



MARLIN A-23A

FINAL WELL REPORT

Prepared by

Geoservices Overseas S.A.

Engineers: R. Pereira, S. Oades, M. Smith, G. Fawns

Esso Australia Ltd.
12 Riverside Quay,
South Bank, Melbourne
Victoria 3006
Australia
Tel: (03) 9270-3625
Fax: (03) 9270-3593

Geoservices Overseas SA
Suite 6, 23 Plain Street,
East Perth
Western Australia 6004
Australia
Tel : (08) 9225-5677
Fax : (08) 9225-4277

CONTENTS**SECTION 1 -- GENERAL WELL SUMMARY**

WELL DATA	4
MUDLOGGING	5
WELL SUMMARY	6
WELL PROFILE	7
TIME DEPTH CURVE	8
BIT SUMMARY	9
CASING and CEMENTING DETAILS	9
WELL DIRECTIONAL PROFILE	10
WELL DIARY	11

SECTION 2 -- GEOLOGICAL SUMMARY

FORMATION TOPS	15
GEOLOGICAL SUMMARY	15
GAS REPORT	18
MDT SUMMARY	21
CHDT SUMMARY	22

SECTION 3 -- GEOSERVICES WELL LOGS

MASTERLOG --	1:500 scale from 1380 to 3051 metres 1:200 scale from 1380 to 3051 metres
DRILLING LOG --	1:1000 scale from 1380 to 3051 metres
GAS RATIO LOG --	1:500 scale from 1380 to 3051 metres
RESERVAL GAS RATIO LOG --	1:500 scale from 1380 to 3051 metres

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

Section 1

General Well Summary

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

WELL DATA

Operator : ESSO Australia Ltd
Platform : Marlin
Well name : Marlin A-23A
Country : Australia
Location : Gippsland Basin
Field : Marlin
Permit : Vic L3 / L4

Surface Location
GDA 94 / MGA 94 co-ordinates : 5 767 924.000m N 606 863.030m E
Zone 55

Location local co-ordinates : Lat: 38° 13' 49.195" S Long: 148° 13' 13.466" E

Surface co-ordinates : 2.90 mN -22.43 mE

Profile : Deviated

Reference depth : Rotary Table

RT to Seabed : 86.91 metres

RT above M.S.L. : 27.91 metres

Sea-water depth : 59.00 metres

Proposed total depth : 3089 metres

Actual total depth : 3051 metres

True vertical depth : 2732.01 metres

Spudded on : 15th July 2004

Total depth reached on : 21st July 2004

Drilling Contractor

Drilling Contractor : NABORS ISDL
Rig name : 453
Rig type : Platform

Drilling Phases

Diameter (inch)	From (mMDRT)	To (mMDRT)	Mud Type
8½"	1380	3051.0	KCl / Glycol / PHPA

Cased Hole

Casing Diameter (inch)	Casing Type	Shoe Depth (mMDRT)
16"	Conductor	310.0
13 ³ / ₈ "	Surface	610.5
9 ⁵ / ₈ "	Intermediate	1374.5
7"	Production	3050.0

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

MUD LOGGING

Logging Unit Number: 137

Engineers: R. Pereira, M. Smith, S. Oades, G. Fawns

Sampling Interval

Sample Type	Number of sets	Quantity per set	Sampling interval	From (m)	To (m)
Washed and Dried	3	100 grams	10 metres	1380	1440
Washed and Dried	3	100 grams	5 metres	1440	3051

Cuttings Distribution

Company	Washed and Dried Sample Set
Esso Australia	1
Victorian Department of Energy and Minerals	1
Australian Bureau of Resources	1

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

WELL SUMMARY

Marlin A-23A is a re-drill directional well designed to target the Turrum L-500 sandstone. The well was drilled to a Total Depth of 3051 mMDRT (2732.01 mTVDRT) in an 8½" production hole. The well was logged with Reeves Shuttle system, MDTs were performed and 7" production casing was run to 3050 mMDRT, CHDTs were performed and Marlin A-23A was suspended.

Marlin A-23A was spudded at 06:00 hours on the 15th of July 2004 after setting a 9⁵/₈" whipstock and milling a window in the existing 9⁵/₈" casing from 1368.2 m to 1374.5 m and extending into the formation to 1380 m.

After milling the casing window, the hole was displaced to new KCl/Polymer mud and the hole circulated to condition the mud before a Pressure Integrity Test (1085 psi: 14.0 ppg EMW) was carried out with 9.2 ppg mud. The string was then pulled out of the hole and an 8½" steerable / MWD drilling assembly was made up with a Reed Hycalog RSX 163 bit and run in the hole and worked through the window to 1380 m. The well was kicked-off and drilled, steered and rotated ahead to 2408 m where a wiper trip to the shoe was conducted. The well was then drilled, steered and rotated ahead to Total Depth at 3051 m without any problems.

Marlin A-23A reached a Total Depth of 3051 m at 14:30 hours on the 21st of July 2004. The final survey at a depth of 3030.18 mMDRT had an inclination of 14.67° and an azimuth of 193.43°. A wiper trip was made to 1347 m inside the 9⁵/₈" casing prior to pulling out of the hole and running the Reeves shuttle conveyed memory logging system. After Reeves logging was completed, a Schlumberger Modular Reservoir Dynamics Tester (MDT) tool was run on drill pipe over two intervals to further evaluate the reservoir. A post logging wiper trip was carried out and 7" production casing was run and set at 3050 m. After cutting casing and reinstalling and testing the B section and BOP, a CHDT sampling programme was conducted after which the casing was tested, the well was suspended and the rig was then skidded to Marlin A-10A.

Prior to reaching the kick off depth and drilling new formation the hole was displaced to a KCl / Polymer mud system with an initial mud weight of 9.2 ppg. Baracarb 25 and 100 was added as per programmed concentrations to bridge the pore throats and reduce the likelihood of differential sticking and seepage losses through the Latrobe Formation. Barablok was also added to the mud system at 4 ppb prior to drilling new formation and drilling into coals and this was maintained to TD. The mud weight was maintained at 9.4 ppg until 2284 m where it was gradually weighted up to 9.5 ppg with Barite additions and maintained to TD. Throughout the lithology sections the mud weight ranged from 9.4 ppg to 9.6 ppg while drilling and the mud rheology was maintained at the programmed concentrations with the addition of Glycol and PHPA to TD.

