

WELL COMPLETION REPORT

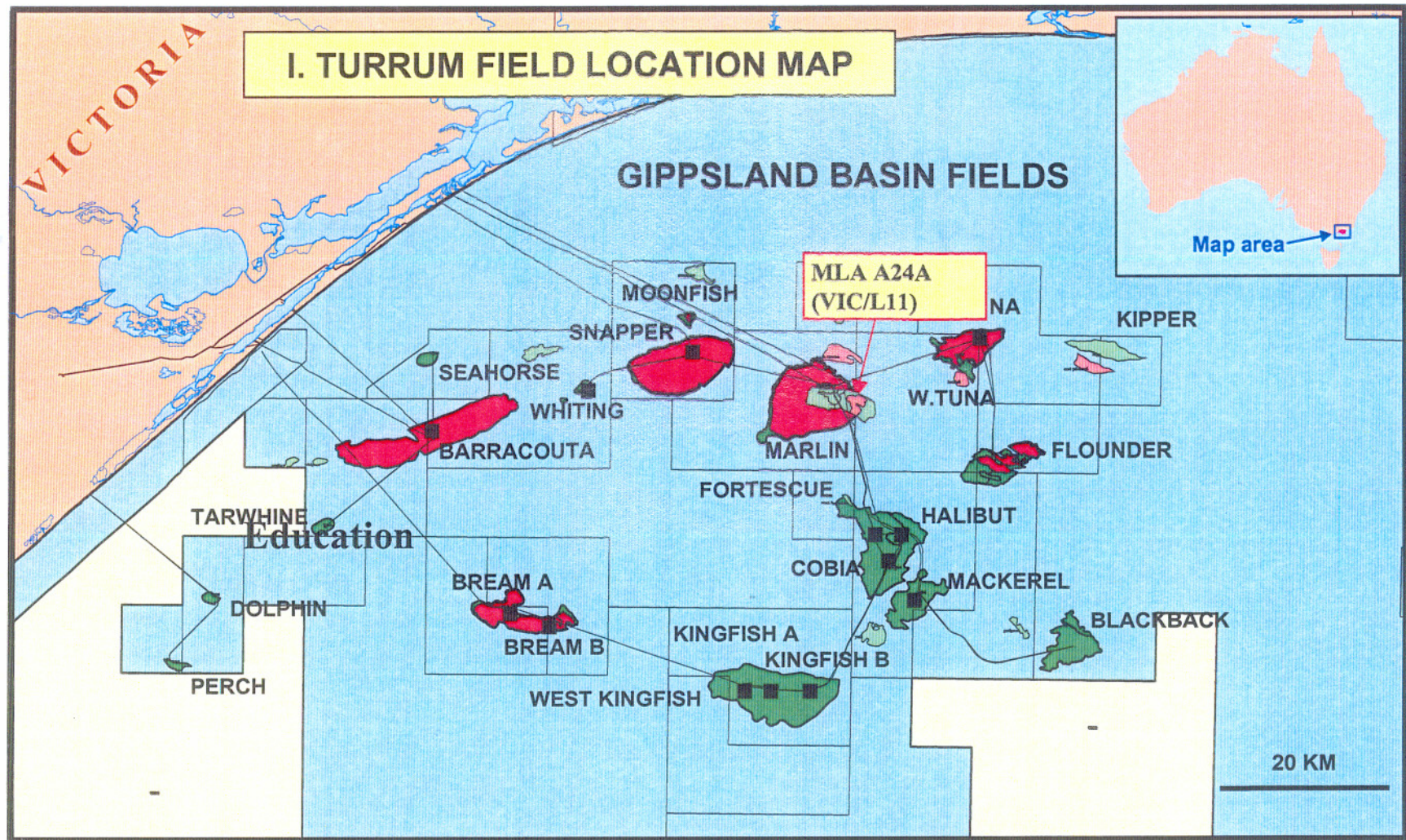
MARLIN A-24A

GIPPSLAND BASIN, VICTORIA

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October 2004

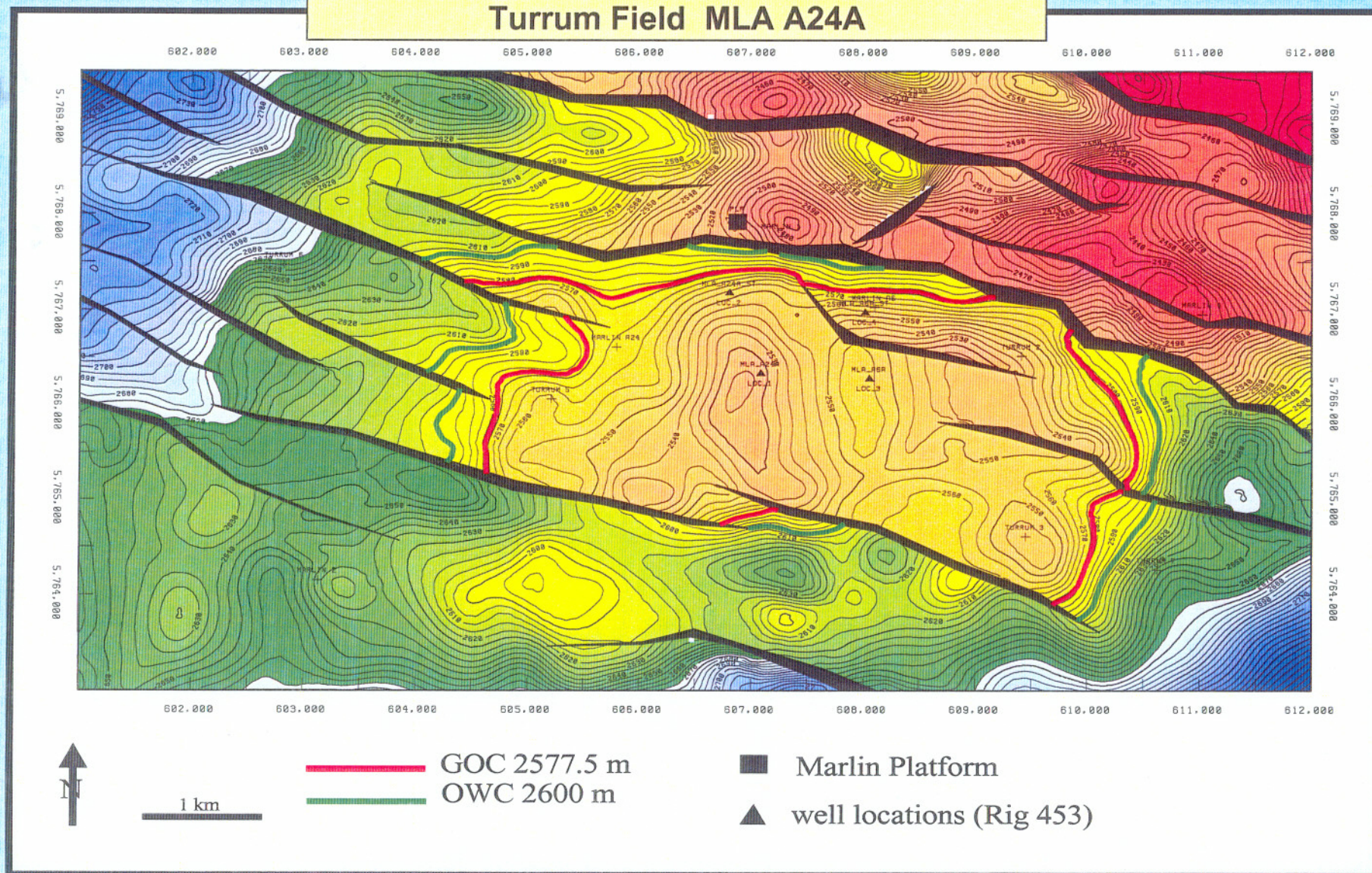
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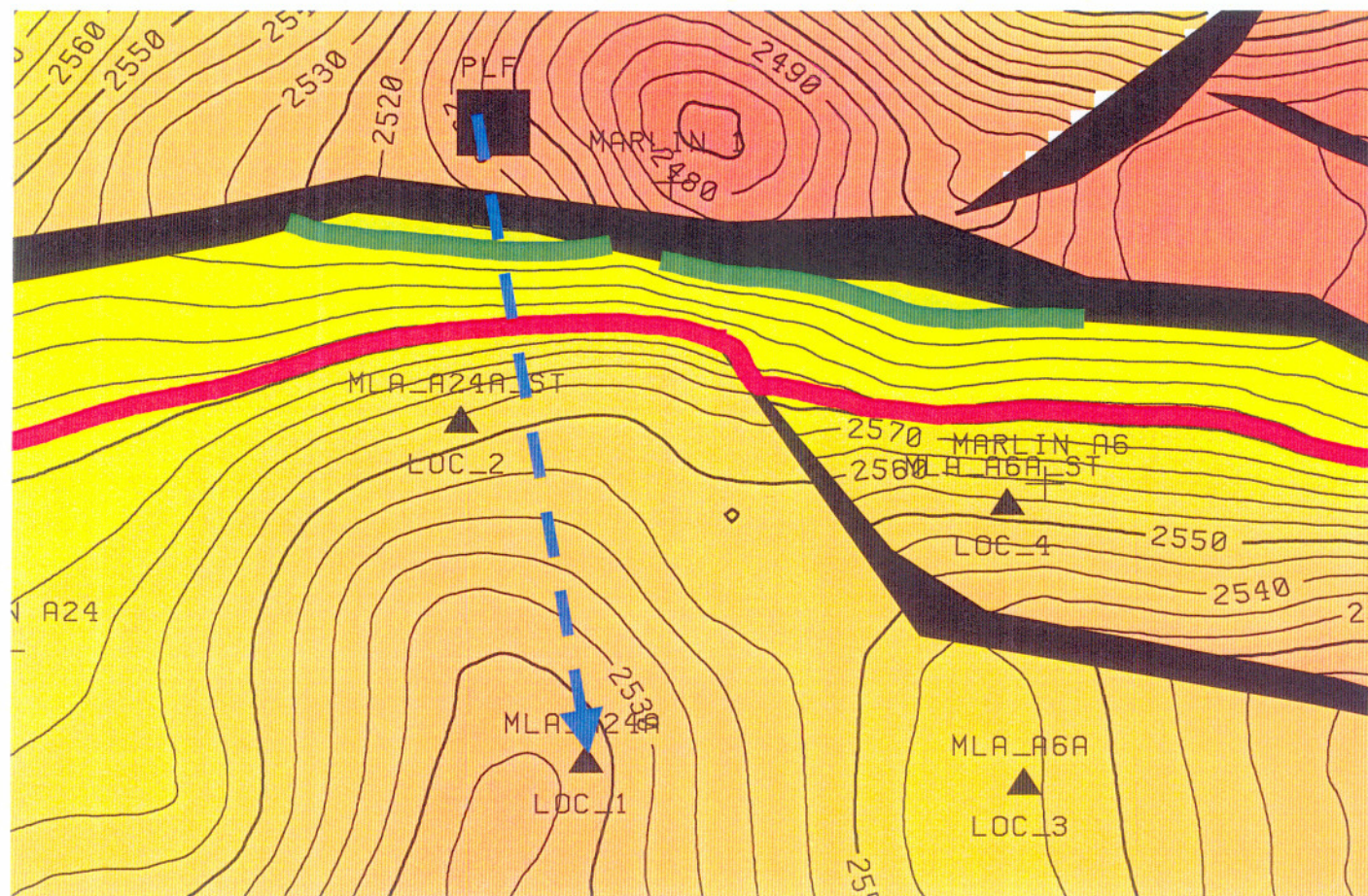


Top L500 Anticline Depth Structure Map

II. WELL DATA RECORD: Location Map Turrum Field MLA A24A



Top L500 Anticline Depth Structure Map

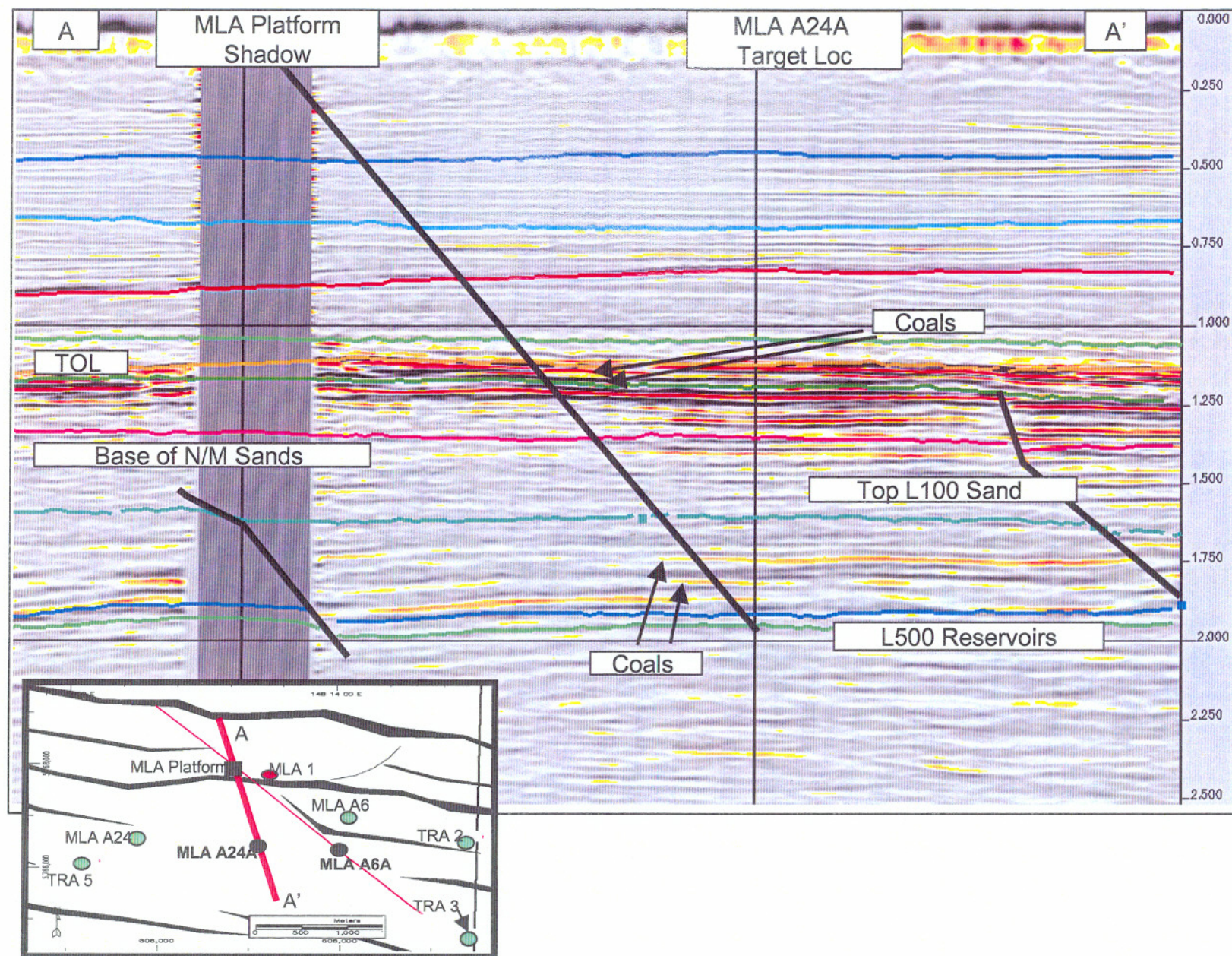


0.333 km

— GOC 2577.5 m
— OWC 2600 m

■ Marlin Platform
▲ well locations (Rig 453)

A24A (L500 Depth Map Zoom-in with seismic well path)



Seismic Line (MLA Platform - MLA A24A well path)

II. WELL DATA RECORD (cont.)

LOCATION

Field	Turrum/Marlin
Well Name	A24a (Loc 3)
Conductor Number	Slot 9
State	Victoria
Permit/Licence	Vic/L11
Geological Basin	Gippsland
Top of Latrobe	1619.0 m MDRT
	1396.1m TVDRT
MGA94 X	606896.21 m E
MGA94 Y	5767254.78 m N
Top of L500	3104.6m MDRT
	2548.3m TVDRT
MGA94 X	607074.61 m E
MGA94 Y	5766334.93 m N

Conductor/Slot 9 Surface Coordinates

(MGA94)X	606,865.17mE
(MGA94) Y	5,767,923.72 mN
Latitude	38°13'49.203"S
Longitude	148°13'15.554"E
Perforations (driller)	N/A

Datum

GDA94 (GRS80)

Projection

MGA94/UTM Zone 55 (S)

ELEVATIONS & DEPTHS

Water Depth	59.0m
Top Wellhead to MSL	15.36 m
Main Deck Rel to MSL	14.48 m
RT Relative to MSL	27.91m
Average Well Angle	42.4°
Total Depth	3275m MDRT
	2676.8m TVDRT
Plug Back Depth	3238.5m MDRT

DATES

Skid Rig	08/04/2004
Kicked Off	13/04/2004
Development Rig Days	39.0
NPT Days	3.32
Rig Released	17/05/04
I.P. Established	Not completed

MISCELLANEOUS

Operator	Esso Australia Pty Ltd
Esso Interest	50%
Permittee/Licensee	Esso/BHPP
Other Interest	50% J.V. Interest
Overriding Royalty	2.5%
Drilling AFE No.	L0531E202

Contractor

International Sea Drilling Ltd

Rig Name

Nabors Rig 453

Equipment Type

Platform

Completion Type

Not completed

Completion Size

Not completed

WELL CLASSIFICATION

Before Drilling

Oil Development

After Drilling

Cased and Abandoned

II. WELL DATA RECORD (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Surface	13 ³ / ₈	54.5/68	J-55/K-55	BTC	652.4
Intermediate	9 ⁵ / ₈	47	L-80	LTC	655.0
Production	7	26	L-80	LTC	3275.0

CEMENTING RECORD

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)
9 ⁵ / ₈ "	HTB	434	ECONOLI TE 100 gal CFR-3L 16 gal NF-6 3 gal	94.8	112.8	L:12.5 T:15.8	153.0 m 655.0 m	2500 psi
7"	HTB	860	HALAD 413L 30 gal / 10 bbl GAS CON 469 60 gal / 10 bbl SCR-100L 7 gal / 10 bbl CFR-3L 2 gal / 10 bbl NF-6 0.25 gal / 10 bbl	160	235	L:13.0 T:15.0	1514.0 m 3275.0 m	2000 psi

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE

Esso Australia Pty Ltd. / ExxonMobil Development Company - Technical Report
MLA A24A - Final Well Report

GENERAL

Platform:	Marlin	Rig:	453	Reservoir:	L500 Sands
Well:	A24A	Well Slot:	#9	RT-MSL (Rig453)	27.91m
Drilling Complexity Index	3.1	Completion Complexity Index	NA		

DEPTH		PERFORMANCE		MUD	
m MDRT	3,275.00	20" Cond. Hole	N/A	Max Wt (ppg)	10.15
m TVDRT	2,676.83	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	1,714.4	8-1/2" Prod. Hole	140.2 m/day	Type (Inter. Hole)	N/A
INCLINATION		6" Liner Hole	N/A	Type (Prod. Hole)	KCl/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	38.4 (TD) / 42.4 (Tang)	* time to drill interval, incl's Connections & NPT.		Type (Liner Hole)	N/A

Comments: New hole drilled: 653m to 3,275mMDRT (2,622m drilled).

TIME ANALYSIS

Start Date:	08/04/2004, 1800hrs	Finish Date:	17/05/2004, 1900hrs		
Target Days (P10):	24.3	Total Days:	39.0	% Under Target:	60.5% (over)
AFE Days (P50):	27.0	NPT Days:	3.32	% of Total Days:	8.5%
Supplementary AFE Days (P50):	N/A				

COSTS (based on projected)

AFE No.:	L0501E202	Revisions:	--	\$ per m	A \$3.07 k / metre (new hole)
\$ per day:	A\$ 206 k/day	\$ per day (excl. T + L) * Equipment, LWD & Reeves	A\$ 174 k/day		A\$ 2.46 k / metre* * based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	315,000	653,000	3,166,000	1,048,000	321,000	A\$5,500,000
AFE (Supplement)	464,000	759,000	4,980,000	1,567,000	480,000	A\$8,250,000
Projected	329,000	805,000	5,452,000	1,110,000	346,000	A\$8,042,000

CASING (all depths herein are based on Rig453 elevations: RT-MSL=27.91m)

	Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	20"	155	155	N/A
Surface Casing *	13-3/8", 54.5ppf/68.0ppf, J55/K55, BTC	652.4	632	N/A
Intermediate Casing	9-5/8", 47.0 ppf, L80, LTC	655	632	14.0 PIT
Prod Casing	7", 26.0ppf, L80, LTC	3,275	2,676	N/A
Prod Liner	N/A	N/A	N/A	N/A

Comments: * Pre-existing casing strings. Intermediate string 9-5/8" string was run due to casing leak in 13-3/8" csg. Production casing is also new string.

COMPLETION

	Size / Weight / Grade / Thread	MMDRT	MTVDRT	Type
Completion	NA	NA	NA	NA

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	NA	NA	NA	NA	NA

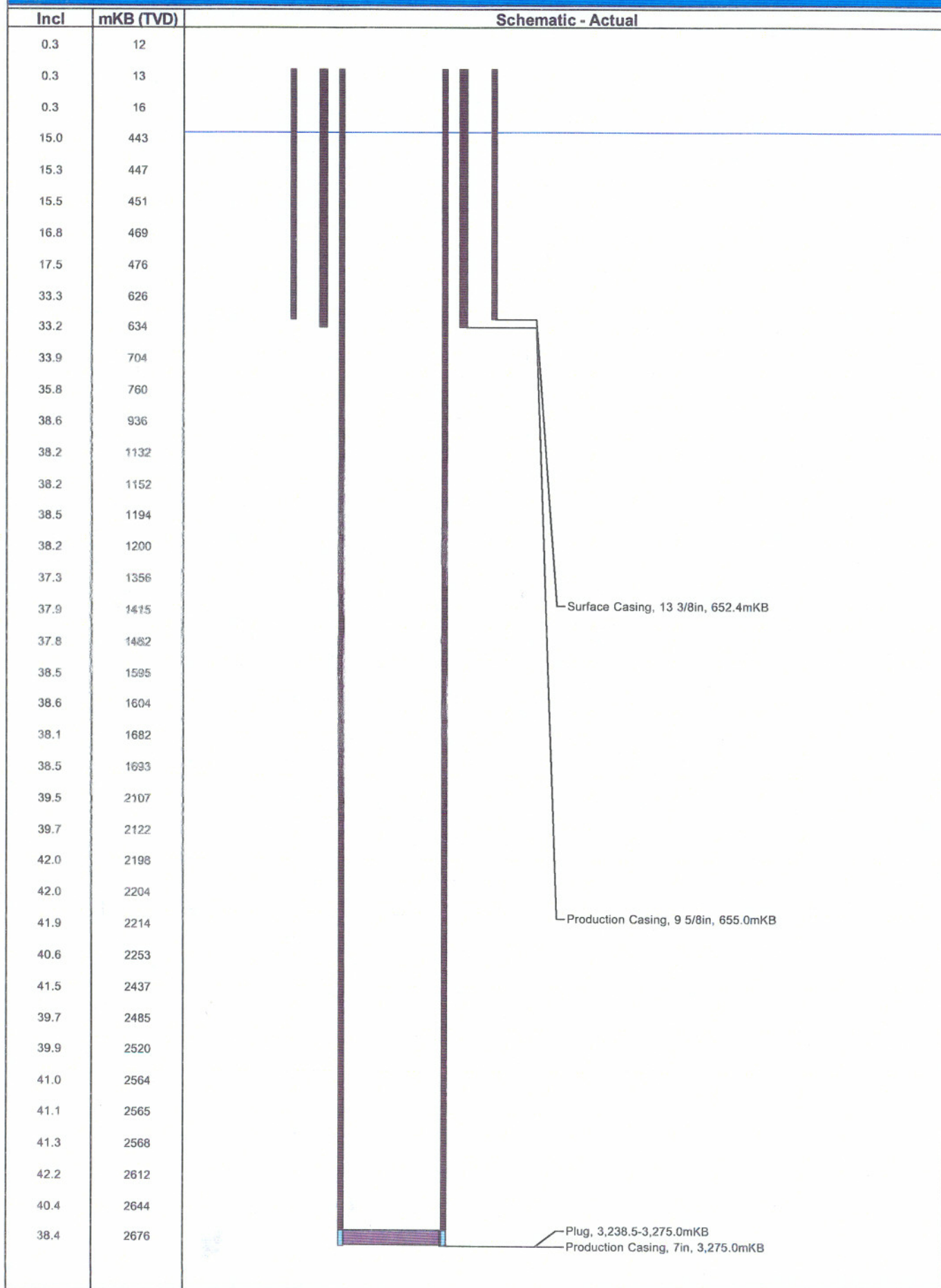
Comments: Well to be completed in January 2005 with Rig 22.

ADDITIONAL

		Upper Interval [m MDRT]	Lower Interval [m MDRT]
Coring	Cut 3x9m cores	3158.5	3185.5
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	1,950	3,275

Comments: The 8-1/2" hole interval was logged using the Reeves well shuttle system. No data above 1,950m MD was obtained on logging run.

Marlin A24A: Existing Schematic



III. SAMPLES

Cuttings

The cuttings sampling programme for Marlin A-24A is detailed in the following table:

Surface Casing to 150m above Top of Latrobe (TOL) 655.0 m - 1460 m	Gippsland Limestone & Lakes Entrance	30 m sampling interval Spot samples
150 m above TOL to the TOL 1460 m – 1620 m	Lakes Entrance Formation	10 m sampling interval Three sets of washed and oven dried cuttings.
TOL to Total Depth (TD) 1620 m – 3275 m (TD)	Latrobe Group	5 m sampling interval Three sets of washed and oven dried cuttings.

Detailed cuttings descriptions for the interval 1460mMDRT to 3275m (TD) are contained in Appendix 3a.

Conventional coring

3 conventional cores were cut in MARLIN A24A.

Core #1 : 3158.5-3167.66m, recovery 100%

Core #2 : 3167.66-3176.66m, recovery 96%

Core #3 : 3176.66-3185.66m, recovery 100%

Detailed Core core descriptions and core descriptions are contained in Appendix 3b

Sidewall coring

No sidewall core samples were shot in Marlin A-24A.

MDT's

Open Hole MDT data is contained in Appendix 5a.

CHDT Samples

CHDT point #1 : 3190.0m MD;

CHDT point #2 : 3214.0m MD;

CHDT point #1 : 3172.5m MD

Cased Hole MDT Report (CHDT) is contained in Appendix 5b.

IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	637.4	652.4
MWD Run 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	652.4	1682.4
MWD Run 3, Powerpulse (Directional & GR)	Schlumberger/Anadrill	1682.4	2045.4
MWD Run 4, Powerpulse (Directional & GR)	Schlumberger/Anadrill	2045.4	2465.4
MWD Run 5, Powerpulse (Directional & GR)	Schlumberger/Anadrill	2465.4	2905.5
MWD Run 6, Powerpulse (Directional & GR)	Schlumberger/Anadrill	2905.5	3140.5
MWD Run 7, Powerpulse (Directional & GR)	Schlumberger/Anadrill	3140.5	3255.01
Run 1: Compact Logging MCG-MDN-MPD-MSS-MDL	Reeves Compact run on drillpipe	2008.0	3270.12
Run 2: MDT (on drillpipe)	Schlumberger Wireline	1645.0	3220.5
Run 3: MDT (Cased hole)	Schlumberger Wireline	3190.0	3214.0

V. FORMATION RESERVOIR TOPS

Zone	m TVDSS			m MDRT	m TVT Gross HC Column	
	Predicted	Actual	Diff.		Predicted	Actual
Top Lakes Entrance	-1286.18	-1273.36	12.82m high	1499.00	77.18m HC column	65.9m HC column
Top Latrobe Group (TOL)	-1367.11	-1368.16	1.05m low	1619.00		
N1.2 Coal	-1408.58	-1371.53	37.05m high (Poor seismic signal)	1623.29		
Base N/M Sands	-1709.23	-1707.54	1.69m high	2050.95		
Top L100 Sand	-2100.65	-2088.95	11.7m high	2538.86		
Top L500 Sand	-2522.82	-2520.29	2.53m high	3104.55		
Current GOC	-2577.5	-2577.5	-	3181.02		
Current OWC	-2600	-2600	-	3211.33		
Near Top Cretaceous Shale	-2608.54	-2615.27	0.66m high	3231.56		
Total Depth (TD)	-2647.2	-2648.95	1.75m low	3275.00		

VI. GEOLOGICAL ANALYSIS - MARLIN A-24A

Objectives

Marlin A24A (pre-drill Location 1) is the second well in a series of 5 wells to be drilled on the Turrum field during 2004 using rig "Rig 453". This well was designed to test two targets, the primary L-500 reservoir target and the secondary target of the shallower L100 to L400 reservoirs.

Within the L500 reservoir there were several objectives:

- a) To confirm the expected field-wide GOC of -2577.5m TVDSS & OWC of -2600m TVDSS;
- b) To confirm the number of hydraulic systems within the L500 reservoir; and,
- c) To cut core (36m total core) over the L500 middle sands to assist in future reservoir property analysis.

In the L100 to L400 reservoirs the objective was:

- a) To confirm the number and continuity of the previously identified sand and gas systems.

One additional objective was identified for the Marlin field:

The Marlin A24A well location was also crestally located for the overlying Marlin Gas field which allowed additional pressure data to be collected to identify the current GWC for the Marlin field.

Results

Marlin A24A was drilled below surface casing (of the original Marlin A24 conductor).

During the drilling of the L500 reservoirs operational difficulties restricted the core collection to three core barrels of 27.16m MD total core length over the L500 middle sands (3158.5m MD (-2560m TVDSS) to 3185.66m MD (-2580.84m TVDSS)).

At the completion of drilling the A24A well, logging was conducted via Reeves Shuttle on drillpipe in 6" hole and a total of 40 MDT pressure points collected. During the logging run the Reeves tool failed and no logs were collected from -2008.42m MD (-1674.49m TVDSS) to the Top of Latrobe sequence. Consequently, the Marlin MDT pressure points were located on depth via the MWD tool. Of the 40 MDT points being taken on wireline, 29 MDT points were collected within the Turrum reservoirs and 11 in the Marlin reservoirs.

The A24A well intersected the top of L500 at 3104.55m MDRT (-2520.29m TVDSS), 2.53m TVD high to prognosis, as shown on the attached L500 well data and well log section.

VI. GEOLOGICAL ANALYSIS - MARLIN A24A (cont'd)

Log character indicated that hydrocarbons were present over the entire L100 to L500 column plus identifying the current GWC's of the overlying Marlin reservoirs. After MDT pressures were taken casing was set and a Cased Hole Dynamic Tester (CHDT) tool was used to take pressures and collect fluid samples at 3 selected points within the L500 sands.

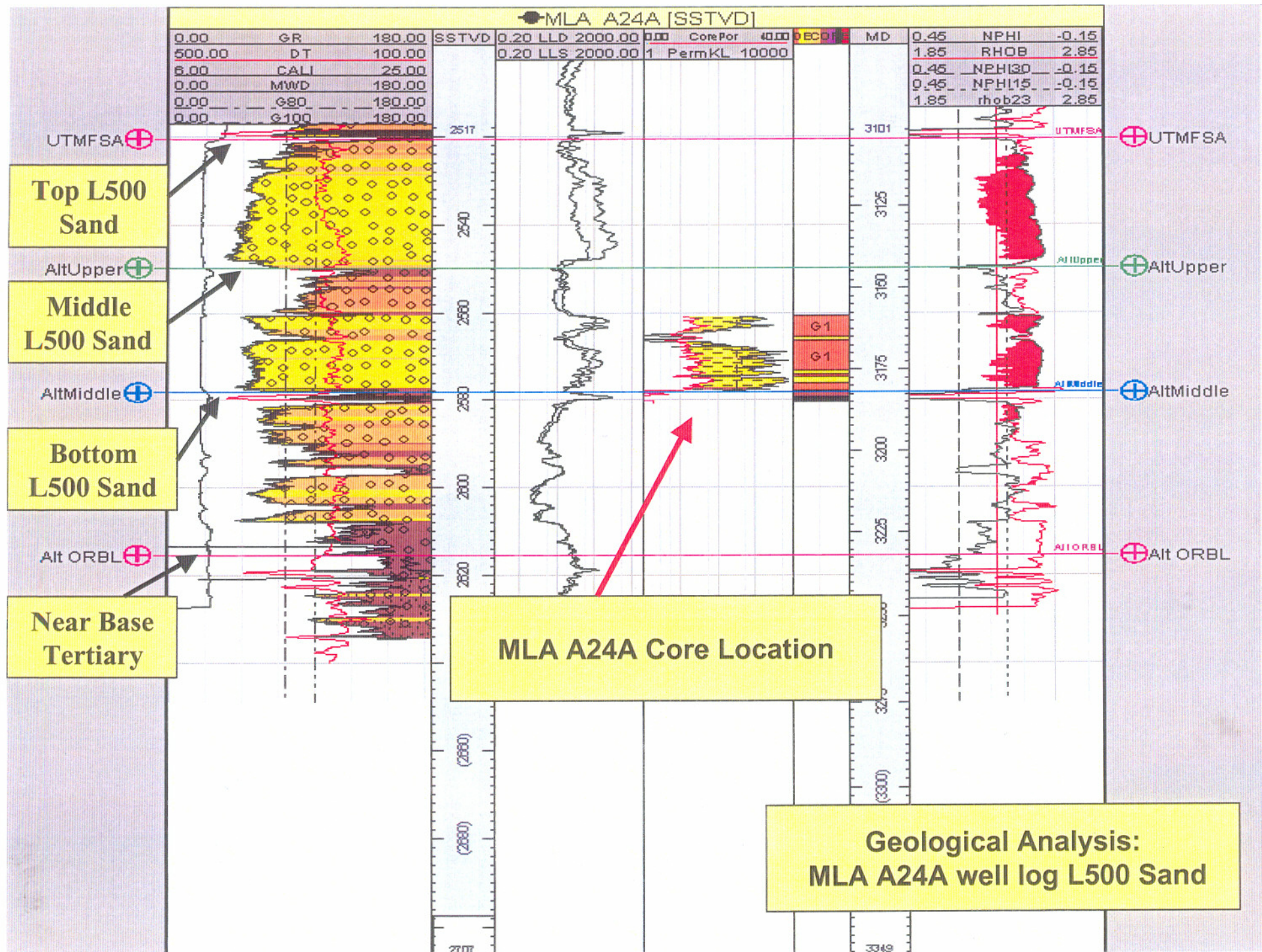
These points were:

- a) CHDT point #1 (3190.0m MD (-2584.5m TVDSS));
- b) CHDT point #2 (3214.0m MD (-2602.06m TVDSS)); and,
- c) CHDT point #3 (3172.5m MD (-2571.28m TVDSS)).

The pressure data indicated that the L500 reservoir contained up to three fluid compartments.

A total of 66m TVT gross gas and oil column was encountered in the L500 sands.

In the secondary target a total of 125 metres TVT gross gas column was encountered in the reservoirs of the L100 group (25m TVT), L200 group (45m TVT), L300 group (45m TVT) & L400 group (10m TVT) sands.



● MLA A24A [SSTVD]

0.00	GR	180.00	SSTVD	0.20	LLD	2000.00	0.00	Core Por	40.00	0.0
500.00	DT	100.00		0.20	LLS	2000.00	1	PermKL	10000	
6.00	CALI	25.00								
0.00	MWD	180.00								
0.00	G80	180.00								
0.00	G100	180.00								

Geological Analysis:
MLA A24A well log
L100 - L400 Sands

p L100_Res ⊕

L105 ⊕

L110 ⊕

L120 ⊕

L130 ⊕

L140 ⊕

L200 ⊕

L210 ⊕

L220 ⊕

L230 ⊕

L300 ⊕

L350 ⊕

L360 ⊕

L400 ⊕

UTMFSA ⊕

AltUpper ⊕

AltMiddle ⊕

Alt ORBL ⊕

L100
Sands

L200
Sands

L300
Sands

L400 Sands

L500 Sands

Top L100_R ⊕

L105 ⊕

L110 ⊕

L120 ⊕

L130 ⊕

L140 ⊕

L200 ⊕

L210 ⊕

L220 ⊕

L230 ⊕

L300 ⊕

L350 ⊕

L360 ⊕

L400 ⊕

UTMFSA ⊕

AltUpper ⊕

AltMiddle ⊕

Alt ORBL ⊕

APPENDIX 1a
MARLIN A-24A
Survey Data



MLA A24A

Schlumberger

Report Date: May 4, 2004	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 172.070°
Field: Marlin GDA 94	Vertical Section Origin: S 3.180 m, E 24.580 m
Structure / Slot: Marlin / 9	TVD Reference Datum: Drillsite Elevation
Well: A-24	TVD Reference Elevation: 27.9 m relative to MSL
Borehole: MLA A-24A	Sea Bed / Ground Level Elevation: 0.000 m relative to MSL
UWI/API#:	Magnetic Declination: 13.133°
Survey Name / Date: A24A Actual Surveys / April 14, 2004	Total Field Strength: 59988.675 nT
Tort / AHD / DDI / ERD ratio: 130.020° / 10607573.37 m / 9.227 / 3962.603	Magnetic Dip: -68.734°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: April 14, 2004
Location Lat/Long: S 38 13 49.203, E 148 13 15.554	Magnetic Declination Model: BGGM 2003
Location Grid N/E Y/X: N 5767923.720 m, E 606865.170 m	North Reference: Grid North
Grid Convergence Angle: -0.75564812°	Total Corr Mag North -> Grid North: +13.889°
Grid Scale Factor: 0.99974065	Local Coordinates Referenced To: Structure Reference Point

Comments	Measured Depth (m)	Inclination (deg)	Azimuth (deg)	TVD (m)	Vertical Section (m)	NS (m)	EW (m)	DLS (deg/30 m)
Projected-Up	0.00	0.00	0.00	0.00	0.00	-3.18	24.58	0.00
Tie-In	0.51	0.00	0.00	0.51	0.00	-3.18	24.58	0.00
	10.51	0.26	299.01	10.51	-0.01	-3.17	24.56	0.78
	15.51	0.29	282.00	15.51	-0.02	-3.16	24.53	0.52
	20.51	0.31	259.14	20.51	-0.03	-3.16	24.51	0.72
	25.51	0.33	256.87	25.51	-0.03	-3.17	24.48	0.14
	30.51	0.34	260.44	30.51	-0.02	-3.17	24.45	0.14
	35.51	0.35	262.13	35.51	-0.02	-3.18	24.42	0.09
	40.51	0.36	265.94	40.51	-0.03	-3.18	24.39	0.15
	45.51	0.37	260.88	45.51	-0.03	-3.18	24.36	0.20
	50.51	0.36	260.42	50.51	-0.02	-3.19	24.33	0.06
	55.51	0.32	263.28	55.51	-0.02	-3.19	24.30	0.26
	60.51	0.31	261.59	60.51	-0.02	-3.20	24.27	0.08
	65.51	0.31	261.57	65.51	-0.02	-3.20	24.25	0.00
	70.51	0.33	279.94	70.51	-0.03	-3.20	24.22	0.62
	75.51	0.36	286.98	75.51	-0.04	-3.19	24.19	0.31
	80.51	0.30	296.80	80.51	-0.05	-3.18	24.16	0.49
	85.51	0.30	295.86	85.51	-0.07	-3.17	24.14	0.03
	90.51	0.31	293.36	90.51	-0.08	-3.16	24.11	0.10
	95.51	0.26	306.18	95.51	-0.10	-3.15	24.09	0.48
	100.51	0.22	304.63	100.51	-0.11	-3.14	24.08	0.24
	105.51	0.17	356.63	105.51	-0.13	-3.12	24.07	1.06
	110.51	0.18	45.41	110.51	-0.14	-3.11	24.07	0.87
	115.51	0.38	73.13	115.51	-0.15	-3.10	24.09	1.42
	120.51	0.56	85.83	120.51	-0.15	-3.09	24.13	1.24
	125.51	0.74	89.31	125.51	-0.14	-3.09	24.19	1.11
	130.51	0.91	94.11	130.51	-0.13	-3.09	24.26	1.10
	135.51	0.99	100.92	135.51	-0.11	-3.11	24.34	0.83
	140.51	1.09	104.70	140.51	-0.07	-3.13	24.43	0.73
	145.51	1.13	107.19	145.50	-0.03	-3.15	24.53	0.38
	150.51	1.14	109.51	150.50	0.01	-3.18	24.62	0.28
	155.51	1.17	107.76	155.50	0.05	-3.22	24.72	0.28
	160.51	1.07	107.56	160.50	0.10	-3.25	24.81	0.60
	165.51	0.84	98.19	165.50	0.13	-3.26	24.89	1.66
	170.51	0.62	63.26	170.50	0.13	-3.26	24.95	2.91
	175.51	0.83	18.63	175.50	0.09	-3.21	24.99	3.50
	180.51	1.02	8.56	180.50	0.01	-3.13	25.00	1.50
	185.51	1.17	358.69	185.50	-0.08	-3.04	25.01	1.44
	190.51	1.22	357.29	190.50	-0.19	-2.93	25.01	0.35
	195.51	1.23	353.73	195.50	-0.29	-2.83	25.00	0.46
	200.51	1.16	347.63	200.50	-0.40	-2.72	24.98	0.87
	205.51	1.07	337.89	205.49	-0.49	-2.63	24.95	1.26
	210.51	0.96	318.25	210.49	-0.57	-2.56	24.91	2.18
	215.51	0.83	298.08	215.49	-0.63	-2.51	24.85	2.03

220.51	0.80	279.83	220.49	-0.66	-2.49	24.78	1.56
225.51	0.78	266.58	225.49	-0.67	-2.48	24.71	1.10
230.51	0.74	253.07	230.49	-0.67	-2.49	24.65	1.10
235.51	0.74	241.32	235.49	-0.65	-2.52	24.59	0.91
240.51	0.65	214.43	240.49	-0.62	-2.56	24.54	2.01
245.51	0.77	194.06	245.49	-0.57	-2.61	24.52	1.66
250.51	0.99	178.64	250.49	-0.50	-2.69	24.51	1.93
255.51	1.15	174.27	255.49	-0.40	-2.78	24.52	1.08
260.51	1.15	177.76	260.49	-0.30	-2.88	24.53	0.42
265.51	1.30	173.49	265.49	-0.20	-2.99	24.53	1.05
270.51	1.46	177.16	270.49	-0.08	-3.11	24.54	1.10
275.51	1.60	180.40	275.48	0.06	-3.24	24.55	0.99
280.51	1.99	185.85	280.48	0.21	-3.40	24.54	2.55
285.51	2.30	190.19	285.48	0.39	-3.58	24.51	2.10
290.51	2.56	192.58	290.47	0.59	-3.79	24.47	1.67
295.51	2.84	196.02	295.47	0.81	-4.02	24.41	1.94
300.51	3.17	197.86	300.46	1.05	-4.27	24.33	2.06
305.51	3.41	199.66	305.45	1.30	-4.54	24.24	1.57
310.51	3.87	202.43	310.44	1.58	-4.84	24.13	2.95
315.51	4.09	201.54	315.43	1.88	-5.16	24.00	1.37
320.51	4.59	203.20	320.42	2.21	-5.51	23.85	3.09
325.51	4.95	204.45	325.40	2.56	-5.89	23.68	2.25
330.51	5.36	204.38	330.38	2.94	-6.30	23.50	2.46
335.51	5.80	204.70	335.36	3.35	-6.74	23.30	2.65
340.51	6.15	203.81	340.33	3.79	-7.21	23.08	2.17
345.51	6.61	203.12	345.30	4.26	-7.72	22.86	2.80
350.51	7.12	203.18	350.26	4.78	-8.27	22.63	3.06
355.51	7.55	203.22	355.22	5.32	-8.86	22.38	2.58
360.51	7.95	202.56	360.17	5.90	-9.48	22.11	2.46
365.51	8.42	203.13	365.12	6.51	-10.14	21.84	2.86
370.51	8.87	203.44	370.07	7.16	-10.83	21.54	2.71
375.51	9.32	203.98	375.00	7.83	-11.55	21.22	2.75
380.51	9.69	204.66	379.94	8.53	-12.30	20.88	2.32
385.51	10.20	205.36	384.86	9.25	-13.09	20.52	3.14
390.51	10.63	205.87	389.78	10.00	-13.90	20.13	2.64
395.51	11.18	206.53	394.69	10.79	-14.75	19.71	3.38
400.51	11.63	207.03	399.59	11.60	-15.63	19.26	2.76
405.51	12.10	207.32	404.48	12.44	-16.55	18.79	2.84
410.51	12.52	207.15	409.37	13.31	-17.50	18.30	2.53
415.51	12.92	207.01	414.24	14.21	-18.48	17.80	2.41
420.51	13.28	206.65	419.11	15.15	-19.49	17.29	2.21
425.51	13.72	206.54	423.98	16.11	-20.53	16.77	2.64
430.51	13.97	205.64	428.83	17.10	-21.61	16.24	1.98
435.51	14.35	204.86	433.68	18.12	-22.71	15.72	2.55
440.51	14.80	204.52	438.52	19.18	-23.85	15.20	2.75
445.51	15.07	204.02	443.35	20.27	-25.03	14.67	1.80
450.51	15.37	203.81	448.17	21.39	-26.23	14.13	1.83
455.51	15.69	203.78	452.99	22.53	-27.45	13.59	1.92
460.51	16.03	203.62	457.80	23.69	-28.71	13.05	2.06
465.51	16.43	203.57	462.60	24.88	-29.99	12.49	2.40
470.51	16.74	203.74	467.39	26.10	-31.29	11.91	1.88
475.51	17.19	203.80	472.18	27.34	-32.63	11.33	2.70
480.51	17.53	204.05	476.95	28.61	-33.99	10.72	2.09
485.51	17.95	204.21	481.71	29.90	-35.38	10.10	2.54
490.51	18.32	204.46	486.46	31.21	-36.80	9.46	2.27
495.51	18.76	204.66	491.20	32.55	-38.25	8.80	2.67
500.51	19.08	204.94	495.93	33.92	-39.72	8.12	2.00
505.51	19.50	204.83	500.65	35.31	-41.22	7.42	2.53
510.51	19.80	205.11	505.36	36.72	-42.74	6.71	1.89
515.51	20.24	205.07	510.06	38.15	-44.29	5.98	2.64
520.51	20.69	205.41	514.74	39.62	-45.87	5.24	2.79
525.51	21.14	205.27	519.41	41.11	-47.49	4.48	2.72
530.51	21.64	205.31	524.07	42.63	-49.13	3.70	3.00
535.51	22.39	205.47	528.70	44.20	-50.83	2.89	4.51

Tie-In

540.51	22.86	205.43	533.32	45.81	-52.56	2.07	2.82
545.51	23.35	205.69	537.92	47.44	-54.33	1.22	3.00
550.51	23.87	205.93	542.50	49.11	-56.14	0.35	3.17
555.51	24.33	206.22	547.06	50.80	-57.97	-0.55	2.85
560.51	24.83	206.49	551.61	52.52	-59.83	-1.47	3.07
565.51	25.28	206.60	556.14	54.26	-61.73	-2.42	2.71
570.51	25.87	206.85	560.65	56.04	-63.66	-3.39	3.60
575.51	26.38	207.20	565.14	57.84	-65.62	-4.39	3.20
580.51	26.82	207.41	569.61	59.67	-67.61	-5.42	2.70
585.51	27.16	207.44	574.07	61.52	-69.62	-6.46	2.04
590.51	27.90	207.91	578.50	63.40	-71.67	-7.54	4.63
595.51	28.37	207.88	582.91	65.31	-73.75	-8.64	2.82
600.51	28.83	207.93	587.30	67.25	-75.87	-9.76	2.76
605.51	29.46	208.32	591.67	69.22	-78.01	-10.91	3.95
610.51	29.90	208.42	596.01	71.22	-80.19	-12.08	2.66
615.51	30.41	208.48	600.33	73.24	-82.40	-13.28	3.07
620.51	30.94	208.95	604.63	75.29	-84.64	-14.51	3.49
625.51	31.46	209.13	608.91	77.36	-86.90	-15.76	3.17
630.51	31.89	209.35	613.17	79.45	-89.19	-17.05	2.67
635.51	32.40	209.45	617.40	81.56	-91.51	-18.35	3.08
640.51	32.97	209.78	621.61	83.70	-93.86	-19.69	3.58
645.51	33.34	209.85	625.79	85.87	-96.23	-21.05	2.23
650.51	33.29	209.89	629.97	88.04	-98.61	-22.41	0.33
655.00	33.20	210.13	633.73	89.98	-100.74	-23.64	1.07
660.00	32.99	210.13	637.92	92.13	-103.11	-25.02	1.26
665.00	33.29	210.01	642.10	94.28	-105.47	-26.38	1.84
670.00	33.73	209.91	646.27	96.46	-107.86	-27.76	2.66
675.00	34.09	209.86	650.42	98.66	-110.28	-29.15	2.17
680.00	34.69	210.12	654.55	100.89	-112.73	-30.56	3.71
685.00	35.40	210.66	658.64	103.14	-115.20	-32.02	4.65
689.10	35.51	210.76	661.98	105.00	-117.25	-33.23	0.91
717.50	34.70	205.96	685.22	118.15	-131.61	-40.99	3.04
752.43	33.40	195.32	714.18	135.26	-149.84	-47.89	5.23
780.54	33.91	186.00	737.60	149.98	-165.11	-50.76	5.53
810.03	35.97	177.85	761.79	166.60	-181.95	-51.29	5.19
838.48	36.64	170.20	784.72	183.40	-198.68	-49.53	4.83
866.83	37.47	166.76	807.35	200.45	-215.41	-46.12	2.36
895.45	37.83	165.95	830.01	217.84	-232.40	-41.99	0.64
924.14	38.25	166.46	852.61	235.43	-249.57	-37.78	0.55
952.81	39.64	166.66	874.90	253.36	-267.09	-33.59	1.46
981.60	38.22	166.49	897.30	271.37	-284.69	-29.39	1.48
1010.23	38.58	167.73	919.74	289.09	-302.02	-25.42	0.89
1039.20	38.55	167.51	942.39	307.09	-319.66	-21.55	0.15
1067.89	39.01	167.54	964.76	325.01	-337.21	-17.67	0.48
1096.72	39.89	167.06	987.02	343.26	-355.08	-13.64	0.97
1125.44	40.57	166.90	1008.94	361.74	-373.15	-9.46	0.72
1154.05	39.92	166.98	1030.78	380.15	-391.16	-5.28	0.68
1183.04	39.68	166.86	1053.05	398.63	-409.23	-1.09	0.26
1211.66	38.68	166.92	1075.24	416.64	-426.84	3.02	1.05
1240.27	38.47	166.82	1097.61	434.40	-444.22	7.07	0.23
1269.13	37.72	166.70	1120.32	452.13	-461.55	11.15	0.78
1297.80	38.60	167.43	1142.86	469.78	-478.81	15.11	1.03
1326.36	37.70	167.36	1165.32	487.36	-496.03	18.96	0.95
1355.04	38.68	167.70	1187.86	505.04	-513.34	22.79	1.05
1384.27	37.81	167.57	1210.82	523.08	-531.02	26.66	0.90
1412.38	37.40	167.34	1233.09	540.17	-547.76	30.39	0.46
1441.17	37.84	168.07	1255.89	557.70	-564.93	34.13	0.65
1469.79	38.56	168.51	1278.38	575.36	-582.26	37.72	0.81
1498.39	37.87	168.37	1300.85	593.01	-599.59	41.27	0.73
1527.11	38.56	168.93	1323.42	610.75	-617.01	44.76	0.81
1556.02	37.65	169.12	1346.17	628.56	-634.53	48.16	0.95
1584.67	36.76	168.55	1368.99	645.86	-651.52	51.51	1.00
1613.25	38.50	168.86	1391.62	663.28	-668.63	54.93	1.84
1642.10	37.91	168.79	1414.29	681.09	-686.14	58.39	0.62

1671.05	37.92	169.06	1437.13	698.86	-703.60	61.80	0.17
1699.71	38.03	168.86	1459.72	716.46	-720.91	65.18	0.17
1727.96	37.84	169.05	1482.00	733.81	-737.95	68.51	0.24
1756.81	38.27	169.04	1504.72	751.56	-755.41	71.89	0.45
1785.62	38.00	168.66	1527.38	769.33	-772.87	75.33	0.37
1814.15	37.10	168.75	1550.00	786.68	-789.92	78.73	0.95
1842.95	38.27	167.89	1572.79	804.25	-807.16	82.30	1.34
1871.75	38.45	168.39	1595.37	822.08	-824.65	85.97	0.37
1900.47	38.71	168.39	1617.82	839.96	-842.19	89.58	0.27
1929.33	38.47	168.66	1640.38	857.92	-859.83	93.16	0.30
1958.22	37.87	169.39	1663.09	875.75	-877.36	96.56	0.78
1986.84	38.12	169.09	1685.65	893.35	-894.67	99.85	0.33
2015.48	39.37	167.94	1707.99	911.24	-912.23	103.42	1.51
2044.61	38.98	168.11	1730.57	929.59	-930.23	107.24	0.42
2071.77	38.59	168.98	1751.74	946.57	-946.91	110.62	0.74
2101.85	37.10	168.96	1775.49	965.00	-965.02	114.15	1.49
2130.54	37.51	168.59	1798.31	982.36	-982.08	117.53	0.49
2159.14	38.47	167.19	1820.85	999.91	-999.29	121.23	1.35
2187.44	38.03	166.74	1843.08	1017.37	-1016.35	125.18	0.55
2216.29	38.41	166.91	1865.74	1035.14	-1033.73	129.25	0.41
2245.08	38.93	167.52	1888.22	1053.06	-1051.28	133.23	0.67
2273.90	38.02	167.87	1910.78	1070.94	-1068.80	137.05	0.97
2302.68	38.81	168.30	1933.33	1088.78	-1086.29	140.74	0.87
2331.35	38.78	168.59	1955.68	1106.71	-1103.89	144.34	0.19
2359.88	38.33	168.94	1977.99	1124.46	-1121.33	147.80	0.53
2388.53	38.91	168.96	2000.37	1142.32	-1138.88	151.23	0.61
2417.21	38.59	168.82	2022.74	1160.24	-1156.50	154.69	0.35
2445.97	39.26	168.62	2045.12	1178.28	-1174.22	158.22	0.71
2474.75	38.92	168.19	2067.45	1196.39	-1192.00	161.87	0.45
2503.79	39.80	167.74	2089.91	1214.76	-1210.01	165.71	0.96
2531.95	39.39	167.17	2111.61	1232.65	-1227.53	169.61	0.58
2560.51	40.01	166.69	2133.58	1250.82	-1245.30	173.74	0.73
2589.43	40.85	166.60	2155.59	1269.49	-1263.54	178.07	0.87
2617.92	41.96	167.22	2176.96	1288.25	-1281.90	182.33	1.25
2646.67	41.96	167.88	2198.34	1307.42	-1300.67	186.48	0.46
2675.56	41.93	168.44	2219.83	1326.68	-1319.57	190.44	0.39
2703.70	41.03	168.90	2240.91	1345.29	-1337.84	194.10	1.01
2732.45	40.27	169.62	2262.72	1363.99	-1356.24	197.59	0.93
2760.98	39.81	169.96	2284.57	1382.33	-1374.31	200.85	0.54
2789.98	38.64	171.44	2307.03	1400.66	-1392.40	203.81	1.55
2818.82	38.83	171.71	2329.53	1418.71	-1410.25	206.46	0.26
2847.42	38.91	171.07	2351.80	1436.66	-1428.00	209.14	0.43
2875.94	39.73	171.25	2373.86	1454.73	-1445.85	211.92	0.87
2904.56	40.43	171.37	2395.76	1473.15	-1464.07	214.71	0.74
2933.12	40.91	171.26	2417.42	1491.76	-1482.47	217.52	0.51
2961.50	41.59	171.60	2438.76	1510.47	-1500.97	220.30	0.76
2990.42	39.85	170.94	2460.67	1529.34	-1519.62	223.17	1.86
3019.22	39.73	171.29	2482.80	1547.76	-1537.83	226.01	0.26
3048.40	39.90	171.55	2505.22	1566.45	-1556.30	228.80	0.24
3076.98	39.84	171.60	2527.15	1584.77	-1574.43	231.48	0.07
3104.57	40.18	172.01	2548.29	1602.51	-1591.99	234.01	0.47
3134.13	41.41	172.07	2570.66	1621.82	-1611.11	236.69	1.25
3162.70	42.38	172.49	2591.93	1640.90	-1630.02	239.25	1.06
3191.43	42.22	172.43	2613.18	1660.23	-1649.19	241.79	0.17
3219.74	41.68	172.83	2634.23	1679.16	-1667.95	244.21	0.64
3248.88	38.89	174.72	2656.46	1697.99	-1686.68	246.27	3.14
3255.01	38.38	174.78	2661.25	1701.81	-1690.49	246.62	2.50
3275.00	38.38	174.78	2676.92	1714.21	-1702.85	247.75	0.00

Projection to TD

Survey Type: Raw Survey

Survey Error Model: SLB ISCWSA version 16 *** 3-D 95.00% Confidence 2.7955 sigma

Surveying Prog:

MD From (m)

0.00
655.00
689.10
717.50

MD To (m)

655.00 Act-Stns SLB_NSG+SSHOT
689.10 Act-Stns SLB_NSG+MSHOT
717.50 Act-Stns SLB_NSG+SSHOT
3275.00 Act-Stns SLB_MWD-STD

EOU Freq

Survey Tool Type

APPENDIX 1b

MARLIN A-24A

MD-TVD Survey Data Listing

Report Date:	28 September 2004
Well:	MARLIN A24A
Structure / Slot:	Marlin Rig 453 / 9
TVD Reference Datum:	Drillsite Elevation
TVD Reference Elevation:	27.90 m relative to MSL
Sea Bed / Ground Level Elevation:	-59.00 m relative to MSL
Grid Coordinate System:	GDA94/MGA94 Zone 55
Location Lat/Long:	S 38 13 49.203, E 148 13 15.554
Location Grid N/E:	N 5767923.72 m, E 606865.17 m
Survey Azimuth Reference:	Grid North

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0.00	0.00	0.00	27.90	0.00	0.00	5767923.72	606865.17
5	0.12	332.62	5.00	22.90	0.01	-0.01	5767923.73	606865.16
10	0.25	302.12	10.00	17.90	0.01	-0.02	5767923.73	606865.15
15	0.29	283.74	15.00	12.90	0.02	-0.04	5767923.74	606865.13
20	0.31	261.47	20.00	7.90	0.02	-0.07	5767923.74	606865.11
25	0.33	257.10	25.00	2.90	0.01	-0.09	5767923.74	606865.08
30	0.34	260.08	30.00	-2.10	0.01	-0.12	5767923.73	606865.05
35	0.35	261.96	35.00	-7.10	0.00	-0.15	5767923.73	606865.02
40	0.36	265.55	40.00	-12.10	0.00	-0.18	5767923.72	606864.99
45	0.37	261.40	45.00	-17.10	0.00	-0.21	5767923.72	606864.96
50	0.36	260.47	50.00	-22.10	-0.01	-0.24	5767923.71	606864.93
55	0.32	262.99	55.00	-27.10	-0.01	-0.27	5767923.71	606864.90
60	0.31	261.76	60.00	-32.10	-0.02	-0.30	5767923.70	606864.87
65	0.31	261.57	65.00	-37.10	-0.02	-0.33	5767923.70	606864.84
70	0.33	278.07	70.00	-42.10	-0.02	-0.36	5767923.70	606864.82
75	0.36	286.26	75.00	-47.10	-0.01	-0.38	5767923.71	606864.79
80	0.31	295.80	80.00	-52.10	0.00	-0.41	5767923.72	606864.76
85	0.30	295.96	85.00	-57.10	0.01	-0.44	5767923.73	606864.74
90	0.31	293.62	90.00	-62.10	0.02	-0.46	5767923.74	606864.71
95	0.27	304.87	95.00	-67.10	0.03	-0.48	5767923.75	606864.69
100	0.22	304.79	100.00	-72.10	0.04	-0.50	5767923.76	606864.67
105	0.18	351.33	105.00	-77.10	0.06	-0.51	5767923.78	606864.66
110	0.18	40.43	110.00	-82.10	0.07	-0.50	5767923.79	606864.67
115	0.36	70.30	115.00	-87.10	0.08	-0.48	5767923.80	606864.69
120	0.54	84.53	120.00	-92.10	0.09	-0.45	5767923.81	606864.73
125	0.72	88.96	125.00	-97.10	0.09	-0.39	5767923.81	606864.78
130	0.89	93.62	130.00	-102.10	0.09	-0.32	5767923.81	606864.85
135	0.98	100.23	135.00	-107.10	0.08	-0.24	5767923.80	606864.93
140	1.08	104.31	140.00	-112.10	0.06	-0.15	5767923.78	606865.02
145	1.13	106.94	145.00	-117.10	0.03	-0.06	5767923.75	606865.11
150	1.14	109.27	149.99	-122.09	0.00	0.03	5767923.72	606865.21
155	1.17	107.94	154.99	-127.09	-0.03	0.13	5767923.69	606865.30
160	1.08	107.58	159.99	-132.09	-0.06	0.22	5767923.66	606865.40
165	0.86	99.15	164.99	-137.09	-0.08	0.31	5767923.64	606865.48
170	0.64	66.82	169.99	-142.09	-0.08	0.37	5767923.64	606865.54
175	0.81	23.18	174.99	-147.09	-0.04	0.41	5767923.69	606865.58
180	1.00	9.59	179.99	-152.09	0.04	0.43	5767923.76	606865.60
185	1.15	17.42	184.99	-157.09	0.13	0.43	5767923.86	606865.60
190	1.21	357.43	189.99	-162.09	0.24	0.43	5767923.96	606865.60
195	1.23	354.09	194.99	-167.09	0.34	0.42	5767924.06	606865.59
200	1.17	348.25	199.99	-172.09	0.45	0.41	5767924.17	606865.58
205	1.08	338.88	204.99	-177.09	0.54	0.38	5767924.26	606865.55
210	0.97	320.25	209.98	-182.08	0.62	0.33	5767924.34	606865.51
215	0.84	300.14	214.98	-187.08	0.67	0.28	5767924.39	606865.45
220	0.80	281.69	219.98	-192.08	0.69	0.21	5767924.41	606865.38
225	0.78	267.93	224.98	-197.08	0.70	0.14	5767924.42	606865.31
230	0.74	254.45	229.98	-202.08	0.69	0.08	5767924.41	606865.25
235	0.74	242.52	234.98	-207.08	0.67	0.02	5767924.39	606865.19
240	0.66	217.17	239.98	-212.08	0.63	-0.03	5767924.35	606865.14
245	0.76	196.14	244.98	-217.08	0.57	-0.05	5767924.29	606865.12
250	0.97	180.21	249.98	-222.08	0.50	-0.06	5767924.22	606865.11
255	1.13	174.72	254.98	-227.08	0.41	-0.06	5767924.13	606865.11
260	1.15	177.40	259.98	-232.08	0.31	-0.05	5767924.03	606865.12

