Esso Australia Pty Ltd

FINAL WELL REPORT

WEST WHIPTAIL-1

8 MAY 2004 to 5 JUNE 2004

Esso Australia Pty Ltd
ABN 49 000 018 566
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Melbourne, Victoria 3001
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26th November 2004

Mr. Wayne J. Mudge
Gippsland Geoscience Project Manager
Esso Australia Pty Ltd
12 Riverside Quay
Southbank, VIC 3006

WEST WHIPTAIL-1 FINAL WELL REPORT

Wayne,

Attached is the Final Well Report for West Whiptail-1, a near-field wildcat well drilled with the ENSCO 102 Jack-up rig in Licence Area VIC/L1. The well was drilled vertically to 1,539m, logged, plugged and abandoned in 28.6 days versus the original AFE time of 18.0 days.

Non-productive time (NPT) was 8.96 days (31.3%) and was primarily associated with:

a) failure of ENSCO 102's BOP lifting hoist (7.50 days);
b) WOW to run the 30" conductor (1.02 days);
c) problems with the Cameron compact wellhead and associated running tools (0.24 days);
d) other miscellaneous rig failures or problems (0.14 days); and
e) problems with the 13-3/8" float shoe openng (0.05 days).

AFE NPT allowance was 1.8 days (10%). The estimated final drilling cost is A$8,490k, 2% below the original AFE which was approved for A$8,650k (US$6.5M Gross).

There were no recordable incidents during West Whiptail-l drilling.

Yours faithfully,

Daniel L. Whiteman
Drilling Manager

/Attach.

cc:	S. Sazenis	EAPL - Melbourne (6 copies for distribution with the Well Completion Report)
	Library	EAPL - Melbourne (2 copies)
	F.W. Kratzer	EMDC Drilling - Melbourne
	C.P. Meakin	EMDC Drilling - Melbourne
	Drilling Files	EMDC Drilling - Melbourne

ESSO AUSTRALIA PTY LTD

WEST WHIPTAIL-1
NEAR-FIELD WILDCAT WELL

ENSCO 102

FINAL WELL REPORT

PREPARED BY:
CHRIS MEAKIN
JULY 2004

ESSO AUSTRALIA PTY LTD
BEARDIE-1 EXPLORATION WELL

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ESSO AUSTRALIA PTY LTD
BEARDIE-1 EXPLORATION WELL
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GENERAL WELL SUMMARY

Operations Summary

Well Summary Data Sheet

ESSO AUSTRALIA PTY LTD
WEST WHIPTAIL-1

WELL SUMMARY DATA SHEET

Well Name:	West Whiptail-1
Partners:	Esso - 50% BHPP - 50%
Block:	License VIC L1 Bass Strait, Australia
Surface Location:	GDA94, Central Meridian 147° E Latitude: 38° 19' 29.150" S Longitude:147° 30' 17.167" E MGA Zone 55 Easting: 544,121.32m E Northing: 5,758,030.22m N
Rig/Rig Contractor:	ENSCO 102/ENSCO Australia Pty Ltd
Well Profile:	Vertical Well. Maximum angle 8.24° at TD (projected)
Depths:	Water Depth: 39.0m DF-SL: 39.0m DF-ML: 78.0m DF-TD: 1539m MD (1535m TVD)
Casings:	30" x 20" x 13-3/8" to 120.4m MDRT 9-5/8" to 745.0m MD
Dates:	Arrive 1nm from Location : 00:30 hrs, 8 May 2004 Spud : 23:00 hrs, 10 May 2004 Reach TD : 09:00 hrs, 20 May 2004 FRW : 15:30 hrs, 5 June 2004
Time Analysis:	Total Days : 28.63 days Total NPT Days : 8.96 days AFE Days 18.0 days
Cost Analysis:	Original AFE : A$8,650,000 Estimated Actual Costs : A$8,492,000 Booked Costs (19-Nov-04) : A$8,373,632 FOREX : A$1.00 = US$0 .7503
KPIs:	A$5,812/m A$296,612/day

Sequence of Operations

WEST WHIPTAIL-1 SEQUENCE OF OPERATIONS

Date Finished	Time	Days	NPT Hours	Prod. Days	Operation Milestones
May 8, 2004	00:30				Tow from off-load point at Western Port to 1nautical mile from West Whiptail-1.
May 8, 2004	03:00	0.10		0.10	Move in and soft pin at location
May 8, 2004	14:00	0.46		0.46	Complete preload
May 9, 2004	05:00	0.63		0.63	Jackup and cantilever to 60'
May 10, 2004	00:00	0.79		0.79	Rig up PCU, walkways & return lines
May 10, 2004	15:30	0.65		0.65	P/U drill pipe. M/U tools.
May 10, 2004	22:30	0.29		0.29	P/U BHA, RIH & Spud Well.
May 11, 2004	11:45	0.55		0.55	Drill 17-1/2" x 36" hole to 123m MDRT
May 11, 2004	15:30	0.16		0.16	Circulate & condition hole. POOH to run Conductor
May 13, 2004	13:30	1.92	**30.00**	0.67	Run 30" Conductor, install Wellhead and Land
May 13, 2004	19:45	0.26		0.26	Cement 30" Conductor
May 14, 2004	09:00	0.55		0.55	N/U BOP & Diverter.
May 14, 2004	22:15	0.55		0.55	P/U 12-1/4" BHA. RIH & Drill float shoe
May 16, 2004	06:30	1.34		1.34	Drill 12-1/4" Hole to Surface Casing TD @ 750m
May 16, 2004	15:30	0.38		0.38	Circulate & condition hole. POOH to run surface casing
May 17, 2004	07:00	0.65		0.65	Run 9-5/8" Surface casing and Land Hanger
May 17, 2004	19:30	0.52		0.52	Cement 9-5/8" surface casing and install seal assembly
May 18, 2004	01:45	0.26		0.26	Test BOP and connections. Close stage collar.
May 18, 2004	17:00	0.64	**1.00**	0.59	P/U 8-1/2" BHA. RIH,Drill float shoe, new hole and run PIT.
May 20, 2004	09:00	1.67		1.67	Drill 8-1/2" Hole to TD
May 20, 2004	20:30	0.48		0.48	Circ. & cond. hole. Wiper trip to shoe. Drop gyro. POOH to Log.
May 22, 2004	20:15	1.99		1.99	Log
June 3, 2004	15:45	11.813	**184.00**	4.15	P&A
June 5, 2004	09:15	1.73		1.73	Rig Down & Cantiler derrick in to stowed position
June 5, 2004	15:30	0.26		0.26	Jack-down, tow to 1nm from West Whiptail-1.
		28.63	**8.96**	**19.67**	**Total Program**

ExxonMobil Drilling

Days, Depth, Mud Weight, and Cost Report

Wellname: WEST WHIPTAIL-1

Report Date	AFE Days	Days From Spud	MD	TVD	Drilling Cum $	Completion Cum $	Total $MM	MW	Pore Press.	Leak Off Test	Management Summary
9-May-04	1	0	78	78	694,426		.694	0.00	0	0	Rig towed to well location. Pin rig on location. Preload rig and jack hull to 57 ft air gap. Start to jack out cantilever and unbind loads from tow.
10-May-04	2	0	78	78	989,202		.989	0.00	0	0	Pick up mud logging unit into cantilever. Skid cantilever to 60 ft. Rig up to drill. Hang and secure pollution control unit and tensioner frame. Start mixing mud.
11-May-04	3	0.1	79	79	1,265,935		1.266	8.55	0	0	Finish preparing rig to drill. Pick up tools. Pick up drill string components. Tag mud line. Drill 36" hole from 78.6 m to 79.3 m.
12-May-04	4	1.1	123	123	1,566,377		1.566	8.55	0	0	Drill 36" hole from 79 m to 123 m. Displace hole with hi vis mud and POOH. Start to run 30" conductor. Wait on weather due to excessive hammering on pollution control unit.
13-May-04	5	2.1	123	123	1,834,062		1.834	0.00	0	0	Wait on weather. Pick up drill pipe. Continue to run 30" conductor to 68 meters.
14-May-04	6	3.1	123	123	2,306,465		2.306	0.00	0	0	Run 30" conductor and cement same with shoe at 120.4 meters. Nipple up wellhead connector.
15-May-04	7	4.1	161	161	2,653,466		2.653	8.70	0	0	N/U BOP. L/D 36" BHA. M/U 12-1/4" BHA. Function Diverter - OK. Drill out float equip & shoetrack. Displ seawater w/Mud. Drill 12-1/4" hole from 123m to 161 m.
16-May-04	8	5.1	687	687	2,926,837		2.927	8.70	8.5	0	Drill 12-1/4" hole from 161m to 687m. Held diverter drill w/both crews.
17-May-04	9	6.1	750	750	3,204,999		3.205	8.70	8.5	0	Drill 12-1/4" hole from 687m to 750m - 9-5/8" Csg Pt. Circ & Cond hole, drop Gyro, POOH, L/D BHA, Pull Wear Bushing, Jet wellhead, R/U to run 9-5/8" Csg. Run 9-5/8" Csg
18-May-04	10	7.1	750	750	3,655,113		3.655	8.70	8.5	0	Run 9-5/8"csg,M/U & Land hanger.Circ hole displacing mud with SW. Mix & Pump Cmt. Displace & Bump plug. Open HES stage collar & flush 30" x 9-5/8" Annulus w/13.5 Mud & Sugar water,Jet WH & Stack,set Seal assy,close stage collar
19-May-04	11	8.1	875	875	3,988,309		3.988	9.70	8.55	14.2	Test Blinds & 9-5/8" to 1900 psi-OK.L/D closing tool,P/U 8½"BHA & GIH 88m,drill out H ES cmt'r, Cont GIH&Tag Cmt@720m,Test Csg 1900 psi-OK.Power Choke Drill.Test IBOP&lower valve on TDS. Drill out,LOTto 14.2 EMW,Drill to 875m

ExxonMobil Drilling

Days, Depth, Mud Weight, and Cost Report

Wellname: WEST WHIPTAIL-1

Report Date	AFE Days	Days From Spud	MD	TVD	Drilling Cum $	Completion Cum $	Total $MM	MW	Pore Press.	Leak Off Test	Management Summary
20-May-04	12	9.1	1406	1406	4,273,367		4.273	9.80	8.55	14.2	Drill 8-1/2" hole from 875m to 1406m. Pit Drills NC 50 sec, DC 52 secs.
21-May-04	13	10.1	1539	1536	4,544,106		4.544	9.80	8.55	14.2	Drill 8-1/2" hole from 1406m to 1539m (TD), circ btms up, Wiper trip to shoe, Flow Check - OK, TIH, Circ btms up, Drop Gyro, Flow Check - OK, POOH, rec gyro, R/U Schlum WL, Run log #1 HALS-PEX-HNGS-DSI-LEHQT.
22-May-04	14	11.1	1539	1536	5,041,805		5.042	10.10	8.55	14.2	Logging-Run #1 HALS-PEX-HNGS-DSI-LEHHQT, Run #2-MDT-GR-LEHQT-Set down @ 1241m, GIH w/BHA-Set down@1241m-wash & ream coal,cont to TD,circ & cond-incr MW f/9.8 to 10.1 ppg, POOH, O/P @ 1267m, ream & Circ Clean, POOH, Cont LOG
23-May-04	15	12.1	1539	1536	5,308,079		5.308	10.10	8.55	14.2	Logging Re-Run #2: MDT-GR-LEHQT, Run #3 CSAT-GR-LEHQT set down @ 1271m, run velocity survey from 1271m to 100m. R/D WL equip, P/U 2-7/8" stinger assy, GIH to set P & A Plug per prog.
24-May-04	16	13.1	1539	1536	5,610,687		5.611	10.20	8.55	14.2	TIH to 643m, Rig repairs Hyd Hose on PRS, TIH to 1539m, Circ prior to setting cmt plugs, Set 5 cmt plugs from 1539m to 669m per prog, L/D Stab, 2 HWDP & Jars while WOC prior to tagging
25-May-04	17	14.1	1539	1536	5,880,301		5.880	10.00	8.55	14.2	L/D DP while WOC,Tag Cmt w/15 klbs@675m,POH,L/D 2-7/8" stinger assy,MU & Set CIBP @170m, Cmt f/170-110m,Displ csg to SW,Test Cmt to 1000 psi/5min-OK,L/D DP while WOC,Tag Cmt @ 117m,attempt to pull seal assy-no success,N/D BOP
26-May-04	18	15.1	1539	1536	6,165,267		6.165	10.00	8.55	14.2	Cont N/D BOP, Lift BOP attempt to return to stump, stop job, investigate BOP hoist problem, L/D DP, Lower BOP back onto wellhead, torq bolts, jet seal assy, pull seals, M/U csg cutter, cut 9-5/8" csg, L/D csg cutter
27-May-04	19	16.1	1539	1536	6,373,173		6.373	10.00	8.55	14.2	Jet Hanger area, Engage hanger, Pull 9-5/8" casing, R/D handling tools, P/U 30" casing cutting equip, L/D 5" drillpipe & performing rig maintenance while waiting on replacement parts for BOP Hoisting System.
28-May-04	20	17.1	1539	1536	6,511,688		6.512	10.00	8.55	14.2	Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. ETA from USA motor & bearings Friday, 28-May-04, ETA Gears Sunday, 30-May-04.

ExxonMobil Drilling

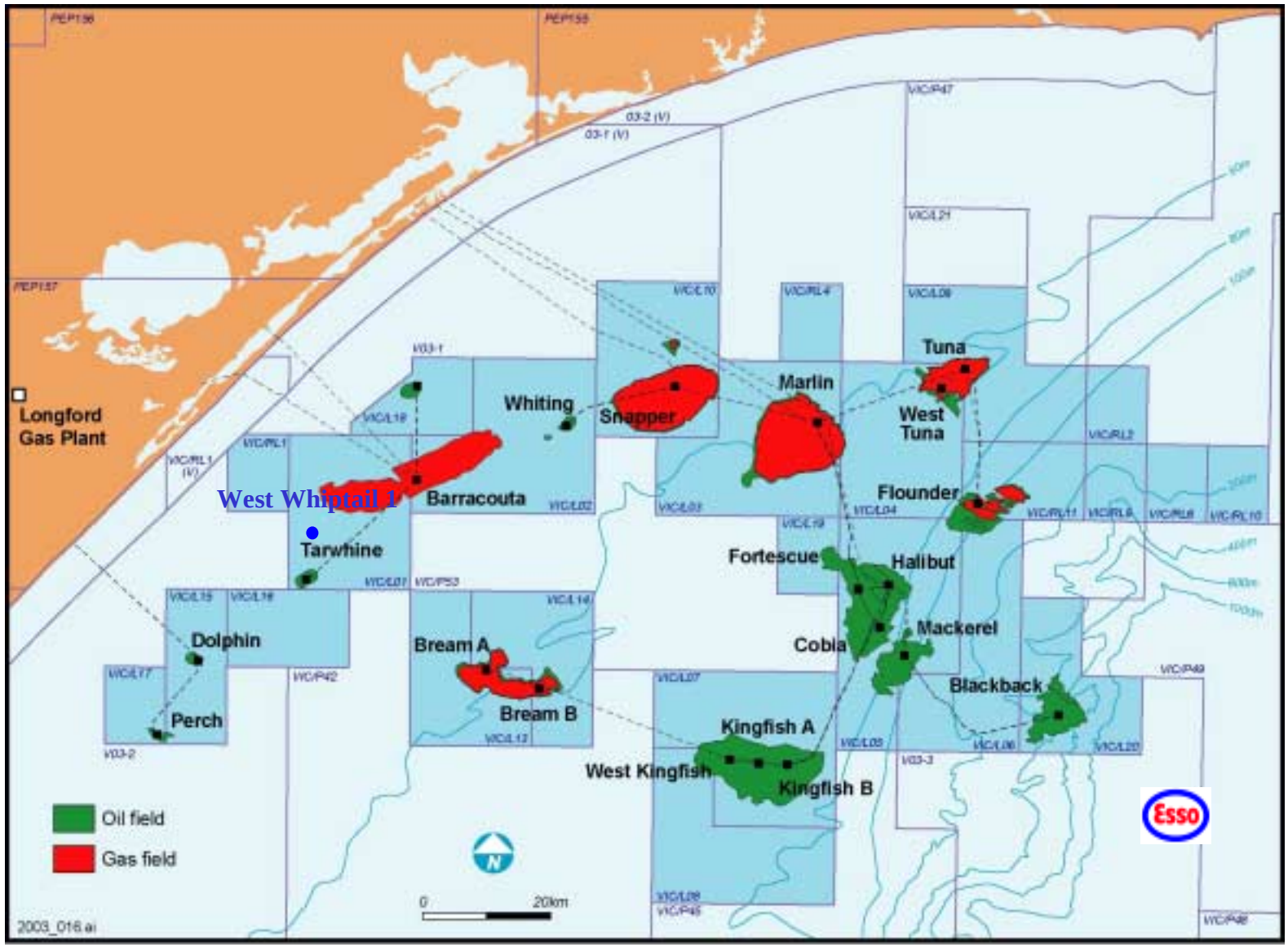
Days, Depth, Mud Weight, and Cost Report

Wellname: WEST WHIPTAIL-1

Report Date	AFE Days	Days From Spud	MD	TVD	Drilling Cum $	Completion Cum $	Total $MM	MW	Pore Press.	Leak Off Test	Management Summary
29-May-04	21	18.1	1539	1536	6,642,707		6.643	10.00	8.55	14.2	Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. ETA from USA Gears Sunday, 30-May-04. Rec'd bearings & motor 2030 hrs, 28-May-04.
30-May-04	22	19.1	1539	1536	6,772,653		6.773	10.00	8.55	14.2	Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. ETA from USA Gears Sunday, 30-May-04.
31-May-04	23	20.1	1539	1536	6,908,444		6.908	10.00	8.55	14.2	Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. Gears arrived - drive gear missing one of two keyways, sent in for modification.
1-Jun-04	24	21.1	1539	1536	7,045,446		7.045	10.00	8.55	14.2	Waiting on replacement parts for BOP hoist. Rig maintenance. Gears arrived by helicopter @ 1300 hrs. Installing gear on BOP hoist shaft - gear became difficult to press on, heat gear & cont to press on.
2-Jun-04	25	22.1	1539	1536	7,181,222		7.181	10.00	8.55	14.2	Continue attempt to install drive gear on MOS BOP Hoist - no success. R/U & attempt to pull off drive gear-heating/pressing - no success. Hevi-duty equip arrivedfrom town @ 1300 hrs-gear off @ 1745 hrs. Measure & redress same.
3-Jun-04	26	23.1	1539	1536	7,364,753		7.365	10.00	8.55	14.2	Install BOP hoist gears and covers, R/U & install BOP hoist on fwd main beam, function test - OK. Load test BOP hoists - OK. Remove BOP. Prepare to cut 30" casing.
4-Jun-04	27	24.1	1539	1536	7,625,446		7.625	10.00	8.55	14.2	Install "C" Plate, Held 30 ton tension, Pull housing & L/O same, M/U csg cutter assy, Cut 30" casing, POOH - L/D 30" conductor. Prepare rig to move. Winds/Seas too rough to backload equip.
5-Jun-04	28	25.1	1539	1536	7,938,908		7.939	10.00	8.55	14.2	Prepare for rig move. L/D cutting assy, L/D tubulars from derrick. R/D Port cantilever stairs. Continue to prepare for rig move. Backload equipment to M/V Far Scandia
6-Jun-04	29	26.1	1539	1536	8,491,906		8.492	10.00	8.55	14.2	Fin B/L equip, shift containers on Deck & secure rig, Skid in cantilver, Jack Down, Water tight integrity check, Off Location @ 14:50 5-Jun-04 continue raising legs & towing rig, 1 NM from location @ 1530, 5-Jun-04. Final Report

Location Map

WEST WHIPTAIL-1 LOCATION MAP



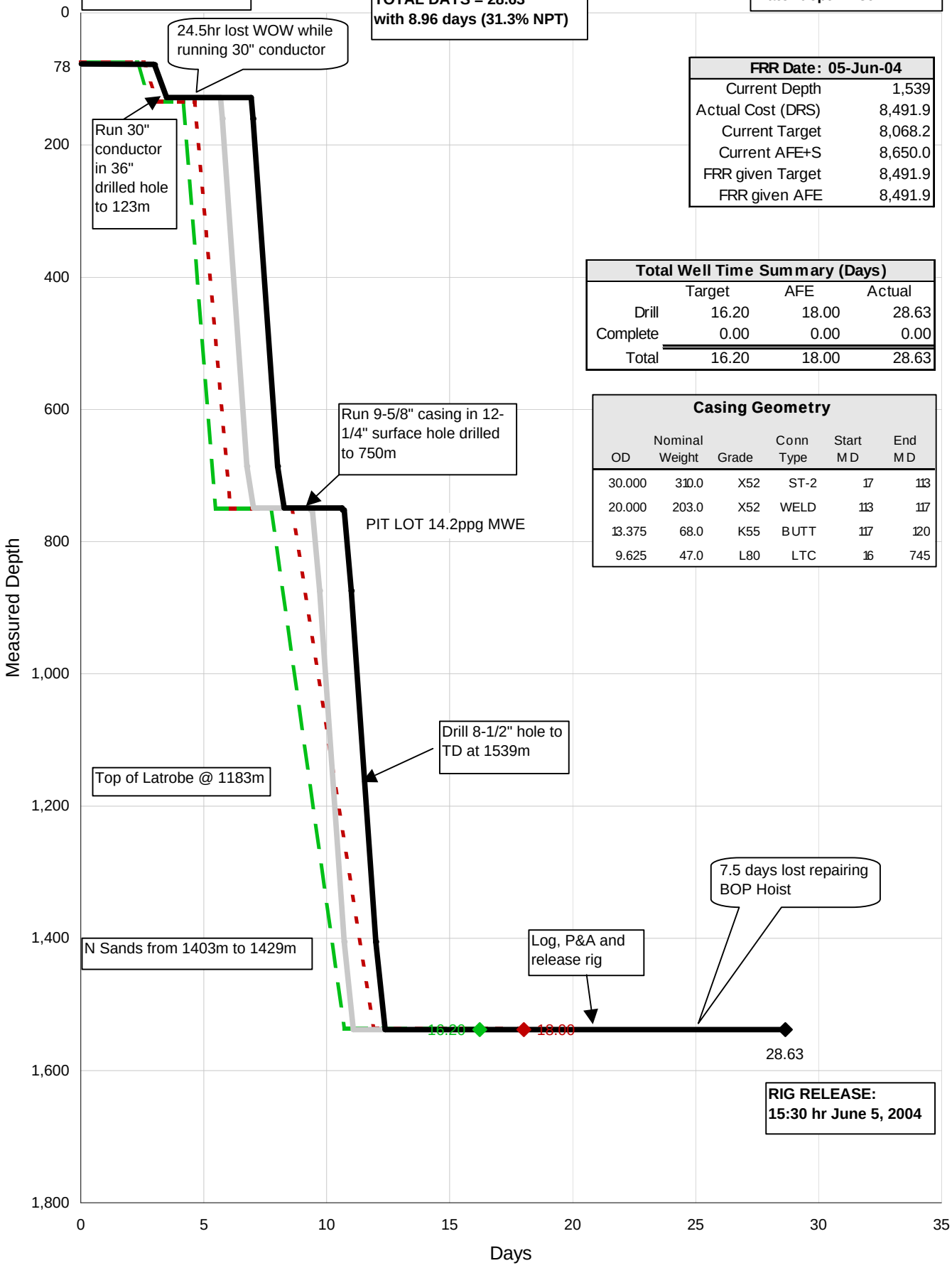
Well Progress Curve

WEST WHIPTAIL-1
Days vs. Depth

Esso Australia Pty Ltd
ENSCO 102 Jack-up
RT:MSL = 39m
Water depth = 39m

START:
00:30 hr May 8, 2004

TOTAL DAYS = 28.63
with 8.96 days (31.3% NPT)



FRR Date: 05-Jun-04	
Current Depth	1,539
Actual Cost (DRS)	8,491.9
Current Target	8,068.2
Current AFE+S	8,650.0
FRR given Target	8,491.9
FRR given AFE	8,491.9

Total Well Time Summary (Days)

	Target	AFE	Actual
Drill	16.20	18.00	28.63
Complete	0.00	0.00	0.00
Total	16.20	18.00	28.63

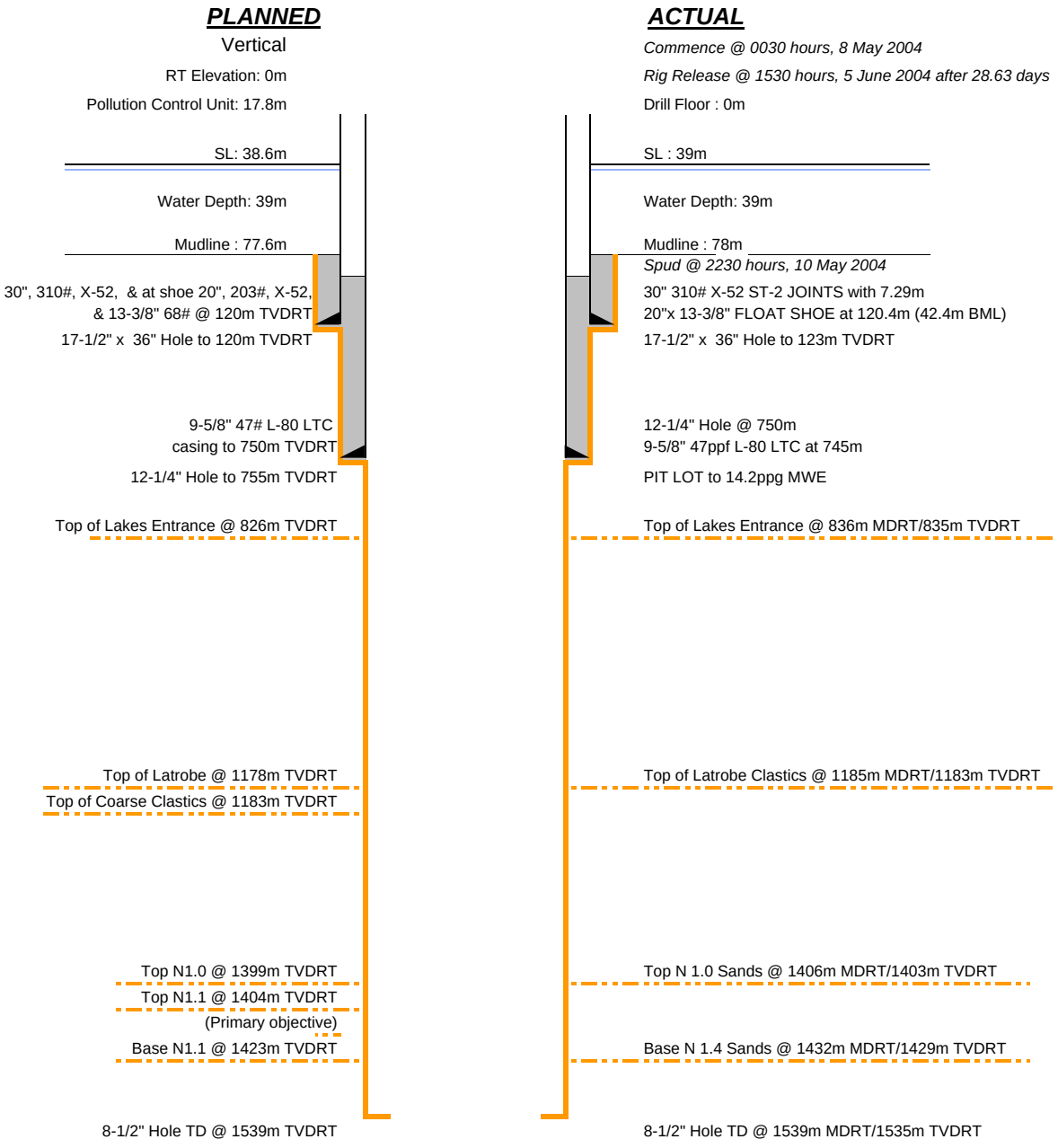
Casing Geometry

OD	Nominal Weight	Grade	Conn Type	Start MD	End MD
30.000	310.0	X52	ST-2	17	113
20.000	203.0	X52	WELD	113	117
13.375	68.0	K55	BUTT	117	120
9.625	47.0	L80	LTC	16	745

RIG RELEASE:
15:30 hr June 5, 2004

Wellbore Schematic

WEST WHIPTAIL-1 WELLBORE SKETCH



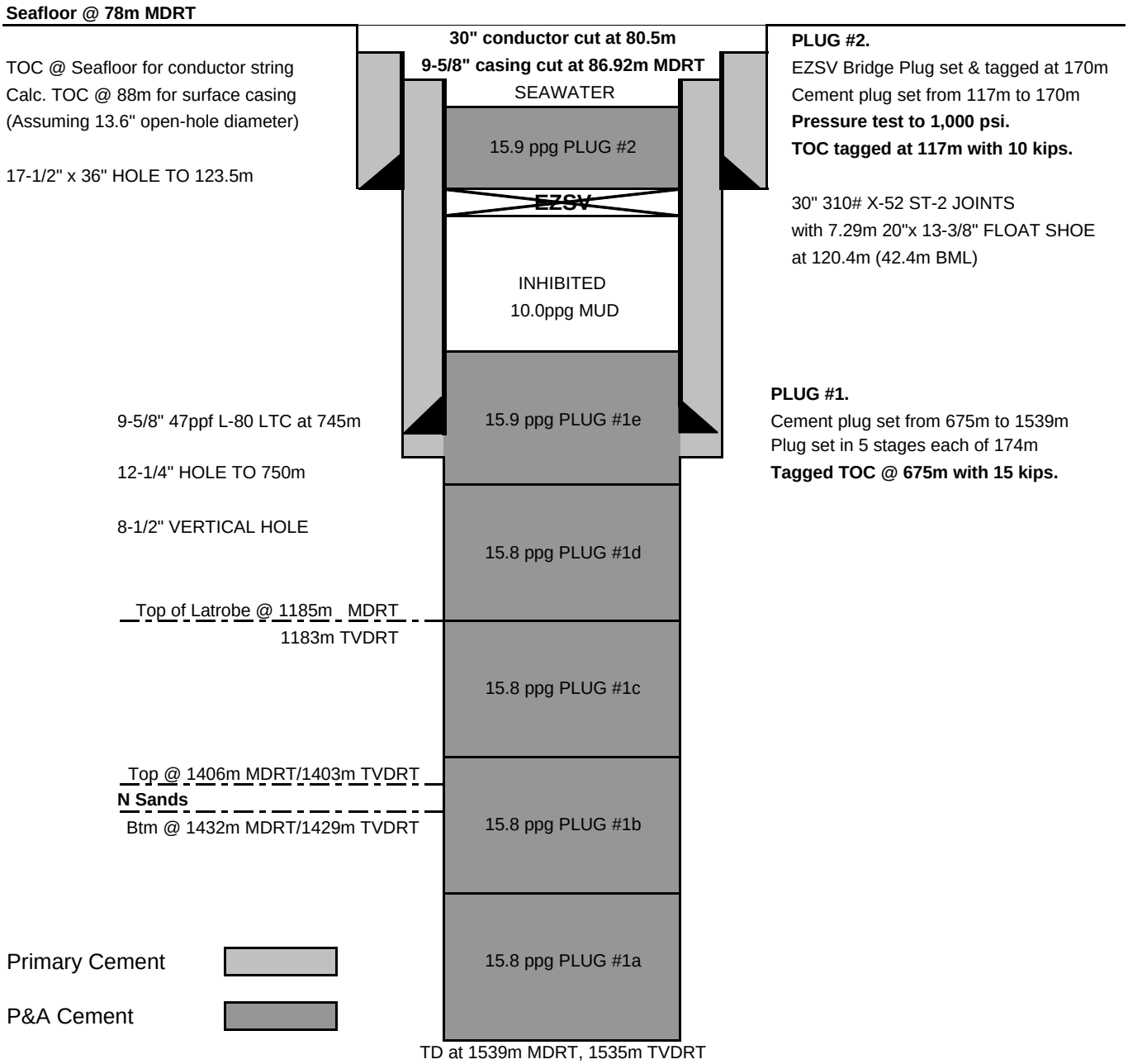
ACTUAL PLUG AND ABANDONMENT WELLBORE SKETCH
WEST WHIPTAIL-1
Drilled by the Jack-up ENSCO 102

LOCATION: GDA94. Latitude 38° 19' 29.150" S. Longitude 147° 30' 17.167" E.
MGA Zone 55 Easting 544,121.32m, Northing 5,758,030.22m
Rig on Location 0300 hours 8 May 2004. Rig released 1530 hours 5 June 2004.

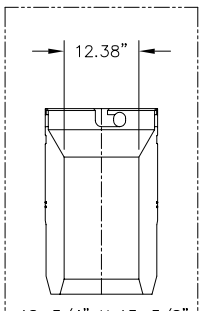
ALL DEPTHS ARE METRES FROM ROTARY TABLE. FORMATION TOPS FROM PRELIMINARY GEOLOGCAL REPORT.

MSL @ 39m RT

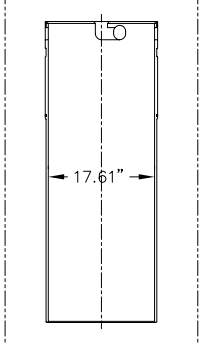
WATER DEPTH: 39m



ATTACHMENT 14

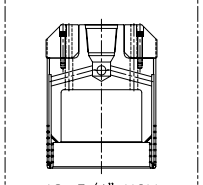


18–3/4" X 13–3/8"
UPPER WEAR BUSHING
P/N 2125332–02

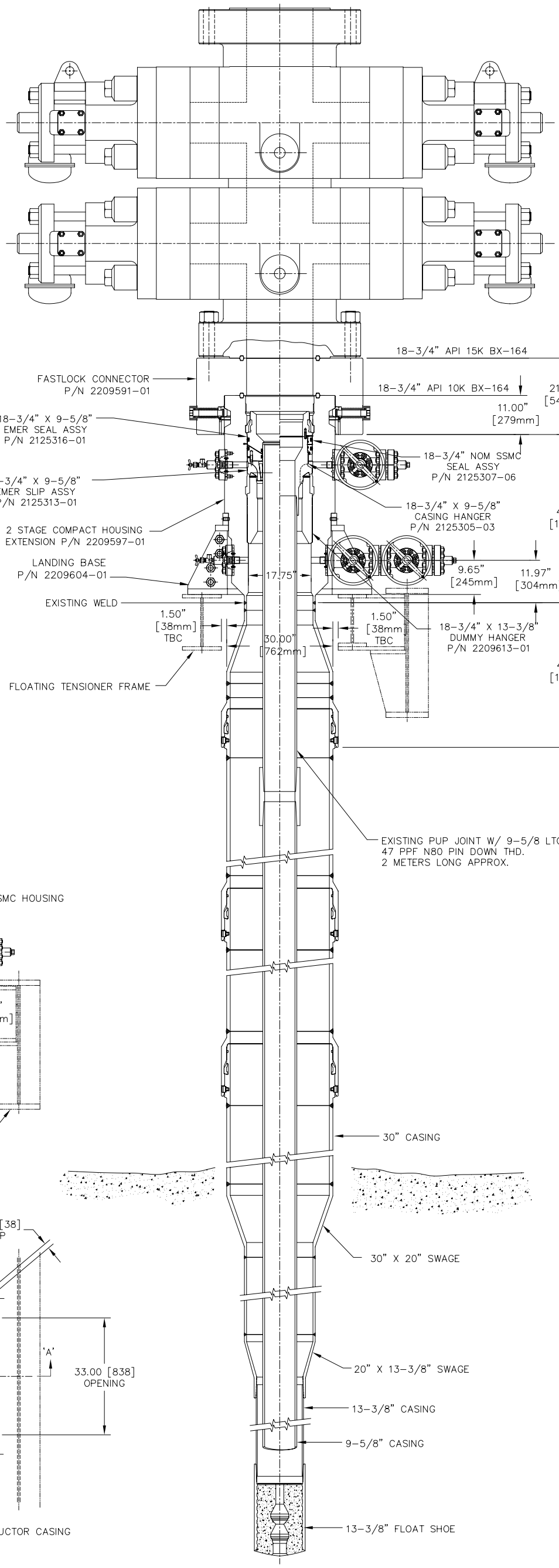


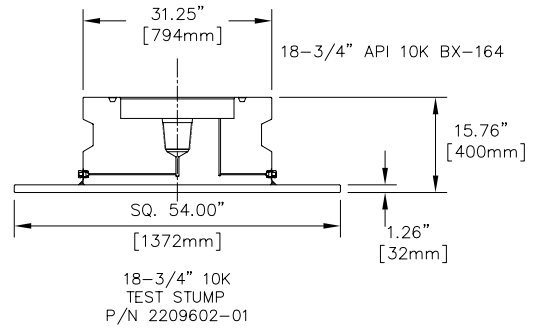
18–3/4" NOM.
LOWER WEAR BUSHING
P/N 2125331–02

18–3/4" NOM.
COMBINATION TOOL
P/N 2125897–01

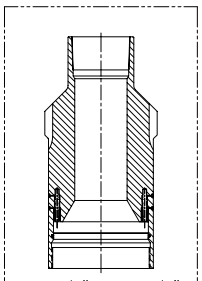


18–3/4" NOM.
JETTING TOOL
P/N 2125334–02

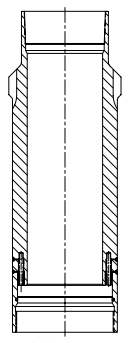




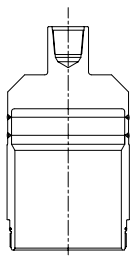
18–3/4" 10K
TEST STUMP
P/N 2209602–01



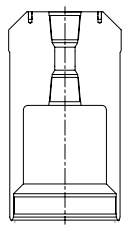
18–3/4" X 9–5/8"
CASING HANGER
RUNNING TOOL
P/N 2202714–02



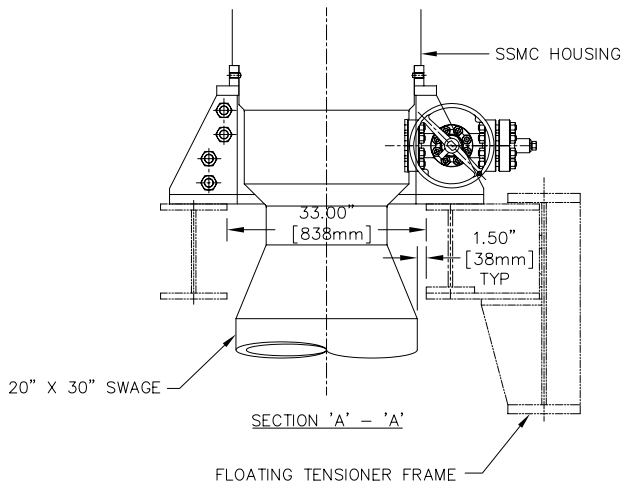
18–3/4" X 13–3/8"
CASING HANGER
RUNNING TOOL
P/N 2202714–01

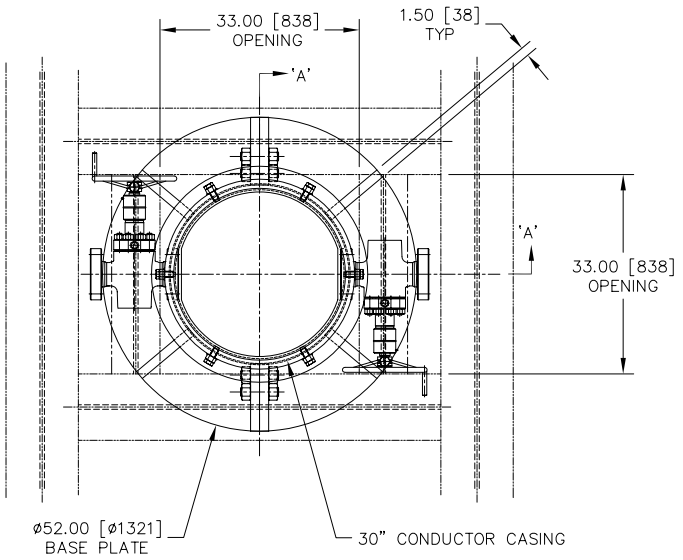


EXISTING 18–3/4"
NOM. SSMC COMPACT
HOUSING RUNNING
TOOL WITH EXTENSION
XOVER
P/N 2209618–01



18–3/4" NOM. SSMC
SEAL ASSY
RUNNING TOOL
P/N 2125327–02





CAD

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P.O. Box 789, ST. ALBANS, Vic. 3021
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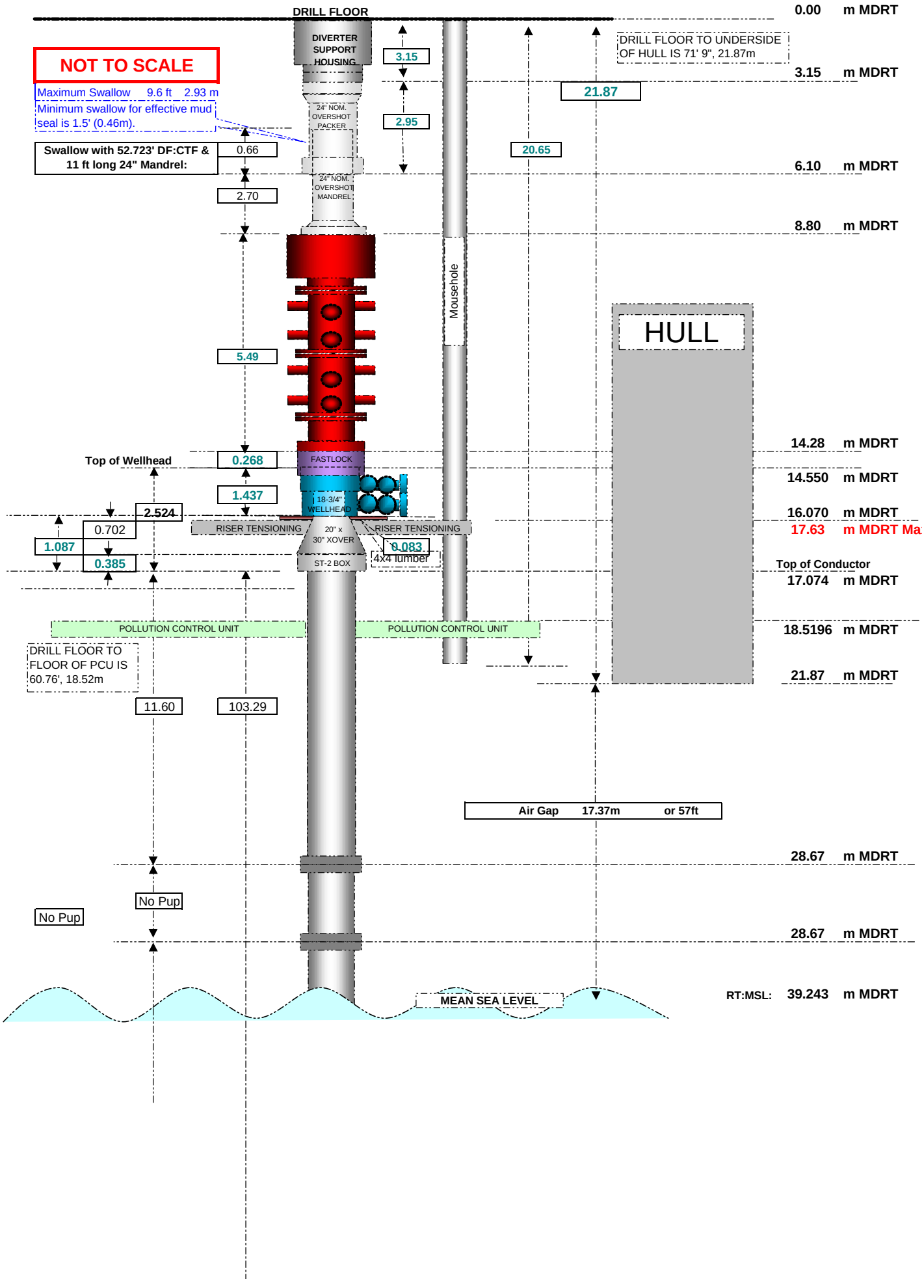
Fax: (03) 9361–4400
CAMERON

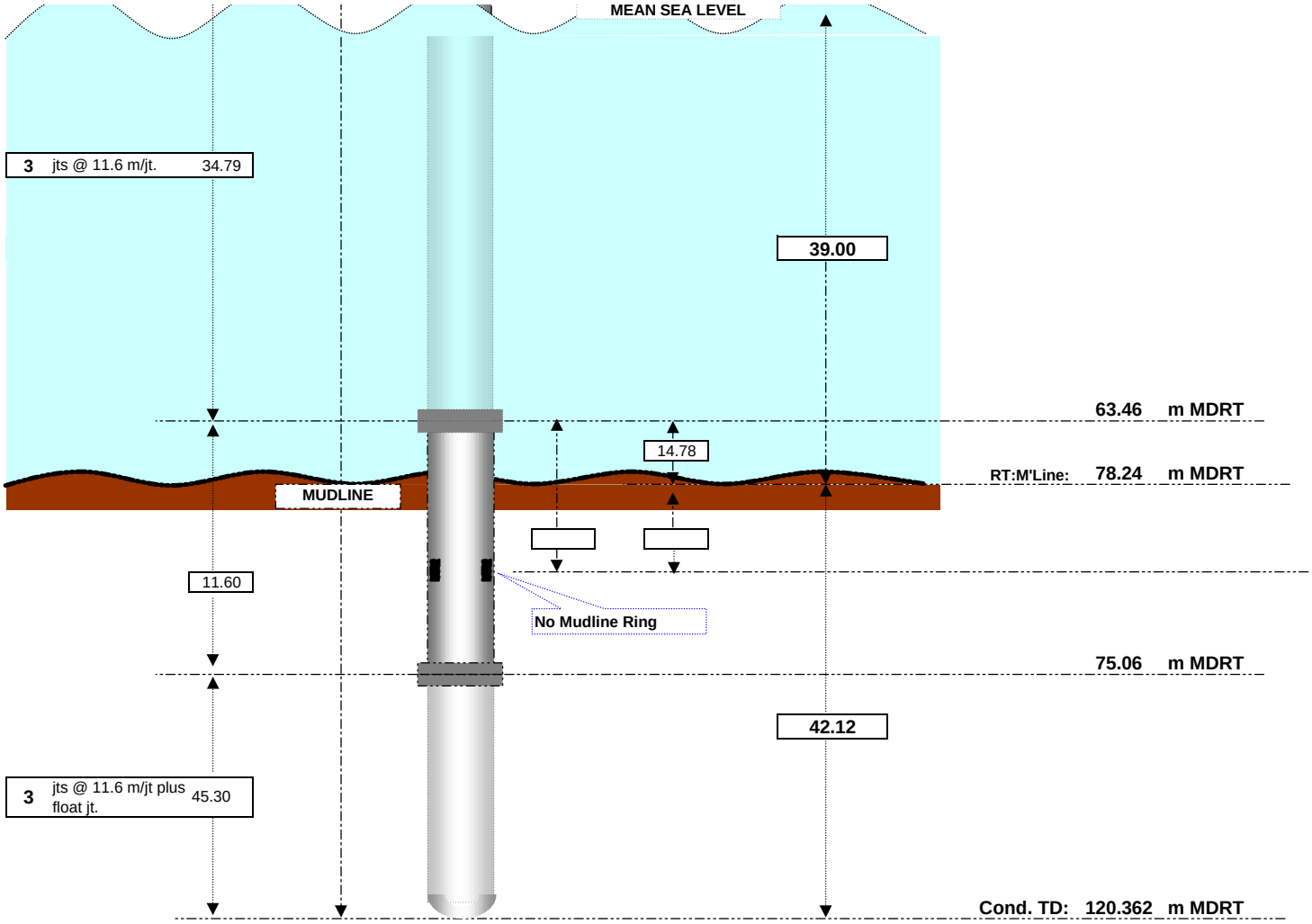
18–3/4" 5000 PSI
NEAR FIELD WILDCAT WELL
ESSO WEST WHIPTAIL–1

Drawn by:	Date:	Scale:	Drawing Number SHT 1 OF 1	Rev.
A. SEREY	18/02/2004	N.T.S.	LO–051691–09	06

WEST WHIPTAIL-1 STACK UP CONDUCTOR HOLE SECTION.

All Dimensions in METRES. Not to scale.




MEAN SEA LEVEL
3 jts @ 11.6 m/jt. 34.79
39.00
63.46 m MDRT
14.78
RT:M'Line: 78.24 m MDRT
MUDLINE
11.60
No Mudline Ring
75.06 m MDRT
42.12
3 jts @ 11.6 m/jt plus float jt. 45.30
Cond. TD: 120.362 m MDRT

Geology

West Whiptail 1
Gippsland Basin, Victoria

GEOLOGICAL DISCUSSION

OBJECTIVES & UNCERTANTIES

The West Whiptail-1 well is located approximately 1.4 km WSW of Whiptail-1A. The location lies in 38 meters of water, within the VIC/L1 license area of the Gippsland Basin. The West Whiptail-1 well was designed to provide data on the lateral extent of the Whiptail and Mulloway discoveries within the fluvial "N" sand reservoirs of the intra Latrobe (lower N.asperus age). A closure was mapped between the Mulloway and Whiptail discoveries with a range of potential contacts in the main N1.1/N1.3 sands of between 1375-1389m. Definition of the position of the contact would enable a better assessment of the oil resource within the overall Whiptail complex which includes Mulloway, West Whiptail, Whiptail and East Whiptail closures.

The West Whiptail1 near field wildcat well was spud on 10th May and drilled to a total depth of 1539m MD by the jack-up drilling rig *Ensco 102*. The well was subsequently P&A'ed and the rig released on 5th June, 2004.

RESULTS

A comparison of prognosed versus actual formation tops penetrated in West Whiptail 1 is summarised below.

Analysis of the wireline logging suite indicates the well intersected a total of 4.5m of gross hydrocarbon bearing sand (4.25m net oil) within the N1.1 sand. The hydrocarbons were located within the prognosed fluvial sequence of the lower N.asperus of the Latrobe Group over the interval 1409.7m to 1414.2m measured depth. The N1.3 sand was intersected at 1417.7m measured depth and was water wet.

The N1.1 intersected in West Whiptail-1 well from pressure data is interpreted to have an OWC at 1380mSS. The intervening shale between the N1.1 and N1.3 sands is a local base seal and has prevented migration of oil into the N1.3. Plotting pressure points from the West Whiptail 1 well gives an OWC at 1380mSS.

Analysis of sample recovered from the hydrocarbon sand in West Whiptail-1 shows that it is 43° API oil similar to Whiptail 1A

FORMATION RESERVOIR TOPS

Formation/ Zone	mTVDSS			mMDRT
	Predicted	Actual	Difference	
Top Lakes Entrance Fm	-787	-796.5	9.5 low	835.6
Top Latrobe Group	-1139	-1138.7	0.3 high	1179
Top Coarse Clastics	-1144	-1145	1 low	1185.3
Top N1.0	-1360	-1364.9	4.9 low	1406.3
Top N1.1	-1365	-1368.3	3.3 low	1409.7
TOTAL DEPTH	**-1500**	**-1496.5**	**3.5 high**	**1539**

SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

Cuttings

Type	Number	Interval	Frequency
Washed & Dried	4	13-3/8" casing to 150-1040mMD	30m
		1040mMD to TD	5m

Conventional Coring

No conventional core was cut in West Whiptail-1

Sidewall Cores

No sidewall cores taken

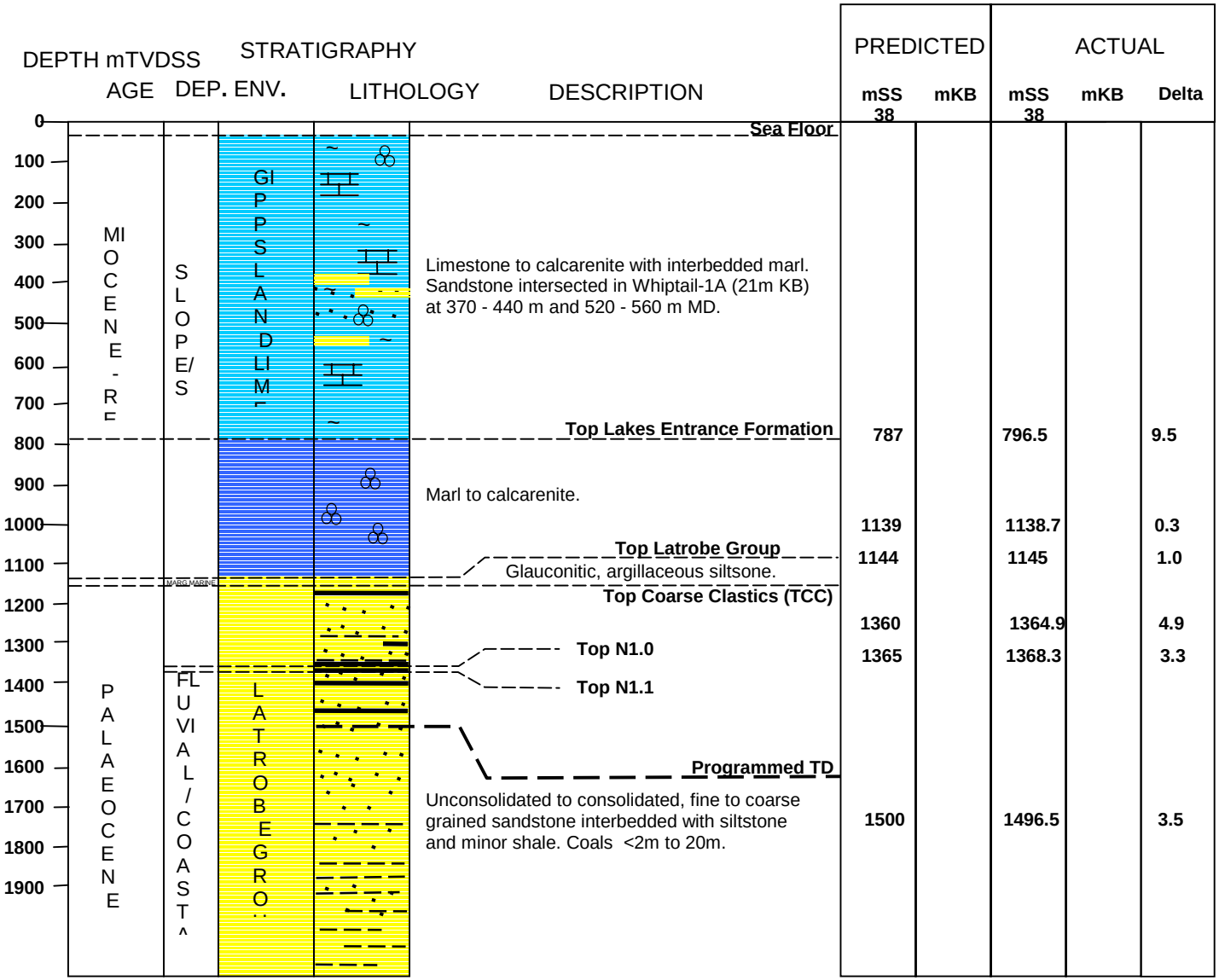
WIRELINE LOGS AND SURVEYS

LOGGING SUITE NUMBER 1

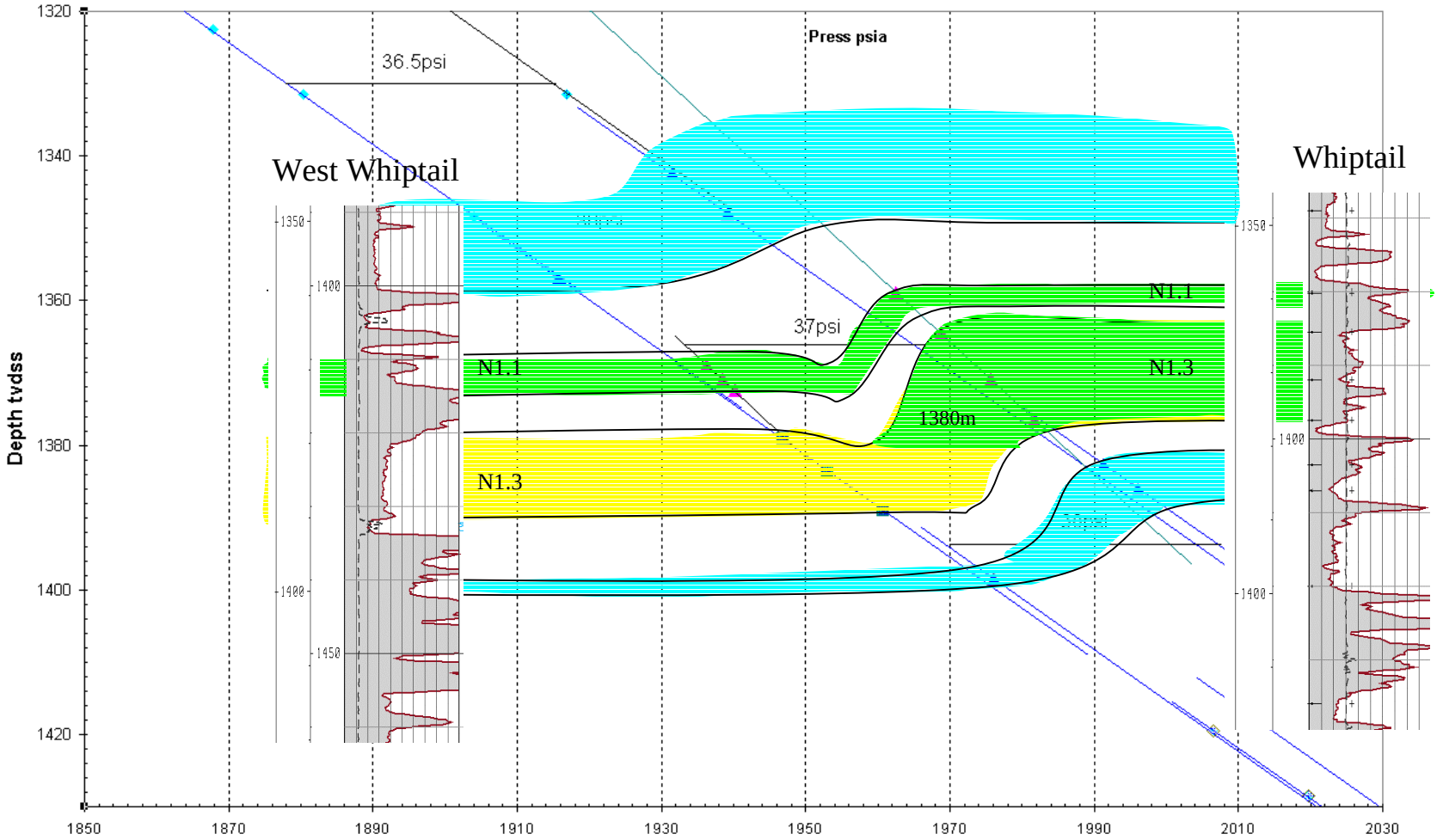
DATE LOGGED: 20/5/04-22/5/04 **HOLE SIZE: 12 1/4"** **CASING SHOE:** 745m	**DRILLERS DEPTH:** 1539m **LOGGERS DEPTH:** 1529m **LOGGERS CASING SHOE:** 745.5m

TYPE OF LOG	FROM	TO	RPT. SECT. / SUMMARY.
MWD SURVEY	93m	1445m	
GYRO	104m	1521.9m	
PEX-HALS-DSI-HNGS-LEHQT	77.6m	1529m GR to seafloor	depth correlation 1380m - 1480m
MDT-GR-LEHQT	1241m	124m	Run aborted, could not pass due to bridge in hole
MDT-GR-LEHQT	1364m	1470m	16 pretests, 13 ok, 5 fluid samples, 1 successfully recovered oil
CSAT -GR	100m	1264m	

WEST WHIPTAIL-1 STRATIGRAPHY



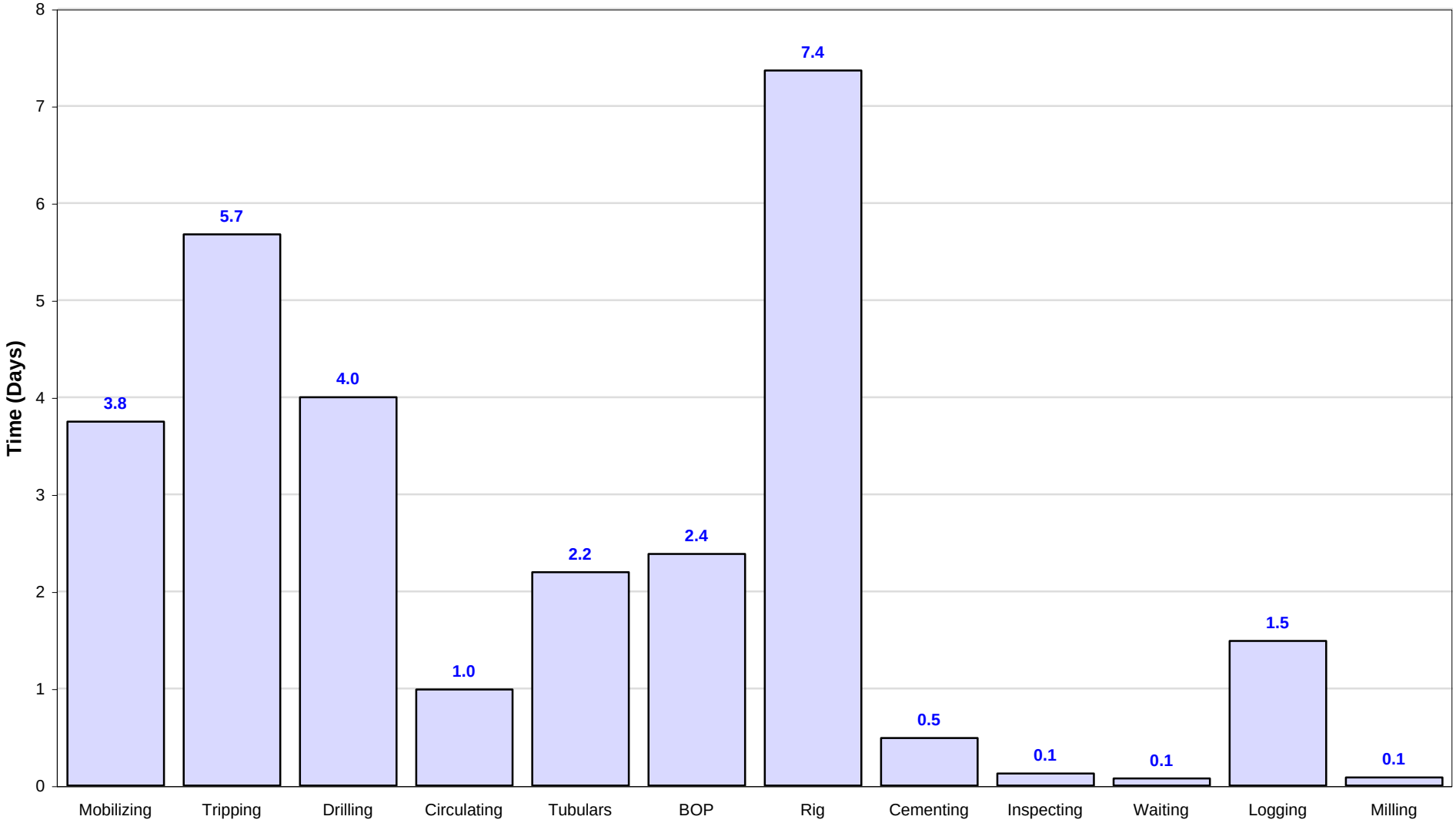
WEST WHIPTAIL 1 AND WHIPTAIL 1 MDT PRESSURES



Rig Time Distribution

Time Distribution Summary

Total Operations (by Time Category)



Activity Summary

WEST WHIPTAIL-1

Category	Total Days	Productive Days	Non-Productive Days	PT%	NPT%	PT Fixed Cost	NPT Fixed Cost
	28.63	**19.67**	**8.96**	**68.7%**	**31.3%**	**5,992,345**	**1,490,357**
Mobilizing	3.75	3.75	0.00	100.0%	0.0%	1,433,236	0
Tripping	5.68	4.93	0.75	86.8%	13.2%	1,410,845	199,600
Drilling	4.00	4.00	0.00	100.0%	0.0%	1,145,191	0
Circulating	0.99	0.99	0.00	100.0%	0.0%	282,003	0
Tubulars	2.20	2.01	0.19	91.5%	8.5%	538,026	51,361
BOP	2.39	1.75	0.64	73.4%	26.6%	459,652	176,477
Rig	7.36	0.02	7.34	0.3%	99.7%	10,369	1,049,913
Cementing	0.49	0.49	0.00	100.0%	0.0%	133,531	0
Inspecting	0.13	0.13	0.00	100.0%	0.0%	36,619	0
Waiting	0.07	0.03	0.04	42.9%	57.1%	8,147	13,006
Logging	1.49	1.49	0.00	100.0%	0.0%	513,001	0
Milling	0.08	0.08	0.00	100.0%	0.0%	21,724	0

NPT Summary

Category	Type	Start Timestamp	End Timestamp	Elapsed Time	Start MD	End MD	NPT?	Acc Party Type	Acc Party Name	Description	Rig Contractor	Rig Name	NPT Fixed Cost (K)	Phase Name	NPT Event
TBLR	Casing problem	11/05/2004 20:00	11/05/2004 21:15	1.25	129	129	Yes	Operator		Float shoe on 30" conductor plugged. Had to pressure with circulating swage to blow clear.	Ensco	Ensco 102	14.5	Run & Cement 30" Conductor	2
WAIT	Weather or environment problem	11/05/2004 22:30	12/05/2004 23:00	24.50	129	129	Yes			Heavey seas and strong winds causing excess swinging of 30" conductor when run below water line.	Ensco	Ensco 102	272.3	Run & Cement 30" Conductor	1
RIG	Power/electrical problem	13/05/2004 5:30	13/05/2004 6:45	1.25	129	129	Yes	Contractor		Pipe racking system would not function. Repair fiber optic cable failure.	Ensco	Ensco 102	14.3	Run & Cement 30" Conductor	3
TBLR	Wellhead or tree problem	13/05/2004 9:15	13/05/2004 12:15	3.00	129	129	Yes	Third Party	Cameron	Cameron procedure call for 30" wellhead running tool to make up w/7 turns, made up w/3-1/4 turns - confirm with Cameron engineering 3 turns OK.	Ensco	Ensco 102	34.4	Run & Cement 30" Conductor	4
RIG	Other rig equipment problem	18/05/2004 8:00	18/05/2004 9:00	1.00	750	750	Yes	Contractor		POWER CHOKE DRILL. Troubleshoot pressure read out system to choke panel.	Ensco	Ensco 102	13.0	Drill 8-1/2" Hole to TD	5
RIG	Other rig equipment problem	23/05/2004 2:15	23/05/2004 3:30	1.25	1,539	1,539	Yes	Contractor		Hydraulic Hose leaking on PRS upper arm (lower gripping jaw). Repair same.	Ensco	Ensco 102	14.0	Plug & Abandon Well	6
TBLR	Wellhead or tree problem	24/05/2004 14:45	24/05/2004 15:30	0.75	1,539	1,539	Yes	Third Party	Cameron	Attempt to retrieve seal assy - no success.	Ensco	Ensco 102	8.3	Plug & Abandon Well	11
RIG	BOP or riser problem	25/05/2004 1:15	25/05/2004 2:00	0.75	1,539	1,539	Yes	Contractor		While lifting BOP, Stopped operation due to noise in forward BOP hoist gearbox. Investigate same. Found Gears stripped out in Forward MOS 75T BOP hoist. Aft hoist OK.	Ensco	Ensco 102	8.9	Plug & Abandon Well	8
RIG	BOP or riser problem	25/05/2004 5:15	25/05/2004 6:45	1.50	1,539	1,539	Yes	Contractor		Prepare, R/U and land BOPs down on wellhead. Continuation of NPT, Previous NPT 0.75 hrs This event 1.50 hrs Cummulative 2.25 hrs	Ensco	Ensco 102	17.8	Plug & Abandon Well	12
RIG	BOP or riser problem	25/05/2004 8:00	25/05/2004 12:00	4.00	1,539	1,539	Yes	Contractor		L/D 5" drillpipe from derrick while torq BOP bolts, reconnect BOP control hoses. Remove test Jt from BOP stack. (Total 5" L/D = 60 Jts). Remove BOP Slings from Top Drive, Install Master Bushings & Install BX Elevators Continuation of NPT. Previous NPT 2.25 hrs This event 4.00 hrs Cummulative 6.25 hrs	Ensco	Ensco 102	47.5	Plug & Abandon Well	13
TBLR	Wellhead or tree problem	25/05/2004 12:30	25/05/2004 14:30	2.00	1,539	0	Yes	Third Party	Cameron	Continuation of Event 11 - recovering 9-5/8" seal assembly. Previous NPT 0.75 hr This Event 2.00 hr Cummulative NPT 2.75 hr	Ensco	Ensco 102	23.7	Plug & Abandon Well	15
RIG	BOP or riser problem	26/05/2004 13:45	02/06/2004 19:30	173.75	1,539	1,539	Yes	Contractor		Continuation of previous NPT report, (Cummulative to date NPT = 6.25 hrs), due to gears stripped out in BOP hoisting system. Sent out motor & bearings from USA. Sent out gears from USA. Drive gear only had 1 keyway cut in it. Send to town for #2 keyway cut. Flown back out to rig - attempt to press on drive gear - no success. Unable to remove gear. Fly out rods & 50T press. Remove gear. Redress drive gear. Heat gear, cool shaft & install drive gear. Rebuild gearbox & install on fwd main beams. Load test BOP hoist & remove stack.	Ensco	Ensco 102	1,021.6	Plug & Abandon Well	10

Well Cost Analysis

AFE

AUTHORITY FOR EXPENDITURE

AFE TITLE:	**West Whiptail-1 Near-Field Wildcat**	**AFE NUMBER:**	**L.0501D001 Rev 1**
CO. NO:	1	**CUSTODIAN NAME:**	C. Meakin
LOCATION:	Australia	**WIZARD ID:**	CPMEAKI
WORK GROUP:	EMDC Drilling - Australia Offshore	**WIZARD CUSTODIAN**	13006

PRIMARY PROJECT EXPENDITURE TYPE (SELECT USING 'X'):		**FUNDING REQUEST PHASE:**	
RATE ENHANCEMENT/TECHNICAL		PROJECT SCOPE STUDY (PS)	
SAFETY		PROJECT DETAILED DESIGN (PD)	
ENVIRONMENTAL		PHASE 1 ASSET EXPENDITURE (AE)	
REGULATORY		TOTAL ASSET EXPENDITURE (AE)	X
OTHER ECONOMIC	X		

FORECAST MILESTONE DATES (MM/YY):	
SCOPING STUDY	
DETAILED DESIGN	Jan-04
OPERATIONAL	Dec-04

ESTIMATED COST DETAILS

THIS PHASE		**CURRENT**	**PREVIOUS**
		A$	**A$**
MAJOR EQUIPMENT		$275,000	$0
MATERIALS		$667,000	$0
CONTRACT/RENTALS/TECH		$6,749,000	$420,000
ALLOCATIONS		$959,000	$70,000
CONTINGENCY		$0	$0
TOTAL 100%		$8,650,000	$490,000
Esso Australia Pty Ltd	50%	$4,325,000	$245,000
BHP Billiton	50%	$4,325,000	$245,000
		A$	
TOTAL PROJECT COST		**$8,650,000**	

SCOPE / JUSTIFICATION / ASSET DETAILS / PROJECT EXECUTION PLAN / SHE ISSUES / PROJECT TEAM:

Funding is requested to drill the West Whiptail-1 Near Field Wildcat in Permit VIC/L1 on a dry hole basis in an estimated 18.0 AFE days and costing A$8,650k (**US$5.1M**) to test the potential for a common oil pool with Whiptail-1A in the Latrobe Group (N Asperus reservoir). This well is located in 38m of water. After drilling and cementing 30" conductor and 9-5/8" surface casing, the well will be drilled to a TD of 1500m TVDSS, logged and plugged & abandoned. This revision of the AFE replaces Rev. 0, approved for A$490k in June 2003, to provide advance committment funding for planning this well.

The 18.0 days estimated for this well includes 0.75 days for soil boring to test foundation adequacy. The AFE time also includes a 10% allowance for NPT.

The costs include 1-3/4 days and A$305k for logs, US$300k for the site survey, and A$601k for this well's 6% share of the total demobilization and moves costs of A$10M for the Ensco 102 (based on 18 days out of a total 300 day program). The actual amount for mob./demob. assigned to this AFE will be the actual cost to EAPL to mob. and demob. the Ensco 102, prorated by the well days for West Whiptail-1 to the total days for EAPL's Ensco 102 program.

AE FUNDING REQUEST USE ONLY:		**DETAILS:**
DOES THIS AFE REPLACE EXISTING EQUIP OR FAC?	NO	

FINANCIAL SERVICES USE ONLY:

CAPITAL vs EXP:		EX. RATE:	
DATE:		US$ NET:	
EM APR LEVEL REQ:		BUDGET CLASS:	

ASSET SET UP:

ASSET CLASS:		ASSET NUMBER:	
LOCATION:		AFE CLEARING RULES:	
BOOK DEPN KEY:		CONTROLLABLE / NON-CONTROLLABLE:	
RRT RATE:		SEGMENT:	
SUMMARY 1:		SUMMARY 2:	

INPUT BY:		DATE:	
REVIEWED BY:		DATE:	

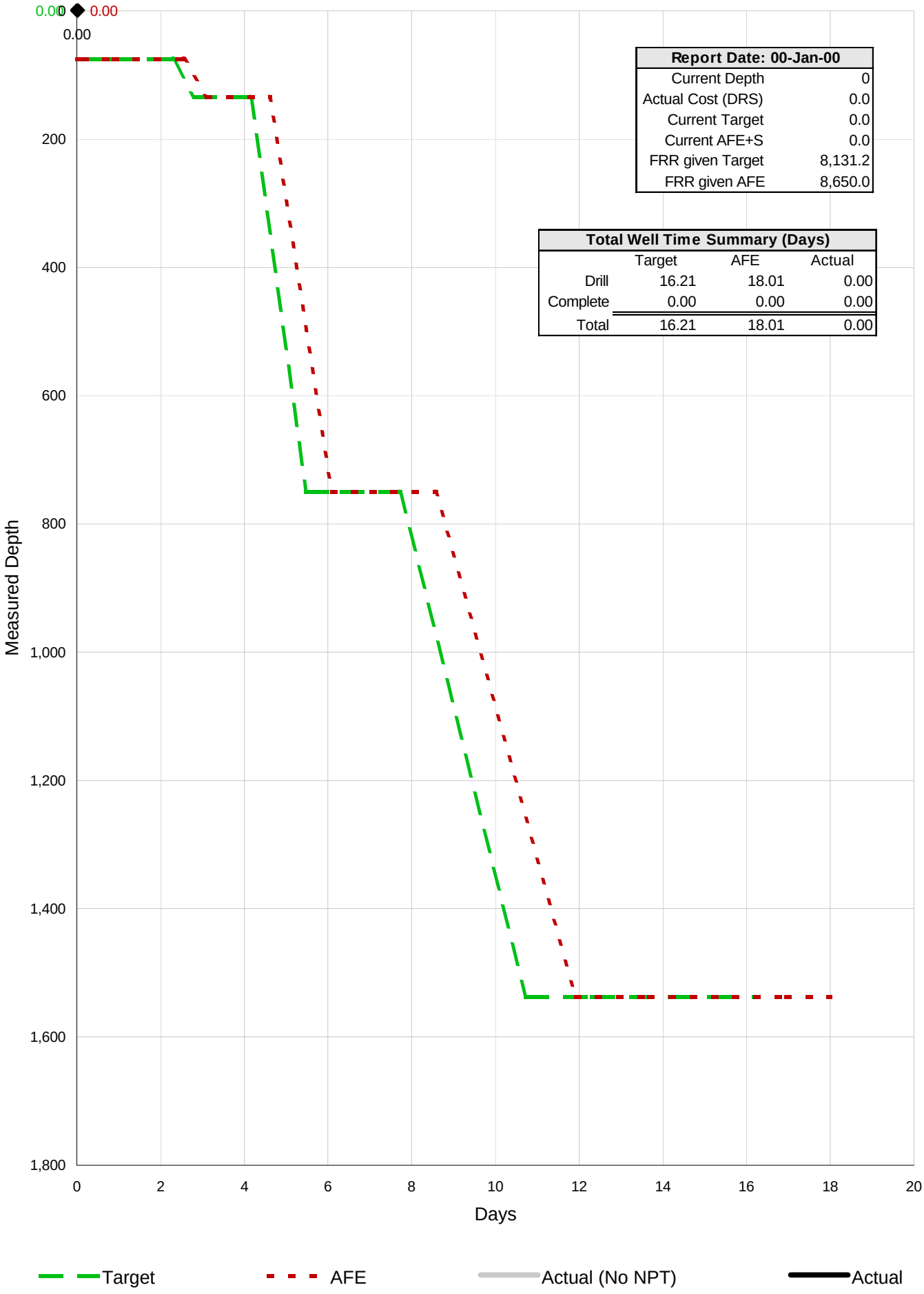
ROLE	APPROVAL LEVEL*	NAME	SIGNATURE	DATE
Drilling Engineer		Chris Meakin		October 7, 2003
Engineering Mgr		Colin Johancsik		7/10/03
Drilling Manager		Dan Whiteman		7/10/2003
West Whiptail Project Leader		David Berman		8/10/2003
Geoscience Project Manager		Glen Nash		9/10/2003
Production Manager	5	Robert Olsen	per	13/10/03

* APPROVAL (LEVEL:) - REFER TO DOAG SPECIFIC USE SCHEDULES, BUDGETS SECTION FOR REQUIREMENTS

COST ELEMENT	DESCRIPTION	ESTIMATED COST CURRENT	ESTIMATED COST PREVIOUS
(A) EQUIPMENT		A$	A$
100	SUBSURFACE PRODUCTION EQ.		
101	SURFACE CASING	$245,000	
105	PRODUCTION CASING		
106	TUBING	$6,000	
107	WELLHEAD ASSEMBLY	$24,000	
	SUB-TOTAL (A)	$275,000	$0
(B) MATERIALS			
130	OTHER MATERIALS	$18,000	
131	OTHER MATERIALS - INTANGIBLES	$18,000	
138	FUEL PRODUCTS DIESEL	$240,000	
150	FLOAT EQUIPMENT, CENTRALISERS	$17,000	
151	DRILLING FLUID/CEMENT	$244,000	
152	DRILL BITS	$130,000	
	SUB-TOTAL (B)	$667,000	$0
(C) CONTRACTS & RENTALS			
201	CONTRACT TRANSPORT - Land & Courier	$36,000	
202	CONTRACT TRANSPORT - Air Fixed Wing & H'copter		
203	CONTRACT TRANSPORT - Marine	$1,015,000	
209	DIVING/ROV SERVICES		
214	OFFSHORE CONSTRUCTION - Rig Mob	$601,000	
217	ELECTRIC LOGGING/PERFORATING	$343,000	
218	MUD LOGGING	$107,000	
219	DIRECTIONAL DRILLING	$145,000	
220	CORING		
221	CEMENTING SERVICES	$114,000	
222	DRILLING/WORKOVERS	$2,818,000	
223	MISCELLANEOUS DRILL SERVICES	$719,000	
230	OTHER	$224,000	$300,000
	SUB-TOTAL (C)	$6,122,000	$300,000
(D) TECHNICAL / PROFESSIONAL SERVICES			
260	ENGINEERING CONSULTANTS	$68,000	$60,000
268	TECH SERVICE - NON AFFILIATE	$559,000	$60,000
	SUB-TOTAL (D)	$627,000	$120,000
	SUB-TOTAL (C) + (D)	$6,749,000	$420,000
(E) ALLOCATIONS			
413	EMDC/OTHER AFFILIATE CHARGES	$344,000	
760	ALLOC MARINE TERMINAL	$36,000	
762	ALLOC SUPPLY VESSELS	$144,000	
764	ALLOC HELICOPTERS	$54,000	
770	ALLOC DRILLING OVERHEAD	$356,000	$70,000
782	ALLOC RESERVOIR TECHNOLOGY	$25,000	
	SUB-TOTAL (E)	$959,000	$70,000
(F) CONTINGENCY			
970	CONTINGENCY ALLOWANCE	$0	$0
	SUB-TOTAL (F)	$0	$0
	AFE TOTAL (A + B + C + D + E + F)	**$8,650,000**	**$490,000**

ESTIMATE PREPARED BY:	C. Meakin	**ESTIMATE NO.**	1
DATE:	07-Oct-03	**ESTIMATE CLASS:**	III

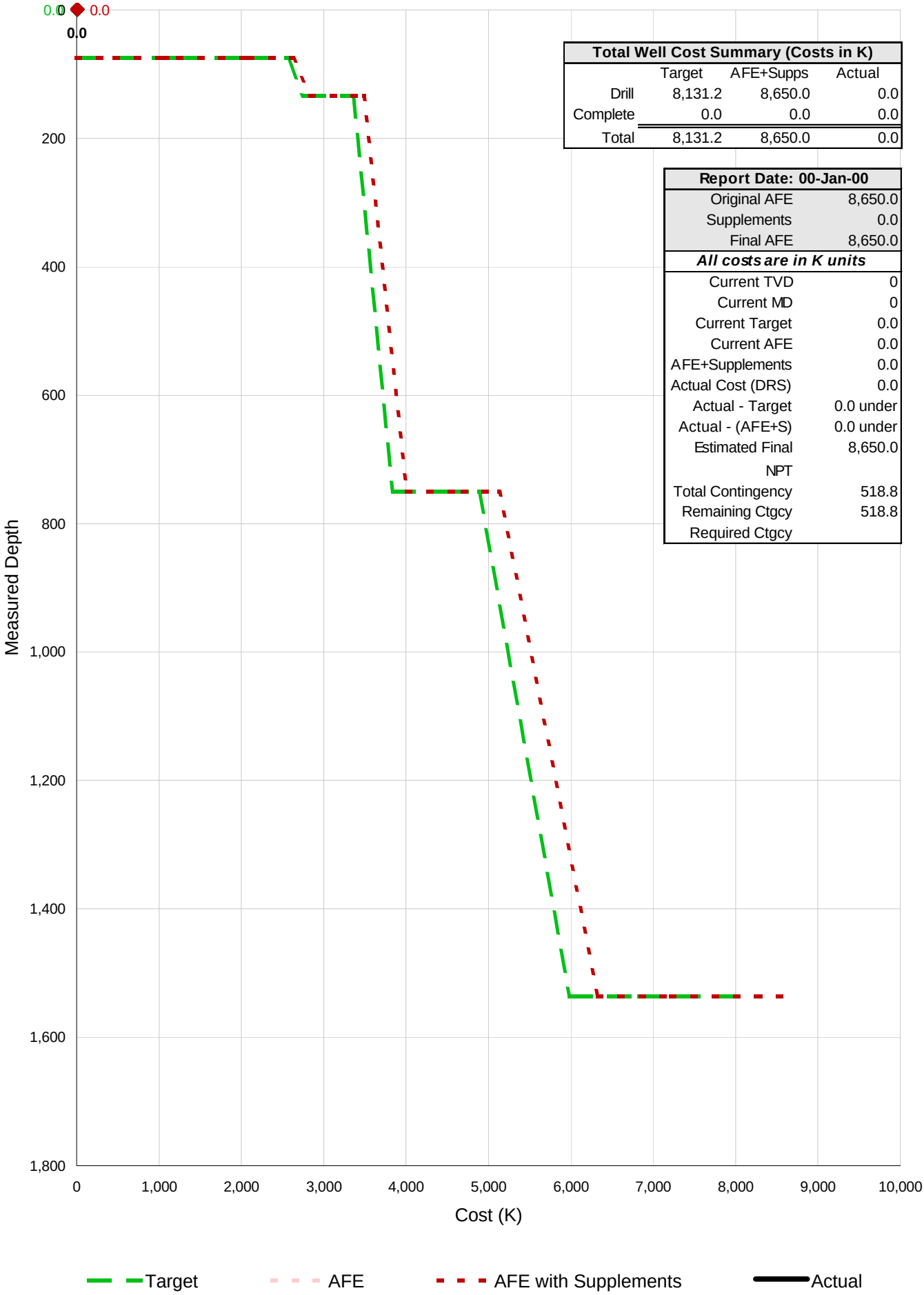
WEST WHIPTAIL-1
Days vs. Depth



Report Date: 00-Jan-00	
Current Depth	0
Actual Cost (DRS)	0.0
Current Target	0.0
Current AFE+S	0.0
FRR given Target	8,131.2
FRR given AFE	8,650.0

Total Well Time Summary (Days)			
	Target	AFE	Actual
Drill	16.21	18.01	0.00
Complete	0.00	0.00	0.00
Total	16.21	18.01	0.00

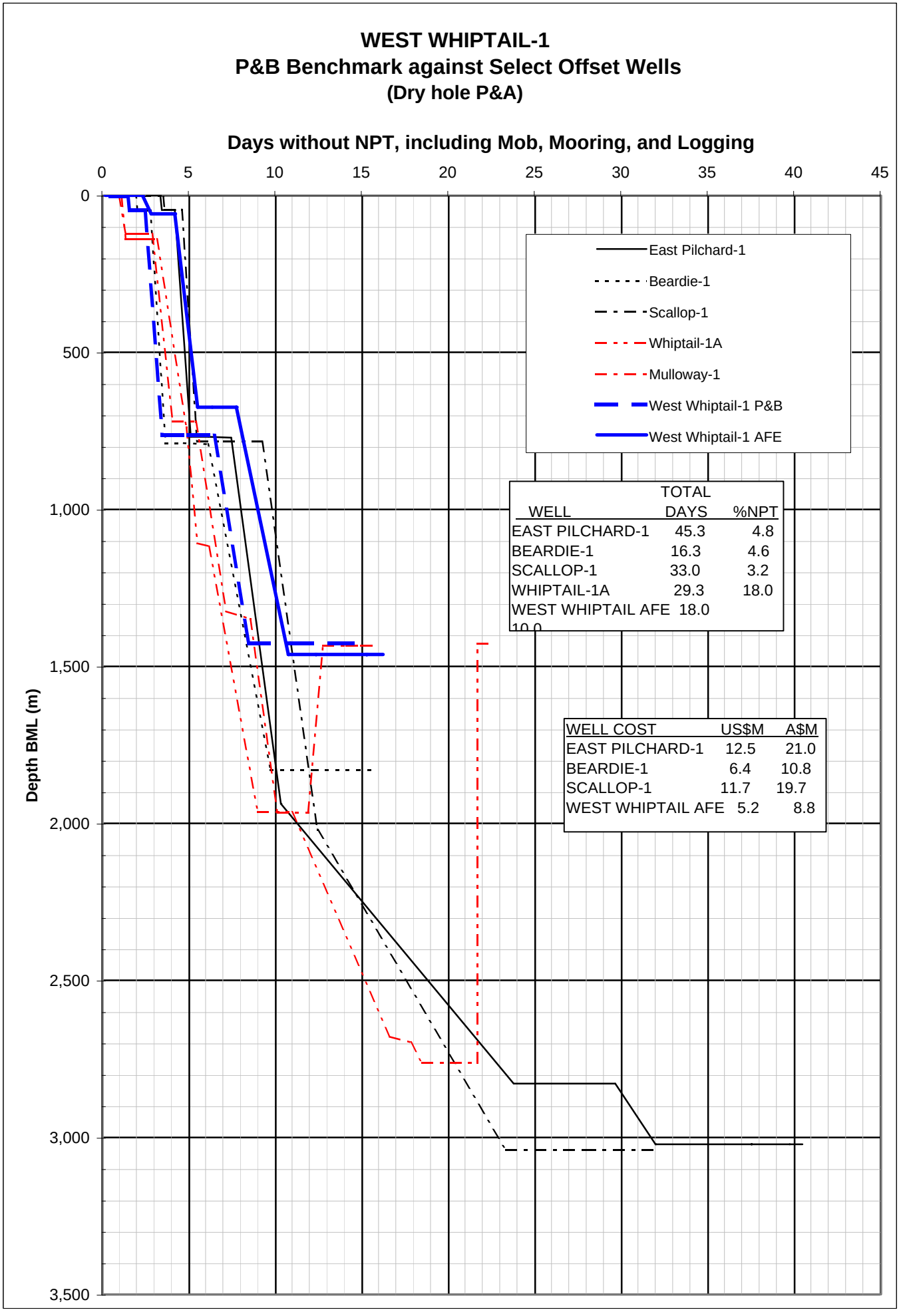
WEST WHIPTAIL-1
Cost vs. Depth



Total Well Cost Summary (Costs in K)			
	Target	AFE+Supps	Actual
Drill	8,131.2	8,650.0	0.0
Complete	0.0	0.0	0.0
Total	8,131.2	8,650.0	0.0

Report Date: 00-Jan-00	
Original AFE	8,650.0
Supplements	0.0
Final AFE	8,650.0
All costs are in K units	
Current TVD	0
Current MD	0
Current Target	0.0
Current AFE	0.0
AFE+Supplements	0.0
Actual Cost (DRS)	0.0
Actual - Target	0.0 under
Actual - (AFE+S)	0.0 under
Estimated Final	8,650.0
NPT	
Total Contingency	518.8
Remaining Ctgcy	518.8
Required Ctgcy	

WEST WHIPTAIL-1
P&B Benchmark against Select Offset Wells
(Dry hole P&A)



WELL	TOTAL DAYS	%NPT
EAST PILCHARD-1	45.3	4.8
BEARDIE-1	16.3	4.6
SCALLOP-1	33.0	3.2
WHIPTAIL-1A	29.3	18.0
WEST WHIPTAIL AFE	18.0	

WELL COST	US$M	A$M
EAST PILCHARD-1	12.5	21.0
BEARDIE-1	6.4	10.8
SCALLOP-1	11.7	19.7
WEST WHIPTAIL AFE	5.2	8.8

Final Well Cost Report

ExxonMobil

Well Name: **WEST WHIPTAIL-1**

Well Cost Worksheet

Class	Description	AFE TOTAL	DIFFERENCE (AFE-DRS)	DRS TOTAL	9-May-04	10-May-04	11-May-04
130	Other Materials	18,000	-22,449	40,449	1,000	1,000	1,000
131	Other Materials - Intangibles	18,000	18,000				
138	Fuel Products Diesel	240,000	-43,284	283,284	11,329	9,017	10,866
150	Float Equip, Centralizers	17,000	-38,852	55,852	0	0	0
151	Drilling Fluid / Cement	244,000	10,121	233,879	0	5,532	9,675
152	Drill Bits	130,000	27,701	102,299	0	0	0
201	Contract Transport-Land	36,000	-21,292	57,292	2,000	2,000	2,000
203	Contract Transport-Marine	1,015,000	-11,380	1,026,380	35,830	35,830	35,830
209	Contract/Rent-Diving, ROV	0	-74,748	74,748	2,100	3,270	3,270
213	Onshore Mob & Demob	0	-388,391	388,391	0	0	0
214	Offshore Mob & Demob	601,000	-355,771	956,771	33,400	33,400	33,400
217	Electric Logging	343,000	118,368	224,632	0	0	0
218	Mud Logging	107,000	14,263	92,737	3,280	10,480	3,280
219	Directional Drilling	145,000	-138,943	283,943	95,404	14,201	6,903
221	Cementing Services	114,000	-11,226	125,226	3,126	7,956	6,876
222	Drilling	2,818,000	85,091	2,732,909	126,549	126,323	126,096
223	Misc Drill Services	719,000	270,300	448,700	5,322	12,199	11,621
230	Other	224,000	66,750	157,250	108,817	2,635	2,635
260	Engineering Consultants	68,000	47,654	20,346	1,000	6,345	1,000
268	Tech Services - Non Affiliate	559,000	559,000				
413	Other Affiliate Charges	344,000	144,908	199,092	52,319	4,638	4,638
760	Prod Support Service-BBMT	36,000	-107,229	143,229	5,000	5,000	5,000
760	Alloc Supply Vessels	144,000	144,000				
764	Alloc Prod Trans-Air	54,000	23,203	30,797	1,000	3,000	693
770	Alloc Drilling Overhead	356,000	-181,318	537,318	206,950	11,950	11,950
782	Alloc Reservoir Technology	25,000	25,000				
101	Surface Casing	245,000	-18,716	263,716	0	0	0
106	Tubing	6,000	6,000				
107	Wellhead Assembly	24,000	11,334	12,666	0	0	0
	TOTAL	8,650,000	158,094	8,491,906	694,426	294,776	276,733
	Days on AFE				1	2	3
	Days from Spud				0	0	0
	Hole Cut				0	0	1
	Measured Depth				78	78	79
	Plugback Depth						
	Job Number				1	1	1
	Job Type				Drilling	Drilling	Drilling

ExxonMobil

Well Name: **WEST WHIPTAIL-1**

Well Cost Worksheet

Class	Description	12-May-04	13-May-04	14-May-04	15-May-04	16-May-04	17-May-04	18-May-04
130	Other Materials	8,284	1,000	1,267	1,000	1,000	1,000	1,000
131	Other Materials - Intangibles							
138	Fuel Products Diesel	10,404	10,404	10,866	11,791	11,791	10,866	9,941
150	Float Equip, Centralizers	0	0	1,984	0	0	0	53,868
151	Drilling Fluid / Cement	2,084	1,775	19,946	5,563	5,385	9,927	27,393
152	Drill Bits	19,336	0	0	61,911	1	0	0
201	Contract Transport-Land	2,000	2,000	2,000	2,000	2,000	2,000	2,000
203	Contract Transport-Marine	35,830	35,830	35,830	35,830	35,830	35,830	35,830
209	Contract/Rent-Diving, ROV	5,370	5,370	5,370	5,370	1,170	1,170	1,170
213	Onshore Mob & Demob	0	0	0	0	0	0	0
214	Offshore Mob & Demob	33,400	33,400	33,400	33,400	33,400	33,400	33,400
217	Electric Logging	0	0	0	0	0	0	0
218	Mud Logging	3,950	4,210	4,210	4,210	4,210	3,550	3,550
219	Directional Drilling	10,835	6,903	6,903	6,903	6,903	10,831	6,903
221	Cementing Services	4,956	4,956	7,212	4,956	4,956	4,956	6,988
222	Drilling	126,096	125,983	126,323	125,869	125,530	125,756	126,209
223	Misc Drill Services	13,664	11,621	10,951	17,327	12,198	12,198	12,198
230	Other	1,645	1,645	1,645	1,645	1,645	1,645	1,645
260	Engineering Consultants	1,000	1,000	1,000	1,000	1,000	1,000	1,000
268	Tech Services - Non Affiliate							
413	Other Affiliate Charges	4,638	4,638	9,276	9,276	9,276	6,957	6,957
760	Prod Support Service-BBMT	5,000	5,000	5,000	5,000	5,000	5,000	5,000
760	Alloc Supply Vessels							
764	Alloc Prod Trans-Air	0	0	2,000	2,000	126	126	2,000
770	Alloc Drilling Overhead	11,950	11,950	11,950	11,950	11,950	11,950	11,950
782	Alloc Reservoir Technology							
101	Surface Casing	0	0	175,270	0	0	0	88,446
106	Tubing							
107	Wellhead Assembly	0	0	0	0	0	0	12,666
	TOTAL	300,442	267,685	472,403	347,001	273,371	278,162	450,114
	Days on AFE	4	5	6	7	8	9	10
	Days from Spud	1	2	3	4	5	6	7
	Hole Cut	44	0	0	38	526	63	0
	Measured Depth	123	123	123	161	687	750	750
	Plugback Depth							
	Job Number	1	1	1	1	1	1	1
	Job Type	Drilling	Drilling	Drilling	Drilling	Drilling	Drilling	Drilling

ExxonMobil

Well Name: **WEST WHIPTAIL-1**

Well Cost Worksheet

Class	Description	19-May-04	20-May-04	21-May-04	22-May-04	23-May-04	24-May-04	25-May-04
130	Other Materials	1,000	1,000	1,000	1,000	1,000	1,000	5,252
131	Other Materials - Intangibles							
138	Fuel Products Diesel	9,941	11,328	9,017	8,554	10,404	8,092	10,126
150	Float Equip, Centralizers	0	0	0	0	0	0	0
151	Drilling Fluid / Cement	49,363	23,340	3,085	9,380	1,776	36,767	2,205
152	Drill Bits	21,051	0	0	0	0	0	0
201	Contract Transport-Land	2,000	2,000	2,000	2,000	2,000	2,000	2,000
203	Contract Transport-Marine	35,830	35,830	35,830	35,830	35,830	35,830	35,830
209	Contract/Rent-Diving, ROV	1,170	1,170	1,170	1,170	1,170	1,170	1,170
213	Onshore Mob & Demob	0	0	0	0	0	0	0
214	Offshore Mob & Demob	33,400	33,400	33,400	33,400	33,400	33,400	33,400
217	Electric Logging	0	0	0	224,632	0	0	0
218	Mud Logging	3,550	3,550	3,550	3,550	3,550	3,550	2,250
219	Directional Drilling	6,103	6,103	12,413	6,103	6,103	6,103	5,403
221	Cementing Services	4,956	4,956	4,956	4,956	5,916	6,845	5,079
222	Drilling	125,756	125,869	125,869	126,323	126,323	126,323	126,323
223	Misc Drill Services	14,087	12,216	12,216	15,568	15,568	17,043	15,343
230	Other	1,645	1,645	1,645	1,645	1,645	1,645	1,645
260	Engineering Consultants	1,000	1,000	1,000	0	0	0	0
268	Tech Services - Non Affiliate							
413	Other Affiliate Charges	4,638	4,638	4,638	4,638	4,638	4,638	4,638
760	Prod Support Service-BBMT	5,000	5,000	5,000	5,000	5,000	5,000	5,000
760	Alloc Supply Vessels							
764	Alloc Prod Trans-Air	756	63	2,000	2,000	1	1,252	2,000
770	Alloc Drilling Overhead	11,950	11,950	11,950	11,950	11,950	11,950	11,950
782	Alloc Reservoir Technology							
101	Surface Casing	0	0	0	0	0	0	0
106	Tubing							
107	Wellhead Assembly	0	0	0	0	0	0	0
	TOTAL	333,196	285,058	270,739	497,699	266,274	302,608	269,614
	Days on AFE	11	12	13	14	15	16	17
	Days from Spud	8	9	10	11	12	13	14
	Hole Cut	125	531	133	0	0	0	0
	Measured Depth	875	1,406	1,539	1,539	1,539	1,539	1,539
	Plugback Depth							
	Job Number	1	1	1	1	1	1	1
	Job Type	Drilling	Drilling	Drilling	Drilling	Drilling	Drilling	Drilling

ExxonMobil

Well Name: **WEST WHIPTAIL-1**

Well Cost Worksheet

Class	Description	26-May-04	27-May-04	28-May-04	29-May-04	30-May-04	31-May-04	1-Jun-04
130	Other Materials	1,000	1,000	1,000	1,000	1,000	1,000	1,000
131	Other Materials - Intangibles							
138	Fuel Products Diesel	8,369	8,092	8,092	8,092	8,092	14,103	11,051
150	Float Equip, Centralizers	0	0	0	0	0	0	0
151	Drilling Fluid / Cement	1,776	1,776	1,776	1,776	1,776	1,776	1,776
152	Drill Bits	0	0	0	0	0	0	0
201	Contract Transport-Land	2,000	2,000	2,000	2,000	2,000	2,000	2,000
203	Contract Transport-Marine	35,830	35,830	35,830	35,830	35,830	35,830	35,830
209	Contract/Rent-Diving, ROV	5,370	3,270	3,270	1,170	1,170	1,170	3,270
213	Onshore Mob & Demob	0	0	0	0	0	0	0
214	Offshore Mob & Demob	33,400	33,400	33,400	33,400	33,400	33,400	33,400
217	Electric Logging	0	0	0	0	0	0	0
218	Mud Logging	10,450	1,750	1,250	1,250	1,250	1,250	1,250
219	Directional Drilling	5,403	5,403	5,403	5,403	5,403	5,403	5,403
221	Cementing Services	5,079	3,906	3,906	2,051	2,051	2,051	2,051
222	Drilling	125,530	74,416	6,119	5,439	5,429	5,326	5,552
223	Misc Drill Services	27,148	13,515	11,236	9,186	9,186	9,186	9,186
230	Other	1,645	1,645	1,645	1,645	1,645	1,645	1,645
260	Engineering Consultants	0	0	0	0	0	0	0
268	Tech Services - Non Affiliate							
413	Other Affiliate Charges	4,638	4,638	4,638	4,638	4,638	4,638	4,638
760	Prod Support Service-BBMT	5,000	5,000	5,000	5,000	5,000	5,000	5,000
760	Alloc Supply Vessels							
764	Alloc Prod Trans-Air	378	315	2,000	1,189	126	63	2,000
770	Alloc Drilling Overhead	11,950	11,950	11,950	11,950	11,950	11,950	11,950
782	Alloc Reservoir Technology							
101	Surface Casing	0	0	0	0	0	0	0
106	Tubing							
107	Wellhead Assembly	0	0	0	0	0	0	0
	TOTAL	284,966	207,906	138,515	131,019	129,946	135,791	137,002
	Days on AFE	18	19	20	21	22	23	24
	Days from Spud	15	16	17	18	19	20	21
	Hole Cut	0	0	0	0	0	0	0
	Measured Depth	1,539	1,539	1,539	1,539	1,539	1,539	1,539
	Plugback Depth							
	Job Number	1	1	1	1	1	1	1
	Job Type	Drilling	Drilling	Drilling	Drilling	Drilling	Drilling	Drilling

ExxonMobil

Well Name: **WEST WHIPTAIL-1**

Well Cost Worksheet

Class	Description	2-Jun-04	3-Jun-04	4-Jun-04	5-Jun-04	6-Jun-04
130	Other Materials	1,000	1,000	1,000	1,000	646
131	Other Materials - Intangibles					
138	Fuel Products Diesel	8,439	6,243	12,614	7,167	8,193
150	Float Equip, Centralizers	0	0	0	0	0
151	Drilling Fluid / Cement	1,776	1,776	1,776	1,776	1,147
152	Drill Bits	0	0	0	0	0
201	Contract Transport-Land	2,000	2,000	2,000	2,000	1,292
203	Contract Transport-Marine	35,830	35,830	35,830	35,830	23,140
209	Contract/Rent-Diving, ROV	3,270	3,270	3,270	3,270	1,158
213	Onshore Mob & Demob	0	0	0	0	388,391
214	Offshore Mob & Demob	33,400	33,400	33,400	33,400	21,571
217	Electric Logging	0	0	0	0	0
218	Mud Logging	1,250	1,250	1,250	1,250	807
219	Directional Drilling	5,403	5,403	5,403	5,403	3,490
221	Cementing Services	2,051	2,051	2,051	2,051	1,325
222	Drilling	5,665	27,679	124,057	124,057	80,120
223	Misc Drill Services	9,186	39,185	12,599	71,815	5,932
230	Other	1,855	1,855	1,855	1,855	1,198
260	Engineering Consultants	2,000	1	0	0	0
268	Tech Services - Non Affiliate					
413	Other Affiliate Charges	4,638	4,638	4,638	4,638	2,995
760	Prod Support Service-BBMT	5,000	5,000	5,000	5,000	3,229
760	Alloc Supply Vessels					
764	Alloc Prod Trans-Air	1,063	1,000	2,000	1,000	646
770	Alloc Drilling Overhead	11,950	11,950	11,950	11,950	7,718
782	Alloc Reservoir Technology					
101	Surface Casing	0	0	0	0	0
106	Tubing					
107	Wellhead Assembly	0	0	0	0	0
	TOTAL	135,776	183,531	260,693	313,462	552,998
	Days on AFE	25	26	27	28	29
	Days from Spud	22	23	24	25	26
	Hole Cut	0	0	0	0	0
	Measured Depth	1,539	1,539	1,539	1,539	1,539
	Plugback Depth					
	Job Number	1	1	1	1	1
	Job Type	Drilling	Drilling	Drilling	Drilling	Drilling

WEST WHIPTAIL-1
Trouble and Deviations Summary

	Trouble Summary			
		Days	Cost (K)	
Code	Problem Description	8.96	1,490.4	Detailed Remarks	Phase Type
Trouble / NPT	BOP lifting gear failed	7.50	1,095.8	NCR58 - A BOP Lifting hoist bearing failed stripping the gears. Source replacement parts and repair.	Drill
Trouble / NPT	WOW to run 30" Conductor	1.02	272.3	Gale force winds and 5m to 6m seas delayed running the 30" conductor through the surf zone	Drill
Trouble / NPT	Wellhead running tool.	0.13	36.0	NCR46 - Determine correct M/U for 18-3/4" wellhead running tool as documentation was incorrect.	Drill
Trouble / NPT	9-5/8" seal assembly recovery	0.11	30.4	NCR57 - Cameron washtool ineffective delaying the recovery of the 9-5/8" seal assembly.	Drill
Trouble / NPT	Hydraulic hose leak on PRS	0.05	15.0	Repair leaking hydraulic hose on PRS upper arm (lower gripping jaw).	Drill
Trouble / NPT	Conductor float shoe not opening	0.05	14.5	Installed ST-2 x NC50 running tool on Top Drive to pump-open the float shoe.	Drill
Trouble / NPT	Pipe racking system not functioning	0.05	14.3	Fibre-optic cable repaired	Drill
Trouble / NPT	Pressure readout on choke panel	0.04	12.0	Trouble shoot pressure readout system to choke panel	Drill
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					
Trouble / NPT					

	Scope Changes and Deviations (from Target) ***			
	(Scope changes appear in italic)	Days	Cost (K)	
Code	Description	3.47	-1,066.6	Detailed Remarks
Deviation	Exchange rate variations		-1,093.0	The AFE was raised using A$1.00=US$0.595, and implemented using A$1.00=US$0.7503.
Deviation	Soil boring not conducted	-0.65	-429.4	Time & cost to soil bore from ENSCO-102 was not implemented under an MOC.
Deviation	Pre-installation of the BOP	-1.25	-350.0	Installing the wellhead, BOP, mandrel & o'shot pkr as part of the diverter R/U saved 30 hr rigtime.
Deviation	Longer P&A time	1.23	344.4	Generally slower operations than anticipated. Pulling 9-5/8" & 30" took 22hr longer than planned.
Deviation	Planning & startup costs	0.00	-306.4	Planning and startup cost for West Whiptail-1 were less than expected.
Deviation	Site survey		-293.6	Site survey was shared with West Moonfish and used a chartered vessel.
Deviation	Longer rig down time	0.98	274.4	Slower operations. From end of P&A to cantilever stowed took 24hr longer than the 18hr allowed.
Deviation	Drilling 12-1/4" surface hole	0.60	169.2	Harder formations and a building BHA resulted in slower drilling, 19.4m/hr vs the planned 35m/hr.
Deviation	Drill 36" hole	0.55	154.6	The 45m 17-1/2" x 36" hole section was harder and took substantially longer to drill than historically
Deviation	Run a 9-5/8" stage collar	0.47	141.3	A stage collar run to flush the 9-5/8" x 30" annulus required additional time to open and close.
Deviation	Move-in, preload and rig-up	0.43	121.1	More time was spent preparing the Pollution Control Unit and P/U drillpipe than anticipated
Deviation	Miscellaneous deviations	0.42	117.6	Overall slower operations, possibly from green crews.
Deviation	P/U 12-1/4" BHA, drill-out & PIT	0.38	105.0	P/U & M/U BHA slower than historical, possibly due to green crews.
Deviation	Drilling 8-1/2" hole	-0.29	-81.7	The 8-1/2" prodn hole drilled faster at 475m/day than the historic 400m/day expected.
Deviation	Move-in, preload and rig-up	0.19	52.5	4.5hr was spent installing the Mudlogging unit under the cantilever as part of the initial mobilisation.
Deviation	Logging program variations	0.41	36.5	A wiper trip after a failed MDT attempt & cancelling CSAT logs added 10hr with $80k less log costs.
Deviation	Cost variations		-29.1	Miscellaneous cost adjustment.
Deviation				

Prelim. Well Cost Reconcil.
& Lessons Learnt

Date: 1-Jul-2004
Prepared by: C.P. Meakin
Approved by:

Well: WEST WHIPTAIL-1
Rig: Ensco 102
FRR Date: 05 Jun 2004

Original AFE	18.00	8,650.0	
Final AFE (Original + Supplements)	18.00	8,650.0	
Original Target	16.20	8,068.2	
Final Target (Original + Scope Changes + Work Stewarded by Others)	16.20	8,068.2	
Deviations			
Exchange rate variations		-1,093.0	The AFE was raised using A$1.00=US$0.595, and implemented using A$1.00=US$0.7503.
Soil boring not conducted	-0.65	-429.4	Time & cost to soil bore from ENSCO-102 was not implemented under an MOC.
Pre-installation of the BOP	-1.25	-350.0	Installing the wellhead, BOP, mandrel & o'shot pkr as part of the diverter R/U saved 30 hr rigtime.
Longer P&A time	1.23	344.4	Generally slower operations than anticipated. Pulling 9-5/8" & 30" took 22hr longer than planned.
Planning & startup costs	0.00	-306.4	Planning and startup cost for West Whiptail-1 were less than expected.
Site survey		-293.6	Site survey was shared with West Moonfish and used a chartered vessel.
Longer rig down time	0.98	274.4	Slower operations. From end of P&A to cantilever stowed took 24hr longer than the 18hr allowed.
Drilling 12-1/4" surface hole	0.60	169.2	Harder formations and a building BHA resulted in slower drilling, 19.4m/hr vs the planned 35m/hr.
Drill 36" hole	0.55	154.6	The 45m 17-1/2" x 36" hole section was harder and took substantially longer to drill than historically
Run a 9-5/8" stage collar	0.47	141.3	A stage collar run to flush the 9-5/8" x 30" annulus required additional time to open and close.
Move-in, preload and rig-up	0.43	121.1	More time was spent preparing the Pollution Control Unit and P/U drillpipe than anticipated
Miscellaneous deviations	0.42	117.6	Overall slower operations, possibly from green crews.
P/U 12-1/4" BHA, drill-out & PIT	0.38	105.0	P/U & M/U BHA slower than historical, possibly due to green crews.
Drilling 8-1/2" hole	-0.29	-81.7	The 8-1/2" prodn hole drilled faster at 475m/day than the historic 400m/day expected.
Move-in, preload and rig-up	0.19	52.5	4.5hr was spent installing the Mudlogging unit under the cantilever as part of the initial mobilisation.
Logging program variations	0.41	36.5	A wiper trip after a failed MDT attempt & cancelling CSAT logs added 10hr with $80k less log costs.
Cost variations		-29.1	Miscellaneous cost adjustment.
Deviations Net Sum	3.47	-1,066.6	
Trouble / NPT			
BOP lifting gear failed	7.50	1,095.8	NCR58 - A BOP Lifting hoist bearing failed stripping the gears. Source replacement parts and repair.
WOW to run 30" Conductor	1.02	272.3	Gale force winds and 5m to 6m seas delayed running the 30" conductor through the surf zone
Wellhead running tool.	0.13	36.0	NCR46 - Determine correct M/U for 18-3/4" wellhead running tool as documentation was incorrect.
9-5/8" seal assembly recovery	0.11	30.4	NCR57 - Cameron washtool ineffective delaying the recovery of the 9-5/8" seal assembly.
Hydraulic hose leak on PRS	0.05	15.0	Repair leaking hydraulic hose on PRS upper arm (lower gripping jaw).
Conductor float shoe not opening	0.05	14.5	Installed ST-2 x NC50 running tool on Top Drive to pump-open the float shoe.
Pipe racking system not functioning	0.05	14.3	Fibre-optic cable repaired
Pressure readout on choke panel	0.04	12.0	Trouble shoot pressure readout system to choke panel
Trouble Total	8.96	1,490.4	
Performance Better Than Original AFE	0.00	158.1	(Adjusted for scope changes and work stewarded by others)
Performance Better Than Target	0.00	0.0	(Adjusted for scope changes and work stewarded by others)
SUMMARY			
DRS ACTUAL (with scope changes)	28.63	8,491.9	

WEST WHIPTAIL-1
Preliminary Well Cost Reconciliation

Date:

Prepared by:

Approved by:

Well: WEST WHIPTAIL-1

Rig: Ensco 102

FRR Date: 05 Jun 2004

DRS ACTUAL (without scope changes)	28.63	8,491.9	
PLANNED NPT	1.80	518.8	Days = 10.0% of Original AFE; Cost = 6.0% of Original AFE
PLANNED CONTINGENCY	0.00	57.7	
ACTUAL NPT	8.96	1,490.4	Actual NPT = 31.3%
ACTUAL DRILLING NPT	8.96	1,490.4	Drill NPT = 31.3% of total (31.3% of drilling phases only)
ACTUAL COMPLETION NPT	0.00	0.0	

Part II - Planning Savings

Describe any planning phase optimizations prior to AFE approval. Include dollar amounts. Examples of planning savings may include, but are not limited to optimized casing programs (eliminated casing strings), use of SBM for improved ROP (field conventional WBM), cut & pull operations conducted with smaller workover rig (conventionally done with Jackup), etc.

Amount (K)	Remarks

Part IIa - Technical Savings

Describe any savings that can be attributed to a new technology. Include dollar amounts. An example of a new technology is a rotary steerable system.

New Technology	Amount (K)	Remarks

Part III - Learnings

Describe any key learnings from this well that may have applicability elsewhere.

Item	Remarks
1	Do not use more than 2 collars between stabilisers in surface hole packed BHAs. The assembly used in West Whiptail-1 with 3 collars was too limber, and light WOB used to try to control build resulted in slow ROP. This extra collar was chosen to simplify handling.
2	Review the use of 30" conductor and riser. Smaller diameter (20") pipe would be cheaper, have better annular flow characteristics, and allow the BHA required to cut the conductor to pass without removing the 18-3/4" wellhead. The 30" was originally chosen based on availability within the required time-frame, and it was chosen before the jackup (vs floater) decision was made.
3	A shop pre-assembly of the new 18-3/4" Cameron wellhead could have identified and resolved the problems experience running this system. In addition a detailed paper review of wellhead procedures prior to field use could have identified and resolved running procedures. Three problems were encountered: 1- Wellhead running tool failed to make-up properly; 2- The 9-5/8" casing hanger lacked a machined groove required to attach the dummy hanger; 3- The wash tool was ineffective for cleaning debris prior to recovering the 9-5/8" seal assembly.
4	There is an opportunity for hazard reduction and operability improvement in the Pollution Control Unit, including: 1- Manhole covers for the conductor and foxhole openings in the PCU; 2- Simpler and safer methods of adjusting the cross members in the tensioner frame when running conductor.
5	On West Whiptail-1 operations were impacted by insufficient crane operators. Crane operators should be increased to two per tour during logistically busy periods.
6	A procedure needs to be developed to test the conductor float valve out of critical path operations. Tools and procedures need to be developed to clean a blocked float valve on-site. Plugged conductor float valves resulted in 3-1/2 hr NPT on Beardie-1 (Weatherford) & 1-1/4 hr on West Whiptail-1 (Davis Lynch).

Part IV - Executive Summary

Briefly and concisely summarize the well, providing well descriptive information and significant events.

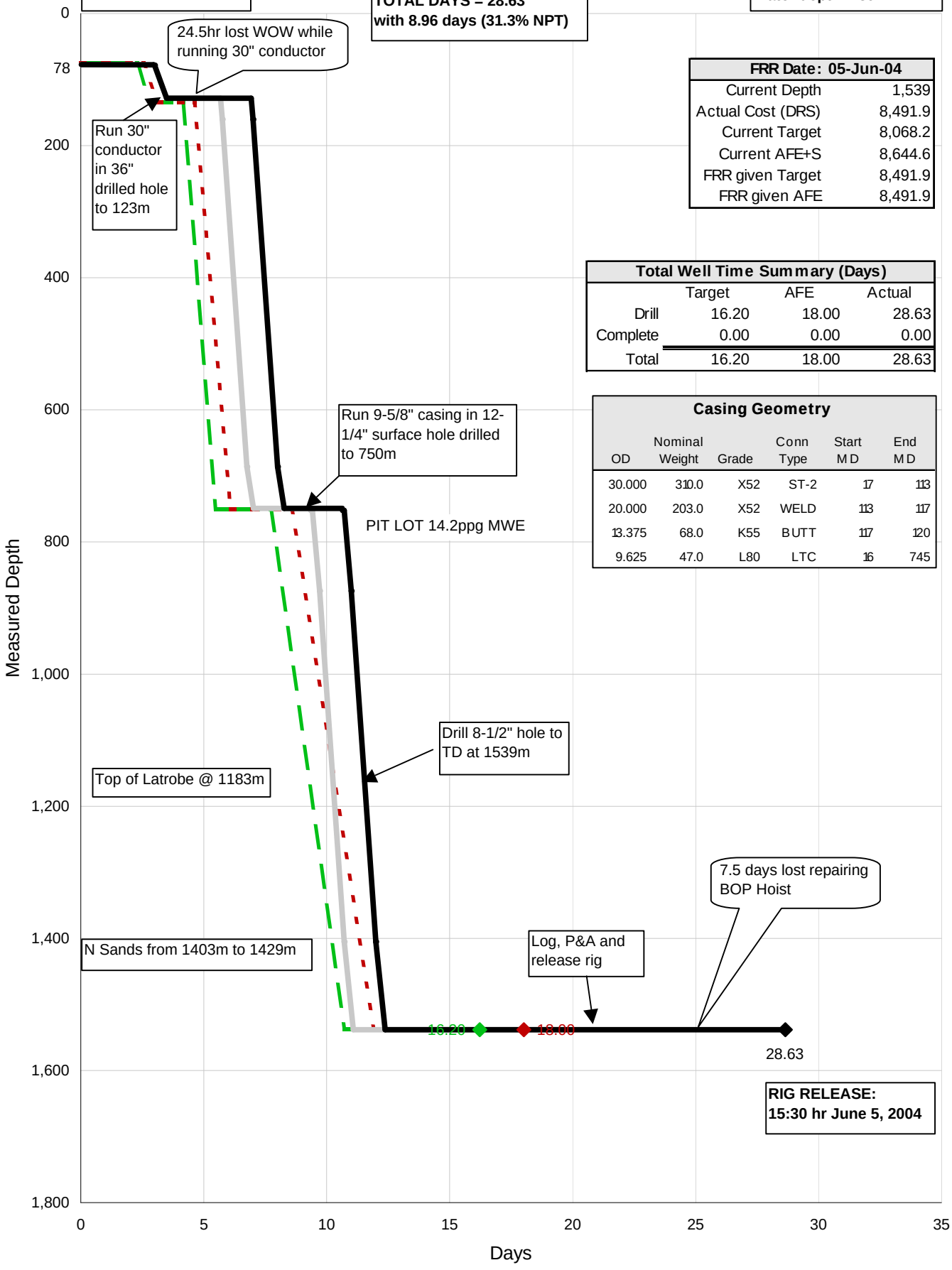
Category	Remarks
General Well Description	Vertical near-field wildcat well drilled to 1500m TVDSS.
Description of Major NPT	Failed BOP hoist delayed P&A operations and rig release.
Major Drivers in Well Design	Normally pressured well with good offset data. No shallow gasand drilling known shales.
Major Client Issues	Low cost well to prove reserves for a development decision.
Highlights	Managed safety successfully on the first well ENSCO 102 drilled in Australia with predominantly green crews.
Well Status	Abandoned.
Offsets	Whiptail-1A (1.4km E) and Mulloway-1 (1.7km W).

WEST WHIPTAIL-1
Days vs. Depth

Esso Australia Pty Ltd
ENSCO 102 Jack-up
RT:MSL = 39m
Water depth = 39m

START:
00:30 hr May 8, 2004

TOTAL DAYS = 28.63
with 8.96 days (31.3% NPT)



FRR Date: 05-Jun-04	
Current Depth	1,539
Actual Cost (DRS)	8,491.9
Current Target	8,068.2
Current AFE+S	8,644.6
FRR given Target	8,491.9
FRR given AFE	8,491.9

Total Well Time Summary (Days)

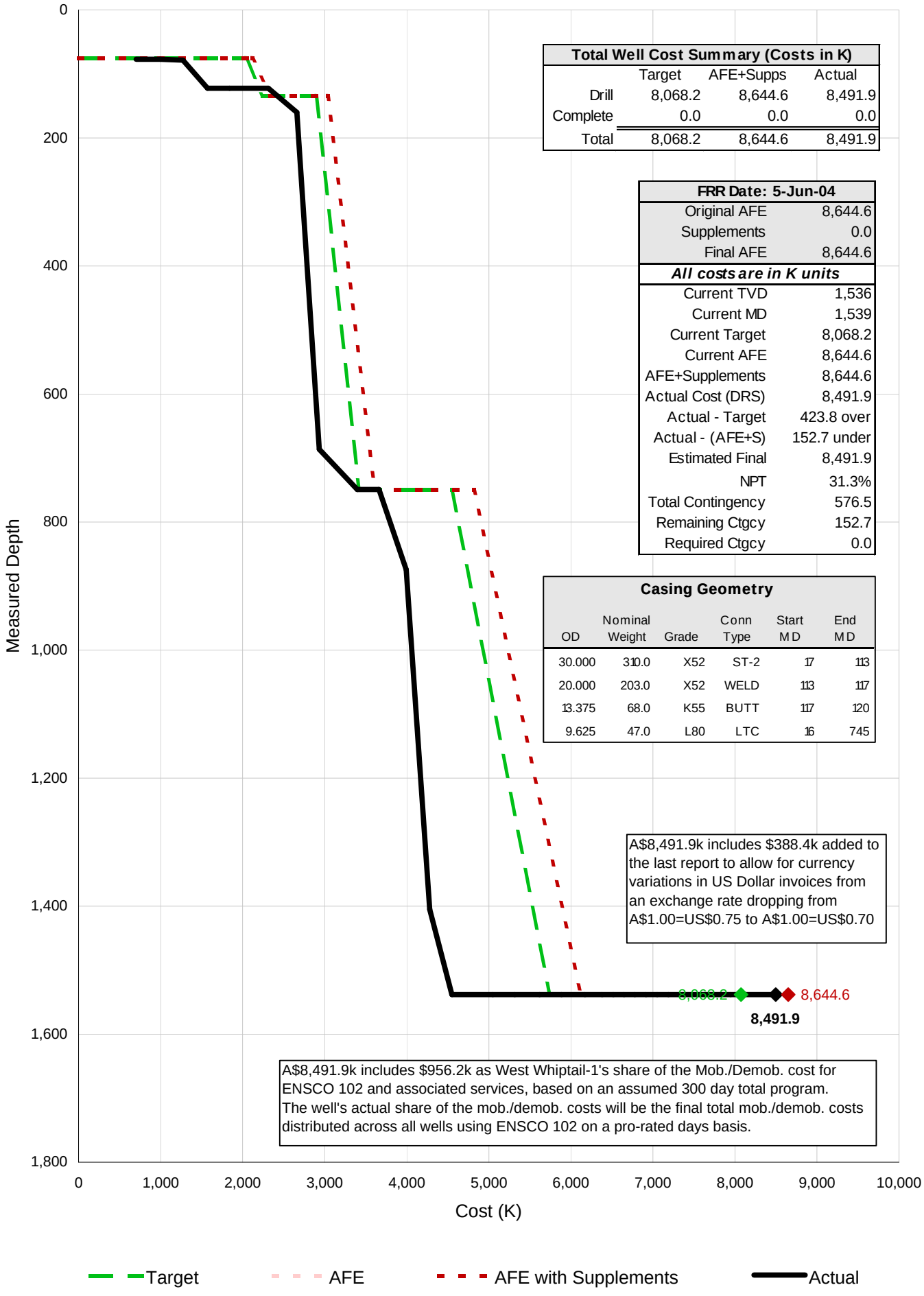
	Target	AFE	Actual
Drill	16.20	18.00	28.63
Complete	0.00	0.00	0.00
Total	16.20	18.00	28.63

Casing Geometry

OD	Nominal Weight	Grade	Conn Type	Start MD	End MD
30.000	310.0	X52	ST-2	17	113
20.000	203.0	X52	WELD	113	117
13.375	68.0	K55	BUTT	117	120
9.625	47.0	L80	LTC	16	745

RIG RELEASE:
15:30 hr June 5, 2004

WEST WHIPTAIL-1
Cost vs. Depth



Total Well Cost Summary (Costs in K)			
	Target	AFE+Supps	Actual
Drill	8,068.2	8,644.6	8,491.9
Complete	0.0	0.0	0.0
Total	8,068.2	8,644.6	8,491.9

FRR Date: 5-Jun-04	
Original AFE	8,644.6
Supplements	0.0
Final AFE	8,644.6
All costs are in K units	
Current TVD	1,536
Current MD	1,539
Current Target	8,068.2
Current AFE	8,644.6
AFE+Supplements	8,644.6
Actual Cost (DRS)	8,491.9
Actual - Target	423.8 over
Actual - (AFE+S)	152.7 under
Estimated Final	8,491.9
NPT	31.3%
Total Contingency	576.5
Remaining Ctgcy	152.7
Required Ctgcy	0.0

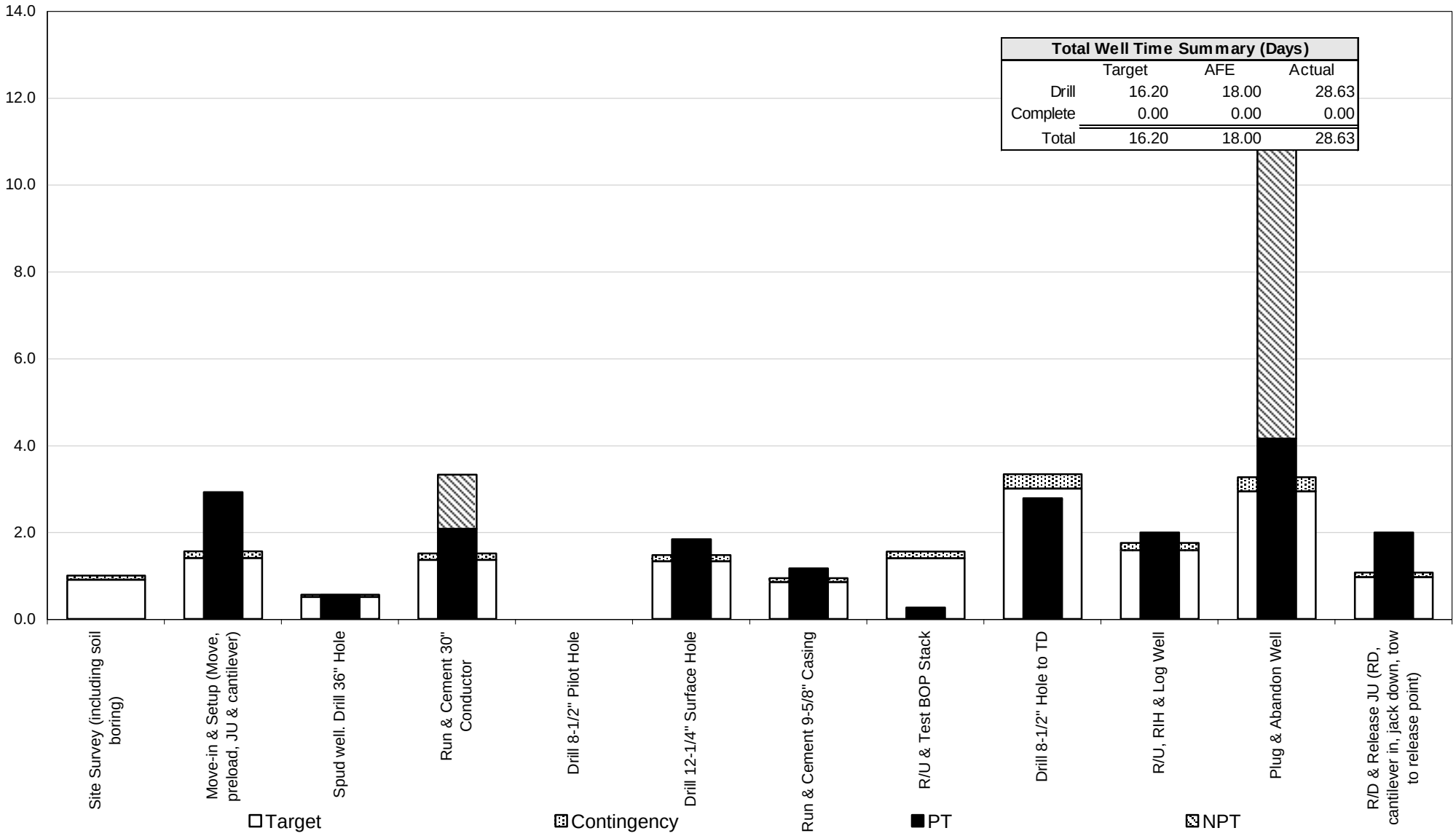
Casing Geometry

OD	Nominal Weight	Grade	Conn Type	Start MD	End MD
30.000	310.0	X52	ST-2	17	113
20.000	203.0	X52	WELD	113	117
13.375	68.0	K55	BUTT	117	120
9.625	47.0	L80	LTC	16	745

A$8,491.9k includes $388.4k added to the last report to allow for currency variations in US Dollar invoices from an exchange rate dropping from A$1.00=US$0.75 to A$1.00=US$0.70

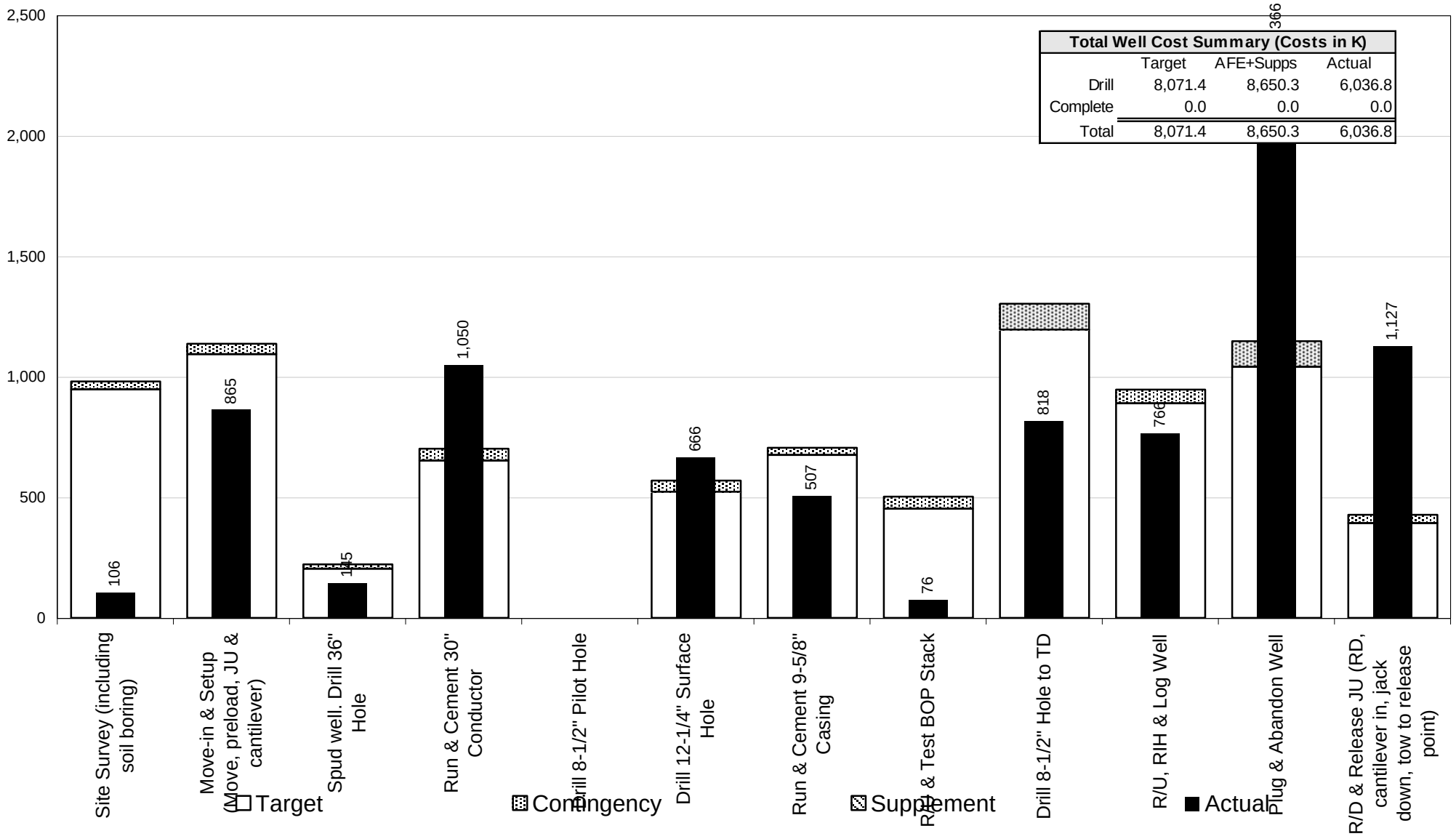
A$8,491.9k includes $956.2k as West Whiptail-1's share of the Mob./Demob. cost for ENSCO 102 and associated services, based on an assumed 300 day total program. The well's actual share of the mob./demob. costs will be the final total mob./demob. costs distributed across all wells using ENSCO 102 on a pro-rated days basis.

WEST WHIPTAIL-1
Actual vs. Planned Days



Total Well Time Summary (Days)			
	Target	AFE	Actual
Drill	16.20	18.00	28.63
Complete	0.00	0.00	0.00
Total	16.20	18.00	28.63

WEST WHIPTAIL-1
Actual vs. Planned Cost (K)



Total Well Cost Summary (Costs in K)

	Target	AFE+Supps	Actual
Drill	8,071.4	8,650.3	6,036.8
Complete	0.0	0.0	0.0
Total	8,071.4	8,650.3	6,036.8

Non-Conformance Report (NCR) Summary

Well: WEST WHIPTAIL-1 **Country: Australia**

#	NCR #	Date	Summary	Responsible Third Party	NPT (hours)
1	46	13-May-2004	18-3/4" SSMC Compact Housing running tool - incorrect makeup.	Cameron	3.00
2	52	14-May-2004	Incorrect design of the 9-5/8" housing - no groove machined for 13-3/8" dummy hanger.	Cameron	Nil
3	57	24-May-2004	Jetting tool required to cleanout hanger seals	Cameron	2.75
4	58	26-May-2004	Failure of ENSCO 102 BOP lifting hoist.	ENSCO	173.75
5					
6					
7					
8					
9					
10					

Current Viewer: Chris P Meakin

Security Classification: ExxonMobil Use Only
Other Designation:

Subject: NCR46 - 18-3/4" SSMC Compact Housing Running Tool

Status: Closed Out

Priority: Cameron

Due: 13 Jun 2004

Assignees: Chris P Meakin/U-SouthPacific/ExxonMobil

Action Item:

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 1 - Action Item

TO BE COMPLETED BY:
OFFSHORE DRILLING/WORKOVER SUPERVISOR

GENERAL INFORMATION

Author's Name:	**Shane A. Harris**
Date of Incident:	**13/05/2004**
Site of Incident:	**Ensco 102**
Well Number & Job Title (if relevant):	**West Whiptail-1**
Brief description of Non-conformance:	**Cameron procedures for number of turns for 18-3/4" SSMC Compact Housing Running Tool (viz. 5 turns) do not correlate with number of threads on tool and turns available (viz. 3 turns) - 3hrs downtime working tool & waiting on engineering verification to use.**
Contractor/Vendor/Consultant responsible for Non-conformance:	**Cameron**
Did the Non-conformance result in:	**(Click in one or more squares below)** **☒ Downtime** **❑ Potential Downtime** **❑ Health/Safety Concerns** **❑ Environmental Concerns** **❑ Financial Loss to Company** **❑ Other (Please specify)**
Categorisation of Non-conformance:	**❑ Equipment Failure** **❑ Delivery Delays** **☒ Design Fault** **❑ Maintenance Fault** **❑ Human Error** **❑ Other**
Recommended remedial action:	**Cameron to review procedures vs tool design to ensure correlate. Cameron to QA equipment leaving factory vs procedures. Cameron to carry out FAT on equipment to ensure turns correct before dispatch.**
Additional Comments:	

Other supporting Attachments:
>>Attach any reference documents here, including title.<<

Status Update: Date: 14 Jul 2004

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 2 - Status Update

TO BE COMPLETED BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Engineer/Technician's Name:	
Contact Name & Date (if new engineer/technician is re-assigned to follow-up NC):	
Is this a non-conformance to the current contract/agreement with the responsible third party?:	○ Yes ● No
If yes, describe the conflict with the current contract/agreement:	
Is immediate follow-up action required?:	○ Yes ● No
If so, give recommended remedial action/follow-up plans:	
Additional comments:	

Resolution: Date: 14 Jul 2004

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 3 - Resolution/Close Out

TO BE COMPLETED WHEN NC CLOSED OUT BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Action Taken:	
Non-conformance action closed out:	● Yes ○ No
Contractor notified of close out:	● Yes ○ No

Other supporting Attachments:

Cameron Report NCR46 Cameron Rpt CF310239&41

Country: Australia Category 1: NCRS

CAMERON

FIELD PERFORMANCE REPORT

1. CRITICALITY RATING: (TICK ONE) 1 [ ] 2 [X] 3 [ ]

1 = ANY INDUSTRY OR NEAR MISS, ANY RECORDABLE SAFETY OR ENVIROMENTAL EVENT. ANY DOWNTIME IN EXCESS OF 10 HOURS.
2 = POTENTIAL SAFETY & ENVIROMENTAL CONCERNS. DOWNTIME LESS THAN 10 HOURS. DESIGN AND PERFORMANCE ISSUES.
3 = ALL OTHER ISSUES

2. CUSTOMER/FACILITY	3. OFFICE ADDRESS	4. CITY / COUNTRY	5. REPRESENTED BY
Ensco 102 / Esso Australia	12 Riverside Quay South Bank	Victoria	
6. MANUFACTURING LOCATION	**7. SALES ORDER NUMBER**	**8. SERIAL NUMBER**	**9. QUANTITY**
10. ACTUAL PRESSURE	**11. ACTUAL WELL FLUIDS**	**12. DURATION IN SERVICE**	**13. DATE OF INCIDENT**
			13-05-04
14. ASSEMBLY PART NUMBER	**15. PART NUMBER REVISION**	**16. ASSEMBLY PART DESCRIPTION**	
2209618-01		Compact housing running tool	
17. DEFECTIVE PART NUMBER	**18. PART NUMBER REVISION**	**19. DEFECTIVE PART DESCRIPTION**	

20. MATERIAL BEING RETURNED?	21. IF YES, WHEN?	22. WHERE? SHOW FPR NUMBER ON ALL RETURNED MATERIAL	23. HOW?
☒ Yes ☐ No	01-06-04 Approximately	To Cameron Melbourne	By boat from Rig to BBMT

24. DESCRIBE (WITH NARRATIVE AND/ OR PICTURES / SKETCHES) THE FOUND DEFECT AND CIRCUMSTANCES. USE ADDITIONAL PAGES.

When making running tool up to compact housing the thread was bumped in the right hand direction, datum mark and three left hand turns made befor tool bottomed out on top of compact housing flange face. The procedure calls for five left hand turns not three. The running tool was backed out and raised back to the rig floor so as to carry out preliminary measurements of thhe runing tool and the compact housing. After these measurements matched , engineering was called to seek advise. Once their approval to continue with three turns was obtained the job was carried out with no further incident.

No further numbers available off running tool due to excessive painting.

25. WAS FIELD ACTION NECESSARY?	26. IF YES, DESCRIBE
☐ Yes ☒ No	
27. SUBMITTED BY (PRINT NAME)	**28. DATE SUBMITTED**
Rudey Mook	18-05-04
29. LOCATION	**30. PHONE NUMBER**
Cameron Melbourne	03 9361 4444

RETURN VIA EMAIL TO TABLE 1 DESIGNEE BELOW

ASSIGNMENT

31. ASSIGNED TO	32. LOCATION	33. DATE ASSIGNED	34. DUE DATE	35. APPROVED
Chris Sinclair	Cameron Melbourne	18/05/2004	01/06/2004	R Graham Wilkie

INVESTIGATION

36. PREPARED BY (PRINT NAME)	37. DATE	38. APPROVED BY (PRINT NAME)	39. DATE
CHRIS SINCLAIR	31/5/04	R GRAHAM WILKIE	7/6/04.

REASSIGNMENT (AS REQUIRED)

40. REASSIGNED TO	41. LOCATION	42. DATE ASSIGNED	43. DUE DATE	44. APPROVED

CORRECTIVE/PREVENTIVE ACTION (AS REQUIRED)

45. CORRECTIVE/PREVENTIVE ACTION ISSUES ISSUED BY: (RESPONSIBLE INDIVIDUAL)	46. CORRECTIVE/PREVENTATIVE ACTION NUMBER:

ACCEPTANCE

47. WARRANTY	48. APPROVED	49. DATE	50. DEFECT CODE	51. PRODUCT CODE	52. FG CODE
☐ Yes ☐ No					

53. **REQUIRED FOR CRITICALITY RATING 1**
REVIEWED BY (CAMERON VICE PRESIDENT):

COMMUNICATION

54. ANSWER DISTRIBUTION:
Eric Mook, R Graham Wilkie

FPR No. **E27**

TABLE 1 DESIGNEE
APME (Director of Engineering) – Glenn Chiasson
EH – (EH Engineering Director) - Keith Garbett
WH (Director of Engineering) – Russ Stevens
Cameron Controls (Quality Manager-Houston) – Karl Popielarczyk
Cameron Wilis (Quality Manager-Houston) – Kathy McNair
Drilling (Drilling Sr. Principal Engineering) – Bolie Williams

CAMERON

FIELD PERFORMANCE REPORT

TO:	DATE SENT:	FPR NUMBER: E27

COPY OF FPR TO BE ATTACHED. MATERIAL IS LOCATED AT:

INVESTIGATE WHY THE PROBLEM OCCURRED AND GIVE DETAILS BELOW. ATTACH ANY SUPPORTING DOCUMENTS

Problem occurred due to incorrect running procedure. Original running procedure for equipment (Philips Bayu Undan) stated 5 turns engagement for 19.250" 2TPI LH Stub Acme Thread, however as can be seen from the attached sketches, a maximum of 2.144": (approx 4.25 turns) is possible at the worst tolerance condition.
Figure 1 shows the relevant dimension from the tool (per X-197635-01) and Housing (per X-197634-01) at their worst tolerance conditions. Angles are shown for reference only.
Figure 2 shows the two threads at first contact, with the running tool thread flanks resting on the housing running threads. Only 2.144" gap exists between landing shoulders, meaning that a maximum of 4.25 turns engagement is possible.
Both the Housing (body p/n 2202395-01) and the running tool (body p/n 2202399-01) use document X-090461 for stub acme thread relief. The -01 document (housing) requires the removal of "first and last half turn of thread to full width of crest" and the –04 document (running tool) requires the removal of "first half turn of thread to full width of crest". With the removal of the first half turn of thread from each component, the equivalent of a full turn of thread is removed from the start of the threads, meaning that only 3.25 turns of engagement is possible.
When the thread is fully made up, the removal of the last half turn of the housing thread becomes relevant, and the 4.25 turns engagement is reduced to 2.75 effective turns (approx 1.38").
Assuming a minimum material yield strength of 60,000psi, and allowing the shear stress to reach 0.67xSy, the maximum allowable load on this thread is approximately 650,000lb. For Sy=75k, maximum allowable load is approximately 810,000lb.

DATE: 31 May 2004	SIGNED: C. Sinclair

CHECK EXISTING STOCK/PROCESS IF THE PROBLEM IS OF A NATURE WHERE OTHER PARTS COULD BE AFFECTED. REPORT RESULTS BELOW

The only other location this equipment (and running procedure) has been utilized is in the Philips Bayu Undan Field. As the incorrect number of turns called up in this procedure was copied from the Bayu Undan running procedures, these procedures will need ot be updated accordingly.

DATE: 31 May 2004	SIGNED: C. Sinclair

CORRECTIVE ACTION TAKEN TO PREVENT RE-OCCURRENCE (i.e. DRAWING CHANGE, PROCEDURE CHANGE, ETC) ATTACH SUPPORTING DOCUMENTS

Makeup of the running tool to the housing is not discussed in the procedure, therefore step 1.5 has been added to discuss the correct makeup of the tool
"Make up SSMC housing to running tool until tool shoulders out on top of housing. A minimum of 3 turns will be required."
The removal of the tool is discussed in section 2.1. This section has been updated to read "minimum of 3 turns" instead of the original "5 turns".
A request has been made to Singapore Engineering to update the procedures for the Bayu Undan project to reflect this change also. (Email attached)

DATE: 31 May 2004	SIGNED: C. Sinclair	
REVIEWED BY:	TECHNICAL MANAGER:	DATE: 7/6/04
REVIEWED BY:	QUALITY MANAGER:	DATE: 7/6/04
REVIEWED BY:	PLANT MANAGER:	DATE:
ACCEPTED BY: B.J. [illegible]		8/6/04

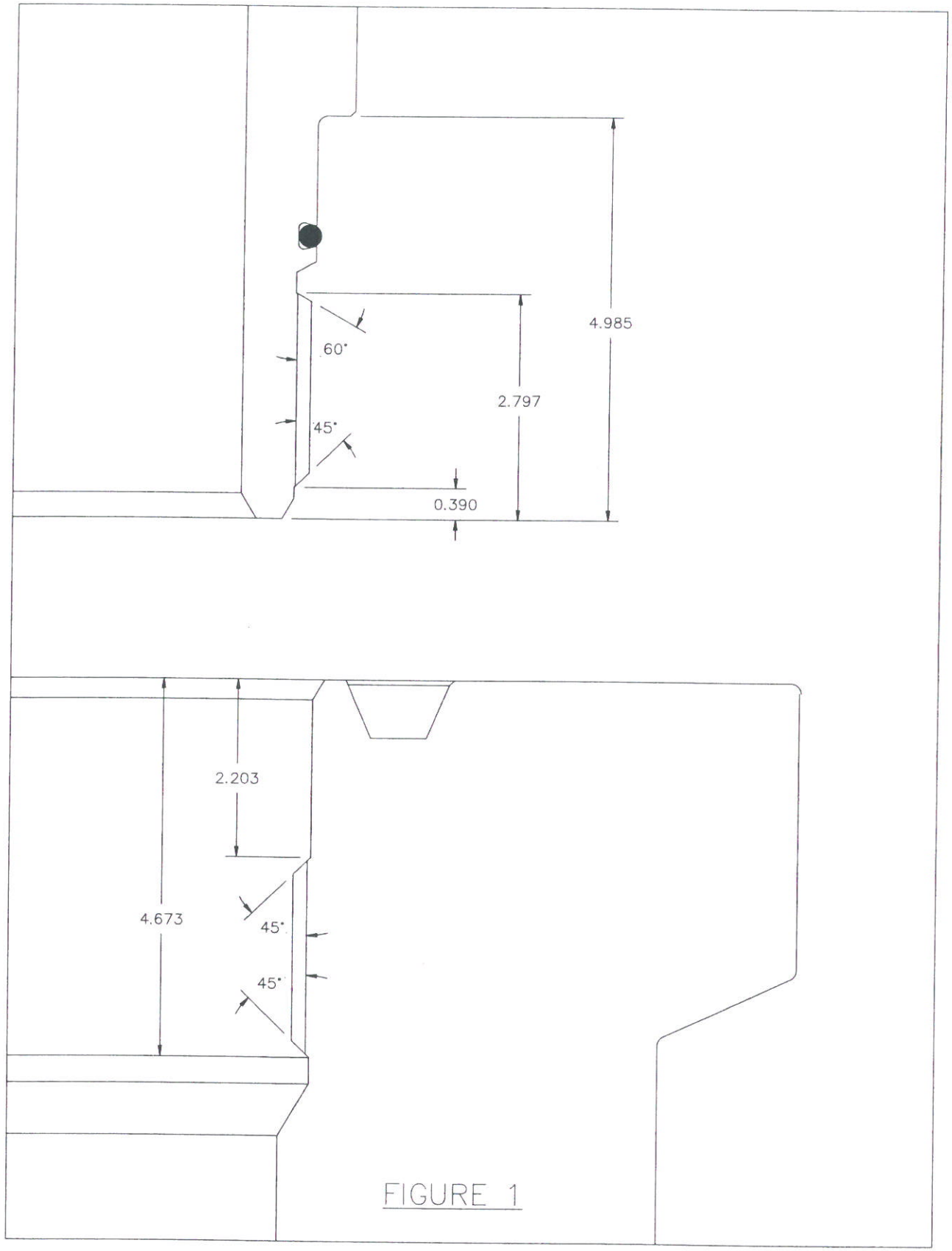


FIGURE 1

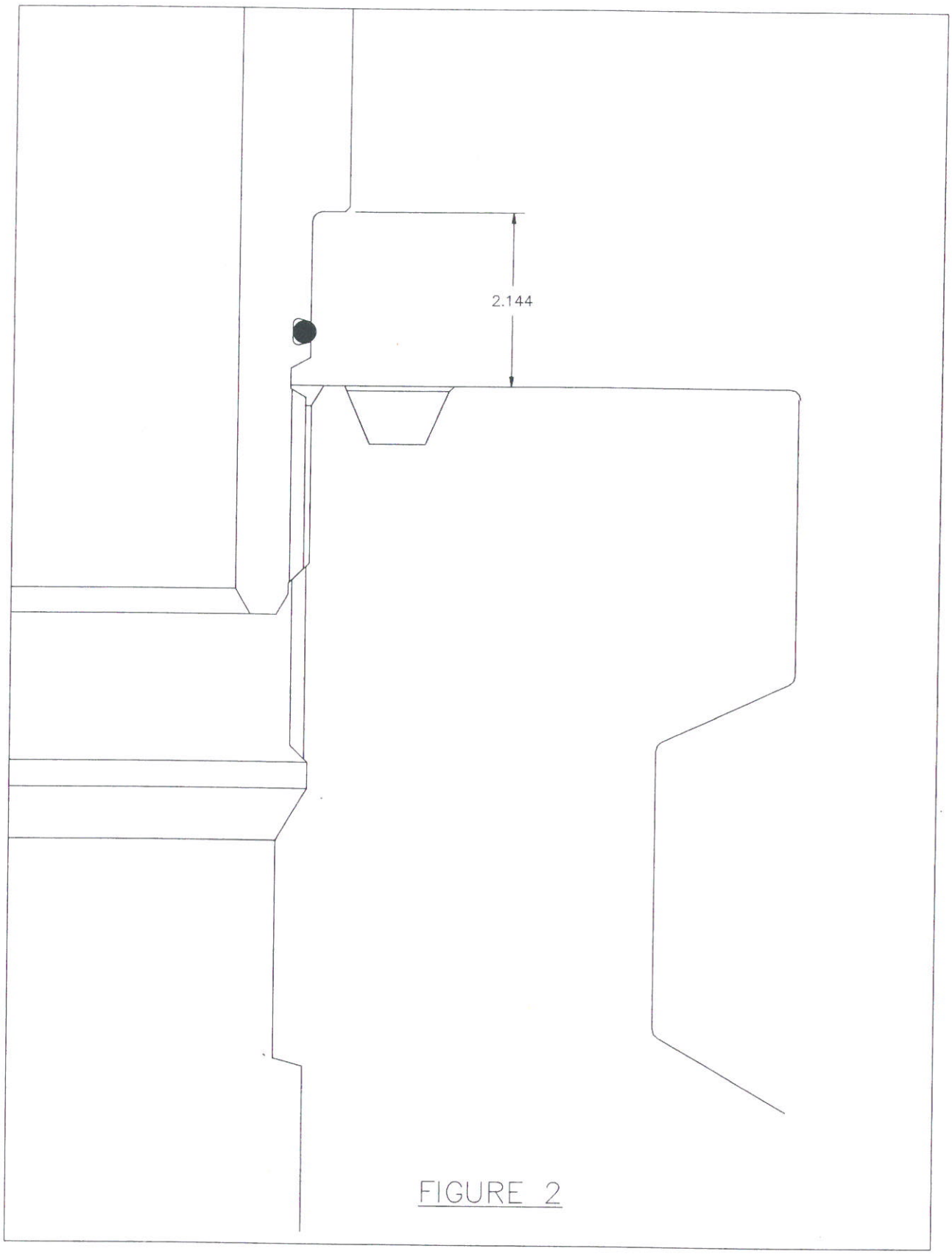


FIGURE 2

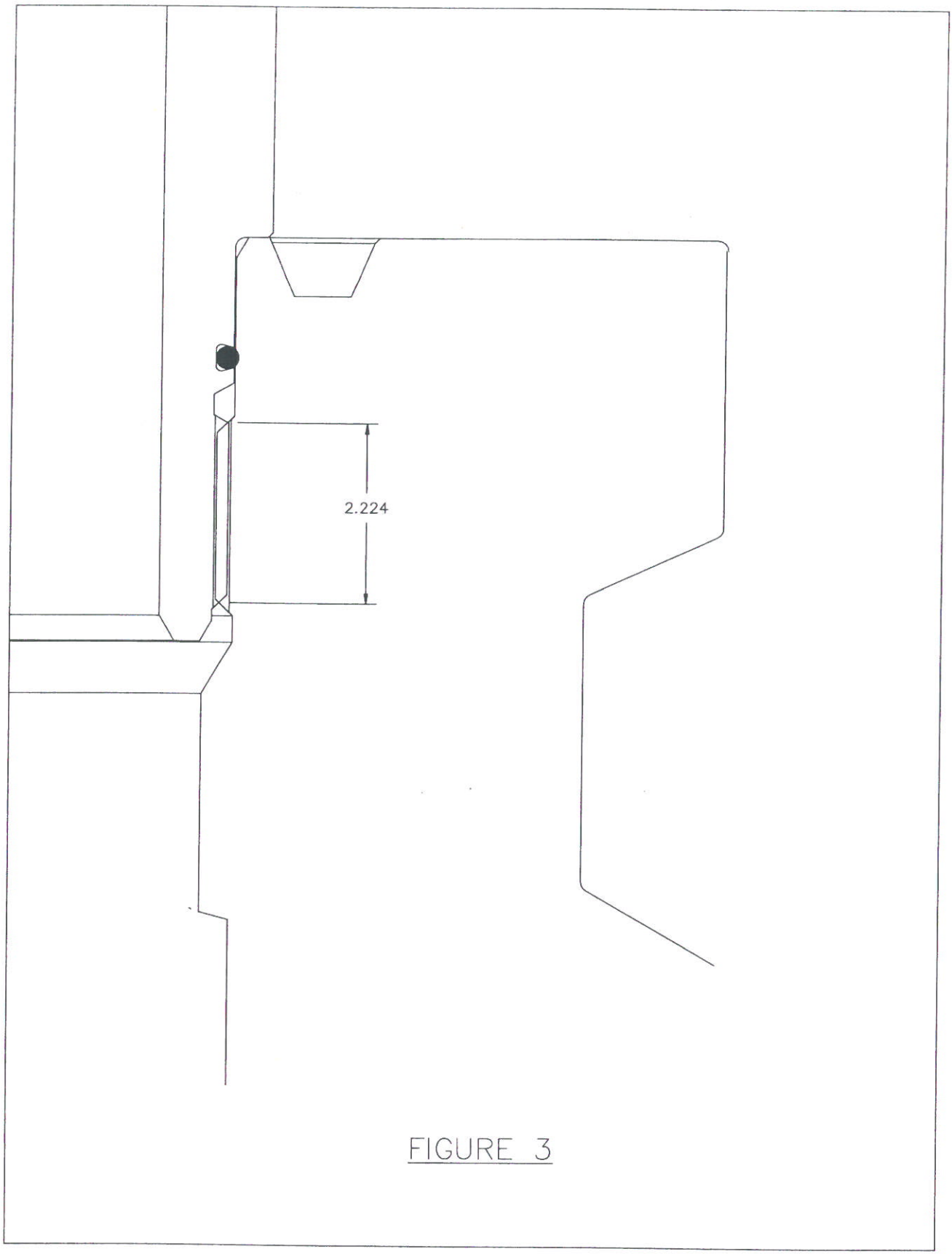


FIGURE 3

1.0 RUNNING 30" CONDUCTOR CASING & 18-3/4" SSMC HOUSING

1.1 Drill out for 30" conductor pipe to depth required.

1.2 Check if the protectors on the joint end Vetco ST-2 connectors can be readily removed and inspect end connections for cleanliness prior to moving landing joint to the V-door.

1.3 Run 30" conductor pipe in hole per casing program. Ensure that space out is correct.

1.4 Cement 30" conductor pipe as per rig procedures.

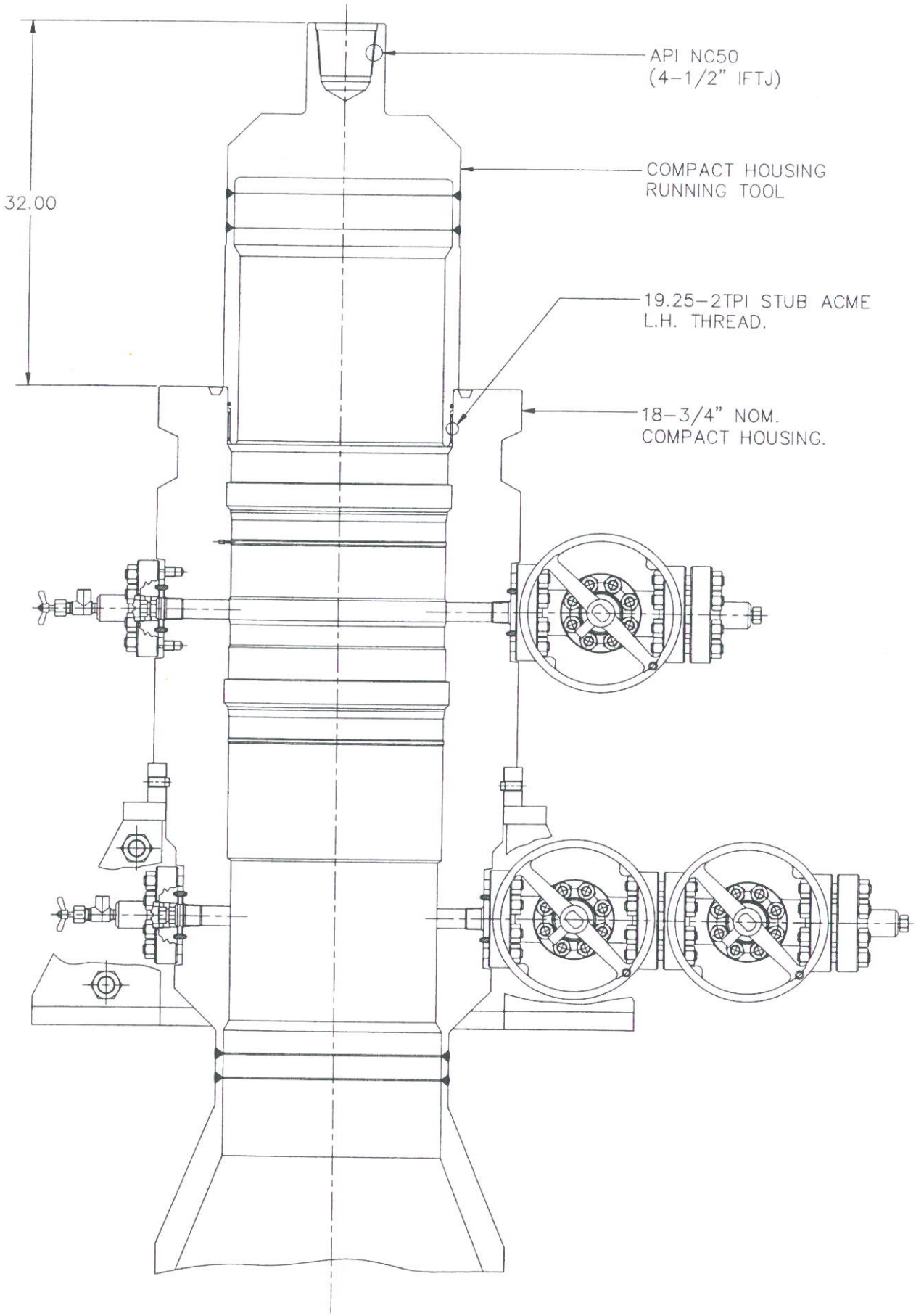
1.5 Make up SSMC housing to running tool until tool shoulders out on top of housing. A minimum of 3 turns will be required.

1.6 Pick up SSMC housing / running tool assembly, and install into drill string via 4-1/2" IFTJ (NC50) thread.

1.7 Ensure that all annulus equipment is correctly installed and tested and that the 20" landing base is securely installed.

1.8 Ensure correct orientation of housing outlets and make up 30" Vetco ST-2 box connector on housing to 30" conductor pipe per Vetco procedures.

1.9 Install floating tensioner frame below 20" landing base per rig procedures.


API NC50
(4-1/2" IFTJ)
COMPACT HOUSING
RUNNING TOOL
32.00
19.25-2TPI STUB ACME
L.H. THREAD.
18-3/4" NOM.
COMPACT HOUSING.

2.0 LOWER STAGE BOP TEST & WEAR BUSHING INSTALLATION

2.1 Back-off 18 ¾" housing running tool with a minimum of 3 turns right hand rotation, and recover landing string

2.2 Clean 18 ¾" housing gasket prep, and install a new BX-164 gasket. Nipple up the 18 ¾" BOP stack. Drive screws on 'Fastlock' connector to be torqued to 2250 ft.lbf.

2.3 Inspect the 18 ¾" nominal combination tool for damage, replace seals if required

2.4 Ensure the landing joint is installed with the torque pins facing up the 35° landing shoulder. Make up one stand of DP to combination tool x-over.

2.5 Lower the combination tool into the compact housing until it lands in the landing shoulder in the compact housing. Measure in to verify correct land-out. Landing shoulder will be 41.43" below top face of housing.

2.6 Test BOP stack as per rig requirements to a maximum of 5000psi. After test completion retrieve combination tool to rig floor, and break-out from DP stand.

2.7 Inspect the 18-3/4" Nom. lower wear bushing for damage. Change seal if necessary.

2.8 Make-up combination tool to stand of DP, ensuring combination tool pins are facing downward. Place wear bushing on RT, lower combination tool into wear bushing, and rotate ¼ turn to the right to lock bushing to tool.

2.9 Pick up the lower wear bushing and slowly lower into compact housing until it lands on the landing shoulder in the compact housing. Measure in to verify correct land-out. Landing shoulder will be 41.43" below top face of housing.

2.10 Rotate drill string ¼ turn to the left to disengage combination tool from wear bushing. Retrieve combination tool with straight vertical pull. Note combination tool may be racked back in derrick ready for bushing retrieval, depending on rig floor space.

2.11 Drill out for 13-3/8" or 9-5/8" casing per casing program.

2.12 Pick-up combination tool, ensuring pins are facing downward and lower through stack until it lands out on top of the lower wear bushing.

2.13 Slowly rotate the landing string right hand. The torque pins will align with slots in the wear bushing within ¼ turn and move down by 3 inches. Rotate additional 20° to the right to fully engage with the wear bushing.

2.14 Retrieve wear bushing with vertical pull, clean down bushing & store safely, break out combination tool, clean and inspect tool, and replace 'O' rings if necessary. Protect 'o' rings and store tool safely.

2.15 Function and flush the BOPs. Optional: RIH with the rig jetting sub and flush the BOP cavities, riser and wellhead prior to running the casing.

Sinclair, Chris

From: Sinclair, Chris

Sent: Monday, 7 June 2004 14:05

To: Svoboda, Mark

Cc: Wilkie, Graham

Subject: Bayu Undan Procedure update per FPR E27

Mark,

FPR E27 has been raised due to problems encountered when running the Esso West Whiptail exploration well, and as a result, the sections of the running procedure which relate to the interface between the 18-3/4" SSMC housing and it's running tool have been updated.

As this equipment is identical to the Philips Bayu Undan equipment, and the procedures were copied from the Bayu Undan 18-3/4" procedures, part of the corrective action to be taken in response to the FPR requires that the Bayu Undan procedures are updated also.

The change made to the Whiptail procedure is as follows:
The engagement of the SSMC housing running tool did read "5 turns" in the original procedures, but this has been changed to "until tool shoulders out on top of housing" and "minimum 3 turns". The procedure for retrieval of the tool has been similarly updated.

Could you please have the 18-3/4" Bayu Undan Running procedures updated to reflect similar wording. I have attached the updated pages of the Whiptail procedure for your information.

Thanks & regards,
Chris

Chris Sinclair
Cameron Australasia
email: mailto:sinclairc@camerondiv.com
web: http://www.coopercameron.com/
ph: +61 3 9361 4419
fax: +61 3 9361 4499

Current Viewer: Chris P Meakin

Security Classification: ExxonMobil Use Only
Other Designation:

Subject: NCR52 - Incorrect Design of 9-5/8" Casing Hanger

Status: Closed Out

Priority: Cameron

Due: 31 May 2004

Assignees: Chris P Meakin/U-SouthPacific/ExxonMobil

Action Item:

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 1 - Action Item

TO BE COMPLETED BY:
OFFSHORE DRILLING/WORKOVER SUPERVISOR

GENERAL INFORMATION

Author's Name:	**Shane A Harris**
Date of Incident:	**14-May-2004**
Site of Incident:	**Ensco 102**
Well Number & Job Title (if relevant):	**West Whiptail-1**
Brief description of Non-conformance:	**Cameron offshore personnel identified that there was no profile machined in 9-5/8" casing hanger for dummy hanger holding screws.**
Contractor/Vendor/Consultant responsible for Non-conformance:	**Cameron**
Did the Non-conformance result in:	**(Click in one or more squares below)** **❑ Downtime** **☒ Potential Downtime** **❑ Health/Safety Concerns** **❑ Environmental Concerns** **☒ Financial Loss to Company** **❑ Other (Please specify)**
Categorisation of Non-conformance:	**❑ Equipment Failure** **❑ Delivery Delays** **☒ Design Fault** **❑ Maintenance Fault** **☒ Human Error** **❑ Other**
Recommended remedial action:	**Immediate action was EMDC exception to modify the casing hanger on site by drilling 4 x 3/8" holes into the body to accommodate the grub screws in the dummy hanger. These grub screws secure the dummy to the hanger. Action is required for Cameron to scrutinise the design and QC of all equipment leaving their factory.**
Additional Comments:	**This is the second major NCR for Cameron for this job dealing with QC of their equipment. The NCR's exclude a number of additional cases on this job where Cameron has been deficient in supplying of equipment (eg not sending wellhead lifting padeyes).**

Other supporting Attachments:

Casing Hanger NCR Picture.j

Status Update: Date: 15 Jul 2004

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 2 - Status Update

TO BE COMPLETED BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Engineer/Technician's Name:	
Contact Name & Date (if new engineer/technician is re-assigned to follow-up NC):	
Is this a non-conformance to the current contract/agreement with the responsible third party?:	○ Yes ● No
If yes, describe the conflict with the current contract/agreement:	
Is immediate follow-up action required?:	○ Yes ● No
If so, give recommended remedial action/follow-up plans:	
Additional comments:	

Resolution: Date: 15 Jul 2004

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 3 - Resolution/Close Out

TO BE COMPLETED WHEN NC CLOSED OUT BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Action Taken:	
Non-conformance action closed out:	● Yes ○ No
Contractor notified of close out:	● Yes ○ No

Other supporting Attachments:

Cameron Report NCR52 Cameron Rpt CF310239.

Country: Australia
Region: Bass Strait
Author: Shane Harris

Database: EAPL Subsurface Engineer & Drill

Category 1: NCRS
Category 2: NC Reports
Document Readers:
Note: If none selected, all can read.
Document Editors: Carla Santamaria/U-SouthPacific/ExxonMobil, Rocky P D'Alessandri/U-SouthPacific/ExxonMobil, Tom Martin/U-SouthPacific/ExxonMobil, Brent R Levey/U-SouthPacific/ExxonMobil, Kirsty E Bortolin/U-SouthPacific/ExxonMobil, Georgina E McCowan/U-SouthPacific/ExxonMobil, Brad Hargreaves/U-SouthPacific/ExxonMobil, Mark Wilson/B/U-SouthPacific/ExxonMobil, Barry White/B/U-SouthPacific/ExxonMobil, Stuart M Thomson/B/U-SouthPacific/ExxonMobil, Donald S Broomfield/U-SouthPacific/ExxonMobil, Anthony A Bassett/U-SouthPacific/ExxonMobil, Alan Schleifer/U-SouthPacific/ExxonMobil, Glenn R Campbell/U-SouthPacific/ExxonMobil, John W Booker/B/U-SouthPacific/ExxonMobil, Greg Rimmer/B/U-SouthPacific/ExxonMobil, Bill Sutherland/B/U-SouthPacific/ExxonMobil, Bruce Woodward/U-SouthPacific/ExxonMobil, Steve S Felstead/U-SouthPacific/ExxonMobil, Frank W Kratzer/U-SouthPacific/ExxonMobil, Daniel L Whiteman/U-SouthPacific/ExxonMobil, Chris P Meakin/U-SouthPacific/ExxonMobil, Jenny Selway/U-SouthPacific/ExxonMobil, Shane A Harris/U-SouthPacific/ExxonMobil, Colin A Johancsik/U-SouthPacific/ExxonMobil, Barry J Steel/U-AsiaPacific/ExxonMobil, Ross B Morris/U-SouthPacific/ExxonMobil, Brian Davis/B/U-SouthPacific/ExxonMobil, Carl MacDonald/U-SouthPacific/ExxonMobil, George K Sharkey/U-Houston/ExxonMobil, Toby R Bloch/SouthPacific/Mobil-Notes, George A Steel/B/U-SouthPacific/ExxonMobil, Glyn Rayson-Hill/B/U-AsiaPacific/ExxonMobil, Vicki L Stewart/U-SouthPacific/ExxonMobil
Last Editor/Date: Chris P Meakin / 15 Jul 2004

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14 14:58

CAMERON

FIELD PERFORMANCE REPORT

1. CRITICALITY RATING: (TICK ONE) 1 [ ] 2 [X] 3 [ ]

1 = ANY INDUSTRY OR NEAR MISS, ANY RECORDABLE SAFETY OR ENVIROMENTAL EVENT. ANY DOWNTIME IN EXCESS OF 10 HOURS.
2 = POTENTIAL SAFETY & ENVIROMENTAL CONCERNS. DOWNTIME LESS THAN 10 HOURS. DESIGN AND PERFORMANCE ISSUES.
3 = ALL OTHER ISSUES

2. CUSTOMER/FACILITY	3. OFFICE ADDRESS	4. CITY / COUNTRY	5. REPRESENTED BY
Ensco 102 / Esso Australia	12 Riverside quay South Bank	Victoria	
6. MANUFACTURING LOCATION	**7. SALES ORDER NUMBER**	**8. SERIAL NUMBER**	**9. QUANTITY**
Cameron Melbourne		4500238055-03-02	2
10. ACTUAL PRESSURE	**11. ACTUAL WELL FLUIDS**	**12. DURATION IN SERVICE**	**13. DATE OF INCIDENT**
		new	14-05-04
14. ASSEMBLY PART NUMBER	**15. PART NUMBER REVISION**	**16. ASSEMBLY PART DESCRIPTION**	
11062691-01	01	18 ¾" x 9 5/8" casing hanger	
17. DEFECTIVE PART NUMBER	**18. PART NUMBER REVISION**	**19. DEFECTIVE PART DESCRIPTION**	

20. MATERIAL BEING RETURNED?	21. IF YES, WHEN?	22. WHERE? SHOW FPR NUMBER ON ALL RETURNED MATERIAL	23. HOW?
[ ] Yes [X] No			

24. DESCRIBE (WITH NARRATIVE AND/ OR PICTURES / SKETCHES) THE FOUND DEFECT AND CIRCUMSTANCES. USE ADDITIONAL PAGES.

When inspecting the 9 5/8" casing hanger and the proposed fitting of the 18 ¾" x 13 3/8" dummy casing hanger, it was noticed that the 12 grub screws on the dummy only bit on the vertical face of the 9 5/8" hanger. After calling the engineer he informed that there should be a machined groove for the grub screws on the casing hanger. A digital photo was taken and sent to the engineer and a solution was devised. This involved the fitting of the dummy to the casing hanger and drilling holes into the hanger at least 1/8" for grubscrews to bite into. This was done and the dummy casing could be ran in hole safely.

25. WAS FIELD ACTION NECESSARY?	26. IF YES, DESCRIBE
[X] Yes [ ] No	Drill holes into casing hanger.
27. SUBMITTED BY (PRINT NAME)	**28. DATE SUBMITTED**
Rudey Mook	18-05-04
29. LOCATION	**30. PHONE NUMBER**
Cameron Melbourne	03 9361 4444

RETURN VIA EMAIL TO TABLE 1 DESIGNEE BELOW

ASSIGNMENT

31. ASSIGNED TO	32. LOCATION	33. DATE ASSIGNED	34. DUE DATE	35. APPROVED
Chris Sinclair	Cameron Melbourne	18/05/2004	01/06/2004	R Graham Wilkie

INVESTIGATION

36. PREPARED BY (PRINT NAME)	37. DATE	38. APPROVED BY (PRINT NAME)	39. DATE
CHRIS SINCLAIR	31/5/04	R. GRAHAM WILKIE	2/6/04

REASSIGNMENT (AS REQUIRED)

40. REASSIGNED TO	41. LOCATION	42. DATE ASSIGNED	43. DUE DATE	44. APPROVED

CORRECTIVE/PREVENTIVE ACTION (AS REQUIRED)

45. CORRECTIVE/PREVENTIVE ACTION ISSUES ISSUED BY: (RESPONSIBLE INDIVIDUAL)	46. CORRECTIVE/PREVENTATIVE ACTION NUMBER:

ACCEPTANCE

47. WARRANTY	48. APPROVED	49. DATE	50. DEFECT CODE	51. PRODUCT CODE	52. FG CODE
[ ] Yes [ ] No					

53. **REQUIRED FOR CRITICALITY RATING 1**
REVIEWED BY (CAMERON VICE PRESIDENT):

COMMUNICATION

54. ANSWER DISTRIBUTION:	FPR No.
Eric Mook, R Graham Wilkie	**E26**

TABLE 1 DESIGNEE
APME (Director of Engineering) – Glenn Chiasson
EH – (EH Engineering Director) - Keith Garbett
WH (Director of Engineering) – Russ Stevens
Cameron Controls (Quality Manager-Houston) – Karl Popielarczyk
Cameron Wilis (Quality Manager-Houston) – Kathy McNair
Drilling (Drilling Sr. Principal Engineering) – Bolie Williams

CAMERON

FIELD PERFORMANCE REPORT

TO:	DATE SENT:	FPR NUMBER: E26

COPY OF FPR TO BE ATTACHED. MATERIAL IS LOCATED AT:

INVESTIGATE WHY THE PROBLEM OCCURRED AND GIVE DETAILS BELOW. ATTACH ANY SUPPORTING DOCUMENTS

'Dummy' Casing hanger p/n 2209613-01 was designed with 12-off .375-16 UNC holes near the top face to accept grub screws. These grub screws are then used to secure the dummy casing hanger to the 18-3/4" nom. Casing hanger (p/n 2209626-01) in the 13.125" diameter recessed groove underneath the 'self cleaning' 35 degree landing shoulder (per X-217314-02). The recessed groove, however, is 'optional' on the feature drawing (X-217314-02) and was not machined on the casing hanger in question. The parts were not made up in the plant prior to shipping, and hence the discrepancy was not noticed until the parts were made up offshore.

DATE: 31 May 2004	SIGNED: C. Sinclair

CHECK EXISTING STOCK/PROCESS IF THE PROBLEM IS OF A NATURE WHERE OTHER PARTS COULD BE AFFECTED. REPORT RESULTS BELOW

The 'dummy' casing hanger used was a special design for this application, and this issue will not affect any other parts unless similar 'dummy' casing hangers have been designed based upon the same assumptions.

DATE: 31 May 2004	SIGNED: C. Sinclair

CORRECTIVE ACTION TAKEN TO PREVENT RE-OCCURRENCE (i.e. DRAWING CHANGE, PROCEDURE CHANGE, ETC) ATTACH SUPPORTING DOCUMENTS

Major revision carried out on p/n 2209626-01 to incorporate new drawing X-108067-79. New drawing incorporates recess features considered optional on original drawing. Part to be reworked to new revision when returned for RGR.

DATE: 31 May 2004	SIGNED: C. Sinclair

REVIEWED BY:		**TECHNICAL MANAGER:**	**DATE:** 2/6/04
REVIEWED BY:		**QUALITY MANAGER:**	**DATE:** 2/6/04
REVIEWED BY:		**PLANT MANAGER:**	**DATE:**
ACCEPTED BY:	B.J. MacLeod		8/6/04

Current Viewer: Chris P Meakin

Security Classification: ExxonMobil Use Only
Other Designation:

Subject: NCR57 - Subject jetting tool to clean out hanger seal

Status: Open

Priority: Cameron

Due: 31 Jul 2004

Assignees: Chris P Meakin/U-SouthPacific/ExxonMobil

Action Item:

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 1 - Action Item

TO BE COMPLETED BY:
OFFSHORE DRILLING/WORKOVER SUPERVISOR

GENERAL INFORMATION

Author's Name:	**Barry Steel**
Date of Incident:	**25/06/2004**
Site of Incident:	**Ensco 102**
Well Number & Job Title (if relevant):	**West Whiptail #1**
Brief description of Non-conformance:	**Jetting tool unsuitable for clearing junk from on top of hanger seal assy and hanger assy. Unable to latch either component until cleanout was done with Baker mill incorporating obliquely orientated jets.**
Contractor/Vendor/Consultant responsible for Non-conformance:	**Cameron**
Did the Non-conformance result in:	**(Click in one or more squares below)** **☒ Downtime** **❑ Potential Downtime** **❑ Health/Safety Concerns** **❑ Environmental Concerns** **☒ Financial Loss to Company** **❑ Other (Please specify)**
Categorisation of Non-conformance:	**❑ Equipment Failure** **❑ Delivery Delays** **☒ Design Fault** **❑ Maintenance Fault** **❑ Human Error** **❑ Other**
Recommended remedial action:	**Recomend that a tool be manufactured with large jets orientated to clean out behind seal assy. It will have to incorporate a design where the tool lands out in position to do this efficiently.**
Additional Comments:	

Other supporting Attachments:
>>Attach any reference documents here, including title.<<

Status Update: Date: 31 May 2004

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 2 - Status Update

TO BE COMPLETED BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Engineer/Technician's Name:	
Contact Name & Date (if new engineer/technician is re-assigned to follow-up NC):	
Is this a non-conformance to the current contract/agreement with the responsible third party?:	○ Yes ● No
If yes, describe the conflict with the current contract/agreement:	
Is immediate follow-up action required?:	○ Yes ● No
If so, give recommended remedial action/follow-up plans:	
Additional comments:	

Resolution: Date:

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 3 - Resolution/Close Out

TO BE COMPLETED WHEN NC CLOSED OUT BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Action Taken:	
Non-conformance action closed out:	○ Yes ● No
Contractor notified of close out:	○ Yes ● No

Other supporting Attachments:
>>Attach any reference documents here, including title.<<

Country: Australia
Region: Bass Strait

Category 1: NCRS
Category 2: NC Reports

Current Viewer: Chris P Meakin

Security Classification: ExxonMobil Use Only
Other Designation:

Subject: NCR58 - Failure of ENSCO 102 BOP Lifting Hoist

Status: Closed Out

Priority: Ensco, Esso

Due: 30 Jun 2004

Assignees: Chris P Meakin/U-SouthPacific/ExxonMobil

Action Item:

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 1 - Action Item

TO BE COMPLETED BY:
OFFSHORE DRILLING/WORKOVER SUPERVISOR

GENERAL INFORMATION

Author's Name:	**Barry Steel**
Date of Incident:	**26th May 2004**
Site of Incident:	**Ensco 102**
Well Number & Job Title (if relevant):	**West Whiptail #1**
Brief description of Non-conformance:	**While removing BOP stack, inboard 75 ton hoist had mechanical problems. On inspection, it was discovered that main drive gear and idler gear had failed. Gearbox housing was also cracked.**
Contractor/Vendor/Consultant responsible for Non-conformance:	**Ensco**
Did the Non-conformance result in:	**(Click in one or more squares below)** **☒ Downtime** **❑ Potential Downtime** **❑ Health/Safety Concerns** **❑ Environmental Concerns** **☒ Financial Loss to Company** **❑ Other (Please specify)**
Categorisation of Non-conformance:	**☒ Equipment Failure** **❑ Delivery Delays** **❑ Design Fault** **❑ Maintenance Fault** **❑ Human Error** **❑ Other**
Recommended remedial action:	**Immediately: Repair or replace failed equipment. Longer Term: 1) Review the cause of the failure and recommend preventative measures to prevent a re-occurence and to mitigate a failure. 2) Identify similar "critical" equipment and recommend preventative measures to prevent failure and to mitigate failure if it does occur.**
Additional Comments:	

Other supporting Attachments:

Failed gears & metal shavings Bad gear failed bearing & metal shavin

Status Update: Date: 31 May 2004

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 2 - Status Update

TO BE COMPLETED BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Engineer/Technician's Name:	
Contact Name & Date (if new engineer/technician is re-assigned to follow-up NC):	
Is this a non-conformance to the current contract/agreement with the responsible third party?:	○ Yes ● No
If yes, describe the conflict with the current contract/agreement:	
Is immediate follow-up action required?:	● Yes ○ No
If so, give recommended remedial action/follow-up plans:	
Additional comments:	

Resolution: Date:

ESSO SUBSURFACE & DRILLING NON-CONFORMANCE REPORT
Section 3 - Resolution/Close Out

TO BE COMPLETED WHEN NC CLOSED OUT BY:
ENGINEER/TECHNICIAN

GENERAL INFORMATION

Action Taken:	
Non-conformance action closed out:	● Yes ○ No
Contractor notified of close out:	● Yes ○ No

Other supporting Attachments:

Barry Todd Email 8-Aug-2004 with report attacl

Country: Australia
Region: Bass Strait
Author: Barry Steel

Database: EAPL Subsurface Engineer & Drill

Category 1: NCRS
Category 2: NC Reports
Document Readers:

Note: If none selected, all can read.

Document Editors: Carla Santamaria/U-SouthPacific/ExxonMobil, Rocky P D'Alessandri/U-SouthPacific/ExxonMobil, Tom Martin/U-SouthPacific/ExxonMobil, Brent R Levey/U-SouthPacific/ExxonMobil, Kirsty E Bortolin/U-SouthPacific/ExxonMobil, Georgina E McCowan/U-SouthPacific/ExxonMobil, Brad Hargreaves/U-SouthPacific/ExxonMobil, Mark Wilson/B/U-SouthPacific/ExxonMobil, Barry White/B/U-SouthPacific/ExxonMobil, Stuart M Thomson/B/U-SouthPacific/ExxonMobil, Donald S Broomfield/U-SouthPacific/ExxonMobil, Anthony A Bassett/U-SouthPacific/ExxonMobil, Alan Schleifer/U-SouthPacific/ExxonMobil, Glenn R Campbell/U-SouthPacific/ExxonMobil, John W Booker/B/U-SouthPacific/ExxonMobil, Greg Rimmer/B/U-SouthPacific/ExxonMobil, Bill Sutherland/B/U-SouthPacific/ExxonMobil, Bruce Woodward/U-SouthPacific/ExxonMobil, Steve S Felstead/U-SouthPacific/ExxonMobil, Frank W Kratzer/U-SouthPacific/ExxonMobil, Daniel L Whiteman/U-SouthPacific/ExxonMobil, Chris P Meakin/U-SouthPacific/ExxonMobil, Jenny Selway/U-SouthPacific/ExxonMobil, Shane A Harris/U-SouthPacific/ExxonMobil, Colin A Johancsik/U-SouthPacific/ExxonMobil, Ross B Morris/U-SouthPacific/ExxonMobil, Brian Davis/B/U-SouthPacific/ExxonMobil, Carl MacDonald/U-SouthPacific/ExxonMobil, George K Sharkey/U-Houston/ExxonMobil, Toby R Bloch/SouthPacific/Mobil-Notes, George A Steel/B/U-SouthPacific/ExxonMobil, Glyn Rayson-Hill/B/U-AsiaPacific/ExxonMobil, Vicki L Stewart/U-SouthPacific/ExxonMobil, Megan L Tarrant/U-SouthPacific/ExxonMobil, Dean J King/U-SouthPacific/ExxonMobil, Sally M McKenzie/U-SouthPacific/ExxonMobil, Col J Walker/U-SouthPacific/ExxonMobil, Gary R Brown/U-SouthPacific/ExxonMobil, Barry J Steel/U-SouthPacific/ExxonMobil
Last Editor/Date: Pamela Perry / 9 Aug 2004

25 5:18

28
15

"Barry Todd"
<btodd@enscous.com>

08/08/2004 10:44 am
Please respond to btodd

To: <chris.p.meakin@exxonmobil.com>
cc:
Subject: RE: BOP Hoist Failure NCR

Chris,

Please find the requested report attached for your files.

In response to our conversation regarding other critical equipment PM Routines; we have searched our PMS for coverage of other critical items and find only the Riser Tensioner System not well covered. To that end we have reviewed the OEM Recommended PM and are in the process of incorporting the recommendations into our PMS. OEM recommended spare parts have been placed on order and are expected to be aboard the rig prior to return to Esso. We are presently performing bi-annual MPI inspection of the Riser Tensioner System.

Best regards,

Bjt

Barry J. Todd
Rig Manager - ENSCO 102

Office: 61-3-8610-2200
Direct: 61-3-8610-2202
Fax: 61-3-9629-7222
Mobile: 61-409-294-905
email: btodd@enscous.com

-----Original Message-----
From: chris.p.meakin@exxonmobil.com [mailto:chris.p.meakin@exxonmobil.com]
Sent: Tuesday, August 03, 2004 9:01 AM
To: btodd@enscous.com
Subject: BOP Hoist Failure NCR

Barry,

Are we able to get an electronic copy of your report on the BOP Hoist failure on ENSCO 102 as per Frank's note below?

Regards

Chris Meakin
Drilling Engineer
EMDC Drilling - Australia Offshore
+61 3 9270 3536 (phone); +61 3 9270 3593 (fax)
E-mail: chris.p.meakin@exxonmobil.com (including attachments)

This message and any attachments may contain proprietary or confidential information. If you are not the intended recipient or you received the message in error, you must not use or distribute the message. Please notify the sender immediately and destroy the original message. Thank you.

----- Forwarded by Chris P Meakin/U-SouthPacific/ExxonMobil on 03/08/2004 10:59 am -----

Frank W Kratzer

To: <btodd@enscous.com>
cc: Chris P Meakin/U-SouthPacific/ExxonMobil@xom,

15/07/2004 05:15 pm

Tim Paltridge/U-SouthPacific/ExxonMobil@xom, Daniel L Whiteman/U-SouthPacific/ExxonMobil@xom, Carl MacDonald/U-SouthPacific/ExxonMobil@xom

Subject: Re: CHECKING IN(Document link: Chris P Meakin)

Barry,

Tim is filling in for me while I am away starting tommoro, back monday the 26th. I will be in Houston on a course. If it can wait, I will catch up with you on my return. For all other issues please correspond with tim whom
is sitting at my desk 9270 3540. I also wanted to catch up with you on a number of issues several which you have answered below. Sorry to send a note. One other if you could send Chris Meakin a electronic copy of the BOP
hoist failure he would appreciate it and were you able to locate any additional 5k or 10 K riser ? Did you get an estimated time to procure and cost for the platform mounted BOP setup ? This is pretty HOTTT
Appreciate if you respond to Tim directly and cc me. Thx.

Regards, Frank

Esso Australia
Office 603 9270 3540
Mobile 0417368 772
Home Email fwkratz@bigpond.net.au

"Barry Todd"

<btodd@enscous.com>

To: <frank.w.kratzer@exxonmobil.com>

cc:

Subject: CHECKING IN

15/07/04 13:36

Please respond to

btodd

Frank,

Haven't talked in awhile so thought I'd call. Tim answered and told me you were in his office. No response, hence the email.

Just a couple of things to update you:

1) We continue to work the BOP Closing Unit issue and I shall keep you informed.

2) Well Control attendees - I hope to finalize the list today.

3) Safety Leadership attendees - I plan to finalize the list(s) by Monday.

4) I have made a request for "sway" information from our Europe group and I await response.

5) Jack McGee (HSE Perth) and myself will arrange to get with Tony next week to discuss MRC's and schedule the training.

Would it be possible to get with you before you leave today and ask you to sign the letters pertaining to the extra Crane Operator and Safety Training Officers. We need to have this on file so we can invoice and for audit purposes. I can make my way down there anytime suits you this afternoon.

Thanks,

bjt

Barry J. Todd
Rig Manager - ENSCO 102

Office: 61-3-8610-2200
Direct: 61-3-8610-2202
Fax: 61-3-9629-7222
Mobile: 61-409-294-905
email: btodd@enscous.com

BOP Hoist Failure (final) Report

INTEROFFICE MEMORANDUM

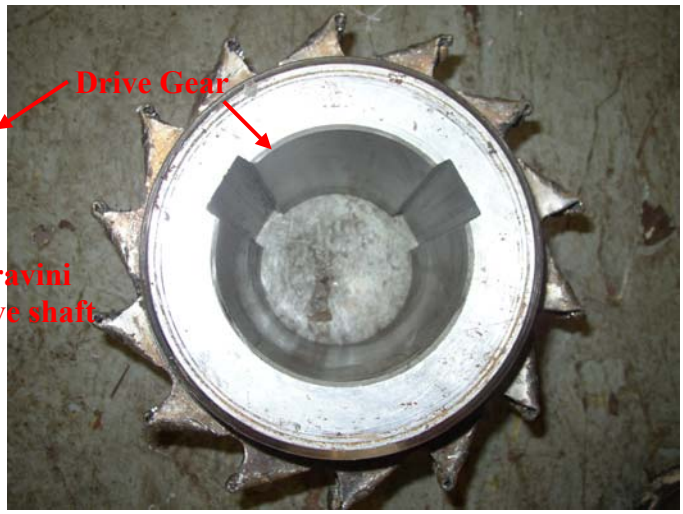
TO:	Eisso Koenders		
FROM:	John Knowlton		
CC:	Barry Todd		
SUBJECT:	BOP Hoist Failure – E102		
DATE:	18 June 04	**REF:**	JSK 03-04

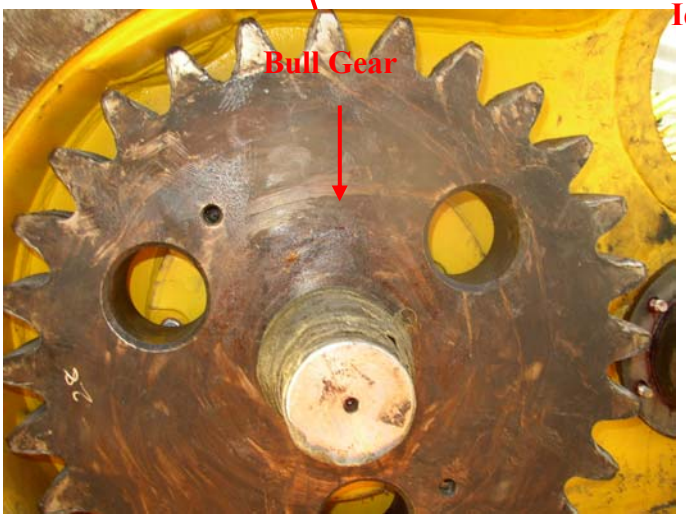
Eisso,

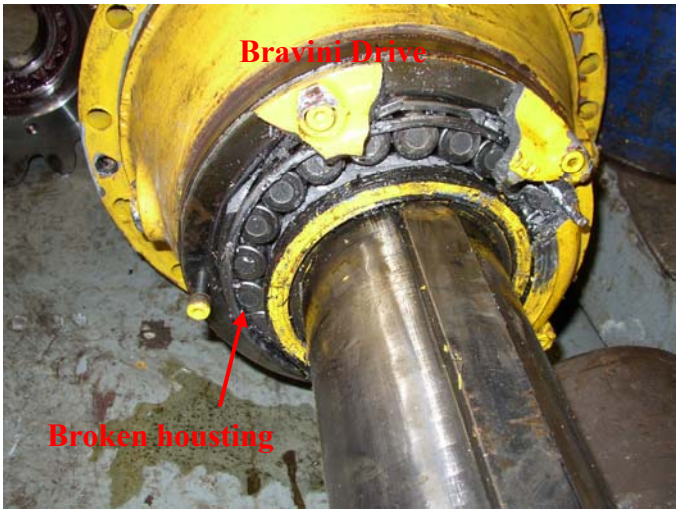
On 26 May, the forward BOP hoist was heard popping while pulling the stack on E102. The operation was stopped after hoisting approximately 10 feet and lowered back down on the wellhead supported by the tensioning system. The drawworks is used as a secondary fall protection while raising or lowering the stack so there was no risk of dropping the stack. The BOP hoists are special one off designed 75 ton hydraulic chain hoist manufactured by MOS in Liverpool. The hoist and connection to the stack is by a lift ring that wraps around the Shaffer 18-3/4" annular preventer. The hoists hang from a special built beam with 9" wide x 4" thick flange. This beam also has a rack attached on the underside for the trolley drive. The trolleys have hydraulic drive pinions (2 per side) that engage the rack under the trolley beam for positive transverse movement. See the attached picture. The connection devise is a purpose built closed end by open end socket that is pinned directly to the lift ring pad eye. There are no other lift points or pad eyes on the hoist / trolleys for secondary hang off. Rig up lines are connected to the 4 x 35 ton pad eyes on top of the annular for secondary fall protection when lifting and lowering the BOP <u>under the rotary only.</u>

Ron Cancienne was on board and has published a report attached. It was apparent that the forward BOP hoist was not slacked off prior to lifting the BOPs. After removal of the transfer gear box cover it was found that the drive gear and idler gear were severely worn with a pile of metal shavings in the bottom of the box. The drive housing was also damaged. The aft hoist was inspected and it appeared to be in perfect condition.

Per Ron Cancienne's report the apparent cause of the failure was due to the hoist being left attached and not slack during the 12 days the stack was installed while drilling West Whiptail-1. Ron's report states that the drive and metal shaving showed no signs of oxidation, it should be noted that the gears showed no sign of oxidation either and that the transfer gear box had not been opened since installation. In short the inside of the gear box is not a corrosive environment. There are two other possible causes of the failure 1.) The gears started wearing because of lack of lubrication and as the wear increased the back lash became so severe that the forces broke the Bravini drive housing. After the Bravini drive housing was damaged the drive gear was allowed to shift over making the back lash even more severe accelerating the wear on the gears. 2) possibly when the chain parted on this hoist 12 December 02 this caused a shock load back into transfer gear box causing the Bravini drive housing to break allowing the drive gear to shift starting the backlash and wear on the gears.







There are 3 known things that happened or didn't happen that caused or contributed to this failure:

1. Chain failure 12 December 02. Chain was chopped apart by the drive sprocket which is attached directly to the bull gear when paying out. This would have put a severe shock load back to the Bravini drive gear box. The transfer gear box was never opened and inspected.
2. MOS recommended PM routines were not implemented in our PM system and therefore MOS task M 06 calling for monthly opening of the transfer gear box and greasing the gears was not performed during two years of operation.
3. The forward hoist was not fully slacked off during the West Whiptail -1 well while the BOP's were nippled up for 12 days. This is contrary to directions in Maintenance Alert MA-076 issued October 2001. It is not know how much load was transferred to the forward BOP hoist but after inspection of the chains and all other components, no damage has been found.

We will likely never know which of the above cause the failure but by correcting all 3 this should prevent a similar incident in the future. Corrective actions are as follows:

1. Modify hoist chain buckets to prevent chain pile up (complete).
2. Add and implement all MOS PM routines into the People soft system (complete).
3. Inspect all load bearing components of the hoist system (complete).
4. Implement procedure to ensure that hoists are disconnected and moved to park position while BOPs are nippled up. (complete).
5. Install warning sign on BOP hoist control "Hoist to be slacked off and stowed while BOP's installed".
6. Council TPs, Drillers, and OIMs on not keeping BOP hoists slack per Maintenance Alert .
7. Area authority audit (Texas Deck / BOPS's – Toolpusher) to be updated to include verification that BOP hoists are disconnected while BOP's nippled up. Note: Maintenance Alert MA-113 June 10, 2004 addresses this again.

Recovery after this equipment failure was severely delayed due to the lack of parts, lack of secondary means to hang off and move the BOPs, and because of the custom built restraints in the system. Support from MOS was extremely poor with the exception of the project manager in Singapore. MOS had no spare parts at all for the system in Singapore or the UK. The machine shop that manufactured the gears in the transfer gear box is out of business. MOS did provide drawings and exact part numbers and ENSCO was able locate bearings, Bravini drive, hydraulic motor and manufacture the gears faster then

MOS was able to provide. Craig Clarke – MOS Singapore project manager was very helpful in getting information including drawings and assisting in repair of the hoist on board the E102. Because there is no means to hang off the BOPs other then the main hoists, there was no way to move the BOPs to allow for continuation of operations (P&A). The extreme thickness of the trolley beam flange 4" and the addition of the rack mounted below the flange, no off the shelf rental or ENSCO owned chain hoists could be substituted to hoist and move the BOPs. Our existing spare hoists and all available rental hoists can tolerate a maximum trolley flange thickness of 2".

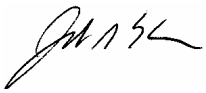
The following additional action items are to be taken to ensure that the recovery from any future failure can be minimized:

1. Order and maintain two spare Bravini Drives, Bull Gears, Drive Gears, Idler Gears, and bearings.
2. Order and maintain one spare chain complete.
3. Rig Modification to add secondary hang off for existing MOS Hoists and ability to lower on to test stump.

For future systems, the following is recommended:

1. Install cable hoist system versus chain hoist system to avoid hydrogen embrittlement and weak link potential failures.
2. Consider changing manufacturer for ENSCO 106 and ENSCO 107 hoists due to lack of adequate support from MOS and with preference for a cable hoist system.

Regards,



John Knowlton
Manager-Operations

Date: 1 June 2004

From: Ron Cancienne

Subject: Ensco MOS Hoist Failure Inspection

John / Tom / Fred,

During the recent rig visit I had occasion to investigate the failure of the MOS hoist. It appears that the cause of the failure of the forward BOP hoist is that the hoist was not released from the BOP stack. The following is what I observed while on the rig.

On Tuesday morning, 26th May the rig crew raised the stack with the hoist system approximately one (1) foot. Work needed to be done at this level before raising the stack further. They then began to raise the stack higher and at about the three (3) foot level, noises and popping sounds were heard. The operation was stopped and a visual inspection was done. It was thought at the time that the noise was coming from the chains and they were lubricated. They continued to lift the stack to about six (6) feet at which time the noise was excessive and the operation stopped. The stack load was taken off of the hoist by the draw works and lowered back down. At this point the hoists were move to the stbd side where they could be inspected. Subsequent inspection found the forward hoist's transfer gearbox damaged.

It should be noted that when the stack was raised, it was noticed that no weight was seen taken off of the tensioning system. When the stack was then lowered back down, the tensioning system took up the full weight of the stack. Thus it appears that the forward hoist has been suspending the 100 ton load of the stack for the two (2) weeks prior period. The hoist is rated at seventy five (75) ton. Thus for two weeks of rough seas and drilling operations, the forward stack was possibly stressed and this caused possible damage to the pinion drive gearbox or bearing. Consequent lifting of the stack after the damage to gearbox caused the resulting damage to the transfer box gears.

While much has been said that the damage was done over a period of time prior to this lift, it can be seen that the damage was caused only recently by the following:

- The metal filing found accumulated at the bottom of the gearbox showed no signs of rust. Close examination of the filing showed no oxidation had begun. Should this have been a case of damage accumulated over time, you would expect to see the bottom filings rusted and topped with new, clean filings. This was not found and thus suggests the damage was new.
- The parts from the cracked pinion drive gearbox were examined, these also showed no signs of rust and only begun to show signs of rust after being removed from the gearbox five days later. Also pointing to being recently damaged.
- Gear teeth wear. Examination of the Pinion gear and intermediate gear both show them to be saw-toothed shaped. The direction of the wear shows the damage to have been done while lifting the load, damage done while rotating clockwise. Note that the opposite side of the gear teeth were still flat and showed no sign of wear. The gear teeth are subject to the

300 Beach Road, #10-01/03 The Concourse Singapore 199555
Tel : (65) 63943100 Fax : (65) 63943105

same load on both sides, either lifting or lowering. If the damage was done over time, you should see damage on both faces of the gear. The damage was done to only one side, the hoisting side, which again leads to the conclusion the damage was done due to the hoist being not released from the load and then exaggerated by the subsequent hoisting of the stack.

Yes, we were lacking in having established proper maintenance on this system. However, no amount of maintenance would have prevented this incident from occurring. The rig personnel, myself and the MOS technician who visited the rig have since developed routines to be implemented for future maintenance of this system based off of recommended procedures from MOS and past experience and knowledge of the rig crew and myself.

Regards,

Ron Cancienne

Ron

RIG ALERT

June 10. 2004

Maintenance Alert – MA-113

BOP Hoist and Load Chain

CATEGORY:	**Operations**
OWNER:	**Unit Engineer – Preventive Maintenance**
OBJECTIVE:	To inspect the hoist load chain for cracks..
BACKGROUND:	**Incident:** The attached Product and Safety Information bulletins provided by J. D. Neuhaus advise of possible hydrogen embrittlement of the BOP Hoist load chain. We have had at least 2 incidents of broken chain. Additionally, ENSCO recently had a failure of a BOP Hoist transfer gearbox which may have been contributed to by snubbing off the BOP, thus keeping the chain in tension and causing cyclic loading.
IMPLEMENTATION REQUIREMENTS:	**Business Units and OIMs**: Inspect or replace (replacement is required if the chain has been in service for 5 or more years) the load chain of all BOP Hoists. Additionally, J. D. Neuhaus Models EH75 and EH100 hoists shall have the hoist chain upgraded to the lower tensile strength referenced in the attached bulletin at first opportunity (these models retain their original load capacity). Additionally, all units shall hold training on the precautions listed in the corrective actions of this MA.
USER:	**OIM**
CORRECTIVE ACTION:	All rigs with J. D. Neuhaus BOP Hoists shall immediately determine the age of the chain and: a. If the chain has been in service for less than 1 year, ensure Dn(sm)03 is being performed as required. If not, open an Alert Service Order and complete the requirements of the PM Routine. b. If the BOP Hoist, chain, or cables have been in service one or more years, rigs shall ensure the requirements of Dn(sm)03, DY17, DY19, and Df(sm)05 are current and being performed as required. c. For Models EH75 and EH100, if the chain has been in service one or more years, a Repair Service Order shall be opened to schedule/complete upgrade of the chain to the new type at first opportunity. If the chain cannot be immediately replaced, rigs shall ensure the requirements of Dn(sm)03, DY17, and DY19 are current and being performed as required. Additionally, an Alert Service Order shall be opened to immediately conduct a magnetic particle inspection of the entire length of the chain and annually thereafter until the chain is upgraded. All other rigs shall ensure the requirements of BOP Hoist Preventive Maintenance Routines DY17 and Df(sm)05 are current and being performed as required. The inspections required by this Manufacturer's Notice are being incorporated into the ENSCO PM Routines. WI-CU-PMR-DK04 is being cancelled and replaced with a new routine that mandates replacement of cables and chains in conjunction with the 5 year overhaul and recertification currently required for all BOP Hoists in routine WI-CU-PMR-Df(sm)05. All replacement chains and cables shall be OEM or documented equivalent. Additionally, all rigs shall hold training to reemphasize the below precautions previously stated in MA-076 issued October 2001 (galvanized chain is no longer recommended) to prevent hydrogen embrittlement of the chain and/or damage to the BOP Hoist: a. Do not keep BOP chain hoist in tension, use only for lifting operations, then detach. b. Keep the chain free of corrosion and properly lubricated.

AUDIT:	**Action Items:** **Rig: _____ Date _____** **Applicable Service Order Numbers: _____, _____, _____, _____, _____, _____,** **OIM's Signature: _____ Date:_____** *Electronic signature (example //s// John Doe) is acceptable* **Rig Manager:** Ensure that within two days of receipt of this Maintenance Alert, applicable rigs have opened "Alert" type Service Orders to perform the above actions, filled in the appropriate sections above, and returned a filled out copy of this Maintenance Alert to the Unit PM Engineer and Corporate Manager, PM Standards (jstclair@enscous.com). **Rig Manager's Signature: _____ Date: _____** *Electronic signature (example //s// John Doe) is acceptable*

J.D. NEUHAUS

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Helmut Stahnke
Phone: +49 2302 208-151
e-mail: info@jdn.de
Our ref.:
st

02. April 2004

ATTENTION DANGER RISK OF ACCIDENT AND INJURY

PRODUCT & SAFETY INFORMATION FOR IMMEDIATE ATTENTION !

Dear Sirs,

Recent information from our market observations have shown, that the 32mm Chain, Id No. 73137, being installed in the following monorails supplied to you carries a serious risk:

EH 75, Nominal Load 75 tons (75.000 kg)
Serial No. 8700019-8700020, YOM 1997
Serial No. 8700021-8700022, YOM 1998
} ENSCO

and

EH 125, Nominal load 125 US ton (113.400 kg)
Serial No. 8700005- 870006, YOM 1997
Serial No. 8700009- 870010, YOM 1997
Serial No. 8700030- 870031, YOM 1999
Serial No. 8700044- 870045, YOM 2001,

The chain, due to its high tensile strength with 1400N/mm², is endangered of hydrogen embrittlement - a possible cause of a sudden chain-breaking. This hydrogen embrittlement is created through corrosion of the chain surface in combination with the existence of recombination poisons in the atmosphere, as it may occur in offshore environments.

Please immediately cease further operation of the monorail hoists concerned until an intensive inspection of the entire (!) chain, incl. end links, for corrosion and cracks had been done by a specialist.

Inspected chains with a no-fault result must be entirely protected with a corrosion protection lubricant, before putting the hoists back into operation.

...2

We offer you a replacement chain with lower tensile strength, which is resistant to such hydrogen embrittlement.
With a chain dimensioning according to API Spec. 8A the EH 125 can be operated with this replacement chain up to loads of max. 110 US ton (100.000 kg).
The EH 75 will have the same load capacity with the new chain.

Please contact us immediately for further action.

With best regards

J.D. Neuhaus GmbH & Co. KG

i. V.

Helmut Stahnke
(QA Manager)

J D N L P Safety Information May 14, 2004

Subject: 31.5 mm Hoist Load Chain

Models effected: EH 75, EH 100.

1. **Potential problems with Hoist Load Chain**

   We have observed that in certain drilling environments that there are compounds present which can affect the integrity of our 31.5 mm hoist load chain. These compounds inhibit the release of hydrogen into the atmosphere when oxidation takes place on the chain. The hydrogen instead is absorbed into the chain which can cause hydrogen enbrittlement.

2. **Risks resulting from hydrogen enbrittlement**

   Hydrogen enbrittlement can cause cracks to form in the chain surface. Over time these cracks can grow and cause chain failure.

3. **To avoid risks**

   Inspect your chain carefully for any cracks; particularly if any corrosion exists on your load chain.

   For additional information on chain maintenance, lubrication, specifications or any other information contact us or your local distributor.

4. **Check Your Hoists.**

   Lubricate the chain on a regular basis to minimize corrosion.

   For chain five years old or older we recommend that you replace your load chain with new chain which has a lower surface hardness and is now impervious to hydrgen embrittlement.

If you have any questions please contact us.

TASK M 06

TRANSFER GEARBOX – LUBRICATE

MATERIALS			
ITEM	DESCRIPTION	QTY	PT NO.
1	Rocol Tuflube Allweather Grease	As req'd	

SAFETY: ERECT WARNING SIGNS

1 Read the General Guidance and Safety Notes in the preliminary pages of the Operating Instructions.

2 Obtain a permit to work.

3 Move the hoist onto the maintenance trolley.

4 Shut off the hydraulic supply to the control console. Dissipate all residual hydraulic pressure in the system by operating the lever controls.

WARNING:

WHEN USING SOLVENTS FOLLOW COSHH REGULATIONS PERTAINING TO THE PRODUCT.

5 Remove the cover from the transfer gearbox.

6 Brush off any loose dirt or corrosion.

7 Apply a thin coat of fresh grease to the gear teeth on the pinion, idler gear and the bull gear.

8 Replace the cover.

TASK COMPLETED

OPERATIONS & WELL DATA ANALYSIS

Safety & Incident Reports

Esso Australia Pty Ltd
WEST WHIPTAIL-1. SUMMARY OF INCIDENTS

#	Date	Classification	Incident
1	10 May 2004	Unsafe Act	The cement hose was being lifted from the M/V Ray J Hope back to the rig. As the webbing sling holding the end of the cement hose approached the cradle, it was observed that the **sling was not properly seated in the hook**. It was half in and half out and resting on the tip of the hook. But it never fell out. The latch will not lock unless it can completely close.
2	11 May 2004	Near Miss	A short stiff new sling was used to lift a lifting cap with the crane stinger. The new sling was threaded through the handle of the lifting cap and both eyes were lached in the stinger hook in an accepted cradle type rigging. A tag line was passed through the lift cap handle. The crane picked up the lift cap off the starboard cantilever. When the lift cap was about 3½ to 4 meters above the deck, one of the sling eyes came out of the hook and the **lifting cap fell to the deck.** Two hands were standing about two meters from where the lifting cap fell. Although nobody saw the actual drop, it is felt that the new sling had enough twist in it that the weight of the lifting cap caused one eye to rotate and open the hook latch.
3	12 May 2004	Non-Work Related	Employee was sitting in recreation room when he felt a lump between his thumb and index finger on right hand. Attended medic where a **small splinter was removed**. Area was washed with antiseptic. Employee does not recall any incident where the splinter may have come from during his shift.
4	12 May 2004	First Aid	Utility person reported to Medic with a **swollen thumb**. Utility person described that it had been sore for a few days but not swollen. Employee can not recall any incident that may have attributed to the condition.
5	13 May 2004	First Aid	AHV Ray J Hope was underway from BBMT to Mackerel. Man was bridge lookout, and went on to the deck fwd of the bridge. He lost his footing and **rolled** badly on his left **ankle**. The deck was dry and paint in good condition. The man was wearing sneakers which was appropriate and safe footwear for the time and operation.
6	16 May 2004	Near Miss	The Manrider **winch cable parted** after it became caught behind the safety line clamp on the TDS Blower hose. The TDS was in the retracted position and was being lowered in preparation of latching the next stand of drillpipe. The 10mm Manrider cable parted 9.5m from where it was secured. The Manrider winch cable had been tied off to the cement manifold spooling as it was not in use. The slackness in the cable was blown up against the Top drive blower hose. Just prior to the cable parting, a man noticed that it was caught behind the safety line clamp. The operation was shut down while the incident was investigated, and the Safety Lanyard inertia reel was removed from the Derrick Crown as the safety line was kinked and had broken strands. NB: the Manrider winch had not been used for several days.

Esso Australia Pty Ltd
WEST WHIPTAIL-1. SUMMARY OF INCIDENTS

#	Date	Classification	Incident
7	16 May 2004	First Aid	On Sunday evening welder noticed that left eye felt as if there was a foreign particle present. There was no dis-comfort. Jobs that day included grinding paint from deck, to weld down Schlumberger Power generator. This location was adjacent to a ventilator stack and was windy. No irritation to the eye over night, however on Monday evening he check his eye in the mirror, discovered black speck in left eye and reported to the medic. Proper PPE was being worn at all times. Medic observed speck of **foreign material in left eye** on outer cornea. Flushed eye with saline solution. Placed patch over eye. No pain reported. Did not attempt to remove. Will fly in AM for doctor exam.
8	25 May 2004	Spill	During backloading operations, the end of a bundle of pipe came in contact with hydraulic line behind guard rail and ruptured it. 10 - 15 ltr of **hydraulic oil discharged** on deck before line was isolated. Spill mopped up with absorbent material. No spill overboard.
9	30 May 2004	First Aid	Crane driver had just come on shift and climbed to the starboard aft crane to get his P.M. list. When he descended the ladder and stepped onto the deck, he stood on the fuel fill-up hose and **twisted his right ankle**. This fuel hose is used to fill the crane with diesel and is on a roll up reel. The hose was rolled up as far as possible, but an extension had been fitted to reach the pipedeck to refuel third party equipment on the previous operators job. The extension was joined with a coupling which would not fit through the fairlead on the hose reel, so the extra hose was left on the deck by the reel. After the Incident the extension was been removed from the hose to prevent reoccurence. The IP had a support bandage fitted and went back to work.
10	03 June 2004	Near Miss	Starboard aft crane was connected to 30" ST2 running tool positioned in the Vdoor. Relief crane operator was observing and talking with crane operator prior to tour changeover. Wind was starting to gust from 30-44 knots when running tool was connected onto crane. Crane operator stopped engine and took foot off slew brake in preparation to change out operator. **Crane slew** to port side due to wind. Running tool was pulled out of V-door striking light on Port leg jack rack.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 10-05-2004 **Time: 1930**
Date Reported to ExxonMobil: 10-05-2004 **Time: 2100**

Country/Location: Australia/Bass Strait **Rig Name: Ensco 102** **Rig Phone: 61 3 5142 2885**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☐ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☐ Near Miss *(includes SNM)*	☒ Unsafe Act or Condition	☐ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ Fire / Explosion ☐ Vehicle ☐ Property Damage / Loss ☐ Loss of Consciousness

Description of Incident: *One sentence.*	Webbing sling not properly seated in hook
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	The cement hose was being lifted from the M/V Ray J Hope back to the rig. As the webbing sling holding the end of the cement hose approached the cradle, Robbo observed that the sling was not properly seated in the hook. It was half in and half out and resting on the tip of the hook. But it never fell out. The latch will not lock unless it can completely close.

Associated Activity: Blow cement from boat to rig **Area of Rig:** bulk hose area

Weather Conditions : Good **Wind Speed: 10 kt** **Wind Direction:** SE **Temp:** 12° C

Estimate equipment / property damage:	*Self-Supervised Activity?*	*Was Incident Witnessed?*
☐ < $50K ☐ ≥ $50K	☐ Yes ☐ No	☒ Yes ☐ No

2. If Injury or Illness

☐ Employee ☐ Contractor ☐ Other **Drug Test Required: Select option**

Name: **Company:** **Job Position:**

Nature of Injury or Illness:

Medical Response Taken:

Years Experience with Company:		**Years Experience in Job:**	
Days into Hitch:		**Hours into Shift:**	**Hours Slept in Last 48 Hours:**

3. Incident Severity

Actual Severity: Level 0 *Drop-Down Box* **Potential Severity: Level 1** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ Ask Why 5 Times	☐ TapRooT® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ Other RCA Tool **Describe:**

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	Party Responsible	Target Date
1. Immedialty talked to vessel. They were sorry it happened.	Crane op	10-05-04
2. OIM and Esso Supervisor talked to Vessel Master who will meet with crews	Drlg Supv	10-05-04
3. Ray Wyld will go to the vessel and talk with crews weather permitting	Ray Wyld	11-05-04
4. General meeting with deck crew on rig to recreate incident and discuss same	OIM	10-05-04
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By: Name _____ Signature _____ Date _____

Closed Out By: Follow Up Team Lead Name _____ Signature _____ Date _____

Name:	Title:	Name:	Title:
Prepared By: George Sharkey	Drlg Supv	**Reviewed By:**	
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 11-05-04 **Time: 2359**
Date Reported to ExxonMobil: 12-05-04 **Time: 0003**

Country/Location: Australia/Bass Strait **Rig Name: Ensco 102** **Rig Phone: 61 3 5142 2880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ **LTI**	☐ **RWI**	☐ **MTI**	☐ **First Aid**	☐ **Non-First Aid**	☐ **Safety Other / HLV** (High Learning Value)
☐ **SIE**	☐ **Non-SIE**	☒ **Near Miss** *(includes SNM)*	☐ **Unsafe Act or Condition**	☐ **Non-Work Related**	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ **Fire / Explosion** ☐ **Vehicle** ☐ **Property Damage / Loss** ☐ **Loss of Consciousness**

Description of Incident: *One sentence.*	Sling holding lifting cap came out of stinger sling and fell to cantilever deck
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	A short stiff new sling was used to lift a lifting cap with the crane stinger. The new sling was threaded through the handle of the lifting cap and both eyes were lached in the stinger hook in an accepted cradle type rigging. A tag line was passed through the lift cap handle. The crane picked up the lift cap off the starboard cantilever. When the lift cap was about 3½ to 4 meters above the deck, one of the sling eyes came out of the hook and the lifting cap fell to the deck. Two hands were standing about two meters from where the lifting cap fell. Although nobody saw the actual drop, it is felt that the new sling had enough twist in it that the weight of the lifting cap caused one eye to rotate and open the hook latch.

Associated Activity:	Moving tools from the tool stores to the cantilever	**Area of Rig:**	Starboard cantilever

Weather Conditions : Windy **Wind Speed: 35 kts** **Wind Direction:** South **Temp:** 12° C

Estimate equipment / property damage: ☐ **< $50K** ☐ **≥ $50K**	***Self-Supervised Activity?*** ☒ **Yes** ☐ **No**	***Was Incident Witnessed?*** ☐ **Yes** ☒ **No**

2. If Injury or Illness

☐ **Employee**	☐ **Contractor**	☐ **Other**	**Drug Test Required: Select option**
Name:	**Company:**		**Job Position:**
Nature of Injury or Illness:			
Medical Response Taken:			
Years Experience with Company:		**Years Experience in Job:**	
Days into Hitch:	**Hours into Shift:**		**Hours Slept in Last 48 Hours:**

3. Incident Severity

Actual Severity: Level 0 *Drop-Down Box* **Potential Severity: Level 2** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ Ask Why 5 Times	☐ TapRooT® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ Other RCA Tool **Describe:**

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	Party Responsible	Target Date
1. Crane operator, OIM, Esso, Safety, and Deck Hands met and discussed	OIM	12-05-04
2. Determined that rigging was proper	OIM	12-05-04
3. Is there at better rigging?	Rig Manager	15--05-04
4. Should gumby hooks be used instead of stingers?	OIM	15--5-04
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By: Name | Signature | Date

Closed Out By: Follow Up Team Lead Name | Signature | Date

Name:	Title:	Name:	Title:
Prepared By: George Sharkey	Drlg Supv	**Reviewed By:**	
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 12-05-04 **Time: 06:00**
Date Reported to ExxonMobil: 12-05-04 **Time: 06:30**

Country/Location: Australia **Rig Name: ENSCO 102** **Rig Phone: 0351422880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☐ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☐ Near Miss *(includes SNM)*	☐ Unsafe Act or Condition	☒ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
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First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
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Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ Fire / Explosion ☐ Vehicle ☐ Property Damage / Loss ☐ Loss of Consciousness

Description of Incident: *One sentence.*	Splinter removed from webbing between thumb and index finger
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	Employee was sitting in recreation room when he felt a lump between his thumb and index finger on right hand. Attended medic where a small splinter was removed. Area was washed with antiseptic. Employee does not recall any incident where the splinter may have come from during his shift.
Associated Activity:	Off duty **Area of Rig:** Quarters

Weather Conditions : **Wind Speed:** **Wind Direction:** **Temp:**

Estimate equipment / property damage: ☐ < $50K ☐ ≥ $50K	***Self-Supervised Activity?*** ☐ Yes ☐ No	***Was Incident Witnessed?*** ☐ Yes ☐ No

2. If Injury or Illness

☐ Employee	☒ Contractor	☐ Other	**Drug Test Required: No**
Name: Andrew Quaine	**Company: Integrated**		**Job Position: Roustabout**

Nature of Injury or Illness: Splinter

Medical Response Taken: Remove and wash area

Years Experience with Company:	**13 days**	**Years Experience in Job:**	**13 days**		
Days into Hitch:	**13**	**Hours into Shift:**	**10**	**Hours Slept in Last 48 Hours:**	**12**

3. Incident Severity

Actual Severity: Select Level 0-5 *Drop-Down Box* **Potential Severity: Select Level 0-5** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ Ask Why 5 Times	☐ TapRooT® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ Other RCA Tool **Describe:**

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	Party Responsible	Target Date
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By:	Name	Signature	Date
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name:	Title:	Name:	Title:
Prepared By: T.J.Paltridge	Operations Supervisor	**Reviewed By:** F.W.Kratzer	Operations Superintendent
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 12-05-04 **Time: 11:00**
Date Reported to ExxonMobil: 12-05-04 **Time: 11:00**

Country/Location: Australia **Rig Name: ENSC 102** **Rig Phone: 0351422880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☒ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☐ Near Miss *(includes SNM)*	☐ Unsafe Act or Condition	☐ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ Fire / Explosion ☐ Vehicle ☐ Property Damage / Loss ☐ Loss of Consciousness

Description of Incident: *One sentence.*	Base of right hand thumb swollen.
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	Utility person reported to Medic with a swollen thumb. Utility person described that it had been sore for a few days but not swollen. Employee can not recall any incident that may have attributed to the condition.

Associated Activity: N/A **Area of Rig:** Quarters

Weather Conditions : **Wind Speed:** **Wind Direction:** **Temp:**

Estimate equipment / property damage: ☐ < $50K ☐ ≥ $50K
Self-Supervised Activity? ☒ Yes ☐ No
Was Incident Witnessed? ☐ Yes ☒ No

2. If Injury or Illness

☐ Employee ☐ Contractor ☐ Other **Drug Test Required: No**

Name: Sonia Skvor **Company: Intergrated** **Job Position: Utility person**

Nature of Injury or Illness: Swollen righ thumb.

Medical Response Taken: R.I.C.E.

Years Experience with Company:	**14 days**	**Years Experience in Job:**	**14 days**		
Days into Hitch:	**14 days**	**Hours into Shift:**	**4**	**Hours Slept in Last 48 Hours:**	**16**

3. Incident Severity

Actual Severity: **Select Level 0-5** *Drop-Down Box* **Potential Severity:** **Select Level 0-5** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ **Ask Why 5 Times**	☐ **TapRooT**® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ **Other RCA Tool** **Describe:**

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	**Party Responsible**	**Target Date**
1. Investigate whether the broom and mop handles have attributed to this condition	Ensco	14/05
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By:	Name	Signature	Date
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name:	**Title:**	**Name:**	**Title:**
Prepared By: T.J.Paltridge	Drilling Supervisor	**Reviewed By:** F.W.Kratzer	Operations Superintendent
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 13 May 2004 **Time: 0200**
Date Reported to ExxonMobil: **Time:**

Country/Location: Australia **Rig Name: Ray J Hope** **Rig Phone: 0428 880746**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☒ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☐ Near Miss *(includes SNM)*	☐ Unsafe Act or Condition	☐ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ Fire / Explosion ☐ Vehicle ☐ Property Damage / Loss ☐ Loss of Consciousness

Description of Incident: *One sentence.*	Man twisted anckle whilst walking on bridge deck.
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	Vessel was underway from BBMT to Mackeral. Man was bridge lookout, and went on to the deck fwd of the bridge. He lost his footing and rolled badly on his left ankle. The deck was dry and paint in good condition. The man was wearing sneakers which was appropriate and safe footwear for the time and operation. IP being transferred onshore on 15:00 flt 15 May for precautionary X-Ray. IP being met at Heliport by Tidewater Port Captain Jason Marsh

Associated Activity: **Area of Rig:** Bridge deck fwd

Weather Conditions : **Wind Speed: 10 knts** **Wind Direction:** ssw **Temp:** 12

Estimate equipment / property damage:	*Self-Supervised Activity?*	*Was Incident Witnessed?*
☐ < $50K ☐ > $50K	☒ Yes ☐ No	☐ Yes ☒ No

2. If Injury or Illness

☐ Employee	☒ Contractor	☐ Other

Drug Test Required: Select option

Name: Terry McManus **Company: Tidewater** **Job Position: Seaman**

Nature of Injury or Illness: ankle badly bruised and swollen

Medical Response Taken: Ice pack 4 hourly and compression bandage

Years Experience with Company:	1	**Years Experience in Job:**	6		
Days into Hitch:	1	**Hours into Shift:**	2	**Hours Slept in Last 48 Hours:**	16

3. Incident Severity

Actual Severity: **Level 0** *Drop-Down Box* **Potential Severity:** **Level 1** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ **Ask Why 5 Times**	☐ **TapRooT**® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ **Other RCA Tool** **Describe:**

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	**Party Responsible**	**Target Date**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By:	Name	Signature	Date
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name: **Title:**	**Name:** **Title:**
Prepared By: J Gauci - Master RJ Hope A.Bassett - SHOT Co-ordinator	**Reviewed By:**
Signature:	**Signature:**

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 16 May 2004 **Time: 09:10**
Date Reported to ExxonMobil: 16 May 2004 **Time: 09:10**

Country/Location: Australia **Rig Name: ENSCO 102** **Rig Phone: 61 3 422880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☐ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☒ Near Miss *(includes SNM)*	☐ Unsafe Act or Condition	☐ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ **Fire / Explosion** ☐ **Vehicle** ☐ **Property Damage / Loss** ☐ **Loss of Consciousness**

Description of Incident: *One sentence.*	Manrider winch cable was broken when it became entangled on the Topdrive.
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	The Manrider winch cable parted after it became caught behind the safety line clamp on the TDS Blower hose. The TDS was in the retracted position and was being lowered in preparation of latching the next stand of drillpipe. The 10mm Manrider cable parted 9.5m from where it was secured. The Manrider winch cable had been tied off to the cement manifold spooling as it was not in use. The slackness in the cable was blown up against the Top drive blower hose. Just prior to the cable parting, a man noticed that it was caught behind the safety line clamp. The operation was shut down while the incident was investigated, and the Safety Lanyard inertia reel was removed from the Derrick Crown as the safety line was kinked and had broken strands. NB: the Manrider winch had not been used for several days.

Associated Activity: Tripping out **Area of Rig:** Rig floor

Weather Conditions : Fine **Wind Speed: 20-25 Gusting to 35 kts** **Wind Direction:** S/W **Temp:** 18 deg C

Estimate equipment / property damage:	*Self-Supervised Activity?*	*Was Incident Witnessed?*
☒ < $50K ☐ ≥ $50K	☒ Yes ☐ No	☒ Yes ☐ No

2. If Injury or Illness

☐ Employee	☐ Contractor	☐ Other	**Drug Test Required: Select option**
Name:	**Company:**		**Job Position:**
Nature of Injury or Illness:			
Medical Response Taken:			
Years Experience with Company:		**Years Experience in Job:**	
Days into Hitch:	**Hours into Shift:**		**Hours Slept in Last 48 Hours:**

3. Incident Severity

Actual Severity: **Level 0** *Drop-Down Box* **Potential Severity:** **Select Level 0-5** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ **Ask Why 5 Times**	☐ **TapRooT**® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ **Other RCA Tool** **Describe:**

Key Findings / Causal Factors

1. Equipment Difficulty/ Design Spec/ Problem not Anticipated.

Cable was not in full tension, allowing slack to blow across the derrick

Root Causes

1. Communication NI Hazards not communicated
2. Pre Job Briefing NI Hazard not identified / Discussed
3. Crew Teamwork NI Crew not aware of hazard

Tugger line was not in full tension

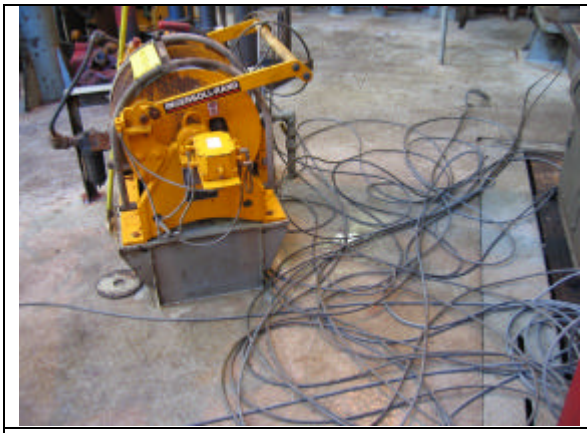
Corrective Actions (Do they address root causes identified above?)	**Party Responsible**	**Target Date**
1. Secured area and checked tension on all other tugger lines. Inspect TDS for damage	ENSCO OIM	16 May 2004
2. Discussed with drill crew importance of looking up at all times when travelling assy is moving	ENSCO	16 May, 2004
3. Driller to make pre-tour inspection of rig floor equipment and tension on all tuggers before he takes over the operation from his relief	ENSCO OIM	27 May, 2004
4. Train and educate all crews to observe all lines in Derrick while travelling assembly is moving	ENSCO Driller	28 May 2004
5. Educate and train drill crew personnel to pull correct tension on all tugger lines	ENSCO Driller	28 May, 2004
6.		
7.		
8.		
9.		
10.		

Accepted By:	Name	Signature	Date
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name:	**Title:**	**Name:**	**Title:**
Prepared By:		**Reviewed By:** F. Kratzer	Operations Supt.
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

TUGGER INCIDENT

TDS and Blower hose	Tugger wire rope on the deck
	
Tugger wire laying on the rig floor	Blower Hose safety clamp

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 16-05-04 **Time: unk**
Date Reported to ExxonMobil: 17-05-04 **Time: 2000**

Country/Location: Australia **Rig Name: Ensco 102** **Rig Phone: 03 5142 2880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☒ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☐ Near Miss *(includes SNM)*	☐ Unsafe Act or Condition	☐ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ **Fire / Explosion** ☐ **Vehicle** ☐ **Property Damage / Loss** ☐ **Loss of Consciousness**

Description of Incident: *One sentence.*	Rig welder reported foreign matter in eye
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	On Sunday evenining welder noticed that left eye felt as if there was a forigne particle present. There was no dis-comfort. Jobs that day included grinding paint from deck, to weld down Schlumberger Power generator. This location was adjacient to a ventilator stack and was windy. No irritation to the eye over night, however on Monday evening he check his eye in the mirror, discovered black speck in left eye and reported to the medic. Proper PPE was being worn at all times. Medic observed speck of foreign material in left eye on outer cornea. Flushed eye with saline solution. Placed patch over eye. No pain reported. Did not attempt to remove. Will fly in AM for doctor exam.

Associated Activity:	Grinding	**Area of Rig:**	Port side elevated platform

Weather Conditions : Mild **Wind Speed: 20** **Wind Direction:** NE **Temp:** 15

Estimate equipment / property damage: ☐ < $50K ☐ ≥ $50K	***Self-Supervised Activity?*** ☒ Yes ☐ No	***Was Incident Witnessed?*** ☐ Yes ☒ No

2. If Injury or Illness

☐ Employee	☒ Contractor	☐ Other	**Drug Test Required: Select option**
Name: Martin Scott	**Company: Integrated**		**Job Position: Welder**

Nature of Injury or Illness: foreign material in left eye

Medical Response Taken: flushed eye at rig, transport on next available transport to doctor for exam

Years Experience with Company:	**5 days**	**Years Experience in Job:**	**21**		
Days into Hitch:	**5**	**Hours into Shift:**	**unk**	**Hours Slept in Last 48 Hours:**	**15**

3. Incident Severity

Actual Severity: Select Level 0-5 *Drop-Down Box* **Potential Severity: Select Level 0-5** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☒ Ask Why 5 Times	☐ TapRooT® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ Other RCA Tool **Describe:**

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	Party Responsible	Target Date
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By:	Name	Signature	Date
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name:	Title:	Name:	Title:
Prepared By: Roger Bain	Drilling Supv	**Reviewed By:**	
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

D-020 Spill Report

1. General Information:

Date:	25/05/2004	**Time:**	17:30
Rig Name:	Ensco 102	**Location/Country:**	Bass Strait / Australia
Well Name:	West Whiptail #1	**Reported By:**	Master of Vessel
Reported To:	Barry Steel	**Date/Time:**	26/05/2004 06:00
Activity:	Backloading pipe		

If regulatory authority notified: **Agency Name:** **Case/ID#:**

2. Spill Information:

Material:	Hydraulic oil	**Color:**	Amber
Est. Volume:	10 - 15 liter	**Sheen Length:**	**Width:**

If Drilling Fluid Spill:

Water-Based or Non-Aqueous Fluid (NAF: Diesel/Mineral Oil/Synthetic) **%NAF**

Spill Source: Ruptured hydraulic line

Description: During backloading operations, the end of a bundle of pipe came in contact with hydraulic line behind guard rail and ruptured it. 10 - 15 ltr of hydraulic oil diccharged on deck before line was isolated.

3. Spill Status:

Action Taken: Spill mopped up with absorbent material. No spill overboard.

Ignition Sources Eliminated: ☐ **Environmentally Sensitive Areas Threatened:** ☐ **Y** ☐ **N**

Areas Threatened: **Miles:**

Wind Speed:	15 -20 kts	**Direction:**	W.S.W.	**Sea State:**	slight

4. Surveillance Data:

Date	Time	Latitude	Longitude	Description	Reported By

5. Additional Comments:

This hydraulic line runs aft to the starboard stern capstan. Line was repaired and put back into service.

E-mail or Fax To: **Operations Superintendent**

Distribute To: **Field Drilling Manager, Operations Manager, Drilling Manager, SH&E Manager and EMEC, EMPC or EMDC Senior In-Country Manager**

6. Incident Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ Ask Why 5 Times	☐ TapRooT® *Required for Level 2 Incident and greater.*	☐ Other Describe:

Key Findings / Causal Factors

1.

Root Causes

1.

Corrective Actions (Do they address root causes identified above?)	Party Responsible	Target Date
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By: _____ (Name) _____ (Signature) _____ (Date)

Closed Out By: _____ (Follow Up Team Lead Name) _____ (Signature) _____ (Date)

Name:	Title:	Name:	Title:
Prepared By: Barry Steel	Drlg Supervisor	**Reviewed By:**	
Signature:		**Signature:**	

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 30-05-04 **Time: 12:10**
Date Reported to ExxonMobil: 30-05-04 **Time: 15:00**

Country/Location: Australia/Bass Strait **Rig Name: Ensco 102** **Rig Phone: 2880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ LTI	☐ RWI	☐ MTI	☒ First Aid	☐ Non-First Aid	☐ Safety Other / HLV (High Learning Value)
☐ SIE	☐ Non-SIE	☐ Near Miss *(includes SNM)*	☐ Unsafe Act or Condition	☐ Non-Work Related	

Incident Classifications Basic Definition:
LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?
☐ Fire / Explosion ☐ Vehicle ☐ Property Damage / Loss ☐ Loss of Consciousness

Description of Incident: *One sentence.*	Crane driver twisted his right anlke.
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	Crane driver had just come on shift and climbed to the starboard aft crane to get his P.M. list. When he decended the ladder and stepped onto the deck, he stood on the fuel fill-up hose and twisted his right ankle. This fuel hose is used to fill the crane with diesel and is on a roll up reel. The hose was rolled up as far as possible, but an extension had been fitted to reach the pipedeck to refuel third party equipment on the previous operators job. The extension was joined with a coupling which would not fit through the fairlead on the hose reel, so the extra hose was left on the deck by the reel. After the Incident the extension was been removed from the hose to prevent reoccurence. The IP had a support bandage fitted and went back to work.

Associated Activity:	Decending crane access ladder.	**Area of Rig:**	Starboard crane base.

Weather Conditions : Cold/windy **Wind Speed: 25/30 kts** **Wind Direction:** W **Temp:** 12*C

Estimate equipment / property damage: ☐ < $50K ☐ ≥ $50K	***Self-Supervised Activity?*** ☐ Yes ☐ No	***Was Incident Witnessed?*** ☐ Yes ☒ No

2. If Injury or Illness

☐ Employee	☒ Contractor	☐ Other	**Drug Test Required: Select option**
Name: Dean Gisby	**Company: Integrated**		**Job Position: Crane Driver**

Nature of Injury or Illness: Twisted Right Ankle

Medical Response Taken: Support Bandage

Years Experience with Company:	**2 months**	**Years Experience in Job:**			
Days into Hitch:	**13**	**Hours into Shift:**	**10 mins.**	**Hours Slept in Last 48 Hours:**	**18**

3. Incident Severity

Actual Severity: Level 0 *Drop-Down Box* **Potential Severity: Level 1** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ Ask Why 5 Times	☐ TapRooT® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ Other RCA Tool **Describe:**

Key Findings / Causal Factors

1. Hose could not be rolled onto reel due to coupling at extension join not fitting through fairlead on reel.
2. Hazard had been previously identified but not rectified.

Root Causes

1. Hose too short to reach pipedeck.

Corrective Actions (Do they address root causes identified above?)	Party Responsible	Target Date
1. Extension removed from hose.	Ensco	30/05/04
2. Incident reviewed at pretour meeting as an example of Hazards that need to be identified and followed up to conclusion.	Supervisors	Ongoing
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

	Name	Signature	Date
Accepted By:			
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name:	Title:	Name:	Title:
Prepared By: Barry Steel		**Reviewed By:** F. Kratzer	Supt
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

D-010 Incident Report Form

1. General Information

Date of Incident: : 03-06-04 **Time: 16:00**
Date Reported to ExxonMobil: 03-06-04 **Time: 16:30**

Country/Location: Australia / Bass Strait **Rig Name: Ensco 102** **Rig Phone: 2880**

Current Classification: *(Highlight "checkbox" of Classification & Press F-1 for a more detailed definition)*

☐ **LTI**	☐ **RWI**	☐ **MTI**	☐ **First Aid**	☐ **Non-First Aid**	☐ **Safety Other / HLV** (High Learning Value)
☐ **SIE**	☐ **Non-SIE**	☒ **Near Miss** *(includes SNM)*	☐ **Unsafe Act or Condition**	☐ **Non-Work Related**	

Incident Classifications ***Basic*** ***Definition:***

LTI- At least one lost workday (after day of incident)
RWI- Unable to perform one or more routine job functions
MTI- Treatment beyond First Aid without restriction /lost time
First Aid- Any of 14 treatments outlined in SMP & IIHL, 2.3.2
Non-First Aid- No treatment but pain, bruising, soreness, etc
SIE- All Non-Immune (expat) Malaria; Other SIE Illnesses
Non SIE- Any Semi-Immune (national) Malaria not upgraded to SIE
Near Miss- Actual Incident that did NOT result in Injury, Illness, Spill
Unsafe Act or Condition- Potential Near Miss or SHE Incident
Non-Work Related- SHE Incident NOT deemed to be work related
Safety Other / HLV - For Sharing of SH&E Info not classified above.

Did Incident involve any of the following?

☐ **Fire / Explosion** ☐ **Vehicle** ☒ **Property Damage / Loss** ☐ **Loss of Consciousness**

Description of Incident: *One sentence.*	Starboard aft crane weather cocked in strong wind and load struck deck light.
Detailed Description: (include effect on operations and any damage to company, contractor owned facilities and/or equipment)	Crane operator was connected to 30" ST2 running tool positioned in the Vdoor. Relief crane operator was observing and talking with crane operator prior to tour changeover. Wind was starting to gust from 30-44 knots when running tool was connected onto crane. Crane operator stopped engine and took foot off slew brake in perparation to change out operator. Crane slew to port side due to wind. Running tool was pulled out of V-door striking light on Port leg jack rack.

Associated Activity: Removing 30" conductor running tool from rig floor **Area of Rig:** Vdoor

Weather Conditions : **Wind Speed: 40** **Wind Direction:** NW **Temp:** 18

Estimate equipment / property damage: ☒ **< $50K** ☐ **≥ $50K**	***Self-Supervised Activity?*** ☐ **Yes** ☐ **No**	***Was Incident Witnessed?*** ☒ **Yes** ☐ **No**

2. If Injury or Illness

☐ **Employee**	☐ **Contractor**	☐ **Other**	**Drug Test Required: Select option**
Name:	**Company:**		**Job Position:**
Nature of Injury or Illness:			
Medical Response Taken:			
Years Experience with Company:		**Years Experience in Job:**	
Days into Hitch:	**Hours into Shift:**		**Hours Slept in Last 48 Hours:**

3. Incident Severity

Actual Severity: **Select Level 0-5** *Drop-Down Box* **Potential Severity:** **Select Level 0-5** *Drop-Down Box*

Level 0 Near Miss, Minor, First Aid only, no Restricted Work
Level 1* OSHA recordable, Restricted Work < 2 days, prescription medication, single stitch cuts
Level 2* Restricted Work < 10 days, serious bruises or abrasions, cuts that require stitches
Level 3* Restricted Work < 30 days, fractures, hospitalization, lost time
Level 4* Restricted Work > 30 days, amputations, disability
Level 5* Complete disability or fatality

* Incident/Near Miss Investigation Summary (Section 4) should be completed for ALL incidents and is required for Incidents with Actual Incident Severity Level of 1 or greater.

ExxonMobil Development

EMDC Drilling Incident Report Form D-010

4. Incident / Near Miss Investigation Summary

Root Cause Analysis Tool *Attach RCA Forms.*	☐ **Ask Why 5 Times**	☐ **TapRooT**® *Required for **Actual,** and recommended for **Potential**, **Severity Level 3 and greater**.*	☐ **Other RCA Tool** **Describe:**

Key Findings / Causal Factors

1. Did not have a full understanding of the crane braking system

Root Causes

1. Weather considerations not taken into account when changing over relief
2. Park brake not applied when engine stopped

Corrective Actions (Do they address root causes identified above?)	**Party Responsible**	**Target Date**
1. Crane operator need to be trained for full understanding of crane systems	OIM/BE	Ongoing
2. Parking brake should always be applied when engine is stopped, notice put in cranes	OIM/BE	Done
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Accepted By:	Name	Signature	Date
Closed Out By:	Follow Up Team Lead Name	Signature	Date

Name:	**Title:**	**Name:**	**Title:**
Prepared By:		**Reviewed By:**	
Signature:		**Signature:**	

Distribution: Field Drilling Manager, Operations Manager, Field Drilling Manager - SH&E, FDT File, SH&E File
Note: Approved Original should remain in FDT File; final electronic D-010 to be emailed to SH&E.

Risk Assessment Follow Up

ESSO AUSTRALIA PTY. LTD.
WEST WHIPTAIL-1

RISK ASSESSMENT FOLLOW-UP

A Risk Assessment Follow-up on West Whiptail-1 has identified no significant incidents occurred which should be considered as a future Risk Assessment Hazard Scenario.

Esso Australia Pty Ltd

Hazard Identification and Risk Assessment

of

EAPL Jackup Project 2004

Issue Date : 10/03/2004

Project : EAPL Jackup Project 2004

EXECUTIVE SUMMARY

A project risk assessment of the generic drilling program planned for the Ensco 102 was completed on January 23, 2004. It was completed in accordance with standard ExxonMobil requirements. A total of 28 events were reviewed and their risk levels estimated. Three of the standard EMDC Drilling events for a "standard jack-up drilling operation" were assessed as not being applicable. These are detailed later in the report.

NOTE: Subsequent to the workshop, event 29 was added to match the full EMDC set of events. This event; "Workboat incident away from rig", was reviewed by circulation.

There were no events with higher risk health/safety/environment consequences identified. Three events have been assessed as having all medium risk consequences. Six events have all consequences assessed as low risk. The remaining 20 events all have risks in both medium and low risk categories.

Of the consequences evaluated. consequence types were:

- H&S 47
- Public disruption 2
- Environment 12
- Financial 37

A total of eight action items were identified and action parties assigned.

Report Endorsed: EAPL Drilling Operations Superintendent

Report Approved: EAPL Drilling Manger

Project : EAPL Jackup Project 2004

SCOPE AND OBJECTIVES

This risk assessment focused on identified wells to be drilled in Bass Strait, south of the Victorian coast. The water depth ranges from some 35 metres to 100 metres. The well program is expected to commence March 2004 and run for a minimum of 50 days and possibly up to more than a year, extending the program into 2005.

Scope covers only open-water well locations and includes:
- Rig move to locations
- Mooring and jackup/down operations
- Drilling operations (excluding production testing)

WORKSHOP DETAILS

Workshop date: January 23, 2004
Team Leader: David Ure (Ure Risk Engineering Pty Ltd)
Assistant Team Leader and record keeper: Andrew Camp (Ure Risk Engineering Pty Ltd)
Esso Coordinator: Chris Meakin (Drilling Engineer)

Members:

Esso: Frank Kratzer (Drilling Operations Superintendent), Colin Johancsik (Drilling Engineering Manager); Roger Bain (Drilling Supervisor); Barry Steel (Drilling Supervisor); Anthony Basset (Drilling Supervisor); Carl MacDonald (Drilling Engineer); David Berman (Geologist)

ENSCO: Barry Todd (Rig Manager); Charles Shelton (Toolpusher); Bruce Rintoul (Safety Training Officer); Dimitri Papavassileiou (Driller); Craig Miller (Asistant Driller)

Tidewater: Ian Del Rosso (General Manager)

Cameron: Brian Threlfall (Regional Manager)

Worley Safety & Risk Management: Steve Donner (Emergency Management & Risk Consultant)

WORKSHOP METHODOLOGY

The ExxonMobil risk scenario method was used, with risk levels assessed on the ExxonMobil risk matrix. In assessing consequence and probability, the "most likely" outcomes were assessed. Where "injury" was considered an outcome, the most likely injury outcome is noted in each event.

The following standard EMDC events were assessed as having no risk contribution for the reasons given:

- Diving Incident (EMDC 29): no diving activities are planned or anticipated.

- Hydrogen sulphide release (EMDC no direct equivalent): no history of Hydrogen Sulphide in previous exploration and appraisal wells remote from platforms.

- Base oil/diesel overflow and ignition (EMDC 36): no oil-based mud useage is planned

- Loss of control during production testing (EMDC 12): no production testing planned.

Project : EAPL Jackup Project 2004

Should any of the above situations change, a separate risk assessment would be conducted.

COMPARISON OF GENERIC JACK-UP WELL WITH BASS STRAIT BLUE WATER WELLS

Jackup Rig: Ensco 102

	Generic Jackup Well	Bass Strait
Jackup rig water depth	200'	125' - 300'
Environment		
Climate	Moderate	Moderate (non-tropical)
Minimum water temp.	55* F	55* F
Location		
Distance offshore	80km	15-60km
Distance to supply base	130km	120-200km
Distance to heli base	130km	30-110km
Well depth	10,000'	11,500'
Normal pressure		
- Max. mud wgt.	11 ppg	11 ppg
- Mud type	FW polymer	KCl/PHPA
H2S expected?	No	No
Shallow gas expected?	No	No
Production test	No	No
Near shipping traffic area?	No	No
Unusual security threat?	No	No
Regulatory doc. requirements	Moderate	Moderate
Pipelines?	No	Yes
Conductor	20" @ 100'BML	30" @ 160' BML
Surf Csg	13-3/8" @ 2000'BML	13-3/8" @ 2200'BML
Intermediate Csg	9-5/8" @ 4000'BML	none or 9-5/8" @ ~6200'BML
Production Csg	7" @ 10000'	none or 9-5/8" or 7" @ TD

In comparing the planned Bass Strait jack-up program with the Generic jack-up program as they apply to this risk assessment, it was concluded that the differences are not significant.

DELIVERABLES

· Hazard list for each event
· Each event with risks evaluated in the four standard ExxonMobil consequence types (health and safety, public disruption, environmental impact and financial impact {reputation or loss of business opportunity included here})
· Risk scenario registers (one for each event) that include: identified hazards, consequences, event prevention and consequence mitigation measures with all controls in place, risk matrix results
· List of action items

Project : EAPL Jackup Project 2004

LIST OF EVENTS EVALUATED

Event No.	Operation	Event Description (EMDC equivalent event)
1	Logistics, Rig Move & jack up/down	Personnel safety incident during rig move (EMDC 7)
2	Logistics, Rig Move & jack up/down	Failure of tow vessel/line (tow and positioning) (EMDC 18)
3	Logistics, Rig Move & jack up/down	Failure during positioning / jacking operations (EMDC no direct equivalent)
4	Logistics, Rig Move & jack up/down	Jackup foundation failure (EMDC 13)
5	Well program execution	Shallow gas release (EMDC 1)
6	Well program execution	Blowout with BOP installed (EMDC 2)
7	Well program execution	Annular flow around surface casing incl. broaching (EMDC 3)
8	Well program execution	Underground flow (EMDC 4)
9	Well program execution	Mud-gas separator fails while under pressure (EMDC 5)
10	Well program execution	High pressure hose/chicksan/fitting/vessel failure (EMDC 14)
11	Well program execution	Dropped objects during drilling operations (EMDC 6)
12	Well program execution	Premature detonation of explosives (EMDC 37)
13	Well program execution	Fall from heights (EMDC 7)
14	Well program execution	Personnel safety incident (EMDC 7)
15	Well program execution	Hazardous materials release (EMDC 9, 15)
16	Well program execution	Fuel or oil spill (EMDC 10)
17	Well program execution	Release of untreated sewage or waste (EMDC 11)
18	Well program execution	Accidental release from mud pit or tank (incl mud cuttings discharge) (EMDC 26)
19	Project execution - general	Civil unrest, terrorism, sabotage, criminal act, IR (EMDC 19)
20	Project execution - general	Personnel contract disease/illness (EMDC 20, 21, 22)
21	Project execution - general	Person overboard (including during rig move) (EMDC 34)
22	Project execution - general	Rig structural failure (EMDC 27)
23	Project execution - general	Regulatory non-compliance (EMDC 38)
24	Project execution - general	Natural disaster (EMDC 28, 35)
25	Project execution - general	Helicopter flight incident (EMDC 30)
26	Marine	Failure of rescue/life boat supports or launch during maintenance or drills (EMDC 31)
27	Marine	Supply vessel collision with rig (EMDC 17)
28	Marine	Ship collision with rig (on tow or location) (EMDC 33)
29	Marine	Workboat incident away from rig (EMDC 32)

Note: The workshop team concluded that the EMDC events 8 (fire/explosion) and 16 (impact on marine/wildlife) are both consequences that are dealt with in each event as applicable.

Project : EAPL Jackup Project 2004

ACTION ITEM SUMMARY

A total of eight action items were identified as shown below.

Action	Event No	Action	Facilitator
1	10	Consider what action (if any) arises from the recent regulator failure.	B Todd
2	11	Consider development of a tool register for tools transferred to height.	B Todd
3	13	Extend the current JSA process to identify areas where recovery of a fallen person would be difficult and incorporate necessary recovery requirements into JSAs as appropriate.	B Todd
4	13	Procure secondary fall arrest device for use with each man-riding hoist.	B Todd
5	14	Communicate Esso hours of work policy to Ensco.	F Kratzer
6	15	Confirm that battery room has ventilation.	B Todd
7	15	Ensure that hazardous materials training requirements are defined.	B Todd
8	19	Update Esso Security on Ensco program.	F Kratzer

HIRApac	**Esso Australia Pty Ltd** **Hazard Identification & Risk Assessment Register**	Date : 10/03/2004 Page No. : 6

Project : EAPL Jackup Project 2004 **Event No. :** 1

System/Operation : Logistics, Rig Move and jack up/down

Event : Personnel safety incident during rig move

Causes :

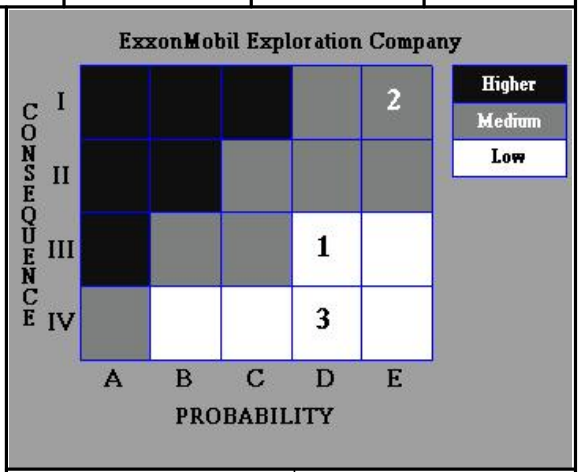
Unsecured hand tools
Pinching/crushing/caught between
Fatigue, Human error incl crane operator
Inadequately secured equipment
Overload of lifting equipment, Lifting slings/straps worn/damaged
Winch failure
Unclear instructions
Adverse weather conditions
Restricted space on site, Restricted visibility
Excess noise
Multiple activities simultaneously
Unfamiliar/untrained personnel, Inadequate/insufficient supervision
Electrical incident
Insufficient lighting

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	III	D
2	Fatality	Health/Safety	I	E
3	Disruption to project	Financial	IV	D

Risk Controls :

PREVENTION:
Rig move procedures / pre-move checklists for every move
Pre-move planning meeting to ensure clear accountabilities
PM operations appropriate to conditions during the move
Contractor JSA, Ensco SMS
Toolbox and safety meetings; Appropriate supervision
Appropriate lighting for night time operations
Straps/ties for hand tools
Inspection of rig and other lifting equipment
Equipment maintenance
Personnel selection / competency assessment
Appropriate training / induction program for personnel
Work permit system; ADU policy; Good housekeeping
Communications equipment; PPE; Securing of loose items
Contractor interface management
No work over side during rig move
Limits on crane operations

MITIGATION:
ERP; First aid capability; Medic
Helicopter medical evacuation if required
Backup equipment to replace damaged items
Fire fighting equipment on rig and support vessels
Notification to relevant authorities eg AMSA



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 1

System/Operation : Logistics, Rig Move and jack up/down

Event : Personnel safety incident during rig move

Consequence Assessment Comments :

Both support vessels have fire fighting capability to FIFI 1.

Probability Assessment Comments :

Not aware of any MTIs arising from rig moves in the Ensco fleet in the past year.

HIRApac	**Esso Australia Pty Ltd** **Hazard Identification & Risk Assessment Register**	Date : 10/03/2004 Page No. : 8

Project : EAPL Jackup Project 2004 **Event No. :** 2

System/Operation : Logistics, Rig Move and jack up/down

Event : Failure of tow vessel/line (tow and positioning)

Causes :

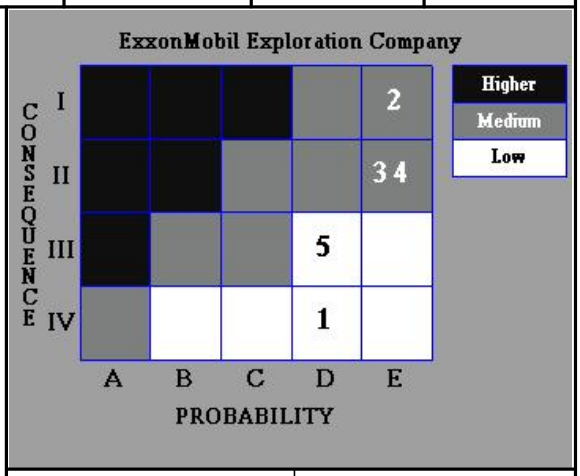
Overload of line
Line wear/corrosion/damage
Inadequate tow line inspection
Incorrect tow line specification
Intrusion of other vessel into tow path
Adverse weather
Mechanical failure on tow vessels
Ineffective maintenance of equipment on tow vessels
Operator error, Communications failure, Unskilled workers
Navigation error
Inadequate tow vessel specification
Vessel breakdown leads to loss or separation of tow vessels
Failure of shackles or padeyes

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (First aid)	Health/Safety	IV	D
2	Fatality	Health/Safety	I	E
3	Collision with ship / platform / pipeline; grounding	Financial	II	E
4	Damage to rig/boat, delay to project	Financial	II	E
5	Spill of fuel/oil to ocean	Environmental	III	D

Risk Controls :

PREVENTION
Tow vessel specification/selection
Inspection of tow vessels by Ensco and Esso
Two tow vessels being used; 24 hour watch on tow vessel and rig
Positioning equipment/staff on board
Line specification, inspection program
Notification to AMSA of move; approval from DPI of move
Navigation lighting; Weather monitoring and forecasting
Tow line monitoring from vessel
Marine certification of crew qualification
Additional MO47 crew on board during rig move
Rig move plans checked by rig insurer
Radar monitoring during rig move (EAPL, vessels); GPS on vessels
Tow vessel has primary responsibility for navigation with back-up position monitoring by rig
Selection of competent crew; Documented rig move procedure
Back-up communications
No crew on tow boat decks while tow in progress

MITIGATION
Can evacuate rig by helicopter, life boats and life rafts if required
ERP; Medic on rig; Rig has emergency tow line
Each boat has 600 metres of work wire that can be deployed
Drop anchors



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 2

System/Operation : Logistics, Rig Move and jack up/down

Event : Failure of tow vessel/line (tow and positioning)

Consequence Assessment Comments :

Two tow vessels will be used - one as primary tow; the second for positioning on location and backup in the event of failure of primary vessel.

Both towlines were replaced after the inspection to new wires. The wire on the Ray J. Hope will be re-inspected after it tows the Origin platform to Bass Strait.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 3

System/Operation : Logistics, Rig Move and jack up/down

Event : Failure during positioning / jacking operations

Causes :

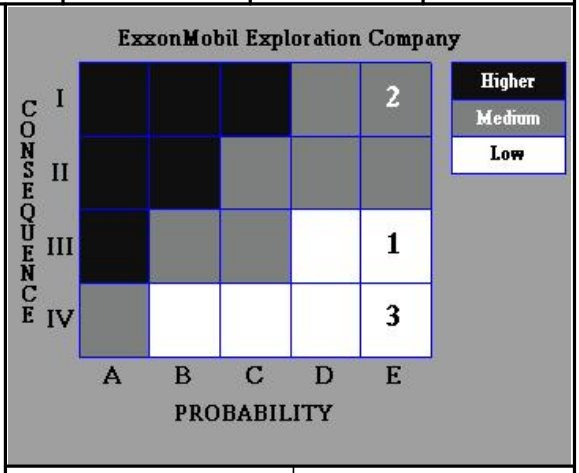
Shackle, work wire failure
Boat failure e.g. propulsion, thrusters
Pennant line failure
Equipment wear & corrosion
Inadequate specification of equipment
Adverse weather
Mechanical failure
Operator error
Failure of communications between tow vessels and rig
Surveying equipment failure
Jacking equipment failure
Crane failure

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	III	E
2	Fatality	Health/Safety	I	E
3	Move off location (delay to project)	Financial	IV	E

Risk Controls :

PREVENTION
Tow wires and equipment selected appropriate to service requirements
Pre-jackup checklists; PM for jacking equipment
Permit to work/JSA
Inspection/testing of wires and equipment
Selection/training of personnel
Positioning procedure
Pre-tour meetings, Pre-move planning meeting
Weather forecasting/monitoring
Positioning equipment inspection and service life standards
Wire and equipment acceptance testing
Independent check that rig has been positioned correctly
Sea floor survey conducted
Pre-move stability calculations
Multiple back-ups for communications
Crane PM; crane operator competency; crane communications

MITIGATION
ERP
Medic on rig



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 3

System/Operation : Logistics, Rig Move and jack up/down

Event : Failure during positioning / jacking operations

Consequence Assessment Comments :

Environmental consequences were considered. The most likely event would be a burst hose. In this case, any spill would be captured on board the rig or the vessel.

Probability Assessment Comments :

No comments were recorded.

HIRApac	**Esso Australia Pty Ltd** **Hazard Identification & Risk Assessment Register**	Date : 10/03/2004 Page No. : 12

Project : EAPL Jackup Project 2004 **Event No. :** 4

System/Operation : Logistics, Rig Move and jack up/down

Event : Jackup foundation failure

Causes :

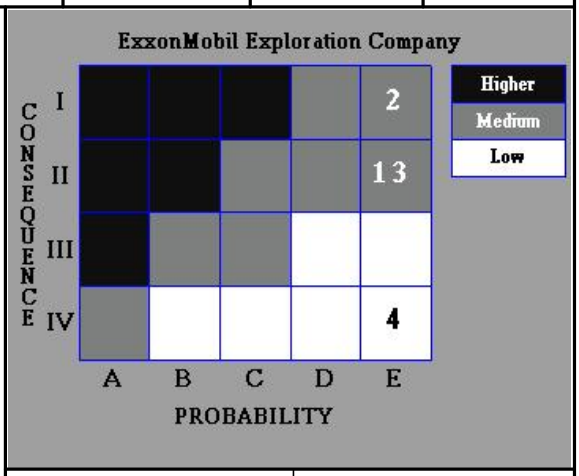
Inadequate seabed, too sloped
No seabed survey
Incorrect seabed survey interpretation
Adverse weather

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Loss of assets / delay to project	Financial	II	E
4	Release to environment	Environmental	IV	E

Risk Controls :

PREVENTION
Pre-load program
Seabed survey conducted, reviewed by recognised third party
Prior Bass Strait experience of no punch through
Rack Phase Difference and Pinion Load Monitoring System on rig
Weather forecasting / monitoring

MITIGATION
ERP



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 4

System/Operation : Logistics, Rig Move and jack up/down

Event : Jackup foundation failure

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Project : EAPL Jackup Project 2004 **Event No. :** 5

System/Operation : Well program execution

Event : Shallow gas release (no surface casing in place)

Causes :

Geological shallow gas, not predicted
Swabbing
Unfamiliar crews
Ineffective maintenance

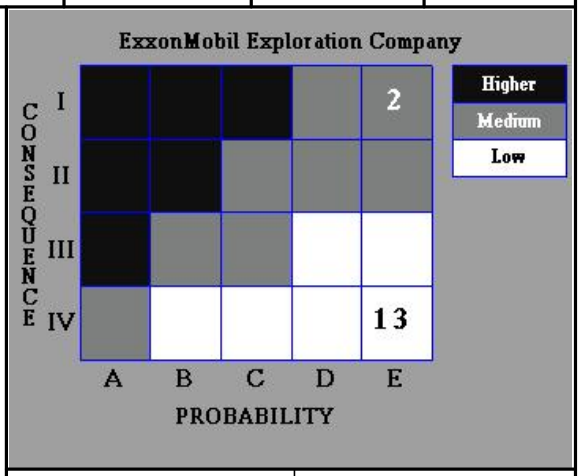
with ignition sources as compounding factor

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	IV	E
2	Fatality	Health/Safety	I	E
3	Loss of assets / delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
Shallow gas geological evaluation and well location selection
Drilling surface hole using diverter
Selection of trained personnel
Pre-spud meeting
Toolbox meetings

MITIGATION:
Well control training and drills
Escape routes
Rig orientation to be considered
Pressurised quarters
ERP (incl safe havens and abandonment plan)
Rig medic
Fire fighting equipment
Weighted mud on standby if shallow gas anomaly identified in a particular well
Work permit system - no hot work during this phase
Supply boat told to keep upwind



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 5

System/Operation : Well program execution

Event : Shallow gas release (no surface casing in place)

Consequence Assessment Comments :

Geological advice says that there is a very low probability of shallow gas across Gippsland Basin. Combined with previous history, the workshop concluded that Ensco 102 locations will be no different in this regard. Individual wells will continue to be assessed for shallow gas potential.

Pilot hole will not be drilled.

The workshop was of the opinion that the risks arising from this scenario were at the very lowest end of the matrix.

Probability Assessment Comments :

Shallow gas release not previously encountered in Bass Strait (<850m)

Project : EAPL Jackup Project 2004 **Event No. :** 6

System/Operation : Well program execution

Event : Blowout with BOP installed

Causes :

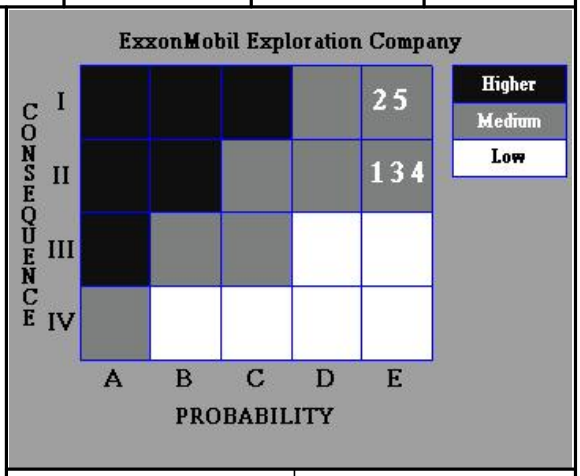
Driller pulling too fast for conditions/swabbing
Supervisor fails to rectify pulling speed
Insufficient trip margin
Trip book procedures fail
Incorrect mud density
Formation pressure higher than expected
Changed/unexpected formation conditions
Mud density adjustment error
Mud density measurement error
Gas cutting of mud
Improper use of trip tank
Failure to comply with standard drilling practices
Rig personnel failure to detect low density during routine checks
Mud engineer fails to detect low mud density

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Loss of assets / delay to project	Financial	II	E
4	Release to environment	Environmental	II	E
5	Public reaction	Public disrupt	I	E

Risk Controls :

PREVENTION:
BOP specifications (ExxonMobil, API)
Wellhead specifications
Casing design and specs/inspection
Pre-acceptance inspection of BOP equipment
Regulatory compliance requirements
BOP maintenance, inspection, and testing program
BOP drills
Well control training
Trained crews and supervision
Contractor's well-control procedures
ExxonMobil well-control procedures
Pit level monitoring and kick detection equipment, with redundancy
Pore pressure prediction
ExxonMobil supervision
Calibrated mud density measuring equipment
Lost circulation materials

MITIGATION:
ERP
Well control procedures
Oil spill response plan
Rig medic
Rig fire fighting capability
AHV fire fighting capability



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 6

System/Operation : Well program execution

Event : Blowout with BOP installed

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 7

System/Operation : Well program execution

Event : Annular flow around surface casing including broaching

Causes :

Poor primary cementation; gas cut cement
Underbalance of formation pressure during cement gellation
Casing centralisation not effective; casing or wellhead failure
Mechanical failure of cementing unit
Poor quality cement/additives; poor cement analysis/testing program
Operator error; improper supervision; improper slurry design
Poor detection of cement integrity problem
Undetected hydrocarbon
Surface casing set too shallow
Inadequate formation strength (PIT)
Miscommunications between two cementing contractors

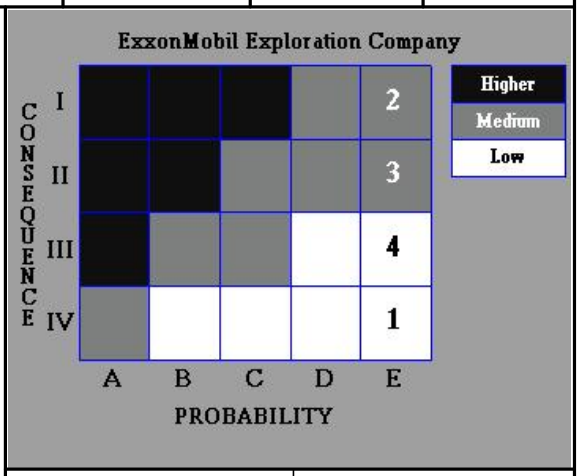
AND
Ignition source

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (First Aid)	Health/Safety	IV	E
2	Fatality	Health/Safety	I	E
3	Loss of assets / delay to project	Financial	II	E
4	Release to environment	Environmental	III	E

Risk Controls :

PREVENTION:
Professionally engineered cement jobs
Pressure Integrity Test
Independently verified casing design
Pre-job cement testing
Competent cementing contractor
QC on cement and additives
Close supervision of cement jobs
Surface casing to exceed minimum depth
Minimum formation strength
Vertical well control
Casing centralisation
Large excess of cement is pumped
Coordination meeting between cementing contractors

MITIGATION:
ERP
Oil spill response plan
Rig medic
Remedial cementing capability
Gas detection



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 7

System/Operation : Well program execution

Event : Annular flow around surface casing including broaching

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 8

System/Operation : Well program execution

Event : Underground flow

Causes :

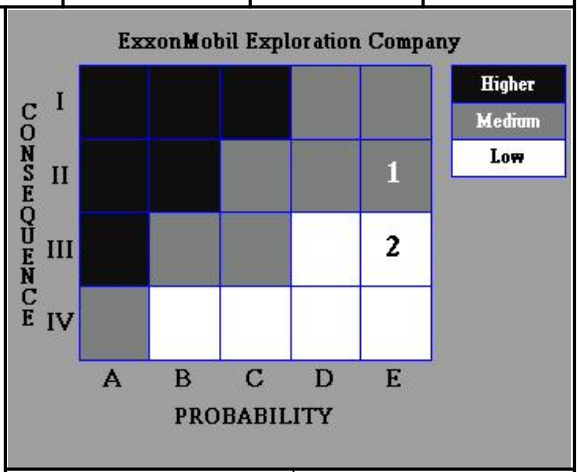
Driller pulling too fast for conditions/swabbing
Insufficient formation integrity
Lost circulation
Supervisor fails to rectify pulling speed
Insufficient trip margin
Trip book procedures fail
Incorrect mud density specification
Formation pressure higher than expected
Changed/unexpected formation conditions
Mud density adjustment error
Mud density measurement error
Gas cutting of mud
Improper use of trip tank
Failure to comply with standard drilling practices

Consequence		Consequence Type	Consequence Category	Probability Category
1	Loss of asset (incl reservoir damage, reserves)	Financial	II	E
2	Delay to project	Financial	III	E

Risk Controls :

PREVENTION:
BOP specifications (ExxonMobil, API)
Casing design and specs/inspection
Run casing if required
Pre-acceptance inspection of BOP equipment
Regulatory requirements
BOP maintenance, inspection, and testing program
BOP drills
Well control training
Trained crew
Trained supervision
Contractor's well-control procedures
ExxonMobil/rig contractor standard procedures
Redundant pit level monitoring and kick detection equipment
Pore pressure prediction on specific wells where overpressure has been identified as possible hazard
ExxonMobil supervision
Calibrated mud density measuring equipment
Lost circulation materials
Increase mud weight

MITIGATION:
Increase mud weight; ERP; Well control procedures
Relief well procedures
Capability to pump barite weighted mud through cement unit



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 8

System/Operation : Well program execution

Event : Underground flow

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 9

System/Operation : Well program execution

Event : Mud-gas separator fails while under pressure & fire results

Causes :

Incorrect equipment specification
Error in determining service pressure and flowrate
Corrosion, erosion
Circulate out kick
Incorrect well control procedure
Incorrect supervision
Line blockage

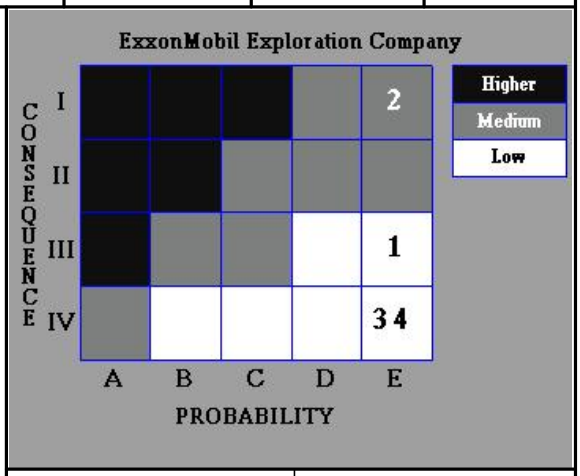
AND
Ignition source

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	III	E
2	Fatality	Health/Safety	I	E
3	Release to environment	Environmental	IV	E
4	Loss of asset / delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
Mud gas separator meets specifications (ExxonMobil, API)
Separator capacity substantially exceeds requirements of Gippsland wells
Dimensional verification and throughput calculation
Maintenance, inspection, and testing program
Well control training
Trained crew
Trained supervision
Contractor's well-control procedures
ExxonMobil/rig contractor standard procedures
ExxonMobil supervision
Correct rig up
Pre acceptance inspection
Equipment inspection and maintenance

MITIGATION:
ERP
Well control procedures incl bull heading
Oil Spill Response plan
On site medic
Rig fire fighting capability
AHV fire fighting capability



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 9

System/Operation : Well program execution

Event : Mud-gas separator fails while under pressure & fire results

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 10

System/Operation : Well program execution

Event : High pressure hose/chicksan/fitting/vessel failure

Causes :

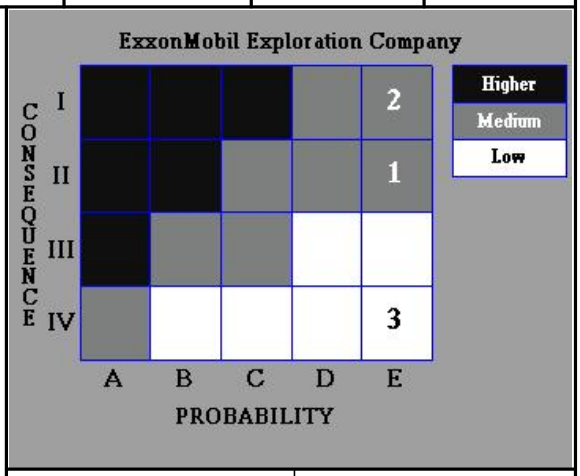
Pressure rating exceeded / PSV fails to relieve
Equipment damaged or worn or corroded
Connection failure
Wrong fitting / mismatched union
Operator error / miscommunication
Piping not restrained
Improper makeup
Ineffective maintenance
Manufacturing defect
Inadequate supervision
Procedural error

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Damage to assets / delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
Equipment specification
Manufacturing QA/QC
Contractor interface management re compatibility of equipment (included in pre acceptance inspection)
Permit to work procedures
Maintenance, inspection, testing procedures (incl relief valve inspections)
Use of appropriate equipment (in test)
JSAs / written work instructions
Trained personnel
Job-specific pressure testing procedures
Use of calibrated pressure gauges
Clear communications
Expert third party inspection agencies where appropriate

MITIGATION:
Minimise personnel in area
Barriers, warning signage, PA announcement for pressure testing
PPE
ERP
On site medic
Bunding, spill catching
Oil Spill Response plan
Non-hazardous fluids used for pressure testing
Use of appropriate pipe and hose restraints



Drilling	
Exploration	
ALARP?	when action complete
Action Item/s?	One

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 10

System/Operation : Well program execution

Event : High pressure hose/chicksan/fitting/vessel failure

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 11

System/Operation : Well program execution

Event : Dropped objects during drilling operations

Causes :

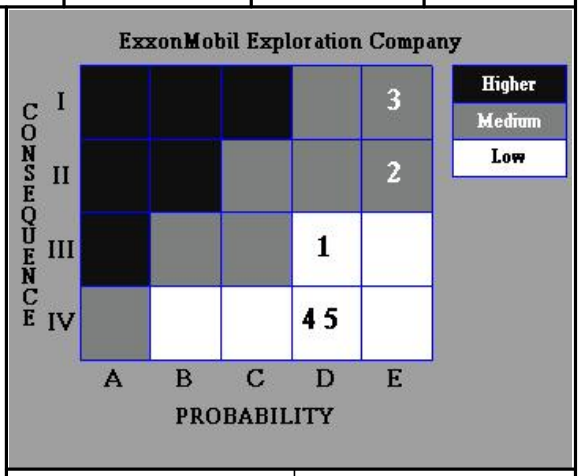
(Item/load falls off forklift or crane, item falls out of derrick, dropped BOP or riser))
Top drive equipment failure
Unsecured hand tools
Materials fatigue, Vibration
Structural failure
Human error
Inadequately secured equipment
Overload of lifting equipment
Lifting slings/straps worn/damaged
Items falling off load
Winch failure, Draw works failure, Drill-line failure
Drill-string failure
Wireline failure, Sheave failure (including logging contractor)
Loss of control of travelling blocks

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	III	D
2	Serious injury (LTI)	Health/Safety	II	E
3	Fatality	Health/Safety	I	E
4	Loss of assets (incl damage to rig or well)	Financial	IV	D
5	Delay to project	Financial	IV	D

Risk Controls :

PREVENTION:
Straps/ties for hand tools
Rig and other lifting equipment inspection incl top drive
Documented dropped object program
Work permit system
Equipment maintenance, sling inspection and labelling
Critical function testing
JSA / written work instructions
Training and supervision, dedicated crane drivers
Appropriate lifting procedures (incl engineered lifts for heavy crane lifts)
Housekeeping procedures
Crane logs
Block control system
Taglines and use of dogman
Control overhead work through permit to work system
Rig floor cordoned off while people and tools aloft
Competent operators of Pipe Racking System

MITIGATION:
PPE
ERP; First aid capability; Medic
Backup equipment to replace damaged items
Cover hole
Impact resistant rig floor



Drilling	
Exploration	
ALARP?	when action complete
Action Item/s?	One

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 11

System/Operation : Well program execution

Event : Dropped objects during drilling operations

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 | **Event No. :** 12

System/Operation : Well program execution

Event : Premature detonation of explosives

Causes :

Stray electric current including:
- Welding machines
- earth faults
- lightning
- static electricity

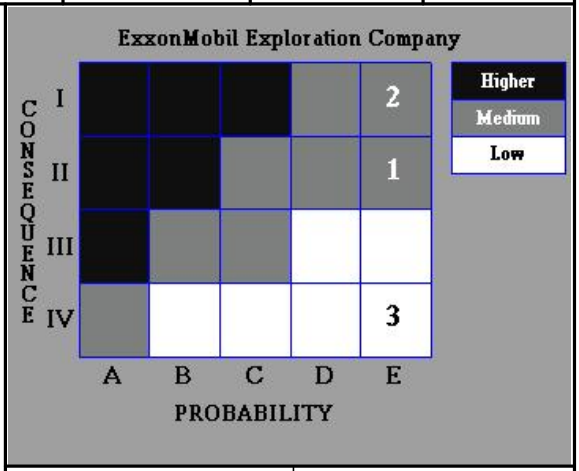
Non-compliance with storage and handling procedures
Human error
Incorrect packaging on explosives
Sources of EMR including:
- radar (from aircraft and naval vessels)
- radio communications
- antennae-bearing devices
- mobile phones

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Delay to project, Loss of assets	Financial	IV	E

Risk Controls :

PREVENTION:
Stray current detection
Work permit (to control hazards from EMR and stray currents)
Drilling and contractor procedures cover radio silence requirements and hot-work during explosives activities.
JSAs
Pre job safety meeting
Visual indications for helicopter landing
Training of specialist contractor personnel and rig crew / radio operator
Minimise use of explosives
Licensed explosives handler
Adequate supervision
No arming of explosives during lightning
Designated smoking areas
Mobile phones controlled on rig
EM Explosives checklist completed by logging contractor
Jettison skids

MITIGATION:
ERP
On-site medic/hospital
Minimal personnel during explosives activities



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 12

System/Operation : Well program execution

Event : Premature detonation of explosives

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

The use of explosives for these wells will be very limited.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 13

System/Operation : Well program execution

Event : Fall from heights

Causes :

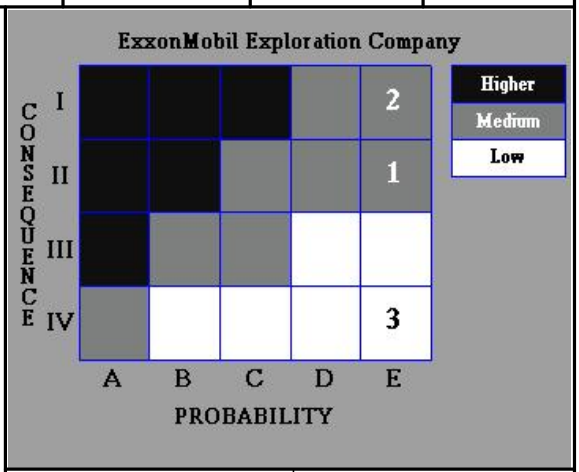
Incorrect or inadequate procedures
Inadequate training
Failure of height safety equipment
Inadequate job design / lack of anchor points
Adverse weather
Human error / failure to comply with procedure
Inadequate supervision
Handrails fail / not properly installed

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Delay to project	Financial	IV	E

Risk Controls :

PREVENTION
Hand rails/kick plates located in normal walking and access areas.
All hand rails conform to required specifications.
Personnel are required to conform to the ExxonMobil height safety standards for work outside hand rail areas.
Adequate supervision
Personnel are trained in the knowledge and use of height safety standards.
Appropriate specification and selection of equipment
JSA / Pre-job safety meeting
Selection of trained personnel / on the job training
Pre-job inspection of all hoist equipment
Adequate communications during manhoist
Minimise work at heights
Full body harness is required
Secondary fall protection for manriding operations.
Personnel transfer procedures to-from boats (Billy Pugh)
Site Safety Plan

MITIGATION
Fall arrest devices where applicable
First aid capability at site
Recovery plans built into JSAs as appropriate
ERP incl medical evacuation if required



Drilling	
Exploration	
ALARP?	when actions complete
Action Item/s?	Two

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 13

System/Operation : Well program execution

Event : Fall from heights

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 14

System/Operation : Well program execution

Event : Personnel safety incident

Causes :

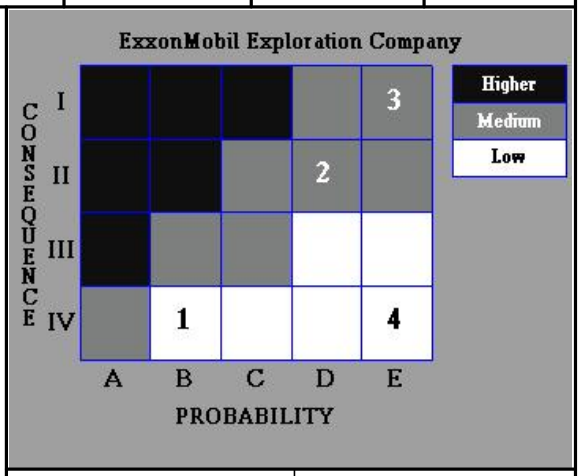
Slips/trips/falls/crush/pinch
Slip / walk inadvertently on rotary table
Hydraulic stabbing basket interference with top drive
Failure of tong tie-back line
Substance abuse
Prior/existing injury
Struck by object
Work with sharp objects
Foreign objects in eyes/skin (eg dust, grinding waste, caustic)
Excessive noise
Heat (burns/scalds), UV light (welding/sun)
Electrocution / Electrical incident
Person struck by travelling equipment
Man riding winch

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (First aid)	Health/Safety	IV	B
2	Injury (LTI)	Health/Safety	II	D
3	Fatality	Health/Safety	I	E
4	Delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
PPE (including sun protection); ADU policy
Equipment maintenance and inspection
JSA / Stepback 5x5 / Selection of appropriate tools / Toolbox/safety meetings and Ensco "STOP" system
Permit to work; On-site supervision; Good housekeeping
Competent personnel (skills, experience, training)
Inspection during installation and use of top drive
Dedicated manriding winches; Fall arrest devices
Induction briefing re site hazards, equipment, expectation to work safely
Hours of work policy; No loose jewellery
Electrical procedures / electrical equipment selection and labelling
PM program; Noisy areas signposted
All worksites well lit; Site Safety Plan
Pre-employment medicals, incl. hearing tests
Ensco training matrix / training program
Safety Induction held prior to start of work including Safety Leaders training

MITIGATION:
Medic
ERP (incl medical evacuation if reqd)



Drilling	
Exploration	
ALARP?	when action complete
Action Item/s?	One

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 14

System/Operation : Well program execution

Event : Personnel safety incident

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

Although Ensco 102 has worked 16 months without an LTI, the workshop attendees were aware of the number of new employees who would start work.

Project : EAPL Jackup Project 2004 **Event No. :** 15

System/Operation : Well program execution

Event : Hazardous materials release

Causes :

Inappropriate packaging, storage, handling, use and disposal of:
- Radioactive substances
- Corrosive substances (acidic/basic)
- Toxic substances
- Carcinogenic material
- Samples in pressurised containers
- Flammable liquids or gases (e.g. paints, battery gases)

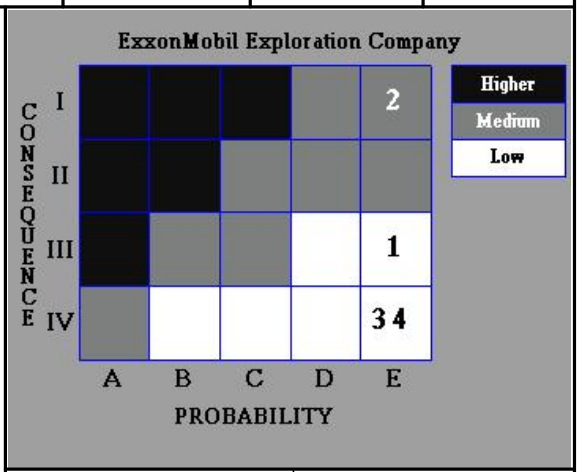
Drop of material from forklift, crane
Inappropriate labelling, Improper use/mixing, Improper storage
Transportation incident (eg forklift puncturing)
Inadequate training / communication / supervision
Failure to use correct PPE
Inadequate/inappropriate/ failure of PPE
Improper sampling procedures

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	III	E
2	Fatality	Health/Safety	I	E
3	Release to environment	Environmental	IV	E
4	Delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
Safe handling procedures
JSA / written work instructions
Appropriate storage procedures covering segregation and security (including IMDG Code of supply boats)
Appropriate containers, labelling
Hazard register
MSDSs (supplier-supplied or search Chemalert)
Haz Mat training / Dangerous Goods training
Permit to work (especially radioactive materials), confined space entry if gases possible
PPE
Procedures by contractors for handling and disposal
Procedures that minimise use of hazardous materials and exposure times
Waste segregation plan incl briefing in induction
Personal and area monitoring (for radioactive materials)
Rig design (e.g. ventilation in battery rooms)

MITIGATION:
Bunding of Dangerous Goods storage and handling areas
First aid (incl on-site neutralising agents)
Emergency eye wash and shower
MSDSs
Procedures for recovery and disposal of radioactive material by logging contractor
ERP



Drilling	
Exploration	
ALARP?	when actions complete
Action Item/s?	Two

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 15

System/Operation : Well program execution

Event : Hazardous materials release

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Project : EAPL Jackup Project 2004 | **Event No. :** 16

System/Operation : Well program execution

Event : Fuel or oil spill

Causes :

Rupture or failure of line (fill up or transfer)
Rupture or failure of storage container
Pump leak
Overfill
Operator error
Failure of seals, Failure of level indicators
Failure of fuel transfer procedures, Failure of bunding
Disassembly of equipment
Failure of communication
Adverse weather

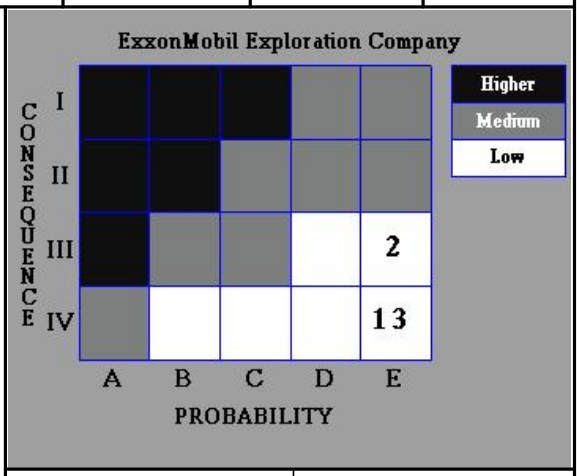
AND
Ignition source

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (First Aid)	Health/Safety	IV	E
2	Release to environment	Environmental	III	E
3	Loss of assets (caused by fire), delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
Procedures incl continuous manning during transfer
Continual monitoring of ullage
Equipment maintenance
Supply of spare seals
Work permit system incl JSA, written work instructions
Trained personnel
Adequate lighting
Dry break couplings used
Radio communication during fuel transfer
Weather considered when deciding upon on transfers
EM, Ensco and Tidewater hydrocarbon transfer checklists

MITIGATION:
Bunding, drip pans and oil absorbent materials on rig
Drip pans on boats
Fuel transfer emergency stop button on vessel bridge
On site medic
ERP (incl evacuation)
Oil spill response plan incl kits on rig and boats
Fire fighting equipment
Auto shut-off on nozzles for cranes refilling



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 16

System/Operation : Well program execution

Event : Fuel or oil spill

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

The workshop considered the fatality consequence to be non-credible for this scenario.

Project : EAPL Jackup Project 2004 **Event No. :** 17

System/Operation : Well program execution

Event : Release of untreated sewage or waste

Causes :

(Paper waste, solid waste, fluid waste)

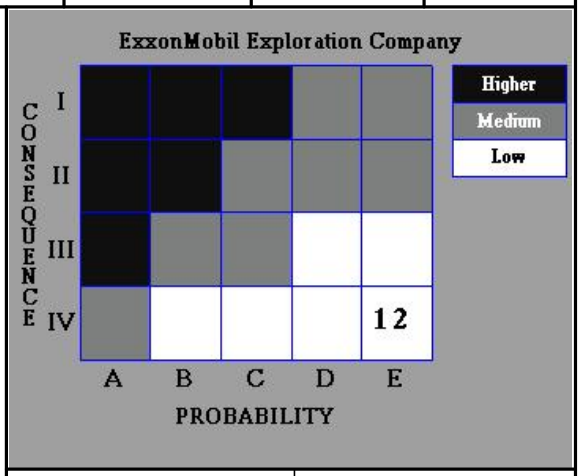
Unclear waste management procedures and policies
Lack of training
Line or container failure
Ineffective waste treatment
Operator error
Ineffective equipment maintenance and inspection
Improper storage and handling procedures

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Release to environment	Environmental	IV	E
2	Public reaction	Financial	IV	E

Risk Controls :

PREVENTION:
ExxonMobil water guidelines
Waste management procedures
Effective waste treatment and oily water separation facilities
Training included in Induction
Supervision
PPE
Environment Management Plan

MITIGATION:
Clean-up of any collectibles by boat



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 17

System/Operation : Well program execution

Event : Release of untreated sewage or waste

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 18

System/Operation : Well program execution

Event : Accidental release of mud (incl mud cuttings discharge)

Causes :

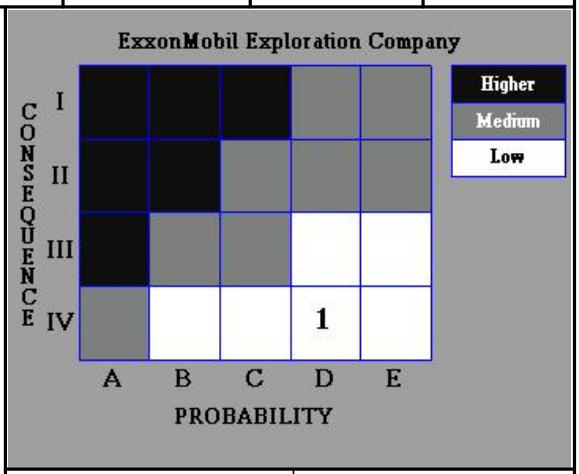
Line or container failure
Operator error
Ineffective equipment maintenance and inspection

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Release to environment	Environmental	IV	D

Risk Controls :

PREVENTION:
Designed mud system
Trained personnel
Equipment tested
Use of water-based muds (not oil-based)

MITIGATION:



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 18

System/Operation : Well program execution

Event : Accidental release of mud (incl mud cuttings discharge)

Consequence Assessment Comments :

The Environment Plan identifies that mud and cuttings will be discharged overboard.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 19

System/Operation : Project execution - general

Event : Civil unrest, terrorism, sabotage, criminal act, Ind Relations

Causes :

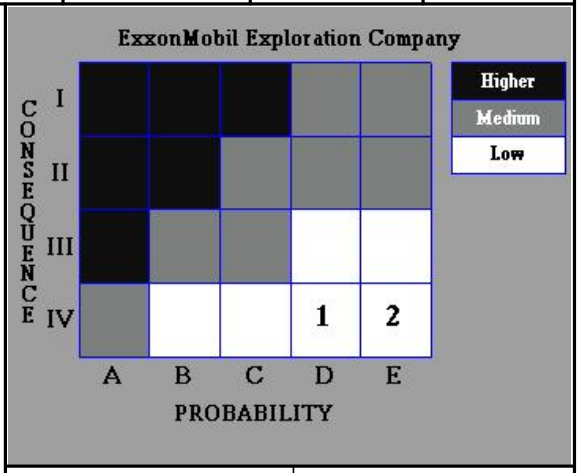
Failure to manage public interfaces
Terrorist event (bomb threat, death threat etc)
Industrial espionage
Industrial unrest
Local concerns about emissions from drilling activity

Consequence		Consequence Type	Consequence Category	Probability Category
1	Disruption to project	Financial	IV	D
2	Damage to equipment	Financial	IV	E

Risk Controls :

PREVENTION:
ExxonMobil Global Security Group provide security services/controls documented in security procedures manuals
Security information/intelligence
Communications
Kidnap/ransom/extortion procedure
Good industrial relations practices
Public Affairs community awareness plans

MITIGATION:
First aid training
ERP
Counselling services post-trauma
Copies of critical documents



Drilling	
Exploration	
ALARP?	when action complete
Action Item/s?	One

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 19

System/Operation : Project execution - general

Event : Civil unrest, terrorism, sabotage, criminal act, Ind Relations

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 20

System/Operation : Project execution - general

Event : Personnel contract disease/illness

Causes :

Water-borne infection
- Inadequate water standard
- Contaminated water supply
- Inadequate water purification
- Inadequate water storage
- Ineffective water testing

Blood-borne infection & STDs
Food-borne infection (eg Hepatitis A)
- Inadequate food storage/preparation/transportation
- Inadequate kitchen hygiene
- Inadequate personal hygiene/pre-existing medical condition
- Poor food quality

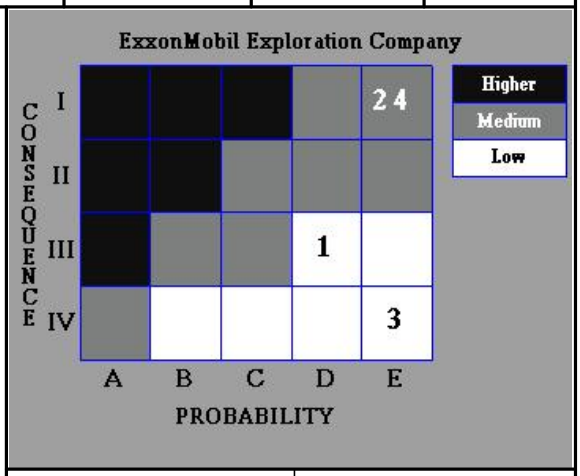
Air-borne infection
Allergies

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Illness (MTI)	Health/Safety	III	D
2	Fatality	Health/Safety	I	E
3	Delay to project	Financial	IV	E
4	Long-term personnel disability	Health/Safety	I	E

Risk Controls :

PREVENTION:
Pre-employment medical assessment for all personnel
Assessment of fitness for work
Water control protocol incl. sampling of water on regular basis
Catering services program (health/hygiene)
Universal hygiene procedures
Dishwashing completely separate from food handling
Hygiene checks by Medic
Pre-startup assessment of facilities by OHD

MITIGATION:
Medical equipment on site (minimum specification incl secure storage of prescription drugs)
ERP
Medic
Medical evacuation



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 20

System/Operation : Project execution - general

Event : Personnel contract disease/illness

Consequence Assessment Comments :

The rig air conditioning system is a refrigerated, closed-circuit system.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 21

System/Operation : Project execution - general

Event : Person overboard (including during rig move)

Causes :

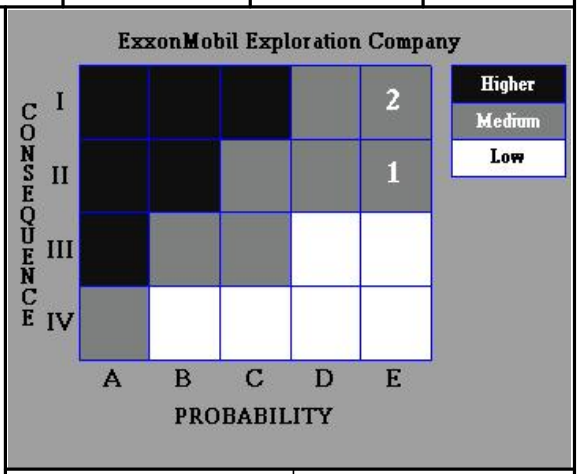
Human error
Failure to follow procedures incl wearing of correct PPE
Failure of PPE
Barrier/handrail failure
Incident during personnel transfer
Hypnotic effect of sea motion
Impact from suspended load
Wave action from supply vessel
Adverse weather (supply vessel)
Fall from heights
Blown off helideck
Slips trips falls, slippery deck, poor housekeeping
Capsize of fast rescue boat (supply vessels) or life boat

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E

Risk Controls :

PREVENTION:
Design specifications for hand rails, integrity of decking and grating, kick plate (or toe-plate).
MODUSPEC inspection includes handrails
"Work Permit" system includes work outside hand rails and in other exposed areas.
Procedures requiring use of work vest, safe scaffolding and restraining harness when working over water.
Restricted entry to exposed areas and limit work in exposed areas during heavy weather/pronounced vessel motion and daylight hours when possible.
Supply vessels have stern gates closed when handling cargo
Inspection of personnel lifting devices such as personnel baskets.
Training and procedures for personnel to wear life jackets, transfers occur only in good weather, and only trained personnel operate crane lifting basket.
Prohibition on work over water during rig tow.
Safety lines
Standby boat when anyone working over water

MITIGATION:
Life jacket / work vest
ERP, including person overboard drills
Fast rescue craft (supply vessels) or life boat from rig
Supply boat
High visibility clothing



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 21

System/Operation : Project execution - general

Event : Person overboard (including during rig move)

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 22

System/Operation : Project execution - general

Event : Rig structural failure

Causes :

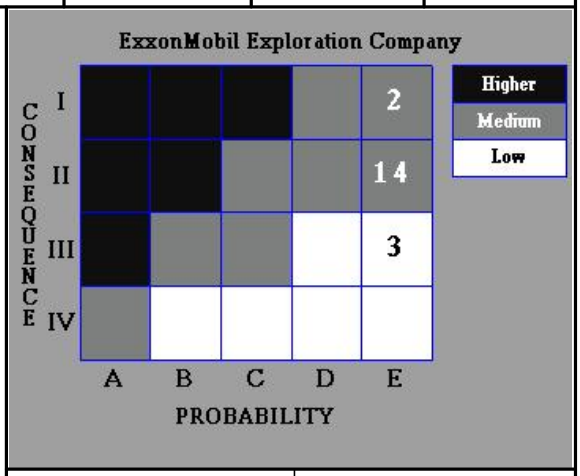
Fatigue
Corrosion
Adverse weather
Ineffective/inappropriate inspection/maintenance
Overload
Inappropriate modifications to rig
Inadequate design
Fire - explosion

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Release to environment	Environmental	III	E
4	Delay to project / damage to assets	Financial	II	E

Risk Controls :

PREVENTION
(No production testing considered in this risk assessment)
MODUSpec includes review of the operational history of rig for evidence of extensive rough weather operations in the past.
Certification Society documentation and damage stability analysis.
Verification of rig design by 3rd party (ABS)
Any modifications need to be approved by 3rd party (ABS)
Modification control procedures. Records of previous structural repairs and confirmation that repairs were made properly.
Daily stability checks/reports.
Fire detection
Metocean analysis
Maintenance program (corrosion control, NDT on major structural members)

MITIGATION:
Abandon ship procedures and drills.
ERP
Oil spill contingency plan.
Adequate (200%) lifeboat/liferaft capacity and frequent inspection/maintenance/testing of same.
Life preservers, and other safety items.
Search and rescue plans, including supply vessels
Emergency well control procedures.