Throughout the Marlin A-23A drilling programme, there were no significant losses or gains encountered while drilling. During logging programs the well had static mud losses ranging from 0.3 to 1.0 bb/hr.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

WELL PROFILE

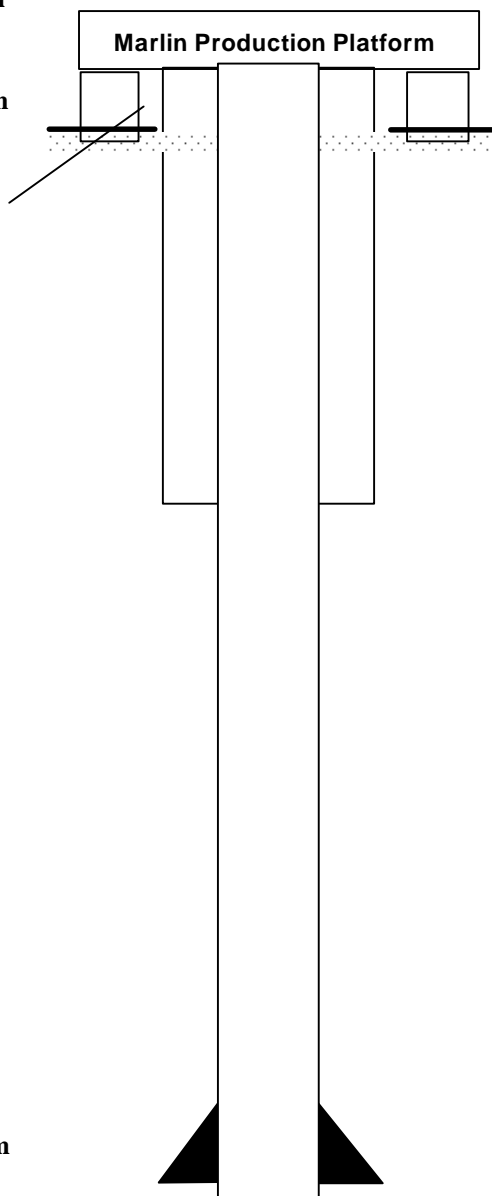
Rotary Table to Mean Sea Level
27.91 m

Rotary Table to Sea Bed 86.91 m

16" Conductor at 310.0 m

9⁵/₈" Casing Set at 1374.5 m

7" Production casing at 3050.0 m



NABORS Rig 453

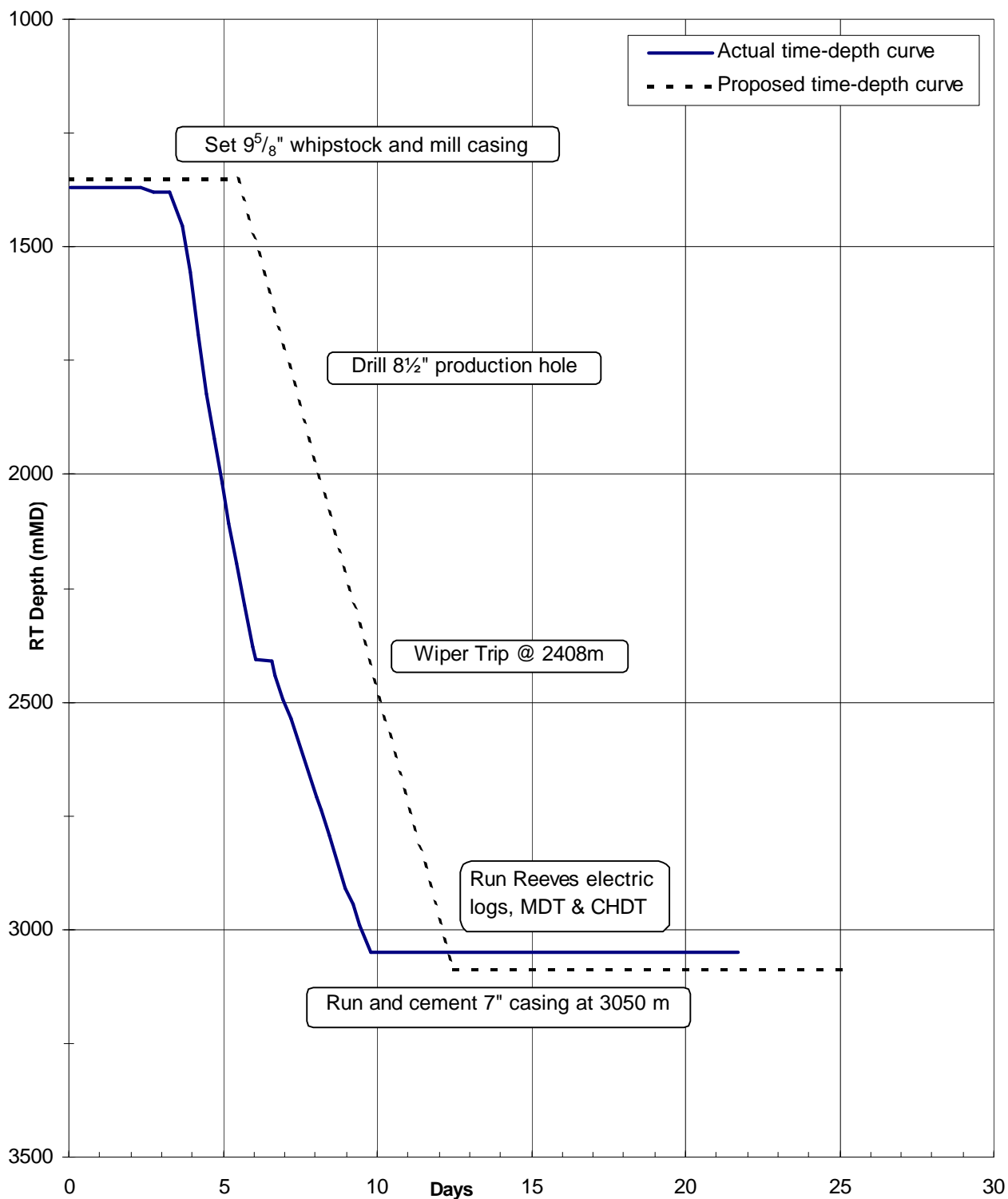
Kicked-off A-23A
15th July 2004

1380.0 m – 3051.0 m
Mud Weight 9.2 – 9.6 ppg

8¹/₂" Hole drilled to 3051.0 m

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

TIME-DEPTH CURVE (measured depth)



Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

BIT RUN SUMMARY

BIT	Size	Type	Jets	In(m)	Out(m)	Hours	Condition
1	8½"	Reed Hycalog RSX 163	4 x 18 2 x 22	1380	3051	91.0	4-8-WT-A-X-1-ER/LT-TD

CASING DATA

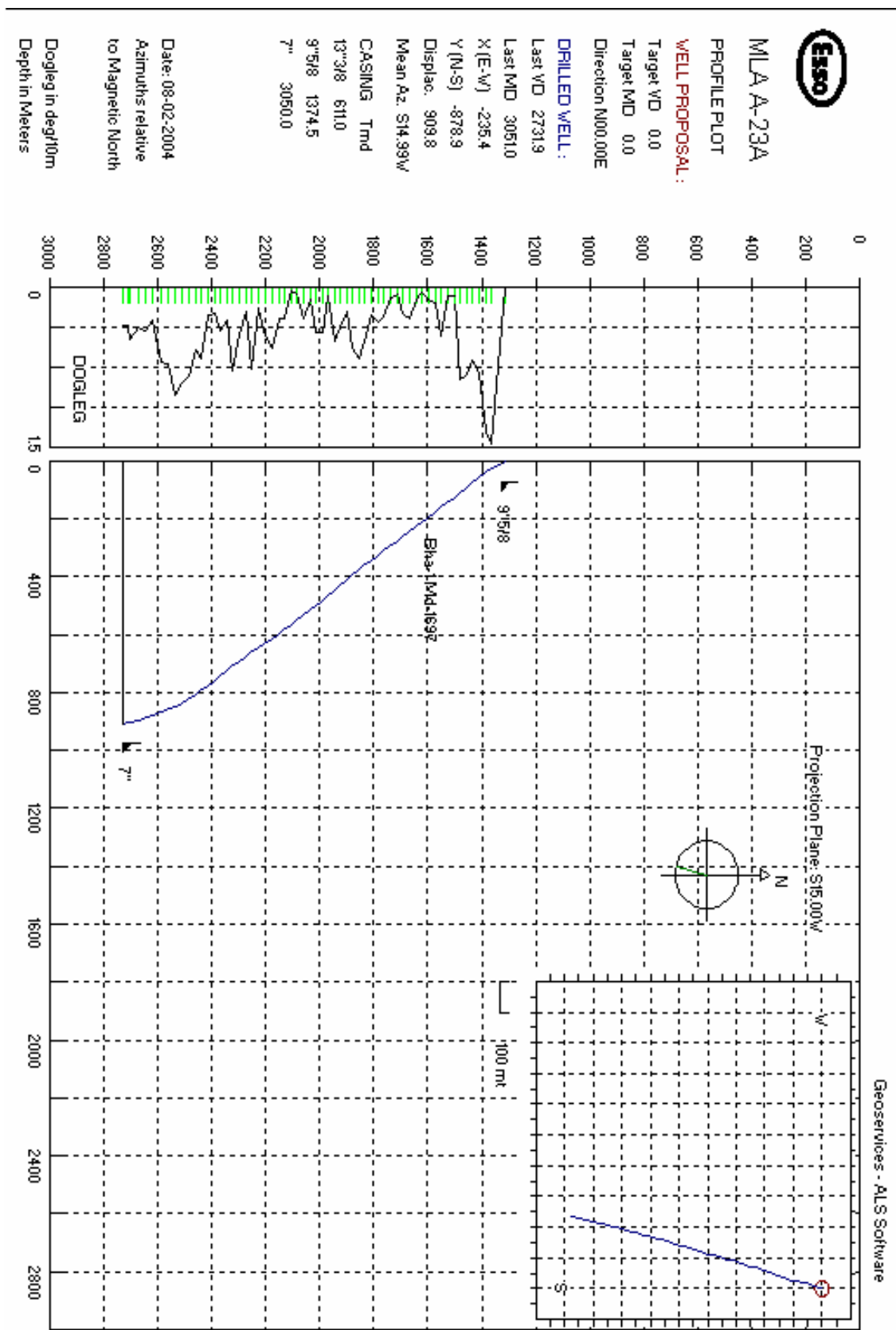
Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Conductor	16	133	K-55	BTC	310.0
Surface	13 ³ / ₈	54.5	J-55	BTC	610.5
Intermediate	9 ⁵ / ₈	47	L-80	LTC	1374.5
Production	7	26	L-80	LTC	3050.0

CEMENTING DATA

Casing details	Cement Type	Dry Cement Volume (sx)	Cement Additives	Mix Water (bbls)	Slurry Volume (bbls)	Slurry Density (ppg)	Cement to/from (mMDRT)	Casing Pressure Test (psi)
7"	HTB	635	HALAD 413L 30 gal / 10 bbl Gascon 60 gal / 10 bbl CFR-3L 2 gal / 10 bbl SCR-100L 7 gal / 10 bbl HALAD 413L 30 gal / 10 bbl Gascon 15 gal / 10 bbl CFR-3L 5 gal / 10 bbl SCR-100L 2 gal / 10 bbl	67 49	92 81	L:13.0 T:15.0	1554 m 3050 m	2500 psi