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
265	1.28	173.93	264.98	-237.08	0.20	-0.04	5767923.92	606865.13
270	1.44	176.79	269.98	-242.08	0.08	-0.03	5767923.81	606865.14
275	1.59	180.07	274.97	-247.07	-0.05	-0.03	5767923.67	606865.14
280	1.95	185.29	279.97	-252.07	-0.20	-0.04	5767923.52	606865.13
285	2.27	189.75	284.97	-257.07	-0.38	-0.06	5767923.34	606865.11
290	2.53	192.34	289.96	-262.06	-0.59	-0.10	5767923.13	606865.07
295	2.81	195.67	294.96	-267.06	-0.81	-0.16	5767922.91	606865.01
300	3.14	197.67	299.95	-272.05	-1.06	-0.24	5767922.66	606864.94
305	3.39	199.48	304.94	-277.04	-1.33	-0.33	5767922.39	606864.85
310	3.82	202.15	309.93	-282.03	-1.63	-0.44	5767922.10	606864.73
315	4.07	201.63	314.92	-287.02	-1.95	-0.57	5767921.78	606864.60
320	4.54	203.03	319.91	-292.01	-2.29	-0.71	5767921.43	606864.46
325	4.91	204.32	324.89	-296.99	-2.67	-0.87	5767921.05	606864.30
330	5.32	204.39	329.87	-301.97	-3.08	-1.06	5767920.65	606864.11
335	5.76	204.67	334.85	-306.95	-3.51	-1.26	5767920.21	606863.91
340	6.11	203.90	339.82	-311.92	-3.99	-1.47	5767919.74	606863.70
345	6.56	203.19	344.79	-316.89	-4.49	-1.69	5767919.23	606863.48
350	7.07	203.17	349.75	-321.85	-5.04	-1.93	5767918.68	606863.25
355	7.51	203.22	354.71	-326.81	-5.62	-2.18	5767918.10	606863.00
360	7.91	202.63	359.67	-331.77	-6.24	-2.44	5767917.48	606862.74
365	8.37	203.07	364.62	-336.72	-6.89	-2.71	5767916.83	606862.46
370	8.82	203.41	369.56	-341.66	-7.58	-3.01	5767916.14	606862.16
375	9.27	203.92	374.50	-346.60	-8.30	-3.32	5767915.42	606861.85
380	9.65	204.59	379.43	-351.53	-9.05	-3.66	5767914.68	606861.51
385	10.15	205.29	384.36	-356.46	-9.83	-4.02	5767913.90	606861.15
390	10.59	205.82	389.28	-361.38	-10.64	-4.41	5767913.08	606860.76
395	11.12	206.46	394.19	-366.29	-11.48	-4.83	5767912.24	606860.35
400	11.58	206.98	399.09	-371.19	-12.36	-5.27	5767911.36	606859.90
405	12.05	207.29	403.98	-376.08	-13.27	-5.74	5767910.45	606859.44
410	12.48	207.17	408.87	-380.97	-14.22	-6.22	5767909.50	606858.95
415	12.88	207.02	413.75	-385.85	-15.20	-6.72	5767908.53	606858.45
420	13.24	206.69	418.62	-390.72	-16.20	-7.23	5767907.52	606857.94
425	13.68	206.55	423.48	-395.58	-17.24	-7.75	5767906.48	606857.42
430	13.94	205.73	428.34	-400.44	-18.32	-8.28	5767905.41	606856.89
435	14.31	204.94	433.18	-405.28	-19.42	-8.80	5767904.30	606856.37
440	14.75	204.55	438.02	-410.12	-20.56	-9.33	5767903.16	606855.85
445	15.04	204.07	442.86	-414.96	-21.73	-9.86	5767901.99	606855.32
450	15.34	203.83	447.68	-419.78	-22.93	-10.39	5767900.80	606854.78
455	15.66	203.78	452.50	-424.60	-24.15	-10.93	5767899.57	606854.24
460	16.00	203.64	457.31	-429.41	-25.40	-11.47	5767898.32	606853.70
465	16.39	203.58	462.11	-434.21	-26.67	-12.03	5767897.05	606853.14
470	16.71	203.72	466.90	-439.00	-27.98	-12.60	5767895.74	606852.57
475	17.14	203.79	471.69	-443.79	-29.31	-13.19	5767894.41	606851.98
480	17.50	204.02	476.46	-448.56	-30.67	-13.79	5767893.05	606851.38
485	17.91	204.19	481.22	-453.32	-32.06	-14.42	5767891.66	606850.76
490	18.28	204.43	485.98	-458.08	-33.47	-15.06	5767890.25	606850.12
495	18.72	204.64	490.72	-462.82	-34.92	-15.71	5767888.80	606849.46
500	19.05	204.91	495.45	-467.55	-36.39	-16.39	5767887.33	606848.78
505	19.46	204.84	500.17	-472.27	-37.88	-17.09	5767885.84	606848.09
510	19.77	205.08	504.88	-476.98	-39.40	-17.79	5767884.32	606847.38
515	20.20	205.07	509.58	-481.68	-40.95	-18.52	5767882.77	606846.65
520	20.64	205.38	514.26	-486.36	-42.53	-19.26	5767881.19	606845.91
525	21.09	205.28	518.94	-491.04	-44.14	-20.02	5767879.58	606845.15
530	21.59	205.31	523.59	-495.69	-45.79	-20.80	5767877.94	606844.37
535	22.31	205.45	528.23	-500.33	-47.47	-21.60	5767876.25	606843.57
540	22.81	205.43	532.85	-504.95	-49.21	-22.43	5767874.52	606842.75
545	23.30	205.66	537.45	-509.55	-50.97	-23.27	5767872.75	606841.90
550	23.82	205.91	542.03	-514.13	-52.77	-24.14	5767870.95	606841.03
555	24.28	206.19	546.60	-518.70	-54.60	-25.04	5767869.12	606840.14
560	24.78	206.46	551.15	-523.25	-56.46	-25.96	5767867.26	606839.22
565	25.23	206.59	555.68	-527.78	-58.35	-26.90	5767865.37	606838.27
570	25.81	206.82	560.19	-532.29	-60.28	-27.87	5767863.44	606837.30
575	26.33	207.16	564.68	-536.78	-62.24	-28.86	5767861.49	606836.31
580	26.78	207.39	569.15	-541.25	-64.22	-29.89	5767859.50	606835.28
585	27.13	207.44	573.61	-545.71	-66.23	-30.93	5767857.49	606834.24
590	27.82	207.86	578.05	-550.15	-68.28	-32.00	5767855.44	606833.17

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
595	28.32	207.88	582.46	-554.56	-70.36	-33.10	5767853.36	606832.07
600	28.78	207.92	586.85	-558.95	-72.47	-34.22	5767851.25	606830.95
605	29.40	208.28	591.22	-563.32	-74.61	-35.37	5767849.11	606829.80
610	29.86	208.41	595.57	-567.67	-76.79	-36.54	5767846.93	606828.63
615	30.36	208.47	599.89	-571.99	-78.99	-37.73	5767844.73	606827.44
620	30.89	208.90	604.19	-576.29	-81.23	-38.96	5767842.49	606826.21
625	31.41	209.11	608.47	-580.57	-83.49	-40.21	5767840.23	606824.96
630	31.85	209.33	612.73	-584.83	-85.78	-41.49	5767837.94	606823.68
635	32.35	209.44	616.97	-589.07	-88.09	-42.80	5767835.63	606822.38
640	32.91	209.75	621.18	-593.28	-90.44	-44.13	5767833.28	606821.05
645	33.30	209.84	625.37	-597.47	-92.81	-45.48	5767830.91	606819.69
650	33.30	209.89	629.54	-601.64	-95.19	-46.85	5767828.53	606818.32
655	33.20	210.13	633.73	-605.83	-97.56	-48.22	5767826.16	606816.95
660	32.99	210.13	637.91	-610.01	-99.92	-49.59	5767823.80	606815.58
665	33.29	210.01	642.10	-614.20	-102.29	-50.96	5767821.43	606814.21
670	33.73	209.91	646.27	-618.37	-104.68	-52.34	5767819.04	606812.83
675	34.09	209.86	650.42	-622.52	-107.10	-53.73	5767816.62	606811.44
680	34.69	210.12	654.55	-626.65	-109.55	-55.14	5767814.18	606810.03
685	35.40	210.66	658.64	-630.74	-112.02	-56.59	5767811.70	606808.58
690	35.48	210.61	662.72	-634.82	-114.52	-58.05	5767809.20	606807.12
695	35.34	209.76	666.81	-638.91	-117.05	-59.42	5767806.67	606805.75
700	35.20	208.92	670.90	-643.00	-119.58	-60.79	5767804.14	606804.39
705	35.06	208.07	674.99	-647.09	-122.11	-62.15	5767801.61	606803.02
710	34.91	207.23	679.08	-651.18	-124.63	-63.52	5767799.09	606801.65
715	34.77	206.38	683.17	-655.27	-127.16	-64.88	5767796.56	606800.29
720	34.61	205.20	687.29	-659.39	-129.73	-66.06	5767793.99	606799.11
725	34.42	203.68	691.44	-663.54	-132.34	-67.05	5767791.38	606798.12
730	34.23	202.15	695.58	-667.68	-134.95	-68.04	5767788.77	606797.14
735	34.05	200.63	699.73	-671.83	-137.56	-69.02	5767786.16	606796.15
740	33.86	199.11	703.88	-675.98	-140.17	-70.01	5767783.55	606795.16
745	33.68	197.58	708.02	-680.12	-142.78	-71.00	5767780.94	606794.17
750	33.49	196.06	712.17	-684.27	-145.39	-71.99	5767778.33	606793.19
755	33.45	194.47	716.33	-688.43	-148.05	-72.73	5767775.67	606792.44
760	33.54	192.81	720.49	-692.59	-150.77	-73.24	5767772.95	606791.93
765	33.63	191.15	724.66	-696.76	-153.48	-73.75	5767770.24	606791.42
770	33.72	189.49	728.82	-700.92	-156.20	-74.26	5767767.52	606790.91
775	33.81	187.84	732.98	-705.08	-158.92	-74.77	5767764.81	606790.40
780	33.90	186.18	737.15	-709.25	-161.63	-75.28	5767762.09	606789.89
785	34.22	184.77	741.26	-713.36	-164.47	-75.41	5767759.25	606789.76
790	34.57	183.39	745.36	-717.46	-167.33	-75.50	5767756.39	606789.67
795	34.92	182.00	749.46	-721.56	-170.19	-75.59	5767753.54	606789.58
800	35.27	180.62	753.56	-725.66	-173.04	-75.69	5767750.68	606789.49
805	35.62	179.24	757.66	-729.76	-175.90	-75.78	5767747.82	606789.40
810	35.97	177.86	761.76	-733.86	-178.75	-75.87	5767744.97	606789.31
815	36.09	176.51	765.79	-737.89	-181.69	-75.56	5767742.03	606789.61
820	36.20	175.17	769.82	-741.92	-184.63	-75.25	5767739.09	606789.92
825	36.32	173.82	773.86	-745.96	-187.57	-74.94	5767736.15	606790.23
830	36.44	172.48	777.89	-749.99	-190.51	-74.63	5767733.21	606790.54
835	36.56	171.14	781.92	-754.02	-193.45	-74.32	5767730.27	606790.85
840	36.68	170.02	785.94	-758.04	-196.39	-73.92	5767727.33	606791.25
845	36.83	169.41	789.93	-762.03	-199.34	-73.32	5767724.38	606791.85
850	36.98	168.80	793.92	-766.02	-202.29	-72.72	5767721.43	606792.45
855	37.12	168.20	797.91	-770.01	-205.25	-72.12	5767718.48	606793.05
860	37.27	167.59	801.90	-774.00	-208.20	-71.51	5767715.52	606793.66
865	37.42	166.98	805.89	-777.99	-211.15	-70.91	5767712.57	606794.26
870	37.51	166.67	809.86	-781.96	-214.11	-70.23	5767709.61	606794.94
875	37.57	166.53	813.82	-785.92	-217.08	-69.51	5767706.64	606795.66
880	37.64	166.39	817.78	-789.88	-220.05	-68.79	5767703.68	606796.38
885	37.70	166.25	821.74	-793.84	-223.01	-68.07	5767700.71	606797.10
890	37.76	166.10	825.70	-797.80	-225.98	-67.35	5767697.74	606797.82
895	37.82	165.96	829.66	-801.76	-228.95	-66.63	5767694.77	606798.54
900	37.90	166.03	833.60	-805.70	-231.94	-65.90	5767691.78	606799.27
905	37.97	166.12	837.53	-809.63	-234.93	-65.16	5767688.79	606800.01
910	38.04	166.21	841.47	-813.57	-237.92	-64.43	5767685.80	606800.74
915	38.12	166.30	845.41	-817.51	-240.92	-63.70	5767682.81	606801.48
920	38.19	166.39	849.35	-821.45	-243.91	-62.96	5767679.81	606802.21

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
925	38.29	166.47	853.28	-825.38	-246.91	-62.23	5767676.81	606802.94
930	38.53	166.50	857.16	-829.26	-249.97	-61.50	5767673.75	606803.68
935	38.78	166.54	861.05	-833.15	-253.02	-60.77	5767670.70	606804.41
940	39.02	166.57	864.94	-837.04	-256.08	-60.04	5767667.64	606805.14
945	39.26	166.61	868.83	-840.93	-259.14	-59.31	5767664.58	606805.87
950	39.50	166.64	872.72	-844.82	-262.20	-58.57	5767661.53	606806.60
955	39.53	166.65	876.61	-848.71	-265.25	-57.84	5767658.47	606807.33
960	39.29	166.62	880.50	-852.60	-268.31	-57.12	5767655.41	606808.06
965	39.04	166.59	884.39	-856.49	-271.36	-56.39	5767652.36	606808.79
970	38.79	166.56	888.28	-860.38	-274.42	-55.66	5767649.30	606809.51
975	38.55	166.53	892.17	-864.27	-277.48	-54.93	5767646.25	606810.24
980	38.30	166.50	896.06	-868.16	-280.53	-54.20	5767643.19	606810.97
985	38.26	166.64	899.96	-872.06	-283.57	-53.49	5767640.15	606811.68
990	38.33	166.85	903.88	-875.98	-286.59	-52.80	5767637.13	606812.37
995	38.39	167.07	907.80	-879.90	-289.62	-52.11	5767634.10	606813.06
1000	38.45	167.29	911.72	-883.82	-292.65	-51.42	5767631.07	606813.76
1005	38.51	167.50	915.64	-887.74	-295.68	-50.72	5767628.04	606814.45
1010	38.58	167.72	919.56	-891.66	-298.70	-50.03	5767625.02	606815.14
1015	38.58	167.69	923.47	-895.57	-301.75	-49.36	5767621.97	606815.81
1020	38.57	167.66	927.38	-899.48	-304.79	-48.69	5767618.93	606816.48
1025	38.56	167.62	931.29	-903.39	-307.84	-48.02	5767615.88	606817.15
1030	38.56	167.58	935.20	-907.30	-310.88	-47.36	5767612.84	606817.82
1035	38.55	167.54	939.11	-911.21	-313.93	-46.69	5767609.80	606818.48
1040	38.56	167.51	943.01	-915.11	-316.97	-46.02	5767606.75	606819.15
1045	38.64	167.52	946.91	-919.01	-320.03	-45.34	5767603.69	606819.83
1050	38.72	167.52	950.81	-922.91	-323.09	-44.67	5767600.63	606820.51
1055	38.80	167.53	954.71	-926.81	-326.15	-43.99	5767597.58	606821.18
1060	38.88	167.53	958.60	-930.70	-329.20	-43.31	5767594.52	606821.86
1065	38.96	167.54	962.50	-934.60	-332.26	-42.64	5767591.46	606822.54
1070	39.07	167.50	966.38	-938.48	-335.34	-41.95	5767588.38	606823.22
1075	39.23	167.42	970.25	-942.35	-338.44	-41.25	5767585.29	606823.92
1080	39.38	167.34	974.11	-946.21	-341.54	-40.55	5767582.19	606824.62
1085	39.53	167.26	977.97	-950.07	-344.63	-39.85	5767579.09	606825.32
1090	39.68	167.17	981.83	-953.93	-347.73	-39.16	5767575.99	606826.02
1095	39.84	167.09	985.69	-957.79	-350.83	-38.46	5767572.89	606826.71
1100	39.97	167.04	989.52	-961.62	-353.96	-37.74	5767569.76	606827.43
1105	40.09	167.01	993.34	-965.44	-357.11	-37.01	5767566.61	606828.16
1110	40.20	166.99	997.16	-969.26	-360.26	-36.28	5767563.47	606828.89
1115	40.32	166.96	1000.97	-973.07	-363.40	-35.56	5767560.32	606829.61
1120	40.44	166.93	1004.79	-976.89	-366.55	-34.83	5767557.17	606830.34
1125	40.56	166.90	1008.61	-980.71	-369.69	-34.10	5767554.03	606831.07
1130	40.47	166.91	1012.42	-984.52	-372.84	-33.37	5767550.88	606831.80
1135	40.35	166.93	1016.24	-988.34	-375.99	-32.64	5767547.73	606832.53
1140	40.24	166.94	1020.06	-992.16	-379.13	-31.91	5767544.59	606833.26
1145	40.13	166.95	1023.87	-995.97	-382.28	-31.18	5767541.44	606833.99
1150	40.01	166.97	1027.69	-999.79	-385.43	-30.45	5767538.29	606834.72
1155	39.91	166.98	1031.51	-1003.61	-388.57	-29.72	5767535.15	606835.45
1160	39.87	166.96	1035.35	-1007.45	-391.69	-29.00	5767532.04	606836.17
1165	39.83	166.93	1039.19	-1011.29	-394.80	-28.27	5767528.92	606836.90
1170	39.79	166.91	1043.03	-1015.13	-397.92	-27.55	5767525.80	606837.62
1175	39.75	166.89	1046.88	-1018.98	-401.04	-26.83	5767522.68	606838.35
1180	39.71	166.87	1050.72	-1022.82	-404.16	-26.10	5767519.57	606839.07
1185	39.61	166.86	1054.57	-1026.67	-407.26	-25.38	5767516.46	606839.79
1190	39.44	166.87	1058.45	-1030.55	-410.33	-24.66	5767513.39	606840.51
1195	39.26	166.89	1062.32	-1034.42	-413.41	-23.95	5767510.31	606841.22
1200	39.09	166.90	1066.20	-1038.30	-416.49	-23.23	5767507.23	606841.94
1205	38.91	166.91	1070.08	-1042.18	-419.56	-22.52	5767504.16	606842.66
1210	38.74	166.92	1073.95	-1046.05	-422.64	-21.80	5767501.08	606843.37
1215	38.66	166.91	1077.85	-1049.95	-425.69	-21.09	5767498.03	606844.08
1220	38.62	166.89	1081.76	-1053.86	-428.73	-20.38	5767495.00	606844.79
1225	38.58	166.87	1085.67	-1057.77	-431.76	-19.67	5767491.96	606845.50
1230	38.55	166.86	1089.58	-1061.68	-434.80	-18.96	5767488.92	606846.21
1235	38.51	166.84	1093.48	-1065.58	-437.83	-18.25	5767485.89	606846.92
1240	38.47	166.82	1097.39	-1069.49	-440.87	-17.55	5767482.85	606847.62
1245	38.35	166.80	1101.33	-1073.43	-443.88	-16.84	5767479.85	606848.33
1250	38.22	166.78	1105.26	-1077.36	-446.88	-16.13	5767476.84	606849.04

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1255	38.09	166.76	1109.20	-1081.30	-449.88	-15.43	5767473.84	606849.74
1260	37.96	166.74	1113.13	-1085.23	-452.88	-14.72	5767470.84	606850.45
1265	37.83	166.72	1117.07	-1089.17	-455.89	-14.01	5767467.84	606851.16
1270	37.75	166.72	1121.00	-1093.10	-458.89	-13.31	5767464.83	606851.86
1275	37.90	166.85	1124.93	-1097.03	-461.90	-12.62	5767461.82	606852.55
1280	38.05	166.98	1128.86	-1100.96	-464.91	-11.93	5767458.81	606853.24
1285	38.21	167.10	1132.80	-1104.90	-467.92	-11.24	5767455.80	606853.94
1290	38.36	167.23	1136.73	-1108.83	-470.93	-10.54	5767452.79	606854.63
1295	38.51	167.36	1140.66	-1112.76	-473.94	-9.85	5767449.78	606855.32
1300	38.53	167.42	1144.59	-1116.69	-476.96	-9.17	5767446.76	606856.00
1305	38.37	167.41	1148.52	-1120.62	-479.97	-8.50	5767443.75	606856.68
1310	38.22	167.40	1152.45	-1124.55	-482.99	-7.82	5767440.74	606857.35
1315	38.06	167.39	1156.39	-1128.49	-486.00	-7.15	5767437.72	606858.02
1320	37.90	167.38	1160.32	-1132.42	-489.01	-6.47	5767434.71	606858.70
1325	37.74	167.36	1164.25	-1136.35	-492.03	-5.80	5767431.69	606859.37
1330	37.82	167.40	1168.18	-1140.28	-495.05	-5.13	5767428.68	606860.04
1335	38.00	167.46	1172.11	-1144.21	-498.06	-4.46	5767425.66	606860.71
1340	38.17	167.52	1176.04	-1148.14	-501.08	-3.80	5767422.64	606861.38
1345	38.34	167.58	1179.97	-1152.07	-504.10	-3.13	5767419.62	606862.04
1350	38.51	167.64	1183.90	-1156.00	-507.12	-2.46	5767416.60	606862.71
1355	38.68	167.70	1187.83	-1159.93	-510.14	-1.79	5767413.58	606863.38
1360	38.53	167.68	1191.76	-1163.86	-513.16	-1.13	5767410.56	606864.04
1365	38.38	167.66	1195.68	-1167.78	-516.18	-0.47	5767407.54	606864.70
1370	38.23	167.63	1199.61	-1171.71	-519.21	0.20	5767404.51	606865.37
1375	38.09	167.61	1203.54	-1175.64	-522.23	0.86	5767401.49	606866.03
1380	37.94	167.59	1207.46	-1179.56	-525.25	1.52	5767398.47	606866.69
1385	37.80	167.56	1211.40	-1183.50	-528.27	2.18	5767395.45	606867.35
1390	37.73	167.52	1215.36	-1187.46	-531.25	2.85	5767392.47	606868.02
1395	37.65	167.48	1219.32	-1191.42	-534.23	3.51	5767389.49	606868.68
1400	37.58	167.44	1223.28	-1195.38	-537.20	4.17	5767386.52	606869.34
1405	37.51	167.40	1227.24	-1199.34	-540.18	4.83	5767383.54	606870.01
1410	37.43	167.36	1231.20	-1203.30	-543.16	5.50	5767380.56	606870.67
1415	37.44	167.41	1235.16	-1207.26	-546.14	6.15	5767377.58	606871.32
1420	37.52	167.53	1239.12	-1211.22	-549.12	6.80	5767374.60	606871.97
1425	37.59	167.66	1243.08	-1215.18	-552.11	7.45	5767371.62	606872.62
1430	37.67	167.79	1247.04	-1219.14	-555.09	8.10	5767368.63	606873.27
1435	37.75	167.91	1251.00	-1223.10	-558.07	8.75	5767365.65	606873.92
1440	37.82	168.04	1254.96	-1227.06	-561.05	9.40	5767362.67	606874.57
1445	37.94	168.13	1258.90	-1231.00	-564.07	10.03	5767359.65	606875.21
1450	38.06	168.21	1262.83	-1234.93	-567.10	10.66	5767356.62	606875.83
1455	38.19	168.28	1266.76	-1238.86	-570.12	11.29	5767353.60	606876.46
1460	38.31	168.36	1270.69	-1242.79	-573.15	11.92	5767350.57	606877.09
1465	38.44	168.44	1274.62	-1246.72	-576.18	12.54	5767347.54	606877.72
1470	38.55	168.51	1278.55	-1250.65	-579.21	13.17	5767344.51	606878.34
1475	38.43	168.48	1282.48	-1254.58	-582.24	13.79	5767341.48	606878.96
1480	38.31	168.46	1286.40	-1258.50	-585.27	14.41	5767338.45	606879.58
1485	38.19	168.44	1290.33	-1262.43	-588.30	15.03	5767335.42	606880.20
1490	38.07	168.41	1294.26	-1266.36	-591.33	15.65	5767332.39	606880.82
1495	37.95	168.39	1298.19	-1270.29	-594.36	16.27	5767329.36	606881.44
1500	37.91	168.40	1302.12	-1274.22	-597.39	16.89	5767326.33	606882.06
1505	38.03	168.50	1306.05	-1278.15	-600.42	17.50	5767323.30	606882.67
1510	38.15	168.60	1309.97	-1282.07	-603.46	18.10	5767320.27	606883.28
1515	38.27	168.69	1313.90	-1286.00	-606.49	18.71	5767317.23	606883.88
1520	38.39	168.79	1317.83	-1289.93	-609.52	19.32	5767314.20	606884.49
1525	38.51	168.89	1321.76	-1293.86	-612.55	19.93	5767311.17	606885.10
1530	38.47	168.95	1325.69	-1297.79	-615.58	20.53	5767308.14	606885.70
1535	38.31	168.98	1329.63	-1301.73	-618.61	21.11	5767305.11	606886.28
1540	38.15	169.01	1333.56	-1305.66	-621.64	21.70	5767302.08	606886.87
1545	38.00	169.05	1337.49	-1309.59	-624.67	22.29	5767299.05	606887.46
1550	37.84	169.08	1341.43	-1313.53	-627.70	22.88	5767296.02	606888.05
1555	37.68	169.11	1345.36	-1317.46	-630.73	23.46	5767292.99	606888.64
1560	37.53	169.04	1349.34	-1321.44	-633.71	24.05	5767290.01	606889.22
1565	37.37	168.94	1353.32	-1325.42	-636.67	24.63	5767287.05	606889.81
1570	37.22	168.84	1357.30	-1329.40	-639.64	25.22	5767284.08	606890.39
1575	37.06	168.74	1361.28	-1333.38	-642.61	25.80	5767281.12	606890.98
1580	36.91	168.64	1365.27	-1337.37	-645.57	26.39	5767278.15	606891.56

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1585	36.78	168.55	1369.25	-1341.35	-648.54	26.98	5767275.18	606892.15
1590	37.08	168.61	1373.21	-1345.31	-651.53	27.57	5767272.19	606892.75
1595	37.39	168.66	1377.17	-1349.27	-654.53	28.17	5767269.19	606893.34
1600	37.69	168.72	1381.13	-1353.23	-657.52	28.77	5767266.20	606893.94
1605	38.00	168.77	1385.09	-1357.19	-660.51	29.37	5767263.21	606894.54
1610	38.30	168.82	1389.05	-1361.15	-663.51	29.96	5767260.21	606895.14
1615	38.46	168.86	1392.99	-1365.09	-666.51	30.56	5767257.21	606895.73
1619	38.38	168.85	1396.14	-1368.24	-668.94	31.04	5767254.78	606896.21
1620	38.36	168.84	1396.92	-1369.02	-669.55	31.16	5767254.17	606896.33
1621	38.34	168.84	1397.71	-1369.81	-670.16	31.28	5767253.57	606896.45
1622	38.32	168.84	1398.49	-1370.59	-670.76	31.40	5767252.96	606896.57
1623	38.30	168.84	1399.28	-1371.38	-671.37	31.52	5767252.35	606896.69
1624	38.28	168.83	1400.07	-1372.17	-671.98	31.64	5767251.75	606896.81
1625	38.26	168.83	1400.85	-1372.95	-672.58	31.76	5767251.14	606896.93
1626	38.24	168.83	1401.64	-1373.74	-673.19	31.88	5767250.53	606897.05
1627	38.22	168.83	1402.42	-1374.52	-673.80	32.00	5767249.93	606897.17
1628	38.20	168.82	1403.21	-1375.31	-674.40	32.12	5767249.32	606897.29
1629	38.18	168.82	1404.00	-1376.10	-675.01	32.24	5767248.71	606897.41
1630	38.16	168.82	1404.78	-1376.88	-675.62	32.36	5767248.11	606897.53
1631	38.14	168.82	1405.57	-1377.67	-676.22	32.48	5767247.50	606897.65
1632	38.12	168.81	1406.35	-1378.45	-676.83	32.60	5767246.89	606897.77
1633	38.10	168.81	1407.14	-1379.24	-677.44	32.72	5767246.28	606897.89
1634	38.08	168.81	1407.92	-1380.02	-678.04	32.84	5767245.68	606898.01
1635	38.06	168.81	1408.71	-1380.81	-678.65	32.96	5767245.07	606898.13
1636	38.03	168.80	1409.50	-1381.60	-679.26	33.08	5767244.46	606898.25
1637	38.01	168.80	1410.28	-1382.38	-679.86	33.20	5767243.86	606898.37
1638	37.99	168.80	1411.07	-1383.17	-680.47	33.32	5767243.25	606898.49
1639	37.97	168.80	1411.85	-1383.95	-681.08	33.44	5767242.64	606898.61
1640	37.95	168.80	1412.64	-1384.74	-681.68	33.56	5767242.04	606898.73
1641	37.93	168.79	1413.42	-1385.52	-682.29	33.68	5767241.43	606898.85
1642	37.91	168.79	1414.21	-1386.31	-682.90	33.80	5767240.82	606898.97
1643	37.91	168.80	1415.00	-1387.10	-683.50	33.92	5767240.22	606899.09
1644	37.91	168.81	1415.79	-1387.89	-684.10	34.04	5767239.62	606899.21
1645	37.91	168.82	1416.58	-1388.68	-684.71	34.15	5767239.01	606899.33
1646	37.91	168.83	1417.37	-1389.47	-685.31	34.27	5767238.41	606899.44
1647	37.91	168.84	1418.15	-1390.25	-685.91	34.39	5767237.81	606899.56
1648	37.91	168.85	1418.94	-1391.04	-686.52	34.51	5767237.21	606899.68
1649	37.91	168.85	1419.73	-1391.83	-687.12	34.63	5767236.60	606899.80
1650	37.91	168.86	1420.52	-1392.62	-687.72	34.74	5767236.00	606899.92
1651	37.91	168.87	1421.31	-1393.41	-688.33	34.86	5767235.40	606900.03
1652	37.91	168.88	1422.10	-1394.20	-688.93	34.98	5767234.79	606900.15
1653	37.91	168.89	1422.89	-1394.99	-689.53	35.10	5767234.19	606900.27
1654	37.91	168.90	1423.68	-1395.78	-690.13	35.22	5767233.59	606900.39
1655	37.91	168.91	1424.47	-1396.57	-690.74	35.33	5767232.98	606900.51
1656	37.91	168.92	1425.25	-1397.35	-691.34	35.45	5767232.38	606900.62
1657	37.92	168.93	1426.04	-1398.14	-691.94	35.57	5767231.78	606900.74
1658	37.92	168.94	1426.83	-1398.93	-692.55	35.69	5767231.17	606900.86
1659	37.92	168.95	1427.62	-1399.72	-693.15	35.81	5767230.57	606900.98
1660	37.92	168.96	1428.41	-1400.51	-693.75	35.92	5767229.97	606901.10
1661	37.92	168.97	1429.20	-1401.30	-694.36	36.04	5767229.37	606901.21
1662	37.92	168.98	1429.99	-1402.09	-694.96	36.16	5767228.76	606901.33
1663	37.92	168.98	1430.78	-1402.88	-695.56	36.28	5767228.16	606901.45
1664	37.92	168.99	1431.57	-1403.67	-696.17	36.40	5767227.56	606901.57
1665	37.92	169.00	1432.36	-1404.46	-696.77	36.51	5767226.95	606901.69
1666	37.92	169.01	1433.14	-1405.24	-697.37	36.63	5767226.35	606901.80
1667	37.92	169.02	1433.93	-1406.03	-697.97	36.75	5767225.75	606901.92
1668	37.92	169.03	1434.72	-1406.82	-698.58	36.87	5767225.14	606902.04
1669	37.92	169.04	1435.51	-1407.61	-699.18	36.99	5767224.54	606902.16
1670	37.92	169.05	1436.30	-1408.40	-699.78	37.10	5767223.94	606902.28
1671	37.92	169.06	1437.09	-1409.19	-700.39	37.22	5767223.33	606902.39
1672	37.92	169.05	1437.88	-1409.98	-700.99	37.34	5767222.73	606902.51
1673	37.93	169.05	1438.67	-1410.77	-701.59	37.46	5767222.13	606902.63
1674	37.93	169.04	1439.45	-1411.55	-702.20	37.58	5767221.52	606902.75
1675	37.94	169.03	1440.24	-1412.34	-702.80	37.69	5767220.92	606902.87
1676	37.94	169.03	1441.03	-1413.13	-703.41	37.81	5767220.32	606902.98
1677	37.94	169.02	1441.82	-1413.92	-704.01	37.93	5767219.71	606903.10

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1678	37.95	169.01	1442.61	-1414.71	-704.61	38.05	5767219.11	606903.22
1679	37.95	169.00	1443.40	-1415.50	-705.22	38.17	5767218.50	606903.34
1680	37.95	169.00	1444.18	-1416.28	-705.82	38.28	5767217.90	606903.45
1681	37.96	168.99	1444.97	-1417.07	-706.43	38.40	5767217.30	606903.57
1682	37.96	168.98	1445.76	-1417.86	-707.03	38.52	5767216.69	606903.69
1683	37.97	168.98	1446.55	-1418.65	-707.63	38.64	5767216.09	606903.81
1684	37.97	168.97	1447.34	-1419.44	-708.24	38.75	5767215.48	606903.93
1685	37.97	168.96	1448.12	-1420.22	-708.84	38.87	5767214.88	606904.04
1686	37.98	168.96	1448.91	-1421.01	-709.45	38.99	5767214.28	606904.16
1687	37.98	168.95	1449.70	-1421.80	-710.05	39.11	5767213.67	606904.28
1688	37.99	168.94	1450.49	-1422.59	-710.65	39.23	5767213.07	606904.40
1689	37.99	168.93	1451.28	-1423.38	-711.26	39.34	5767212.46	606904.52
1690	37.99	168.93	1452.07	-1424.17	-711.86	39.46	5767211.86	606904.63
1691	38.00	168.92	1452.85	-1424.95	-712.46	39.58	5767211.26	606904.75
1692	38.00	168.91	1453.64	-1425.74	-713.07	39.70	5767210.65	606904.87
1693	38.00	168.91	1454.43	-1426.53	-713.67	39.82	5767210.05	606904.99
1694	38.01	168.90	1455.22	-1427.32	-714.28	39.93	5767209.44	606905.10
1695	38.01	168.89	1456.01	-1428.11	-714.88	40.05	5767208.84	606905.22
1696	38.02	168.89	1456.80	-1428.90	-715.48	40.17	5767208.24	606905.34
1697	38.02	168.88	1457.58	-1429.68	-716.09	40.29	5767207.63	606905.46
1698	38.02	168.87	1458.37	-1430.47	-716.69	40.40	5767207.03	606905.58
1699	38.03	168.86	1459.16	-1431.26	-717.30	40.52	5767206.43	606905.69
1700	38.03	168.86	1459.95	-1432.05	-717.90	40.64	5767205.82	606905.81
1701	38.02	168.87	1460.74	-1432.84	-718.50	40.76	5767205.22	606905.93
1702	38.01	168.88	1461.53	-1433.63	-719.11	40.88	5767204.61	606906.05
1703	38.01	168.88	1462.32	-1434.42	-719.71	40.99	5767204.01	606906.16
1704	38.00	168.89	1463.10	-1435.20	-720.31	41.11	5767203.41	606906.28
1705	37.99	168.90	1463.89	-1435.99	-720.92	41.23	5767202.80	606906.40
1706	37.99	168.90	1464.68	-1436.78	-721.52	41.35	5767202.20	606906.52
1707	37.98	168.91	1465.47	-1437.57	-722.12	41.46	5767201.60	606906.64
1708	37.97	168.92	1466.26	-1438.36	-722.73	41.58	5767200.99	606906.75
1709	37.97	168.92	1467.05	-1439.15	-723.33	41.70	5767200.39	606906.87
1710	37.96	168.93	1467.84	-1439.94	-723.93	41.82	5767199.79	606906.99
1711	37.95	168.94	1468.63	-1440.73	-724.54	41.94	5767199.18	606907.11
1712	37.95	168.94	1469.41	-1441.51	-725.14	42.05	5767198.58	606907.23
1713	37.94	168.95	1470.20	-1442.30	-725.74	42.17	5767197.98	606907.34
1714	37.93	168.96	1470.99	-1443.09	-726.35	42.29	5767197.37	606907.46
1715	37.93	168.96	1471.78	-1443.88	-726.95	42.41	5767196.77	606907.58
1716	37.92	168.97	1472.57	-1444.67	-727.55	42.52	5767196.17	606907.70
1717	37.91	168.98	1473.36	-1445.46	-728.16	42.64	5767195.56	606907.81
1718	37.91	168.98	1474.15	-1446.25	-728.76	42.76	5767194.96	606907.93
1719	37.90	168.99	1474.94	-1447.04	-729.36	42.88	5767194.36	606908.05
1720	37.89	169.00	1475.72	-1447.82	-729.97	43.00	5767193.75	606908.17
1721	37.89	169.00	1476.51	-1448.61	-730.57	43.11	5767193.15	606908.29
1722	37.88	169.01	1477.30	-1449.40	-731.17	43.23	5767192.55	606908.40
1723	37.87	169.02	1478.09	-1450.19	-731.78	43.35	5767191.94	606908.52
1724	37.87	169.02	1478.88	-1450.98	-732.38	43.47	5767191.34	606908.64
1725	37.86	169.03	1479.67	-1451.77	-732.98	43.58	5767190.74	606908.76
1726	37.85	169.04	1480.46	-1452.56	-733.59	43.70	5767190.13	606908.87
1727	37.85	169.04	1481.24	-1453.34	-734.19	43.82	5767189.53	606908.99
1728	37.84	169.05	1482.03	-1454.13	-734.79	43.94	5767188.93	606909.11
1729	37.86	169.05	1482.82	-1454.92	-735.40	44.06	5767188.32	606909.23
1730	37.87	169.05	1483.61	-1455.71	-736.00	44.17	5767187.72	606909.34
1731	37.89	169.05	1484.40	-1456.50	-736.61	44.29	5767187.11	606909.46
1732	37.90	169.05	1485.18	-1457.28	-737.22	44.41	5767186.51	606909.58
1733	37.92	169.05	1485.97	-1458.07	-737.82	44.52	5767185.90	606909.70
1734	37.93	169.05	1486.76	-1458.86	-738.43	44.64	5767185.30	606909.81
1735	37.94	169.05	1487.55	-1459.65	-739.03	44.76	5767184.69	606909.93
1736	37.96	169.05	1488.33	-1460.43	-739.64	44.88	5767184.09	606910.05
1737	37.97	169.05	1489.12	-1461.22	-740.24	44.99	5767183.48	606910.16
1738	37.99	169.05	1489.91	-1462.01	-740.85	45.11	5767182.88	606910.28
1739	38.00	169.05	1490.70	-1462.80	-741.45	45.23	5767182.27	606910.40
1740	38.02	169.05	1491.48	-1463.58	-742.06	45.34	5767181.66	606910.52
1741	38.03	169.05	1492.27	-1464.37	-742.66	45.46	5767181.06	606910.63
1742	38.05	169.05	1493.06	-1465.16	-743.27	45.58	5767180.45	606910.75
1743	38.06	169.04	1493.84	-1465.94	-743.87	45.69	5767179.85	606910.87

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1744	38.08	169.04	1494.63	-1466.73	-744.48	45.81	5767179.24	606910.98
1745	38.09	169.04	1495.42	-1467.52	-745.08	45.93	5767178.64	606911.10
1746	38.11	169.04	1496.21	-1468.31	-745.69	46.05	5767178.03	606911.22
1747	38.12	169.04	1496.99	-1469.09	-746.29	46.16	5767177.43	606911.34
1748	38.14	169.04	1497.78	-1469.88	-746.90	46.28	5767176.82	606911.45
1749	38.15	169.04	1498.57	-1470.67	-747.50	46.40	5767176.22	606911.57
1750	38.17	169.04	1499.36	-1471.46	-748.11	46.51	5767175.61	606911.69
1751	38.18	169.04	1500.14	-1472.24	-748.71	46.63	5767175.01	606911.80
1752	38.20	169.04	1500.93	-1473.03	-749.32	46.75	5767174.40	606911.92
1753	38.21	169.04	1501.72	-1473.82	-749.92	46.87	5767173.80	606912.04
1754	38.23	169.04	1502.51	-1474.61	-750.53	46.98	5767173.19	606912.15
1755	38.24	169.04	1503.29	-1475.39	-751.13	47.10	5767172.59	606912.27
1756	38.26	169.04	1504.08	-1476.18	-751.74	47.22	5767171.98	606912.39
1757	38.27	169.04	1504.87	-1476.97	-752.35	47.34	5767171.38	606912.51
1758	38.26	169.02	1505.65	-1477.75	-752.95	47.45	5767170.77	606912.63
1759	38.25	169.01	1506.44	-1478.54	-753.56	47.57	5767170.16	606912.75
1760	38.24	169.00	1507.23	-1479.33	-754.16	47.69	5767169.56	606912.86
1761	38.23	168.98	1508.01	-1480.11	-754.77	47.81	5767168.95	606912.98
1762	38.22	168.97	1508.80	-1480.90	-755.37	47.93	5767168.35	606913.10
1763	38.21	168.96	1509.59	-1481.69	-755.98	48.05	5767167.74	606913.22
1764	38.20	168.95	1510.37	-1482.47	-756.59	48.17	5767167.14	606913.34
1765	38.19	168.93	1511.16	-1483.26	-757.19	48.29	5767166.53	606913.46
1766	38.18	168.92	1511.95	-1484.05	-757.80	48.41	5767165.92	606913.58
1767	38.17	168.91	1512.73	-1484.83	-758.40	48.53	5767165.32	606913.70
1768	38.17	168.89	1513.52	-1485.62	-759.01	48.65	5767164.71	606913.82
1769	38.16	168.88	1514.31	-1486.41	-759.62	48.77	5767164.11	606913.94
1770	38.15	168.87	1515.09	-1487.19	-760.22	48.89	5767163.50	606914.06
1771	38.14	168.85	1515.88	-1487.98	-760.83	49.01	5767162.89	606914.18
1772	38.13	168.84	1516.67	-1488.77	-761.43	49.13	5767162.29	606914.30
1773	38.12	168.83	1517.45	-1489.55	-762.04	49.25	5767161.68	606914.42
1774	38.11	168.81	1518.24	-1490.34	-762.65	49.37	5767161.08	606914.54
1775	38.10	168.80	1519.03	-1491.13	-763.25	49.48	5767160.47	606914.66
1776	38.09	168.79	1519.81	-1491.91	-763.86	49.60	5767159.86	606914.78
1777	38.08	168.77	1520.60	-1492.70	-764.46	49.72	5767159.26	606914.89
1778	38.07	168.76	1521.39	-1493.49	-765.07	49.84	5767158.65	606915.01
1779	38.06	168.75	1522.17	-1494.27	-765.67	49.96	5767158.05	606915.13
1780	38.05	168.73	1522.96	-1495.06	-766.28	50.08	5767157.44	606915.25
1781	38.04	168.72	1523.75	-1495.85	-766.89	50.20	5767156.84	606915.37
1782	38.03	168.71	1524.53	-1496.63	-767.49	50.32	5767156.23	606915.49
1783	38.02	168.69	1525.32	-1497.42	-768.10	50.44	5767155.62	606915.61
1784	38.02	168.68	1526.10	-1498.20	-768.70	50.56	5767155.02	606915.73
1785	38.01	168.67	1526.89	-1498.99	-769.31	50.68	5767154.41	606915.85
1786	37.99	168.66	1527.68	-1499.78	-769.91	50.80	5767153.81	606915.97
1787	37.96	168.66	1528.47	-1500.57	-770.51	50.92	5767153.21	606916.09
1788	37.92	168.67	1529.27	-1501.37	-771.11	51.04	5767152.61	606916.21
1789	37.89	168.67	1530.06	-1502.16	-771.71	51.16	5767152.02	606916.33
1790	37.86	168.67	1530.85	-1502.95	-772.30	51.28	5767151.42	606916.45
1791	37.83	168.68	1531.64	-1503.74	-772.90	51.39	5767150.82	606916.57
1792	37.80	168.68	1532.44	-1504.54	-773.50	51.51	5767150.22	606916.69
1793	37.77	168.68	1533.23	-1505.33	-774.10	51.63	5767149.63	606916.81
1794	37.74	168.69	1534.02	-1506.12	-774.69	51.75	5767149.03	606916.92
1795	37.70	168.69	1534.82	-1506.92	-775.29	51.87	5767148.43	606917.04
1796	37.67	168.69	1535.61	-1507.71	-775.89	51.99	5767147.83	606917.16
1797	37.64	168.70	1536.40	-1508.50	-776.49	52.11	5767147.24	606917.28
1798	37.61	168.70	1537.19	-1509.29	-777.08	52.23	5767146.64	606917.40
1799	37.58	168.70	1537.99	-1510.09	-777.68	52.35	5767146.04	606917.52
1800	37.55	168.71	1538.78	-1510.88	-778.28	52.47	5767145.44	606917.64
1801	37.51	168.71	1539.57	-1511.67	-778.88	52.59	5767144.84	606917.76
1802	37.48	168.71	1540.37	-1512.47	-779.47	52.71	5767144.25	606917.88
1803	37.45	168.71	1541.16	-1513.26	-780.07	52.83	5767143.65	606918.00
1804	37.42	168.72	1541.95	-1514.05	-780.67	52.95	5767143.05	606918.12
1805	37.39	168.72	1542.74	-1514.84	-781.27	53.07	5767142.45	606918.24
1806	37.36	168.72	1543.54	-1515.64	-781.86	53.19	5767141.86	606918.36
1807	37.33	168.73	1544.33	-1516.43	-782.46	53.30	5767141.26	606918.48
1808	37.29	168.73	1545.12	-1517.22	-783.06	53.42	5767140.66	606918.60
1809	37.26	168.73	1545.92	-1518.02	-783.66	53.54	5767140.06	606918.71

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1810	37.23	168.74	1546.71	-1518.81	-784.26	53.66	5767139.47	606918.83
1811	37.20	168.74	1547.50	-1519.60	-784.85	53.78	5767138.87	606918.95
1812	37.17	168.74	1548.29	-1520.39	-785.45	53.90	5767138.27	606919.07
1813	37.14	168.75	1549.09	-1521.19	-786.05	54.02	5767137.67	606919.19
1814	37.10	168.75	1549.88	-1521.98	-786.65	54.14	5767137.08	606919.31
1815	37.13	168.72	1550.67	-1522.77	-787.24	54.26	5767136.48	606919.43
1816	37.18	168.69	1551.46	-1523.56	-787.84	54.39	5767135.88	606919.56
1817	37.22	168.66	1552.25	-1524.35	-788.44	54.51	5767135.28	606919.68
1818	37.26	168.64	1553.04	-1525.14	-789.04	54.63	5767134.68	606919.81
1819	37.30	168.61	1553.84	-1525.94	-789.64	54.76	5767134.08	606919.93
1820	37.34	168.58	1554.63	-1526.73	-790.24	54.88	5767133.48	606920.05
1821	37.38	168.55	1555.42	-1527.52	-790.84	55.01	5767132.89	606920.18
1822	37.42	168.52	1556.21	-1528.31	-791.43	55.13	5767132.29	606920.30
1823	37.46	168.49	1557.00	-1529.10	-792.03	55.25	5767131.69	606920.43
1824	37.50	168.46	1557.79	-1529.89	-792.63	55.38	5767131.09	606920.55
1825	37.54	168.43	1558.58	-1530.68	-793.23	55.50	5767130.49	606920.67
1826	37.58	168.40	1559.38	-1531.48	-793.83	55.63	5767129.89	606920.80
1827	37.62	168.37	1560.17	-1532.27	-794.43	55.75	5767129.29	606920.92
1828	37.66	168.34	1560.96	-1533.06	-795.03	55.87	5767128.69	606921.04
1829	37.70	168.31	1561.75	-1533.85	-795.63	56.00	5767128.10	606921.17
1830	37.74	168.28	1562.54	-1534.64	-796.22	56.12	5767127.50	606921.29
1831	37.78	168.25	1563.33	-1535.43	-796.82	56.24	5767126.90	606921.42
1832	37.83	168.22	1564.12	-1536.22	-797.42	56.37	5767126.30	606921.54
1833	37.87	168.19	1564.92	-1537.02	-798.02	56.49	5767125.70	606921.66
1834	37.91	168.16	1565.71	-1537.81	-798.62	56.62	5767125.10	606921.79
1835	37.95	168.13	1566.50	-1538.60	-799.22	56.74	5767124.50	606921.91
1836	37.99	168.10	1567.29	-1539.39	-799.82	56.86	5767123.91	606922.04
1837	38.03	168.07	1568.08	-1540.18	-800.41	56.99	5767123.31	606922.16
1838	38.07	168.04	1568.87	-1540.97	-801.01	57.11	5767122.71	606922.28
1839	38.11	168.01	1569.66	-1541.76	-801.61	57.23	5767122.11	606922.41
1840	38.15	167.98	1570.46	-1542.56	-802.21	57.36	5767121.51	606922.53
1841	38.19	167.95	1571.25	-1543.35	-802.81	57.48	5767120.91	606922.65
1842	38.23	167.92	1572.04	-1544.14	-803.41	57.61	5767120.31	606922.78
1843	38.27	167.89	1572.83	-1544.93	-804.01	57.73	5767119.72	606922.90
1844	38.28	167.91	1573.61	-1545.71	-804.61	57.86	5767119.11	606923.03
1845	38.28	167.93	1574.40	-1546.50	-805.22	57.99	5767118.50	606923.16
1846	38.29	167.94	1575.18	-1547.28	-805.83	58.11	5767117.89	606923.28
1847	38.30	167.96	1575.97	-1548.07	-806.44	58.24	5767117.29	606923.41
1848	38.30	167.98	1576.75	-1548.85	-807.04	58.37	5767116.68	606923.54
1849	38.31	168.00	1577.53	-1549.63	-807.65	58.50	5767116.07	606923.67
1850	38.31	168.01	1578.32	-1550.42	-808.26	58.62	5767115.46	606923.79
1851	38.32	168.03	1579.10	-1551.20	-808.87	58.75	5767114.86	606923.92
1852	38.33	168.05	1579.89	-1551.99	-809.47	58.88	5767114.25	606924.05
1853	38.33	168.06	1580.67	-1552.77	-810.08	59.01	5767113.64	606924.18
1854	38.34	168.08	1581.45	-1553.55	-810.69	59.13	5767113.03	606924.31
1855	38.35	168.10	1582.24	-1554.34	-811.29	59.26	5767112.43	606924.43
1856	38.35	168.12	1583.02	-1555.12	-811.90	59.39	5767111.82	606924.56
1857	38.36	168.13	1583.81	-1555.91	-812.51	59.52	5767111.21	606924.69
1858	38.36	168.15	1584.59	-1556.69	-813.12	59.64	5767110.60	606924.82
1859	38.37	168.17	1585.38	-1557.48	-813.72	59.77	5767110.00	606924.94
1860	38.38	168.19	1586.16	-1558.26	-814.33	59.90	5767109.39	606925.07
1861	38.38	168.20	1586.94	-1559.04	-814.94	60.03	5767108.78	606925.20
1862	38.39	168.22	1587.73	-1559.83	-815.55	60.15	5767108.18	606925.33
1863	38.40	168.24	1588.51	-1560.61	-816.15	60.28	5767107.57	606925.45
1864	38.40	168.26	1589.30	-1561.40	-816.76	60.41	5767106.96	606925.58
1865	38.41	168.27	1590.08	-1562.18	-817.37	60.54	5767106.35	606925.71
1866	38.41	168.29	1590.86	-1562.96	-817.98	60.66	5767105.75	606925.84
1867	38.42	168.31	1591.65	-1563.75	-818.58	60.79	5767105.14	606925.96
1868	38.43	168.32	1592.43	-1564.53	-819.19	60.92	5767104.53	606926.09
1869	38.43	168.34	1593.22	-1565.32	-819.80	61.05	5767103.92	606926.22
1870	38.44	168.36	1594.00	-1566.10	-820.41	61.17	5767103.32	606926.35
1871	38.45	168.38	1594.78	-1566.88	-821.01	61.30	5767102.71	606926.47
1872	38.45	168.39	1595.57	-1567.67	-821.62	61.43	5767102.10	606926.60
1873	38.46	168.39	1596.35	-1568.45	-822.23	61.55	5767101.49	606926.73
1874	38.47	168.39	1597.13	-1569.23	-822.84	61.68	5767100.88	606926.85
1875	38.48	168.39	1597.91	-1570.01	-823.45	61.81	5767100.27	606926.98

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1876	38.49	168.39	1598.70	-1570.80	-824.06	61.93	5767099.66	606927.10
1877	38.50	168.39	1599.48	-1571.58	-824.67	62.06	5767099.05	606927.23
1878	38.51	168.39	1600.26	-1572.36	-825.29	62.18	5767098.44	606927.35
1879	38.52	168.39	1601.04	-1573.14	-825.90	62.31	5767097.82	606927.48
1880	38.52	168.39	1601.82	-1573.92	-826.51	62.43	5767097.21	606927.60
1881	38.53	168.39	1602.60	-1574.70	-827.12	62.56	5767096.60	606927.73
1882	38.54	168.39	1603.39	-1575.49	-827.73	62.68	5767095.99	606927.86
1883	38.55	168.39	1604.17	-1576.27	-828.34	62.81	5767095.38	606927.98
1884	38.56	168.39	1604.95	-1577.05	-828.95	62.93	5767094.77	606928.11
1885	38.57	168.39	1605.73	-1577.83	-829.56	63.06	5767094.16	606928.23
1886	38.58	168.39	1606.51	-1578.61	-830.17	63.19	5767093.55	606928.36
1887	38.59	168.39	1607.29	-1579.39	-830.78	63.31	5767092.94	606928.48
1888	38.60	168.39	1608.08	-1580.18	-831.39	63.44	5767092.33	606928.61
1889	38.61	168.39	1608.86	-1580.96	-832.00	63.56	5767091.72	606928.73
1890	38.62	168.39	1609.64	-1581.74	-832.62	63.69	5767091.11	606928.86
1891	38.62	168.39	1610.42	-1582.52	-833.23	63.81	5767090.49	606928.98
1892	38.63	168.39	1611.20	-1583.30	-833.84	63.94	5767089.88	606929.11
1893	38.64	168.39	1611.98	-1584.08	-834.45	64.06	5767089.27	606929.24
1894	38.65	168.39	1612.77	-1584.87	-835.06	64.19	5767088.66	606929.36
1895	38.66	168.39	1613.55	-1585.65	-835.67	64.32	5767088.05	606929.49
1896	38.67	168.39	1614.33	-1586.43	-836.28	64.44	5767087.44	606929.61
1897	38.68	168.39	1615.11	-1587.21	-836.89	64.57	5767086.83	606929.74
1898	38.69	168.39	1615.89	-1587.99	-837.50	64.69	5767086.22	606929.86
1899	38.70	168.39	1616.67	-1588.77	-838.11	64.82	5767085.61	606929.99
1900	38.71	168.39	1617.46	-1589.56	-838.72	64.94	5767085.00	606930.11
1901	38.71	168.39	1618.24	-1590.34	-839.34	65.07	5767084.39	606930.24
1902	38.70	168.40	1619.02	-1591.12	-839.95	65.19	5767083.78	606930.36
1903	38.69	168.41	1619.80	-1591.90	-840.56	65.32	5767083.16	606930.49
1904	38.68	168.42	1620.58	-1592.68	-841.17	65.44	5767082.55	606930.61
1905	38.67	168.43	1621.36	-1593.46	-841.78	65.56	5767081.94	606930.74
1906	38.66	168.44	1622.15	-1594.25	-842.39	65.69	5767081.33	606930.86
1907	38.66	168.45	1622.93	-1595.03	-843.00	65.81	5767080.72	606930.98
1908	38.65	168.46	1623.71	-1595.81	-843.61	65.94	5767080.11	606931.11
1909	38.64	168.47	1624.49	-1596.59	-844.23	66.06	5767079.50	606931.23
1910	38.63	168.48	1625.27	-1597.37	-844.84	66.18	5767078.88	606931.36
1911	38.62	168.49	1626.05	-1598.15	-845.45	66.31	5767078.27	606931.48
1912	38.61	168.50	1626.84	-1598.94	-846.06	66.43	5767077.66	606931.60
1913	38.61	168.51	1627.62	-1599.72	-846.67	66.56	5767077.05	606931.73
1914	38.60	168.52	1628.40	-1600.50	-847.28	66.68	5767076.44	606931.85
1915	38.59	168.53	1629.18	-1601.28	-847.89	66.80	5767075.83	606931.98
1916	38.58	168.54	1629.96	-1602.06	-848.50	66.93	5767075.22	606932.10
1917	38.57	168.54	1630.74	-1602.84	-849.12	67.05	5767074.61	606932.22
1918	38.56	168.55	1631.53	-1603.63	-849.73	67.18	5767073.99	606932.35
1919	38.56	168.56	1632.31	-1604.41	-850.34	67.30	5767073.38	606932.47
1920	38.55	168.57	1633.09	-1605.19	-850.95	67.43	5767072.77	606932.60
1921	38.54	168.58	1633.87	-1605.97	-851.56	67.55	5767072.16	606932.72
1922	38.53	168.59	1634.65	-1606.75	-852.17	67.67	5767071.55	606932.85
1923	38.52	168.60	1635.43	-1607.53	-852.78	67.80	5767070.94	606932.97
1924	38.51	168.61	1636.22	-1608.32	-853.39	67.92	5767070.33	606933.09
1925	38.51	168.62	1637.00	-1609.10	-854.01	68.05	5767069.72	606933.22
1926	38.50	168.63	1637.78	-1609.88	-854.62	68.17	5767069.10	606933.34
1927	38.49	168.64	1638.56	-1610.66	-855.23	68.29	5767068.49	606933.47
1928	38.48	168.65	1639.34	-1611.44	-855.84	68.42	5767067.88	606933.59
1929	38.47	168.66	1640.12	-1612.22	-856.45	68.54	5767067.27	606933.71
1930	38.46	168.68	1640.91	-1613.01	-857.06	68.66	5767066.66	606933.83
1931	38.44	168.70	1641.69	-1613.79	-857.67	68.78	5767066.06	606933.95
1932	38.41	168.73	1642.48	-1614.58	-858.27	68.90	5767065.45	606934.07
1933	38.39	168.75	1643.27	-1615.37	-858.88	69.02	5767064.84	606934.19
1934	38.37	168.78	1644.05	-1616.15	-859.49	69.13	5767064.24	606934.30
1935	38.35	168.80	1644.84	-1616.94	-860.09	69.25	5767063.63	606934.42
1936	38.33	168.83	1645.63	-1617.73	-860.70	69.37	5767063.02	606934.54
1937	38.31	168.85	1646.41	-1618.51	-861.31	69.49	5767062.42	606934.66
1938	38.29	168.88	1647.20	-1619.30	-861.91	69.60	5767061.81	606934.77
1939	38.27	168.90	1647.98	-1620.08	-862.52	69.72	5767061.20	606934.89
1940	38.25	168.93	1648.77	-1620.87	-863.13	69.84	5767060.60	606935.01
1941	38.23	168.95	1649.56	-1621.66	-863.73	69.96	5767059.99	606935.13