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 22

System/Operation : Project execution - general

Event : Rig structural failure

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

23/1/04: Ensco 102 is 18 months old, built to endure harsh North Sea environment, up to 328 feet water depth.

Project : EAPL Jackup Project 2004 **Event No. :** 23

System/Operation : Project execution - general

Event : Regulatory non-compliance

Causes :

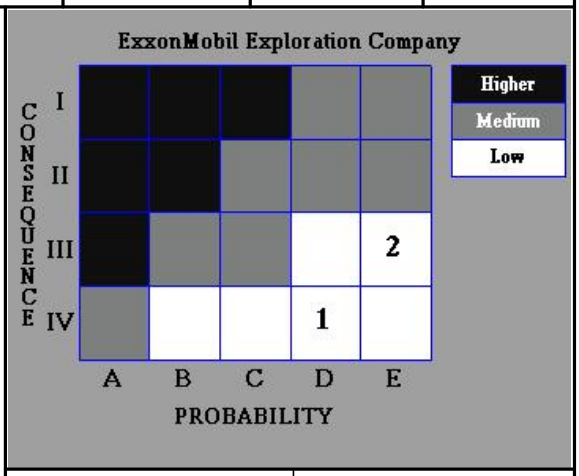
Laws/regulations not known or understood
Complexity of local regulatory requirements
Unable to obtain necessary internal/co-venturer approvals
Insufficient EAPL resource allocation
Inadequate, lost or erroneous data/information
Change of regulations
Delays to obtaining licences/permits
Human error
Immigration/customs/quarantine problems
Deliberate flouting of law
Approval not within authority level
Approval process not completed
Contractor, partner regulatory problem
Poor communication

Consequence		Consequence Type	Consequence Category	Probability Category
1	Delay to project	Financial	IV	D
2	Fines	Financial	III	E

Risk Controls :

PREVENTION:
Regulatory compliance plan
Use of qualified shipping agents / previous experience
Early/ongoing dialogue with regulators
Awareness of internal government processes
Formal approval of any non-compliance
Training
Involvement by regulator in planning process
Awareness of vessel safety case, bridging document included in Induction

MITIGATION:
Legal defence
Close liaison with regulator



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 23

System/Operation : Project execution - general

Event : Regulatory non-compliance

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 24

System/Operation : Project execution - general

Event : Natural disaster

Causes :

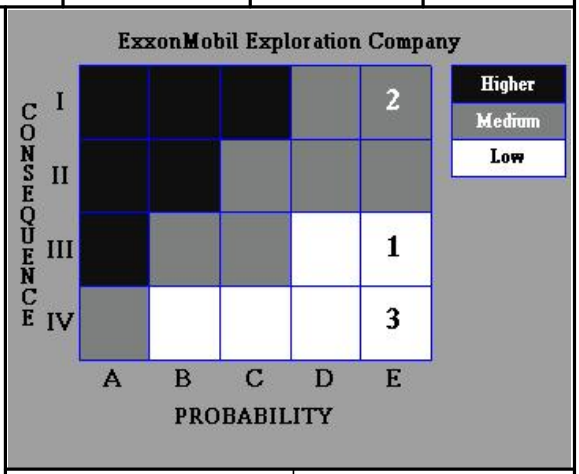
Lightning
High winds
High seas

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (MTI)	Health/Safety	III	E
2	Fatality	Health/Safety	I	E
3	Loss of assets / delay to project	Financial	IV	E

Risk Controls :

PREVENTION:
Lightning conductors
Weather forecast
Vessel design criteria
Stability analysis
Metocean analysis
Soils evaluation and pre-loading

MITIGATION:
ERP
Fire fighting equipment
Aviation policy limit on wind speed
Wind speed limit on crane operations
Sea state limits on operations - rig and supply vessels
Medic



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 24

System/Operation : Project execution - general

Event : Natural disaster

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 25

System/Operation : Project execution - general

Event : Helicopter flight incident

Causes :

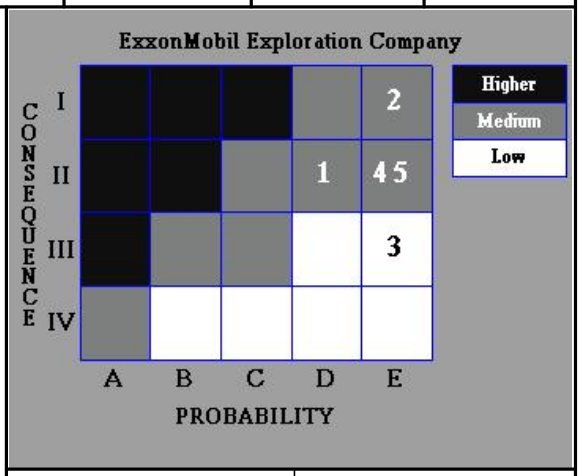
Adverse or rapidly changing weather
Pilot incapacitation (fatigue, A&D abuse, medical)
Lack of pilot/engineer skill/experience
Aircraft mechanical, hydraulic or electrical failure
Inadequate helipad condition/lighting
Contaminated fuel, Fuel starvation
Poor air traffic control / collision with other aircraft
Communication failure
Overload
Hazardous cargo (flammable or explosive)
Passenger or other person comes too close to rotating propellers
Cargo makes contact with rotors
Inappropriate passenger behaviour
Debris on helipad, including caps, hats and newspapers

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	D
2	Fatality	Health/Safety	I	E
3	Project delay	Financial	III	E
4	Damage to assets	Financial	II	E
5	Public reaction	Public disrupt	II	E

Risk Controls :

PREVENTION:
ExxonMobil aviation standards;
Inspection and maintenance program
Civil aviation standards
Normal helicopter operations in daylight only
Aviation audits/assessments; Quality checks of fuel supply
Adherence to procedures; EAPL aviation policy
Flight following with live tracking
Co-pilot in each helicopter; Project-specific training
Helicopter induction briefing
Controls on arrival and departure by helideck crew
Trained Helicopter Landing Officers
Markings on helideck
Inspection of helideck by aviation
Training for rig crew and all passengers on S76 helicopter included in overall rig induction
Crane operations shut down when helicopter landing/taking off

MITIGATION:
Emergency communication capability/Emerg Location Transmitter
EAPL ERP incl Public Affairs procedures
Search and Rescue; Flight following; Survival kits
Aircraft first aid kits; HUET training
Fast Rescue Craft on both support vessels, life boat on rig
Vessel can respond very quickly during helicopter operations



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 25

System/Operation : Project execution - general

Event : Helicopter flight incident

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

Minimal population under flight path from Longford.
Long incident-free history of helicopter operations in Bass Strait.

Project : EAPL Jackup Project 2004 **Event No. :** 26

System/Operation : Marine

Event : Failure of rescue/life boat supports or launch during maintenance or drills

Causes :

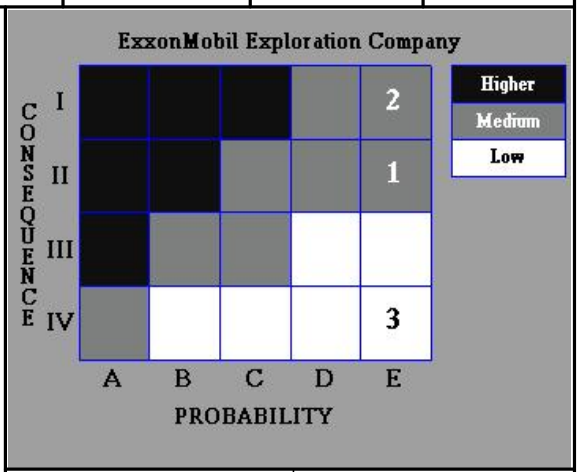
Inadequate maintenance / inspection
Failure of wires
Failure to install safety lines
Mechanical failure
Structural failure of rescue craft / lifeboat / liferafts or davits
Human error / failure to follow procedure
Failure to remove all safety lines when deploying
Failure of limit switch on lifting system

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Health/Safety	II	E
2	Fatality	Health/Safety	I	E
3	Delay to project	Financial	IV	E

Risk Controls :

PREVENTION
Inspection / maintenance program
Designated personnel responsible for launching lifeboats (with training)
Limited access to rescue craft / lifeboats / life rafts
Permit to work manages maintenance and access during drills
JSAs / written work instructions
Trained personnel conduct maintenance
Slings on during maintenance, off after maintenance

MITIGATION
ERP
Medic
Fast rescue craft on support vessels can respond to rig
Fall protection if working on outside of craft / life boat



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 | **Event No. :** 26

System/Operation : Marine

Event : Failure of rescue/life boat supports or launch during maintenance or drills

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 27

System/Operation : Marine

Event : Supply vessel collision with rig

Causes :

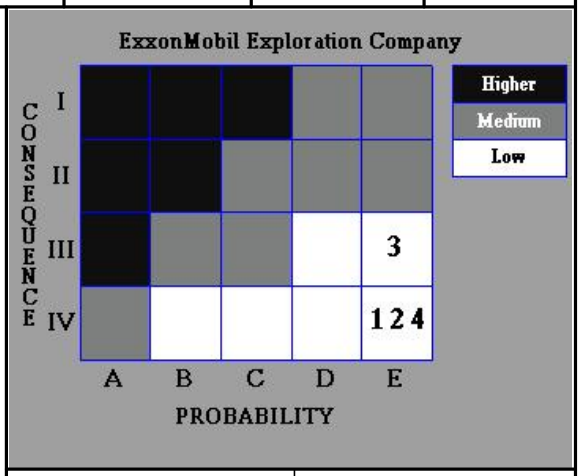
Loss of supply vessel power, control
Adverse weather
Operator error (including due to fatigue or ADU impairment)
Inadequate communication
Deviation from standard procedure
Inadequate length of transfer hoses

	Consequence	Consequence Type	Consequence Category	Probability Category
1	Injury (First Aid)	Health/Safety	IV	E
2	Damage to equipment	Financial	IV	E
3	Release to environment	Environmental	III	E
4	Delay to project	Financial	IV	E

Risk Controls :

PREVENTION
Procedures for selection of experienced marine contractors with trained crews.
Alcohol and Drug Use policy stated in Marine Contract.
Marine Service Vessel specifications in Marine Contract.
Supply boats selected with adequate power and bow thrusters.
Weather/sea state operating limits
Radio communications between supply vessel and rig
Visual control over close manouevres
Supply boat and rig ballast control procedures
Supply vessel master ultimate control over approach to rig
Transfer hoses long enough
Heavy lift procedures
Hours of work managed to avoid fatigue
Live boat operations
All generators operating - redundancy
Supply vessel "500 metre" checklist

MITIGATION
ERP
Fast rescue craft on both supply vessels
Medic on rig



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 27

System/Operation : Marine

Event : Supply vessel collision with rig

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Esso Australia Pty Ltd
Hazard Identification & Risk Assessment Register

Date : 10/03/2004

Project : EAPL Jackup Project 2004 **Event No. :** 28

System/Operation : Marine

Event : Ship collision with rig (on tow or on location)

Causes :

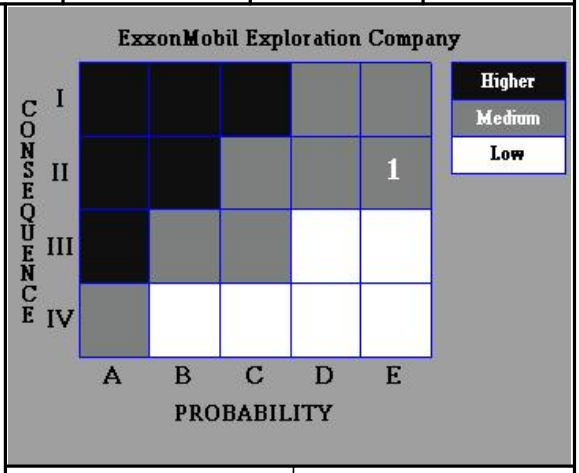
Loss of ship power, control
Adverse weather, including fog
Operator error
Inadequate communication (equipment, language etc)
Failure of radar
Navigation error
Inadequate manning on ship / bridge unmanned

Consequence		Consequence Type	Consequence Category	Probability Category
1	Injury (LTI)	Financial	II	E
2	Fatality			
3	Damage to equipment			
4	Release to environment			
5	Delay to project			

Risk Controls :

PREVENTION
AMSA notification process initiated by rig and supply vessels
PSLA notification re 500 m safety zone around rig
Radio communications between ship and rig
Radar watch at Longford and on rig/supply vessels during rig tow
Navigation lighting / foghorn / searchlights
If on tow, follow standard shipping rules
If on location and supply boat nearby, supply boat would contact ship

MITIGATION
ERP
Suspension of operations when collision imminent
Fast rescue craft on both supply vessels
Medic on rig



Drilling	
Exploration	
ALARP?	Yes
Action Item/s?	None

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 28

System/Operation : Marine

Event : Ship collision with rig (on tow or on location)

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

Project : EAPL Jackup Project 2004 **Event No. :** 29

System/Operation : Marine

Event : Workboat incident away from rig

Causes :

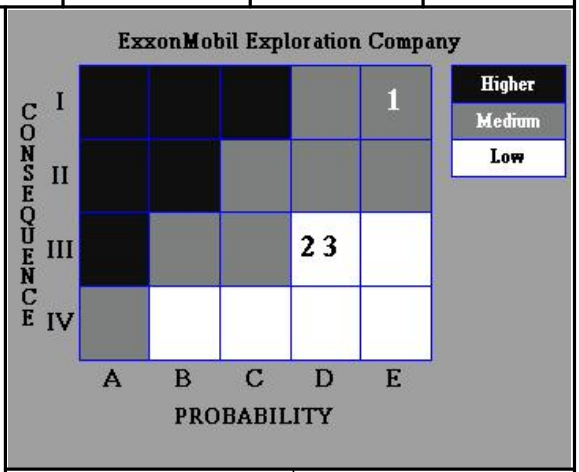
Workboat experiences a fire/explosion
Workboat runs aground, collides with another vessel/fixed structure,
or experiences some other serious incident due to:
- equipment failure/malfunction
- personnel error
- extreme weather conditions
- cargo shift

Consequence		Consequence Type	Consequence Category	Probability Category
1	Fatality	Health/Safety	I	E
2	Discharge to environment	Environmental	III	D
3	Delay to project	Financial	III	D

Risk Controls :

PREVENTION
Comply with Upstream Design Standard: Service Vessel Safety.
Select workboat technical specifications based on conditions anticipated.
Conduct workboat pre-acceptance testing /inspection.
Conduct monthly workboat inspections and verify compliance with written preventive maintenance schedule.
Limit, to the extent possible workboat operations in heavy fog and adverse weather. Conduct drills for operations in these conditions.
Minimize personnel on workboat deck while boat is underway.

MITIGATION
Emergency response plan
Oil spill contingency plan.
Routine testing of safety and fire fighting equipment onboard workboat.



Drilling	
Exploration	
ALARP?	
Action Item/s?	

Project File : Ensco1023.mdb

Project : EAPL Jackup Project 2004 **Event No. :** 29

System/Operation : Marine

Event : Workboat incident away from rig

Consequence Assessment Comments :

No comments were recorded.

Probability Assessment Comments :

No comments were recorded.

HIR Apac

Esso Australia Pty Ltd
Risk Rank

Date :10/03/2004

Project: EAPL Jackup Project 2004 | **Consequence Type:** All | **Rank Mode:** Risk (All risks for each event)

Rank No.	Event No.	System/Operation	Event	Consequence	Consequence Type	C Cat.	P Cat.	Risk	Risk Level
1	1	Logistics, Rig Move a..	Personnel safety incident during rig ..	Fatality	Health/Safety	I	E	5	Medium
2	2	Logistics, Rig Move a..	Failure of tow vessel/line (tow and p..	Fatality	Health/Safety	I	E	5	Medium
3	2	Logistics, Rig Move a..	Failure of tow vessel/line (tow and p..	Collision with ship / platform /..	Financial	II	E	5	Medium
4	2	Logistics, Rig Move a..	Failure of tow vessel/line (tow and p..	Damage to rig/boat, delay to pro..	Financial	II	E	5	Medium
5	3	Logistics, Rig Move a..	Failure during positioning / jacking ..	Fatality	Health/Safety	I	E	5	Medium
6	4	Logistics, Rig Move a..	Jackup foundation failure	Injury (LTI)	Health/Safety	II	E	5	Medium
7	4	Logistics, Rig Move a..	Jackup foundation failure	Fatality	Health/Safety	I	E	5	Medium
8	4	Logistics, Rig Move a..	Jackup foundation failure	Loss of assets / delay to projec..	Financial	II	E	5	Medium
9	5	Well program executio..	Shallow gas release (no surface casin..	Fatality	Health/Safety	I	E	5	Medium
10	6	Well program executio..	Blowout with BOP installed	Injury (LTI)	Health/Safety	II	E	5	Medium
11	6	Well program executio..	Blowout with BOP installed	Fatality	Health/Safety	I	E	5	Medium
12	6	Well program executio..	Blowout with BOP installed	Loss of assets / delay to projec..	Financial	II	E	5	Medium
13	6	Well program executio..	Blowout with BOP installed	Release to environment	Environmental	II	E	5	Medium
14	6	Well program executio..	Blowout with BOP installed	Public reaction	Public disrupt	I	E	5	Medium
15	7	Well program executio..	Annular flow around surface casing in..	Fatality	Health/Safety	I	E	5	Medium
16	7	Well program executio..	Annular flow around surface casing in..	Loss of assets / delay to projec..	Financial	II	E	5	Medium
17	8	Well program executio..	Underground flow	Loss of asset (incl reservoir da..	Financial	II	E	5	Medium
18	9	Well program executio..	Mud-gas separator fails while under p..	Fatality	Health/Safety	I	E	5	Medium
19	10	Well program executio..	High pressure hose/chicksan/fitting/v..	Injury (LTI)	Health/Safety	II	E	5	Medium
20	10	Well program executio..	High pressure hose/chicksan/fitting/v..	Fatality	Health/Safety	I	E	5	Medium
21	11	Well program executio..	Dropped objects during drilling opera..	Serious injury (LTI)	Health/Safety	II	E	5	Medium
22	11	Well program executio..	Dropped objects during drilling opera..	Fatality	Health/Safety	I	E	5	Medium
23	12	Well program executio..	Premature detonation of explosives	Injury (LTI)	Health/Safety	II	E	5	Medium
24	12	Well program executio..	Premature detonation of explosives	Fatality	Health/Safety	I	E	5	Medium
25	13	Well program executio..	Fall from heights	Injury (LTI)	Health/Safety	II	E	5	Medium
26	13	Well program executio..	Fall from heights	Fatality	Health/Safety	I	E	5	Medium
27	14	Well program executio..	Personnel safety incident	Injury (LTI)	Health/Safety	II	D	5	Medium
28	14	Well program executio..	Personnel safety incident	Fatality	Health/Safety	I	E	5	Medium
29	15	Well program executio..	Hazardous materials release	Fatality	Health/Safety	I	E	5	Medium
30	20	Project execution - g..	Personnel contract disease/illness	Fatality	Health/Safety	I	E	5	Medium
31	20	Project execution - g..	Personnel contract disease/illness	Long-term personnel disability	Health/Safety	I	E	5	Medium
32	21	Project execution - g..	Person overboard (including during ri..	Injury (LTI)	Health/Safety	II	E	5	Medium
33	21	Project execution - g..	Person overboard (including during ri..	Fatality	Health/Safety	I	E	5	Medium
34	22	Project execution - g..	Rig structural failure	Injury (LTI)	Health/Safety	II	E	5	Medium

HIR Apac

Esso Australia Pty Ltd
Risk Rank

Project: EAPL Jackup Project 2004 **Consequence Type:** All **Rank Mode:** Risk (All risks for each event)

Rank No.	Event No.	System/Operation	Event	Consequence	Consequence Type	C Cat.	P Cat.	Risk	Risk Level
35	22	Project execution - g..	Rig structural failure	Fatality	Health/Safety	I	E	5	Medium
36	22	Project execution - g..	Rig structural failure	Delay to project / damage to ass..	Financial	II	E	5	Medium
37	24	Project execution - g..	Natural disaster	Fatality	Health/Safety	I	E	5	Medium
38	25	Project execution - g..	Helicopter flight incident	Injury (LTI)	Health/Safety	II	D	5	Medium
39	25	Project execution - g..	Helicopter flight incident	Fatality	Health/Safety	I	E	5	Medium
40	25	Project execution - g..	Helicopter flight incident	Damage to assets	Financial	II	E	5	Medium
41	25	Project execution - g..	Helicopter flight incident	Public reaction	Public disrupt	II	E	5	Medium
42	26	Marine	Failure of rescue/life boat supports ..	Injury (LTI)	Health/Safety	II	E	5	Medium
43	26	Marine	Failure of rescue/life boat supports ..	Fatality	Health/Safety	I	E	5	Medium
44	28	Marine	Ship collision with rig (on tow or on..	Injury (LTI)	Financial	II	E	5	Medium
45	29	Marine	Workboat incident away from rig	Fatality	Health/Safety	I	E	5	Medium
46	1	Logistics, Rig Move a..	Personnel safety incident during rig ..	Injury (MTI)	Health/Safety	III	D	4	Low
47	2	Logistics, Rig Move a..	Failure of tow vessel/line (tow and p..	Spill of fuel/oil to ocean	Environmental	III	D	4	Low
48	11	Well program executio..	Dropped objects during drilling opera..	Injury (MTI)	Health/Safety	III	D	4	Low
49	14	Well program executio..	Personnel safety incident	Injury (First aid)	Health/Safety	IV	B	4	Low
50	20	Project execution - g..	Personnel contract disease/illness	Illness (MTI)	Health/Safety	III	D	4	Low
51	29	Marine	Workboat incident away from rig	Discharge to environment	Environmental	III	D	4	Low
52	29	Marine	Workboat incident away from rig	Delay to project	Financial	III	D	4	Low
53	1	Logistics, Rig Move a..	Personnel safety incident during rig ..	Disruption to project	Financial	IV	D	3	Low
54	2	Logistics, Rig Move a..	Failure of tow vessel/line (tow and p..	Injury (First aid)	Health/Safety	IV	D	3	Low
55	3	Logistics, Rig Move a..	Failure during positioning / jacking ..	Injury (MTI)	Health/Safety	III	E	3	Low
56	7	Well program executio..	Annular flow around surface casing in..	Release to environment	Environmental	III	E	3	Low
57	8	Well program executio..	Underground flow	Delay to project	Financial	III	E	3	Low
58	9	Well program executio..	Mud-gas separator fails while under p..	Injury (MTI)	Health/Safety	III	E	3	Low
59	11	Well program executio..	Dropped objects during drilling opera..	Loss of assets (incl damage to r..	Financial	IV	D	3	Low
60	11	Well program executio..	Dropped objects during drilling opera..	Delay to project	Financial	IV	D	3	Low
61	15	Well program executio..	Hazardous materials release	Injury (MTI)	Health/Safety	III	E	3	Low
62	16	Well program executio..	Fuel or oil spill	Release to environment	Environmental	III	E	3	Low
63	18	Well program executio..	Accidental release of mud (incl mud c..	Release to environment	Environmental	IV	D	3	Low
64	19	Project execution - g..	Civil unrest, terrorism, sabotage, cr..	Disruption to project	Financial	IV	D	3	Low
65	22	Project execution - g..	Rig structural failure	Release to environment	Environmental	III	E	3	Low
66	23	Project execution - g..	Regulatory non-compliance	Delay to project	Financial	IV	D	3	Low
67	23	Project execution - g..	Regulatory non-compliance	Fines	Financial	III	E	3	Low
68	24	Project execution - g..	Natural disaster	Injury (MTI)	Health/Safety	III	E	3	Low

HIR Apac

Esso Australia Pty Ltd
Risk Rank

Project: EAPL Jackup Project 2004 | **Consequence Type:** All | **Rank Mode:** Risk (All risks for each event)

Rank No.	Event No.	System/Operation	Event	Consequence	Consequence Type	C Cat.	P Cat.	Risk	Risk Level
69	25	Project execution - g..	Helicopter flight incident	Project delay	Financial	III	E	3	Low
70	27	Marine	Supply vessel collision with rig	Release to environment	Environmental	III	E	3	Low
71	3	Logistics, Rig Move a..	Failure during positioning / jacking ..	Move off location (delay to proj..	Financial	IV	E	2	Low
72	4	Logistics, Rig Move a..	Jackup foundation failure	Release to environment	Environmental	IV	E	2	Low
73	5	Well program executio..	Shallow gas release (no surface casin..	Injury (MTI)	Health/Safety	IV	E	2	Low
74	5	Well program executio..	Shallow gas release (no surface casin..	Loss of assets / delay to projec..	Financial	IV	E	2	Low
75	7	Well program executio..	Annular flow around surface casing in..	Injury (First Aid)	Health/Safety	IV	E	2	Low
76	9	Well program executio..	Mud-gas separator fails while under p..	Release to environment	Environmental	IV	E	2	Low
77	9	Well program executio..	Mud-gas separator fails while under p..	Loss of asset / delay to project..	Financial	IV	E	2	Low
78	10	Well program executio..	High pressure hose/chicksan/fitting/v..	Damage to assets / delay to proj..	Financial	IV	E	2	Low
79	12	Well program executio..	Premature detonation of explosives	Delay to project, Loss of assets..	Financial	IV	E	2	Low
80	13	Well program executio..	Fall from heights	Delay to project	Financial	IV	E	2	Low
81	14	Well program executio..	Personnel safety incident	Delay to project	Financial	IV	E	2	Low
82	15	Well program executio..	Hazardous materials release	Release to environment	Environmental	IV	E	2	Low
83	15	Well program executio..	Hazardous materials release	Delay to project	Financial	IV	E	2	Low
84	16	Well program executio..	Fuel or oil spill	Injury (First Aid)	Health/Safety	IV	E	2	Low
85	16	Well program executio..	Fuel or oil spill	Loss of assets (caused by fire),..	Financial	IV	E	2	Low
86	17	Well program executio..	Release of untreated sewage or waste	Release to environment	Environmental	IV	E	2	Low
87	17	Well program executio..	Release of untreated sewage or waste	Public reaction	Financial	IV	E	2	Low
88	19	Project execution - g..	Civil unrest, terrorism, sabotage, cr..	Damage to equipment	Financial	IV	E	2	Low
89	20	Project execution - g..	Personnel contract disease/illness	Delay to project	Financial	IV	E	2	Low
90	24	Project execution - g..	Natural disaster	Loss of assets / delay to projec..	Financial	IV	E	2	Low
91	26	Marine	Failure of rescue/life boat supports ..	Delay to project	Financial	IV	E	2	Low
92	27	Marine	Supply vessel collision with rig	Injury (First Aid)	Health/Safety	IV	E	2	Low
93	27	Marine	Supply vessel collision with rig	Damage to equipment	Financial	IV	E	2	Low
94	27	Marine	Supply vessel collision with rig	Delay to project	Financial	IV	E	2	Low
95	28	Marine	Ship collision with rig (on tow or on..	Fatality					
96	28	Marine	Ship collision with rig (on tow or on..	Damage to equipment					
97	28	Marine	Ship collision with rig (on tow or on..	Release to environment					
98	28	Marine	Ship collision with rig (on tow or on..	Delay to project					

HIR Apac	**Esso Australia Pty Ltd** **Actions**	Date : 10/03/2004 Page No. : 67

Project : EAPL Jackup Project 2004 | **Event No. :** 10

System/Operation : Well program execution | **Event :** High pressure hose/chicksan/fitting/vessel failure

No.	Actions	Status	Facilitator	I. Date	C. Date
1	Consider what action (if any) arising from the recent regulator failure.		Barry Todd		

HIR Apac	**Esso Australia Pty Ltd** **Actions**	Date : 10/03/2004 Page No. : 68

Project : EAPL Jackup Project 2004 | **Event No. :** 11

System/Operation : Well program execution | **Event :** Dropped objects during drilling operations

No.	Actions	Status	Facilitator	I. Date	C. Date
2	Consider development of a tool register for tools transferred to height.		Barry Todd		

HIR Apac	**Esso Australia Pty Ltd** **Actions**	Date : 10/03/2004 Page No. : 69

Project : EAPL Jackup Project 2004 | **Event No. :** 13

System/Operation : Well program execution | **Event :** Fall from heights

No.	Actions	Status	Facilitator	I. Date	C. Date
3	Procure secondary fall arrest device for use with each man-riding hoist.		Barry Todd		
4	Extend the current JSA process to identify areas where recovery of a fallen person would be difficult and incorporate necessary recovery requirements into JSAs as appropriate.		Barry Todd		

HIR Apac	**Esso Australia Pty Ltd** **Actions**	Date : 10/03/2004 Page No. : 70

Project : EAPL Jackup Project 2004	**Event No. :** 14
System/Operation : Well program execution	**Event :** Personnel safety incident

No.	Actions	Status	Facilitator	I. Date	C. Date
5	Communicate Esso hours of work policy to Ensco.		Frank Kratzer		

HIR Apac	**Esso Australia Pty Ltd** **Actions**	Date : 10/03/2004 Page No. : 71

Project : EAPL Jackup Project 2004 | **Event No. :** 15

System/Operation : Well program execution | **Event :** Hazardous materials release

No.	Actions	Status	Facilitator	I. Date	C. Date
6	Ensure that hazardous materials training requirements are defined.		Barry Todd		
7	Confirm that battery room has ventilation.		Barry Todd		

Esso Australia Pty Ltd
Actions

Date : 10/03/2004

Project : EAPL Jackup Project 2004

Event No. : 19

System/Operation : Project execution - general

Event : Civil unrest, terrorism, sabotage, criminal act, Ind Relations

No.	Actions	Status	Facilitator	I. Date	C. Date
8	Update Esso Security on Ensco program.		Frank Kratzer		

Ensco 102 Risk Assessment Action Items

Action No.	Event No.	System	Risk	Action	Facilitator	Initiation Date	Status	Completion Date
1	10	Well program execution	High pressure hose/chicksan/fitting/ vessel failure	Consider what action (if any) arising from the recent regulator failure.	Barry Todd	23-Jan-04	**Completed.** Uniweld regulators have been replaced with BOC 7000 KPA Type 50 regulators since arrival in Bass Strait.	15-May-04
2	11	Well program execution	Dropped objects during drilling operations	Consider development of a tool register for tools transferred to height.	Barry Todd	23-Jan-04	**Completed.** Tool register has been developed and is in use. See example attached.	04-Feb-04
3	13	Well program execution	Fall from heights	Extend the current JSA process to identify areas where recovery of a fallen person would be difficult and incorporate necessary recovery requirements into JSAs as appropriate.	Barry Todd	23-Jan-04	**Completed.** Procedures developed for recovery of personnel from BOPs, Personnel & Work Baskets, Scaffolding on the rig floor and over the side, and crane boom.	12-Mar-04
4	13	Well program execution	Fall from heights	Procure secondary fall arrest device for use with each man-riding hoist.	Barry Todd	23-Jan-04	**Completed.** Secondary fall arrest devices were installed prior to commecment of operation for Esso.	02-Apr-04
5	14	Well program execution	Personnel safety incident	Communicate Esso hours of work policy to Ensco.	Frank Kratzer	27-Jan-04	**Completed.** Work hours have been emailed to Ensco.	28-Jan-04
6	15	Well program execution	Hazardous materials release	Confirm that battery room has ventilation.	Barry Todd	23-Jan-04	**Completed.** Confirmed large intake vent on side of compartment and ceiling exhaust fan.	01-Feb-04
7	15	Well program execution	Hazardous materials release	Ensure that hazardous materials training requirements are defined.	Barry Todd	23-Jan-04	**Completed.** Hazardous materials training as defined in Victorian Code of Practice, under Section 56 of the Dangerous Goods Act 1985. Training will be managed In-House.	06-Feb-04
8	19	Project execution general	Civil unrest, terrorism, sabotage, criminal act, Ind Relations	Update Esso Security on Ensco program.	Frank Kratzer	23-Jan-04	**Completed.** Esso Security updated on the ENSCO 102 program.	09-Feb-04

Printed on 02/08/2004 at 1:15 pm

Risk Hazard Scenario Supplementary Worksheet

Risk Assessment Project: **EAPL Jackup Project**

Event No: **5**

Event: **Shallow gas release (no surface casing in place)**

Supplementary Scenario:

The Cameron 18-3/4" Lower Wear Bushing installed in the Compact We//bead used *for Open-Wafer well locations on ENSCO 102 unseats during a shallow gas event while drilling surface* hole, *enters the diverter. blocking if* and *causes* broaching. The *wear bushing is held in p/ace by o-ring friction.*

Comments:

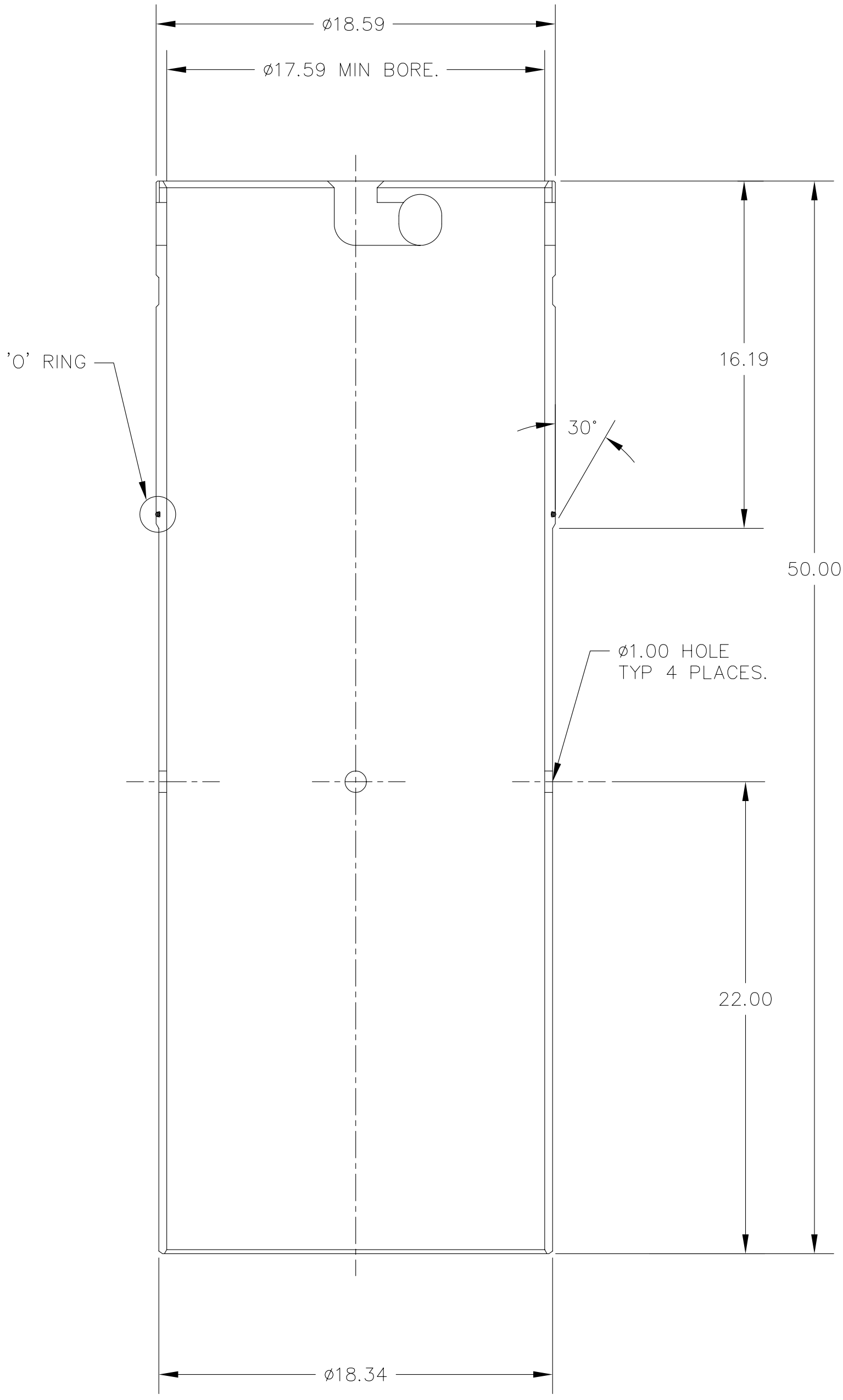
Shallow gas release (no surface casing *in p/ace) has been assessed as a low probability ("E") event (EAPL Jackup Project 2004 risk assessment scenario 5). As shown in the attachments, even if the* wear *bushing* was *f/owed out of the we//head, and if if managed to f/ow up through the BOP stack without becoming stuck, and lodged in the diverter, the difference in diameter* make *if unlikely if would block the diverter. This reduces the probability of this specific scenario to a probability much less than "E".*

As a result. no further action is proposed either to prevent the wear bushing unseating, or to further mitigate any outcomes.

Recommended: 7/May/2004

Endorsed: **EAPL Drilling Engineering Manager** 7/05/04

Approved: **EAPL Drilling Operations Superintendent**



CAD

EST. WEIGHT:- 325 lbs

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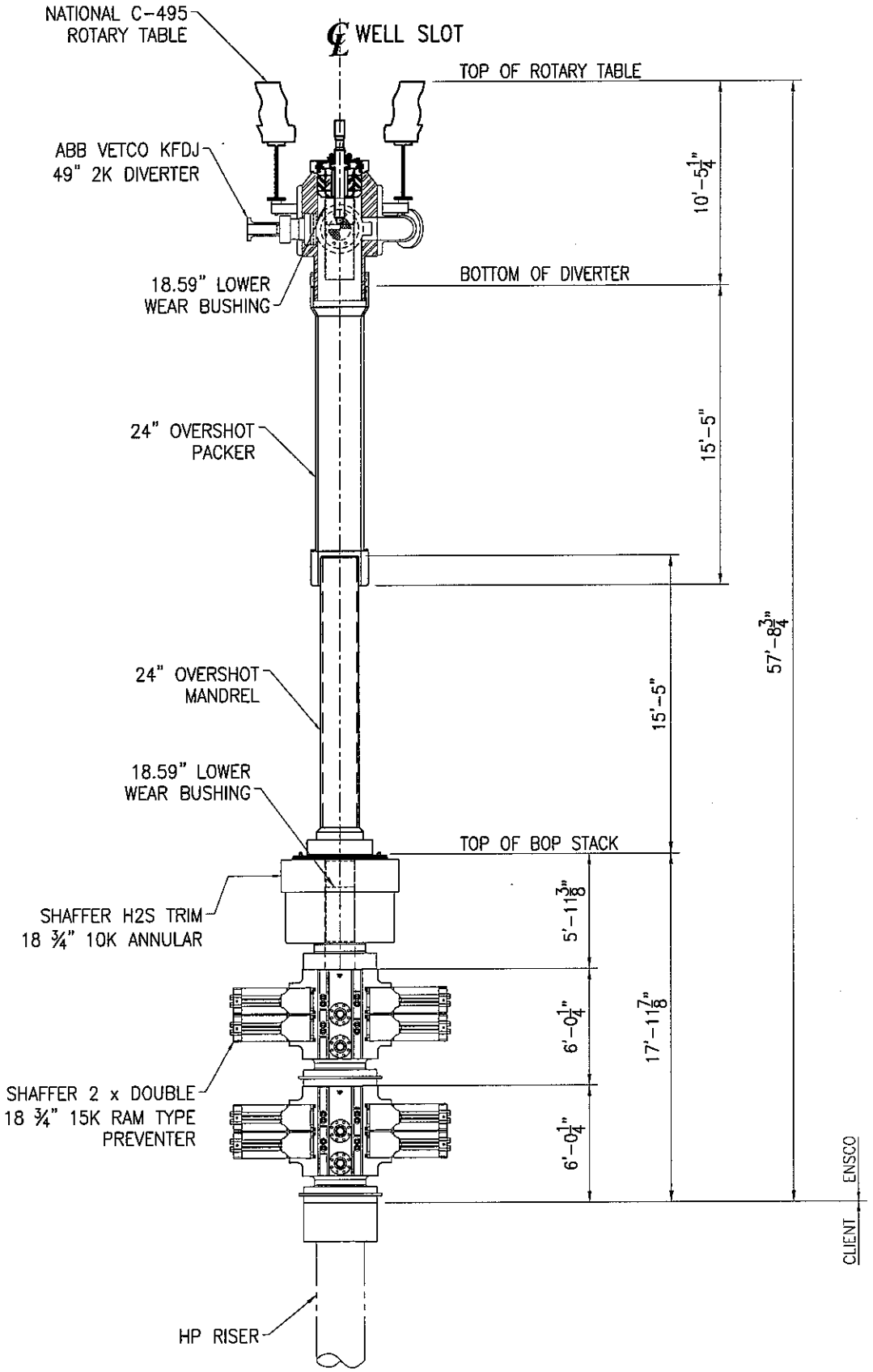
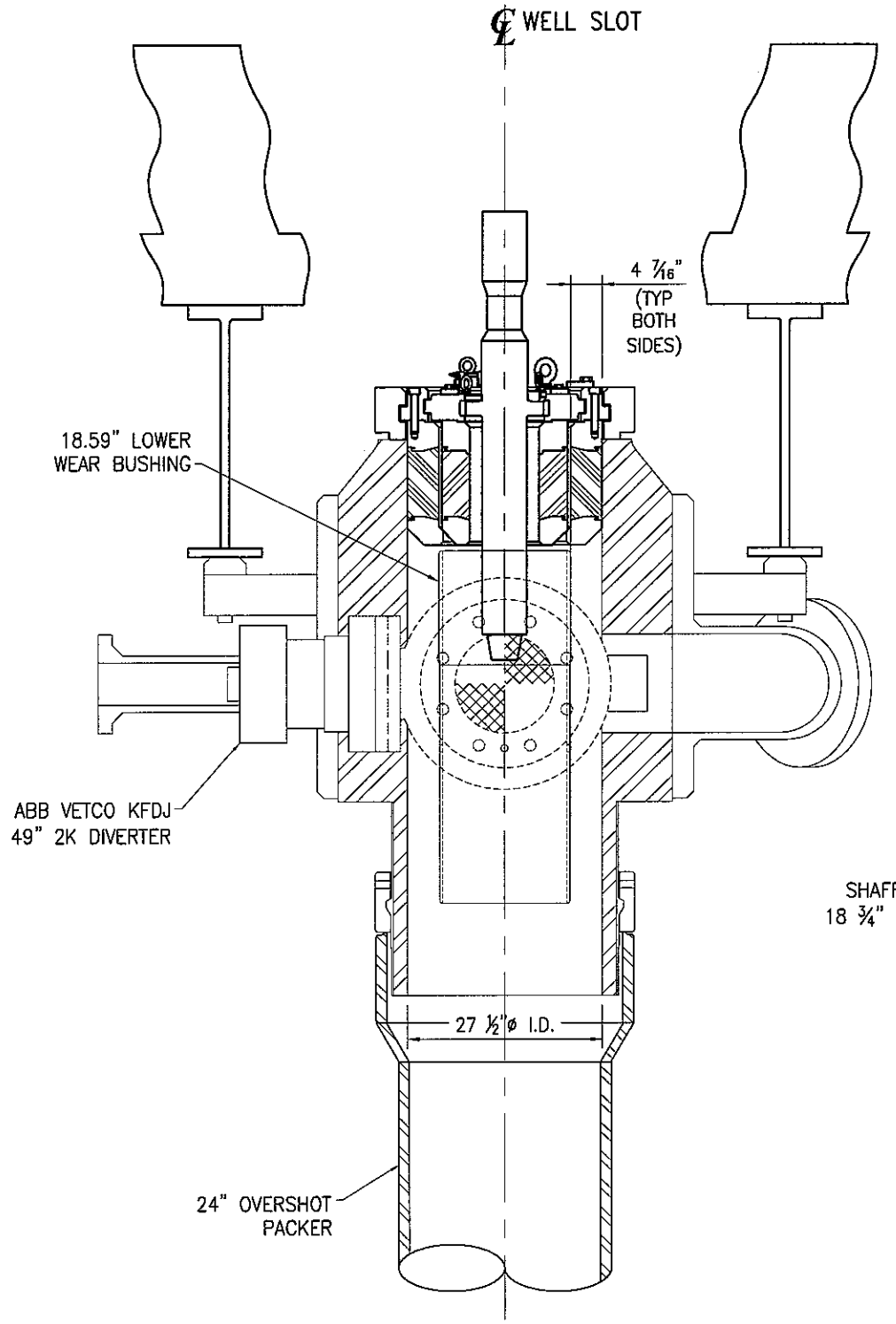
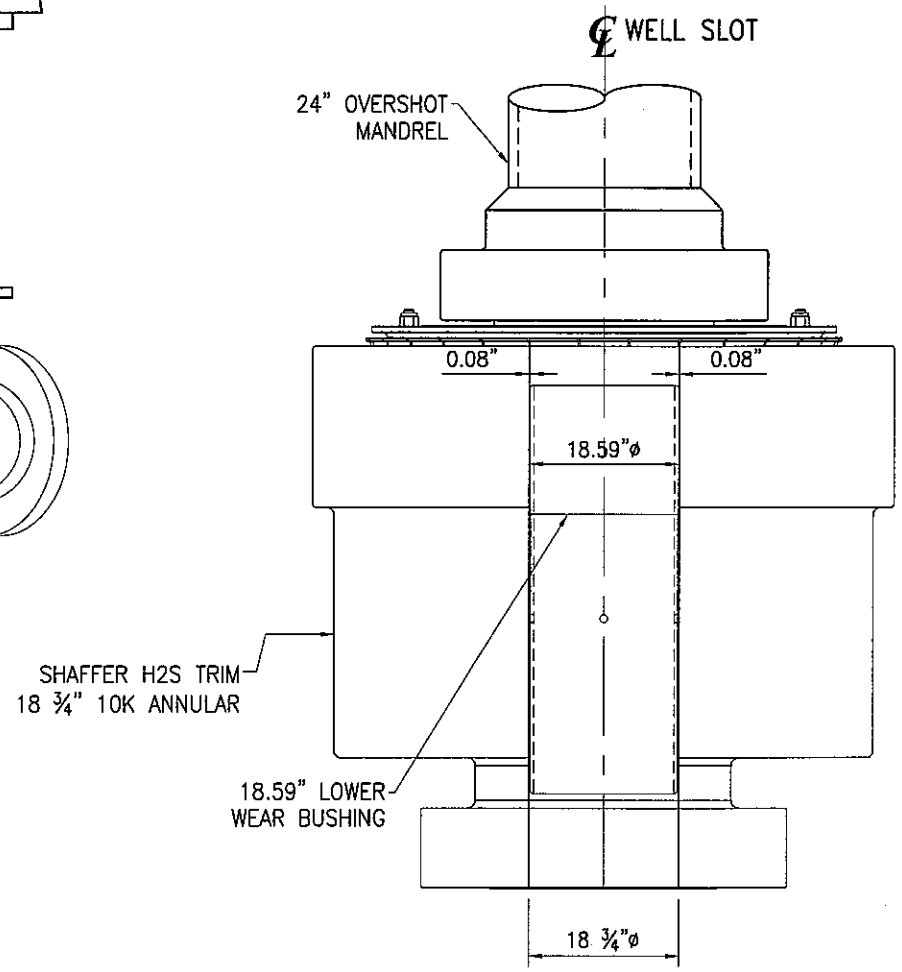
CAMERON

ESSO - WHIPTAIL
18-3/4" LOWER WEAR BUSHING
P/No. 2125331-02

Drawn by:	Date:	Scale:	Drawing Number SHT 1 OF 1	Rev.
J. RAMAGE	05/04/2004	N.T.S.	LO-051691-20	01







REFERENCE DRAWINGS

1) CAMERON DWG. No: LO-051691.20 REV. 01
   18 3/4" LOWER WEAR BUSHING.
2) ABB DWG. No: E101-01-A-M-DD-0133 REV. 1
   18 3/4" 15,000 Psi SHAFFER BOP STACK ARRANGEMENT.

ENSCO

ENSCO ASIA PACIFIC PTE. LTD.

PROJ. NO. ENSCO 102

BOP STACK WITH 18 3/4" LOWER WEAR BUSH ARRANGEMENT

REV:	DATE	REVISION	BY	CHK.	APPR.

DRAWN:	A.QUEK	CHECKED BY:	S.S.
SCALE:	1/4" TO 1'-0"	DATE:	15/APR/2004
CAD FILE NAME:		DESIGNED BY:	
DRAWING NO.:	E102-SK-01-008	SHEET 1 1	REVISION: 0

Rig Positioning Summary

REPORT FOR THE ENSCO 102 RIG MOVE TO THE WEST WHIPTAIL-1 LOCATION

FUGRO SURVEY JOB NO. – P0016

Client	:	Esso Australia Pty Ltd Esso House 12 Riverside Quay Southbank, 3006 Victoria
Date of Survey	:	28 April - 10 May, 2004
Date of Report	:	20 May, 2004
Checked	:	_____
Authorised	:	_____

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APPENDIX B : DAILY OPERATIONS REPORTS
APPENDIX C : PROJECT COORDINATE LISTING AND PROCEDURE
APPENDIX D : GYRO CHECKS AND OFFSET TRAVERSE
APPENDIX E : FINAL POSITIONING DATA
APPENDIX F : ENSCO 102 ROTARY TABLE HEIGHT DIAGRAM AT WEST WHIPTAIL-1

ABSTRACT

Between 28 April and 10 May, 2004, Fugro Survey Pty Ltd (Fugro) provided equipment and personnel for the jack-up Mobile Offshore Drilling Unit, Ensco 102, rig move to the West Whiptail-1 location in Permit VIC/L1 in the Bass Strait, Australia.

Surface positioning was achieved utilising Fugro's SkyFix/SkyFix Spot Differential GPS (Differential GPS) interfaced to Fugro's MultiFix 4 multiple reference station positioning software and Fugro's GNS2 navigation software.

The final position for the drill stem derived from DGPS observations at the West Whiptail-1 location was:

Location Name:	**West Whiptail-1**
Easting:	544121.32m
Northing:	5758030.22m
Latitude:	38° 19' 29.150" S
Longitude:	147° 30' 17.167" E
Rig Heading:	129.0° T

This position is 7.59m on a bearing of 142.6° (grid) from the proposed West Whiptail-1 location.

All coordinates in this report are quoted in GDA94 datum and MGA Zone 55 (CM 147° E) projection, unless otherwise stated.

1.0 INTRODUCTION

Fugro Survey Pty Ltd (Fugro) was contracted by Esso Australia Pty Ltd (Esso) to provide positioning survey services onboard the jack-up Mobile Offshore Drilling Unit (MODU), *Ensco 102*, during the rig move to the West Whiptail-1 location in Permit VIC\L1 in the Bass Strait, Australia.

A general location diagram is shown as Figure 1-1.

This report details the equipment used, survey parameters adopted, procedures employed and the results achieved. A section on safety is included in Section 3.0 of this report.

The survey operations in this report have been conducted in accordance with the terms and conditions covered by the Service Warranty presented in Appendix A.

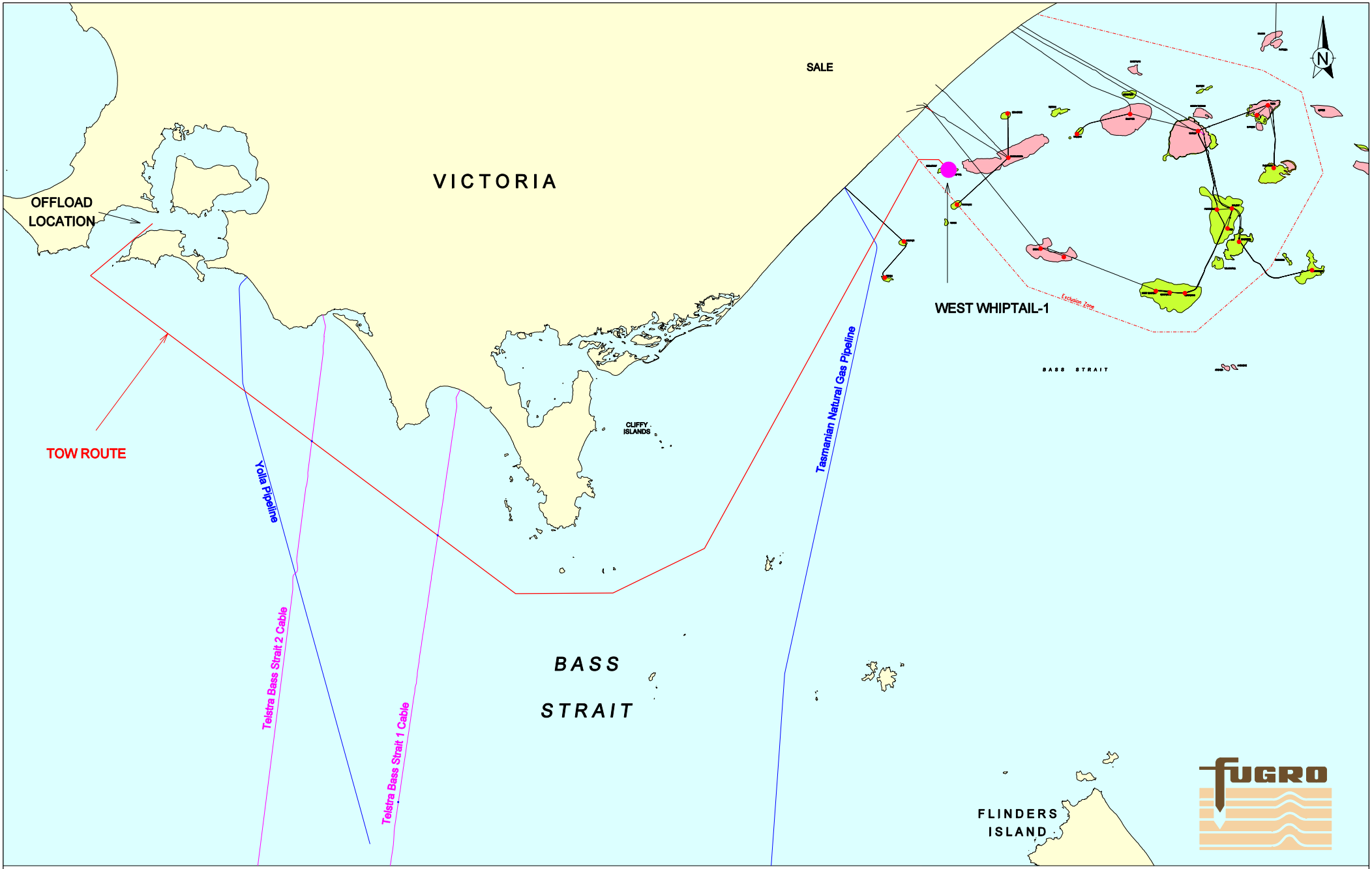
1.1 Scope of Work

Personnel and equipment were provided on a 24-hour per day basis for:

- Provision of real-time positioning of the MODU *Ensco 102* during transit to the West Whiptail-1 location using SkyFix XP SDGPS.
- Determination of the final Differential GPS position of the *Ensco 102* drillstem at the West Whiptail-1 location using a Multiple Reference Station Differential GPS solution.
- GPS carrier phase logging and processing to verify the final Differential GPS drillstem position.
- Determination of the GPS antennae offsets by means of a closed traverse.
- The provision of a comprehensive positioning report containing the final Differential GPS position of the *Ensco 102* drillstem at the Jansz-3 location.

1.2 Sequence of Events

28 April, 2004	Fugro personnel travel from Perth to Melbourne.
29 April, 2004	Fugro travel from accommodation to Long Island point heliport. Helicopter transfer to Ensco 102. Equipment mobilised and tested for functionality. All systems operational.
30 April, 2004	Ensco 102 disembarks from HLV and moves to weather standby location.
1 May, 2004	Fugro personnel measure offsets with total station. Gyro calibration conducted. Waiting on weather.
2, May, 2004	Fugro personnel measure offsets with total station. Attend abandon rig drill and weekly safety meeting. Gyro calibration conducted. Waiting on weather.
3 - 4 May, 2004	Fugro personnel waiting on weather.



ENSCO 102 TOW ROUTES TO WEST WHIPTAIL–1

w:\project data\p0016-ESSO-West Whiptail-1 Rig Move\M.Elmslie\Report\figures1-1 RevA

5 - 7 May, 2004	Ensco 102 commences tow to West Whiptail-1. Ensco 102 under tow.
8 May, 2004	Ensco 102 pinned on location, waiting on preloading, jacking up to drilling airgap and skidout.
9 May, 2004	Log Final fix and carrier phase observations. Power down survey equipment and demob Ensco 102.
10 May, 2004	Fugro personnel depart Ensco 102 for Longford. Travel to Melbourne then continue travel onto Perth.

Further details of Fugro's involvement in the rig move are presented in the Daily Operational Reports included in Appendix B.

2.0 RESULTS

2.1 Final DGPS Position

The final DGPS position of the *Ensco 102* drill-stem was established by calculating the mean position from three hours of differential GPS data between 10:00 and 13:00 on 9 May, 2004. During this period, calculated drill-stem coordinates from the primary positioning system was logged at five second intervals in GNS2. Data from the primary positioning system was used for the final position calculation.

Differential corrections for the GPS positioning system were derived using a multi-reference solution with base station data from Adelaide, Melbourne and Sydney.

GDA94 geographical positions for the West Whiptail-1 location are shown in Table 2-1.

Position	Method	Latitude	Longitude
Drill Stem at Surface	DGPS	38° 19' 29.150" S	147° 30' 17.167" E

TABLE 2-1 : DGPS GEOGRAPHICAL POSITIONS FOR WEST WHIPTAIL-1 (GDA94)

GDA94 grid coordinates (CM 147° E) for the West Whiptail-1 location are shown in Table 2-2.

Position	Method	Easting	Northing
Drill Stem at Surface	DGPS	544121.32m	5758030.22m

TABLE 2-2 : DGPS GRID COORDINATES FOR WEST WHIPTAIL-1 (MGA)

This position is 7.59m at a bearing of 142.6° (grid) from the design location.

A copy of the original rig position field report is contained in Appendix C.

2.2 Final Carrier Phase Position

The final carrier phase position of the *Ensco 102* drillstem was established by processing the three hours of carrier phase GPS data between 10:00 and 13:00 on 9 May, 2004 with AUSLIG's AUSPOS online processing service. During this period, calculated drillstem coordinates from the primary positioning system was logged at 10 second intervals.

Carrier phase data was logged using a Trimble 4000SSE dual frequency GPS receiver with a Trimble L1\L2 geodetic antenna.

GDA94 geographical coordinates for the carrier phase drillstem position at West Whiptail-1 location are shown in Table 2-3.

Position	Method	Latitude	Longitude
Drill Stem at Surface	Carrier Phase	38° 19' 29.154" S	147° 30' 17.168" E

TABLE 2-3: CARRIER PHASE GEOGRAPHICAL POSITIONS FOR WEST WHIPTAIL-1 (GDA94)

GDA94 grid coordinates (CM 147° E) for the carrier phase position at West Whiptail-1 location are shown in Table 2-4.

Position	Method	Easting	Northing
Drill Stem at Surface	Carrier Phase	544121.35m	5758030.11m

TABLE 2-4: CARRIER PHASE GRID COORDINATES FOR WEST WHIPTAIL-1 (MGA)

This position is 7.69m at a bearing of 142.8° (grid) from the design location and 0.12m at a bearing of 164.0° (grid) from the final Differential GPS drillstem position.

2.3 Comparison Between DGPS and Carrier Phase Positions

Comparisons were made between the DGPS and carrier phase drillstem positions at the West Whiptail-1 location. The results of these comparisons are shown in Table 2-5.

Difference Easting	Difference Northing
0.03m	0.11m

TABLE 2-5 : DGPS AND CARRIER PHASE COMPARISONS (MGA)

2.4 Rig Heading

The heading of the *Ensco 102* was established by calculating the average heading during three hours of corrected gyro compass readings logged between 10:00 and 13:00 on 9 May, 2004. During this period gyro readings were logged at five second intervals in GNS2.

The *Ensco 102* rig heading is shown in Table 2-6.

Description	Method	True	Grid
Rig Heading	Gyro	129.0°	129.3°
Proposed Heading	-	130°	-

TABLE 2-6 : RIG HEADING

3.0 SAFETY

All work undertaken by Fugro personnel during the project was performed within the guidelines of Fugro's Safety Policy, as defined in Fugro's Safety Manual (FSSM01) and Offshore Survey Safety Practices (FSSM06). A Project Specific Safety Plan was developed for positioning services onboard the *Ensco 102* for the West Whiptail-1 rig move which was utilised for the move to West Whiptail-1. Fugro personnel worked within all project safety guidelines and plans adopted by Esso and Ensco.

No safety incidents involving Fugro personnel were reported during the project.

Fugro personnel attended a rig induction upon arrival on the rig, and a pre-rig move meeting. While onboard Abandon Rig Drills were held on 2 and 9 May, 2004 in which Fugro personnel participated.

4.0 SURVEY PROCEDURES

4.1 Mobilisation

Mobilisation commenced with departure of M. Elmslie and N. Gregory from Perth on 28 April, 2004, to Melbourne. On 29 April, 2004 M. Elmslie and N. Gregory were transferred to the *Ensco 102* and arrived onboard mid-morning. Following a rig induction, the survey equipment on board the rig was mobilised and powered up and systems and function tests commenced.

4.2 General Survey Procedures

The towing vessel *Ray J Hope* brought the *Ensco 102* onto location, upon which the *Invincible Tide* assisted in final manoeuvring. After jacking up, preloading and skid outing, final position data was logged between 10:00 and 13:00 on 9 May, 2004. A final fix report was issued to the Esso company representative (refer Appendix E).

4.3 Demobilisation

Equipment onboard the *Ensco 102* was packed away and left onboard for the next rig move.

M. Elmslie and N. Gregory departed the rig on 10 May, 2004.

5.0 EQUIPMENT CALIBRATIONS

5.1 Gyro Compass Calibration

The calibration of the survey gyro compass was carried out on 3 May, 2004, at the holding location at Western Port Bay.

A series of observations were made to the sun from which the rig heading was calculated. The calculated values were then compared to the observed gyro compass values logged in GNS2 and a mean C-O value of -88.3° was determined and applied in GNS2.

Details of the observations and gyro calibrations reduction results are enclosed in Appendix D.

5.2 Vessel Offset Calculations

Due to sighting restrictions and in consultation with the Esso survey representative a closed traverse was not performed. The offsets of both GPS antennae were calculated by means of taking measurements to the drillstem, the centreline of the rig on the helideck and the GPS antennas from a station setup on the helideck and then repeating the process from another station also on the helideck as a check. The results of both sets of observations were averaged to calculate the final antenna offsets.

A Topcon GTS 225 Total Station and prisms were used. Values were checked and confirmed by the client Q.C. representative.

Checks were also carried out by 30m tape measure to verify the offsets calculated by the traverse. Scale drawings were also checked against the calculated offset values.

The final offsets are shown below in Table 5-1.

Offset	X	Y
Datum	0	0
Ashtech	-3.33m	+118.99m
Trimble	+13.29m	+104.61m

TABLE 5-1 : VESSEL OFFSETS

Offset results and calculations are contained in Appendix D.

6.0 SURVEY PARAMETERS

6.1 Geodetic Parameters

All coordinates supplied in this report are referenced to the Geodetic Datum of Australia 1994 (GDA94). Global Positioning System (GPS) operates in reference to the World Geodetic System 1984.

Datum	**:**	**World Geodetic System 1984 (WGS84)**
Reference Spheroid	:	World Geodetic Spheroid 1984
Semi-Major Axis	:	6378137.000m
Inverse flattening	:	298.257223563

Datum	**:**	**Geodetic Datum of Australia 1994 (GDA94)**
Reference Spheroid	:	Geocentric Reference System 1980 (GRS80)
Semi-Major Axis	:	6378137.000m
Inverse flattening	:	298.257222101

Note that for all intents and purposes no transformation is required between WGS84 and GDA94 datum.

The proposed drilling location and all project coordinates are grid coordinates on the Map Grid of Australia.

Projection	**:**	**Universal Transverse Mercator (UTM)**
Grid	:	Map Grid of Australia (MGA)
Latitude of Origin	:	0°
Central Meridian	:	147° East (Zone 55)
Central Scale Factor	:	0.9996
False Easting	:	500000m
False Northing	:	10000000m
Units	:	Metres

6.2 Differential GPS Reference Stations

The reference stations listed in Table 6-1 were used in the computation of the MultiFix 4 multiple reference station positioning software. All coordinates are in WGS84.

Description	Site ID	Latitude	Longitude
Adelaide	205	35° 17’ 30.127” S	138° 34’ 50.582” E
Melbourne	208	37° 53’ 47.944” S	145° 07’ 56.688” E
Sydney	206	33° 59’ 12.479” S	151° 14’ 24.222” E

TABLE 6-1 : SKYFIX/SKYFIX SPOT REFERENCE STATIONS (WGS84)

6.3 Project Coordinates and Tolerances

Project target coordinates and surface tolerance for the West Whiptail-1 location were supplied by Esso and are shown in Table 6-2.

Location	Easting	Northing	Tolerance
West Whiptail-1	544116.71m	5758036.25m	5m radius

TABLE 6-2 : PROJECT DESIGN COORDINATES (GDA94)

7.0 EQUIPMENT & PERSONNEL

7.1 Equipment Listing

Survey equipment used for the positioning of the *Ensco 102* was as follows:

Ensco 102

1 x	SkyFix Rig Portable
1 x	Ashtech Z-Xtreme GPS receiver
2 x	Trimble 4000SSE GPS receiver
2 x	SkyFix Spot Antennae
1 x	SG Brown 1000S Gyrocompass
1 x	SG Brown 1000 Gyrocompass
1 x	GNS2 Dongle
1 x	Multifix 4 Dongle
1 x	GNS2 Dongle
3 x	1.3GHz Pentium 4 Computers (for GNS2/MultiFix3)
2 x	Epson LX-300 Printers
1 x	UPS Power Conditioner
4 x	24v PSU
1 x	Topcon GTS 225 Total Station
1 x	Prism Set
1 x	Tripod
2 x	Pentium 3 Computers for GNS2 Remote Display
3 x	90938 SkyFix demodulators
1 x	110-240V Transformer

GNS2 version 2.60b, MultiFix4 version 1.05

All systems were provided complete with all necessary cabling, connectors, power supplies, antennae, accessories, manuals and consumables.

Refer to Figure 7-1 for vessel offset diagram.

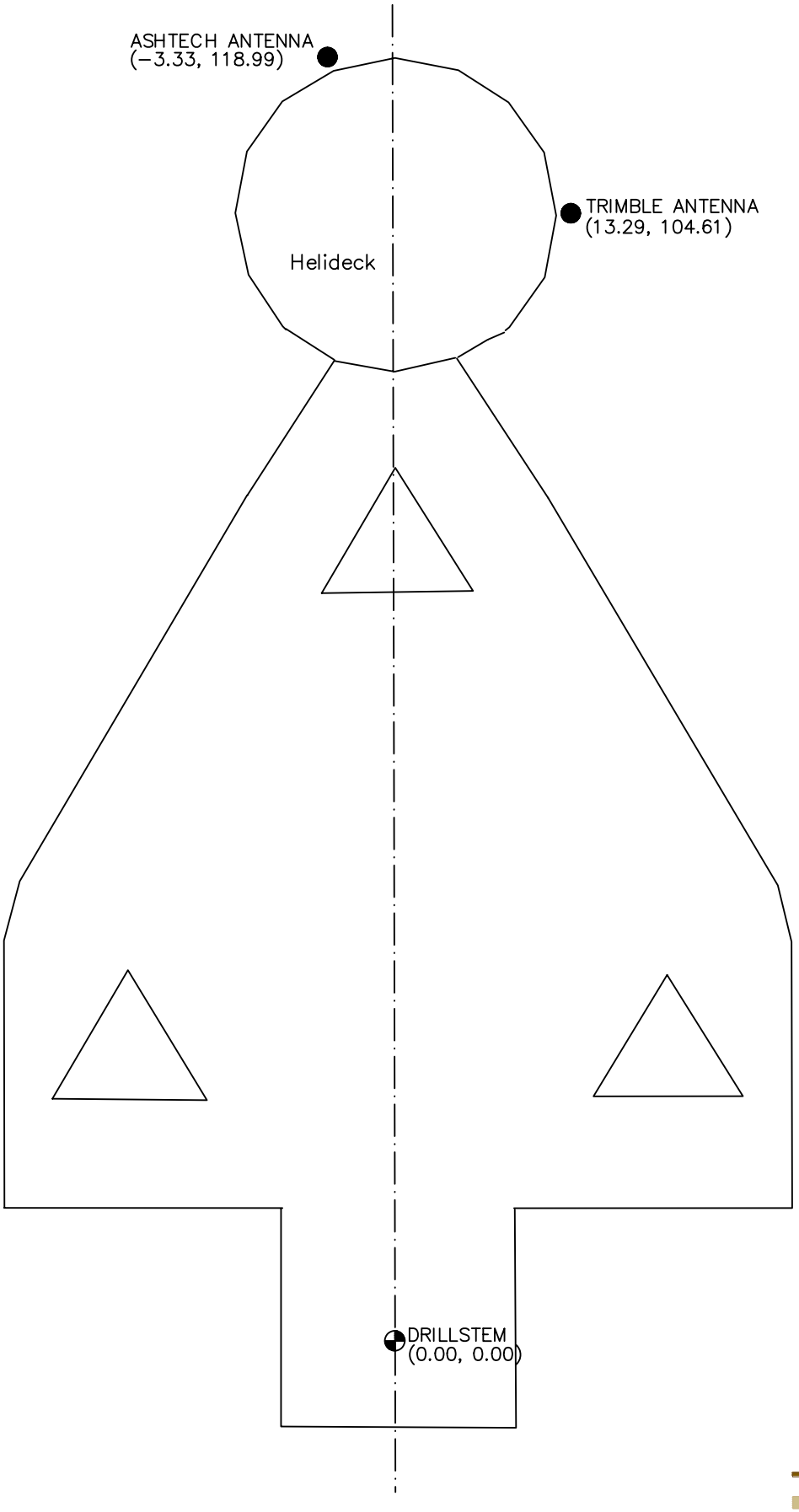
7.2 Personnel

Fugro personnel involved in the rig positioning operation were as follows:

M. Elmslie	Party Chief/Surveyor	28 April – 10 May, 2004
N. Gregory	Engineer	28 April – 10 May, 2004

Esso were represented during the rig move by:

H. Arrowsmith	Esso Representative	28 April – 10 May, 2004



ENSCO 102 RIG OFFSET DIAGRAM

FIGURE 7−1

8.0 CONCLUSIONS

On reviewing the rig move and positioning operations undertaken by Fugro onboard the *Ensco 102*, the conclusion was reached that the *Ensco 102* was successfully positioned at the West Whiptail-1 location.

9.0 DISTRIBUTION

Copies of this report have been distributed as follows:

Esso Australia Pty Ltd	: 2 copies
Attn: Mr Chris Meakin	: 1 electronic copy
ExxonMobil Exploration Company (Houston)	: 5 copies
ExxonMobil Upstream Technical Computing	: 1 electronic copy
Geodetics and Cartography Group	
Attn: Mr Barry Barrs	
Fugro Survey Pty Ltd	: 1 copy

APPENDIX A
SERVICE WARRANTY

1. This report and the geophysical interpretation and assessment carried out in connection with the report (together with the "Services") were compiled and carried out by Fugro Survey Pty Ltd (FSPL) for Esso Australia Pty Ltd (Esso) (the "Client") in accordance with the terms of a contract between FSPL and the Client. The Services were performed by FSPL with the skill and care ordinarily exercised by a reasonable geophysical survey contractor, at the time the Services were performed. Further, and in particular, the Services were performed by FSPL taking into account the limits of the scope of works required by the Client, the time scale involved and the resources, including financial, equipment and manpower resources, agreed between FSPL and the Client.

2. Other than that expressly contained in paragraph 1 above, FSPL provides no other representation or warranty whether expressed or implied, in relation to the Services and all warranties and conditions implied by law are hereby expressly excluded.

3. The Services were performed by FSPL exclusively for the purposes of the Client. FSPL is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless stated in the contract or report for the Services or expressly provided in writing, FSPL does not authorise, consent or condone any party other than the Client relying upon the services. Should this report or any part of this report, or otherwise details of the Services or any part of the services be made known to any such party and such party relies thereon that party does so wholly at its own and sole risk and FSPL disclaims any liability to such parties. Any such party would be well advised to seek (*independent*) advice from a competent (*geophysical survey contractor/consultant*) and/or lawyer.

4. It is FSPL's understanding that this report is to be used for the purpose described in Section 1 - "Introduction" of the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the Client's proposed development or activity change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the Client without FSPL's review and advice shall be at the Client's sole and own risk. Should FSPL be requested to review the report after the date hereof, FSPL shall be entitled to additional payment at the then existing rates or such other terms as agreed between FSPL and the Client.

5. The passage of time may result in man-made and/or natural changes in site conditions and changes in regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should be not relied upon if any such changes have taken place and in any event after a period not greater than two years (or typically six months in the case of seabed features information) from the date of this report or as stated in the report without the written advice of FSPL. In the absence of such written advice from FSPL, reliance on the report after the specified time period shall be at the Client's own and sole risk. Should FSPL be asked to review the report after the specified time period, FSPL shall be entitled to additional payment at the then existing rate or such other terms as may be agreed upon between FSPL and the Client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the Client and FSPL. FSPL has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the Client and FSPL. FSPL is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services.

7. Where the Services have involved the use of any information provided by third parties or the Client and upon which FSPL was reasonably entitled to rely then the Services clearly are limited by the accuracy of such information. Unless otherwise stated, FSPL was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the Client or third parties, including laboratories and information services, during the performance of the services. FSPL is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to FSPL and including the doing of any independent investigation of the information provided to FSPL save as otherwise provided in the terms of the contract between the Client and FSPL

8. Neither FSPL nor any director, officer, agent, or employee of FSPL shall have any liability (whether direct or indirect, in contract or in tort or breach of statutory duty or otherwise) to the Client (nor to any body corporate related to the Client within the meaning of section 50 of the Corporations Law, nor to any director, officer, agent, or employee of the Client or of any such body) for or in connection with the engagement of FSPL for the provision of the Services, except to the extent to which it is not permissible by law to exclude, restrict or modify liability and except for any such liability for losses, claims, damages, liabilities or expenses incurred by the Client (or any of them) that are determined by a final judgement of a court of competent jurisdiction to have resulted primarily from actions taken or omitted to be taken by such person illegally or in bad faith from such person's gross negligence.

The above provisions will survive any termination of FSPL's engagement to provide the Services.

APPENDIX B
DAILY OPERATIONS REPORTS

Fugro Marine Division
FSHY01-1

DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:28/04/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
1645	2015	Fugro personnel travel from Perth to Melbourne.
2100		Check into accommodations.

EQUIPMENT	NO.	EQUIPMENT	NO.

PERSONNEL	TITLE
M.Elmslie	Surveyor
N.Gregory	Engineer

VEHICLES:

CONSUMABLES:

ACCOMMODATION:HOLIDAY INN

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		1

Fugro Marine Division
FSHY01-1

DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:29/04/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0620	0630	Fugro personnel depart accommodation and transit to Esso office
0700	0830	Transit from Esso office to Tyabb airport.
1000	1030	Transit from Tyabb airport to Long Island Point helipad.
1110	1120	Transit from Long Island Point helipad to Ensco 102.
1130	1200	Fugro personnel attend rig induction and tour.
1300	1445	Equipment mobilisation.
1500	1800	Running out of GPS antenna cables.
1830	2325	Experiencing problems with GPS receivers.
2330		Equipment operational.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				

VEHICLES:

CONSUMABLES:

ACCOMMODATION:

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		2

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:30/04/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0630	0700	Ensco102 disembarking from HLV American Cormiorant.
0700	0924	Rig moving from drop off location to standby location.
0925	0945	Rig jacking down.
0945		Rig pinned at 28°26'17" S 145°17'23" E, waiting on weather.
1030		SkyFix XP operational.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		2

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:01/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	1529	Fugro personnel on standby for weather.
1530	1715	Offset measurements conducted.
1728	1728	Sun observations for gyro calibrations conducted, amount of observations limited due to cloud cover. C-O of -88.3° entered into GNS2.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
MAClark		4

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:02/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0930	1100	Offset measurements conducted.
1300	1310	Fugro personnel attend abandon rig muster.
1315	1345	Fugro personnel attend weekly safety meeting.
1702	1708	Sun observations for gyro calibration conducted. C-O of -88.0° calc'd.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		5

Fugro Marine Division
FSHY01-1

DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:03/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	1712	Fugro personnel on standby for weather.
1713	1721	Sun observations for gyro calibration. C-O of -88.3° calc'd.
1722	2359	Fugro personnel on standby for weather.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				

VEHICLES:

CONSUMABLES:

ACCOMMODATION:

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		6

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:04/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	2359	Fugro personnel on standby for weather.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		7

Fugro Marine Division
FSHY01-1

DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:05/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	2359	Fugro personnel on standby for weather.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				

VEHICLES:

CONSUMABLES:

ACCOMMODATION:

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		8

Approved by Dave Scott, Operations Manager – 08/05/01
Note – To ensure that this is the latest version check the Electronic Master File

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:06/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0935		Ray J Hope Connected to main tow bridal.
1000	1030	Jacking down to 15' draft.
1140	1148	Jacking down to rig afloat, departing location.
1300		Rig position 38°15'58" S 145°15'08" E, DTG 175Nm CMG 260°
2359		Rig position 38°55'51" S 145°38'55" E, DTG 127Nm CMG 140°

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				

VEHICLES:

CONSUMABLES:

ACCOMMODATION:

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		9

Fugro Marine Division
FSHY01-1

DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:07/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0300		Rig position 39°05'30" S 145°54'20" E, DTG 112Nm CMG 132°.
1200		Rig position 39°12'35" S 145°43'46" E, DTG 69Nm CMG 62°.
2301		Commence jacking down operations.
2302		Commence turn at WP5.
2352		Invincible Tide connected to starboard aft.
2359		Rig position 38°18'34" S 147°28'14" E, DTG 2Nm CMG 79°.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		10

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:08/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0030		Rig 1Nm from intended location.
0110		Switch to DGPS for primary positioning system.
0300		Rig pinned.
0301	0359	Jacking up to 4' air gap.
0338		Invincible Tide released from starboard aft.
0400	1300	Preloading. Final leg penetrations Bow 1.9', Stbd 1.7', Port 1.7'
1245		Ray J hope released from main tow bridal.
1330	1338	GPS to main deck heighting.
1400	1630	Jacking to 55' drilling air gap.
1815		Commence skidout operations.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		11

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:09/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
0500		Skidout operations complete, cantilever 60' past transom.
1000	1300	Final fix observations, GNS, MF4 and Trimble.
1015	1025	Cantilever skidout check.
1046		Main deck to sea level measurement taken, 27.26m
1500	1530	Demobilisation of equipment.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		12

Fugro Marine Division
FSHY01-1
DAILY OPERATIONS REPORT

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:10/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	TO	SUMMARY OF OPERATIONS (UTC+10HRS)
1230	1245	Fugro personnel transit from Ensco102 to Longford heliport.
1300	1600	Transit from Longford to Melbourne domestic airport
1830	2200	Transit from Melbourne to Perth.

EQUIPMENT	NO.	EQUIPMENT	NO.	PERSONNEL	TITLE
Ashtech GPS receiver	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS receiver	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		13

APPENDIX C

PROJECT COORDINATE LISTING AND PROCEDURE

PROJECT QUALITY PLAN

For

ESSO AUSTRALIA PTY LTD

WEST WHIPTAIL-1 DRILLING RIG POSITIONING

MODU – ENSCO-102

FUGRO SURVEY JOB NO. – P0016

Revision: 0

Fugro Survey Pty Ltd
ABN 81 009 172 990
Hydrographic House
4 Ledgar Road
Balcatta
Western Australia 6021
Tel: (08) 9344 7166
Fax: (08) 9344 8783

DISTRIBUTION LIST

Copy	Issued to	Where	Date of Distribution
1	FSPL Project Manager	Perth	
2	FSPL Party Chief	ENSCO-102	
3	ESSO Australia Pty Ltd	Melbourne	(via Email)
4	FSPL QA & Safety Manager	Perth	

REVISION HISTORY

0	19-04-2004	All	For project operations	BO'B		BO'B	
Rev	**Date**	**Pages**	**Reason For Issue**	**ORIG**	**Check**	**Approved**	**Approved**
				FSSL			**Client**

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1. ENSCO-56 Tow Route to West Whiptail-1

INTRODUCTION

1.1 General

FUGRO SURVEY Pty. Ltd. (formerly Thales GeoSolutions Australasia) have been contracted by **ESSO AUSTRALIA PTY LTD** to provide positioning services during positioning of the Mobile Jack Up Offshore Drilling Unit, **ENSCO-102** at their **WEST WHIPTAIL-1** location in the Bass Strait, offshore Victoria, Australia.

This document details the location, the geodetic parameters to be used, and the procedures to be followed to position the **ENSCO-102** at **WEST WHIPTAIL-1.**

All positioning related works will be carried out in accordance with the Client's requirements and Fugro's standing survey procedures.

1.2 Purpose

The purpose of this document is to provide an interface between Fugro's standard MODU positioning procedures and ESSO's MODU positioning procedures.

1.3 Scope

This Project Quality Plan applies to operations to be undertaken on the MODU ENSCO-102 during the West Whiptail-1 positioning activities on behalf of ESSO Australia.

1.4 Definitions and Abbreviations

Client	-	ESSO Australia Pty Ltd
Survey Contractor	-	Fugro Survey Pty Ltd (formerly Thales GeoSolutions Australasia Ltd)
AGD	-	Australian Geodetic Datum
AHD	-	Australian Height Datum
AHV	-	Anchor Handling Vessel
AMG	-	Australian Map Grid
ANS	-	Australian National Spheroid
CM	-	Central Meridian
C-O	-	Calculated minus Observed
DGPS	-	Differential Global Positioning System
EAL	-	ESSO Australia Pty Ltd

FSPL	-	Fugro Survey Pty Ltd
GDA	-	Geocentric Datum of Australia
GPS	-	Global Positioning System
GNS2	-	General Navigation System
GRS	-	Geodetic Reference System
HDOP	-	Horizontal Dilution of Precision (GPS related)
ITRF	-	International Terrestrial Reference Frame
MGA	-	Map Grid of Australia
MODU	-	Mobile Offshore Drilling Unit
MSL	-	Mean Sea Level
MV	-	Motor Vessel
NAVSTAR	-	Navigational Satellite Timing and Ranging
PDOP	-	Position Dilution of Precision (GPS related)
PQP	-	Project Quality Plan
Rep.	-	Representative
SDGPS	-	Satellite Differential Global Positioning System
SSM	-	Standard Survey Mark
SV	-	Space Vehicle (GPS related)
UTM	-	Universal Transverse Mercator
WGS	-	World Geodetic System
WI	-	Work Instruction

1.5 Scope of Work

The scope of work comprises:

- Provision of SDGPS positioning (primary) & DGPS positioning (secondary) information to assist the MODU Barge Master in positioning the MODU at the intended location.
- Determination of the MODU final drill stem position by SDGPS and GPS carrier phase observations when it is accepted that the drill stem is within the positioning tolerances.
- Production of a positioning report.

The following prime equipment will be provided to undertake the scope of works.

	Operational	Spare
SDGPS Positioning System		
SkyFix Receive-Only Rig Portable Antenna	1	
SkyFix Spot Beam 90962/3/1 Antenna	1	1
SkyFix Spot 90938 Receiver	1	1
SkyFix 90938 Receiver	1	1
Ashtech Z-Xtreme D/F GPS Receiver	1	
Trimble Series 4000 SSE Geodetic GPS Receivers	1	1
MultiFix 4 Computer c/w 8 Port Digiboard	1	1
MultiFix 4 Software Security Key	1	
4 Way GPS Antenna Splitter	1	
On-Line Navigation System		
GNS2 Master Computer c/w 8 Port Digiboard	1	1
(spare GNS2 computer can also run MultiFix 4)		
GNS2 Software Security Key	1	
Epson LX 300 Printer	1	1
GNS2 Remote Computer c/w Colour Monitor	1	1
Gyrocompass		
SG Brown 1000s Gyrocompass	1	1
(*on-line spare*)		
Miscellaneous		
Uninterruptible Power Supply (UPS)	1	1
Total Station	1	
Marine Sextant (gyro calibration)	1	

1.6 Quality Assurance

All personnel assigned to the project shall ensure that their work is executed to the highest professional and industry standards, and in accordance with both the applicable company specifications and the appropriate work instructions. FSPL has a Quality Assurance System that complies with the requirements ISO 9001 and all project personnel are required to be familiar with the essential elements of their respective systems as applicable to the work.

It is the responsibility of the onshore FSPL Operations Manager and the offshore Party Chief to ensure that quality assurance is being adopted as a 'Frame of Mind' by the entire project team.

Furthermore, it is their responsibility to ensure that the work is executed in accordance with the quality plan, which cross references specific operations in this document to the relevant work instructions.

1.7 Project Organisation

The project organisation chart is contained on page 8 of this document.

1.7.1 Onshore

The project will be organised on a day to day basis by the Fugro Survey Operations Department. The key positions in the management of this project will be:

FSPL Director/General Manager	Steve Duffield
FSPL Operations Manager	John Stoker
➢ **FSPL Project Manager**	**Brad O'Brien (main focal point)**
PSPL Positioning Business Line Manager	Ian Hobbs
FSPL QA & Safety Manager	Huw Ellis

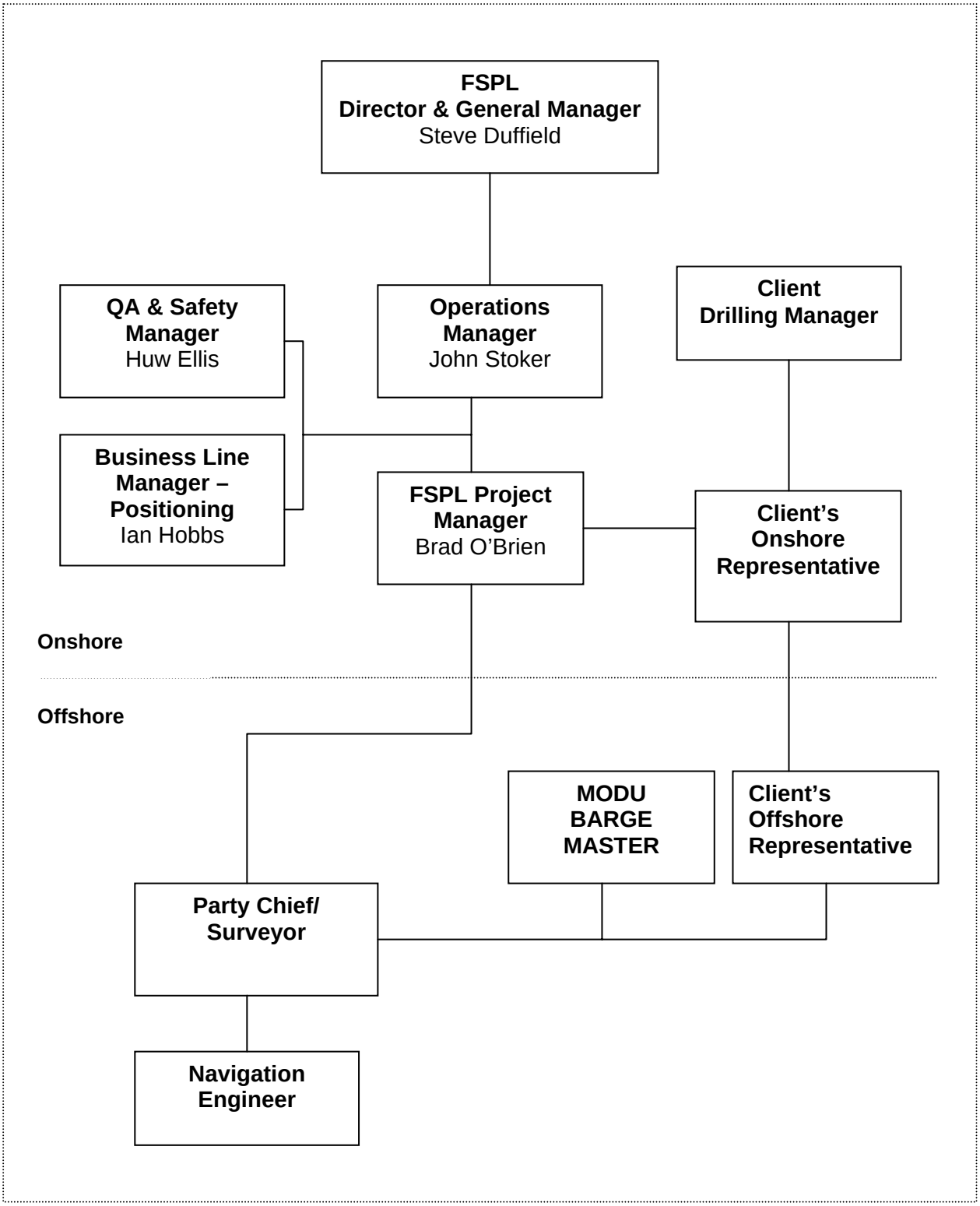
The main focal point for liaison with the client and the FSPL offshore Party Chief will be Brad O'Brien, the FSPL Project Manager.

The Operations Manager, based at FSPL's Perth office, has ultimate responsibility for execution of the project. The Operations Manager has delegated responsibility for project management, procurement of equipment, assigning personnel and providing support to the field team to the Project Manager.

1.7.2 Offshore

Operational control offshore of FSPL's activities will be exercised by FSPL's Party Chief onboard the MODU who will liaise with the client's on-site representative and the MODU Barge Master.

FSPL Project Operational Organisation



2.0 PROJECT INFORMATION

2.1 Company

Client

Esso Australia Pty Ltd
12 Riverside Quay
Southbank
Melbourne
VICTORIA 3006

Tel: (03) 9270 3333
Fax: (03) 9270 3593

Contact: **Mr Chris P. Meakin** **Drilling Engineer**
Tel: (03) 9270 3536
Fax: (03) 9270 3593
Mobile: TBA
Email: chrip.p.meakin@exxonmobil.com

Contract No.: 00414001/01

Location Name: West Whiptail-1

Basin / Permit: Gippsland Basin **/** VIC/L1

Survey Contractor

Fugro Survey Pty Ltd
ACN 009 172 990
Hydrographic House
4 Ledgar Road
BALCATTA WA 6021
AUSTRALIA
Tel: (08) 9344 7166
Fax: (08) 9344 8783

Contact: **Mr Brad O'Brien** **Project Manager**
Tel: (08) 6241 1338 (Direct)
Fax: (03) 9344 8783
Mobile: 0418 951 282
Email: b.obrien@fugro.com.au

Mr Ian Hobbs **Business Line Manager (Positioning)**
Tel: (08) 6241 1301 (Direct)
Fax: (03) 9344 8783
Mobile: 0407 382 039
Email: is.hobbs@fugro.com.au

3.0 SURVEY PARAMETERS

3.1 Co-ordinate System

The client requires that all survey calculations shall be carried out on the Geocentric Datum of Australia (GDA) and the Map Grid of Australia (MGA).

The primary navigation system for this project will be Fugro Survey SkyFix XP Positioning System (SDGPS) which utilises the USA Military space based all weather Navigational Satellite Timing and Ranging Global Positioning System (NAVSTAR GPS). Skyfix XP corrections will be provided via the Inmarsat (SkyFix) and Asia Pacific 109 East (SkyFix Spot) communications satellites.
The NAVSTAR GPS is referenced to the International Terrestrial Reference Frame (ITRF) 2000 (epoch 1997.0).

3.2 Geodetic Parameters

Datum	:	Geocentric Datum of Australia (GDA)
Ellipsoid	:	Geodetic Reference System 1980 (GRS80)
Major Semi-axis (a)	:	6 378 137.000 m
Minor Semi-axis (b)	:	6 356 752.314 m
Eccentricity Squared (e^2)	:	0.006 694 380 023
Flattening ($^1/_f$)	:	298.257 222 101

Datum	:	ITRF 2000 (epoch 1997.0) (WGS84)
Ellipsoid	:	World Geodetic System 1984 (WGS84)
Major Semi-axis (a)	:	6 378 137.000 m
Minor Semi-axis (b)	:	6 356 752.314 m
Eccentricity Squared (e^2)	:	0.006 694 379 990
Flattening ($^1/_f$)	:	298.257 223 563

Projection Name	:	Map Grid of Australia (MGA)
Projection Type	:	Universal Transverse Mercator (UTM)
MGA Zone	:	55
Central Meridian (C.M.)	:	147° East
Scale Factor on the C.M.	:	0.9996

False Easting	:	500 000m
False Northing	:	10 000 000m
Latitude of Origin	:	0° (Equator)
Unit of Measure	:	International Metre

Note:

The WGS84 and GRS80 ellipsoids have a very small difference in the inverse flattening. On a UTM projection this difference is at the centimetre level. WGS84 and GDA94 co-ordinates can be considered the same for most practical applications, especially during DGPS operations.

For more detail refer to: *Geocentric Datum of Australia Technical Manual Version 2.2*.

3.3 GPS Datum Transformation - WGS84 to GDA94

The following 7 parameter datum transformation values will be used to convert WGS84 co-ordinates to GDA94 co-ordinates:

Parameter	
Dx (m)	0.0
Dy (m)	0.0
Dz (m)	0.0
Rx (secs)	0.0
Ry (secs)	0.0
Rz (secs)	0.0
Scale (ppm)	0.0

For more detail refer to: *Geocentric Datum of Australia Technical Manual Version 2.2.*

3.4 GPS Datum Transformation Check - WGS84 to GDA94

During set-up of the navigational computer's geodetic parameters, transformation values and signs entered into GNS2 are to be checked by entering the following WGS84 position and comparing the GNS2 computed GDA94 position, they should be the same.

Worked Example - Zone 55

WTN Control	**WGS84**	**GDA94**
Latitude:	S 38° 11′ 32.857″	S 38° 11′ 32.857″
Longitude:	E 148° 23′ 19.644″	E 148° 23′ 19.644″
		MGA
		Zone 55 CM 147° E
Easting :		621 615.531 m
Northing:		5 771 919.331 m
Ellipsoidal Height:	45.611 m	45.611 m

TABLE 1 : GEODETIC PARAMETERS

3.5 DGPS Reference Stations

The following Fugro Survey SkyFix/SkyFix Spot differential reference stations will be used by the DGPS system (secondary system) on the MODU during the positioning activities at the intended location.

Note: It is normal for System #1 data to be transmitted over the links.

Datum: ITRF 2000 (epoch 1997.0) (WGS84)

Station:	**Melbourne**	Range: 226 km	
ID:	**208**		
System	**Latitude (South)**	**Longitude (East)**	**Height Ellipsoidal (m)**
1	37° 53′ 47.94396″	145° 07′ 56.68847″	113.236
2	37° 53′ 47.92954″	145° 07′ 56.56674″	113.234

Station:	**Sydney**	Range: 588 km	
ID:	**206**		
System	**Latitude (South)**	**Longitude (East)**	**Height Ellipsoidal (m)**
1	33° 59′ 12.47855″	151° 14′ 24.22195″	74.958
2	33° 59′ 12.56651″	151° 14′ 24.27199″	74.907

Station:	**Adelaide**	Range: 863 km	
ID:	**205**		
System	**Latitude (South)**	**Longitude (East)**	**Height Ellipsoidal (m)**
1	35° 17′ 30.12666″	138° 34′ 50.58201″	400.039
2	35° 17′ 30.14358″	138° 34′ 50.50571″	400.019

Note: Skyfix XP (Primary system) utilises Satellite Orbit and Clock corrections generated for each satellite continuously by Fugro's global network of reference stations. These corrections are then broadcast to the user and can be used at any location, regardless of the distance to reference stations.

Skyfix Station and Beam Information

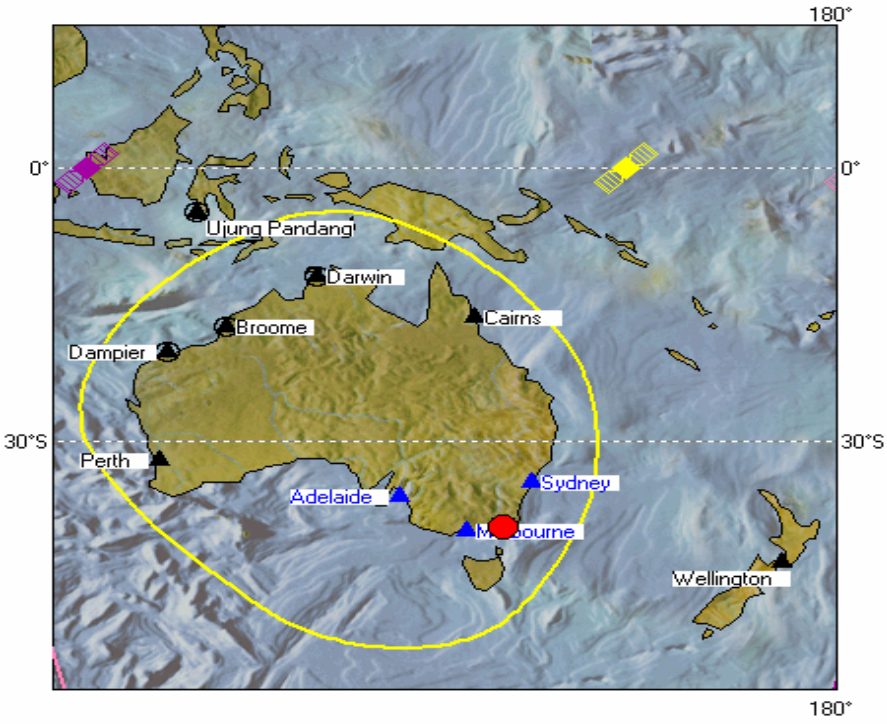
Location:	West Whiptail-1
Latitude:	38°19'28.955"S
Longitude:	147°30'16.976"E
Beam Elevation Mask:	10.00°
Maximum Range:	2000 km

Selected Beams Locations:

Beam Name	Elev	Azi	Freq(MHz)
Pacific Ocean Region	33	47	75.100
109 East High Power	30	307	75.145
Optus Spot	43	19	78.525

Station Ranges:

Station Name	ID:	Range:	Premier:
Melbourne	208	226	No
Sydney	206	588	No
Adelaide	205	863	No
Brisbane	210	1310	No



THALES

4.0 INTENDED LOCATION

Location Name: West Whiptail-1

Basin / Permit: Gippsland Basin / VIC/L1

Datum: **GDA94**

Latitude : 38° 19′ 28.9555″ South

Longitude : 147° 30′ 16.9760″ East

Projection: **MGA Zone 55 C.M. 147° East**

Easting : 544 116.71 m

Northing : 5 758 036.25 m

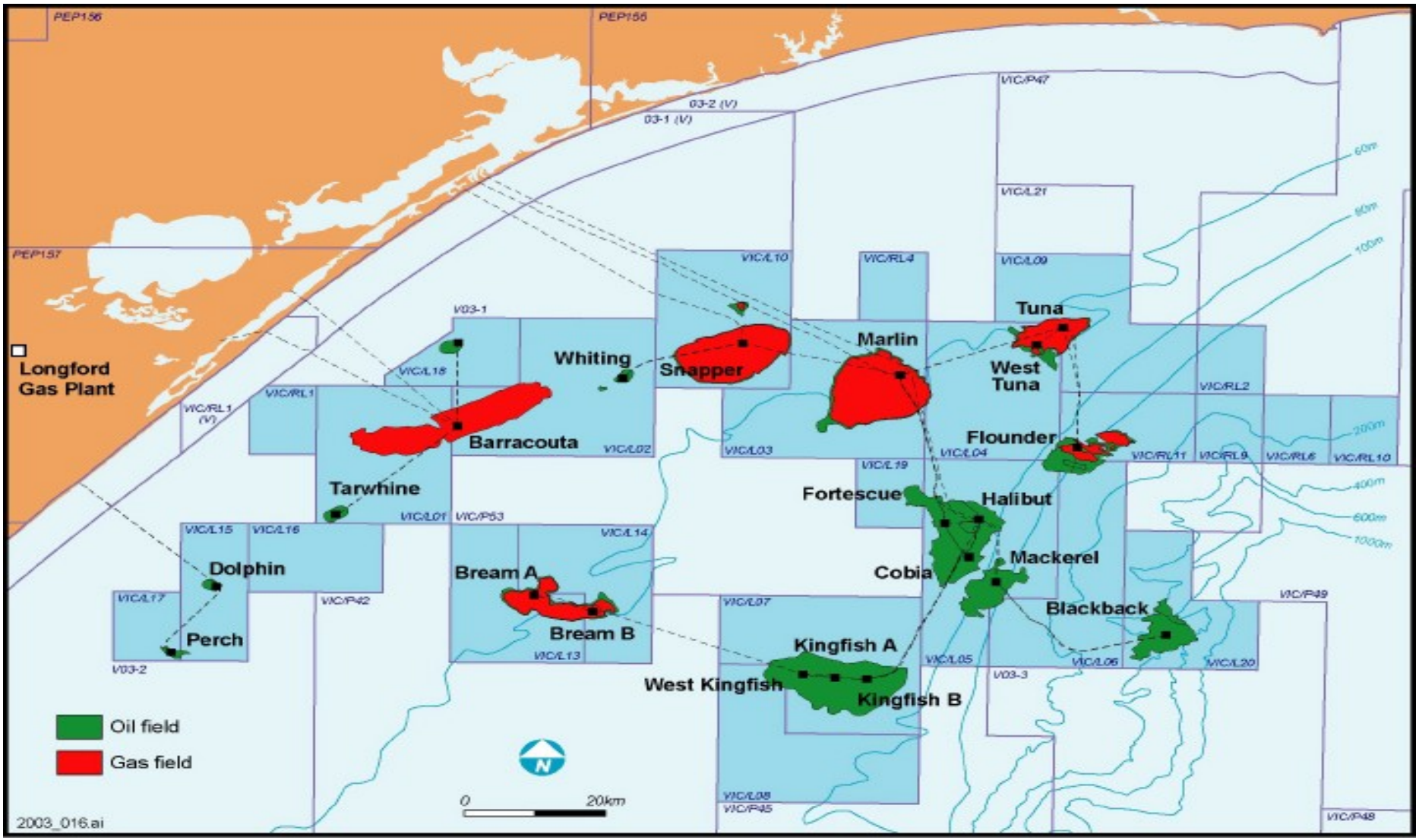
Note: for conversion between the above co-ordinates, the grid should be taken as the origin.

Intended Heading: 90° (T)

Water Depth: 39 m LAT

The maximum allowable positioning tolerances of the ENSCO-102 are as follows:

Position	5 metre radius circle of intended location
Heading	+/- 5° of proposed rig heading


PEP156
PEP156
PEP157
VIC/P47
03-2 (V)
03-1 (V)
VIC/L21
VIC/L10
VIC/RL4
VIC/L09
VIC/L18
VIC/RL1
VIC/RL1 (V)
VIC/L02
VIC/L03
VIC/L04
VIC/RL2
VIC/RL11
VIC/RL9
VIC/RL6
VIC/RL10
VIC/L19
VIC/L01
VIC/P53
VIC/L15
VIC/L16
VIC/L14
VIC/L17
VIC/P42
VIC/L13
VIC/L07
VIC/L05
VIC/L06
VIC/L20
VIC/P49
VIC/P48
VIC/L08
VIC/P45
03-1
03-2
03-3
Longford Gas Plant
Whiting
Snapper
Marlin
Tuna
West Tuna
Barracouta
Flounder
Tarwhine
Fortescue
Halibut
Dolphin
Bream A
Bream B
Cobia
Mackerel
Blackback
Perch
Kingfish A
Kingfish B
West Kingfish
Oil field
Gas field
N
0
20km
60m
80m
100m
200m
400m
600m
1000m
2003_016.ai

5.0 OPERATIONS

The MODU positioning will be carried out in accordance with the following standard Fugro Work Instructions and Forms.

Work Instructions

WI No.	*Title*	*Rev. No.*	*Rev. Date*
WI-098-RIG-005	Positioning of Exploration Drilling Rigs	6	13/01/2003
WI-098-RIG-006	Rig Move Data Pack	5	13/01/2003
WI-098-RIG-060	Offset Measurement	5	13/01/2003
WI-098-RIG-073	Sun Observations	4	13/01/2003
WI-098-RIG-190	GNS2 Final Position Fix	3	13/01/2003

Forms

Form No.	*Title*	*Rev. No.*	*Rev. Date*
F098-RIG-006-2(c)	Rig Move Survey Data Sheet - GDA	1	06/03/2002
F098-RIG-006-1	Rig Move Data Pack Check List	4	30/03/2000
F098-RIG-005-1	Rig Move Mobilisation Check List	5	30/10/2000
F098-RIG-073-1	Sun Observation Record	2	03/02/1998
F098-RIG-005-2	Rig Move Operation Check List	5	30/10/2000
F098-RIG-005-3	Rig Move Demobilisation Check List	4	30/10/2000
F098-RIG-060-1(a)	Rig Information Sheet	4	14/01/2000
F098-RIG-080	Rig Move Report Checklist	2	28/03/2002
F098-RIG-100	ExxonMobil rig Move Checklist	2	30/10/2002

In addition to the above procedures, the following Fugro drawings will be referenced to during operations:

1. ENSCO-102 Rigmove Tow Route to West Whiptail-1 Rev dated .

ATTACHMENT 1

ENSCO-102 Rigmove Tow Route to West Whiptail-1

MOVE, PRELOAD & EXIT PROGRAM	WELL: West Whiptail-1
	TYPE: Near Field Wildcat Well

1.0 MOVE, PRELOAD & EXIT OBJECTIVES

Move the ENSCO 102 from the offload location at GDA94 Latitude offload location at Latitude 38 57' 50" S, Longitude 148 33' E to the West Whiptail-1 (VIC/L1) well location. The Tidewater Ray J. Hope will be the primary tow vessel, supported by the Tidewater Invincible Tide.

Position the rig within a **5m-radius circle** centred on the proposed location on a heading of **130° True**. The prevailing wind is from the West (West SouthWest to South). By selecting a heading of 130 , the quarters are unlikely to be downwind of either the rig floor or the engine exhausts, boat handling will be in the lee of the predominant weather, and should AHVs loose power, the vessel will likely drift away from the ENSCO 102.

Preload ENSCO 102 and prepare to spud the well.

On the completion of the well, prepare to move the rig, jack-down and then exit the location on approximately the reverse path to the entry.

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10.0 PREPARING TO SPUD 8
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Engineer	(C.P. Meakin)	22-Apr-2004
Drilling Engineering Manger	(C. A. Johancsik) for	22-04-04
Operations Superintendent	(F. W. Kratzer)	22/04/04
Endorsed: Gippsland Geoscience Manger	(W.J. Mudge)	23/4/04
Approved: Drilling Manager	(D. L. Whiteman)	22/4/2004

REV: 0

3.0 WEST WHIPTAIL-1 WELL LOCATION

ATTACHMENT 1 West Whiptail-1 Well Location, Position Tolerance, Rig Heading & Air Gap. details the location for West Whiptail-1. The location is within the Bass Strait Shipping Exclusion Zone.

4.0 BOTTOM CONDITIONS / HAZARDS & PRECAUTIONS

Barracouta platform, the nearest surface facility, is 15.3 km from the West Whiptail-1 location on a grid bearing of 79 . The cased and suspended Mulloway-1 sub-sea wellhead is 1.7km from the West Whiptail-1 location on a grid bearing of 281 . The cased and suspended Whiptail-1A sub-sea wellhead is 1.4km from the West Whiptail-1 location on a grid bearing of 85 .

The following conclusions were made from the West Whiptail-1 Site Survey Site Investigation and Operations Report, Thales Report No. 3635C1, survey date 28 October 2003, report issued date 13 January 2004:

Bathymetry
Across the West Whiptail-1 survey area, the seabed shoals very gently (seabed gradient much less than 1°) to the NorthWest.

The nearest observable water depth to the proposed West Whiptail-1 location is 39.0m. The minimum water depth observed within the survey area is 37.2m, 1500m NorthWest of the proposed West Whiptail-1 location. The maximum water depth observed is 41.1m, 1500m SouthEast of the proposed West Whiptail-1 location.

The seabed surrounding the proposed West Whiptail-1 location is free of steep slopes and bathymetric anomalies.

Seabed Features
Moderate reflectivity seabed interpreted as loose fine to medium grained shelly quartz sand is present across the entire West Whiptail-1 site survey area.

In the eastern quarter of the survey area, subtle changes in the seabed reflectivity define NorthEast-SouthWest trending lineations that are probably oriented parallel to the prevailing current. The lineations have no significant relief and represent localised sorting of the seabed sand.

No obvious debris was observed on the side scan sonar records within the site survey area.

Shallow Geology
Two distinct units are visible on the sub-bottom profiler data, leading to the following interpreted stratigraphy:

Stratigraphy	Description
Unit A	Loose to dense/soft to stiff sandy and silty soils.
Unit B	Bedded variably consolidated/cemented sediments.

The shallow geology is relatively homogenous across the site survey area:

- Unit A is flat lying, laterally continuous across the entire site survey area and interpreted to consist of loose to dense sandy soil interbedded with soft to stiff clayey soil. Within the site survey area, the thickness of Unit A is uniformly 3.0m.
- Unit B is also laterally continuous underlying Unit A across the site survey area. Unit B is composed of folded sediments interpreted to consist of bedded variably consolidated/cemented sediments and extends beyond the limit of useful acoustic penetration (20m). One internal reflector within Unit B exhibits a monocline structure with an axis plunging 0.1° East-NorthEast. The bedding on the SouthEast of the monocline dips approximately 0.5° South-SouthEast.

The predicted stratigraphy at the proposed West Whiptail-1 location is given in the table below:

Top of Unit	Depth Below Seabed (m)	Unit Thickness (m)	Predicted Lithology
A	0.0	3.0	Loose to dense/soft to stiff sandy and silty soils.
B	3.0	>17m, (to beyond the limit of acoustic penetration 20m)	Bedded variably consolidated/cemented sediments.

Seabed Sampling
One grab sample and one gravity core sample were recovered near the proposed West Whiptail-1 location. Both samples consist of loose, light brown, fine to medium shelly quarts sand.

Hazards and Constraints
No significant seabed features that would be hazardous to jackup rig emplacement or drilling operations have been observed in the West Whiptail-1 site survey area.

No significant hazards or constraints to jackup rig emplacement or drilling operations have been identified within the shallow subsurface (20m) in the West Whiptail-1 site survey area. Folding of Unit B is not considered hazardous for jackup rig emplacement due to the very shallow dip of the beds within this unit and the uniformity of the sediments.

5.0 MOORING EQUIPMENT / ANCHOR HANDLING VESSELS

5.1 ENSCO 102 PRINCIPAL DIMENSIONS AND MOORING EQUIPMENT:

ATTACHMENT 2 details ENSCO 102 Principal Dimensions, Mooring System & Towing Gear.

5.2 ANCHOR HANDLING VESSELS:

The Anchor Handling Vessels (AHVs) that will be used for the tow and positioning are:

AHVs	Ray J. Hope	Invincible Tide
Operator	Tidewater Marine	Tidewater Marine
AHV Positioning	Not Required	Not Required
BHP	15,000	8,160
Bollard Pull (Short Ton)	187	110
Winch Line Pull (Short Ton)	330	185
Tow wire	2,000m / 3"	1,200m / 2-1/2"
Pennant Reels	(2) 2,500m / 3"	(2) 500m / 2.2"

6.0 MANAGEMENT OF CHANGE

1. The following procedures are the minimum requirements. Variations to the procedures due to weather and current will only be allowed if the variation is safe and do not present an increased personnel or operational risk.
2. Esso's Representative and the OIM shall discuss any variation prior to operations commencing.

7.0 PREPARATION FOR RIG MOVE

1. The tow will commence from the location where the ENSCO 102 was off-loaded from the dry tow vessel in Western Port at approximately GDA94 Latitude 38 26’ 01" S, Longitude 145 deg 12’ 59" E. Esso's communications equipment, rig positioning equipment should be loaded onboard prior to commencing the tow. Esso's communications personnel, rig positioning personnel, inspection personnel and Esso's drilling representatives should be onboard prior to commencing the rig move or shortly thereafter.
2. Verify that the pre-tow stability calculations are complete.
3. Ensure any loose items are sea fastened, and that watertight doors and hatches are closed except when passing through.
4. Ensure that Thales Geosolution/Fugro Survey Pty Ltd Skyfix XP/GNS 2 Navigation System is loaded on the rig at the start of the tow for rig positioning. Survey personnel should also board the rig at this point to install the positioning equipment onboard the rig.
5. Ensure that the Emergency towline is prepared prior to moving off location and that sufficient spare mooring equipment is provided to cope with any potential problem.
6. All tidal, current and weather data shall be considered prior to and during any rig move operation.
7. Ensure that notification for the move has been sent to DPI and AMSA.

8. Conduct a pre-rig move meeting with rig crew and masters of the vessels to discuss the rig move, positioning and preload procedure. The minimum attendance is:

   - Esso Drilling Supervisor
   - ENSCO 102 OIM
   - Rig Superintendent
   - Barge Master
   - Thales Geosolution's Surveyor
   - Captains of both AHVs
   - Winch Operators

   During the meeting the rig move procedures, charts, site survey reports, tidal height predictions, near surface current predictions, navigational hazards, radio channels, weather predictions and any other information deemed to be relevant to the operation shall be discussed.

8.0 TOW TO WEST WHIPTAIL-1

1. The tow will proceed from the offload location to the West Whiptail-1 location with the one vessel (Ray J. Hope) connected to tow bridle. The Invincible Tide should be connected to the ENSCO 102 to assist in the final rig positioning.

   NOTE: 1 The move will be conducted in accordance with the ENSCO 102 Marine Operations Manual and ENSCO Rig Move Guidance Manual. Responsibility for the safety of personnel and integrity of the vessel will at all times remains with the ENSCO 102 OIM.

   NOTE: 2 All tidal and current data shall be considered prior to and during any rig move operation.

2. The planned tow route is shown in ATTACHMENT 3 ENSCO 102 RIG MOVE TOW ROUTE TO West Whiptail-1. The rig will be towed at a transit draft of between 15.2 ft (light ship) and 20.8 ft (load line). The towing distance is estimated to be 175 nm and is expected to take approximately 48 hours at 3.5 knots. Thales Geosolution/Fugro Survey Pty Ltd, using the Skyfix XP/GNS 2 Navigation System, shall monitor the tow from the offload location to the West Whiptail-1 location.

3. The proposed tow route to West Whiptail-1 is tabulated below:

Location	Latitude	Longitude	Course (True)	Leg
Off-Load Location	38 º 26’ 01"S	145 º 12' 59" E		12.0 nm
Westernport Pilot Station	38 º 32' 55" S	145 º 02'. 05" E	127.7 º	72.0 nm
Way Point #2	39 º 16' 55" S	146 º 15' 05" E	090.0 º	13.2 nm
Way Point #3	39 º 16' 55" S	146 º 32' 05" E	064.3 º	13.8 nm
Way Point #4	39 º 10'.55" S	146 º 48' 05" E	028.8 º	60.2 nm
Way Point #5	38 º 18' 06" S	147 º 25' 05" E	090.0 º	2.7 nm
Way Point #6	38 º 18' 06" S	147 º 28' 35" E	132.5 º	1.9 nm
West Whiptail-1	38 º 19' 28.9555" S	147 º 30' 16.9760" E	130.0 º	

NOTE: 1 Datum and Spheroid are Geodetic Datum of Australia 1994 (GDA94) and the Geodetic Reference System 1980 ellipsoid (GRS80).

NOTE: 2 The exact route to West Whiptail-1 shall be determined by the Esso Representative, and the Ensco OIM and Barge Master.

NOTE: 3 During the rig move the primary tow vessel shall maintain a continuous radar watch. In addition, the Ensco 102 radio room is to maintain a listening watch.

NOTE: 4 The planned tow route crosses the gas line to Tasmania and the oil line from Perch and Dolphin, before entering the exclusion zone around Esso's existing Bass Strait.

NOTE: 5 The tow route should maintain a **minimum safe distance of 2 nm** from any existing facility, viz. Platform, monotower or subsea completion.

4. Shorten/reduce the tow length at the final WayPoint before towing into West Whiptail-1. Attach the secondary tow vessel to port or starboard as necessary to control the tow in to the West Whiptail-1 location.
5. The rig will be released to Esso one (1) nautical mile from the West Whiptail-1 location. Finalise the material inventory at this time by supplying:
   - Inventory all mud products and additives on board (barite and bentonite).
   - Inventory all cement, additives and consumables in board.
   - Inventory all bulks (eg. fuel) on the rig and on the AHVs.
   - Sign off the "Statement of Facts" between Ensco's representative and Esso. Fax to Esso's Melbourne office (03-9270-3546).
6. An Esso Representative will provide a quality check for the final the rig positioning at the West Whiptail-1 location.
7. The run-in to the West Whiptail-1 location will be made at a heading of 090^{o} and will commence at a distance of 3.0 nm from the final location.
8. Commence to lower the legs on the approach to the West Whiptail-1 location. When 100m from location stop the rig and lower the legs to tag bottom and confirm water depth. Correct the water depth tagged using ATTACHMENT 4 WEST WHIPTAIL-1 TIDE CHARTS.
9. With the legs jacked approximately one metre above the seafloor, commence the tow in to the West Whiptail-1 location as specified in ATTACHMENT 1 West Whiptail-1 Well Location, Position Tolerance, Rig Heading & Air Gap. Do not drag legs on the sea floor.
10. Once on location within the specified tolerance, jack-down all legs to pin the rig at the final position.
11. Release the secondary tow vessel.

9.0 PRELOADING

1. After rig and legs are pinned in the correct position, with the hull at floating draft and the tow lines slack, pull one leg at a time up off the sea floor while pinned on the other two. This is to allow any deflection or torque in the legs to be released.
2. Determine the minimum draft that the hull can be safely brought up to based on the sea conditions.
3. With the hull at about 10 feet draft, load the rig evenly on all 3 legs to the maximum allowable jacking load calculated at the minimum draft determined in step one above.
4. Jack the hull up to the minimum draft, while maintaining the hull level by stopping and starting the legs as required.
5. After the hull has stabilized at the minimum draft, dump the preload in the aft preload tanks.

   NOTE: 1 The load on the bow leg will increase as the aft tanks are dumped. If the bow leg gains additional penetration when dumping the aft tanks, level the hull down the aft legs and recalculate the bow leg reaction. Dump the bow tanks as required to get back to the maximum allowable jacking leg reaction (calculated in Step 2 above) and jack back up to the minimum draft

6. With the hull at the minimum draft as described above, continue loading the bow leg. As the bow leg penetrates, jack the hull down on the aft legs to keep level. Continuously keep track of the rig's variable loading.

   NOTE: 1 The preload tank soundings should be input into the program in one foot increments as the tanks are being filled or as the Barge Engineer dictates. The hull draft and leg positions should be updated each time a leg is jacked or one foot of movement seen.

NOTE: 2 When a hull draft of about 3 feet to 3-l/2 feet is reached, the hull buoyancy will become too large to overcome and the preload water must be dumped back to the maximum jacking load (at the starting draft). The hull is then jacked back up to the starting draft to begin a new cycle.

7. Repeat the above process until 100% preload leg reaction is reached (accounting for hull buoyancy). The maximum hull draft at which a 100% preload reaction can be obtained on the bow leg is about 2-l/2 feet depending upon variable load on board. The mud pits can be filled with water to help increase the load on the bow leg.

8. After reaching the 100% preload hold the preload for l/2 hour with no settlement.

NOTE: 1 If the leg settles, level the hull down on the aft legs and take on additional preload water, if possible, to account for the increased hull buoyancy at the new draft or dump the preload and start another cycle.

9. Dump preload on bow leg.

10. Jack the hull approximately 1 foot above the wave action (not to exceed five (5) feet from still water level) and load the bow leg to the 100% preload leg reaction.

NOTE: 1 Additional leg penetration would not be expected if the leg was preloaded to 100% in the water. However, because of the inaccuracies in determining the exact hull draft and buoyancy while preloading in the water, it is possible that additional penetration could occur when the full preload is applied with the hull out of the water. This is why the air gap during this stage shall not exceed more than 1 foot above the wave crests.

NOTE: 2 The level indicators must be watched closely so that the rig can be maintained level by immediately jacking the hull down on the high side at the first sign of any additional penetration.

NOTE: 3 If the hull contacts water, dump the preload back to the maximum jacking load, jack back up to the minimum air gap and repeat the above process.

11. After the 100% preload leg reaction is reached, hold the preload for 3 hours with no settlement. The hull must remain completely clear of the water while holding preload.

12. After the preload has been held 3 hours without any settlement dump all preload on the bow leg.

13. Load both aft legs to 100% preload leg reaction.

14. After the 100% preload leg reaction is reached, hold the preload for 3 hours with no settlement. The hull must remain completely clear of the water while holding preload.

15. After the preload has been held 3 hours without any settlement dump all preload on the starboard legs.

16. Release the primary tow vessel from the main bridle.

17. Dump all preload tanks and jack the hull up to the required operating air gap for the location.

NOTE: 1 All water remaining in preload tanks is to be stripped at the earliest opportunity. This water is to be accounted for as variable load until it is removed.

NOTE: 2 Record the amount of preload, the depth of each leg penetration and the final air gap on the Daily Drilling Report.

18. Engage rack chokes and secure the jacking console.

9.1 ALTERNATE PRELOAD METHOD

An alternate preload method will be considered based upon On-Site Marine Warranty Surveyor's approval.

1. The preloading air gap is to be set no more than five (5) feet above still water level and taking into account the state and range of the tide. At no time is the hull of the unit to be more than five (5) feet above the surface of the water.

2. Preloading is to be conducted on a leg-by-leg basis starting with the bow leg.

3. If the bottom foundation under the bow leg proves to be free of rapid settlement or punch-through , the stern legs may be preloaded together.
4. Full preload is to be held for a period of three (3) hours past the last observed settlement.
5. RPD's are to be checked throughout the preloading operations. RPD's must remain within tolerance. If RPD's are out of tolerance, the appropriate corrections must be made.
6. Follow steps 16, 17 and 18 above.

10.0 PREPARING TO SPUD

1. Extend the cantilever to its operating position.
2. Commence P/U drill pipe and preparing to spud West Whiptail-1 Drilling Program.

NOTE: 1 If critical path time is required to complete the mobilisation of 3rd Party Services, and to complete any tasks to finalise rig acceptance, these charges should not be booked to the West Whiptail-1 well or reported under the WW1, the West Whiptail-1 DRS reports. Rather, a mobilisation/demobilisation report for ENSCO 102 should be created under DRS, and costs shared equally between the Exploration and Production ENSCO 102 Mobilisation/Demobilisation AFEs, L.0201D100 and L.0501D002 respectively.

11.0 EXIT FROM WEST WHIPTAIL-1

1. Back-load equipment and lay down drill pipe and BHAs as required for the planned tow.
2. Retract the cantilevered rig floor and derrick into its stowed location.
3. Prepare the rig for towing as detailed in Section 7.0 PREPARATION FOR RIG MOVE.
4. Confirm the all legs are ready for jacking. Jack to ~10 foot air gap.
5. Pass the main tow bridle to the primary tow vessel.
6. Continue jacking to tow draft and all legs are free.

NOTE: 1 It is anticipated that low pressure jetting will not be required to recover the spud cans.

7. Attach the secondary tow vessel to port or starboard as the prevailing weather conditions dictate.
8. Confirm that the vessel is secure for the tow.
9. Continue jacking the legs until they are at the tow position.
10. Exit the Bass Strait field on a course approximately the reverse of that used for the entry.

Location	Latitude	Longitude	Course (True)	Leg
Depart West Whiptail-1	38 ^{o} 19' 28.9555" S	147 ^{o} 30' 16.9760" E	231.8 ^{o}	11.3 nm
Way Point #2	38 ^{o} 26' 24" S	147 ^{o} 19' 05" E	215.3 ^{o}	44.7 nm
Way Point #3	39 ^{o}.02' 55" S	146 ^{o} 46' 05" E	246.5 ^{o}	26.3 nm
Way Point #4	39 ^{o} 13' 25" S	146 ^{o}.15' 05" E	207.0 ^{o}	41.8 nm
Way Point #5 (1nm East of Yolla)	39 ^{o} 50' 40.5" S	145 ^{o} 50' 24.3" E	270.0 ^{o}	1.0 nm
Yolla Platform	39 ^{o} 50' 40.5" S	145 ^{o} 49' 06.3" E	270.0 ^{o}	

NOTE: 1 Datum and Spheroid are Geodetic Datum of Australia 1994 (GDA94) and the Geodetic Reference System 1980 ellipsoid (GRS80).

12.0 DISTRIBUTION

Organisation	Attention	Address	Check
Minerals & Petroleum Victoria **2 copies**	Manager, Minerals & Petroleum Operations Attention: Mr H. Haag	8th Floor, 250 Victoria Parade **EAST MELBOURNE VIC 3002**	
BHP Billiton Petroleum (Vic) Pty Ltd **(1 copy plus letter to DPI)**	Mr Mel Osborne Geoscience Section Leader	Bass Strait Asset Level 28, 600 Bourke Street MELBOURNE VIC 3000	
SRO Department **(1 copy plus letter to DPI)**	Mr Ron Reinten	Esso House Room 10th floor	
Ensco Australia Pty Ltd	Mr Barry Todd Rig Manager - ENSCO 102	btodd@tm.net.my	
ENSCO 102 **(2 signed copies)**	OIM	ENSCO 102 Mailbag Ensco Australia Pty Ltd	
Tidewater Marine Towing and Support Vessels	Mr Ian Del Rosso	idelrosso@tdw.com	
Fugro Surveys Pty Ltd. (Thales Geosolutions)	Mr Brad O'Brien	b.obrien@fugro.com.au	
Arrowsmith, Muir & Associates	Mr Harry Arrowsmith	HrArrws@aol.com	
BBMT Materials Supervisors	Mr Col Walker & Ms Sally McKenzie	Internal Email	
EAPL Library	Librarian	Esso House 3rd floor	
Field Drilling Manager	Daniel L. Whiteman	Internal Email	
Operations Superintendent **(plus 1 signed copy)**	Frank Kratzer	Internal Email	
Operations Supervisors **(plus 2 signed copies)**	Colin Johancsik	Internal Email	
Engineering Manager	Colin Johancsik	Internal Email	
Program Original Copy	West Whiptail-1 Well File		
Drilling Engineer	Chris Meakin	Internal Email	
Drilling Engineer	Shane Harris	Internal Email	
Gippsland Production Geoscience Manager	Wayne Mudge	Internal Email	
Geoscience Team Leader	Andy Zannetos	Internal Email	
Operations Geologist	Andrew Hodgson	Internal Email	

13.0 ATTACHMENTS

ATTACHMENT 1. **WEST WHIPTAIL-1 WELL LOCATION, POSITION TOLERANCE, RIG HEADING & AIR GAP.**

ATTACHMENT 2. **ENSCO 102 PRINCIPAL DIMENSIONS, MOORING SYSTEM & TOWING GEAR.**

ATTACHMENT 3. **ENSCO 102 RIG MOVE TOW ROUTE TO WEST WHIPTAIL-1 AND FROM WEST WHIPTAIL-1 TO YOLLA**

ATTACHMENT 4. **WEST WHIPTAIL-1 TIDE CHARTS**

WEST WHIPTAIL-1

Well Location, Position Tolerance, Rig Heading & Air Gap

Well Name	**WEST WHIPTAIL-1**
Basin / Permit	Gippsland Basin / VIC/L1
Seismic Lines Survey	Northern Fields G01A 3D Seismic Inline-1292, Crossline-1765
Latitude	38° 19’ 28.9555” S
Longitude	147° 30’ 16.9760” E
M.G.A Easting	544,116.71 m
Northing	5,758,036.25 m
Position Tolerance	The spudded location will be no greater than 5 (five) metres from the target location.
Rig Heading	130° ± 5° True
Air Gap (Hull to MSL)	55 feet / 16.764 metres
Datum	Geocentric Datum of Australia (GDA)
Geographic Coordinate Set	GDA94
Projection	Universal Transverse Mercator (UTM)
Grid Coordinates	Transverse Mercator, using GRS80
ellipsoid	Map Grid of Australia 1994 (MGA94)
Zone	MGA94 Zone 55
Central Meridian (CM)	147 Degrees East
False Easting	500,000 mE
False Northing	10,000,000 mN
Scale Factor at CM	0.9996

ATTACHMENT 2

ENSCO 102

PRINCIPAL DIMENSIONS

Shape of hull:	Triangular
Hull length (between perpendiculars):	246 ft
Hull width:	222 ft
Length overall (including helideck):	334 ft
Depth of hull (at sides):	30 ft
Gross Register Tonnage:	12,247 Tons
Net Register Tonnage:	3,674 Tons
Maximum displacement prior to elevation:	41,806 Kips
Load line displacement:	41,838 Kips w/ Cans Free Flooded
Load line draft:	20.8 ft
Light ship displacement	29,481 Kips w/ Cans Free Flooded
Light ship draft	15.2 ft
Load line mark position (aft of bow):	168 ft

Draft Mark Locations:

Forward marks:	Bow, Port/Stbd
Aft marks:	Stern, Port/Stbd
Bow to CL of fwd leg spacing:	53 ft
Longitudinal leg spacing:	150 ft
Transverse leg spacing:	156 ft

Drilling Slot Dimensions: 30 ft x 50 ft (Rotary centre skids 70 ft aft of transom)

Spud Legs:

Number of legs:	3
Type of legs:	Triangular Truss
Overall length of spud legs:	544 ft
Diameter of spud cans (across flats):	59.8 ft
Height of spud cans (to top of trunk):	18 ft
Footing area of spud cans (one can):	2862.9 ft^2
Volume of spud cans (one can):	20,000 ft^3
Below hull:	1.3 ft
Length of raw water tower:	4 x units leg mounted. Full operational length of legs.

MOORING SYSTEM &TOWING GEAR

Anchor Winches

Number of winches:	4 each
Make:	Plimsoll
Model:	PR-EMW / SD-77T – 2 speed, reversing - 2” Wire
Rated line pull - high speed:	102,000 lbs
Rated line pull - low speed:	102,000 lbs
Speed - high gear:	27 fpm 1st wrap
Speed - low gear:	8.8 fpm 1st wrap
Brake type:	Spring loaded/pneumatic release band brake
Brake holding capacity:	350,000 lbs at 2nd layer
Provision for free wheeling:	Yes
Local and remote controls:	Local
Anchor line tension indicator:	No
Remote anchor line tension recorder:	Yes
Remote reading odometer:	Yes

Anchor Lines/Fairleads

Make:	Plimsoll
Fair lead model:	24”
Deck sheaves model:	24”
Anchor line type:	6 x 36 RH Regular Lay EIPS, IWRC Galvanised
Quantity:	2060 ft
Diameter:	2”
Rated breaking strength:	383,486 lbs

Anchors

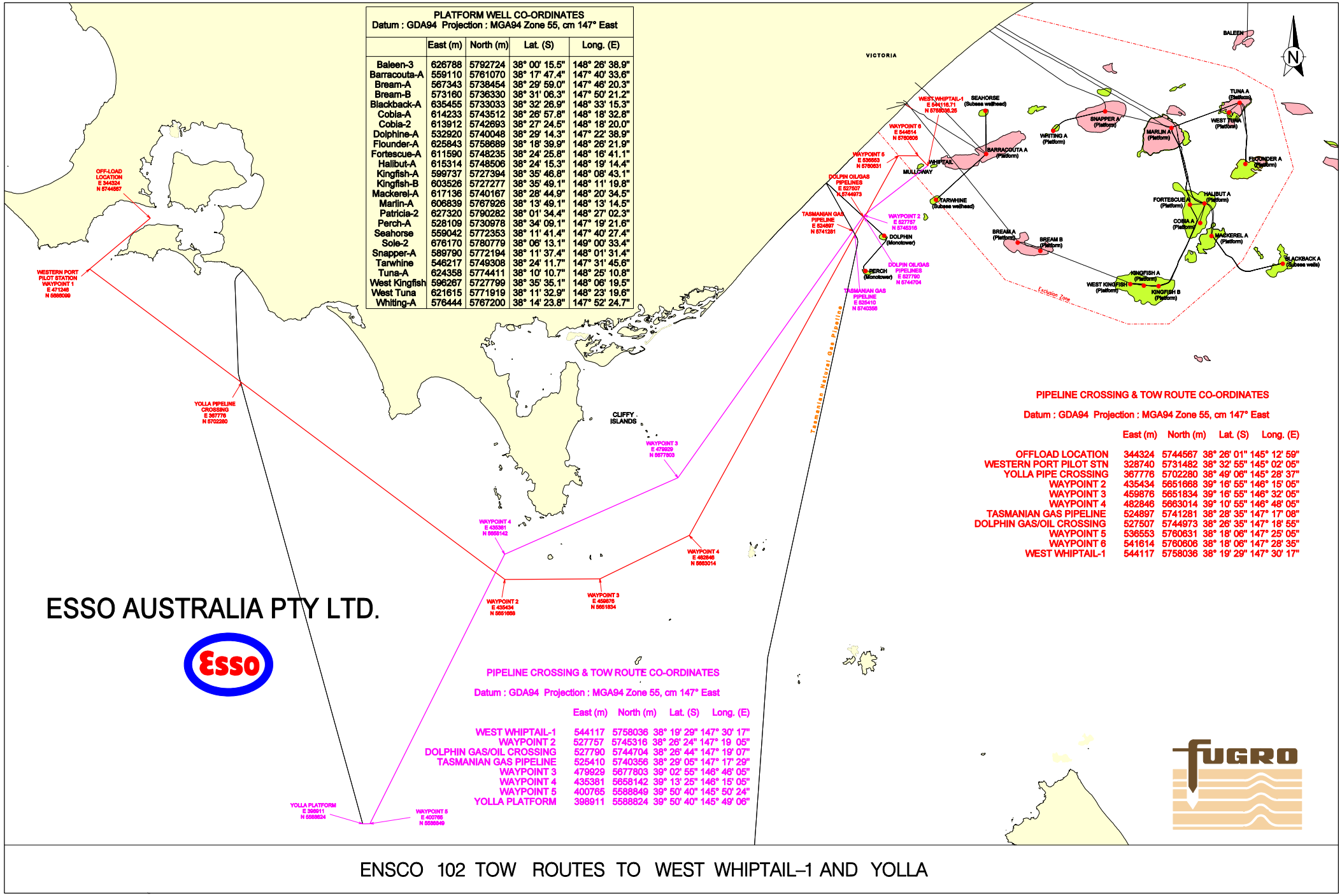
Quantity:	4
Make:	Delta Flipper type
Weight:	15,000 lbs
Classification Society:	ABS

Anchor Buoys/Pennant Lines

Quantity Anchor Buoys:	4
Make:	TBA
Type:	Steel / Foam Filled
Shape:	Cylindrical
Quantity Pennant Lines:	16
Make:	Haggie Rand
Type:	6 x 36 IWRC, RHOL, EIPS
Length:	8 X 15 ft / 8 x 175 ft
Diameter:	2”
Breaking strength:	180 Ton

Towing Gear/Power Requirements

Towing Bridle Size:	3” Chain / 2-1/2” Wire w/ Triangular Plate
Rating:	300 Ton
Minimum boats required for in-field tow:	Two (2)
Minimum power required for in-field tow:	240 ton combined bollard pull
Minimum boats required for ocean tow:	One (1)
Minimum power required for ocean tow:	240 ton bollard pull


PLATFORM WELL CO-ORDINATES
Datum : GDA94 Projection : MGA94 Zone 55, cm 147° East
East (m) North (m) Lat. (S) Long. (E)
Baleen-3 626788 5792724 38° 00' 15.5" 148° 26' 38.9"
Barracouta-A 559110 5761070 38° 17' 47.4" 147° 40' 33.6"
Bream-A 567343 5738454 38° 29' 59.0" 147° 46' 20.3"
Bream-B 573160 5736330 38° 31' 06.3" 147° 50' 21.2"
Blackback-A 635455 5733033 38° 32' 26.9" 148° 33' 15.3"
Cobia-A 614233 5743512 38° 26' 57.8" 148° 18' 32.8"
Cobia-2 613912 5742693 38° 27' 24.5" 148° 18' 20.0"
Dolphine-A 532920 5740048 38° 29' 14.3" 147° 22' 38.9"
Flounder-A 625843 5758689 38° 18' 39.9" 148° 26' 21.9"
Fortescue-A 611590 5748235 38° 24' 25.8" 148° 16' 41.1"
Halibut-A 615314 5748506 38° 24' 15.3" 148° 19' 14.4"
Kingfish-A 599737 5727394 38° 35' 46.8" 148° 08' 43.1"
Kingfish-B 603526 5727277 38° 35' 49.1" 148° 11' 19.8"
Mackerel-A 617136 5740167 38° 28' 44.9" 148° 20' 34.5"
Marlin-A 606839 5767926 38° 13' 49.1" 148° 13' 14.5"
Patricia-2 627320 5790282 38° 01' 34.4" 148° 27' 02.3"
Perch-A 528109 5730978 38° 34' 09.1" 147° 19' 21.6"
Seahorse 559042 5772353 38° 11' 41.4" 147° 40' 27.4"
Sole-2 676170 5780779 38° 06' 13.1" 149° 00' 33.4"
Snapper-A 589790 5772194 38° 11' 37.4" 148° 01' 31.4"
Tarwhine 546217 5749308 38° 24' 11.7" 147° 31' 45.6"
Tuna-A 624358 5774411 38° 10' 10.7" 148° 25' 10.8"
West Kingfish 596267 5727799 38° 35' 35.1" 148° 06' 19.5"
West Tuna 621615 5771919 38° 11' 32.9" 148° 23' 19.6"
Whiting-A 576444 5767200 38° 14' 23.8" 147° 52' 24.7"
VICTORIA
BALEEN
N
OFF-LOAD LOCATION E 344324 N 5744567
WESTERN PORT PILOT STATION WAYPOINT 1 E 471240 N 5688099
YOLLA PIPELINE CROSSING E 367776 N 5702280
CLIFFY ISLANDS
WAYPOINT 3 E 479929 N 5677803
WAYPOINT 4 E 435381 N 5658142
WAYPOINT 4 E 482846 N 5663014
WAYPOINT 2 E 435434 N 5651688
WAYPOINT 3 E 459876 N 5651834
YOLLA PLATFORM E 398911 N 5588824
WAYPOINT 5 E 400765 N 5588849
WEST WHIPTAIL-1 E 544116.71 N 5758036.25
SEAHORSE (Subsea wellhead)
WAYPOINT 6 E 544614 N 5760606
WAYPOINT 5 E 536553 N 5760631
DOLPHIN OIL/GAS PIPELINES E 527507 N 5744973
TASMANIAN GAS PIPELINE E 524897 N 5741281
WAYPOINT 2 E 527757 N 5745316
DOLPHIN (Monotower)
PERCH (Monotower)
DOLPHIN OIL/GAS PIPELINES E 527790 N 5744704
TASMANIAN GAS PIPELINE E 525410 N 5740356
Tasmanian Natural Gas Pipeline
WHIPTAIL
MULLOWAY
TARWHINE (Subsea wellhead)
BARRACOUTA A (Platform)
WHITING A (Platform)
SNAPPER A (Platform)
MARLIN A (Platform)
TUNA A (Platform)
WEST TUNA (Platform)
FLOUNDER A (Platform)
FORTESCUE A (Platform)
HALIBUT A (Platform)
COBIA A (Platform)
MACKEREL A (Platform)
BLACKBACK A (Subsea wells)
BREAM A (Platform)
BREAM B (Platform)
KINGFISH A (Platform)
WEST KINGFISH (Platform)
KINGFISH B (Platform)
Exclusion Zone
PIPELINE CROSSING & TOW ROUTE CO-ORDINATES
Datum : GDA94 Projection : MGA94 Zone 55, cm 147° East
East (m) North (m) Lat. (S) Long. (E)
OFFLOAD LOCATION 344324 5744567 38° 26' 01" 145° 12' 59"
WESTERN PORT PILOT STN 328740 5731482 38° 32' 55" 145° 02' 05"
YOLLA PIPE CROSSING 367776 5702280 38° 49' 06" 145° 28' 37"
WAYPOINT 2 435434 5651688 39° 16' 55" 146° 15' 05"
WAYPOINT 3 459876 5651834 39° 16' 55" 146° 32' 05"
WAYPOINT 4 482846 5663014 39° 10' 55" 146° 48' 05"
TASMANIAN GAS PIPELINE 524897 5741281 38° 28' 35" 147° 17' 08"
DOLPHIN GAS/OIL CROSSING 527507 5744973 38° 26' 35" 147° 18' 55"
WAYPOINT 5 536553 5760631 38° 18' 06" 147° 25' 05"
WAYPOINT 6 541614 5760606 38° 18' 06" 147° 28' 35"
WEST WHIPTAIL-1 544117 5758036 38° 19' 29" 147° 30' 17"
ESSO AUSTRALIA PTY LTD.
Esso
PIPELINE CROSSING & TOW ROUTE CO-ORDINATES
Datum : GDA94 Projection : MGA94 Zone 55, cm 147° East
East (m) North (m) Lat. (S) Long. (E)
WEST WHIPTAIL-1 544117 5758036 38° 19' 29" 147° 30' 17"
WAYPOINT 2 527757 5745316 38° 26' 24" 147° 19' 05"
DOLPHIN GAS/OIL CROSSING 527790 5744704 38° 26' 44" 147° 19' 07"
TASMANIAN GAS PIPELINE 525410 5740356 38° 29' 05" 147° 17' 29"
WAYPOINT 3 479929 5677803 39° 02' 55" 146° 46' 05"
WAYPOINT 4 435381 5658142 39° 13' 25" 146° 15' 05"
WAYPOINT 5 400765 5588849 39° 50' 40" 145° 50' 24"
YOLLA PLATFORM 398911 5588824 39° 50' 40" 145° 49' 06"
FUGRO
ENSCO 102 TOW ROUTES TO WEST WHIPTAIL–1 AND YOLLA
u:\p0016\pre-job\route 20040423\West Whiptail-1 Tow Route Plan_rev3.dgn

EQUALLY SPACED PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT =1 HOUR

	HOURS AFTER MIDNIGHT																						
DATE	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01:04:2004	-.16	-.14	-.02	.16	.35	.49	.54	.48	.32	.08	-.19	-.42	-.54	-.58	-.54	-.41	-.20	.03	.22	.31	.28	.17	.03	-.12
02:04:2004	-.22	-.24	-.16	.02	.23	.42	.54	.57	.47	.25	-.02	-.28	-.48	-.57	-.57	-.48	-.29	-.04	.17	.31	.34	.26	.11	-.06
03:04:2004	-.22	-.30	-.28	-.15	.04	.26	.45	.56	.55	.40	.17	-.10	-.34	-.51	-.57	-.53	-.38	-.15	.10	.28	.37	.35	.23	.05
04:04:2004	-.14	-.29	-.34	-.29	-.15	.05	.27	.45	.53	.48	.31	.09	-.16	-.37	-.51	-.54	-.45	-.26	-.02	.21	.36	.42	.36	.20
05:04:2004	-.00	-.19	-.32	-.36	-.31	-.17	.04	.25	.41	.46	.39	.23	.03	-.18	-.37	-.47	-.45	-.33	-.13	.09	.28	.41	.43	.33
06:04:2004	.16	-.04	-.21	-.34	-.38	-.33	-.19	.00	.19	.32	.35	.29	.18	.02	-.17	-.33	-.38	-.33	-.20	-.03	.17	.34	.43	.41
07:04:2004	.29	.13	-.04	-.22	-.35	-.40	-.36	-.24	-.07	.09	.20	.24	.22	.15	.03	-.11	-.22	-.24	-.19	-.09	.05	.23	.37	.42
08:04:2004	.37	.26	.13	-.04	-.23	-.38	-.44	-.41	-.32	-.19	-.05	.07	.15	.18	.16	.09	-.01	-.08	-.10	-.07	.00	.12	.27	.37
09:04:2004	.39	.35	.27	.15	-.04	-.25	-.42	-.48	-.48	-.43	-.32	-.18	-.03	.09	.17	.21	.18	.11	.04	.01	.01	.06	.16	.27
10:04:2004	.35	.38	.37	.30	.17	-.04	-.28	-.45	-.54	-.58	-.55	-.44	-.27	-.09	.07	.20	.28	.27	.19	.11	.05	.05	.08	.16
11:04:2004	.26	.35	.42	.42	.36	.20	-.04	-.30	-.49	-.62	-.68	-.65	-.51	-.31	-.10	.10	.27	.36	.33	.21	.10	.04	.02	.05
12:04:2004	.13	.25	.39	.49	.50	.41	.23	-.04	-.33	-.55	-.69	-.75	-.69	-.53	-.30	-.04	.19	.35	.40	.31	.17	.04	-.03	-.06
13:04:2004	-.02	.10	.28	.46	.56	.56	.46	.24	-.07	-.38	-.61	-.74	-.77	-.68	-.48	-.21	.08	.30	.42	.39	.25	.08	-.06	-.14
14:04:2004	-.16	-.09	.10	.33	.53	.62	.60	.47	.21	-.13	-.45	-.66	-.76	-.75	-.62	-.37	-.05	.23	.40	.44	.35	.17	-.03	-.18
15:04:2004	-.27	-.25	-.11	.12	.37	.57	.65	.61	.44	.13	-.22	-.50	-.67	-.73	-.69	-.50	-.20	.12	.36	.46	.43	.29	.08	-.14
16:04:2004	-.30	-.36	-.29	-.11	.14	.39	.58	.64	.56	.35	.04	-.28	-.52	-.65	-.67	-.57	-.33	-.01	.27	.44	.47	.39	.21	-.02
17:04:2004	-.24	-.38	-.39	-.30	-.11	.14	.38	.54	.56	.45	.24	-.04	-.30	-.49	-.58	-.55	-.40	-.14	.14	.37	.47	.45	.33	.13
18:04:2004	-.11	-.31	-.41	-.40	-.30	-.12	.11	.33	.45	.44	.33	.15	-.07	-.28	-.42	-.45	-.38	-.21	.02	.25	.41	.46	.39	.25
19:04:2004	.05	-.16	-.33	-.40	-.40	-.31	-.15	.05	.23	.32	.30	.23	.11	-.05	-.21	-.29	-.28	-.20	-.05	.13	.30	.41	.41	.31
20:04:2004	.17	.00	-.18	-.32	-.40	-.40	-.34	-.20	-.04	.10	.18	.19	.17	.11	-.00	-.10	-.14	-.11	-.04	.06	.19	.32	.38	.34
21:04:2004	.24	.12	-.02	-.18	-.32	-.40	-.42	-.37	-.27	-.14	-.02	.07	.13	.16	.13	.07	.02	.01	.02	.06	.13	.22	.31	.32
22:04:2004	.26	.19	.11	-.02	-.18	-.32	-.40	-.43	-.40	-.33	-.22	-.09	.02	.11	.17	.18	.15	.12	.10	.09	.10	.16	.23	.27
23:04:2004	.26	.22	.17	.11	-.03	-.20	-.33	-.41	-.44	-.44	-.38	-.26	-.12	.01	.12	.20	.23	.21	.17	.13	.11	.12	.16	.21
24:04:2004	.23	.23	.21	.18	.09	-.06	-.23	-.35	-.42	-.47	-.46	-.38	-.25	-.09	.05	.16	.25	.27	.23	.17	.12	.11	.12	.15
25:04:2004	.19	.23	.24	.23	.17	.05	-.11	-.27	-.38	-.46	-.49	-.45	-.35	-.20	-.04	.11	.22	.28	.26	.20	.13	.10	.09	.11
26:04:2004	.15	.21	.26	.27	.23	.14	-.01	-.18	-.33	-.44	-.49	-.49	-.42	-.29	-.12	.04	.19	.27	.28	.22	.14	.08	.06	.07
27:04:2004	.10	.17	.26	.32	.30	.23	.10	-.07	-.26	-.41	-.49	-.51	-.46	-.36	-.20	-.02	.15	.26	.29	.23	.14	.06	.02	.01
28:04:2004	.04	.12	.23	.33	.37	.33	.22	.05	-.15	-.35	-.48	-.53	-.51	-.42	-.28	-.09	.11	.25	.30	.26	.16	.05	-.03	-.07
29:04:2004	-.06	.02	.16	.30	.39	.41	.34	.20	-.01	-.25	-.43	-.52	-.53	-.48	-.35	-.16	.06	.24	.33	.31	.21	.07	-.05	-.14
30:04:2004	-.17	-.11	.02	.20	.35	.44	.44	.34	.16	-.09	-.33	-.49	-.54	-.52	-.42	-.23	.00	.22	.36	.38	.30	.15	-.03	-.17

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 1(a): PREDICTED TIDAL HEIGHTS AT WEST WHIPTAIL, APRIL - 2004

EQUALLY SPACED PREDICTIONS FOR EAL WEST WHIPTAIL

LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT =1 HOUR

DATE	HOURS AFTER MIDNIGHT																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01:05:2004	-.26	-.26	-.16	.02	.22	.37	.46	.45	.31	.09	-.17	-.39	-.51	-.53	-.48	-.32	-.07	.18	.37	.46	.41	.27	.08	-.13
02:05:2004	-.29	-.36	-.33	-.19	.01	.21	.38	.46	.42	.25	.02	-.23	-.41	-.51	-.50	-.40	-.18	.10	.34	.49	.52	.43	.24	-.00
03:05:2004	-.23	-.39	-.44	-.38	-.23	-.02	.20	.36	.42	.35	.18	-.03	-.25	-.41	-.47	-.43	-.27	-.02	.24	.45	.57	.55	.41	.18
04:05:2004	-.08	-.31	-.45	-.49	-.43	-.28	-.06	.16	.31	.35	.28	.14	-.04	-.23	-.36	-.39	-.30	-.12	.11	.35	.53	.60	.54	.36
05:05:2004	.12	-.13	-.36	-.50	-.55	-.49	-.33	-.12	.08	.22	.26	.22	.13	-.01	-.17	-.26	-.25	-.15	.01	.21	.41	.56	.59	.49
06:05:2004	.30	.07	-.16	-.39	-.55	-.60	-.54	-.40	-.21	-.02	.11	.19	.20	.15	.05	-.06	-.12	-.09	-.02	.10	.27	.44	.54	.53
07:05:2004	.42	.26	.06	-.17	-.42	-.58	-.63	-.59	-.48	-.32	-.14	.03	.14	.20	.20	.15	.07	.03	.03	.07	.16	.30	.43	.49
08:05:2004	.47	.39	.26	.08	-.18	-.43	-.60	-.66	-.66	-.58	-.42	-.22	-.03	.12	.22	.27	.25	.18	.12	.09	.10	.17	.28	.38
09:05:2004	.44	.45	.40	.29	.10	-.17	-.43	-.60	-.70	-.72	-.65	-.48	-.26	-.05	.14	.28	.35	.32	.23	.14	.09	.09	.14	.23
10:05:2004	.33	.42	.46	.44	.33	.12	-.16	-.43	-.61	-.73	-.76	-.67	-.48	-.25	-.01	.20	.35	.40	.33	.20	.09	.03	.02	.07
11:05:2004	.17	.31	.44	.50	.48	.36	.13	-.17	-.44	-.63	-.74	-.75	-.63	-.43	-.17	.08	.29	.41	.40	.28	.12	.00	-.06	-.08
12:05:2004	-.02	.13	.31	.46	.52	.49	.36	.11	-.20	-.47	-.64	-.72	-.69	-.55	-.31	-.03	.22	.39	.45	.36	.19	.02	-.11	-.18
13:05:2004	-.18	-.08	.11	.32	.47	.52	.48	.32	.05	-.26	-.50	-.62	-.66	-.60	-.41	-.15	.14	.37	.47	.44	.30	.10	-.09	-.23
14:05:2004	-.29	-.25	-.11	.10	.31	.45	.49	.43	.25	-.04	-.31	-.49	-.58	-.57	-.47	-.24	.05	.32	.47	.50	.41	.23	.01	-.20
15:05:2004	-.33	-.37	-.30	-.14	.07	.27	.41	.43	.35	.15	-.10	-.33	-.45	-.50	-.46	-.30	-.05	.23	.44	.53	.49	.36	.15	-.09
16:05:2004	-.30	-.41	-.42	-.33	-.17	.03	.23	.35	.35	.25	.08	-.13	-.29	-.38	-.40	-.31	-.12	.13	.36	.51	.53	.45	.29	.06
17:05:2004	-.18	-.37	-.45	-.45	-.37	-.22	-.02	.17	.27	.26	.18	.06	-.10	-.22	-.28	-.26	-.15	.04	.25	.43	.52	.50	.38	.20
18:05:2004	-.03	-.25	-.41	-.49	-.49	-.41	-.26	-.06	.10	.19	.19	.16	.07	-.04	-.14	-.16	-.11	.00	.16	.32	.46	.50	.44	.30
19:05:2004	.11	-.09	-.29	-.44	-.52	-.52	-.44	-.29	-.11	.03	.12	.16	.16	.10	.02	-.04	-.04	.02	.11	.23	.36	.46	.46	.36
20:05:2004	.21	.05	-.13	-.32	-.47	-.54	-.53	-.45	-.32	-.16	-.02	.09	.15	.17	.13	.08	.05	.06	.10	.18	.27	.38	.43	.39
21:05:2004	.28	.16	.02	-.17	-.36	-.48	-.53	-.52	-.45	-.33	-.18	-.03	.08	.15	.18	.16	.13	.12	.12	.15	.21	.30	.37	.38
22:05:2004	.32	.22	.12	-.02	-.21	-.38	-.48	-.51	-.50	-.44	-.32	-.16	-.02	.08	.15	.19	.19	.17	.14	.14	.17	.24	.30	.34
23:05:2004	.33	.27	.19	.09	-.07	-.26	-.39	-.47	-.50	-.48	-.41	-.28	-.13	.00	.10	.18	.22	.21	.17	.14	.14	.18	.24	.28
24:05:2004	.30	.29	.25	.16	.04	-.13	-.29	-.41	-.47	-.49	-.45	-.36	-.22	-.08	.05	.15	.22	.24	.20	.15	.12	.14	.18	.22
25:05:2004	.26	.29	.28	.23	.13	-.01	-.18	-.33	-.43	-.48	-.48	-.41	-.30	-.16	-.01	.12	.21	.25	.22	.16	.11	.10	.11	.14
26:05:2004	.19	.25	.30	.29	.22	.10	-.06	-.23	-.38	-.47	-.49	-.46	-.36	-.23	-.07	.09	.21	.27	.25	.18	.10	.05	.03	.05
27:05:2004	.10	.18	.26	.31	.30	.21	.08	-.10	-.29	-.43	-.49	-.48	-.41	-.29	-.13	.05	.22	.31	.30	.22	.11	.01	-.04	-.06
28:05:2004	-.03	.06	.18	.28	.33	.31	.22	.06	-.15	-.35	-.47	-.49	-.46	-.35	-.19	.02	.22	.35	.38	.31	.17	.02	-.10	-.17
29:05:2004	-.18	-.12	.02	.17	.29	.35	.32	.21	.02	-.21	-.40	-.48	-.48	-.41	-.26	-.04	.20	.39	.47	.43	.29	.11	-.09	-.24
30:05:2004	-.32	-.30	-.19	-.02	.15	.29	.36	.32	.18	-.04	-.26	-.42	-.47	-.44	-.33	-.12	.15	.39	.54	.56	.45	.26	.02	-.22
31:05:2004	-.39	-.44	-.40	-.26	-.07	.13	.29	.35	.29	.13	-.08	-.28	-.41	-.44	-.38	-.21	.05	.33	.55	.65	.61	.45	.20	-.09

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 2(a): PREDICTED TIDAL HEIGHTS AT WEST WHIPTAIL, MAY - 2004

HIGH LOW PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT = .25 HOUR

DATE	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL
01:04:2004	00:16	-.16	-.16	06:00	.54	.54	13:00	-.58	-.58	19:13	.31	.31
02:04:2004	00:43	-.24	-.24	06:43	.57	.57	13:33	-.58	-.58	19:43	.34	.34
03:04:2004	01:18	-.30	-.30	07:26	.57	.57	14:08	-.57	-.57	20:20	.38	.38
04:04:2004	02:00	-.34	-.34	08:08	.54	.54	14:42	-.54	-.54	21:00	.42	.42
05:04:2004	02:54	-.36	-.36	08:54	.46	.46	15:18	-.48	-.48	21:40	.44	.44
06:04:2004	03:58	-.38	-.38	09:49	.35	.35	15:57	-.38	-.38	22:19	.44	.44
07:04:2004	05:02	-.40	-.40	11:10	.24	.24	16:42	-.24	-.24	23:00	.42	.42
08:04:2004	06:07	-.44	-.44	13:05	.18	.18	17:48	-.10	-.10	23:49	.39	.39
09:04:2004	07:29	-.49	-.49	15:08	.21	.21	19:23	.00	.00			
10:04:2004	01:11	.38	.38	09:09	-.58	-.58	16:27	.29	.29	20:42	.04	.04
11:04:2004	02:37	.43	.43	10:12	-.68	-.68	17:14	.36	.36	22:02	.02	.02
12:04:2004	03:36	.50	.50	11:02	-.75	-.75	17:50	.40	.40	23:04	-.06	-.06
13:04:2004	04:28	.57	.57	11:46	-.78	-.78	18:20	.43	.43	23:47	-.17	-.17
14:04:2004	05:20	.63	.63	12:28	-.77	-.77	18:47	.45	.45			
15:04:2004	00:23	-.27	-.27	06:10	.65	.65	13:07	-.74	-.74	19:14	.46	.46
16:04:2004	00:58	-.36	-.36	06:56	.64	.64	13:44	-.67	-.67	19:44	.48	.48
17:04:2004	01:38	-.40	-.40	07:39	.57	.57	14:18	-.58	-.58	20:18	.48	.48
18:04:2004	02:25	-.41	-.41	08:24	.46	.46	14:51	-.45	-.45	20:54	.46	.46
19:04:2004	03:24	-.41	-.41	09:18	.32	.32	15:24	-.30	-.30	21:29	.42	.42
20:04:2004	04:33	-.41	-.41	10:52	.19	.19	16:00	-.14	-.14	22:04	.38	.38
21:04:2004	05:41	-.42	-.42	13:07	.16	.16	16:53	.01	.01	22:40	.33	.33
22:04:2004	06:58	-.43	-.43	14:42	.18	.18	19:02	.09	.09	23:21	.27	.27
23:04:2004	08:28	-.45	-.45	16:01	.23	.23	20:06	.11	.11			
24:04:2004	00:29	.24	.24	09:25	-.47	-.47	16:45	.27	.27	20:54	.11	.11
25:04:2004	01:59	.24	.24	10:01	-.49	-.49	17:13	.29	.29	21:37	.09	.09
26:04:2004	02:44	.28	.28	10:26	-.50	-.50	17:34	.29	.29	22:18	.06	.06
27:04:2004	03:20	.32	.32	10:48	-.51	-.51	17:48	.29	.29	22:51	.01	.01
28:04:2004	03:58	.37	.37	11:11	-.53	-.53	18:00	.30	.30	23:22	-.07	-.07
29:04:2004	04:42	.42	.42	11:39	-.54	-.54	18:16	.34	.34	23:53	-.17	-.17
30:04:2004	05:32	.45	.45	12:12	-.54	-.54	18:39	.39	.39			

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- MTL is Mean Tide Level.
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 1(b): PREDICTED HIGH & LOW TIDES AT WEST WHIPTAIL, APRIL - 2004

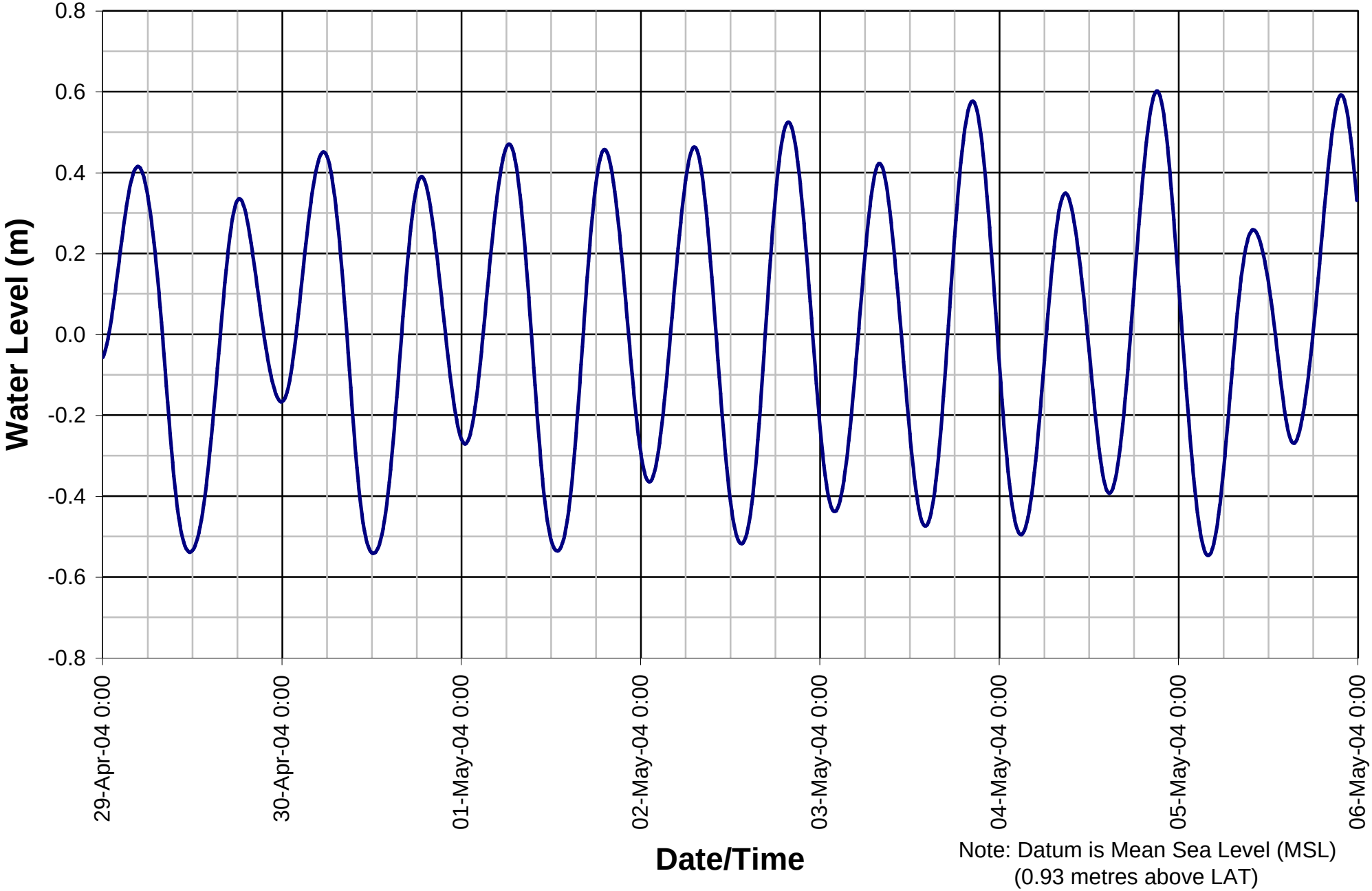
HIGH LOW PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT = .25 HOUR

DATE	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL
01:05:2004	00:28	-.27	-.27	06:22	.47	.47	12:49	-.54	-.54	19:09	.46	.46
02:05:2004	01:08	-.37	-.37	07:10	.46	.46	13:27	-.52	-.52	19:45	.52	.52
03:05:2004	01:56	-.44	-.44	07:57	.42	.42	14:05	-.47	-.47	20:24	.58	.58
04:05:2004	02:53	-.50	-.50	08:49	.35	.35	14:43	-.39	-.39	21:04	.60	.60
05:05:2004	03:56	-.55	-.55	09:58	.26	.26	15:23	-.27	-.27	21:44	.59	.59
06:05:2004	04:57	-.60	-.60	11:42	.20	.20	16:11	-.12	-.12	22:25	.55	.55
07:05:2004	06:02	-.63	-.63	13:33	.21	.21	17:28	.02	.02	23:14	.50	.50
08:05:2004	07:24	-.67	-.67	15:11	.27	.27	19:16	.09	.09			
09:05:2004	00:32	.45	.45	08:48	-.72	-.72	16:13	.35	.35	20:31	.08	.08
10:05:2004	02:09	.46	.46	09:47	-.76	-.76	16:54	.40	.40	21:42	.02	.02
11:05:2004	03:14	.50	.50	10:34	-.76	-.76	17:26	.43	.43	22:44	-.08	-.08
12:05:2004	04:09	.53	.53	11:15	-.72	-.72	17:53	.45	.45	23:30	-.19	-.19
13:05:2004	05:03	.52	.52	11:53	-.66	-.66	18:16	.47	.47			
14:05:2004	00:10	-.29	-.29	05:55	.49	.49	12:30	-.59	-.59	18:41	.50	.50
15:05:2004	00:50	-.37	-.37	06:44	.44	.44	13:05	-.50	-.50	19:09	.53	.53
16:05:2004	01:35	-.42	-.42	07:32	.36	.36	13:41	-.40	-.40	19:42	.54	.54
17:05:2004	02:29	-.46	-.46	08:25	.28	.28	14:16	-.29	-.29	20:19	.53	.53
18:05:2004	03:32	-.50	-.50	09:37	.20	.20	14:51	-.16	-.16	20:55	.50	.50
19:05:2004	04:30	-.53	-.53	11:30	.16	.16	15:27	-.05	-.05	21:31	.47	.47
20:05:2004	05:22	-.54	-.54	12:50	.17	.17	16:09	.05	.05	22:05	.43	.43
21:05:2004	06:13	-.53	-.53	14:08	.18	.18	17:27	.12	.12	22:39	.38	.38
22:05:2004	07:12	-.51	-.51	15:28	.20	.20	18:42	.14	.14	23:19	.34	.34
23:05:2004	08:12	-.50	-.50	16:16	.22	.22	19:27	.14	.14			
24:05:2004	00:18	.30	.30	08:56	-.49	-.49	16:44	.24	.24	20:07	.12	.12
25:05:2004	01:30	.29	.29	09:28	-.49	-.49	17:03	.25	.25	20:55	.09	.09
26:05:2004	02:25	.30	.30	09:55	-.49	-.49	17:15	.28	.28	22:04	.03	.03
27:05:2004	03:16	.32	.32	10:22	-.50	-.50	17:27	.32	.32	22:58	-.06	-.06
28:05:2004	04:11	.33	.33	10:51	-.50	-.50	17:44	.38	.38	23:40	-.19	-.19
29:05:2004	05:13	.35	.35	11:26	-.49	-.49	18:07	.47	.47			
30:05:2004	00:19	-.32	-.32	06:10	.36	.36	12:07	-.47	-.47	18:37	.57	.57
31:05:2004	01:03	-.44	-.44	07:02	.35	.35	12:50	-.44	-.44	19:13	.65	.65

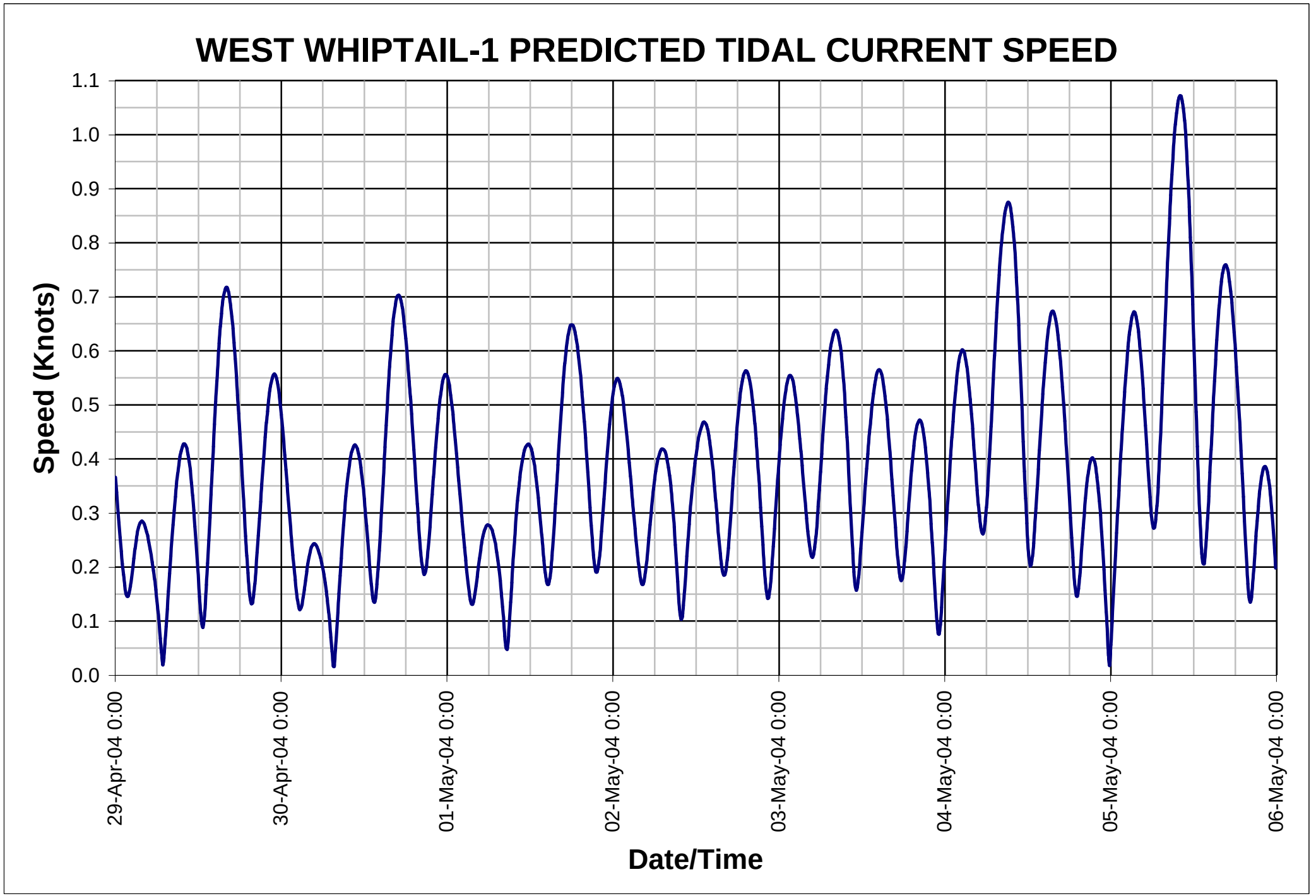
NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- MTL is Mean Tide Level.
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

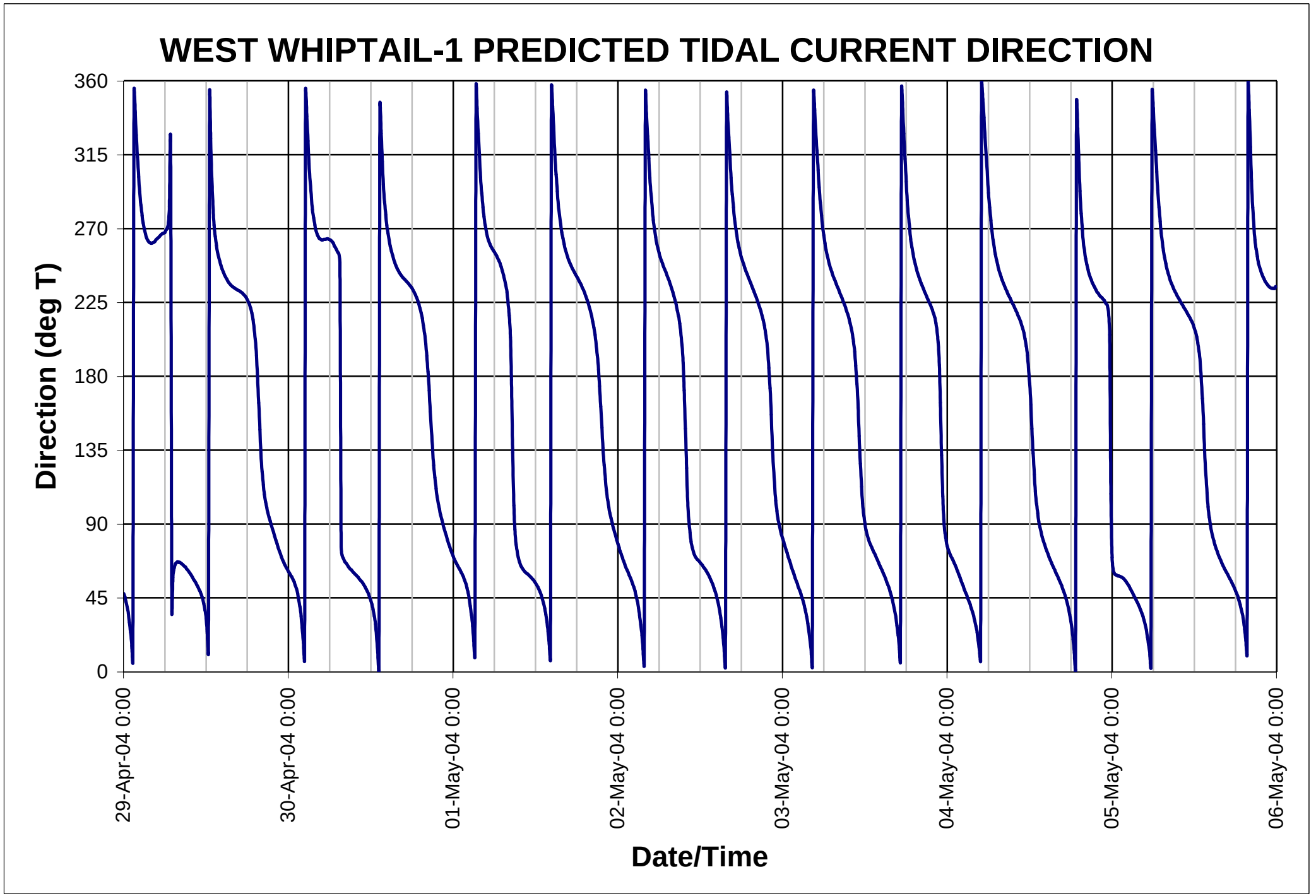
TABLE 2(b): PREDICTED HIGH & LOW TIDES AT WEST WHIPTAIL, MAY - 2004

WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL

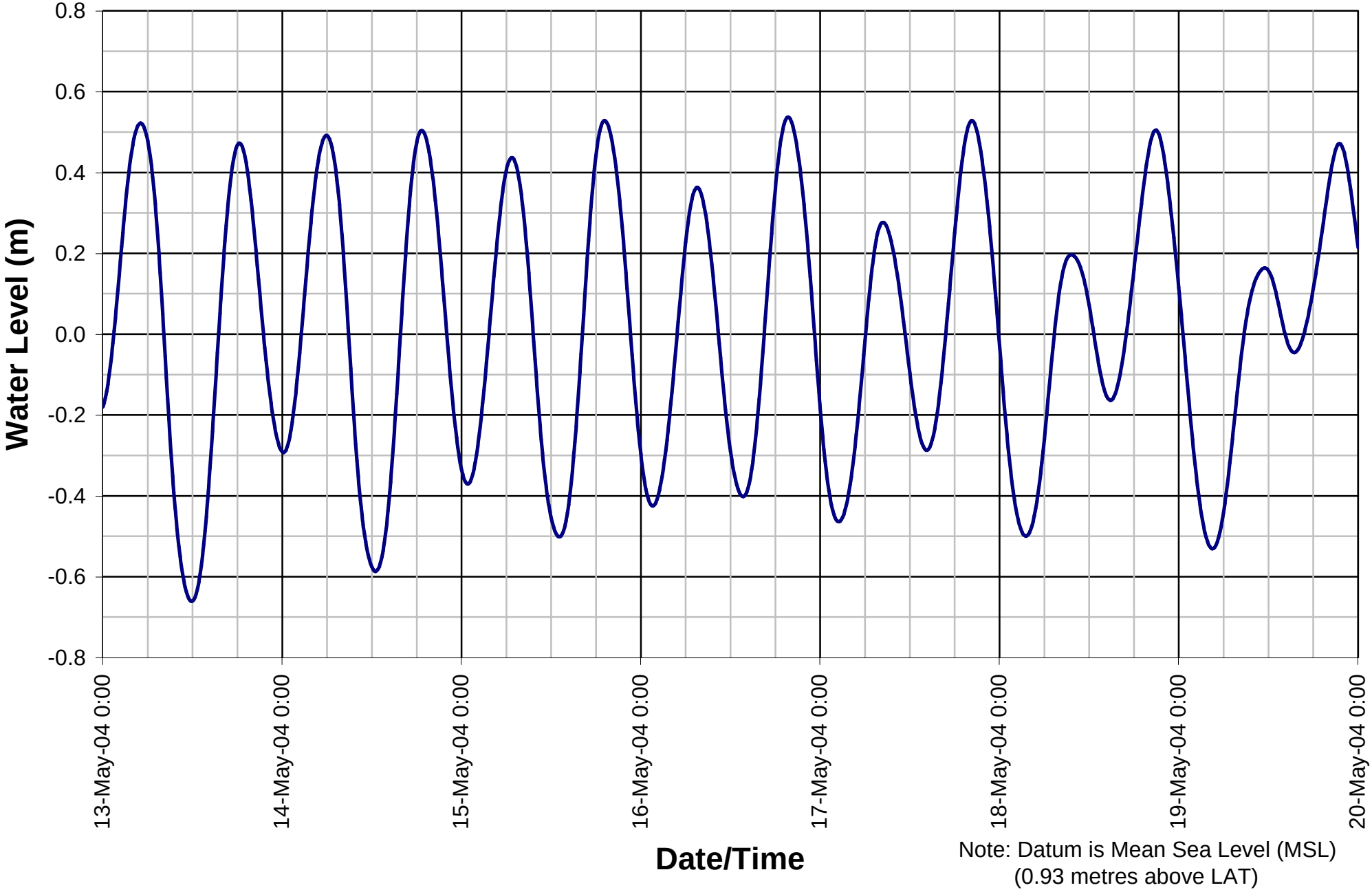


Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)

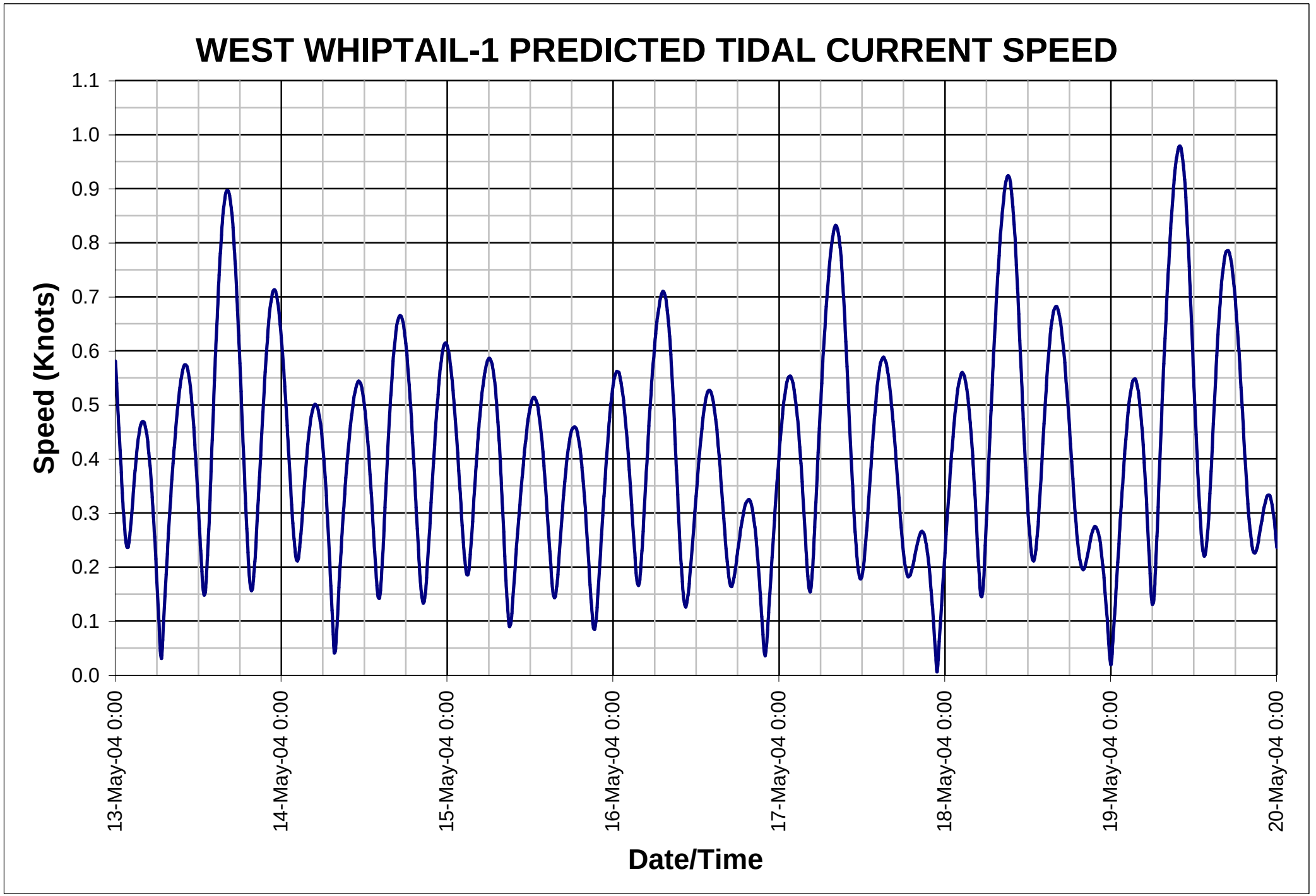

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
29-Apr-04 0:00
30-Apr-04 0:00
01-May-04 0:00
02-May-04 0:00
03-May-04 0:00
04-May-04 0:00
05-May-04 0:00
06-May-04 0:00
Date/Time

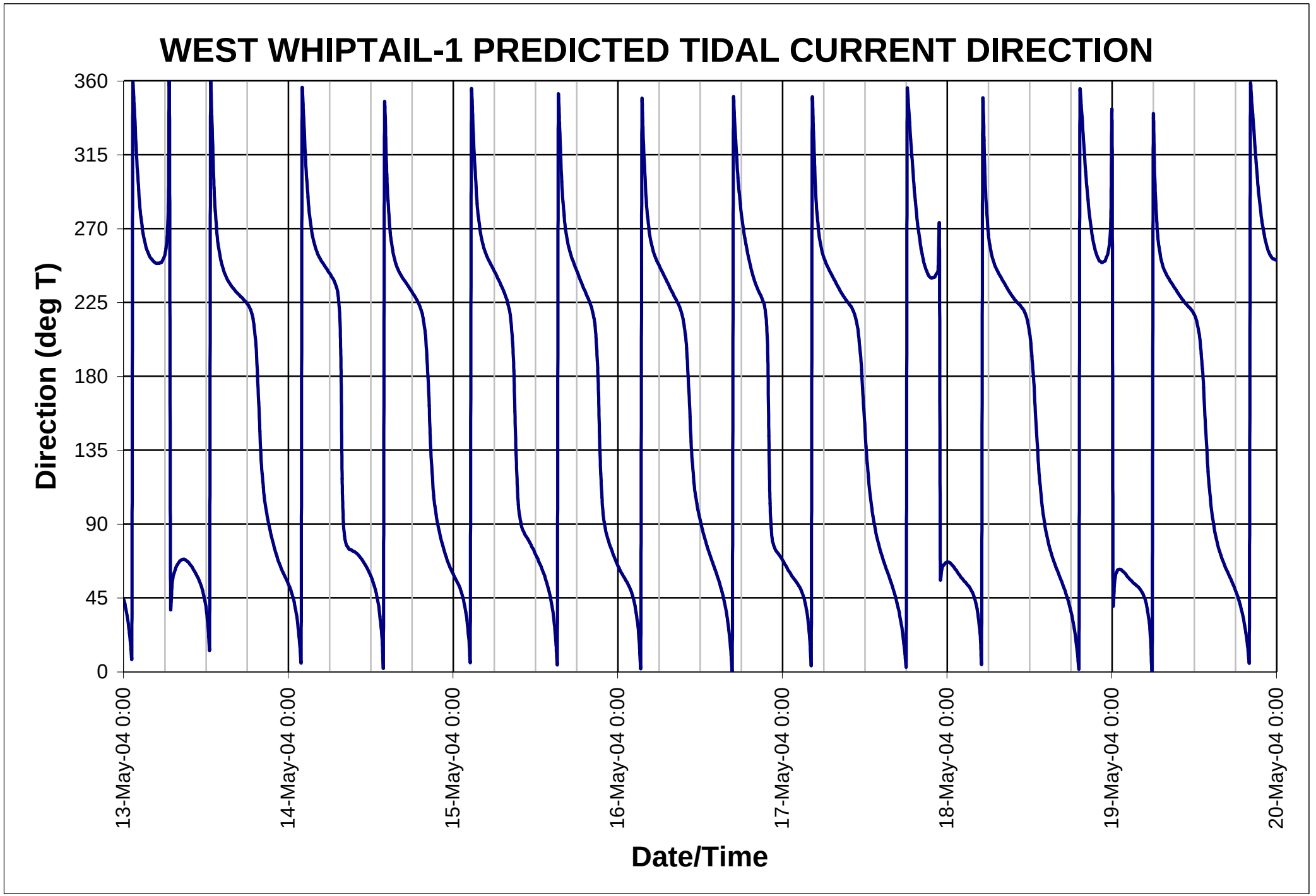

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
29-Apr-04 0:00
30-Apr-04 0:00
01-May-04 0:00
02-May-04 0:00
03-May-04 0:00
04-May-04 0:00
05-May-04 0:00
06-May-04 0:00
Date/Time

WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL



Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
13-May-04 0:00
14-May-04 0:00
15-May-04 0:00
16-May-04 0:00
17-May-04 0:00
18-May-04 0:00
19-May-04 0:00
20-May-04 0:00
Date/Time


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
13-May-04 0:00
14-May-04 0:00
15-May-04 0:00
16-May-04 0:00
17-May-04 0:00
18-May-04 0:00
19-May-04 0:00
20-May-04 0:00
Date/Time

APPENDIX D

GYRO CHECKS AND OFFSET TRAVERSE

FUGRO TGS (Australia) Limited
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro TGS Job Number: P0016
Job Description: Ensco 102 Rig Move to West Whiptail-1 (SG Brown 1000S)
Client: Apache
Party Chief: M.Elmslie
Surveyor: M.Elmslie
Rig Name: Ensco 102
Date: 03May 2004

Control Point Co-ordinates

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Latitude (DMS):	-038	26	20
Longitude (DMS):	145	17	21
UTC Correction (HMS):	10.00		

Total Station Observations:

Face	Local Time (HMS)			Observed Direction to R.O. (DMS)			Observed Direction to Sun (DMS)			Observed (O) True Heading (D.D)
Left	17	12	53	000	00	00	080	51	07	299.50
Right	17	12	53	180	00	00	260	51	07	
Left	17	13	40	000	00	00	080	44	10	299.50
Right	17	13	40	180	00	00	260	44	10	
Left	17	14	35	000	00	00	080	34	47	299.50
Right	17	14	35	180	00	00	260	34	47	
Left	17	15	36	000	00	00	080	25	07	299.50
Right	17	15	36	180	00	00	260	25	07	
Left	17	16	17	000	00	00	080	18	44	299.50
Right	17	16	17	180	00	00	260	18	44	
Left	17	17	14	000	00	00	080	10	10	299.50
Right	17	17	14	180	00	00	260	10	10	
Left	17	18	22	000	00	00	079	59	41	299.50
Right	17	18	22	180	00	00	259	59	41	
Left	17	19	17	000	00	00	079	50	54	299.50
Right	17	19	17	180	00	00	259	50	54	
Left	17	20	10	000	00	00	079	42	37	299.50
Right	17	20	10	180	00	00	259	42	37	
Left	17	21	38	000	00	00	079	38	04	299.50
Right	17	21	38	180	00	00	259	38	04	
Left										
Right										
Left										
Right										

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

FUGRO TGS (Australia) Limited
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro TGS Job Number: P0016
Job Description: Ensco 102 Rig Move to West Whiptail-1 (SG Brown 1000S)
Client: Apache
Party Chief: M.Elmslie
Surveyor: M.Elmslie
Rig Name: Ensco 102
Date: 03May 2004

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Average Local Time (HMS)			Average Horizontal Angle (DMS)			Azimuth Sun (DMS)			Azimuth RO (DMS)			Calculated (C) True Heading (D.D)	Observed (O) True Heading (D.D)	C-O (D.D)
17	12	53.0	080	51	07	292	02	49	211	11	42	211.20	299.50	-88.30
17	13	40.0	080	44	10	291	55	25	211	11	15	211.19	299.50	-88.31
17	14	35.0	080	34	47	291	46	45	211	11	58	211.20	299.50	-88.30
17	15	36.0	080	25	07	291	37	09	211	12	02	211.20	299.50	-88.30
17	16	17.0	080	18	44	291	30	43	211	11	59	211.20	299.50	-88.30
17	17	14.0	080	10	10	291	21	46	211	11	36	211.19	299.50	-88.31
17	18	22.0	079	59	41	291	11	07	211	11	26	211.19	299.50	-88.31
17	19	17.0	079	50	54	291	02	31	211	11	37	211.19	299.50	-88.31
17	20	10.0	079	42	37	290	54	14	211	11	37	211.19	299.50	-88.31
17	21	38.0	079	38	04	290	40	31	211	02	27	211.04	299.50	-88.46

Mean C-O **-88.32**

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

FUGRO TGS (Australia) Limited
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro TGS Job Number: P0016
Job Description: Ensco 102 Rig Move to West Whiptail-1 (SG Brown 1000)
Client: Apache
Party Chief: M.Elmslie
Surveyor: M.Elmslie
Rig Name: Ensco 102
Date: 03May 2004

Control Point Co-ordinates

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Latitude (DMS):	-038	26	20
Longitude (DMS):	145	17	21
UTC Correction (HMS):	10.00		

Total Station Observations:

Face	Local Time (HMS)			Observed Direction to R.O. (DMS)			Observed Direction to Sun (DMS)			Observed (O) True Heading (D.D)
Left	17	12	53	000	00	00	080	51	07	302.70
Right	17	12	53	180	00	00	260	51	07	
Left	17	13	40	000	00	00	080	44	10	302.70
Right	17	13	40	180	00	00	260	44	10	
Left	17	14	35	000	00	00	080	34	47	302.70
Right	17	14	35	180	00	00	260	34	47	
Left	17	15	36	000	00	00	080	25	07	302.70
Right	17	15	36	180	00	00	260	25	07	
Left	17	16	17	000	00	00	080	18	44	302.50
Right	17	16	17	180	00	00	260	18	44	
Left	17	17	14	000	00	00	080	10	10	302.50
Right	17	17	14	180	00	00	260	10	10	
Left	17	18	22	000	00	00	079	59	41	302.50
Right	17	18	22	180	00	00	259	59	41	
Left	17	19	17	000	00	00	079	50	54	302.50
Right	17	19	17	180	00	00	259	50	54	
Left	17	20	10	000	00	00	079	42	37	302.50
Right	17	20	10	180	00	00	259	42	37	
Left	17	21	38	000	00	00	079	38	04	302.50
Right	17	21	38	180	00	00	259	38	04	
Left										302.20
Right										
Left										302.20
Right										

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

FUGRO TGS (Australia) Limited
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro TGS Job Number: P0016
Job Description: Ensco 102 Rig Move to West Whiptail-1 (SG Brown 1000)
Client: Apache
Party Chief: M.Elmslie
Surveyor: M.Elmslie
Rig Name: Ensco 102
Date: 03May 2004

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Average Local Time (HMS)			Average Horizontal Angle (DMS)			Azimuth Sun (DMS)			Azimuth RO (DMS)			Calculated (C) True Heading (D.D)	Observed (O) True Heading (D.D)	C-O (D.D)
17	12	53.0	080	51	07	292	02	49	211	11	42	211.20	302.70	-91.50
17	13	40.0	080	44	10	291	55	25	211	11	15	211.19	302.70	-91.51
17	14	35.0	080	34	47	291	46	45	211	11	58	211.20	302.70	-91.50
17	15	36.0	080	25	07	291	37	09	211	12	02	211.20	302.70	-91.50
17	16	17.0	080	18	44	291	30	43	211	11	59	211.20	302.50	-91.30
17	17	14.0	080	10	10	291	21	46	211	11	36	211.19	302.50	-91.31
17	18	22.0	079	59	41	291	11	07	211	11	26	211.19	302.50	-91.31
17	19	17.0	079	50	54	291	02	31	211	11	37	211.19	302.50	-91.31
17	20	10.0	079	42	37	290	54	14	211	11	37	211.19	302.50	-91.31
17	21	38.0	079	38	04	290	40	31	211	02	27	211.04	302.50	-91.46

Mean C-O **-91.40**

Signature

SURVEYOR/PARTY CHIEF

CLIENT SURVEY REPRESENTATIVE

APPENDIX E
FINAL POSITIONING DATA

FINAL POSITION FIX – DIFFERENTIAL GPS

Job: West Whiptail-1 Rig Move
Job Number: P0016
Fugro Surveyor: M.Elmslie
Client: Esso
Client Representative: H.Arrowsmith

Sampling started: 9 May 2004 10:00:17
Sampling end: 9 May 2004 13:00:10

Ensco102

Final Datum / Drill String Position

Datum: **GDA94 (GRS80)**
Latitude: 38°19'29.150"S Longitude: 147°30'17.167"E
Projection: **MGA Zone 55**
Easting: 544121.32 Northing: 5758030.22

Mean corrected heading: 129.03°T
SD heading: 0.0°T
Intended heading: 130.0°T
Difference from intended: -1.0°
Gyro C-O: -88.3°
Convergence: -0.31°

Final Datum Position is 7.59m on a bearing of 142.3°T (142.6°G) from the intended location.

Above Final Datum / Drill String Position in datum: WGS 84
Latitude: 38°19'29.150"S Longitude: 147°30'17.167"E Spheroidal Ht: 48.81m

Final Antenna Position (T1 Fugro UKOOA):

Sample size: 2080 fixes used out of a total of 2160.

Antenna offset
X: -3.33m Y: 118.99m Z: 0.00m
Range: 119.04m Rel Brg from datum to antenna: 358.4°

Datum: WGS 84
Latitude: 38°19'31.498"S Longitude: 147°30'21.060"E Spheroidal Ht: 48.81m
Datum: GDA94 (GRS80)
Latitude: 38°19'31.498"S Longitude: 147°30'21.060"E Spheroidal Ht: 48.81m
Projection: MGA Zone 55
Easting: 544215.45 Northing: 5757957.35

Standard deviations
Long or E: 0.35m
Lat or N: 0.26m
Height: 0.64m
Position: 0.44m

Geodetic Parameters

GPS Spheroid Name: WGS 84
Semi-major (a): 6378137.00m
Semi-minor (b): 6356752.31m
Eccentricity: 0.00669438
Inverse Flatenning (1/f): 298.25722356

Local Spheroid Name: GDA94 (GRS80)
Semi-major (a): 6378137.00m
Semi-minor (b): 6356752.31m
Eccentricity: 0.00669438
Inverse Flatenning (1/f): 298.25722210

Projection Name: MGA Zone 55

Transformation Name: WGS 84 to GDA94 (GRS80)

Datum Shift Parameters: (Coordinate Frame Rotation)
dx: 0.0000m
dy: 0.0000m
dz: 0.0000m
rx: 0.0000
ry: 0.0000
rz: 0.0000
scale: 0.0000

Intended Datum Location
Datum: GDA94 (GRS80)
Latitude: 38°19'28.956"S Longitude: 147°30'16.976"E
Projection: MGA Zone 55
Easting: 544116.71 Northing: 5758036.25

APPENDIX F

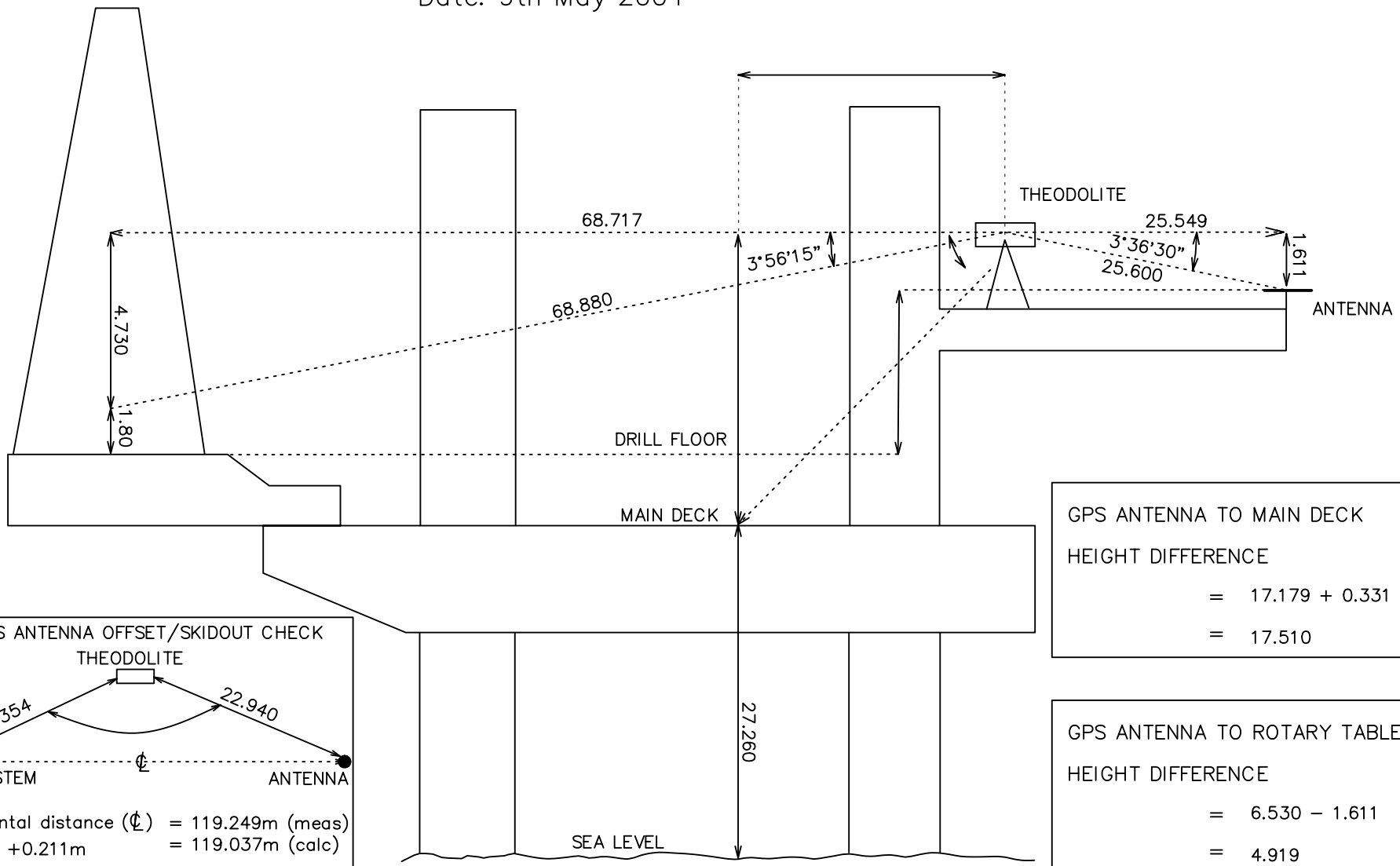
ENSCO 102 ROTARY TABLE HEIGHT DIAGRAM AT WEST WHIPTAIL-1

HEIGHT DIFFERENCE BETWEEN DRILL FLOOR AND HELIDECK (GPS ANTENNA)

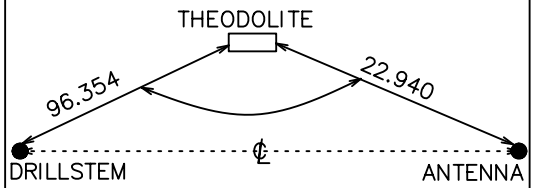
Client: Esso Australia Pty Ltd Rig: ENSC056

Drill Location: WEST WHIPTAIL–1 Job Number: P0016

Date: 9th May 2004



GPS ANTENNA OFFSET/SKIDOUT CHECK



horizontal distance (℄) = 119.249m (meas)
= 119.037m (calc)

diff = +0.211m

GPS ANTENNA TO MAIN DECK

HEIGHT DIFFERENCE

= 17.179 + 0.331

= 17.510

GPS ANTENNA TO ROTARY TABLE

HEIGHT DIFFERENCE

= 6.530 – 1.611

= 4.919

ESSO AUSTRALIA.LTD

HYDROGRAPHIC SURVEYORS REPORT ON

QUALITY ASSURANCE / QUALITY CONTROL

MODU JACKUP RIG POSITIONING

WEST WHIPTAIL -1 WELL SITE
BLOCK VIC/L1

MAY 2004

BY

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
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		PAGE
	INTRODUCTION	4
1.0	ARRIVAL AT RIG	5
2.0	THE WEST WHIPTAIL-1 WELLSITE	5
3.0	POSITIONINNG CONTRACTOR	6
3.1	ANTENNAE INSTALLATION	6
3.2	POSITIONING EQUIPMENT	6
3.3	PRE RIG MOVE INFORMATION	7
4.0	DRILLING LOCATION	8
4.1	CONTRACTOR VALUES	9
4.2	ONBOARD THEODOLITE SURVEY	9
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ATTACHMENTS

1.0 CONTRACTORS EQUIPMENT & ANTENNA INSTALLATIONS

2.0 COMPASS CALIBRATIONS

3.0 CONTRACTORS PRERIG MOVE INFORMATION.

4.0 COMPUTER CONFIGURATION FILE

5.0 DIAGRAM OF ON BOARD TRAVERSE

6.0 SATELLITE AVAILABILITY FOR FINAL FIX`

7.0 POINTS DISPERSAL DIAGRAM

8.0 CONTRACTORS FINAL FIX DOCUMENT

9.0 DAILY DIARY OF EVENTS

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
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INTRODUCTION

On February 2004 Arrowsmith Muir & Associates Pty.Ltd, Consultant Land Engineering & HydrographicSurveyors were Contracted by Esso Australia Ltd to provide Quality Assurance & Quality Control Services for the positioning of the Modu Drill Rig "ENSCO 102" at the site of West Whiptail-1 well drilling site in Block VIC/ L1 Bass Strait Australia

This report has been prepared generally in accordance with Esso's "Well Location and Reporting Offshore QC/QA Procedures" and outlines the procedures adopted and the findings of the QA/QC Surveyor who carried out the work.

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
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1.0 ARRIVAL AT RIG

The ENSCO 102 jackup drilling rig had been transported from Singapore on the Heavy lift vessel (HLV) "American Cormorant" arriving in Westernport Bay on April 28th 2004.
The American Cormorant had anchored at GDA Lat 38 Deg 26'01" S ,Long.145Deg 12'59"E and embarking personnel were transported to the rig via Tyabb Airport and Long Island Point Heliport on April 29 th.
The surveyor arrived onboard the rig at 1500 hours on that day.
The survey contractor's personnel had arrived earlier the same day and had all positioning equipment mobilised in the control room of the rig.by 2300 hours.
The Weather forcast for the tow from Westernport to West Whiptail –1 was unfavourable so the rig was floated off the HLV during the night of the 29th and with the aide of Port Authority tugs taken to a holding location at Lat.36Deg.26'24"S Long.145 Deg 17'35"just North of Phillip Island
It became apparent to the surveyor during this manoeuvre that moving and pinning the rig over location where a small tolerance was required was going to be a difficult task.

2.0 THE WEST WHIPTAIL –1 WELLSITE

The West Whiptail-1 wellsite is located in Victoria Lease L.1, 15 kilometers south east of the existing Barracouta A platform.The Target Co ordinates for the well expressed in terms of MGA (Map Grid Australia) Zone 55 were E.544116.71 N.5758036.25 Latitude 38Deg.19'28.956"S Longitude 147 Deg 30' 16.976"E .The water depth at the site is 39 - 40 metres.

3.0 POSITIONING CONTRACTOR

The positioning Contractor was "Fugro Survey Pty.Ltd" Hydrographic House
4 Ledgar Road Balcatta WA 6021.
The control room of the Ensco 102 is quite spacious with ample room for the setting up of all equipment and a dedicated tablewas provided for the purpose
A photograph of the installation is shown in Figure 1.below and a complete list of equipment is shown in ATTACHMENT 1.

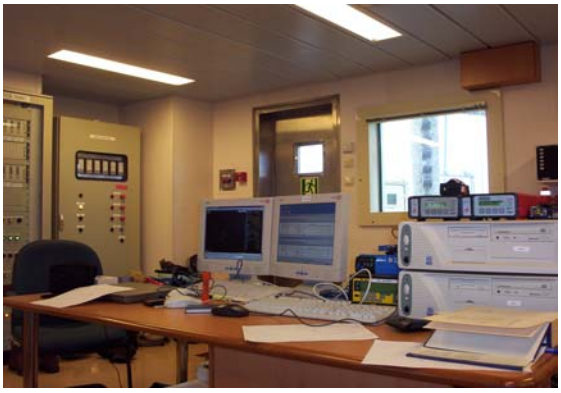

FIGURE 1
CONTRACTORS EQUIPMENT INSTALLATION

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
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3.1 ANTENNAE INSTALLATION

The GPS antennae were installed on the helicopter deck on the starboard and forward sides of the helipad so as to be in the best location to capture as much as possible of the available horizon.
Both the drilling derrick and the three legs of the rig were going to obstruct or create multi path to incoming signals from the aft of the rig.The antenna on the forward side was selected as the primary antenna (antenna.1) for the positioning work and the obstruction envelope relative to it defined using an inclinometer and compass in order that satellites falling within it could be rejected from the final fix logging.
This antenna was connected to an Ashtech Z- Extreme 18 channel dual frequency geodetic GPS receiver while the secondary antenna (antenna 2) on the starboard was coupled to a Trimble 4000SSE 18 channel dual frequency GPS reciever
The recording mask above the horizon for acceptable satellites was set at 10 degrees.for both receivers.
A photograph of the obstructed area (60 Degrees.in arc.) is shown in figure 2
A diagram showing each antenna location on the rigs Helipad and photographs of each antenna are shown in ATTACHMENT 1

FIGURE 2
VIEW OF HELIPAD
SHOWING OBSTRUCTIONS

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
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11 CLONMULT AV HIGHETT VIC.3190
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3.2 POSITIONING EQUIPMENT

The primary positioning GPS the Ashtech Z-Extreme 18 channel dual frequency GPS receiver utilised Racal premier Star fix differential corrections from a multi station fix based on reference stations in Adelaide,Melbourne,and Sydney.The differential correction is computed from the multi station fix and transmitted via Optus satellite in the form RTCM corrections.
Two signals on different frequencies are available to the user (System 1 & System 2)
If,for any reason System 1 at any of the three differential stations fails System 2 is automatically activated and transmitted to the user
The Trimble 4000 SSE dual frequency receiver utilised the same set of base stations and signal corrections.
Both systems operated simultaneously with side by side comparison data screens.
The age of the RTCM correction and system updates were always 5 seconds or less.
Fugro/Thales rig positioning (GNS2) software was installed on a personal computer to provide the rig position in both tabular and real time graphic displays.
During the logging of the final fix data both recievers were used to log Raw GPS phase data for baseline computations
Two Gyro compasses were installed on the floor of the control room to provide true rig heading for translation of the GPS antennae positions back to the Kelley (drill string) location.
On the afternoon of May3rd sun observations were carried out in order to calibrate both compasses.ATTACHMENT 2 shows the observations and reductions

3.3 PRE RIG MOVE INFORMATION

Fugro Survey Pty.Ltd document number P0016 (PRE RIG MOVE INFORMATION) contains the co-ordinates and transformation parameters for the proposed location of the well.
The quoted location was in terms of GDA (Geocentric Datum Australia) which for all practical purposes is the same as WGS84 (World Geodetic Spheroid 1984) and requires no shift to adjust to GDA
Rectangular co-ordinates (UTM's) were expressed in terms of MGA (Map Grid Australia) Zone 55
The parameters for the calculation of co-ordinates from Spherical to Rectangular are contained in document P0016 and these were checked and verified correct by the QA/QC Surveyor before the surveyor went to the site.
The actual conversion was also verified as being correct by processing same with the QA/QC surveyors own software.
The three reference stations locations used in the multi station fix solution for the differential correction are also listed in document P0016.
These locations were at Adelaide ,Melbourne and Sydney.

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Multi path audits at these locations were carried out in January 2003 and were also made available as part of the pre rig move information supplied by the contractor.
Mission planning (Satellite Availability and predicted reliability)
information for the West Whiptail-1 location as at 12 th April 2004 .are also provided in the pre Rig move information (Document P0016)
The QA/QC also surveyor verified this for site and the projected date by use of his own separate software package.
A copy of document P0016 is included as ATTACHMENT 3

4.0 DRILLING LOCATION.

The Co ordinates of drilling location were provided to the QC/QA surveyor
by ESSO Drilling Department in an Email dated March 15th 2004
as part of the Request for Rig positioning Services to the contractor

The co ordinates,datum and spherical parameters were as follows

Mapping system GDA94	147 deg 30' 16.9760" E Long. 38 deg 19' 28.9555 " S Lat .
MGA co ordinates	E .544116.71 m N.5758036.25m.
Datum	Geocentric Datum Australia 94 (GDA94)
Reference Spheroid	GDA 94/(GRS80)
Equatorial Semi Major Axis	6378137.0 metres
Semi Minor Axis	6356752.314 metres
Eccentricity Squared	0.006694380
Flattening	298.25722101
Projection	Universal Transverse Mercator (UTM)
Projection Zone	Zone 55
Central Meridan (CM)	147deg E
Scale Factor at CM	0.9996
False Easting	500,000m
False Northing	10,000,000
Unit of Measure	International Metre
Positioning Tolerance	+ or- 5 metres

4.1 CONTRACTORS VALUES.

On arrival the Positioning Contractor's field values (Doc.P0016 Pages 4 &5) were verified as being the same as those provided to the surveyor prior to him going to the site.
As WGS84 and GRS80 reference spheroids are considered to be the same no datum shifts are required in transforming co ordinates from geographical to the rectangular and Map Grid Australia (MGA) mapping system.
The contractors configuration file in his software therefore needed that the following parameters were set at zero

DX 000
DY 000
DZ 000
ROT.X 000
ROT.Y 000
ROT.Z 000
SCALE 000

On arrival at the rig and immediately prior to commencement of the final fix logging the configuration file from the operating computer was printed and the above parameters confirmed along with the adopted corrections for antennae offsets as were determined from an on board theodolite survey.
A copy of the printout is contained as ATTACHMENT 4.

4.2 ONBOARD THEODOLITE SURVEY

To relate the rotary table (Kelley) to the GPS antennae locations it was necessary to carry out a theodolite survey using a Topcon Electronic Total Station. Access to the drill floor on the ENSCO 102 is limited and such that a closed traverse could not be undertaken.
A short baseline was therefore established on the helicopter pad from the ends of which all required positions could be seen.
The baseline was double measured and directions and distances observed to the antennae ,Kelley and a point selected and marked on the forward centreline of the rig.at helipad level
Separate computations were then undertaken from each set of observations to establish and confirm the antennae offsets (X&Y) relative to the line joining the Kelley and the adopted forward centreline of the rig
The mean of the calculated X & Y offsets from each set of observations was adopted.
Note: The ENSCO 102 is a jackup drill rig with a skidout drill floor.and as a consequence the rig has to be located and pinned on station prior to the skidding out of the drill floor.
After consultation with the rig operators a "skidout distance" of 60feet (18.29m) was to be adopted for the well and had to be incorporated in the determined "Y" dimension for the antennae offsets prior to coming on to station.

As the rig had to be held on standby prior to going on station this time was used

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to undertake this work.
A photograph of the mark adopted as centreline on the forward edge of the helipad is shown in figure 3
A diagram showing the baseline ,directions and distances as determined prior to skidding out is shown in ATTACHMENT 5

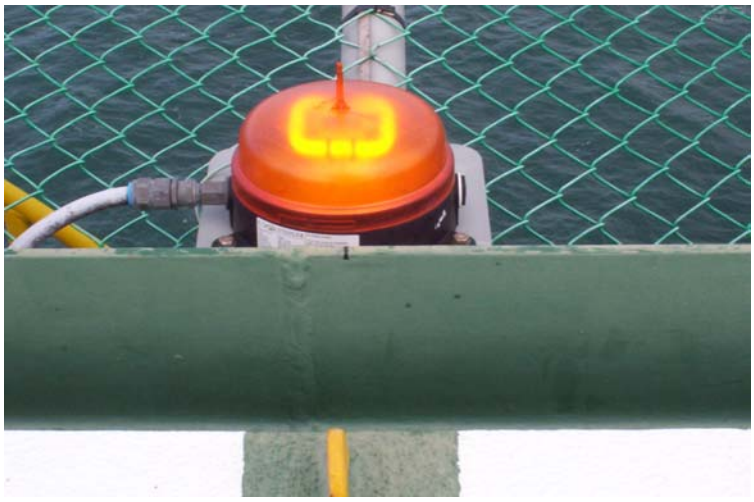

FIGURE 3
CENTRELINE MARK ON FORWARD EDGE OF HELIPAD

5.0 TOW TO WEST WHIPTAIL -1 SITE.

The tow to site commenced at 1150 hours May 6th
A predetermined tow route had been designed from the Westernport Pilot station to the West Whiptail-1 site..Coordinates of the various way points were input into the navigation system and the route monitored by the Positioning Contractor.
The towing vessel " Ray J Hope" closely followed the route departing there from only at the last two waypoints where two large radius curves were followed rather than trying to navigate the sharp turns defined by waypoints 5 & 6
Route fixes were recorded at regular intervals should a record be required The route is shown as part of Document P0016 in ATTACHMENT 3
The tow was under the direction of a towmaster and undertaken will all three rig legs fully jacked up and secured until the run in to the Well was commenced at 0030 hours May 8th .
It was at this time that ESSO officially took over the rig from the drilling contractor..

6.0 LOCATING ON STATION.

Prior to the commencement of the run in to West Whiptail –1 the second tow vessel 'Invincible Tide" was attached to the rear starboard side of the rig to stop the rig so that it could be pinned.
All legs were lowered to be within 0.5 to 1m above the seabed.
The run in was commenced initially at 1.5 kts under the direction of the tow master, slowing to 0.5 kts as the target circle (5m) was approached.
Generally the approach was good however as soon as the Invincible Tide applied power to halt

the forward progress so that a leg could be lowered to pin it the rig it would swing off headingand outside the target area..
After three attempts spanning some 2 hours a pinned location on heading and approximately 8 metres south east of the target location was secured.
A general consensus of opinion was that in the circumstances this would be the best that could be achieved without the expending of considerable further time.so, after consultation with the ESSO company representative it was decided in the interests of efficiency that the location would be adopted despite being outside the tolerance permitted.
The remaining two legs were then lowered and the rig secured on location.
Preloading of the legs in accordance with para 9 of the move,preload and exit program then commenced.

7.0 LOGGING OF FINAL POSITION FIX

On completion of the preloading and the elevation of the rig to drilling height
The drill floor was skidded out to the distance of 60 feet.
The skidout distance is indicated and measured on a scale etched into the port main support beam of the drill floor at main deck level.
The zero for the skidout distance is a distance related to the transom of the rig and is measured at an index mark on the port side at the aft of the main deck.(See QC/QA Surveyors Independent Check paragraph 9) The positioning contractor in order to verify the Skidout actually measured the direct skidout distance of the Kelley using the Topcon Total Station.setup on the roof of the control room..The index mark at the aft of the rig for measuring the skidout was also observed to be exactly on the 60 foot mark on the side of the main beam.
After confirming that the drill floor would not be moved prior to spudding it was decided that final fix logging could commence as soon suitable satellite availability and PDOP (Probable Dilution of Position) values were suitable.
The obstruction arc created by the legs and derrick had been measured so that satellites with paths passing through these structures could be omitted from the computation.
ATTACHMENT 6 shows the updated Satellite availability ,Sky plot ,PDOP values and obstruction envelopes for the location and date.
Final fix logging commenced at 1000 hours and ended at 1300 hours on Sunday May 9th.
The contractor logged differential GPS positions at 5 second intervals on the primary antenna (Ashtech receiver)throughout the logging period.
The secondary Antenna (Trimble 4000SSE reciever) was also set to record “raw” phase data for the same period.

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7.1 LOGGING OF FINAL FIX DATA BY QA/QC SURVEYOR

The QA/QC surveyor also logged the Contractor's real time differential data into "Hydro" acquisition and navigation software package at intervals of 10 seconds for the observation period of 3 hours (1100 Fixes)

The location of Primary Antenna was logged directly as MGA coordinates and is presented as a dispersal points diagram and compared with the final antenna location as determined by the Contractor.
The diagram is presented in ATTACHMENT 7 to the report and indicates good agreement.

7.2 DUAL FREQUENCY PHASE DATA

A single session of 3 hours Raw dual frequency GPS phase data were logged directly into both the Ashtech Z Extreme receiver., (Primary Antenna 1) and the Trimble 4000 SSE. (Secondary Antenna 2) both being later downloaded
The Ashtech is a new generation receiver with the ability to log raw dual frequency phase data in both Rinex and propriety formats
The Trimble phase data was logged as propriety DAT files and converted to Rinex Format using the Trimble DATRIN2 conversion software..
All logged and converted files are contained on the CD accompanying this report.

8.0 FINAL LOCATION

The final reduced Location of the well as determined from the real time DGPS logging is in terms of:

GDA 94	38deg 19' 29.150"S 147deg 30' 17.167"E
MGA94 UTM Zone 55	E.544121.32m N.5758030.22m RIG Heading 129.03 deg true

A copy of Contractors Final Fix Report is contained in the report as ATTACHMENT 8

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9.0 INDEPENDENT VERIFICATION OF FINAL CO-ORDINATES

On the morning of May 9th 0800 hours to 0900 hours) GPS co-ordinates were observed by the QA/QC surveyor on the centre line of the Rig forward mark on the helipad and an aft mark being the portside navigation light. in order to independently verify the heading and Final Location of the well as determined by the contractor.
Some question existed as to exactly what the actual Skidout distance of the rotary table from its stowed position would be as there appeared to be no relationship between the skidout scale on the main deck and the rotary table .
The QC surveyor therefore selected a point that would move out with the drill floor and related the rotary table to it by direct measurment .This point was the aft portside navigation light on the drill platform hand rail.
The equipment used was a handheld Trimble Scout 12 channel GPS receiver reading directly in WGS 84, UTM Zone 55 Grid Co-ordinate mapping system
Differential corrections were received in RTCM format from the AMSA (Australian Marine Safety Authority) " Cape Schank differential station.using a mobile beacon .
The observed co ordinates were

Bow mark	E.544212m	N.5757953m
Aft Mark	E.544124m	N 5758043m

The bow mark was determined to be 116.5 m ahead of and online with the Kelley bushing which was directly measured to be 13.2 metres to the starboard and 8.7 metres ahead of the aft mark being the aft port navigation light.
Accordingly, the drill would be located at

E.544123 N.5758027
Calculated grid bearing of the rig 129 deg 37' (T 129 deg 55')

This agreed with a final location by the contractor within 3.2m Northing , 1.7 m Easting and less than 1 deg in heading which was considered satisfactory as.the observation time at each mark was less than 5 minutes .
The Final Position Fix –Differential GPS was then signed off by the QA/QC Surveyor and forwarded to
Exxonmobil Exploration Company.
Upstream Technical Computing & Cartography Group
Houston (Fax 281 6547718)
Additional copies were provided to the OIM of the ENSCO102 and ESSO company Representative on the rig

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9.1 COMMENTS

During the course of the work no unusual solar events occurred that would influence the reliability of the data collected or the observation final fix location The QA/QC surveyor expresses a very high level of confidence in the final location.

A daily diary of events is attached as ATTACHMENT 9 and the QA/QC surveyor and the contractors positioning crew left the rig on the afternoon of May 10th.

H.T.ARROWSMITH LS

SUPERVISING SURVEYOR

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.

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ATTACHMENTS

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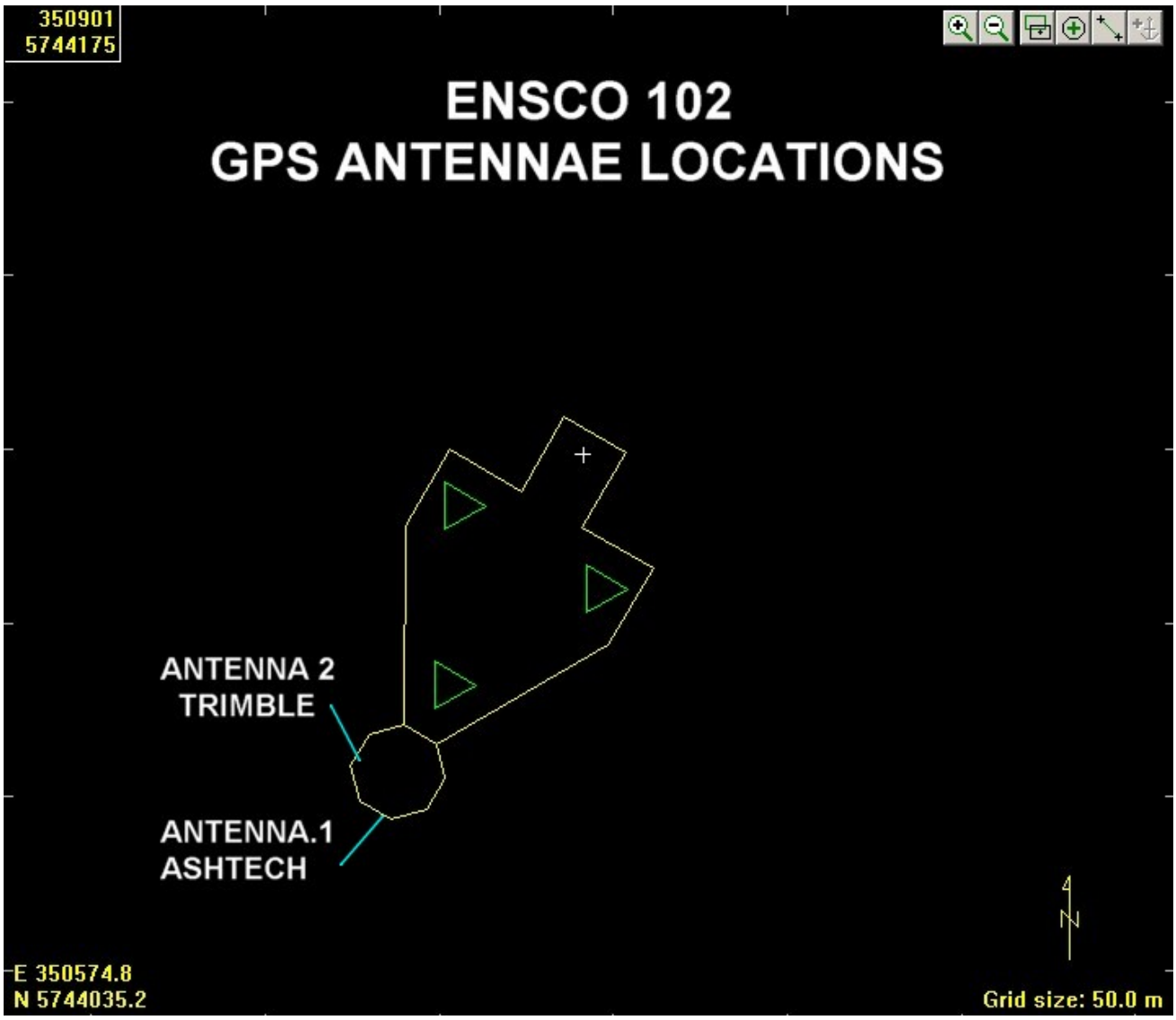

ATTACHMENT 1

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ANTENNA 1 ASHTECH

ANTENNA 2 TRIMBLE

ATTACHMENT 1

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Fugro Survey Pty Ltd

DESPATCH NOTE

Despatch Note No.: 5119

Job No.: P0016

Date: 02-Apr-04

Consignor

Fugro Survey Pty Ltd
38 Guthrie Street
Osborne Park
Western Australia 6017
Tel: +618 9445 0042
Fax: +618 9244 4155

Consignee

ESSO
FOR FUGRO SURVEY
BARRYS BEACH
VICTORIA

Carrier: Toll Logistics

Contact:

P. Order: 10453

Con #

Bo	Qty	Item #	Description	Serial Number	Origin	Value
0	1	132096	CONTAINER 6' DNV STORAGE	132048	AU	1,000
1	1	136311	SKYFIX RIG PORTABLE 90915	29		616
2	1	N/A	PRISMS			0
3	1	136340	TOTAL STATION TOPCON GTS 225	UN1373		103
4	1	136056	TRIMBLE COMPACT L1/L2 ANTENNA	3249a66622		822
4	1	136044	TRIMBLE 4000SSE GEODETIC SURVEYOR	3511a06312		7,397
5	1	136077	TRIMBLE COMPACT L1/L2 ANTENNA	3017a00153		822
5	1	136046	TRIMBLE 4000SSE GEODETIC SURVEYOR	3511ao6319		7,397
6	1	131680	SG BROWN 1000S GYRO	246	UK	12,329
7	1	130463	GYRO SG BROWN 1000A	FC512	UK	12,329
8	1	136831	MONITOR 17" LCD	14800371HA9420	AU	60
8	1	136263	PRINTER EPSON	1YQY044533		103
8	1	136262	PRINTER EPSON			103
8	1	136115	DESKTOP PC P3	h040fhgz1592		103
8	1	131677	POWER SUPPLY 12V	0350231A	AU	30
8	1	131562	NETWORK HUB 4 PORT 100BASE	FEHA92000850	AU	50
9	1	136627	SKYFIX ANTENNA 90962	725	JP	616
9	1	136590	MONITOR FLAT SCREEN ACER	20500042HA9420	JP	60
9	1	136482	SKYFIX ANTENNA 90962	142	UK	616
9	1	136158	DESKTOP PC P4			103
9	1	136157	DESKTOP PC P4			103
9	1	131720	UPS UNIT 1 KVA LIEBERT	0035200053AD1C1	AU	103
9	1	N/A	GNS II DONGLE	142478		0
9	1	N/A	MULTIFIX 4 DONGLE	120298		0
10	1	136098	DESKTOP PC P3	H032fhgz1344		103
10	1	131503	MONITOR 15" ADI	023086L50300431	AU	100
11	1	136759	SKYFIX RECEIVER 90938	768	AU	5,000
11	1	136522	SKYFIX RECEIVER 90938	1125	UK	5,000
11	1	136500	SKYFIX RECEIVER 90938	33	UK	5,000
11	1	130629	STARFIX 6500 MK II DEMODULATOR	42009	AU	100
12	1	136844	DESKTOP PC P3		AU	103
12	1	136802	POWER SUPPLY 24V 10A	1696	AU	30
12	1	136588	MONITOR FLAT SCREEN ACER	14800361HA9420	JP	60
12	1	136453	ASHTECH Z-XTREME GPS RECEIVER	ZE1200345034	US	2,466
12	1	136153	DESKTOP PC P4			103
12	1	102990	POWER SUPPLY 24V	9400		30
13	1	N/A	TRANSFORMER C/W CABLES			0
14	1	N/A	TRIPODS			0

ATTACHMENT 1

FUGRO TGS (Australia) Limited
Hydrographic House
4 Ledgar Road
Balcatta 6021
Western Australia

Solar Observation for Azimuth (Hour Angle) 2004

Fugro TGS Job Number: P0016
Job Description: Ensco 102 Rig Move to West Whiptail-1 (SG Brown 1000)
Client: ~~Apache~~
Party Chief: M.Elmslie
Surveyor: M.Elmslie
Rig Name: Ensco 102
Date: 03May 2004

Control Point Co-ordinates

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Latitude (DMS): -038 26 20
Longitude (DMS): 145 17 21
UTC Correction (HMS): 10.00

Total Station Observations:

Face	Local Time (HMS)			Observed Direction to R.O. (DMS)			Observed Direction to Sun (DMS)			Observed (O) True Heading (D.D)
Left	17	12	53	000	00	00	080	51	07	302.70
Right	17	12	53	180	00	00	260	51	07	
Left	17	13	40	000	00	00	080	44	10	302.70
Right	17	13	40	180	00	00	260	44	10	
Left	17	14	35	000	00	00	080	34	47	302.70
Right	17	14	35	180	00	00	260	34	47	
Left	17	15	36	000	00	00	080	25	07	302.70
Right	17	15	36	180	00	00	260	25	07	
Left	17	16	17	000	00	00	080	18	44	302.50
Right	17	16	17	180	00	00	260	18	44	
Left	17	17	14	000	00	00	080	10	10	302.50
Right	17	17	14	180	00	00	260	10	10	
Left	17	18	22	000	00	00	079	59	41	302.50
Right	17	18	22	180	00	00	259	59	41	
Left	17	19	17	000	00	00	079	50	54	302.50
Right	17	19	17	180	00	00	259	50	54	
Left	17	20	10	000	00	00	079	42	37	302.50
Right	17	20	10	180	00	00	259	42	37	
Left	17	21	38	000	00	00	079	38	04	302.50
Right	17	21	38	180	00	00	259	38	04	
Left										302.20
Right										
Left										302.20
Right										

Signature

SURVEYOR/PARTY CHIEF

16/05/04 12:46

ATTACHMENT 2

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Western Australia

FUGRO

Solar Observation for Azimuth (Hour Angle) 2004

Fugro TGS Job Number: P0016
Job Description: Ensco 102 Rig Move to West Whiptail-1 (SG Brown 1000S)
Client: ~~Apache~~
Party Chief: M.Elmslie
Surveyor: M.Elmslie
Rig Name: Ensco 102
Date: 03May 2004

Datum: GDA94 Projection: MGA Zone 55 CM 147° East

Average Local Time (HMS)			Average Horizontal Angle (DMS)			Azimuth Sun (DMS)			Azimuth RO (DMS)			Calculated (C) True Heading (D.D)	Observed (O) True Heading (D.D)	C-O (D.D)
17	12	53.0	080	51	07	292	02	49	211	11	42	211.20	299.50	-88.30
17	13	40.0	080	44	10	291	55	25	211	11	15	211.19	299.50	-88.31
17	14	35.0	080	34	47	291	46	45	211	11	58	211.20	299.50	-88.30
17	15	36.0	080	25	07	291	37	09	211	12	02	211.20	299.50	-88.30
17	16	17.0	080	18	44	291	30	43	211	11	59	211.20	299.50	-88.30
17	17	14.0	080	10	10	291	21	46	211	11	36	211.19	299.50	-88.31
17	18	22.0	079	59	41	291	11	07	211	11	26	211.19	299.50	-88.31
17	19	17.0	079	50	54	291	02	31	211	11	37	211.19	299.50	-88.31
17	20	10.0	079	42	37	290	54	14	211	11	37	211.19	299.50	-88.31
17	21	38.0	079	38	04	290	40	31	211	02	27	211.04	299.50	-88.46

Mean C-O -88.32

Signature _____
SURVEYOR/PARTY CHIEF

_____
CLIENT SURVEY REPRESENTATIVE

16/05/04 12:51

West Whiptail-1SGB1000S_3-05-04 Output Sheet Rev.6

ATTACHMENT 2

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ATTACHMENT 3

Prepared for

ESSO AUSTRALIA PTY LTD

DOCUMENT TITLE	:	**WEST WHIPTAIL-1 PRE-RIG MOVE INFORMATION**
CLIENT	:	**ESSO AUSTRALIA PTY LTD**
REPORT REF.	:	**P0016**
REPORT REV NO.	:	**0**
REPORT ISSUE DATE	:	**8 APRIL 2004**

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1. INTRODUCTION

Esso Australia Pty Ltd (Esso) have contracted Fugro Survey Pty Ltd to provide personnel and positioning services for the rig move of the jack-up drilling rig Ensco 102 to the West Whiptail-1 location, Bass Strait, Victoria. As part of this contract, Fugro supplies the following pre-rig move information.

Project	:	P0016
Well Location	:	West Whiptail-1
Description	:	Ensco 102 Rig Move to West Whiptail-1 Location
Client	:	Esso Australia Pty Ltd

2. WELL LOCATION

2.1 INTENDED LOCATION

The coordinates of the intended West Whiptail-1 location were provided by Esso as follows:

Datum: GDA94

Latitude	:	38° 19' 28.9555" South
Longitude	:	147° 30' 16.9760" East

Projection: MGA Zone 55, CM 147° East

Easting	:	544 116.71m
Northing	:	5 758 036.25m

2.2 POSITIONING TOLERANCE

Positioning tolerance has been specified as within a 5m radius of the intended West Whiptail-1 location unless otherwise notified.

2.3 INTENDED RIG HEADING

The intended rig heading at West Whiptail-1 is 090°T.

3. GEODETIC PARAMETERS

The co-ordinate reference frame to be used on this project is the Geocentric Datum of Australia 1994 (GDA94). The Global Positioning System (GPS) is referenced to the World Geodetic System 1984 (WGS84).

3.1 DATUMS

Datum	:	**Geocentric Datum of Australia 1994 (GDA94)**
Spheroid	:	Geodetic Reference System 1980 (GRS80)
Semi-major Axis (a)	:	6 378 137.000m
Semi-minor Axis (b)	:	6 356 752.314m
Eccentricity Squared (e^2)	:	0.006 694 380
Flattening ($^1/_f$)	:	298.257 222 101

Datum	:	**ITRF2000 (Epoch 1997.0) (WGS84)**
Spheroid	:	World Geodetic System 1984 (WGS84)
Semi-major Axis (a)	:	6 378 137.000m
Semi-minor Axis (b)	:	6 356 752.314m
Eccentricity Squared (e^2)	:	0.006 694 380
Flattening ($^1/_f$)	:	298.257 223 563

3.2 PROJECTION

Projection Name	:	**Map Grid of Australia (MGA)**
Projection Type	:	Universal Transverse Mercator (UTM)
MGA Zone	:	55
Central Meridian (CM)	:	147° East
Scale factor on the CM	:	0.9996
False Easting	:	500 000m
False Northing	:	10 000 000m
Latitude of Origin	:	0° (Equator)
Unit of Measure	:	International Metre

3.3 DATUM TRANSFORMATIONS

The following 7-parameter datum transformation will be used by the GNS2 software to convert WGS84 co-ordinates to GDA94 co-ordinates:

Dx	=	0m
Dy	=	0m
Dz	=	0m
Rx	=	0"
Ry	=	0"
Rz	=	0"
Scale	=	0.0 p.p.m.

The sign convention in Thales' GNS2 survey software used is that used by the US Department of Defense where a positive rotation about the Z axis is an anti-clockwise movement of the X and Y axes (when viewed from the North Pole looking towards the center of the Earth).

4. DIFFERENTIAL GPS INFORMATION

4.1 DIFFERENTIAL GPS REFERENCE STATIONS

The following SkyFix reference stations will be used for Differential GPS corrections:

Datum: ITRF2000 (Epoch 1997.0) (WGS84)

Station Name	Station ID	Latitude (South)	Longitude (East)	Ellipsoidal Height (m)
Adelaide System 1	205	35° 17' 30.12666"	138° 34' 50.58201"	400.039
Adelaide System 2	205	35° 17' 30.14358"	138° 34' 50.50571"	400.019
Sydney System 1	206	33° 59' 12.47855"	151° 14' 24.22195"	74.958
Sydney System 2	206	33° 59' 12.56651"	151° 14' 24.27199"	74.907
Melbourne System 1	208	38° 27' 52.88196"	144° 54' 46.67104"	146.183
Melbourne System 2	208	38° 27' 52.82792"	144° 54' 46.56831"	146.119

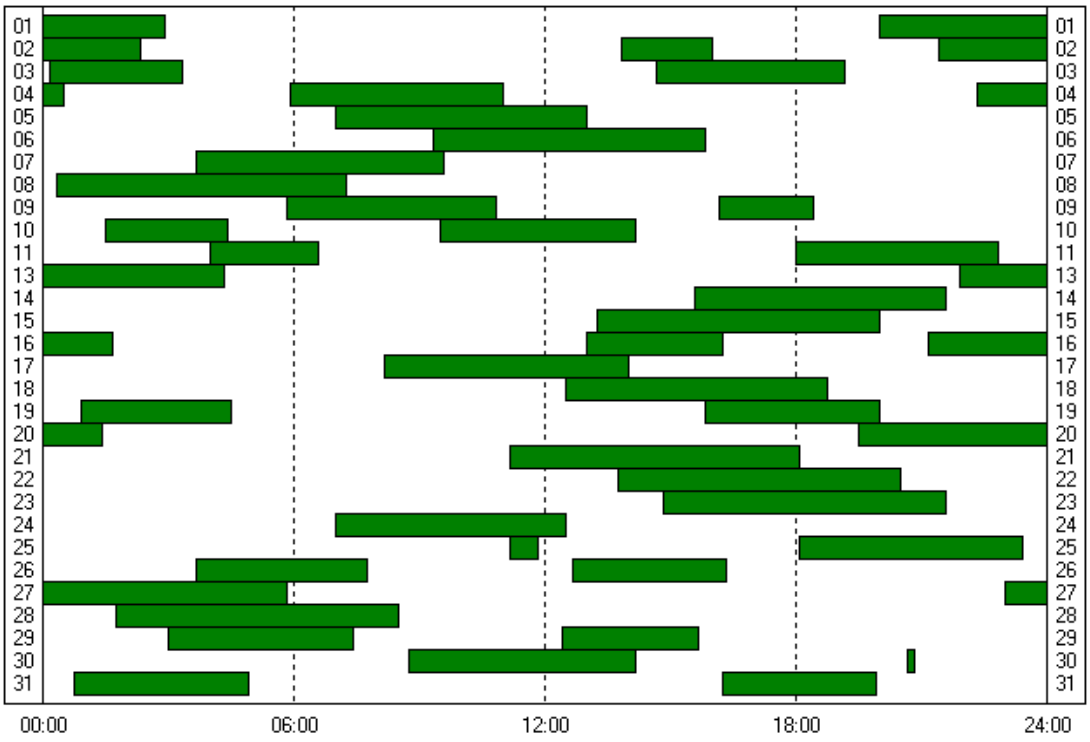
System 1 differential corrections will be transmitted via the Optus Spot Inmarsat and the Pacific Ocean Region (POR) beam satellite as shown in section 4.2. System 2 differential corrections are automatically transmitted to the user in the event of a system 1 failure at any individual station. Station descriptions are included on the following pages.

4.2 DIFFERENTIAL GPS MISSION PLANNING

Fugro GeoSky 'Mission Planning'

Location:	West Whiptail-1
Latitude (WGS84):	38° 19' 28.9555" South
Longitude (WGS84):	147° 30' 16.9760" East
SV Elevation Mask:	10.00°
Beam Elevation Mask:	10.00°

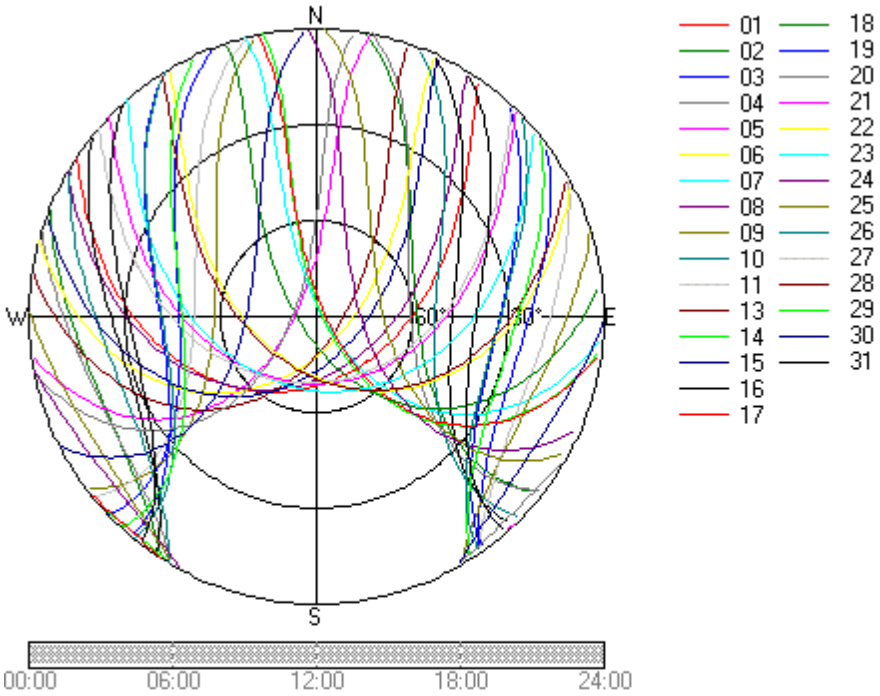
GPS SATELLITE AVAILABILITY



User Location:
Latitude: 38°19'28.9555"S
Longitude: 147°30'16.976"E
Date: 12th April 2004

THALES

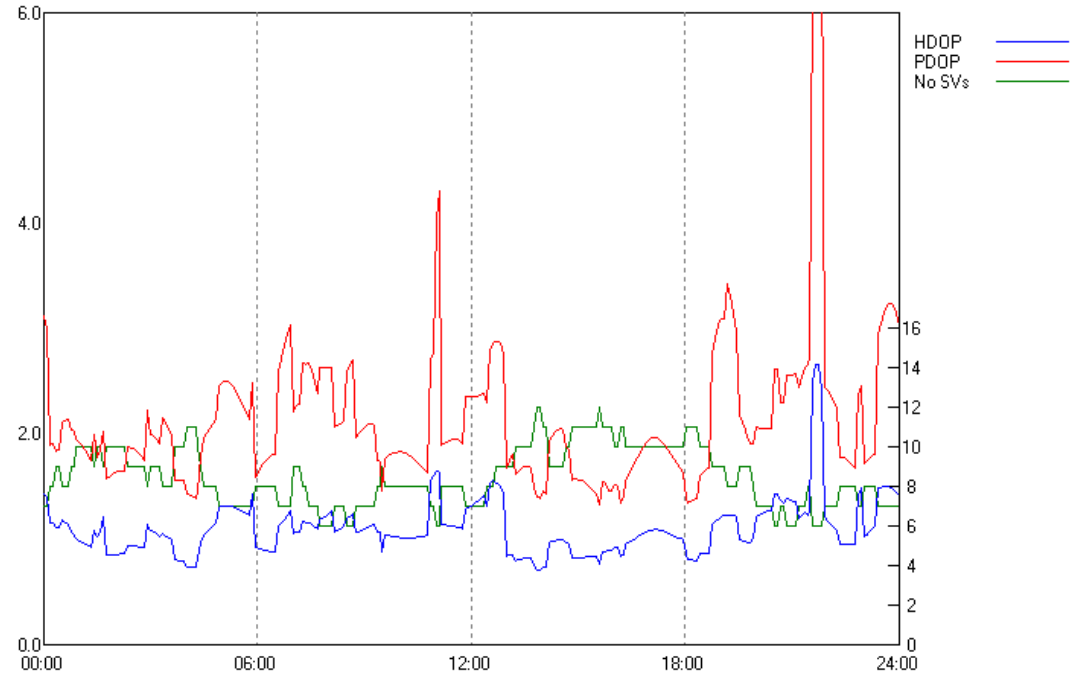
GPS SKYPLOT



User Location:
Latitude: 38°19'28.9555"S
Longitude: 147°30'16.976"E
Date: 12th April 2004

THALES ©

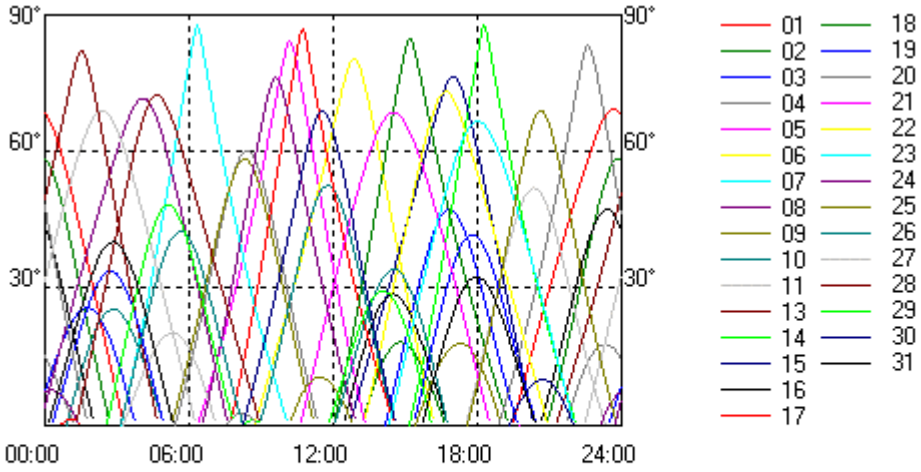
LOCAL DOP VALUES



User Location:
Latitude: 38°19'28.9555"S
Longitude: 147°30'16.976"E
Date: 12th April 2004

THALES ©

GPS SATELLITE ELEVATIONS

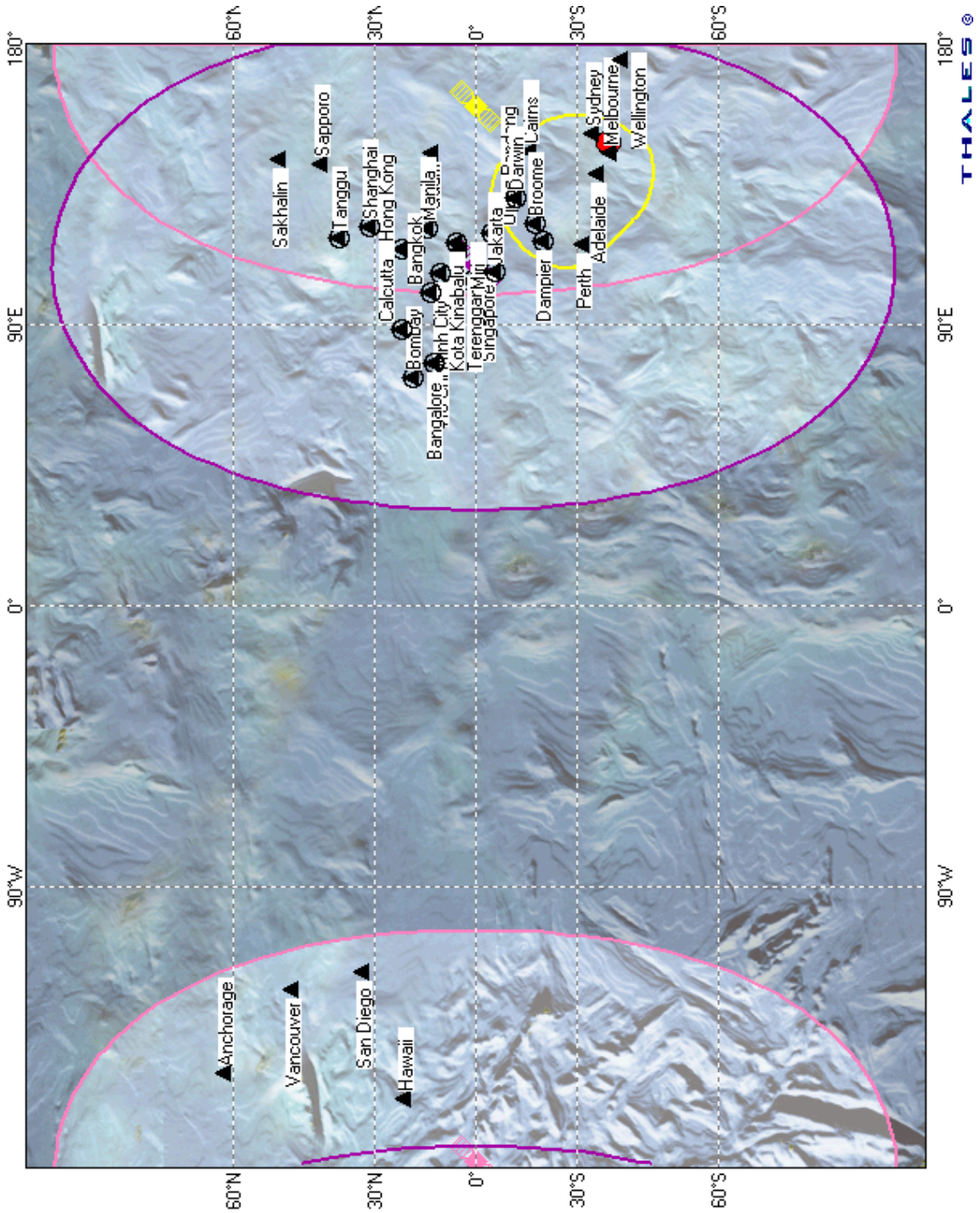


User Location:
Latitude: 38°19'28.9555"S
Longitude: 147°30'16.976"E
Date: 12th April 2004

THALES ®

SkyFix Coverage Report

GLOBAL SKYFIX COVERAGE MAP



SkyFix Station and Satellite Beam Information

Location:	Ensco 102
Latitude:	38° 19' 28.9555" South
Longitude:	147° 30' 16.9760" East
Beam Elevation Mask:	10.00°
Maximum Range:	1000 km

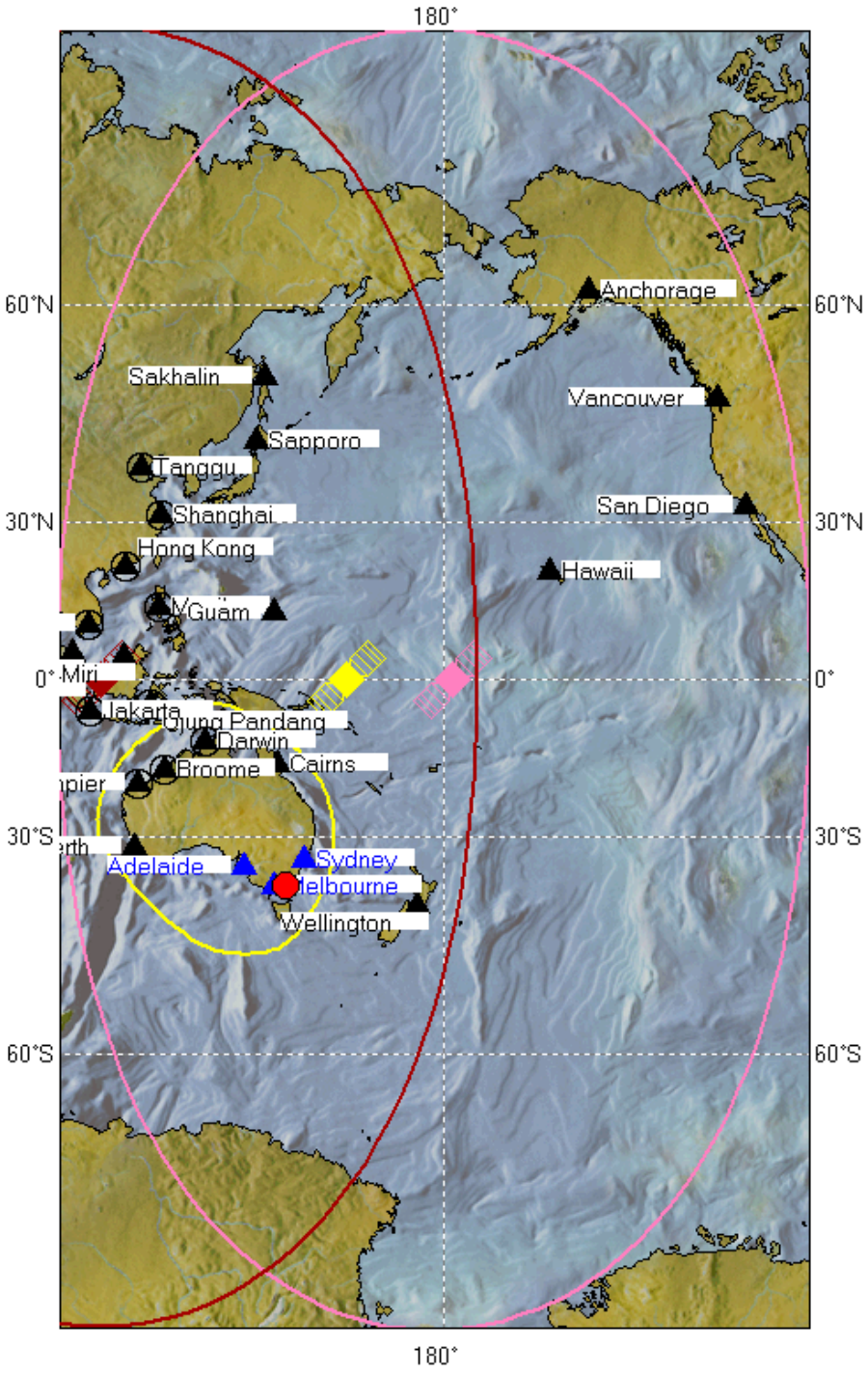
Selected Beams Locations:

Beam Name	Elev	Azi	Freqy(MHz)
Pacific Ocean Region	33	46	75.100
109 East High Power	29	306	75.145
Optus Spot	44	18	78.525

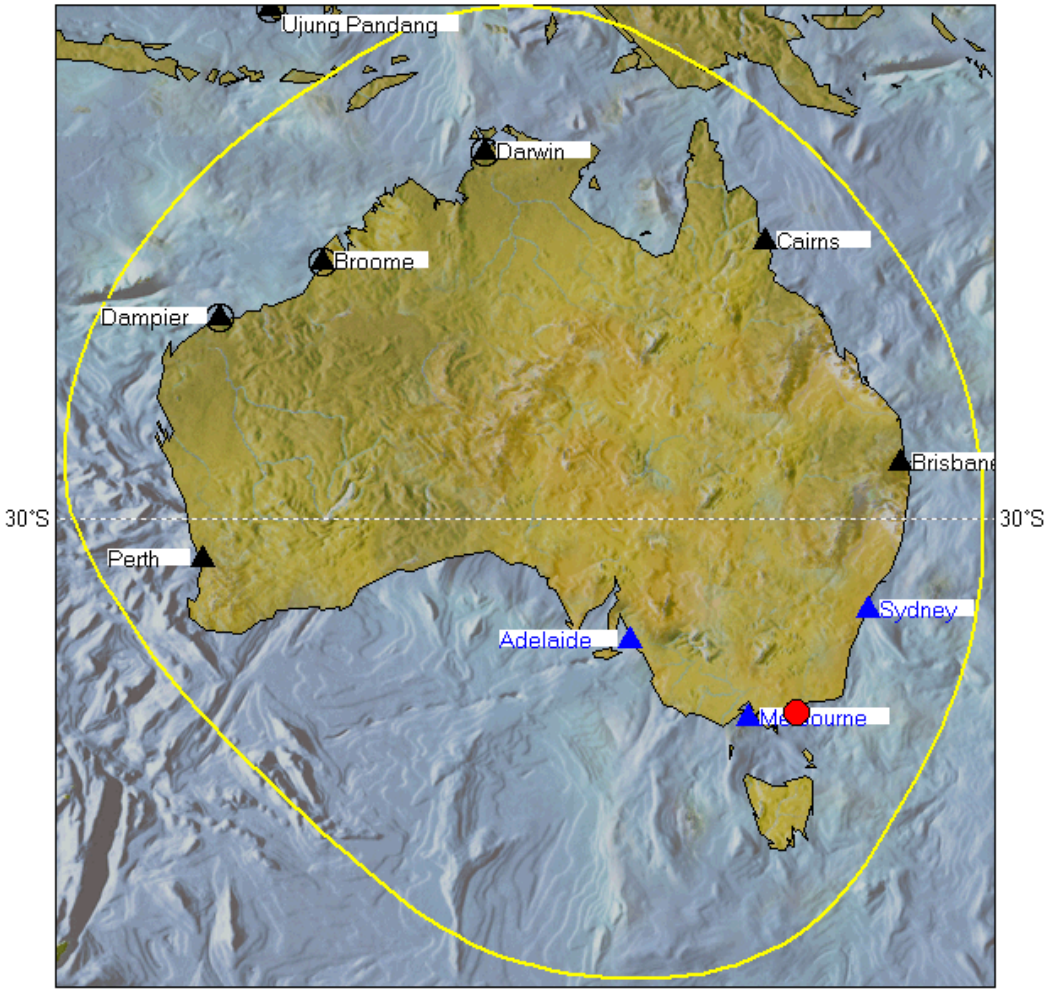
Station Ranges:

Station Name	ID:	Range:	Premier:
Melbourne	208	322	No
Sydney	206	527	No
Adelaide	205	949	No

PACIFIC OCEAN REGION COVERAGE



OPTUS SPOT COVERAGE



THALES

5. PRE-SURVEY EQUIPMENT CHECKS

On 31 March 2004 the following instruments assigned to this project, the positioning of the jack-up drilling rig Ensco 102 to West Whiptail-1, were tested:

5.1 GPS RECEIVERS

Trimble 4000 SSE	S/N	136044
L1/L2 Dual Freq. Antenna	S/N	136056
Trimble 4000 SSE	S/N	136046
L1/L2 Dual Freq. Antenna	S/N	136077

The Trimble GPS Receivers were set up over two Survey Marks (SM's) and one hour and thirty minutes of GPS phase data were logged. The data were downloaded and a baseline processed using GPSurvey software. The position of SM STN2 was calculated using SM STN1 as a fixed control point.

The published coordinates of the Survey Mark are as follows:

Datum: WGS84

Point	Latitude (South)	Longitude (East)	Ellipsoidal Height (m)
STN1	31° 51' 59.1739"	115° 48' 18.7190"	-19.494

Post-processing of the GPS phase data result in the following positions:

Datum: WGS84

Point	Latitude (South)	Longitude (East)	Ellipsoidal Height (m)
STN1	31° 51' 59.1739"	115° 48' 18.7190"	-19.494
STN2	31° 51' 51.4154"	115° 48' 18.9151"	-16.443

The calculated position of STN2 is verified to be in good order as measurement of distance from STN1 using a Topcon GTS 211D Total Station (S/N 136340) agreed with distance calculated between both stations.

5.2 TOTAL STATION

The distance measurement function of a Topcon GTS 211D Total Station (S/N 136340) was tested against a baseline between two Survey Marks (SM's). A total of 20 measurements were carried out in both directions. The published grid co-ordinates of the SS's are as follows:

Datum: WGS84 Projection: Universal Transverse Mercator (UTM) Zone 50 South

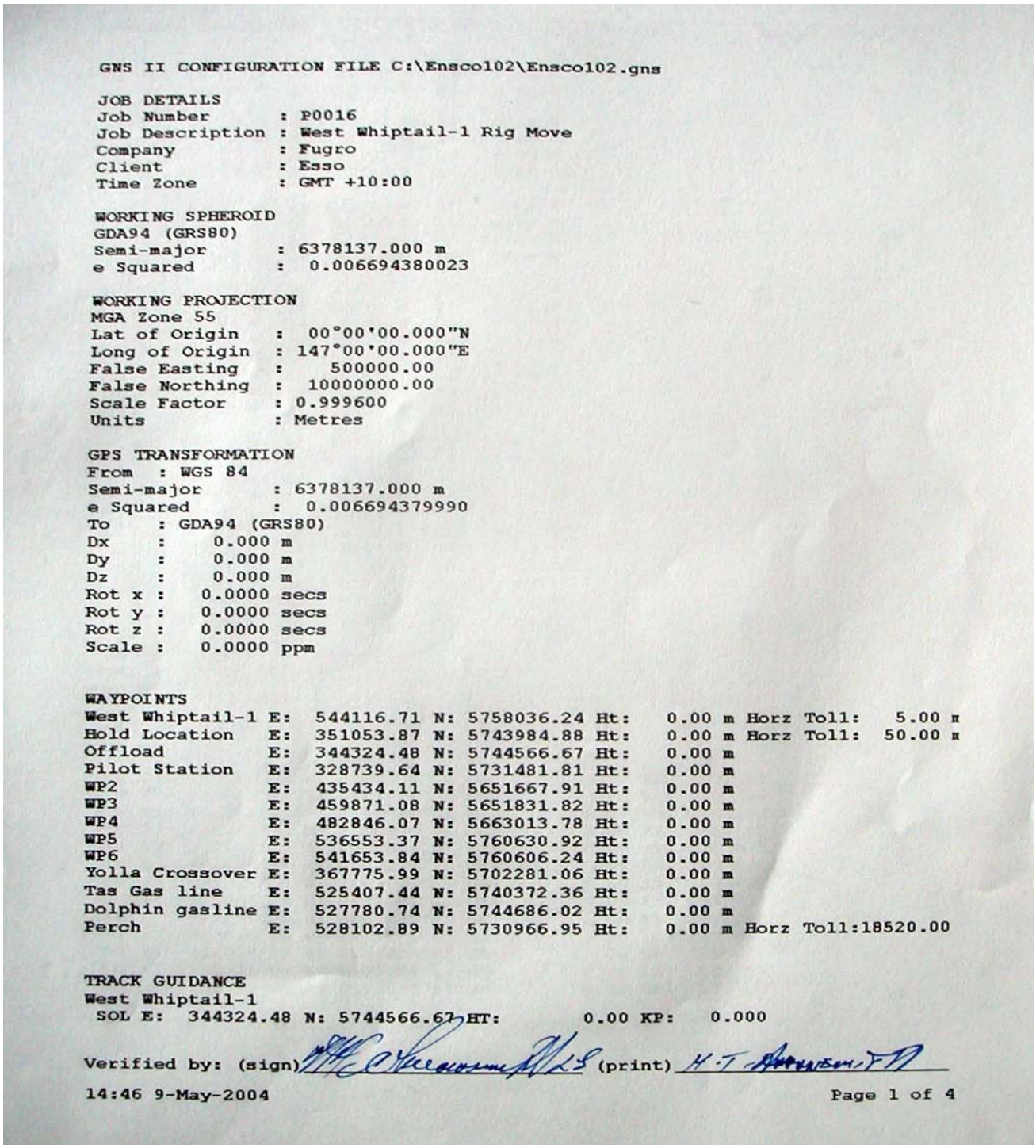
Point	Easting (m)	Northing (m)
STN1	386 977.79	6 473 746.38
STN2	386 980.31	6 473 985.35

The horizontal grid distance calculated from the published SM coordinates is 238.984m.

The mean observed distance measured with the Topcon total station was 239.039m. The grid distance calculated by application of scale factor is 238.981m. This value represents a mean absolute error of 0.003m, or a scale error of approximately 1:75000.

5.3 MISCELLANEOUS EQUIPMENT

All other hardware and software equipment for use on the project has been workshop tested and has been verified as complying with the operational requirements.



GNS II CONFIGURATION FILE C:\Ensco102\Ensco102.gns

JOB DETAILS
Job Number : P0016
Job Description : West Whiptail-1 Rig Move
Company : Fugro
Client : Esso
Time Zone : GMT +10:00

WORKING SPHEROID
GDA94 (GRS80)
Semi-major : 6378137.000 m
e Squared : 0.006694380023

WORKING PROJECTION
MGA Zone 55
Lat of Origin : 00°00'00.000"N
Long of Origin : 147°00'00.000"E
False Easting : 500000.00
False Northing : 10000000.00
Scale Factor : 0.999600
Units : Metres

GPS TRANSFORMATION
From : WGS 84
Semi-major : 6378137.000 m
e Squared : 0.006694379990
To : GDA94 (GRS80)
Dx : 0.000 m
Dy : 0.000 m
Dz : 0.000 m
Rot x : 0.0000 secs
Rot y : 0.0000 secs
Rot z : 0.0000 secs
Scale : 0.0000 ppm

WAYPOINTS

West Whiptail-1	E:	544116.71	N: 5758036.24	Ht:	0.00 m	Horz Toll:	5.00 m
Hold Location	E:	351053.87	N: 5743984.88	Ht:	0.00 m	Horz Toll:	50.00 m
Offload	E:	344324.48	N: 5744566.67	Ht:	0.00 m		
Pilot Station	E:	328739.64	N: 5731481.81	Ht:	0.00 m		
WP2	E:	435434.11	N: 5651667.91	Ht:	0.00 m		
WP3	E:	459871.08	N: 5651831.82	Ht:	0.00 m		
WP4	E:	482846.07	N: 5663013.78	Ht:	0.00 m		
WP5	E:	536553.37	N: 5760630.92	Ht:	0.00 m		
WP6	E:	541653.84	N: 5760606.24	Ht:	0.00 m		
Yolla Crossover	E:	367775.99	N: 5702281.06	Ht:	0.00 m		
Tas Gas line	E:	525407.44	N: 5740372.36	Ht:	0.00 m		
Dolphin gasline	E:	527780.74	N: 5744686.02	Ht:	0.00 m		
Perch	E:	528102.89	N: 5730966.95	Ht:	0.00 m	Horz Toll:	18520.00

TRACK GUIDANCE
West Whiptail-1
SOL E: 344324.48 N: 5744566.67 HT: 0.00 KP: 0.000

Verified by: (sign) _____ (print) _____

14:46 9-May-2004 Page 1 of 4

ATTACHMENT 4

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

GNS II CONFIGURATION FILE C:\Ensco102\Ensco102.gns

EOL E:	328739.62	N:	5731481.81	HT:	0.00	KP:	20.351
SOL E:	328739.62	N:	5731481.81	HT:	0.00	KP:	20.351
EOL E:	435434.13	N:	5651667.91	HT:	0.00	KP:	153.624
SOL E:	435434.13	N:	5651667.91	HT:	0.00	KP:	153.624
EOL E:	459871.08	N:	5651831.82	HT:	0.00	KP:	178.070
SOL E:	459871.08	N:	5651831.82	HT:	0.00	KP:	178.070
EOL E:	482846.04	N:	5663013.75	HT:	0.00	KP:	203.632
SOL E:	482846.04	N:	5663013.75	HT:	0.00	KP:	203.632
EOL E:	536553.37	N:	5760630.92	HT:	0.00	KP:	315.092
SOL E:	536553.37	N:	5760630.92	HT:	0.00	KP:	315.092
EOL E:	541653.87	N:	5760606.24	HT:	0.00	KP:	320.195
SOL E:	541653.87	N:	5760606.24	HT:	0.00	KP:	320.195
EOL E:	544116.71	N:	5758036.24	HT:	0.00	KP:	323.756

MOBILES
Ensco102 (Jack-up Rig)
Shape Definition: Ensco102a
Line:-

X:	-10.26 m	Y:	-6.60 m	Z:	0.00 m
X:	-10.26 m	Y:	18.29 m	Z:	0.00 m
X:	-33.83 m	Y:	18.29 m	Z:	0.00 m
X:	-33.83 m	Y:	43.82 m	Z:	0.00 m
X:	-5.28 m	Y:	93.27 m	Z:	0.00 m
X:	5.28 m	Y:	93.27 m	Z:	0.00 m
X:	33.83 m	Y:	43.82 m	Z:	0.00 m
X:	33.83 m	Y:	18.29 m	Z:	0.00 m
X:	10.26 m	Y:	18.29 m	Z:	0.00 m
X:	10.26 m	Y:	-6.60 m	Z:	0.00 m
X:	-10.26 m	Y:	-6.60 m	Z:	0.00 m

Line:-

X:	-5.28 m	Y:	93.27 m	Z:	0.00 m
X:	-12.64 m	Y:	100.69 m	Z:	0.00 m
X:	-12.64 m	Y:	111.18 m	Z:	0.00 m
X:	-5.28 m	Y:	118.60 m	Z:	0.00 m
X:	5.28 m	Y:	118.60 m	Z:	0.00 m
X:	12.64 m	Y:	111.18 m	Z:	0.00 m
X:	12.64 m	Y:	100.69 m	Z:	0.00 m
X:	5.28 m	Y:	93.27 m	Z:	0.00 m

Line:-

X:	17.04 m	Y:	27.21 m	Z:	0.00 m
X:	30.53 m	Y:	27.21 m	Z:	0.00 m
X:	23.77 m	Y:	38.86 m	Z:	0.00 m
X:	17.04 m	Y:	27.21 m	Z:	0.00 m

Line:-

X:	-17.04 m	Y:	27.21 m	Z:	0.00 m
X:	-30.53 m	Y:	27.21 m	Z:	0.00 m
X:	-23.77 m	Y:	38.86 m	Z:	0.00 m
X:	-17.04 m	Y:	27.21 m	Z:	0.00 m

Line:-

X:	-6.73 m	Y:	72.93 m	Z:	0.00 m
X:	6.73 m	Y:	72.93 m	Z:	0.00 m

Verified by: (sign) _____ (print) H.T ARROWSMITH

14:46 9-May-2004

Page 2 of 4

ATTACHMENT 4

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
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```
GNS II CONFIGURATION FILE C:\Ensco102\Ensco102.gns

    X:   0.00 m  Y:  84.61 m  Z:   0.00 m
    X:  -6.73 m  Y:  72.93 m  Z:   0.00 m

 Tracking Point        : Datum
 Pitch and Roll Centre: Datum

 Selected Sources:-
  Primary Position : Manual
  Backup Position  : T2 Thales UKOOA (Using Antenna Offset : GPS _Trimble)
  Primary Heading  : Manual
  Backup Heading   : S2 SGB 1000S
  Primary Height   : Datum Displacement
  Backup Height    : T2 Thales UKOOA
  Pitch and Roll   : Manual
  Soundings        : Manual
  Speed            : Position Filter
  Course Made Good : Posn Filter CMG

 Equipment:-
  T1 Thales UKOOA
   Status:  ON   Interface: AshtechDGP
   Antenna Offset Selected: GPS_Ashtech
    X:   -3.33 m Y:  118.99 m Z:    0.00 m Rng:  119.04 m Brg:358.4°
   Apply Pitch Roll: Instantaneous  Stale Time: 5.0 s  Posn SD: 3.0 m  Ht s
   Update posn regardless of whether diff corrected
   Filter: Off  Time Constant:60.0 s  Sample Dwell: 0.5 s
   Gate: Off  Gate Width: 9.0 xSD  Minimum Gate: 0.0 m

  T2 Thales UKOOA
   Status:  ON   Interface: TrimbleDGP
   Antenna Offset Selected: GPS _Trimble
    X:   13.29 m Y:  104.61 m Z:    0.00 m Rng:  105.45 m Brg:  7.2°
   Apply Pitch Roll: Instantaneous  Stale Time: 5.0 s  Posn SD: 3.0 m  Ht s
   Update posn regardless of whether diff corrected
   Filter: Off  Time Constant:60.0 s  Sample Dwell: 0.5 s
   Gate: Off  Gate Width: 9.0 xSD  Minimum Gate: 0.0 m

  S1 SGB 1000S
   Status:  ON   Interface: COM4
   C-O: -88.3 degs  Stale Time: 5.0 s  SD: 0.1 degs
    Filter: Off  Gate: Off  Time Constant: 5.0 s  Sample Dwell: 0.5 s

  S2 SGB 1000S
   Status:  ON   Interface: COM5
   C-O: -91.4 degs  Stale Time: 5.0 s  SD: 0.1 degs
    Filter: Off  Gate: Off  Time Constant: 5.0 s  Sample Dwell: 0.5 s

 Defined Offsets:-
  Datum
   X:    0.00 m Y:    0.00 m Z:    0.00 m Rng:    0.00 m Brg:  0.0°
  GPS_Ashtech
   X:   -3.33 m Y:  118.99 m Z:    0.00 m Rng:  119.04 m Brg:358.4°
  GPS _Trimble
   X:   13.29 m Y:  104.61 m Z:    0.00 m Rng:  105.45 m Brg:  7.2°

Verified by: (sign)                    (print) H.T ARROWSMITH

14:46 9-May-2004                                    Page 3 of 4
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ATTACHMENT 4

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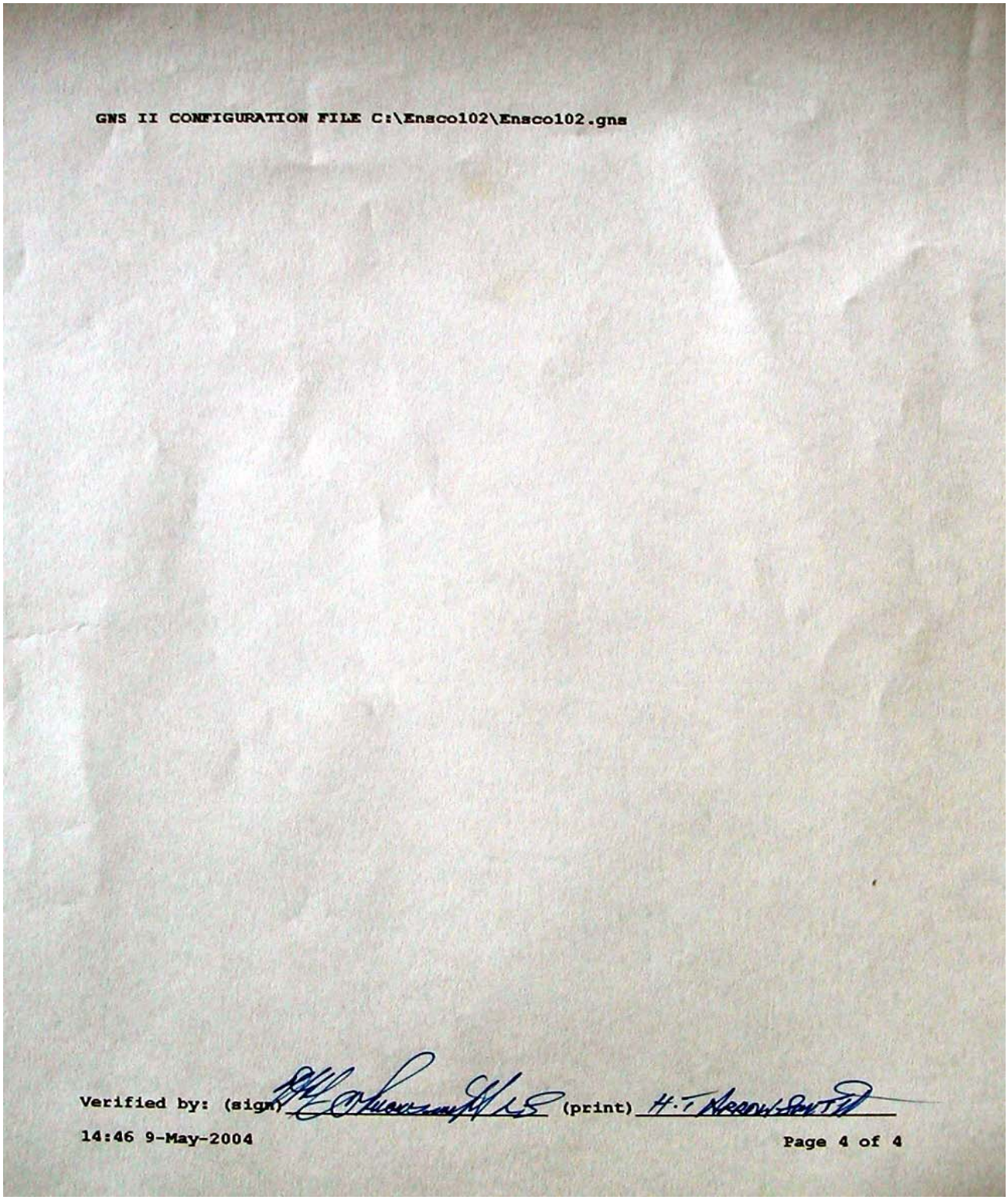
GNS II CONFIGURATION FILE C:\Ensco102\Ensco102.gns

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Page 4 of 4

ATTACHMENT 4

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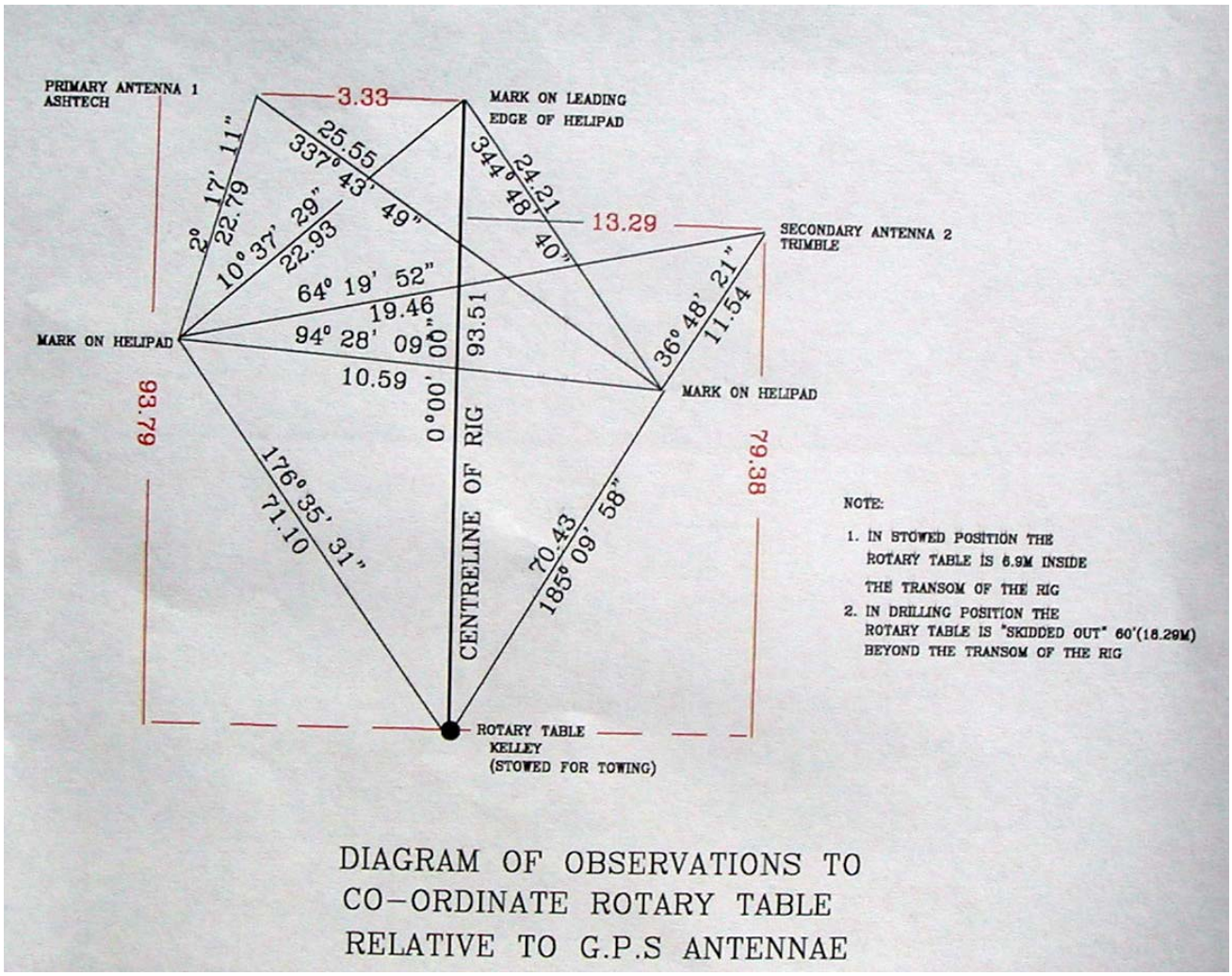

DIAGRAM OF OBSERVATIONS TO
CO-ORDINATE ROTARY TABLE
RELATIVE TO G.P.S ANTENNAE

ATTACHMENT 5

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
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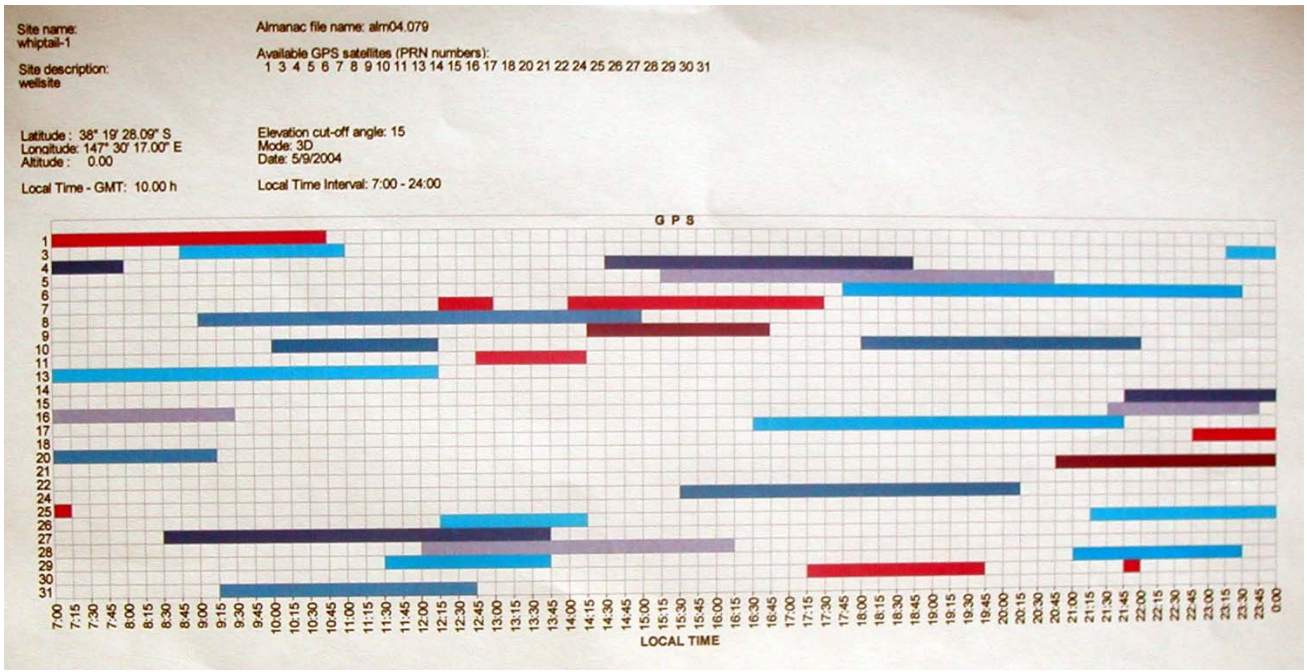
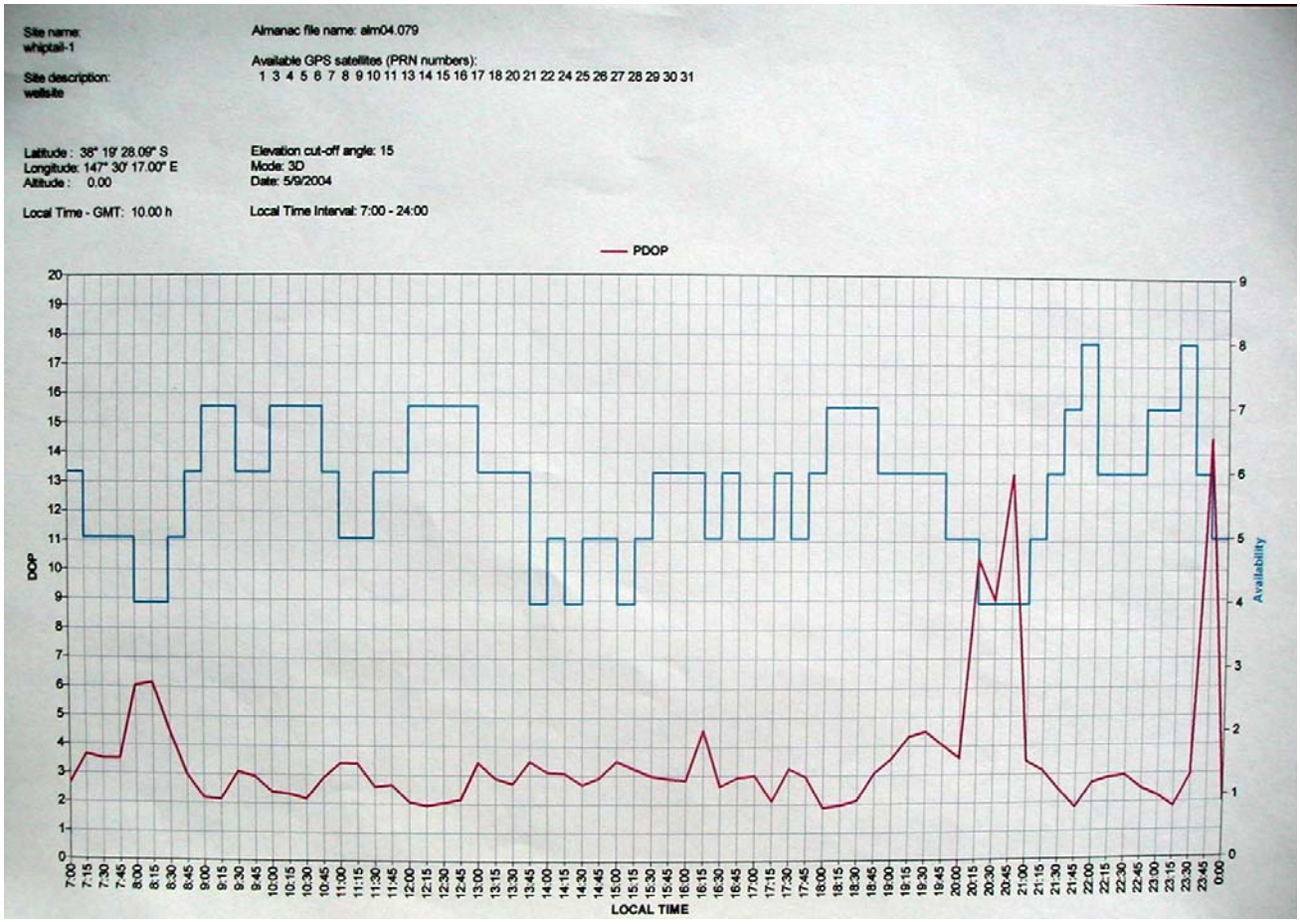


SATELLITE AVAILABILITY

ATTACHMENT 6

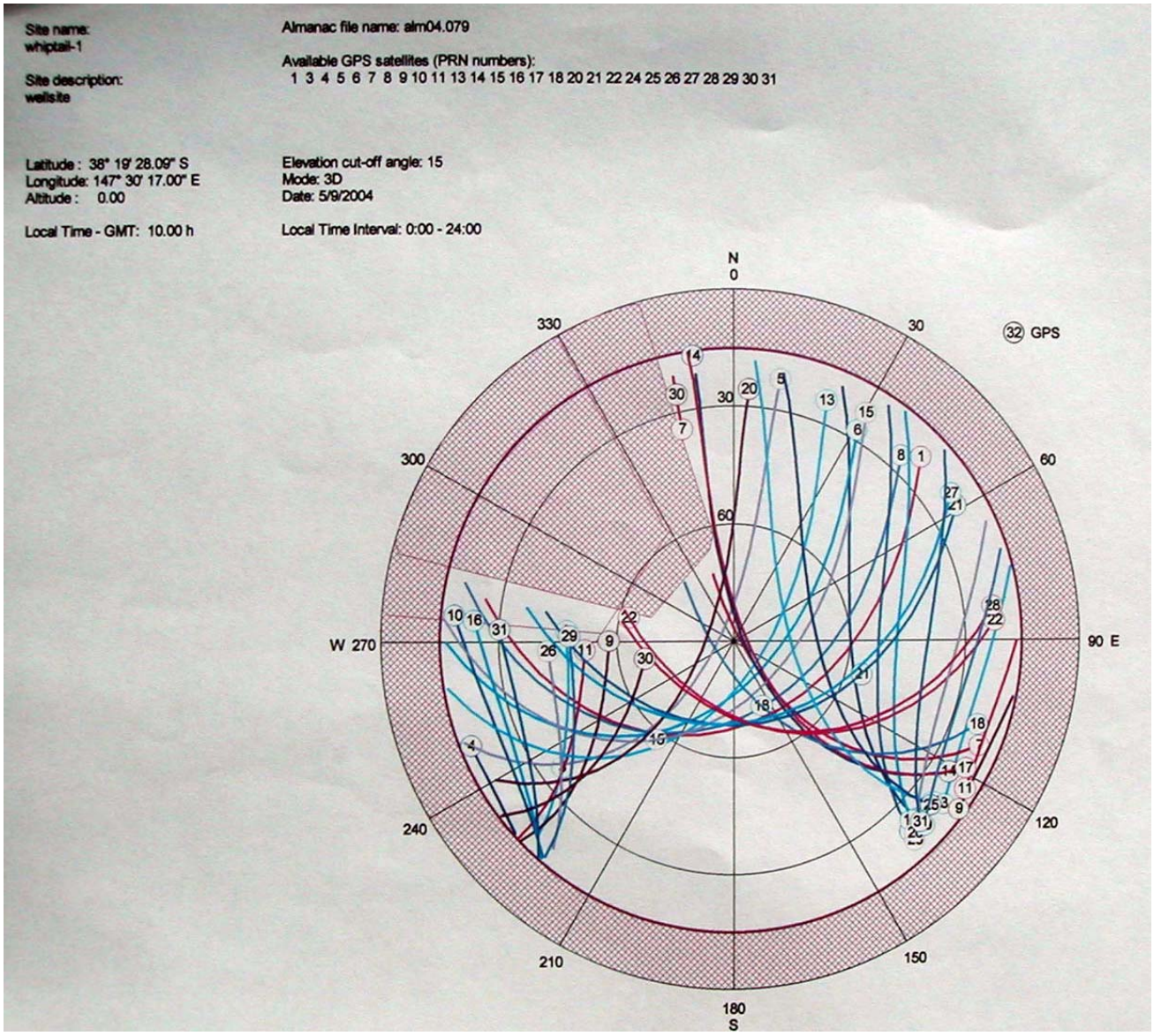
ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com



SATELLITE PDOP VALUES

ATTACHMENT 6

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com



SATELLITE SKY CHART

ATTACHMENT 6

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
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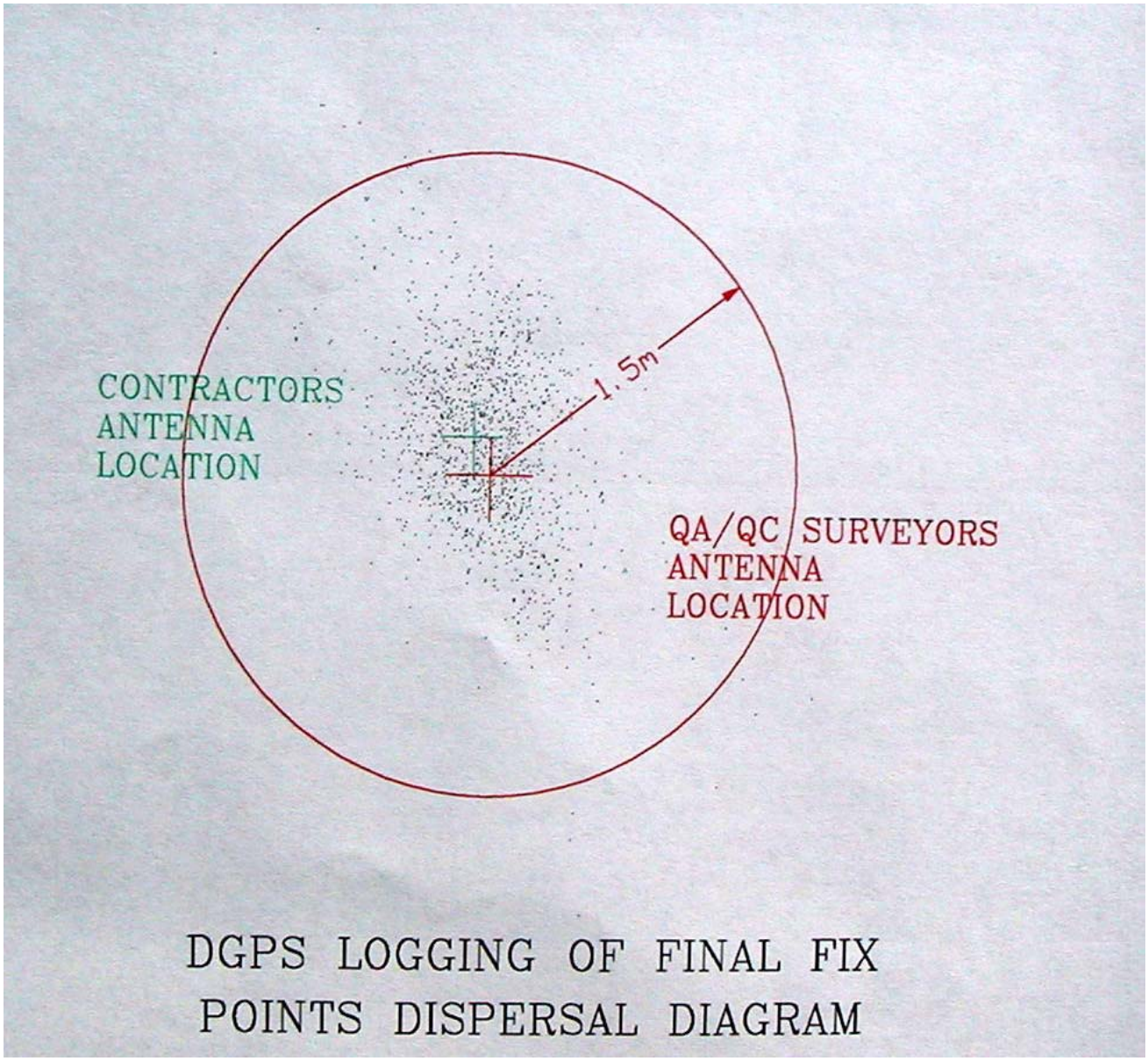

ATTACHMENT 7

ARROWSMITH MUIR & ASSOCIATES PTY.LTD.
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APPENDIX B

DIFFERENTIAL GPS Final Fix Printouts

FINAL POSITION FIX – DIFFERENTIAL GPS

Job: West Whiptail-1 Rig Move
Job Number: P0016
Fugro Surveyor: M.Elmslie
Client: Esso
Client Representative: H.Arrowsmith

Sampling started: 9 May 2004 10:00:17
Sampling end: 9 May 2004 13:00:10
Ensco102

Final Datum / Drill String Position
Datum: GDA94 (GRS80)
Latitude: 38°19'29.150"S Longitude: 147°30'17.167"E
Projection: MGA Zone 55
Easting: 544121.32 Northing: 5758030.22

Mean corrected heading: 129.03°T
SD heading: 0.0°T
Intended heading: 130.0°T
Difference from intended: -1.0°
Gyro C-O: -88.3°
Convergence: -0.31°

Final Datum Position is 7.59m on a bearing of 142.3°T (142.6°G) from the intended location.