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

WELL DIRECTIONAL PROFILE



Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

WELL DIARY

- 11th July 2004** Change to MLA A-23A @ 20:00hrs. Nipple down BOPs and riser. Change out B section. Cameron test seals 1500 psi/15 minutes. Dress MPRs to 2⁷/₈" – 5¹/₂" VBRs.
- 12th July 2004** Continue to dress MPRs to 2⁷/₈" – 5¹/₂" VBRs. Nipple up BOP and riser. Make up test assembly and test lines and MPRs to both 4" and 5" DP. Attempt to test annular BOP – no go. Change out annular element and function test. Make up test assembly and test BOPs, choke and stand pipe manifolds. Test annular to 4" and 5" drill pipe. Break down test assembly and run wear bushing. Rig service. Make up scraper assembly.
- 13th July 2004** Continue to make up scraper assembly and run in hole. Tag top of cement at 1390 m and circulate hole to sea water. Work scraper from 1390 m to 1370 m. Pull out of hole and lay out scraper. Rig up schlumberger and run EZSV to 1375 m. Make up whipstock and milling assembly, orientate and run in hole to EZSV depth. Rig up SDI and side entry sub. Run in hole with gyro and orientate whipstock.
- 14th July 2004** Continue to orientate whipstock. Pull out with gyro and lay out side entry sub. Set whipstock and bottom trip anchor at 1375 m. Mill 9⁵/₈" casing from 1368.2 m to 1380m. Displace to mud and pull back through window to 1366 m. Test lines and conduct PIT, 9.2 ppg; 1085 psi; EMW 14.0 ppg; 1100 psi. Pull out of hole and lay out milling assembly. Make up bit and BHA and shallow test motor. Lay out motor due to bent housing failure. Make up bit and BHA.
- 15th July 2004** Continue to make up bit and BHA. Run in hole from 199 m to 1374.5 m and orientate through window. Ream under gauge hole from 1374.5 m to 1380 m. Drill, steer and survey 8¹/₂" hole from 1380 m to 1453 m. Observe 500 units of gas, slight flow observed. Shut in and monitor pressure – 0 psi. Open annular and circulate until below 45 units. Drill, steer and survey 8¹/₂" hole from 1453 m to 1519 m. Circulate whilst rigging down Schlumberger sheaves from crown. Drill, steer and survey 8¹/₂" hole from 1519 m to 1691 m.
- 16th July 2004** Drill, steer and survey 8¹/₂" hole from 1691 m to 2109 m.
- 17th July 2004** Drill, steer and survey 8¹/₂" hole from 2109 m to 2121 m. Service rig while cleaning mud pump strainers. Drill, steer and survey 8¹/₂" hole from 2121 m to 2264 m. Clean mud pump suction screens, while circulating. Change valve and seat on mud pump 1, while circulating. Drill, steer and survey 8¹/₂" hole from 2264 m to 2380 m. Conduct flow check – static. Drill, steer and survey 8¹/₂" hole from 2380 m to 2408 m. Circulate hole clean while racking back from 2408 m to 2322 m. Conduct flow check – static. Pull out of hole.
- 18th July 2004** Pull out of hole from 2322 m to 1434 m. Pump 20 bbl super sweep and circulate hole clean. Orientate bit, flow check and pull out of hole to 1347 m. Slip and cut drilling line. Run in hole to 2408 m; precautionary wash last 2 stands. Drill, steer and survey 8¹/₂" hole from 2408 m to 2434 m. Circulate out high gas (670 units) and conduct flow check. Drill, steer and survey 8¹/₂" hole from 2434 m to 2437 m. Circulate out high gas (860 units) and conduct flow check. Drill, steer and survey 8¹/₂" hole from 2437 m to 2536 m.
- 19th July 2004** Drill, steer and survey 8¹/₂" hole from 2536 m to 2733 m. Circulate whilst change swab/liner #2 mud pump. Rig service whilst complete change out. Drill steer and survey from 2733 m to 2738 m.
- 20th July 2004** Drill, steer and survey from 2738 m to 2813 m. Circulate via side entry sub whilst change Kelly hose seal and mud pump cap seal. Drill steer and survey from 2813 m to 2941 m. Circulate whilst change swab on #1 mud pump and change screens on #2 shaker. Drill steer and survey from 2941 m to 2945 m.
- 21st July 2004** Drill, steer and survey from 2945 m to 3051 m. Pump 20 bbls super sweep and circulate hole clean. Pull out of hole to 1433 m. Pump 20 bbls super sweep and circulate hole clean. Orientate

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

motor and pull out of hole to 1347 m. Service rig and install Reeves block height sensor. Run in hole to bottom.