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1942	38.21	168.98	1650.34	-1622.44	-864.34	70.07	5767059.38	606935.25
1943	38.19	169.01	1651.13	-1623.23	-864.95	70.19	5767058.78	606935.36
1944	38.17	169.03	1651.92	-1624.02	-865.55	70.31	5767058.17	606935.48
1945	38.14	169.06	1652.70	-1624.80	-866.16	70.43	5767057.56	606935.60
1946	38.12	169.08	1653.49	-1625.59	-866.77	70.54	5767056.96	606935.72
1947	38.10	169.11	1654.27	-1626.37	-867.37	70.66	5767056.35	606935.83
1948	38.08	169.13	1655.06	-1627.16	-867.98	70.78	5767055.74	606935.95
1949	38.06	169.16	1655.85	-1627.95	-868.59	70.90	5767055.14	606936.07
1950	38.04	169.18	1656.63	-1628.73	-869.19	71.02	5767054.53	606936.19
1951	38.02	169.21	1657.42	-1629.52	-869.80	71.13	5767053.92	606936.30
1952	38.00	169.23	1658.20	-1630.30	-870.41	71.25	5767053.32	606936.42
1953	37.98	169.26	1658.99	-1631.09	-871.01	71.37	5767052.71	606936.54
1954	37.96	169.28	1659.78	-1631.88	-871.62	71.49	5767052.10	606936.66
1955	37.94	169.31	1660.56	-1632.66	-872.23	71.60	5767051.50	606936.78
1956	37.92	169.33	1661.35	-1633.45	-872.83	71.72	5767050.89	606936.89
1957	37.90	169.36	1662.14	-1634.24	-873.44	71.84	5767050.28	606937.01
1958	37.87	169.38	1662.92	-1635.02	-874.05	71.96	5767049.68	606937.13
1959	37.88	169.38	1663.71	-1635.81	-874.65	72.07	5767049.07	606937.24
1960	37.89	169.37	1664.50	-1636.60	-875.26	72.19	5767048.47	606937.36
1961	37.89	169.36	1665.29	-1637.39	-875.86	72.30	5767047.86	606937.47
1962	37.90	169.35	1666.07	-1638.17	-876.47	72.42	5767047.26	606937.59
1963	37.91	169.34	1666.86	-1638.96	-877.07	72.53	5767046.65	606937.70
1964	37.92	169.33	1667.65	-1639.75	-877.67	72.65	5767046.05	606937.82
1965	37.93	169.32	1668.44	-1640.54	-878.28	72.76	5767045.44	606937.93
1966	37.94	169.31	1669.23	-1641.33	-878.88	72.88	5767044.84	606938.05
1967	37.95	169.30	1670.01	-1642.11	-879.49	72.99	5767044.23	606938.16
1968	37.96	169.29	1670.80	-1642.90	-880.09	73.11	5767043.63	606938.28
1969	37.96	169.28	1671.59	-1643.69	-880.70	73.22	5767043.02	606938.39
1970	37.97	169.27	1672.38	-1644.48	-881.30	73.34	5767042.42	606938.51
1971	37.98	169.26	1673.17	-1645.27	-881.91	73.45	5767041.81	606938.62
1972	37.99	169.25	1673.95	-1646.05	-882.51	73.57	5767041.21	606938.74
1973	38.00	169.24	1674.74	-1646.84	-883.12	73.68	5767040.60	606938.85
1974	38.01	169.22	1675.53	-1647.63	-883.72	73.80	5767040.00	606938.97
1975	38.02	169.21	1676.32	-1648.42	-884.33	73.91	5767039.39	606939.08
1976	38.03	169.20	1677.11	-1649.21	-884.93	74.03	5767038.79	606939.20
1977	38.03	169.19	1677.89	-1649.99	-885.54	74.14	5767038.18	606939.31
1978	38.04	169.18	1678.68	-1650.78	-886.14	74.26	5767037.58	606939.43
1979	38.05	169.17	1679.47	-1651.57	-886.75	74.37	5767036.97	606939.54
1980	38.06	169.16	1680.26	-1652.36	-887.35	74.49	5767036.37	606939.66
1981	38.07	169.15	1681.05	-1653.15	-887.96	74.60	5767035.77	606939.77
1982	38.08	169.14	1681.83	-1653.93	-888.56	74.72	5767035.16	606939.89
1983	38.09	169.13	1682.62	-1654.72	-889.17	74.83	5767034.56	606940.00
1984	38.10	169.12	1683.41	-1655.51	-889.77	74.95	5767033.95	606940.12
1985	38.10	169.11	1684.20	-1656.30	-890.38	75.06	5767033.35	606940.23
1986	38.11	169.10	1684.99	-1657.09	-890.98	75.18	5767032.74	606940.35
1987	38.13	169.08	1685.77	-1657.87	-891.59	75.29	5767032.14	606940.46
1988	38.17	169.04	1686.55	-1658.65	-892.20	75.42	5767031.52	606940.59
1989	38.21	169.00	1687.33	-1659.43	-892.81	75.54	5767030.91	606940.71
1990	38.26	168.96	1688.11	-1660.21	-893.43	75.67	5767030.30	606940.84
1991	38.30	168.92	1688.89	-1660.99	-894.04	75.79	5767029.68	606940.96
1992	38.35	168.88	1689.67	-1661.77	-894.65	75.92	5767029.07	606941.09
1993	38.39	168.84	1690.45	-1662.55	-895.27	76.04	5767028.46	606941.21
1994	38.43	168.80	1691.23	-1663.33	-895.88	76.17	5767027.84	606941.34
1995	38.48	168.76	1692.01	-1664.11	-896.49	76.29	5767027.23	606941.46
1996	38.52	168.72	1692.79	-1664.89	-897.11	76.41	5767026.62	606941.59
1997	38.56	168.68	1693.57	-1665.67	-897.72	76.54	5767026.00	606941.71
1998	38.61	168.64	1694.35	-1666.45	-898.33	76.66	5767025.39	606941.84
1999	38.65	168.60	1695.13	-1667.23	-898.95	76.79	5767024.78	606941.96
2000	38.69	168.56	1695.91	-1668.01	-899.56	76.91	5767024.16	606942.08
2001	38.74	168.52	1696.69	-1668.79	-900.17	77.04	5767023.55	606942.21
2002	38.78	168.48	1697.47	-1669.57	-900.79	77.16	5767022.94	606942.33
2003	38.83	168.44	1698.25	-1670.35	-901.40	77.29	5767022.32	606942.46
2004	38.87	168.40	1699.03	-1671.13	-902.01	77.41	5767021.71	606942.58
2005	38.91	168.36	1699.81	-1671.91	-902.62	77.54	5767021.10	606942.71
2006	38.96	168.32	1700.59	-1672.69	-903.24	77.66	5767020.48	606942.83
2007	39.00	168.28	1701.37	-1673.47	-903.85	77.79	5767019.87	606942.96

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2008	39.04	168.24	1702.15	-1674.25	-904.46	77.91	5767019.26	606943.08
2009	39.09	168.20	1702.93	-1675.03	-905.08	78.04	5767018.64	606943.21
2010	39.13	168.16	1703.71	-1675.81	-905.69	78.16	5767018.03	606943.33
2011	39.17	168.12	1704.49	-1676.59	-906.30	78.28	5767017.42	606943.46
2012	39.22	168.08	1705.27	-1677.37	-906.92	78.41	5767016.80	606943.58
2013	39.26	168.04	1706.05	-1678.15	-907.53	78.53	5767016.19	606943.71
2014	39.31	168.00	1706.83	-1678.93	-908.14	78.66	5767015.58	606943.83
2015	39.35	167.96	1707.61	-1679.71	-908.76	78.78	5767014.96	606943.95
2016	39.36	167.94	1708.39	-1680.49	-909.37	78.91	5767014.35	606944.08
2017	39.35	167.95	1709.17	-1681.27	-909.99	79.04	5767013.73	606944.21
2018	39.34	167.95	1709.94	-1682.04	-910.61	79.17	5767013.11	606944.35
2019	39.32	167.96	1710.72	-1682.82	-911.23	79.30	5767012.49	606944.48
2020	39.31	167.97	1711.49	-1683.59	-911.84	79.44	5767011.88	606944.61
2021	39.30	167.97	1712.27	-1684.37	-912.46	79.57	5767011.26	606944.74
2022	39.28	167.98	1713.04	-1685.14	-913.08	79.70	5767010.64	606944.87
2023	39.27	167.98	1713.82	-1685.92	-913.70	79.83	5767010.02	606945.00
2024	39.26	167.99	1714.59	-1686.69	-914.32	79.96	5767009.40	606945.13
2025	39.24	168.00	1715.37	-1687.47	-914.93	80.09	5767008.79	606945.26
2026	39.23	168.00	1716.14	-1688.24	-915.55	80.22	5767008.17	606945.39
2027	39.22	168.01	1716.92	-1689.02	-916.17	80.35	5767007.55	606945.52
2028	39.20	168.01	1717.69	-1689.79	-916.79	80.48	5767006.93	606945.66
2029	39.19	168.02	1718.47	-1690.57	-917.41	80.62	5767006.32	606945.79
2030	39.18	168.02	1719.24	-1691.34	-918.02	80.75	5767005.70	606945.92
2031	39.16	168.03	1720.02	-1692.12	-918.64	80.88	5767005.08	606946.05
2032	39.15	168.04	1720.79	-1692.89	-919.26	81.01	5767004.46	606946.18
2033	39.14	168.04	1721.57	-1693.67	-919.88	81.14	5767003.84	606946.31
2034	39.12	168.05	1722.34	-1694.44	-920.50	81.27	5767003.23	606946.44
2035	39.11	168.05	1723.12	-1695.22	-921.11	81.40	5767002.61	606946.57
2036	39.10	168.06	1723.89	-1695.99	-921.73	81.53	5767001.99	606946.70
2037	39.08	168.07	1724.67	-1696.77	-922.35	81.66	5767001.37	606946.84
2038	39.07	168.07	1725.44	-1697.54	-922.97	81.79	5767000.75	606946.97
2039	39.06	168.08	1726.22	-1698.32	-923.59	81.93	5767000.14	606947.10
2040	39.04	168.08	1727.00	-1699.10	-924.20	82.06	5766999.52	606947.23
2041	39.03	168.09	1727.77	-1699.87	-924.82	82.19	5766998.90	606947.36
2042	39.01	168.09	1728.55	-1700.65	-925.44	82.32	5766998.28	606947.49
2043	39.00	168.10	1729.32	-1701.42	-926.06	82.45	5766997.66	606947.62
2044	38.99	168.11	1730.10	-1702.20	-926.68	82.58	5766997.05	606947.75
2045	38.97	168.12	1730.87	-1702.97	-927.29	82.71	5766996.43	606947.88
2046	38.96	168.15	1731.65	-1703.75	-927.91	82.83	5766995.82	606948.01
2047	38.95	168.19	1732.43	-1704.53	-928.52	82.96	5766995.20	606948.13
2048	38.93	168.22	1733.21	-1705.31	-929.13	83.08	5766994.59	606948.25
2049	38.92	168.25	1733.99	-1706.09	-929.75	83.21	5766993.97	606948.38
2050	38.90	168.28	1734.77	-1706.87	-930.36	83.33	5766993.36	606948.50
2051	38.89	168.31	1735.55	-1707.65	-930.98	83.46	5766992.75	606948.63
2052	38.87	168.35	1736.33	-1708.43	-931.59	83.58	5766992.13	606948.75
2053	38.86	168.38	1737.11	-1709.21	-932.20	83.71	5766991.52	606948.88
2054	38.85	168.41	1737.89	-1709.99	-932.82	83.83	5766990.90	606949.00
2055	38.83	168.44	1738.67	-1710.77	-933.43	83.95	5766990.29	606949.13
2056	38.82	168.47	1739.45	-1711.55	-934.04	84.08	5766989.68	606949.25
2057	38.80	168.51	1740.23	-1712.33	-934.66	84.20	5766989.06	606949.37
2058	38.79	168.54	1741.01	-1713.11	-935.27	84.33	5766988.45	606949.50
2059	38.77	168.57	1741.79	-1713.89	-935.89	84.45	5766987.84	606949.62
2060	38.76	168.60	1742.57	-1714.67	-936.50	84.58	5766987.22	606949.75
2061	38.74	168.64	1743.34	-1715.44	-937.11	84.70	5766986.61	606949.87
2062	38.73	168.67	1744.12	-1716.22	-937.73	84.82	5766985.99	606950.00
2063	38.72	168.70	1744.90	-1717.00	-938.34	84.95	5766985.38	606950.12
2064	38.70	168.73	1745.68	-1717.78	-938.96	85.07	5766984.77	606950.25
2065	38.69	168.76	1746.46	-1718.56	-939.57	85.20	5766984.15	606950.37
2066	38.67	168.80	1747.24	-1719.34	-940.18	85.32	5766983.54	606950.49
2067	38.66	168.83	1748.02	-1720.12	-940.80	85.45	5766982.92	606950.62
2068	38.64	168.86	1748.80	-1720.90	-941.41	85.57	5766982.31	606950.74
2069	38.63	168.89	1749.58	-1721.68	-942.03	85.70	5766981.70	606950.87
2070	38.62	168.92	1750.36	-1722.46	-942.64	85.82	5766981.08	606950.99
2071	38.60	168.96	1751.14	-1723.24	-943.25	85.94	5766980.47	606951.12
2072	38.58	168.98	1751.92	-1724.02	-943.86	86.07	5766979.86	606951.24
2073	38.53	168.98	1752.71	-1724.81	-944.47	86.18	5766979.26	606951.36

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2074	38.48	168.98	1753.50	-1725.60	-945.07	86.30	5766978.65	606951.47
2075	38.43	168.98	1754.29	-1726.39	-945.67	86.42	5766978.05	606951.59
2076	38.38	168.98	1755.08	-1727.18	-946.27	86.54	5766977.45	606951.71
2077	38.33	168.98	1755.87	-1727.97	-946.88	86.65	5766976.85	606951.83
2078	38.28	168.98	1756.66	-1728.76	-947.48	86.77	5766976.24	606951.94
2079	38.23	168.98	1757.45	-1729.55	-948.08	86.89	5766975.64	606952.06
2080	38.18	168.97	1758.24	-1730.34	-948.68	87.01	5766975.04	606952.18
2081	38.13	168.97	1759.03	-1731.13	-949.28	87.12	5766974.44	606952.30
2082	38.08	168.97	1759.82	-1731.92	-949.89	87.24	5766973.84	606952.41
2083	38.03	168.97	1760.61	-1732.71	-950.49	87.36	5766973.23	606952.53
2084	37.98	168.97	1761.40	-1733.50	-951.09	87.48	5766972.63	606952.65
2085	37.93	168.97	1762.19	-1734.29	-951.69	87.59	5766972.03	606952.76
2086	37.89	168.97	1762.98	-1735.08	-952.29	87.71	5766971.43	606952.88
2087	37.84	168.97	1763.77	-1735.87	-952.90	87.83	5766970.82	606953.00
2088	37.79	168.97	1764.56	-1736.66	-953.50	87.95	5766970.22	606953.12
2089	37.74	168.97	1765.35	-1737.45	-954.10	88.06	5766969.62	606953.23
2090	37.69	168.97	1766.14	-1738.24	-954.70	88.18	5766969.02	606953.35
2091	37.64	168.97	1766.93	-1739.03	-955.31	88.30	5766968.42	606953.47
2092	37.59	168.97	1767.71	-1739.81	-955.91	88.41	5766967.81	606953.59
2093	37.54	168.97	1768.50	-1740.60	-956.51	88.53	5766967.21	606953.70
2094	37.49	168.97	1769.29	-1741.39	-957.11	88.65	5766966.61	606953.82
2095	37.44	168.96	1770.08	-1742.18	-957.71	88.77	5766966.01	606953.94
2096	37.39	168.96	1770.87	-1742.97	-958.32	88.88	5766965.40	606954.06
2097	37.34	168.96	1771.66	-1743.76	-958.92	89.00	5766964.80	606954.17
2098	37.29	168.96	1772.45	-1744.55	-959.52	89.12	5766964.20	606954.29
2099	37.24	168.96	1773.24	-1745.34	-960.12	89.24	5766963.60	606954.41
2100	37.19	168.96	1774.03	-1746.13	-960.73	89.35	5766963.00	606954.53
2101	37.14	168.96	1774.82	-1746.92	-961.33	89.47	5766962.39	606954.64
2102	37.10	168.96	1775.61	-1747.71	-961.93	89.59	5766961.79	606954.76
2103	37.12	168.95	1776.41	-1748.51	-962.52	89.71	5766961.20	606954.88
2104	37.13	168.93	1777.20	-1749.30	-963.12	89.82	5766960.60	606955.00
2105	37.15	168.92	1778.00	-1750.10	-963.71	89.94	5766960.01	606955.11
2106	37.16	168.91	1778.79	-1750.89	-964.31	90.06	5766959.41	606955.23
2107	37.17	168.89	1779.59	-1751.69	-964.90	90.18	5766958.82	606955.35
2108	37.19	168.88	1780.38	-1752.48	-965.50	90.30	5766958.23	606955.47
2109	37.20	168.87	1781.18	-1753.28	-966.09	90.41	5766957.63	606955.59
2110	37.22	168.85	1781.98	-1754.08	-966.68	90.53	5766957.04	606955.70
2111	37.23	168.84	1782.77	-1754.87	-967.28	90.65	5766956.44	606955.82
2112	37.25	168.83	1783.57	-1755.67	-967.87	90.77	5766955.85	606955.94
2113	37.26	168.82	1784.36	-1756.46	-968.47	90.89	5766955.25	606956.06
2114	37.27	168.80	1785.16	-1757.26	-969.06	91.00	5766954.66	606956.18
2115	37.29	168.79	1785.95	-1758.05	-969.66	91.12	5766954.06	606956.29
2116	37.30	168.78	1786.75	-1758.85	-970.25	91.24	5766953.47	606956.41
2117	37.32	168.76	1787.54	-1759.64	-970.85	91.36	5766952.88	606956.53
2118	37.33	168.75	1788.34	-1760.44	-971.44	91.48	5766952.28	606956.65
2119	37.35	168.74	1789.13	-1761.23	-972.03	91.59	5766951.69	606956.77
2120	37.36	168.73	1789.93	-1762.03	-972.63	91.71	5766951.09	606956.88
2121	37.37	168.71	1790.72	-1762.82	-973.22	91.83	5766950.50	606957.00
2122	37.39	168.70	1791.52	-1763.62	-973.82	91.95	5766949.90	606957.12
2123	37.40	168.69	1792.32	-1764.42	-974.41	92.07	5766949.31	606957.24
2124	37.42	168.67	1793.11	-1765.21	-975.01	92.18	5766948.71	606957.36
2125	37.43	168.66	1793.91	-1766.01	-975.60	92.30	5766948.12	606957.47
2126	37.45	168.65	1794.70	-1766.80	-976.20	92.42	5766947.53	606957.59
2127	37.46	168.64	1795.50	-1767.60	-976.79	92.54	5766946.93	606957.71
2128	37.47	168.62	1796.29	-1768.39	-977.39	92.66	5766946.34	606957.83
2129	37.49	168.61	1797.09	-1769.19	-977.98	92.77	5766945.74	606957.95
2130	37.50	168.60	1797.88	-1769.98	-978.57	92.89	5766945.15	606958.06
2131	37.53	168.57	1798.68	-1770.78	-979.17	93.02	5766944.55	606958.19
2132	37.56	168.52	1799.46	-1771.56	-979.77	93.14	5766943.95	606958.32
2133	37.59	168.47	1800.25	-1772.35	-980.38	93.27	5766943.35	606958.45
2134	37.63	168.42	1801.04	-1773.14	-980.98	93.40	5766942.74	606958.58
2135	37.66	168.37	1801.83	-1773.93	-981.58	93.53	5766942.14	606958.70
2136	37.69	168.32	1802.62	-1774.72	-982.18	93.66	5766941.54	606958.83
2137	37.73	168.27	1803.40	-1775.50	-982.78	93.79	5766940.94	606958.96
2138	37.76	168.22	1804.19	-1776.29	-983.38	93.92	5766940.34	606959.09
2139	37.79	168.18	1804.98	-1777.08	-983.99	94.05	5766939.74	606959.22

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2140	37.83	168.13	1805.77	-1777.87	-984.59	94.18	5766939.13	606959.35
2141	37.86	168.08	1806.56	-1778.66	-985.19	94.31	5766938.53	606959.48
2142	37.89	168.03	1807.35	-1779.45	-985.79	94.44	5766937.93	606959.61
2143	37.93	167.98	1808.13	-1780.23	-986.39	94.57	5766937.33	606959.74
2144	37.96	167.93	1808.92	-1781.02	-986.99	94.70	5766936.73	606959.87
2145	38.00	167.88	1809.71	-1781.81	-987.60	94.82	5766936.13	606960.00
2146	38.03	167.83	1810.50	-1782.60	-988.20	94.95	5766935.52	606960.13
2147	38.06	167.78	1811.29	-1783.39	-988.80	95.08	5766934.92	606960.25
2148	38.10	167.74	1812.07	-1784.17	-989.40	95.21	5766934.32	606960.38
2149	38.13	167.69	1812.86	-1784.96	-990.00	95.34	5766933.72	606960.51
2150	38.16	167.64	1813.65	-1785.75	-990.61	95.47	5766933.12	606960.64
2151	38.20	167.59	1814.44	-1786.54	-991.21	95.60	5766932.51	606960.77
2152	38.23	167.54	1815.23	-1787.33	-991.81	95.73	5766931.91	606960.90
2153	38.26	167.49	1816.01	-1788.11	-992.41	95.86	5766931.31	606961.03
2154	38.30	167.44	1816.80	-1788.90	-993.01	95.99	5766930.71	606961.16
2155	38.33	167.39	1817.59	-1789.69	-993.61	96.12	5766930.11	606961.29
2156	38.36	167.34	1818.38	-1790.48	-994.22	96.25	5766929.51	606961.42
2157	38.40	167.29	1819.17	-1791.27	-994.82	96.38	5766928.90	606961.55
2158	38.43	167.25	1819.96	-1792.06	-995.42	96.50	5766928.30	606961.68
2159	38.47	167.20	1820.74	-1792.84	-996.02	96.63	5766927.70	606961.81
2160	38.46	167.18	1821.53	-1793.63	-996.62	96.77	5766927.10	606961.94
2161	38.44	167.16	1822.31	-1794.41	-997.23	96.91	5766926.49	606962.08
2162	38.43	167.14	1823.10	-1795.20	-997.83	97.05	5766925.89	606962.22
2163	38.41	167.13	1823.89	-1795.99	-998.43	97.19	5766925.29	606962.36
2164	38.39	167.11	1824.67	-1796.77	-999.04	97.33	5766924.69	606962.50
2165	38.38	167.10	1825.46	-1797.56	-999.64	97.47	5766924.08	606962.64
2166	38.36	167.08	1826.24	-1798.34	-1000.24	97.61	5766923.48	606962.78
2167	38.35	167.07	1827.03	-1799.13	-1000.85	97.75	5766922.88	606962.92
2168	38.33	167.05	1827.81	-1799.91	-1001.45	97.89	5766922.27	606963.06
2169	38.32	167.03	1828.60	-1800.70	-1002.05	98.03	5766921.67	606963.20
2170	38.30	167.02	1829.38	-1801.48	-1002.66	98.17	5766921.07	606963.34
2171	38.29	167.00	1830.17	-1802.27	-1003.26	98.31	5766920.46	606963.48
2172	38.27	166.99	1830.95	-1803.05	-1003.86	98.45	5766919.86	606963.62
2173	38.25	166.97	1831.74	-1803.84	-1004.46	98.59	5766919.26	606963.76
2174	38.24	166.95	1832.52	-1804.62	-1005.07	98.73	5766918.65	606963.90
2175	38.22	166.94	1833.31	-1805.41	-1005.67	98.87	5766918.05	606964.04
2176	38.21	166.92	1834.09	-1806.19	-1006.27	99.01	5766917.45	606964.18
2177	38.19	166.91	1834.88	-1806.98	-1006.88	99.15	5766916.84	606964.32
2178	38.18	166.89	1835.66	-1807.76	-1007.48	99.28	5766916.24	606964.46
2179	38.16	166.87	1836.45	-1808.55	-1008.08	99.42	5766915.64	606964.60
2180	38.15	166.86	1837.24	-1809.34	-1008.69	99.56	5766915.04	606964.74
2181	38.13	166.84	1838.02	-1810.12	-1009.29	99.70	5766914.43	606964.88
2182	38.11	166.83	1838.81	-1810.91	-1009.89	99.84	5766913.83	606965.02
2183	38.10	166.81	1839.59	-1811.69	-1010.50	99.98	5766913.23	606965.15
2184	38.08	166.79	1840.38	-1812.48	-1011.10	100.12	5766912.62	606965.29
2185	38.07	166.78	1841.16	-1813.26	-1011.70	100.26	5766912.02	606965.43
2186	38.05	166.76	1841.95	-1814.05	-1012.31	100.40	5766911.42	606965.57
2187	38.04	166.75	1842.73	-1814.83	-1012.91	100.54	5766910.81	606965.71
2188	38.04	166.74	1843.52	-1815.62	-1013.51	100.68	5766910.21	606965.85
2189	38.05	166.75	1844.30	-1816.40	-1014.11	100.82	5766909.61	606965.99
2190	38.06	166.76	1845.09	-1817.19	-1014.72	100.96	5766909.01	606966.14
2191	38.08	166.76	1845.87	-1817.97	-1015.32	101.10	5766908.40	606966.28
2192	38.09	166.77	1846.66	-1818.76	-1015.92	101.25	5766907.80	606966.42
2193	38.10	166.77	1847.45	-1819.55	-1016.52	101.39	5766907.20	606966.56
2194	38.12	166.78	1848.23	-1820.33	-1017.13	101.53	5766906.60	606966.70
2195	38.13	166.78	1849.02	-1821.12	-1017.73	101.67	5766905.99	606966.84
2196	38.14	166.79	1849.80	-1821.90	-1018.33	101.81	5766905.39	606966.98
2197	38.16	166.80	1850.59	-1822.69	-1018.93	101.95	5766904.79	606967.12
2198	38.17	166.80	1851.37	-1823.47	-1019.54	102.09	5766904.19	606967.26
2199	38.18	166.81	1852.16	-1824.26	-1020.14	102.23	5766903.58	606967.40
2200	38.20	166.81	1852.95	-1825.05	-1020.74	102.37	5766902.98	606967.55
2201	38.21	166.82	1853.73	-1825.83	-1021.34	102.52	5766902.38	606967.69
2202	38.22	166.83	1854.52	-1826.62	-1021.94	102.66	5766901.78	606967.83
2203	38.23	166.83	1855.30	-1827.40	-1022.55	102.80	5766901.17	606967.97
2204	38.25	166.84	1856.09	-1828.19	-1023.15	102.94	5766900.57	606968.11
2205	38.26	166.84	1856.87	-1828.97	-1023.75	103.08	5766899.97	606968.25

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2206	38.27	166.85	1857.66	-1829.76	-1024.35	103.22	5766899.37	606968.39
2207	38.29	166.86	1858.45	-1830.55	-1024.96	103.36	5766898.76	606968.53
2208	38.30	166.86	1859.23	-1831.33	-1025.56	103.50	5766898.16	606968.67
2209	38.31	166.87	1860.02	-1832.12	-1026.16	103.64	5766897.56	606968.81
2210	38.33	166.87	1860.80	-1832.90	-1026.76	103.78	5766896.96	606968.96
2211	38.34	166.88	1861.59	-1833.69	-1027.37	103.93	5766896.36	606969.10
2212	38.35	166.88	1862.37	-1834.47	-1027.97	104.07	5766895.75	606969.24
2213	38.37	166.89	1863.16	-1835.26	-1028.57	104.21	5766895.15	606969.38
2214	38.38	166.90	1863.94	-1836.04	-1029.17	104.35	5766894.55	606969.52
2215	38.39	166.90	1864.73	-1836.83	-1029.78	104.49	5766893.95	606969.66
2216	38.41	166.91	1865.52	-1837.62	-1030.38	104.63	5766893.34	606969.80
2217	38.42	166.93	1866.30	-1838.40	-1030.99	104.77	5766892.74	606969.94
2218	38.44	166.95	1867.08	-1839.18	-1031.59	104.91	5766892.13	606970.08
2219	38.46	166.97	1867.86	-1839.96	-1032.20	105.05	5766891.52	606970.22
2220	38.48	166.99	1868.64	-1840.74	-1032.81	105.18	5766890.91	606970.36
2221	38.50	167.01	1869.42	-1841.52	-1033.42	105.32	5766890.30	606970.49
2222	38.51	167.03	1870.20	-1842.30	-1034.03	105.46	5766889.69	606970.63
2223	38.53	167.05	1870.98	-1843.08	-1034.64	105.60	5766889.08	606970.77
2224	38.55	167.07	1871.76	-1843.86	-1035.25	105.74	5766888.47	606970.91
2225	38.57	167.09	1872.54	-1844.64	-1035.86	105.88	5766887.86	606971.05
2226	38.59	167.12	1873.33	-1845.43	-1036.47	106.01	5766887.25	606971.19
2227	38.60	167.14	1874.11	-1846.21	-1037.08	106.15	5766886.64	606971.32
2228	38.62	167.16	1874.89	-1846.99	-1037.69	106.29	5766886.03	606971.46
2229	38.64	167.18	1875.67	-1847.77	-1038.30	106.43	5766885.42	606971.60
2230	38.66	167.20	1876.45	-1848.55	-1038.91	106.57	5766884.81	606971.74
2231	38.68	167.22	1877.23	-1849.33	-1039.52	106.70	5766884.21	606971.88
2232	38.69	167.24	1878.01	-1850.11	-1040.13	106.84	5766883.60	606972.01
2233	38.71	167.26	1878.79	-1850.89	-1040.74	106.98	5766882.99	606972.15
2234	38.73	167.29	1879.57	-1851.67	-1041.34	107.12	5766882.38	606972.29
2235	38.75	167.31	1880.35	-1852.45	-1041.95	107.26	5766881.77	606972.43
2236	38.77	167.33	1881.13	-1853.23	-1042.56	107.40	5766881.16	606972.57
2237	38.78	167.35	1881.91	-1854.01	-1043.17	107.53	5766880.55	606972.71
2238	38.80	167.37	1882.69	-1854.79	-1043.78	107.67	5766879.94	606972.84
2239	38.82	167.39	1883.47	-1855.57	-1044.39	107.81	5766879.33	606972.98
2240	38.84	167.41	1884.26	-1856.36	-1045.00	107.95	5766878.72	606973.12
2241	38.86	167.43	1885.04	-1857.14	-1045.61	108.09	5766878.11	606973.26
2242	38.87	167.45	1885.82	-1857.92	-1046.22	108.23	5766877.50	606973.40
2243	38.89	167.48	1886.60	-1858.70	-1046.83	108.36	5766876.89	606973.54
2244	38.91	167.50	1887.38	-1859.48	-1047.44	108.50	5766876.28	606973.67
2245	38.93	167.52	1888.16	-1860.26	-1048.05	108.64	5766875.67	606973.81
2246	38.90	167.53	1888.94	-1861.04	-1048.66	108.77	5766875.07	606973.94
2247	38.87	167.54	1889.73	-1861.83	-1049.26	108.91	5766874.46	606974.08
2248	38.84	167.56	1890.51	-1862.61	-1049.87	109.04	5766873.85	606974.21
2249	38.81	167.57	1891.29	-1863.39	-1050.48	109.17	5766873.24	606974.34
2250	38.77	167.58	1892.07	-1864.17	-1051.09	109.30	5766872.63	606974.48
2251	38.74	167.59	1892.86	-1864.96	-1051.69	109.44	5766872.03	606974.61
2252	38.71	167.60	1893.64	-1865.74	-1052.30	109.57	5766871.42	606974.74
2253	38.68	167.62	1894.42	-1866.52	-1052.91	109.70	5766870.81	606974.87
2254	38.65	167.63	1895.21	-1867.31	-1053.52	109.83	5766870.20	606975.01
2255	38.62	167.64	1895.99	-1868.09	-1054.13	109.97	5766869.60	606975.14
2256	38.59	167.65	1896.77	-1868.87	-1054.73	110.10	5766868.99	606975.27
2257	38.55	167.66	1897.55	-1869.65	-1055.34	110.23	5766868.38	606975.40
2258	38.52	167.68	1898.34	-1870.44	-1055.95	110.36	5766867.77	606975.54
2259	38.49	167.69	1899.12	-1871.22	-1056.56	110.50	5766867.16	606975.67
2260	38.46	167.70	1899.90	-1872.00	-1057.17	110.63	5766866.56	606975.80
2261	38.43	167.71	1900.69	-1872.79	-1057.77	110.76	5766865.95	606975.93
2262	38.40	167.73	1901.47	-1873.57	-1058.38	110.89	5766865.34	606976.07
2263	38.36	167.74	1902.25	-1874.35	-1058.99	111.03	5766864.73	606976.20
2264	38.33	167.75	1903.03	-1875.13	-1059.60	111.16	5766864.12	606976.33
2265	38.30	167.76	1903.82	-1875.92	-1060.20	111.29	5766863.52	606976.46
2266	38.27	167.77	1904.60	-1876.70	-1060.81	111.42	5766862.91	606976.60
2267	38.24	167.79	1905.38	-1877.48	-1061.42	111.56	5766862.30	606976.73
2268	38.21	167.80	1906.17	-1878.27	-1062.03	111.69	5766861.69	606976.86
2269	38.17	167.81	1906.95	-1879.05	-1062.64	111.82	5766861.09	606976.99
2270	38.14	167.82	1907.73	-1879.83	-1063.24	111.96	5766860.48	606977.13
2271	38.11	167.83	1908.51	-1880.61	-1063.85	112.09	5766859.87	606977.26

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2272	38.08	167.85	1909.30	-1881.40	-1064.46	112.22	5766859.26	606977.39
2273	38.05	167.86	1910.08	-1882.18	-1065.07	112.35	5766858.65	606977.52
2274	38.02	167.87	1910.86	-1882.96	-1065.68	112.49	5766858.05	606977.66
2275	38.05	167.89	1911.65	-1883.75	-1066.28	112.61	5766857.44	606977.79
2276	38.08	167.90	1912.43	-1884.53	-1066.89	112.74	5766856.83	606977.91
2277	38.11	167.92	1913.21	-1885.31	-1067.50	112.87	5766856.22	606978.04
2278	38.13	167.93	1914.00	-1886.10	-1068.11	113.00	5766855.61	606978.17
2279	38.16	167.95	1914.78	-1886.88	-1068.72	113.13	5766855.01	606978.30
2280	38.19	167.96	1915.56	-1887.66	-1069.32	113.25	5766854.40	606978.43
2281	38.21	167.98	1916.35	-1888.45	-1069.93	113.38	5766853.79	606978.55
2282	38.24	167.99	1917.13	-1889.23	-1070.54	113.51	5766853.18	606978.68
2283	38.27	168.01	1917.91	-1890.01	-1071.15	113.64	5766852.57	606978.81
2284	38.30	168.02	1918.70	-1890.80	-1071.76	113.77	5766851.97	606978.94
2285	38.32	168.04	1919.48	-1891.58	-1072.36	113.90	5766851.36	606979.07
2286	38.35	168.05	1920.26	-1892.36	-1072.97	114.02	5766850.75	606979.20
2287	38.38	168.07	1921.05	-1893.15	-1073.58	114.15	5766850.14	606979.32
2288	38.41	168.08	1921.83	-1893.93	-1074.19	114.28	5766849.53	606979.45
2289	38.43	168.10	1922.62	-1894.72	-1074.80	114.41	5766848.93	606979.58
2290	38.46	168.11	1923.40	-1895.50	-1075.40	114.54	5766848.32	606979.71
2291	38.49	168.13	1924.18	-1896.28	-1076.01	114.67	5766847.71	606979.84
2292	38.52	168.14	1924.97	-1897.07	-1076.62	114.79	5766847.10	606979.97
2293	38.54	168.16	1925.75	-1897.85	-1077.23	114.92	5766846.49	606980.09
2294	38.57	168.17	1926.53	-1898.63	-1077.83	115.05	5766845.89	606980.22
2295	38.60	168.19	1927.32	-1899.42	-1078.44	115.18	5766845.28	606980.35
2296	38.63	168.20	1928.10	-1900.20	-1079.05	115.31	5766844.67	606980.48
2297	38.65	168.22	1928.88	-1900.98	-1079.66	115.44	5766844.06	606980.61
2298	38.68	168.23	1929.67	-1901.77	-1080.27	115.56	5766843.45	606980.74
2299	38.71	168.25	1930.45	-1902.55	-1080.87	115.69	5766842.85	606980.86
2300	38.74	168.26	1931.23	-1903.33	-1081.48	115.82	5766842.24	606980.99
2301	38.76	168.27	1932.02	-1904.12	-1082.09	115.95	5766841.63	606981.12
2302	38.79	168.29	1932.80	-1904.90	-1082.70	116.08	5766841.02	606981.25
2303	38.81	168.30	1933.58	-1905.68	-1083.31	116.20	5766840.41	606981.38
2304	38.81	168.31	1934.36	-1906.46	-1083.92	116.33	5766839.80	606981.50
2305	38.81	168.32	1935.14	-1907.24	-1084.54	116.46	5766839.19	606981.63
2306	38.81	168.33	1935.92	-1908.02	-1085.15	116.58	5766838.57	606981.75
2307	38.81	168.34	1936.70	-1908.80	-1085.76	116.71	5766837.96	606981.88
2308	38.80	168.35	1937.48	-1909.58	-1086.38	116.83	5766837.34	606982.00
2309	38.80	168.36	1938.26	-1910.36	-1086.99	116.96	5766836.73	606982.13
2310	38.80	168.37	1939.04	-1911.14	-1087.61	117.08	5766836.12	606982.25
2311	38.80	168.38	1939.82	-1911.92	-1088.22	117.21	5766835.50	606982.38
2312	38.80	168.39	1940.60	-1912.70	-1088.83	117.33	5766834.89	606982.51
2313	38.80	168.40	1941.38	-1913.48	-1089.45	117.46	5766834.27	606982.63
2314	38.80	168.41	1942.16	-1914.26	-1090.06	117.58	5766833.66	606982.76
2315	38.80	168.42	1942.94	-1915.04	-1090.67	117.71	5766833.05	606982.88
2316	38.80	168.43	1943.72	-1915.82	-1091.29	117.84	5766832.43	606983.01
2317	38.80	168.44	1944.49	-1916.59	-1091.90	117.96	5766831.82	606983.13
2318	38.79	168.45	1945.27	-1917.37	-1092.52	118.09	5766831.21	606983.26
2319	38.79	168.47	1946.05	-1918.15	-1093.13	118.21	5766830.59	606983.38
2320	38.79	168.48	1946.83	-1918.93	-1093.74	118.34	5766829.98	606983.51
2321	38.79	168.49	1947.61	-1919.71	-1094.36	118.46	5766829.36	606983.63
2322	38.79	168.50	1948.39	-1920.49	-1094.97	118.59	5766828.75	606983.76
2323	38.79	168.51	1949.17	-1921.27	-1095.59	118.71	5766828.14	606983.89
2324	38.79	168.52	1949.95	-1922.05	-1096.20	118.84	5766827.52	606984.01
2325	38.79	168.53	1950.73	-1922.83	-1096.81	118.97	5766826.91	606984.14
2326	38.79	168.54	1951.51	-1923.61	-1097.43	119.09	5766826.29	606984.26
2327	38.78	168.55	1952.29	-1924.39	-1098.04	119.22	5766825.68	606984.39
2328	38.78	168.56	1953.07	-1925.17	-1098.65	119.34	5766825.07	606984.51
2329	38.78	168.57	1953.85	-1925.95	-1099.27	119.47	5766824.45	606984.64
2330	38.78	168.58	1954.63	-1926.73	-1099.88	119.59	5766823.84	606984.76
2331	38.78	168.59	1955.41	-1927.51	-1100.50	119.72	5766823.23	606984.89
2332	38.77	168.60	1956.19	-1928.29	-1101.11	119.84	5766822.61	606985.01
2333	38.75	168.61	1956.97	-1929.07	-1101.72	119.96	5766822.00	606985.13
2334	38.74	168.62	1957.75	-1929.85	-1102.33	120.08	5766821.39	606985.26
2335	38.72	168.63	1958.53	-1930.63	-1102.94	120.21	5766820.78	606985.38
2336	38.71	168.65	1959.32	-1931.42	-1103.55	120.33	5766820.17	606985.50
2337	38.69	168.66	1960.10	-1932.20	-1104.16	120.45	5766819.56	606985.62

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2338	38.68	168.67	1960.88	-1932.98	-1104.78	120.57	5766818.95	606985.74
2339	38.66	168.68	1961.66	-1933.76	-1105.39	120.69	5766818.33	606985.86
2340	38.64	168.70	1962.44	-1934.54	-1106.00	120.81	5766817.72	606985.98
2341	38.63	168.71	1963.23	-1935.33	-1106.61	120.93	5766817.11	606986.11
2342	38.61	168.72	1964.01	-1936.11	-1107.22	121.06	5766816.50	606986.23
2343	38.60	168.73	1964.79	-1936.89	-1107.83	121.18	5766815.89	606986.35
2344	38.58	168.75	1965.57	-1937.67	-1108.44	121.30	5766815.28	606986.47
2345	38.56	168.76	1966.35	-1938.45	-1109.06	121.42	5766814.67	606986.59
2346	38.55	168.77	1967.14	-1939.24	-1109.67	121.54	5766814.06	606986.71
2347	38.53	168.78	1967.92	-1940.02	-1110.28	121.66	5766813.44	606986.83
2348	38.52	168.79	1968.70	-1940.80	-1110.89	121.78	5766812.83	606986.96
2349	38.50	168.81	1969.48	-1941.58	-1111.50	121.91	5766812.22	606987.08
2350	38.49	168.82	1970.26	-1942.36	-1112.11	122.03	5766811.61	606987.20
2351	38.47	168.83	1971.05	-1943.15	-1112.72	122.15	5766811.00	606987.32
2352	38.45	168.84	1971.83	-1943.93	-1113.33	122.27	5766810.39	606987.44
2353	38.44	168.86	1972.61	-1944.71	-1113.95	122.39	5766809.78	606987.56
2354	38.42	168.87	1973.39	-1945.49	-1114.56	122.51	5766809.16	606987.69
2355	38.41	168.88	1974.17	-1946.27	-1115.17	122.63	5766808.55	606987.81
2356	38.39	168.89	1974.96	-1947.06	-1115.78	122.76	5766807.94	606987.93
2357	38.38	168.90	1975.74	-1947.84	-1116.39	122.88	5766807.33	606988.05
2358	38.36	168.92	1976.52	-1948.62	-1117.00	123.00	5766806.72	606988.17
2359	38.34	168.93	1977.30	-1949.40	-1117.61	123.12	5766806.11	606988.29
2360	38.33	168.94	1978.08	-1950.18	-1118.22	123.24	5766805.50	606988.41
2361	38.35	168.94	1978.87	-1950.97	-1118.84	123.36	5766804.88	606988.53
2362	38.37	168.94	1979.65	-1951.75	-1119.45	123.48	5766804.27	606988.65
2363	38.39	168.94	1980.43	-1952.53	-1120.06	123.60	5766803.66	606988.77
2364	38.41	168.94	1981.21	-1953.31	-1120.68	123.72	5766803.05	606988.89
2365	38.43	168.94	1981.99	-1954.09	-1121.29	123.84	5766802.43	606989.01
2366	38.45	168.94	1982.77	-1954.87	-1121.90	123.96	5766801.82	606989.13
2367	38.47	168.94	1983.55	-1955.65	-1122.51	124.08	5766801.21	606989.25
2368	38.49	168.95	1984.33	-1956.43	-1123.13	124.20	5766800.60	606989.37
2369	38.51	168.95	1985.12	-1957.22	-1123.74	124.32	5766799.98	606989.49
2370	38.53	168.95	1985.90	-1958.00	-1124.35	124.44	5766799.37	606989.61
2371	38.56	168.95	1986.68	-1958.78	-1124.96	124.56	5766798.76	606989.73
2372	38.58	168.95	1987.46	-1959.56	-1125.58	124.68	5766798.15	606989.85
2373	38.60	168.95	1988.24	-1960.34	-1126.19	124.80	5766797.53	606989.97
2374	38.62	168.95	1989.02	-1961.12	-1126.80	124.92	5766796.92	606990.09
2375	38.64	168.95	1989.80	-1961.90	-1127.41	125.04	5766796.31	606990.21
2376	38.66	168.95	1990.58	-1962.68	-1128.03	125.16	5766795.70	606990.33
2377	38.68	168.95	1991.37	-1963.47	-1128.64	125.28	5766795.08	606990.45
2378	38.70	168.95	1992.15	-1964.25	-1129.25	125.39	5766794.47	606990.57
2379	38.72	168.95	1992.93	-1965.03	-1129.86	125.51	5766793.86	606990.69
2380	38.74	168.95	1993.71	-1965.81	-1130.48	125.63	5766793.24	606990.81
2381	38.76	168.95	1994.49	-1966.59	-1131.09	125.75	5766792.63	606990.93
2382	38.78	168.96	1995.27	-1967.37	-1131.70	125.87	5766792.02	606991.04
2383	38.80	168.96	1996.05	-1968.15	-1132.31	125.99	5766791.41	606991.16
2384	38.82	168.96	1996.83	-1968.93	-1132.93	126.11	5766790.79	606991.28
2385	38.84	168.96	1997.62	-1969.72	-1133.54	126.23	5766790.18	606991.40
2386	38.86	168.96	1998.40	-1970.50	-1134.15	126.35	5766789.57	606991.52
2387	38.88	168.96	1999.18	-1971.28	-1134.76	126.47	5766788.96	606991.64
2388	38.90	168.96	1999.96	-1972.06	-1135.38	126.59	5766788.34	606991.76
2389	38.90	168.96	2000.74	-1972.84	-1135.99	126.71	5766787.73	606991.88
2390	38.89	168.95	2001.52	-1973.62	-1136.60	126.83	5766787.12	606992.00
2391	38.88	168.95	2002.30	-1974.40	-1137.22	126.95	5766786.50	606992.12
2392	38.87	168.94	2003.08	-1975.18	-1137.83	127.07	5766785.89	606992.24
2393	38.86	168.94	2003.86	-1975.96	-1138.45	127.19	5766785.27	606992.37
2394	38.85	168.93	2004.64	-1976.74	-1139.06	127.31	5766784.66	606992.49
2395	38.84	168.93	2005.42	-1977.52	-1139.68	127.43	5766784.05	606992.61
2396	38.83	168.92	2006.20	-1978.30	-1140.29	127.56	5766783.43	606992.73
2397	38.82	168.92	2006.98	-1979.08	-1140.90	127.68	5766782.82	606992.85
2398	38.80	168.91	2007.76	-1979.86	-1141.52	127.80	5766782.20	606992.97
2399	38.79	168.91	2008.54	-1980.64	-1142.13	127.92	5766781.59	606993.09
2400	38.78	168.90	2009.32	-1981.42	-1142.75	128.04	5766780.97	606993.21
2401	38.77	168.90	2010.10	-1982.20	-1143.36	128.16	5766780.36	606993.33
2402	38.76	168.89	2010.88	-1982.98	-1143.98	128.28	5766779.75	606993.45
2403	38.75	168.89	2011.66	-1983.76	-1144.59	128.40	5766779.13	606993.57

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2404	38.74	168.88	2012.44	-1984.54	-1145.20	128.52	5766778.52	606993.69
2405	38.73	168.88	2013.22	-1985.32	-1145.82	128.64	5766777.90	606993.81
2406	38.72	168.87	2014.00	-1986.10	-1146.43	128.76	5766777.29	606993.93
2407	38.70	168.87	2014.78	-1986.88	-1147.05	128.88	5766776.68	606994.05
2408	38.69	168.86	2015.56	-1987.66	-1147.66	129.00	5766776.06	606994.17
2409	38.68	168.86	2016.34	-1988.44	-1148.27	129.12	5766775.45	606994.29
2410	38.67	168.86	2017.12	-1989.22	-1148.89	129.24	5766774.83	606994.42
2411	38.66	168.85	2017.90	-1990.00	-1149.50	129.36	5766774.22	606994.54
2412	38.65	168.85	2018.68	-1990.78	-1150.12	129.49	5766773.60	606994.66
2413	38.64	168.84	2019.46	-1991.56	-1150.73	129.61	5766772.99	606994.78
2414	38.63	168.84	2020.24	-1992.34	-1151.35	129.73	5766772.38	606994.90
2415	38.61	168.83	2021.02	-1993.12	-1151.96	129.85	5766771.76	606995.02
2416	38.60	168.83	2021.80	-1993.90	-1152.57	129.97	5766771.15	606995.14
2417	38.59	168.82	2022.58	-1994.68	-1153.19	130.09	5766770.53	606995.26
2418	38.61	168.81	2023.36	-1995.46	-1153.80	130.21	5766769.92	606995.38
2419	38.63	168.81	2024.13	-1996.23	-1154.42	130.33	5766769.30	606995.51
2420	38.65	168.80	2024.91	-1997.01	-1155.04	130.46	5766768.69	606995.63
2421	38.68	168.79	2025.69	-1997.79	-1155.65	130.58	5766768.07	606995.75
2422	38.70	168.79	2026.47	-1998.57	-1156.27	130.70	5766767.45	606995.87
2423	38.72	168.78	2027.25	-1999.35	-1156.88	130.83	5766766.84	606996.00
2424	38.75	168.77	2028.02	-2000.12	-1157.50	130.95	5766766.22	606996.12
2425	38.77	168.77	2028.80	-2000.90	-1158.12	131.07	5766765.60	606996.24
2426	38.79	168.76	2029.58	-2001.68	-1158.73	131.19	5766764.99	606996.37
2427	38.82	168.75	2030.36	-2002.46	-1159.35	131.32	5766764.37	606996.49
2428	38.84	168.74	2031.14	-2003.24	-1159.97	131.44	5766763.76	606996.61
2429	38.86	168.74	2031.91	-2004.01	-1160.58	131.56	5766763.14	606996.73
2430	38.89	168.73	2032.69	-2004.79	-1161.20	131.69	5766762.52	606996.86
2431	38.91	168.72	2033.47	-2005.57	-1161.81	131.81	5766761.91	606996.98
2432	38.93	168.72	2034.25	-2006.35	-1162.43	131.93	5766761.29	606997.10
2433	38.96	168.71	2035.03	-2007.13	-1163.05	132.05	5766760.68	606997.23
2434	38.98	168.70	2035.80	-2007.90	-1163.66	132.18	5766760.06	606997.35
2435	39.00	168.70	2036.58	-2008.68	-1164.28	132.30	5766759.44	606997.47
2436	39.03	168.69	2037.36	-2009.46	-1164.89	132.42	5766758.83	606997.59
2437	39.05	168.68	2038.14	-2010.24	-1165.51	132.55	5766758.21	606997.72
2438	39.07	168.68	2038.92	-2011.02	-1166.13	132.67	5766757.59	606997.84
2439	39.10	168.67	2039.69	-2011.79	-1166.74	132.79	5766756.98	606997.96
2440	39.12	168.66	2040.47	-2012.57	-1167.36	132.91	5766756.36	606998.09
2441	39.14	168.65	2041.25	-2013.35	-1167.98	133.04	5766755.75	606998.21
2442	39.17	168.65	2042.03	-2014.13	-1168.59	133.16	5766755.13	606998.33
2443	39.19	168.64	2042.81	-2014.91	-1169.21	133.28	5766754.51	606998.45
2444	39.21	168.63	2043.58	-2015.68	-1169.82	133.41	5766753.90	606998.58
2445	39.24	168.63	2044.36	-2016.46	-1170.44	133.53	5766753.28	606998.70
2446	39.26	168.62	2045.14	-2017.24	-1171.06	133.65	5766752.67	606998.82
2447	39.25	168.60	2045.92	-2018.02	-1171.67	133.78	5766752.05	606998.95
2448	39.24	168.59	2046.69	-2018.79	-1172.29	133.91	5766751.43	606999.08
2449	39.22	168.57	2047.47	-2019.57	-1172.91	134.03	5766750.81	606999.20
2450	39.21	168.56	2048.24	-2020.34	-1173.53	134.16	5766750.20	606999.33
2451	39.20	168.54	2049.02	-2021.12	-1174.14	134.29	5766749.58	606999.46
2452	39.19	168.53	2049.80	-2021.90	-1174.76	134.41	5766748.96	606999.58
2453	39.18	168.51	2050.57	-2022.67	-1175.38	134.54	5766748.34	606999.71
2454	39.17	168.50	2051.35	-2023.45	-1176.00	134.67	5766747.72	606999.84
2455	39.15	168.49	2052.12	-2024.22	-1176.61	134.79	5766747.11	606999.96
2456	39.14	168.47	2052.90	-2025.00	-1177.23	134.92	5766746.49	607000.09
2457	39.13	168.46	2053.68	-2025.78	-1177.85	135.05	5766745.87	607000.22
2458	39.12	168.44	2054.45	-2026.55	-1178.47	135.17	5766745.25	607000.34
2459	39.11	168.43	2055.23	-2027.33	-1179.09	135.30	5766744.64	607000.47
2460	39.09	168.41	2056.01	-2028.11	-1179.70	135.43	5766744.02	607000.60
2461	39.08	168.40	2056.78	-2028.88	-1180.32	135.55	5766743.40	607000.72
2462	39.07	168.38	2057.56	-2029.66	-1180.94	135.68	5766742.78	607000.85
2463	39.06	168.37	2058.33	-2030.43	-1181.56	135.81	5766742.17	607000.98
2464	39.05	168.35	2059.11	-2031.21	-1182.17	135.93	5766741.55	607001.10
2465	39.04	168.34	2059.89	-2031.99	-1182.79	136.06	5766740.93	607001.23
2466	39.02	168.32	2060.66	-2032.76	-1183.41	136.19	5766740.31	607001.36
2467	39.01	168.31	2061.44	-2033.54	-1184.03	136.31	5766739.69	607001.48
2468	39.00	168.29	2062.21	-2034.31	-1184.64	136.44	5766739.08	607001.61
2469	38.99	168.28	2062.99	-2035.09	-1185.26	136.57	5766738.46	607001.74

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2470	38.98	168.26	2063.77	-2035.87	-1185.88	136.69	5766737.84	607001.86
2471	38.96	168.25	2064.54	-2036.64	-1186.50	136.82	5766737.22	607001.99
2472	38.95	168.23	2065.32	-2037.42	-1187.12	136.95	5766736.61	607002.12
2473	38.94	168.22	2066.09	-2038.19	-1187.73	137.07	5766735.99	607002.24
2474	38.93	168.20	2066.87	-2038.97	-1188.35	137.20	5766735.37	607002.37
2475	38.93	168.19	2067.65	-2039.75	-1188.97	137.33	5766734.75	607002.50
2476	38.96	168.17	2068.42	-2040.52	-1189.59	137.46	5766734.13	607002.63
2477	38.99	168.16	2069.19	-2041.29	-1190.21	137.59	5766733.51	607002.76
2478	39.02	168.14	2069.97	-2042.07	-1190.83	137.72	5766732.89	607002.90
2479	39.05	168.12	2070.74	-2042.84	-1191.45	137.86	5766732.27	607003.03
2480	39.08	168.11	2071.51	-2043.61	-1192.07	137.99	5766731.65	607003.16
2481	39.11	168.09	2072.29	-2044.39	-1192.69	138.12	5766731.03	607003.29
2482	39.14	168.08	2073.06	-2045.16	-1193.31	138.25	5766730.41	607003.43
2483	39.17	168.06	2073.83	-2045.93	-1193.93	138.39	5766729.79	607003.56
2484	39.20	168.05	2074.60	-2046.70	-1194.55	138.52	5766729.17	607003.69
2485	39.23	168.03	2075.38	-2047.48	-1195.17	138.65	5766728.55	607003.82
2486	39.26	168.02	2076.15	-2048.25	-1195.79	138.78	5766727.93	607003.95
2487	39.29	168.00	2076.92	-2049.02	-1196.41	138.92	5766727.31	607004.09
2488	39.32	167.98	2077.70	-2049.80	-1197.03	139.05	5766726.69	607004.22
2489	39.35	167.97	2078.47	-2050.57	-1197.65	139.18	5766726.07	607004.35
2490	39.38	167.95	2079.24	-2051.34	-1198.27	139.31	5766725.45	607004.48
2491	39.41	167.94	2080.02	-2052.12	-1198.89	139.44	5766724.83	607004.62
2492	39.44	167.92	2080.79	-2052.89	-1199.51	139.58	5766724.21	607004.75
2493	39.47	167.91	2081.56	-2053.66	-1200.13	139.71	5766723.59	607004.88
2494	39.50	167.89	2082.34	-2054.44	-1200.75	139.84	5766722.97	607005.01
2495	39.53	167.88	2083.11	-2055.21	-1201.37	139.97	5766722.35	607005.14
2496	39.56	167.86	2083.88	-2055.98	-1201.99	140.11	5766721.73	607005.28
2497	39.59	167.85	2084.66	-2056.76	-1202.61	140.24	5766721.11	607005.41
2498	39.62	167.83	2085.43	-2057.53	-1203.23	140.37	5766720.49	607005.54
2499	39.65	167.81	2086.20	-2058.30	-1203.86	140.50	5766719.87	607005.67
2500	39.69	167.80	2086.98	-2059.08	-1204.48	140.63	5766719.25	607005.81
2501	39.72	167.78	2087.75	-2059.85	-1205.10	140.77	5766718.63	607005.94
2502	39.75	167.77	2088.52	-2060.62	-1205.72	140.90	5766718.01	607006.07
2503	39.78	167.75	2089.30	-2061.40	-1206.34	141.03	5766717.39	607006.20
2504	39.80	167.74	2090.07	-2062.17	-1206.96	141.16	5766716.76	607006.34
2505	39.78	167.72	2090.84	-2062.94	-1207.58	141.30	5766716.14	607006.47
2506	39.77	167.70	2091.61	-2063.71	-1208.20	141.44	5766715.52	607006.61
2507	39.75	167.68	2092.38	-2064.48	-1208.82	141.58	5766714.90	607006.75
2508	39.74	167.65	2093.15	-2065.25	-1209.45	141.72	5766714.28	607006.89
2509	39.72	167.63	2093.92	-2066.02	-1210.07	141.86	5766713.65	607007.03
2510	39.71	167.61	2094.69	-2066.79	-1210.69	142.00	5766713.03	607007.17
2511	39.70	167.59	2095.46	-2067.56	-1211.31	142.13	5766712.41	607007.31
2512	39.68	167.57	2096.23	-2068.33	-1211.93	142.27	5766711.79	607007.44
2513	39.67	167.55	2097.00	-2069.10	-1212.56	142.41	5766711.17	607007.58
2514	39.65	167.53	2097.77	-2069.87	-1213.18	142.55	5766710.54	607007.72
2515	39.64	167.51	2098.54	-2070.64	-1213.80	142.69	5766709.92	607007.86
2516	39.62	167.49	2099.31	-2071.41	-1214.42	142.83	5766709.30	607008.00
2517	39.61	167.47	2100.09	-2072.19	-1215.04	142.96	5766708.68	607008.14
2518	39.59	167.45	2100.86	-2072.96	-1215.67	143.10	5766708.06	607008.27
2519	39.58	167.43	2101.63	-2073.73	-1216.29	143.24	5766707.43	607008.41
2520	39.56	167.41	2102.40	-2074.50	-1216.91	143.38	5766706.81	607008.55
2521	39.55	167.39	2103.17	-2075.27	-1217.53	143.52	5766706.19	607008.69
2522	39.53	167.37	2103.94	-2076.04	-1218.15	143.66	5766705.57	607008.83
2523	39.52	167.35	2104.71	-2076.81	-1218.78	143.80	5766704.94	607008.97
2524	39.51	167.33	2105.48	-2077.58	-1219.40	143.93	5766704.32	607009.11
2525	39.49	167.31	2106.25	-2078.35	-1220.02	144.07	5766703.70	607009.24
2526	39.48	167.29	2107.02	-2079.12	-1220.64	144.21	5766703.08	607009.38
2527	39.46	167.27	2107.79	-2079.89	-1221.27	144.35	5766702.46	607009.52
2528	39.45	167.25	2108.56	-2080.66	-1221.89	144.49	5766701.83	607009.66
2529	39.43	167.23	2109.33	-2081.43	-1222.51	144.63	5766701.21	607009.80
2530	39.42	167.21	2110.10	-2082.20	-1223.13	144.76	5766700.59	607009.94
2531	39.40	167.19	2110.87	-2082.97	-1223.75	144.90	5766699.97	607010.07
2532	39.39	167.17	2111.64	-2083.74	-1224.38	145.04	5766699.35	607010.21
2533	39.41	167.15	2112.41	-2084.51	-1225.00	145.19	5766698.72	607010.36
2534	39.43	167.14	2113.18	-2085.28	-1225.62	145.33	5766698.10	607010.50
2535	39.46	167.12	2113.95	-2086.05	-1226.24	145.47	5766697.48	607010.65

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2536	39.48	167.10	2114.72	-2086.82	-1226.87	145.62	5766696.86	607010.79
2537	39.50	167.09	2115.49	-2087.59	-1227.49	145.76	5766696.23	607010.94
2538	39.52	167.07	2116.26	-2088.36	-1228.11	145.91	5766695.61	607011.08
2539	39.54	167.05	2117.03	-2089.13	-1228.73	146.05	5766694.99	607011.22
2540	39.56	167.03	2117.80	-2089.90	-1229.35	146.20	5766694.37	607011.37
2541	39.59	167.02	2118.57	-2090.67	-1229.98	146.34	5766693.75	607011.51
2542	39.61	167.00	2119.34	-2091.44	-1230.60	146.49	5766693.12	607011.66
2543	39.63	166.98	2120.11	-2092.21	-1231.22	146.63	5766692.50	607011.80
2544	39.65	166.97	2120.88	-2092.98	-1231.84	146.77	5766691.88	607011.95
2545	39.67	166.95	2121.65	-2093.75	-1232.47	146.92	5766691.26	607012.09
2546	39.70	166.93	2122.42	-2094.52	-1233.09	147.06	5766690.63	607012.24
2547	39.72	166.92	2123.19	-2095.29	-1233.71	147.21	5766690.01	607012.38
2548	39.74	166.90	2123.95	-2096.05	-1234.33	147.35	5766689.39	607012.52
2549	39.76	166.88	2124.72	-2096.82	-1234.95	147.50	5766688.77	607012.67
2550	39.78	166.87	2125.49	-2097.59	-1235.58	147.64	5766688.15	607012.81
2551	39.80	166.85	2126.26	-2098.36	-1236.20	147.79	5766687.52	607012.96
2552	39.83	166.83	2127.03	-2099.13	-1236.82	147.93	5766686.90	607013.10
2553	39.85	166.82	2127.80	-2099.90	-1237.44	148.08	5766686.28	607013.25
2554	39.87	166.80	2128.57	-2100.67	-1238.07	148.22	5766685.66	607013.39
2555	39.89	166.78	2129.34	-2101.44	-1238.69	148.36	5766685.03	607013.54
2556	39.91	166.77	2130.11	-2102.21	-1239.31	148.51	5766684.41	607013.68
2557	39.93	166.75	2130.88	-2102.98	-1239.93	148.65	5766683.79	607013.82
2558	39.96	166.73	2131.65	-2103.75	-1240.55	148.80	5766683.17	607013.97
2559	39.98	166.72	2132.42	-2104.52	-1241.18	148.94	5766682.55	607014.11
2560	40.00	166.70	2133.19	-2105.29	-1241.80	149.09	5766681.92	607014.26
2561	40.02	166.69	2133.95	-2106.05	-1242.43	149.23	5766681.30	607014.41
2562	40.05	166.69	2134.71	-2106.81	-1243.06	149.38	5766680.67	607014.55
2563	40.08	166.68	2135.48	-2107.58	-1243.69	149.53	5766680.03	607014.70
2564	40.11	166.68	2136.24	-2108.34	-1244.32	149.68	5766679.40	607014.85
2565	40.14	166.68	2137.00	-2109.10	-1244.95	149.83	5766678.77	607015.00
2566	40.17	166.67	2137.76	-2109.86	-1245.58	149.98	5766678.14	607015.15
2567	40.20	166.67	2138.52	-2110.62	-1246.21	150.13	5766677.51	607015.30
2568	40.23	166.67	2139.28	-2111.38	-1246.84	150.28	5766676.88	607015.45
2569	40.26	166.66	2140.04	-2112.14	-1247.47	150.43	5766676.25	607015.60
2570	40.29	166.66	2140.80	-2112.90	-1248.10	150.58	5766675.62	607015.75
2571	40.31	166.66	2141.56	-2113.66	-1248.73	150.73	5766674.99	607015.90
2572	40.34	166.65	2142.33	-2114.43	-1249.37	150.88	5766674.36	607016.05
2573	40.37	166.65	2143.09	-2115.19	-1250.00	151.03	5766673.72	607016.20
2574	40.40	166.65	2143.85	-2115.95	-1250.63	151.18	5766673.09	607016.35
2575	40.43	166.64	2144.61	-2116.71	-1251.26	151.33	5766672.46	607016.50
2576	40.46	166.64	2145.37	-2117.47	-1251.89	151.48	5766671.83	607016.65
2577	40.49	166.64	2146.13	-2118.23	-1252.52	151.63	5766671.20	607016.80
2578	40.52	166.64	2146.89	-2118.99	-1253.15	151.78	5766670.57	607016.95
2579	40.55	166.63	2147.65	-2119.75	-1253.78	151.93	5766669.94	607017.10
2580	40.58	166.63	2148.42	-2120.52	-1254.41	152.08	5766669.31	607017.25
2581	40.61	166.63	2149.18	-2121.28	-1255.04	152.23	5766668.68	607017.40
2582	40.63	166.62	2149.94	-2122.04	-1255.68	152.38	5766668.05	607017.55
2583	40.66	166.62	2150.70	-2122.80	-1256.31	152.53	5766667.41	607017.70
2584	40.69	166.62	2151.46	-2123.56	-1256.94	152.68	5766666.78	607017.85
2585	40.72	166.61	2152.22	-2124.32	-1257.57	152.83	5766666.15	607018.00
2586	40.75	166.61	2152.98	-2125.08	-1258.20	152.98	5766665.52	607018.15
2587	40.78	166.61	2153.74	-2125.84	-1258.83	153.13	5766664.89	607018.30
2588	40.81	166.60	2154.50	-2126.60	-1259.46	153.28	5766664.26	607018.45
2589	40.84	166.60	2155.27	-2127.37	-1260.09	153.43	5766663.63	607018.60
2590	40.87	166.61	2156.02	-2128.12	-1260.73	153.58	5766662.99	607018.75
2591	40.91	166.63	2156.77	-2128.87	-1261.38	153.73	5766662.35	607018.90
2592	40.95	166.66	2157.52	-2129.62	-1262.02	153.88	5766661.70	607019.05
2593	40.99	166.68	2158.27	-2130.37	-1262.66	154.03	5766661.06	607019.20
2594	41.03	166.70	2159.02	-2131.12	-1263.31	154.18	5766660.41	607019.35
2595	41.07	166.72	2159.77	-2131.87	-1263.95	154.33	5766659.77	607019.50
2596	41.11	166.74	2160.52	-2132.62	-1264.60	154.48	5766659.13	607019.65
2597	41.14	166.76	2161.27	-2133.37	-1265.24	154.63	5766658.48	607019.80
2598	41.18	166.79	2162.02	-2134.12	-1265.88	154.78	5766657.84	607019.95
2599	41.22	166.81	2162.77	-2134.87	-1266.53	154.92	5766657.19	607020.10
2600	41.26	166.83	2163.52	-2135.62	-1267.17	155.07	5766656.55	607020.25
2601	41.30	166.85	2164.27	-2136.37	-1267.82	155.22	5766655.90	607020.40