Above Final Datum / Drill String Position in datum: WGS 84
Latitude: 38°19'29.150"S Longitude: 147°30'17.167"E Spheroidal Ht: 48.81m

Final Antenna Position (T1 Fugro UKOOA):
Sample size: 2080 fixes used out of a total of 2160.

ATTACHMENT 8

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CONSULTANT HYDROGRAPHIC SURVEYORS
11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

Antenna offset

X: -3.33m Y: 118.99m Z: 0.00m
Range: 119.04m Rel Brg from datum to antenna: 358.4°

Datum: WGS 84
Latitude: 38°19'31.498"S Longitude: 147°30'21.060"E
Spheroidal Ht: 48.81m
Datum: GDA94 (GRS80)
Latitude: 38°19'31.498"S Longitude: 147°30'21.060"E
Spheroidal Ht: 48.81m
Projection: MGA Zone 55
Easting: 544215.45 Northing: 5757957.35

Standard deviations

Long or E: 0.35m
Lat or N: 0.26m
Height: 0.64m
Position: 0.44m

Geodetic Parameters

GPS Spheroid Name: WGS 84
Semi-major (a): 6378137.00m
Semi-minor (b): 6356752.31m
Eccentricity: 0.00669438
Inverse Flatenning (1/f): 298.25722356

Local Spheroid Name: GDA94 (GRS80)
Semi-major (a): 6378137.00m
Semi-minor (b): 6356752.31m
Eccentricity: 0.00669438
Inverse Flatenning (1/f): 298.25722210

Projection Name: MGA Zone 55

Transformation Name: WGS 84 to GDA94 (GRS80)

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EMAIL:HrArrws@aol.com

Datum Shift Parameters: (Coordinate Frame Rotation)

dx:	0.0000m
dy:	0.0000m
dz:	0.0000m
rx:	0.0000
ry:	0.0000
rz:	0.0000
scale:	0.0000

Intended Datum Location

Datum: GDA94 (GRS80)
Latitude: 38°19'28.956"S Longitude: 147°30'16.976"E
Projection: MGA Zone 55
Easting: 544116.71 Northing: 5758036.25

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:28/04/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
1645	2015	Fugro personnel travel from Perth to Melbourne.
2100		Check into accommodations.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
				M.Elmslie	Surveyor
				N.Gregory	Engineer
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:HOLIDAY INN					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		1

ATTACHMENT 9

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:29/04/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0620	0630	Fugro personnel depart accommodation and transit to Esso office
0700	0830	Transit from Esso office to Tyabb airport.
1000	1030	Transit from Tyabb airport to Long Island Point helipad.
1110	1120	Transit from Long Island Point helipad to Ensco 102.
1130	1200	Fugro personnel attend rig induction and tour.
1300	1445	Equipment mobilisation.
1500	1800	Running out of GPS antenna cables.
1830	2325	Experiencing problems with GPS receivers.
2330		Equipment operational.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		2

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:29/04/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0630	0700	Ensco102 disembarking from HLV American Cormiorant.
0700	0924	Rig moving from drop off location to standby location.
0925	0945	Rig jacking down.
0945		Rig pinned at 28°26'17" S 145°17'23" E, waiting on weather.
1030		SkyFix XP operational.

EQUIPMENT	NO.	EQUIPMENT		TITLE
Ashtech GPS	1	Gyro	M.Elmslie	Surveyor
Trimble GPS	1		N.Gregory	Engineer
MultiFix4	2			
GNS v2.60b	1			
SkyFix 109 East	1			
SkyFix Spot	1			
Total station	1			

VEHICLES:			
CONSUMABLES:			
ACCOMMODATION:			

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		2

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

Client:Esso	LOCATION:WEST WHIPTAIL-1	DATE:30/04/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0630	0700	Ensco102 disembarking from HLV American Cormiorant.
0700	0924	Rig moving from drop off location to standby location.
0925	0945	Rig jacking down.
0945		Rig pinned at 28°26'17" S 145°17'23" E, waiting on weather.
1030		SkyFix XP operational.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		2

ATTACHMENT 9

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:01/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	1529	Fugro personnel on standby for weather.
1530	1715	Offset measurements conducted.
1728	1728	Sun observations for gyro calibrations conducted, amount of observations limited due to cloud cover. C-O of -88.3° entered into GNS2

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
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ATTACHMENT 9

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11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:02/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0930	1100	Offset measurements conducted.
1300	1310	Fugro personnel attend abandon rig muster.
1315	1345	Fugro personnel attend weekly safety meeting.
1702	1708	Sun observations for gyro calibration conducted. C-O of -88.0°

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		5

ATTACHMENT 9

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:03/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	1712	Fugro personnel on standby for weather.
1713	1721	Sun observations for gyro calibration. C-O of -88.3° calc'd.
1722	2359	Fugro personnel on standby for weather.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:04/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	2359	Fugro personnel on standby for weather.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
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EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:05/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0000	2359	Fugro personnel on standby for weather.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		8

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO	LOCATION:WEST WHIPTAIL-1	DATE:06/05/04
PROJECT:RIG MOVE	VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0935		Ray J Hope Connected to main tow bridal.
1000	1030	Jacking down to 15' draft.
1140	1148	Jacking down to rig afloat, departing location.
1300		Rig position 38°15'58" S 145°15'08" E, DTG 175Nm CMG 260°
2359		Rig position 38°55'51" S 145°38'55" E, DTG 127Nm CMG 140°

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:07/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0300		Rig position 39°05'30" S 145°54'20" E, DTG 112Nm CMG 132°.
1200		Rig position 39°12'35" S 145°43'46" E, DTG 69Nm CMG 62°.
2301		Commence jacking down operations.
2302		Commence turn at WP5.
2352		Invincible Tide connected to starboard aft.
2359		Rig position 38°18'34" S 147°28'14" E, DTG 2Nm CMG 79°.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		10

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TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:08/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0030		Rig 1Nm from intended location.
0110		Switch to DGPS for primary positioning system.
0300		Rig pinned.
0301	0359	Jacking up to 4' air gap.
0338		Invincible Tide released from starboard aft.
0400	1300	Preloading. Final leg penetrations Bow 1.9', Stbd 1.7', Port 1.7'
1245		Ray J hope released from main tow bridal.
1330	1338	GPS to main deck heighting.
1400	1630	Jacking to 55' drilling air gap.
1815		Commence skidout operations.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		11

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EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:09/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
0500		Skidout operations complete, cantilever 60' past transom.
1000	1300	Final fix observations, GNS, MF4 and Trimble.
1015	1025	Cantilever skidout check.
1046		Main deck to sea level measurement taken, 27.26m
1500	1530	Demobilisation of equipment.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		12

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EMAIL:HrArrws@aol.com

CLIENT:ESSO		LOCATION:WEST WHIPTAIL-1	DATE:10/05/04
PROJECT:RIG MOVE		VESSEL:ENSCO 102	JOB NO:P0016

FROM	To	SUMMARY OF OPERATIONS (UTC+10HRS)
1230	1245	Fugro personnel transit from Ensco102 to Longford heliport.
1300	1600	Transit from Longford to Melbourne domestic airport
1830	2200	Transit from Melbourne to Perth.

EQUIPMENT	NO.	EQUIPMENT	NO.		TITLE
Ashtech GPS	1	Gyro	2	M.Elmslie	Surveyor
Trimble GPS	1			N.Gregory	Engineer
MultiFix4	2				
GNS v2.60b	1				
SkyFix 109 East	1				
SkyFix Spot	1				
Total station	1				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R NUMBER
		13

ATTACHMENT 9

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11 CLONMULT AV HIGHETT VIC.3190
TEL 03 95550197 FAX 03 95559883
EMAIL:HrArrws@aol.com

Mud Summary Report

ESSO AUSTRALIA PTY LTD
BAROID DRILLING FLUID RECAP
West Whiptail - 1
BASS STRAIT, VICTORIA.

Prepared by : Emad Elzahaby, Adam Martin

Date : May 2004

Checked by : James Gallagher

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    - Interval Chemical Concentrations
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9. DAILY MUD REPORTS

1. WELL SUMMARY

1.1 Well Data

Well Name	:	West Whiptail-1
Operator	:	Esso Australia Pty Ltd
Well Type	:	Vertical/Wildcat
Bottom Hole Temperature	:	70°C
Location	:	Bass Strait Victoria
Contractor/Rig	:	Ensco 102
Baroid On Location	:	08/05/2004
Start Date	:	10/05/2004
RT to Mudline	:	77.6 m
Total Depth	:	1539 m MD, 1539 m TVD
Date TD Reached	:	20/05/2004
Total Days Actual Drilling	:	6 Days
Date Released	:	05/06/2004 (14:45 hrs)
Total Days on Well	:	28
Drilling Cuttings Volume	:	667 bbl

1.2 Formation Tops

Formation	MD RT (m)	TVD RT (m)	Inclination (deg.)
Sealevel			-
Seabed/Gippsland Lst	78.0	78.0	-
Lakes Entrance	836.0	835.4	-
Latrobe Clastic	1185.0	1183.3	-
N1.0	1406.3	1403.5	-
N1.1	1409.7	1406.9	-
Base N1.1	1414.2	1411.4	-
N1.3 & N1.4	1418.7	1415.9	-
Base N1.4	1431.5	1428.6	-
TD	**1539.0**	**1535.1**	-

1.3 Casing Program

30”	Conductor	@	120 m TVDRT
9 5/8”	Surface casing	@	745 m TVDRT
8 1/2”	Plug and Abandon	@	1539 m TVDRT

1.4 Personnel

Drilling Supervisors	:	Tim Paltridge George Sharkey	Barry Steel Roger Bain
Baroid Field Service Reps.	:	Emad Elzahaby Adam Martin	Hayden Butler Dan Cotter

2. COST SUMMARY

2.1 Drilling Fluid Costs

	Drilling Fluid	Hole Size	MD From	MD To	Cost USD $
1.	Hi-Vis Bentonite sweeps	36”	78 m	123 m	8,080.08
2.	Seawater/Bentonite	12.25”	123 m	750 m	12,090.30
3.	KCl/PHPA/Polymer/Glycol-CP	8.5”	750 m	1539 m	66,471.46
Mud Materials Used For Drilling				**Total USD $**	**86,641.84**
Materials Used for Cementing:				**USD $**	**289.50**
Other:				**USD $**	**13.29**
Total Materials:				**USD $**	**86,944.63**

2.2 Engineering Costs

Service Representatives	From (date)	To (date)	Days
On West Whiptail-1			
Emad Elzahaby	08/05/2004	23/05/2004	16
Adam Martin	09/05/2004	19/05/2004	11
Hayden Butler	20/05/2004	27/05/2004	8
Dan Cotter	24/05/2004	27/06/2004	4
On Standby			
Hayden Butler	28/05/2004	28/05/2004	(1)
Dan Cotter	28/05/2004	05/06/2004	(8)
Total Days:		**Service**	**39**
		Standby	**(9)**
Service Cost @ AUD $ 925	**@ USD $ 666**		**$ 25,974.00**
Standby Cost @ AUD $ 925	**@ USD $ 666**		**$ 5,994.00**
Total Cost of Material & Engineering:		**USD $**	**$ 118,912.63**

3. PERFORMANCE SUMMARY

3.1 Comments

3.2 Performance Indicators

Interval 1. (78 m – 123m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled	59 m	45 m	Yes
• Volume Built, bbl	1,332	1,728	No
• Consumption Rate, bbl/m	22.6	38.4	No
• Mud Cost / bbl, USD $	3.82	4.68	No
• Mud Cost / m, USD $	86.36	179.56	No
• Interval Mud Cost, USD $	5,087	8,080	No
Interval 2. (123 m – 750 m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled	626 m	627 m	Yes
• Volume Built, bbl	2711	2816	Yes
• Dilution Rate, bbl/m	2.5	2.75	Yes
• Consumption Rate, bbl/m	4	4.49	No
• Mud Cost / bbl, USD $	4.69	4.92	Yes
• Mud Cost / m, USD $	20.30	19.28	Yes
• Interval Mud Cost, USD $	12,711	12,090	Yes
Interval 3. (750 m – 1539 m)	**Program**	**Actual**	**Achieved (+/- 10 %)**
• Drilled	740 m	789 m	Yes
• Volume Built, bbl	1509	1633	Yes
• Dilution Rate, bbl/m	0.9	0.96	Yes
• Consumption Rate, bbl/m	2.04	2.07	Yes
• Mud Cost / bbl, USD $	34.38	40.71	No
• Mud Cost / m, USD $	70.11	84.26	No
• Interval Mud Cost, USD $	51,880	66,484.75	No
• **Materials used for cementing**		**289.50**	
• **Total Well Cost, USD$ (Materials Only)**		**86,944.63**	

Explanation of Non-Conformance

- **Interval 1:** only 778 bbls were used for this interval and 950bbls were carried over to the ¼" hole. 12
- **Interval 3:** The program did not consider the BARABLOK cost, barite for slugs and the extra BARACIDE, BARACOR-129 & KOH which had to be used to treat the active system before POOH for logging and in the P & A program. Also extra 49 meters of formation were drilled.

4. INTERVAL - 1

4.1 SUMMARY

This section was drilled with a 17 ½" bit and a 36" hole opener. The section was drilled successfully using 40 bbl pre-hydrated bentonite (35ppb) sweeps pumped every half a stand. Casing was successfully run to bottom (120.3 m MD).

36" Hole From 78 m To 123 m In 5 Days

Drilling Fluid Hi-Vis Bentonite Sweeps
Formations Gippsland Limestone

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Funnel Viscosity	>100		145	150	Yes
Yield Point	>40		60	67	Yes

Explanation of Non-Conformance
- Properties were within the programmed specifications

Maintenance
- 1728 bbls of 35ppb pre-hydrated bentonite was mixed before the interval was drilled. A total of 778 bbls was used for this interval and 950bbls was carried over to the 12 ¼" hole.
- The hole was swept with 40bbl sweeps every half a stand to TD
- Before pulling out of hole to make a wiper trip to the mudline the hole was displaced with 100bbls of mud.
- After the wiper trip, the DP was RIH to TD and a 50 bbl sweep was pumped.
- The hole was then displaced with hi-vis mud (200% hole volume). The hole was refilled with a further 100bbls of hi-vis mud at 15 BML. The hole was filled in stages to mitigate hole collapse.

Solids Control Equipment
- In this section all the returns were to the seafloor, hence no solids control equipment was used in this section.

-

4.2 EVALUATION

Comments
This interval was drilled and cased off trouble free.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions
1) Problem None
   Cause
   Action

Drilling Fluid
1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment
1) Problem None
   Cause
   Action

4.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions
- None

Drilling Fluid
- None

Solids Control and Mud Mixing Equipment
- None

5.0 INTERVAL - 2

5.1 SUMMARY

This section was drilled using a 12 ¼" PDC bit. The section was drilled successfully with no drilling fluid problems, however, minor mud losses were experienced, from 350 m MD to 550 m MD. These losses were insignificant (2 bbls/hr) considering the cost involved with the seawater/bentonite mud system.

This section was drilled relatively fast, up to 104 m/hr was experienced (375m MD). This drilling rate was reduced significantly around 600 m MD, because of the hole angle. At TD the well had an inclination of 3.5º instead of the being vertical as programmed. The casing was successfully ran to bottom and cemented without problem.

12 ¼" Hole From 123 m To 750 m In 5 Days

Drilling Fluid Seawater/Bentonite
Formations Gippsland Marl

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Mud Weight, ppg		9.5	8.8	9.2	Yes
Funnel Viscosity, sec/qt	35	50	35	50	Yes

Explanation of Non-Conformance

- All mud properties were maintained within programmed specifications.

Maintenance

- Bentonite was pre-hydrated at 35 lbs/bbl in drill water. The pre-hydrated gel was then diluted with seawater to 17 lb/bbl. Caustic soda and lime were added to the mud to further flocculate the gel to achieve desired viscosity.
- 950 bbls of prehydrated Bentonite was carried over from the previous interval and was diluted with 850 bbls of seawater.
- While drilling, pre-hydrated Bentonite, seawater, lime and caustic soda were added to the active system to control and maintain the mud weight and rheological properties.
- Heavy dilution with seawater was required to maintain viscosity and the mud within the programmed specifications.
- 330 bbls of 13.5 ppg mud were mixed. This mud was used to to displace any excess cement above the stage collar from the well.

Solids Control Equipment

- The Derrick shale shakers were initially dressed with 4 x 125 mesh screens for the four shakers.
- The Derrick mud cleaner was dressed with 180 mesh screens.

5.2 EVALUATION

Comments

- A bentonite/seawater flocculated mud system was used to drill this interval. This mud provided a good hole cleaning and carrying capacity. It is also the most cost effective mud system for drilling the upper Gippsland formation.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem None
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem None
   Cause
   Action

5.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None.

Drilling Fluid

- None.

Solids Control and Mud Mixing Equipment.

- None.

6. INTERVAL - 3

6.1 SUMMARY

8 ½ " Hole From 750 m To 1539 m In 3 Days

Drilling Fluid 8% KCl / PHPA / Polymer / Glycol-CP
Formations Gippsland, Lakes Entrance, Latrobe

Properties	**Programmed**		**Actual (Typical)**		
	Min	**Max**	**Min**	**Max**	**Conformance**
Mud Weight, ppg	8.8	9.7	9.5	10	No
Yield Point, lb/100ft2	20	45	20	30	Yes
API Filtrate, ml/30 min		8.0	3.5	5	Yes
HPHT Filtrate @ 250° F, ml		15		11.2	Yes
pH	8.5	9.5	8.5	9.2	Yes
Low Gravity Solids, % vol		8		3.1	Yes
KCl Content, % wt	6	8	7	8	Yes
Sulfite Residual, ppm	100		100	140	Yes
Glycol Content, % vol	3	5	3	3.3	Yes

Explanation of Non-Conformance

- All mud properties were conformed to programmed specifications except for the mud weight which was increased to combat the hole instability caused by the Coal beds.

Maintenance

- A 6- 8% KCl/PHPA/Polymer/Glycol-CP was used to drill the 8 ½ " interval to provide good hole stability in the reactive claystones, prevent differential sticking in the sands, and provide maximum penetration rates.
- For the most part, the KCl % was kept in the range of 6 – 8%, which was justified by the absence of any hole problems.
- At 740 m while drilling out the cement and the 9-5/8" casing shoe track, the hole was displaced to new KCl/PHPA/Polymer/Glycol-CP fluid.
- There were no initial displacement losses at the shakers other than 32.5 bbls of interface and cement contaminated mud which was dumped.
- An initial volume of 1500 bbls of mud was prepared. The volume built was fully specified except for PHPA concentrations. The mud was mixed at zero PHPA in order to avoid the problem losses of unsheared mud over the shakers. After displacement, PHPA concentrations were increased to programmed level.
- The initial displacement volume of mud was weighted to 9.5 ppg with barite because the top of the Lakes Entrance formation at 824 m which is only 79 m below the shoe and it is recommended for future wells with the same profile to start with 9.5 ppg instead of 8.8 ppg (the programmed initial mud weight) because it is to tight to increase the weight from 8.8 ppg to 9.5 ppg while drilling 79 m of Gippsland Marl.
- Three meters of new hole was drilled and a PIT performed to 14.2 EMW.
- Following displacement, Glycol-CP was added to the active mud system and concentrations maintained in the 3 - 3.5%.range.
- Also after displacement, BARACOR 129 oxygen scavenger was added to the active system and residual sulphite levels subsequently maintained at 100 mg/l through regular product additions.
- The Lakes Entrance Formation from 824 m to 1176 m was drilled mud weight between 9.5 – 9.7 ppg ranges.

- Immediately prior to drilling the top of the Latrobe Formation, the entire circulating system was pretreated with 5 ppb each of BARACARB (calcium carbonate) 25 and 100. These products act as pore throat bridging agents to reduce the likelihood of differential sticking and seepage losses in the high permeability sands.
- Regular additions BARACARB 25 and BARACARB 100 were required to replace losses to the wall cake and over the shakers.
- Active system volume and required properties were maintained with premix additions formulated as per the active system requirements.
- Shaker screens were run as fine as practical based on screen availability.
- The mud cleaner was run as required and worked very efficiently.
- As the primary indicator of hole cleaning, the yield point was monitored and maintained in the 20 - 30 lb/100ft2 ranges, while the 6 RPM reading was maintained at 6 – 8.
- The H2S content was monitored with the Garrett Gas Train and HACH tests.
- There was no indication of H2S in the 8 ½" interval.
- Prior to pulling out of the hole to log, the entire circulating system was treated with additional BARACIDE, BARACOR 129 and KOH to preserve the mud during extended logging operations.
- Experienced hole instability from the Coal beds while logging and treated the active system with 5 ppb of BARABLOK during the wiper trip. BARABLOK is a powdered hydrocarbon resin (asphaltite) with high softening points under temperature and pressure that extrudes into formation fractures and bedding planes to bond the matrix and prevent sloughing.

Solids Control Equipment

- On displacement, the 4 Derrick shakers were dressed with 80 mesh screens. Coarse screens were utilized in order to avoid losses of unsheared mud over the shakers.
- As the fluid sheared and mud properties allowed, finer screens 150 were fitted to the shakers
- The mud cleaner was operated as required on an irregular basis depending upon the mud weight, solids content, and the amount of BARACARB in the underflow.

6.2 EVALUATION

Comments

- This interval was drilled without problem in 3 days and within budget. There were no mud related problems but hole instability from the Coal beds was experienced while logging.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem Hole instability.
   Cause Coal beds.
   Action Treated the active system with 5 ppb of BARABLOK.

Drilling Fluid

1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem None
   Cause
   Action

6.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- Low HPHT fluid loss and dynamic fluid loss control will help minimise filtrate invasion and pore pressure penetration into micro-fractures. The use of deformable micro-fracture plugging agents such as BARABLOK or similar asphaltic material will reduce dynamic filtrate loss. This will produce a thin filter cake across micro-fractures and impart cohesive strength to the bore hole wall. Where coals are expected it would be prudent to pre-treat the drilling fluid system with BARABLOK **prior** to drilling the section. This will maximise the ability of the product to stabilise coal seams and minimise sloughing.

- Limit mechanical destabilisation of the bore hole wall. Minimise trips, reaming and back reaming if possible. Avoid excessive surge and swab while tripping across coal beds. Drill with the minimum number of stabilisers possible.

- High annular velocities may contribute to coal instability. Pump rate should be selected to effect suitable hole cleaning without promoting instability.

Drilling Fluid

- The initial displacement volume of mud was weighted to 9.5 ppg with barite because the top of the Lakes Entrance formation at 824 m which is only 79 m below the shoe and it is recommended for future wells with the same profile to follow the same and to start with 9.5 ppg instead of 8.8 ppg (the programmed initial mud weight) because it is too tight to increase the weight from 8.8 ppg to 9.5 ppg while drilling only 79 m of Gippsland Marl.

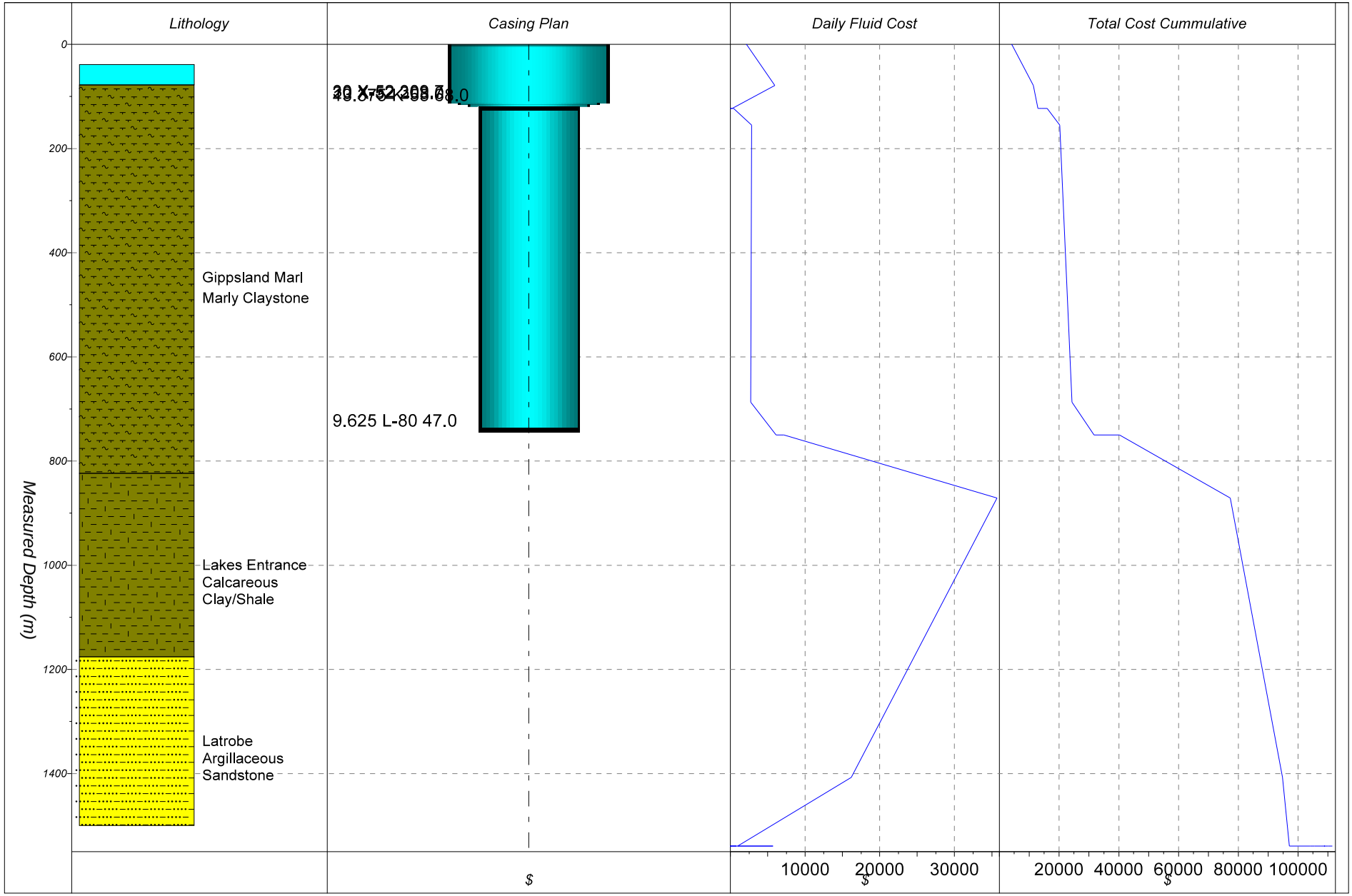
Solids Control and Mud Mixing Equipment

- None.

Fluid Costs vs Depth

Well : West Whiptail-1

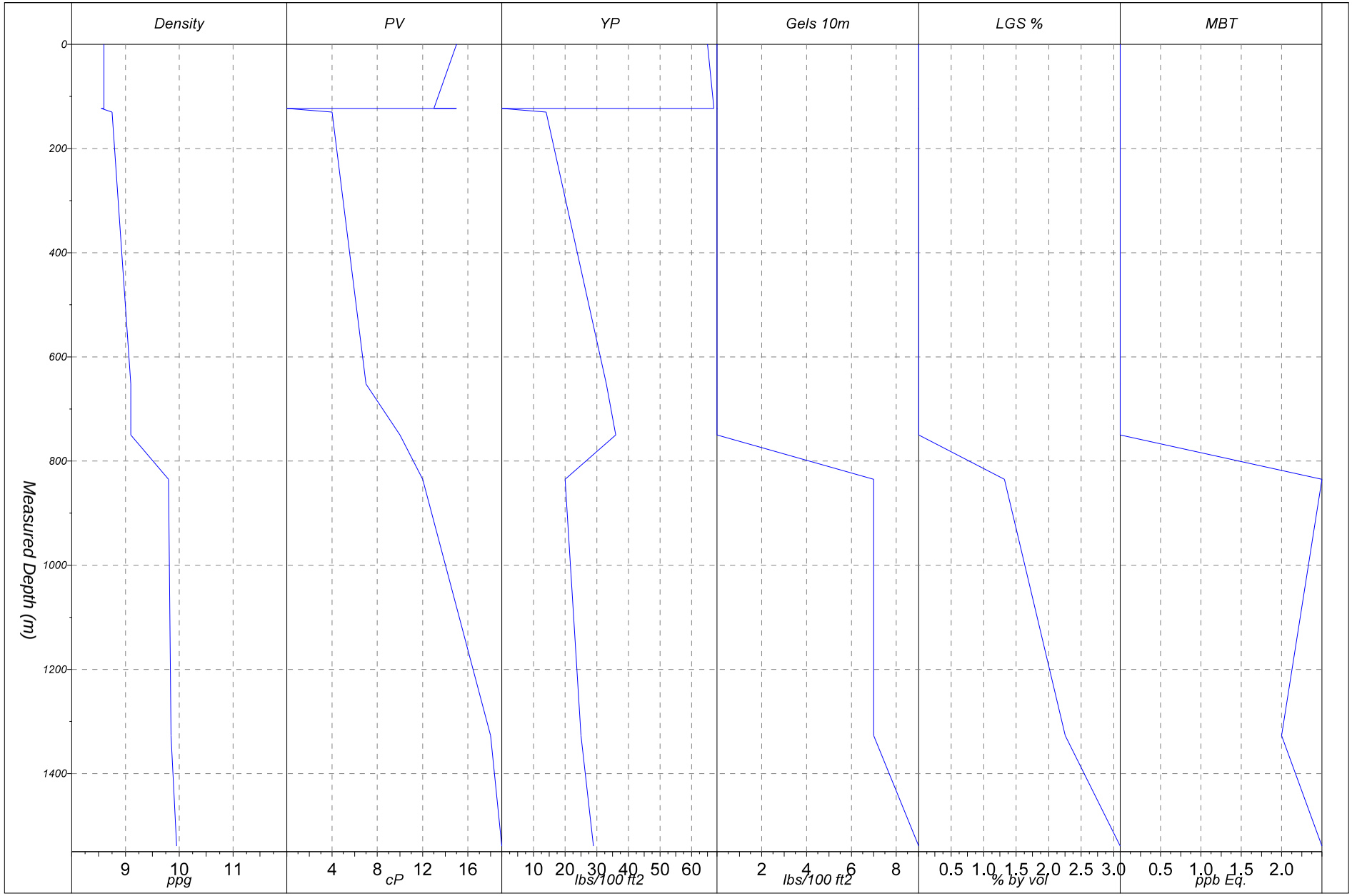
Operator : Esso Australia Pty Ltd



Recap Properties Water Based vs Depth Set 1

Well : West Whiptail-1

Operator : Esso Australia Pty Ltd



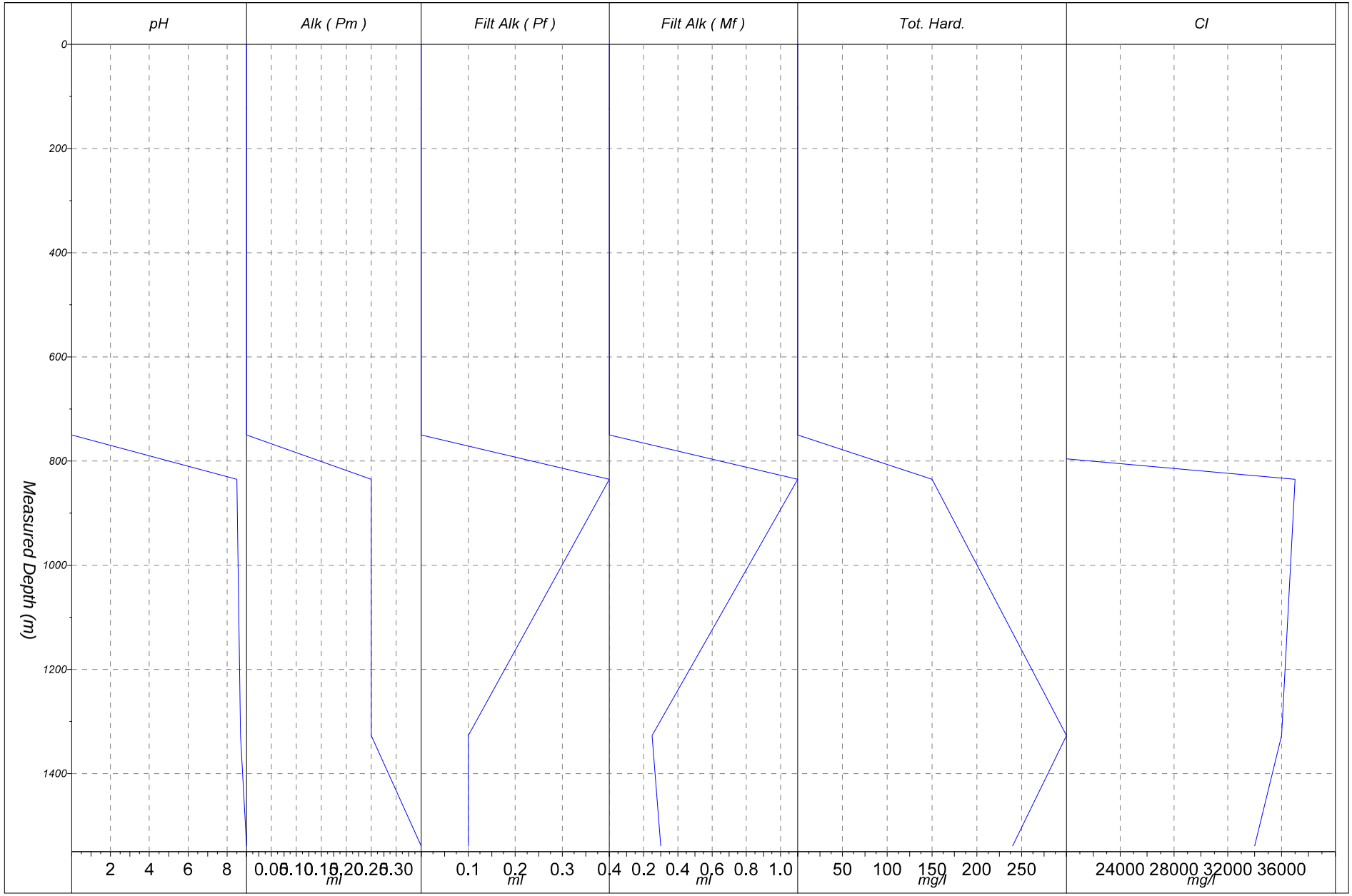
Baroid Drilling Fluids

Printed On 19/07/2004

Recap Properties Water Based vs Depth Set 2

Well : West Whiptail-1

Operator : Esso Australia Pty Ltd



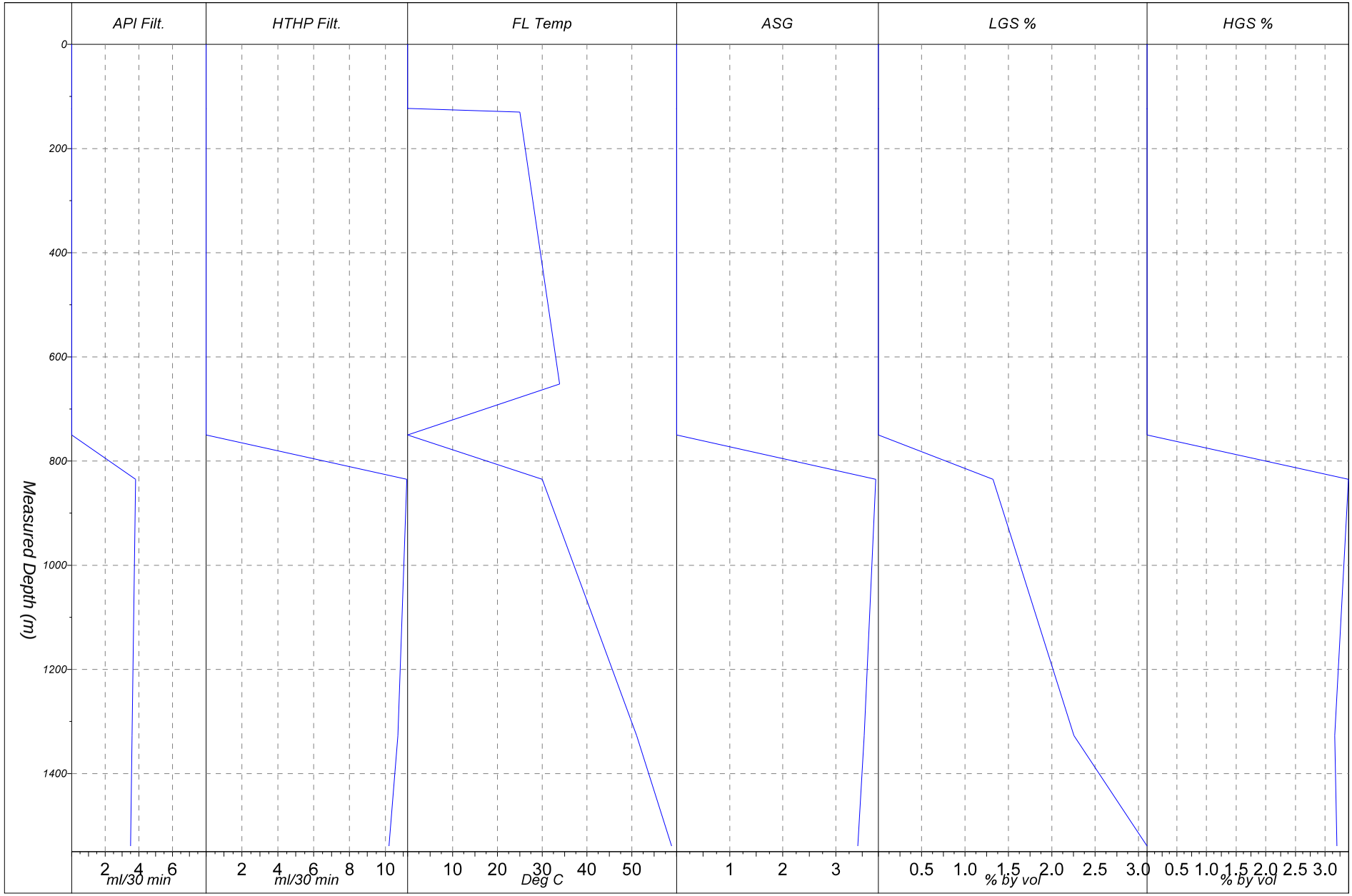
Baroid Drilling Fluids

Printed On 19/07/2004

Recap Properties Water Based vs Depth Set 3

Well : West Whiptail-1

Operator : Esso Australia Pty Ltd



Well Summary

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Well Data

Spud Date		May/10/04	Products/Fluids Drilling Cost		$86,641.84
TD Date		May/20/04	Products/Fluids Completion Cost		$0.00
Project		Whiptail	Solids Control/ Waste Management Cost		$0.00
Days on Well		18	Products/Fluids Cementing Cost		$289.50
From Date		May/09/04	Products Lost/Damaged Cost		$0.00
To Date		May/27/04	Engineering Services Cost		$25,974.00
Drilling Days		7	Equipment Cost		$0.00
Rotating Hours		89.50	Transport / Packaging		$0.00
Average ROP	m/hr	16.3	Other Cost		$13.29
Maximum Density	ppg	10.20	Total Well Cost		$112,918.63
Total Measured Depth	m	1,539.0	Planned Cost		$0.00
True Vertical Depth	m	1,539.0	Cost per Fluid Volume	$ / bbl	19.41
Distance Drilled	m	1,461.0	Cost per m Drilled	$ / m	77.29
Maximum Deviation	degrees	0.00	Cost / Volume of Hole Drilled	$ / bbl	233.79
Maximum Horiz. Displacement	m	0.0	Fluid Volume / Hole Volume	bbl / bbl	12.043
Bottom Hole Temperature	Deg C	70.00	Fluid Volume / Length Drilled	bbl/m	3.980

Casing Design

Casing Description	Set Date and Time	Top MD m	Top TVD m	End MD m	End TVD m	Csg OD in	Csg ID in	Hole Size in	Hole MD m	Hole TVD m
30 X-52 309.7	05/13/2004 07:00	17.0	17.0	113.0	113.0	30.000	28.000		113.0	113.0
20 X-52 203.0	05/13/2004 09:00	113.0	113.0	116.0	116.0	20.000	18.000		116.0	116.0
13.375 K-55 68.0	05/13/2004 11:10	116.0	116.0	120.0	120.0	13.375	12.415	12.250	123.0	123.0
9.625 L-80 47.0	05/17/2004 13:00	17.0	17.0	745.0	745.0	9.625	8.681	12.250	750.0	750.0

Mud Program

Interval #	Mud Type	Interval Days	BHT Deg C	Max. Dens ppg	Planned Fluid Cost	Actual Fluids and Products Cost	Variance
01	Hi-Vis Bentonite Sweeps	4		8.60	$ 0.00	$ 8,080.08	$ 8,080.08
02	Seawater/Bentonite	4		9.10	$ 0.00	$ 12,090.30	$ 12,090.30
02	Sea Water	4		9.10	$ 0.00	$ 0.00	$ 0.00
03	KCL/PHPA/GLYCOL	11	70	10.20	$ 0.00	$ 66,471.46	$ 66,471.46

Total Cost Breakdown

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Material	Unit Size	Quantity	Total Cost
Engineering/Services			
Drilling Fluids Engineer	Day(s)	39.00	$ 25,974.00
		Subtotal	**$ 25,974.00**
Other			
bentonite	100 lb bulk	1.00	$ 13.29
		Subtotal	**$ 13.29**
Prod/Fluids : Cementing			
calcium chloride	25 Kg bag	30.00	$ 289.50
		Subtotal	**$ 289.50**
Prod/Fluids : Drilling			
BARABLOK	50 lb bag	80.00	$ 2,664.00
BARACARB 100	1200 Kg bulk	3.00	$ 1,500.15
BARACARB 25	1200 Kg bag	3.00	$ 1,190.07
Baracide	25 Kg can	8.00	$ 2,062.64
BARACOR 129	25 Kg can	32.00	$ 1,452.80
BARA-DEFOAM W300	25 l can	2.00	$ 115.86
BARAZAN D PLUS	25 Kg bag	48.00	$ 10,172.16
barite	100 lb bulk	2,354.00	$ 19,164.28
bentonite	100 lb bulk	857.00	$ 11,389.53
Caustic Soda	25 Kg pail	20.00	$ 855.00
citric acid	25 Kg bag	4.00	$ 220.28
DEXTRID LTE	25 Kg bag	80.00	$ 2,008.00
GEM CP	1500 l bulk	5.00	$ 19,753.00
Hme Energizer	5 gal can	2.00	$ 223.98
lime	20 Kg bag	9.00	$ 53.64
PAC-L	25 Kg bag	30.00	$ 2,497.50
phpa	25 Kg bag	31.00	$ 2,735.75
Potassium Chloride Bulk	1000 kg	20.00	$ 7,668.20
potassium hydroxide	20 Kg pail	16.00	$ 684.00
soda ash	25 Kg bag	13.00	$ 172.25
sodium bicarbonate	25 Kg bag	5.00	$ 58.75
		Subtotal	**$ 86,641.84**
		Total Well Cost	**$ 112,918.63**

Net Well Cost Breakdown

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Cost Breakdown I $	Interval 01	Interval 02	Interval 03	Total
Fluids/Products : Drilling	8,080.08	12,090.30	66,471.46	86,641.84
Fluids Products : Comp/Filtration				
Solids Control/Waste Managment				
Fluids/Products : Cementing	231.60		57.90	289.50
Engineering Services	5,994.00	5,328.00	14,652.00	25,974.00
Fluids/Products : Lost Damaged				
Other Cost			13.29	13.29
Equipment cost				
Transport / Packaging Cost				
Total Cost	14,305.68	17,418.30	81,194.65	112,918.63

Cost Breakdown II $	Interval 01	Interval 02	Interval 03	Total
Total Products Cost	8,311.68	12,090.30	66,542.65	86,944.63
Total Fluids Cost				
Total Charges Cost	5,994.00	5,328.00	14,652.00	25,974.00
Total Cost	14,305.68	17,418.30	81,194.65	112,918.63
Planned Cost				
Variance	14,305.68	17,418.30	81,194.65	**112,918.63**

Volumes Breakdown bbl	Interval 01	Interval 02	Interval 03	Total
Total Base Fluids Additions				
Total Chemical Additions	69.1	31.2	167.4	267.7
Total Barite Additions		72.6	87.5	160.1
Total Water Additions	1,659.2	2,382.1	1,378.4	5,419.7
Total Fluid Built	**1,728.3**	**2,455.0**	**1,633.3**	5,816.6
Total Fluids Received				
Total Mixing Additions				
Total Influx Additions				
Total Other Additions				
Total Fluid Volume	**1,728.3**	**2,455.0**	**1,633.3**	5,816.6

Interval Summary

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	01	Bit Size	0.000 in	Hole Size Maximum	0.000 in

Interval Start Date		May/09/2004	Planned Cost	$	0.00
Interval End Date		May/12/2004	Total Interval Cost	$	14,305.68
Interval TD Date		May/11/2004	Programmed Variance	$	14,305.68
Drilling Days		1.00	Total Products Cost	$	8,311.68
Rotating / Drilling Hours		11.00 / 11.00	Total Fluids Cost	$	0.00
Top of Int. MD/TVD	m	78.0 / 78.0	Total Charges Cost	$	5,994.00
End of Int. MD/TVD	m	123.0 / 123.0	Total Cementing Cost	$	231.60
Footage	m	45.0	Fluid Cost per Vol unit	$/bbl	8.28
Average ROP	m/hr	4.1	Fluid Cost / Hole Drilled	$/m	317.90
Max. Hole Angle	degrees		Fluid Cost / Vol Drilled	$/bbl	0.00
Casing Size	in		Total Fluid Volume	bbl	1,728.30
Casing Shoe MD	m		Vol Fluid / Vol Drilled	bbl/bbl	0.00
Casing Length	m		Vol Fluid / Hole Drilled	bbl/m	38.41
Bottom Hole Temp.	Deg C	70	Fluid Loss / Vol Drilled	bbl/bbl	0.00
Max. Fluid Density	ppg	8.60	Fluid Loss / Hole Drilled	bbl/m	17.30

Interval Products and Base Fluids Usage and Cost

Product Function / Name	Packaging	Drilling Fluid	Total Used	Product Cost
Alkalinity Control				
soda ash	25 Kg bag	Gel	6.00	$ 79.50
			Total	**$ 79.50**
Viscosifier/Suspension Agent				
bentonite	100 lb bulk	Gel	602.00	$ 8,000.58
			Total	**$ 8,000.58**
Weighting Material				
calcium chloride	25 Kg bag	No Fluid	24.00	$ 231.60
			Total	**$ 231.60**

Total Products and Base Fluids Cost $ 8,311.68

Interval Summary

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	02	Bit Size	13.563 in	Hole Size Maximum	17.500 in

Interval Start Date		May/13/2004	Planned Cost	$	0.00
Interval End Date		May/16/2004	Total Interval Cost	$	17,418.30
Interval TD Date		May/16/2004	Programmed Variance	$	17,418.30
Drilling Days		3.00	Total Products Cost	$	12,090.30
Rotating / Drilling Hours		32.50 / 32.50	Total Fluids Cost	$	0.00
Top of Int. MD/TVD	m	123.0 / 123.0	Total Charges Cost	$	5,328.00
End of Int. MD/TVD	m	750.0 / 750.0	Total Cementing Cost	$	0.00
Footage	m	627.0	Fluid Cost per Vol unit	$/bbl	7.10
Average ROP	m/hr	19.3	Fluid Cost / Hole Drilled	$/m	27.78
Max. Hole Angle	degrees		Fluid Cost / Vol Drilled	$/bbl	57.81
Casing Size	in	13.375	Total Fluid Volume	bbl	2,455.00
Casing Shoe MD	m	120.0	Vol Fluid / Vol Drilled	bbl/bbl	8.15
Casing Length	m	4.0	Vol Fluid / Hole Drilled	bbl/m	3.92
Bottom Hole Temp.	Deg C	70	Fluid Loss / Vol Drilled	bbl/bbl	10.31
Max. Fluid Density	ppg	9.10	Fluid Loss / Hole Drilled	bbl/m	4.95

Interval Products and Base Fluids Usage and Cost

Product Function / Name	Packaging	Drilling Fluid	Total Used	Product Cost
Alkalinity Control				
soda ash	25 Kg bag	Gel/Caustic	3.00	$ 39.75
lime	20 Kg bag	Gel/Caustic	9.00	$ 53.64
Caustic Soda	25 Kg pail	Gel/Caustic	16.00	$ 684.00
			Total	**$ 777.39**
Filtration Control				
PAC-L	25 Kg bag	Gel/Caustic	2.00	$ 166.50
			Total	**$ 166.50**
Viscosifier/Suspension Agent				
bentonite	100 lb bulk	Gel/Caustic	255.00	$ 3,388.95
			Total	**$ 3,388.95**
Weighting Material				
barite	100 lb bulk	Gel/Caustic	1,068.00	$ 7,757.46
			Total	**$ 7,757.46**

Total Products and Base Fluids Cost $ 12,090.30

Interval Summary

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	03	Bit Size	8.500 in	Hole Size Maximum	8.500 in

Interval Start Date		May/17/2004	Planned Cost	$	0.00
Interval End Date		May/27/2004	Total Interval Cost	$	81,194.65
Interval TD Date		May/20/2004	Programmed Variance	$	81,194.65
Drilling Days		3.00	Total Products Cost	$	66,542.65
Rotating / Drilling Hours		46.00 / 46.00	Total Fluids Cost	$	0.00
Top of Int. MD/TVD	m	750.0 / 750.0	Total Charges Cost	$	14,652.00
End of Int. MD/TVD	m	1,539.0 / 1,539.0	Total Cementing Cost	$	57.90
Footage	m	789.0	Fluid Cost per Vol unit	$/bbl	49.71
Average ROP	m/hr	17.2	Fluid Cost / Hole Drilled	$/m	102.91
Max. Hole Angle	degrees		Fluid Cost / Vol Drilled	$/bbl	446.90
Casing Size	in	9.625	Total Fluid Volume	bbl	1,633.30
Casing Shoe MD	m	745.0	Vol Fluid / Vol Drilled	bbl/bbl	8.99
Casing Length	m	728.0	Vol Fluid / Hole Drilled	bbl/m	2.07
Bottom Hole Temp.	Deg C	70	Fluid Loss / Vol Drilled	bbl/bbl	8.99
Max. Fluid Density	ppg	10.20	Fluid Loss / Hole Drilled	bbl/m	2.07

Interval Products and Base Fluids Usage and Cost

Product Function / Name	Packaging	Drilling Fluid	Total Used	Product Cost
Alkalinity Control				
citric acid	25 Kg bag	KCL/PHPA/Gem Glycol	4.00	$ 220.28
Caustic Soda	25 Kg pail	KCL/PHPA/Gem Glycol	4.00	$ 171.00
potassium hydroxide	20 Kg pail	KCL/PHPA/Gem Glycol	16.00	$ 684.00
soda ash	25 Kg bag	KCL/PHPA/Gem Glycol	4.00	$ 53.00
sodium bicarbonate	25 Kg bag	KCL/PHPA/Gem Glycol	5.00	$ 58.75
			Total	**$ 1,187.03**
Bactericides				
Baracide	25 Kg can	KCL/PHPA/Gem Glycol	8.00	$ 2,062.64
			Total	**$ 2,062.64**
Filtration Control				
PAC-L	25 Kg bag	KCL/PHPA/Gem Glycol	28.00	$ 2,331.00
BARABLOK	50 lb bag	KCL/PHPA/Gem Glycol	80.00	$ 2,664.00
DEXTRID LTE	25 Kg bag	KCL/PHPA/Gem Glycol	80.00	$ 2,008.00
			Total	**$ 7,003.00**
Lost Circulation/Bridging Agent				
BARACARB 25	1200 Kg bag	KCL/PHPA/Gem Glycol	3.00	$ 1,190.07
BARACARB 100	1200 Kg bul	KCL/PHPA/Gem Glycol	3.00	$ 1,500.15
			Total	**$ 2,690.22**
Shale Control				
GEM CP	1500 l bulk	KCL/PHPA/Gem Glycol	5.00	$ 19,753.00
phpa	25 Kg bag	KCL/PHPA/Gem Glycol	31.00	$ 2,735.75
Potassium Chloride Bulk	1000 kg	KCL/PHPA/Gem Glycol	20.00	$ 7,668.20
			Total	**$ 30,156.95**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	25 Kg bag	KCL/PHPA/Gem Glycol	48.00	$ 10,172.16
bentonite	100 lb bulk	No Fluid	1.00	$ 13.29
			Total	**$ 10,185.45**
Weighting Material				

Interval Summary

Interval #	03	Bit Size	8.500 in	Hole Size Maximum	8.500 in

calcium chloride	25 Kg bag	No Fluid	6.00	$	57.90
barite	100 lb bulk	KCL/PHPA/Gem Glycol	1,286.00	$	11,406.82
			Total	**$**	**11,464.72**
Corrosion Inhibitor					
BARACOR 129	25 Kg can	KCL/PHPA/Gem Glycol	32.00	$	1,452.80
			Total	**$**	**1,452.80**
Detergent/Surfactanct					
Hme Energizer	5 gal can	KCL/PHPA/Gem Glycol	2.00	$	223.98
			Total	**$**	**223.98**
Defoamer					
BARA-DEFOAM W300	25 l can	KCL/PHPA/Gem Glycol	2.00	$	115.86
			Total	**$**	**115.86**

Total Products and Base Fluids Cost	**$**	**66,542.65**

Interval Cost Breakdown

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	01	**From Report Date**	9/05/2004	**Top of Interval**	78.0 m
Hole Size	0.000 in	**To Report Date**	12/05/2004	**Bottom of Interval**	123.0 m

Material	Unit Size	Quantity	Total Cost
Engineering/Services			
Drilling Fluids Engineer	Day(s)	9.00	$ 5,994.00
		Subtotal	**$ 5,994.00**
Prod/Fluids : Cementing			
calcium chloride	25 Kg bag	24.00	$ 231.60
		Subtotal	**$ 231.60**
Prod/Fluids : Drilling			
bentonite	100 lb bulk	602.00	$ 8,000.58
soda ash	25 Kg bag	6.00	$ 79.50
		Subtotal	**$ 8,080.08**
		Interval Cost	**$ 14,305.68**
		Programmed Cost	**$ 0.00**
		Programmed Variance	**$ 14,305.68**

Interval Cost Breakdown

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	02	**From Report Date**	13/05/2004	**Top of Interval**	123.0 m
Hole Size	17.500 in	**To Report Date**	16/05/2004	**Bottom of Interval**	750.0 m

Material	Unit Size	Quantity	Total Cost
Engineering/Services			
Drilling Fluids Engineer	Day(s)	8.00	$ 5,328.00
		Subtotal	**$ 5,328.00**
Prod/Fluids : Drilling			
barite	100 lb bulk	1,068.00	$ 7,757.46
bentonite	100 lb bulk	255.00	$ 3,388.95
Caustic Soda	25 Kg pail	16.00	$ 684.00
lime	20 Kg bag	9.00	$ 53.64
PAC-L	25 Kg bag	2.00	$ 166.50
soda ash	25 Kg bag	3.00	$ 39.75
		Subtotal	**$ 12,090.30**
		Interval Cost	**$ 17,418.30**
		Programmed Cost	**$ 0.00**
		Programmed Variance	**$ 17,418.30**

Interval Cost Breakdown

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	03	**From Report Date**	17/05/2004	**Top of Interval**	750.0 m
Hole Size	8.500 in	**To Report Date**	27/05/2004	**Bottom of Interval**	1,539.0 m

Material	Unit Size	Quantity	Total Cost
Engineering/Services			
Drilling Fluids Engineer	Day(s)	22.00	$ 14,652.00
		Subtotal	**$ 14,652.00**
Other			
bentonite	100 lb bulk	1.00	$ 13.29
		Subtotal	**$ 13.29**
Prod/Fluids : Cementing			
calcium chloride	25 Kg bag	6.00	$ 57.90
		Subtotal	**$ 57.90**
Prod/Fluids : Drilling			
BARABLOK	50 lb bag	80.00	$ 2,664.00
BARACARB 100	1200 Kg bulk	3.00	$ 1,500.15
BARACARB 25	1200 Kg bag	3.00	$ 1,190.07
Baracide	25 Kg can	8.00	$ 2,062.64
BARACOR 129	25 Kg can	32.00	$ 1,452.80
BARA-DEFOAM W300	25 l can	2.00	$ 115.86
BARAZAN D PLUS	25 Kg bag	48.00	$ 10,172.16
barite	100 lb bulk	1,286.00	$ 11,406.82
Caustic Soda	25 Kg pail	4.00	$ 171.00
citric acid	25 Kg bag	4.00	$ 220.28
DEXTRID LTE	25 Kg bag	80.00	$ 2,008.00
GEM CP	1500 l bulk	5.00	$ 19,753.00
Hme Energizer	5 gal can	2.00	$ 223.98
PAC-L	25 Kg bag	28.00	$ 2,331.00
phpa	25 Kg bag	31.00	$ 2,735.75
Potassium Chloride Bulk	1000 kg	20.00	$ 7,668.20
potassium hydroxide	20 Kg pail	16.00	$ 684.00
soda ash	25 Kg bag	4.00	$ 53.00
sodium bicarbonate	25 Kg bag	5.00	$ 58.75
		Subtotal	**$ 66,471.46**
		Interval Cost	**$ 81,194.65**
		Programmed Cost	**$ 0.00**
		Programmed Variance	**$ 81,194.65**

Interval Inventory Report

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	01	**From Report Date**	9/05/2004	**Top of Interval**	78.0	m	
Hole Size	0.000 in	**To Report Date**	12/05/2004	**Bottom of Interval**	123.0	m	

Product Name	Unit	Starting	Received	Used	Returned	Ending	Weight lb
BARABLOK	50 lb bag						
BARACARB 100	1200 Kg bulk						
BARACARB 25	1200 Kg bag						
Baracide	25 Kg can						
BARACOR 129	25 Kg can						
BARA-DEFOAM W300	25 l can						
BARAFILM	55 gal drum						
BARAZAN D PLUS	25 Kg bag						
barite	100 lb bulk		3,461.00			3,461.00	346,100.0
BAROFIBRE	25 lb bag						
BAROLIFT	15 lb box						
bentonite	100 lb bulk		1,343.00	602.00		741.00	74,100.0
calcium chloride	25 Kg bag		42.00	24.00		18.00	992.1
Caustic Soda	25 Kg pail		64.00			64.00	3,527.4
citric acid	25 Kg bag						
DEXTRID LTE	25 Kg bag						
GEM CP	1500 l bulk						
Hme Energizer	5 gal can						
lime	20 Kg bag		84.00			84.00	3,703.7
NO-SULF	17 Kg pail						
PAC-L	25 Kg bag						
phpa	25 Kg bag						
Potassium Chloride Bulk	1000 kg		4.00			4.00	8,818.4
potassium hydroxide	20 Kg pail						
soda ash	25 Kg bag		40.00	6.00		34.00	1,873.9
sodium bicarbonate	25 Kg bag						

Total Weight of Products in Stock, lb 439,115.5
Total Weight of Products in Stock, Metric Tons 199.18

Interval Inventory Report

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	02	**From Report Date**	13/05/2004	**Top of Interval**	123.0 m
Hole Size	13.560 in	**To Report Date**	16/05/2004	**Bottom of Interval**	750.0 m

Product Name	Unit	Starting	Received	Used	Returned	Ending	Weight lb
BARABLOK	50 lb bag		80.00			80.00	4,000.0
BARACARB 100	1200 Kg bulk		7.00			7.00	18,518.6
BARACARB 25	1200 Kg bag		5.00			5.00	13,227.6
Baracide	25 Kg can		32.00			32.00	1,763.7
BARACOR 129	25 Kg can		32.00			32.00	1,763.7
BARA-DEFOAM W300	25 l can		4.00			4.00	193.5
BARAFILM	55 gal drum		1.00			1.00	422.0
BARAZAN D PLUS	25 Kg bag		80.00			80.00	4,409.2
barite	100 lb bulk	3,461.00		1,068.00		2,393.00	239,300.0
BAROFIBRE	25 lb bag		80.00			80.00	2,000.0
BAROLIFT	15 lb box		6.00			6.00	90.0
bentonite	100 lb bulk	741.00		255.00		486.00	48,600.0
calcium chloride	25 Kg bag	18.00				18.00	992.1
Caustic Soda	25 Kg pail	64.00		16.00		48.00	2,645.5
citric acid	25 Kg bag		40.00			40.00	2,204.6
DEXTRID LTE	25 Kg bag		160.00			160.00	8,818.4
GEM CP	1500 l bulk		3.00			3.00	10,113.7
Hme Energizer	5 gal can		4.00			4.00	153.5
lime	20 Kg bag	84.00		9.00		75.00	3,306.9
NO-SULF	17 Kg pail		57.00			57.00	2,136.3
PAC-L	25 Kg bag		80.00	2.00		78.00	4,299.0
phpa	25 Kg bag		75.00			75.00	4,133.6
Potassium Chloride Bulk	1000 kg	4.00	19.00			23.00	50,705.8
potassium hydroxide	20 Kg pail		32.00			32.00	1,410.9
soda ash	25 Kg bag	34.00		3.00		31.00	1,708.6
sodium bicarbonate	25 Kg bag		40.00			40.00	2,204.6

Total Weight of Products in Stock, lb 429,121.8
Total Weight of Products in Stock, Metric Tons 194.65

Interval Inventory Report

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	03	**From Report Date**	17/05/2004	**Top of Interval**	750.0 m
Hole Size	8.500 in	**To Report Date**	27/05/2004	**Bottom of Interval**	1,539.0 m

Product Name	Unit	Starting	Received	Used	Returned	Ending	Weight lb
BARABLOK	50 lb bag	80.00	80.00	80.00	80.00		
BARACARB 100	1200 Kg bulk	7.00		3.00		4.00	10,582.1
BARACARB 25	1200 Kg bag	5.00	2.00	3.00		4.00	10,582.1
Baracide	25 Kg can	32.00		8.00	24.00		
BARACOR 129	25 Kg can	32.00		32.00			
BARA-DEFOAM W300	25 l can	4.00		2.00		2.00	96.7
BARAFILM	55 gal drum	1.00				1.00	422.0
BARAZAN D PLUS	25 Kg bag	80.00		48.00	32.00		
barite	100 lb bulk	2,393.00		1,286.00		1,107.00	110,700.0
BAROFIBRE	25 lb bag	80.00				80.00	2,000.0
BAROLIFT	15 lb box	6.00				6.00	90.0
bentonite	100 lb bulk	486.00		1.00		485.00	48,500.0
calcium chloride	25 Kg bag	18.00	42.00	6.00		54.00	2,976.2
Caustic Soda	25 Kg pail	48.00		4.00		44.00	2,425.1
citric acid	25 Kg bag	40.00		4.00		36.00	1,984.1
DEXTRID LTE	25 Kg bag	160.00		80.00	80.00		
GEM CP	1500 l bulk	3.00	4.00	5.00	2.00		
Hme Energizer	5 gal can	4.00		2.00	2.00		
lime	20 Kg bag	75.00				75.00	3,306.9
NO-SULF	17 Kg pail	57.00			57.00		
PAC-L	25 Kg bag	78.00		28.00	50.00		
phpa	25 Kg bag	75.00		31.00	44.00		
Potassium Chloride Bulk	1000 kg	23.00	7.00	20.00		10.00	22,046.0
potassium hydroxide	20 Kg pail	32.00		16.00	16.00		
soda ash	25 Kg bag	31.00		4.00		27.00	1,488.1
sodium bicarbonate	25 Kg bag	40.00		5.00		35.00	1,929.0

Total Weight of Products in Stock, lb 219,128.3
Total Weight of Products in Stock, Metric Tons 99.40

Fluid Volume Record

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval # 01

		bbl	ADDITIONS bbl							LOSSES bbl					VOLUMES bbl			
Rpt #	Rpt Date	Initial Volume	Received & Mixed	Base	Water	Barite	Chem	Influx	Daily Total	SCE	Down Hole	Misc	Returned & Mixed	Daily Total	Hole Volume	Active Pits Volume	Reserve Pits Volume	Final Volume
Fluid Name:		Hi-Vis Bentonite Sweeps																
001	9/05/2004				506.6		18.4		525.0								525.0	525.0
002	0/05/2004	525.0			1,152.6		50.7		1,203.3						2.3		1,726.0	1,728.3
003	1/05/2004	1,728.3										778.3		778.3			950.0	950.0
	Cummulative Volumes:				1,659.2		69.1		1,728.3			778.3		778.3				

Fluid Volume Record

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval # 02

		bbl	ADDITIONS						bbl	LOSSES				bbl	VOLUMES				bbl
Rpt #	Rpt Date	Initial Volume	Received & Mixed	Base	Water	Barite	Chem	Influx	Daily Total	SCE	Down Hole	Misc	Returned & Mixed	Daily Total	Hole Volume	Active Pits Volume	Reserve Pits Volume	Final Volume	
Fluid Name: Hi-Vis Bentonite Sweeps																			
005	3/05/2004	950.0											950.0	950.0					
	Cummulative Volumes:												950.0	950.0					
Fluid Name: Seawater/Bentonite																			
005	3/05/2004		950.0		570.3		0.7		1,521.0								1,521.0	1,521.0	
006	4/05/2004	1,521.0			624.8		21.0		645.8						264.8	491.0	1,411.0	2,166.8	
007	5/05/2004	2,166.8			560.0				560.0	55.5	50.0	156.0		261.5	504.3	513.0	1,448.0	2,465.3	
008	5/05/2004	2,465.3	88.7						88.7	25.0		285.7		310.7	565.3	378.0	1,300.0	2,243.3	
	Cummulative Volumes:		1,038.7		1,755.1		21.7		2,815.5	80.5	50.0	441.7		572.2					
Fluid Name: Sea Water																			
005	3/05/2004				290.4				290.4						290.3			290.3	
006	4/05/2004	290.3										290.3		290.3					
	Cummulative Volumes:				290.4				290.4			290.3		290.3					
Fluid Name: Gel/Polymer @ 13.5 ppg																			
006	4/05/2004				336.6		0.4		337.0								337.0	337.0	
007	5/05/2004	337.0				22.9	9.1		32.0								369.0	369.0	
008	5/05/2004	369.0				49.7			49.7				88.7	88.7			330.0	330.0	
	Cummulative Volumes:				336.6	72.6	9.5		418.7				88.7	88.7					

Fluid Volume Record

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval # 03

		bbl	ADDITIONS						bbl	LOSSES				bbl	VOLUMES			bbl
Rpt #	Rpt Date	Initial Volume	Received & Mixed	Base	Water	Barite	Chem	Influx	Daily Total	SCE	Down Hole	Misc	Returned & Mixed	Daily Total	Hole Volume	Active Pits Volume	Reserve Pits Volume	Final Volume
Fluid Name: KCL/PHPA/GLYCOL																		
009	7/05/2004				369.5	10.2	20.3		400.0								400.0	400.0
010	8/05/2004	400.0			1,008.9	30.6	93.3		1,132.8	35.0		32.5		67.5	194.3	421.0	850.0	1,465.3
011	9/05/2004	1,465.3				27.7	39.7		67.4	228.1		188.0		416.1	298.7	394.0	424.0	1,116.7
012	0/05/2004	1,116.7					1.8		1.8	50.0		175.8		225.8	376.7	433.0	83.0	892.7
013	1/05/2004	892.7				19.0	11.5		30.5	35.0		33.5		68.5	376.7	428.0	50.0	854.7
014	2/05/2004	854.7										25.0		25.0	376.7	388.0	65.0	829.7
015	3/05/2004	829.7					0.8		0.8			53.8		53.8	376.7	335.0	65.0	776.7
016	4/05/2004	776.7										775.9		775.9				
	Cummulative Volumes:				1,378.4	87.5	167.4		1,633.3	348.1		1,284.5		1,632.6				
Fluid Name: Seawater/Bentonite																		
009	7/05/2004	2,243.3										1,662.3		1,662.3			581.0	581.0
016	4/05/2004	581.0										581.0		581.0				
	Cummulative Volumes:											2,243.3		2,243.3				
Fluid Name: Gel/Polymer @ 13.5 ppg																		
009	7/05/2004	330.0										330.0		330.0				
	Cummulative Volumes:											330.0		330.0				

Interval Chemical Concentrations

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	01	**From Report Date**	9/05/2004	**Top of Interval**	78.0 m
Hole Size	0.000 in	**To Report Date**	12/05/2004	**Bottom of Interval**	123.0 m

Fluid Name: Hi-Vis Bentonite Sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
bentonite	33.74	30.48	34.83
soda ash	0.20	0.19	0.21

Interval Chemical Concentrations

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	02	From Report Date	13/05/2004	Top of Interval	123.0 m
Hole Size	17.500 in	To Report Date	16/05/2004	Bottom of Interval	750.0 m

Fluid Name: Gel/Polymer @ 13.5 ppg

Material	Average ppb	Minimum ppb	Maximum ppb
barite	173.21	91.33	255.08
bentonite	20.40	19.11	21.68
Caustic Soda	0.15	0.13	0.16
PAC-L	0.30	0.26	0.33
soda ash	0.15	0.13	0.16

Fluid Name: Hi-Vis Bentonite Sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
bentonite	34.83	34.83	34.83
soda ash	0.19	0.19	0.19

Fluid Name: Seawater/Bentonite

Material	Average ppb	Minimum ppb	Maximum ppb
barite	8.86	8.86	8.86
bentonite	20.56	18.55	23.35
Caustic Soda	0.34	0.30	0.38
lime	0.16	0.14	0.18
PAC-L	0.01	0.01	0.01
soda ash	0.12	0.11	0.13

Interval Chemical Concentrations

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	03	**From Report Date**	17/05/2004	**Top of Interval**	750.0 m
Hole Size	8.500 in	**To Report Date**	27/05/2004	**Bottom of Interval**	1,539.0 m

Fluid Name: Gel/Polymer @ 13.5 ppg

Material	Average ppb	Minimum ppb	Maximum ppb
barite	255.08	255.08	255.08
bentonite	19.11	19.11	19.11
Caustic Soda	0.13	0.13	0.13
PAC-L	0.26	0.26	0.26
soda ash	0.13	0.13	0.13

Fluid Name: KCL/PHPA/GLYCOL

Material	Average ppb	Minimum ppb	Maximum ppb
BARABLOK	4.48	4.33	4.62
BARACARB 100	5.17	5.00	5.33
BARACARB 25	5.17	5.00	5.33
Baracide	0.24	0.14	0.40
BARACOR 129	1.04	0.18	1.31
BARA-DEFOAM W300	0.05	0.03	0.09
BARAZAN D PLUS	1.66	1.59	1.73
barite	73.05	37.50	97.98
Caustic Soda	0.28	0.28	0.28
citric acid	0.14	0.13	0.14
DEXTRID LTE	2.76	2.65	2.88
GEM CP	10.10	6.60	11.01
Hme Energizer	0.09	0.08	0.09
PAC-L	0.97	0.93	1.01
phpa	1.03	0.72	1.11
Potassium Chloride Bulk	27.62	26.55	28.76
potassium hydroxide	0.40	0.11	0.58
soda ash	0.14	0.13	0.14
sodium bicarbonate	0.17	0.17	0.18

Fluid Name: Seawater/Bentonite

Material	Average ppb	Minimum ppb	Maximum ppb
barite	8.86	8.86	8.86
bentonite	18.57	18.57	18.57
Caustic Soda	0.30	0.30	0.30
lime	0.14	0.14	0.14
PAC-L	0.01	0.01	0.01
soda ash	0.11	0.11	0.11

Interval Chemical Concentrations

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Interval #	03	From Report Date	17/05/2004	Top of Interval	750.0 m
Hole Size	8.500 in	To Report Date	27/05/2004	Bottom of Interval	1,539.0 m

Fluid Property Recap:Water-Based Fluid

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Date	Depth	FL Temp	Density	Fun Visc	Rheology @ 48.89C					Filtration					Filtrate Analysis							Retort Analysis				MBT	Rheometer Dial Reading					
					PV	YP	Gels lbs/100 ft2			API ml/30 min	HTHP ml/30 min	Cake API/HTHP 32nd in		Temp	pH	Pm ml	Pf ml	Mf ml	Cl mg/l	Total Hard mg/l	Sand % by Vol	Corr Sol % by Vol	LGS % by Vol	Oil % by Vol	Water% by Vol							
	m	Deg C	ppg	sec/qt	cP		10s	10m	30m					Deg C												ppb Eq.	600	300	200	100	6	3
05/09/04	0.0		8.55	150	15	60													0	0		0.0	0.0		0.1	0.0	90	75				
05/10/04	0.0		8.55	150	15	60													0	0		0.0	0.0		0.1	0.0	90	75				
05/10/04	0.0		8.60	145	15	65													0	0		0.0	0.0		0.1	0.0	95	80				
05/11/04	120.0		8.60	145	15	65													0	0		0.0	0.0		0.1	0.0	95	80				
05/11/04	123.0		8.60	148	13	67													0	0		0.0	0.0		0.1	0.0	93	80				
05/12/04	123.0		8.60	150	13	67													0	0		0.0	0.0		0.1	0.0	93	80				
05/12/04	123.0		8.60	148	15	66													0	0		0.0	0.0		0.1	0.0	96	81				
05/13/04	123.0		8.55	0															0	0		0.0	0.0		0.1	0.0						
05/14/04	123.0		8.55	0															0	0		0.0	0.0		0.1	0.0						
05/14/04	130.0	25	8.75	37	4	14													0	0		0.0	0.0		0.1	0.0	22	18				
05/15/04	392.0	25	9.00	50	8	44													0	0		0.0	0.0		0.1	0.0	60	52				
05/15/04	506.0	30	9.10	44	10	30													0	0		0.0	0.0		0.1	0.0	50	40				
05/15/04	652.0	34	9.10	44	7	33													0	0		0.0	0.0		0.1	0.0	47	40				
05/15/04	273.0	25	9.00	47	8	44													0	0		0.0	0.0		0.1	0.0	60	52				
05/16/04	705.0	35	9.10	40	8	32													0	0		0.0	0.0		0.1	0.0	48	40				
05/16/04	750.0	30	9.10	44	10	35													0	0		0.0	0.0		0.1	0.0	55	45				
05/16/04	750.0		9.10	41	10	36													0	0		0.0	0.0		0.1	0.0	56	46				
05/18/04	820.0		9.80	44	12	19	6	6	7	3.7	11.0	1	2	121	8.60	0.25	0.40	1.20	36,500	140	0.10	4.7	1.2		92.4	2.5	43	31	25	18	6.0	4.0
05/18/04	835.0	30	9.80	43	12	20	6	7	7	3.8	11.2	1	2	121	8.50	0.25	0.40	1.10	37,000	150	0.20	4.7	1.3		92.3	2.5	44	32	25	18	6.0	4.0
05/19/04	1,200.0	49	9.70	46	16	24	6	8		3.6	10.5	1	2	121	8.70	0.30	0.10	0.25	38,000	160	0.10	4.4	1.6		92.5	2.5	56	40	31	22	7.0	6.0
05/19/04	1,235.0	49	9.70	50	15	27	6	9		3.5	10.5	1	2	121	9.00	0.35	0.20	0.50	40,000	200	0.10	4.3	1.4		92.5	1.0	57	42	33	23	8.0	7.0
05/19/04	1,315.0	48	9.70	45	17	26	7	7	8	3.6	10.4	1	3	121	8.80	0.15	0.10	0.30	35,500	300	0.20	4.6	1.8		92.5	1.5	60	43	33	24	7.0	5.0
05/19/04	1,327.0	51	9.85	46	18	25	7	7	8	3.6	10.7	1	2	121	8.70	0.25	0.10	0.25	36,000	300	0.20	5.4	2.3		91.7	2.0	61	43	34	24	7.0	5.0
05/20/04	1,481.0	57	9.90	46	18	31	8	10	10	4.2	10.6	1	2	121	8.80	0.25	0.10	0.30	33,000	320	0.20	5.9	2.5		91.5	2.5	67	49	40	28	8.0	7.0
05/20/04	1,539.0	59	9.95	48	19	29	7	9	9	3.5	10.2	1	2	121	9.00	0.35	0.10	0.30	34,000	240	0.25	6.3	3.1		91.0	2.5	67	48	39	29	8.0	7.0
05/21/04	1,539.0		9.95	50	19	29	7	9	9	4.5	10.2	1	2	121	8.50	0.20	0.10	0.20	34,000	240		6.3	3.1		91.0	2.5	67	48	39	29	8.0	7.0
05/21/04	1,539.0		10.20	48	17	28	7	9	9	3.8	10.8	1	2	121	9.00	0.30	0.15	0.25	33,000	240		7.4	3.3		90.0	2.5	62	45	38	28	8.0	6.0
05/22/04	1,539.0		10.20	49	17	28	7	9	9	3.8	10.8	1	2	121	9.00	0.30	0.15	0.25	33,000	240		7.4	3.3		90.0	2.5	62	45	38	28	8.0	6.0
05/22/04	1,539.0		10.20	51	18	27	7	9	9	4.0	10.4	1	2	121	9.00	0.25	0.15	0.25	33,000	240		7.4	3.3		90.0	2.5	63	45	38	28	8.0	6.0
05/23/04	1,539.0		10.20	47	15	21	5	7	8	5.6	13.8	1	2	121	11.30	0.80	0.50	0.90	28,000	200		7.8	3.8		90.0	2.5	51	36	28	19	6.0	4.0

Fluid Program Exceptions Report

Well : West Whiptail-1
Operator: Esso Australia Pty Ltd

Report No	Date	Time	Depth m	Property Name	Units	Actual Value	Exception	Program Min	Program Max
003	05/11/04	22:45	123	Yield Point	lbs/100 ft2	67	High	40	65
004	05/12/04	09:00	123	Yield Point	lbs/100 ft2	67	High	40	65
004	05/12/04	23:00	123	Yield Point	lbs/100 ft2	66	High	40	65

Operations Log Recap

For report #001A on 9/05/2004	**Operation at depth(m) 0**
Activity	Rig up and rig down
Rig Activity	Prepare Rig to Spud.
Fluid Treatments	Mixed 525 bbls of prehydrated bentonite.
For report #002A on 10/05/2004	**Operation at depth(m) 79**
Activity	Prepare to Drill
Rig Activity	Continued preparing the rig for spud. Lowered 17 1/2" and 36" hole opener to the mudline.
Fluid Treatments	Mixed 1203 bbls of prehydrated bentonite.
For report #003A on 11/05/2004	**Operation at depth(m) 123**
Activity	Wait on weather to run casing
Rig Activity	Drill ahead 36" hole to TD at 123 m. Pumped sweeps and displaced the hole to Hi-Vis prehydrated Bentonite as per Esso program. Lowered casing string to sea level. Sea was too rough, pulled back until above the sea level. Wait on weather.
Fluid Treatments	Sweeping the hole with Hi-Vis Bentonite sweeps as required.
For report #004A on 12/05/2004	**Operation at depth(m) 123**
Activity	W.O.W
Rig Activity	Wait on weather to run casing. At 23:00 start to run casing to sea level.
Fluid Treatments	No treatments prepared today. Total cuttings volume for the 36" hole equal to 189 bbls.
For report #005A on 13/05/2004	**Operation at depth(m) 123**
Activity	Wait on cement
Rig Activity	Cemented the 30" casing as per program. Wait on cement.
Fluid Treatments	Diluted 600 bbls of Hi-Vis Bentonite sweeps with 571 bbls of seawater.
For report #006A on 14/05/2004	**Operation at depth(m) 155**
Activity	Drilling
Rig Activity	Nipple up B.O.P. RIH with BHA and displace hole to mud. Drill out the cement shoe and begin to drill.
Fluid Treatments	Mixed the remaining 350 bbls of prehydrated Bentonite with 250 bbls of seawater. Add lime to improve viscosity and Yield Point. Mixed another 539 bbls of prehydrated bentonite using drillwater. MIxed 337 bbls of 13.5ppg bentontie mud. Cutitngs Volume: 16.7 bbls
For report #007A on 15/05/2004	**Operation at depth(m) 687**
Activity	Drilling
Rig Activity	Drill ahead 12.25" hole.
Fluid Treatments	Run dilution with seawater & reserve mud to control the mud weight and solids build up. Weighted up 330 bbls to 13.5 ppg. 50 bbls of mud lost due to seepage (average 2.0 bbls per hour) Daily Cuttings Volume: 254.4 bbls
For report #008A on 16/05/2004	**Operation at depth(m) 750**
Activity	Running 9 5/8" casing
Rig Activity	Continued to drill the 12.25" section to TD @ 750 m. Circulated the hole clean. Displaced the hole with 400 bbls of undiluted prehydrated bentonite on the last circulation. Pumped slug & POOH. L/D BHA. R/UP to run the 9 5/8" casing. RIH with 9 5/8" casing.
Fluid Treatments	Run dilution with seawater & reserve mud to control the mud weight and solids build up. Started to clean mud pit in preparation for the 8 1/2" hole. Daily Cuttings Volume: 31.5 bbls
For report #009A on 17/05/2004	**Operation at depth(m) 750**
Activity	Pressure Testing
Rig Activity	Continue running the 9 5/8" casing. Cemented the 9 5/8" casing as per program.
Fluid Treatments	Cleaned pits 2,3 and 4 for use in next section. Changed shakers 1,2,3,4 to pyramid 80 mesh screens for use at the start of the next section. Continue cleaning pits and mixing mud for the 8 1/2" hole.
For report #010A on 18/05/2004	**Operation at depth(m) 871**
Activity	Drilling
Rig Activity	Drill out the cement with sea water. Displaced the hole to KCl/PHPA/Glycol . Drill 3 m of new formation and conducted PIT to 14.2 ppg equivalent mud weight. Started to drill 8.5" hole.

Operations Log Recap

For report #010A on 18/05/2004	Operation at depth(m) 871
Fluid Treatments	Continued mixing mud the 8.5" section. Cleaned sand trap and shaker pits for KCl/PHPA/Glycol mud system. A total of 1500 bbls was mixed. Daily Cuttings Volume : 27.8 bbls Chlorides of Drillwater (makeup water) : 2000 mg/l Calcium of Drillwater (makeup water) : 40 mg/l
For report #011A on 19/05/2004	**Operation at depth(m) 1407**
Activity	Drilling
Rig Activity	Continued to drill the 8.5" hole. Treatments Cont: GGT @ 14:00 = 0 ppm GGT @ 19:40 = 0 ppm Cuttings Volume: 123.4bbls
Fluid Treatments	Upgraded the four shaker to 150 mesh screens. Added to the active Glycol. BARACOR-129, Caustic Potash & PHPA to maintain the mud properties. Maintained the active volume by transferring reserve mud. Stopped running the desilter before adding the BARACARB. At 1100 m before the top of Latrobe formation, treated the active system with 5 ppb BARACARB-25 and 5 ppb BARACARB-100. Prepared slug for trip out of hole.
For report #012A on 20/05/2004	**Operation at depth(m) 1539**
Activity	Logging
Rig Activity	Drill ahead 8 1/2" hole to TD at 1539 m. Circulated the hole clean and conducted a wiper trip to the shoe. RIH and circulated the hole clean. POOH for logging. R/U wireline, load sources and commence RIH with wireline.
Fluid Treatments	Treated the active system with BARACIDE, Caustic Potash and BARACOR-129 before POOH for logging. Mixed 60 bbls of slug.
For report #013A on 21/05/2004	**Operation at depth(m) 1539**
Activity	Wire Line logs
Rig Activity	Continue logging the 8 1/2" hole. Experienced obstruction caused by the Coal bed at 1240 m. Pull out the logging tool rig down Sclumberger. P/UP 8 1/2" bit, BHA and RIH. Circulate hole clean, pump slug and POOH. Tight spot at 1267m - wash and ream. Circulate shakers clean, pump slug and POOH.
Fluid Treatments	Treated the active system with 5 ppb BARABLOK. Maintained the mud weight at 10 ppg as per instruction to combat the hole instability caused by the Coal beds. The increased in mud weight at 20:00 is due to slug.
Issues	While logging the 8 1/2" hole, hole instability was experienced at 1240 to 1260 m which caused by the Coal beds.
For report #014A on 22/05/2004	**Operation at depth(m) 1539**
Activity	Tripping
Rig Activity	Continue logging the 8 1/2 " hole. R/D Schlumberger wireline. Commence P/U & M/U cement stinger assy and RIH.
Fluid Treatments	Backloaded the mud chemicals not required for the Origin Energy job.
For report #015A on 23/05/2004	**Operation at depth(m) 1539**
Activity	Wait on cement
Rig Activity	P & A well, setting cement plugs as per program.
Fluid Treatments	Treated the active system with Caustic and BARACIDE for inhibition of mud left inside casing. Dumped cement contaminated mud when reversing out after setting plugs. Calcium chloride used for cementing.
For report #016A on 24/05/2004	**Operation at depth(m) 1539**
Activity	P & A
Rig Activity	P & A well, setting cement plugs as per program.
Fluid Treatments	Dumped and cleaned all mud pits.
For report #017A on 25/05/2004	**Operation at depth(m) 1539**
Activity	P & A Well
Rig Activity	Continue P & A well.

Operations Log Recap

For report #018A on 26/05/2004	Operation at depth(m) 1539
Activity	P & A Well
Rig Activity	Continue with P & A Program.
For report #019A on 27/05/2004	**Operation at depth(m) 1539**
Activity	P & A Well
Rig Activity	P & A Well.

Bit Record

Well : West Whiptail-1

Operator: Esso Australia Pty Ltd

Run No	Bit No	Bit Size in	Bit Manufacturer	Bit Type	Bit Style	IADC Code	Serial No	Jet or TFA	Depth Out m	Run Length m	ROP m / hr	WOB lb	Bit RPM	Pump Pres psi	Pump Output gpm	Fluid Type	Fluid Density ppg	Dev Angle	Bit Grading	Reason Pulled
2	2	12.250	SMITH	S91HPX	MT	S123		0.835	750.0	630.0	0.0	10,000.0	145	0.0	0	Gel	9.10	3.00	1-1-CT-G-X-0-No-TD	TD - Total/Casing Depth
3	3	8.500	BAKER	S75HPX	FC			7x11	1,539.0	789.0	24.4	0.0	130	3,330.0	820	KCL/PHPA/Gem Glycol	9.80	0.00	8-8-LT-G-X-0-ER-TD	TD - Total/Casing Depth

Daily Drilling Fluid Report

Report No 001

Baroid, a Halliburton Company

Date 9/05/2004		Depth 0.0 m	
Spud Date 10/05/2004		Rig Activity Rig up and rig down	

Operator: Esso Australia Pty Ltd	Report For: Tim Paltridge, George Sharkey	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information		Drill St ring	OD	ID	Length	OD	Casing	MD
Bit Size	in	ITEM	in	in	m	in	Set	m
Make/Type	/							
Jets								
TFA	sq-in							
Jets Velocity	m/sec							
Jet Impact Force	lbf							
HHSI	hhp/in2							
Pres Drop @ Bit	psi							
Bit Depth	m							
ECD @ Shoe	ppg							
ECD @ Bit	ppg							

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser		Circ Pressure	psi
Total Circ Time		AV, DP		Tot Prs Loss	psi
BU Time, min		AV, DC		Pres Drop DP	psi
Total Strokes		BU Stroke		Pres Drop An	psi

Properties	1	2	3	4	Targets				Program
					1	2	3	4	
Source	Tank No.1								
Time	22:00								
Depth m	0.0								
FL Temp Deg C									
Density ppg @ Deg C	8.55 @				*				
FV @ Deg C	150 @								
PV @ Deg C	15 @ 49								
YP lbs/100 ft2	60								
Gels lbs/100 ft2	0/0/0								
600/300	90.0/75.0								
200/100	0.0/0.0								
6/3	0.0/0.0								
API Filt ml/30 min	0.0								
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0								
Corr Solids % by vol	0.0								
NAP/Water % by vol	0.0/0.1								
Sand % by vol	0.00								
MBT ppb Eq.	0.0								
pH	0.00								
Alk Mud (Pm)	0.00								
Alk Filt (Pf/Mf)	0.00/0.00								
Chlorides mg/l	0								
Hard Ca mg/l	0								
LGS/HGS %	0.0/0.0								
LGS/HGS ppb	0.00/0.00								
ASG	0.000								

Fluid Treatments

Fluid Type: Hi-Vis Bentonite Sweeps

Mixed 525 bbls of prehydrated bentonite.

Rig Activity

Prepare Rig to Spud.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			3		$ 1,998.00
bentonite	100 lb bulk		1,100	160	940	$ 2,126.40
soda ash	25 Kg bag		40	2	38	$ 26.50
barite	100 lb bulk		430		430	
calcium chloride	25 Kg bag		42		42	
Caustic Soda	25 Kg pail		64		64	
lime	20 Kg bag		84		84	
Potassium Chloride Bulk	1000 kg		4		4	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	0.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	0.0

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown Hi-Vis Bentonite Sweeps

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water	506.6	Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve	525.0	Barite		Other	
Prev Vol		Chemicals	18.4	Total Surface	
Net Chg	525.0	Other Adds.		Downhole	
Total Vol	525.0	Total Added	525.0	Total Losses	

Daily Products Cost	$ 2,152.90	Total Daily Cost	$ 4,150.90
Cumulative Products Cost	$ 2,152.90	Total Cumulative Cost	$ 4,150.90

Other Fluid Types | **Vol bbl**

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Adam Martin

Office 90 Talinga Rd Melbourne Tel 61-03-9581-7555

Warehouse c/o of Esso Australia Ltd via Toora Victoria Tel 61-3-56-881-445

The recommendations made hereon shall not be construed as authorizing the infringement of any valid patent, and are made without assumption of any liability by Baroid, a Halliburton Company or its agents, and are statements of opinion only.

Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 002

Date	10/05/2004	Depth	78.7 m
Spud Date	10/05/2004	Rig Activity	Prepare to Drill

Operator	Report For	Well Name
Esso Australia Pty Ltd	Tim Paltridge, George Sharkey	West Whiptail-1
Contractor	**Report For**	**Rig Name**
Ensco Drilling	Charles Shelton	Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information

Bit Size	17.500 in
Make/Type	SECURITY / EBXT1GS
Jets	1.228
TFA	1.228 sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	78.7 m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Drill Pipe	5.000	3.000	12.9
Drill Collar	8.500	3.000	29.4
Drill Collar	9.500	3.000	36.4

Casing

OD in	Casing Set	MD m

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total	gpm	AV, Riser		Circ Pressure	psi
Total Circ Time		AV, DP		Tot Prs Loss	psi
BU Time, min		AV, DC		Pres Drop DP	psi
Total Strokes		BU Stroke		Pres Drop An	psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.1	Tank No.3							
Time	10:00	20:30							
Depth m	0.0	0.0							
FL Temp Deg C									
Density ppg @ Deg C	8.55 @ 20	8.60 @ 20							8.50 | 9.00
FV @ Deg C	150 @ 20	145 @ 20							100 | 150
PV @ Deg C	15 @ 49	15 @ 49							
YP lbs/100 ft2	60	65							40 | 65
Gels lbs/100 ft2	0/0/0	0/0/0							
600/300	90.0/75.0	95.0/80.0							
200/100	0.0/0.0	0.0/0.0							
6/3	0.0/0.0	0.0/0.0							
API Filt ml/30 min	0.0	0.0							
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0							
Corr Solids % by vol	0.0	0.0							
NAP/Water % by vol	0.0/0.1	0.0/0.1							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	0.0	0.0							
pH	0.00	0.00							
Alk Mud (Pm)	0.00	0.00							
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00							
Chlorides mg/l	0	0							
Hard Ca mg/l	0	0							
LGS/HGS %	0.0/0.0	0.0/0.0							
LGS/HGS ppb	0.00/0.00	0.00/0.00							
ASG	0.000	0.000							

Fluid Treatments

Fluid Type: Hi-Vis Bentonite Sweeps

Mixed 1203 bbls of prehydrated bentonite.

Rig Activity

Continued preparing the rig for spud. Lowered 17 1/2" and 36" hole opener to the mudline.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
bentonite	100 lb bulk	940	243	442	741	$ 5,874.18
soda ash	25 Kg bag	38		4	34	$ 53.00
barite	100 lb bulk	430	2,341		2,771	
calcium chloride	25 Kg bag	42			42	
Caustic Soda	25 Kg pail	64			64	
lime	20 Kg bag	84			84	
Potassium Chloride Bulk	1000 kg	4			4	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown — Hi-Vis Bentonite Sweeps

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap	2.3	Drill Water	1,152.6	Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole	2.3	Sea Water		Evaporation	
Total Circ	2.3	Whole Mud		Trips	
Reserve	1,726.0	Barite		Other	
Prev Vol	525.0	Chemicals	50.7	Total Surface	
Net Chg	1,203.3	Other Adds.		Downhole	
Total Vol	1,728.3	Total Added	1,203.3	Total Losses	

Daily Products Cost	$ 5,927.18	Total Daily Cost	$ 7,259.18
Cumulative Products Cost	$ 8,080.08	Total Cumulative Cost	$ 11,410.08

Other Fluid Types | **Vol bbl**

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Report No 003

Baroid, a Halliburton Company

Date	11/05/2004	Depth	123.0 m
Spud Date	10/05/2004	Rig Activity	Wait on weather to run casing

Operator	Report For	Well Name
Esso Australia Pty Ltd	Tim Paltridge, George Sharkey	West Whiptail-1
Contractor	**Report For**	**Rig Name**
Ensco Drilling	Charles Shelton	Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information		Drill St ring	OD	ID	Length	OD	Casing	MD
Bit Size	in	ITEM	in	in	m	in	Set	m
Make/Type	/							
Jets								
TFA	sq-in							
Jets Velocity	m/sec							
Jet Impact Force	lbf							
HHSI	hhp/in2							
Pres Drop @ Bit	psi							
Bit Depth	m							
ECD @ Shoe	ppg							
ECD @ Bit	ppg							

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total	gpm	AV, Riser		Circ Pressure	psi
Total Circ Time		AV, DP		Tot Prs Loss	psi
BU Time, min		AV, DC		Pres Drop DP	psi
Total Strokes		BU Stroke		Pres Drop An	psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.3	Tank No.3							
Time	11:00	22:45							
Depth m	120.0	123.0							
FL Temp Deg C									
Density ppg @ Deg C	8.60 @ 20	8.60 @ 20							8.50 | 9.00
FV @ Deg C	145 @ 20	148 @ 20							100 | 150
PV @ Deg C	15 @ 49	13 @ 49							
YP lbs/100 ft2	65	67				*			40 | 65
Gels lbs/100 ft2	0/0/0	0/0/0							
600/300	95.0/80.0	93.0/80.0							
200/100	0.0/0.0	0.0/0.0							
6/3	0.0/0.0	0.0/0.0							
API Filt ml/30 min	0.0	0.0							
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0							
Corr Solids % by vol	0.0	0.0							
NAP/Water % by vol	0.0/0.1	0.0/0.1							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	0.0	0.0							
pH	0.00	0.00							
Alk Mud (Pm)	0.00	0.00							
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00							
Chlorides mg/l	0	0							
Hard Ca mg/l	0	0							
LGS/HGS %	0.0/0.0	0.0/0.0							
LGS/HGS ppb	0.00/0.00	0.00/0.00							
ASG	0.000	0.000							

Fluid Treatments

Fluid Type: Hi-Vis Bentonite Sweeps

Sweeping the hole with Hi-Vis Bentonite sweeps as required.

Rig Activity

Drill ahead 36" hole to TD at 123 m. Pumped sweeps and displaced the hole to Hi-Vis prehydrated Bentonite as per Esso program. Lowered casing string to sea level. Sea was too rough, pulled back until above the sea level. Wait on weather.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
calcium chloride	25 Kg bag	42		24	18	$ 231.60
barite	100 lb bulk	2,771			2,771	
bentonite	100 lb bulk	741			741	
Caustic Soda	25 Kg pail	64			64	
lime	20 Kg bag	84			84	
Potassium Chloride Bulk	1000 kg	4			4	
soda ash	25 Kg bag	34			34	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	0.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	0.0

Time (Hrs)

Drilling	11.00
Circulating	1.00
Trips	2.00
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	10.00
Total	24.00
Rotating	11.00
ROP	4.0
Dil Rate	

Fluid Volume Breakdown Hi-Vis Bentonite Sweeps

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve	950.0	Barite		Other	-778.3
Prev Vol	1,728.3	Chemicals		Total Surface	-778.3
Net Chg	-778.3	Other Adds.		Downhole	
Total Vol	950.0	Total Added		Total Losses	-778.3

Daily Products Cost	$ 231.60	Total Daily Cost	$ 1,563.60
Cumulative Products Cost	$ 8,311.68	Total Cumulative Cost	$ 12,973.68

Other Fluid Types | **Vol bbl**

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 004

Date	12/05/2004	Depth	123.0 m
Spud Date	10/05/2004	Rig Activity	W.O.W

Operator	Report For	Well Name
Esso Australia Pty Ltd	Tim Paltridge, George Sharkey	West Whiptail-1
Contractor	**Report For**	**Rig Name**
Ensco Drilling	Charles Shelton	Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information		Drill St ring	OD	ID	Length	OD	Casing	MD
Bit Size	in	ITEM	in	in	m	in	Set	m
Make/Type	/							
Jets								
TFA	sq-in							
Jets Velocity	m/sec							
Jet Impact Force	lbf							
HHSI	hhp/in2							
Pres Drop @ Bit	psi							
Bit Depth	123.0 m							
ECD @ Shoe	ppg							
ECD @ Bit	ppg							

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total	gpm	AV, Riser		Circ Pressure	psi
Total Circ Time		AV, DP		Tot Prs Loss	psi
BU Time, min		AV, DC		Pres Drop DP	psi
Total Strokes		BU Stroke		Pres Drop An	psi

Properties	1	2	3	4	Targets				Program
					1	2	3	4	
Source	Tank No.3	Tank No.3							
Time	09:00	23:00							
Depth m	123.0	123.0							
FL Temp Deg C									
Density ppg @ Deg C	8.60 @ 20	8.60 @ 20							8.50 | 9.00
FV @ Deg C	150 @ 20	148 @ 20							100 | 150
PV @ Deg C	13 @ 49	15 @ 49							
YP lbs/100 ft2	67	66			*	*			40 | 65
Gels lbs/100 ft2	0/0/0	0/0/0							
600/300	93.0/80.0	96.0/81.0							
200/100	0.0/0.0	0.0/0.0							
6/3	0.0/0.0	0.0/0.0							
API Filt ml/30 min	0.0	0.0							
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0							
Corr Solids % by vol	0.0	0.0							
NAP/Water % by vol	0.0/0.1	0.0/0.1							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	0.0	0.0							
pH	0.00	0.00							
Alk Mud (Pm)	0.00	0.00							
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00							
Chlorides mg/l	0	0							
Hard Ca mg/l	0	0							
LGS/HGS %	0.0/0.0	0.0/0.0							
LGS/HGS ppb	0.00/0.00	0.00/0.00							
ASG	0.000	0.000							

Fluid Treatments

Fluid Type: Hi-Vis Bentonite Sweeps

No treatments prepared today.
Total cuttings volume for the 36" hole equal to 189 bbls.

Rig Activity

Wait on weather to run casing.
At 23:00 start to run casing to sea level.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
barite	100 lb bulk	2,771	690		3,461	
bentonite	100 lb bulk	741			741	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	64			64	
lime	20 Kg bag	84			84	
Potassium Chloride Bulk	1000 kg	4			4	
soda ash	25 Kg bag	34			34	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	1.00
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	23.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown **Hi-Vis Bentonite Sweeps**

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve	950.0	Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Chg		Other Adds.		Downhole	
Total Vol		Total Added		Total Losses	

Daily Products Cost	$ 0.00	Total Daily Cost	$ 1,332.00
Cumulative Products Cost	$ 8,311.68	Total Cumulative Cost	$ 14,305.68

Other Fluid Types **Vol bbl**

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 005

Date 13/05/2004	Depth 123.0 m
Spud Date 10/05/2004	Rig Activity Wait on cement

Operator: Esso Australia Pty Ltd	Report For: Tim Paltridge, George Sharkey	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait	Field or Block: VIC/L1

Bit Information

Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	123.0 m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Riser	0.000		0.0
Open Hole	17.500		3.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Flow Line								
Time	20:00								
Depth m	123.0								
FL Temp Deg C									
Density ppg @ Deg C	8.55 @ 20								8.50 | 9.00
FV @ Deg C	0 @				*				100 | 150
PV @ Deg C	0 @								
YP lbs/100 ft2	0				*				40 | 65
Gels lbs/100 ft2	0/0/0								
600/300	0.0/0.0								
200/100	0.0/0.0								
6/3	0.0/0.0								
API Filt ml/30 min	0.0								
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0								
Corr Solids % by vol	0.0								
NAP/Water % by vol	0.0/0.1								
Sand % by vol	0.00								
MBT ppb Eq.	0.0								
pH	0.00								
Alk Mud (Pm)	0.00								
Alk Filt (Pf/Mf)	0.00/0.00								
Chlorides mg/l	0								
Hard Ca mg/l	0								
LGS/HGS %	0.0/0.0								
LGS/HGS ppb	0.00/0.00								
ASG	0.000								

Fluid Treatments

Fluid Type: Sea Water

Diluted 600 bbls of Hi-Vis Bentonite sweeps with 571 bbls of seawater.

Rig Activity

Cemented the 30" casing as per program. Wait on cement.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
Caustic Soda	25 Kg pail	64		10	54	$ 427.50
barite	100 lb bulk	3,461			3,461	
bentonite	100 lb bulk	741			741	
calcium chloride	25 Kg bag	18			18	
lime	20 Kg bag	84			84	
Potassium Chloride Bulk	1000 kg	4			4	
soda ash	25 Kg bag	34			34	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	16.00
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	8.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown Sea Water

Active	bbl	Additions	bbl	Losses	bbl
Annulus	290.3	NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole	290.3	Sea Water	290.4	Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	950.0	Chemicals		Total Surface	
Net Chg	290.4	Other Adds.		Downhole	
Total Vol		Total Added	290.4	Total Losses	

Daily Products Cost	$ 427.50	Total Daily Cost	$ 1,759.50
Cumulative Products Cost	$ 8,739.18	Total Cumulative Cost	$ 16,065.18

Other Fluid Types	Vol bbl
Seawater/Bentonite	1,521.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Report No 006

Baroid, a Halliburton Company

Date 14/05/2004		Depth 155.0 m	
Spud Date 10/05/2004		Rig Activity Drilling	
Operator Esso Australia Pty Ltd	Report For Tim Paltridge, George Sharkey	Well Name West Whiptail-1	
Contractor Ensco Drilling	Report For Charles Shelton	Rig Name Ensco 102	
Country Australia	State/Province/Region Victoria	County/Geographic Area Bass Strait	Field or Block VIC/L1

Bit Information

Bit Size	12.250	in
Make/Type	SMITH / S91HPX	
Jets	0.835	
TFA	0.835	sq-in
Jets Velocity	102.5	m/sec
Jet Impact Force		lbf
HHSI		hhp/in2
Pres Drop @ Bit		psi
Bit Depth	155.0	m
ECD @ Shoe		ppg
ECD @ Bit		ppg

Drill St ring

ITEM	OD in	ID in	Length m
Drill Pipe	5.000	3.000	98.0
Drill Collar	8.250	2.813	57.0
Riser	18.750		17.0
Open Hole	12.250		35.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM	75	75	
gpm	439	439	

Total gpm	878	AV, Riser	20.1	Circ Pressure psi	1,910.0
Total Circ Time	36.2	AV, DP	8.6	Tot Prs Loss psi	
BU Time, min	12.5	AV, DC	80.0	Pres Drop DP psi	
Total Strokes	5,424	BU Stroke	1,870	Pres Drop An psi	

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.10	Flow Line							
Time	08:00	23:00							
Depth m	123.0	130.0							
FL Temp Deg C		25							
Density ppg @ Deg C	8.55 @ 20	8.75 @ 25			*	*			
FV @ Deg C	0 @	37 @ 25							
PV @ Deg C	0 @	4 @ 49							
YP lbs/100 ft2	0	14							
Gels lbs/100 ft2	0/0/0	0/0/0							
600/300	0.0/0.0	22.0/18.0							
200/100	0.0/0.0	0.0/0.0							
6/3	0.0/0.0	0.0/0.0							
API Filt ml/30 min	0.0	0.0							
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0							
Corr Solids % by vol	0.0	0.0							
NAP/Water % by vol	0.0/0.1	0.0/0.1							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	0.0	0.0							
pH	0.00	0.00							
Alk Mud (Pm)	0.00	0.00							
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00							
Chlorides mg/l	0	0							
Hard Ca mg/l	0	0							
LGS/HGS %	0.0/0.0	0.0/0.0							
LGS/HGS ppb	0.00/0.00	0.00/0.00							
ASG	0.000	0.000							

Fluid Treatments

Fluid Type: Seawater/Bentonite

Mixed the remaining 350 bbls of prehydrated Bentonite with 250 bbls of seawater. Add lime to improve viscosity and Yield Point.

Mixed another 539 bbls of prehydrated bentonite using drillwater.

MIxed 337 bbls of 13.5ppg bentontie mud.

Cutitngs Volume: 16.7 bbls

Rig Activity

Nipple up B.O.P. RIH with BHA and displace hole to mud. Drill out the cement shoe and begin to drill.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
bentonite	100 lb bulk	741		175	566	$ 2,325.75
Caustic Soda	25 Kg pail	54		6	48	$ 256.50
PAC-L	25 Kg bag		80	2	78	$ 166.50
lime	20 Kg bag	84		9	75	$ 53.64
soda ash	25 Kg bag	34		3	31	$ 39.75
BARAZAN D PLUS	25 Kg bag		80		80	
barite	100 lb bulk	3,461			3,461	
calcium chloride	25 Kg bag	18			18	
citric acid	25 Kg bag		40		40	
DEXTRID LTE	25 Kg bag		80		80	
phpa	25 Kg bag		50		50	
Potassium Chloride Bulk	1000 kg	4	6		10	
potassium hydroxide	20 Kg pail		32		32	
sodium bicarbonate	25 Kg bag		40		40	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	125 125 125 125	3.5
FLC 514	125 125 125 125	3.5
FLC 514	125 125 125 125	0.0
FLC 514	125 125 125 125	3.5

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	2.0

Time (Hrs)

Drilling	3.50
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	1.00
Logging	
Dir Work	
Repair	
Other	19.50
Total	24.00
Rotating	3.50
ROP	9.1
Dil Rate	

Fluid Volume Breakdown **Seawater/Bentonite**

Active	bbl	Additions	bbl	Losses	bbl
Annulus	260.6	NAP Base		Dumped	
Pipe Cap	4.3	Drill Water		Transferred	
Active Pits	491.0	Dewatering		SC Equip	
Total Hole	264.8	Sea Water	624.8	Evaporation	
Total Circ	755.8	Whole Mud		Trips	
Reserve	1,411.0	Barite		Other	
Prev Vol	290.3	Chemicals	21.0	Total Surface	
Net Chg	645.8	Other Adds.		Downhole	
Total Vol		Total Added	645.8	Total Losses	

Daily Products Cost	$ 2,842.14	Total Daily Cost	$ 4,174.14
Cumulative Products Cost	$ 11,581.32	Total Cumulative Cost	$ 20,239.32

Other Fluid Types Vol bbl

Gel/Polymer @ 13.5 ppg 337.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Adam Martin

Office 90 Talinga Rd Melbourne Tel 61-03-9581-7555

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Daily Drilling Fluid Report

Report No 007

Baroid, a Halliburton Company

Date 15/05/2004		**Depth** 687.0 m	
Spud Date 10/05/2004		**Rig Activity** Drilling	
Operator Esso Australia Pty Ltd	**Report For** Barry Steel, George Sharkey,	**Well Name** West Whiptail-1	
Contractor Ensco Drilling	**Report For** Charles Shelton	**Rig Name** Ensco 102	
Country Australia	**State/Province/Region** Victoria	**County/Geographic Area** Bass Strait	**Field or Block** VIC/L1

Bit Information

Bit Size	12.250 in
Make/Type	SMITH / S91HPX
Jets	0.835
TFA	0.835 sq-in
Jets Velocity	123.1 m/sec
Jet Impact Force	1,981.1 lbf
HHSI	6.83 hhp/in2
Pres Drop @ Bit	1,309.7 psi
Bit Depth	687.0 m
ECD @ Shoe	9.00 ppg
ECD @ Bit	9.00 ppg

Drill St ring

ITEM	OD in	ID in	Length m
Drill Pipe	5.000	4.276	441.3
Drill Pipe	5.000	3.000	188.7
Drill Collar	8.250	2.813	57.0
Riser	18.750		17.0
Open Hole	12.250		567.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM	90	90	
gpm	527	527	

Total gpm	1,053	AV, Riser	24.1	Circ Pressure psi	2,000.0
Total Circ Time	40.6	AV, DP	10.4	Tot Prs Loss psi	1,359.7
BU Time, min	18.8	AV, DC	96.0	Pres Drop DP psi	
Total Strokes	7,301	BU Stroke	3,392	Pres Drop An psi	

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Flow Line	Flow Line	Flow Line	Flow Line					
Time	09:15	13:15	21:20	05:30					
Depth m	392.0	506.0	652.0	273.0					
FL Temp Deg C	25	30	34	25					
Density ppg @ Deg C	9.00 @ 25	9.10 @ 25	9.10 @ 25	9.00 @ 25	*	*	*	*	
FV @ Deg C	50 @ 25	44 @ 25	44 @ 25	47 @ 25					
PV @ Deg C	8 @ 49	10 @ 49	7 @ 49	8 @ 49					
YP lbs/100 ft2	44	30	33	44					
Gels lbs/100 ft2	0/0/0	0/0/0	0/0/0	0/0/0					
600/300	60.0/52.0	50.0/40.0	47.0/40.0	60.0/52.0					
200/100	0.0/0.0	0.0/0.0	0.0/0.0	0.0/0.0					
6/3	0.0/0.0	0.0/0.0	0.0/0.0	0.0/0.0					
API Filt ml/30 min	0.0	0.0	0.0	0.0					
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0	0.0/0.0	0.0/0.0					
Corr Solids % by vol	0.0	0.0	0.0	0.0					
NAP/Water % by vol	0.0/0.1	0.0/0.1	0.0/0.1	0.0/0.1					
Sand % by vol	0.00	0.00	0.00	0.00					
MBT ppb Eq.	0.0	0.0	0.0	0.0					
pH	0.00	0.00	0.00	0.00					
Alk Mud (Pm)	0.00	0.00	0.00	0.00					
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00					
Chlorides mg/l	0	0	0	0					
Hard Ca mg/l	0	0	0	0					
LGS/HGS %	0.0/0.0	0.0/0.0	0.0/0.0	0.0/0.0					
LGS/HGS ppb	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00					
ASG	0.000	0.000	0.000	0.000					

Fluid Treatments

Fluid Type: Seawater/Bentonite

Run dilution with seawater & reserve mud to control the mud weight and solids build up. Weighted up 330 bbls to 13.5 ppg.

50 bbls of mud lost due to seepage (average 2.0 bbls per hour)

Daily Cuttings Volume: 254.4 bbls

Rig Activity

Drill ahead 12.25" hole.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
barite	100 lb bulk	3,461		337	3,124	$ 1,644.56
bentonite	100 lb bulk	566		80	486	$ 1,063.20
BARABLOK	50 lb bag		80		80	
BARACARB 100	1200 Kg bulk		3		3	
BARACARB 25	1200 Kg bag		1		1	
Baracide	25 Kg can		32		32	
BARACOR 129	25 Kg can		32		32	
BARA-DEFOAM W300	25 l can		4		4	
BARAFILM	55 gal drum		1		1	
BARAZAN D PLUS	25 Kg bag	80			80	
BAROFIBRE	25 lb bag		80		80	
BAROLIFT	15 lb box		6		6	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	40			40	
DEXTRID LTE	25 Kg bag	80	80		160	
GEM CP	1500 l bulk		3		3	
Hme Energizer	5 gal can		4		4	
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail		57		57	
PAC-L	25 Kg bag	78			78	
phpa	25 Kg bag	50	25		75	
Potassium Chloride Bulk	1000 kg	10	7		17	
potassium hydroxide	20 Kg pail	32			32	
soda ash	25 Kg bag	31			31	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	125 125 125 125	24.0
FLC 514	125 125 125 125	24.0
FLC 514	125 125 125 125	24.0
FLC 514	125 125 125 125	24.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	24.0

Time (Hrs)

Drilling	23.00
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.00
Total	24.00
Rotating	23.00
ROP	10.3
Dil Rate	

Fluid Volume Breakdown **Seawater/Bentonite**

Active	bbl	Additions	bbl	Losses	bbl
Annulus	472.6	NAP Base		Dumped	-156.0
Pipe Cap	31.7	Drill Water		Transferred	
Active Pits	513.0	Dewatering		SC Equip	-55.5
Total Hole	504.3	Sea Water	560.0	Evaporation	
Total Circ	1,017.3	Whole Mud		Trips	
Reserve	1,448.0	Barite		Other	
Prev Vol	337.0	Chemicals		Total Surface	-211.5
Net Chg	298.5	Other Adds.		Downhole	-50.0
Total Vol	369.0	Total Added	560.0	Total Losses	-261.5

Other Fluid Types	Vol bbl
Gel/Polymer @ 13.5 ppg	369.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 2,707.76	Total Daily Cost	$ 4,039.76
Cumulative Products Cost	$ 14,289.08	Total Cumulative Cost	$ 24,279.08

Baroid Representatives: Emad Elzahaby Adam Martin

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Warehouse	c/o of Esso Australia Ltd	via Toora Victoria	Tel 61-3-56-881-445

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 008

Date 16/05/2004	Depth 750.0 m
Spud Date 10/05/2004	Rig Activity Running 9 5/8" casing

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, George Sharkey,	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait
		Field or Block: VIC/L1

Bit Information

Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	12.250		630.0

Casing OD in	Set @ m
30.000	113.0
20.000	116.0
13.375	120.0

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Flow Line	Flow Line	Tank No.10						
Time	03:15	08:00	19:30						
Depth m	705.0	750.0	750.0						
FL Temp Deg C	35	30							
Density ppg @ Deg C	9.10 @ 25	9.10 @ 25	9.10 @ 25		*	*	*		
FV @ Deg C	40 @ 25	44 @ 25	41 @ 25						
PV @ Deg C	8 @ 49	10 @ 49	10 @ 49						
YP lbs/100 ft2	32	35	36						
Gels lbs/100 ft2	0/0/0	0/0/0	0/0/0						
600/300	48.0/40.0	55.0/45.0	56.0/46.0						
200/100	0.0/0.0	0.0/0.0	0.0/0.0						
6/3	0.0/0.0	0.0/0.0	0.0/0.0						
API Filt ml/30 min	0.0	0.0	0.0						
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0	0.0/0.0						
Corr Solids % by vol	0.0	0.0	0.0						
NAP/Water % by vol	0.0/0.1	0.0/0.1	0.0/0.1						
Sand % by vol	0.00	0.00	0.00						
MBT ppb Eq.	0.0	0.0	0.0						
pH	0.00	0.00	0.00						
Alk Mud (Pm)	0.00	0.00	0.00						
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00	0.00/0.00						
Chlorides mg/l	0	0	0						
Hard Ca mg/l	0	0	0						
LGS/HGS %	0.0/0.0	0.0/0.0	0.0/0.0						
LGS/HGS ppb	0.00/0.00	0.00/0.00	0.00/0.00						
ASG	0.000	0.000	0.000						

Fluid Treatments

Fluid Type: Seawater/Bentonite

Run dilution with seawater & reserve mud to control the mud weight and solids build up. Started to clean mud pit in preparation for the 8 1/2" hole.
Daily Cuttings Volume: 31.5 bbls

Rig Activity

Continued to drill the 12.25" section to TD @ 750 m. Circulated the hole clean. Displaced the hole with 400 bbls of undiluted prehydrated bentonite on the last circulation. Pumped slug & POOH. L/D BHA.
R/UP to run the 9 5/8" casing. RIH with 9 5/8" casing.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
barite	100 lb bulk	3,124		731	2,393	$ 6,112.90
BARABLOK	50 lb bag	80			80	
BARACARB 100	1200 Kg bulk	3	4		7	
BARACARB 25	1200 Kg bag	1	4		5	
Baracide	25 Kg can	32			32	
BARACOR 129	25 Kg can	32			32	
BARA-DEFOAM W300	25 l can	4			4	
BARAFILM	55 gal drum	1			1	
BARAZAN D PLUS	25 Kg bag	80			80	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	486			486	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	40			40	
DEXTRID LTE	25 Kg bag	160			160	
GEM CP	1500 l bulk	3			3	
Hme Energizer	5 gal can	4			4	
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail	57			57	
PAC-L	25 Kg bag	78			78	
phpa	25 Kg bag	75			75	
Potassium Chloride Bulk	1000 kg	17	6		23	
potassium hydroxide	20 Kg pail	32			32	
soda ash	25 Kg bag	31			31	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	125 125 125 125	9.0
FLC 514	125 125 125 125	9.0
FLC 514	125 125 125 125	9.0
FLC 514	125 125 125 125	9.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	9.0

Time (Hrs)

Drilling	6.00
Circulating	3.00
Trips	7.00
Rig Surveys	
Fishing	
Run Casing	3.00
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.00
Total	24.00
Rotating	6.00
ROP	10.5
Dil Rate	

Fluid Volume Breakdown — Seawater/Bentonite

Active	bbl	Additions	bbl	Losses	bbl
Annulus	565.3	NAP Base		Dumped	-260.0
Pipe Cap		Drill Water		Transferred	
Active Pits	378.0	Dewatering		SC Equip	-25.0
Total Hole	565.3	Sea Water		Evaporation	
Total Circ	378.0	Whole Mud	88.7	Trips	
Reserve	1,300.0	Barite		Other	-25.7
Prev Vol	2,465.3	Chemicals		Total Surface	-310.7
Net Chg	-222.0	Other Adds.		Downhole	
Total Vol	2,243.3	Total Added	88.7	Total Losses	-310.7

Other Fluid Types	Vol bbl
Gel/Polymer @ 13.5 ppg	330.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 6,112.90	Total Daily Cost	$ 7,444.90
Cumulative Products Cost	$ 20,401.98	Total Cumulative Cost	$ 31,723.98

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 009

Date	17/05/2004	Depth	750.0 m
Spud Date	10/05/2004	Rig Activity	Pressure Testing

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, Roger Bain	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information

Bit Size	in		
Make/Type	/		
Jets			
TFA	sq-in		
Jets Velocity	m/sec		
Jet Impact Force	lbf		
HHSI	hhp/in2		
Pres Drop @ Bit	psi		
Bit Depth	750.0 m		
ECD @ Shoe	ppg		
ECD @ Bit	ppg		

Drill St ring

ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	8.500		5.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.10	Tank No.1							
Time	05:00	21:00							
Depth m	750.0	750.0							
FL Temp Deg C									
Density ppg @ Deg C	9.20 @ 25	9.20 @ 25			*	*			
FV @ Deg C	43 @ 25	45 @ 25							
PV @ Deg C	11 @ 49	9 @ 49							
YP lbs/100 ft2	32	36							
Gels lbs/100 ft2	0/0/0	0/0/0							
600/300	54.0/43.0	54.0/45.0							
200/100	0.0/0.0	0.0/0.0							
6/3	0.0/0.0	0.0/0.0							
API Filt ml/30 min	0.0	0.0							
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0	0.0/0.0							
Corr Solids % by vol	0.0	0.0							
NAP/Water % by vol	0.0/0.1	0.0/0.1							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	0.0	0.0							
pH	0.00	0.00							
Alk Mud (Pm)	0.00	0.00							
Alk Filt (Pf/Mf)	0.00/0.00	0.00/0.00							
Chlorides mg/l	0	0							
Hard Ca mg/l	0	0							
LGS/HGS %	0.0/0.0	0.0/0.0							
LGS/HGS ppb	0.00/0.00	0.00/0.00							
ASG	0.000	0.000							

Fluid Treatments

Fluid Type: Seawater/Bentonite

Cleaned pits 2,3 and 4 for use in next section. Changed shakers 1,2,3,4 to pyramid 80 mesh screens for use at the start of the next section. Continue cleaning pits and mixing mud for the 8 1/2" hole.

Rig Activity

Continue running the 9 5/8" casing. Cemented the 9 5/8" casing as per program.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARAZAN D PLUS	25 Kg bag	80		12	68	$ 2,543.04
Potassium Chloride Bulk	1000 kg	23		5	18	$ 1,917.05
barite	100 lb bulk	2,393		150	2,243	$ 1,330.50
PAC-L	25 Kg bag	78		7	71	$ 582.75
DEXTRID LTE	25 Kg bag	160		20	140	$ 502.00
Baracide	25 Kg can	32		1	31	$ 257.83
potassium hydroxide	20 Kg pail	32		1	31	$ 42.75
soda ash	25 Kg bag	31		1	30	$ 13.25
BARABLOK	50 lb bag	80			80	
BARACARB 100	1200 Kg bulk	7			7	
BARACARB 25	1200 Kg bag	5			5	
BARACOR 129	25 Kg can	32			32	
BARA-DEFOAM W300	25 l can	4			4	
BARAFILM	55 gal drum	1			1	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	486			486	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	40			40	
GEM CP	1500 l bulk	3			3	
Hme Energizer	5 gal can	4			4	
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail	57			57	
phpa	25 Kg bag	75			75	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	80 80 80 80	0.0
FLC 514	80 80 80 80	0.0
FLC 514	80 80 80 80	6.0
FLC 514	80 80 80 80	0.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	0.0

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig Surveys	
Fishing	
Run Casing	13.00
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	11.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown — Seawater/Bentonite

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Chg		Other Adds.		Downhole	
Total Vol	400.0	Total Added		Total Losses	

Daily Products Cost	$ 7,189.17	Total Daily Cost	$ 8,521.17
Cumulative Products Cost	$ 27,591.15	Total Cumulative Cost	$ 40,245.15

Other Fluid Types	Vol bbl
KCL/PHPA/GLYCOL	400.0

Deviation Information	
Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby, Adam Martin

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Daily Drilling Fluid Report

Report No 010

Baroid, a Halliburton Company

Date 18/05/2004		Depth 871.0 m	
Spud Date 10/05/2004		Rig Activity Drilling	

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, Roger Bain	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait	Field or Block: VIC/L1

Bit Information

Bit Size	8.500	in
Make/Type	BAKER / S75HPX	
Jets	7x11	
TFA	0.650	sq-in
Jets Velocity	114.2	m/sec
Jet Impact Force	1,445.5	lbf
HHSI	9.60	hhp/in2
Pres Drop @ Bit	1,227.5	psi
Bit Depth	871.0	m
ECD @ Shoe	10.33	ppg
ECD @ Bit	10.46	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Drill Pipe	5.000	4.276	675.0
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.500	3.000	51.4
Riser	18.750		17.0
Open Hole	8.500		126.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM	65		65
gpm	380		380

Total gpm	761	AV, Riser	17.4	Circ Pressure psi	3,100.0
Total Circ Time	34.0	AV, DP	112.9	Tot Prs Loss psi	1,965.5
BU Time, min	8.3	AV, DC	189.5	Pres Drop DP psi	604.9
Total Strokes	4,416	BU Stroke	1,081	Pres Drop An psi	98.0

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.10	Flow Line							
Time	21:40	22:20							
Depth m	820.0	835.0							
FL Temp Deg C		30							
Density ppg @ Deg C	9.80 @ 25	9.80 @ 25			*	*			
FV @ Deg C	44 @ 30	43 @ 30							
PV @ Deg C	12 @ 49	12 @ 49							
YP lbs/100 ft2	19	20							
Gels lbs/100 ft2	6/6/7	6/7/7							
600/300	43.0/31.0	44.0/32.0							
200/100	25.0/18.0	25.0/18.0							
6/3	6.0/4.0	6.0/4.0							
API Filt ml/30 min	3.7	3.8							
HTHP ml/30 min @Deg C	11.0 @ 121	11.2 @ 121							
Cake 32nd in	1.0/2.0	1.0/2.0							
Corr Solids % by vol	4.7	4.7							
NAP/Water % by vol	0.0/92.4	0.0/92.3							
Sand % by vol	0.10	0.20							
MBT ppb Eq.	2.5	2.5							
pH	8.60	8.50							
Alk Mud (Pm)	0.25	0.25							
Alk Filt (Pf/Mf)	0.40/1.20	0.40/1.10							
Chlorides mg/l	36,500	37,000							
Hard Ca mg/l	140	150							
LGS/HGS %	1.2/3.5	1.3/3.4							
LGS/HGS ppb	10.59/51.40	12.04/49.97							
ASG	3.801	3.752							
6 rpm -	6	6							
KCl content ppb	25.50	25.00							
Sulfite residual mg/l	120	120							

Fluid Treatments

Fluid Type: KCL/PHPA/GLYCOL

Continued mixing mud the 8.5" section. Cleaned sand trap and shaker pits for KCl/PHPA/Glycol mud system. A total of 1500 bbls was mixed.

Daily Cuttings Volume : 27.8 bbls

Chlorides of Drillwater (makeup water) : 2000 mg/l
Calcium of Drillwater (makeup water) : 40 mg/l

Rig Activity

Drill out the cement with sea water. Displaced the hole to KCl/PHPA/Glycol . Drill 3 m of new formation and conducted PIT to 14.2 ppg equivalent mud weight. Started to drill 8.5" hole.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
GEM CP	1500 l bulk	3	4	3	4	$ 11,851.80
BARAZAN D PLUS	25 Kg bag	68		36	32	$ 7,629.12
Potassium Chloride Bulk	1000 kg	18	7	15	10	$ 5,751.15
barite	100 lb bulk	2,243		450	1,793	$ 3,991.50
phpa	25 Kg bag	75		20	55	$ 1,765.00
PAC-L	25 Kg bag	71		21	50	$ 1,748.25
DEXTRID LTE	25 Kg bag	140		60	80	$ 1,506.00
Baracide	25 Kg can	31		3	28	$ 773.49
BARACOR 129	25 Kg can	32		5	27	$ 227.00
citric acid	25 Kg bag	40		4	36	$ 220.28
potassium hydroxide	20 Kg pail	31		3	28	$ 128.25
sodium bicarbonate	25 Kg bag	40		5	35	$ 58.75
soda ash	25 Kg bag	30		3	27	$ 39.75
BARABLOK	50 lb bag	80	80		160	
BARACARB 100	1200 Kg bulk	7			7	
BARACARB 25	1200 Kg bag	5	2		7	
BARA-DEFOAM W300	25 l can	4			4	
BARAFILM	55 gal drum	1			1	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	486			486	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
Hme Energizer	5 gal can	4			4	
lime	20 Kg bag	75			75	

Solid Control Equipment

Shaker	Screens				Hrs
FLC 514	80	80	80	80	14.0
FLC 514	80	80	80	80	14.0
FLC 514	80	80	80	80	14.0
FLC 514	80	80	80	80	14.0

Hydrocyclones	Cones	Screens			Hrs
Mud cleaner 1	20	4	180	180	180	14.0

Time (Hrs)

Drilling	14.00
Circulating	
Trips	6.00
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.00
Total	24.00
Rotating	14.00
ROP	8.6
Dil Rate	

Fluid Volume Breakdown KCL/PHPA/GLYCOL

Active	bbl	Additions	bbl	Losses	bbl
Annulus	150.7	NAP Base		Dumped	-32.5
Pipe Cap	43.7	Drill Water	1,008.9	Transferred	
Active Pits	421.0	Dewatering		SC Equip	-35.0
Total Hole	194.3	Sea Water		Evaporation	
Total Circ	615.3	Whole Mud		Trips	
Reserve	850.0	Barite	30.6	Other	
Prev Vol	400.0	Chemicals	93.3	Total Surface	-67.5
Net Chg	1,065.3	Other Adds.		Downhole	
Total Vol	1,465.3	Total Added	1,132.8	Total Losses	-67.5

Other Fluid Types	Vol bbl
Seawater/Bentonite	581.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 35,690.34	Total Daily Cost	$ 37,022.34
Cumulative Products Cost	$ 63,281.49	Total Cumulative Cost	$ 77,267.49

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 011

Date 19/05/2004	Depth 1,407.0 m
Spud Date 10/05/2004	Rig Activity Drilling

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, Roger Bain	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait	Field or Block: VIC/L1

Bit Information

Bit Size	12.250 in
Make/Type	SMITH / S91HPX
Jets	0.835
TFA	0.835 sq-in
Jets Velocity	95.7 m/sec
Jet Impact Force	1,291.7 lbf
HHSI	3.46 hhp/in2
Pres Drop @ Bit	853.9 psi
Bit Depth	1,407.0 m
ECD @ Shoe	10.42 ppg
ECD @ Bit	39.76 ppg

Drill St ring

ITEM	OD in	ID in	Length m
Drill Pipe	5.000	4.276	1,161.3
Drill Pipe	5.000	3.000	188.7
Drill Collar	8.250	2.813	57.0
Riser	18.750		17.0
Open Hole	8.500		662.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM	70		70
gpm	410		410

Total gpm	819	AV, Riser	18.7	Circ Pressure psi	3,330.0
Total Circ Time	35.5	AV, DP	121.5	Tot Prs Loss psi	9,296.3
BU Time, min	11.6	AV, DC	1,461.7	Pres Drop DP psi	1,134.7
Total Strokes	4,971	BU Stroke	1,625	Pres Drop An psi	7,214.7

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Flow Line	Tank No.10	Tank No.10	Flow Line					
Time	12:00	14:00	18:50	19:40					
Depth m	1,200.0	1,235.0	1,315.0	1,327.0					
FL Temp Deg C	49	49	48	51					
Density ppg @ Deg C	9.70 @ 42	9.70 @ 49	9.70 @ 98	9.85 @ 25	*	*	*	*	
FV @ Deg C	46 @ 42	50 @ 49	45 @ 30	46 @ 30					
PV @ Deg C	16 @ 49	15 @ 49	17 @ 49	18 @ 49					
YP lbs/100 ft2	24	27	26	25					
Gels lbs/100 ft2	6/8/0	6/9/0	7/7/8	7/7/8					
600/300	56.0/40.0	57.0/42.0	60.0/43.0	61.0/43.0					
200/100	31.0/22.0	33.0/23.0	33.0/24.0	34.0/24.0					
6/3	7.0/6.0	8.0/7.0	7.0/5.0	7.0/5.0					
API Filt ml/30 min	3.6	3.5	3.6	3.6					
HTHP ml/30 min @Deg C	10.5 @ 121	10.5 @ 121	10.4 @ 121	10.7 @ 121					
Cake 32nd in	1.0/2.0	1.0/2.0	1.0/3.0	1.0/2.0					
Corr Solids % by vol	4.4	4.3	4.6	5.4					
NAP/Water % by vol	0.0/92.5	0.0/92.5	0.0/92.5	0.0/91.7					
Sand % by vol	0.10	0.10	0.20	0.20					
MBT ppb Eq.	2.5	1.0	1.5	2.0					
pH	8.70	9.00	8.80	8.70					
Alk Mud (Pm)	0.30	0.35	0.15	0.25					
Alk Filt (Pf/Mf)	0.10/0.25	0.20/0.50	0.10/0.30	0.10/0.25					
Chlorides mg/l	38,000	40,000	35,500	36,000					
Hard Ca mg/l	160	200	300	300					
LGS/HGS %	1.6/2.9	1.4/2.9	1.8/2.8	2.3/3.2					
LGS/HGS ppb	14.36/41.97	12.74/42.14	16.35/41.78	20.54/46.55					
ASG	3.631	3.675	3.580	3.534					
Glycol Content % by vol	3.0	3.0	3.0	3.0					
KCl % % by vol	7.5	8.0	8.0	8.0					
Sulfite residual mg/l	120	140	120	110					

Fluid Treatments

Fluid Type: KCL/PHPA/GLYCOL

Upgraded the four shaker to 150 mesh screens. Added to the active Glycol. BARACOR-129, Caustic Potash & PHPA to maintain the mud properties. Maintained the active volume by transferring reserve mud. Stopped running the desilter before adding the BARACARB.
At 1100 m before the top of Latrobe formation, treated the active system with 5 ppb BARACARB-25 and 5 ppb BARACARB-100. Prepared slug for trip out of hole.

Rig Activity

Continued to drill the 8.5" hole.

Treatments Cont:
GGT @ 14:00 = 0 ppm
GGT @ 19:40 = 0 ppm

Cuttings Volume: 123.4bbls

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
GEM CP	1500 l bulk	4		2	2	$ 7,901.20
barite	100 lb bulk	1,793		407	1,386	$ 3,610.09
BARACARB 100	1200 Kg bulk	7		3	4	$ 1,500.15
BARACARB 25	1200 Kg bag	7		3	4	$ 1,190.07
phpa	25 Kg bag	55		11	44	$ 970.75
BARACOR 129	25 Kg can	27		17	10	$ 771.80
potassium hydroxide	20 Kg pail	28		4	24	$ 171.00
BARA-DEFOAM W300	25 l can	4		1	3	$ 57.93
BARABLOK	50 lb bag	160			160	
Baracide	25 Kg can	28			28	
BARAFILM	55 gal drum	1			1	
BARAZAN D PLUS	25 Kg bag	32			32	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	486			486	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	36			36	
DEXTRID LTE	25 Kg bag	80			80	
Hme Energizer	5 gal can	4			4	
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail	57			57	
PAC-L	25 Kg bag	50			50	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	150 150 150 150	24.0
FLC 514	150 150 150 150	24.0
FLC 514	150 150 150 150	24.0
FLC 514	150 150 150 150	24.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	12.0

Time (Hrs)

Drilling	23.00
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.00
Total	24.00
Rotating	23.00
ROP	16.5
Dil Rate	

Fluid Volume Breakdown KCL/PHPA/GLYCOL

Active	bbl	Additions	bbl	Losses	bbl
Annulus	226.4	NAP Base		Dumped	-78.0
Pipe Cap	72.3	Drill Water		Transferred	
Active Pits	394.0	Dewatering		SC Equip	-228.1
Total Hole	298.7	Sea Water		Evaporation	
Total Circ	692.7	Whole Mud		Trips	
Reserve	424.0	Barite	27.7	Other	-110.0
Prev Vol	1,465.3	Chemicals	39.7	Total Surface	-416.1
Net Chg	-348.7	Other Adds.		Downhole	
Total Vol	1,116.7	Total Added	67.4	Total Losses	-416.1

Other Fluid Types	Vol bbl
Seawater/Bentonite	581.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 16,172.99	Total Daily Cost	$ 17,504.99
Cumulative Products Cost	$ 79,454.48	Total Cumulative Cost	$ 94,772.48

Baroid Representatives: Emad Elzahaby Adam Martin

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Daily Drilling Fluid Report

Report No 012

Baroid, a Halliburton Company

Date	20/05/2004	Depth	1,539.0 m
Spud Date	10/05/2004	Rig Activity	Logging

Operator	Report For	Well Name
Esso Australia Pty Ltd	Barry Steel, Roger Bain	West Whiptail-1
Contractor	**Report For**	**Rig Name**
Ensco Drilling	Charles Shelton	Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information	
Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	m
ECD @ Shoe	9.95 ppg
ECD @ Bit	9.95 ppg

Drill St ring	OD in	ID in	Length m
ITEM			
Riser	18.750		17.0
Open Hole	8.500		794.0

OD in	Casing Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data			
Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2 Hyd	3	4	Targets 1	2	3	4	Program
Source	Flow Line	Flow Line							
Time	05:00	13:30							
Depth m	1,481.0	1,539.0							
FL Temp Deg C	57	59							
Density ppg @ Deg C	9.90 @ 25	9.95 @ 55			*	*			
FV @ Deg C	46 @ 40	48 @ 55							
PV @ Deg C	18 @ 49	19 @ 49							
YP lbs/100 ft2	31	29							
Gels lbs/100 ft2	8/10/10	7/9/9							
600/300	67.0/49.0	67.0/48.0							
200/100	40.0/28.0	39.0/29.0							
6/3	8.0/7.0	8.0/7.0							
API Filt ml/30 min	4.2	3.5							
HTHP ml/30 min @Deg C	10.6 @ 121	10.2 @ 121							
Cake 32nd in	1.0/2.0	1.0/2.0							
Corr Solids % by vol	5.9	6.3							
NAP/Water % by vol	0.0/91.5	0.0/91.0							
Sand % by vol	0.20	0.25							
MBT ppb Eq.	2.5	2.5							
pH	8.80	9.00							
Alk Mud (Pm)	0.25	0.35							
Alk Filt (Pf/Mf)	0.10/0.30	0.10/0.30							
Chlorides mg/l	33,000	34,000							
Hard Ca mg/l	320	240							
LGS/HGS %	2.5/3.3	3.1/3.2							
LGS/HGS ppb	23.17/48.92	28.24/47.12							
ASG	3.506	3.413							
Glycol Content % by vol	3.0	3.0							
KCl % % by vol	6.9	7.1							
Sulfite residual mg/l	110	140							

Fluid Treatments

Fluid Type: KCL/PHPA/GLYCOL

Treated the active system with BARACIDE, Caustic Potash and BARACOR-129 before POOH for logging. Mixed 60 bbls of slug.

Rig Activity

Drill ahead 8 1/2" hole to TD at 1539 m. Circulated the hole clean and conducted a wiper trip to the shoe. RIH and circulated the hole clean. POOH for logging. R/U wireline, load sources and commence RIH with wireline.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARACOR 129	25 Kg can	10		10		$ 454.00
Baracide	25 Kg can	28		1	27	$ 257.83
potassium hydroxide	20 Kg pail	24		6	18	$ 256.50
bentonite	100 lb bulk	486		1	485	$ 13.29
BARABLOK	50 lb bag	160			160	
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARA-DEFOAM W300	25 l can	3			3	
BARAFILM	55 gal drum	1			1	
BARAZAN D PLUS	25 Kg bag	32			32	
barite	100 lb bulk	1,386			1,386	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	36			36	
DEXTRID LTE	25 Kg bag	80			80	
GEM CP	1500 l bulk	2			2	
Hme Energizer	5 gal can	4			4	
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail	57			57	
PAC-L	25 Kg bag	50			50	
phpa	25 Kg bag	44			44	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	

Solid Control Equipment						
Shaker	Screens				Hrs	
FLC 514	150	150	150	150	15.0	
FLC 514	150	150	150	150	15.0	
FLC 514	150	150	150	150	15.0	
FLC 514	150	150	150	150	15.0	
Hydrocyclones	Cones	Screens			Hrs	
Mud cleaner 1	20	4	180	180 180	12.0	

Time (Hrs)	
Drilling	9.00
Circulating	3.00
Trips	8.50
Rig Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.50
Total	24.00
Rotating	9.00
ROP	14.7
Dil Rate	

Fluid Volume Breakdown KCL/PHPA/GLYCOL

Active	bbl	Additions	bbl	Losses	bbl
Annulus	376.7	NAP Base		Dumped	-78.0
Pipe Cap		Drill Water		Transferred	
Active Pits	433.0	Dewatering		SC Equip	-50.0
Total Hole	376.7	Sea Water		Evaporation	
Total Circ	433.0	Whole Mud		Trips	-12.0
Reserve	83.0	Barite		Other	-85.8
Prev Vol	1,116.7	Chemicals	1.8	Total Surface	-225.8
Net Chg	-224.0	Other Adds.		Downhole	
Total Vol	892.7	Total Added	1.8	Total Losses	-225.8

Other Fluid Types	Vol bbl
Seawater/Bentonite	581.0

Deviation Information	
Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 981.62	Total Daily Cost	$ 2,313.62
Cumulative Products Cost	$ 80,436.10	Total Cumulative Cost	$ 97,086.10

Baroid Representatives: Emad Elzahaby Hayden Butler

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Daily Drilling Fluid Report

Report No 013

Baroid, a Halliburton Company

Date	21/05/2004	Depth	1,539.0 m
Spud Date	10/05/2004	Rig Activity	Wire Line logs

Operator	Report For	Well Name
Esso Australia Pty Ltd	Barry Steel, Roger Bain	West Whiptail-1
Contractor	**Report For**	**Rig Name**
Ensco Drilling	Charles Shelton	Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information

Bit Size		in
Make/Type	/	
Jets		
TFA		sq-in
Jets Velocity	122.9	m/sec
Jet Impact Force	1,702.0	lbf
HHSI	12.18	hhp/in2
Pres Drop @ Bit	1,445.4	psi
Bit Depth		m
ECD @ Shoe	10.74	ppg
ECD @ Bit	10.91	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	8.500		794.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM	70		70
gpm	410		410

Total gpm	819	AV, Riser	18.7	Circ Pressure psi	3,000.0
Total Circ Time	42.6	AV, DP	121.5	Tot Prs Loss psi	2,921.6
BU Time, min	12.9	AV, DC	204.0	Pres Drop DP psi	1,130.1
Total Strokes	5,960	BU Stroke	1,803	Pres Drop An psi	251.4

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.10	Tank No.10							
Time	10:00	20:00							
Depth m	1,539.0	1,539.0							
FL Temp Deg C									
Density ppg @ Deg C	9.95 @ 25	10.20 @ 35			*	*			
FV @ Deg C	50 @ 25	48 @ 35							
PV @ Deg C	19 @ 49	17 @ 49							
YP lbs/100 ft2	29	28							
Gels lbs/100 ft2	7/9/9	7/9/9							
600/300	67.0/48.0	62.0/45.0							
200/100	39.0/29.0	38.0/28.0							
6/3	8.0/7.0	8.0/6.0							
API Filt ml/30 min	4.5	3.8							
HTHP ml/30 min @Deg C	10.2 @ 121	10.8 @ 121							
Cake 32nd in	1.0/2.0	1.0/2.0							
Corr Solids % by vol	6.3	7.4							
NAP/Water % by vol	0.0/91.0	0.0/90.0							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	2.5	2.5							
pH	8.50	9.00							
Alk Mud (Pm)	0.20	0.30							
Alk Filt (Pf/Mf)	0.10/0.20	0.15/0.25							
Chlorides mg/l	34,000	33,000							
Hard Ca mg/l	240	240							
LGS/HGS %	3.1/3.2	3.3/4.1							
LGS/HGS ppb	28.24/47.12	30.46/59.87							
ASG	3.413	3.478							
Glycol Content % by vol	3.0	3.0							
KCl % % by vol	7.0	7.0							
Sulfite residual mg/l	120	80							

Fluid Treatments

Fluid Type: KCL/PHPA/GLYCOL

Treated the active system with 5 ppb BARABLOK. Maintained the mud weight at 10 ppg as per instruction to combat the hole instability caused by the Coal beds. The increased in mud weight at 20:00 is due to slug.

Rig Activity

Continue logging the 8 1/2" hole. Experienced obstruction caused by the Coal bed at 1240 m. Pull out the logging tool rig down Sclumberger. P/UP 8 1/2" bit, BHA and RIH. Circulate hole clean, pump slug and POOH. Tight spot at 1267m - wash and ream. Circulate shakers clean, pump slug and POOH.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARABLOK	50 lb bag	160		80	80	$ 2,664.00
barite	100 lb bulk	1,386		279	1,107	$ 2,474.73
Baracide	25 Kg can	27		1	26	$ 257.83
Hme Energizer	5 gal can	4		2	2	$ 223.98
potassium hydroxide	20 Kg pail	18		2	16	$ 85.50
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARA-DEFOAM W300	25 l can	3			3	
BARAFILM	55 gal drum	1			1	
BARAZAN D PLUS	25 Kg bag	32			32	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
calcium chloride	25 Kg bag	18			18	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	36			36	
DEXTRID LTE	25 Kg bag	80			80	
GEM CP	1500 l bulk	2			2	
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail	57			57	
PAC-L	25 Kg bag	50			50	
phpa	25 Kg bag	44			44	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514	150 150 150 150	2.0
FLC 514	150 150 150 150	2.0
FLC 514	150 150 150 150	2.0
FLC 514	150 150 150 150	2.0

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20 4	180 180 180	0.0

Time (Hrs)

Drilling	
Circulating	2.00
Trips	11.00
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	11.00
Dir Work	
Repair	
Other	
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown KCL/PHPA/GLYCOL

Active	bbl	Additions	bbl	Losses	bbl
Annulus	376.7	NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	428.0	Dewatering		SC Equip	-35.0
Total Hole	376.7	Sea Water		Evaporation	
Total Circ	428.0	Whole Mud		Trips	-33.5
Reserve	50.0	Barite	19.0	Other	
Prev Vol	892.7	Chemicals	11.5	Total Surface	-68.5
Net Chg	-38.0	Other Adds.		Downhole	
Total Vol	854.7	Total Added	30.5	Total Losses	-68.5

Other Fluid Types	Vol bbl
Seawater/Bentonite	581.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 5,706.04	Total Daily Cost	$ 7,038.04
Cumulative Products Cost	$ 86,142.14	Total Cumulative Cost	$ 104,124.14

Baroid Representatives: Emad Elzahaby Hayden Butler

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 014

Date	22/05/2004	Depth	1,539.0 m
Spud Date	10/05/2004	Rig Activity	Tripping

Operator	Report For	Well Name
Esso Australia Pty Ltd	Barry Steel, Roger Bain	West Whiptail-1
Contractor	**Report For**	**Rig Name**
Ensco Drilling	Charles Shelton	Ensco 102

Country	State/Province/Region	County/Geographic Area	Field or Block
Australia	Victoria	Bass Strait	VIC/L1

Bit Information		Drill St ring	OD in	ID in	Length m
Bit Size	in	ITEM			
Make/Type	/				
Jets					
TFA	sq-in				
Jets Velocity	m/sec				
Jet Impact Force	lbf				
HHSI	hhp/in2				
Pres Drop @ Bit	psi				
Bit Depth	1,539.0 m	Riser	18.750		17.0
ECD @ Shoe	ppg	Open Hole	8.500		794.0
ECD @ Bit	ppg				

OD in	Casing Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data			
Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.10	Tank No.10							
Time	07:30	19:00							
Depth m	1,539.0	1,539.0							
FL Temp Deg C									
Density ppg @ Deg C	10.20 @ 20	10.20 @ 20			*	*			
FV @ Deg C	49 @ 20	51 @ 20							
PV @ Deg C	17 @ 49	18 @ 49							
YP lbs/100 ft2	28	27							
Gels lbs/100 ft2	7/9/9	7/9/9							
600/300	62.0/45.0	63.0/45.0							
200/100	38.0/28.0	38.0/28.0							
6/3	8.0/6.0	8.0/6.0							
API Filt ml/30 min	3.8	4.0							
HTHP ml/30 min @Deg C	10.8 @ 121	10.4 @ 121							
Cake 32nd in	1.0/2.0	1.0/2.0							
Corr Solids % by vol	7.4	7.4							
NAP/Water % by vol	0.0/90.0	0.0/90.0							
Sand % by vol	0.00	0.00							
MBT ppb Eq.	2.5	2.5							
pH	9.00	9.00							
Alk Mud (Pm)	0.30	0.25							
Alk Filt (Pf/Mf)	0.15/0.25	0.15/0.25							
Chlorides mg/l	33,000	33,000							
Hard Ca mg/l	240	240							
LGS/HGS %	3.3/4.1	3.3/4.1							
LGS/HGS ppb	30.46/59.87	30.46/59.87							
ASG	3.478	3.478							
Glycol Content % by vol	3.0	3.0							
KCl % % by vol	7.0	7.0							
Sulfite residual mg/l	80	80							

Fluid Treatments

Fluid Type: KCL/PHPA/GLYCOL

Backloaded the mud chemicals not required for the Origin Energy job.

Rig Activity

Continue logging the 8 1/2 " hole. R/D Schlumberger wireline. Commence P/U & M/U cement stinger assy and RIH.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARABLOK	50 lb bag	80				
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
Baracide	25 Kg can	26			2	
BARA-DEFOAM W300	25 l can	3			3	
BARAFILM	55 gal drum	1			1	
BARAZAN D PLUS	25 Kg bag	32				
barite	100 lb bulk	1,107			1,107	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
calcium chloride	25 Kg bag	18	42		60	
Caustic Soda	25 Kg pail	48			48	
citric acid	25 Kg bag	36			36	
DEXTRID LTE	25 Kg bag	80				
GEM CP	1500 l bulk	2				
Hme Energizer	5 gal can	2				
lime	20 Kg bag	75			75	
NO-SULF	17 Kg pail	57				
PAC-L	25 Kg bag	50				
phpa	25 Kg bag	44				
Potassium Chloride Bulk	1000 kg	10			10	
potassium hydroxide	20 Kg pail	16				
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment			
Shaker	Screens	Hrs	
FLC 514			
FLC 514			
FLC 514			
FLC 514			
Hydrocyclones	**Cones**	**Screens**	**Hrs**
Mud cleaner 1	20	4	

Time (Hrs)	
Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	22.00
Dir Work	
Repair	
Other	2.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown KCL/PHPA/GLYCOL

Active	bbl	Additions	bbl	Losses	bbl
Annulus	376.7	NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	388.0	Dewatering		SC Equip	
Total Hole	376.7	Sea Water		Evaporation	
Total Circ	388.0	Whole Mud		Trips	-25.0
Reserve	65.0	Barite		Other	
Prev Vol	854.7	Chemicals		Total Surface	-25.0
Net Chg	-25.0	Other Adds.		Downhole	
Total Vol	829.7	Total Added		Total Losses	-25.0

Other Fluid Types	Vol bbl
Seawater/Bentonite	581.0

Deviation Information	
Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Daily Products Cost	$ 0.00	Total Daily Cost	$ 1,332.00
Cumulative Products Cost	$ 86,142.14	Total Cumulative Cost	$ 105,456.14

Baroid Representatives: Emad Elzahaby Hayden Butler

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Daily Drilling Fluid Report

Report No 015

Baroid, a Halliburton Company

Date 23/05/2004	Depth 1,539.0 m
Spud Date 10/05/2004	Rig Activity Wait on cement

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, Roger Bain	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Charles Shelton	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait	Field or Block: VIC/L1

Bit Information

Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	1,539.0 m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	8.500		794.0

Casing OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.10								
Time	22:30								
Depth m	1,539.0								
FL Temp Deg C									
Density ppg @ Deg C	10.20 @ 20				*				
FV @ Deg C	47 @ 20								
PV @ Deg C	15 @ 49								
YP lbs/100 ft2	21								
Gels lbs/100 ft2	5/7/8								
600/300	51.0/36.0								
200/100	28.0/19.0								
6/3	6.0/4.0								
API Filt ml/30 min	5.6								
HTHP ml/30 min @Deg C	13.8 @ 121								
Cake 32nd in	1.0/2.0								
Corr Solids % by vol	7.8								
NAP/Water % by vol	0.0/90.0								
Sand % by vol	0.00								
MBT ppb Eq.	2.5								
pH	11.30								
Alk Mud (Pm)	0.80								
Alk Filt (Pf/Mf)	0.50/0.90								
Chlorides mg/l	28,000								
Hard Ca mg/l	200								
LGS/HGS %	3.8/4.1								
LGS/HGS ppb	34.18/59.63								
ASG	3.431								
Glycol Content % by vol	3.0								
KCl % % by vol	6.0								
Sulfite residual mg/l	80								

Fluid Treatments

Fluid Type: KCL/PHPA/GLYCOL

Treated the active system with Caustic and BARACIDE for inhibition of mud left inside casing. Dumped cement contaminated mud when reversing out after setting plugs. Calcium chloride used for cementing.

Rig Activity

P & A well, setting cement plugs as per program.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
Baracide	25 Kg can	2		2		$ 515.66
Caustic Soda	25 Kg pail	48		4	44	$ 171.00
BARA-DEFOAM W300	25 l can	3		1	2	$ 57.93
calcium chloride	25 Kg bag	60		6	54	$ 57.90
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARAFILM	55 gal drum	1			1	
barite	100 lb bulk	1,107			1,107	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
citric acid	25 Kg bag	36			36	
lime	20 Kg bag	75			75	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	3.25
Trips	3.75
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	1.25
Other	15.75
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown KCL/PHPA/GLYCOL

Active	bbl	Additions	bbl	Losses	bbl
Annulus	376.7	NAP Base		Dumped	-53.8
Pipe Cap		Drill Water		Transferred	
Active Pits	335.0	Dewatering		SC Equip	
Total Hole	376.7	Sea Water		Evaporation	
Total Circ	335.0	Whole Mud		Trips	
Reserve	65.0	Barite		Other	
Prev Vol	829.7	Chemicals	0.8	Total Surface	-53.8
Net Chg	-53.0	Other Adds.		Downhole	
Total Vol	776.7	Total Added	0.8	Total Losses	-53.8

Daily Products Cost	$ 802.49	Total Daily Cost	$ 2,134.49
Cumulative Products Cost	$ 86,944.63	Total Cumulative Cost	$ 107,590.63

Other Fluid Types	Vol bbl
Seawater/Bentonite	581.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Emad Elzahaby Hayden Butler

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 016

Date 24/05/2004	Depth 1,539.0 m
Spud Date 10/05/2004	Rig Activity P & A

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, Roger Bain	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Henry Stachg	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait	Field or Block: VIC/L1

Bit Information		Drill St ring	OD in	ID in	Length m
Bit Size	in	ITEM			
Make/Type	/				
Jets					
TFA	sq-in				
Jets Velocity	m/sec				
Jet Impact Force	lbf				
HHSI	hhp/in2				
Pres Drop @ Bit	psi				
Bit Depth	1,539.0 m	Riser	18.750		17.0
ECD @ Shoe	ppg	Open Hole	8.500		794.0
ECD @ Bit	ppg				

OD in	Casing Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data			
Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.6								
Time	09:00								
Depth m	1,539.0								
FL Temp Deg C									
Density ppg @ Deg C	8.45 @				*				
FV @ Deg C	0 @								
PV @ Deg C	0 @								
YP lbs/100 ft2	0								
Gels lbs/100 ft2	0/0/0								
600/300	0.0/0.0								
200/100	0.0/0.0								
6/3	0.0/0.0								
API Filt ml/30 min	0.0								
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0								
Corr Solids % by vol	0.0								
NAP/Water % by vol	0.0/0.1								
Sand % by vol	0.00								
MBT ppb Eq.	0.0								
pH	0.00								
Alk Mud (Pm)	0.00								
Alk Filt (Pf/Mf)	0.00/0.00								
Chlorides mg/l	0								
Hard Ca mg/l	0								
LGS/HGS %	0.0/0.0								
LGS/HGS ppb	0.00/0.00								
ASG	0.000								

Fluid Treatments

Fluid Type: Sea Water

Dumped and cleaned all mud pits.

Rig Activity

P & A well, setting cement plugs as per program.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARA-DEFOAM W300	25 l can	2			2	
BARAFILM	55 gal drum	1			1	
barite	100 lb bulk	1,107			1,107	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
calcium chloride	25 Kg bag	54			54	
Caustic Soda	25 Kg pail	44			44	
citric acid	25 Kg bag	36			36	
lime	20 Kg bag	75			75	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown Sea Water

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	776.7	Chemicals		Total Surface	
Net Chg		Other Adds.		Downhole	
Total Vol		Total Added		Total Losses	

Daily Products Cost	$ 0.00	Total Daily Cost	$ 1,332.00
Cumulative Products Cost	$ 86,944.63	Total Cumulative Cost	$ 108,922.63

Other Fluid Types | **Vol bbl**

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Hayden Butler, Dan Cotter

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Warehouse c/o of Esso Australia Ltd via Toora Victoria Tel 61-3-56-881-445

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Daily Drilling Fluid Report

Baroid, a Halliburton Company

Report No 017

Date 25/05/2004	Depth 1,539.0 m
Spud Date 10/05/2004	Rig Activity P & A Well

Operator: Esso Australia Pty Ltd	Report For: Barry Steel, Roger Bain	Well Name: West Whiptail-1
Contractor: Ensco Drilling	Report For: Henry Stachg	Rig Name: Ensco 102
Country: Australia	State/Province/Region: Victoria	County/Geographic Area: Bass Strait	Field or Block: VIC/L1

Bit Information

Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	1,539.0 m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	8.500		794.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.6								
Time	20:00								
Depth m	1,539.0								
FL Temp Deg C									
Density ppg @ Deg C	8.50 @				*				
FV @ Deg C	0 @								
PV @ Deg C	0 @								
YP lbs/100 ft2	0								
Gels lbs/100 ft2	0/0/0								
600/300	0.0/0.0								
200/100	0.0/0.0								
6/3	0.0/0.0								
API Filt ml/30 min	0.0								
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0								
Corr Solids % by vol	0.0								
NAP/Water % by vol	0.0/0.1								
Sand % by vol	0.00								
MBT ppb Eq.	0.0								
pH	0.00								
Alk Mud (Pm)	0.00								
Alk Filt (Pf/Mf)	0.00/0.00								
Chlorides mg/l	0								
Hard Ca mg/l	0								
LGS/HGS %	0.0/0.0								
LGS/HGS ppb	0.00/0.00								
ASG	0.000								

Fluid Treatments

Fluid Type: Sea Water

Rig Activity

Continue P & A well.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARA-DEFOAM W300	25 l can	2			2	
BARAFILM	55 gal drum	1			1	
barite	100 lb bulk	1,107			1,107	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
calcium chloride	25 Kg bag	54			54	
Caustic Soda	25 Kg pail	44			44	
citric acid	25 Kg bag	36			36	
lime	20 Kg bag	75			75	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Chg		Other Adds.		Downhole	
Total Vol		Total Added		Total Losses	

Daily Products Cost	$ 0.00	Total Daily Cost	$ 1,332.00
Cumulative Products Cost	$ 85,460.35	Total Cumulative Cost	$ 108,770.35

Other Fluid Types | Vol bbl

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Hayden Butler, Dan Cotter

Office 90 Talinga Rd Melbourne Tel 61-03-9581-7555

Warehouse c/o of Esso Australia Ltd via Toora Victoria Tel 61-3-56-881-445

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Daily Drilling Fluid Report

Report No 018

Baroid, a Halliburton Company

Date 26/05/2004		Depth 1,539.0 m	
Spud Date 10/05/2004		Rig Activity P & A Well	
Operator Esso Australia Pty Ltd	Report For Barry Steel, Roger Bain	Well Name West Whiptail-1	
Contractor Ensco Drilling	Report For Henry Stachg	Rig Name Ensco 102	
Country Australia	State/Province/Region Victoria	County/Geographic Area Bass Strait	Field or Block VIC/L1

Bit Information

Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	1,539.0 m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	8.500		794.0

Casing

OD in		MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets	Program
Source	Tank No.6					
Time	20:00					
Depth m	1,539.0					
FL Temp Deg C						
Density ppg @ Deg C	8.50 @				*	
FV @ Deg C	0 @					
PV @ Deg C	0 @					
YP lbs/100 ft2	0					
Gels lbs/100 ft2	0/0/0					
600/300	0.0/0.0					
200/100	0.0/0.0					
6/3	0.0/0.0					
API Filt ml/30 min	0.0					
HTHP ml/30 min @Deg C						
Cake 32nd in	0.0/0.0					
Corr Solids % by vol	0.0					
NAP/Water % by vol	0.0/0.1					
Sand % by vol	0.00					
MBT ppb Eq.	0.0					
pH	0.00					
Alk Mud (Pm)	0.00					
Alk Filt (Pf/Mf)	0.00/0.00					
Chlorides mg/l	0					
Hard Ca mg/l	0					
LGS/HGS %	0.0/0.0					
LGS/HGS ppb	0.00/0.00					
ASG	0.000					

Fluid Treatments

Fluid Type: Sea Water

Rig Activity

Continue with P & A Program.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARA-DEFOAM W300	25 l can	2			2	
BARAFILM	55 gal drum	1			1	
barite	100 lb bulk	1,107			1,107	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
calcium chloride	25 Kg bag	54			54	
Caustic Soda	25 Kg pail	44			44	
citric acid	25 Kg bag	36			36	
lime	20 Kg bag	75			75	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Chg		Other Adds.		Downhole	
Total Vol		Total Added		Total Losses	

Daily Products Cost	$ 0.00	Total Daily Cost	$ 1,332.00
Cumulative Products Cost	$ 85,460.35	Total Cumulative Cost	$ 110,102.35

Other Fluid Types | Vol bbl

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Hayden Butler Dan Cotter

Office 90 Talinga Rd Melbourne Tel 61-03-9581-7555

Warehouse c/o of Esso Australia Ltd via Toora Victoria Tel 61-3-56-881-445

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Daily Drilling Fluid Report

Report No 019

Baroid, a Halliburton Company

Date 27/05/2004		Depth 1,539.0 m	
Spud Date 10/05/2004		Rig Activity P & A Well	
Operator Esso Australia Pty Ltd	Report For Barry Steel, Roger Bain	Well Name West Whiptail-1	
Contractor Ensco Drilling	Report For Henry Stachg	Rig Name Ensco 102	
Country Australia	State/Province/Region Victoria	County/Geographic Area Bass Strait	Field or Block VIC/L1

Bit Information

Bit Size	in
Make/Type	/
Jets	
TFA	sq-in
Jets Velocity	m/sec
Jet Impact Force	lbf
HHSI	hhp/in2
Pres Drop @ Bit	psi
Bit Depth	1,539.0 m
ECD @ Shoe	ppg
ECD @ Bit	ppg

Drill St ring

ITEM	OD in	ID in	Length m
Riser	18.750		17.0
Open Hole	8.500		794.0

Casing

OD in	Set	MD m
30.000	@	113.0
20.000		116.0
13.375		120.0
9.625	@	745.0

Form Integrity 14.20 ppg

Circulation/Hydraulics Data

Model	Nat 14-P-220	Nat 14-P-220	Nat 14-P-220
Bore in	6.500	6.500	6.500
Stroke in	14.000	14.000	14.000
Eff (%)	97	97	97
bbl/strk	.139	.139	.139
SPM			
gpm			

Total gpm		AV, Riser	Circ Pressure psi
Total Circ Time		AV, DP	Tot Prs Loss psi
BU Time, min		AV, DC	Pres Drop DP psi
Total Strokes		BU Stroke	Pres Drop An psi

Properties	1	2	3	4	Targets 1	2	3	4	Program
Source	Tank No.6								
Time	23:00								
Depth m	1,539.0								
FL Temp Deg C									
Density ppg @ Deg C	8.50 @				*				
FV @ Deg C	0 @								
PV @ Deg C	0 @								
YP lbs/100 ft2	0								
Gels lbs/100 ft2	0/0/0								
600/300	0.0/0.0								
200/100	0.0/0.0								
6/3	0.0/0.0								
API Filt ml/30 min	0.0								
HTHP ml/30 min @Deg C									
Cake 32nd in	0.0/0.0								
Corr Solids % by vol	0.0								
NAP/Water % by vol	0.0/0.1								
Sand % by vol	0.00								
MBT ppb Eq.	0.0								
pH	0.00								
Alk Mud (Pm)	0.00								
Alk Filt (Pf/Mf)	0.00/0.00								
Chlorides mg/l	0								
Hard Ca mg/l	0								
LGS/HGS %	0.0/0.0								
LGS/HGS ppb	0.00/0.00								
ASG	0.000								

Fluid Treatments

Fluid Type: Sea Water

Rig Activity

P & A Well.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	Day(s)			2		$ 1,332.00
BARACARB 100	1200 Kg bulk	4			4	
BARACARB 25	1200 Kg bag	4			4	
BARA-DEFOAM W300	25 l can	2			2	
BARAFILM	55 gal drum	1			1	
barite	100 lb bulk	1,107			1,107	
BAROFIBRE	25 lb bag	80			80	
BAROLIFT	15 lb box	6			6	
bentonite	100 lb bulk	485			485	
calcium chloride	25 Kg bag	54			54	
Caustic Soda	25 Kg pail	44			44	
citric acid	25 Kg bag	36			36	
lime	20 Kg bag	75			75	
Potassium Chloride Bulk	1000 kg	10			10	
soda ash	25 Kg bag	27			27	
sodium bicarbonate	25 Kg bag	35			35	

Solid Control Equipment

Shaker	Screens	Hrs
FLC 514		
FLC 514		
FLC 514		
FLC 514		

Hydrocyclones	Cones	Screens	Hrs
Mud cleaner 1	20	4	

Time (Hrs)

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.00
Total	24.00
Rotating	
ROP	0.0
Dil Rate	

Fluid Volume Breakdown

Active	bbl	Additions	bbl	Losses	bbl
Annulus		NAP Base		Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SC Equip	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Chg		Other Adds.		Downhole	
Total Vol		Total Added		Total Losses	

Daily Products Cost	$ 0.00	Total Daily Cost	$ 1,332.00
Cumulative Products Cost	$ 85,460.35	Total Cumulative Cost	$ 111,434.35

Other Fluid Types Vol bbl

Deviation Information

Survey MD	m
Survey TVD	m
Angle	
Direction	
Horiz Displ.	m

Baroid Representatives: Hayden Butler Dan Cotter

Office 90 Talinga Rd Melbourne Tel 61-03-9581-7555

Warehouse c/o of Esso Australia Ltd via Toora Victoria Tel 61-3-56-881-445

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Pressure Integrity Tests

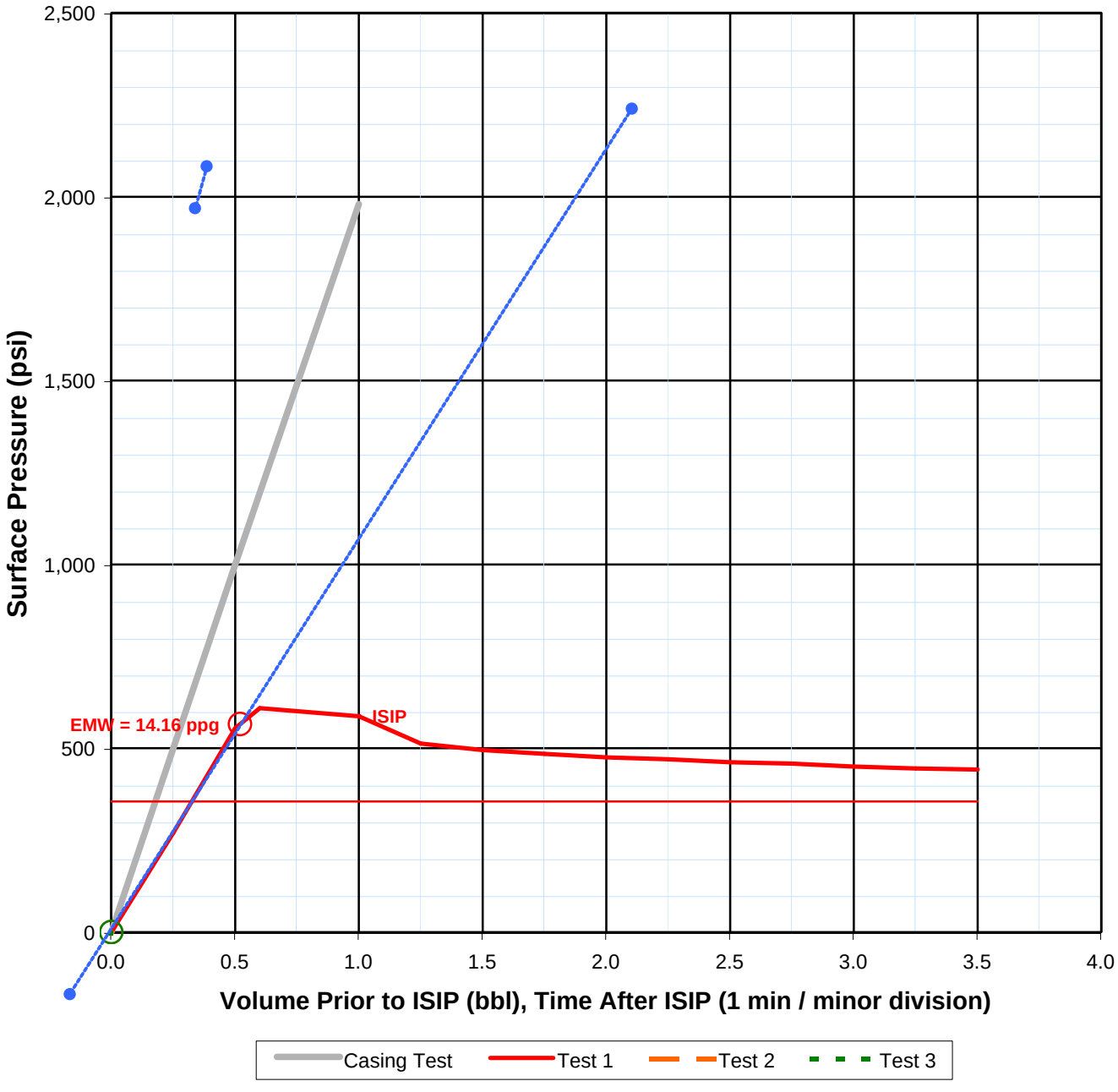
Integrity Test Plot

Well	West Whiptail #1
Csg Size (in)	9.625
Rig	Ensco 102
RKB (AMSL, m)	39.0
Water Depth (m)	39.0
Field	West Whiptail
Country	Australia

Mud pumped = 1 bbl.
Mud bled back= 1/2 bbl

Final Interpretation

Test	Depth (m)	Integ (ppg)	Type	MS (ppg)
Test 1	745.0	14.2	PIT	N/A
Test 2				
Test 3				



Integrity Test Data

Well	West Whiptail #1
Csg Size (in)	9.625
Rig	Ensco 102
RKB (AMSL, m)	39.0
Water Depth (m)	39.0
Field	West Whiptail
Country	Australia

Final Interpretation

Test	Depth (m)	Integ (ppg)	Type	MS (ppg)
Test 1	745.0	14.2	PIT	N/A
Test 2				
Test 3				

Data input = BLUE Calculated value = RED

Casing Test	
Date	18-May-04
Last Csg (in)	9.625
TOC in Csg	720.0
Mud Density	8.6
Mud Type	WBM
Pump Rate	0.50

Integrity Test 1	
Date	18-May-04
Last Casing Set (in)	9.625
Test Depth (m TVD)	745.0
Well Depth (m MD)	753.0
Mud Density (ppg)	9.7
Mud Type	WBM
Pump Rate (bbl/min)	0.25
Req'd EMW (ppg)	12.5
Req'd Test Press (psi)	356

Integrity Test 2	
Date	
Last Casing Set (in)	
Test Depth (m TVD)	
Well Depth (m MD)	
Mud Density (ppg)	
Mud Type	
Pump Rate (bbl/min)	
Req'd EMW (ppg)	
Req'd Test Press (psi)	0

Pumping		Pumping		Shut in		Pumping		Shut in	
V (bbl)	**P (psi)**	**V (bbl)**	**P (psi)**	**t (min)**	**P (psi)**	**V (bbl)**	**P (psi)**	**t (min)**	**P (psi)**
0.00	0	0.00	0	0.00	587				
0.50	1,000	0.25	270	1.00	513				
1.00	1,980	0.50	555	2.00	495				
1.50		0.60	609	3.00	485				
2.00		1.00	587	4.00	475				
2.50		1.25		5.00	470				
		1.50		6.00	462				
				7.00	458				
				8.00	450				
				9.00	445				
				10.00	442				

Bits Summary Report

West Whiptail-1 Bit Report

Row ID	Well ID	Tool Size	Tool Code	Tool No	Run No	Make	Type	Serial
1	WW1	17.5	BT	1	1	SEC	EBXT1G	10616445
2	WW1	12.25	BT	2	1	STC	S91HPX	JT1493
3	WW1	8.5	BT	3	1	STC	S75HPX	JS7531

Row ID	IADC Code	Mud Type	Date/Time Run	Date/Time Pul	Depth In (m MDRT)	Depth Out (m MDRT)	Min WOB (kips)	Max WOB (kips)
1	115	Water-Based	10-May-2004 22:45	11-May-2004 15:30	78	123	0	4
2	S123	Water-Based	14-May-2004 14:00	16-May-2004 15:00	129	750	0	10
3	S222	Water-Based	18-May-2004 2:00	20-May-2004 20:30	750	1539	5	15

Row ID	Min RPM	Max RPM	Min Flow Rate (gpm)	Max Flow Rate (gpm)	Min Pump Pressure (psig)	Max Pump Pressure (psig)	Min Torque (ft-lb)	Max Torque (ft-lb)
1	24	80	400	985	300	880	800	4000
2	70	145	900	1070	1950	3500	1000	5000
3	80	150	650	850	2400	3800		

Row ID	Min Mud Density (ppg)	Max Mud Density (ppg)	Nozzles	TFA (sq. in.)	Length Cut (m)	Hours	ROP (m/hr)	Dull Grade
1	8.55	8.55	4 x 20s	1.2272	44	12.75	3.482	1- 1-NO-A-1- 2.-NO-TD
2	8.7	8.7	8 x 11s	0.8353	564	25.75	21.903	1- 1-CT-G-X- 0.-NO-TD
3	9.5	9.8	7 x 11s	0.8353	789	32.40	24.352	7- 7-LT-N-X- 0.-NR-TD

Row ID	Approx Starting Survey MDRT (m)	Approx Starting Survey TVDRT (m)	Approx Starting Survey Incl (deg)	Approx Starting Survey Azim (deg)	Approx Ending Survey MDRT (m)	Approx Ending Survey TVDRT (m)	Approx Ending Survey Incl (deg)	Approx Ending Survey Azim (deg)
1								
2	132	131.999	0.5	249	729	729	3.25	271.35
3	766.8	766.37	3.5	271	1522	1518	8	290.23

Smith 8-1/2" S75HPX
21 3:37

BHA Summary Report

WEST WHIPTAIL-1
WW1

DRILL STRING REPORT

Mixed Oilfield Units

Date Run: 10-May-04 Date Pulled: 11-May-04 Length of BHA : 65.820
Time Run: 22:45 Time Pulled: 15:30 BHA Weight in Air : .0
Depth In: 78.00 Depth Out : 123.00 Above Jars: .0
Below Jars: .0
In Mud : 55.0

36" Hole Opener Assembly

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length	Serial Number
HW	5.000	3.000	????	4.500	IF	.0					58.020	
DC	8.250	2.938	????	7.625	REG	.0					28.560	
XO	8.000	3.125	????	7.625	REG	.0					.810	
DC	9.400	3.125	????	7.625	REG	.0					28.180	
MS	9.500	3.125	????	7.625	REG	.0	.000	.000	.000		3.330	
BS	9.437	3.000	????	7.625	REG	.0			.000	.00	.990	With solid float
HO	36.000	2.750	????	7.625	REG	.0					2.690	46335
BT	17.500	3.500	????	7.625	REG	.0					.420	10616445

Bit Code : BT Bit Manufacturer: SEC Billing : D
Bit Number: 1 Bit Model : EBXT1G Cost : 0
Run Number: 1 Serial Number : 10616445 Daily Rig Rate: 0
Bit Size : 17.500 IADC Class : 115

Nozzles : 20.0 20.0 20.0 20.0
Flow Area : 1.2272

Reason bit pulled or run terminated : TD
Wear to inner 2/3 cutters: 1
Wear to inner 1/3 cutters: 1
Major dull characteristic: NO

Location of reported wear: A
Wear to bearings or seals: 1
Wear to gauge : 1.
Other dull characteristic: NO

WEST WHIPTAIL-1
WW1

DRILL STRING REPORT

Mixed Oilfield Units

Date Run: 14-May-04 Date Pulled: 16-May-04 Length of BHA : 245.720
Time Run: 14:00 Time Pulled: 15:00 BHA Weight in Air : 75.0
Depth In: 129.00 Depth Out : 750.00 Above Jars: 30.0
Below Jars: 35.0
In Mud : 65.0

12¬" PDC, 12¬" Stab, 8" AnderDrift, 12¬" Stab, 3 x 8¬" DC, 12¬" Stab, 2 x 8¬" DC, XO, 1 x HW,Jar, 18 x HWDP

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length	Serial Number
DP	5.000	4.276	S135	4.500	IF	.0					504.280	
HW	5.000	3.000	????	4.500	IF	.0					168.880	
JR	6.500	2.875	????	4.500	IF	.0					9.830	
HW	5.000	3.000	????	4.500	IF	.0					9.240	
XO	8.000	2.938	????	4.500	IF	.0					.810	
DC	8.250	8.250	????	6.625	REG	.0					19.060	
ST	8.000	2.938	????	6.625	REG	.0	12.250	.000	.000		2.240	
DC	8.250	2.937	????	6.625	REG	.0					28.350	
ST	8.000	2.750	????	6.625	REG	.0	12.250	.000	.000		2.140	
SV	8.000	3.000	????	6.625	REG	.0					3.130	
ST	8.000	2.750	????	6.625	REG	.0	12.250	.000	.000		1.760	
BT	12.250	3.000	????	6.625	REG	.0					.280	JT 1493

Bit Code : BT Bit Manufacturer: STC Billing : D
Bit Number: 2 Bit Model : S91HPX Cost : 61911
Run Number: 1 Serial Number : JT1493 Daily Rig Rate: 0
Bit Size : 12.250 IADC Class : S123

Nozzles : 11.0 11.0 11.0 11.0 11.0 11.0 11.0 11.0
Flow Area : .8353

Reason bit pulled or run terminated : TD
Wear to inner 2/3 cutters: 1
Wear to inner 1/3 cutters: 1
Major dull characteristic: CT

Location of reported wear: G
Wear to bearings or seals: X
Wear to gauge : 0.
Other dull characteristic: NO

WEST WHIPTAIL-1
WW1

DRILL STRING REPORT

Mixed Oilfield Units

Date Run: 18-May-04 Date Pulled: 20-May-04 Length of BHA : 196.110
Time Run: 02:00 Time Pulled: 20:30 BHA Weight in Air : 38.0
Depth In: 750.00 Depth Out : 1539.00 Above Jars: 18.0
Below Jars: 20.0
In Mud : 32.7

8«" PDC, 8«" NB STAB, ANDERDRIFT Svy, 8«" STAB, 2 x 6¾" DC, 8«" STAB, 2 x 6¾" DC, 1 x 5" HWDP, JAR, 14 x 5" HWDP

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length	Serial Number
DP	5.000	4.276	S135	4.500	IF	19.5					504.280	
HW	5.000	3.000	????	4.500	IF	50.0					131.180	
JR	6.500	2.875	????	4.500	IF	50.0					9.830	
HW	5.000	3.000	????	4.500	IF	50.0					9.240	
DC	6.750	2.313	????	4.500	IF	65.0					18.660	
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.340	
DC	6.750	2.312	????	4.500	IF	65.0					18.740	
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.790	
SV	7.000	3.000	????	4.500	IF	65.0					3.160	ANDERDRIFT
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.970	
BT	8.500	2.000	????	4.500	REG	.0					.200	JS7531

Bit Code : BT
Bit Number: 3
Run Number: 1
Bit Size : 8.500

Bit Manufacturer: STC
Bit Model : S75HPX
Serial Number : JS7531
IADC Class : S222

Billing : D
Cost : 61911
Daily Rig Rate: 150000

Nozzles : 11.0 11.0 11.0 11.0 11.0 11.0 11.0
Flow Area : .8353

Reason bit pulled or run terminated : TD
Wear to inner 2/3 cutters: 7
Wear to inner 1/3 cutters: 7
Major dull characteristic: LT

Location of reported wear: N
Wear to bearings or seals: X
Wear to gauge : 0.
Other dull characteristic: NR

WEST WHIPTAIL-1

WW1

WORK STRING REPORT

Mixed Oilfield Units

Date Run:	25-May-04	Date Pulled:	25-May-04
Time Run:	16:10	Time Pulled:	20:15
Depth In:	87.000	Depth Out :	87.000

8-1/2" Bull Nose Stab, 8-1/4" Baker Multi string cutter, (3-1/2" long knives),
8-1/2" non-rot stab, XO, 4 x 6-3/4" DC, 3 x 5" HWDP

WEST WHIPTAIL-1

WW1

WORK STRING REPORT

Mixed Oilfield Units

Date Run:	3-Jun-04	Date Pulled:	3-Jun-04
Time Run:	04:30	Time Pulled:	08:30
Depth In:	80.500	Depth Out :	80.500

6-5/8" Reg Pin Bull Nose, 25" OD Non-Rot Stab, 11-3/4" OD Baker multi-string cutter, 25" OD Non-Rot Stab, 3 x 8-1/4" DC, XO, 3 x 5"HWDP

Casing Data

WEST WHIPTAIL-1
CASING SECTION WORKSHEET

Well ID	Start Timestamp	End Timestamp	String Top MD	String Top TVD	String Shoe MD	String Shoe TVD	Section Top MD	Section Bottom MD	Length	Joint Count	OD	ID	Nominal Weight	Grade	Conn. Type
WW1	11/05/2004 18:00	13/05/2004 2:45	17.074	17.074	120.362	120.362	17.074	113.072	95.998	9	30	28	310	X52	ST-2
WW1	11/05/2004 18:00	13/05/2004 2:45	17.074	17.074	120.362	120.362	113.072	116.612	3.54	1	20	18	203	X52	WELD
WW1	11/05/2004 18:00	13/05/2004 2:45	17.074	17.074	120.362	120.362	116.612	120.362	3.75	1	13.375	12.415	68	K55	BUTT
WW1	16/05/2004 19:45	17/05/2004 6:50	15.61	15.61	745	745	15.61	745	729.39	60	9.625	8.681	47	L80	LTC

WEST WHIPTAIL-1
WW1

CASING REPORT

Mixed Oilfield Units

Start Date/Time	: 11-May-04 18:00	Water Depth	: 39.00 below MSL
End Date/Time	: 13-May-04 02:45	K.B. Elevation:	39.00 above MSL
Hours to Run Casing:	32:45	K.B. to Seabed:	78.00
		Bradenhead	: 63.45 above ML

Setting Depths

	Measured Depth	True Vertical Depth
String Top Depth :	17.07	17.07
String Shoe Depth:	120.36	120.36

Casing String Limitations

Burst of Top Joint: 2204. Drift of Smallest Section: 12.259

Casing (Top Down)

OD	ID	Wgt/Lng	Grade	Conn	No of Jts	Length
30.000	28.000	310.000	X52	ST-2	9	95.998
20.000	18.000	203.000	X52	WELD	1	3.540
13.375	12.415	68.000	K55	BUTT	1	3.750
				Total	11	103.288

Casing Equipment

Placement	Length	Description

WEST WHIPTAIL-1
WW1

CASING REPORT

Mixed Oilfield Units

Start Date/Time	: 16-May-04 19:45	Water Depth	: 39.00 below MSL
End Date/Time	: 17-May-04 06:50	K.B. Elevation:	39.00 above MSL
Hours to Run Casing:	11:05	K.B. to Seabed:	78.00
		Bradenhead	: 63.45 above ML

Setting Depths

	Measured Depth	True Vertical Depth
String Top Depth :	15.61	15.61
String Shoe Depth:	745.00	745.00

Casing String Limitations

Burst of Top Joint: 5496. Drift of Smallest Section: 8.525

Casing (Top Down)

OD	ID	Wgt/Lng	Grade	Conn	No of Jts	Length
9.625	8.681	47.000	L80	LTC	60	729.390
				Total	60	729.390

Casing Equipment

	Placement	Length	Description
Shoe			Hallib Super Seal II Float Shoe # 100077323
Float Collar	732.130		Hallib Super Seal II FC #100004812
Stage Collars	87.960	.700	Type HES Cementer
Centralizers	Number: 19		W'fd 9-5/8"x12-1/4"ST-A3 #01161234,1 W'fd P010
Placement Interval:			2 per 1st 3 Jts, 1 every 4 Jts, 1 @ 95m
Other			Shut off baffle Jt

Remarks

W'fd 9-5/8" centralizer @ 95m modified to 17-1/2" x 9-5/8" to fit thru stack. Had to lift the 17-3/4" diverter packing insert to fit the 18-1/2" Hanger Running tool thru, could not run the 22" diverter packing insert because that will not seal off 9-5/8" casing.

30" CASING RUNNING LIST
West Whiptail #1

30"		310#		X-52			
PPF	ID	COLLAR OD	TORQUE	BURST	COLLAPSE	TENSION	REMARKS
310.0	26.813	28		2204	1630	1387	
RUN NO	JOINT NO	JOINT LENGTH	TOTAL LENGTH	DEPTH IN WELL	REMARKS		
				123.00	TD		
				120.34	SHOE DEPTH		
1	S 1	10.510	10.510	109.83	NEW	Remove padeyes	
2	6	12.045	22.555	97.79	USED	Remove padeyes	
3	7	11.715	34.270	86.07	USED	Remove padeyes	
4	8	11.120	45.390	74.95	USED	Remove padeyes - Mudline 77.6m	
5	12	11.125	56.515	63.83	NEW		
6	13	11.692	68.207	52.13	NEW		
7	14	11.690	79.897	40.44	NEW		
8	15	11.710	91.607	28.73	NEW		
9	16	11.681	103.288	17.05	NEW		
10		1.087	104.375	15.97		Wellhead below landing base	
11		1.437	105.812	14.53		Wellhead above landing base	
12		0.268	106.080	14.26		Fastlok	
13		5.490	111.570	8.77		BOP	
14		2.670	114.240	6.10		Mandrel	
15		2.950	117.190	3.15		Overshot	
16		3.150	120.340	0.00		Diverter Support housing	
				0.00		Rotary table	

9-5/8" CASING RUNNING LIST
West Whiptail #1

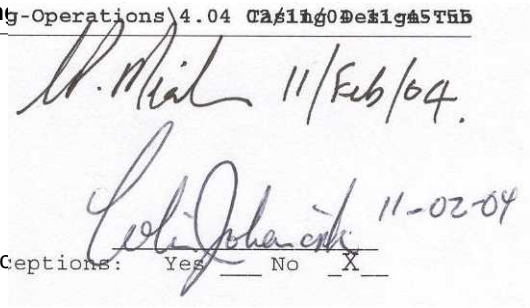
9.625			47#		L-80	LTC Phosphatised
PPF	ID	COLLAR OD	TORQUE	BURST	COLLAPSE	TENSION
47.0	8.681	10.625	9600-14400	4600	4750	868k - 80%

RUN NO	JOINT NO	JOINT LENGTH	TOTAL LENGTH	Top DEPTH in WELL	Btm Depth In Well	REMARKS
				750.06	TD	RT to dummy landing shoulder 15.61 m
				745.06	SHOE DEPTH	
1	A	12.922	12.922	732.13	745.06	Float Shoe and float collar on same joint (2 x cents)
2	T7	12.175	25.097	719.96	732.13	Bakerlocked joint(2 x cents)
3	B	12.554	37.651	707.40	719.96	Shut off baffle(2 x cents)
4	T1	12.167	49.818	695.24	707.40	Thread locked
5	T2	11.890	61.708	683.35	695.24	Thread locked
6	64	12.180	73.888	671.17	683.35	
7	63	12.180	86.068	658.99	671.17	cent
8	62	12.170	98.238	646.82	658.99	
9	61	12.180	110.418	634.64	646.82	
10	60	12.180	122.598	622.46	634.64	
11	59	12.170	134.768	610.29	622.46	cent
12	58	12.020	146.788	598.27	610.29	
13	57	11.910	158.698	586.36	598.27	
14	56	12.040	170.738	574.32	586.36	
15	55	12.040	182.778	562.28	574.32	cent
16	54	12.180	194.958	550.10	562.28	
17	53	12.180	207.138	537.92	550.10	
18	52	12.180	219.318	525.74	537.92	
19	51	12.110	231.428	513.63	525.74	cent
20	50	12.180	243.608	501.45	513.63	
21	49	12.140	255.748	489.31	501.45	
22	48	12.180	267.928	477.13	489.31	
23	47	12.180	280.108	464.95	477.13	cent
24	46	12.180	292.288	452.77	464.95	
25	45	12.180	304.468	440.59	452.77	
26	44	12.180	316.648	428.41	440.59	
27	43	12.180	328.828	416.23	428.41	cent
28	42	12.180	341.008	404.05	416.23	
29	41	12.170	353.178	391.88	404.05	
30	40	12.180	365.358	379.70	391.88	
31	39	12.180	377.538	367.52	379.70	cent
32	38	12.000	389.538	355.52	367.52	
33	37	12.180	401.718	343.34	355.52	
34	36	12.180	413.898	331.16	343.34	
35	35	12.040	425.938	319.12	331.16	cent
36	34	11.570	437.508	307.55	319.12	
37	33	12.180	449.688	295.37	307.55	
38	32	12.010	461.698	283.36	295.37	
39	31	12.180	473.878	271.18	283.36	cent
40	30	12.170	486.048	259.01	271.18	
41	29	12.180	498.228	246.83	259.01	
42	28	12.180	510.408	234.65	246.83	
43	27	12.180	522.588	222.47	234.65	cent
44	26	12.180	534.768	210.29	222.47	
45	25	12.180	546.948	198.11	210.29	
46	24	12.180	559.128	185.93	198.11	
47	23	12.020	571.148	173.91	185.93	cent
48	22	12.180	583.328	161.73	173.91	
49	21	12.180	595.508	149.55	161.73	
50	20	12.180	607.688	137.37	149.55	
51	19	12.170	619.858	125.20	137.37	cent
52	18	12.180	632.038	113.02	125.20	
53	17	12.180	644.218	100.84	113.02	
54	16	12.180	656.398	88.66	100.84	9 5/8" x 17½" centralizer
	SCC	0.700	657.098	87.96	88.66	HES stage cement collar
55	T3	12.165	669.263	75.79	87.96	Thread locked
56	T4	12.170	681.433	63.62	75.79	Thread locked
57	T5	10.167	691.600	53.46	63.62	Thread locked
58	T6	12.050	703.650	41.41	53.46	Thread locked

9-5/8" CASING RUNNING LIST
West Whiptail #1

9.625			47#		L-80	LTC Phosphatised
PPF	ID	COLLAR OD	TORQUE	BURST	COLLAPSE	TENSION
47.0	8.681	10.625	9600-14400	4600	4750	868k - 80%

RUN NO	JOINT NO	JOINT LENGTH	TOTAL LENGTH	Top DEPTH in WELL	Btm Depth In Well	REMARKS
59	15	12.180	715.830	**29.23**	**41.41**	
61	14	12.180	728.010	**17.05**	**29.23**	
62	HGR	1.435	729.445	**15.61**	**17.05**	**Casing pin to landing shoulder**
	R/Tool	3.510	732.955	**12.10**	**15.61**	
	10	11.950	744.905	**0.15**	**12.10**	
	P3	3.015	747.920	**-2.86**	**0.15**	
	Elevation	15.610				
SPARE JOINTS						
1	**12**	12.170				**Regular 9 5/8" joing**
2	**11**	12.170				**Regular 9 5/8" joing**
3	**13**	12.170				**Regular 9 5/8" joing**
4	**9**	12.180				**Regular 9 5/8" joing**
5	**8**	12.180				**Regular 9 5/8" joing**
6	**7**	12.180				**Regular 9 5/8" joing**
7	**6**	12.180				**Regular 9 5/8" joing**
8	**5**	12.180				**Regular 9 5/8" joing**
9	**4**	12.180				**Regular 9 5/8" joing**
10	**3**	12.180				**Regular 9 5/8" joing**
11	**2**	12.180				**Regular 9 5/8" joing**
12	**1**	12.180				**Regular 9 5/8" joing**
13	**T8**	12.172				**Thread locked**
14	**H1**	12.182				**Hand tight**
15	**H2**	12.187				**Hand tight**
16	**P1**	3.025				**Pup joint**
17	**P2**	4.014				**Pup joint**



EMLRFD CASING ANALYSIS REPORT
(For ExxonMobil Use Only)

Version 1.6
File Name: West Whiptail-1 Casing Design.xls Designed By:
Case Name: West Whiptail-1 ex Jackup Endorsed By:
Well Type: Exploration Bridging Doc Exceptions: Yes ___ No _X__

Description: West Whiptail-1 drilled from the Ensco 102 in 39m of water to a TD of 1539m MDRT

PAL/CTP Summary for Current Casing String

Casing Type: Cond

PAL Report

Pressure

Sect	From (m)	To (m)	OD (in)	Weight (lbs/ft)	Grade	Pressure PAL	Load Cond	Temp (°C)	H2S (psia)	PAL Table Values PAL1 (psi)	PAL2 (psi)	PAL3 (psi)
1	16	122	30.000	309.72	K55	1	P_TST	12	0.001	2598	3650	4534
2	122	125	20.000	202.92	K55	1	P_TST	15	0.001	3997	5575	6951
3	125	128	13.375	68.00	K55	1	P_TST	15	0.001	3325	4409	5333

Tension

Sect	From (m)	To (m)	OD (in)	Weight (lbs/ft)	Grade	Tension PAL	Load Cond	Temp (°C)	H2S (psia)	PAL Table Values PAL1 (lbf)	PAL2 (lbf)	PAL3 (lbf)
1	16	122	30.000	309.72	K55	1	P_TST	12	0.001	3343191	4383731	5318304
2	122	125	20.000	202.92	K55	1	P_TST	15	0.001	2244769	2895032	3491425
3	125	128	13.375	68.00	K55	1	P_TST	15	0.001	813589	1031688	1231567

CTP Report

Sect.	Type	Plat.	OS/Std	G/L	CTP	OD (in)	CTP Values CTP1 (psi)	CTP2 (psi)	CTP3 (psi)
1	PRM			L	1	N/A	2342	3208	4382
2	BTC	Phos	Std	L	?				
3	BTC	Phos	Std	L	1	14.375	2520	0	3110

Wellbore Casing Summary

Type	From (m)	To (m)	Length (m)	OD (in)	Weight (lbs/ft)	ID (in)	Grade	Conn. Type
Cond	16	122	106	30.000	309.72	28.000	K55	PRM
Cond	122	125	3	20.000	202.92	18.000	K55	BTC
Cond	125	128	3	13.375	68.00	12.415	K55	BTC
Surface	17	750	733	9.625	47.00	8.681	L80	LTC
Prod	17	1539	1522	7.000	29.00	6.184	L80	LTC

API Rating

OD (in)	Wt. (lbs/ft)	Grade	P.B. Tension (lbf)	P.B. Burst (psi)	P.B. Collapse (psi)	Conn. Type	Conn. Tension (lbf)
30.000	309.72	K55	5010852	3208	1669	PRM	_____
20.000	202.92	K55	3282972	4813	4044	BTC	N/A
13.375	68.00	K55	1069489	3454	1949	BTC	1300000
9.625	47.00	L80	1085791	6865	4754	LTC	893000
7.000	29.00	L80	675956	8160	7026	LTC	587000

** Premium connections must be checked against a specific performance envelope **

Tubular Weights

Type	Length (m)	OD (in)	Weight (lbs/ft)	Air Wt. (lbs)	Buoyed Wt. (lbs)	Mud Weight (ppg)
Cond	106	30.000	309.72	107711	92898	9.00
Cond	3	20.000	202.92	1997	1723	9.00
Cond	3	13.375	68.00	669	580	9.00
Surface	733	9.625	47.00	113028	96920	9.50
Prod	1522	7.000	29.00	144809	122892	10.00

Casing Buoyed + Tubing Air Weights: _____ (lbs)
Other Wellhead Load: _____ (lbs)
Total Wellhead Load: _____ (lbs)

Setting Mud Weight

Setting Mud Weight: 9.00 (ppg)
Displacement Fluid Density: 8.50 (ppg)

Cement

Top MD (m)	Bottom MD (m)	Type	Weight (ppg)
78	128	Cement	15.90

Overpull After Cement Sets: 0.0 (K lbf)

LRFD/RFD Analysis Summary Results

DCE	Load Combination	Max Load		@ Depth (m)	Max UF	@ Depth (m)
Burst	Pressure Test	615	(psi)	46	0.159	122
Tension	Green Cmt Pressure Test	193789	(lbf)	16	0.036	16
API Collapse	Cement Column Collapse	70	(psi)	128	0.039	122

Safety Factor Analysis Summary

DCE	Load Combination	Max Load			@ Depth (m)	Min SF	@ Depth (m)
Burst	Pressure Test	8933	(psi)	VME	122	6.157	122
Tension	Running with Overpull	0	(lbf)		0	47.632	16
	Green Cmt Pressure Test	3058	(psi)	VME	16	17.986	16

* Wear is used only in burst for drilling & drilling/prod. casing. See casing wear table.

Detailed Analysis Results

Design Check Equation: Burst
Load Combination: Drilling - Pressure Test

H2S: 1.0 (ppm)
Surface Pressure: 500.0 (psi) (User Input)
Displacement Fluid Density: 8.50 (ppg)
Temperature Profile: geothermal
Pipe Probability of Failure: -3.5

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (psi)	Unf.* Resistance (psi)	Factored Load (psi)	Factored Resistance (psi)	UF
1	16	1.230	1.343	500	2887	615	3878	0.159
1	26	1.230	1.343	500	2887	615	3878	0.159
1	36	1.230	1.343	500	2887	615	3878	0.159
1	46	1.230	1.343	500	2887	615	3878	0.159
1	56	1.230	1.343	500	2887	615	3878	0.159
1	66	1.230	1.343	500	2887	615	3878	0.159
1	76	1.230	1.343	500	2886	615	3877	0.159

1	76	1.230	1.343	500	2886	615	3877	0.159
1	78	1.230	1.343	500	2886	615	3877	0.159
1	86	1.230	1.343	500	2886	615	3877	0.159
1	96	1.230	1.343	500	2886	615	3877	0.159
1	106	1.230	1.343	500	2886	615	3877	0.159
1	116	1.230	1.343	500	2886	615	3876	0.159
1	122	1.230	1.343	500	2886	615	3876	0.159
2	122	1.230	1.365	500	4330	615	5911	0.104
2	125	1.230	1.365	500	4330	615	5910	0.104
3	125	1.230	1.347	500	3107	615	4184	0.147
3	126	1.230	1.347	500	3107	615	4184	0.147
3	128	1.230	1.347	500	3107	615	4184	0.147

* Includes effects of casing wear and tension derating if applicable.

LRFD Pressure and Tension Summary, Pressure Test

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	16	16	523	23	233070	-72696
1	26	26	538	38	222909	-81539
1	36	36	552	52	212747	-90382
1	46	46	567	67	202586	-99224
1	56	56	581	81	192425	-108067
1	66	66	596	96	182263	-116910
1	76	76	610	110	172102	-125753
1	78	78	613	113	170070	-127521
1	86	86	624	124	161940	-134596
1	96	96	639	139	151779	-143438
1	106	106	653	153	141618	-152281
1	116	116	668	168	131456	-161124
1	122	122	677	177	125359	-166430
2	122	122	677	177	46901	-69793
2	125	125	681	181	44904	-71531
3	125	125	681	181	23599	-33411
3	126	126	682	182	23376	-33606
3	128	128	685	185	22929	-33996

vonMises Design Check, Pressure Test

Csg. Sect. No.	Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	VME Stress (psi)	Derated Strength (psi)	Derated Triaxial S.F.	Temp (°C)	
1	16	523	23	233070	8661	55000	6.350	14	#
1	26	538	38	222909	8682	55000	6.335	14	#
1	36	552	52	212747	8704	55000	6.319	14	#
1	46	567	67	202586	8727	55000	6.303	13	#
1	56	581	81	192425	8751	55000	6.285	13	#
1	66	596	96	182263	8775	55000	6.268	12	#
1	76	610	110	172102	8801	55000	6.249	12	#
1	78	613	113	170070	8807	55000	6.245	12	#
1	86	624	124	161940	8828	55000	6.230	12	#
1	96	639	139	151779	8856	55000	6.210	13	#
1	106	653	153	141618	8885	55000	6.190	14	#
1	116	668	168	131456	8915	55000	6.170	14	#
1	122	677	177	125359	8933	55000	6.157	15	#
2	122	677	177	46901	6013	55000	9.147	15	#
2	125	681	181	44904	6022	55000	9.133	15	#
3	125	681	181	23599	8319	55000	6.611	15	#
3	126	682	182	23376	8323	55000	6.609	15	#
3	128	685	185	22929	8329	55000	6.603	15	#

For temperature < 75 F, nominal strength is used for S.F. calculation.

Design Check Equation: Tension
Load Combination: Drilling - Running with Overpull

Overpull While Running : 10.0 (K lbf)

Casing Section No.	Depth (m)	Effective Tension (lbf)	P.B. Rating (lbf)	Conn. Rating (lbf)	P.B. S.F.	Conn. S.F.

No.	(m)	(lbf)	(lbf)	(lbf)		
1	16	105200	5010840	_____	47.632	_____
1	26	96436	5010840	_____	51.960	_____
1	36	87672	5010840	_____	57.154	_____
1	46	78908	5010840	_____	63.502	_____
1	56	70144	5010840	_____	71.436	_____
1	66	61380	5010840	_____	81.636	_____
1	76	52616	5010840	_____	95.233	_____
1	78	50864	5010840	_____	98.515	_____
1	78	50864	5010840	_____	98.515	_____
1	86	43852	5010840	_____	114.266	_____
1	96	35089	5010840	_____	142.805	_____
1	106	26325	5010840	_____	190.348	_____
1	116	17561	5010840	_____	285.344	_____
1	122	12302	5010840	_____	407.307	_____
2	122	12302	3282964	N/A	266.856	N/A
2	125	10580	3282964	N/A	310.305	N/A
3	125	10580	1069486	1300000	101.087	122.876
3	126	10387	1069486	1300000	102.968	125.162
3	128	10000	1069486	1300000	106.949	130.000

The effective weight shown in this table is the weight of the casing hanging vertically in mud. Effects of hole angle are not included.

Design Check Equation: Tension
Load Combination: Drilling - Green Cmt Pressure Test

Surface Test Pressure: 200.0 (psi)
Displacement Fluid Density: 8.50 (ppg)
Pipe Probability of Failure: -3.5

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (lbf)	Unf. Resistance (lbf)	Factored Load (lbf)	Factored Resistance (lbf)	UF
1	16	1.130	1.060	171495	5010840	193789	5311491	0.036
1	26	1.130	1.060	161334	5010840	182307	5311491	0.034
1	36	1.130	1.060	151172	5010840	170825	5311491	0.032
1	46	1.130	1.060	141011	5010840	159342	5311491	0.030
1	56	1.130	1.060	130849	5010840	147860	5311491	0.028
1	66	1.130	1.060	120688	5010840	136377	5311491	0.026
1	76	1.130	1.060	110527	5010840	124895	5311491	0.024
1	78	1.130	1.060	108494	5010840	122599	5311491	0.023
1	86	1.130	1.060	100365	5010840	113413	5311491	0.021
1	96	1.130	1.060	90204	5010840	101930	5311491	0.019
1	106	1.130	1.060	80042	5010840	90448	5311491	0.017
1	116	1.130	1.060	69881	5010840	78966	5311491	0.015
1	122	1.130	1.060	63784	5010840	72076	5311491	0.014
2	122	1.130	1.060	21454	3282964	24244	3479942	0.007
2	125	1.130	1.060	19457	3282964	21987	3479942	0.006
3	125	1.130	1.060	11493	1069486	12987	1133655	0.011
3	126	1.130	1.060	11270	1069486	12735	1133655	0.011
3	128	1.130	1.060	10824	1069486	12231	1133655	0.011

LRFD Pressure and Tension Summary, Green Cmt Pressure Test

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	16	16	223	25	171495	51417
1	26	26	238	40	161334	43176
1	36	36	252	55	151172	34935
1	46	46	267	70	141011	26694
1	56	56	281	86	130849	18453
1	66	66	296	101	120688	10212
1	76	76	310	116	110527	1971
1	78	78	313	120	108494	323
1	86	86	324	141	100365	374
1	96	96	339	168	90204	438
1	106	106	353	195	80042	502
1	116	116	368	222	69881	566
1	122	122	377	239	63784	604
2	122	122	377	239	21454	604
2	125	125	381	247	19457	54
3	125	125	381	247	11493	54

3	125	125	381	247	11493	54
3	126	126	382	249	11270	36
3	128	128	385	255	10824	-0

vonMises Design Check, Green Cmt Pressure Test

Csg. Sect. No.	Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	VME Stress (psi)	Derated Strength (psi)	Derated Triaxial S.F.	Temp (°C)	
1	16	223	25	171495	3058	55000	17.986	14	#
1	26	238	40	161334	3036	55000	18.116	14	#
1	36	252	55	151172	3017	55000	18.233	14	#
1	46	267	70	141011	3000	55000	18.335	13	#
1	56	281	86	130849	2986	55000	18.422	13	#
1	66	296	101	120688	2974	55000	18.493	12	#
1	76	310	116	110527	2965	55000	18.548	12	#
1	78	313	120	108494	2964	55000	18.557	12	#
1	86	324	141	100365	2809	55000	19.578	12	#
1	96	339	168	90204	2616	55000	21.024	13	#
1	106	353	195	80042	2423	55000	22.700	14	#
1	116	368	222	69881	2230	55000	24.667	14	#
1	122	377	239	63784	2114	55000	26.020	15	#
2	122	377	239	21454	1430	55000	38.456	15	#
2	125	381	247	19457	1392	55000	39.523	15	#
3	125	381	247	11493	1914	55000	28.734	15	#
3	126	382	249	11270	1896	55000	29.006	15	#
3	128	385	255	10824	1860	55000	29.564	15	#

For temperature < 75 F, nominal strength is used for S.F. calculation.

Design Check Equation: API Collapse
Load Combination: Drilling - Cement Column Collapse

Cement

Top MD (m)	Bottom MD (m)	Type	Weight (ppg)
78	128	Cement	15.90

Displacement Fluid Density: 8.50 (ppg)

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (psi)	Unf. Resistance (psi)	Factored Load (psi)	Factored Resistance (psi)	UF
1	16		0.944	1	1666		1573	0.001
1	26		0.944	2	1666		1573	0.001
1	36		0.944	3	1667		1574	0.002
1	46		0.944	4	1668		1575	0.002
1	56		0.944	5	1669		1575	0.003
1	66		0.944	6	1669		1576	0.004
1	76		0.944	6	1669		1576	0.004
1	78		0.944	7	1669		1576	0.004
1	86		0.944	17	1669		1576	0.011
1	96		0.944	29	1669		1576	0.019
1	106		0.944	42	1669		1576	0.027
1	116		0.944	55	1669		1576	0.035
1	122		0.944	62	1669		1576	0.039
2	122		0.961	62	4044		3885	0.016
2	125		0.961	66	4044		3885	0.017
3	125		0.953	66	1949		1856	0.035
3	126		0.953	67	1949		1856	0.036
3	128		0.953	70	1949		1856	0.038

RFD Pressure and Tension Summary, Cement Column Collapse

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	16	16	23	25	48345	51417

1	26	26	38	40	38183	43176
1	36	36	52	55	28022	34935
1	46	46	67	70	17860	26694
1	56	56	81	86	7699	18453
1	66	66	96	101	-2462	10212
1	76	76	110	116	-12624	1971
1	78	78	113	120	-14656	323
1	86	86	124	141	-22785	374
1	96	96	139	168	-32947	438
1	106	106	153	195	-43108	502
1	116	116	168	222	-53269	566
1	122	122	177	239	-59366	604
2	122	122	177	239	-29439	604
2	125	125	181	247	-31437	54
3	125	125	181	247	-12718	54
3	126	126	182	249	-12941	36
3	128	128	185	255	-13387	-0

Well Data

Pore Pressure Curve

MD (m)	Pore Pressure (ppg)	Frac Pressure (ppg)
128	8.50	8.70
750	8.50	12.50
1539	8.50	12.50

Survey

Selected Data Type:Directional

Directional

MD (m)	Inc (deg)	Azm (deg)	TVD (m)	N/S (m)	E/W (m)

Temperature Profiles

Profile Name & Type: Geothermal (Manual Entry)

MD (m)	Temp (°C)
0	15
78	12
128	15
750	34
1178	54
1539	71

Profile Name & Type: Drilling (Cubic Polynomial)

MD (m)	Temp (°C)
0	37
1539	49

Profile Name & Type: Injection (Manual Entry)

MD (m)	Temp (°C)
0	20
3325	60

Casing wear is the recommended 10%

EMLRFD CASING ANALYSIS REPORT
(For ExxonMobil Use Only)

M. Mein 11/Feb/04

Colin Johnson 11-02-04.

Version 1.6
File Name: West Whiptail-1 Casing Design.LRF Designed By:
Case Name: West Whiptail-1 ex Jackup Endorsed By:
Well Type: Exploration Bridging Doc Exceptions: Yes ___ No _X__

Description: West Whiptail-1 drilled from the Ensco 102 in 39m of water to a TD of 1539m MDRT

PAL/CTP Summary for Current Casing String
Casing Type: Surface

PAL Report

Pressure

Sect	From (m)	To (m)	OD (in)	Weight (lbs/ft)	Grade	Pressure PAL	Load Cond	Temp (°C)	H2S (psia)	PAL Table Values PAL1 (psi)	PAL2 (psi)	PAL3 (psi)
1	17	750	9.625	47.00	L80	1	KICK	12	0.027	5449	7718	9710

Tension

Sect	From (m)	To (m)	OD (in)	Weight (lbs/ft)	Grade	Tension PAL	Load Cond	Temp (°C)	H2S (psia)	PAL Table Values PAL1 (lbf)	PAL2 (lbf)	PAL3 (lbf)
1	17	750	9.625	47.00	L80	1	KICK	12	0.027	719326	936091	1134980

CTP Report

Sect.	Type	Plat.	OS/Std	G/L	CTP	OD (in)	CTP Values CTP1 (psi)	CTP2 (psi)	CTP3 (psi)
1	LTC	Phos	Std	L	1	10.625	5020	0	6180

Wellbore Casing Summary

Type	From (m)	To (m)	Length (m)	OD (in)	Weight (lbs/ft)	ID (in)	Grade	Conn. Type
Cond	16	122	106	30.000	309.72	28.000	K55	PRM
Cond	122	125	3	20.000	202.92	18.000	K55	BTC
Cond	125	128	3	13.375	68.00	12.415	K55	BTC
Surface	17	750	733	9.625	47.00	8.681	L80	LTC
Prod	17	1539	1522	7.000	29.00	6.184	L80	LTC

API Rating

OD (in)	Wt. (lbs/ft)	Grade	P.B. Tension (lbf)	P.B. Burst (psi)	P.B. Collapse (psi)	Conn. Type	Conn. Tension (lbf)
30.000	309.72	K55	5010852	3208	1669	PRM	_____
20.000	202.92	K55	3282972	4813	4044	BTC	N/A
13.375	68.00	K55	1069489	3454	1949	BTC	1300000
9.625	47.00	L80	1085791	6865	4754	LTC	893000
7.000	29.00	L80	675956	8160	7026	LTC	587000

** Premium connections must be checked against a specific performance envelope **

Tubular Weights

Type	Length (m)	OD (in)	Weight (lbs/ft)	Air Wt. (lbs)	Buoyed Wt. (lbs)	Mud Weight (ppg)
Cond	106	30.000	309.72	107711	92898	9.00

Cond	3	20.000	202.92	1997	1723	9.00
Cond	3	13.375	68.00	669	580	9.00
Surface	733	9.625	47.00	113028	96920	9.50
Prod	1522	7.000	29.00	144809	122892	10.00

Casing Buoyed + Tubing Air Weights: _____ (lbs)
Other Wellhead Load: _____ (lbs)
Total Wellhead Load: _____ (lbs)

Setting Mud Weight

Setting Mud Weight: 9.50 (ppg)
Displacement Fluid Density: 9.50 (ppg)

Cement

Top MD (m)	Bottom MD (m)	Type	Weight (ppg)
85	410	Cement	12.50
410	750	Cement	15.80

Overpull After Cement Sets: 0.0 (K lbf)

LRFD/RFD Analysis Summary Results

DCE	Load Combination	Max Load		@ Depth (m)	Max UF	@ Depth (m)
Burst	Kick	1293	(psi)	17	0.165	17
	Pressure Test	772	(psi)	750	0.099	750
Tension	Green Cmt Pressure Test	165800	(lbf)	17	0.156	17
API Collapse	Cement Column Collapse	531	(psi)	750	0.115	750
	Future Drilling Collapse	531	(psi)	750	0.115	750

Safety Factor Analysis Summary

DCE	Load Combination	Max Load			@ Depth (m)	Min SF	@ Depth (m)
Burst	Kick	17140	(psi)	VME	17	4.667	17
	Pressure Test	9017	(psi)	VME	750	8.773	750
Tension	Running with Overpull	0	(lbf)		0	5.514	17
	Green Cmt Pressure Test	16138	(psi)	VME	17	4.957	17

Detailed Analysis Results

Design Check Equation: Burst
Load Combination: Drilling - Kick

H2S: 20.0 (ppm)
Gas Gradient: 0.136 (psi/m)
Fracture Gradient at Shoe: 12.50 (ppg)
Controlling Shoe Depth (MD): 750.0 (m)
Pipe Probability of Failure: -6.5

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (psi)	Unf.* Resistance (psi)	Factored Load (psi)	Factored Resistance (psi)	UF
1	17	0.880	1.269	1469	6177	1293	7841	0.165
1	85	0.880	1.269	1369	6178	1204	7842	0.154
1	117	0.880	1.269	1327	6178	1167	7842	0.149
1	128	0.880	1.269	1312	6178	1155	7843	0.147
1	217	0.880	1.269	1210	6179	1065	7843	0.136
1	317	0.880	1.269	1079	6179	949	7843	0.121
1	410	0.880	1.269	957	6178	842	7842	0.107
1	417	0.880	1.269	948	6178	834	7841	0.106
1	517	0.880	1.269	816	6176	718	7839	0.092
1	617	0.880	1.269	685	6173	603	7836	0.077

1	617	0.880	1.269	685	6173	603	7836	0.077
1	717	0.880	1.269	554	6170	488	7832	0.062
1	750	0.880	1.269	511	6169	450	7830	0.057

* Includes effects of casing wear and tension derating if applicable.

LRFD Pressure and Tension Summary, Kick

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	17	17	1497	27	110128	23529
1	85	85	1506	137	96064	16922
1	117	117	1510	184	89445	13417
1	128	128	1512	200	87170	12212
1	217	217	1524	314	68762	1409
1	317	317	1538	459	48079	-9546
1	410	410	1550	593	28844	-19733
1	417	417	1551	604	27396	-20500
1	517	517	1565	748	6713	-31455
1	617	617	1578	893	-13969	-42410
1	717	717	1592	1038	-34652	-53364
1	750	750	1596	1086	-41478	-56979

vonMises Design Check, Kick

Csg. Sect. No.	Depth (m)	Int.* Press (psi)	Ext. Press (psi)	Real Tension (lbf)	VME Stress (psi)	Derated Strength (psi)	Derated Triaxial S.F.	Temp (°C)	
1	17	1497	27	110128	17140	80000	4.667	14	#
1	85	1506	137	96064	15975	80000	5.008	12	#
1	117	1510	184	89445	15496	80000	5.163	14	#
1	128	1512	200	87170	15331	80000	5.218	15	#
1	217	1524	314	68762	14198	80000	5.635	18	#
1	317	1538	459	48079	12770	80000	6.264	21	#
1	410	1550	593	28844	11497	80000	6.958	24	#
1	417	1551	604	27396	11404	80000	7.015	24	#
1	517	1565	748	6713	10124	79527	7.855	27	
1	617	1578	893	-13969	8967	79348	8.849	30	
1	717	1592	1038	-34652	7987	79168	9.913	33	
1	750	1596	1086	-41478	7714	79109	10.256	34	

* Frac@shoe: gas to surface for surf & cond csg and water to surface for others.
\# For temperature < 75 F, nominal strength is used for S.F. calculation.

Design Check Equation: Burst
Load Combination: Drilling - Pressure Test

H2S: 1.0 (ppm)
Surface Pressure: 500.0 (psi) (User Input)
Displacement Fluid Density: 9.50 (ppg)
Temperature Profile: geothermal
Pipe Probability of Failure: -3.5

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (psi)	Unf.* Resistance (psi)	Factored Load (psi)	Factored Resistance (psi)	UF
1	17	1.230	1.269	500	6172	615	7834	0.079
1	85	1.230	1.269	500	6174	615	7837	0.078
1	117	1.230	1.269	505	6175	622	7839	0.079
1	128	1.230	1.269	507	6176	624	7839	0.080
1	217	1.230	1.269	537	6178	660	7842	0.084
1	317	1.230	1.269	554	6179	681	7843	0.087
1	410	1.230	1.269	570	6179	701	7843	0.089
1	417	1.230	1.269	571	6178	702	7843	0.090
1	517	1.230	1.269	588	6177	723	7840	0.092
1	617	1.230	1.269	605	6174	744	7836	0.095
1	717	1.230	1.269	622	6169	765	7831	0.098
1	750	1.230	1.269	628	6167	772	7829	0.099

* Includes effects of casing wear and tension derating if applicable.

LRFD Pressure and Tension Summary, Pressure Test

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	17	17	527	27	75701	46481
1	85	85	637	137	65215	37488
1	117	117	689	184	60281	32860
1	128	128	707	200	58585	31269
1	217	217	851	314	44861	17343
1	317	317	1013	459	29441	2880
1	410	410	1163	593	15101	-10571
1	417	417	1175	604	14021	-11584
1	517	517	1336	748	-1399	-26047
1	617	617	1498	893	-16819	-40510
1	717	717	1660	1038	-32238	-54974
1	750	750	1713	1086	-37327	-59746

vonMises Design Check, Pressure Test

Csg. Sect. No.	Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	VME Stress (psi)	Derated Strength (psi)	Derated Triaxial S.F.	Temp (°C)	
1	17	527	27	75701	6442	80000	12.418	14	#
1	85	637	137	65215	6190	80000	12.924	12	#
1	117	689	184	60281	6143	80000	13.023	14	#
1	128	707	200	58585	6131	80000	13.048	15	#
1	217	851	314	44861	6286	80000	12.727	18	#
1	317	1013	459	29441	6484	80000	12.337	21	#
1	410	1163	593	15101	6827	80000	11.719	24	#
1	417	1175	604	14021	6858	80000	11.665	24	#
1	517	1336	748	-1399	7380	79527	10.776	27	
1	617	1498	893	-16819	8022	79348	9.891	30	
1	717	1660	1038	-32238	8758	79168	9.040	33	
1	750	1713	1086	-37327	9017	79109	8.773	34	

For temperature < 75 F, nominal strength is used for S.F. calculation.

Design Check Equation: Tension
Load Combination: Drilling - Running with Overpull

Overpull While Running : 100.0 (K lbf)

Casing Section No.	Depth (m)	Effective Tension (lbf)	P.B. Rating (lbf)	Conn. Rating (lbf)	P.B. S.F.	Conn. S.F.
1	17	196920	1085789	893000	5.514	4.535
1	85	187929	1085789	893000	5.778	4.752
1	85	187929	1085789	893000	5.778	4.752
1	117	183698	1085789	893000	5.911	4.861
1	128	182243	1085789	893000	5.958	4.900
1	217	170475	1085789	893000	6.369	5.238
1	317	157253	1085789	893000	6.905	5.679
1	410	144956	1085789	893000	7.490	6.160
1	410	144956	1085789	893000	7.490	6.160
1	417	144031	1085789	893000	7.539	6.200
1	517	130808	1085789	893000	8.301	6.827
1	617	117586	1085789	893000	9.234	7.594
1	717	104363	1085789	893000	10.404	8.557
1	750	100000	1085789	893000	10.858	8.930

The effective weight shown in this table is the weight of the casing hanging vertically in mud. Effects of hole angle are not included.

Design Check Equation: Tension
Load Combination: Drilling - Green Cmt Pressure Test

Surface Test Pressure: 1500.0 (psi)
Displacement Fluid Density: 9.50 (ppg)
Pipe Probability of Failure: -3.5

Casing Section	Depth	Lf	Rf	Unf. Load	Unf. Resistance	Factored Load	Factored Resistance	UF

Section No.	Depth (m)	Lf	Rf	Load (lbf)	Resistance (lbf)	Load (lbf)	Resistance (lbf)	DF
1	17	1.130	0.980	146726	1085789	165800	1064073	0.156
1	85	1.130	0.980	136240	1085789	153952	1064073	0.145
1	117	1.130	0.980	131306	1085789	148376	1064073	0.139
1	128	1.130	0.980	129610	1085789	146459	1064073	0.138
1	217	1.130	0.980	115886	1085789	130951	1064073	0.123
1	317	1.130	0.980	100466	1085789	113527	1064073	0.107
1	410	1.130	0.980	86126	1085789	97322	1064073	0.091
1	417	1.130	0.980	85046	1085789	96102	1064073	0.090
1	517	1.130	0.980	69626	1085789	78678	1064073	0.074
1	617	1.130	0.980	54206	1085789	61253	1064073	0.058
1	717	1.130	0.980	38786	1085789	43829	1064073	0.041
1	750	1.130	0.980	33698	1085789	38079	1064073	0.036

LRFD Pressure and Tension Summary, Green Cmt Pressure Test

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	17	17	1527	27	146726	58318
1	85	85	1637	137	136240	49325
1	117	117	1689	206	131306	46283
1	128	128	1707	229	129610	45237
1	217	217	1851	418	115886	36775
1	317	317	2013	631	100466	27268
1	410	410	2163	829	86126	18425
1	417	417	2175	848	85046	18046
1	517	517	2336	1117	69626	12627
1	617	617	2498	1386	54206	7208
1	717	717	2660	1655	38786	1788
1	750	750	2713	1744	33698	-0

vonMises Design Check, Green Cmt Pressure Test

Csg. Sect. No.	Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	VME Stress (psi)	Derated Strength (psi)	Derated Triaxial S.F.	Temp (°C)	
1	17	1527	27	146726	16138	80000	4.957	14	#
1	85	1637	137	136240	16019	80000	4.994	12	#
1	117	1689	206	131306	15816	80000	5.058	14	#
1	128	1707	229	129610	15747	80000	5.080	15	#
1	217	1851	418	115886	15197	80000	5.264	18	#
1	317	2013	631	100466	14601	80000	5.479	21	#
1	410	2163	829	86126	14071	80000	5.686	24	#
1	417	2175	848	85046	13991	80000	5.718	24	#
1	517	2336	1117	69626	12855	79527	6.186	27	
1	617	2498	1386	54206	11727	79348	6.766	30	
1	717	2660	1655	38786	10610	79168	7.462	33	
1	750	2713	1744	33698	10244	79109	7.723	34	

For temperature < 75 F, nominal strength is used for S.F. calculation.

Design Check Equation: Tension
Load Combination: Drilling - Buckling Check

Buckling Check Parameters

Temperature Profile:	Geothermal	
Top of Cement (TOC):	85	(m)
Maximum Mud Wt. to Drill Next Section:	10.00	(ppg)
Average Geothermal Temperature Above TOC:	13.38	(°C)
Average Operational Temperature Above TOC:	13.38	(°C)
Delta Temperature Above TOC:	0.00	(°C)
Real Tension at TOC:	47716	(lbf)
Effective Tension at TOC:	49154	(lbf)

Pressure and Tension Summary, As Cemented

Pressure and Tension Summary, As Cemented

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	17	17	27	27	57945	58318
1	85	85	137	137	47459	49325
1	117	117	189	206	42525	46283
1	128	128	207	229	40829	45237
1	217	217	351	418	27105	36775
1	317	317	513	631	11685	27268
1	410	410	663	829	-2656	18425
1	417	417	675	848	-3735	18046
1	517	517	836	1117	-19155	12627
1	617	617	998	1386	-34575	7208
1	717	717	1160	1655	-49995	1788
1	750	750	1213	1744	-55083	0

Design Check Equation: API Collapse
Load Combination: Drilling - Cement Column Collapse

Cement

Top MD (m)	Bottom MD (m)	Type	Weight (ppg)
85	410	Cement	12.50
410	750	Cement	15.80

Displacement Fluid Density: 9.50 (ppg)

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (psi)	Unf. Resistance (psi)	Factored Load (psi)	Factored Resistance (psi)	UF
1	17		0.967	0	4693		4538	0.000
1	85		0.967	-0	4704		4549	-0.000
1	117		0.967	16	4710		4554	0.004
1	128		0.967	22	4712		4556	0.005
1	217		0.967	67	4726		4570	0.015
1	317		0.967	119	4742		4586	0.026
1	410		0.967	166	4754		4597	0.036
1	417		0.967	174	4754		4597	0.038
1	517		0.967	281	4754		4597	0.061
1	617		0.967	388	4754		4597	0.084
1	717		0.967	495	4754		4597	0.108
1	750		0.967	531	4754		4597	0.115

RFD Pressure and Tension Summary, Cement Column Collapse

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	17	17	27	27	57945	58318
1	85	85	137	137	47459	49325
1	117	117	189	206	42525	46283
1	128	128	207	229	40829	45237
1	217	217	351	418	27105	36775
1	317	317	513	631	11685	27268
1	410	410	663	829	-2656	18425
1	417	417	675	848	-3735	18046
1	517	517	836	1117	-19155	12627
1	617	617	998	1386	-34575	7208
1	717	717	1160	1655	-49995	1788
1	750	750	1213	1744	-55083	0

Design Check Equation: API Collapse
Load Combination: Drilling - Future Drilling Collapse

Minimum Mud Weight: 9.50 (ppg)

Casing Section No.	Depth (m)	Lf	Rf	Unf. Load (psi)	Unf. Resistance (psi)	Factored Load (psi)	Factored Resistance (psi)	UF
1	17		0.967	0	4693		4538	0.000
1	85		0.967	-0	4704		4549	-0.000
1	117		0.967	16	4710		4554	0.004
1	128		0.967	22	4712		4556	0.005
1	217		0.967	67	4726		4570	0.015
1	317		0.967	119	4742		4586	0.026
1	410		0.967	166	4754		4597	0.036
1	417		0.967	174	4754		4597	0.038
1	517		0.967	281	4754		4597	0.061
1	617		0.967	388	4754		4597	0.084
1	717		0.967	495	4754		4597	0.108
1	750		0.967	531	4754		4597	0.115

RFD Pressure and Tension Summary, Future Drilling Collapse

Casing Section No.	Measured Depth (m)	Vertical Depth (m)	Int. Press (psi)	Ext. Press (psi)	Real Tension (lbf)	Eff. Tension (lbf)
1	17	17	27	27	57945	58318
1	85	85	137	137	47459	49325
1	117	117	189	206	42525	46283
1	128	128	207	229	40829	45237
1	217	217	351	418	27105	36775
1	317	317	513	631	11685	27268
1	410	410	663	829	-2656	18425
1	417	417	675	848	-3735	18046
1	517	517	836	1117	-19155	12627
1	617	617	998	1386	-34575	7208
1	717	717	1160	1655	-49995	1788
1	750	750	1213	1744	-55083	0

Well Data

Pore Pressure Curve

MD (m)	Pore Pressure (ppg)	Frac Pressure (ppg)
128	8.50	8.70
750	8.50	12.50
1539	8.50	12.50

Survey

Selected Data Type:Directional

Directional

MD (m)	Inc (deg)	Azm (deg)	TVD (m)	N/S (m)	E/W (m)

Temperature Profiles

Profile Name & Type: Geothermal (Manual Entry)

MD (m)	Temp (°C)
0	15
78	12
128	15
750	34
1178	54
1539	71

Profile Name & Type: Drilling (Cubic Polynomial)

MD (m)	Temp (°C)
0	37
1539	49

Profile Name & Type: Injection (Manual Entry)

MD (m)	Temp (°C)
0	20
3325	60

Casing wear is the recommended 10%

Cementing Data

ESSO AUSTRALIA PTY. LTD.
WEST WHIPTAIL-1

CEMENTING SUMMARY

CASING

		30" x 20" x 13-3/8" Casing	9-5/8" Casing
Hole Depth	MDRT	120.34m	750m
Casing Setting Depth	MDRT	120.34m	745m
Hole Size	in	36	12.25
Excess over Hole Size	%	250	25

Lead Slurry	Interval	MDRT		87m - 373m **(Note 1)**
	Class "G" cement	sacks		580
	Volume pumped	bbls		163
	Weight	ppg		12.5
	Yield	cfs		2.20
	Mix water	gps		12.37 (SW)
	Econolite	gal/bbl		1.46
	SCR – 100L	gal/bbl		
	HR-6L	gal/bbl		0.20
	NF-6 (Anti-Foam)	gal/bbl		0.03

Tail Slurry	Interval	MDRT	78.0m - 120.34m	373m - 745m **(Note 2)**
	Class "G" cement	sacks	1084	332
	Volume pumped	bbls	220	68
	Weight	ppg	15.9	15.8
	Yield	cfs	1.17	1.15
	Mix water	gps	5.16 (SW)	5.10 (FW)
	CaCl2	% BWOC	1	
	SCR – 100L	gal/bbl		
	WG 17 LXP	gal/bbl		
	NF-5 (Anti-Foam)	gal/bbl	0.03	0.03

P&A PLUGS

		Plug 1a	Plug 1b	Plug 1c	Plug 1d	Plug 1e	Plug 2a	Plug 2b
Base	m MDRT	1,539	1,365	1,191	1,017	843	170	170
Planned Top	m MDRT	1,365	1,191	1,017	843	669	170	110
Tagged Top	m MDRT	N/A	N/A	N/A	N/A	675	170	117
Tag weight	1,000 lbs	N/A	N/A	N/A	N/A	15	-	10
Pressure test	psig/min.	-	-	-	-	-	-	1,000/5
Class "G" cement	sacks	197	208	252	222	205	EZSV	70
Volume pumped	bbls	41	43	52	46	42.6	Bridge	14.6
Weight	ppg	15.8	15.8	15.8	15.8	15.9	plug	15.9
Yield	cfs	1.16	1.16	1.16	1.16	1.17	-	1.17
Mix water	gps	4.87	4.87	4.87	4.87	5.15	-	5.15
Mixwater	type	Fresh	Fresh	Fresh	Fresh	Seawater	-	Seawater
$CaCl_2$	% BWOC	-	-	-	-	1.0	-	1.0
HR-6L	gal/bbl	0.3	0.3	0.3	0.3	-	-	-
Halad 413L	gal/bbl	2.0	2.0	2.0	2.0	-	-	-
NF-5 (Defoam)	gal/bbl	0.03	0.03	0.03	0.03	0.03	-	0.03

Note 1: TOC at hydraulic stage collar set at 87m.
Note 2: Based on gauge hole with no excess cement.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 13-May-04 16:00 Job Type: Primary Single Stage
End Date/Time : 13-May-04 18:05 Rig Name: Ensco 102

Casing Size :	30.000	Setting Depth :	120.34	Float Collar :	.00
Drift :	12.259	String Top MD :	17.07	Landing Collar:	.00
Weight/Length:	310.000	Gauge Hole Size:	36.000	Estimated BHST:	13.0

Excess Cement: 250.0% over Gauge

Last Casing Run: at (shoe MD)

Mud Data

Mud Weight :	8.60	PV:	15.0	Oil Content :	.0
pH :	.0	YP:	66.0	Water Content:	.0
Temperature:	.0				

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.600	100.0	.0	0.	Seawater

Cement Slurries

Cement	Class	Additives
Tail	G	"G" + 1% CaCL2 + .003 gal/sk NF-6 (Hal)

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	1084.	1.17	5.200	S	04:17	.0	.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.900	220.0	6.0	950.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Displ'mnt	8.600	7.0	2.0	600.	Seawater

Job Procedure

Date	Start Time	End Time	Activity
13-May-04	14:30	15:45	Rig up cement hoses. Held prejob safety meeting. Pump 50 bbls seawater with rig pumps at 300 gpm, SPP 50 psi
13-May-04	15:45	16:15	Break circulation with Dowell and pressure test cement lines to 2,000 psi.
13-May-04	16:15	16:30	Pump 100 bbls seawater with rig pumps at 525 gpm, SPP 850 psi
13-May-04	16:30	18:00	Cement conductor with 1,084 sacks Class G cement with 0.3 gal/10 bbl NF-5 and 1% bwoc CaCl2 mixed in seawater to 15.9 ppg. While pumping, cement line # 2 became blocked. Change over to cement line # 1 to complete job. Drop latch-in dart and displace drill pipe bumping plug with 2, 000 psi. 30 inch conductor shoe depth 120.36 m RT.

Post Job

Final Pump Pressure	600.	Estimated TOC:	.00
Number of Plugs Used	1	From	Calculation
Did Plug Bump? (Y/N)	Y	Estimated BOC:	120.40
Bump Pressure	2000.	From	Calculation
Held Pressure for	00:07		
Release Pressure at	18:05		
Reciprocated Casing? (Y/N)	N		
Rotated Casing? (Y/N)	N		
Float Equipment OK? (Y/N)	Y		
% Returns during Job	.0		
Cement to Surface? (Y/N)	N		
Volume	0.		

Remarks and Problems

Cmt Line #2 plugged up after 3 bbl, shut down switched to cmt line #1. Upon completion of job, cmt line was 1/2 plugged up with old cmt prior to job. Slurry wt maintained thru out job, plug bumped.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 17-May-04 10:00 Job Type: Primary Single Stage
End Date/Time : 17-May-04 12:35 Rig Name: Ensco 102

Casing Size :	9.625	Setting Depth :	745.00	Float Collar :	732.13
Drift :	8.525	String Top MD :	15.61	Landing Collar:	.00
Weight/Length:	47.000	Gauge Hole Size:	12.250	Estimated BHST:	34.0

Excess Cement: 25.0% over Gauge

Last Casing Run: 13.375 at 120.36 (shoe MD)

Mud Data

Mud Weight :	9.10	PV:	10.0	Oil Content :	.0
pH :	.0	YP:	36.0	Water Content:	.0
Temperature:	.0				

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	750.0	7.6	800.	seawater pumped by rig
Flush	8.550	40.0	6.0	660.	Seawater pumped by DS,

Cement Slurries

Cement	Class	Additives
Lead	G	"G" + 1.46 gal/bblMF Econolite NF-5 + 0.20 gal/bblMF HR-6L + 0.03 gal/bblMF NF-6 12.37 gal/sk SW
Tail	G	"G" + 0.03 gal/bblMF NF-6 5.10 gal/sk FW

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Lead	580.	2.20	12.370	S	03:15	.0	250.0	0	0
Tail	332.	1.15	5.100	F	02:30	.0	2500.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Lead	12.500	163.0	5.0	320.
Tail	15.800	68.0	5.0	280.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	20.0	6.0	200.	Seawater pumped by DS
Displ'mnt	8.550	152.3	6.0	930.	SW172.3 BBL total disp 20 bbls+1096 stk

Job Procedure

Date	Start Time	End Time	Activity
17-May-04	10:00	10:30	Line up cmt unit to cmt head, test lines to 3000 psi & pump 40 bbls of seawater.
17-May-04	10:30	12:45	Release 1st stage by-pass plug. Pump 10 bbl Seawater w/cmt unit. Load cmt head with 9-5/8" Shut-off Plug. Mix & Pump cement job as follows: Lead: 163 bbl, (416 sx/915 cu ft) Class "G" cmt w/1.46 gal/bbl econolite + 0.20 gal/bbl HR-6L + 0.03 gal/bbl NF-6 in seawater to 12.5 ppg. Tail: 68 bbl, (332 sx/382 cu ft) Class "G" cmt + 0.03 gal/bbl NF-6 to 15.8 ppg. Drop the 9-5/8" 1st stage shut-off Plug. Cmt unit displaced w/20 bbl seawater followed by rig pumping 1096 stks, 152.3 bbl for total displacement of 172.3 bbl to Bump Plug. Took rtns thru the wellhead outlets during displacment. Circ Press prior to bumping plug @ 2 bpm/930 psi, bump plug w/ additional 570 psi for 1500 psi. Held for 5 mins. Bled back 2-1/2 bbl - Floats Held. CIP @ 12:35.

Post Job

Final Pump Pressure	1500.	Estimated TOC:	88.00
Number of Plugs Used	2	From	Calculation
Did Plug Bump? (Y/N)	Y	Estimated BOC:	745.00
Bump Pressure	500.	From	Calculation
Held Pressure for	00:07		
Release Pressure at	12:35		
Reciprocated Casing? (Y/N)	N		
Rotated Casing? (Y/N)	N		
Float Equipment OK? (Y/N)	Y		
% Returns during Job	100.0		
Cement to Surface? (Y/N)	N		
Volume	0.		

Remarks and Problems

Bumped plug - Floats Held. Weight & Rate maintained throught Job. Good Job.
Displaced 1st 20 bbls w/DS remainded w/rig pumps 1096 stks, for total displaement of 172.3 bbl. (Pump Output 0.139 bps)

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 23-May-04 08:30 Job Type: Plug and Abandon (Plug 1a)
End Date/Time : 23-May-04 09:15 Rig Name: Ensco 102

Casing Size :	9.625	Setting Depth :	745.00	Float Collar :	732.13
Drift :	8.525	String Top MD :	15.61	Landing Collar:	.00
Weight/Length:	47.000	Gauge Hole Size:	8.500	Estimated BHST:	72.0

Excess Cement: .8% over Gauge

Last Casing Run: 9.625 at 745.00 (shoe MD)

Mud Data

Mud Weight :	10.20	PV:	18.0	Oil Content :	.0
pH :	9.0	YP:	27.0	Water Content:	90.0
Temperature:	.0				

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	21.0	5.0	1040.	Fresh water

Cement Slurries

Cement	Class	Additives
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	197.	1.16	4.870	F	04:09	.0	2000.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.800	41.0	4.5	780.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	2.0	2.0	300.	Fresh Water
Displ'mnt	10.000	74.0	6.5	780.	WBM

Job Procedure

Date	Start Time	End Time	Activity
23-May-04	08:30	09:15	Plug 1a, (1539m-1365m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 41 bbls (230cu ft/197 sx), class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 74 bbls 10.0 ppg WBM.
23-May-04	10:00	11:00	Make Up pump in sub & cmt lines. Plug 1b, (1365m-1191m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 43 bbls (242cu ft/208 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 64 bbls 10.0 ppg WBM.
23-May-04	13:30	14:15	Slack off to 1191m. Plug 1c, (1191m-1017m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 52 bbls (292cu ft/252 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 54 bbls 10.0 ppg WBM.
23-May-04	15:00	16:00	Make Up pump in sub & cmt lines. Plug 1d, (1017m-843m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 46 bbls (258cu ft/222 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 44 bbls 10.0 ppg WBM.
23-May-04	18:15	19:15	Make Up pump in sub & cmt lines. Plug 1e, (843m-669m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 42.6 bbls (239cu ft/205 sx)class "G" cmt slurry @ 15.9 ppg 2 bbl fresh water, displaced with 34 bbls 10.0 ppg WBM.

Post Job

Wait-on-cement Time:	00:00	Estimated TOC:	1365.00
Tagged Cement at :	.00	From :	Calculation
Weight Applied :	0.	Estimated BOC:	1539.00
Tested Cement to :	0.	From :	Calculation
Drilled Cement to :	.00		

Remarks and Problems

Plug 1a, 1539m to 1365m. Pipe reciprocated during job, hole attempted to pack off, reciprocated pipe to keep circ passages open.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 23-May-04 10:00 Job Type: Plug and Abandon (Plug 1b)
End Date/Time : 23-May-04 11:00 Rig Name: Ensco 102

Casing Size : 9.625 Setting Depth : 745.00 Float Collar : 732.13
Drift : 8.525 String Top MD : 15.61 Landing Collar: .00
Weight/Length: 47.000 Gauge Hole Size: 8.500 Estimated BHST: 72.0
Excess Cement: 1.0% over Gauge

Last Casing Run: 9.625 at 745.00 (shoe MD)

Mud Data

Mud Weight : 10.20 PV: 18.0 Oil Content : .0
pH : 9.0 YP: 27.0 Water Content: 90.0
Temperature: .0

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	21.0	6.5	750.	Fresh Water

Cement Slurries

Cement	Class	Additives
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	208.	1.16	4.870	F	04:09	.0	2000.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.800	43.0	4.0	750.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	2.0	1.5	200.	
Displ'mnt	10.000	64.0	6.5	700.	WBM

Job Procedure

Date	Start Time	End Time	Activity
23-May-04	08:30	09:15	Plug 1a, (1539m-1365m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 41 bbls (230cu ft/197 sx), class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 74 bbls 10.0 ppg WBM.
23-May-04	10:00	11:00	Make Up pump in sub & cmt lines. Plug 1b, (1365m-1191m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 43 bbls (242cu ft/208 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 64 bbls 10.0 ppg WBM.
23-May-04	13:30	14:15	Slack off to 1191m. Plug 1c, (1191m-1017m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 52 bbls (292cu ft/252 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 54 bbls 10.0 ppg WBM.
23-May-04	15:00	16:00	Make Up pump in sub & cmt lines. Plug 1d, (1017m-843m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 46 bbls (258cu ft/222 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 44 bbls 10.0 ppg WBM.
23-May-04	18:15	19:15	Make Up pump in sub & cmt lines. Plug 1e, (843m-669m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 42.6 bbls (239cu ft/205 sx)class "G" cmt slurry @ 15.9 ppg 2 bbl fresh water, displaced with 34 bbls 10.0 ppg WBM.

Post Job

Wait-on-cement Time:	00:00	Estimated TOC:	1191.00
Tagged Cement at :	.00	From :	Calculation
Weight Applied :	0.	Estimated BOC:	1365.00
Tested Cement to :	0.	From :	Calculation
Drilled Cement to :	.00		

Remarks and Problems

Plu 1b - 1365m-1191m. Pipe reciprocated during job, hole attempted to pack off, reciprocated pipe to keep circ passages open, pressure peaks on DS Job rpt represent when hole was packing off.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 23-May-04 13:30 Job Type: Plug and Abandon (Plug 1c)
End Date/Time : 23-May-04 14:15 Rig Name: Ensco 102

Casing Size :	9.625	Setting Depth :	745.00	Float Collar :	732.13
Drift :	8.525	String Top MD :	15.61	Landing Collar:	.00
Weight/Length:	47.000	Gauge Hole Size:	8.500	Estimated BHST:	72.0

Excess Cement: 15.0% over Gauge

Last Casing Run: 9.625 at 745.00 (shoe MD)

Mud Data

Mud Weight :	10.20	PV:	18.0	Oil Content :	.0
pH :	9.0	YP:	27.0	Water Content:	90.0
Temperature:	.0				

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	21.0	6.5	600.	Fresh Water

Cement Slurries

Cement	Class	Additives
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	252.	1.16	4.870	F	04:09	.0	200.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.800	52.0	4.5	925.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	2.0	3.0	200.	Fresh Water
Displ'mnt	10.000	54.0	6.5	800.	WBM

Job Procedure

Date	Start Time	End Time	Activity
23-May-04	08:30	09:15	Plug 1a, (1539m-1365m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 41 bbls (230cu ft/197 sx), class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 74 bbls 10.0 ppg WBM.
23-May-04	10:00	11:00	Make Up pump in sub & cmt lines. Plug 1b, (1365m-1191m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 43 bbls (242cu ft/208 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 64 bbls 10.0 ppg WBM.
23-May-04	13:30	14:15	Slack off to 1191m. Plug 1c, (1191m-1017m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 52 bbls (292cu ft/252 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 54 bbls 10.0 ppg WBM.
23-May-04	15:00	16:00	Make Up pump in sub & cmt lines. Plug 1d, (1017m-843m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 46 bbls (258cu ft/222 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 44 bbls 10.0 ppg WBM.
23-May-04	18:15	19:15	Make Up pump in sub & cmt lines. Plug 1e, (843m-669m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 42.6 bbls (239cu ft/205 sx)class "G" cmt slurry @ 15.9 ppg 2 bbl fresh water, displaced with 34 bbls 10.0 ppg WBM.

Post Job

Wait-on-cement Time:	00:00	Estimated TOC:	1017.00
Tagged Cement at :	.00	From :	Calculation
Weight Applied :	0.	Estimated BOC:	1191.00
Tested Cement to :	0.	From :	Calculation
Drilled Cement to :	.00		

Remarks and Problems

Plug 1c, 1191m - 1017m. Pressure peaks on DS job report would again indicate when hole was trying to pack-off - reciprocated pipe to prevent same.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 23-May-04 15:00 Job Type: Plug and Abandon (Plug 1d)
End Date/Time : 23-May-04 16:00 Rig Name: Ensco 102

Casing Size : 9.625 Setting Depth : 745.00 Float Collar : 732.13
Drift : 8.525 String Top MD : 15.61 Landing Collar: .00
Weight/Length: 47.000 Gauge Hole Size: 8.500 Estimated BHST: 72.0
Excess Cement: 7.0% over Gauge

Last Casing Run: 9.625 at 745.00 (shoe MD)

Mud Data

Mud Weight : 10.20 PV: 18.0 Oil Content : .0
pH : 9.0 YP: 27.0 Water Content: 90.0
Temperature: .0

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	21.0	6.5	600.	Fresh Water

Cement Slurries

Cement	Class	Additives
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	222.	1.16	4.870	F	04:09	.0	2000.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.800	46.0	5.0	590.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	2.0	2.5	150.	Fresh Water
Displ'mnt	10.000	44.0	6.6	380.	WBM

Job Procedure

Date	Start Time	End Time	Activity
23-May-04	08:30	09:15	Plug 1a, (1539m-1365m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 41 bbls (230cu ft/197 sx), class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 74 bbls 10.0 ppg WBM.
23-May-04	10:00	11:00	Make Up pump in sub & cmt lines. Plug 1b, (1365m-1191m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 43 bbls (242cu ft/208 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 64 bbls 10.0 ppg WBM.
23-May-04	13:30	14:15	Slack off to 1191m. Plug 1c, (1191m-1017m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 52 bbls (292cu ft/252 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 54 bbls 10.0 ppg WBM.
23-May-04	15:00	16:00	Make Up pump in sub & cmt lines. Plug 1d, (1017m-843m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 46 bbls (258cu ft/222 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 44 bbls 10.0 ppg WBM.
23-May-04	18:15	19:15	Make Up pump in sub & cmt lines. Plug 1e, (843m-669m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 42.6 bbls (239cu ft/205 sx)class "G" cmt slurry @ 15.9 ppg 2 bbl fresh water, displaced with 34 bbls 10.0 ppg WBM.

Post Job

Wait-on-cement Time:	00:00	Estimated TOC:	843.00
Tagged Cement at :	.00	From :	Calculation
Weight Applied :	0.	Estimated BOC:	1017.00
Tested Cement to :	0.	From :	Calculation
Drilled Cement to :	.00		

Remarks and Problems

Plug 1d, 1017m-843m, hole no longer trying to pack - off, DS job rpt indicates no portions of pack offs.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 23-May-04 18:15 Job Type: Plug and Abandon (Plug 1e)
End Date/Time : 23-May-04 19:15 Rig Name: Ensco 102

Casing Size : 9.625 Setting Depth : 745.00 Float Collar : 732.13
Drift : 8.525 String Top MD : 15.61 Landing Collar: .00
Weight/Length: 47.000 Gauge Hole Size: 8.500 Estimated BHST: 72.0
Excess Cement: 1.1% over Gauge

Last Casing Run: 9.625 at 745.00 (shoe MD)

Mud Data

Mud Weight : 10.20 PV: 18.0 Oil Content : .0
pH : 9.0 YP: 27.0 Water Content: 90.0
Temperature: .0

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	21.0	6.0	140.	Fresh Water

Cement Slurries

Cement	Class	Additives
Tail	G	Class "G" + 0.003 NF-6 gps SW + 1.0% BWOC CaCL

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	205.	1.17	5.150	S	03:15	.0	1642.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.900	42.6	4.8	540.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	2.0	6.5	140.	Fresh Water
Displ'mnt	10.000	34.0	6.5	280.	WBM

Job Procedure

Date	Start Time	End Time	Activity
23-May-04	08:30	09:15	Plug 1a, (1539m-1365m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 41 bbls (230cu ft/197 sx), class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 74 bbls 10.0 ppg WBM.
23-May-04	10:00	11:00	Make Up pump in sub & cmt lines. Plug 1b, (1365m-1191m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 43 bbls (242cu ft/208 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 64 bbls 10.0 ppg WBM.
23-May-04	13:30	14:15	Slack off to 1191m. Plug 1c, (1191m-1017m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 52 bbls (292cu ft/252 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 54 bbls 10.0 ppg WBM.
23-May-04	15:00	16:00	Make Up pump in sub & cmt lines. Plug 1d, (1017m-843m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 46 bbls (258cu ft/222 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 44 bbls 10.0 ppg WBM.
23-May-04	18:15	19:15	Make Up pump in sub & cmt lines. Plug 1e, (843m-669m) Dowell Schlumberger mixed & pumped 21 bbls fresh water, 42.6 bbls (239cu ft/205 sx)class "G" cmt slurry @ 15.9 ppg 2 bbl fresh water, displaced with 34 bbls 10.0 ppg WBM.

Post Job

Wait-on-cement Time:	05:45	Estimated TOC:	675.00
Tagged Cement at :	675.00	From :	Other
Weight Applied :	15000.	Estimated BOC:	837.00
Tested Cement to :	0.	From :	Calculation
Drilled Cement to :	.00		

Remarks and Problems

Plug 1e, 843m-669m. Tagged plug with 15 klbs @ 675m, after 5-3/4 hours.

WEST WHIPTAIL-1
WW1

CEMENT REPORT

Mixed Oilfield Units

Start Date/Time: 24-May-04 09:00 Job Type: Plug and Abandon (Plug 2)
End Date/Time : 24-May-04 09:30 Rig Name: Ensco 102

Casing Size :	9.625	Setting Depth :	745.00	Float Collar :	732.13
Drift :	8.525	String Top MD :	15.61	Landing Collar:	.00
Weight/Length:	47.000	Gauge Hole Size:	8.500	Estimated BHST:	72.0

Excess Cement: .0% over Gauge

Last Casing Run: 9.625 at 745.00 (shoe MD)

Mud Data

Mud Weight :	10.20	PV:	15.0	Oil Content :	.0
pH :	11.3	YP:	21.0	Water Content:	90.0
Temperature:	.0				

Mud Flush and Spacer

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Preflush	8.550	10.0	6.5	350.	Seawater

Cement Slurries

Cement	Class	Additives
Tail	G	Class "G" + 0.003 NF-6 gps SW + 1.0% BWOC CaCL

Cement	Amount Used	Yield	Water Req	Mix Water	Thick Time	Comp Strength 12 Hr	Comp Strength 24 Hr	Free Water	Fluid Loss
Tail	70.	1.17	5.150	S	03:15	.0	1642.0	0	0

Type	Density	Volume	Avg Rate	Maximum Press
Tail	15.900	14.6	4.5	290.

Postflush and Displacement

Type	Density	Volume	Avg Rate	Maximum Press	Composition
Postflush	8.550	3.7	3.5	180.	seawater
Displ'mnt	10.000	2.0	3.5	125.	WBM

Job Procedure

Date	Start Time	End Time	Activity
24-May-04	09:00	09:30	Plug 2, (170m-110m) Dowell Schlumberger mixed & pumped 10 bbls fresh water, 14.6 bbls (230cu ft/70 sx), class "G" cmt slurry @ 15.9 ppg, 3.7 bbl seawater, displaced with 2 bbls 10.0 ppg WBM.
24-May-04	12:00	12:30	Test cement to 1000 psi for 5 mins - OK.

Post Job

Wait-on-cement Time:	05:00	Estimated TOC:	100.00
Tagged Cement at :	117.00	From :	Calculation
Weight Applied :	10.	Estimated BOC:	170.00
Tested Cement to :	1000.	From :	Calculation
Drilled Cement to :	.00		

Remarks and Problems

Plug 2, (170m-100m) Tested to 1000 psi for 5 mins, Tagged w/10 klbs @ 117m.

Esso Australia Pty Ltd
12 Riverside Quay
Southbank, VIC 3006

West Whiptail 1

Rig: Ensco 102
Offshore, Bass Strait

Date: May 2004

CEMENTING

END OF WELL REPORT

HALLIBURTON

HALLIBURTON

HALLIBURTON AUSTRALIA PTY LTD

90 Talinga Road, Cheltenham, Vic 3192 Tel: +61 3 9583 7522 Fax: +61 3 9583 7588

22nd June 2004

Chris Meakin
Esso
12, Riverside Quay,
Southbank,
Vic 3001

Dear Chris,

Subject: Cementing Post Job Report
Ensco 102 : West WhipTail #1

Included for your review is a copy of the cementing Post Job Report for the Ensco 102 West WhipTail#1 exploration well. This report includes details of cementing operations for the Conductor casing, 9 5/8inch casing and the P&A.

Also including is the job logs and summaries, lab reports and cementing programs.

I trust this PJR meets the requirements of Esso and provides sufficient detail for reference for future work in these fields.

Yours sincerely,

Andrew Stobie
Associate Technician

Checked By:

Jim Collins

Esso Australia Ltd
12,Riverside Quay, Southbank, Vic 3001

Ensco 102
West WhipTail#1 Exploration well

Bass Strait

Cementing Post Job Report

Prepared for:
Chris Meakin
22nd June 2004
Version: 0

Submitted by:
Andrew Stobie
90 Talinga Road
Cheltenham
Vic 3192
Tel: +61 3 9583 7522
Fax: +61 3 9583 7588

HALLIBURTON

30inch Conductor Casing Details

The 30" Conductor casing was set on the 13th of May 2004. The casing ran from RKB to 115m with a 20inch crossover from 115m – 118m and a 13 3/8inch double valve latch in float shoe from 118m-121m. Mud-line was located 78m below RKB. Cement was pumped through a 5inch drill pipe with a Davis Lynch latch in adapter secured to the 13 3/8inch double valve float shoe. The cement slurry consisted of 15.9ppg class G cement with 1% $CaCl_2$ by weight of cement to aid in earlier set up time.

A JSA was performed, the cement head rigged up and then another JSA conducted prior to cementing operations. 10bbls of inhibited freshwater spacer was pumped ahead followed by a line test to 3000psi, a further 20bbls of spacer was pumped giving 30bbls in total. The bottom cement plug was then released by 10bbls of freshwater at 8bpm. 79bbls of lead cement was then pumped at 6.5bpm followed by 35bbls of tail at 5bpm. The top cement plug was released followed by 10bbls of freshwater and a further 149bbls of displacement to land the plug. A further 0.4bbls was pumped to pressure the casing to 1300psi. Pressure was held for 15mins then bled off.

HS&E:

- The operation was carried out in a safe and careful manner with no health, safety, or environmental incidents.

9 5/8inch casing details

The 9 5/8" casing was set on the 17th of May 2004. The 47ppf casing was run inside 30"×20"×13-3/8" conductor casing to 121m, followed by 12 ¼ open hole to a measured depth of 745m. The slurry design consisted of a 12.5ppg lead as well as a 15.8ppg tail. The lead cement was brought to the theoretical mudline, 78m bellow the rig floor. The lead slurry consisted of econolite allowing stabilization of the cement particles necessary for the lightweight mix. HR-6L cement retarder was also used to enable extended pumping times. The tail slurry was mixed neat with no additives.

The casing was run with a float shoe, float collar and shut off baffle at bottom and a Type H ES cementer located at the mudline. The ES cementer tool was used in order to circulate the TOC at the mudline enabling cut&pull of the casing at the conclusion of the well. 40bbl of seawater was pumped ahead then a pressure test of 3000psi was conducted for 10mins. The bottom plug was dropped followed by 10bbl of seawater and 165bbl of lead slurry. 69bbls of tail slurry was pumped then 3bbls of seawater to flush the lines before releasing the top plug which was displaced with 160bbls of seawater by the rig. The plug was bumped at 1500psi and pressure bled back to the cementing unit and floats held. The type H - ES cementer stage tool was opened with a pressure of 2150psi, enough required to shear the retaining pins. The rig began circulation with 330bbl of 13.2ppg mud followed by 330bbl seawater until returns were clean. 330bbl of sugar water was then flushed through to inhibit the set-up of any remaining cement in the annulus between the mudline and rig floor. The rig then RIH with the adapter closing tool, bumper sub and 8 ½" stabilizer tagging the cementer joint at 88m.

The rig sat down with 10000# on tool to shut in the pipe rams then pressured up to 1300psi to shear out closing pins and shut tool. 100psi of pressure was applied to the casing with no returns to verify stage tool had been shut. After pulling out of hole the casing, multistage cementer and blind rams were successfully pressure tested to 2000psi.

HS&E:

- The operation was carried out in a safe and careful manner with no health, safety, or environmental incidents.

Observations & Lessons Learnt:

- The type H ES Cementer opened at 2,150psi. This was within the design specification of 2,250 ± 250psi

P&A Details

Multiple cement abandonment plugs were set on the 23rd and 24th of May 2004. Five 174m long balanced plugs were laid on top of each other with plug bottoms at depths of 1539m, 1365m, 1191, 1017 and 843m. The slurry design for the first four plugs consisted of a 15.8ppg mix with 3gal/10bbl HR-6L cement retarding agent and 20gal/10bbl Halad 413L fluid loss control additive. The fifth plug consisted of a 15.8ppg mix with 1% bwoc $CaCl_2$ to aid in earlier set up.

A sixth cement plug was set on top of an EZ SV bridging plug located at 170m. The plug length was designed at 60m, bringing the plug TOC to 110m. The plug was set using a 15.8ppg slurry with 1% BWOC $CaCl_2$. The rig reverse circulated drill pipe clean with seawater then pressure tested the bridging plug with 1000psi. The cement plug was tagged at 117m after waiting 6hours on cement set up.

HS&E:

- The operation was carried out in a safe and careful manner with no health, safety, or environmental incidents.

Observations & Lessons Learnt:

- Use of a BHKA tool was planned and discussed. This was not used because of stinger hang up concerns

Esso Australia Ltd
12 Riverside Quay
Southbank, 3006

West Whiptail_1

Bass Strait

Cementing Program

Revision 7

Prepared for: Chris Meakin

30/ 03 / 04

Prepared by:
Jim Collins
Checked by:
John Hargreaves

Halliburton Energy Services

90 Talinga Rd

Cheltenham, 3192

Ph: (03) 9581 7511 Fax: (03) 9583 7588

HALLIBURTON ExxonMobil

30" Cementing information

30in x 20in x 13 3/8in Casing Details

JOB PARAMETERS			
Casing measured depth:	120m	BHST temperature:	13°C
True vertical depth:	120m	BHCT temperature:	13°C
Depth to top cement:	77.6m	Drilling mud type:	SeaWater
		Drilling mud density:	8.55ppg

WELLBORE

Casing/Tubing

0-119m	5in 19.5ppf inner st
0-112.8m	30in 309.7ppf casing
112.8-116.3m	20in 202.9ppf casing
116.3-120m	13 3/8in 68ppf casing

Annulus

0-78m	RKB-ML
78-119m	36in open hole (250% excess)
119-120m	17.5in open hole (250% excess)

SPACERS

Spacer #1 - 100bbl Seawater at 8.55ppg

Seawater	42.00 gal/bbl	(6m OH annular fill / 40min contact time)

Contact times are based on the displacement rate.

CEMENT

Composition		Properties	
Adelaide Brighton Class G		Surface density:	15.90 ppg
Calcium Chloride 1%	1.00 %BWOC	Surface yield:	1.17 ft³/sk
NF-6	0.03 gal/bblMF	Total mixing fluid:	5.20 gal/sk
Seawater	5.16 gal/sk	Thickening time (70 Bc):	4:18
		Pv/Yp at mix:	47/69
		Comp strength at 13°C	50 psi in 3 hrs
		Comp strength at 13°C	500 psi in 9 hrs
		Comp strength at 13°C	2,000 psi in 36 hrs

Note that %BWOC are based on a 94 lb sack, since of the 94 lb sack of blend only 94 lb is cement.

VOLUME CALCULATIONS

Cement

30in casing / 36in hole volume	35.1 m x 1.2620 bbl/m	44.3 bbl
30in casing / 36in hole excess	2.50 x 56.0 bbl	110.8 bbl
20in casing / 36in hole volume	3.5 m x 2.8555 bbl/m	10.0 bbl
20in casing / 36in hole excess	2.50 x 10.0 bbl	25.1 bbl
13 3/8in casing / 36in hole volume	2.7 m x 3.5602 bbl/m	9.61 bbl
13 3/8in casing / 36in hole excess	2.50 x 9.61 bbl	24.0 bbl
13 3/8in casing / 17.5in hole volume	1.0 m x 0.4059 bbl/m	0.41 bbl
13 3/8in casing / 17.5in hole excess	2.50 x 0.41 bbl	1.01 bbl
Shoe track volume	1 m x 0.4912 bbl/m	0.5 bbl
	Total slurry volume =225.9 bbl	

Quantity of cement	226 bbl x 5.6146 / 1.17 ft³/sk	1085 sks
Quantity of mixwater	1085 sks x 5.20 gal/sk	134.3 bbl

Displacement

5in inner st volume	119 m x 0.0583 bbl/m	6.93 bbl
	Total displacement volume = 6.93 bbl	

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1.5 x casing volume:	11.1	8	1
Pump spacers:	100.0	8	13
Release ball/bottom plug:	N/A	N/A	5
Mix & pump cement:	226.0	5	45
Release dart/top plug:	N/A	N/A	5
Pump displacement:	6.9	2	4

Total job time (including circulation): ***1hr 43min***

Minimum cement thickening time (with 1hr safety factor): ***1hr 54min***

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Seawater

Seawater	4,200 gals

Cement (Including 10 bbl pit loss)

Adelaide Brighton Class G	1085 Sacks
Calcium Chloride 1%	1,019.9 lbs
NF-6	4 gals
Seawater	5,599 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

NOTE:
1. Service Location – BBMT
2. Baroid to supply CaCl
3. Volumes calculated are based on theoretical operational requirements. Tank bottoms to be added

Job Procedure

1. Pressure test cement line to 2000 psi
2. Pump 100 bbls of sea water spacer.
3. Mix and pump 226 bbls of cement slurry. Take samples and check density.
4. Pump the theoretical displacement volume of 6.93 bbls of displacement fluid
5. Displace cement at maximum pump rate wellbore conditions can tolerate.
6. Wait on cement.

9 5/8" Cementing Information

9 5/8in Casing Details

JOB PARAMETERS			
Casing measured depth:	750m	BHST temperature:	34°C
True vertical depth:	750m	BHCT temperature:	27°C
Depth to top lead:	78m	Drilling mud type:	SeaWater
Depth to top tail:	580m	Drilling mud density:	8.55ppg

WELLBORE

Casing/Tubing

0-750m	9 5/8in 47ppf casing

Annulus

0-78m	RKB-ML
78-88m	30in 309.7ppf casing (28in ID) - Stage Collar 10m Below Mud line
88-112.8m	30in 309.7ppf casing (28in ID)
112.8-116.3m	20in 202.9ppf casing (17.812in ID)
116.3-120m	13 3/8in 68ppf casing (12.415in ID)
120-750m	12.25in open hole (25% excess)

SPACERS

Spacer #1 - 50bbl Seawater at 8.55ppg

Seawater	42.00 gal/bbl	(137m OH annular fill / 5min contact time)

Contact times are based on the displacement rate.

LEAD CEMENT

Composition		Properties	
Adelaide Brighton Class G		Surface density:	12.50 ppg
Econolite Liquid	1.46 gal/bblMF	Surface yield:	2.20 ft³/sk
HR-6L	0.20 gal/bblMF	Total mixing fluid:	12.89 gal/sk
NF-6	0.03 gal/bblMF	Thickening time (70 Bc):	5:16
Seawater	12.37 gal/sk	Pv/Yp at mix:	11/19
		Comp strength at 27°C:	50 psi in 12 hrs
		Comp strength at 27°C:	250 psi in 24 hrs
		Comp strength at 27°C:	500 psi in 36 hrs

TAIL CEMENT

Composition		Properties	
Adelaide Brighton Class G		Surface density:	15.80 ppg
NF-6	0.03 gal/bblMF	Surface yield:	1.15 ft³/sk
Freshwater	5.10 gal/sk	Total mixing fluid:	5.10 gal/sk
		Thickening time (70 Bc):	3:05
		Pv/Yp at mix:	48/46
		Comp strength at 31°C	50 psi in 3 hrs
		Comp strength at 31°C	500 psi in 4 hrs
		Comp strength at 31°C	2,500 psi in 24 hrs

VOLUME CALCULATIONS

Lead Cement

9 5/8in casing / 30in casing volume	35.18 m x 2.2033 bbl/m	77.51 bbl
9 5/8in casing / 20in casing volume	3.5 m x 0.7373 bbl/m	2.58bbl
9 5/8in casing / 13 3/8in casing volume	3.7 m x 0.1960 bbl/m	0.73 bbl
9 5/8in casing / 12.25in hole volume	358.1 m x 0.1830 bbl/m	65.53 bbl
9 5/8in casing / 12.25in hole excess	0.25 x 84.2 bbl	16.38 bbl
	Total lead slurry volume =	***162.73 bbl***
Quantity of lead cement	162.73 bbl x 5.6146 / 2.20 ft³/sk	415 sacks
Quantity of lead mixwater	415 sacks x 12.89 gal/sk	127.5 bbl

Tail Cement

9 5/8in casing / 12.25in hole volume	271.91 m x 0.1830 bbl/m	49.76 bbl
9 5/8in casing / 12.25in hole excess	0.25 x 31.1 bbl	12.44 bbl
Shoe track volume	25 m x 0.2402 bbl/m	5.9 bbl
	Total tail slurry volume =	***68.1 bbl***
Quantity of tail cement	68.1 bbl x 5.6146 / 1.15 ft³/sk	332 sks
Quantity of tail mixwater	332 sks x 5.10 gal/sk	40.3 bbl

Displacement

9 5/8in casing volume	726 m x 0.24283 bbl/m	176.3 bbl

Total displacement volume (excluding any line volume from cement unit to rig floor) =176.3 bbl

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1.5 x casing volume:	264.7	8	33
Pump spacers:	70.0	8	9
Release ball/bottom plug:	N/A	N/A	5
Mix & pump lead cement:	162.7	5	25
Mix & pump tail cement:	68.1	5	14
Release dart/top plug:	N/A	N/A	5
Pump displacement:	176.3	10	17

Total job time (including circulation): 2hr 18min

Minimum lead cement thickening time (with 2hr safety factor): 3hr 01min

Minimum tail cement thickening time (with 2hr safety factor): 2hr 12min

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Seawater	
Seawater	50 bbls

Post Flush – Seawater & Sugar – to retard	
Seawater (2 x riser volume)	330 bbls
Sugar ~ 8 lb/bbl	2645 lbs

Lead Cement (Including 10 bbl pit loss)

Adelaide Brighton Class G	415 Sacks
Econolite Liquid	186 gals
HR-6L	26 gals
NF-6	4 gals
Seawater	5,134 gals

Tail Cement (Including 10 bbl pit loss)

Adelaide Brighton Class G	332 Sacks
NF-6	1 gals
Freshwater	2,111 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

NOTE: 1. Service Location – BBMT
2. Volumes calculated are based on theoretical operational requirements. Tank bottoms to be added

Type H ES Cementer Installation & Operating Instructions

1.0 Introduction

This section provides instructions for installing and operating the Type H (hydraulic opening version) ES (External Sleeve) Cementer. The Type H ES Cementer is designed for use in almost any well regardless of depth, pressure, or temperature. The Type H ES Cementer operates the same as a conventional cementer except it opens when differential casing pressure is applied after the first-stage plug lands.

2.0 Features and Applications

The Type H ES Cementer features the following advantages:

- PDC drillability
- Smooth bore drill-out
- Short, single piece mandrel design
- Hydraulic opening capability
- Externally adjustable opening pressure and adjustable closing pressure
- Optional free fall opening plug (if pressure cannot be used to open the tool)
- Compatible with second-stage bottom plug sets

3.0 Operating Pressures

Before using the Type H ES cementer you must determine the required opening pressure of the cementer. In addition to the four pre-installed opening shear pins, several pins are packaged with each assembly. You can adjust the opening pressure by adding or removing shear pins.

The Type H ES cementer can also be opened by using a Free Fall opening plug. If you are going to open the cementer with a plug, install six opening shear pins. Although it seldom needs to be changed the closing pressure of the cementer can also be adjusted. The opening pressure with or without aid of a plug and closing pressure with different numbers of shear pins are listed in the tables below.

Note: For this application the cementer will be pinned with 5 opening shear pins and 6 closing shear pins.

Opening Pressures & Forces for 9 5/8" (43.5-53.5 lb/ft) Type H ES Cementer

No of Shear Pins	3	4	5	6
Opening Differential Pressure (psi)	1350	1800	2250	2700
Opening Pressure with Free Fall Plug (psi)	245	325	405	485
Opening Force (lbs)	14,100	18,800	23,500	28,200

Closing Pressures & Forces for 9 5/8" (43.5-53.5 lb/ft) Type H ES Cementer

No of Shear Pins	4	5	6
Closing Pressure (psi)	650	810	975
Closing Force (lbs)	38,000	47,500	57,000

4.0 Installation

Install centralizers above and below the Type H ES Cementer. Remove any grease or pipe dope from the casing joints the cementer is to be made up in. Make up the Type H ES Cementer in the casing string as follows.

Note: Prior to this the shut off baffle adapter must first be made up one joint above the float collar. The primary shut off baffle adapter will be pre-installed above the collar onshore.

1. Remove the box-end thread protector from the Type H ES Cementer.

Note: Examine the closing pins and ensure that they are at least flush with the closing seat ID. If they are not, use an Allen-head wrench to reposition them. If they are left protruding into the tools ID they may prevent the contingency free-fall plug from reaching the opening seat. See attached schematic for further details.

2. Clean casing threads to remove grease and pipe dope and apply thread lock to the pin thread of the casing joint to be stabbed into the top of the cementer.
3. Swing the casing joint out over the rig floor.
4. Start the Type H ES Cementer onto the pin thread. Make up the cementer onto the casing joint so that the cementer will not fall off the end of the casing when it is picked up off the rig floor.
5. Remove the pin end thread protector from the Type H ES Cementer.
6. Apply thread lock to the pin thread.
7. Stab the pin thread of the cementer into the box thread of the casing joint in the rig slips.
8. Place make-up tongs on the joint above the cementer and back-up tongs on the joint below the cementer.

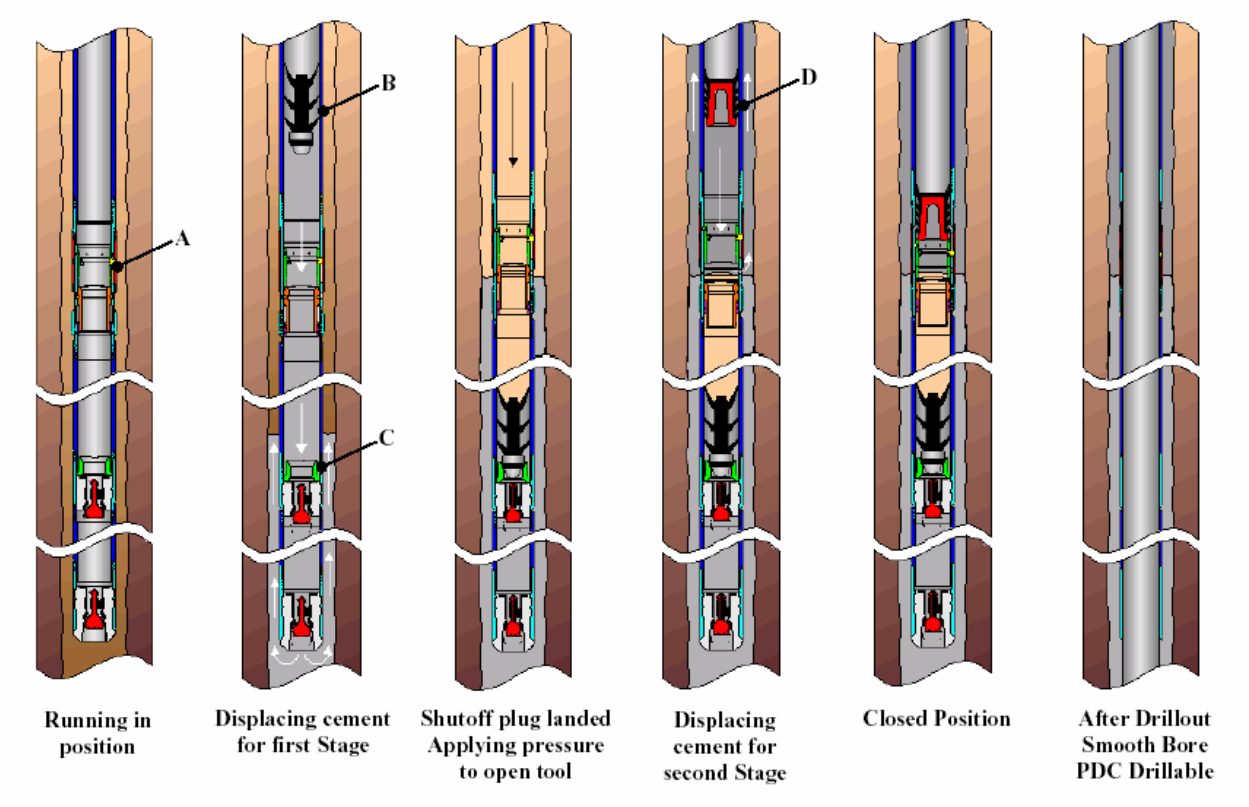
CAUTION: Do not place tongs on the Type H ES Cementer. Using tongs on the cementer may damage the tool.

9. Make up the Type H ES Cementer to the same torque used to make up the casing.
10. Check for exposed threads (API casings). If exposed threads are found, go to the maximum torque allowed on the casing.
11. Lower the cementer into the hole.
12. Remove the mill make-up collar on top of the casing joint used to pick up the cementer.
13. Clean casing threads to remove any grease or pipe dope. Apply thread lock to the exposed pin thread.
14. Make up the casing collar.
15. Clean and apply thread lock to the pin thread of the next casing joint.
16. Stab and make up the casing joint to normal torque.
17. Repeat Steps 12 through 16 for the next three joints.

CAUTION: Welding is not normally required on Type H ES Cementers and is not recommended without special instructions from the Tools Systems Department, Duncan, OK. Do not weld on tools rated for sour gas service under any circumstances.

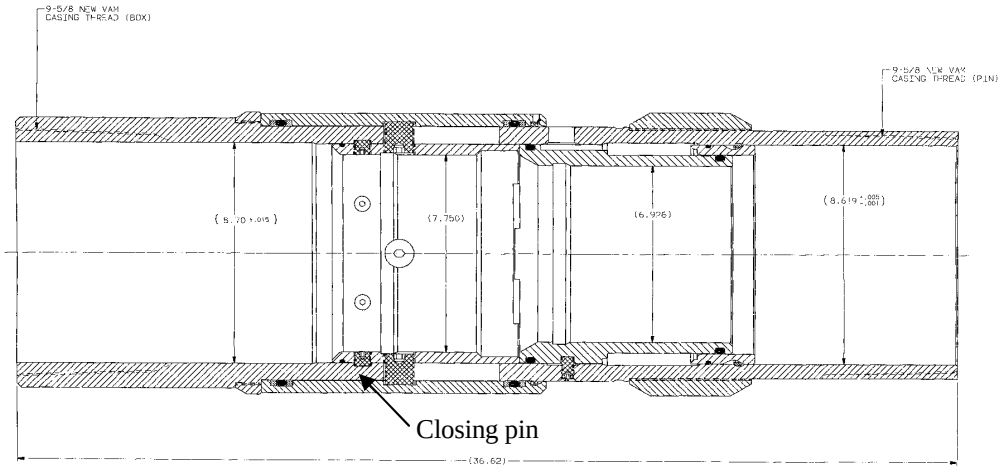
5.0 Plug Set

Shown below is a typical operational schematic for the Type H ES cementer.

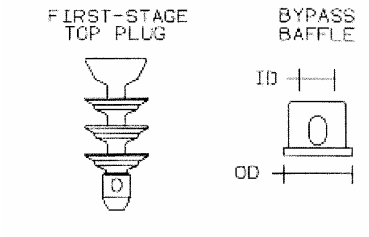


The 9 5/8" type H ES cementer consists of the following equipment:

A) 9 5/8" (43.5-53.5 lb/ft) Type H ES Cementer (Part # 100075777)

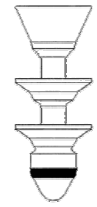


B) First Stage Bypass Plug and Baffle (Part # 100075009)



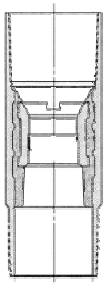
The first stage bypass plug differs from Halliburton's standard plugs. It has a small nose with larger wiper fins to allow it to go through the stage tool and shut off adaptor without problems. The by-pass plug is 19.76" long. By-pass plug nose OD 4.2" < 5" Shut off baffle adaptor ID

C) First Stage Shutoff Plug (Part # 100074917)



The first stage shutoff plug differs from Halliburton's standard plugs. It has a smaller core OD with larger wiper fins to allow it to go through the stage tool without problems.

D) Shut off Baffle Adapter (Part # 100076050)



The baffle adapter provides the mating face for the shutoff plug to seal against and pressure up against. It should be made up one joint above the float collar.

E) Contingency Closing Plug (Part # 100075372)

	The closing plug is similar to the standard five-wiper top cementing plug, but it has a hard nose on its lower end for landing on the closing seat. After the closing plug seats, applied pressure shears the releasing sleeve/closing seat shear pins and closes the closing sleeve. **Note: We will not be utilizing the closing plug as we will be closing the stage tool with a closing adaptor made up on drill pipe.**

F) Contingency Free Fall Opening Plug (Part # 100075389)

 17.50" long	The free fall closing plug is used as a contingency in the event that the cementer fails to open. In sections with deviation greater than 30 , be prepared to chase it down with a workstring.

6.0 Operation

Note: **Due to the length of the bypass plug and the shutoff plug, only one plug will fit in the 9 5/8" cement head. As a result the by-pass plug will have to be loaded straight into the casing before making up the cement head with the quick connect.**

1. Rig up cementing head loaded with the 9 5/8" by-pass plug.
2. Pressure test cement line to 3000 psi.
3. Condition hole prior to cementing.
4. Pump 40 bbls seawater ahead and monitor returns, release the bypass plug and pump a further 10 bbls seawater.
5. Load the cementing head with the 9 5/8" shut off plug.
6. Mix and pump 163 bbls of lead cement slurry and 68 bbls of tail cement slurry. Take samples and check density
7. Release shut off plug, and displace with the calculated casing displacement volume including any surface line volume with seawater, slowing down to 2/3 bpm to bump the plug.

Note: Reduce the displacement rate to below 5 bpm as the shutoff plug nears and passes through the ES cementer.

Note: It is strongly advised that the casing be callipered to obtain an accurate displacement volume.

8. Bump the plug to 500 psi over the final differential pressure ~800psi to a maximum of 1500psi. Slowly bleed off pressure and check the floats holding

Note: If floats are found to be passing, hold pressure and wait on cement.

9. If floats are holding, open the tool by slowly increasing casing pressure to the pre-set opening pressure 2,250 psi +/- 250 psi. This is the value with 5 shear pins installed. When the cementer opens, casing pressure should rapidly decrease and circulation to surface should be re-established. Remember that the Type-H ES cementer opens only when the differential pressure set at the surface is acting across the tool. If the fluid in the annulus weighs more than fluid in the casing, more surface pressure will be necessary than the preset opening pressure to open the tool. If the fluid in the annulus weighs less than fluid in the casing, the tool will open with less surface pressure than originally set at the surface. In this case as depth is negligible the estimated additional pressure is ~ 60 psi.

CAUTION: **The maximum pressure is limited by the rating of the shutoff plug and baffle adapter. In this case the baffle adapter and shutoff plug are rated to 5,000 psi differential pressure for L80 casing. <u>DO NOT EXCEED THIS 5,000 psi DIFFERENTIAL PRESSURE WHEN ATTEMPTING TO OPEN THE STAGE TOOL</u>.**

Note: **If the shutoff plug fails to bump, one of the following steps may be necessary:**

a) Drop the contingency free fall opening plug down the casing to seat in the opening sleeve. The approximate free fall rate of the plug should be 27 m/min. Based on the planned setting depth of 88m MD, the free fall plug will reach the tool in approximately ~ 3 ½ mins.

CAUTION: **If the free fall plug is chased down with a Workstring, do not push the workstring into the tool or the tool may close prematurely.**

b) Wait on cement and pressure up against the hard cement.

10. The cementer should now be open; the riser should be flushed with 330bbls of 13.5ppg mud to remove the viscous cement and then flushed with seawater until clean returns are seen. The retarder sugar mix can then be displaced into the riser to retard any cement deposits. Sugar should be added at ~8.0 lb/bbl, quantity shown above in material requirements.
11. Install stage cementer closing adapter (4 1/2" IF Box up) on DP. The slip joint (12" minimum stroke) should be installed directly above closing adapter or above first joint of DP.

12. RIH with a stabilizer on the joint of DP above the closing adaptor to ensure proper centralization of closing adapter. Failing this install a minimum of 2 centralizers on opposite ends of the first joint with stop collars.
13. RIH with closing adapter and DP.
14. Reduce DP running speed within 10m. Slowly lower DP until closing adapter reaches stage cementer closing sleeve.
15. Land available weight on stage cementer closing sleeve. Drill pipe should be spaced out such that annular preventer or BOP rams can be closed.
16. Close annular preventer or BOP DP rams.
17. Pressure DP x 9-5/8 casing annulus though preventer to close stage cementer. Applied pressure must be enough to generate sufficient closing force to close the stage cementer. Assuming 5" drill pipe and a 8.619" stage tool ID, the area on which the pressure will be applied would be approximately 38.7 sq-in. Given this area, the following annular pressures will be required to close the cementer in a balanced system, neglecting applied force due to DP weight.

Note: 4 closing pins require 38,000 pounds force. Nominal annular pressure of 982 psi.

5 closing pins require 48,500 pounds force. Nominal annular pressure of 1,253 psi.

6 closing pins require 57,000 pounds force. Nominal annular pressure of 1,473 psi.

Note: If we have sufficient block weight then there will be no need to pressure up the annulus as per following 3 steps.

Note: When determining anticipated pressure ranges that will be seen during the closing process, use a +/- 15% tolerance.

18. Apply and hold maximum annular pressure for 1 to 2 minutes.
19. When sufficient force is applied to the stage cementer closing sleeve, the stage cementer closing adapter will be allowed to move down with the stage cementer closing sleeve without being affected by the preventer/DP seal. This movement is allowed because of the slip joint installed above stage cementer closing adapter with stabilizer. Because the travel of the closing sleeve is so small, a annular pressure drop may not be visible.
20. Bleed annular pressure to zero.
21. Conduct a casing test (Preferably through DP) to ensure stage cementer is closed. If annular circulation occurs, repeat detailed closing procedure with an additional 500 psi and repeat casing test.
22. End of job, WOC.
23. RIH with BHA and perform drillout stage cementer. Take care to ensure BHA is not reciprocated while drilling through stage cementer. Maintain constant WOB while drilling through cementer seats. Refer to drill out procedures below.

7.0 Drilling Out ES Cementers

The Type H ES Cementer may be drilled out any time after the second-stage cement has had sufficient time to set. Either conventional roller cone rock bits or PDC bits may be used.

Drilling Out with Roller Cone Bits

1. Use a short- or medium-tooth, hard rock formation bit.
2. Apply 3,000 to 5,000 lb/in. of bit diameter to drill the aluminium operating seats.
3. Rotate at 40 to 60 rev/min.
4. Circulate at 40 gal/min per in. of bit diameter. Be careful not to pump the bit off the target.
5. While maintaining rotation and pump rate, and maintain weight on bit

Note: It has been shown that picking up the bit off bottom can allow rubber and other debris from around the bit fall back onto the

Note: If a mud motor is used to drill out the Type H ES Cementer, limit the weight on bit to 5,000 lb. Also, allow the weight to drill off before applying additional weight.

6. After drilling through the cementer, chase any remaining debris to the bottom with the bit.
7. If drilling ahead after drilling out the Type H ES Cementer, and a different bit than the one used to drill out the cementer will be required, use the following procedure. With the bit used to drill out the cementer, drill the first-stage plugs, the floating equipment, and some formation (at least the length of the bottom hole drilling assembly) before tripping out to change bits. This procedure should clean up any metal debris left from the cementer.

Drilling Out with PDC Bits

Generally, the drilling recommendations of the bit supplier should be followed. However, when possible, follow the guidelines listed below when drilling out the Type H ES Cementer with a PDC bit.

- Use a medium to hard rock formation PDC bit for drilling out the Type H ES Cementer. These bits have a flatter face than the soft formation, blade type PDC bits. Do not use a bladed type (gumbo) bit for drilling out a Type H ES Cementer. These bits have fewer teeth and are more likely to be damaged.
- Do not exceed 75 rev/min rotation speed. A good range to use is 40 to 75 rev/min.
- Because of the aggressive nature of PDC bits, drilling with a minimal weight on bit is advisable. Generally, 3,000 to 5,000 lb should be sufficient.
- Note Flatter-faced bits are more susceptible to “pump off” than blade type bits.
- Apply weight and allow it to drill off before applying additional WOB.
- After drilling out the Type H ES Cementer, chase any remaining debris to the bottom with the bit. If it is intended to drill ahead, and a new bit is to be used, drill out the shoe track (first-stage plugs and floating equipment) and some formation, at least the length of the bottom hole drilling assembly, before tripping out to change bits. This procedure should clean up any debris remaining from the stage cementer and floating equipment.

8.0 Drill-out Procedures for Halliburton Float Equipment

Key factors that affect bit performance while drilling cementing plugs and float equipment:

- Bit Type. (Convention rock bit, flat bottomed PDC, bladed PDC)
- Bit style. (Cutter size & angle, blade layout, bit profile, etc.).
- Bit hydraulics & Hole cleaning issues, (flow rate, number of blades).
- Drilling procedures (i.e. WOB, pump rate, RPM, etc.).
- Target material. (Whether rubber, cast or wrought aluminium, bronze, plastic, concrete, etc is drilled.)
- Fixity. (Target materials drill best with fixed cutter bits, when the material is not allowed to rotate. Proper cementing procedures can help ensure effective placement of cement near and around target.)

The following recommendations should be suitable for most applications. Each parameter however may be adjusted to give optimum drill-out.

1. ***Do not spud the bit.*** Carefully tag plug set with minimum WOB.

2. ***On contacting plug flush bit*** by reciprocating drill string 2 - 3 ft.

3. ***Engage clutch and increase rotation to 40 – 75 rpm***.

4. Note torque and ***vary parameters to gain torque*** to indicate drilling is established.

5. ***Use max flow rate for the bit size to aid in debris removal,*** however beware pump-off with too high a rate.

6. ***If downhole motors are being used, limit pump rates*** to achieve the recommended RPM's.

7. ***Use low weight per inch bit diameter***. Conventional bits 2000 – 3000 lbs, PDC bits ~ 3000 – 5000 lbs.

8. ***Initially try minimum WOB and let weight 'drill-off'*** before applying more weight.

9. ***Watch for bit sticking/slipping*** that can occur with sudden increases in WOB. Weight is not necessarily the solution to increased penetration rate.

10. ***Be aware of WOB versus WOT*** (weight on bit v. weight on target). Only WOT affects penetration as it is affected by pump-off, pressure loss past BHA, rate etc.

11. ***For fixed blade bits reciprocate only if penetration stops.*** Reciprocate while maintaining circulation and rotational speed to ensure proper debris removal.

12. ***For roller bits frequently flush bit*** by picking up bit 6 ft whilst circulating rotating (every 2 inches or less or if penetration stalls). Time allowed for this does not need to be excessive (eg. ±1min).

13. ***Use high visc sweeps for large diameter casings*** where high flow rates may be unachievable.

14. ***If the drill-pipe vibrates or otherwise acts erratically temporarily change the parameters***.

15. ***Repeat above procedures as required.*** At any time, if the rate decreases, change parameters. The key to successful drill-out is careful attention to penetration rates.

GUIDELINES FOR PREPARATION OF CEMENT MIXWATER

From time to time it is necessary to pre-mix the additives and mixwater for a cement job instead of adding them "on the fly" via the cement unit LAP system.

NOTE: If mixing in displacement tanks, Econolite and HR-6L are not compatible in their neat form. Ensure there is a sufficient level of water for dilution before mixing chemical additives or add them separately to the mixwater

Lab testing has indicated that there is a maximum age, or retention time, **for batch mixed mixwaters,** after which they should not be used. This is because slurry properties such as thickening time may be affected, and it applies particularly to the "high fineness" additives: Silicalite Liquid, Micromax, Gascon 469 and Microbond in conjunction with cement retarders. Therefore when pre-mixing additives the following guidelines need to be followed:

1. Prepare drillwater/seawater in a **clean pit/blender** and check fluid has the appropriate chloride content.

Freshwater	<1000	Ppm
Seawater	<20000	Ppm

2. Add 2 gal of defoamer (NF-6) per 10 bbl of water.

3. During the casing/liner run add the additives below in the following order.
   a) Extenders – **Silicalite Liquid / Gascon 469 / Econolite Liquid**, **WG-17LXP**
   b) Friction Reducers – **CFR-3L**.
   c) Fluid Loss/Gas Migration Additives – **Halad additives / GasStop-L**.

4. Once the casing is on bottom or the liner hanger has been set and just prior to/during mud conditioning add the additives below in the following order.
   a) Viscosifying Additives – **SA-533**. This must be added very slowly to prevent lumps forming and should be added directly to a tub and not though a mixing hopper, since a build up of partially hydrated polymer can form inside the gooseneck. Note that SA-533 requires at least 30 mins to yield.
   b) Weighting Materials – **Micromax**.

5. Immediately prior to the jobs commencement add the retarder and then any expansive additives. Circulate the pit with maximum agitation.
   a) Retarders – **HR-6L / HR-25L / SCR-100L**.
   b) Expansive Additives - **MicroBond**.

6. If any foaming is observed add additional anti-foaming agents as required.

NOTE: Once the retarder has been added Halliburton recommends that the maximum surface time of the mixwater should be no more than **8** hours. This is due to the retarder being attracted to the high surface area of the siliceous material in the extender. This has the effect of reducing the retardation effect of the retarder on the cement.
It is recommended that if the mixwater with retarder is left for more than 8 hours on surface that it be dumped and a new batch mixed.

Mixwater that has been prepared without the addition of an extender or retarder can be kept for 24 hours. After 24 hours the mixwater should not be used for cementing operations unless authorised by a Halliburton engineer.

EJCS No:_____ **CPI No:**_____

HALLIBURTON	CEMENTING END OF JOB CUSTOMER SATISFACTION	SALES ORDER # / TICKET # / JOB #	JOB DATE	ON SITE HES REP
			13-May-04	John Hargreaves

COUNTRY	BDA	LOCATION	JOB SITE TYPE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Tim Poltridge	WestWhip tail #1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	Well Type	JOB CLASS
CEMENT JOB	CEMENT CONDUCTOR CASING 14161	Unknown	Non-RTO

HSE Incident? (Accident Injury etc)	Operating Hrs	Customer Completed
☐ YES ☑ NO		☐

SPECIAL TOOLS

Complete if a Special Tools Job was performed

JOB TYPE CODE	JOB PURPOSE CODE

Dear Customer,

We hope that you were satisfied with the service quality of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our perfomance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

Please indicate your response by placing a tick in the box underneath the rating that best matches your opinion.

DESCRIPTION	**Superior Performance** (New quality performance standard - Best Practice) 5	**Exceeded Expectations** (Provided more than required - Potential Best Practice) 4	**Met Exectations** (Did what was expected - Prevention/Improvement) 3	**Below Expectations** (Did not do as expected, Recovery Made - CPI Required) 2	**Poor Performance** (Job problems/failures, some recovery made - CPI Required) 1
Did our personnel perform the job to your satisfaction?					
Did our equipment perform the job to your satisfaction?					
Did we perform the job to the agreed upon design?					
Did our products and materials perform as you expected?					
Did we perform in a safe & careful manner?					
Did we perform in an environmentally sound manner?					
Was the job performed as scheduled?					
Did the equipment condition & appearance meet you expectations?					
How well did our personnel communicate during mobilisation, rig-up and job execution?					

What can we do to improve our service? (Any further comments may be completed on the back of this form)

Customer Comments (Any further comments may be completed on the back of this form)

Customer Signature: _____ **Date:** _____

All data collected is for trend analysis and business process improvement only.

HALLIBURTON

Job Site Health and Safety Meeting Report & Emergency Response Plan

1. Location Information

	SALES ORDER # (If applicable): 0	JOB DATE: 13-May-04	ON SITE HES REP: John Hargreaves
COUNTRY: Australia	STATE/OPERATIONAL AREA: Perth	LOCATION/FIELD NAME: Bass Strait	JOB SITE: Offshore-Other < 1500ft
CUSTOMER: ExxonMobil	CUSTOMER REPRESENTATIVE: Tim Poltridge	WELL NAME & NUMBER: WestWhip tail #1	
PSL GROUP - LEVEL 1: Cementing	PSL GROUP - LEVEL 2: Zonal Isolation	PSL GROUP - LEVEL 3: Cementing Services & Materials	
JOB TYPE CODE: CEMENT JOB	JOB PURPOSE CODE: CEMENT CONDUCTOR CASING 14161		JOB CLASS: 0

2. Discussion of Hazards

2.1 HAZARDS FOUND AT THE JOB SITE

- ☐ **Electrical** Discuss location of electrical lines and power sources in relation to equipment and lines
- ☑ **Chemicals** Discuss harmful substances on the job site (eg. H2S, flammable gasses, drilling fluids, additives well bore fluids, Radioactive). Ask for MSDS sheets when necessary
- ☐ **Overhead** Discuss overhead hazards (eg, guy wires, hazards while on rig floor or under the rig floor).
- ☑ **Environment** Discuss environmental conditions (eg. heat, cold, ice snow, rain, wind, dust, visibility etc.)
- ☐ **Confined Spaces** Discuss any required entry into confined spaces (eg. Cellars, tanks, pits).
- ☑ **Walking / Working Surfaces** Discuss the terrain where the rig up and job will occur (eg. Boards, limestone, mud, stairways, walkways, the derrick, and the rig floor
- ☑ **Noise** Discuss area with high noise levels and avoid these areas or provide hearing protection.
- ☐ **Hydraulic Leaks** - Discussed procedures to follow for leaks

2.2 HAZARDS FOUND IN JOB PROCEDURES OR INTRODUCED TO THE JOB SITE

- ☑ **Walking / Working Surfaces** Discuss work stations, equipment, and access on and off of them.
- ☐ **Chemicals** Discuss possible exposures to substances such as dusts, chemicals, vapours, and Flammable/combustible.
- ☑ **Noise** Discuss noise levels from equipment. Avoid placing high noise producing equipment next to work stations when possible.
- ☑ **Ignition sources** Discuss possible ignition sources (eg. engines, electrical equipment, open flames, smoking etc.)
- ☑ **Wellbore fluids or Gasses** Discuss shale shaker, Frac tanks, return lines, and vent lines.
- ☑ **Slipping and tripping** Discuss tripping hazards (eg. equipment and lines on the ground and rig floor, suction hoses and vent lines
- ☐ **Falling** Discuss job procedures requiting work at heights greater than 1.8m
- ☐ **Lifting** Discuss proper lifting techniques and ways to eliminate or reduce heavy lifting such as; forklifts, cranes, and sharing the load.
- ☑ **Pressure** Discuss pressure hazards such as DME and bulk tanks.
- ☐ **Radiation** Discuss radiation hazards introduced to the site.
- ☐ **Wireline** Discuss cables, tape off no go areas.
- ☐ **Overhead** Discuss equipment rigged up overhead such as DME above the rig floor, lubricators, chains, pulleys.
- ☐ **Explosives** Discuss explosives handling and storage procedure.
- ☑ **Communication** Discuss radios, hand signals etc.

3. Hazard Controls

- ☑ **Personal protective equipment** Discuss required PPE such as respirators, head protection, hearing protection, protective footwear, hand and skin protection, and fall protection.
- ☑ **Physical barriers** Discuss items such as hose covers, line tie-downs, guards, railings, and inert gas blankets.
- ☑ **Environment** Discuss control measures for environmental factors such as temperature, wind, ice, rain, snow, etc.
- ☐ **Ignition source controls** Discuss control measures for ignition sources such as the use of spark arresters, emergency shutdown procedures, and NO SMOKING rules.
- ☑ **Safety equipment** Discuss safety items such as pop-off valves, fire extinguishers, and communication devices.
- ☐ **Vents** Discuss vent lines for Frac tanks and bulk tanks.
- ☑ **High Pressure Manifolding** Clearly mark all high pressure manifolding after rigging it up and before commencing any pumping. Possible marking may include: Yellow tape, signs, roping off the area, orange cones etc.

4. Emergency / Contingency Plans

- ☑ **Location of eyewash / safety shower station** Discuss the location of the eyewash / safety shower station and how to use it.
- ☑ **Assembly Points** Discuss where to gather in the event of an emergency.
- ☐ **Wind direction** Discuss the wind direction and how it may change the contingency plan such as the assembly area location, and discuss how to detect wind direction on the job site (eg. Windsocks, streamers etc.)
- ☑ **Injury and Accident Procedures** Discuss personnel responsibilities and procedures in the event of an injury or accident.
- ☑ **Rescue Procedures** Discuss rescue procedures with the appropriate personnel (trained and equipped)
- ☑ **Emergency Shut Down Procedures** Discuss when, how and what to shut down in the event of an emergency.
- ☐ **Recovery Procedures** Discuss how to return to normal operating procedures after an emergency.