- 22nd July 2004** Continue to run in hole to bottom, washing and reaming last two stands. Pump 20 bbl super sweep and circulate hole clean whilst rack back from 3051 m to 2980 m. Slug pipe and pull out of hole to 1347. Slip and cut. Continue to pull out of hole. Rack back BHA. Make up Reeves Shuttle Logging tool and run in hole on drill pipe.
- 23rd July 2004** Continue to run in hole with Reeves Shuttle Logging tool on drill pipe to 3051 m. Pulled back to 291 m. Circulate and deploy logging tool. Log up from 3045 m to 1958 m. Pull out of hole from 1958 m. Lay out logging tools. Logging data not available. Make up Reeves Shuttle Logging tool on drill pipe and run in hole for second logging run.
- 24th July 2004** Continue to run in hole with Reeves Shuttle Logging tool on drill pipe to 3051 m. Pulled back to 2991 m. Circulate and deploy logging tool. Log up from 3045 m to 1958 m. Pull out of hole from 1958 m. Lay out logging tools. Clear rig floor. Rig service. Install Schlumberger sheave at crown. Pick up and make up Schlumberger MDT Tools and run in hole on drill pipe.
- 25th July 2004** Continue to run in hole with Schlumberger MDT Tools on drill pipe to 1330 m. Circulate string volume. Make up side entry sub and cross overs. Schlumberger run in hole with wet connect and latch MDT tool, test same. Schlumberger pull out of hole with wet connect whilst circulate bottoms up. Break and lay down side entry and cross overs. Run in hole from 1330 m to 1859 m. Make up side entry sub and string stabiliser. Schlumberger run in hole with wet connect and latch MDT tool, test same. Secure and conduct overpull on wire line. Spot 10 bbl freshwater around wet connector. Run in from 1859 m to 3025 m. Correlate MDT tools between 3025 m and 2918 m. Pull out of hole conducting MDT pressure surveys as programmed.
- 26th July 2004** Continue to pull out of hole conducting MDT pressure surveys as programmed to 2532 m. Flow check and pull out of hole from 2532 m to 1859 m. Remove clamp, shear off MDT tools and Schlumberger pull out of hole with wireline. Break down and layout side entry sub and string stabiliser. Pull out of hole from 1859 m to 1388 m. Make up side entry sub and string stabiliser. Circulate hole whilst Schlumberger run in hole with wet connect. Latch onto and test tools. Schlumberger conduct overpull test on wireline. Pull out of hole conducting MDT pressure surveys as programmed.
- 27th July 2004** Continue to pull out of hole conducting MDT pressure surveys as programmed to 1448 m. Pull out of hole from 1448 m to 1388 m. Schlumberger pull and shear off MDT tool with wet connect and pull out of hole. Break and lay out side entry sub and stabiliser. Pull out of hole from 1388 m, rack back HWDP and lay out jar. Schlumberger break and lay out MDT tools. Rig to and retrieve wearbushing. Make up 5" test assembly, seat same. Install high pressure lines. Howco test BOP choke manifold and stand pipes. Pull and lay out 5" test assembly. Make up 4" test assembly, seat same. Howco test 2⁷/₈"-5¹/₂" rams. Pull and lay out 4" test assembly. Prepare to and run in hole.
- 28th July 2004** Continue to run in hole to 1340 m. Slip and cut, rig service. Run in hole from 1340 m to 1456 m. Rotate, work string whilst circulate and condition mud. Run in hole from 1456 m to 1942 m. Rotate and work string whilst circulate and condition mud. Run in hole from 1942 m to 2458 m. Rotate and work string whilst circulate and condition mud. Run in hole from 2458 m to 3051 m. Pump 25 bbl super sweep, rotate and work string whilst circulate hole clean racking back 1 stand per half hour to 3002 m. Pull out of hole from 3002 m, rack back HWDP and lay out jar. Close LPRs around DP. Change out UPRs to 7" solids. Pressure test. Make up Weatherford casing handling gear.
- 29th July 2004** Make up Weatherford casing handling gear and run 7" casing as per programme.
- 30th July 2004** Run 7" casing to 3050 m. Rig up cementing head. Circulate and condition mud in hole. Cemented as per ESSO programme. Wait on cement.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

31st July 2004

Wait on cement. Set casing slips. Lift BOP and riser and cut casing. Nipple down BOP and riser. Dress casing stump. Change out rams. Install tubing head and pressure test. Nipple up BOP and riser. Run wear bushing. Pressure test BOP. Rig up Schlumberger and run CHDT logs.

01st August 2004

Continue to run CHDT log #1 at 2921 m. Pull out of hole with CHDT to surface. Secure chambers. Break and lay out chambers for redress. Redress CHDT tools. Make up and function test CHDT tools. Run in hole and conduct CHDT log #2 as per program. Schlumberger pull out of hole to surface. Break and lay out CHDT tool. Pressure test casing. Make up and function test CHDT tools. Run in hole and rerun CHDT log #2 as per program.

02nd August 2004

Continue to rerun CHDT log #2 as per program. Tool failure, pull out of hole. Break down and lay out tools. Pressure tested casing to 3000 psi for 15 minutes. Rigged down Schlumberger sheaves and cleared rig floor. Remove wear bushing and nipple down flow lines. Nipple down bell nipple, BOP, riser and deluge skids. Install abandonment flange and valves. Reinstate deck grating. Crane shut down for repairs. Change over to MLA A-10A at 12:00 hours.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

Section 2

Geological Summary

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

FORMATION TOPS

DESCRIPTION	MD (m) RT	TVD (m) RT	TVD (m) SS
Lakes Entrance	N/A	N/A	N/A
Latrobe Group (TOL)	1444.3	1389.9	1362.0
Top of main N15 Coal	1593.6	1511.4	1483.5
Base of N/M Sands	1870.5	1736.5	1708.6
Top Turrum L-100 Sand	2375.3	2143.4	2115.4
Top Turrum L-500 Sands	2896.1	2583.8	2555.9
Near Top of Cretaceous Shale	2988.0	2671.1	2643.2
Total Depth	3051.0	2731.9	2704.0

GEOLOGICAL SUMMARY**LAKES ENTRANCE FORMATION**

1380 m – 1444 m

CLAYSTONE**CLAYSTONE**

Light olive grey to light grey, occasional olive grey to medium grey, very calcareous and grading to calcareous CLAYSTONE, rare disseminated pyrite, common carbonaceous specks, trace ooids and fossil fragments, soft to firm, amorphous, blocky to sub-fissile with depth.

LATROBE GROUP

1444 m - 1594 m

Interbedded SANDSTONE, SILTSTONE, CLAYSTONE and COAL**SANDSTONE**

Clear to translucent, opaque, coarse to very coarse, common medium to fine, moderate to moderately well sorted, sub-rounded to sub-angular, common angular bit fractured grains, weak inferred siliceous cement, trace strong localised siliceous cement in fine grained aggregates, localised pyrite cement, abundant off white to light grey dispersive argillaceous matrix, trace carbonaceous staining, trace nodular pyrite, loose, hard aggregates, tight visual and good inferred porosity, no fluorescence.

SILTSTONE

Light brown to moderate brown, argillaceous, micromicaceous, trace carbonaceous inclusions, trace pyrite, soft to firm, sub-blocky to amorphous.

CLAYSTONE

Medium grey to olive grey, minor light brown, calcareous, trace carbonaceous specks, common disseminated pyrite, soft to firm, sub-blocky to amorphous.

COAL

Dark brown, brownish black to black, earthy to dull lustre, brittle to firm, sub-blocky to blocky, uneven fracture, silty, lignitic.