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2602	41.34	166.87	2165.02	-2137.12	-1268.46	155.37	5766655.26	607020.55
2603	41.38	166.90	2165.77	-2137.87	-1269.11	155.52	5766654.62	607020.70
2604	41.42	166.92	2166.52	-2138.62	-1269.75	155.67	5766653.97	607020.85
2605	41.46	166.94	2167.27	-2139.37	-1270.39	155.82	5766653.33	607021.00
2606	41.50	166.96	2168.02	-2140.12	-1271.04	155.97	5766652.68	607021.14
2607	41.53	166.98	2168.77	-2140.87	-1271.68	156.12	5766652.04	607021.29
2608	41.57	167.00	2169.52	-2141.62	-1272.33	156.27	5766651.40	607021.44
2609	41.61	167.03	2170.27	-2142.37	-1272.97	156.42	5766650.75	607021.59
2610	41.65	167.05	2171.02	-2143.12	-1273.61	156.57	5766650.11	607021.74
2611	41.69	167.07	2171.77	-2143.87	-1274.26	156.72	5766649.46	607021.89
2612	41.73	167.09	2172.52	-2144.62	-1274.90	156.87	5766648.82	607022.04
2613	41.77	167.11	2173.27	-2145.37	-1275.55	157.02	5766648.17	607022.19
2614	41.81	167.13	2174.02	-2146.12	-1276.19	157.17	5766647.53	607022.34
2615	41.85	167.16	2174.77	-2146.87	-1276.84	157.32	5766646.89	607022.49
2616	41.89	167.18	2175.52	-2147.62	-1277.48	157.47	5766646.24	607022.64
2617	41.92	167.20	2176.27	-2148.37	-1278.12	157.62	5766645.60	607022.79
2618	41.96	167.22	2177.02	-2149.12	-1278.77	157.77	5766644.95	607022.94
2619	41.96	167.24	2177.77	-2149.87	-1279.42	157.91	5766644.30	607023.09
2620	41.96	167.27	2178.51	-2150.61	-1280.07	158.06	5766643.65	607023.23
2621	41.96	167.29	2179.25	-2151.35	-1280.73	158.20	5766642.99	607023.37
2622	41.96	167.31	2180.00	-2152.10	-1281.38	158.35	5766642.34	607023.52
2623	41.96	167.34	2180.74	-2152.84	-1282.03	158.49	5766641.69	607023.66
2624	41.96	167.36	2181.48	-2153.58	-1282.69	158.63	5766641.04	607023.81
2625	41.96	167.38	2182.23	-2154.33	-1283.34	158.78	5766640.38	607023.95
2626	41.96	167.41	2182.97	-2155.07	-1283.99	158.92	5766639.73	607024.09
2627	41.96	167.43	2183.71	-2155.81	-1284.64	159.07	5766639.08	607024.24
2628	41.96	167.45	2184.46	-2156.56	-1285.30	159.21	5766638.42	607024.38
2629	41.96	167.47	2185.20	-2157.30	-1285.95	159.36	5766637.77	607024.53
2630	41.96	167.50	2185.94	-2158.04	-1286.60	159.50	5766637.12	607024.67
2631	41.96	167.52	2186.69	-2158.79	-1287.26	159.64	5766636.47	607024.82
2632	41.96	167.54	2187.43	-2159.53	-1287.91	159.79	5766635.81	607024.96
2633	41.96	167.57	2188.18	-2160.28	-1288.56	159.93	5766635.16	607025.10
2634	41.96	167.59	2188.92	-2161.02	-1289.21	160.08	5766634.51	607025.25
2635	41.96	167.61	2189.66	-2161.76	-1289.87	160.22	5766633.85	607025.39
2636	41.96	167.64	2190.41	-2162.51	-1290.52	160.36	5766633.20	607025.54
2637	41.96	167.66	2191.15	-2163.25	-1291.17	160.51	5766632.55	607025.68
2638	41.96	167.68	2191.89	-2163.99	-1291.83	160.65	5766631.90	607025.82
2639	41.96	167.70	2192.64	-2164.74	-1292.48	160.80	5766631.24	607025.97
2640	41.96	167.73	2193.38	-2165.48	-1293.13	160.94	5766630.59	607026.11
2641	41.96	167.75	2194.12	-2166.22	-1293.79	161.09	5766629.94	607026.26
2642	41.96	167.77	2194.87	-2166.97	-1294.44	161.23	5766629.28	607026.40
2643	41.96	167.80	2195.61	-2167.71	-1295.09	161.37	5766628.63	607026.55
2644	41.96	167.82	2196.36	-2168.46	-1295.74	161.52	5766627.98	607026.69
2645	41.96	167.84	2197.10	-2169.20	-1296.40	161.66	5766627.32	607026.83
2646	41.96	167.86	2197.84	-2169.94	-1297.05	161.81	5766626.67	607026.98
2647	41.96	167.89	2198.59	-2170.69	-1297.70	161.95	5766626.02	607027.12
2648	41.96	167.91	2199.33	-2171.43	-1298.36	162.09	5766625.36	607027.26
2649	41.96	167.93	2200.07	-2172.17	-1299.01	162.22	5766624.71	607027.39
2650	41.96	167.94	2200.82	-2172.92	-1299.67	162.36	5766624.06	607027.53
2651	41.96	167.96	2201.56	-2173.66	-1300.32	162.50	5766623.40	607027.67
2652	41.95	167.98	2202.31	-2174.41	-1300.97	162.63	5766622.75	607027.81
2653	41.95	168.00	2203.05	-2175.15	-1301.63	162.77	5766622.09	607027.94
2654	41.95	168.02	2203.79	-2175.89	-1302.28	162.91	5766621.44	607028.08
2655	41.95	168.04	2204.54	-2176.64	-1302.94	163.05	5766620.79	607028.22
2656	41.95	168.06	2205.28	-2177.38	-1303.59	163.18	5766620.13	607028.35
2657	41.95	168.08	2206.02	-2178.12	-1304.24	163.32	5766619.48	607028.49
2658	41.95	168.10	2206.77	-2178.87	-1304.90	163.46	5766618.82	607028.63
2659	41.95	168.12	2207.51	-2179.61	-1305.55	163.59	5766618.17	607028.77
2660	41.95	168.14	2208.26	-2180.36	-1306.21	163.73	5766617.51	607028.90
2661	41.95	168.16	2209.00	-2181.10	-1306.86	163.87	5766616.86	607029.04
2662	41.94	168.18	2209.74	-2181.84	-1307.52	164.01	5766616.21	607029.18
2663	41.94	168.20	2210.49	-2182.59	-1308.17	164.14	5766615.55	607029.31
2664	41.94	168.22	2211.23	-2183.33	-1308.82	164.28	5766614.90	607029.45
2665	41.94	168.24	2211.97	-2184.07	-1309.48	164.42	5766614.24	607029.59
2666	41.94	168.25	2212.72	-2184.82	-1310.13	164.55	5766613.59	607029.73
2667	41.94	168.27	2213.46	-2185.56	-1310.79	164.69	5766612.94	607029.86

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2668	41.94	168.29	2214.21	-2186.31	-1311.44	164.83	5766612.28	607030.00
2669	41.94	168.31	2214.95	-2187.05	-1312.09	164.97	5766611.63	607030.14
2670	41.94	168.33	2215.69	-2187.79	-1312.75	165.10	5766610.97	607030.27
2671	41.93	168.35	2216.44	-2188.54	-1313.40	165.24	5766610.32	607030.41
2672	41.93	168.37	2217.18	-2189.28	-1314.06	165.38	5766609.66	607030.55
2673	41.93	168.39	2217.92	-2190.02	-1314.71	165.51	5766609.01	607030.69
2674	41.93	168.41	2218.67	-2190.77	-1315.37	165.65	5766608.36	607030.82
2675	41.93	168.43	2219.41	-2191.51	-1316.02	165.79	5766607.70	607030.96
2676	41.92	168.45	2220.16	-2192.26	-1316.67	165.92	5766607.05	607031.09
2677	41.88	168.46	2220.91	-2193.01	-1317.32	166.05	5766606.40	607031.22
2678	41.85	168.48	2221.66	-2193.76	-1317.97	166.18	5766605.75	607031.35
2679	41.82	168.50	2222.41	-2194.51	-1318.62	166.31	5766605.10	607031.48
2680	41.79	168.51	2223.16	-2195.26	-1319.27	166.44	5766604.45	607031.61
2681	41.76	168.53	2223.90	-2196.00	-1319.92	166.57	5766603.80	607031.74
2682	41.72	168.55	2224.65	-2196.75	-1320.57	166.70	5766603.15	607031.87
2683	41.69	168.56	2225.40	-2197.50	-1321.22	166.83	5766602.50	607032.01
2684	41.66	168.58	2226.15	-2198.25	-1321.87	166.96	5766601.85	607032.14
2685	41.63	168.59	2226.90	-2199.00	-1322.52	167.09	5766601.20	607032.27
2686	41.60	168.61	2227.65	-2199.75	-1323.17	167.22	5766600.56	607032.40
2687	41.56	168.63	2228.40	-2200.50	-1323.82	167.35	5766599.91	607032.53
2688	41.53	168.64	2229.15	-2201.25	-1324.47	167.48	5766599.26	607032.66
2689	41.50	168.66	2229.90	-2202.00	-1325.11	167.61	5766598.61	607032.79
2690	41.47	168.68	2230.65	-2202.75	-1325.76	167.74	5766597.96	607032.92
2691	41.44	168.69	2231.40	-2203.50	-1326.41	167.87	5766597.31	607033.05
2692	41.40	168.71	2232.15	-2204.25	-1327.06	168.00	5766596.66	607033.18
2693	41.37	168.73	2232.89	-2204.99	-1327.71	168.13	5766596.01	607033.31
2694	41.34	168.74	2233.64	-2205.74	-1328.36	168.27	5766595.36	607033.44
2695	41.31	168.76	2234.39	-2206.49	-1329.01	168.40	5766594.71	607033.57
2696	41.28	168.77	2235.14	-2207.24	-1329.66	168.53	5766594.06	607033.70
2697	41.24	168.79	2235.89	-2207.99	-1330.31	168.66	5766593.41	607033.83
2698	41.21	168.81	2236.64	-2208.74	-1330.96	168.79	5766592.76	607033.96
2699	41.18	168.82	2237.39	-2209.49	-1331.61	168.92	5766592.11	607034.09
2700	41.15	168.84	2238.14	-2210.24	-1332.26	169.05	5766591.46	607034.22
2701	41.12	168.86	2238.89	-2210.99	-1332.91	169.18	5766590.81	607034.35
2702	41.08	168.87	2239.64	-2211.74	-1333.56	169.31	5766590.16	607034.48
2703	41.05	168.89	2240.39	-2212.49	-1334.21	169.44	5766589.51	607034.61
2704	41.02	168.91	2241.14	-2213.24	-1334.85	169.56	5766588.87	607034.74
2705	41.00	168.93	2241.90	-2214.00	-1335.49	169.69	5766588.23	607034.86
2706	40.97	168.96	2242.66	-2214.76	-1336.13	169.81	5766587.59	607034.98
2707	40.94	168.98	2243.41	-2215.51	-1336.77	169.93	5766586.95	607035.10
2708	40.92	169.01	2244.17	-2216.27	-1337.41	170.05	5766586.31	607035.22
2709	40.89	169.03	2244.93	-2217.03	-1338.05	170.17	5766585.67	607035.34
2710	40.86	169.06	2245.69	-2217.79	-1338.69	170.29	5766585.03	607035.46
2711	40.84	169.08	2246.45	-2218.55	-1339.33	170.41	5766584.39	607035.59
2712	40.81	169.11	2247.21	-2219.31	-1339.97	170.54	5766583.75	607035.71
2713	40.78	169.13	2247.97	-2220.07	-1340.61	170.66	5766583.11	607035.83
2714	40.76	169.16	2248.73	-2220.83	-1341.25	170.78	5766582.47	607035.95
2715	40.73	169.18	2249.48	-2221.58	-1341.89	170.90	5766581.83	607036.07
2716	40.70	169.21	2250.24	-2222.34	-1342.53	171.02	5766581.19	607036.19
2717	40.68	169.23	2251.00	-2223.10	-1343.17	171.14	5766580.55	607036.31
2718	40.65	169.26	2251.76	-2223.86	-1343.81	171.26	5766579.91	607036.44
2719	40.63	169.28	2252.52	-2224.62	-1344.45	171.39	5766579.27	607036.56
2720	40.60	169.31	2253.28	-2225.38	-1345.09	171.51	5766578.63	607036.68
2721	40.57	169.33	2254.04	-2226.14	-1345.73	171.63	5766577.99	607036.80
2722	40.55	169.36	2254.80	-2226.90	-1346.37	171.75	5766577.35	607036.92
2723	40.52	169.38	2255.55	-2227.65	-1347.01	171.87	5766576.71	607037.04
2724	40.49	169.41	2256.31	-2228.41	-1347.65	171.99	5766576.07	607037.16
2725	40.47	169.43	2257.07	-2229.17	-1348.29	172.11	5766575.43	607037.29
2726	40.44	169.46	2257.83	-2229.93	-1348.93	172.24	5766574.79	607037.41
2727	40.41	169.48	2258.59	-2230.69	-1349.57	172.36	5766574.15	607037.53
2728	40.39	169.51	2259.35	-2231.45	-1350.21	172.48	5766573.51	607037.65
2729	40.36	169.53	2260.11	-2232.21	-1350.85	172.60	5766572.87	607037.77
2730	40.33	169.56	2260.87	-2232.97	-1351.49	172.72	5766572.23	607037.89
2731	40.31	169.58	2261.62	-2233.72	-1352.13	172.84	5766571.59	607038.01
2732	40.28	169.61	2262.38	-2234.48	-1352.77	172.96	5766570.95	607038.14
2733	40.26	169.63	2263.15	-2235.25	-1353.41	173.08	5766570.31	607038.25

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2734	40.25	169.64	2263.91	-2236.01	-1354.04	173.19	5766569.68	607038.37
2735	40.23	169.65	2264.68	-2236.78	-1354.68	173.31	5766569.05	607038.48
2736	40.21	169.66	2265.44	-2237.54	-1355.31	173.42	5766568.41	607038.59
2737	40.20	169.67	2266.21	-2238.31	-1355.94	173.54	5766567.78	607038.71
2738	40.18	169.69	2266.97	-2239.07	-1356.58	173.65	5766567.15	607038.82
2739	40.16	169.70	2267.74	-2239.84	-1357.21	173.77	5766566.51	607038.94
2740	40.15	169.71	2268.50	-2240.60	-1357.84	173.88	5766565.88	607039.05
2741	40.13	169.72	2269.27	-2241.37	-1358.47	173.99	5766565.25	607039.16
2742	40.12	169.73	2270.04	-2242.14	-1359.11	174.11	5766564.61	607039.28
2743	40.10	169.75	2270.80	-2242.90	-1359.74	174.22	5766563.98	607039.39
2744	40.08	169.76	2271.57	-2243.67	-1360.37	174.34	5766563.35	607039.51
2745	40.07	169.77	2272.33	-2244.43	-1361.01	174.45	5766562.71	607039.62
2746	40.05	169.78	2273.10	-2245.20	-1361.64	174.56	5766562.08	607039.74
2747	40.04	169.79	2273.86	-2245.96	-1362.27	174.68	5766561.45	607039.85
2748	40.02	169.81	2274.63	-2246.73	-1362.91	174.79	5766560.81	607039.96
2749	40.00	169.82	2275.39	-2247.49	-1363.54	174.91	5766560.18	607040.08
2750	39.99	169.83	2276.16	-2248.26	-1364.17	175.02	5766559.55	607040.19
2751	39.97	169.84	2276.93	-2249.03	-1364.81	175.13	5766558.92	607040.31
2752	39.95	169.85	2277.69	-2249.79	-1365.44	175.25	5766558.28	607040.42
2753	39.94	169.86	2278.46	-2250.56	-1366.07	175.36	5766557.65	607040.53
2754	39.92	169.88	2279.22	-2251.32	-1366.71	175.48	5766557.02	607040.65
2755	39.91	169.89	2279.99	-2252.09	-1367.34	175.59	5766556.38	607040.76
2756	39.89	169.90	2280.75	-2252.85	-1367.97	175.70	5766555.75	607040.88
2757	39.87	169.91	2281.52	-2253.62	-1368.60	175.82	5766555.12	607040.99
2758	39.86	169.92	2282.28	-2254.38	-1369.24	175.93	5766554.48	607041.10
2759	39.84	169.94	2283.05	-2255.15	-1369.87	176.05	5766553.85	607041.22
2760	39.83	169.95	2283.82	-2255.92	-1370.50	176.16	5766553.22	607041.33
2761	39.81	169.96	2284.58	-2256.68	-1371.14	176.27	5766552.58	607041.45
2762	39.77	170.01	2285.36	-2257.46	-1371.76	176.38	5766551.96	607041.55
2763	39.73	170.06	2286.13	-2258.23	-1372.39	176.48	5766551.34	607041.65
2764	39.69	170.11	2286.91	-2259.01	-1373.01	176.58	5766550.71	607041.75
2765	39.65	170.17	2287.68	-2259.78	-1373.63	176.68	5766550.09	607041.85
2766	39.61	170.22	2288.45	-2260.55	-1374.26	176.79	5766549.46	607041.96
2767	39.57	170.27	2289.23	-2261.33	-1374.88	176.89	5766548.84	607042.06
2768	39.53	170.32	2290.00	-2262.10	-1375.51	176.99	5766548.22	607042.16
2769	39.49	170.37	2290.78	-2262.88	-1376.13	177.09	5766547.59	607042.26
2770	39.45	170.42	2291.55	-2263.65	-1376.75	177.19	5766546.97	607042.37
2771	39.41	170.47	2292.33	-2264.43	-1377.38	177.30	5766546.34	607042.47
2772	39.37	170.52	2293.10	-2265.20	-1378.00	177.40	5766545.72	607042.57
2773	39.33	170.57	2293.88	-2265.98	-1378.63	177.50	5766545.10	607042.67
2774	39.28	170.62	2294.65	-2266.75	-1379.25	177.60	5766544.47	607042.78
2775	39.24	170.68	2295.43	-2267.53	-1379.87	177.71	5766543.85	607042.88
2776	39.20	170.73	2296.20	-2268.30	-1380.50	177.81	5766543.22	607042.98
2777	39.16	170.78	2296.98	-2269.08	-1381.12	177.91	5766542.60	607043.08
2778	39.12	170.83	2297.75	-2269.85	-1381.75	178.01	5766541.98	607043.18
2779	39.08	170.88	2298.53	-2270.63	-1382.37	178.12	5766541.35	607043.29
2780	39.04	170.93	2299.30	-2271.40	-1382.99	178.22	5766540.73	607043.39
2781	39.00	170.98	2300.08	-2272.18	-1383.62	178.32	5766540.10	607043.49
2782	38.96	171.03	2300.85	-2272.95	-1384.24	178.42	5766539.48	607043.59
2783	38.92	171.08	2301.62	-2273.72	-1384.86	178.52	5766538.86	607043.70
2784	38.88	171.13	2302.40	-2274.50	-1385.49	178.63	5766538.23	607043.80
2785	38.84	171.19	2303.17	-2275.27	-1386.11	178.73	5766537.61	607043.90
2786	38.80	171.24	2303.95	-2276.05	-1386.74	178.83	5766536.98	607044.00
2787	38.76	171.29	2304.72	-2276.82	-1387.36	178.93	5766536.36	607044.10
2788	38.72	171.34	2305.50	-2277.60	-1387.98	179.04	5766535.74	607044.21
2789	38.68	171.39	2306.27	-2278.37	-1388.61	179.14	5766535.11	607044.31
2790	38.64	171.44	2307.05	-2279.15	-1389.23	179.24	5766534.49	607044.41
2791	38.65	171.45	2307.83	-2279.93	-1389.85	179.33	5766533.87	607044.50
2792	38.65	171.46	2308.61	-2280.71	-1390.47	179.42	5766533.25	607044.59
2793	38.66	171.47	2309.39	-2281.49	-1391.09	179.51	5766532.63	607044.69
2794	38.67	171.48	2310.17	-2282.27	-1391.71	179.61	5766532.01	607044.78
2795	38.67	171.49	2310.95	-2283.05	-1392.33	179.70	5766531.39	607044.87
2796	38.68	171.50	2311.73	-2283.83	-1392.95	179.79	5766530.78	607044.96
2797	38.69	171.51	2312.51	-2284.61	-1393.57	179.88	5766530.16	607045.05
2798	38.69	171.52	2313.29	-2285.39	-1394.18	179.97	5766529.54	607045.14
2799	38.70	171.52	2314.07	-2286.17	-1394.80	180.06	5766528.92	607045.24

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2800	38.71	171.53	2314.85	-2286.95	-1395.42	180.16	5766528.30	607045.33
2801	38.71	171.54	2315.63	-2287.73	-1396.04	180.25	5766527.68	607045.42
2802	38.72	171.55	2316.41	-2288.51	-1396.66	180.34	5766527.06	607045.51
2803	38.73	171.56	2317.19	-2289.29	-1397.28	180.43	5766526.44	607045.60
2804	38.73	171.57	2317.97	-2290.07	-1397.90	180.52	5766525.82	607045.69
2805	38.74	171.58	2318.75	-2290.85	-1398.52	180.61	5766525.20	607045.79
2806	38.75	171.59	2319.53	-2291.63	-1399.14	180.71	5766524.59	607045.88
2807	38.75	171.60	2320.31	-2292.41	-1399.75	180.80	5766523.97	607045.97
2808	38.76	171.61	2321.09	-2293.19	-1400.37	180.89	5766523.35	607046.06
2809	38.77	171.62	2321.87	-2293.97	-1400.99	180.98	5766522.73	607046.15
2810	38.77	171.63	2322.65	-2294.75	-1401.61	181.07	5766522.11	607046.24
2811	38.78	171.64	2323.43	-2295.53	-1402.23	181.16	5766521.49	607046.34
2812	38.79	171.65	2324.21	-2296.31	-1402.85	181.26	5766520.87	607046.43
2813	38.79	171.66	2324.99	-2297.09	-1403.47	181.35	5766520.25	607046.52
2814	38.80	171.66	2325.77	-2297.87	-1404.09	181.44	5766519.63	607046.61
2815	38.80	171.67	2326.55	-2298.65	-1404.71	181.53	5766519.02	607046.70
2816	38.81	171.68	2327.33	-2299.43	-1405.33	181.62	5766518.40	607046.79
2817	38.82	171.69	2328.11	-2300.21	-1405.94	181.71	5766517.78	607046.89
2818	38.82	171.70	2328.89	-2300.99	-1406.56	181.81	5766517.16	607046.98
2819	38.83	171.71	2329.67	-2301.77	-1407.18	181.90	5766516.54	607047.07
2820	38.83	171.68	2330.45	-2302.55	-1407.80	181.99	5766515.92	607047.16
2821	38.84	171.66	2331.23	-2303.33	-1408.42	182.09	5766515.30	607047.26
2822	38.84	171.64	2332.00	-2304.10	-1409.04	182.18	5766514.68	607047.35
2823	38.84	171.62	2332.78	-2304.88	-1409.66	182.27	5766514.06	607047.45
2824	38.84	171.59	2333.56	-2305.66	-1410.28	182.37	5766513.44	607047.54
2825	38.85	171.57	2334.34	-2306.44	-1410.91	182.46	5766512.82	607047.63
2826	38.85	171.55	2335.12	-2307.22	-1411.53	182.56	5766512.20	607047.73
2827	38.85	171.53	2335.90	-2308.00	-1412.15	182.65	5766511.58	607047.82
2828	38.86	171.50	2336.68	-2308.78	-1412.77	182.74	5766510.95	607047.92
2829	38.86	171.48	2337.45	-2309.55	-1413.39	182.84	5766510.33	607048.01
2830	38.86	171.46	2338.23	-2310.33	-1414.01	182.93	5766509.71	607048.10
2831	38.86	171.44	2339.01	-2311.11	-1414.63	183.03	5766509.09	607048.20
2832	38.87	171.42	2339.79	-2311.89	-1415.25	183.12	5766508.47	607048.29
2833	38.87	171.39	2340.57	-2312.67	-1415.87	183.21	5766507.85	607048.39
2834	38.87	171.37	2341.35	-2313.45	-1416.49	183.31	5766507.23	607048.48
2835	38.88	171.35	2342.13	-2314.23	-1417.11	183.40	5766506.61	607048.57
2836	38.88	171.33	2342.90	-2315.00	-1417.73	183.50	5766505.99	607048.67
2837	38.88	171.30	2343.68	-2315.78	-1418.35	183.59	5766505.37	607048.76
2838	38.88	171.28	2344.46	-2316.56	-1418.97	183.68	5766504.75	607048.86
2839	38.89	171.26	2345.24	-2317.34	-1419.59	183.78	5766504.13	607048.95
2840	38.89	171.24	2346.02	-2318.12	-1420.21	183.87	5766503.51	607049.04
2841	38.89	171.21	2346.80	-2318.90	-1420.83	183.97	5766502.89	607049.14
2842	38.89	171.19	2347.58	-2319.68	-1421.45	184.06	5766502.27	607049.23
2843	38.90	171.17	2348.35	-2320.45	-1422.07	184.15	5766501.65	607049.33
2844	38.90	171.15	2349.13	-2321.23	-1422.69	184.25	5766501.03	607049.42
2845	38.90	171.12	2349.91	-2322.01	-1423.32	184.34	5766500.41	607049.51
2846	38.91	171.10	2350.69	-2322.79	-1423.94	184.44	5766499.79	607049.61
2847	38.91	171.08	2351.47	-2323.57	-1424.56	184.53	5766499.17	607049.70
2848	38.93	171.07	2352.24	-2324.34	-1425.18	184.63	5766498.54	607049.80
2849	38.96	171.08	2353.02	-2325.12	-1425.81	184.72	5766497.92	607049.89
2850	38.98	171.09	2353.79	-2325.89	-1426.43	184.82	5766497.29	607049.99
2851	39.01	171.09	2354.56	-2326.66	-1427.06	184.92	5766496.66	607050.09
2852	39.04	171.10	2355.34	-2327.44	-1427.68	185.01	5766496.04	607050.19
2853	39.07	171.11	2356.11	-2328.21	-1428.31	185.11	5766495.41	607050.28
2854	39.10	171.11	2356.89	-2328.99	-1428.94	185.21	5766494.78	607050.38
2855	39.13	171.12	2357.66	-2329.76	-1429.56	185.31	5766494.16	607050.48
2856	39.16	171.12	2358.43	-2330.53	-1430.19	185.40	5766493.53	607050.58
2857	39.19	171.13	2359.21	-2331.31	-1430.82	185.50	5766492.91	607050.67
2858	39.21	171.14	2359.98	-2332.08	-1431.44	185.60	5766492.28	607050.77
2859	39.24	171.14	2360.75	-2332.85	-1432.07	185.70	5766491.65	607050.87
2860	39.27	171.15	2361.53	-2333.63	-1432.69	185.79	5766491.03	607050.97
2861	39.30	171.16	2362.30	-2334.40	-1433.32	185.89	5766490.40	607051.06
2862	39.33	171.16	2363.07	-2335.17	-1433.95	185.99	5766489.78	607051.16
2863	39.36	171.17	2363.85	-2335.95	-1434.57	186.09	5766489.15	607051.26
2864	39.39	171.17	2364.62	-2336.72	-1435.20	186.18	5766488.52	607051.35
2865	39.42	171.18	2365.40	-2337.50	-1435.82	186.28	5766487.90	607051.45

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2866	39.44	171.19	2366.17	-2338.27	-1436.45	186.38	5766487.27	607051.55
2867	39.47	171.19	2366.94	-2339.04	-1437.08	186.48	5766486.65	607051.65
2868	39.50	171.20	2367.72	-2339.82	-1437.70	186.57	5766486.02	607051.74
2869	39.53	171.21	2368.49	-2340.59	-1438.33	186.67	5766485.39	607051.84
2870	39.56	171.21	2369.26	-2341.36	-1438.95	186.77	5766484.77	607051.94
2871	39.59	171.22	2370.04	-2342.14	-1439.58	186.86	5766484.14	607052.04
2872	39.62	171.23	2370.81	-2342.91	-1440.21	186.96	5766483.51	607052.13
2873	39.65	171.23	2371.58	-2343.68	-1440.83	187.06	5766482.89	607052.23
2874	39.67	171.24	2372.36	-2344.46	-1441.46	187.16	5766482.26	607052.33
2875	39.70	171.24	2373.13	-2345.23	-1442.09	187.25	5766481.64	607052.43
2876	39.73	171.25	2373.90	-2346.00	-1442.71	187.35	5766481.01	607052.52
2877	39.76	171.25	2374.67	-2346.77	-1443.35	187.45	5766480.37	607052.62
2878	39.78	171.26	2375.44	-2347.54	-1443.99	187.55	5766479.74	607052.72
2879	39.80	171.26	2376.20	-2348.30	-1444.62	187.64	5766479.10	607052.81
2880	39.83	171.27	2376.97	-2349.07	-1445.26	187.74	5766478.46	607052.91
2881	39.85	171.27	2377.73	-2349.83	-1445.89	187.84	5766477.83	607053.01
2882	39.88	171.28	2378.50	-2350.60	-1446.53	187.94	5766477.19	607053.11
2883	39.90	171.28	2379.26	-2351.36	-1447.17	188.03	5766476.55	607053.20
2884	39.93	171.28	2380.03	-2352.13	-1447.80	188.13	5766475.92	607053.30
2885	39.95	171.29	2380.79	-2352.89	-1448.44	188.23	5766475.28	607053.40
2886	39.98	171.29	2381.56	-2353.66	-1449.08	188.32	5766474.64	607053.50
2887	40.00	171.30	2382.32	-2354.42	-1449.71	188.42	5766474.01	607053.59
2888	40.02	171.30	2383.09	-2355.19	-1450.35	188.52	5766473.37	607053.69
2889	40.05	171.30	2383.85	-2355.95	-1450.99	188.62	5766472.74	607053.79
2890	40.07	171.31	2384.62	-2356.72	-1451.62	188.71	5766472.10	607053.88
2891	40.10	171.31	2385.38	-2357.48	-1452.26	188.81	5766471.46	607053.98
2892	40.12	171.32	2386.15	-2358.25	-1452.90	188.91	5766470.83	607054.08
2893	40.15	171.32	2386.91	-2359.01	-1453.53	189.01	5766470.19	607054.18
2894	40.17	171.33	2387.68	-2359.78	-1454.17	189.10	5766469.55	607054.27
2895	40.20	171.33	2388.44	-2360.54	-1454.80	189.20	5766468.92	607054.37
2896	40.22	171.33	2389.21	-2361.31	-1455.44	189.30	5766468.28	607054.47
2897	40.25	171.34	2389.97	-2362.07	-1456.08	189.39	5766467.64	607054.57
2898	40.27	171.34	2390.74	-2362.84	-1456.71	189.49	5766467.01	607054.66
2899	40.29	171.35	2391.50	-2363.60	-1457.35	189.59	5766466.37	607054.76
2900	40.32	171.35	2392.27	-2364.37	-1457.99	189.69	5766465.73	607054.86
2901	40.34	171.36	2393.03	-2365.13	-1458.62	189.78	5766465.10	607054.96
2902	40.37	171.36	2393.80	-2365.90	-1459.26	189.88	5766464.46	607055.05
2903	40.39	171.36	2394.56	-2366.66	-1459.90	189.98	5766463.83	607055.15
2904	40.42	171.37	2395.33	-2367.43	-1460.53	190.08	5766463.19	607055.25
2905	40.44	171.37	2396.09	-2368.19	-1461.17	190.17	5766462.55	607055.34
2906	40.45	171.36	2396.85	-2368.95	-1461.82	190.27	5766461.90	607055.44
2907	40.47	171.36	2397.61	-2369.71	-1462.46	190.37	5766461.26	607055.54
2908	40.49	171.36	2398.37	-2370.47	-1463.11	190.47	5766460.62	607055.64
2909	40.50	171.35	2399.12	-2371.22	-1463.75	190.57	5766459.97	607055.74
2910	40.52	171.35	2399.88	-2371.98	-1464.39	190.67	5766459.33	607055.84
2911	40.54	171.35	2400.64	-2372.74	-1465.04	190.76	5766458.68	607055.94
2912	40.56	171.34	2401.40	-2373.50	-1465.68	190.86	5766458.04	607056.03
2913	40.57	171.34	2402.16	-2374.26	-1466.33	190.96	5766457.40	607056.13
2914	40.59	171.33	2402.92	-2375.02	-1466.97	191.06	5766456.75	607056.23
2915	40.61	171.33	2403.68	-2375.78	-1467.61	191.16	5766456.11	607056.33
2916	40.62	171.33	2404.43	-2376.53	-1468.26	191.26	5766455.46	607056.43
2917	40.64	171.32	2405.19	-2377.29	-1468.90	191.35	5766454.82	607056.53
2918	40.66	171.32	2405.95	-2378.05	-1469.55	191.45	5766454.17	607056.62
2919	40.67	171.31	2406.71	-2378.81	-1470.19	191.55	5766453.53	607056.72
2920	40.69	171.31	2407.47	-2379.57	-1470.84	191.65	5766452.89	607056.82
2921	40.71	171.31	2408.23	-2380.33	-1471.48	191.75	5766452.24	607056.92
2922	40.72	171.30	2408.98	-2381.08	-1472.12	191.85	5766451.60	607057.02
2923	40.74	171.30	2409.74	-2381.84	-1472.77	191.94	5766450.95	607057.12
2924	40.76	171.30	2410.50	-2382.60	-1473.41	192.04	5766450.31	607057.21
2925	40.77	171.29	2411.26	-2383.36	-1474.06	192.14	5766449.66	607057.31
2926	40.79	171.29	2412.02	-2384.12	-1474.70	192.24	5766449.02	607057.41
2927	40.81	171.28	2412.78	-2384.88	-1475.35	192.34	5766448.38	607057.51
2928	40.82	171.28	2413.54	-2385.64	-1475.99	192.44	5766447.73	607057.61
2929	40.84	171.28	2414.29	-2386.39	-1476.63	192.53	5766447.09	607057.71
2930	40.86	171.27	2415.05	-2387.15	-1477.28	192.63	5766446.44	607057.80
2931	40.87	171.27	2415.81	-2387.91	-1477.92	192.73	5766445.80	607057.90

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2932	40.89	171.26	2416.57	-2388.67	-1478.57	192.83	5766445.16	607058.00
2933	40.91	171.26	2417.33	-2389.43	-1479.21	192.93	5766444.51	607058.10
2934	40.93	171.27	2418.08	-2390.18	-1479.86	193.03	5766443.86	607058.20
2935	40.96	171.28	2418.83	-2390.93	-1480.51	193.13	5766443.21	607058.30
2936	40.98	171.29	2419.58	-2391.68	-1481.17	193.22	5766442.56	607058.39
2937	41.00	171.31	2420.34	-2392.44	-1481.82	193.32	5766441.90	607058.49
2938	41.03	171.32	2421.09	-2393.19	-1482.47	193.42	5766441.25	607058.59
2939	41.05	171.33	2421.84	-2393.94	-1483.12	193.52	5766440.60	607058.69
2940	41.07	171.34	2422.59	-2394.69	-1483.77	193.62	5766439.95	607058.79
2941	41.10	171.35	2423.34	-2395.44	-1484.43	193.71	5766439.30	607058.89
2942	41.12	171.37	2424.10	-2396.20	-1485.08	193.81	5766438.64	607058.98
2943	41.15	171.38	2424.85	-2396.95	-1485.73	193.91	5766437.99	607059.08
2944	41.17	171.39	2425.60	-2397.70	-1486.38	194.01	5766437.34	607059.18
2945	41.19	171.40	2426.35	-2398.45	-1487.03	194.11	5766436.69	607059.28
2946	41.22	171.41	2427.10	-2399.20	-1487.69	194.21	5766436.04	607059.38
2947	41.24	171.43	2427.85	-2399.95	-1488.34	194.30	5766435.38	607059.48
2948	41.27	171.44	2428.61	-2400.71	-1488.99	194.40	5766434.73	607059.57
2949	41.29	171.45	2429.36	-2401.46	-1489.64	194.50	5766434.08	607059.67
2950	41.31	171.46	2430.11	-2402.21	-1490.29	194.60	5766433.43	607059.77
2951	41.34	171.47	2430.86	-2402.96	-1490.95	194.70	5766432.78	607059.87
2952	41.36	171.49	2431.61	-2403.71	-1491.60	194.80	5766432.12	607059.97
2953	41.39	171.50	2432.37	-2404.47	-1492.25	194.89	5766431.47	607060.07
2954	41.41	171.51	2433.12	-2405.22	-1492.90	194.99	5766430.82	607060.16
2955	41.43	171.52	2433.87	-2405.97	-1493.55	195.09	5766430.17	607060.26
2956	41.46	171.53	2434.62	-2406.72	-1494.21	195.19	5766429.52	607060.36
2957	41.48	171.55	2435.37	-2407.47	-1494.86	195.29	5766428.86	607060.46
2958	41.51	171.56	2436.12	-2408.22	-1495.51	195.38	5766428.21	607060.56
2959	41.53	171.57	2436.88	-2408.98	-1496.16	195.48	5766427.56	607060.65
2960	41.55	171.58	2437.63	-2409.73	-1496.81	195.58	5766426.91	607060.75
2961	41.58	171.59	2438.38	-2410.48	-1497.47	195.68	5766426.26	607060.85
2962	41.56	171.59	2439.13	-2411.23	-1498.11	195.78	5766425.61	607060.95
2963	41.50	171.57	2439.89	-2411.99	-1498.76	195.88	5766424.96	607061.05
2964	41.44	171.54	2440.65	-2412.75	-1499.40	195.98	5766424.32	607061.15
2965	41.38	171.52	2441.41	-2413.51	-1500.05	196.07	5766423.67	607061.25
2966	41.32	171.50	2442.17	-2414.27	-1500.69	196.17	5766423.03	607061.35
2967	41.26	171.47	2442.92	-2415.02	-1501.34	196.27	5766422.38	607061.44
2968	41.20	171.45	2443.68	-2415.78	-1501.98	196.37	5766421.74	607061.54
2969	41.14	171.43	2444.44	-2416.54	-1502.63	196.47	5766421.09	607061.64
2970	41.08	171.41	2445.20	-2417.30	-1503.27	196.57	5766420.45	607061.74
2971	41.02	171.38	2445.96	-2418.06	-1503.92	196.67	5766419.80	607061.84
2972	40.96	171.36	2446.71	-2418.81	-1504.56	196.77	5766419.16	607061.94
2973	40.90	171.34	2447.47	-2419.57	-1505.21	196.87	5766418.52	607062.04
2974	40.84	171.31	2448.23	-2420.33	-1505.85	196.97	5766417.87	607062.14
2975	40.78	171.29	2448.99	-2421.09	-1506.50	197.06	5766417.23	607062.24
2976	40.72	171.27	2449.75	-2421.85	-1507.14	197.16	5766416.58	607062.33
2977	40.66	171.25	2450.50	-2422.60	-1507.79	197.26	5766415.94	607062.43
2978	40.60	171.22	2451.26	-2423.36	-1508.43	197.36	5766415.29	607062.53
2979	40.54	171.20	2452.02	-2424.12	-1509.08	197.46	5766414.65	607062.63
2980	40.48	171.18	2452.78	-2424.88	-1509.72	197.56	5766414.00	607062.73
2981	40.42	171.15	2453.53	-2425.63	-1510.36	197.66	5766413.36	607062.83
2982	40.36	171.13	2454.29	-2426.39	-1511.01	197.76	5766412.71	607062.93
2983	40.30	171.11	2455.05	-2427.15	-1511.65	197.86	5766412.07	607063.03
2984	40.24	171.09	2455.81	-2427.91	-1512.30	197.95	5766411.42	607063.13
2985	40.18	171.06	2456.57	-2428.67	-1512.94	198.05	5766410.78	607063.23
2986	40.12	171.04	2457.32	-2429.42	-1513.59	198.15	5766410.13	607063.32
2987	40.06	171.02	2458.08	-2430.18	-1514.23	198.25	5766409.49	607063.42
2988	40.00	171.00	2458.84	-2430.94	-1514.88	198.35	5766408.84	607063.52
2989	39.94	170.97	2459.60	-2431.70	-1515.52	198.45	5766408.20	607063.62
2990	39.88	170.95	2460.36	-2432.46	-1516.17	198.55	5766407.55	607063.72
2991	39.85	170.95	2461.12	-2433.22	-1516.81	198.65	5766406.92	607063.82
2992	39.84	170.96	2461.89	-2433.99	-1517.44	198.75	5766406.28	607063.92
2993	39.84	170.97	2462.66	-2434.76	-1518.07	198.84	5766405.65	607064.02
2994	39.84	170.98	2463.42	-2435.52	-1518.70	198.94	5766405.02	607064.12
2995	39.83	171.00	2464.19	-2436.29	-1519.33	199.04	5766404.39	607064.21
2996	39.83	171.01	2464.96	-2437.06	-1519.97	199.14	5766403.75	607064.31
2997	39.82	171.02	2465.73	-2437.83	-1520.60	199.24	5766403.12	607064.41

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2998	39.82	171.03	2466.50	-2438.60	-1521.23	199.34	5766402.49	607064.51
2999	39.81	171.04	2467.27	-2439.37	-1521.86	199.44	5766401.86	607064.61
3000	39.81	171.06	2468.04	-2440.14	-1522.50	199.54	5766401.23	607064.71
3001	39.81	171.07	2468.80	-2440.90	-1523.13	199.64	5766400.59	607064.81
3002	39.80	171.08	2469.57	-2441.67	-1523.76	199.73	5766399.96	607064.91
3003	39.80	171.09	2470.34	-2442.44	-1524.39	199.83	5766399.33	607065.01
3004	39.79	171.11	2471.11	-2443.21	-1525.03	199.93	5766398.70	607065.10
3005	39.79	171.12	2471.88	-2443.98	-1525.66	200.03	5766398.06	607065.20
3006	39.79	171.13	2472.65	-2444.75	-1526.29	200.13	5766397.43	607065.30
3007	39.78	171.14	2473.41	-2445.51	-1526.92	200.23	5766396.80	607065.40
3008	39.78	171.15	2474.18	-2446.28	-1527.55	200.33	5766396.17	607065.50
3009	39.77	171.17	2474.95	-2447.05	-1528.19	200.43	5766395.53	607065.60
3010	39.77	171.18	2475.72	-2447.82	-1528.82	200.53	5766394.90	607065.70
3011	39.76	171.19	2476.49	-2448.59	-1529.45	200.62	5766394.27	607065.80
3012	39.76	171.20	2477.26	-2449.36	-1530.08	200.72	5766393.64	607065.89
3013	39.76	171.21	2478.02	-2450.12	-1530.72	200.82	5766393.01	607065.99
3014	39.75	171.23	2478.79	-2450.89	-1531.35	200.92	5766392.37	607066.09
3015	39.75	171.24	2479.56	-2451.66	-1531.98	201.02	5766391.74	607066.19
3016	39.74	171.25	2480.33	-2452.43	-1532.61	201.12	5766391.11	607066.29
3017	39.74	171.26	2481.10	-2453.20	-1533.25	201.22	5766390.48	607066.39
3018	39.74	171.28	2481.87	-2453.97	-1533.88	201.32	5766389.84	607066.49
3019	39.73	171.29	2482.63	-2454.73	-1534.51	201.42	5766389.21	607066.59
3020	39.73	171.30	2483.40	-2455.50	-1535.14	201.51	5766388.58	607066.68
3021	39.74	171.31	2484.17	-2456.27	-1535.78	201.61	5766387.95	607066.78
3022	39.75	171.31	2484.94	-2457.04	-1536.41	201.70	5766387.31	607066.87
3023	39.75	171.32	2485.71	-2457.81	-1537.04	201.80	5766386.68	607066.97
3024	39.76	171.33	2486.48	-2458.58	-1537.68	201.89	5766386.05	607067.07
3025	39.76	171.34	2487.24	-2459.34	-1538.31	201.99	5766385.41	607067.16
3026	39.77	171.35	2488.01	-2460.11	-1538.94	202.08	5766384.78	607067.26
3027	39.78	171.36	2488.78	-2460.88	-1539.57	202.18	5766384.15	607067.35
3028	39.78	171.37	2489.55	-2461.65	-1540.21	202.28	5766383.51	607067.45
3029	39.79	171.38	2490.32	-2462.42	-1540.84	202.37	5766382.88	607067.54
3030	39.79	171.39	2491.08	-2463.18	-1541.47	202.47	5766382.25	607067.64
3031	39.80	171.39	2491.85	-2463.95	-1542.11	202.56	5766381.61	607067.73
3032	39.80	171.40	2492.62	-2464.72	-1542.74	202.66	5766380.98	607067.83
3033	39.81	171.41	2493.39	-2465.49	-1543.37	202.75	5766380.35	607067.93
3034	39.82	171.42	2494.16	-2466.26	-1544.01	202.85	5766379.71	607068.02
3035	39.82	171.43	2494.93	-2467.03	-1544.64	202.94	5766379.08	607068.12
3036	39.83	171.44	2495.69	-2467.79	-1545.27	203.04	5766378.45	607068.21
3037	39.83	171.45	2496.46	-2468.56	-1545.91	203.14	5766377.82	607068.31
3038	39.84	171.46	2497.23	-2469.33	-1546.54	203.23	5766377.18	607068.40
3039	39.85	171.47	2498.00	-2470.10	-1547.17	203.33	5766376.55	607068.50
3040	39.85	171.48	2498.77	-2470.87	-1547.81	203.42	5766375.92	607068.59
3041	39.86	171.48	2499.53	-2471.63	-1548.44	203.52	5766375.28	607068.69
3042	39.86	171.49	2500.30	-2472.40	-1549.07	203.61	5766374.65	607068.78
3043	39.87	171.50	2501.07	-2473.17	-1549.71	203.71	5766374.02	607068.88
3044	39.87	171.51	2501.84	-2473.94	-1550.34	203.80	5766373.38	607068.98
3045	39.88	171.52	2502.61	-2474.71	-1550.97	203.90	5766372.75	607069.07
3046	39.89	171.53	2503.37	-2475.47	-1551.60	204.00	5766372.12	607069.17
3047	39.89	171.54	2504.14	-2476.24	-1552.24	204.09	5766371.48	607069.26
3048	39.90	171.55	2504.91	-2477.01	-1552.87	204.19	5766370.85	607069.36
3049	39.90	171.55	2505.68	-2477.78	-1553.50	204.28	5766370.22	607069.45
3050	39.90	171.55	2506.45	-2478.55	-1554.14	204.37	5766369.58	607069.55
3051	39.89	171.55	2507.21	-2479.31	-1554.77	204.47	5766368.95	607069.64
3052	39.89	171.56	2507.98	-2480.08	-1555.41	204.56	5766368.31	607069.73
3053	39.89	171.56	2508.75	-2480.85	-1556.04	204.66	5766367.68	607069.83
3054	39.89	171.56	2509.52	-2481.62	-1556.68	204.75	5766367.05	607069.92
3055	39.89	171.56	2510.28	-2482.38	-1557.31	204.84	5766366.41	607070.02
3056	39.88	171.56	2511.05	-2483.15	-1557.94	204.94	5766365.78	607070.11
3057	39.88	171.57	2511.82	-2483.92	-1558.58	205.03	5766365.14	607070.20
3058	39.88	171.57	2512.59	-2484.69	-1559.21	205.13	5766364.51	607070.30
3059	39.88	171.57	2513.35	-2485.45	-1559.85	205.22	5766363.88	607070.39
3060	39.88	171.57	2514.12	-2486.22	-1560.48	205.31	5766363.24	607070.49
3061	39.87	171.57	2514.89	-2486.99	-1561.11	205.41	5766362.61	607070.58
3062	39.87	171.57	2515.66	-2487.76	-1561.75	205.50	5766361.97	607070.67
3063	39.87	171.58	2516.42	-2488.52	-1562.38	205.60	5766361.34	607070.77

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3064	39.87	171.58	2517.19	-2489.29	-1563.02	205.69	5766360.71	607070.86
3065	39.87	171.58	2517.96	-2490.06	-1563.65	205.78	5766360.07	607070.96
3066	39.86	171.58	2518.73	-2490.83	-1564.28	205.88	5766359.44	607071.05
3067	39.86	171.58	2519.49	-2491.59	-1564.92	205.97	5766358.80	607071.14
3068	39.86	171.58	2520.26	-2492.36	-1565.55	206.07	5766358.17	607071.24
3069	39.86	171.59	2521.03	-2493.13	-1566.19	206.16	5766357.53	607071.33
3070	39.85	171.59	2521.80	-2493.90	-1566.82	206.25	5766356.90	607071.42
3071	39.85	171.59	2522.56	-2494.66	-1567.46	206.35	5766356.27	607071.52
3072	39.85	171.59	2523.33	-2495.43	-1568.09	206.44	5766355.63	607071.61
3073	39.85	171.59	2524.10	-2496.20	-1568.72	206.54	5766355.00	607071.71
3074	39.85	171.59	2524.87	-2496.97	-1569.36	206.63	5766354.36	607071.80
3075	39.84	171.60	2525.63	-2497.73	-1569.99	206.72	5766353.73	607071.89
3076	39.84	171.60	2526.40	-2498.50	-1570.63	206.82	5766353.10	607071.99
3077	39.84	171.60	2527.17	-2499.27	-1571.26	206.91	5766352.46	607072.08
3078	39.85	171.62	2527.93	-2500.03	-1571.90	207.00	5766351.83	607072.17
3079	39.86	171.63	2528.70	-2500.80	-1572.53	207.09	5766351.19	607072.27
3080	39.88	171.64	2529.47	-2501.57	-1573.17	207.19	5766350.55	607072.36
3081	39.89	171.66	2530.23	-2502.33	-1573.81	207.28	5766349.92	607072.45
3082	39.90	171.67	2531.00	-2503.10	-1574.44	207.37	5766349.28	607072.54
3083	39.91	171.69	2531.76	-2503.86	-1575.08	207.46	5766348.64	607072.63
3084	39.93	171.70	2532.53	-2504.63	-1575.71	207.55	5766348.01	607072.72
3085	39.94	171.72	2533.30	-2505.40	-1576.35	207.64	5766347.37	607072.82
3086	39.95	171.73	2534.06	-2506.16	-1576.99	207.74	5766346.73	607072.91
3087	39.96	171.75	2534.83	-2506.93	-1577.62	207.83	5766346.10	607073.00
3088	39.98	171.76	2535.59	-2507.69	-1578.26	207.92	5766345.46	607073.09
3089	39.99	171.78	2536.36	-2508.46	-1578.90	208.01	5766344.83	607073.18
3090	40.00	171.79	2537.13	-2509.23	-1579.53	208.10	5766344.19	607073.27
3091	40.01	171.81	2537.89	-2509.99	-1580.17	208.19	5766343.55	607073.36
3092	40.03	171.82	2538.66	-2510.76	-1580.81	208.28	5766342.92	607073.46
3093	40.04	171.84	2539.42	-2511.52	-1581.44	208.38	5766342.28	607073.55
3094	40.05	171.85	2540.19	-2512.29	-1582.08	208.47	5766341.64	607073.64
3095	40.06	171.87	2540.96	-2513.06	-1582.71	208.56	5766341.01	607073.73
3096	40.07	171.88	2541.72	-2513.82	-1583.35	208.65	5766340.37	607073.82
3097	40.09	171.90	2542.49	-2514.59	-1583.99	208.74	5766339.73	607073.91
3098	40.10	171.91	2543.25	-2515.35	-1584.62	208.83	5766339.10	607074.01
3099	40.11	171.93	2544.02	-2516.12	-1585.26	208.93	5766338.46	607074.10
3100	40.12	171.94	2544.78	-2516.88	-1585.90	209.02	5766337.83	607074.19
3101	40.14	171.96	2545.55	-2517.65	-1586.53	209.11	5766337.19	607074.28
3102	40.15	171.97	2546.32	-2518.42	-1587.17	209.20	5766336.55	607074.37
3103	40.16	171.99	2547.08	-2519.18	-1587.80	209.29	5766335.92	607074.46
3104	40.17	172.00	2547.85	-2519.95	-1588.44	209.38	5766335.28	607074.56
3105	40.20	172.01	2548.61	-2520.71	-1589.08	209.48	5766334.64	607074.65
3106	40.24	172.01	2549.37	-2521.47	-1589.73	209.57	5766333.99	607074.74
3107	40.28	172.01	2550.12	-2522.22	-1590.38	209.66	5766333.35	607074.83
3108	40.32	172.02	2550.88	-2522.98	-1591.02	209.75	5766332.70	607074.92
3109	40.36	172.02	2551.64	-2523.74	-1591.67	209.84	5766332.05	607075.01
3110	40.41	172.02	2552.40	-2524.50	-1592.32	209.93	5766331.40	607075.10
3111	40.45	172.02	2553.15	-2525.25	-1592.96	210.02	5766330.76	607075.19
3112	40.49	172.03	2553.91	-2526.01	-1593.61	210.11	5766330.11	607075.28
3113	40.53	172.03	2554.67	-2526.77	-1594.26	210.20	5766329.46	607075.37
3114	40.57	172.03	2555.42	-2527.52	-1594.91	210.29	5766328.82	607075.46
3115	40.61	172.03	2556.18	-2528.28	-1595.55	210.38	5766328.17	607075.55
3116	40.66	172.03	2556.94	-2529.04	-1596.20	210.47	5766327.52	607075.64
3117	40.70	172.04	2557.69	-2529.79	-1596.85	210.56	5766326.87	607075.73
3118	40.74	172.04	2558.45	-2530.55	-1597.49	210.65	5766326.23	607075.82
3119	40.78	172.04	2559.21	-2531.31	-1598.14	210.74	5766325.58	607075.91
3120	40.82	172.04	2559.97	-2532.07	-1598.79	210.83	5766324.93	607076.00
3121	40.86	172.04	2560.72	-2532.82	-1599.44	210.92	5766324.29	607076.09
3122	40.91	172.05	2561.48	-2533.58	-1600.08	211.01	5766323.64	607076.19
3123	40.95	172.05	2562.24	-2534.34	-1600.73	211.10	5766322.99	607076.28
3124	40.99	172.05	2562.99	-2535.09	-1601.38	211.19	5766322.35	607076.37
3125	41.03	172.05	2563.75	-2535.85	-1602.02	211.29	5766321.70	607076.46
3126	41.07	172.05	2564.51	-2536.61	-1602.67	211.38	5766321.05	607076.55
3127	41.11	172.06	2565.27	-2537.37	-1603.32	211.47	5766320.40	607076.64
3128	41.15	172.06	2566.02	-2538.12	-1603.96	211.56	5766319.76	607076.73
3129	41.20	172.06	2566.78	-2538.88	-1604.61	211.65	5766319.11	607076.82

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3130	41.24	172.06	2567.54	-2539.64	-1605.26	211.74	5766318.46	607076.91
3131	41.28	172.06	2568.29	-2540.39	-1605.91	211.83	5766317.82	607077.00
3132	41.32	172.07	2569.05	-2541.15	-1606.55	211.92	5766317.17	607077.09
3133	41.36	172.07	2569.81	-2541.91	-1607.20	212.01	5766316.52	607077.18
3134	41.40	172.07	2570.56	-2542.66	-1607.85	212.10	5766315.87	607077.27
3135	41.44	172.08	2571.31	-2543.41	-1608.51	212.19	5766315.21	607077.36
3136	41.47	172.10	2572.05	-2544.15	-1609.17	212.28	5766314.55	607077.45
3137	41.51	172.11	2572.80	-2544.90	-1609.83	212.37	5766313.89	607077.54
3138	41.54	172.13	2573.54	-2545.64	-1610.49	212.46	5766313.23	607077.63
3139	41.58	172.14	2574.29	-2546.39	-1611.15	212.55	5766312.57	607077.72
3140	41.61	172.16	2575.03	-2547.13	-1611.82	212.64	5766311.91	607077.81
3141	41.64	172.17	2575.78	-2547.88	-1612.48	212.73	5766311.24	607077.90
3142	41.68	172.19	2576.52	-2548.62	-1613.14	212.82	5766310.58	607077.99
3143	41.71	172.20	2577.27	-2549.37	-1613.80	212.91	5766309.92	607078.08
3144	41.75	172.22	2578.01	-2550.11	-1614.46	213.00	5766309.26	607078.17
3145	41.78	172.23	2578.75	-2550.85	-1615.12	213.09	5766308.60	607078.26
3146	41.81	172.24	2579.50	-2551.60	-1615.79	213.18	5766307.94	607078.35
3147	41.85	172.26	2580.24	-2552.34	-1616.45	213.27	5766307.27	607078.44
3148	41.88	172.27	2580.99	-2553.09	-1617.11	213.36	5766306.61	607078.53
3149	41.91	172.29	2581.73	-2553.83	-1617.77	213.44	5766305.95	607078.62
3150	41.95	172.30	2582.48	-2554.58	-1618.43	213.53	5766305.29	607078.71
3151	41.98	172.32	2583.22	-2555.32	-1619.09	213.62	5766304.63	607078.80
3152	42.02	172.33	2583.96	-2556.06	-1619.76	213.71	5766303.97	607078.89
3153	42.05	172.35	2584.71	-2556.81	-1620.42	213.80	5766303.30	607078.98
3154	42.08	172.36	2585.45	-2557.55	-1621.08	213.89	5766302.64	607079.06
3155	42.12	172.38	2586.20	-2558.30	-1621.74	213.98	5766301.98	607079.15
3156	42.15	172.39	2586.94	-2559.04	-1622.40	214.07	5766301.32	607079.24
3157	42.19	172.41	2587.69	-2559.79	-1623.06	214.16	5766300.66	607079.33
3158	42.22	172.42	2588.43	-2560.53	-1623.73	214.25	5766300.00	607079.42
3159	42.25	172.44	2589.17	-2561.27	-1624.39	214.34	5766299.33	607079.51
3160	42.29	172.45	2589.92	-2562.02	-1625.05	214.43	5766298.67	607079.60
3161	42.32	172.47	2590.66	-2562.76	-1625.71	214.52	5766298.01	607079.69
3162	42.36	172.48	2591.41	-2563.51	-1626.37	214.61	5766297.35	607079.78
3163	42.38	172.49	2592.15	-2564.25	-1627.04	214.70	5766296.68	607079.87
3164	42.37	172.49	2592.89	-2564.99	-1627.70	214.79	5766296.02	607079.96
3165	42.37	172.49	2593.63	-2565.73	-1628.37	214.88	5766295.35	607080.05
3166	42.36	172.48	2594.37	-2566.47	-1629.04	214.96	5766294.68	607080.14
3167	42.36	172.48	2595.11	-2567.21	-1629.71	215.05	5766294.02	607080.22
3168	42.35	172.48	2595.85	-2567.95	-1630.37	215.14	5766293.35	607080.31
3169	42.34	172.48	2596.59	-2568.69	-1631.04	215.23	5766292.68	607080.40
3170	42.34	172.47	2597.33	-2569.43	-1631.71	215.32	5766292.01	607080.49
3171	42.33	172.47	2598.07	-2570.17	-1632.37	215.41	5766291.35	607080.58
3172	42.33	172.47	2598.81	-2570.91	-1633.04	215.49	5766290.68	607080.67
3173	42.32	172.47	2599.55	-2571.65	-1633.71	215.58	5766290.01	607080.75
3174	42.32	172.47	2600.29	-2572.39	-1634.38	215.67	5766289.35	607080.84
3175	42.31	172.46	2601.03	-2573.13	-1635.04	215.76	5766288.68	607080.93
3176	42.31	172.46	2601.77	-2573.87	-1635.71	215.85	5766288.01	607081.02
3177	42.30	172.46	2602.51	-2574.61	-1636.38	215.94	5766287.34	607081.11
3178	42.29	172.46	2603.25	-2575.35	-1637.04	216.02	5766286.68	607081.20
3179	42.29	172.46	2603.99	-2576.09	-1637.71	216.11	5766286.01	607081.28
3180	42.28	172.45	2604.72	-2576.82	-1638.38	216.20	5766285.34	607081.37
3181	42.28	172.45	2605.46	-2577.56	-1639.05	216.29	5766284.68	607081.46
3182	42.27	172.45	2606.20	-2578.30	-1639.71	216.38	5766284.01	607081.55
3183	42.27	172.45	2606.94	-2579.04	-1640.38	216.47	5766283.34	607081.64
3184	42.26	172.45	2607.68	-2579.78	-1641.05	216.55	5766282.67	607081.73
3185	42.26	172.44	2608.42	-2580.52	-1641.71	216.64	5766282.01	607081.81
3186	42.25	172.44	2609.16	-2581.26	-1642.38	216.73	5766281.34	607081.90
3187	42.24	172.44	2609.90	-2582.00	-1643.05	216.82	5766280.67	607081.99
3188	42.24	172.44	2610.64	-2582.74	-1643.72	216.91	5766280.01	607082.08
3189	42.23	172.44	2611.38	-2583.48	-1644.38	217.00	5766279.34	607082.17
3190	42.23	172.43	2612.12	-2584.22	-1645.05	217.08	5766278.67	607082.26
3191	42.22	172.43	2612.86	-2584.96	-1645.72	217.17	5766278.00	607082.34
3192	42.21	172.44	2613.60	-2585.70	-1646.38	217.26	5766277.34	607082.43
3193	42.19	172.45	2614.35	-2586.45	-1647.05	217.35	5766276.68	607082.52
3194	42.17	172.47	2615.09	-2587.19	-1647.71	217.43	5766276.01	607082.60
3195	42.15	172.48	2615.83	-2587.93	-1648.37	217.52	5766275.35	607082.69