4. Emergency / Contingency Plans (continued)

☐ **Fire fighting** Discuss fire fighting responsibilities with the appropriate personnel (trained & equipped personnel only)	☐ **Spill control** Discuss measures used for reporting and containing spills.
☐ **First Aid Station** point out the location of the first aid lot and who is responsible for administering first aid.	

5. Roles and Responsibilities

Discuss individual roles and responsibilities for all of the above. Determine the level of understanding by asking questions, performing skill checks or other forms of evaluation, depending upon the hazards of the process (eg. Opening and closing of valves, the correct use of communication devices, the correct use of specific PPE such as fall protection, and an understanding of equipment and procedures.

6. Emergency Escape Procedures *(communicate the following information with all employees on location)*

Safe Refuge Area and/or Meeting Point:

Note: If wind direction changes do not proceed to gathering point, but rather proceed upwind after observing wind direction indicator

Evacuation may occur onsite because of: (Check appropriate boxes)	**The following equipment is required on location:** (Check appropriate boxes)
☐ Release of H2S above 10 ppm	☐ H2S monitors
☐ Blowout	☐ Combustible gas monitors
☐ Release of flammable gasses	☐ Wind direction indicator (windsocks, streamers etc.)
☐ Release of other gasses	☐ Escape respirators (one for each employee)
☑ Fire	☐ Release of H2S above 10 ppm

7. Emergency Telephone Numbers and/or Method of Contact (On Shore Jobs)

Ambulance / EMS:	Hospital:
Doctor:	Police:
Supervisor: Halliburton	National Poisons and Hazardous Chemicals
Fire Department	Information Centre:

First Aid Responders on this site (names):

(Only first aid/CPR and Bloodborne Pathogen trained individuals)

8. Rescue Procedures If emergency rescuer is necessary, the following is required: (Check appropriate boxes)

☐ Full facepiece SCBA (30 minute)	☐ Escape respirators
☐ Protective Clothing	☐ Monitoring Equipment
List:	List:

9. Other Comments:

10. Meeting Attended by (signed) Chairman:

Drilling Sup		
Rig Crew		
Cementing crew		

11. Signature (sign below upon completion of this form)

Halliburton Representative:

Halliburton Representative Signature: _____

Company Representative:

Company Representative Signature: _____

HALLIBURTON	CEMENTING (KPI's) KEY PERFORMANCE INDICATORS	SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
		0	13-May-04	John Hargreaves

COUNTRY	BDA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Tim Poltridge	WestWhip tail #1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	Well Type	JOB CLASS
CEMENT JOB	CEMENT CONDUCTOR CASING 14161	Unknown	Non-RTO

SPECIAL TOOLS

JOB TYPE CODE	JOB PURPOSE CODE	Was H2S Present	unknown	Operating Hrs	0
0	0				

DEFINITION OF A JOB - DEFINED AS A PUMPING SESSION

KPI's marked with an * are required fields and must be completed

*** WAS THIS A PRIMARY CEMENT JOB ? (Y/N)** Definition - Primary Cement Job = Casing job, Liner job, Tie-back job or Primary Squeeze Job (Planned Liner Top Squeeze, Squeeze of Existing Perforations, Squeeze of Casing Leak)	YES
*** WAS THIS A PRIMARY PLUG JOB?** Definition: Was this the first attempt to obtain a cement plug at a specific well depth. E.G. Kick Off Plug, Plug to Abandon Plug or LCM Plug	NO
Range: 0 to 100	
***MIXING DENSITY - PERCENT(%) OF JOB STAYED IN DESIGNED DENSITY RANGE: (0 - 100%)** (Density range defined as +/- 0.20ppg ie. 2/10ppg) (Calculation: Total BBLS cement mixed at designed density divided by total BBLS of cement pumped multiplied by 100)	100
*** WAS AUTOMATED DENSITY CONTROL (ADC) USED?**	
***TYPE OF RIG (CLASSIFICATION) JOB WAS PERFORMED ON:** Drill ship, Platform, Jack-Up, Semi-Submersible, Submersible, Land drlg, Land Work Over, Land None	Jack Up
Range: 0 to 100	
***PUMP RATE - PERCENT(%) OF JOB STAYED AT DESIGNED PUMP RATE: (0 - 100%)** (Pump rate range defined as +/- 1bbl/min) (Calculation: Total BBLS of fluid pumped at the designed rate divided by total BBLS of fluid pumped, multiplied by 100)	100
No. OF REMEDIAL SQUEEZE JOBS REQUIRED AFTER PRIMARY JOB PERFORMED BY HES: Definition - Remedial Squeeze Job = Shoe Squeeze, Block Squeeze or Unplanned Liner Top Squeeze	0
NUMBER OF JSA's PERFORMED. (JOB SAFETY ANALYSIS) JSA Number _____	0
NON-PRODUCTIVE RIG TIME: (HRS) (Cementing PSL responsibility) Definition: Time that rig was delayed (hours) due to Cementing responsibility	0
REASON FOR NON PRODUCTIVE RIG TIME: (Cementing PSL Responsibility)Definition: Number of additional plugs set at the same well depth following the FIRST plug pumped by HES	ADD DETAILS
NUMBER OF UNPLANNED SHUTDOWNS: (After starting to pump)Definition: Number of unplanned pumping operation shutdowns	0
REASON FOR UNPLANNED SHUTDOWNS: (After starting to pump)Definition: If appropriate, describe the reason for unplanned shutdown(s) after starting to pump	ADD DETAILS

NUMBER OF REMEDIAL SQUEEZE JOBS REQUIRED AFTER PRIMARY JOB PERFORMED BY COMPETITION:	0
NUMBER OF REMEDIAL PLUG JOBS NEEDED AFTER PRIMARY PLUG PUMPED BY HES: Definition: Number of additional plugs set at the same well depth following the FIRST plug pumped by HES	0
DID WE RUN TOP AND BOTTOM CASING WIPER PLUGS?	NO

(Only complete if a Service Tools Job was performed)

SERVICE TOOLS

*** ENTER SERVICE TOOLS JOB CLASS**	

PERSONNEL

SERVICE TOOL SPECIALIST #1

SERVICE TOOL SPECIALIST #2

JOB SAFETY ANALYSIS

*** WERE APPROPRIATE JSA's CONDUCTED?**	
*** OPERATING HRS -Personnel**	
*** OPERATING HRS -Tools**	

HALLIBURTON — Cmt - Job Summary

SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
0	13-May-04	John Hargreaves

COUNTRY	BDA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Tim Poltridge	WestWhip tail #1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	JOB CLASS
CEMENT JOB	CEMENT CONDUCTOR CASING 14161	Non-RTO

HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS

HES UNIT NUMBERS	HOURS	HES UNIT NUMBERS	HOURS	HES UNIT NUMBERS	HOURS

Form Name: _____ Type: _____
Form Thickness: _____ From: _____ To: _____
Packer Type: _____ Set At: _____
Bottom Hole Temp.: _____ Pressure: _____
Mics. Data: _____ Total Depth: _____

	Called Out	On Location	Job Started	Job Completed
DATE	9/05/2004	9/05/2004	13/05/2004	13/05/2004
TIME	12:00	13:00	16:02	18:30

TOOLS & ACCESSORIES

TYPE & SIZE	QTY	MAKE
Float Collar		
Float Shoe 13 3/8" double valve	1	Davis Lynch
Guide Shoe		
Centralizers		
Bottom Plug		
Top Plug		Drill pipe dart
Head	1	Baker Drill pipe head
Packer		
Other		

WELL DATA

	NEW/USED	WEIGHT	SIZE	FROM	TO	MAX ALLOW
Casing	NEW/		30"	RKB	115	
			20:"	115	118	
		68	13 3/8"	118	121	
Tbg/D.P.	Used	19.5	5"	Rt	120	
Tbg/D.P.						
Open Hole				123		
Perforations						
Perforations						
Perforations						

Treat Fluid _____ Density _____ Lb/Gal
Disp. Fluid _____ Density _____ Lb/Gal
Prop.Type _____ Size _____ Lb. _____
Prop.Type _____ Size _____ Lb. _____
Acid Type _____ Gal. _____ %
Acid Type _____ Gal. _____ %
Surfactant _____ Gal. _____ In
NE Agent _____ Gal. _____ In
Fluid Loss _____ Gal/Lb _____ In
Gelling Agent _____ Gal/Lb _____ In
Fric. Red. _____ Gal/Lb _____ In
Breaker _____ Gal/Lb _____ In
Blocking Agent _____ Gal/Lb
Perfpac Balls _____ Qty
Other _____
Other _____

Hours on Location Date	Hours	Pumping Hours Date	Hours	DESCRIPTION OF JOB
9/05/2004	24	.13/5/04	4	Cmt 30" Conductor
TOTAL	24	TOTAL	4	

CEMENT LEFT IN PIPE

FEET _____ Reason _____

CEMENT DATA

STAGE	SACKS	CEMENT	BULK/SKS	ADDDITIVES	YIELD	LBS/GAL
1	1100	Class"g"	Bulk	1% CaCL 2 BWOC	1.17	15.9

Circulating _____ Displacement _____ Preflush: Gal - bbl _____ Tupe _____
Breakdown _____ Maximum _____ Load & Bkdn: Gal - bbl _____ Pad: bbl - Gal _____
Average _____ Frac Gradient _____ Treatment: Gal - bbl _____ Disp: bbl - Gal _____
Shut In: Instant _____ 5 Min _____ 15 Min _____ Cement Slurry: Gal - bbl _____
Pipe Movement _____ Total Volume : Gal - bbl _____

	CIRCULATION	SPACER / FLUSH	CEMENT	DISPLACEMENT
Fluid type/Density	8.54	8.54	15.9	8.54
Rate	8	3.5	4	2
Volume	50	10	220	6.6

THE INFORMATION STATED HEREIN IS CORRECT — CUSTOMER'S REPRESENTATIVE SIGNATURE

HALLIBURTON Cementing - Job Log		SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
		0	13-May-04	John Hargreaves
COUNTRY	STATE/OPERATIONAL AREA	LOCATION/FIELD NAME		JOB SITE
Australia	Perth	Bass Strait		Offshore-Other < 1500ft
CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER		
ExxonMobil	Tim Poltridge	WestWhip tail #1		
PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3		
Cementing	Zonal Isolation	Cementing Services & Materials		
JOB TYPE CODE	JOB PURPOSE CODE			JOB CLASS
CEMENT JOB	CEMENT CONDUCTOR CASING 14161			Non-RTO

HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS

HES UNIT NUMBERS	HRS	HES UNIT NUMBERS	HRS	HES UNIT NUMBERS	HRS

CHART #	TIME	PUMPS T	PUMPS C	VOLUME (BBL)(GAL)	PRESS (PSI) Tbg	PRESS (PSI) Csg	RATE (BPM)	JOB DESCRIPTION / REMARKS
9/05/2004	13:00							John Hargreaves arrives Ensco 102 and Check equipment
10/05/2004								Make up Baker cmthead and load latch down dart
11/05/2004								Prepare Mix water 1% CaCL2
12/05/2004								Rig run casingand then wait on weather
13/05/2004	13:30- 14:00							Make up Davis Lynch latch in adapter to 5" DP and RIH
	16:02							Start cementing as per Sclumberger cementing report
								as they were cementing on board Ensco 102
	18:03							Job finshed and bumped plug end job

DISTRICT	STATION	TYPE SERVICE	COMPANY	Schlumberger
CAS	PAS	Cement 30" Casing	Esso	

RIG	TYPE OF WELL	FIELD	WELL No.	SERVICE REPORT
Ensco 102	Exploration	West Whiptail	1	

TIME AND DATE JOB STARTED	TOTAL DEPTH	SIZE HOLE	DEVIATION	BHST	BHCT	INVOICE NUMBER
16:00 13/05/04	123m	36				

TIME & DATE JOB COMPLETED	DRILL FLUID			FORMATION	SIR NUMBER
18:10 15/05/04	SW Type	8.6ppg Wt.	Vis		

Casing							Pervious Casing		
30"x20"X13 3/8" Size	121 Depth	Type	Wt.	Volume	Allowable Press.	Collar at	TOP	Bottom	Size

Drill Pipe						BRIDGE PLUG		TAIL PIPE	
5" Size	120 Depth	S-135 Type	19.5 Wt.			Type	Depth	Type	Depth

CASING EQUIPMENT USED				CEMENT HEAD	MUD CIRCULATION PRIOR TO JOB		
SHOE Float Stab	COLLAR Float Stab	PLUGS Top Bottom	CENT. Qty. Type		Time - Min.	50 Vol. BBLS	Press - PSI

WASH			SPACER			LEAD SLURRY				TAIL SLURRY			
8.6 Wt.	100 Vol. BBLS	Fill	Wt.	Vol. BBLS	Fill	Wt.	Vol.	Mix Water	Fill	15.9 Wt.	220 Vol.	135 Mix Water	Fill

EQUIPMENT								DURING JOB WAS PIPE	PARAMETERS RECORDED:				ON:	MUD RETURNS
	LAS	X	Pump		Batch		Compressor	Rotated	X	X	X	X	PRISM	LOST DURING JOB
X	LPJ		Unit		Mixer	X	RCM	Reciprocated	Press	Rate	Vol	Dty	Recorder	BBLS

Pump Unit S/No.

LEAD SLURRY	TAIL SLURRY	MATERIALS USED
	1% CaCl2 0.003 gal/sk NF-6 (HAL) 1075 sx Class G	

TIME	PRESSURE Low	PRESSURE High	VOLUME BBL	VOLUME BPM	LT MIN	RECORD OF SERVICE
						Production tests
16:02		350	10	3.5		Flush Lines
16:09		2000				Pressure Test
16:10			100			Switch to rig to pump sea water
16:33		550	3	4.5		Flush lines to check valve alignment
16:46						Start pumping 15.9 ppg slurry
16:47		2550	3	4	6	Pressure spike, stop slurry, clear sock
16:53						Re-start slurry
16:54		200	5	3		Stop Slurry
16:56		2100	5	3		Re-start slurry, Pressure spike
16:57						Switch to Line 1, Re-start slurry
17:00		430	17	4	5	Stop Slurry, clear sock
17:06						Re-start Slurry
17:10		650	35	4	2	Stop Slurry, clear sock
17:13						Re-start Slurry
17:45		950	220	6		End Slurry
17:48			6	3		Flush Cement Line
17:58			6.6	2		Start Displacement
18:03		1400				Bump Plug
						End Job

No. OF DS PERSONNEL ON JOB						STEM1 DONE? YES X NO	TOTAL LOST TIME 0.2 H	TOTAL OPERATING TIME 4 H
SUP		S.S	1			CUSTOMER COMMENTS		
MECH		F.E.	1	HEL	1 (HAL)			

DS REPRESENTATIVE	CUSTOMER REPRESENTATIVE
Wayne Comben / Mark James	Tim Paltridge

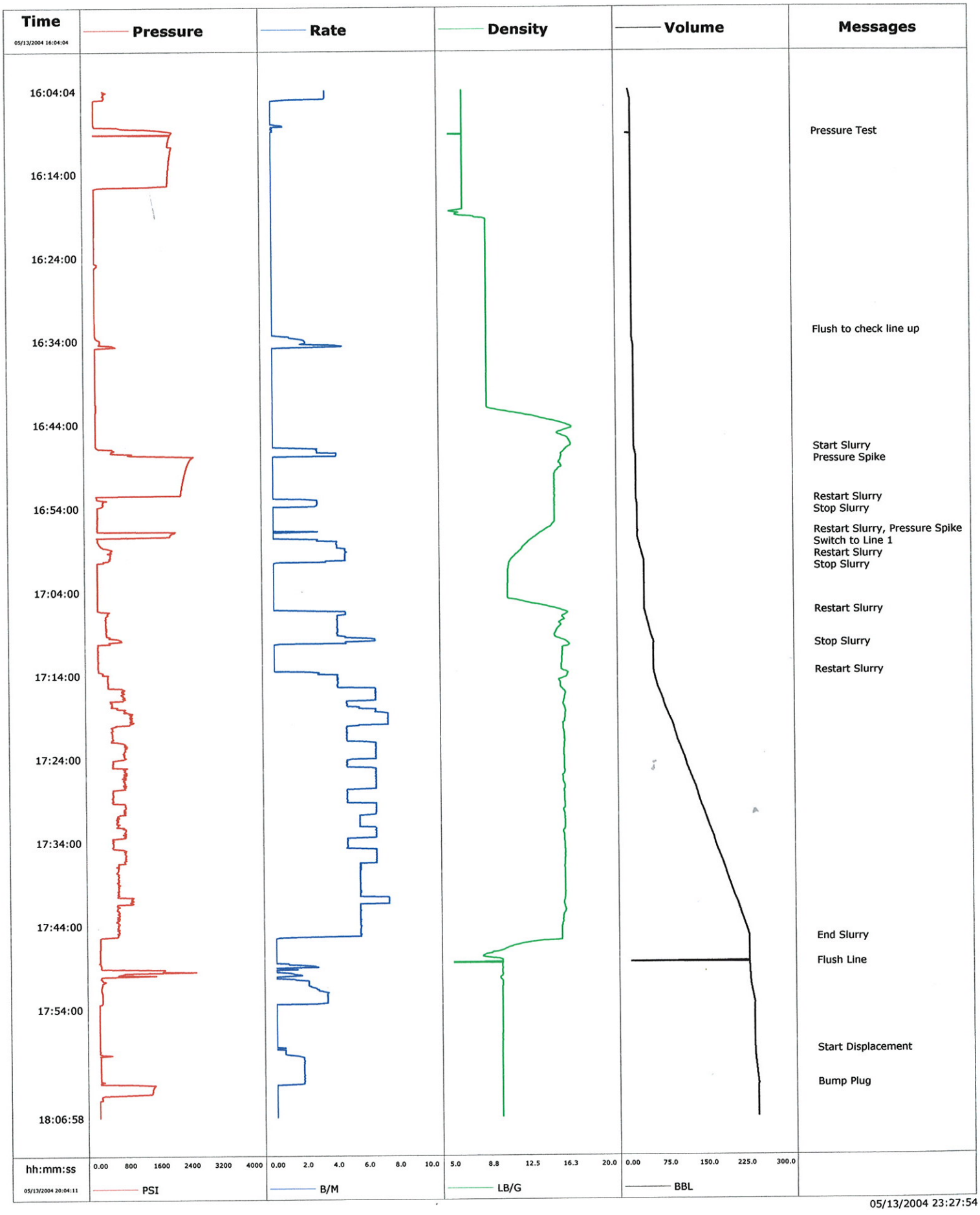
QUALITY OF SERVICE GOOD ☐ SATISFACTORY ☐ POOR ☐

Schlumberger

Cementing Job Report

CemCAT v1.0

Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben/Mark James	**Job Type**	30" Casing
Country	Australia	**Job Date**	05-13-2004



EJCS No:_____ CPI No:_____

HALLIBURTON	CEMENTING END OF JOB CUSTOMER SATISFACTION	SALES ORDER # / TICKET # / JOB #	JOB DATE	ON SITE HES REP
			17-May-04	John Hargreaves

COUNTRY	BDA	LOCATION	JOB SITE TYPE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	Well Type	JOB CLASS
CEMENT JOB	INTERMEDIATE CASING 7522	Production	Non-RTO

HSE Incident? (Accident Injury etc) ☐ YES ☑ NO | Operating Hrs | Customer Completed ☐

SPECIAL TOOLS

Complete if a Special Tools Job was performed

JOB TYPE CODE	JOB PURPOSE CODE

Dear Customer,

We hope that you were satisfied with the service quality of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our perfomance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

Please indicate your response by placing a tick in the box underneath the rating that best matches your opinion.

DESCRIPTION	**Superior Performance** (New quality performance standard - Best Practice)	**Exceeded Expectations** (Provided more than required - Potential Best Practice)	**Met Exectations** (Did what was expected - Prevention/Improvement)	**Below Expectations** (Did not do as expected, Recovery Made - CPI Required)	**Poor Performance** (Job problems/failures, some recovery made - CPI Required)
	5	4	3	2	1
Did our personnel perform the job to your satisfaction?					
Did our equipment perform the job to your satisfaction?					
Did we perform the job to the agreed upon design?					
Did our products and materials perform as you expected?					
Did we perform in a safe & careful manner?					
Did we perform in an environmentally sound manner?					
Was the job performed as scheduled?					
Did the equipment condition & appearance meet you expectations?					
How well did our personnel communicate during mobilisation, rig-up and job execution?					

What can we do to improve our service? (Any further comments may be completed on the back of this form)

Customer Comments (Any further comments may be completed on the back of this form)

Customer Signature: _____ **Date:** _____

All data collected is for trend analysis and business process improvement only.

HALLIBURTON

Job Site Health and Safety Meeting Report & Emergency Response Plan

1. Location Information

	SALES ORDER # (If applicable): 0	JOB DATE: 17-May-04	ON SITE HES REP: John Hargreaves
COUNTRY: Australia	STATE/OPERATIONAL AREA: Perth	LOCATION/FIELD NAME: Bass Strait	JOB SITE: Offshore-Other < 1500ft
CUSTOMER: ExxonMobil	CUSTOMER REPRESENTATIVE: Barry Steel	WELL NAME & NUMBER: WestWhiptail#1	
PSL GROUP - LEVEL 1: Cementing	PSL GROUP - LEVEL 2: Zonal Isolation	PSL GROUP - LEVEL 3: Cementing Services & Materials	
JOB TYPE CODE: CEMENT JOB	JOB PURPOSE CODE: INTERMEDIATE CASING 7522		JOB CLASS: 0

2. Discussion of Hazards

2.1 HAZARDS FOUND AT THE JOB SITE

- ☐ **Electrical** Discuss location of electrical lines and power sources in relation to equipment and lines
- ☑ **Chemicals** Discuss harmful substances on the job site (eg. H2S, flammable gasses, drilling fluids, additives well bore fluids, Radioactive). Ask for MSDS sheets when necessary
- ☐ **Overhead** Discuss overhead hazards (eg, guy wires, hazards while on rig floor or under the rig floor).
- ☑ **Environment** Discuss environmental conditions (eg. heat, cold, ice snow, rain, wind, dust, visibility etc.)
- ☐ **Confined Spaces** Discuss any required entry into confined spaces (eg. Cellars, tanks, pits).
- ☑ **Walking / Working Surfaces** Discuss the terrain where the rig up and job will occur (eg. Boards, limestone, mud, stairways, walkways, the derrick, and the rig floor
- ☑ **Noise** Discuss area with high noise levels and avoid these areas or provide hearing protection.
- ☐ **Hydraulic Leaks** - Discussed procedures to follow for leaks

2.2 HAZARDS FOUND IN JOB PROCEDURES OR INTRODUCED TO THE JOB SITE

- ☑ **Walking / Working Surfaces** Discuss work stations, equipment, and access on and off of them.
- ☑ **Chemicals** Discuss possible exposures to substances such as dusts, chemicals, vapours, and Flammable/combustible.
- ☑ **Noise** Discuss noise levels from equipment. Avoid placing high noise producing equipment next to work stations when possible.
- ☐ **Ignition sources** Discuss possible ignition sources (eg. engines, electrical equipment, open flames, smoking etc.)
- ☑ **Wellbore fluids or Gasses** Discuss shale shaker, Frac tanks, return lines, and vent lines.
- ☑ **Slipping and tripping** Discuss tripping hazards (eg. equipment and lines on the ground and rig floor, suction hoses and vent lines
- ☑ **Falling** Discuss job procedures requiting work at heights greater than 1.8m
- ☑ **Lifting** Discuss proper lifting techniques and ways to eliminate or reduce heavy lifting such as; forklifts, cranes, and sharing the load.
- ☑ **Pressure** Discuss pressure hazards such as DME and bulk tanks.
- ☐ **Radiation** Discuss radiation hazards introduced to the site.
- ☐ **Wireline** Discuss cables, tape off no go areas.
- ☑ **Overhead** Discuss equipment rigged up overhead such as DME above the rig floor, lubricators, chains, pulleys.
- ☐ **Explosives** Discuss explosives handling and storage procedure.
- ☑ **Communication** Discuss radios, hand signals etc.

3. Hazard Controls

- ☑ **Personal protective equipment** Discuss required PPE such as respirators, head protection, hearing protection, protective footwear, hand and skin protection, and fall protection.
- ☑ **Physical barriers** Discuss items such as hose covers, line tie-downs, guards, railings, and inert gas blankets.
- ☐ **Environment** Discuss control measures for environmental factors such as temperature, wind, ice, rain, snow, etc.
- ☐ **Ignition source controls** Discuss control measures for ignition sources such as the use of spark arresters, emergency shutdown procedures, and NO SMOKING rules.
- ☑ **Safety equipment** Discuss safety items such as pop-off valves, fire extinguishers, and communication devices.
- ☐ **Vents** Discuss vent lines for Frac tanks and bulk tanks.
- ☑ **High Pressure Manifolding** Clearly mark all high pressure manifolding after rigging it up and before commencing any pumping. Possible marking may include: Yellow tape, signs, roping off the area, orange cones etc.

4. Emergency / Contingency Plans

- ☑ **Location of eyewash / safety shower station** Discuss the location of the eyewash / safety shower station and how to use it.
- ☑ **Assembly Points** Discuss where to gather in the event of an emergency.
- ☐ **Wind direction** Discuss the wind direction and how it may change the contingency plan such as the assembly area location, and discuss how to detect wind direction on the job site (eg. Windsocks, streamers etc.)
- ☐ **Injury and Accident Procedures** Discuss personnel responsibilities and procedures in the event of an injury or accident.
- ☐ **Rescue Procedures** Discuss rescue procedures with the appropriate personnel (trained and equipped)
- ☑ **Emergency Shut Down Procedures** Discuss when, how and what to shut down in the event of an emergency.
- ☐ **Recovery Procedures** Discuss how to return to normal operating procedures after an emergency.

4. Emergency / Contingency Plans (continued)

☐ **Fire fighting** Discuss fire fighting responsibilities with the appropriate personnel (trained & equipped personnel only)	☐ **Spill control** Discuss measures used for reporting and containing spills.
☐ **First Aid Station** point out the location of the first aid lot and who is responsible for administering first aid.	

5. Roles and Responsibilities

Discuss individual roles and responsibilities for all of the above. Determine the level of understanding by asking questions, performing skill checks or other forms of evaluation, depending upon the hazards of the process (eg. Opening and closing of valves, the correct use of communication devices, the correct use of specific PPE such as fall protection, and an understanding of equipment and procedures.

6. Emergency Escape Procedures *(communicate the following information with all employees on location)*

Safe Refuge Area and/or Meeting Point:

Note: If wind direction changes do not proceed to gathering point, but rather proceed upwind after observing wind direction indicator

Evacuation may occur onsite because of: (Check appropriate boxes)	**The following equipment is required on location:** (Check appropriate boxes)
☐ Release of H2S above 10 ppm	☐ H2S monitors
☐ Blowout	☐ Combustible gas monitors
☐ Release of flammable gasses	☐ Wind direction indicator (windsocks, streamers etc.)
☐ Release of other gasses	☐ Escape respirators (one for each employee)
☑ Fire	☐ Release of H2S above 10 ppm

7. Emergency Telephone Numbers and/or Method of Contact (On Shore Jobs)

Ambulance / EMS:	Hospital:
Doctor:	Police:
Supervisor: Halliburton	National Poisons and Hazardous Chemicals
Fire Department	Information Centre:

First Aid Responders on this site (names):

(Only first aid/CPR and Bloodborne Pathogen trained individuals)

8. Rescue Procedures If emergency rescuer is necessary, the following is required: (Check appropriate boxes)

☐ Full facepiece SCBA (30 minute)	☐ Escape respirators
☐ Protective Clothing	☐ Monitoring Equipment
List:	List:

9. Other Comments:

10. Meeting Attended by (signed) Chairman:

Drilling SUP		
Rig Crew		
Cementing crew		

11. Signature (sign below upon completion of this form)

Halliburton Representative: Company Representative:

Halliburton Representative Signature: _____ Company Representative Signature: _____

HALLIBURTON	CEMENTING (KPI's) KEY PERFORMANCE INDICATORS	SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
		0	17-May-04	John Hargreaves

COUNTRY	BDA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	Well Type	JOB CLASS
CEMENT JOB	INTERMEDIATE CASING 7522	Production	Non-RTO

SPECIAL TOOLS

JOB TYPE CODE	JOB PURPOSE CODE	Was H2S Present	unknown	Operating Hrs	0
0	0				

DEFINITION OF A JOB - DEFINED AS A PUMPING SESSION

KPI's marked with an * are required fields and must be completed

*** WAS THIS A PRIMARY CEMENT JOB ? (Y/N)** Definition - Primary Cement Job = Casing job, Liner job, Tie-back job or Primary Squeeze Job (Planned Liner Top Squeeze, Squeeze of Existing Perforations, Squeeze of Casing Leak)	YES
*** WAS THIS A PRIMARY PLUG JOB?** Definition: Was this the first attempt to obtain a cement plug at a specific well depth. E.G. Kick Off Plug, Plug to Abandon Plug or LCM Plug	NO
	Range: 0 to 100
***MIXING DENSITY - PERCENT(%) OF JOB STAYED IN DESIGNED DENSITY RANGE: (0 - 100%)** (Density range defined as +/- 0.20ppg ie. 2/10ppg) (Calculation: Total BBLS cement mixed at designed density divided by total BBLS of cement pumped multiplied by 100)	100
*** WAS AUTOMATED DENSITY CONTROL (ADC) USED?**	
***TYPE OF RIG (CLASSIFICATION) JOB WAS PERFORMED ON:** Drill ship, Platform, Jack-Up, Semi-Submersible, Submersible, Land drlg, Land Work Over, Land None	Jack Up
	Range: 0 to 100
***PUMP RATE - PERCENT(%) OF JOB STAYED AT DESIGNED PUMP RATE: (0 - 100%)** (Pump rate range defined as +/- 1bbl/min) (Calculation: Total BBLS of fluid pumped at the designed rate divided by total BBLS of fluid pumped, multiplied by 100)	100
No. OF REMEDIAL SQUEEZE JOBS REQUIRED AFTER PRIMARY JOB PERFORMED BY HES: Definition - Remedial Squeeze Job = Shoe Squeeze, Block Squeeze or Unplanned Liner Top Squeeze	0
NUMBER OF JSA's PERFORMED. (JOB SAFETY ANALYSIS) JSA Number _____	1
NON-PRODUCTIVE RIG TIME: (HRS) (Cementing PSL responsibility) Definition: Time that rig was delayed (hours) due to Cementing responsibility	0
REASON FOR NON PRODUCTIVE RIG TIME: (Cementing PSL Responsibility)Definition: Number of additional plugs set at the same well depth following the FIRST plug pumped by HES	ADD DETAILS
NUMBER OF UNPLANNED SHUTDOWNS: (After starting to pump)Definition: Number of unplanned pumping operation shutdowns	0
REASON FOR UNPLANNED SHUTDOWNS: (After starting to pump)Definition: If appropriate, describe the reason for unplanned shutdown(s) after starting to pump	ADD DETAILS

NUMBER OF REMEDIAL SQUEEZE JOBS REQUIRED AFTER PRIMARY JOB PERFORMED BY COMPETITION:	0
NUMBER OF REMEDIAL PLUG JOBS NEEDED AFTER PRIMARY PLUG PUMPED BY HES: Definition: Number of additional plugs set at the same well depth following the FIRST plug pumped by HES	0
DID WE RUN TOP AND BOTTOM CASING WIPER PLUGS?	NO

(Only complete if a Service Tools Job was performed)

SERVICE TOOLS

*** ENTER SERVICE TOOLS JOB CLASS**

PERSONNEL

SERVICE TOOL SPECIALIST #1

SERVICE TOOL SPECIALIST #2

JOB SAFETY ANALYSIS

*** WERE APPROPRIATE JSA's CONDUCTED?**

*** OPERATING HRS -Personnel**

*** OPERATING HRS -Tools**

HALLIBURTON — Cmt - Job Summary

SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
0	17-May-04	John Hargreaves

COUNTRY	BDA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	JOB CLASS
CEMENT JOB	INTERMEDIATE CASING 7522	Non-RTO

HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS

HES UNIT NUMBERS	HOURS	HES UNIT NUMBERS	HOURS	HES UNIT NUMBERS	HOURS

Form Name: _____ Type: _____
Form Thickness: _____ From: _____ To: _____
Packer Type: _____ Set At: _____
Bottom Hole Temp.: _____ Pressure: _____
Mics. Data: _____ Total Depth: _____

	Called Out	On Location	Job Started	Job Completed
DATE	9/05/2004	9/05/2004	17/05/2004	17/05/2004
TIME	12:00	13:00	10:11	12:03

TOOLS & ACCESSORIES

TYPE & SIZE	QTY	MAKE
Float Collar 9 5/8"	1	Superseal II
Float Shoe 9 5/8"	1	Superseal II
Suhut off Baffle adapter	1	Halliburton
Centralizers		
By pass Plug 9 5/8"	1	Halliburton
First Stage closing plug	1	Halliburton
Head 9 5/8"	1	Dowell Integal
Multi stage cmt HES	1	Halliburton
Other		

WELL DATA

	NEW/USED	WEIGHT	SIZE	FROM	TO	MAX ALLOW
Casing	New	47	9 5/8"	RKB	745.06	
Liner						
Liner						
Tbg/D.P.						
Tbg/D.P.						
Open Hole						
Perforations						
Perforations						
Perforations						

Treat Fluid _____ Density _____ Lb/Gal
Disp. Fluid _____ Density _____ Lb/Gal
Prop.Type _____ Size _____ Lb. _____
Prop.Type _____ Size _____ Lb. _____
Acid Type _____ Gal. _____ % _____
Acid Type _____ Gal. _____ % _____
Surfactant _____ Gal. _____ In _____
NE Agent _____ Gal. _____ In _____
Fluid Loss _____ Gal/Lb _____ In _____
Gelling Agent _____ Gal/Lb _____ In _____
Fric. Red. _____ Gal/Lb _____ In _____
Breaker _____ Gal/Lb _____ In _____
Blocking Agent _____ Gal/Lb
Perfpac Balls _____ Qty
Other _____
Other _____

Hours on Location Date	Hours	Pumping Hours Date	Hours	DESCRIPTION OF JOB
9/05/2004	24			
.18/5/04	24	.17/5/04	4	Cmt 9 5/8" Intermediate Casing
TOTAL	48	TOTAL	4	

CEMENT LEFT IN PIPE
FEET _____ Reason _____

CEMENT DATA

STAGE	SACKS	CEMENT	BULK/SKS	ADDDITIVES	YIELD	LBS/GAL
1	415	Class"G"	BULK	14.6gal/10BBL Econolite	2.2	12.5
2	323	Class"G"	BULK	Neat cmt	1.1.8	15.8

Circulating _____ Displacement _____ Preflush: Gal - bbl _____ Tupe _____
Breakdown _____ Maximum _____ Load & Bkdn: Gal - bbl _____ Pad: bbl - Gal _____
Average _____ Frac Gradient _____ Treatment: Gal - bbl _____ Disp: bbl - Gal _____
Shut In: Instant _____ 5 Min _____ 15 Min _____ Cement Slurry: Gal - bbl _____
Pipe Movement _____ Total Volume : Gal - bbl _____

	CIRCULATION	SPACER / FLUSH	CEMENT	DISPLACEMENT
Fluid type/Density	8.54	8.54	12.5/15.8	8.54
Rate	8	7	4.7/4.7	4/8/6/3
Volume	400	50	165/69	180

THE INFORMATION STATED HEREIN IS CORRECT

CUSTOMER'S REPRESENTATIVE SIGNATURE

HALLIBURTON	Cementing - Job Log	SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
		0	17-May-04	John Hargreaves

COUNTRY	STATE/OPERATIONAL AREA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	JOB CLASS
CEMENT JOB	INTERMEDIATE CASING 7522	Non-RTO

HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS

HES UNIT NUMBERS	HRS	HES UNIT NUMBERS	HRS	HES UNIT NUMBERS	HRS

CHART #	TIME	PUMPS T	PUMPS C	VOLUME (BBL)(GAL)	PRESS (PSI) Tbg	PRESS (PSI) Csg	RATE (BPM)	JOB DESCRIPTION / REMARKS
16/05/2004								Prepare mix water
	20:40							Load By-pass baffle onto Float collar and make up shoe track
								consisting of float shoe,float collar and baffle adapter
17/05/2004	3:45							Make up 9 5/8" Multi stage cementer HES to casing RIH
	7:30							Hold safety meeting rig up cmt head
	8:25							Rig begins to circulate
	10:11							Begin pre flush and cmt as per program
								Dowell schlumberger cmt unit see report
	12:03							Switch to rig pumps to displace
						1500		Bumped plug to 1500 psi ,Bled pressure back to cmt unit
								Floats held 2 1/2" BBL bled back
				160		2150		Pressure up casing to 2150 psi and Multi stage cementer open
				350				Rig begins to flush casing with 330 bbl -13.2 Mud
				330				Followed by Seawater until returns are clean,
				330				Followed by 330 Sugar water and displace into Annuals
	22:30-22:40							Make up Adapter Closing tool ,Bumper sub and 8 1/2" Stabilizer
								RIH tag Multi Stage cementer at 88M
								Sit down 10000# on tool ,Shut in Pipe rams and pressure up to
						1300		1300 psi shaear out closing pins and shut tool
18/05/2004	0:00					100		Line up to pump down DP and test casing to 100psi
								All ok as no returns to annuals POOH
	0:05							Pooh with Closing adapter and prepare to test casing
								against Blind Rams
	0:35					2000		Test Casing ,Multi stage cementer and Bling ra,ms to 2000psi
								Test Ok
								Proceed with drilling programe

DISTRICT	STATION	TYPE SERVICE	COMPANY	Schlumberger
CAS	PAS	Cement 9 5/8" Casing	Esso	

RIG	TYPE OF WELL	FIELD	WELL No.	SERVICE REPORT
Ensco 102	Exploration	West Whiptail	1	

TIME AND DATE JOB STARTED	TOTAL DEPTH	SIZE HOLE	DEVIATION	BHST	BHCT	INVOICE NUMBER
10:00 17/05/04	750m	12 1/4"				

TIME & DATE JOB COMPLETED	DRILL FLUID			FORMATION	SIR NUMBER
14:00 17/05/04	WBM Type	9ppg Wt.	Vis		

Casing

Size	Depth	Type	Wt.	Volume	Allowable Press.	Collar at
9 5/8"	745m	L-80	47	180bbl		720

Pervious Casing

TOP	Bottom	Size
	123	13 3/8"

Drill Pipe

Size	Depth	Type	Wt.

BRIDGE PLUG		TAIL PIPE	
Type	Depth	Type	Depth

CASING EQUIPMENT USED

SHOE	COLLAR	PLUGS		CENT.		CEMENT HEAD
X Float Stab	X Float Stab	2 Top	Bottom	19 Qty.	Type	9 5/8" Double Integral

MUD CIRCULATION PRIOR TO JOB

Time - Min.	Vol. BBLS	Press - PSI
	400	

WASH			SPACER			LEAD SLURRY				TAIL SLURRY			
Wt.	Vol. BBLS	Fill	Wt.	Vol. BBLS	Fill	Wt.	Vol.	Mix Water	Fill	Wt.	Vol.	Mix Water	Fill
8.6	50					12.5	164	129		15.8	69	40	

EQUIPMENT						DURING JOB WAS PIPE	PARAMETERS RECORDED:				ON:	MUD RETURNS
	LAS	X Pump	Batch	Compressor		Rotated	X	X	X	X	PRISM	LOST DURING JOB
X	LPJ	Unit	Mixer	X RCM	Pump Unit S/No.	Reciprocated	Press	Rate	Vol	Dty	Recorder	BBLS

LEAD SLURRY	TAIL SLURRY	MATERIALS USED
0.008 gal/sk NF-6 (HAL)	0.003 gal/sk NF-6 (HAL)	
0.452 Econolite (HAL)	340 sx Class G	
420 sx Class G		

TIME	PRESSURE Low	PRESSURE High	VOLUME BBL	VOLUME BPM	LT MIN	RECORD OF SERVICE
						Production tests
10:11			40	7		Pump sea water ahead
10:21		3000				Pressure test lines
10:30		240				Drop Bottom Plug
10:31			10	4.5		Pump sea water behind plug
10:56		500	165	4.7		Start Lead Slurry
11:34		500	69	4.7		Start Tail Slurry
11:48						End Slurry
11:54		110	3	2.5		Flush Lines
11:57		185				Drop Top Plug
11:58		160	20	4.5		Start Displacement
12:03						Switch to rig to continue displacement
						End Job

No. OF DS PERSONNEL ON JOB					STEM1 DONE? YES X NO	TOTAL LOST TIME 02 H	TOTAL OPERATING TIME 4 H
SUP		S.S	1				
MECH		F.E.	1	HEL (HAL) 1			

CUSTOMER COMMENTS

DS REPRESENTATIVE

Wayne Comben / Mark James

QUALITY OF SERVICE GOOD ☐ SATISFACTORY ☐ POOR ☐

CUSTOMER REPRESENTATIVE

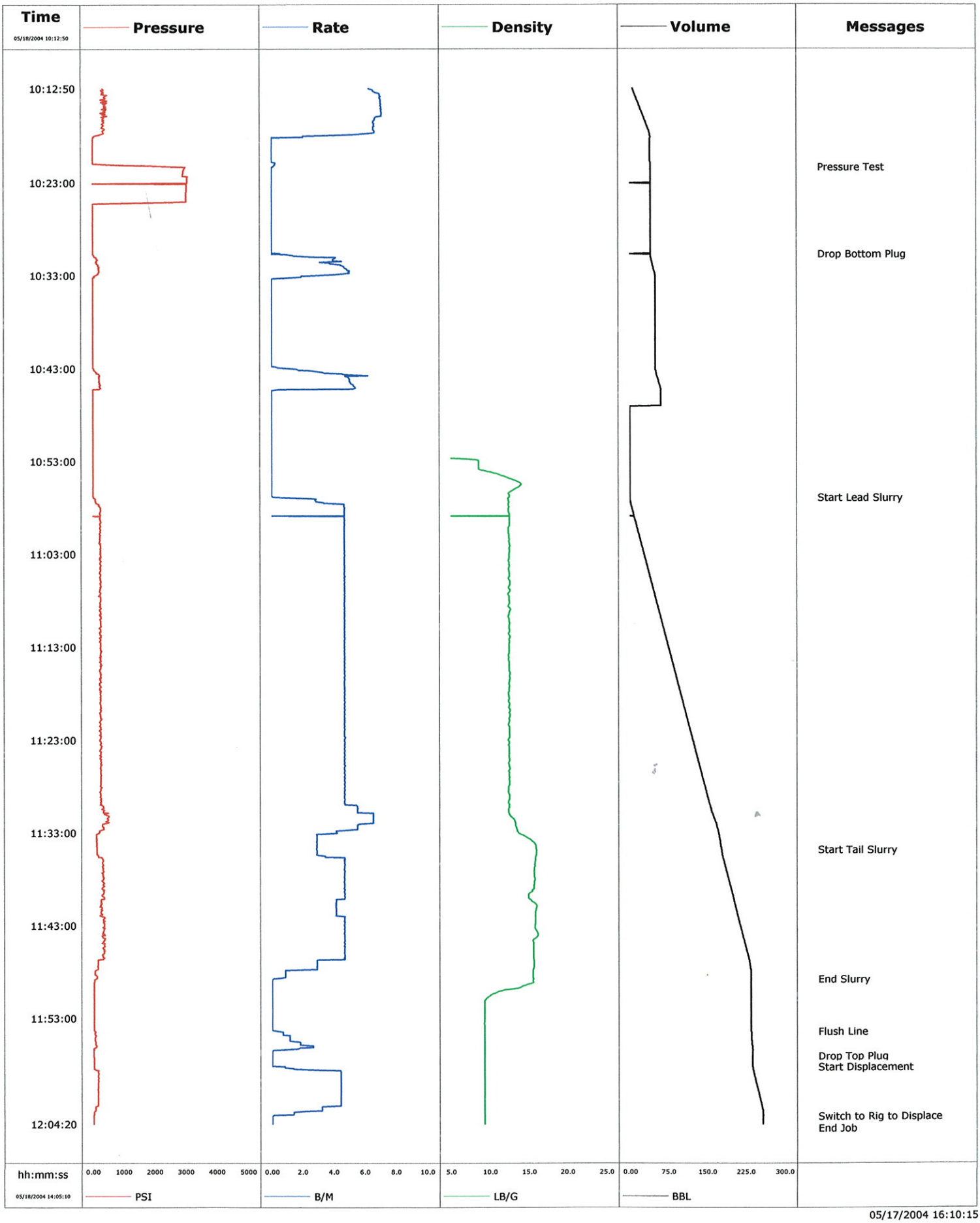
Bruce Steel

Schlumberger

Cementing Job Report

CemCAT v1.0

Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben / Mark James	**Job Type**	9 5/8" Casing
Country	Australia	**Job Date**	05-17-2004

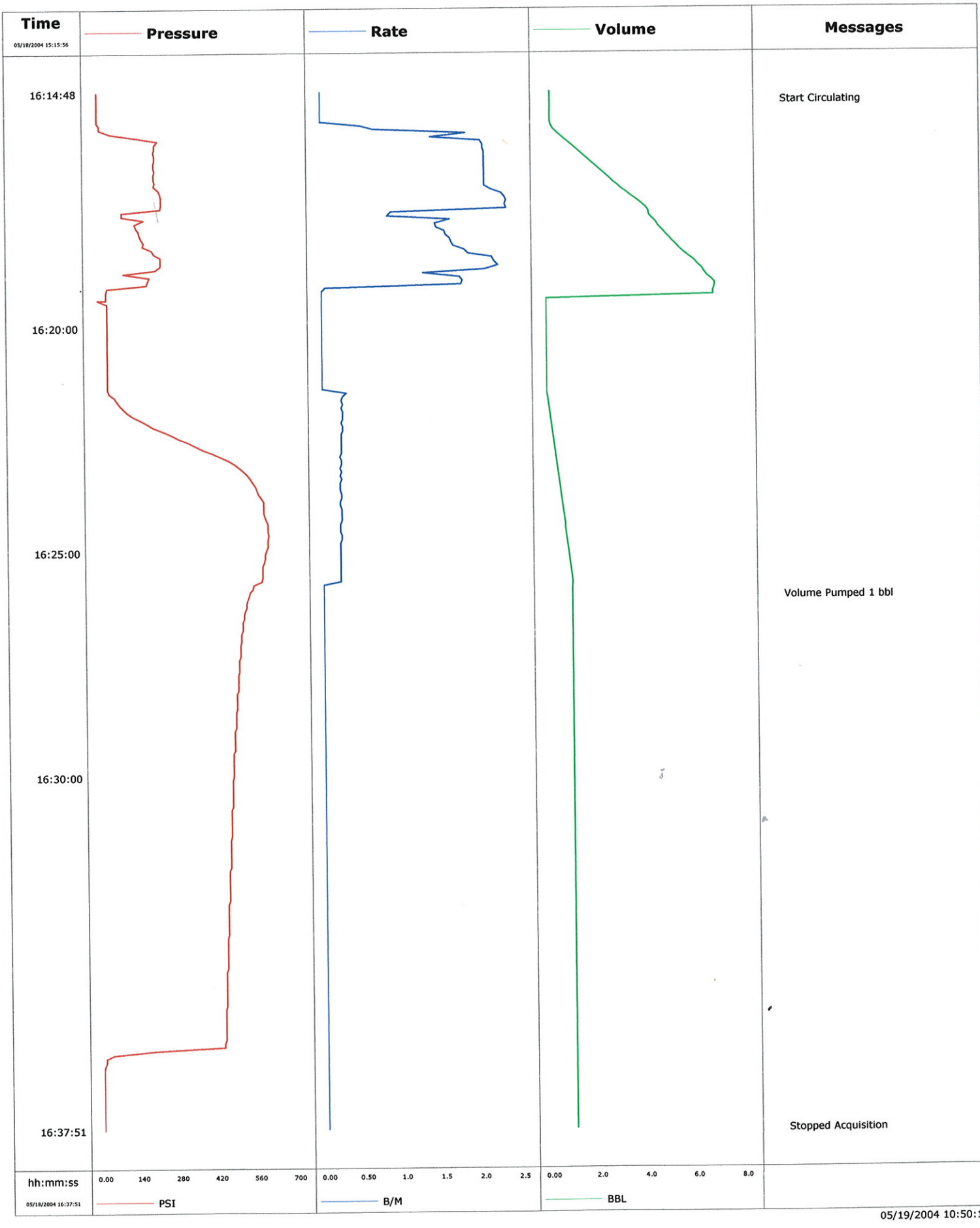


Schlumberger

Cementing Job Report

CemCAT v1.0

Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben	**Job Type**	PIT
Country	Australia	**Job Date**	05-18-2004



Esso Australia Ltd
12 Riverside Quay
Southbank, 3006

West Whiptail – P&A Program
Bass Strait
Victoria

Cementing Recommendation

Prepared For: Chris Meakin
12th May 2004
Revision 0

Submitted by:
Jim Collins

Halliburton Energy Services
90 Talinga Road
Cheltenham
VIC 3192

HALLIBURTON

WELL INFORMATION

Plug 1 Details - 8.5in hole

1600m – 76^{0}C, 1500m – 71^{0}C, 1360 – 65^{0}C, 1139m – 54^{0}C

JOB PARAMETERS

Plug bottom MD:	1,600m	BHST temperature:	76°C
Plug bottom TVD:	1,600m	BHCT temperature:	°C
Plug top MD:	1,450m	Drilling mud type:	PHPA
Plug length:	150m	Drilling mud density:	10.00ppg
Plug length with DP in:	162m		

WELLBORE

Workstring

0-1,500m	5in 19.5ppf tubing

Annulus

0-750m	9 5/8in 47ppf casing (8.681in ID)
750-1,500m	8.5in open hole (20% excess)

SPACERS

Spacer #1 - Freshwater at 8.33ppg

Freshwater	42.00 gal/bbl	40bbl ahead and 11.9bbl behind to balance (169m annular fill / 7min contact time)

Contact times are based on the displacement rate.

CEMENT SLURRY

Composition		**Properties**	
Adelaide Brighton Class G		Surface density:	15.80 ppg
Halad-413L	3.20 gal/bblMF	Surface yield:	1.16 ft³/sk
HR-6L	0.30 gal/bblMF	Total mixing fluid:	5.17 gal/sk
NF-6	0.03 gal/bblMF	Thickening time (70 Bc):	3:30
Freshwater	4.74 gal/sk		

VOLUME CALCULATIONS

Cement

8.5in hole volume	150 m x 0.2303 bbl/m	34.5 bbl
8.5in hole excess	0.20 x 34.5 bbl	6.9 bbl
	Slurry volume =41.5 bbl	
Quantity of cement	41.5 bbl x 5.6146 / 1.16 ft³/sk	201 sacks
Quantity of mixfluid	201 sacks x 5.15 gal/sk	24.7 bbl

Displacement

5in tubing volume	1,134 m x 0.0583 bbl/m	66.1 bbl
	Total displacement volume =66.1 bbl	

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1 x bottoms up:	267.8	6	45
Pump spacers ahead:	40.0	6	7
Mix & pump cement:	41.5	5	8
Drop wiper ball:	N/A	N/A	5
Pump spacers behind:	11.9	6	2
Pump displacement:	66.1	6	11
Pull workstring 50 m above TOC:	200m	20m/min	10
Circulate workstring clean:	87.0	3	29

Total job time (including circulation): 2hr 50min

Minimum cement thickening time (with 2hr safety factor): 3hr 28min

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Freshwater

Freshwater	2,178 gals

Cement

Adelaide Brighton Class G	9 MT(211 ft³)
Halad-413L	79 gals
HR-6L	2 gals
NF-6	1 gals
Freshwater	953 gals

Estimated Cost Per Unit Volume

Spacer #1 - Freshwater
Cement

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

Job Procedure

1. RIH with 5" drill pipe to 1500m
2. Pressure test the cement lines
3. Establish circulation
4. Pump 40 bbls of fresh water
5. Mix 41.5 bbls of cement slurry and pump balanced plug. Take samples and check density
6. Displace with 11.9 bbls of fresh water to balance plug, then change to well fluid
7. Pump 65.1 bbls of well fluid to create a balanced plug, under displaced to avoid U-Tubing

Note: This is 1 bbl less displacement to enable dry POOH

8. Pooh 50m above cement plug to 1300m MD and reverse circulate clean

Note: Wiper balls can be dropped to remove any cement sheath from the pipe

WELL INFORMATION

Plug 2 Details - 9 5/8in casing x 8.5in open hole

JOB PARAMETERS			
Plug bottom MD:	785m	BHST temperature:	34°C
Plug bottom TVD:	785m	BHCT temperature:	28°C
Plug top MD:	695m	Drilling mud type:	PHPA
Plug length:	90m	Drilling mud density:	10.00ppg
Plug length with DP in:	99m		

WELLBORE

Workstring

0-785m	5in 19.5ppf tubing

Annulus

0-750m	9 5/8in 47ppf casing (8.681in ID)
750-785m	8.5in open hole (20% excess)

SPACERS

Spacer #1 - Freshwater at 8.33ppg

Freshwater	42.00 gal/bbl	40bbl ahead and 14.5bbl behind to balance (169m annular fill / 7min contact time)

Contact times are based on the displacement rate.

CEMENT SLURRY

Composition		Properties	
Adelaide Brighton Class G		Surface density:	15.90 ppg
NF-6	0.03 gal/bblMF	Surface yield:	1.17 ft³/sk
Seawater	5.16 gal/sk	Total mixing fluid:	5.24 gal/sk
		Thickening time (70 Bc):	3:10
		Pv/Yp at mix:	98/102

VOLUME CALCULATIONS

Cement

9 5/8in casing volume	55 m x 0.2402 bbl/m	13.2 bbl
8.5in hole volume	35 m x 0.2303 bbl/m	8.1 bbl
8.5in hole excess	0.20 x 8.1 bbl	1.6 bbl
	Slurry volume =22.9 bbl	
Quantity of cement	22.9 bbl x 5.6146 / 1.17 ft³/sk	110 sacks
Quantity of mixwater	110 sacks x 5.24 gal/sk	13.7 bbl

Displacement

5in tubing volume	437 m x 0.0583 bbl/m	25.5 bbl
	Total displacement volume =25.5 bbl	

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1 x bottoms up:	127.3	6	21
Pump spacers ahead:	40.0	6	7
Mix & pump cement:	22.9	5	5
Drop wiper ball:	N/A	N/A	5
Pump spacers behind:	14.5	6	2
Pump displacement:	25.5	6	4
Pull workstring 50 m above TOC:	140m	20m/min	7
Circulate workstring clean:	46.0	3	15

Total job time (including circulation): ***1hr 34min***

Minimum cement thickening time (with 2hr safety factor): ***2hr 36min***

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Freshwater

Freshwater	2,290 gals

Cement

Adelaide Brighton Class G	5 MT(117 ft³)
NF-6	1 gals
Seawater	576 gals

Estimated Cost Per Unit Volume

Spacer #1 - Freshwater
Cement

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

Job Procedure

1. RIH with 5" drill pipe to 785m,
2. Pressure test the cement lines
3. Establish circulation
4. Pump 40 bbls of fresh water
5. Mix and pump 30bbls of cement slurry. Take samples and check density
6. Displace with 14.5 bbls of fresh water to balance plug, then change to well fluid
7. Pump 25.5 bbls of well fluid to create a balanced plug

Note: This is 1 bbl less displacement to enable dry POOH

8. Pooh 50m above cement plug to 645m and reverse clean

Note: Wiper balls can be dropped to remove any cement sheath from the pipe

WELL INFORMATION

Plug 3 Details - 9 5/8in casing

JOB PARAMETERS			
Plug bottom MD:	103m	BHST temperature:	15°C
Plug bottom TVD:	103m	BHCT temperature:	12°C
Plug top MD:	83m	Drilling mud type:	PHPA
Plug length:	20m	Drilling mud density:	10.00ppg
Plug length with DP in:	22m		

WELLBORE

Workstring

0-103m	5in 19.5ppf tubing

Annulus

0-103m	9 5/8in 47ppf casing (8.681in ID)

SPACERS

Spacer #1 - Freshwater at 8.33ppg

Freshwater	42.00 gal/bbl	40bbl ahead and 4.7bbl behind to balance (249m annular fill / 7min contact time)

Contact times are based on the displacement rate.

CEMENT SLURRY

Composition		Properties	
Adelaide Brighton Class G		Surface density:	15.90 ppg
Calcium Chloride 1%	1.00 %BWOC	Surface yield:	1.17 ft³/sk
NF-6	0.03 gal/bblMF	Total mixing fluid:	5.15 gal/sk
Seawater	5.15 gal/sk	Thickening time (70 Bc):	4:18
		Pv/Yp at mix:	47/69

.

VOLUME CALCULATIONS

Cement

9 5/8in casing volume	20 m x 0.2402 bbl/m	4.8 bbl
		Slurry volume =4.8 bbl
Quantity of cement	4.8 bbl x 5.6146 / 1.17 ft³/sk	23 sacks
Quantity of mixwater	23 sacks x 5.18 gal/sk	2.8 bbl

Displacement

Total displacement volume =0.0 bbl

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1 x bottoms up:	16.5	6	3
Pump spacers ahead:	40.0	6	7
Mix & pump cement:	4.8	5	1
Drop wiper ball:	N/A	N/A	5
Pump spacers behind:	4.7	6	1
Pump displacement:	0.0	6	0
Pull workstring 20 m above TOC:	20m	20m/min	2
Circulate workstring clean:	6.0	3	2

Total job time (including circulation): 1hr 06min

Minimum cement thickening time (with 2hr safety factor): 2hr 26min

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Freshwater

Freshwater	1,878 gals

Cement

Adelaide Brighton Class G	1 MT(23 ft^3)
Calcium Chloride 1%	22 lbs
NF-6	0 gals
Freshwater	118 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

Job Procedure

1. RIH with 5" drill pipe to 103m on EZSV, pull up 0.5m
2. Pressure test the cement lines
3. Establish circulation
4. Pump 40 bbls of fresh water spacer
5. Mix and pump 5bbls of cement slurry. Take samples and check density
6. Displace with 4 bbls of fresh water to balance plug
7. Note: This is 0.7 bbl less displacement to enable dry POOH
8. Pooh 20m above cement plug to 63m and reverse clean
9. Note: Wiper balls can be dropped to remove any cement sheath from the pipe

Plug Setting Recommendations

1. **Cement Volume: Pumping sufficient volume is one of the biggest causes of plug failures.**
   - *Open hole*: HOC + 50% excess over gauge to account for washouts, (if not calipered).
   - *Cased Hole*: 10 bbls to compensate for mud contamination.

2. **If plug is not being set on a firm base, set a CST or spot a Viscous Reactive Pill (VRP),** the same length as the proposed plug, to act as a base.

3. **Drill pipe and stinger should be drifted for accurate displacement.** Include using a latch-down indicator sub (ball catcher) to achieve accurate displacement.

4. **Wash over the plug interval.** Rotate and reciprocate down over the entire interval at maximum rate, dependent on well conditions.

5. **Minimise any shutdowns to keep the mud in a fluidised condition.** This will help to maximise mud removal efficiency when placing cement.

6. **Use a side-port diverter tool** to direct the flow outwards, minimising intermixing and providing jetting action. DO NOT USE A MULE SHOE WITH NARROW SLOTS.

7. **Plug height should be limited to 500 ft.** The extra time taken to pull slowly out of the plug increases the risk of cementing-in the cementing assembly.

8. **Use 2-7/8" or 3 ½" stinger** on the end of the drill pipe to minimise stripping the plug when POOH. The recommended length is 1.5 x plug length. When in highly deviated or horizontal holes, centralising the stinger will prevent dead areas of mud on the low side of the hole.

9. **Pump minimum of 40 bbls of spacer ahead of the plug** and required volume behind to balance & separate the mud from the cement. It is best to keep the spacer weight almost equal to the cement weight in horizontal holes.

10. **Pump spacer, cement and displacement at maximum possible rates** with the cement unit, however **do not over displace** - slow rate down prior to end of calculated displacement.

11. **Use side entry sub/swivel** or top-drive cement head to enable rotation of the drill pipe whilst pumping cement and displacement - **DO NOT reciprocate.**

12. **POOH slowly (30 - 60 ft/min)** and break connections carefully to avoid stripping plug until 500ft above the cement plug. Avoid any delay's

13. **Do not circulate on top of plug.** Break circulation slowly so as to minimise disturbance of plug. Never reverse circulate when setting an open-hole plug.

14. **Waiting on cement** should be at least the time for the plug to reach 500 psi. or 3000 psi. for a Kick-off plug. Best results have been obtained by a mandatory 24 hr WOC before disturbing the plug.

EJCS No:_____ **CPI No:**_____

HALLIBURTON CEMENTING END OF JOB CUSTOMER SATISFACTION	SALES ORDER # / TICKET # / JOB #	JOB DATE	ON SITE HES REP
		25-May-04	John Hargreaves

COUNTRY	BDA	LOCATION	JOB SITE TYPE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	Well Type	JOB CLASS
CEMENT JOB	PLUG TO ABANDON 7528	SRVC	Non-RTO

HSE Incident? (Accident Injury etc) ☐ YES ☑ NO	Operating Hrs	Customer Completed ☐

SPECIAL TOOLS

Complete if a Special Tools Job was performed

JOB TYPE CODE	JOB PURPOSE CODE
SPECIAL TOOLS	DRILLABLE TOOL SERVICE 7551

Dear Customer,

We hope that you were satisfied with the service quality of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our perfomance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

Please indicate your response by placing a tick in the box underneath the rating that best matches your opinion.

DESCRIPTION	**Superior Performance** (New quality performance standard - Best Practice) 5	**Exceeded Expectations** (Provided more than required - Potential Best Practice) 4	**Met Exectations** (Did what was expected - Prevention/Improvement) 3	**Below Expectations** (Did not do as expected, Recovery Made - CPI Required) 2	**Poor Performance** (Job problems/failures, some recovery made - CPI Required) 1
Did our personnel perform the job to your satisfaction?		X			
Did our equipment perform the job to your satisfaction?			X		
Did we perform the job to the agreed upon design?			X		
Did our products and materials perform as you expected?			X		
Did we perform in a safe & careful manner?		X			
Did we perform in an environmentally sound manner?		X			
Was the job performed as scheduled?			X		
Did the equipment condition & appearance meet you expectations?			X		
How well did our personnel communicate during mobilisation, rig-up and job execution?		X			

What can we do to improve our service? (Any further comments may be completed on the back of this form)

Customer Comments (Any further comments may be completed on the back of this form)

Good Job(s). Good Communication to Co Rep + with Rig crew.
Good participation + Attendance at safety + operational meetings
Good cooperation between Halliburton & Dowell Schlumberger Tech
getting the Job done. Flawless execution

Customer Signature: Roger Brian **Date:** 25-May-04

All data collected is for trend analysis and business process improvement only.

HALLIBURTON Cmt - Job Summary

SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
0	25-May-04	John Hargreaves

COUNTRY	BDA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	JOB CLASS
CEMENT JOB	PLUG TO ABANDON 7528	Non-RTO

HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS

HES UNIT NUMBERS	HOURS	HES UNIT NUMBERS	HOURS	HES UNIT NUMBERS	HOURS

Form Name: Type:
Form Thickness: From: To:
Packer Type: Set At:
Bottom Hole Temp.: Pressure:
Mics. Data: Total Depth:

	Called Out	On Location	Job Started	Job Completed
DATE	9/05/2004	9/05/2004	24/05/2004	25/05/2004
TIME	12:00	13:00	8:28	11:20

TOOLS & ACCESSORIES

TYPE & SIZE	QTY	MAKE
9 5/8" Mech setting tool	1	Halliburton
9 5/8" Ez drill Sv Bridge plug	1	Halliburton

WELL DATA

	NEW/USED	WEIGHT	SIZE	FROM	TO	MAX ALLOW
Casing	New	47	9 5/8"	RKB	745.06m	
Liner						
Liner						
Tbg/D.P.	used	9.6	2 7/8"	240m	Stinger	length
Tbg/D.P.	used	19.6	5		Above	stinger
Open Hole			8.5"		1539m	
Perforations						
Perforations						
Perforations						

Treat Fluid Density Lb/Gal
Disp. Fluid Density Lb/Gal
Prop.Type Size Lb.
Prop.Type Size Lb.
Acid Type Gal. %
Acid Type Gal. %
Surfactant Gal. In
NE Agent Gal. In
Fluid Loss Gal/Lb In
Gelling Agent Gal/Lb In
Fric. Red. Gal/Lb In
Breaker Gal/Lb In
Blocking Agent Gal/Lb
Perfpac Balls Qty
Other
Other

Hours on Location Date	Hours	Pumping Hours Date	Hours	DESCRIPTION OF JOB
.9/5/04	24	.24/5/04	12	P&A Plug 1a,1b,1c,1d,1e
.26/5/04		.25/5/04	12	Run Mst and bridging Plug set
				Plug No 2 for P&A
TOTAL	24	TOTAL	24	

CEMENT LEFT IN PIPE

FEET Reason

CEMENT DATA

STAGE	SACKS	CEMENT	BULK/SKS	ADDDITIVES	YIELD	LBS/GAL
Plug 1a	197	Class"G"	Bulk	3gal/10BBL HR6L and	1.16	15.8
Plug1b	208	Class"G"	Bulk	20gal/10BBL Halad 413L	1.16	15.8
Plug1c	252	Class"G"	Bulk	Plugs 1a to Plug 1 d	1.16	15.8
Plug1d	222	Class"G"	Bulk		1.16	15.8
Plug1e	205	Class"G"	Bulk	1% CaCl2 BWOC ,Seawater	1.17	15.9
Plug2	70	Class"G"	Bulk	1% CaCl2 BWOC ,Seawater	1.17	15.9

Circulating Displacement Preflush: Gal - bbl Tupe
Breakdown Maximum Load & Bkdn: Gal - bbl Pad: bbl - Gal
Average Frac Gradient Treatment: Gal - bbl Disp: bbl - Gal
Shut In: Instant 5 Min 15 Min Cement Slurry: Gal - bbl
Pipe Movement Total Volume : Gal - bbl

	CIRCULATION	SPACER / FLUSH	CEMENT	DISPLACEMENT
Fluid type/Density	As per program	8.54 for all Plugs	As above	See Job Log
Rate		Average 6.5	4.5 average	See Job Log
Volume		See Job Log	See Job Log	See Job Log

THE INFORMATION STATED HEREIN IS CORRECT CUSTOMER'S REPRESENTATIVE SIGNATURE

HALLIBURTON Cementing - Job Log	SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
	0	25-May-04	John Hargreaves

COUNTRY	STATE/OPERATIONAL AREA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	JOB CLASS
CEMENT JOB	PLUG TO ABANDON 7528	Non-RTO

HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS	HES EMP NAME (EXPOSURE HRS)	HRS

HES UNIT NUMBERS	HRS	HES UNIT NUMBERS	HRS	HES UNIT NUMBERS	HRS

CHART #	TIME	PUMPS T	PUMPS C	VOLUME (BBL)(GAL)	PRESS (PSI) Tbg	PRESS (PSI) Csg	RATE (BPM)	JOB DESCRIPTION / REMARKS
24/05/2004	6:00							Prepare Mix water for P& A plugs
								Plugs 1a,1b,1c,1d
								Hold JSA and Safety meetings before jobs were performed.
	8:28							Plug1A,21BBL freshwater spacer,197 sks ,40.7BBL Slurry at 15.8#
	9:04							2BBL freshwater ,74 BBL Mud displacement
								Plug depth = 1539m- 1365m
	10:15							Plug1B ,21 BBL freshwater spacer,208sks,43BBL Slurry at 15.8#
	10:43							2 BBL Freshwater ,64 BBL Mud displacement
								Plug Depth = 1365m - 1191m
	13:28							Plug1C, 21BBL freshwater spacer,252sks,52.15BBL Slurry at 15.8#
	14:09							2BBL freshwater ,54 BBL Mud displacement
								Plug Depth = 1191m - 1017m
	15:17							Plug 1D, 21BBL Freshwater displacement ,222sks,45.8 BBL Slurry
	15:47							at 15.8#,2 BBL freshwater ,44BBL mud displacment
								Plug Depth = 1017m - 843m
	18:22							Plug1 E,21BBL freshwater spacer,205Sks,42.6BBL Slurry at 15.9#
	18:47							2BBL Freshwater,34BBL Mud displacement
								Plug Depth = 843m - 669m
								Tagged plug at 675m
25/05/2004	6:15							Pick up 9 5/8" MST and make 9 5/8" Ez drill Sv
								bridging plug onto 5" DP and RiH to 170m
								Pick up, slack off 95000#
	8:00							Set Bridging Plug at 170m
								Prepare for Plug Number 2
	8:57							Plug 2 ,10BBL Seawater,70 sks,14.6BBL Slurry at 15.9#
	9:18							3.7BBL seawater 2 BBL Mud
								Plug depth = 170M - 108m
								After cmt plug rig Pull above plug and circulate to Seawater
	11:20							Pooh with MST service Broken and off floor
								Pressure tested cmt plug and bridging plug to 1000psi All OK
								WOC ,Rig continue with operations
								Tagged plug at 675m
	17:15							Rig tag cmt plug @ 117m
								Rig go ahead and prepare to Nipple down BOP
								and cut casing
								Halliburton Operator
								Sal Hargreaves 25/5/04

HALLIBURTON

Job Site Health and Safety Meeting Report & Emergency Response Plan

1. Location Information

	SALES ORDER # (If applicable)	JOB DATE	ON SITE HES REP
	0	25-May-04	John Hargreaves

COUNTRY	STATE/OPERATIONAL AREA	LOCATION/FIELD NAME	JOB SITE
Australia	Perth	Bass Strait	Offshore-Other < 1500ft

CUSTOMER	CUSTOMER REPRESENTATIVE	WELL NAME & NUMBER
ExxonMobil	Barry Steel	WestWhiptail#1

PSL GROUP - LEVEL 1	PSL GROUP - LEVEL 2	PSL GROUP - LEVEL 3
Cementing	Zonal Isolation	Cementing Services & Materials

JOB TYPE CODE	JOB PURPOSE CODE	JOB CLASS
CEMENT JOB	PLUG TO ABANDON 7528	0

2. Discussion of Hazards

2.1 HAZARDS FOUND AT THE JOB SITE

- ☐ **Electrical** Discuss location of electrical lines and power sources in relation to equipment and lines
- ☑ **Chemicals** Discuss harmful substances on the job site (eg. H2S, flammable gasses, drilling fluids, additives well bore fluids, Radioactive). Ask for MSDS sheets when necessary
- ☐ **Overhead** Discuss overhead hazards (eg, guy wires, hazards while on rig floor or under the rig floor).
- ☑ **Environment** Discuss environmental conditions (eg. heat, cold, ice snow, rain, wind, dust, visibility etc.)
- ☐ **Confined Spaces** Discuss any required entry into confined spaces (eg. Cellars, tanks, pits).
- ☑ **Walking / Working Surfaces** Discuss the terrain where the rig up and job will occur (eg. Boards, limestone, mud, stairways, walkways, the derrick, and the rig floor
- ☑ **Noise** Discuss area with high noise levels and avoid these areas or provide hearing protection.
- ☐ **Hydraulic Leaks** - Discussed procedures to follow for leaks

2.2 HAZARDS FOUND IN JOB PROCEDURES OR INTRODUCED TO THE JOB SITE

- ☑ **Walking / Working Surfaces** Discuss work stations, equipment, and access on and off of them.
- ☑ **Chemicals** Discuss possible exposures to substances such as dusts, chemicals, vapours, and Flammable/combustible.
- ☑ **Noise** Discuss noise levels from equipment. Avoid placing high noise producing equipment next to work stations when possible.
- ☐ **Ignition sources** Discuss possible ignition sources (eg. engines, electrical equipment, open flames, smoking etc.)
- ☑ **Wellbore fluids or Gasses** Discuss shale shaker, Frac tanks, return lines, and vent lines.
- ☑ **Slipping and tripping** Discuss tripping hazards (eg. equipment and lines on the ground and rig floor, suction hoses and vent lines
- ☑ **Falling** Discuss job procedures requiting work at heights greater than 1.8m
- ☑ **Lifting** Discuss proper lifting techniques and ways to eliminate or reduce heavy lifting such as; forklifts, cranes, and sharing the load.
- ☑ **Pressure** Discuss pressure hazards such as DME and bulk tanks.
- ☐ **Radiation** Discuss radiation hazards introduced to the site.
- ☐ **Wireline** Discuss cables, tape off no go areas.
- ☑ **Overhead** Discuss equipment rigged up overhead such as DME above the rig floor, lubricators, chains, pulleys.
- ☐ **Explosives** Discuss explosives handling and storage procedure.
- ☑ **Communication** Discuss radios, hand signals etc.

3. Hazard Controls

- ☑ **Personal protective equipment** Discuss required PPE such as respirators, head protection, hearing protection, protective footwear, hand and skin protection, and fall protection.
- ☑ **Physical barriers** Discuss items such as hose covers, line tie-downs, guards, railings, and inert gas blankets.
- ☐ **Environment** Discuss control measures for environmental factors such as temperature, wind, ice, rain, snow, etc.
- ☐ **Ignition source controls** Discuss control measures for ignition sources such as the use of spark arresters, emergency shutdown procedures, and NO SMOKING rules.
- ☑ **Safety equipment** Discuss safety items such as pop-off valves, fire extinguishers, and communication devices.
- ☐ **Vents** Discuss vent lines for Frac tanks and bulk tanks.
- ☑ **High Pressure Manifolding** Clearly mark all high pressure manifolding after rigging it up and before commencing any pumping. Possible marking may include: Yellow tape, signs, roping off the area, orange cones etc.

4. Emergency / Contingency Plans

- ☑ **Location of eyewash / safety shower station** Discuss the location of the eyewash / safety shower station and how to use it.
- ☑ **Assembly Points** Discuss where to gather in the event of an emergency.
- ☐ **Wind direction** Discuss the wind direction and how it may change the contingency plan such as the assembly area location, and discuss how to detect wind direction on the job site (eg. Windsocks, streamers etc.)
- ☑ **Injury and Accident Procedures** Discuss personnel responsibilities and procedures in the event of an injury or accident.
- ☐ **Rescue Procedures** Discuss rescue procedures with the appropriate personnel (trained and equipped)
- ☑ **Emergency Shut Down Procedures** Discuss when, how and what to shut down in the event of an emergency.
- ☐ **Recovery Procedures** Discuss how to return to normal operating procedures after an emergency.

4. Emergency / Contingency Plans (continued)

☐ **Fire fighting** Discuss fire fighting responsibilities with the appropriate personnel (trained & equipped personnel only)	☐ **Spill control** Discuss measures used for reporting and containing spills.
☐ **First Aid Station** point out the location of the first aid lot and who is responsible for administering first aid.	

5. Roles and Responsibilities

Discuss individual roles and responsibilities for all of the above. Determine the level of understanding by asking questions, performing skill checks or other forms of evaluation, depending upon the hazards of the process (eg. Opening and closing of valves, the correct use of communication devices, the correct use of specific PPE such as fall protection, and an understanding of equipment and procedures.

6. Emergency Escape Procedures *(communicate the following information with all employees on location)*

Safe Refuge Area and/or Meeting Point:

Note: If wind direction changes do not proceed to gathering point, but rather proceed upwind after observing wind direction indicator

Evacuation may occur onsite because of: (Check appropriate boxes)	**The following equipment is required on location:** (Check appropriate boxes)
☐ Release of H2S above 10 ppm	☐ H2S monitors
☐ Blowout	☐ Combustible gas monitors
☐ Release of flammable gasses	☐ Wind direction indicator (windsocks, streamers etc.)
☐ Release of other gasses	☐ Escape respirators (one for each employee)
☑ Fire	☐ Release of H2S above 10 ppm

7. Emergency Telephone Numbers and/or Method of Contact (On Shore Jobs)

Ambulance / EMS:	Hospital:
Doctor:	Police:
Supervisor: Halliburton	National Poisons and Hazardous Chemicals
Fire Department	Information Centre:

First Aid Responders on this site (names):

(Only first aid/CPR and Bloodborne Pathogen trained individuals)

8. Rescue Procedures If emergency rescuer is necessary, the following is required: (Check appropriate boxes)

☐ Full facepiece SCBA (30 minute)	☐ Escape respirators
☐ Protective Clothing	☐ Monitoring Equipment
List:	List:

9. Other Comments:

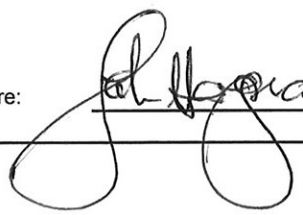
10. Meeting Attended by (signed) Chairman:

Drilling SUP		
Rig Crew		
Cementing crew		

11. Signature (sign below upon completion of this form)

Halliburton Representative:

Halliburton Representative Signature:



Company Representative:

Company Representative Signature: _____

HALLIBURTON SERVICE TOOLS JOB HISTORY REPORT

Version 1.0 12th June 2000 - e-mail to Ed.Anderson@halliburton.com

GENERAL INFORMATION

FBM		Country
Asia Pacific		Australia
Customer		**NWA**
Exxon Mobile		Australia
Rig Name	**Rig Type**	**Well Name/No.**
Ensco 102	Jack-up	WestWhipTail #2
Location Type	**Run No.**	**Water Depth**
Offshore	1	

EQUIPMENT DATA

Job Type		O Ring	Dev
Bridge Plugs (EZSV)		70	3
Packer Type	**MD Pkr**	**TVD Pkr**	**Duro**
EZSV	557.6	557.6	
Tool Description		**Tool#**	**Depth**
9 5/8" Mech Setting tool		XWAEZ007	557.6

COMMENTS (Include CPI no. if required)

WELL INFORMATION

	Type		Density	PH
Well Fluid	Water Based		10	
	Type		**Size**	**Weight**
Work-string	IF Drill Pipe		5	19.6
	Size	**Weight**	**Grade**	**Shoe Depth**
Casing / Liner	9 5/8"	47	L-80	745

RUN DATA

Hole Conds.	Max BHST	Max BHSP

Packer Info	Packer Element OD	Packer Shoes OD
	As per 9 5/8" Ez drill Sv	As per 9 5/8" Ez drill Sv
	Pick-Up Weight	**Slack-off Weight**
	95000	95000
	Packer Set Weight	**Max Differential**
	50000# tension Sleeve	
	Max Overpull	**Jars Used?** / **Shear Joint**

	Date	Time
Date-Time RIH w/Tools (through Rotary Table)		
Date-Time POOH w/Tools (through Rotary Table)		
Total Hours In Hole	5.0	
Total Hours On Bottom	3.0	

Specialist(s)	Specialist #1

JOB CLASSIFICATION

Job Class	1
Non Productive Time (For Job Class 3 Only)	

DISTRICT	STATION	TYPE SERVICE	COMPANY	Schlumberger
CAS	PAS	P&A	Esso	

RIG	TYPE OF WELL	FIELD	WELL No.	SERVICE REPORT
Ensco 102	Exploration	West Whiptail	1	

TIME AND DATE JOB STARTED	TOTAL DEPTH	SIZE HOLE	DEVIATION	BHST	BHCT	INVOICE NUMBER
8:30 23/05/04	1539	8 1/2				

TIME & DATE JOB COMPLETED	DRILL FLUID			FORMATION	SIR NUMBER
10:55 23/05/04	WBM Type	10ppg Wt.	Vis		

Casing						
Size	Depth	Type	Wt.	Volume	Allowable Press.	Collar at

Drill Pipe					
Size	Depth	Type	Wt.		
5"					

Pervious Casing		
TOP	Bottom	Size
	745	9 5/8

BRIDGE PLUG		TAIL PIPE	
Type	Depth	Type	Depth
		2 7/8"	1539

CASING EQUIPMENT USED				CEMENT HEAD	MUD CIRCULATION PRIOR TO JOB		
SHOE Float Stab	COLLAR Float Stab	PLUGS Top	Bottom	CENT. Qty. Type		Time - Min.	Vol. BBLS	Press - PSI

WASH			SPACER			LEAD SLURRY				TAIL SLURRY			
Wt.	Vol. BBLS	Fill	Wt.	Vol. BBLS	Fill	Wt.	Vol.	Mix Water	Fill	Wt.	Vol.	Mix Water	Fill
8.6										15.8			

EQUIPMENT								DURING JOB WAS PIPE	PARAMETERS RECORDED:				ON:	MUD RETURNS
	LAS	X	Pump	X	Batch		Compressor	Rotated	X	X	X	X	PRISM	LOST DURING JOB
X	LPJ		Unit		Mixer	X	RCM	Reciprocated	Press	Rate	Vol	Dty	Recorder	BBLS

Pump Unit S/No.

LEAD SLURRY	TAIL SLURRY	MATERIALS USED
	15.8 ppg Class G as per Halliburton Slurry Design	

TIME	PRESSURE Low	PRESSURE High	VOLUME BBL	VOLUME BPM	LT MIN	RECORD OF SERVICE
						Production tests
						P&A Plug 1A 1539m-1365m
08:28			21	5		Bump fresh water ahead
08:45			41	4-5		Mix and Pump 15.8ppg slurry as per Halliburton design w/ FW
09:03			2	2		Pump Fresh water spacer behind
09:04			76	6.5		Displace with Mud
09:16						Finish
						P&A Plug 1B 1365m-1191m
10:15			21	6.5		Pump fresh water spacer ahead
10:28			43	3.5-4.5		Mix and Pump15.8ppg slurry as per Halliburton design w/ FW
10:42			2	1.5		Pump fresh water spacer behind
10:43			64	6.5		Displace with Mud
10:54						Finish
						P&A Plug 1C 1191m-1017m
13:28			21	6.5		Pump fresh water spacer ahead
13:53			54	4-5		Mix and Pump 15.8ppg slurry as per Halliburton design w/FW
14:09			2	3		Pump fresh water spacer behind
14:09			56	6.5		Displace with Mud
14:18						Finish

No. OF DS PERSONNEL ON JOB						STEM1 DONE? YES X NO	TOTAL LOST TIME 0 H	TOTAL OPERATING TIME 6 H
SUP		S.S	1			CUSTOMER COMMENTS	DS REPRESENTATIVE	
MECH		F.E.	1	HEL (HAL)	1		Wayne Comben / Mark James	

QUALITY OF SERVICE	GOOD		SATISFACTORY		POOR		CUSTOMER REPRESENTATIVE
							Barry Steel

DISTRICT	STATION	TYPE SERVICE	COMPANY	Schlumberger
CAS	PAS	P&A	Esso	

RIG	TYPE OF WELL	FIELD	WELL No.	SERVICE REPORT
Ensco 102	Exploration	West Whiptail	1	

TIME AND DATE JOB STARTED	TOTAL DEPTH	SIZE HOLE	DEVIATION	BHST	BHCT	INVOICE NUMBER
15:10 23/05/04	1539	8 1/2				

TIME & DATE JOB COMPLETED	DRILL FLUID			FORMATION	SIR NUMBER
9:24 24/05/04	WBM Type	10ppg Wt.	Vis		

Casing							Pervious Casing		
Size	Depth	Type	Wt.	Volume	Allowable Press.	Collar at	TOP	745 Bottom	9 5/8 Size

Drill Pipe						BRIDGE PLUG		TAIL PIPE	
5" Size	Depth	Type	Wt.			Type	Depth	2 7/8" Type	1539 Depth

CASING EQUIPMENT USED				CEMENT HEAD	MUD CIRCULATION PRIOR TO JOB		
SHOE Float Stab	COLLAR Float Stab	PLUGS Top Bottom	CENT. Qty. Type		Time - Min.	Vol. BBLS	Press - PSI

WASH			SPACER			LEAD SLURRY				TAIL SLURRY			
8.6 Wt.	Vol. BBLS	Fill	Wt.	Vol. BBLS	Fill	Wt.	Vol.	Mix Water	Fill	15.8 Wt.	Vol.	Mix Water	Fill

EQUIPMENT							DURING JOB WAS PIPE	PARAMETERS RECORDED:				ON:	MUD RETURNS
	LAS	X	Pump	X	Batch	Compressor	Rotated	X	X	X	X	PRISM	LOST DURING JOB
X	LPJ		Unit		Mixer	X RCM	Reciprocated	Press	Rate	Vol	Dty	Recorder	BBLS

Pump Unit S/No.

LEAD SLURRY	TAIL SLURRY	MATERIALS USED
	15.8 ppg Class G as per Halliburton Slurry Design	

TIME	PRESSURE Low	PRESSURE High	VOLUME BBL	VOLUME BPM	LT MIN	RECORD OF SERVICE
						Production tests
						P&A Plug 1D 1017m-843m
15:18			21	6.5		Bump fresh water ahead
15:31			46	5		Mix and Pump 15.8ppg slurry as per Halliburton design w/ FW
15:46			2	2.5		Pump Fresh water spacer behind
15:47			44	6.6		Displace with Mud
15:56						Finish
						P&A Plug 1E 843m-669m
18:22			21	6		Pump fresh water spacer ahead
18:36			43	4.75		Mix and Pump15.8ppg slurry as per Halliburton design w/ SW &1%CaCl2
18:49			2	6.5		Pump fresh water spacer behind
18:49			35	6.5		Displace with Mud
18:58						Finish
						P&A Plug 2 170m-110m
08:58			10	6.5		Pump Sea water spacer ahead
09:11			17	4.5		Mix and Pump 15.8ppg slurry as per Halliburton design w/SW &1%CaCl2
09:19			3.7	3.5		Pump Sea water spacer behind
09:19			2	3.5		Displace with Mud
09:24						Finish

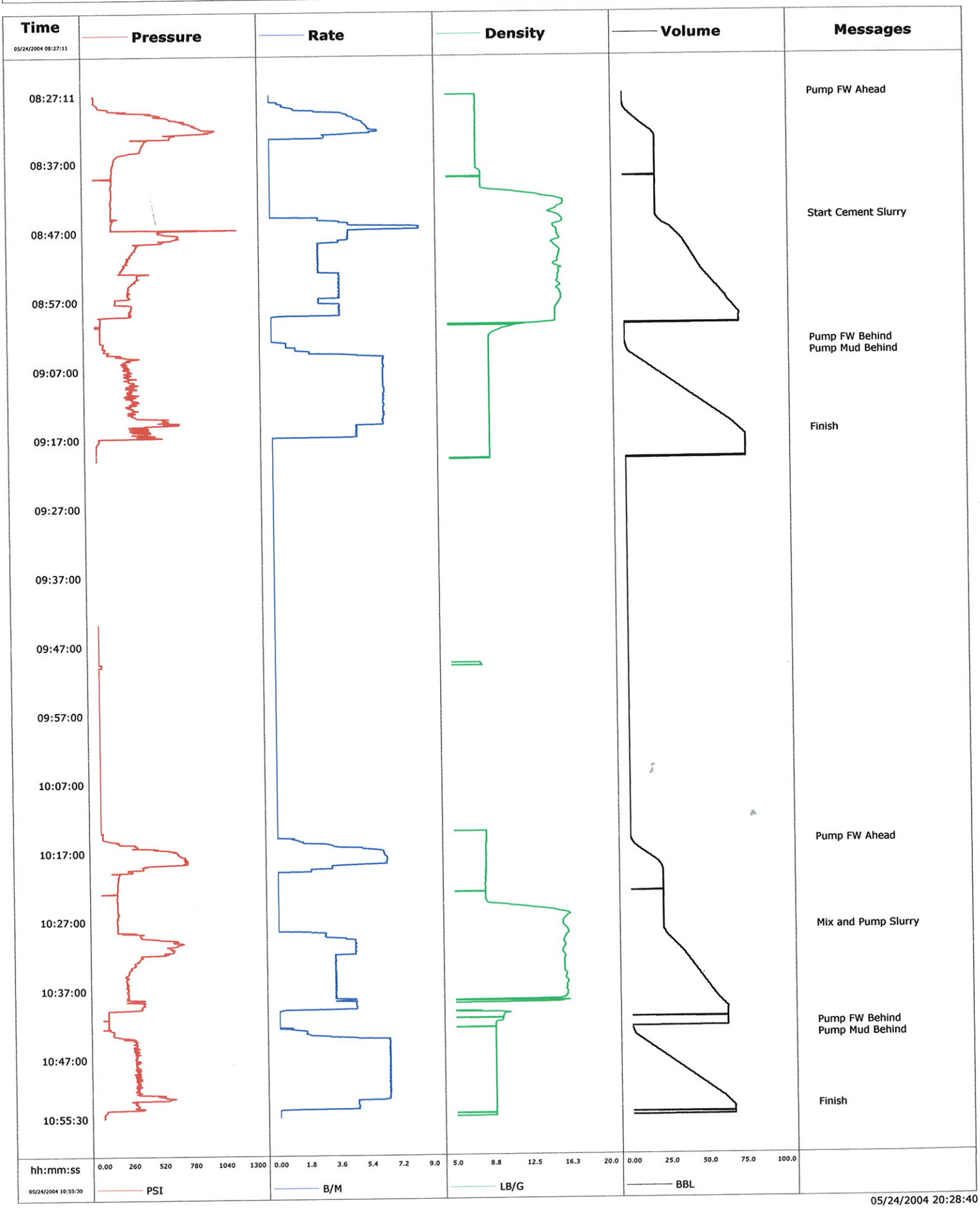
No. OF DS PERSONNEL ON JOB						STEM1 DONE? YES X NO	TOTAL LOST TIME 0 H	TOTAL OPERATING TIME 7 H
SUP		S.S	1			CUSTOMER COMMENTS	DS REPRESENTATIVE	
MECH		F.E.	1	HEL (HAL)	1		Wayne Comben / Mark James	

QUALITY OF SERVICE	GOOD	SATISFACTORY	POOR	CUSTOMER REPRESENTATIVE
				Barry Steel

Schlumberger

Cementing Job Report

Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben	**Job Type**	P and A Plugs 1A and 1B
Country	Australia	**Job Date**	05-24-2004

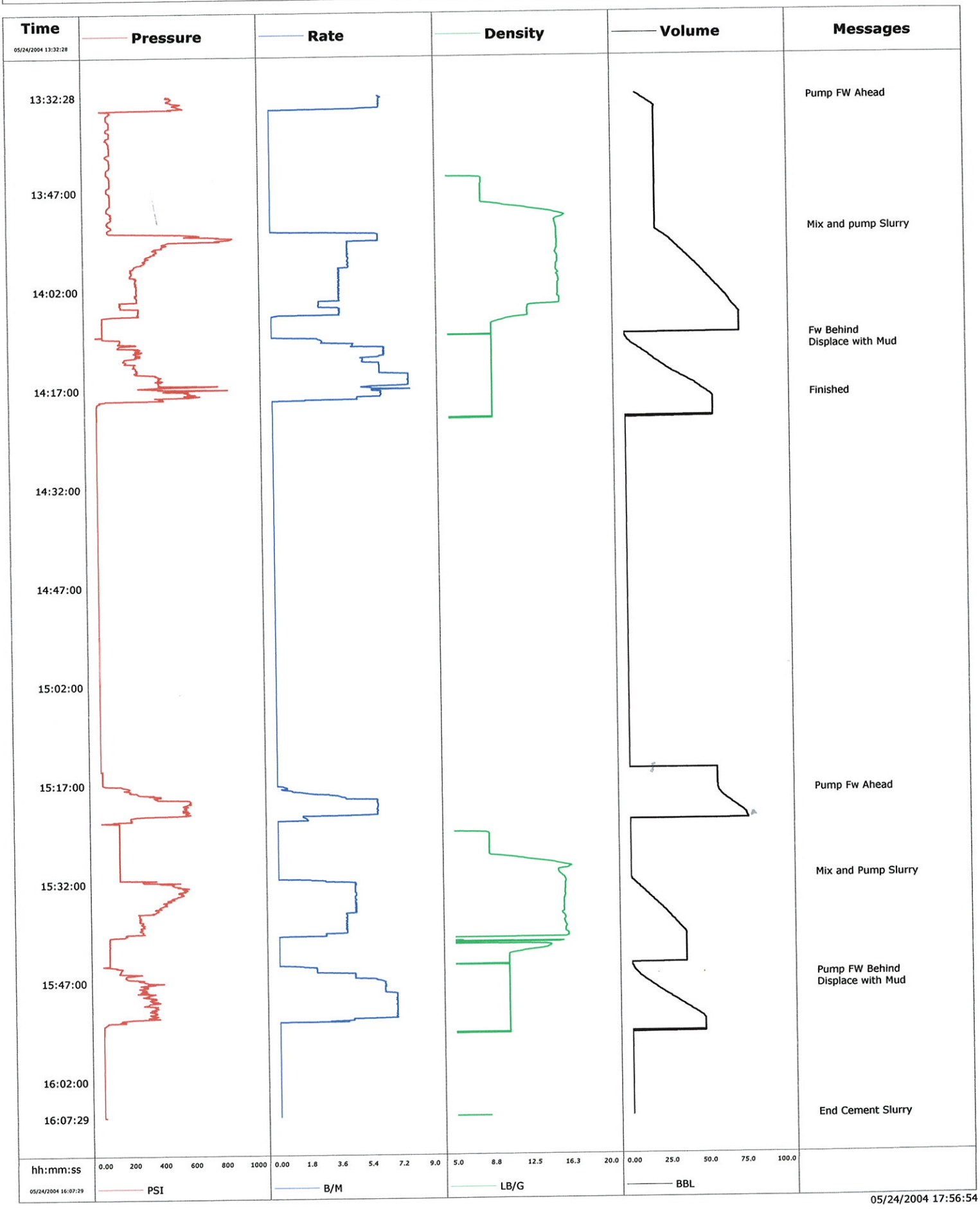


Schlumberger

Cementing Job Report

CemCAT v1.0

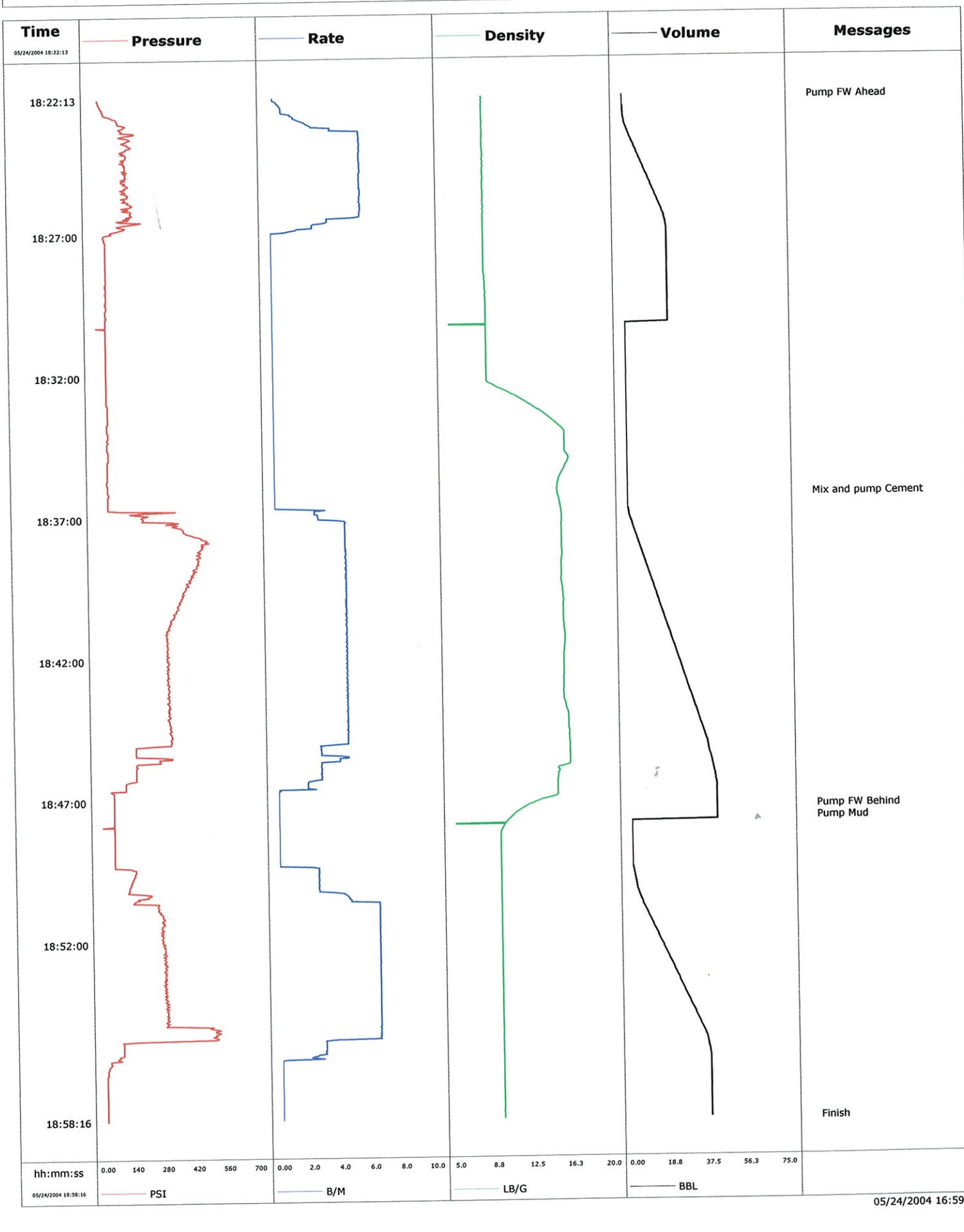
Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben	**Job Type**	PA Plug 1C and 1D
Country	Australia	**Job Date**	05-24-2004



Schlumberger

Cementing Job Report

Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben	**Job Type**	PA Plug 1E
Country	Australia	**Job Date**	05-24-2004

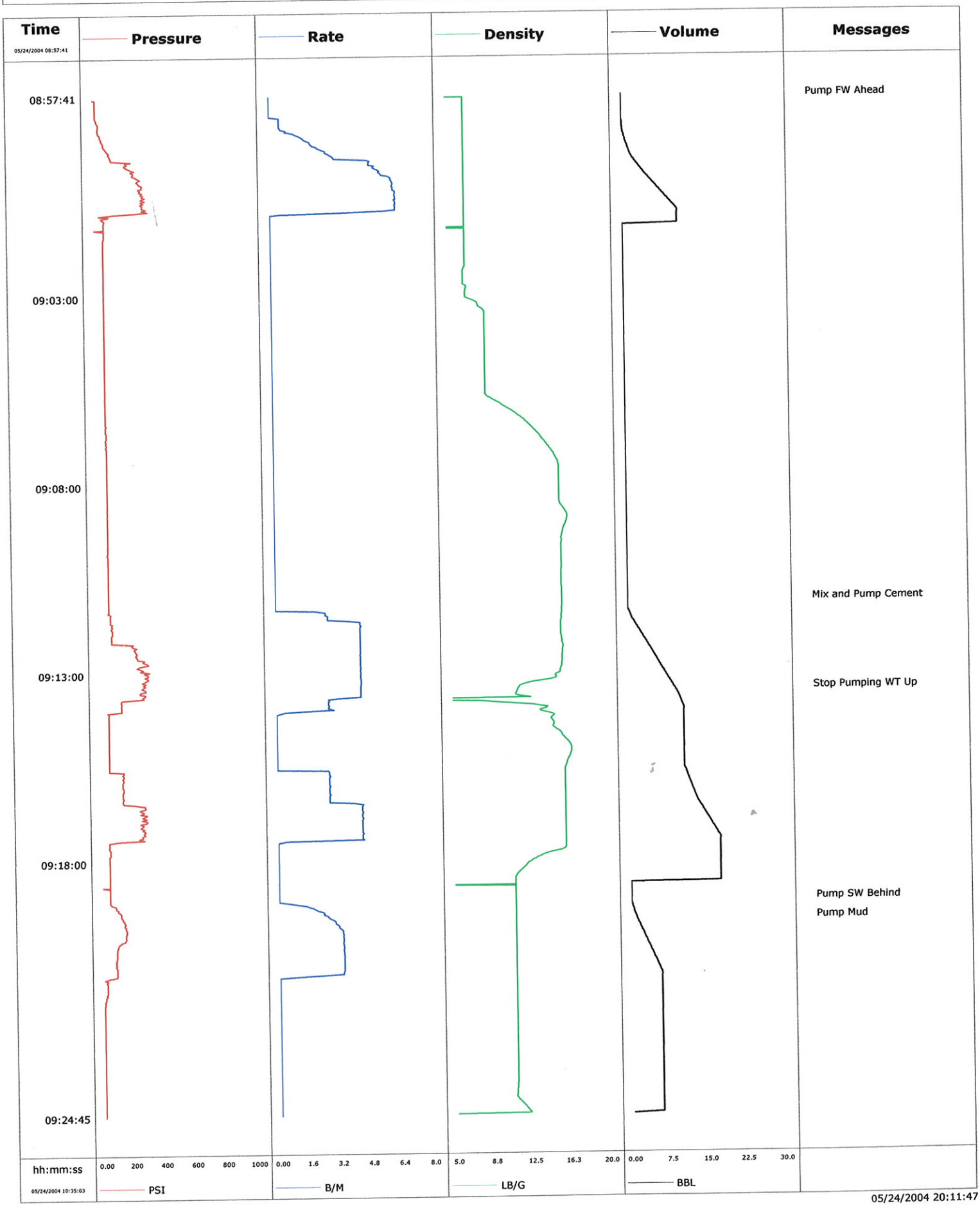


Schlumberger

Cementing Job Report

CemCAT v1.0

Well	West Whiptail 1	**Client**	Esso
Field	West Whiptail	**SIR No.**	
Engineer	Wayne Comben	**Job Type**	PA Plug 2
Country	Australia	**Job Date**	05-24-2004



HALLIBURTON

CEMENT SLURRY REPORT

Customer	:	Esso	Date	:	3-May-04
Well Name	:	Westwhiptail-1	Reference	:	S10/WWT/01/30inch
Casing Size	:	30 in.			
Job Type	:	Conductor Casing			
Slurry Type	:	Tail			

RKB to Mudline	:	78	Meters	**Depth(TVD from RKB)**	:	120	Meters
Depth(MD from RKB)	:	120	Meters	**BHCT (per API Spec 10)**	:	13	Deg.C.
Surface Temperature	:	27	Deg.C.	**Water Source**	:	Seawater	
BHST	:	13	Deg.C.	**Mud Weight**	8.60	PPG	

ABC Class 'G'	:	94.00	Lbs.	From Yard
NF-6	:	0.003	Gals/Sk	0.25 gal/10bbl of Mix Fluid
Calcium Chloride		1.0	% BWOC	

Slurry Weight (Surface)	:	15.90	PPG	**Slurry Yield (Surface)**	:	1.17	CuFt/Sack
Mixing Water	:	5.15	Gals/Sack	**Total Mixing Fluid**	:	5.15	Gals/Sack

Thickening Time (Hrs:Mins)	:	**Initial B**	**30 BC**	**50 BC**	**70 BC**	300	psi
		14	3:12	3:26	3:34	13	Deg.C.

Fann Readings (RPM)	:	**300**	**200**	**100**	**6**	**3**	**PV**	**YP**
80 Deg F	:	102	86	68	28	22	51	51

500 psi Compressive Strength @ 2000 psi and 13 Deg.C.

Notes	:	The test was conducted to the specifications provided
	:	
Lab Technician	:	Jim Collins
Approved	:	Jim Collins

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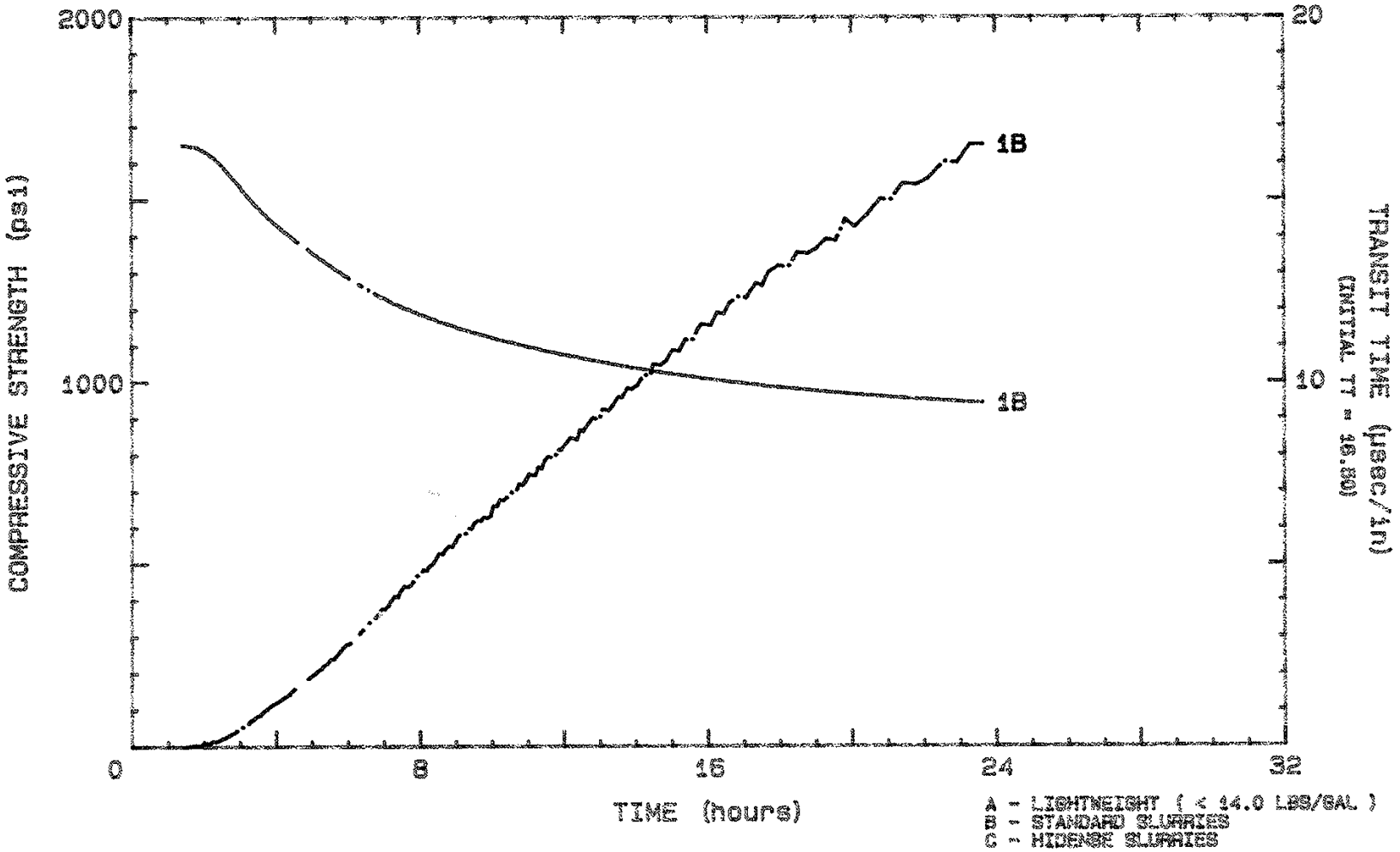
30" Conductor - Westuhiptail-1

PROJECT NO.: S101WWT101/30 incl
DATE: 5/5/04
PRESSURE: 2000psi
TEMPERATURE: Room - 13°C

ULTRASONIC
CEMENT ANALYZER
HALLIBURTON SERVICES

INITIAL SET:	50	@	2: 57
STRENGTH 1 :	500	@	8: 18
STRENGTH 2 :	19999		
CURR. STR. :	1642	@	23: 43

CEMENT: Class G @ 15.9ppg, 5.15 gal/sx Seawater, 1% BWOC CaCl, yield 1.17 ~~ft~~ ft³/sack



HALLIBURTON

CEMENT SLURRY REPORT

Customer	: Esso		Date	: 31-Mar-04	
Well Name	: West Whiptail 1		Reference	: S11/WWT/01/Lead	
Casing Size	: 9 5/8	in.			
Job Type	: Production Casing				
Slurry Type	: Lead				
Time to Temp	: 19mins				

Depth(MD from RKB)	: 750	Meters	**Depth(TVD from RKB)**	: 750	Meters
Surface Temperature	: 25	Deg.C.	**Temperature Gradient**	: 1.20	Deg.C./100M
BHST	: 34	Deg.C.	**BHCT (per API Spec 10)**	: 27	Deg.C.
Mud Weight	: 8.6	PPG	**Water Source**	: Seawater	

ABC Class 'G'	: 94.00	Lbs.	From Yard	
Liquid Econolite	: 0.452	Gals/Sk	14.6	gal/10bbl of Mix Fluid
NF-6	: 0.008	Gals/Sk	0.25	gal/10bbl of Mix Fluid

Slurry Weight	: 12.50	PPG	**Slurry Yield**	: 2.20	CuFt/Sack
Mixing Water	: 12.54	Gals/Sack	**Total Mixing Fluid**	: 12.99	Gals/Sack

Thickening Time (Hrs:Mins)	: **Initial BC**	**30 BC**	**50 BC**	**70 BC**		1,250	psi
	: 20	4:10	4:40	6:20		27	Deg.C.

Fann Readings (RPM)	: **300**	**200**	**100**	**6**	**3**	**PV**	**YP**
80 Deg F	: 35	30	25	15	10	15	20

Compressive Strength	: **Initial set @ 50psi**	4:11
	: **500psi set**	NA
	Aquired Strength	336psi @ 18:48

Notes : The test was conducted to the specifications provided

Lab Technician : Andrew Stobie

Approved : Jim Collins

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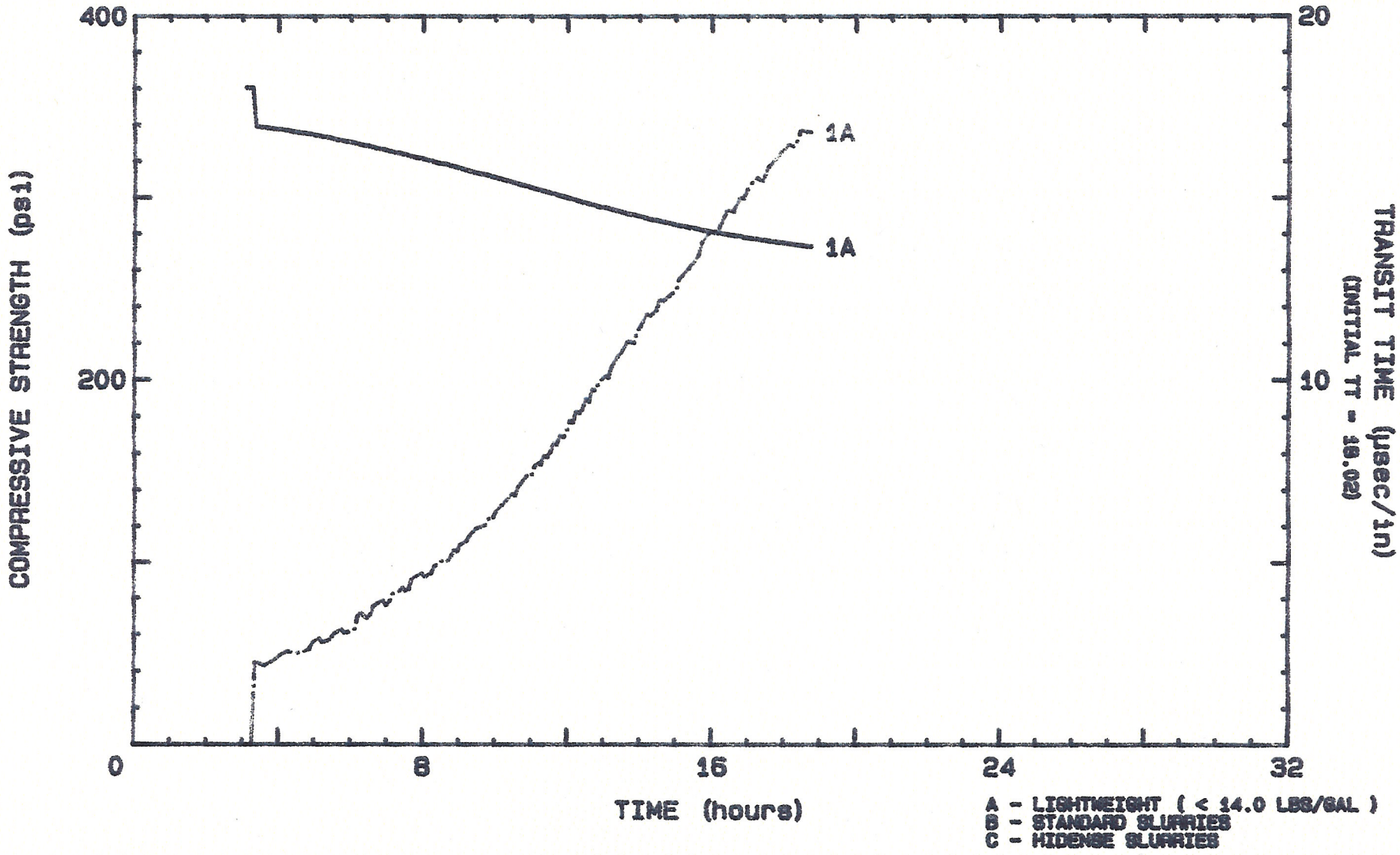
West Whiptail 1 _ 5/8" Casing Lead

PROJECT No.	S11/ WWT/01/Lead		INITIAL SET	50	@	4:11
DATE	31/03/04	**ULTRASONIC CEMENT ANALYZER**	STRENGTH 1	500	@	
PRESSURE	2000psi	**HALLIBURTON SERVICES**	STRENGTH 2	19999	@	
TEMPERATURE	34^{0}C		CURR. STRENGTH	336	@	18:48

CEMENT Class 'G' Cement & Econolite Liquid 14.6 gal/10bbl & Seawater

Density – 12.5ppg ▲ yield – 2.20cuft/sk ▲ Water – 12.54gal/sk ▲ Total Fluid – 12.99gal/sk



HALLIBURTON

CEMENT SLURRY REPORT

Customer	: Esso		Date	:	31-Mar-04
Well Name	: West Whiptail 1		Reference	:	S12/WWT/01/Tail
Casing Size	: 9 5/8	in.			
Job Type	: Production Casing				
Slurry Type	: Tail				
Time to Temp	: 13mins				

Depth(MD from RKB)	: 750	Meters	**Depth(TVD from RKB)**	:	750	Meters
Surface Temperature	: 25	Deg.C.	**Temperature Gradient**	:	1.20	Deg.C./100M
BHST	: 34	Deg.C.	**BHCT (per API Spec 10)**	:	27	Deg.C.
Mud Weight	: 8.6	PPG	**Water Source**	:	Seawater	

ABC Class 'G'	: 94.00	Lbs.	From Yard

Slurry Weight	: 15.80	PPG	**Slurry Yield**	:	1.18	CuFt/Sack
Mixing Water	: 5.27	Gals/Sack	**Total Mixing Fluid**	:	5.27	Gals/Sack

Thickening Time (Hrs:Mins)	: **Initial BC**	**30 BC**	**50 BC**	**70 BC**		1,250	psi
	: 50	0:00	0:00	3:10		27	Deg.C.

Fann Readings (RPM)	: **300**	**200**	**100**	**6**	**3**	**PV**	**YP**
80 Deg F	: 200	152	135	40	20	97.5	103

Compressive Strength	: **Initial set @ 50psi**	2:37
	: **500psi set**	6:54
	Aquired Strength	2436psi @ 24:37

Notes : The test was conducted to the specifications provided

Lab Technician : Andrew Stobie

Approved : Jim Collins

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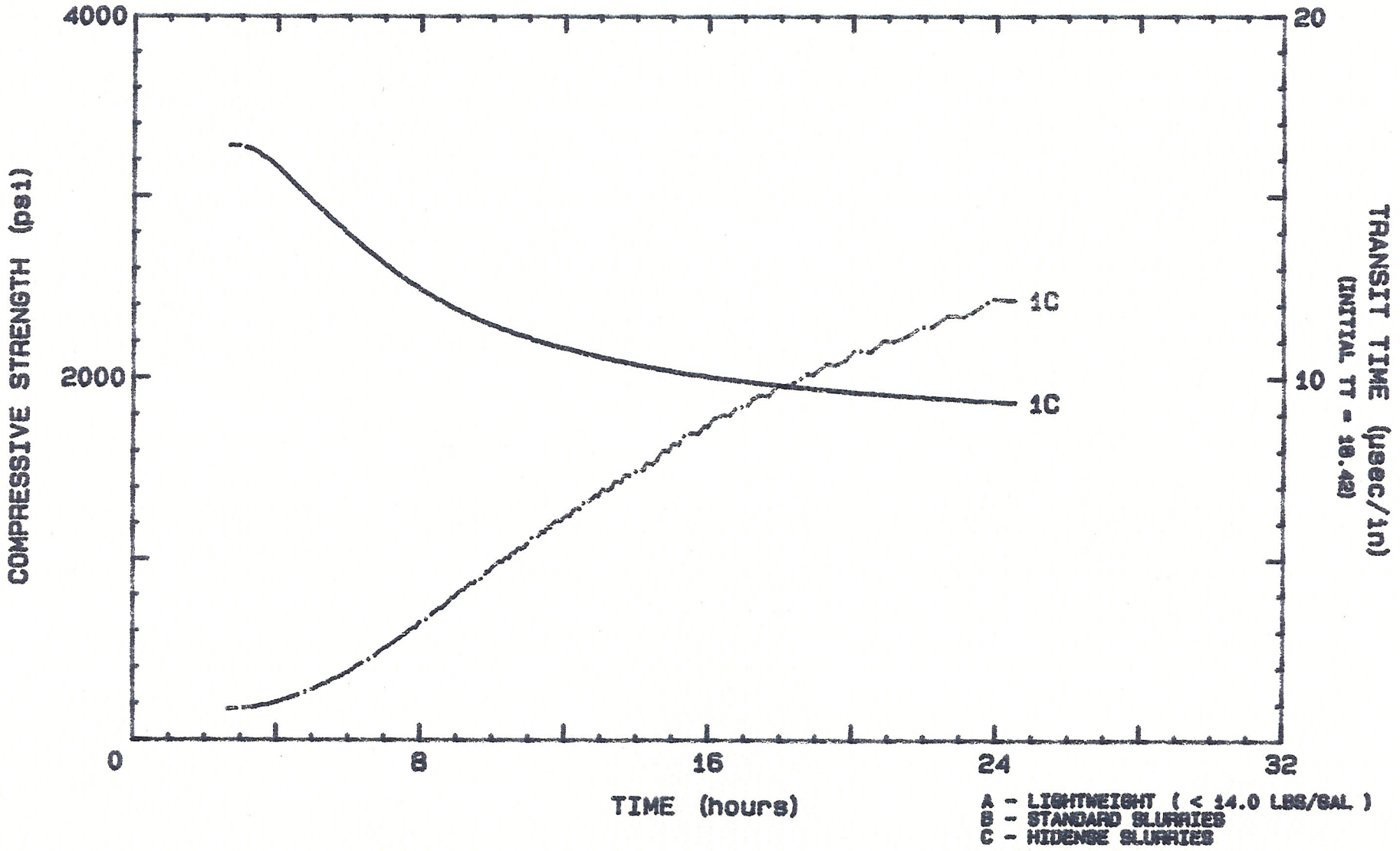
West Whiptail 1 9 5/8" Casing Tail

PROJECT No.	S12/ WWT/01/Tail		INITIAL SET	50	@	2:37
DATE	31/03/04	**ULTRASONIC CEMENT ANALYZER**	STRENGTH 1	500	@	6:54
PRESSURE	2000psi	**HALLIBURTON SERVICES**	STRENGTH 2	19999	@	
TEMPERATURE	34^{0}C		CURR. STRENGTH	2436	@	24:37

CEMENT Class 'G' Cement & Seawater

Density – 15.8ppg ▲ yield – 1.18cuft/sk ▲ Water – 5.27gal/sk ▲ Total Fluid – 5.27gal/sk



HALLIBURTON

CEMENT SLURRY REPORT

Customer	: Esso	Date	: 19-May-04
Well Name	: West Whiptail 1	Reference	: S20/WWT/01/Plug1
Casing Size	: 8.5in open hole		
Job Type	: Plug		
Slurry Type	: Plug		
Time to Temp	: 12mins		

Depth(MD from RKB)	: 1600	Meters	**Depth(TVD from RKB)**	: 1600	Meters
Surface Temperature	: 20	Deg.C.	**Temperature Gradient**	: 3.56	Deg.C./100M
BHST	: 77	Deg.C.	**BHCT (per API Spec 10)**	: 62	Deg.C.
Mud Weight	: 10.0	PPG	**Water Source**	: Freshwater	

ABC Class 'G'	: 94.00	Lbs.	From Yard	
Halad 413L	0.39	gals/sk	32	gal/10bbl Mix Fluid
HR-6L	0.04	gals/sk	3	gal/10bbl Mix Fluid
NF-6	0.00	gals/sk	0.025	gal/10bbl Mix Fluid

Slurry Weight	: 15.80	PPG	**Slurry Yield**	: 1.16	CuFt/Sack
Mixing Water	: 4.74	Gals/Sack	**Total Mixing Fluid**	: 5.17	Gals/Sack

Thickening Time (Hrs:Mins)	: **Initial BC**	**30 BC**	**50 BC**	**70 BC**	3,050	psi
	: 30	0:00	3:28	3:47	62	Deg.C.

Fann Readings (RPM)	: **300**	**200**	**100**	**6**	**3**	**PV**	**YP**
20 Deg C	: 250	184	100	7	4	225	25
62 Deg C	: 185	125	10	8	5	262.5	0

Compressive Strength	:	**50psi**	5:56
	:	**500psi**	6:57
	:	**2372psi**	20:33

Notes : The test was conducted to the specifications provided

Lab Technician : Andrew Stobie

Approved : Jim Collins

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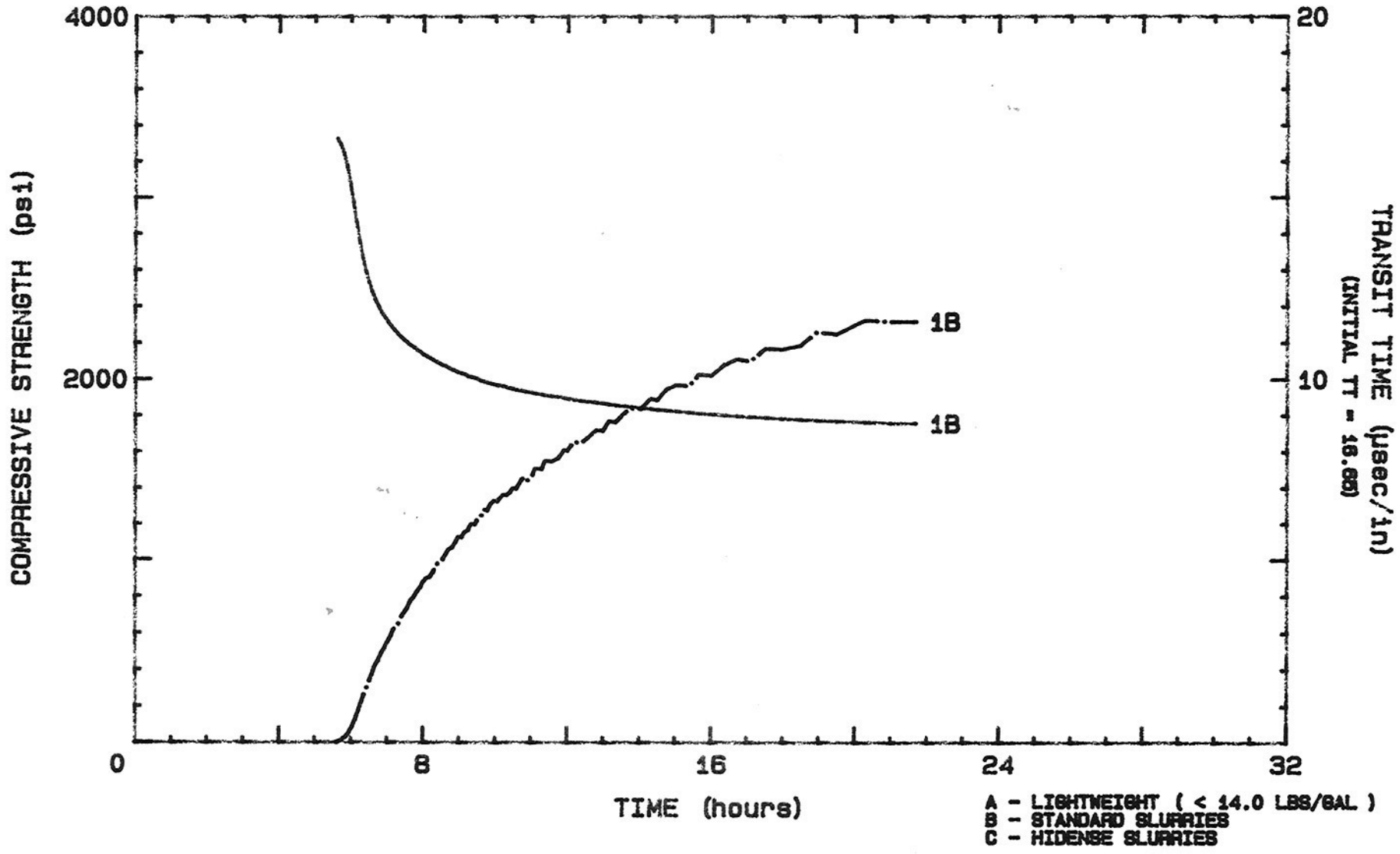
West Whiptail 1 – Plug 1

PROJECT No.	S20/WWT/01/PLUG1		INITIAL SET	50	@	5:56
DATE	19/05/04	**ULTRASONIC CEMENT ANALYZER**	STRENGTH 1	500	@	6:57
PRESSURE	2000psi	**HALLIBURTON SERVICES**	STRENGTH 2	19999	@	
TEMPERATURE	77^{0}C		CURR. STRENGTH	2344	@	21:48

CEMENT Class 'G' Cement & Halad413L 32gal/10bbl & HR6L 3 gal/10bbl & Drillwater

Density – 15.8ppg ▲ yield – 1.16cuft/sk ▲ Water – 4.74gal/sk ▲ Total Fluid – 5.17gal/sk



HALLIBURTON

CEMENT SLURRY REPORT

Customer	: Esso	Date	: 19-May-04
Well Name	: West Whiptail 1	Reference	: S21/WWT/01/Plug2
Casing Size	: 9 5/8in & 8 1/2in open hole		
Job Type	: Plug		
Slurry Type	: Plug		
Time to Temp	: 5mins		

Depth(MD from RKB)	: 785	Meters	**Depth(TVD from RKB)**	: 785	Meters
Surface Temperature	: 25	Deg.C.	**Temperature Gradient**	: 1.15	Deg.C./100M
BHST	: 34	Deg.C.	**BHCT (per API Spec 10)**	: 28	Deg.C.
Mud Weight	: 10.0	PPG	**Water Source**	: Seawater	

ABC Class 'G'	: 94.00	Lbs.	From Yard

Slurry Weight	: 15.90	PPG	**Slurry Yield**	: 1.16	CuFt/Sack
Mixing Water	: 5.15	Gals/Sack	**Total Mixing Fluid**	: 5.15	Gals/Sack

Thickening Time (Hrs:Mins)	: **Initial BC**	**30 BC**	**50 BC**	**70 BC**		1,900	psi
	: 50	0:00	0:00	3:10		28	Deg.C.

Fann Readings (RPM)	: **300**	**200**	**100**	**6**	**3**	**PV**	**YP**
80 Deg F	: 200	152	135	40	20	97.5	103

Compressive Strength	:	**50psi**	2:37
	:	**500psi**	6:54
		2436psi	24:37

Notes : The test was conducted to the specifications provided

Lab Technician : Andrew Stobie

Approved : Jim Collins

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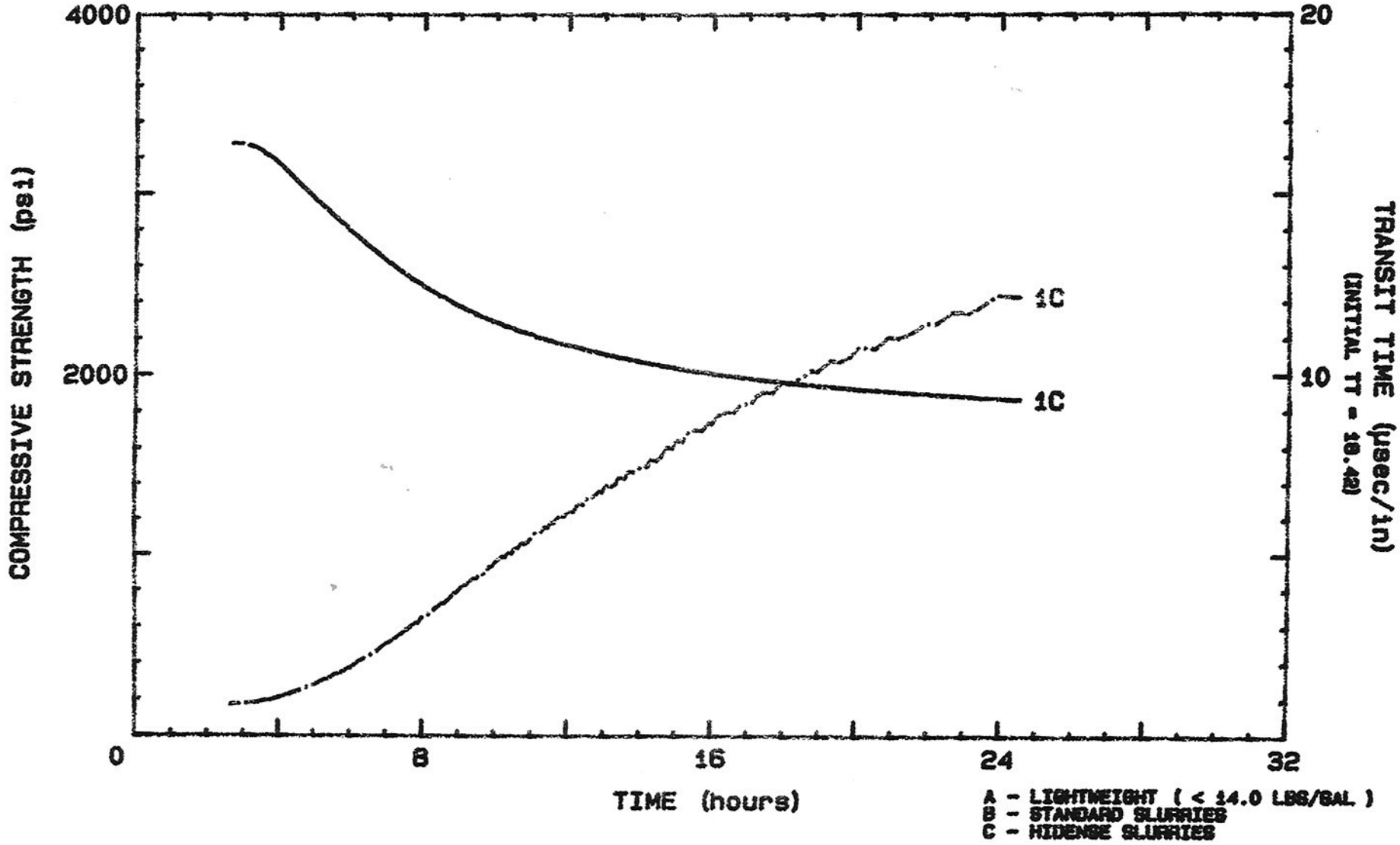
West Whiptail 1 – Plug 2

PROJECT No.	S21/WWT/01/PLUG2		INITIAL SET	50	@	2:37
DATE	19/05/04	**ULTRASONIC CEMENT ANALYZER**	STRENGTH 1	500	@	6:54
PRESSURE	2000psi	**HALLIBURTON SERVICES**	STRENGTH 2	19999	@	
TEMPERATURE	34^{0}C		CURR. STRENGTH	2344	@	24:37

CEMENT Class 'G' Cement & Seawater

Density – 15.9ppg ▲ yield – 1.16cuft/sk ▲ Water – 5.15gal/sk ▲ Total Fluid – 5.15gal/sk



HALLIBURTON

CEMENT SLURRY REPORT

Customer	: Esso		Date	:	19-May-04
Well Name	: Westwhiptail-1		Reference	:	S22/WWT/01/Plug3
Casing Size	: 9 5/8	in.			
Job Type	: Plug				
Slurry Type	: Plug				

RKB to Mudline	: 78	Meters	**Depth(TVD from RKB)**	: 103	Meters
Depth(MD from RKB)	: 103	Meters	**BHCT (per API Spec 10)**	: 12	Deg.C.
Surface Temperature	: 27	Deg.C.	**Water Source**	: Seawater	
BHST	: 15	Deg.C.	**Mud Weight**	8.60 PPG	

ABC Class 'G'	: 94.00	Lbs.	From Yard
NF-6	: 0.003	Gals/Sk	0.25 gal/10bbl of Mix Fluid
Calcium Chloride	1.0	% BWOC	

Slurry Weight (Surface)	: 15.90	PPG	**Slurry Yield (Surface)**	: 1.17	CuFt/Sack
Mixing Water	: 5.15	Gals/Sack	**Total Mixing Fluid**	: 5.15	Gals/Sack

Thickening Time (Hrs:Mins)	: **Initial BC**	**30 BC**	**50 BC**	**70 BC**	300	psi
	14	3:12	3:26	3:34	12	Deg.C.

Fann Readings (RPM)	: **300**	**200**	**100**	**6**	**3**	**PV**	**YP**
70 Deg F	: 102	86	68	28	22	51	51

Compressive Strength	:	**50 psi**	2:57
		500psi	8:18
		1642psi	23:43

Notes	:	The test was conducted to the specifications provided
	:	
Lab Technician	:	Andrew Stobie
Approved	:	Jim Collins

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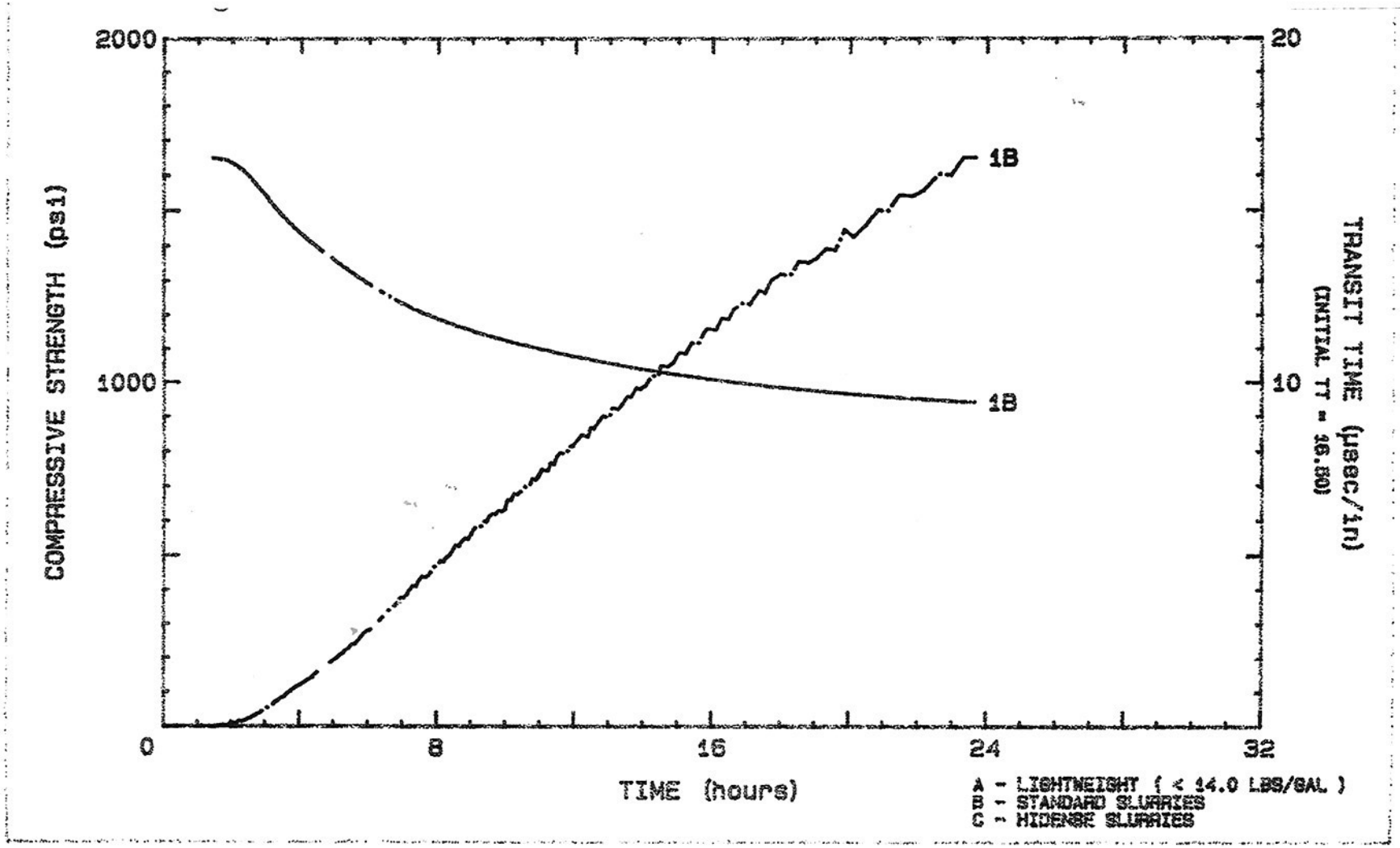
West Whiptail 1 – Plug 3

PROJECT No.	S22/WWT/01/PLUG3	**ULTRASONIC CEMENT ANALYZER**	INITIAL SET	50	@	2:57
DATE	19/05/04	**HALLIBURTON SERVICES**	STRENGTH 1	500	@	8:18
PRESSURE	2000psi		STRENGTH 2	19999	@	
TEMPERATURE	15^{0}C		CURR. STRENGTH	1642	@	23:43

CEMENT Class 'G' Cement & Calcium Chloride 1% & Seawater

Density – 15.9ppg ▲ yield – 1.17cuft/sk ▲ Water – 5.15gal/sk ▲ Total Fluid – 5.15gal/sk



Material Consumption Summary

ExxonMobil Drilling

Bulk Consumption Report

Well ID	WW1
AFE Number	L0501D001
Job Type	Drilling

					Data		
Supply	Report Date	MD	TVD	PBTD	Amount Received	Amount Used	Inventory
Barite					1,541	465	1,076
Cement					2,041	1,609	432
Drill Water					1,244	1,084	160
Fuel					728	452	276
Gel					541	55	486
Potable Water					1,067	773	294

ExxonMobil Development

DRILLING

DATE:	12-May-2004	**REF:**	DD:7158/CPM
TO:	Mark Wiseman	**CC:**	Distribution
FROM:	Chris Meakin	**FILE:**	West Whiptail-1 File 6.3
SUBJECT:	Statement of Fact for ENSCO 102, Ray J. Hope & Invincible Tide on Entry to West Whiptail-1		

Attached are the Statement of Fact for the Jack-up ENSCO 102 and the Tidewater support vessels Ray J. Hope and the Invincible Tide at 00:30hr on 8-May-2004. This was when the ENSCO 102 was one nautical mile from the West Whiptail-1 location.

Chris Meakin

/Attach

Distribution:

Rex Roylance;

Sally McKenzie;

West Whiptail-1 Final Well Report (Toby Bloch)

ENSCO 102

STATEMENT OF FACT

On hire to ESSO one mile from West Whiptail-l location
0030 Saturday 8 May 2004

Fuel oil	:	118 mt
Potable water	:	200 mt
Drill Water	:	160 mt
Bulk	:	NIL

Johnny R. Lykke
Barge Engineer

Charles Shelton
OIM

T. J. Aldridge
EMDC Supervisor

ENSCO 102

MODU ENSCO 102
OFFICIAL NO. 11415
GROSS 12247 TONS
ELZB2

AHTS “Ray J Hope”
Tidewater Marine Australia.

Statement of Fact

On hire to ESSO one mile from Whiptail 1 location

0030 Saturday 8 May 2004

Fuel Oil	539000 ltrs
Lubricating Oils	
Main Engine	7000 ltrs
Auxiliary Oil	620 ltrs
Hydraulic Oil	3200 ltrs
Gear Oil	2700 ltrs
Potable Water :	441 m3
Drill Water :	90 m3
Bulk Product :	
Cement “G”	1900 sx
Barite	2600 sx
Gel	1697 sx

Michael Fleming
Master

Ray J Hope
Port Vila. Vanuatu
O.N. 1543
GRT 2556 NRT 810
BHP 15000

George K. Sharkey
George K. Sharkey
Esso Drilling Supervisor

STATEMENT OF FACT

West whiptail 1, 1 mile off, 0030hrs 8 May '04

ROB Fuel:355,600 litres
MELO 2140 l
Hyd Oil: 2450 l
Gear Oil: 580 l

Pot. Water: 60 t
Drill Water: 433 t

John Burton, master,
INVINCIBLE TIDE

M/V INVINCIBLE TIDE
O.N. 01962608 C.S. V3QQ9
GRT: 1339 NET. 408
BHP: 8160
POR: Belize

George K. Sharkey
George K. Sharkey
Drilling Supervisor
Esso Australia

Chris P Meakin

12/05/2004 04:07 pm

To: Tim Paltridge/U-SouthPacific/ExxonMobil@xom
cc: Shane A Harris/U-SouthPacific/ExxonMobil@xom, Toby R Bloch/SouthPacific/Mobil-Notes@xom, Mark Wiseman/SouthPacific/ExxonMobil@XOM
Subject: Re: ENSCO 102 Statement of Fact - Conversion mt to Litres

Thanks Tim,

Given that the conversion is 1 mt = 7.3 bbl, this is equivalent to 1000 kg = 7.3 * 158.988 L,
or an SG of 1000/(7.3 x 158.988) = 0.8616

The Ensco 102 Statement of Fact is for 118 mt or 118,000 kg of diesel.

Hence the above is equivalent to 118,000/0.8616 = 136,955 L

Regards

Chris Meakin
Drilling Engineer
EMDC Drilling - Australia Offshore
+61 3 9270 3536 (phone); +61 3 9270 3593 (fax)
E-mail: chris.p.meakin@exxonmobil.com (including attachments)

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Tim Paltridge

Tim Paltridge

12/05/2004 02:45 pm

To: Chris P Meakin/U-SouthPacific/ExxonMobil@xom
cc:
Subject: Re: ENSCO 102 Statement of Fact

Chris

Cement 94 lb/sx
Barite 100 lb/sx
Fuel conversion from tonnes to bbl is 7.3 and I think it is 309 litres per tonne.

Does this help.

Regards
Tim Paltridge
Operations Supervisor
Office 03-5142-2880
Fax 03-51-42-2881

Chris P Meakin

Chris P Meakin

05/12/04 02:33 PM

To: Tim Paltridge/U-SouthPacific/ExxonMobil@xom
cc:
Subject: ENSCO 102 Statement of Fact

Tim,

On ENSCO 102's Statement of Facts all values are in metric ton (mt).

How do ENSCO determine these dips? If they actually measure a volume, what factors are they using to convert to mt? For example, Fuel Oil (diesel) was 118 mt. I need to convert this to Litres.

Regards

Chris Meakin
Drilling Engineer
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E-mail: chris.p.meakin@exxonmobil.com (including attachments)

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ExxonMobil Development

DRILLING

DATE:	8 June 2004	**REF:**	DD:7170/CPM
TO:	Mark Wiseman	**CC:**	Distribution
FROM:	Chris Meakin	**FILE:**	West Whiptail-1 File 6.3
SUBJECT:	Statement of Fact for ENSCO 102, Ray J. Hope & Invincible Tide on Exit from West Whiptail-1		

Attached are the Statement of Fact for the Jack-up ENSCO 102 and the Tidewater support vessels Ray J. Hope and the Invincible Tide at 15:30hr on 5 June 2004. This was when the ENSCO 102 was one nautical mile from the West Whiptail-1 location en route to Yolla platform.

Based on the attached Email, the conversion factor from mt to litres is 1 mt = 1160.6 litres.

Chris Meakin

/Attach

Distribution:

Daniel O'Meara

Toby Bloch

Rex Roylance;

Sally McKenzie;

West Whiptail-1 Final Well Report (Toby Bloch)

ENSCO 102

STATEMENT OF FACT

On hire to ESSO one mile from West Whiptail- 1 location
1530 Saturday 5 June 2004

Fuel oil	279 mt
Potable water :	297 mt
Drill Water	160 mt
Bulk	Barite 48.8 mt, Bentonite 21.2 mt Cement 34.2 mt

Richard Pryor
Richard Pryor
Barge Engineer

I Parr
OIM

Roger Bain
Roger BAIN
Drilling Supervisor
Esso Australia

AHTS “Ray J Hope”
Tidewater Marine Australia,

Statement of Fact

One mile from Whiptail 1 location under tow towards Yolla A

1530 Saturday 5th June 2004

Fuel Oil	413,000 litres	
Lubricating Oils		
Main Engine	7000 ltrs	
Auxiliary Oil	360 ltrs	H.S.D
Hudraulic Oil	3230 ltrs	D T E 18M
Gear Oil	1195	Mobil 626
Gear Oil	1460	Mobil 527
Potable Water	390 m3	
Drill Water	500m3	
Bulk Product :		
Cement "G"	0	
Barlte	0	
Gel	794 sx	

John Gauci
Master

Roger Bain
ROGER BAIN
Esso Australia
Drilling Supervisor

INVENTORY OF CONSUMABLES
ON/OFF CHARTER

OPERATOR: TIDEWATER MARINE AUSTRALIA | CHARTERER: ESSO AUSTRALIA

THIS IS TO CERTIFY THAT M/V: INVINCIBLE TIDE | WAS STATED QTY OF ITEMS ON / OFF CHARTER | AS OF HOURS: 15.30 HRS | DATE: 5-6-04

FUEL TANK SOUNDINGS

PORT TANK NUMBER	FEET	INCHES	STARBOARD TANK NUMBER	FEET
DAY TANK			DAY TANK	

LIQUID INVENTORY

LIQUIDS	AMOUNT	UNIT	BULK TYPE	BULK AMOUNT
DESEL FUEL	261.000	LITRES	GEL	336 SKS
MAIN ENGINE LUBE	1 200	"	CEMENT	1300 SKS
AUXILIARY ENG LUBE			BARITES	1250 SKS
RED. GEAR LUBE				
HYDRAULIC LUBE	2600	LITRES		
OTHER LUBES	1650	LITRES		
DRILL WATER	538	TONNES		
POTABLE WATER	276	TONNES		

DECK EQUIPMENT

MATERIAL	PCS	LENGTH (FT.)	SIZE
TOW LINE-WIRE			
TOW LINE-WIRE			
TOW LINE-NYLON			
PENDANT-WIRE			
PENDANT-NYLON			
WORK WIRE			
DOCKING LINES			
HOSE-FUEL			
HOSE-WATER			
HOSE-BULK MTRL			
HOSE-AIR			

AS PER RECORD BOOK

ANCHOR HANDLING EQUIPMENT

MATERIAL	PCS	SIZE
PELICAN HOOKS		
CHAIN CHASER		
GRAPPLE		
SHACKLES		
SHACKLES		
SHACKLES		
TOOLS		

AS PER RECORD BOOK

REMARKS

TIDEWATER MARINE INVINCIBLE TIDE

OPERATOR'S REPRESENTATIVE | MASTER | CHARTERER REPRESENTATIVE

TMS 1376 (R 10/76)

Roger Bain
Roger BAIN
Drilling Supervisor
ESSO Australia

RECEIVED 2004

Chris P Meakin

12/05/2004 04:07 pm

To: Tim Paltridge/U-SouthPacific/ExxonMobil@xom
cc: Shane A Harris/U-SouthPacific/ExxonMobil@xom, Toby R Bloch/SouthPacific/Mobil-Notes@xom, Mark Wiseman/SouthPacific/ExxonMobil@XOM
Subject: Re: ENSCO 102 Statement of Fact - Conversion mt to Litres

Thanks Tim,

Given that the conversion is 1 mt = 7.3 bbl, this is equivalent to 1000 kg = 7.3 * 158.988 L,
or an SG of 1000/(7.3 x 158.988) = 0.8616

The Ensco 102 Statement of Fact is for 118 mt or 118,000 kg of diesel.

Hence the above is equivalent to 118,000/0.8616 = 136,955 L

Regards

Chris Meakin
Drilling Engineer
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E-mail: chris.p.meakin@exxonmobil.com (including attachments)

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Tim Paltridge

Tim Paltridge

12/05/2004 02:45 pm

To: Chris P Meakin/U-SouthPacific/ExxonMobil@xom
cc:
Subject: Re: ENSCO 102 Statement of Fact

Chris

Cement 94 lb/sx
Barite 100 lb/sx
Fuel conversion from tonnes to bbl is 7.3 and I think it is 309 litres per tonne.

Does this help.

Regards
Tim Paltridge
Operations Supervisor
Office 03-5142-2880
Fax 03-51-42-2881

Chris P Meakin

Chris P Meakin

05/12/04 02:33 PM

To: Tim Paltridge/U-SouthPacific/ExxonMobil@xom
cc:
Subject: ENSCO 102 Statement of Fact

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On ENSCO 102's Statement of Facts all values are in metric ton (mt).

How do ENSCO determine these dips? If they actually measure a volume, what factors are they using to convert to mt? For example, Fuel Oil (diesel) was 118 mt. I need to convert this to Litres.

Regards

Chris Meakin
Drilling Engineer
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ExxonMobil
Development

DRILLING

DATE:	8 June 2004	**REF:**	DD:7171/CPM
TO:	Mark Wiseman	**CC:**	Distribution
FROM:	Chris Meakin	**FILE:**	West Whiptail-1 File 6.3
SUBJECT:	Statement of Fact for ENSCO 102, Ray J. Hope & Invincible Tide on Entry to Yolla Platform and on Hand-over to Origin Energy.		

Attached are the Statement of Fact for the Jack-up ENSCO 102 and the Tidewater support vessels Ray J. Hope and the Invincible Tide at 17:30hr on 6 June 2004. This was when the ENSCO 102 was one nautical mile from the Yolla platform and the operation was handed-over to Origin Energy. Also attached is a copy of the letter sent from the rig to Origin transmitting the Statement of Facts, together with a table summarising bulk products, fuel and water on the ENSCO 102 and support vessels, and a list of the mud chemicals transferred to Origin Energy. Please arrange for Origin Energy to be invoiced for these transfers.

Based on the attached Email, the conversion factor from mt to litres is 1 mt = 1160.6 litres.

Chris Meakin

/Attach

Distribution:
Daniel O'Meara
Toby Bloch
Rex Roylance;
Sally McKenzie;
West Whiptail-1 Final Well Report (Toby Bloch)

I:\EMDC Drilling\EMDC Exploration\West Whiptail-1\06.0 Materials-Supply\6.03 Statement of Facts\Yolla Platform Entry Statement of Fact - signed.doc

ENSCO 102

STATEMENT OF FACT

On hire to Origin one mile from Yolla Platform
1730 Sunday 6th, June 2004

Fuel oil	266 mt
Potable water	253 mt
Drill Water	160 mt
Bulk	Barite 48.8 mt. Bentonite 2 1.2 mt Cement 34.2 mt

Richard Pryor
Barge Engineer

I Parr
OIM

PLEASE RE FAX TO ENSCO 102

AHTS “Ray J Hope”
Tidewater Marine Australia.

Statement of Fact

One mile from Yolla A

1730 Sunday 6th June 2004

Fuel Oil	369,000 litres	
Lubricating Oils		
Main Engine	7000 ltrs	
Auxiliary Oil	360 ltrs	**H.S D**
Hudraulic Oil	3230 ltrs	**DTE** 18M
Gear Oil	1195	**Mobil 626**
Gear Oil	1460	**Mobil 627**
Potable Water.	385 m3	
Drill Water :	500m3	
Bulk Product :		
Cement “G”	0	
Barite	0	
Gel	794 sx	

John Gauci
Master

ESSO.

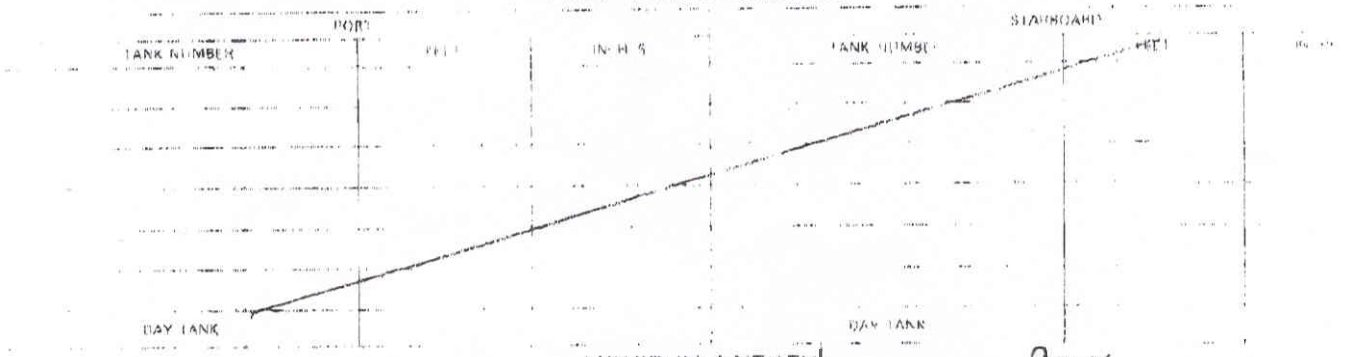
Origin

INVENTORY OF CONSUMABLES
ON/OFF CHARTER

TIDEWATER MARINE AUSTRALIA — ESSO AUSTRALIA / ORIGIN ENERGY

INVINCIBLE TIDE — 1730 HRS — 6-6-04

FUEL TANK SOUNDINGS



LIQUID INVENTORY

LIQUIDS	AMOUNT	UNIT
DIESEL FUEL	241920	LITRES
MAIN ENGINE LUBE	1270	LITRES
ASST ENG. LUBE		
REG. GEAR LUBE		
HYDRAULIC LUBE	2600	LITRES
POTABLE WATER	1680	LITRES
DRILL WATER	538	TONNES
RESERVE WATER	266	TONNES

BULK

TYPE	
GEL	396 SKS
G CLASS CEMENT	1300 SKS
BARITES	1250 SKS

DECK EQUIPMENT

MATERIAL	POS	LENGTH
TOW LINE WIRE		
TOW LINE WIRE		
TOW LINE CHAIN		
PENNANT WIRE		
PENNANT CHAIN		
WORK WIRE		
ANCHORS		
ANCHOR CHAIN		
ANCHOR WIRE		
TOW PIN		

N/A

ANCHOR HANDLING EQUIPMENT

MATERIAL	POS
BOAT HOOKS	
MAIN CABLE	
CABLE	
WIRES	
ROPES	
ROPES	
CHAIN	
OTHER	

N/A

TIDEWATER MARINE · INVINCIBLE TIDE

MASTER'S SIGNATURE — CHARTERER'S REPRESENTATIVE

B. Hall ESSO

STATEMENT OF FACTS

Drilling Co-operation Agreement
Between Origin Energy Resources Limited
and
Esso Australia Pty. Ltd.

A statement of facts which records bulk materials. fluids, well-consumables and rental equipment common to both Operators which are to remain on the E-102 and tow AHSV's Ray J.Hope and the Invincible Tide at the point of handover lnm from Origins next location Yolla.

Ensco Jack-up:	**E-102,**
Tidewater AHSV:	**Ray J. Hope**
Tidewater AHSV:	**Invincible Tide**

To: **Origin Energy Resources Pty. Ltd.**
Drilling Superintendent M.Lanzer

From: **Esso Australia Pty. Ltd.**

Date: May 2004 Time: lnm from Yolla

Ensco 102 OIM.. …. .... .Date: 6 June 04 Time: 1730

Esso Drilling Supervisor:. …. ….. … .. .Date: 6th June '04 Time: 17:30

ADA/Origin Drilling Supervisor, ...Date: 6th June, 04 Time: 17:30

ENSCO 102

STATEMENT OF FACTS

Drilling Co-operation Agreement
Between Origin Energy Resources Limited
and
Esso Australia Pty. Ltd.

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Ensco Jack-up:	**E-102,**
Tidewater AHSV:	**Ray J. Hope**
Tidewater AHSV:	**Invincible Tide**

To: **Origin Energy Resources Pty. Ltd.**
Drilling Superintendent M.Lanzer

From: **Esso Australia Pty. Ltd.**

Date: May 2004 Time. 1nm from Yolla

Ensco 102 OIM. Richard Pryer f/I Parr Date: 6th June 04 Time: 1730

Esso Drilling Supervisor: B. Steel Date: 6th June '04 Time: 17.'30

ADA/Origin Drilling Supervisor. Date: 6th june 04 Time: 17.30

BULK PRODUCTS, FUEL and WATER

	E 102	Ray J. Hope	Invincible Tide
	MT	MT	MT
Fuel	266 CU MTRS	369 CU. MTRS	241.9 CU MTRS
Helifuel:	—	—	—
Baryte:	48.8 MT	—	1250 SX
Bentonite:	21.2 MT	794 SX	396 SX
Cement:	34.2 MT	—	1300 SX
Drill Water:	160 MT	500 M^3	538 MT
Pot. Water:	253 MT	385 M^3	266 MT

Due to fax problems, Ray J. Hope figures were radio to rig.

MUD CHEMICALS TO KEEP ON RIG FOR ORIGIN

Date: 25/05/04

To: Barry Steel / Roger Bain
From: Dan Cotter / Hayden Butler
cc: Nicholas Doust, Barge Engineer
Rig: ENSCO 102

• ~~1485 sx~~ 467 sx	100 lb/sx	Bentonite.
. 27 sx	25 kg/sx	Soda Ash.
. 44 pails	25 kg/pail	Caustic Soda.
. 75 sx	20 kg/sx	Lime.
. ~~1107 sx~~ 1076	100 lb/sx	Barite
• 54 sx	25 kg/sx	Calcium Chloride
• 10 big bag	1000kg/bag	KCl.
• 35 sx	25 kg/sx	Sodium Bicarbonate.
. 36 sx	25 kg/sx	Citric Acid.
• 4 big bag	1200kg/bag	BARACARB-25
• 4 big bag	1200kg/bag	BARACARB-100.
• 80 sx	25 lb/sx	BAROFIBRE.
• 1 drum	55gal/drum	BARAFILM/PETROFREE
• 2 cans	25 lt/can	BARADEFOAM-W300.
• 6 boxes	15 lb/box	BAROLIFT.

Regards checked

Origin

(BAROID)

Chris P Meakin

12/05/2004 04:07 pm

To: Tim Paltridge/U-SouthPacific/ExxonMobil@xom
cc: Shane A Harris/U-SouthPacific/ExxonMobil@xom, Toby R Bloch/SouthPacific/Mobil-Notes@xom, Mark Wiseman/SouthPacific/ExxonMobil@XOM
Subject: Re: ENSCO 102 Statement of Fact - Conversion mt to Litres

Thanks Tim,

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or an SG of 1000/(7.3 x 158.988) = 0.8616

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Hence the above is equivalent to 118,000/0.8616 = 136,955 L

Regards

Chris Meakin
Drilling Engineer
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E-mail: chris.p.meakin@exxonmobil.com (including attachments)

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Tim Paltridge

Tim Paltridge

12/05/2004 02:45 pm

To: Chris P Meakin/U-SouthPacific/ExxonMobil@xom
cc:
Subject: Re: ENSCO 102 Statement of Fact

Chris

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Barite 100 lb/sx
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Operations Supervisor
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Fax 03-51-42-2881

Chris P Meakin

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05/12/04 02:33 PM

To: Tim Paltridge/U-SouthPacific/ExxonMobil@xom
cc:
Subject: ENSCO 102 Statement of Fact

Tim,

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Regards

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Drilling Engineer
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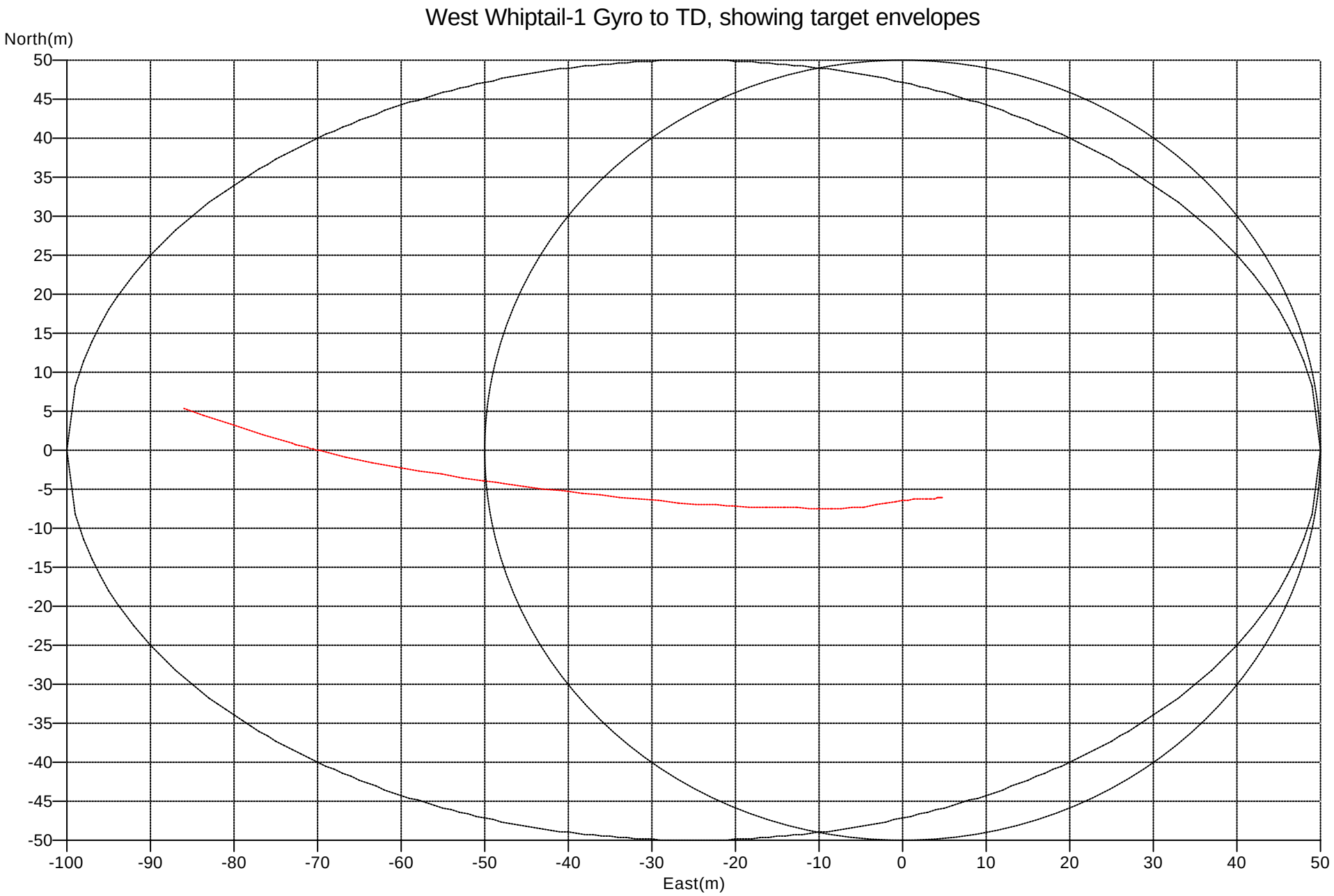
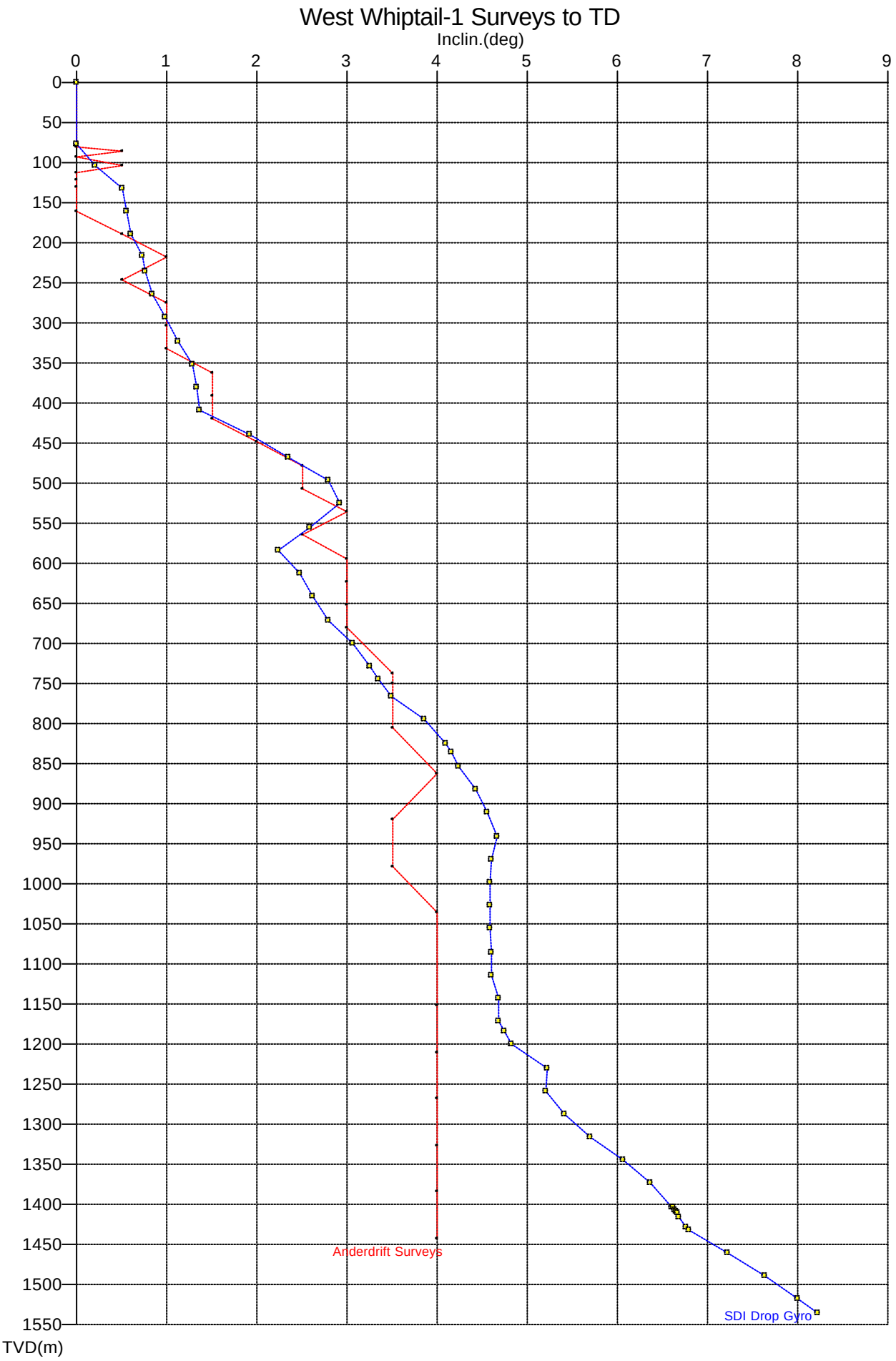
Directional Survey Plots & Data


West Whiptail-1 Gyro to TD, showing target envelopes
North(m)
50
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
East(m)


West Whiptail-1 Surveys to TD
Inclin.(deg)
0
1
2
3
4
5
6
7
8
9
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
TVD(m)
Anderdrift Surveys
SDI Drop Gyro

WELLPATH(02.01.00) Survey - Gyro at TD
Comments: Scientific Drilling International Drop Gyro run at well TD. Deepest survey at 1521.9m MDRT was extrapolated to the 1539m MDRT well TD.

Well Name: West Whiptail-1
Azimuth for vertical section plane based on: Bottomhole

MD (m)	Inclin. (deg)	Azimuth (deg)	TVD (m)	North (m)	East (m)	V. Sect (m)	D/L Sev (deg/30m)	Cum D/L (deg)	
0.0	0.00	0.00	0.0	-6.0	4.6	0.0	0.00	0.00	
77.6	0.00	0.00	77.6	-6.0	4.6	0.0	0.00	0.00	
104.0	0.21	236.92	104.0	-6.0	4.6	0.0	0.24	0.21	
132.0	0.51	249.02	132.0	-6.1	4.4	0.2	0.33	0.52	
160.3	0.55	268.10	160.3	-6.1	4.1	0.4	0.19	0.70	
188.4	0.60	266.43	188.4	-6.2	3.9	0.7	0.06	0.75	
216.7	0.73	264.77	216.7	-6.2	3.5	1.0	0.14	0.88	
235.5	0.76	268.18	235.5	-6.2	3.3	1.3	0.09	0.94	
264.6	0.84	268.61	264.6	-6.2	2.9	1.7	0.08	1.02	
293.6	0.99	266.47	293.6	-6.2	2.4	2.1	0.16	1.17	
322.6	1.12	265.47	322.6	-6.3	1.9	2.7	0.14	1.30	
351.7	1.28	263.80	351.7	-6.3	1.3	3.2	0.17	1.46	
380.7	1.34	261.56	380.7	-6.4	0.6	3.9	0.08	1.54	
409.8	1.37	264.38	409.8	-6.5	-0.1	4.6	0.08	1.62	
438.8	1.92	260.36	438.7	-6.6	-0.9	5.4	0.58	2.18	
467.9	2.35	259.83	467.8	-6.8	-1.9	6.4	0.44	2.61	
496.9	2.80	260.15	496.8	-7.0	-3.2	7.6	0.47	3.06	
526.0	2.92	262.43	525.9	-7.2	-4.7	9.0	0.17	3.22	
555.0	2.58	265.13	554.8	-7.4	-6.0	10.4	0.38	3.59	
584.1	2.24	268.02	583.9	-7.5	-7.3	11.6	0.37	3.95	
613.1	2.48	270.68	612.9	-7.5	-8.5	12.8	0.27	4.21	
642.2	2.62	271.49	641.9	-7.5	-9.8	14.1	0.15	4.36	
671.3	2.79	271.34	671.0	-7.4	-11.1	15.4	0.18	4.53	
700.3	3.07	272.84	700.0	-7.4	-12.6	16.9	0.30	4.82	
729.4	3.25	271.35	729.0	-7.3	-14.2	18.5	0.20	5.02	
745.0	3.35	271.00	744.6	-7.3	-15.1	19.4	0.20	5.12	
766.8	3.49	270.55	766.4	-7.3	-16.4	20.7	0.20	5.26	
795.9	3.85	271.64	795.4	-7.2	-18.3	22.5	0.38	5.63	
824.9	4.10	272.51	824.3	-7.2	-20.3	24.5	0.27	5.88	
836.0	**4.15**	**273.14**	**835.4**	**-7.1**	**-21.1**	**25.3**	**0.19**	**5.95**	**Lakes Entrance**
854.0	4.24	274.13	853.4	-7.0	-22.4	26.7	0.19	6.07	
883.1	4.43	274.40	882.4	-6.9	-24.6	28.9	0.20	6.26	
912.1	4.55	274.99	911.3	-6.7	-26.9	31.1	0.13	6.39	
941.1	4.66	275.57	940.2	-6.5	-29.2	33.4	0.12	6.51	
970.1	4.60	275.85	969.1	-6.2	-31.5	35.8	0.07	6.57	
999.0	4.58	276.56	997.9	-6.0	-33.8	38.1	0.06	6.63	
1028.0	4.58	276.04	1026.8	-5.7	-36.1	40.4	0.04	6.67	
1057.0	4.58	276.46	1055.7	-5.5	-38.4	42.7	0.03	6.71	
1086.2	4.61	276.79	1084.8	-5.2	-40.7	45.1	0.04	6.75	
1115.3	4.61	277.10	1113.8	-4.9	-43.0	47.4	0.03	6.77	
1144.3	4.68	278.20	1142.7	-4.6	-45.4	49.8	0.12	6.88	
1173.4	4.69	278.80	1171.7	-4.3	-47.7	52.1	0.05	6.93	
1185.0	**4.75**	**278.98**	**1183.3**	**-4.1**	**-48.7**	**53.1**	**0.15**	**6.99**	**Latrobe Clastics**

WELLPATH(02.01.00) Survey - Gyro at TD
Comments: Scientific Drilling International Drop Gyro run at well TD. Deepest survey at 1521.9m MDRT was extrapolated to the 1539m MDRT well TD.

Well Name: West Whiptail-1
Azimuth for vertical section plane based on: Bottomhole

MD (m)	Inclin. (deg)	Azimuth (deg)	TVD (m)	North (m)	East (m)	V. Sect (m)	D/L Sev (deg/30m)	Cum D/L (deg)	
1202.4	4.83	279.23	1200.6	-3.9	-50.1	54.5	0.15	7.08	
1231.4	5.23	278.56	1229.5	-3.5	-52.6	57.1	0.42	7.48	
1260.5	5.20	278.41	1258.5	-3.1	-55.2	59.7	0.03	7.52	
1289.6	5.42	279.29	1287.5	-2.7	-57.9	62.4	0.24	7.75	
1318.6	5.70	281.36	1316.4	-2.2	-60.7	65.2	0.36	8.09	
1347.6	6.07	282.15	1345.2	-1.6	-63.6	68.2	0.39	8.47	
1376.6	6.37	283.88	1374.0	-0.9	-66.6	71.3	0.37	8.83	
1405.7	6.61	285.59	1402.9	-0.0	-69.8	74.6	0.32	9.13	
1406.3	**6.61**	**285.62**	**1403.5**	**-0.0**	**-69.9**	**74.6**	**0.25**	**9.14**	**N1.0**
1409.7	**6.63**	**285.78**	**1406.9**	**0.1**	**-70.2**	**75.0**	**0.25**	**9.17**	**N1.1**
1412.5	6.65	285.92	1409.7	0.2	-70.6	75.3	0.25	9.19	
1414.2	**6.66**	**286.00**	**1411.4**	**0.2**	**-70.8**	**75.5**	**0.25**	**9.21**	**Base N1.1**
1418.7	**6.69**	**286.21**	**1415.9**	**0.4**	**-71.3**	**76.1**	**0.25**	**9.24**	**N1.3 & N1.4**
1431.5	**6.77**	**286.81**	**1428.6**	**0.8**	**-72.7**	**77.5**	**0.25**	**9.35**	**Base N1.4**
1434.8	6.79	286.96	1431.8	0.9	-73.1	77.9	0.25	9.38	
1463.8	7.23	288.03	1460.6	2.0	-76.4	81.4	0.47	9.83	
1492.9	7.64	289.10	1489.5	3.2	-80.0	85.1	0.45	10.27	
1521.9	8.00	290.23	1518.2	4.5	-83.7	88.9	0.40	10.66	
1539.0	**8.22**	**290.90**	**1535.1**	**5.3**	**-86.0**	**91.3**	**0.42**	**10.90**	**TD**

A
Scientific Drilling International Report
of a Drop Keeper Gyro Survey

For

ESSO AUSTRALIA LTD.

Well : West Whiptail-1
Location : Bass Strait
Latitude : -38.325 degrees
Date : 16 May 2004

Job Number : 87K0504042

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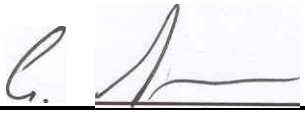
Report Compiled by:  **Date:** 30/5/04

Report Checked by: **Date:** 31/5/04

All interpretations are opinions based on inferences from electrical or other measurements and Scientific Drilling cannot and does not guarantee the accuracy or correctness of any interpretations, and Scientific Drilling shall not, except in the case of gross negligence or wilful conduct on Scientific Drilling's part, be liable or responsible for any loss, cost, damage or expense incurred or sustained by anyone resulting from any interpretations made by any of Scientific Drilling's officers, agents or employees. These interpretations are also subject to Scientific Drilling's General Terms and Conditions set out in Scientific Drilling's current Price Schedule.

1.

GENERAL SUMMARY

Scientific Drilling

JOB CHRONOLOGY

10th May 04

12:30	**Gavin Sayers departs Longford for ENSCO102**
13:00	**Attend muster drill and weekly safety meeting**
14:00	**Carry out rig induction**
15:00	**Locate equipment and take inventory**

11th May

06:30	**Attend morning meeting**
07:30	**Test tools and carry-out pre-fld-cal.(OK)**
15:00	**Standby for survey**

12th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**

13th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**

14th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**

15th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**

16th May

06:30	**Attend morning meeting**
07:00	**Carry out pre job tool checks**
08:15	**Hold JSA**
08:20	**Program gyro**
08:30	**Release tool down drill pipe**
08:40	**Pump slug**
09:15	**Begin trip OOH with drill string surveying in gyrocompass mode at connections**
14:00	**Retrieve gyro at surface from BHA**
14:15	**Down load survey from memory section**
15:00	**Process and submit survey to ESSO rep.**

17th May

06:30	**Attend morning meeting**
07:30	**Carry out post fld. Cal and tool checks**
12:00	**Standby for survey**

18th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**

JOB CHRONOLOGY……cont.

19th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**

20th May

06:30	**Attend morning meeting**
07:00	**Standby for survey**
13:00	**Carry out pre job tool checks**
14:45	**Hold JSA**
14:55	**Program gyro**
15:03	**Release tool down drill pipe**
15:14	**Begin trip OOH with drill string surveying in gyrocompass mode at connections**
19:25	**Retrieve gyro at surface from BHA**
19:35	**Down load survey from memory section**
20:30	**Process and submit survey to ESSO rep.**

21st May

06:30	**Rigdown running gear and prepare backload**
13:00	**Travel from ENSCO 102 to Longford**

POST SURVEY DISCUSSION

Objective:

The objective of the gyros were to obtain a definitive survey of the well from surface to TD. The well was drilled using an Anderdrift tool for inclination only so a directional survey was required to satisfy well bore trajectory and target requirements.

Summary:

The gyros were run in two stages. The first survey was taken at TD of the 12 ¼" section at 750m, whilst the second was run at the 8 ½" section TD of 1539 m. Both surveys were Drop gyros, released into the drill sting prior to POOH, landing on the Totco ring in the BHA and surveying in continuous gyrocompass mode at connections during the trip OOH until retrieval at surface.

The survey was preformed with the SDI Keeper gyro run in drop memory configuration with depth referenced to the ENSCO 102 RKB. (RKB – MSL = 38.6 m / RKB - mudline=77.6m) The tool was run inside a 1.85" heatshield and powered by an alkaline battery pack. The tool was centralised using in-line drill pipe centralisers and two landing shocks were used to absorb the impact when the tool landed in the totco ring.

The gyro results showed a maximum inc. of 8.0 degrees at 1521.9m with a horizontal displacement at 1521.9m of 88.95m bearing 276.78 degrees.

It is significant to note that the only rig time spent in running this survey was at the surface when releasing and retrieving the tool. All survey stations could be taken with the string in the slips, with a minute at each station being obtained without the need to slow down the trip.

No tool problems were encountered during the survey. All QC checks prior to and during the survey meet specification.

Comprehensive post job QC testing at SDI's Sale office confirmed Kpr106 was within specification, with no calibration or accuracy shifts from pre job testing. Refer to section 3 of this report for further information.

2.

SURVEY REPORTS

Scientific Drilling

Scientific Drilling (Australia)
Survey Report

Company:	Esso Australia Limited	**Date:** 18/06/2004	**Time:** 11:34:20	**Page:**	1
Field:	Bass Strait	**Co-ordinate(NE) Reference:**	Site: West Whiptail-1, Grid North		
Site:	West Whiptail-1	**Vertical (TVD) Reference:**	ENSCO,102 RKB 38.6		
Well:	West Whiptail-1	**Section (VS) Reference:**	Well (0.00N,0.00E,0.00Azi)		
Wellpath:	West Whiptail-1	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Field: Bass Strait
Victoria
Australia

Map System:	Universal Transverse Mercator	**Map Zone:**	UTM Zone 55, South 144E to 150E
Geo Datum:	GDA94 - Australia (GRS80)	**Coordinate System:**	Site Centre
Sys Datum:	Mean Sea Level	**Geomagnetic Model:**	igrf2000

Site: West Whiptail-1

Bass Strait

Site Position:			**Northing:**	5761736.59 m	**Latitude:**	38	17	28.900 S
From:	Geographic		**Easting:**	544137.50 m	**Longitude:**	147	30	17.000 E
Position Uncertainty:		0.00 m			**North Reference:**			Grid
Water Depth:		0.00 m			**Grid Convergence:**			-0.31 deg

Well: West Whiptail-1
Exploration Well

Slot Name:

Well Position:	**+N/-S**	0.00 m	**Northing:**	5761736.59 m	**Latitude:**	38	17	28.900 S
	+E/-W	0.00 m	**Easting :**	544137.50 m	**Longitude:**	147	30	17.000 E
Position Uncertainty:		0.00 m						

Wellpath: West Whiptail-1
Exploration well.

Current Datum:	ENSCO,102 RKB	**Height**	38.60 m	**Drilled From:**	Surface
Magnetic Data:	24/05/2004			**Tie-on Depth:**	0.00 m
Field Strength:	60112 nT			**Above System Datum:**	Mean Sea Level
				Declination:	12.87 deg
				Mag Dip Angle:	-68.88 deg

Vertical Section:	**Depth From (TVD)** m	**+N/-S** m	**+E/-W** m	**Direction** deg
	0.00	0.00	0.00	0.00

Survey Program for Definitive Wellpath
Date: 1/06/2004 **Validated:** No **Version:** 0

Actual From m	**To** m	**Survey**	**Toolcode**	**Tool Name**
77.60	729.40	Outrun Definitive	Keeper Drop MultiShot	Keeper Drop Multishot Rate Gyr
766.80	1521.90	Outrun Definitive.	Keeper Drop MultiShot	Keeper Drop Multishot Rate Gyr

Survey

MD m	Incl deg	Azim deg	TVD m	+N/-S m	+E/-W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000	TIE LINE
77.60	0.00	0.00	77.60	0.00	0.00	0.00	0.000	0.000	0.000	Keeper Drop MultiShot
104.00	0.21	236.92	104.00	-0.03	-0.04	-0.03	0.239	0.239	0.000	Keeper Drop MultiShot
132.00	0.51	249.02	132.00	-0.10	-0.20	-0.10	0.330	0.321	12.964	Keeper Drop MultiShot
160.30	0.55	268.10	160.30	-0.15	-0.45	-0.15	0.191	0.042	20.226	Keeper Drop MultiShot
188.40	0.60	266.43	188.40	-0.16	-0.73	-0.16	0.056	0.053	-1.783	Keeper Drop MultiShot
216.70	0.73	264.77	216.69	-0.19	-1.06	-0.19	0.139	0.138	-1.760	Keeper Drop MultiShot
235.50	0.76	268.18	235.49	-0.20	-1.31	-0.20	0.085	0.048	5.441	Keeper Drop MultiShot
264.60	0.84	268.61	264.59	-0.21	-1.71	-0.21	0.083	0.082	0.443	Keeper Drop MultiShot
293.60	0.99	266.47	293.59	-0.23	-2.17	-0.23	0.159	0.155	-2.214	Keeper Drop MultiShot
322.60	1.12	265.47	322.58	-0.27	-2.71	-0.27	0.136	0.134	-1.034	Keeper Drop MultiShot
351.70	1.28	263.80	351.68	-0.33	-3.31	-0.33	0.169	0.165	-1.722	Keeper Drop MultiShot
380.70	1.34	261.56	380.67	-0.41	-3.97	-0.41	0.082	0.062	-2.317	Keeper Drop MultiShot
409.80	1.37	264.38	409.76	-0.50	-4.65	-0.50	0.075	0.031	2.907	Keeper Drop MultiShot
438.80	1.92	260.36	438.75	-0.61	-5.48	-0.61	0.581	0.569	-4.159	Keeper Drop MultiShot
467.90	2.35	259.83	467.83	-0.80	-6.55	-0.80	0.444	0.443	-0.546	Keeper Drop MultiShot
496.90	2.80	260.15	496.80	-1.03	-7.83	-1.03	0.466	0.466	0.331	Keeper Drop MultiShot
526.00	2.92	262.43	525.86	-1.25	-9.26	-1.25	0.170	0.124	2.351	Keeper Drop MultiShot
555.00	2.58	265.13	554.83	-1.40	-10.65	-1.40	0.376	-0.352	2.793	Keeper Drop MultiShot
584.10	2.24	268.02	583.90	-1.47	-11.87	-1.47	0.372	-0.351	2.979	Keeper Drop MultiShot
613.10	2.48	270.68	612.88	-1.49	-13.06	-1.49	0.273	0.248	2.752	Keeper Drop MultiShot
642.20	2.62	271.49	641.95	-1.46	-14.36	-1.46	0.149	0.144	0.835	Keeper Drop MultiShot
671.30	2.79	271.34	671.02	-1.43	-15.73	-1.43	0.175	0.175	-0.155	Keeper Drop MultiShot
700.30	3.07	272.84	699.98	-1.37	-17.21	-1.37	0.300	0.290	1.552	Keeper Drop MultiShot
729.40	3.25	271.35	729.03	-1.31	-18.81	-1.31	0.204	0.186	-1.536	Keeper Drop MultiShot
766.80	3.49	270.55	766.37	-1.28	-21.01	-1.28	0.196	0.193	-0.642	Keeper Drop MultiShot
795.90	3.85	271.64	795.41	-1.24	-22.87	-1.24	0.378	0.371	1.124	Keeper Drop MultiShot

Scientific Drilling (Australia)
Survey Report

Company:	Esso Australia Limited	**Date:** 18/06/2004	**Time:** 11:34:20	**Page:**	2
Field:	Bass Strait	**Co-ordinate(NE) Reference:**	Site: West Whiptail-1, Grid North		
Site:	West Whiptail-1	**Vertical (TVD) Reference:**	ENSCO,102 RKB 38.6		
Well:	West Whiptail-1	**Section (VS) Reference:**	Well (0.00N,0.00E,0.00Azi)		
Wellpath:	West Whiptail-1	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Survey

MD m	Incl deg	Azim deg	TVD m	+N/-S m	+E/-W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Tool/Comment
824.90	4.10	272.51	824.34	-1.17	-24.88	-1.17	0.266	0.259	0.900	Keeper Drop MultiShot
854.00	4.24	274.13	853.36	-1.05	-26.99	-1.05	0.189	0.144	1.670	Keeper Drop MultiShot
883.10	4.43	274.40	882.38	-0.88	-29.19	-0.88	0.197	0.196	0.278	Keeper Drop MultiShot
912.10	4.55	274.99	911.29	-0.70	-31.45	-0.70	0.133	0.124	0.610	Keeper Drop MultiShot
941.10	4.66	275.57	940.20	-0.48	-33.77	-0.48	0.124	0.114	0.600	Keeper Drop MultiShot
970.10	4.60	275.85	969.10	-0.25	-36.10	-0.25	0.066	-0.062	0.290	Keeper Drop MultiShot
999.00	4.58	276.56	997.91	0.00	-38.40	0.00	0.063	-0.021	0.737	Keeper Drop MultiShot
1028.00	4.58	276.04	1026.82	0.25	-40.70	0.25	0.043	0.000	-0.538	Keeper Drop MultiShot
1057.00	4.58	276.46	1055.72	0.51	-43.00	0.51	0.035	0.000	0.434	Keeper Drop MultiShot
1086.20	4.61	276.79	1084.83	0.78	-45.32	0.78	0.041	0.031	0.339	Keeper Drop MultiShot
1115.30	4.61	277.10	1113.84	1.06	-47.65	1.06	0.026	0.000	0.320	Keeper Drop MultiShot
1144.30	4.68	278.20	1142.74	1.37	-49.97	1.37	0.117	0.072	1.138	Keeper Drop MultiShot
1173.40	4.69	278.80	1171.74	1.72	-52.32	1.72	0.052	0.010	0.619	Keeper Drop MultiShot
1202.40	4.83	279.23	1200.64	2.10	-54.70	2.10	0.149	0.145	0.445	Keeper Drop MultiShot
1231.40	5.23	278.56	1229.53	2.49	-57.21	2.49	0.418	0.414	-0.693	Keeper Drop MultiShot
1260.50	5.20	278.41	1258.51	2.88	-59.83	2.88	0.034	-0.031	-0.155	Keeper Drop MultiShot
1289.60	5.42	279.29	1287.49	3.30	-62.49	3.30	0.242	0.227	0.907	Keeper Drop MultiShot
1318.60	5.70	281.36	1316.35	3.80	-65.25	3.80	0.356	0.290	2.141	Keeper Drop MultiShot
1347.60	6.07	282.15	1345.20	4.41	-68.16	4.41	0.392	0.383	0.817	Keeper Drop MultiShot
1376.60	6.37	283.88	1374.03	5.12	-71.23	5.12	0.366	0.310	1.790	Keeper Drop MultiShot
1405.70	6.61	285.59	1402.94	5.96	-74.41	5.96	0.318	0.247	1.763	Keeper Drop MultiShot
1434.80	6.79	286.96	1431.84	6.91	-77.66	6.91	0.248	0.186	1.412	Keeper Drop MultiShot
1463.80	7.23	288.03	1460.63	7.97	-81.04	7.97	0.475	0.455	1.107	Keeper Drop MultiShot
1492.90	7.64	289.10	1489.48	9.17	-84.61	9.17	0.446	0.423	1.103	Keeper Drop MultiShot
1521.90	8.00	290.23	1518.21	10.50	-88.32	10.50	0.405	0.372	1.169	Keeper Drop MultiShot

3.

QUALITY ASSURANCE

KEEPER POST JOB VERIFICATION

SECTION A – TO BE COMPLETED BY SUPERVISOR OR SURVEY ENGINEER

Customer: Esso Australia Ltd. Location: Ensco 102 Well Name: West Whiptail - 1

Keeper No: 106 Max Inc on Job: 8° Job No: 87K0504042

Azimuth at 20 deg: N/A Max. gyro temp on job: 178°f Surveyor on job: G. Sayers.

Field Cal on job : Di = -0.07 Ds = 0.25 ASF = -0.0010 StSF = 0.0001 Sbias = 0.0011 Temp = 102.3

Comments: Keeper 106 utilized for both surveys. Full calibrations were performed on the rig to confirm tool calibration.

Initialisation Data: Gyro Temp: N/A Inclination: Azimuth:

Gyro toolface: DKG. No. of Readings: Settle/Fetch time: Cat stew.

SECTION B – TO BE COMPLETED BY THE PERSON INSPECTING KEEPER GYRO

Field cal -: Di = -0.04 Ds = -0.09 ASF = 0.0007 StSF = 0.0013 Sbias = 0.0006 Temp = 102.7°

Low Angle Mode: (initialise Keeper at same position as used for job)

Gyro Temp: 102.9° Inclination: 0.43° Azimuth: 270.59 Gyro Toolface: 265.15 GTF SdM : 0.02

Inclination check: OK: ☑ Fail : ☐ Max error: -0.048°

Azimuth check: OK: ☑ Fail : ☐ Az error at 20 deg point: -0.036°

Drift Tuning: OK: ☑ Faulty : ☐ Gyro Temp Start = 102.7° End = 101.8°

Comments: Note : Post job verification toting was delayed due to tool being required immediatly on another job. 'A' grade tool in post Q.C.

High Speed Mode:

Inclination check: OK: ☑ Fail : ☐ Max error: -0.08°

Azimuth check: OK: ☑ Fail : ☐ Max error: +0.102°

Drift Tuning: OK: ☑ Faulty : ☐ Gyro Temp Start = 102.8 End = 102.7

Comments:

KEEPER POST JOB CHECK

Pass : ☑ Fail : ☐ Signed: Date: 1 June '04

Scientific Drilling

QSF32

Scientific Drilling (Australia)

Keeper #: 106

KEEPER ACCEPTANCE

Customer: Esso Australia Ltd.	Location: West Whiptail - 1
Keeper Checked by: Simon Garantini	Date: 7 May 2004
Wireline Type: N/A - KDG.	Wireline Company: N/A
Survey Inclination Range: Nom 0°	Azimuth at 15 degrees: N/A

Job Type:(tick boxes)

Casing Survey ☐ Drillpipe/Tubing Survey ☑ Steering ☐ Single Shot ☐

Power Supply #: 28589	Test Stand#: 007	MSI #: 124	File Name: 1060426c.bin

Field Cal Offsets (Previous or rig calibration)

DI = -0.06 DS = 0.04 ASF = -0.0019 St.SF= 0.0008 St.Bias = 0.0001 Temp = 107.2

ield Cal Offsets (Post Calibration)

DI = -0.07 DS = 0.25 ASF = -0.0010 St.SF = 0.0001 St.Bias = 0.0011 Temp = 102.3

Results of Tests Done

Wireline Comms Test	YES / NO	PASS / FAIL	Max. Ohms =
CCL Test	YES / NO	PASS / FAIL	n/a
Gamma Test	YES / NO	PASS / FAIL	n/a

Low Angle Continuous Mode

Start Inclination = 0.46° Initialisation data in specification: (YES) / NO. GTF SDM : 0.02

Max inclination error through run: = -0.019° Azimuth error at 15 degrees: -0.029°

High Speed Mode

Start Azimuth = 270.000 Final Azimuth = 270.044

Inclination Range from:: 20 to 90 Max error = -0.07 at 35 deg.

Azimuth range from: : 240 to 300 Max error = -0.084°

Comments: Low temp (175°f) A grade tool.

Keeper Checked By (signature):

This Keeper is within / outwith (*) specification and is acceptable for the job. If outwith specification, and the tool is to be used, a concession for use must be raised before shipping.

Manager/or his delegate (**signature**): Date: 7 May 2004

* delete as applicable

Firmware Version 46336505. *KCAL Version* 1.25.28T

Scientific Drilling

QTF32/Rev.02

KEEPER DATABASE SUMMARY

Well Details:

Client:	ESSO Australia Ltd.	Location:	Bass Strait
Job Number:	87K0504042	Personnel:	G. Sayers
Date:	20th May 2004	Depth datum:	Ensco 102 RKB (38.6m RKB - MSL)
Well Number:	West Whiptail-1	Water depth:	39.0 mtrs
Rig:	Ensco 102	Latitude:	38 deg 19' 28.9" S
Keeper Number:	KPR #106	Longitude:	147 deg 30' 17.0" E
Survey Interval:	0- 1521.9 mtrs.	Grid correction:	+0.31 deg
Mud weight:	9.5 ppg	Slot coord N:	0.0m
Drill Pipe:	5 "	E:	0.0m

Wireline Details: **N/A - Drop Keeper Gyro** **Tool Details:**

Wireline Company:		Tool length:	9.1 mtrs.
W/L Insulation(Mohms)		Max tool O.D.:	1.85"
W/L Resistance (ohms)		Gyro-zero point length:	3.5 mtrs.
Wireline size/type:		Approx. Tool wt:	200lb.

BHA / DP Details:

	Run#1	Run#2
DP Size:	5"	5"
BHA Length:	245.72 mtrs	196.11 mtrs.
Bit-Totco ring:	5.17 mtrs	5.53 mtrs
Bit-UBHO sub:	n/a	n/a
Bit-Top of Jars:	76.84 mtrs	65.13 mtrs
Minimum BHA ID:	2 ¾"	2 5/16"

Bench Test Details:

Primary tool:	KPR #106	Backup Tool:	KPR#053
Voltage:	135	Voltage:	
Current:	441	Current:	
Slew Voltage:	166	Slew Voltage:	
Slew Current:	480	Slew Current:	
Gyro temp (F):	104 deg. F	Gyro temp (F):	

Equipment Details:

Computer:	GS Dell	Computer (2):	Compaq
TIU:		Power Supply (2):	
MSI:		MSI (2):	
Heatshield:	1.85 Half flask, Sofia	Heatshield:	
Transformer:		Rig power supply (v):	
Tool Run Time:	.		

Comments / Problems:

No operational problems encountered.

KEEPER SURVEY Q.A. SUMMARY (Memory Survey)

Client:	ESSO Australia Ltd.	Location:	Bass Strait
Job Number:	87K0504042	Personnel:	G. Sayers
Date:	20th May 2004	Latitude:	-38.325 deg
Well Number:	West Whiptail-1	Grid correction:	+0.31 deg
Keeper Number:	Keeper # 106	Slot coord N:	0 m
Survey Interval:	0 – 1521.9m	E:	0 m

Field Calibration data:

	Office Calibration	Pre survey Cal.	Difference	Accept(Yes/No)
Di (deg/hr)	-0.07	-0.08	0.01	Yes
Ds (deg/hr)	0.25	0.31	0.06	Yes
X Accelerometer S.F.	-0.0010	0.0010	0.0020	Yes
St Accelerometer S.F.	0.0001	-0.0001	0.0002	Yes

Continuous Navigation Initialization Data: N/A – Drop Keeper Gyro

Measured Depth:	Inclination:	Time:	Num of Init GC:
Computd ERH: deg/hr (theoretical = deg/hr)	GTF sample mean SD:	Gyro Temp:	Accept (Y or N):

Tie in Data:

Survey Type	MD	TVD	Inclination	Azimuth	Latitude	Departure
Surface cord.	0	0	0	0	0	0

Inrun vs Outrun positional Differences: N/A- Drop Keeper Gyro

	TVD (m)	North / South (m).	East / West (m)
Inrun (m)			
Outrun (m)			
Difference (m)			
Difference / 1000			
QC Specification / 1000			
Accept (Y or N)			

Depth Control: N/A – Drop Gyro

Wireline Company:	Gamma/ CCL Used (Yes/No):	CCL Correction applied:
Wireline size/type:	Rezero:	Accept (Yes/No):

Survey Run time:

	Run#1	Run#2
Program gyro:	08:20	14:55
Release tool in DP:	08:30	15:03
Begin POOH:	09:15	15:14
End of svy. section:	12:15	16:43
Retrieve tool:	14:00	19:25

Survey Final Report :

Is Final report Different than the field report? □ No □ Yes → Why?

No. The Keeper gyro was returned to Sale for post job testing. No post survey calibration shifts seen. Tool meets all QC parameters.

Comments / Problems:

No operational problems encountered.

SURVEY PRE-JOB CHECKLIST

Client:	ESSO Australia Ltd.	Location:	Bass Strait
Job Number:	87K0504042	Personnel:	G. Sayers
Date:	15th May 2004	Latitude:	-38.325 deg

Job Checklist: (tick appropriate boxes)

- Pre-job Preparation	X
- Function test tool & Field cal.	X
- Clients Well Program	X
- Pre-Spud Meeting Changes	X
- Pre Job Safety Meeting held	X
- Keeper Database Summary	X
- Keeper Survey QA Summary	X
- Raw Data Printout	X
- Comparison (MWD) survey data / BHA listing	
- Keeper Post Job Calibration check	X
- Copy of Work Order / Job Ticket	X
- Client end of well report completed	X

Data Archiving:

- Master and Working Disks Filed	X
- Report Files copied to Hard drive	X
- Definitive Survey Archived	X
- Disk Files copied to Hard drive	X

Disk Labels Used

- Inrun or outrun presented :	Outrun (KDG)
-Master disk label :	87K0504042
- Client disk label :	westwhiptail1gyro.txt

4.

DIRECTIONAL SURVEY ERROR ANALYSIS

Scientific Drilling

Scientific Drilling Australia

Directional Survey Precision Analysis

Analysis for	Esso Australia Ltd
Field or Platform	ENSCO 102
Well	West Whiptail-1
Date of survey/proposal	31 May 2004
Latitude	-38.325 deg
Longitude	+147.505 deg
Depth units	Meters
Error outputs are based on	2-Sigma calculations
Source of input data was;	Final Drop Keeper gyro results
Data file	E:\AAA\FINDEREA\FINALSVY.TXT
Software version	Version 1.01E

Tie-on information

Slot coordinates	:	Latitude	0.00
		Departure	0.00
Tie-on position (relative to slot)	:	Latitude	0.00
		Departure	0.00
		TVD	0.00
Position uncertainty	:	Lateral	0.00
		Radial	0.00
		TVD	0.00
Last survey shot	:	Measured depth	0.00
		Inclination	0.00
		Azimuth	0.00

Section 1 Start depth 0m
End depth 1521.9m

Instrument type Drop Keeper Gyro Compass Survey

Error parameters for this section:

Measured depth uncertainty (per 1000)	0.4
Shot interval	0
Offset center uncertainty	0.05
Offset center correction applied	NO
BHA deflection uncertainty	0.00
BHA deflection correction applied	NO
Tool centralized	NO
Date of error parameter file	21 May 1993

Information specific to this instrument:

Field Cal Performed	YES
CCL or Gamma Depth Control	NO

Depth						Error half-axes				Angular errors	
Meas.	TVD	Incl.	Azimuth	Lat.	Dep.	Lateral	Radial	TVD	Orient	Incl.	Azimuth
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.07	180.00
77.60	77.60	0.00	0.00	0.00	0.00	0.00	0.10	0.00	90.00	0.07	180.00
104.00	104.00	0.21	236.92	-0.03	-0.04	0.09	0.08	0.00	326.92	0.07	22.96
132.00	132.00	0.51	249.02	-0.10	-0.20	0.12	0.13	0.00	333.64	0.07	9.47
160.30	160.30	0.55	268.10	-0.15	-0.45	0.17	0.18	0.00	341.84	0.07	8.78
188.40	188.40	0.60	266.43	-0.16	-0.73	0.21	0.22	0.00	347.55	0.07	8.05
216.70	216.69	0.73	264.77	-0.19	-1.06	0.25	0.27	0.00	349.97	0.07	6.61
235.50	235.49	0.76	268.18	-0.20	-1.31	0.27	0.29	0.00	351.17	0.07	6.35
264.60	264.59	0.84	268.61	-0.21	-1.71	0.31	0.33	0.00	352.87	0.07	5.75
293.60	293.59	0.99	266.47	-0.23	-2.17	0.35	0.37	0.01	353.84	0.07	4.88
322.60	322.58	1.12	265.47	-0.27	-2.71	0.38	0.41	0.01	354.25	0.07	4.31
351.70	351.68	1.28	263.80	-0.33	-3.31	0.42	0.45	0.01	354.31	0.07	3.77
380.70	380.67	1.34	261.56	-0.41	-3.97	0.45	0.48	0.01	354.04	0.07	3.60
409.80	409.76	1.37	264.38	-0.50	-4.65	0.49	0.52	0.01	353.88	0.07	3.52
438.80	438.75	1.92	260.36	-0.61	-5.48	0.53	0.56	0.01	353.60	0.07	2.52
467.90	467.83	2.35	259.83	-0.80	-6.55	0.57	0.59	0.02	353.02	0.07	2.06
496.90	496.80	2.80	260.15	-1.03	-7.83	0.61	0.63	0.02	352.53	0.07	1.73

Depth						Error half-axes				Angular errors	
Meas.	TVD	Incl.	Azimuth	Lat.	Dep.	Lateral	Radial	TVD	Orient	Incl.	Azimuth
526.00	525.86	2.92	262.43	-1.25	-9.26	0.64	0.67	0.02	352.34	0.07	1.66
555.00	554.83	2.58	265.13	-1.40	-10.65	0.68	0.70	0.02	352.51	0.07	1.87
584.10	583.90	2.24	268.02	-1.47	-11.87	0.71	0.74	0.02	352.92	0.07	2.16
613.10	612.88	2.48	270.68	-1.49	-13.06	0.75	0.78	0.03	353.51	0.07	1.95
642.20	641.95	2.62	271.49	-1.46	-14.36	0.79	0.82	0.03	354.19	0.07	1.85
671.30	671.02	2.79	271.34	-1.43	-15.73	0.83	0.86	0.03	354.81	0.07	1.73
700.30	699.98	3.07	272.84	-1.37	-17.21	0.87	0.90	0.04	355.44	0.07	1.58
729.40	729.03	3.25	271.35	-1.31	-18.81	0.91	0.94	0.04	356.00	0.07	1.49
766.80	766.37	3.49	270.55	-1.28	-21.01	0.97	0.99	0.05	356.52	0.07	1.39
795.90	795.41	3.85	271.64	-1.24	-22.87	1.00	1.03	0.05	356.89	0.07	1.26
824.90	824.34	4.10	272.51	-1.17	-24.88	1.04	1.07	0.06	357.31	0.07	1.19
854.00	853.36	4.24	274.13	-1.05	-26.99	1.08	1.11	0.06	357.78	0.07	1.15
883.10	882.38	4.43	274.40	-0.88	-29.19	1.13	1.15	0.07	358.27	0.07	1.10
912.10	911.29	4.55	274.99	-0.70	-31.45	1.17	1.19	0.07	358.73	0.07	1.07
941.10	940.20	4.66	275.57	-0.48	-33.77	1.21	1.23	0.07	359.18	0.07	1.05
970.10	969.10	4.60	275.85	-0.25	-36.10	1.24	1.27	0.08	359.60	0.07	1.06
999.00	997.91	4.58	276.56	0.00	-38.40	1.28	1.31	0.08	0.00	0.07	1.06
1,028.00	1,026.82	4.58	276.04	0.25	-40.70	1.32	1.35	0.08	0.36	0.07	1.06
1,057.00	1,055.72	4.58	276.46	0.51	-43.00	1.36	1.39	0.09	0.68	0.07	1.06
1,086.20	1,084.83	4.61	276.79	0.78	-45.32	1.40	1.43	0.09	0.98	0.07	1.06
1,115.30	1,113.84	4.61	277.10	1.06	-47.65	1.44	1.47	0.09	1.27	0.07	1.06
1,144.30	1,142.74	4.68	278.20	1.37	-49.97	1.48	1.51	0.10	1.57	0.07	1.04
1,173.40	1,171.74	4.69	278.80	1.72	-52.32	1.52	1.55	0.10	1.89	0.07	1.04
1,202.40	1,200.64	4.83	279.23	2.10	-54.70	1.56	1.58	0.11	2.20	0.07	1.01
1,231.40	1,229.53	5.23	278.56	2.49	-57.21	1.60	1.62	0.12	2.50	0.07	0.94
1,260.50	1,258.51	5.20	278.41	2.88	-59.83	1.64	1.66	0.12	2.76	0.07	0.94
1,289.60	1,287.49	5.42	279.29	3.30	-62.49	1.68	1.70	0.13	3.02	0.07	0.91
1,318.60	1,316.35	5.70	281.36	3.80	-65.25	1.72	1.74	0.13	3.34	0.07	0.87
1,347.60	1,345.20	6.07	282.15	4.41	-68.16	1.76	1.78	0.14	3.70	0.07	0.82
1,376.60	1,374.03	6.37	283.88	5.12	-71.23	1.80	1.83	0.15	4.11	0.07	0.78
1,405.70	1,402.94	6.61	285.59	5.96	-74.41	1.85	1.87	0.16	4.58	0.07	0.76
1,434.80	1,431.84	6.79	286.96	6.91	-77.66	1.89	1.91	0.17	5.08	0.07	0.74
1,463.80	1,460.63	7.23	288.03	7.97	-81.04	1.94	1.96	0.18	5.62	0.07	0.70
1,492.90	1,489.48	7.64	289.10	9.17	-84.61	1.99	2.01	0.19	6.19	0.07	0.67
1,521.90	1,518.21	8.00	290.23	10.50	-88.32	2.04	2.05	0.20	6.78	0.07	0.55

Radius of uncertainty at end of section: 2.90m

5.

DKG – FIELD DATA SHEETS

Scientific Drilling

KEEPER DROP-GYRO FIELD DATA SHEET

Scientific Drilling

Customer :	EAL	Date :	16/5/04	Page no :	1 of 1
Location :		Job no :	87K0504042.	Keeper S/N :	
Well No :	WEST WHIPTAIL - 1	Surveyor :	GAVIN	Time dropped :	
Lease :		Grid Corr :	+0.31	On bottom (est) :	
Rig name :	FINNO 102	North ref. :		Slug pumped @ :	

* STAND #18 IN DERRICK @ START OF TRIP.

STD #	Stand No	Surface Time	Measured depth (m)	Gyro depth (m)	Comments
	TD	0845	739.57		DROP @ 0830.30
(17)	1	0918	710.54		ON BOTT 0836.30
(16)	2	0951	681.47		PUMP SLUG @ 0840 - NO GOOD
	3	0957	652.42		RE-PUMP @ 0851
	4	1000	623.34		POOH @ 0915
	5	1004	594.26		* 9.17 → 9.45 STATIONARY FOR
	6	1007	565.20		INCIDENT.
	7	1011	536.15		
	8	1014	507.13		
	9	1018	478.08		
	10	1022	449.04		
	11	1031	419.97		
	12	1033.30	390.93		
	13	1036.30	361.91		
	14	1039	332.82		
	15	1041.30	303.80		
	16	1044	274.76		
	17	1046.30	245.72		* P/UP SINGLE
	BHA 1	1103	226.86		
	2	1106	198.60		
	3	1110	170.48		
	4	1114	142.24		
	5	1120	114.20		
	6	1125	86.15		

1. Bit-Totco =	5.17
2. Bull nose – Gyro =	3.50
3. Bit – Gyro = 1 + 2 =	8.67 + 1.5 s/up.
Latitude :	-38.325
Longtitude :	
Northing (m) :	
Easting (m) :	
Total Magnetic Force :	
Dip Angle :	
Grid Convergence :	
Magnetic Declination :	
Magnetic Nth – True Nth =	
True Nth – Grid Nth =	
Magnetic Nth – Grid Nth =	
North referenced to GRID or TRUE	
Battery voltage (before run) =	33
Battery voltage (after run) =	
Run time =	5 hrs
Num of records downloaded =	

Thursday, 17 June 2004 (3).max

KEEPER DROP-GYRO FIELD DATA SHEET

Scientific Drilling

Customer :	EAL	Date :	20-5-04	Page no :	1 of 2
Location :		Job no :	87K05OH042	Keeper S/N :	106
Well No :	WEST WHIPTAIL 1	Surveyor :	GANN	Time dropped :	
Lease :		Grid Corr :	+0.31	On bottom (est) :	
Rig name :	ENSLO 102	North ref. :		Slug pumped @ :	

* 5 min HOLD OFF / 300 CONT.

Derrick Stand #	Stand No	Surface Time	Measured depth (m)	Gyro depth (m)	Comments
	TD		1539.0		DROP @ 15.03.30
(47)	KO	15.12.30	1532.25		EST. ON BOTT 15.12.30
(46)	1	15.15.00	1503.18		POOH (NO SURV) 15.14.30
	2	15.19.15	1474.10		OOH 19.25
	3	15.22.15	1445.11		
	4	15.26.15	1416.[illegible]		
	5	15.29.45	1386.91		
	6	15.33.00	1357.94		
	7	15.36.30	1328.91		
	8	15.39.45	1299.87		
	9	15.42.30	1270.80		
	10	15.45.30	1241.73		
	11	15.48.30	1212.72		
	12	15.51.15	1183.66		
	13	15.55.00	1154.63		
	14	15.57.00	1125.56		
	15	16.00.30	1096.50		
	16	16.04.15	1067.33		
	17	16.08.30	1038.35		
	18	16.12.00	1009.34		
	19	16.15.00	980.40		
	20	16.18.15	951.39		
	21	16.21.15	922.36		
	22	16.24.30	893.37		

1. Bit-Totco =	5.33
2. Bull nose – Gyro =	3.50
3. Bit – Gyro = 1 + 2 =	8.83 + 1.50 sub
	= 10.33
Latitude :	−38.325.
Longtitude :	
Northing (m) :	
Easting (m) :	
Total Magnetic Force :	
Dip Angle :	
Grid Convergence :	
Magnetic Declination :	
Magnetic Nth – True Nth =	
True Nth – Grid Nth =	
Magnetic Nth – Grid Nth =	
North referenced to GRID or TRUE	
Battery voltage (before run) =	
Battery voltage (after run) =	
Run time =	
Num of records downloaded =	

Thursday, 17 June 2004 (3).max

KEEPER DROP-GYRO FIELD DATA SHEET

Scientific Drilling

Customer : EAL
Location :
Well No : WEST WHITTARE 1
Lease :
Rig name :

Date :
Job no :
Surveyor :
Grid Corr :
North ref. :

Page no : 2 of 2
Keeper S/N :
Time dropped :
On bottom (est) :
Slug pumped @ :

Stand No	Surface Time	Measured depth (m)	Gyro depth (m)	Comments
23	16.28.00	864.28		
24	16.31.30	835.23		
25	16.35.15	806.18		
26	16.38.30	777.10		
(20) 27	16.43.00	748.66		

1. Bit-Totco =
2. Bull nose – Gyro =
3. Bit – Gyro = 1 + 2 =
Latitude :
Longtitude :
Northing (m) :
Easting (m) :
Total Magnetic Force :
Dip Angle :
Grid Convergence :
Magnetic Declination :
Magnetic Nth – True Nth =
True Nth – Grid Nth =
Magnetic Nth – Grid Nth =
North referenced to GRID or TRUE
Battery voltage (before run) =
Battery voltage (after run) =
Run time =
Num of records downloaded =

Thursday, 17 June 2004 (3).max

Drilling Emissions & Waste Record

ExxonMobil Development

Environmental Performance Indicators Report

Well: WW1 **Country:** Australia

Rig: Ensco 102 **FRR Date:** 5-Jun-04

Offshore or Onshore: Offshore

Emissions Data

Rig Fuel Consumption 57166 gallons (U.S.)

Environmental Regulatory Compliance Data

Exceedances reported to regulatory authorities*

No. to air	Nil	No. to water	Nil	No. of NOV's	Nil
No. to Land	Nil	Other	Nil		
No. R.Q. Exceedances	Nil			No. Fines	Nil
Total Exceedances	Nil			Fines Amount ($US)	Nil

Oil Spills* > 1 bbl.	No. to land	Nil	Vol. to land	Nil	bbls.
	No. to water	Nil	Vol. to water	Nil	bbls.
Chemical Spills* > 100 kg.	No. to land	Nil	Vol. to land	Nil	kgs.
	No. to water	Nil	Vol. to water	Nil	kgs.

[Vol.(gal.)*Specific Gravity *(8.3 lbs./1 gal)*(1kg/2.2 lbs.)] =Mass(kg)

Drilling Fluid Spills* > 1 bbl.	No. to land	Nil	Vol. to land	Nil	bbls.
(Indicate Water-Based or NAF)	No. to water	Nil	Vol. to water	Nil	bbls.

Report Water-Based Drilling Fluid Spills, regardless of volume, if reportable to a regulatory authority.

*Please send all spill (form D-020) or exceedance reports to Drilling Environmental Coordinator fax 281-654-4337

Waste Data

Drilling Fluid Type: Water-Based or *Non-Aqueous Fluid (**NAF**)

*If NAF please indicate type (oil/mineral/synthetic) and trade name WBM

Drill Cuttings (Only complete for NAF drill cuttings discharged to sea)

NAF Drill Cuttings disposed at sea Vol. Nil bbls. (Use gauge hole volume)

Wet Wt% NAF on Cuttings

Hazardous Waste (classified as Hazardous Waste by regulatory authorities)
Please see Instructions for more detail and examples.

Net Generated (lbs.)	Nil	External Recycled (lbs.)	Nil
Waste Type	Nil	Waste Type	Nil

Engineer: Chris Meakin Eng. Manager: Colin Johancsik

Send completed copy to EMDC Drilling Environmental Coordinator and include copy in Final Well Report

Management of Change Summary

MANAGEMENT OF CHANGE SUMMARY

Well: **WEST WHIPTAIL-1** Country: Australia

#	MOC ID #	Description & Reason for Change	Risk Mitigation Measures Implemented	Approved By	Effective Date	Expiry Date
1	**3**	**Item 1:** The BOP stack (2 double rams) does not have a spool(s) for choke/kill line access as required. Instead there are side outlets on the ram bodies (one under each of the four rams; 2 choke / 2 kill). The BOP has adequate spacing for ram / ram & ram / annular stripping and double-valved access points for stripping volume control and monitoring. A review of the BOP drawings shows that there is no interference of the ram blocks with the side ports. Hence, there will be very little opportunity for erosion of the ram block as the flow makes its turn into the side outlet. Modification would require a stack changeout which is not deemed necessary. **Item 2:** The wellhead connector is neither flanged nor an EM approved hub connector. However, the proven CIW "Fastlock" connector will allow rapid and safe make-up of the BOP to the wellhead. **Item 3:** The kill line valves/lines connected to standpipe manifold do not have the same rating as the 15ksi BOP stack. The current standpipe rating is 7.5ksi, which is deemed to be adequate for the expected maximum surface pressure required during the Ensco-102 drilling campaign.	The exploration/development drilling campaign with the Ensco-102 will be conducted in a mature basin (Gippsland), with numerous offset wells and known pore pressure regime (max in range of 12-13ppg). As in all EM operations, all drilling will be done overbalanced. The Ensco-102 BOP is a new, high specification system (15ksi / 5 component (annular + 4 rams); shear ram; rapid closing) designed for use on HPHT applications and hence will be able to handle the Gippsland basin conditions.	D.L. Whiteman	18-Mar-2004	31-Dec-2004
2	**4**	The Ensco-102 BOP closing procedure has the annular preventer closed prior to opening the choke line remote-operated valve (HCV). This differs from EM procedures which specify that the HCV be opened prior to closing the annular. A change is not warranted as a hard shut-in (ie: hydraulic choke closed) makes the order that the HCV/annular are shut-in irrelevant.	The section 14S of the "Standard Operations Manual for Jack-up/Platform/Barge Drilling" will have the Ensco-102 shut-in procedures documented.	D.L. Whiteman	15-Mar-2004	31-Dec-2004
3	**6**	**Item 1:** The BOP stack will be pressure tested on the test stump prior to installation on wellhead. Upon installation, the BOP/wellhead connector will be pressure tested to 3ksi. This is a deviation from the EMDC "Surface Blowout Prevention and Well Control Equipment Manual", which stipulates that a pressure test of the entire system is required upon installation.	The exploration/development drilling campaign with the Ensco-102 will be conducted in a mature basin (Gippsland), with numerous offset wells and known pore pressure regime (max in range of 12-13ppg). As in the majority of EMDC operations (excluding UBD), all drilling will be done overbalanced.	D.L. Whiteman	01-Apr-2004	31-Dec-2004

MANAGEMENT OF CHANGE SUMMARY

Well: **WEST WHIPTAIL-1** Country: Australia

#	MOC ID #	Description & Reason for Change	Risk Mitigation Measures Implemented	Approved By	Effective Date	Expiry Date
3	**6**	/Cont. **Item 2:** The rams/valves will be stump tested to 7.5ksi and the annular to 3.5ksi. The ram test pressure is a deviation from the BOPE Manual which states that the rams should be tested to the rated working pressure of the preventers (15ksi) or the wellhead (10ksi), whichever is lower. The annular test pressure is a deviation from the BOPE manual which states that the annular must be tested to rated working pressure during acceptance testing and 70% of rated working pressure thereafter (assuming casinghead rating does not limit).				
4	**7**	EMDC OIMS Section 8-10 specifies that "Exposure suits shall be provided on MODU and for Drilling-associated helicopter operations if the expected rescue time exceeds the estimated the estimated hypothermia survival time." Reference to exposure suits also includes survival suits. Exposure suits shall be provided during any month that: (a) there is less than 95% propability that the average water temperature will be above 68degrees F. (20 degrees C.): or (b) estimated in-water survival time is less than the estimated rescue time. A chart "Estimated Survival Time for Anti Exposure Garments" Scenario Search and Rescue (SAR) plans shall consider the probable cumulative time to mobilize SAR equipment, locate personnel in the water and recover them. For helicopter ops, scenarios shall include ditching anywhere along over water transportation routes (with personnel in the water) Responsibility: Operations Superintendent. Approval Authority: Field Drilling Manager (including alternatives, exceptions) The water temperature in Bass Strait, as measured at Kingfish B platform, is such that during any month there is less than a 95% probability that the average water temparature will be above 20º C throughout the year. Hence, under OIMS 8-10 Exposure Suits are required.	**PREVENTION:** ExxonMobil aviation standards; Inspection and maintenance program; Civil aviation standards; Normal helicopter operations in daylight only; Aviation audits/assessments; Quality checks of fuel supply; Adherence to procedures; EAPL aviation policy; Flight following with live tracking; Co-pilot in each helicopter; Project-specific training; Helicopter induction briefing; Controls on arrival and departure by helideck crew; Trained Helicopter Landing Officers; Markings on helideck; Inspection of helideck by aviation; Training for rig crew and all passengers on S76 helicopter included in overall rig induction; Crane operations shut down when helicopter landing/taking off.	D.L. Whiteman	02-Apr-2004	31-Dec-2005

MANAGEMENT OF CHANGE SUMMARY

Well: **WEST WHIPTAIL-1** Country: Australia

#	MOC ID #	Description & Reason for Change	Risk Mitigation Measures Implemented	Approved By	Effective Date	Expiry Date
4	**7**	/Cont. However, exposure suits are not worn during for helicopter operations to the Bass Strait platforms during daylight hours. This has been risk assessed and accepted by EM Production Management and the Regulator. It would be inconsistent to wear exposure suits to the MODU operations and not on the often longer flights to the various platforms. Hence an exception is sought to the EMDC OIMS Section 8-10 requirement that Exposure suits shall be provided for Drilling-associated helicopter operations.	**MITIGATION MEASURES:** Emergency communication capability/Emerg Location Transmitter; EAPL ERP incl Public Affairs procedures; Search and Rescue; Flight following; Survival kits; Aircraft first aid kits; HUET training; Fast Rescue Craft on both support vessels, life boat on rig, Vessel can respond very quickly during helicopter operations.			
5	**8**	The EMDC Drilling OIMS Manual requires that procedures are in place to assure adequate rig foundations have been provided. For Jack-up rigs it stipulates that a soil boring shall be performed to determine expected spud can penetrations and to evaluate punch-through potential. An exemption to this requirement is sought based on using a staged preload procedure acceptable to ENSCO, historic spud can penetration data that the deepest spud can penetration for twelve Jack-up operations in Bass Strait has been 3.0m, and in no cases has a preload needed to be repeated because of leg penetration, and a site survey at West Whiptail-1 that reveals a consistent sub-bottom profile comprising a uniform 3m thick loose to dense/soft to stiff sandy and silty soil overlaying a truncated folded unit thought to possibly be an erosional surface approximately 20,000 years old, that extends to below the 20m depth of investigation.	**PREVENTION:** Staged preload program, geophysiscal site survey, prior Bass Strait experience of no punch through, weather forecasting and monitoting. **MITIGATION MEASURES:** Emergency Response Plan	D.L. Whiteman	22-Apr-2004	30-Jun-2004

MANAGEMENT OF CHANGE SUMMARY

Well: **WEST WHIPTAIL-1** Country: Australia

#	MOC ID #	Description & Reason for Change	Risk Mitigation Measures Implemented	Approved By	Effective Date	Expiry Date
6	**9**	The secondary back-up pumps on the control system, two air-operated "Haskel" pumps, do not meet the EMDC "Surface Blowout Prevention and Well Control Equipment Manual" requirements which are: "With the accumulator unit removed from service, the pumps must be capable of opening the hydraulically-operated gate valve and closing the annular preventer on the smallest size drill pipe being used within two (2) minutes, and achieve a minimum of 1,200 psi pressure on the closing system manifold. The result of a pump capacity test was 4.1 minutes. **Request:** Accept the backup air-operated pumps as installed.	The exploration/development drilling campaign with the Ensco-102 will be conducted in a mature basin (Gippsland), with numerous offset wells and known pore pressure regime (max in range of 12-13ppg). As in all EM operations, all drilling will be done overbalanced. The Ensco-102 BOP is a new, high specification system (15ksi / 5 component (annular + 4 rams); shear ram; rapid closing) designed for use on HPHT applications and hence will be able to handle the Gippsland basin conditions. The probability of requiring the the secondary backup system to be employed is considered to be extremely low.	D.L. Whiteman	06-May-2004	31-Dec-2004
7	**2/ 2004**	Increase target tolerance from 50m to 100m on western boundary of original target box.	None	W.J. Mudge	17-May-2004	-

Recommendations for future drilling programs:

None.

Recommendations to upgrade the Management of Change System:

None.

Management of Change Worksheet

ExxonMobil Developmen

DRS ID:	Ensco-102 Wells	**MOC ID:**	3
Well Name:	Ensco-102 Wells	**Drill Team:**	Austrailia Offshore
		Rig:	Ensco-102

Type of Change: ○ Drilling Program/Procedure Change ◉ Design Standard Exception ---- Identify: BOP Equipment

Date Initiated: (dd/mm/yy) 18/03/2004

Category (Check One)

☑ BOP Configuration	☐ Mud Weight Change	☐ BHA Related	☐ Personnel Change
☐ BOP Test Extension	☐ Cement Design / Procedure	☐ Depth Change	☐ Mooring Operations
☐ SHE Policy / Standards	☐ Plug and Abandon Procedures	☐ Other --- Define:	

Description / Reason for Change:

Item 1: The BOP stack (2 double rams) does not have a spool(s) for choke/kill line access as required. Instead there are side outlets on the ram bodies (one under each of the four rams; 2 choke / 2 kill). The BOP has adequate spacing for ram / ram & ram / annular stripping and double-valved access points for stripping volume control and monitoring. A review of the BOP drawings shows that there is no interference of the ram blocks with the side ports. Hence, there will be very little opportunity for erosion of the ram block as the flow makes its turn into the side outlet. Modification would require a stack changeout which is not deemed necessary.

Item 2: The wellhead connector is neither flanged nor an EM approved hub connector. However, the proven CIW "Fastlock" connector will allow rapid and safe make-up of the BOP to the wellhead.

Item 3: The kill line valves/lines connected to standpipe manifold do not have the same rating as the 15ksi BOP stack. The current standpipe rating is 7.5ksi, which is deemed to be adequate for the expected maximum surface pressure required during the Ensco-102 drilling campaign.

Nature and Level of Engineering Review Made:

Input received from EMDC Drilling Technical BOP SME (emails attached). Thorough review of BOP specifications.

Risk Assessment Summary (Use Risk Matrix - in OIMS Element 2 or Click Example Button):

Probability: ☐ A ☐ B ☐ C ☐ D ☑ E

Consequence: ☐ I ☐ II ☑ III ☐ IV

Risk Mitigation Measures (Prescribed Program Limits):

The exploration/development drilling campaign with the Ensco-102 will be conducted in a mature basin (Gippsland), with numerous offset wells and known pore pressure regime (max in range of 12-13ppg). As in all EM operations, all drilling will be done overbalanced. The Ensco-102 BOP is a new, high specification system (15ksi / 5 component (annular + 4 rams); shear ram; rapid closing) designed for use on HPHT applications and hence will be able to handle the Gippsland basin conditions.

Training / Communication Required to Implement Change? ☑ No ☐ Yes (Describe)

Permit Notifications Required to Implement Change? ☑ No ☐ Yes (Describe)

Effective Date: (dd/mm/yy)	18/03/2004	24 hr Time:	0:00	Duration: Until:	31/12/2004	Date Approved: (dd/mm/yy)	18/03/2004

Initiated by:	C. MacDonald	Reviewed by:	F. Kratzer	Approved by:	D. Whiteman
Sign:		Sign:		Sign:	

Management of Change Worksheet

ExxonMobil Developmen

DRS ID: Ensco-102 Wells **MOC ID:** 4

Well Name: Ensco-102 Wells **Drill Team:** Austrailia Offshore

Rig: Ensco-102

Type of Change: (•) Drilling Program/Procedure Change ( ) Design Standard Exception ---- Identify

Date Initiated: (dd/mm/yy) 11/02/2004

Category (Check One)

- [ ] BOP Configuration
- [ ] Mud Weight Change
- [ ] BHA Related
- [ ] Personnel Change
- [ ] BOP Test Extension
- [ ] Cement Design / Procedure
- [ ] Depth Change
- [ ] Mooring Operations
- [ ] SHE Policy / Standards
- [ ] Plug and Abandon Procedures
- [x] Other --- Define: BOP Closing Procedure

Description / Reason for Change:

The Ensco-102 BOP closing procedure has the annular preventer closed prior to opening the choke line remote-operated valve (HCV). This differs from EM procedures which specify that the HCV be opened prior to closing the annular. A change is not warranted as a hard shut-in (ie: hydraulic choke closed) makes the order that the HCV/annular are shut-in irrelevant.

Nature and Level of Engineering Review Made:

Nil

Risk Assessment Summary (Use Risk Matrix - in OIMS Element 2 or Click Example Button):

Probability

- [ ] A
- [ ] B
- [ ] C
- [x] D
- [ ] E

Consequence

- [ ] I
- [ ] II
- [ ] III
- [x] IV

Risk Mitigation Measures (Prescribed Program Limits):

The section 14S of the "Standard Operations Manual for Jack-up/Platform/Barge Drilling" will have the Ensco-102 shut-in procedures documented.

Training / Communication Required to Implement Change? [x] No [ ] Yes (Describe)

Permit Notifications Required to Implement Change? [x] No [ ] Yes (Describe)

Effective Date: (dd/mm/yy) 15/03/2004 **24 hr Time:** 0:00 **Duration: Until:** 31/12/2004 **Date Approved: (dd/mm/yy)** 01/03/2004

Initiated by: C. MacDonald **Reviewed by:** F. Kratzer **Approved by:** D. Whiteman

Sign: _____ Sign: _____ Sign: _____

Management of Change Worksheet

ExxonMobil Developmen

DRS ID: West Whiptail-1 **MOC ID:** 6

Well Name: West Whiptail-1 **Drill Team:** Austrailia Offshore

Rig: Ensco-102

Type of Change:
- ○ Drilling Program/Procedure Change
- ◉ Design Standard Exception ---- Identify: BOPE Testing

Date Initiated: (dd/mm/yy) 15/03/2004

Category (Check One)

☐ BOP Configuration	☐ Mud Weight Change	☐ BHA Related	☐ Personnel Change
☐ BOP Test Extension	☐ Cement Design / Procedure	☐ Depth Change	☐ Mooring Operations
☐ SHE Policy / Standards	☐ Plug and Abandon Procedures	☑ Other --- Define: BOPE Testing	

Description / Reason for Change:

1. The BOP stack will be pressure tested on the test stump prior to installation on wellhead. Upon installation, the BOP/wellhead connector will be pressure tested to 3ksi. This is a deviation from the EMDC "Surface Blowout Prevention and Well Control Equipment Manual", which stipulates that a pressure test of the entire system is required upon installation.

2. The rams/valves will be stump tested to 7.5ksi and the annular to 3.5ksi. The ram test pressure is a deviation from the BOPE Manual which states that the rams should be tested to the rated working pressure of the preventers (15ksi) or the wellhead (10ksi), whichever is lower. The annular test pressure is a deviation from the BOPE manual which states that the annular must be tested to rated working pressure during acceptance testing and 70% of rated working pressure thereafter (assuming casinghead rating does not limit).

Nature and Level of Engineering Review Made:

Review of EMDC requirements and exposure to lowering the test pressures for Gippsland Operations.

Risk Assessment Summary (Use Risk Matrix - in OIMS Element 2 or Click Example Button):

Probability: ☐ A ☐ B ☐ C ☑ D ☐ E

Consequence: ☐ I ☐ II ☑ III ☐ IV

Risk Mitigation Measures (Prescribed Program Limits):

The exploration/development drilling campaign with the Ensco-102 will be conducted in a mature basin (Gippsland), with numerous offset wells and known pore pressure regime (max in range of 12-13ppg). As in the majority of EMDC operations (excluding UBD), all drilling will be done overbalanced.

Training / Communication Required to Implement Change? ☑ No ☐ Yes (Describe)

Permit Notifications Required to Implement Change? ☑ No ☐ Yes (Describe)

Effective Date: (dd/mm/yy) 01/04/2004 | 24 hr Time: 0:00 | Duration: Until: 31/12/2004 | Date Approved: (dd/mm/yy) 15/03/2004

Initiated by: C. MacDonald | Reviewed by: F. Kratzer | Approved by: D. Whiteman

Sign: _____ Sign: _____ Sign: _____

Management of Change Worksheet

DRS ID: All

MOC ID: 7

Well Name: All

Drill Team: Austrailia Offshore

Rig: All MODUs

Type of Change:
- ○ Drilling Program/Procedure Change
- ◉ Design Standard Exception ---- Identify: Exposure Suits

Date Initiated: (dd/mm/yy) 02/04/2004

Category (Check One)

☐ BOP Configuration	☐ Mud Weight Change	☐ BHA Related	☐ Personnel Change
☐ BOP Test Extension	☐ Cement Design / Procedure	☐ Depth Change	☐ Mooring Operations
☐ SHE Policy / Standards	☐ Plug and Abandon Procedures	☑ Other --- Define: Exposure Suits - MODU Helicopter op	

Description / Reason for Change:

EMDC OIMS Section 8-10 specifies that "Exposure suits shall be provided on MODU and for Drilling-associated helicopter operations if the expected rescue time exceeds the estimated the estimated hypothermia survival time."
Reference to exposure suits also includes survival suits. Exposure suits shall be provided during any month that: (a) there is less than 95% propability that the average water temperature will be above 68degrees F. (20 degrees C.): or (b) estimated in-water survival time is less than the estimated rescue time. A chart "Estimated Survival Time for Anti Exposure Garments"

Scenario Search and Rescue (SAR) plans shall consider the probable cumulative time to mobilize SAR equipment, locate personnel in the water and recover them. For helicopter ops, scenarios shall include ditching anywhere along over water transportation routes (with personnel in the water)

Responsibility: Operations Superintendent. Approval Authority: Field Drilling Manager (including alternatives, exceptions)

The water temperature in Bass Strait, as measured at Kingfish B platform, is such that during any month there is less than a 95% probability that the average water temparature will be above 20º C throughout the year. Hence, under OIMS 8-10 Exposure Suits are required.

However, exposure suits are not worn during for helicopter operations to the Bass Strait platforms during daylight hours. This has been risk assessed and accepted by EM Production Management and the Regulator. It would be inconsistent to wear exposure suits to the MODU operations and not on the often longer flights to the various platforms. Hence an exception is sought to the EMDC OIMS Section 8-10 requirement that Exposure suits shall be provided for Drilling-associated helicopter operations.

Nature and Level of Engineering Review Made:

Without exposure suits survival time in the water could varies between 2-1/4 hours (based on the coldest monthly water temparature recorded at KFB between 1989 and 1996 of 11.3º C and for thin clothing, and 6 hours in March with an average water temperature of 19.2º C .

The Safety Cases for Bass Strait platforms have addressed the issue of exposure suits on platforms (not provided) and exposure suits for helicopter operations: "A dedicated, winch equipped SAR aircraft is held on stand-by at Longford during routine flying hours through the months (typically May to November inclusive) when the Bass Strait water temperature is 15.5 degrees C or less. At temperatures above 15.5º C the minimum sea survival time is estimated to be more than the SAR time to the most distant incident location by as raft-drop aircraft. At the 12º C lowest water temperature the SAR time achieved to the most distant incident location by the dedicated SAR aircraft on stand-by at Longford is less than the estimated minimum sea survival time. As such the dedication of a SAR aircraft is a suitable alternative to immersion suits with the additional benefit of providing the shortest incident to hospital time. The Esso aircraft cannot perform the same function in the event of a night time incident and therefore immersion suits have been introduced for all crew and passengers on night flights.

While the water temperature in Bass Strait requires exposure suits for drilling-associated helicopter operations the provision of search and rescue aircraft and planning, as detailed in the platform Safety Cases, will provide rapid rescue well within the estimated survival time.

Risk Assessment Summary (Use Risk Matrix - in OIMS Element 2 or Click Example Button):

Probability: ☐ A ☐ B ☐ C ☑ D ☐ E

Consequence: ☐ I ☑ II ☐ III ☐ IV

Risk Mitigation Measures (Prescribed Program Limits):

PREVENTION:

ExxonMobil aviation standards; Inspection and maintenance program; Civil aviation standards; Normal helicopter operations in daylight only; Aviation audits/assessments; Quality checks of fuel supply; Adherence to procedures; EAPL aviation policy; Flight following with live tracking; Co-pilot in each helicopter; Project-specific training; Helicopter induction briefing; Controls on arrival and departure by helideck crew; Trained Helicopter Landing Officers; Markings on helideck; Inspection of helideck by aviation; Training for rig crew and all passengers on S76 helicopter included in overall rig induction; Crane operations shut down when helicopter landing/taking off.

MITIGATION MEASURES:

Emergency communication capability/Emerg Location Transmitter; EAPL ERP incl Public Affairs procedures; Search and Rescue; Flight following; Survival kits; Aircraft first aid kits; HUET training; Fast Rescue Craft on both support vessels, life boat on rig, Vessel can respond very quickly during helicopter operations.

Training / Communication Required to Implement Change? ☑ No ☐ Yes (Describe)

Management of Change Worksheet

Permit Notifications Required to Implement Change? ☑ No ☐ Yes (Describe)

Effective Date: (dd/mm/yy)	02/04/2004	24 hr Time:	0:00	Duration: Until:	31/12/2005	Date Approved: (dd/mm/yy)	15/04/2004

Initiated by:	Chris Meakin	Reviewed by:	Frank Kratzer	Approved by:	D. Whiteman
Sign:		Sign:		Sign:	

Management of Change Worksheet

ExxonMobil Developmen

DRS ID: ww1 **MOC ID:** 8

Well Name: West Whiptail-1 **Drill Team:** Austrailia Offshore

Rig: ENSCO 102

Type of Change: ○ Drilling Program/Procedure Change ◉ Design Standard Exception ---- Identify: Soil Boring

Date Initiated: (dd/mm/yy) 21/04/2004

Category (Check One)

☐ BOP Configuration	☐ Mud Weight Change	☐ BHA Related	☐ Personnel Change
☐ BOP Test Extension	☐ Cement Design / Procedure	☐ Depth Change	☐ Mooring Operations
☐ SHE Policy / Standards	☐ Plug and Abandon Procedures	☑ Other --- Define: Jackup Foundation Adequacy	

Description / Reason for Change:

The EMDC Drilling OIMS Manual requires that procedures are in place to assure adequate rig foundations have been provided. For Jack-up rigs it stipulates that a soil boring shall be performed to determine expected spud can penetrations and to evaluate punch-through potential. An exemption to this requirement is sought based on using a staged preload procedure acceptable to ENSCO, historic spud can penetration data that the deepest spud can penetration for twelve Jack-up operations in Bass Strait has been 3.0m, and in no cases has a preload needed to be repeated because of leg penetration, and a site survey at West Whiptail-1 that reveals a consistent sub-bottom profile comprising a uniform 3m thick loose to dense/soft to stiff sandy and silty soil overlaying a truncated folded unit thought to possibly be an erosional surface approximately 20,000 years old, that extends to below the 20m depth of investigation.

Nature and Level of Engineering Review Made:

Review of historic records. Geophysical site survey at West Whiptail-1

Risk Assessment Summary (Use Risk Matrix - in OIMS Element 2 or Click Example Button):

Probability: ☐ A ☐ B ☐ C ☐ D ☑ E

Consequence: ☑ I ☐ II ☐ III ☐ IV

Risk Mitigation Measures (Prescribed Program Limits):

Prevention:
Staged preload program, geophysiscal site survey, prior Bass Strait experience of no punch through, weather forecasting and monitoting.
Mitigation:
Emergency Response Plan

Training / Communication Required to Implement Change? ☑ No ☐ Yes (Describe)

Permit Notifications Required to Implement Change? ☑ No ☐ Yes (Describe)

Effective Date: (dd/mm/yy) 04/09/1930 24 hr Time: Duration: Until: 30/06/2004 Date Approved: (dd/mm/yy) 22/04/2004

Initiated by: Chris Meakin Reviewed by: Frank Kratzer Approved by: D. Whiteman

Sign: _____ Sign: _____ Sign: _____

Management of Change Worksheet

ExxonMobil Developmen

DRS ID: ww1 **MOC ID:** 9

Well Name: West Whiptail-1 **Drill Team:** Austrailia Offshore

Rig: Ensco-102

Type of Change:
- ○ Drilling Program/Procedure Change
- ◉ Design Standard Exception ---- Identify: BOPE Equipment

Date Initiated: (dd/mm/yy) 06/05/2004

Category (Check One)

☐ BOP Configuration	☐ Mud Weight Change	☐ BHA Related	☐ Personnel Change
☐ BOP Test Extension	☐ Cement Design / Procedure	☐ Depth Change	☐ Mooring Operations
☐ SHE Policy / Standards	☐ Plug and Abandon Procedures	☑ Other --- Define: Closing System Specification	

Description / Reason for Change:

The secondary back-up pumps on the control system, two air-operated "Haskel" pumps, do not meet the EMDC "Surface Blowout Prevention and Well Control Equipment Manual" requirements which are: "With the accumulator unit removed from service, the pumps must be capable of opening the hydraulically-operated gate valve and closing the annular preventer on the smallest size drill pipe being used within two (2) minutes, and achieve a minimum of 1,200 psi pressure on the closing system manifold.

The result of a pump capacity test was 4.1 minutes (report attached).

Request: Accept the backup air-operated pumps as installed.

Nature and Level of Engineering Review Made:

Review of EMDC/API requirements; probability of mutiple failures of BOP control system; probability of well control incident in Gippsland Operations.

Risk Assessment Summary (Use Risk Matrix - in OIMS Element 2 or Click Example Button):

Probability: ☐ A ☐ B ☐ C ☐ D ☑ E

Consequence: ☐ I ☐ II ☑ III ☐ IV

Risk Mitigation Measures (Prescribed Program Limits):

The exploration/development drilling campaign with the Ensco-102 will be conducted in a mature basin (Gippsland), with numerous offset wells and known pore pressure regime (max in range of 12-13ppg). As in all EM operations, all drilling will be done overbalanced. The Ensco-102 BOP is a new, high specification system (15ksi / 5 component (annular + 4 rams); shear ram; rapid closing) designed for use on HPHT applications and hence will be able to handle the Gippsland basin conditions. The probability of requiring the the secondary backup system to be employed is considered to be extremely low.

Training / Communication Required to Implement Change? ☑ No ☐ Yes (Describe)

Permit Notifications Required to Implement Change? ☑ No ☐ Yes (Describe)

Effective Date: (dd/mm/yy) 06/05/2004 **24 hr Time:** 0:00 **Duration: Until:** 31/12/2004 **Date Approved: (dd/mm/yy)** 06/05/2004

Initiated by: C. MacDonald **Reviewed by:** F. Kratzer **Approved by:** D. Whiteman

Sign: _____ **Sign:** _____ **Sign:** _____

Table 1 - Change Request form

Initiation

Date: 17/5/2004 Request No. 2/2004 (no/year)

Project: West Whiptail I Location: Production

Type of Change

☑ Permanent ☐ Emergency

☐ Minor ☐ Urgent

☐ Temporary (Removal Date: _____)

Nature of Change

☐ Operations ☐ Equipment ☐ Haz. Material

☐ Personnel ☐ Procedures ☐ Parameters

☐ Regulatory/Permits ☐ Other

Description of change (Include current process):

Increase target tolerance from 50m to 100m on western boundary of original target box

	Name (Print)	Signature	Date
Originated By:	Andy Zannetos		17/5/04
Endorsed by:	Wayne Mudge		17/5/04

Evaluation

Justification for change:

Well is walking to the west. At 750m casing point gyro survey indicates well is 20m west of original target location. If well continues walking then it may move outside of 50m target box at primary target depth. Drilling slowly to remain within original target box will significantly Increase cost of well.

Potential Consequences of Change (Positive and Negative):

Well cost will decrease

May move approximately 3m down dip of crest at new western boundary

Mitigation Steps and Special Precautions:

Training Required: ☐ Yes ☑ No

If Yes, Describe:

Cost:

Does change increase risk? ☐ Yes ☑ No (If Yes, attach copy of risk assessment)

Comments:

Approvals

	Name (Print)	Signature	Date:	Title/Company
Proposed By:	Andy Zannetos		17/5/04	Drill Well Coordinator
Reviewed By:				
Reviewed By:				
Endorsed By:				
Approved By:	Wayne Mudge		17/5/04	Project Mgr.

Table 1 - Change Request form *continued*

Implementation

Change communicated to all parties involved: Initial: | | Date: |
Describe method of communication:

Documentation changes completed: Initial: | | Date: |
List documents changed:

Training requirements completed: Initial: | | Date: |
List training conducted:

Regulatory/Permit requirements completed: Initial: | | Date: |
Describe requirements:

Temporary change completed: Initial: | | Date: |
Return to Normal Operation Date: | |

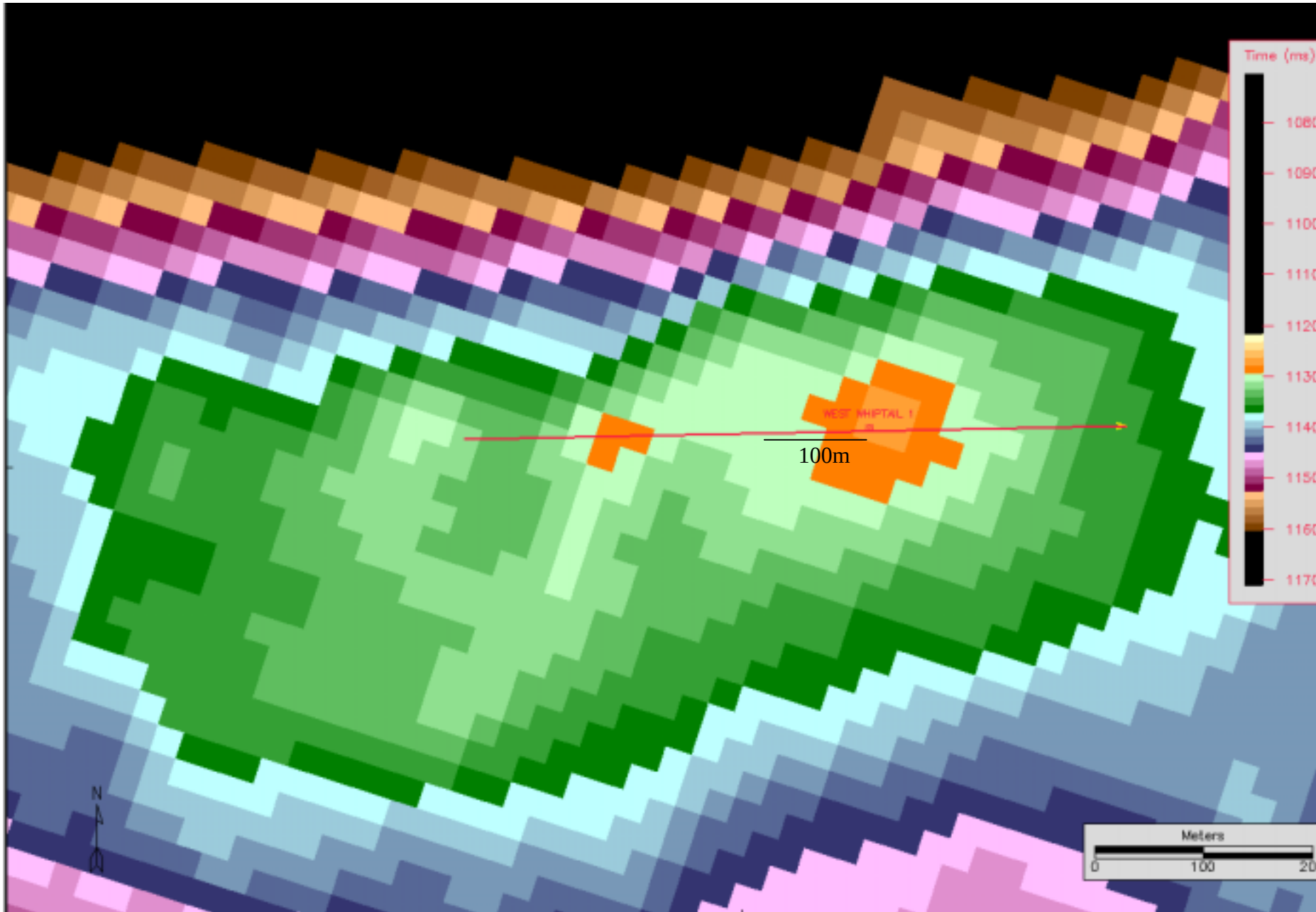
Close-Out

Change Implementations Completed: Initial: | | Date: |

Summary of Lesson Learned Completed: Initial: | | Date: |
List lessons learned:

Note: Share Lessons Learned with Contractor and Client as appropriate.
Update Change Management Log.

Change Request Form Closed: Signature: | | Date: |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1090
1100
1110
1120
1130
1140
1150
1160
1170
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Meters
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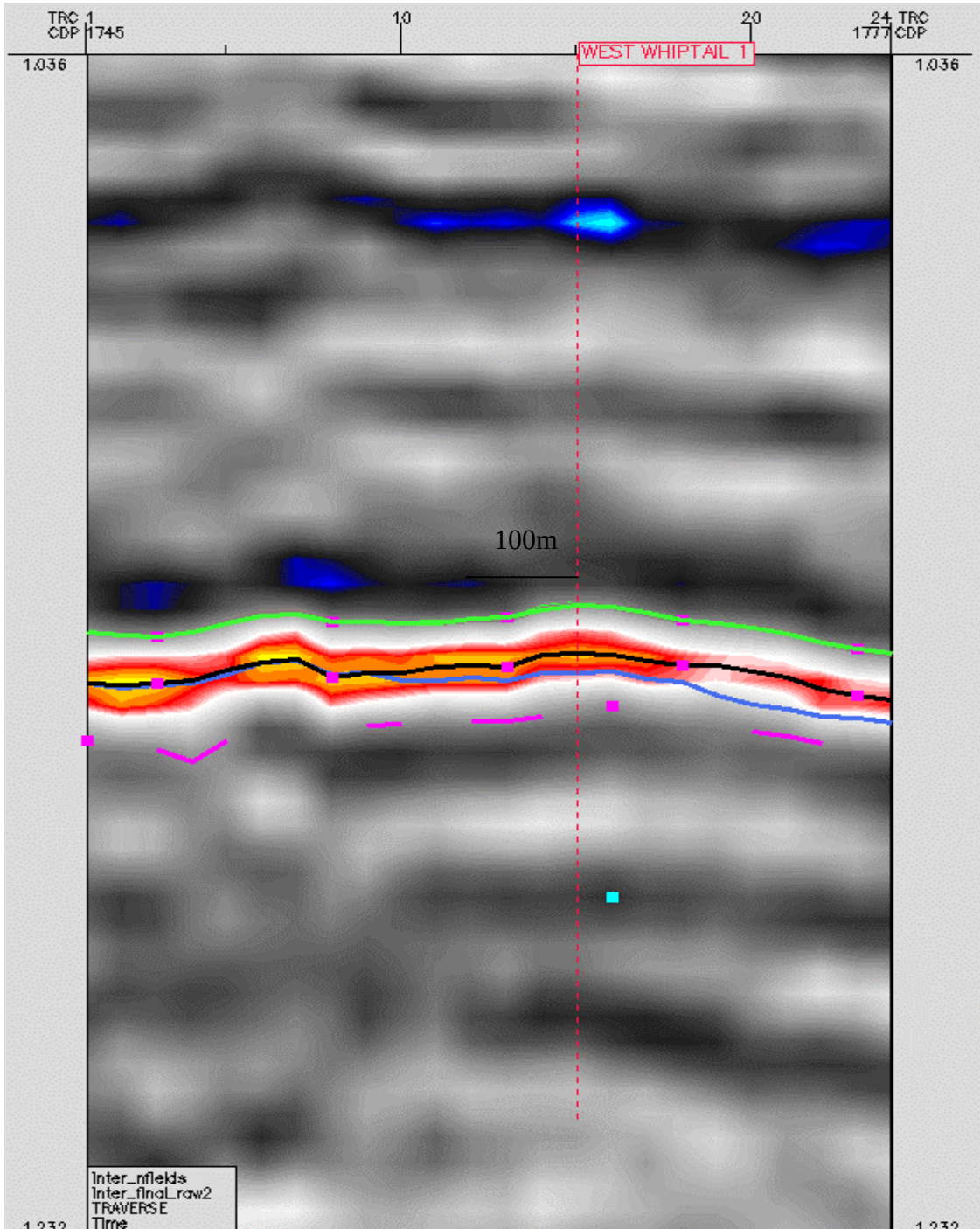
20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24 TRC
1777 CDP
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TRAVERSE
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1.232
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Operations Conditions

BARGE ENGINEER
MIDNIGHT REPORT

Date: 8-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**5523**	**kips**	2505	MT		
To Go	**8188**	**kips**	3714	MT		
						On Cans
BOW Static Leg Force	**9147**	kips	**31.7**	%		**12457**
STBD Static Leg Force	**9717**	kips	**33.7**	%		**13052**
PORT Static Leg Force	**10003**	kips	**34.7**	%		**13290**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	206	160	119			
Received / Mac			**88**			
Backloaded						
Used	**21**	**4**	**11**			
STOCK	**185**	**156**	**196**			
usable	*154*	*146*	*164*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**mt**
Mud Tank # 2	**Barite**	135					**mt**
Mud Tank # 3	**Barite**	135					**mt**
			Barite				**mt**
Mud Tank # 4	**Bentonite**	60		53		53	**mt**
Cement Tank # 1	**G-NEAT**	94					**mt**
Cement Tank # 2	**G-NEAT**	94					**mt**
Cement Tank # 3	**BLEND**	86					**mt**
Cement Tank # 4	**BLEND**	86					**mt**
			Cement				**mt**
REMARKS:				**Useable**	**Cmt neat**	-24	**mt**
				Useable	**Cmt blend**	-24	**mt**

	Gall
Fuel Total	59310
Fuel Used	3329

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	5523	**Bow**	9147	**Set Back**	
Max VDL	13711	**Stbd**	9717	**Hook**	
Drill W	981 bbl	**Port**	10003	**Cantilever**	
Pot W.	1164 bbl			**Available**	
				Allowable	

REQUIRED ASAP:	**500**	**mt Drill**	**200**	**mt Fuel**	**100**	**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 9-May-04

0000 hrs

Operator: Esso

Heading 129 Feet

Position 38D19M29S **WD.** 128

Location : West Whiptail 1 147D30M17E **A/G.** 57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	**546**	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6474**	**kips**	2936	MT		
To Go	**7237**	**kips**	3283	MT		
						On Cans
BOW Static Leg Force	**8299**	kips	**27.8**	%		**11610**
STBD Static Leg Force	**10572**	kips	**35.5**	%		**13907**
PORT Static Leg Force	**10946**	kips	**36.7**	%		**14233**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	185	156	196			
Received / Mac		**300**				
Backloaded						
Used	**24**	**211**	**6**			
STOCK	**161**	**245**	**190**			
usable	*131*	*235*	*151*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**mt**
Mud Tank # 2	**Barite**	135					**mt**
Mud Tank # 3	**Barite**	135		82.23		82.23	**mt**
			Barite	**82.23**		**82.23**	**mt**
Mud Tank # 4	**Bentonite**	60	53.95		4.97	48.98	**mt**
Cement Tank # 1	**G-NEAT**	94					**mt**
Cement Tank # 2	**G-NEAT**	94					**mt**
Cement Tank # 3	**BLEND**	86					**mt**
Cement Tank # 4	**BLEND**	86					**mt**
			Cement				**mt**
REMARKS:				**Useable**	**Cmt neat**	-24	**mt**
				Useable	**Cmt blend**	-24	**mt**

	Gall
Fuel Total	57494
Fuel Used	1816

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6474	**Bow**	8299	**Set Back**	
Max VDL	13711	**Stbd**	10572	**Hook**	
Drill W	1541 bbl	**Port**	10946	**Cantilever**	
Pot W.	1013 bbl			**Available**	
				Allowable	

REQUIRED ASAP:	**500**	**mt Drill**	**200**	**mt Fuel**	**100**	**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 10-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7200**	**kips**	3266	MT		
To Go	**6511**	**kips**	2953	MT		
						On Cans
BOW Static Leg Force	**8695**	kips	**28.5**	%		**12005**
STBD Static Leg Force	**10981**	kips	**36.0**	%		**14316**
PORT Static Leg Force	**10868**	kips	**35.6**	%		**14155**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	161	245	190			
Received / Mac	**150**					
Backloaded						
Used	**22**	**110**	**10**			
STOCK	**289**	**135**	**180**			
usable	*258*	*125*	*165*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**mt**
Mud Tank # 2	**Barite**	135		6.2		6.2	**mt**
Mud Tank # 3	**Barite**	135	82.2	37.3		119.5	**mt**
			Barite	**43.5**		**125.7**	**mt**
Mud Tank # 4	**Bentonite**	60	49	11	26.4	33.6	**mt**
Cement Tank # 1	**G-NEAT**	94		85.5		85.5	**mt**
Cement Tank # 2	**G-NEAT**	94					**mt**
Cement Tank # 3	**BLEND**	86					**mt**
Cement Tank # 4	**BLEND**	86					**mt**
			Cement	**85.5**		**85.5**	**mt**
REMARKS:				**Useable**	**Cmt neat**	61.5	**mt**
				Useable	**Cmt blend**	-24	**mt**

	Gall
Fuel Total	54468
Fuel Used	3026

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	7200	**Bow**	8695	**Set Back**	**80**
Max VDL	13711	**Stbd**	10981	**Hook**	**20**
Drill W	849 bbl	**Port**	10868	**Cantilever**	**320**
Pot W.	1818 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 11-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7162**	**kips**	3249	MT		
To Go	**6549**	**kips**	2971	MT		
						On Cans
BOW Static Leg Force	**8589**	kips	**28.2**	%		**11900**
STBD Static Leg Force	**10999**	kips	**36.1**	%		**14334**
PORT Static Leg Force	**10917**	kips	**35.8**	%		**14204**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	289	135	180			
Received / Mac	17					
Backloaded						
Used	20	6	9			
STOCK	286	129	171			
usable	*255*	*119*	*134*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	Barite	135					sx (100#)
Mud Tank # 2	Barite	135	137	690		827	sx (100#)
Mud Tank # 3	Barite	135	1812	822		2635	sx (100#)
			Barite	**1512**		**3461**	sx (100#)
Mud Tank # 4	Bentonite	60	741			741	sx (100#)
Cement Tank # 1	G-NEAT	94	2005			2005	sx (94#)
Cement Tank # 2	G-NEAT	94					sx (94#)
Cement Tank # 3	G-NEAT	94					sx (94#)
Cement Tank # 4	G-NEAT	94					sx (94#)
			Cement			**2005**	sx (94#)
REMARKS:				**Useable**	**Cmt neat**	1455	sx (94#)
				Useable	**Cmt blend**		sx (94#)

	Gall
Fuel Total	51745
Fuel Used	2723

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	7162	**Bow**	8589	**Set Back**	**80**
Max VDL	13711	**Stbd**	10999	**Hook**	**80**
Drill W	811 bbl	**Port**	10917	**Cantilever**	**320**
Pot W.	1799 bbl			**Available**	**2500**
		3024		**Allowable**	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 12-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7112**	**kips**	3226	MT		
To Go	**6599**	**kips**	2993	MT		
						On Cans
BOW Static Leg Force	**8556**	kips	**28.1**	%		**11866**
STBD Static Leg Force	**21023**	kips	**69.0**	%	Maximum lim	**24358**
PORT Static Leg Force	**876**	kips	**2.9**	%		**4164**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	286	129	185			
Received / Mac	18					
Backloaded						
Used	25	21	9			
STOCK	**279**	**108**	**176**			
usable	*248*	*98*	*139*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	2635			2635	**sx (100#)**
			Barite			**3461**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	741			741	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	2005			2005	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94					**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement			**2005**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	1455	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	53258
Fuel Used	2723

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	7112	**Bow**	8556	**Set Back**	**90**
Max VDL	13711	**Stbd**	21023	**Hook**	**80**
Drill W	679 bbl	**Port**	876	**Cantilever**	**320**
Pot W.	1755 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 13-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7318**	**kips**	3319	MT		
To Go	**6393**	**kips**	2900	MT		
						On Cans
BOW Static Leg Force	**8911**	kips	**29.1**	%		**12221**
STBD Static Leg Force	**10883**	kips	**35.5**	%		**14217**
PORT Static Leg Force	**10867**	kips	**35.4**	%		**14155**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	279	108	179			
Received / Mac	**20**	**150**				
Backloaded						
Used	**23**	**78**	**10**			
STOCK	**276**	**180**	**169**			
usable	*245*	*170*	*134*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	2635			2635	**sx (100#)**
			Barite			**3461**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	741			741	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	2005		1149	856	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94					**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**1149**	**856**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	306	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	51140
Fuel Used	3026

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	7318	**Bow**	8911	**Set Back**	**90**
Max VDL	13711	**Stbd**	10883	**Hook**	**80**
Drill W	1132 bbl	**Port**	10867	**Cantilever**	**320**
Pot W.	1736 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 14-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6643**	**kips**	3013	MT		
To Go	**7068**	**kips**	3206	MT		
						On Cans
BOW Static Leg Force	**10305**	kips	**34.4**	%		**13615**
STBD Static Leg Force	**10073**	kips	**33.6**	%		**13408**
PORT Static Leg Force	**9609**	kips	**32.0**	%		**12896**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	276	180	169			
Received / Mac	**16**	**112**	**146**			
Backloaded						
Used	**24**	**127**	**12**			
STOCK	**268**	**165**	**303**			
usable	*237*	*155*	*246*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	2635			2635	**sx (100#)**
			Barite			**3461**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	741		255	486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	856			856	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94		1141		1141	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement	**1141**		**1997**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	1447	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	91688
Fuel Used	3631

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6643	**Bow**	10305	**Set Back**	**90**
Max VDL	13711	**Stbd**	10073	**Hook**	**80**
Drill W	1038 bbl	**Port**	9609	**Cantilever**	**320**
Pot W.	1686 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 17-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7419**	**kips**	3365	MT		
To Go	**6292**	**kips**	2854	MT		
						On Cans
BOW Static Leg Force	**9756**	kips	**31.7**	%		**13066**
STBD Static Leg Force	**10707**	kips	**34.8**	%		**14042**
PORT Static Leg Force	**10300**	kips	**33.5**	%		**13588**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	276	165	285			
Received / Mac	23					
Backloaded						
Used	21	44	10			
STOCK	**278**	**121**	**275**			
usable	*248*	*111*	*220*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	1566			1566	**sx (100#)**
			Barite			**2393**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	486			486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	856			856	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	1141			1141	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement			**1997**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	1447	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	83215
Fuel Used	3026

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	7419	**Bow**	9756	**Set Back**	**99**
Max VDL	13711	**Stbd**	10707	**Hook**	**80**
Drill W	761 bbl	**Port**	10300	**Cantilever**	**320**
Pot W.	1749 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 18-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7309**	**kips**	3315	MT		
To Go	**6402**	**kips**	2904	MT		
						On Cans
BOW Static Leg Force	**9991**	kips	**32.6**	%		**13301**
STBD Static Leg Force	**10422**	kips	**34.0**	%		**13756**
PORT Static Leg Force	**10240**	kips	**33.4**	%		**13528**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	278	121	275			
Received / Mac	14	200				
Backloaded						
Used	24	97	10			
STOCK	268	224	265			
usable	*237*	*214*	*217*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	Barite	135					sx (100#)
Mud Tank # 2	Barite	135	827			827	sx (100#)
Mud Tank # 3	Barite	135	1566		247	1320	sx (100#)
			Barite		**247**	**2146**	sx (100#)
Mud Tank # 4	Bentonite	60	486			486	sx (100#)
Cement Tank # 1	G-NEAT	94	856		433	423	sx (94#)
Cement Tank # 2	G-NEAT	94	1141		173	967	sx (94#)
Cement Tank # 3	G-NEAT	94					sx (94#)
Cement Tank # 4	G-NEAT	94					sx (94#)
			Cement		**606**	**1391**	sx (94#)
REMARKS:				**Useable**	**Cmt neat**	841	sx (94#)
				Useable	**Cmt blend**		sx (94#)

	Gall
Fuel Total	80189
Fuel Used	3026

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	7309	**Bow**	9991	**Set Back**	**85**
Max VDL	13711	**Stbd**	10422	**Hook**	**80**
Drill W	1409 bbl	**Port**	10240	**Cantilever**	**320**
Pot W.	1686 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 19-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6998**	**kips**	3174	MT		
To Go	**6713**	**kips**	3045	MT		
						On Cans
BOW Static Leg Force	**9889**	kips	**32.6**	%		**13199**
STBD Static Leg Force	**10236**	kips	**33.7**	%		**13571**
PORT Static Leg Force	**10216**	kips	**33.7**	%		**13504**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	234	77	257			
Received / Mac	**34**	**240**				
Backloaded						
Used	**47**	**32**	**11**			
STOCK	**221**	**285**	**246**			
usable	*190*	*275*	*189*			
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	704		81	623	**sx (100#)**
			Barite		**81**	**1449**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	486			486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	423			423	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	967			967	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement			**1391**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	841	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	74440
Fuel Used	3329

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6998	**Bow**	9889	**Set Back**	**27**
Max VDL	13711	**Stbd**	10236	**Hook**	**80**
Drill W	1793 bbl	**Port**	10216	**Cantilever**	**320**
Pot W.	1390 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 20-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7045**	**kips**	3196	MT		
To Go	**6666**	**kips**	3024	MT		
						On Cans
BOW Static Leg Force	**9805**	kips	**32.3**	%		**13115**
STBD Static Leg Force	**10219**	kips	**33.6**	%		**13554**
PORT Static Leg Force	**10364**	kips	**34.1**	%		**13652**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	221	285	246			
Received / Mac	**24**					**4000**
Backloaded						
Used	**21**	**36**	**6**			
STOCK	**224**	**249**	**240**			**4000**
usable	*193*	*238*	*186*			*4000*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	622			622	**sx (100#)**
			Barite			**1448**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	486			486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	422			422	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	966			966	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement			**1388**	**sx (94#)**
				Useable	**Cmt neat**	838	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

REMARKS:

Barite tank pressurised, no sounding

	Gall
Fuel Total	72624
Fuel Used	1816

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	7045	**Bow**	9805	**Set Back**	**50**
Max VDL	13711	**Stbd**	10219	**Hook**	**80**
Drill W	1566 bbl	**Port**	10364	**Cantilever**	**300**
Pot W.	1409 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 21-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6912**	**kips**	3135	MT		
To Go	**6799**	**kips**	3084	MT		
						On Cans
BOW Static Leg Force	**9748**	kips	**32.2**	%		**13058**
STBD Static Leg Force	**10328**	kips	**34.1**	%		**13663**
PORT Static Leg Force	**10179**	kips	**33.6**	%		**13467**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	224	249	240			4000
Received / Mac	**20**					
Backloaded						
Used	**19**	**35**	**5**			
STOCK	**225**	**214**	**235**			**4000**
usable	*191*	*204*	*183*			*3600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	622		340	282	**sx (100#)**
			Barite		**340**	**1109**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	486			486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	422	938		1360	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	891			891	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement	**938**		**2252**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	1702	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

Barite tank pressurised, no sounding

	Gall
Fuel Total	71111
Fuel Used	1513

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6912	**Bow**	9748	**Set Back**	**50**
Max VDL	13711	**Stbd**	10328	**Hook**	**80**
Drill W	1346 bbl	**Port**	10179	**Cantilever**	**300**
Pot W.	1415 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 22-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6742**	**kips**	3058	MT		
To Go	**6969**	**kips**	3161	MT		
						On Cans
BOW Static Leg Force	**9645**	kips	**32.1**	%		**12955**
STBD Static Leg Force	**10353**	kips	**34.4**	%		**13688**
PORT Static Leg Force	**10087**	kips	**33.5**	%		**13375**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	225	214	235			4000
Received / Mac	20					
Backloaded						
Used	21	50	9			
STOCK	**224**	**164**	**226**			**4000**
usable	*193*	*154*	*176*			*3600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	282			282	**sx (100#)**
			Barite			**1109**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	486			486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	1360			1360	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	891			891	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement			**2252**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	1702	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	68388
Fuel Used	2723

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6742	**Bow**	9645	**Set Back**	**50**
Max VDL	13711	**Stbd**	10353	**Hook**	**80**
Drill W	1032 bbl	**Port**	10087	**Cantilever**	**300**
Pot W.	1409 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 23-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6840**	**kips**	3103	MT		
To Go	**6871**	**kips**	3117	MT		
						On Cans
BOW Static Leg Force	**9698**	kips	**32.1**	%		**13008**
STBD Static Leg Force	**10175**	kips	**33.7**	%		**13510**
PORT Static Leg Force	**10310**	kips	**34.2**	%		**13598**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	224	164	226			4000
Received / Mac	**14**	**150**				
Backloaded						
Used	**35**	**61**	**4**			
STOCK	**203**	**253**	**222**			**4000**
usable	*193*	*154*	*176*			*3600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	827			827	**sx (100#)**
Mud Tank # 3	**Barite**	135	282			282	**sx (100#)**
			Barite			**1109**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	486			486	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	1360		586	774	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	891		739	152	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**1325**	**926**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	376	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	67178
Fuel Used	1210

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6840	**Bow**	9698	**Set Back**	**50**
Max VDL	13711	**Stbd**	10175	**Hook**	**80**
Drill W	1591 bbl	**Port**	10310	**Cantilever**	**300**
Pot W.	1277 bbl			**Available**	**2500**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 24-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6706**	**kips**	3042	MT		
To Go	**7005**	**kips**	3177	MT		
						On Cans
BOW Static Leg Force	**9644**	kips	**32.1**	%		**12954**
STBD Static Leg Force	**10133**	kips	**33.7**	%		**13468**
PORT Static Leg Force	**10272**	kips	**34.2**	%		**13560**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	203	253	222			4000
Received / Mac	15					
Backloaded						
Used	30.3		8.4			3000
STOCK	187.7	253	213.6			1000
usable	*156*	*243*	*156*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	Barite	135					sx (100#)
Mud Tank # 2	Barite	135	805			805	sx (100#)
Mud Tank # 3	Barite	135	271			271	sx (100#)
			Barite			1076	sx (100#)
Mud Tank # 4	Bentonite	60	467			467	sx (100#)
Cement Tank # 1	G-NEAT	94	774		117	657	sx (94#)
Cement Tank # 2	G-NEAT	94	145			145	sx (94#)
Cement Tank # 3	G-NEAT	94					sx (94#)
Cement Tank # 4	G-NEAT	94					sx (94#)
			Cement		117	802	sx (94#)
REMARKS:				Useable	Cmt neat	432	sx (94#)
				Useable	Cmt blend		sx (94#)

	Gall
Fuel Total	64636
Fuel Used	2542

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6706	**Bow**	9644	**Set Back**	**40**
Max VDL	13711	**Stbd**	10133	**Hook**	**80**
Drill W	1591 bbl	**Port**	10272	**Cantilever**	**430**
Pot W.	1181 bbl			**Available**	**2480**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**	**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 25-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**7332**	**kips**	3326	MT		
To Go	**6379**	**kips**	2893	MT		
						On Cans
BOW Static Leg Force	**9722**	kips	**31.7**	%		**13033**
STBD Static Leg Force	**10503**	kips	**34.2**	%		**13837**
PORT Static Leg Force	**10451**	kips	**34.1**	%		**13738**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	187.3	253	213.6			4000
Received / Mac	**153**					
Backloaded						
Used	**24.9**	**5.3**	**4.6**			**3000**
STOCK	**315.4**	**247.7**	**209**			**1000**
usable	*284*	*237*	*156*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	63244
Fuel Used	1392

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	7332	**Bow**	9722	**Set Back**	**40**
Max VDL	13711	**Stbd**	10503	**Hook**	**80**
Drill W	1558 bbl	**Port**	10451	**Cantilever**	**430**
Pot W.	1984 bbl			**Available**	**2480**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 26-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6215**	**kips**	2819	MT		
To Go	**7496**	**kips**	3400	MT		
						On Cans
BOW Static Leg Force	**9127**	kips	**30.9**	%		**12437**
STBD Static Leg Force	**10258**	kips	**34.7**	%		**13593**
PORT Static Leg Force	**10174**	kips	**34.4**	%		**13461**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	292	243	205			1000
Received / Mac	9					
Backloaded						
Used	**32.4**	**4.7**	**4**			
STOCK	**268.5**	**239.6**	**200.7**			**1000**
usable	*237*	*229*	*143*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	62033
Fuel Used	1210

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6215	**Bow**	9127	**Set Back**	**40**
Max VDL	13711	**Stbd**	10258	**Hook**	**80**
Drill W	1528 bbl	**Port**	10174	**Cantilever**	**430**
Pot W.	1837 bbl			**Available**	**2480**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 27-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6215**	**kips**	2819	MT		
To Go	**7496**	**kips**	3400	MT		
						On Cans
BOW Static Leg Force	**9127**	kips	**30.9**	%		**12437**
STBD Static Leg Force	**10258**	kips	**34.7**	%		**13593**
PORT Static Leg Force	**10174**	kips	**34.4**	%		**13461**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	268.5	239.6	200.7			1000
Received / Mac	9					
Backloaded						
Used	32.4	4.7	4			
STOCK	**245.26**	**234.26**	**191.25**			**1000**
usable	*214*	*224*	*134*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	62033
Fuel Used	1210

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6215	**Bow**	9127	**Set Back**	**40**
Max VDL	13711	**Stbd**	10258	**Hook**	**80**
Drill W	1528 bbl	**Port**	10174	**Cantilever**	**430**
Pot W.	1837 bbl			**Available**	**2480**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 28-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6215**	**kips**	2819	MT		
To Go	**7496**	**kips**	3400	MT		
						On Cans
BOW Static Leg Force	**9127**	kips	**30.9**	%		**12437**
STBD Static Leg Force	**10258**	kips	**34.7**	%		**13593**
PORT Static Leg Force	**10174**	kips	**34.4**	%		**13461**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	245.26	234.26	191.25			1000
Received / Mac	9					
Backloaded						
Used	32.4	4.7	4			
STOCK	**232.02**	**231.56**	**183.1**			**1000**
usable	*201*	*221*	*125*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	62033
Fuel Used	1210

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6215	**Bow**	9127	**Set Back**	**40**
Max VDL	13711	**Stbd**	10258	**Hook**	**80**
Drill W	1528 bbl	**Port**	10174	**Cantilever**	**430**
Pot W.	1837 bbl			**Available**	**2480**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 29-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6306**	**kips**	2861	MT		
To Go	**7405**	**kips**	3359	MT		
						On Cans
BOW Static Leg Force	**9230**	kips	**31.1**	%		**12540**
STBD Static Leg Force	**10283**	kips	**34.7**	%		**13618**
PORT Static Leg Force	**10137**	kips	**34.2**	%		**13425**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	232.02	231.56	183.1			1000
Received / Mac	**12**		**150**			
Backloaded						
Used	**14.61**	**0.9**	**17.2**			
STOCK	**229.41**	**230.66**	**315.9**			**1000**
usable	*198*	*220*	*258*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	95592
Fuel Used	5205

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6306	**Bow**	9230	**Set Back**	**40**
Max VDL	13711	**Stbd**	10283	**Hook**	
Drill W	1451 bbl	**Port**	10137	**Cantilever**	**430**
Pot W.	1443 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 30-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129			Feet
Position	38D19M29S	**WD.**	128	
	147D30M17E	**A/G.**	57	

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6268**	**kips**	2843	MT		
To Go	**7443**	**kips**	3376	MT		
						On Cans
BOW Static Leg Force	**9223**	kips	**31.1**	%		**12533**
STBD Static Leg Force	**10267**	kips	**34.7**	%		**13602**
PORT Static Leg Force	**10122**	kips	**34.2**	%		**13409**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	229.41	230.66	315.9			1000
Received / Mac	**12**					
Backloaded						
Used	**27.64**	**2.71**	**10.36**			
STOCK	**213.77**	**227.95**	**305.54**			**1000**
usable	*183*	*218*	*248*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	92457
Fuel Used	3135

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6268	**Bow**	9223	**Set Back**	**40**
Max VDL	13711	**Stbd**	10267	**Hook**	
Drill W	1434 bbl	**Port**	10122	**Cantilever**	**430**
Pot W.	1345 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 31-May-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6268**	**kips**	2843	MT		
To Go	**7443**	**kips**	3376	MT		
						On Cans
BOW Static Leg Force	**9223**	kips	**31.1**	%		**12533**
STBD Static Leg Force	**10267**	kips	**34.7**	%		**13602**
PORT Static Leg Force	**10122**	kips	**34.2**	%		**13409**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	229.41	230.66	315.9			1000
Received / Mac	**12**					
Backloaded						
Used	**27.64**	**2.71**	**10.36**			
STOCK	**213.77**	**227.95**	**305.54**			**1000**
usable	*183*	*218*	*248*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	92457
Fuel Used	3135

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	6268	**Bow**	9223	**Set Back**	**40**
Max VDL	13711	**Stbd**	10267	**Hook**	
Drill W	1434 bbl	**Port**	10122	**Cantilever**	**430**
Pot W.	1345 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 1-Jun-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6459**	**kips**	2930	MT		
To Go	**7252**	**kips**	3290	MT		
						On Cans
BOW Static Leg Force	**9273**	kips	**31.1**	%		**12583**
STBD Static Leg Force	**10308**	kips	**34.6**	%		**13642**
PORT Static Leg Force	**10222**	kips	**34.3**	%		**13510**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	213.77	227.95	305.54			1000
Received / Mac	**140**					
Backloaded						
Used	**14.87**	**37.8**	**4.75**			
STOCK	**338.9**	**190.15**	**300.79**			**1000**
usable	*308*	*180*	*243*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	91020
Fuel Used	1437

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6459	**Bow**	9273	**Set Back**	**40**
Max VDL	13711	**Stbd**	10308	**Hook**	
Drill W	1196 bbl	**Port**	10222	**Cantilever**	**430**
Pot W.	2132 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 2-Jun-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	**546**	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6358**	**kips**	2884	MT		
To Go	**7353**	**kips**	3335	MT		
						On Cans
BOW Static Leg Force	**9217**	kips	**31.0**	%		**12527**
STBD Static Leg Force	**10336**	kips	**34.8**	%		**13671**
PORT Static Leg Force	**10149**	kips	**34.2**	%		**13437**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	338.9	190.15	300.79			1000
Received / Mac	**5**					
Backloaded						
Used	**23.25**	**5.4**				
STOCK	**320.65**	**184.75**	**300.79**			**1000**
usable	*290*	*174*	*243*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	91020
Fuel Used	

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6358	**Bow**	9217	**Set Back**	**40**
Max VDL	13711	**Stbd**	10336	**Hook**	
Drill W	1162 bbl	**Port**	10149	**Cantilever**	**430**
Pot W.	2017 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 3-Jun-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6282**	**kips**	2849	MT		
To Go	**7429**	**kips**	3370	MT		
						On Cans
BOW Static Leg Force	**9177**	kips	**31.0**	%		**12487**
STBD Static Leg Force	**10340**	kips	**34.9**	%		**13675**
PORT Static Leg Force	**10108**	kips	**34.1**	%		**13396**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	320.65	184.75	300.79			1000
Received / Mac	**15**					
Backloaded						
Used	**25.42**	**24.11**	**13.78**			
STOCK	**310.23**	**160.64**	**287.01**			**1000**
usable	*279*	*150*	*229*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	86850
Fuel Used	4170

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6282	**Bow**	9177	**Set Back**	**40**
Max VDL	13711	**Stbd**	10340	**Hook**	
Drill W	1010 bbl	**Port**	10108	**Cantilever**	**430**
Pot W.	1951 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 4-Jun-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**6281**	**kips**	2849	MT		
To Go	**7430**	**kips**	3370	MT		
						On Cans
BOW Static Leg Force	**11896**	kips	**40.2**	%		**15206**
STBD Static Leg Force	**8859**	kips	**29.9**	%		**12194**
PORT Static Leg Force	**8870**	kips	**29.9**	%		**12158**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	310.23	160.64	287.01			1000
Received / Mac	**10**					
Backloaded						
Used	**23.04**		**2.37**			
STOCK	**297.19**	**160.64**	**284.64**			**1000**
usable	*266*	*150*	*227*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	**Content**	**Lb/ft3**	**Yesterday**	**Received**	**Used**	**Stock**	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	86133
Fuel Used	717

Loads (Kips)		**Reactions (Kips)**		**Cantilever Loads (kips)**	
VDL	6281	**Bow**	11896	**Set Back**	**40**
Max VDL	13711	**Stbd**	8859	**Hook**	
Drill W	1010 bbl	**Port**	8870	**Cantilever**	**430**
Pot W.	1869 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

BARGE ENGINEER
MIDNIGHT REPORT

Date: 5-Jun-04

Operator: Esso

Location : West Whiptail 1

Heading	129		Feet
Position	38D19M29S	**WD.**	128
	147D30M17E	**A/G.**	57

Operation : DRILLING

Max allowed VDL	14257	kips	6467	MT		
VDL reduction	546	kips	248	MT		
Reduced due to preload	**13711**	**kips**	6219	MT	**(MAX VDL)**	
VDL	**9257**	**kips**	4199	MT		
To Go	**4454**	**kips**	2020	MT		
						On Cans
BOW Static Leg Force	**13034**	kips	**40.0**	%		**16344**
STBD Static Leg Force	**9774**	kips	**30.0**	%		**13108**
PORT Static Leg Force	**9793**	kips	**30.0**	%		**13081**
MAX allowed static leg force	13000	Kips/Leg	MOM 1.12		(NS)	
MAX allowed leg reaction	14838	Kips/Leg	MOM 4.3.1 A		(NS)	

	Pot Water	Drill Water	Fuel	Base Oil	Brine	Jet A-1
Yesterday	297.19	160.64	284.64			1000
Received / Mac	6					
Backloaded						
Used	**26.85**		**8.59**			
STOCK	**276.34**	**160.64**	**276.05**			**1000**
usable	*245*	*150*	*218*			*600*
	mt	**mt**	**mt**	**mt**	**mt**	**Liter**

BULK	Content	Lb/ft3	Yesterday	Received	Used	Stock	
Mud Tank # 1	**Barite**	135					**sx (100#)**
Mud Tank # 2	**Barite**	135	805			805	**sx (100#)**
Mud Tank # 3	**Barite**	135	271			271	**sx (100#)**
			Barite			**1076**	**sx (100#)**
Mud Tank # 4	**Bentonite**	60	467			467	**sx (100#)**
Cement Tank # 1	**G-NEAT**	94	774		117	657	**sx (94#)**
Cement Tank # 2	**G-NEAT**	94	145			145	**sx (94#)**
Cement Tank # 3	**G-NEAT**	94					**sx (94#)**
Cement Tank # 4	**G-NEAT**	94					**sx (94#)**
			Cement		**117**	**802**	**sx (94#)**
REMARKS:				**Useable**	**Cmt neat**	432	**sx (94#)**
				Useable	**Cmt blend**		**sx (94#)**

	Gall
Fuel Total	83533
Fuel Used	2599

Loads (Kips)		Reactions (Kips)		Cantilever Loads (kips)	
VDL	9257	**Bow**	13034	**Set Back**	**40**
Max VDL	13711	**Stbd**	9774	**Hook**	
Drill W	1010 bbl	**Port**	9793	**Cantilever**	**430**
Pot W.	1738 bbl			**Available**	**2560**
				Allowable	**2600**

REQUIRED ASAP:		**mt Drill**		**mt Fuel**		**mt Potable**

EQUALLY SPACED PREDICTIONS FOR EAL WEST WHIPTAIL

LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT =1 HOUR

DATE	HOURS AFTER MIDNIGHT																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01:04:2004	-.16	-.14	-.02	.16	.35	.49	.54	.48	.32	.08	-.19	-.42	-.54	-.58	-.54	-.41	-.20	.03	.22	.31	.28	.17	.03	-.12
02:04:2004	-.22	-.24	-.16	.02	.23	.42	.54	.57	.47	.25	-.02	-.28	-.48	-.57	-.57	-.48	-.29	-.04	.17	.31	.34	.26	.11	-.06
03:04:2004	-.22	-.30	-.28	-.15	.04	.26	.45	.56	.55	.40	.17	-.10	-.34	-.51	-.57	-.53	-.38	-.15	.10	.28	.37	.35	.23	.05
04:04:2004	-.14	-.29	-.34	-.29	-.15	.05	.27	.45	.53	.48	.31	.09	-.16	-.37	-.51	-.54	-.45	-.26	-.02	.21	.36	.42	.36	.20
05:04:2004	-.00	-.19	-.32	-.36	-.31	-.17	.04	.25	.41	.46	.39	.23	.03	-.18	-.37	-.47	-.45	-.33	-.13	.09	.28	.41	.43	.33
06:04:2004	.16	-.04	-.21	-.34	-.38	-.33	-.19	.00	.19	.32	.35	.29	.18	.02	-.17	-.33	-.38	-.33	-.20	-.03	.17	.34	.43	.41
07:04:2004	.29	.13	-.04	-.22	-.35	-.40	-.36	-.24	-.07	.09	.20	.24	.22	.15	.03	-.11	-.22	-.24	-.19	-.09	.05	.23	.37	.42
08:04:2004	.37	.26	.13	-.04	-.23	-.38	-.44	-.41	-.32	-.19	-.05	.07	.15	.18	.16	.09	-.01	-.08	-.10	-.07	.00	.12	.27	.37
09:04:2004	.39	.35	.27	.15	-.04	-.25	-.42	-.48	-.48	-.43	-.32	-.18	-.03	.09	.17	.21	.18	.11	.04	.01	.01	.06	.16	.27
10:04:2004	.35	.38	.37	.30	.17	-.04	-.28	-.45	-.54	-.58	-.55	-.44	-.27	-.09	.07	.20	.28	.27	.19	.11	.05	.05	.08	.16
11:04:2004	.26	.35	.42	.42	.36	.20	-.04	-.30	-.49	-.62	-.68	-.65	-.51	-.31	-.10	.10	.27	.36	.33	.21	.10	.04	.02	.05
12:04:2004	.13	.25	.39	.49	.50	.41	.23	-.04	-.33	-.55	-.69	-.75	-.69	-.53	-.30	-.04	.19	.35	.40	.31	.17	.04	-.03	-.06
13:04:2004	-.02	.10	.28	.46	.56	.56	.46	.24	-.07	-.38	-.61	-.74	-.77	-.68	-.48	-.21	.08	.30	.42	.39	.25	.08	-.06	-.14
14:04:2004	-.16	-.09	.10	.33	.53	.62	.60	.47	.21	-.13	-.45	-.66	-.76	-.75	-.62	-.37	-.05	.23	.40	.44	.35	.17	-.03	-.18
15:04:2004	-.27	-.25	-.11	.12	.37	.57	.65	.61	.44	.13	-.22	-.50	-.67	-.73	-.69	-.50	-.20	.12	.36	.46	.43	.29	.08	-.14
16:04:2004	-.30	-.36	-.29	-.11	.14	.39	.58	.64	.56	.35	.04	-.28	-.52	-.65	-.67	-.57	-.33	-.01	.27	.44	.47	.39	.21	-.02
17:04:2004	-.24	-.38	-.39	-.30	-.11	.14	.38	.54	.56	.45	.24	-.04	-.30	-.49	-.58	-.55	-.40	-.14	.14	.37	.47	.45	.33	.13
18:04:2004	-.11	-.31	-.41	-.40	-.30	-.12	.11	.33	.45	.44	.33	.15	-.07	-.28	-.42	-.45	-.38	-.21	.02	.25	.41	.46	.39	.25
19:04:2004	.05	-.16	-.33	-.40	-.40	-.31	-.15	.05	.23	.32	.30	.23	.11	-.05	-.21	-.29	-.28	-.20	-.05	.13	.30	.41	.41	.31
20:04:2004	.17	.00	-.18	-.32	-.40	-.40	-.34	-.20	-.04	.10	.18	.19	.17	.11	-.00	-.10	-.14	-.11	-.04	.06	.19	.32	.38	.34
21:04:2004	.24	.12	-.02	-.18	-.32	-.40	-.42	-.37	-.27	-.14	-.02	.07	.13	.16	.13	.07	.02	.01	.02	.06	.13	.22	.31	.32
22:04:2004	.26	.19	.11	-.02	-.18	-.32	-.40	-.43	-.40	-.33	-.22	-.09	.02	.11	.17	.18	.15	.12	.10	.09	.10	.16	.23	.27
23:04:2004	.26	.22	.17	.11	-.03	-.20	-.33	-.41	-.44	-.44	-.38	-.26	-.12	.01	.12	.20	.23	.21	.17	.13	.11	.12	.16	.21
24:04:2004	.23	.23	.21	.18	.09	-.06	-.23	-.35	-.42	-.47	-.46	-.38	-.25	-.09	.05	.16	.25	.27	.23	.17	.12	.11	.12	.15
25:04:2004	.19	.23	.24	.23	.17	.05	-.11	-.27	-.38	-.46	-.49	-.45	-.35	-.20	-.04	.11	.22	.28	.26	.20	.13	.10	.09	.11
26:04:2004	.15	.21	.26	.27	.23	.14	-.01	-.18	-.33	-.44	-.49	-.49	-.42	-.29	-.12	.04	.19	.27	.28	.22	.14	.08	.06	.07
27:04:2004	.10	.17	.26	.32	.30	.23	.10	-.07	-.26	-.41	-.49	-.51	-.46	-.36	-.20	-.02	.15	.26	.29	.23	.14	.06	.02	.01
28:04:2004	.04	.12	.23	.33	.37	.33	.22	.05	-.15	-.35	-.48	-.53	-.51	-.42	-.28	-.09	.11	.25	.30	.26	.16	.05	-.03	-.07
29:04:2004	-.06	.02	.16	.30	.39	.41	.34	.20	-.01	-.25	-.43	-.52	-.53	-.48	-.35	-.16	.06	.24	.33	.31	.21	.07	-.05	-.14
30:04:2004	-.17	-.11	.02	.20	.35	.44	.44	.34	.16	-.09	-.33	-.49	-.54	-.52	-.42	-.23	.00	.22	.36	.38	.30	.15	-.03	-.17

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 1(a): PREDICTED TIDAL HEIGHTS AT WEST WHIPTAIL, APRIL - 2004

EQUALLY SPACED PREDICTIONS FOR EAL WEST WHIPTAIL

LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT =1 HOUR

DATE	HOURS AFTER MIDNIGHT																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01:05:2004	-.26	-.26	-.16	.02	.22	.37	.46	.45	.31	.09	-.17	-.39	-.51	-.53	-.48	-.32	-.07	.18	.37	.46	.41	.27	.08	-.13
02:05:2004	-.29	-.36	-.33	-.19	.01	.21	.38	.46	.42	.25	.02	-.23	-.41	-.51	-.50	-.40	-.18	.10	.34	.49	.52	.43	.24	-.00
03:05:2004	-.23	-.39	-.44	-.38	-.23	-.02	.20	.36	.42	.35	.18	-.03	-.25	-.41	-.47	-.43	-.27	-.02	.24	.45	.57	.55	.41	.18
04:05:2004	-.08	-.31	-.45	-.49	-.43	-.28	-.06	.16	.31	.35	.28	.14	-.04	-.23	-.36	-.39	-.30	-.12	.11	.35	.53	.60	.54	.36
05:05:2004	.12	-.13	-.36	-.50	-.55	-.49	-.33	-.12	.08	.22	.26	.22	.13	-.01	-.17	-.26	-.25	-.15	.01	.21	.41	.56	.59	.49
06:05:2004	.30	.07	-.16	-.39	-.55	-.60	-.54	-.40	-.21	-.02	.11	.19	.20	.15	.05	-.06	-.12	-.09	-.02	.10	.27	.44	.54	.53
07:05:2004	.42	.26	.06	-.17	-.42	-.58	-.63	-.59	-.48	-.32	-.14	.03	.14	.20	.20	.15	.07	.03	.03	.07	.16	.30	.43	.49
08:05:2004	.47	.39	.26	.08	-.18	-.43	-.60	-.66	-.66	-.58	-.42	-.22	-.03	.12	.22	.27	.25	.18	.12	.09	.10	.17	.28	.38
09:05:2004	.44	.45	.40	.29	.10	-.17	-.43	-.60	-.70	-.72	-.65	-.48	-.26	-.05	.14	.28	.35	.32	.23	.14	.09	.09	.14	.23
10:05:2004	.33	.42	.46	.44	.33	.12	-.16	-.43	-.61	-.73	-.76	-.67	-.48	-.25	-.01	.20	.35	.40	.33	.20	.09	.03	.02	.07
11:05:2004	.17	.31	.44	.50	.48	.36	.13	-.17	-.44	-.63	-.74	-.75	-.63	-.43	-.17	.08	.29	.41	.40	.28	.12	.00	-.06	-.08
12:05:2004	-.02	.13	.31	.46	.52	.49	.36	.11	-.20	-.47	-.64	-.72	-.69	-.55	-.31	-.03	.22	.39	.45	.36	.19	.02	-.11	-.18
13:05:2004	-.18	-.08	.11	.32	.47	.52	.48	.32	.05	-.26	-.50	-.62	-.66	-.60	-.41	-.15	.14	.37	.47	.44	.30	.10	-.09	-.23
14:05:2004	-.29	-.25	-.11	.10	.31	.45	.49	.43	.25	-.04	-.31	-.49	-.58	-.57	-.47	-.24	.05	.32	.47	.50	.41	.23	.01	-.20
15:05:2004	-.33	-.37	-.30	-.14	.07	.27	.41	.43	.35	.15	-.10	-.33	-.45	-.50	-.46	-.30	-.05	.23	.44	.53	.49	.36	.15	-.09
16:05:2004	-.30	-.41	-.42	-.33	-.17	.03	.23	.35	.35	.25	.08	-.13	-.29	-.38	-.40	-.31	-.12	.13	.36	.51	.53	.45	.29	.06
17:05:2004	-.18	-.37	-.45	-.45	-.37	-.22	-.02	.17	.27	.26	.18	.06	-.10	-.22	-.28	-.26	-.15	.04	.25	.43	.52	.50	.38	.20
18:05:2004	-.03	-.25	-.41	-.49	-.49	-.41	-.26	-.06	.10	.19	.19	.16	.07	-.04	-.14	-.16	-.11	.00	.16	.32	.46	.50	.44	.30
19:05:2004	.11	-.09	-.29	-.44	-.52	-.52	-.44	-.29	-.11	.03	.12	.16	.16	.10	.02	-.04	-.04	.02	.11	.23	.36	.46	.46	.36
20:05:2004	.21	.05	-.13	-.32	-.47	-.54	-.53	-.45	-.32	-.16	-.02	.09	.15	.17	.13	.08	.05	.06	.10	.18	.27	.38	.43	.39
21:05:2004	.28	.16	.02	-.17	-.36	-.48	-.53	-.52	-.45	-.33	-.18	-.03	.08	.15	.18	.16	.13	.12	.12	.15	.21	.30	.37	.38
22:05:2004	.32	.22	.12	-.02	-.21	-.38	-.48	-.51	-.50	-.44	-.32	-.16	-.02	.08	.15	.19	.19	.17	.14	.14	.17	.24	.30	.34
23:05:2004	.33	.27	.19	.09	-.07	-.26	-.39	-.47	-.50	-.48	-.41	-.28	-.13	.00	.10	.18	.22	.21	.17	.14	.14	.18	.24	.28
24:05:2004	.30	.29	.25	.16	.04	-.13	-.29	-.41	-.47	-.49	-.45	-.36	-.22	-.08	.05	.15	.22	.24	.20	.15	.12	.14	.18	.22
25:05:2004	.26	.29	.28	.23	.13	-.01	-.18	-.33	-.43	-.48	-.48	-.41	-.30	-.16	-.01	.12	.21	.25	.22	.16	.11	.10	.11	.14
26:05:2004	.19	.25	.30	.29	.22	.10	-.06	-.23	-.38	-.47	-.49	-.46	-.36	-.23	-.07	.09	.21	.27	.25	.18	.10	.05	.03	.05
27:05:2004	.10	.18	.26	.31	.30	.21	.08	-.10	-.29	-.43	-.49	-.48	-.41	-.29	-.13	.05	.22	.31	.30	.22	.11	.01	-.04	-.06
28:05:2004	-.03	.06	.18	.28	.33	.31	.22	.06	-.15	-.35	-.47	-.49	-.46	-.35	-.19	.02	.22	.35	.38	.31	.17	.02	-.10	-.17
29:05:2004	-.18	-.12	.02	.17	.29	.35	.32	.21	.02	-.21	-.40	-.48	-.48	-.41	-.26	-.04	.20	.39	.47	.43	.29	.11	-.09	-.24
30:05:2004	-.32	-.30	-.19	-.02	.15	.29	.36	.32	.18	-.04	-.26	-.42	-.47	-.44	-.33	-.12	.15	.39	.54	.56	.45	.26	.02	-.22
31:05:2004	-.39	-.44	-.40	-.26	-.07	.13	.29	.35	.29	.13	-.08	-.28	-.41	-.44	-.38	-.21	.05	.33	.55	.65	.61	.45	.20	-.09

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 2(a): PREDICTED TIDAL HEIGHTS AT WEST WHIPTAIL, MAY - 2004