1594m- 1870m

Interbedded SANDSTONE, SILTSTONE, CLAYSTONE and COAL**SANDSTONE**

Clear to translucent, fine to coarse, common very coarse, dominantly medium, moderate to poorly sorted, sub-rounded to sub-angular, common round and angular grains, localised pyrite cement, dispersive off white to pale grey argillaceous matrix, trace nodular pyrite, poor to very poor inferred porosity, no fluorescence.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

SILTSTONE	Pale brown to pale yellow brown, light brown grey, brown grey, argillaceous, arenaceous in part, trace carbonaceous inclusions, soft, rare firm, sub-blocky to amorphous.
CLAYSTONE	Pale yellow brown, dark yellow brown to dusky yellow brown, silty in part, micro-micaceous in part, trace carbonaceous specks, trace nodular pyrite, dispersive to soft, amorphous, sub-blocky to sub-fissile in part.
COAL	Dark brown, brownish black to black, dull to earthy lustre, brittle to firm, blocky to sub-blocky, uneven fracture, silty in part, micro-micaceous in part, lignitic.
1870m – 2375m	CLAYSTONE with minor interbedded SANDSTONE and COAL
CLAYSTONE	Moderate yellow brown to very light grey, silty in part, local carbonaceous laminations, trace nodular pyrite, trace micro-micaceous, rare to trace glauconite, soft to firm, amorphous to sub-blocky.
SANDSTONE	Very light grey, clear to translucent, very fine to fine, moderately well sorted, sub-round to sub-angular, trace siliceous cement, weak dolomite cement, common argillaceous matrix, trace carbonaceous specks, dominantly loose, friable to moderately hard aggregates, poor inferred porosity, poor to very poor visual porosity, no fluorescence.
COAL	Dark brown, brownish black to black, dull to earthy lustre, brittle to firm, blocky to sub-blocky, uneven fracture, silty in part, micro-micaceous in part, lignitic.
2375m – 2896m	Interbedded SANDSTONE, CLAYSTONE AND COAL
SANDSTONE	Very light grey, clear to translucent, very fine to fine, trace medium, moderately well sorted, sub-angular to sub-round, traces siliceous cement, common white argillaceous matrix, minor carbonaceous fragments, dominantly loose, friable to moderately hard aggregates in part, tight visual and inferred porosity, fluorescence.
FLUORESCENCE	2709m – 2720m: 5% dull to moderately bright yellow patchy direct. No direct cut, instant yellow green crush cut, moderately thick residual ring.
CLAYSTONE	Light brown to brown grey, dark yellow brown to dusky yellow brown, silty in part, very fine carbonaceous specks, micro-micaceous, dominantly dispersive, soft, rare locally firm, amorphous, sub-blocky.
COAL	Dark brown, brownish black to black, dull to earthy lustre, occasionally sub-vitreous, brittle to firm, blocky to sub-blocky, uneven fracture, silty in part, micromicaceous in part, lignitic, argillaceous and grading to CARBONACEOUS CLAYSTONE in part.
2896 m – 2988 m	SANDSTONE with minor interbedded CLAYSTONE and COAL
SANDSTONE	Clear to translucent, very light grey, dominantly medium to coarse, minor very coarse, common fine, sub-round to sub-angular, common round and angular, moderately sorted, trace fine grained aggregates with weak siliceous cement, trace pyrite cement, white to light grey argillaceous matrix, common nodular pyrite, trace green lithics, trace mica flakes, dominantly clean loose sand, minor friable aggregates, fair inferred and visual porosity.
FLUORESCENCE	2895 m to 2940 m: Trace to 40% bright to predominantly dull yellow white to yellow green patchy to pin point direct fluorescence. Predominantly slow to occasionally moderate rapid bleeding yellow green to yellow white cut, moderate thick ring residue to in part moderate thick film residue.
FLUORESCENCE	2965 m to 2975 m: Trace dull to moderate bright yellow green patchy fluorescence. No cut, thin ring residue. (Associated with dolomitic cemented aggregates.)

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

CLAYSTONE Dusky yellow brown to dark yellow brown, brown black in part, silty, grading to SILTY CLAYSTONE in part, micro-micaceous, common carbonaceous specks and flecks, trace very fine nodular pyrite, very soft to occasionally firm, dispersive, amorphous to sub-blocky.

COAL Dark brown black to black, dull to earthy lustre, brittle, sub-blocky to sub-fissile, uneven to sub-conchoidal fracture, micro-micaceous, lignitic, argillaceous, grading to CARBONACEOUS CLAYSTONE in part.

CRETACEOUS SHALE

2988 m – 3051 m TD **CLAYSTONE with minor interbedded SANDSTONE**

CLAYSTONE Light to medium grey, silty in part, trace carbonaceous specks, dispersive, predominantly amorphous, sub-blocky to sub-fissile.

SANDSTONE Clear to translucent, light grey, fine to coarse, predominantly fine to medium, poorly sorted, trace light grey argillaceous matrix, predominantly loose, minor tight aggregates, poorly to fair inferred porosity, no fluorescence.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

GAS REPORT

Gas was present on exiting from the 9⁵/₈" casing in low concentrations. Initially Methane was the only gas measured and it remained at low concentrations until entering the Latrobe Group at 1444 mMDRT where gas levels increased from a background of 3 to 5 units to a background of between 25 and 50 units. This was accompanied by a change in the composition of the gases with a greater proportion of heavier (ethane-C2 to pentane-C5) gases present. The gas levels reflected the lithological interbedding of Coals, Sandstones and Siltstones, with the Sandstone lithology tending to have higher levels of C4 and C5 gases. There was a corresponding increase in lighter C1 and C2 gases in areas with more Siltstone. The background levels through the Siltstones remained high however due to the organic rich composition of the lithology. Gas levels remained between 25 and 50 units until 1660 m where a definitive change in levels and composition began, reflecting a transition to a less organic rich Claystone lithology and fewer Sandstone and Coal beds. Background gas levels dropped to between 5 and 15 units and composition saw a decline in the heavy gases which continued to 2080 m. Gas peaks over this depth range were associated with Coal and Sandstone interbeds and stringers.

From 2080 m to 2410 m the background gas levels increased to range between 15 and 30 units reflecting an increasing Sandstone lithology. The gas composition was made up of heavier gases with a change from an average 92/6/2/Tr % breakdown to an average 87/7/4/1/Tr % breakdown. There were many little gas peaks over this interval reflecting Sandstone beds within the predominant Claystone lithology. From 2410 m to 2895 m the gas levels and composition again changed as further Coal beds were drilled. Most peaks over this interval were from Coal beds with lesser peaks coming from the Sandstones. Background gas levels were around 50 units with an average 92/5/2/1/Tr % breakdown which did not alter much over the interval. At 2710 m to 2720 m a higher percentage of heavy gases were recorded and fluorescence was noted in the cuttings sample, though the gas readings were lower indicating a water wet zone.