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3196	42.13	172.49	2616.58	-2588.68	-1649.03	217.60	5766274.69	607082.77
3197	42.11	172.51	2617.32	-2589.42	-1649.70	217.69	5766274.02	607082.86
3198	42.09	172.52	2618.07	-2590.17	-1650.36	217.77	5766273.36	607082.95
3199	42.08	172.54	2618.81	-2590.91	-1651.02	217.86	5766272.70	607083.03
3200	42.06	172.55	2619.55	-2591.65	-1651.69	217.95	5766272.04	607083.12
3201	42.04	172.57	2620.30	-2592.40	-1652.35	218.03	5766271.37	607083.20
3202	42.02	172.58	2621.04	-2593.14	-1653.01	218.12	5766270.71	607083.29
3203	42.00	172.59	2621.78	-2593.88	-1653.67	218.20	5766270.05	607083.37
3204	41.98	172.61	2622.53	-2594.63	-1654.34	218.29	5766269.38	607083.46
3205	41.96	172.62	2623.27	-2595.37	-1655.00	218.37	5766268.72	607083.55
3206	41.94	172.64	2624.02	-2596.12	-1655.66	218.46	5766268.06	607083.63
3207	41.92	172.65	2624.76	-2596.86	-1656.33	218.55	5766267.40	607083.72
3208	41.90	172.66	2625.50	-2597.60	-1656.99	218.63	5766266.73	607083.80
3209	41.88	172.68	2626.25	-2598.35	-1657.65	218.72	5766266.07	607083.89
3210	41.87	172.69	2626.99	-2599.09	-1658.32	218.80	5766265.41	607083.98
3211	41.85	172.71	2627.73	-2599.83	-1658.98	218.89	5766264.74	607084.06
3212	41.83	172.72	2628.48	-2600.58	-1659.64	218.97	5766264.08	607084.15
3213	41.81	172.73	2629.22	-2601.32	-1660.30	219.06	5766263.42	607084.23
3214	41.79	172.75	2629.96	-2602.06	-1660.97	219.15	5766262.75	607084.32
3215	41.77	172.76	2630.71	-2602.81	-1661.63	219.23	5766262.09	607084.40
3216	41.75	172.78	2631.45	-2603.55	-1662.29	219.32	5766261.43	607084.49
3217	41.73	172.79	2632.20	-2604.30	-1662.96	219.40	5766260.77	607084.58
3218	41.71	172.81	2632.94	-2605.04	-1663.62	219.49	5766260.10	607084.66
3219	41.69	172.82	2633.68	-2605.78	-1664.28	219.58	5766259.44	607084.75
3220	41.66	172.85	2634.43	-2606.53	-1664.94	219.66	5766258.78	607084.83
3221	41.56	172.91	2635.20	-2607.30	-1665.58	219.73	5766258.14	607084.90
3222	41.46	172.98	2635.96	-2608.06	-1666.22	219.80	5766257.50	607084.97
3223	41.37	173.04	2636.72	-2608.82	-1666.87	219.87	5766256.85	607085.04
3224	41.27	173.11	2637.48	-2609.58	-1667.51	219.94	5766256.21	607085.11
3225	41.18	173.17	2638.25	-2610.35	-1668.15	220.01	5766255.57	607085.18
3226	41.08	173.24	2639.01	-2611.11	-1668.80	220.08	5766254.93	607085.25
3227	40.98	173.30	2639.77	-2611.87	-1669.44	220.15	5766254.28	607085.32
3228	40.89	173.37	2640.53	-2612.63	-1670.08	220.22	5766253.64	607085.39
3229	40.79	173.43	2641.30	-2613.40	-1670.72	220.29	5766253.00	607085.46
3230	40.70	173.50	2642.06	-2614.16	-1671.37	220.36	5766252.36	607085.53
3231	40.60	173.56	2642.82	-2614.92	-1672.01	220.43	5766251.71	607085.60
3232	40.51	173.63	2643.59	-2615.69	-1672.65	220.50	5766251.07	607085.67
3233	40.41	173.69	2644.35	-2616.45	-1673.29	220.57	5766250.43	607085.74
3234	40.31	173.75	2645.11	-2617.21	-1673.94	220.64	5766249.79	607085.81
3235	40.22	173.82	2645.87	-2617.97	-1674.58	220.71	5766249.14	607085.88
3236	40.12	173.88	2646.64	-2618.74	-1675.22	220.78	5766248.50	607085.95
3237	40.03	173.95	2647.40	-2619.50	-1675.86	220.85	5766247.86	607086.03
3238	39.93	174.01	2648.16	-2620.26	-1676.51	220.92	5766247.21	607086.10
3239	39.84	174.08	2648.93	-2621.03	-1677.15	220.99	5766246.57	607086.17
3240	39.74	174.14	2649.69	-2621.79	-1677.79	221.06	5766245.93	607086.24
3241	39.64	174.21	2650.45	-2622.55	-1678.43	221.14	5766245.29	607086.31
3242	39.55	174.27	2651.21	-2623.31	-1679.08	221.21	5766244.64	607086.38
3243	39.45	174.34	2651.98	-2624.08	-1679.72	221.28	5766244.00	607086.45
3244	39.36	174.40	2652.74	-2624.84	-1680.36	221.35	5766243.36	607086.52
3245	39.26	174.47	2653.50	-2625.60	-1681.01	221.42	5766242.72	607086.59
3246	39.17	174.53	2654.27	-2626.37	-1681.65	221.49	5766242.07	607086.66
3247	39.07	174.60	2655.03	-2627.13	-1682.29	221.56	5766241.43	607086.73
3248	38.97	174.66	2655.79	-2627.89	-1682.93	221.63	5766240.79	607086.80
3249	38.88	174.72	2656.56	-2628.66	-1683.57	221.70	5766240.15	607086.87
3250	38.80	174.73	2657.34	-2629.44	-1684.20	221.75	5766239.53	607086.93
3251	38.71	174.74	2658.12	-2630.22	-1684.82	221.81	5766238.90	607086.98
3252	38.63	174.75	2658.90	-2631.00	-1685.44	221.87	5766238.28	607087.04
3253	38.55	174.76	2659.68	-2631.78	-1686.06	221.92	5766237.66	607087.10
3254	38.46	174.77	2660.46	-2632.56	-1686.68	221.98	5766237.04	607087.15
3255	38.38	174.78	2661.24	-2633.34	-1687.30	222.04	5766236.42	607087.21
3256	38.38	174.78	2662.03	-2634.13	-1687.92	222.10	5766235.80	607087.27
3257	38.38	174.78	2662.81	-2634.91	-1688.54	222.15	5766235.18	607087.32
3258	38.38	174.78	2663.59	-2635.69	-1689.16	222.21	5766234.56	607087.38
3259	38.38	174.78	2664.38	-2636.48	-1689.78	222.27	5766233.94	607087.44
3260	38.38	174.78	2665.16	-2637.26	-1690.40	222.32	5766233.33	607087.49
3261	38.38	174.78	2665.95	-2638.05	-1691.01	222.38	5766232.71	607087.55

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3262	38.38	174.78	2666.73	-2638.83	-1691.63	222.43	5766232.09	607087.61
3263	38.38	174.78	2667.51	-2639.61	-1692.25	222.49	5766231.47	607087.66
3264	38.38	174.78	2668.30	-2640.40	-1692.87	222.55	5766230.85	607087.72
3265	38.38	174.78	2669.08	-2641.18	-1693.49	222.60	5766230.23	607087.78
3266	38.38	174.78	2669.86	-2641.96	-1694.10	222.66	5766229.62	607087.83
3267	38.38	174.78	2670.65	-2642.75	-1694.72	222.72	5766229.00	607087.89
3268	38.38	174.78	2671.43	-2643.53	-1695.34	222.77	5766228.38	607087.95
3269	38.38	174.78	2672.22	-2644.32	-1695.96	222.83	5766227.76	607088.00
3270	38.38	174.78	2673.00	-2645.10	-1696.58	222.89	5766227.14	607088.06
3271	38.38	174.78	2673.78	-2645.88	-1697.20	222.94	5766226.52	607088.12
3272	38.38	174.78	2674.57	-2646.67	-1697.81	223.00	5766225.91	607088.17
3273	38.38	174.78	2675.35	-2647.45	-1698.43	223.06	5766225.29	607088.23
3274	38.38	174.78	2676.14	-2648.24	-1699.05	223.11	5766224.67	607088.28
3275	38.38	174.78	2676.92	-2649.02	-1699.67	223.17	5766224.05	607088.34

APPENDIX 2a

MARLIN A-24A

Petrophysics Evaluation Summary

Esso Australia Pty Ltd.
Exploration Department

**Marlin A24A
Formation Evaluation
Log Interpretation Report**

Petrophysicist: A Strand & A. Cernovskis

September 2004

Marlin A24A Log Interpretation

Marlin A24A was drilled as a directional well designed to develop the L500 reservoir in the Turrum Field. The well spudded 10 April 2004 through the Marlin A24 well by drilling out the cement plug from 604-635mMDRT. 9-5/8" casing was run from surface to 655.5m MDRT with the shoe tagged at 656mMDRT. During drilling operations three continuous conventional cores were taken from the intervals 3158.5-3167.66m (Core-1), 3167.66-3176.66m (Core-2), 3176.66-3185.66m (Core-3). The well was drilled to a total depth of 3275mMDRT (Drillers Depth) in 8-1/2" hole and 7" production casing was run.

The 8-1/2-inch open-hole was logged with Reeves Shuttle Logging system (on drill-pipe) from 3270.5-2008.5mMDRT, formation samples and pressures were taken using the Schlumberger Cased Hole MDT Tool at predefined intervals.

The Reeves data have been analysed for porosity, water saturation and net pay over the interval 2220-3260mMDRT. Preliminary results from Core Analysis and the Cased Hole MDT Program have been incorporated into the interpretation.

Note that all depths quoted in this report are logged MDRT unless otherwise specified.

DATA

Data from the following logging surveys were used in this interpretation:

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
RUN 1: Compact Gamma Ray - Neutron -Density/Caliper - Laterolog - Compensated Sonic	Reeves	2008.5	3270.5

Deviation

The well angle over the target zones ranged from 38.50° at 1613.25m to 42.38° at 3162.70m.

Mud Data

Run 1:	Mud Type :	KCl/Glycol/PHPA
	Mud Weight:	10.15 ppg
	Rm:	0.137 ohm-m @ 25 °C
	Rmf:	0.089 ohm-m @ 25 °C
	Rmc:	0.236 ohm-m @ 25 °C
	BHT:	93.70 °C

Hole Size

2008.5-3270.5m	8.5 inches
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Data Acquisition & Log Quality

There was no data collected above 2008.5m due to battery failure otherwise the quality of the Reeves data is acceptable. The deep and shallow resistivity (DDL and DSL), DEN (Bulk Density), NPRL (Thermal Neutron Porosity in LPU) and DT35 (3-5" Compensated Sonic) were depth aligned to the GRGC (Gamma Ray).

Data Processing

No processing undertaken.

INTERPRETATION

Log Used

The primary logs used in the interpretation were GRGC, DDL, GRGC, DEN, NPRL, DT35.

Formation Water Salinity

Formation water salinity of 25,000ppm NaCl equivalent and A=1, M=2 and N=2 were used throughout the final analysis.

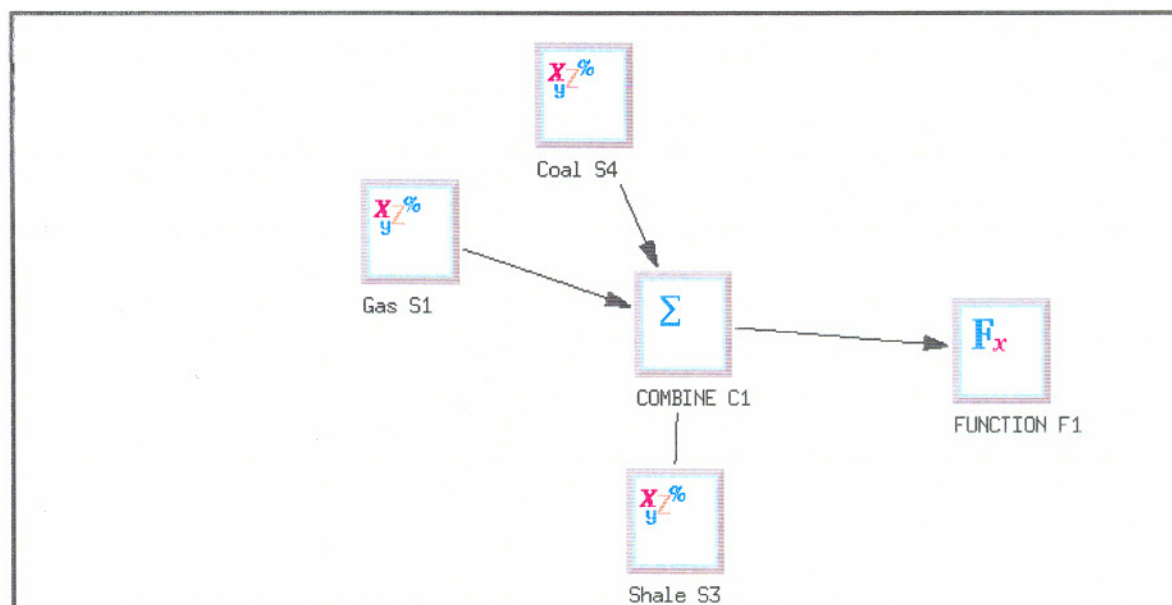
Hydrocarbon Type

All of the reservoir units were solved for gas, there were no significant oil fluorescence shows recorded.

Shale Volume, Porosity and Water Saturation

The Schlumberger Geoframe ELAN+ module was used to determine mineral and rock volumes of quartz, illite and feldspar; total porosity, effective porosity and effective water saturation. Details of the model are presented in the following figures and tables.

Elan+ Processes



Elan Process Definition

Combine Order	Combine Method
Coal S4 Shale S3 Gas S1	<div>Method</div> <div>2008.5</div> <div> UNDEFINED Internal Average </div> <div>3250</div> <div>Zones (m)</div>

Probability Functions

```

probability(SOL.4, PRB4_CH)

prob3 = linear(ILLI_VOL.SOL.3, 0.3, 0, 0.5, 1)
probability(SOL.3, prob3)

prob1 = if (PRB1_CH <= 0.25, 1, 0)
probability(SOL.1, prob1)
  
```

Solve Processes

Process SOLVE 1 "Gas"

Edit Gas 1			Help
Equations	Volumes	Constraints	
RHOB NPFI DT CUDC_DWA GR CT1 CT3	QUAR ILLI FELD XWAT UWAT XGAS UGAS	IrreducibleUWater IrreducibleXWater	

Process

SOLVE 3 "Shale"

Edit Shale 3		
Help		
Equations	Volumes	Constraints
RHOB CUDC_DWA GR	QUAR ILLI XWAT UWAT	

Process

SOLVE 4 "Coal"

Edit Coal 4		
Help		
Equations	Volumes	Constraints
RHOB	COAL	

Process

FUNCTION F1 "FUNCTION"

Selected Functions
PHIT PIGN SUWI SWT SXWI VCL

User-defined Function

```
swt_cmp=if((PRB3_CH > 0),1,(UWAT_VOL + XBWA_VOL)/(UWAT_VOL + XBWA_VOL + UOIL_VOL + UGAS_VOL))
output(SWT, swt_cmp)
```

Channel Selection

Compound Name Spec	MARLIN A24A
TEMP;*	TEMP.WELLEDIT TEMP@WELLEDIT;3 .WELLEDIT
IFRH;*	
INPH;*	
DEN:BPB;*	DEN DEN@ASCII_Load;3 .DEPTH_SHIFT [A59477]
NPRL:BPB;*	NPRL NPRL@ASCII_Load;3 .DEPTH_SHIFT [A59477]
DT35:BPB;*	DT35 DT35@ASCII_Load;3 .DEPTH_SHIFT [A59477]
DDLL:BPB;*	DDLL DDLL@ASCII_Load;3 .DEPTH_SHIFT [A59477]
GGCE:BPB;*	GGCE GGCE@ASCII_Load;2 [A594768]
FLAG_RHOH;*	FLAG_RHOH.WELLEDIT FLAG_RHOH@WELLEDIT
PRB3;*	
FLAG_COAL;*	FLAG_COAL.WELLEDIT FLAG_COAL@ASCII_Load

Table 1. Elan + Same Parameters

Parameter	Value	Parameter	Value
RHOB_QUAR	2.650(g/cm3	RHOB_CALC	2.710(g/cm3
RHOB_ORTH	2.570(g/cm3	RHOB_ILLI	2.780(g/cm3
RHOB_KAOL	2.620(g/cm3	RHOB_FELD	2.520(g/cm3
RHOB_COAL	1.200(g/cm3	RHOB_UWAT	0.996(g/cm3
RHOB_XOIL	0.700(g/cm3	RHOB_UOIL	0.700(g/cm3
RHOB_XGAS	0.098(g/cm3	RHOB_UGAS	0.098(g/cm3
RHOB_XBWA	1.000(g/cm3	NPHI_QUAR	-0.018(m3/m3
NPHI_CALC	0.000(m3/m3	NPHI_ORTH	-0.010(m3/m3
NPHI_ILLI	0.247(m3/m3	NPHI_KAOL	0.450(m3/m3
NPHI_FELD	-0.006(m3/m3	NPHI_COAL	0.500(m3/m3
NPHI_XWAT	1.000(m3/m3	NPHI_UWAT	1.000(m3/m3
NPHI_XOIL	1.000(m3/m3	NPHI_UOIL	1.000(m3/m3
NPHI_XGAS	0.123(m3/m3	NPHI_UGAS	0.123(m3/m3
NPHI_XBWA	1.000(m3/m3	DT_QUAR	55.500(us/m
DT_CALC	47.800(us/m	DT_ORTH	69.007(us/m
DT_ILLI	60.000(us/m	DT_KAOL	91.318(us/m
DT_FELD	69.007(us/m	DT_COAL	121.920(us/m
DT_XWAT	0.000(us/m	DT_UWAT	220.000(us/m
DT_XOIL	0.000(us/m	DT_UOIL	240.000(us/m
DT_XGAS	0.000(us/m	DT_UGAS	289.999(us/m
DT_XBWA	189.000(us/m	CUDC_ILLI	-999.250(mS/m
CUDC_KAOL	-999.250(mS/m	GR_CALC	11.000(gAPI
GR_ORTH	200.000(gAPI	GR_KAOL	98.000(gAPI
GR_COAL	40.000(gAPI	GR_XWAT	0.000(gAPI
GR_UWAT	0.000(gAPI	GR_XOIL	0.000(gAPI
GR_UOIL	0.000(gAPI	GR_XGAS	0.000(gAPI
GR_UGAS	0.000(gAPI	GR_XBWA	0.000(gAPI
CT1_QUAR	0.000(	CT1_CALC	0.000(
CT1_ORTH	0.000(	CT1_ILLI	0.000(
CT1_KAOL	0.000(	CT1_FELD	0.000(
CT1_COAL	0.000(	CT1_XWAT	0.000(
CT1_UWAT	0.000(	CT1_XOIL	0.000(
CT1_UOIL	0.000(	CT1_XGAS	1.000(
CT1_XBWA	0.000(	CT2_QUAR	0.000(
CT2_CALC	0.000(	CT2_ORTH	0.000(
CT2_ILLI	0.000(	CT2_KAOL	0.000(
CT2_FELD	0.000(	CT2_COAL	0.000(
CT2_XWAT	0.000(	CT2_UWAT	0.000(
CT2_XOIL	1.000(	CT2_XGAS	0.000(
CT2_UGAS	0.000(	CT2_XBWA	0.000(
CT3_QUAR	0.050(	CT3_CALC	0.000(
CT3_ORTH	-1.000(	CT3_ILLI	0.000(
CT3_KAOL	0.000(	CT3_FELD	-1.000(
CT3_COAL	0.000(	CT3_XWAT	0.000(
CT3_UWAT	0.000(	CT3_XOIL	0.000(
CT3_UOIL	0.000(	CT3_XGAS	0.000(
CT3_UGAS	0.000(	CT3_XBWA	0.000(
ARHOB_ILLI	2.780(g/cm3	ARHOB_KAOL	2.620(g/cm3
WCLP_ILLI	0.154(m3/m3	WCLP_KAOL	0.058(m3/m3
CBWA_KAOL	-999.250(mS/m	CECA_ILLI	0.200(meq/g

CECA_KAOL	0.090(meq/g	RMF	0.086(ohm.m
MST	-999.250(degC	RWT	-999.250(degC
SALIN_ISOL	-999.250(ppk	SALIN_PARA	-999.250(ppk
SALIN_XWAT	-999.250(ppk	SALIN_UWAT	-999.250(ppk
SALIN_XIWA	-999.250(ppk	SALIN_UIWA	-999.250(ppk
SALIN_XOIL	0.000(ppk	SALIN_UOIL	0.000(ppk
SALIN_XGAS	0.000(ppk	SALIN_UGAS	0.000(ppk
SALIN_XSFL	-999.250(ppk	SALIN_USFL	-999.250(ppk
CT1_ZP	0.000(	CT2_ZP	0.000(
CT3_ZP	0.000(	RHOB_UNC_ZP	0.027(g/cm3
NPHI_UNC_ZP	0.015(m3/m3	DT_UNC_ZP	2.250(us/m
GR_UNC_ZP	2.250(gAPI	CT1_UNC_ZP	0.015(
CT2_UNC_ZP	0.015(	CT3_UNC_ZP	0.015(
VOLS_UNC_ZP	0.015(m3/m3	RHOB_UNC_WM	1.000(
NPHI_UNC_WM	1.000(	DT_UNC_WM	0.500(
CUDC_UNC_WM	0.700(	GR_UNC_WM	0.500(
CT1_UNC_WM	1.000(	CT2_UNC_WM	1.000(
CT3_UNC_WM	0.700(	VOLS_UNC_WM	1.000(
RHOB_IFAC_ZP	1.000(	NPHI_IFAC_ZP	1.000(
A_ZP	1.000(	N_ZP	2.000(
C_DWA	0.000(	M_DWA	2.000(
BVIRR	0.015(m3/m3		

RESULTS AND DISCUSSION

The quantitative summary of the interpreted reservoir parameters as presented in Table 2 was based on PHIE cut-off of 8%.

The core gamma ray (COGR) was depth matched to the log gamma ray (GGCE), a shift of -0.4m was applied to Core-3 across the interval 3176.66-3185.66m, this shift was also applied to the core porosity (overburden corrected). A good match has been achieved between core porosity (PCOR) and the interpreted porosity (PHIT) as depicted in Figure 1. In Figure 1.1 a statistical review of PCOR and PHIT is presented and the close match achieved between the two data sets authenticates the interpretation results.

A graphic display of the interpretation results across the interval 3100-3200m is presented in Figure 2. A gas-water contact is interpreted at 3197m.

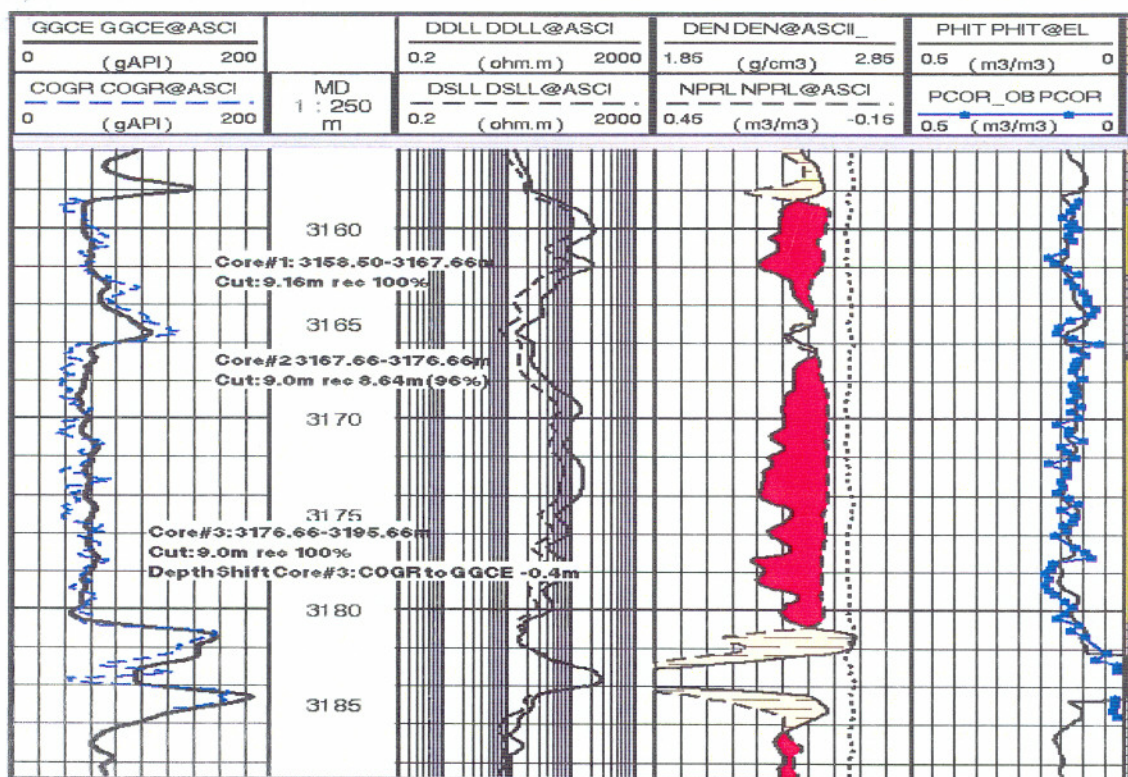


Figure 1 Core Gamma and Core Porosity Depth Match

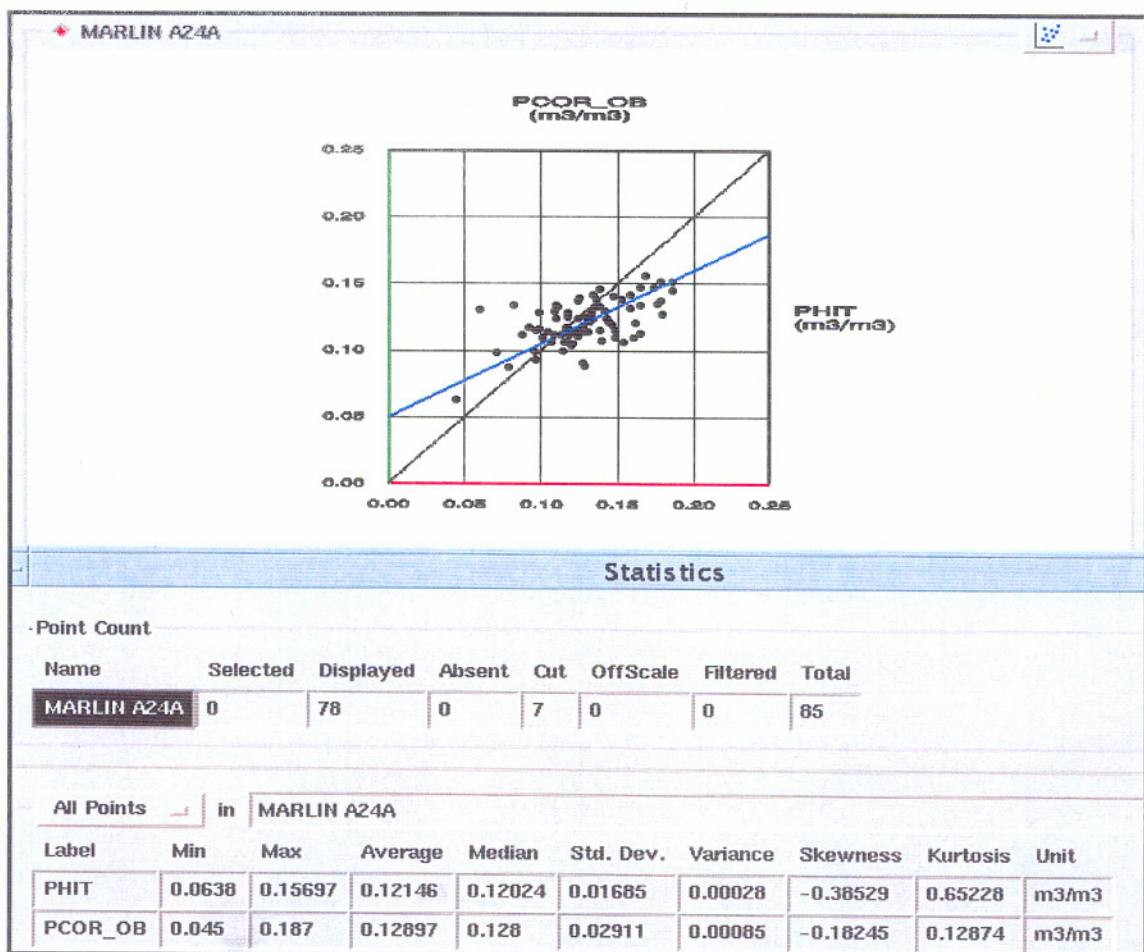
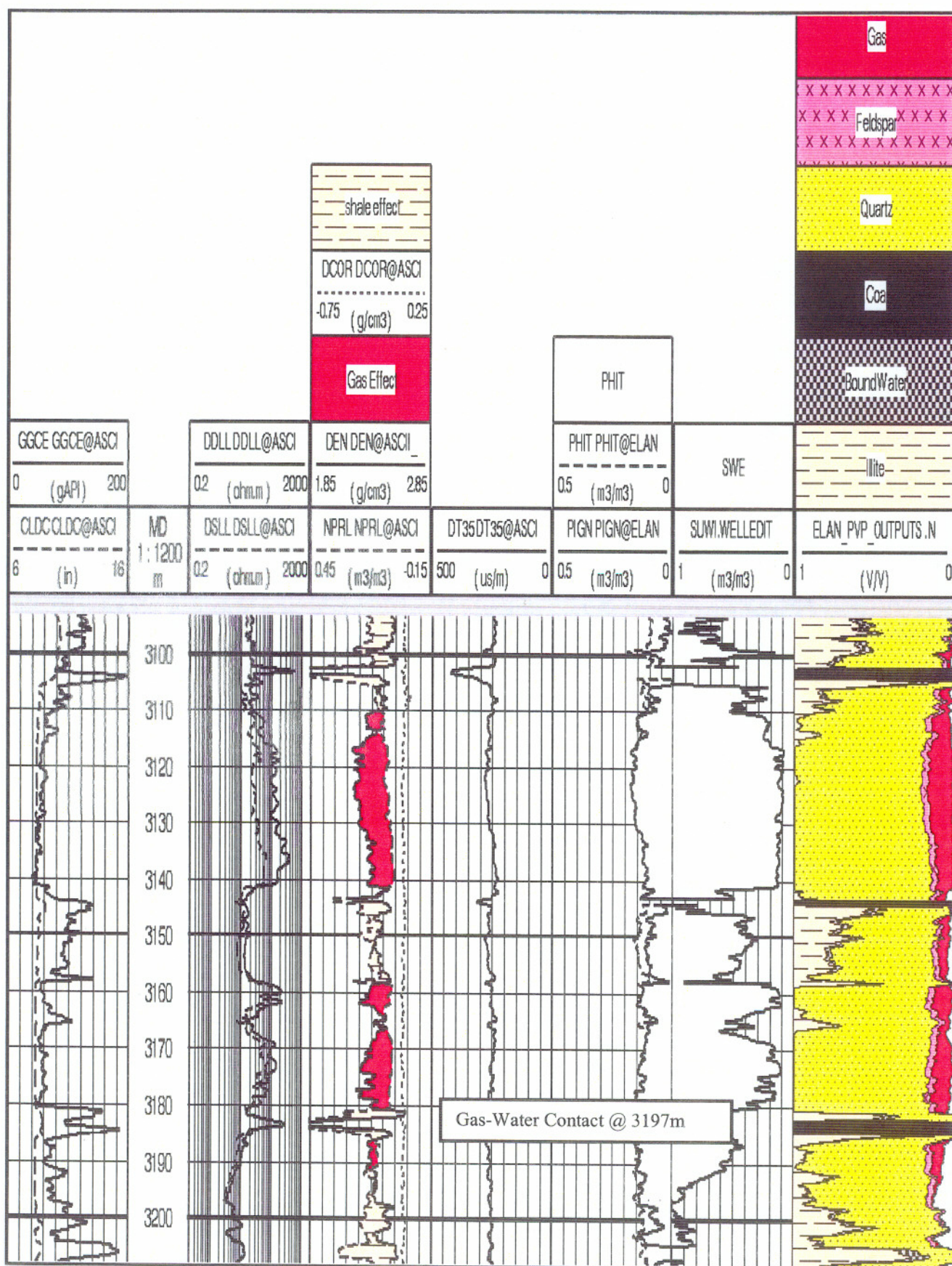


Figure 1.1 Core Porosity vs PHIT with statistics



Marlin A24A										
Petrophysical Analysis Summary 2015.9 - 3204.8m MD										
Net Thickness is based on a PHIE Cut-off >					:0.08 volume per volume					
Depth Reference					MDKB					
Mean PHIE, Mean VSH, Mean SWE is of Net Thickness interval										
Net Pay Y= yes= SWE<0.650; N= no=SWE>0.650										
Name	Top Depth	Bottom Depth	Gross Thickness	Net Thickness	Net/Gross Ratio	Mean VSH	Mean PHIE	Mean SWE	Comments	Net Pay
Turrum	2015.9	2022.4	6.5	5.9	0.900	0.270	0.172	0.999	Water Bearing	
Turrum	2044.3	2045.6	1.3	1.1	0.885	0.373	0.146	0.952	Water Bearing	
Turrum	2049.7	2056.9	7.2	6.8	0.944	0.325	0.168	0.985	Water Bearing	
Turrum	2125.7	2127.9	2.2	1.6	0.727	0.298	0.170	0.982	Water Bearing	
Turrum	2129.3	2137.3	8.0	4.2	0.531	0.439	0.118	0.979	Water Bearing	
Turrum	2140.4	2142.0	1.6	1.1	0.687	0.393	0.142	0.660	Possible Gas Bearing	n
Turrum	2151.0	2153.3	2.3	2.2	0.957	0.363	0.152	0.639	Gas Bearing	y
Turrum	2153.9	2161.5	7.6	7.3	0.967	0.254	0.215	0.506	Gas Bearing	y
Turrum	2245.1	2247.0	1.9	1.6	0.868	0.328	0.134	0.603	Gas Bearing	y
Turrum	2248.5	2250.9	2.4	2.2	0.917	0.241	0.167	0.506	Gas Bearing	y
Turrum	2268.2	2269.1	0.9	0.5	0.555	0.526	0.109	0.704	Possible Gas Bearing	n
Turrum	2277.8	2278.6	0.8	0.6	0.750	0.170	0.181	0.424	Gas Bearing	y
Turrum	2279.8	2295.3	15.5	7.9	0.503	0.383	0.104	0.908	Water Bearing	
Turrum	2297.0	2304.6	7.6	6.7	0.882	0.341	0.126	0.823	Water Bearing	
Turrum	2306.0	2309.9	3.9	2.8	0.718	0.317	0.121	0.901	Water Bearing	
Turrum	2314.1	2317.6	3.5	3.3	0.957	0.432	0.111	0.853	Water Bearing	
Turrum	2336.9	2339.5	2.6	2.5	0.981	0.319	0.115	0.791	Water Bearing	
Turrum	2368.7	2377.1	8.4	4.9	0.583	0.335	0.128	0.584	Gas Bearing	y
Turrum	2381.2	2391.3	10.1	4.6	0.455	0.428	0.098	0.753	Water Bearing	
Turrum	2393.7	2395.7	2.0	1.3	0.650	0.363	0.110	0.842	Water Bearing	
Turrum	2399.6	2404.0	4.4	3.2	0.727	0.280	0.137	0.584	Gas Bearing	y
Turrum	2407.5	2409.2	1.7	0.4	0.235	0.422	0.082	0.760	Possible Gas Bearing	n
Turrum	2409.4	2417.5	8.1	4.9	0.605	0.181	0.153	0.363	Gas Bearing	y
Turrum	2420.6	2423.6	3.0	2.6	0.867	0.191	0.155	0.430	Gas Bearing	y
Turrum	2430.9	2436.1	5.2	4.3	0.827	0.164	0.163	0.401	Gas Bearing	y
Turrum	2440.3	2448.3	8.0	1.8	0.225	0.380	0.095	0.851	Water Bearing	
Turrum	2449.6	2456.9	7.3	4.6	0.630	0.338	0.109	0.768	Possible Gas Bearing	n
Turrum	2458.8	2464.1	5.3	3.4	0.632	0.304	0.114	0.718	Possible Gas Bearing	n
Turrum	2466.2	2468.9	2.7	1.7	0.630	0.234	0.153	0.598	Gas Bearing	y
Turrum	2473.5	2477.6	4.1	1.3	0.317	0.427	0.092	0.820	Water Bearing	
Turrum	2480.5	2483.8	3.3	1.5	0.455	0.308	0.122	0.667	Possible Gas Bearing	n
Turrum	2489.0	2491.5	2.5	0.9	0.360	0.402	0.097	0.654	Possible Gas Bearing	n
Turrum	2492.8	2496.1	3.3	0.5	0.152	0.374	0.087	0.744	Possible Gas Bearing	n
Turrum	2498.5	2501.4	2.9	1.2	0.414	0.279	0.116	0.663	Possible Gas Bearing	n
Turrum	2503.9	2508.4	4.5	2.5	0.556	0.349	0.095	0.712	Possible Gas Bearing	n
Turrum	2525.8	2527.9	2.1	1.2	0.571	0.298	0.121	0.516	Gas Bearing	y
Turrum	2531.2	2534.0	2.8	0.1	0.036	0.343	0.081	0.798	Possible Gas Bearing	n
Turrum	2535.1	2537.7	2.6	1.1	0.423	0.415	0.098	0.715	Possible Gas Bearing	n
Turrum	2541.9	2546.6	4.7	4.3	0.915	0.153	0.144	0.520	Gas Bearing	y
Turrum	2547.4	2549.1	1.7	0.6	0.353	0.336	0.088	0.842	Water Bearing	

Name	Top Depth	Bottom Depth	Gross Thickness	Net Thickness	Net/Gross Ratio	Mean VSH	Mean PHIE	Mean SWE	Comments	Net Pay
Turrum	2552.2	2558.7	6.5	1.9	0.292	0.317	0.099	0.832	Water Bearing	
Turrum	2560.3	2565.5	5.2	0.9	0.173	0.392	0.094	0.761	Possible Gas Bearing	n
Turrum	2581.6	2587.5	5.9	3.1	0.525	0.353	0.104	0.384	Gas Bearing	y
Turrum	2588.9	2591.8	2.9	2.4	0.828	0.022	0.192	0.224	Gas Bearing	y
Turrum	2593.2	2595.0	1.8	1.1	0.611	0.299	0.113	0.552	Gas Bearing	y
Turrum	2596.9	2601.3	4.4	0.4	0.091	0.352	0.086	0.696	Possible Gas Bearing	n
Turrum	2602.0	2603.1	1.1	0.6	0.545	0.370	0.093	0.510	Gas Bearing	y
Turrum	2606.0	2607.7	1.7	0.2	0.118	0.265	0.082	0.234	Gas Bearing	y
Turrum	2608.2	2615.9	7.7	2.4	0.312	0.367	0.093	0.524	Gas Bearing	y
Turrum	2620.4	2622.8	2.4	1.7	0.708	0.317	0.108	0.495	Gas Bearing	y
Turrum	2634.2	2638.3	4.1	1.4	0.341	0.341	0.117	0.506	Gas Bearing	y
Turrum	2640.4	2641.9	1.5	0.3	0.233	0.382	0.087	0.669	Possible Gas Bearing	n
Turrum	2679.3	2686.0	6.7	3.5	0.522	0.275	0.122	0.398	Gas Bearing	y
Turrum	2701.5	2707.8	6.3	2.4	0.381	0.260	0.104	0.603	Gas Bearing	y
Turrum	2730.0	2738.5	8.5	6.0	0.706	0.292	0.100	0.513	Gas Bearing	y
Turrum	2765.3	2783.3	18.0	12.8	0.711	0.130	0.168	0.162	Gas Bearing	y
Turrum	2795.6	2800.6	5.0	3.9	0.780	0.157	0.151	0.179	Gas Bearing	y
Turrum	2814.1	2823.7	9.6	7.8	0.818	0.075	0.177	0.198	Gas Bearing	y
Turrum	2834.2	2838.5	4.3	2.0	0.465	0.226	0.108	0.265	Gas Bearing	y
Turrum	2847.5	2854.1	6.6	4.5	0.682	0.210	0.127	0.342	Gas Bearing	y
Turrum	2866.1	2870.7	4.6	3.9	0.848	0.185	0.133	0.311	Gas Bearing	y
Turrum	2887.5	2892.9	5.4	1.7	0.315	0.246	0.092	0.457	Gas Bearing	y
Turrum	2893.7	2906.2	12.5	11.6	0.928	0.166	0.137	0.306	Gas Bearing	y
Turrum	2920.3	2930.5	10.2	9.4	0.926	0.127	0.147	0.206	Gas Bearing	y
Turrum	2952.0	2964.4	12.4	5.1	0.415	0.142	0.147	0.160	Gas Bearing	y
Turrum	2977.1	2978.8	1.7	1.0	0.588	0.212	0.111	0.328	Gas Bearing	y
Turrum	2982.6	2989.4	6.8	4.0	0.588	0.185	0.092	0.396	Gas Bearing	y
Turrum	3006.9	3013.9	7.0	1.5	0.214	0.204	0.101	0.449	Gas Bearing	y
Turrum	3025.9	3028.6	2.7	1.6	0.593	0.136	0.137	0.270	Gas Bearing	y
Turrum	3031.8	3043.3	11.5	5.3	0.461	0.215	0.088	0.494	Gas Bearing	y
Turrum	3058.3	3070.6	12.3	10.0	0.813	0.058	0.145	0.217	Gas Bearing	y
Turrum	3076.5	3090.0	13.5	12.0	0.889	0.096	0.125	0.311	Gas Bearing	y
Turrum	3090.5	3102.2	11.7	0.8	0.068	0.392	0.109	0.218	Gas Bearing	y
Turrum	3105.2	3143.4	38.2	35.9	0.940	0.029	0.136	0.171	Gas Bearing	y
Turrum	3145.8	3157.7	11.9	9.8	0.824	0.260	0.099	0.431	Gas Bearing	y
Turrum	3158.0	3181.1	23.1	21.7	0.939	0.021	0.121	0.228	Gas Bearing	y
Turrum	3185.2	3197.0	11.8	11.1	0.936	0.102	0.131	0.673	Gas Bearing, GWC @3197.0m	y
Turrum	3201.3	3204.8	3.5	2.4	0.686	0.183	0.115	0.889	Water Bearing	n

Table 2. Petrophysical Summary

APPENDIX 3a

MARLIN A-24A

Lithology/Show Descriptions

Jonathon Reeves

Marlin A24A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
			Geologist on board (15/04/04) from 1460m to TD 8.5” Hole section.
1460	1470	100	CLAYSTONE: light grey to medium light grey, very light grey in part, calcareous, grading to calcareous claystone, rare silt, trace disseminated pyrite, trace carbonaceous specks, soft to firm, sub blocky.
1470	1480	100	CLAYSTONE: light grey to medium light grey, very light grey in part, calcareous, grading to calcareous claystone, rare silt, trace pyritised wood fragments and pyrite nodules, trace disseminated pyrite, trace carbonaceous specks, soft to firm, sub blocky.
1480	1490	100	CLAYSTONE: as above.
1490	1500	100	CLAYSTONE: as above.
1500	1510	100	CLAYSTONE: light grey to medium light grey, very light grey in part, calcareous, grading to calcareous claystone, rare silt, trace disseminated pyrite, trace carbonaceous specks, soft to firm, sub blocky.
1510	1520	100	CLAYSTONE: as above.
1520	1530	100	CLAYSTONE: as above.
1530	1540	100	CLAYSTONE: as above.
1540	1550	100	CLAYSTONE: as above.
1550	1560	100	CLAYSTONE: as above.
1560	1570	100	CLAYSTONE: light grey to medium light grey, very light grey to light brownish grey in part, calcareous, grading to calcareous claystone, rare silt, trace disseminated pyrite, trace carbonaceous specks, moderately firm to firm, sub blocky.
1570	1580	100	CLAYSTONE: as above.
1580	1590	100	CLAYSTONE: generally as above, trace nodular pyrite and fossil fragments
1590	1600	100	CLAYSTONE: generally as above, trace pyritised wood fragments and very fine sand grains.
1600	1610	100	CLAYSTONE: as above.
1610	1615	100	CLAYSTONE: as above.
1615	1620	85	CLAYSTONE: very light grey to light brownish grey, brownish grey, calcareous, minor to common silt, trace carbonaceous specks, trace glauconite, moderately firm to firm, sub blocky.
		15	COAL: brownish black to black, earthy lustre, brittle, sub blocky to blocky, hackly to angular fracture, lignitic.
1620	1625	90	CLAYSTONE: as above.
		10	COAL: as above.
1625	1630	95	CLAYSTONE: generally as above, trace very coarse quartz float.
		5	COAL: as above.
1630	1635	90	CLAYSTONE: as above.
		5	COAL: as above.
		5	SANDSTONE: very light grey, clear to translucent grains, coarse to very coarse, trace medium, poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, loose, fair inferred porosity no fluor.
			NOTE: Sample has Baracarb contamination.
1635	1640	90	CLAYSTONE: generally as above, trace thinly interbedded coal.
		5	COAL: as above.
		5	SANDSTONE: as above.
			NOTE: Sample has Baracarb contamination.

Interval (m)		%	Lithology / Show Description
From	To		
1640	1645	80	SANDSTONE: very light grey, clear to translucent grains, medium to very coarse, trace granules, very poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, loose, fair inferred porosity no fluor.
		20	CLAYSTONE: as above.
		Tr	COAL: as above.
			NOTE: Sample has Baracarb contamination.
1645	1650	90	SANDSTONE: very light grey, clear to translucent grains, predominantly coarse to very coarse, trace medium and granules, rare bit fractured grains, very poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, loose, fair inferred porosity no fluor.
		10	CLAYSTONE: very light grey to light brownish grey, brownish grey, calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, moderately firm to firm, sub blocky.
		Tr	COAL: as above.
			NOTE: Sample has Baracarb contamination.
1650	1655	80	SANDSTONE: generally as above, predominantly coarse grained.
		20	CLAYSTONE: as above.
1655	1660	80	SANDSTONE: generally as above, predominantly coarse grained, trace nodular pyrite.
		20	CLAYSTONE: as above.
1660	1665	80	SANDSTONE: generally as above, predominantly medium to coarse grained.
		20	CLAYSTONE: as above.
1665	1670	15	SANDSTONE: very light grey, clear to translucent grains, predominantly coarse to very coarse, trace medium and granules, rare bit fractured grains, very poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, loose, fair inferred porosity no fluor.
		65	CLAYSTONE: very light grey to light brownish grey, brownish grey, calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, soft to moderately firm, dispersive, amorphous to sub blocky.
		20	COAL: brownish black to black, earthy lustre, brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1670	1675	10	SANDSTONE: generally as above, predominantly medium to coarse grained.
		90	CLAYSTONE: as above.
1675	1680	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
1680	1685	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
1685	1690	10	SANDSTONE: generally as above, trace nodular pyrite.
		90	CLAYSTONE: as above.
1690	1695	10	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, trace very coarse and granules, rare bit fractured grains, very poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, loose, fair inferred porosity no fluor.
		90	CLAYSTONE: light brownish grey to brownish grey, minor light grey, calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace glauconite, trace nodular pyrite, soft to moderately firm, dispersive, amorphous to sub blocky.
		Tr	COAL: brownish black to black, earthy lustre, brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.

Interval (m)		%	Lithology / Show Description
From	To		
1695	1700 (1699)	20	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, trace very coarse and granules, rare bit fractured grains, very poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
		80	CLAYSTONE: as above. POOH @ 1699 to change bit.
1700	1705	20	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, trace very coarse and granules, rare bit fractured grains, very poorly sorted, angular to sub angular, trace pyrite cement, trace argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
		80	CLAYSTONE: light brownish grey to brownish grey, minor light grey, calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace glauconite, trace nodular pyrite, soft to moderately firm, dispersive, amorphous to sub blocky.
1705	1710	80	SANDSTONE: as above.
		20	CLAYSTONE: as above.
		Tr	COAL: brownish black to black, earthy lustre, brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1710	1715	10	SANDSTONE: as above.
		85	CLAYSTONE: as above.
		5	COAL: as above.
1715	1720	10	SANDSTONE: as above.
		85	CLAYSTONE: as above.
		5	COAL: as above.
1720	1725	5	SANDSTONE: generally as above, predominantly medium to coarse grained.
		90	CLAYSTONE: as above.
		5	COAL: as above.
1725	1730	30	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, trace very coarse and granules, rare bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
		70	CLAYSTONE: light brownish grey to brownish grey, minor light grey, calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace disseminated pyrite, soft to moderately firm, dispersive, amorphous to sub blocky.
		Tr	COAL: as above.
1730	1735	70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
		Tr	COAL: as above.
1735	1740	80	SANDSTONE: as above.
		20	CLAYSTONE: as above.
		Tr	COAL: as above.
1740	1745	95	SANDSTONE: as above.
		5	CLAYSTONE: as above.
		Tr	COAL: as above.
1745	1750	95	SANDSTONE: as above.
		5	CLAYSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
1750	1755	95	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, minor very coarse and trace granules, rare bit fractured grains, poorly sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
		5	CLAYSTONE: as above.
		Tr	COAL: as above.
		10	SANDSTONE: as above.
1755	1760	10	CLAYSTONE: as above.
		80	COAL: brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
		20	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, minor very coarse and trace granules, rare bit fractured grains, poorly sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
1760	1765	10	CLAYSTONE: light brownish grey to brownish grey, minor light grey, weakly calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace disseminated pyrite, soft to moderately firm, dispersive, amorphous to sub blocky.
		70	COAL: as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
		20	SANDSTONE: as above.
		Tr	CLAYSTONE: as above.
1765	1770	80	COAL: as above.
		20	SANDSTONE: very light grey, clear to translucent grains, medium to coarse, common very coarse and trace granules, rare bit fractured grains, poorly sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
		70	CLAYSTONE: light brownish grey to brownish grey, commonly white, weakly calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace disseminated pyrite, soft to moderately firm, dispersive, amorphous to sub blocky.
1770	1775	10	COAL: as above.
		15	SANDSTONE: as above.
		80	CLAYSTONE: light brownish grey to brownish grey, trace white, weakly calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace disseminated pyrite, soft to moderately firm, dispersive, amorphous to sub blocky.
		5	COAL: as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1775	1780	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.
1780	1785	5	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		5	COAL: as above.
1785	1790	5	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		5	COAL: as above.
1790	1795	5	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		5	COAL: as above.
1795	1800	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
1800	1805	Tr	SANDSTONE: generally as above, very light grey, clear to translucent grains, medium to coarse, common very coarse and trace granules, rare bit fractured grains, poorly sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, rare nodular pyrite, loose, fair inferred porosity no fluor.
		100	CLAYSTONE: as above, light brownish grey to brownish grey, weakly calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
		Tr	COAL: as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1805	1810	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
1810	1815	Tr	COAL: as above.
		Tr	SANDSTONE: generally as above, dominantly loose, trace strongly cemented medium grained aggregates.
		95	CLAYSTONE: as above.
1815	1820	5	COAL: as above.
		Tr	SANDSTONE: as above.
		90	CLAYSTONE: generally as above, trace nodular pyrite.
1820	1825	10	COAL: as above.
		Tr	SANDSTONE: as above.
		100	CLAYSTONE: generally as above, minor white.
1825	1830	Tr	COAL: as above.
		Tr	SANDSTONE: as above.
		98	CLAYSTONE: as above.
1830	1835	2	COAL: as above.
		Tr	SANDSTONE: as above.
		90	CLAYSTONE: as above.
1835	1840	10	COAL: as above.
		Tr	SANDSTONE: as above, coarse to very coarse grained.
		98	CLAYSTONE: as above.
1840	1845	2	COAL: as above.
		30	SANDSTONE: generally as above, very light grey, clear to translucent grains, medium to coarse, minor very coarse and trace granules, rare bit fractured grains, moderately sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity no fluor
		70	CLAYSTONE: as above, light brownish grey to brownish grey, minor white, weakly calcareous, minor to common silt, grading to argillaceous siltstone, trace carbonaceous specks, trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
1845	1850	Tr	COAL: as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
		70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
1850	1855	Tr	COAL: as above.
		70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
1855	1860	Tr	COAL: as above.
		70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
1860	1865	30	SANDSTONE: generally as above, very light grey, clear to translucent grains, predominantly medium to coarse, rare very coarse and trace granules, trace bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity no fluor
		70	CLAYSTONE: as above, light brownish grey to brownish grey, minor to common white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
		Tr	COAL: as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1865	1870	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		Tr	COAL: as above.
1870	1875	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		Tr	COAL: as above.
1875	1880	5	SANDSTONE: as above.
		95	CLAYSTONE: as above, commonly white.
		Tr	COAL: as above.
1880	1885	10	SANDSTONE: as above.
		88	CLAYSTONE: as above, commonly white.
		2	COAL: as above.
1885	1890	50	SANDSTONE: generally as above, very light grey, clear to translucent grains, predominantly medium to coarse, trace very coarse, trace bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity no fluor
		50	CLAYSTONE: as above, commonly white.
		Tr	COAL: as above.
1890	1895	40	SANDSTONE: as above.
		60	CLAYSTONE: as above.
		Tr	COAL: as above.
1895	1900	70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
		Tr	COAL: as above.
1900	1905	20	SANDSTONE: as above.
		80	CLAYSTONE: as above.
		Tr	COAL: as above.
1905	1910	20	SANDSTONE: as above.
		80	CLAYSTONE: generally as above, light brownish grey to brownish grey, commonly white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
		Tr	COAL: as above.
1910	1915	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.
1915	1920	30	SANDSTONE: as above.
		70	CLAYSTONE: as above.
		Tr	COAL: as above.
1920	1925	20	SANDSTONE: as above.
		80	CLAYSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
1925	1930	20	SANDSTONE: very light grey, clear to translucent grains, predominantly fine to medium, trace coarse, trace bit fractured grains, well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity, no fluor.
		80	CLAYSTONE: generally as above, light brownish grey to brownish grey, commonly white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
1930	1935	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
1935	1940	30	SANDSTONE: as above.
		70	CLAYSTONE: as above.
1940	1945	30	SANDSTONE: as above.
		60	CLAYSTONE: as above.
		10	COAL: brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1945	1950	Tr	SANDSTONE: as above.
		100	CLAYSTONE: generally as above, light brownish grey to brownish grey, commonly white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
1950	1955	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.
1955	1960	Tr	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		5	COAL: as above.
1960	1965	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
1965	1970	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
1970	1975	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
1975	1980	5	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		5	COAL: as above.
1980	1985	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.
1985	1990	Tr	SANDSTONE: as above.
		80	CLAYSTONE: light brownish grey to brownish grey, minor white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
		20	COAL: generally as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
1990	1995	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		Tr	COAL: as above.
1995	2000	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2000	2005	20	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, minor fine, trace bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity, no fluor.
		80	CLAYSTONE: light brownish grey to brownish grey, common white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
		Tr	COAL: generally as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
2005	2010	80	SANDSTONE: as above.
		20	CLAYSTONE: as above.
		Tr	COAL: as above.
2010	2015	40	SANDSTONE: generally as above, fine to medium grained.
		60	CLAYSTONE: as above.
		Tr	COAL: as above.
2015	2020	5	SANDSTONE: as above.
		95	CLAYSTONE: generally as above, predominantly white to very light grey.
		5	COAL: as above.
2020	2025	20	SANDSTONE: generally as above, fine to medium grained.
		75	CLAYSTONE: generally as above, predominantly white to very light grey.
		5	COAL: as above.
2025	2030	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		Tr	COAL: as above.
2030	2035	Tr	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, minor to common fine, trace bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity, no fluor.
		90	CLAYSTONE: light brownish grey to brownish grey, common white, weakly calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to sub blocky.
		10	COAL: generally as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
2035	2040	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.
2040	2045	Tr	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		5	COAL: as above.
2045	2050	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.
2050	2055	Tr	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		5	COAL: as above.
2055	2060	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2060	2063	Tr	SANDSTONE: very light grey, clear to translucent grains, predominantly medium to coarse, minor to common fine, trace bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity, no fluor.
		100	CLAYSTONE: light brownish grey to brownish grey, medium light grey, minor white, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	COAL: generally as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic. POOH to change bit. Sample quality during this bit run was very poor.
2065	2070	Tr	SANDSTONE: as above, very light grey, clear to translucent grains, predominantly medium to coarse, minor to common fine, trace bit fractured grains, moderately well sorted, angular to sub angular, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity, no fluor.
		100	CLAYSTONE: as above, light brownish grey to brownish grey, medium light grey, minor white, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	COAL: generally as above, brownish black to black, dull to earthy lustre, friable to brittle, sub fissile, sub blocky to blocky, hackly to angular fracture, lignitic.
2070	2075	Tr	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		5	COAL: as above.
2075	2080	Tr	SANDSTONE: as above.
		95	CLAYSTONE: as above.
		5	COAL: as above.
2080	2085	95	CLAYSTONE: as above.
		5	COAL: as above.
		5	COAL: as above.
2085	2090	95	CLAYSTONE: as above.
		5	COAL: as above.
		5	COAL: as above.
2090	2095	95	CLAYSTONE: as above.
		5	COAL: as above.
		5	COAL: as above.
2095	2100	80	CLAYSTONE: as above.
		20	COAL: brownish black to black, earthy to sub vitreous lustre, friable to brittle, sub fissile in part, sub blocky to blocky, hackly to angular fracture, lignitic.
		95	CLAYSTONE: as above.
2100	2105	5	COAL: as above.
		100	CLAYSTONE: as above.
		Tr	COAL: as above.
2110	2115	95	CLAYSTONE: generally as above, common white.
		5	COAL: as above.
		90	CLAYSTONE: generally as above, common white.
2115	2120	10	COAL: as above.
		20	CLAYSTONE: generally as above, minor white.
		80	COAL: as above.
2120	2125	40	CLAYSTONE: generally as above, minor white.
		60	COAL: as above.
		90	CLAYSTONE: generally as above, minor white.
2125	2130	10	COAL: as above.
		90	CLAYSTONE: generally as above, minor white.
		10	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2135	2140	95	CLAYSTONE: as above, light brownish grey to predominantly brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		5	COAL: generally as above, brownish black to black, earthy to sub vitreous lustre, friable to brittle, sub fissile in part, sub blocky to blocky, hackly to angular fracture, lignitic.
2140	2145	98	CLAYSTONE: as above.
		2	COAL: as above.
2145	2150	98	CLAYSTONE: as above.
		2	COAL: as above.
2150	2155	98	CLAYSTONE: as above.
		2	COAL: as above.
2155	2160	20	SANDSTONE: very light grey, clear to translucent grains, fine to predominantly medium grained, nil to trace coarse, well sorted, angular to sub angular, minor sub rounded, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, predominantly loose, trace friable aggregates, fair inferred porosity, no fluor.
		78	CLAYSTONE: as above.
		2	COAL: as above.
2160	2165	10	SANDSTONE: as above.
		85	CLAYSTONE: as above.
		5	COAL: as above.
2165	2170	10	SANDSTONE: as above.
		85	CLAYSTONE: as above.
		5	COAL: as above.
2170	2175	5	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		5	COAL: as above.
2175	2180	40	SANDSTONE: very light grey, clear to translucent grains, predominantly fine to medium grained, nil to trace coarse, well sorted, angular to sub angular, minor sub rounded, trace pyrite cement, trace white argillaceous matrix, trace nodular pyrite, commonly loose, minor friable aggregates with coal laminations, poor inferred porosity, no fluor.
		60	CLAYSTONE: as above, light brownish grey to predominantly brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	COAL: generally as above, brownish black to black, earthy to sub vitreous lustre, friable to brittle, sub fissile in part, sub blocky to blocky, hackly to angular fracture, lignitic.
2180	2185	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.
2185	2190	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.
2190	2195	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.

Note: heavy Baracarb contamination in sample.