HIGH LOW PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT = .25 HOUR

DATE	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL
01:04:2004	00:16	-.16	-.16	06:00	.54	.54	13:00	-.58	-.58	19:13	.31	.31
02:04:2004	00:43	-.24	-.24	06:43	.57	.57	13:33	-.58	-.58	19:43	.34	.34
03:04:2004	01:18	-.30	-.30	07:26	.57	.57	14:08	-.57	-.57	20:20	.38	.38
04:04:2004	02:00	-.34	-.34	08:08	.54	.54	14:42	-.54	-.54	21:00	.42	.42
05:04:2004	02:54	-.36	-.36	08:54	.46	.46	15:18	-.48	-.48	21:40	.44	.44
06:04:2004	03:58	-.38	-.38	09:49	.35	.35	15:57	-.38	-.38	22:19	.44	.44
07:04:2004	05:02	-.40	-.40	11:10	.24	.24	16:42	-.24	-.24	23:00	.42	.42
08:04:2004	06:07	-.44	-.44	13:05	.18	.18	17:48	-.10	-.10	23:49	.39	.39
09:04:2004	07:29	-.49	-.49	15:08	.21	.21	19:23	.00	.00			
10:04:2004	01:11	.38	.38	09:09	-.58	-.58	16:27	.29	.29	20:42	.04	.04
11:04:2004	02:37	.43	.43	10:12	-.68	-.68	17:14	.36	.36	22:02	.02	.02
12:04:2004	03:36	.50	.50	11:02	-.75	-.75	17:50	.40	.40	23:04	-.06	-.06
13:04:2004	04:28	.57	.57	11:46	-.78	-.78	18:20	.43	.43	23:47	-.17	-.17
14:04:2004	05:20	.63	.63	12:28	-.77	-.77	18:47	.45	.45			
15:04:2004	00:23	-.27	-.27	06:10	.65	.65	13:07	-.74	-.74	19:14	.46	.46
16:04:2004	00:58	-.36	-.36	06:56	.64	.64	13:44	-.67	-.67	19:44	.48	.48
17:04:2004	01:38	-.40	-.40	07:39	.57	.57	14:18	-.58	-.58	20:18	.48	.48
18:04:2004	02:25	-.41	-.41	08:24	.46	.46	14:51	-.45	-.45	20:54	.46	.46
19:04:2004	03:24	-.41	-.41	09:18	.32	.32	15:24	-.30	-.30	21:29	.42	.42
20:04:2004	04:33	-.41	-.41	10:52	.19	.19	16:00	-.14	-.14	22:04	.38	.38
21:04:2004	05:41	-.42	-.42	13:07	.16	.16	16:53	.01	.01	22:40	.33	.33
22:04:2004	06:58	-.43	-.43	14:42	.18	.18	19:02	.09	.09	23:21	.27	.27
23:04:2004	08:28	-.45	-.45	16:01	.23	.23	20:06	.11	.11			
24:04:2004	00:29	.24	.24	09:25	-.47	-.47	16:45	.27	.27	20:54	.11	.11
25:04:2004	01:59	.24	.24	10:01	-.49	-.49	17:13	.29	.29	21:37	.09	.09
26:04:2004	02:44	.28	.28	10:26	-.50	-.50	17:34	.29	.29	22:18	.06	.06
27:04:2004	03:20	.32	.32	10:48	-.51	-.51	17:48	.29	.29	22:51	.01	.01
28:04:2004	03:58	.37	.37	11:11	-.53	-.53	18:00	.30	.30	23:22	-.07	-.07
29:04:2004	04:42	.42	.42	11:39	-.54	-.54	18:16	.34	.34	23:53	-.17	-.17
30:04:2004	05:32	.45	.45	12:12	-.54	-.54	18:39	.39	.39			

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- MTL is Mean Tide Level.
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 1(b): PREDICTED HIGH & LOW TIDES AT WEST WHIPTAIL, APRIL - 2004

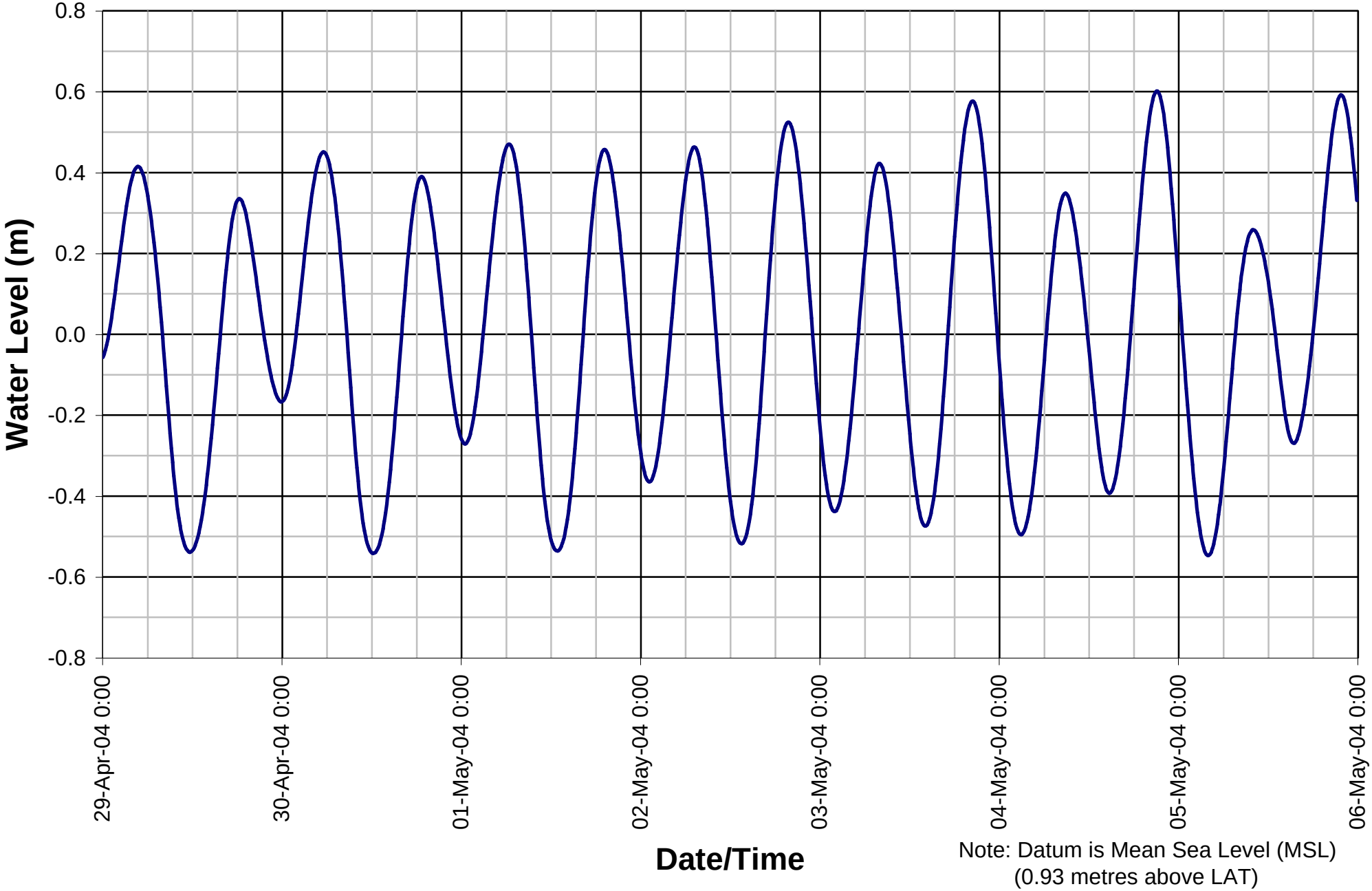
HIGH LOW PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT = .25 HOUR

DATE	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL
01:05:2004	00:28	-.27	-.27	06:22	.47	.47	12:49	-.54	-.54	19:09	.46	.46
02:05:2004	01:08	-.37	-.37	07:10	.46	.46	13:27	-.52	-.52	19:45	.52	.52
03:05:2004	01:56	-.44	-.44	07:57	.42	.42	14:05	-.47	-.47	20:24	.58	.58
04:05:2004	02:53	-.50	-.50	08:49	.35	.35	14:43	-.39	-.39	21:04	.60	.60
05:05:2004	03:56	-.55	-.55	09:58	.26	.26	15:23	-.27	-.27	21:44	.59	.59
06:05:2004	04:57	-.60	-.60	11:42	.20	.20	16:11	-.12	-.12	22:25	.55	.55
07:05:2004	06:02	-.63	-.63	13:33	.21	.21	17:28	.02	.02	23:14	.50	.50
08:05:2004	07:24	-.67	-.67	15:11	.27	.27	19:16	.09	.09			
09:05:2004	00:32	.45	.45	08:48	-.72	-.72	16:13	.35	.35	20:31	.08	.08
10:05:2004	02:09	.46	.46	09:47	-.76	-.76	16:54	.40	.40	21:42	.02	.02
11:05:2004	03:14	.50	.50	10:34	-.76	-.76	17:26	.43	.43	22:44	-.08	-.08
12:05:2004	04:09	.53	.53	11:15	-.72	-.72	17:53	.45	.45	23:30	-.19	-.19
13:05:2004	05:03	.52	.52	11:53	-.66	-.66	18:16	.47	.47			
14:05:2004	00:10	-.29	-.29	05:55	.49	.49	12:30	-.59	-.59	18:41	.50	.50
15:05:2004	00:50	-.37	-.37	06:44	.44	.44	13:05	-.50	-.50	19:09	.53	.53
16:05:2004	01:35	-.42	-.42	07:32	.36	.36	13:41	-.40	-.40	19:42	.54	.54
17:05:2004	02:29	-.46	-.46	08:25	.28	.28	14:16	-.29	-.29	20:19	.53	.53
18:05:2004	03:32	-.50	-.50	09:37	.20	.20	14:51	-.16	-.16	20:55	.50	.50
19:05:2004	04:30	-.53	-.53	11:30	.16	.16	15:27	-.05	-.05	21:31	.47	.47
20:05:2004	05:22	-.54	-.54	12:50	.17	.17	16:09	.05	.05	22:05	.43	.43
21:05:2004	06:13	-.53	-.53	14:08	.18	.18	17:27	.12	.12	22:39	.38	.38
22:05:2004	07:12	-.51	-.51	15:28	.20	.20	18:42	.14	.14	23:19	.34	.34
23:05:2004	08:12	-.50	-.50	16:16	.22	.22	19:27	.14	.14			
24:05:2004	00:18	.30	.30	08:56	-.49	-.49	16:44	.24	.24	20:07	.12	.12
25:05:2004	01:30	.29	.29	09:28	-.49	-.49	17:03	.25	.25	20:55	.09	.09
26:05:2004	02:25	.30	.30	09:55	-.49	-.49	17:15	.28	.28	22:04	.03	.03
27:05:2004	03:16	.32	.32	10:22	-.50	-.50	17:27	.32	.32	22:58	-.06	-.06
28:05:2004	04:11	.33	.33	10:51	-.50	-.50	17:44	.38	.38	23:40	-.19	-.19
29:05:2004	05:13	.35	.35	11:26	-.49	-.49	18:07	.47	.47			
30:05:2004	00:19	-.32	-.32	06:10	.36	.36	12:07	-.47	-.47	18:37	.57	.57
31:05:2004	01:03	-.44	-.44	07:02	.35	.35	12:50	-.44	-.44	19:13	.65	.65

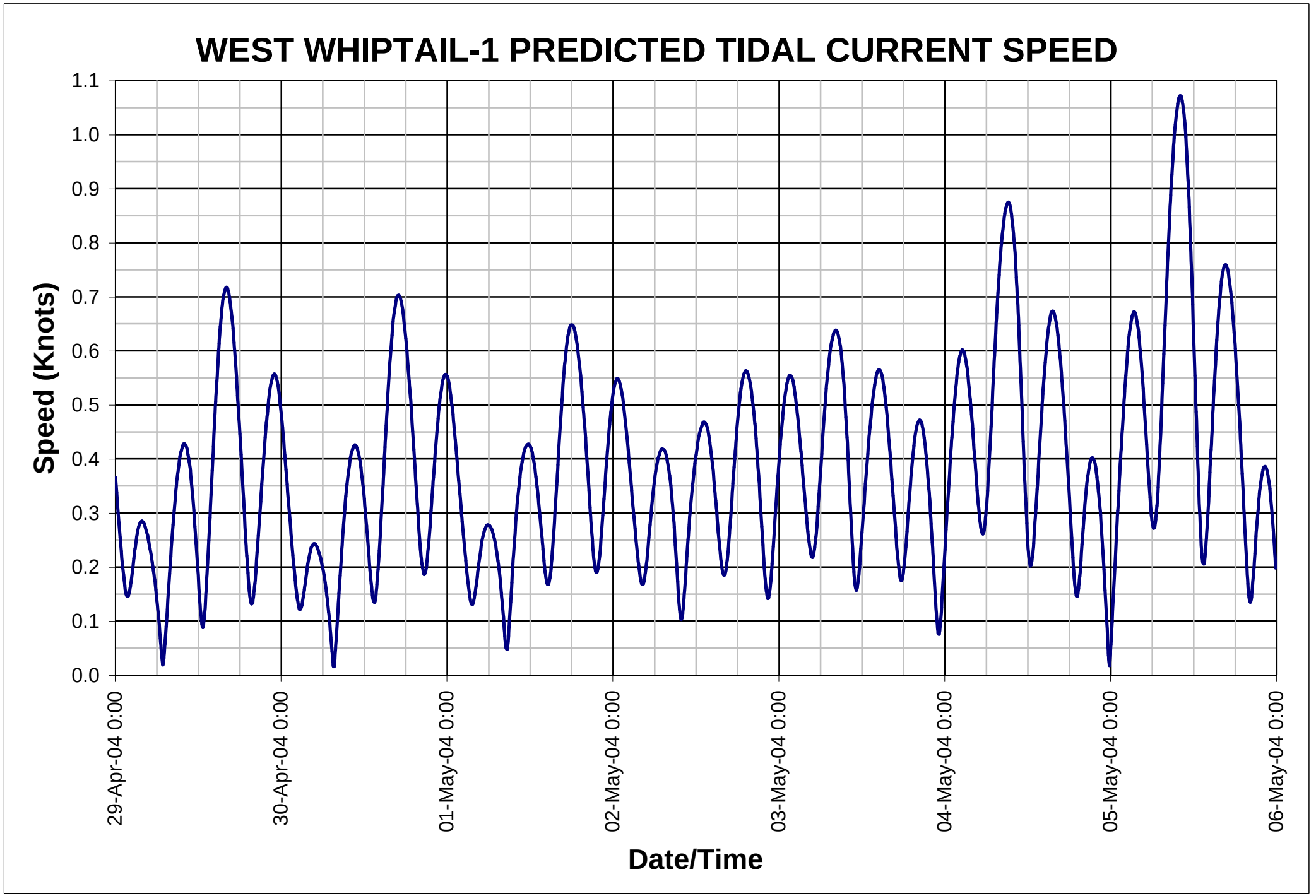
NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- MTL is Mean Tide Level.
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

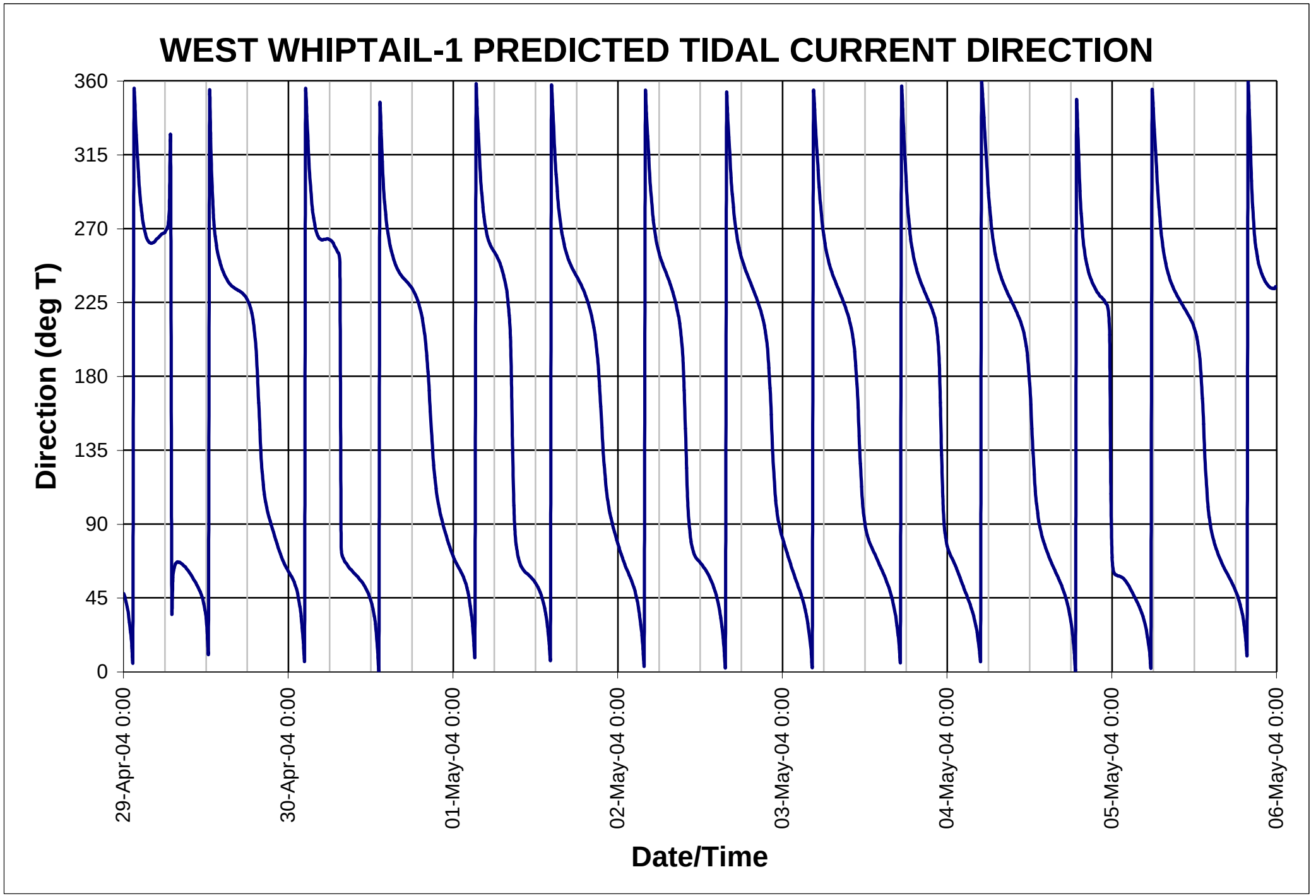
TABLE 2(b): PREDICTED HIGH & LOW TIDES AT WEST WHIPTAIL, MAY - 2004

WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL

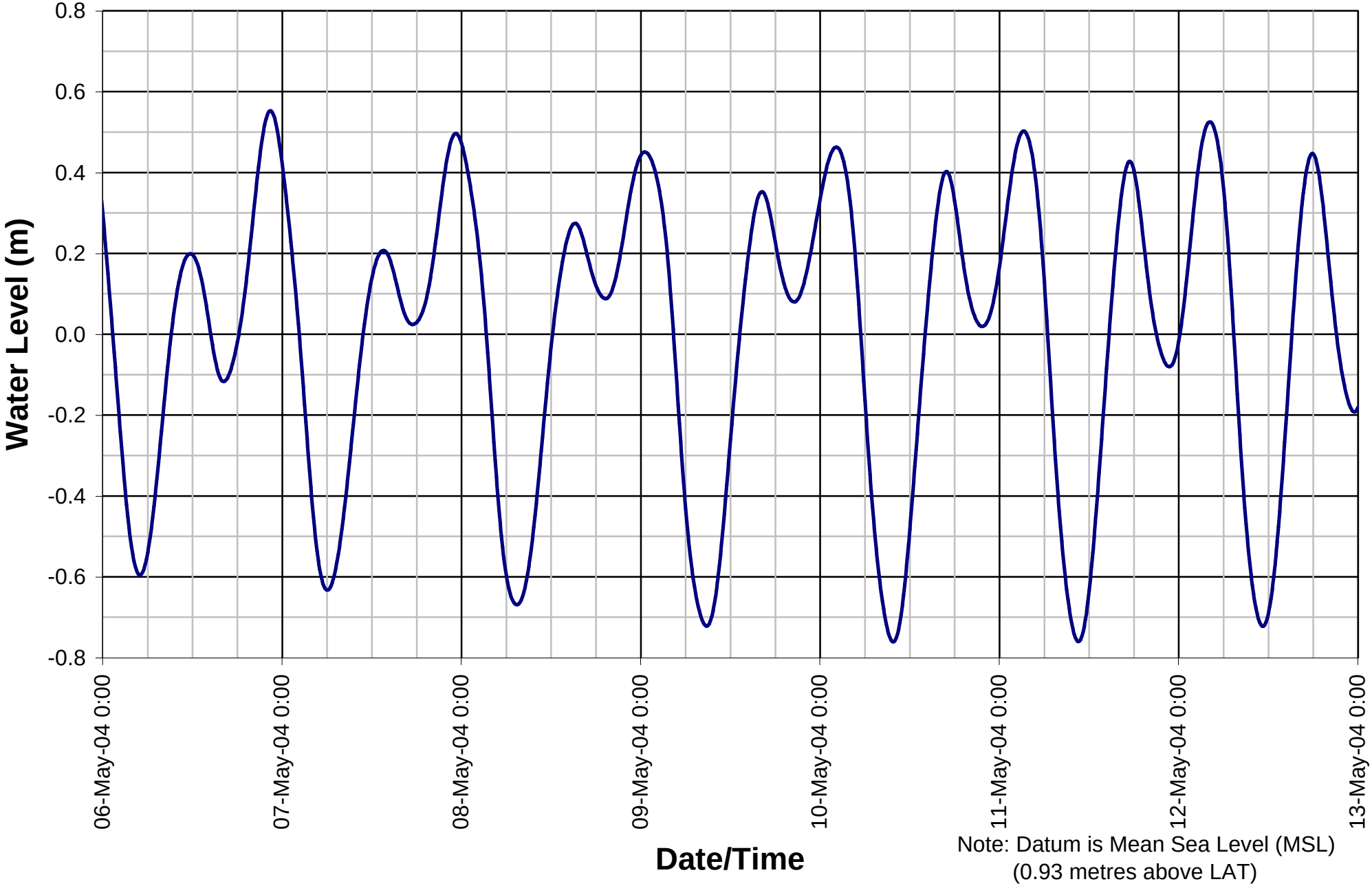


Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)

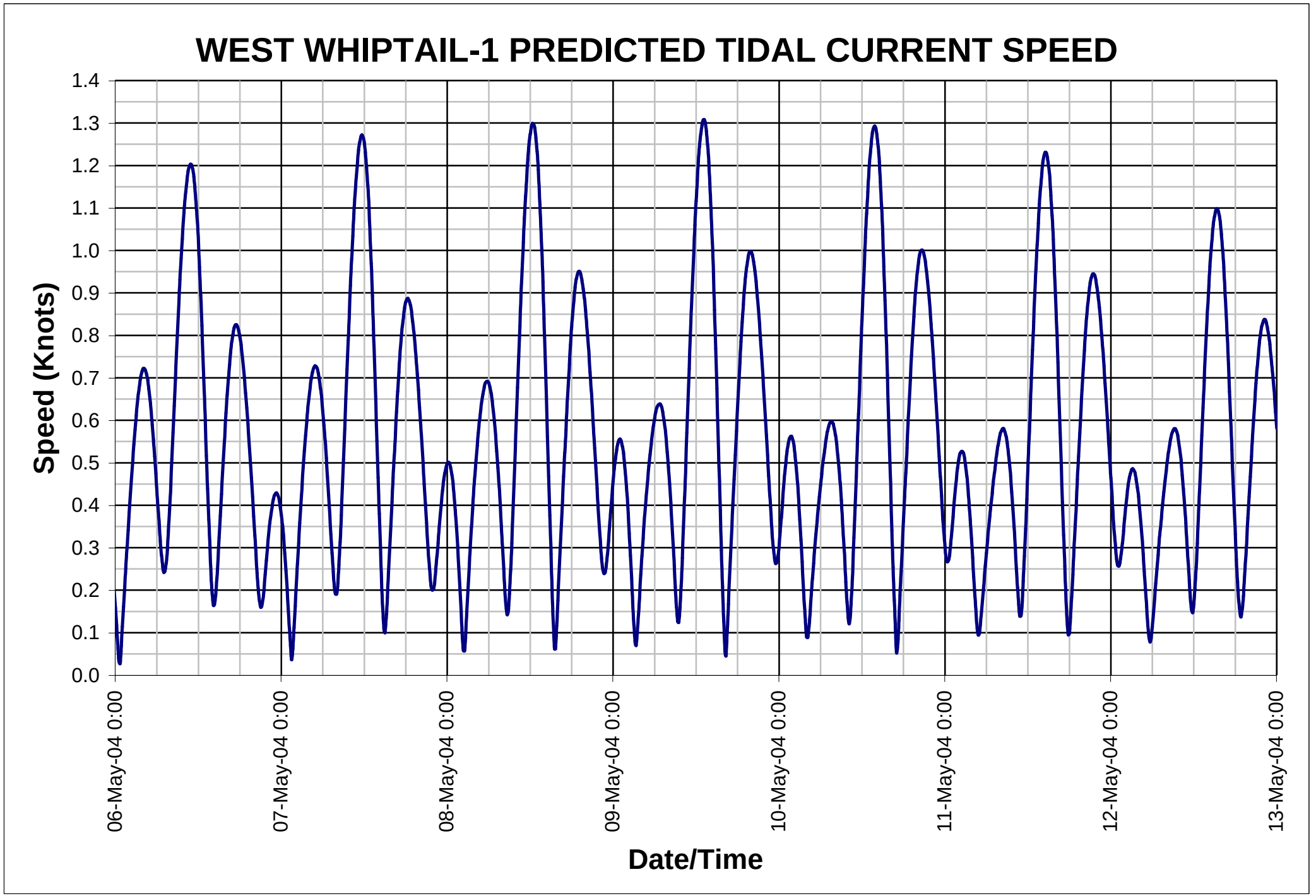

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
29-Apr-04 0:00
30-Apr-04 0:00
01-May-04 0:00
02-May-04 0:00
03-May-04 0:00
04-May-04 0:00
05-May-04 0:00
06-May-04 0:00
Date/Time


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
29-Apr-04 0:00
30-Apr-04 0:00
01-May-04 0:00
02-May-04 0:00
03-May-04 0:00
04-May-04 0:00
05-May-04 0:00
06-May-04 0:00
Date/Time

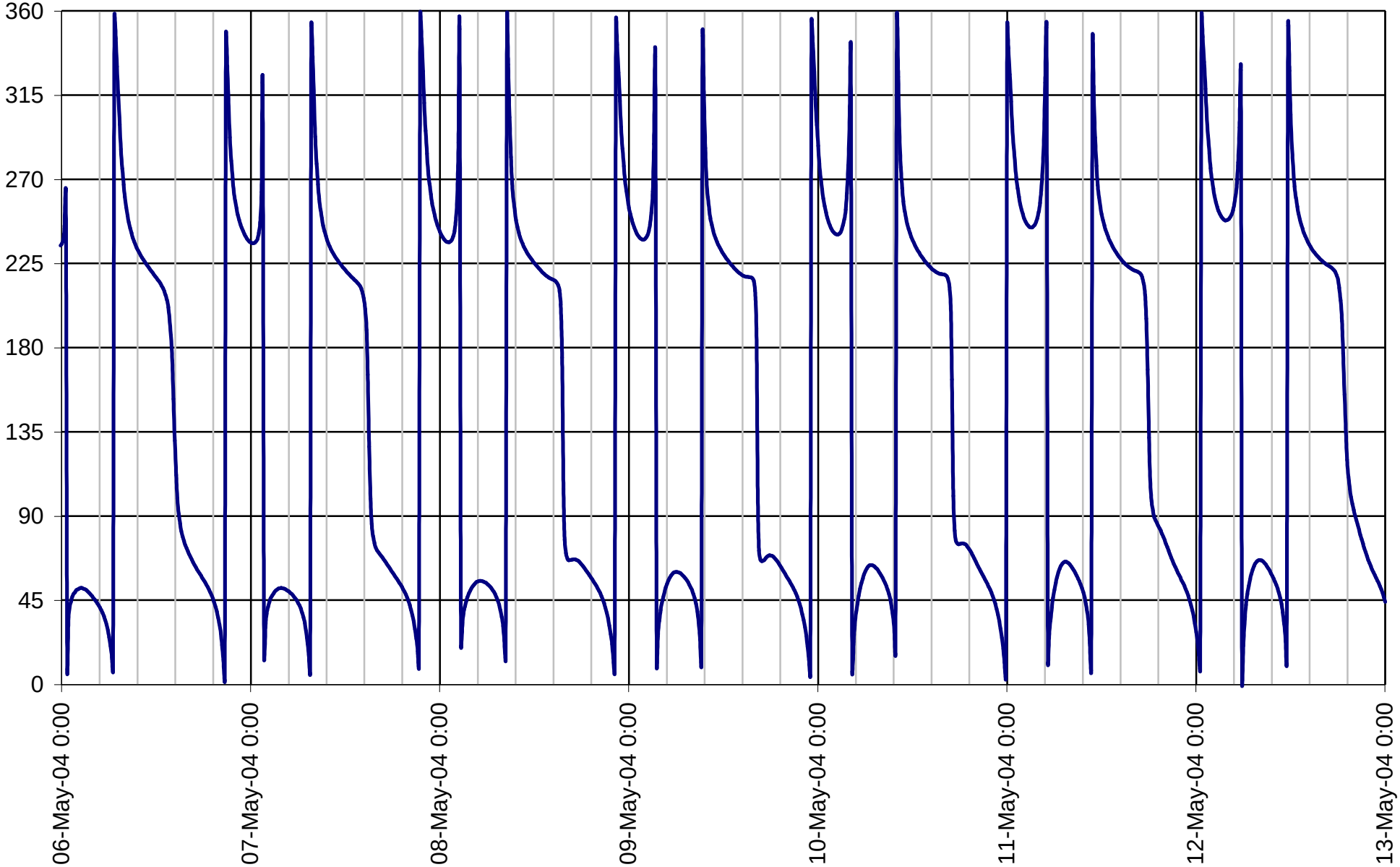
WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL



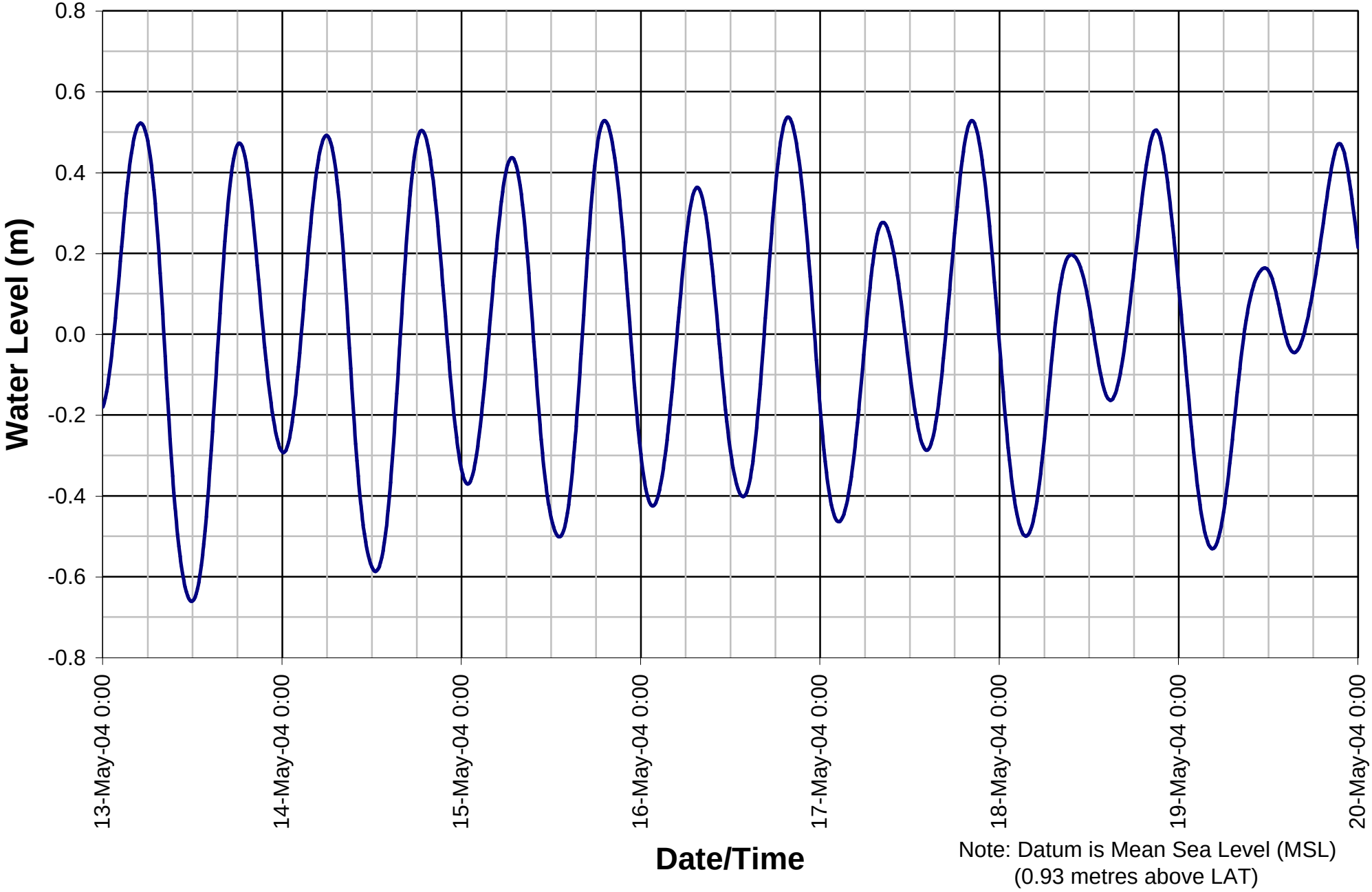
Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
06-May-04 0:00
07-May-04 0:00
08-May-04 0:00
09-May-04 0:00
10-May-04 0:00
11-May-04 0:00
12-May-04 0:00
13-May-04 0:00
Date/Time

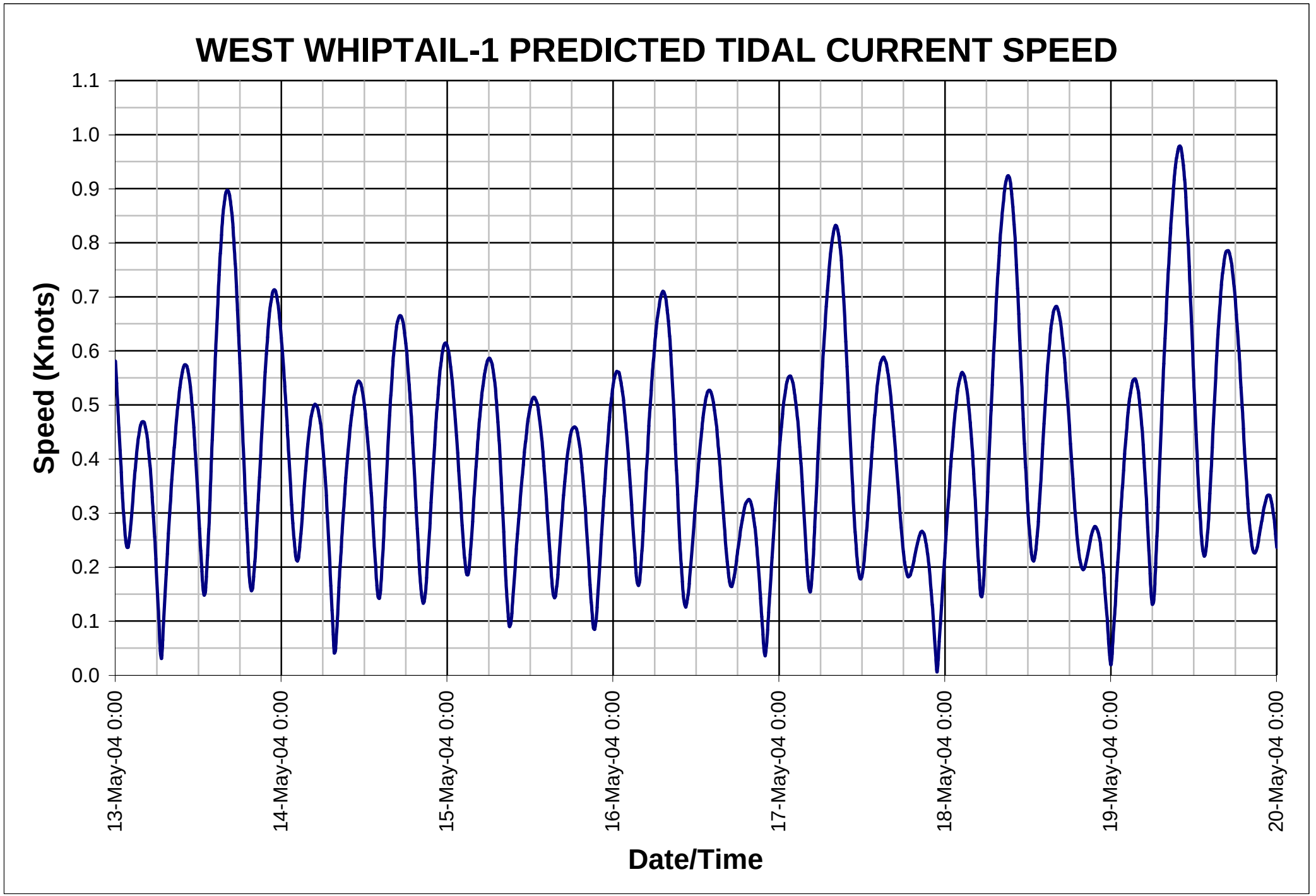
WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION

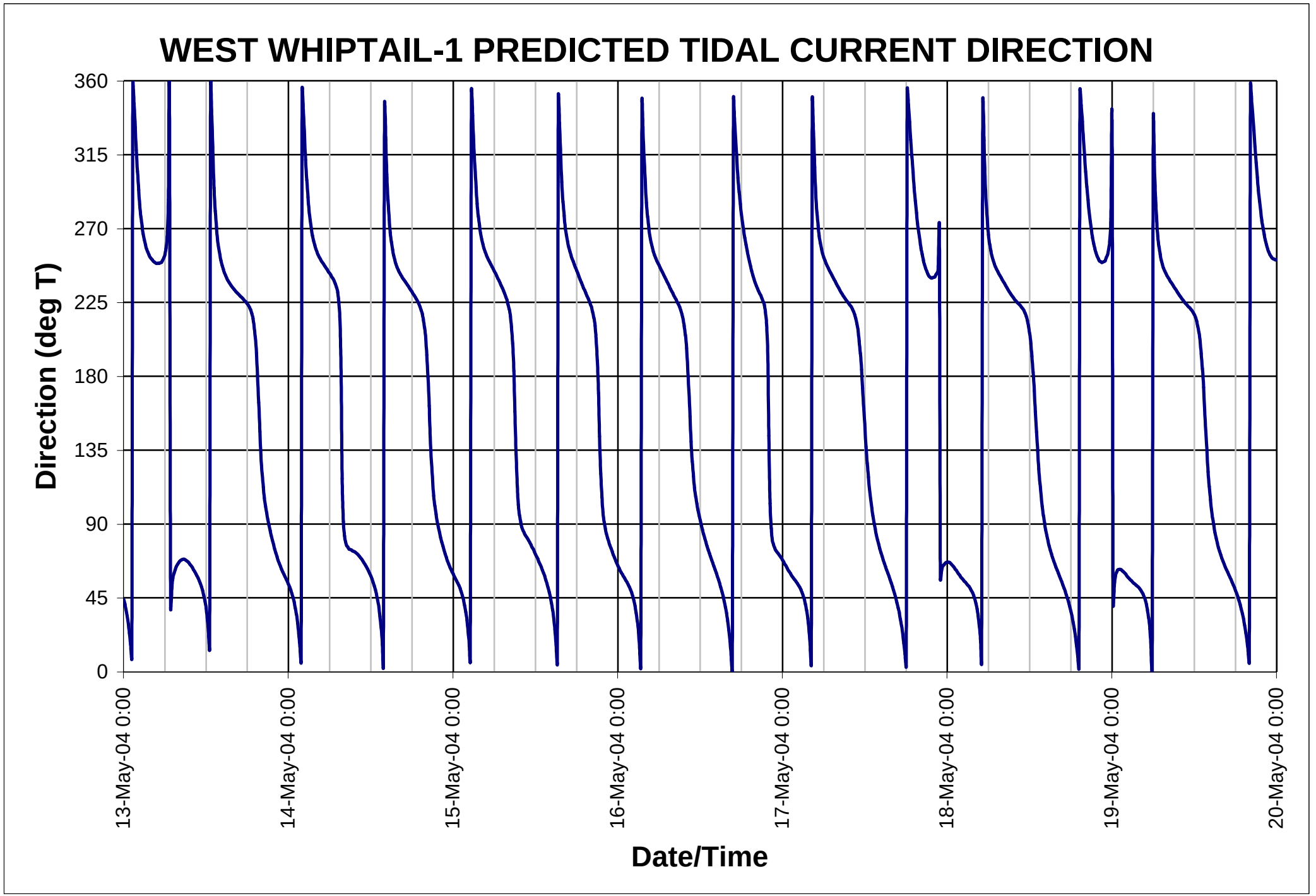


WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL

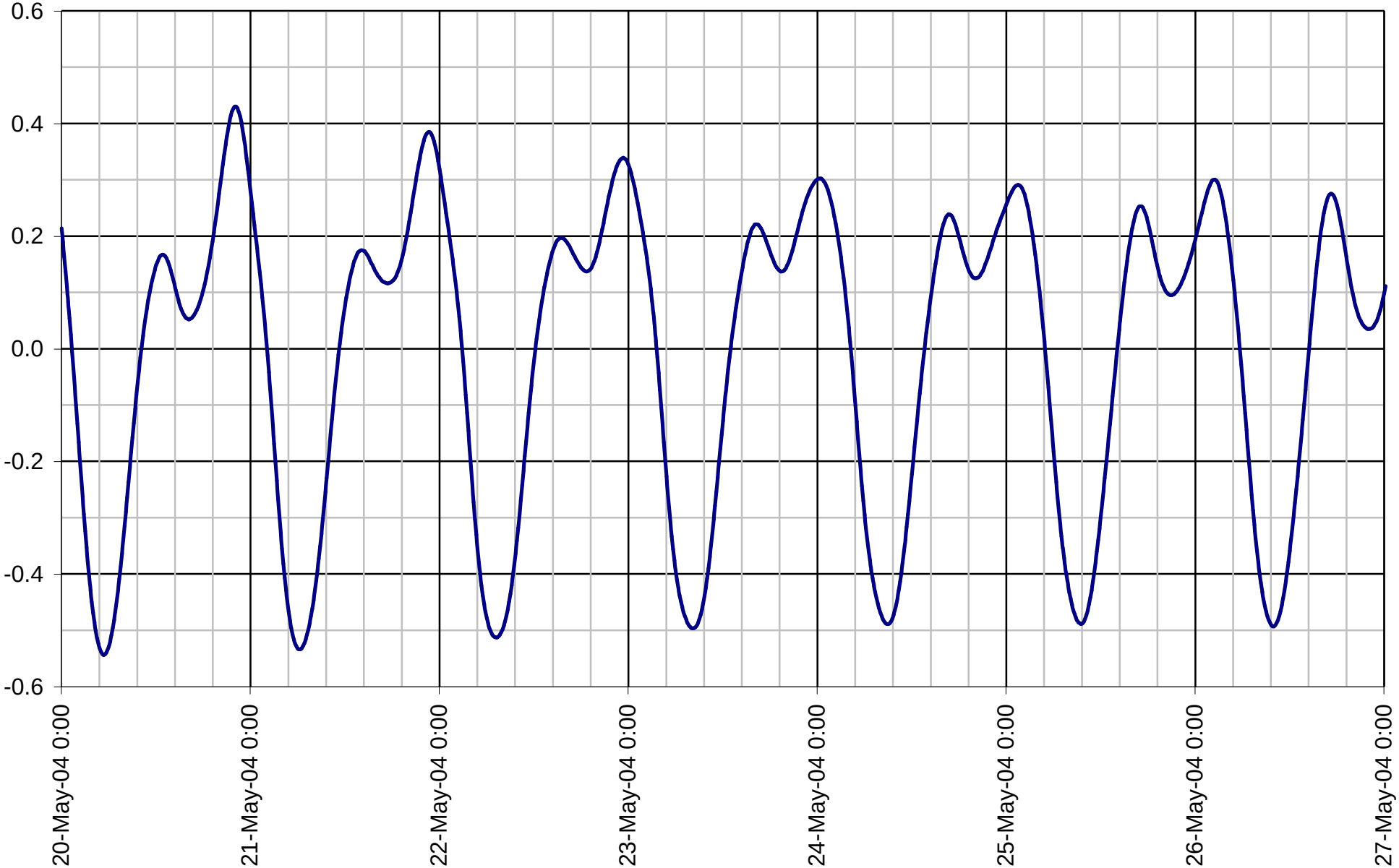


Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
13-May-04 0:00
14-May-04 0:00
15-May-04 0:00
16-May-04 0:00
17-May-04 0:00
18-May-04 0:00
19-May-04 0:00
20-May-04 0:00
Date/Time

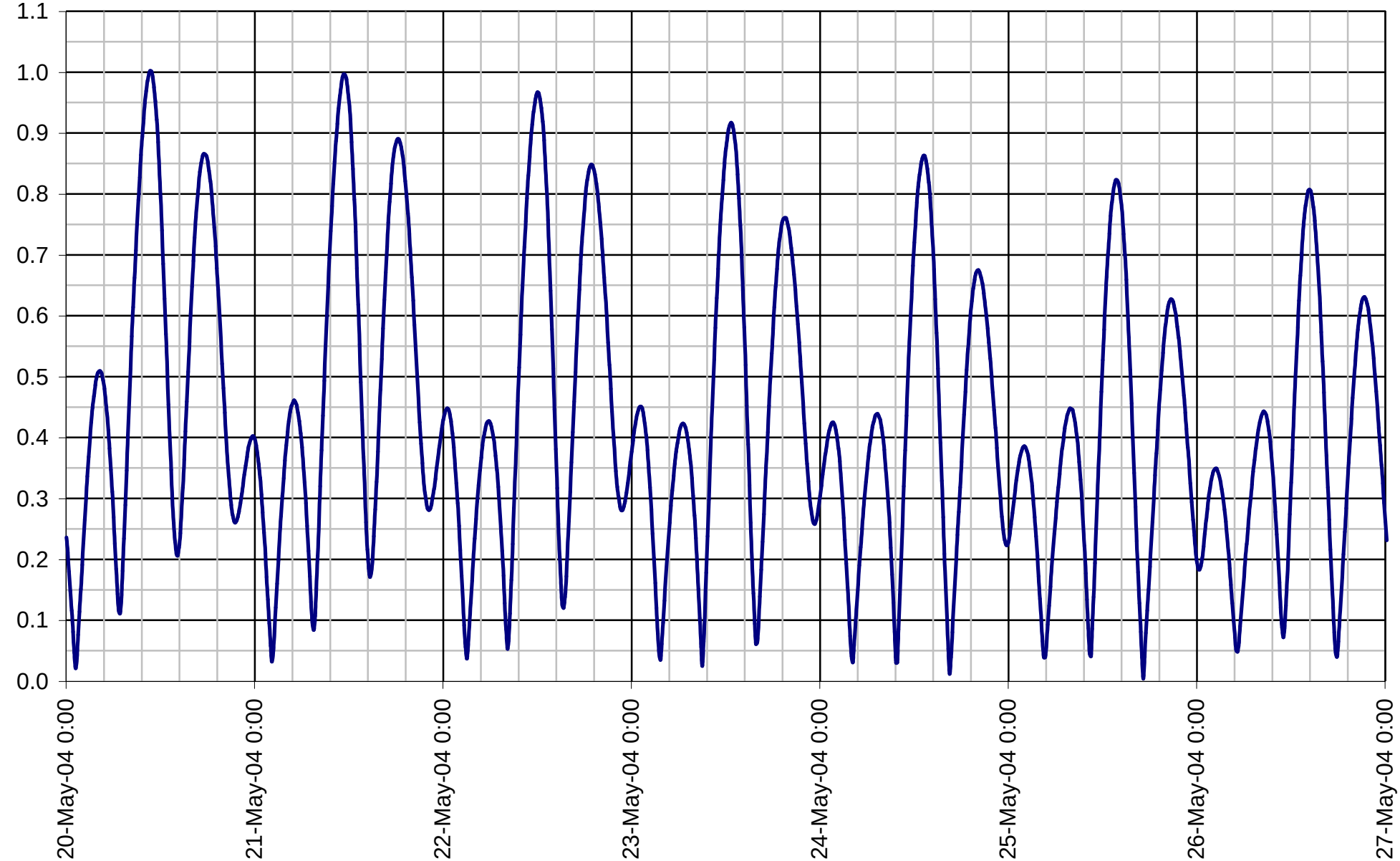

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
13-May-04 0:00
14-May-04 0:00
15-May-04 0:00
16-May-04 0:00
17-May-04 0:00
18-May-04 0:00
19-May-04 0:00
20-May-04 0:00
Date/Time

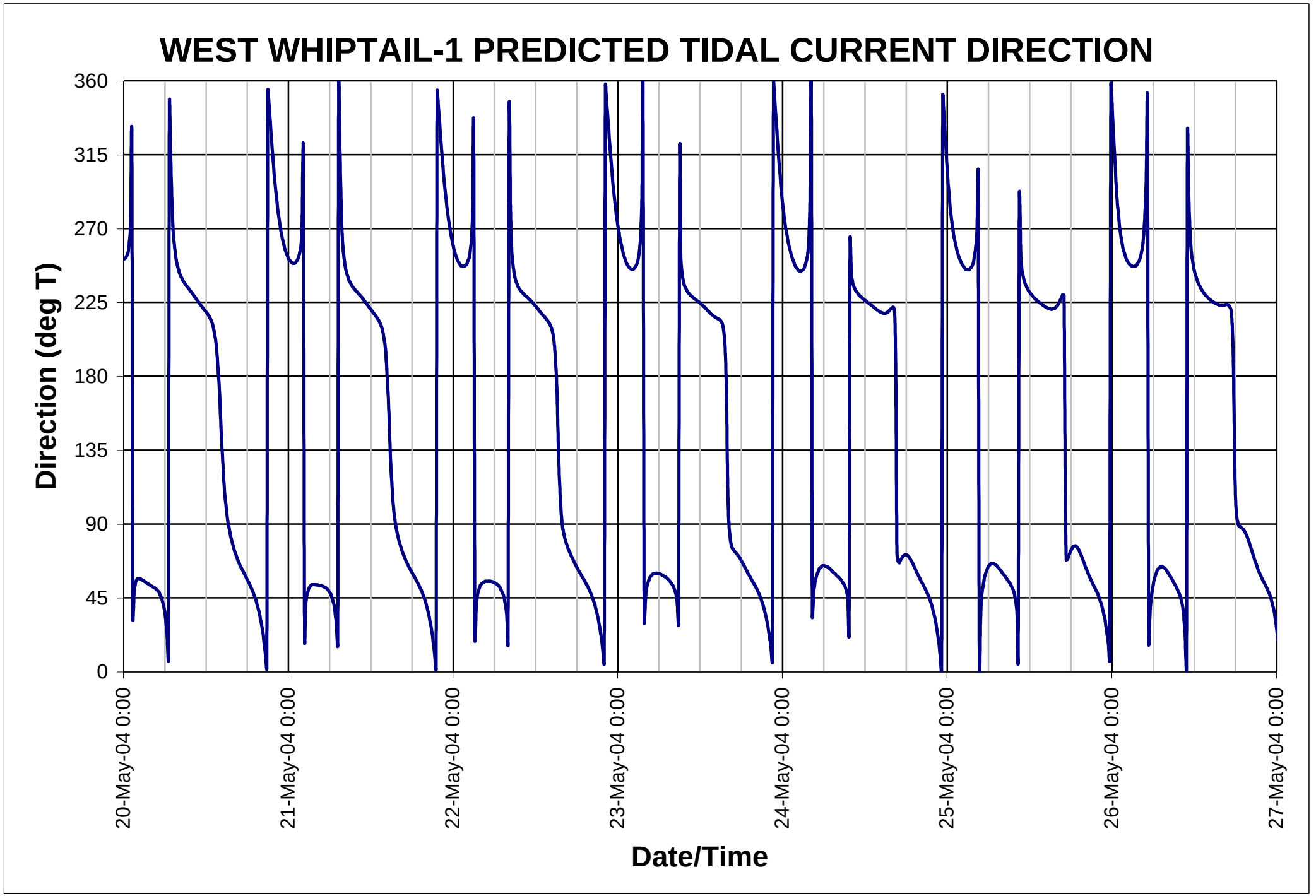
WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL



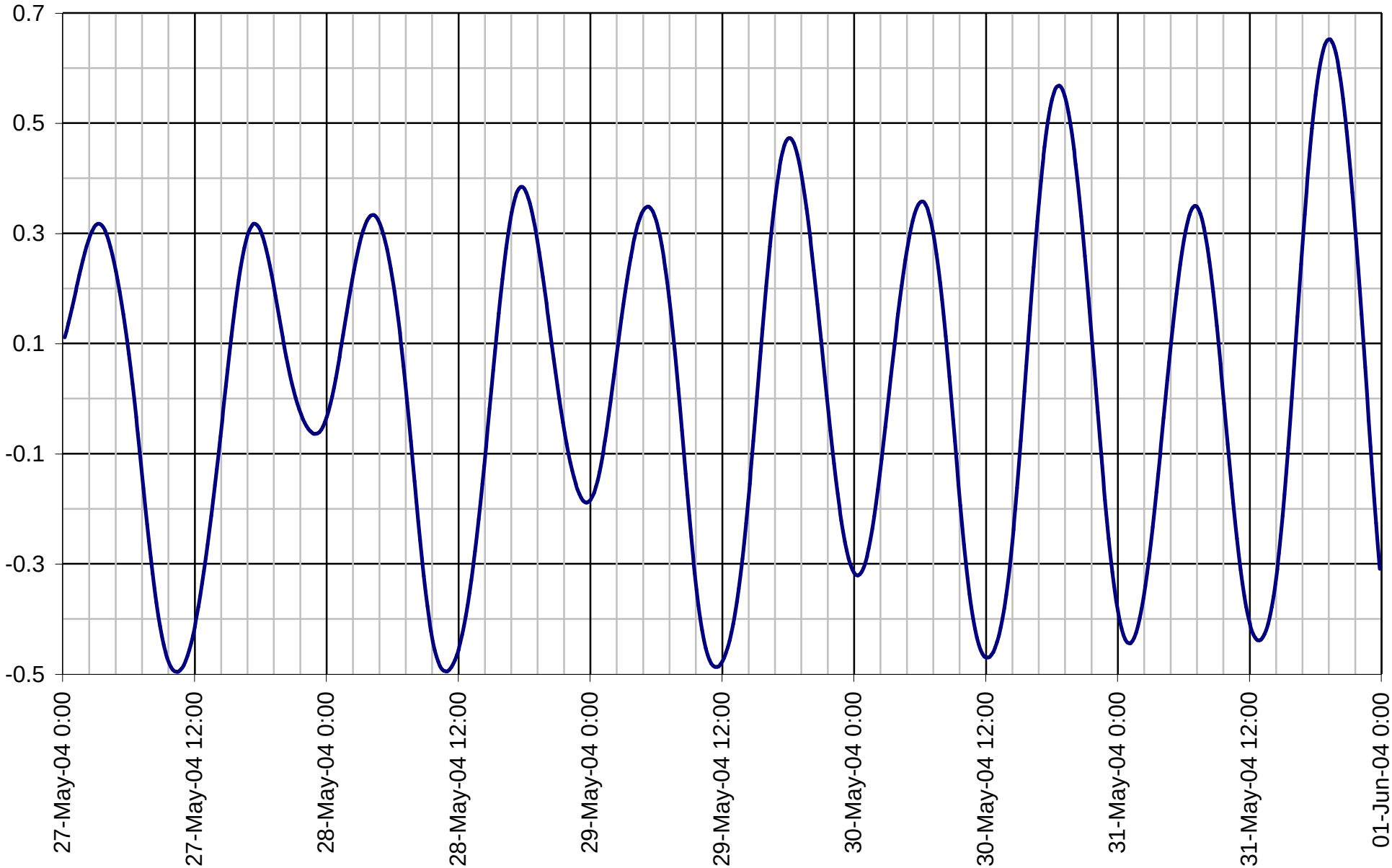
Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED



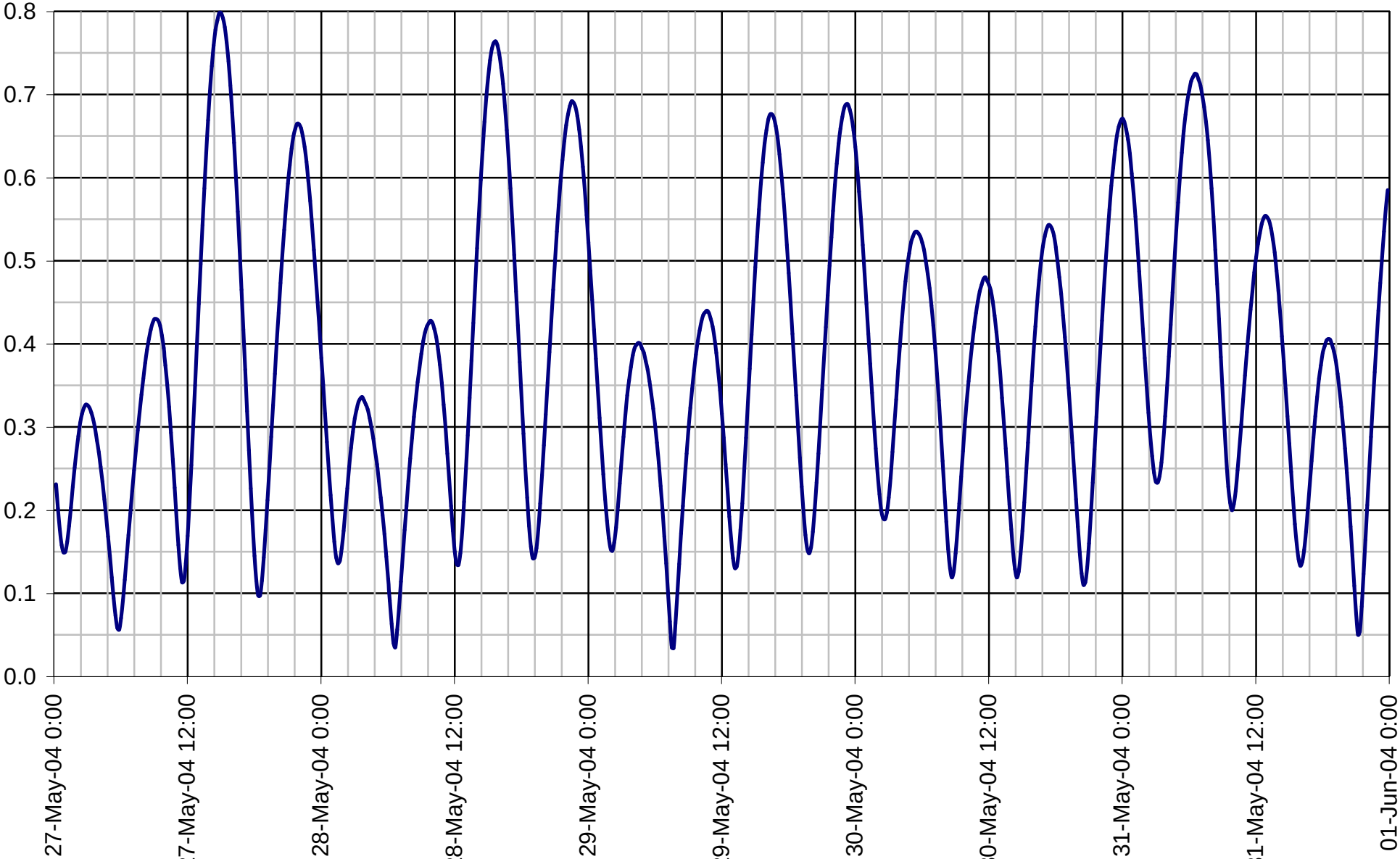

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
20-May-04 0:00
21-May-04 0:00
22-May-04 0:00
23-May-04 0:00
24-May-04 0:00
25-May-04 0:00
26-May-04 0:00
27-May-04 0:00
Date/Time

WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL

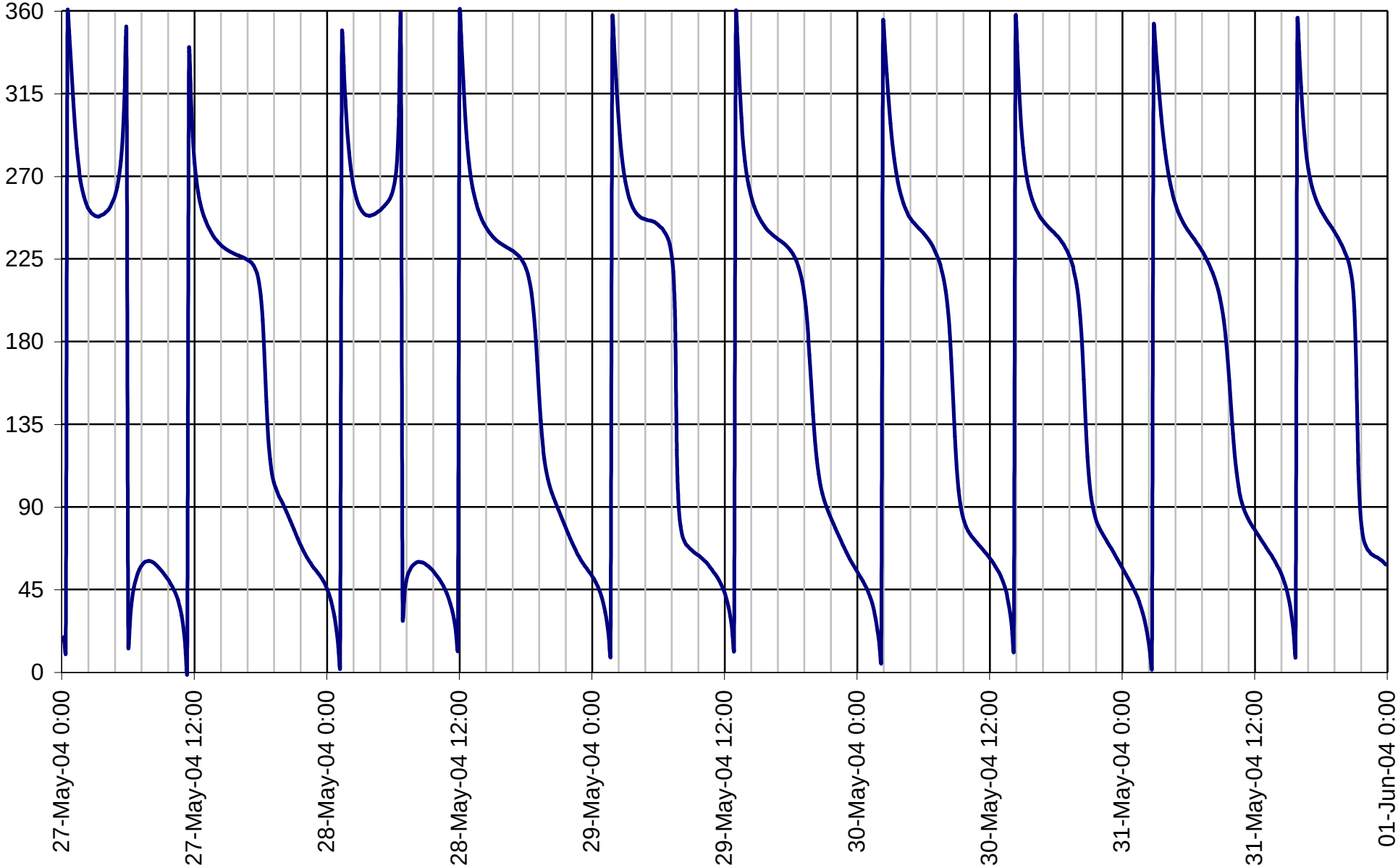


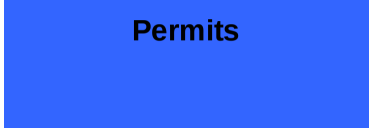
Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED



WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION




Permits

Esso Australia Pty Ltd
West Whiptail-1 PERMITS

#	Date	To/From*	Permit
1	29 October 2003	to DEH	Environmental Protection and Biodiversity Conservation Act 1999 (EPBC) Referral - 2004/2005 Bass Strait Drilling Program.
2	12 November 2003	to DEH	Resubmit EPBC Referral - 2004/2005 Bass Strait Drilling Program.
3	28 November 2003	to DPI	West Whiptail-1 Application to Drill
4	9 December 2003	From DEH	Decision that Esso Australia Pty Ltd/Exploration (mineral, oil, gas)/Bass Strait/VIC/2004/2005 drilling program for exploration and production (VIC 01-06, 09-11, 16, 18 & 19 and VIC/RL 01 & 04 EPBC 2003/1282 is not a controlled action under the EPBC Act 1999.
5	30 January 2004	to DPI	Request for the Acceptance of the Bass Strait MODU Drilling Program Environment Plan.
6	24 February 2004	to DPI	Submission of the Standard Operations Manual for Jack-up / Platform / Barge Drilling.
7	1 March 2004	to DPI	Request for Consent to Use the ENSCO 102 Jack-up; Acceptance of the ENSCO 102 & Esso Safety Case Bridging Document; and the ENSCO 102 Bridging Emergency Response Plan.
8	2 March 2004	from DPI	Acceptance of the Bass Strait MODU Drilling Program Environment Plan (Supplement to the Bass Strait Environment Plan)
9	4 March 2004	to DPI	West Whiptail-1 Approval to Drill.
10	10 March 2004	from DIER	MODU ENSCO 102 Consent to Move into the Adjacent Area and to Yolla Production Platform. (responding to Origin's requests)
11	11 March 2004	from DPI	Notice of Prohibition of Entry into Safety Zone West Whiptail-1 Well, published in the Victoria Government Gazette.
12	11 March 2004	from DPI	MODU ENSCO 102 approval for the Rig Move into the Adjacent Area and Acceptance of the Safety Case Bridging Document.
13	11 March 2004	from DPI	Consent to Drill West Whiptail-1 Exploration Well in Vic/L1.
14	22 March 2004	to DPI	Clarification of drilling within 300m of a licence area boundary.
15	1 April 2004	from DPI	West Whiptail-1 Exploration Well in Vic/L1 - Advice the Section about drilling within 300m of a licence boundary was repealed in 2000.
16	21 April 2004	to AMSA & DPI	Approval to move ENSCO 102 from Offload Location to West Whiptail-1.
17	22 April 2004	from AMSA	AMSA Consent to move ENSCO 102 from Offload Location to West Whiptail-1.
18	27 April 2004	from DPI	DPI Consent to move ENSCO 102 from Offload Location to West Whiptail-1.
19	27 April 2004	to DPI	Copy of ENSCO 102 Move, Preload and Exit Program for West Whiptail-1 sent for information.
20	4 May 2004	to AMSA & DPI	ENSCO 102 Rig Move from Offload Location to West Whiptail-1 Update.

#	Date	To/From*	Permit
21	6 May 2004	to MRCC, DOT, AMSA, DPI	Advice of Rig Move from Offload Location to West Whiptail-1.
22	8 May 2004	to MRCC, DOT, AMSA, DPI	Advice of Rig Arrival at West Whiptail-1.
23	17 May 2004	to DPI	Request for Approval to Deepen West Whiptail-1.
24	17 May 2004	from DPI	Consent to Deepen West Whiptail-1 Exploration Well in VIC/L1.
25	21 May 2004	to DPI	Request for Approval to Abandon West Whiptail-1.
26	21 May 2004	from DPI	Consent to Plug and Abandon West Whiptail-1 Exploration Well.
27	5 May 2004	to MRCC, DOT, AMSA, DPI	Advice of Rig Move from West Whiptail-1 to Yolla Platform.
28	21 May 2004	to DPI	Advice on the details of the West Whiptail-1 P&A and seabed survey.

* AMSA Australian Maritime Safety Authority
DPI Department of Primary Industry, Minerals & Petroleum Victoria
DEH Department of Environment and Heritage
DIER Department of Infrastructure, Energy and Resources, Mineral Resources Tasmania
DOT Department of Transport
MRCC Maritime Rescue Co-ordination Centre

Esso Australia Pty Ltd
ABN 49 000 018 566

12 Riverside Quay
Southbank VIC 3006
GPO Box 400C
Melbourne VIC 3001
Telephone: 61 3 9270 3333

29th October, 2003

Mr. S. Mercer
Referrals Section
Department of Environment and Heritage
PO Box 787
Canberra, ACT 2601

Our Ref: DD:7073/CPM

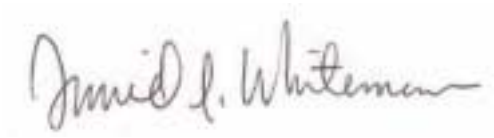
Dear Steve,

EPBC REFERRAL - 2004/2005 Bass Strait Drilling Program

Please find attached the referral for our proposed Bass Strait Drilling Program. As per recent discussions and reviews between Ms. S. Riddell and our Mr. P. May we have prepared a single referral under the EPBC Act to cover these activities.

If you would like to discuss this referral further or have in queries in relation to this submission, please contact Sarah Sheales on (03) 9270 3314.

Yours sincerely,
Esso Australia Pty Ltd
(for and on behalf of Esso Australia Resources Pty Ltd)
(ARN 62 091 829 819)



Daniel L. Whiteman
Drilling Manager

/Attach.

bcc: R.H.Reinten (SRO files)
G.A. Nash
S. Sheales

File: West Whiptail-1 Well File, 2.2.1 Environmental
West Moonfish-1 Well File, 2.2.1 Environmental

Environment Protection and Biodiversity Conservation Act 1999

Referral Form

1. Contacts and proponent

1.1 Person making the referral
(Note: The term "person" can refer to an individual or a corporation)

Esso Australia Pty Ltd
12 Riverside Quay
Southbank, VIC, 3006
Phone – 03 9270 3333
Fax – 03 9270 3546

1.2 Person(s) proposing to take the action. (Contact on behalf of Esso Australia Pty Ltd)

Mr Dan Whiteman

Esso Australia Pty Ltd
12 Riverside Quay
Southbank, VIC, 3006

Phone – 03 9270 3422
Fax – 03 9270 3546

Email: daniel.l.whiteman@exxonmobil.com

1.3 Person(s) who will be the proponent for the action

As Above

2. Description of the proposal

2.1 Provide a *summary description* of the action (two or three sentences)

Esso Australia Pty Ltd (Esso) proposes to undertake various exploration and production drilling activities over several Licence areas and Retention Lease Areas within the Gippsland Basin, the Bass Strait over a period of two years. The location of the proposed exploration activities are indicated in Figure 1.

2.2 Details of the *location* of the project area

Where the project is of less than 1 km2 in size, provide the location as a single pair of latitude and longitude references.

Where the project area is greater than 1 $km^{2,}$ or any dimension is greater than 1 km, provide additional coordinates to enable accurate identification of the location of the project area.

Locality:

The general location of the proposed drilling program and associated activities is displayed in Figure 1. This includes those 'Licensed' areas and 'Retention Lease' areas within the Gippsland Basin, the Bass Strait as detailed in Table 2.1.1 below.
The exact location and number of wells to be drilled during this exploration program has not been finalised at this time. The first two wells are prosed to be West Whiptail–1 in Vic/L1 and West Moonfish-1 in Vic/L10. The final number and location of wells to be drilled will ultimately depend on the outcome of the ongoing assessment of the recently completed 3D seismic program, which was conducted over this area.

Table 2.1.1 Locality of proposed drilling area

Licence Type	Licence Number
*VIC/RL	01, 04 & 11
**VIC/L	01, 02, 03, 04, 05, 06, 09, 10, 16, 18 & 19.

*Victorian Retention Lease **Victorian / Licence

Please provide a brief physical description of the project area (a more detailed description is required at section 3 of this form).

Bass Strait is a high energy environment exposed to frequent storms and significant wave heights. The highest wave conditions are generally associated with strong west to south-west winds caused by the eastward passage of low pressure systems across Bass Strait.

In the Gippsland basin, seabed material is predominantly calcium carbonate comprised of calcarenites, marls and marine shales. The grain size of sediments around the exploration area are within a 0.25-0.5 mm range (equivalent to sand) (Jones and Davies 1983).

Attach an A4 size map showing the location and approximate boundaries of the area in which the project is to occur (This map, or a second attached map, should also show features mentioned in responses to questions in part 3 of this referral.)

2.3 Provide the *timeframe* in which the action is proposed to occur. Include start and finish dates where applicable.

This extended exploration drilling program is scheduled for a period between January 2004 and December 2005. The exact timing for drilling individual wells is not known at this stage and is dependant on MODU availability, the wells to be drilled and the scope for each well. The program flexibility is highly limited and the suspension of drilling operations at any given time is not proposed.

2.4 Provide a *description* of the action, including *all* activities proposed to be carried out as part of the proposed action.

Esso proposes to drill exploration and production wells from both Moored Floating Mobile Offshore Drilling Units (MODU) and Jack-up MODU's. The

wells proposed will be either vertical or directional oil or gas wells as required to determine if significant hydrocarbon accumulations are present. In the event that any production testing of wells was planned, such testing would only occur after the development and approval of an amended EPBC Notice of Referral.

The proposed drilling fluid scheme is a Water Based Mud (WBM). Synthetic or oil based mud is not proposed for this exploration drilling program. The MODU(s) to be contracted for this proposed drilling operation are not known at this time.

The drilling program is yet to be fully developed, however the following standard equipment and procedures will be used:

- Cuttings and drilling fluid will be returned to the seafloor while drilling riserless;
- Surface casing will be set and cemented to the seafloor;
- A Blow-Out Prevention (BOP) stack and riser will be installed;
- Intermediate casing may be set and cemented if required.

In the event that significant hydrocarbons are encountered wells may be deepened, and/or a production casing string may be set and cemented. These wells will then either be plugged with cement plugs and abandoned or suspended.

Drilled cuttings will be continuously discharged overboard after separation from recirculated drilling fluid by vibrating screens (shale-shakers) and to a lesser extent, desanders and desilters. Cuttings discharged can be expected to range from very fine to very coarse (<1 cm) particle/sediment size. The volume of cuttings discharged will depend on the depth of wells drilled, however will be typically in the order of magnitude of 225 m^3 for a well depth of 2,000 m.

2.5 Provide an *explanation of the context* in which the action is proposed to take place, including any relevant planning framework, in which the action is proposed (for example, relevant management plans or State or Local Government approvals).

An Environment Plan (EP) will be prepared for the overall drilling campaign for each MODU contracted, as required under the Petroleum (Submerged Lands) (Management of Environment) Regulations 1999 for the Victorian Designated Authority, the Department of Primary Industries (DPI). This plan will address the drilling programs from a risk based context and will include an implementation plan, containing agreed performance objectives, defined roles and responsibilities and reporting requirements. Well drilling design and execution will be conducted under the framework of the ExxonMobil Development Company Drilling 'Operations Integrity Management System' (OIMS) and the EP, which will ensure that all potential hazards to the environment are identified, assessed and either avoided or managed to an acceptable level.

Oil spill risks associated with well drilling activities will be managed in accordance with Esso's approved Bass Strait Emergency Response Manual that includes the Oil Spill Contingency Plan (OSCP).

2.6 Indicate whether, and in what way, the action is *related to other actions* or proposals in the region.

This proposed drilling program is part of Esso's ongoing oil and gas production in Bass Strait.

Esso Australia Pty Ltd operates 21 oil and gas projects within the Gippsland Basin, under permits on behalf of the Gippsland Basin Joint Venture as administered by the DPI, Minerals Petroleum Victoria division as the Designated Authority. The existing operations comprise staffed and not normally staffed production platforms, monotowers and subsea completions.

The Longford plants receive Bass Strait production by pipeline and are located about 20 km south east of Sale and 12 km from the coast in the Gippsland region of Victoria. Gas processing and crude oil stabilisation operations take place at Longford.

The primary objective of the exploration and production wells is to discover oil, condensate or gas deposits that can be economically developed and contribute to the existing production from Bass Strait.

3. Description of the project area and the affected area

3.1 Describe the affected area, referring, as appropriate, to attached maps. In particular, indicate on the map the location of any of the following features: World Heritage properties, Ramsar wetlands, listed threatened species or communities and/or known habitat for these species or communities, listed migratory species and/or known habitat for these species, Commonwealth marine areas and Commonwealth land.

The general location of the proposed activity is indicated in Figure 1 in Attachment 1 and described in section 2.2.

There are no marine reserves, World Heritage properties, or areas listed or nominated on the Register of the National Estate, or listed Ramsar wetlands in the immediate vicinity of the proposed drilling program location. The closest Ramsar wetlands are located onshore, approximately 10km from the nearest retention lease area (VIC/RL1)(Refer to Figure 2). The closest marine national reserve to the exploration area is the Ninety Mile Beach Marine National Park near Seaspray, which is located approximately 20 km from the closest Retention Lease (VIC/RL1) (Refer to Figure 2).

General
Bass Strait is a high energy environment exposed to frequent storms and significant wave heights. The highest wave conditions are generally associated with strong west to south-west winds caused by the eastward passage of low pressure systems across Bass Strait.

In inshore areas of Bass Strait, video observations indicate the seabed consists of symmetrical wave-generated sandy ripples, becoming more shelly in the troughs as the depth increases (Black et al, 1994). The bedforms near the coast are wave generated and aligned approximately perpendicular to the coast. Further offshore, a change to an irregular bed colonised by marine grown occurs near 35-40 m depth. This is the depth at which wave orbital velocities generated during storms no longer exceed the threshold velocity for sediment transport.

Benthic Environment
Although specific seabed surveys have not been conducted at all potential well sites, Esso has undertaken various studies in eastern Bass Strait. These studies show the seabed material is likely to be predominantly calcium carbonate comprised of calcarenites, marls and marine shales. Sediment particle sizes in the vicinity of the well are likely to be similar in size to sand (0.25 – 0.5 mm). Seabed surveys which have been conducted by Esso, within the Gippsland Basin indicate that significant rock substrate structures do not occur within the region of the proposed exploration program. This void of rocky substate within the Gippsland Basin is confirmed by Geoscience Australia in Butler *et. al*. (2002).

Benthic sampling in the Bass Strait has consistently shown a highly diverse array of invertebrate groups with several polychaete families, pycnogonids, pericarid crustaceans, opisthobranch molluscs, bryozoans and brachiopods being the most species rich.

Cetaceans

Cetacean species listed under the EPBC Act may migrate or move through the proposed exploration area, however, none of the species listed are dependent upon the area for food or reproduction. The Humpback Whale occurs regularly in the region while migrating to and from the north eastern Australian coast from the sub-Antarctic, but does not feed in Bass Strait. Low numbers of sightings of the blue, southern right and fin whales have been made along the eastern Bass Strait coastline and offshore (Esso, 2000).

The Proponent has been conducting a whale spotting program since 1987. From the Esso (2000) sightings records the majority of humpback whales pass through the region during October and November, however incidental reporting has been made at other times of the year. Isolated sightings of blue whales, southern right whales and fin whales have occurred within the region. The area is found to be outside of the southern right whales normal major calving areas, which are located offshore from western Victoria. The proponent has procedures in place for monitoring whales and these will continue to be followed during the drilling program.

Cetacean species listed under the EPBC Act as being threatened or for migratory provisions, which may occur within the area of the drilling program, are described below in Table 3.1.1.

Table 3.1.1 Cetaceans Listed Under the EPBC Which May Occur Within the Exploration Area

Species	Occurrence in Bass Strait	Mating Season	Breeding Season	EPBC Status
Eubalaena australis – southern-right whale	Migratory	July - Aug	June - Aug	Endangered
Balaenoptera musculus – blue whale	Migratory	June – Aug (peak July)	May – Aug (peak May-June)	Endangered / Migratory Provisions
Balaenoptera physalus – fin whale	Migratory	April - Aug	April - Aug	Vulnerable
Balaenoptera borealis – sei whale	Migratory	Apr - Aug	Apr - Aug	Vulnerable
Megaptera novaeanliae – humpback whale	Migratory	June - Oct	Jun - Oct	Endangered / Migratory Provisions
Physeter macrocephalus – sperm whale	Migratory	Sept - Dec	Nov - March	Vulnerable
Baleanoptera edeni – bryde's whale	Migratory	March - Aug	March - Aug	Migratory Provisions
Caperea marginate – pygmy right whale	Migratory	Not known	Possibly year round.	Migratory Provisions
Orcinus orca – killer whale	Migratory	All year	Seasonally variable, no known calving waters in Australia.	Migratory Provisions

Sources: Bannister *et.al.*(1996), EA (2003).

Fish

Fish species which may occur within the exploration area which are listed under the EPBC Act are the great white shark (*Carchardodon carcharias)* (vulnerable / Migratory Provisions) and grey nurse shark (*Carcharias taurus*) (vulnerable). Great white sharks are uncommon but are generally known to frequent waters around seal colonies. There are known Australian fur seal colonies at Wilson's Promontory and the Skerries, each of which are located over 90 km from the nearest exploration drilling location. In general, details of the species life history are not well understood, it is not known whether white sharks make use of particular pupping areas, however pups are fully developed and independent at birth, potentially weighing up to 32 kg (EA 2000).

Grey nurse sharks may be found within the vicinity of the proposed drilling location, the species distribution is such that they are uncommon in Victorian and Tasmanian waters, however the general distribution within Australian waters includes most of the southern half of the continent (EA 2000b). The species has been recorded at a range of depths, however is generally found between 15 m and 25 m (EA 2000). The precise timing of mating and pupping in Australian waters is not known.

Avifauna

Migratory and threatened seabirds, some of which will be protected by international agreements (Bonn Convention, JAMBA and CAMBA) may pass through or near to exploration activities on their way to islands in the Bass Strait and/or Tasmania. Foraging groups of seabirds are also sighted, sporadically, in the eastern Bass Strait area. Avifauna species which are listed under the EPBC which may potentially pass through the exploration region are described below in Table 3.1.2.

Table 3.1.2: Avifauna of the Study Area Protected under Act

Species	Status	Migratory Provisions	Type of Presence
Diomedea amsterdamensis - Amsterdam Albatross	End	Yes	Species or species habitat may occur within area
Diomedea antipodensis – Antipodean Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea dabbenena - Tristan Albatross	End	Yes	Foraging may occur within area
Diomedea epomophora - Southern Royal Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea exulans – Wandering Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea gibsoni - Gibson's Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea sanfordi - Northern Royal Albatross	End	Yes	Species or species habitat may occur within area
Macronectes giganteus – Southern Giant-Petrel	End	Yes	Species or species habitat may occur within area

Species	Status	Migratory Provisions	Type of Presence
Macronectes halli - Northern Giant-Petrel	Vul	Yes	Species or species habitat may occur within area
Thalassarche bulleri - Buller's Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche cauta - Shy Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche chrysostoma – Grey-headed Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche impavida - Campbell Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche melanophris – Black-browed Albatross	Nil	Yes	Species or species habitat may occur within area
Thalassarche salvini - Salvin's Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche steadi - White-capped Albatross	Vul	Yes	Species or species habitat may occur within area

Notes: End = Endangered, Vul = Vulnerable.
Data Source: EA 2003, ABC (2002).

3.2 Provide a *description of important features* of the project area and the affected area and show these on the attached map, including (if relevant to the project area or affected area) information about:

(a) soil and vegetation characteristics;
(b) water flows, including rivers, creeks and impoundments;
(c) the presence of outstanding natural features, including caves;
(d) gradient;
(e) any buildings or other infrastructure;
(f) any marine areas;
(g) kinds of fauna in the area; and
(h) the current state of the environment in the area, including information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The general location of the proposed activity is displayed in Figure 1. The area is entirely within Commonwealth waters. A description of the environment of the proposed exploration program is provided in Section 3.1.

3.3 What is the *tenure* of the project area (for example is it freehold, leasehold or some other tenure)? If practicable, show on the attached map.

The proposed drilling area is located within 'production licence' and 'retention lease' areas (refer to Figure 1). The Permits are operated by Esso Australia Pty Ltd on behalf of the Gippsland Basin Joint Venture and is administered by the DPI, Minerals Petroleum Victoria division as the Designated Authority.

3.4 What are the current and/or proposed *land uses* for the project area?

The proponent currently operates 21 oil and gas projects within the Gippsland Basin, under permits on behalf of the Gippsland Basin Joint Venture as administered by the DPI, Minerals Petroleum Victoria division as the Designated Authority. The existing operations comprise staffed and not normally staffed production platforms, monotowers and subsea completions.

The Longford plants receive Bass Strait production by pipeline and are located about 20 km south east of Sale and 12 km from the coast in the Gippsland region of Victoria. Gas processing and crude oil stabilisation operations take place at Longford.

4. Nature and extent of the likely impacts of the action

4.1 Describe, as relevant to your project, the nature and extent of *likely impacts* on the following matters protected by the EPBC Act:

- the world heritage values of a declared World Heritage property; or
- the ecological character of a declared Ramsar wetland; or
- the members of a listed threatened species (except a conservation-dependent species) or any threatened ecological community, or their habitat, or
- the members of a listed migratory species or their habitat; or
- the environment in part of the Commonwealth marine area; or
- the environment on Commonwealth land.

- **the world heritage values of a declared World Heritage property;**

  It is anticipated that disturbance to the Commonwealth marine area will be limited to the effects of water based drilling mud and cuttings causing temporary localised effects on benthic fauna only. According to Hinwood et al. (1994) the plume created by a discharge of drill cuttings can be expected to dilute by a factor of at least 10,000 within 100 m of the point of discharge.

- **the ecological character of a declared Ramsar wetland;**

  The proposed drilling program will not cross to onshore land, nor will it impact on the adjacent coastal areas and so will not impact on any wetland areas.

- **the members of a listed threatened species (except a conservation-dependent species) or any threatened ecological community, or their habitat, and**
- **the members of a listed migratory species or their habitat;**

  Benthic Community
  The drilling program is unlikely to have any significant, long lasting effects on benthic communities due to the associated water depth, and significant ocean current regime. There will be minor localised impact within a radius of approximately 5 m from the well where a cuttings pile will generate during the riserless section of the well. The extensive nature of the habitat and nature of the seabed indicates a high potential for recovery of benthic fauna from physical disturbance.

  The Museum of Victoria conducted an extensive survey of benthic invertebrates in Bass Strait from 1979-1983 (Wilson and Poore, 1987). In

general a highly diverse array of invertebrate groups was found, with several polychaete families, pycnogonids, pericarid crustaceans, opisthobranch molluscs, bryozoans and brachiopods being the most species rich. The main findings were:

- The remarkably high diversity of a wide range of invertebrate groups has been a recurrent observation of all surveys in Bass Strait and diversity is high compared with equivalent areas of the northern hemisphere.
- Many species are widely distributed across the strait, suggesting heterogenous sediments and many microhabitats.

From this it can be ascertained that, though the drilling program may have a localised impact on the benthic communities at the well location, it will not result in a significant regional impact as a result of high diversity and distribution of species in Bass Strait. Any support vessels mobilised to site from overseas are required to comply with the AQIS Australian Ballast Water Guidelines to minimise the potential for any introduction of exotic marine organisms. In addition, the water depth and distance from the coast will effectively further reduce the risks of exotic introductions.

Cetaceans:

Esso recognise that the peak Humpback whale migration period within the Bass Strait (October – November) will coincide with the drilling program. The drilling program is such that flexibilities do not exist so as to cease activities during this period, given that the likely impacts to cetaceans are minimal.

Studies conducted by the American Petroleum Institute (API) have indicated that the underwater sound produced through the operation of a MODU overlap with the hearing frequencies of baleen whales, potentially found within the Gippsland Basin. However at distances of greater than 1 km it is anticipated that noise produced from a MODU will be undetectable (API 1986).

The eastern Bass Strait region contains 21 oil and gas installations, which have associated support vessel traffic. It also supports a significant portion of the community through commercial fishing activities. The small increase in support vessel movements (approximately 1 vessel movement per day) in the region are unlikely to have any significant impact on whale migration behaviour.

Noise associated with drilling exploration is likely to result in avoidance of the immediate proximal area by whales. Given the location of the proposed exploration program, such avoidance is considered to have insignificant impact to cetaceans.

Further impact mitigation measures to be used during the exploration program in general and in particular during the peak Humpback whale migration period will include:

- Support vessels and aircraft will attempt to remain at least 300 m from whales and vessels will slow to idle ‘no wake speed’ where whales are sighted proximal to such vessels,
- Sudden or repeated changes in speed or direction will be avoided where whales are sighted,

- When moving away from whales, idle 'no wake speed' will be maintained until such time as the most proximal whale is more than 300 metres from a vessel.
- General shipping and aircraft regulations will be observed at all times.

Fish:

It is considered highly unlikely that the proposed drilling activity will have any affect on the great white shark or grey nurse shark. The permit area is not classified as being a habitat critical for the protection of either species and EA (2000 & 2000a) describe potential major threats to both species as being; shark control activities, commercial and recreational fishing. Further threats to these species include the potential behavioural changes caused to Great White Sharks by berleying practices associated with ecotourism and the practice of shark finning (the removal of the sharks fins, prior to returning it to the water) in the case of grey nurse sharks.

Avifauna

Drilling activities are considered unlikely to have any significant impact on the movements of migratory and sea bird species. Whilst a large number of sea birds utilise and pass through the Bass Strait, there are no areas of bird colonies close to the proposed exploration zone, nor is the Gippsland basin known to be of particular value in terms of feeding grounds. Some species, especially cormorants, roost at Cape Conran (Norris & Mansergh 1981). Colonies occur to the west of the offshore operations in Corner Inlet and on the islands around Wilson's Promontory, and to the east at the Skerries, Tullaberga Island and Gabo Island (Harris & Norman 1981); all of these locations are more than 50km from the proposed exploration area.

- **the environment in part of the Commonwealth marine area;**

  Given the reasons detailed in the proceeding sections, it is highly unlikely that any effect will occur as a result of the proposed works.

- **the environment on Commonwealth land.**

  It is highly unlikely that any effect will occur as a result of the proposed works. Onshore activities will be generally limited to associated waste disposal activities, all drilling will occur offshore and within Commonwealth waters.

4.2 Indicate if your action is:

- (a) a nuclear action; or
- (b) will be taken by the Commonwealth or by a Commonwealth agency; or
- (c) will be taken in a Commonwealth marine area; or
- (d) will be taken on Commonwealth land.

If your action falls into one of these categories, provide details about the impact of your action on the environment generally (ie, in addition to the specific matters addressed above in 4.1):

- **(a) a nuclear action; or**
  The proposed drilling program is not a nuclear action.
- **(b) will be taken by the Commonwealth or by a Commonwealth agency; or**
  The proposed drilling program will not be taken by the Commonwealth or by a Commonwealth agency.
- **(c) will be taken in a Commonwealth marine area; or**

The proposed drilling program will be undertaken in a Commonwealth marine area.

- **(d) will be taken on Commonwealth land.**

The proposed drilling program will not be undertaken on Commonwealth land.

5. Information sources

For information given in sections 3 and 4 of this referral, please indicate:

(a) the source of the information; and

(b) how recent the information is; and

(c) how the reliability of the information was tested; and

(d) any uncertainties in the information.

The following sources have been used to prepare this document. The area of investigation has been under the Proponent's operation since 1967 and as such the area is familiar to the Proponent. Not with standing this, the report has been prepared undertaking best endeavours to acquire the latest available information sources.

1. ABC (2002) "Bird Atlas" Birds Australia, AcroMap Pty Ltd and ABC Science Online, www.abc.net.au/birds/mapviewer.html.

2. American Petroleum Institute (1986) “Underwater Drilling-Measurement of Sound Levels and their Effects on Belukah Whales” API Publication No. 4438, Washington.

3. Bannister, JL; Kemper, CM and Warneke, RM (1999) “The Action Plan for Australian Cetaceans” Wildlife Australia, Environment Australia, Canberra.

4. Black KP, Brand GW, Gwyther D, Hammond LS, Mourtikas S, Noyes-Fitzsimmons RL, Smith JM and Richardson BJ (1994) "Coastal Facilities. In: Environmental implications of offshore oil and gas development in Australia - the findings of an independent scientific review" Swan JM, Neff JM and Young PC (Eds), Australian Petroleum Exploration Association, Sydney pp 409-506.

5. Butler A, Althaus F, Furlani D and Ridgway K, (2002) “Assessment of the Conservation Values of the Bass Strait Sponge Beds Area – A Component of the Commonwealth Marine Conservation Assessment Program 2002-2004.” CSIRO Marine Research. Hobart, Tasmania.

6. Department of Foreign Affairs (1974) "Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment" Australian Government Publishing Service, Canberra.

7. Department of Foreign Affairs and Trade (1979) "Convention on the Conservation of Migratory Species of Wild Animals" Australian Government Publishing Service, Canberra.

8. Department of Foreign Affairs and Trade (1986) "Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment" Australian Government Publishing Service, Canberra.

9. DNRE (2000) "Biomap - A flora and fauna information product: Mapsheet T8321-1-3 - Collier Hill" Department of Natural Resources and Environment, East Melbourne.

10. DNRE (2000a) "Biomap - A flora and fauna information product: Mapsheet T8321-1-2 – Golden Beach" Department of Natural Resources and Environment, East Melbourne.

11. EA (1997) "Australian Ramsar Sites - Site 21: Gippsland Lakes" www anca aov au/environm/wetlands/site21.htm.

12. EA (2000) "Draft Recovery Plan for Great White Sharks, Carcharodon catcharias: in Australia" Environment Australia, Canberra.

13. EA (2000b) “Draft Recovery Plan for Grey Nurse Sharks, Carcharitas taurus, in Australia” Wildlife Management Section, Biodiversity Group, Canberra.

14. EA (2003) EPBC Interactive Map at EA website: http://www.ea.gov.au/erin/ert/epbc/index.html.

15. Ecology, Labrador Petro-Management Ltd and Sea Research) (1994) "Drilling Activities. In: Environmental implications of offshore oil and gas development in Australia - the findings of an independent scientific review" Swan JM, Neff JM and Young PC (Eds), Australian Petroleum Exploration Association, Sydney pp 123-207.

16. Environment Conservation Council (1999) “Marine Coastal & Estuarine Investigation – Draft Report for Public Comment” Environment Conservation Council, East Melbourne.

17. Esso (2000) Internal records of whale sightings from Esso Operated Activities from 1987 to 2000.

18. Harris, M.P., and Norman, F.I., (1981). Distribution and Status of Coastal Colonies of Seabirds in Victoria. Mem.Nat.Mus.Vic. 42:89-106.

19. Hinwood JB, Poots, AE, Dennis, LR, Carey JM, Houridis H, Bell RJ, Thomson JR, Boudreau P and Ayling AM. Australian Marine and Offshore Group Pty Ltd (in association with Marine Science and Ecology, Labrador Petro-Management Ltd and Sea Research) (1994) “Drilling Activities. In: Environmental Implications of Offshore Oil and Gas Development in Australia – the findings of an independent scientific review, Swan, JM, Neff, JM and Young, PC (Eds)” Australian

Petroleum Exploration Association, Sydney, pp 123 – 207

20. Jones, HA and Davies, PJ (1983) "Surficial Sediments of the Tasmanian Continental Shelf and Part of Bass Strait" Bureau Mineral Resources, Geology and Geophysics Bulletin 218, Australian Government Publication, Act pp 25.

21. Norris, K.C. and Mansergh, I.M., (1981). Sites of Zoological Significance in East Gippsland. Ministry of Conservation, Environmental Studies Division Report No. 321.

22. Tucker, M (1991) "Whales and Whale Watching in Australia" Australian National Parks and Wildlife Service, Canberra.

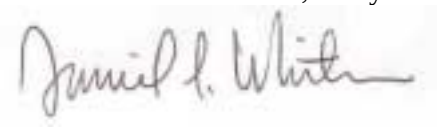
23. Wilson, RS and Poore, GCB (1987)"The Bass Strait Survey: biological sampling stations 1979-1984" Occ. Papers Museum of Victoria 3 pp 1-14.

Seabed information, including sediments and infauna descriptions, were collected by the Museum of Victoria and Esso Australia during the years 1979 to 1993. Whale species distribution was obtained from observations made from Esso platforms, vessels and helicopters. Knowledge on the distribution and abundance of seabirds in the Bass Strait is limited.

6. Signatures and Declarations

6.1. Signature of person making the referral

I, Daniel L. Whiteman, for and on behalf of Esso Australia Pty Ltd, declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature 

Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd

Date 29 October 2003

6.2. Declaration of person nominated as proponent in Section 1.3, if different from person proposing to take the action

I, …….*(full name*), being (or agent acting on behalf of) the person nominated in Section 1.3 of this referral form as the nominated proponent agree to be designated as the proponent for the action described above if it is decided that the action requires approval under Part 9 of the EPBC Act.

Signature

Date

Signature of person proposing to take the action

Date

6.3. Statement by person making this referral on whether or not they believe the referred action to be a controlled action and identification of relevant controlling provisions
(Note: This Section must be completed in *all cases* except where the referral is made by a State or Territory or a Commonwealth agency in relation to an action to be taken by another person.)

*If you think your proposed action **is not likely to have a significant impact** on any of the matters listed in the table below, then you should select and complete the following statement and you should **not** mark any of the boxes in the table below.*

I, Daniel L. Whiteman, for and on behalf of Esso Australia Pty Ltd, being the person making this referral and the person proposing to take the action (or agent acting on behalf of the person) believe that the action described in this referral **is not a controlled action.**

OR

*If you think that your proposed action **is likely to have a significant impact** on any of the matters listed in the table below, then you should select and complete the following statement. You must then mark 'Yes' against those matters on which you think it will have a significant impact, in the table below.*

I …….*(full name*), being the person making this referral and the person proposing to take the action (or agent acting on behalf of the person) believe that the action described in this referral **is a controlled action because of the following provisions of the Act**:

Significant Impact Likely	**Controlling Provision**
	World Heritage property (Sections 12 and 15A - significant impacts on the values of a World Heritage property)
	Ramsar Wetland (Sections 16 and 17B - significant impacts on the ecological character of a Ramsar wetland)
	Threatened species or ecological communities (Section 18 and Section 18A - significant impacts on a listed threatened species or a listed threatened ecological community)
	Migratory species (Sections 20 and 20A - significant impacts on a listed migratory species)
	Nuclear action (Sections 21 and 22A - nuclear actions)

	Commonwealth marine area (Sections 23, 24 and 24A - actions relating to the Commonwealth marine area and fishing in coastal waters managed by the Commonwealth)
	Commonwealth land (Sections 26 and 27A - actions relating to Commonwealth land)
	Commonwealth action (Section 28 - actions by the Commonwealth having a significant impact on the environment)

Briefly provide reasons why you believe your proposed action is or is not a controlled action:
(Note: For an explanation of the term "controlled action", see the Referral Guide that accompanies this form.)

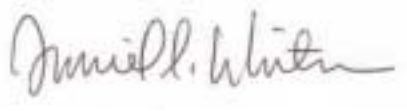
Esso Australia Pty Ltd believes the various exploration and production drilling activities over several Licence areas and Retention Lease Areas within the Gippsland Basin is not a controlled action under the EPBC Act.

The exploration and production drilling activities will have no effect on any World Heritage Property, RAMSAR wetlands, Commonwealth Land or any listed threatened ecological community.

Likely impacts to the Commonwealth marine area are limited to localised and temporary seabed disturbance as a result of cuttings discharge and placement of subsea equipment.

Activities associated with the various exploration drilling activities are temporary and unlikely to have a significant effect on any listed threatened species or migratory species, or their habitat. These species are likely to be transient through the area and the action will not significantly interfere with their breeding, feeding and migration.

The proposed action will be subject to a P(SL)A Environment Plan which will ensure that activities are conducted in an environmentally responsible manner.

Signature 

Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd

Date 29 October 2003

If the person making this referral is, or is representing, a *small business* (a business having fewer than 20 employees), please provide an estimate of the time taken to complete this form

Please Include

- The time spent reading the instructions, working on the questions and obtaining the information; and
- The time spent by all employees in collecting and providing this information.

hours minutes

END OF FORM

Figure 1: Locality

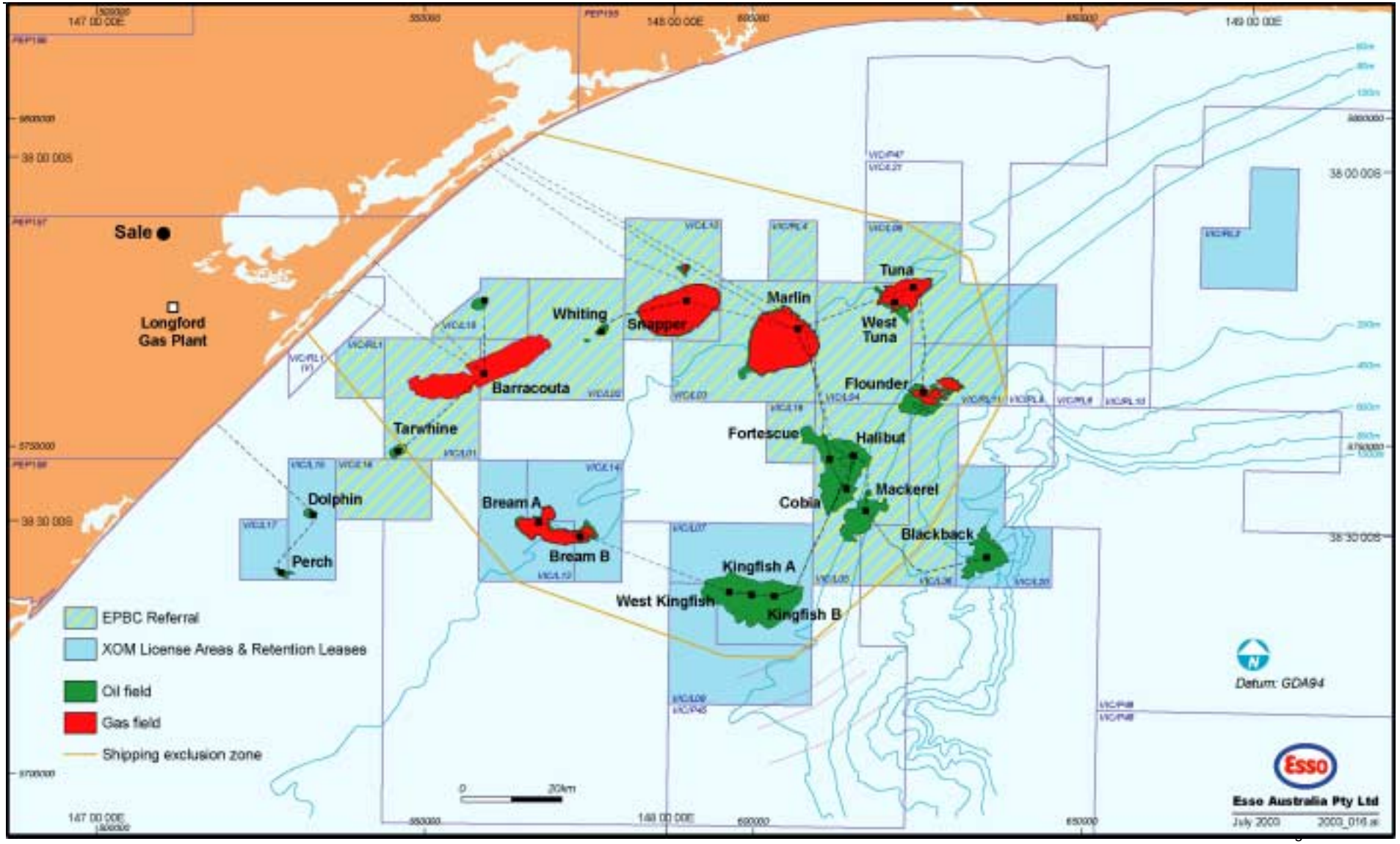
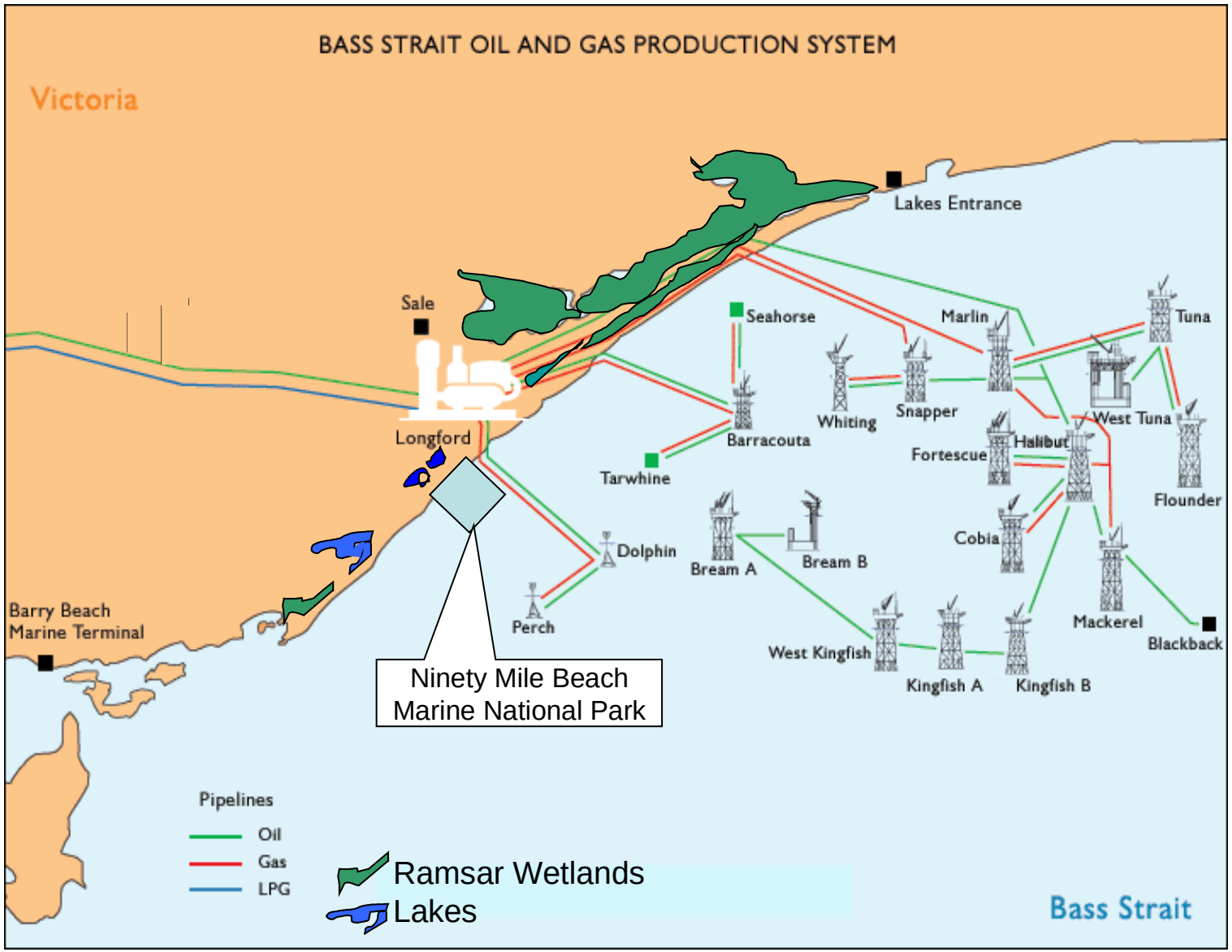


Figure 2: Bass Strait Oil and Gas Production System



Esso Australia Pty Ltd
ABN 49 000 018 566

12 Riverside Quay
Southbank VIC 3006
GPO Box 400C
Melbourne VIC 3001
Telephone: 61 3 9270 3333

12th November, 2003

Mr. S. Mercer
Referrals Section
Department of Environment and Heritage
PO Box 787
Canberra, ACT 2601

Our Ref: DD:7083/CPM

Dear Steve,

Resubmit EPBC Referral - 2004/2005 Bass Strait Drilling Program

Please withdraw the Esso Australia Pty Ltd (Esso) referral dated 29th October, 2003 for our proposed Bass Strait Drilling Program, and replace it with the attached referral.

Following communications between Manel Samarakoon of your department and our Sarah Sheales, we have modified our referral, principally by adding Table 2.1.2 to define the Latitudes and Longitudes of the area covered by the referral, and by adding cross-references from Table 2.1.2 to Figure 1 in the referral.

If you would like to discuss this referral further or have in queries in relation to this submission, please contact Sarah Sheales on (03) 9270 3314.

Yours sincerely,
Esso Australia Pty Ltd
(for and on behalf of Esso Australia Resources Pty Ltd)
(ARN 62 091 829 819)

Daniel L. Whiteman
Drilling Manager

/Attach.

bcc: R.H.Reinten (SRO files)
G.A. Nash
S. Sheales

File: West Whiptail-1 Well File, 2.2.1 Environmental
West Moonfish-1 Well File, 2.2.1 Environmental

Environment Protection and Biodiversity Conservation Act 1999

Referral Form

1. Contacts and proponent

1.1 Person making the referral
(Note: The term "person" can refer to an individual or a corporation)

Esso Australia Pty Ltd
12 Riverside Quay
Southbank, VIC, 3006
Phone – 03 9270 3333
Fax – 03 9270 3546

1.2 Person(s) proposing to take the action. (Contact on behalf of Esso Australia Pty Ltd)

Mr Dan Whiteman

Esso Australia Pty Ltd
12 Riverside Quay
Southbank, VIC, 3006

Phone – 03 9270 3422
Fax – 03 9270 3546

Email: daniel.l.whiteman@exxonmobil.com

1.3 Person(s) who will be the proponent for the action

As Above

2. Description of the proposal

2.1 Provide a *summary description* of the action (two or three sentences)

Esso Australia Pty Ltd (Esso) proposes to undertake various exploration and production drilling activities over several Licence areas and Retention Lease Areas within the Gippsland Basin, the Bass Strait over a period of two years. The location of the proposed exploration activities are indicated in Figure 1.

2.2 Details of the *location* of the project area

Where the project is of less than 1 km2 in size, provide the location as a single pair of latitude and longitude references.

Where the project area is greater than 1 $km^{2,}$ or any dimension is greater than 1 km, provide additional coordinates to enable accurate identification of the location of the project area.

Locality:

The general location of the proposed drilling program and associated activities is displayed in Figure 1. This includes those 'Licensed' areas and 'Retention Lease' areas within the Gippsland Basin, the Bass Strait as listed in Table 2.1.1 and as detailed in Table 2.1.2 below.

The exact location and number of wells to be drilled during this exploration program has not been finalised at this time. The first two wells are prosed to be West Whiptail–1 in Vic/L1 and West Moonfish-1 in Vic/L10. The final number and location of wells to be drilled will ultimately depend on the outcome of the ongoing assessment of the recently completed 3D seismic program, which was conducted over this area.

Table 2.1.1 Locality of proposed drilling area

Licence Type	Licence Number
**VIC/L	01, 02, 03, 04, 05, 06, 09, 10, 11, 16, 18 & 19.
*VIC/RL	01 & 04

*Victorian Licence / **Victorian Retention Lease

Table 2.1.2 Latitude & Longitudes of Licence Areas and Retention Leases

Licence Area / Retention Lease	Boundary Corners (GDA 94)		Fig. 1 Ref. No.
	Latitude	Longitude	
VIC/L01	38° 14' 54.487" S	147° 30' 04.613" E	02
	38° 14' 54.478" S	147° 35' 04.598" E	03
	38° 14' 54.483" S	147° 40' 04.632" E	
	38° 19' 54.479" S	147° 40' 04.631" E	36
	38° 24' 54.488" S	147° 40' 04.632" E	37
	38° 24' 54.501" S	147° 35' 04.653" E	38
	38° 24' 54.496" S	147° 30' 04.669" E	43
	38° 19' 54.485" S	147° 30' 04.668" E	44
VIC/L02	38° 14' 54.483" S	147° 40' 04.632" E	
	38° 14' 54.486" S	147° 45' 04.614" E	
	38° 09' 54.487" S	147° 45' 04.614" E	07
	38° 09' 54.472" S	147° 55' 04.631" E	08
	38° 14' 54.469" S	147° 55' 04.633" E	34
	38° 19' 54.461" S	147° 55' 04.633" E	35
	38° 19' 54.479" S	147° 40' 04.631" E	36
VIC/L03	38° 09' 54.467" S	148° 05' 04.596" E	11
	38° 09' 54.477" S	148° 10' 04.632" E	12
	38° 09' 54.452" S	148° 15' 04.615" E	15
	38° 19' 54.458" S	148° 15' 04.614" E	
	38° 19' 54.454" S	148° 10' 04.632" E	31
	38° 19' 54.456" S	148° 00' 04.616" E	32
	38° 14' 54.465" S	148° 00' 04.615" E	33
	38° 14' 54.459" S	148° 05' 04.595" E	
VIC/L04	38° 09' 54.452" S	148° 15' 04.615" E	15
	38° 09' 54.459" S	148° 20' 04.539" E	16
	38° 09' 54.462" S	148° 25' 04.580" E	
	38° 14' 54.446" S	148° 25' 04.578" E	
	38° 19' 54.441" S	148° 25' 04.633" E	
	38° 19' 54.458" S	148° 15' 04.614" E	

Licence Area / Retention Lease	Boundary Corners (GDA 94) (cont.)		Fig. 1 Ref. No.
VIC/L05	38° 19' 54.458" S	148° 15' 04.614" E	
	38° 19' 54.441" S	148° 25' 04.633" E	
	38° 29' 54.453" S	148° 25' 04.635" E	
	38° 29' 54.460" S	148° 20' 04.595" E	
	38° 34' 54.462" S	148° 20' 04.597" E	26
	38° 34' 54.467" S	148° 15' 04.616" E	27
	38° 29' 54.463" S	148° 15' 04.614" E	28
	38° 24' 54.470" S	148° 15' 04.614" E	29
VIC/L06	38° 19' 54.441" S	148° 25' 04.633" E	
	38° 19' 54.455" S	148° 30' 04.559" E	23
	38° 24' 54.460" S	148° 30' 04.614" E	24
	38° 34' 54.442" S	148° 30' 04.616" E	25
	38° 34' 54.462" S	148° 20' 04.597" E	26
	38° 29' 54.460" S	148° 20' 04.595" E	
	38° 29' 54.453" S	148° 25' 04.635" E	
VIC/L09	38° 04' 54.453" S	148° 20' 04.539" E	17
	38° 04' 54.431" S	148° 30' 04.559" E	18
	38° 09' 54.464" S	148° 30' 04.560" E	19
	38° 09' 54.448" S	148° 35' 04.542" E	20
	38° 14' 54.442" S	148° 35' 04.542" E	21
	38° 14' 54.446" S	148° 25' 04.578" E	
	38° 09' 54.462" S	148° 25' 04.580" E	
	38° 09' 54.459" S	148° 20' 04.539" E	16
VIC/L10	38° 04' 54.456" S	147° 55' 04.633" E	09
	38° 04' 54.454" S	148° 05' 04.597" E	10
	38° 09' 54.467" S	148° 05' 04.596" E	11
	38° 14' 54.459" S	148° 05' 04.595" E	
	38° 14' 54.465" S	148° 00' 04.615" E	33
	38° 14' 54.469" S	147° 55' 04.633" E	34
	38° 09' 54.472" S	147° 55' 04.631" E	08
VIC/L11	38° 14' 54.446" S	148° 25' 04.578" E	
	38° 14' 54.442" S	148° 35' 04.542" E	21
	38° 19' 54.449" S	148° 35' 04.539" E	22
	38° 19' 54.455" S	148° 30' 04.559" E	23
	38° 19' 54.441" S	148° 25' 04.633" E	
VIC/L16	38° 24' 54.504" S	147° 25' 04.688" E	42
	38° 24' 54.496" S	147° 30' 04.669" E	43
	38° 24' 54.501" S	147° 35' 04.653" E	38
	38° 29' 54.490" S	147° 35' 04.653" E	39
	38° 29' 54.486" S	147° 30' 04.670" E	40
	38° 29' 54.495" S	147° 25' 04.686" E	41
VIC/L18	38° 09' 54.482" S	147° 40' 04.633" E	06
	38° 09' 54.487" S	147° 45' 04.614" E	07
	38° 14' 54.486" S	147° 45' 04.614" E	
	38° 14' 54.483" S	147° 40' 04.632" E	
	38° 14' 54.478" S	147° 35' 04.598" E	03
	38° 14' 09.477" S	147° 35' 04.596" E	04
	38° 10' 54.489" S	147° 40' 04.634" E	05

Licence Area / Retention Lease	Boundary Corners (GDA 94) (cont.)		Fig. 1 Ref. No.
VIC/L19	38° 19' 54.454" S	148° 10' 04.632" E	31
	38° 19' 54.458" S	148° 15' 04.614" E	
	38° 24' 54.470" S	148° 15' 04.614" E	29
	38° 24' 54.469" S	148° 10' 04.634" E	30
VIC/RL1	38° 14' 54.493" S	147° 26' 24.613" E	01
	38° 14' 54.487" S	147° 30' 04.613" E	02
	38° 19' 54.485" S	147° 30' 04.668" E	44
	38° 19' 54.493" S	147° 25' 04.689" E	45
	38° 15' 54.500" S	147° 25' 04.687" E	46
VIC/RL4	38° 04' 54.449" S	148° 10' 04.632" E	13
	38° 04' 54.444" S	148° 15' 04.558" E	14
	38° 09' 54.452" S	148° 15' 04.615" E	15
	38° 09' 54.477" S	148° 10' 04.632" E	12

Please provide a brief physical description of the project area (a more detailed description is required at section 3 of this form).

Bass Strait is a high energy environment exposed to frequent storms and significant wave heights. The highest wave conditions are generally associated with strong west to south-west winds caused by the eastward passage of low pressure systems across Bass Strait.

In the Gippsland basin, seabed material is predominantly calcium carbonate comprised of calcarenites, marls and marine shales. The grain size of sediments around the exploration area are within a 0.25-0.5 mm range (equivalent to sand) (Jones and Davies 1983).

Attach an A4 size map showing the location and approximate boundaries of the area in which the project is to occur (This map, or a second attached map, should also show features mentioned in responses to questions in part 3 of this referral.)

2.3 Provide the *timeframe* in which the action is proposed to occur. Include start and finish dates where applicable.

This extended exploration drilling program is scheduled for a period between January 2004 and December 2005. The exact timing for drilling individual wells is not known at this stage and is dependant on MODU availability, the wells to be drilled and the scope for each well. The program flexibility is highly limited and the suspension of drilling operations at any given time is not proposed.

2.4 Provide a *description* of the action, including *all* activities proposed to be carried out as part of the proposed action.

Esso proposes to drill exploration and production wells from both Moored Floating Mobile Offshore Drilling Units (MODU) and Jack-up MODU's. The wells proposed will be either vertical or directional oil or gas wells as required to determine if significant hydrocarbon accumulations are present. In the

event that any production testing of wells was planned, such testing would only occur after the development and approval of an amended EPBC Notice of Referral.

The proposed drilling fluid scheme is a Water Based Mud (WBM). Synthetic or oil based mud is not proposed for this exploration drilling program. The MODU(s) to be contracted for this proposed drilling operation are not known at this time.

The drilling program is yet to be fully developed, however the following standard equipment and procedures will be used:

- Cuttings and drilling fluid will be returned to the seafloor while drilling riserless;
- Surface casing will be set and cemented to the seafloor;
- A Blow-Out Prevention (BOP) stack and riser will be installed;
- Intermediate casing may be set and cemented if required.

In the event that significant hydrocarbons are encountered wells may be deepened, and/or a production casing string may be set and cemented. These wells will then either be plugged with cement plugs and abandoned or suspended.

Drilled cuttings will be continuously discharged overboard after separation from recirculated drilling fluid by vibrating screens (shale-shakers) and to a lesser extent, desanders and desilters. Cuttings discharged can be expected to range from very fine to very coarse (<1 cm) particle/sediment size. The volume of cuttings discharged will depend on the depth of wells drilled, however will be typically in the order of magnitude of 225 m^3 for a well depth of 2,000 m.

2.5 Provide an *explanation of the context* in which the action is proposed to take place, including any relevant planning framework, in which the action is proposed (for example, relevant management plans or State or Local Government approvals).

An Environment Plan (EP) will be prepared for the overall drilling campaign for each MODU contracted, as required under the Petroleum (Submerged Lands) (Management of Environment) Regulations 1999 for the Victorian Designated Authority, the Department of Primary Industries (DPI). This plan will address the drilling programs from a risk based context and will include an implementation plan, containing agreed performance objectives, defined roles and responsibilities and reporting requirements. Well drilling design and execution will be conducted under the framework of the ExxonMobil Development Company Drilling 'Operations Integrity Management System' (OIMS) and the EP, which will ensure that all potential hazards to the environment are identified, assessed and either avoided or managed to an acceptable level.

Oil spill risks associated with well drilling activities will be managed in accordance with Esso's approved Bass Strait Emergency Response Manual that includes the Oil Spill Contingency Plan (OSCP).

2.6 Indicate whether, and in what way, the action is *related to other actions* or proposals in the region.

This proposed drilling program is part of Esso's ongoing oil and gas production in Bass Strait.

Esso Australia Pty Ltd provides services for 21 oil and gas projects within the Gippsland Basin, under permits administered by the DPI, Minerals Petroleum Victoria division as the Designated Authority. The existing operations comprise staffed and not normally staffed production platforms, monotowers and subsea completions.

The Longford plants receive Bass Strait production by pipeline and are located about 20 km south east of Sale and 12 km from the coast in the Gippsland region of Victoria. Gas processing and crude oil stabilisation operations take place at Longford.

The primary objective of the exploration and production wells is to discover oil, condensate or gas deposits that can be economically developed and contribute to the existing production from Bass Strait.

3. Description of the project area and the affected area

3.1 Describe the affected area, referring, as appropriate, to attached maps. In particular, indicate on the map the location of any of the following features: World Heritage properties, Ramsar wetlands, listed threatened species or communities and/or known habitat for these species or communities, listed migratory species and/or known habitat for these species, Commonwealth marine areas and Commonwealth land.

The general location of the proposed activity is indicated in Figure 1 in Attachment 1 and described in section 2.2.

There are no marine reserves, World Heritage properties, or areas listed or nominated on the Register of the National Estate, or listed Ramsar wetlands in the immediate vicinity of the proposed drilling program location. The closest Ramsar wetlands are located onshore, approximately 10km from the nearest retention lease area (VIC/RL1)(Refer to Figure 2). The closest marine national reserve to the exploration area is the Ninety Mile Beach Marine National Park near Seaspray, which is located approximately 20 km from the closest Retention Lease (VIC/RL1) (Refer to Figure 2).

General

Bass Strait is a high energy environment exposed to frequent storms and significant wave heights. The highest wave conditions are generally associated with strong west to south-west winds caused by the eastward passage of low pressure systems across Bass Strait.

In inshore areas of Bass Strait, video observations indicate the seabed consists of symmetrical wave-generated sandy ripples, becoming more shelly in the troughs as the depth increases (Black et al, 1994). The bedforms near the coast are wave generated and aligned approximately perpendicular to the coast. Further offshore, a change to an irregular bed colonised by marine grown occurs near 35-40 m depth. This is the depth at which wave orbital velocities generated during storms no longer exceed the threshold velocity for sediment transport.

Benthic Environment

Although specific seabed surveys have not been conducted at all potential well sites, Esso has undertaken various studies in eastern Bass Strait. These studies show the seabed material is likely to be predominantly calcium carbonate comprised of calcarenites, marls and marine shales. Sediment particle sizes in the vicinity of the well are likely to be similar in size to sand (0.25 – 0.5 mm). Seabed surveys which have been conducted by Esso, within the Gippsland Basin indicate that significant rock substrate structures do not occur within the region of the proposed exploration program. This void of rocky substate within the Gippsland Basin is confirmed by Geoscience Australia in Butler *et. al*. (2002).

Benthic sampling in the Bass Strait has consistently shown a highly diverse array of invertebrate groups with several polychaete families, pycnogonids, pericarid crustaceans, opisthobranch molluscs, bryozoans and brachiopods being the most species rich.

Cetaceans

Cetacean species listed under the EPBC Act may migrate or move through the proposed exploration area, however, none of the species listed are dependent upon the area for food or reproduction. The Humpback Whale occurs regularly in the region while migrating to and from the north eastern Australian coast from the sub-Antarctic, but does not feed in Bass Strait. Low numbers of sightings of the blue, southern right and fin whales have been made along the eastern Bass Strait coastline and offshore (Esso, 2000).

The Proponent has been conducting a whale spotting program since 1987. From the Esso (2000) sightings records the majority of humpback whales pass through the region during October and November, however incidental reporting has been made at other times of the year. Isolated sightings of blue whales, southern right whales and fin whales have occurred within the region. The area is found to be outside of the southern right whales normal major calving areas, which are located offshore from western Victoria. The proponent has procedures in place for monitoring whales and these will continue to be followed during the drilling program.

Cetacean species listed under the EPBC Act as being threatened or for migratory provisions, which may occur within the area of the drilling program, are described below in Table 3.1.1.

Table 3.1.1 Cetaceans Listed Under the EPBC Which May Occur Within the Exploration Area

Species	Occurrence in Bass Strait	Mating Season	Breeding Season	EPBC Status
Eubalaena australis – southern-right whale	Migratory	July - Aug	June - Aug	Endangered
Balaenoptera musculus – blue whale	Migratory	June – Aug (peak July)	May – Aug (peak May-June)	Endangered / Migratory Provisions
Balaenoptera physalus – fin whale	Migratory	April - Aug	April - Aug	Vulnerable
Balaenoptera borealis – sei whale	Migratory	Apr - Aug	Apr - Aug	Vulnerable
Megaptera novaeanliae – humpback whale	Migratory	June - Oct	Jun - Oct	Endangered / Migratory Provisions
Physeter macrocephalus – sperm whale	Migratory	Sept - Dec	Nov - March	Vulnerable
Baleanoptera edeni – bryde's whale	Migratory	March - Aug	March - Aug	Migratory Provisions
Caperea marginate – pygmy right whale	Migratory	Not known	Possibly year round.	Migratory Provisions
Orcinus orca – killer whale	Migratory	All year	Seasonally variable, no known calving waters in Australia.	Migratory Provisions

Sources: Bannister *et.al.*(1996), EA (2003).

Fish

Fish species which may occur within the exploration area which are listed under the EPBC Act are the great white shark (*Carchardodon carcharias)* (vulnerable / Migratory Provisions) and grey nurse shark (*Carcharias taurus*) (vulnerable). Great white sharks are uncommon but are generally known to frequent waters around seal colonies. There are known Australian fur seal colonies at Wilson's Promontory and the Skerries, each of which are located over 90 km from the nearest exploration drilling location. In general, details of the species life history are not well understood, it is not known whether white sharks make use of particular pupping areas, however pups are fully developed and independent at birth, potentially weighing up to 32 kg (EA 2000).

Grey nurse sharks may be found within the vicinity of the proposed drilling location, the species distribution is such that they are uncommon in Victorian and Tasmanian waters, however the general distribution within Australian waters includes most of the southern half of the continent (EA 2000b). The species has been recorded at a range of depths, however is generally found between 15 m and 25 m (EA 2000). The precise timing of mating and pupping in Australian waters is not known.

Avifauna

Migratory and threatened seabirds, some of which will be protected by international agreements (Bonn Convention, JAMBA and CAMBA) may pass through or near to exploration activities on their way to islands in the Bass Strait and/or Tasmania. Foraging groups of seabirds are also sighted, sporadically, in the eastern Bass Strait area. Avifauna species which are listed under the EPBC which may potentially pass through the exploration region are described below in Table 3.1.2.

Table 3.1.2: Avifauna of the Study Area Protected under Act

Species	Status	Migratory Provisions	Type of Presence
Diomedea amsterdamensis - Amsterdam Albatross	End	Yes	Species or species habitat may occur within area
Diomedea antipodensis – Antipodean Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea dabbenena - Tristan Albatross	End	Yes	Foraging may occur within area
Diomedea epomophora - Southern Royal Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea exulans – Wandering Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea gibsoni - Gibson's Albatross	Vul	Yes	Species or species habitat may occur within area
Diomedea sanfordi - Northern Royal Albatross	End	Yes	Species or species habitat may occur within area
Macronectes giganteus – Southern Giant-Petrel	End	Yes	Species or species habitat may occur within area

Species	Status	Migratory Provisions	Type of Presence
Macronectes halli - Northern Giant-Petrel	Vul	Yes	Species or species habitat may occur within area
Thalassarche bulleri - Buller's Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche cauta - Shy Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche chrysostoma – Grey-headed Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche impavida - Campbell Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche melanophris – Black-browed Albatross	Nil	Yes	Species or species habitat may occur within area
Thalassarche salvini - Salvin's Albatross	Vul	Yes	Species or species habitat may occur within area
Thalassarche steadi - White-capped Albatross	Vul	Yes	Species or species habitat may occur within area

Notes: End = Endangered, Vul = Vulnerable.
Data Source: EA 2003, ABC (2002).

3.2 Provide a *description of important features* of the project area and the affected area and show these on the attached map, including (if relevant to the project area or affected area) information about:

(a) soil and vegetation characteristics;
(b) water flows, including rivers, creeks and impoundments;
(c) the presence of outstanding natural features, including caves;
(d) gradient;
(e) any buildings or other infrastructure;
(f) any marine areas;
(g) kinds of fauna in the area; and
(h) the current state of the environment in the area, including information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The general location of the proposed activity is displayed in Figure 1. The area is entirely within Commonwealth waters. A description of the environment of the proposed exploration program is provided in Section 3.1.

3.3 What is the *tenure* of the project area (for example is it freehold, leasehold or some other tenure)? If practicable, show on the attached map.

The proposed drilling area is located within 'production licence' and 'retention lease' areas (refer to Figure 1). Esso is wholly owned by Esso Australia Resources Pty Ltd, the Operator of a joint venture with BHP Billiton Petroleum (Bass Strait) Pty Ltd. The Permits are held by the joint venturers and administered by the DPI, Minerals Petroleum Victoria division as the Designated Authority.

3.4 What are the current and/or proposed *land uses* for the project area?

The proponent currently provides services for 21 oil and gas projects within the Gippsland Basin, under permits held by the joint venturers and administered by the DPI, Minerals Petroleum Victoria division as the Designated Authority. The existing operations comprise staffed and not normally staffed production platforms, monotowers and subsea completions.

The Longford plants receive Bass Strait production by pipeline and are located about 20 km south east of Sale and 12 km from the coast in the Gippsland region of Victoria. Gas processing and crude oil stabilisation operations take place at Longford. These facilities are owned by the joint venturers.

4. Nature and extent of the likely impacts of the action

4.1 Describe, as relevant to your project, the nature and extent of *likely impacts* on the following matters protected by the EPBC Act:

- the world heritage values of a declared World Heritage property; or
- the ecological character of a declared Ramsar wetland; or
- the members of a listed threatened species (except a conservation-dependent species) or any threatened ecological community, or their habitat, or
- the members of a listed migratory species or their habitat; or
- the environment in part of the Commonwealth marine area; or
- the environment on Commonwealth land.

- **the world heritage values of a declared World Heritage property;**

  It is anticipated that disturbance to the Commonwealth marine area will be limited to the effects of water based drilling mud and cuttings causing temporary localised effects on benthic fauna only. According to Hinwood et al. (1994) the plume created by a discharge of drill cuttings can be expected to dilute by a factor of at least 10,000 within 100 m of the point of discharge.

- **the ecological character of a declared Ramsar wetland;**

  The proposed drilling program will not cross to onshore land, nor will it impact on the adjacent coastal areas and so will not impact on any wetland areas.

- **the members of a listed threatened species (except a conservation-dependent species) or any threatened ecological community, or their habitat, and**
- **the members of a listed migratory species or their habitat;**

  Benthic Community
  The drilling program is unlikely to have any significant, long lasting effects on benthic communities due to the associated water depth, and significant ocean current regime. There will be minor localised impact within a radius of approximately 5 m from the well where a cuttings pile will generate during the riserless section of the well. The extensive nature of the habitat and nature of the seabed indicates a high potential for recovery of benthic fauna from physical disturbance.

The Museum of Victoria conducted an extensive survey of benthic invertebrates in Bass Strait from 1979-1983 (Wilson and Poore, 1987). In general a highly diverse array of invertebrate groups was found, with several polychaete families, pycnogonids, pericarid crustaceans, opisthobranch molluscs, bryozoans and brachiopods being the most species rich. The main findings were:

- The remarkably high diversity of a wide range of invertebrate groups has been a recurrent observation of all surveys in Bass Strait and diversity is high compared with equivalent areas of the northern hemisphere.
- Many species are widely distributed across the strait, suggesting heterogenous sediments and many microhabitats.

From this it can be ascertained that, though the drilling program may have a localised impact on the benthic communities at the well location, it will not result in a significant regional impact as a result of high diversity and distribution of species in Bass Strait. Any support vessels mobilised to site from overseas are required to comply with the AQIS Australian Ballast Water Guidelines to minimise the potential for any introduction of exotic marine organisms. In addition, the water depth and distance from the coast will effectively further reduce the risks of exotic introductions.

Cetaceans:

Esso recognise that the peak Humpback whale migration period within the Bass Strait (October – November) will coincide with the drilling program. The drilling program is such that flexibilities do not exist so as to cease activities during this period, given that the likely impacts to cetaceans are minimal.

Studies conducted by the American Petroleum Institute (API) have indicated that the underwater sound produced through the operation of a MODU overlap with the hearing frequencies of baleen whales, potentially found within the Gippsland Basin. However at distances of greater than 1 km it is anticipated that noise produced from a MODU will be undetectable (API 1986).

The eastern Bass Strait region contains 21 oil and gas installations, which have associated support vessel traffic. It also supports a significant portion of the community through commercial fishing activities. The small increase in support vessel movements (approximately 1 vessel movement per day) in the region are unlikely to have any significant impact on whale migration behaviour.

Noise associated with drilling exploration is likely to result in avoidance of the immediate proximal area by whales. Given the location of the proposed exploration program, such avoidance is considered to have insignificant impact to cetaceans.

Further impact mitigation measures to be used during the exploration program in general and in particular during the peak Humpback whale migration period will include:

- Support vessels and aircraft will attempt to remain at least 300 m from whales and vessels will slow to idle ‘no wake speed’ where whales are sighted proximal to such vessels,
- Sudden or repeated changes in speed or direction will be avoided where whales are sighted,

- When moving away from whales, idle 'no wake speed' will be maintained until such time as the most proximal whale is more than 300 metres from a vessel.
- General shipping and aircraft regulations will be observed at all times.

Fish:

It is considered highly unlikely that the proposed drilling activity will have any affect on the great white shark or grey nurse shark. The permit area is not classified as being a habitat critical for the protection of either species and EA (2000 & 2000a) describe potential major threats to both species as being; shark control activities, commercial and recreational fishing. Further threats to these species include the potential behavioural changes caused to Great White Sharks by berleying practices associated with ecotourism and the practice of shark finning (the removal of the sharks fins, prior to returning it to the water) in the case of grey nurse sharks.

Avifauna

Drilling activities are considered unlikely to have any significant impact on the movements of migratory and sea bird species. Whilst a large number of sea birds utilise and pass through the Bass Strait, there are no areas of bird colonies close to the proposed exploration zone, nor is the Gippsland basin known to be of particular value in terms of feeding grounds. Some species, especially cormorants, roost at Cape Conran (Norris & Mansergh 1981). Colonies occur to the west of the offshore operations in Corner Inlet and on the islands around Wilson's Promontory, and to the east at the Skerries, Tullaberga Island and Gabo Island (Harris & Norman 1981); all of these locations are more than 50km from the proposed exploration area.

- **the environment in part of the Commonwealth marine area;**

  Given the reasons detailed in the proceeding sections, it is highly unlikely that any effect will occur as a result of the proposed works.

- **the environment on Commonwealth land.**

  It is highly unlikely that any effect will occur as a result of the proposed works. Onshore activities will be generally limited to associated waste disposal activities, all drilling will occur offshore and within Commonwealth waters.

4.2 Indicate if your action is:

- (a) a nuclear action; or
- (b) will be taken by the Commonwealth or by a Commonwealth agency; or
- (c) will be taken in a Commonwealth marine area; or
- (d) will be taken on Commonwealth land.

If your action falls into one of these categories, provide details about the impact of your action on the environment generally (ie, in addition to the specific matters addressed above in 4.1):

- **(a) a nuclear action; or**
  The proposed drilling program is not a nuclear action.
- **(b) will be taken by the Commonwealth or by a Commonwealth agency; or**
  The proposed drilling program will not be taken by the Commonwealth or by a Commonwealth agency.
- **(c) will be taken in a Commonwealth marine area; or**

The proposed drilling program will be undertaken in a Commonwealth marine area.

- **(d) will be taken on Commonwealth land.**

The proposed drilling program will not be undertaken on Commonwealth land.

5. Information sources

For information given in sections 3 and 4 of this referral, please indicate:

(a) the source of the information; and

(b) how recent the information is; and

(c) how the reliability of the information was tested; and

(d) any uncertainties in the information.

The following sources have been used to prepare this document. The area of investigation has been under the Proponent's operation since 1967 and as such the area is familiar to the Proponent. Not with standing this, the report has been prepared undertaking best endeavours to acquire the latest available information sources.

1. ABC (2002) "Bird Atlas" Birds Australia, AcroMap Pty Ltd and ABC Science Online, www.abc.net.au/birds/mapviewer.html.

2. American Petroleum Institute (1986) “Underwater Drilling-Measurement of Sound Levels and their Effects on Belukah Whales” API Publication No. 4438, Washington.

3. Bannister, JL; Kemper, CM and Warneke, RM (1999) “The Action Plan for Australian Cetaceans” Wildlife Australia, Environment Australia, Canberra.

4. Black KP, Brand GW, Gwyther D, Hammond LS, Mourtikas S, Noyes-Fitzsimmons RL, Smith JM and Richardson BJ (1994) "Coastal Facilities. In: Environmental implications of offshore oil and gas development in Australia - the findings of an independent scientific review" Swan JM, Neff JM and Young PC (Eds), Australian Petroleum Exploration Association, Sydney pp 409-506.

5. Butler A, Althaus F, Furlani D and Ridgway K, (2002) “Assessment of the Conservation Values of the Bass Strait Sponge Beds Area – A Component of the Commonwealth Marine Conservation Assessment Program 2002-2004.” CSIRO Marine Research. Hobart, Tasmania.

6. Department of Foreign Affairs (1974) "Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment" Australian Government Publishing Service, Canberra.

7. Department of Foreign Affairs and Trade (1979) "Convention on the Conservation of Migratory Species of Wild Animals" Australian Government Publishing Service, Canberra.

8. Department of Foreign Affairs and Trade (1986) "Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment" Australian Government Publishing Service, Canberra.

9. DNRE (2000) "Biomap - A flora and fauna information product: Mapsheet T8321-1-3 - Collier Hill" Department of Natural Resources and Environment, East Melbourne.

10. DNRE (2000a) "Biomap - A flora and fauna information product: Mapsheet T8321-1-2 – Golden Beach" Department of Natural Resources and Environment, East Melbourne.

11. EA (1997) "Australian Ramsar Sites - Site 21: Gippsland Lakes" www anca aov au/environm/wetlands/site21.htm.

12. EA (2000) "Draft Recovery Plan for Great White Sharks, Carcharodon catcharias: in Australia" Environment Australia, Canberra.

13. EA (2000b) “Draft Recovery Plan for Grey Nurse Sharks, Carcharitas taurus, in Australia” Wildlife Management Section, Biodiversity Group, Canberra.

14. EA (2003) EPBC Interactive Map at EA website: http://www.ea.gov.au/erin/ert/epbc/index.html.

15. Ecology, Labrador Petro-Management Ltd and Sea Research) (1994) "Drilling Activities. In: Environmental implications of offshore oil and gas development in Australia - the findings of an independent scientific review" Swan JM, Neff JM and Young PC (Eds), Australian Petroleum Exploration Association, Sydney pp 123-207.

16. Environment Conservation Council (1999) “Marine Coastal & Estuarine Investigation – Draft Report for Public Comment” Environment Conservation Council, East Melbourne.

17. Esso (2000) Internal records of whale sightings from Esso Operated Activities from 1987 to 2000.

18. Harris, M.P., and Norman, F.I., (1981). Distribution and Status of Coastal Colonies of Seabirds in Victoria. Mem.Nat.Mus.Vic. 42:89-106.

19. Hinwood JB, Poots, AE, Dennis, LR, Carey JM, Houridis H, Bell RJ, Thomson JR, Boudreau P and Ayling AM. Australian Marine and Offshore Group Pty Ltd (in association with Marine Science and Ecology, Labrador Petro-Management Ltd and Sea Research) (1994) “Drilling Activities. In: Environmental Implications of Offshore Oil and Gas Development in Australia – the findings of an independent scientific review, Swan, JM, Neff, JM and Young, PC (Eds)” Australian

Petroleum Exploration Association, Sydney, pp 123 – 207

20. Jones, HA and Davies, PJ (1983) "Surficial Sediments of the Tasmanian Continental Shelf and Part of Bass Strait" Bureau Mineral Resources, Geology and Geophysics Bulletin 218, Australian Government Publication, Act pp 25.

21. Norris, K.C. and Mansergh, I.M., (1981). Sites of Zoological Significance in East Gippsland. Ministry of Conservation, Environmental Studies Division Report No. 321.

22. Tucker, M (1991) "Whales and Whale Watching in Australia" Australian National Parks and Wildlife Service, Canberra.

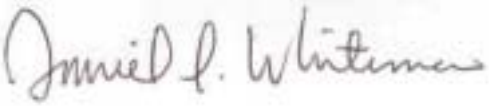
23. Wilson, RS and Poore, GCB (1987)"The Bass Strait Survey: biological sampling stations 1979-1984" Occ. Papers Museum of Victoria 3 pp 1-14.

Seabed information, including sediments and infauna descriptions, were collected by the Museum of Victoria and Esso Australia during the years 1979 to 1993. Whale species distribution was obtained from observations made from Esso platforms, vessels and helicopters. Knowledge on the distribution and abundance of seabirds in the Bass Strait is limited.

6. Signatures and Declarations

6.1. Signature of person making the referral

I, Daniel L. Whiteman, for and on behalf of Esso Australia Pty Ltd, declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature 

Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd

Date 12 Nov 2003

6.2. Declaration of person nominated as proponent in Section 1.3, if different from person proposing to take the action

I, …….*(full name*), being (or agent acting on behalf of) the person nominated in Section 1.3 of this referral form as the nominated proponent agree to be designated as the proponent for the action described above if it is decided that the action requires approval under Part 9 of the EPBC Act.

Signature

Date

Signature of person proposing to take the action

Date

6.3. Statement by person making this referral on whether or not they believe the referred action to be a controlled action and identification of relevant controlling provisions
(Note: This Section must be completed in *all cases* except where the referral is made by a State or Territory or a Commonwealth agency in relation to an action to be taken by another person.)

*If you think your proposed action **is not likely to have a significant impact** on any of the matters listed in the table below, then you should select and complete the following statement and you should **not** mark any of the boxes in the table below.*

I, Daniel L. Whiteman, for and on behalf of Esso Australia Pty Ltd, being the person making this referral and the person proposing to take the action (or agent acting on behalf of the person) believe that the action described in this referral **is not a controlled action.**

OR

*If you think that your proposed action **is likely to have a significant impact** on any of the matters listed in the table below, then you should select and complete the following statement. You must then mark 'Yes' against those matters on which you think it will have a significant impact, in the table below.*

I …….*(full name*), being the person making this referral and the person proposing to take the action (or agent acting on behalf of the person) believe that the action described in this referral **is a controlled action because of the following provisions of the Act**:

Significant Impact Likely	**Controlling Provision**
	World Heritage property (Sections 12 and 15A - significant impacts on the values of a World Heritage property)
	Ramsar Wetland (Sections 16 and 17B - significant impacts on the ecological character of a Ramsar wetland)
	Threatened species or ecological communities (Section 18 and Section 18A - significant impacts on a listed threatened species or a listed threatened ecological community)
	Migratory species (Sections 20 and 20A - significant impacts on a listed migratory species)
	Nuclear action (Sections 21 and 22A - nuclear actions)

	Commonwealth marine area (Sections 23, 24 and 24A - actions relating to the Commonwealth marine area and fishing in coastal waters managed by the Commonwealth)
	Commonwealth land (Sections 26 and 27A - actions relating to Commonwealth land)
	Commonwealth action (Section 28 - actions by the Commonwealth having a significant impact on the environment)

Briefly provide reasons why you believe your proposed action is or is not a controlled action:
(Note: For an explanation of the term "controlled action", see the Referral Guide that accompanies this form.)

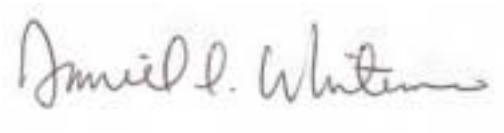
Esso Australia Pty Ltd believes the various exploration and production drilling activities over several Licence areas and Retention Lease Areas within the Gippsland Basin is not a controlled action under the EPBC Act.

The exploration and production drilling activities will have no effect on any World Heritage Property, RAMSAR wetlands, Commonwealth Land or any listed threatened ecological community.

Likely impacts to the Commonwealth marine area are limited to localised and temporary seabed disturbance as a result of cuttings discharge and placement of subsea equipment.

Activities associated with the various exploration drilling activities are temporary and unlikely to have a significant effect on any listed threatened species or migratory species, or their habitat. These species are likely to be transient through the area and the action will not significantly interfere with their breeding, feeding and migration.

The proposed action will be subject to a P(SL)A Environment Plan which will ensure that activities are conducted in an environmentally responsible manner.

Signature 

Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd

Date 12 Nov 2003

If the person making this referral is, or is representing, a *small business* (a business having fewer than 20 employees), please provide an estimate of the time taken to complete this form

Please Include

- The time spent reading the instructions, working on the questions and obtaining the information; and
- The time spent by all employees in collecting and providing this information.

hours minutes

END OF FORM

Figure 1: Locality

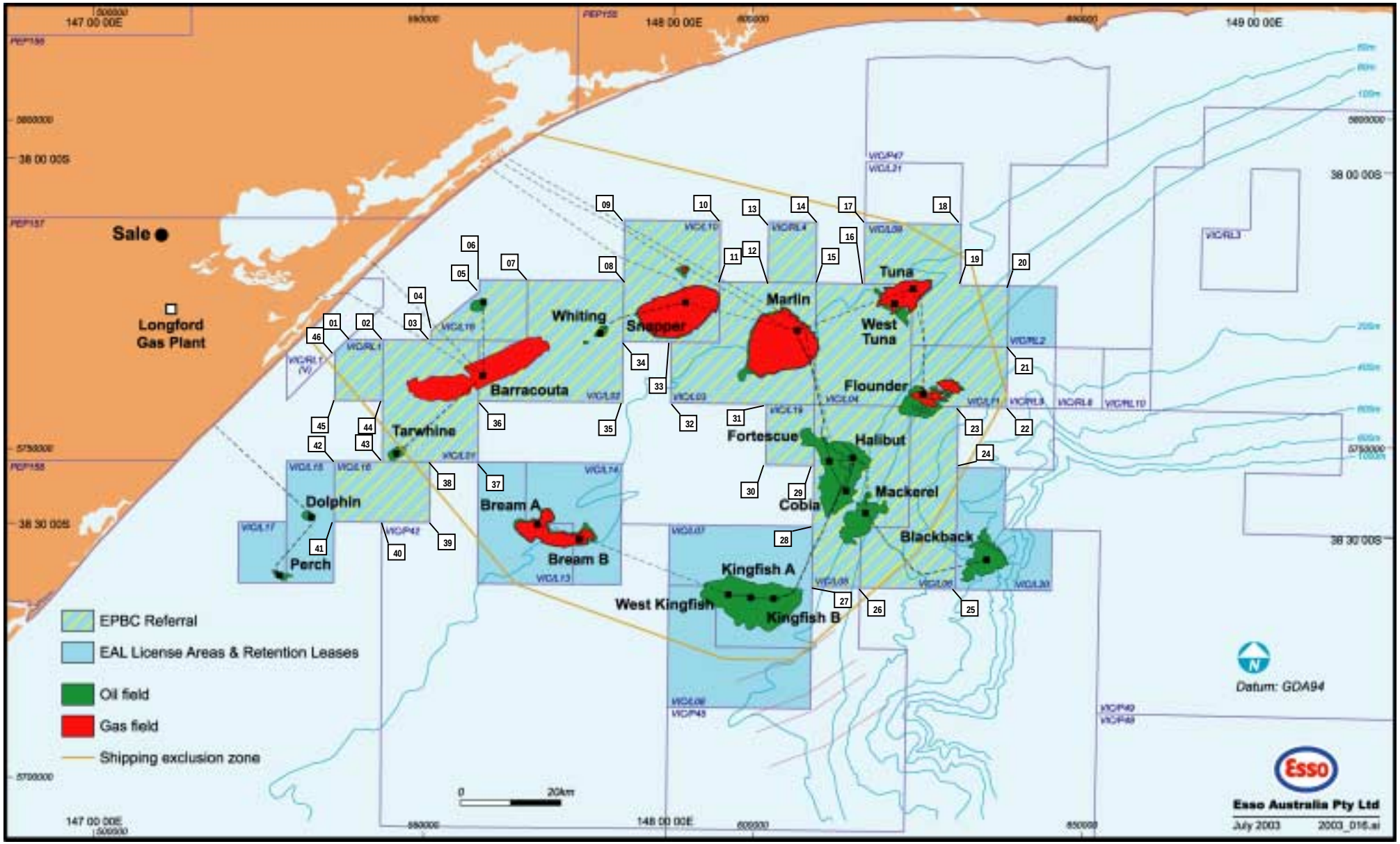
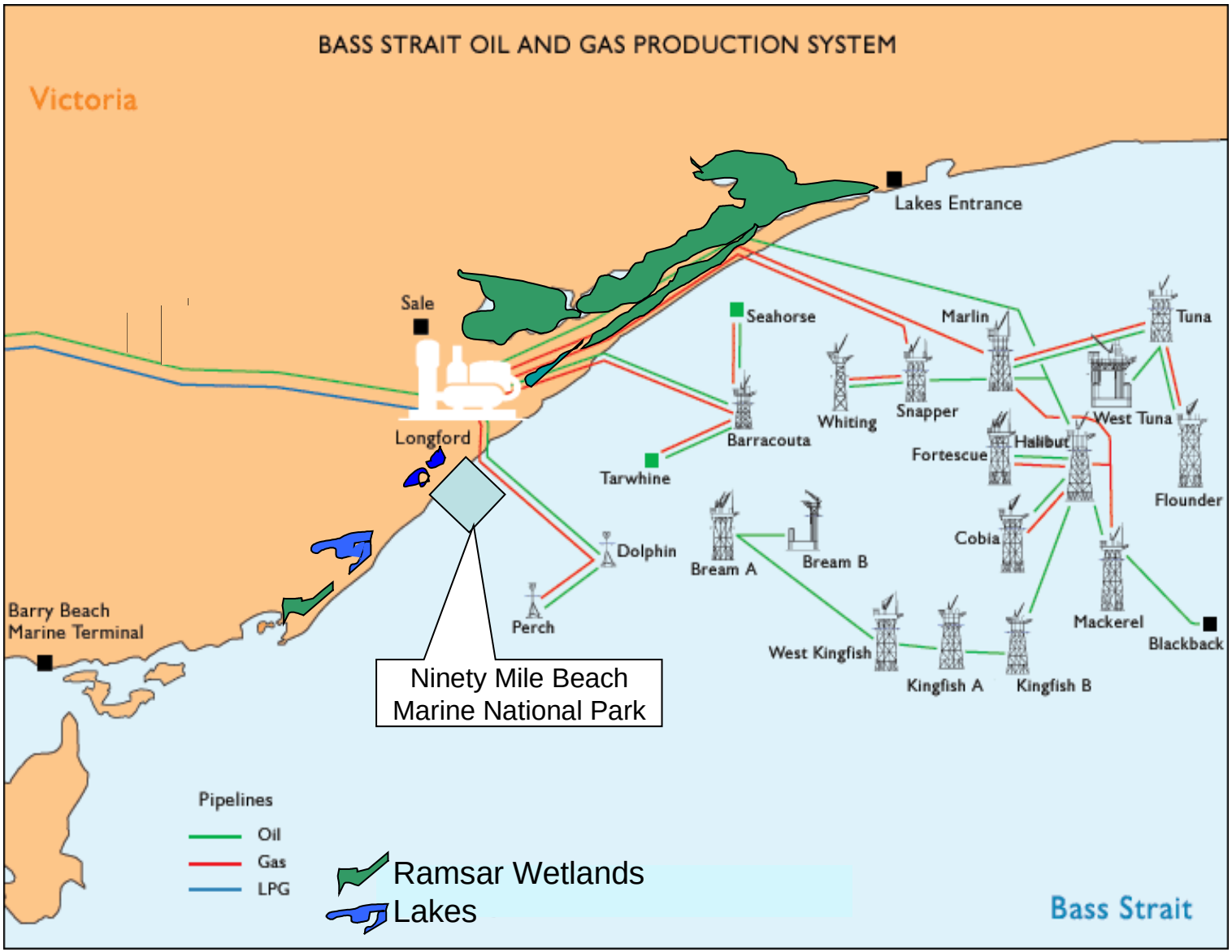


Figure 2: Bass Strait Oil and Gas Production System



Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

November 28, 2003

Attention: Horacio Haag
Manager, Petroleum Operations, Safety & Environment
Department of Primary Industries
250 Victoria Parade
EAST MELBOURNE VIC 3002

Dear Sir

RE: WEST WHIPTAIL -1 APPLICATION TO DRILL

Please fmd enclosed two copies of the "Application to Drill" for the proposed West Whiptail-1 exploration well located in license block VIC/LI.

The approval of the Designated Authority is requested under Section 100 of the Petroleum (Submerged Lands) Act (1967) to drill within 300m of the licencc boundary for the proposed West Whiptail 1 well.

Contingent on your approval, drilling operations are anticipated to commence in the first quarter of 2004.

Yours sincerely,

Tom Snow
Operations Technical Subsurface Manager (Acting)

Esso Australia Pty Ltd

WEST WHIPTAIL-1

AUTHORISATION TO DRILL

GIPPSLAND BASIN VIC/L1

VICTORIA / AUSTRALIA

JULY 2003

DRILLING RECOMMENDATION

Name	:	West Whiptail-1		
Classification	:	Near Field Wildcat		
Location	:	Reservoir	:	Latrobe Group (*N Asperus*)
		Primary Target	:	N1.1 - N1.4
		Secondary Target:		N1.0
		Basin / Permit	:	Gippsland Basin / VIC/L1
		Seismic Lines	:	Northern Fields G01 3D Seismic Survey Inline-1292, Crossline-1765
		Latitude	:	38 19 28.9 S
		Longitude	:	147 30 17.0 E
		A.M.G.	:	544117 mE 5758036 mN
		Datum	:	**GDA94**
		Spheroid	:	Australian National Spheroid (ANS) UTM Zone 55 / **AMG Zone 55** Central Meridian (CM) **147 Degrees East** False Easting 500,000.0 False Northing 10,000,000.0 Scale Factor at CM 0.9996.
		Projection	:	Universal Transverse Mercator (UTM)
		Tolerance	:	The drilling target at the depth of 1500m TVDSS should be intersected within a circle of radius 50m.
Working Interests	:	Esso Australia Pty Ltd		50.0%
		BHPB Billiton		50.0%
Location Checked	:	_____ M.A. Williams Geophysicist		
Location Verified	:	_____ J.F. Moore Geophysical Advisor		
Programmed T.D.	:	1500m TVDSS		
Water Depth	:	38m TVDSS		
Nearest Wells	:	Whiptail-1A	:	1.4 km to the ENE
		Mulloway-1	:	1.7 km to the WNW

Objectives	:	West Whiptail-1 will test an Intra-Latrobe Group closure located between the Whiptail and Mulloway discoveries. West Whiptail-1 will provide data on the lateral and vertical extent of the Whiptail and Mulloway discoveries.
Assessed	:	_____ D. C. Berman Geologist
Recommended	:	_____ G. A. Nash Gippsland Production Geoscience Manager
Approved	:	_____ M. J. Nolan Deputy Production Manager

West Whiptail-1 Authorisation to Drill Distribution

Copy	Company / Department	Name / Position
Original	EAL (Melbourne)	Library
1	EAL (Melbourne)	G. A. Nash / Gippsland Geoscience Project Manager
2	EMPC Central Technology (Houston)	G. Arter / Business Coordinator SE Asia - Australia - Europe
3	EAL (Operations) (Melbourne)	A. J. Hodgson / Operations Geologist
4	Rig	Wellsite Geologist
5	EMDC Drilling (Melbourne)	D. L. Whiteman / Drilling Manager
6-7	DPI (Melbourne)	K. Hill / Manager
8	BHPBilliton (Melbourne)	M. Osborne / BHPBilliton

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Figure 5 – Whiptail Complex Oil Geochemistry

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Figure 7 – Mulloway-1 Zero Offset Synthetic

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Figure 9 – Whiptail Complex N1.1 TWT Structure Map

Figure 10 - Oil Sand Tuning Model

Figure 11 – Whiptail Complex N1.1 Depth Structure Map (Model A)

Figure 12 – Whiptail Complex N1.1 Depth Structure Map (Model B)

Figure 13 – Whiptail Complex N1.1 Depth Structure Map (Model C)

Figure 14 – Whiptail Complex N1.0 /N1.1 Composite Depth Structure Map (Model D)

Figure 15 - Whiptail Complex Reservoir Parameters

Figure 16 - West Whiptail-1 Geologic Success Case Scenarios

ENCLOSURES

Enclosure 1 – Whiptail Complex Schematic Cross Section

SUMMARY

The proposed West Whiptail-1 location is approximately 1.4 km WSW of Whiptail-1A and 1.7 km ESE of Mulloway-1. The location is in 38 metres of water within the VIC/L1 licence area of the Gippsland Basin (Figure 1). West Whiptail is one of four discrete *en echelon* closures which collectively comprise an E-W oriented hangingwall anticlinal trend referred to as the Whiptail Complex.

The Whiptail discovery well (September 1985) intersected 18m gross oil pay in *N asperus* age fluvial sandstone reservoirs (N1.1-N1.4). An oil-water-contact (OWC) was not observed in the well although oil was sampled at 1377 mSS (Low Proved Oil). Mulloway-1 (February 1989) tested a discrete dip closure 3 km west of Whiptail-1A and intersected 20m gross oil pay in a stratigraphic section similar to that observed at Whiptail-1A. However, in contrast to the Whiptail discovery, the N1.1-N1.4 oil recovered in Mulloway-1 is extensively biodegraded and an OWC was observed at 1375 mSS, demonstrating that at least the N1.3-N1.4 oils at Whiptail and Mulloway are separate accumulations.

In early 2003 the Whiptail and Mulloway discoveries were reviewed following acquisition of the G01A 3D Survey. The review concluded the primary geologic element contributing to uncertainty in reserves is the relative depth of the Whiptail OWC and the spill point to West Whiptail.

Although the Whiptail Complex is located within an area of low lateral velocity gradients, individual closures within the Whiptail Complex are of low strutural relief. To mitigate trap risk, a High Density Velocity Analysis was acquired in May 2003. All depth maps produced in the depth conversion project place the West Whiptail-1 location within closure at the primary and secondary targets. The primary geologic risk for West Whiptail-1 is the presence and adequacy of top seal.

West Whiptail-1 will be drilled through a section equivalent to the N reservoirs at Whiptail and Mulloway to a TD of 1500 mSS. West Whiptail-1 is expected to provide data on the lateral and vertical extent of the Whiptail and Mulloway discoveries.

GEOLOGICAL DISCUSSION

OVERVIEW

The majority of large Gippsland Basin hydrocarbon fields are Latrobe Group closures sealed by overlying marine shales of the Lakes Entrance Formation. Some large intra-Latrobe Group fields are also present such as the Tuna T and Turrum L reservoirs which are sealed by coastal plain shales. Within the greater Barracouta, Whiting and Snapper area there are several medium to small intra-Latrobe Group hydrocarbon accumulations sealed by coastal plain shales and from each of these fields oil has been produced from the upper-Latrobe Group (*N.asperus - L.balmei*).

REGIONAL SETTING

The initial formation of the Gippsland Basin was associated with rifting and subsidence that extended along the southern margins of Australia during the Jurassic to Early Cretaceous. During this period, deposition of predominantly volcanoclastic successions occurred in alluvial and fluvial environments in NE trending *en echelon* graben systems (Otway and Strzelecki groups). A phase of structuring and localised uplift of the Strzelecki Group occurred around 100-95 Ma.

A renewed phase of Late Cretaceous (approximately 90 Ma) rifting coincided with the onset of Tasman seafloor spreading. This resulted in the rapid development of extensional basins, with active extensional faults oriented WNW/ESE (oblique to the earlier extensional event). A thick, coarsening-upward succession was deposited in these tectonically active depocentres (Emperor-Golden Beach Groups). Initial rift deposition included marine and lacustrine shales in distal parts of the basin, while deltaic successions and alluvial fans developed along the basin margin. The rift fill succession evolved into a fluvial-dominated system. As the northward migrating Tasman spreading centre passed by the Gippsland Basin around 85-80 Ma, the eruption of mafic volcanics and emplacement of related intrusions occurred across the Gippsland Basin.

The active rift phase in the Gippsland Basin ceased at approximately 80 Ma, as the Tasman Rift proceeded to migrate towards the north. From this time, the Gippsland Basin evolved into a failed arm of the Tasman Rift system. The Latrobe Group was deposited in this sag phase, basinal setting behind a NE-SW tending beach-barrier complex., with fault controlled subsidence continuing until the Late Paleocene. As sedimentation rates declined, the strandline moved to the northwest, depositing thin glauconitic green sands of the Gurnard Formation over a wide area during the Eocene.

Two major phases of canyon cutting occurred during the Tertiary. During the Early Eocene, the Tuna/Flounder Channel was cut and then filled with predominantly marine sediments of the Flounder Formation and during the Middle Ecocene the Marlin Channel was cut during the Middle Eocene and partially filled with distal marine sediment of the Turrum Formation. Erosion associated with the top Latrobe Group unconformity resulted in the formation of many of the hydrocarbon traps in the basin.

The top of the Latrobe Group is marked by deposition of marl and calcareous siltstone of the Lakes Entrance Formation in response to continued marine transgression during the Oligocene. Prograding limestone and calcareous siltstone wedges of the Gippsland Limestone resulted in the formation of the present day shelf.

Compressional deformation in the late Eocene to Miocene resulted in selective inversion of extensional faults across the basin and the establishment of the major ENE-WSW anticlinal trends.

PREDICTED STRATIGRAPHY

The predicted stratigraphy of West Whiptail-1 (Table 1, Figure 2) is based on adjacent well control and seismic correlations. The stratigraphy at West Whiptail-1 is predicted to be similar to that intersected at Whiptail-1A and Mulloway-1. The primary target is the N1.1-N1.4 reservoirs which are oil bearing at Whiptail-1A and Mulloway-1. The secondary target is the N1.0 reservoir which is oil bearing at Mulloway-1.

The well is expected to intersect a thick succession of limestones and marls of the Gippsland Limestone which overlie the marls of the Lakes Entrance Formation. The Latrobe Group section is expected to be comprised of a meandering fluvial succession in which significant interbedded coastal plain coals and shales are laterally continous at the prospect scale. Although not observed in Whiptail-1A or Mulloway-1, dolomite cementation of sandstones is observed at the adjacent Barracouta field.

The primary target reservoirs (N1.1 - N1.4) are predicted to have been deposited in an upper delta plain environment as point bar sandstones within a meandering fluvial system. Individual sandstone bodies may represent a single channel fill or multistoried, amalgamated channel-fills. Based on local analogs individual channel fills are expected to average approximately 8-10 m in thickness, have lateral extents in the range of 100s-1500 metres and exhibit similar reservoir properties to that observed at Mulloway-1 and Whiptail-1A. Top seal is expected to be provided by interbedded coastal plain shales, claystones and coals. These interbedded shales, claystones and coal units are proven hydrocarbon seals in adjacent wells.

MARKER	DEPTH (mSS)	LITHOLOGY
Sea Floor		N/A
Top Gippsland Limestone		Limestone / Calcarenite / Marl
Top Lakes Entrance Formation	787	Marl / Claystone / Limestone / Shale
Top Latrobe Group (TOL)	1139	Sandstone / Shale / Coal
Top Coarse Clastics (TCC)	1144	Sandstone / Shale / Coal
N1.0	1360	Sandstone / Shale / Coal
N1.1	1365	Sandstone / Shale / Coal
TD	1500	

Table 1 - West Whiptail-1 Predicted Stratigraphy

There is no plan to deepen West Whiptail-1 beyond programmed TD. Whiptail-1A intersected a high net section beneath the Barracouta M1 equivalent to a TD of 2800 mSS in the footwall of the Whiptail fault. This section is interpreted to mainly represent highly amalgamated meandering to braided fluvial sandstones and on this basis the potential for effective seal development beneath programmed TD is considered low.

STRUCTURE

West Whiptail is one of four discrete *en echelon* closures which comprise an E-W oriented hangingwall anticlinal trend referred to as the Whiptail Complex. The Whiptail Complex is the product of oblique inversion of E-W oriented normal faults during Eocene - Miocene compression. Interpretation of post-Latrobe Group stratigraphy indicates West Whiptail and Whiptail share a common structural history.

WHIPTAIL COMPLEX HYDROCARBON DISTRIBUTION

The Whiptail discovery well (September 1985) intersected 18m gross oil pay in *N. asperus* age fluvial sandstone reservoirs (N1.1-N1.4). An OWC was not observed in the well although Low Proved Oil (LPO) was established at 1377 mSS. Reinterpretation of Mulloway-1 and Whiptail-1A RFT data indicates a potential additional 10m of oil column downdip of Whiptail-1A LPO in the presence of an effective base seal (Figures 3 & 4). Oil geochemistry and RFT data confirms a single oil column at Whiptail-1A (Figures 4 & 5). The N1.0 reservoir at Whiptail-1A is a low net section and is interpreted to be water wet.

Mulloway-1 (February 1989) tested a discrete dip closure 3 km west of Whiptail-1A and intersected 20m gross oil pay in a similar (*N. asperus*) stratigraphic section to that intersected in Whiptail-1A. However, in contrast to the Whiptail discovery the N1.1-N1.4 oil recovered in Mulloway-1 exhibits extensive biodegradation (Figure 5) and an OWC was observed at 1375 mSS, demonstrating at least the N1.3-N1.4 oils at Whiptail and Mulloway are separate accumulations. The Mulloway-1 N1.0 oil (43 API) exhibits negligible biodegratation and is geochemically similar to that recovered in Whiptail-1A. An OWC was not observed in the Mulloway-1 N1.0 reservoir.

Two oil-stained core samples were selected to test the vertical extent of biodegradation within the Mulloway-1 oil column. Pentane-soluble extracts indicate biodegradation of the oil extends evenly thoughout the N1.1 - N1.4 reservoirs at Mulloway-1. The earliest stage of biodegradation exhibited by the Whiptail N1.1 - N1.4 and Mulloway N1.0 oils when compared to the more advanced biodegradation of the Mulloway N1.1-N1.4, which has removed virtually all n-alkanes, suggests the unbiodegraded oils may represent a more recent oil charge or be protected from the freshwater aquifer by local variations in stratigraphy.

HYDROCARBON PROPERTIES IN ADJACENT WELLS

Gippsland oils, though derived from a common source, exhibit considerable variation in chemical composition. Oil from adjacent fields exhibits moderate to severe (Perch-1, Barracouta-3, Dolphin-1) through to minor - no (Tarwhine-1, Seahorse-1, Barracouta-5) biodegradation.

The presence of biodegraded oil in the Whiptail Complex and adjacent fields is controlled by present day reservoir temperature (< 75 - 80 C) and the presence of a freshwater aquifer in the northern and western Gippsland Basin (Kuttan *et al.* 1985). All biodegraded oils sampled in the Gippsland Basin except for Tuna-4, Kahawai-1 and Kipper-1 occur within the limits of the freshwater zone.

TOTAL DEPTH

West Whiptail-1 is predicted to penetrate the top of the N1.0 reservoir at 1360 m TVDSS, the N1.1 reservoir at 1365 m TVDSS. To ensure adequate logging of the target reservoirs a Total Depth of 1500m TVDSS is required.

GEOPHYSICAL DISCUSSION

GEOPHYSICAL DATA

The West Whiptail prospect was originally identified on 2D seismic data. Subsequent 3D surveys (G88A, G99A and G01A) confirmed the presence of a discrete TWT closure located between the Whiptail and Mulloway discoveries. The seismic data quality of both G99A and G01A surveys exhibits improved multiple suppression and signal-to-noise ratios compared to previous 2D and 3D data.

TIME INTERPRETATION

The time interpretation of the Whiptail Complex was conducted on the G01A 3D migrated full stack. Significant horizons included five Miocene surfaces, Top Latrobe Group, Mid N Asperus Coal Marker, Lower N Asperus Coal Marker and the Barracouta M1 equivalent.

Three wells (Mulloway-1, Whiptail-1A and Barracouta-3) were tied to the seismic data using synthetic seismograms. The Whiptail-1A and Mulloway-1 zero offset synthetics are shown in Figure 6 and 7 respectively. The key features of both synthetics are the strong low impedance unit which represents the interbedded coal and shale coastal plain seal at both Whiptail and Mulloway. The Lower N Asperus Coal Marker is interpreted on the peak to trough zero crossing that is interpreted to mark the top of the coastal plain seal and the base of overlying fluvial sandstone.

The five Miocene horizons were used as control for depth conversion. The lowermost of these (HVC4) cuts down into the lower velocity marls of the Lakes Entrance Formation in a N-S oriented channel over the West Whiptail Prospect. Two Miocene horizons (HVC2 and HVC2a) represent the top and base surface of an interpreted Miocene clastic unit observed in offset wells.

Tuning analyses of the G01A 3D migrated full stack indicate the seismic wavelet has adequate bandwidth to resolve events at the top and base of the reservoir to a thickness of 14 - 21 ms (20 - 30 Hz Ricker Wavelet 90 Phase Shift). Below 14 - 21 ms the seismic wavelet can detect the top and base of the reservoir but can no longer resolve its thickness. Based on interval velocities measured in the wells a 14 - 21 ms isochron equates to a thickness of 22 - 33 metres (Figure 10) implying the reservoir is beneath resolution at both existing well locations. At the West Whiptal-1 location the N1.1-N1.4 reservoir is interpreted to be below peak tuning and therefore has been assessed as the arithmetic average of the gross reservoir observed at Mulloway-1 and Whiptail-1A (19 metres).

Similar analysis indicates the seismic trough overlying the peak which represents the coastal plain interbedded coal and shale unit is also below tuning thickness over most of the Complex. The isochron from the peak-trough zero crossing to the trough-peak zero crossing is approximately constant at 18 ms and the trough appears to exceed tuning thickness only south of the Whiptail-1A well.

DEPTH CONVERSION

Although the Whiptail Complex is located within an area of relatively low lateral velocity gradients, individual closures within the Whiptail Complex are of low strutural relief.

The results of the Whiptail-1A and Mulloway-1 wells provide geologic constraints on possible depth conversion solutions. The Whiptail (unbiodegraded oil) and Mulloway (biodegraded oil) accumulations sealed by interbedded coal and shale must be separated by a structural or stratigraphic barrier. Four alternative depth maps consistent with the well data were generated (Figures 11-14).

High Density Velocity Analysis was used to evaluate whether the TWT West Whiptail closure is valid in the depth domain. High density 3D volumes of velocity data are interpreted data generated by the contractor processing centre using picking algorithms to identify the semblance maxima which derive from primary reflections. An expert processor provides manual interpretation of the velocity field for control of the picking. The success of the process is dependent on the quality of the expert interpretation as well as the ability of the algorithm to discriminate primary reflections from multiples and converted waves.

High Density Velocity Analyses were provided by VERITAS (Singapore). The input data was preprocessed by Kirchoff 3D prestack time migration and radon multiple filtering. All four depth conversion techniques performed indicate the West Whiptail-1 location is within closure. Although this result mitigates closure adequacy risk, commercial success is contingent on the extent of closure intersected in West Whiptail-1. The range of closure defined by the depth conversions is 15-24 metres at West Whiptail. Detailed methodology and discussion of the depth conversion is provided by Moore (2003).

ASSESSMENT

METHOD

A detailed probabilistic assessment has been undertaken to assess the range of recoverable oil occurring in the Whiptail Complex Latrobe Group resevoirs. The assessment excludes reservoirs not interpreted to reservoir oil in either Whiptail-1A or Mulloway-1.

Assessment scenarios for the Whiptail Complex were created by combining four alternative depth structure models with three alternative stratigraphic models. The resulting twelve discrete depth structure / stratigraphic scenarios (denoted A1, A2, A3, B1, ..., D3) were reduced to four assessed scenarios (A1, B1, C1 and D2). The four (4) depth structure models were combined with three (3) stratigraphic models to produce twelve (12) scenarios of which ten (10) are consistent with available data. Four (4) of the depth model / stratigraphic model combinations (scenarios) were selected to represent significant OWC / spill point relationships and input to a scenario based assessment in which each scenario was modeled by monte carlo simulation. The resulting aggregate probability distributions were combined in proportion to scenario weights to produce a model mixed distribution.

Parameter input distributions are defined by offset wells, most likely parameters are the arithmetic average of parameters measured at Whiptail-1A and Mulloway-1 (Figure 15).

RESULTS

A deterministic best estimate of 11.9 MBO EUR and a probabilistic geologic success case range of 8.5 (P10) - 11.4 (P50) - 12.7 (Mean) - 19.5 (P10) MBO EUR is assessed.

OPERATIONS

MUD LOGGING

Mudlogging services will be provided from surface casing to TD. Four sets of washed and oven dried ditch cuttings samples and one set of lightly washed and air dried ditch cuttings samples will be caught and bagged every 30m from the casing shoe to 1000 m TVDSS. 5m samples should be collected from 1000m TVDSS to TD. All cuttings samples will be described and monitored for hydrocarbon fluorescence, and the mud gas for hydrocarbon, hydrogen sulphide and carbon dioxide.

CORING

No core is planned to be cut in the West Whiptail-1 well.

MWD

No MWD or LWD logs will be aquired in the West Whiptail-1 well.

PRODUCTION TESTING

No production testing is planned for the West Whiptail-1 well.

WIRELINE LOGGING

Sufficient quality pressure tests and samples are required to conclusively type fluids and determine any fluid contacts in the West Whiptail-1 well. One suite of wireline logs are programmed.

VERTICAL HOLE		
SUITE	**LOG TYPE**	**INTERVAL**
1.	Gamma Ray (+Spectral Gamma)	From TD to Seabed (Spectral Gamma from TD to 80m above TOL)
	Caliper	From TD to casing shoe
	Resistivity	From TD to casing shoe
	Bulk Density	From TD to casing shoe
	Neutron Porosity	From TD to casing shoe
	Sonic-P, S and upper dipole in open hole.	From TD to casing shoe
	Velocity Survey / Checkshots	VSP from TD to Seabed through casing until last good signal. Checkshots every 100m.
	Formation Tester	Pre-tests and formation samples to be taken as appropriate. Refer to MDT protocol.

GEOLOGICALLY RELATED DRILLING HAZARDS

Bore Hole Conditions

i) **Brecciated/Sheared Fault Zones**

There is a possibility for small-scale (sub-seismic) faults to be encountered in the reservoir section and also in the section from -790m TVDSS to top Latrobe Group. LCM may be required although no lost circulation related to these fault zones has been encountered in offset wells.

ii) **Carbon Dioxide**

Adjacent well control indicates the primary target section at West Whiptail-1 is expected to have low CO_2 (<5%), with ranges in offset wells at 0-4%. There has been low amounts of CO_2 produced from the Barracouta field from the M1 reservoir (0-0.8%). There is a small increase in the CO_2 levels below programmed TD, especially in the sub-volcanic section from adjacent well control. In the Whiting L460 reservoir CO_2 levels from gas production of 0-15% have been recorded, while CO2 levels of 7-12% were recorded in the sub-volcanic *T.longus* section from production tests at Whiting-2. In Wirrah-3 CO_2 concentration of 0-8% were recorded from RFT gas samples taken below the volcanics.

iii) **Hydrocarbon Gas**

Gas was not observed in either Whiptail-1A or Mulloway-1 although a gas anomaly was observed on the mudlog at the top of the Latrobe Group in Whiptail-1A. Gas columns are present throughout the shallow Latrobe Group section at Barracouta and three gas sands were intersected in Tarwhine-1 below 2300 m TVDSS. It is considered unlikely gas will be encountered at the top of or within the Latrobe Group at West Whiptail 1.

iv) **Swelling Shale**

The Lakes Entrance Formation is recognised as a potential problem zone for swelling shale. At the West Whiptail-1 location, the Lakes Entrance Formation (measured from the base of High Velocity Channel 4 (HVC4) to the top of the Latrobe Group) is expected to be 322m thick..

v) **Coal**

Sloughing coals are a documented problem within the Latrobe Group in the Gippsland Basin. However drilling problems associated with sloughing coals have not been reported in nearby offset wells. Coals in adjacent wells are predominantly 2-20 m thick and similar coal thicknesses are expected at the West Whiptail-1 location.

vi) **Hydrogen Sulphide Gas**

H_2S was not a documented problem in exploration wells drilled in the Gippsland Basin prior to Sole-2 (2002) drilled on the NE basin margin. Experience to date suggests new fields have very low concentrations that increase over the duration of the production life of a field, commonly in response to coning of water. H_2S levels at Barracouta range from 0-18 ppm recorded from gas production (*N.asperus* section) in 1992, yet H_2S was not measured in the exploration or production wells. At West Whiptail-1 H_2S levels are expected to be in the range of 0-20 ppm for the entire well. Contingent on economic success at West Whiptail-1, facilities fabrication is scheduled to begin prior to development drilling, therefore H_2S will be measured in West Whiptail-1 to the extent necessary and appropriate to support materials selection.

Over Pressure

i) **Abnormal Pressures**

Latrobe Group: Normally pressured systems are anticipated from TOL to TD, that is ~ 1.4 psi/m (~8.5-8.6 ppg MWE). It is anticipated that West Whiptail will be normally pressured throughout the Latrobe Group section.

ii) **Sea Floor Hydrocarbon Seeps**

There is no evidence of sea-floor hydrocarbon seeps.

iii) **Flowing Formation**

Offset well data indicates no instances of formations flowing water and on this basis it is not anticipated to occur at the West Whiptail-1 location.

iv) **Shallow Production**

Shallow production not present at the nearby Barracouta and Whiting Field.

v) **Shallow Gas**

No shallow gas zones have been identified during drilling of adjacent wells (Barracouta, Whiting and Tarwhine Fields, Mulloway-1 or Whiptail-1A). Total gas units recorded above TOL are in general low. In Whiting-2 total gas ranged from 5-15 units (background 5 units) above the TOL. Although there is no demonstrated relationship between seismic amplitudes and shallow gas in the area, no shallow seimic amplitude anomalies have been identified at the West Whiptail-1 location.

Under Pressure

i) **Drawn Down Reservoir**

Gas production from the Barracouta N1 reservoir may result in drawn down reservoirs if the reservoir is continuous across to the West Whiptail 1 location. The N1 reservoir is 120psi drawn down at Barracouta while the deeper M1 reservoir has been drawn down 90psi. Approximately 5 psi drawdown over 3.5 years was observed between the drilling of Whiptail 1A and Mulloway 1. The N reservoirs at Mulloway 1 exhibited approximately 40 - 45 psi drawdown in 1989 relative to the original basin gradient and assuming a similar rate of drawdown a further 20 psi drawdown (total 60 psi) is likely at West Whiptail-1.

ii) **Lost Returns**

Lost return intervals were recorded from Barracouta-4 at -874mTVDss and -1210mTVDSS within a Miocene sandstone section. Based on seismic correlation and cuttings descriptions from Whiptail-1A a porous and permeable section is expected to be variably present at West Whiptail-1 between the depths of 350 - 530 m TVDSS.

Completed by : _____
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Geologist

Checked by : _____
K. Kuttan
Petrophysicist

REFERENCES

Moore J. F. 2003. Whiptail Complex Depth Conversion Project. EAPL Unpublished Report.

Kuttan K., Kulla J.B. & Neumann R.G. 1985. Freshwater influx in the Gippsland Basin: impact on formation evaluation, hydrocarbon volumes, and hydrocarbon migration. *Australian Petroleum Exploration Association Journal*, 26, 242-9.

Whiptail-1A Well Completion Report. EAPL Unpublished Report.

Mulloway-1 Well Completion Report. EAPL Unpublished Report.

FIGURES

GIPPSLAND BASIN LOCATION MAP

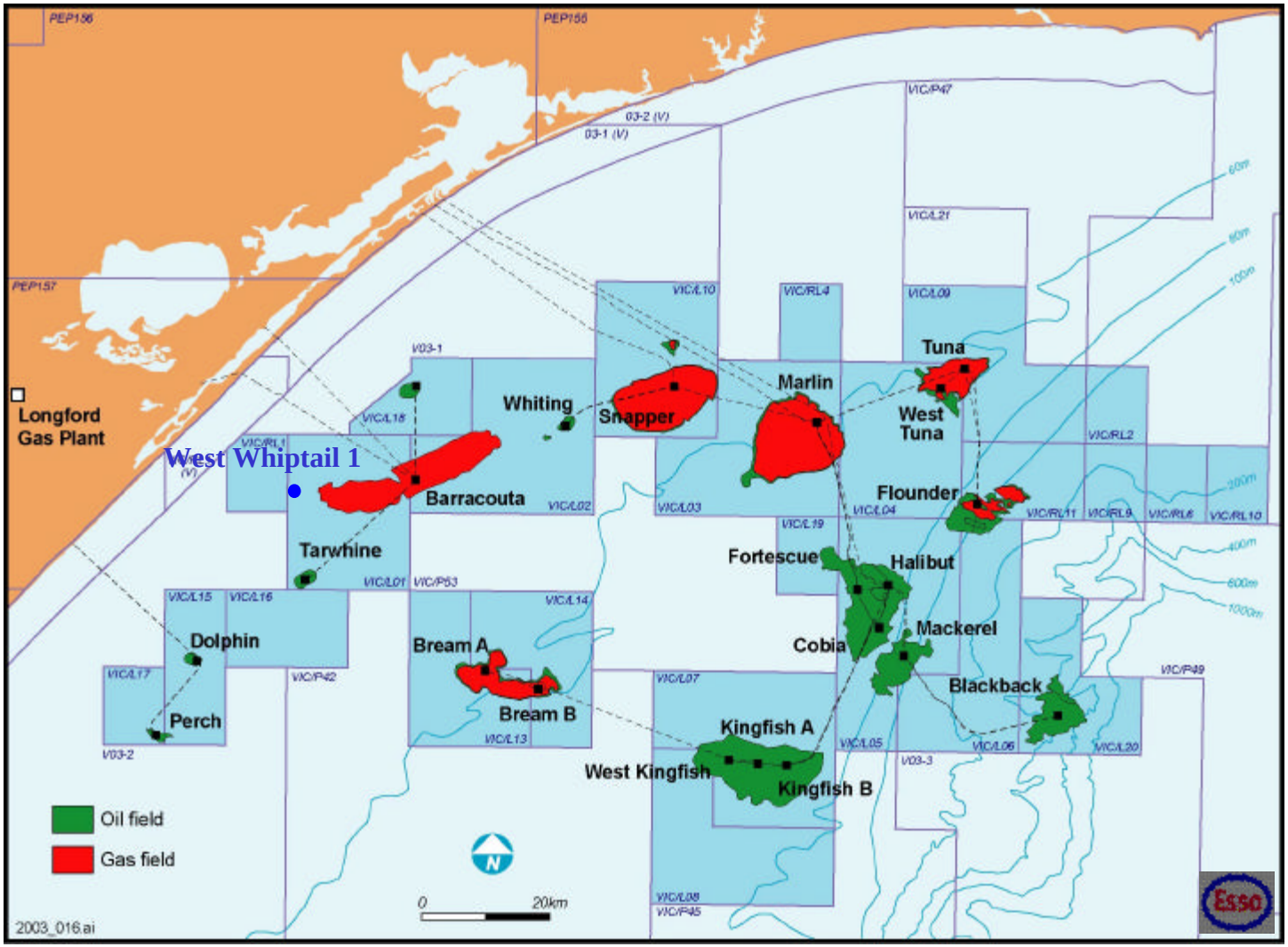
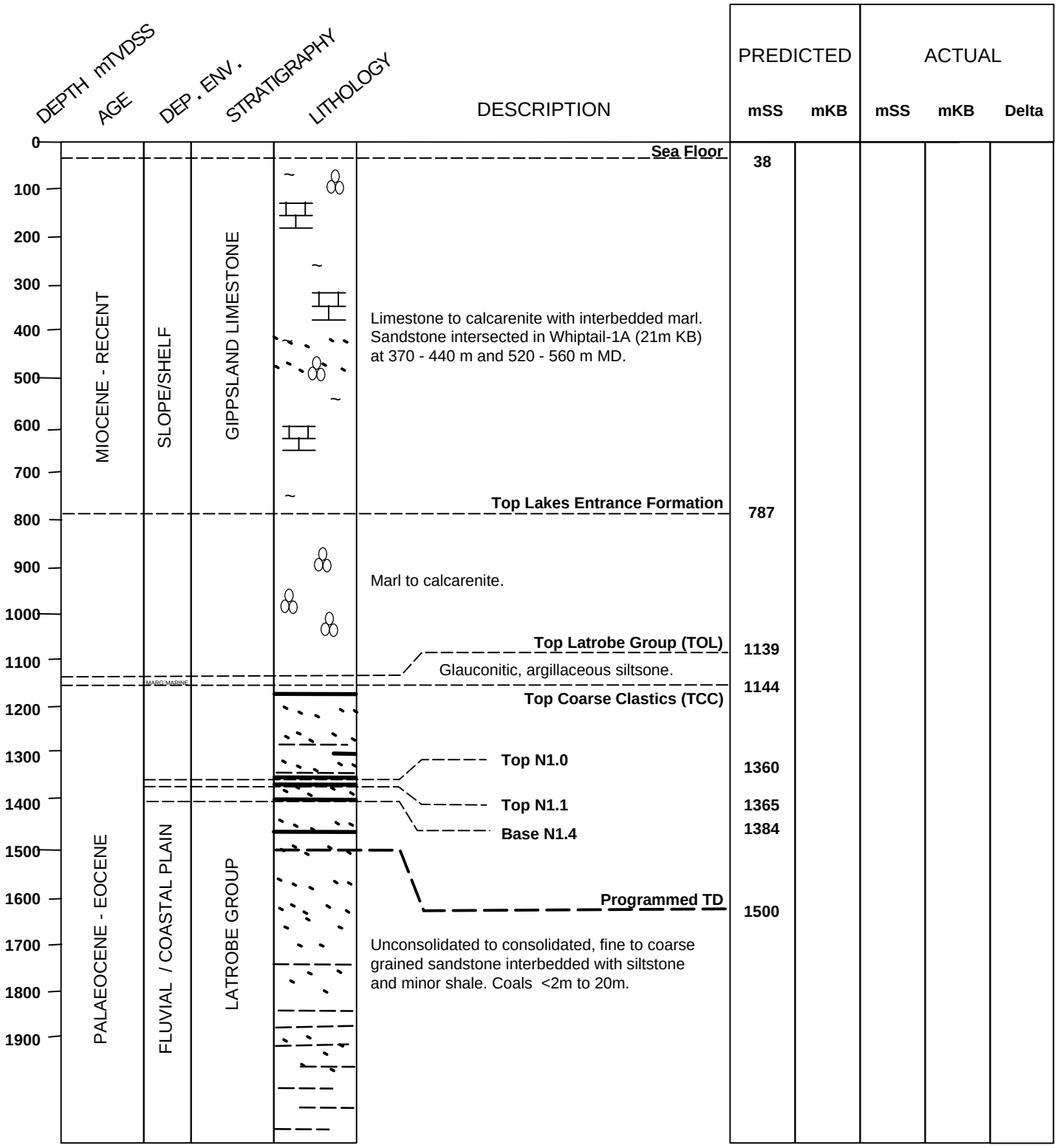


FIGURE 1

WEST WHIPTAIL-1
PREDICTED STRATIGRAPHY



** Predicted stratigraphy referenced to Depth Model B*

FIGURE 2

MULLOWAY 1 RFT INTERPRETATION

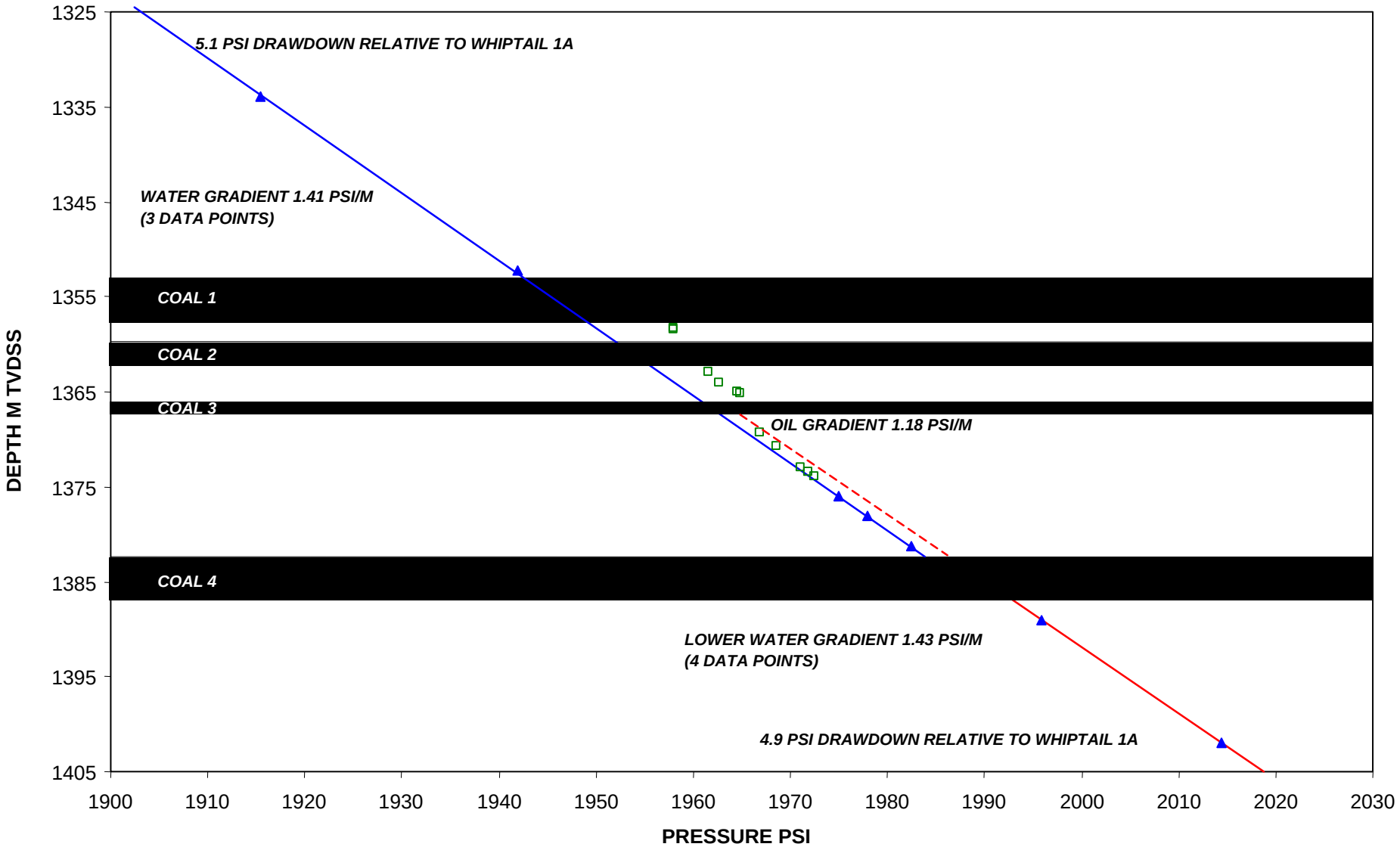


FIGURE 3

WHIPTAIL 1A RFT INTERPRETATION

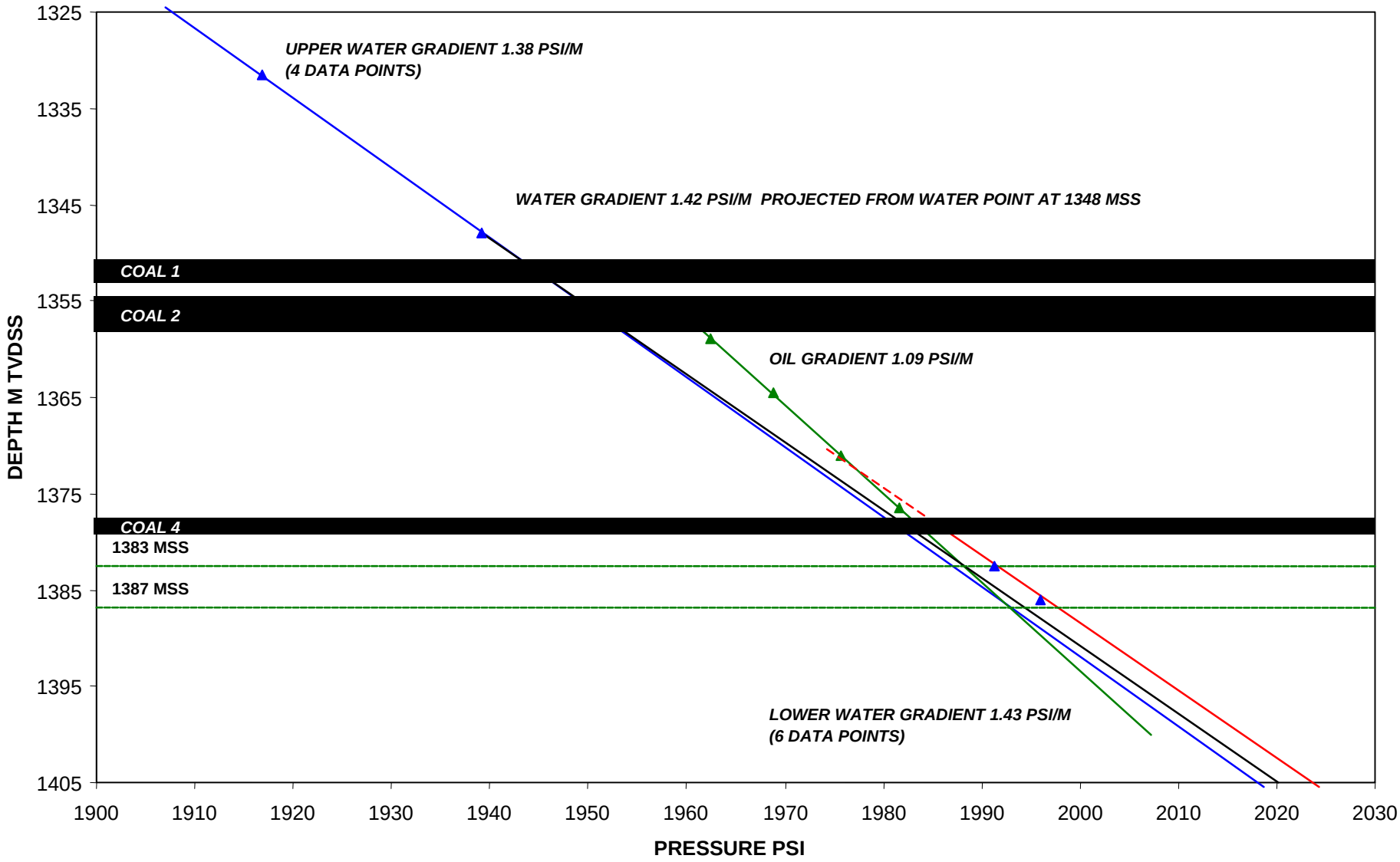


FIGURE 4

MULLOWAY 1 AND WHIPTAIL 1A OIL GEOCHEMISTRY

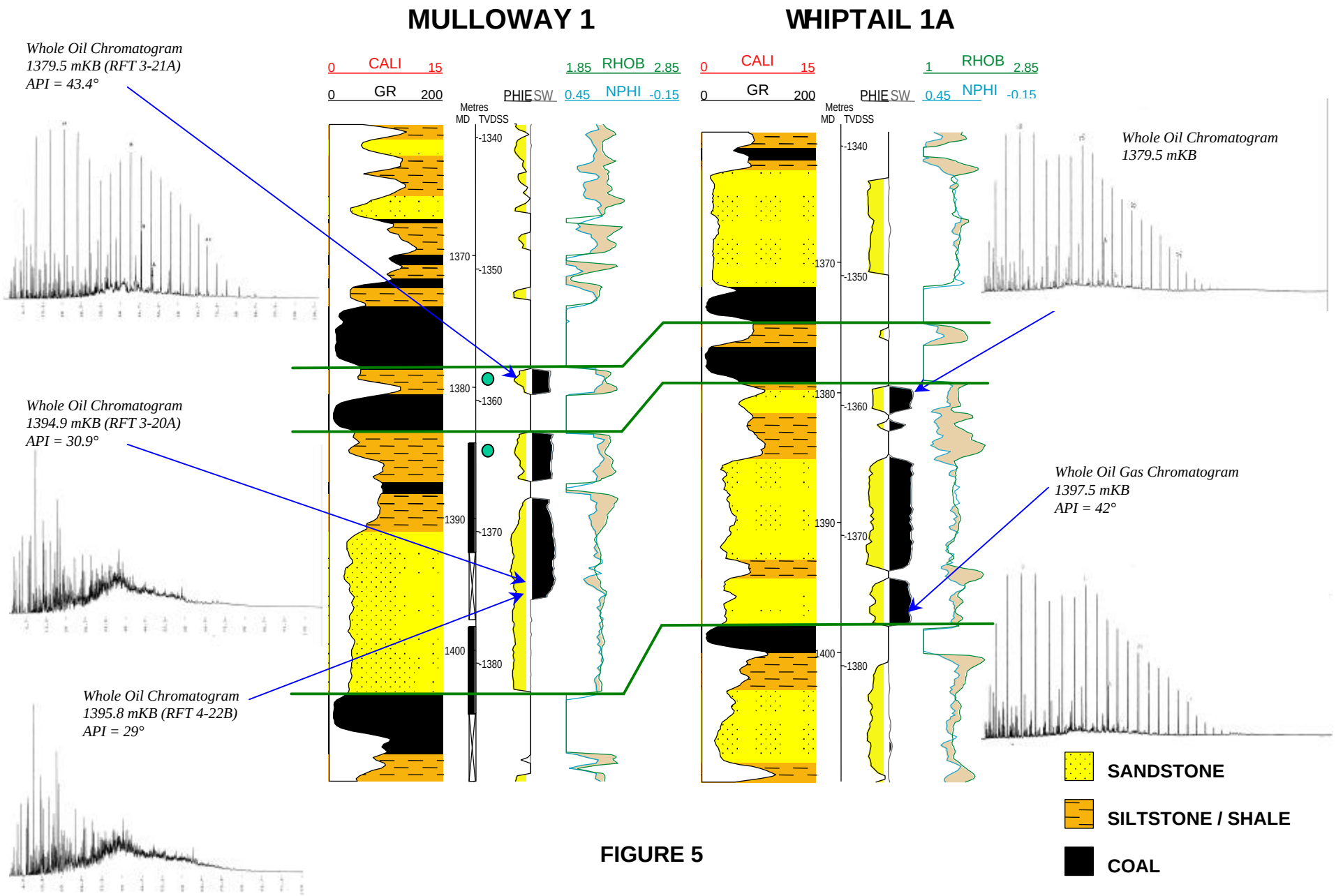


FIGURE 5

WHIPTAIL 1A ZERO OFFSET SYNTHETIC

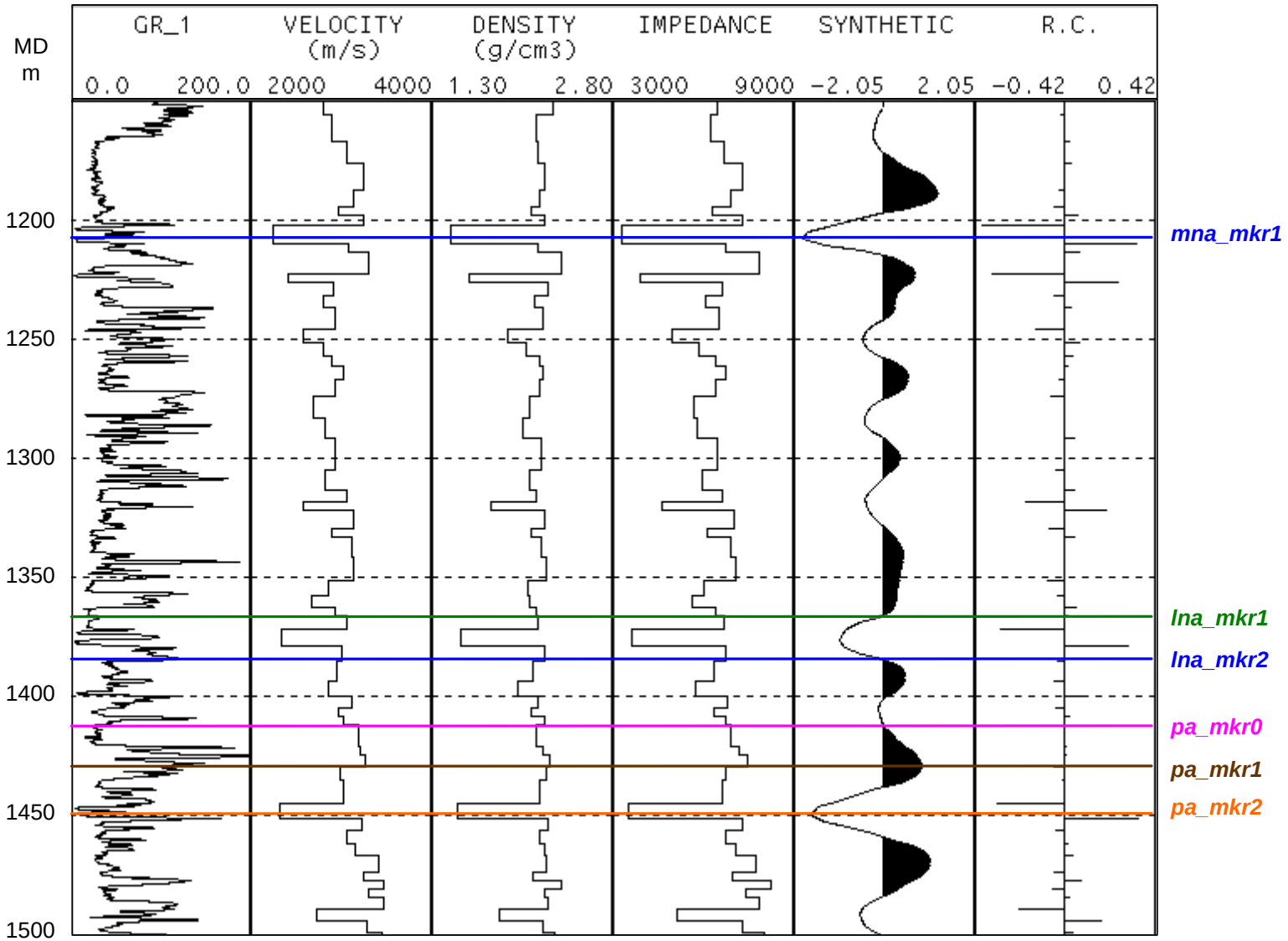


FIGURE 6

30 HZ RICKER WAVELET 90° PHASE SHIFT

MULLOWAY 1 ZERO OFFSET SYNTHETIC

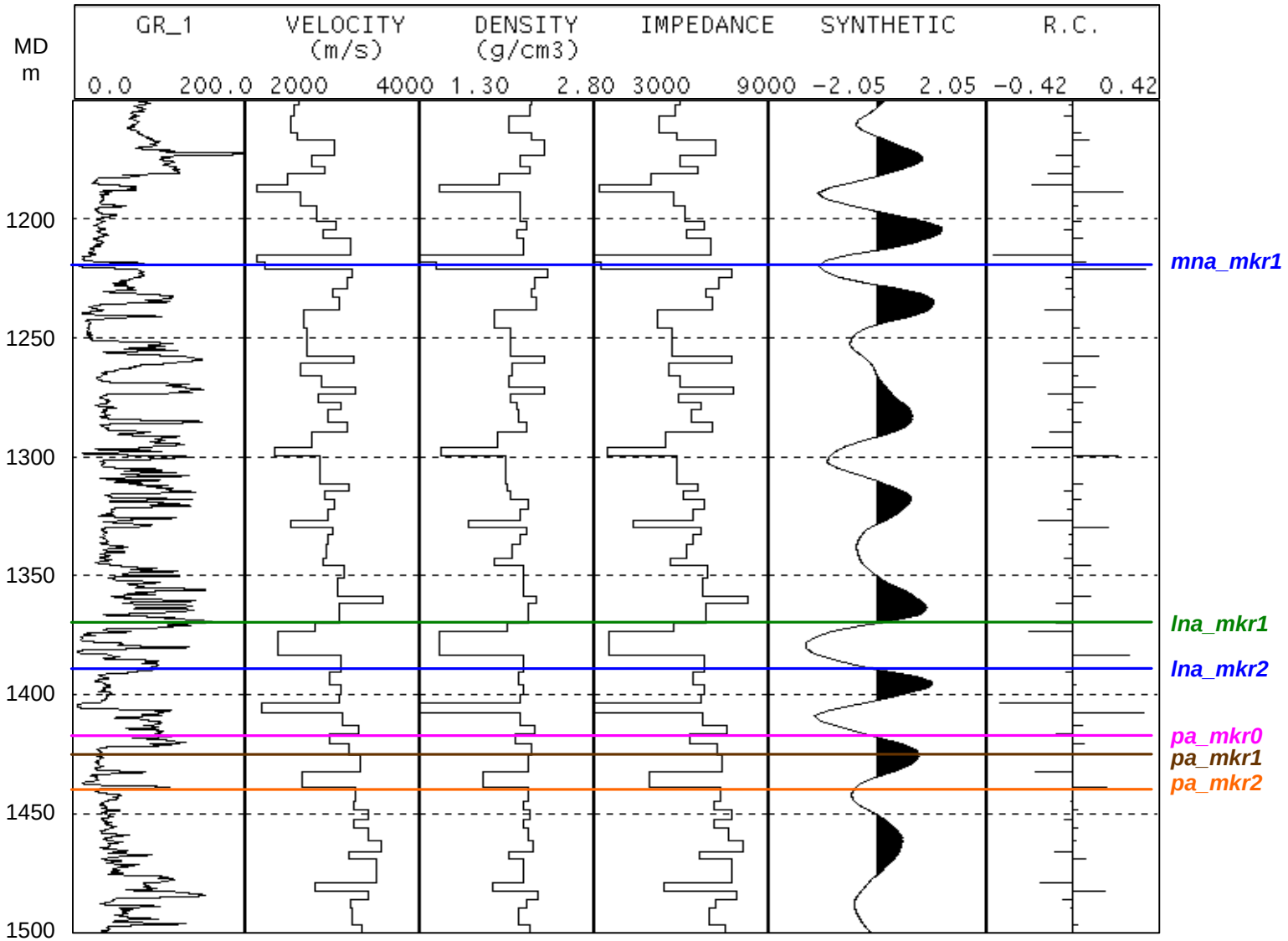


FIGURE 7

30 HZ RICKER WAVELET 90° PHASE SHIFT

WEST WHIPTAIL 1 INTERPRETED SEISMIC LINE

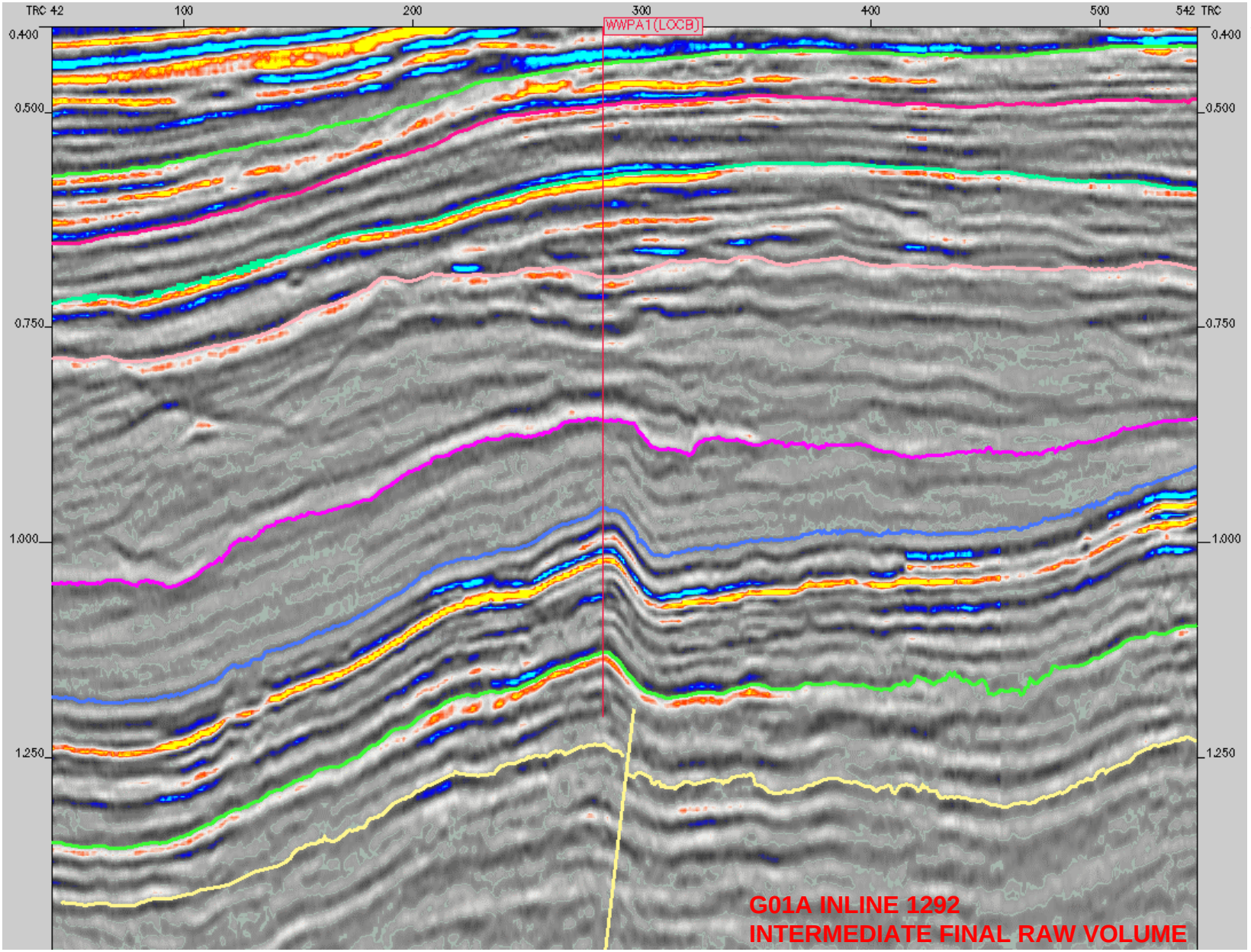


FIGURE 8

N1.1 TWT STRUCTURE MAP

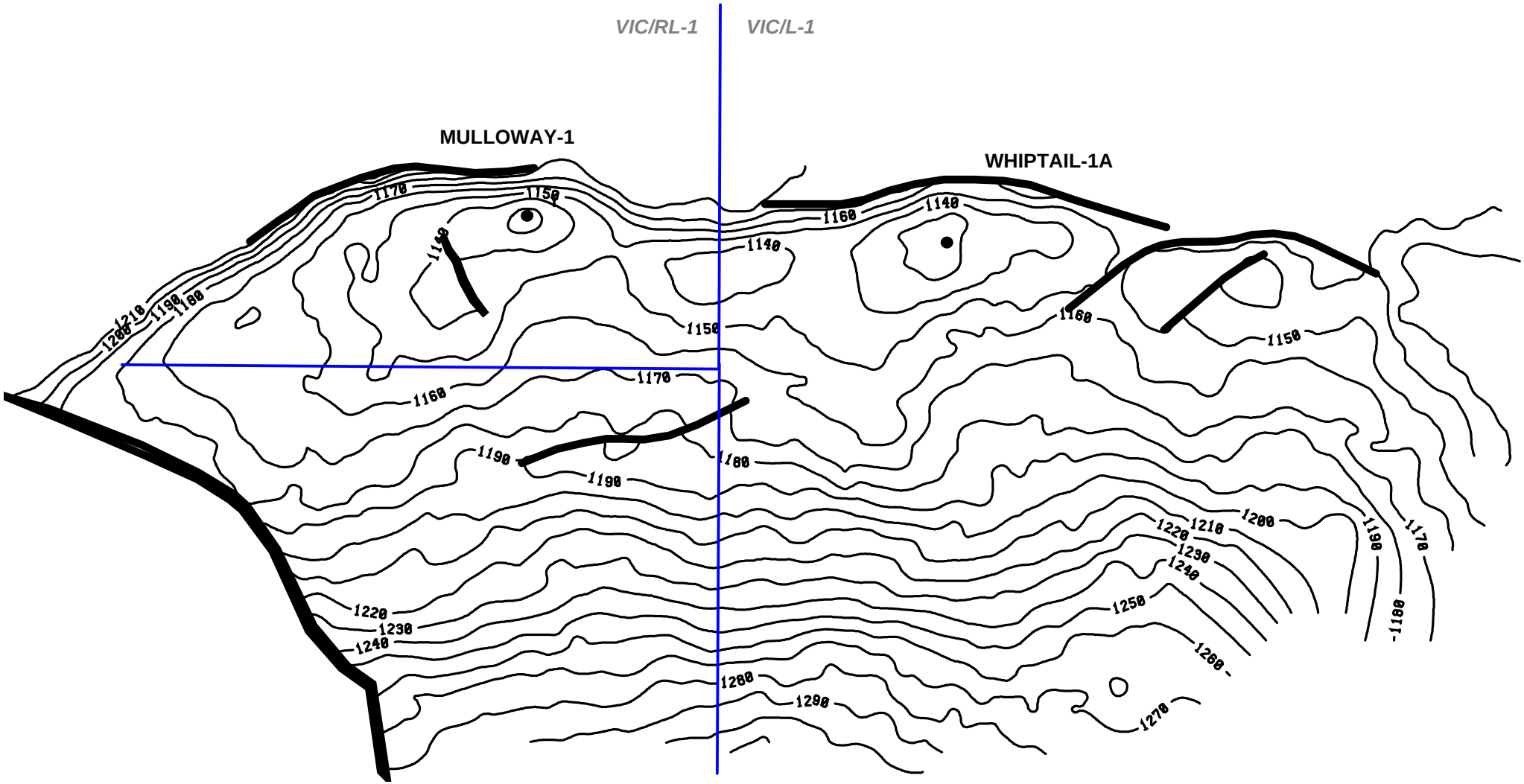
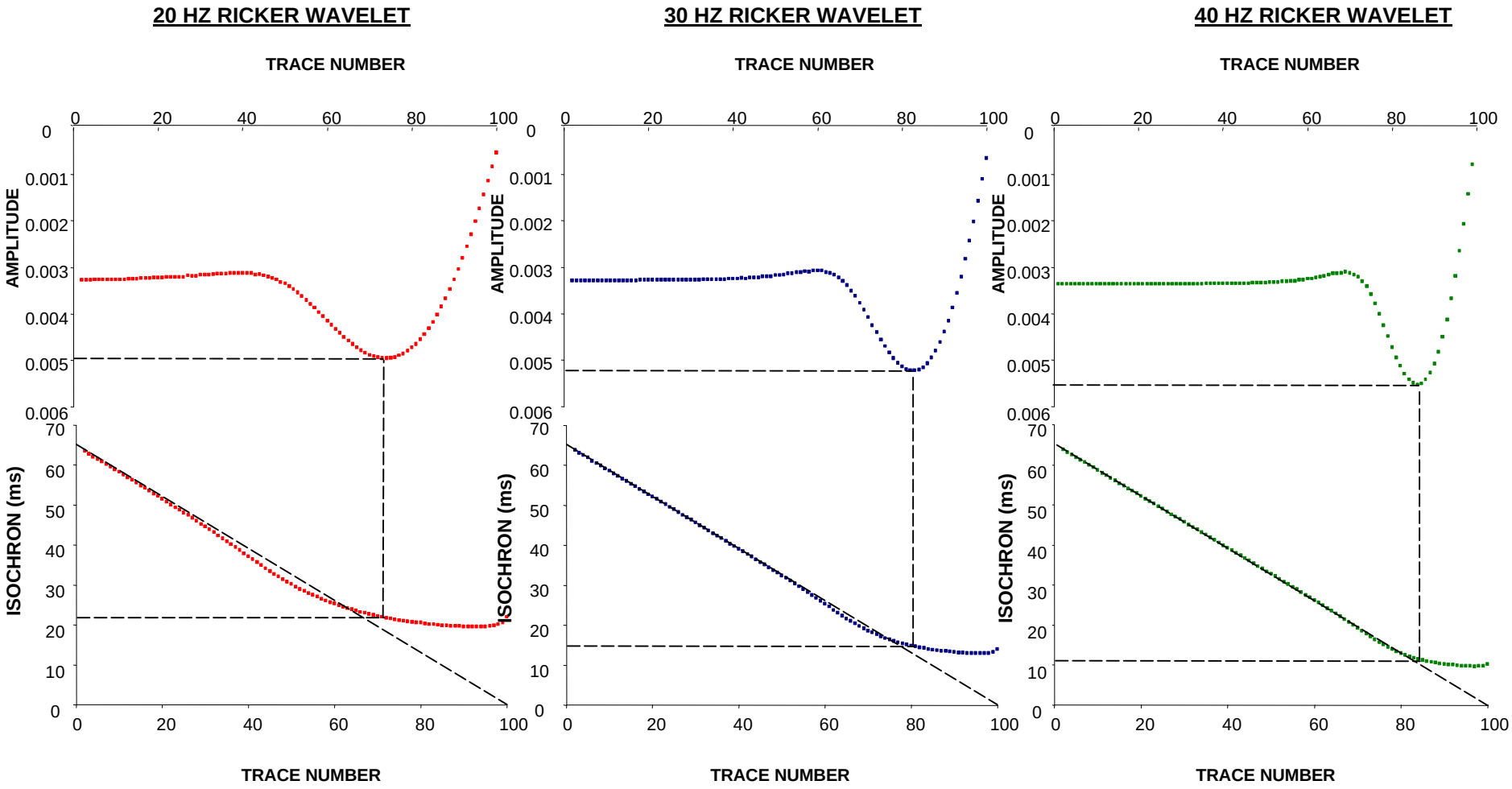


FIGURE 9

OIL SAND TUNING MODEL



PEAK TUNING @ TRACE 74 (21.4 ms)

Vint =3100

33 METRES

PEAK TUNING @ TRACE 82 (14.4 ms)

Vint =3100

22 METRES

PEAK TUNING @ TRACE 86 (11 ms)

Vint =3100

17 METRES

FIGURE 10

N1.1 DEPTH STRUCTURE MAP (MODEL A)

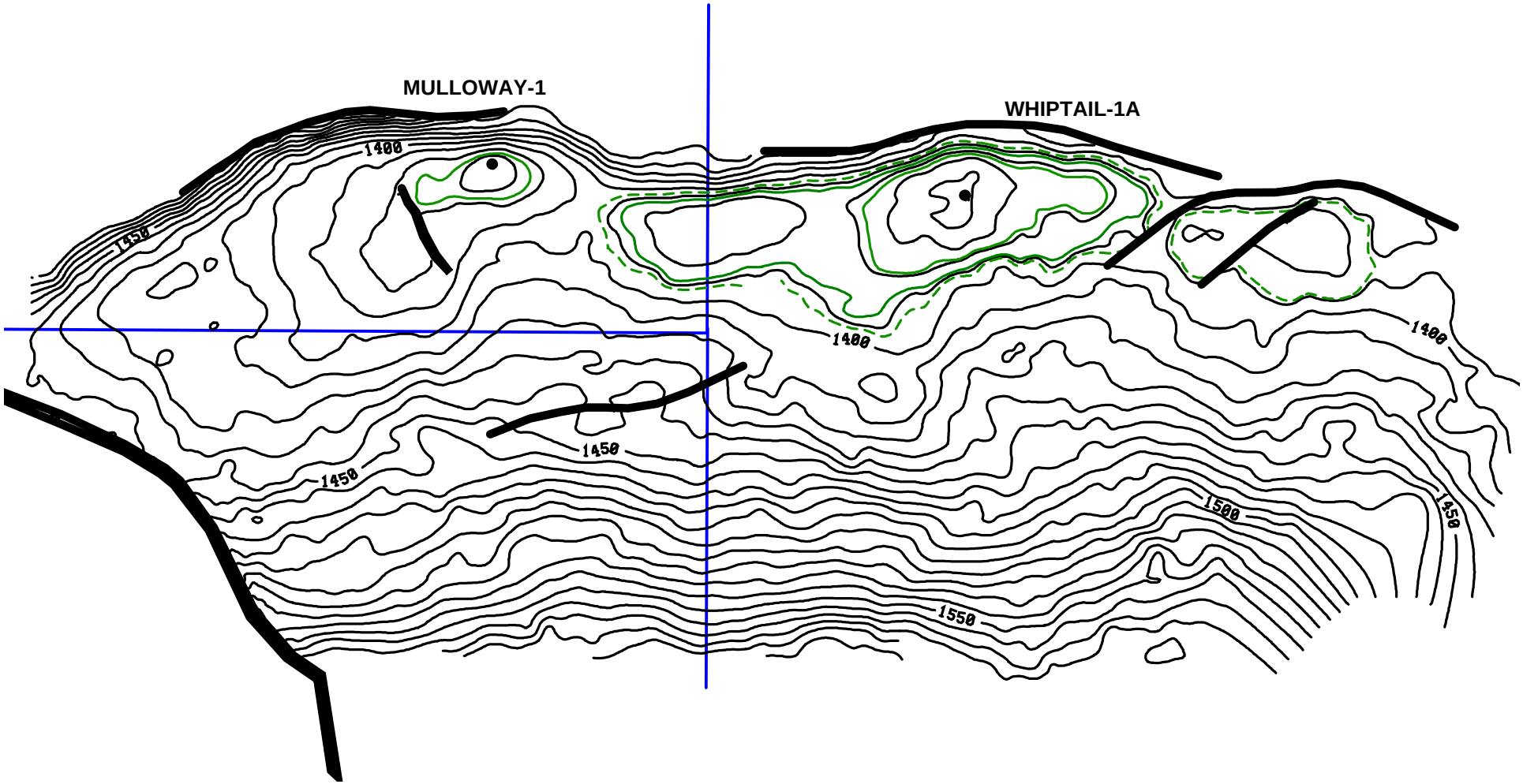


FIGURE 11

N1.1 DEPTH STRUCTURE MAP (MODEL B)

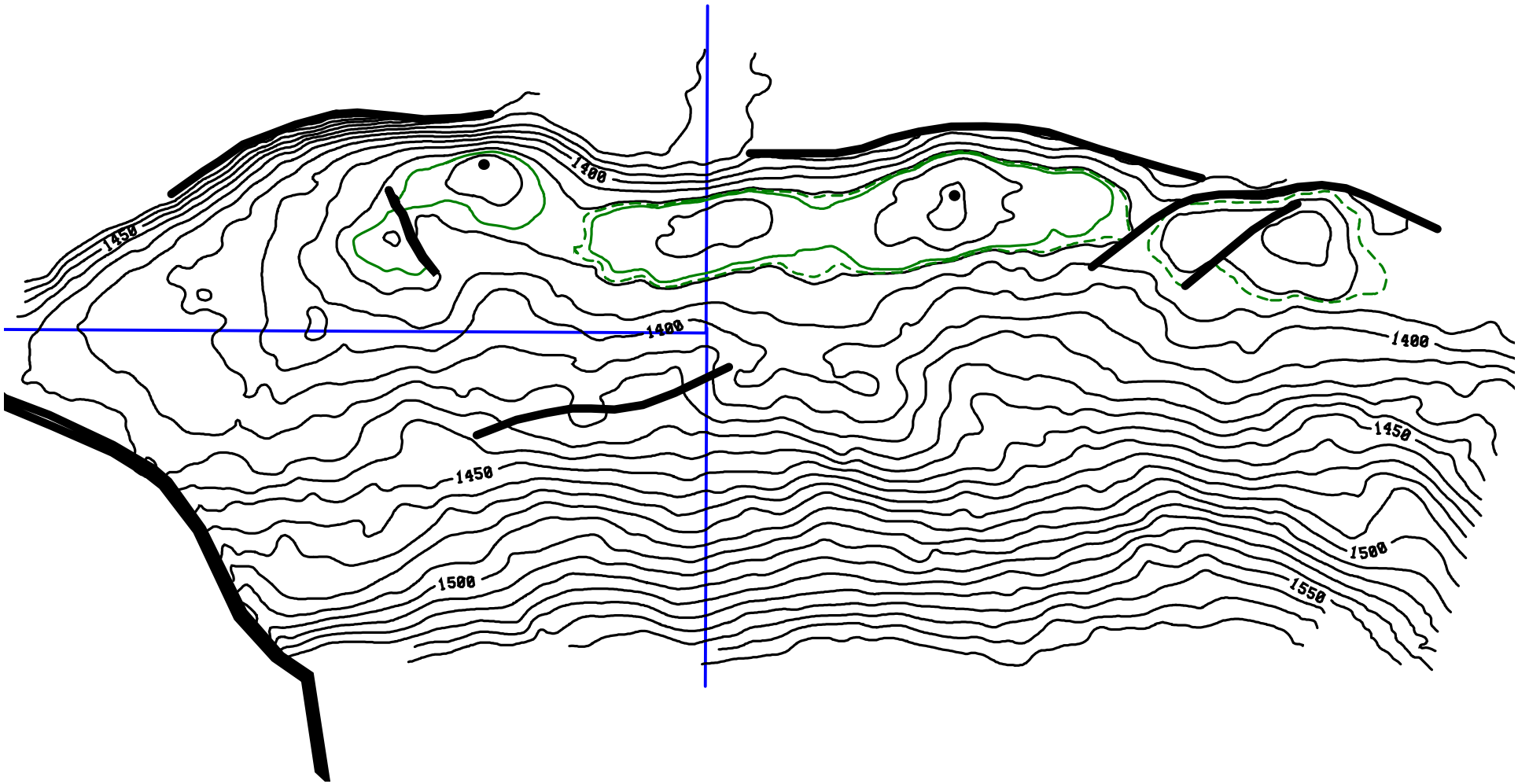
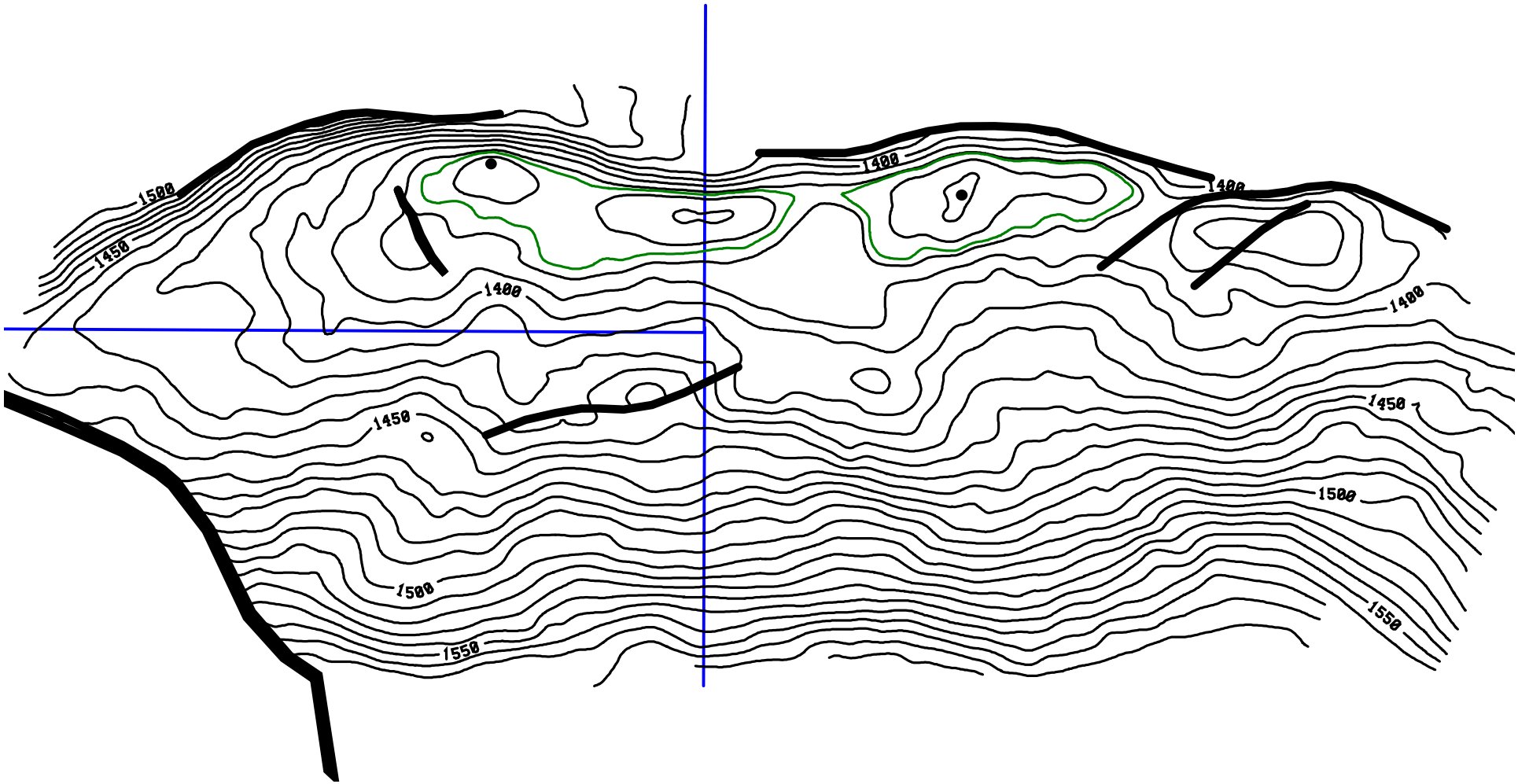


FIGURE 12

N1.1 DEPTH STRUCTURE MAP (MODEL C)



KILOMETERS 0 .5 1.0 KILOMETERS

STATUTE MILES 0 .2 .4 .6 .8 1.0 STATUTE MILES

FIGURE 13

N1.0 / N1.1 COMPOSITE DEPTH STRUCTURE MAP (MODEL D)

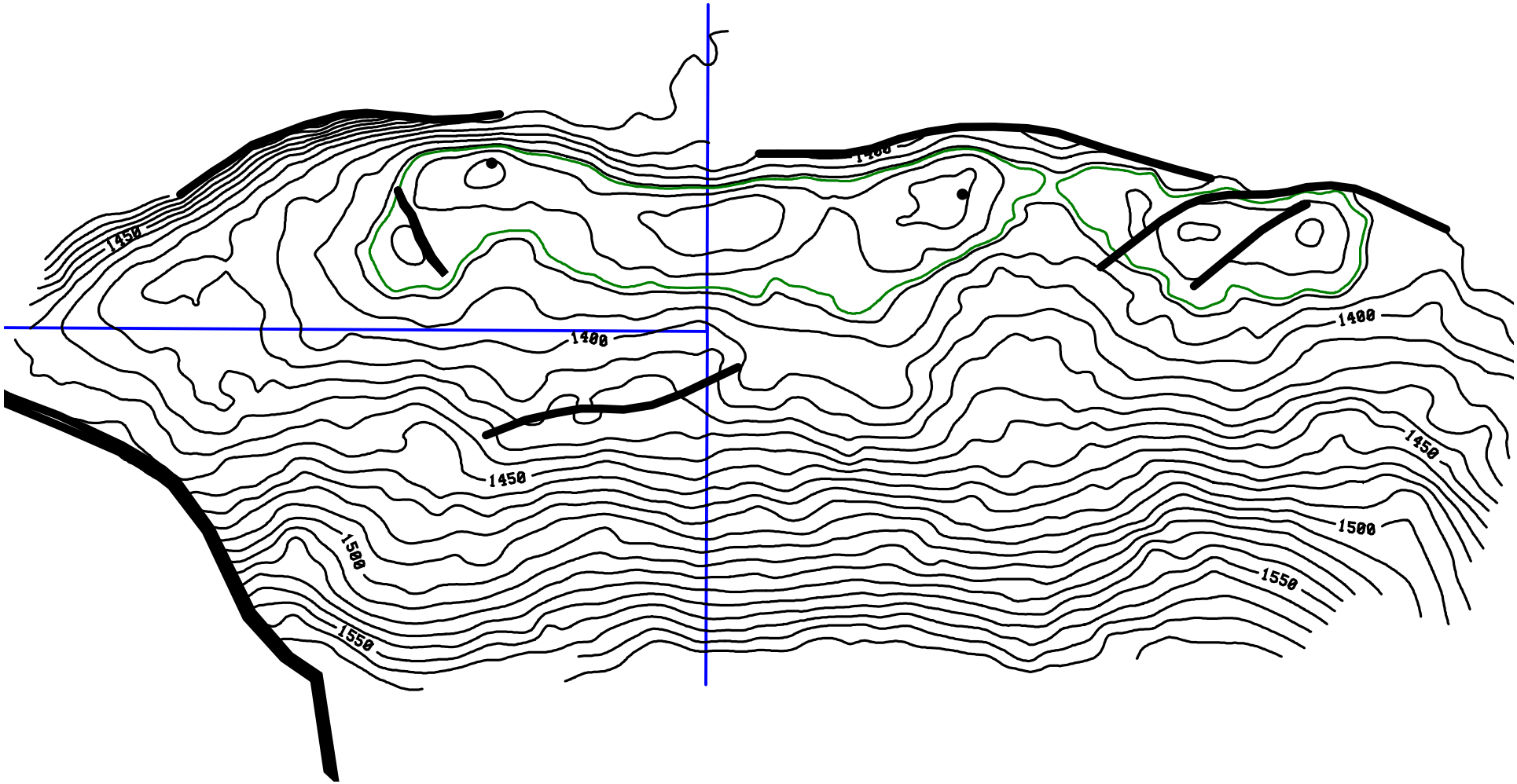


FIGURE 14

WHIPTAIL COMPLEX RESERVOIR PARAMETERS

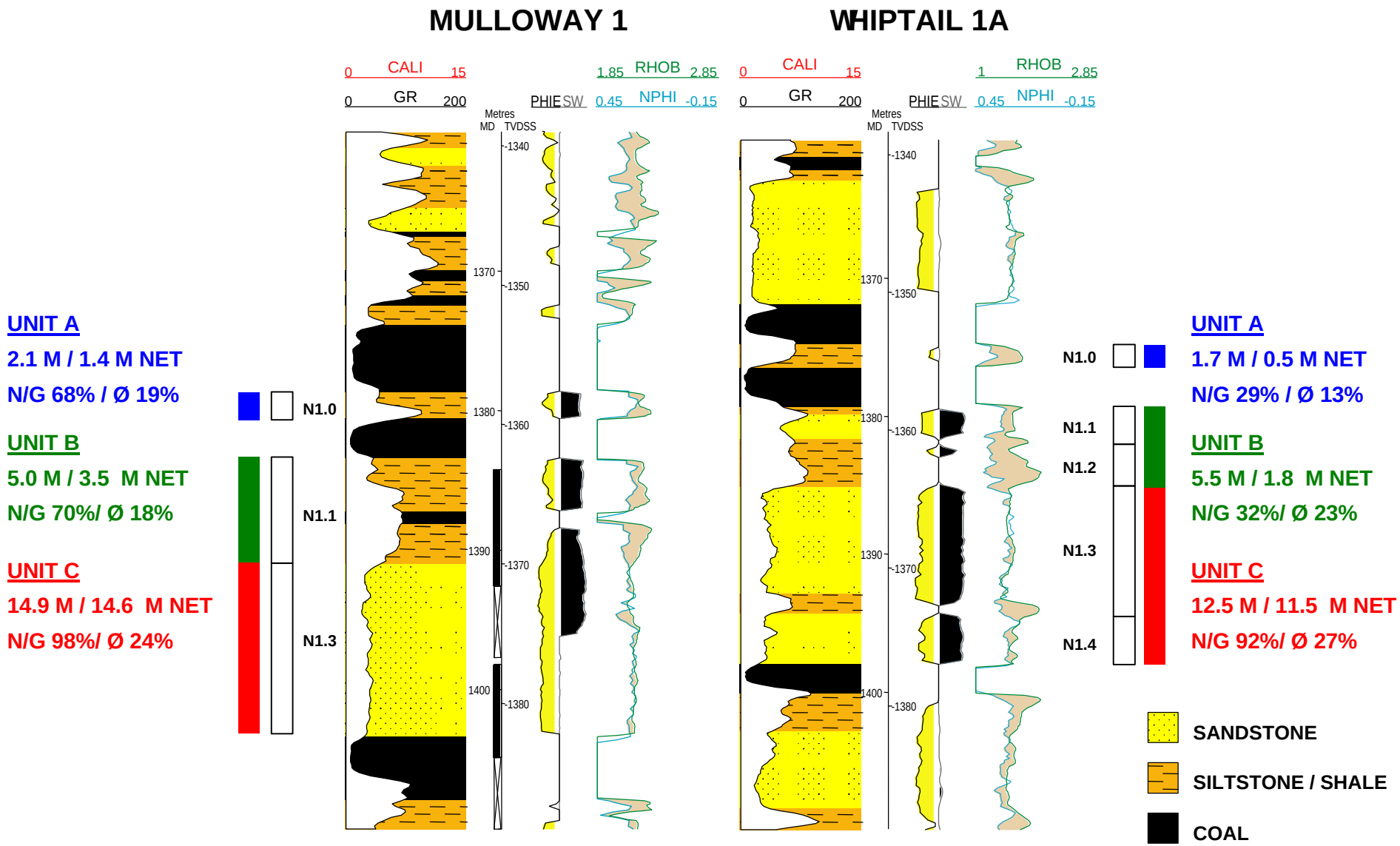
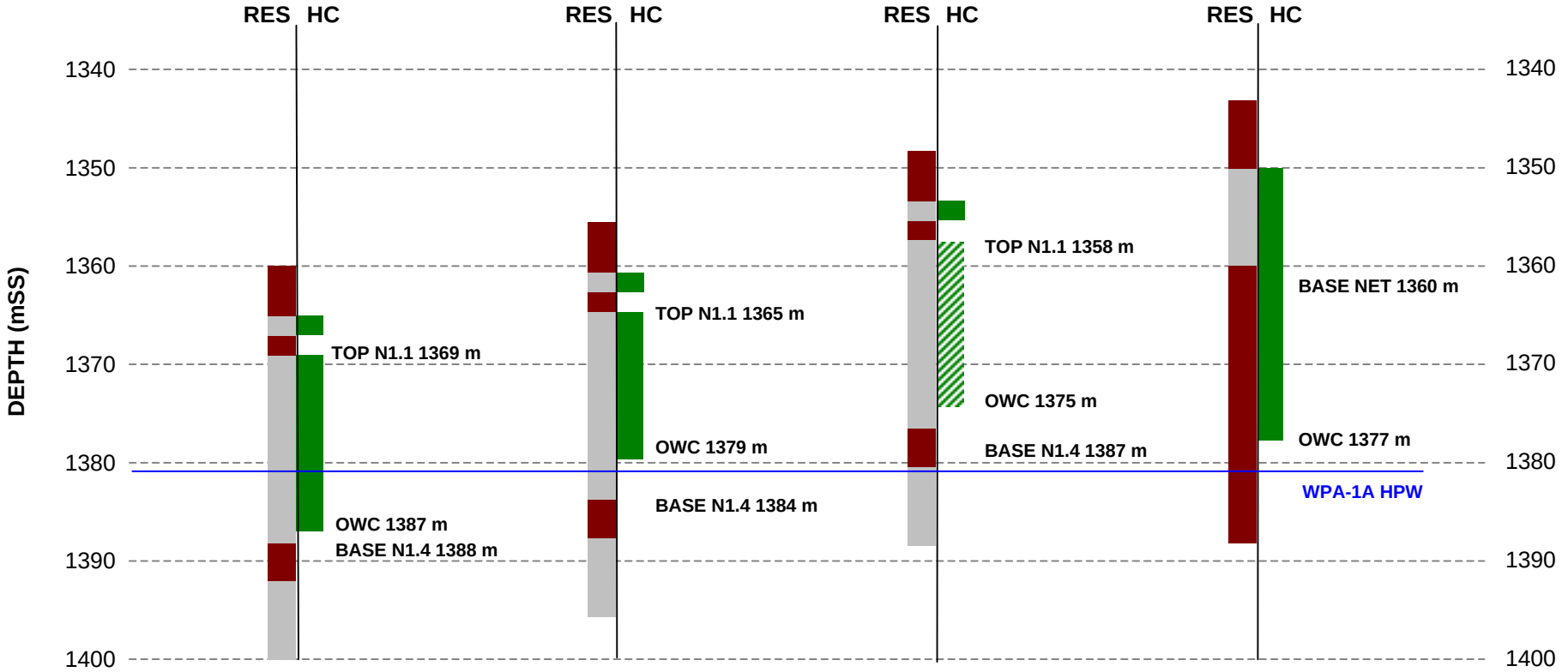


FIGURE 15

WEST WHIPTAIL-1 GEOLOGIC SUCCESS CASE SCENARIOS

SCENARIO	A	B	C	D
GROSS PAY* (M)	18	14	17	10 / 27



DISCRIMINATING CRITERIA

- UNBIODEGRADED OIL
- OWC BELOW WPA-1A HPW

- UNBIODEGRADED OIL
- OWC ABOVE WPA-1A HPW

- BIODEGRADED N1.1 - N1.4 OIL
- SHALLOW N1.1 CREST
- OWC = 1375 m (MWA-1)
- OWC ABOVE WPA-1A LPO

- UNBIODEGRADED OIL
- LOW NET SECTION (<50%)
- POTENTIAL OIL ON ROCK

OIL
NET
BIODEGRADED OIL
NON NET

FIGURE 16

* PRIMARY TARGET N1.1-N1.4

ENCLOSURES

orig. SLO Group
xc. CAJ
CPM
Well file x 2
Surv. file x 2

Environment Australia

Department of the Environment and Heritage

Mr Dan Whiteman
Esso Australia Pty Ltd
12 Riverside Quay
SOUTHBANK VIC 3006

Dear Mr Whiteman

Esso Australia Pty Ltd/Exploration (mineral, oil, gas)/Bass Strait/VIC/2004/2005 drilling program for exploration and production (VIC 0l-06, 09-11, 16, 18 & 19 and VIC/RL 01 & 04 EPBC 2003/1282

Thank you for the above referral, received on 13 November 2003, for decision whether or not approval is needed under Chapter 4 of the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). The referral documentation nominated Esso Australia Pty Ltd as the person proposing to undertake the action.

The referral has now been considered under the EPBC Act and I have decided that the action is not a controlled action. Approval is therefore not needed under Part 9 of the Act before the action can proceed. A copy of the document recording my decision is attached for your information.

Please note that this decision only relates to the potential for significant impact on the specific matters of national environmental significance protected by the Australian Government under the EPBC Act. There may be a need for separate State or Local Government environmental assessment and approval to address potential impacts on State, regional or local environmental values.

We note that the proposed exploration and production drilling program for 2004/2005 is to determine the presence of significant hydrocarbon accumulations within the relevant lease areas in the Bass Strait and that, in the event any production testing of wells are planned, Esso proposes to submit a separate referral under the EPBC Act.

Chapter 5 of the EPBC Act states that it is an offence to take, kill, injure, move, trade or keep a member of a listed migratory species, listed threatened species or ecological community, listed marine species, or a cetacean, in a Commonwealth area (terrestrial or marine). It is necessary to make a separate application for a permit if the above circumstances are likely to apply to a proposed action. Further

information may be obtained by calling 1800 SO3 772 or visiting Environment Australia's web site (http://www.deh.gov.au/epbc/).

Yours sincerely

Mark Flanigan
Assistant Secretary
Policy and Compliance Branch

9 December 2003

AUSTRALIAN GOVERNMENT

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

DECISION THAT ACTION IS NOT A CONTROLLED ACTION

Pursuant to section 75 of the *Environment Protection and Biodiversity Conservation Act 1999*, I, MARK FLANIGAN, Assistant Secretary, Policy and Compliance Branch, Department of the Environment and Heritage, decide that the proposed action, set out in the Schedule, is not a controlled action.

SCHEDULE

The proposed action by Esso Australia Pty Ltd to undertake exploration and production drilling activities during the period January 2004 to December 2005 (inclusive) within the Gippsland Basin, Bass Strait, Victoria, and as described in the referral received under the Act on 13 November 2003 (EPBC 2003/1282).

Dated this 9 day of DECEMBER 2003

.....

ASSISTANT SECRETARY

POLICY AND COMPLIANCE BRANCH

DEPARTMENT OF THE ENVIRONMENT AND HERITAGE

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
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61 3 9270 3333 Telephone

30 January, 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002
Attention: Mr H. Haag

Dear Sir,

Subject: Acceptance of the Bass Strait MODU Drilling Program Environment Plan

Pursuant to the Petroleum (Submerged Lands) (Management of Environment) Regulation 9, we hereby submit for acceptance the **Bass Strait MODU Drilling Program Environment Plan**.

Please contact Colin Johancsik on 9270-3534 (E-mail: colin.a.johancsik@exxonmobil.com) if you require any further information.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)

Daniel L. Whiteman
Drilling Manager

bcc: R. Reinten (SRO)
W Mudge
A. Djakic
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

Bass Strait
MODU Drilling Program
Environment Plan

(Supplemental to the Bass Strait Environment Plan)

ESSO AUSTRALIA PTY LTD

APPROVALS

This Bass Strait MODU Drilling Program Environment Plan has been reviewed by Esso Australia Pty Ltd (EAPL) and is approved for the Bass Strait MODU Drilling Program to be undertaken in VIC/RL 01 & 04 as well as VIC/L 01, 02, 03, 04, 05, 06, 09, 10, 11, 16, 18 & 19.

EAPL Approvals:

Frank. W. Kratzer
EAPL Drilling Operations Superintendent

Daniel L. Whiteman
EAPL Drilling Manager

FOREWORD

The Bass Strait Drilling Program is to be conduced in the area of Bass Strait subject to production licenses and retention leases issued under the Petroleum (Submerged Lands) Act 1967 (Cwth). These leases and licenses are held by Esso Australia Resources Pty Ltd (EARPL).

EAPL is wholly owned by EARPL and is contracted to provide personnel and services for the Bass Strait joint venture. For drilling operations, EAPL personnel seek guidance from ExxonMobil Development Company (EMDC), a company with employees based in Houston Texas. EAPL and EMDC are subsidiaries of Exxon Mobil Corporation, a US company with headquarters in Dallas, Texas.

EAPL have developed the Bass Strait Environment Plan (BSEP) which covers all of Esso Australia's exploration and production activities in the Gippsland Basin within Bass Strait. The BSEP has been approved by the Victorian Department of Primary Industries (DPI). This Environment Plan (EP) has been produced in order to abridge the BSEP through the provision of specific details relating to the Bass Strait Mobile Offshore Drilling Unit (MODU) Drilling Program and should therefore be read in conjunction with the BSEP.

ABBREVIATIONS

AHV	Anchor Handling Vessel
AMOSC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production and Exploration Association
ATBA	Area to be Avoided
BBMT	Barry Beach Marine Terminal
BOP	Blowout Preventer
BSMDP	Bass Strait MODU Drilling Program
BSEP	Bass Strait Environment Plan
Cwth	Commonwealth
DEH	Department of Environment and Heritage
DEH	Department of Natural Resources and Environment
DPI	Department of Primary Industries
EAPL	Esso Australia Pty Ltd
EARPL	Esso Australia Resources Pty Ltd
EMDC	ExxonMobil Development Company
EMM	Environment Management Manual
EP	Bass Strait MODU Drilling Program Environment Plan
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ERM	Emergency Response Manual
MSDS	Material Safety Data Sheets
MODU	Mobile Offshore Drilling Unit
OIM	Offshore Installation Manager
OIMS	Operation Integrity Management System
OSCP	Oil Spill Contingency Plan
OSV	Offshore Support Vessel
PHPA	Partially Hydrolysed Polyacrylamide
P(SL)A	Petroleum (Submerged Lands) Act 1967
SRO	Safety, Regulatory and OIMS

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1. EXECUTIVE SUMMARY

Esso Australia Pty Ltd (EAPL) proposes to undertake various exploration and production drilling activities over several Licence areas and Retention Lease areas within the Gippsland Basin, Bass Strait. These activities are proposed to occur over a period of two years. The location of the proposed exploration activities are indicated in Figure 3.1.

This Bass Strait MODU Drilling Program (BSMDP) Environment Plan (EP) has been prepared during the planning stage of the project. It has been developed to comply with the guidelines for the preparation and submission of an EP under the provisions of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999*. The EP outlines the framework that will be followed in order to ensure effective environmental management during activities associated with the drilling program.

EAPL submitted a Referral to the Department of Environment and Heritage (DEH) who determined that for the above drilling program is not a controlled action, under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2. INTRODUCTION

2.1 Background

EAPL, pursuant to an agreement with its parent company of Esso Australia Resources Pty Ltd, proposes to undertake an extended drilling program within the Gippsland Basin, Bass Strait in the production license and retention lease areas as indicated below in Figure 3.1. The exact location and number of wells to be drilled during this program has not been finalised at this time. The first two wells are proposed to be West Whiptail-1 in VIC/L1 and West Moonfish-1 in VIC/L10. The final number and location of wells to be drilled during the program will ultimately depend on the results of the ongoing assessment of the recently completed 3D seismic program, which has been conducted over the program area.

2.2 The Proponent

EAPL presently provides personnel services for 21 oil and gas projects within the Gippsland Basin, on behalf of the Esso Australia Resources Pty Ltd and BHP Billiton Petroleum (Bass Strait) Pty Ltd Joint Venture (refer to Figure 3.1). The existing operations comprise staffed and not normally staffed production platforms, monotowers and subsea completions.

2.3 Scope and Purpose of this Environment Plan

The scope of this EP is to cover all activities controlled by EAPL Drilling from the completion of loading of materials on the AHVs, through AHVs and MODU activities, to the start of off-loading material returned to the supply base for shipment to vendors, storage or disposal.

The purpose of this EP is to supplement the BSEP through the provision of project specific details regarding the BSMDP. This document has been produced to meet the requirements of the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999* and to minimise the potential impacts of the proposed operations upon the environment.

The work that is proposed for this project is described in detail in Section 3. A summary description of the environment is presented in Section 4. The actual and potential environmental risks and effects of the proposal, based on a review of available information, are discussed in Section 5. The proposed environmental management objectives, standards and performance criteria to ensure that the environmental impacts are minimised are presented in Section 6. An implementation strategy for the environmental commitments is presented in Section 7 and auditing and reporting arrangements are provided in Section 8.

2.4 Further Background Information

Further background information is provided within the BSEP including details regarding the EAPL Environmental Policy as well as legislation, treaties and industry codes of practice which are applicable to the BSMDP.

3. PROJECT DESCRIPTION

3.1 Location

The proposed location of the Bass Strait Drilling Program is provided in Figure 3.1 below and the program is to be undertaken in VIC/RL 01 & 04 as well as VIC/L 01, 02, 03, 04, 05, 06, 09, 10, 11, 16, 18 & 19.

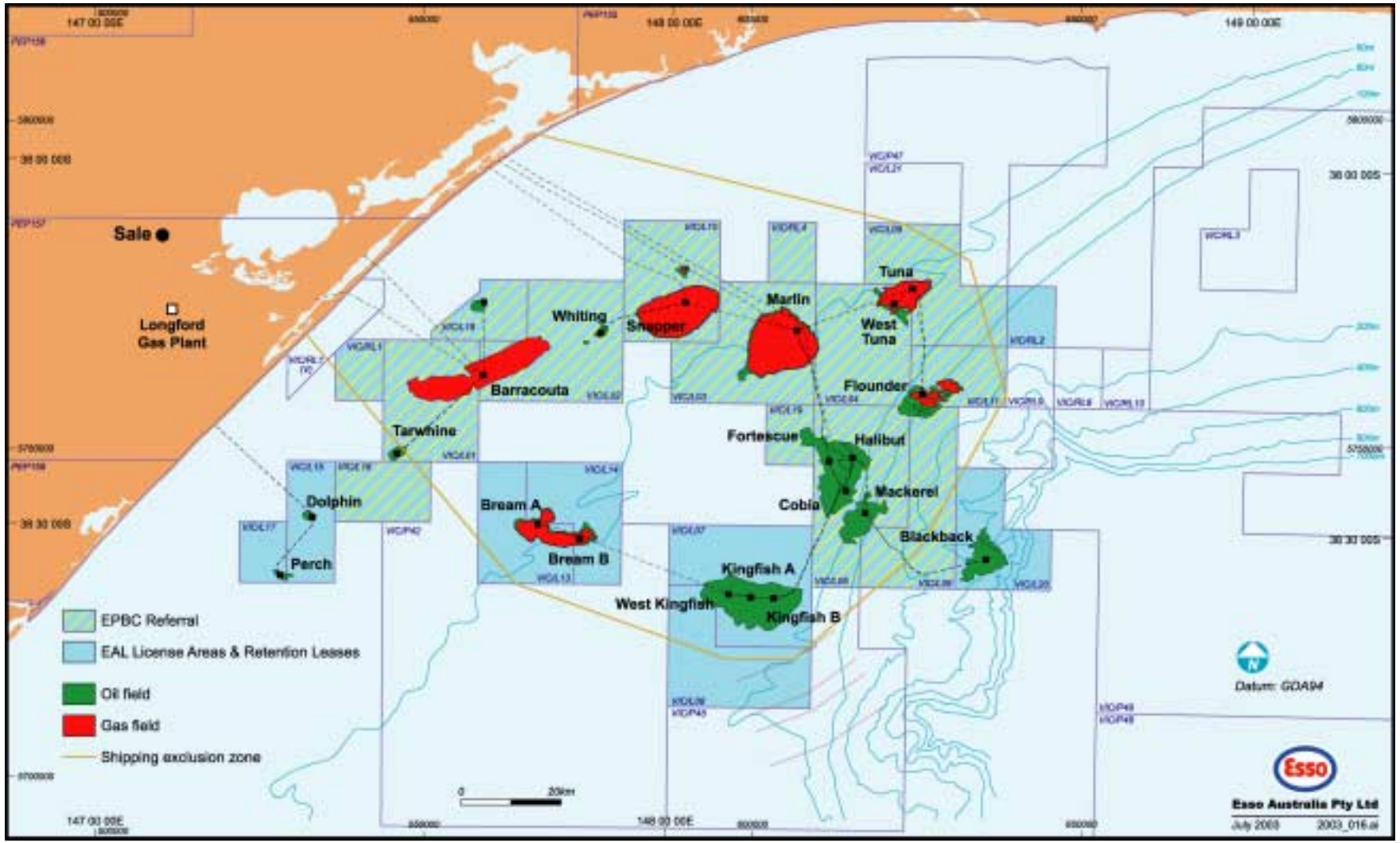
3.2 Project Schedule

Drilling is scheduled to occur over an extended period between March 2004 and December 2005. The exact timing of individual wells will depend on MODU availability.

3.3 MODU Details

A number of different MODU's may be used during the BSMDP, depending on availability and suitability for the particular requirements of each activity.

Figure 3.1 Bass Strait Drilling Program Location Map



3.4 Drilling Techniques

Esso proposes to drill exploration and production wells from both Floating and Jack-up MODUs. The wells proposed will be either vertical or directional oil or gas wells as required to determine if significant hydrocarbon accumulations are present. In the event that any production testing of wells was planned, such testing would only occur after the development and approval of an amended EP.

The proposed drilling fluid scheme is a Water Based Mud (WBM) comprised of Potassium Chloride (KCl), partially hydrolysed poly-acrylamide (PHPA), glycol and polymer mud. Synthetic or oil based drilling fluid is not proposed for this drilling program at this stage.

The drilling program is yet to be fully developed, however the following standard equipment and procedures will be used:

- Cuttings and drilling fluid will be returned to the seafloor while drilling riserless;
- Surface casing will be set and cemented to the seafloor;
- A pressure tested Blow-Out Preventer (BOP) stack will be installed;
- Intermediate casing may be set and cemented if required.

In the event that significant hydrocarbons are encountered wells may be deepened, and/or a production casing string may be set and cemented. These wells will then either be plugged with cement plugs and abandoned or suspended.

Drilled cuttings will be continuously discharged overboard after separation from recirculated drilling fluid by vibrating screens (shale-shakers) and to a lesser extent, desanders and desilters. Cuttings discharged can be expected to range from very fine to very coarse (<1 cm) particle/sediment size. The volume of cuttings discharged will depend on the depth of wells drilled, however will be typically in the order of magnitude of 225 m^3 for a well depth of 2,000 m.

The drilling activities involve strict standards and procedures to ensure that the risk of accidents is minimised. The greatest potential for harmful environmental and safety consequences is from a loss of well control, commonly termed a 'blowout'. The installation of a BOP stack prior to entering regions of known hydrocarbons is therefore a routine and important safety measure.

Loss of well control is very rare and has not occurred in Australian petroleum activities since 1984 (Swan et al, 1994). Loss of well control can result from poor practice and inadequate response to a formation influx into the wellbore, commonly termed "a kick". Esso has considerable experience and a demonstrated track record in successfully carrying out drilling operations within Bass Strait since 1968. EAPL currently operates 21 oil and gas projects within the Gippsland Basin. The type of drilling procedures required to drill the wells in this program, and the formations drilled, will be similar to other wells drilled by EAPL in the Gippsland Basin. Hence the risk of a loss of well control is assessed to be extremely low.

During drilling, the well will be monitored continuously to ensure that sufficient drilling fluid pressure is maintained and that minimal formation fluids enter the well. Various electronic and manual devices are used to monitor:

- background gas, connection gas and trip gas;
- drilling fluids gains or losses;
- penetration rates;
- drilling fluid properties, including drilling fluid weight and fluid loss;
- the shape of cuttings.

3.5 Operational Discharges

Various types of waste are produced during drilling operations, commonly these are:

- drill cuttings;
- drilling fluid residues;
- engine exhausts;
- deck drainage and oily wastes;
- domestic wastes;
- cooling water; and
- other wastes, e.g. wood, paper, plastic and steel.

The nature of these operational wastes and information on their management are provided below. Table 3.4.1 provides a quick reference guide for treatment of wastes generated on board.

A summary diagram of the fate of the various wastes can be found in Attachment 1.

Table 3.4.1 Waste Management Summary

Waste / Pollutant Stream	Minimisation and Containment	Disposal
Air emissions - Engine Exhaust		Vent to atmosphere
Batteries (used)	Store in leak proof containers	Transport to shore base for disposal / recycle as per EAPL EMM
Cement - slurries, mix water, returns		Discharge overboard
Chemical waste - drilling fluid additives	Store in original containers if practical	Transport to shore base for disposal / recycle as per EAPL EMM
Completion fluids	Not expected	Not applicable
Containers/Drums/Barrels	Crush all surplus drums. Store in scrap containers	Transport to shore base for disposal / recycle as per EAPL EMM
Domestic refuse	Store in trash containers	Transport to shore base for disposal
Drill cuttings		Discharge overboard
Drilling fluids (WBM)		Discharge overboard
Kitchen and non-solid food waste	Comminute	Discharge overboard
Lubricants (used)		Transport to shore base for disposal / recycle as per EAPL EMM
Oil filters and grease containers		Transport to shore base for disposal / recycle as per EAPL EMM
Oily rags		Transport to shore base for disposal / recycle as per EAPL EMM
Paint cans (empty)		Transport to shore base for disposal / recycle as per EAPL EMM
Pallets		Transport to shore base for disposal / recycle as per EAPL EMM
Produced oil	Not expected	Not applicable
Produced water	Not expected	Not applicable
Scrap metal	Store in designated scrap metal bin	Transport to shore base for disposal / recycle as per EAPL EMM
Solid food and used cooking oils	Store in designated containers	Transport to shore base for disposal / recycle as per EAPL EMM

3.5.1 Drill Cuttings and Drilling Fluid Residues

Drill cuttings are the predominant waste materials produced from drilling. During drilling the cuttings will be brought up to the surface, separated from the drilling fluids through solids control equipment (e.g., a shale shaker), and then discharged from the MODU via an overboard pipe.

The cuttings produced by using a water-based drilling fluid are able to break up and disperse readily when discharged overboard. Water based drilling fluids will be used to drill the well. The drilling fluids will consist primarily of seawater, to which various chemicals are added. The drilling fluid will lubricate and cool the drill bit, maintain well pressure, inhibit reactive formations and lift drill cuttings to the surface.

The water based fluid currently used in Bass Strait by EAPL is generally regarded as having low toxicity and this is supported by ecological toxicity results. Potassium chloride (KCl) concentrations have been lowered from 20 per cent to 5 per cent with the addition of non-toxic additives such as glycol, and at the same time drilling performance has improved, reducing the need for stuck pipe intervention with oil based spotting pills. Drilling fluid and discharge cutting dispersion modelling at a number of fields has shown that due to rapid dilution through the water column, potentially toxic concentrations of drilling fluid can occur only in the immediate vicinity of the discharge point. According to Hinwood et al. (1994), the plume created by a discharge of drill cuttings can be expected to dilute by a factor of at least 10,000 within 100 m of the point of discharge.

In the high-energy environment of eastern Bass Strait, frequent storm activity prevents the accumulation of drilling materials on the seabed around the drilling location. EAPL's platform integrity video surveillance has provided visual confirmation of this. Two seabed monitoring programs have been completed in EAPL's operational area in eastern Bass Strait, at the West Tuna and Fortescue platforms. Both programs were designed to assess seabed impact and recovery from drilling programs. Results of both programs confirm the general homogeneity of sediment types and the restricted zone and transitory nature of effect from drilling fluid discharge.

3.5.2 Deck drainage and oily wastes

While no wastes will be routinely discharged via deck wash-down, detergent wash-down of the decks may result in minor quantities of chemical residues such as oil and grease, pipe dope and drilling fluid entering the direct overboard drain. The drilling floor, sack room, shaker room and other selected areas are completely bunded to prevent the accidental releases of wastes to the sea. Liquid wastes from these areas are directed to the oily water separator for treatment, prior to the treated water being discharged overboard. Any waste oil is transported to the mainland for appropriate disposal and recycling.

Storm drains on the rig floor are ducted to a separation tank where any oil present is drawn off into drums for recycling in accordance with Esso requirements. The separated water is then discharged overboard. The waste oil is transported to the mainland for appropriate disposal and recycling.

3.5.3 Domestic Wastes

Low volumes of domestic wastes are primarily sanitary and liquid wastes from the kitchen, bathrooms and laundry of the MODU. Sewage is treated by an electro-chemical process, with no addition of chlorine, prior to being discharged overboard. Kitchen food scraps are comminuted (< 25 mm diameter) prior to discharge overboard. The volumes of waste to be discharged are typically in the order of <10 m^3/day. No significant impacts are anticipated because of the minor quantities involved, the localised area of impact and high biodegradability/low persistence of the waste.

Used cooking oils are stored in drums and shipped to the mainland for appropriate disposal. All materials such as packing cases, sacks and cardboard food cartons, glass, metal and plastic containers, are segregated and returned to the mainland for appropriate recycling or disposal.

Biodegradable detergents are used for cleaning.

3.5.4 Cooling Water

During drilling operations, seawater is pumped on board the rig and used as a coolant for drilling machinery. The temperature of the discharged water is normally 1 – 3 °C above ambient water temperatures and is cooled and re-oxygenated as it falls to the sea surface from the MODU deck. The typical discharge rate of cooling water is 3.2 m^3 per minute.

3.5.5 Other wastes

Other wastes, hazardous and non hazardous, are to be transported to the mainland for appropriate re-use, recycling or disposal in accordance with EAPL's Environment Management Manual.

Other industrial wastes e.g. steel, are to be transported to the mainland for disposal.

3.6 Drilling Crew Transport Operations and Support Vessels

During drilling, the drilling work force will be accommodated on the MODU, crew changes will occur by helicopter from EAPL's Longford heliport. During the drilling project support vessels will be used as required to comply with all appropriate state and Commonwealth legislation for the control of all sources of pollution and of discharges at sea.

Diesel fuel transfers from the two supply vessels supporting the MODU will take place approximately once a week during the drilling period. All refueling operations will be conducted in strict accordance with the Drilling contractors', EAPL's and government guidelines. These will include continuous visual monitoring and the use of dry-break fittings. Oil spill equipment is stored at the EAPL Longford plant and Barry Beach Marine Terminal (BBMT) supply base, and is available within hours if required. Other oil spill management equipment is available from the Australian Marine Oil Spill Center (AMOSC) and other sources, as required.

4. DESCRIPTION OF ENVIRONMENT

A detailed description of the existing physical, biological and socio-economic environment of the Gippsland Basin is provided within the BSEP and should be read for the purposes of the BSMDP. A brief summary of the fisheries which exist within eastern Bass Strait are also provided below in Table 4.1.

4.1 Shipping

The BSMDP occurs mainly within the Area To Be Avoided (ATBA), which is a shipping exclusion zone within Bass Strait (refer to Fig 3.1). The ATBA is proclaimed by the Department of Primary Industries (DPI) under the provisions of the *Petroleum (Submerged Lands) Act 1967*, and requires that unauthorized vessels of greater than 200 gross tonnage do not enter the area. This requirement forms notice 11 of Summary of Marine Notices issued by Australian Maritime Safety Authority (AMSA). The ATBA is highly controlled area with respect to shipping vessel traffic.

Regardless of the location of drilling activities in relation to the ATBA, a 500 meter exclusion zone will be engaged around the MODU under the provisions of the *Petroleum (Submerged Lands) Act 1967*.

Table 4.1 Summary of Fisheries within the Eastern Bass Strait

Fishery	Location	Primary Target Species	Main Fishing Methods
Bass Strait Central Zone Scallop Fishery	Central Bass Strait between Victoria and Tasmania.	Commercial scallops (Pecten fumatus) & Doughboy s (Chlamys Mimachlamys asperrimus):	Harvested from coarse sandy bottoms using a towed dredge.
Eastern Tuna & Billfish	Extends from Cape York, Queensland, to the S.A./Victorian border.	Broadbill Swordfish, Bigeye Tuna, Skipjack and Yellowfin Tuna.	Harvested from coarse sandy bottoms using a towed dredge.
South East Non Trawl	Extends from Sandy Cape in Queensland through waters adjacent to NSW, Victoria and Tasmania and across to the S.A/W.A. border.	Blue-eye Trevalla, Pink Ling and Blue Warehou.	Harvested from coarse sandy bottoms using a towed dredge.
South East Trawl	Extends from Barranjoey Point (north of Sydney) around the NSW, Victorian and Tasmanian coastlines to Cape Jervis in S.A.	16 species including: Grenadier, Orange Roughy, Mirror Dory, Trevally, Ocean Perch, Gemfish, School Whiting, Blue Warehou.	Harvested from coarse sandy bottoms using a towed dredge.
Southern Bluefin Tuna	Southern Bluefin Tuna (SBT) is a highly migratory species and is widely distributed throughout waters of the southern oceans.	Southern Bluefin Tuna.	Harvested from coarse sandy bottoms using a towed dredge.
Southern Shark	Cwth. waters adjacent to the States of Victoria, S.A. and Tasmania, excluding coastal waters within three nautical miles of State baselines.	School Shark and Gummy Shark.	Harvested from coarse sandy bottoms using a towed dredge.
Southern Squid Jig	Cwth. waters adjacent to NSW, Victoria, S.A., Tasmania and Queensland up to Sandy Cape. Squid jig catches are mainly taken between Queenscliff and Portland (Vic).	Arrow squid.	Harvested from coarse sandy bottoms using a towed dredge.

Source: Australian Fisheries Management Authority (2001)

5. ENVIRONMENTAL RISKS AND EFFECTS

The BSEP provides a detailed risk assessment for Esso's production activities within the Bass Strait which could potentially result in environmental effects. Potential exploration activities and associated events / incidents which have the potential to cause environmental impact during the BSMDP are summarised for information in Table 5.1 below. The potential impacts associated with the BSMDP have been appropriately assessed within Section 4 of the BSEP (Assessment of Environmental Effects and Risks). This section of the BSEP should be read in conjunction with this EP.

Table 5.1 Summary of BSMDP Activities with Potential Environmental Impact

Activity	Potential Event / Incident
Aspect of Project – MODU Operation	
Cooling water discharge	Mortality of planktonic or benthic organisms due to reduced water quality
Deck drainage & oily wastes	Mortality of planktonic or benthic organisms due to reduced water quality
Domestic waste	Failure of systems resulting in release of untreated sewerage and waste
Domestic waste handling	Changes in planktonic or benthic organisms due to reduced water quality and added nutrients
Drill cuttings discharge	Mortality of sessile benthic organisms due to smothering
Drilling fluids discharge	Possible mortality of sessile benthic organisms and plankton in the immediate vicinity of the drilling fluids until they disperse.
Emissions from engines	Contribution to atmospheric emissions
Extraction of hydrocarbons.	Potential to cause groundwater to migrate into deeper hydrocarbon bearing formations as the hydrocarbons are removed
Introduction of marine pests	Invasion by marine non-endemic species
MODU Hazardous materials management	Loss of containment or spill of hazardous / dangerous chemicals to environment from MODU.
Noise from aircraft, vessels, etc	Disturbance to marine organisms.
Offloading/backloading MODU.	Collision between vessels causing equipment failure and spillage.
Placement and removal of the MODU	Damage to seabed habitats in immediate area surrounding the MODU. Disturbance of marine fauna or birds.
Vibration due to drilling or use of compressors	Potential disturbance to marine organisms.
Aspect of Project - Support Vessel Operations	
Domestic wastes.	Changes in planktonic or benthic organisms due to reduced water quality and added nutrients
Introduction of Marine Pests.	Invasion of marine non endemic species
Minor to moderate oil spill.	The risk of a moderate volume spill occurring e.g. from fuel tank rupture on supply vessel.
Transport of chemicals to and from the MODU.	Spillage of chemicals during transportation and handling
Vessel to MODU fuel transfers.	Diesel spill.

6. ENVIRONMENTAL PERFORMANCE

6.1 Introduction

This section summarises EAPL's environmental performance objectives for the BSMDP. The performance objectives are directly linked with the identified risks and effects discussed in Section 5. Details in this section include those from the BSEP which are appropriate to the BSMDP.

This section also identifies the standards governing the operation i.e., those acts of legislation or industry guidelines and codes of practice by which operations should be carried out to achieve the stated environmental objective, consistent with industry's best practice. Performance criteria by which Esso will measure its environmental performance are also presented. The performance criteria are measurable and relate directly to the environmental objectives. The criteria provide an overview to the commitments for environmental management detailed in the Implementation Strategy in Section 7.

6.2 Environmental Objectives, Standards and Criteria

The environmental objectives, standards and measurement criteria for drilling the proposed program are shown in below in Table 6.1.

Table 6.1 Summary of Environmental Objectives, Standards and Performance Criteria

Aspect	Objectives	Standards	Criteria
Environmental Plan	Communicate BSMDP	BSMDP	• Summary included in personnel induction; • Personnel training; • Audit shows induction of personnel carried out.
Quarantine issues	Minimise quarantine risks	AQIS Australian Ballast Water Guidelines, P(SL)A Regulations.	• No reports of introduced pests from ballast water.
Drilling fluids and cuttings	Minimise the effects of drilling cuttings and fluids on the environment		• Discharge of drilling cuttings and fluids is in accordance with Environmental Plan, • Only water based or synthetic drilling fluids used.
Spillage during hazardous substances transport	Avoid localised contamination around support vessel / MODU	Esso OSCP AMOS Plan, AMOSC AMSA National Plan to combat pollution of the sea by oil and other noxious and hazardous substances Esso EMM	• OSCP in place, • Minimise government reportable oil spills, • Ensure that all cargo handling equipment is maintained and operated in accordance with the AMSA OSV Code, • Ensure that hazardous chemical cargo is appropriately segregated, lashed and secured in accordance with the OSV Code, • Ensure that all containers used for transporting and storing hazardous chemicals are appropriate for the task, approved for use, and appropriately labelled in accordance with the OSV Code, • Hazardous goods exclusively use self-bunded bulky boxes well designed for spill prevention and containment.

Oil spill and spillage during fuel transfer operations	Minimise risks and effects of oil spill, including during fuel transfer.	EAPL OSCP, AMOS Plan, AMOSC, AMSA National Plan to combat pollution of the sea by oil and other noxious and hazardous substances, AMSA OSV Code, Refueling operations are to be continuously overseen by the Vessel Master or First Officer, Esso EMM, Emergency Response Plans to be in place for responding to an oil spill event, Ensure that equipment and procedures used for transferring fuel, e.g. 'Dry-Break' hose couplings, conform to the AMSA Code for the safe working of support vessels, In the unlikely event of a spill occurring during fuel transfer, the volume spilled is to be minimised by the automatic operation of shutdown pumps or safety valves.	• Assure that all fuel transfer activities are conducted in the shortest and safest time possible following procedures, • Transfer fuel out of extreme weather conditions, • Senior management emphasis on spill elimination, • OSCP in place, • Emergency response plans established and implemented.
Waste management	Minimise effects of MODU and support vessel wastes including: deck drainage and oily wastes kitchen and domestic wastes solid wastes.	AMSA OSV Code, IMO standards, P(SL)A , Food scraps have been comminuted to a minimum of 25 mm prior to discharge.	• Audit shows management of wastes in accordance with EP's Implementation Strategy.

7. IMPLEMENTATION STRATEGY

The primary goal of the Implementation Strategy is to ensure that the environmental performance objectives and standards in the Environment Plan are met. Details in this section include those from the BSEP which are appropriate to the BSMDP.

7.1 Commitment

Esso's commitment to ensure the appropriate environmental management of activities during the BSMDP is detailed below in Table 7.1. This detail is taken directly from the BSEP as appropriate for the activities associated with the BSMDP.

Table 7.1 Implementation strategy

ID	Responsibility	Task/Management Action	Evidence of Action
Approval to commence/continue operations			
1	Esso	Obtain written approval for the BSMDP EP from DPI	Verify by citing letter of approval from DPI.
Auditing and reporting			
2	Esso Drilling Manager	Ensure that one compliance audit per year against the commitments proposed in this Environment Plan takes place for ongoing operations.	Verify by citing records of compliance audits.
3	Esso Drilling Manager	Ensure that the results of compliance audits are forwarded to the SRO Manager.	Verify by citing records of compliance audits.
4	Esso Drilling Superintendent	Report as soon as practicable to DPI any spills of petroleum of greater than 80 L as required under the *P(SL)A*	Verify by citing spill incident report register during compliance audits.
5	Esso Drilling Supervisor	Report any oil or other chemical spill regardless of volume to Esso	Verify by citing records and visual facilities inspections and personnel interviews during compliance audits.
Provision of standards and procedures			
6	Esso Drilling Supervisor	Provide as required, major Contractor(s) Person-In-Charge with access to all relevant operating standards and procedures such as the EMM, Esso OSCP, Esso ERM, BSEP and the BSMDP EP	Verify by citing records and visual facilities inspections and personnel interviews during compliance audits.
Oil Spill Response			
9	Esso Drilling Supervisor	Ensure that all key personnel are made aware of the existence and location of ERM and OSCP documents on the MODU	Verify by personnel interviews during compliance audits.
10	Esso Drilling Supervisor	Ensure that senior personnel are familiar with the contents of the ERM and OSCP documents such that the initial response to an oil spill could be carried out efficiently	Verify by personnel interviews during compliance audits.

Disposal of Ballast Water			
12	Esso Drilling Supervisor	Vessels are to follow Australian ballast water disposal guidelines (including no ballast water exchange in coastal waters)	Review documentation of any at-sea ballasting
Handling of Hazardous Substances			
13	Esso Drilling Supervisor	All substances shall be handled in accordance with their respective material safety data sheets (MSDS). MSDS must be provided to Esso for all chemicals used	Verify by visual inspection and personnel interview during compliance audit.
Equipment and Supplies			
14	Esso BBMT Superintendent	Ensure that storage on supply vessels is in accordance with various legislative requirements including the AMSA OSV Code and AMSA Marine Orders: Dangerous Cargoes, Cargo Stowage and Securing, Marine Pollution Prevention - Noxious Liquid Substances, and Marine Pollution Prevention - Packaged Harmful Substances	Verify via visual inspection.
Disposal of Wastes			
19	OIM	Deck drains and bunds on the MODU will be inspected to ensure that they are functional	Verify via visual inspection and personnel interviews.
20	OIM/Vessel Master	Kitchen wastes and sanitary effluent will be comminuted to 25 mm prior to being discharged overboard in accordance with the *P(SL)A* Schedule	Verify via visual inspection and personnel interviews.
21	OIM/Vessel Master	Biodegradable detergents to be used for cleaning functions	Verify via visual inspection and personnel interviews.
22	OIM/Vessel Master	Ensure that all waste material not to be discharged overboard are returned to the mainland for recycling or disposal	Verify through personnel interviews.

Fuel transfer			
23	OIM/Vessel Master	Ensure that all fuel transfer operations from supply vessels are conducted in accordance with Esso refuelling procedures, including continuous visual monitoring and the use of Esso approved fittings	Verify through records of compliance and personnel interviews.
Support Vessel Operations: Disposal of wastes			

24	Vessel Master	All vessels must comply with State and Commonwealth legislation for the control of pollution and discharges at sea	Letter of approval of vessels to operate in Victorian waters by AMSA. Visual inspection of vessel records and on-board practices.
Support Vessel Operations: Loss of material			
25	Esso Drilling Supervisor / OIM / Vessel Master	Any spillage during loading, unloading, supply vessel transportation, storage shall be reported immediately	Verify through incident records and personnel interviews.
26	Esso Drilling Supervisor	Any loss to the sea of liquid hydrocarbon or other hazardous substance that requires an operational response to contain or recover is to be managed in accordance with the Esso OSCP	Verify through incident records and personnel interviews.
Support Vessels Operations: Supply of equipment and supplies			
27	Esso Drilling Supervisor / Vessel Master	Use procedures, consistent with the AMSA OSV Code, that are aimed at preventing any loss to the environment for the loading, transportation, unloading and storage of hazardous substances	Verify through incident records and personnel interviews.
Drilling: Disposal of wastes			
25	Esso Drilling Supervisor	The deck drains and bunds on the rig will be inspected to ensure they are functional prior to commencement of drilling	Verify through records of compliance and personnel interviews.
Drilling: Use of drilling fluids			
26	Esso Drilling Supervisor	Drilling fluids used will be water based, synthetic based or as otherwise approved for use by the DPI	Verify through records of compliance and personnel interviews.
27	Esso Drilling Supervisor	Monitor drilling fluid concentrations and use, and cuttings volumes as part of Esso's waste management system	Verify through records of compliance and personnel interviews.
Drilling: Well Control			
28	Esso Drilling Supervisor	Adopt ExxonMobil and required government standards for well design and control	Verify through records of compliance and personnel interviews.

Note: ID Numbers are as per the BSEP and therefore are non-consecutive.

7.2 Organisation and Responsibility

The BSMDP will be conducted under the supervision of the EAPL's Drilling Manager and Drilling Operations Superintendent. All activities will be conducted in line with EAPL's Environment Policy, the EMDC Operations Integrity Management System (OIMS) and the requirements laid out in this Environment Plan.

These plans and processes ensure that environmental management aspects are properly addressed and managed through all phases of the project and that:

- Appropriate resources are allocated;
- Key environmental responsibilities are clearly defined;
- Activities carrying 'environmental exposure' are monitored and stewarded;
- Regulatory approvals are efficiently managed;
- Subcontractor competency is assured; and
- Environmental assurance requirements are met during all phases of the project and especially during all on-site activities.

At the commencement of operations responsibility for day-to-day environmental management will transfer from the EAPL Drilling Operations Superintendent to the Drilling Supervisor. The On-board Supervisor will be responsible for the implementation of the EP during operations. They will ensure that responsibilities for environmental performance are clearly delegated, all personnel are aware of their roles/responsibilities and personnel receive adequate training on environmental issues. The On-board Supervisor will coordinate the front-line tactical response to spills or pollution incidents, including associated reporting and notification requirements. The EAPL Drilling Operations Superintendent will be responsible for review of the project.

7.3 Training and Awareness

All personnel, including contractors, will undergo induction training prior to working on Ensco 102. This training will aim to promote an awareness of this EP, and the requirements for the correct disposal of wastes from this drilling program. Personnel will also be trained on their role within the emergency response system.

Emergency response training will be conducted on a regular basis.

7.4 Measures to Ensure that Environmental Performance are Met

This EP is prepared as part of the drilling program planning, reviewed by relevant Esso staff and submitted for approval by the Designated Authority. The EP will be made available and explained to employees and contractors during inductions and subsequent rig site meetings.

7.5 General Operations

Spillage or liquid discharge to sea will be prevented by:

- Compliance with State and Commonwealth legislation for the control of pollution and dumping at sea;
- Use of liquid management procedures, e.g. for on-board and ship-to-MODU fuel transfers;
- Use of appropriate emergency management procedures to deal with accidental spills, including the provision of oliophilic absorbent materials and emergency liquid storage areas.

7.6 MODU Operations

7.6.1 Waste Management

Waste management will be undertaken and conform to the requirements of the EP. Management activities incorporate the principles of reuse, recycle and appropriate disposal and will include:

- Ensuring water-based drilling fluid and cuttings, and cement returns, are discharged overboard;
- Ensuring oily waters are collected and meet P(SL)A requirements prior to discharge overboard;
- Ensuring waste oils are collected and shipped ashore for recycling;
- Ensuring sewage is comminuted to less than 25 mm and treated prior to discharge overboard;
- Ensuring non-solid foods and kitchen scraps are comminuted to less than 25 mm in according with the P(SL)A requirements; and
- Ensuring that general refuse is collected, segregated and transported to shore for recycling or disposal.

7.6.2 Drilling Operations

Only water based drilling fluid will be used during the drilling program. The drilling program will adopt industry and government standards for well design and control.

7.7 Monitoring

7.7.1 Air Emissions

Air emissions will be quantified by estimation based on fuel use.

7.7.2 Refueling

Will be conducted in accordance with EAPL's refueling procedure, which includes visual monitoring and the use of EAPL approved fittings.

7.7.3 Waste Disposal

Both hazardous and general waste will be monitored for quantity and type, whenever disposal is necessary. For hazardous waste materials, logging of waste type, quantity, disposal method and contractor will be kept and waste transfer documentation will be monitored routinely during waste transfer operations. Verification of domestic wastes disposal equipment from the MODU and support vessels will be undertaken routinely during maintenance. Sewage and non-solid food and kitchen wastes will be comminuted to a maximum diameter of 25 mm as per P(SL)A requirements if it is to be discharged to the sea.

7.7.4 Drilling Fluid and Cuttings

Drilling fluid concentrations and volumes together with the volume of drilling cutting produced will be monitored on a daily basis during the drilling program.

7.7.5 Post Spill/Incident Monitoring

Post spill or incident monitoring will be conducted to evaluate the degree of impact of an incident on the receiving environment and to assist in mitigation strategies. The type of assessment will depend on the extent and type of environment affected.

7.7.6 Cooling Water Dosing

The MODU cooling water system is an inhibited closed loop system. There is no release of cooling water from this system to the environment. The cooling water dosing systems is inspected during associated maintenance programs.

7.8 Oil Spill Contingency Plan

From previous exploration and production activity is the Bass Strait, Gippsland crude is likely to have the following characteristics: API gravity of 46.4, 0.7952 SG, pour point of 6°C and a wax content of 20 per cent. EAPL has a Designated Authority approved Oil Spill Response Plan (OSRP), which covers all of its activities in the Bass Strait. Any oil spill emergencies that may occur from this drilling operation will be managed in accordance with the Esso Emergency Response Manual and the OSRP.

The Oil Spill Response Team is lead by an On-Scene Commander to whom advisory and (oil spill) operational management personnel report. The operational part of the team consists of two groups – Field Operations and Field Support; each headed by a superintendent who reports to the Operations Coordinator.

EAPL's OSRP has three Tiers of response which is based on the international tiered response to oil spills. Esso's direct resources in Bass Strait can cater for Tier 1 and along with resources from Long Island Point, the lower range of Tier 2 spills. For larger spills other resources from industry and government stockpiles, as well as overseas stockpiles, could be called upon. Equipment can be sourced locally through the Australian Marine Oil Spill Centre (AMOSC) in Geelong, Victoria.

The Tier 1 response is worksite specific and relies on the specific location handling the spill response with little or no assistance from other parts of the EAPL organisation, with the exception of some possible administrative assistance from the Tier 2 and Tier 3 Response Team Organisation.

A Tier 2 response relies on EAPL's other site resources and may also call on other Australian oil companies and/or industry associations and/or State and Federal Government to provide additional resources to respond to the oil spill emergency.

A Tier 3 response would occur when international assistance is required in addition to Australian resources.

In the unlikely event of a spill at the well location, it will not present a significant risk to the environment as the well is located in a high-energy environment of eastern Bass Strait on the continental slope 45 km from the coast. Potential landfall on any spilt oil is along the high-energy, sandy shoreline of Ninety Mile Beach, where, if the oil has not evaporated or dispersed (naturally or chemically), the pounding waves quickly degrade the oil.

EAPL as a member of AMOSC has priority access to equipment and training, with several staff members having undergone AMOSC equipment training. EAPL undertakes in-house training exercises to maintain proficiency of personnel.

7.9 Community Consultation

The approach adopted for community consultation of distant offshore exploration activities has been one of general research of stakeholder' activities and the extent of conflict of interest that the exploration activity could cause other stakeholders.

From discussions with DPI a number of organisations have been identified for consultation, and they are: South East Trawl Fishing Industry Association; Seafood Industry Victoria. Bass Strait Central Zone Fishery and Lakes Entrance Fisherman's Co-operative (LEFCO). EAPL are in the process of contacting each of these organisations to advise them of their proposed activities, location and timing.

During drilling operations open communications will be maintained with fishermen through the procedures established between EAPL and the regional fishing industry, plus continuous radar watch and radio communications with vessels.

In addition, EAPL and key commercial fishing representatives have established a tribunal to review claims made by fishermen over lost or damaged equipment as a result of EAPL's activities. The tribunal is seen by all parties to be fair and reasonable and as such have expressed satisfaction with the procedures developed and implemented.

Throughout the drilling program AMSA will be advised of the MODUs location and the movement of supply vessels.

EAPL has in place equipment and procedures to minimise the risks from coastal shipping, including:

- 24 hour radar watch and radio communications with coastal shipping;
- Helicopter or supply vessel dispatched to attract attention if contact not made by radio;
- Distress flares, fog horn and lights used to attract attention if contact with vessel is not yet made, shut down of MODU and evacuation of personnel if vessel continues its path towards the MODU.

7.10 Management & Review of EP

The EP is not expected to require maintenance (review and updating) during the drilling program.

8. REPORTING ARRANGEMENTS

8.1 Auditing

EAPL will record and report relevant information periodically to demonstrate that the environmental performance objectives and standards outlined in this EP have been met.

8.2 Reporting

Records of fuel usage and unplanned discharges to the environment will be kept. Environmental incidents will be reported to the designated authority as required under the provisions of the Petroleum (Submerged Lands) (Management of Environment) Regulations 1999. Spills of petroleum greater than 80 L are reportable events (refer to Section 6) and will be reported to DPI as soon as practicable.

Any oil or chemical spill, regardless of volume will be reported to Esso's Drilling Superintendent.

Daily reports outlining details of incidents, operational and technical data, manning lists, operational and standby activities and non operational activities.

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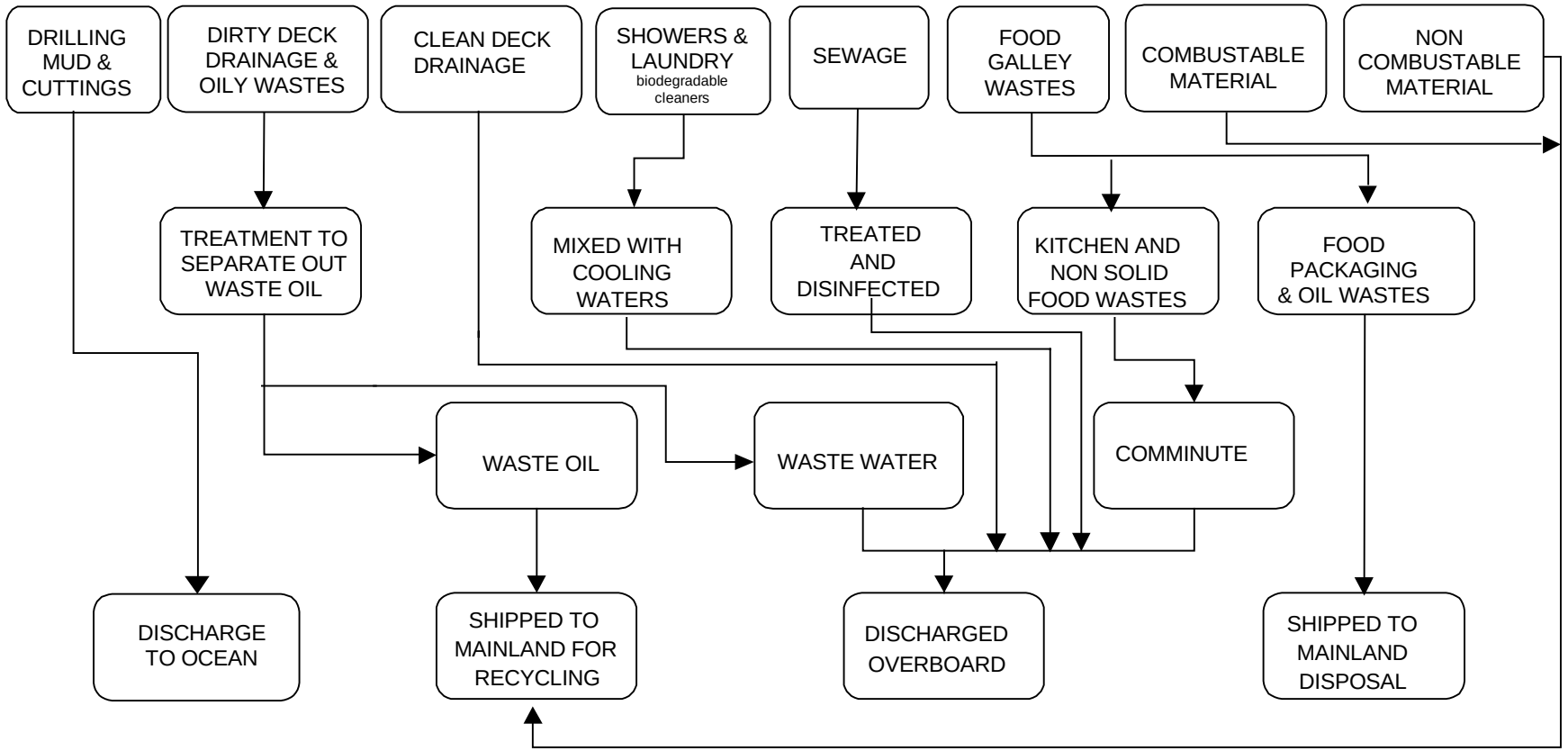
ATTACHMENT 1
RIG WASTE MANAGEMENT



Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

February 24, 2004

Mr. Horacio Haag
Manager, Petroleum Operations Safety & Environment
Department of Primary Industries
8th Floor, 250 Victoria Parade,
EAST MELBOURNE, VIC, 3002

Our Reference: DDS7128/cam

Dear Horacio,

RE: Standard Operations Manual for Jack-Up / Platform / Barge Drilling Transmittal

Please find attached an uncontrolled copy of our "Standard Operations Manual for Jack-Up / Platform / Barge Drilling" (First Edition May 2003). This manual supercedes EAPL's "Drilling Operations Manual". The manual applies to both our platform-based and jack-up rig operations. Specific data for the drilling units operating in Bass Strait will be included in the "S" tab for each specific topic (ie: rig specific BOPE contained in Section 14.0 S).

Updates to specific sections will be forwarded to you as required.

Please contact Colin Johancsik on (03) 9270 3534 if you require additional information.

Yours sincerely,
Esso Australia Pty Ltd,
(for and on behalf of Esso Australia Resources Pty Ltd
ABN 62 091 829 819)

Daniel L. Whiteman
Field Drilling Manager

Cc w/o attach: Drilling File/Drilling Engineer
DPI File
SRO

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

1 March, 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002
Attention: Mr H. Haag

Dear Sir,

Subject: Consent to Use the ENSCO 102 Jack-up;
Acceptance of the ENSCO 102 & Esso Safety Case Bridging Document; and the ENSCO 102 Bass Strait Bridging Emergency Response Plan

Pursuant to the Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulation 5, we hereby request your consent to use the vessel ENSCO 102 to drill various exploration and production wells in VIC/L 01, 02, 03, 04, 05, 06, 09, 10, 11, 16, 18 & 19 as well as VIC/RL 01 and 04 during 2004 and 2005.

Pursuant to the Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulation 7, we hereby submit for acceptance the **ENSCO 102 & Esso Safety Case Bridging Document**. The ENSCO 102 Vessel Safety Case was approved on the 11 November 2003 by the Victorian Department of Primary Industries.

We also include for acceptance as part of the Safety Case bridging submission the **ENSCO 102 Bass Strait Bridging Emergency Response Plan**.

Please contact Colin Johancsik on 9270-3534 (E-mail: colin.a.johancsik@exxonmobil.com) if you require any further information.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)

Daniel L. Whiteman
Drilling Manager

bcc: R. Reinten (SRO)
M. Osborne, BHP Billiton Petroleum
B. Todd - Ensco Australia Pty Ltd
ENSCO 102 Contract File

bcc: (without Attachments)
W Mudge
A. Djakic
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

ORIG SRO Group
cc Chris Meakin

Department of Primary Industries

240 Victoria Parade
PO Box 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 4011
Facsimile: (03) 9412 4803
ABN 42 579 412 233
DX 210099

2 March 2004

Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd
12 Riverside Quay
SOUTHBANK VIC 3006

RECEIVED
4 - MAR 2004
D L WHITEMAN

Bass Strait MODU Drilling Program Environment Plan
(Supplement to the Bass Strait Environment Plan)

Dear Daniel.

Minerals and Petroleum Regulation (MPR) have carried out assessment of Esso Australia's Bass Strait MODU Drilling Program Environment Plan (Supplement to the Bass Strait Environment Plan) dated January 2004. The exact number and locations of the wells to be drilled in this program is not known at this stage.

However, it has been determined that the Environment Plan is in compliance with the requirements of the *Petroleum (Submerged Lands) (Management of Environment) Regulations* 1999 (Cth) and has been accepted subject to Esso submitting the exact location of each well to MPR at least two week prior to the commencement of drilling of each well.

If you have any queries on this matter please contact Terry McKinley on 9412 5133.

Yours sincerely

Horacio Haag
Manager Petroleum Operation Safety and Environment

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

4 March, 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002
Attention: Mr H. Haag

Dear Sir,

Subject: WEST WHIPTAIL-1 APPROVAL TO DRILL

Pursuant to the Petroleum (Submerged Lands) Act Schedule of Specific Requirements Clause 501(1) we hereby request your approval to drill the West Whiptail-1 Near-Field Wildcat well in VIC/L01. Enclosed are two copies of the drilling program. The program details the information requested in Clauses 501 (2) (a) through (o) except for those items of information requested in sub-clauses (h), BOP equipment; (k); (m) and (n).

We also enclose information on the ENSCO 102 BOP system, as requested in sub-clause (h). This information should be appended to the **ExxonMobil Development Drilling Standard Operations Manual for Jack-up / Platform / Barge Drilling** under tab 14.0S.

The person responsible for communicating with the Designated Authority (sub-clause (k)) is Mr Wayne Mudge, 9270-3808 (E-mail: wayne.j.mudge@exxonmobil.com).

The drilling procedures manual required in sub-clause (m) is the **ExxonMobil Development Drilling Standard Operations Manual for Jack-Up / Platform / Barge Drilling** (First Edition May 2003) that was sent to you on February 24, 2004.