On drilling into the primary target of the L-500 sands at 2895 m there was an increase in gas to a peak of 177 units in the Sandstone. This peak was rich in C3 to C5 gases and fluorescence was noted in cuttings samples from 2895 m to 2940 m though the cut on this fluorescence should be evaluated with caution as the addition of Glycol to the mud system is thought to contaminate the cut. Fluorescence was again noted from 2965 m to 2975 m but this attributed to some dolomitic cemented sandstone aggregates and also Glycol encapsulated in rock flour. From 2895 m to the top of the Cretaceous Shale at 2986 m background gas levels gradually decreased from 100 units down to 25 to 30 units. Apart from the initial gas peak there were no other significant gas peaks seen attributable to Sandstone beds. From the top of the Near Top Cretaceous Shale at 3988 to TD no significant gas peaks were seen and the gas ratio was typically in the order of 86/8/4/2/Tr % breakdown, with levels remaining relatively steady at about 30 units.

Localised increases in background gas are attributed to both lithology variations and the penetration rate, which was dependant upon the drilling method (being either rotary or slide) carried out at the time. No CO₂ or H₂S was detected while drilling Marlin A-23A though 2 to 3 ppm of H₂S was detected in the CHDT gas samples.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

Gas peaks through the Latrobe Group

Depth metres	Total Gas units	C ₁ %	C ₂ %	C ₃ %	iC ₄ %	nC ₄ %	iC ₅ %	nC ₅ %
1444	172	1.927	0.139	0.055	0.008	0.012	0.003	0.003
1479	156	1.809	0.138	0.064	0.010	0.017	0.005	0.005
1501	58	0.569	0.062	0.036	0.007	0.013	0.004	0.005
1517	122	1.336	0.113	0.051	0.008	0.014	0.004	0.004
1622	149	1.266	0.117	0.051	0.007	0.014	0.004	0.004
1633	120	1.361	0.124	0.055	0.007	0.014	0.004	0.004
2029	39	0.474	0.037	0.011	0.001	0.002	-	-
2090	102	1.278	0.110	0.049	0.006	0.009	0.002	0.002
2181	69	0.882	0.074	0.040	0.006	0.010	0.003	0.003
2229	101	1.402	0.106	0.051	0.006	0.011	0.003	0.003
2247	151	2.161	0.162	0.085	0.011	0.018	0.005	0.004
2419	672	7.844	0.554	0.221	0.016	0.035	0.003	0.003
2551	385	5.050	0.321	0.103	0.008	0.019	0.004	0.005
2567	145	2.013	0.128	0.057	0.008	0.015	0.005	0.005
2579	639	7.713	0.531	0.218	0.015	0.033	0.004	0.003
2587	673	7.742	0.543	0.231	0.019	0.041	0.011	0.010
2618	688	8.101	0.565	0.244	0.021	0.041	0.011	0.010
2634	253	3.662	0.219	0.103	0.014	0.025	0.007	0.007
2665	267	4.473	0.255	0.098	0.013	0.023	0.007	0.007
2742	315	4.503	0.315	0.118	0.014	0.024	0.006	0.006
2750	263	4.464	0.277	0.114	0.015	0.024	0.007	0.007
2804	202	2.780	0.192	0.072	0.010	0.018	0.005	0.005
2833	257	3.320	0.219	0.087	0.012	0.022	0.006	0.006
2862	213	3.364	0.240	0.107	0.014	0.026	0.007	0.007
2903	177	2.583	0.184	0.084	0.012	0.022	0.007	0.007

Nb: Due to the large number of COAL stringers drilled only SANDSTONE gas peaks have been listed.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

MDT SUMMARY

Depth M	TVDSS M	Drawdown n Mobility MD/CP	Hydrostatic Pressure (Quartz gauge)		Formation Pressure PSIA	Comments
			Before PSIA	After PSIA		
2996.72	2651.68		4555.33	4556.04		Tight
2996.23	2651.20	27.4	4557.49	4557.10	3882.95	Good test
2977.47	2633.23	0.5	4530.80	4519.78	3789.32	Good test
2975.03	2630.89	2.5	4514.50	4514.25	3759.12	Good test
3972.19	2628.18		4510.52	4509.97		Tight
2971.57	2627.59	13.3	4500.90	4506.32	3752.38	Good test
2970.04	2626.12	9.5	4503.08	4502.79	3749.47	Good test
2958.91	2615.49	31.3	4480.73	4480.53	3735.48	Good test
2957.45	2614.10	4.0	4478.26	4478.18	3734.11	Good test
2955.47	2612.22	1.7	4474.35	4474.11	3732.95	Good test
2953.70	2610.54		4471.04	4470.91		Tight
2953.23	2610.09		4470.17	4470.03		Supercharged
2951.90	2608.83		4467.33	4467.06		Supercharged
2946.00	2603.22		4456.33	4455.33		First was no seal. Tight after starting pump
2945.30	2602.56		4453.57	4453.06		First was no seal. Tight after starting pump
2945.70	2602.94		4455.79	4455.50		No seal
2944.16	2601.47		4452.81	4452.36		No seal
2941.80	2599.23		4446.58	4446.36		No seal
2943.19	2600.55		4450.44	4450.14		No seal
2942.67	2600.06		4449.90	4449.37		Supercharged
2937.16	2594.82	9.0	4438.61	4438.73	3708.15	Good test
2934.68	2592.46		4433.47	4433.43		Tight
2935.15	2592.91	3.4	4434.87	4434.84	3705.47	Good test
2933.46	2591.30	5.1	4431.66	4431.49	3706.87	Good test
2925.50	2583.78	4.6	4416.22	4416.24	3695.28	Good test
2923.00	2581.42	27.0	412.17	4412.11	3690.72	Good test
2921.00	2579.53	9.4	4407.63	4407.42	3688.47	Good test
2920.00	2578.58	3.5	4405.63	4405.30	3688.33	Good test
2918.50	2577.16	22.5	4403.13	4403.10	3686.77	Good test
2916.53	2575.30		4399.28	4398.86		Supercharged. Tried with pump
2916.00	2574.80		4398.51	4398.19		Supercharged. Tried with pump
2915.03	2573.88		4395.96	4395.87		Tight
2911.47	2570.52	18.6	4389.54	4389.45	3682.72	Good test
2908.00	2567.24	31.2	4382.85	4382.98	3681.96	Good test
2906.50	2565.83	30.1	4379.73	4379.71	3681.58	Good test
2903.91	2563.38	5.4	4375.11	4374.98	3680.92	Good test
2902.02	2561.60	18.6	4371.37	4371.28	3680.47	Good test
2865.00	2527.06	297.3	4301.60	4301.41	3734.46	Good test
2861.50	2523.82	9.7	4294.44	4294.11	3732.35	Good test
2859.99	2522.43	898.5	4292.22	4292.04	3731.82	Good test
2832.46	2497.23	619.9	4242.86	4242.94	3705.06	Good test
2830.97	2495.88	42.2	4240.70	4240.53	3704.65	Good test
2826.97	2492.26		4233.61	4233.34		Tight
2827.99	2493.18	38.9	4235.89	4235.56	3704.26	Good test
2815.83	2482.20	52.2	4213.39	4213.40	3700.75	Good test
2801.49	2469.47	3.8	4189.17	4189.05	3699.92	Good test
2798.46	2466.82		4184.45	4183.95		Time limit reached, not stabilised, looks tight
2798.97	2467.27	0.8	4181.52	4184.05	3700.47	Good test
2749.46	2424.46	20.3	4103.90	4103.82	3582.44	Good test