Interval (m)		%	Lithology / Show Description
From	To		
2195	2200	100	CLAYSTONE: as above, light brownish grey to predominantly brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	COAL: as above. Note: heavy Baracarb contamination in sample.
2200	2205	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2205	2210	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2210	2215	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2215	2220	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2220	2225	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2225	2230	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2230	2235	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2235	2240	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2240	2245	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2245	2250	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2250	2255	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2255	2260	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2260	2265	100	CLAYSTONE: as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	COAL: generally as above, brownish black to black, earthy to sub vitreous lustre, friable to brittle, sub fissile in part, sub blocky to blocky, hackly to angular fracture, lignitic.
2265	2270	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2270	2275	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2275	2280	100	CLAYSTONE: as above.
		Tr	COAL: as above.
2280	2285	90	CLAYSTONE: as above.
		10	SANDSTONE: very light grey, clear to translucent grains, fine to predominantly medium grained, well sorted, angular to sub angular, minor sub rounded, trace argillaceous matrix, commonly loose, trace friable aggregates, poor inferred porosity, no fluor.
		Tr	COAL: as above.
2285	2290	95	CLAYSTONE: as above.
		5	SANDSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2290	2295	95	CLAYSTONE: as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		5	SANDSTONE: very light grey, clear to translucent grains, fine to predominantly medium grained, well sorted, angular to sub angular, minor sub rounded, trace argillaceous matrix, commonly loose, trace friable aggregates, poor inferred porosity, no fluor.
		Tr	COAL: generally as above, brownish black to black, earthy to sub vitreous lustre, friable to brittle, sub fissile in part, sub blocky to blocky, hackly to angular fracture, lignitic.
2295	2300	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above.
2300	2305	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above.
2305	2310	90	CLAYSTONE: as above.
		10	SANDSTONE: generally as above, minor fine grained cemented aggregates.
		Tr	COAL: as above.
2310	2315	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above.
2315	2320	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above.
2320	2325	95	CLAYSTONE: as above.
		5	SANDSTONE: generally as above, minor fine grained cemented aggregates.
		Tr	COAL: as above.
2325	2330	95	CLAYSTONE: as above.
		5	SANDSTONE: generally as above, minor fine grained cemented aggregates.
		Tr	COAL: as above.
2330	2335	100	CLAYSTONE: generally as above, minor nodular pyrite.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above.
2335	2340	100	CLAYSTONE: generally as above, minor nodular pyrite.
		Tr	SANDSTONE: as above.
2340	2345	100	CLAYSTONE: generally as above, minor nodular pyrite.
		Tr	SANDSTONE: as above.
2345	2350	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
2350	2355	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
2355	2360	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
2360	2365	95	CLAYSTONE: as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		5	SANDSTONE: very light grey, clear to translucent grains, fine to predominantly medium grained, minor very fine, well sorted, angular to sub angular, minor sub rounded, trace argillaceous matrix, commonly loose, trace friable aggregates, poor inferred porosity, no fluor.

Interval (m)		%	Lithology / Show Description
From	To		
2365	2370	95 5	CLAYSTONE: as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky. SANDSTONE: very light grey, clear to translucent grains, fine to predominantly medium grained, minor very fine, well sorted, angular to sub angular, minor sub rounded, trace argillaceous matrix, commonly loose, trace friable aggregates, poor inferred porosity, no fluor.
2370	2375	80 20	CLAYSTONE: as above. SANDSTONE: as above.
2375	2380	80 20	CLAYSTONE: as above. SANDSTONE: as above.
2380	2385	90 10	CLAYSTONE: as above. SANDSTONE: as above.
2385	2390	90 10	CLAYSTONE: as above. SANDSTONE: as above.
2390	2395	90 10	CLAYSTONE: as above. SANDSTONE: as above.
2395	2400	100 Tr	CLAYSTONE: as above. SANDSTONE: as above.
2400	2405	90 10	CLAYSTONE: as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky. SANDSTONE: very light grey, clear to translucent grains, fine to medium grained, minor very fine, well sorted, angular to sub angular, minor sub rounded, trace quartz cement, trace argillaceous matrix, commonly loose, trace friable aggregates, poor inferred porosity, no fluor
2405	2410	95 5	CLAYSTONE: as above. SANDSTONE: as above.
2410	2415	30 70	CLAYSTONE: as above. SANDSTONE: as above.
2415	2420	60 40	CLAYSTONE: as above. SANDSTONE: as above.
2420	2425	40 60	CLAYSTONE: as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky. SANDSTONE: very light grey, clear to translucent grains, fine to medium grained, minor very fine, well sorted, angular to sub angular, minor sub rounded, trace quartz cement, trace argillaceous matrix, loose, poor inferred porosity, no fluor
2425	2430	70 30	CLAYSTONE: as above. SANDSTONE: as above.
2430	2435	80 20	CLAYSTONE: as above. SANDSTONE: as above.
2435	2440	80 20	CLAYSTONE: as above. SANDSTONE: as above.
2440	2445	80 20	CLAYSTONE: as above. SANDSTONE: as above.
2445	2450	90 10	CLAYSTONE: as above. SANDSTONE: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2450	2455	60	CLAYSTONE: as above, dark yellowish brown to brownish grey, minor white, weakly to moderately calcareous, minor to common silt, grading to argillaceous siltstone in part, trace carbonaceous specks and fragments, nil to trace disseminated pyrite, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		40	SANDSTONE: as above, very light grey, clear to translucent grains, fine to medium grained, minor very fine, well sorted, angular to sub angular, minor sub rounded, trace quartz cement, trace argillaceous matrix, loose, poor inferred porosity, no fluor
2455	2460	70	CLAYSTONE: as above.
		30	SANDSTONE: as above.
2460	2465	90	CLAYSTONE: as above.
		10	SANDSTONE: as above.
2465	2470	90	CLAYSTONE: as above.
		10	SANDSTONE: as above.
2470	2475	90	CLAYSTONE: as above.
		10	SANDSTONE: as above.
2475	2480	Note: sample heavily Baracarb contaminated.	
		90	CLAYSTONE: as above.
2480	2483	10	SANDSTONE: as above.
		Note: sample heavily Baracarb contaminated.	
2483	2483	80	CLAYSTONE: as above.
		20	SANDSTONE: as above.
2483	2490	Note: sample heavily Baracarb contaminated.	
		POOH to change bit @ 2483mRT – Samples during this bit run were of poor quality	
		20	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, very fine to fine grained, minor medium, well sorted, angular to sub rounded, minor quartz cement, nil to trace argillaceous matrix, friable to brittle aggregates, poor inferred porosity, no fluor.
2490	2495	80	CLAYSTONE: dark yellowish brown to brownish grey, minor white, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Note: sample has common cavings and Baracarb following trip.	
2495	2500	70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
2495	2500	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
2500	2505	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
2505	2510	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
2510	2515	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
2515	2520	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
2520	2525	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2525	2530	40	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, very fine to fine grained, minor medium, well sorted, angular to sub rounded, minor quartz cement, nil to trace argillaceous matrix, friable to brittle aggregates, poor inferred porosity, no hydrocarbon fluor, trace dull yellow mineral fluor.
		55	CLAYSTONE: dark yellowish brown to brownish grey, minor white, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		5	COAL: brownish black to black, earthy to sub vitreous lustre, friable to firm, sub fissile in part, sub blocky to blocky, hackly to angular fracture, occasional sub conchoidal fracture, lignitic.
2530	2535	20	SANDSTONE: as above.
		80	CLAYSTONE: as above.
		Tr	COAL: as above.
2535	2540	40	SANDSTONE: as above.
		60	CLAYSTONE: as above.
2540	2545	60	SANDSTONE: as above.
		40	CLAYSTONE: as above.
2545	2550	60	SANDSTONE: generally as above, minor medium to coarse grains, moderately sorted.
		40	CLAYSTONE: as above.
2550	2555	40	SANDSTONE: as above.
		60	CLAYSTONE: as above.
2555	2560	70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
2560	2565	30	SANDSTONE: as above.
		70	CLAYSTONE: as above.
2565	2570	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
2570	2575	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
2575	2580	5	SANDSTONE: as above.
		95	CLAYSTONE: as above.
2580	2585	80	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, fine to medium grained, minor very fine, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor rock flour, loose, poor inferred porosity. Fluor: 10% dull orange yellow spotted, slow dim to dull yellow white cut, thin ring residue
		20	CLAYSTONE: as above dark yellowish brown to brownish grey, minor white, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
2585	2590	80	SANDSTONE: as above.
		20	CLAYSTONE: as above.
		Tr	COAL: as above.
2590	2595	70	SANDSTONE: as above.
		30	CLAYSTONE: as above.
		Tr	COAL: as above.
2595	2600	20	SANDSTONE: as above.
		80	CLAYSTONE: as above.
		Tr	COAL: as above.

Note: Sample has abundant Baracarb contamination.

Interval (m)		%	Lithology / Show Description
From	To		
2600	2605	5	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, fine to medium grained, minor very fine, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common rock flour, loose, poor inferred porosity. Nil fluor
		95	CLAYSTONE: as above dark yellowish brown to brownish grey, minor white, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	COAL: brownish black to black, earthy to sub vitreous lustre, friable to firm, sub fissile in part, sub blocky to blocky, hackly to angular fracture, occasional sun conchoidal fracture, lignitic. Note: Sample has abundant minor contamination.
2605	2610	30	SANDSTONE: generally as above, abundant rock flour in sample.
		70	CLAYSTONE: as above.
2610	2615	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
2615	2620	20	SANDSTONE: as above.
		75	CLAYSTONE: as above.
		5	COAL: as above.
2620	2625	20	SANDSTONE: as above.
		75	CLAYSTONE: as above.
		5	COAL: as above.
2625	2630	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.
2630	2635	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
		Tr	COAL: as above.
2635	2640	20	SANDSTONE: as above.
		80	CLAYSTONE: as above.
		Tr	COAL: as above.
2640	2645	10	SANDSTONE: as above.
		90	CLAYSTONE: as above.
2645	2650	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
2650	2655	20	SANDSTONE: as above.
		80	CLAYSTONE: as above.
2655	2660	Tr	SANDSTONE: as above.
		100	CLAYSTONE: as above.
2660	2665	100	CLAYSTONE: dark yellowish brown to brownish grey, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		Tr	SANDSTONE: as above.
2665	2670	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
2670	2675	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2675	2680	90	CLAYSTONE: generally as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		5	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, fine to medium grained, minor very fine, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common rock flour, loose, poor inferred porosity. Nil fluor
		5	COAL: brownish black to black, earthy to sub vitreous lustre, friable to firm, sub fissile in part, sub blocky to blocky, hackly to angular fracture, occasional sun conchoidal fracture, lignitic.
2680	2685	90	CLAYSTONE: as above.
		5	SANDSTONE: as above.
		5	COAL: as above
2685	2690	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above
2690	2695	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above
2695	2700	80	CLAYSTONE: as above.
		10	SANDSTONE: as above.
		10	COAL: as above
2700	2705	90	CLAYSTONE: as above.
		10	SANDSTONE: as above.
		Tr	COAL: as above
2705	2710	80	CLAYSTONE: generally as above, dark yellowish brown to brownish grey, weakly to moderately calcareous, common silt, grading to argillaceous siltstone, trace very fine quartz, trace carbonaceous specks and fragments, nil to trace nodular pyrite, very soft to moderately firm, dispersive, amorphous to rarely sub blocky.
		20	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, very fine to fine grained, trace medium, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common rock flour, loose, poor inferred porosity. Nil fluor
2710	2715	100	CLAYSTONE: as above.
		Tr	SANDSTONE: as above.
2715	2720	95	CLAYSTONE: brownish grey to brownish black, common silt, grading to argillaceous siltstone, trace very fine quartz, micromicaceous, common carbonaceous specks, trace carbonaceous fragments, trace nodular pyrite, very soft to firm, amorphous to predominantly sub-blocky.
		5	SANDSTONE: generally as above, very fine to fine grained, well sorted, sub-angular to sub-rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common rock flour, friable to trace locally moderately hard in part, very poor visual porosity. Nil fluorescence
		Tr	COAL: as above.
		95	CLAYSTONE: as above, trace dark greenish grey which is calcareous, moderately firm and sub-blocky.
2720	2725	Tr	SANDSTONE: cemented as above, nil fluorescence.
		5	COAL: brownish black to black, predominantly earthy to occasionally sub vitreous lustre, friable to firm, sub fissile in part, sub blocky to blocky, hackly to angular fracture, occasional sub conchoidal fracture, lignitic

Interval (m)		%	Lithology / Show Description
From	To		
2725	2730	95	CLAYSTONE: predominantly brownish grey as above, trace pale yellowish brown very soft and amorphous, trace brownish black micromicaceous as above, trace dark greenish grey which is calcareous, moderately firm and sub-blocky.
		Tr	SANDSTONE: cemented as above, minor rock flour, nil fluorescence.
		5	COAL: as above.
2730	2735	80	CLAYSTONE: Predominantly light grey to light olive grey, very soft, trace carbonaceous specks, amorphous. Trace brownish grey and brownish black as above.
		20	SANDSTONE: Predominantly loose clear, opaque, translucent very fine to fine grains, trace medium, sub-angular to sub-rounded, moderately well sorted, poor inferred porosity, nil fluorescence. Trace very light grey, light brownish grey, cemented as above, common rock flour, nil fluorescence.
2735	2740	95	CLAYSTONE: brownish grey to brownish black, common silt, grading to argillaceous siltstone, trace very fine quartz, micromicaceous, common carbonaceous specks, trace carbonaceous fragments, soft to firm, trace moderately hard, amorphous to predominantly sub-blocky.
		5	SANDSTONE: Predominantly loose very fine to fine, as above. Trace cemented aggregates as above. Nil fluorescence.
2740	2745	95	CLAYSTONE: as above.
		5	SANDSTONE: Predominantly loose very fine to fine, as above. Trace cemented aggregates as above. Nil fluorescence.
2745	2750	95	CLAYSTONE: brownish grey to brownish black, very soft to soft and amorphous, minor light grey soft and amorphous.
		5	SANDSTONE: Predominantly loose very fine to fine, as above. Trace cemented aggregates as above. Nil fluorescence. Common rock flour.
2750	2755	70	CLAYSTONE: as above, very soft to soft, predominantly amorphous, occasionally sub blocky, trace pyrite nodules.
		30	SANDSTONE: Predominantly clear, opaque, translucent, loose very fine to medium, predominantly medium, moderately sorted, sub-angular-sub-rounded, poor to fair inferred porosity, common rock flour, nil fluorescence. Trace cemented aggregates as above. Nil fluorescence.
2755	2760	40	CLAYSTONE: as above, very soft to soft, predominantly amorphous, occasionally sub blocky.
		20	SANDSTONE: clear, opaque, translucent, loose very fine to medium, medium, poorly sorted, sub-angular to sub-rounded, poor inferred porosity, nil fluorescence. .
		40	COAL: brownish black to black, earthy to occasionally sub vitreous lustre, friable to firm, occasionally moderately hard, sub fissile in part, sub blocky to blocky, hackly to angular fracture, occasional conchoidal fracture, lignitic.
2760	2765	60	CLAYSTONE: as above, very soft to soft, predominantly amorphous, trace pyrite nodule, trace carbonaceous laminae, common carbonaceous specks and flecks.
		40	SANDSTONE: clear, opaque, translucent, loose very fine to medium, predominantly fine, moderately sorted, sub-angular-sub-rounded, poor inferred porosity, nil fluorescence.
		Tr	COAL: as above.
2765	2770	35	CLAYSTONE: as above, very soft to soft, predominantly amorphous, trace pyrite nodule, trace carbonaceous laminae, common carbonaceous specks and flecks.
		60	SANDSTONE: clear, opaque, translucent, loose very fine to coarse, predominantly medium, moderately sorted, sub-angular-sub-rounded, clean, fair inferred porosity, nil fluorescence. Common rock flour.
		5	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2770	2775	70	CLAYSTONE: as above, very soft to soft, predominantly amorphous, trace pyrite nodule, minor carbonaceous laminae, common carbonaceous specks and flecks.
		30	SANDSTONE: as above, fine to very coarse, poorly sorted, fair inferred porosity, minor kaolin matrix, nil fluorescence. Abundant rock flour.
		Tr	COAL: as above.
2775	2780	65	CLAYSTONE: brownish grey to brownish black, locally minor silt, grading to argillaceous siltstone i/p, micromicaceous, common carbonaceous specks, trace carbonaceous fragments, locally trace carbonaceous laminae, very soft to firm, amorphous to sub blocky, very soft to soft.
		30	SANDSTONE: as above, fine to very coarse, trace granule, sub-angular-sub-rounded, poorly sorted, trace muscovite mica, minor kaolin matrix, fair inferred porosity, nil fluorescence. Abundant rock flour.
		5	COAL: as above.
2780	2785	30	CLAYSTONE: as above.
		40	CARBONACEOUS CLAYSTONE: brownish black, black, very carbonaceous grading to Coal in part, micromicaceous in part, firm to friable, sub blocky.
		20	SANDSTONE: as above, fine to coarse, predominantly medium, sub-angular-sub-rounded, poorly sorted, minor kaolin matrix, fair inferred porosity, nil fluorescence. Abundant rock flour.
2785	2790	10	COAL: as above.
		85	CLAYSTONE: as above.
		10	SANDSTONE: as above, fine to medium, sub-angular-sub-rounded, poorly sorted, minor kaolin matrix, poor inferred porosity, nil fluorescence. Abundant rock flour.
2790	2795	5	COAL: as above.
		90	CLAYSTONE: as above.
		5	SANDSTONE: as above, fine to medium, sub-angular-sub-rounded, poorly sorted, minor kaolin matrix, poor inferred porosity, nil fluorescence. Common rock flour.
2795	2800	5	COAL: as above.
		60	CLAYSTONE: brownish black, carbonaceous in part, silty in part, micromicaceous, firm to moderately hard, sub blocky to occasionally blocky.
		30	SANDSTONE: clear, opaque, translucent, occasionally light grey, fine to medium, trace coarse and very coarse, predominantly medium, poorly sorted, predominantly sub angular to sub rounded, loose, minor kaolin matrix, trace pyrite nodules, trace fossil fragments, poor inferred porosity, nil fluorescence. Common rock flour. Trace clear, translucent, fine sub-angular well sorted moderately hard brown silica cemented aggregates, has trace very dull yellow pinpoint fluorescence, very slow cream cut flour, thin ring residue. Very poor show.
2800	2805	10	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic
		70	CLAYSTONE: brownish black as above, also brownish grey, very soft, common carbonaceous specks and flecks, amorphous.
		25	SANDSTONE: clear, opaque, translucent, fine to medium, moderately sorted, predominantly sub angular to sub rounded, loose, minor kaolin matrix, trace fossil fragments, poor inferred porosity, nil fluorescence. Common rock flour.
2805	2810	5	COAL: as above.
		75	CLAYSTONE: as above.
		10	SANDSTONE: as above, minor kaolin matrix, poor inferred porosity, nil fluorescence. Common rock flour.
		15	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2810	2815	80	CLAYSTONE: as above, minor brownish black, predominantly brownish grey and dark yellowish brown, very soft, trace micro carbonaceous specks, amorphous.
		10	SANDSTONE: as above, minor kaolin matrix, poor inferred porosity, nil fluorescence. Common rock flour.
		10	COAL: as above.
2815	2820	35	CLAYSTONE: as above, minor brownish black, predominantly brownish grey and dark yellowish brown, very soft, trace micro carbonaceous specks, amorphous.
		50	SANDSTONE: as above, fine to medium, sub-angular-sub-rounded, poorly sorted, loose, minor kaolin matrix, poor inferred porosity, nil fluorescence. Common rock flour.
		15	COAL: as above.
2820	2825	70	CLAYSTONE: as above, predominantly brownish black, carbonaceous grading to Coal in part, firm to occasionally moderately hard, sub blocky to blocky. Trace pyrite nodule chunks.
		10	SANDSTONE: as above, fine to medium, sub angular to sub rounded, poorly sorted, loose, minor kaolin matrix, poor inferred porosity, nil fluorescence. Minor rock flour.
		20	COAL: as above. Sample contaminated with Baracarb.
		70	CLAYSTONE: as above, predominantly brownish black, carbonaceous grading to Coal in part, firm to occasionally moderately hard, subblocky to blocky.
2825	2830	10	SANDSTONE: as above, fine to medium, sub angular to sub rounded, poorly sorted, loose, minor kaolin matrix, poor inferred porosity, nil fluorescence.
		20	COAL: as above. Sample contaminated with Baracarb.
		95	CLAYSTONE: as above, predominantly brownish grey, very soft, amorphous.
2830	2835	Tr	SANDSTONE: as above, nil fluorescence.
		5	COAL: as above.
2835	2840	60	CLAYSTONE: brownish grey to brownish black, common silt, grading to argillaceous siltstone, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, trace nodular pyrite, very soft to firm, amorphous to predominantly sub blocky.
		40	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, very fine to fine grained, trace medium, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, poor inferred porosity. Nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic Note: sample has abundant Baracarb contamination
		60	CLAYSTONE: as above, predominantly brownish grey, very soft, amorphous.
2840	2845	40	SANDSTONE: as above, nil fluorescence.
		Tr	COAL: as above.
2845	2850	20	CLAYSTONE: generally as above, predominantly brownish grey, becoming brownish black in part, common silt, grading to argillaceous siltstone, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, trace nodular pyrite, very soft to firm, amorphous to predominantly sub blocky.
		80	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, very fine to fine grained, trace medium, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, trace weakly cemented aggregates, poor inferred porosity. Nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic Note: sample has abundant Baracarb contamination

Interval (m)		%	Lithology / Show Description
From	To		
2850	2855	50	CLAYSTONE: generally as above, predominantly brownish grey, becoming brownish black in part, common silt, grading to argillaceous siltstone, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, trace nodular pyrite, very soft to soft, amorphous to occasionally sub blocky.
		50	SANDSTONE: very light grey, light brownish grey, clear to translucent grains, very fine to fine grained, trace medium, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, trace weakly cemented aggregates, poor inferred porosity. Nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic Note: sample has abundant Baracarb contamination
2855	2860	40	CLAYSTONE: as above, predominantly brownish grey, very soft, amorphous.
		40	SANDSTONE: as above, nil fluorescence.
		20	COAL: as above.
2860	2865	60	CLAYSTONE: as above, predominantly brownish grey, very soft, amorphous.
		30	SANDSTONE: as above, nil fluorescence.
		10	COAL: as above.
2865	2870	25	CLAYSTONE: generally as above, predominantly medium grey to brownish grey, minor brownish black in part, common silt, grading to argillaceous siltstone in part, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, nil to trace nodular pyrite, very soft to soft, amorphous to occasionally sub blocky.
		70	SANDSTONE: very light grey, light brownish grey in part, clear to translucent grains, very fine to fine grained, trace medium, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, nil to trace weakly cemented aggregates, poor inferred porosity. Nil fluorescence.
		5	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic.
2870	2875	60	CLAYSTONE: as above.
		40	SANDSTONE: as above.
		Tr	COAL: as above.
2875	2880	90	CLAYSTONE: generally as above, predominantly brownish grey, minor brownish black in part, common silt, grading to argillaceous siltstone in part, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, nil to trace nodular pyrite, very soft to soft, amorphous to occasionally sub blocky.
		10	SANDSTONE: very light grey, light brownish grey in part, clear to translucent grains, very fine to fine grained, trace medium, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, nil to trace weakly cemented aggregates, poor inferred porosity. Nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic.
2880	2885	90	CLAYSTONE: generally as above, predominantly brownish grey, minor brownish black in part, common silt, grading to argillaceous siltstone in part, trace very fine grained quartz, rare thin coal inter laminations, common carbonaceous specks, trace carbonaceous fragments, common disseminated pyrite, nil to trace nodular pyrite, very soft to soft, amorphous to occasionally sub blocky.
		10	SANDSTONE: as above.
		Tr	COAL: as above.
2885	2890	90	CLAYSTONE: as above.
		10	SANDSTONE: as above.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description		
From	To				
2890	2895	20	CLAYSTONE: generally as above, predominantly brownish grey, minor brownish black in part, common silt, grading to argillaceous siltstone in part, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, nil to trace nodular pyrite, very soft to soft, amorphous to occasionally sub blocky.		
		80	SANDSTONE: very light grey, light brownish grey in part, clear to translucent grains, very fine to fine grained, minor medium to coarse, moderately sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, trace weakly cemented aggregates, poor inferred porosity. Nil fluor		
		Tr	COAL: as above brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic.		
2895	2900	5	CLAYSTONE: generally as above, predominantly brownish grey, common silt, grading to argillaceous siltstone in part, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, nil to trace nodular pyrite, very soft to soft, amorphous to occasionally sub blocky.		
		95	SANDSTONE: very light grey, light brownish grey in part, clear to translucent grains, medium to coarse grained, rare very fine to fine, trace very coarse, moderately sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, generally loose, trace weakly cemented aggregates, poor inferred porosity. Nil fluor		
		Tr	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, hackly to angular fracture, lignitic.		
2900	2905	Tr	CLAYSTONE: as above.		
		95	SANDSTONE: as above.		
2905	2910	5	COAL: as above.		
		Tr	CLAYSTONE: as above.		
		5	SANDSTONE: as above.		
		95	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, friable to firm, occasionally moderately hard, sub blocky to blocky, sub fissile in part, hackly to angular fracture, trace silty laminae, lignitic.		
		2910	2915	Tr	CLAYSTONE: as above.
				Tr	SANDSTONE: as above.
2915	2920	100	COAL: generally as above.		
		60	CLAYSTONE: as above.		
		35	SANDSTONE: very light grey, clear to translucent grains, fine to medium grained, trace coarse, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor to common white rock flour, loose, poor inferred porosity. Nil fluor		
2920	2923	5	COAL: generally as above.		
		30	CLAYSTONE: as above.		
		60	SANDSTONE: as above.		
		10	COAL: generally as above.		
2923	2925		POOH @ 2923mRT to change mud motor.		
		10	CLAYSTONE: as above.		
		80	SANDSTONE: as above.		
		10	COAL: generally as above.		
(Poor quality sample after trip, abundant cavings)					

Interval (m)		%	Lithology / Show Description
From	To		
2925	2930	Tr	CLAYSTONE: generally as above, predominantly brownish grey, common silt, grading to argillaceous siltstone in part, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, nil to trace nodular pyrite, very soft to soft, occasionally firm, amorphous to occasionally sub-blocky.
		90	SANDSTONE: very light grey, clear to translucent grains, medium to coarse grained, trace fine, well sorted, angular to sub rounded, trace quartz cement, trace pyrite cement, nil to trace argillaceous matrix, minor white rock flour, trace nodular pyrite, loose, poor inferred porosity. Nil fluorescence.
		10	COAL: brownish black to predominantly black, dull to sub-vitreous lustre, brittle to firm, occasionally moderately hard, sub blocky to blocky, sub fissile in part, hackly to angular fracture, trace silty laminae, lignitic.
2930	2935	80	CLAYSTONE: as above.
		20	SANDSTONE: as above.
		Tr	COAL: as above.
2935	2940	100	CLAYSTONE: generally as above, very dispersive.
		Tr	SANDSTONE: as above.
		Tr	COAL: as above.
2940	2945	50	CLAYSTONE: generally as above, predominantly light brownish grey to brownish grey, common silt, grading to silty claystone in part, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, nil to trace nodular pyrite, very soft to soft, occasionally firm, amorphous to occasionally sub blocky.
		40	SANDSTONE: very light grey, clear to translucent grains, fine to medium grained, trace very fine, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor white rock flour, fair inferred porosity. Nil fluorescence.
		10	COAL: generally as above.
2945	2950	75	CLAYSTONE: as above.
		20	SANDSTONE: generally as above, trace firmly cemented aggregates.
		5	COAL: as above.
2950	2955	Tr	CLAYSTONE: as above.
		100	SANDSTONE: very light grey, clear to translucent grains, medium grained, trace fine and coarse grains, well sorted, angular to sub rounded, trace quartz cement, nil to trace argillaceous matrix, minor white rock flour, trace red lithic grains, fair inferred porosity. Nil fluor
		Tr	COAL: as above.
2955	2960	Tr	CLAYSTONE: as above.
		100	SANDSTONE: generally as above, trace pyrite cement.
		Tr	COAL: as above.
2960	2965	5	CLAYSTONE: as above.
		85	SANDSTONE: very light grey, clear to translucent grains, fine- coarse grained, predominantly medium, moderately sorted, angular to sub rounded, 10% friable fine grained aggregates with trace quartz cement and trace argillaceous matrix, minor white rock flour, predominantly loose, fair inferred porosity, poor visual porosity. 10% fluorescence in aggregates, nil stain, very dull yellowish orange patchy fluorescence, nil cut in white light, very pale white very slow cut fluorescence, nil residue, very poor show.
		10	COAL: as above.
2965	2970	95	CLAYSTONE: predominantly light brownish grey to brownish grey, common silt, grading to silty claystone in part, trace very fine grained quartz, common micro carbonaceous specks, nil to trace nodular pyrite, very soft to soft, amorphous.
		5	SANDSTONE: generally as above, fine to medium, occasionally coarse, trace very coarse. Nil fluorescence.
		Tr	COAL: as above.

Interval (m)		%	Lithology / Show Description
From	To		
2970	2975	95	CLAYSTONE: predominantly light brownish grey to brownish grey, common silt, grading to silty claystone in part, trace very fine grained quartz, common micro carbonaceous specks, nil to trace nodular pyrite, very soft to soft, amorphous.
		5	SANDSTONE: generally as above, fine to medium, occasionally coarse, trace very coarse. Nil fluorescence.
		Tr	COAL: as above.
2975	2980	5	CLAYSTONE: as above.
		95	SANDSTONE: generally as above, medium to coarse, predominantly medium, trace fine, trace pyrite cement, rare mica flakes, 5% aggregates as above, predominantly loose, one grain fluorescence as in sample 2960 to 2965m (Caving?). Trace small pyrite nodules, and rare 2-3mm pyrite nodule chunk.
		Tr	COAL: as above.
2980	2985	40	CLAYSTONE: as above.
		55	SANDSTONE: generally as above, very fine to coarse, trace very coarse, predominantly medium, sub-angular to sub-rounded, poorly sorted, trace mica flakes, trace pyrite cement, common pyrite nodules, 5% aggregates as above, fair inferred porosity, poor visual porosity, nil fluorescence.
		5	COAL: as above.
2985	2990	90	CLAYSTONE: as above, very soft and amorphous, becoming less silty.
		5	SANDSTONE: as above, very fine to medium, nil fluorescence.
		5	COAL: as above.
2990	2995	100	CLAYSTONE: as above, very soft and amorphous.
		Tr	SANDSTONE: as above, very fine to fine grained, nil fluorescence.
		Tr	COAL: as above (Cavings).
2995	3000	100	CLAYSTONE: as above, very soft and amorphous.
		Tr	SANDSTONE: as above, very fine to fine grained, nil fluorescence.
		Tr	COAL: as above (Cavings).
3000	3005	95	CLAYSTONE: as above, very soft and amorphous.
		5	SANDSTONE: as above, fine to medium, predominantly loose, minor pyrite cement, trace pyrite nodules, nil fluorescence.
		Tr	COAL: as above.
3005	3010	75	CLAYSTONE: generally as above, very soft and amorphous, minor brownish black, firm, carbonaceous grading to Coal in part, subblocky to occasionally subfissile.
		20	SANDSTONE: clear, opaque, translucent, very light grey, very fine to fine, occasionally medium, trace coarse, moderately well sorted, sub angular to sub rounded, predominantly loose, trace mica flakes, trace pyrite cement, trace pyrite nodules, trace fine aggregates, friable which have trace quartz cement and trace white argillaceous matrix, minor rock flour, poor inferred porosity, very poor visual porosity, nil fluorescence.
		5	COAL: as above.
3010	3015	95	CLAYSTONE: generally as above, very soft and amorphous, trace brownish black claystone as above.
		5	SANDSTONE: trace very fine to fine as above, well sorted, sub angular to sub rounded, poor inferred porosity, nil fluorescence.
		70	CLAYSTONE: as above, very soft and amorphous.
3015	3020	10	SANDSTONE: very fine to fine as above, well sorted, sub angular to sub rounded, poor inferred porosity, trace fine grained aggregates with trace quartz cement, minor pyrite cement, trace mica flakes, trace pyrite nodules and chunks, nil fluorescence.
		20	COAL: as above, occasionally brittle, firm to moderately hard.

Interval (m)		%	Lithology / Show Description
From	To		
3020	3025	95	CLAYSTONE: as above, very soft and amorphous.
		5	SANDSTONE: fine to occasionally medium loose grains as above, trace fine grained aggregates with trace quartz cement, minor pyrite cement, trace mica flakes, trace pyrite nodules and chunks, nil fluorescence.
		Tr	COAL: as above, (cavings).
3025	3030	85	CLAYSTONE: as above, very soft and amorphous.
		5	SANDSTONE: very fine to fine loose grains as above, rare fine grained aggregates with trace quartz cement, trace pyrite cement, trace pyrite nodules and chunks, nil fluorescence.
		10	COAL: brownish black to predominantly black, dull to sub vitreous lustre, brittle to firm, occasionally moderately hard, sub blocky to blocky, sub fissile in part, hackly to angular fracture, lignitic to sub bituminous.
3030	3035	45	CLAYSTONE: light brownish grey to brownish grey, minor carbonaceous brownish black, minor silt, trace very fine grained quartz, common carbonaceous specks, trace carbonaceous fragments, very soft to soft, occasionally firm, predominantly amorphous to occasionally sub blocky.
		50	SANDSTONE: clear, opaque, translucent, trace pale grey, very fine to fine loose grains as above, rare fine grained aggregates with trace quartz cement, common to abundant white argillaceous matrix, trace pyrite cement, trace pyrite nodules and chunks, nil fluorescence.
		5	COAL: brownish black to predominantly black, dull to sub vitreous lustre, brittle to firm, occasionally moderately hard, locally trace disseminated pyrite, sub blocky to blocky, sub fissile in part, hackly to angular fracture, lignitic to sub bituminous.
3035	3040	30	CLAYSTONE: light brownish grey to brownish grey as above, very soft and amorphous.
		60	SANDSTONE: very fine to fine as above, occasionally medium, common white argillaceous matrix, trace pyrite cement, trace pyrite nodules, nil fluorescence.
		10	COAL: as above.
3040	3045	15	CLAYSTONE: light brownish grey to brownish grey as above, very soft and amorphous.
		70	SANDSTONE: clear, opaque, translucent, trace pale grey, very fine to medium as above, predominantly medium, sub angular to sub rounded, moderately sorted, predominantly loose, minor mica, minor (10%) fine to occasionally medium friable to occasionally moderately hard aggregates, common white argillaceous matrix, trace quartz cement, locally trace very hard pyrite cement, trace pyrite nodules, fair inferred porosity, nil to very poor visual porosity, nil fluorescence.
		15	COAL: As above.
3045	3050	70	CLAYSTONE: light brownish grey to brownish grey as above, very soft and amorphous, occasionally brownish black hard and subblocky to blocky.
		15	SANDSTONE: as above, trace white argillaceous matrix, trace pyrite cement, trace pyrite nodules, fair inferred porosity, nil to very poor visual porosity, nil fluorescence.
		15	COAL: As above, trace hard and blocky.
3050	3055	85	CLAYSTONE: light brownish grey to predominantly brownish grey as above, very soft and amorphous, occasionally brownish black hard and subblocky to blocky.
		5	SANDSTONE: as above, nil fluorescence.
		10	COAL: As above.
3055	3060	80	CLAYSTONE: light brownish grey to predominantly brownish grey as above, very soft and amorphous, occasionally brownish black, subblocky to blocky.
		10	SANDSTONE: as above very fine to fine grained, sub angular to sub rounded, loose, trace rock flour, nil fluorescence.
		10	COAL: As above.

Interval (m)		%	Lithology / Show Description
From	To		
3060	3065	15	CLAYSTONE: light brownish grey to predominantly brownish grey as above, very soft and amorphous, occasionally brownish black, subblocky to blocky.
		80	SANDSTONE: clear, opaque, translucent, fine to medium, predominantly medium, sub rounded, occasionally sub angular, well sorted, loose, trace rock flour, trace mica, trace pyrite, trace argillaceous matrix, loose, fair inferred porosity, nil fluorescence.
		5	COAL: As above.
3065	3070	65	CLAYSTONE: light brownish grey to predominantly brownish grey as above, very soft and amorphous, occasionally brownish black, subblocky to blocky.
		25	SANDSTONE: as above, medium to coarse, predominantly medium, sub rounded, occasionally sub angular, trace argillaceous matrix, loose, fair inferred porosity, nil fluorescence.
		10	COAL: As above.
3070	3075	70	CLAYSTONE: light brownish grey to predominantly brownish grey as above, very soft and amorphous, occasionally brownish black, dispersive, subblocky to blocky.
		30	SANDSTONE: very light grey, clear, opaque, translucent, and trace pale grey grains, fine to predominantly medium grained, trace very fine and coarse, moderately to well sorted, sub angular to sub rounded, trace quartz cemented aggregates, trace hard pyrite cemented aggregates, minor white argillaceous matrix, rare nodular pyrite, predominantly loose, minor (10%) fine to medium friable to occasionally hard aggregates, fair inferred porosity, nil to very poor visual porosity, nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub vitreous lustre, brittle to firm, occasionally moderately hard, minor hard pyritic laminae, locally trace disseminated pyrite, sub blocky to blocky, sub fissile in part, hackly to angular fracture, lignitic to sub bituminous.
3075	3080	20	CLAYSTONE: light brownish grey to brownish grey, very soft and amorphous, occasionally brownish black, dispersive, sub blocky to blocky.
		80	SANDSTONE: very light grey, clear, opaque, translucent, and trace pale grey grains, fine to predominantly medium grained, trace very fine and coarse, moderately to well sorted, sub angular to sub rounded, trace quartz cemented aggregates, trace hard pyrite cemented aggregates, minor white argillaceous matrix, trace nodular pyrite, predominantly loose, minor fine to medium friable to occasionally hard aggregates, fair inferred porosity, nil to very poor visual porosity, nil fluorescence.
		Tr	COAL: as above.
3080	3085	10	CLAYSTONE: as above, very soft and amorphous.
		90	SANDSTONE: as above.
3085	3090	Tr	COAL: as above.
		30	CLAYSTONE: light brownish grey to brownish grey, very soft and amorphous, occasionally brownish black, dispersive, sub blocky to blocky.
		70	SANDSTONE: very light grey, clear, opaque, translucent, and trace pale grey grains, fine to predominantly medium grained, trace very fine and coarse, moderately to well sorted, sub angular to sub rounded, minor white argillaceous matrix, predominantly loose, fair inferred porosity, nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub vitreous lustre, brittle to firm, occasionally moderately hard, locally trace disseminated pyrite, sub blocky to blocky, sub fissile in part, hackly to angular fracture, lignitic to sub bituminous.
3090	3095	40	CLAYSTONE: as above, very soft and amorphous.
		60	SANDSTONE: generally as above, fine to medium grained, trace pyrite cement.
		Tr	COAL: as above
3095	3100	60	CLAYSTONE: as above, very soft and amorphous.
		40	SANDSTONE: generally as above, fine to medium grained, predominantly fine, trace pyrite cement.
		Tr	COAL: as above

Interval (m)		%	Lithology / Show Description
From	To		
3100	3105	20	CLAYSTONE: light brownish grey to brownish grey, very soft and amorphous, occasionally brownish black, dispersive, sub blocky to blocky.
		80	SANDSTONE: very light grey, clear, opaque, translucent, and trace pale grey grains, fine to medium grained, predominantly fine, trace very fine, well sorted, sub angular to sub rounded, minor white argillaceous matrix, loose, fair inferred porosity, nil fluorescence.
		Tr	COAL: brownish black to predominantly black, dull to sub vitreous lustre, brittle to firm, occasionally moderately hard, locally trace disseminated pyrite, sub blocky to blocky, sub fissile in part, hackly to angular fracture, lignitic to sub bituminous.
3105	3110	10	CLAYSTONE: as above, light brownish grey to brownish grey, very soft and amorphous, occasionally brownish black, dispersive, sub blocky to blocky.
		90	SANDSTONE: very light grey, clear, opaque, translucent, and trace pale grey grains, fine to predominantly medium grained, trace very fine and coarse, moderately to well sorted, sub angular to sub rounded, trace strong pyrite cement, trace nodular pyrite, minor white argillaceous matrix, loose, fair inferred porosity, nil fluorescence.
		Tr	COAL: as above.
3110	3115	Tr	CLAYSTONE: as above, light brownish grey to brownish grey, very soft and amorphous, occasionally brownish black, dispersive, sub blocky to blocky.
		100	SANDSTONE: very light grey, clear, opaque, translucent, and trace pale grey grains, fine to predominantly medium grained, trace coarse, well sorted, sub angular to sub rounded, trace strong pyrite cement, trace nodular pyrite, minor white argillaceous matrix, loose, fair inferred porosity, nil fluorescence.
		Tr	COAL: as above.
3115	3120	Tr	CLAYSTONE: as above, very soft and amorphous.
		100	SANDSTONE: as above.
		Tr	COAL: as above.
3120	3125	Tr	CLAYSTONE: as above, very soft and amorphous.
		100	SANDSTONE: as above.
		Tr	COAL: as above.
3125	3130	Tr	CLAYSTONE: as above, very soft and amorphous, trace brownish black and hard, blocky.
		100	SANDSTONE: clear, opaque, translucent, and trace pale grey grains, medium to predominantly coarse grained, trace very coarse, well sorted, sub angular to predominantly sub rounded, trace strong pyrite cement, trace nodular pyrite, trace white argillaceous matrix, loose, fair inferred porosity, nil fluorescence.
		Tr	COAL: as above (caving).
3130	3135	Tr	CLAYSTONE: as above, very soft and amorphous, trace brownish black and hard, blocky.
		100	SANDSTONE: as above, medium to predominantly coarse, minor very coarse, trace granules (2mm), loose, fair to good inferred porosity, nil fluorescence.
		Tr	COAL: as above (caving).
3135	3140	Tr	CLAYSTONE: as above, very soft and amorphous, trace brownish black and hard, blocky.
		100	SANDSTONE: clear, opaque, translucent, pale grey, medium to coarse, minor very coarse, trace granules (2mm), sub-angular to predominantly sub-rounded, trace rounded, moderately sorted, predominantly loose, trace fine grained aggregates with trace quartz cement and trace white argillaceous matrix, firm to moderately hard in part, locally trace disseminated pyrite inclusion, trace pyrite nodules, fair inferred porosity, very poor to poor visual porosity. Trace fluorescence in aggregates, nil stain, patchy very dull orange/brown fluorescence, having nil cut in white light, very slow pale white cut fluorescence having no residue, very poor show.
		Tr	COAL: as above (caving).

Interval (m)		%	Lithology / Show Description
From	To		
3140	3145	30	CLAYSTONE: light brownish grey to brownish grey, silty, common micro carbonaceous specks, trace carbonaceous fleck, very soft and amorphous
		70	SANDSTONE: predominantly loose medium to coarse, minor very coarse, trace granules (2mm) as above. 5% fine to occasionally medium grained aggregates as above has fluorescence. Nil stain, 5% patchy dull yellow fluorescence, nil cut in white light, moderately rapid pale cream/white cut fluorescence, trace residue, poor to fair show.
		Tr	COAL: brownish black, black, dull to earthy, brittle, uneven to angular fracture, pyritised, lignitic.
3145	3150	50	CLAYSTONE: light brownish grey to brownish grey, silty, common micro carbonaceous specks, trace carbonaceous fleck, very soft and amorphous
		50	SANDSTONE: predominantly loose fine to coarse, minor very coarse, loose as above. 20% clear, opaque, translucent, occasionally pale brown, predominantly fine to occasionally medium grained aggregates, sub angular to sub rounded, moderately sorted, trace quartz cement, minor argillaceous matrix, trace pyrite cement, trace pyrite nodules, very poor to poor visual porosity, 5 % fluorescence. Nil stain, 5% patchy dull yellow fluorescence, nil cut in white light, moderately rapid pale cream/white cut fluorescence, trace residue, fair show.
		Tr	COAL: brownish black, black, dull to earthy, brittle, uneven to angular fracture, pyritised, lignitic.
3150	3155	80	CLAYSTONE: light brownish grey to brownish grey, silty, common micro carbonaceous specks, trace carbonaceous fleck, very soft and amorphous
		20	SANDSTONE: predominantly loose fine to coarse, minor very coarse, loose as above. Trace clear, opaque, translucent, occasionally pale brown, predominantly fine to occasionally medium grained aggregates, sub-angular to sub-rounded, moderately sorted, trace quartz cement, minor argillaceous matrix, trace pyrite cement, trace pyrite nodules, very poor to poor visual porosity, no fluorescence.
		Tr	COAL: brownish black, black, dull to earthy, brittle, uneven to angular fracture, pyritised, lignitic.
3155	3158	85	CLAYSTONE: brownish grey, silty, common micro carbonaceous specks, trace carbonaceous fleck, very soft and amorphous
		15	SANDSTONE: as above, no fluorescence.
		Tr	COAL: brownish black, black, dull to earthy, brittle, uneven to angular fracture, pyritised, lignitic.
		POOH to core @ 3158.45mRT. Cut a total of 3 cores from 3158.5m to 3185.66m. Refer to core descriptions.	
3185	3190	80	CLAYSTONE: brownish grey, silty in part, common micro carbonaceous specks, trace carbonaceous fleck, very slightly calcareous in part, very soft and amorphous
		20	SANDSTONE: clear, opaque, translucent, medium to coarse, predominantly medium, moderately sorted, sub-angular to sub-rounded, trace quartz overgrowth, trace pyrite nodules, common rock flour, trace argillaceous matrix, trace forams, poor inferred porosity, no fluorescence, Glycol fluorescence in part.
		Tr	COAL: brownish black, black, dull to earthy lustre, uneven to fracture, lignitic.
3190	3195	40	CLAYSTONE: brownish grey, silty in part, common micro carbonaceous specks, trace carbonaceous fleck, very slightly calcareous in part, very soft and amorphous
		55	SANDSTONE: clear, opaque, translucent, medium to coarse, poorly sorted, sub-angular to sub-rounded, trace pyrite nodules, locally trace disseminated pyrite inclusions, common rock flour, trace argillaceous matrix, poor to fair inferred porosity, 10% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show.
		5	COAL: brownish black, black, dull to earthy lustre, uneven to fracture, lignitic.

Interval (m)		%	Lithology / Show Description
From	To		
3195	3200	50	CLAYSTONE: brownish grey, silty in part, common micro carbonaceous specks, trace carbonaceous fleck, very slightly calcareous in part, very soft and amorphous
		45	SANDSTONE: clear, opaque, translucent, medium to coarse, poorly sorted, sub-angular to sub-rounded, trace pyrite nodules, locally trace disseminated pyrite inclusions, common rock flour, trace argillaceous matrix, poor to fair inferred porosity, 10% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show.
		5	COAL: brownish black, black, dull to earthy lustre, uneven to fracture, lignitic.
		70	CLAYSTONE: as above, brownish grey, silty in part, minor carbonaceous specks and fragments, very slightly calcareous in part, dispersive, predominantly very soft and amorphous bit generated texture, trace hard blocky to sub fissile representative cuttings.
3200	3205	30	SANDSTONE: clear, opaque, translucent, medium to coarse grained, poorly sorted, sub angular to sub rounded, minor angular, moderate siliceous cement, trace pyrite cement, minor quartz overgrowths, trace brownish grey argillaceous matrix, trace nodular pyrite, trace feldspar grains, common rock flour, returned loose, trace firm aggregates, poor to fair inferred porosity, 10% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show.
		Tr	COAL: brownish black, black, dull to earthy lustre, uneven to fracture, lignitic. NOTE: Samples contain Barablock mud additive contamination which gives dull white cut fluorescence.
		70	CLAYSTONE: as above, brownish grey, silty in part, minor carbonaceous specks and fragments, very slightly calcareous in part, dispersive, predominantly very soft and amorphous bit generated texture, trace hard blocky to sub fissile representative cuttings.
		30	SANDSTONE: clear, opaque, translucent, medium to coarse grained, trace very coarse, poorly sorted, sub angular to sub rounded, minor angular, moderate siliceous cement, trace pyrite cement, minor quartz overgrowths, trace brownish grey argillaceous matrix, trace nodular pyrite, trace feldspar grains, common rock flour, returned loose, trace firm aggregates, fair inferred porosity, 10% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show.
3205	3210	Tr	COAL: brownish black, black, dull to earthy lustre, uneven to fracture, lignitic.
		20	CLAYSTONE: as above, brownish grey, silty in part, minor carbonaceous specks and fragments, very slightly calcareous in part, dispersive, predominantly very soft and amorphous bit generated texture, trace hard blocky to sub fissile representative cuttings.
		80	SANDSTONE: clear, opaque, translucent, predominantly medium to coarse grained, moderately well sorted, sub angular to sub rounded, minor angular, moderate siliceous cement, minor quartz overgrowths, trace brownish grey argillaceous matrix, trace nodular pyrite, trace feldspar grains, common rock flour, returned loose, trace firm aggregates, fair inferred porosity, 5% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show.
		Tr	COAL: brownish black, black, dull to earthy lustre, uneven to fracture, lignitic.
3210	3215	10	CLAYSTONE: as above.
		90	SANDSTONE: clear, opaque, translucent, medium to coarse grained, trace very coarse, moderately well sorted, sub angular to sub rounded, minor angular, moderate siliceous cement, minor quartz overgrowths, trace brownish grey argillaceous matrix, trace feldspar grains, common rock flour, returned loose, trace firm aggregates, fair inferred porosity, 5% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show.
		Tr	COAL: as above.
3215	3220		

Interval (m)		%	Lithology / Show Description
From	To		
3220	3225	70	CLAYSTONE: as above, brownish grey, silty in part, minor carbonaceous specks and fragments, very slightly calcareous in part, dispersive, predominantly very soft and amorphous bit generated texture, trace hard blocky to sub fissile representative cuttings.
		30	SANDSTONE: as above, clear, opaque, translucent, fine to predominantly medium grained, trace coarse, moderately well sorted sorted, sub-angular to sub-rounded, minor to common angular, moderate siliceous cement, trace quartz overgrowths, nil to trace brownish grey argillaceous matrix, trace nodular pyrite, common rock flour, returned loose, trace firm aggregates, fair inferred porosity, 5% fluorescence, nil stain, dull to moderately bright yellowish white pinpoint to spotted fluorescence, nil cut in white light, trace dull white very slow cut fluorescence, nil residue. Poor show. NOTE: Samples contain Barablock mud additive contamination which gives dull white cut fluorescence.
3225	3230	80	CLAYSTONE: as above.
		20	SANDSTONE: as above.
3230	3235	90	CLAYSTONE: as above, brownish grey, silty in part, minor carbonaceous specks and fragments, trace coaly laminae, very slightly calcareous in part, dispersive, predominantly very soft and amorphous bit generated texture, trace hard blocky to sub fissile representative cuttings.
		10	SANDSTONE: as above.
3235	3240	80	CLAYSTONE: as above.
		20	SANDSTONE: clear, opaque, translucent, fine to predominantly medium grained, trace coarse, moderately well sorted sorted, sub angular to sub rounded, minor to common angular, moderate siliceous cement, trace quartz overgrowths, nil to trace brownish grey argillaceous matrix, trace nodular pyrite, common rock flour, returned loose, trace firm aggregates, fair inferred porosity.
3240	3245	90	CLAYSTONE: as above.
		10	SANDSTONE: as above.
3245	3250	90	CLAYSTONE: as above, brownish grey, silty in part, minor carbonaceous specks and fragments, trace very fine to fine grained quartz, trace arenaceous laminae, trace coaly fragments, trace mica, very slightly calcareous in part, dispersive, predominantly very soft and amorphous bit generated texture, trace hard blocky to sub fissile representative cuttings.
		10	SANDSTONE: clear, opaque, translucent, fine to predominantly medium grained, trace coarse, moderately well sorted, sub angular to sub rounded, minor to common angular, moderate siliceous cement, trace quartz overgrowths, nil to trace brownish grey argillaceous matrix, trace nodular pyrite, common rock flour, returned loose, trace firm aggregates, fair inferred porosity. NOTE: Samples contain Barablock mud additive contamination which gives dull white cut fluorescence.
3250	3255	90	CLAYSTONE: as above.
		10	SANDSTONE: as above. Abundant Barablock (90 % of sample) mud additive in sample, which gives dull white cut fluorescence.
3255	3260	90	CLAYSTONE: dusky yellowish brown, brownish black, silty, minor carbonaceous specks and fragments, trace very fine grained quartz, dispersive, very soft and amorphous.
		5	SANDSTONE: clear, opaque, translucent, fine to medium, moderately sorted, sub angular to sub rounded, generally as above, trace mica, poor inferred porosity, no fluorescence.
		5	COAL: brownish black, black, earthy to sub vitreous, angular to sub conchoidal fracture, brittle, occasionally hard, blocky. Common Barablock mud additive.

Interval (m)		%	Lithology / Show Description
From	To		
3260	3265	90	CLAYSTONE: brownish grey, silty, minor carbonaceous specks and fragments, trace very fine grained quartz, dispersive, very soft and amorphous.
		10	SANDSTONE: as above, trace pyrite nodules Common Barablock.
3265	3270	95	CLAYSTONE: brownish grey, silty, minor carbonaceous specks and fragments, trace very fine grained quartz, dispersive, very soft and amorphous.
		5	SANDSTONE: as above, trace pyrite nodules Common Barablock.
3270	3275	95	CLAYSTONE: brownish grey, silty, minor carbonaceous specks and fragments, trace very fine grained quartz, dispersive, very soft and amorphous.
		5	SANDSTONE: as above, trace pyrite nodules Common Barablock.

Reached TD 3275m MDRT on the 4th May at 00:45hrs.

APPENDIX 3b

MARLIN A-24A

Core Chip Descriptions

Arnaldo Ribeiro/Cliff Menhennitt

CONVENTIONAL CORE CHIP DESCRIPTION



Geologist(s): Arnaldo Ribeiro/Cliff Menhennitt	Core Number: 1	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3158.5-3167.66m	Metres Cored: 9.16	Recovery / % 100	Date: 29 th April 2004
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DEPTH m	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES COLOR	SHOW QUAL
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR		
3158.5	100	SANDSTONE: Quartzose, clear, opaque, translucent, pale grey, medium – very coarse, predominantly coarse to very coarse, common granules (2-3mm), one 5mm broken granule, moderately sorted, sub-rounded, trace quartz cement, locally trace pyrite cement, locally trace clay matrix, minor disseminated pyrite, trace pyrite nodules, predominantly moderately hard, locally friable in part, trace interstitial porosity. Fluorescence. Hydrocarbon odour.	PVP	NIL	PATCHY MODERATELY BRIGHT YELLOW	NIL	IMMEDIATE WHITE	Thick pale brown film residue	GOOD
3159	100	SANDSTONE: Quartzose, generally as above, medium to very coarse, common granules, poorly sorted, moderately hard. Trace interstitial porosity. Trace Fluorescence.	PVP	NIL	Trace PATCHY DULL YELLOW	NIL	IMMEDIATE WHITE	Thin film residue	POOR
3160	100	SANDSTONE: Quartzose, generally as above, medium to very coarse, common granules, poorly sorted, moderately hard to hard. Trace interstitial porosity. Trace Fluorescence.	PVP	NIL	Trace PATCHY DULL YELLOW/WHITE	NIL	MODERATE WHITE	Thin film residue	POOR
3161	90 10	SANDSTONE: Quartzose, as above, medium to granules, bi-modal environment, very hard. Trace patchy fluorescence. CLAYSTONE: SANDSTONE/CLAYSTONE thin bed CONTACT. brownish black, common silt grading to Siltstone, non calcareous, trace mica flakes, micro micaceous in part, hard, carbonaceous in part grading to Coal, common carbonaceous specks and flecks, local vitreous coal lense.	NVP-PVP	NIL	Trace PATCHY DULL YELLOW/WHITE	NIL	MODERATE WHITE	Thin film residue	POOR
3162	80 20	SANDSTONE with thin CLAYSTONE interbeds, and vitreous coal lense. SANDSTONE: Quartzose, clear, opaque, translucent, pale grey, medium grey, medium to very coarse, trace granules, sub-angular to sub-rounded, poorly sorted, trace slightly calcareous cement, trace quartz cement, common argillaceous matrix, trace pyrite nodule, trace pyrite cement, moderately hard. Trace (2 spots only) fluorescence. CLAYSTONE: brownish black, common silt grading to Siltstone, non calcareous, trace mica flakes, micro micaceous in part, hard, carbonaceous in part grading to Coal, common carbonaceous specks and flecks, local vitreous coal lense.	PVP	NIL	Trace SPOTTED DULL YELLOW/WHITE	NIL	SLOW WHITE	pale very thin ring residue	VERY POOR

CONVENTIONAL CORE CHIP DESCRIPTION



Geologist(s): Amaldo Ribeiro/Cliff Menhennitt	Core Number: 1	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3158.5-3167.66m	Metres Cored: 9.16	Recovery / % 100	Date: 29 th April 2004
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DEPTH m	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES COLOR	SHOW QUAL
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR		
3163	100	SANDSTONE: Quartzose, clear, opaque, translucent, pale grey, trace medium grey, medium to granules, poorly sorted, sub-angular to sub-rounded, abundant brownish black silty argillaceous mtrix, trace mica flakes, carbonaceous specks in matrix, hard. Very poor visual porosity, Even fluorescence in matrix.	VPVP	NIL	EVEN DULL BROWN	NIL	TRACE VERY SLOW DULL WHITE	NIL	VERY POOR
3164	100	SANDSTONE: Quartzose, clear, opaque, translucent, pale grey, trace medium grey, medium to granules, poorly sorted, sub-rounded, locally brownish black silty clay matrix, trace sl calcareous cement, trace carbonaceous specks in matrix, hard. Trace spotted fluorescence in clay matrix.	PVP	NIL	Trace SPOTTED DULL PALE YELLOW/WHITE	NIL	VERY SLOW DULL WHITE	TRACE RESIDUE	VERY POOR
3165	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, fine to medium, sub-angular to sub-rounded, moderately sorted, locally common clay matrix, common muscovite and minor biotite mica, trace glauconite nodule, trace chlorite?, hard.	PVP	NIL	Trace SPOTTED DULL PALE YELLOW/WHITE	NIL	SLOW DULL WHITE	thin ring residue	POOR
3166	100	SANDSTONE: Quartzose, clear, opaque, translucent, pale grey, trace medium grey, medium to very coarse grained, trace fine and granules, very poorly sorted, sub-angular to sub-rounded, minor angular, strong silica cement, trace pyrite cement, abundant brownish black silty argillaceous matrix in parts, trace mica flakes, trace carbonaceous specks in matrix, trace quartz overgrowths, trace chloritic grains, hard. Very poor visual porosity.	PVP	NIL	Trace SPOTTED DULL PALE YELLOW/WHITE	NIL	VERY SLOW DULL WHITE CRUSH CUT (Possibly Glycol)	thin dull ring residue	POOR
3166.7	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, minor medium, moderately well sorted, predominantly sub-angular to minor sub-rounded, minor angular, moderate siliceous cement, trace lithic grains, hard, friable in part, fair to good visual porosity.	FVP-GVP	NIL	Trace SPOTTED DULL PALE YELLOW/WHITE	NIL	VERY SLOW DULL WHITE CRUSH CUT (Possibly Glycol)	thin dull ring residue	POOR
3167.66	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, very coarse to granule, minor coarse, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace argillaceous matrix, trace lithic grains, firm to friable, fair to good visual porosity.	FVP-GVP	NIL	Trace SPOTTED DULL PALE YELLOW/WHITE	NIL	VERY SLOW DULL WHITE CRUSH CUT (Possibly Glycol)	thin dull ring residue	POOR

CONVENTIONAL CORE CHIP DESCRIPTION



Geologist(s): Arnaldo Ribeiro/Cliff Menhennitt	Core Number: 2	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3167.66-3176.66	Metres Cored: 9.0	Recovery / % 96	Date: 30 th April 2004
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DEPTH m	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES COLOR	SHOW QUAL
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR		
3167.66	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, very coarse to granule, minor coarse, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey argillaceous matrix, trace lithic grains, firm to friable, good visual intergranular porosity. (Some drilling mud invasion)	GVP	NIL	TRACE DULL PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	SLOW DULL WHITE CUT AND CRUSH CUT (Partly Glycol)	thin mod brt ring residue	POOR
3168	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, very coarse to granule, minor coarse, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey argillaceous matrix, trace lithic grains, trace pyrite pore fill and pyritised wood fragments, firm to friable, good visual intergranular porosity, minor kaolinitic pore fill in part.	GVP	NIL	TRACE DULL PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	SLOW DULL WHITE CUT AND CRUSH CUT (Partly Glycol)	thin mod brt ring residue	POOR
3169	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to granule, minor medium, poorly sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, trace lithic grains, firm to friable, good visual intergranular porosity in part.	FVP-GVP	NIL	TRACE DULL PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	SLOW DULL WHITE CUT AND CRUSH CUT (Partly Glycol)	thin mod brt ring residue	POOR
3170	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium, moderately sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, trace lithic grains, trace weathered feldspar grains, trace pyrite, firm to friable, good visual intergranular porosity.	GVP	NIL	TRACE DULL PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	SLOW DULL WHITE CUT AND CRUSH CUT (Partly Glycol)	thin mod brt ring residue	POOR
3171	100	SANDSTONE: generally as above, quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granules and medium grains, moderately sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, trace lithic grains, trace weathered feldspar grains, trace pyrite, firm to friable, good visual intergranular porosity.	GVP	NIL	TRACE DULL PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	Very SLOW DULL CRUSH CUT (Partly Glycol)	thin dull ring residue	POOR

CONVENTIONAL CORE CHIP DESCRIPTION

Geologist(s): Arnaldo Ribeiro/Cliff Menhennitt	Core Number: 2	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3167.66-3176.66	Metres Cored: 9.0	Recovery / % 96	Date: 30 th April 2004
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DEPTH m	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES COLOR	SHOW QUAL
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR		
3172	100	SANDSTONE: generally as above, quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granules, moderately sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace localized pyrite cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, trace lithic grains, firm to friable, fair to good visual intergranular porosity.	FVP-GVP	NIL	TRACE DULL PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	Very SLOW DULL CRUSH CUT (Partly Glycol)	thin dull ring residue	POOR
3173	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium, moderately to well sorted, predominantly sub-angular to sub-rounded, minor angular and trace rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, trace lithic grains, trace weathered feldspar grains, firm to friable, good to very good visual intergranular porosity.	GVP-VGVP	NIL	NIL	NIL	Very SLOW DULL CRUSH CUT (Partly Glycol)	thin dull ring residue	POOR
3174	100	SANDSTONE: generally as above, quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium, moderately to well sorted, predominantly sub-angular to sub-rounded, minor angular and trace rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, nil to trace lithic grains, firm to friable, good to very good visual intergranular porosity.	GVP-VGVP	NIL	NIL	NIL	SLOW DULL/MOD BRT CRUSH CUT (Partly Glycol)	thin mod brt ring residue	POOR
3175	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, medium to very coarse, trace granule, moderately sorted, predominantly sub-angular to sub-rounded, minor angular and trace rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey silty to argillaceous matrix, nil to trace lithic grains, firm to friable, fair to good visual intergranular porosity.	FVP-GVP	NIL	NIL	NIL	Very SLOW DULL CRUSH CUT (Partly Glycol)	thin dull ring residue	POOR
3175.5	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, minor granule, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey argillaceous matrix, trace lithic grains, firm to friable, good visual intergranular porosity, minor kaolinitic pore fill in part.	GVP	NIL	NIL	NIL	Very SLOW DULL/MOD BRT CRUSH CUT (Partly Glycol)	thin dull ring residue	POOR



CONVENTIONAL CORE CHIP DESCRIPTION

Geologist(s): Arnaldo Ribeiro/Cliff Menhennitt	Core Number: 2	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3167.66-3176.66	Metres Cored: 9.0	Recovery / % 96	Date: 30 th April 2004
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DEPTH m	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES COLOR	SHOW QUAL
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR		
3176.6	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, minor granule, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace pyrite cement, trace quartz overgrowths, trace brownish grey argillaceous matrix, trace lithic grains, trace coaly fragments pyritised in part, trace weathered feldspar grains, firm to predominantly friable, good visual intergranular porosity, trace pyritic pore fill in part.	GVP	NIL	NIL	NIL	Very SLOW DULL CRUSH CUT (Partly Glycol)	thin dull ring residue	POOR

CONVENTIONAL CORE CHIP DESCRIPTION

Geologist(s): Arnaldo Ribeiro/Cliff Menhennitt	Core Number: 3	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3176.66-3185.66	Metres Cored: 9.0	Recovery / % 9.0m /100	Date: 2nd May 2004
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DEPTH mMDRT	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES	SHOW
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR	COLOR	QUAL
3176.66	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium grains, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace brownish grey argillaceous matrix, trace lithic grains, trace weathered feldspar grains, firm to friable, good visual intergranular porosity.	GVP	NIL	PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	SLOW DULL WHITE CRUSH CUT (Partly Glycol)	thin dull white ring residue	POOR
3177	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to predominantly very coarse to granule, trace medium grains, poorly sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace to rare quartz overgrowths, minor brownish black bituminous pore fill (Possibly Barablock), rare brownish grey argillaceous matrix, trace lithic/feldspathic grains, minor weathered feldspar grains, trace chloritic grains, trace kaolinitic pore fill, locally common, firm to friable, fair visual intergranular porosity.	FVP	NIL	NIL	NIL	Bituminous material has DULL PALE YELLOW/WHITE CUT (No direct fluor)	thk mod brt yel white ring residue	POOR
3178	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium grains, moderately well sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace lithic/feldspathic grains, trace weathered feldspar grains, firm to friable, good visual intergranular porosity.	GVP	NIL	PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	VERY SLOW DULL WHITE CRUSH CUT (Glycol)	thin dull white ring residue	POOR
3179	100	SANDSTONE: generally as above, quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium grains, moderately sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace lithic/feldspathic grains, trace weathered feldspar grains, trace chloritic grains, firm to friable, good visual intergranular porosity.	GVP	NIL	PALE YELLOW/WHITE (Exterior of core fluoresces while fresh surfaces do not)	NIL	VERY SLOW DULL WHITE CRUSH CUT (Glycol)	thin dull white ring residue	POOR

CONVENTIONAL CORE CHIP DESCRIPTION

Geologist(s): Arnaldo Ribeiro/Cliff Menhennitt	Core Number: 3	Bit Diameter: 8 1/2"	Core Diameter: 4"	Core bit Type: DBS CD93	Cored Interval: 3176.66-3185.66	Metres Cored: 9.0	Recovery / % 9.0m /100	Date: 2nd May 2004
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DEPTH mMDRT	%	LITHOLOGY DESCRIPTION and COMMENTS (classification, color, hardness, texture, mineralogy, modifiers, cement)	POR	STAIN	FLUOR	CUT	CUT FLUOR	RES COLOR	SHOW QUAL
				DIST COLOR	DIST INTEN COLOR	INTEN COLOR	INTEN COLOR		
3180 (Predicted GOC@ 2577.5m TVDSS)	100	SANDSTONE: generally as above, quartzose, clear, opaque, translucent, trace pale grey, coarse to very coarse, trace granule and medium grains, moderately sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, trace quartz overgrowths, trace lithic/feldspathic grains, trace weathered feldspar grains, trace chloritic grains, firm to friable, good visual intergranular porosity.	GVP	NIL	NIL	NIL	VERY SLOW DULL WHITE CRUSH CUT (Glycol)	thin dull white ring residue	POOR
3181	100	SANDSTONE: Quartzose, clear, opaque, translucent, trace pale grey, coarse to predominantly very coarse to granule, trace medium grains, poorly sorted, predominantly sub-angular to sub-rounded, minor angular and rounded, moderate siliceous cement, rare quartz overgrowths, trace brownish grey argillaceous matrix, trace lithic/feldspathic grains, minor weathered feldspar grains, trace chloritic grains, trace kaolinitic pore fill, locally common, firm to friable, fair to good visual intergranular porosity.	FVP- GVP	NIL	NIL (Trace pinpoint mineral fluor related to weathered feldspar grains)	NIL	VERY SLOW DULL WHITE CRUSH CUT (Glycol)	thin dull white ring residue	POOR
3182	100	CLAYSTONE: brownish grey, minor quartz silt, minor mica, chip sample has 20mm pyrite pyrite nodule, trace very fine to fine quartz grains, trace chloritic grains, trace very finely disseminated pyrite, hard, blocky to sub fissile, non calcareous.							
3183	100	COAL: greyish black to black, predominantly earthy lustre with abundant fine vitreous laminae, sub blocky to sub fissile, uneven to angular fracture, minor plant remains.							
3184	100	COAL: greyish black to black, earthy to predominantly sub vitreous lustre with minor fine vitreous laminae, sub blocky to blocky, angular to sub conchoidal fracture, bituminous.							
3184.7	100	CLAYSTONE with minor interbedded COAL; CLAYSTONE: brownish grey, minor quartz silt, trace mica, trace very fine to fine quartz grains, trace very finely disseminated pyrite, hard, blocky to sub fissile, non calcareous. COAL: black, vitreous lustre, sub conchoidal fracture, bituminous.							
3185.66	100	CLAYSTONE: brownish grey, common to locally abundant very fine to fine quartz grains, grading to arenaceous claystone in part, trace arenaceous laminae, minor quartz silt, trace mica, trace very finely disseminated pyrite, trace coaly fragments, hard, blocky to sub fissile, non calcareous.							