Details of the geological prognosis for area and the objectives of the well required under sub-clause (n) were sent to you on November 28, 2003 in the **letter West Whiptail-1 Application to Drill**. Additional details are contained in the West Whiptail-1 Drilling Program, including Attachment 2, West Whiptail-1 Geological Program.

Please contact Colin Johancsik on 9270-3534 (E-mail: colin.a.johancsik@exxonmobil.com) if you require any further information.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)

Daniel L. Whiteman
Drilling Manager

bcc: R. Reinten (SRO)
W Mudge
M. Osborne, BHP Billiton Petroleum

bcc: (without Attachments)
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

Well Control - Section 14.0S

The EAPL Drilling Supervisor (or designate) **must** be on the drillfloor for the first 15-25 stands on every trip out of the hole.

A ENSCO 102 Shut-in Procedures

B MLA- Rig 453 BOPE

B.1 PLATFORM ELEVATIONS
B.2 WELL CONTROL EQUIPMENT
B.3 CHOKE MANIFOLD

C ENSCO 102 BOPE

C.1 WELL CONTROL EQUIPMENT

C.1 WELL CONTROL EQUIPMENT

BOP Stack Diagram

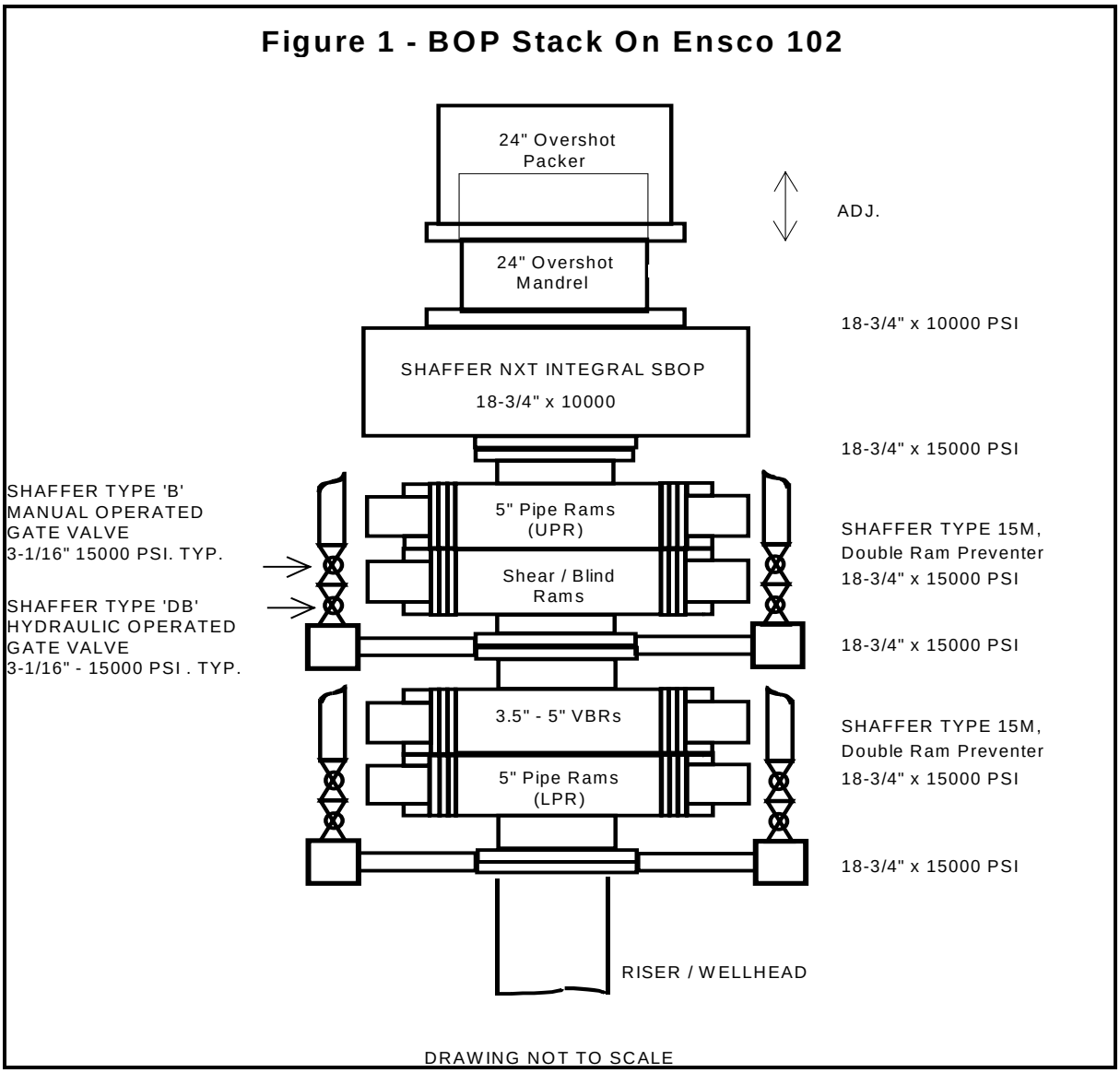
Figure 1 shows a drawing of the Ensco 102 BOP System.

Refer to 'Ensco 102 Safety Case', Section 2.9.5, for a description of the BOP and well control equipment, and methods of operation

Information on BOP Testing Procedures can be found within the Standard Operations Manual

Information on the ENSCO 102 Shut-in Procedure is contained in Section A of this Supplement.

Figure 1 - BOP Stack On Ensco 102



Tasmania

DEPARTMENT *of*
INFRASTRUCTURE,
ENERGY *and* RESOURCES

MINERAL RESOURCES TASMANIA

Enquiries: Chris Boron
Phone: (03) 6233 8362
Your Ref: T/L1
Our File: 4CJB014:SK Yolla 3 & 4

10 March 2004

Mr Mark Mussared
Subsurface Manager, BassGas
Origin Energy Resources Limited
GPO Box 2576
ADELAIDE SA 5001

Dear Mr Mussared

MODU ENSCO 102
RIG MOVE INTO THE ADJACENT AREA
ACCEPTANCE OF SAFETY CASE BRIDGING DOCUMENTS – YOLLA 3 AND 4

I refer to your application to drill the Yolla 3 and 4 development wells in production licence T/L1 dated 18 August 2003.

Under the provisions of Clause 302 of the *Petroleum (Submerged Lands) Act - 1967 Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production 1997,* I hereby approve your proposal to move the MODU "Ensco 102" into the adjacent area and to the Yolla production platform, Latitude 39° 50' 50", Longitude 145° 49' 06.30".

This consent also applies to movement of the Rig within and out of the adjacent area, subject to the following conditions:

- That moves to be notified to the Maritime Rescue Co-ordination Centre of the Australian Maritime Safety Authority; and
- That Origin Energy liaise with ASP Ship Management and the Harbour Master at Bell Bay to ensure they are aware of the operations at the Yolla site.
- That the intended movement of the rig into, within and out of the adjacent area be notified to the South East Trawl Fishing Industry Association (SETFIA) and the Gillnet Hook and Trap Fishery Management Advisory Committee (GHATMAC) as early as possible prior to the commencement of drilling.

Failure to notify the Department of all moves in writing will be considered a breach of the Legislation.

I also hereby accept the Origin Energy, BassGas Project, Yolla –A Drilling Operations, principal safety case bridging document No BR1155-D-201 revision C, dated December 2003 and the addendum document No BR1155-D-202, revision C dated February 2004 in accordance with the *Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations 1996.*

Acceptance given is not an advice that the use of the Ensco 102 in accordance with the Bridging Documents will, in fact, be safe. Whilst health and safety are matters considered in making the relevant decision under the regulations, the responsibility for the safe operation of the MODU remains at all times with Origin Energy Resources Limited and Ensco Australia Pty Ltd.

The continued acceptance of the safety case will be contingent upon inspections and audits of the facility safety systems with a mutually agreed schedule.

Approval to drill the Yolla-3 and 4 development wells in accordance with Clause 501 of the *Petroleum (Submerged Lands) Act - 1967 Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production 1997* can only be granted when Origin Energy Limited have provided the finalised version of the drilling programme.

Yours sincerely

Matthew Fitzgerald
A/DIRECTOR OF MINES

cc Mr John Griffiths
General Manager
Offshore Resources Branch
Department of Industry, Tourism
& Resources
GPO Box 9839
CANBERRA ACT 2601

Mr Bruce Armour
Petroleum Operations Inspector
Minerals and Petroleum Regulation
Department of Primary Industries
PO Box 500
EAST MELBOURNE VIC 3002

T6 Carob (Ceratonia siliqua).

T7 Date Palm (Phoenix dactylifera).

4. All of the monuments and memorials as follows on Diagram 798 held by the Executive Director:

M1 Burke and Wills Monument.

M2 Mackay Monument.

M3 Chinese Funerary Tower and footstones in Chinese section.

5. All of the Cemetery Reserve Rs 3777 known as Bendigo Cemetery and Crown Allotment 200, Section N1 and 200 Section Q and 201 Section C, City of Bendigo, Parish of Sandhurst and section of Road Reserve along Carpenter Street marked L1 on Diagram 798 held by the Executive Director.

Dated 11 March 2004

RAY TONKIN
Executive Director

COMMONWEALTH OF AUSTRALIA

Petroleum (Submerged Lands) Act 1967

Prohibition of Entry into Safety Zone
West Whiptail—1 Exploration Well

Pursuant to the power conferred by Section 119 of the **Petroleum (Submerged Lands) Act 1967**, all vessels are prohibited, other than vessels engaged in or in connection with the petroleum exploration and/or production operations authorised under that Act, from entering or remaining in the safety zone specified in the schedule, without my consent in writing.

SCHEDULE

(1) The area within a distance of 500 metres measured from each point of the outer edge of the drilling vessel known as Enesco 102.

(2) The area or areas within a distance of 500 metres measured from each point of the outer edge of any anchor buoys or other equipment deployed from that drilling vessel.

while the vessel is engaged in operations associated with drilling of the West Whiptail—1 Exploration Well situated at or about the point of Latitude 38° 19' 30" South, Longitude 147° 30' 17" East over the period from early April 2004 until mid-May 2004.

Dated 9 March 2004

Made under the **Petroleum (Submerged Lands) Act 1967** of the Commonwealth of Australia

Signed by
HORACIO HAAG
Manager, Petroleum Operations Safety and Environment as a delegate of the Designated Authority, pursuant to delegation dated 28 September 2000 under Section 15 of the **Petroleum (Submerged Lands) Act 1967**

Psychologists Registration Act 2000

PSYCHOLOGISTS REGISTRATION BOARD OF VICTORIA

Following a complaint the Psychologists Registration Board of Victoria conducted an inquiry into the conduct of Diana Kelly-Byrne, a psychologist registered in Victoria (registration number 3640). After a hearing she was found to have engaged in unprofessional conduct of a serious nature. The Board suspended Dr Kelly-Byrne's registration for a period of nine months with effect from 19 April 2004.

Racing Act 1958

APPOINTMENT OF RACING APPEALS TRIBUNAL ADVISORY PANEL MEMBERS

I appoint, under Section 83I of the **Racing Act 1958**, the following persons as members of the Racing Appeals Tribunal Advisory Panel for the period of 3 January 2004 to 2 January 2007.

Thoroughbred Racing Panel: Ann Carlyon, Grant Downey, Bob Hoysted, Stan Kerr, Peter King, Joanne Spears, Gary Willetts.

Harness Racing Panel: Peter Beaumont, Elizabeth Ann Clarke, Dianne Heather Davies, John Kellett, Brian Pearce, Graeme Prosser.

Greyhound Racing Panel: Fred Abel, Maureen Drennan, Margaret Long, Ross Mitchell, Barry Toner, Ian Vigor.

Dated 24 December 2003

JOHN PANDAZOPOULOS MP
Minister for Racing

Department of Primary Industries

240 Victoria Parade
PO Box 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 4011
Facsimile: (03) 9412 4803
ABN 90 719 052 204
DX 210099

11 March 2004
Our Ref: No; PE/16/0028

Mr Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd
GPO Box 400C
Melbourne 3001

RECEIVED
12 MAR 2004
D L WHITEMAN

FAXED

MODU ENSCO 102
RIG MOVE INTO THE ADJACENT AREA
ACCEPTANCE OF SAFETY CASE BRIDGING DOCUMENT

I refer to your letter dated 1 March 2004 regarding the above subject.

Under the provisions of Clause 302 of the *Petroleum (Submerged Lands) Act - 1967 Schedule of Specific Requirements as to Offshore Petroleum Exploration und Production 1997* and Section 5 of the *Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations* 1996, I hereby approve your proposal to move the MODU "Ensco 102" into the adjacent area to the West Whiptail - 1 location with the following coordinates:

Latitude 38° 19' 28.9" South, Longitude 147° 30' 17" East

This consent also applies to movement of the Rig within and out of the adjacent area, subject to the following conditions:

- That the intended movement of the rig into, within and out of the adjacent area be notified to the Rescue Co-ordination Centre at the Australian Maritime Safety Authority; and
- That the intended movement of the rig into, within and out of the adjacent area be notified to the area fishing co-operative; and
- Liaison with the South East Trawl Fishing Industry Association. the Southern Squid Jig Fishery Management Advisory Committee and Gillnet Hook and Trap Fishery Management Advisory Committee as early as possible prior to the commencement of drilling.

Failure to notify the Department of all moves in writing will be considered a breach of the Legislation.

Victoria
The PlaceTo Be

I also hereby accept the Esso Australia Pty Ltd and Ensco Australia Pty Ltd Safety Case Bridging Document Rev 0: February 2004 and Bridging Emergency Response Plan Rev 0: February 2004 in accordance with Section 8 of the *Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations 1996.*

Acceptance given is not an advice that the use of the Ensco 102 in accordance with the Bridging Document will, in fact, be safe. Whilst health and safety are matters considered in making the relevant decision under the regulations, the responsibility for the safe operation of the MODU remains at all times with Esso Australia Pty Ltd and Ensco Australia Pty Ltd.

The continued acceptance of the safety case will be contingent upon inspections and audits of the facility safety management system with a mutually agreed schedule.

Yours sincerely

HORACIO HAAG
Manager Petroleum Operations Safety and Environment

Department of Primary Industries

240 Victoria Parade
PO Box 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 4011
Facsimile: (03) 9412 4803
ABN 90 719 052 204
DX 210099

11 March 2004
Our Ref: No; PE/l6/0028

FAXED

RECEIVED
12 MAR 2004
WHITEMAN

Mr Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd
GPO Box 400C
Melbourne 3001

CONSENT TO DRILL WEST WHIPTAIL - 1 EXPLORATION WELL IN VIC/LI

I refer to the following Esso Australia Pty Ltd correspondence and documentation regarding the above subject.

1. Application to drill dated 4 March 2004
2. Bass Strait MODU Drilling Programme Environment Plan, Rev -0, January 2004
3. West Whiptail - 1 Geological Programme, Rev – 01, February 2004
4. West Whiptail - 1 Drilling Programme, Rev 0, March 2004
5. MODU Safety Case Bridging Document for Ensco 102, Rev 0, February 2004
6. Ensco 102 Bridging Emergency Response Plan, Rev 0, February 2004
7. ExxonMobil Standard Drilling Operations Manual, Jack – Up / Platform / Barge Drilling. May 2003

In accordance with Provisions of Clause 501 *of* the *Petroleum (Submerged Lands) Act, Schedule of Specific Requirements as to Offshore Petroleum Exploration und Production in Waters Under Commonwealth Jurisdiction 1997*, I hereby approve the drilling of the West Whiptail - 1 well in accordance with Esso Australia Pty Ltd's Geological and Drilling Programmes.

The commencement of drilling operation and its continuation is subject to Esso Australia Pty Ltd and its contractor's adherence to the above approved or accepted procedures, manuals. safety case, drilling programme and APPEA's Code of Environmental Practice.

In addition:

- A seabed survey of the well location must be carried out prior to the rig move from the drilling site.
- A preliminary analysis of the logs is to be provided to the Department before approval can be granted for suspension, or plug and abandonment.

Yours sincerely

HORACIO HAAG
Manager, Petroleum Operations Safety and Environment

Victoria
The Place To Be

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank VIC 3006
GPO Box 400C
Melbourne VIC 3001
Telephone: 61 3 9270 3333

Or Sent.

FAXED 29/3/04

March 22, 2004

Mr. Horacio Haag
Manager, Petroleum Operations, Safety & Environment
Department of Primary Industries
250 Victoria Parade
EAST MELBOURNE VIC 3002

Your ref: PE/16/0028

Dear Horacio

Esso recently received the consent to drill the West Whiptail-l Exploration well

When this application to drill was submitted on November 28th approval was requested under section 100 of the Petroleum (Submerged Lands) Act (1967) to drill within 300m of a licence boundary for the proposed West Whiptail -1 well.

Can you please confirm that this approval has been granted

Yours sincerely

Louise McKenzie
Operations Technical Subsurface Manager

Department of Primary Industries

240 Victoria Parade
PO Box 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 4011
Facsimile: (03) 9412 4803
ABN 42 579 412 233
DX 210099

1 April 2004
Our Ref: No; PE/l6/0028

Ms Louise McKenzie
Operations Technical Subsurface Manager
Esso Australia Pty Ltd
GPO Box 4OOC
Melbourne 3001

WEST WHIPTAIL - 1 EXPLORATION WELL IN VIC/Ll

I refer to the Esso Australia Pty Ltd applications to drill the West Whiptail – 1 well dated 28 November 2003 and 4 March 2004, our consent dated 12 march 2004 and your letter seeking clarification dated 22 March 2004.

This is to advise you that Section 100 of the *Petroleum (Submerged Lands) Act 1967* "Drilling near boundaries" was repealed in the year 2000.

Yours sincerely

HORACIO HAAG
Manager, Petroleum Operations Safety and Environment

cc A. Zannetos

Victoria
The Place To Be

Find out more by calling our Customer Service Centre on 136 186 or visit our website at www.dpi.vic.gov.au

Facsimile

Drilling

To	Manager - Marine Operations & Personnel Australian Maritime Safety Authority	Pages	Cover + 1 page
Fax	(02) 6279 5966 (AMSA)	Date	21 April 2004
From	Daniel L. Whiteman	CC	Distribution
		Ref	DD:7144/CPM

Re ENSCO 102 Rig Move from Offload Location to Esso's West Whiptail-1 Location

---

Distribution:

Maritime Rescue Co-ordination Centre, Canberra The Officer in Charge, MRCC	(02) 6230 6868
DOT Canberra The Officer in Charge DOT	(02) 6274 6699
Department of Primary Industry Mr H. Haag, Manager, Petroleum Operations, Safety and Environment	(03) 9412 5152
Ensco Australia Pty Limited Mr Barry Todd - Rig Manager	(03) 9629 7222

Pursuant to Clauses 302(2) and 302(3) of the Petroleum (Submerged Lands) Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production, Esso Australia Pty. Ltd. hereby request your approval to move the Jack-up Drilling Rig “ENSCO 102” from the dry tow offload location in Westernport Bay to Esso’s West Whiptail-1 location in Bass Strait on or about 29 April 2004 as set out below.

The Department of Primary Industry approved the move to the West Whiptail-1 location on 11 March 2004.

If this message has been received by other than the party to whom it is addressed, please notify us immediately at the telephone number below. The message may contain material which is proprietary or confidential, and it should not be copied or distributed. Confidentiality is not waived by reason of loss or mistaken delivery. If transmission is incomplete or illegible, please phone .

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay, Southbank VIC 3006
GPO Box 400C, Melbourne VIC 3001
Telephone: 61 3 9270 3333

An **ExxonMobil** Subsidiary

Facsimile

Drilling

Datum and Spheroid:	Geodetic Datum of Australia 1994 (GDA94)
	Geodetic Reference System 1980 ellipsoid (GRS80)
Departing Location:	Western Port North of Phillip Island
	Latitude 38° 26’ 01”S
	Longitude 145° 12’ 59”E
Arriving Location:	West Whiptail-1 (VIC/L1, Bass Strait)
	Latitude 38° 19’ 28.9”S
	Longitude 147° 30’ 17.0”E
Distance of Tow:	Approximately 185 nautical miles
Anticipated Start Date:	29 April 2004
Anticipated Duration:	~2 days
Towing Vessel(s):	“Ray J. Hope” & “Invincible Tide”
Move Procedure:	As per the ENSCO 102 Marine Operations Manual and ENSCO Rig Move Guidance Manual.
Person in charge during Tow:	ENSCO 102 OIM

Number Personnel on Board during Tow: 70

The actual commencement of the tow will be advised by ENSCO 102 prior to commencing the rig move.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)

Daniel L. Whiteman
Drilling Manager

If this message has been received by other than the party to whom it is addressed, please notify us immediately at the telephone number below. The message may contain material which is proprietary or confidential, and it should not be copied or distributed. Confidentiality is not waived by reason of loss or mistaken delivery. If transmission is incomplete or illegible, please phone .

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay, Southbank VIC 3006
GPO Box 400C, Melbourne VIC 3001
Telephone: 61 3 9270 3333

An **ExxonMobil** Subsidiary

Facsimile

Drilling

Bcc:
R Reinten (SRO)
A. Zannetos
Drilling Supervisors - West Whiptail-1
F.W. Kratzer
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance
File: West Whiptail-1 2.3 - Control Documents, Regulatory

AMSA SHIP OPS&QUALS

Australian Government
Australian Maritime Safety Authority

AUSTRALIAN MARITIME SAFETY AUTHORITY

Organisation : Esso Drilling Div
Attention : Mr Daniel Whiteman

Phone :
Fax :
No of Pages : 1
Your Ref :

From : G.J.Bond
for Manager Ship Operations
Phone : 02 6279 5672
Fax : 02 6279 5056
Date : 22/04/04
AMSA Ref :

Rig-move Ensco 102

Ref your fax of yesterday: rig move to West Whiptail approved by AMSA.

G.J.Bond

For

Manager Ship Operations

RECEIVED
22 APR 2004
D L WHITEMAN

cc CP Meakin
orig SRO - Judy Sutherland

Department of Primary Industries

240 Victoria Parade
PO Box 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 401 I
Facsimile: (03) 9412 4803
ABN 42 579 412 233
DX 210099

27 April 2004
Our Ref; PE/16/0028
Your Ref; DD:7144/CPM

Mr Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd
GPO Box 400C
MELBOURNE VIC 3001

RECEIVED
27 APR 2004
D L WHITEMAN

cc C P Meakin
FW Kratzer
orig SRO Files
(Judy Sutherland)

Dear Mr Whiteman,

ENSCO-102 RIG MOVE FROM OFFLOAD LOCATION TO WEST WHIPTAIL- LOCATION

I refer to your facsimile dated 21 April 2004 regarding the above subject.

Under the provisions of Clause 302 of the Petroleum (Submerged *Lands) Acts Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production* 2004, I hereby approve your request to move the jack-up drill rig "Ensco-102" from the offload location to the West Whiptail-l location.

Yours sincerely,

HORACIO HAAG
Manager, Petroleum Operations, Safety and Environment

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

27 April, 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002

Attention: Mr H. Haag

Dear Sir,

Subject: WEST WHIPTAIL-1 MOVE, PRELOAD & EXIT PROGRAM

Please find enclosed a copy of the above referenced program.

Please contact Colin Johancsik on 9270-3534 (E-mail: colin.a.johancsik@exxonmobil.com) if you require any further information.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)

Daniel L. Whiteman
Drilling Manager

bcc: R. Reinten (SRO)
W Mudge
M. Osborne, BHP Billiton Petroleum

bcc: (without Attachments)
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

Facsimile

Drilling

To	Manager - Marine Operations & Personnel Australian Maritime Safety Authority	Pages	Cover + 1 page
Fax	(02) 6279 5966 (AMSA)	Date	4 May 2004
From	Daniel L. Whiteman	CC	Distribution
		Ref	DD:7154/CPM

Re ENSCO 102 Rig Move from Offload Location to Esso's West Whiptail-1 Location Update

---

Distribution:

Maritime Rescue Co-ordination Centre, Canberra The Officer in Charge, MRCC	(02) 6230 6868
DOT Canberra The Officer in Charge DOT	(02) 6274 6699
Department of Primary Industry Mr H. Haag, Manager, Petroleum Operations, Safety and Environment	(03) 9412 5152
Ensco Australia Pty Limited Mr Barry Todd - Rig Manager	(03) 9629 7222

Further to our earlier facsimile of 21 April 2004 (Ref: DD:7144/CPM) we wish to advise that the move of the ENSCO 102 from its dry tow offload location in Western Port to Esso's West Whiptail-1 location in Bass Strait has been delayed by weather. Details of the rig's current location and the move are set out below.

We now expect the move to start on or about 6 May 2004.

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Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay, Southbank VIC 3006
GPO Box 400C, Melbourne VIC 3001
Telephone: 61 3 9270 3333

An **ExxonMobil** Subsidiary

ENSCO Australia Pty. Ltd.
ENSCO 102

To:	Fax No:	Ph No:
MRCC Australia	02 62306868	02 62622306
The Officer in Charge MRCC		
DOT Canberra	02 62746699	02 62747447
The Officer in Charge DOT		
AMSA Canberra	02 6279 5056	02 62795908
Manager-Marine Operations & Personnel		
AMSA Melbourne	03 96743003	03 96743010
Manager - Mr. Shaun O'Neil		
VDNRE	03 94125152	
Manager – Petroleum Operations and Safety		
Tasmanian Fishing Industry Council	03 62242321	03 62242332
Mr. Bob Lister		
Seafood Industry Victoria	03 9824 0755	03 9824 0744
Mr. Ross McGowan		
Esso Australia	03 92703593	
Frank Kratzer		
ENSCO Australia Pty Ltd	03 96297222	03 86102200
Barry J. Todd		

From: Charles Shelton
OIM - ENSCO 102

Date: 06/05/04
Ref: Rig move from Westemport Bay to West Whiptail-l

Please be advised that as of 11:48 hours May 6, 2004 the MODU ENSCO 102 departed from Westernport Bay offload location, Latitude: 38' 26.1' S, Longitude: 145" 12.9' E bound for the West Whiptail-l location at position Latitude: 38' 19' 28.9" S, Longitude: 147" 30' 17.0" E. The tow distance is approximately 165 nautical miles. The towing vessels are the "Ray J. Hope" and the "Invincible Tide".

In accordance with MO47 – Appendix 1, Article 4.3 this MODU move is assisted by Capt. John Meade holder of British Class 1 F.G. Certificate SCTW95.

Regards,

Charles Shelton
OIM – ENSCO 102

Facsimile

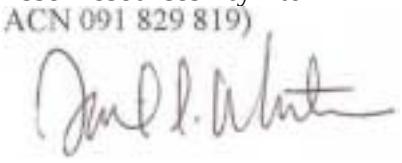
Drilling

Datum and Spheroid:	Geodetic Datum of Australia 1994 (GDA94)
	Geodetic Reference System 1980 ellipsoid (GRS80)
Departing Location:	Western Port North of Phillip Island
	Latitude 38° 26’ 24”S
	Longitude 145° 17’ 36”E
Arriving Location:	West Whiptail-1 (VIC/L1, Bass Strait)
	Latitude 38° 19’ 28.9”S
	Longitude 147° 30’ 17.0”E
Distance of Tow:	Approximately 185 nautical miles
Anticipated Start Date:	6 May 2004
Anticipated Duration:	~2 days
Towing Vessel(s):	“Ray J. Hope” & “Invincible Tide”
Move Procedure:	As per the ENSCO 102 Marine Operations Manual and ENSCO Rig Move Guidance Manual.
Person in charge during Tow:	ENSCO 102 OIM

Number Personnel on Board during Tow: 70

The actual commencement of the tow will be advised by ENSCO 102 prior to commencing the rig move.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)



Daniel L. Whiteman
Drilling Manager

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Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay, Southbank VIC 3006
GPO Box 400C, Melbourne VIC 3001
Telephone: 61 3 9270 3333

An **ExxonMobil** Subsidiary

Facsimile

Drilling

Bcc:
R Reinten (SRO)
A. Zannetos
Drilling Supervisors - West Whiptail-1
F.W. Kratzer
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance
File: West Whiptail-1 2.3 - Control Documents, Regulatory

ENSCO Australia Pty. Ltd.

ENSCO 1O2

TO:	FAX No:	TEL No:
MRCC Australia	02 62306868	02 62622306
The Officer in Charge MRCC		
DOT Canberra	02 62146699	02 62141441
The Officer in Charge DOT		
AMSA Canberra	02 62795056	02 62795908
Manager – Marine Operations & Personnel		
AMSA Melbourne	03 96743003	03 96743010
Manager Mr. Shaun O'Neil		
VDNRE	03 9412 5152	
Manger – Petroleum Operations and Safety		
Tasmanian Fiihing Industry Council	03 62242321	03 62242332
Mr. Bob Lister		
Seafood Industry Victoria	03 9824 0755	03 9824 0744
Mr. Ross McGowan		
Esso Australia	03 92703593	
Frank Kratzer		
ENSCO Australia Pty Ltd	03 9629 7222	03 8610 2200
Barry J. Todd		

From: Charles Shelton
OIM - ENSCO 102

Date: 08/05/04
Ref: Rig move from Westernport Bay to West Whiptail-1

Please be advised that as of 00:30 hours May 8, 2004 the MODU ENSCO 102 arrived at the West Whiptail-1 location at position Latitude: 38° 19' 28.9" S. Longitude 147 30' 17.9" E. The legs were pinned at 03:00 hours May 8, 2004. Preloading operations began at 04:00 hours and are continuing.

In accordance with MO47 – Appendix 1, Article 4.3 this MODU move is assisted by Capt. John Meade holder of British Class 1 F.G. Certificate SCTW95.

Regards,

Charles Shelton
OIM – ENSCO 102

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

17 May, 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002
Attention: Mr H. Haag

Dear Sir,

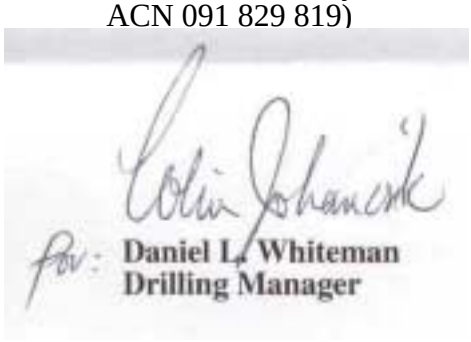
Subject: APPROVAL TO DEEPEN WEST WHIPTAIL-1

Further to our letter Ref. DD:7131/CPM dated 4 March, 2004 for your approval to drill West Whiptail-1 in VIC/L1, and your subsequent consent dated 11 March, 2004 (Your reference PE/16/0028), we seek your approval to deepen the West Whiptail-1 well by as much as 100m, to a maximum total depth of 1600m TVDSS.

We do not expect to have to drill West Whiptail-1 beyond to planned 1500m TVDSS. The only scenarios where deepening would be required would be if we were drilling a low net to gross section and deepening were required to provide 10 metres of wet porous sand for pressure measurement, or if the well had significant hydrocarbon shows at TD.

Please contact Mr Wayne Mudge, 9270-3808 (E-mail: wayne.j.mudge@exxonmobil.com) if you require any further information.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)



bcc: R. Reinten (SRO)
W.J. Mudge
M. Osborne, BHP Billiton Petroleum

bcc: (without Attachments)
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

→ SRO (R. Reington) F.W. Kratzer
Andy Lannekos Wellfile
Ensco 102

FAXED

Department of Primary Industries

240 Victoria Parade
PO Box 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 4011
Facsimile: (03) 9412 4803
ABN 42 579 412 233
DX 210099

17 May 2004
Our Ref; PE/16/0028
Your Ref; DD:716O/CPM

Mr Daniel Whiteman
Drilling Manager
Esso Australia Pty Ltd
GPO Box 400C
MELBOURNE VIC 3001

FAXED #3372
ENSCO 102 19/5/2004.

Dear Mr Whiteman,

CONSENT TO DEEPEN WESTTAIL-1 EXPLORATION WELL IN VIC/L1

With reference to your letter of 17 May 2004, and our letter of consent dated 11 March 2004, I hereby consent to the deepening of the West Whiptail-1 exploration well to a new depth of 1600 m TVDSS.

Yours sincerely,

BRUCE ARMOUR
Acting Manager, Petroleum Operations, Safety and Environment

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

21 May, 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002
Attention: Mr H. Haag

Dear Sir,

Subject: REQUEST FOR APPROVAL TO ABANDON WEST WHIPTAIL-1

Pursuant to the Petroleum (Submerged Lands) Act Clause 513 (1) we hereby request your approval to abandon West Whiptail-1 near-field wildcat well in VIC/L1. The objective of this well was to delineate the extent of the hydrocarbons found in Mulloway-1 and Whiptail-1A to allow evaluation of this field for future development, and then plug and abandon this location. We plan to P&A this well as follows:

1. RIH with a tubing stinger on drillpipe and spot a continuous balanced cement plug from TD to 669m MDRT in five stages. This will isolate all "significant" hydrocarbon intervals in the wellbore in the N1.0 and 1.1 sands, and the freshwater zones overlying and underlying the hydrocarbons, and to place a plug across the 9-5/8" surface casing shoe. WOC and tag to ensure the location and integrity of Plug #1;
2. Displace the mud in the surface casing with inhibited mud (bactericide, oxygen scavenger and pH > 10);
3. POOH, P/U, set and tag an EZSV at 170m to support the surface cement plug;
4. Spot the surface cement plug from 170m to 110m. Pressure test to 1,000 psi to ensure integrity, and tag to verify depth after WOC;
5. Cut and pull the 9-5/8" surface casing from approximately 9m below the mudline;
6. Nipple down the BOP and set back on the test stump;
7. Cut the conductor approximately 2m below the mudline (subject to DPI approval). Retrieve the wellhead and conductor riser;
8. Conduct a seafloor survey with the ROV;
9. Rig down for the wet tow to Yolla. Jack-down, and with the Ray J. Hope as the primary tow vessel, tow to one nautical mile from the West Whiptail-1 location to release the rig.

A Wellbore Sketch of the proposed P&A is attached for your reference.

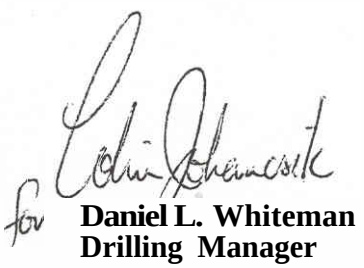
Esso Australia Pty Ltd requests dispensation from P(SL)A Clause 514(10) which requires that all casing strings and piling shall be severed and removed at least five metres below the seabed. In the above procedure we propose cutting the 30" conductor approximately 2m below the mudline. Our concern is that that, if we cut at 5 metres below mudline, either we may not be able to recover the 30" which was cemented into 36" hole; or that excessive force may be required in the recovery operation.

We believe a cut approximately 2m below the mud line is adequate. Significant scouring at this location is thought to be unlikely due to sediment composition and strength. The seafloor consists of fine to medium, loose, shelly (carbonate) quartz sands that are significantly compacted on the seabed (West Whiptail-1 Site Survey Report, 2004). Preloading the ENSCO 102 at this location resulted in minimal leg penetration (bow 0.6m, port and starboard aft legs each 0.5m).

The proposed P&A is not expected to impact fishing in the area and the Lakes Entrance fish co-operatives will be notified of the location and depth of the P&A well.

If you require any further information please contact Cohn Johancsik on (03) 9270-3534 (e-mail: colin.a.johancsik@exxonmobil.com).

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)



for **Daniel L. Whiteman**
Drilling Manager

An **ExxonMobil** Subsidiary

ATTACHMENT 1

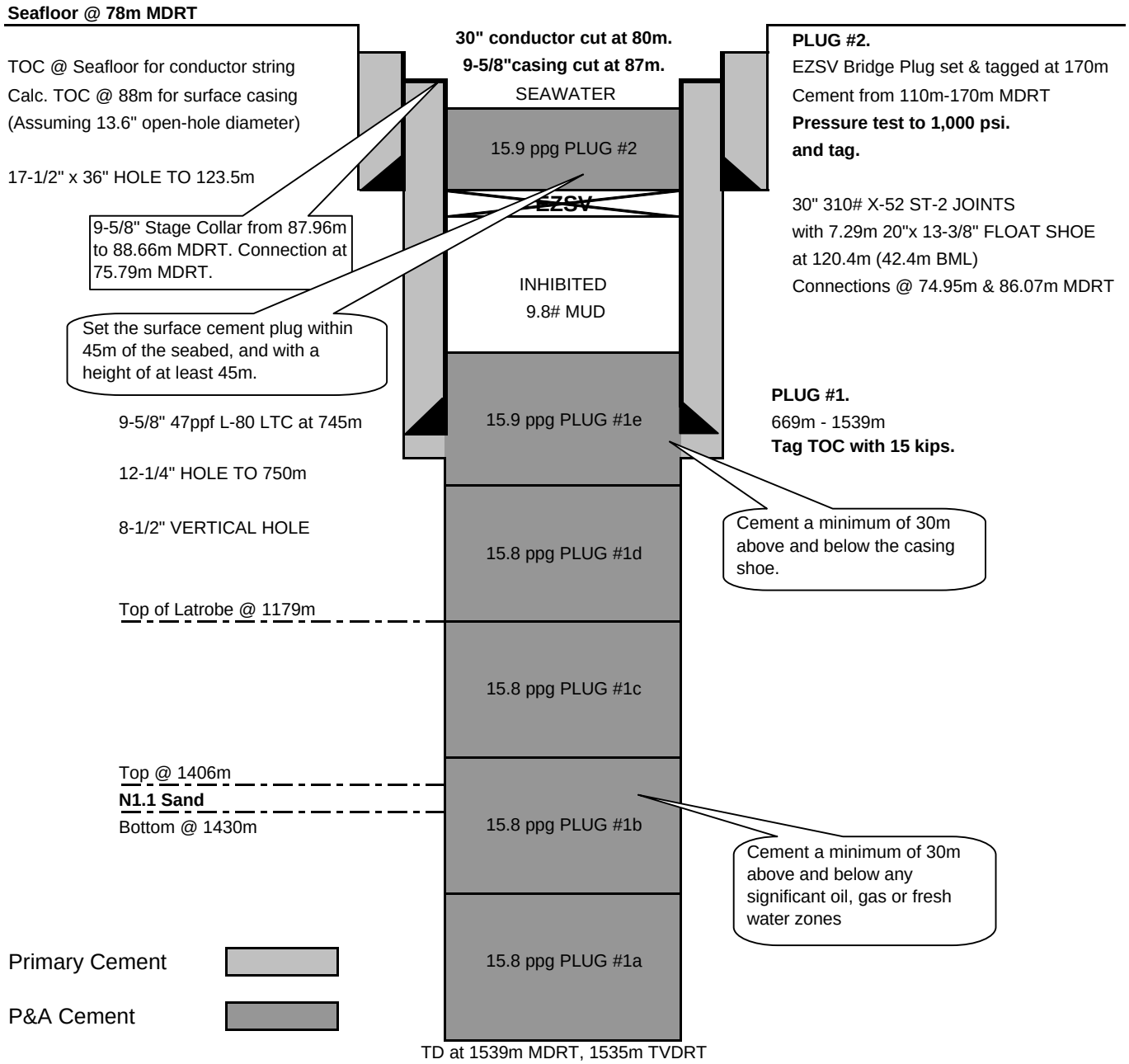
PROPOSED WELLBORE SKETCH FOR PLUGGING & ABANDONING
WEST WHIPTAIL-1
Drilled by the Jack-up ENSCO 102

LOCATION: GDA94. Latitude 38° 19' 29.150" S. Longitude 147° 30' 17.167" E.
MGA Zone 55 Easting 544,121.32m, Northing 5,758,030.22m
Rig on Location 0300 hours 8-May-2004. Expected rig released 27-May-2004

ALL DEPTHS ARE METRES FROM ROTARY TABLE. FORMATION TOPS FROM MUD LOG.

MSL @ 39m RT

WATER DEPTH = 39m



bcc: R. Reinten (SRO)
W.J. Mudge
M. Osborne, BHP Billiton Petroleum

bcc: (without Attachments)
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

Department of Primary Industries

240 Victoria Parade
PO BOX 500 East Melbourne
Victoria 3002 Australia
Telephone: (03) 9412 4011
Facsimile: (03) 9412 4803
ABN 42 579 412 233
DX210099

→ SRO (R. Reinten)
Andy Zannetos
FWK
Ensco 102
W. Whiptail FWR
Surv. File
File 2.3 Regulatory

FAXED #3394 21/5/2004

21 May 2004
Our Ref: No; PE/16/0028

Mr Daniel L. Whiteman
Drilling Manager
Esso Australia Pty Ltd
GPO Box 400C
Melbourne 3001

Dear Mr Whireman

CONSENT TO PLUG AND ABANDON WEST WHIPTAIL - 1 EXPLORATION WELL

I refer to your fax DD:7160/CPM of 21 May 2004 requesting the Designated Authority's approval to plug and abandon the West Whiptail-1 exploration well in Vic/Ll.

In accordance with Provisions of Clause 513 of the *Petroleum (Submerged Lands) Act, Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production in Waters under Commonwealth Jurisdiction 1997*, I hereby approve your request to plug and abandon the West Whiptail -1 exploration well according to your proposed procedure.

In view of the seafloor conditions you describe at the site, I also grant a dispensation to Clause 514(10) of the *Petroleum (Submerged Lands) Act, Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production in Waters under Commonwealth Jurisdiction 1997* - provided that the 30 inch conductor is severed at 2.0 m below the seafloor.

A seabed survey of the well location must be carried out prior to the rig move from the drilling site and copies of logs and other test data shall be provided to the Department.

Yours sincerely

BRUCE ARMOUR
Acting Manager Petroleum Operations Safety and Environment

Victoria The Place To Be

Find out more by calling our Customer Service Centre on 136 186 or visit our website at www.dpi.vic.gov.au

ENSCO Australia Pty. Ltd.
ENSCO 102

To:	**Fax No:**	**Ph No:**
MRCC Australia	02 6230 6868	02 6262 2306
The Officer in Charge MRCC		
DOT Canberra	02 6274 6699	02 6274 7447
The Officer in Charge DOT		
AMSA Canberra	026279 5056	02 6279 5908
Manager - Marine Operations & Personnel		
AMSA Melbourne	03 9674 3003	03 9674 3010
Manager - Mr. Shaun O'Neil		
VDNRE	03 9412 5152	
Manager – Petroleum Operations and Safety		
Tasmanian Fishing Industry Council	03 6224 2321	03 6224 2332
Mr. Bob Lister		
Seafood Industry Victoria	03 9824 0755.	03 9824 0744
Mr. Ross McGowan		
Esso Australia	03 9270 3593	
Frank Kratzer		
ENSCO Australia Pty Ltd	03 9629 7222	03 8610 2200
Barry J. Todd		

From: Ian Parr
OIM - ENSCO 102

Date: 5 June 2004
Ref: Rig move from West Whiptail-1 to Yolla

Please be advised that as of 14:00 hours on 5 June 2004 the MODU ENSCO 102 departed from Western Whiptail-1 location Latitude: 38 19' 28.9" S, Longitude: 147 30' 17.0" E bound for the Yolla Platform location at position Latitude: 39" 50' 40.5" S, Longitude: 145 49' 06.3" E. The tow distance is approximately 125.1 nautical miles. The towing vessels are the "Ray J. Hope" and the "Invincible Tide".

In accordance with MO47 – Appendix 1. Article 43 this MODU move is assisted by Capt. John Meade holder of British Class 1 F.G. Certificate SCTW95.

Regards,

Ian Parr
OIM – ENSCO 102

Esso Australia Pty Ltd
ABN 49 000 018 566
12 Riverside Quay
Southbank, Victoria 3006
GPO Box 400C
Melbourne, Victoria 3001
61 3 9270 3333 Telephone

7 June 2004

Manager, Minerals & Petroleum Operations
Minerals & Petroleum Victoria
8th Floor, 250 Victoria Parade
EAST MELBOURNE VIC 3002
Attention: Mr H. Haag

Dear Sir,

Subject: WEST WHIPTAIL-1 - ACTUAL PLUG & ABANDONMENT DETAILS

On May 21, 2004, Esso Australia Pty. Ltd. requested approval to Plug and Abandon the West Whiptail-1 near-field wildcat well in VIC/L1. Consent to P&A the well was granted by DPI on the same day (ref: PE/16/0028).

Pursuant to the Petroleum (Submerged Lands) Act - Schedule of Specific Requirements as to Offshore Petroleum Exploration and Production - Clause 553, Esso Australia Pty Ltd hereby provides details regarding the actual plug and abandonment of the West Whiptail-1 near-field wildcat well. A Wellbore Sketch of the actual P&A is attached for your reference.

We have also attached the results of the seabed survey carried out prior to the rig move from the drilling location.

By copy of this letter we are also informing various Bass Strait fisheries of the final location and depth of this abandoned well.

Please contact Colin Johancsik on (03) 9270-3534 (e-mail: colin.a.johancsik@exxonmobil.com) if you require any further information.

Yours faithfully
Esso Australia Pty Ltd
(for and on behalf of
Esso Resources Pty Ltd
ACN 091 829 819)

Daniel L. Whiteman
Drilling Manager

/Attach

cc:	Richard Brumley	DNRE Fisheries, Lakes Entrance	Fax:	(03) 5155 3137
	Ross McGowan	Seafood Industries Victoria	Fax:	(03) 9824 0755
	Jeff Richardson	Australian Fishing Management Authority	Fax:	(02) 6272 5167
	The Chairman	Southern Squid Jig Fishery Management Advisory Committee	Fax:	(02) 6272 5167
	The Chairman	Gillnet Hook & Trap Fishery Management Committee	Fax:	(02) 6272 5167
	Tom Davies and Jeff North	Lakes Entrance Fisherman's Co-operative	Fax:	(03) 5155 2859
	Gail Richey	South East Trawl Fishery	Fax:	(03) 6428 7755
	Dr. Ian Knuckey	South East Trawl Fishery	Fax:	(03) 5258 4399
	Arno Blank	Bass Strait Central Zone Scallop Fishery	Fax:	(03) 5156 2744
	Locky Marshall	Twofold Bay Fishing Co-operative	Fax:	(03) 6496 3401

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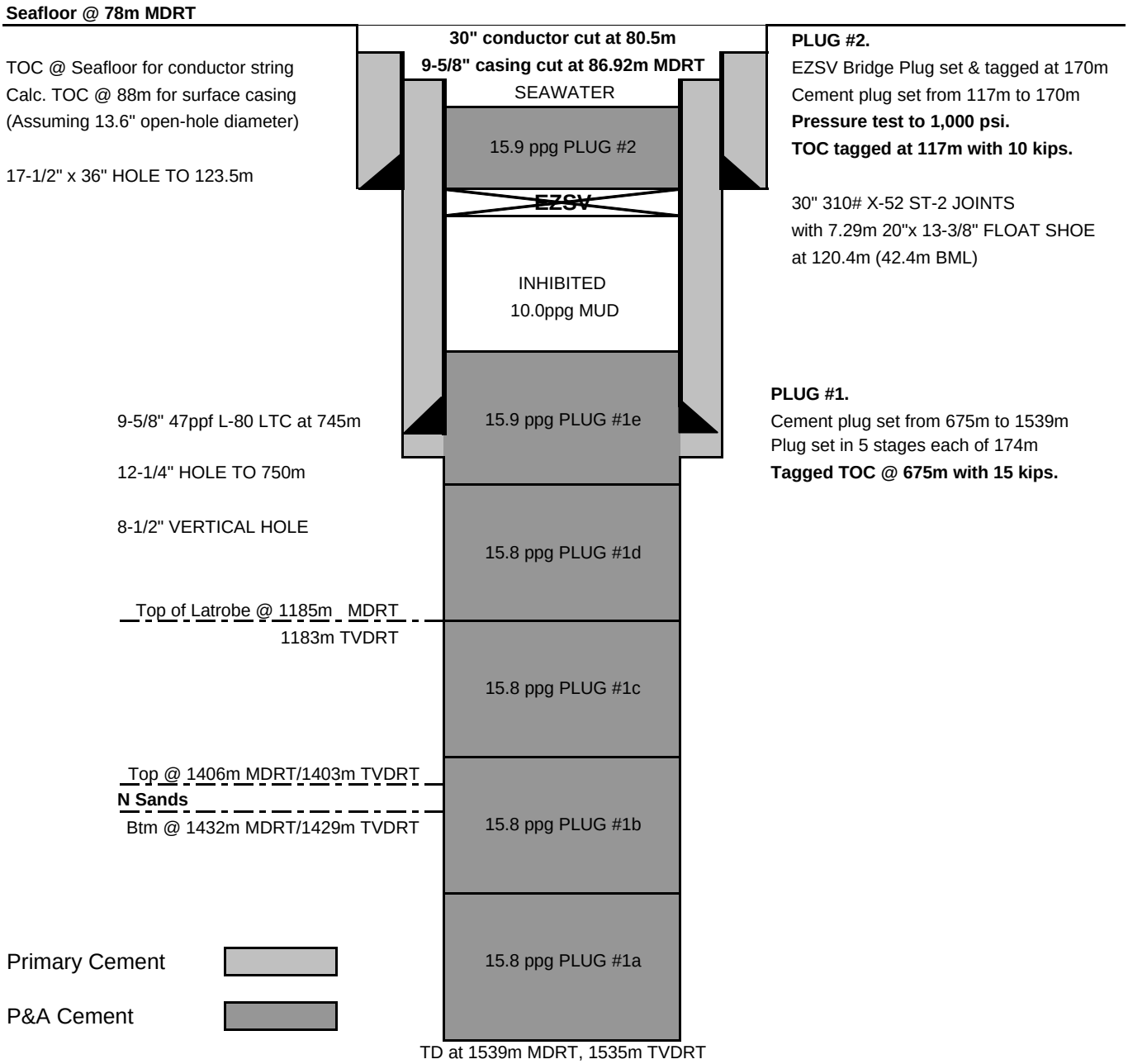
ACTUAL PLUG AND ABANDONMENT WELLBORE SKETCH
WEST WHIPTAIL-1
Drilled by the Jack-up ENSCO 102

LOCATION: GDA94. Latitude 38° 19' 29.150" S. Longitude 147° 30' 17.167" E.
MGA Zone 55 Easting 544,121.32m, Northing 5,758,030.22m
Rig on Location 0300 hours 8 May 2004. Rig released 1530 hours 5 June 2004.

ALL DEPTHS ARE METRES FROM ROTARY TABLE. FORMATION TOPS FROM PRELIMINARY GEOLOGCAL REPORT.

MSL @ 39m RT

WATER DEPTH: 39m



Global Offshore Pty Ltd.
A.B.N. 70 076 525 203

141 Patten Street, Sale. Victoria 3850
Postal: PO Box 509. Sale. Victoria 3850
Telephone: (03) 51 442311 Facsimile: (03) 51 444757
Website: www.globalind.com

Post Abandonment Seabed Survey; West Whiptail-1 exploration hole.

The West Whiptail-1 seabed survey was undertaken by Global Offshore Pty Ltd using the ESSO boxer ROV system onboard the Jack up rig 'ENSCO 102'.

On the 24th and 25th of May, 1st of June 2004 the ROV carried out a visual Inspection of the 30" Casing and entry hole at the seabed, a Sonar survey was also carried out to a radius of 50 meters on the four Cardinal headings giving a 90 degree overlap of all points of the survey. Final Inspection of hole carried out on 3rd June with no sign of casing above seabed or any other debris sited.

Results were:
Seabed to a radius of 50 meters from the well site was found to be flat and featureless, The visual and sonar survey showed nothing untoward caused by the West Whiptail drilling program.
At the wellsite a mound or crater is left approximately half a meter above the seabed, this is made of cutting returns which gently slopes down to natural seabed over 2-3 meters,

Signed:

Alex Nitzsche
ROV Supervisor

bcc: R. Reinten (SRO)
W.J. Mudge
M. Osborne, BHP Billiton Petroleum

bcc: (without Attachments)
West Whiptail-1 Final Well Report
West Whiptail-1 Well Planning & Surveillance File
File: West Whiptail-1 2.3 (Regulatory)

DRILLING PROGRAMS &
SUPPLEMENTAL PROCEDURES

MOVE, PRELOAD & EXIT PROGRAM	WELL: West Whiptail-1
	TYPE: Near Field Wildcat Well

1.0 MOVE, PRELOAD & EXIT OBJECTIVES

Move the ENSCO 102 from the offload location at GDA94 Latitude offload location at Latitude 38 57' 50" S, Longitude 148 33' E to the West Whiptail-1 (VIC/L1) well location. The Tidewater Ray J. Hope will be the primary tow vessel, supported by the Tidewater Invincible Tide.

Position the rig within a **5m-radius circle** centred on the proposed location on a heading of **130° True**. The prevailing wind is from the West (West SouthWest to South). By selecting a heading of 130 , the quarters are unlikely to be downwind of either the rig floor or the engine exhausts, boat handling will be in the lee of the predominant weather, and should AHVs loose power, the vessel will likely drift away from the ENSCO 102.

Preload ENSCO 102 and prepare to spud the well.

On the completion of the well, prepare to move the rig, jack-down and then exit the location on approximately the reverse path to the entry.

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Engineer	(C.P. Meakin)	22-Apr-2004
Drilling Engineering Manger	(C. A. Johancsik) for	22-04-04
Operations Superintendent	(F. W. Kratzer)	22/04/04
Endorsed: Gippsland Geoscience Manger	(W.J. Mudge)	23/4/04
Approved: Drilling Manager	(D. L. Whiteman)	22/4/2004

REV: 0

3.0 WEST WHIPTAIL-1 WELL LOCATION

ATTACHMENT 1 West Whiptail-1 Well Location, Position Tolerance, Rig Heading & Air Gap. details the location for West Whiptail-1. The location is within the Bass Strait Shipping Exclusion Zone.

4.0 BOTTOM CONDITIONS / HAZARDS & PRECAUTIONS

Barracouta platform, the nearest surface facility, is 15.3 km from the West Whiptail-1 location on a grid bearing of 79 . The cased and suspended Mulloway-1 sub-sea wellhead is 1.7km from the West Whiptail-1 location on a grid bearing of 281 . The cased and suspended Whiptail-1A sub-sea wellhead is 1.4km from the West Whiptail-1 location on a grid bearing of 85 .

The following conclusions were made from the West Whiptail-1 Site Survey Site Investigation and Operations Report, Thales Report No. 3635C1, survey date 28 October 2003, report issued date 13 January 2004:

Bathymetry
Across the West Whiptail-1 survey area, the seabed shoals very gently (seabed gradient much less than 1°) to the NorthWest.

The nearest observable water depth to the proposed West Whiptail-1 location is 39.0m. The minimum water depth observed within the survey area is 37.2m, 1500m NorthWest of the proposed West Whiptail-1 location. The maximum water depth observed is 41.1m, 1500m SouthEast of the proposed West Whiptail-1 location.

The seabed surrounding the proposed West Whiptail-1 location is free of steep slopes and bathymetric anomalies.

Seabed Features
Moderate reflectivity seabed interpreted as loose fine to medium grained shelly quartz sand is present across the entire West Whiptail-1 site survey area.

In the eastern quarter of the survey area, subtle changes in the seabed reflectivity define NorthEast-SouthWest trending lineations that are probably oriented parallel to the prevailing current. The lineations have no significant relief and represent localised sorting of the seabed sand.

No obvious debris was observed on the side scan sonar records within the site survey area.

Shallow Geology
Two distinct units are visible on the sub-bottom profiler data, leading to the following interpreted stratigraphy:

Stratigraphy	Description
Unit A	Loose to dense/soft to stiff sandy and silty soils.
Unit B	Bedded variably consolidated/cemented sediments.

The shallow geology is relatively homogenous across the site survey area:

- Unit A is flat lying, laterally continuous across the entire site survey area and interpreted to consist of loose to dense sandy soil interbedded with soft to stiff clayey soil. Within the site survey area, the thickness of Unit A is uniformly 3.0m.
- Unit B is also laterally continuous underlying Unit A across the site survey area. Unit B is composed of folded sediments interpreted to consist of bedded variably consolidated/cemented sediments and extends beyond the limit of useful acoustic penetration (20m). One internal reflector within Unit B exhibits a monocline structure with an axis plunging 0.1° East-NorthEast. The bedding on the SouthEast of the monocline dips approximately 0.5° South-SouthEast.

The predicted stratigraphy at the proposed West Whiptail-1 location is given in the table below:

Top of Unit	Depth Below Seabed (m)	Unit Thickness (m)	Predicted Lithology
A	0.0	3.0	Loose to dense/soft to stiff sandy and silty soils.
B	3.0	>17m, (to beyond the limit of acoustic penetration 20m)	Bedded variably consolidated/cemented sediments.

Seabed Sampling
One grab sample and one gravity core sample were recovered near the proposed West Whiptail-1 location. Both samples consist of loose, light brown, fine to medium shelly quarts sand.

Hazards and Constraints
No significant seabed features that would be hazardous to jackup rig emplacement or drilling operations have been observed in the West Whiptail-1 site survey area.

No significant hazards or constraints to jackup rig emplacement or drilling operations have been identified within the shallow subsurface (20m) in the West Whiptail-1 site survey area. Folding of Unit B is not considered hazardous for jackup rig emplacement due to the very shallow dip of the beds within this unit and the uniformity of the sediments.

5.0 MOORING EQUIPMENT / ANCHOR HANDLING VESSELS

5.1 ENSCO 102 PRINCIPAL DIMENSIONS AND MOORING EQUIPMENT:

ATTACHMENT 2 details ENSCO 102 Principal Dimensions, Mooring System & Towing Gear.

5.2 ANCHOR HANDLING VESSELS:

The Anchor Handling Vessels (AHVs) that will be used for the tow and positioning are:

AHVs	Ray J. Hope	Invincible Tide
Operator	Tidewater Marine	Tidewater Marine
AHV Positioning	Not Required	Not Required
BHP	15,000	8,160
Bollard Pull (Short Ton)	187	110
Winch Line Pull (Short Ton)	330	185
Tow wire	2,000m / 3"	1,200m / 2-1/2"
Pennant Reels	(2) 2,500m / 3"	(2) 500m / 2.2"

6.0 MANAGEMENT OF CHANGE

1. The following procedures are the minimum requirements. Variations to the procedures due to weather and current will only be allowed if the variation is safe and do not present an increased personnel or operational risk.
2. Esso's Representative and the OIM shall discuss any variation prior to operations commencing.

7.0 PREPARATION FOR RIG MOVE

1. The tow will commence from the location where the ENSCO 102 was off-loaded from the dry tow vessel in Western Port at approximately GDA94 Latitude 38 26’ 01" S, Longitude 145 deg 12’ 59" E. Esso's communications equipment, rig positioning equipment should be loaded onboard prior to commencing the tow. Esso's communications personnel, rig positioning personnel, inspection personnel and Esso's drilling representatives should be onboard prior to commencing the rig move or shortly thereafter.
2. Verify that the pre-tow stability calculations are complete.
3. Ensure any loose items are sea fastened, and that watertight doors and hatches are closed except when passing through.
4. Ensure that Thales Geosolution/Fugro Survey Pty Ltd Skyfix XP/GNS 2 Navigation System is loaded on the rig at the start of the tow for rig positioning. Survey personnel should also board the rig at this point to install the positioning equipment onboard the rig.
5. Ensure that the Emergency towline is prepared prior to moving off location and that sufficient spare mooring equipment is provided to cope with any potential problem.
6. All tidal, current and weather data shall be considered prior to and during any rig move operation.
7. Ensure that notification for the move has been sent to DPI and AMSA.

8. Conduct a pre-rig move meeting with rig crew and masters of the vessels to discuss the rig move, positioning and preload procedure. The minimum attendance is:

   - Esso Drilling Supervisor
   - ENSCO 102 OIM
   - Rig Superintendent
   - Barge Master
   - Thales Geosolution's Surveyor
   - Captains of both AHVs
   - Winch Operators

   During the meeting the rig move procedures, charts, site survey reports, tidal height predictions, near surface current predictions, navigational hazards, radio channels, weather predictions and any other information deemed to be relevant to the operation shall be discussed.

8.0 TOW TO WEST WHIPTAIL-1

1. The tow will proceed from the offload location to the West Whiptail-1 location with the one vessel (Ray J. Hope) connected to tow bridle. The Invincible Tide should be connected to the ENSCO 102 to assist in the final rig positioning.

   NOTE: 1 The move will be conducted in accordance with the ENSCO 102 Marine Operations Manual and ENSCO Rig Move Guidance Manual. Responsibility for the safety of personnel and integrity of the vessel will at all times remains with the ENSCO 102 OIM.

   NOTE: 2 All tidal and current data shall be considered prior to and during any rig move operation.

2. The planned tow route is shown in ATTACHMENT 3 ENSCO 102 RIG MOVE TOW ROUTE TO West Whiptail-1. The rig will be towed at a transit draft of between 15.2 ft (light ship) and 20.8 ft (load line). The towing distance is estimated to be 175 nm and is expected to take approximately 48 hours at 3.5 knots. Thales Geosolution/Fugro Survey Pty Ltd, using the Skyfix XP/GNS 2 Navigation System, shall monitor the tow from the offload location to the West Whiptail-1 location.

3. The proposed tow route to West Whiptail-1 is tabulated below:

Location	Latitude	Longitude	Course (True)	Leg
Off-Load Location	38 º 26’ 01"S	145 º 12' 59" E		12.0 nm
Westernport Pilot Station	38 º 32' 55" S	145 º 02'. 05" E	127.7 º	72.0 nm
Way Point #2	39 º 16' 55" S	146 º 15' 05" E	090.0 º	13.2 nm
Way Point #3	39 º 16' 55" S	146 º 32' 05" E	064.3 º	13.8 nm
Way Point #4	39 º 10'.55" S	146 º 48' 05" E	028.8 º	60.2 nm
Way Point #5	38 º 18' 06" S	147 º 25' 05" E	090.0 º	2.7 nm
Way Point #6	38 º 18' 06" S	147 º 28' 35" E	132.5 º	1.9 nm
West Whiptail-1	38 º 19' 28.9555" S	147 º 30' 16.9760" E	130.0 º	

NOTE: 1 Datum and Spheroid are Geodetic Datum of Australia 1994 (GDA94) and the Geodetic Reference System 1980 ellipsoid (GRS80).

NOTE: 2 The exact route to West Whiptail-1 shall be determined by the Esso Representative, and the Ensco OIM and Barge Master.

NOTE: 3 During the rig move the primary tow vessel shall maintain a continuous radar watch. In addition, the Ensco 102 radio room is to maintain a listening watch.

NOTE: 4 The planned tow route crosses the gas line to Tasmania and the oil line from Perch and Dolphin, before entering the exclusion zone around Esso's existing Bass Strait.

NOTE: 5 The tow route should maintain a **minimum safe distance of 2 nm** from any existing facility, viz. Platform, monotower or subsea completion.

4. Shorten/reduce the tow length at the final WayPoint before towing into West Whiptail-1. Attach the secondary tow vessel to port or starboard as necessary to control the tow in to the West Whiptail-1 location.
5. The rig will be released to Esso one (1) nautical mile from the West Whiptail-1 location. Finalise the material inventory at this time by supplying:
   - Inventory all mud products and additives on board (barite and bentonite).
   - Inventory all cement, additives and consumables in board.
   - Inventory all bulks (eg. fuel) on the rig and on the AHVs.
   - Sign off the "Statement of Facts" between Ensco's representative and Esso. Fax to Esso's Melbourne office (03-9270-3546).
6. An Esso Representative will provide a quality check for the final the rig positioning at the West Whiptail-1 location.
7. The run-in to the West Whiptail-1 location will be made at a heading of 090^{o} and will commence at a distance of 3.0 nm from the final location.
8. Commence to lower the legs on the approach to the West Whiptail-1 location. When 100m from location stop the rig and lower the legs to tag bottom and confirm water depth. Correct the water depth tagged using ATTACHMENT 4 WEST WHIPTAIL-1 TIDE CHARTS.
9. With the legs jacked approximately one metre above the seafloor, commence the tow in to the West Whiptail-1 location as specified in ATTACHMENT 1 West Whiptail-1 Well Location, Position Tolerance, Rig Heading & Air Gap. Do not drag legs on the sea floor.
10. Once on location within the specified tolerance, jack-down all legs to pin the rig at the final position.
11. Release the secondary tow vessel.

9.0 PRELOADING

1. After rig and legs are pinned in the correct position, with the hull at floating draft and the tow lines slack, pull one leg at a time up off the sea floor while pinned on the other two. This is to allow any deflection or torque in the legs to be released.
2. Determine the minimum draft that the hull can be safely brought up to based on the sea conditions.
3. With the hull at about 10 feet draft, load the rig evenly on all 3 legs to the maximum allowable jacking load calculated at the minimum draft determined in step one above.
4. Jack the hull up to the minimum draft, while maintaining the hull level by stopping and starting the legs as required.
5. After the hull has stabilized at the minimum draft, dump the preload in the aft preload tanks.

   NOTE: 1 The load on the bow leg will increase as the aft tanks are dumped. If the bow leg gains additional penetration when dumping the aft tanks, level the hull down the aft legs and recalculate the bow leg reaction. Dump the bow tanks as required to get back to the maximum allowable jacking leg reaction (calculated in Step 2 above) and jack back up to the minimum draft

6. With the hull at the minimum draft as described above, continue loading the bow leg. As the bow leg penetrates, jack the hull down on the aft legs to keep level. Continuously keep track of the rig's variable loading.

   NOTE: 1 The preload tank soundings should be input into the program in one foot increments as the tanks are being filled or as the Barge Engineer dictates. The hull draft and leg positions should be updated each time a leg is jacked or one foot of movement seen.

NOTE: 2 When a hull draft of about 3 feet to 3-l/2 feet is reached, the hull buoyancy will become too large to overcome and the preload water must be dumped back to the maximum jacking load (at the starting draft). The hull is then jacked back up to the starting draft to begin a new cycle.

7. Repeat the above process until 100% preload leg reaction is reached (accounting for hull buoyancy). The maximum hull draft at which a 100% preload reaction can be obtained on the bow leg is about 2-l/2 feet depending upon variable load on board. The mud pits can be filled with water to help increase the load on the bow leg.

8. After reaching the 100% preload hold the preload for l/2 hour with no settlement.

NOTE: 1 If the leg settles, level the hull down on the aft legs and take on additional preload water, if possible, to account for the increased hull buoyancy at the new draft or dump the preload and start another cycle.

9. Dump preload on bow leg.

10. Jack the hull approximately 1 foot above the wave action (not to exceed five (5) feet from still water level) and load the bow leg to the 100% preload leg reaction.

NOTE: 1 Additional leg penetration would not be expected if the leg was preloaded to 100% in the water. However, because of the inaccuracies in determining the exact hull draft and buoyancy while preloading in the water, it is possible that additional penetration could occur when the full preload is applied with the hull out of the water. This is why the air gap during this stage shall not exceed more than 1 foot above the wave crests.

NOTE: 2 The level indicators must be watched closely so that the rig can be maintained level by immediately jacking the hull down on the high side at the first sign of any additional penetration.

NOTE: 3 If the hull contacts water, dump the preload back to the maximum jacking load, jack back up to the minimum air gap and repeat the above process.

11. After the 100% preload leg reaction is reached, hold the preload for 3 hours with no settlement. The hull must remain completely clear of the water while holding preload.

12. After the preload has been held 3 hours without any settlement dump all preload on the bow leg.

13. Load both aft legs to 100% preload leg reaction.

14. After the 100% preload leg reaction is reached, hold the preload for 3 hours with no settlement. The hull must remain completely clear of the water while holding preload.

15. After the preload has been held 3 hours without any settlement dump all preload on the starboard legs.

16. Release the primary tow vessel from the main bridle.

17. Dump all preload tanks and jack the hull up to the required operating air gap for the location.

NOTE: 1 All water remaining in preload tanks is to be stripped at the earliest opportunity. This water is to be accounted for as variable load until it is removed.

NOTE: 2 Record the amount of preload, the depth of each leg penetration and the final air gap on the Daily Drilling Report.

18. Engage rack chokes and secure the jacking console.

9.1 ALTERNATE PRELOAD METHOD

An alternate preload method will be considered based upon On-Site Marine Warranty Surveyor's approval.

1. The preloading air gap is to be set no more than five (5) feet above still water level and taking into account the state and range of the tide. At no time is the hull of the unit to be more than five (5) feet above the surface of the water.

2. Preloading is to be conducted on a leg-by-leg basis starting with the bow leg.

3. If the bottom foundation under the bow leg proves to be free of rapid settlement or punch-through , the stern legs may be preloaded together.
4. Full preload is to be held for a period of three (3) hours past the last observed settlement.
5. RPD's are to be checked throughout the preloading operations. RPD's must remain within tolerance. If RPD's are out of tolerance, the appropriate corrections must be made.
6. Follow steps 16, 17 and 18 above.

10.0 PREPARING TO SPUD

1. Extend the cantilever to its operating position.
2. Commence P/U drill pipe and preparing to spud West Whiptail-1 Drilling Program.

NOTE: 1 If critical path time is required to complete the mobilisation of 3rd Party Services, and to complete any tasks to finalise rig acceptance, these charges should not be booked to the West Whiptail-1 well or reported under the WW1, the West Whiptail-1 DRS reports. Rather, a mobilisation/demobilisation report for ENSCO 102 should be created under DRS, and costs shared equally between the Exploration and Production ENSCO 102 Mobilisation/Demobilisation AFEs, L.0201D100 and L.0501D002 respectively.

11.0 EXIT FROM WEST WHIPTAIL-1

1. Back-load equipment and lay down drill pipe and BHAs as required for the planned tow.
2. Retract the cantilevered rig floor and derrick into its stowed location.
3. Prepare the rig for towing as detailed in Section 7.0 PREPARATION FOR RIG MOVE.
4. Confirm the all legs are ready for jacking. Jack to ~10 foot air gap.
5. Pass the main tow bridle to the primary tow vessel.
6. Continue jacking to tow draft and all legs are free.

NOTE: 1 It is anticipated that low pressure jetting will not be required to recover the spud cans.

7. Attach the secondary tow vessel to port or starboard as the prevailing weather conditions dictate.
8. Confirm that the vessel is secure for the tow.
9. Continue jacking the legs until they are at the tow position.
10. Exit the Bass Strait field on a course approximately the reverse of that used for the entry.

Location	Latitude	Longitude	Course (True)	Leg
Depart West Whiptail-1	38 ^{o} 19' 28.9555" S	147 ^{o} 30' 16.9760" E	231.8 ^{o}	11.3 nm
Way Point #2	38 ^{o} 26' 24" S	147 ^{o} 19' 05" E	215.3 ^{o}	44.7 nm
Way Point #3	39 ^{o}.02' 55" S	146 ^{o} 46' 05" E	246.5 ^{o}	26.3 nm
Way Point #4	39 ^{o} 13' 25" S	146 ^{o}.15' 05" E	207.0 ^{o}	41.8 nm
Way Point #5 (1nm East of Yolla)	39 ^{o} 50' 40.5" S	145 ^{o} 50' 24.3" E	270.0 ^{o}	1.0 nm
Yolla Platform	39 ^{o} 50' 40.5" S	145 ^{o} 49' 06.3" E	270.0 ^{o}	

NOTE: 1 Datum and Spheroid are Geodetic Datum of Australia 1994 (GDA94) and the Geodetic Reference System 1980 ellipsoid (GRS80).

12.0 DISTRIBUTION

Organisation	Attention	Address	Check
Minerals & Petroleum Victoria **2 copies**	Manager, Minerals & Petroleum Operations Attention: Mr H. Haag	8th Floor, 250 Victoria Parade **EAST MELBOURNE VIC 3002**	
BHP Billiton Petroleum (Vic) Pty Ltd **(1 copy plus letter to DPI)**	Mr Mel Osborne Geoscience Section Leader	Bass Strait Asset Level 28, 600 Bourke Street MELBOURNE VIC 3000	
SRO Department **(1 copy plus letter to DPI)**	Mr Ron Reinten	Esso House Room 10th floor	
Ensco Australia Pty Ltd	Mr Barry Todd Rig Manager - ENSCO 102	btodd@tm.net.my	
ENSCO 102 **(2 signed copies)**	OIM	ENSCO 102 Mailbag Ensco Australia Pty Ltd	
Tidewater Marine Towing and Support Vessels	Mr Ian Del Rosso	idelrosso@tdw.com	
Fugro Surveys Pty Ltd. (Thales Geosolutions)	Mr Brad O'Brien	b.obrien@fugro.com.au	
Arrowsmith, Muir & Associates	Mr Harry Arrowsmith	HrArrws@aol.com	
BBMT Materials Supervisors	Mr Col Walker & Ms Sally McKenzie	Internal Email	
EAPL Library	Librarian	Esso House 3rd floor	
Field Drilling Manager	Daniel L. Whiteman	Internal Email	
Operations Superintendent **(plus 1 signed copy)**	Frank Kratzer	Internal Email	
Operations Supervisors **(plus 2 signed copies)**	Colin Johancsik	Internal Email	
Engineering Manager	Colin Johancsik	Internal Email	
Program Original Copy	West Whiptail-1 Well File		
Drilling Engineer	Chris Meakin	Internal Email	
Drilling Engineer	Shane Harris	Internal Email	
Gippsland Production Geoscience Manager	Wayne Mudge	Internal Email	
Geoscience Team Leader	Andy Zannetos	Internal Email	
Operations Geologist	Andrew Hodgson	Internal Email	

13.0 ATTACHMENTS

ATTACHMENT 1. **WEST WHIPTAIL-1 WELL LOCATION, POSITION TOLERANCE, RIG HEADING & AIR GAP.**

ATTACHMENT 2. **ENSCO 102 PRINCIPAL DIMENSIONS, MOORING SYSTEM & TOWING GEAR.**

ATTACHMENT 3. **ENSCO 102 RIG MOVE TOW ROUTE TO WEST WHIPTAIL-1 AND FROM WEST WHIPTAIL-1 TO YOLLA**

ATTACHMENT 4. **WEST WHIPTAIL-1 TIDE CHARTS**

WEST WHIPTAIL-1

Well Location, Position Tolerance, Rig Heading & Air Gap

Well Name	**WEST WHIPTAIL-1**
Basin / Permit	Gippsland Basin / VIC/L1
Seismic Lines Survey	Northern Fields G01A 3D Seismic Inline-1292, Crossline-1765
Latitude	38° 19’ 28.9555” S
Longitude	147° 30’ 16.9760” E
M.G.A Easting	544,116.71 m
Northing	5,758,036.25 m
Position Tolerance	The spudded location will be no greater than 5 (five) metres from the target location.
Rig Heading	130° ± 5° True
Air Gap (Hull to MSL)	55 feet / 16.764 metres
Datum	Geocentric Datum of Australia (GDA)
Geographic Coordinate Set	GDA94
Projection	Universal Transverse Mercator (UTM)
Grid Coordinates	Transverse Mercator, using GRS80
ellipsoid	Map Grid of Australia 1994 (MGA94)
Zone	MGA94 Zone 55
Central Meridian (CM)	147 Degrees East
False Easting	500,000 mE
False Northing	10,000,000 mN
Scale Factor at CM	0.9996

ATTACHMENT 2

ENSCO 102

PRINCIPAL DIMENSIONS

Shape of hull:	Triangular
Hull length (between perpendiculars):	246 ft
Hull width:	222 ft
Length overall (including helideck):	334 ft
Depth of hull (at sides):	30 ft
Gross Register Tonnage:	12,247 Tons
Net Register Tonnage:	3,674 Tons
Maximum displacement prior to elevation:	41,806 Kips
Load line displacement:	41,838 Kips w/ Cans Free Flooded
Load line draft:	20.8 ft
Light ship displacement	29,481 Kips w/ Cans Free Flooded
Light ship draft	15.2 ft
Load line mark position (aft of bow):	168 ft

Draft Mark Locations:

Forward marks:	Bow, Port/Stbd
Aft marks:	Stern, Port/Stbd
Bow to CL of fwd leg spacing:	53 ft
Longitudinal leg spacing:	150 ft
Transverse leg spacing:	156 ft

Drilling Slot Dimensions: 30 ft x 50 ft (Rotary centre skids 70 ft aft of transom)

Spud Legs:

Number of legs:	3
Type of legs:	Triangular Truss
Overall length of spud legs:	544 ft
Diameter of spud cans (across flats):	59.8 ft
Height of spud cans (to top of trunk):	18 ft
Footing area of spud cans (one can):	2862.9 ft^2
Volume of spud cans (one can):	20,000 ft^3
Below hull:	1.3 ft
Length of raw water tower:	4 x units leg mounted. Full operational length of legs.

MOORING SYSTEM &TOWING GEAR

Anchor Winches

Number of winches:	4 each
Make:	Plimsoll
Model:	PR-EMW / SD-77T – 2 speed, reversing - 2” Wire
Rated line pull - high speed:	102,000 lbs
Rated line pull - low speed:	102,000 lbs
Speed - high gear:	27 fpm 1st wrap
Speed - low gear:	8.8 fpm 1st wrap
Brake type:	Spring loaded/pneumatic release band brake
Brake holding capacity:	350,000 lbs at 2nd layer
Provision for free wheeling:	Yes
Local and remote controls:	Local
Anchor line tension indicator:	No
Remote anchor line tension recorder:	Yes
Remote reading odometer:	Yes

Anchor Lines/Fairleads

Make:	Plimsoll
Fair lead model:	24”
Deck sheaves model:	24”
Anchor line type:	6 x 36 RH Regular Lay EIPS, IWRC Galvanised
Quantity:	2060 ft
Diameter:	2”
Rated breaking strength:	383,486 lbs

Anchors

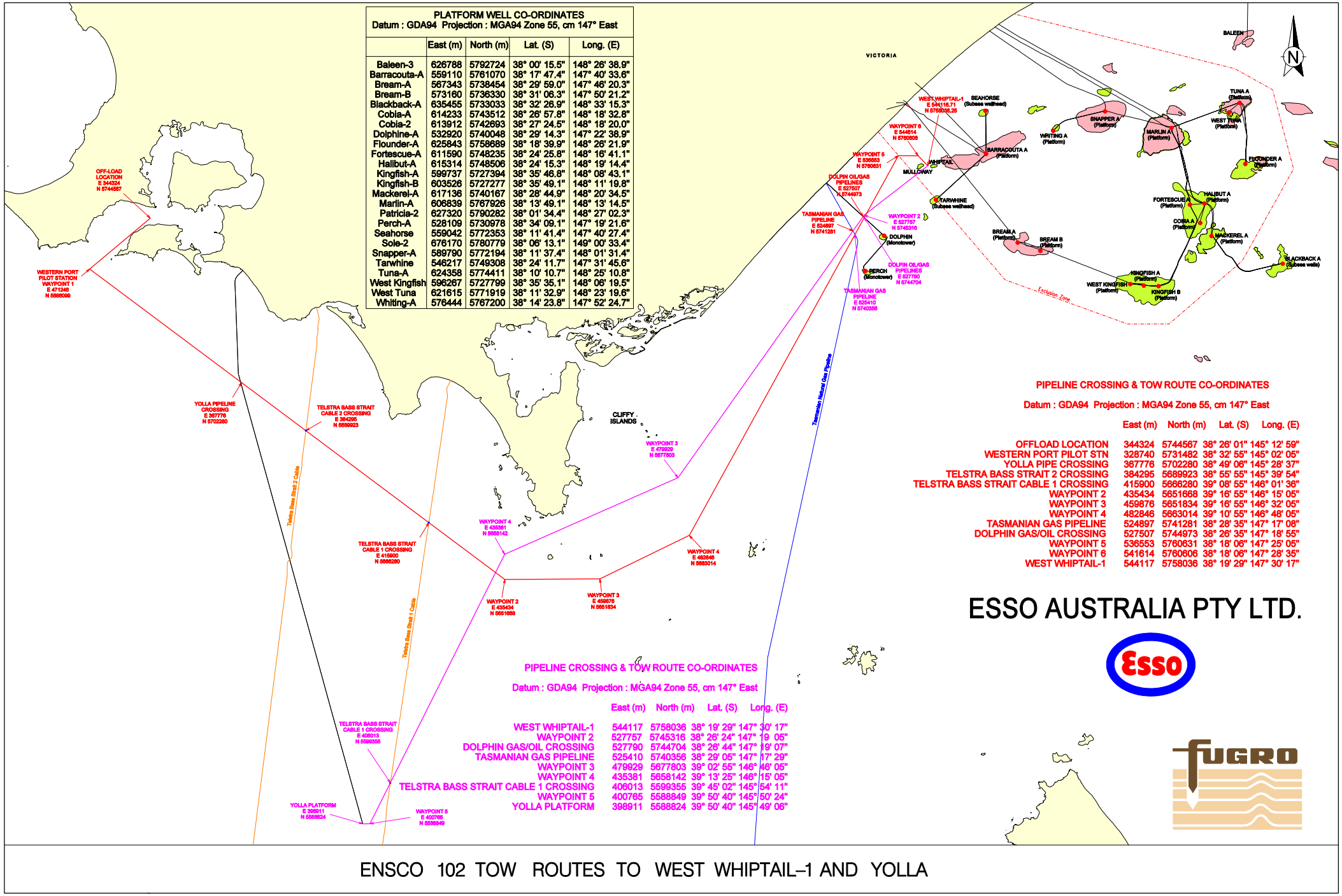
Quantity:	4
Make:	Delta Flipper type
Weight:	15,000 lbs
Classification Society:	ABS

Anchor Buoys/Pennant Lines

Quantity Anchor Buoys:	4
Make:	TBA
Type:	Steel / Foam Filled
Shape:	Cylindrical
Quantity Pennant Lines:	16
Make:	Haggie Rand
Type:	6 x 36 IWRC, RHOL, EIPS
Length:	8 X 15 ft / 8 x 175 ft
Diameter:	2”
Breaking strength:	180 Ton

Towing Gear/Power Requirements

Towing Bridle Size:	3” Chain / 2-1/2” Wire w/ Triangular Plate
Rating:	300 Ton
Minimum boats required for in-field tow:	Two (2)
Minimum power required for in-field tow:	240 ton combined bollard pull
Minimum boats required for ocean tow:	One (1)
Minimum power required for ocean tow:	240 ton bollard pull


PLATFORM WELL CO-ORDINATES
Datum : GDA94 Projection : MGA94 Zone 55, cm 147° East
East (m) North (m) Lat. (S) Long. (E)
Baleen-3 626788 5792724 38° 00' 15.5" 148° 26' 38.9"
Barracouta-A 559110 5761070 38° 17' 47.4" 147° 40' 33.6"
Bream-A 567343 5738454 38° 29' 59.0" 147° 46' 20.3"
Bream-B 573160 5736330 38° 31' 06.3" 147° 50' 21.2"
Blackback-A 635455 5733033 38° 32' 26.9" 148° 33' 15.3"
Cobia-A 614233 5743512 38° 26' 57.8" 148° 18' 32.8"
Cobia-2 613912 5742693 38° 27' 24.5" 148° 18' 20.0"
Dolphine-A 532920 5740048 38° 29' 14.3" 147° 22' 38.9"
Flounder-A 625843 5758689 38° 18' 39.9" 148° 26' 21.9"
Fortescue-A 611590 5748235 38° 24' 25.8" 148° 16' 41.1"
Halibut-A 615314 5748506 38° 24' 15.3" 148° 19' 14.4"
Kingfish-A 599737 5727394 38° 35' 46.8" 148° 08' 43.1"
Kingfish-B 603526 5727277 38° 35' 49.1" 148° 11' 19.8"
Mackerel-A 617136 5740167 38° 28' 44.9" 148° 20' 34.5"
Marlin-A 606839 5767926 38° 13' 49.1" 148° 13' 14.5"
Patricia-2 627320 5790282 38° 01' 34.4" 148° 27' 02.3"
Perch-A 528109 5730978 38° 34' 09.1" 147° 19' 21.6"
Seahorse 559042 5772353 38° 11' 41.4" 147° 40' 27.4"
Sole-2 676170 5780779 38° 06' 13.1" 149° 00' 33.4"
Snapper-A 589790 5772194 38° 11' 37.4" 148° 01' 31.4"
Tarwhine 546217 5749308 38° 24' 11.7" 147° 31' 45.6"
Tuna-A 624358 5774411 38° 10' 10.7" 148° 25' 10.8"
West Kingfish 596267 5727799 38° 35' 35.1" 148° 06' 19.5"
West Tuna 621615 5771919 38° 11' 32.9" 148° 23' 19.6"
Whiting-A 576444 5767200 38° 14' 23.8" 147° 52' 24.7"
VICTORIA
BALEEN
SEAHORSE (Subsea wellhead)
WEST WHIPTAIL-1 E 544116.71 N 5758036.25
WAYPOINT 6 E 544614 N 5760606
WAYPOINT 5 E 536553 N 5760631
DOLPHIN OIL/GAS PIPELINES E 527507 N 5744973
TASMANIAN GAS PIPELINE E 524897 N 5741281
WAYPOINT 2 E 527757 N 5745316
DOLPHIN (Monotower)
PERCH (Monotower)
DOLPHIN OIL/GAS PIPELINES E 527760 N 5744704
TASMANIAN GAS PIPELINE E 525410 N 5740356
WHIPTAIL
MULLOWAY
TARWHINE (Subsea wellhead)
BARRACOUTA A (Platform)
WRITING A (Platform)
SNAPPER A (Platform)
MARLIN A (Platform)
TUNA A (Platform)
WEST TUNA (Platform)
FLOUNDER A (Platform)
FORTESCUE A (Platform)
HALIBUT A (Platform)
COBIA A (Platform)
MACKEREL A (Platform)
BLACKBACK A (Subsea wells)
BREAM A (Platform)
BREAM B (Platform)
KINGFISH A (Platform)
WEST KINGFISH (Platform)
KINGFISH B (Platform)
Exclusion Zone
N
OFF-LOAD LOCATION E 344324 N 5744567
WESTERN PORT PILOT STATION WAYPOINT 1 E 471240 N 5688099
YOLLA PIPELINE CROSSING E 367776 N 5702280
TELSTRA BASS STRAIT CABLE 2 CROSSING E 384295 N 5689923
CLIFFY ISLANDS
Telstra Bass Strait 2 Cable
Telstra Bass Strait 1 Cable
Tasmanian Natural Gas Pipeline
WAYPOINT 3 E 479929 N 5677803
WAYPOINT 4 E 435381 N 5658142
TELSTRA BASS STRAIT CABLE 1 CROSSING E 415900 N 5666280
WAYPOINT 4 E 482646 N 5663014
WAYPOINT 2 E 435434 N 5651668
WAYPOINT 3 E 459876 N 5651834
TELSTRA BASS STRAIT CABLE 1 CROSSING E 406013 N 5599355
YOLLA PLATFORM E 398911 N 5588824
WAYPOINT 5 E 400765 N 5588849
PIPELINE CROSSING & TOW ROUTE CO-ORDINATES
Datum : GDA94 Projection : MGA94 Zone 55, cm 147° East
East (m) North (m) Lat. (S) Long. (E)
WEST WHIPTAIL-1 544117 5758036 38° 19' 29" 147° 30' 17"
WAYPOINT 2 527757 5745316 38° 26' 24" 147° 19' 05"
DOLPHIN GAS/OIL CROSSING 527790 5744704 38° 26' 44" 147° 19' 07"
TASMANIAN GAS PIPELINE 525410 5740356 38° 29' 05" 147° 17' 29"
WAYPOINT 3 479929 5677803 39° 02' 55" 146° 46' 05"
WAYPOINT 4 435381 5658142 39° 13' 25" 146° 15' 05"
TELSTRA BASS STRAIT CABLE 1 CROSSING 406013 5599355 39° 45' 02" 145° 54' 11"
WAYPOINT 5 400765 5588849 39° 50' 40" 145° 50' 24"
YOLLA PLATFORM 398911 5588824 39° 50' 40" 145° 49' 06"
PIPELINE CROSSING & TOW ROUTE CO-ORDINATES
Datum : GDA94 Projection : MGA94 Zone 55, cm 147° East
East (m) North (m) Lat. (S) Long. (E)
OFFLOAD LOCATION 344324 5744567 38° 26' 01" 145° 12' 59"
WESTERN PORT PILOT STN 328740 5731482 38° 32' 55" 145° 02' 05"
YOLLA PIPE CROSSING 367776 5702280 38° 49' 08" 145° 28' 37"
TELSTRA BASS STRAIT 2 CROSSING 384295 5689923 38° 55' 55" 145° 39' 54"
TELSTRA BASS STRAIT CABLE 1 CROSSING 415900 5666280 39° 08' 55" 146° 01' 36"
WAYPOINT 2 435434 5651668 39° 16' 55" 146° 15' 05"
WAYPOINT 3 459876 5651834 39° 16' 55" 146° 32' 05"
WAYPOINT 4 482846 5663014 39° 10' 55" 146° 48' 05"
TASMANIAN GAS PIPELINE 524897 5741281 38° 28' 35" 147° 17' 08"
DOLPHIN GAS/OIL CROSSING 527507 5744973 38° 26' 35" 147° 18' 55"
WAYPOINT 5 536553 5760631 38° 18' 06" 147° 25' 05"
WAYPOINT 6 541614 5760606 38° 18' 06" 147° 28' 35"
WEST WHIPTAIL-1 544117 5758036 38° 19' 29" 147° 30' 17"
ESSO AUSTRALIA PTY LTD.
Esso
FUGRO
ENSCO 102 TOW ROUTES TO WEST WHIPTAIL–1 AND YOLLA
u:\p0016\pre-job\route 20040423\West Whiptail-1 Tow Route Plan_rev3.dgn

EQUALLY SPACED PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT =1 HOUR

	HOURS AFTER MIDNIGHT																						
DATE	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01:04:2004	-.16	-.14	-.02	.16	.35	.49	.54	.48	.32	.08	-.19	-.42	-.54	-.58	-.54	-.41	-.20	.03	.22	.31	.28	.17	.03	-.12
02:04:2004	-.22	-.24	-.16	.02	.23	.42	.54	.57	.47	.25	-.02	-.28	-.48	-.57	-.57	-.48	-.29	-.04	.17	.31	.34	.26	.11	-.06
03:04:2004	-.22	-.30	-.28	-.15	.04	.26	.45	.56	.55	.40	.17	-.10	-.34	-.51	-.57	-.53	-.38	-.15	.10	.28	.37	.35	.23	.05
04:04:2004	-.14	-.29	-.34	-.29	-.15	.05	.27	.45	.53	.48	.31	.09	-.16	-.37	-.51	-.54	-.45	-.26	-.02	.21	.36	.42	.36	.20
05:04:2004	-.00	-.19	-.32	-.36	-.31	-.17	.04	.25	.41	.46	.39	.23	.03	-.18	-.37	-.47	-.45	-.33	-.13	.09	.28	.41	.43	.33
06:04:2004	.16	-.04	-.21	-.34	-.38	-.33	-.19	.00	.19	.32	.35	.29	.18	.02	-.17	-.33	-.38	-.33	-.20	-.03	.17	.34	.43	.41
07:04:2004	.29	.13	-.04	-.22	-.35	-.40	-.36	-.24	-.07	.09	.20	.24	.22	.15	.03	-.11	-.22	-.24	-.19	-.09	.05	.23	.37	.42
08:04:2004	.37	.26	.13	-.04	-.23	-.38	-.44	-.41	-.32	-.19	-.05	.07	.15	.18	.16	.09	-.01	-.08	-.10	-.07	.00	.12	.27	.37
09:04:2004	.39	.35	.27	.15	-.04	-.25	-.42	-.48	-.48	-.43	-.32	-.18	-.03	.09	.17	.21	.18	.11	.04	.01	.01	.06	.16	.27
10:04:2004	.35	.38	.37	.30	.17	-.04	-.28	-.45	-.54	-.58	-.55	-.44	-.27	-.09	.07	.20	.28	.27	.19	.11	.05	.05	.08	.16
11:04:2004	.26	.35	.42	.42	.36	.20	-.04	-.30	-.49	-.62	-.68	-.65	-.51	-.31	-.10	.10	.27	.36	.33	.21	.10	.04	.02	.05
12:04:2004	.13	.25	.39	.49	.50	.41	.23	-.04	-.33	-.55	-.69	-.75	-.69	-.53	-.30	-.04	.19	.35	.40	.31	.17	.04	-.03	-.06
13:04:2004	-.02	.10	.28	.46	.56	.56	.46	.24	-.07	-.38	-.61	-.74	-.77	-.68	-.48	-.21	.08	.30	.42	.39	.25	.08	-.06	-.14
14:04:2004	-.16	-.09	.10	.33	.53	.62	.60	.47	.21	-.13	-.45	-.66	-.76	-.75	-.62	-.37	-.05	.23	.40	.44	.35	.17	-.03	-.18
15:04:2004	-.27	-.25	-.11	.12	.37	.57	.65	.61	.44	.13	-.22	-.50	-.67	-.73	-.69	-.50	-.20	.12	.36	.46	.43	.29	.08	-.14
16:04:2004	-.30	-.36	-.29	-.11	.14	.39	.58	.64	.56	.35	.04	-.28	-.52	-.65	-.67	-.57	-.33	-.01	.27	.44	.47	.39	.21	-.02
17:04:2004	-.24	-.38	-.39	-.30	-.11	.14	.38	.54	.56	.45	.24	-.04	-.30	-.49	-.58	-.55	-.40	-.14	.14	.37	.47	.45	.33	.13
18:04:2004	-.11	-.31	-.41	-.40	-.30	-.12	.11	.33	.45	.44	.33	.15	-.07	-.28	-.42	-.45	-.38	-.21	.02	.25	.41	.46	.39	.25
19:04:2004	.05	-.16	-.33	-.40	-.40	-.31	-.15	.05	.23	.32	.30	.23	.11	-.05	-.21	-.29	-.28	-.20	-.05	.13	.30	.41	.41	.31
20:04:2004	.17	.00	-.18	-.32	-.40	-.40	-.34	-.20	-.04	.10	.18	.19	.17	.11	-.00	-.10	-.14	-.11	-.04	.06	.19	.32	.38	.34
21:04:2004	.24	.12	-.02	-.18	-.32	-.40	-.42	-.37	-.27	-.14	-.02	.07	.13	.16	.13	.07	.02	.01	.02	.06	.13	.22	.31	.32
22:04:2004	.26	.19	.11	-.02	-.18	-.32	-.40	-.43	-.40	-.33	-.22	-.09	.02	.11	.17	.18	.15	.12	.10	.09	.10	.16	.23	.27
23:04:2004	.26	.22	.17	.11	-.03	-.20	-.33	-.41	-.44	-.44	-.38	-.26	-.12	.01	.12	.20	.23	.21	.17	.13	.11	.12	.16	.21
24:04:2004	.23	.23	.21	.18	.09	-.06	-.23	-.35	-.42	-.47	-.46	-.38	-.25	-.09	.05	.16	.25	.27	.23	.17	.12	.11	.12	.15
25:04:2004	.19	.23	.24	.23	.17	.05	-.11	-.27	-.38	-.46	-.49	-.45	-.35	-.20	-.04	.11	.22	.28	.26	.20	.13	.10	.09	.11
26:04:2004	.15	.21	.26	.27	.23	.14	-.01	-.18	-.33	-.44	-.49	-.49	-.42	-.29	-.12	.04	.19	.27	.28	.22	.14	.08	.06	.07
27:04:2004	.10	.17	.26	.32	.30	.23	.10	-.07	-.26	-.41	-.49	-.51	-.46	-.36	-.20	-.02	.15	.26	.29	.23	.14	.06	.02	.01
28:04:2004	.04	.12	.23	.33	.37	.33	.22	.05	-.15	-.35	-.48	-.53	-.51	-.42	-.28	-.09	.11	.25	.30	.26	.16	.05	-.03	-.07
29:04:2004	-.06	.02	.16	.30	.39	.41	.34	.20	-.01	-.25	-.43	-.52	-.53	-.48	-.35	-.16	.06	.24	.33	.31	.21	.07	-.05	-.14
30:04:2004	-.17	-.11	.02	.20	.35	.44	.44	.34	.16	-.09	-.33	-.49	-.54	-.52	-.42	-.23	.00	.22	.36	.38	.30	.15	-.03	-.17

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 1(a): PREDICTED TIDAL HEIGHTS AT WEST WHIPTAIL, APRIL - 2004

EQUALLY SPACED PREDICTIONS FOR EAL WEST WHIPTAIL

LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT =1 HOUR

DATE	HOURS AFTER MIDNIGHT																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01:05:2004	-.26	-.26	-.16	.02	.22	.37	.46	.45	.31	.09	-.17	-.39	-.51	-.53	-.48	-.32	-.07	.18	.37	.46	.41	.27	.08	-.13
02:05:2004	-.29	-.36	-.33	-.19	.01	.21	.38	.46	.42	.25	.02	-.23	-.41	-.51	-.50	-.40	-.18	.10	.34	.49	.52	.43	.24	-.00
03:05:2004	-.23	-.39	-.44	-.38	-.23	-.02	.20	.36	.42	.35	.18	-.03	-.25	-.41	-.47	-.43	-.27	-.02	.24	.45	.57	.55	.41	.18
04:05:2004	-.08	-.31	-.45	-.49	-.43	-.28	-.06	.16	.31	.35	.28	.14	-.04	-.23	-.36	-.39	-.30	-.12	.11	.35	.53	.60	.54	.36
05:05:2004	.12	-.13	-.36	-.50	-.55	-.49	-.33	-.12	.08	.22	.26	.22	.13	-.01	-.17	-.26	-.25	-.15	.01	.21	.41	.56	.59	.49
06:05:2004	.30	.07	-.16	-.39	-.55	-.60	-.54	-.40	-.21	-.02	.11	.19	.20	.15	.05	-.06	-.12	-.09	-.02	.10	.27	.44	.54	.53
07:05:2004	.42	.26	.06	-.17	-.42	-.58	-.63	-.59	-.48	-.32	-.14	.03	.14	.20	.20	.15	.07	.03	.03	.07	.16	.30	.43	.49
08:05:2004	.47	.39	.26	.08	-.18	-.43	-.60	-.66	-.66	-.58	-.42	-.22	-.03	.12	.22	.27	.25	.18	.12	.09	.10	.17	.28	.38
09:05:2004	.44	.45	.40	.29	.10	-.17	-.43	-.60	-.70	-.72	-.65	-.48	-.26	-.05	.14	.28	.35	.32	.23	.14	.09	.09	.14	.23
10:05:2004	.33	.42	.46	.44	.33	.12	-.16	-.43	-.61	-.73	-.76	-.67	-.48	-.25	-.01	.20	.35	.40	.33	.20	.09	.03	.02	.07
11:05:2004	.17	.31	.44	.50	.48	.36	.13	-.17	-.44	-.63	-.74	-.75	-.63	-.43	-.17	.08	.29	.41	.40	.28	.12	.00	-.06	-.08
12:05:2004	-.02	.13	.31	.46	.52	.49	.36	.11	-.20	-.47	-.64	-.72	-.69	-.55	-.31	-.03	.22	.39	.45	.36	.19	.02	-.11	-.18
13:05:2004	-.18	-.08	.11	.32	.47	.52	.48	.32	.05	-.26	-.50	-.62	-.66	-.60	-.41	-.15	.14	.37	.47	.44	.30	.10	-.09	-.23
14:05:2004	-.29	-.25	-.11	.10	.31	.45	.49	.43	.25	-.04	-.31	-.49	-.58	-.57	-.47	-.24	.05	.32	.47	.50	.41	.23	.01	-.20
15:05:2004	-.33	-.37	-.30	-.14	.07	.27	.41	.43	.35	.15	-.10	-.33	-.45	-.50	-.46	-.30	-.05	.23	.44	.53	.49	.36	.15	-.09
16:05:2004	-.30	-.41	-.42	-.33	-.17	.03	.23	.35	.35	.25	.08	-.13	-.29	-.38	-.40	-.31	-.12	.13	.36	.51	.53	.45	.29	.06
17:05:2004	-.18	-.37	-.45	-.45	-.37	-.22	-.02	.17	.27	.26	.18	.06	-.10	-.22	-.28	-.26	-.15	.04	.25	.43	.52	.50	.38	.20
18:05:2004	-.03	-.25	-.41	-.49	-.49	-.41	-.26	-.06	.10	.19	.19	.16	.07	-.04	-.14	-.16	-.11	.00	.16	.32	.46	.50	.44	.30
19:05:2004	.11	-.09	-.29	-.44	-.52	-.52	-.44	-.29	-.11	.03	.12	.16	.16	.10	.02	-.04	-.04	.02	.11	.23	.36	.46	.46	.36
20:05:2004	.21	.05	-.13	-.32	-.47	-.54	-.53	-.45	-.32	-.16	-.02	.09	.15	.17	.13	.08	.05	.06	.10	.18	.27	.38	.43	.39
21:05:2004	.28	.16	.02	-.17	-.36	-.48	-.53	-.52	-.45	-.33	-.18	-.03	.08	.15	.18	.16	.13	.12	.12	.15	.21	.30	.37	.38
22:05:2004	.32	.22	.12	-.02	-.21	-.38	-.48	-.51	-.50	-.44	-.32	-.16	-.02	.08	.15	.19	.19	.17	.14	.14	.17	.24	.30	.34
23:05:2004	.33	.27	.19	.09	-.07	-.26	-.39	-.47	-.50	-.48	-.41	-.28	-.13	.00	.10	.18	.22	.21	.17	.14	.14	.18	.24	.28
24:05:2004	.30	.29	.25	.16	.04	-.13	-.29	-.41	-.47	-.49	-.45	-.36	-.22	-.08	.05	.15	.22	.24	.20	.15	.12	.14	.18	.22
25:05:2004	.26	.29	.28	.23	.13	-.01	-.18	-.33	-.43	-.48	-.48	-.41	-.30	-.16	-.01	.12	.21	.25	.22	.16	.11	.10	.11	.14
26:05:2004	.19	.25	.30	.29	.22	.10	-.06	-.23	-.38	-.47	-.49	-.46	-.36	-.23	-.07	.09	.21	.27	.25	.18	.10	.05	.03	.05
27:05:2004	.10	.18	.26	.31	.30	.21	.08	-.10	-.29	-.43	-.49	-.48	-.41	-.29	-.13	.05	.22	.31	.30	.22	.11	.01	-.04	-.06
28:05:2004	-.03	.06	.18	.28	.33	.31	.22	.06	-.15	-.35	-.47	-.49	-.46	-.35	-.19	.02	.22	.35	.38	.31	.17	.02	-.10	-.17
29:05:2004	-.18	-.12	.02	.17	.29	.35	.32	.21	.02	-.21	-.40	-.48	-.48	-.41	-.26	-.04	.20	.39	.47	.43	.29	.11	-.09	-.24
30:05:2004	-.32	-.30	-.19	-.02	.15	.29	.36	.32	.18	-.04	-.26	-.42	-.47	-.44	-.33	-.12	.15	.39	.54	.56	.45	.26	.02	-.22
31:05:2004	-.39	-.44	-.40	-.26	-.07	.13	.29	.35	.29	.13	-.08	-.28	-.41	-.44	-.38	-.21	.05	.33	.55	.65	.61	.45	.20	-.09

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 2(a): PREDICTED TIDAL HEIGHTS AT WEST WHIPTAIL, MAY - 2004

HIGH LOW PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT = .25 HOUR

DATE	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL
01:04:2004	00:16	-.16	-.16	06:00	.54	.54	13:00	-.58	-.58	19:13	.31	.31
02:04:2004	00:43	-.24	-.24	06:43	.57	.57	13:33	-.58	-.58	19:43	.34	.34
03:04:2004	01:18	-.30	-.30	07:26	.57	.57	14:08	-.57	-.57	20:20	.38	.38
04:04:2004	02:00	-.34	-.34	08:08	.54	.54	14:42	-.54	-.54	21:00	.42	.42
05:04:2004	02:54	-.36	-.36	08:54	.46	.46	15:18	-.48	-.48	21:40	.44	.44
06:04:2004	03:58	-.38	-.38	09:49	.35	.35	15:57	-.38	-.38	22:19	.44	.44
07:04:2004	05:02	-.40	-.40	11:10	.24	.24	16:42	-.24	-.24	23:00	.42	.42
08:04:2004	06:07	-.44	-.44	13:05	.18	.18	17:48	-.10	-.10	23:49	.39	.39
09:04:2004	07:29	-.49	-.49	15:08	.21	.21	19:23	.00	.00			
10:04:2004	01:11	.38	.38	09:09	-.58	-.58	16:27	.29	.29	20:42	.04	.04
11:04:2004	02:37	.43	.43	10:12	-.68	-.68	17:14	.36	.36	22:02	.02	.02
12:04:2004	03:36	.50	.50	11:02	-.75	-.75	17:50	.40	.40	23:04	-.06	-.06
13:04:2004	04:28	.57	.57	11:46	-.78	-.78	18:20	.43	.43	23:47	-.17	-.17
14:04:2004	05:20	.63	.63	12:28	-.77	-.77	18:47	.45	.45			
15:04:2004	00:23	-.27	-.27	06:10	.65	.65	13:07	-.74	-.74	19:14	.46	.46
16:04:2004	00:58	-.36	-.36	06:56	.64	.64	13:44	-.67	-.67	19:44	.48	.48
17:04:2004	01:38	-.40	-.40	07:39	.57	.57	14:18	-.58	-.58	20:18	.48	.48
18:04:2004	02:25	-.41	-.41	08:24	.46	.46	14:51	-.45	-.45	20:54	.46	.46
19:04:2004	03:24	-.41	-.41	09:18	.32	.32	15:24	-.30	-.30	21:29	.42	.42
20:04:2004	04:33	-.41	-.41	10:52	.19	.19	16:00	-.14	-.14	22:04	.38	.38
21:04:2004	05:41	-.42	-.42	13:07	.16	.16	16:53	.01	.01	22:40	.33	.33
22:04:2004	06:58	-.43	-.43	14:42	.18	.18	19:02	.09	.09	23:21	.27	.27
23:04:2004	08:28	-.45	-.45	16:01	.23	.23	20:06	.11	.11			
24:04:2004	00:29	.24	.24	09:25	-.47	-.47	16:45	.27	.27	20:54	.11	.11
25:04:2004	01:59	.24	.24	10:01	-.49	-.49	17:13	.29	.29	21:37	.09	.09
26:04:2004	02:44	.28	.28	10:26	-.50	-.50	17:34	.29	.29	22:18	.06	.06
27:04:2004	03:20	.32	.32	10:48	-.51	-.51	17:48	.29	.29	22:51	.01	.01
28:04:2004	03:58	.37	.37	11:11	-.53	-.53	18:00	.30	.30	23:22	-.07	-.07
29:04:2004	04:42	.42	.42	11:39	-.54	-.54	18:16	.34	.34	23:53	-.17	-.17
30:04:2004	05:32	.45	.45	12:12	-.54	-.54	18:39	.39	.39			

NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- MTL is Mean Tide Level.
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

TABLE 1(b): PREDICTED HIGH & LOW TIDES AT WEST WHIPTAIL, APRIL - 2004

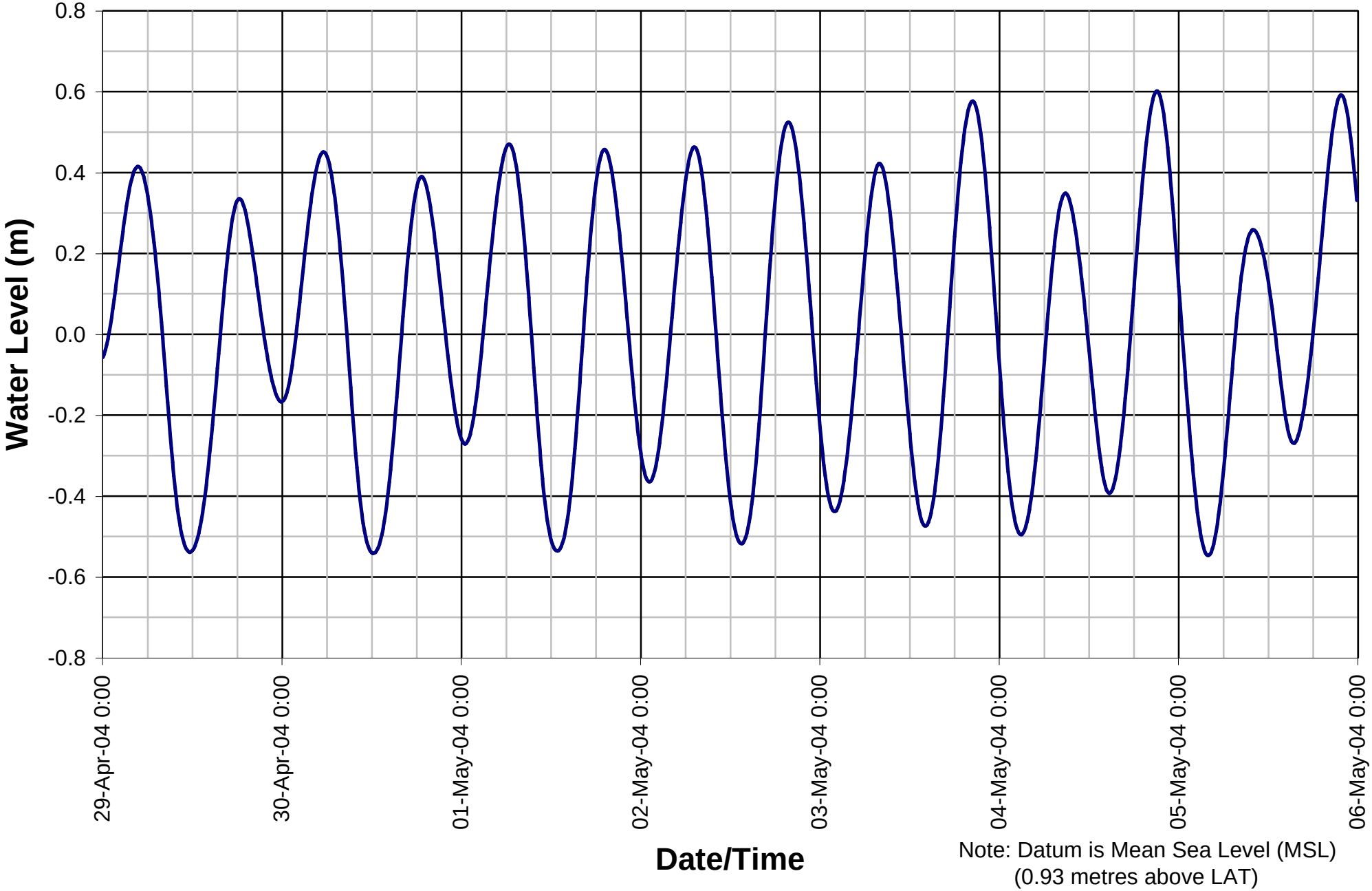
HIGH LOW PREDICTIONS FOR EAL WEST WHIPTAIL
LATITUDE=-38 19 LONGITUDE= 147 30 TIME ZONE = EST DT = .25 HOUR

DATE	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL	TIME	HGT	DIFF FROM MTL
01:05:2004	00:28	-.27	-.27	06:22	.47	.47	12:49	-.54	-.54	19:09	.46	.46
02:05:2004	01:08	-.37	-.37	07:10	.46	.46	13:27	-.52	-.52	19:45	.52	.52
03:05:2004	01:56	-.44	-.44	07:57	.42	.42	14:05	-.47	-.47	20:24	.58	.58
04:05:2004	02:53	-.50	-.50	08:49	.35	.35	14:43	-.39	-.39	21:04	.60	.60
05:05:2004	03:56	-.55	-.55	09:58	.26	.26	15:23	-.27	-.27	21:44	.59	.59
06:05:2004	04:57	-.60	-.60	11:42	.20	.20	16:11	-.12	-.12	22:25	.55	.55
07:05:2004	06:02	-.63	-.63	13:33	.21	.21	17:28	.02	.02	23:14	.50	.50
08:05:2004	07:24	-.67	-.67	15:11	.27	.27	19:16	.09	.09			
09:05:2004	00:32	.45	.45	08:48	-.72	-.72	16:13	.35	.35	20:31	.08	.08
10:05:2004	02:09	.46	.46	09:47	-.76	-.76	16:54	.40	.40	21:42	.02	.02
11:05:2004	03:14	.50	.50	10:34	-.76	-.76	17:26	.43	.43	22:44	-.08	-.08
12:05:2004	04:09	.53	.53	11:15	-.72	-.72	17:53	.45	.45	23:30	-.19	-.19
13:05:2004	05:03	.52	.52	11:53	-.66	-.66	18:16	.47	.47			
14:05:2004	00:10	-.29	-.29	05:55	.49	.49	12:30	-.59	-.59	18:41	.50	.50
15:05:2004	00:50	-.37	-.37	06:44	.44	.44	13:05	-.50	-.50	19:09	.53	.53
16:05:2004	01:35	-.42	-.42	07:32	.36	.36	13:41	-.40	-.40	19:42	.54	.54
17:05:2004	02:29	-.46	-.46	08:25	.28	.28	14:16	-.29	-.29	20:19	.53	.53
18:05:2004	03:32	-.50	-.50	09:37	.20	.20	14:51	-.16	-.16	20:55	.50	.50
19:05:2004	04:30	-.53	-.53	11:30	.16	.16	15:27	-.05	-.05	21:31	.47	.47
20:05:2004	05:22	-.54	-.54	12:50	.17	.17	16:09	.05	.05	22:05	.43	.43
21:05:2004	06:13	-.53	-.53	14:08	.18	.18	17:27	.12	.12	22:39	.38	.38
22:05:2004	07:12	-.51	-.51	15:28	.20	.20	18:42	.14	.14	23:19	.34	.34
23:05:2004	08:12	-.50	-.50	16:16	.22	.22	19:27	.14	.14			
24:05:2004	00:18	.30	.30	08:56	-.49	-.49	16:44	.24	.24	20:07	.12	.12
25:05:2004	01:30	.29	.29	09:28	-.49	-.49	17:03	.25	.25	20:55	.09	.09
26:05:2004	02:25	.30	.30	09:55	-.49	-.49	17:15	.28	.28	22:04	.03	.03
27:05:2004	03:16	.32	.32	10:22	-.50	-.50	17:27	.32	.32	22:58	-.06	-.06
28:05:2004	04:11	.33	.33	10:51	-.50	-.50	17:44	.38	.38	23:40	-.19	-.19
29:05:2004	05:13	.35	.35	11:26	-.49	-.49	18:07	.47	.47			
30:05:2004	00:19	-.32	-.32	06:10	.36	.36	12:07	-.47	-.47	18:37	.57	.57
31:05:2004	01:03	-.44	-.44	07:02	.35	.35	12:50	-.44	-.44	19:13	.65	.65

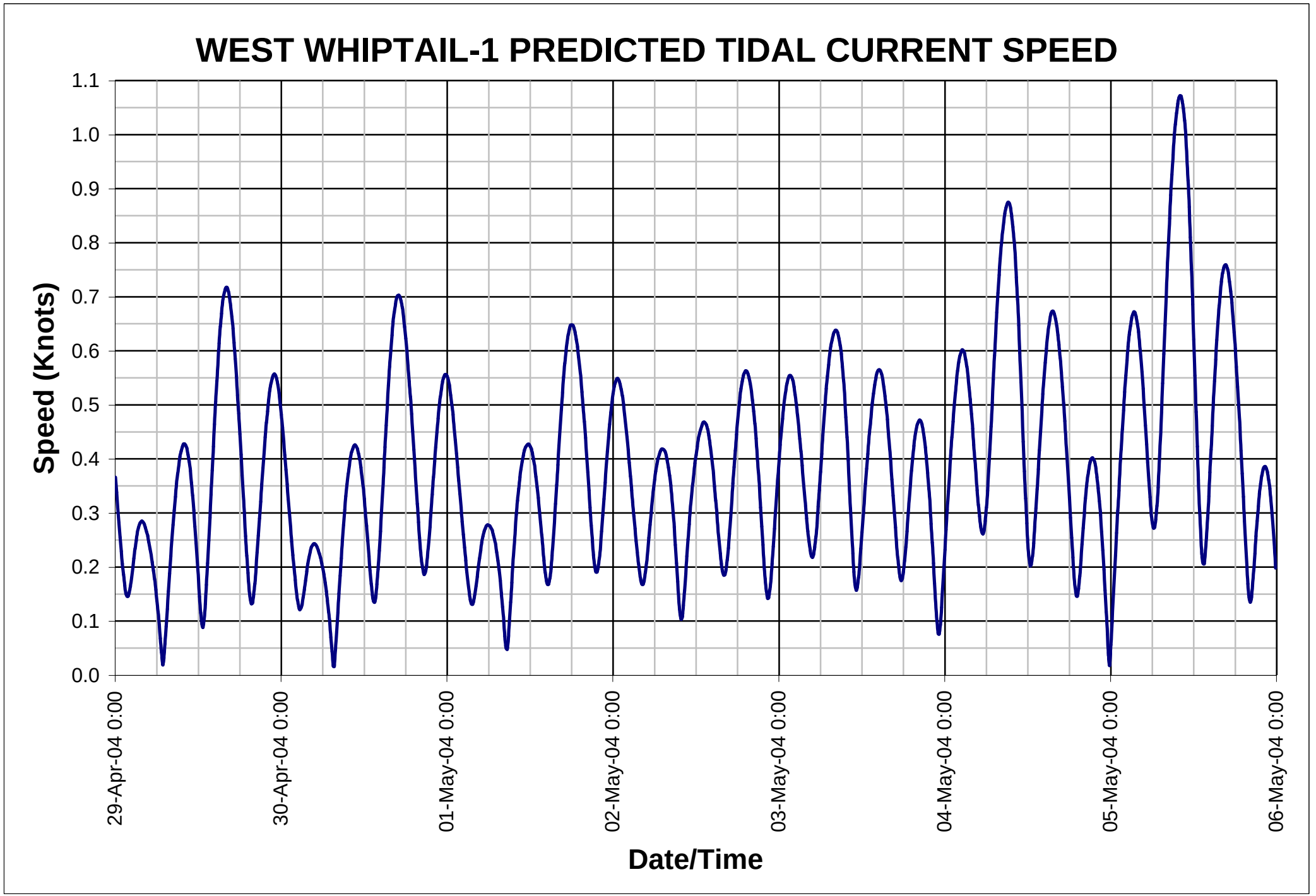
NOTES: - Datum is Mean Sea Level (0.93 metres above LAT).
- MTL is Mean Tide Level.
- Units are metres.
- Strictly astronomical tides. No allowance has been made for meteorological effects.

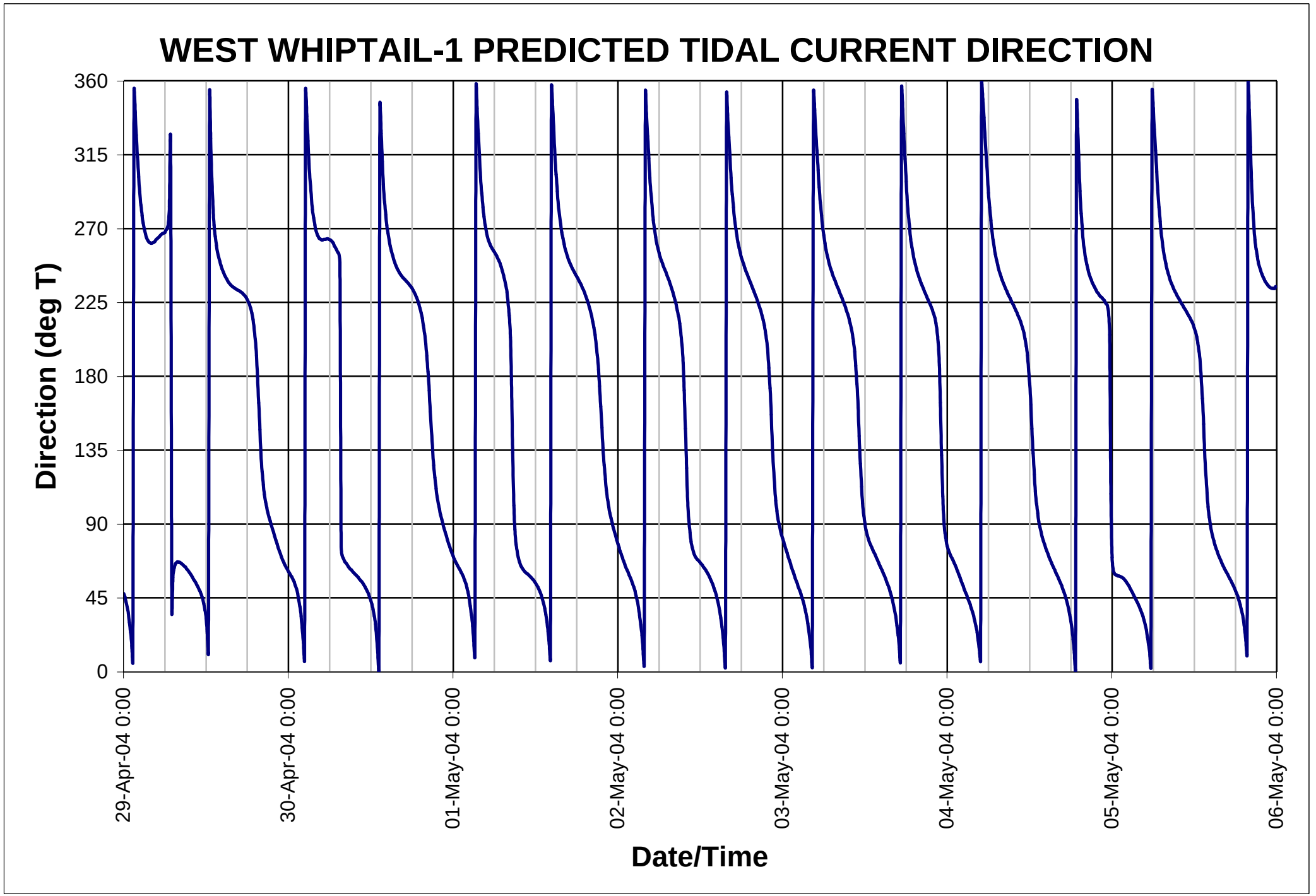
TABLE 2(b): PREDICTED HIGH & LOW TIDES AT WEST WHIPTAIL, MAY - 2004

WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL

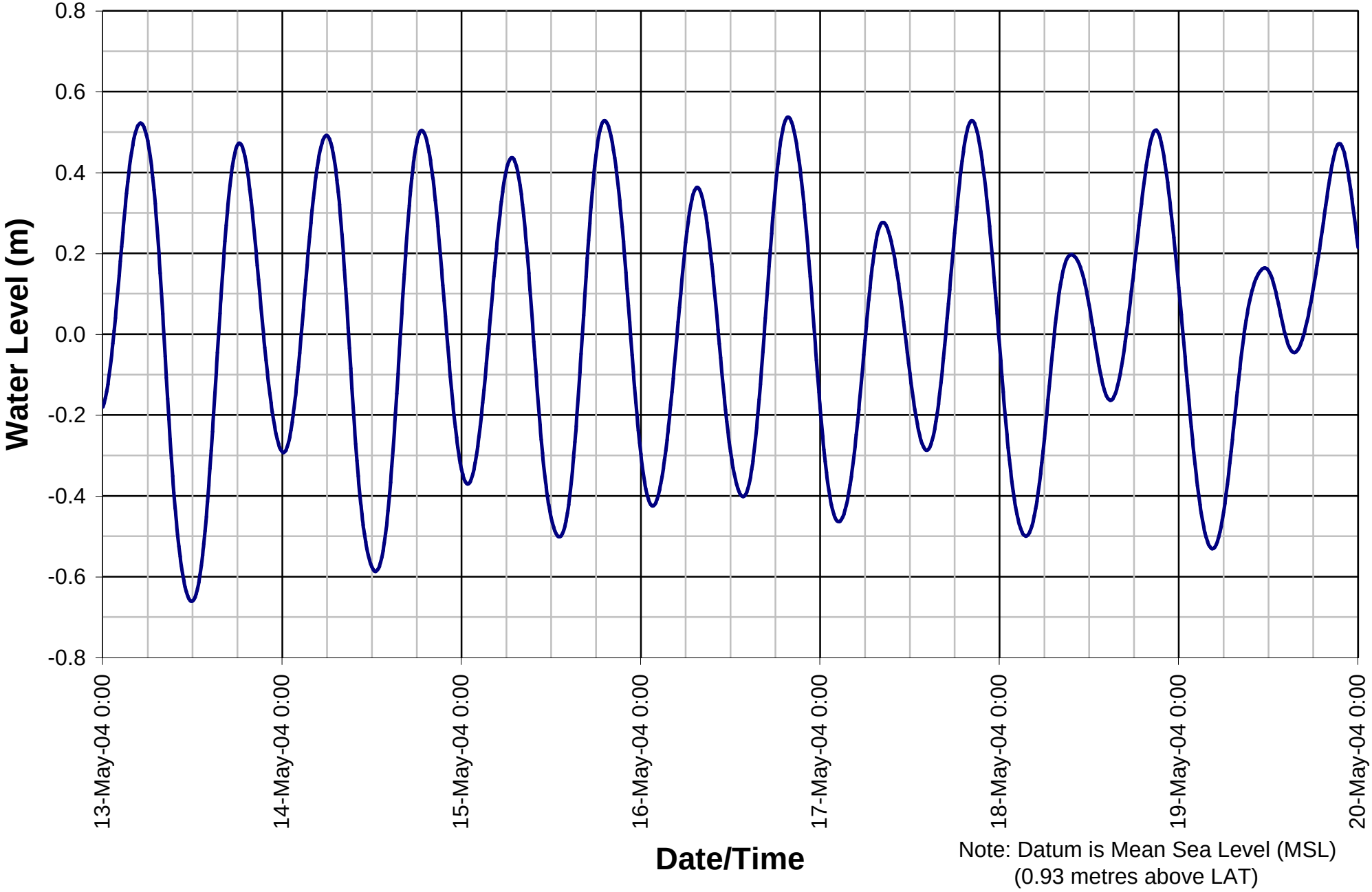


Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)

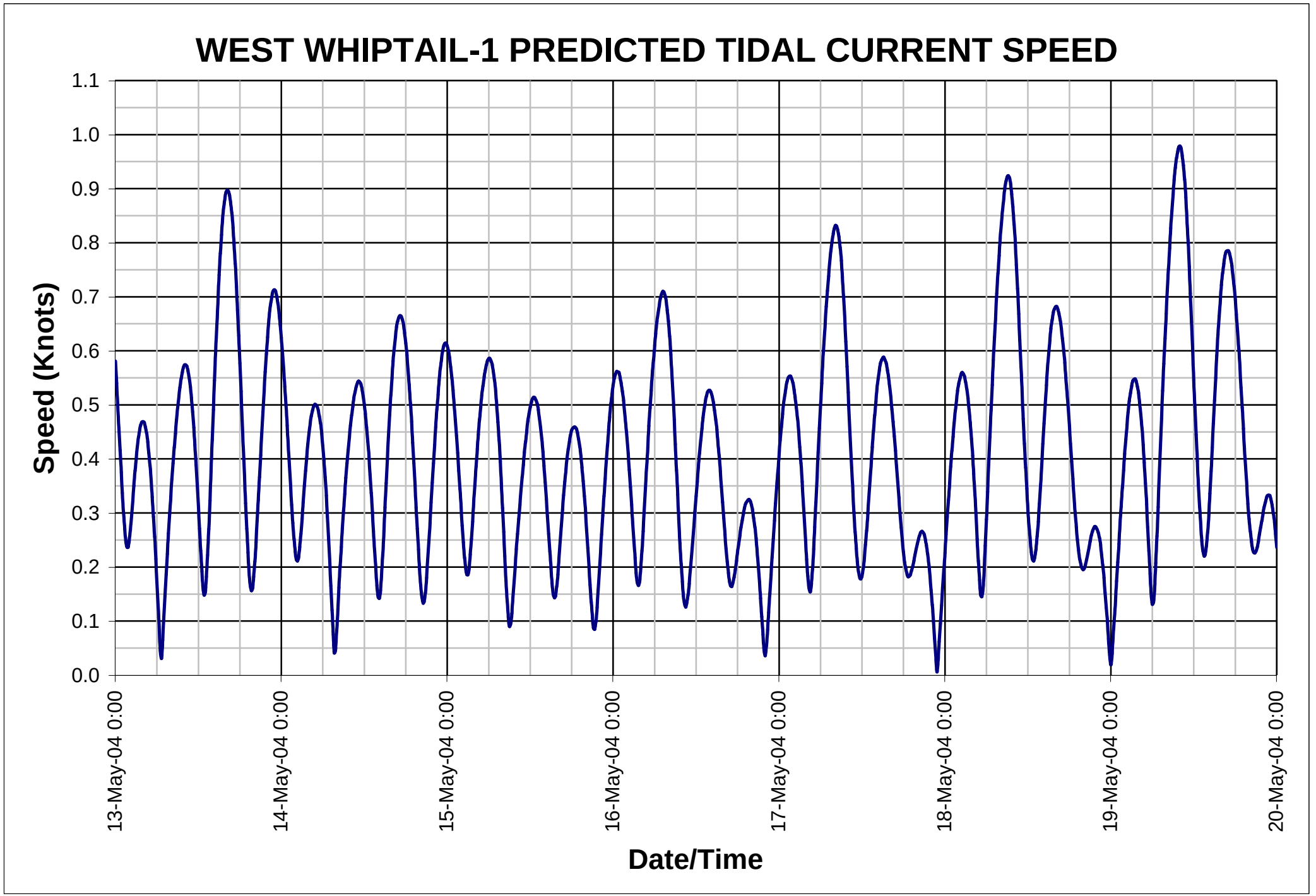

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
29-Apr-04 0:00
30-Apr-04 0:00
01-May-04 0:00
02-May-04 0:00
03-May-04 0:00
04-May-04 0:00
05-May-04 0:00
06-May-04 0:00
Date/Time

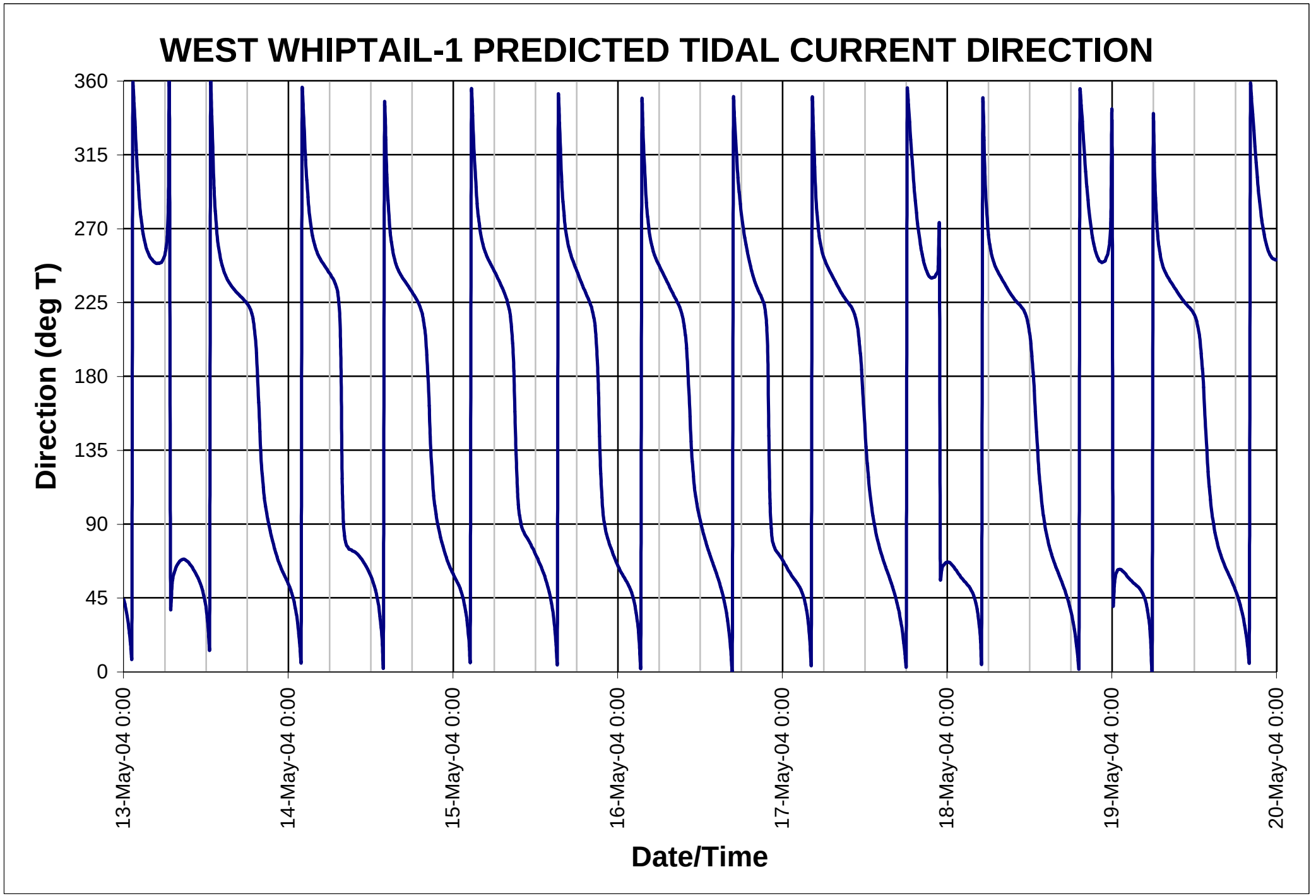

WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
29-Apr-04 0:00
30-Apr-04 0:00
01-May-04 0:00
02-May-04 0:00
03-May-04 0:00
04-May-04 0:00
05-May-04 0:00
06-May-04 0:00
Date/Time

WEST WHIPTAIL-1 PREDICTED TIDAL WATER LEVEL



Note: Datum is Mean Sea Level (MSL)
(0.93 metres above LAT)


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT SPEED
Speed (Knots)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
13-May-04 0:00
14-May-04 0:00
15-May-04 0:00
16-May-04 0:00
17-May-04 0:00
18-May-04 0:00
19-May-04 0:00
20-May-04 0:00
Date/Time


WEST WHIPTAIL-1 PREDICTED TIDAL CURRENT DIRECTION
Direction (deg T)
360
315
270
225
180
135
90
45
0
13-May-04 0:00
14-May-04 0:00
15-May-04 0:00
16-May-04 0:00
17-May-04 0:00
18-May-04 0:00
19-May-04 0:00
20-May-04 0:00
Date/Time

DRILLING PROGRAM	WELL: West Whiptail-1
AFE NO: L.0501D001 RK ORDER: 23001141	JOB: Near Field Wildcat Well

NOTE: 1 Drilling Reporting System (DRS) designation for this well is **ww1**

NOTE: 2 All depths are referenced to Mean Sea Level (MSL).

1.0 PROPOSED WELL OBJECTIVES

- Rig : ENSCO 102, a Keppel FELS, enhanced Mod V "A" Class independent leg cantilever jack-up constructed in March 2002.
- Water Depth : 39.0 m
- RT to waterline : 38.6 m
- RT to Mudline : 77.6 m
- 30"x20"x13-3/8" Conductor, Shoe @ : 120 m MDRT 120 m TVDRT
- 9-5/8" Surface Casing, Shoe @ : 750 m MDRT 750 m TVDRT
- Production Casing Depth : This well will not be cased and suspended.
- Total Depth : 1539 m MDRT 1539m TVDRT 1500m TVDSS
- Maximum inclination : vertical well
- Pressure / Temperature : 2,124 psig / 70.5° C at 1515m TVDRT (Whiptail-1A)
- Anticipated Spud Date : April 2004

2.0 TARGET DETAILS

2.1 BASIN, LICENCE

Gippsland Basin, VIC / L1

2.2 TARGET

PARAMETER	TARGET
Longitude:	147° 30' 17.0" E
Latitude:	38° 19' 28.9" S
Datum and Spheroid	Geodetic Datum of Australia 1994 (GDA94) Geodetic Reference System 1980 ellipsoid (GRS80) Map Grid of Australia Zone 55, CM 147° E
Easting:	544,117m
Northing:	5,758,036m
Depth:	1,500 m TVDSS
Size:	50m radius circle

Engineer	(C.P. Meakin)	(4-Mar-04)
Drilling Engineering Manger	(C.A. Johancsik)	4-03-04
Operations Superintendent	(F.W. Kratzer)	(4/03/04
APPROVED Drilling Manager	(D.L. Whiteman)	4 March 2004
ENDORSED Gippsland Project Manager	(W.J. Mudge)	4/3/04

REV: 0

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4.0 GENERAL WELL INFORMATION

4.1 INTRODUCTION

The West Whiptail-1 will be drilled with the ENSCO 102 jack-up in 39m of water. ATTACHMENT 1 Location Map shows the well location.

West Whiptail-1 will test an Intra-Latrobe Group closure located between the Whiptail and Mulloway discoveries, and will provide data on the lateral and vertical extent of the Whiptail and Mulloway discoveries.

The well is planned as a straight hole to a dry hole depth of 1500m MDSS/TVDSS. 30" conductor with a 13-3/8" shoe joint will be set and cemented in 36" hole at 120m MDRT. 9-5/8" surface casing will be set and cemented in 12-1/4" hole at 750m MDRT. The well will be drilled to TD in 8-1/2" hole. The proposed well is shown schematically in ATTACHMENT 3 Wellbore Sketch.

The well is planned to be drilled in a Target time of 16.2 days (18.0 AFE days) to the dry hole AFE depth of 1500m TVDSS, before logging, plugging and abandoning, as shown in ATTACHMENT 4 Well Progress Curve - West Whiptail-1 Dry Hole Scenario.

The drilling contractor is Ensco Australia Pty Ltd, 66 Kings Road, West Perth, Western Australia, 6005. Other contractors involved in the operation and the nature of their services are detailed in Section 13.0 the West Whiptail-1 Drilling Program Distribution List.

4.1.1 Offset Well Control

Well Name	Distance & Direction	TD (TVDSS)	Max. MW	Date Drilled
Mulloway-1	1.7km W	1,700	9.5	1989
Whiptail-1A	1.4km E	2,800	10.3	1985

4.1.2 Offset Pressure & Temperature Data

Well Name	Depth (TVDSS)	Pressure Data		Temperature Data	
		Pressure (psig)	Gradient (psi/m)	Temperature (°C)	Gradient (°C/1000m)
Mulloway-1	1,378	1,978	1.44	64.5	46.8
Whiptail-1A	1,476	2,124	1.44	70.5	47.1

4.2 SUMMARY DRILLING PLAN

1. Move to the West Whiptail-1 location and position the rig within 5.0m of the call location in accordance with the West Whiptail-1 Rig Move, Positioning & Release Supplementary program.
2. Pre-load the rig, jack to an operating air gap of 55' (16.76m) and extend the cantilever to its operational position according to the West Whiptail-1 Rig Move, Positioning & Release Supplementary program.
3. Pick-up drillpipe, BHA and prepare to spud.
4. Drill 17-1/2" x 36" hole to 120m. Use a 9-1/2" Anderdrift tool to monitor inclination.
5. Run the 13-3/8" x 20" x 30" shoe joint, and 30" conductor and riser joints. Land the top joint in Conductor Tensioning Frame using a running tool on drill pipe. Remove the landing joints. Install 18-3/4" Cameron wellhead.
6. Pick-up the wellhead and conductor. Land the wellhead on the Conductor Tensioning Frame.
7. Using a latch-in inner-string cementing string, cement 30" conductor taking returns to the seafloor.
8. N/U BOPs, 24" mandrel and overshot packer, and the diverter. Shell test BOPs to a low pressure. Function test diverter. Disable BOP controls to prevent accidental closure.
9. P/U 12-1/4" BHA and drill surface hole to 750m MDRT. Use an Anderdrift tool to monitor inclination, and drop a gyro for surface hole survey if required.
10. Run 9-5/8" surface casing (47# L80 LTC) with hydraulic stage collars set below mudline, and land in the wellhead.
11. Cement surface casing. When plug bumps for the 1st stage, pressure up to open stage collar. Circulate seawater to clean cement from the surface casing by 30" riser conductor annulus, followed by sugar-water to prevent any residual cement setting.
12. PU wash tool and wash BOP and wellhead. POOH.
13. Enable BOP controls. Function BOP and pressure test BOP/wellhead connections.
14. PU closing plug on drill pipe, land, close annular BOP, pressure up and close stage collar. PU and test casing. POOH.
15. P/U 8-1/2" PDC bit and BHA and RIH. Drillout stage collar. Continue RIH. Changeout to mud while drilling float joints and 3m of new hole. Conduct PIT.
16. Drill 8-1/2" vertical hole to the TD at 1539m MDRT (deepening as required as per the West Whiptail-1 Geological Program). Use an Anderdrift tool to monitor inclination.
17. Log the well as per the West Whiptail-1 Geological Program. Run a gyro survey with gamma ray on Electricline for the final well survey.

18. P&A according to the West Whiptail-1 P&A Supplementary program.

19. Rig-down and release the rig at 1nm from location according to the West Whiptail-1 Rig Move, Positioning & Release Supplementary program.

4.3 REFERENCE DOCUMENTS

All operations will be conducted in compliance with the following documents:

- [1] ENSCO 102 & Esso Safety Case Bridging Document;
- [2] ExxonMobil Development Company Drilling Standard Operations Manual for Jack-up / Platform / Barge Drilling (DOM);
- [3] Bass Strait MODU Environmental Plan;
- [4] ExxonMobil ENSCO 102 Site Safety Plan;
- West Whiptail-1 Geological Program.

The ENSCO 102 & Esso Safety Case Bridging Document defines the interfaces between the ENSCO 102 Safety Case and the ExxonMobil Development Company Drilling OIMS manual.

Details of the two attending craft and the six helicopters support for the operation, are given in the ENSCO 102 & Esso Safety Case Bridging document and the ENSCO 102 Bass Strait Bridging Emergency Response Plan.

Geological operations will be carried out according to the West Whiptail-1 Geological Program. This document, together with the West Whiptail-1 Authorisation to Drill - July 2003, details the geological prognosis for the area and the objectives of the well.

The ExxonMobil Development Company Drilling Standard Operations Manual for Jack-up / Platform / Barge Drilling (DOM) details drilling procedures.

The Bass Strait MODU Environmental Plan details the planned pollution control measures.

4.4 REPORTING

ATTACHMENT 5 contains the well description for the Drilling Reporting System Well Setup Data.

4.4.1 Daily Reporting

On a daily basis report:

- Drilling activity from midnight to midnight in the Daily Drilling Report (DDR);
- Fuel usage midnight to midnight for the ENSCO 102 and both support vessels;
- Daily cost report;
- Mud report, including mud volumes and concentrations, and the volume of cuttings discharged;
- Directional Survey report;
- Mud logging report;
- ENSCO 102 POB Report;
- ENSCO 102 Barge Engineer Midnight Report.

4.4.2 Periodic Reporting

Report after the event:

- Well move and positioning report;
- Pre-load report;
- Water depth, RT to MSL and 18-3/4" wellhead depths below RT;
- Wellhead reports including diagram;
- BHA diagrams;
- Bit reports;
- Final casing tallies;
- Casing reports;

- Cementing reports;
- PIT reports;
- P&A Diagrams;
- Incident reports.

5.0 GEOLOGY AND FORMATION EVALUATION

5.1 WELL OBJECTIVES

1. Conduct all drilling operations in a safe manner (no incidents) and in compliance with the approved environmental plan (no unapproved discharges).
2. West Whiptail-1 will test an Intra-Latrobe Group closure located between the Whiptail and Mulloway discoveries. West Whiptail-1 will provide data on the lateral and vertical extent of the Whiptail and Mulloway discoveries. The objective is to obtain quality formation evaluation data through mud logging and electric-line logging.

5.2 PREDICTED LITHOLOGY/PORE PRESSURES

Formation	Lithology	TVDSS (m)	TVDRT (m)	Estm. Pore Press. (PPG)
Top Gippsland Limestone	Limestone, calcarenite, marl	-39	78	
Top Lakes Entrance Fm	Marl, claystone, limestone, shale	-787	826	8.5
Top Latrobe Group (TOL)	Sandstone, shale, coal	-1139	1178	8.5
Top Coarse Clastics (TCC)	Sandstone, shale, coal	-1144	1183	8.5
Top N1.0	Sandstone, shale, coal	-1360	1399	8.5
Top N1.1	Sandstone, shale, coal	-1365	1404	8.5
Base N1.1	Sandstone, shale, coal	-1384	1423	8.5
TD		-1500	1539	8.5

ATTACHMENT 6 shows the West Whiptail-1 Predicted Stratigraphy.

5.2.1 Stick Charts

ATTACHMENT 7 Mulloway-1 Stick Chart shows drilling data for Mulloway-1, drilled in February 1989, and located 1.5 km NW of the West Whiptail-1 location.

ATTACHMENT 8 Whiptail-1A Stick Chart shows drilling data for Whiptail-1A, drilled in August 1985, and located 1.6 km E of the West Whiptail-1 location.

5.3 FORMATION EVALUATION

5.3.1 Electric Logging

No wireline logging is planned across the 12-1/4” surface hole section, except for gamma ray and DSI through 9-5/8" surface casing.

Wireline logging and MDTs are planned in the 8-1/2" production hole section. Details of the logging program are contained in ATTACHMENT 2 West Whiptail-1 Geological Program. The order of logging runs may change based on drilling results and a finalised program will be issued to the wellsite at TD.

Notes:

1. If the logging program is extensive, a wiper trip may be required to condition the hole.

2. Severing and stuckpipe tools should be available on-site.
3. If sample chambers are emptied into the wellbore, the Drilling Supervisor shall be notified of the volume emptied and the pressure, to allow the hazard of any gas migrating into the riser to be evaluated and mitigated.

5.3.2 Mud Logging

Mud logging services are required from spud. Sampling will commence below the surface casing shoe. Details of the mud logging requirements are contained in ATTACHMENT 2 West Whiptail-1 Geological Program.

5.3.3 Cuttings Samples

Details of the formation sampling program are contained in ATTACHMENT 2 West Whiptail-1 Geological Program.

5.3.4 Coring

No coring is planned for this well.

6.0 CRITICAL ISSUES & OFFSET DRILLING EXPERIENCE

6.1 SURFACE HAZARDS

Barracouta platform, the nearest surface facility, is 15.3 km from the West Whiptail-1 location on a grid bearing of 79°. The cased and suspended Mulloway-1 sub-sea wellhead is 1.7km from the West Whiptail-1 location on a grid bearing of 281°. The cased and suspended Whiptail-1A sub-sea wellhead is 1.4km from the West Whiptail-1 location on a grid bearing of 85°.

Details of the site survey of a 2 km by 2 km square centred on the location are contained in the West Whiptail-1 Site Survey Site Investigation and Operations Report. The report concluded that across the West Whiptail-1 survey area, the seabed shoals very gently (seabed gradient much less than 1°) to the northwest. The seabed surrounding the proposed West Whiptail-1 location is free of steep slopes and bathymetric anomalies. No obvious debris was observed on the side scan sonar records within the site survey area.

The well is located within the Shipping Exclusion Zone.

6.2 SEA FLOOR HYDROCARBON SEEPS

There is no evidence of sea-floor hydrocarbon seeps.

6.3 SHALLOW PRODUCTION

Shallow production is not present at the nearby Barracouta and Whiting Field.

6.4 SHALLOW GAS

No shallow gas zones have been identified during drilling of adjacent wells (Barracouta, Whiting and Tarwhine Fields, Mulloway-1 or Whiptail-1A). Total gas units recorded above TOL are generally low. In Whiting-2 total gas ranged from 5-15 units (background 5 units) above the TOL. There is no demonstrated relationship between seismic amplitudes and shallow gas in the area, and no shallow seismic amplitude anomalies have been identified at the West Whiptail-1 location.

6.4.1 Shallow Gas Precautions

The following practices will be undertaken to mitigate the consequential impact of any shallow gas:

- Non-ported drill pipe floats will be used while drilling conductor and surface hole;

- Surface hole will be drilled through a tested diverter;
- Standard tripping practices will be utilised to keep the hole full and prevent swabbing.

6.5 ABNORMAL PRESSURE

Latrobe Group: Normally pressured systems are anticipated from TOL to TD, that is ~ 1.4 psi/m (~8.5-8.6 ppg MWE). It is anticipated that West Whiptail will be normally pressured throughout the Latrobe Group section.

Gas was not observed in either Whiptail-1A or Mulloway-1 although a gas anomaly was observed on the mudlog at the top of the Latrobe Group in Whiptail-1A. Gas columns are present throughout the shallow Latrobe Group section at Barracouta and three gas sands were intersected in Tarwhine-1 below 2300 m TVDSS. It is considered unlikely that gas will be encountered at the top of or within the Latrobe Group at West Whiptail 1. If gas is present, column heights are likely to be small and therefore no significant overpressure is expected.

6.5.1 Abnormal Pressure Precautions.

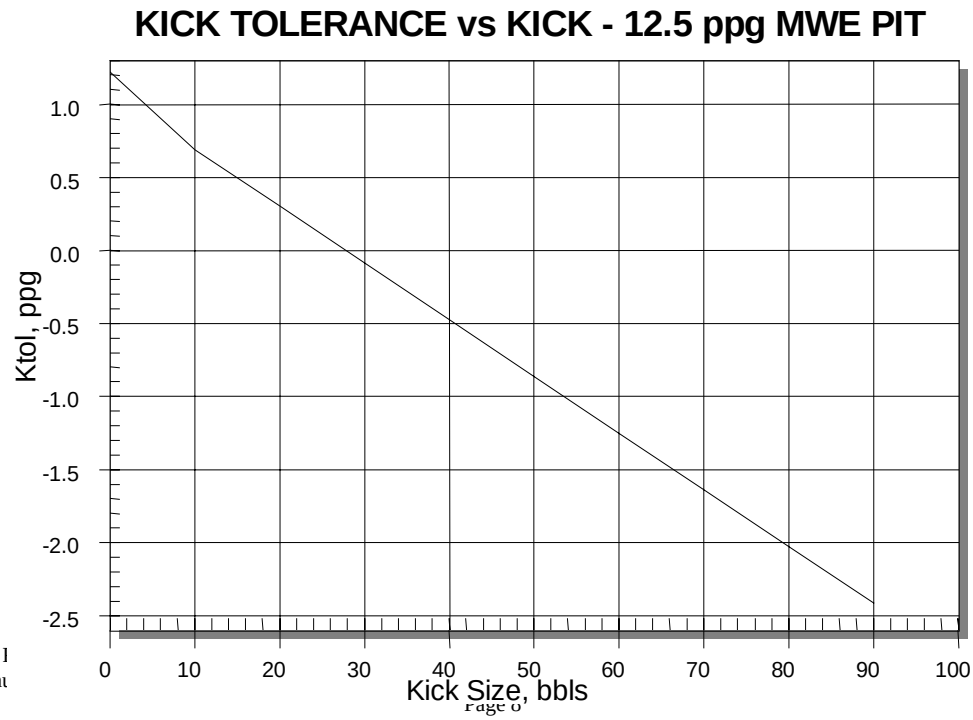
Although abnormal pressure is not expected, a full service mud-logging unit will monitor and plot all drilling parameters from surface casing to TD. If abnormal pressure trends are identified consult with the Operations Superintendent on possible options.

In addition:

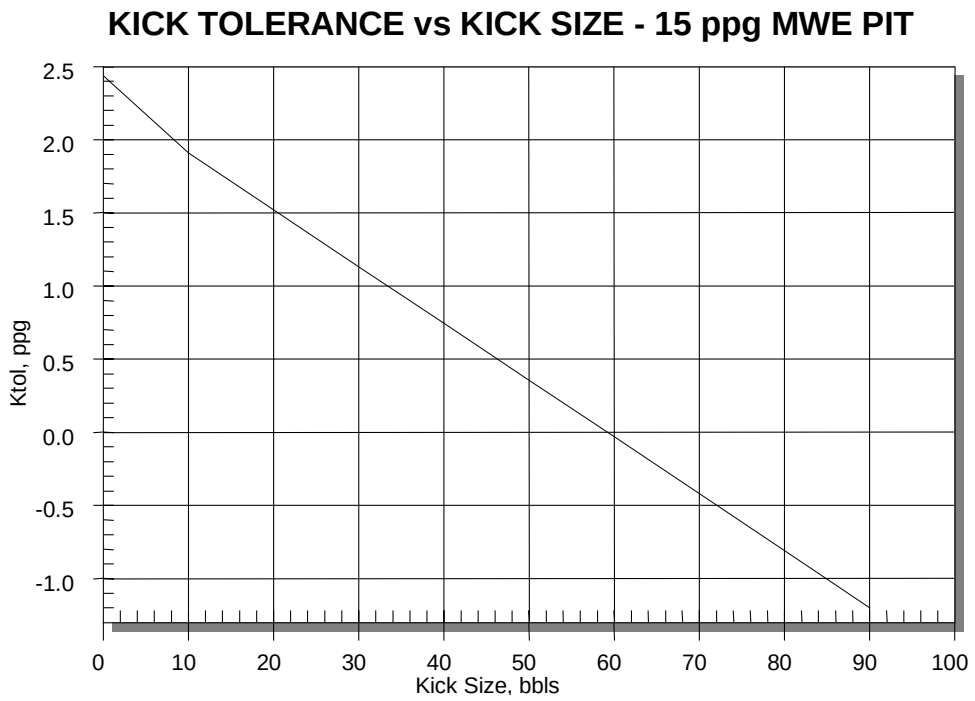
- A trip book is to be maintained for all trips in and out of the well with the drilling riser in place;
- On trips in the hole, fill the drill pipe and break circulation at least every 25 stands;
- A Drilling Supervisor or designate will be on the rig floor for the first 15 to 25 stands pulled off bottom.

6.5.2 Kick Tolerance

The kick tolerance for West Whiptail-1 for a **minimum LOT of 12.5 ppg MWE** at the 9-5/8" surface casing shoe at 750m is 0.7 ppg kick for a 10 bbl influx. The kick calculation is based on a gas kick with 1 ppg intensity taken at the 8-1/2" hole at 1539m, 10 ppg mud, and 75m of 8" collars, 292m of 5" HWDP with a balance of 5" drill pipe to surface. Kick tolerance versus kick size for a LOT of 12.5 ppg MWE are plotted below.



If the LOT at the 9-5/8" surface casing shoe was 15 ppg MWE the kick tolerance increases to 1.9 ppg kick for a 10 bbl influx.



6.6 HYDROGEN SULFIDE

H_2S was not a documented problem in exploration wells drilled in the Gippsland Basin prior to Sole-2 (2002) drilled on the NE basin margin. Experience to date suggests new fields have very low concentrations that increase over the duration of the production life of a field, commonly in response to coning of water. H_2S levels at Barracouta range from 0-18 ppm recorded from gas production (*N.asperus* section) in 1992, yet H_2S was not measured in the exploration or production wells. At West Whiptail-1 H_2S levels are expected to be in the range of 0-20 ppm for the entire well. Contingent on economic success at West Whiptail-1, facilities fabrication is scheduled to begin prior to development drilling, therefore H_2S will be measured in West Whiptail-1 to the extent necessary and appropriate to support materials selection.

6.6.1 H_2S Precautions

1. Continuous monitoring of H_2S will be done from the 9-5/8" casing shoe to TD with the mud logger's H_2S detection equipment.
2. After entering the Latrobe the Mud engineers will run the Garret Gas Train (GGT) twice daily to monitor for H_2S, CO_2 and soluble sulphides.
3. Keep sufficient quantities of NO-SULF (a zinc based H_2S scavenger) on-board to treat H_2S in the mud system.
4. Follow the H_2S Contingency Plan contained in Section 4.15 of the DOM. This provides a tiered response for H_2S levels:
   - ten ppm or less, but greater than zero;
   - twenty ppm or less, but greater than ten ppm; and
   - greater than twenty ppm.

6.7 CARBON DIOXIDE

Adjacent well control indicates the primary target section at West Whiptail-1 is expected to have low CO_2 (<5%), with ranges in offset wells at 0-4%. There has been low amounts of CO_2 produced from the Barracouta field from the M1 reservoir (0-0.8%). There is a small increase in the CO_2 levels below programmed TD, especially in the sub-volcanic section from adjacent well control. In the Whiting L460 reservoir CO_2 levels from gas production of 0-15% have been recorded, while CO_2 levels of 7-12% were recorded in the sub-volcanic *T.longus* section from production tests at Whiting-2. In Wirrah-3 CO_2 concentration of 0-8% were recorded from RFT gas samples taken below the volcanics.

6.8 WELLBORE STABILITY

Brecciated/Sheared Fault Zones
There is a possibility for small-scale (sub-seismic) faults to be encountered in the reservoir section and also in the section from -790m TVDSS to top Latrobe Group. LCM may be required although no lost circulation related to these fault zones has been encountered in offset wells.

Swelling Shale
The Lakes Entrance Formation is recognised as a potential problem zone for swelling shale. At the West Whiptail-1 location, the Lakes Entrance Formation (measured from the base of High Velocity Channel 4 (HVC4) to the top of the Latrobe Group) is expected to be 322m thick.

6.8.1 Wellbore Stability Precautions

- In the shallow hole sections bridging has been experienced in several Gippsland Basin wells while running casing. Normally, these bridges are encountered a short distance below the mudline (0-25m). Wiping the hole completely to the seafloor and displacing the entire wellbore with hi-vis mud in stages (to minimise the mud level drops while POH) is required to help prevent these shallow bridges.
- Hole instability will be managed by a combined chemical, mechanical and operational approach. The drilling fluid of 9.5 - 10.0 ppg KCL/PHPA/Polymer/Glycol will be used to inhibit shale and claystone hydration. Mud weight guidelines of 9.5 - 10.0 ppg and additions of Calcium Carbonate will be utilised to maximise ROP and minimise the likelihood of differential sticking, but at the same time provide hydraulic support to the shales. A flow rate of 650 - 800 gpm will be run in the 8-1/2" hole for hole cleaning. A PDC bit is proposed to assist in drilling this section as fast as prudent to minimise open-hole exposure time. Wiper trips will be conducted as required to minimise tight hole events based on true hole indications, with precautions taken to avoid swabbing or BHA sticking tendencies.

6.9 COAL STRINGERS

Sloughing coals are a documented problem within the Latrobe Group in the Gippsland Basin. However drilling problems associated with sloughing coals have not been reported in nearby offset wells. Coals in adjacent wells are predominantly 2-20 m thick and similar coal thicknesses are expected at the West Whiptail-1 location.

6.9.1 Coal Stringer Precautions

- Generally coal stringers may be handled with a combination of mud weight, increased cuttings carrying capacity, reaming and wiper trips. Repeated reaming may be required to break up coal chunks. Exercise caution if coal stringers are encountered. Pyrite stringers are routinely encountered at the top of the Latrobe. PDC bits can be nursed through these stringers by limiting rotary speed (<80) and WOB.
- Coal stringers are expected/possible in the Latrobe sands. The main danger is stuck pipe from not cleaning excessive amounts of coal from the hole. The primary preventative measure to prevent the coal seams becoming unstable is to drill the coal stringers at a steady controlled

ROP. When drilling ahead, coal seams will be indicated by softer drilling. The following is a suggested guideline when coal seams are encountered or suspected:

- Drill a maximum of 1.5m into the coal.
- Pick up above the coal and circulate for 5 minutes (at same pump rate as when drilling). Maintain pipe movement and rotation. The intention is to circulate any coal above the BHA before drilling ahead.
- Prior to making the next connection after drilling through a coal stringer, wipe the stand 2-3 times while maintaining circulation (without rotation).
- Pull pipe slowly when picking up for any reason or pulling out of hole past the coal seams. Swabbing will cause additional caving of the seams.
- If coal sloughing becomes severe, consideration should be given to adding 6-10 ppb BARABLOK to plug microfractures and minimise filtrate invasion.

6.10 WELL CONTROL

Based on fracture gradient predictions for this site and offset wells, the 9-5/8" casing will be set so that its casing shoe will have formation integrity of at least 12.5 ppg. This is adequate for circulating out a gas kick relevant for Bass Strait area normally pressured formations, see Paragraph 6.5.2 Kick Tolerance. Sufficient mud weight will be carried based on the geologic section to be drilled to prevent a gas kick considering historical pore pressures. The BOP stack will be function/pressure as detailed in Paragraph 7.8 Well Control Equipment and Testing.

6.11 LOST RETURNS

Lost return intervals were recorded from Barracouta-4 at -874mTVDss and -1210mTVDSS within a Miocene sandstone section. Based on seismic correlation and cuttings descriptions from Whiptail-1A a porous and permeable section is expected to be variably present at West Whiptail-1 between the depths of 350 - 530 m TVDSS.

6.11.1 Lost Returns Precautions

- A flocculated bentonite mud system has proven to be a most cost-effective fluid to drill the Gippsland marl. This fluid provides excellent hole cleaning, with cost-effective protection against hole erosion and severe losses in the lost circulation zones which may occur in the Upper Gippsland limestone;
- LCM (Barofibre and Calcium Carbonate) will be kept on location for spotting of any pills that may be required;
- Refer to Section 4S in the ExxonMobil Development Company Drilling Standard Operations Manual for Jack-up / Platform / Barge Drilling [2].

6.12 DRAWNDOWN FORMATIONS

Gas production from the Barracouta N1 reservoir may result in drawn down reservoirs if the reservoir is continuous across to the West Whiptail 1 location. The N1 reservoir is 120 psi drawn down at Barracouta while the deeper M1 reservoir has been drawn down 90 psi. Approximately 5 psi drawdown over 3.5 years was observed between the drilling of Whiptail 1A and Mulloway 1. The N reservoirs at Mulloway 1 exhibited approximately 40 - 45 psi drawdown in 1989 relative to the original basin gradient and assuming a similar rate of drawdown a further 20 psi drawdown (total 60 psi) is likely at West Whiptail-1.

Drilling into the Top of the Latrobe Group should proceed cautiously when initially penetrating it to evaluate the risk of sticking. Adequate BHA stabilisation should be run, minimum drill collars used and the mud system prepared by the addition of Calcium Carbonate.

6.13 ENVIRONMENTAL CONSIDERATIONS

The metocean conditions are detailed in the ENSCO 102 and Esso Safety Case Bridging document. Storms are typically from the southeast, south and southwest directions.

6.14 DRILLING RISK ASSESSMENT SUMMARY

A Drilling Risk Assessment for ENSCO 102 operations in open-waters in Bass Strait has been held prior to spud. The primary goal of this risk assessment was to identify significant risk events involved with the entire operation, together with preventative measures and mitigation plans for these identified risks. All action items should be closed before spud.

7.0 WELL DESIGN & ENGINEERING

7.1 DIRECTIONAL SURVEY PROGRAM

The West Whiptail-1 well will be drilled as a straight hole. Andergauge Anderdrift tools will be included in the BHA for the 36", 12-1/4" and 8-1/2" hole sections to take inclinations on every connection. Consider having an Anderdrift technician on-site to train personnel on the use of the tool. Report Anderdrift surveys at a constant azimuth on the Drilling Reporting System Daily Drilling Report. If required drop a gyro survey prior to POOH to run surface casing (Note 3). The regulations require depth and inclination be taken at least every 300m or nearest bit change. At the well TD a gyro survey with gamma ray will be run on Electricline.

Hole Size-Inches	Depth (m MDRT)	Survey Interval-m	Survey Instrument
17-1/2" x 36"	0 - 120	30m and at mudline and section TD	9-1/2" Anderdrift tool
12-1/4"	0 - 750m or 120 - 750m (Note 2)	30m and at mudline and section TD	8" Anderdrift tool
12-1/4"	0 - 750m	5m and at mudline and section TD	SDI drop gyro if required (Note 3)
8-1/2"	750 - 1539m	30m and at section TD	7" Anderdrift tool
8-1/2"	0 m to TD	5m.	SDI Gyro & GR rum on Electricline.

NOTE: 1 Ensure that all Hi-Vis sweeps are clear of drill string prior to taking an Anderdrift survey or take the survey prior to pumping any Hi-Vis.

NOTE: 2 Survey from surface if an Anderdrift survey has not been conducted in the 17-1/2" x 36" hole section.

NOTE: 3 Run a drop gyro survey at the surface hole TD (~750m MDRT) if the total offset for the surface hole section, plotted at a constant azimuth, is greater than 22m. At 22 m offset, the well could continue to build at an average inclination of up to 2 deg and still remain within the 50m radius target window.

NOTE: 4 Recent offset wells indicate a straight hole should be within this target radius.

Well	TD (TVDSS)	Closure Distance at/near TD	Average Inclination (deg)
East Pilchard-1	3112	57.9	1.07
Beardie-1	1880	16.9	0.52
Scallop-1	3148	43.0	0.78

NOTE: 5 Relief well criteria require that the location of the well be known within 15m.

7.2 CASING DESIGN

Size	Depth-m MDRT	Nominal ID	Drift ID	Weight ppf	Grade	Conn.	Burst Rating psi w/DF	Collapse Rating Psi W/DF	Tension Rating Pipe-kips w/DF	Tension Rating Con.-kips w/DF	Max. Calc'd Burst psi	Max. Calc'd Collap. psi	Max. Calc'd Tension Kips	Burst Design DF	Coll. Design DF	Tension Design DF PB/Conn.
30"	17-113	28.000"	26.813"	310	X-52	ST-2	2204	1630	3554	1387	500	0	105	1.375	1.0	1.333/1.5
20"	113-116	18.000"	17.812"	203	X-52	Weld	3309	3760	2326	N/A	500	66	12	1.375	1.0	1.333/1.5
13-3/8"	116-120	12.415	12.259"	68	K55	Butt	2509	1950	802	479	500	70	10	1.375	1.0	1.333/1.5
9-5/8"	16-750	8.681"	8.525"	47	L-80	LTC	5496	4760	815	595	1880	531	197	1.375	1.0	1.333/1.5

NOTE: 1 The float shoe joint comprises 30" casing tapered to 20" tapered to 13-3/8", with a 13-3/8" float shoe for inner-string cementing.

NOTE: 2 The 30" conductor casing burst design is based on a 500 psi pressure test. Collapse design is based on 15.9 ppg cement outside with seawater inside. Tension is based on buoyed tubular weights with 10 kips overpull.

NOTE: 3 The 9-5/8" surface casing burst design is based on a full column of gas (P(SL)A Requirement), and assumes a conservative 17 ppg leak-off at the 9-5/8" shoe. Using a gas gradient of 0.1 psi/ft results in a maximum net burst pressure at the BOP at 16m MDRT of 1,880 psi. This burst design is more conservative than 1470 psi predicted from the EMLRFD kick scenario. Collapse is based on cement column collapse. Tension is based on buoyed tubular weights with 100 kips overpull.

NOTE: 4 The casing design also satisfies ExxonMobil LRFD design criteria for both production and surface casing.

NOTE: 5 Casing test pressure for 9-5/8" surface casing is 1,900 psi.

NOTE: 6 PIT test on the 9-5/8" surface casing shoe should be taken to a maximum of 17.0 ppg EMW. The minimum PIT required is 12.5 ppg MWE. Consult with the Drilling Superintendent if 12.5 ppg EMW is not achieved.

7.3 DRILLING FLUIDS REQUIREMENTS

Hole Size	Depths- (m MD)	System	MW PPG	PV Cp	YP lb/100ft^2	Funnel Viscosity sec/qt	6 RPM	API WL cc/30 min	HTHP cc/30 min	pH	%LGS
17-1/2" x 36"	78-120	SW/with gel sweeps	8.5+	N/R	>40	>100	N/R	N/R	N/R	N/R	N/R
12-1/4"	120- 765	SW/gel	< 9.5	N/R	15 - 30	35 - 50	N/R	N/R	N/R	N/R	N/R
8-1/2"	750- 826 (to top of Lakes)	6% - 8% KCL/PHPA/Polymer/ Glycol	8.8 - 9.7	< 30	25 - 45		6 - 10	<8	<15	8.8- 9.2	<8
8-1/2"	826-1539 (to TD)	6% - 8% KCL/PHPA/Polymer/ Glycol	9.5 - 9.7	< 30	25 - 45		6 - 10	<8	<15	8.8- 9.2	<8

NOTE: 1 Refer to ATTACHMENT 9 Baroid Drilling Fluid Program - West Whiptail-1 for the detailed drilling fluids program.

NOTE: 2 The properties for the 36" hole section refer to the high vis sweeps.

NOTE: 3 Recommend two high vis sweeps per stand (FV>100, YP>40) while drilling and opening 17-1/2" hole to 36" with seawater.

NOTE: 4 Run Garret Gas Train twice daily when in Latrobe for H_2S, CO_2 and soluble sulphides

NOTE: 5 Report total cuttings volume discharged, based on gauge hole, in the mud report on a daily basis.

NOTE: 6 It is acceptable to "mud-up" while drilling out the 9-5/8" surface casing.

7.4 BIT AND HYDRAULICS PROGRAM

Hole Size	Interval (mMD)	Bit Type	IADC Code	Nozzles (32nds)	WOB (Kips)	RPM	GPM	Pump Pressure-psi	Open Hole drill pipe AV (m/min)
17-1/2" x 36"	78 - 120	17-1/2" Security EBXT1GS mill tooth bit w/- Grant 36" M6980 Hole Opener	115	4 x 20's 4 x 14 (36" HO)	0 - 5	50 - 150	500 - 1,200	800 - 1000	N/A
12-1/4"	120 - 765	12-1/4" Smith S91 PDC	S123	9 x 11's	5 - 30	50 - 150	900 - 1,100	4000	50 - 60
8-1/2" (Primary)	750 - 1539	8-1/2" Smith S75PX PDC	S222	7 x 11's	5 - 25	50 - 150	650 - 850	4000	80 - 100
8-1/2" (Contingency)	750 - 1539	8-1/2" Reed TD53AKPRDH insert bit	537	4 x 15's	20 - 60	50 - 250	650 - 850	4000	70 - 90

NOTE: 1 Full details of the bit selection are contained in the report West Whiptail-1 Drilling Program Bit Strategy, Shane Harris, 10-Feb-2004.

NOTE: 2 Mud pumps are 3 x National 14-P-220. Design WP and output has been assumed to be 4000 psi.

NOTE: 3 Run low WOB and GPM to spud and start the well straight. WOB should not exceed the maximum recommended by the manufacturer.

NOTE: 4 Adequate backup PDC and insert bits will be available on-site. As well as junk bits, backup 517 and 537 insert bits may be required.

17-1/2" Hole (Open to 36"); 17-1/2" Security EBXT1GS (115), Primary & Backup (x2);
12-1/4" Hole: 12-1/4" Smith S91 PDC - Primary (x1), 12-1/4" Security FS 2563 PDC - Backup (x1);
12-1/4" Security EBXLC1 (117) - Backup (x1), 12-1/4" Security XS4 (216) - Junk Bit (x2);
8-1/2" Hole: 8-1/2" Smith S75PX PDC - Primary & Backup (x2);
8-1/2" Reed TD53AKPRDH (537) - Backup (x1), 8-1/2" Reed TD51A (517) - Backup (x1); 8-1/2" Security XS4 (217) - Junk Bit (x3)

7.5 CEMENTING DESIGN

Refer to ATTACHMENT 10 West Whiptail-1 - 30" Conductor Casing and Cementing Requirements, ATTACHMENT 11 West Whiptail-1 - 9-5/8" Surface Casing and Cementing Requirements and ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program.

7.6 BOTTOM HOLE ASSEMBLY PROGRAM

17-1/2" x 36" Hole	12-1/4" Hole	9-5/8" Casing Clean-out	8-1/2" Hole	8-1/2" Hole (Contingency)
17-1/2" Mill Tooth Bit, 7-5/8" Reg Pin	**12-1/4" PDC Bit**, 6-5/8" Reg Pin	**8-1/2" Mill Tooth Bit**, 4-1/2" Reg Pin	**8-1/2" PDC Bit**, 4-1/2" Reg Pin	**8-1/2" TCI Bit**, 4-1/2" Reg Pin
36" Grant Hole Opener, 7-5/8" Reg Pin x Box	**12-1/4" Near Bit Stabiliser**, 6-5/8" Reg Box x Box, w/ Solid Float	**8-1/2" Near Bit Stabiliser**, 4-1/2" Reg Box x 4-1/2" IF Box, w/ Ported Float	**8-1/2" Near Bit Stabiliser**, 4-1/2" Reg Box x 4-1/2" IF Box, w/ Ported Float	**8-1/2" Near Bit Stabiliser**, 4-1/2" Reg Box x 4-1/2" IF Box, w/ Ported Float
Float Sub, 7-5/8" Reg Box x Box, w/ Solid Float	**8" Anderdrift Tool**, 6-5/8" Reg Pin x Box	**5 x 6-3/4" Drill Collar**, 4-1/2" IF Pin x Box	**7" Anderdrift Tool**, 4-1/2" IF Pin x Box	**7" Anderdrift Tool**, 4-1/2" IF Pin x Box
9-1/2" Anderdrift Tool, 7-5/8" Reg Pin x Box	**Totco Ring**	**1 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box	**Totco Ring**	**Totco Ring**
Totco Ring	**12-1/4" Integral Blade Stabiliser**, 6-5/8" Reg Pin x Box	**6-1/2" Daily Hydraulic Jars**, 4-1/2" IF Pin x Box	**8-1/2" Integral Blade Stabiliser**, 4-1/2" IF Pin x Box	**8-1/2" Integral Blade Stabiliser**, 4-1/2" IF Pin x Box
3 x 9-1/2" Drill Collars, 7-5/8" Reg Pin x Box	**3 x 8-1/2" Drill Collar**, 6-5/8" Reg Pin x Box	**15 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box	**2 x 6-3/4" Drill Collar**, 4-1/2" IF Pin x Box	**2 x 6-3/4" Drill Collar**, 4-1/2" IF Pin x Box
Crossover, 6-5/8" Reg Box x 7-5/8" Reg Pin	**12-1/4" Integral Blade Stabiliser**, 6-5/8" Reg Pin x Box	**5" NKK S135 Drillpipe to Surface**	**8-1/2" Integral Blade Stabiliser**, 4-1/2" IF Pin x Box	**8-1/2" Integral Blade Stabiliser**, 4-1/2" IF Pin x Box
3 x 8-1/2" Drill Collars, 6-5/8" Reg Pin x Box	**2 x 8-1/2" Drill Collars**, 6-5/8" Reg Pin x Box		**2 x 6-3/4" Drill Collars**, 4-1/2" IF Pin x Box	**2 x 6-3/4" Drill Collars**, 4-1/2" IF Pin x Box
Crossover, 4-1/2" IF Box x 6-5/8" Reg Pin	**Crossover**, 4-1/2" IF Box x 6-5/8" Reg Pin		**1 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box	**1 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box
5" Hevi-Wate Drillpipe to Surface	**1 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box		**6-1/2" Daily Hydraulic Jars**, 4-1/2" IF Pin x Box	**6-1/2" Daily Hydraulic Jars**, 4-1/2" IF Pin x Box
	6-1/2" Daily Hydraulic Jars, 4-1/2" IF Pin x Box		**15 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box	**30 x 5" Hevi-Wate Drillpipe**, 4-1/2" IF Pin x Box
	18 x 5" Hevi-Wate Drillpipe, 4-1/2" IF Pin x Box		**5" NKK S135 Drillpipe to Surface**	**5" NKK S135 Drillpipe to Surface**
	5" NKK S135 Drillpipe to Surface			

NOTE: 1 Estimated BHA component lengths are included in the report Proposed Bottom Hole Assembly: West Whiptail-1, Shane Harris, 10-Feb-2004.

7.7 DRILL COLLAR PROPERTIES

Tube OD	Tube ID	Wt.-ppf	Wt-31.5ft.	Conn. OD	Type	BSR	M/U Torque-ft/lbs	DC1 OD	DC2 OD	Stiffness Ratio
6-3/4"	2-1/4"	108	3,402	6.25"	4-1/2" IF	2.21	36,740	6-3/4"	5" HWDP	2.79
8-1/2"	2-13/16"	172	5,418	8.50"	6-5/8" Regular	3.27	54,410	8-1/2"	5" HWDP	5.58
9-1/2"	3"	216	6,804	9.50"	7-5/8" Regular	2.81	89,730	9-1/2"	8-1/2"	1.40

NOTE: 1 Recommended BSR Design: $2.25 \leq BSR \leq 2.75$ (6"<Collar OD<7-7/8")

$2.50 \leq BSR \leq 3.20$ (Collar OD> 8")

BSR's for 6-3/4" & 8-1/2" drill collars slightly lower/higher than respective recommended ranges. BSR's believed acceptable due to the well being vertical hole and the softer formations and short intervals being drilled.

NOTE: 2 Recommended Stiffness Ratio: Stiffness Ratio ≤ 5.5

Stiffness ratio from 8-1/2" drill collars to 5" HWDP slightly higher than recommended. Stiffness ratio believed acceptable for the formation and short interval being drilled (surface hole).

NOTE: 3 M/U Torque for 5" HWDP is 29,400 ft-lbs.

NOTE: 4 M/U Torque for 7-5/8" Reg. Bits is 34,000-40,000 ft-lbs. M/U for 6-5/8" Reg. Bits is 28,000-32,000 ft-lbs.

7.8 WELL CONTROL EQUIPMENT AND TESTING

Casing	Section	Top Flange	Casing Burst w/- DF (psi)	MASP (psi) @ shoe	Well Control Equipment Installed	BOP Size & Rating	Annular Test (k psi)	Pipe Ram Test (k psi)	Blind Ram Test (k psi)	Choke & Kill Lines/ Valves Test (k psi)	Choke Manifold Test (k psi)
30"x20" x13-3/8"	12-1/4" surface hole	18-3/4" 15k psi	2204	N/A	Diverter	N/A	N/A	N/A	N/A	N/A	N/A
9-5/8"	8-1/2" to TD	18-3/4" 15k psi	5496	320	1-Annular 4-Rams	18-3/4"-10k 18-3/4"-15k	3.0/3.0	3.0/3.0	3.0/3.0	3.0/3.0	3.0/3.0

NOTE: 1 Refer to the ENSCO 102 Vessel Safety Case Section 2.9.5 for a description of the BOP equipment and method of operation.

NOTE: 2 Stump test BOP stack to 10,000 psi on the rams and 7,500 psi on the annular with water prior to running.

NOTE: 3 Test the diverter by pumping through all diverter lines at the maximum rate possible to detect leaks, verify correct line up, and inspect for excessive vibration.

NOTE: 4 Pressures shown above for 9-5/8" are for the Stump Test/Subsequent Test. Precede all high-pressure tests with a 200-psi low-pressure test.

NOTE: 5 The BOP Stack Ram Arrangement is to be, from the top, 5" Pipe, "V" shear/blind, 3-1/2" to 5" VBR, 5" Pipe.

NOTE: 6 Pressure test frequency: 1) Full test on stump, 2) Every 14 days, and 3) Each new tubular string run.

NOTE: 7 Prior to drill-out the Surface Casing test the connection between the BOP Stack and the wellhead to 3,000 psi. This is an exception to the DOM.

NOTE: 8 MASP pressure is based on a 12.5 ppg MWE LOT, 10.0 ppg mud in the well and a surface casing shoe at 750m TVDRT.

8.0 DETAILED PROCEDURES - 17-1/2"/36" HOLE & 30" CONDUCTOR

8.1 GENERAL INFORMATION

Move-in, positioning, pre-load and rig-up are detailed in a separate West Whiptail-1 Move program.

8.2 PREPARATIONS PRIOR TO DRILLING 17-1/2" X 36" HOLE SECTION

1. Pick up drill pipe and HWDP and SLM. MU the cementing assembly. Complete as many items out of the critical path as possible.
2. MU 17-1/2" x 36" BHA (7.6 Bottom Hole Assembly Program).
3. Confirm that the welds at the ST-2 pin end connector to the 30" conductor has been ground flat to allow the side-door elevator to be positioned immediately underneath the pin end connector.
4. Using ABB Vetco Gray's Operating and Service Procedure 100 - Squnch Joint Connectors, check that the 30" connector boxes and pins are clean. Check condition of the O-ring on each box end and replace if damaged or missing. Lightly grease each pin profile before make-up. **Do not use pipe dope.** The connections are weight-set to makeup, rotation is not required. An anti-rotation pin and slot prevents rotation after makeup. Check that the joints have been painted to simplify alignment, and that plastic plugs have been installed in the releasing screw holes to aid the later recovery of the riser section of the 30" conductor. Reinstall protectors.
5. Prepare the Cameron 18-3/4" wellhead for running, and make-up the 18-3/4" SSMC Compact Housing Running tool on drill pipe and stand back.
6. Make-up the 30" ST-2 box by NC 50 (4-1/2" IF) conductor landing tool on drill pipe and stand back.

8.3 DRILLING 17-1/2" X 36" HOLE SECTION PROCEDURE

1. PU the 17-1/2" x 36" hole BHA and RIH to mudline at 78m MDRT. Slowly lower the BHA , with pumps idling to keep the bit jets clear, until the string begins to take weight. Record the depth when the 17-1/2" bit tags the mudline and when 5 kips of weight can be held for 5 minutes (competent mudline). Take an inclination survey.

   NOTE: 1 Record tide from tide tables. Correct all depths to MSL.

   NOTE: 2 Assess current direction and strength at the time of spud. Ensure that the BHA is vertical. If practical plan to spud towards slack tide.

2. Drill the first 10-20m with low pump rate (250± gpm), 0-2 kips WOB and 60-80 rpm to avoid excessive washout and to control hole deviation. Pump hi-vis sweeps every 15m or as needed for hole cleaning. **Use very little WOB the first few meters because a near-mudline hard streak exists in some areas of Bass Strait that has caused excessive deviation in past wells.**

   NOTE: 1 Space-out the drillstring so that the first connection will not pull the bit out of hole.

3. Continue drilling to 120m MD (42m BML). **Adjust drilling depth, based on strap of the 30" tubulars and 20" shoe joint, to allow ~ 1 to 2 metres of rathole when the 18-3/4" wellhead lands in the Conductor Tensioning Frame.** Drill with minimum bit weight (0-5 kips), and 250-1200 gpm, for deviation control. Limit ROP to one stand/hour and pump hi-vis gel sweeps as needed. Pump a 100-bbl hi-vis sweep. Circulate BU with seawater.

   NOTE: 1 On East Pilchard-1 ~5 kips WOB achieved 50-60 m/hr ROP. Increasing WOB to 15 kips reduced ROP to ~ 20 m/hr from buckling of the unsupported HWDP while drilling riserless.

4. Take an Anderdrift survey when spudding, on every connection and at TD. **Maximum deviation should not exceed 1.0° of drift.** If this angle is exceeded, consult with the Drilling Operations Superintendent. Prepare to ream the hole until hole angle is within this tolerance.

5. Make a wiper trip to the mudline. **Do not pull the HO above the mudline.** RIH to TD. Circulate the hole clean with a 50-bbl hi-vis gel sweep. Displace hole with hi-vis mud (200% hole volume-~ 460 bbls) made with seawater, without lime, while POH to 15m BML. Fill hole in stages to mitigate hole collapse. Refill the hole with 100 bbls of hi-vis mud at this point. Finish POH.

8.4 RUNNING 30" STRUCTURAL CASING

1. Casing properties are listed in 7.2 Casing Design. Details of the conductor casing and cementing requirements are contained in ATTACHMENT 10 West Whiptail-1 - 30" Conductor Casing and Cementing Requirements. Review the ExxonMobil Development Company Drilling Standard Operations Manual for Jack-up / Platform / Barge Drilling casing running checklist.

2. RU 30" casing running equipment and prepare floor to run casing.

   NOTE: 1 Run 30" conductor with slips and side-door elevator run on bails. As a back-up another 30" side-door elevator will be available.

   NOTE: 2 Prepare the Cameron 18-3/4" wellhead for stabbing onto the conductor.

   NOTE: 3 PU the 5" drill pipe and 4-1/2" IF box by 30" x 1" wall ST-2 box crossover required to land the conductor.

3. PU the float shoe joint assembly. Pump water into the shoe joint to confirm that the floats are open. Cut-off the horizontal lift padeyes when running.

   NOTE: 1 The float shoe joint assembly comprises a 13-3/8" buttress threaded Davis Lynch Type 500DV-L-LP Double Valve float shoe on a 13-3/8" 68 lb/ft buttress pup, a 13-3/8" BTC box by 20" weld swedge, a 20" x 1" wall X-52 pup, a 20" x 30" swedge, and 30" x 1" wall X-52 conductor pup with ST-2 pin connector on top. The joint is fitted with horizontal lifting padeyes.

   NOTE: 2 Details of the Davis Lynch Type 500DV-L-LP Double Valve float shoe, the Latch-in Plug and the Latch-in Adapter are contained in ATTACHMENT 13 Davis-Lynch Inner String Float Shoe , Latch-in Plug and Latch-in Adapter.

   NOTE: 3 Ensure that detailed measurements of the float joint are included in the casing tally.

4. Run the casing as follows:

   - Four (4) intermediate conductor joints - 30" 310#, X-52, ST-2 box down x pin up used conductor joints. The joints are fitted with two low-profile lifting eyes which will need to be cut-off prior to running through the rotary table;
   - Four (4) riser joints - 30" 310#, X-52, ST-2 box down x pin up new conductor joints. The joints are fitted with two low-profile lifting eyes. **DO NOT** cut-off the low-profile lifting eyes as they will be used to handle the joints on recovery. Check that the plastic plugs are fitted in the releasing screw holes to aid joint recovery.

   NOTE: 1 Conductor inventory consists of both used and new conductor joints. Plan to run the **used joints** to be cemented into the hole, including the one with the mudline suspension ring. Note the depth of the mudline suspension ring for trip planning in surface hole. Plan to use the **new joints** in the riser section that will be recovered.

   NOTE: 2 Fill the joints with seawater as they are run.

5. LD the 30" running equipment. PU drill pipe elevator and the conductor landing assembly comprising a ST-2 box connector down by NC50 box connector up crossover, run on drill pipe. Stab onto the upper conductor joint.

6. Run the conductor in hole to the final shoe depth, then pick-up and land the ST-2 pin connector of the top joint in a side-door elevator supported on the Conductor Tensioning Frame.

7. PU the 18-3/4" Cameron wellhead and stab onto the top conductor joint.

   NOTE: 1 The wellhead is shown schematically in ATTACHMENT 14 Cameron 18-3/4" 5000 psi Compact Wellhead.

8. PU the 18-3/4" SSMC Compact Housing Running tool and MU into the wellhead with seven (7) turns of left-hand thread according to Cameron procedures.

9. PU the wellhead and conductor, remove the side-door elevator and lower the conductor to landout the wellhead on the Conductor Tensioning Frame. Record the landed weight in the Daily Drilling Report.

10. Remove the 18-3/4" SSMC Compact Housing Running tool from the wellhead with 7 turns of right hand rotation, and stand back in the derrick for the recovery operation.

8.5 CEMENTING 30" STRUCTURAL CASING.

1. Hold JSA meeting to discuss cementing procedures. Review the DOM cementing checklist.

2. Prior to starting the inner-string cementing operations:

   - Use regular weight (19.5 ppf) drill pipe, and drift this with 2.625" drill pipe rabbits to ensure plug passage. As little as 1000 lbs is enough weight to set down and engage the Latch-In adapter to the receiver in the float shoe;
   - Pre-assemble the SSR plug head onto a stand of drill pipe. Preload the Drill Pipe Wiper Plug if the SSR Head includes a plug exit indicator. Stand back.

3. Pick-up first joint of drill pipe and make up the Latch-In Adapter on bottom and install one centraliser and stop ring +/- 2m above it. Check centraliser position against the casing tally to ensure the centraliser enter the 13-3/8" casing pup before the Latch-in Adapter enters the shoe.

4. Start the drill pipe into the hole, taking care when the Latch-in Adapter and centraliser enter the wellhead and conductor.

5. Continue running drill pipe, spacing out so that the last stand picked up contains the SSR plug head.

6. Lower the drill pipe until weight is lost, which indicates the Latch-In Adapter has made contact with the float equipment. Set down all weight up to 50,000 lbs. to assure that the Latch-In Adapter engages to the receiver in the float equipment and effects a seal. If the casing is not full, fill it at this time by pumping open ended into the casing by drill pipe annulus.

7. Break circulation using the rig pumps at 6 bpm. Increase pump rate to 14 bpm maximum over the next five minutes. Circulate a minimum of 1.5 string volumes with seawater to condition the hole.

8. Tie-in 2” lines with low-torque valve to the plug launcher on top of the drill pipe. RU and test cementing lines to 2000 psi.

9. Recalculate cement volume onsite based on actual hole depth and verify with the onsite cementing crew.

10. Pump a 100-bbl seawater pre-flush.

11. Pump 226 bbls of 15.9 ppg neat cement slurry mixed in seawater (volume required to fill the annulus with 250% excess)

    NOTE: 1 Proposed cement slurry properties are detailed in ATTACHMENT 10 West Whiptail-1 - 30" Conductor Casing and Cementing Requirements and ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program. Refer also to the Halliburton Cementing Laboratory Report for actual properties of the slurry.

NOTE: 2 Keep the wellhead and conductor under observation during cementing. Adjust Conductor Frame Tensioner tension to prevent conductor rising while displacing cement.

12. Release, (if it has been pre-loaded) or manually drop the Latch-Down Drill Pipe Wiper Plug.

13. Displace the drill pipe with ~ 6.9 bbl of seawater at ~2 BPM.

NOTE: 1 Capacity values for displacement:

- 5" 19.5 ppf S-135 drill pipe: 0.05827 bbl/m

14. Once the plug lands, apply a minimum of 500 psi over plug landing pressure to assure the plug fully latches down.

15. With the Latch-In Adapter still engaged to the receiver in the float equipment, release pump pressure and observe flow back to determine if the check valves in the float equipment are holding.

16. With chain tongs, rotate drill pipe a minimum of ¼ turn to the right, while gradually picking up on it until all the drill pipe weight, but none of the casing weight, is reflected on the weight indicator. At this point the adapter should be un-latched from the receiver in the float equipment.

NOTE: 1 If the drill pipe Latch-in Adapter cannot be released, there is a secondary release mechanism. This entails pulling 30,000 lbs over drill-pipe weight (+/- 15%) and shearing-out a Safety Release Sleeve. If this must be done, ensure that the total load on the Conductor Tensioning Frame exceeds 60,000 lbs. If necessary, chain down the conductor before applying the pull load, which should be applied gradually.

17. Pull the drill pipe out of hole.

18. Report the 30" shoe depth on the Daily Drilling Report and send in the Drilling Reporting System casing and cementing reports, and 30" casing tally as a spreadsheet.

19. Ensure the following measurements are reported on the next Daily Drilling Report:

    - Water Depth;
    - Top flange of the 18-3/4" wellhead from RT;
    - Actual RT to ML;
    - Actual distance RT to sealevel.

NOTE: 1 Correct measured depths to MSL using the tide tables provided

9.0 DETAILED PROCEDURES - 12-1/4" HOLE & 9-5/8" SURFACE CASING

9.1 GENERAL INFORMATION

Although shallow gas is not expected, the precautions detailed in Paragraph 6.4.1 Shallow Gas Precautions will be observed.

9.2 PREPARATIONS PRIOR TO DRILLING 12-1/4" HOLE SECTION

1. N/U BOP and diverter to the 18-3/4" wellhead, refer to ATTACHMENT 14 Cameron 18-3/4" 5000 psi Compact Wellhead, as follows:

    - ♦ Clean 18-3/4” housing gasket prep, and install a new BX-164 gasket;
    - ♦ Nipple up the 18-3/4” 10k by 18-3/4" 15k Fastlock Connector (Cameron P/N 2209591-01);
    - ♦ Install a new BX-164 gasket;

- Nipple up the 18-3/4" BOP stack, with 24" Overshot Mandrel and 24" Overshot Packer to the Diverter.

2. Lockout the BOP Closing System to prevent accidentally closing the BOP while drilling surface hole. Test the diverter as detailed in Paragraph 7.8 Well Control Equipment and Testing.

3. Install the Cameron 18-3/4" nom. Lower Wear Bushing (P/N 2125331-02) as follows:

   - Inspect the 18-3/4" Nom. lower wear bushing for damage. Change seal if necessary;
   - Make-up combination tool to stand of DP, ensuring combination tool pins are facing downward. Place wear bushing on RT, lower comb. Tool into wear bushing, and rotate 1/4 turn to the right to lock bushing to tool;
   - Pick up the lower wear bushing and slowly lower into compact housing until it landed on the landing shoulder in the compact housing. Strap in DP to verify correct land-out. Landing shoulder will be 1.052m (41.43" below top face of housing);
   - Rotate drill string 1/4 turn to the left to disengage Combination Tool from wear bushing. Retrieve Combination Tool with straight vertical pull.

   NOTE: 1 Combination Tool may be racked back in derrick ready for bushing retrieval, depending on rig floor space.

4. Pre-mix the seawater/bentonite gel mud required for the hole section as per ATTACHMENT 9 Baroid Drilling Fluid Program - West Whiptail-1.

9.3 DRILLING 12-1/4" HOLE SECTION

1. PU the 12-1/4" hole BHA, listed in Paragraph 7.6 Bottom Hole Assembly Program, and RIH to TD on 5", 19.5#, S-135 drill pipe.

   NOTE: 1 Do not circulate at the 30" shoe. Pull up inside the 30" casing to circulate.

2. Drill ahead at 900 - 1,100 GPMs, 50-150 RPMs, and 5 - 30 kips WOB to ~765m MDRT as per Paragraph 7.4 Bit and Hydraulics Program, to provide ~15 m of rathole below the 9-5/8" casing shoe proposed for 750m MDRT. Drill with seawater/bentonite mud system, maintaining mud properties as per the Baroid mud program to provide good hole stability and adequate hole cleaning while drilling. Adjust the drilling depth based on strap of the 9-5/8" casing. Take an Anderdrift surveys at every connection and at TD.

   NOTE: 1 When drilling the interval immediately under the shoe, maintain a slow pump-rate to avoid washing out hole immediately under the shoe.

   NOTE: 2 If a survey is missed repeat surveys are not required. However, ensure that there are surveys at least every 150m.

3. At TD of 765m MDRT, circulate at least bottoms up and until the hole is clean. Make a wiper trip to the 30" shoe. RIH to TD, circulate B/U, then displace the hole with any excess non-flocculated seawater/bentonite mud. Drop the SDI gyro survey (if required) and SLM out of hole.

   NOTE: 1 Run the SDI gyro survey if the estimated vertical section for the well based on the Anderdrift surveys accumulated along the same azimuth exceeds 22m, as per Paragraph 7.1 Directional Survey Program.

9.4 CASING RUNNING PROCEDURE

1. Hold JSA meeting to discuss casing running procedures. Review the DOM casing running checklist.

2. Drift 9-5/8" casing to 8.525".

3. Recover the Cameron 18-3/4" nom. Lower Wear Bushing (P/N 2125331-02) as follows:

- Pick-up combination tool, ensuring pins are facing downward and lower through stack until it lands out on top of the lower wear bushing;
- Rotate the landing, string to right hand slowly. The torque pins will align with slot within 1/4 turn and move down by 3 inches. Rotate additional 20º to the right to fully engage with the wear bushing.
- Retrieve wear bushing with vertical pull, lay-down bushing, break out combination tool, clean and inspect tool, and replace 'O' rings if necessary. Protect 'O' rings and lay-down tool. This wear bushing will be used again during plug and abandonment.

4. RU 9-5/8" casing running equipment and prepare floor to run casing.

   NOTE: 1 The 9-5/8" casing will be run with 150 ton side-door elevators and rotary hand slips.

   NOTE: 2 ENSCO 102 9-5/8" casing running equipment will be used as backup.

   NOTE: 3 Ensure that a detailed description of the float joints and the hydraulic stage collar is included in the casing tally.

5. Make-up, run and centralise 9-5/8" Surface Casing to a depth of 750m MDRT as detailed in ATTACHMENT 11 West Whiptail-1 - 9-5/8" Surface Casing and Cementing Requirements and as described below. Have Weatherford on the rig floor to supervise casing running and connection make-up.

   NOTE: 1 M/U the 9-5/8" casing using Best-O-Life 2000 thread compound.

   NOTE: 2 Make-up the 9-5/8" casing using ExxonMobil Torque position makeup. For 9-5/8" 47ppf L80 LTC casing with phosphatised couplings T-min is 9,600 ft-lbs and T-max is 14,400 ft-lbs. D1 is 4.813" and D2 is 5.125".

6. Pick-up the preassembled 9-5/8" float shoe joint by float collar joint, and fit two (2) Weatherford ST-A3 centralisers (Esso S/N 01161234), each across a JSH stop collars (Esso S/N 01161398) placed ~10m from either end of the joint. The preassembled joint comprises, from top to bottom:
   - A Halliburton Super Seal II 9-5/8" 43.5 - 53.5 ppf L80 LTC Float Collar, Halliburton P/N 100004812, threadlocked onto the casing after backing-out the mill end connection;
   - A joint of 9-5/8" 47ppf L-80 LTC casing, Esso S/N 01800280;
   - A Halliburton Super Seal II 9-5/8" 43.5 - 53.5 ppf L80 LTC Float Shoe, Halliburton P/N 100077323, Esso S/N 01808221 threadlocked onto the casing joint.

   NOTE: 1 The float valves in both the float shoe and float collar have been set-up for auto-fill.

   NOTE: 2 The float equipment is PDC drillable.

   NOTE: 3 The Float Collar is NOT fitted with the anti-rotation feature for better compatibility with the Bypass Baffle

7. Sit the Halliburton Bypass Baffle on to the top of the Float Collar.

   NOTE: 1 The Halliburton 9-5/8" 1st Stage plug set, P/N 100075009, comprises a Bypass Plug and Bypass Baffle. The plug is 502mm long, with a 9.62" Wiper OD and a 4.20" Nose OD. The Bypass Baffle is 9.085" OD with a top end ID of 3.25". Casing 9-5/8" 47 ppf casing ID is 8.681".

8. Verify flow through the 9-5/8" float shoe/collar, before it passes from sight, by filling the casing with mud and observing flow out of the shoe. Check and top-up the remaining joints with mud as they are run.

   NOTE: 1 The float shoe and float collar valves have been set-up for auto-fill.

9. Threadlock the Shut-off Baffle joint onto the float joint. The Shut-off Baffle joint comprises from top to bottom:
   - A Halliburton Two-Stage First Stage Shut-off Baffle Adapter, 9-5/8" 43.5 - 53.5 ppf L80 LTC, Halliburton P/N 100076050, threadlocked onto the casing after backing-out the mill end connection. The Baffle Adapter is 10.625" OD, 8.619" ID, with an insert ID where the Shutoff

Plug lands of 5.00". The Shutoff Plug is 18.98" long, with a Wiper OD of 9.62" and a Nose OD of 5.29";

- A joint of 9-5/8" 47ppf L-80 LTC casing, Esso S/N 01800280.

10. Two thread locked joints of 9-5/8" 47ppf L-80 LTC casing.

11. 9-5/8" 47ppf L-80 LTC casing, Esso S/N 01800280, quantity and centralisation as per ATTACHMENT 11 West Whiptail-1 - 9-5/8" Surface Casing and Cementing Requirements.

12. Install the Halliburton Type-H ES Cementer as follows:

- Remove the box-end thread protector from the ES Cementer;
- Apply Threadlock to the pin thread of the joint that will be stabbed into the top of the Cementer, and make-up the Cementer onto the pin thread hand-tight. This joint should have a threadlocked mill-end collar preinstalled;
- Remove the pin-end thread protector from the Cementer and apply Threadlock to the pin thread;
- Stab the pin thread into the box thread of the joint in the slips;
- Place makeup tongs on the joint above the Cementer and backup tongs on the joint below it to prevent damage to the operating sleeves. Make up the tool to the normal torque used to make up casing. Lower the tool into the hole;
- Apply Threadlock to the pin end of the next joint, one that has a threadlocked mill-end collar preinstalled, making-up the casing to normal torque;
- Threadlock the next three joints in a similar manner.

NOTE: 1 The Type-H ES Cementer has the following features: PDC drillability; smooth-bore drillout; short, single-piece mandrel design; hydraulic opening capability; externally adjustable opening pressure and adjustable closing pressure; optional Free-Fall opening plug (if pressure cannot be used to open the tool); compatibility with second-stage bottom plug sets.

NOTE: 2 The Type-H ES Cementer can be prepared for different opening pressures. The primary and backup Cementer have been set-up with five (5) pins and 2,250 psi opening pressure.

Number of Shear Pins	3	4	**5**	6
9-5/8" 43.5-53.5 ppf Opening Pressure (psi)	1,350	1,800	**2,250**	2,700

The closing pressure can also be adjusted. The primary and backup Cementer has been supplied with the maximum number of 6 shear pins.

	Number of Shear Pins	4	5	**6**
9-5/8" 43.5-53.5 ppf	Closing Pressure (psi)	650	810	**975**
	Closing Force (lb)	38,000	47,500	**57,000**

13. Pick-up the Cameron 18-3/4" x 9-5/8" casing hanger/running tool assembly and make-up on the casing joint in the slips. The assembly comprises, from top to bottom:

- a 9-5/8" 47 lb/ft L-80 LTC pup joint;
- the 18-3/4" x 9-5/8" Casing Hanger Running tool (P/N 2202714-02);
- the Cameron 18-3/4" x 9-5/8" casing hanger (P/N 2125305-03), complete with 18-3/4" x 13-3/8" dummy hanger (P/N 2209613-01); and
- a 9-5/8" 47 lb/ft L-80 LTC pup joint.

NOTE: 1 Running Tool / Casing Hanger make up is LH thread seven (7) turns.

14. Lower casing string and set in slips at adequate height for running tool access. Bump running tool left hand to ensure it is fully made up to the hanger.

15. Slowly lower and measure in landing string for expected land-out. Slow rate of descent 2m from land-out point. Land-out casing hanger. Verify casing stick-up when string weight begins to drop.

16. Rig up, pump and displace cement as per the procedures below - Paragraph 9.5 Cementing 9-5/8" Surface Casing.

17. After cementing rotate landing string right hand 7 turns to disengage the running tool from the casing hanger. Recover running tool and casing landing joints.

18. RD casing handling tools.

19. RIH with the Cameron 18-3/4" nom. Jetting Tool (P/N 2125334-02) on drill pipe and flush the BOP cavities, riser and wellhead prior to closing the ES Cementer.

20. PU the 18-3/4" Seal Assembly Running Tool (P/N 2125327-02) and the 18-3/4" x 9-5/8" Seal Assembly (P/N 2125307-08). RIH and install as per Cameron procedures.

21. Function test the BOPs, and pressure test the Fastlock connections, as follows:

    - PU and RIH with the 9-5/8" cup tester into the 9-5/8" casing.;
    - Test BOP stack as per Paragraph 7.8 Well Control Equipment and Testing. A 3,000 psi test across the connectors will place 119 kips tension on the drill pipe and result in a hookload of ~300 kips.

22. As per ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program P/U the ES Cementer Closing Tool, centralisers and slip-joint on drill pipe and RIH to the ES Cementer. Land the closing tool in the closing sleeve, close the annular, and pressure up above the closing tool to 1,473 psi ± 220 psi to close the ES Cementer. Hold this pressure for 1 to 2 minutes. Open the annular, pickup the drill pipe, close the annular and pressure test the casing to 500 psi to ensure that the sleeve is closed.

    NOTE: 1 When pinned with six (6) shear screws the closing sleeve requires 57,000 lb to close (Refer to Paragraph 9.4.12.NOTE: 2). The aluminium operating seat above the closing sleeve has an ID of 8.619", and this corresponds to 1,473 psi for the tool run on 5" drill pipe.

9.5 CEMENTING 9-5/8" SURFACE CASING

NOTE: 1 This Section follows on from Paragraph 9.4.16 and returns to Paragraph 9.4.17.

1. Conduct a JSA to discuss casing cementing procedures while circulating.

2. Rig-Up to take returns from all four (4) side-outlets on the 18-3/4" wellhead, and to discharge returns overboard via a cementing trough. Review the DOM Cementing checklist.

3. Proposed cement slurry properties are detailed in ATTACHMENT 11 West Whiptail-1 - 9-5/8" Surface Casing and Cementing Requirements and ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program.

    NOTE: 1 Refer to the Halliburton Cementing Laboratory Report for actual properties of the slurry.

4. Pre-mix 330 bbl of sugar in seawater at 8 lb/bbl. This will be used to contaminate any residual cement left in the riser at the end of the cement job.

5. Rig up Dowell Schlumberger cement head on 9-5/8” landing joint, loaded with the 9-5/8" By-Pass Plug.

    NOTE: 1 Only one plug will fit into the cement head.

6. RU and test cementing lines to 3000 psi.

7. Break circulation using the rig pumps at 6 bpm. Increase pump rate to 10 bpm maximum over the next five minutes. Circulate a minimum of 1.5 hole volumes with seawater to the shoe to ensure the drillstring and floats are clear prior to cementing and densities inside and outside of the casing are similar.

    NOTE: 1 Returns for this circulation will be from the bell nipple.

8. Pump a 40-bbl seawater pre-flush taking and monitoring returns from the wellhead.

9. Drop the 9-5/8" 1st Stage Bypass Plug and pump a further 10 bbl of seawater.

   NOTE: 1 The Halliburton 9-5/8" 1st Stage plug set, P/N 100075009, comprises a Bypass Plug and Bypass Baffle. The Bypass Baffle was installed on top of the float collar and is 9.085" OD with a top end ID of 3.25". The By-Pass Plug is 502mm (19.76") long, with a 9.62" Wiper OD and a 4.20" Nose OD to land in the baffle. 9-5/8" 47 ppf casing ID is 8.681".

10. Load the cement head with the 9-5/8" Shut-off Plug

11. Mix and pump 227 bbls of 12.5 ppg lead cement slurry followed by 68 bbl of 15.8 ppg tail slurry (volume required to fill the float joints, 30" conductor by 9-5/8" annulus with no excess, and 12-1/4" by 95/8" open-hole annulus with 100% excess).

    NOTE: 1 Recalculate cement volume on-site based on actual hole depth, and verify with the on-site cementing crew. Use 100% excess on open hole.

12. Drop the 9-5/8" 1st Stage Shut-off Plug.

    NOTE: 1 The Shut-off Plug is 483mm (19.02") long, with a Wiper OD of 9.62" and a Nose OD of 5.27". It lands on the First Stage Shut-off Baffle Adapter. The Baffle Adapter is 10.625" OD, 8.619" ID, with an insert ID where the Shut-off Plug lands of 5.00".

13. Displace cement with nominally 176.7 bbl seawater to bump the top plug with 500 psi over the final differential pressure for 2 minutes. **Do not exceed 1,500 psi** during the displacement as the hydraulic stage collar is set to open at 2,250 psi ±250 psi. Base the actual displacement on the actual lengths of casing run, and the callipered casing ID. Monitor for cement returns during the job. Pump at a slow rate (less than 5 bpm) until the Shut-off Plug passes the ES Cementer. Displace the first 100 bbl cement with the rig pumps at a rate of 8-10 bpm, before slowing the rate to 6 bpm, and finally to 2 to 3 bpm for the last 30 bbl to bump the plug to minimise fracture pressure at TD and possible lost returns.

    NOTE: 1 Check the efficiency of the rig pumps.

    NOTE: 2 Use actual capacity based on the average ID for 9-5/8" 47 ppf L80 casing allocated. Capacity values used for displacement calculations are as follows:

    - 9-5/8" 47 ppf casing: 0.24306 bbl/m (based on callipered casing prepared for Beardie-1.)

    NOTE: 3 ***Pump the total calculated displacement plus a maximum of half the shoe track volume.***

    NOTE: 4 Monitor returns from the wellhead throughout the displacement. Ensure that cement returns do not enter the BOP stack. Reduce displacement rate if necessary to reduce back-pressure across the wellhead side-outlet valves.

    NOTE: 5 Based on cementing 9-5/8" surface casing in 12-1/4" gauge hole, with the hydraulic stage collar set 10m below mudline, the top of cement in the 30" x 9-5/8" riser when pumping 100% excess for open hole is calculated at 35m MDRT. Cement returns are not expected during the primary cement job, only while circulating out the riser annulus clean after opening the stage collar.

14. Shut down pumps. Check floats for proper operation. Hold backpressure if required.

15. If the shut-off plug landed, pressure up on the casing to 2,250 psi ±250 psi differential pressure to open the Halliburton ES Cementer.

    NOTE: 1 A loss of pressure and start of circulation indicates that the cementer has opened.

    NOTE: 2 2,250 psi opening pressure is based on five (5) shear pins installed in the tool as per Paragraph 9.4.9.412.NOTE: 2).

    NOTE: 3 Only if the Cementer does not open hydraulically or if the Shut-off Plug did not bump will the contingency Opening Plug need to be dropped. Refer to ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program. The contingency opening plug is a free-fall plug, 444.5mm

(17.50") long, with a 6.750" OD nose. The Opening Seat ID in the tool is 6.926" Expected free-fall rates are between 60 and 120 m/min.

Bleed-off pressure and open the cement head to load and drop the Free-Fall Opening Plug. After the plug has landed apply pressure to open the cementing ports. The required pressure is stencilled on the tool.

Number of Shear Pins	4	**5**	6
9-5/8" 43.5-53.5 ppf Opening Pressure with Free-Fall Plug (psi)	325	**405**	485

16. Circulate seawater to flush the riser until clean returns are seen.

    NOTE: 1 Monitor returns from the wellhead throughout the cleanup. Ensure that cement returns do not enter the BOP stack. Reduce displacement rate if necessary to reduce back-pressure across the wellhead side-outlet valves.

17. Circulate all the sugar water (~330 bbl of 8 lb/bbl of sugar mixed in seawater) to contaminate any residual cement. The riser annular volume will be left filled with sugar-water.

18. Report the 9-5/8" shoe depth on the Daily Drilling Report and send in the Drilling Reporting System casing and cementing reports, and 9-5/8" casing tally spreadsheet.

19. Complete the casing running operation, including shutting the Cementer, as described in Paragraph 9.4.17 and subsequent steps.

10.0 DETAILED PROCEDURES - 8-1/2" PRODUCTION HOLE

10.1 GENERAL INFORMATION

1. Ensure that all single valved side-outlets on the wellhead are fitted by a bull-plugged companion flange

2. Test the BOP stack connections, choke and kill lines against the blind rams and casing shoe to 1900 psi (Phase I PIT).

    NOTE: 1 Report results of PITs using the EMDC Drilling PIT spreadsheet on the following daily report. Send original plots for the PITs and a copy of the spreadsheet to the office for the well file.

3. Mix and maintain mud properties as detailed in Paragraph 7.3 Drilling Fluids Requirements and ATTACHMENT 9 Baroid Drilling Fluid Program - West Whiptail-1.

10.2 DRILLING 8-1/2" HOLE SECTION

1. PU the 8-1/2" bit and BHA, listed in Paragraphs 7.4 Bit and Hydraulics Program and 7.6 Bottom Hole Assembly Program and RIH to TD on 5", 19.5#, S-135 drill pipe.

2. RIH and tag the ES Cementer at ~88m MDRT. Drill out the ES Cementer with 40 to 75 rpm and 3,000 to 5,000 lb WOB while circulating.

3. Finish TIH to float shoe. Prepare to displace the seawater in the well with 8.8 ppg KCL/PHPA/Polymer/Glycol mud system.

    NOTE: 1 Add Glycol-CP to the active system after any high pH caused by cement contamination has been treated out with Citric Acid and Bicarb. Soda.

    NOTE: 2 Coarse screens should be used on the shakers until the KCL/PHPA/Polymer/Glycol mud is sheared at the bit and increases in temperature. Screens should be the finest possible size that can be used without whole mud losses.

4. Prior to drilling float equipment conduct a Phase I PIT to 1,900 psi if not completed in Section 10.1 General Information Paragraph 2.

NOTE: 1 Report results of PITs using the EMDC Drilling PIT spreadsheet on the following daily report. Send original plots for the PITs and a copy of the spreadsheet to the office for the well file.

5. Displace with the KCL/PHPA/Polymer/Glycol mud system.

NOTE: 1 To prevent possible damage to the 8-1/2" PDC bit used to drill the shoe track, drill the 9-5/8" shoe track either with mud from the previous hole section, or with new mud.

NOTE: 2 When displacing the well to new mud, dump the seawater returns. At 100 bbls before theoretical displacement, reduce the pump rate and have the mud engineer observe for KCL/PHPA/Polymer/Glycol returns. Divert flow to the active mud system when new mud is observed at the surface.

6. Drill cement and float equipment. Pump viscous sweeps to remove debris. Clean out rathole. Drill 3m of new hole. Pull bit into casing.

7. Circulate and condition mud for PIT.

8. Test cement line to 5000 psi. Perform a Phase II PIT by pumping simultaneously down the drill pipe and annulus to leak-off, but not exceeding 17.0 ppg MWE.

NOTE: 1 Contact the Operations Drilling Superintendent if the original and repeated PIT is less than 12.5 ppg MWE.

NOTE: 2 Complete the ExxonMobil PIT calculation Excel spreadsheet and send to Town.

9. Optimum drilling parameters are: 650-850 gpm, 50-150 rpm, and 5-25 kips WOB for PDC bits and 50-250 rpm and 20 - 60 kips WOB for TCI bits. Use the maximum flow rate possible while minimising mud losses at the shaker.

10. Drill ahead, taking Anderdrift surveys every connection.

NOTE: 1 This is a vertical well with a 50m radius target.

NOTE: 2 Do not repeat a missed survey. Ensure that as a minimum there are surveys every 150m.

NOTE: 3 Maintain complete details of all BHAs (through HWDP) run to TD, with ODs, IDs, lengths and connections.

11. Drill ahead to the TD depth of 1539m MDRT, determining the final dry hole depth according to ATTACHMENT 2 West Whiptail-1 Geological Program.

12. Additional notes for the 8-1/2" hole section are:

NOTE: 1 Maintain the mud properties as listed in 7.3 Drilling Fluids Requirements and ATTACHMENT 9 Baroid Drilling Fluid Program - West Whiptail-1. Raise MW to 9.5 to 9.7 ppg prior to drilling into the Lakes Entrance Formation expected at 826m MDRT. Immediately prior to drilling into the Latrobe Formation expected at about 1178m MDRT, add calcium carbonate as per ATTACHMENT 9 Baroid Drilling Fluid Program - West Whiptail-1. Raise mud weight as hole conditions dictate. Discuss with Operations Superintendent before raising mud weight above 10.5 ppg.

NOTE: 2 Coal stringers are expected/possible in the Latrobe sands. Guidelines for drilling coal are contained in 6.9.1 Coal Stringer Precautions.

NOTE: 3 Run Garret Gas Train every 12 hours on mud checks below top of Latrobe for H_2S, CO_2 and soluble sulphides. Have Baroid measure and report chlorides and calcium content of the make-up water on the Daily Drilling Report.

NOTE: 4 Break circulation at a minimum every 25 stands when TIH.

NOTE: 5 Monitor flow and cuttings characteristics across the shakers to ensure hole integrity and cleaning. Report total volume of cuttings discharged daily in the Mud Report based on gauge hole.

NOTE: 6 Continue drilling with the blocks strung with 12 lines (1-3/4" EEIPS IWRC), depending on current conditions. Drilling guidelines for maximum allowable weight indicator readings are as follows, including the block weights (180 kips for the blocks):

	Routine Operations	**Stuck Pipe-Controlled Pull**
No. of Lines	4.0 Safety Factor	3.0 Safety Factor
12 Lines	793 kips	1057 kips

These are calculated for 1-3/4" 6 x 26 IWRC EEIPS drill line with 338 kips strength. Contact the Esso Drilling Operations Superintendent before pulling in excess of 657 kips (85% of drill pipe tensile capacity). The 5" S drill pipe will be the weak link in the string, with a tensile capacity for premium pipe of 561 kips (741 kips on the weight indicator). The derrick is rated for 1,446 kips (12 lines) and the crown block and travelling block are rated for 1,500 kips (680 mt).

13. At the dry hole TD, pump a 100-bbl hi-vis sweep. Circulate bottoms up at the maximum possible rate. Make a wiper trip to the 9-5/8" shoe. RIH to TD and circulate the hole until the shakers are clean or 2.0 times bottoms up, whichever occurs last. POOH to log.
14. Run SDI gyro and gamma-ray on Schlumberger Electricline, reporting the directional survey at 5m intervals.
15. Log the well according to ATTACHMENT 2 West Whiptail-1 Geological Program.

11.0 P&A SUPPLEMENTAL PROGRAM

A Supplemental Program will be issued to P&A the well.

12.0 ATTACHMENTS

ATTACHMENT 1. Location Map

ATTACHMENT 2. West Whiptail-1 Geological Program

ATTACHMENT 3. Wellbore Sketch

ATTACHMENT 4. Well Progress Curve - West Whiptail-1 Dry Hole Scenario

ATTACHMENT 5. Drilling Reporting System Well Setup Data

ATTACHMENT 6. West Whiptail-1 Predicted Stratigraphy

ATTACHMENT 7. Mulloway-1 Stick Chart

ATTACHMENT 8. Whiptail-1A Stick Chart

ATTACHMENT 9. Baroid Drilling Fluid Program - West Whiptail-1

ATTACHMENT 10. West Whiptail-1 - 30" Conductor Casing and Cementing Requirements

ATTACHMENT 11. West Whiptail-1 - 9-5/8" Surface Casing and Cementing Requirements

ATTACHMENT 12. Halliburton West Whiptail-1 Cementing Program

ATTACHMENT 13. Davis-Lynch Inner String Float Shoe , Latch-in Plug and Latch-in Adapter

ATTACHMENT 14. Cameron 18-3/4" 5000 psi Compact Wellhead

13.0 WEST WHIPTAIL-1 DRILLING PROGRAM DISTRIBUTION LIST

Organisation	Attention	Address	Check
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BHP Billiton Petroleum (Vic) Pty Ltd (including copy of DPI letter)	Mr Mel Osborne Geoscience Section Leader	Bass Strait Asset Level 28, 600 Bourke Street MELBOURNE VIC 3000	
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Cameron Australasia Pty Ltd Wellhead & Wellhead Services	Mr Paul Chipperfield	Lot 1, Ballarat Rd, 1 Glencairn Ave DEER PARK VIC 3021	
Dowell Schlumberger (Western) SA Cementing & Pumping Services	Mr Leen Vlot	Level 5, 256 St George's Terrace PERTH, WA 6000	
Geoservices Mud Logging Services	Mr Jan Pieniazek	Hyatt Centre, Suite 6, 23 Plain St EAST PERTH, WA 6004	
Halliburton Australia Pty. Ltd. Cement design and materials	Mr Jim Collins	90 Talinga Road CHELTENHAM VIC 3192	
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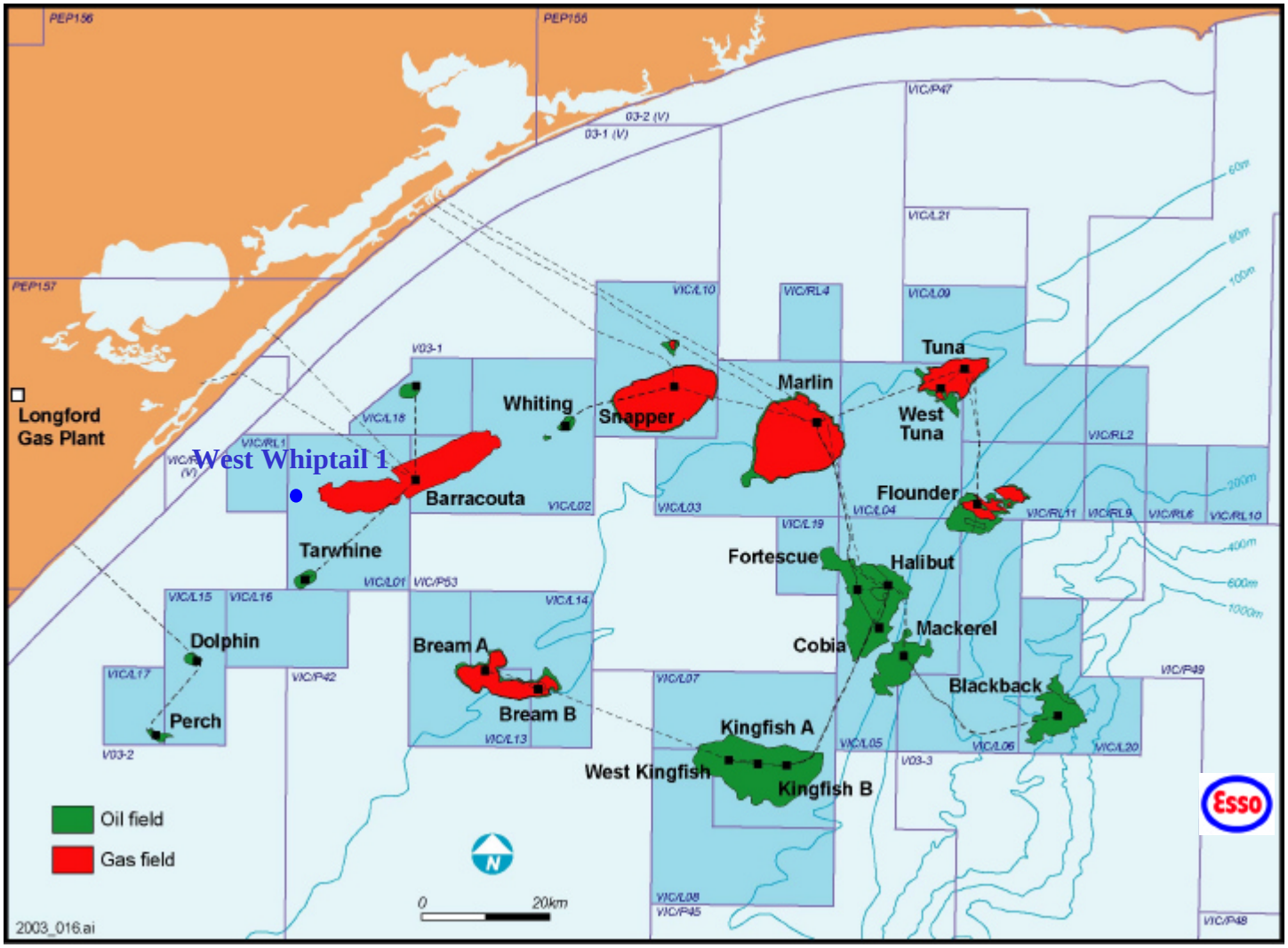
Scientific Drilling International Directional Services	Mr Simon Garantini	Unit 14/17 Stephenson Street SALE VIC 3850	
Tidewater Marine Towing and Support Vessels	Mr Ian Del Rosso	1st Floor Sheraton Court 207 Adelaide Tce, PERTH, WA 6000	
Weatherford Australia Casing Running & Drill Tools	Mr Bill Winter	P.O. Box 1154 SALE VIC. 3850	
BBMT Materials Supervisors	Mr Col Walker & Ms Sally McKenzie	BBMT WELSHPOOL VIC	
EAPL Library **Note: 2 copies incld EMDC Op Man**	Librarian	Esso House 3rd floor	
Field Drilling Manager	Daniel L. Whiteman	Esso House Room 6.16	
Operations Superintendent (including EMDC Op. Manual)	Frank Kratzer	Esso House Room 6.23	
Engineering Manager	Colin Johancsik	Esso House Room 6.18	
Program Original Copy	West Whiptail-1 Well File		
Drilling Engineer	Chris Meakin	Esso House Room 6.19	
Drilling Engineer	Shane Harris	Esso House Room 6.20	
Gippsland Production Geoscience Manager	Wayne Mudge	Esso House Room 5.23	
Geoscience Team Leader (including EMDC Op. Manual)	David Berman	Esso House Room 5.06	
Formation Evaluation	Kumar Kuttan	Esso House Room 4.86	
Operations Geologist	Andrew Hodgson	Esso House Room 4.84	

WEST WHIPTAIL-1 LOCATION MAP ATTACHMENT 1



ATTACHMENT 2

ESSO AUSTRALIA PTY LTD

WEST WHIPTAIL-1

GEOLOGICAL PROGRAM

VIC/L1

February , 2004

ESSO AUSTRALIA PTY LTD
12 RIVERSIDE QUAY, SOUTHBANK, MELBOURNE, VIC, 3006.

CONTROLS

Approvals

	Name	Title	Signature	Date
Prepared By	A. Hodgson	Operations Geologist		10/02/04
Reviewed By	K. Kuttan	Petrophysicist		10/02/04
	D. Berman	Project Geologist		10/02/04
Approved By	W. Mudge	Project Manager Production Gippsland Geoscience		10/2/04

Registration

Document Name	West Whiptail-1 Geological Program - VIC/L1

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FIGURES

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APPENDIXES

1. West Whiptail-1 MDT Protocol
3. West Whiptail-1 PVT Protocol

1.0 WEST WHIPTAIL-1 WELL DATA SUMMARY

Well Name		:	West Whiptail-1
Location	Primary Target	:	N1.1 - N1.4
	Basin, Permit	:	Gippsland Basin, VIC/L1
	Seismic Lines	:	Northern Fields G01 3D Seismic Survey Inline-1292, Crossline-1765
	Latitude	:	38 19' 28.9" S
	Longitude	:	147 30' 17.0" E
		:	X = 544,117 m E Y = 5,758,036 m N
Target Depth		:	1399mMDRT (1360mTVDSS)
Datum	**GDA94**		
	Spheroid	:	Geodetic Reference System 1980 (GRS80) UTM Zone 55 / **AMG Zone 55** Central Meridian (CM) **147 Degrees East** False Easting 500,000.0 False Northing 10,000,000.0 Scale Factor at CM 0.9996.
	Projection	:	Map Grid of Australia 1994 (MGA94)
Working Interests		:	ESSO Australia Resources Pty Ltd (Operator) 50.0 % BHP Billiton Petroleum Victoria Pty Ltd 50.0 %
Type of Well		:	Nearfield Wildcat
Anticipated Spud Date		:	February 2004
Proposed Total Depth		:	1539mMDRT, (1500mTVDSS)
Water Depth		:	39m MSL
RT - Sea Level		:	38.6 m
Rig		:	ENSCO 102

2.0 GEOLOGICAL SUMMARY

2.1 Geological Synopsis

The proposed West Whiptail-1 location is approximately 1.6 km WSW of Whiptail-1A and 1.5 km ESE of Mulloway-1. The location is in 38 metres of water within the VIC/L1 licence area of the Gippsland Basin (Figure 1).

In early 2003 the Whiptail and Mulloway discoveries were reexamined as part of an effort to commercialise static oil and gas fields covered by the G01A 3D survey. The review concluded Whiptail Complex project economics are sensitive to estimated reserves and the key element contributing to reserves uncertainty is the relative depth of the Whiptail OWC and spill point to West Whiptail.

West Whiptail-1 is programmed to test an Intra-Latrobe Group dip closure located between the Whiptail and Mulloway discoveries. West Whiptail-1 is expected to provide data on the lateral and vertical extent of the Whiptail and Mulloway discoveries.

Figure 1: West Whiptail-1 Location Map

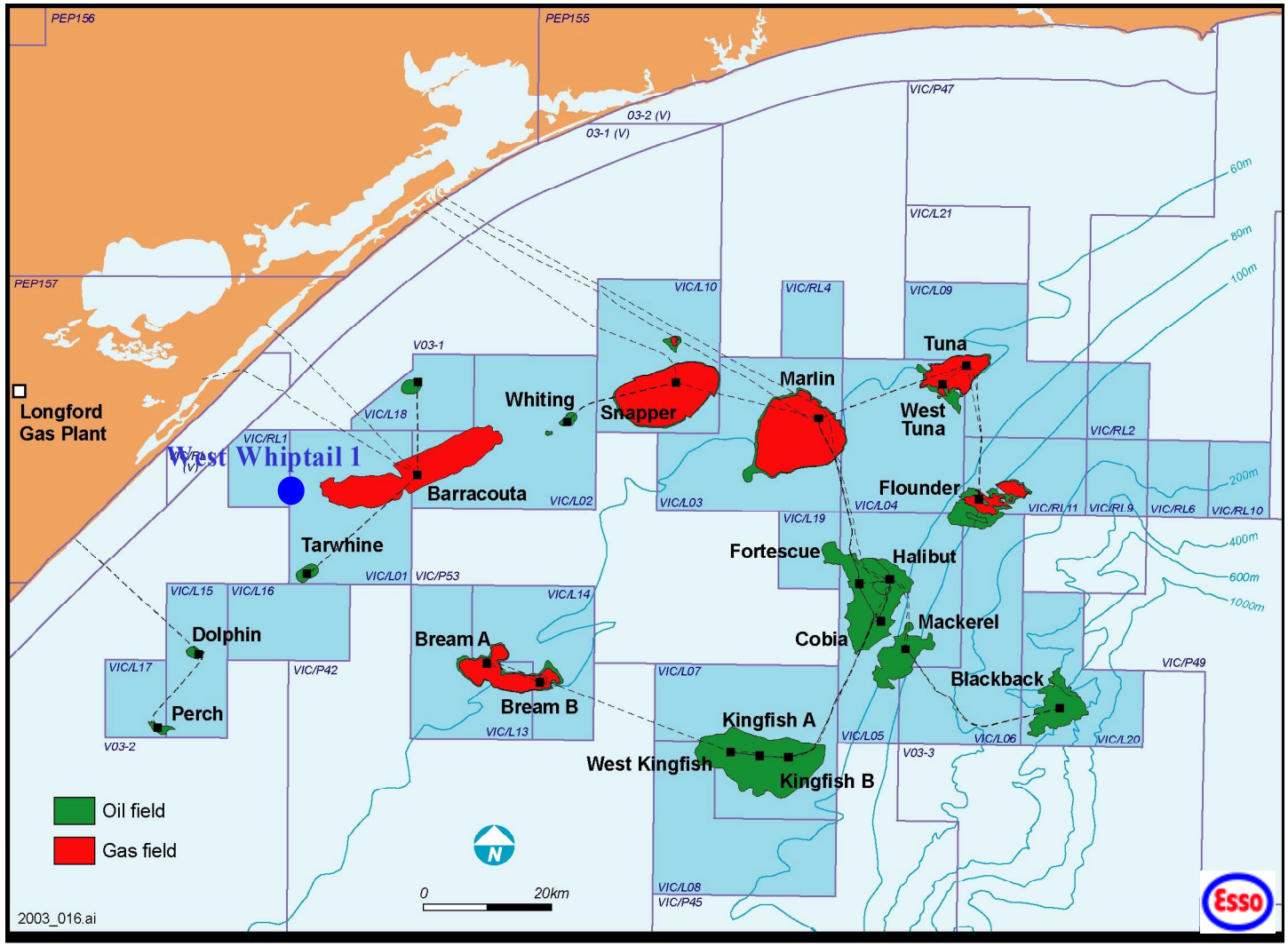
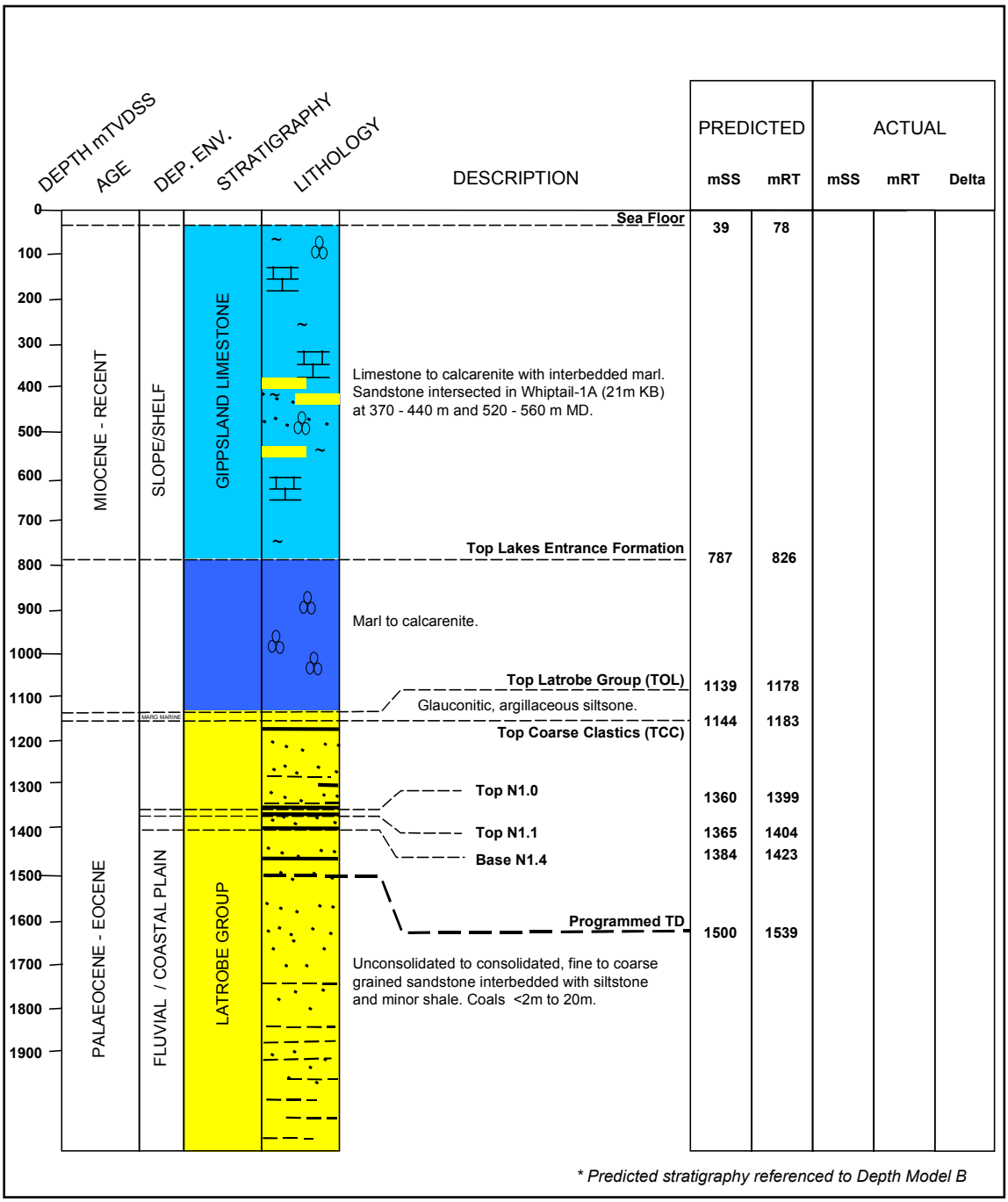


Figure 2: West Whiptail-1 Predicted Stratigraphy



2.2 Offset Wells

Table 1

Well Name	Distance & Direction	TD (TVDSS)	Max. MW	Analogous Interval	Drilled Date
Whiptail-1A	1.4km E	-2,800	10.3		1985
Mulloway-1	1.74km NW	-1,700	9.5		1989
Barrcouta-3	9.8km E	-2,932	10.9		1969
Tarwhine-1	9.0km S	-2,936	10.3		1981
Baracouta-5	14.0km E	-1,749	11.1		1985

2.3 Geological Prognosis

West Whiptail-1 will be drilled through a section equivalent to the N reservoirs at Whiptail and Mulloway to a TD of 1500mSS. West Whiptail-1 is expected to provide data on the lateral and vertical extent of the Whiptail and Mulloway discoveries. Figure 2 highlights the type section expected in West Whiptail-1. The prognosed formation tops are listed in Table 2 and the predicted well section with predicted time versus depth curve and formation evaluation program illustrated in Figure 3.

Table 2

Prognosed Formation Tops			
Formation/Marker	**Thickness (m)**	**MDRT (m)**	**TVDSS (m)**
Sea bed / Top Gippsland Limestone	748	78	-39
Top Lakes Entrance Fm	352	826	-787
Top Latrobe Group	361	1178	-1,139
TCC		1183	-1,144
Top N1.0		1399	-1,360
Top N1.1		1404	-1,365
Base N1.4		1423	-1,384
Total Depth		1539	-1500

Figure 3: West Whiptail-1 Formation Evaluation and Time Depth Curve

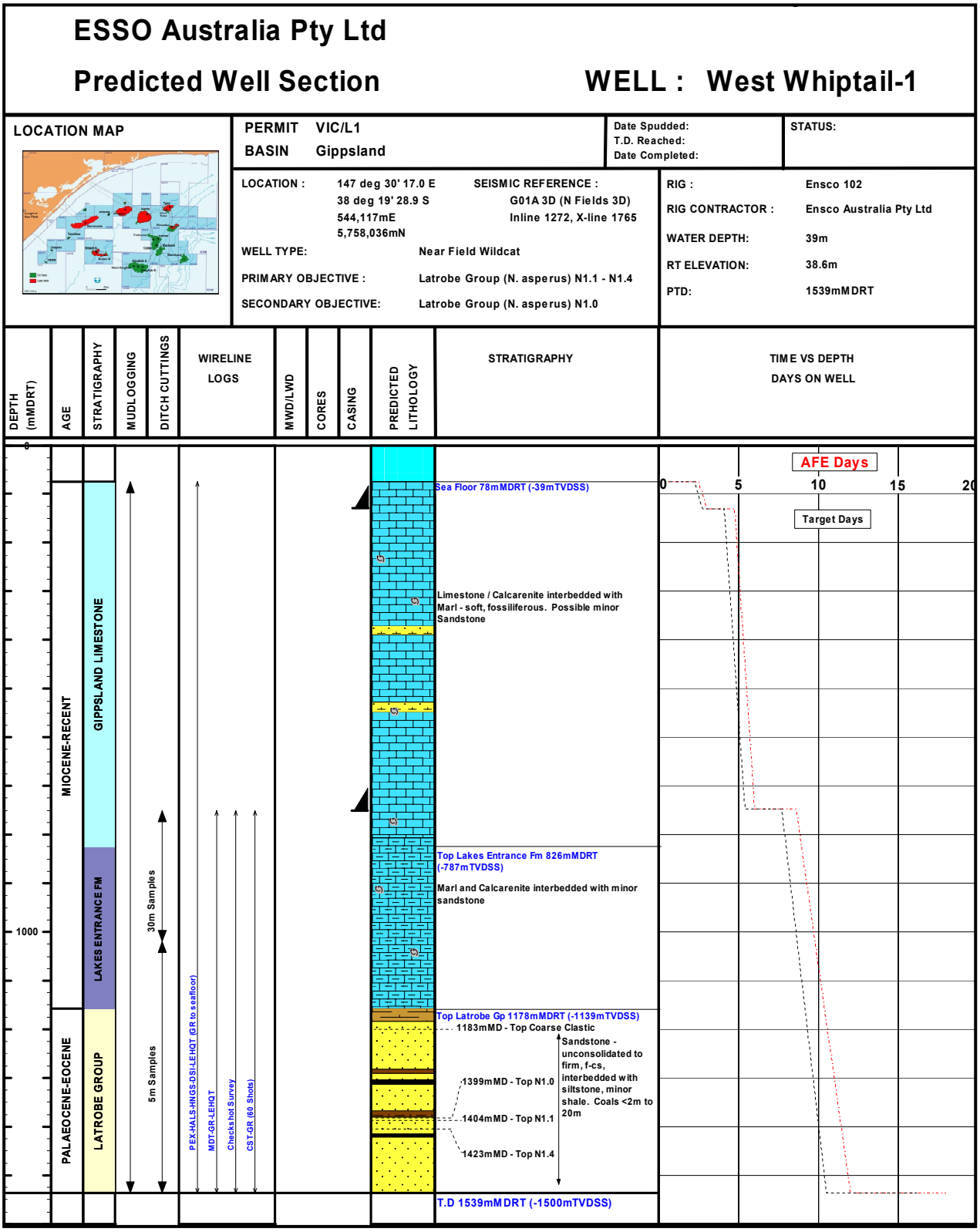


Figure 4: West Whiptail-1 Prospect Seismic Line- Inline 1292 G01A 3D

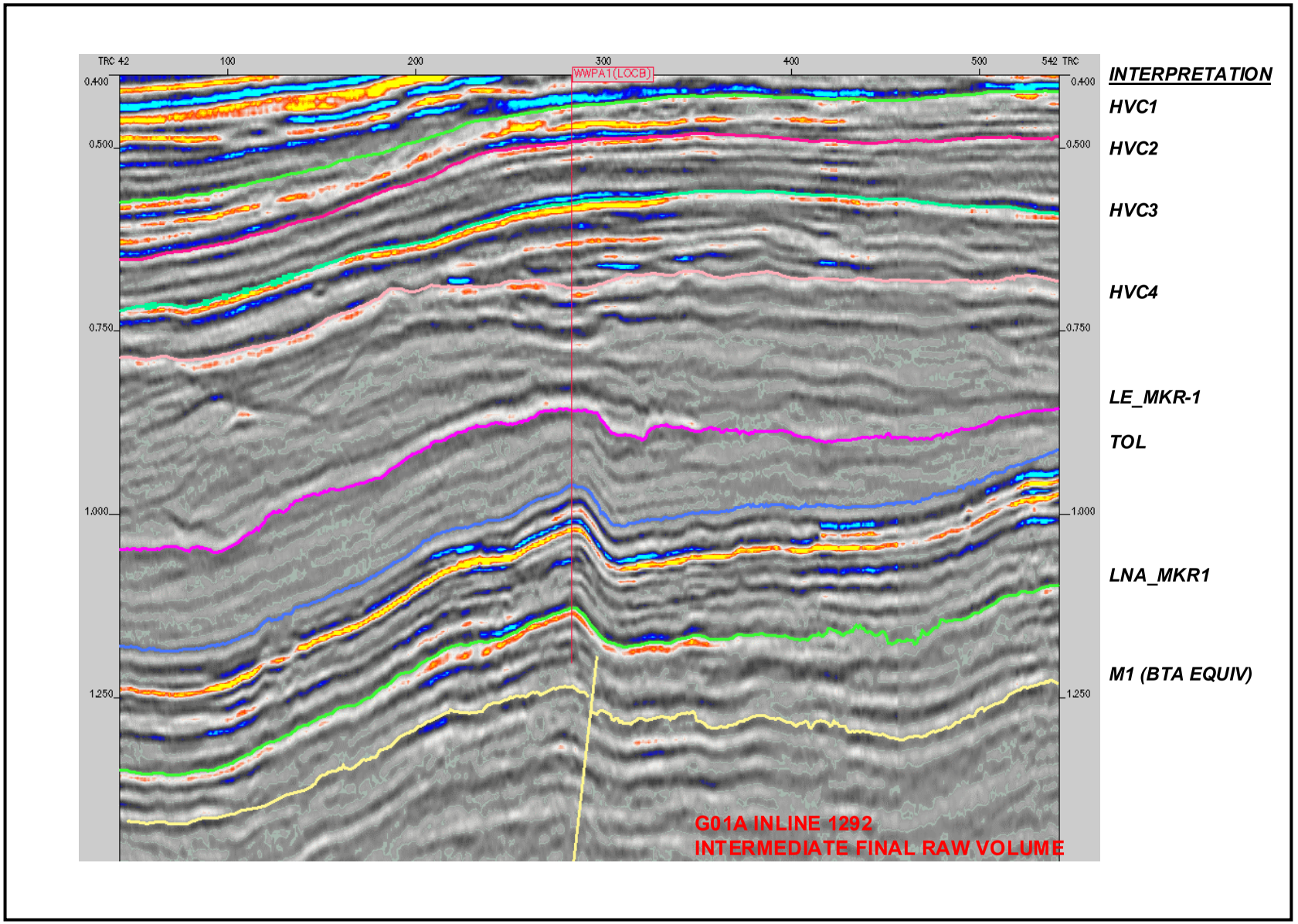


Figure 5: West Whiptail-1 Seismic Section

2.4 Stratigraphy

The predicted stratigraphy of West Whiptail-1 (Figure 2) is based on adjacent well control and regional seismic correlations. The section at West Whiptail-1 is predicted to be similar to that intersected at Whiptail-1A and Mulloway-1.

The well is expected to intersect a thick succession of limestones and marls of the Gippsland Limestone overlying the marls of the Lakes Entrance Formation. The Latrobe Group section is expected to be comprised of a high to low sinuosity meandering fluvial succession. Significant coals are anticipated to be laterally continous at the prospect scale. Although not well developed in the Whiptail-1A or Mulloway-1 wells minor dolomite cementation of sandstones in this section is observed within the adjacent Barracouta field.

The primary target reservoirs (N1.1, N1.2, N1.3 and N1.4) are expected to exhibit similar reservoir quality to that observed at Mulloway-1 and Whiptail-1A. Intra-formational seals are provided by thin, coastal plain shales, claystones and coals. These shales, claystones and coals have proven to effectively seal hydrocarbons in adjacent wells.

There is no plan to deepen the well beyond programmed TD. Whiptail-1A was drilled to a TD of 2800 mSS and intersected a high net to gross section beneath the M1 BTA equivalent, therefore the potential for effective seal development beneath programmed TD is considered low.

2.5 Reservoir

The primary target reservoirs (N1.1 - N1.4) are predicted to have been deposited in an upper delta plain environment as point bar sandstones within a meandering fluvial system. Individual sandstone bodies may represent a single channel fill or multistoried, amalgamated channel-fills. Based on local analogs individual channel fills are expected to average approximately 8-10 m in thickness, have lateral extents in the range of 100s-1500 metres and exhibit similar reservoir properties to that observed at Mulloway-1 and Whiptail-1A.

Top seal is expected to be provided by interbedded coastal plain shales, claystones and coals. These interbedded shales, claystones and coal units are proven hydrocarbon seals in adjacent wells.

2.6 Total Depth

West Whiptail-1 is predicted to penetrate the top of the N1.0 reservoir at 1360m TVDSS and the base of the N1.4 reservoir at 1384m TVDSS. To ensure adequate logging of the primary target reservoirs and the section beneath 1384mTVDSS a Total Depth of -1500m TVDSS is required

3.0 Potential Geologically Related Drilling Hazards

3.1 Bore Hole Conditions

i) Brecciated/Sheared Fault Zones

There is a possibility for small-scale (sub-seismic) faults to be encountered in the reservoir section and also in the section from -790m TVDSS to top Latrobe Group. LCM may be required although no lost circulation related to these fault zones has been encountered in offset wells.

ii) Carbon Dioxide

Adjacent well control indicates the primary target section at West Whiptail-1 is expected to have low CO_2 (<5%), with ranges in offset wells at 0-4%. There has been very low amounts of CO_2 produced from the Barracouta field from the M1 reservoir (0-0.8%). There is a small increase in the CO_2 levels below programmed TD, especially in the sub-volcanic section from adjacent well control. In the Whiting L460 reservoir CO_2 levels from gas production of 0-15% have been recorded, while CO2 levels of 7-12% were recorded in the sub-volcanic *T.longus* section from production tests at Whiting-2. In Wirrah-3 CO_2 concentration of 0-8% were recorded from RFT gas samples taken below the volcanics.

iii) Hydrocarbon Gas

Gas was not observed in either Whiptail-1A or Mulloway-1 although a gas anomaly was observed on the mudlog at the top of the Latrobe Group in Whiptail 1A. Gas columns are present throughout the shallow Latrobe Group section at Barracouta and three gas sands were intersected in Tarwhine-1 below 2300 m TVDSS. It is considered unlikely gas will be encountered at the top of or within the Latrobe Group at West Whiptail 1.

iv) Swelling Shale

The Lakes Entrance Formation is recognised as a potential problem zone for swelling shale. At the West Whiptail-1 location the Lakes Entrance Formation, measured from the base of High Velocity Channel 4 (HVC4) to TCC, is expected to be 357m thick.

v) Coal

Sloughing coals are a documented problem within the Latrobe Group in the Gippsland Basin. However no drilling problems associated with sloughing coals have been reported in nearby offset wells. Coals in adjacent wells are predominantly 2-20 m thick and similar coal thicknesses are expected at the West Whiptail-1 location.

vi) Hydrogen Sulphide Gas

H_2S was not a documented problem on exploration wells drilled in the Gippsland Basin prior to Sole-2 (2002) drilled in the NE of the Basin. Experience to date suggests new fields have very low concentrations that increase over the duration of production life of a field, commonly in response to coning of water. H_2S levels at Barracouta range from 0-18

ppm recorded from gas production (*N.asperus* section) in 1992, yet H_2S was not measured in the exploration or production wells. At West Whiptail-1 H_2S levels are expected to be in the range of 0-20 ppm for the entire well. Contingent on economic success at West Whiptail-1, facilities fabrication will begin prior to development well drilling, therefore H_2S will be measured in West Whiptail-1 to the extent necessary and appropriate to support materials selection.

3.2 Over Pressure

i) Abnormal Pressures

Latrobe Group: Normally pressured systems can be expected from TOL to TD, ie. ~ 1.4 psi/m (~8.5-8.6 ppg MWE). It is expected that West Whiptail will be normally pressured throughout the Latrobe Group section.

ii) Sea Floor Hydrocarbon Seeps

There is no evidence of sea-floor hydrocarbon seeps.

iii) Flowing Formation

Surrounding well data indicates no instances of formations flowing water and on this basis it is not anticipated to occur at the West Whiptail-1 location.

iv) Shallow Production

Shallow production not present from nearby Barracouta and Whiting Field.

v) Shallow Gas

No shallow gas zones have been identified during drilling of the adjacent wells (Barracouta, Whiting and Tarwhine Fields, Mulloway-1 or Whiptail-1A). Total gas units recorded above TOL are in general low. In Whiting-2 total gas ranged from 5-15 units (background 5 units) above the TOL. There is no demonstrated link between seismic amplitudes and shallow gas in the Barracouta/Whiting area.

3.3 Under Pressure

i) Drawn Down Reservoir

Gas production from the N1 reservoir at Barracouta may cause drawn down reservoirs if the reservoir is continuous across to the West Whiptail 1 location. The N1 reservoir is 120psi drawn down at Barracouta while the deeper M1 reservoir has been drawn down 90psi. Approximately 5 psi drawdown over 3.5 years was observed between the drilling of Whiptail 1A and Mulloway 1. The N reservoirs at Mulloway exhibited approximately 40 - 45 psi drawdown in 1989 relative to the original basin gradient and by extrapolation a further 20 psi drawdown is considered likely.

ii) Lost Returns

Lost return intervals were recorded from Barracouta-4 at -874mTVDss and -1210mTVDSS within a Miocene sandstone section. Based on cuttings descriptions from Whiptail-1A and seismic correlation a porous and permeable section is expected to be variably present at West Whiptail-1 between the depths of 350 - 530mTVDSS.

3.4 Formation Temperatures

The predicted static bottom hole temperature at this location is approximately 71 deg C.

4.0 EVALUATION PROGRAM

4.1 Mudlogging

Geoservices to provide full mudlogging services from spud. Sampling will commence after first returns after setting the 340mm (9 5/8") casing and will continue to T.D. Hardcopies and digital copies (.PDF format) of the mudlog, drilling data log, pressure log and gas ratio log are required on a **daily basis updated to 05:00hrs AEST** for the wellsite geologist to send to the office. Further updates are to be supplied when required.

A finalised Mudlog (scale 1/500), Formation Pressure log (1/1000), Gas Ratio Log (1:500) and Drilling Data log (1/1000) in hard copy paper form are to be supplied at the end of the well to the wellsite geologist and forwarded to the Operations Geologist as a check print prior to finalisation of the End of Well Report.

4.1.1 Data Engineering Services

Data engineering services will include the RESERVAL gas detection system and monitoring of drilling parameters as follows:

Gas Detection

- FID total gas
- FID chromatographic analysis
- Report Background gas, Circulating gas, Connection gas and Trip gas
- Continuous H_2S detection - ditch gas line, active mud pits and shakers
- Report any H_2S associated with the above
- Continuous CO2 detection
- Draeger portable detector for H_2S, CO_2 and SO_2

Monitoring Drilling Parameters

- Rate of penetration
- Depth
- Weight on bit
- Rotary and bit RPM
- Mud pit levels
- Pump strokes
- Calculation of lag time
- Formation pressure analysis and prediction
- Drill string torque and drag
- Casing shut in pressure
- Standpipe pressure
- Mud density (in/out)
- Mud temperature (in/out)
- Mud conductivity (in/out)
- Mud flow (in/out)

4.1.2 Formation Sampling and Analysis

Formation sampling requirements are outlined in Table 3.

The sampling interval will relate to rate of penetration and importance of the interval in question. All cutting samples will be described and monitored for hydrocarbon fluorescence,

Interval (mMDRT)	Hole Size	Formation	Sample Interval *
9 5/8" Shoe – 1040	216mm (8 1/2")	Gipps Limestone	30m
1040 - TD	216mm (8 1/2")	Gipps Lst - Latrobe Gp.	5m

* To be increased or decreased at the discretion of the Esso Wellsite Geologist, and subject to Drilling rate and returns.

Table 3

Formation and Mud Samples				
Type	**No. of Sets**	**Quantity**	**Set No**	**Destination**
Lightly washed dried and bagged cuttings (Palynology).	1	200gm	A	EAPL
Type	**No. of Sets**	**Quantity**	**Set No**	**Destination**
Washed and dried and bagged Cuttings.	1	100gm	B	EAPL
	1	100gm	C	BHPB
	1	100gm	D	DPI
	1	100gm	G	GA
Type	**No. of Sets**	**Quantity**		**Destination**
Mud Samples (TD)	1	1 litre		EAPL*

* Hold till the end of well before decision to transport or dispose.

All samples are to be boxed and labelled and dispatched as directed by the Wellsite Geologist. All sample suites are to be accompanied by a full manifest located (separately) externally in plastic on the first box of the suite. An additional copy should be included inside the first box. *(See **Section 8.3** for distribution)*

4.1.3 Other Mudlogging Services

Mudlogging company will supply:

- both plastic and glass screw-top bottles,
- 4 litre cans for oil samples.
- fluid hydrometers and thermometers for oil API determination.

4.2 MWD / LWD Logging Services

No MWD / LWD services will be run in West Whiptail-1.

4.3 Wireline Logging Services

No wireline logging is planned across the 311mm (12 1/4") hole section, except for gamma ray and DSI through 244mm (9 5/8") casing.

The following wireline logging program is planned across the 216mm (8 1/2") hole section at TD. (Table 4 and Figure 3.) The order of logging runs may change based on drilling results and a finalised program will be issued to the wellsite at TD.

Table 4.

Run No.	Wireline Logs	Comments
1	PEX-HALS-HNGS-DSI-LEHQT	GR and DSI from TD to seafloor. PEX-HNGS to 80m above TOL. HALS to 9 5/8" shoe
2	MDT-GR-LEHQT	Pressure seats and samples as required.
3	Checkshot Survey	Shot data to be acquired at 50m spacings from TD to seafloor. If signal lost then increase to 100m levels to sea floor.
4*	CST_GR	60 shots

* Contingent.

The order of logging runs may change based on drilling results. A final program/protocol will be issued to the wellsite at TD. Schlumberger will supply complete back up for all tools.

Additional Comments

- A continuous sonic log (DSI) will be recorded from TD to seafloor or until the last good signal is lost. This log is to be recorded in P&S and Upper Dipole mode in open hole and in compressional mode only inside casing.

- Samples may be as required. Equipment to acquire fluid/gas samples is to be available on the rig including Pump Out module, OFA, MRMS and 1 gallon dump chambers. All modules, including the MRMS and chambers will have backup tools available on the rig. A detailed depth and sampling program will be prepared by Esso in the office and sent to the wellsite after receipt of the PEX log. The MDT protocol is contained in Appendix 1.

Note: Schlumberger to record and report to the Company Drilling Supervisor all pump outs into the well bore prior to the end of the MDT program.

- A checkshot survey with 50m shot spacings from TD will be acquired.
- The wireline product distribution summary is contained in Section 8.

4.4 Onsite H2S Analysis

Onsite detection and sampling for H2S will be required. Detection equipment for Draeger and Wet Chemistry analysis will be provided by Petrolab. Transfer equipment for lab PVT analysis will also be required and supplied by Petrolab.

4.5 Coring

4.5.1 Conventional Cores

No conventional cores are planned in West Whiptail-1.

4.5.2 Sidewall Cores (CST's)

No sidewall cores are planned in West Whiptail-1.

4.6 Well Testing Services

No Drill Stem Test is planned.

5.0 DATA DISTRIBUTION SUMMARY

5.1 Distribution Summary

Well data (daily reports, logs etc) will be transmitted from the rig to the Esso office in Melbourne via the Esso LAN by the Esso wellsite geologist. A complete set of field prints of all logs and sidewall cores will be hand carried to Esso House by the wellsite geologist or the Wireline engineer, where possible at the conclusion of the well.

5.2 Wireline Data Distribution

Table 5 Field Data via Wellsite Geologist direct to Esso Office

Log	Format	Media	Interval	Order of Importance
Run 1:				
PEX-HALS	.PDS (1:200)	Esso LAN	TD to 13 3/8" shoe	A.S.A.P
	.PDF (1:200)	Esso LAN	TD to 13 3/8" shoe	A.S.A.P
	FAX (1:200)	Cont. Fax	TD to 13 3/8" shoe	If required*
	LAS ASCII	Esso LAN	TD to 13 3/8" shoe	A.S.A.P**
	Rmf, Rmc, Rm and BHT	Esso LAN		A.S.A.P
SONIC LOG	.PDS (1:200)	Esso LAN	TD to 13 3/8" shoe	A.S.A.P
	.PDF (1:200)	Esso LAN	TD to 13 3/8" shoe	A.S.A.P
Run 2:				
MDT	WSG Field Spreadsheet	Esso LAN	Updated and forwarded to Esso Ops as required	A.S.A.P
	Opened chamber fluid/gas descriptions	Esso LAN	A/A	A.S.A.P
Run3:				
Checkshot	TWT ASCII	Esso LAN	Final survey	Upon completion
Field Prints				
All logs	One set of prints	Paper	Full suite	At the end of well

* Fax logs will only be required in the event that the Esso LAN is down or at the request of the Operations Geologist

** Field ASCII LAS file should contain all basic optical curves over the entire open hole logged interval.

After return of corrected QC prints the following final logs will be generated in Schlumberger's Sale base and forwarded to Esso in Melbourne, marked Attention: Andrew Hodgson, Operations Geologist.

Table 6 Final Wireline Data Distribution List

Distribution	Prints*	Films*	CD ROM**
Esso, Melbourne	3	1	1
BHPB, Melbourne	-	-	1
DPI, Melbourne	1	-	1
GA. Canberra	-		1
Total	**4**	**1**	**4**

* Prints
Paper and film prints (1:200 and 1:500 scale, Hi and Low Res where appropriate) for each logging suite.

** Digital Data On CD
All non proprietary log data to be provided in DLIS format as separate, high and low resolution files. All .PDS and PDF image files.

5.3 Mudlog Cuttings Sample Distribution

Table 7 Final Cuttings Sample Distribution List

Distribution	Lightly Washed & Air Dried	Washed / Dried Cuttings
Esso, Melbourne	1 (Set A)	1 (Set B)
BHPB, Melbourne		1 (Set C)
DPI, Melbourne		1 (Set F)
GA, Canberra		1 (Set G)
Total	**1**	**4**

At the conclusion of drilling all cuttings will be forwarded directly to Kestrel marked *Attention: Diana Giodano*. All boxed sets should be clearly marked for their final destination for redistribution from Kestrel.

5.4 Mudlog Data Distribution

At the conclusion of the well a QC copy of the mudlogging end of well report (completed up to the point of the WSG departure) and the mudlog, drilling log, gas log and pressure log should be handed to the wellsite geologist to hand carry to the Esso office. A finalised QC copy of the end of well report should be forwarded to Esso, care of Andrew Hodgson, Operations Geologist.

After the QC copies have been returned to Geoservices the following final products should be produced and forwarded to Esso in Melbourne, marked Attention: Andrew Hodgson, Operations Geologist.

Final data distribution will be as follows:

Distribution	EOWR / Paper Logs and CD*	Sepia Logs
Esso, Melbourne	3	1
BHPB, Melbourne	1	-
DPI, Melbourne	1	-
GA, Canberra	1	-
Total	6	1

*CD's containing digital versions of the final well report, logs (.PDF or MS Word files) and ASCII files of the complete recorded drilling data for the well.

6.0 Log Formats

The standard wireline formats are contained within the Esso Wireline Logging Guidelines document.

6.0 CONTACTS

6.1 Esso Australia Pty Ltd

Esso Australia Pty Ltd
12 Riverside Quay, Southbank, MELBOURNE, VICTORIA, 3006
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6.2 Partners and Government Bodies

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Core and Cuttings Samples
DPI Core Sample Library
South Rd, Werribee
Off Sneydes Rd
Melway Ref: P 206, E8.
Call first Dave Murfitt - DPI: (03) 9742 8688

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SCHLUMBERGER
Location Manager - ROBERT TWIGG
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E-mail: rtwigg@sale.oilfield.slb.com

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E-mail: adelaide@petrolab.net

KESTREL CORE STORE (Cuttings)
Kestral Information Management Pty Ltd
596-600 Somerville Rd, Sunshine Vic 3020
Core/Archive Supervisor - Diana Giodano
Telephone: (03) 03 9311-0391

APPENDIX 1: WEST WHIPTAIL-1 MDT PROGRAM PROTOCOL (TD +/-1537mMD)

Objectives:

Sufficient quality pressure tests and samples are required to conclusively type fluids and determine fluid contacts in the West Whiptail-1 well

Pressure Testing:

- In hydrocarbon bearing intervals, sufficient pressure data will be collected so that hydrocarbon gradients can be determined (a minimum of 3 pressure readings will be required in most cases to confirm the pressure gradient). Similarly, in water bearing intervals, sufficient pressure data are to be obtained so that water gradients can be clearly defined. They should include pressure data from above and below any hydrocarbon bearing zones. Repeat measurements may be carried out as required to achieve conclusive data on pressure gradients.

- The base plan is to obtain pressures and samples with one trip of the MDT. Pressure data is to be obtained while logging down before any samples are taken.

- Time spent on individual MDT pressure points will be left up to the discretion of the wellsite geologist, however an endeavour should be made to take no more than 5 minutes in each case.

- The wellsite geologist will relay pressure and sample data to the petrophysicist in the Esso office as points are taken.

Hydrocarbon Sampling:

The number and location of MRMS samples will be confirmed after evaluation of the open-hole logs. A 1 gallon dump chamber may be used to collect a non PVT quality sample which will be opened at surface.

Note: Schlumberger are to record and report to the Company drilling supervisor all pump outs into the well bore prior to the end of the MDT program.

Execution of Plan

After receipt of logs (resistivity-density-neutron), a team (office team) consisting of the petrophysicist, project geologist and reservoir engineer will select pressure and potential sample points. The program will be communicated to the wellsite geologist by the Operations Geologist. The program will be modified as appropriate depending on the results of the pressure data. All data from the rig will be communicated to the office team via the Operations Geologist or Petrophysicist. Except for any major deviation to the program the **running of the MDT program will be managed by the Petrophysicist.**

Authority Levels:

Pressure Testing	**Action Authorised By**
Point Selection (including repeats)	Petrophysicist, Reservoir Engineer & Project Geologist
Program Abandonment (without achieving objectives)	Gippsland Project Manager
Wiper Trip	Drilling Supervisor
Test duration (if significant risk of differential sticking)	Deputy Production Manager with Drilling Superintendent endorsement
Hydrocarbon Sampling	
Point Selection	Petrophysicist, Reservoir Engineer & Project Geologist
Repeat run to satisfy ATD objectives	Petrophysicist, Reservoir Engineer & Project Geologist
Program abandonment (without achieving objectives)	Gippsland Project Manager
Wiper Trip	Drilling Supervisor
Test duration (if significant risk of differential sticking	Deputy Production Manager with Drilling Superintendent endorsement

APPENDIX 2: WEST WHIPTAIL-1 PVT PROTOCOL (Petrolab)

PVT analysis of the West Whiptail-1 appraisal well subsurface crude sample is critical for the understanding of the fluid distribution of the greater Whiptail-Mulloway complex. Key PVT parameters will also affect ultimate recovery efficiency for the N-1 reservoirs, impact facility design, and influence materials selection. In order to progress the Whiptail-Mulloway development to Gate 2 after the well results are received, key reservoir fluid parameters will be needed to make informed decisions. This document describes the proposed PVT analyses that should be performed as soon as the subsurface samples are obtained.

Samples should be obtained from at least two different sand units: the poorer quality N1.0 unit (Unit A) at the top of the reservoir, and the good quality N1.2 (Unit C) at the base of the reservoir. Based on samples taken from both the Whiptail-1A exploration well and the Mulloway-1 exploration well, crude characteristics may be different in each of these strata. In addition, differences were observed in the viscosity and density of the Whiptail-1A sample compared to the Mulloway-1 sample. Therefore, the characteristics of the West Whiptail-1 crude will be key in understanding reservoir distribution and flow properties.

The final decision on zones to be sampled and sent to the lab will be determined by the project geologist, reservoir engineer, and petrophysicist after the well has reached TD and initial well logs received.

The following table shows the estimated reservoir conditions at the proposed sample depths.

Estimated Sampling Conditions

Sample	MDT (Unit A)	MDT (Unit C)
Sampling Depth (mTVDSS)	1360	1370
Reservoir Pressure (psia) (est)	1955	1965
Reservoir Temperature (^{o}C) (est)	60	63
Fluid	Crude	Crude
Crude API (est)	42	42
Crude GOR (scf/stb) (est)	25	25

In addition to the standard suite of PVT analyses (crude composition, constant mass expansion, and separator tests,) the following analyses should also be conducted on the samples:

Extension of composition fractions to C12+ - both Whiptail and Mulloway crudes have very low GORs and have a high percentage of heavy fractions. The distribution of these heavy ends may provide additional information regarding the expected behaviour of the crudes.

Fingerprint analysis of crude - the N1.0 unit in Mulloway-1 and the Whiptail-1A crude chromatography signature indicates an unbiodegraded oil, whereas the N1.2 unit in Mulloway-1 shows a biodegraded crude. Fingerprinting of the West Whiptail-1 crude will aid in the stratigraphic correlation of the various units.

Pour point, flash point, & wax content - problems were encountered when viscosity measurements were made for the Whiptail-1A crude. The crude had a relatively high pour

point (50°F) and the stainless steel ball in the rolling ball viscosimeter apparatus would cease to flow at these temperatures. Wax content was determined to be between 2 - 4%. Similar measurements of pour point, flash point, and wax content will be required for facilities design.

Oil viscosity - repeatability of the viscosity measurements is vital to explain the discrepancy in the Whiptail-1A and Mulloway-1 measurements. Confirmation of the "correct" viscosity will enable proper modeling of the fluid flow in the reservoir and result in better recovery efficiency estimations.

Pending a preliminary assessment of the viscosity and density measurements, the following tests may also be required.

PONA distribution & asphaltene content analysis - the heavier (30°API) Mulloway-1 crude had a lower viscosity than the (42°API) Whiptail-1A crude. A possible explanation for this may be the existence of aromatics or asphaltenes in the crude that increases the overall density but decreases the crude viscosity. Understanding the Paraffin Olefine Naphthene Aromatic (PONA) distribution may provide important information regarding crude composition and behaviour. These analyses can also be used to identify changes in properties when Whiptail crude is mixed with other hydrocarbon streams.

Special Requirements

Based on offset wells, Whiptail-1A and Mulloway-1, and crude samples from the Barracouta field, the oil at West Whiptail is expected to be highly undersaturated with a bubble point in the region of 70 - 150 psi. Instead of a multi-stage differential liberation, a single-stage flash from bubble point to stock tank is recommended.

Also, samples not used for the PVT analysis must be retained and properly stored in case the need for additional tests arises. Although this has been specified in the past, there have been cases where fluid samples could not be located.

Recommended Analysis for West Whiptail-1 Appraisal Well Subsurface Crude Sample

Sample	Items From Analysis Program and Proposed Sequence
MDT (N-1 Unit A)	1, 2, 3, (4, 5)*
MDT (N-1 Unit C)	1, 2, 3, (4, 5)*

* Items in parentheses indicate analyses that are contingent on prior analysis

Standard Analysis

Item	Petrolab Analysis Code	Description
1	**O-7**	**Complete Bottomhole Fluid Analysis**
	L-1	Validity Check, Room Temperature Bubble Point
	L-4, L-6	Molar Composition of C1 through C12+ including N_2, CO_2, and H_2S, Molecular Weight and Density of C12+ fraction ▪ Report the above properties for all fractions
	G-2, G-3	Molar composition of C1 through C12+ including N_2, CO_2 and H_2S , GPM Content, Heating Value, Wobbe Index, Specific Gravity, Molecular Weight and Pseudo-Critical properties ▪ Report the above properties for all fractions
	O-1	Pressure-Volume relations at reservoir temperature (CME), which includes measurement of Bubble Point Pressure, Relative Volume, Compressibility, and Thermal Expansion factors of oil above the Bubble Point and Y-function curve
	O-3	Viscosity Pressure Relations of Reservoir Oil at Reservoir Temperature ▪ Ensure repeatability of measurements
	O-4	Separator test, includes measurement of Formation Volume Factor and Shrinkage of oil, Gravities of produced oil and gas, and separator and stock tank Gas Oil Ratios Conduct separator tests at 50psia and 100psia (?)
	O-5	"Hot" flash from saturation pressure to stock tank conditions to replace differential liberation analysis

Special Requirements:

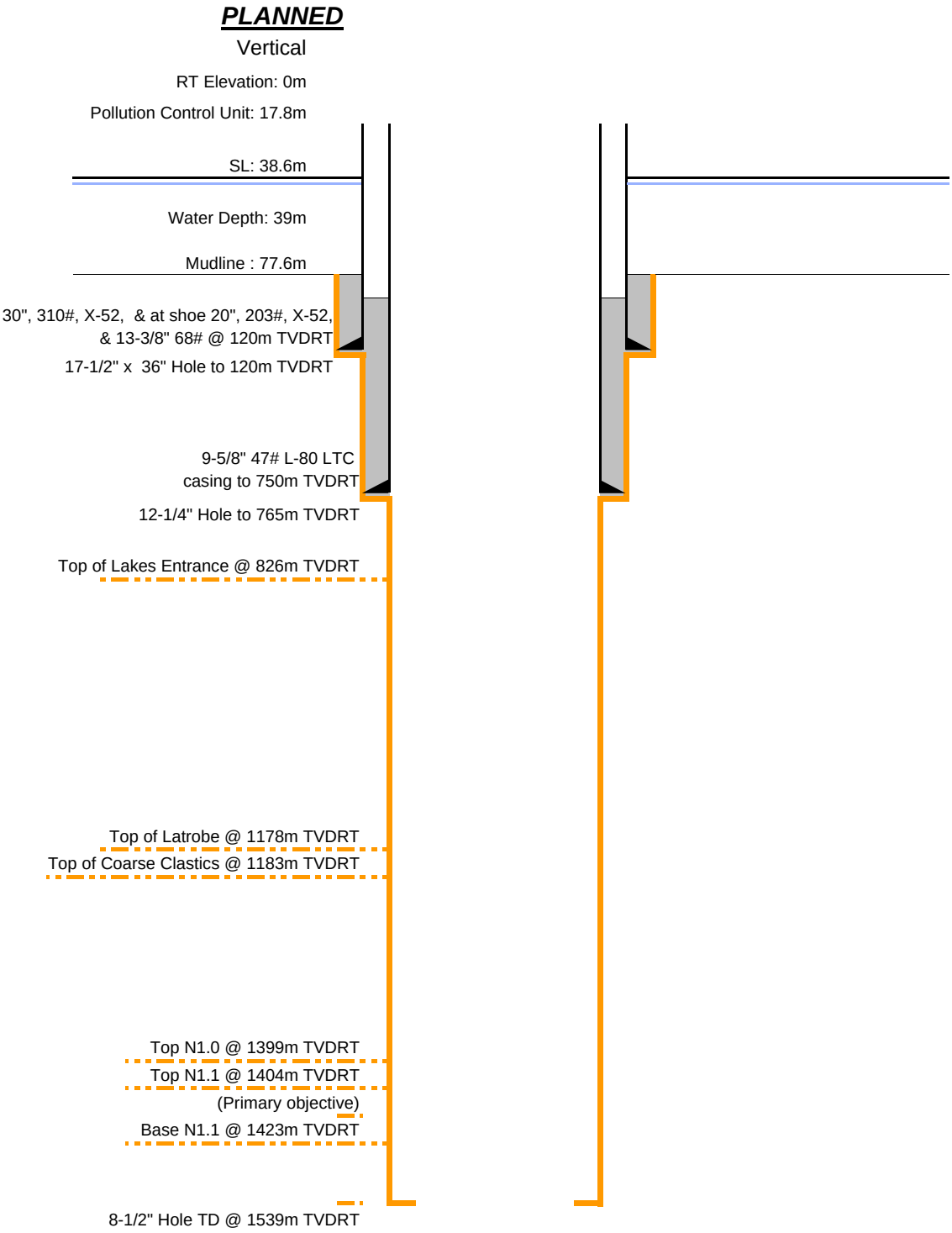
Item	Petrolab Analysis Code	Additional Requirement Description
2	**T-4**	**Fingerprint analysis / Analysis of Stable Petroleum Liquids by Gas chromatography**
3		**Stabilised Crude Analysis**
	T-9	Wax content
	T-13	Pour point
	T-14	Flash point

Contingencies:

Item	Petrolab Analysis Code	Additional Requirement Description
4	**T-6**	**Paraffin, Olefine, Naphthene, Aromatic (PONA) distribution analysis**
5	**T-10**	**Asphaltene content**

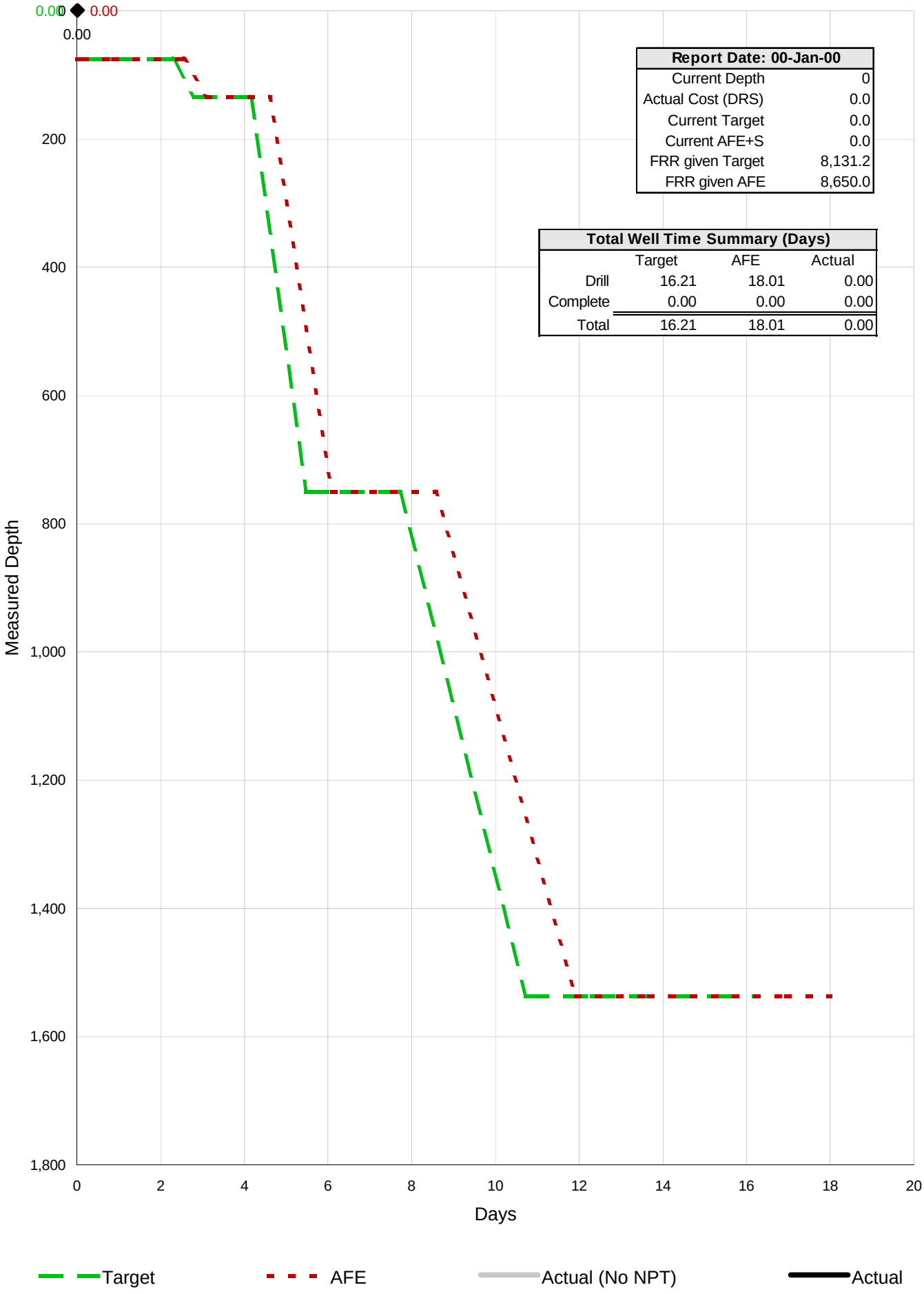
ATTACHMENT 3

WEST WHIPTAIL-1 WELLBORE SKETCH



WEST WHIPTAIL-1
Days vs. Depth

ATTACHMENT 4



Report Date: 00-Jan-00	
Current Depth	0
Actual Cost (DRS)	0.0
Current Target	0.0
Current AFE+S	0.0
FRR given Target	8,131.2
FRR given AFE	8,650.0

Total Well Time Summary (Days)			
	Target	AFE	Actual
Drill	16.21	18.01	0.00
Complete	0.00	0.00	0.00
Total	16.21	18.01	0.00

DRS Well Setup Information Form

ATTACHMENT 5

TIGHT HOLE? - No _X_ , Yes __

DRS Well ID	ww1	**Quadrant**	NOT APPLICABLE
Office Code	AU	**Block**	NOT APPLICABLE
Location Code	AUSTRALIA-SE	**Slot**	NOT APPLICABLE
Sub-Code		**License**	VIC/L1
Country	AUSTRALIA	**U.S. Only**	
Province	VICTORIA	**PRISM ID**	NOT APPLICABLE
Field	GIPPSLAND BASIN	**OCSG Number**	NOT APPLICABLE
Unit/Lease	VIC/L1	**MMS District**	NOT APPLICABLE
Platform	NOT APPLICABLE	**API State Code**	NOT APPLICABLE
Spud Date/Time	18/03/2004 12:00	**API County Code**	NOT APPLICABLE
		API Well Code	NOT APPLICABLE

Water Depth	38 m	**Surface Location**	UTM/MGA94 Zone 55
Ground Elevation	NOT APPLICABLE	**North (+)/South (-)**	5,758,036m N
Bradenhead Height	14.82 m	**East (+)/West(-)**	544,117m E
Rotary Table Height	38.63 m	**Vertical Section Correction**	0 m
Riser Used? (Y/N)	Y	**U.S. Only**	
Latitude (DMS)	38 deg 19' 28.9"S	**Section**	NOT APPLICABLE
Longitude (DMS)	147 deg 30' 17.0"E	**Township**	NOT APPLICABLE
Lambert Zone	UTM/MGA94 Zone 55	**Range**	NOT APPLICABLE
X-Coordinate	544,117m E	**Benchamrk**	NOT APPLICABLE
Y-Coordinate	5,758,036m N	**Reference Corner**	NOT APPLICABLE

Job Type	D	**Drilling Only**	
Daylight Only (Y/N)	N	**Wellbore Code (O, R, G, L)**	O
Report Time	Midnight	**Multilaterals Only**	
Data Source	DRS	**Lateral ID**	NOT APPLICABLE
Starting Date (dd/mmm/yy hh:mm)	16/03/2004 12:00	**Branch ID**	NOT APPLICABLE
Well Number	-	**Branch Number**	NOT APPLICABLE
Formal Well Name	WEST WHIPTAIL-1	**U.S. Only**	
Operator	Esso Australia Resources Pty Ltd	**API sidetrack code (00, 01, 02 ..)**	NOT APPLICABLE
Working Interest %	50%		

SAP AFE# (MNSL)	L.0501D001	**AFE Total**	A$8,650,000
AFE Number	L.0501D001	**Workover/Completion**	A$0
Account Code	-	**- Drilling Only -**	A$0
Budget Category	01	**AFE Amount Dry**	A$8,650,000
Initial Tangible Cost	A$275,000	**AFE Amount Suspended**	NOT APPLICABLE
Initial Intangible Cost	A$8,375,000	**Estimated Days - Dry**	18.0 (AFE Days)
Initial Mud Cost	A$175,000	**Estimated Days - Suspended**	NOT APPLICABLE

Rig Contractor	ENSCO	**Wireline/Coiled Tubing Unit**	
Rig Name	ENSCO 102	**or Pumping Service (y/n/)**	N
- Drilling Only		**Planned Measured Depth**	1500 m MDRT
Objective Code	O	**True Vertical Depth**	1500 m TVDRT
Permit Date	-	**Target North (+)/South (-)**	0
Mud Company	BAROID	**East (+)/West (-)**	0
MWD Company	NOT APPLICABLE		
Real-Time Company	SCHLUMBERGER		

LIST OF PERSONNEL FOR REPORT/REALTIME TIGHT HOLE ACCESS

Drilling Superintendent:	**FRANK KRATZER**
Drilling Supervisors:	**BARRY STEEL, GEORGE SHARKEY, TIM PALTRIDGE, ROGER BAIN**
Drilling Engineers:	**CHRIS MEAKIN, SHANE HARRIS**
Others:	

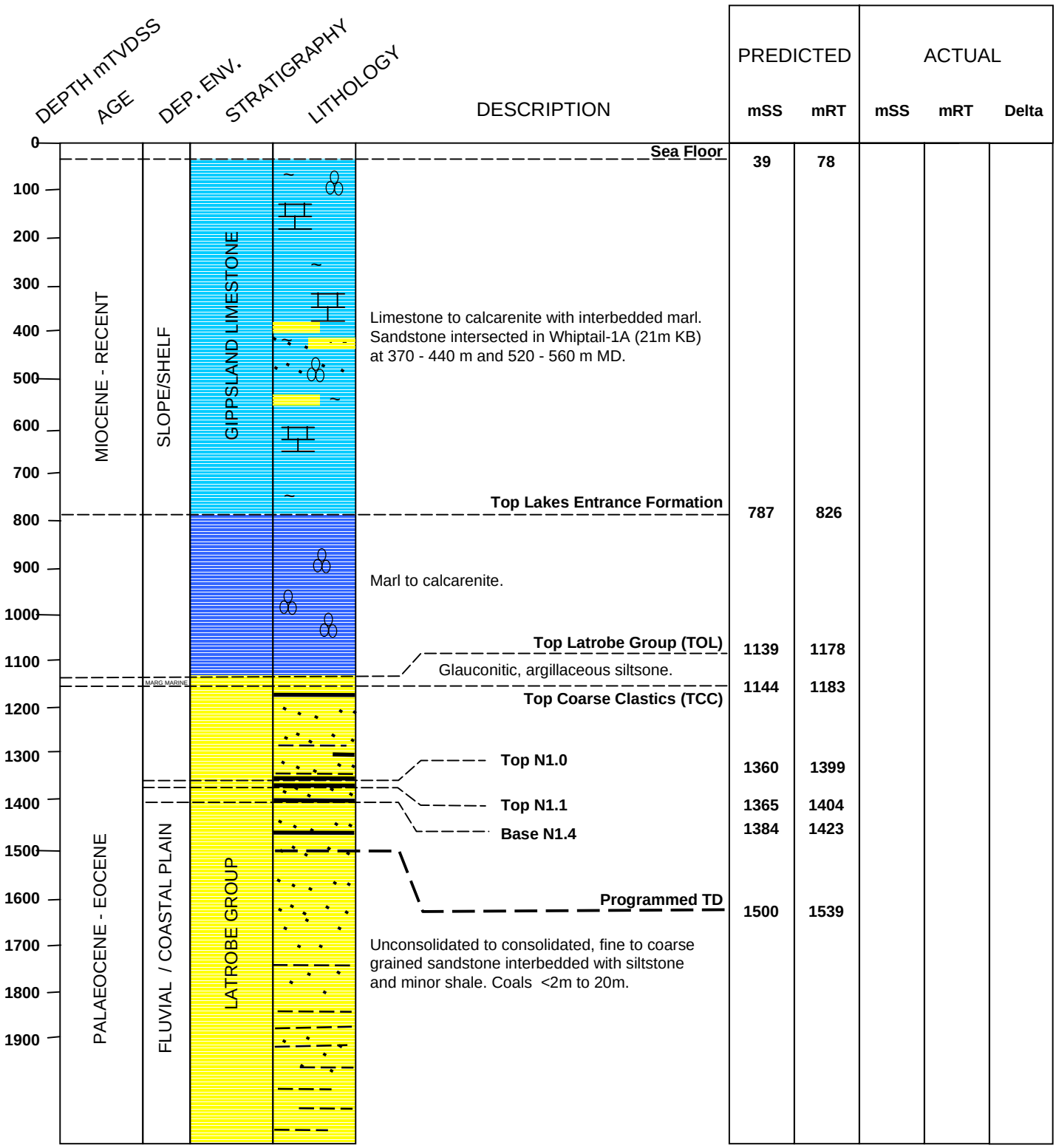
E-MAIL DAILY DRILLING REPORTS ONLY (PARTNER VERSION)

Parnter Name and Contact #1:	
Parnter Name and Contact #2:	

FAXED DAILY DRILLING REPORTS (PARTNER VERSION)

Parnter Name and Contact #1:	
Parnter Name and Contact #2:	

WEST WHIPTAIL-1 ATTACHMENT 6
PREDICTED STRATIGRAPHY



** Predicted stratigraphy referenced to Depth Model B*

Mulloway-1 Stick Chart

ATTACHMENT 7

MULLOWAY-1 **Rig - Southern Cross** **Total Days: 17.45** **Start: 19:45 hr 06-Feb-89**

RT:MSL (m) 21 Water Depth (m) 37

Report	TVDKB	MDKB	Inc	MW (ppg)	Mud Type	Formation	Bits		Comments
1	0	0	0	0	Seawater with high viscosity gel slugs	0	0		Report 1 Moving to location 0.20 days
2	58	58		8.6				← **26" hole**	Report 2 Mooring. 27.25hr NPT from failed stabilizer bar, parted mooring chain and fouled pennant lines.
3	64	64		8.6			**#1 - OSC-3AJ (1 1 I) 120m, 9.25hrs, 13.0m/hr.**		WOB = 0-5, RPM = 50.
4	178	178	0.50					**20" csg**	Cmt with Class 'G' with 2.2% Gel, 13.2 ppg, 750sx lead followed by 350 sx 15.8 ppg neat.
						Gippsland		**178m**	
5	193	193			Seawater/prehydrated gel/native solids mud system				WOB = 20-35, RPM = 120.
6	753	753		9.0					Run IMS-MSFL-Sonic-GR
							#2 - S11JC (114) (4 6 I)	← **17-1/2" hole**	Cmt with 1000sx 15.8 ppg Class 'G'
6	776	776	0.75	9.0		**Gippsland**	**598m, 28hrs, 21.4m/hr.**	**13-3/8" csg**	Phase I PIT to 1500 psi
7	776	776						**761m**	Phase II PIT (LOT - 14.2ppg EMW).
8	935	935	0.30	9.1					Lost 1.75hr NPT energizing 13-3/8" seal assy.
9	1100	1100			Seawater/prehydrated gel/native clay mud system, with lignosulphonate				
9	1168	1168		9.5		**Top of Latrobe**	**#3 - HP11J (116) (6 5 1/8)**		WOB = 25-40, RPM = 120.
9	1340	1340	0.50	9.5			**564m, 27.75hrs, 20.3m/hr.** **#4 - HP51 (517) (2 2 I) 40m, 3.25hrs, 12.6m/hr.**		
10	1385	1385		9.6			**#5 & 5RR - 2C478 (10%) 25m, 3.25hrs, 9.1m/hr.**		Trip at 1385m to core. Cut core 1 from 1385m to '1393.5m (65% recovery) and Core 2 from 1393.5m to 1405m (no recovery).
11	1444	1444	0.80	9.6				← **12-1/4" hole**	WOB = 6-25, RPM = 110.
12	1567	1567					**4RR - HP51 (517) (4 6 3/8) 162m, 15.25hrs, 10.7m/hr.**		Trip at 1567m on ROP, 3m over last hour
12	1600	1600	1.80	9.5			**#6 - HP53 (537) (2 3 1/8)**		WOB = 25-30, RPM = 110.
13	1721	1721	1.10	9.5			**154m, 13hrs, 11.8m/hr.**		POOH to log
14	1721	1721							Run DLL-LDL-CNL-MSFL-Sonic-GR-AMS Run RFTs and SHDT
15	1490	1490		9.5					Run WST. R/D Schlumberger. Set 235sx 15.8 ppg plug 1590-1481. Dress to 1490m & tag w/20kips
16	1490	1490		9.5				**9-5/8" csg**	Cmt with 600sx 15.7 ppg Class 'G' w/ 0.84g/10bbl HR6L Floats held.
								1,479m	Phase I PIT to 3500 psi (casing vs blind rams)
17	100	100		9.5					Pump 15.8 ppg suspension plug from 165-100m.
18									No tag. Pull BOP & Riser Recover moorings
19									Rig release 0630 24-Feb-1989

Location:	Latitude	38° 19' 18.75" S
VIC/RL1	Longitude	147° 29' 06.28"
GDA94	MGA Easting	542,404.2m E
	MGA Northing	5,758,360.1m N

Formation Evaluation

Log	Interval
1 BHC-CAL-GR	768.5 - 169.7
2 DLL-MSFL-GR-SP	1718.5 - 761.0
BHC-CAL-GR	1695.0 - 761.0
LDL-CNL-GR-AMS	1706 - 1095.0
3 RFT-HP-GR	1682.0 - 1184.5 (22 pretests/4 sample runs)
4 SHDT-GR	1718.0 - 1098.0 (1:200)
5 WSS	1690.0 - 779.0 (11 levels)
6 CST-GR	1696.5 - 1137.0 (30 shots, recovered 29)

Whiptail-1A Stick Chart

ATTACHMENT 8

***WHIPTAIL-1A* Rig - Southern Cross** **Total Days:** **43.15** **Start: 21:15 hr 05-Aug-85**

RKB:MSL (m) 21 Water Depth (m) 39

Report	TVDKB	MDKB	Inc	MW (ppg)	Mud Type	Formation	Bits		Comments
1	60	60	0	0		0	0		Report 1 Moving 24.5nm to location 7 hours
2 - 5	60	60		8.6	Seawater with high viscosity gel slugs			**26" hole**	Mooring, spud Whiptail-1 and run & cement 20" casing in 26" hole. Run BOP. O-ring not installed in xover joint. P&A well, pull BOP, cut casing. Move rig 50'. Re-spud well. NPT was 3.05 days.
6	197	197	0.75	8.6			**#1 - R1 (111) (1 1 I)** **137m, 6hrs, 22.8m/hr.**	**20" csg**	WOB = 0-5, RPM = 50-90. Cmt with Class 'G' with 2.2% Gel, 13.3 ppg, 750sx lead followed by 350 sx 15.8 ppg neat.
7	749	749		8.9	Seawater/prehydrated gel slug mud	**Gippsland**		**183m**	Run BOP stack & drill ahead WOB = 0-30, RPM = 150. Cmt with 1050sx 15.8 ppg Class 'G'
8	797	797	1.00	9.0		**Gippsland**	**#2 - X3A (1 1 I)** **600m, 18hrs, 33.3m/hr.**	**17-1/2" hole** **13-3/8" csg**	Calc TOC @ 60m Phase I PIT (1500psi).
9	941	941		8.8	Polymer/Bentonite/Seawater		**#3 - X3A (3 3 I)**	**782m**	Phase II PIT (LOT - 12.4ppg EMW).
	1141.5	1141.5				**Top of Latrobe**	**368m, 15.5hrs, 23.8m/hr.**		Phase III PIT @ 1165m (13.3ppg EMW at shoe).
	1165	1165	0.50	10.3					WOB = 20-30, RPM = 110-120. Trip to core
10	1175	1175					**9-7/8" RC476 (5% worn)** **10m, 0.25hrs, 40m/hr.**		Core WOB = 5, RPM = 85 Core #1, 7.9m (77%) recovery
11	1502	1502		10.3			**#4 - J22 (517) (1 8 3/16)**		
12	1789	1789	0.75	10.3			**614m, 41.75hrs, 14.71m/hr.**		WOB = 30-40, RPM = 60
13	2021	2021		9.8			**#5 - J22 (517) (2 3 1/8)**		WOB = 40, RPM = 60. Trip to log
							232m, 19.25hrs, 12.05m/hr.	**12-1/4" hole**	
14	2021	2021	1.50	9.8					Run logs & RFTs
15	2032	2032		10.0+			**#6 - J33 (537) (5 5 1/4)**		WOB = 45-50, RPM = 50. Pull on torque
16	2217	2217		9.5			**376m, 52hrs, 7.23m/hr.**		
17	2378	2378		9.5					
18	2397	2397		9.5					
	2450	2450		9.5			**#7 - J22 (517) (7 6 1/4)**		WOB = 50, RPM = 50
19	2698	2598		9.5			**322m, 57.5hrs, 5.6m/hr.**		
20	2719	2719	1.00	9.5					
21	2737	2737		9.5+			**#8 - J22 (517) (1 1 I)**		
							18m, 4.75hrs, 3.78m/hr.		WOB = 40, RPM = 60. POOH to core
	2754.6	2754.6		9.5+			**9-7/8" RC483 (20% worn)**		Core WOB = 10-25, RPM = 100
							18m, 3hrs, 6m/hr.		Core #2, 56.3% recovery
22	2781	2781		9.5			**#8RR - J22 (517) (1 3 1/8)**		
23	2821	2821		9.5			**66m, 15.25hrs, 4.33m/hr.**		WOB = 50, RPM = 50. TD. POOH to log.
24	2821	2821							Run logs & RFTs
25	1500	1500		9.5+					Set balanced cmt plug from 1600-1500m w/- 269 sx Class G neat. Tag plug @ 1482m and dress to 1500m PBTD
26	1500	1500		9.5				**9-5/8" csg**	Run & cmt 9-5/8" casing w/- 530 sx 15.8ppg Class G in freshwater. Bumped plug w/- 3000 psi, held. Bled-off. Float held. Float Collar @ 1463m.
27	1463	1463		9.5				**1485m**	Lost 21.5 hrs investigating a fatality
28	95	95		9.5				**12-1/4" hole**	Set balanced cement plug from 160m to 95m with 75sx cement mixed w/- seawater.
29	95	95							Pull riser & BOP. WOW prior to deballasting rig
30	95	95						**TD & 2821m**	Deballast rig. Pull anchors.
31	2600	2600							Release rig 04:45 4-Sep-1985.

Location:	Latitude	38° 19' 24.84" S
VIC/L1 GDA94	Longitude	147° 31' 14.17"
	MGA Easting	545,506.2m E
	MGA Northing	5,758,155.5m N

Formation Evaluation		
	Log	**Interval**
1 - 1	BHC-GR	794 - 182m
2 - 1	DLTE-MSFL-GR	2007 - 782m
2 - 1	LDTC-CNTH-GR	2006 - 1100m
2 - 2	BHC-GR	2007 - 782m
	RFT	No. 1 - 7
3 - 2	DLTE-MSFL-GR	2816 - 1950m
3 - 2	LDTC-CNTH-GR	2816 - 1950m
3 - 3	DDBHC-GR	2815 - 2007m
	RFT	No. 8 & 9
3 - 1	WSS-GR	2815 - 200m
	Core #1, 4-3/4"	1165.4 - 1175.4m, 77% recovery, plastic sleeve
	Core #2, 5-1/4"	2737.2 - 2754.6m, 56% recovery
	Sidewall Cores	2781 - 1120m, 60 shots, 55 recovered

ATTACHMENT 9

ESSO AUSTRALIA PTY LTD
BAROID DRILLING FLUID PROGRAM
WEST WHIPTAIL-1
BASS STRAIT, VICTORIA

Prepared by	:	Nicholas Doust
Date	:	January 2004
Revision	:	0

"All information, recommendations and suggestions herein concerning our products are based on tests and data believed to be reliable. However, it is the user's responsibility to determine the safety, toxicity and suitability for their own use of the products described herein."

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INTRODUCTION

Well Summary

Operator	:	Esso Australia Pty Ltd
Well Name	:	West Whiptail-1
Location	:	Bass Strait, VIC/L1, Victoria
Well Designation	:	Wildcat/Appraisal
Rig	:	Ensco 102 Jackup
Well Depth (TD)	:	1,500m MDRT (1,500 m TVD)
Inclination & Direction	:	Vertical
Horizontal Displacement	:	0 m MD

Well Profile

The West Whiptail-1 is a vertical wildcat/appraisal well targeting the 'N' reservoir. West Whiptail will be drilled using the Ensco 102. The well consists of three intervals (36" to 134m, 12 ¼" to 760m and 8.5" to 1500m TVD).