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

Depth M	TVDSS M	Drawdown n Mobility MD/CP	Hydrostatic Pressure (Quartz gauge)		Formation Pressure PSIA	Comments
			Before PSIA	After PSIA		
2747.07	2422.44		4100.93	4100.68		No seal move up 0.5 m
2746.46	2421.92	3.3	4098.88	4098.55	3583.20	Good test
2741.47	2417.70	1424.9	4092.21	4092..02	3580.50	Good test
2737.43	2414.28	19.4	4086.25	4086.00	3580.13	Good test
2663.17	2353.20	2980.5	3973.48	3973.35	3484.77	Good test
2648.48	2341.31	14.1	3951.05	3950.84	3463.41	Good test
2615.51	2314.90	3046.2	3904.20	3904.12	3453.09	Good test
2613.01	2312.90	31.1	3901.14	3900.84	3452.92	Good test
2587.52	2292.55	129.4	3865.30	3865.20	3414.38	Good test
2584.01	2289.69	7.5	3860.80	3860.49	3413.71	Good test
2580.98	2287.22	693.4	3856.40	3856.11	3412.70	Good test
2575.93	2283.11	2828.5	3849.87	3849.34	3411.34	Good test
2567.52	2276.27	3480.3	3838.90	3838.32	3409.25	Good test
2561.52	2271.38	12.3	3827.24	3827.01	3408.13	Good test
2533.48	2248.14		3786.31	3785.96		Tight
2534.03	2248.60		3787.05	3786.34		Time limit reached, not stabilised, lost seal
1736.68	1599.33	2600.7	2723.30	2721.57	2194.43	Good test
1727.58	1591.95	4675.4	2713.58	2712.80	2184.37	Good test
1690.55	1561.86	305.9	2664.36	2663.37	2141.05	Good test
1684.19	1556.69	3695.8	2656.33	2655.16	2134.05	Good test
1587.45	1478.36	2399.7	2520.38	2517.78	2019.20	Good test
1583.46	1475.15	3968.1	2512.71	2511.80	2014.73	Good test
1578.49	1471.15	1964.0	2506.00	2505.34	2009.14	Good test
1570.49	1464.70	72.2	2496.53	2495.41	2002.50	Good test
1564.50	1459.88	1059.0	2488.58	2488.00	1986.95	Good test
1541.01	1440.95	2892.2	2458.68	2457.82	1994.50	Good test
1533.04	1434.52		2447.03	2445.20		Pressure higher than previous, not stabilised
1532.56	1434.13	328.5	2442.98	2441.53	1994.24	Good test
1526.47	1429.22	28404.0	2434.37	2432.15	1992.50	Good test
1513.96	1419.14	9073.4	2413.53	2411.84	1991.17	Good test
1506.98	1413.51	2948.5	2409.27	2408.28	1992.63	Good test
1500.05	1407.93	61809.4	2397.37	2394.49	1991.72	Good test
1496.02	1404.66	81.3	2389.52	2388.24	1992.58	Good test
1494.03	1403.04		2385.78	2384.82		Time limit reached, not stabilised, tight
1482.97	1394.03	87.2	2372.31	2371.18	1991.14	Good test
1478.01	1389.99	6340.8	2365.11	2364.49	1988.47	Good test
1474.01	1386.73	2365.3	2359.37	2358.46	1987.74	Good test
1452.02	1368.47	100.8	23332.49	2331.07	1987.45	Good test
1448.52	1365.55	1085.5	2325.56	2324.43	1983.64	Good test

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	

CHDT SUMMARY

Depth M	TVDSS M	Drawdown Mobility MD/CP	Hydrostatic Pressure		Formation Pressure PSIA	Test Type
			Before PSIA	After PSIA		
2921.0	2579.53	ND CHQ plugged	4389.2	4375.09	3689.68	Drilled 1½". Good build up, pumped out and took oil sample.
2959.9	2616.05	16.4	4451.44	4445.31	3736.48	Good pre-test. Pumped out. Determined water. No sample.
2933.5	2591.34	ND	4393.48	4391.32	-	Tool problem. Unable to establish communication with formation.
2933.0	2590.87	ND	4388.88	4388.88	-	Tool problem. Unable to establish communication with formation.

Revision	Date	Issued by	Approved by	Remarks
1	02-08-2004	Geoservices Unit 137	QC Technical Assistant	