APPENDIX 3c

MARLIN A-24A

Core Descriptions and Core Photos

John McPherson

**SEDIMENTOLOGIC DESCRIPTIONS OF THE
MARLIN-A24A CONVENTIONAL CORE**

by

John G. McPherson

16 September 2004

Esso Australia Ltd

MARLIN No. A24A

Three conventional cores cut in the Marlin No. A24A well were examined and described by John G. McPherson (August 10-12, 2003) at Core Laboratories in Perth, Western Australia. The well is located on the northern margin of the Gippsland Basin, SE Australia, and the targeted reservoir sand is the L500. All depths are in measured depth from the rotary table. The well was deviated to approximately 35 degrees from the vertical. The cored intervals and core depth shifts to match the wireline-log depths were estimated for each core, and are as follows:

Core No.	Group	Base of Core (m)	Top of Core (m)	Core Shift (to log depth-m)
3	<i>F. longus</i>	3167.66	3158.50	-0.4
2	<i>F. longus</i>	3176.30	3167.66	0
1	<i>F. longus</i>	3185.66	3176.66	0

The examined cores were vertical slabbed sections (approx. 3 cm thick) cut from a 9 cm-diameter core and presenting a 7.5-cm cut face. The cores were stored as one-metre lengths within metal trays, two metres per box. They were held in place with polystyrene spacers. Each core was accurately depth marked. Overall, the core was moderately to well cemented and in excellent condition, having just been slabbed. The core displayed little by way of coring-induced dislocation or fracturing. The whole core had been imaged by CT scan in order to ascertain bedding orientation. The core analysis plugs were taken with reference to this bedding. The plugs themselves were also CT scanned to determine irregularities such as fractures, cement bands, nodules, etc. The CT scan images are available in a separate report. The palynology as noted here was done by Roger Morgan and is available in a separate report (Morgan, 2004).

Unit	Lithologic Description	Depositional Elements	Depth (m)
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F. longus* Interval*Core 3**

1 core 3 (base)	Mudstone, medium dark grey (N4), carbonaceous and silty. Common (<10%) silt and very fine sand lenses and laminae. Intensely bioturbated by undefined <i>Cruziana</i> . The unit is largely homogenised through bioturbation. Scattered coaly wisps and intraclasts.	M ₁ (S ₃)	3,185.66–3,184.95
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Paly: 3,185.23 m coastal lake *F. longus*

- gradational -

- 2 Mudstone, olive grey (5Y4/1), carbonaceous M₁ 3,184.95–3,184.54
core 3 mudstone with scattered slivers of coal. Oxidised, weakly fissile with scattered sand grains throughout. Silt content higher toward the base. Scattered pyrite as framboids in the matrix and as nodules.

Paly: 3,184.62 m coastal lake *F. longus*

- gradational -

- 3 Coal with abundant clay in discrete beds Coal 3,184.54–3,183.40
core 3 throughout. The coal is anthracite.

Paly: 3,183.44 m ?coastal lake *Indeterminate*

- gradational -

- 4 Mudstone, olive grey (5Y4/1), highly M₁ 3,183.40–3,182.75
core 3 carbonaceous mudstone with some coal slivers and interbeds increasing in number toward the base (in lower 40 cm). Oxidised, weakly fissile with scattered sand grains throughout. Scattered pyrite as framboids in the matrix and as nodules.

Paly: 3,183.14 m coastal lake *F. longus*

3,182.83 m coastal lake *F. longus*

- gradational -

- 5 Mudstone, medium dark grey (N4), M₁ 3,182.75–3,182.20
core 3 carbonaceous, silty and with common sand grains and granules scattered throughout. Intensely bioturbated by undefined *Cruziana*. The unit is largely homogenised through bioturbation. Scattered coaly wisps and intraclasts, particularly in the lower 40 cm. Glauconite grains common throughout. The basal 30 cm contains large *Thalassinoides* burrows.

Paly: 3,182.23 m ?estuarine *F. longus*

- gradational -

6 core 3	Mudstone, olive grey (5Y4/1), carbonaceous mudstone with slivers and thin lenses of coal. Oxidised, weakly fissile with scattered sand grains throughout. Silt content increase toward the base. Scattered pyrite as framboids in the matrix and as nodules.	M ₁	3,182.20–3,181.47
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- erosional (SB) -

7 core 3	Conglomerate, medium grey (N5), moderately to poorly sorted, fine pebble, very coarse sand, granule gravel. Some thin interbeds of very coarse sand. Overall, fining-upward to a fine pebble very coarse sandstone at the top (gradational with overlying unit). Minor coaly intraclasts throughout. Cross-bedded with common flat bedding. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Common laminae and thin beds (~1 cm) of carbonaceous (coaly) clay. Possible <i>Thalassinoides</i> burrow traces at 3,179.5–3,180.0 m. The grains and pebbles are subrounded, and highly quartzose with minor lithics. Common pyrite nodules and thin lenses throughout. The lowermost 20 cm is highly pyritic. Overall the gravels are "clean" with almost no detrital clay, except for the discrete laminae. The unit is moderately cemented by quartz overgrowths, with common spotty carbonate (dolomite) in the form of small (0.5–2 cm) patches. Primary porosity is low–moderate and clearly visible in hand specimen. Permeability is very high, with high variability caused by the changes in grain size locally, e.g. $\phi = 14.0\%$, $k = 2,350$ md @ 3,179.53 m.	G ₁ (S ₁)	3,181.47–3,179.20
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- gradational -

8 core 3	Sandstone, medium grey (N5), coarse and very coarse sand. Well sorted. Some thin interbeds of granule gravel and fine pebble, coarse and very coarse sand, most common in lower 20 cm. Overall fining upward from a granule very coarse sand at the base to a coarse sand at the top. Mostly cross-bedded but with some unstratified intervals. Rare carbonaceous clayey laminae on bedding surfaces. Coaly wisps and intraclasts common. The sand grains are subangular to subrounded, and the sand is "clean" and free of detrital clay. The sand is highly quartzose with minor lithics and is moderately cemented by silica overgrowths. Locally cemented by spotty carbonate (dolomite) forming small (0.5–2 cm) patches. This is particularly common in the lower half of the unit. Porosity is moderate and permeability is very high, e.g. $\phi = 18.7\%$, $k = 7,220$ md @ 3,178.63 m.	S ₁ (G ₁) (S _{1p})	3,179.20–3,177.25
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- sharp -

9 core 3 (top)	Conglomerate, medium grey (N5), moderately to poorly sorted, fine pebble, very coarse sand, granule gravel. Some thin interbeds of very coarse sand. Minor coaly intraclasts throughout. Cross-bedded with some flat bedding. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Abundant laminae and thin beds (~1 cm) of carbonaceous (coaly) clay. The grains and pebbles are subrounded, and highly quartzose with minor lithics. Common pyrite nodules and thin lenses throughout. Overall the gravels are "clean" with almost no detrital clay, except for the discrete laminae. The unit is moderately cemented by quartz overgrowths, with common spotty carbonate (dolomite) forming small (0.5–2 cm) patches. Primary porosity is low but visible in hand specimen. Horizontal permeability is high but vertical permeability is low due to carbonaceous clay laminae, e.g. $\phi = 11.7\%$, $k = 808$ md @ 3,176.7 m.	G ₁ (S ₁)	3,177.25–3,176.66
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- missing core -

***F. longus* Interval**

Core 2

10 core 2 (base)	Sandstone, medium grey (N5), coarse and very coarse sand. Well sorted. Some thin interbeds of granule gravel and fine pebble, coarse and very coarse sand. Mostly cross-bedded but with some unstratified intervals. Rare carbonaceous clayey laminae on bedding surfaces. Coaly wisps and intraclasts common. The sand grains are subangular to subrounded and the sand is "clean" and free of detrital clay. The sand is highly quartzose with minor lithics and is moderately cemented by silica overgrowths. Porosity is moderate and permeability is very high, e.g. $\phi = 16.5\%$, $k = 4,440$ md @ 3,176.08 m.	S ₁ (G ₁) (S _{1p})	3,176.30–3,175.50
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- sharp -

11 core 2	Conglomerate, medium grey (N5), poorly sorted, fine pebble, very coarse sand, granule gravel. Some thin interbeds of granular very coarse sand. Minor coaly intraclasts throughout. Cross-bedded with common flat bedding. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Scattered laminae of carbonaceous (coaly) clay. The grains and pebbles are subrounded, and highly quartzose with minor lithics. Overall the gravels are "clean" with almost no detrital clay, except for the minor discrete laminae. The unit is moderately cemented by quartz overgrowths with minor spotty carbonate (dolomite) locally. Scattered small pyrite nodules. Porosity is moderate but clearly visible in hand specimen, and permeability is very high, e.g. $\phi = 14.9\%$; $k = 1,630$ md @ 3,174.73 m. A wide variation in permeability caused by local grain size variability.	G ₁ (S ₁)	3,175.50–3,174.00
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- sharp -

12 core 2	Sandstone, medium grey (N5), coarse and very coarse sand. Well sorted. Some thin interbeds of granule gravel and fine pebble, coarse and very coarse sand. Mostly cross-bedded but with some unstratified intervals. Common carbonaceous clayey laminae on bedding surfaces. Coaly wisps and intraclasts common. The sand grains are subangular to subrounded, and the sand is "clean" and free of detrital clay. The sand is highly quartzose with minor lithics and is moderately cemented by silica overgrowths. Porosity is moderate and permeability is very high, e.g. $\phi = 14.8\%$, $k = 2,410$ md @ 3,173.53 m.	S ₁ (G ₁) (S _{1p})	3,174.00–3,171.25
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- sharp -

13 core 2 (top)	Conglomerate, medium grey (N5), moderately sorted, fine pebble, very coarse sand, granule gravel. Some thin interbeds of very coarse sand. Minor coaly intraclasts throughout. Mostly unstratified. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Scattered laminae and thin beds (~1 cm) of carbonaceous (coaly) clay. These laminae are abundant from top–3,168.00 m and have significantly reduced vertical permeability. The grains and pebbles are subrounded, and highly quartzose with minor lithics. Overall, the gravels are "clean" with almost no detrital clay, except for the minor discrete laminae. The unit is moderately cemented by quartz overgrowths with minor spotty carbonate (dolomite) locally. Porosity is low although visible in hand specimen, and permeability is high and locally very high, e.g. $\phi = 11.3\%$; $k = 999$ md @ 3,168.72 m. A wide variation in permeability caused by local grain size variability.	G ₁ (S ₁)	3,171.25–3,167.66
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- core break -

***F. longus* Interval**

Core 1

14 core 1 (base)	Conglomerate, medium grey (N5), moderately sorted, fine pebble, very coarse sand, granule gravel. Some thin interbeds of very coarse sand. Minor coaly intraclasts throughout. Mostly unstratified. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Abundant laminae and thin beds (~1 cm) of carbonaceous (coaly) clay. These laminae have significantly reduced vertical permeability. The grains and pebbles are subrounded, and highly quartzose with minor lithics. Overall, the gravels are "clean" with almost no detrital clay, except for the minor discrete laminae. The unit is moderately cemented by quartz overgrowths with minor spotty carbonate (dolomite) locally. The top 20 cm is highly cemented by carbonate (dolomite). Porosity is low and permeability is moderate, reduced by the carbonaceous clay laminae, e.g. $\phi = 11.8\%$; $k = 115$ md @ 3,167.17 m. A low Kv due to the carbonaceous clay laminae.	G ₁ (S ₁)	3,167.66–3,165.87
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- sharp -

15 core 1	Sandstone, medium grey (N5), upper fine sand and well sorted. Abundant carbonaceous clay wisps and laminae (flasers), and thin beds (1–10 mm). These are more common in the lower half of the unit inducing a high gamma reading. Ripple cross-laminated with very rhythmic bedding suggestive of tidal influences. Moderately burrowed by <i>Cruziana</i> traces including <i>Planolites</i> and rare <i>Paleophycus</i> . The sand grains are subangular to subrounded. The sand is highly quartzose with minor lithics and is well cemented by silica overgrowths and minor spotty carbonate (dolomite). Porosity and permeability are low, e.g. $\phi = 12.5\%$, $k = 9$ md @ 3,165.77 m. A light yellow oil stain (condensate) under UV light. A low Kv due to the carbonaceous clay laminae and flasers.	S ₂	3,165.87–3,164.72
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- erosional -

16 core 1	Conglomerate, medium grey (N5), moderately to poorly sorted, fine pebble, very coarse sand, granule gravel. Minor coaly intraclasts throughout. Cross-bedded with common flat bedding. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Scattered laminae and thin beds (~1 cm) of carbonaceous (coaly) clay. The grains and pebbles are subrounded, and highly quartzose with minor lithics. Overall the gravels are "clean" with almost no detrital clay, except for the minor discrete laminae. The unit is well cemented by quartz overgrowths with common spotty carbonate (dolomite) locally. The basal 10 cm is highly cemented. Porosity is very low and permeability is low, e.g. $\phi = 7.1\%$, $k = 2$ md @ 3,164.23 m. Low Kv created by the abundant carbonaceous laminae.	G ₁ (S ₁)	3,164.72–3,163.50
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- sharp -

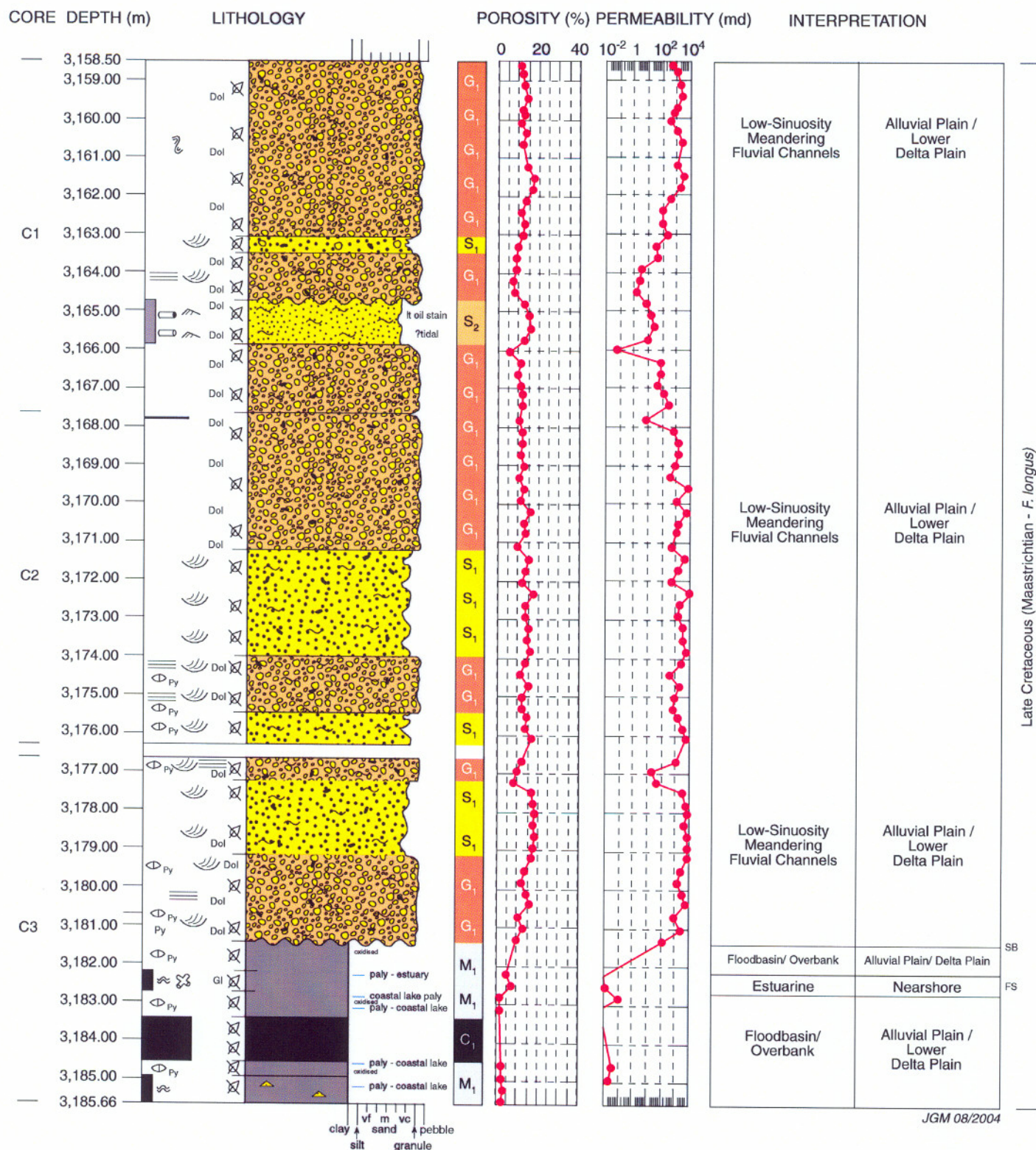
17 core 1	Sandstone, medium grey (N5), coarse and very coarse sand. Moderately sorted with scattered granules throughout. Commonly cross-bedded. Abundant carbonaceous laminae and thin beds (<5 mm) on bedding surfaces. Coaly intraclasts common. The sand grains are subangular to subrounded, and the sand is "clean" and free of detrital clay. The sand is highly quartzose with minor lithics and is well cemented by silica overgrowths. Porosity is low and permeability is low-moderate, e.g. $\phi = 9.9\%$, $k = 37$ md @ 3,163.33 m. Low Kv created by the abundant carbonaceous laminae.	S ₁	3,163.50–3,163.10
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- sharp -

18 core 1 (top)	Conglomerate, medium grey (N5), moderately to poorly sorted, fine pebble, very coarse sand, granule gravel. Some thin interbeds of very coarse sand (S ₁). Minor coaly intraclasts throughout. Cross-bedded with common flat bedding. A wide variability in grain size and sorting within individual beds on a scale of cm's to dm's. Scattered laminae and thin beds (~1 cm) of carbonaceous (coaly) clay. Some intraformational slumping (dewatering) at 3,161.8 m). The grains and pebbles are subrounded, and highly quartzose with minor lithics. Overall the gravels are "clean" with almost no detrital clay, except for the minor discrete laminae. The unit is moderately cemented by quartz overgrowths with minor carbonate (dolomite) locally. Porosity is clearly visible in hand specimen. Porosity is low but permeability is high to very high, e.g. $\phi = 14.2\%$, $k = 1,130$ md @ 3,161.23 m. There is a wide variation in permeability caused by the local grain size variability.	G ₁ (S ₁)	3,163.10–3,158.50
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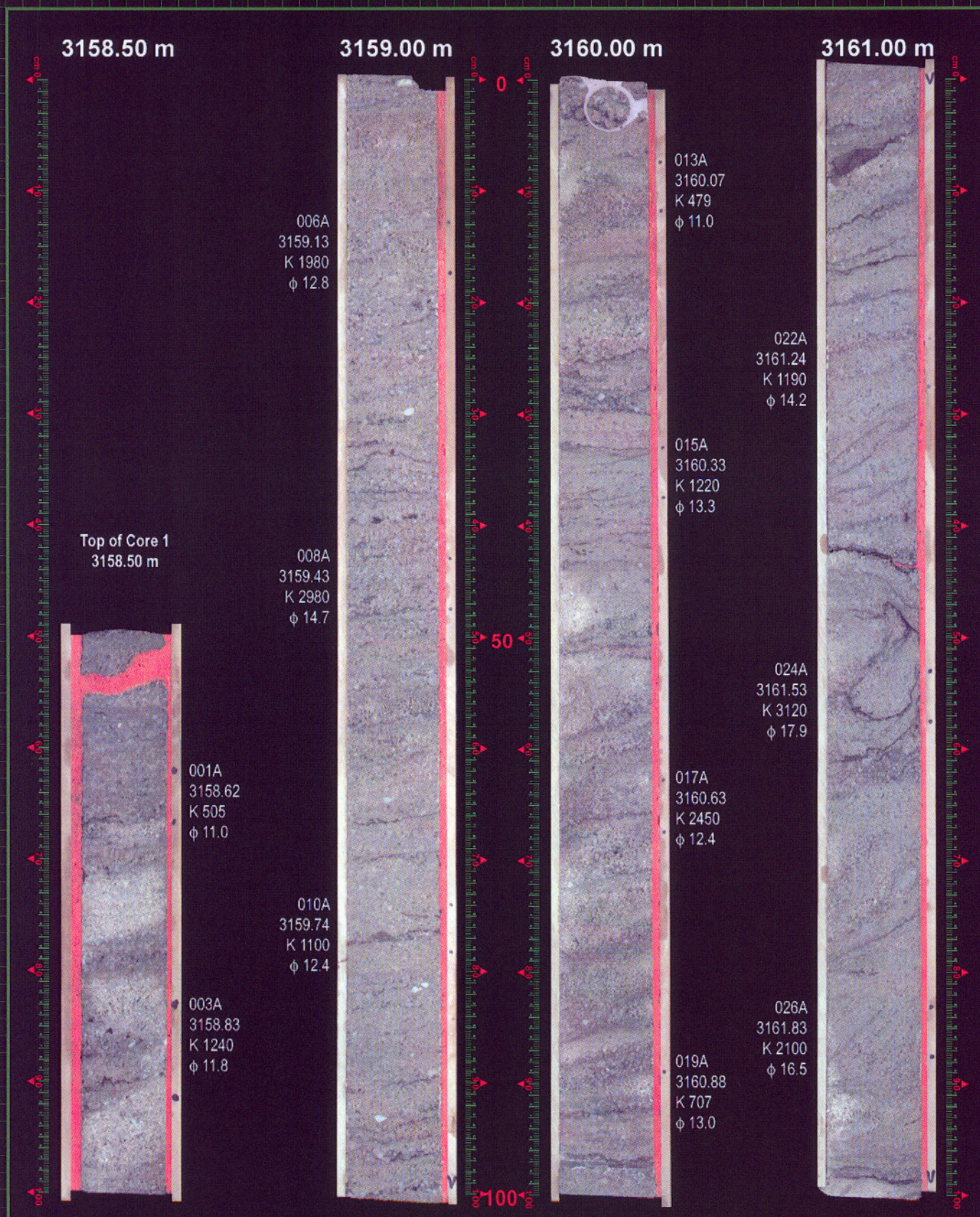
John G. McPherson,
4 November 2004

MARLIN No. A24A

Late Cretaceous (Maastrichtian - *F. longus*)



Esso Australia Pty Ltd MARLIN A24A Core 1





Esso Australia Pty Ltd
MARLIN A24A
Core 1



3158.50 m

3159.00 m

3160.00 m

3161.00 m

Top Of Core 1
3158.50 m





Esso Australia Pty Ltd

MARLIN A24A

Core 1



3162.00 m

3163.00 m

3164.00 m

3165.00 m

036A
3163.03
K 253
 ϕ 11.7

029A
3162.12
K 374
 ϕ 13.9

038A
3163.33
K 41.2
 ϕ 9.9

031A
3162.43
K 111
 ϕ 11.1

040A
3163.63
K 47.0
 ϕ 9.2

033A
3162.73
K 123
 ϕ 13.2

042A
3163.93
K 3.63
 ϕ 8.8

052A
3165.13
K 18.0
 ϕ 15.4

045A
3164.23
K 2.73
 ϕ 7.1

054A
3165.43
K 30.7
 ϕ 15.9

047A
3164.53
K 1.43
 ϕ 7.9

056A
3165.77
K 10.3
 ϕ 12.5

049A
3164.83
K 7.13
 ϕ 12.9



Esso Australia Pty Ltd
MARLIN A24A
Core 1



3162.00 m

3163.00 m

3164.00 m

3165.00 m

— 0 —

— 50 —

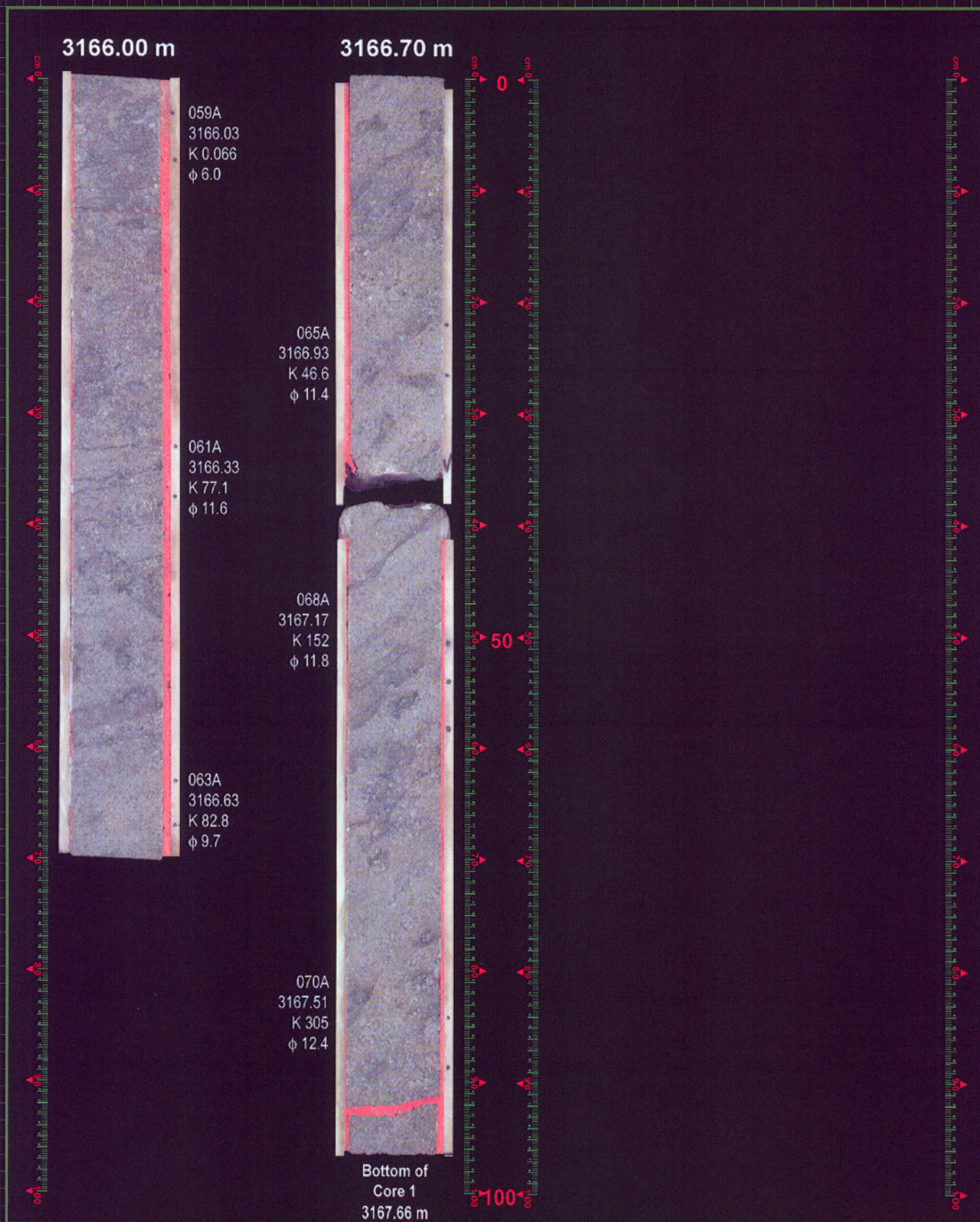
— 100 —



Esso Australia Pty Ltd

MARLIN A24A

Core 1





Esso Australia Pty Ltd
MARLIN A24A
Core 1



3166.00 m

3166.70 m

— 0 —

— 50 —

Bottom Of
Core 1
3167.66 m

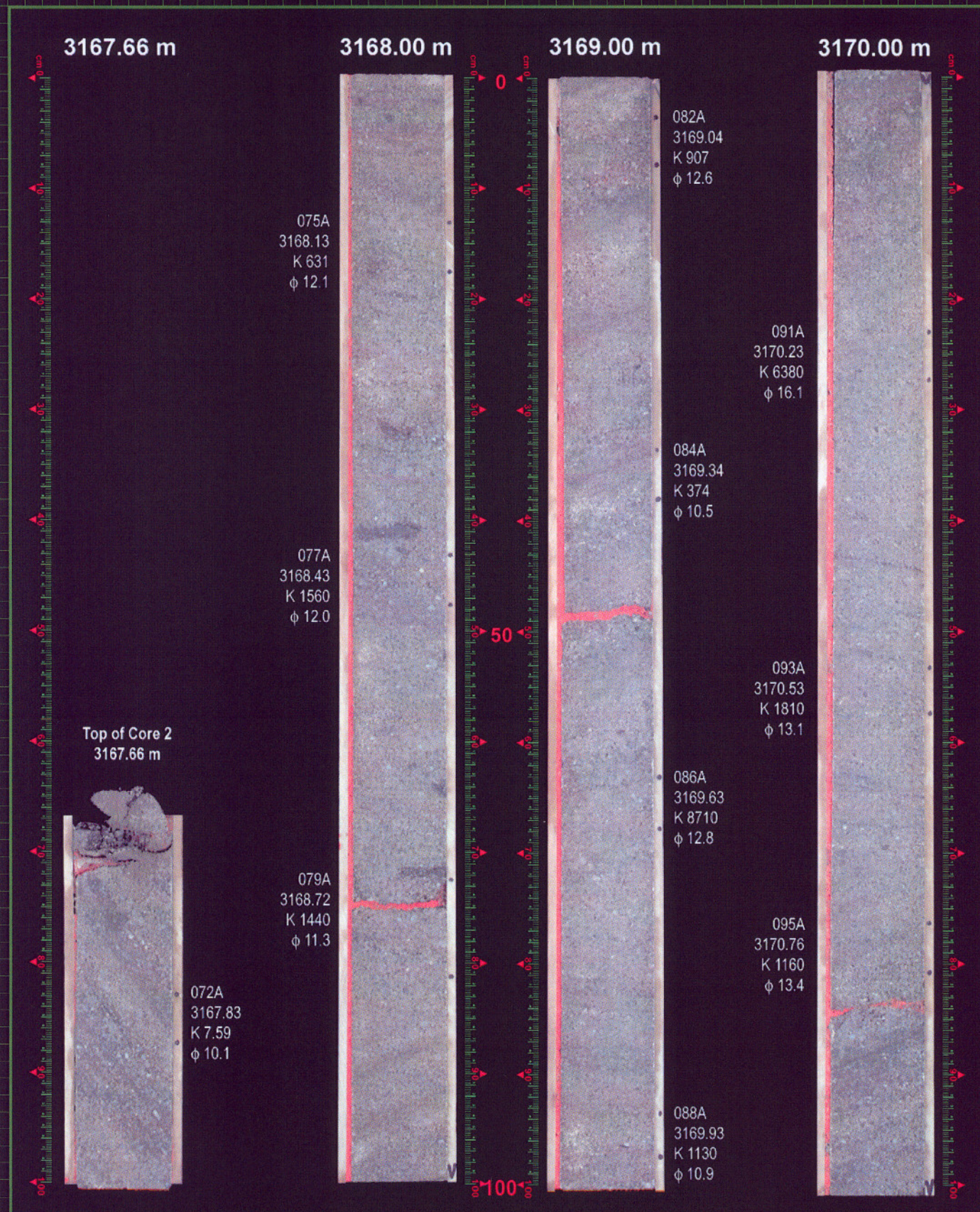
— 100 —



Esso Australia Pty Ltd

MARLIN A24A

Core 2





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MARLIN A24A

Core 2



3167.66 m

3168.00 m

3169.00 m

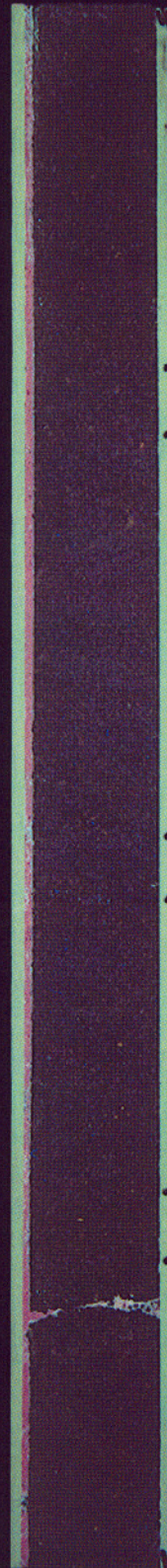
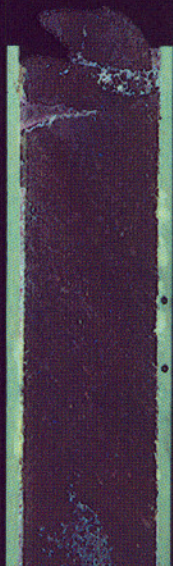
3170.00 m

— 0 —

— 50 —

— 100 —

Top Of Core 2
3167.66 m

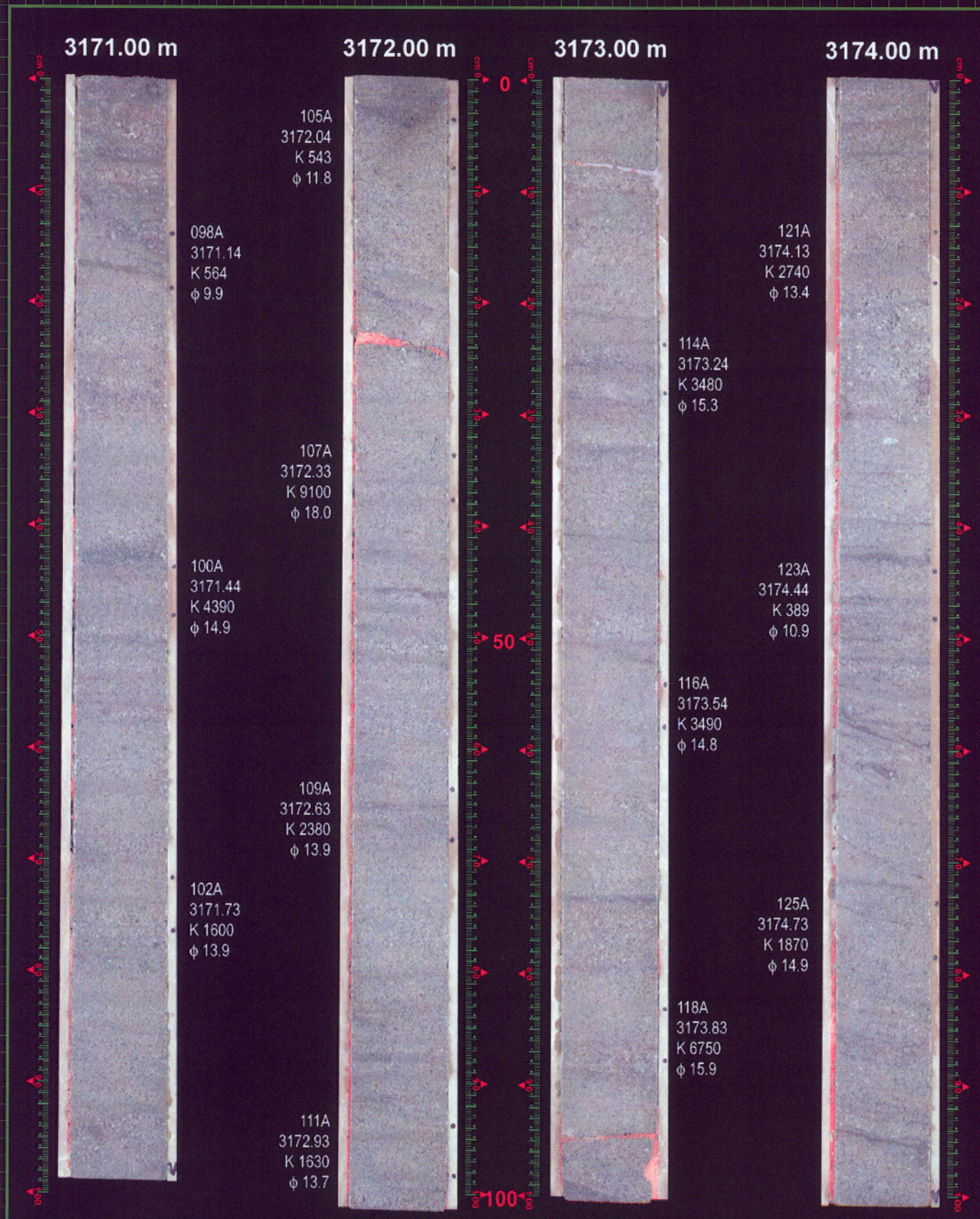




Esso Australia Pty Ltd

MARLIN A24A

Core 2





Esso Australia Pty Ltd
MARLIN A24A
Core 2



3171.00 m

3172.00 m

3173.00 m

3174.00 m

— 0 —

— 50 —

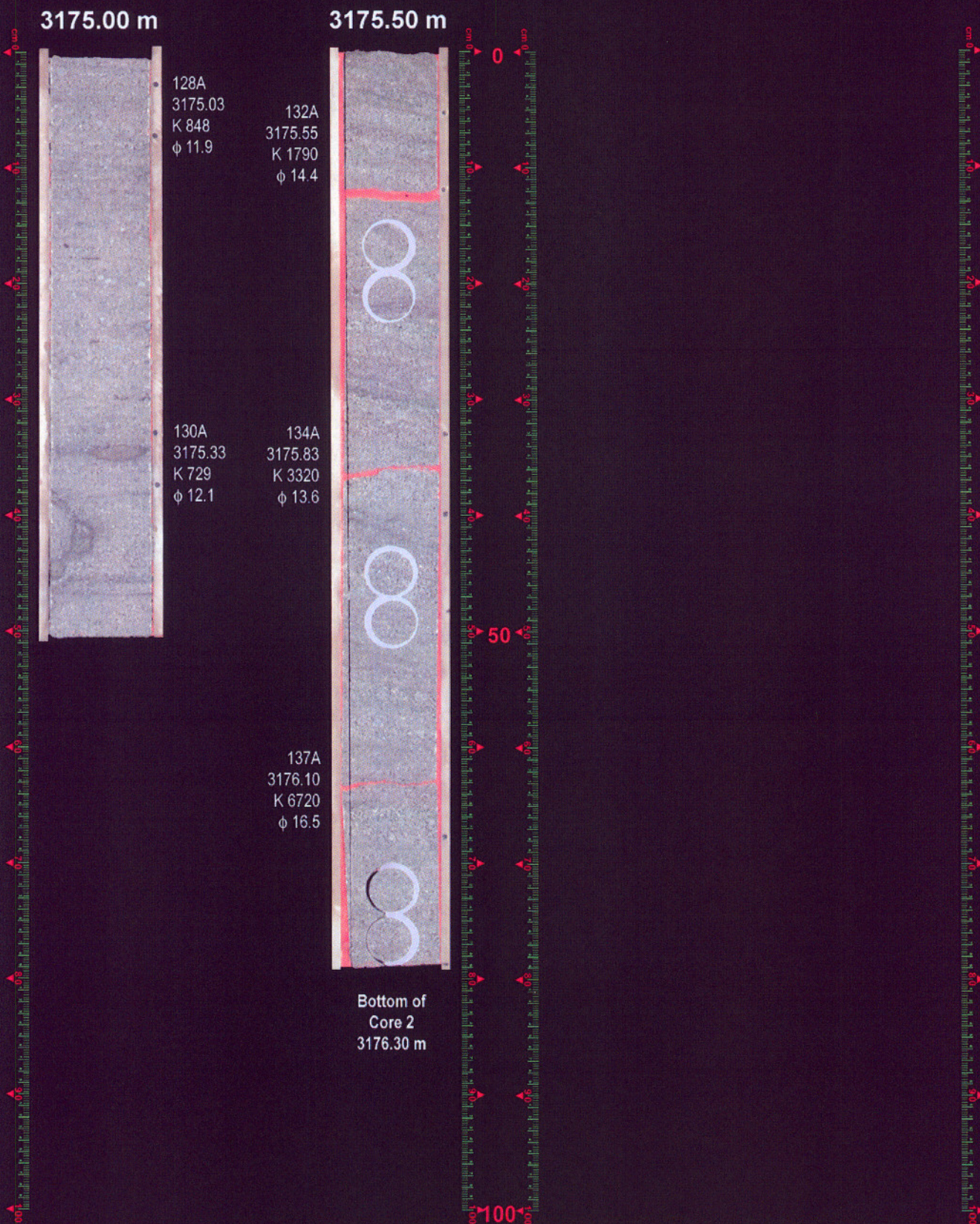
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Esso Australia Pty Ltd

MARLIN A24A

Core 2

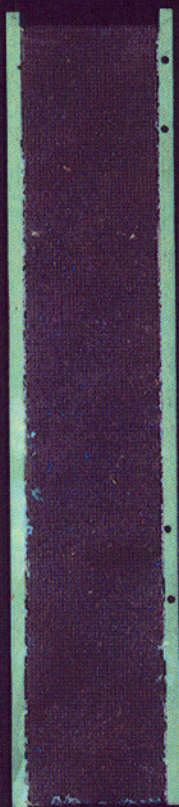




Esso Australia Pty Ltd
MARLIN A24A
Core 2



3175.00 m



3175.50 m



— 0 —

—

—

—

—

— 50 —

—

—

—

Bottom Of
Core 2
3176.30 m

—

— 100 —



Esso Australia Pty Ltd

MARLIN A24A

Core 3



3176.66 m

3177.00 m

3178.00 m

3179.00 m

Top of Core 2
3176.66 m

139A
3176.70
K 1190
 ϕ 11.7

141A
3176.93
K 21.5
 ϕ 9.7

144A
3177.22
K 54.8
 ϕ 8.2

146A
3177.51
K 3880
 ϕ 16.9

148A
3177.81
K 6120
 ϕ 17.4

151A
3178.04
K 8250
 ϕ 18.7

153A
3178.33
K 5040
 ϕ 17.9

155A
3178.63
K 8230
 ϕ 18.7

157A
3178.93
K 8410
 ϕ 17.7

160A
3179.19
K 7010
 ϕ 16.5

162A
3179.53
K 2480
 ϕ 14.0

164A
3179.83
K 1780
 ϕ 12.4



Esso Australia Pty Ltd
MARLIN A24A
Core 3



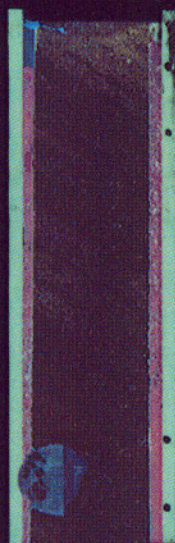
3176.66 m

3177.00 m

3178.00 m

3179.00 m

Top Of Core 3
3176.66 m



— 0 —

— — —

— — —

— — —

— — —

— 50 —

— — —

— — —

— — —

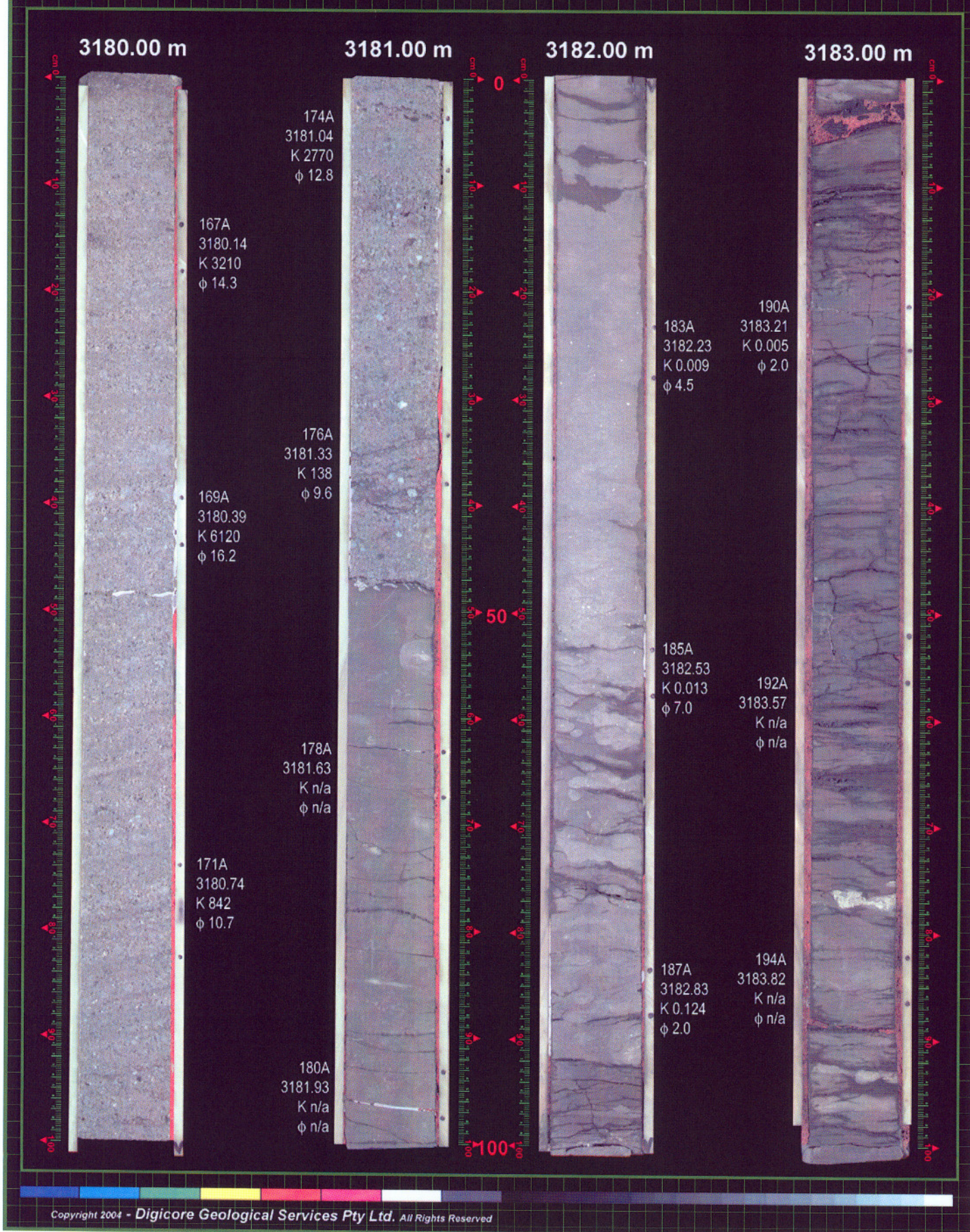
— — —

— 100 —





Esso Australia Pty Ltd MARLIN A24A Core 3





Esso Australia Pty Ltd
MARLIN A24A
Core 3



3180.00 m

3181.00 m

3182.00 m

3183.00 m

— 0 —

— 50 —

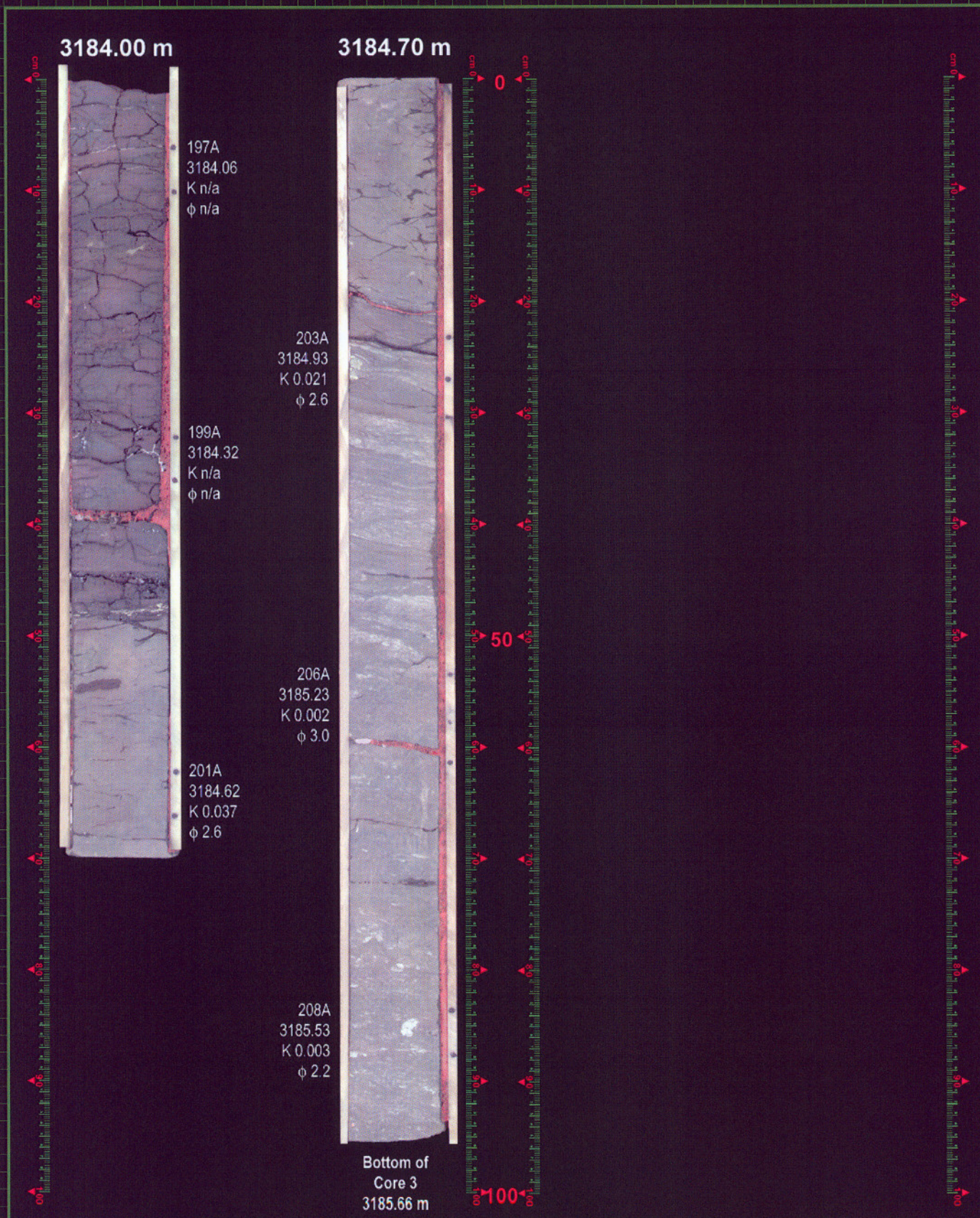
— 100 —



Esso Australia Pty Ltd

MARLIN A24A

Core 3





Esso Australia Pty Ltd
MARLIN A24A
Core 3



3184.00 m

3184.70 m

— 0 —

— 50 —

Bottom Of
Core 3
3185.66 m

— 100 —

APPENDIX 4a

MARLIN A-24A

Mud Log

APPENDIX 4b
MARLIN A-24A
Well Completion Log

APPENDIX 5b

MARLIN A-24A

Cased Hole MDT Report (CHDT)



FROM RESERVOIR TO RESULTS.

Oilphase-DBR Sampling & Analysis Services
23 Brennan Way
Belmont Western Australia
Australia 6104

Esso Australia Pty Ltd Sampling Operations Report

FIELD: Turrum
WELL: MLA-A24A
DATE: 9th to 19th May, 2004
TEST: Cased Hole MDT Reservoir Evaluation (CHDT)

Prepared By: Paul Barraclough – Sampling Specialist Christian Ritchie – Sampling Specialist	Date: 26 th May, 2004	Reviewed By: Chris Forde – Engineer-In-Charge, APG	Date: 26 th May, 2004
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Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th - 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

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2. Sample Listing
3. Sequence of Events
4. Sample Data Sheets
5. Sampling Conditions Sheets
6. Well Site Analysis Results Sheets
 - *Stain Tube Measurements*
 - *Hydrogen Sulphide, Mercaptans and Carbonyl Sulphide in Hydrocarbon Gas by UOP*
 - *Hydrogen Sulphide in Pressurised Water Sample*
 - *Fluid Volumes from MRSC Chambers*
7. Toolstring Diagrams
8. Mud Reports
 - *Mud Report dated 5/05/2004*
 - *Mud Report dated 13/05/2004*

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Summary

Esso Australia contracted Oilphase-DBR, the sampling and analysis specialists for Schlumberger, to provide the on site sampling and analytical chemistry services on the Marlin Platform for the evaluation of the exploration well MLA-A24A, located off the south-east coast of Australia. In three runs of the Wireline Cased Hold MDT tool, a total of twelve downhole samples were collected using the Oilphase Non Reactive Single Phase Multi-Chamber (NR-SPMC) tools and four large volume samples were collected in one 1 gallon and three 2.75 gallon Wireline samplers (MRSC). On-site analysis was performed to measure sulphur content in pre-determined samples.

Cased Hole MDT Run 1

The CHDT tool was configured with one Multi Sample Module (MRMS) loaded with six NR-SPMC sampling tools, which are coated to minimise hydrogen sulphide loss, along with one 1 gallon and one 2.75 gallon Large Volume Sample Chambers (MRSC's). The large volume chambers were equipped with an Oilphase piston and agitation ring to improve mixing and ensure sample homogeneity prior to transfer. The toolstring was configured for low shock sampling and was run in hole on Wireline.

The CHDT tool was run in hole to a depth of 3190.0 m MD for the first sampling point. Using the CHDT technology, a hole was drilled through the casing and the cement to allow the Wireline tool to come into communication with the reservoir fluids. The sampling point was pumped out for a little over an hour (to minimise any mud filtrate contamination) before the reservoir fluid was diverted to the samplers. The 1 gallon chamber, the 2.75 gallon chamber and five NR-SPMC's were sampled from this point. After sampling, the casing was successfully plugged and pressure tested prior to pulling out of hole.

On recovery to surface, all samplers were found to have captured sample and closed successfully. While still on the pipe deck, a small portion of the 1 gallon MRSC chamber was flashed to atmosphere to determine H₂S content by stain tube – as per the platform requirements prior to handling and transferring the samples. The 2.75 gallon MRSC was then heated and agitated at greater than reservoir pressure for three hours to ensure sample re-combination. A small portion of sample was flashed off measuring H₂S by stain tube with the remainder of the sample being transferred into a 20 litre IATA can. Upon completion, the 1 gallon MRSC chamber was transferred identically to the 2.75 gallon MRSC chamber although with CGR measured. The NR-SPMC's were removed from the MRMS and opening pressures of the tools recorded, confirming all samplers had collected samples successfully. Each tool was heated back to reservoir temperature and transferred into Oilphase Single-phase Sample Bottles (SSB) for safe transport to the laboratory.

The initial scope of work for the samples collected on the first run, required the measurement of hydrogen sulphide present in the oil phase. However, after sampling, the nature of the downhole fluid was believed to be a gas-condensate (not an oil as previously thought) and with no hydrogen sulphide present in the gas phase and a very low condensate volume available from an NR-SPMC flash, it was decided by the client not to proceed with the analysis.

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Cased Hole MDT Run 2

For Run 2, the CHDT tool was configured with one MRMS loaded with three NR-SPMC's configured for low shock sampling. The tool was located at depth 3214.0 m MD, the casing drilled to bring the tool in communication with the reservoir and the pumpout commenced. All three NR-SPMC's were filled from this sample point.

Once at surface, the NR-SPMC tools were removed from the MRMS and opening pressures of samplers recorded, confirming all samplers had collected samples successfully. The NR-SPMC's were heated back to reservoir temperature before being transferred into SSB's for safe transport to the laboratory. Two NR-SPMC's had 50 cc of liquid flashed through scrubbing solutions for H₂S in Water analysis, with remaining sample being transferred into SSB's.

Titration was carried out on the two scrubbing solutions for the determination of H₂S in Water.

Cased Hole MDT Run 3

The CHDT for Run 3 was configured with one MRMS loaded with four NR-SPMC's and two 2.75 gallon MRSC's that were used as dump chambers – all chambers being configured for low shock sampling. The tool was run in hole to a depth of 3172.5 m MD and once again, the casing was drilled and communication was successfully established with the reservoir. During the pump out, once gas was shown to occupy approximately 50% of the flowline, the reservoir fluid was diverted to the 2.75 gallon chambers – thereby minimising the volume of gas transferred to the well bore. With the large volume chambers filled, fluid was then introduced to all four NR-SPMC's.

On recovery to surface, the two 2.75 gallon MRSC chambers were flashed through Schlumberger Wireline's separator and gas flow meter and the CGR measured along with H₂S by stain tube. The NR-SPMC tools were removed from the MRMS and opening pressures of samplers recorded, confirming all samplers had collected samples successfully. Two NR-SPMC's were then flashed through scrubbing solutions, flowing 20 litres each for the analysis of H₂S in gas, with residual sample flashed to atmosphere. The remaining two NR-SPMC's were heated back to reservoir temperature before being transferred into SSB's for safe transport to the laboratory.

Titration was carried out on the two scrubbing solutions for the determination of H₂S in gas.

All sampling, transfer and well site chemistry equipment was rigged down and consigned for shipment back to Perth via the Sale Schlumberger base. All samples were shipped from the rig, in an Oilphase transportation container, to the Sale Schlumberger base where samples were distributed to PetroLab and Baker-Petrolite for analysis.