Well Parameters and Potential Hazards

- Lakes Entrance is a known swelling formation and is 352 m in length.
- Hole cleaning should be good with the anticipated drilling parameters
- There is a possibility of small scale faults (sub-seismic) in reservoir section and the Lakes entrance formation.
- Based on seismic correlation, a porous and permeable section is expected to be variably present between the depths of 350 – 530 m TVDSS. This would increase the probability of experiencing lost returns.
- There have been 2-20m coals (Latrobe Group) in offset wells. It is likely that the coals will be less than 10m in this well. Coals have not caused problems on offset wells, Whiptail-1A or Mulloway-1
- The primary target, N-1.1 is anticipated to have low quantities of $C0_2$ (< 5%)
- Small amounts of H_2S have been recorded on offset wells. Up to 15ppm in the N1 reservoir on Baracouta 1 and Baracouta 5. H_2S levels are expected to be in the range of 2 – 20 ppm
- No shallow gas is anticipated based on adjacent wells -Barracouta, Whiting and Tarwhine Field, Mulloway-1, Whiptail-1.
- Formation flow water is not expected based on offset well data.
- Anticipated BHT reservoir temperature ± 70.5 deg C.
- Possible lost returns in the slight drawn down zones.

Formation Tops

Formation	Formation Tops		Length (m MD)
	MD RT (m)	TVD RT (m)	
Sea level	37	37	
Gippsland Marl	75	75	749
Lakes Entrance	824	824	352
Latrobe Formation	1176	1176	324
Top of Course Clastics	1181	1181	
N1.0 Sands	1397	1397	
N1.1 Sands	1402	1402	
Base N1.1	1421	1421	
TD	1500	1500	

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Well Parameters and Potential Hazards

Interval	Hazard/Concern	Action
36" / 12.1/4"	• Lost circulation / hard ledges • Unstable hole	• Drill with seawater/hi-vis bentonite sweeps. • Displace hole to pre-hydrated bentonite on trips and prior to running casing.
8.5"	• Poor hole cleaning	• Maintain 6 rpm at 6 -10 lb100ft^2 and Yield Point at 25 – 45 lb/100ft^2, increase pump rate & limit ROP. • Keep constant monitoring on mud weight, hole cleaning, flow rates and rheology. • Consider stopping drilling to circulate the hole clean. • Limit ROP's. • Make a wiper trip to the shoe.
	• Hole instability in reactive Lakes Entrance Formation.	• Run an inhibitive mud system. Maintain KCl concentration and fluid loss control.
	• Mud Losses in faults of Latrobe.	• Maintain adequate LCM supplies of BAROFIBRE, BARACARB
	• Differential Sticking in Latrobe Formation.	• Add sized BARACARB bridging agent. Maintain tight filtration control. Have EZ-SPOT and ester supplies on location.
	• H_2S in reservoir.	• Maintain adequate supplies of NO-SULF, BARACOR-129 and caustic potash on rig. Monitor with GGT.
	• CO_2 in reservoir.	• Treat with caustic soda.
	• Coal Sloughing	• Add BARABLOK to active system or spot pill across coals.

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Mud Systems

36" Hole Seawater/Bentonite Sweeps

- Seawater and high viscosity sweeps pumped at regular intervals will provide sufficient hole cleaning to drill the 36" interval.

- Lost circulation may occur in this interval.

12 ¼" Hole Flocculated Bentonite

- A flocculated bentonite mud system has proven to be a most cost-effective fluid to drill the Gippsland marl. This fluid provides excellent hole cleaning, with cost-effective protection against hole erosion and severe losses in the lost circulation zones which may occur in the Upper Gippsland limestone.

8.5" Hole

- A fully specified 6% KCl/PHPA/Glycol-CP system should be used from the surface casing shoe to interval TD. This fluid will provide good hole stability in reactive claystone, prevent differential sticking in the high permeability sands, and provide maximum penetration rates.

- An initial mud weight of 8.8 ppg is required. Raise the mud weight to 9.5 ppg by the top of the Lakes Entrance Formation. A maximum mud weight of 10.0 ppg is suggested if hole problems occur in the Lakes Entrance Formation.

- Differential sticking and seepage losses through faults are a potential danger in the Latrobe Formation. The differential sticking tendency will be highest opposite the most permeable 'N' sands penetrated in this section.

- BARACARB sized marble should be added immediately prior to entering the Latrobe Formation. These pore throat bridging agents will reduce HPHT filtrate loss and reduce the risk of differential sticking in the Latrobe.

- A yield point value of 25-45 lb/100ft^2 and 6 rpm rheometer reading of 6 – 10 lb/100ft^2 will provide optimum lift factors, as well as excellent cuttings suspension and carrying capacity at the high drilling rates expected.

- Hole cleaning is not expected to be a problem in this vertical well. However, ensure maximum drillpipe rotation is used in conjunction with programmed low-shear rate rheology values and adequate circulation before connections and trips.

- Glauconitic is usually present at the top of the Latrobe Formation. It may contain minor amounts of abrasive pyrite.

DRILLING FLUID PERFORMANCE INDICATORS

Drilling fluid performance should be based on achieving the following targets and Performance Indicators. The hole condition targets are considered much more important than the drilling fluid targets, as these relate directly to savings in rig time. Note that rig cost/day far exceeds mud cost/day.

HOLE CONDITION TARGETS

- No time lost to hole problems in 36" and $12^{1}/_{4}$" hole
- No time lost due to lost circulation or hole instability in $8^{1}/_{2}$" hole
- Minimal reaming or back-reaming (<15 hours) due to hole instability or inadequate hole cleaning
- No differential sticking problems in the Latrobe
- Wireline logs successfully run to bottom and retrieved
- All casings successfully run

INTERVAL 1

36" Hole : 75 - 134 m (59 m drilled)

Formations : Sand/Shell/Marl/Limestone

Drilling Fluid : Seawater with Hi-Vis Bentonite Sweeps

Introduction

The 36" interval contains predominantly soft chalky limestone and marl. Shell beds, sands, calcarenite and calcilutite are possible. Potential hole problems include lost circulation and harder ledges.

The interval will be drilled with seawater using a 17-1/2" bit and 36" hole opener. High viscosity gel sweeps will be pumped at regular intervals to keep the hole clean. Returns will be to the seabed. No shallow gas is expected in the 36" interval.

Fluid volumes have been estimated on the basis of 40 - 50 bbl sweeps every half-stand. Approximately 1.5 x hole volume of pre-hydrated bentonite will be displaced at the interval TD and then a short trip made. The hole will once again be displaced, before pulling out to run 30" casing. Mud displaced into the hole should not be flocculated with Lime.

Recommended Properties (Hi-Vis Sweeps)

Funnel Viscosity (sec/qt)	:	> 100
YP (lb/100ft^2)	:	> 40

Formulation

35 - 40 ppb bentonite should be pre-hydrated in treated drillwater and allowed to yield for at least 8 hours. If a shearing device is available this period may be reduced. The pre-hydrated mixture can then be diluted by 1/3 with seawater to give a final concentration of about 25 ppb bentonite. Lime and caustic should be added just prior to pumping to further flocculate the fluid. The actual dilution rate and the use or quantity of Lime can be adjusted to achieve the desired viscosity. Formulate sweeps with:

Soda Ash	:	0.1 - 0.2 ppb
Bentonite	:	35 - 40 ppb (hydrate 8 hours)
Seawater	:	1/3 initial volume
Caustic Soda	:	0.5 ppb (add before pumping)
Lime	:	0.5 ppb (add before pumping)

Maintenance

- At casing depth, the hole should be displaced with 1.5 x the open hole volume of undiluted high viscosity pre-hydrated bentonite. After a wiper trip the hole will again be displaced 1.5 times with undiluted pre-hydrated bentonite to ensure the hole is full, including any overgauge sections.

- The hole should be spudded at a reduced pump rate to avoid washing out the seabed.

- Maintain enough bentonite and drillwater on the rig and boat to ensure a steady supply. Make sure the mud pits are full of pre-hydrated gel while drilling.

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INTERVAL 2

12¼" Hole	**:**	**134 - 760 m (626 m drilled)**
Formations	**:**	**Upper Gippsland**
Drilling Fluid	**:**	**Lime-Flocculated Seawater/AQUAGEL**

Introduction

An inexpensive flocculated Seawater/Gel fluid provides excellent hole cleaning with sufficient inhibition for the dispersive clay and marl in this interval. This fluid has proven to be superior to seawater with viscous sweeps for prevention of hole erosion and lost circulation in the porous limestone sequence.

Prior to pulling out of hole to run the 9-5/8" casing, spot 200 bbls (or all excess surface bentonite mud) of non-flocculated and pre-hydrated bentonite on bottom

Recommended Properties

Mud Weight	< 9.5	ppg
Funnel Viscosity	35 - 50	sec/qt
API Filtrate	No Control	

Formulation

Dilute pre-hydrated bentonite to 15 ppb with seawater. Further flocculate the fluid by adding:

Caustic Soda	:	0.5 - 0.75	ppb
Lime	:	0.5 - 0.75	ppb

Maintenance

- Maintain a flocculated system by diluting pre-hydrated bentonite with seawater and regular additions of Caustic Soda and Lime.
- Use any surplus pre-hydrated bentonite to spot in the hole prior to running casing.
- Dump and dilute with seawater and flocculated bentonite as required to maintain system volume and mud weight within specification.

Lost Circulation

- Lost returns are possible between 350 and 530 TVDSS where a porous and permeable section is expected. The sealing nature of the bentonite system should provide a filter cake to heal any losses.

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INTERVAL 3

8.5" Hole	**:**	**760 m to 1,500 m MD (740m to drill)**
Formations	**:**	**Gippsland Marl, Lakes Entrance, Latrobe Formation**
Drilling Fluid	**:**	**8% KCl/PHPA/Polymer/Glycol-CP**

Introduction

A 6-8 % KCl/PHPA/Polymer/Glycol-CP system will be used from the kick-off to interval TD to provide good hole stability in reactive claystone, prevent differential sticking in the high permeability sands, and provide maximum penetration rates in the Lakes Entrance & Latrobe Formation. This fluid has been used successfully on previous deviated Bass Strait wells.

This fluid will provide effective borehole stability, due to the following mechanisms:

- Sufficient KCl to provide adequate osmotic inhibition (salinity balance) and sufficient Potassium ion to convert reactive clay to non-reactive clay.
- The addition of 3% by vol, Glycol-CP (cloud point polyalkylene glycol) will complement the osmotic inhibition provided by KCl and reduce pore pressure penetration.
- Inhibiting polymers, particularly PHPA, and filtration control polymers such as PAC and DEXTRID-LTE will provide additional clay inhibition and retard pore pressure penetration.
- Careful control of pH will also help minimise clay swelling.
- Bridging of the reservoir with sized calcium carbonate to reduce pore pressure penetration and differential sticking.

Target Properties

Mud Weight	8.8 – 9.7	ppg
	9.5	ppg prior to drilling Lakes Entrance
Yield Point	25 – 45	$lb/100ft^2$
6 rpm Rheometer Reading	6 – 10	$lb/100ft^2$
API Filtrate	< 8	ml/30 min
HPHT Filtrate	< 15	ml/30 min @ 250°F
KCl Content	6	% by wt soln
Excess PHPA Content	> 1	ppb
Low Gravity Solids	< 8	% by vol
Glycol Content	3	% by vol
pH	8.8 – 9.5	
Residual Sulphite	> 100	mg/l

Recommended System Formulation (in order of addition)

BARACIDE	:	0.1	ppb
KCl Brine	:	6	% by wt soln (30 ppb)
BARAZAN D PLUS	:	1.0 - 1.5	ppb (first polymer to be mixed)
PAC-L	:	1	ppb
DEXTRID-LTE	:	2.75	ppb
PHPA	:	1.5	ppb
Glycol-CP	:	3	% by vol (added after displacement)
Caustic Potash	:	0.2	ppb (To pH 9.0)
Barite	:	As Req'd.	
BARCACOR 129	:	0.5	ppb (add to active system only)

Mixing & Maintenance

- New mud will weigh 8.8 ppg. Raise the mud weight to reach 9.5 ppg by the top of the Lakes Entrance Formation. Use regular additions of Barite to maintain weight while keeping within the programmed low gravity solids range. Baracarb additions will increase the mud weight by 0.2 ppg prior to entering the Latrobe Formation.

- New mud is to be displaced into the hole with zero concentration of PHPA to avoid mud losses over the shaker screens upon start-up of drilling. The PHPA concentration should be increased to programmed values as soon as possible when drilling commences by the addition of concentrated PHPA premix and direct additions of PHPA.

- It will be necessary to run coarser screens at first until the new mud shears down sufficiently.

- In new pre-mix, PHPA should be the last polymer added, in order to minimise the inhibitive effect of PHPA on the yield of the other polymers.

- When drilling ahead after the displacement, add 3% Glycol-CP polyglycol for additional inhibition and lubricity.

- Maintain a constant mud formulation after the initial displacement. This will provide full inhibition for improved hole conditions and cuttings integrity for the entire section, thus avoiding any initial period of reduced mud performance.

- A concentration of > 1 ppb excess PHPA should be maintained in the mud system for clay encapsulation and inhibition. The condition of cuttings at the shakers should be closely monitored as a guide to ensuring sufficient excess PHPA.

- Add Glycol-CP to the active, not the reserve system, to maintain the required glycol concentration. Base all glycol additions on any new volume added to the active system.

- Sized calcium carbonate must be added prior to drilling into the Latrobe Formation. These pore throat bridging agents will reduce HPHT fluid loss and reduce the risk of differential sticking in the Latrobe. It is expected that the N sands will be multi-Darcy permeability sands in the order of 1 – 3 Darcy. The addition of 5 ppb each of Baracarb-25 (Circal 60/16) micron and 5 ppb of Baracarb-100 (Circal Y) prior to drilling into the Latrobe Formation will provide adequate bridging of reservoir pore throats . The addition of calcium carbonate will increase the mud weight by ± 0.2 ppg.

- Regularly add an additional 1 x 25 kg sack each of Baracarb-25, and Baracarb-100 for every 10 m of new hole drilled in the Latrobe Formation, to replace losses to the solids control equipment and wall cake.

- Run the desilter and desander to reduce solids loading of the mud and report the efficiency in the daily mud report.

- It is anticipated that West Whiptail-1 will be drilled at high penetration rates. Polymer, glycol and KCl additions must be made at a rate fast enough to match high penetration rates, plus additional chemical depletion by reactive claystone. Polymer and KCl additions should preferably be made via steady transfer of relatively concentrated premix to the active system while drilling.

- Keep additional new **drill water** based 6 - 8% KCl/PHPA/Polymer reserve mud pre-mixed in the reserve pits.

- Mud left behind casing should be treated with extra BARACIDE, BARACOR 129 oxygen scavenger and Caustic Potash to help prevent corrosion.

- BARACOR-129 oxygen scavenger will be used when drilling or circulating with a closed system. The residual sulphite concentration should be maintained at > 100 mg/l at the flowline. BARACOR-129 oxygen scavenger solution should be added as close to the pump suction as possible. Ensure hoppers and non-essential solids control equipment is switched off when not in use in order to minimise aeration of the mud.

- Perform complete in/out mud checks in every tour while drilling or circulating. Additional partial mud checks should be performed as necessary to ensure all critical mud properties remain within specification.

- BARAFILM / Ester pre-blended corrosion inhibitor should be used to coat the inside of the pipe on the final trip out of the hole. Pour 20 - 40 litres per 1000 m of pipe of BARAFILM / Ester blend down the inside of the pipe after a heavy slug has been pumped. APPROPRIATE PROTECTIVE CLOTHING MUST BE WORN WHEN HANDLING CORROSION INHIBITORS.

- ExxonMobil mud testing guidelines must be followed when conducting mud checks.

Borehole Stability/ Differential Sticking

- If there are indications of hole instability in the Lakes Entrance Formation then consideration should be given to increasing the mud weight towards 10.0 ppg, increasing the glycol content in 0.5% increments towards a maximum of 5% and increasing the KCl concentration to 8- 10%.

- Differential sticking is a hazard in the Latrobe Formation, particularly in the slightly drawn down (60 psi) and high permeability sections of the 'N' reservoir. Provided hole stability is good, the mud weight should be maintained around the 9.7 ppg range after the addition of sized calcium carbonate to reduce the potential of differential sticking. Maintain a low HPHT filtrate loss and keep the pipe moving to help prevent differential sticking.

- If differential sticking of the drill string occurs, a stuck pipe spotting fluid can sometimes assist in freeing the string. Spotting fluids are designed to penetrate and break up the filter cake. Stuck pipe pills can be formulated with EZ-SPOT, ester and barite if required. To mix the EZ-SPOT pill, start with the required volume of ester, add EZ-SPOT, water and barite (weight to same as active mud system) in that order.
  For a 50 bbl pipe freeing pill at 10 ppg add the following (in order of addition):
  - 29 bbls of ester
  - 3 drums of EZ-SPOT
  - 13 bbls of water
  - 140 ppb barite

  Note: It is critical to have spotting fluid readily available and applied as soon as possible after the stuck pipe occurrence to increase the probability of success.

Coal Stability

- Coal beds up to 10 metres thick are anticipated. These coals are not expected to cause any problems based on this being a vertical hole and experience on offset wells. Nevertheless, good coal drilling practices should including controlled drilling of coal beds should be followed. The mud system is a highly inhibitive, low fluid loss mud which will retard filtrate invasion and pore pressure penetration into the highly fractured, mechanically weak coal beds and reduce the possibility of sloughing.

- The following strategies will reduce coal instability:
  - Correct drilling practices such as controlled drilling, surge/swab and ECD management
  - Adequate mud rheology and flow rate for optimum hole cleaning. Note also that coal may act as a thinner resulting in reduced hole cleaning ability just at the time that it is needed most. Mud rheology needs to be carefully monitored and controlled when drilling coal beds.
  - Adequate mud weight for coal stability, minimum of 9.5 ppg in Latrobe. A gradual increase in mud weight may also be required.
  - pH should be maintained as low as 8.8 to prevent excessive solubilisation of coal into the mud
  - Because coal sections represent a relatively impermeable zone, usual filtration control additives do not usually function as designed. Still, additions of filtration control agents can be effective by coating the clays found bonding some coal plates together, helping to stabilize some seams. Maintain API fluid loss of < 6 ml/30 for good coating.

- A contingent stock of BARABLOK should be stored on the rig if space allows and added or spotted across the troublesome coals (at 4 – 6 ppb) if there are any signs of coal instability. BARABLOK is a powdered hydrocarbon resin (asphaltite) with high softening points under temperature and pressure that extrudes into formation fractures and bedding planes to bond the matrix and prevent sloughing.

Hole Cleaning

- Hole cleaning should be good at the anticipated pump rates in the 8-1/2" vertical well bore.

- Vary the amount of xanthan gum added to the premix, in order to maintain the 6 rpm rheometer reading and yield point at 6 - 10 lb/100ft^2 and 25 – 45 respectively for good hole cleaning. Avoid adding xanthan gum directly to the active system, as PHPA will inhibit the hydration and yield of Xanthan gum.

- The shakers should be circulated clean of cuttings before trips. Rapid pipe rotation and a circulation time of at least 1.5 x bottoms up will be necessary to completely clean the hole.

- Report 30 minute gel strengths on the daily mud report.

Hydrogen Sulphide (H_2S)

- Low H_2S levels of 0 -20 ppm are possible in West Whiptail-1. The Garrett Gas Train (GGT) test for H_2S should be run twice daily on this well in the Latrobe Formation and the results reported in the mud treatment section of the mud report. For a quick test of soluble sulfides use the HACH test method. The HACH test can be used to detect as little as 0.3 ppm H_2S.

- Maintain the pH at least 8.5 in order to maximize the capability of the polymers and also to ensure a 'buffer' zone if any H_2S is detected. In an alkaline environment, H_2S is sequestered within the mud and is not released at surface. However, if the fluid pH is allowed to drop then H_2S will be liberated from the mud. High pH does not remove H_2S, it merely prevents the release of free H_2S into the environment. The removal of H_2S must be undertaken by the use of scavengers such as NO-SULF which react with H_2S to form an insoluble precipitate.

- Keep sufficient quantities of NO-SULF on board. NO-SULF is a blend of zinc compounds used to treat out H_2S in the mud system. If H_2S is detected then treat the mud system with 1 – 4 lb/bbl NO-SULF. The reaction of zinc and sulfide compounds forms an insoluble and unreactive precipitate of zinc sulfide.

Lost Circulation/Seepage Losses

- Lost returns are unlikely based on offset well data.

- BAROFIBRE should also be kept on board if there is deck space available as a contingency item and used in combination with sized calcium carbonate if there are indications of significant seepage losses.

- In the event of seepage losses in the permeable and slightly drawn down Latrobe Formation, then:
  1. Drill ahead and sweep the hole with 20 ppb of Baracarb 25 & 100 (25/100 median micron) combination plus 5 –10ppb BAROFIBRE (if available).
  2. If unacceptable losses persist then stop drilling, reduce pump rate and spot a pill consisting of 25 ppb Baracarb- 25, 25 ppb Baracarb 100 and10 ppb BAROFIBRE (if available) pill across the formation.

  Note that non-degradable LCM such as KWIK-SEAL should not be used in the Latrobe Formation as it may damage the reservoir.

Bit Balling

- Bit balling is not anticipated. If required, SAPP or CONDET should be used in a pill format to combat any bit balling. SAPP pills should be made at a concentration of 1 to 3 lbs/bbl. Do not use SAPP in high Calcium environments. SAPP is a dispersant so should be used sparingly to prevent dispersing clay solids and also prevent possible borehole washout. Condet is a detergent which reduces surface tension and the sticking tendency of clay. Add 3 – 5% of CONDET in pill of active mud. CONDET may cause foaming of the mud system. Slugging the pipe during a connection with EZ-MUD L (liquid PHPA) may also eliminate bit balling. While drilling the Lakes Entrance, have sufficient KCl brine mixed for sweeps if required. Bit balling should not occur in the sandy Latrobe Formation.

WEST WHIPTAIL-1 **CONDUCTOR CASING** **ATTACHMENT 10**

Casing Type : 30", 1.0" wall, X-52, with ST-2 connectors with 30" x 20" x 13-3/8" shoe joint. **Centraliser type :** None required

Conductor Setting Depth : **120.01 m MDRT** **120 m TVDRT**

String (Bottom to Top)	Length (m)	Joints (no.)	Casing O.D.	Conn	Weight (lb/ft)	Grade	Central's (no./jt)	Total No. Central's	Stop rings (no/jt)	Burst (psi) SF=1.375	Collapse (psi) SF=1.0
Float shoe jt 30"x 20"x 13-3/8" (see Note 1)	10.90	1	30"/20"/13-3/8"	RL-4	310/129/68	X52 & K55	-	-	-	2204	1430
Intermdiate Conductor joints	34.50	3	30"	RL-4	310	X-52	-	-	-	2204	1630
Mudline joint	11.50	1	30"	RL-4	310	X-52				2204	1630
Riser joints	46.00	4	30"	RL-4	310	X-52	-	-	-	2204	1630
Wellhead	1.97	0					-	-	-		
String length	104.87	9						0	0		

RT - top 30" Wellhead **14.82**

Planned Total String Depth **119.69** m MDRT

(1) - Shoe joint, 30" x 20" x 13-3/8", comprising 30" x 1" wall, API 5L, X52 section, approx. 8 ft long, with ST-2 pin connector up, with a 30" x 20" forge swage, and a 20" x 1" wall, API 5L, X52 section approx. 10 ft long, with 20" X56 forge swage with 13-3/8" Buttress box down, connected to 13-3/8" 68 lb/ft K-55 pin x pin pup, approximately 8 ft long, bucked into a Davis Lynch 13-3/8" double-valved inner-string latch-in float shoe. The joint is fitted with two low-profile lifting eyes, and the weld to the ST-2 is ground flush.

(2) - Make-up and stab the ST-2 connectors as per ABB Vetco Gray's running procedure. Ensure all o-rings are run in the ST-2 connectors and plastics plug are installed in the releasing screw holes for **connections that will be later recovered**.

(3) - Maximum allowable hookload on conductor casing is 1,240 kips (df = 1.5). This includes 180 kips for the weight of the travelling equipment.

(4) - Initially land the 30" casing to which the wellhead will be attached in a 30" side-door elevator. Install the wellhead, and pickup wellhead and conductor and land on the wellhead landing base.

(5) - Record casing and cementing data in the Drilling Reporting system, and send the final Casing Tally spreadsheet to Melbourne office.

Cement Job Type	Slurry Vol (bbl)	No. sx (sx)	Total Fluid Required		Additives		Slurry Yield cu ft/sx	Slurry Density (ppg)	Max Job Time (hrs)	Thick'ning Time (hrs)	Displace. Vol (bbl)
			Type	Qty gal/sx	Type	Qty (gal/10 bbl)					
Conductor Slurry	226	1,084	Seawater	5.00	NF-5 $CaCl_2$	0.3 1% (bwoc)	1.17	15.9	2hr:00min	2hr:25min to 2hr:50min	6.9
Slurry Volume assumes 250% excess on 36" gauge hole with cement back to mudline. Recalculate volumes based on actual hole depths.											

Special Requirements

(1) - Pump the cement through a inner 5" drillpipe cementing string latched into the latch-in float shoe.

(2) - Drop the latch-in pump-down wiper plug and displace until the plug lands in the float shoe.

(3) - BHST 13° C. BHCT 13° C.

(4) - Estimated time to reach 500 psi compressive strength at 13° C is 9 hours.

WEST WHIPTAIL-1 SURFACE CASING

ATTACHMENT 11

Casing Type : 9-5/8", 47ppf, L-80 LTC

Centraliser type : 15 - W'fd 9-5/8" x 12-1/4" ST-A3, S/N 01161234
One (1) - W'fd PO10 modified to 9-5/8" x 27"

Nominal Casing Setting Depth : 750 m MDRT 750 m TVDRT

Stop Collar : Weatherford 9-5/8" JSH - S/N 01161398

String	Length (m)	Joints (no.)	Casing O.D.	Conn	Weight (lb/ft)	Grade	Central's (no./jt)	Total No. Central's	Stop rings (no/jt)	Burst SF=1.375	Collapse SF=1.0
Float shoe by Float collar jt.	12.50	1	9-5/8"	LTC	47	L-80	1	1	1	4996 psi	4750 psi
Shut-off Baffle joint	12.50	1	9-5/8"	LTC	47	L-80	1	1	1	4996 psi	4750 psi
9-5/8" Surface Casing, threadlocked	23.50	2	9-5/8"	LTC	47	L-80	0.25	1	13	4996 psi	4750 psi
9-5/8" Surface Casing @ 11.75 m/jt.	611.00	52	9-5/8"	LTC	47	L-80	0.25	13	13	4996 psi	4750 psi
HES Stage cement collar	0.80	1	9-5/8"	LTC	47	L-80	1	1	1	4996 psi	4750 psi
9-5/8" Surface Casing, threadlocked	47.00	4	9-5/8"	LTC	47	L-80	0.25	1	13	4996 psi	4750 psi
9-5/8" Surface Casing	23.50	2	9-5/8"	LTC	47	L-80	-	-	-	4996 psi	4750 psi
Pup joint & casing hanger	3.00	0	9-5/8"	LTC	47	L-80	-	-	-	4996 psi	4750 psi
Casing hanger to top of Wellhead	0.12	0									
String length	733.92	63						18	42		
RT - Top 18-3/4" Wellhead Housing	**14.82**										
Actual Casing Shoe Depth	**748.74** m MDRT										

(1) - Run all casing using Best-O-Life 2000 thread compound.
(2) - Confirm that all float equipment is PDC drillable.
(3) - M/U connections using ExxonMobil Torque position. For 9-5/8" 47ppf L80 LTC casing with phosphatised couplings T-min is 9,600 ft-lbs and T-max is 14,400 ft-lbs. D1 is 4.813" and D2 5.125".
(4) - Maximum allowable hookload on surface casing is 415 kips (df = 1.5). This includes 180 kips for the weight of the travelling equipment.
(5) - Record casing and cementing data in the Drilling Reporting system, and send the final Casing Tally spreadsheet to Melbourne office.

Cement Job Type	Slurry Vol (bbl)	No. sx (sx)	Total Fluid Required		Additives		Slurry Yield cu ft/sx	Slurry Density (ppg)	Max Job Time (hrs)	Thick'ning Time (hrs)	Displace. Vol (bbl)
			Type	Qty gal/sx	Type	Qty (gal/10 bbl)					
Lead Cement Slurry	227	580	Seawater Total Fluid	12.37 12.89	Econolite HR-6L NF-5	14.6 2.0 0.3	2.20	12.5	2hr:45min	3hr:15min to 3hr:50min	-
Tail Cement Slurry	68	332	Freshwater	5.10	NF-5	0.3	1.15	15.8	2hr:05min	2hr:30min to 2hr:55min	176.7

Slurry Vol assumes 100% excess on 12-1/4" gauge hole with cement to the stage collar set at 10m below mudline. Recalculate volumes based on actual hole depths.

Special Requirements
(1) - Pump a 50 bbl of seawater spacer in front of the cement. Drop a By-Pass plug in front of the lead slurry, and drop the shut-off plug after pumping the tail slurry.
(2) - Displace with the seawater, slowing down to 6 bpm for the last 80 bbl, and 3 bpm for the last 30 bbl. Bump the plug to 500 psi over final differential pressure. Check floats are holding.
(3) - Increase pressure to 1,800 psi +/- 250 psi to open stage tool. Displace with the seawater, slowing down to 6 bpm for the last 80 bbl, and 3 bpm for the last 30 bbl.
(4) - BHST 34° C. BHCT 34° C.
(5) - Maximum MWE at the 13-3/8" casing shoe for cement back to the wellhead is 13.9 ppg MWE for gauge hole.
(6) - Estimated 24hr compressive strength for the lead slurry at 34° C is 250 psi. Estimated 24hr compressive strength for the tail slurry at 34° C is 2,500 psi.

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West Whiptail_1

Bass Strait

Cementing Program

Revision 6

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27/ 02 / 04

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HALLIBURTON ExxonMobil

30" Cementing information

30in x 20in x 13 3/8in Casing Details

JOB PARAMETERS			
Casing measured depth:	120m	BHST temperature:	13°C
True vertical depth:	120m	BHCT temperature:	13°C
Depth to top cement:	77.6m	Drilling mud type:	SeaWater
		Drilling mud density:	8.55ppg

WELLBORE

Casing/Tubing

0-119m	5in 19.5ppf inner st
0-112.8m	30in 309.7ppf casing
112.8-116.3m	20in 202.9ppf casing
116.3-120m	13 3/8in 68ppf casing

Annulus

0-78m	RKB-ML
78-119m	36in open hole (250% excess)
119-120m	17.5in open hole (250% excess)

SPACERS

Spacer #1 - 100bbl Seawater at 8.55ppg

Seawater	42.00 gal/bbl	(6m OH annular fill / 40min contact time)

Contact times are based on the displacement rate.

CEMENT

Composition		Properties	
Adelaide Brighton Class G		Surface density:	15.90 ppg
Calcium Chloride 1%	1.00 %BWOC	Surface yield:	1.17 ft³/sk
NF-6	0.03 gal/bblMF	Total mixing fluid:	5.20 gal/sk
Seawater	5.16 gal/sk	Thickening time (70 Bc):	4:18
		Pv/Yp at mix:	47/69
		Comp strength at 13°C	50 psi in 3 hrs
		Comp strength at 13°C	500 psi in 9 hrs
		Comp strength at 13°C	2,000 psi in 36 hrs

Note that %BWOC are based on a 94 lb sack, since of the 94 lb sack of blend only 94 lb is cement.

VOLUME CALCULATIONS

Cement

30in casing / 36in hole volume	35.1 m x 1.2620 bbl/m	44.3 bbl
30in casing / 36in hole excess	2.50 x 56.0 bbl	110.8 bbl
20in casing / 36in hole volume	3.5 m x 2.8555 bbl/m	10.0 bbl
20in casing / 36in hole excess	2.50 x 10.0 bbl	25.1 bbl
13 3/8in casing / 36in hole volume	2.7 m x 3.5602 bbl/m	9.61 bbl
13 3/8in casing / 36in hole excess	2.50 x 9.61 bbl	24.0 bbl
13 3/8in casing / 17.5in hole volume	1.0 m x 0.4059 bbl/m	0.41 bbl
13 3/8in casing / 17.5in hole excess	2.50 x 0.41 bbl	1.01 bbl
Shoe track volume	1 m x 0.4912 bbl/m	0.5 bbl
	Total slurry volume =225.9 bbl	

Quantity of cement	226 bbl x 5.6146 / 1.17 ft³/sk	1085 sks
Quantity of mixwater	1085 sks x 5.20 gal/sk	134.3 bbl

Displacement

5in inner st volume	119 m x 0.0583 bbl/m	6.93 bbl
	Total displacement volume = 6.93 bbl	

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1.5 x casing volume:	11.1	8	1
Pump spacers:	100.0	8	13
Release ball/bottom plug:	N/A	N/A	5
Mix & pump cement:	226.0	5	45
Release dart/top plug:	N/A	N/A	5
Pump displacement:	6.9	2	4

Total job time (including circulation): ***1hr 43min***

Minimum cement thickening time (with 1hr safety factor): ***1hr 54min***

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Seawater

Seawater	4,200 gals

Cement (Including 10 bbl pit loss)

Adelaide Brighton Class G	1085 Sacks
Calcium Chloride 1%	1,019.9 lbs
NF-6	4 gals
Seawater	5,599 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

NOTE:
1. Service Location – BBMT
2. Baroid to supply CaCl
3. Volumes calculated are based on theoretical operational requirements. Tank bottoms to be added

Job Procedure

1. Pressure test cement line to 2000 psi
2. Pump 100 bbls of sea water spacer.
3. Mix and pump 226 bbls of cement slurry. Take samples and check density.
4. Pump the theoretical displacement volume of 6.93 bbls of displacement fluid
5. Displace cement at maximum pump rate wellbore conditions can tolerate.
6. Wait on cement.

9 5/8" Cementing Information

9 5/8in Casing Details

JOB PARAMETERS			
Casing measured depth:	750m	BHST temperature:	34°C
True vertical depth:	750m	BHCT temperature:	27°C
Depth to top lead:	88m	Drilling mud type:	SeaWater
Depth to top tail:	580m	Drilling mud density:	8.55ppg

WELLBORE

Casing/Tubing

0-750m	9 5/8in 47ppf casing

Annulus

0-78m	RKB-ML
78-88m	30in 309.7ppf casing (28in ID) - Stage Collar 10m Below Mud line
88-112.8m	30in 309.7ppf casing (28in ID)
112.8-116.3m	20in 202.9ppf casing (17.812in ID)
116.3-120m	13 3/8in 68ppf casing (12.415in ID)
120-750m	12.25in open hole (100% excess)

SPACERS

Spacer #1 - 50bbl Seawater at 8.55ppg

Seawater	42.00 gal/bbl	(137m OH annular fill / 5min contact time)

Contact times are based on the displacement rate.

LEAD CEMENT

Composition		Properties	
Adelaide Brighton Class G		Surface density:	12.50 ppg
Econolite Liquid	1.46 gal/bblMF	Surface yield:	2.20 ft³/sk
HR-6L	0.20 gal/bblMF	Total mixing fluid:	12.89 gal/sk
NF-6	0.03 gal/bblMF	Thickening time (70 Bc):	5:16
Seawater	12.37 gal/sk	Pv/Yp at mix:	11/19
		Comp strength at 27°C:	50 psi in 12 hrs
		Comp strength at 27°C:	250 psi in 24 hrs
		Comp strength at 27°C:	500 psi in 36 hrs

TAIL CEMENT

Composition		Properties	
Adelaide Brighton Class G		Surface density:	15.80 ppg
NF-6	0.03 gal/bblMF	Surface yield:	1.15 ft³/sk
Freshwater	5.10 gal/sk	Total mixing fluid:	5.10 gal/sk
		Thickening time (70 Bc):	3:05
		Pv/Yp at mix:	48/46
		Comp strength at 31°C	50 psi in 3 hrs
		Comp strength at 31°C	500 psi in 4 hrs
		Comp strength at 31°C	2,500 psi in 24 hrs

VOLUME CALCULATIONS

Lead Cement

9 5/8in casing / 30in casing volume	24.8 m x 2.2033 bbl/m	54.6 bbl
9 5/8in casing / 20in casing volume	3.5 m x 0.7159 bbl/m	2.51bbl
9 5/8in casing / 13 3/8in casing volume	3.7 m x 0.4911 bbl/m	1.82 bbl
9 5/8in casing / 12.25in hole volume	460 m x 0.1830 bbl/m	84.2 bbl
9 5/8in casing / 12.25in hole excess	1.00 x 84.2 bbl	84.2 bbl
	Total lead slurry volume =	***227.3 bbl***
Quantity of lead cement	227.3 bbl x 5.6146 / 2.20 ft³/sk	580 sacks
Quantity of lead mixwater	580 sacks x 12.89 gal/sk	178.0 bbl

Tail Cement

9 5/8in casing / 12.25in hole volume	170 m x 0.1830 bbl/m	31.1 bbl
9 5/8in casing / 12.25in hole excess	1.00 x 31.1 bbl	31.1 bbl
Shoe track volume	25 m x 0.2402 bbl/m	5.9 bbl
	Total tail slurry volume =	***68.1 bbl***
Quantity of tail cement	68.1 bbl x 5.6146 / 1.15 ft³/sk	332 sks
Quantity of tail mixwater	332 sks x 5.10 gal/sk	40.3 bbl

Displacement

9 5/8in casing volume	726 m x 0.24306 bbl/m	176.5 bbl
	Total displacement volume =	***176.5 bbl***

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bpm)	Time (mins)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1.5 x casing volume:	264.7	8	33
Pump spacers:	70.0	8	9
Release ball/bottom plug:	N/A	N/A	5
Mix & pump lead cement:	227	5	46
Mix & pump tail cement:	68.1	5	14
Release dart/top plug:	N/A	N/A	5
Pump displacement:	176.5	10	17

Total job time (including circulation): ***2hr 39min***

Minimum lead cement thickening time (with 2hr safety factor): ***3hr 22min***

Minimum tail cement thickening time (with 2hr safety factor): ***2hr 33min***

MINIMUM MATERIAL REQUIREMENTS (Double for loadout)

Spacer #1 - Seawater	
Seawater	50 bbls

Post Flush – Seawater & Sugar – to retard	
Seawater (2 x riser volume)	330 bbls
Sugar ~ 8 lb/bbl	2645 lbs

Lead Cement (Including 10 bbl pit loss)

Adelaide Brighton Class G	580 Sacks
Econolite Liquid	260 gals
HR-6L	36 gals
NF-6	5 gals
Seawater	7,175 gals

Tail Cement (Including 10 bbl pit loss)

Adelaide Brighton Class G	332 Sacks
NF-6	1 gals
Freshwater	2,111 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

NOTE: 1. Service Location – BBMT
2. Volumes calculated are based on theoretical operational requirements. Tank bottoms to be added

Type H ES Cementer Installation & Operating Instructions

1.0 Introduction

This section provides instructions for installing and operating the Type H (hydraulic opening version) ES (External Sleeve) Cementer. The Type H ES Cementer is designed for use in almost any well regardless of depth, pressure, or temperature. The Type H ES Cementer operates the same as a conventional cementer except it opens when differential casing pressure is applied after the first-stage plug lands.

2.0 Features and Applications

The Type H ES Cementer features the following advantages:

- PDC drillability
- Smooth bore drill-out
- Short, single piece mandrel design
- Hydraulic opening capability
- Externally adjustable opening pressure and adjustable closing pressure
- Optional free fall opening plug (if pressure cannot be used to open the tool)
- Compatible with second-stage bottom plug sets

3.0 Operating Pressures

Before using the Type H ES cementer you must determine the required opening pressure of the cementer. In addition to the four pre-installed opening shear pins, several pins are packaged with each assembly. You can adjust the opening pressure by adding or removing shear pins.

The Type H ES cementer can also be opened by using a Free Fall opening plug. If you are going to open the cementer with a plug, install six opening shear pins. Although it seldom needs to be changed the closing pressure of the cementer can also be adjusted. The opening pressure with or without aid of a plug and closing pressure with different numbers of shear pins are listed in the tables below.

Note: For this application the cementer will be pinned with 5 opening shear pins and 6 closing shear pins.

Opening Pressures & Forces for 9 5/8" (43.5-53.5 lb/ft) Type H ES Cementer

No of Shear Pins	3	4	5	6
Opening Differential Pressure (psi)	1350	1800	2250	2700
Opening Pressure with Free Fall Plug (psi)	245	325	405	485
Opening Force (lbs)	14,100	18,800	23,500	28,200

Closing Pressures & Forces for 9 5/8" (43.5-53.5 lb/ft) Type H ES Cementer

No of Shear Pins	4	5	6
Closing Pressure (psi)	650	810	975
Closing Force (lbs)	38,000	47,500	57,000

4.0 Installation

Install centralizers above and below the Type H ES Cementer. Remove any grease or pipe dope from the casing joints the cementer is to be made up in. Make up the Type H ES Cementer in the casing string as follows.

Note: Prior to this the shut off baffle adapter must first be made up one joint above the float collar. The primary shut off baffle adapter will be pre-installed above the collar onshore.

1. Remove the box-end thread protector from the Type H ES Cementer.

Note: Examine the closing pins and ensure that they are at least flush with the closing seat ID. If they are not, use an Allen-head wrench to reposition them. If they are left protruding into the tools ID they may prevent the contingency free-fall plug from reaching the opening seat. See attached schematic for further details.

2. Clean casing threads to remove grease and pipe dope and apply thread lock to the pin thread of the casing joint to be stabbed into the top of the cementer.
3. Swing the casing joint out over the rig floor.
4. Start the Type H ES Cementer onto the pin thread. Make up the cementer onto the casing joint so that the cementer will not fall off the end of the casing when it is picked up off the rig floor.
5. Remove the pin end thread protector from the Type H ES Cementer.
6. Apply thread lock to the pin thread.
7. Stab the pin thread of the cementer into the box thread of the casing joint in the rig slips.
8. Place make-up tongs on the joint above the cementer and back-up tongs on the joint below the cementer.

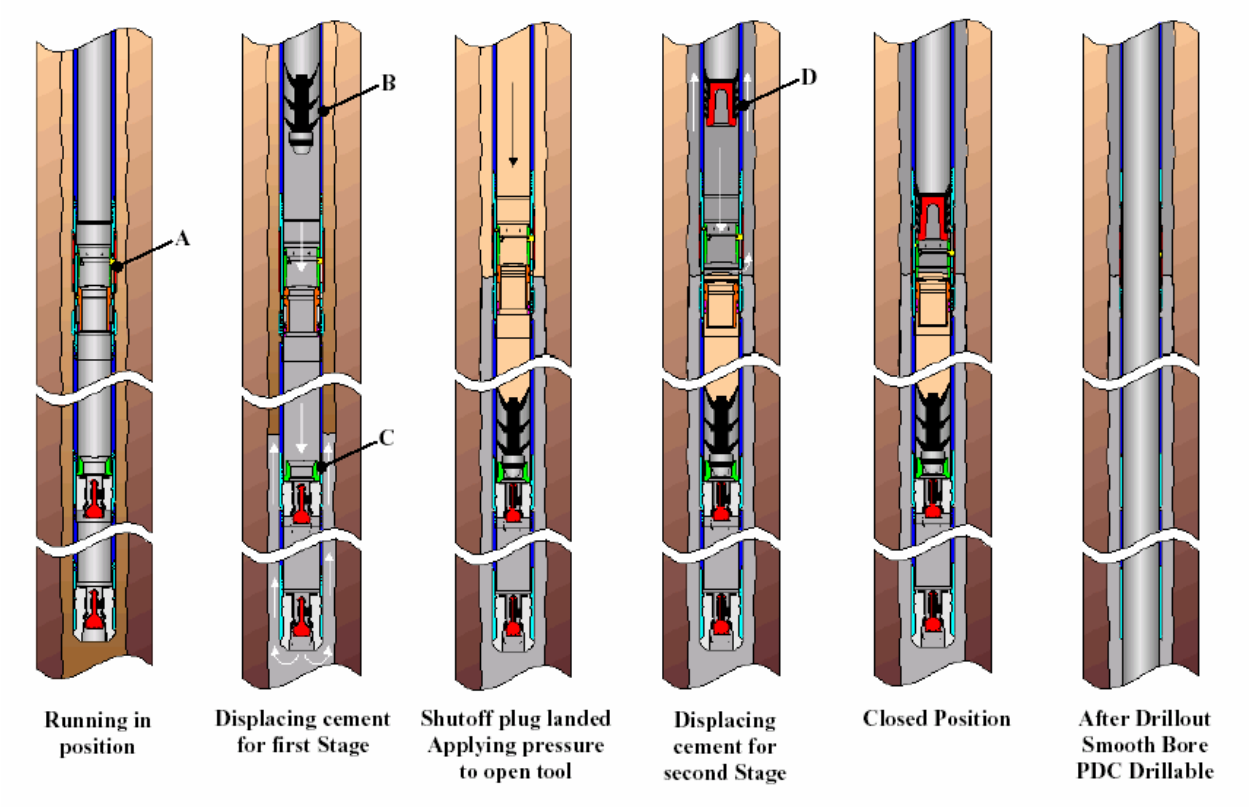
CAUTION: Do not place tongs on the Type H ES Cementer. Using tongs on the cementer may damage the tool.

9. Make up the Type H ES Cementer to the same torque used to make up the casing.
10. Check for exposed threads (API casings). If exposed threads are found, go to the maximum torque allowed on the casing.
11. Lower the cementer into the hole.
12. Remove the mill make-up collar on top of the casing joint used to pick up the cementer.
13. Clean casing threads to remove any grease or pipe dope. Apply thread lock to the exposed pin thread.
14. Make up the casing collar.
15. Clean and apply thread lock to the pin thread of the next casing joint.
16. Stab and make up the casing joint to normal torque.
17. Repeat Steps 12 through 16 for the next three joints.

CAUTION: Welding is not normally required on Type H ES Cementers and is not recommended without special instructions from the Tools Systems Department, Duncan, OK. Do not weld on tools rated for sour gas service under any circumstances.

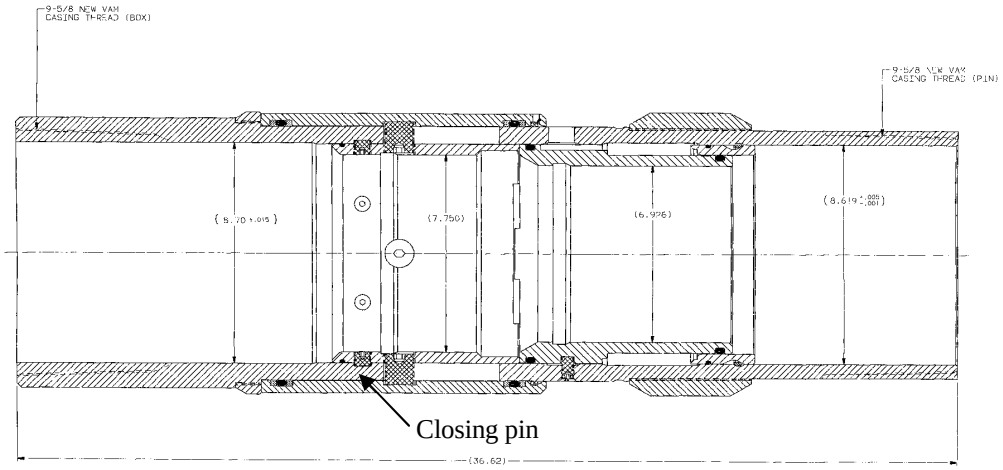
5.0 Plug Set

Shown below is a typical operational schematic for the Type H ES cementer.

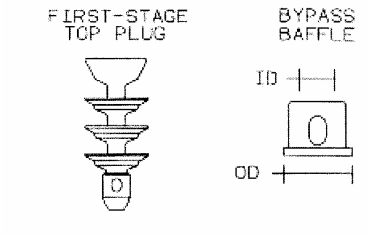


The 9 5/8" type H ES cementer consists of the following equipment:

A) 9 5/8" (43.5-53.5 lb/ft) Type H ES Cementer (Part # 100075777)

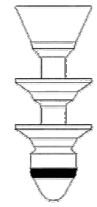


B) First Stage Bypass Plug and Baffle (Part # 100075009)



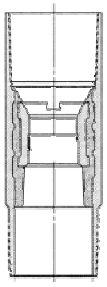
The first stage bypass plug differs from Halliburton's standard plugs. It has a small nose with larger wiper fins to allow it to go through the stage tool and shut off adaptor without problems. The by-pass plug is 19.76" long. By-pass plug nose OD 4.2" < 5" Shut off baffle adaptor ID

C) First Stage Shutoff Plug (Part # 100074917)



The first stage shutoff plug differs from Halliburton's standard plugs. It has a smaller core OD with larger wiper fins to allow it to go through the stage tool without problems.

D) Shut off Baffle Adapter (Part # 100076050)



The baffle adapter provides the mating face for the shutoff plug to seal against and pressure up against. It should be made up one joint above the float collar.

E) Contingency Closing Plug (Part # 100075372)

	The closing plug is similar to the standard five-wiper top cementing plug, but it has a hard nose on its lower end for landing on the closing seat. After the closing plug seats, applied pressure shears the releasing sleeve/closing seat shear pins and closes the closing sleeve. **Note: We will not be utilizing the closing plug as we will be closing the stage tool with a closing adaptor made up on drill pipe.**

F) Contingency Free Fall Opening Plug (Part # 100075389)

 17.50" long	The free fall closing plug is used as a contingency in the event that the cementer fails to open. In sections with deviation greater than 30 , be prepared to chase it down with a workstring.

6.0 Operation

Note: **Due to the length of the bypass plug and the shutoff plug, only one plug will fit in the 9 5/8" cement head. As a result the by-pass plug will have to be loaded straight into the casing before making up the cement head with the quick connect.**

1. Rig up cementing head loaded with the 9 5/8" by-pass plug.
2. Pressure test cement line to 3000 psi.
3. Condition hole prior to cementing.
4. Pump 40 bbls seawater ahead and monitor returns, release the bypass plug and pump a further 10 bbls seawater.
5. Load the cementing head with the 9 5/8" shut off plug.
6. Mix and pump 227 bbls of lead cement slurry and 68 bbls of tail cement slurry. Take samples and check density
7. Release shut off plug, and displace with the calculated casing displacement volume with seawater, slowing down to 2/3 bpm to bump the plug.

Note: Reduce the displacement rate to below 5 bpm as the shutoff plug nears and passes through the ES cementer.

Note: It is strongly advised that the casing be callipered to obtain an accurate displacement volume.

8. Bump the plug to 500 psi over the final differential pressure ~800psi to a maximum of 1500psi. Slowly bleed off pressure and check the floats holding

Note: If floats are found to be passing, hold pressure and wait on cement.

9. If floats are holding, open the tool by slowly increasing casing pressure to the pre-set opening pressure 2,250 psi +/- 250 psi. This is the value with 5 shear pins installed. When the cementer opens, casing pressure should rapidly decrease and circulation to surface should be re-established. Remember that the Type-H ES cementer opens only when the differential pressure set at the surface is acting across the tool. If the fluid in the annulus weighs more than fluid in the casing, more surface pressure will be necessary than the preset opening pressure to open the tool. If the fluid in the annulus weighs less than fluid in the casing, the tool will open with less surface pressure than originally set at the surface. In this case as depth is negligible the estimated additional pressure is ~ 60 psi.

CAUTION: **The maximum pressure is limited by the rating of the shutoff plug and baffle adapter. In this case the baffle adapter and shutoff plug are rated to 5,000 psi differential pressure for L80 casing. <u>DO NOT EXCEED THIS 5,000 psi DIFFERENTIAL PRESSURE WHEN ATTEMPTING TO OPEN THE STAGE TOOL</u>.**

Note: **If the shutoff plug fails to bump, one of the following steps may be necessary:**

a) Drop the contingency free fall opening plug down the casing to seat in the opening sleeve. The approximate free fall rate of the plug should be 27 m/min. Based on the planned setting depth of 88m MD, the free fall plug will reach the tool in approximately ~ 3 ½ mins.

CAUTION: **If the free fall plug is chased down with a Workstring, do not push the workstring into the tool or the tool may close prematurely.**

b) Wait on cement and pressure up against the hard cement.

10. The cementer should now be open; the riser should be flushed with seawater until clean returns are seen. The retarder sugar mix can then be displaced into the riser to retard any cement deposits. Sugar should be added at ~8.0 lb/bbl, quantity shown above in material requirements.
11. Install stage cementer closing adapter (4 1/2" IF Box up) on DP. The slip joint (12" minimum stroke) should be installed directly above closing adapter or above first joint of DP.
12. RIH with a stabilizer on the joint of DP above the closing adaptor to ensure proper centralization of closing adapter. Failing this install a minimum of 2 centralizers on opposite ends of the first joint with stop collars.

13. RIH with closing adapter and DP.
14. Reduce DP running speed within 10m. Slowly lower DP until closing adapter reaches stage cementer closing sleeve.
15. Land available weight on stage cementer closing sleeve. Drill pipe should be spaced out such that annular preventer or BOP rams can be closed.
16. Close annular preventer or BOP DP rams.
17. Pressure DP x 9-5/8 casing annulus though preventer to close stage cementer. Applied pressure must be enough to generate sufficient closing force to close the stage cementer. Assuming 5" drill pipe and a 8.619" stage tool ID, the area on which the pressure will be applied would be approximately 38.7 sq-in. Given this area, the following annular pressures will be required to close the cementer in a balanced system, neglecting applied force due to DP weight.

Note: 4 closing pins require 38,000 pounds force. Nominal annular pressure of 982 psi.

5 closing pins require 48,500 pounds force. Nominal annular pressure of 1,253 psi.

6 closing pins require 57,000 pounds force. Nominal annular pressure of 1,473 psi.

Note: If we have sufficient block weight then there will be no need to pressure up the annulus as per following 3 steps.

Note: When determining anticipated pressure ranges that will be seen during the closing process, use a +/- 15% tolerance.

18. Apply and hold maximum annular pressure for 1 to 2 minutes.
19. When sufficient force is applied to the stage cementer closing sleeve, the stage cementer closing adapter will be allowed to move down with the stage cementer closing sleeve without being affected by the preventer/DP seal. This movement is allowed because of the slip joint installed above stage cementer closing adapter with stabilizer. Because the travel of the closing sleeve is so small, a annular pressure drop may not be visible.
20. Bleed annular pressure to zero.
21. Conduct a casing test (Preferably through DP) to ensure stage cementer is closed. If annular circulation occurs, repeat detailed closing procedure with an additional 500 psi and repeat casing test.
22. End of job, WOC.
23. RIH with BHA and perform drillout stage cementer. Take care to ensure BHA is not reciprocated while drilling through stage cementer. Maintain constant WOB while drilling through cementer seats. Refer to drill out procedures below.

7.0 Drilling Out ES Cementers

The Type H ES Cementer may be drilled out any time after the second-stage cement has had sufficient time to set. Either conventional roller cone rock bits or PDC bits may be used.

Drilling Out with Roller Cone Bits

1. Use a short- or medium-tooth, hard rock formation bit.
2. Apply 3,000 to 5,000 lb/in. of bit diameter to drill the aluminium operating seats.
3. Rotate at 40 to 60 rev/min.
4. Circulate at 40 gal/min per in. of bit diameter. Be careful not to pump the bit off the target.
5. While maintaining rotation and pump rate, and maintain weight on bit

Note: It has been shown that picking up the bit off bottom can allow rubber and other debris from around the bit fall back onto the

Note: If a mud motor is used to drill out the Type H ES Cementer, limit the weight on bit to 5,000 lb. Also, allow the weight to drill off before applying additional weight.

6. After drilling through the cementer, chase any remaining debris to the bottom with the bit.
7. If drilling ahead after drilling out the Type H ES Cementer, and a different bit than the one used to drill out the cementer will be required, use the following procedure. With the bit used to drill out the cementer, drill the first-stage plugs, the floating equipment, and some formation (at least the length of the bottom hole drilling assembly) before tripping out to change bits. This procedure should clean up any metal debris left from the cementer.

Drilling Out with PDC Bits

Generally, the drilling recommendations of the bit supplier should be followed. However, when possible, follow the guidelines listed below when drilling out the Type H ES Cementer with a PDC bit.

- Use a medium to hard rock formation PDC bit for drilling out the Type H ES Cementer. These bits have a flatter face than the soft formation, blade type PDC bits. Do not use a bladed type (gumbo) bit for drilling out a Type H ES Cementer. These bits have fewer teeth and are more likely to be damaged.
- Do not exceed 75 rev/min rotation speed. A good range to use is 40 to 75 rev/min.
- Because of the aggressive nature of PDC bits, drilling with a minimal weight on bit is advisable. Generally, 3,000 to 5,000 lb should be sufficient.
- Note Flatter-faced bits are more susceptible to “pump off” than blade type bits.
- Apply weight and allow it to drill off before applying additional WOB.
- After drilling out the Type H ES Cementer, chase any remaining debris to the bottom with the bit. If it is intended to drill ahead, and a new bit is to be used, drill out the shoe track (first-stage plugs and floating equipment) and some formation, at least the length of the bottom hole drilling assembly, before tripping out to change bits. This procedure should clean up any debris remaining from the stage cementer and floating equipment.

8.0 Drill-out Procedures for Halliburton Float Equipment

Key factors that affect bit performance while drilling cementing plugs and float equipment:

- Bit Type. (Convention rock bit, flat bottomed PDC, bladed PDC)
- Bit style. (Cutter size & angle, blade layout, bit profile, etc.).
- Bit hydraulics & Hole cleaning issues, (flow rate, number of blades).
- Drilling procedures (i.e. WOB, pump rate, RPM, etc.).
- Target material. (Whether rubber, cast or wrought aluminium, bronze, plastic, concrete, etc is drilled.)
- Fixity. (Target materials drill best with fixed cutter bits, when the material is not allowed to rotate. Proper cementing procedures can help ensure effective placement of cement near and around target.)

The following recommendations should be suitable for most applications. Each parameter however may be adjusted to give optimum drill-out.

1. ***Do not spud the bit.*** Carefully tag plug set with minimum WOB.

2. ***On contacting plug flush bit*** by reciprocating drill string 2 - 3 ft.

3. ***Engage clutch and increase rotation to 40 – 75 rpm***.

4. Note torque and ***vary parameters to gain torque*** to indicate drilling is established.

5. ***Use max flow rate for the bit size to aid in debris removal,*** however beware pump-off with too high a rate.

6. ***If downhole motors are being used, limit pump rates*** to achieve the recommended RPM's.

7. ***Use low weight per inch bit diameter***. Conventional bits 2000 – 3000 lbs, PDC bits ~ 3000 – 5000 lbs.

8. ***Initially try minimum WOB and let weight 'drill-off'*** before applying more weight.

9. ***Watch for bit sticking/slipping*** that can occur with sudden increases in WOB. Weight is not necessarily the solution to increased penetration rate.

10. ***Be aware of WOB versus WOT*** (weight on bit v. weight on target). Only WOT affects penetration as it is affected by pump-off, pressure loss past BHA, rate etc.

11. ***For fixed blade bits reciprocate only if penetration stops.*** Reciprocate while maintaining circulation and rotational speed to ensure proper debris removal.

12. ***For roller bits frequently flush bit*** by picking up bit 6 ft whilst circulating rotating (every 2 inches or less or if penetration stalls). Time allowed for this does not need to be excessive (eg. ±1min).

13. ***Use high visc sweeps for large diameter casings*** where high flow rates may be unachievable.

14. ***If the drill-pipe vibrates or otherwise acts erratically temporarily change the parameters***.

15. ***Repeat above procedures as required.*** At any time, if the rate decreases, change parameters. The key to successful drill-out is careful attention to penetration rates.

GUIDELINES FOR PREPARATION OF CEMENT MIXWATER

From time to time it is necessary to pre-mix the additives and mixwater for a cement job instead of adding them "on the fly" via the cement unit LAP system.

NOTE: If mixing in displacement tanks, Econolite and HR-6L are not compatible in their neat form. Ensure there is a sufficient level of water for dilution before mixing chemical additives or add them separately to the mixwater

Lab testing has indicated that there is a maximum age, or retention time, **for batch mixed mixwaters,** after which they should not be used. This is because slurry properties such as thickening time may be affected, and it applies particularly to the "high fineness" additives: Silicalite Liquid, Micromax, Gascon 469 and Microbond in conjunction with cement retarders. Therefore when pre-mixing additives the following guidelines need to be followed:

1. Prepare drillwater/seawater in a **clean pit/blender** and check fluid has the appropriate chloride content.

Freshwater	<1000	Ppm
Seawater	<20000	Ppm

2. Add 2 gal of defoamer (NF-6) per 10 bbl of water.

3. During the casing/liner run add the additives below in the following order.
   a) Extenders – **Silicalite Liquid / Gascon 469 / Econolite Liquid**, **WG-17LXP**
   b) Friction Reducers – **CFR-3L**.
   c) Fluid Loss/Gas Migration Additives – **Halad additives / GasStop-L**.

4. Once the casing is on bottom or the liner hanger has been set and just prior to/during mud conditioning add the additives below in the following order.
   a) Viscosifying Additives – **SA-533**. This must be added very slowly to prevent lumps forming and should be added directly to a tub and not though a mixing hopper, since a build up of partially hydrated polymer can form inside the gooseneck. Note that SA-533 requires at least 30 mins to yield.
   b) Weighting Materials – **Micromax**.

5. Immediately prior to the jobs commencement add the retarder and then any expansive additives. Circulate the pit with maximum agitation.
   a) Retarders – **HR-6L / HR-25L / SCR-100L**.
   b) Expansive Additives - **MicroBond**.

6. If any foaming is observed add additional anti-foaming agents as required.

NOTE: Once the retarder has been added Halliburton recommends that the maximum surface time of the mixwater should be no more than **8** hours. This is due to the retarder being attracted to the high surface area of the siliceous material in the extender. This has the effect of reducing the retardation effect of the retarder on the cement.
It is recommended that if the mixwater with retarder is left for more than 8 hours on surface that it be dumped and a new batch mixed.

Mixwater that has been prepared without the addition of an extender or retarder can be kept for 24 hours. After 24 hours the mixwater should not be used for cementing operations unless authorised by a Halliburton engineer.

Esso Australia PL
12 Riverside Quay, Southbank, Vic 3001

West Whiptail_1
Victoria; Australia

OptiCem
9.625 in Cement Job

Prepared for: Chris Meakin

February 12th, 2004

Version 1

Prepared by:
Jim Collins
Halliburton
95817511

HALLIBURTON

The Future Is Working Together.

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Design

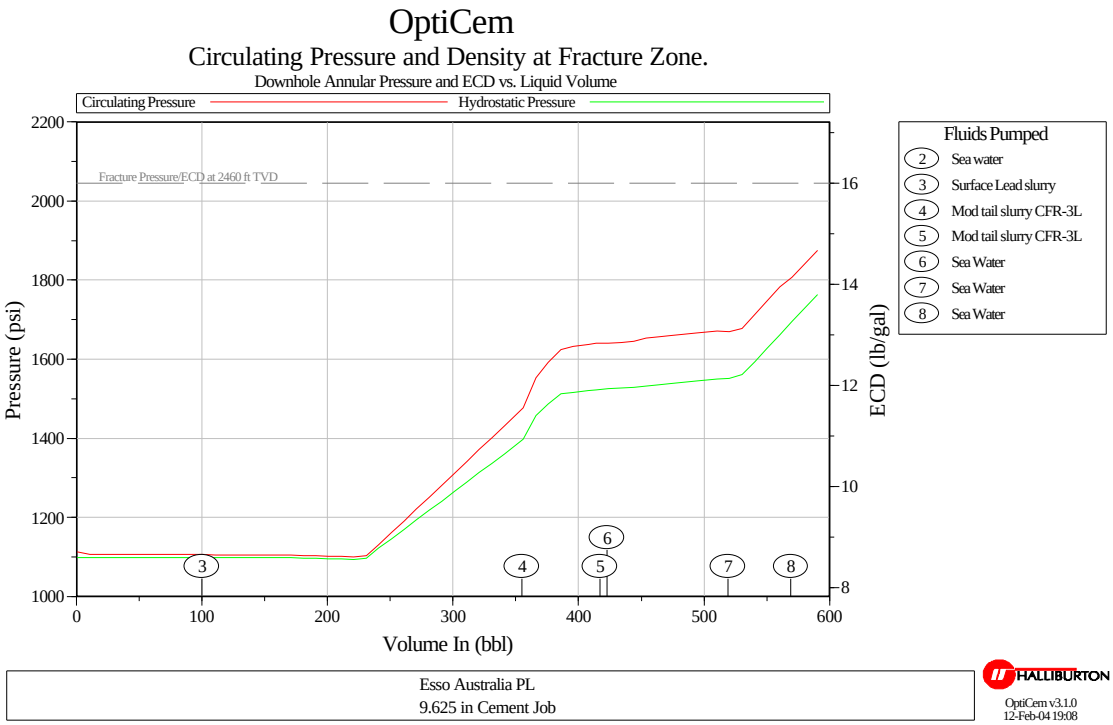
Introduction

This report has been based on information supplied by Esso for the 9 5/8” casing job for the Westwhiptail-1 well. The objective of this report is to simulate the ECD created during the cementation of the 9 5/8” casing string is we suspend the well.

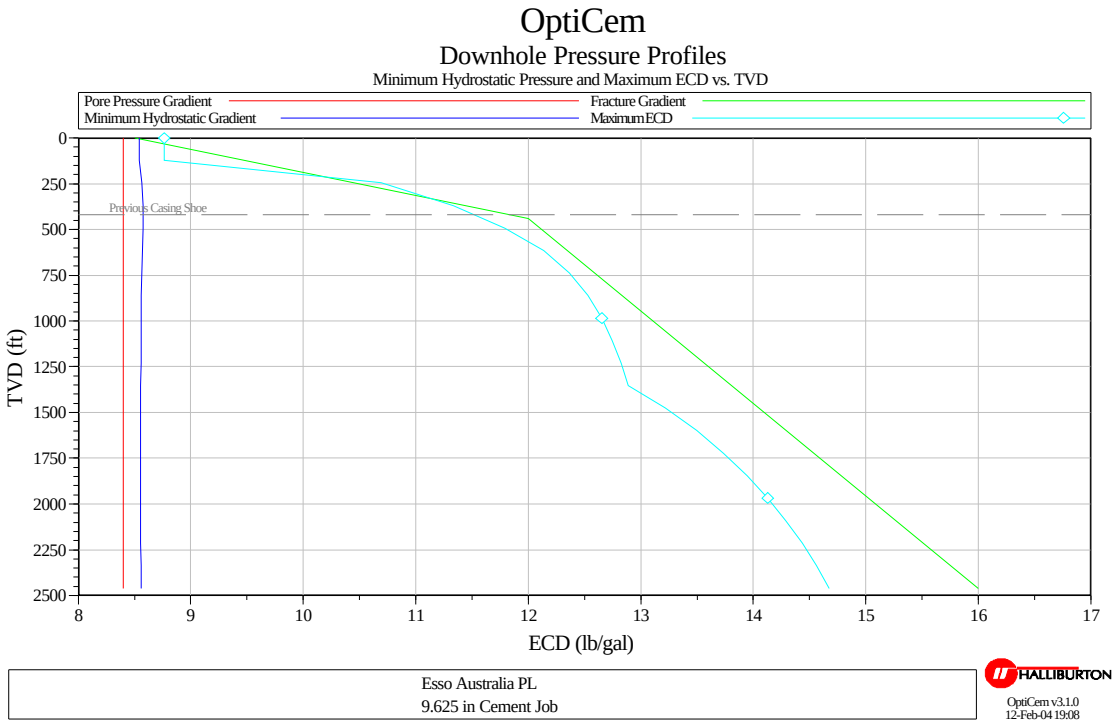
Executive Summary

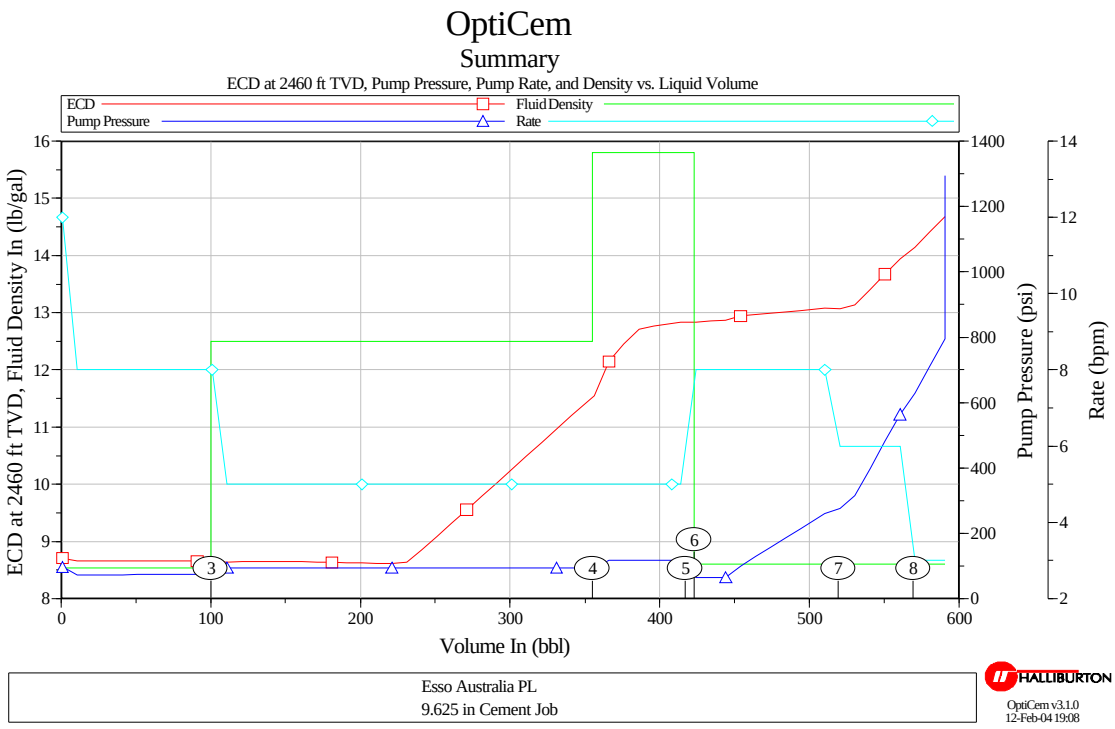
The mud weight was simulated at 8.6ppg, 0% excess with 80% standoff over the cementing interval. The cement was displaced 100bbls at 8bpm, 50bbls at 6bpm and the last ~30bbls at 3 bpm. 12.5ppg lead and 15.8ppg tail slurries were modeled. The ECD’s simulated from this information are 14.4ppg at the 9 5/8” shoe and 12.5ppg at the 30” shoe. These simulations have been run using gauge hole and therefore predict a “worse case” ECD. From these results it is worth noting that toward the end of the cement job when the tail cement is gaining height in the annulus the ECD exceeds a minimum 12.5ppg fracture gradient. The returns at this stage in the job must be monitored closely. If we lose returns, the pump rate must be slowed 3bpm or less.

Graphs



Design





Parameters

Design

Parameters		
Fracture Zone Measured Depth	2460.6	ft
Fracture Zone Gradient	14.00	lb/gal
Reservoir Measured Depth	2460.6	ft
Reservoir Pore Pressure	8.40	lb/gal
Additional Pressure to Seat Plug	500.0	psi
Mud Line to Mean Sea Level Height	124.7	ft
Mean Sea Level to Rotary Kelly Bushing Height	121.4	ft
Surface Iron Length	65.6	ft
Surface Iron Diameter	2.000	in
Pump to RKB Height	16.4	ft
Simulator Volume Increment	10.0	bbl

Pumping Schedule

Stage		Liquid				
Number	Description	Density	Rate	Volume	Tracer	Shutdown
		lb/gal	bpm	bbl		min
1	Sea Water	8.60	12.00	0.0	☐	
2	Sea water	8.54	8.00	100.0	☐	
3	Surface Lead slurry	12.50	5.00	255.0	☐	
4	Mod tail slurry CFR-3L	15.80	5.00	62.0	☒	
5	Mod tail slurry CFR-3L	15.80	5.00	6.0	☐	
6	Sea Water	8.60	8.00	96.3	☐	
7	Sea Water	8.60	6.00	50.0	☐	
8	Sea Water	8.60	3.00	30.0	☐	

Volume and Rate Calculations

Time	Surface Stage Number		Liquid Volume	Total Volume	Liquid Rate	Total Rate	Leading Edge of Tracer Fluid
	In	Out	In	Out	In	Out	
min			bbl		bpm		ft
0.08	1	1	1.0	1.0	12.00	12.00	0.0
1.33	2	1	11.0	11.0	8.00	8.00	0.0
2.58	2	1	21.0	21.0	8.00	8.00	0.0
3.83	2	1	31.0	31.0	8.00	8.00	0.0
5.08	2	1	41.0	41.0	8.00	8.00	0.0
6.33	2	1	51.0	51.0	8.00	8.00	0.0
7.58	2	1	61.0	61.0	8.00	8.00	0.0
8.83	2	1	71.0	71.0	8.00	8.00	0.0
10.08	2	1	81.0	81.0	8.00	8.00	0.0
11.33	2	1	91.0	91.0	8.00	8.00	0.0
12.58	2	1	101.0	101.0	8.00	8.00	0.0
14.58	3	1	111.0	114.1	5.00	6.56	0.0
16.58	3	1	121.0	128.3	5.00	7.09	0.0
18.58	3	1	131.0	142.5	5.00	7.11	0.0
20.58	3	1	141.0	156.7	5.00	7.11	0.0
22.58	3	1	151.0	171.0	5.00	7.11	0.0
24.58	3	1	161.0	185.2	5.00	7.11	0.0
26.58	3	1	171.0	199.6	5.00	7.20	0.0
28.58	3	1	181.0	214.0	5.00	7.19	0.0
30.58	3	1	191.0	228.4	5.00	7.19	0.0
32.58	3	1	201.0	242.7	5.00	7.19	0.0
34.58	3	1	211.0	257.1	5.00	7.19	0.0
36.58	3	1	221.0	271.5	5.00	7.19	0.0
38.58	3	1	231.0	284.9	5.00	6.69	0.0
40.58	3	1	241.0	293.0	5.00	4.08	0.0
42.58	3	1	251.0	301.1	5.00	4.03	0.0
44.58	3	1	261.0	309.2	5.00	4.03	0.0
46.58	3	1	271.0	317.2	5.00	4.03	0.0
48.58	3	1	281.0	325.3	5.00	4.03	0.0
50.58	3	1	291.0	333.4	5.00	4.03	0.0
52.58	3	1	301.0	341.4	5.00	4.03	0.0
54.58	3	1	311.0	349.5	5.00	4.03	0.0
56.58	3	1	321.0	357.6	5.00	4.03	0.0
58.58	3	1	331.0	365.6	5.00	4.03	0.0
60.58	3	1	341.0	373.7	5.00	4.03	0.0
63.58	3	1	356.0	385.8	5.00	4.03	0.0
65.58	4	1	366.0	396.3	5.00	5.24	-539.9
67.58	4	1	376.0	406.2	5.00	4.95	-673.5
69.58	4	1	386.0	416.4	5.00	5.10	-811.3
71.58	4	1	396.0	426.6	5.00	5.11	-949.2
73.58	4	1	406.0	436.8	5.00	5.11	-1087.1
75.98	4	1	418.0	449.1	5.00	5.11	-1252.5
77.17	5	1	424.0	455.2	5.00	5.19	-1336.0
78.42	6	1	434.0	461.0	8.00	4.59	-1413.4
79.67	6	1	444.0	466.6	8.00	4.52	-1489.7
80.92	6	1	454.0	472.3	8.00	4.53	-1566.0

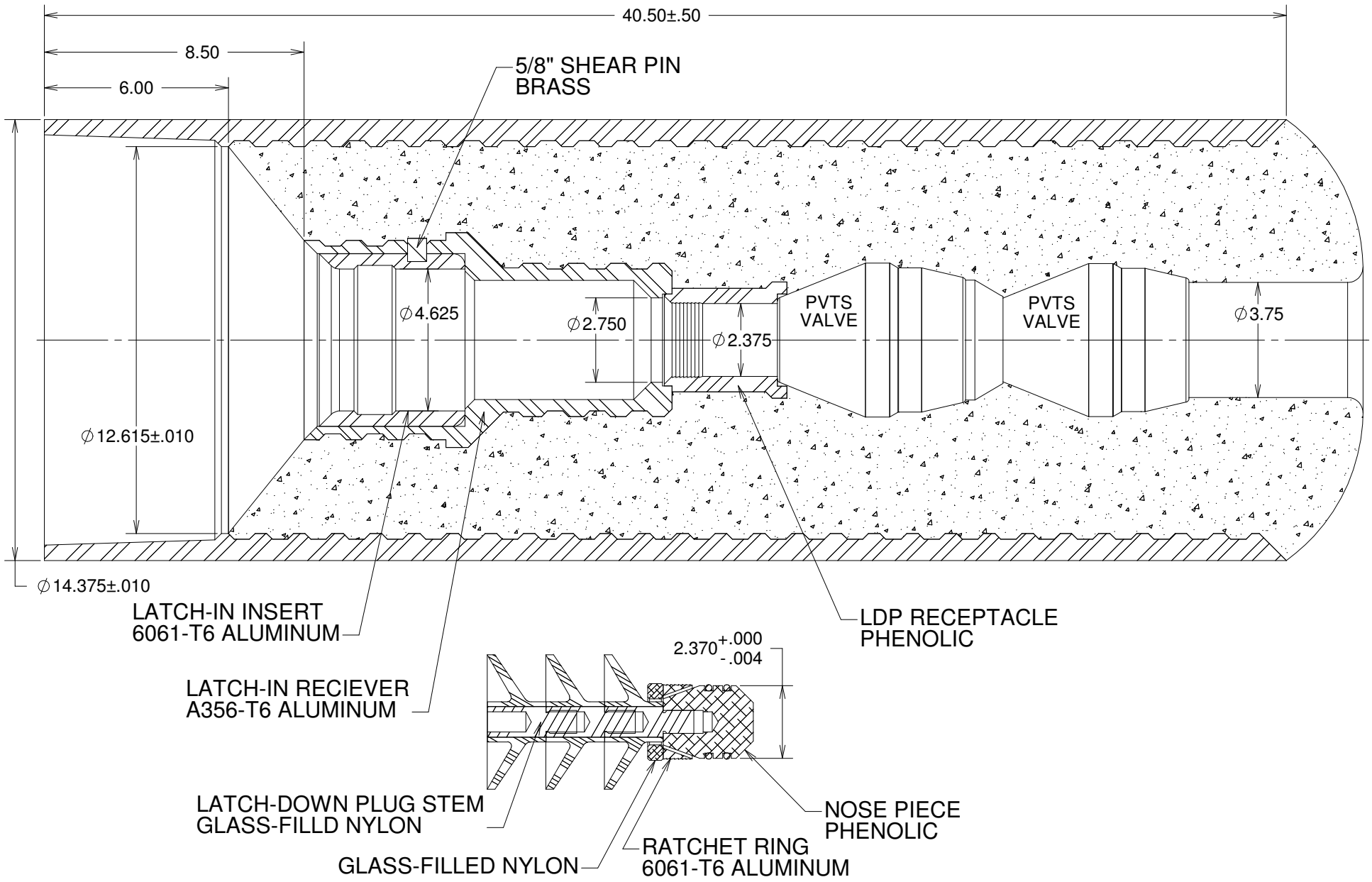
Simulation

Volume and Rate Calculations							
Time	Surface Stage Number		Liquid Volume	Total Volume	Liquid Rate	Total Rate	Leading Edge of Tracer Fluid
	In	Out	In	Out	In	Out	
min			bbl		bpm		ft
82.17	6	1	464.0	477.9	8.00	4.53	-1642.4
83.42	6	1	474.0	483.6	8.00	4.53	-1718.8
84.67	6	1	484.0	489.3	8.00	4.53	-1795.2
85.92	6	1	494.0	494.9	8.00	4.53	-1871.5
87.17	6	1	504.0	504.0	8.00	7.24	-1993.6
89.21	6	1	520.3	520.3	8.00	8.00	-2213.7
90.88	7	1	530.3	530.3	6.00	6.00	-2348.6
92.55	7	1	540.3	540.3	6.00	6.00	2445.3
94.21	7	1	550.3	550.3	6.00	6.00	2355.7
95.88	7	1	560.3	560.3	6.00	6.00	2266.1
97.55	7	1	570.3	570.3	6.00	6.00	2176.4
100.88	8	1	580.3	580.3	3.00	3.00	2086.8
104.21	8	1	590.3	590.3	3.00	3.00	1997.2
107.55	8	1	600.3	600.3	3.00	3.00	1907.5

Gas Flow Potential	1.3	
at Reservoir Zone Measured Depth	2460.6	ft

Disclaimer

The above report is based on sound engineering practices, but because of variable well conditions and other information which must be relied upon, Halliburton makes no warranty, express or implied, as to the accuracy of the data or of any calculations or opinion s expressed herein. You agree that Halliburton shall not be liable for any loss or damage whether due to negligence or otherwise arising out of or in connection with such data calculations or opinions.



REVISED 12/7/00

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DAVIS-LYNCH INC.

STD. TOLERANCES U.O.S.:
.XX = ± .010" ∅ ± 1/32" LENGTH
.XXX = ± .004" ∅ ± 1/64" LENGTH
FRACTIONS = ± 1/32"
BREAK EDGES 1/32" x 45°
ALL ANGLES 45°
STD. SURFACE FINISH = 125rms

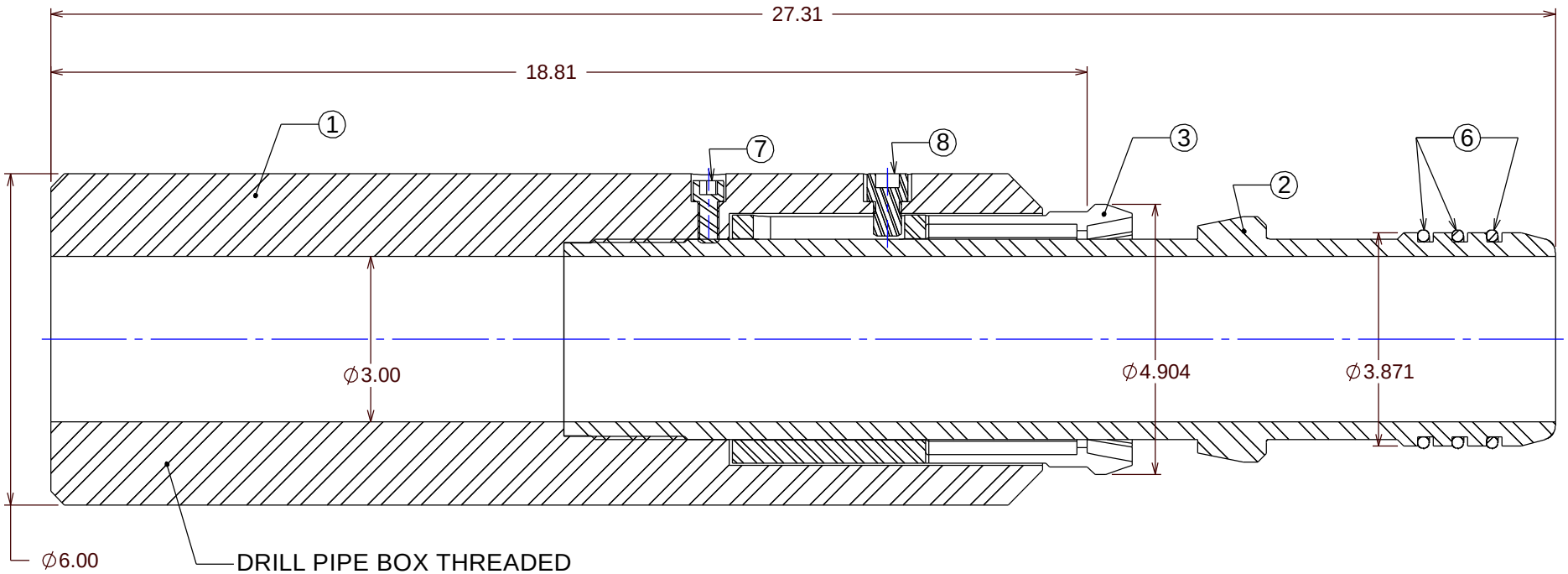
MATERIAL: PER WORK ORDER
SCALE: 1:5

REV. #	REV. DATE	DESCRIPTION OF REVISION	APPV'D

TOOL NAME: 13-3/8" TYPE 500DV-L-LP DOUBLE-VALVE FLOAT SHOE

DWN BY:	DWG DATE:	PART NAME:	Work Order:
RAC	1/12/2004	TBRO 68#, GRADE K-55 CASING, BUTTRESS	0

APPR'VD BY:	REVISION DATE:	FILENAME:	DRAWING NO:
JCE	1/12/2004	1338500DVLLP-BTC- MTLS	1338500DVLLP-BTC



ITEM NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL	REVISION
1	1	300LIAouterslv	OUTER SLEEVE	4140HT, Rc28-30	6/26/2001
2	1	300LIAmandrel	SEAL MANDREL	4140HT, Rc 28-30	6/26/2001
3	1	300LIAcollett	J-SLOT COLLET	4140HT, Rc 30-32	6/26/2001
6	3	2-341	O-RING	BUNA-70D	6/30/1999
7	1	38-16 Cap Screw	SKT-HD CAP SCREW, 3/4" L	STEEL	1/1/1999
8	1	50-13 Cap Screw	SKT-HD CAP SCREW, 5/8" L	STEEL	1/1/1999

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STD. TOLERANCES U.O.S.:
.XX = ± .010" ∅ ± 1/32" LENGTH
.XXX = ± .004" ∅ ± 1/64" LENGTH
FRACTIONS = ± 1/32"
BREAK EDGES 1/32" x 45°
ALL ANGLES 45°
STD. SURFACE FINISH = 125rms

MATERIAL: 4140HT
SCALE: 3:8

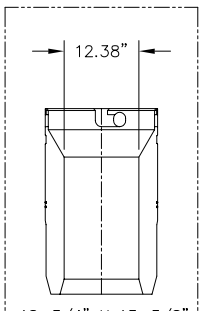
REV. #	REV. DATE	DESCRIPTION OF REVISION	APPV'D

TOOL NAME: 3" I.D. LATCH-IN INNER STRING CEMENTING

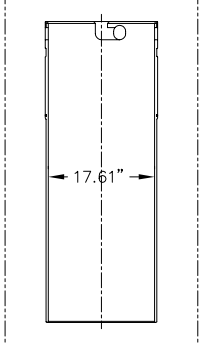
DWN BY:	DWG DATE:	PART NAME:	Work Order:
PLS	6/26/2001	3" I.D. ADAPTER ASSEMBLY	0

APPR'VD BY:	REVISION DATE:	FILENAME:	DRAWING NO:
JCE	6/26/2001	300LATCH-IN-ADPT	300LATCH-IN-ADPT

ATTACHMENT 14

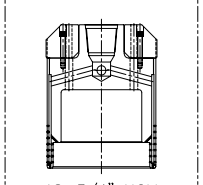


18–3/4" X 13–3/8"
UPPER WEAR BUSHING
P/N 2125332–02



18–3/4" NOM.
LOWER WEAR BUSHING
P/N 2125331–02

18–3/4" NOM.
COMBINATION TOOL
P/N 2125897–01



18–3/4" NOM.
JETTING TOOL
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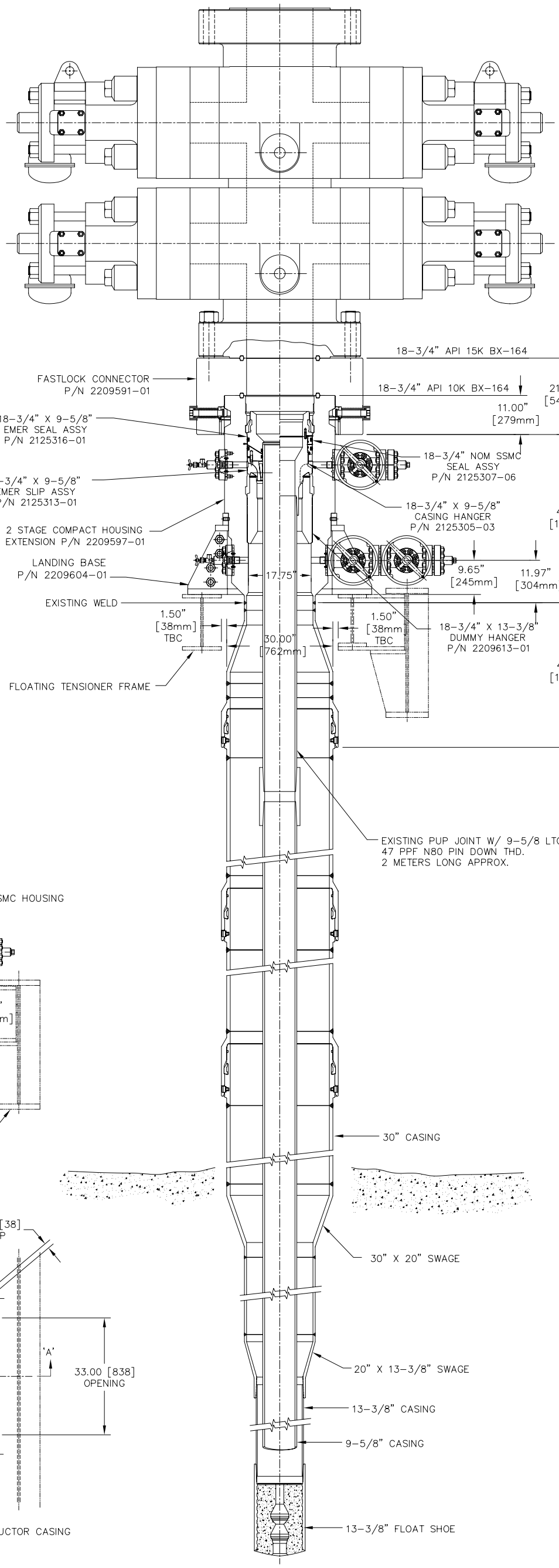

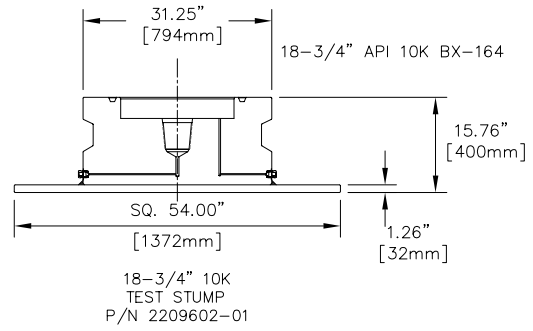

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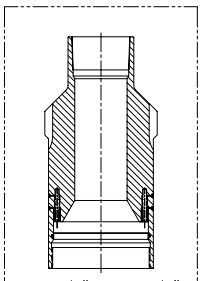
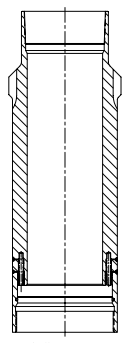


18–3/4" X 9–5/8"
CASING HANGER
RUNNING TOOL
P/N 2202714–02



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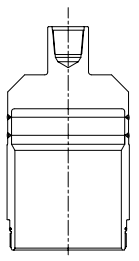
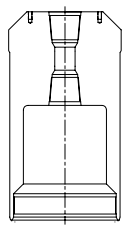
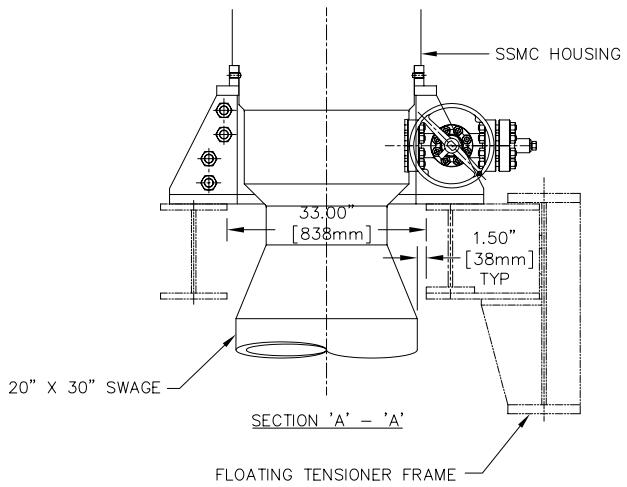
RUNNING TOOL
P/N 2202714–01

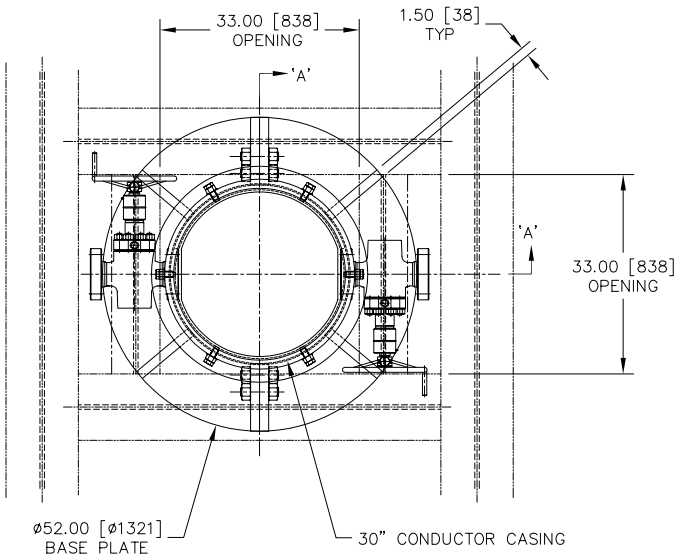


EXISTING 18–3/4"
NOM. SSMC COMPACT
HOUSING RUNNING
TOOL WITH EXTENSION
XOVER
P/N 2209618–01



18–3/4" NOM. SSMC
SEAL ASSY
RUNNING TOOL
P/N 2125327–02





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CAMERON

18–3/4" 5000 PSI
NEAR FIELD WILDCAT WELL
ESSO WEST WHIPTAIL–1

Drawn by:	Date:	Scale:	Drawing Number SHT 1 OF 1	Rev.
A. SEREY	18/02/2004	N.T.S.	LO–051691–09	06

M E M O R A N D U M

EMDC DRILLING, AUSTRALIA OFFSHORE

TO:	Frank Kratzer	**DATE:**	12-May-2004
FROM:	Chris Meakin	**REFERENCE:**	West Whiptail-1
c.c.:	Distribution	**SUBJECT:**	Pre-Spud Minutes

ENDORSED:

Frank Kratzer
Drilling Operation Superintendent

PARTICIPANTS:

ENSCO 102			
Tim Paltridge	Esso Drlg Supv.	Glyn Edwards	Andergauge
George Sharkey	Esso Drlg Supv.	Emad Elzahaby	Baroid
Colin Johancsik	Esso Engineering Mgr	Kerry McMillan	Cameron
Shane Harris	Esso Drlg Engineer	Rudey Mook	Cameron
Chris Meakin	Esso Drlg Engineer	Mark James	Dowell Schlumberger
Simon Grope	Esso Geologist	Wayne Comben	Dowell Schlumberger
Mike Woodmansee	Esso Site Geologist	Mark Smith	Geoservices
Ray Wyld	EMDC Safety Adviser	Alex Nitzsche	Global Offshore (ROV)
Joey Shelton	ENSCO OIM	Collin Taylor	Global Offshore (ROV)
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West Whiptail-1 Well Data File
West Whiptail-1 Well Surveillance File

The West Whiptail-1 Pre-Spud Meeting was held on the ENSCO 102 at the well location on Sunday May 9, 2004, at 1800 hrs.

Tim Paltridge opened the pre-spud meeting.

Colin Johancsik spoke on the need for a safe operation, and invited all participants to raise questions if they needed to in this final review of the well program prior to spudding the well.

Simon Grope then reviewed the prospect location, and identified that we had good geological control with the close offset wells at Whiptail-1A and Mulloway-1, but uncertainty in the depth of the contacts and the nature of the reservoir to resolve before committing to further development of the field. Simon also discussed the lithology expected and some of the risks, viz. Some sands and potential lost returns in the Gippsland Limestone; sloughing shales in Lakes Entrance; and hydrocarbons and coal sections in Latrobe.

Chris Meakin then reviewed the Drilling Program, in particular:

1. Section 4.3 Reference Documents, identifying the documents that we must comply with, and that these were available from the OIM and the Esso Drilling Supervisor.

2. Section 6.0 Critical Issue & Offset Drilling Experience, running through the potential hazards and the preventative measures planned.

3. Section 4.2 Summary Drilling Plan was then reviewed to give an overview of the drilling plan. The following changes were noted:
   - Step 9. A drop gyro will be required;
   - Step 11. The riser will also we flushed with 300 bbl of 13.5 ppg riser flush mud;
   - Step 16. The TD is 1500m TVDSS, with a potential to deepen the well;
   - Step 17. A drop gyro will be run on the last trip out of hole.

4. Attachment 1 was handed-out to attendees and discussed generally, and the major changes to the Drilling Program arising from the Drill-Well-on-Paper held on March 19 reviewed. In particular changes to the following paragraphs were covered in detail:
   - Para. 7.1. A SDI drop gyro will be run in surface hole, and at the well TD. The SDI Gyro and GR run on electricline has been dropped from the program;
   - Para. 9.2(1). After rigging up the BOP and diverter to the 18-3/4" wellhead, test connections to 200 psi.
   - Para. 9.3(2). The amount of rathole has been reduced to ~5m, and the nominal surface hole TD to 755m MDRT;
   - Para. 9.3(3). Only make a wiper trip to the shoe if hole conditions dictate. After discussion the requirement to SLM out-of-hole was dropped because the mechanical racking system in use on the rig eliminate a person in the derrick, and the accuracy of a SLM was thought to be no greater, and perhaps less, than measuring pipe on the piperack. This section should now read:

     "At TD of 755m MDRT, circulate at least bottoms up and until the hole is clean. Displace the hole with any excess non-flocculated seawater/bentonite mud. Drop the SDI Gyro Survey and POOH. Make a wiper trip to the 30" shoe prior to POOH if hole conditions dictate."

   - Para. 9.5(3). Attachment 11 detailing the surface casing cementing program has been revised, and is included at the end of Attachment 1 to this document;
   - A new paragraph has been added after Para. 9.5(3) adding the requirement to prepared 300 bbl of 13.5 ppg riser flush mud. It reads as follows:

     "Pre-mix 330 bbl of 13.5ppg bentonite mud with a 10 second gel greater than 3 lb/100ft^2. This riser flush mud will be used to displace any excess cement above the stage collar from the well."

   - Para. 9.5(11). The amount of open-hole excess required for the 9-5/8" surface casing cement slurry has been reduced from 100% to 25%. This has reduced the lead slurry volume. The tail slurry volume hasn't been changed;
   - Para. 9.5 (13) has been extensively rewritten to allow for a nominal 4 bbl displacement from the cement unit to the rig floor, and the identify that the first 10 bbl of displacement will be by the cement pumps before switching to the rig pumps. Following discussions at the Pre-Spud meeting, displacement was

changed such that all the displacement would be using seawater, and the riser flush mud would be introduced only after the plug was bumped and the stage collar opened. Note 2 in this paragraph has also been changed to include the 9-5/8" by 30" annular volume, as well as updating the capacity of the 9-5/8" casing using the calipered ID of the actual casing, as has Not 5. This paragraph should now read:

"Displace cement with nominally 180.5 bbl seawater/mud (this assumes 4 bbl displacement volume from the cementer to the rig floor) to bump the top plug with 500 psi over the final differential pressure for 2 minutes. Displace the first 10 bbl by the cementer, followed by 90 bbl with the rig pumps at a rate of 8-10 bpm, before slowing the rate to 6 bpm to minimise fracture pressure at TD and possible lost returns. For the final 30 bbl of displacement slow the pump rate to 2 to 3 bpm. Do not exceed 1,500 psi during the displacement, as the hydraulic stage collar is set to open at 2,250 psi ±250 psi. Base the actual displacement on the actual lengths of casing run, and the callipered casing ID. Monitor for cement returns during the job. Pump at a slow rate (less than 5 bpm) until the Shut-off Plug passes the ES Cementer.

NOTE: 1 **Check the efficiency of the rig pumps.**

NOTE: 2 **Use actual capacity based on the average ID for 9-5/8" 47 ppf L80 casing allocated for West Whiptail-1. Capacity values used for displacement calculations are as follows:**

- **9-5/8" x 30" (28" ID) conductor annulus: 2.2034 bbl/m;**
- **9-5/8" 47 ppf casing: 0.24283 bbl/m (West Whiptail-1 calipered casing.)**

NOTE: 3 ***Pump the total calculated displacement plus a maximum of half the shoe track volume.***

NOTE: 4 **Monitor returns from the wellhead throughout the displacement. Ensure that cement returns do not enter the BOP stack. Reduce displacement rate if necessary to reduce back-pressure across the wellhead side-outlet valves.**

NOTE: 5 **Based on cementing 9-5/8" surface casing in 12-1/4" gauge hole, the top of cement in the 30" x 9-5/8" riser when pumping 25% excess for open hole is calculated at 13.1m above the mudline. Cement returns are not expected during the primary cement job, and possibly not while circulating out the riser annulus clean after opening the stage collar."**

- Para. 9.5(16). This paragraph should be modified to specify initially flushing the riser with the riser flush mud, followed by seawater. Attention was draw to the note and the need to ensure that cement returns don't enter the BOPs. This paragraph should read:

"Circulate the 13.5 ppg riser flush mud, followed by seawater to flush the riser until clean returns are seen."

- Para. 10.2(5). The 9-5/8" surface casing shoe track will be drilled with new mud;
- Para. 10.2(13). As with the surface hole section TD when 8-1/2" production hole TD is reached a drop gyro will be run in the last trip out of hole. A wiper trip to the surface casing shoe should be made only if hole conditions dictate;
- Para 10.2(14) (running a SDI gyro/GR survey on electricline) has been deleted.

Mike Woodmansee described the West Whiptail-1 Geological Program. In particular:

1. The expected lithology for the wells and the hazards:
   - In the Gippsland Limeston a sand section at ~500m may have lost circulation potential;
   - Active shales in the Lakes Entrance section should be controlled with the mud programmed;
   - At the top of Coarse Clastics (top of Latrobe) a hard section of pyrite/dolomite may be encountered. **Discussion identified this hard section would need to be drilled "carefully" to avoid damaging the bit.** Deeper in the section there may be some gas and some coal section from 2m to 20m thick, followed by an oil leg and then water.
2. The mud logging program, including sampling and monitoring for gas and H_2S;
3. The logging program comprising:
   - PEX/Sonic;
   - MDTs, pressure and possibly samples;
   - Velocity survey, using the rig crane;
   - A strong potential that the contingent side-wall cores would be required.

Tim Paltridge thanked everyone for the attention and closed the meeting at 1910 hrs.

ATTACHMENT 1

PROGRAM CHANGES INCLUDING ERRATA.

No.	Reference (Page & Para.)	Change FROM	Change TO
1	P8 #6.5.2	"75m of 8" collars, 292m ..."	"75m of 6-3/4" collars, 292m..."
2	P12 #7.1	**See Changes Detailed Below**	
3	P16 9-5/8" Clean-out BHA	Change heading from "9-5/8" Casing Clean-out"	"Contingency 9-5/8" Casing Clean-out"
4	P19 #8.3 (3)	"one stand/hour"	"one to two stands/hour"
5	P23 #9.3 (1)	"RIH to TD on 5", 19.5# S-135 drill pipe."	"RIH to TD on 5", 19.5# S-135 drill pipe and drill out the float shoe."
6	P23 #9.3 (2)	"Drill ahead at 900 - 1,100 GPMs, 50-150 RPMs, and 5 - 30 kips WOB to ~765m MDRT as per Paragraph 7.4 Bit and Hydraulics Program, to provide ~15 m of rathole below the 9-5/8" casing shoe proposed for 750m MDRT."	"Drill ahead at 900 - 1,100 GPMs, 50-150 RPMs, and 5 - 30 kips WOB to ~755m MDRT as per Paragraph 7.4 Bit and Hydraulics Program, to provide ~5 m of rathole below the 9-5/8" casing shoe proposed for 750m MDRT."
7	P23 #9.3 (3)	"At TD of 765m MDRT, circulate at least bottoms up and until the hole is clean. Make a wiper trip to the 30" shoe. RIH to TD, circulate B/U, then displace the hole with any excess non-flocculated seawater/bentonite mud. Drop the SDI gyro survey (if required) and SLM out of hole. **NOTE: 1** Run the SDI gyro survey if the estimated vertical section for the well based on the Anderdrift surveys accumulated along the same azimuth exceeds 22m, as per Paragraph 7.1 Directional Survey Program."	"At TD of 755m MDRT, circulate at least bottoms up and until the hole is clean. Displace the hole with any excess non-flocculated seawater/bentonite mud. Drop the SDI Gyro Survey and SLM out of hole. Make a wiper trip to the 30" shoe prior to POOH if hole conditions dictate."
8	P24 #9.4 (4) Note 1	"and rotary hand slips."	"and PS-21 casing slips."
9	P25 #9.4 (12)		Add an additional bullet point after the last bullet point: "♦ Continue running casing as per Attachment 11."
10	P26 #9.4 (22)	"P/U the ES Cementer Closing Tool, centralisers and slip-joint on drill pipe"	"P/U the ES Cementer Closing Tool, 8-1/2" stabilisers and bumper sub on drill pipe"
11	P26 #9.5 (3)	"Proposed cement slurry properties are detailed in ATTACHMENT 11 West Whiptail-1 - 9-5/8" Surface Casing Cementing Requirement and ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program."	"Proposed cement slurry properties are detailed in ATTACHMENT 11 West Whiptail-1 - 9-5/8" Surface Casing Cementing Requirement, Rev. 1 and ATTACHMENT 12 Halliburton West Whiptail-1 Cementing Program."
12	P26 #9.5 (4)		**New paragraph Added. Existing Paragraphs 9.5 (4) to (19) are incremented by one.** "Pre-mix 330 bbl of 13.5ppg bentonite mud with a 10 second gel greater than 3 lb/100ft^2. This riser flush mud will be used to displace any excess cement above the stage collar from the well."
13	P26 #9.5 (7/8)	"10 bpm"	"8.5 bpm"

ATTACHMENT 1

No.	Reference (Page & Para.)	Change FROM	Change TO
14	P27 #9.5 (11/12)	"Mix and pump 161 bbls of 12.5 ppg lead cement slurry followed by 68 bbl of 15.8 ppg tail slurry (volume required to fill the float joints, 30" conductor by 9-5/8" annulus with no excess, and 12-1/4" by 9-5/8" open-hole annulus with 100% excess). **NOTE: 1** Recalculate cement volume on-site based on actual hole depth, and verify with the on-site cementing crew. Use 100% excess on open hole."	"Mix and pump 163 bbls of 12.5 ppg lead cement slurry followed by 68 bbl of 15.8 ppg tail slurry (volume required to fill the float joints, 30" conductor by 9-5/8" annulus with no excess, and 12-1/4" by 9-5/8" open-hole annulus with 25% excess). **NOTE: 1** Recalculate cement volume on-site based on actual hole depth, and verify with the on-site cementing crew. Use 25% excess on open hole."
15	P27 #9.5 (13/14)	**See Changes Detailed Below**	
16	P28 #9.5 (16/17)	"Circulate seawater to flush the riser until clean returns are seen."	"Circulate the balance of the 13.5 ppg riser flush mud, followed by seawater to flush the riser until clean returns are seen."
16	P28 #10.1 (1)	"fitted by a bull-plugged companion flange."	"fitted with a bull-plugged companion flange."
17	P29 #10.2 (5) Note 1	"drill the 9-5/8" shoe track either with mud from the previous hole section, or with new mud."	"drill the 9-5/8" shoe track with new mud."
18	P29 #10.2 (8)	"Test the cement lines to 5000 psi."	"Test the cement lines to 3000 psi."
19	P29 #10.2 (13)	"At the dry hole TD, pump a 100-bbl hi-vis sweep. Circulate bottoms up at the maximum possible rate. Make a wiper trip to the 9-5/8" shoe. RIH to TD and circulate the hole until the shakers are clean or 2.0 times bottoms up, whichever occurs last. POOH to log."	"At the dry hole TD, pump a 100-bbl hi-vis sweep. Circulate bottoms up at the maximum possible rate. Drop the SDI Gyro Survey and SLM out of hole. Make a wiper trip to the 9-5/8" shoe prior to POOH if hole conditions dictate."
20	P29 #10.2 (14)	" Run SDI gyro and gamma-ray on Schlumberger Electricline, reporting the directional survey at 5m intervals."	This step has been deleted. Paragraph 13 specifies running the SDI Drop Gyro on the last trip out of hole.
21	West Whiptail-1 Geological Program P20		Add "Manager, Petroleum Operations Safety and Environment - MR HORACIO HAAG Telephone: (03) 9412 5101 Work Telephone: 0408 543 154 Cell Telephone: (03) 9315 3643 Home Fax: (03) 9412 5152 E-mail: horacio.haag@dpi.vic.gov.au"

ATTACHMENT 1

Page 12 #7.1 - Change FROM

Hole Size-Inches	Depth (m MDRT)	Survey Interval-m	Survey Instrument
17-1/2" x 36"	0 - 120	30m and at mudline and section TD	9-1/2" Anderdrift tool
12-1/4"	0 - 750m or 120 - 750m (Note 2)	30m and at mudline and section TD	8" Anderdrift tool
12-1/4"	0 - 750m	5m and at mudline and section TD	SDI drop gyro if required (Note 3)
8-1/2"	750 - 1539m	30m and at section TD	7" Anderdrift tool
8-1/2"	0 m to TD	5m.	SDI Gyro & GR rum on Electricline.

NOTE: 6 Ensure that all Hi-Vis sweeps are clear of drill string prior to taking an Anderdrift survey or take the survey prior to pumping any Hi-Vis.
NOTE: 7 Survey from surface if an Anderdrift survey has not been conducted in the 17-1/2" x 36" hole section.
NOTE: 8 Run a drop gyro survey at the surface hole TD (~750m MDRT) if the total offset for the surface hole section, plotted at a constant azimuth, is greater than 22m. At 22 m offset, the well could continue to build at an average inclination of up to 2 deg and still remain within the 50m radius target window.
NOTE: 9 Recent offset wells indicate a straight hole should be within this target radius.

Page 12 #7.1 - Change TO

Hole Size-Inches	Depth (m MDRT)	Survey Interval-m	Survey Instrument
17-1/2" x 36"	0 - 120	30m and at mudline and section TD	9-1/2" Anderdrift tool
12-1/4"	0 - 750m or 120 - 750m (Note 2)	30m and at mudline and section TD	8" Anderdrift tool
12-1/4"	0 - 750m	5m and at mudline and section TD	SDI Drop Gyro
8-1/2"	750 - 1539m	30m and at section TD	7" Anderdrift tool
8-1/2"	0 m to TD	5m.	SDI Drop Gyro.

NOTE: 1 Ensure that all Hi-Vis sweeps are clear of drill string prior to taking an Anderdrift survey or take the survey prior to pumping any Hi-Vis.
NOTE: 2 Survey from surface if an Anderdrift survey has not been conducted in the 17-1/2" x 36" hole section.
NOTE: 3 Recent offset wells indicate a straight hole should be within this target radius.

Page 27 #9.5 (13) - Change FROM

Displace cement with nominally 176.7 bbl seawater to bump the top plug with 500 psi over the final differential pressure for 2 minutes. **Do not exceed 1,500 psi** during the displacement as the hydraulic stage collar is set to open at 2,250 psi ±250 psi. Base the actual displacement on the actual lengths of casing run, and the callipered casing ID. Monitor for cement returns during the job. Pump at a slow rate (less than 5 bpm) until the Shut-off Plug passes the ES Cementer. Displace the first 100 bbl cement with the rig pumps at a rate of 8-10 bpm, before slowing the rate to 6 bpm, and finally to 2 to 3 bpm for the last 30 bbl to bump the plug to minimise fracture pressure at TD and possible lost returns.

NOTE: 4 Check the efficiency of the rig pumps.

NOTE: 5 Use actual capacity based on the average ID for 9-5/8" 47 ppf L80 casing allocated. Capacity values used for displacement calculations are as follows:

- 9-5/8" 47 ppf casing: 0.24306 bbl/m (based on callipered casing prepared for Beardie-1.)

NOTE: 6 ***Pump the total calculated displacement plus a maximum of half the shoe track volume.***

NOTE: 7 Monitor returns from the wellhead throughout the displacement. Ensure that cement returns do not enter the BOP stack. Reduce displacement rate if necessary to reduce back-pressure across the wellhead side-outlet valves.

NOTE: 8 Based on cementing 9-5/8" surface casing in 12-1/4" gauge hole, with the hydraulic stage collar set 10m below mudline, the top of cement in the 30" x 9-5/8" riser when pumping 100% excess for open hole is calculated at 35m MDRT. Cement returns are not expected during the primary cement job, only while circulating out the riser annulus clean after opening the stage collar.

Page 27 #9.5 (13) - Change TO

Displace cement with nominally 180.5 bbl seawater/mud (this assumes 4 bbl displacement volume from the cementer to the rig floor) to bump the top plug with 500 psi over the final differential pressure for 2 minutes. Displace the first 10 bbl by the cementer, followed by 90 bbl with the rig pumps at a rate of 8-10 bpm, before slowing the rate to 6 bpm to minimise fracture pressure at TD and possible lost returns. For the final 30 bbl of displacement switch to the pre-mixed 13.5 ppg riser flush mud, slowing the pump rate to 2 to 3 bpm. **Do not exceed 1,500 psi** during the displacement as the hydraulic stage collar is set to open at 2,250 psi ±250 psi. Base the actual displacement on the actual lengths of casing run, and the callipered casing ID. Monitor for cement returns during the job. Pump at a slow rate (less than 5 bpm) until the Shut-off Plug passes the ES Cementer.

NOTE: 1 Check the efficiency of the rig pumps.

NOTE: 2 Use actual capacity based on the average ID for 9-5/8" 47 ppf L80 casing allocated for West Whiptail-1. Capacity values used for displacement calculations are as follows:

- 9-5/8" x 30" (28" ID) conductor annulus: 2.2034 bbl/m;
- 9-5/8" 47 ppf casing: 0.24283 bbl/m (West Whiptail-1 calipered casing.)

NOTE: 3 ***Pump the total calculated displacement plus a maximum of half the shoe track volume.***

NOTE: 4 Monitor returns from the wellhead throughout the displacement. Ensure that cement returns do not enter the BOP stack. Reduce displacement rate if necessary to reduce back-pressure across the wellhead side-outlet valves.

NOTE: 5 Based on cementing 9-5/8" surface casing in 12-1/4" gauge hole, the top of cement in the 30" x 9-5/8" riser when pumping 25% excess for open hole is calculated at 13.1m above the mudline. Cement returns are not expected during the primary cement job, and possibly not while circulating out the riser annulus clean after opening the stage collar.

WEST WHIPTAIL-1 SURFACE CASING

ATTACHMENT 11 Rev. 1

Casing Type : 9-5/8", 47ppf, L-80 LTC

Centraliser type : 17 - W'fd 9-5/8" x 12-1/4" ST-A3, S/N 01161234
One (1) - W'fd PO10 modified to 9-5/8" x 27"

Nominal Casing Setting Depth : 750 m MDRT 750 m TVDRT

Stop Collar : 18 - Weatherford 9-5/8" JSH - S/N 01161398

String	Length (m)	Joints (no.)	Casing O.D.	Conn	Weight (lb/ft)	Grade	Central's (no./jt)	Total No. Central's	Stop rings (no/jt)	Burst SF=1.375	Collapse SF=1.0
Float shoe by Float collar jt.	12.50	1	9-5/8"	LTC	47	L-80	2	2	2	4996 psi	4750 psi
Shut-off Baffle joint	12.50	1	9-5/8"	LTC	47	L-80	1	1	1	4996 psi	4750 psi
9-5/8" Surface Casing, threadlocked	23.40	2	9-5/8"	LTC	47	L-80	0.5	1	1	4996 psi	4750 psi
9-5/8" Surface Casing @ 11.7 m/jt.	608.40	52	9-5/8"	LTC	47	L-80	0.25	13	13	4996 psi	4750 psi
HES Stage cement collar preassembly	4.80	1	9-5/8"	LTC	47	L-80	1	1	1	4996 psi	4750 psi
9-5/8" Surface Casing, threadlocked	46.80	4	9-5/8"	LTC	47	L-80	-	-	-	4996 psi	4750 psi
9-5/8" Surface Casing	23.40	2	9-5/8"	LTC	47	L-80	-	-	-	4996 psi	4750 psi
Pup joint & casing hanger	3.00	0	9-5/8"	LTC	47	L-80	-	-	-	4996 psi	4750 psi
Casing hanger to top of Wellhead	0.12	0									
String length	734.92	63						18	18		
RT - Top 18-3/4" Wellhead Housing	**14.82**										
Actual Casing Shoe Depth	**749.74** m MDRT										

(1) - Run all casing using Best-O-Life 2000 thread compound.
(2) - Confirm that all float equipment is PDC drillable.
(3) - M/U connections using ExxonMobil Torque position. For 9-5/8" 47ppf L80 LTC casing with phosphatised couplings T-min is 9,600 ft-lbs and T-max is 14,400 ft-lbs. D1 is 4.813" and D2 5.125".
(4) - HES Stage cement collar preassembly comprises Halliburton 9-5/8" Type H ES cementer with 1.8m 9-5/8" 47 lb/ft L-80 LTC pup joint threadlocked on either end.
(5) - Maximum allowable hookload on surface casing is 415 kips (df = 1.5). This includes 180 kips for the weight of the travelling equipment.
(6) - Record casing and cementing data in the Drilling Reporting system, and send the final Casing Tally spreadsheet to Melbourne office.

Cement Job Type	Slurry Vol (bbl)	No. sx (sx)	Total Fluid Required		Additives		Slurry Yield cu ft/sx	Slurry Density (ppg)	Max Job Time (hrs)	Thick'ning Time (hrs)	Displace. Vol (bbl)
			Type	Qty gal/sx	Type	Qty (gal/10 bbl)					
Lead Cement Slurry	163	416	Seawater Total Fluid	12.54 12.99	Econolite NF-5	14.6 0.3	2.2	12.5	2hr:30min	3hr:00min to 3hr:30min	-
Tail Cement Slurry	68	332	Freshwater	5.10	NF-5	0.3	1.15	15.8	2hr:05min	2hr:30min to 2hr:55min	180.5

Slurry Vol assumes 25% excess on 12-1/4" gauge open hole with cement to the mudline. Recalculate volumes based on actual hole depths.

Special Requirements

(1) - Pump a 50 bbl of seawater spacer in front of the cement. Drop a By-Pass plug in front of the lead slurry, and drop the shut-off plug after pumping the tail slurry.
(2) - The 180.5 bbl displacement volume assumes 4 bbl surface volume. Use the actual surface volume in the displacement calculation
(3) - Displace the first 10 bbl with the cementer before changing to the rig pumps. Displace initially with the seawater, slowing down to 6 bpm for the last 80 bbl, and 3 bpm for the last 30 bbl. Bump the plug to 500 psi over final differential pressure. Check floats are holding.
(4) - Increase pressure to 2,250 psi +/- 250 psi to open stage tool. Circulate the 13.5 ppg flush mud, followed by seawater until clean and 330 bbl of 8 lb/bbl sugar water.
(5) - BHST 34° C. BHCT 34° C.
(6) - Maximum MWE at the 13-3/8" casing shoe for cement back to the wellhead is 13.9 ppg MWE for gauge hole.
(7) - Estimated 24hr compressive strength for the lead slurry at 34° C is 350 psi. 24hr compressive strength for the tail slurry at 34° C is 2,400 psi.

DRILLING PROGRAM	**WELL: West Whiptail-1 (DRS Designation WW1)**
AFE NO: L0501D001. RK ORDER: 23001141	**JOB: P&A SUPPLEMENTAL PROCEDURE**

1.0 WEST WHIPTAIL-1 P & A WELL INFORMATION

Well Name:		West Whiptail-1
Location:	GDA94 Latitude	38° 19' 21.150" S
	Longitude	147° 30' 17.167" S
	MGA Zone 55, CM 147° East Easting	544 121.23m
	Northing	5 758 030.22m
Water Depth:		39.0 m relative to Mean Sea Level (MSL).
RT to MSL & Mudline:		39.0 m & 78.0m
30" x 20" x 13-3/8" Conductor Shoe:		120.36 m MDRT 120.36 m TVDRT
9-5/8" Casing Shoe:		745.0 m MDRT 744.6m TVDRT
8-1/2" Hole TD:		1539 m MDRT 1535m TVDRT 1496m TVDSS
Maximum Inclination:		8.2° (projected at TD)
Drilling Fluid:		KCl, PHPA, glycol polymer water -based mud.
Pressure / Temperature:		2,124 psig/70.5° C at 1515m TVDRT (Whiptail-1A)
Rig:		ENSCO 102, a Keppel FELS, enhanced Mod V "A" Class independent leg cantilever jack-up constructed in March 2002.
Anticipated Start Date:		May 22, 2004.

NOTE: 1 This program is a supplement to the West Whiptail-1 Drilling Program.

NOTE: 2 ATTACHMENT 1 Proposed Wellbore Sketch for Plugging & Abandoning West Whiptail-1.

2.0 TABLE OF CONTENTS

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3.2 Plug and Slurry Summary 2
3.3 CLASS "G" Slurry Recipes 2
3.4 Capacity Data 3
4.0 PLUGBACK PROCEDURE 3
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6.0 RIG-DOWN & EXIT 6
7.0 ATTACHMENTS 6
ATTACHMENT 1. Proposed Wellbore Sketch for Plugging & Abandoning West Whiptail-1 6

	Engineer	(C.P. Meakin)
	Drilling Engineering Manger	(C.A. Johancsik)
	Operations Superintendent	(F.W. Kratzer)

21/May/04
21/05/04
21.05.04.

REV: 0

3.0 GENERAL WELL INFORMATION

3.1 ZONES REQUIRING ISOLATION

ZONE	TOP (m MDRT)	BASE (m MDRT)	COMMENT
Latrobe Sands	1179	1403	Fresh water zones
N1.0 & 1.1 Sands	1403	1430	Hydrocarbon sands
Below N1.1 Sands	1430	1539	Freshwater zones

3.2 PLUG AND SLURRY SUMMARY

Plug No.	Interval (m)	Length (m)	Volume (bbl) *	Sacks	Displace (bbl)	Slurry Recipe	Tag Plug Above
1a	1539-1365	174	40.70	197	77.8	A	N/R
1b	1365-1191	174	43.03	208	67.7	A	N/R
1c	1191-1017	174	52.15	252	57.6	B	N/R
1d	1017-843	174	45.86	222	47.4	B	N/R
1e	843-669	174	42.61	206	37.8	C	715m MDRT
2	170-110	60	14.6	70	7.1	D	Test @ 1000 psi 123m MDRT

NOTE: 1 Volumes are based on the HALS-TLD-MCFL-CNL log of 21-May-2004 callipered hole size.

NOTE: 2 Displacements include 1 bbl for surface volume.

3.3 CLASS "G" SLURRY RECIPES

	A	B	C	D
Depth (m)	1600	1140	785	140
Density (ppg)	15.8	15.8	15.9	15.9
Yield (cfs)	1.16	1.16	1.16	1.17
Water Type	Drillwater	Drillwater	Seawater	Seawater
Mixing Water (gps)	4.74	4.90	5.15	5.15
Total Mixing Fluid (gps)	5.17	5.14	5.15	5.15
HR-6L (gal/10 bbl)	tba	tba	tba	-
Halad 413L (gal/10 bbl)	tba	tba	tba	-
NF-6 (gal/10 bbl)	0.25	0.25	0.25	0.25
$CaCl_2$ (% BWOC)	-	-	-	1
BHST (°C)	63	46	34	17
Thickening Time Reqd (hrs.)	2:30-2:55	2:30-2:50	2:20-2:45	1:40-1:55

3.4 CAPACITY DATA

8-1/2" open hole	0.07018 bbl/ft	0.23026 bbl/m
9-5/8" 47 ppf surface casing (8.72888" ID from calliper)	0.07401 bbl/ft	0.24283 bbl/m
30" 310 ppf (28" ID) conductor	0.76158 bbl/ft	2.49861 bbl/m
2-7/8" 6.4 ppf VamAce tubing, 2.441" ID, 2.347" drift	0.00579 bbl/ft	0.01899 bbl/m
5", 19.5 ppf drillpipe	0.01776 bbl/ft	0.05827 bbl/m
2-7/8" tubing x 8-1/2" open hole annulus	0.06215 bbl/ft	0.20392 bbl/m
5" drillpipe x 12-1/4" open hole annulus	0.04590 bbl/ft	0.15059 bbl/m
5" DP x 9-5/8" surface casing annulus	0.04973 bbl/ft	0.16315 bbl/m
5" DP x 30" conductor annulus	0.73729 bbl/ft	2.41894 bbl/m

4.0 PLUGBACK PROCEDURE

1. P/U the 2-7/8" VamAce pin by NC 50 (4-1/2" IF) box crossover and make-up on to the bottom of a stand of drillpipe. Review well control procedures with the crew.
2. P/U ~240m of 2-7/8" 6.4 ppf J55 VamAce tubing (Esso S/N 01800274), 2-7/8" VamAce pin by NC 50 (4-1/2" IF) box crossover, and RIH on 5" 19.5 ppf S135 drillpipe to TD at 1539m MDRT. Circulate and condition mud while rotating the drillpipe. Circulate a minimum of one bottoms-up.
3. Prior to cementing, reciprocate one stand to ensure pipe is free
4. RU and pressure test cementing equipment to 3000 psi.
5. Pump Plug 1a as an open-hole balanced plug as follows:
   - 21 bbls fresh water spacer;
   - 197 Sacks (40.7 bbls) cement mixed per Slurry Recipe A;
   - 2 bbls fresh water spacer;
   - Displace with a further 77.8 bbl of mud to spot as a balanced cement plug;
   - Pick up six stands (174m) and circulate bottoms up. Circulate hole clean. Flush BOPs through choke and kill lines while circulating bottoms up. Rotate and circulate the DP while circulating hole clean.
6. Repeat paragraph 5 setting plugs 1b, 1c, 1d and 1e as described in Paragraph 3.2 Plug and Slurry Summary.

   NOTE: 1 Note that although the length of these plugs is the same, the volumes mixed change because of changes in the hole size.

   NOTE: 2 Plug 1e, Slurry Composition "C" uses seawater in the slurry, and also in the pre and post cementing spacers.
7. After setting plug 1e, pick up 6 stands, circulate bottoms-up. Pick-up a further stand and WOC 4 hours or until surface samples are hard. Rotate and circulate the drill pipe while WOC. Consider laying down excess drillpipe, BHA or picking up the BHA to cut the 9-5/8" casing and 30" conductor while WOC.
8. TIH slowly, wash down and tag TOC with 15k WOB while circulating. TOC must be no deeper than 715m MDRT. Record TOC on DDR. If TOC is below 715m MDRT, spot additional cement as required, WOC and verify TOC.

NOTE: 1 P(SL)A Schedule of Specific Requirements Clause 514 (1) requires in the uncased portions of a well, cement plugs shall be placed such as to provide a minimum of 30 metres of cement above and a minimum of 30 metres of cement below any significant oil, gas or fresh water zones.

NOTE: 2 P(SL)A Schedule of Specific Requirements Clause 514 (2) requires where there is open hole immediately below the casing string, there shall be placed in the casing string:

(a) a cement plug placed by displacement method so as to extend at least 30 metres above and at least 30 metres below the casing shoe; or

(b) a cement retainer with effective back pressure control set at least 10 m, but not more than 30 m, above the casing shoe with a cement plug calculated to extend at least 30 metres below the casing shoe and at least 15 metres above the retainer; or

(c) where lost circulation conditions exist or are anticipated, a permanent type bridge plug set within 45 metres above the casing shoe with at least 15 metres of cement on top of the bridge plug.

NOTE: 3 P(SL)A Schedule of Specific Requirements Clause 514 (8) requires that the location and integrity of cement plugs shall be verified in an approved manner.

9. Displace mud in the hole from TOC at Plug 1 (Estimated at 669m MDKB) to 170m MDKB with ~121 bbl of inhibited mud. Inhibit the mud by adding:
   - 0.35 ppb Baracide (Biocide);
   - Caustic soda or caustic potash to a pH of 10.5+;
   - 0.5 ppb Baracor 129 (oxygen scavenger) just prior to pumping the mud.

   NOTE: 1 P(SL)A Schedule of Specific Requirements Clause 514 (9) requires any intervals of cased hole in a well between cement plugs shall be filled with mud fluid of appropriate density suitably inhibited to prevent the corrosion of the casing string.

10. POOH with drill pipe and lay town the tubing stinger.

11. P/U 9-5/8" EZSV configured as a bridge plug, RIH on drillpipe to 170m MDRT and set. Pick-up out of the EZSV and circulate bottoms-up. Sting into the EZSV and set-down 5 kips to verify the location. Record location and tag weight for the EZSV on the Daily Report.

12. Pick up out of the EZSV and pump the following (Plug 3):
   - 10 bbls sea water spacer
   - 70 Sacks (14.6 bbls) of 15.9 ppg Class G cement mixed per Slurry Recipe D.
   - Displace with 7.1 bbl of seawater (this includes 1 bbl for surface volume and stickup) to leave a 60m balanced plug from 110m to 170m MDRT.

   NOTE: 1 P(SL)A Schedule of Specific Requirements Clause 514 (6) requires a surface plug extending at least 45 metres in height shall be placed in the innermost casing string which extends to the seabed with the top of the plug at a depth no greater than 45 metres below the seabed.

13. POOH to 100m and circulate the casing and riser clean with seawater. POOH to and flush BOP and riser. Function rams and flush BOPs again.

14. Pressure test the cement plug to 1000 psi for 5 minutes to confirm the integrity of the plug and record the results on the daily report.

5.0 WELLHEAD REMOVAL PROCEDURE

1. While WOC, P/U the Cameron 18-3/4" Seal Assembly Running Tool, RIH and recover the 9-5/8" seal assembly as per Cameron procedures.

2. After WOC about 5 hours (or until surface samples are hard), RIH and tag TOC. TOC must be no deeper than 123m (45m below the mud line). Report depth of TOC on the morning report. POOH with slickline.

   NOTE: 1 TOC can be tagged with drillpipe or wireline.

3. P/U Casing Cutter BHA, RIH and cut 9-5/8" casing at 87 m MDRT. Circulate through the casing to confirm the cut. POOH with the casing cutter.

   NOTE: 1 Consult with the Baker Fisherman for details of the BHA.

   NOTE: 2 9-5/8" surface casing connections are at 75.79m MDRT and across the stage collar set from 87.96m to 88.66m MDRT

   NOTE: 3 RT to Mudline = 78m.

   NOTE: 4 P(SL)A Schedule of Specific Requirements Clause 514 (10) requires all casing string and piling shall be severed and removed at least 5 metres below the seabed and the well location shall be cleared of any debris or obstructions. Dispensation has been sought from the regulator to cut the 30" and 20" shallower.

   NOTE: 5 Gauge all stabilisers and check against wellhead dimensions.

   NOTE: 6 Measure and caliper all tools and check depth of cut.

4. P/U the Cameron 18-3/4" x 9-5/8" Casing Hanger Running Tool, RIH and M/U into the casing hanger as per Cameron procedures. Pick-up and POOH laying down the casing hanger and 9-5/8" casing.

Size	Depth-m MDRT	Nom. ID	Drift ID	Weight ppf	Grade	Conn.	Burst Rating (psi) with 1.375 DF	Collapse Rating (psi) with 1.0DF	Tension Rating (kips)	
									Pipe Body with 1.333DF	Connection (kips) with 1.5DF
9-5/8"	16-745	8.681"	8.525"	47	L-80	LTC	5496	4760	815	595

5. N/D 24" diverter overshot packer, 24" diverter mandrel.

6. N/D the BOPs form the 18-3/4" Fastlock connection. M/U the 18-3/4" 15k x NT2 connection on the BOP and return the BOP to the test stump for storage.

7. Remove the side-outlet valves from the 18-3/4" wellhead.

8. P/U Casing Cutter BHA, RIH and cut 30" x 1" wall thickness 310 ppf conductor at 83 m MDRT. Circulate through the conductor to confirm the cut. POOH with the casing cutter.

   NOTE: 1 Consult with the Baker Fisherperson for details of the BHA.

   NOTE: 2 30" ST-2 conductor connections are at 74.95m and 86.07m MDRT.

   NOTE: 3 RT to Mudline = 78m.

   NOTE: 4 P(SL)A Schedule of Specific Requirements Clause 514 (10) requires all casing string and piling shall be severed and removed at least 5 metres below the seabed and the well location shall be cleared of any debris or obstructions. Dispensation has been sought from the regulator to cut the 30" and 20" shallower.

   NOTE: 5 Gauge all stabilisers and check against wellhead dimensions.

   NOTE: 6 Measure and calliper all tools and check depth of cut.

9. P/U the 18-3/4" Compact Housing Running Tool and M/U into the wellhead as per Cameron procedures.

10. P/U the wellhead and conductor through the rotary and lay down.

    NOTE: 1 The maximum P/U rating for the Cameron tool is 500 kips.

    NOTE: 2 5" 19.5 ppf S135 premium drillpipe is rated at 561 kips.

NOTE: 3 For the blocks strung with 12 lines (1-3/4" EEIPS IWRC), drilling guidelines for maximum allowable weight indicator readings are as follows, including the block weights (80 kips for the blocks):

	Routine Operations	**Stuck Pipe-Controlled Pull**
No. of Lines	4.0 Safety Factor	3.0 Safety Factor
12 Lines	793 kips	1057 kips

These are calculated for 1-3/4" 6 x 26 IWRC EEIPS drill line with 338 kips strength. Contact the Esso Drilling Operations Superintendent before pulling in excess of 657 kips (85% of drill pipe tensile capacity). **The Cameron Compact Housing Running Tool will be the weak link in the string, with a tensile capacity of 500 kips (580 kips on the weight indicator).** The derrick is rated for 1,446 kips (12 lines) and the crown block and travelling block are rated for 1,500 kips (680 mt).

6.0 RIG-DOWN & EXIT

1. Conduct a seabed survey with rig ROV prior to departing location out of the critical path. Visually survey and record a 100m square area around the wellhead. Use the ROV sonar to scan out from the extremities of the square on a range of 100m. Request the ROV Operators fill out a written report on survey and fax into office, and supply three (3) copies of the video tape recording the survey.
2. The mud system is approved for discharge into the Bass Strait.
3. Rig down and wet tow the rig to the release location one (1) nautical mile from West Whiptail-1 as per the West Whiptail-1 Move, Preload and Exit Program.

NOTE: 1 Complete Statements of Fact for the ENSCO 102, and Tidewater's Ray. J. Hope and Invincible Tide

7.0 ATTACHMENTS

ATTACHMENT 1. Proposed Wellbore Sketch for Plugging & Abandoning West Whiptail-1

ATTACHMENT 1

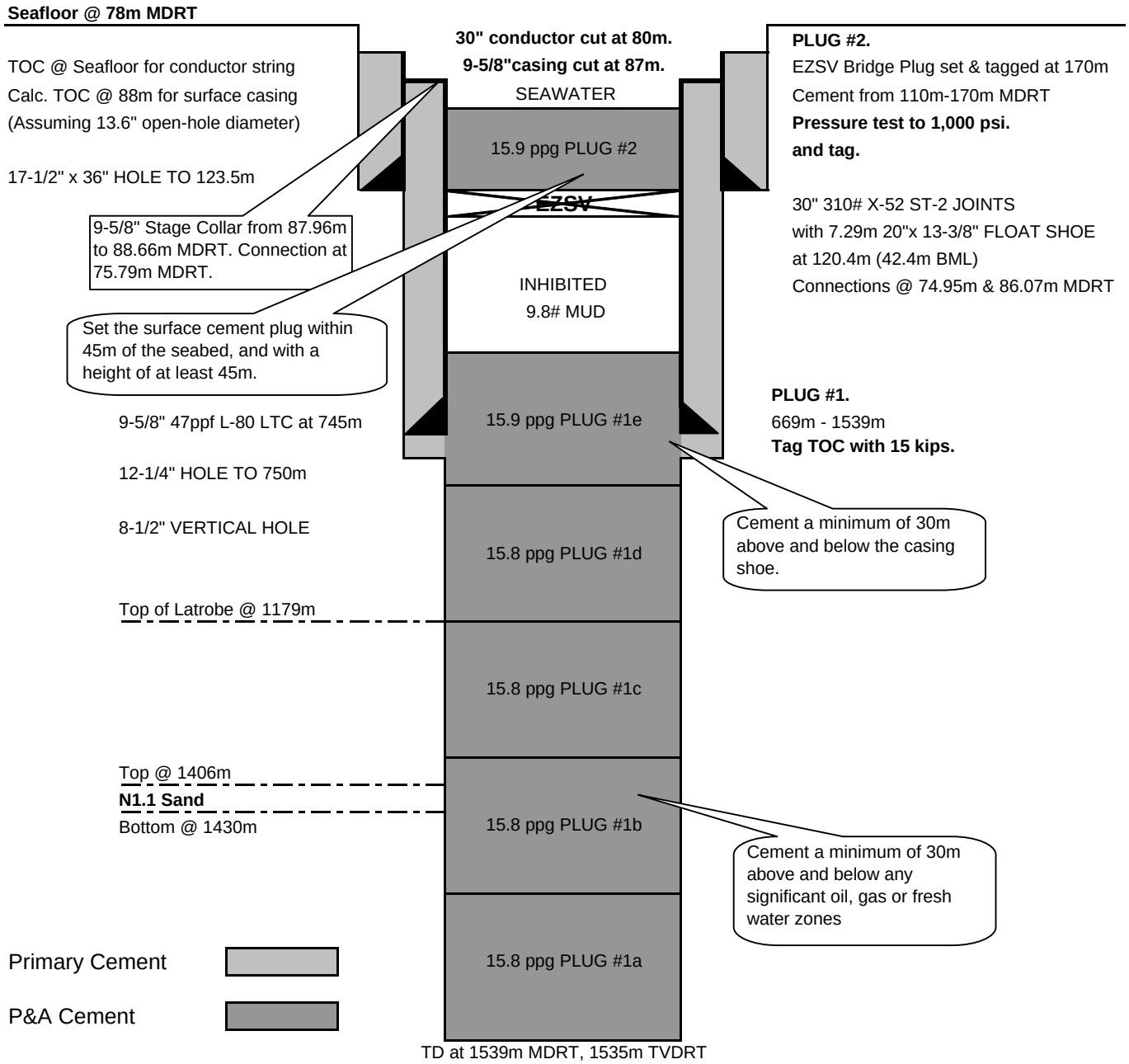
PROPOSED WELLBORE SKETCH FOR PLUGGING & ABANDONING
WEST WHIPTAIL-1
Drilled by the Jack-up ENSCO 102

LOCATION: GDA94. Latitude 38° 19' 29.150" S. Longitude 147° 30' 17.167" E.
MGA Zone 55 Easting 544,121.32m, Northing 5,758,030.22m
Rig on Location 0300 hours 8-May-2004. Expected rig released 27-May-2004

ALL DEPTHS ARE METRES FROM ROTARY TABLE. FORMATION TOPS FROM MUD LOG.

MSL @ 39m RT

WATER DEPTH = 39m



DAILY DRILLING REPORTS
Including DRILLING LOGS

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 09-May-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	78.00
TVD m:	1539.00	78.00
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	1.0
- Ahead/Behind:		.0
- from Spud :		.0
Spud Date :	10-May-2004	
Progress m:		.00
Drilling Hours :		.00
ROP m/hr:		
Percentage NPT :		.0
Depth Reference:	Rig Floor (RKB)	

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: NO CASING REPORTED YET
Next Casing : 30.000 inches at 120.000 meters MD
Leakoff Test : .00 ppg

Current: Unbinding loads and preparing rig to drill
Planned: Skid cantilever to 60 feet. Pick up drill tools.

Start	Elpsd	End MD		Description
00:30	2.50	78.00	MOB	Ensco 102 under tow to West Whiptail 1 location. M/V Ray J Hope on tow bridle and M/V Invincible Tide on starboard aft bitt connected resilient line (line passed to M/V Invincible Tide at 2355 hrs 7 May). Legs previously lowered to near mud line while approaching location (started lowering legs at 2300 hrs 7 May). At 0030 hrs 8 May 2004, Ensco 102 towed to within one nautical mile of the West Whiptail 1 called location. Captain John Meade directed tow vessels heading and power to maneuver rig to within position tolerance and rig heading
03:00	1.00	78.00	MOB	Pin rig in 39 meter water depth MSL. Jack down from 12 ft to 17 ft draft to raise bow leg to release possible torque. Jack up hull to 0.7 meters above mean sea level. Initial penetration: starboard 1.7 ft bow 1.8 ft, port 1.4 ft. Retrieve line from M/V Invincible Tide and release Invincible Tide to Barry Beach Marine Terminal at 0345 hrs. Preliminary position is 7.4 meters at a bearing of 138.9° from called location to actual. Latitude 38° 19' 29.138" S, 147° 30' 17.176" E. Final location will be determined after spudding well.
04:00	2.00	78.00	MOB	Commence preloading bow leg (plan to use 9.1 alternate preload method). At 0600 hrs had 100% preload on bow leg (22,024 kips)
06:00	1.00	78.00	MOB	Hold preload on bow leg.
07:00	3.00	78.00	MOB	Continue with second stage preload, loading stern legs. At 1000 hrs had 99.2% preload on all legs (short 546 kips) Bow 21,966 kips, starboard 21,741 kips, port 21,686 kips. Total preload VDL 32,119 kips. Condition total 65,394 kips, LCG 152.77 feet, TCG 0.07 feet.

10:00	3.00	78.00	MOB	Hold preload. AHTS Ray J Hope released from tow bridle at 1245 hrs.
13:00	1.00	78.00	MOB	Dump preload. Held prejacking JSA meeting.
14:00	4.00	78.00	MOB	Jack hull up to 57 feet airgap. Final leg penetration starboard 1.7 ft, bow 1.9 ft, port 1.7 ft. Engage rack chocks.
18:00	.75	78.00	MOB	Skid cantilever out to 9 ft mark
18:45	.75	78.00	MOB	Lower mud logger house frame to main deck
19:30	.25	78.00	MOB	Skid cantilever out to 23 ft mark
19:45	4.25	78.00	MOB	Prepare rig for drilling. Remove binders from equipment. Hook up port and bow deep wells. Start make up of 15 inch mud return pipe spools.

Total 23.50

REMARKS

M/V Ray J Hope - on location
M/V Invincible Tide - en route to location ETA 0130 hrs 9 May
Established communications with Barracouta microwave link at 1500 hrs
Safety Meetings - talked about performance. Plan for no first aids. Reiterated how we will achieve "Nobody Gets Hurt" Job planning, catering holds own safety meetings, JSA on backloading, jacking, skidding cantilever. Unbinding loads. Good effort on Stop cards 58 yesterday and 64 cards the day before.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		
BOP Pressure Test	No		
Fire Drill	No		
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	
BOP System Inspection (Minicheck)	No	0	

PERSONNEL

Personnel : Ray Wyld, Dave Dowling, Brad Jansen
Supervisors : Paltridge, Tim J.
Sharkey, George K.
Total Head Count: 73
Total Hours : 876.00

HEAD COUNTS

Contractor	52	ExxonMobil	4
Contractor Short Service (SSE)	0	Service Company	17

MANAGEMENT SUMMARY

Rig towed to well location. Pin rig on location. Preload rig and jack hull to 57 ft air gap. Start to jack out cantilever and unbind loads from tow.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	694,426	0	694,426	0
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	694,426	0	694,426	0
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	694,426	0	694,426	0

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Drill Water	4	160	156	Gel	0	53	53
Fuel	11	207	196	Potable Water	21	206	185

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump Displaces bbl/st Rate str/min

No hydraulics calculations were performed because no bit report was entered.

```
Pump Rate       0 str/min
Flow Rate     .00 gpm
Pressure        0 psi
================================== SURVEYS ==================================
                            No surveys have been entered.
================================ WELL CONTROL ================================
Pump    Rate     Pressure      MD
       str/min     psi       meters       Burst (70%)               0 psi
                                           Formation Strength       N/A
                                           Kick Tolerance           N/A
                                           Pore Pressure            .00 ppg
                                           MASP                     N/A

                                           Background Gas            .0
Density              .00 ppg               Connection Gas            .0
ECD              ******* ppg               Trip Gas                  .0
   at              78.00 meters
   with bit at      .00 meters
============================== ANCHOR TENSIONS ===============================
                 Anchor     Tension at 03:00     24-Hr Maximum
================================ RISER DATA ================================
Riser Tension:       0  Flex Joint Rotation:   .0  Hole Position, Offset:    .00
      Angle  :      .0                                        Angle :      0
============================== DAILY DRILL STRING ============================
               -------- Weights --------    --- Torques ---   Cumulative Time On
WOB      0     Pick-up                0    Off-TD       .0   BHA            .00
RPM      0     Slack-off              0    On-TD        .0   Shock Sub      .00
               Off-TD, Rotating       0                      Jars           .00
================================== CASING ==================================
  Section    O.D.     Grade   Wt/Lng    Thread   Joints     Top       Bottom

*** End 09-May-2004 report for WW1            Run 07-Sep-2004 20:56 Central Time
```

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 10-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	78.00
Office :	Australia SE	TVD m:	1539.00	78.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	2.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		.0
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		.0
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: NO CASING REPORTED YET
Next Casing : 30.000 inches at 120.000 meters MD
Leakoff Test : .00 ppg

Current: Preparing rig to drill
Planned: Pick up drill pipe and various running tools and stand back.

Start	Elpsd	End MD		Description
00:00	1.00	78.00	MOB	Continue to prepare rig for drilling and to make up 15 inch mud return line.
01:00	1.50	78.00	MOB	Offload several baskets from Invincible Tide to free mud logging unit slings. Offload Geoservice mud logging unit from supply boat and land on support frame.
02:30	2.00	78.00	MOB	Weld mud logging unit to frame. Skid cantilever to 9 feet (over mud logging unit). Pick up mud logging unit into position and secure in place.
04:30	.50	78.00	MOB	Skid cantilever from 9 feet to 60 feet
05:00	4.00	78.00	MOB	Set stairs to cantilever. Prepare to lower pollution control unit. Install service lines and 15" return line to main deck trough.
09:00	1.00	78.00	MOB	Lower pollution control unit and secure same with pins and stiffening jacks while offloading work boat. Elevation of PCU floor is 18.52 meters below the rotary table.
10:00	2.00	78.00	MOB	Position walkways and secure same at BOP deck. Rig down BOP crane and traveling block slings from PCU.
12:00	3.00	78.00	MOB	Rig up service lines and cement hoses from main deck to cantilever. Offload conductor pipe from workboat.
15:00	3.00	78.00	MOB	Install tensioner frame inside PCU and hook up tensioner cables. Elevation below rotary table of floating tensioner frame top is 16.61 m with pistons stroked out and 15.4 m with pistons closed.
18:00	6.00	78.00	MOB	Rig up mud pump jumper hoses from main deck to cantilever. Pick up and install fox hole and spider with slips for 5 inch. Install overboard hoses from shakers. Install shaker screens on shakers. Mixing spud mud in mud pits.
Total	24.00			

REMARKS

M/V Ray J Hope - standby at rig

M/V Invincible Tide - transferring barite to rig. ETD 0100 hrs 10 May for BBMT
Held Prespud meeting with Colin Johancsik, Chris Meakin, Shane Harris, and Simon Grope
Final datum position is 7.59 m on a bearing of 142.3° T (142.6° G) from the intended location.
Pretour safety meetings: elevators to BOP trolley, making up running tools and drill collars, rabbiting drill pipe

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		
BOP Pressure Test	No		
Fire Drill	No		
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	
BOP System Inspection (Minicheck)	No	0	

PERSONNEL

Personnel : Colin Johancsik, Chris Meakin, Simon Grope
Supervisors : Paltridge, Tim J.
Sharkey, George K.
Total Head Count: 83
Total Hours : 996.00

HEAD COUNTS

Contractor	53	ExxonMobil	7
Contractor Short Service (SSE)	0	Service Company	23

MANAGEMENT SUMMARY

Pick up mud logging unit into cantilever. Skid cantilever to 60 ft. Rig up to drill. Hang and secure pollution control unit and tensioner frame. Start mixing mud.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	294,776	0	294,776	5,532
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	989,202	0	989,202	5,532
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	989,202	0	989,202	5,532

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	82	82	Gel	5	0	48
Drill Water	211	300	245	Potable Water	24	0	161
Fuel	6	0	190				

MUD ADDITIVES

Function	Name	Unit	Size	Amount
CALCIUM REMOVER	Soda Ash	KGS	25	2
VISCOSIFIER	Bentonite	SAX	100	160

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump Displaces bbl/st
Rate str/min
No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

No surveys have been entered.

WELL CONTROL

Pump Rate str/min
Pressure psi
MD meters
Burst (70%) 0 psi

		Formation Strength	N/A
		Kick Tolerance	N/A
		Pore Pressure	.00 ppg
		MASP	N/A
		Background Gas	.0
Density	.00 ppg	Connection Gas	.0
ECD	******* ppg	Trip Gas	.0
at	78.00 meters		
with bit at	.00 meters		

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom

*** End 10-May-2004 report for WW1 Run 07-Sep-2004 20:56 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 11-May-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	79.30
TVD m:	1539.00	79.30
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	3.0
- Ahead/Behind:		.0
- from Spud :		.1
Spud Date :	10-May-2004	
Progress m:		1.30
Drilling Hours :		1.00
ROP m/hr:		1.30
Percentage NPT :		.0
Depth Reference:	Rig Floor (RKB)	

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: NO CASING REPORTED YET
Next Casing : 30.000 inches at 120.000 meters MD
Leakoff Test : .00 ppg

Current: Drilling 36 inch hole at 79 meters
Planned: Drill 36" hole to 122 m. Run and cement 30" conductor

Start	Elpsd	End MD		Description
00:00	3.00	78.00	TRIP	Pick up or make up string, BHA, or tools -- Move and lay out drill collars, HeviWate drill pipe and drill pipe on cantilever. Continue to mix spud mud. Offload ROV from supply boat.
03:00	3.00	78.00	TRIP	Pick up or make up string, BHA, or tools -- Lower 30 inch elevator into pollution control unit. Continue to lay out tubulars on cantilever. Measure and bundle 5" dp to pick up in derrick
06:00	4.00	78.00	TRIP	Pick up or make up string, BHA, or tools -- Make up 7 stands of drifted drill pipe and rack back in derrick. Make up 18¾" SSMC housing running tool on stand of drill pipe and stand back. Make up 30" ST 2 conductor landing tool on stand of drill pipe and stand back.
10:00	2.00	78.00	TRIP	Pick up or make up string, BHA, or tools -- Install latch down dart in dart dropping head, make up in stand, and stand back.
12:00	3.50	78.00	TRIP	Pick up or make up string, BHA, or tools -- Pick up three stands 5" HeviWate drill pipe. Make up one stand of 8¼" drill collar and rack in derrick
15:30	2.00	78.00	TRIP	Pick up or make up string, BHA, or tools -- Prepare BHA and rig floor for drilling.
17:30	3.50	78.00	TRIP	Pick up or make up string, BHA, or tools -- Make up one stand of 9½" drill collars and make up bottom hole assembly. Install Totco ring baffle in box of Anderdrift. Run solid flapper type float in bit sub.
21:00	1.25	78.00	TRIP	Pick up or make up string, BHA, or tools -- Shallow test Anderdrift @ 35 m with 800 gpm @ 700 psi. Make up 8¼ drill collars and TIH with 17½" bit on 36" hole opener to 65 m
22:15	.25	78.00	TRIP	Pick up or make up string, BHA, or tools -- Hold pre spud meeting on rig floor with drill crew and service personnel.
22:30	.50	78.60	DRLG	Tag mud line at 78 meters while pumping 175 gpm. Wash

				to 78.6 meters competent bottom with 5 kips WOB. Take Anderdrift survey - 0°. Attempt to wash down with 250 gpm.
23:00	1.00	79.30	DRLG	Spud in well from 78.6 meters. Increase rotary to 40 rpm. Increase flow to 400 gpm w/ 300 psi SPP. Drill to 79.3 m.
				11 May MN to 0500 hrs Drill from 79.3 m to 92 m. WOB 0/2 kips, 700 gpm, SPP 400 psi, 80 RPM, 1,300/1,500 ft-lb torque, occasionally torquey. Anderdrift ½° at 85 meters.
Total	24.00			

REMARKS

Ray J Hope - at location
Invincible Tide - at location
Held fire drill and rang H2S alarm. Held general safety meeting. Working at heights. STOP cards.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		
BOP Pressure Test	No		
Fire Drill	Yes		
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	
BOP System Inspection (Minicheck)	No	0	

PERSONNEL

Personnel	Dave Dowling, Shane Harris
Supervisors	Paltridge, Tim J. Sharkey, George K.
Total Head Count:	81
Total Hours	972.00

HEAD COUNTS

Contractor	52	ExxonMobil	4
Contractor Short Service (SSE)	0	Service Company	25

SAFETY INCIDENT

*** SH&E Other / HLV
Unsafe Act or Condition - soft sling on cement hose not properly set in hook.

MANAGEMENT SUMMARY

Finish preparing rig to drill. Pick up tools. Pick up drill string components. Tag mud line. Drill 36" hole from 78.6 m to 79.3 m.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	276,733	0	276,733	9,675
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	1,265,935	0	1,265,935	15,207
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	1,265,935	0	1,265,935	15,207

MUD REPORT

Time	20:30	Flowline Temp	.0 deg C	% Solids	.0
Mud Type	WBM	Filtrate	.0 cc	% LGS	.0
Sample From	Pit	Filter Cake	.0 32nd"	% Sand	.00
		HTHP Temp	.0 deg C	% Water	.0
MD	78.70 meters	Filtrate	.0 cc	% Oil	.0
Density	8.60 ppg				
Viscosity	145 sec	Elec Stab	0 volts	Ca++	0
PV	15.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	65.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	77.3 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	1.3 barrel	Pm	.0

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	37	119	Fuel	10	0	180
Cement	0	86	86	Gel	26	11	33

Drill Water 110 0 135 Potable Water 22 150 289

MUD ADDITIVES

Function	Name	Unit	Size	Amount
CALCIUM REMOVER	Soda Ash	KGS	25	4
VISCOSIFIER	Bentonite	SAX	100	442

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
1 1	17.500	BT	SEC	EBXT1G	78.0	1.0	1.00	1.00	1.00	1-1	1	1	0

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1360	70

Nozzle Sizes 32nd": 20.0 20.0 20.0 / 20.0 .0 .0 / .0 .0

Total Flow Area 1.2272 in2

Nozzle Velocity 31.86 m/sec

Hole Diameter 17.500 inches

Bit Pressure Drop 84 psi (28 % of SPP)

Pump Rate 70 str/min

Flow Rate 399.84 gpm

Pressure 300 psi

Impact Force 185 lbf

Hydraulic HP .081 hp/in2

Annular Velocities ft/min

DC (Max) 44.

DP (Min) 0.

(Min OH) ******

Riser (Min) 0.

SURVEYS

No surveys have been entered.

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00

Burst (70%) 0 psi

Formation Strength N/A

Kick Tolerance N/A

Pore Pressure .00 ppg

MASP N/A

Background Gas .0

Connection Gas .0

Trip Gas .0

Density 8.55 ppg

ECD 8.55 ppg

at 79.30 meters

with bit at 78.94 meters

DRILL STRING

Date Run: 10-May-04 Date Pulled: 11-May-04 Length of BHA : 65.820

Time Run: 22:45 Time Pulled: 15:30 BHA Weight in Air : .0

Depth In: 78.00 Depth Out : 123.00 Above Jars: .0

Below Jars: .0

In Mud : 55.0

36" Hole Opener Assembly

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Length Bend	Section Length
HW	5.000	3.000	????	4.500	IF	.0					58.020
DC	8.250	2.938	????	7.625	REG	.0					28.560
XO	8.000	3.125	????	7.625	REG	.0					.810
DC	9.400	3.125	????	7.625	REG	.0					28.180
MS	9.500	3.125	????	7.625	REG	.0	.000	.000	.000		3.330
BS	9.437	3.000	????	7.625	REG	.0			.000	.00	.990
HO	36.000	2.750	????	7.625	REG	.0					2.690
BT	17.500	3.500	????	7.625	REG	.0					.420

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	2	Pick-up	135	Off-TD	.0	BHA	1.00
RPM	40	Slack-off	135	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	135			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom

*** End 11-May-2004 report for WW1 Run 07-Sep-2004 20:56 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 12-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	123.00
Office :	Australia SE	TVD m:	1539.00	123.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	4.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		1.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	43.70	
Latitude :	38d 19' 29" South	Drilling Hours :	11.75	
Longitude :	147d 30' 17" East	ROP m/hr:	3.72	
Water Depth:	39.00 m	Percentage NPT :	2.9	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 13.375 inches at 120.36 MD, 120.36 TVD
Next Casing : 30.000 inches at 120.000 meters MD
Leakoff Test : .00 ppg

Current: Wait on weather to run 30 inch conductor
Planned: Run and cement 30 inch conductor. NU wellhead.

Start	Elpsd	End MD		Description
00:00	11.75	129.00	DRLG	Drill 36" hole from 79.3 m to 123 meters. Pump 40 bbl high viscosity pill every 15 meters. Take Anderdrift inclination surveys. WOB 0-4 kips, 985 gpm, SPP 880 psi, 80 rpm. Frequently torquey. Survey depth Anderdrift inclination 93.93 m 0° 103.35 m ½° 112.78 m 0°
11:45	.25	129.00	CIRC	Pump 100 bbls high viscosity pill and circulate bottoms up with seawater at 1000 gpm SPP 880 psi.
12:00	.25	129.00	DRLG	Take survey with Anderdrift - 0° at 122.2 m
12:15	.75	129.00	TRIP	Short trip (not to surface) -- Short trip to 85 m and RIH to 123 m
13:00	.75	129.00	CIRC	Pump and circulate out a 50 bbl hi vis sweep. Displace hole with 200 bbls of high vis mud.
13:45	.25	129.00	TRIP	Pull string out of hole -- POOH to 91 m
14:00	.50	129.00	CIRC	Pump 260 bbls of hi vis mud at 800 gpm w/ 60 psi SPP
14:30	1.00	129.00	TRIP	Break and lay down string, BHA or tools -- POOH and lay down two 9½" drill collars and rack BHA in derrick
15:30	2.00	129.00	TBLR	RU to run 30 inch conductor
17:30	.50	129.00	TBLR	Held pre job safety meeting
18:00	2.00	129.00	TBLR	Run 30", 310 ppf, X52, ST-2 casing to 34 m. Run casing with 30" elevators on casing bales, split bowl on rotary, hand slips, and dog collar on each joint. Welder cut off padeyes. The shoe joint consists of the following sections: 3.35 m of 13 3/8", 0.4 m swage 3.19 m of 20", 0.35 m swage, and 3.22 m of 30" w/ ST 2 pin up. 13 3/8" float shoe is for inner-string cementing with tag-in adapter. Fill pipe with seawater but had no flow out of float shoe.
20:00	1.25	129.00	TBLR	Make up 30" ST 2 x 4½ IF landing tool to 30" conductor. Pressure on 30 inch with 200 psi with seawater and float shoe opened. Release ST 2 snap

```
                          ring and stand back landing tool.
                    NPT   See Event 2 (TBLR)
21:15  1.25   129.00 TBLR Continue running 30 inch conductor from 34 meters to
                          45 meters.  Due to heavy seas and 35 knot wind,
                          conductor hammered pollution control unit and swung
                          considerably.  Decision made to wait on weather.
22:30  1.50   129.00 TBLR Wait on weather.  Rig up Global Divers' ROV to observe
                          stabbing of 13 3/8" inch shoe in 36" hole.
                    NPT   See Event 1 (WAIT)
Total 24.00
======================== PROBLEM EVENTS AND MILESTONES ========================
Event:   2    NPT: Yes   Hours:    1.25   Responsible Party: Operator
Start: 11-May-04 20:00   TBLR Casing problem
End  : 11-May-04 21:15        Float shoe on 30" conductor plugged.  Had to
                              pressure with circulating swage to blow clear.

Event:   1    NPT: Yes   Hours:    1.50   Responsible Party: Not Applicable
Start: 11-May-04 22:30   WAIT Weather or environment problem
End  : 12-May-04 23:00        Heavey seas and strong winds causing excess
                              swinging of 30" conductor when run below water
                              line.
=================================== REMARKS ===================================
M/V Invincible Tide - standby at location
M/V Ray J Hope - en route to Barry Beach Marine Terminal ETA 0700 hr 12 May
Pretour safety meeting:  hazards of running 30", weather, chin straps, detailed
work procedure for 30 inch, don't rely on luck, one man per handle on dog collar
and slips, don't try to ontrol 30" if caught by wind.
====================== INSPECTIONS, DRILLS, AND CITATIONS ======================
                                    Occurred?  Count  Most Recently Reported
BOP Control Function Test (BCFT)      No
BOP Pressure Test                     No
Fire Drill                            No                  11-May-2004
Abandon Ship Drill                    No
Operations Superintendent Inspection  No
Regulatory Agency Citation            No
BOP Drill (Pit or Trip Drill)         No          0
BOP System Inspection (Minicheck)     No          0
================================== PERSONNEL ==================================
Personnel       :  Dave Dowling, Shane Harris, Ray Wyld
Supervisors     :  Paltridge, Tim J.
                   Sharkey, George K.
Total Head Count:     81
Total Hours     :    972.00
================================ HEAD COUNTS ================================
Contractor                          54      ExxonMobil                        4
Contractor Short Service (SSE)       0      Service Company                  23
============================== SAFETY INCIDENT ==============================
*** Near Miss
Stiff sling jumped out of crane stinger hook dropping lifting cap to deck.
============================ MANAGEMENT SUMMARY ============================
Drill 36" hole from 79 m to 123 m.  Displace hole with hi vis mud and POOH.
Start to run 30" conductor. Wait on weather due to excessive hammering on
pollution control unit.
======================== COST DATA (Australian Dollar) ========================
       AFE                    Intangible    Tangible      Total         Mud
Dry  :   8,650,000| Daily         300,442           0      300,442       2,084
Susp :           0| Cum Mbl           0           0            0           0
Comp :           0| Cum Drl     1,566,377         0    1,566,377      17,291
Total:   8,650,000| Cum Comp          0           0            0           0
                  | Cum W/O           0           0            0           0
Exc  : 1.33280/US$| Cum AFE     1,566,377         0    1,566,377      17,291
================================== MUD REPORT ==================================
Time           22:45          Flowline Temp     .0 deg C       % Solids     .0
Mud Type         WBM          Filtrate          .0 cc          % LGS        .0
Sample From      Pit          Filter Cake       .0 32nd"       % Sand      .00
                              HTHP Temp         .0 deg C       % Water      .0
MD           123.00 meters         Filtrate     .0 cc          % Oil        .0
Density        8.60 ppg
Viscosity       148 sec       Elec Stab          0 volts       Ca++         0
```

PV	13.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	67.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	247.8 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	42.7 barrel	Pm	.0

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	38	157	Fuel	9	0	171
Cement	0	0	86	Gel	0	1	34
Drill Water	6	0	129	Potable Water	20	17	286

MUD ADDITIVES

Function	Name	Unit	Size	Amount
SURFACE ACTIVE	CalciumChloride	KGS	25	24

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
1 1	17.500	BT	SEC	EBXT1G	78.0	44.4	12.75	3.69	3.48	1-1	1	1	0

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1360	86
2	.1360	86

Nozzle Sizes 32nd": 20.0 20.0 20.0 / 20.0 .0 .0

Total Flow Area 1.2272 in2

Nozzle Velocity 78.29 m/sec

Hole Diameter 17.500 inches

Bit Pressure Drop 504 psi

57 % of SPP

Impact Force 1119 lbf

Hydraulic HP 1.202 hp/in2

Pump Rate 172 str/min

Flow Rate 982.46 gpm

Pressure 880 psi

Annular Velocities ft/min:
DC (Max) 102.
DP (Min) 31.
(Min OH) ******
Riser (Min) 0.

SURVEYS

No surveys have been entered.

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00
2	0	0	.00

Burst (70%) 1543 psi
Formation Strength N/A
Kick Tolerance N/A
Pore Pressure .00 ppg
MASP N/A

Background Gas .0
Connection Gas .0
Trip Gas .0

Density 8.55 ppg
ECD 8.55 ppg
at 123.00 meters
with bit at 122.83 meters

DRILL STRING

Date Run: 10-May-04 Date Pulled: 11-May-04 Length of BHA : 65.820
Time Run: 22:45 Time Pulled: 15:30 BHA Weight in Air : .0
Depth In: 78.00 Depth Out : 123.00 Above Jars: .0
Below Jars: .0
In Mud : 55.0

36" Hole Opener Assembly

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length
HW	5.000	3.000	????	4.500	IF	.0					58.020
DC	8.250	2.938	????	7.625	REG	.0					28.560
XO	8.000	3.125	????	7.625	REG	.0					.810
DC	9.400	3.125	????	7.625	REG	.0					28.180
MS	9.500	3.125	????	7.625	REG	.0	.000	.000	.000		3.330
BS	9.437	3.000	????	7.625	REG	.0			.000	.00	.990
HO	36.000	2.750	????	7.625	REG	.0					2.690
BT	17.500	3.500	????	7.625	REG	.0					.420

DAILY DRILL STRING

	Weights		Torques		Cumulative Time On

WOB	4	Pick-up	155	Off-TD	500.0	BHA	12.75
RPM	80	Slack-off	155	On-TD	4000.0	Shock Sub	.00
		Off-TD, Rotating	155			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36

*** End 12-May-2004 report for WW1 Run 07-Sep-2004 20:56 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 13-May-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	123.00
TVD m:	1539.00	123.00
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	5.0
- Ahead/Behind:		.0
- from Spud :		2.1
Spud Date :	10-May-2004	
Progress m:		.00
Drilling Hours :		.00
ROP m/hr:		
Percentage NPT :		21.5
Depth Reference:	Rig Floor (RKB)	

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 13.375 inches at 120.36 MD, 120.36 TVD
Next Casing : 30.000 inches at 120.000 meters MD
Leakoff Test : .00 ppg

Current: Running 30 inch conductor at 68 meters.
Planned: Run conductor to 121 m. Nipple up wellhead. Cement conductor.

Start	Elpsd	End MD		Description
00:00	4.25	129.00	BOP	Rigging up ROV equipment. Testing BOP on test stump. Test pipe rams, annular, choke and kill valves to 400 / 3000 psi. Cannot test blind rams due to test joint in stack that can be removed only by skidding BOP stack under rotary table. Move Fastlock connector to BOP trolley in cellar.
			NPT	See Event 1 (WAIT)
04:15	.25	129.00	TBLR	Run 30" casing to 45 meters. Unable to run due to severe swinging in pollution control unit due to swell. Pull casing back to 35 meters, 4 m above waterline
			NPT	See Event 1 (WAIT)
04:30	5.00	129.00	TRIP	Pick up or make up string, BHA, or tools -- Pick up 5 inch drill pipe and stand in derrick.
			NPT	See Event 1 (WAIT)
09:30	.25	129.00	TBLR	Run 30" casing to 45 meters. Unable to run due to severe swinging in pollution control unit due to swell. Pull casing back to 35 meters, 4 m above waterline
			NPT	See Event 1 (WAIT)
09:45	2.75	129.00	TRIP	Pick up or make up string, BHA, or tools -- Pick up 5 inch drill pipe and stand in derrick. Install lifting eyebolt rings on wellhead and Fastlock connector.
			NPT	See Event 1 (WAIT)
12:30	.50	129.00	TBLR	Run 30" casing to 45 meters. Unable to run due to severe swinging in pollution control unit due to swell. Pull casing back to 35 meters, 4 m above waterline
			NPT	See Event 1 (WAIT)
13:00	3.00	129.00	TRIP	Pick up or make up string, BHA, or tools -- Pick up 5 inch drill pipe and stand in derrick.
			NPT	See Event 1 (WAIT)
16:00	.50	129.00	TBLR	Run 30" casing to 45 meters. Unable to run due to

				severe swinging in pollution control unit due to swell. Pull casing back to 35 meters, 4 m above waterline
			NPT	See Event 1 (WAIT)
16:30	3.00	129.00	TRIP	Pick up or make up string, BHA, or tools -- Pick up 5 inch drill pipe and stand in derrick.
			NPT	See Event 1 (WAIT)
19:30	.25	129.00	TBLR	Run 30" casing to 45 meters. Unable to run due to severe swinging in pollution control unit due to swell. Pull casing back to 35 meters, 4 m above waterline
			NPT	See Event 1 (WAIT)
19:45	3.25	129.00	TRIP	Pick up or make up string, BHA, or tools -- Pick up 5 inch drill pipe and stand in derrick. Total 40 stands in derrick
			NPT	See Event 1 (WAIT)
23:00	1.00	129.00	TBLR	Held rig floor safety meeting. Continue to run 30" conductor from 35 meters to 68 meters.

13 May 04
0000 - 0145
Continue to run 30" conductor to 102 meters. Fill each joint with seawater.
0145 - 0245
LD the 30" running equipment. PU drill pipe elevator and the conductor landing assembly comprising a ST-2 box connector down by NC 50 box connector up crossover run on drill pipe. Stab onto the upper conductor joint. Run the conductor in hole to the final shoe depth of 120.4 m, then pick up to 118 m.
0245 - 0330
Held JSA meeting in cellar on PCU work (inertial reels aluminum handle stilsons). Run in centralizing dogs in bottom of PCU to stabilize 30" conductor.
0330 - 0430
Install inserts in tensioner frame and run in support beams. Set 30" elevators on tensioner frame. Land the ST-2 pin connector of the top joint of 30" in the side-door elevator supported on the Conductor Tensioning Frame.
0430 - 0500
Use releasing screws to compress ST-2 snap ring to release running tool.

Total 24.00

PROBLEM EVENTS AND MILESTONES

Event: 1 NPT: Yes Hours: 24.50 Responsible Party: Not Applicable
Start: 11-May-04 22:30 WAIT Weather or environment problem
End : 12-May-04 23:00 See report for 12-May-2004 (job 08-May-2004 00:30)

REMARKS

M/V Invincible Tide - standing by
M/V Ray J Hope - working for production
Pretour safety meeting - continued running of 30" conductor. Will hold rig floor JSA for casing running and subsequent work in PCU to land conductor

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		
BOP Pressure Test	Yes		
Fire Drill	No		11-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	
BOP System Inspection (Minicheck)	No	0	

PERSONNEL

Personnel : Dave Dowling, Shane Harris, Ray Wyld
Supervisors : Paltridge, Tim J.
Sharkey, George K.
Total Head Count: 80
Total Hours : 960.00

HEAD COUNTS

Contractor	53	ExxonMobil	4
Contractor Short Service (SSE)	0	Service Company	23

SAFETY INCIDENT

*** First Aid Incident

Sonia Skvor reported to medic with a swollen thumb which she described as having been sore for a few days but not swollen.
Andrew Quaine had medic remove a splinter between his right hand thumb and index finger. Andrew Quaine does not recall any incident where the splinter may have come from during his shift.

*** SH&E Other / HLV

MANAGEMENT SUMMARY

Wait on weather. Pick up drill pipe. Continue to run 30" conductor to 68 meters.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	267,685	0	267,685	1,775
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	1,834,062	0	1,834,062	19,066
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	1,834,062	0	1,834,062	19,066

MUD REPORT

Time	23:00	Flowline Temp	.0 deg C	% Solids	.0
Mud Type	WBM	Filtrate	.0 cc	% LGS	.0
Sample From	Pit	Filter Cake	.0 32nd"	% Sand	.00
		HTHP Temp	.0 deg C	% Water	.0
MD	123.00 meters	Filtrate	.0 cc	% Oil	.0
Density	8.60 ppg				
Viscosity	148 sec	Elec Stab	0 volts	Ca++	0
PV	15.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	66.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	247.8 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	.0 barrel	Pm	.0

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	157	Fuel	9	0	162
Cement	0	0	86	Gel	0	0	34
Drill Water	21	0	108	Potable Water	25	18	279

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1360	0
2	.1360	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

No surveys have been entered.

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00
2	0	0	.00

Burst (70%)	1543 psi
Formation Strength	N/A
Kick Tolerance	N/A
Pore Pressure	.00 ppg
MASP	N/A
Background Gas	.0
Connection Gas	.0

Density .00 ppg

ECD ******* ppg Trip Gas .0
at 123.00 meters
with bit at .00 meters

DAILY DRILL STRING

		-------- Weights --------		--- Torques ---		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36

*** End 13-May-2004 report for WW1 Run 07-Sep-2004 20:56 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 14-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	123.00
Office :	Australia SE	TVD m:	1539.00	123.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	6.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		3.1
Field :	Gippsland Basin	Spud Date :		10-May-2004
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		20.9
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 13.375 inches at 120.36 MD, 120.36 TVD
Next Casing : 9.625 inches at 750.000 meters MD
Leakoff Test : .00 ppg

Current: Nippling up Fastlock wellhead connector to wellhea
Planned: Nipple up BOP stack. RIH with 12¼" drilling assembly

Start	Elpsd	End MD		Description
00:00	2.00	129.00	TBLR	Continue to run 30" conductor to 102 meters. Fill each joint with seawater.
02:00	.75	129.00	TBLR	Lay down the 30" running equipment. PU drill pipe elevator and the conductor landing assembly comprising a ST-2 box connector down by NC 50 box connector up crossover, run on drill pipe. Stab onto the upper conductor joint. Run the conductor in hole to the final shoe depth of 120.4 m, then pick up to 118 m.
02:45	.75	129.00	TBLR	Held JSA meeting in cellar on PCU work (inertial reels aluminum handle stilsons). Run in centralizing dogs in bottom of PCU to stabilize 30" conductor.
03:30	1.00	129.00	TBLR	Install inserts in tensioner frame and run in support beams. Set 30" elevators on tensioner frame. Land the ST-2 pin connector of the top joint of 30" in the side-door elevator supported on the Conductor Tensioning Frame.
04:30	1.00	129.00	BOP	Use releasing screws to compress ST-2 snap ring to release running tool. Pull and lay down ST 2 landing tool. Using the MOS SWL 75 Te gantry crane, transport 18 3/4" SSMC wellhead from BOP trolley to below rotary table.
05:30	1.25	129.00	RIG	Pipe racking system would not function. Repair fiber optic cable failure.
			NPT	See Event 3 (RIG)
06:45	2.25	129.00	BOP	Connect rig up slings to top drive and connect slings to 18 3/4" wellhead lifting eyes. Lower and stab wellhead ST-2 connector on 30" conductor.
09:00	.25	129.00	BOP	Lay down rig up slings and pick up 5 inch drill pipe elevators.
09:15	3.00	129.00	BOP	Run 18 3/4 inch wellhead running tool and make up in top of 18 3/4" wellhead with 3¼ turns. Procedure calls for seven turns. Retrieve running tool and inspect same. Inspect top threads of wellhead. No

				problems found. Confirm with Cameron engineering 3 turns OK. Make up 18 3/4" wellhead running tool in wellhead with 3¼ turns.
			NPT	See Event 4 (TBLR)
12:15	1.25	129.00	BOP	Pick up conductor string off elevators and remove elevators. String weight 190,000 pounds including block weight of 80,000 pounds. Land wellhead landing base on floating tensioner frame with wood 4 x 4s between wellhead landing base and insert beams. Used 4 x 4s due to padeyes on insert beams.
13:30	1.00	129.00	TRIP	Run string in hole -- Make up latch in adapter on 5 inch drill pipe and trip in hole to tag float shoe at 119.7 meters with 20 kips
14:30	1.25	129.00	CMT	Rig up cement hoses. Held prejob safety meeting. Pump 50 bbls seawater with rig pumps at 300 gpm, SPP 50 psi
15:45	.50	129.00	CMT	Break circulation with Dowell and pressure test cement lines to 2,000 psi.
16:15	.25	129.00	CMT	Pump 100 bbls seawater with rig pumps at 525 gpm, SPP 850 psi
16:30	1.50	129.00	CMT	Cement conductor with 1,084 sacks Class G cement with 0.3 gal/10 bbl NF-5 and 1% bwoc CaCl2 mixed in seawater to 15.9 ppg. While pumping, cement line # 2 became blocked. Change over to cement line # 1 to complete job. Drop latch-in dart and displace drill pipe bumping plug with 2,000 psi. 30 inch conductor shoe depth 120.36 m RT.
18:00	.75	129.00	TRIP	Set or release downhole equipment -- Check for backflow - floats held. Release latch in adapter with ¼ right hand turn.
18:45	1.00	129.00	TRIP	Pull string out of hole -- Rack cement head in derrick and POOH with 5 inch cementing string. Break out adapter and remove drill pipe centralizers (13 3/8" and 20")
19:45	1.25	129.00	TRIP	Pick up or make up string, BHA, or tools -- Change out casing bales for drilling bales on top drive. Install link tilts. Had to change link tilt adapter clamps as none provided for 180 inch casing bales.
21:00	.75	129.00	TRIP	Set or release downhole equipment -- Run and set 18 3/4" lower wear bushing in housing. Measurements: Rotary table to top wellhead 14.55 m Rotary table to tensioner frame insert beam 16.07 m Rotary table to 13 3/8" casing hanger landing shoulder 15.61 m
21:45	.75	129.00	TRIP	Pick up or make up string, BHA, or tools -- Remove elevators from links and install rig up slings on top drive.
22:30	1.50	129.00	BOP	Land Cameron Fastlock connector on wellhead. Make up lock down pins. Measure rotary table to top of Fastlock 14.28 m.
				14 May 04 0000 - 0500 Skid BOP stack and land on wellhead connector. The PCU beam securing pin piston hindered the BOP stack travel due to the extended pod platform. Prepare to make up flange nuts to wellhead connector.
Total 24.00				

========== PROBLEM EVENTS AND MILESTONES ==========

Event: 3 NPT: Yes Hours: 1.25 Responsible Party: Rig Contractor
Start: 13-May-04 05:30 RIG Power/electrical problem
End : 13-May-04 06:45 Pipe racking system would not function. Repair fiber optic cable failure.

Event: 4 NPT: Yes Hours: 3.00 Responsible Party: Cameron
Start: 13-May-04 09:15 TBLR Wellhead or tree problem
End : 13-May-04 12:15 Cameron procedure call for 30" wellhead running tool to make up w/7 turns, made up w/3-1/4 turns - confirm with Cameron engineering 3 turns OK.

========== REMARKS ==========

M/V Invincible Tide - standing by
M/V Ray J Hope - working for production
Pretour safety meeting - Cementing, Pressure Testing. Nippling Up. Hand Placement & the "Lone Worker". Enviromental Awareness
Held JSA discussion w/Ensco supervisors
ROV made video survey of 30" conducotr and spud cans.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		
BOP Pressure Test	No		13-May-2004
Fire Drill	No		11-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	Yes		
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	
BOP System Inspection (Minicheck)	No	0	

PERSONNEL

Personnel : Frank Kratzer, Shane Harris, Ray Wyld
Supervisors : Bain, Roger L.
Paltridge, Tim J.
Sharkey, George K.
Steel, Barry J.
Total Head Count: 83
Total Hours : 996.00

HEAD COUNTS

Contractor	53	ExxonMobil	7
Contractor Short Service (SSE)	0	Service Company	23

MANAGEMENT SUMMARY

Run 30" conductor and cement same with shoe at 120.4 meters. Nipple up wellhead connector.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	297,133	175,270	472,403	19,946
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	2,131,195	175,270	2,306,465	39,012
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	2,131,195	175,270	2,306,465	39,012

MUD REPORT

Time	20:00	Flowline Temp	.0 deg C	% Solids	.0
Mud Type	WBM	Filtrate	.0 cc	% LGS	.0
Sample From	Pit	Filter Cake	.0 32nd"	% Sand	.00
		HTHP Temp	.0 deg C	% Water	.0
MD	123.00 meters	Filtrate	.0 cc	% Oil	.0
Density	8.55 ppg				
Viscosity	0 sec	Elec Stab	0 volts	Ca++	0
PV	.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	247.8 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	.0 barrel	Pm	.0

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	157	Fuel	10	17	169
Cement	50	0	36	Gel	0	0	34
Drill Water	78	150	180	Potable Water	23	20	276

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	Caustic Soda	BKT	25	10

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1360	0
2	.1360	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

No surveys have been entered.

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00
2	0	0	.00

Burst (70%)	1543 psi
Formation Strength	N/A
Kick Tolerance	N/A
Pore Pressure	.00 ppg
MASP	N/A
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density .00 ppg
ECD ******* ppg
at 123.00 meters
with bit at .00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36

CEMENT INFORMATION

Start Date : 13-May-04 Reciprocation?: N Number of Plugs : 1
Time : 16:00 Rotation? : N Did Plug Bump? : Y
Finish Date: 13-May-04 % Returns : 0 Did Float(s) Hold?: Y
Time 18:05 Top of Cement : .00 Casing Size : 30.000

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.60			100.0	.0	Seawater
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.90	1.2	1084	220.0	6.0	
Post	.00			.0	.0	
Disp	8.60			7.0	2.0	Seawater

	Class	Additives
Lead		
Tail	G	"G" + 1% CaCL2 + .003 gal/sk NF-6 (Hal)

Cmt Line #2 plugged up after 3 bbl, shut down switched to cmt line #1. Upon completion of job, cmt line was 1/2 plugged up with old cmt prior to job. Slurry wt maintained thru out job, plug bumped.

*** End 14-May-2004 report for WW1 Run 07-Sep-2004 20:57 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 15-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	161.00
Office :	Australia SE	TVD m:	1539.00	161.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	7.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		4.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	38.00	
Latitude :	38d 19' 29" South	Drilling Hours :	1.75	
Longitude :	147d 30' 17" East	ROP m/hr:	21.71	
Water Depth:	39.00 m	Percentage NPT :	17.9	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 13.375 inches at 120.36 MD, 120.36 TVD
Next Casing : 9.625 inches at 755.000 meters MD
Leakoff Test : .00 ppg

Current: Drilling 12¼ inch hole at 161 meters
Planned: Drill 12¼" hole to 755 meters.

Start	Elpsd	End MD		Description
00:00	1.75	129.00	BOP	Remove R/U slings & install safety slings on Top Drive. Prepare to P/U BOP's.
01:45	.25	129.00	BOP	Held Pre-Job meeting on moving & installing BOP
02:00	.50	129.00	BOP	P/U BOP & walk to center of rotary.
02:30	1.00	129.00	BOP	Remove test joint and install safety slings on BOP, install man rider cable in sheave under rig floor. Lower BOP.
03:30	1.50	129.00	BOP	Remove hydraulic cylinder from PCU to lower BOP and install on Fast Lock connector.
05:00	2.00	129.00	BOP	N/U BOP. P/U & Install 3.36m, 24" mandrel over BOP
07:00	2.00	129.00	BOP	P/U 2.95m over shot, set on running tool. P/U diverter & M/U onto overshot, lower down & set onto diverter housing. Continue to torque up BOP.
09:00	.50	129.00	BOP	Remove excess equipment from rig floor & r/u to run drill pipe while continuing to torque up BOP.
09:30	3.00	129.00	TRIP	Break and lay down string, BHA or tools -- Held PJSM & JSA. Break out 17-1/2" bit & break out & L/D 36" BHA.
12:30	1.00	129.00	TRIP	Pick up or make up string, BHA, or tools -- JSA. P/U 5" HWDP - 3 stds and rack in derrick.
13:30	4.50	129.00	TRIP	Pick up or make up string, BHA, or tools -- JSA. P/U & M/U 2 x 8-1/4" DC & M/U 12-1/4" BHA.
18:00	1.50	129.00	BOP	Install diverter insert packer. Function test Diverter & pressure test same to 200 psi - OK. Diverter closing time 15 seconds.
19:30	.25	129.00	TRIP	Pick up or make up string, BHA, or tools -- Test AnderDrift survey tool - OK.
19:45	.50	129.00	DRLG	Wash down displacing seawater to 8.55 ppg mud. Tag float @ 119.7 m w/325 gpm @ 300 psi. Check Anderdrift 0° at 100 meters
20:15	2.00	129.00	DRLG	Drill out shoe track and rat hole from 119.7m to 123m w/600 gpm, SPP 800 psi.
22:15	1.75	161.00	DRLG	Drill 12-1/4" hole from 123m to 161 m. Anderdrift surveys: 0° at 131 m and 0° at 161 m.

15 May 04
0000 hr to 0500 hrs
Drill 12¼" hole from 161 m to 255 m
Anderdrift survey ½° at 188 m, 1° at 216 m, ½° at 243 m. Held diverter drill.

Total 24.00

REMARKS

M/V Invincible Tide - standing by
M/V Ray J Hope - standing by
Pretour safety meetings - Slinging & Rigging, clean up, sort rubbish, stand back when lifting drill pipe, use hook to catch tag line. Drilling & well control.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	Yes		
BOP Pressure Test	No		13-May-2004
Fire Drill	No		11-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	1	
BOP System Inspection (Minicheck)	No	0	

PERSONNEL

Personnel : Shane Harris, Ray Wyld
Supervisors : Bain, Roger L.
Basset, Anthony A.
Paltridge, Tim J.
Sharkey, George K.
Steel, Barry J.
Total Head Count: 79
Total Hours : 948.00

HEAD COUNTS

Contractor	52	ExxonMobil	7
Contractor Short Service (SSE)	0	Service Company	20

MANAGEMENT SUMMARY

N/U BOP. L/D 36" BHA. M/U 12-1/4" BHA. Function Diverter - OK. Drill out float equip & shoetrack. Displ seawater w/Mud. Drill 12-1/4" hole from 123m to 161 m.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	347,001	0	347,001	5,563
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	2,478,196	175,270	2,653,466	44,575
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	2,478,196	175,270	2,653,466	44,575

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	157	Fuel	12	146	303
Cement	0	49	85	Gel	12	0	22
Drill Water	127	112	165	Potable Water	24	16	268

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	Caustic Soda	BKT	25	6
FILTRATION REDUCER	PAC-L	KGS	25	2
VISCOSIFIER	Bentonite	SAX	100	175

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
2 1	12.250	BT	STC	S91HPX	129.0	38.0	1.75	21.71	21.71	1-1	X	0	36

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min	Nozzle Sizes 32nd"				Annular Velocities ft/min	
			11.0	11.0	11.0			
1	.1360	77	11.0	11.0		DC (Max)	264.	
2	.1360	78	Total Flow Area	.8353	in2	DP (Min)	0.	
			Nozzle Velocity	103.65	m/sec	(Min OH)	******	

```
                              Hole Diameter    12.250 inches    Riser (Min)     0.
                              Bit
                                Pressure Drop     900 psi
Pump Rate     155 str/min                          51 % of SPP
Flow Rate  885.36 gpm           Impact Force     1359 lbf
Pressure     1750 psi           Hydraulic HP    3.945 hp/in2
=================================== SURVEYS ===================================
                              No surveys have been entered.
================================ WELL CONTROL =================================
Pump    Rate     Pressure      MD
       str/min     psi       meters       Burst (70%)             1543 psi
  1        0           0         .00      Formation Strength       N/A
  2        0           0         .00      Kick Tolerance           N/A
                                          Pore Pressure            .00 ppg
                                          MASP                     N/A

                                          Background Gas            .0
Density              8.70 ppg             Connection Gas            .0
ECD                  8.70 ppg             Trip Gas                  .0
   at              161.00 meters
   with bit at     160.93 meters
================================ DRILL STRING =================================
Date Run:  14-May-04   Date Pulled:  16-May-04   Length of BHA        :  245.720
Time Run:      14:00   Time Pulled:      15:00   BHA Weight in Air    :     75.0
Depth In:     129.00   Depth Out  :     750.00              Above Jars:     30.0
                                                Below Jars:     35.0
                                                In Mud    :     65.0
12¼" PDC, 12¼" Stab, 8" AnderDrift, 12¼" Stab, 3 x 8¼" DC, 12¼" Stab, 2 x 8¼"
DC, XO, 1 x HW,Jar, 18 x HWDP

                         Connections  Nom     Stab Blade    Length       Section
Tp   OD      ID    Grd   Size  Type Wt/Len  OD In  OD Out  To Ctr Bend   Length
-- ------- ------- ---- ------- --- ------ ------- ------- ------ ----- --------
DP   5.000   4.276 S135   4.500 IF      .0                                504.280
HW   5.000   3.000 ????   4.500 IF      .0                                168.880
JR   6.500   2.875 ????   4.500 IF      .0                                  9.830
HW   5.000   3.000 ????   4.500 IF      .0                                  9.240
XO   8.000   2.938 ????   4.500 IF      .0                                   .810
DC   8.250   8.250 ????   6.625 REG     .0                                 19.060
ST   8.000   2.938 ????   6.625 REG     .0  12.250    .000   .000          2.240
DC   8.250   2.937 ????   6.625 REG     .0                                28.350
ST   8.000   2.750 ????   6.625 REG     .0  12.250    .000   .000          2.140
SV   8.000   3.000 ????   6.625 REG     .0                                 3.130
ST   8.000   2.750 ????   6.625 REG     .0  12.250    .000   .000          1.760
BT  12.250   3.000 ????   6.625 REG     .0                                  .280
============================== DAILY DRILL STRING ==============================
               -------- Weights --------    --- Torques ---   Cumulative Time On
WOB      5     Pick-up               150    Off-TD    200.0   BHA           3.75
RPM     70     Slack-off             150    On-TD     750.0   Shock Sub      .00
               Off-TD, Rotating      150                      Jars          3.75
================================== CASING ==================================
  Section    O.D.     Grade   Wt/Lng    Thread   Joints     Top       Bottom
      1      30.000   X52     310.000    ST-2        9       17.07     113.07
      2      20.000   X52     203.000    WELD        1      113.07     116.61
      3      13.375   K55      68.000    BUTT        1      116.61     120.36

*** End 15-May-2004 report for WW1            Run 07-Sep-2004 20:57 Central Time
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Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 16-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	687.00
Office :	Australia SE	TVD m:	1539.00	687.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	8.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		5.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	526.00	
Latitude :	38d 19' 29" South	Drilling Hours :	24.00	
Longitude :	147d 30' 17" East	ROP m/hr:	21.92	
Water Depth:	39.00 m	Percentage NPT :	15.7	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Limeston
Deepest Casing Run: 13.375 inches at 120.36 MD, 120.36 TVD
Next Casing : 9.625 inches at 750.000 meters MD
Leakoff Test : .00 ppg

Current: Drilling 12¼" hole at 687 m
Planned: Drill to 9-5/8" Csg Pt @ 750m, CBU, Drop Gyro, POOH, Run 9-5/8" Csg

Start	Elpsd	End MD		Description
00:00	24.00	687.00	DRLG	Drill 12-1/4" hole from 161 m to 687m. Mud losses downhole 50 bbls over last 24 hours. Held diverter drills with both crews. Depth Inclination 161 m 0° 188 m ½° 216 m 1° 244 m ½° 273 m 1° 302 m 1° 331 m 1° 360 m 1½° 388 m 1½° 419 m 1½° 448 m 2° 476 m 2½° 507 m 2½° 536 m 3° 565 m 2½° 594 m 3° 623 m 3° 652 m 3° 681 m 3° 16 May 04 0000 hr to 0500 hrs Drill 12¼" hole from 687m to 718m WOB 4, ROP 7 to 8 m/hr, SPP 3,280 psi, torque 1,000 - 3,000 ft-lb, 140 RPM, 1,070 gpm

Total 24.00

REMARKS

M/V Invincible Tide - Standing by
M/V Ray J Hope - At Rig

Pretour safety meetings - Boat Activity, Deck space, Drilling & well control.
Preparing to run casing. JSA to spot Schlumberger doghouse.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		15-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		11-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	2	15-May-2004
BOP System Inspection (Minicheck)	Yes	2	

PERSONNEL

Personnel : Shane Harris, Ray Wyld
Supervisors : Bain, Roger L.
Basset, Anthony A.
Sharkey, George K.
Steel, Barry J.
Total Head Count: 76
Total Hours : 912.00

HEAD COUNTS

Contractor	52	ExxonMobil	6
Contractor Short Service (SSE)	0	Service Company	18

MANAGEMENT SUMMARY

Drill 12-1/4" hole from 161m to 687m. Held diverter drill w/both crews.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	273,371	0	273,371	5,385
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	2,751,567	175,270	2,926,837	49,960
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	2,751,567	175,270	2,926,837	49,960

MUD REPORT

Time	21:20	Flowline Temp	34.0 deg C	% Solids	.0
Mud Type	WBM	Filtrate	.0 cc	% LGS	.0
Sample From	Flowline	Filter Cake	.0 32nd"	% Sand	.00
		HTHP Temp	.0 deg C	% Water	.0
MD	652.00 meters	Filtrate	.0 cc	% Oil	.0
Density	9.10 ppg				
Viscosity	44 sec	Elec Stab	0 volts	Ca++	0
PV	7.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	33.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	1029.2 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	251.6 barrel	Pm	.0

Run dilution with seawater & reserve mud to control the mud weight and solids buildup. Weighted up 330 bbls to 13.5ppg. 50 bbls of mud lost due to seepage (average 2.0 bbls per hour)

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	157	Fuel	12	146	437
Cement	0	49	134	Gel	12	0	10
Drill Water	127	112	150	Potable Water	24	16	260

MUD ADDITIVES

Function	Name	Unit	Size	Amount
VISCOSIFIER	Bentonite	SAX	100	80
WEIGHTING MATERIAL	Barite	SAX	100	337

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
2 1	12.250	BT	STC	S91HPX	129.0	564.0	25.75	21.92	21.90	1-1	X	0	36

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min	Nozzle Sizes 32nd"	11.0	11.0	11.0	Annular Velocities ft/min

1	.1390	92		11.0	11.0	DC (Max)	321.
2	.1390	0	Total Flow Area	.8353	in2	DP (Min)	34.
3	.1390	92	Nozzle Velocity	125.76	m/sec	(Min OH)	210.
			Hole Diameter	12.250	inches	Riser (Min)	0.
			Bit				
			Pressure Drop	1325	psi		
Pump Rate	184	str/min		39	% of SPP		
Flow Rate	1074.19	gpm	Impact Force	2000	lbf		
Pressure	3400	psi	Hydraulic HP	7.045	hp/in2		

SURVEYS

No surveys have been entered.

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00
2	0	0	.00
3	0	0	.00

Burst (70%)	1543 psi
Formation Strength	N/A
Kick Tolerance	N/A
Pore Pressure	8.50 ppg
MASP	N/A
Background Gas	1.0
Connection Gas	.0
Trip Gas	.0

Density	8.70 ppg
ECD	9.07 ppg
at	687.00 meters
with bit at	686.71 meters

DRILL STRING

Date Run:	14-May-04	Date Pulled:	16-May-04	Length of BHA :	245.720
Time Run:	14:00	Time Pulled:	15:00	BHA Weight in Air :	75.0
Depth In:	129.00	Depth Out :	750.00	Above Jars:	30.0
				Below Jars:	35.0
				In Mud :	65.0

12¼" PDC, 12¼" Stab, 8" AnderDrift, 12¼" Stab, 3 x 8¼" DC, 12¼" Stab, 2 x 8¼" DC, XO, 1 x HW,Jar, 18 x HWDP

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length
DP	5.000	4.276	S135	4.500	IF	.0					504.280
HW	5.000	3.000	????	4.500	IF	.0					168.880
JR	6.500	2.875	????	4.500	IF	.0					9.830
HW	5.000	3.000	????	4.500	IF	.0					9.240
XO	8.000	2.938	????	4.500	IF	.0					.810
DC	8.250	8.250	????	6.625	REG	.0					19.060
ST	8.000	2.938	????	6.625	REG	.0	12.250	.000	.000		2.240
DC	8.250	2.937	????	6.625	REG	.0					28.350
ST	8.000	2.750	????	6.625	REG	.0	12.250	.000	.000		2.140
SV	8.000	3.000	????	6.625	REG	.0					3.130
ST	8.000	2.750	????	6.625	REG	.0	12.250	.000	.000		1.760
BT	12.250	3.000	????	6.625	REG	.0					.280

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	5	Pick-up	180	Off-TD	1.5	BHA	27.75
RPM	140	Slack-off	180	On-TD	3.0	Shock Sub	.00
		Off-TD, Rotating	180			Jars	27.75

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36

*** End 16-May-2004 report for WW1 Run 07-Sep-2004 20:57 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 17-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	750.00
Office :	Australia SE	TVD m:	1539.00	750.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	9.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		6.1
Field :	Gippsland Basin	Spud Date :		10-May-2004
Country :	Australia	Progress m:		63.00
Latitude :	38d 19' 29" South	Drilling Hours :		6.50
Longitude :	147d 30' 17" East	ROP m/hr:		9.69
Water Depth:	39.00 m	Percentage NPT :		13.9
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Limestone
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 9.625 inches at 750.000 meters MD
Leakoff Test : .00 ppg

Current: Running 9-5/8" csg at 377 m
Planned: Run 9 5/8" casing to 745 m & cement

Start	Elpsd	End MD		Description
00:00	6.50	750.00	DRLG	Drill 12-1/4" hole from 687m to 750m, 9-5/8" Csg Pt. Backream each std 3 times. WOB 5, ROP 7 to 8 m/hr, SPP 3,280 psi, torque 1,000 - 3,000 ft-lb, 140 RPM, 1,070 gpm
06:30	1.50	750.00	CIRC	Circ 3 btm up while rotating & reciprocating pipe - 184 spm/3500 psi., shakers clean.
08:00	.50	750.00	CIRC	Displace hole w/400 bbls of Hi-Vis 8.7 ppg Mud.
08:30	.50	750.00	CIRC	Drop SDI "Keeper" Gyro Survey, Pump 25 bbl Slug.
09:00	1.00	750.00	INSP	Investigate incident on rig floor. Blocks ran into cable on man-rider, line parted, No one on the designated man rider at time, No injuries.
10:00	2.00	750.00	TRIP	Pull string out of hole -- POOH to 12-1/4" BHA.
12:00	3.00	750.00	TRIP	Break and lay down string, BHA or tools -- Break & L/D 12-1/4" BHA, cleaning Gumbo f/stabs. Recover Gyro.
15:00	.50	750.00	TRIP	Break and lay down string, BHA or tools -- Remove subs from rig floor - clear same.
15:30	.75	750.00	TBLR	M/U retrieving tool & pull wear bushing.
16:15	1.25	750.00	TBLR	M/U Cameron jetting tool & jet hanger profile & BOP stack w/125 spm @ 1000 psi. Rack same back in derrick.
17:30	2.00	750.00	TBLR	Prepare rig floor & R/U Weatherford csg tools.
19:30	.25	750.00	TBLR	Pre-Job Safety Meeting for running Casing.
19:45	4.25	750.00	TBLR	Run 9 5/8", 47 ppf, L80, LTC casing to 377 m. Shoe track consists of self filling float shoe, full joint, self filling float collar with bypass baffle on top, full joint, and shut off baffle adapter. After shoe passed 300 meters, hole started taking fluid. Maintain slow running speed to minimize hole surge. 17 May 04 0000 - 0315 Continue running 9 5/8" casing from 377 m to 656 m.

Install 9 5/8" x 17½" rigid centralizer mid joint below H ES cementer.
Hole continued taking mud, up to 1 bbl per joint.
0315 - 0345
Make up H ES cementer stage tool in casing string
0345 - 0500
Continue running casing
0630 Update Land Hanger

Total 24.00

REMARKS

M/V Invincible Tide - To BBMT
M/V Ray J Hope - At Rig
Pretour safety meetings - Heavy Lifts, tripping, handling BHA, Running Casing.
JSA to spot Schlumbrger logging unit.
Held fire drill - Good Response
Held Weekly Safety mtg w/Both Crews.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		15-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	Yes		11-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	2	16-May-2004
BOP System Inspection (Minicheck)	Yes	2	16-May-2004

PERSONNEL

Personnel : Shane Harris, Ray Wyld
Supervisors : Bain, Roger L.
Basset, Anthony A.
Sharkey, George K.
Steel, Barry J.
Total Head Count: 78
Total Hours : 936.00

HEAD COUNTS

Contractor	52	ExxonMobil	6
Contractor Short Service (SSE)	0	Service Company	20

SAFETY INCIDENT

*** Near Miss
While POOH, block ran into man-rider cable parting same. No one on the designated man rider at the time - No Injuries.

MANAGEMENT SUMMARY

Drill 12-1/4" hole from 687m to 750m - 9-5/8" Csg Pt. Circ & Cond hole, drop Gyro, POOH, L/D BHA, Pull Wear Bushing, Jet wellhead, R/U to run 9-5/8" Csg. Run 9-5/8" Csg

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	278,162	0	278,162	9,927
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	3,029,729	175,270	3,204,999	59,887
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	3,029,729	175,270	3,204,999	59,887

MUD REPORT

Time	19:30	Flowline Temp	.0 deg C	% Solids	.0
Mud Type	WBM	Filtrate	.0 cc	% LGS	.0
Sample From	Pit	Filter Cake	.0 32nd"	% Sand	.00
		HTHP Temp	.0 deg C	% Water	.0
MD	750.00 meters	Filtrate	.0 cc	% Oil	.0
Density	9.10 ppg				
Viscosity	41 sec	Elec Stab	0 volts	Ca++	0
PV	10.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	36.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	177.5 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	30.1 barrel	Pm	.0

Run dilution with seawater & reserve mud to control the mud weight and solids buildup. Started to clean mud pits in preperation for the 8.5" hole. Daily cuttings volume: 31.5bbls

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	157	Fuel	10	0	427
Cement	0	0	134	Gel	0	0	10
Drill Water	44	0	106	Potable Water	21	23	262

MUD ADDITIVES

Function	Name	Unit	Size	Amount
WEIGHTING MATERIAL	Barite	SAX	100	731

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
2 1	12.250	BT	STC	S91HPX	129.0	.0	.00	.00	.00	1-1	X	0	-1

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	92
2	.1390	0
3	.1390	92

Nozzle Sizes 11.0 11.0 11.0
32nd" 11.0 11.0 11.0
11.0 11.0
Total Flow Area .8353 in2
Nozzle Velocity 125.76 m/sec
Hole Diameter 12.250 inches
Bit
Pressure Drop 1325 psi
38 % of SPP
Impact Force 2000 lbf
Hydraulic HP 7.045 hp/in2

Annular Velocities ft/min
DC (Max) 3607.
DP (Min) 522.
(Min OH) ******
Riser (Min) 0.

Pump Rate 184 str/min
Flow Rate 1074.19 gpm
Pressure 3500 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
104.00	.21	236.92	104.00	-.026	- .026	- .041	.239
132.00	.51	249.02	132.00	-.099	- .099	- .200	.330
160.30	.55	268.10	160.30	-.149	- .149	- .453	.191
188.40	.60	266.43	188.40	-.162	- .162	- .735	.056
216.70	.73	264.77	216.69	-.188	- .188	- 1.062	.141
235.50	.76	268.18	235.49	-.203	- .203	- 1.306	.089
264.60	.84	268.61	264.59	-.214	- .214	- 1.712	.084
293.60	.99	266.47	293.59	-.235	- .235	- 2.175	.159
322.60	1.12	265.47	322.58	-.272	- .272	- 2.707	.136
351.70	1.28	263.80	351.68	-.330	- .330	- 3.314	.168
380.70	1.34	261.56	380.67	-.415	- .415	- 3.972	.079
409.80	1.37	264.38	409.76	-.499	- .499	- 4.654	.076
438.80	1.92	260.36	438.75	-.614	- .614	- 5.478	.581
467.90	2.35	259.83	467.83	-.801	- .801	- 6.546	.444
496.90	2.80	260.15	496.80	-1.027	- 1.027	- 7.829	.466
526.00	2.92	262.43	525.86	-1.246	- 1.246	- 9.264	.171
555.00	2.58	265.13	554.83	-1.399	- 1.399	- 10.647	.376
584.10	2.24	268.02	583.90	-1.474	- 1.474	- 11.868	.372
613.10	2.48	270.68	612.88	-1.487	- 1.487	- 13.062	.273
642.20	2.62	271.49	641.95	-1.462	- 1.462	- 14.356	.150
671.30	2.79	271.34	671.02	-1.428	- 1.428	- 15.729	.175
700.30	3.07	272.84	699.98	-1.373	- 1.373	- 17.210	.300
729.40	3.25	271.35	729.03	-1.315	- 1.315	- 18.813	.204

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00
2	0	0	.00
3	0	0	.00

Burst (70%) 3847 psi
Formation Strength N/A
Kick Tolerance N/A
Pore Pressure 8.50 ppg
MASP N/A

Background Gas 1.0
Connection Gas .0
Trip Gas .0

Density 8.70 ppg
ECD 11.03 ppg
at 750.00 meters
with bit at 749.81 meters

DRILL STRING

Date Run: 14-May-04 Date Pulled: 16-May-04 Length of BHA : 245.720
Time Run: 14:00 Time Pulled: 15:00 BHA Weight in Air : 75.0

Depth In: 129.00 Depth Out : 750.00 Above Jars: 30.0
Below Jars: 35.0
In Mud : 65.0

12¼" PDC, 12¼" Stab, 8" AnderDrift, 12¼" Stab, 3 x 8¼" DC, 12¼" Stab, 2 x 8¼" DC, XO, 1 x HW,Jar, 18 x HWDP

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length
DP	5.000	4.276	S135	4.500	IF	.0					504.280
HW	5.000	3.000	????	4.500	IF	.0					168.880
JR	6.500	2.875	????	4.500	IF	.0					9.830
HW	5.000	3.000	????	4.500	IF	.0					9.240
XO	8.000	2.938	????	4.500	IF	.0					.810
DC	8.250	8.250	????	6.625	REG	.0					19.060
ST	8.000	2.938	????	6.625	REG	.0	12.250	.000	.000		2.240
DC	8.250	2.937	????	6.625	REG	.0					28.350
ST	8.000	2.750	????	6.625	REG	.0	12.250	.000	.000		2.140
SV	8.000	3.000	????	6.625	REG	.0					3.130
ST	8.000	2.750	????	6.625	REG	.0	12.250	.000	.000		1.760
BT	12.250	3.000	????	6.625	REG	.0					.280

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	10	Pick-up	180	Off-TD	2.0	BHA	34.00
RPM	145	Slack-off	180	On-TD	5.0	Shock Sub	.00
		Off-TD, Rotating	180			Jars	34.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 17-May-2004 report for WW1 Run 07-Sep-2004 20:57 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 18-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned | Actual
Units :	Mixed Oilfield	MD m:	1539.00 | 750.00
Office :	Australia SE	TVD m:	1539.00 | 750.00
Client :	ExxonMobil Production	Days	|
Drill Team :	Australia Offshore	- if Dry :	18.0 |
		- if Suspended:	.0 |
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0 |
Contractor :	Ensco	- Susp + Comp :	.0 | 10.0
Rig Name :	Ensco 102	- Ahead/Behind:	| .0
Operator :	Esso Aus Res	- from Spud :	| 7.1
Field :	Gippsland Basin	Spud Date :	10-May-2004
Country :	Australia	Progress m:	.00
Latitude :	38d 19' 29" South	Drilling Hours :	.00
Longitude :	147d 30' 17" East	ROP m/hr:	
Water Depth:	39.00 m	Percentage NPT :	12.5
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)
Ground Elev:	.00 m		
Phone :	61 3 5142 2880		

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Limestone
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : .00 ppg

Current: Test 9-5/8" casing
Planned: Test Csg, & Blind rams, M/U 8-1/2" drlg assy, Clean out csg, PIT, Drill

Start	Elpsd	End MD		Description
00:00	5.00	750.00	TBLR	Continue to Run 9 5/8", 47 ppf, L80, LTC casing to 727m.. Maintain slow running speed to minimize hole surge & losses. Install 9 5/8" x 17½" rigid centralizer mid joint below HES cementer. Make up HES cementer stage tool in casing string
05:00	1.00	750.00	TBLR	Lift the 17-3/4" diverter packing insert to fit the 18-1/2" Hanger Running tool thru, could not run the 22" diverter packing insert because that will not seal off 9-5/8" casing. Re-install same.
06:00	1.00	750.00	TBLR	P/U & M/U Cameron 18-3/4" x 9-5/8" casing hanger & running tool assy. M/U Landing string & land-out casing hanger. 9-5/8" shoe @ 745m.
07:00	1.00	750.00	TBLR	PJSM/JSA. P/U & install cement head. R/U lines.
08:00	2.00	750.00	CIRC	Displace & circ hole with seawater. Initially at 32 spm/740 psi. Final circ @ 55 spm/660 psi. Total 5400 stks pumped, 750 bbl.
10:00	.50	750.00	CMT	Line up cmt unit to cmt head, test lines to 3000 psi & pump 40 bbls of seawater.
10:30	2.25	750.00	CMT	Release 1st stage by-pass plug. Pump 10 bbl Seawater w/cmt unit. Load cmt head with 9-5/8" Shut-off Plug. Mix & Pump cement job as follows: Lead: 163 bbl, (416 sx/915 cu ft) Class "G" cmt w/1.46 gal/bbl econolite + 0.20 gal/bbl HR-6L + 0.03 gal/bbl NF-6 in seawater to 12.5 ppg. Tail: 68 bbl, (332 sx/382 cu ft) Class "G" cmt + 0.03 gal/bbl NF-6 to 15.8 ppg. Drop the 9-5/8" 1st stage shut-off Plug. Cmt unit displaced w/20 bbl seawater followed by rig pumping 1096 stks, 152.3 bbl for total displacement of 172.3 bbl to Bump Plug. Took rtns thru the wellhead

				outlets during displacment. Circ Press prior to bumping plug @ 2 bpm/930 psi, bump plug w/ additional 570 psi for 1500 psi. Held for 5 mins. Bled back 2-1/2 bbl - Floats Held. CIP @ 12:35.
12:45	.25	750.00	TRIP	Set or release downhole equipment -- Pressure up to 2150 psi to open the Halliburton ES Stage Cement collar @ 88m.
13:00	1.75	750.00	CIRC	Pump 330 bbl 13.5 ppg Mud @ 380 gpm/1500 psi, circulating seawater out. Pump 330 bbls sugar water.
14:45	1.25	750.00	TBLR	R/D cmt lines & head. L/D landing string. Flush thru all service lines.
16:00	.75	750.00	TBLR	R/D casing equipment & R/u 5" handling equipment.
16:45	.75	750.00	CIRC	M/U wash tool. Jet wellhead & BOP stack.
17:30	2.00	750.00	TRIP	Set or release downhole equipment -- P/U & GIH w/Cameron 18-3/4" seal assy & running tool. Lock in seal assy in hanger. Overpull test to 220 klbs. Press test void to 5000 psi for 10 mins.
19:30	2.75	750.00	BOP	M/U & RIH w/cup tester. Fill BOP Stack w/seawater. Test annular, 4 choke & kill hose conn, wellhead, & side outlet valves to 250/3000 psi for 5 mins. Upper choke flange leaking - retest - OK. R/d test equipment & POOH with cup tester.
22:15	1.75	750.00	TRIP	Set or release downhole equipment -- M/U Hallib multi cement closing assy & GIH. Tag @ 88m w/ 10 klbs. Close annular, Pressure up on annulus to 1300 psi - Closing Halliburton ES Stage Cement collar. Bled off. Open annular, pick up drill pipe 3m. Close UPR, press up to 100 psi - no communication to 30" csg valve - OK. 0000-0500 hrs Press test Blinds & 9-5/8" Csg to 200/1900 psi for 5 mins - OK. Clear Rig floor. M/U BHA, GIH & Drill out Halliburton ES Stage Cement collar @ 88m w/ 2-4 WOB, 55 RPM, & 630 gpm. Testing Choke manifold
Total 24.00				

REMARKS

M/V Invincible Tide - To BBMT
M/V Ray J Hope - At Rig
Pretour safety meetings - Backloading Drill pipe, Cementing Operations, Pressure TestingHandling BHA.
Corrections to Inventory Data - Fuel used 8 tonnes

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	Yes		15-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	2	17-May-2004
BOP System Inspection (Minicheck)	Yes	1	17-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 82
Total Hours : 984.00

HEAD COUNTS

Contractor	52	ExxonMobil	3
Contractor Short Service (SSE)	0	Service Company	27

SAFETY INCIDENT

*** First Aid Incident
Rig Welder reported foreign object in left eye. Medic observed "speck" in left eye on outer cornea. Flushed eye with saline solution. Placed patch over eye. Did not remove. Will send in the AM for doctor exam.

MANAGEMENT SUMMARY

Run 9-5/8"csg,M/U & Land hanger.Circ hole displacing mud with SW. Mix & Pump Cmt. Displace & Bump plug. Open HES stage collar & flush 30" x 9-5/8" Annulus

w/13.5 Mud & Sugar water,Jet WH & Stack,set Seal assy,close stage collar

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	349,002	101,112	450,114	27,393
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	3,378,731	276,382	3,655,113	87,280
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	3,378,731	276,382	3,655,113	87,280

MUD REPORT

Time	21:00	Flowline Temp	.0 deg C	% Solids	.0
Mud Type	WBM	Filtrate	.0 cc	% LGS	.0
Sample From	Pit	Filter Cake	.0 32nd"	% Sand	.00
		HTHP Temp	.0 deg C	% Water	.0
MD	750.00 meters	Filtrate	.0 cc	% Oil	.0
Density	9.20 ppg				
Viscosity	45 sec	Elec Stab	0 volts	Ca++	0
PV	9.0 cp	MBT	.0 lb/bbl	Cl-	0
YP	36.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	0./ 0. phsf			pH	.0
		Circ Volume	177.5 barrel	Pf/Mf	.0/ .0
		Vol Hole Dr	.0 barrel	Pm	.0

Cleaned pits 2,3,4 and 4 for the 8.5" section. Changed shakers 1,2,3,4 to pyramid 80 mesh screens for use at the start of the next section.

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	1384	1541	Fuel	216	0	211
Cement	0	733	867	Gel	0	476	486
Drill Water	39	0	67	Potable Water	73	14	203

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	KOH	BKT	20	1
BACTERICIDE	BARACIDE	BKT	25	1
CALCIUM REMOVER	Soda Ash	KGS	25	1
FILTRATION REDUCER	Dextrid LTE	KGS	25	20
FILTRATION REDUCER	PAC-L	KGS	25	7
SHALE CONTROL	KCl	MTN	1000	5
VISCOSIFIER	Barazan D Plus	KGS	25	12
WEIGHTING MATERIAL	Barite	SAX	100	150

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	92
2	.1390	0
3	.1390	92

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 184 str/min
Flow Rate 1074.19 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
671.30	2.79	271.34	671.02	-1.428	- 1.428	- 15.729	.175
700.30	3.07	272.84	699.98	-1.373	- 1.373	- 17.210	.300
729.40	3.25	271.35	729.03	-1.315	- 1.315	- 18.813	.204

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	.00
2	0	0	.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	N/A
Kick Tolerance	N/A
Pore Pressure	8.50 ppg
MASP	N/A

		Background Gas	.0
Density	8.70 ppg	Connection Gas	.0
ECD	******* ppg	Trip Gas	.0
at	750.00 meters		
with bit at	750.00 meters		

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

CEMENT INFORMATION

Start Date :	17-May-04	Reciprocation?:	N	Number of Plugs :	2
Time :	10:00	Rotation? :	N	Did Plug Bump? :	Y
Finish Date:	17-May-04	% Returns :	100	Did Float(s) Hold?:	Y
Time	12:35	Top of Cement :	88.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			750.0	7.6	seawater pumped by rig
Flsh	8.55			40.0	6.0	Seawater pumped by DS,
Lead	12.50	2.2	580	163.0	5.0	
Tail	15.80	1.1	332	68.0	5.0	
Post	8.55			20.0	6.0	Seawater pumped by DS
Disp	8.55			152.3	6.0	SW172.3 BBL total disp 20 bbls+1096 stk

	Class	Additives
Lead	G	"G" + 1.46 gal/bblMF Econolite NF-5 + 0.20 gal/bblMF HR-6L + 0.03 gal/bblMF NF-6 12.37 gal/sk SW
Tail	G	"G" + 0.03 gal/bblMF NF-6 5.10 gal/sk FW

Bumped plug - Floats Held. Weight & Rate maintained throught Job. Good Job. Displaced 1st 20 bbls w/DS remainded w/rig pumps 1096 stks, for total displaement of 172.3 bbl. (Pump Output 0.139 bps)

*** End 18-May-2004 report for WW1 Run 07-Sep-2004 20:58 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 19-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	875.00
Office :	Australia SE	TVD m:	1539.00	875.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	11.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		8.1
Field :	Gippsland Basin	Spud Date :		10-May-2004
Country :	Australia	Progress m:		125.00
Latitude :	38d 19' 29" South	Drilling Hours :		7.50
Longitude :	147d 30' 17" East	ROP m/hr:		16.67
Water Depth:	39.00 m	Percentage NPT :		11.8
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Lake Entrance
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Drilling 8½" Hole
Planned: Drill

Start	Elpsd	End MD		Description
00:00	1.00	750.00	INSP	Press test Blinds & 9-5/8" Csg to 250/1900 psi for 5 mins - OK, ensured Halliburton ES stage cement collar closed.
01:00	.75	750.00	TRIP	Break and lay down string, BHA or tools -- L/D closing tool, bumper jars & 8½" Stab.
01:45	2.75	750.00	TRIP	Pick up or make up string, BHA, or tools -- PJSM/JSA. P/U 8½" BHA & GIH to 88m.
04:30	.50	750.00	DRLG	Drill out Halliburton Type H ES stage cementer @ 88m with 2-4 WOB, 55 RPM & 630 gpm, reciprocate & rotate BHA thru same.
05:00	2.00	750.00	TRIP	Pick up or make up string, BHA, or tools -- Continue RIH w/BHA & 5" DP f/88m to 720m - Tag Cmt.
07:00	1.00	750.00	TBLR	PJSM/JSA. R/U & pressure test 9-5/8" casing to 1900 psi for 15 mins - OK.
08:00	1.00	750.00	WAIT	Unplanned wait -- POWER CHOKE DRILL. Troubleshoot pressure read out system to choke panel.
			NPT	See Event 5 (RIG)
09:00	2.00	750.00	DRLG	Drill cmt f/720m to 740m w/100 spm, (2140 psi).
11:00	.25	750.00	CIRC	Circ Btms Up w/800 gpm.
11:15	.50	750.00	INSP	Perform POWER CHOKE DRILL.
11:45	1.50	750.00	BOP	R/U & Test IBOP & lower manual valve on Top Drive 200/3000 psi. R/D test assy.
13:15	1.75	750.00	DRLG	Drill out cmt & shoetrack f/740m to 745m, clean out rat hole to 750m.
15:00	.50	753.00	DRLG	Drill 8-1/2" hole from 750m to 753m - New Formation.
15:30	.50	753.00	CIRC	CBU. Pull up f/753m to 737m.
16:00	1.00	753.00	CIRC	Perform PIT test, 578 psi, w/9.7 ppg MW for 14.2 ppg EMW.
17:00	7.00	875.00	DRLG	Drill 8-1/2" hole from 750m to 875m. RPM 140, GPM 750-850, SPP 3100, WOB 0-10 0000-0530 Drilling @ 1001m, last survey 3½°

RPM 150, GPM 850, SPP 3200, WOB 2-8

Survey Depth	Inc
806m	3.5°
864m	4.0°
921m	3.5°
979m	3.5°

Total 24.00

========== PROBLEM EVENTS AND MILESTONES ==========

Event: 5 NPT: Yes Hours: 1.00 Responsible Party: Rig Contractor
Start: 18-May-04 08:00 RIG Other rig equipment problem
End : 18-May-04 09:00 POWER CHOKE DRILL. Troubleshoot pressure read out system to choke panel.

========== REMARKS ==========

M/V Invincible Tide - At BBMT, Marine Inspection, Crew Change
M/V Ray J Hope - Departed for Bream Platform to take Backload
Pretour safety meetings - Well Control, Drilling & Making Connections, Mud, Reporting all incidents

========== INSPECTIONS, DRILLS, AND CITATIONS ==========

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	2	18-May-2004
BOP System Inspection (Minicheck)	Yes	2	18-May-2004

========== PERSONNEL ==========

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 78
Total Hours : 936.00

========== HEAD COUNTS ==========

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	24

========== MANAGEMENT SUMMARY ==========

Test Blinds & 9-5/8" to 1900 psi-OK.L/D closing tool,P/U 8½"BHA & GIH 88m,drill out H ES cmt'r, Cont GIH&Tag Cmt@720m,Test Csg 1900 psi-OK.Power Choke Drill.Test IBOP&lower valve on TDS. Drill out,LOTto 14.2 EMW,Drill to 875m

========== COST DATA (Australian Dollar) ==========

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	333,196	0	333,196	49,363
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	3,711,927	276,382	3,988,309	136,643
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	3,711,927	276,382	3,988,309	136,643

========== MUD REPORT ==========

Time	22:20	Flowline Temp	30.0 deg C	% Solids	4.7
Mud Type	WBM	Filtrate	3.7 cc	% LGS	1.0
Sample From	Flowline	Filter Cake	1.0 32nd"	% Sand	.10
		HTHP Temp	121.0 deg C	% Water	92.3
MD	835.00 meters	Filtrate	11.2 cc	% Oil	.0
Density	9.80 ppg				
Viscosity	43 sec	Elec Stab	0 volts	Ca++	150
PV	12.0 cp	MBT	2.5 lb/bbl	Cl-	37000
YP	20.0 phsf	Excess Lime	.00 lb/bbl	CaCl2	0
Gels	6./ 7. phsf			pH	8.5
		Circ Volume	626.1 barrel	Pf/Mf	.4/ 1.1
		Vol Hole Dr	28.8 barrel	Pm	.3

Rhe'try at 49.0 deg: 600/44 300/32 200/25 100/18 60/0 30/0 6/6 3/4
30 min Gels - 7. Continued mixing mud for the 8.5" section. Cleaned sand trap and shaker pits for KCl/PHPA/Glycol mud system. A total of 1500 bbls was mixed. Daily cuttings volume : 27.8bbls. Chlorides of Drillwater : 2000 mg/l. Calcium of Drillwater : 40 mg/l

========== SOLIDS CONTROL ==========

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1541	Fuel	8	0	203
Cement	0	0	867	Gel	0	0	486
Drill Water	0	0	67	Potable Water	0	0	203

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	Citric Acid	KGS	25	4
ALKALINITY (PH)	KOH	BKT	20	3
BACTERICIDE	BARACIDE	BKT	25	3
CALCIUM REMOVER	Soda Ash	KGS	25	3
CALCIUM REMOVER	Sodium Bicarb	KGS	25	5
CORROSION INHIBITOR	Baracor 129	BKT	25	5
FILTRATION REDUCER	Dextrid LTE	KGS	25	60
FILTRATION REDUCER	PAC-L	KGS	25	21
SHALE CONTROL	Gem CP	LTR	1500	3
SHALE CONTROL	KCl	MTN	1000	15
SHALE CONTROL	PHPA	KGS	25	20
VISCOSIFIER	Barazan D Plus	KGS	25	36
WEIGHTING MATERIAL	Barite	SAX	100	450

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
3 1	8.500	BT	STC	S75HPX	750.0	125.0	7.50	16.67	16.67	7-7	X	0	202

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	70
2	.1390	70
3	.1390	0

Nozzle Sizes 32nd": 11.0 11.0 11.0 / 11.0 11.0 11.0 / 11.0 .0

Total Flow Area .8353 in2

Nozzle Velocity 95.69 m/sec

Hole Diameter 8.500 inches

Bit Pressure Drop 855 psi

Bit 27 % of SPP

Pump Rate 140 str/min

Flow Rate 817.32 gpm

Pressure 3200 psi

Impact Force 1291 lbf

Hydraulic HP 7.186 hp/in2

Annular Velocities ft/min

DC (Max) 750.

DP (Min) 397.

(Min OH) ******

Riser (Min) 0.

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
671.30	2.79	271.34	671.02	-1.428	- 1.428	- 15.729	.175
700.30	3.07	272.84	699.98	-1.373	- 1.373	- 17.210	.300
729.40	3.25	271.35	729.03	-1.315	- 1.315	- 18.813	.204

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	30	180	835.00
2	40	325	835.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	3.04 ppg
Pore Pressure	8.55 ppg
MASP	572 psi
Background Gas	2.0
Connection Gas	.0
Trip Gas	.0

Density 9.70 ppg

ECD 10.24 ppg

at 875.00 meters

with bit at 874.78 meters

DRILL STRING

Date Run: 18-May-04 Date Pulled: 20-May-04 Length of BHA : 196.110

Time Run: 02:00 Time Pulled: 20:30 BHA Weight in Air : 38.0

Depth In: 750.00 Depth Out : 1539.00 Above Jars: 18.0

Below Jars: 20.0

In Mud : 32.7

8½" PDC, 8½" NB STAB, ANDERDRIFT Svy, 8½" STAB, 2 x 6¾" DC, 8½" STAB, 2 x 6¾" DC, 1 x 5" HWDP, JAR, 14 x 5" HWDP

Tp	OD	ID	Grd	Connections Size	Connections Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length

DP	5.000	4.276	S135	4.500	IF	19.5				1342.889
HW	5.000	3.000	????	4.500	IF	50.0				131.180
JR	6.500	2.875	????	4.500	IF	50.0				9.830
HW	5.000	3.000	????	4.500	IF	50.0				9.240
DC	6.750	2.313	????	4.500	IF	65.0				18.660
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000	1.340
DC	6.750	2.312	????	4.500	IF	65.0				18.740
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000	1.790
SV	7.000	3.000	????	4.500	IF	65.0				3.160
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000	1.970
BT	8.500	2.000	????	4.500	REG	.0				.200

DAILY DRILL STRING

		-------- Weights --------		--- Torques ---		Cumulative Time On	
WOB	5	Pick-up	170	Off-TD	2.0	BHA	7.50
RPM	140	Slack-off	170	On-TD	3.5	Shock Sub	.00
		Off-TD, Rotating	170			Jars	41.50

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 19-May-2004 report for WW1 Run 07-Sep-2004 20:58 Central Time

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1406.00
Office :	Australia SE	TVD m:	1539.00	1406.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	12.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		9.1
Field :	Gippsland Basin	Spud Date :		10-May-2004
Country :	Australia	Progress m:		531.00
Latitude :	38d 19' 29" South	Drilling Hours :		24.00
Longitude :	147d 30' 17" East	ROP m/hr:		22.13
Water Depth:	39.00 m	Percentage NPT :		10.8
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Latrobe - 95% Sandstone, 5% Siltstone (1405m)
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Drilling
Planned: Drill to TD, Wiper Trip, Drop Gyro, POOH, Run E-Logs

Start	Elpsd	End MD		Description
00:00	24.00	1406.00	DRLG	Drill 8-1/2" hole from 875m to 1406m. RPM 80-140, GPM 830-850, SPP 3200-3450, WOB 0-10 Max Gas 35u from 1125m. Additional Gas peaks 30 units from 1403m, over a BG gas of 4 u, 32 units from 1408m Background Gas 875m-1000m 3 units, 1000-1406m 6 units. Connection Gas 1210m to 1400m 5-15 units over BG. Formation Tops f/WSG & Mud Loggers --- Lakes Entrance 815m Latrobe 1179m Coarse Clastics 1183m N 1.0 1403m N 1.1 1406m Base N 1.4 1430m Survey Depth Inc --- 1036m 4.0° 1153m 4.0° 1212m 4.0° 1270m 4.0° 1328m 4.0° 1386m 4.0° 1444m 4.0° 0000-0500 Drilling @ 1480m RPM 130, GPM 830, SPP 3800, WOB 2-8 MW 9.8 ppg
Total	24.00			

REMARKS

M/V Invincible Tide - At Rig
M/V Ray J Hope - At BBMT
M/V Far Scandia - Depart E102 @ 0420, made run from R453 with 5 Schlumberger XO plugs (compatable XO plugs in the oilphase container that was recently backloaded from Marlin to the Far Scandia), used to install MPSR's (450 cc MDT PVT sample Chambers), into the MRMS (MDT multi-sample carriage module).
The MDT program requires 9 x 450 cc chambers to be filled, with 11 to be run in hole. 2 MRMS's are to be run as each MRMS holds a maximum of 6 MPSR's. Without these plugs can run 1 MRMS + 6 MPSR's in one run. Additional 450cc chambers would require 2 MDT runs. Hence the "Far Scandia" run over from Marlin.
Pretour safety meetings - Well Control, Drilling & Making Connections, short change & Last Night "Staying Focused" & "Carrying Safety Home"

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	2	19-May-2004
BOP System Inspection (Minicheck)	Yes	2	19-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 79
Total Hours : 948.00

HEAD COUNTS

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	25

MANAGEMENT SUMMARY

Drill 8-1/2" hole from 875m to 1406m. Pit Drills NC 50 sec, DC 52 secs.

COST DATA (Australian Dollar)

AFE		Intangible	Tangible	Total	Mud
Dry : 8,650,000	Daily	285,058	0	285,058	23,340
Susp : 0	Cum Mbl	0	0	0	0
Comp : 0	Cum Drl	3,996,985	276,382	4,273,367	159,983
Total: 8,650,000	Cum Comp	0	0	0	0
	Cum W/O	0	0	0	0
Exc : 1.33280/US$	Cum AFE	3,996,985	276,382	4,273,367	159,983

MUD REPORT

Time	19:40	Flowline Temp	51.0 deg C	% Solids	5.4
Mud Type	WBM	Filtrate	3.6 cc	% LGS	2.0
Sample From	Flowline	Filter Cake	1.0 32nd"	% Sand	.20
		HTHP Temp	121.0 deg C	% Water	91.7
MD	1327.00 meters	Filtrate	10.7 cc	% Oil	.0
Density	9.80 ppg				
Viscosity	46 sec	Elec Stab	0 volts	Ca++	0
PV	18.0 cp	MBT	2.0 lb/bbl	Cl-	36000
YP	25.0 phsf	Excess Lime	.04 lb/bbl	CaCl2	0
Gels	7./ 7. phsf			pH	8.7
		Circ Volume	721.3 barrel	Pf/Mf	.1/ .3
		Vol Hole Dr	122.3 barrel	Pm	.3

Rhe'try at 49.0 deg: 600/61 300/43 200/34 100/24 60/0 30/0 6/7 3/5
Upgraded the four shaker to 150 mesh screens. Added to the active Glycol, Baracor 129, Caustic Potash & PHPA. At 1100 m before the top of the latrobe formation, treated atcive system with Baracarb 25 and Baracarb 100 at 5 ppb. Preparing a slug for tripping out of the hole. GGT: 0 ppm

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	81	0	1460	Fuel	11	0	192
Cement	0	0	867	Gel	0	0	486
Drill Water	32	240	275	Potable Water	47	34	190

MUD ADDITIVES

Function	Name	Unit	Size	Amount

ALKALINITY (PH)	KOH	BKT	20	4
CORROSION INHIBITOR	Baracor 129	BKT	25	17
DEFOAMER	Bara-Defoam	BKT	5	1
FILTRATION REDUCER	Baracarb 100	MTN	1200	3
FILTRATION REDUCER	Baracarb 25	MTN	1200	3
SHALE CONTROL	Gem CP	LTR	1500	2
SHALE CONTROL	PHPA	KGS	25	11
WEIGHTING MATERIAL	Barite	SAX	100	407

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
3 1	8.500	BT	STC	S75HPX	750.0	656.0	25.30	29.83	25.93	7-7	X	0	114

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	73
2	.1390	73
3	.1390	0

Nozzle Sizes 32nd"	11.0	11.0	11.0
	11.0	11.0	11.0
	11.0	.0	
Total Flow Area	.8353	in2	
Nozzle Velocity	99.79	m/sec	
Hole Diameter	8.500	inches	
Bit Pressure Drop	940	psi	
	25	% of SPP	
Impact Force	1418	lbf	
Hydraulic HP	8.235	hp/in2	

Annular Velocities ft/min	
DC (Max)	782.
DP (Min)	414.
(Min OH)	442.
Riser (Min)	0.

Pump Rate	146 str/min
Flow Rate	852.35 gpm
Pressure	3750 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
671.30	2.79	271.34	671.02	-1.428	- 1.428	- 15.729	.175
700.30	3.07	272.84	699.98	-1.373	- 1.373	- 17.210	.300
729.40	3.25	271.35	729.03	-1.315	- 1.315	- 18.813	.204

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	30	275	1270.00
2	40	375	1270.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.83 ppg
Pore Pressure	8.55 ppg
MASP	559 psi
Background Gas	5.0
Connection Gas	15.0
Trip Gas	.0

Density	9.80 ppg
ECD	10.50 ppg
at	1406.00 meters
with bit at	1405.74 meters

DRILL STRING

Date Run:	18-May-04	Date Pulled:	20-May-04	Length of BHA	:	196.110
Time Run:	02:00	Time Pulled:	20:30	BHA Weight in Air	:	38.0
Depth In:	750.00	Depth Out :	1539.00	Above Jars:		18.0
				Below Jars:		20.0
				In Mud	:	32.7

8½" PDC, 8½" NB STAB, ANDERDRIFT Svy, 8½" STAB, 2 x 6¾" DC, 8½" STAB, 2 x 6¾" DC, 1 x 5" HWDP, JAR, 14 x 5" HWDP

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length
DP	5.000	4.276	S135	4.500	IF	19.5					1342.889
HW	5.000	3.000	????	4.500	IF	50.0					131.180
JR	6.500	2.875	????	4.500	IF	50.0					9.830
HW	5.000	3.000	????	4.500	IF	50.0					9.240
DC	6.750	2.313	????	4.500	IF	65.0					18.660
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.340
DC	6.750	2.312	????	4.500	IF	65.0					18.740
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.790
SV	7.000	3.000	????	4.500	IF	65.0					3.160
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.970
BT	8.500	2.000	????	4.500	REG	.0					.200

DAILY DRILL STRING

-------- Weights --------	--- Torques ---	Cumulative Time On

WOB	5	Pick-up	205	Off-TD	2.0	BHA	25.30
RPM	140	Slack-off	205	On-TD	5.0	Shock Sub	.00
		Off-TD, Rotating	205			Jars	59.30

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 20-May-2004 report for WW1 Run 07-Sep-2004 20:58 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 21-May-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	1539.00
TVD m:	1539.00	1536.00
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	13.0
- Ahead/Behind:		.0
- from Spud :		10.1
Spud Date :		10-May-2004
Progress m:		133.00
Drilling Hours :		9.00
ROP m/hr:		14.78
Percentage NPT :		10.0
Depth Reference:		Rig Floor (RKB)

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Latrobe - 80% Sandstone, 20% Siltstone (1539m)
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Running E-Logs
Planned: Run E-Logs, (4 runs planned)

Start	Elpsd	End MD		Description
00:00	9.00	1539.00	DRLG	Drill 8-1/2" hole from 1406m to 1539m, (TD). RPM 80-140, GPM 830-850, SPP 3450-3800, WOB 0-10
09:00	1.00	1539.00	CIRC	Circ btms up (3x) until hole clean.
10:00	1.75	1539.00	TRIP	Short trip (not to surface) -- POOH from 1539m to 745m No overpulls, hole took proper fill.
11:45	.25	1539.00	TRIP	Short trip (not to surface) -- Held Trip Drill. DC-TD-38 sec. Flow Check Well - Static. Held Pit Drill. DC-PD-52 sec.
12:00	1.50	1539.00	TRIP	Short trip (not to surface) -- TIH from 745m to 1529m - Tagging with 20 klbs down.
13:30	.50	1539.00	DRLG	Wash & Ream from 1529-1539m w/850 GPM, SPP 3800 psi & 100 RPM.
14:00	1.00	1539.00	CIRC	Circ Btms Up (3x) @ 850 GPM, SPP 3800 psi.
15:00	.25	1539.00	DRLG	Drop SDI Gyrp Survey @ 1531m, Flow Check - Static.
15:15	1.50	1539.00	TRIP	Pull string out of hole -- POOH from 1531m to Shoe @ 745m. Hole Good.
16:45	.25	1539.00	TRIP	Pull string out of hole -- Flow Check @ shoe - Well Static.
17:00	1.00	1539.00	TRIP	Pull string out of hole -- Pump Slug & POOH to BHA.
18:00	.25	1539.00	TRIP	Break and lay down string, BHA or tools -- Flow Check @ BHA - Well Static - Remove auto-slips
18:15	1.00	1539.00	TRIP	Break and lay down string, BHA or tools -- POOH w/BHA - Rack back to 16.7m
19:15	.50	1539.00	DRLG	R/U & Retrieve SDI Gyro Survey tool.
19:45	.75	1539.00	TRIP	Break and lay down string, BHA or tools -- POOH w/BHA - Break off Bit, L/O NB Stab, Anderdrift tool, & String Stab. Clear rig floor.
20:30	.75	1539.00	LOG	PJSM/JSA. R/U & R/u wireline & sheaves.
21:15	2.00	1539.00	LOG	M/U Schlumberger Run #1 tools. Power Up & Check tools.
23:15	.75	1539.00	LOG	Install radio-active sources & GIH with wireline, (At 1000m @ 0000 hrs). Run #1 HALS-PEX-HNGS-DSI-LEHHQT

0500 Update - Out of hole with Run #1. Logged from 1529m to 745m (Shoe), then logged out w/GR & sonic thru csg on the way out.
Prepare to Run #2 MDT-GR-LEHQT

Total 24.00

REMARKS

M/V Invincible Tide - At Rig
M/V Ray J Hope - At BBMT
Pretour safety meetings - Tripping, R/U & Running Wireline, Thinking Ahead

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	1	20-May-2004
BOP System Inspection (Minicheck)	Yes	2	20-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 79
Total Hours : 948.00

HEAD COUNTS

Contractor	53	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	24

MANAGEMENT SUMMARY

Drill 8-1/2" hole from 1406m to 1539m (TD), circ btms up, Wiper trip to shoe, Flow Check - OK, TIH, Circ btms up, Drop Gyro, Flow Check - OK, POOH, rec gyro, R/U Schlum WL, Run log #1 HALS-PEX-HNGS-DSI-LEHQT.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	270,739	0	270,739	3,085
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	4,267,724	276,382	4,544,106	163,068
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	4,267,724	276,382	4,544,106	163,068

MUD REPORT

Time	13:30	Flowline Temp	59.0 deg C	% Solids	6.3
Mud Type	WBM	Filtrate	3.5 cc	% LGS	3.0
Sample From	Flowline	Filter Cake	1.0 32nd"	% Sand	.25
		HTHP Temp	121.0 deg C	% Water	91.0
MD	1539.00 meters	Filtrate	10.2 cc	% Oil	.0
Density	9.95 ppg				
Viscosity	48 sec	Elec Stab	0 volts	Ca++	240
PV	19.0 cp	MBT	2.5 lb/bbl	Cl-	34000
YP	29.0 phsf	Excess Lime	.07 lb/bbl	CaCl2	0
Gels	7./ 9. phsf			pH	9.0
		Circ Volume	791.0 barrel	Pf/Mf	.1/ .3
		Vol Hole Dr	30.6 barrel	Pm	.4

Rhe'try at 49.0 deg: 600/67 300/48 200/39 100/29 60/0 30/0 6/8 3/7

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	6	0	186
Cement	0	0	867	Gel	0	0	486
Drill Water	36	0	239	Potable Water	21	24	193

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	KOH	BKT	20	6
BACTERICIDE	BARACIDE	BKT	25	1
CORROSION INHIBITOR	Baracor 129	BKT	25	10
VISCOSIFIER	Bentonite	SAX	100	1

BIT RECORD

Bit/Run Numbers	Size	Cd	Mfg	Type	Depth In	Length	Rotary Hours	Lng/Hour Today	Lng/Hour Cum	Grade T	Grade B	Grade G	Cost /Lng
3 1	8.500	BT	STC	S75HPX	750.0	789.0	32.40	18.73	24.35	7-7	X	0	120

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	72
2	.1390	72
3	.1390	0

Nozzle Sizes 32nd": 11.0 11.0 11.0 / 11.0 11.0 11.0 / 11.0 .0

Total Flow Area .8353 in2

Nozzle Velocity 98.42 m/sec

Hole Diameter 8.500 inches

Bit Pressure Drop 914 psi

Pump Rate 144 str/min

Flow Rate 840.67 gpm

Pressure 3750 psi

Impact Force 1380 lbf

Hydraulic HP 7.901 hp/in2

Annular Velocities ft/min: DC (Max) 772. | DP (Min) 409. | (Min OH) 436. | Riser (Min) 0.

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
766.80	3.49	270.55	766.37	-1.279	- 1.279	- 21.011	.196
795.90	3.85	271.64	795.41	-1.243	- 1.243	- 22.873	.378
824.90	4.10	272.51	824.34	-1.169	- 1.169	- 24.882	.265
854.00	4.24	274.13	853.36	-1.046	- 1.046	- 26.995	.187
883.10	4.43	274.40	882.38	-.883	- .883	- 29.188	.197
912.10	4.55	274.99	911.29	-.697	- .697	- 31.451	.134
941.10	4.66	275.57	940.20	-.482	- .482	- 33.769	.123
970.10	4.60	275.85	969.10	-.249	- .249	- 36.098	.061
999.00	4.58	276.56	997.91	.001	+ .001	- 38.397	.062
1028.00	4.58	276.04	1026.82	.255	+ .255	- 40.699	.046
1057.00	4.58	276.46	1055.72	.507	+ .507	- 43.001	.035
1086.20	4.61	276.79	1084.83	.777	+ .777	- 45.325	.041
1115.30	4.61	277.10	1113.84	1.060	+ 1.060	- 47.646	.000
1144.30	4.68	278.20	1142.74	1.372	+ 1.372	- 49.974	.116
1173.40	4.69	278.80	1171.74	1.724	+ 1.724	- 52.324	.050
1202.40	4.83	279.23	1200.64	2.101	+ 2.101	- 54.701	.149
1231.40	5.23	278.56	1229.53	2.493	+ 2.493	- 57.213	.418
1260.50	5.20	278.41	1258.51	2.884	+ 2.884	- 59.829	.035
1289.60	5.42	279.29	1287.49	3.299	+ 3.298	- 62.490	.241
1318.60	5.70	281.36	1316.35	3.803	+ 3.803	- 65.254	.356
1347.60	6.07	282.15	1345.20	4.410	+ 4.410	- 68.165	.392
1376.60	6.37	283.88	1374.03	5.118	+ 5.118	- 71.225	.366
1405.70	6.61	285.59	1402.94	5.956	+ 5.956	- 74.406	.317
1434.80	6.79	286.96	1431.84	6.907	+ 6.907	- 77.664	.247
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	30	280	1415.00
2	40	390	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.68 ppg
Pore Pressure	8.55 ppg
MASP	559 psi
Background Gas	5.0
Connection Gas	10.0
Trip Gas	20.0

Density 9.80 ppg

ECD 10.59 ppg

at 1539.00 meters

with bit at 1538.94 meters

DRILL STRING

Date Run: 18-May-04 Date Pulled: 20-May-04

Time Run: 02:00 Time Pulled: 20:30

Depth In: 750.00 Depth Out : 1539.00

Length of BHA :	196.110
BHA Weight in Air :	38.0
Above Jars:	18.0
Below Jars:	20.0
In Mud :	32.7

8½" PDC, 8½" NB STAB, ANDERDRIFT Svy, 8½" STAB, 2 x 6¾" DC, 8½" STAB, 2 x 6¾" DC, 1 x 5" HWDP, JAR, 14 x 5" HWDP

Tp	OD	ID	Grd	Connections Size	Type	Nom Wt/Len	Stab Blade OD In	Stab Blade OD Out	Length To Ctr	Bend	Section Length

| -- | ------- | ------- | ---- | ------- | --- | ------ | ------- | ------- | ------ | ----- | -------- |
DP	5.000	4.276	S135	4.500	IF	19.5					1342.889
HW	5.000	3.000	????	4.500	IF	50.0					131.180
JR	6.500	2.875	????	4.500	IF	50.0					9.830
HW	5.000	3.000	????	4.500	IF	50.0					9.240
DC	6.750	2.313	????	4.500	IF	65.0					18.660
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.340
DC	6.750	2.312	????	4.500	IF	65.0					18.740
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.790
SV	7.000	3.000	????	4.500	IF	65.0					3.160
ST	6.500	3.000	????	4.500	IF	65.0	8.500	.000	.000		1.970
BT	8.500	2.000	????	4.500	REG	.0					.200

DAILY DRILL STRING

		-------- Weights --------		--- Torques ---		Cumulative Time On	
WOB	10	Pick-up	215	Off-TD	2.0	BHA	32.40
RPM	140	Slack-off	215	On-TD	5.0	Shock Sub	.00
		Off-TD, Rotating	215			Jars	66.40

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 21-May-2004 report for WW1 Run 07-Sep-2004 20:58 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 22-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	14.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		11.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	.00	
Latitude :	38d 19' 29" South	Drilling Hours :	.00	
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :	9.2	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Latrobe - 80% Sandstone, 20% Siltstone (1539m)
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Logging
Planned: Continue Logging Program, Commence P & A procedures

Start	Elpsd	End MD		Description
00:00	5.50	1539.00	LOG	Run #1 HALS-PEX-HNGS-DSI-LEHHQT Log from 1529m to 745m (Shoe), then logged w/GR & sonic thru csg on the way out.
05:30	1.50	1539.00	LOG	Remove radioactive source & L/D logging tools
07:00	1.50	1539.00	LOG	M/U tools for Run #2, MDT-GR-LEHQT on Schlumberger wireline.
08:30	2.00	1539.00	LOG	RIH w/wireline - Set down @ 1241m, attempt to go down - No Success
10:30	.50	1539.00	LOG	POOH w/Schlumberger WL to surface
11:00	1.00	1539.00	LOG	L/D logging tools & R/D equipment.
12:00	1.25	1539.00	TRIP	Pick up or make up string, BHA, or tools -- PJSM/JSA. M/U 8-1/2" Bit (RR Bit #3), Bit Sub & RIH w/BHA to 190m. Install auto-slips.
13:15	1.00	1539.00	TRIP	Run string in hole -- RIH to shoe, 745m, filling each 15 tsds.
14:15	1.00	1539.00	TRIP	Run string in hole -- TIH from shoe to 1240m, Tag up w/7 klbs.
15:15	.75	1539.00	DRLG	Wash & Ream from 1240m to 1290m. 700 gpm/3700 psi & 80 RPM. Circ Clean.
16:00	.75	1539.00	TRIP	Run string in hole -- RIH from 1290m - set down @ 1522m with 15 klbs, 17m fill.
16:45	.25	1539.00	DRLG	Wash & Ream from 1522m to 1539m, (TD).
17:00	1.00	1539.00	CIRC	Circ hole clean while incr MW to 10.1 ppg & adding 5 ppb BARABLOK to mud system. Abundant coal observed at shakers. Circ a total of 3 btms up. Max Gas 50 units.
18:00	1.25	1539.00	TRIP	Pull string out of hole -- Flow Check well - Static. Pump slug. POOH from 1539m to 1267m - 30 klbs overpull.
19:15	.75	1539.00	DRLG	Ream thru bridge @ 1267m with 750 GPM/3700 psi & 100 RPM. Circ hole clean (Coal at shakers), while reaming std.
20:00	1.25	1539.00	TRIP	Pull string out of hole -- RIH 1 stand. POOH on elevators to shoe @ 745m. No excess drag observed.

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21:15  1.25  1539.00 TRIP Pull string out of hole -- Flow check @ shoe - static.
                         POOH from shoe to BHA.
22:30  1.00  1539.00 TRIP Pull string out of hole -- Flow check well - Static.
                         Remove auto-slips. POOH w/BHA & break out bit.
23:30   .50  1539.00 RIG  Service TOP Drive, Clear rig floor, R/U Schlumberger
                         wireline sheaves.

                         0000-0500 hrs Update
                         M/U & GIH w/Log Re-Run #2 no problem getting past
                         1240m
                         Logging Re-Run #2: MDT-GR-LEHQT, Ran 16 pressure test
                         from 1364m to 1470m. Plan to acquire 1 x 1 gallon
                         chamber sample for analysis & 4 MPSR's for PVT
                         analysis. Additional samples to be directed from town.

                         From Logs - Actual Formation Tops

                         Formation       Depth  Prog Differance
                         ------------------------------------
                         Seabed...........78.6.......0.6
                         Lakes Entrance...836.0......9.5
                         Latrobe Clastics.1185.0.....As Prog
                         N1.0.............1406.0.....+4.3
                         N1.1.............1409.5.....+2.8
                         Base N1.4........1432.0.....+6.0
                         TD...............1539.0.....+3.2
Total 24.00
========================= PROBLEM EVENTS AND MILESTONES ========================
Event:   7    Milestone
Start: 21-May-04 09:00   MILE Reached target depth
                              Reached TD - 1539m
=================================== REMARKS ====================================
M/V Invincible Tide - At Rig
M/V Ray J Hope - At Rig, Departed BBMT, went to MLA then to rig, will go to BMA
today.
Pretour safety meetings - Good relief Notes, Well Control, Running Wireline,
Boat operations - Plan Your Escape
====================== INSPECTIONS, DRILLS, AND CITATIONS ======================
                                        Occurred?  Count  Most Recently Reported
BOP Control Function Test (BCFT)          No                 18-May-2004
BOP Pressure Test                         No                 13-May-2004
Fire Drill                                No                 17-May-2004
Abandon Ship Drill                        No
Operations Superintendent Inspection      No                 14-May-2004
Regulatory Agency Citation                No
BOP Drill (Pit or Trip Drill)             Yes          2     21-May-2004
BOP System Inspection (Minicheck)         Yes          2     21-May-2004
================================== PERSONNEL ===================================
Personnel       :  N/A
Supervisors     :  Bain, Roger L.
                   Steel, Barry J.
Total Head Count:     83
Total Hours     :    996.00
================================= HEAD COUNTS ==================================
Contractor                          53      ExxonMobil                          2
Contractor Short Service (SSE)       0      Service Company                    28
============================== MANAGEMENT SUMMARY ==============================
Logging-Run #1 HALS-PEX-HNGS-DSI-LEHHQT, Run #2-MDT-GR-LEHQT-Set down @ 1241m,
GIH w/BHA-Set down@1241m-wash & ream coal,cont to TD,circ & cond-incr MW f/9.8
to 10.1 ppg, POOH, O/P @ 1267m, ream & Circ Clean, POOH, Cont LOG
======================= COST DATA (Australian Dollar) ==========================
       AFE                      Intangible    Tangible      Total         Mud
Dry  :   8,650,000| Daily         497,699           0      497,699       9,380
Susp :           0| Cum Mbl             0           0            0           0
Comp :           0| Cum Drl     4,765,423     276,382    5,041,805     172,448
Total:   8,650,000| Cum Comp            0           0            0           0
                  | Cum W/O             0           0            0           0
Exc  : 1.33280/US$| Cum AFE     4,765,423     276,382    5,041,805     172,448
================================== MUD REPORT ==================================
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Time	20:00	Flowline Temp	.0 deg C	% Solids	7.4
Mud Type	WBM	Filtrate	3.8 cc	% LGS	3.0
Sample From	Pit	Filter Cake	1.0 32nd"	% Sand	.00
		HTHP Temp	121.0 deg C	% Water	90.0
MD	1539.00 meters	Filtrate	10.8 cc	% Oil	.0
Density	10.20 ppg				
Viscosity	48 sec	Elec Stab	0 volts	Ca++	240
PV	17.0 cp	MBT	2.5 lb/bbl	Cl-	33000
YP	28.0 phsf	Excess Lime	.04 lb/bbl	CaCl2	0
Gels	7./ 9. phsf			pH	9.0
		Circ Volume	589.3 barrel	Pf/Mf	.1/ .3
		Vol Hole Dr	.0 barrel	Pm	.3

Rhe'try at 49.0 deg: 600/62 300/45 200/38 100/28 60/0 30/0 6/8 3/6

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	5	0	181
Cement	0	938	1805	Gel	0	0	486
Drill Water	36	0	203	Potable Water	19	20	194

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	KOH	BKT	20	2
BACTERICIDE	BARACIDE	BKT	25	1
FILTRATION REDUCER	BARABLOK	LBF	50	80
SURFACE ACTIVE	HME Energizer	GLU	5	2
WEIGHTING MATERIAL	Barite	SAX	100	279

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	65
2	.1390	65
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 130 str/min
Flow Rate 758.94 gpm
Pressure 3750 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	30	280	1415.00
2	40	390	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.52 ppg
Pore Pressure	8.55 ppg
MASP	521 psi
Background Gas	5.0
Connection Gas	.0
Trip Gas	50.0

Density	10.10 ppg		
ECD	******* ppg		
at	1539.00 meters		
with bit at	1539.00 meters		

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	230	Off-TD	2.0	BHA	.00
RPM	100	Slack-off	220	On-TD	5.0	Shock Sub	.00
		Off-TD, Rotating	220			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61

3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 22-May-2004 report for WW1 Run 07-Sep-2004 20:59 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 23-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	15.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		12.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		8.6
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc : Latrobe - 80% Sandstone, 20% Siltstone (1539m)
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: GIH to set P & A Plug per prog
Planned: Set P & A Plug per prog

Start	Elpsd	End MD		Description
00:00	12.00	1539.00	LOG	M/U & GIH w/Log Re-Run #2 no problem getting past 1240m Logging Re-Run #2: MDT-GR-LEHQT, Ran 16 pressure test from 1364m to 1470m. Acquired 1 x 1 gallon chamber sample for analysis & 5 MPSR's for PVT analysis. POOH with wireline. L/D Run #2 logging tools.
12:00	3.00	1539.00	LOG	Prepare Run #3 tools. CSAT-GR-LEHQT, run siesmic equip off port aft of rig. P/U & RIH w/wireline Run #3 CSAT-GR-LEHQT, Set down @ 1271m, WLM.
15:00	4.50	1539.00	LOG	Run velocity survey from 1271m to 100m. Survey each 50m. POOH w/wireline to surface.
19:30	.75	1539.00	LOG	Lay out WL tools, rig down wireline equipment, clear rig floor.
20:15	.75	1539.00	TRIP	Pick up or make up string, BHA, or tools -- R/U 2-7/8" handling equipment, prepare deck.
21:00	2.50	1539.00	TRIP	Pick up or make up string, BHA, or tools -- PJSM/JSA. P/U & RIH with 2-7/8" mule shoe, 25 jts 2-7/8" tbg, (243m). Flush & drift same.
23:30	.50	1539.00	TRIP	Pick up or make up string, BHA, or tools -- R/D 2-7/8" handling equipment & R/U 5" handling equipment. 0000-0530 Activity - Circ Prior to Pumping Cmt Plug 1a 0000-0130 Install PS21 slips & L/D Cmt Head 0130-0215 TIH w/2-7/8" Stinger assy on 5" DP f/243m to 621m 0215-0330 Repair Hydrualic Hose on PRS upper arm lower grip jaw 0330-0530 Continue TIH f/671m to 1521m, wash last std to btm - No excess drag observed. Torq readings at the shoe @ 50 RPM 800-1000 Ft-lbs
Total	24.00			

========== REMARKS ==========

M/V Invincible Tide - At Rig, backloading Schlumberger Equipment
M/V Ray J Hope - At anchor
Pretour safety meetings - Tripping, Wireline Ops, Handling 2-7/8" Tbg, Cementing Operations

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	Yes	2	22-May-2004
BOP System Inspection (Minicheck)	Yes	2	22-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 83
Total Hours : 996.00

HEAD COUNTS

Contractor	53	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	28

MANAGEMENT SUMMARY

Logging Re-Run #2: MDT-GR-LEHQT, Run #3 CSAT-GR-LEHQT set down @ 1271m, run velocity survey from 1271m to 100m. R/D WL equip, P/U 2-7/8" stinger assy, GIH to set P & A Plug per prog.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	266,274	0	266,274	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	5,031,697	276,382	5,308,079	174,224
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	5,031,697	276,382	5,308,079	174,224

MUD REPORT

Time	19:00	Flowline Temp	.0 deg C	% Solids	7.4
Mud Type	WBM	Filtrate	4.0 cc	% LGS	3.0
Sample From	Pit	Filter Cake	1.0 32nd"	% Sand	.00
		HTHP Temp	121.0 deg C	% Water	90.0
MD	1539.00 meters	Filtrate	10.4 cc	% Oil	.0
Density	10.20 ppg				
Viscosity	51 sec	Elec Stab	0 volts	Ca++	240
PV	18.0 cp	MBT	2.5 lb/bbl	Cl-	33000
YP	27.0 phsf	Excess Lime	.03 lb/bbl	CaCl2	0
Gels	7./ 9. phsf			pH	9.0
		Circ Volume	549.3 barrel	Pf/Mf	.1/ .3
		Vol Hole Dr	.0 barrel	Pm	.3

Rhe'try at 49.0 deg: 600/63 300/45 200/38 100/28 60/0 30/0 6/8 3/6

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	9	0	172
Cement	0	0	1805	Gel	0	0	486
Drill Water	50	0	153	Potable Water	21	20	193

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	60
2	.1390	60
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 120 str/min
Flow Rate 700.56 gpm
Pressure 2050 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.52 ppg
Pore Pressure	8.55 ppg
MASP	521 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.10 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 875.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	185	Off-TD	.0	BHA	.00
RPM	0	Slack-off	185	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 23-May-2004 report for WW1 Run 07-Sep-2004 20:59 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 24-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	16.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		13.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		8.4
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: L/D DC & Stab while WOC prior to tagging cmt plug
Planned: Tag cmt, POH-L/D 2-7/8", P/U EZSV set & Test surf plug, Cut & Pull Csg

Start	Elpsd	End MD		Description
00:00	1.25	1539.00	TRIP	Run string in hole -- PJSM/JSA. TIH w/2-7/8" Stinger assy on 5" Drill Pipe from 243m to 621m
01:15	1.00	1539.00	TRIP	Break and lay down string, BHA or tools -- PJSM/JSA. Install PS21 slips & L/D Cmt Head from derrick.
02:15	1.25	1539.00	RIG	Hydraulic Hose leaking on PRS upper arm (lower gripping jaw). Repair same.
			NPT	See Event 6 (RIG)
03:30	2.00	1539.00	TRIP	Run string in hole -- Continue TIH from 621m to 745m, (Shoe). Take rotational torque values, @ 50 RPM 800-1000 ft-lbs. Continue TIH to 1539m, Pre-cautionary wash last 30m to btm.
05:30	2.75	1539.00	CIRC	Circ & Cond mud at 1539m in preparation to setting cmt plugs, 700 gpm/2000 psi.
08:15	.25	1539.00	TRIP	Pick up or make up string, BHA, or tools -- Make Up pump in sub & cmt lines.
08:30	.75	1539.00	CMT	Plug 1a, (1539m-1365m) Dowell Schlumberger mixed & pumped 21 bbls fresh water 41 bbls (230cu ft/197 sx), class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 74 bbls 10.0 ppg WBM.
09:15	.75	1539.00	TRIP	Short trip (not to surface) -- Remove cmt lines & pump in sub. POOH to 1365m.
10:00	1.00	1539.00	CMT	Make Up pump in sub & cmt lines. Plug 1b, (1365m-1191m) Dowell Schlumberger mixed & pumped 21 bbls fresh water 43 bbls (242cu ft/208 sx)class "G" cmt slurry @ 15.8 ppg, 2 bbl fresh water, displaced with 64 bbls 10.0 ppg WBM.
11:00	.50	1539.00	TRIP	Pull string out of hole -- Remove cmt lines & pump in sub. POOH to 1191m.
11:30	.75	1539.00	CIRC	R/U to rev out. Close annular & reverse out 100 bbls, dumped 2 bbls water & 18 bbls contaminated mud.
12:15	1.00	1539.00	CIRC	Open annular pick up 15m, circulate down drill pipe

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                          with 480 gpm/3270 psi, while Dowell Schlumberger
                          cleaned up cmt unit & caught spacer.
13:15   .25  1539.00 CIRC Held PJSM/JSA on crew on cementing operations.
13:30   .75  1539.00 CMT  Slack off to 1191m.
                          Plug 1c, (1191m-1017m)
                          Dowell Schlumberger mixed & pumped 21 bbls fresh water
                           52 bbls (292cu ft/252 sx)class "G" cmt slurry @ 15.8
                          ppg, 2 bbl fresh water, displaced with 54 bbls 10.0
                          ppg WBM.
14:15   .75  1539.00 TRIP Pull string out of hole -- Remove cmt lines & pump in
                          sub. POOH to 1017m.
15:00  1.00  1539.00 CMT  Make Up pump in sub & cmt lines.
                          Plug 1d, (1017m-843m)
                          Dowell Schlumberger mixed & pumped 21 bbls fresh water
                           46 bbls (258cu ft/222 sx)class "G" cmt slurry @ 15.8
                          ppg, 2 bbl fresh water, displaced with 44 bbls 10.0
                          ppg WBM.
16:00   .50  1539.00 TRIP Pull string out of hole -- Remove cmt lines & pump in
                          sub. POOH to 843m.
16:30   .50  1539.00 CIRC R/U to rev out. Close annular & reverse out 100 bbls,
                          dumped 2 bbls water & 16 bbls contaminated mud.
17:00  1.25  1539.00 CIRC Open annular pick up 15m, circulate down drill pipe
                          with 460 gpm/2000 psi, while Dowell Schlumberger
                          cleaned up cmt unit & caught spacer.
18:15  1.00  1539.00 CMT  Make Up pump in sub & cmt lines.
                          Plug 1e, (843m-669m)
                          Dowell Schlumberger mixed & pumped 21 bbls fresh water
                           42.6 bbls (239cu ft/205 sx)class "G" cmt slurry @
                          15.9 ppg, 2 bbl fresh water, displaced with 34 bbls
                          10.0 ppg WBM.
19:15   .75  1539.00 CIRC R/D pump in sub & cmt lines. POOH to 600m. R/U to rev
                          out. Close annular & reverse out 65 bbls, dumped 21
                          bbls contaminated mud
20:00  1.00  1539.00 CIRC Open annular POOH to 550m, circulate down drill pipe
                          with 650 gpm/1250 psi. Circ surface to surface 2x.
                          Circ with 10.0ppg inhibited mud. Function BOP. Flush
                          thru choke & kill lines.
21:00   .25  1539.00 TRIP Pull string out of hole -- POOH to 520m.
21:15  2.75  1539.00 TRIP Break and lay down string, BHA or tools -- WOC. While
                          WOC break down pump in sub, L/O from derrick 8-1/2"
                          Stab, 2 x HWDP, & Jars. L/O 9 Jts drill pipe.
                          Reciprocate & circ each hour.

                          0000-0500 Update:
                          L/D 5" drill pipe while WOC. At 0100 tag TOC plug @
                          675m with 15 klbs. POOH & commence L/D 2-7/8" stinger
                          assy.
Total 24.00
======================== PROBLEM EVENTS AND MILESTONES ========================
Event:   6    NPT: Yes   Hours:    1.25   Responsible Party: Rig Contractor
Start: 23-May-04 02:15   RIG  Other rig equipment problem
End  : 23-May-04 03:30        Hydraulic Hose leaking on PRS upper arm (lower
                              gripping jaw). Repair same.
=================================== REMARKS ===================================
M/V Invincible Tide - BBMT
M/V Ray J Hope - At Rig
Pretour safety meetings - Offloading 20" for Origin, Plan your escape routes,
Handling 2-7/8" Tbg, Cementing Operations.
====================== INSPECTIONS, DRILLS, AND CITATIONS ======================
                                        Occurred?  Count  Most Recently Reported
BOP Control Function Test (BCFT)          No                 18-May-2004
BOP Pressure Test                         No                 13-May-2004
Fire Drill                                No                 17-May-2004
Abandon Ship Drill                        No
Operations Superintendent Inspection      No                 14-May-2004
Regulatory Agency Citation                No
BOP Drill (Pit or Trip Drill)             Yes          2     23-May-2004
BOP System Inspection (Minicheck)         Yes          2     23-May-2004
================================== PERSONNEL ==================================
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Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 83
Total Hours : 996.00

HEAD COUNTS

Contractor	53	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	28

MANAGEMENT SUMMARY

TIH to 643m, Rig repairs Hyd Hose on PRS, TIH to 1539m, Circ prior to setting cmt plugs, Set 5 cmt plugs from 1539m to 669m per prog, L/D Stab, 2 HWDP & Jars while WOC prior to tagging

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	302,608	0	302,608	36,767
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	5,334,305	276,382	5,610,687	210,991
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	5,334,305	276,382	5,610,687	210,991

MUD REPORT

Time	22:30	Flowline Temp	.0 deg C	% Solids	7.8
Mud Type	WBM	Filtrate	5.6 cc	% LGS	4.0
Sample From	Pit	Filter Cake	1.0 32nd"	% Sand	.00
		HTHP Temp	121.0 deg C	% Water	90.0
MD	1539.00 meters	Filtrate	13.8 cc	% Oil	.0
Density	10.20 ppg				
Viscosity	47 sec	Elec Stab	0 volts	Ca++	200
PV	15.0 cp	MBT	2.5 lb/bbl	Cl-	28000
YP	21.0 phsf	Excess Lime	.09 lb/bbl	CaCl2	0
Gels	5./ 7. phsf			pH	11.3
		Circ Volume	619.3 barrel	Pf/Mf	.5/ .9
		Vol Hole Dr	.0 barrel	Pm	.8

Rhe'try at 49.0 deg: 600/51 300/36 200/28 100/19 60/0 30/0 6/6 3/4
Treated the active system with Caustic & Baracide for inhibition of mud left inside casing. Dumped cement contaminated mud when reversing out after setting plugs. Calcium CLoride used for cementing.

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	4	0	168
Cement	1325	0	480	Gel	0	0	486
Drill Water	61	150	242	Potable Water	35	14	172

MUD ADDITIVES

Function	Name	Unit	Size	Amount
ALKALINITY (PH)	Caustic Soda	BKT	25	4
BACTERICIDE	BARACIDE	BKT	25	2
DEFOAMER	Bara-Defoam	BKT	5	1
SURFACE ACTIVE	CalciumChloride	KGS	25	6

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	60
2	.1390	60
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 120 str/min
Flow Rate 700.56 gpm
Pressure 2050 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446

1521.90	8.00	290.23	1518.21	10.501 +	10.501 -	88.324 .405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.46 ppg
Pore Pressure	8.55 ppg
MASP	508 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	57.0

Density	10.20 ppg
ECD	******* ppg
at	1539.00 meters
with bit at	875.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

CEMENT INFORMATION

Start Date :	23-May-04	Reciprocation?:		Number of Plugs :	0
Time :	08:30	Rotation? :		Did Plug Bump? :	
Finish Date:	23-May-04	% Returns :	0	Did Float(s) Hold?:	
Time	09:15	Top of Cement :	1365.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			21.0	5.0	Fresh water
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.80	1.2	197	41.0	4.5	
Post	8.55			2.0	2.0	Fresh Water
Disp	10.00			74.0	6.5	WBM

	Class	Additives
Lead		
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Plug 1a, 1539m to 1365m. Pipe reciprocated during job, hole attempted to pack off, reciprocated pipe to keep circ passages open.

CEMENT INFORMATION

Start Date :	23-May-04	Reciprocation?:		Number of Plugs :	0
Time :	10:00	Rotation? :		Did Plug Bump? :	
Finish Date:	23-May-04	% Returns :	0	Did Float(s) Hold?:	
Time	11:00	Top of Cement :	1191.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			21.0	6.5	Fresh Water
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.80	1.2	208	43.0	4.0	
Post	8.55			2.0	1.5	
Disp	10.00			64.0	6.5	WBM

	Class	Additives
Lead		
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Plu 1b - 1365m-1191m. Pipe reciprocated during job, hole attempted to pack off, reciprocated pipe to keep circ passages open, pressure peaks on DS Job rpt represent when hole was packing off.

========== CEMENT INFORMATION ==========

Start Date :	23-May-04	Reciprocation?:		Number of Plugs :	0
Time :	13:30	Rotation? :		Did Plug Bump? :	
Finish Date:	23-May-04	% Returns :	0	Did Float(s) Hold?:	
Time	14:15	Top of Cement :	1017.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			21.0	6.5	Fresh Water
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.80	1.2	252	52.0	4.5	
Post	8.55			2.0	3.0	Fresh Water
Disp	10.00			54.0	6.5	WBM

	Class	Additives
Lead		
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Plug 1c, 1191m - 1017m. Pressure peaks on DS job report would again indicate when hole was trying to pack-off - reciprocated pipe to prevent same.

========== CEMENT INFORMATION ==========

Start Date :	23-May-04	Reciprocation?:		Number of Plugs :	0
Time :	15:00	Rotation? :		Did Plug Bump? :	
Finish Date:	23-May-04	% Returns :	0	Did Float(s) Hold?:	
Time	16:00	Top of Cement :	843.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			21.0	6.5	Fresh Water
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.80	1.2	222	46.0	5.0	
Post	8.55			2.0	2.5	Fresh Water
Disp	10.00			44.0	6.6	WBM

	Class	Additives
Lead		
Tail	G	Class "G" + 0.25 gps Halad 413L + 0.04 gps HR-6L + 0.0025 NF-6 gps w/FW

Plug 1d, 1017m-843m, hole no longer trying to pack - off, DS job rpt indicates no portions of pack offs.

========== CEMENT INFORMATION ==========

Start Date :	23-May-04	Reciprocation?:		Number of Plugs :	0
Time :	18:15	Rotation? :		Did Plug Bump? :	
Finish Date:	23-May-04	% Returns :	0	Did Float(s) Hold?:	
Time	19:15	Top of Cement :	675.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			21.0	6.0	Fresh Water
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.90	1.2	205	42.6	4.8	
Post	8.55			2.0	6.5	Fresh Water
Disp	10.00			34.0	6.5	WBM

	Class	Additives

Lead		
Tail	G	Class "G" + 0.003 NF-6 gps SW + 1.0% BWOC CaCL

Plug 1e, 843m-669m. Tagged plug with 15 klbs @ 675m, after 5-3/4 hours.

*** End 24-May-2004 report for WW1 Run 07-Sep-2004 20:59 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 25-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	17.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		14.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		8.1
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: N/D BOP
Planned: N/D BOP, Pull seal assy, Cut Casing

Start	Elpsd	End MD		Description
00:00	.75	1539.00	TRIP	Break and lay down string, BHA or tools -- WOC. While WOC L/D 5" drillpipe from derrick.
00:45	.25	1539.00	TRIP	Run string in hole -- TIH to 602m.
01:00	.50	1539.00	INSP	Wash from 602m with 20 spm/100 psi. Tag Cement @ 675m, Set 15 klbs down - OK.
01:30	1.00	1539.00	TRIP	Pull string out of hole -- POOH with 5" drillpipe to 243m.
02:30	3.75	1539.00	TRIP	Break and lay down string, BHA or tools -- Remove PS-21 slips, install master bushings & R/U weatherford 2-7/8" handling equipment. PJSM/JSA. POOH - L/D 2-7/8" tbg. R/D Weatherford tools.
06:15	1.75	1539.00	TRIP	Set or release downhole equipment -- M/U & RIH with Halliburton EZSV configured as bridge plug. Set same @ 170m.
08:00	.50	1539.00	TRIP	Pick up or make up string, BHA, or tools -- Spaceout & R/U pump in sub & cement lines.
08:30	.50	1539.00	CIRC	Break circ with rig pumps while holding PJSM/JSA.
09:00	.50	1539.00	CMT	Plug 2, (170m-110m) Dowell Schlumberger mixed & pumped 10 bbls fresh water 14.6 bbls (230cu ft/70 sx), class "G" cmt slurry @ 15.9 ppg, 3.7 bbl seawater, displaced with 2 bbls 10.0 ppg WBM.
09:30	.25	1539.00	TRIP	Pull string out of hole -- R/D cmt lines. POOH to 100m.
09:45	1.00	1539.00	CIRC	Displace casing with seawater until returns are clean. Function BOP. Flush choke & kill lines.
10:45	.50	1539.00	TRIP	Pull string out of hole -- POOH & L/D HES Running Tool.
11:15	.75	1539.00	CIRC	Function all rams, function & flush diverter lines & BOP.
12:00	.50	1539.00	CMT	Test cement to 1000 psi for 5 mins - OK.
12:30	2.25	1539.00	TRIP	Pick up or make up string, BHA, or tools -- WOC. While

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                          WOC M/U Cameron's 9-5/8" seal assy retrieval tool.
                          Attempt to retrieve seal assy - No Success. M/U
                          Cameron Jetting tool. Jet seal area with 800 GPM/150
                          psi with seawater.
14:45   .75  1539.00 TRIP Set or release downhole equipment -- Attempt to
                          retrieve seal assy - no success.
                     NPT  See Event 11 (TBLR)
15:30  1.00  1539.00 TRIP Break and lay down string, BHA or tools -- Continue to
                          L/D 5" drillpipe from derrick - 24 jts L/D.
16:30   .50  1539.00 TRIP Run string in hole -- TIH w/5" drillpipe - Tag cmt @
                          117m with 10 klbs.
17:00   .25  1539.00 TRIP Pull string out of hole -- POOH w/5" drillpipe
17:15   .25  1539.00 TRIP Pull string out of hole -- Clear rig floor of excess
                          equipment.
17:30  2.50  1539.00 BOP  PJSM/JSA. R/U diverter handling equip. M/U test Jt pup
                           de-pressurize unit. N/D diverter, BOPs. Pull diverter
                           L/O 2.95m overshot, L/O 3.36m 24" mandrel.
20:00  2.00  1539.00 BOP  N/D choke & kill lines, BOPs. Insert test Jt in BOP.
                          R/U safety sling.
22:00   .50  1539.00 BOP  Break out Cameron Fast Loc connector, ensure free. Set
                          down BOP & M/U.
22:30  1.50  1539.00 BOP  Continue N/D BOP from Cameron FastLoc connector.
                          Disconnect BOP control hoses.

                          0000-0500 Update
                          ----------------
                          0000-0200 N/D BOP.
                          0200-0500 Attempt to return BOP to test stump, BOP
                          hoist mal-function. Investigate same.
                          L/D Drill pipe while investigating "Stripped Gears" in
                          MOS 75T chain/Clevis Hydraulic BOP hoist. BOP secured
                          by 4 x 35T shackles & cables to TDS.
Total 24.00
========================= PROBLEM EVENTS AND MILESTONES ========================
Event:  11    NPT: Yes   Hours:     .75   Responsible Party: Cameron
Start: 24-May-04 14:45   TBLR Wellhead or tree problem
End  : 24-May-04 15:30        Attempt to retrieve seal assy - no success.
=================================== REMARKS ====================================
M/V Invincible Tide - At rig
M/V Ray J Hope - At Rig
Pretour safety meetings - Press Tesing, N/D Ops
Held Weekly Safety Meeting with crews on 24-May-2004 & 25-MAy-2004
====================== INSPECTIONS, DRILLS, AND CITATIONS ======================
                                        Occurred?  Count  Most Recently Reported
BOP Control Function Test (BCFT)          No                 18-May-2004
BOP Pressure Test                         No                 13-May-2004
Fire Drill                                No                 17-May-2004
Abandon Ship Drill                        No
Operations Superintendent Inspection      No                 14-May-2004
Regulatory Agency Citation                No
BOP Drill (Pit or Trip Drill)             Yes          2     24-May-2004
BOP System Inspection (Minicheck)         Yes          2     24-May-2004
================================== PERSONNEL ===================================
Personnel       :  N/A
Supervisors     :  Bain, Roger L.
                   Steel, Barry J.
Total Head Count:     85
Total Hours     :   1020.00
================================= HEAD COUNTS ==================================
Contractor                          53      ExxonMobil                          2
Contractor Short Service (SSE)       0      Service Company                    30
============================== MANAGEMENT SUMMARY ==============================
L/D DP while WOC,Tag Cmt w/15 klbs@675m,POH,L/D 2-7/8" stinger assy,MU & Set
CIBP @170m, Cmt f/170-110m,Displ csg to SW,Test Cmt to 1000 psi/5min-OK,L/D DP
while WOC,Tag Cmt @ 117m,attempt to pull seal assy-no success,N/D BOP
======================== COST DATA (Australian Dollar) =========================
       AFE                    Intangible    Tangible      Total         Mud
Dry  :   8,650,000| Daily         269,614           0      269,614       2,205
Susp :           0| Cum Mbl           0           0            0           0
```

Comp :	0	Cum Drl	5,603,919	276,382	5,880,301	213,196
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	5,603,919	276,382	5,880,301	213,196

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	8	0	160
Cement	0	0	480	Gel	0	0	486
Drill Water	0	0	242	Potable Water	30	15	157

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On
WOB	0	Pick-up	0	Off-TD	.0	BHA .00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub .00
		Off-TD, Rotating	0			Jars .00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

CEMENT INFORMATION

Start Date :	24-May-04	Reciprocation?:		Number of Plugs :	0
Time :	09:00	Rotation? :		Did Plug Bump? :	
Finish Date:	24-May-04	% Returns :	0	Did Float(s) Hold?:	
Time	09:30	Top of Cement :	100.00	Casing Size :	9.625

	Density	Yield	Amt	Volume	Rate	Composition
Pref	8.55			10.0	6.5	Seawater
Flsh	.00			.0	.0	
Lead	.00	.0	0	.0	.0	
Tail	15.90	1.2	70	14.6	4.5	

Post	8.55		3.7	3.5 seawater
Disp	10.00		2.0	3.5 WBM

	Class	Additives
Lead		
Tail	G	Class "G" + 0.003 NF-6 gps SW + 1.0% BWOC CaCL

Plug 2, (170m-100m) Tested to 1000 psi for 5 mins, Tagged w/10 klbs @ 117m.

*** End 25-May-2004 report for WW1 Run 07-Sep-2004 20:59 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 26-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	18.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		15.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	.00	
Latitude :	38d 19' 29" South	Drilling Hours :	.00	
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :	9.6	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Prepare to Jet Hanger
Planned: L/D 9-5/8" csg, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	1.00	1539.00	BOP	Continue N/D BOPs - Removing Bolts and preparing to lift BOP.
01:00	.25	1539.00	BOP	Held PJSM for lifting BOPs.
01:15	.75	1539.00	BOP	Lift BOP 6' - Stop operation due to noise in forward BOP hoist gearbox.
			NPT	See Event 8 (RIG)
02:00	3.25	1539.00	TRIP	Break and lay down string, BHA or tools -- L/D 5" drillpipe from derrick while investigating problem with BOP hoist.
05:15	1.50	1539.00	BOP	Prepare, R/U and land BOPs down on wellhead.
			NPT	See Event 12 (RIG)
06:45	1.25	1539.00	BOP	L/D 5" drillpipe from derrick while investigating problem with BOP hoist
08:00	3.00	1539.00	BOP	L/D 5" drillpipe from derrick while torq BOP bolts, reconnect BOP control hoses. Remove test Jt from BOP stack. (Total 5" L/D = 60 Jts)
			NPT	See Event 13 (RIG)
11:00	1.00	1539.00	BOP	Remove BOP Slings from Top Drive, Install Master Bushings & Install BX Elevators
			NPT	See Event 13 (RIG)
12:00	.50	1539.00	TRIP	Break and lay down string, BHA or tools -- Clear rig floor & catwalk of excess equip, L/O 9 Jts of 5" DP.
12:30	.75	1539.00	BOP	M/U Baker's flat btm mill/jetting assy. RIH to 9-5/8" seal assy.
			NPT	See Event 15 (TBLR)
13:15	1.00	1539.00	BOP	M/U Top Drive, Jet seal area with 1400 gpm, 2000 psi, working string around seal area.
			NPT	See Event 15 (TBLR)
14:15	.25	1539.00	TRIP	Pull string out of hole -- POOH w/Jetting assy
			NPT	See Event 15 (TBLR)
14:30	.75	1539.00	BOP	RIH with Cameron's seal assy retrieval tool, engage and retrieve 9-5/8" seal assy. Pull same to surface.
15:15	1.00	1539.00	BOP	Break out, Lay out running tool. Break & lay out Jet

				tool. Clear rig floor.
16:15	.75	1539.00	TRIP	Pick up or make up string, BHA, or tools -- PJSM/JSA. M/U Baker's 9-5/8" casing cutter assy. Surface test OK Knives Open @ 25 spm, 50 psi.
17:00	1.00	1539.00	TRIP	Pick up or make up string, BHA, or tools -- TIH with Baker's 9-5/8" casing cutter assy, 6-3/4" DC, 5" HWDP, 5" DP to 87m.
18:00	.25	1539.00	TBLR	M/U Top Drive. Take parameters P/U 105 klbs, SO 110 klbs, free rotating TQ 1000 ft-lbs. Rot Wt 105 klbs. Continue down with no pump to 88m bull nose depth - cutting at 87m. Started rotating at 85 rpm. Pumping at 55 spm/1050 psi. Incr to 90 rpm. TQ incr'd to 5000 ft-lbs. After 1 minute pressure dropped off to 400 psi - lost all TQ. Incr to 70 spm, no incr in TQ. Stop pumping & rotation. P/U 1m engage pump at 500 psi, slack back down as knives enter cut, pressure drop off to 200 psi - stop pumping.
18:15	2.25	1539.00	TRIP	Break and lay down string, BHA or tools -- POOH - L/D HWDP & DC. Break all connections and service breaks - Knives had small amount of wear.
20:30	.75	1539.00	TBLR	R/U 9-5/8" casing handling equip
21:15	2.25	1539.00	TBLR	PJSM/JSA. P/U 9-5/8" hanger running string, GIH & attempt to engage hanger - No success. POOH.
23:30	.50	1539.00	TBLR	C/O handling equip. M/U jetting assy. RIH.
				0000-0500 Update ----------
				Jet 9-5/8" hanger assy GIH & engage hanger, M/U to same. POOH L/D hanger running string, hanger & 9-5/8" casing cutting Jts that are bakerlocked.

Total 24.00

========== PROBLEM EVENTS AND MILESTONES ==========

Event: 8 NPT: Yes Hours: .75 Responsible Party: Rig Contractor
Start: 25-May-04 01:15 RIG BOP or riser problem
End : 25-May-04 02:00
While lifting BOP, Stopped operation due to noise in forward BOP hoist gearbox. Investigate same. Found Gears stripped out in Forward MOS 75T BOP hoist. Aft hoist OK.

Event: 12 NPT: Yes Hours: 1.50 Responsible Party: Rig Contractor
Start: 25-May-04 05:15 RIG BOP or riser problem
End : 25-May-04 06:45
Prepare, R/U and land BOPs down on wellhead.
Continuation of NPT,
Previous NPT 0.75 hrs
This event 1.50 hrs
Cummulative 2.25 hrs

Event: 13 NPT: Yes Hours: 4.00 Responsible Party: Rig Contractor
Start: 25-May-04 08:00 RIG BOP or riser problem
End : 25-May-04 12:00
L/D 5" drillpipe from derrick while torq BOP bolts reconnect BOP control hoses. Remove test Jt from BOP stack. (Total 5" L/D = 60 Jts). Remove BOP Slings from Top Drive, Install Master Bushings & Install BX Elevators Continuation of NPT.

Previous NPT 2.25 hrs
This event 4.00 hrs
Cummulative 6.25 hrs

Event: 15 NPT: Yes Hours: 2.00 Responsible Party: Cameron
Start: 25-May-04 12:30 TBLR Wellhead or tree problem
End : 25-May-04 14:30
Continuation of Event 11 - recovering 9-5/8" seal assembly.

Previous NPT 0.75 hr
This Event 2.00 hr
Cummulative NPT 2.75 hr

REMARKS

M/V Invincible Tide - At anchor
M/V Ray J Hope - To Bream to take Backload to W Tuna
Pretour safety meetings - Cut & Pulling Casing, Staying Focused on Safety, Precieved Need to Hurry vs Taking time for Safety - No Short Cuts.
Held Weekly Safety Meeting with crews on (NC) 24-May-2004 & (DC) 25-MAy-2004

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 77
Total Hours : 924.00

HEAD COUNTS

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	23

MANAGEMENT SUMMARY

Cont N/D BOP, Lift BOP attempt to return to stump, stop job, investigate BOP hoist problem, L/D DP, Lower BOP back onto wellhead, torq bolts, jet seal assy, pull seals, M/U csg cutter, cut 9-5/8" csg, L/D csg cutter

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	284,966	0	284,966	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	5,888,885	276,382	6,165,267	214,972
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	5,888,885	276,382	6,165,267	214,972

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	5	0	155
Cement	117	0	363	Gel	0	0	486
Drill Water	5	0	237	Potable Water	25	153	285

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters		
				Burst (70%)	3847 psi

1	0	0	1415.00	Formation Strength	14.20 ppg
2	0	0	1415.00	Kick Tolerance	1.57 ppg
3	0	0	.00	Pore Pressure	8.55 ppg
				MASP	534 psi

		Background Gas	.0
Density	10.00 ppg	Connection Gas	.0
ECD	******* ppg	Trip Gas	.0
at	1539.00 meters		
with bit at	1539.00 meters		

========== WORK STRING ==========

Date Run:	25-May-04	Date Pulled:	25-May-04
Time Run:	16:10	Time Pulled:	20:15
Depth In:	87.00	Depth Out :	87.00

8-1/2" Bull Nose Stab, 8-1/4" Baker Multi string cutter, (3-1/2" long knives), 8-1/2" non-rot stab, XO, 4 x 6-3/4" DC, 3 x 5" HWDP

========== DAILY DRILL STRING ==========

		-------- Weights --------		--- Torques ---		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

========== CASING ==========

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 26-May-2004 report for WW1 Run 07-Sep-2004 21:00 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 27-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	19.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		16.1
Field :	Gippsland Basin	Spud Date :		10-May-2004
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		11.3
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Rig maintenance while wait'g on BOP hoisting parts
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	1.00	1539.00	BOP	RIH with Jetting assy to 9-5/8" csg hanger. Wash/Jet hanger with seawater 1400 GPM/2000 psi. Pull & rack back in Derrick.
01:00	.50	1539.00	TBLR	R/U 9-5/8" elevators, P/U 9-5/8" hanger running tool - M/U to 9-5/8" hanger
01:30	1.00	1539.00	TBLR	POOH & L/O landing JTs & 9-5/8" running tool, (13-3/8" Dummy Hanger remained in wellhead housing).
02:30	3.50	1539.00	TBLR	POOH & L/O 9-5/8" casing. Cold cut 4 x bakerlocked Jts above coupling. Hanger landed @ 15.61m. Recovered (below Hanger), Hanger Pup 1.44m, 5 Jts (58.74m) + Cut Jt (11.03m). 9-5/8" cut @ 86.82m
06:00	1.00	1539.00	TBLR	R/D 9-5/8" handling equipment & prepare rig floor for L/D drill pipe.
07:00	5.00	1539.00	TRIP	Break and lay down string, BHA or tools -- L/D 5" drillpipe (19 jts), 5" HWDP (8 Jts), & L/D Baker wash assy. Preforming rig maintance.
12:00	1.75	1539.00	TRIP	Pick up or make up string, BHA, or tools -- P/U Baker's 30" casing cutter assy. M/U service breaks per Baker. Test Tool, opens @ 35 spm/80 psi. L/D assy.
13:45	10.25	1539.00	RIG	Waiting on replacement parts for BOP hoist. While waiting rig crew, R/D overboard lines in cellar deck. Open BOPs, clean out cavities, Clean out mud pits. C/O man rider cable in cellar deck, string up aft man rider on rig floor. Continue maintenance on rig floor equipment. 0500 Update: --- Continue rig maintenance while waiting on BOP Hoisting System parts, ETA from USA motor & bearings Friday, 28-May-04, ETA Gears Sunday, 30-May-04.
			NPT	See Event 10 (RIG)

Total 24.00

PROBLEM EVENTS AND MILESTONES

Event: 10 NPT: Yes Hours: 10.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 Continuation of previous NPT report, (Cummulative to date NPT = 6.25 hrs), due to gears stripped out in BOP hoisting system. Sent out motor & bearings from USA. Sent out gears from USA. Drive gear only had 1 keyway cut in it. Send to town for #2 keyway cut. Flown back out to rig - attempt to press on drive gear - no success. Unable to remove gear. Fly out rods & 50T press. Remove gear. Redress drive gear. Heat gear, cool shaft & install drive gear. Rebuild gearbox & install on fwd main beams. Load test BOP hoist & remove stack.

REMARKS

M/V Invincible Tide - At BBMT
M/V Ray J Hope - Returning from Flounder after taking backload from Bream
* Pretour safety meetings - Staying focused on Safety, No short cuts, Taking time for safety. Short Change
* ETA for Motor and Bearings for BOP Hoist @ BBMT, Friday AM 28-May-04
* ETA for Gears for BOP Hoist @ BBMT, Sunday AM 30-May-04

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 72
Total Hours : 864.00

HEAD COUNTS

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	18

MANAGEMENT SUMMARY

Jet Hanger area, Engage hanger, Pull 9-5/8" casing, R/D handling tools, P/U 30" casing cutting equip, L/D 5" drillpipe & performing rig maintenance while waiting on replacement parts for BOP Hoisting System.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	207,906	0	207,906	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,096,791	276,382	6,373,173	216,748
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,096,791	276,382	6,373,173	216,748

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1460	Fuel	22	0	133
Cement	117	0	246	Gel	0	0	486
Drill Water	5	0	232	Potable Water	101	9	193

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0

No hydraulics calculations were performed because no bit report was entered.

3	.1390	0

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 27-May-2004 report for WW1 Run 07-Sep-2004 21:00 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 28-May-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	1539.00
TVD m:	1539.00	1536.00
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	20.0
- Ahead/Behind:		.0
- from Spud :		17.1
Spud Date :		10-May-2004
Progress m:		.00
Drilling Hours :		.00
ROP m/hr:		
Percentage NPT :		15.7
Depth Reference:	Rig Floor (RKB)	

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Rig maintenance while wait'g on BOP hoist gearbox.
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	24.00	1539.00	RIG	Waiting on replacement parts for BOP hoist gearbox. While waiting, rig crew continue cleaning out BOP cavities. Cleaning mud pits. Maintenance on mud pit suction valves. Cleaned PCU deck area. Dismantled cement manifold & attempt to locate cement plug. 0500 Update: --- Continue rig maintenance while waiting on BOP Hoisting System parts, ETA from USA motor & bearings Friday, 28-May-04, ETA Gears Sunday, 30-May-04.
			NPT	See Event 10 (RIG)
Total	24.00			

PROBLEM EVENTS AND MILESTONES

Event: 10 NPT: Yes Hours: 34.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 See report for 27-May-2004 (job 08-May-2004 00:30)

REMARKS

M/V Invincible Tide - At BBMT, Gyro broken
M/V Ray J Hope - Enroute To BBMT to P/U Ensco's BOP Hoist Parts
* Pretour safety meetings - Observation & Intervention - The next steps in the Journey to "Nobody Gets Hurt & No Spills", Discussed the "Perceived Need to Hurry", the "Lone Worker".
* ETA for Motor and Bearings for BOP Hoist @ BBMT, Friday 1000 AM 28-May-04
* ETA for Gears for BOP Hoist @ BBMT, Sunday AM 30-May-04

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		

BOP Drill (Pit or Trip Drill) No 0 25-May-2004
BOP System Inspection (Minicheck) No 0 25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 69
Total Hours : 828.00

HEAD COUNTS

Contractor	54	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	13

MANAGEMENT SUMMARY

Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. ETA from USA motor & bearings Friday, 28-May-04, ETA Gears Sunday, 30-May-04.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	138,515	0	138,515	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,235,306	276,382	6,511,688	218,524
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,235,306	276,382	6,511,688	218,524

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	384	0	1076	Fuel	4	62	191
Cement	0	186	432	Gel	0	0	486
Drill Water	11	0	221	Potable Water	0	85	278

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00

Off-TD, Rotating 0 Jars .00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 28-May-2004 report for WW1 Run 07-Sep-2004 21:00 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 29-May-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	1539.00
TVD m:	1539.00	1536.00
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	21.0
- Ahead/Behind:		.0
- from Spud :		18.1
Spud Date :		10-May-2004
Progress m:		.00
Drilling Hours :		.00
ROP m/hr:		
Percentage NPT :		19.8
Depth Reference:	Rig Floor (RKB)	

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Rig maintenance while wait'g on BOP hoist gears.
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	24.00	1539.00	RIG	Waiting on replacement parts for BOP hoist gearbox. While waiting, rig crew cleaned up cellar deck area, maintenance on trip tank pumps - pump 1 @ 10.2 bpm, pump 2 @ 10.2 bpm. Pumps 1 & 2 @ 12.5 bpm. Service Disc brakes. C/O seals on mud pit suction valves. Lubricate & check drive sprockets on operational BOP hoist - OK. Hydraulic motor & gear locking plate arrived on M/V Ray J Hope @ 2030 hrs. Offload same & inspect parts - OK. Install gear locking plate on BOP hoist. Dress hydraulic motor & prepare same for installation. 0500 Update: --- Continue rig maintenance while waiting on BOP Hoisting System parts, ETA Gears Sunday, 30-May-04.
			NPT	See Event 10 (RIG)
Total 24.00				

========== PROBLEM EVENTS AND MILESTONES ==========
Event: 10 NPT: Yes Hours: 58.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 See report for 27-May-2004 (job 08-May-2004 00:30)
========== REMARKS ==========
M/V Invincible Tide - At BBMT - off hire until further notice, Gyro broken
M/V Ray J Hope - At Anchor
* Pretour safety meetings - Weather conditions, Stepback 5 x 5, & Discussed the "Perceived Need to Hurry".
* Motor and Bearings for BOP Hoist arrived at rig, Friday 2030 28-May-04
* ETA for Gears for BOP Hoist @ Longford Sunday AM 30-May-04
========== INSPECTIONS, DRILLS, AND CITATIONS ==========

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004

Fire Drill	No		17-May-2004
Abandon Ship Drill	No		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 63
Total Hours : 756.00

HEAD COUNTS

Contractor	53	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	8

MANAGEMENT SUMMARY

Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. ETA from USA Gears Sunday, 30-May-04. Rec'd bearings & motor 2030 hrs, 28-May-04.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	131,019	0	131,019	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,366,325	276,382	6,642,707	220,300
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,366,325	276,382	6,642,707	220,300

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	4	0	187
Cement	0	0	432	Gel	0	0	486
Drill Water	5	0	216	Potable Water	32	9	255

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

		Weights			Torques		Cumulative Time On
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 29-May-2004 report for WW1 Run 07-Sep-2004 21:00 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 30-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	22.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		19.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	.00	
Latitude :	38d 19' 29" South	Drilling Hours :	.00	
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :	23.4	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Rig maintenance while wait'g on BOP hoist gears.
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	24.00	1539.00	RIG	Waiting on replacement parts for BOP hoist gearbox. While waiting, performed maintenance on mud pit equaliser valves, PRS & fingerboards. Installed gear locking plate on BOP hoist. R/U BOP safety slings on Top Drive, PM on shakers & c/o screens. Remove, clean & replace filter on dust collector in mixing area, clean out trap on same. Housekeeping in pump room. Repair wilden pump on skimmer tank. Remove gear locking plate from BOP hoist. 0500 Update: --- Continue rig maintenance while waiting on BOP Hoisting System parts, ETA Gears Sunday, 30-May-04.
			NPT	See Event 10 (RIG)
Total	24.00			

========== PROBLEM EVENTS AND MILESTONES ==========
Event: 10 NPT: Yes Hours: 82.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 See report for 27-May-2004 (job 08-May-2004 00:30)
========== REMARKS ==========
M/V Invincible Tide - At BBMT - off hire until further notice, Gyro broken
M/V Ray J Hope - At Anchor
* Pretour safety meetings - Weather conditions, Stepback 5 x 5, Preventative Maintenance.
* ETA for Gears for BOP Hoist @ Longford Sunday 30-May-04, if cleared thru Customs in time will be flown out, if not will be delivered by boat.
========== INSPECTIONS, DRILLS, AND CITATIONS ==========

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		17-May-2004
Abandon Ship Drill	No		

Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 63
Total Hours : 756.00

HEAD COUNTS

Contractor	54	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	7

MANAGEMENT SUMMARY

Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. ETA from USA Gears Sunday, 30-May-04.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	129,946	0	129,946	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,496,271	276,382	6,772,653	222,076
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,496,271	276,382	6,772,653	222,076

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	4	0	183
Cement	0	0	432	Gel	0	0	486
Drill Water	5	0	211	Potable Water	32	9	232

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

	Weights			Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00

RPM 0 Slack-off 0 On-TD .0 Shock Sub .00
Off-TD, Rotating 0 Jars .00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 30-May-2004 report for WW1 Run 07-Sep-2004 21:01 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 31-May-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	23.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		20.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		26.7
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Rig maintenance while wait'g on BOP hoist gears.
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	24.00	1539.00	RIG	Waiting on replacement parts for BOP hoist gearbox. While waiting, Installed inertia line in derrick for aft manrider. Maintenance on mud pumps. Continued PMs on rig equipment. Remove casing valves from wellhead. Housekeeping rig floor/pump room. Remove bull gear from MOS BOP hoist. Clean out drains on rig floor, PMs on PS-21 slips. Remove Joe Stein valves from mud pits & modify shafts C/O BOP lifting slings from 100' to 60', 35 Ton. M/V Invincible Tide alongside @ 2115 hrs with gears for BOP hoist. Drive gear missing one keyway. Install bullgear on BOP hoist. M/V Invincible Tide departed @ 2340 hrs with BOP hoist drive gear for modification. 0500 Update: --- Continue rig maintenance while waiting on BOP Hoisting System drive gear, ETA BBMT 0700, with drive gear for modification, then to machine shop, then to Longford to fly out.
			NPT	See Event 10 (RIG)

Total 24.00

========== PROBLEM EVENTS AND MILESTONES ==========
Event: 10 NPT: Yes Hours: 106.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 See report for 27-May-2004 (job 08-May-2004 00:30)
========== REMARKS ==========
M/V Invincible Tide - In route to BBMT with drive gear
M/V Ray J Hope - At Anchor
* Pretour safety meetings - Housekeeping, Handrails, Watching Out for "the Little Things". *

Held weekly safety meeting with both crews.
Held fire & abandon drill - All crews participated.

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	Yes		17-May-2004
Abandon Ship Drill	Yes		
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 63
Total Hours : 756.00

HEAD COUNTS

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	9

SAFETY INCIDENT

*** First Aid Incident
Crane operator while stepping out of the crane, stood on the fuel fill-up hose and twisted his right ankle. IP had a support bandage fitted and went back to work.

MANAGEMENT SUMMARY

Waiting on replacement parts for BOP hoist. While waiting performing rig maintenance. Gears arrived - drive gear missing one of two keyways, sent in for modification.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	135,791	0	135,791	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,632,062	276,382	6,908,444	223,852
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,632,062	276,382	6,908,444	223,852

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	17	150	316
Cement	0	0	432	Gel	0	0	486
Drill Water	1	20	230	Potable Water	15	12	229

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate	Pressure	MD

	str/min	psi	meters		
1	0	0	1415.00	Burst (70%)	3847 psi
2	0	0	1415.00	Formation Strength	14.20 ppg
3	0	0	.00	Kick Tolerance	1.57 ppg
				Pore Pressure	8.55 ppg
				MASP	534 psi

		Background Gas	.0
Density	10.00 ppg	Connection Gas	.0
ECD	******* ppg	Trip Gas	.0
at	1539.00 meters		
with bit at	1539.00 meters		

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 31-May-2004 report for WW1 Run 07-Sep-2004 21:01 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 01-Jun-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	24.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		21.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		29.8
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Installing Gear to BOP Hoist
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	13.00	1539.00	RIG	Waiting on replacement parts for BOP hoist gearbox. While waiting, install idler gear on MOS BOP Hoist. C/O wiper seals on mud pumps #1 & #3. Clean out rig floor drains pans. Re-installing Joe Stien valves in mud pits. Cleaning decks. Locate 30" "C" plate to cellar deck.
			NPT	See Event 10 (RIG)
13:00	11.00	1539.00	RIG	BOP hoist gear arrived by helicopter at 1300 hrs. Install drive gear on shaft of BOP hoist. Gear became difficult to press on. Heat gear & press on. Gear lack 1" being fully on. Rig crew continued cleaning drains on rig floor. Fill pit #7 w/seawater & test run mud pumps - OK. Install test JT in BOP & disconnect control lines. Put hytorq unit & tools on BOP in preparation for stack removal. Put 30" handling equipment on the rig floor. 0500 Update: --- Continue rig maintenance while pressing on gear to BOP Hoist. Still lack 6-1/2 mm to being fully on.
			NPT	See Event 10 (RIG)

Total 24.00

========== PROBLEM EVENTS AND MILESTONES ==========
Event: 10 NPT: Yes Hours: 130.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 See report for 27-May-2004 (job 08-May-2004 00:30)
========== REMARKS ==========
M/V Invincible Tide - In route to Rig
M/V Ray J Hope - At Anchor
* Pretour safety meetings - Housekeeping, ID of Hazards & Follow Up, Dealing with Adversity. *

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		31-May-2004
Abandon Ship Drill	No		31-May-2004
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 63
Total Hours : 756.00

HEAD COUNTS

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	9

MANAGEMENT SUMMARY

Waiting on replacement parts for BOP hoist. Rig maintenance. Gears arrived by helicopter @ 1300 hrs. Installing gear on BOP hoist shaft - gear became difficult to press on, heat gear & cont to press on.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	137,002	0	137,002	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,769,064	276,382	7,045,446	225,628
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,769,064	276,382	7,045,446	225,628

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	10	0	306
Cement	0	0	432	Gel	0	0	486
Drill Water	3	0	227	Potable Water	28	12	213

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0

Density	10.00 ppg	Connection Gas	.0
ECD	******* ppg	Trip Gas	.0
at	1539.00 meters		
with bit at	1539.00 meters		

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 01-Jun-2004 report for WW1 Run 07-Sep-2004 21:01 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 02-Jun-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	25.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		22.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		32.6
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Heating Gear to install on BOP Hoist
Planned: Continue rig maintenance, Repair BOP hoist, remove BOP, cut & pull 30"

Start	Elpsd	End MD		Description
00:00	24.00	1539.00	RIG	Continue attempt to install drive gear on MOS BOP Hoist - no success. R/U & attempt to pull off drive gear - heating/pressing - no success. Continue attempt to pull while awaiting hevi-duty equipment from town, arrived at 1300 hrs - gear off @ 1745 hrs. Measure & redress same. Rig crew continued unblocking/cleaning out drains/pans. Cleaning in pump room. Clean out & store equip in heavy tool store. Clean camera box out in derrick. Repair air line for adjustable fingers on monkey boards. 0500 Update --- Drive Gear installed - rebuilding gearbox for installation.
			NPT	See Event 10 (RIG)
Total 24.00				

========== PROBLEM EVENTS AND MILESTONES ==========
Event: 10 NPT: Yes Hours: 154.25 Responsible Party: Rig Contractor
Start: 26-May-04 13:45 RIG BOP or riser problem
End : 2-Jun-04 19:30 See report for 27-May-2004 (job 08-May-2004 00:30)
========== REMARKS ==========
M/V Invincible Tide - Enroute to BBMT
M/V Ray J Hope - At Anchor
* Pretour safety meetings - ID of Hazards & Follow Up, Hand Placement, Observation/Intervention. *
========== INSPECTIONS, DRILLS, AND CITATIONS ==========

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		31-May-2004

Abandon Ship Drill	No		31-May-2004
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : N/A
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 65
Total Hours : 780.00

HEAD COUNTS

Contractor	52	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	11

MANAGEMENT SUMMARY

Continue attempt to install drive gear on MOS BOP Hoist - no success. R/U & attempt to pull off drive gear-heating/pressing - no success. Hevi-duty equip arrivedfrom town @ 1300 hrs-gear off @ 1745 hrs. Measure & redress same.

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	135,776	0	135,776	1,776
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	6,904,840	276,382	7,181,222	227,404
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	6,904,840	276,382	7,181,222	227,404

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	5	0	301
Cement	0	0	432	Gel	0	0	486
Drill Water	38	0	189	Potable Water	15	140	338

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

WEATHER REPORT

	23:55	Max			23:55	Max	
Bar Pressure :	0	0	mm Hg	Wind Speed :	5.0	5.0	knot
Heave :	.00	.00	meters	Direction :	280	280	degree
Pitch :	.00	.00	degree	Wave Height :	.50	.50	meters
Roll :	.00	.00	degree	Period :	0	0	second
Swell Height :	.50	.50	meters	Direction :	280	280	degree
Period :	0	0	second	Air Temperature:	12.0	12.0	deg C
Direction:	210	210	degree	Sea Temperature:	.0	.0	deg C
Visibility :	10.0	10.0	km	Cloud Cover :	8	8	

DAILY DRILL STRING

		Weights		--- Torques ---		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 02-Jun-2004 report for WW1 Run 07-Sep-2004 21:02 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 03-Jun-2004

DRS Well ID:	WW1	AFE	L0501D001	
Units :	Mixed Oilfield	MD	m: 1539.00	1539.00
Office :	Australia SE	TVD	m: 1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	26.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		23.1
Field :	Gippsland Basin	Spud Date :		10-May-2004
Country :	Australia	Progress m:		.00
Latitude :	38d 19' 29" South	Drilling Hours :		.00
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :		34.5
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Install "C" Plate around 30"
Planned: Cut & Pull 30"

Start	Elpsd	End MD		Description
00:00	5.25	1539.00	RIG	Prepare and dress MOS BOP Hoist motor shaft/drive gear - heating gear & cooling shaft, install drive gear onto shaft.
			NPT	See Event 10 (RIG)
05:15	1.25	1539.00	RIG	Let gear cool down on BOP hoist. Continued with housekeeping on rig floor & lower deck.
			NPT	See Event 10 (RIG)
06:30	1.50	1539.00	RIG	Install idler gear. Lubricate drive, bull & Idler gears. Install side plate.
			NPT	See Event 10 (RIG)
08:00	1.00	1539.00	RIG	Remove safety slings on hoist blocks, install sprocket covers.
			NPT	See Event 10 (RIG)
09:00	2.00	1539.00	RIG	R/U & install BOP hoist on forward main beam - Hook up drag chain & hydraulics.
			NPT	See Event 10 (RIG)
11:00	3.25	1539.00	RIG	Function check forward BOP hoist - OK. Lower hoist to lower limit cleaning off chain. Lubricate chains & gears on both BOP hoist. Take measurements on chain links. Replace chain box covers & connect BOP hoist to BOP. Continued with housekeeping on rig floor & lower deck.
			NPT	See Event 10 (RIG)
14:15	1.50	1539.00	RIG	JSA/PJSM. Pull with Block 308 klbs wt indicator reading. Adjust tensioner frame to 25 MT. Pull with block to 330 klbs on Wt Indicator - Hold 5 mins. Pull with block to 352 klbs on Wt Indicator - Hold 5 mins. Pull with BOP hoist untill wt indicator read block wt - (88 klbs). Hold for 20 mins for BOP hoist Static Test. Slack off BOP hoist until wt indicator read 308 klbs. Disconnect BOP hoist & transverse to starbd for inspection by MOS & OIM - OK.
			NPT	See Event 10 (RIG)

```
15:45  2.75  1539.00 RIG  Reconnect BOP hoists, break & remove nuts from BOP
                          flange.
                     NPT  See Event 10 (RIG)
18:30  1.00  1539.00 RIG  PJSM/JSA. Lift BOP with BOP hoist, holding 40 klbs
                          with blocks until above PCU. Release Block tension,
                          raise & lower BOP with BOP hoist (2x) - OK. Inspect
                          gears - OK. Disconnect block slings.
                     NPT  See Event 10 (RIG)
19:30   .50  1539.00 BOP  Traverse BOP to stump & secure same.
20:00  1.75  1539.00 BOP  PJSM/JSA. Disconnect BOP hoist. Lower "C" plate into
                          PCU. N/D Fastloc connector with Cameron.
21:45  1.75  1539.00 BOP  L/D lift slings. Install elevators. P/U wellhead
                          running tool & M/U into Cameron wellhead. Pull 60 klb
                          on wellhead. Release tensioner fram. Remove wellhead
                          base plate. Open tensioner frame sliding plates.
                          Unshackle from tensioner slings. Lower tensioner frame
                          with BOP hoist. Close back sliding plates.
23:30   .50  1539.00 BOP  Commence installing "C" plate around 30" pipe.

                          0500 Update
                          -----------
                          Install "C" Plate, Test "C" Plate, Remove Housing, M/U
                          30" Casing Cutter Assy, & Prepare to cut 30" - Seas
                          0.5m, Winds 15 knots
Total 24.00
========================= PROBLEM EVENTS AND MILESTONES ========================
Event:  10    NPT: Yes   Hours:  173.75   Responsible Party: Rig Contractor
Start: 26-May-04 13:45   RIG  BOP or riser problem
End  :  2-Jun-04 19:30        See report for 27-May-2004 (job 08-May-2004 00:30)
=================================== REMARKS ====================================
M/V Invincible Tide - At Anchor
M/V Ray J Hope - At Anchor
* Pretour safety meetings - June is Safety Month, Last night, Taking safety
home. JSA & Stepback 5x5 *
====================== INSPECTIONS, DRILLS, AND CITATIONS ======================
                                        Occurred?  Count  Most Recently Reported
BOP Control Function Test (BCFT)          No                 18-May-2004
BOP Pressure Test                         No                 13-May-2004
Fire Drill                                No                 31-May-2004
Abandon Ship Drill                        No                 31-May-2004
Operations Superintendent Inspection      No                 14-May-2004
Regulatory Agency Citation                No
BOP Drill (Pit or Trip Drill)             No           0     25-May-2004
BOP System Inspection (Minicheck)         No           0     25-May-2004
================================== PERSONNEL ===================================
Personnel       :  N/A
Supervisors     :  Bain, Roger L.
                   Steel, Barry J.
Total Head Count:     65
Total Hours     :    780.00
================================== HEAD COUNTS =================================
Contractor                          52      ExxonMobil                          2
Contractor Short Service (SSE)       0      Service Company                    11
============================== MANAGEMENT SUMMARY ==============================
Install BOP hoist gears and covers, R/U & install BOP hoist on fwd main beam,
function test - OK. Load test BOP hoists - OK. Remove BOP. Prepare to cut 30"
casing.
======================== COST DATA (Australian Dollar) =========================
       AFE                    Intangible    Tangible      Total         Mud
Dry  :   8,650,000| Daily         183,531           0      183,531       1,776
Susp :           0| Cum Mbl             0           0            0           0
Comp :           0| Cum Drl     7,088,371     276,382    7,364,753     229,180
Total:   8,650,000| Cum Comp            0           0            0           0
                  | Cum W/O             0           0            0           0
Exc  : 1.33280/US$| Cum AFE     7,088,371     276,382    7,364,753     229,180
============================== SOLIDS CONTROL ==================================
 Hours on Centrifuge:    .00            Dilution Rate:     .00
================================ SUPPLIES DATA =================================
                 Usage Receipts  Stock                    Usage Receipts  Stock
```

Barite	0	0	1076	Fuel	0	0	301
Cement	0	0	432	Gel	0	0	486
Drill Water	0	0	189	Potable Water	0	0	338

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 03-Jun-2004 report for WW1 Run 07-Sep-2004 21:02 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 04-Jun-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	27.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		24.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	.00	
Latitude :	38d 19' 29" South	Drilling Hours :	.00	
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :	33.2	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Preparing for rig move
Planned: Backload equip & Send to BBMT, Prepare rig to move, Move rig

Start	Elpsd	End MD		Description
00:00	2.50	1539.00	BOP	Continue installing "C" plate around 30" pipe, welding up around 30" conductor. Extend tension frame slings.
02:30	.50	1539.00	BOP	Tension up on "C" Plate Test - OK. Hold Tension @ 34 Ton.
03:00	1.25	1539.00	BOP	PJSM. Release wellhead from 30" conductor. Pull 18-3/4" housing to rig floor. Release running tool with 3-1/2 turns & L/O wellhead housing.
04:15	.75	1539.00	TBLR	P/U Baker's 30" casing cutting assy.
05:00	1.00	1539.00	TRIP	Run string in hole -- RIH w/Baker's 30" casing cutting assy & tag 9-5/8" stub @ 86.92m. P/U to position knives at 80.5m. Take parameters. PU 105 klbs, S/O 115 klbs. Rotating free with 2/3 kft-lbs.
06:00	1.00	1539.00	MILL	Set tensioner @ 4 x 30 ton. Cut 30" casing at 80.5m, (39 mins). Started pumping with 46 spm, 270 gpm/660 psi, Torq @ 3/4 kft-lbs. Incr to 52 spm, 305 gpm/800 psi, Torq @ 3/4 kft-lbs. Incr to 57 spm, 330 gpm/1020 psi, Torq @ 4 kft-lbs. Incr to 65 spm, 380 gpm/1400 psi, Torq @ 4/5 kft-lbs. Lost rtns, no pressure drop was observed. Lost 10 ton wt on tensioner frame. Stop rotation pick up 1 ft on tension frame - no overpull. Stop pumping, pick cutter up into 30" with no overpull. Jumped ROV to observe casing cut.
07:00	1.00	1539.00	MILL	POOH - L/O cutter assy on deck. Knives 30% worn.
08:00	.50	1539.00	TBLR	Make up ST-2 Retrieval tool on 5" DP. M/U to 30" conductor P/U 2 ft.
08:30	.75	1539.00	TBLR	JSA. Back out centralizer dogs on tensioner frame, P/U 30" conductor off "C" Plate. Cut "C" off of tensioner frame. Remove "C" Plate. Open up beams on tensioner frame to allow pad eyes & couplings thru.
09:15	.50	1539.00	TBLR	Pull 30" to surface. Release running tool & rack back. ROV Perform Final Site Seabed Survey - no sign of casing above seabed or any other debris sited.
09:45	.75	1539.00	TBLR	PJSM/JSA. R/U 30" handling equipment.

```
10:30  2.00  1539.00 TBLR POOH - L/D 30" conductor with ST-2 connectors.
12:30   .75  1539.00 WAIT Planned wait -- Stop crane operations for helicopter.
13:15   .50  1539.00 TBLR Finish L/d 30" conductor - Total - 5 jts plus cut Jt.
13:45   .75  1539.00 TBLR R/D 30" handling equipment. Remove "C" plate from PCU.
                          Remove lifting slings from blocks & install bails &
                          elevators.
14:30  1.25  1539.00 TBLR Break out & L/D 30" ST2 running tool & wellhead
                          running tool.
15:45  5.00  1539.00 MOB  Stop crane operations due to high winds (48 knots).
                          Pull choke & kill lines up on cellar deck. Install
                          pin-actuator on PCU. Gather necessary equip for
                          lifting PCU. Securing cantilver deck for rig move.
                          Connect BOP Hoist to PCU.
20:45  1.75  1539.00 MOB  JSA/PJSM. Release jacks, pull pins, raise PCU to
                          stowed position & Pin same.
22:30  1.50  1539.00 TRIP Break and lay down string, BHA or tools -- L/D 2 stds
                          5" drill pipe from derrick. Clear rig floor.

                          0500 Update
                          -----------
                          Continue to prepare for rig move.
                          Winds 28-35 @ 260°, seas 2½m
Total 24.00
================================== REMARKS ==================================
M/V Invincible Tide - At Anchor
M/V Ray J Hope - At Anchor
* Pretour safety meetings - Weather Conditions, Staying Focused, Near Miss
Reporting. JSA & Stepback 5x5 *
** Weather Update ** Winds 28-35 knots, 260°; Seas 2½m, Swells 1½m **
Comms coming out today to disconnect communication equip
** Alternate Ensco Telephone Numbers **
(0011)  8816  214  658  57
or
(0011)  872  763  270  445        can send fax by: 872  763  270  446
====================== INSPECTIONS, DRILLS, AND CITATIONS ======================
                                      Occurred?  Count  Most Recently Reported
BOP Control Function Test (BCFT)        No                 18-May-2004
BOP Pressure Test                       No                 13-May-2004
Fire Drill                              No                 31-May-2004
Abandon Ship Drill                      No                 31-May-2004
Operations Superintendent Inspection    No                 14-May-2004
Regulatory Agency Citation              No
BOP Drill (Pit or Trip Drill)           No          0      25-May-2004
BOP System Inspection (Minicheck)       No          0      25-May-2004
================================== PERSONNEL ==================================
Personnel       :  N/A
Supervisors     :  Bain, Roger L.
                   Steel, Barry J.
Total Head Count:     65
Total Hours     :    780.00
================================== HEAD COUNTS ==================================
Contractor                          52      ExxonMobil                          2
Contractor Short Service (SSE)       0      Service Company                    11
================================ SAFETY INCIDENT ================================
*** Near Miss
Crane operator had hooked onto 30" conductor running tool positioned in V door.
Relief crane operator was observing and talking with crane operator prior to
tour changeover. Wind was starting to gust from 30-44 knots. Crane operator
stopped engine & took foot off of slew brake in perparation to change out
operator. Crane slew to Port side due to wind. Running tool was pulled out of V
door striking light on Port leg jack rack.
============================== MANAGEMENT SUMMARY ==============================
Install "C" Plate, Held 30 ton tension, Pull housing & L/O same, M/U csg cutter
assy, Cut 30" casing, POOH - L/D 30" conductor. Prepare rig to move. Winds/Seas
too rough to backload equip.
======================== COST DATA (Australian Dollar) ========================
       AFE                    Intangible    Tangible      Total         Mud
Dry  :   8,650,000| Daily         260,693           0      260,693       1,776
Susp :           0| Cum Mbl            0           0            0           0
```

Comp :	0	Cum Drl	7,349,064	276,382	7,625,446	230,956
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	7,349,064	276,382	7,625,446	230,956

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	14	0	287
Cement	0	0	432	Gel	0	0	486
Drill Water	24	0	165	Potable Water	25	15	328

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

WORK STRING

Date Run: 3-Jun-04 Date Pulled: 3-Jun-04
Time Run: 04:30 Time Pulled: 08:30
Depth In: 80.50 Depth Out : 80.50

6-5/8" Reg Pin Bull Nose, 25" OD Non-Rot Stab, 11-3/4" OD Baker multi-string cutter, 25" OD Non-Rot Stab, 3 x 8-1/4" DC, XO, 3 x 5"HWDP

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 04-Jun-2004 report for WW1 Run 07-Sep-2004 21:02 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 05-Jun-2004

DRS Well ID:	WW1	AFE L0501D001	Planned	Actual
Units :	Mixed Oilfield	MD m:	1539.00	1539.00
Office :	Australia SE	TVD m:	1539.00	1536.00
Client :	ExxonMobil Production	Days		
Drill Team :	Australia Offshore	- if Dry :	18.0	
		- if Suspended:	.0	
Budget Cat :	WILDCAT--PRODUCTIVE AND DRY HO	- to Complete :	.0	
Contractor :	Ensco	- Susp + Comp :	.0	28.0
Rig Name :	Ensco 102	- Ahead/Behind:		.0
Operator :	Esso Aus Res	- from Spud :		25.1
Field :	Gippsland Basin	Spud Date :	10-May-2004	
Country :	Australia	Progress m:	.00	
Latitude :	38d 19' 29" South	Drilling Hours :	.00	
Longitude :	147d 30' 17" East	ROP m/hr:		
Water Depth:	39.00 m	Percentage NPT :	32.0	
RKB Height :	39.00 m	Depth Reference:	Rig Floor (RKB)	
Ground Elev:	.00 m			
Phone :	61 3 5142 2880			

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Backloading equipment to M/V Far Scandia
Planned: Prepare rig for move, backload equipment, Cantilever in, Jack down

Start	Elpsd	End MD		Description
00:00	2.25	1539.00	MOB	Prepare rig for move - Tie down rig floor equipment, Rig down service lines to cantilever. Unable to backload equipment to workboat due to rough seas & wind conditions. Winds 30-35 knots @ 260 deg, seas 2-1/2-4m.
02:15	.25	1539.00	TRIP	Break and lay down string, BHA or tools -- Clear catwalk/V door of drill pipe.
02:30	1.00	1539.00	TRIP	Break and lay down string, BHA or tools -- P/U 30" cutting assy - Break out & L/D same.
03:30	2.50	1539.00	TRIP	Break and lay down string, BHA or tools -- Lay out tubulars from derrick. 3 x 5" DP, 3 x 5" HWDP, 3 x 8-1/4" DC. Prepare decks for backload.
06:00	17.25	1539.00	MOB	Prepare rig for rig move. R/D cement/mud lines, to cantilever, L/O foxhole. Remove fastlooc connector from cellar deck. Tie down equip on rig floor. Remove port side cantilever stairway. Prepare cantilever for skidding in. Secure PCU, Iron roughneck, Lockin diverter housing, Secure top drive. Secure cantilever deck. Clean out PCU. Clean & secure cellar deck. Grease cantilever skid plates. Install port cantilever skid block. Secure heavy tool store. Grease & cover C & K lines, mud outlets on main deck, & cmt line outlets. Disconnect jumper hose on port bow deepwell. Grease & protect BOP outlets. Pump out seawater from mud pits. Replace dies in foxhole slips.
23:15	.75	1539.00	MOB	Backload Equipment to M/V Far Scandia Winds 20 knots; Seas 1.0m, Swells 2m 0500 Update ---------- Finish backloading M/V "Far Scandia" @ 04:00 hrs, move equipment around on deck, prepare to skid in.

Winds 18 knots; Seas 1.0m, Swells 1.0m
Total 24.00

REMARKS

M/V Invincible Tide - At Anchor
M/V Ray J Hope - At Anchor
M/V Far Scandia - Took on Backload, Departed Ensco 102 @ 0400, ETA MLA 0715
* Pretour safety meetings - Weather Conditions, Handling Tubulars, backloading materials to boat. JSA & Stepback 5x5 *
** Weather Update ** Winds 20 knots; Seas 1.0m, Swells 2m **
Esso communication equipment disconnected
** Alternate Ensco Telephone Numbers **
(0011) 8816 214 658 57
or
(0011) 872 763 270 445 can send fax by: 872 763 270 446

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		31-May-2004
Abandon Ship Drill	No		31-May-2004
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : H. Flink & K. O'Halloran w/Origin on board
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 70
Total Hours : 840.00

HEAD COUNTS

Contractor	53	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	15

MANAGEMENT SUMMARY

Prepare for rig move. L/D cutting assy, L/D tubulars from derrick. R/D Port cantilever stairs. Continue to prepare for rig move. Backload equipment to M/V Far Scandia

COST DATA (Australian Dollar)

AFE: Dry 8,650,000 | Susp 0 | Comp 0 | Total 8,650,000 | Exc 1.33280/US$

	Intangible	Tangible	Total	Mud
Daily	313,462	0	313,462	1,776
Cum Mbl	0	0	0	0
Cum Drl	7,662,526	276,382	7,938,908	232,732
Cum Comp	0	0	0	0
Cum W/O	0	0	0	0
Cum AFE	7,662,526	276,382	7,938,908	232,732

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	2	0	285
Cement	0	0	432	Gel	0	0	486
Drill Water	0	0	165	Potable Water	23	10	315

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces bbl/st	Rate str/min
1	.1390	0
2	.1390	0
3	.1390	0

No hydraulics calculations were performed because no bit report was entered.

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density	10.00 ppg
ECD	******* ppg
at	1539.00 meters
with bit at	1539.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 05-Jun-2004 report for WW1 Run 07-Sep-2004 21:03 Central Time

Drilling | DETAILED DAILY REPORT | Company Use Only
WEST WHIPTAIL-1 | 06-Jun-2004

DRS Well ID: WW1
Units : Mixed Oilfield
Office : Australia SE
Client : ExxonMobil Production
Drill Team : Australia Offshore

Budget Cat : WILDCAT--PRODUCTIVE AND DRY HO
Contractor : Ensco
Rig Name : Ensco 102
Operator : Esso Aus Res
Field : Gippsland Basin
Country : Australia
Latitude : 38d 19' 29" South
Longitude : 147d 30' 17" East
Water Depth: 39.00 m
RKB Height : 39.00 m
Ground Elev: .00 m
Phone : 61 3 5142 2880

AFE L0501D001	Planned	Actual
MD m:	1539.00	1539.00
TVD m:	1539.00	1536.00
Days		
- if Dry :	18.0	
- if Suspended:	.0	
- to Complete :	.0	
- Susp + Comp :	.0	29.0
- Ahead/Behind:		.0
- from Spud :		26.1
Spud Date :		10-May-2004
Progress m:		.00
Drilling Hours :		.00
ROP m/hr:		
Percentage NPT :		31.3
Depth Reference:	Rig Floor (RKB)	

Superintendent : F.W. Kratzer
Engineers : S.A. Harris
C.P. Meakin
Formation Desc :
Deepest Casing Run: 9.625 inches at 745.00 MD, 745.00 TVD
Next Casing : 8.500 inches at 1539.000 meters MD
Leakoff Test : 14.20 ppg

Current: Towing rig to 1 NM f/Yolla Location
Planned: Demob Ensco 102 to 1 NM from Origin "Yolla" Location

Start	Elpsd	End MD		Description
00:00	4.00	1539.00	MOB	Finish backloading equipment to M/V "Far Scandia"
04:00	3.50	1539.00	MOB	Organizing equipment on decks in preparation to skid cantilever in.
07:30	1.75	1539.00	MOB	PJSM/JSA. Skid cantilver in to towing position. Pin & Secure.
09:15	1.50	1539.00	MOB	Remove rack chocks - all 3 legs, pass 4 anchor bouys & pendants to M/V Invincible Tide. Disconnect Port Leg Deepwell.
10:45	1.25	1539.00	MOB	PJSM. Prepare to Jack down. Take RPD readings & check jacking console lights. Continue to secure rig. Remove safety sling from bow towing bridle.
12:00	1.50	1539.00	MOB	Up with hull 1'. No leg flag indication on PLMS display for Bow or Stbd leg. Jack down - all stop with 10' air gap. Call in M/V Ray J Hope for tow bridle. Attach M/V Ray J Hope to bridle continue jacking down. All stop with 10' draft to check lower hull integrity.
13:30	1.25	.00	MOB	Hull at 10' draft - check lower hull and preload tanks for water tight integrity.
14:45	.75	.00	MOB	Down w/hull to 20' draft - all legs free & off bottom @ 1500 hrs. Continue up with legs while M/V Ray J Hope establishes course. One mile off location @ 1530 hrs, 05-Jun-04 - End of drilling phase of West Whiptail #1 - Final Report.

Total 15.50

========== PROBLEM EVENTS AND MILESTONES ==========
Event: 14 Milestone
Start: 5-Jun-04 15:30 MILE Released rig
End of Drilling AFE, (1 NM off West Whiptail #1 location), carry on work under de-mobilaZATION AFE.

========== REMARKS ==========
Held Abandon Drill with all crew @ 1600 hrs, 05-Jun-04 - Good Response

Cost Prorated to 15.5 hrs
M/V Ray J Hope - Tow to Yolla
M/V Invincible Tide - Accompaning on Tow to Yolla
Final Statement of Facts

Consumables	M/V Invincible Tide	M/V Ray J Hope	Ensco 102
Fuel	261,000 Liter	413,000 L	279 mt
Potable Water	273 m^3	380 m^3	297 mt
Drill Water	538 m^3	500 m^3	160 mt
Class "G" Cement	"0"	1300 sx	34.2 mt
Barite	"0"	1250 sx	48.8 mt
Gel	794 sx	396 sx	21.2 mt
Hydraulic Oil	2,600 Liters	3230 Liters	
Engine Lub Oil	1,200 Liters	7000 Liters	
Other Lube Oil	1,680 Liters	3015 Liters	

* Pretour safety meetings - Demob, Buddy System, Water tight doors. JSA & Stepback 5x5 *
** Weather Update ** Winds 20 knots; Seas 1.0m, Swells 2m **
Esso communication equipment disconnected
** Alternate Ensco Telephone Numbers **
(0011) 8816 214 658 57
or
(0011) 872 763 270 445 can send fax by: 872 763 270 446

INSPECTIONS, DRILLS, AND CITATIONS

	Occurred?	Count	Most Recently Reported
BOP Control Function Test (BCFT)	No		18-May-2004
BOP Pressure Test	No		13-May-2004
Fire Drill	No		31-May-2004
Abandon Ship Drill	Yes		31-May-2004
Operations Superintendent Inspection	No		14-May-2004
Regulatory Agency Citation	No		
BOP Drill (Pit or Trip Drill)	No	0	25-May-2004
BOP System Inspection (Minicheck)	No	0	25-May-2004

PERSONNEL

Personnel : H. Flink & K. O'Halloran w/Origin on board
Supervisors : Bain, Roger L.
Steel, Barry J.
Total Head Count: 71
Total Hours : 852.00

HEAD COUNTS

Contractor	54	ExxonMobil	2
Contractor Short Service (SSE)	0	Service Company	15

MANAGEMENT SUMMARY

Fin B/L equip, shift containers on Deck & secure rig, Skid in cantilver, Jack Down, Water tight integrity check, Off Location @ 14:50 5-Jun-04 continue raising legs & towing rig, 1 NM from location @ 1530, 5-Jun-04. Final Report

COST DATA (Australian Dollar)

	AFE		Intangible	Tangible	Total	Mud
Dry :	8,650,000	Daily	552,998	0	552,998	1,147
Susp :	0	Cum Mbl	0	0	0	0
Comp :	0	Cum Drl	8,215,524	276,382	8,491,906	233,879
Total:	8,650,000	Cum Comp	0	0	0	0
		Cum W/O	0	0	0	0
Exc :	1.33280/US$	Cum AFE	8,215,524	276,382	8,491,906	233,879

SOLIDS CONTROL

Hours on Centrifuge: .00 Dilution Rate: .00

SUPPLIES DATA

	Usage	Receipts	Stock		Usage	Receipts	Stock
Barite	0	0	1076	Fuel	9	0	276
Cement	0	0	432	Gel	0	0	486
Drill Water	5	0	160	Potable Water	27	6	294

MUD ADDITIVES

Function	Name	Unit	Size	Amount

BIT RECORD

No bit report was entered for this date.

HYDRAULICS

Pump	Displaces	Rate
	bbl/st	str/min

No hydraulics calculations were performed

1	.1390	0	because no bit report was entered.
2	.1390	0	
3	.1390	0	

Pump Rate 0 str/min
Flow Rate .00 gpm
Pressure 0 psi

SURVEYS

MD	Angle	Azimuth	TVD	Vert Sec	N+/S-	E+/W-	Dogleg
1463.80	7.23	288.03	1460.62	7.972	+ 7.972	- 81.039	.474
1492.90	7.64	289.10	1489.48	9.172	+ 9.172	- 84.609	.446
1521.90	8.00	290.23	1518.21	10.501	+ 10.501	- 88.324	.405

WELL CONTROL

Pump	Rate str/min	Pressure psi	MD meters
1	0	0	1415.00
2	0	0	1415.00
3	0	0	.00

Burst (70%)	3847 psi
Formation Strength	14.20 ppg
Kick Tolerance	1.57 ppg
Pore Pressure	8.55 ppg
MASP	534 psi
Background Gas	.0
Connection Gas	.0
Trip Gas	.0

Density 10.00 ppg
ECD ******* ppg
at 1539.00 meters
with bit at 1539.00 meters

DAILY DRILL STRING

		Weights		Torques		Cumulative Time On	
WOB	0	Pick-up	0	Off-TD	.0	BHA	.00
RPM	0	Slack-off	0	On-TD	.0	Shock Sub	.00
		Off-TD, Rotating	0			Jars	.00

CASING

Section	O.D.	Grade	Wt/Lng	Thread	Joints	Top	Bottom
1	30.000	X52	310.000	ST-2	9	17.07	113.07
2	20.000	X52	203.000	WELD	1	113.07	116.61
3	13.375	K55	68.000	BUTT	1	116.61	120.36
4	9.625	L80	47.000	LTC	60	15.61	745.00

*** End 06-Jun-2004 report for WW1 Run 07-Sep-2004 21:03 Central Time

DRILLING LOG

FROM :(mt) 100 TO :(mt) 1550 SCALE : 1/ 1000

Well Name : WEST WHIPTAIL 1

Company : ESSO AUSTRALIA

Country : AUSTRALIA

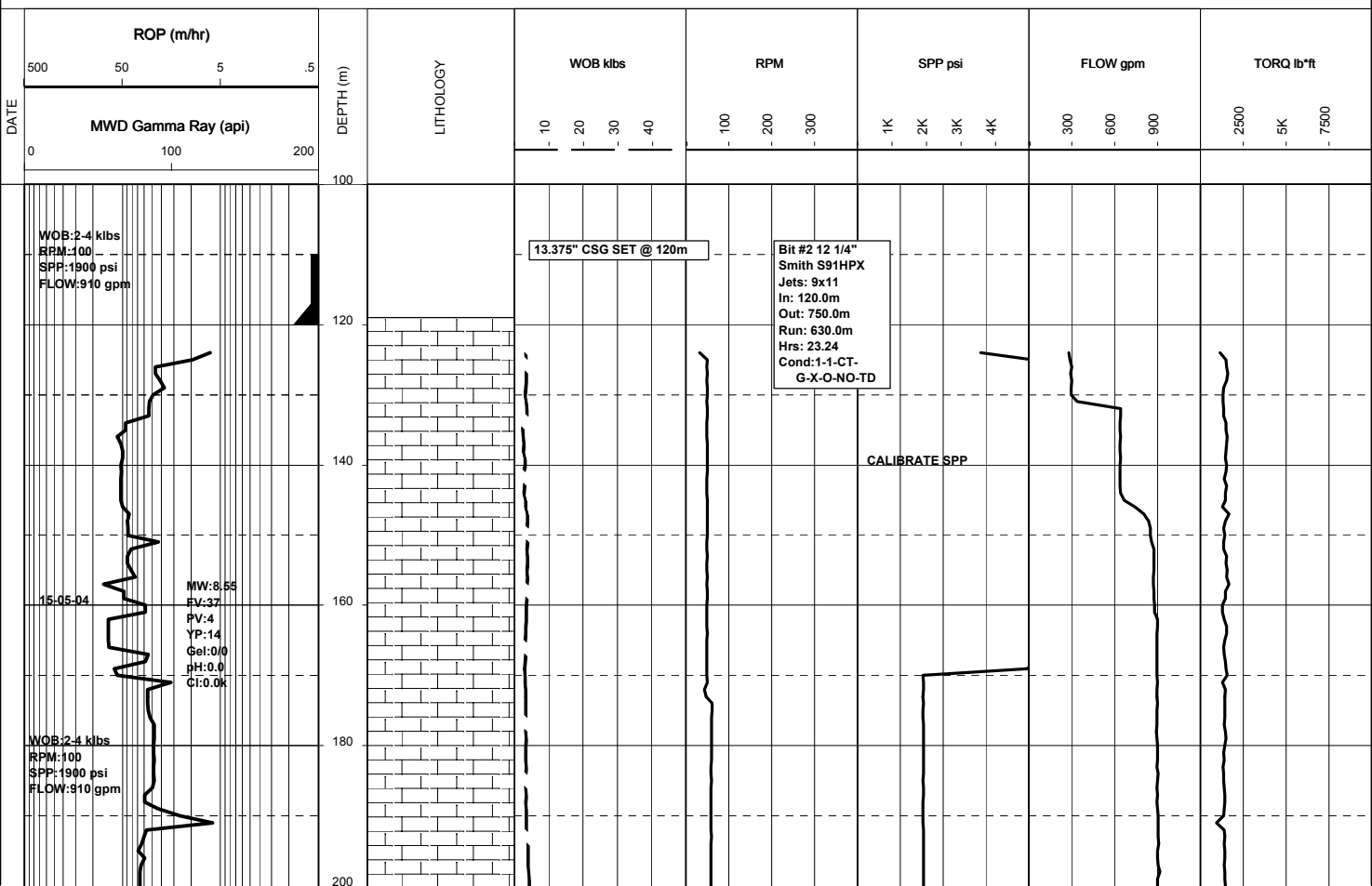
RT-MSL : 39.0m

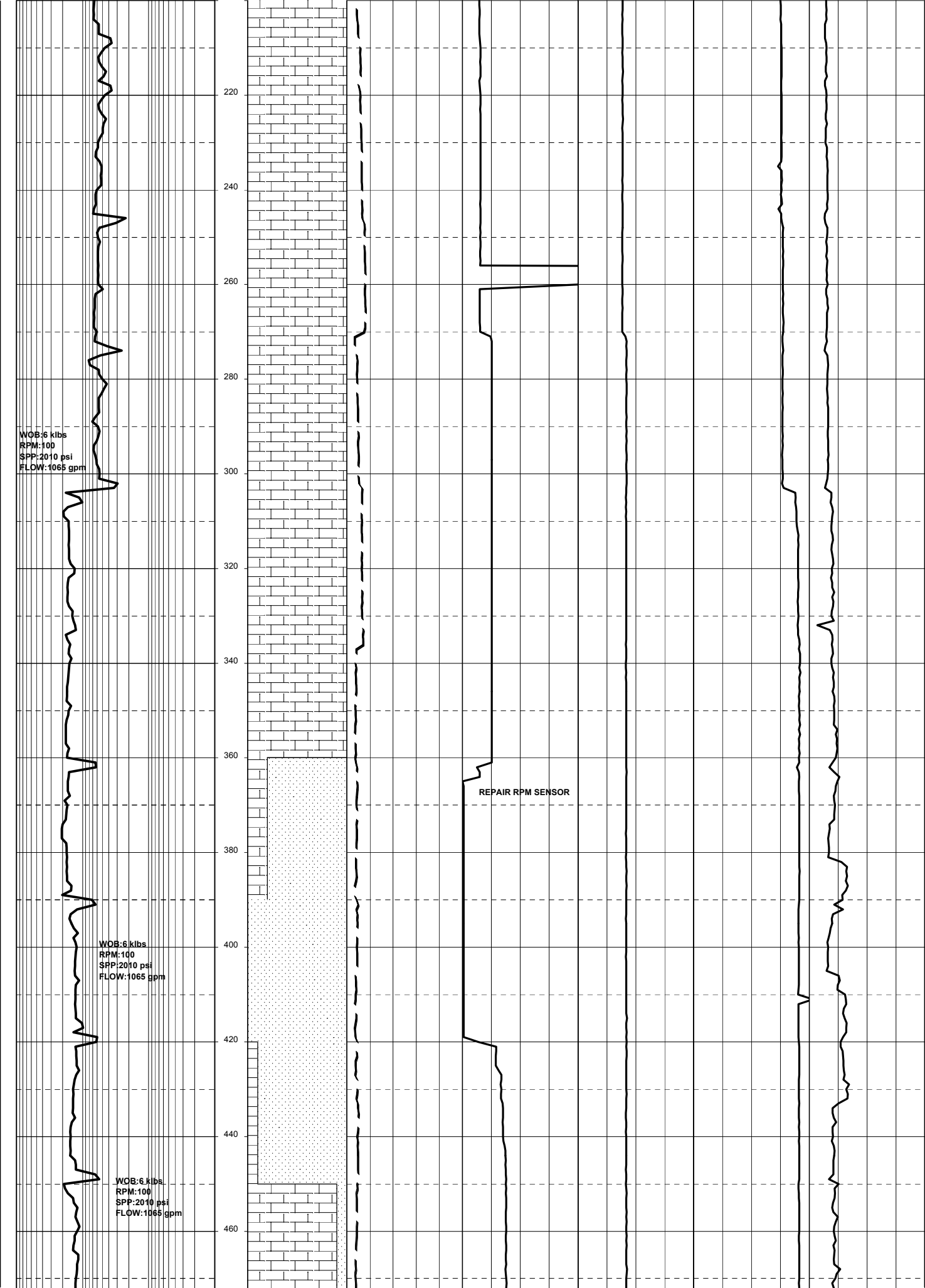
RT-SEABED : 123m

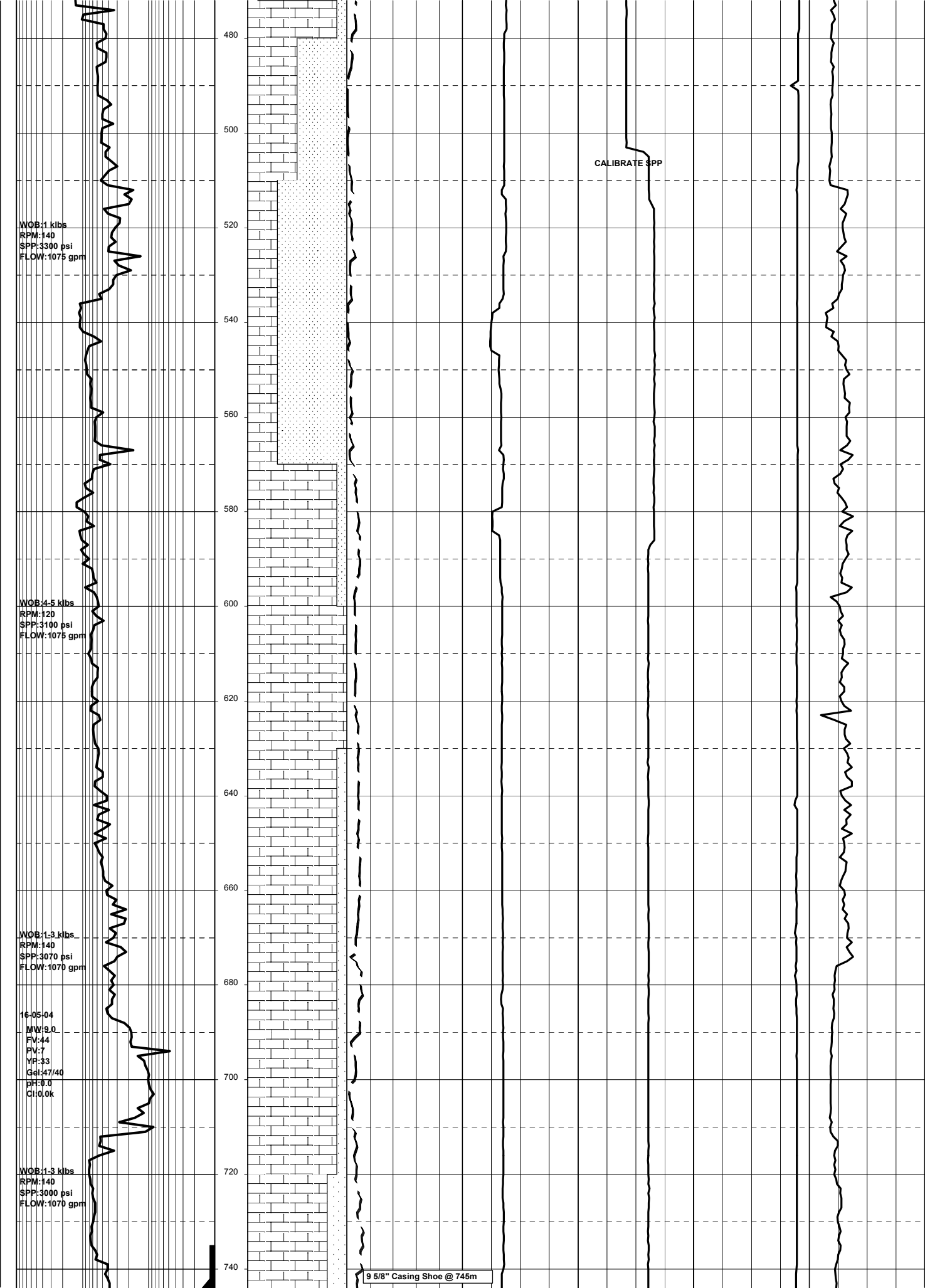
Final TD : 1539 mRT

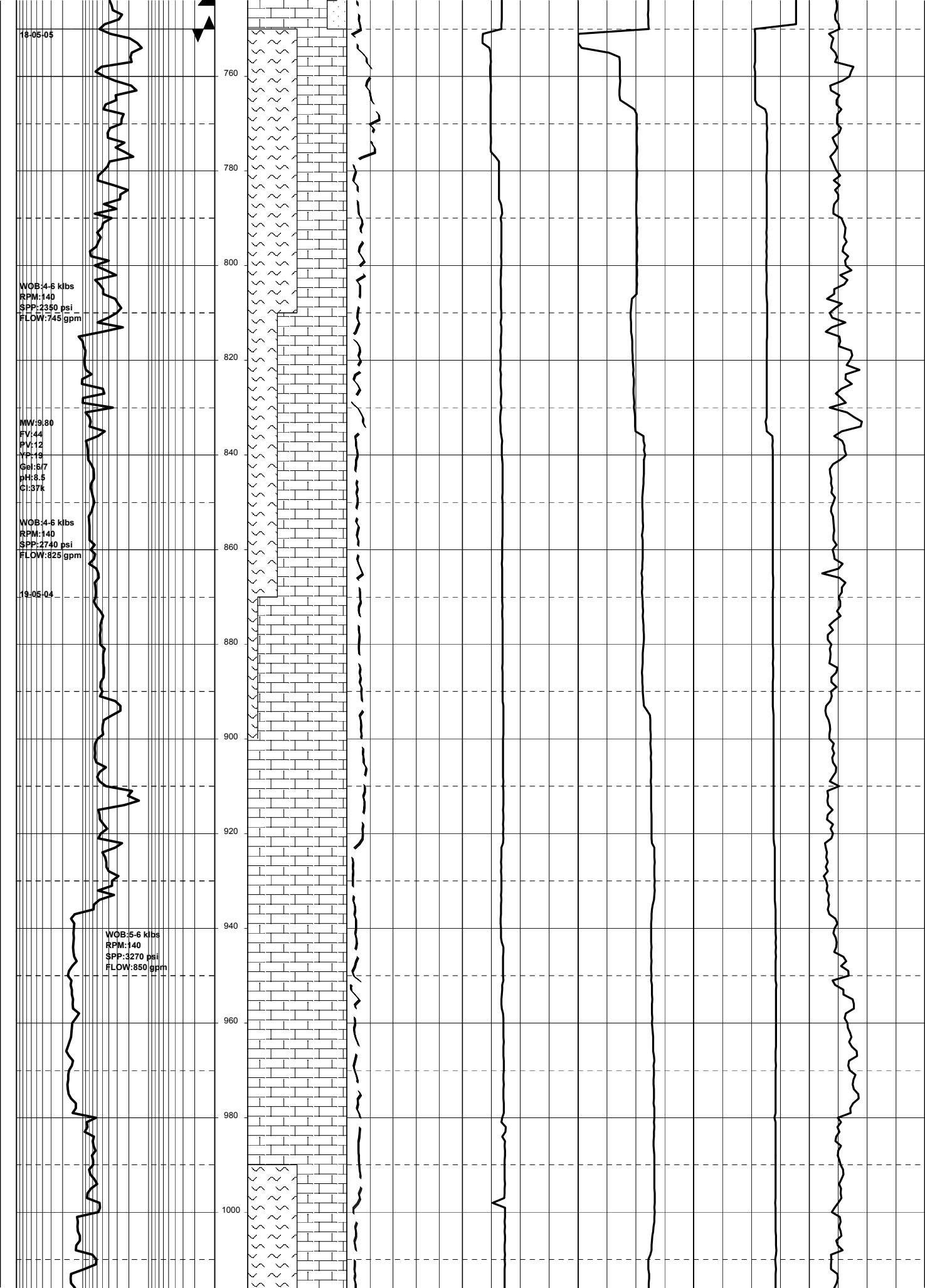
Final TVD : 1539 mRT

Generated by ALS Package




220
240
260
280
300
320
340
360
380
400
420
440
460
WOB:6 klbs
RPM:100
SPP:2010 psi
FLOW:1065 gpm
WOB:6 klbs
RPM:100
SPP:2010 psi
FLOW:1065 gpm
WOB:6 klbs
RPM:100
SPP:2010 psi
FLOW:1065 gpm
REPAIR RPM SENSOR


480
500
520
540
560
580
600
620
640
660
680
700
720
740
CALIBRATE SPP
WOB:1 klbs
RPM:140
SPP:3300 psi
FLOW:1075 gpm
WOB:4-5 klbs
RPM:120
SPP:3100 psi
FLOW:1075 gpm
WOB:1-3 klbs
RPM:140
SPP:3070 psi
FLOW:1070 gpm
16-05-04
MW:9.0
FV:44
PV:7
YP:33
Gel:47/40
pH:0.0
Cl:0.0k
WOB:1-3 klbs
RPM:140
SPP:3000 psi
FLOW:1070 gpm
9 5/8" Casing Shoe @ 745m


18-05-05
760
780
800
WOB:4-6 klbs
RPM:140
SPP:2350 psi
FLOW:745 gpm
820
MW:9.80
FV:44
PV:12
YP:19
Gel:5/7
pH:8.5
Cl:37k
840
WOB:4-6 klbs
RPM:140
SPP:2740 psi
FLOW:825 gpm
860
19-05-04
880
900
920
940
WOB:5-6 klbs
RPM:140
SPP:3270 psi
FLOW:850 gpm
960
980
1000

1020
1040
1060
1080
WOB:5-10 klbs
RPM:140
SPP:3300 psi
FLOW:850 gpm
1100
1120
1140
1160
WOB:5-7klbs
RPM:127
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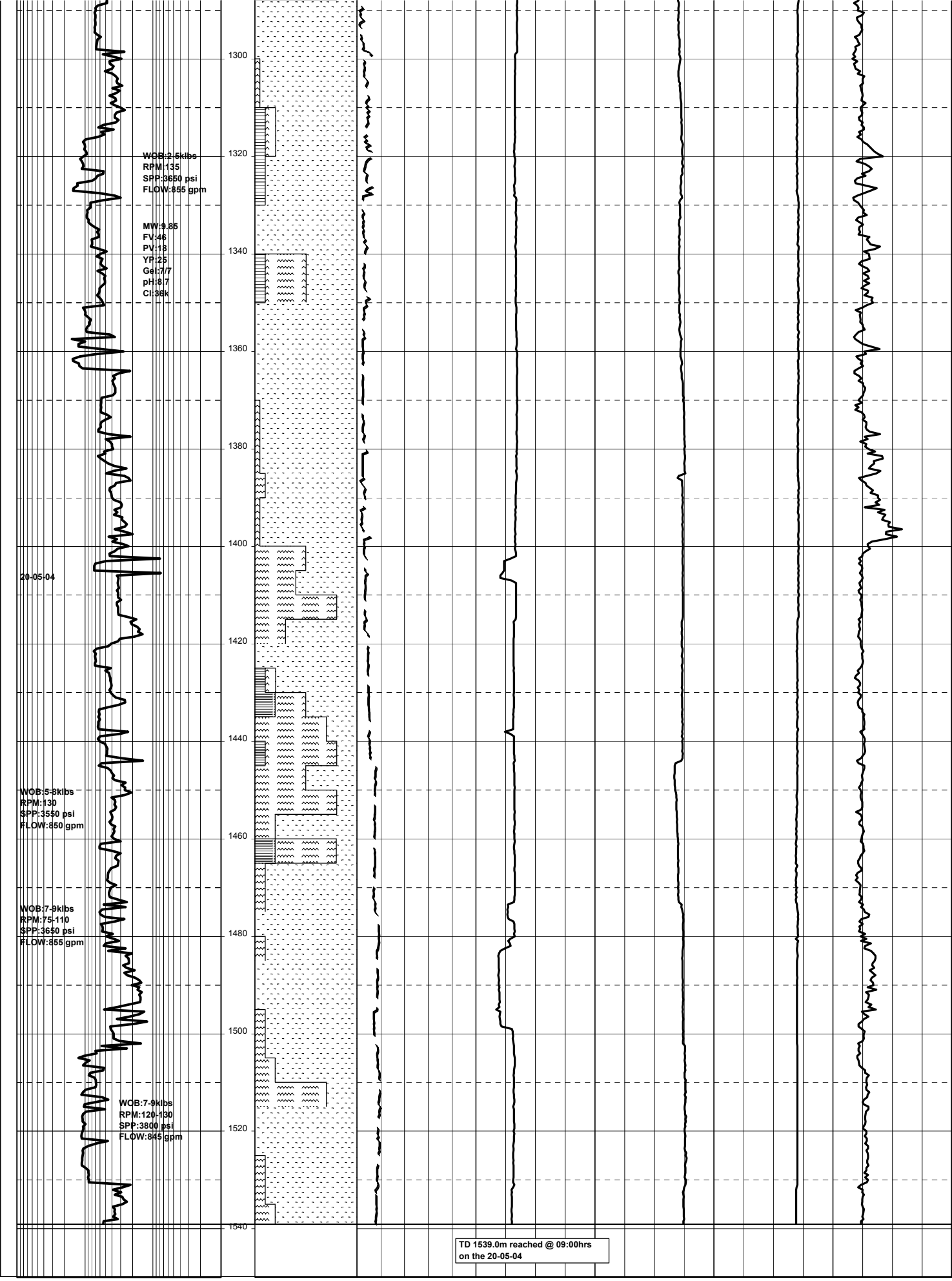
1240
1260
1280


1300
1320
1340
1360
1380
1400
1420
1440
1460
1480
1500
1520
1540
WOB:2.5klbs
RPM:135
SPP:3650 psi
FLOW:855 gpm
MW:9.85
FV:46
PV:18
YP:25
Gel:7/7
pH:8.7
Cl:36k
20-05-04
WOB:5-8klbs
RPM:130
SPP:3550 psi
FLOW:850 gpm
WOB:7-9klbs
RPM:75-110
SPP:3650 psi
FLOW:855 gpm
WOB:7-9klbs
RPM:120-130
SPP:3800 psi
FLOW:845 gpm
TD 1539.0m reached @ 09:00hrs
on the 20-05-04

OTHER REPORTS

Well Planning Checklist

WELL PLANNING CHECKLIST

Esso Australia Pty Ltd

Items marked * **must be filled in for a Screening Cost Estimate;**
Items marked * & ** **must be filled in for a Budget (Class V) Cost Estimate;**
Items marked *, ** & *** **must be filled in prior to Well Design and/or AFE (Class III) Cost Estimate;**
Unmarked items should be completed if pertinent.
ENTER OR EDIT DATA AT THE FIELDS IN BLUE. **TAB BETWEEN FIELDS**
USE THE F1 KEY FOR CONTEXT SENSITIVE HELP.

West Whiptail -1

GENERAL INFORMATION*

Estimate Required*	**AFE (Class III) or Well Design**	**Drilling Rig Required***	**Jack-up**
Cost Centre for this work*	L0501D001		
Prior Cost Estimates?*	N/A		
Country*	**Australia**	**State***	**Victoria**
Well Name*	**West Whiptail - 1**	**Permit/Licence****	**VIC/L1**
Location*	**Offshore**	**Drilling Sequence*****	
Well Classification*	**Wildcat**	**EMWI***	**50%**
If "Other" explain*	Near Field Wildcat / Appraisal. Potential for common pool with Whiptail-1A		
Well Objective(s)*	Latrobe Group(N Asperus) Reservoirs		
Well TD (TVDSS + rathole)*	**1,500** **m TVDSS plus**	**50**	**m rathole**

Primary Target:		**MGA Zone***	**55**
· **Longitude**	**147 30 17**	· **Depth***	**1,365** **m TVDSS**
· **Latitude**	**38 19 28.9**	· **Seismic Reference**	G01A 3D (N Fields 3D)
· **MGA Easting (m)***	**544117 mE**		
· **MGA Northing (m)***	**5,758,036.0**	· **Shot Point**	Inline: 1292 Xline: 1765
· **Target Size****		· **Target Constraints****	50m radius at target.
Secondary Target (if applicable):			
· **Longitude**	**147 30 17**	· **Depth***	**1,360** **m TVDSS**
· **Latitude**	**38 19 28.9**	· **Seismic Reference**	G01A 3D (N Fields 3D)
· **MGA Easting (m)***	**544117 mE**		
· **MGA Northing (m)***	**5758036 mN**	· **Shot Point**	Inline: 1292 Xline: 1765
· **Target Size****		· **Target Constraints****	50m radius at target.
Is the well vertical?*	**Yes**	**Water Depth/Site Elevation***	**38.0** **m**
Surface Location (if the well is not vertical):			
· **Longitude**		· **Description***	
· **Latitude**			
• MGA Easting (m)*		• Surface Restrictions** (eg. pipelines, conductors)	No pipelines in well area. Location within shipping exclusion zone. Whiptail 1A and Mulloway 1 suspended.

Prepared by: DAVID BERMAN 22/9/2003

APPROVED by: for G.A. NASH 22/9/2003

Reviewed by: (HUMAN CUTTING)

- **MGA Northing (m)***

DIRECTIONAL CONSIDERATIONS***

- **If the well is vertical, is a 3 - 5° cone acceptable? (Y/N)*** No**
- **If the well is directional, describe the well path in plan and section (define anticipated horizontal sections, etc)*****

FORMATION TOPS AND MARKER DEPTHS*

Formation/Marker*	TVDSS*	Res. Pres. (Psig)*	Lithology*	Comments (incl target radius, boundaries, etc.)*
Water Bottom	38		Limestone / Marl	
Lakes Entrance Formation	787	1200	Marl / Limestone	
Latrobe Group	1139	1700	SS/Shale/Coal	
Top Coarse Clastics	1144	1700	SS/Shale/Coal	
Top N1.0	1360	2010	SS/Shale/Coal	50m radius at target.
Top N1.1	1365	2020	SS/Shale/Coal	50m radius at target.
Base N1.4	1384	2045	SS/Shale/Coal	50m radius at target.

PRESSURE & TEMPERATURE DATA**

(Note: Minimum data is either one data point and a gradient, or two data points)

Depth (m TVDSS)**	Pressure Data**		Temperature Data**		Data Source**
	Pressure (psig)	Pressure Gradient (psi/m)	Temp (°C)	Temp. Gradient (°C/1000m)	
1378	1978	1.44	64.5	46.8	Mulloway-1
1476	2124	1.44	70.5	47.1	Whiptail-1A

OFFSET WELL CONTROL*

Well Name*	Distance & Direction*	TD (m TVDSS)*	Max. MW (ppg)***	Analogous Interval (formation & depth TVDSS)***	Date Drilled
Whiptail-1A	1.6km E	2,800	10.3		4-Sep-85
Mulloway-1	1.5kmW	1,700	9.5		24-Feb-89
Barracouta-3	10km E	2,932	10.9		8-Sep-69
Tarwhine-1	8.9km S	2,936	10.3		28-Dec-81
Barracouta-5	14.2 km E	1,749	11.1		3-Feb-85

OFFSET PRESSURE DATA (POTENTIAL OVERPRESSURED SANDS)**

Well Name**	Depth** (m TVDSS)	Reservoir**	Pressure (psig)**	Pressure Data Source**

OFFSET FRACTURE PRESSURE DATA**

Well Name**	Depth** (m TVDSS)	Reservoir**	Fracture Pressure (psig)**	Pressure Data Source**

SUBSURFACE GEOLOGICAL HAZARDS***

BORE HOLE CONDITIONS***

Carbon Dioxide Gas*	Barracouta-3: Trace (5 units) in N2 reservoir
	Whiptail-1A: Insufficient to measure (RFT sample).
	Mulloway-1: 4ppm ? (RFT sample).
	Barracouta 1: 4% in N5 reservoir
	Barracouta 2: 0.5-1.4% in N1 reservoir
	Barracouta 3: Trace (5 units) in N2 reservoir
Hydrogen Sulphide Gas*	Barracouta-5: 15 ppm in N1 reservoir.
	Whiptail-1A: none recorded (RFT samples).
	Mulloway-1: 1ppm ? (RFT samples).
	Barracouta 1: 15ppm in N1 reservoir.
Swelling Shale*	Lakes Entrance Formation (328m thick at Whiptail-1A & 137m thick at Mulloway-1)
Sloughing Coal*	2-20m coals (Latrobe Group) in offset wells. Likely < 10m at target location.
Brecciated/Sheared Fault Zones***	Possible small scale faults (sub-seismic) in reservoir section and in section from Top of Lakes Entrance Formations to TOL.

NORMAL PRESSURE* **Yes**

High Solution Gas Water Sands***	Not Present.
Hydrocarbon Gas Sands***	Gas column at Barracouta Field (TOL). Small gas column observed at Golden Beach-1 (Gurnard Formation). Not observed at Whiptail-1A or Mulloway-1 although apparent closure at TOL means potential for gas although unlikely.

OVERPRESSURE* **No**

Seafloor/Surface Hydrocarbon Seeps***	None
Overpressured Mud or Shale***	Not present in offset wells.
Overpressured Reservoirs***	Not anticipated in Latrobe Group.
Shallow Gas**	No shallow gas zones have been identified during drilling of adjacent wells (Barracouta, Whiting and Tarwhine Fields, Mulloway-1 or Whiptail-1A). Total gas units recorded above TOL are in general low. In Whiting-2 total gas ranged from 5-15 units (background 5 units) above the TOL. Although there is no demonstrated relationship between seismic amplitudes and shallow gas in the area, no shallow seimic amplitude anomalies have been identified at the West Whiptail-1 location.

UNDERPRESSURE***

Draw Down Reservoirs* **	Gas production from the Barracouta N1 reservoir may result in drawn down reservoirs if the reservoir is continuous across to the West Whiptail 1 location. The N1 reservoir is 120psi drawn down at Barracouta while the deeper M1 reservoir has been drawn down 90psi. Approximately 5 psi drawdown over 3.5 years was observed between the drilling of Whiptail 1A and Mulloway 1. The N reservoirs at Mulloway 1 exhibited approximately 40 - 45 psi drawdown in 1989 relative to the original basin gradient and assuming a similar rate of drawdown a further 20 psi drawdown (total 60 psi) is likely at West Whiptail-1.
Lost Returns* **	Possible lost returns in drawn down zones. Lost return intervals were recorded from Barracouta-4 at -874mTVDss and -1210mTVDSS within Miocene sandstones. Cuttings descriptions indicate this section was intersected in Whiptail-1A. Based on seismic correlation a porous and permeable section is expected to be variably present at the West Whiptail-1 location between the depths of 350 - 530 m TVDSS.

SEAFLOOR STABILITY***

High Relief/Seafloor Topography* **	Expected to be near flat (< 0.5 degrees) at surface location.
Other* **	

GEOPHYSICAL SHALLOW HAZARD SURVEY***

- **Based on the hazard identification, will a site specific hazard survey be required?*** ** **Yes**

If YES:

- **Can existing 3-D seismic data be used, or will acquisition of high resolution 2-D data be required?*** **
  3D seismic data inadequate to define bathymetry.
- **List services required (i.e. high res 2-D, bathymetric, sub-bottom profile, side scan sonar, etc.)*** **
  Site survey required.
- **Check Expected Required Products:*** **

Interpreted high res 2-D or 3-D seismic	☐
Bathymetric maps	☒
Seafloor hazards/obstruction map	☐
Shallow gas/shallow fault map	☐
Consultants' report (if required)	☐
In-house summary report	☐

COMPLETION CONSIDERATIONS***

- **Expected Completion Time**** **days**
- **How will the well be maintained? P&A/T&A/etc, single/dual, csg/tbg size/etc, oil/gas, conventional/gravel pack/etc, flowing/ESP/etc?*****

  P&A. Endorsement for P&A option received from EAL management 7/7/2003.

SUMMARY OF ANTICIPATED COMPLETION COSTS**

(**Note:** For completed wells, other than subsea wells, cost are for the well completion to the downstream Xmas tree wing valve. For subsea wells, costs are only to the wellhead, i.e. costs **DO NOT** include the Completion Guide Base, Xmas Tree and control systems.)

Item**	Cost (Aus$k)**
Tubing	
Completion Equipment	
Wellhead & Xmas Tree	
Other	
TOTAL	**$0.00**

WELL TESTING*

- **How many well tests are probable?*** **None**
- **Objectives of the Well Test(s)***

  N/A
- **Clarify the test objectives as listed below (Check the boxes)*****

  Confirm the existence of hydrocarbons ☐
  Measure the productivity of the well ☐
  Measure the formation pressure and temperature ☐
  Obtain separator samples of oil, gas, and water for laboratory analyses ☐
  Obtain bottom-hole samples for laboratory analyses ☐
  Determine the amount of wellbore damage or stimulation ☐
  Determine reservoir limits ☐
  Determine hydrocarbon reserves ☐
  Determine the vertical components of productivity using production logs ☐
- **Well Reservoir Engineer has provided input to above program?*****

  N/A
- **Well Test Engineer has communicated test equipment needs to Drilling?*****

  N/A

MUD PROGRAM DATA*

- **Estimated Maximum Pore Pressure (ppg EMW)*** **8.7**
- **Formation/Depth (m TVDSS)*** **1360**
- **Pressure Profile Attached*** **No**
- **Conductivity/Pore Pressure Plots Completed?*** **No**
- **Does the wireline formation evaluation program place restrictions on the mud program? Explain***

  No

- **Does the coring program place restrictions on the mud program? Explain***

  N/A

- **Does the formation integrity and/or formation evaluation considerations require adjustments in the mud or mud hydraulics (e.g. MW, FV, WL, GPM, AV, etc)? Elaborate***

  No

- **If hydrateable shale has been identified as potentially affecting wellbore stability, should the DCM be employed or mechanical properties be investigated?***

  No. Swelling shale problems in the Lakes Entrance Formation are well documented.

CORING PROGRAM DATA*

- **Number and length of conventional cores to be cut*** None
- **Objectives of the Coring program***

  N/A

Formation*	Interval* (m TVDSS)	Type & Length*	Total Core (m)*	Comments*

For costing purposes provide (documented) cost estimates and enter values in summary table at back of WPC*

- **Type core/barrel***

Type of Core* **4-1/2"** ☐
5-1/4" ☐
Other (detail) ☐

Type of Barrel* **Fibreglass sleeve** ☐
Plastic liner ☐
Aluminium ☐
Other (detail) ☐

- **Types of routine core analysis to be performed*****

  N/A

- **Types of special core analysis (SCAL) to be performed in the future (no cost estimate is required)*****

  N/A

- **Will any special handling "onsite" be required? (epoxy stabilisation, on-site plugging, measurements, etc)*****

  N/A

- **What will be the disposition of the core after the preliminary wellsite description is made?*****

  N/A

- **Disposition of on-site core plugs?*****

  N/A

- **How will the core point be determined (i.e. on shows; stratigraphy)? Qualifying conditions will be outlined in ATD/RTD and Coring Protocol.****

  N/A

MUD LOGGING AND SAMPLE PROGRAM*

- **Will mud logging be required?*** **Yes**

For costing purposes, provide (documented) cost estimate and enter value in summary table at back of WPC*

- **Indicate any additional services required and depth ranges:*****

Additional Services***

Wellsite Geochem ☐ **Dielectric Const Meter** ☐ **Fission Track** ☐ **Other** ☒

Depth Ranges***

Type	Number	Interval	Frequency (m)	Recipients	Shipping Frequency
Washed & Dried	4	**Casing shoe - 1000 m TVDSS**	**30**	EAL, BHPB, DPI, GA (via EAL)	**End of Well**
		1000 m TVDSS - TD	**5**		
Lightly Washed & Air Dried	1	**Casing shoe - 1000 m TVDSS**	**30**	EAL	**End of Well**
		1000 m TVDSS - TD	**5**		

Lightly washed and air dried cuttings may be required for analyses affected by subjecting the cuttings to temperature (i.e. oven drying).

- **Discuss any special considerations regarding samples.*****
  - None

Are there any wellsite paleontology requirements (e.g. to avoid geological hazards)?***

- No but if Geoservices are onboard then Reserval mud gas analysis system will be used

FORMATION EVALUATION PROGRAM*

LOGGING PROGRAM*

- **Objectives of the Logging program***

  Establish fluid contacts by acquiring high quality pressure data and recover samples.

- **If Intermediate Hole is drilled, will it be logged?*** **No**

Logging Requirements*

Electricline ☒ **LWD** ☐ **BOTH Electricline & LWD** ☐ **EITHER Electricline & LWD** ☐

- **If LWD is required, justification is as follows:***

  N/A

- **Specify LWD requirements****

Depth Interval**				
Hole Size (in.)**				
Directional Only**	☐	☐	☐	☐
Directnl/Resis/GR**	☐	☐	☐	☐
Porosity**	☐	☐	☐	☐
(Other LWD reqmnts)**	☐	☐	☐	☐
(Other LWD reqmnts)**	☐	☐	☐	☐

For costing purposes, provide documented cost estimate and enter value in summary table at back of WPC*

- **Has BHA configuration been discussed with Drilling Department?*****

  No

- **Specify the Electricline Logging requirements****

Depth Interval**	Seabed-800m	800-1064mSS	1064-1400mSS	
Hole Size/Suite #**	12 1/4"	8 1/2"	8 1/2"	
Generic Tools**				
Gamma Ray	☒	☒	☒	☐
HNGS	☐	☒	☒	☐
Resistivity	☐	☒	☒	☐
Density	☐	☒	☒	☐
Neutron	☐	☒	☒	☐
Sonic - P wave	☒	☒	☒	☐
(Select generic tool)	☐	☐	☐	☐
VSP - zero offset	☒	☒	☒	☐
(Select generic tool)	☐	☐	☐	☐
(Select generic tool)	☐	☐	☐	☐
MDTs - No. of Pressures			20	
MDTs - No. of Samples			2	
(Enter MDTs, MSCTs SWCs)				
(Enter MDTs, MSCTs SWCs)				
(Enter MDTs, MSCTs SWCs)				
MDT H2S sensor may be used and / or ceramic MPSR's	TBD			

*For costing purposes, provide documented cost estimate and enter value in summary table at back of WPC****

- **Formation Evaluation specialist has provided input to above program?** Yes
- **Will sidewall core samples be taken for paleo, geochem, etc. purposes?** No
- **Will mechanical rotary sidewall cores be taken for reservoir and lithology identification?** No
- **List formation evaluation problems, if any (e.g. deep invasion, hole washout, fresh formation waters, fracture identification, complex mineralogy, etc)****

  Freshwater

- **What can be done to minimise these problems?****

- **Has optimisation of drilling parameters been discussed with Drilling Department?****

  No.

GEOPHYSICAL SURVEYS[1]***

- **Will a geophysical survey be run?*** Yes

*For costing purposes, provide documented cost estimate and enter value in summary table at back of WPC****

- **Type of velocity survey to be run (i.e. checkshot, VSP, walkaways, etc)*****

  VSP - zero offset.

- **What depth?*****

  From TD to surface.

1 Specifications provide by Geophysical Applications.

- **Energy source and supplier.*****

  Schlumberger airgun.

- **Geophone type.*****

  Dual CSAT.

- **Will a pit or boat be required?*****

  No.

- **Pit specs provided to drilling.*****

  N/A.

- **Will geophysical applications provide on-site supervision?*****

  Yes. To be resourced by EALP GAPS.

- **Any additional special instructions:*****

  Good cement is required behind 9-5/8" casing to surface for the zero offset VSP.

WELLSITE GEOLOGICAL SUPERVISION***

Will a contract Wellsite Geologist be required?* Yes**

Will the Wellsite Geologist require backup during long work periods?* Yes**

For costing purposes, provide documented cost estimate and enter value in summary table at back of WPC**

BID/CONTRACT CONSIDERATIONS**

Technical specifications (tool types, services required, etc) are to be/have been supplied for Formation Evaluation and Geophysical Operations contracts for inclusion in bids/contracts/planning, etc**

Contract**	Contractor**	Target Date**	Affiliate Technical Contact**
Electricline Logging	Schlumberger		AHodgson/KKuttan
Wellsite Geology	AIPC		AHodgson/KKuttan
Mud Logging	Geoservices / Inteq		AHodgson/KKuttan
Biostratigraphy	Morgan Paleo		AHodgson/KKuttan
PVT Analysis	Petrolab		AHodgson/KKuttan
Rig Positioning QA/QC	Arrowsmith		AHodgson/KKuttan
(Select Contract)			
(Select Contract)			
(Select Contract)			
(Select Contract)			
(Add additional contracts)			
(Add additional contracts)			
(Add additional contracts)			

Cost elements for Formation Evaluation related services (via contract terms, quotes, or contract plan) are to be provided to Drilling for inclusion in the well costing on the following table.

SUMMARY OF ANTICIPATED FORMATION EVALUATION COSTS***

(include only items expected to be invoiced within six months of reaching TD)

Item***	Cost (A$k)***
Wireline Logging (including Processing and Seismic)	**$261,000**
LWD - Gr/Res/Dir	**$0**
Wellsite Geological Supervision	**$20,000**
Mudlogging	**$78,000**
Wellsite sample transfer and onsite analysis	**$74,000**
Palynology (URC)	**$8,000**
Geochemical Analysis	**$10,000**
Onsite VSP QC	**$0**
Secure Website	**$0**
Operations Geology Surveillance	**$38,000**
FE Surveillance	**$50,000**
Post Well PVT Analysis	**$47,000**
Rig Positioning QA/QC	**$20,000**
(Enter additional items)	
(Enter additional items)	
Contingency (10%)	
TOTAL	**$606,000**

When requesting cost estimates from Formation Evaluation for any of the above, supply a documented program as backup.

ANY ADDITIONAL DISCUSSION*

Drilling rig uncontracted - Floater or Jackup may be suitable.

Directional considerations - Require 50m radius at primary target depth. Expect to have discussions with Drilling as well design progresses regarding optimisation of directional considerations.

Locations referenced to:

Datum : GDA94

Spheroid: Australian National Spheroid (ANS).

UTM Zone 55 / AMG Zone 55

Central Meridian (CM) 147 Degrees East

False Easting 500,000.0

False Northing 10,000,000.0

Scale Factor at CM 0.9996.

Projection: Universal Transverse Mercator (UTM).

Secondary Target is N1.0 (Oil reservoir at Mulloway-1).

Require sufficient rathole to ensure MDT sampling down to 1450 mSS.

Pressure at reservoir estimated as Reservoir Pressure = (Depth mTVDSS x 1.42 psi/m) + 79.6 (Standard Gippsland Basin aquifer pressure calculation).

Temperature at reservoir level estimated: 65 deg C +/- 10 deg C (149 deg F +/- 15 deg F)

Site Survey Report

THALES

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Prepared for

ESSO AUSTRALIA PTY LTD

DOCUMENT TITLE	**:**	**WEST WHIPTAIL-1 SITE SURVEY SITE INVESTIGATION AND OPERATIONS REPORT**
CLIENT	**:**	**ESSO AUSTRALIA PTY LTD**
LOCATION	**:**	**BASS STRAIT**
PERMIT	**:**	**VIC/RL1, VIC/L1, V03/2**
REPORT REF.	**:**	**3635C1**
REPORT REV NO.	**:**	**0**
REPORT ISSUE DATE	**:**	**13 JANUARY 2004**
SURVEY DATE	**:**	**28 OCTOBER 2003**

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Datum: GDA94, Projection: MGA Zone 55, CM 147° East.

Figure 2: Echo sounder data example. Illustrates the seabed topography at the proposed West Whiptail-1 location.
Line: WW1-P26. Heading: 360°.

Figure 3A: 100kHz side scan sonar data example. Illustrates the featureless seabed at the proposed West Whiptail-1 location. Moderate reflectivity seabed interpreted as fine to medium grained shelly quartz sand.
Line: WW1-P26. Heading: 360°.

Figure 3B: 100kHz side scan sonar data example. Illustrates the featureless seabed at the proposed West Whiptail-1 location. Moderate reflectivity seabed interpreted as fine to medium grained shelly quartz sand.
Line: WW1-P25. Heading: 180°.

Figure 4: Boomer data example. Illustrates the shallow geology at the proposed West Whiptail-1 location. Unit A: Loose to dense/soft to stiff, sandy and clayey soils. Unit B: Bedded, variably consolidated/cemented sediments. R1: Reflector R1 (base of Unit A). IR: Internal reflector.
Line: WW1-P26. Heading: 360°.

Figure 5: Boomer data example. Illustrates the monocline bedding structure in Unit B. Unit A: Loose to dense/soft to stiff, sandy and clayey soils. Unit B: Bedded, variably consolidated/cemented sediments. R1: Reflector R1 (base of Unit A). IR: Internal reflector.
Line: WW1-P14. Heading: 180°.

Figure 6: Location of the West Whiptail-1 site survey area.

Figure 7: West Whiptail-1 site survey boundaries.
Datum: GDA94, Projection: MGA Zone 55, CM 147° East.

Figure 8: FTV Bluefin used for the West Whiptail-1 site survey.

DRAWINGS

3635C1-01	GPS ANTENNA TRACK DRAWING	Scale: 1:5000
3635C1-02	SINGLE BEAM ECHO SOUNDER TRACK DRAWING	Scale: 1:5000
3635C1-03	SIDE SCAN SONAR FISH TRACK DRAWING	Scale: 1:5000
3635C1-04	SUB-BOTTOM PROFILER TRACK DRAWING	Scale: 1:5000
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APPENDICES

A - SAFETY REPORTS

B - TECHNICAL SPECIFICATION - BLUEFIN

C - OFFSET DIAGRAM - BLUEFIN

D - GNS SYSTEM DATA PRINTOUT

E - GYROCOMPASS CALIBRATIONS PRINTOUTS

F - STATIC DIFFERENTIAL GPS CHECK PRINTOUTS

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H - BAR CHECK & MOTION SENSOR CHECK

I - SIDE SCAN SONAR WET TEST & RUB TEST

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K - BOOMER WET TEST AND PULSE TEST

L - VELOCITY OF SOUND IN SEAWATER PROFILES

M - SURVEY LINE LOGS

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O - DAILY FIELD PROGRESS REPORT SHEETS

P - DAILY VESSEL BRIDGE LOGS

Q - FIELD SEABED SAMPLE DESCRIPTIONS

R - WHALE SIGHTING REPORT

S - DIFFERENTIAL GPS REFERENCE STATION DESCRIPTION
(ON CD)

T - DESCRIPTION OF THALES GEOSOLUTIONS METHOD OF COORDINATING SkyFix STATIONS
(ON CD)

PART 1: SITE INVESTIGATION REPORT

1. EXECUTIVE SUMMARY

Bathymetry

Across the West Whiptail-1 survey area, the seabed shoals very gently (seabed gradient much less than 1°) to the northwest.

The nearest observable water depth to the proposed West Whiptail-1 location is 39.0m. The minimum water depth observed within the survey area is 37.2m, 1500m northwest of the proposed West Whiptail-1 location. The maximum water depth observed is 41.1m, 1500m southeast of the proposed West Whiptail-1 location.

The seabed surrounding the proposed West Whiptail-1 location is free of steep slopes and bathymetric anomalies.

Seabed Features

Moderate reflectivity seabed interpreted as loose fine to medium grained shelly quartz sand is present across the entire West Whiptail-1 site survey area.

In the eastern quarter of the survey area, subtle changes in the seabed reflectivity define northeast-southwest trending lineations that are probably oriented parallel to the prevailing current. The lineations have no significant relief and represent localised sorting of the seabed sand.

No obvious debris was observed on the side scan sonar records within the site survey area.

Shallow Geology

Two distinct units are visible on the sub-bottom profiler data, leading to the following interpreted stratigraphy:

Stratigraphy	Description
Unit A	Loose to dense/soft to stiff sandy and silty soils.
Unit B	Bedded variably consolidated/cemented sediments.

The shallow geology is relatively homogenous across the site survey area:

- Unit A is flat lying, laterally continuous across the entire site survey area and interpreted to consist of loose to dense sandy soil interbedded with soft to stiff clayey soil. Within the site survey area, the thickness of Unit A is uniformly 3.0m.
- Unit B is also laterally continuous underlying Unit A across the site survey area. Unit B is composed of folded sediments interpreted to consist of bedded variably consolidated/cemented sediments and extends beyond the limit of useful acoustic penetration (20m). One internal reflector within Unit B exhibits a monocline structure with an axis plunging 0.1° east-northeast. The bedding on the southeast of the monocline dips approximately 0.5° south-southeast.

The predicted stratigraphy at the proposed West Whiptail-1 location is given in the table below:

Top of Unit	Depth Below Seabed (m)	Unit Thickness (m)	Predicted Lithology
A	0.0	3.0	Loose to dense/soft to stiff sandy and silty soils.
B	3.0	>17m, (to beyond the limit of acoustic penetration 20m)	Bedded variably consolidated/cemented sediments.

Seabed Sampling

One grab sample and one gravity core sample were recovered near the proposed West Whiptail-1 location. Both samples consist of loose, light brown, fine to medium shelly quarts sand.

Hazards and Constraints

No significant seabed features that would be hazardous to jackup rig emplacement or drilling operations have been observed in the West Whiptail-1 site survey area.

No significant hazards or constraints to jackup rig emplacement or drilling operations have been identified within the shallow subsurface (20m) in the West Whiptail-1 site survey area. Folding of Unit B is not considered hazardous for jackup rig emplacement due to the very shallow dip of the beds within this unit and the uniformity of the sediments.

Using the method of shallow gas risk assessment outlined in section 2.5.2.2 of this report, the risk of shallow gas is defined as slight (gas unlikely) at the proposed West Whiptail-1 location within the limit of useful acoustic penetration (20m).

2. SURVEY RESULTS

2.1 BATHYMETRY

Across the survey area, the seabed shoals very gently (seabed gradient much less than 1°) to the northwest (Figure 1).

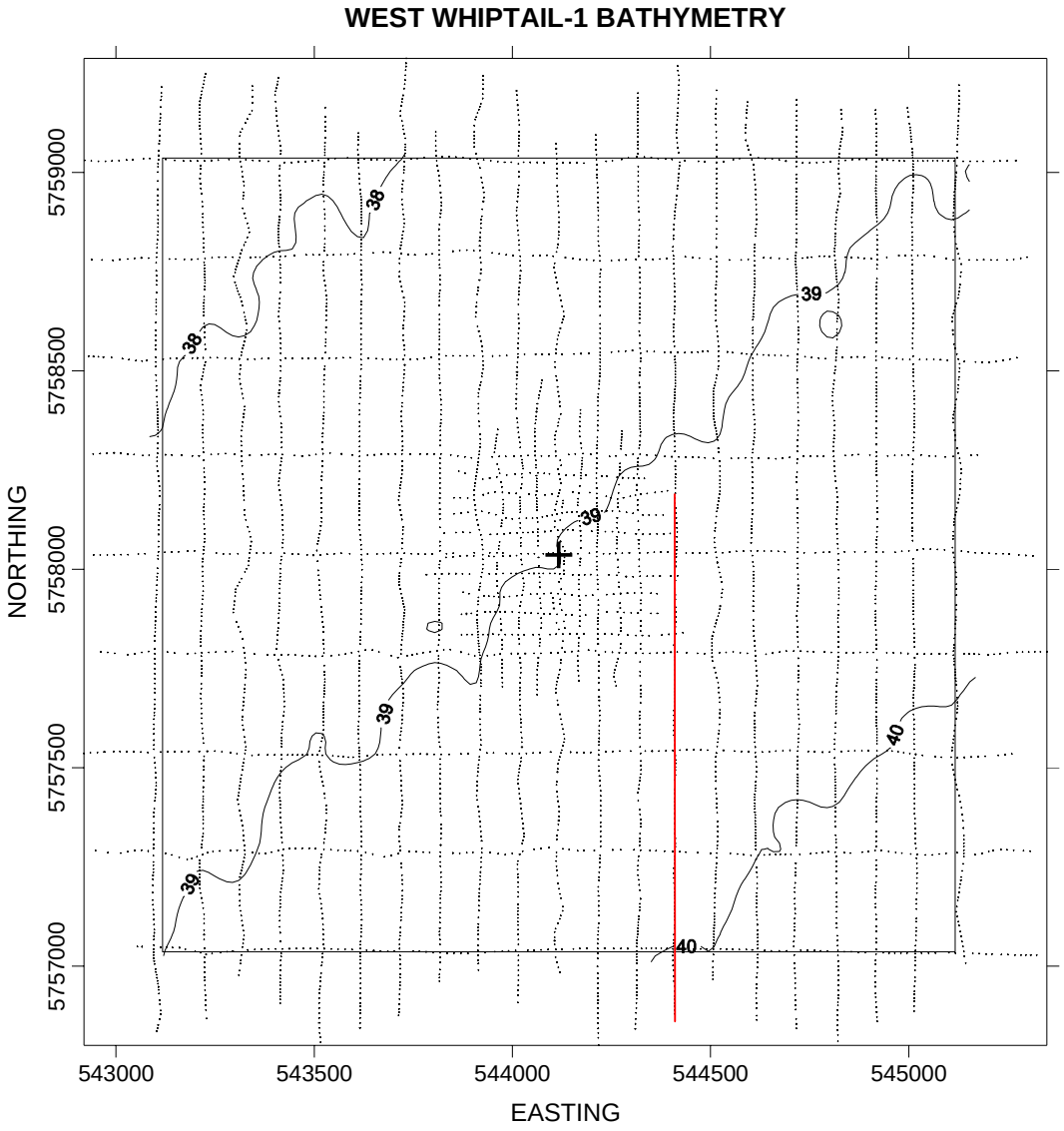


Figure 1: West Whiptail-1 site survey area bathymetry (contours in metres) showing the survey lines, the proposed West Whiptail-1 location (**+**) and the section of Figure 5. Datum: GDA94, Projection: MGA Zone 55, CM 147° East.

The nearest observable water depth to the proposed West Whiptail-1 location is 39.0m. The minimum water depth observed within the survey area is 37.2m, 1500m northwest of the proposed West Whiptail-1 location. The maximum water depth observed is 41.1m, 1500m southeast of the proposed West Whiptail-1 location.

The seabed surrounding the proposed West Whiptail-1 location is free of steep slopes and bathymetric anomalies.

A dual frequency single beam echo sounder data example illustrating the seabed at the proposed West Whiptail-1 location is presented in Figure 2.

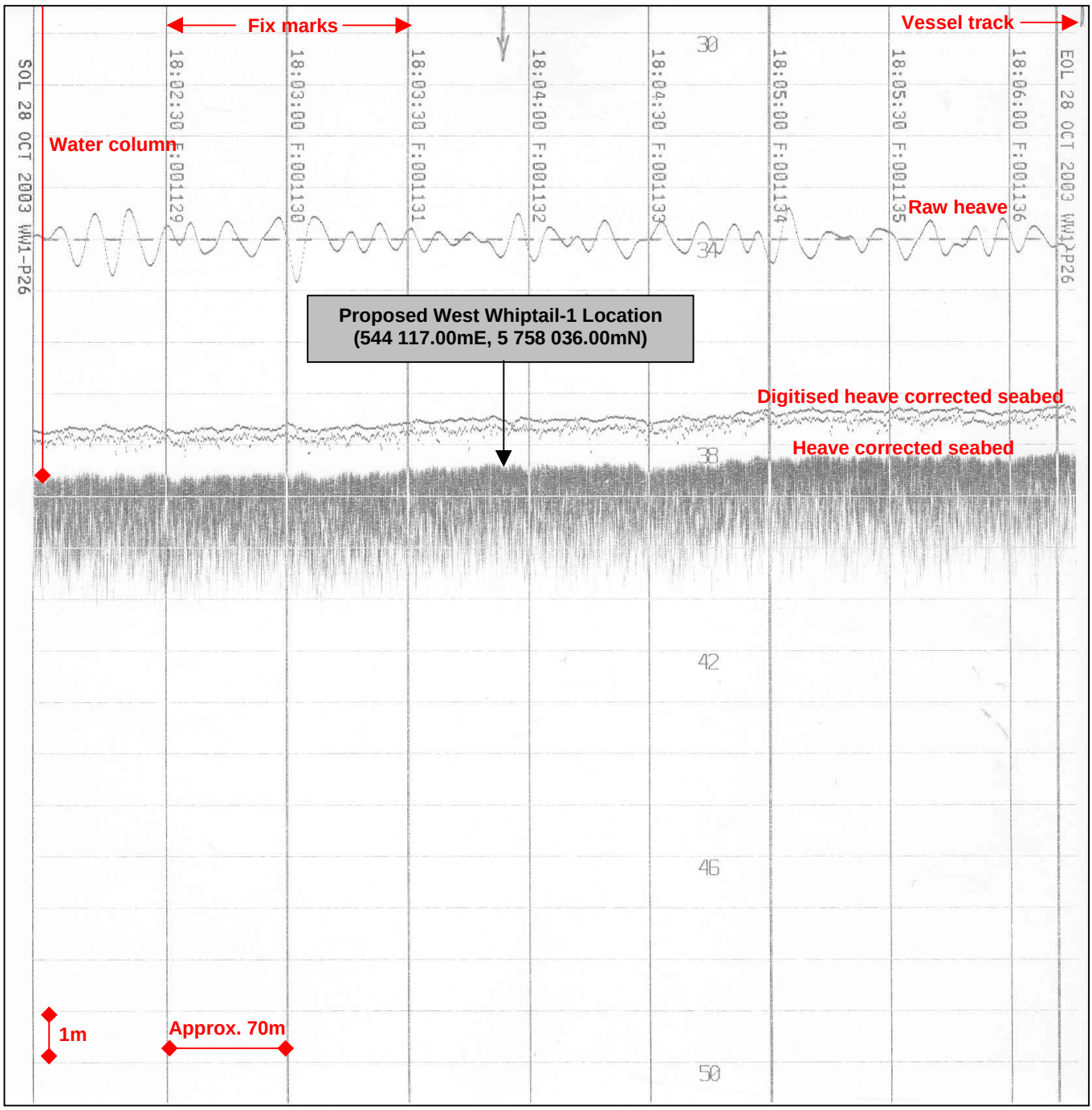


Figure 2: Echo sounder data example. Illustrates the seabed topography at the proposed West Whiptail-1 location.
Line: WW1-P26. Heading: 360°.

2.2 SEABED FEATURES

Two gravity core samples were recovered near the proposed West Whiptail-1 location and were used to ground truth the geophysical data. The textural characteristics interpreted in terms of sediment lithology are plotted on the seabed features drawing (refer Drawing No. 3635C1-06).

Side scan sonar data quality was generally good. Insonification of the seabed was generally achieved to the limit of the selected slant range, and adequate to produce the required coverage.

Seabed sediments within the survey area have been interpreted and classified into the following acoustic and lithological seabed categories:

Type A: Moderate reflectivity seabed interpreted as loose fine to medium grained shelly quartz sand.

This seabed type is present across the entire West Whiptail-1 site survey area. The homogeneous and featureless nature of the seabed sediments in this area is consistent with the flat morphology of the seabed.

In the eastern quarter of the survey area, the seabed is mottled containing very small patches of high reflectivity seabed interpreted to be slightly coarser grained soils. In this area, subtle changes in the seabed reflectivity define northeast-southwest trending lineations that are probably oriented parallel to the prevailing current. The lineations have no significant relief and represent localised sorting of the seabed sand.

No obvious debris was observed on the side scan sonar records within the site survey area.

Two data examples illustrating the seabed at the proposed Whiptail-1 location are given as Figures 3A and 3B.

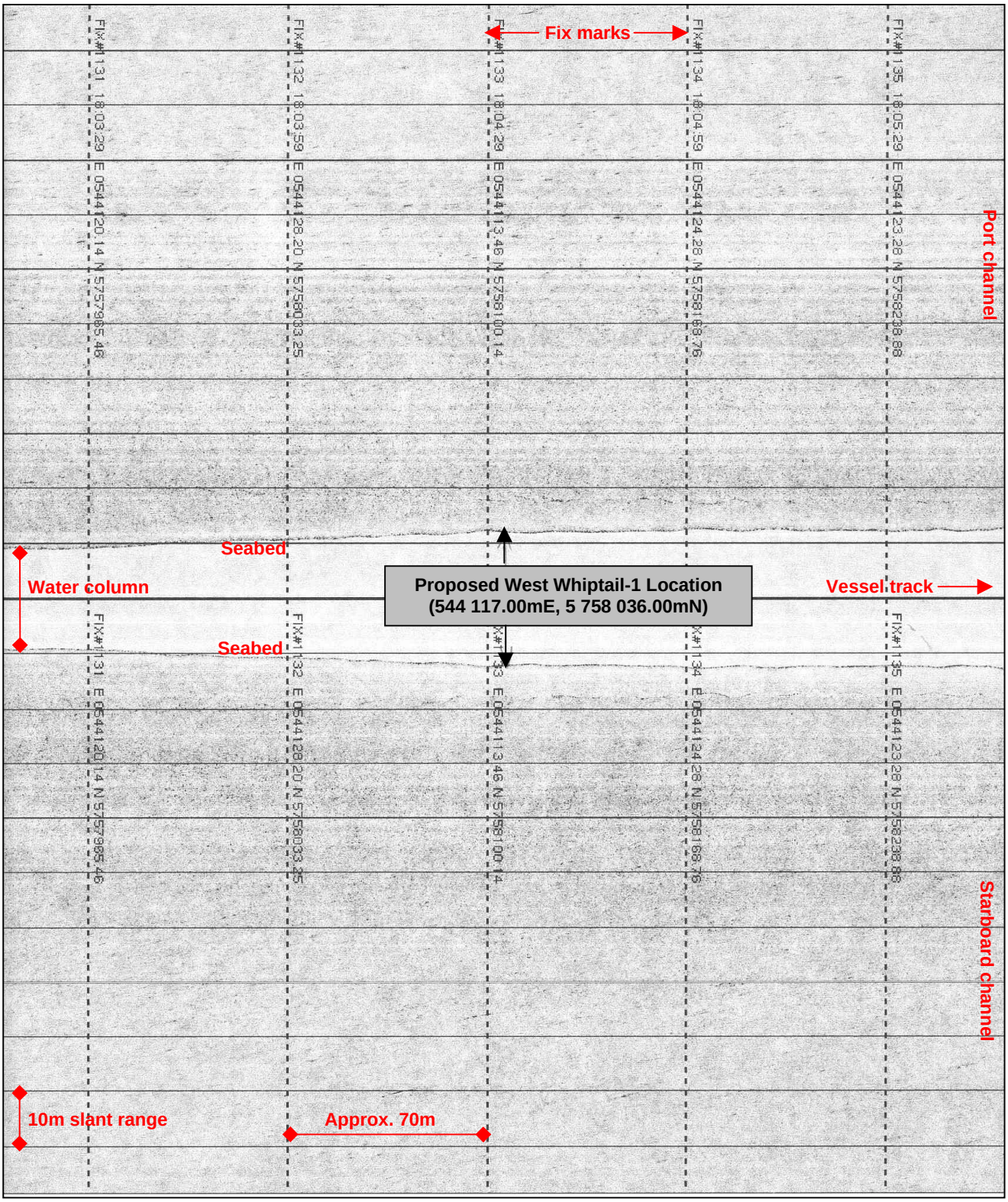


Figure 3A: 100kHz side scan sonar data example. Illustrates the featureless seabed at the proposed West Whiptail-1 location. Moderate reflectivity seabed interpreted as fine to medium grained shelly quartz sand.
Line: WW1-P26. Heading: 360°.

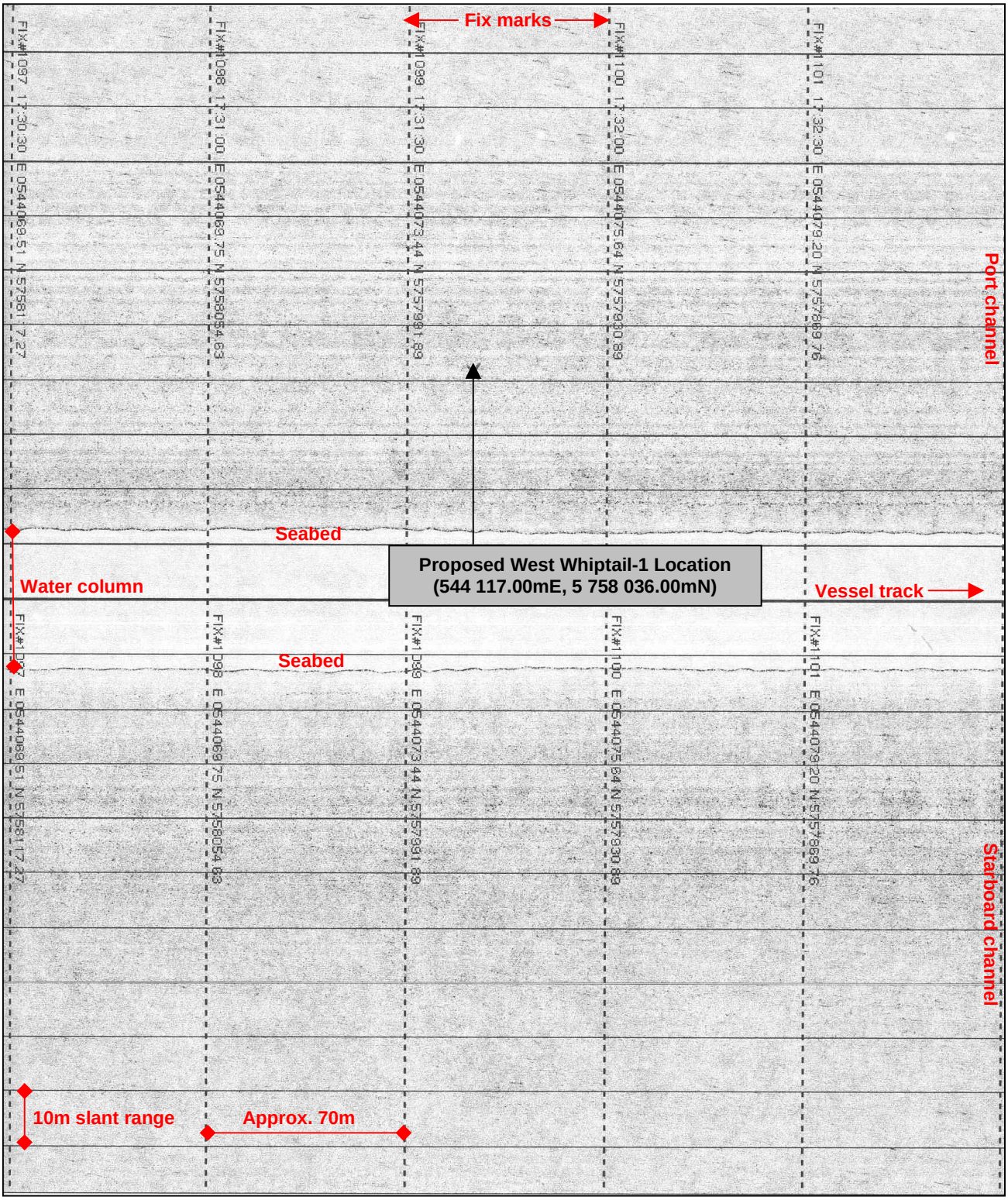


Figure 3B: 100kHz side scan sonar data example. Illustrates the featureless seabed at the proposed West Whiptail-1 location. Moderate reflectivity seabed interpreted as fine to medium grained shelly quartz sand.
Line: WW1-P25. Heading: 180°.

2.3 SHALLOW GEOLOGY

Sub-bottom profiler data quality was noisy at the start of the survey due to the choppy nature of the sea condition. The data quality improved significantly later in the day when the primary lines were surveyed. The limit of penetration reached with the sub-bottom profiler (or limit of useful acoustic penetration) was up to 20m below seabed. Boomer data could not be interpreted below this depth.

Sediment thickness was calculated using an assumed acoustic velocity of 1600m/s for the time to depth conversion. Two distinct units are visible on the sub-bottom profiler data, leading to the following interpreted stratigraphy.

Stratigraphy	Description
Unit A	Loose to dense/soft to stiff sandy and silty soils.
Unit B	Bedded variably consolidated/cemented sediments.

The shallow geology is relatively homogenous across the site survey area. Unit A is flat lying and laterally continuous across the entire site survey area. Unit B is also laterally continuous across the site survey area underlying Unit A. Unit B is composed of folded sediments and extends beyond the limit of useful acoustic penetration.

The thickness of Unit A (seabed to reflector R1) was mapped across the survey area and plotted on an isopach drawing (refer Drawing No. 3635C1-07). The monocline fold axis of a bed in Unit B is also shown on Drawing No. 3635C1-07). The shallow geology is represented on cross-sections through the proposed West Whiptail-1 location in Drawing No. 3635C1-08.

A data example showing the shallow geology at the proposed West Whiptail1 location is presented in Figure 4 and folding structures in Unit B are shown in Figure 5.

Unit A : Loose to dense/soft to stiff sandy and silty soils.

The seabed and reflector R1 bind the uppermost Unit A that is well defined on the boomer records. Unit A covers the entire site survey area and contains a number of sub-horizontal and continuous reflectors showing that this unit is composed of relatively finely bedded soils of different grain size, density and stiffness. At the seabed, sampling has shown that Unit A is composed of fine to medium grained shelly quartz sand.

Unit A is interpreted to consist of loose to dense sandy soil interbedded with soft to stiff clayey soil. The poor recovery from the drop corer suggest that the soils of Unit A are significantly compacted on the seabed.

Reflector R1, the base of Unit A, is generally well defined suggesting that there is a significant difference in the geotechnical properties of the two units. Within the site survey area, the thickness of Unit A is uniformly 3.0m.

Unit A is 3.0m thick at the proposed West Whiptail-1 location.

Unit B : Bedded variably consolidated/cemented sediments.

The top of Unit B is defined by reflector R1 and it's base extends beyond the depth of useful acoustic penetration that is a maximum of 20m. Unit B underlies Unit A over the whole site survey area.

Unit B contains several internal reflectors suggesting that it is composed of alternating beds of sediments with different geotechnical properties. The bedding traces (internal reflectors) show a well defined monocline structure in the sediments of Unit B demonstrating that they are folded (Figure 5). Reflector R1, the base of Unit A truncates clearly the upper beds of Unit B showing that the boundary between Unit A and the underlying Unit B is an angular unconformity. Although no dating of sediment was conducted in this site investigation, the unconformity is interpreted to represent a period of erosion of Unit B possibly coinciding with the sea level regression during the latest glaciation approximately 20 000 years ago. One internal reflector within Unit B is not truncated and the monocline flexure point was mapped on the north-south survey lines where it is clearly identified. The flexure points form the monocline axis has been plotted on Drawing 3635C1-07. The axis trends east-northeast to west-southwest and slopes down very gently east-northeast. The bedding dip southeast of the monocline axis is approximately 0.5° to the south-southeast.

The sediments of Unit B are acoustically fairly transparent suggesting that they are relatively homogeneous. No sample was recovered from Unit B to confirm the sediment composition. The boomer pulse penetrates the sediments to approximately 20m below seabed suggesting that the sediments of Unit B are consolidated and possibly variably cemented.

The thickness of Unit B is greater than 17.0m at the proposed West Whiptail-1 location.

The predicted stratigraphy at the proposed West Whiptail-1 location is given in the table below.

Top of Unit	Depth Below Seabed (m)	Unit Thickness (m)	Predicted Lithology
A	0.0	3.0	Loose to dense/soft to stiff sandy and silty soils.
B	3.0	>17m, (to beyond the limit of acoustic penetration 20m)	Bedded variably consolidated/cemented sediments.

A boomer data example over the proposed West Whiptail-1 location is presented as Figure 4.

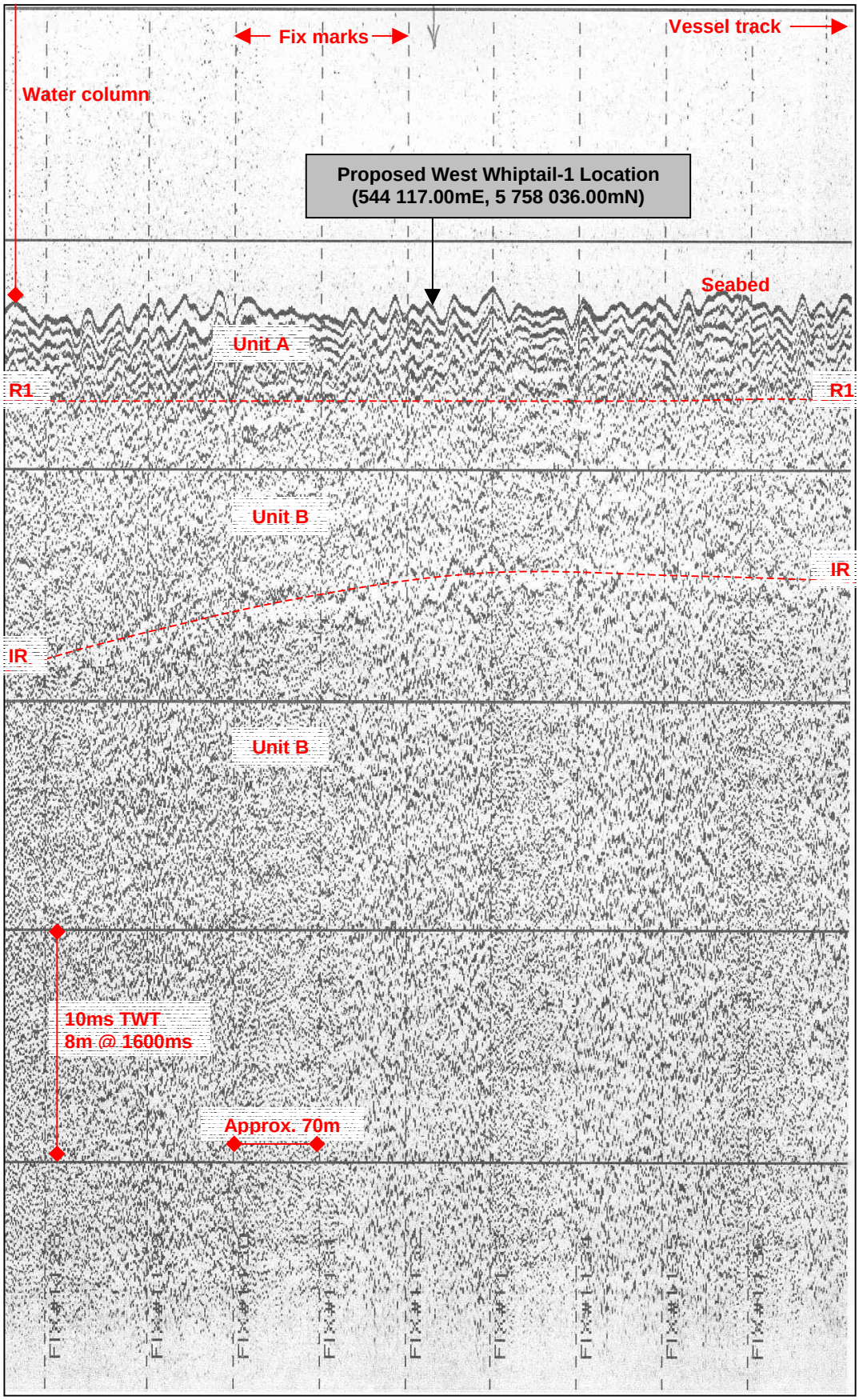


Figure 4: Boomer data example. Illustrates the shallow geology at the proposed West Whiptail-1 location. Unit A: Loose to dense/soft to stiff, sandy and clayey soils. Unit B: Bedded, variably consolidated/cemented sediments. R1: Reflector R1 (base of Unit A). IR: Internal reflector.
Line: WW1-P26. Heading: 360°.

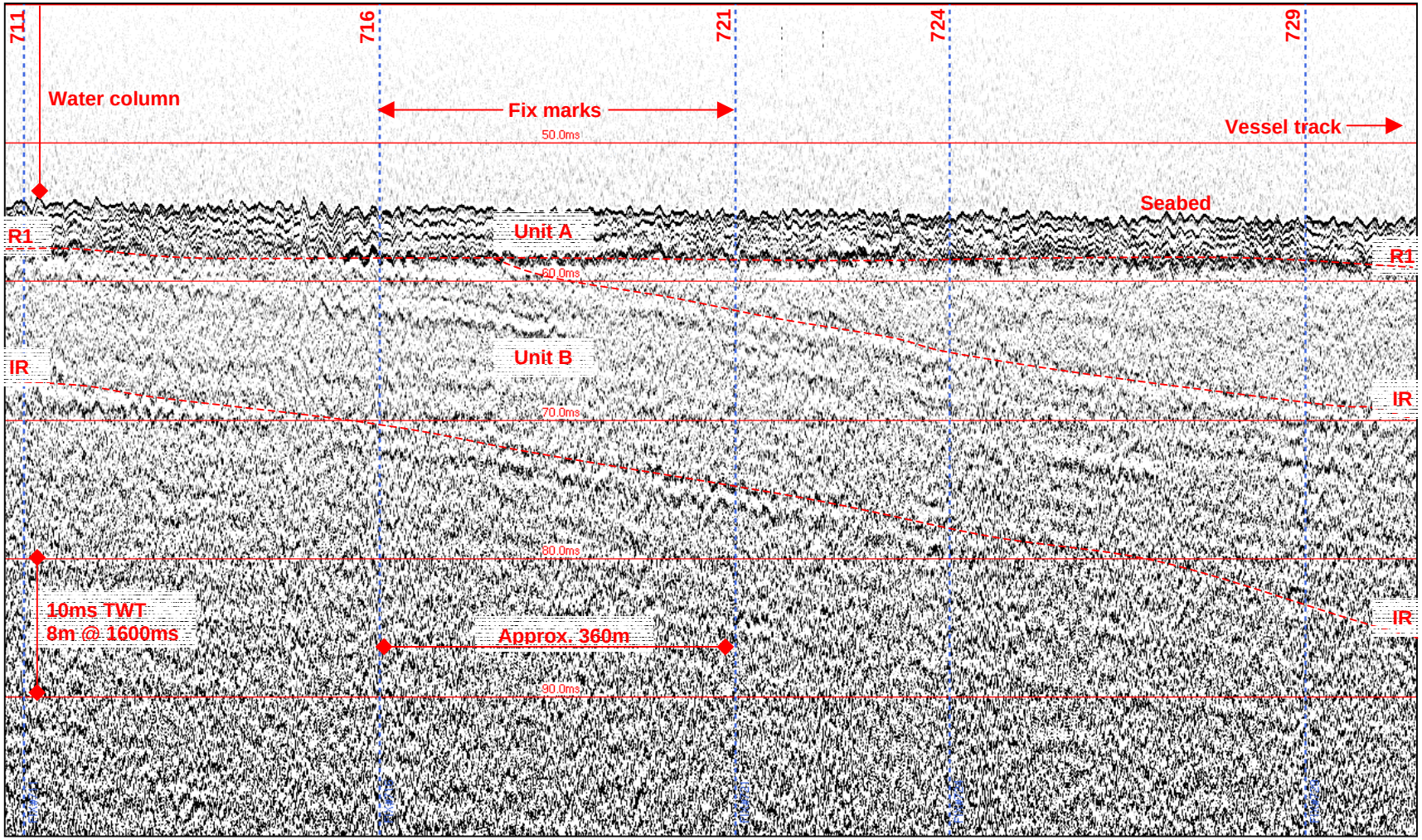


Figure 5: Boomer data example. Illustrates the monocline bedding structure in Unit B. Unit A: Loose to dense/soft to stiff, sandy and clayey soils. Unit B: Bedded, variably consolidated/cemented sediments. R1: Reflector R1 (base of Unit A). IR: Internal reflector.
Line: WW1-P14. Heading: 180°.

2.4 SEABED SAMPLING

A grab sample (WW-GS1) and a gravity core sample (WW-GC1) were collected near the proposed West Whiptail-1 location.
The low core recovery of 0.1m is attributed to the compaction and coarseness of the recovered gravelly sand.

The gravity corer barrel length was 2m. All recovered samples were logged, bagged and photographed after recovery. Both samples are considered to be disturbed and somewhat washed and, therefore, they are not suitable for testing. All samples were returned to Perth for further reference.

Sample descriptions are summarised in the table below and sample logs are presented in Appendix Q.

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Sample Reference Number	Location		Brief Description
	Easting (m)	Northing (m)	
WW-GS1	544 143.00	5 758 035.00	Loose, light brown, fine to medium shelly quarts sand.
WW-GC1	544 104.00	5 758 041.00	Recovery: 0.10m. Loose, light brown, fine to medium shelly quarts sand.

2.5 HAZARDS AND CONSTRAINTS

2.5.1 Seafloor

No significant seabed features that would be hazardous to jackup rig emplacement or drilling operations have been observed in the West Whiptail-1 site survey data based on echo sounder or side scan sonar data interpretation.

2.5.2 Shallow Sub-Surface

No significant hazards or constraints to jackup rig emplacement or drilling operations have been identified within the shallow subsurface at West Whiptail-1. This conclusion is based on the interpreted lithology and structure of the shallow sediments from sub-bottom profiler data, to the maximum limit of acoustic penetration (20m).

Folding of Unit B is not considered hazardous for jackup rig emplacement due to the very shallow dip of the beds within this unit and the uniformity of the sediments.

2.5.2.1 Shallow Gas Risk Assessment

The limit of penetration reached with the sub-bottom profiler (or limit of useful acoustic penetration) was up to 20m below the seabed. Boomer data could not be interpreted below this depth.

No obvious anomalous high reflection or obvious acoustic masking was noted on the boomer records within the limit of useful acoustic penetration.

The shallow geology shows that the sediments of Unit B are folded but no sign of gas migration along the bedding plane was noted on the boomer records within the limit of useful acoustic penetration.

No other criteria suggesting the presence of shallow gas were observed from the bathymetry, side scan sonar, boomer or seabed sampling data.

Using the method of shallow gas risk assessment outlined in section 2.5.2.2 of this report, the risk of shallow gas is defined as slight (gas unlikely) at the proposed West Whiptail-1 location within the limit of useful acoustic penetration 20m.

2.5.2.2 Standard Method of Shallow Gas Risk Assessment

The shallow gas hazard assessment consisted of the following:

- Analysis of side scan sonar / echo sounder data attributes, which included the following:
  - Disturbed seabed and / or numerous pockmarks.
  - Areas of high reflectivity seabed.
  - Evidence of gas within the water column.
- Lithological / structural evidence e.g. faults.
- Analysis of seismic data attributes which included the following:
  - Anomalous high amplitude reflectors: high acoustic impedance contrast.
  - Acoustic blanking: high signal attenuation.
  - Velocity pull down of underlying reflectors: velocity reduction.
  - Phase reversal: negative reflection coefficient.
  - Edge effects: diffraction hyperbolae.

The risk assessment criteria in this report is summarised in the following table and is dependant on the type and number of attributes observed and the magnitude or severity of these attributes.

Shallow Gas Risk Assessment Criteria

Level of Risk	Probability of Gas	Typical Seismic Characteristics
High	Gas most probable	High amplitude with 3 or 4 other well defined features (closure, phase reversal etc.).
Moderate	Gas likely	High amplitude with 2 other subsidiary gas-like features.
Low	Gas possible	Moderate amplitude with 1 or 2 other features or very high reflector amplitude alone.
Slight	Gas unlikely	Usually 1 or more features, but unremarkable reflector amplitude.

3. SITE INVESTIGATION REPORT CONCLUSIONS

The water depth at the proposed West Whiptail-1 location is 39.0m and the surrounding seabed is free of steep slopes and bathymetric anomalies.

The proposed West Whiptail-1 location lies in moderate reflectivity seabed interpreted as loose fine to medium grained shelly quartz sand. No significant seabed feature and debris were noted on the side scan sonar records within the survey area.

The predicted stratigraphy at the proposed West Whiptail-1 location is given in the table below.

Top of Unit	Depth Below Seabed (m)	Unit Thickness (m)	Predicted Lithology
A	0.0	3.0	Loose to dense/soft to stiff sandy and silty soils.
B	3.0	>17m, (to beyond the limit of acoustic penetration 20m)	Bedded variably consolidated/cemented sediments.

The limit of penetration reached with the sub-bottom profiler (or limit of useful acoustic penetration) was up to 20m below the seabed. Boomer data could not be interpreted below this depth.

Using the method of shallow gas risk assessment outlined in section 2.5.2.2 of this report, the risk of shallow gas is defined as slight (gas unlikely) at the proposed West Whiptail-1 location within the limit of useful acoustic penetration 20m.

PART 2: SURVEY OPERATIONS REPORT

4. OVERVIEW

Positioning, bathymetric and geophysical services were provided by Thales GeoSolutions (Australasia) Limited (Thales) for a survey of the proposed West Whiptail-1 location for Esso Australia Pty Ltd (Esso) in Bass Strait offshore Victoria and North Tasmania.

The site survey area is located in the Gippsland Basin, approximately 15km offshore south of the Victorian coast and approximately 15km west-southwest of the Barracouta Platform (Figure 6).

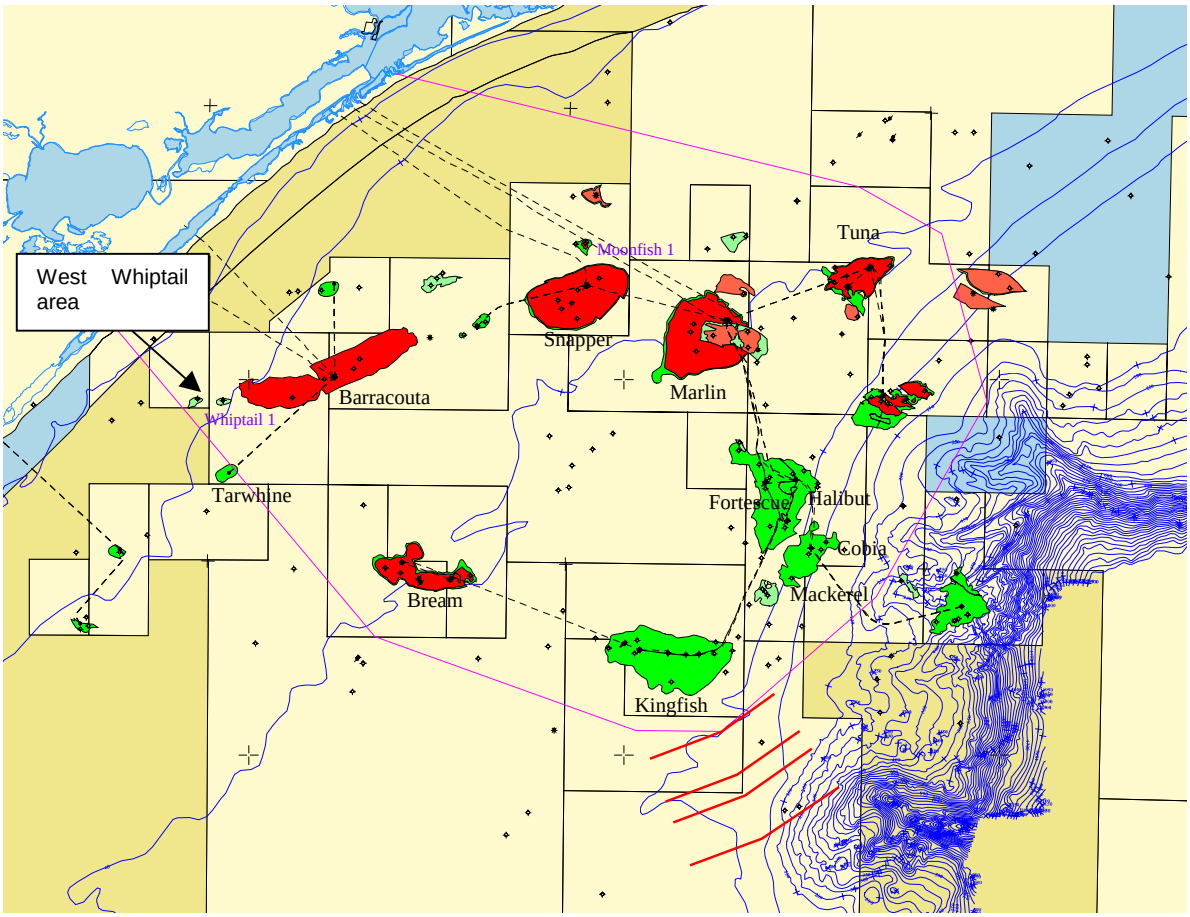


Figure 6: Location of the West Whiptail-1 site survey area.

All survey requirements and operating procedures were undertaken in accordance with the agreement between Thales and Esso. The survey was undertaken to investigate the suitability of the area for the positioning of a jackup drilling rig.

The survey vessel FTV Bluefin, was used to conduct the survey. All necessary survey positioning, geophysical and geotechnical equipment were installed and calibrated prior to the commencement of and during the survey. A Trimble Series 4000 Global Positioning System (GPS) receiver was used in conjunction with Thales' SkyFix/SkyFix Spot Differential GPS and associated equipment to provide on-line positioning. An ODOM MKIII single beam echo sounder, dual frequency GeoAcoustics side scan sonar and EG&G 230 boomer sub-bottom profiling systems with CODA data logging were used for geophysical data acquisition.

The survey site consisted of a 2.0km by 2.0km square area centred on the proposed West Whiptail-1 location (Figure 7). Esso provided the following coordinates for this project:

Proposed West Whiptail-1 Location

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Easting : 544 117.00m
Northing : 5 758 036.00m

Corners of the West Whiptail-1 Site Survey Area

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Easting (m)	Northing (m)
543 117.00	5 759 036.00
545 117.00	5 759 036.00
545 117.00	5 757 036.00
543 117.00	5 757 036.00

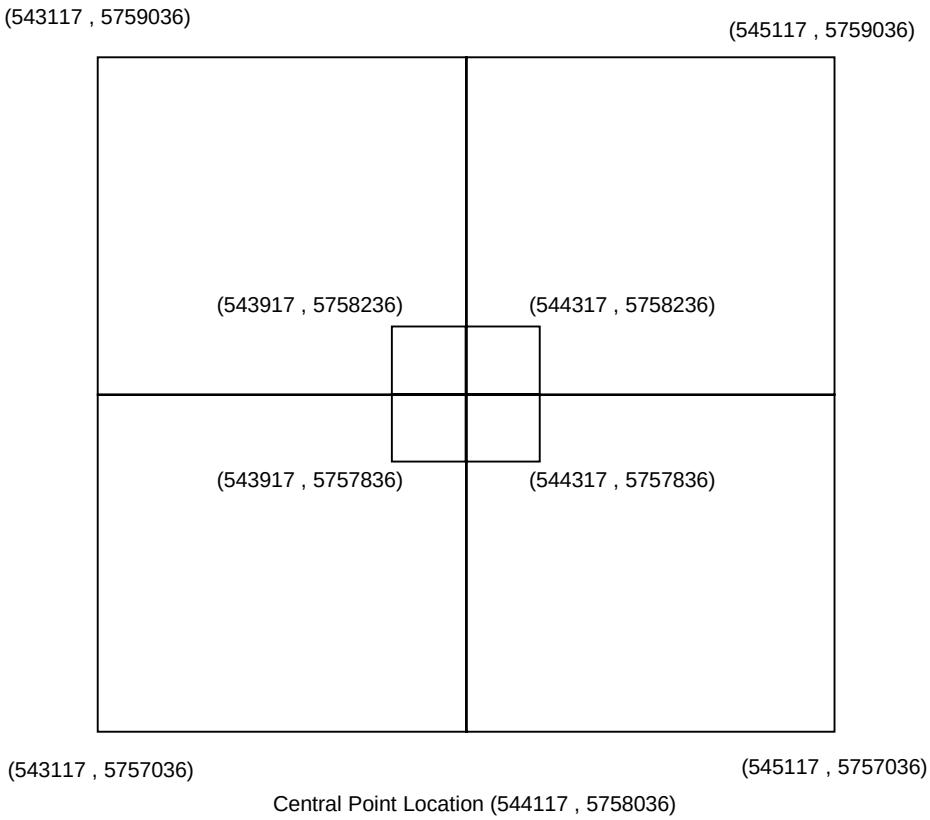


Figure 7: West Whiptail-1 site survey boundaries.
Datum: GDA94, Projection: MGA Zone 55, CM 147° East.

The survey consisted of twenty one 2.0km and five 0.6km primary lines, on an orientation of 090°/270° with a line spacing of 100m and 50m respectively. The cross lines consisted of nine 2.0km cross lines with nine 0.6km infill cross lines, on an orientation of 000°/180° with 250m spacing and 50m spacing respectively. The full suite of geophysical equipment consisting of echo sounder, side scan sonar and sub-bottom profiler (boomer) was operated simultaneously on all lines.

A total of 68.4 line kilometres were surveyed for this project.

Seabed sampling was successfully undertaken at two locations near the proposed West Whiptail-1 location, the results of which have been used to ground truth the geophysical data.

The survey was carried out on 28 October 2003.

All times are quoted in Australian Eastern Daylight Saving Time (UTC + 11 hours).

5. SCOPE OF WORK AND PRODUCTION SUMMARY

5.1 SCOPE OF WORK

Thales was contracted by Esso to provide personnel, positioning, single beam bathymetry, side scan sonar and sub bottom profiling systems for the site survey at the proposed West Whiptail-1 location.

The project requirements were as follows:

- Mobilise the vessel Bluefin at the AMC Wharf Beauty Point, Tasmania.
- Perform static, dynamic calibrations and checks on positioning systems prior to start of survey operations.
- Perform side scan sonar dynamic position checks.
- Provide positioning, single beam bathymetry, side scan sonar and sub bottom profiling services during site survey operations at the proposed West Whiptail-1 location.
- Provide gravity drop corer and grab sampler systems for seabed sampling.
- Demobilise the vessel Bluefin at the AMC Wharf Beauty Point, Tasmania.
- Compile a comprehensive report on the survey, processing and interpretation of the data collected.

5.2 PRODUCTION SUMMARY

Date	Lines completed	Daily Distance (km)	Total Distance (km)	Percentage Complete (%)
28 October 2003	P1-P29, X1-X18	68.4	68.4	100

Two gravity cores were successfully collected on 28 October 2003.

5.3 DISCUSSION

The survey objectives were achieved at the completion of the survey, although strong cross-course current was experienced during the survey of the primary (north-south) lines.

Three whales were sighted in the survey area at 1147 on 28 October 2003 and the recommended Thales Environmental Policy as laid out in the Thales Safety Management Plan was followed immediately.

6. OPERATIONS

6.1 SUMMARY OF EVENTS

The events that occurred between mobilisation of the equipment on the survey vessel to demobilisation of the equipment are summarised in this section of the report. An example is given below:

The Bluefin commenced mobilisation at the AMC Wharf on 23 October 2003, initially on contract to Origin Energy Resources, before conducting the West Whiptail-1 and West Moonfish-1 site surveys for Esso Australia Pty Ltd, in Gippsland Basin, Bass Strait, offshore Victoria.

Mobilisation of the vessel Bluefin was conducted at the Australian Maritime College (AMC) Wharf, Beauty Point, Tasmania.

A vessel induction, pre-mobilisation safety meeting including a JSA for the mobilisation was conducted for the Thales and Bluefin personnel on arrival at the vessel. The safety and induction meeting commenced at 0900 on 23 October 2003.

Mobilisation of Thales equipment began at 0918 on 23 October 2003. A static Differential GPS calibration and side scan sonar rub tests were completed. At 2020 Thales personnel suspended mobilisation for the evening.

At 0700 on 24 October 2003 mobilisation recommenced. SVP tests, echo sounder bar check, gyrocompass calibration, boomer wet test and rub test on backup side scan sonar were completed by 1742.

At 1852 on 24 October 2003 the vessel departed the AMC Wharf and conducted a dynamic Differential GPS check at the Shear Reef and Middle Bank navigation beacons before commencing transit to the Origin site arriving at 0520 on 25 October 2003.

Upon arrival at the Origin location a dynamic side scan sonar calibration was conducted between 0621 and 0826 on 25 October 2003.

The vessel was contracted to Origin Resources until 0130 on 26 October 2003, at this time the vessel commenced transit to Sealers Cove arriving at 1020 on 26 October 2003 to take shelter from weather. The vessel transited from Sealers Cove to the West Whiptail-1 site survey area at 1700 and arrived at 2342 on 27 October 2003.

Analogue data acquisition commenced at 0110 and was completed by 2017 on 28 October 2003. Seabed samples were acquired from the West Whiptail-1 site survey area from between 2104 and 2133.

Vessel commenced transit to West Moonfish-1 at 2145 on 28 October 2003 and arrived at 0040 on 29 October 2003.

Analogue data acquisition commenced at 0133 and was suspended at 0745 on 29 October 2003 due to poor data quality caused by increasing weather conditions. The vessel commenced transit to Sealers Cove for shelter at 0815 arriving at 2020.

Vessel departed Sealers Cove at 0730 and arrived at the West Moonfish-1 location at 1600 on 30 October 2003. Vessel was on weather standby from 1609 to 1815. Data acquisition commenced at 1853 on 30 October 2003 and was completed at 1230 on 31 October 2003. Seabed samples were acquired from the West Moonfish-1 site survey area between 1321 and 1341 on 31 October 2003.

Commenced running cross lines over existing pipeline at 1402 and abandoned operations at 1422 due to increasingly bad weather.

Vessel commences transit back to Beauty Point at 1426 on 31 October 2003. During transit back to Beauty Point a Dynamic Differential GPS check was carried out from 1548 to 1603 on 1 November 2003 using Orari Bank navigation beacon. Vessel arrived alongside AMC Wharf at 1622 on 1 November 2003.

De-mobilisation commenced from 1630 to 2000 when Thales personnel suspended the de-mobilisation for the night. At 0700 on 2 November 2003 de-mobilisation recommenced and was completed at 1000, after which Thales personnel departed for Perth.

6.2 OPERATIONAL DIFFICULTIES ENCOUNTERED

Strong cross-course current caused significant deviation of the primary lines during the survey.

No other significant operational difficulty was encountered during the project.

6.3 WEATHER CONDITIONS DURING THE SURVEY

The following table summarises the weather conditions experienced during the survey. Copies of the Bluefin daily bridge logs are given in Appendix Q.

		Wind			
Date & Time		**Direction**	**Force**	**Sea state**	**Comments**
28 October 2003	0600	W	4	Calm, low swell	Arrive on location.
28 October 2003	1200	Various	2	Low swell, overcast, clear	
28 October 2003	1900	SE	1	Calm, low swell	
28 October 2003	2100	Various	1	Calm, flat sea	
28 October 2003	2145	Various	1	Calm, flat sea	Depart location.

Note: Wind force is referenced to the Beaufort scale.

7. NAVIGATION REPORT

7.1 BASE STATION SURVEY AND DESCRIPTION

During the survey operations the following Differential GPS reference stations were used to derive vessel positions:

- Melbourne
- Sydney
- Adelaide

The description of these stations is included in Appendix S and the coordination method is given in Appendix T.

Multipath audit results for these stations are included in the project CD.

7.2 NAVIGATION EQUIPMENT

7.2.1 GNS2

GNS2 (General Navigation System) is Thales' third generation of On-line Navigation Survey Control software. It has been written by Thales' Software Support Group in C++ for operation under Windows® 95 or Windows® 98 or Windows® NT. GNS2 adheres to the operation and dialogue conventions of the Microsoft Windows® environment. Attention has been paid to preserving a consistent operator interface, while at the same time modifying individual dialogue boxes to reflect specific logical circumstances. It has been designed for operation with a pointing device such as a mouse or a tracker ball but control can still be effected in case of the absence or failure of such a device.

The program has the ability to accommodate a large number and variety of mobiles, including surface vessels/ships, anchor handling vessels, tugs, barges, ROVs, towfish, aircraft, vehicles and submersibles etc. The only limiting factors on the number of mobiles that can be tracked in GNS2 are the number of input/output serial communication ports available on the computer and the computer's memory.

For the input/output (I/O) of navigation and sensor data, GNS2 employs intelligent multi-channel serial communications boards to expand a computer's serial input/output facility. Currently GNS2 can support up to 26 communication (Comm) ports, which would consist of the computer's two internal Comm ports and three 8 channel serial communications boards fitted in the computer's internal expansion slots.

If Least Squares Computations (LSCs) are employed for positional calculations, whether two-dimensional (2D), three-dimensional (3D) or altitude aided, GNS2 uses standard iteration routines for the minimisation of residuals using 'variation of co-ordinate' algorithms. The number of positioning systems/computations that GNS2 can handle, is only limited by the number of I/O serial communication ports available on the computer and the computer's memory.

All input observable are accepted on interrupt. Screen updates and other internal triggers are paced to once per second but time critical activities occur at discrete moments as required.

The GNS2 application workspace can extend beyond the display area, which is normally restricted to a single monitor connected to the computer. By using one or more multiple VGA cards, an enlarged display area can spread across multiple monitors.

Currently GNS2 can display 14 different types of view windows. Several copies of the same type of view window can be invoked at any one time. This may be required when several mobiles are being tracked and a Plan, Helmsman's or Bullseye display are required for each one or when the data on several Comm ports are to be viewed simultaneously. Each window can be individually sized to optimise use of the available display area.

GNS2 can be operated in 2 modes; GNS2 Master or GNS2 Remote. GNS2 Master has the full functionality of GNS2. GNS2 Remote is run on a separate computer and allows independent configuration of the graphics display and its associated numeric information. GNS2 Remote is operated on Anchor Handling Vessels or anywhere where positional information is required. (eg. Vessel Masters, ROV Pilots, Winch Control Stations). The link between GNS2 Master and GNS2 Remote can be via a telemetry link or hard wired cable.

7.2.2 Global Positioning System (GPS)

System Description

The NAVSTAR GPS (Navigational Satellite Timing and Ranging Global Positioning System) is a USA Military all-weather, space-based positioning system that transmits signals from a constellation of satellites orbiting the Earth. It is capable of providing suitably equipped users worldwide with accurate three-dimensional positions on, or near, the Earth's surface. The accuracy of these determined positions can vary from a few millimetres to several 10's of metres depending on the GPS receiver and on the method of data acquisition and processing. System design consists of three integrated parts: the Ground Control Segment, the Space Segment and the User Segment.

The operational space segment consists of 24 production satellites and 3 active spares; the term Space Vehicle (SV) is used as a synonym for satellite. The satellites are in high orbits, at approximately 20,200km, having an orbit period of 12 hours. They are arranged in 6 orbital planes, inclined at 55 degrees with near circular orbits. The configuration provides complete 4-satellite (3D) coverage worldwide.

GPS Observations

There are two important types of GPS observations (observables): Pseudo-range and Carrier Phase. Carrier phase is sometimes also referred to as carrier beat phase. Pseudo-range techniques are generally used for navigation. In high-precision baseline surveying the carrier phase is used. Although the (undifferenced) phase can be used directly, it has become common practice, at least in surveying applications, to process certain linear combinations of the original carrier phase observations (double differences and triple differences).

Pseudo-ranges

The pseudo-range is a measure of the distance between the satellite and the receiver at the epochs of transmission and reception of the signals. The transit time of the signals is measured by comparing (correlating) identical pseudo-random noise (PRN) codes generated by the satellite and by the receiver. A code-tracking loop within the receiver shifts the internal replica of the PRN code in time until maximum correlation occurs. The codes generated at the receiver are derived from the receiver's own clock, and the codes of the satellite transmissions are generated by the satellite system of clocks. It follows that unavoidable timing errors in both the satellite and the receiver clock will cause the measured quantity (pseudo-range) to differ from the geometric distance.

Where instantaneous positions are required, pseudo-range is the preferred observable. Given the satellite ephemeris (i.e. the position of the satellite at the epoch of transmission), there are seven unknowns: two clock errors, three receiver co-ordinates and the ionospheric and tropospheric delays. The effect of the satellite clock error is negligible for the typical navigation solution, particularly considering that the time errors are indistinguishable from the ionospheric and tropospheric delays. The satellite clocks are constantly monitored and synchronised with GPS time as maintained by the control centre. Actual offsets of the satellite clocks are approximated by polynomials in time and transmitted as part of the navigation message to the user for the correction of the measured pseudo-ranges. The ionospheric and tropospheric delays can be computed on the basis of ionospheric and tropospheric models, thus there are four unknowns left X, Y, Z and receiver clock error. These can be determined from four pseudo-ranges measured simultaneously to four GPS satellites.

Carrier Phase

The phase observable is the difference between the phase of the carrier signal of the satellite, measured at the receiver, and the phase of the local oscillator within the receiver at the epoch of measurement. This can be regarded as a biased range measurement of the satellite-receiver distance with the integer number of carrier waves being unknown. The wavelength of the L1 carrier is about 19cm. Because of the fraction of the carrier phase is measured, the term "interferometry" is often used to describe carrier phase techniques.

7.2.3 SkyFix/SkyFix Spot Differential GPS (DGPS)

Differential GPS (DGPS)

GPS is primarily a USA Defence space-based positioning system capable of operating worldwide and in all weather conditions. The USA Military can degrade the accuracy of GPS with the use of Selective Availability (SA) to control the accuracy of Pseudo-range measurements. Essentially, the user is given a false Pseudo-range for each satellite so that the resulting measurement is in error by a controlled amount. On the 1 May 2000 SA was discontinued conditionally and coincided with the successful demonstration of the ability to selectively deny GPS signals on a regional basis. SA has been set to zero and can be reinstated during periods of heightened global tension.

GPS signals are affected by several sources of positional bias, the largest of which was SA. The remaining biases of the ionosphere, the troposphere, time, satellite ephemeris and inherent reciever noise also give rise to substantial bias of position.

Differential GPS is a means by which the civil user can improve the accuracy and quality of GPS to the 1-3 metre level. It requires a receiver be located at a precisely known point from which pseudo-range corrections for each satellite can be determined and monitored. These pseudo-range corrections are then communicated by means of a telecommunications link to users at unknown locations. In the relative mode, most of the important systematic errors common to the known station and at the unknown location cancel out to improve the accuracy of the computed position.

SkyFix/SkyFix Spot Differential

SkyFix

Thales GeoSolutions (Australasia) Limited introduced its SkyFix Differential GPS System in Australia in February 1991, using the Inmarsat Pacific and Indian Ocean marine communications satellites as the differential data broadcast link. Extensive performance trials and projects undertaken to date have shown SkyFix to meet the best industry expectations in terms of quality of service and accuracy.

Satellite communications systems, particularly at the Inmarsat L-band frequencies of 1.5 GHz are reliable and free of the interference associated with the crowded MF/HF bands. This high data integrity gives users confidence that the corrections will be continuously received without interference.

The SkyFix Australian network comprises of reference stations at Dampier, Broome, Perth, Adelaide, Melbourne, Sydney, Cairns and Darwin.

SkyFix Spot

The SkyFix Spot Differential GPS System was launched in Australia in December 1994, using the OPTUS high powered focused communications satellite as the differential data broadcast link. Projects undertaken to date have shown SkyFix Spot to meet the industry expectations in terms of quality of service and accuracy.

The SkyFix Spot system has a link capacity of 1200 bits per second, similar to the SkyFix system but because it is only transmitting corrections from the Australian network an update rate of better than five seconds is achieved.

The OPTUS satellite uses the L-band frequencies of 1.5586 GHz and are very reliable and free of interference avoiding data loss associated with the crowded MF/HF bands.

The SkyFix Spot network comprises of reference stations at Dampier, Broome, Perth, Adelaide, Melbourne, Sydney, Cairns, Darwin, Alice Springs and also Ujung Pandang and Jakarta in Indonesia and Wellington, New Zealand.

The differential corrections generated at each reference station are brought via landline links to the data hub and control centre in Singapore, where the system is monitored for performance and quality. From there, a composite message containing full RTCM 104 version 2 formatted data from all reference stations are sent via dual redundant links to Satellite Earth Stations at Sentosa Island, Singapore, O.T.C. Perth, Western Australia and OPTUS, Perth, Western Australia, for uplink and broadcast over the Inmarsat Pacific and Indian Ocean Region satellites and the OPTUS Satellite.

The SkyFix/SkyFix Spot system includes a 24 hour monitoring facility to ensure the validity of data received at the control centre from the Differential GPS reference stations, and that the same data are received over the SkyFix/SkyFix Spot satellite data link.

7.2.4 Trimble Series 4000 GPS Receiver

The Trimble Series 4000 GPS receiver is designed for moderate precision static and dynamic positioning applications. The GPS receiver provides time and three-dimensional station co-ordinates at a once-per-second update rate.

The receiver receives the civilian coded signal (C/A) from the GPS NAVSTAR satellites. The receiver automatically acquires and simultaneously tracks GPS satellites and precisely measures code phase and computes position and velocity.

Latitude, longitude and height values are output on the World Geodetic System (WGS 84) Earth-centred, Earth-fixed co-ordinate system.

The receiver is designed to measure the following observables:

- Coarse/Acquisition (C/A) code Pseudo-ranges
- Rate of change of Pseudo-range
- Integrated Carrier

C/A code correlation techniques measure the propagation time of the signal from the satellite to the antenna. Latitude, longitude, height and time can be determined from measurements made from at least 4 satellites, by a process similar to triangulation.

To determine speed and heading, the receiver calculates the rate of change of Range (the range-rate) by measuring the Doppler shift of the carrier.

It is capable of receiving and processing differential corrections from other reference sources using the standard format of the Radio Technical Commission for Maritime Services, Special Committee 104 (RTCM SC-104), Version 1.0 or 2.0 protocols.

The Trimble Series 4000 GPS receiver has several options available, including internal data logging memory, event marker logging etc. and therefore may be used alone or as part of a more extensive navigation system.

7.2.5 MultiFix 3

System Overview

MultiFix 3 is Thales GeoSolutions (Australasia) Limited third generation *multiple reference station* differential GPS (DGPS) real time position computation and quality control program. It is an integral part of the Thales SkyFix Premier service but can also be used with the standard SkyFix service. MultiFix 3 has more advanced features than its predecessor, MultiFix 2, including being able to use dual frequency receivers and form real time 'Iono-Free DGPS position solutions'.

MultiFix 3 is one of a series of programs available under the group name Zero, which includes other tools and utilities with a similar user interface and layout structure, like static and dynamic position comparison programs, a correction monitor program, a terminal program and a replay utility.

MultiFix 3 takes in Almanac, Ephemeris and Raw Code and Carrier measurements from a single or dual frequency GPS receiver (or, for replay, from logged files). It takes in RTCM SC104 Version 2 differential correction messages from one or more RTCM correction delivery systems. It also takes in RTCM Type 15 or Thales Proprietary RTCM Type 55 Ionospheric range corrections generated at selected SkyFix Premier reference stations and broadcast via the Thales global network of high (SkyFix Spot-Optus) and low (SkyFix-Inmarsat) power satellite based L-Band beams.

Key features of the program are:

- No limit on the number of RTCM correction delivery systems (data links)
- No limit on the number of RTCM differential reference stations
- No limit on the number of computations (solutions)
- Each computation can employ corrections from any combination of reference stations available
- Computations are weighted least squares with statistical evaluation based upon the UKOOA recommendations
- No limit on the number of outputs
- No limit on the number of view windows
- View windows can be customised
- Extra NMEA outputs can be defined
- TCP/IP communication via sockets for GPS, RTCM and position data transfer between networked computers

MultiFix 3 has been designed in a modular fashion such that data is passed between modules as if over a computer network. The core module MultiFix 3 performs the computation of position. Additional modules are available and more will be made available in the future. While a single computer can be used, the various modules will equally be able to be run on different computers, provided there is a network interconnection.

MultiFix 3 uses the EGM96 geoid/spheroid separation model.

The RTCM corrections that are generated at reference stations are contaminated by a variety of error components, one of which is Ionospheric delay. The Ionospheric delay is currently more variable because of greater sun spot activity. MultiFix 2 and MultiFix 3's standard computation uses the Klobuchar Ionospheric delay model. This model is updated periodically but is not responsive to the current short-term variability. MultiFix 3 has an additional calculation option when working with dual frequency receivers and in receipt of Type 15 or 55 RTCM messages. With dual frequency receivers, estimates can be made of the Ionospheric delay by examining the differences between the measurements from the two frequencies. If the same procedure for estimation of Ionospheric delay is performed at the reference stations and on the mobile, both the RTCM corrections and the pseudo-ranges can have the Ionospheric delay removed, effectively providing an Iono-Free DGPS

position solution.

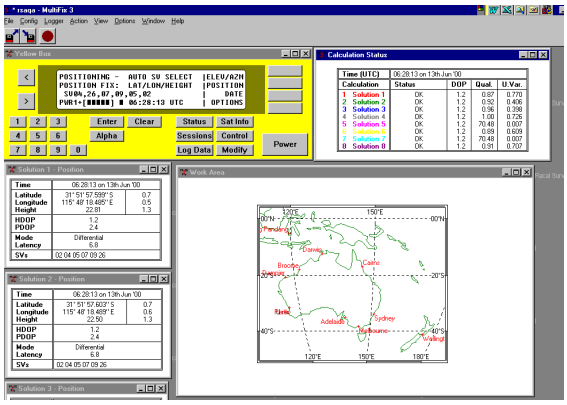
Hardware Requirements

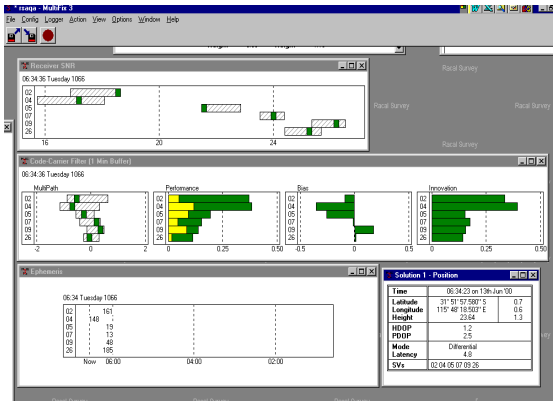
Optimum requirements for MultiFix 3 are:

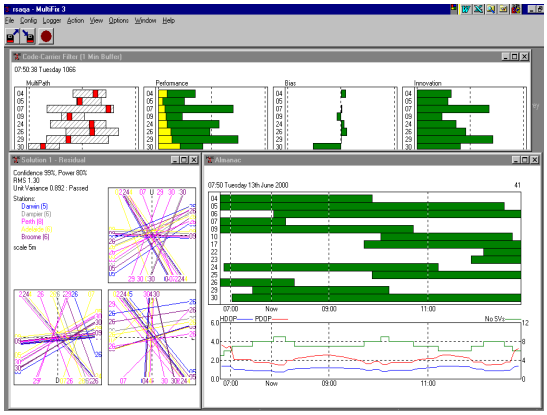
- 350 MHz Pentium II computer
- 32 Mb RAM
- Windows 95, 98 or NT operating system
- Graphics resolution of at least 800 x 600 pixels
- Intelligent multi-port serial I/O board

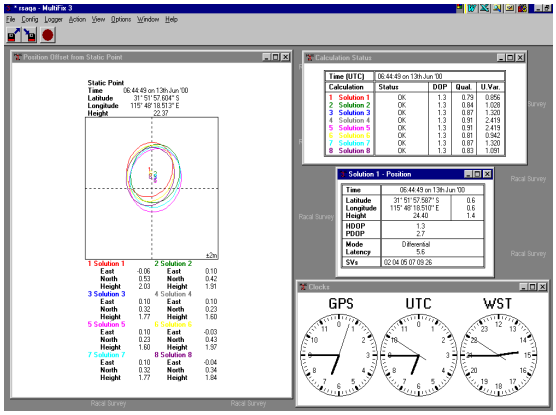
Positioning and Quality Control Displays

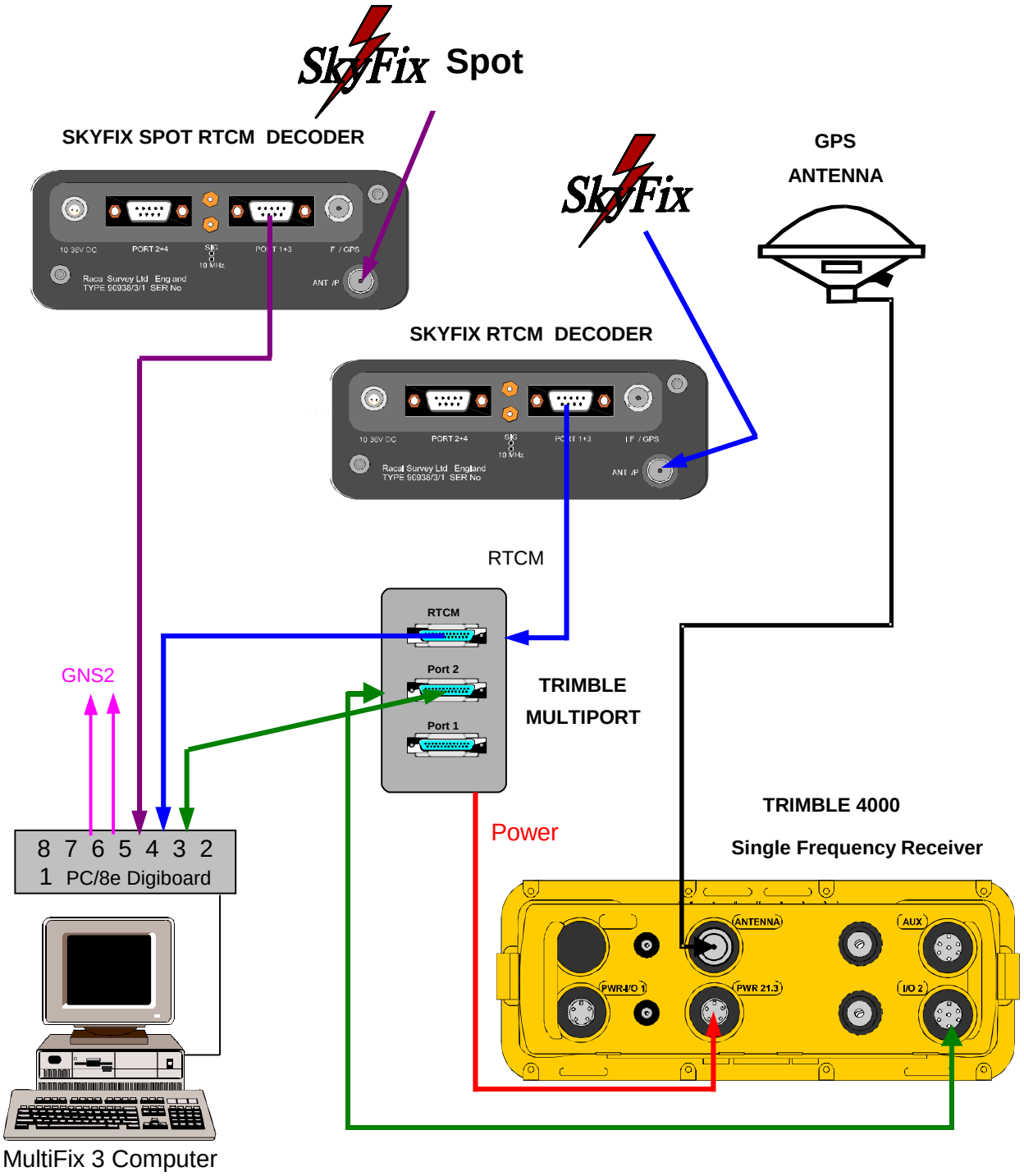
MultiFix 3 has a large number of features to accomodate the user requirements of highly accurate positions with quality control (QC) information and outputs in different formats. MultiFix 3 runs in a Windows environment, which allows the user to design a preferred screen layout by opening, sizing and placing the numerous displays that are available. Examples of the various displays can be found below.











Typical MultiFix 3 Interconnection With Trimble 4000 GPS Receiver

7.2.6 S.G. Brown 1000S GyroCompass

The S.G. Brown 1000S Gyrocompass is a compact, simple-to-operate master heading reference instrument employing the effect of gravity and the earth's rotation to produce a True North reference. This reference may be read off the compass card or from a digital display and can be interfaced to the GNS2 navigation system.

The normal starting cycle of the instrument is fully automatic and is initiated when the system power supply is switched on. A fail safe control circuit is incorporated which ensures that the compass is not damaged after a power failure when power is restored; the compass will restart automatically and carry out its normal settling program.

7.2.7 SG Brown Meridian Surveyor Gyrocompass

The SGB Meridian Surveyor Gyrocompass is a compact, simple-to-operate master heading reference instrument employing the effect of gravity and the earth's rotation to produce a True North reference. This reference may be read from a digital display and can be interfaced to a navigation system.

The normal starting cycle of the instrument is fully automatic and is initiated when the system power supply is switched on. A fail safe control circuit is incorporated which ensures that the compass is not damaged after a power failure when power is restored; the compass will restart automatically and carry out its normal settling program.

Among the standard features of the Meridian Surveyor are:

- A maximum of 45 minute settling time to within 0.7° of the meridian.
- Operation from a 12V DC electrical supply.
- Latitude and speed can be input manually or via GPS input.

System specifications are as follows:

Power Supply	:	24DC (acceptable range 18V – 36V DC) 3Amp at power-on.	
Performance	:	Static accuracy	< 0.1° secant latitude.
		Dynamic accuracy	< 0.6° secant latitude.
		Repeatability	< 0.25° secant latitude.
		Max rate of turn	200° per second.
		Time to settle within 0.7°	< 45 minutes.
		Latitude operating range	80° north to 80° south.
		Speed range	0 to 90 knots.
		Operating environment	0°C to 45°C -15°C to +55°C (reduced accuracy).
Dimensions	:	344mm(H) x 267mm (W) x 440mm(D).	
Weight	:	15.5kg.	

7.3 NAVIGATION EQUIPMENT CALIBRATION AND CHECKS

7.3.1 Gyrocompass Calibration

The S.G. Brown and Meridian survey gyrocompasses were calibrated at 0831 on 24 October 2003. Calibration of the survey gyrocompass was performed using total station observations, while the Bluefin was alongside the Australian Maritime College (AMC) Wharf, Beauty Point, Tasmania.

Survey Mark AMC5 on the AMC Wharf was occupied by total station. The observed reference object was Survey Mark AMC4 on the AMC Wharf. A series of horizontal angles and distances were measured to reflective prisms located along the centreline of the vessel, at the bow and stern. Simultaneous survey gyrocompass observations were recorded within the Thales GNS2 software. The gyrocompass Calculated minus Observed (C-O) was reset to zero before commencing logging data to file.

The vessels Calculated (C) heading was compared to the Observed (O) survey gyrocompass heading to determine the gyrocompass C-O. The gyrocompass C-O was entered into GNS2 and used throughout the site survey campaign. The results of the calibrations are tabulated below.

Control Point Coordinates

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Control Mark	Easting (m)	Northing (m)
AMC5	485 300.18	5 443 626.90
AMC4	485 344.21	5 443 638.87

Primary Observations

Date: 24 October 2003 Instrument Station: AMC5
Backsight: AMC4
Backsight Observation (DMS): 0° 00' 00"

Time (hh:mm:ss)	Observation Point	Observed Bearing	Observed Distance (m)	Observed (O) True Heading
08:31:36	Bow	315° 47' 50"	76.638	341.20°
08:32:07	Stern	339° 44' 28"	61.480	341.20°
08:32:42	Bow	315° 47' 43"	76.631	341.20°
08:33:14	Stern	339° 44' 18"	61.480	341.20°
08:33:37	Bow	315° 47' 37"	76.634	341.20°
08:34:00	Stern	339° 44' 22"	61.489	341.20°
08:34:22	Bow	315° 47' 47"	76.636	341.20°
08:34:45	Stern	339° 44' 30"	61.489	341.20°
08:35:08	Bow	315° 47' 50"	76.636	341.20°
08:35:40	Stern	339° 44' 33"	61.484	341.20°
08:36:04	Bow	315° 47' 28"	76.630	341.20°
08:36:28	Stern	339° 44' 40"	61.484	341.20°
08:36:53	Bow	315° 47' 39"	76.625	341.20°
08:37:17	Stern	339° 44' 48"	61.479	341.20°
08:37:55	Bow	315° 47' 38"	76.625	341.20°
08:38:18	Stern	339° 44' 54"	61.487	341.20°
08:38:37	Bow	315° 47' 56"	76.626	341.20°
08:39:00	Stern	339° 44' 44"	61.483	341.20°

Time (hh:mm:ss)	Observation Point	Observed Bearing	Observed Distance (m)	Observed (O) True Heading
08:39:27	Bow	315° 47' 40"	76.622	341.20°
08:39:54	Stern	339° 44' 38"	61.480	341.20°

Results

Calculated (C) Vessel Heading (True)	Observed (O) Survey Gyrocompass (True)	C-O
340.04°	341.20°	-1.16°
340.03°	341.20°	-1.17°
340.01°	341.20°	-1.19°
340.02°	341.20°	-1.18°
340.03°	341.20°	-1.17°
340.01°	341.20°	-1.19°
340.02°	341.20°	-1.18°
340.00°	341.20°	-1.20°
340.02°	341.20°	-1.18°
340.01°	341.20°	-1.19°
	Mean	**-1.18°**

The mean gyrocompass C-O = -1.18° was entered into the GNS2 configuration parameters.

Secondary Observations

Date: 24 October 2003 Instrument Station: AMC5
Backsight: AMC4
Backsight Observation (DMS): 0° 00' 00"

Time (hh:mm:ss)	Observation Point	Observed Bearing	Observed Distance (m)	Observed (O) True Heading
08:31:36	Bow	315° 47' 50"	76.638	339.30°
08:32:07	Stern	339° 44' 28"	61.480	339.30°
08:32:42	Bow	315° 47' 43"	76.631	339.30°
08:33:14	Stern	339° 44' 18"	61.480	339.30°
08:33:37	Bow	315° 47' 37"	76.634	339.20°
08:34:00	Stern	339° 44' 22"	61.489	339.30°
08:34:22	Bow	315° 47' 47"	76.636	339.30°
08:34:45	Stern	339° 44' 30"	61.489	339.30°
08:35:08	Bow	315° 47' 50"	76.636	339.30°
08:35:40	Stern	339° 44' 33"	61.484	339.30°
08:36:04	Bow	315° 47' 28"	76.630	339.30°
08:36:28	Stern	339° 44' 40"	61.484	339.30°
08:36:53	Bow	315° 47' 39"	76.625	339.20°
08:37:17	Stern	339° 44' 48"	61.479	339.30°
08:37:55	Bow	315° 47' 38"	76.625	339.20°
08:38:18	Stern	339° 44' 54"	61.487	339.20°
08:38:37	Bow	315° 47' 56"	76.626	339.20°
08:39:00	Stern	339° 44' 44"	61.483	339.20°
08:39:27	Bow	315° 47' 40"	76.622	339.20°
08:39:54	Stern	339° 44' 38"	61.480	339.20°

Results

Calculated (C) Vessel Heading (True)	Observed (O) Survey Gyrocompass (True)	C-O
340.04°	339.30°	0.74°
340.03°	339.30°	0.73°
340.01°	339.25°	0.76°
340.02°	339.30°	0.72°
340.03°	339.30°	0.73°
340.01°	339.30°	0.71°
340.02°	339.25°	0.77°
340.00°	339.20°	0.80°
340.02°	339.20°	0.82°
340.01°	339.20°	0.81°
	Mean	**0.76°**

The mean gyrocompass C-O = +0.76° was entered into the GNS2 configuration parameters.

The printouts for the pre-survey gyrocompass calibration are located in Appendix D.

7.3.2 Static Differential GPS Check

A static check of the SkyFix/SkyFix Spot Differential GPS was carried out at 1917 on 23 October 2003 while the Bluefin was alongside the AMC Wharf.

Survey Mark AMC5 on the AMC Wharf was occupied by total station. The observed reference object was Survey Mark AMC4. A series of horizontal angles and distances were measured to the vessel datum (echo sounder transducer pole) installed onboard the Bluefin. Simultaneous Differential GPS position fixes were recorded within Thales GNS2 software.

The calculated datum position was then compared to the observed datum position to provide verification of the Differential GPS positioning system. The results of the static Differential GPS check are tabulated below.

Control Point Coordinates

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Control Mark	Easting (m)	Northing (m)
AMC5	485 300.18	5 443 626.90
AMC4	485 344.21	5 443 638.87

Results

Date : 23 October 2003
Instrument Station : AMC5
Backsight Station : AMC4

Time (hh:mm:ss)	Calculated Coordinates		Observed DGPS Coordinates		Linear Misclose (m)
	Easting (m)	Northing (m)	Easting (m)	Northing (m)	
19:17:10	485 353.15	5 443 670.25	485 352.85	5 443 670.88	0.69
19:18:12	485 353.21	5 443 670.25	485 352.91	5 443 670.68	0.52
19:19:35	485 353.19	5 443 670.25	485 352.67	5 443 670.80	0.76
19:20:39	485 353.17	5 443 670.27	485 352.60	5 443 670.77	0.76
19:21:50	485 353.20	5 443 670.26	485 353.07	5 443 671.17	0.92
19:23:40	485 353.18	5 443 670.27	485 353.51	5 443 670.92	0.73
19:24:20	485 353.18	5 443 670.26	485 353.58	5 443 670.49	0.46
19:24:45	485 353.18	5 443 670.26	485 353.58	5 443 670.24	0.40
19:25:15	485 353.17	5 443 670.27	485 353.60	5 443 670.09	0.46
19:25:45	485 353.19	5 443 670.27	485 353.56	5 443 670.27	0.37
				Mean	**0.61**

Mean Linear Misclosure = +0.61m

Printouts of the static Differential GPS checks are located in Appendix E of this report.

7.3.3 Dynamic GPS Systems Check

A dynamic GPS systems check was carried out at 1548 on 1 November 2003 in Beauty Point.

Navigation Beacon Orari Bank was circumnavigated and position fixes logged when the vessel was perpendicular to the beacon.

The four position fixes were intersected to calculate an observed position of the beacon. This observed beacon position was compared to the known beacon position and the difference in positions was computed to determine the systems confidence check. The results of the Differential GPS dynamic systems check are tabulated below:

Results

Date : 1 November 2003

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

	Easting (m)	**Northing (m)**
Known Orari Bank Beacon Location	485 623.68	5 445 204.38
Calculated Orari Bank Beacon Location	485 628.94	5 445 204.10
Difference in Position	-1.26	+0.28

Position linear misclose is 1.29m.

Printouts of Differential GPS dynamic check is located in Appendix G of this report.

7.4 GEODETIC PARAMETERS

The datum for coordinates determined by Thales' SkyFix and SkyFix Spot Differential GPS are referenced to International Terrestrial Reference Frame 2000 (ITRF2000). The datum for coordinates listed in this report are referenced to the Geocentric Datum of Australia 1994 (GDA94).

7.4.1 ITRF2000 Datum and Projection

Datum	:	**ITRF2000 (Epoch 1997.0)**
Ellipsoid/Spheroid	:	Geodetic Reference System 1980 (GRS80)
Semi-major Axis (a)	:	6 378 137.000m
Semi-minor Axis (b)	:	6 356 752.314m
Eccentricity Squared (e^2)	:	0.006 694 380
Flattening ($^1/_f$)	:	298.257 222 101
Projection Name	:	**Universal Transverse Mercator (UTM)**
Projection Type	:	Universal Transverse Mercator (UTM)
UTM Zone	:	55 South
Central Meridian (CM)	:	147° East
Scale factor on the CM	:	0.9996
False Easting	:	500 000m
False Northing	:	10 000 000m
Latitude of Origin	:	0° (Equator)
Unit of Measure	:	International Metre

Note: The WGS84 datum and the ITRF2000 datum are consistent in the order of a few centimetres and are considered to be the same.

7.4.2 GDA94 Datum and Projection

Datum	:	**Geocentric Datum of Australia 1994 (GDA94)**
Ellipsoid/Spheroid	:	Geodetic Reference System 1980 (GRS80)
Semi-major Axis (a)	:	6 378 137.000m
Semi-minor Axis (b)	:	6 356 752.314m
Eccentricity Squared (e^2)	:	0.006 694 380
Flattening ($^1/_f$)	:	298.257 222 101
Projection Name	:	**Map Grid of Australia (MGA)**
Projection Type	:	Universal Transverse Mercator (UTM)
MGA Zone	:	55
Central Meridian (CM)	:	147° East
Scale factor on the CM	:	0.9996
False Easting	:	500 000m
False Northing	:	10 000 000m
Latitude of Origin	:	0° (Equator)
Unit of Measure	:	International Metre

Note: Where an accuracy of a metre or greater is required, the WGS84 datum and the GDA94 datum are considered to be the same.

7.4.3 Datum Transformation - ITRF2000 to GDA94

From the Geocentric Datum of Australia Technical Manual (Version 2.2) produced by the Inter-governmental Committee on Surveying & Mapping (ICSM), the ITRF2000 datum and the WGS84 datum are consistent at a level in the order of a few centimetres and are considered to be the same. Similarly, where an accuracy of a metre or greater is required, the GDA94 datum and the WGS84 datum are considered to be the same. In January 1994 the GDA94 datum and the ITRF datum were coincident, however the GDA94 datum is moving with the Australian tectonic plate in a North northeastly direction at a rate of approximately 7 centimetres per year.

The following 7-parameter datum transformation was used by Thales' GNS2 software to convert ITRF2000 coordinates to GDA94 coordinates:

Dx	=	0.000m
Dy	=	0.000m
Dz	=	0.000m
Rx	=	0.000"
Ry	=	0.000"
Rz	=	0.000"
Scale	=	0.000 p.p.m.

The sign convention used in Thales' GNS2 software is that used by the US Department of Defence, where a positive rotation about the Z axis is an anti-clockwise movement of the X and Y axes (when viewed from the North Pole looking towards the centre of the Earth).

7.5 NAVIGATION PROCESSING AND DATA QUALITY

7.5.1 Navigation Data Processing

A differentially corrected GPS antenna position was output from Thales' MultiFix 3 computer to the Thales' GNS2 navigation computer. Within the GNS2 software the antenna position data was transformed from the Differential GPS datum (ITRF 2000) datum to the working datum (GDA94) and projections (MGA Zone 55). The vessel datum position (echo sounder) was calculated by applying the offsets from the GPS antenna and using the survey gyrocompass heading. The position of the Bluefin was graphically displayed on the GNS2 computer in the survey module and the GNS2 remote display computer on the bridge along with track guidance lines to cover the line being surveyed. The relevant track guidance information was displayed such as distance offline, bearing to go, true heading, course made good etc. enabled good line keeping to be maintained by the vessels officers.

The GNS2 computer was set to log position data and output a fix mark/position to the geophysical sensors every 30 seconds, whilst the intermediate bathymetric data and corresponding heave, pitch and roll data were logged at 2 second intervals.

The GNS2 software logs the data in the P2/94 format, which is then exported to Thales' charting software CHART X for processing. The navigation data were used to create track plots to facilitate the interpretation of the geophysical data.

7.5.2 Navigation Data Quality

The quality of the navigation data was within specified limitations during the project.

Due to strong cross-current the acceptable tolerance for distance off line was increased from ±10m to ±30m in consultation with the client representative. Distance off line for each line was logged to a custom output file and displayed as a graph on the navigation output to enable the navigator to monitor the vessel's distance from the intended line.

HDOP, PDOP and unit variance were logged in MultiFix 3 and graphed in GNS2. The graphs were displayed on the navigation system and were closely monitored by the navigation operator.

The coordinates of the fixes for each line were logged to a file and before leaving the project area the data was imported into a CAD package, plotted on the screen and checked for any missing lines or data.

There were no significant problems encountered during the project and the navigation system operated as expected.

7.6 NAVIGATION LOG SUMMARY

Primary lines were run in a north-south direction and the cross lines in an east-west direction.

The running of lines commenced at 0110 on 28 October 2003 and was completed at 2023 on 28 October 2003.

The primaries lines and cross lines of the site survey were run first followed by the primary and cross lines of the infill central area.

Line P4 was re-run due to the vessel exceeding significantly the allowable distance offline tolerance of ±10m. However due to the prevailing southwest swell the vessel could not stay on course and, in consultation with the Client Representative, this tolerance was changed to ±30m.

8. SURVEY VESSEL AND EQUIPMENT

8.1 SURVEY VESSEL

The vessel used for the survey was the FTV Bluefin registered in Launceston (Figure 8), Tasmania. Technical specifications of the Bluefin are given in Appendix B.

Figure 8: FTV Bluefin used for the West Whiptail-1 site survey.

The equipment layout on the survey vessel is given schematically in Appendix C.

8.2 EQUIPMENT OTHER THAN NAVIGATION EQUIPMENT

8.2.1 Bathymetry Data Acquisition and Processing

Analogue and digital soundings of the seafloor were obtained using an ODOM MKIII echo sounder with dual frequency 24kHz and 200kHz transducers. The data was corrected for heave using a TSS 335B motion sensor and the digital heave corrected bathymetric data was continuously logged to hard disk (approximately every 0.1 second at site depth). The transducers were mounted onto the starboard side of the vessel and a bar check was carried out prior to commencement of the survey. A draft setting of 1.95m was obtained for the 24kHz transducer and 2.15m was obtained for the 200kHz transducer on 24 October 2003 and entered into the echo sounder (refer Appendix H). A second draft setting of 1.95m was obtained for the 24kHz transducer and 2.15m was obtained for the 200kHz transducer on 1 November 2003, while the survey vessel was tied up at Beauty Point. Data from the 24kHz transducer was used for bathymetry processing and no draft correction was applied during processing.

The GNS2 software recorded mobile files in P2/94 format, which included fix information and all bathymetric data. The mobile files were input to Thales' CHART X data processing system to process vessel position and the bathymetric data. Once input to the CHART X data processing system, a tide file is applied to correct the bathymetric data to Mean Sea Level (MSL).

All soundings have been reduced to Mean Sea Level (MSL) based on the tidal predictions obtained from Esso for the survey area (38° 15' 00" South, 147° 45' 00" East). Tidal reduction tables provided by Esso are given in Appendix N.

The bathymetric soundings are representative of the seafloor topography and are plotted on Drawing No. 3635C1-05 (Scale 1:5000) and contoured at 1m intervals.

The bathymetry data appearing on Drawing No. 3635C1-05 was gridded with a square grid size of 15m and a kriging interpolation algorithm with a linear variogram to create the contours. Statistical parameters for the processed water depth within the survey area are summarised in the following table:

Depth Variables	Statistics
Number of active values used for gridding	5460
Range between minimum and maximum	3.9m
Midrange	39.15m
Minimum	37.2m
25 percentile	38.7m
Median	39.0m
75 percentile	39.5m
Maximum	41.1m
Average	39.1m
Standard deviation	0.666m
Variance	0.443

8.2.2 Odom Echotrac DF3200 MKIII Echo Sounder

The single beam bathymetric system comprises of an Odom Echotrac DF3200 MKIII dual frequency echo sounder, which operates at both 24kHz and 200kHz. The dual frequency transducers were mounted on an over the side pole on the starboard side of the Bluefin.

To measure water depths the Echotrac DF3200 MKIII echo sounder uses ultrasonic sound-waves. A short burst of acoustic energy is transmitted vertically downwards into the water by a transducer. A proportion of the sound energy is reflected by the bottom or by other solid media such as fish, and returns as an echo to the transducer. The time which elapses between the transmission of the signal and the return of its echo is proportional to the depth. The primary accuracy of the depth measurement is dependent upon the measurement of the velocity of sound through the water column, which is set by the operator in the echo sounder.

At the start of the survey, a velocity of sound in seawater profile was performed at the site, the results of which were entered into the echo sounder set up parameters.

Bar checks were carried out when the vessel was mobilised, when the vessel was in shelter during weather delays and when the vessel was demobilised to determine the draft of the echo sounder transducers. The transducer pole was marked and checked regularly against sea level to monitor draft changes as the survey progressed. The resulting corrections to transducer draft were applied in the echo sounder.

The single beam data were heave compensated in the Echotrac DF3200 MKIII echo sounder and the digital heave corrected bathymetric data was continuously logged to hard disk (approximately every 0.1 second at site depth). The GNS2 software recorded mobile files in P2/94 format, which included fix information and all bathymetric data.

Technical Specifications

The Odom Echotrac MKIII is dual frequency single beam echo sounder which has interchangeable, plug and play modules for a high resolution thermal paper recorder or a full size colour LCD chart with data storage and playback. It utilises multiple processors including two dedicated Digital Signal Processors (DSPs) working in concert to accomplish specific analysis tasks while communicating effectively on a real-time basis in order to assure accurate measurements under difficult sea conditions and over all types of seabed.

The sonar transceiver, echo processor, graphical operator interface and hard copy recorder are all housed in one portable splash-proof case. The unit is suited for desktop, bulkhead or rack mounting. Suitable for use in the shallows of rivers and harbours, the unit is also capable of working to depths of over 6000m.

The specifications are as follows:

Frequencies:	High : 100kHz to 750kHz Low : 10kHz to 50kHz Thales preferred frequencies are 200kHz for high and 24kHz for low. [Automatic tuning or manual in 1kHz steps (high) and 100Hz steps (low)]
Printer:	Thin film thermal print head, 216mm wide, 8 dots per mm, capable of printing up to 16 grey shades.
Display and Keypad:	Transflective, Back-lighted Graphical LCD Module (64 x 240 dots). The display provides good visibility in all light conditions. The 18 key-sealed micro-switch unit is used by the operator for direct parameter entry and functional control from the front panel.
Digitizer:	Bottom tracking capabilities of the unit are enhanced by utilising the Digital Signal Processing features of the digitizer processor.

Interfacing and Annotation:	Four RS-232 serial ports baud rate selectable 4800 to 19200. Depth information is output after each sounding cycle with selectable data strings including values for both the high and low channels in dual frequency operation. Custom output strings conforming to other major echo sounder formats are available. The Echotrac accepts annotation of up to 80 characters printed on the Fix Mark line. Also inputs from external computer, motion sensor and sound velocity.
Heave Compensation:	Direct connection to most modern heave compensation sensors via a dedicated serial port. Heave and corrected seabed are printed on the chart in addition to raw depths. Corrected depths or raw depths and heave values can be selected for output by the operator.
Power Requirements:	24V DC, 110/230V AC (50/60Hz), 75 Watts average power consumption.
Operating Temperature:	0° to 50° C up to 90% humidity.
Weight:	15.9 kg.
Unit Dimensions:	Height 450mm Width 450mm Depth 300mm

8.2.3 TSS DMS 2-05 Motion Sensor

The TSS DMS 2-05 Motion Sensor is used to provide heave, pitch and roll data to the single beam echo sounder system. The TSS DMS 2-05 is a small portable system for measuring the vertical displacement and altitude of a vessel when no stationary reference is available.

Sensor Package

The standard sensor package contains the solid state sensing elements that resolve the magnitude and direction of forces acting upon the sensor so that it can supply motion measurements. High speed circuitry converts the signals from the sensing elements into actual measurements of attitude and motion. These are then communicated via RS232 or RS422 to a receiving PC, or terminal, or to the appropriate receiving equipment (echo sounder, datalogger etc.).

Installation of the DMS System is simple, and the compact design allows it to be mounted close to the point for which measurements are required.

Software

Software resident within the sensor electronics package allows a PC or terminal to control the DMS System so that its configuration can be optimised for any particular installation. The software can be utilised to check the analogue output values, and to measure the roll and pitch mount angles.

Auxiliary Input

The DMS System can accept signals from auxiliary equipment such as a Global Positioning System (GPS) or a gyrocompass. The sensor uses these ‘aiding’ inputs to maintain the accuracy and stability of measurements throughout vessel turns.

Principle of Operation

The DMS includes an array of solid-state sensing elements that measures the instantaneous linear accelerations and angular rates affecting the sensor at any time. These measurements allow the system to derive the attitude of the platform on which the sensor is mounted with respect to the true vertical.

Additionally, velocity and heading information supplied by external GPS and gyrocompass systems can be used by the DMS system to maintain the measurement accuracy of the sensor throughout vessel turns.

The digital output from the sensor is updated and supplied as a digital data string transmitted to external equipment using either RS232 or RS422.

To support the requirement of applications that require an analogue input (i.e. the Elac Multibeam System), the sensor provides scalable analogue outputs for roll, pitch and heave.

System specifications are as follows:

Heave

Range	:	± 10 meters
Resolution	:	1cm
Bandwidth	:	0.05 to >10 Hz
Accuracy	:	The greatest of 5cm or 5%
Measurement Datum	:	All measurements are with respect to the centre of the bottom surface of vertically mounted Sensor.
Acceleration Range (vertical)	:	2g
Noise (at cut-off frequency 0.05 Hz)	:	<1cm RMS

Roll, Pitch

Range	:	±30º
Resolution	:	Digital 0.01º
Bandwidth	:	0 to >10 Hz
Accuracy		
(Dynamic) DMS 2-05	:	±0.05º
(Static) DMS 2-05	:	±0.05º
Angular rate change	:	100º/second
Noise	:	<0.05º RMS
Cross axis coupling	:	<1%

Electrical

Power Requirement	:	12V to 36V DC 12W at 24V
Digital Interface	:	RS232C, RS422 user selectable
Digital Output Data Rate	:	Dependent upon output format and baud rate. The Sensor will supply data packets at the highest possible transfer rate. Using the default settings (format TSS1 at 9600 baud), the digital output rate will be 32 packets/second.

Environmental

Temperature Range		
(Operating)	:	0 to +40ºC {32ºF to 104ºF}
(Storage)	:	-20 to +70ºC {-4ºF to 158ºF}
Shock (Survival)	:	30g peak 40ms half-sine
Vibration (Operating)	:	Meet Lloyd's Register ENV2 (1996) specification for vibration Meet ABS Table 4/11.1 (1996) No. 12 IEC Publication 68-2-6 (1995) Test F.
Transverse Acceleration	:	500mg peak 0.1s sine
Enclosure Ingress Protection	:	3000m {9840ft} depth rated
Tilt	:	±30º any plane
Operating Transit/Storage	:	No limit
Yaw Immunity	:	10º per second with 30º roll and pitch

8.2.4 Side Scan Sonar Data Acquisition

The textural characteristics and reflective strengths of the seafloor around the West Whiptail-1 survey area were investigated by the deployment of a dual frequency GeoAcoustics side scan sonar system. The side scan sonar was set at 100m slant range, with interval scaling lines at 10m, theoretically providing over 100% data overlap on a 100m primary line spacing. The side scan sonar was operated at 100kHz for extended range. The CODA data logging was used for the geophysical data acquisition.

Positional Considerations

The accuracy of derived contact dimensions is dependent on the quality of the side scan sonar data.

Adverse operating conditions can produce effects such as tow fish heave and yaw, which reduce interpretation accuracy. In particular, the contact height calculation is dependent on the shadow length, which is determined by the tow fish position relative to the contact.

The accuracy with which a sonar contact or seabed feature can be positioned is dependent on a number of factors. Survey considerations are of primary importance, as position accuracy ultimately depends on the accuracy with which both the vessel and tow fish can be positioned. Running adjacent survey lines in opposite directions reduces the effects of tow fish position inaccuracy, as miss-ties between lines can then be averaged to produce a best-fit position.

On 25 October 2003 a side scan sonar dynamic position check was completed at Yolla-2 wellhead with the side scan sonar fish used for the West Whiptail-1 site survey (Appendix J). The results from the dynamic checks show that the fish was flying well and that the accuracy of feature positions measured from the side scan sonar records was approximately ±15m.
The position accuracy of features derived from an interpretation of side scan sonar data, is subject to additional considerations that are independent of the data quality issues discussed above. Such potential errors include those associated with scaling, plotting and subsequent digitising of features. Additionally, certain features require a subjective interpretation.

In the survey area, the accuracy of positioning is estimated at ±15m and the accuracy of height measured above and below ambient seabed is estimated at ±0.3m.

8.2.5 Geo Acoustics Dual Frequency Side Scan Sonar Systems

The GeoAcoustics Dual Frequency Side Scan Sonar system provides mapping of the seabed and consists of a GeoAcoustics combined towfish (159D), a pair of dual frequency sonar transducers (196D) and a Sonar Transceiver (SS941).

The GeoAcoustics combined towfish contains side scan sonar transducers that transmits short pulses of high frequency acoustic energy in fan shaped beams at right angles to the fish's track. The beams are narrow in the horizontal plane and wide in the vertical plane. In the nose of the towfish is the transmitting and receiving circuitry and on receipt of a trigger pulse from the ship-borne recorder the transducers are energised. The receiving circuitry amplifies the returned echoes and sends them via the tow cable to the recorder for display.

The transceiver unit allows the operator a simple means of controlling various Side Scan operating parameters. The unit includes standard controls such as: Gain, Time Varying Gain (TVG), Automatic Gain Control (AGC), with duplicated controls for port and starboard transducers. The operating frequency can also be switched from 100kHz to 500kHz directly from the transceiver. The choices of frequencies means that long range scanning and short range high resolution investigations are possible. The output of the transceiver can be recorded digitally if interfaced to a digital recording system.

System specifications are as follows:

GeoAcoustics 196D Dual Frequency Transducers

Source level	223 ± 3 dB re 1µPa @ 1 m
Beamwidth	50° by 1°/40° by 0.5°
Sensitivity	190 dB re 1 V/µPa
Depression	Angle 10° ±1° down.

Transmitter

Frequency	100/500 kHz ±1%.
Power output	1.2 kW/1 kW pulse ±20%.
Pulse length	167 µsec/88 µsec ±1%
Pulse repetition rate	50 pulses per second maximum.

Protection Open and short circuit protected.

Efficiency Greater than 80%.

Receiver

Port channel	100/500kHz, heterodyned to 135kHz.
Starboard channel	100/500kHz, heterodyned to 65kHz.
Bandwidth	20kHz. TVG Transmission loss curve compensated at both frequencies. Approximately + 40dB at 100m range.

Keyburst Frequency	455kHz ± 2%.	
Pulse length	300µsec for 110 kHz operation. 600µsec for 410kHz operation.	
Power	150V DC at 100mA.	
Size	Diameter	10.2cm
	Length	34.5cm
	Weight	3.2kg in air, 0.45kg in water.

8.2.6 Sub-Bottom Profiling Data Acquisition

The shallow geology of the survey area was interpreted from data acquired by the deployment of an EG&G 230 surface tow boomer. Analogue seismic data were recorded on the CODA DA200 Digital Recorder and an Alden 9315 CTP printer. The data was digitally recorded using the CODA Acquisition System to allow further processing and replay. The boomer data was recorded with a sweep of 140ms of which 60ms was displayed on a hard copy printout using the Alden 9315 CTP printer. The firing interval was 470ms and a power level of 200 Joules was supplied by an Applied Acoustics high voltage energy source. The printed sub-bottom data was TVG amplified to compensate for signal loss and a band-pass filter (1.2kHz to 2.5kHz) was applied.

8.2.7 Boomer Sub-Bottom Profiling System – CSP1000

A Boomer sub-bottom profiling system consisting of an Applied Acoustics CSP1000 power source, AA200 Boomer seismic source, and an AH360/8 Type hydrophone is used to determine the nature of the sub-seafloor geology. The boomer catamaran and the 8-element hydrophone are towed astern of the vessel.

The raw analogue signal is firstly filtered using a Krohn-Hite 3700 filter before it is digitally displayed and recorded.

The system is operated and fired by an Applied Acoustics CSP1000 Triggered Capacitor Bank and Power Source. The data can be processed and recorded by a digital recording system, which includes a band pass filter.

The Boomer Sub-bottom Profiling system comprises the following components:

Applied Acoustics CSP1000 Power Source

The Applied Acoustics CSP1000 Power Source provides a high-voltage direct current for charging the capacitor banks used in sub-bottom profiling systems. The Applied Acoustics CSP1000 Power Source will charge at 1000 Joules per second. This allows the operator to select sound-pulse repetition rates as fast as six pulses per second at an energy level of 1000 Joules:

System specifications are as follows:

Size:	19” rack mounted 7U high 550mm deep
Weight:	55 kg
Operating Temperature:	0-37°C at maximum output

Mains input:	207-206 VAC 45-65Hz @ 2.5kVA 3 pin connector
Voltage Output:	3550 or 3800 volts DC 4 pin interlocked connector
Output Energy:	100 to 1000J in 100J increments
Charging Rate:	1000J per second
Capacitance:	144µF. 1 x 10^8 shot life
Trigger:	+ive key opto isolated or closure set by front panel switch. BNC connector on front panel and remote.
Repetition Rate:	To 6pps
Earth:	M8 stainless steel stud on front panel

AA200 Boomer Seismic Source

The EG&G Model 230 Boomer (or Uniboom) is an electromechanical source fixed to a surface towed catamaran. The boomer source consists of an induction coil against which an aluminium plate is applied by a system of springs. With each discharge, from the ship-borne capacitor banks, the eddy currents induced in the conductive plate cause it to move violently away from the coil. The initial movement of the plate triggers the acoustic pulse, the duration of the boomer signal is limited to about 0.2ms.

Applied Acoustic AH360/8 Hydrophone

The Applied Acoustic AH360/8 Type Hydrophone uses 8 elements connected in series and incorporates a current summing amplifier. The hydrophone elements and preamplifier are enclosed in a one-inch, oil filled tube designed to minimise turbulent noise from towing, this part of the hydrophone is called the active section. In addition to the active section, the hydrophone includes a tail for stabilisation, a tow cable that incorporates the conductors for transmitting the electric signals and a battery box attached to the shipboard end of the cable which supplies the DC voltage for operating the pre-amplifier.

System specifications are as follows:

Input Power:	9v DC Battery
Sensitivity:	-61 dB/volt/microbar
Bandwidth:	400Hz - 5kHz
Hydrophone Element:	
Sensitivity	-103 dB/volt/microbar (single element)
Gain (Preamplifier)	42 dB (including gain of 10 elements in series)
Output	2 kohms

8.2.8 CODA DA200 Digital Recording/Processing System

The CODA-DA200 Sonar Data Acquisition and Playback System is used to convert the analogue signal from the GeoAcoustics Transceivers to digital format, and to record the digital data on magneto-optical disk. The CODA is a Unix-based hardware and software system developed for recording and processing of analogue or digital signals from a dual channel side scan sonar.

In real time the data can be recorded to the hard disk, to removable disk drives, or to magneto-optical disk. Processing parameters such as slant range correction, TVG enhancement, image enhancement, zoom facilities, real-time cursor navigation position and on-screen management, scrolling speed adjustment, multi-resolution data display and single/dual channel waterfall display, can be applied while on-line or during playback but only the raw data will be recorded to magneto-optical disk.

Nautronix USBL positions are fed from the sonar fish to the GNS computer for real-time addition of KP and Easting and Northing positions to the sonar record. This information is stored to tape with the raw sonar data.

CODA-DA200

Physical
Flight-cased industrial 19” rackmount chassis - 21” x 22” x 13”
Monitor flight casing - 20.75” x 19.75” x 19.5”

Hardware
Dedicated acquisition board
Dual Independent input/output triggers
High-spec Pentium PC
High Resolution 17” monitor
Mouse or Trackball

Data Storage/Retrieval
Shock mounted high speed DDS DAT (4mm) SCSI tape (Exabyte tape, Optical Disk optional)
Shock mounted 1GB SCSI HDD

Data Format
CODA, SEG-Y, SDEF, Q-MIPS™ compatible

Hard Copy
Continuous real-time output to various thermal recorders:
Ultra Wideline 200, Ultra Wideline 195
Ultra 3710, EPC1086, Alden 9315
Screen dump to disk or printer in EPS or TIFF format
SCSI, GPIB, Parallel interface

DATA INTERFACES
Analogue Input
200 KHz throughput
Fully independent triggers
Input signal range ± 1.25 to ±10V
12-bit resolution, dynamic range 72dB (16-bit optional)
Up to 10,240 samples per channel

Triggering
2 fully independent triggers
Master Trigger Output
Trigger period 33ms to 65s
TTL (user-specifiable duty cycle)
Slave Trigger Input
Trigger period minimum 33ms
TTL (min. pulse width 40ns)
Negative/Positive Edge Triggered

Digital Input/Output
TCP/IP Ethernet link, or customer-specified (e.g. SCSI, GPIB), RS-232, DMA compatible parallel
External event input by TTL

Navigational Interface
RS-232 serial interface
Data rate up to 9600 baud, user-configurable
User-configurable RS-232 data format
Corrected navigation input from floppy disk

SOFTWARE
General On-line Processing
Simultaneous, real-time, dual sensor display windows
Real-time, on-line corrective processing including independent channel TVG
Automatic seabed detection and display
Full colour image enhancement

Sidescan On-line Processing
Slant range correction
Across-track smoothing

Shallow Seismic On-line Processing
High, low and band-pass filtering
Trace mixing and anti-mixing
User selectable sound velocity for measurements
Swell filtering

High-Resolution Display
Multi-channel window displays including horizontal and vertical waterfall display and 3D mesh plot (optional)
Multi-resolution, independent channel display
3-mode zoom
Freeze frame with auto-release during acquisition
A-scan oscilloscope display
Geo-referenced screen and cursor
On-screen measurement and event marking
User configurable scale lines

High Speed Tape Operating System
Random data access with intuitive controls including GoTo, Stop, Play, Fast Forward, Rewind, Cue and review
Tape copying facility including data format and tape conversion
Continuous recording with dual type system
CODA, SEG-Y, SDEF, Q-MIPS™ compatible data formats

Acquisition
Navigation input and survey parameter QC
Software-configurable acquisition setup
Time-synchronised navigation input
User-programmable nav. string input

General
X windows/Motif user interface (version X11R6)
UNIX SVR4 operating system
Additional software modules available for pipeline inspection (PI100), site survey interpretation and reporting (GeoKit), survey overview (Trackplot and Trackplot Plus), on-line mosaicing (Coda Mosaic), swathe bathymetry acquisition and processing (Coda Swathe module)

8.2.9 Applied Microsystems Model SVPlus Sound Velocity Profiler

The SVPlus is a multi-parameter, self-contained, intelligent instrument designed for the measurement of sound velocity, temperature and pressure. The SVPlus features microprocessor based CMOS circuitry, two A/D converters (1 part in 40,000, 1 part in 16,000) and 128 Kbytes of battery backed-up random access memory (RAM) for data storage. The SVPlus has the options of logging data continuously, by depth increments, by time increments, by sound velocity increments, or logging individual scans.

Prior to deployment the SVPlus is connected to an IBM compatible computer via a 3-conductor cable, the instruments output is standard ASCII RS-232. When connected to a computer the SVPlus is programmed using Applied Microsystems Ltd's Total System Software. The SVPlus is configured for logging, choosing sample time units, sampling interval, depth logging increment, sound velocity increment and log file name. Logging begins when the SVPlus is immersed in water and when the instrument receives a valid sound velocity value it begins recording the data. Logging stops when the instrument cannot detect a sound velocity signal and it will assume it is out of the water.

Deployment of the SVPlus is either by hand or winch. As the instrument is lowered to and raised from the seabed, data is stored in memory.

When recovered the SVPlus is re-connected to a computer to view, edit and graph the data logged by the instrument. When a file (or cast) has been completely loaded an analysis of the data automatically begins. The purpose of this analysis is to compute the engineering values of the data and to determine the maximum and minimum values for graphing.

The SVPlus records the temperature, pressure and sound velocity at user specified logging increments. The sound velocity is measured by injecting an acoustic pulse into the water and measuring the time taken for that pulse to travel across a fixed distance.

The SVPlus's sensors must be calibrated occasionally. These should remain within published specifications for periods of 1 - 2 years, depending on the amount of use, and depth of deployment. Sensors are calibrated by recording the instruments raw data at known reference points. This data is applied to a curve fitting algorithm to produce calibration coefficients which are permanently stored in the instruments memory.

System specifications are as follows:

Pressure: Type: Keller stainless steel pressure transducer
Range: Assorted pressure ranges up to 5000 dBars
Accuracy: 0.15% of Full scale
Resolution: 0.005% of Full scale
Response Time: 10 ms

Temperature: Type: Pressure protected precision aged thermistor
Range: -02°c to 32°C
Accuracy: ±0.005°C
Resolution: 0.001°C
Response Time: 100 ms

Sound Velocity: Type: 1 Megahertz piezoelectric transducer. INVAR stabilised path length (±5.5nm/°C)
Range: 1400 - 1550 m/s
Accuracy: <0.06 m/s (r.m.s)
Resolution: 0.015 m/s

Sample Rate: When recording internally without sending data, the scan rate is selectable from 10 scans/second to one every 24 hours.

Memory: 128 Kb battery backed-up RAM, expandable to 40 Mbytes. The standard RAM can record 6400 scans of date, time, pressure, sound velocity and battery.

8.2.10 Valeport Model 606 Sound Velocity Profiler

The Model 606 CTD utilises Valeport's new modular sensor technology to allow absolutely synchronous sampling of the conductivity, temperature and pressure sensors. Other CTDs use cyclic sampling techniques - taking data from one sensor, then the next, and so on. By sampling all sensors at exactly the same time, the Model 606 ensures that all data comes from exactly the same position. In combination with a sampling rate of up to 8Hz, this makes the Model 606 particularly suitable for rapid profiling work. Low power drain and large memory also make it ideal for use in fixed mooring applications.

Features

- Direct computation of Speed of Sound using a choice of industry standard formulae.
- Direct computation of Salinity & Density.
- Self Recording and/or Direct Reading.
- Ideal for profiling and fixed mooring installation.
- Titanium body.
- Pressure balanced inductive conductivity sensor.
- Fast Response PRT Temperature Sensor.
- Time and down/up depth triggering.
- Valeport DataLog 400™ Windows based user software.
- Programmable sampling regime.
- Data direct to PC.
- 8 Mbyte memory (upgradeable to 32 Mbyte).
- Sealed electronics module not exposed during battery changes.

- True synchronised sampling at up to 8Hz.
- Rated to 5000m.
- Can be used with up to 6km cable.

8.2.11 Van Veen Grab Sampler

Grab samplers are used for the purpose of collecting medium sized disturbed samples of the surface layer of the seabed.

The Van Veen Grab sampler consists of two weighted hinged jaws to which are attached long arms; it is so constructed that when the grab is fully open the arms are also extended to their fullest extent. A catch holds the jaws in the open position and the instrument is slung on a bridle from the ends of the two arms.

On striking the seabed, the impact releases the catch and as the hydrowire is hove in, the grab closes under its own weight taking a sample in the process.

8.2.12 Thales Gravity Corer

The Thales gravity corer consists of a series of lead weights (250kg or 400kg) attached to a 2m long double tube core barrel. The outer tube is terminated with an 81mm inside diameter (ID) cutting shoe. The inner tube is an 80mm ID clear plastic liner fitted with a flexible fingers core catcher that will prevent the sample from falling out upon retrieval.

Penetration of the gravity corer is achieved by gravity force when the corer is dropped in free fall from a height of 5m to 15m above the seabed. The penetration depth will depend on the weight of the corer, the nature of the soils and their density or stiffness.

8.3 EQUIPMENT CALIBRATION AND CHECKS

8.3.1 Velocity of Sound in Seawater Profiles

A velocity of sound in seawater profile was carried out at West Whiptail-1 survey site on 28 October 2003, using an SVPlus and Valeport Sound Velocity Probes.

A mean velocity of sound of 1502.2m/s was determined from the Valeport and 1502.6m/s was determined from the SVPlus.

A mean velocity of sound of 1502.6m/s was entered into the echo sounder.

The water column velocity profile is detailed in Appendix L of this report.

8.3.2 Echo Sounder Transducer Draft Measurement and Motion Sensor Test

Echo Sounder Transducer Draft Measurements

The Odom Echotrac MKIII echo sounder transducer draft settings were established by undertaking a bar check. A bar check was performed after vessel mobilisation on 24 October 2003, while the Bluefin was alongside the AMC Wharf. The draft was measured as 1.95m for the 24kHz and 2.15m for the 200kHz transducers.

A bar check was also performed after the vessel return to the AMC Wharf on 1 November 2003. The draft was measured as 1.95m for the 24kHz and 2.15m for the 200kHz transducers.

Copies of the bar check are included in Appendix H of this report.

Motion Sensor Test

A motion sensor test was carried out prior to departure from the AMC Wharf on 24 October 2003. This involved physically lifting the DMS 2-05 Motion Sensor up and down whilst watching the echo sounder screen for the correct movement in the raw heave trace.

Refer to Appendix H for the results.

8.3.3 Side Scan Sonar Tests and Dynamic Position Checks

Side Scan Sonar Rub Tests and Wet Tests

Side scan sonar rub tests and wet tests were performed on the primary and back-up towfish alongside the AMC Wharf on 24 October 2003. The purpose of these tests was to ensure that the fish mounted transducers were operating within specification and connected to the correct recorder channels. The Client Representative accepted the results.

The results of these tests are presented as Appendix I of this report.

Side Scan Sonar Dynamic Positioning Check

A side scan sonar dynamic positioning check of the systems was performed on 25 October 2003. The method used was to run a series of lines around an easily identifiable seabed feature, with known coordinates. The position of the seabed feature determined from the side scan sonar could then be compared to the published coordinates. For this project the Yolla-2 well head was used.

Published Coordinates of Yolla-2:

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Easting : 398 385.30m
Northing : 5 587 337.70m

Average Observed Coordinates of Yolla-2:

Datum: GDA94 Projection: MGA Zone 55, CM 147° East

Line ID	Easting (m)	Northing (m)
L1	398 373.00	5 587 333.00
L3	398 385.00	5 587 339.00
L4	398 390.00	5 587 334.00

The average observed distance of target is 6.9m from the published position. The client representative accepted the results of the dynamic position check.

The results of the dynamic positioning check are included as Appendix J of this report.

8.3.4 Boomer Pulse Test and Wet Test

A boomer wet-test was performed while the Bluefin was alongside the AMC Wharf on 24 October 2003. The purpose of the test was to check the overall operation and performance of the seismic equipment. The Client Representative was present during the test and accepted the results.

The results of this test are presented as Appendix K of this report.

9. PERSONNEL

The following personnel were employed on this project:

For: Thales GeoSolutions (Australasia) Limited

Mike Karklin	-	Team Leader/Senior Underwater Engineer
Jacek Murcha	-	Surveyor
Michael Elmslie	-	Surveyor
Mark Dixon	-	Underwater Engineer
John Graindorge	-	Senior Geophysicist

For: Esso Australia Pty Ltd

John Tighe	-	Client Representative

For: Bluefin Vessel

Aussie Meyer	-	Master
Chris Lambert	-	First Mate
Bernie Smith	-	Second Mate
Tony Nicholls	-	Cook
Pat Chamberlain	-	Chief Engineer
Tommy Than	-	Second Engineer
Seamus Elder	-	Deck Crew
Paul Laine	-	Deck Crew
Dion Donoghoe	-	Deck Crew

10. SAFETY, HEALTH AND ENVIRONMENTAL MATTERS

10.1 OBJECTIVES

The prevention of accidents and injury is the primary objective on this and all Thales projects, and great importance is placed on ensuring and maintaining the health and safety of employees. Furthermore, Thales wishes to protect all persons with whom employees may have association during work activities. It is therefore the policy of Thales; to observe and comply with all statutory provisions and to take additional measures that it sees fit in the pursuance of safety. Thales maintains a safe working environment by employing the following measures:

a) Observe and comply with all statutory provisions.

b) Ensure that all work places are suitably equipped and free from recognised hazards that are liable to cause death, injury or illness.

c) Encourage employees to improve health and safety awareness in their own sphere of activity, to prevent injury to themselves and to other people and to report accidents and hazards to their superiors.

d) Hold all supervisory personnel responsible for developing and maintaining safety equipment where appropriate.

e) Provide employees with suitable safety equipment where appropriate.

f) Seek ways of improving health and safety in the work environment.

g) Encouraging the use of the ‘Stepback 5x5’ work safety ethic.

To facilitate the implementation of these measures Thales produces the following documents; Survey Safety Manual, Project Manual (includes Safety Management Plan), and Emergency Response Plan.

10.2 PROJECT SAFETY STATISTICS

The project safety statistics are detailed in Appendix A.

For a total of 869.5 man-hours worked, the following events have been reported:

Lost Time Injury	0
Restricted Workday Cases	0
Medical Treatment Cases	0
First Aid Cases	0
Incident/Near Miss Incidents	0
Lost Workdays	0
Restricted Workdays	0
Lost Accident Time	0
Fatalities	0
Environmental Incidents	1
Toolbox Meetings	2

10.3 PROJECT INDUCTION AND SAFETY MEETING

A general Project Induction and Safety Meeting was held at 0905 on 23 October 2003 onboard the Bluefin, prior to the start of mobilisation. A fire and abandonment drill was held at 1218 on 25 October 2003.

The Thales Party Chief discussed the following topics:

1. Thales personnel introductions.
2. Project briefing of the survey campaign.
3. Introduction of Thales Operations Policies including Thales Health and Safety Policy, Environmental Policy, Drugs and Alcohol Policy, Injury Management Policy and Procedures, and Quality Policy.
4. The effective implementation of Thales Policies under the Thales Safety Management Systems (SMS).
5. Legislation and Regulations applicable to Thales Operations, particularly offshore operations.
6. Hazard Identification and Assessment (the introduction of Thales U-See, U-Act Safety System and the Stepback 5x5 process), Risk Assessment and Job Safety Analysis (JSA) with particular discussion directed toward equipment deployment / recovery and geotechnical coring operations.
7. Thales Emergency Response Plan and the process for accident / incident reporting and investigations.
8. Safety documentation supporting Thales SMS including Thales Manuals, Legislation and Acts, Safety Work Instructions, Safety Notes, Safety Forms, Codes of Practice and Guidance Notes.
9. The appropriate use of Personal Protective Equipment (PPE) including coveralls, safety footwear, safety helmets, safety glasses, hearing protection devices, safety gloves and the mandatory use of life vests during operations near the vessels stern.
10. Thales' Underwater Engineers to control all back deck operations involving equipment deployment / recovery and geotechnical coring.

The AMC Vessel Master discussed the Following topics:

1. AMC personnel introductions.
2. Vessel safety onboard the Bluefin.
3. Emergency procedures, muster points and alarms.
4. General reinforcement of Thales Safety Management System (SMS).

10.4 VESSEL INDUCTION

AMC held a vessel induction onboard the Bluefin on 23 October 2003. All Thales personnel and the Client Representative were required to undertake the vessel induction.

10.5 JOB SAFETY ANALYSIS (JSA) MEETINGS

Job Safety Analysis meetings were undertaken prior to all facets of the survey. A JSA was held for the following operations; vessel mobilisation, equipment installation, vessel operations, deployment/recovery of equipment, velocity profile dip and coring operations. Particular emphasis was directed towards safety near the stern of the vessel, with all non-essential personnel required to remain clear of equipment deployment and geotechnical coring operations. The use of PPE was re-iterated. The process of communication between the back deck and bridge was outlined during each JSA to ensure personnel were informed during each phase of the operation.

JSA worksheets are detailed in the Thales Safety Management Plan.

10.6 ACCIDENTS AND INCIDENTS

There were no safety accident or incident reported for the project.

10.7 ENVIRONMENTAL MATTERS

On 28 October 2003 at 1147 while running lines, several “blows” from whales were sighted some distance from the survey vessel. The recommended Thales Environmental Policy as laid out in the Thales Safety Management Plan was followed immediately. All sonar equipment was switched off and the speed was reduced to 2 knots.

Three whales including a calve were swimming southeast and came to 100m to 200m from the ship on their way. The sonar equipment was turned back on at 1219, after no visual sighting of the wales was made in the last 30 minutes. Observations for further sightings was maintained.

A copy of the Whale Sighting Report sent to Environmental Australia, Marine and Water Division is presented in Appendix R.

11. OPERATIONS REPORT CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

The site survey conducted at the proposed West Whiptail-1 location was carried out in a safe and incident free manner.

There were no major problems encountered during the project with the bathymetry, side scan sonar, sub bottom profiling and navigation systems. All systems performed as expected.

Strong cross-course current caused significant deviation of the primary lines during the survey resulting in the maximum allowable off course distance to be revised from ±10m to ±30m.

The FTV Bluefin was used during this project and no significant problems were encountered with the vessel.

11.2 RECOMMENDATIONS

No recommendation is made for future projects.

12. DISTRIBUTION

Copies of this report have been distributed as follows:

Esso Australia Pty Ltd	: 10 copies
Attn: David Berman	: 10 electronic copies
Thales GeoSolutions (Australasia) Limited	: 1 copy

John Graindorge
Senior Geophysicist

Anthony Kerr
Survey Manager

APPENDIX A

SAFETY REPORTS

APPENDIX B

TECHNICAL SPECIFICATION - BLUEFIN

APPENDIX C

OFFSET DIAGRAM - BLUEFIN

APPENDIX D

GNS SYSTEM DATA PRINTOUT

APPENDIX E

GYROCOMPASS CALIBRATIONS PRINTOUTS

APPENDIX F

STATIC DIFFERENTIAL GPS CHECK PRINTOUTS

APPENDIX G

DYNAMIC DIFFERENTIAL GPS POSITIONING CHECK

APPENDIX H

BAR CHECK & MOTION SENSOR CHECK

APPENDIX I

SIDE SCAN SONAR WET TEST & RUB TEST

APPENDIX J

SIDE SCAN SONAR DYNAMIC POSITION CHECKS

APPENDIX K

BOOMER WET TEST AND PULSE TEST

APPENDIX L

VELOCITY OF SOUND IN SEAWATER PROFILES

APPENDIX M

SURVEY LINE LOGS

APPENDIX N

TIDAL PREDICTIONS

APPENDIX O

DAILY FIELD PROGRESS REPORT SHEETS

APPENDIX P

DAILY VESSEL BRIDGE LOGS

APPENDIX Q

FIELD SEABED SAMPLE DESCRIPTIONS

APPENDIX R

WHALE SIGHTING REPORT

APPENDIX S

DIFFERENTIAL GPS REFERENCE STATION DESCRIPTION
(ON CD)

APPENDIX T

DESCRIPTION OF THALES GEOSOLUTIONS METHOD OF
COORDINATING SkyFix STATIONS
(ON CD)

EXXONMOBIL EXPLORATION COMPANY

OIMS Shallow Drilling Evaluation

Exploration Well
West Whiptail-1
Gippsland Basin, VIC/L1

By

L.M. Campbell

EMEC/TECHNOLOGY
GEOSCIENCE RESOURCE OPERATIONS/OPERATIONS GEOLOGY/Site Investigation
January 8, 2004

ExxonMobil Proprietary

EXXONMOBIL EXPLORATION COMPANY

OIMS Shallow Drilling Hazards Evaluation

EXPLORATION WELL
WEST WHIPTAIL-1
GIPPSLAND BASIN, VIC/L1

Prepared by: Jan 8, 2004

Lorna Campbell, EMEC Site Investigation Specialist

Reviewed by: 8 JAN 04

Scott Leonard, EMEC Site Investigation Specialist

Approved by: Jan 8, 2004

Bob Beebe, EMEC Operations Geology Skill Area Coordinator

EMEC/TECHNOLOGY
GEOSCIENCE RESOURCE OPERATIONS/OPERATIONS GEOLOGY
January 8th, 2004

OIMS Shallow Hazards Identification Process

Hazard/Constraint Definitions and Probability Classifications

Hazards are defined as geological, man-made, or environmental features/conditions that could compromise personnel safety, result in catastrophic damage/loss of facilities, equipment, and materials, and/or environmental damage unless sufficient mitigation measures are implemented. Examples include overpressured* shallow gas, overpressured shallow aquifers, incipient slope failure, shallow buried channels, and proximal subsea pipelines.

* **Overpressure** (abnormal pressure) is defined as formation fluid pressure, at any given depth, in excess of the hydrostatic pressure (normal pore-pressure). It can also be defined as a fluid pressure gradient in excess of the hydrostatic pressure gradient. This condition may or may not have operational significance depending on the mitigation measures taken.

Constraints are defined as geological, man-made, or environmental features/conditions that could incur significant cost overruns, delay operations, and/or result in minor damage/loss of equipment and materials unless sufficient mitigation measures are implemented. Examples include extremely weak seafloor soils, near-seafloor boulders, reactive clays, and faults.

The **probability of occurrence** of a particular Hazard or Constraint at a proposed drilling or development location is assessed, in qualitative terms, under the following classifications:

High: Probable presence or occurrence; plausible; likely to happen; mitigation measures highly recommended

Moderate: Possible presence or occurrence; potential; capable of favorable development; mitigation measures recommended

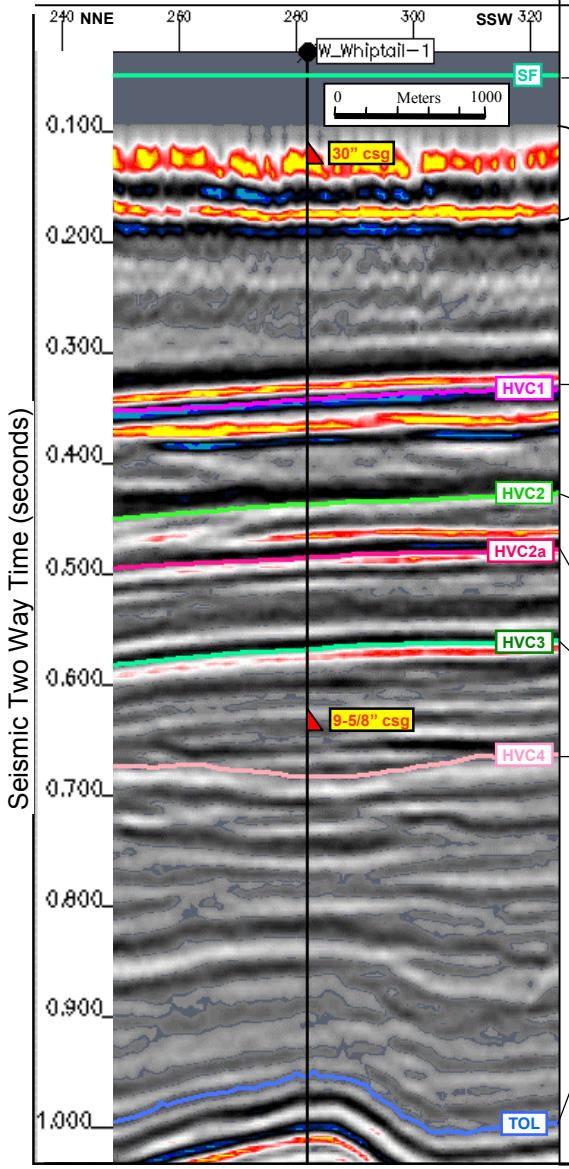
Low: Unlikely presence or occurrence; not significant or important; negligible

None: Not present or no possibility of occurrence

TOP HOLE PROGNOSIS SCHEMATIC
West Whiptail-1 (Vic/L1), Australia

EMEC Operations Geology: Site Investigation Group

Proposed West Whiptail-1 Well Surface Location:
x = 544 117; y = 5 758 036mN
Seismic Line: G013D Inline 1292



Horizons	*Subsea Depth (metres)	*BML Depth (metres)	Horizon TWT (sec)	**Pore Pressure EMW (ppg)	Lithology / Seismic Facies / Structure	Potential Drilling Hazards / Constraints
					According to Site Survey data, the seafloor at the proposed location shoals gently to the northwest (dip <<1° SE)	*Hazards:* **None** *Constraints:* **None.**
Seafloor	- 39	0	0.052	8.6	Seafloor sediments are classified as fine- to medium-grained, shelly sand. Sediments below 3m, to a depth of ~20m are interpreted to be relatively homogeneous and well consolidated sands.	*Hazards:* **None.** *Constraints:* **Low Probability** of shallow stability issues. **No conductor setting problems were encountered in offset wells, however lack of seismic data between 20m BML and 120mBML does not enable conclusions to be made at well location**
30" csg	- 98	59	0.190		**Proposed 30" Casing set at 135mMDKB (59m BML)**	
Noisy data						
					Fossiliferous calcarenite	
HVC1	- 339.7	300.7	0.346	8.6	**HIGH VELOCITY CHANNEL 1** Approximates top of Miocene channeling section. Sediments below composed of uniform limestone, calcarenite and interbedded marl with minor sands at top.	*Hazards:* **None.** *Constraints:* **None.**
HVC2	- 460.2	421.2	0.442	8.6	**HIGH VELOCITY CHANNEL BASE 2** Channel fill comprising sandstone with minor calcarenite. Variably consolidated and cemented, with possibility for very good porosity.	*Hazards:* **None.** *Constraints:* **Low Probability** of lost returns in loosely consolidated sands
HVC2a	- 524.4	485.4	0.491	8.6	**HIGH VELOCITY CHANNEL BASE 2a** Approximate base of sandstone unit and return to uniform limestone, calcarenite and interbedded marl	*Hazards:* **None.** *Constraints:* **None.**
HVC3	- 636.8	597.8	0.575	8.6	**HIGH VELOCITY CHANNEL BASE 3** Uniform limestone, calcarenite and interbedded marl	*Hazards:* **None.** *Constraints:* **None.**
9-5/8" csg	- 713	674	0.629		**Proposed 9-5/8" casing set at 750m MDkb (674m BML)**	
HVC4	- 793.5	754.5	0.691	8.6	**HIGH VELOCITY CHANNEL BASE 4** Approximates base of channeling sequence and transition to marls and claystones of Lakes Entrance Formation.	*Hazards:* **None.** *Constraints:* **Low Probability** of stuck pipe/tight hole conditions in swelling shales of Lakes Entrance Formation
TOL	- 1148.9	1109.9	0.963	8.6	**TOP LATROBE GROUP UNCONFORMITY** Thin glauconitic, argillaceous siltstone/calcisiltite (5m) overlying thick fluvial sandstones, coals and minor shale, siltstone (reservoir section). Coal thickness is predicted to be 2-10m at West Whiptail-1 based on offset well correlations.	*Hazards:* **Low Probability** of small, normally pressured gas accumulation beneath Top Latrobe unconformity *Constraints:* **Low Probability** of sloughing coals
	- 1187.5	1148.5	1.000		**Depth Limit of Investigation.**	**Depth Limit of Investigation.**

* Time/Depth Function supplied by John Moore (EAL/GAP) ** Estimated Pore Pressure provided by Chris Meakin (EAL/Drilling)

- Seismic Amplitude +

*** Geohazard/Constraint Classification:**

High: Probable presence or occurrence; plausible; likely to happen; mitigation measures highly recommended

Low: Unlikely presence or occurrence; not significant or important; negligible

Moderate: Possible presence or occurrence; potential; capable of favorable development; mitigation measures recommended

None: Not present or no possibility of occurrence

Top-Hole Prognosis and Shallow Drilling Hazards Evaluation

Proposed West Whiptail-1 Exploration Well Location

Proposed Surface Location: 38º 19' 28.9" S 5 758 036mN
147º 30' 17.0" E 544 117mE

Geodetics: Map Grid of Australia (MGA94) / UTM Zone 55; GRS80 Ellipsoid; Geocentric Datum of Australia (GDA94); Central Meridian 147° E.
Key Seismic Lines: G013D Inline 1292, Xline 1765

NOTES:

1. The average water column velocity (1502m/s) used in the derivation of the water depth at the proposed wellsite is a mean velocity derived from the sound velocity profiler used by Thales Geosolutions (Australasia) Ltd. when conducting the West Whiptail-1 Site Survey.
2. RKB elevation for the Ensco-102 jack-up rig is assumed to be 37.135m for MD calculations (provided by Chris Meakin - EAL Drilling).
3. Sediment column velocities are based on time-depth-average velocity relationships derived by John Moore (EAL). The estimated depth prediction error is +/- 1m at the seabed and <3% for sub-seabed.
   * Note: This time-depth conversion is slightly different to that used for depth conversion of the reservoir section, and is only applicable for the shallow section. Depth values provided by the business unit (EAPL geoscience) should be used for TOL and below.
4. Estimated pore-pressure (EMW) values were derived from offset well drilling (mud weights and RFT measurements)

Subsea Depth (metres)	BML Depth (metres)	Interval Thickness (metres)	TWT (sec)	Horizon	P-P EMW (ppg)	Morphology and Structure Lithology Seismic Facies	Potential Drilling Hazards/Constraints
-39	0		0.052	**Seafloor**	8.6	According to Site Survey data, the seafloor at the proposed location shoals gently to the northwest (dip <<1° SE) Seafloor sediments are classified as fine- to medium-grained, shelly sand. Sediments below 3m, to a depth of 20m are interpreted to be relatively homogeneous and well consolidated sands and calcareous sediments, grading to carbonates. **Proposed 30" casing set at 135m MDKB (59m BML, -98mTVDss)**	*Hazards:* **None** *Constraints:* **Low probability** of stability problems. **A data gap exists between that obtained by sub-bottom profiler during the site survey (max penetration 20m BML) and the start of real seismic data (~120mBML). No conductor setting problems have been encountered in offset wells, however this data gap does not enable conclusions to be made at the W.Whiptail well location. More conclusive data will be available once geotechnical information is obtained at the site.**
		300.7					
-339.7	300.7		0.346	**HVC1**	8.6	Uniform limestone, calcarenite and interbedded marl (GIPPSLAND LIMESTONE). Minor sandstone also described at the top of this interval in Whiptail-1A (370-440mMD), with likely continuity to Mulloway-1 based on seismic, however cuttings were not available in this well at this shallow depth to confirm.	*Hazards:* **None** *Constraints:* **None**
		120.5					

Subsea Depth (metres)	BML Depth (metres)	Interval Thickness (metres)	TWT (sec)	Horizon	P-P EMW (ppg)	Morphology and Structure Lithology Seismic Facies	Potential Drilling Hazards/Constraints
-460.2	421.2		0.442	**HVC2**	8.6	Sandstone with minor calcarenite. Described in nearby Whiptail-1A as medium- to coarse-grained loose quartz grains, well rounded and moderately sorted, with minor fossiliferous fragments. Local variations in consolidation and possible cementation.	*Hazards:* **None** *Constraints:* **Low probability** of lost returns in loosely consolidated sands.
		64.2					
-524.4	485.4		0.491	**HVC2a**	8.6	Approximate base of sandstone unit and return to high velocity, uniform limestone, calcarenite and interbedded marl (GIPPSLAND LIMESTONE)	*Hazards:* **None** *Constraints:* **None**
		112.4					
-636.8	597.8		0.575	**HVC3**	8.6	Uniform limestone, calcarenite and interbedded marl (GIPPSLAND LIMESTONE) **Proposed 9-5/8" casing set at 750m MDKB (674m BML, -713mTVDss)**	*Hazards:* **None** *Constraints:* **None**
		156.7					
-793.5	754.5		0.691	**HVC4**	8.6	Approximate base of Miocene channeling sequence. Transition to marl with calcisiltite, calcarenite (LAKES ENTRANCE FORMATION)	*Hazards:* **None** *Constraints:* **Low probability** of stuck pipe/tight hole conditions in swelling shales of Lakes Entrance Formation
		355.4					
-1148.9*	1109.9*		0.963*	**TOL**	8.6	TOP LATROBE GROUP UNCONFORMITY (approximate) Thin glauconitic, argillaceous siltstone/calcisiltite (5m) overlying thick fluvial sandstones, coals and minor shale, siltstone (reservoir section). Coal thickness is predicted to be 2-10m at West Whiptail-1 based on offset well correlations.	*Hazards:* **Low Probability** of small, normally pressured gas accumulation beneath Top Latrobe unconformity *Constraints:* **Low Probability** of sloughing coals
						Depth Limit of Investigation	**Depth Limit of Investigation**

GEODETIC MAPPING PARAMETRES AND VELOCITY DATA

Geodetic Parametres

Projection:	MGA94 (Map Grid of Australia)	**Ellipsoid:**	GRS80
Datum:	GDA94 (Geocentric Datum of Australia)	**Central Meridian:**	147º East
False Easting:	500 000m	**False Northing:**	10 000 000m
Scale Factor at CM:	0.99960	**Units:**	Metres

Velocity Data

Water Column Time to Depth Conversion: The average water column velocity at the proposed location is 1502m/sec. This is based on measurements obtained by a sound velocity profiler as part of the West Whiptail-1 Site Survey conducted by Thales Geosolutions (Australasia) Ltd. in October, 2003.

Subsurface Time to Depth Conversion: Seismic Velocity/Depth/Time predictions are based on a solution provided by John Moore (EAL) dated January 2nd, 2003. The polynomial which best defines the Time/Depth relationship is:

$$\text{Depth BML} = (-579.4t^5 + 2932.4t^4 - 4812.5t^3 + 2395.1t^2 + 945.74t + 1510) * t/2$$

where ‘t’ is the two-way-time in seconds below mudline (BML).

The estimated depth prediction error is ±1 metres at the seabed (based on site survey echosounder data) and <3% for sub-seabed.

OFFSET WELL INFORMATION

Well	Available Information	Easting (m)	Northing (m)	Distance (m)	Bearing(°)
Whiptail-1A	DPR; F.E. Log; GR, resistivity Log.	545394.04	5757971.49	1279	92.9
Mulloway-1	DPR: F.E. Log; GR, resistivity Log.	542292.12	5758175.75	1830	274.4
Barracouta-4	DPR; F.E. Log; GR, resistivity Log.	561294.00	5761860.00	17598	77.4

OFFSET WELL ANALYSIS SUMMARY

The following summarizes the main findings of an investigation of well logs, well summaries and daily drilling reports from the above closest wells:

- The 26" section of each offset well was drilled riserless, therefore no cuttings/lithological infomation is available from the mudline to ~120mBML for each well.
- Pressure data obtained in offset wells indicates the shallow section is normally pressured, with a water gradient of ~1.4psi/m (8.5-8.6ppg EMW).
- Significant lost returns associated with unconsolidated Miocene sands (within the Gippsland Limestone Formation) were recorded in the Barracouta-4 well at ~825mBML. The equivalent sand intervals have been intersected at Whiptail-1A (at 370-440mMDKB and 520-550mMDKB), Mulloway-1 and many other production wells on the Barracouta field, but were drilled with no well control problems. The sand package appears to be variably consolidated and cemented. It is estimated to be of similar thickness to that observed at both Whiptail-1A and Mulloway-1: ~64m.
- The Lakes Entrance Formation is recognised as a potential swelling shale zone. Tight hole conditions are commonly experienced in offset wells within this formation, from approximately 750m - 1000mBML. The unit is gradational with the one above (the Gippsland Limestone), making prediction of the top of the unit difficult.
- Shallow gas has not been observed in offset wells above the top of the Latrobe Group (top of reservoir section). Shallow water flow is also not an issue due to the generally poor reservoir quality of the shallow carbonate dominated stratigraphy.

All depths quoted are Measured Depth (MD) from the RKB, unless separately quoted in brackets as Below Mudline (BML) or True Vertical Depth relative to Sea Surface (TVDSS).

KEY OFFSET WELL SUMMARIES

Well	*Operator*	*Spud Date*	*Water Depth*	*KBE*	*Surface Location*	*Semi-sub MODU*	*Status*	*Offset Distance*	*Data Base*
Whiptail-1A	EAL	8 August 1985	39m	21m	545394.04mE, 5757971.49mN	Southern Cross	P&A	1279m E	WCR, mudlogs, wireline logs

Hole Size	*Depth Range*	*Drilling Fluid*	*Casing*	*Comments*
N/A				Eight anchors run and pretensioned to 230kips. Drilling template run and landed at seafloor depth of 61m KB.
26"	60m - 197m MDKB	Seawater with hi-vis gel slugs	20" set at 182m MDKB (-161m subsea, 122m BML)	26" hole drilled to 198m. Wiper trip conducted prior to POOH. Run and cement casing at 180m. Rig up and run BOP stack and riser. Pressure test failed - leak observed in casing annulus. BOP stack pulled and 20" casing cut. Guidebase and drilling template retrieved. Rig moved approximately 18m west to re-spud. Seafloor template re-run in water depth of 60m. 26" hole drilled to 197m, 20" casing run and cemented at 182m as for original well. BOP stack and riser run and tested - ok.
17½"	197m - 797m MDKB	Seawater with hi-vis gel slugs pumped every stand to 350m	13-3/8" set at 782m MDKB (-761m subsea, 722m BML)	Run in hole with 17-1/2" BHA. Cement tagged at 173m and drilled out with new hole to a depth of 797m. Tight hole experienced from 779 - 721m during POOH, single slugs required to 550m. Run back to bottom and wash 6m of fill to clean hole. Casing run and cemented, full returns. Lithology described as calcarenite, with good quality sandstone 370 - 440m and 510 - 560m, with calcisiltite increasing below.
12¼"	797m -	Seawater gel mud 8.8ppg +	**Below limit of investigation**	Drill out float collar, cement and new formation to 803m. Casing shoe PIT run to leakoff at 12.4ppg EMW. Mudweight gradually increased to 10.3ppg below 941m in anticipation of gas sands and coals below Top Latrobe. At 1165.4m, open hole PIT run at shoe (13.3ppg EMW) before POOH to run core barrel. Lithology described as calcisiltite, with minor calcarenite. Sandstone (Coarse Clastics) at 1160m. Small gas anomaly noted on mudlog , but not evidenced in wireline logs.

Well	*Operator*	*Spud Date*	*Water Depth*	*KBE*	*Surface Location*	*Semi-sub MODU*	*Status*	*Offset Distance*	*Data Base*
Mulloway-1	EAL	8 February, 1989	37m	21m	542292.12mE, 5758175.75mN	Southern Cross	P&A	1830m W	WCR, mudlogs, wireline logs

Hole Size	*Depth Range*	*Drilling Fluid*	*Casing*	*Comments*
N/A				TGB run and landed at seafloor depth of 58m MDKB.
26"	58m - 178m MDKB	Seawater with hi-vis gel slugs	20” set at 170m MDKB (-149m subsea, 112m BML)	26" hole opener BHA stabbed into TGB and drilled to 178m MDKB. Wiper trip conducted prior to POOH. Run and cement casing at 170m. BOP stack and riser run and tested - ok.
17½"	178m - 776m MDKB	Seawater/gel mud	13-3/8" set at 761m MDKB (-740m subsea, 703m BML)	Run in hole with 17-1/2" BHA. Cement tagged at 169m and drilled out with new hole to a depth of 761m. Set casing at 761m and cement.
12¼"	776m -	Seawater gel mud 8.8ppg +	**Below limit of investigation**	Drill out float collar, cement and 3m new formation to 779m. PIT run to leakoff at 14.2ppg EMW. Drill ahead to 1340m in one bit run, conditioning mud and increasing mud weight gradually to 9.5ppg. Lithology described as limestone, claystone with siltstone to Top Latrobe Group Coals and sandstone, siltstone below. POOH at 1340m with overpull up to 90kips. Caliper log indicates hole washed out to 14-15" from casing shoe to 1170m, but in gauge below except for washouts in coal stringers at Top Latrobe.

Well	*Operator*	*Spud Date*	*Water Depth*	*KBE*	*Surface Location*	*Semi-sub MODU*	*Status*	*Offset Distance*	*Data Base*
Barracouta-4	EAL	30 March, 1977	46.6m	25.3m	561294mE, 5761860mN	Ocean Endeavour	P&A	17598m ENE	WCR, DDR, mudlogs, wireline logs

Hole Size	*Depth Range*	*Drilling Fluid*	*Casing*	*Comments*
N/A				Ran all 8 anchors and tested 7 to 250kips.
26"	46.6 - 218.8m MDKB	Seawater with hi-vis gel slugs	20" set at 200m MDKB (-174.7m subsea, 128.1m BML)	Drilled to 218.8, set 20" casing and cemented.
17½"	218.8 - 975m MDKB	Seawater/gel mud	13-3/8" set at 959m MDKB (-933.7m subsea, 887.1m BML)	Drilled out to 809m, drilling break marking the top of a Miocene sand package within dominantly carbonate lithology. Drilled ahead to 897m, encountered a significant drilling break (55-260m/hr) as pipe dropped to 900m and lost circulation. Hole losing ~60bbls/min. No returns to 975m - ran logs and correlated with other Barracouta wells. Ran and cemented 13-3/8" casing at 959m. Temperature log indicated lost circulation zone 807m - 896m. Sidewall cores identified the lithology as an unconsolidated sequence of excellent quality channel sands.
12¼"	975m -	Seawater gel mud 8.8ppg +	**Below limit of investigation**	Ran in hole with 12-1/4" BHA. Tagged top of cement at 670m. Drilled to 980m and conducted PIT to 13.5ppg EMW. Drilled ahead to 1290m, conditioned hole and then POOH to run logs. Tight hole at 1228m, 1231m, 1237m, 1199m, 1179m, 932m during logging runs, some conditioning required. Top Latrobe (Gurnard Formation) identified at 1041m, with change in lithology from carbonates/marls to clastics and coals. Bad hole conditions and minor lost circulation due to coal washouts 1236m to 1255m.

SUMMARY OF FIGURES

Notes:

a. Depth measurements quoted from seismic data were produced using a Time/Depth function supplied by John Moore (EAL/GAP).

Figure

1 *West Whiptail-1 Wellsite Position relative to Data Resources*. The map shows the subset area of the G013D seismic survey (c.2001) used for this analysis. The relative positions of the closest offset wells, the site survey area and the location of seismic sections used as illustrations in the report are also displayed. The shallow mapping area is a rectangle that is approximately 7.5km (inline direction) by 8.2km (xline direction) oriented at 72^{o} from grid north.

2 *Seismic Dip Section through the proposed West Whiptail-1 Wellsite.* The dip traverse shows top-hole conditions at the proposed well to approximately 1200m BML. Shallow horizons referenced in following figures are displayed.

3 *Seismic traverse illustrating the correlation between the proposed West Whiptail-1 wellsite and the Whiptail-1A and Mulloway-1 Offset Wells.* These are the closest offset wells, situated 1279m east and 1830m northwest of the proposed West Whiptail-1 location respectively. Gamma ray (GR - red) and deep resistivity (ILD -blue) logs and casing points for the top-hole section of the wells are displayed.

4 *Seismic tie-line from the proposed West Whiptail-1 Wellsite through Whiptail-1A to Barracouta-4.* This is an extension of the previous seismic traverse line through the Barracouta-4 well, which is located at the northeastern (far) end of the Barracouta structure. This well is significant as an offset to the proposed well due to the occurrence of lost returns in a Miocene sand unit approximately 135m thick. The stratigraphic unit in which the lost returns occurred is regionally continuous and can be correlated to the proposed well location using seismic data (between HVC2 and HVC2a). Penetrations in other nearby wells intersected a similar sand interval within the carbonate sequence, however sand quality and cementation varied. All other wells drilled through this interval without incident. The primary depositional direction during the Miocene was from northwest to southeast, through a series of sub-marine channel incisions. One such major channel axis occurs in the Barracouta region, hence the greater degree of channeling visible on this traverse from the Whiptail area.

The seismic data has been decimated by a factor of two to enable the traverse to fit onto one page.

5 *Contoured Bathymetry*. The map shows water depth contoured at 1m intervals based on two datasets. The black contours and underlying coloured grid are derived from seismic data (grid provided by EAL), and cover a broader area including the two offset wells. The smaller red rectangle is the outline of the West Whiptail site survey (conducted by Thales), with red contours depicting the single-beam echosounder data collected during this survey. Time-to-depth conversion of the raw data was based on constant velocity of 1502 m/sec at the wellsite, obtained by CTD measurements in the water column. The depth prediction error is <1 metre for the echo-sounder data, and closely agrees with the larger, seismic-based dataset.

Water depth at the proposed wellsite location is predicted to be -39m (relative MSL datum), with a prediction error based on offset wells and the accuracy of the geophysical data of <1m (+/-1%). The seafloor is almost flat at the well location with a gentle regional slope to the south-east (<<1^{o}).

6 *Structure Map: Horizon HVC1.* Horizon HVC1 (High Velocity Channel 1) approximates the top of a package of Miocene limestone channeln deposits within the lower velocity marls and calcarenites of the Gippsland Limestone Formation. The horizon is essentially a flat terrace northwest of the well location with a gentle dip of ~0.5^{o} SSE that steepens to ~1.6^{o} SSE in the southeast of the map area. The actual dip at the well location is 1.2^{o} SSE.

7 *Isopach Map: Seafloor to Horizon HVC1. Contour interval 5m.* The marls and calcarenites of the Gippsland Limestone and the overlying recent sands that have been deposited since the major period of Miocene channeling range in thickness from 256m in the northwest of the map area to 430m in the southeast. The sequence is thickest where the channel cutting was most extensive in the area (in the southeast).

8 *Structure Map: Horizon HVC2.* Horizon HVC2 (High Velocity Channel 2) marks the base of a second Miocene channel cut event filled with calcareous sediments, and the approximate top of a sandstone-bearing channel fill sequence. The structure of the horizon is very similar to HVC1 with a flat lying terrace northwest of the well location (dip ~0.5^{o} SSE) steepening in the southeast to 1.2^{o} SSE. The dip at the well location is approximately 0.8^{o} SSE.

9 *Structure Map: Horizon HVC2a.* Horizon HVC2a marks the base of the Miocene sandstone unit and the return to calcareous channel fill, based on regional correlation of wireline well logs and cuttings descriptions. It has a similar structure to Horizon HVC2, with a flat terrace in the northwestern part of the area and a steeper limb to the southeast where dips approach 3^{o} SSE. The dip of the horizon at the well location is approximately 1.1^{o} SSE.

10 *Isopach Map: Horizon HVC2 to Horizon HVC2a. Contour interval 5m*. This map displays the thickness of the Miocene sandstone unit. Offset well Barracouta-4 suffered significant lost returns within this unit due to its medium to coarse grainsize and lack of consolidation. No other wells in the area have experienced drilling issues in this unit (including the nearest offset wells Mulloway-1 and Whiptail-1A) suggesting that the character of this sand is not uniform throughout the region. Horizon HVC2a is eroded by the later channel cutting event defined by Horizon HVC2 outside the mapped area to the east, hence the

thinning of the unit in this direction. The interval thickens to a maximum of 95m in the southwestern corner, and has a thickness at the well of approximately 64m.

11 *Interval Amplitude Extraction Map: Horizon HVC2 to Horizon HVC2a.* This map displays the maximum negative amplitude in the interval HVC2 to HVC2a - the clastic unit within the dominantly carbonate shallow section. Many wells do not have cuttings samples in this interval, including Mulloway-1. Whiptail-1A cuttings described sandstone within this interval, with interbedded carbonates (calcarenite). Based on log signature, the sand interval at Mulloway appears to be slightly thicker and better developed, and has a slightly higher (negative) amplitude value than Whiptail-1A. This may indicate that seismic amplitude character could indicate zones of better developed sands. The interval at West Whiptail-1 has a very similar amplitude character to Mulloway-1 and is expected to intersect a similar clastic unit to that observed on logs in that well.

12 *Structure Map: Horizon HVC4.* Horizon HVC4 (High Velocity Channel 4). This horizon marks the approximate base of the Miocene channeling in the region. Below this horizon the lithology transitions from the marls and calcarenites of the Gippsland Limestone to the marls and claystones of the Lakes Entrance Formation. This transition is gradational and does not correspond to a major seismic marker. The horizon generally dips to the southeast, with dips increasing from ~0.6^{o}SE northwest of the well location to 3-4^{o}SSE as the channeling increases in the southeast corner. The main channel axis trends approximately south from the Whiptail-1A well.

13 *Structure Map: Top Latrobe Group (TOL).* The Top of the Latrobe Group is a major unconformity. Basin-wide structuring and erosion during the Eocene led to the formation of most of the large hydrocarbon traps at TOL level which are producing today, sealed by the trangressive shales and marls above. Below the TOL marker, the Latrobe Group is a thick succession of coastal plain sediments - fluvial sands, coals and shales, capped by a thin glauconitic sand unit (Gurnard Formation). The structure at this horizon mimics that of the underlying target section, set up by a compressional, reactivated east-west trending fault to the north of the well. The horizon generally dips to the south (as set up by basement faulting), with an average dip of approximately 5^{o}S. Dip of the horizon at the well location is approximately 6.2^{o}S.

14 *Isopach Map: Horizon HVC4 to TOL. Contour interval 10m.* The isopach displays the approximate thickness of the interval between the oldest Miocene channeling and the Top of the Latrobe Group unconformity. The majority of this interval is composed of Lakes Entrance Formation marls and claystones. The thinnest section (315m) occurs where the north-south trending HVC4 channel is thickest in the southeast of the area. Similarly, the interval thickens away from the channel facies to the southwest, with a maximum thickness in the mapped area of 540m.

15 *Interval Amplitude Extraction Map: Horizon HVC4 to TOL*. This map displays the maximum negative amplitude in the interval HVC4 to TOL - the Lakes Entrance Formation. As confirmed by local and more regional well penetrations, no anomalous values indicative of hydrocarbon-bearing sediments or good quality reservoir are observed. The key hazards within this sequence are the shales of the Lakes Entrance Formation which swell when hydrated. The slightly higher

amplitude values observed on this map are likely related to slight lithological variations within the interval (eg. Calcarenites or calcsiltites interbedded with shale).

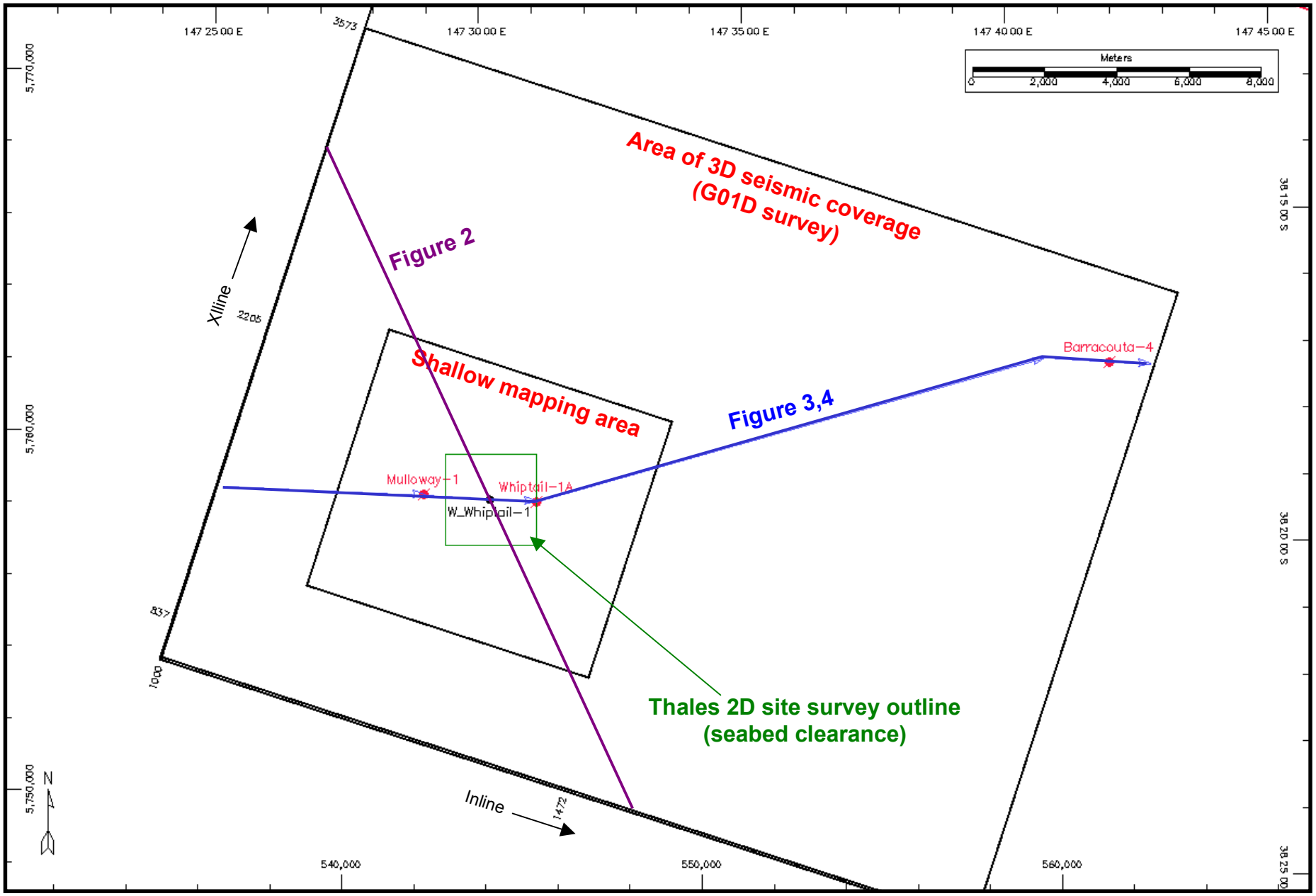


Figure 1. Basemap showing proposed West Whiptail-1 surface location, offset wells, site survey outline (green) and 3D seismic survey used in this study.

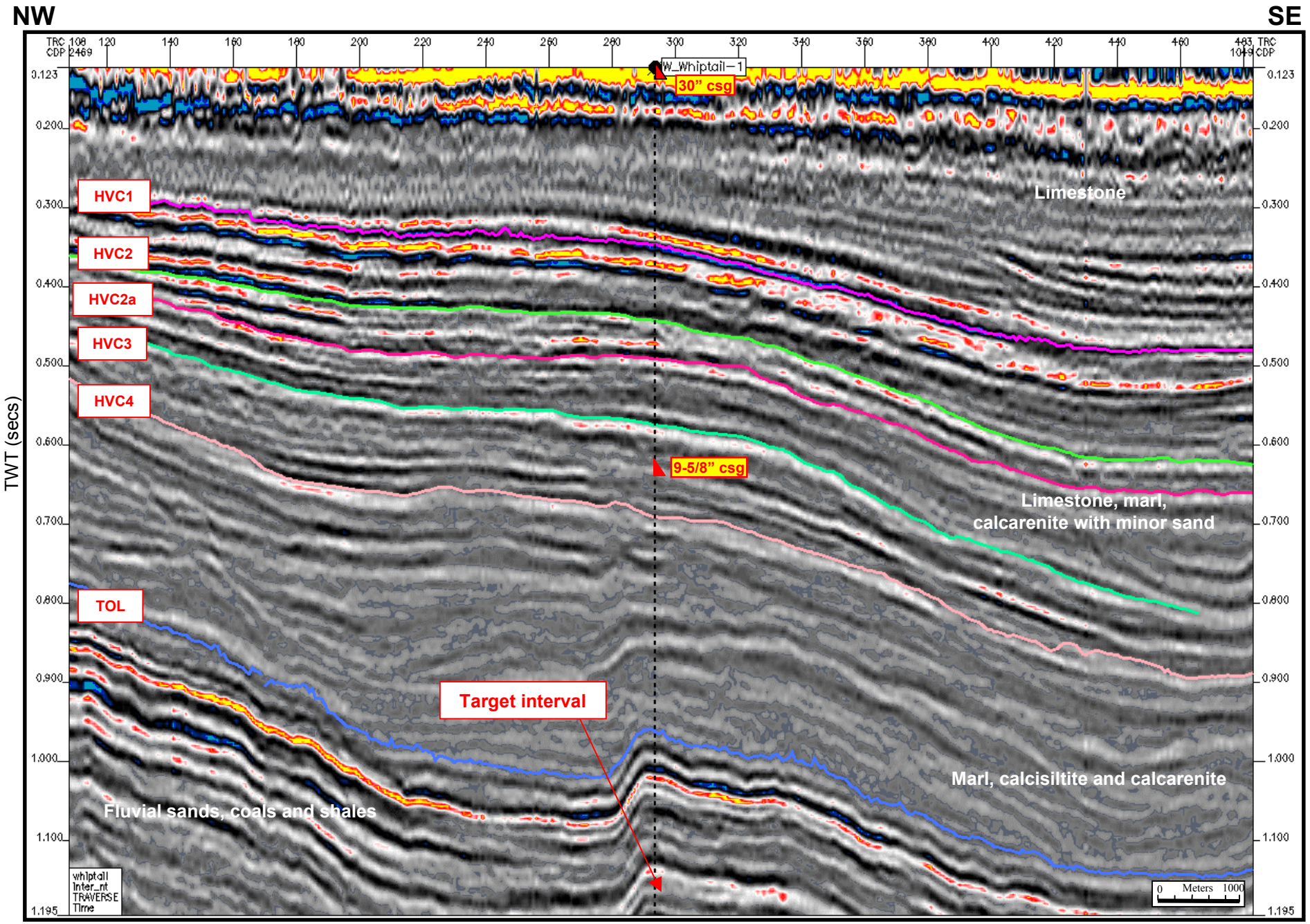


Figure 2. Approximate dip line through the shallow stratigraphy at West Whiptail-1, showing shallow mapped horizons and proposed casing plan.

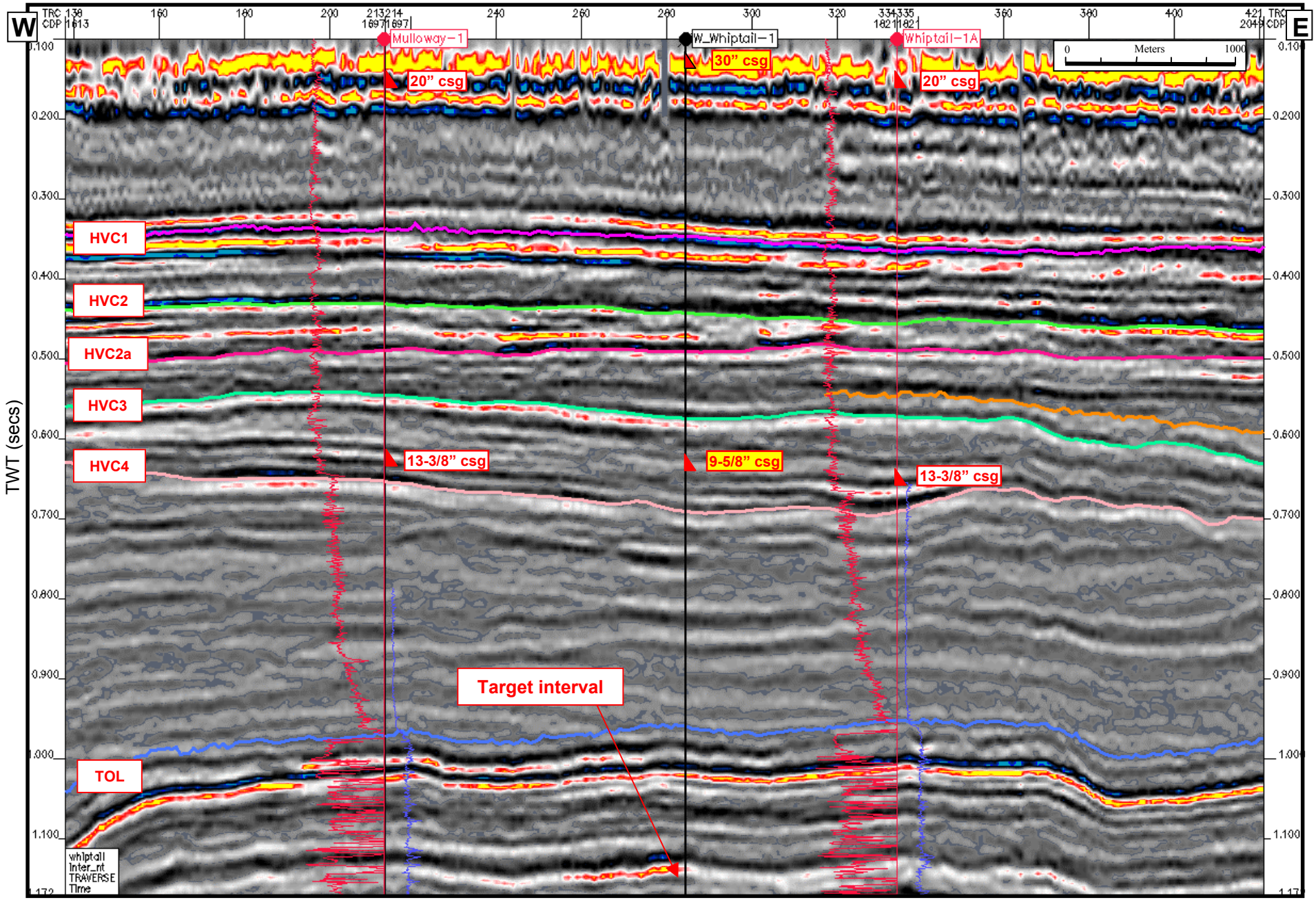


Figure 3. Seismic traverse through Mulloway-1, proposed location West Whiptail-1 and Whiptail-1A, displaying shallow horizons and proposed casing points. Log curves displayed are GR (red) and ILD (blue), exaggerated to show shallow variation in the Tertiary carbonate section.

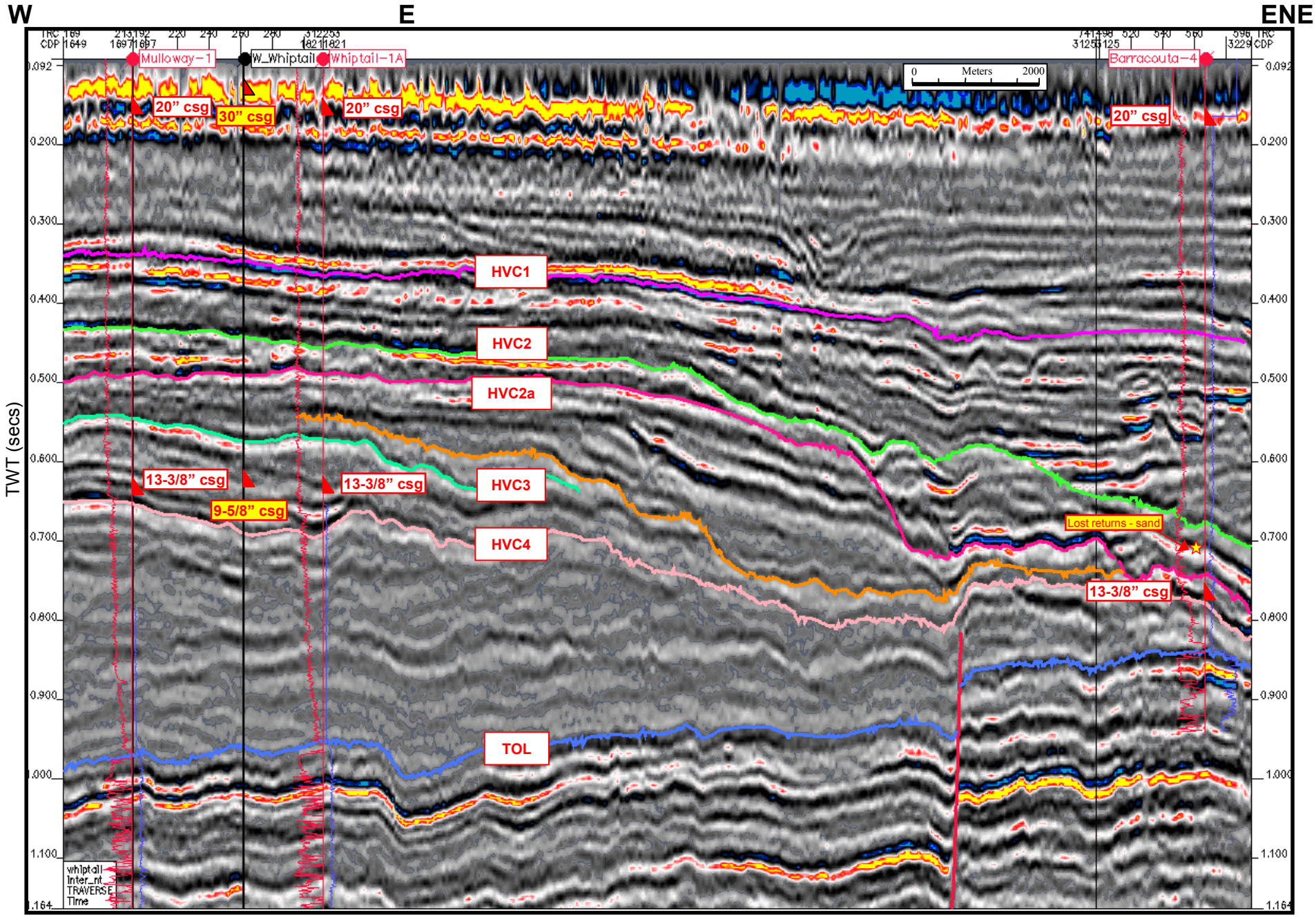


Figure 4. Seismic traverse through Mulloway-1, proposed location West Whiptail-1 and Whiptail-1A, with regional tie to Barracouta-4. Shallow Miocene channeling (denoted by shallow horizons) is more pronounced over the Barracouta field as the shelf slope increases, removing a significant section of Lakes Entrance Formation (between HVC4 and TOL).

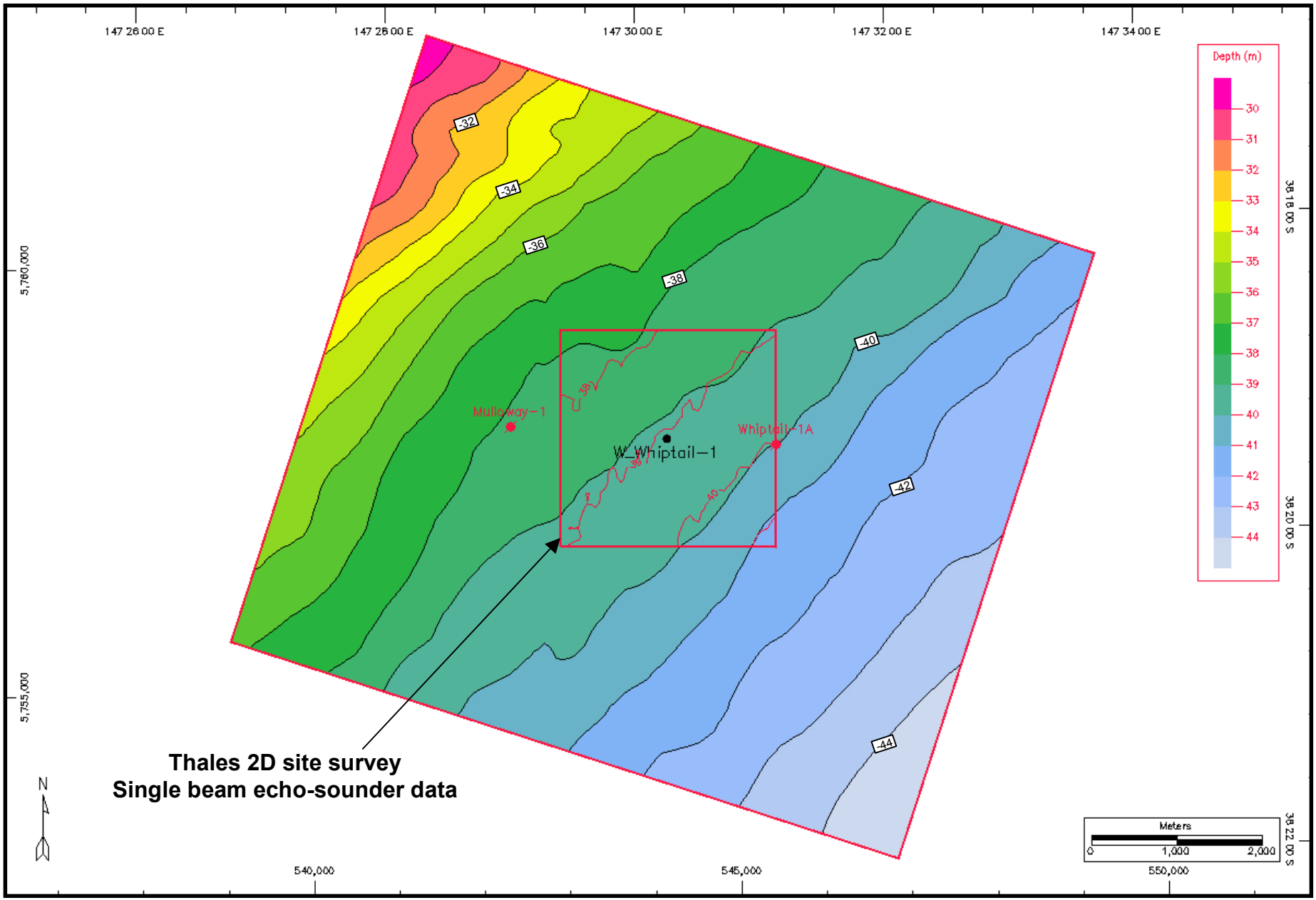


Figure 5. Contoured Bathymetry map (Depth subsea, referenced to MSL). Black contours are derived from seismic data covering the northern margin. Red rectangle defines the Thales site survey area, with contours based on single-beam echosounder data.

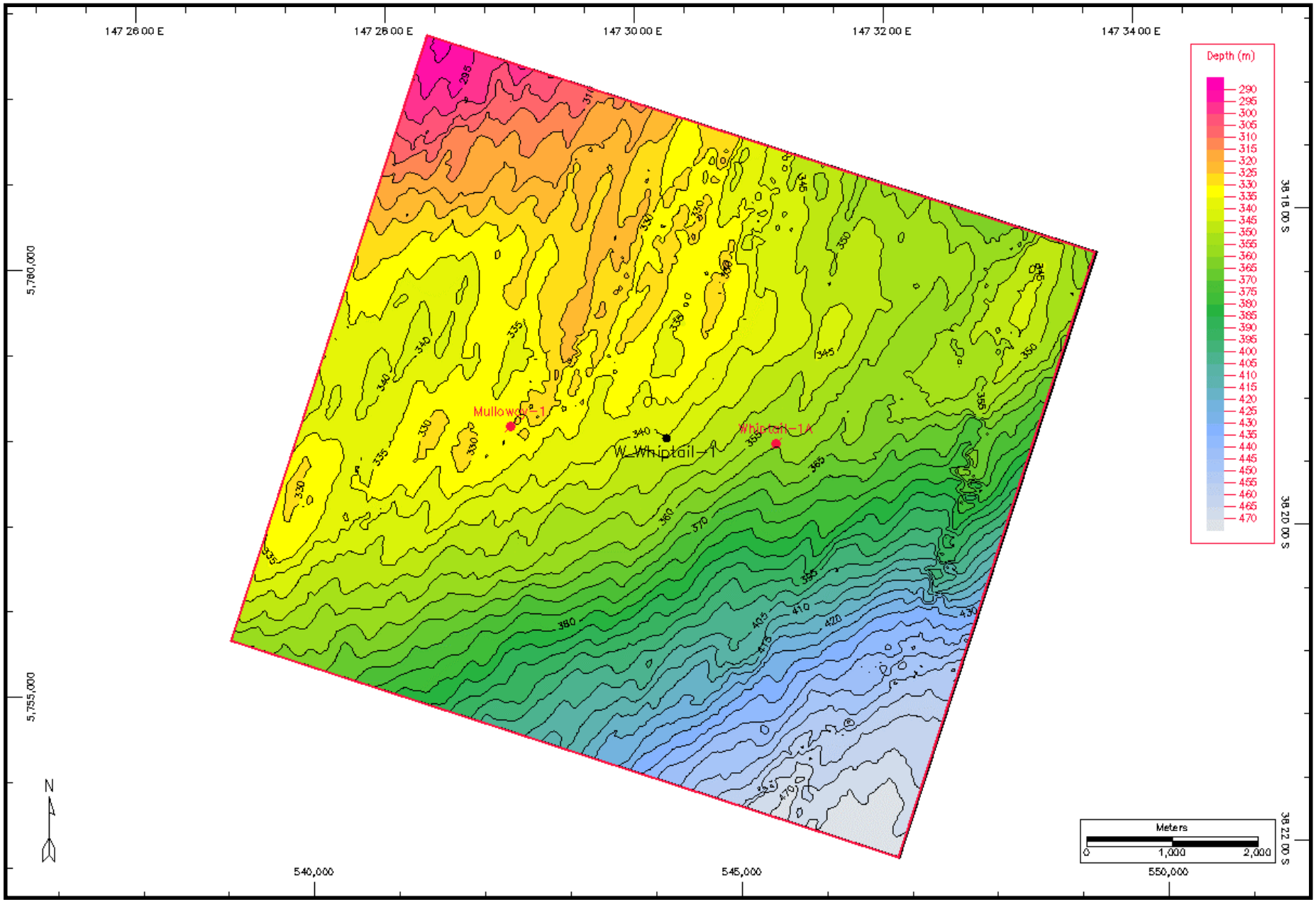


Figure 6. Structure Map for HVC1 (Depth subsea, referenced to MSL). This horizon approximates the top of the most recent channeling in the Whiptail region within the Gippsland Limestone. Contour interval is 5m.

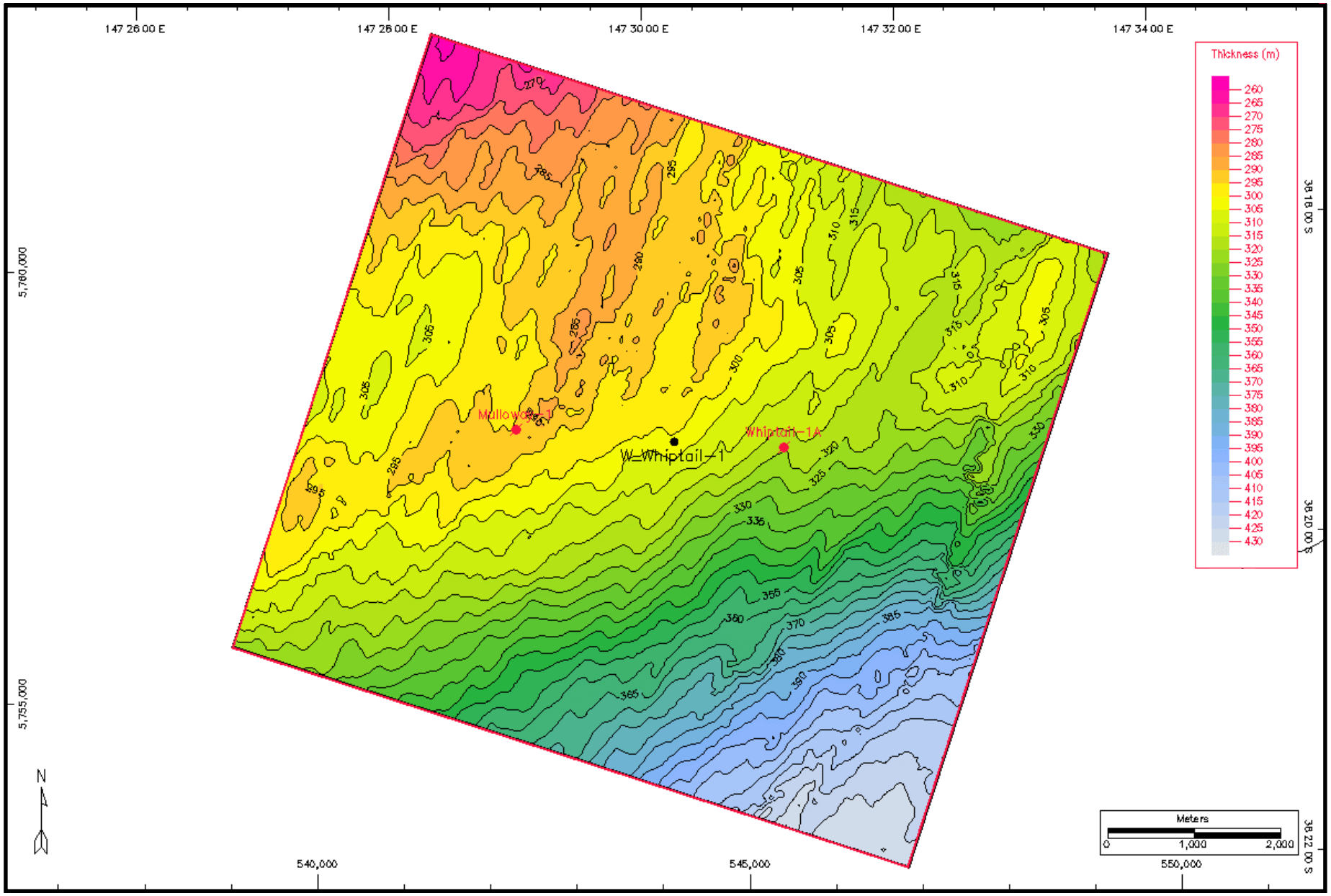


Figure 7. Isopach Map for water bottom to HVC1, encompassing recent sands and Miocene carbonates.

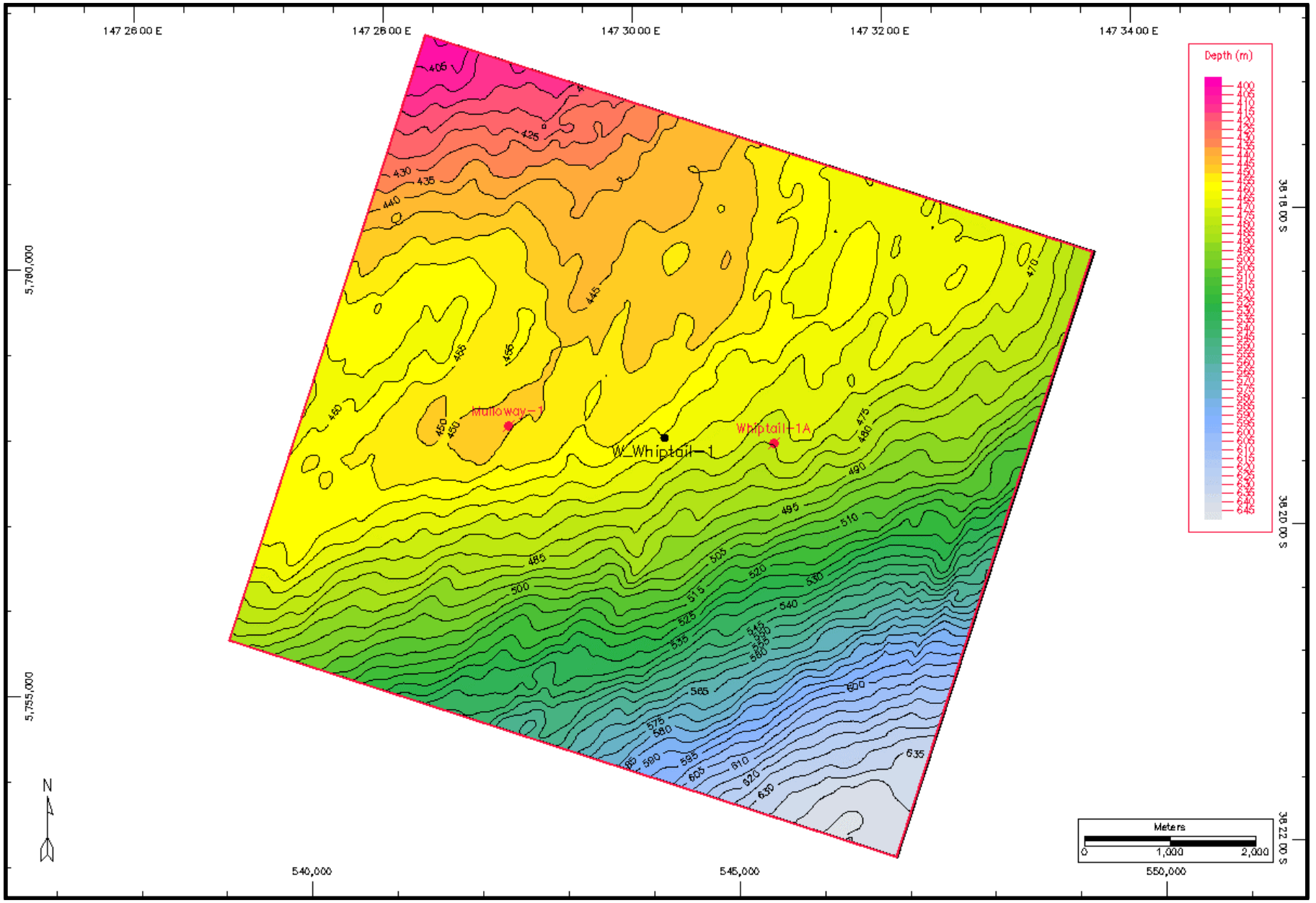


Figure 8. Structure Map for HVC2 (Depth subsea, referenced to MSL). Contour interval is 5m.

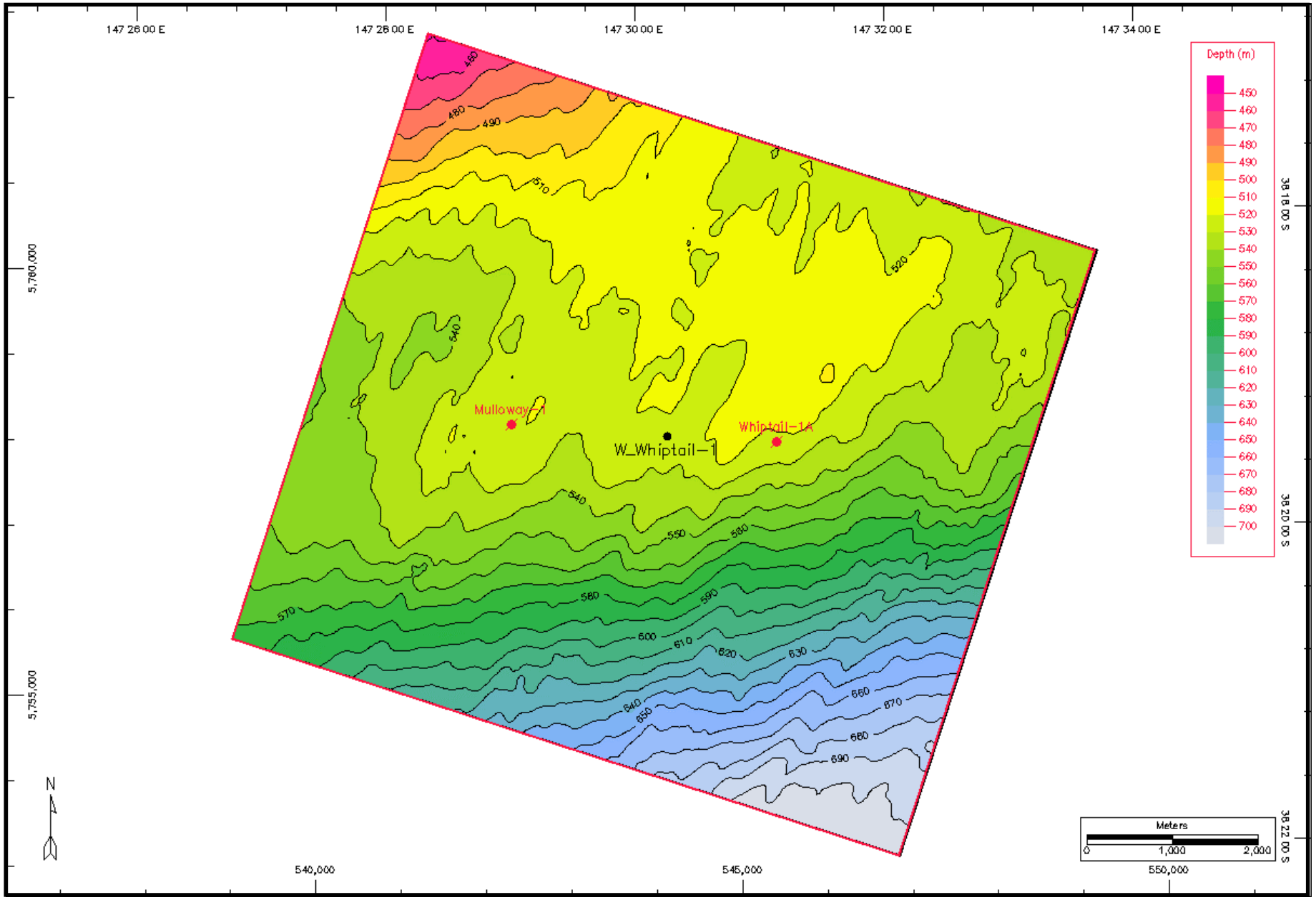


Figure 9. Structure Map for HVC2a (Depth Subsea, referenced to MSL). Contour interval is 10m.

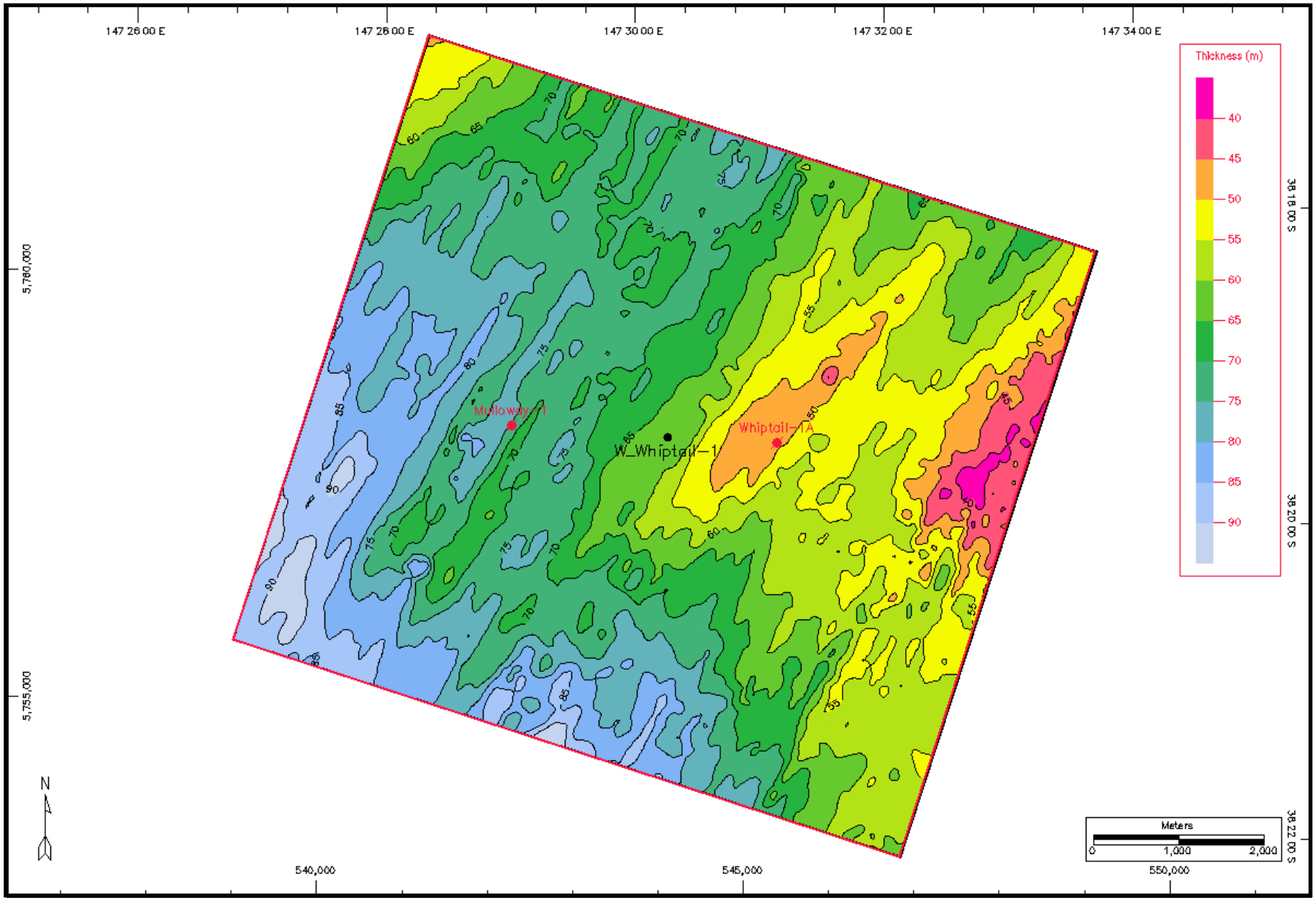


Figure 10. Isopach Map for HVC2 to HVC2a (Miocene clastic unit). Contour interval is 5m.

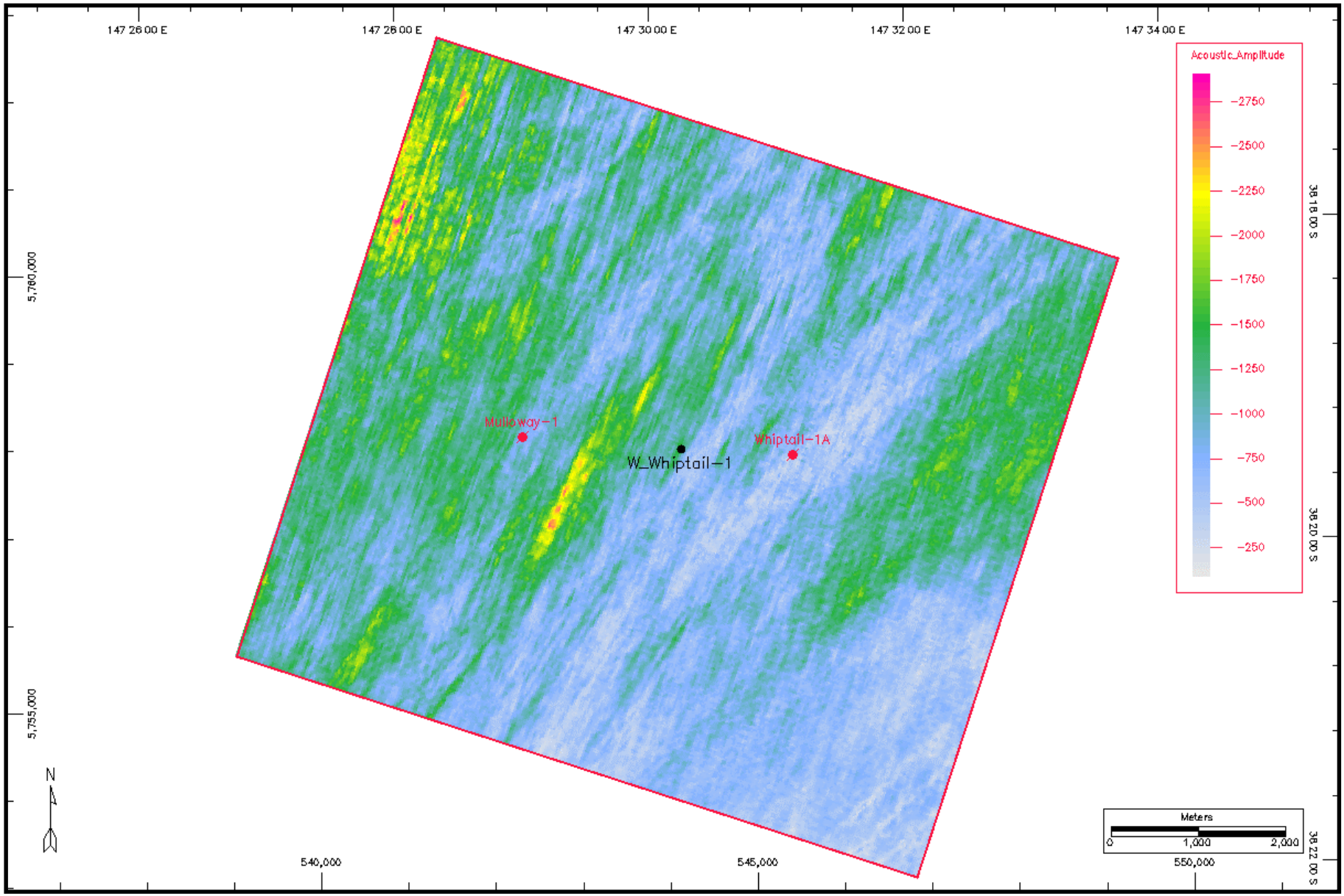


Figure 11. Amplitude extraction (Minimum Interval amplitude) between HVC2 and HVC2a. This interval has been described as a good quality, variably consolidated and cemented sandstone within the predominantly carbonate top-hole section in this area. Primary depositional dip is from northwest to southeast.

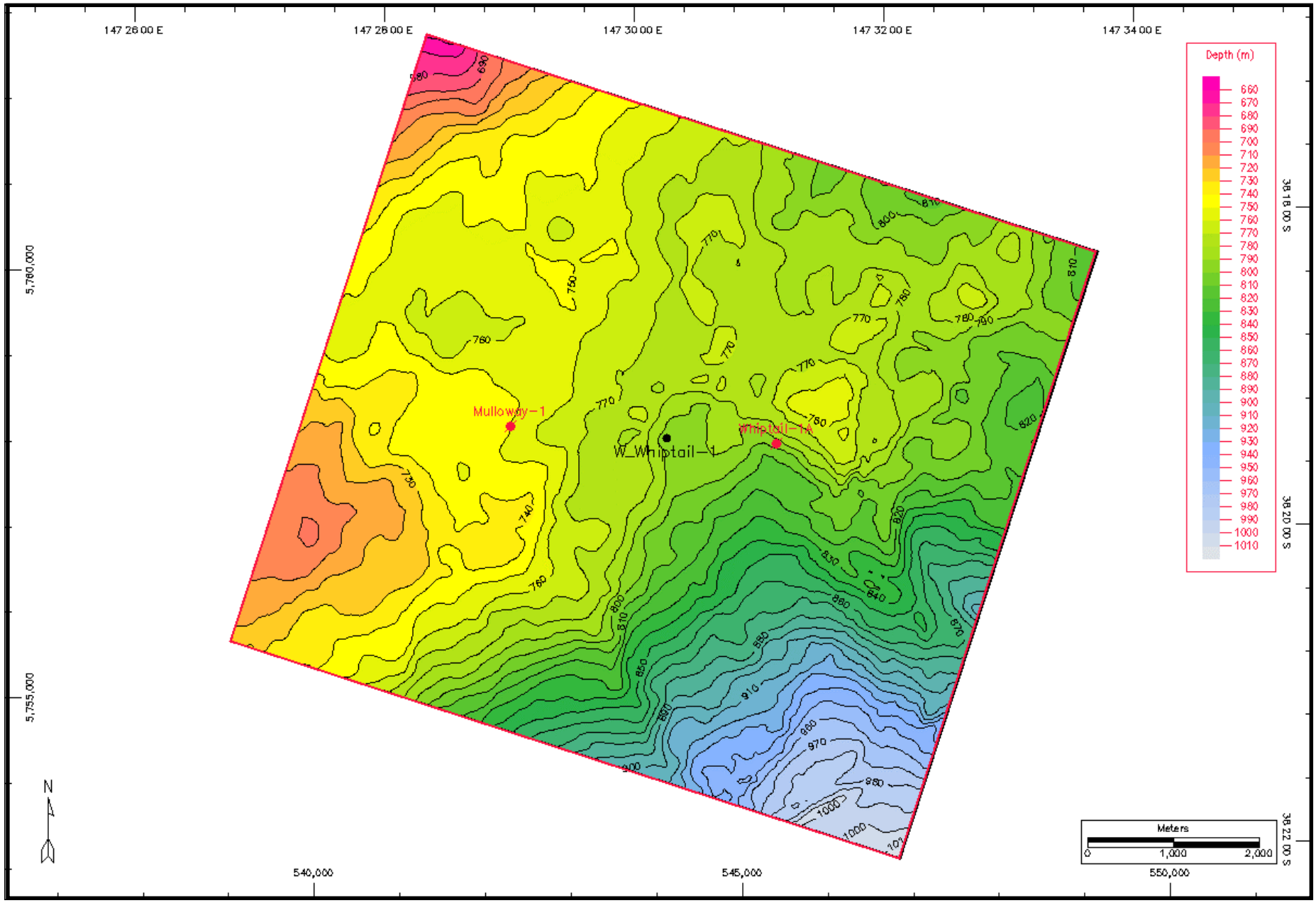


Figure 12. Structure Map for HVC4 (Depth subsea, referenced to MSL). Contour interval is 10m.

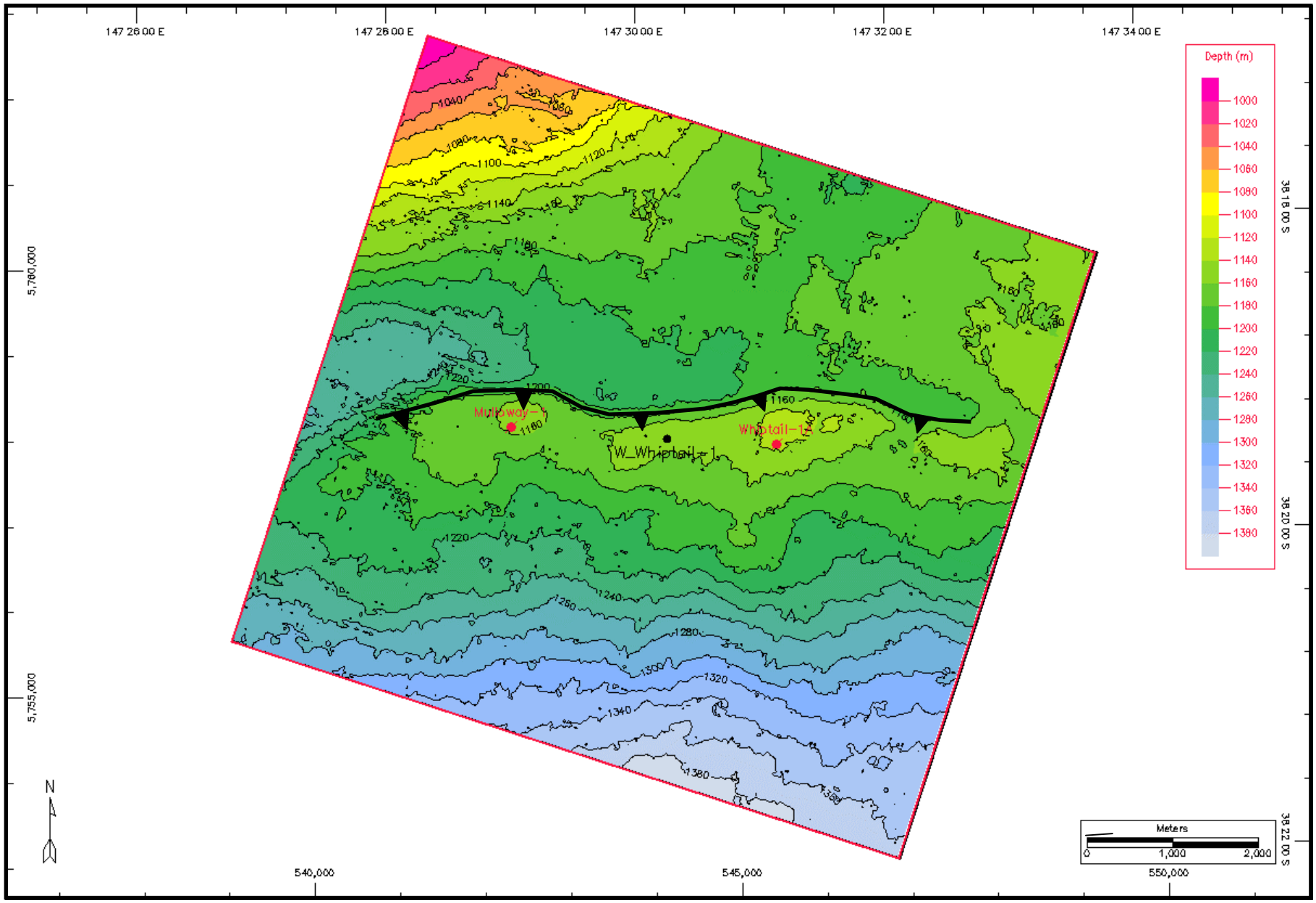


Figure 13. Structure Map for TOL (Depth subsea, referenced to MSL). Contour interval is 20m.

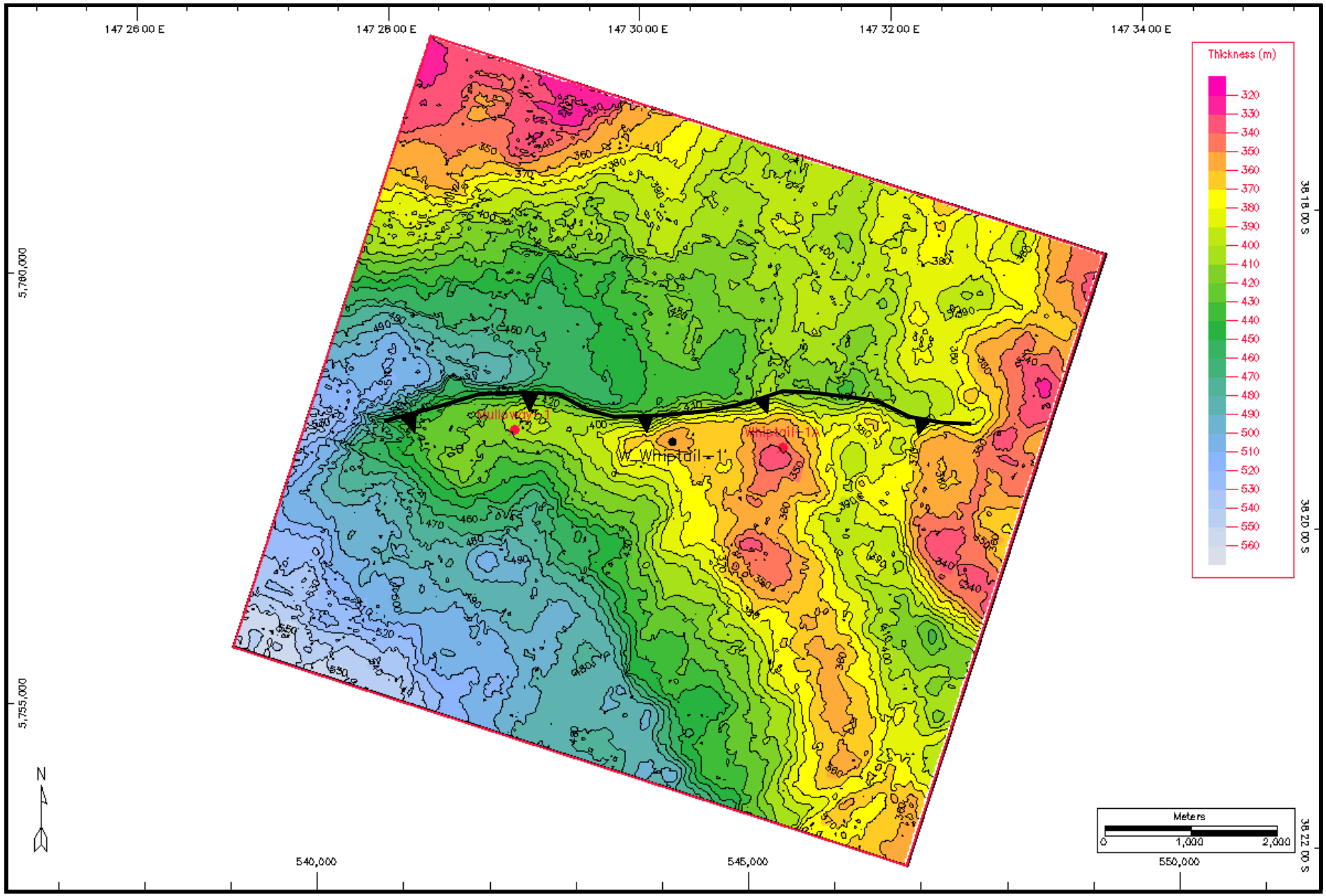


Figure 14. Isopach Map for HVC4 to TOL incorporating the marls in the basal section of the Gippsland Limestone and the shales of the Lakes Entrance Formation. Contour interval is 10m.

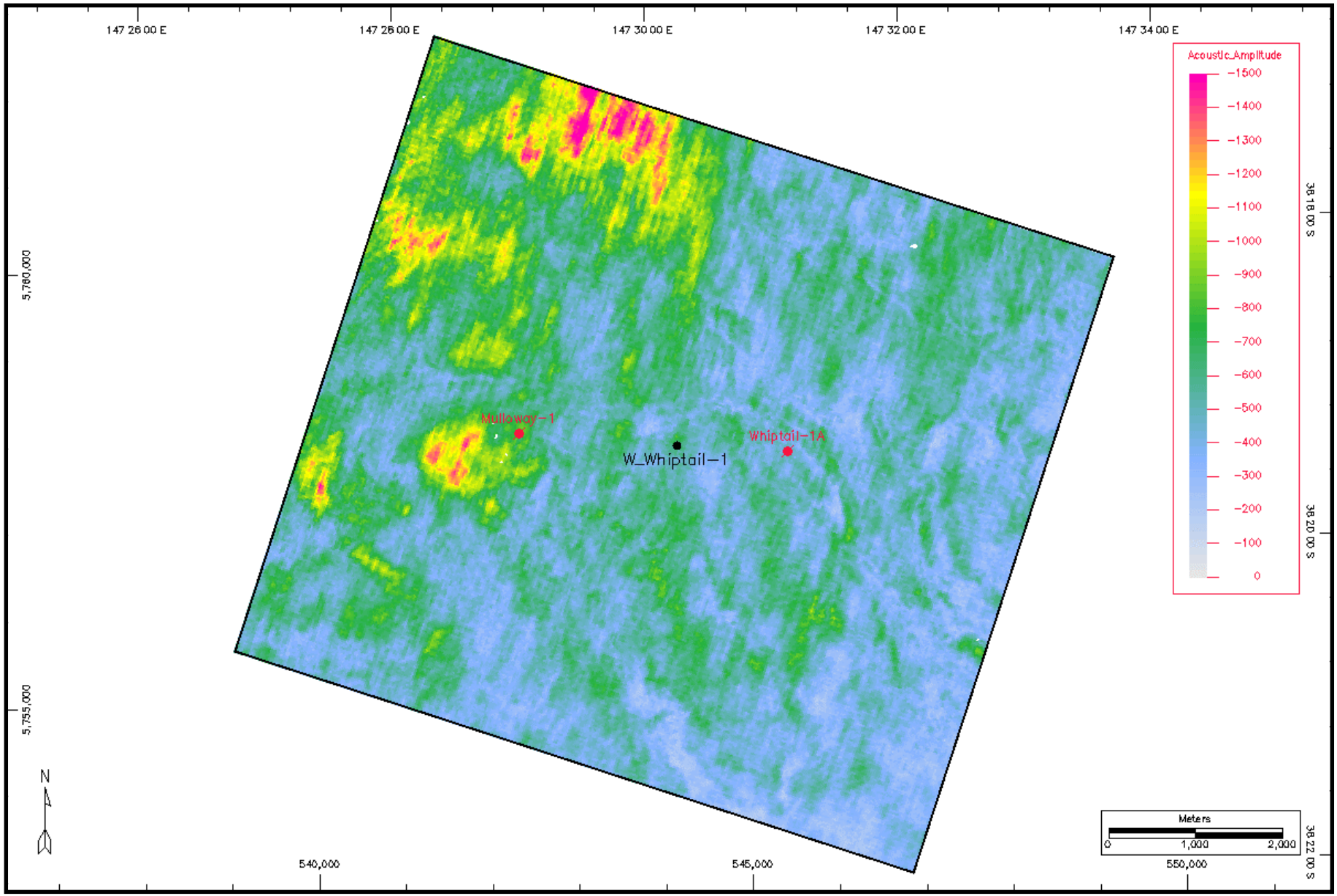


Figure 15. Amplitude extraction (Minimum Interval amplitude) between HVC4 and TOL - dominantly marls and claystones of the Lakes Entrance Formation.