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Cased Hole MDT Sample Listing

CHDT Run No: Run 1

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
1.01	15/05/04	14:00	1 Gallon MDT Sample	3190.0 m MD	1 Litre IATA can	N/A
1.02	15/05/04	14:23	2.75 Gallon MDT Sample	3190.0 m MD	25 Litre IATA can	N/A
1.03	15/05/04	15:46	Bottomhole SPMC Sample	3190.0 m MD	Single Phase (SSB)	9562-MA
1.04	15/05/04	16:15	Bottomhole SPMC Sample	3190.0 m MD	Non-reactive (NSB)	9206-MA
1.05	15/05/04	16:30	Bottomhole SPMC Sample	3190.0 m MD	Single Phase (SSB)	12875-QA
1.06	15/05/04	16:44	Bottomhole SPMC Sample	3190.0 m MD	Single Phase (SSB)	1440-EA
1.07	15/05/04	17:05	Bottomhole SPMC Sample	3190.0 m MD	Single Phase (SSB)	12873-QA

CHDT Run No: Run 2

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
2.01	16/05/04	11:22	Bottomhole SPMC Sample	3214.0 m MD	Single Phase (SSB)	12887-QA
2.02	16/05/04	11:31	Bottomhole SPMC Sample	3214.0 m MD	Single Phase (SSB)	11478-QA
2.03	16/05/04	11:37	Bottomhole SPMC Sample	3214.0 m MD	Non-reactive (NSB)	8128-MA

CHDT Run No: Run 3

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
3.01	17/05/04	05:26	Bottomhole SPMC Sample	3172.5 m MD	Single Phase (SSB)	N/A
3.02	17/05/04	05:29	Bottomhole SPMC Sample	3172.5 m MD	Single Phase (SSB)	N/A
3.03	17/05/04	05:34	Bottomhole SPMC Sample	3172.5 m MD	Single Phase (SSB)	11482-QA
3.04	17/05/04	05:39	Bottomhole SPMC Sample	3172.5 m MD	Single Phase (SSB)	12883-QA
3.05	17/05/04	03:13	2.75 Gallon MDT Sample	3172.5 m MD	1 Litre IATA can	N/A
3.06	17/05/04	04:14	2.75 Gallon MDT Sample	3172.5 m MD	1 Litre IATA can	N/A

Sample - Miscellaneous

Sample No.	Sample Date	Sample Time	Sample Nature	Sample Point	Bottle Type	Bottle No.
4.01	18/05/04	20:30	Mud Filtrate Sample (3 cc)	Mud Pits	1 Litre Plastic cont.	N/A

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Sequence of Events

Date	Time	Event
<u>CHDT Logging Operations – MLA-A24A</u>		
09/05/2004	15:00	Oilphase Sampling and Analysis Specialists arrived on Marlin Platform
	17:45	Attended Night Shift drill crew pre-tour meeting
10/05/2004	05:45	Attended Day Shift drill crew pre-tour meeting
	06:00	Attended Day Shift process operator's meeting
	07:00	Attended Third Party Company meeting with Drilling Supervisor
	10:30	Oilphase container arrived on Marlin Platform, preliminary checks commenced
	11:00	Started equipment unpacking and prepared for relocation to pressurised workshop
	17:45	Night Shift drill crew pre-tour meeting, crew made aware of Oilphase pressure operations to take place
	19:00	Continued with equipment relocation and set up
11/05/2004	05:45	Attended Day Shift drill crew pre-tour meeting
	06:00	Attended Day Shift process operator's meeting, discussed pressurised workshop isolation issue, decided Oilphase to pre-charge downhole tools on night shift to allow operators access to workshop
	07:00	Weekly Safety Meeting
	08:30	Continued equipment rig up and function test
	08:45	Fire alarm sounded, attended Brucker for roll call
	17:45	Attended Night Shift drill crew pre-tour meeting, personnel made aware of Oilphase pressure operations, general work permit arranged
	19:30	Commenced preparation/ pre-charge of 9 x NR-SPMC's
12/05/2004	05:00	Completed pressure operations, permit closed
	17:45	Attended Night Shift drill crew pre-tour meeting
	19:15	Discussed with Platform Supervisor, Drilling Safety Representative, Maersk H ₂ S officer and Wireline on safest method of handling MRSC sample with H ₂ S gas
	20:25	Continued preparation/ pre-charge of 3 x NR-SPMC's
13/05/2004	22:40	Completed pressure operations, permit closed
	10:40	Confirmed charge pressures of 6 x NR-SPMC's for first CHDT run
	13:00	Commenced set up of well site chemistry equipment for onsite analysis
	15:40	Oilphase Specialist (2 nd man) departed Marlin platform for Snapper platform.
	17:45	Attended Night Shift drill crew pre-tour meeting
	20:00	Wireline tools laid out for op-check and NR-SPMC installation
	20:30	Agitation ring + piston installed into 1 gallon MRSC
14/05/2004	23:46	Commenced NR-SPMC installation into MRMS-BA-011
	01:10	Completed installation of NR-SPMC's and config given to Wireline Engineer
	08:15	Oilphase Specialist (2 nd man) arrived back on Marlin Platform
	08:45	Reviewed locations for MRSC sample handling with Platform Supervisor and

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Sequence of Events

Date	Time	Event
<u>CHDT Logging Operations – MLA-A24A</u>		
14/05/2004	08:45	suitable location identified
	09:00	Commenced assembly of Oilphase agitation frame
	09:45	Completed assembly
	13:00	Continued preparation for wellsite chemistry
15/05/2004	05:45	Attended Day Shift drill crew pre-tour meeting
	06:00	Attended Day Shift process operator's meeting
	06:42	Confirmed charge pressures of 6 x NR-SPMC's for second CHDT run
	07:48	Completed pressure checks
	08:22	Commenced NR-SPMC installation into MRMS-BA-048
	09:00	Completed installation of NR-SPMC's and config given to Wireline Engineer
		Standby by for MDT logging and sampling operations
	10:48	CHDT tool commenced pretests @ 3190.0 m MD
	11:13	Pump out commenced
	14:00	Begin sampling into 1 gallon MRSC-BB-036
	14:18	1 gallon MRSC closed
	14:23	Begin sampling into 2.75 gallon MRSC-DB-033
	15:05	2.75 gallon MRSC closed
	15:46	Commenced sampling into NR-SPMC's
	17:09	Completed sampling into NR-SPMC's
	23:15	Schlumberger Tools at surface
	23:30	Portion of sample vented out of 1 gallon MRSC for H ₂ S measurement as per rig requirements before further sample handling/transfer
	23:45	Installed 2.75 gallon MRSC into Oilphase heating jacket/agitation frame
16/05/2004	02:15	Begin removal of NR-SPMC's from MRMS
	03:15	Complete removal of NR-SPMC's from MRMS
	03:30	Opening pressure of 2.75 gallon MRSC measured
		Heating and agitation of sample commenced
	06:30	Began transfer of 2.75 gallon MRSC into 20 litre IATA can
	07:05	Transfer of 2.75 gallon MRSC completed
	07:30	Installed 1 gallon MRSC into Oilphase heating jacket/agitation frame
	08:07	CHDT on depth @ 3214.0 m MD for Run 2
	09:02	Opening pressure of 1 gallon MRSC measured
		Heating and agitation of sample commenced
	09:30	Commenced re-dress of 1 x NR-SPMC for CHDT Run 3
	10:40	Completed re-dress of 1 x NR-SPMC
	11:23	Commenced sampling into 3 x NR-SPMC's, CHDT Run 2

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Sequence of Events

Date	Time	Event
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CHDT Logging Operations – MLA-A24A

16/05/2004	11:39	Completed sampling into 3 x NR-SPMC's
	12:40	Flashed partial sample from 1 gallon to take CGR measurement
	13:06	Began transfer of 1 gallon MRSC into 1 litre IATA
	13:15	Transfer of 1 gallon MRSC completed
	13:30	Commenced pre-charge of 1 x NR-SPMC for third CHDT run
	14:10	Completed pre-charge of 1 x NR-SPMC for third CHDT run
	14:20	Confirmed charge pressures of 3 x NR-SPMC's for third CHDT run
	15:10	Completed pressure checks
	15:27	Commenced NR-SPMC installation into MRMS-BA-011
	16:36	Completed installation of NR-SPMC's and config given to Wireline Engineer
17/05/2004	02:05	CHDT on depth at 3172.5 m MD – Run 3
	02:40	Began removal of NR-SPMC's from MRMS from Run 2,
	03:10	Complete removal of NR-SPMC's from MRMS
	03:13	Begin sampling into 2.75 gallon MRSC-DB-033, CHDT Run 3
	03:17	Began opening pressure checks of NR-SPMC's, Run 1 and 2
	04:08	2.75 gallon MRSC closed
	04:14	Begin sampling into 2.75 gallon MRSC-DB-034
	04:15	Completed pressure checks of NR-SPMC's
	05:08	2.75 gallon MRSC closed
	05:26	Commenced sampling into 4 x NR-SPMC's
	05:40	Completed sampling into 4 x NR-SPMC's
	05:54	Began heating of NR-SPMC to reservoir temperature
	07:49	Commenced transfer of NR-SPMC into SSB transport bottle
	07:57	Completed transfer of NR-SPMC
	08:00	Wireline CHDT on surface and MRMS laid down
		End of Wireline CHDT Sampling Operations for MLA-A24A
	08:40	Commenced heating NR-SPMC to reservoir temperature
	10:03	Commenced partial flash to collect liquid phase for H2S analysis, gas phase tested for H2S using stain tube
	10:40	Only 2 - 3 cc of condensate collected – insufficient for analysis Flash stopped and NR-SPMC rigged down awaiting further instruction from Client
	10:52	Began heating of NR-SPMC to reservoir temperature
	11:15	Fire alarm sounded, made area safe and mustered at Brucker
	11:30	Began removal of NR-SPMC's from MRMS from Run 3
	12:15	Completed removal of NR-SPMC's from MRMS
13:20	Commenced transfer of NR-SPMC into SSB transport bottle	

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Sequence of Events

Date	Time	Event
<u>CHDT Logging Operations – MLA-A24A</u>		
17/05/2004	13:24	Completed transfer of NR-SPMC
	14:00	Began heating of NR-SPMC to reservoir temperature
	15:12	Commenced transfer of NR-SPMC into SSB transport bottle
	15:19	Transfer of NR-SPMC completed
	16:10	Began opening pressure checks of NR-SPMC's from Run 3
	16:35	Wireline commenced flashing MRSC-DB-033 and MRSC-DB-34 through Schlumberger Wireline's separator and gas flow meter with the CGR measured along with H ₂ S by stain tube
	16:45	Completed pressure checks of NR-SPMC's
	17:30	Completed flashing of 2 x MRSC's
	19:40	Began heating of NR-SPMC to reservoir temperature
	20:40	Commenced transfer of NR-SPMC into SSB transport bottle
	20:47	Completed transfer of NR-SPMC
	22:05	Began heating of NR-SPMC to reservoir temperature
	23:07	Commenced transfer of NR-SPMC into SSB transport bottle
	23:20	Transfer of NR-SPMC completed
	23:35	Began heating of NR-SPMC to reservoir temperature
18/05/2004	00:40	Commenced transfer of NR-SPMC into SSB transport bottle
	00:48	Completed transfer of NR-SPMC
	01:03	Began heating of NR-SPMC to reservoir temperature
	01:50	Commenced transfer of NR-SPMC into SSB transport bottle
	01:56	Completed transfer of NR-SPMC
	09:07	Began flashing of NR-SPMC through Potassium Hydroxide scrubbing solution for H ₂ S in gas analysis
	09:50	Completed flashing of NR-SPMC – 20 litres flowed; remaining sample vented
	10:29	Commenced flashing of 2 nd NR-SPMC through Potassium Hydroxide scrubbing solution for H ₂ S in gas analysis
	11:19	Completed flashing of NR-SPMC – 20 litres flowed; remaining sample vented
	11:41	Began heating of NR-SPMC to reservoir temperature
	12:20	Commenced H ₂ S in gas analysis x 2
	12:40	Began flashing of NR-SPMC through Sodium Hydroxide scrubbing solution for H ₂ S in water analysis
	12:50	Completed flashing of NR-SPMC – 50 cc collected
	13:10	Completed H ₂ S in gas analysis
	13:16	Commenced transfer of NR-SPMC into SSB transport bottle
	13:23	Completed transfer of NR-SPMC

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Sequence of Events

Date	Time	Event
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CHDT Logging Operations – MLA-A24A

18/05/2004	13:42	Began heating of NR-SPMC to reservoir temperature
	14:20	Began flashing of 2 nd NR-SPMC through Sodium Hydroxide scrubbing solution for H ₂ S in water analysis
	14:28	Completed flashing of NR-SPMC – 50 cc collected
	14:58	Commenced transfer of NR-SPMC into SSB transport bottle
	15:04	Completed transfer of NR-SPMC
	15:35	Commenced H ₂ S in water analysis x 2
	16:30	Completed H ₂ S in water analysis

End of Sampling and Analysis Operations for MLA-A24A

	16:45	Begin rig down of Oilphase equipment and pack up
19/05/2004	07:00	Continued equipment pack up into Oilphase shipping container
	14:50	Completed pack up and consign to Schlumberger, Perth, WA
	15:45	2 x Oilphase Personnel de-mobbed to Sale
20/05/2004	10:30	Client meeting in Melbourne to discuss operations and results
	18:30	2 x Oilphase Personnel return to Perth, West Australia

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.01	Test No: Run 1	Sample Nature:	1 Gallon MDT Sample
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	15/05/04	Transfer Date:	16/05/04
Sampling Time:	14:00	Transfer Time:	09:02
MRMS Serial No:	N/A	Chamber Type:	1 Gal MDT
MRMS Position (Slot):	N/A	Chamber Serial No:	036
Sample Point :	3190.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	1 Litre IATA can	Gas Cap Created:	N/A
Sample Bottle Volume:	1 Litre	Fluid Remaining:	N/A
Sample Volume:	870 cc	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	2500 psig @ 16 °C	Transfer Duration:	9 mins
Transfer Pressure:	5000 psig @ 70 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	240 mins	Transfer Temperature:	70 °C
GOR:	2940 m3/m3	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3682.7 psig	Drawdown:	92.7 psi
BHT:	128 °C	Min BHS Pressure:	3589.3 psig
At depth:	3190 m MD	Pump Out Duration:	165 mins
Pump Out Vol:	78 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
CGR measured @ 60.6 bbl/MMscf
H2S measured by stain tube: <0.3 ppm
Chlorides = 26,000 ppm
Sample comprised of 750 cc water and 120 cc condensate

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.02	Test No: Run 1	Sample Nature:	2.75 Gallon MDT Sample
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	15/05/04	Transfer Date:	16/05/04
Sampling Time:	14:23	Transfer Time:	06:30
MRMS Serial No:	N/A	Chamber Type:	2.75 Gal MDT
MRMS Position (Slot):	N/A	Chamber Serial No:	033
Sample Point :	3190.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	25 Litre IATA can	Gas Cap Created:	N/A
Sample Bottle Volume:	25 Litre	Fluid Remaining:	N/A
Sample Volume:	2200 cc	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	3100 psig @ 16 °C	Transfer Duration:	35 mins
Transfer Pressure:	5000 psig @ 70 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	180 mins	Transfer Temperature:	55 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3682.7 psig	Drawdown:	91.7 psi
BHT:	128 °C	Min BHS Pressure:	3590.3 psig
At depth:	3190 m MD	Pump Out Duration:	188 mins
Pump Out Vol:	87 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
H2S measured by stain tube: <0.3 ppm
Chlorides = 24,000 ppm
Sample comprised of 1970 cc water and 311 cc condensate

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.03 Test No: Run 1	Sample Nature: Bottomhole SPMC Sample
Bottle No: 9562-MA	Flow Period: N/A
Sampling Date: 15/05/04	Transfer Date: 17/05/04
Sampling Time: 15:46	Transfer Time: 13:20
MRMS Serial No: 011	Chamber Type: NR-SPMC
MRMS Position (Slot): 1	Chamber Serial No: 256
Sample Point : 3190.0 m MD	Formation: Turrum

Shipping Conditions

Sample Bottle Type: Single Phase (SSB)	Gas Cap Created: 60 cc (Nitrogen)
Sample Bottle Volume: 820 cc	Fluid Remaining: 610 cc (Water/ Glycol)
Sample Volume: 150 cc	Final Pressure: 7550 psig @ 16 °C

Transfer Conditions

Initial Pressure: 3900 psig @ 16 °C	Transfer Duration: 4 mins
Transfer Pressure: 6500 psig @ 128 °C	Apparent Bubble Point: N/A @ N/A
Heating & Agitation Time: 148 mins	Transfer Temperature: 128 °C
GOR: N/A N/A	Oil Gravity API: N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP: 3682.7 psig	Drawdown: 24.7 psi
BHT: 128 °C	Min BHS Pressure: 3657.3 psig
At depth: 3190 m MD	Pump Out Duration: 271 mins
Pump Out Vol: 115 Litre	

Remarks

SPMC's run in hole with CHDT tool
 CHDT toolstring configured for low shock sampling
 Low opening pressure/ high compressibility is indicative of the presence of gas in the sample
 11.1 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.04	Test No: Run 1	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	9206-MA	Flow Period:	N/A
Sampling Date:	15/05/04	Transfer Date:	17/05/04
Sampling Time:	16:15	Transfer Time:	07:49
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position (Slot):	2	Chamber Serial No:	257
Sample Point :	3190.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Non-reactive (NSB)	Gas Cap Created:	60 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	610 cc (Water/ Glycol)
Sample Volume:	150 cc	Final Pressure:	7880 psig @ 16 °C

Transfer Conditions

Initial Pressure:	3700 psig @ 16 °C	Transfer Duration:	8 mins
Transfer Pressure:	6500 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	115 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3682.7 psig	Drawdown:	25.7 psi
BHT:	128 °C	Min BHS Pressure:	3656.3 psig
At depth:	3190 m MD	Pump Out Duration:	301 mins
Pump Out Vol:	119 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
Low opening pressure/ high compressibility is indicative of the presence of gas in the sample
10.2 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.05 Test No: Run 1

Sample Nature: Bottomhole SPMC Sample

Bottle No: 12875-QA

Flow Period: N/A

Sampling Date: 15/05/04

Transfer Date: 17/05/04

Sampling Time: 16:30

Transfer Time: 15:12

MRMS Serial No: 011

Chamber Type: NR-SPMC

MRMS Position 3

Chamber Serial No: 269

(Slot):

Sample Point : 3190.0 m MD

Formation: Turrum

Shipping Conditions

Sample Bottle Type: Single Phase (SSB)

Gas Cap Created: 10 cc (Nitrogen)

Sample Bottle Volume: 820 cc

Fluid Remaining: 665 cc (Water/ Glycol)

Sample Volume: 145 cc

Final Pressure: 8220 psig @ 16 °C

Transfer Conditions

Initial Pressure: 3700 psig @ 16 °C

Transfer Duration: 5 mins

Transfer Pressure: 6500 psig @ 128 °C

Apparent Bubble Point: N/A @ N/A

Heating & Agitation Time: 60 mins

Transfer Temperature: 128 °C

GOR: N/A N/A

Oil Gravity API: N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP: 3682.7 psig

Drawdown: 25.7 psi

BHT: 128 °C

Min BHS Pressure: 3656.3 psig

At depth: 3190 m MD

Pump Out Duration: 316 mins

Pump Out Vol: 122 Litre

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
Low opening pressure/ high compressibility is indicative of the presence of gas in the sample
7.2 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.06	Test No: Run 1	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	1440-EA	Flow Period:	N/A
Sampling Date:	15/05/04	Transfer Date:	17/05/04
Sampling Time:	16:44	Transfer Time:	18:55
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position	5	Chamber Serial No:	273
(Slot):		Formation:	Turrum
Sample Point :	3190.0 m MD		

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	60 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	670 cc (Water/ Glycol)
Sample Volume:	90 cc	Final Pressure:	8550 psig @ 16 °C

Transfer Conditions

Initial Pressure:	3950 psig @ 16 °C	Transfer Duration:	5 mins
Transfer Pressure:	7000 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	95 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3682.7 psig	Drawdown:	23.7 psi
BHT:	128 °C	Min BHS Pressure:	3658.3 psig
At depth:	3190 m MD	Pump Out Duration:	331 mins
Pump Out Vol:	124 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
Low opening pressure/ high compressibility is indicative of the presence of gas in the sample
Partial flash performed and evolved gas captured - H2S in gas phase measured by stain tube <0.3 ppm
Remaining sample was transferred - no measurement of H2S in oil was made as per client instructions
12.0 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 1.07	Test No: Run 1	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	12873-QA	Flow Period:	N/A
Sampling Date:	15/05/04	Transfer Date:	17/05/04
Sampling Time:	17:05	Transfer Time:	20:40
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position (Slot):	6	Chamber Serial No:	275
Sample Point :	3190.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	60 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	600 cc (Water/ Glycol)
Sample Volume:	160 cc	Final Pressure:	8300 psig @ 16 °C

Transfer Conditions

Initial Pressure:	4400 psig @ 16 °C	Transfer Duration:	7 mins
Transfer Pressure:	7500 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	60 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3682.7 psig	Drawdown:	23.6 psi
BHT:	128 °C	Min BHS Pressure:	3658.4 psig
At depth:	3190 m MD	Pump Out Duration:	351 mins
Pump Out Vol:	128 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
No measurement of H₂S in oil was made as per client instructions
10.3 cc de-ionised H₂O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 2.01	Test No: Run 2	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	12887-QA	Flow Period:	N/A
Sampling Date:	16/05/04	Transfer Date:	18/05/04
Sampling Time:	11:22	Transfer Time:	13:16
MRMS Serial No:	048	Chamber Type:	NR-SPMC
MRMS Position (Slot):	2	Chamber Serial No:	023
Sample Point :	3214.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	49 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	591 cc (Water/ Glycol)
Sample Volume:	180 cc	Final Pressure:	9900 psig @ 16 °C

Transfer Conditions

Initial Pressure:	7650 psig @ 16 °C	Transfer Duration:	8 mins
Transfer Pressure:	9300 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	96 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A
Contamination Level:	N/A		

Production Conditions During Sampling

Initial BHP:	3703.3 psig	Drawdown:	2.0 psi
BHT:	128 °C	Min BHS Pressure:	3701.3 psig
At depth:	3214 m MD	Pump Out Duration:	86 mins
Pump Out Vol:	150.1 Litre		

Remarks

SPMC's run in hole with CHDT tool
 CHDT toolstring configured for low shock sampling
 Sulphur in water level is below detectable limit of 1 ppm
 Filtrate contamination may affect analysis results
 Chlorides = 34,000 ppm
 10.2 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 2.02	Test No: Run 2	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	11478-QA	Flow Period:	N/A
Sampling Date:	16/05/04	Transfer Date:	18/05/04
Sampling Time:	11:31	Transfer Time:	14:58
MRMS Serial No:	048	Chamber Type:	NR-SPMC
MRMS Position (Slot):	3	Chamber Serial No:	026
Sample Point :	3214.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	49 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	591 cc (Water/ Glycol)
Sample Volume:	180 cc	Final Pressure:	10080 psig @ 16 °C

Transfer Conditions

Initial Pressure:	7690 psig @ 16 °C	Transfer Duration:	6 mins
Transfer Pressure:	9500 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	76 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3703.3 psig	Drawdown:	3.0 psi
BHT:	128 °C	Min BHS Pressure:	3700.3 psig
At depth:	3214 m MD	Pump Out Duration:	92 mins
Pump Out Vol:	151.1 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
Sulphur in water level is below detectible limit of 1 ppm
Filtrate contamination may affect analysis results
Chlorides = 26,500 ppm
7.2 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 2.03	Test No: Run 2	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	8128-MA	Flow Period:	N/A
Sampling Date:	16/05/04	Transfer Date:	17/05/04
Sampling Time:	11:37	Transfer Time:	23:07
MRMS Serial No:	048	Chamber Type:	NR-SPMC
MRMS Position (Slot):	6	Chamber Serial No:	106
Sample Point :	3214.0 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Non-reactive (NSB)	Gas Cap Created:	52 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	533 cc (Water/ Glycol)
Sample Volume:	235 cc	Final Pressure:	10750 psig @ 16 °C

Transfer Conditions

Initial Pressure:	7650 psig @ 16 °C	Transfer Duration:	13 mins
Transfer Pressure:	10000 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	62 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A
Contamination Level:	N/A		

Production Conditions During Sampling

Initial BHP:	3703.3 psig	Drawdown:	3.0 psi
BHT:	128 °C	Min BHS Pressure:	3700.3 psig
At depth:	3214 m MD	Pump Out Duration:	94 mins
Pump Out Vol:	152.7 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
10.3 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 3.01	Test No: Run 3	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	17/05/04	Transfer Date:	N/A
Sampling Time:	05:26	Transfer Time:	N/A
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position (Slot):	1	Chamber Serial No:	107
Sample Point :	3172.5 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	N/A
Sample Bottle Volume:	820 cc	Fluid Remaining:	N/A
Sample Volume:	N/A	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	4350 psig @ 16 °C	Transfer Duration:	N/A
Transfer Pressure:	N/A @ N/A	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	N/A	Transfer Temperature:	ambient
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3675.9 psig	Drawdown:	16.4 psi
BHT:	128 °C	Min BHS Pressure:	3659.5 psig
At depth:	3172.5 m MD	Pump Out Duration:	160 mins

Pump Out Vol: 54 Litre

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
20 Litres of the sample was vented through scrubbing solutions for H2S measurement with remainder vented to atmosphere
H2S below detectible limit - stain tube measured H2S<0.3 ppm
Sample not transferred, instead it was bled off after chemical analysis
11.1 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 3.02	Test No: Run 3	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	17/05/04	Transfer Date:	N/A
Sampling Time:	05:29	Transfer Time:	N/A
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position (Slot):	2	Chamber Serial No:	223
Sample Point :	3172.5 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	N/A
Sample Bottle Volume:	820 cc	Fluid Remaining:	N/A
Sample Volume:	N/A	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	3760 psig @ 16 °C	Transfer Duration:	N/A
Transfer Pressure:	N/A @ N/A	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	N/A	Transfer Temperature:	ambient
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3675.9 psig	Drawdown:	6.6 psi
BHT:	128 °C	Min BHS Pressure:	3669.3 psig
At depth:	3172.5 m MD	Pump Out Duration:	165 mins
Pump Out Vol:	55 Litre		

Remarks

SPMC's run in hole with CHDT tool
 CHDT toolstring configured for low shock sampling
 20 Litres of the sample was vented through scrubbing solutions for H2S measurement with remainder vented to atmosphere
 H2S below detectible limit - stain tube measured H2S<0.3 ppm
 Sample not transferred, instead it was bled off after chemical analysis
 10.2 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 3.03	Test No: Run 3	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	11482-QA	Flow Period:	N/A
Sampling Date:	17/05/04	Transfer Date:	18/05/04
Sampling Time:	05:34	Transfer Time:	00:40
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position (Slot):	3	Chamber Serial No:	224
Sample Point :	3172.5 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	58 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	617 cc (Water/ Glycol)
Sample Volume:	145 cc	Final Pressure:	8350 psig @ 16 °C

Transfer Conditions

Initial Pressure:	3610 psig @ 16 °C	Transfer Duration:	8 mins
Transfer Pressure:	8000 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	65 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3675.9 psig	Drawdown:	19.6 psi
BHT:	128 °C	Min BHS Pressure:	3656.3 psig
At depth:	3172.5 m MD	Pump Out Duration:	170 mins
Pump Out Vol:	58 Litre		

Remarks

SPMC's run in hole with CHDT tool
 CHDT toolstring configured for low shock sampling
 7.2 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 3.04	Test No: Run 3	Sample Nature:	Bottomhole SPMC Sample
Bottle No:	12883-QA	Flow Period:	N/A
Sampling Date:	17/05/04	Transfer Date:	18/05/04
Sampling Time:	05:39	Transfer Time:	01:50
MRMS Serial No:	011	Chamber Type:	NR-SPMC
MRMS Position (Slot):	6	Chamber Serial No:	272
Sample Point :	3172.5 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	Single Phase (SSB)	Gas Cap Created:	55 cc (Nitrogen)
Sample Bottle Volume:	820 cc	Fluid Remaining:	610 cc (Water/ Glycol)
Sample Volume:	155 cc	Final Pressure:	8400 psig @ 16 °C

Transfer Conditions

Initial Pressure:	4500 psig @ 16 °C	Transfer Duration:	6 mins
Transfer Pressure:	7500 psig @ 128 °C	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	47 mins	Transfer Temperature:	128 °C
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3675.9 psig	Drawdown:	15.6 psi
BHT:	128 °C	Min BHS Pressure:	3660.3 psig
At depth:	3172.5 m MD	Pump Out Duration:	175 mins

Pump Out Vol: 60 Litre

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
10.3 cc de-ionised H2O in sample due to tool configuration

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 3.05	Test No: Run 3	Sample Nature:	2.75 Gallon MDT Sample
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	17/05/04	Transfer Date:	17/05/04
Sampling Time:	03:13	Transfer Time:	16:35
MRMS Serial No:	N/A	Chamber Type:	2.75 Gal MDT
MRMS Position (Slot):	N/A	Chamber Serial No:	033
Sample Point :	3172.5 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	1 Litre IATA can	Gas Cap Created:	N/A
Sample Bottle Volume:	1 Litre	Fluid Remaining:	N/A
Sample Volume:	510 cc	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	3600 psig @ 16 °C	Transfer Duration:	15 mins
Transfer Pressure:	100 psig @ ambient	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	N/A	Transfer Temperature:	ambient
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3675.9 psig	Drawdown:	25.6 psi
BHT:	128 °C	Min BHS Pressure:	3650.3 psia
At depth:	3172.5 m MD	Pump Out Duration:	29 mins
Pump Out Vol:	20 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
H2S measured by Mearsk H2S rep using a stain tube
40 cc of wellbore mud in sample
No water observed in sample
CGR = 19.2 bbl/MMscf
Transfer Vol 153.85 ft3 gas, 470 cc condensate

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 3.06	Test No: Run 3	Sample Nature:	2.75 Gallon MDT Sample
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	17/05/04	Transfer Date:	17/05/04
Sampling Time:	04:14	Transfer Time:	17:04
MRMS Serial No:	N/A	Chamber Type:	2.75 Gal MDT
MRMS Position (Slot):	N/A	Chamber Serial No:	034
Sample Point :	3172.5 m MD	Formation:	Turrum

Shipping Conditions

Sample Bottle Type:	1 Litre IATA can	Gas Cap Created:	N/A
Sample Bottle Volume:	1 Litre	Fluid Remaining:	N/A
Sample Volume:	545 cc	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	3450 psig @ 16 °C	Transfer Duration:	15 mins
Transfer Pressure:	100 psig @ ambient	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	N/A	Transfer Temperature:	ambient
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	3675.9 psig	Drawdown:	18.6 psi
BHT:	128 °C	Min BHS Pressure:	3657.3 psia
At depth:	3172.5 m MD	Pump Out Duration:	90 mins
Pump Out Vol:	47 Litre		

Remarks

SPMC's run in hole with CHDT tool
CHDT toolstring configured for low shock sampling
H2S measured by Mearsk H2S rep using a stain tube
75 cc of wellbore mud in sample
No water observed in sample
CGR = 19.1 bbl/MMscf
Transfer Vol 154.86 ft3 gas, 470 cc condensate

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Bottomhole Sample Data Sheet – Open Hole

Identification

Sample No: 4.01	Test No: Sample - Misc	Sample Nature:	Mud Filtrate Sample (3 cc)
Bottle No:	N/A	Flow Period:	N/A
Sampling Date:	18/05/04	Transfer Date:	N/A
Sampling Time:	20:30	Transfer Time:	N/A
MRMS Serial No:	N/A	Chamber Type:	N/A
MRMS Position (Slot):	N/A	Chamber Serial No:	N/A
Sample Point :	Mud Pits	Formation:	N/A

Shipping Conditions

Sample Bottle Type:	1 Litre Plastic cont.	Gas Cap Created:	N/A
Sample Bottle Volume:	1 Litre	Fluid Remaining:	N/A
Sample Volume:	3 cc	Final Pressure:	atmos @ ambient

Transfer Conditions

Initial Pressure:	N/A @ N/A	Transfer Duration:	N/A
Transfer Pressure:	N/A @ N/A	Apparent Bubble Point:	N/A @ N/A
Heating & Agitation Time:	N/A	Transfer Temperature:	N/A
GOR:	N/A N/A	Oil Gravity API:	N/A

Contamination Level: N/A

Production Conditions During Sampling

Initial BHP:	N/A	Drawdown:	N/A
BHT:	N/A	Min BHS Pressure:	N/A
At depth:	N/A	Pump Out Duration:	N/A
Pump Out Vol:	N/A		

Remarks

See Mud Report, attached to the Sampling Report

CHDT Sampling Data Sheet - Run 1

Date	Time	MRMS No	Sample No	Type	S/No	Vol	Pos'n	Depth (m MD)	SIBHP (psia)	FBHP (psia)	PO Duration	PO vol (ltrs)	BHT (°C)	Max DD (psi)	Closing P (psia)	Sampling Duration
CHDT Run 1																
15/05/04	14:00	MRMS011	1.01	MRSC	036	1 gal	n/a	3190.0	3696.7	3604.0	165.0	78.0	128	92.7	6248	18 mins
15/05/04	14:23	MRMS011	1.02	MRSC	033	2.75 gal	n/a	3190.0	3696.7	3605.0	188.0	87.0	128	91.7	6147	42 mins
15/05/04	15:46	MRMS011	1.03	SPMC	256	250 cc	1	3190.0	3696.7	3672.0	271.0	115.0	128	24.7	3672	8 mins
15/05/04	16:15	MRMS011	1.04	SPMC	257	250 cc	2	3190.0	3696.7	3671.0	301.0	119.0	128	25.7	3671	5 mins
15/05/04	16:30	MRMS011	1.05	SPMC	269	250 cc	3	3190.0	3696.7	3671.0	316.0	122.0	128	25.7	3671	4 mins
15/05/04	16:44	MRMS011	1.06	SPMC	273	250 cc	5	3190.0	3696.7	3673.0	331.0	124.0	128	23.7	3673	4 mins
15/05/04	17:05	MRMS011	1.07	SPMC	275	250 cc	6	3190.0	3696.7	3673.1	351.0	128.0	129	23.6	3673	4 mins

Date: 15/05/04
 Time: 14:00
 MRMS No: MRMS011
 Sample No: 1.01
 Type: MRSC
 S/No: 036
 Vol: 1 gal
 Pos'n: n/a
 Depth (m MD): 3190.0
 SIBHP (psia): 3696.7
 FBHP (psia): 3604.0
 PO Duration: 165.0
 PO vol (ltrs): 78.0
 BHT (°C): 128
 Max DD (psi): 92.7
 Closing P (psia): 6248
 Sampling Duration: 18 mins

Comments

- Data collected by Oilphase Specialist during MDT sampling operations

- Data collected by Oilphase Specialist during MDT sampling operations



CHDT Sampling Data Sheet - Run 3

[illegible]

Comments

- Data collected by Oilphase Specialist during MDT sampling operations

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Schlumberger

Field Analysis Results

Stain Tube Measurement

Sample ID	Sampler Type	Sampler S/N	Chamber Volume	Sample Depth (m MD)	Hydrogen Sulphide (ppm-vol)	Mercaptan (ppm-vol)	Carbon Dioxide (ppm-vol)	Remarks
CHDT Run 1								
1.01	MRSC	036	1 gallon	3190.0	less than 0.3	-	-	Result was below the detectible limit
1.02	MRSC	033	2.75 gallon	3190.0	less than 0.3	-	-	Result was below the detectible limit
1.06	NR-SPMC	273	250 cc	3190.0	less than 0.3	-	-	Result was below the detectible limit
CHDT Run 3								
3.01	NR-SPMC	107	250 cc	3172.5	less than 0.3	-	-	Result was below the detectible limit
3.02	NR-SPMC	223	250 cc	3172.5	less than 0.3	-	-	Result was below the detectible limit
No further samples were analysed								

Remarks

Analysis by Kitagawa Stain Tube

Measurement of mercaptans and carbon dioxide not required by client

Initial H₂S in sample measurement made on recovery of MDT sample chamber to surface prior to sample handling as required by the on-site JSA

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Schlumberger

Hydrogen Sulphide, Mercaptans and COS in Hydrocarbon Gas by UOP Method

Sample ID	SPMC S/N	Depth (m MD)	H2S by Stain Tube (vol-ppm)	Sampling Duration (mins)	Analysed Vol (Litres @ amb. conditions)	Hydrogen Sulphide (vol-ppm)	Mercaptans (wt-ppm)	Carbonyl Sulphide (wt-ppm)	Remarks
CHDT Run 3									
3.01	107	3172.5	less than 0.3	43	20.040	less than 0.1	less than 0.3	BDL	Result was below the detectible limit of the analysis system used
3.02	223	3172.5	less than 0.3	50	20.012	less than 0.1	less than 0.3	BDL	Result was below the detectible limit of the analysis system used
No further samples were analysed									

Analysis by UOP 212-77 method

"Analysed Vol" for the analysis were as specified in Oilphase Operating Procedure OP084 rev5

"BDL" - Below Detectible Limit

R-SH Detectible Limit = 0.28 wt-ppm, as sulphur

COS Detectible Limit = 0.14 wt-ppm, as sulphur

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Schlumberger

Field Analysis Results

Hydrogen Sulphide in Pressurised Water Sample

Sample ID	Sampler Type	Sampler S/N	Chamber Volume	Sample Depth (m MD)	Volume used for Analysis (cc)	Hydrogen Sulphide (ppm-wt)	Remarks
CHDT Run 2							
2.01	NR-SPMC	107	250 cc	3214.0	50 cc	less than 1 ppm	Chlorides content = 34,000 ppm
2.02	NR-SPMC	223	250 cc	3214.0	50 cc	less than 1 ppm	Chlorides content = 26,500 ppm
No further samples were analysed							

Remarks

Analysis is by Iodometric titration against Sodium Thiosulphate in a saturated starch solution

Minimum detectable limit = 1 ppm

Chloride level in solution measured by Baroid Engineer using AgNO₃ titration method

Presence of filtrate in the sample may affect the analysis results

Client: Esso Australia Pty Ltd
Job No: AOH437
Date: 9th to 19th May, 2004

Field: Turrum
Well: MLA-A24A
Installation: Marlin Production Platform

Schlumberger

Field Analysis Results

Fluid Volumes from MRSC Chambers

Sample ID	Sampler Type	Sampler S/N	Chamber Volume	Sample Depth (m MD)	Condensate Volume (cc)	Gas Volume (ft3)	Water Volume (cc)	CGR	Remarks
1.01	MRSC	036	1 gallon	3190.0	120.0	12.46	750.0	60.6 bbl/MMscf	Gas volume calculated from measured CGR and total volume of recovered condensate
1.02	MRSC	033	2.75 gallon	3190.0	311.0	not measured	1970.0	not measured	
3.05	MRSC	033	2.75 gallon	3172.5	470.0	153.85	N/A	19.2 bbl/MMscf	Also contained 40 cc well bore mud
3.06	MRSC	034	2.75 gallon	3172.5	470.0	154.86	N/A	19.1 bbl/MMscf	Also contained 75 cc well bore mud
No further samples were analysed									

Remarks

Sample 1.01 partially flashed from monophasic conditions to yield 5 cc of condensate and 14.7 L of gas - Calculated CGR = 60.6 bbl/MMscf
Sample 3.05 and 3.06 were flashed completely and total gas and liquid volumes measured

Client Esso Australia Pty Ltd
Job No AOH437
Date 14th May, 2004

Field Turrum
Well MLA-A24A
Installation Marlin Production Platform

CHDT Sampling Toolstring - Run 1

MDT - MRMS Module

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	NR-SPMC	256	10,000	11.1
2	NR-SPMC	257	10,000	10.2
3	NR-SPMC	269	10,000	7.2
4	NR-SPMC	272	10,000	12.5
5	NR-SPMC	273	10,000	12.0
6	NR-SPMC	275	10,000	10.3

*NB: "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

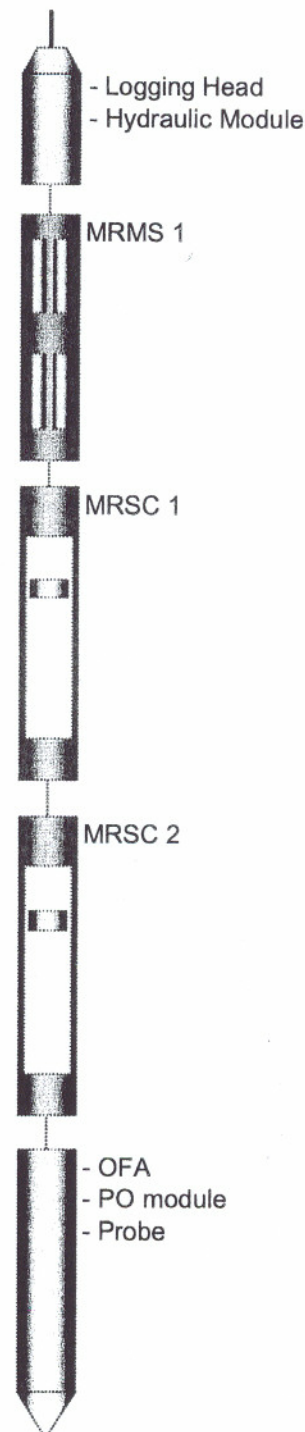
Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	4,600	psig
Estimated Bottomhole Temp	125	°C
Expected Fluid Type	Oil	
Assumed Fluid Shrinkage	15	%
Calc'd Recovery Pressure at T(amb)	7,000	psig

MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	DB	033	2.75	Y
2	BB	036	1	Y



Remarks

Samples were captured using CHDT string
CHDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline

Client Esso Australia Pty Ltd
Job No AOH437
Date 16th May, 2004
Field Turrum
Well MLA-A24A
Installation Marlin Production Platform

CHDT Sampling Toolstring - Run 2

MDT - MRMS Module

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	N/A	N/A	N/A	11.1
2	NR-SPMC	023	10,000	10.2
3	NR-SPMC	026	10,000	7.2
4	N/A	N/A	N/A	12.5
5	N/A	N/A	N/A	12.0
6	NR-SPMC	106	10,000	10.3

*NB: "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

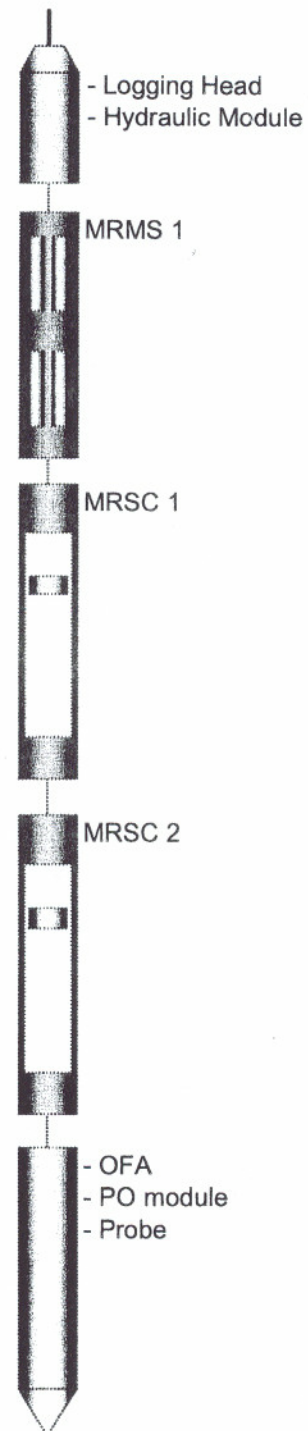
Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	4,600	psig
Estimated Bottomhole Temp	125	°C
Expected Fluid Type	Water	
Assumed Fluid Shrinkage	5	%
Calc'd Recovery Pressure at T(amb)	8,500	psig

MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	not run			
2	not run			



Remarks

Samples were captured using CHDT string
 CHDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
 Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline

Client Esso Australia Pty Ltd
Job No AOH437
Date 17th May, 2004
Field Turrum
Well MLA-A24A
Installation Marlin Production Platform

CHDT Sampling Toolstring - Run 3

MDT - MRMS Module

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	NR-SPMC	107	10,000	11.1
2	NR-SPMC	223	10,000	10.2
3	NR-SPMC	224	10,000	7.2
4	N/A	N/A	N/A	12.5
5	N/A	N/A	N/A	12.0
6	NR-SPMC	272	10,000	10.3

*NB: "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

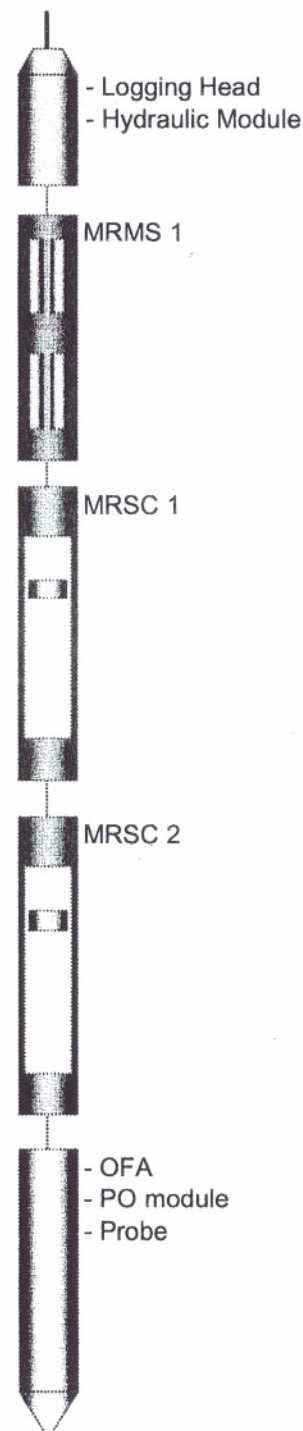
Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	4,600	psig
Estimated Bottomhole Temp	125	°C
Expected Fluid Type	Gas	
Assumed Fluid Shrinkage	40	%
Calc'd Recovery Pressure at T(amb)	4,700	psig

MDT - MRSC Modules

Module No	Type	Serial No	Volume (Gal)	Agitation Ring?
1	DB	033	2.75	N
2	DB	034	2.75	N



Remarks

Samples were captured using CHDT string
 CHDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
 Estimated data calculated by Oilphase Specialist based on information supplied by Schlumberger Wireline

ESSO AUSTRALIA PTY LTD

Well: MLA_A24A
 Date: 15-May-04
 Tool Type: CHDT/MDT-GR-CCL-LEHQT
 Gauge Type: CQG
 Pressure units (psia, psig) psia

Deviated Well
 Inclination average 42deg

Witness: Lindsay Cullen
 Engineer: Ruthven, Majkut
 KB (metres): 27.9
 Probe type: Large
 Temperature units (degF, degC) Deg C

	Reeves Depth mMD	Schlumberger Depth mMD	Reeves Depth mTVSS	Schlumberger Depth mTVSS	Strain Gauge			Quartz Gauge				Strain	Qtz	Mobility			
Point No					Hydrostatic Before	PPG	Reservoir	PPG	Hydrostatic Before	PPG	Reservoir	PPG	Temp	hyd after	hyd after	Ratio	Comments
Run 1																	
1	3190.00	3190.00	2584.50	2584.50		0.0	3694.20	8.3883	4589.1	10.42033	3696.7	8.394	123.7		4582.60	47	Cased hole pretest after drilling hole 1 inch in casing and formation. Good buildup after few minutes, pump out
2	3203.50	3201.80	2594.54	2593.27		0.0		0	4612.6	10.43872	3708.07	8.3872	128.0		4610.00	nd	build up OK thru hole. Pumpout causes blocking or collapse.
Run 2																	
3	3214.00	3214.00	2602.06	2602.06					4638.20	10.5	3716.97	8.38	129.0		4633.10	nd	good test. Drill to 1.74". Pump out to establish fluid. Take 3 SPMC samples.
4	3196.50	3196.50	2589.05	2589.05					4596.58	10.4	3701.10	8.39	129.0			nd	good test. Drill to 1.7". Pump out to establish fluid. Drew down 4-500psi
Run 3																	
5	3172.50	3172.50	2571.28	2571.28					4546.69	10.4	3690.64	8.42	128.0		4539.79	nd	good. Drill 1.36", pump out to sample gas. Take 4 x SPMC

ESSO AUSTRALIA PTY LTD

Well: MLA_A24A

Date: 15-May-04

Tool Type: CHDT/MDT-GR-CCL-LEHQT

Gauge Type: CQG

Pressure units (psia, psig) psia

Deviated Well
Inclination average 42deg

Witness

Lindsay Cullen

Engineer

Ruthven, Majkut

KB (metres):

27.9

Probe type

Large

Temperature units (degF, degC) Deg C

Point No	Reeves	Schlumberger	Reeves	Schlumberger	Strain Gauge				Quartz Gauge				Strain	Qtz	Mobility	Comments	
	Depth mMD	Depth mMD	Depth mTVDSS	Depth mTVDSS	Hydrostatic Before	PPG	Reservoir	PPG	Hydrostatic Before	PPG	Reservoir	PPG	Temp	hyd after	hyd after		Ratio
Run 1																	
1	3190.00	3190.00	2584.50	2584.50		0.0	3694.20	8.3883	4589.1	10.42033	3696.7	8.394	123.7		4582.60	47	Cased hole pretest after drilling hole 1 inch in casing and formation. Good buildup after few minutes, pump out
2	3203.50	3201.80	2594.54	2593.27		0.0		0	4612.8	10.43872	3708.07	8.3872	128.0		4610.00	nd	build up OK thru hole. Pumpout causes blocking or collapse.
Run 2																	
3	3214.00	3214.00	2602.06	2602.06					4638.20	10.5	3716.97	8.38	129.0		4633.10	nd	good test. Drill to 1.74". Pump out to establish fluid. Take 3 SPMC samples.
4	3196.50	3196.50	2589.05	2589.05					4596.58	10.4	3701.10	8.39	129.0			nd	good test. Drill to 1.7". Pump out to establish fluid. Drew down 4-500psi
Run 3																	
5	3172.50	3172.50	2571.28	2571.28					4546.69	10.4	3690.64	8.42	128.0		4539.79	nd	good. Drill 1.36", pump out to sample gas. Take 4 x SPMC

EALP - WELL MDT FLUID SAMPLE DATA

Well:			MARLIN A24A						
A. Sample Identification									
Run/seat number	##	1,1							
Sample depth	md m rkb	3190	3190	3190	3190	3190		3190	3190
Pretest volume	cc	20 ccs							
Chamber size	cc/litre/gallon	1 gallon	2.75 gall	SPMC250c	SPMC250c	SPMC250cc		SPMC250c	SPMC250cc
Chamber serial number	#	36	33	256	257	269		273	275
Probe type		Large	large						
Choke size		n/a							
B. Sampling History									
Date	dd/mm/yy	15/05/04	05/15/04	05/15/04	05/15/04	05/15/04		05/15/04	05/15/04
Initial hydrostatic	psia	4589							
Tool Set	hh:mm	10:45							
Pretest start	hh:mm	11:10							
Initial formation pressure (pretest)	psia	3695.06							
Pretest end	hh:mm	11:15							
Pretest duration	hh:mm	5 minutes							
Pumpout start	hh:mm	11:15							
Pumpout end	hh:mm	14:00							
Pumpout duration	hh:mm	2:45							
Pumpout volume	litres	78							
OFA indication	colour	green/white/blue	reen/white/blue	green/white	green/white	green/white		green/white	green/white
Interpreted fluid at OFA	-	oil/filtrate	oil/filtrate	oil	oil	oil		oil	oil
Maximum resistivity at probe	ohm-m	0.7	0.7	0.7	0.7	0.7		0.7	0.7
Chamber open	hh:mm	14:00	14:23	15:45	16:15	16:30		16:50	17:07
Minimum sampling pressure	psia	3604	3605.0	3672.0	3671.9	3671.4		3673.0	3673.2
Final formation pressure	psia	na	na	na	na				3695.0
Seal chamber	hh:mm	14:17	15:05	15:52	16:20	16:33		16:53	17:10
Chamber fill time	hh:mm	0.011805556	0:42	0:07	0:05	0:03		0:03	0:03
Tool retract	hh:mm	na	na	na	na	na		na	na
Final hydrostatic	psia								
Total time	hh:mm								
C. Sample Downhole Temperature And Resistivity									
At sample depth (AMS)	degC	127	127.0	128.0	128.0	128.0		128.0	128.0
Rm@sample depth (AMS)	ohm-m	0.03	0.03	0.03	0.03	0.03		0.03	0.03
D. Sample Recovery At Surface									
Surface opening pressure	psig	nr							
Volume gas	??	14.7l/5cc							
Volume oil/condensate	litres	0.3	5						
Volume water/filtrate	litres	0.6	1						
E. Sample Properties Measured On-Site									
Gas via ch	C1	Mole %	0	0	0	0	0	0	0
	C2	Mole %	0	0	0	0	0	0	0
	C3	Mole %	0	0	0	0	0	0	0
	C4	Mole %	0	0	0	0	0	0	0
	C5	Mole %	0	0	0	0	0	0	0
	C6+	Mole %							
	CO2	Mole %	0	0	0	0	0	0	0
	H2S	Mole %	0	0	0	0	0	0	0
Oil/Conder	API @ degC	degrees	0	0	0	0	0	0	0
	Colour								
	Fluorescence								
	GOR or CGR	cuft/bbl or mmscf/bbl	0	0	0	0	0	0	0
	Pour point	degC	0	0	0	0	0	0	0
Water/Filtr	Rmud @ degC	ohm-m@degC	0	0	0	0	0	0	0
	K+ ion calculated fr	ppm	0	0	0	0	0	0	0
	Chlorides titrated	ppm	0	0	0	0	0	0	0
	Tritium	DPM							
	pH		0	0	0	0	0	0	0
	Type								
F. Mud Filtrate Properties									
Rmud @ degC	ohm-m@degC		0	0	0	0	0	0	0
K+ ion calculated from KCL%	ppm		0	0	0	0	0	0	0
Chlorides titrated	ppm		0	0	0	0	0	0	0
pH			0	0	0	0	0	0	0
Tritium	DPM								
G. General Calibration									
Reported mud weight	ppg		0	0	0	0	0	0	0
Calculated hydrostatic	psia		0	0	0	0	0	0	0
H. Remarks and Comments									
General	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific

Note: Schlumbergers one gallon chamber (MRSC-BB-090) was transferred to ACS cylinder number (817398) From: 2925.5m

EALP - WELL MDT FLUID SAMPLE DATA

Well:			MARLIN A24A						
A. Sample Identification									
Run/seat number	##	2,3							
Sample depth	md m rkb	3214							
Pretest volume	cc								
Chamber size	cc/litre/gallon	SPMC250cc	SPMC250cc	SPMC250cc					
Chamber serial number	#	23	26	106					
Probe type		Large	Large	Large					
Choke size		n/a	n/a	n/a					
B. Sampling History									
Date	dd/mm/yy	16/05/04	16/05/04	16/05/04					
Initial hydrostatic	psia	4638.2	4638.2	4638.2					
Tool Set	hh:mm	8:40	8:40	8:40					
Pretest start	hh:mm	8:50							
Initial formation pressure (pre)	psia	3716.97							
Pretest end	hh:mm	9:17							
Pretest duration	hh:mm	0:27							
Pumpout start	hh:mm	9:17							
Pumpout end	hh:mm	11:10							
Pumpout duration	hh:mm	1:53							
Pumpout volume	litres	150							
OFA indication	colour	blue	blue	blue					
Interpreted fluid at OFA	-	filtrate/water	filtrate/water	filtrate/water					
Maximum resistivity at probe	ohm-m	0.035	0.035	0.035					
Chamber open	hh:mm	11:22	11:31	11:37					
Minimum sampling pressure	psia	3712	3715.0	3715.0					
Final formation pressure	psia								
Seal chamber	hh:mm	11:25	11:34	11:40					
Chamber fill time	hh:mm	0:03	0:03	0:03					
Tool retract	hh:mm	na							
Final hydrostatic	psia								
Total time	hh:mm	2:45	2:54	3:00					
C. Sample Downhole Temperature And Resistivity									
At sample depth (AMS)	degC	128	128.0	128.0					
Rm@sample depth (AMS)	ohm-m	nm	nm	nm					
D. Sample Recovery At Surface									
Surface opening pressure	psig								
Volume gas	cuft								
Volume oil/condensate	litres								
Volume water/filtrate	litres								
E. Sample Properties Measured On-Site									
Gas via ch	C1	Mole %	0	0	0	0	0	0	0
	C2	Mole %	0	0	0	0	0	0	0
	C3	Mole %	0	0	0	0	0	0	0
	C4	Mole %	0	0	0	0	0	0	0
	C5	Mole %	0	0	0	0	0	0	0
	C6+	Mole %							
	CO2	Mole %	0	0	0	0	0	0	0
	H2S	Mole %	0	0	0	0	0	0	0
Oil/Conder	API @ degC	degrees	0	0	0	0	0	0	0
	Colour								
	Fluorescence								
	GOR or CGR	cuft/bbl or mmscf/bbl	0	0	0	0	0	0	0
	Pour point	degC	0	0	0	0	0	0	0
Water/Filtr	Rmud @ degC	ohm-m@degC	0	0	0	0	0	0	0
	K+ ion calculated fr	ppm	0	0	0	0	0	0	0
	Chlorides titrated	ppm	0	0	0	0	0	0	0
	Tritium	DPM							
	pH		0	0	0	0	0	0	0
	Type								
F. Mud Filtrate Properties									
Rmud @ degC	ohm-m@degC		0	0	0	0	0	0	0
K+ ion calculated from KCL%	ppm		0	0	0	0	0	0	0
Chlorides titrated	ppm		0	0	0	0	0	0	0
pH			0	0	0	0	0	0	0
Tritium	DPM								
G. General Calibration									
Reported mud weight	ppg		0	0	0	0	0	0	0
Calculated hydrostatic	psia		0	0	0	0	0	0	0
H. Remarks and Comments									
General	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific

Note: Schlumbergers one gallon chamber (MRSC-BB-090) was transferred to ACS cylinder number (817398) From: 2925.5m

EALP - WELL MDT FLUID SAMPLE DATA

Well:		MARLIN A24A							
A. Sample Identification									
Run/seal number	#/#	3/5							
Sample depth	md m rkb	3214							
Pretest volume	cc								
Chamber size	cc/litre/gallon	SPMC250cc	SPMC250cc	SPMC250cc	SPMC250cc				
Chamber serial number	#	107	223	224	272				
Probe type		Large	Large	Large	Large				
Choke size		n/a	n/a	n/a	n/a				
B. Sampling History									
Date	dd/mm/yy	17/05/04	18/05/04	18/05/04	18/05/04				
Initial hydrostatic	psia	4546.69	4546.69	4546.69	4546.69				
Tool Set	hh:mm	2:05	2:05	2:05	2:05				
Pretest start	hh:mm	2:40							
Initial formation pressure (pre)	psia	3690.64							
Pretest end	hh:mm	2:45							
Pretest duration	hh:mm	0:05							
Pumpout start	hh:mm	2:50							
Pumpout end	hh:mm	5:26							
Pumpout duration	hh:mm	2:36							
Pumpout volume	litres								
OFA indication	colour	clear/green	clear/green	clear/green	clear/green				
Interpreted fluid at OFA	-	gas/cond	gas/cond	gas/cond	gas/cond				
Maximum resistivity at probe	ohm-m	8(erratic)	8(erratic)	8(erratic)	8(erratic)				
Chamber open	hh:mm	5:26	5:29	5:34	5:40				
Minimum sampling pressure	psia	3674	3684.0	3671.0	3675.0				
Final formation pressure	psia								
Seal chamber	hh:mm	5:27	5:30	5:36	5:41				
Chamber fill time	hh:mm	0:01	0:01	0:02	0:01				
Tool retract	hh:mm	na							
Final hydrostatic	psia								
Total time	hh:mm	3:22	3:25	3:31	3:36				
C. Sample Downhole Temperature And Resistivity									
At sample depth (AMS)	degC	128	128.0	128.0	129.0				
Rm @ sample depth (AMS)	ohm-m	nm	nm	nm	nm				
D. Sample Recovery At Surface									
Surface opening pressure	psig								
Volume gas	cuft								
Volume oil/condensate	litres								
Volume water/filtrate	litres								
E. Sample Properties Measured On-Site									
Gas via ch C1	Mole %		0	0	0	0	0	0	0
C2	Mole %		0	0	0	0	0	0	0
C3	Mole %		0	0	0	0	0	0	0
C4	Mole %		0	0	0	0	0	0	0
C5	Mole %		0	0	0	0	0	0	0
C6+	Mole %								
CO2	Mole %		0	0	0	0	0	0	0
H2S	Mole %	0	0	0	0	0	0	0	0
Oil/Conder	API @ degC	degrees	0	0	0	0	0	0	0
Colour									
Fluorescence									
GOR or CGR	cuft/bbl or mmsec/bbl	0	0	0	0	0	0	0	0
Pour point	degC	0	0	0	0	0	0	0	0
Water/Filtr	Rmud @ degC	ohm-m@degC	0	0	0	0	0	0	0
K+ ion calculated	ppm	0	0	0	0	0	0	0	0
Chlorides titrated	ppm	0	0	0	0	0	0	0	0
Tritium	DPM								
pH		0	0	0	0	0	0	0	0
Type									
F. Mud Filtrate Properties									
Rmud @ degC	ohm-m@degC		0	0	0	0	0	0	0
K+ ion calculated from KCL%	ppm		0	0	0	0	0	0	0
Chlorides titrated	ppm		0	0	0	0	0	0	0
pH			0	0	0	0	0	0	0
Tritium	DPM								
G. General Calibration									
Reported mud weight	ppg		9.95	0	0	0	0	0	0
Calculated hydrostatic	psia		0	0	0	0	0	0	0
H. Remarks and Comments									
General	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific	Sample Specific

Note: Schlumbergers one gallon chamber (MRSC-BB-090) was transferred to ACS cylinder number (817398) From: 2925.5m

APPENDIX 5c

MARLIN A-24A

Compositional Analysis Report



Company : Esso Australia Limited
Well : MLA-A24A

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File : E-24040

**TRANSFER DETAILS OF RESERVOIR FLUID
@ 5000 psig**

Sample Number	Sampled in	Sample Volume	Transferred into
		CC	Petrolab
			Cylinder #
1.03	9562-MA	120	8207501
1.04	9206-MA	130	84062114
1.05	12875-QA	120	84033012
1.06	1440-EA	60	8212808
1.07	12873-QA	120	84103302
3.03	11482-QA	120	8212816
3.04	12883-QA	125	84032418



Company : Esso Australia Limited
Well : MLA-A24A

Page : 2 of 7
File : E -24040

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # P-84033012

Component	Mol %
Hexanes minus	C6- 2.49
Hexanes	C6 5.29
Heptanes	C7 17.43
Octanes	C8 14.81
Nonanes	C9 15.97
Decanes	C10 10.81
Undecanes	C11 6.75
Dodecanes	C12 4.72
Tridecanes	C13 4.53
Tetradecanes	C14 3.47
Pentadecanes	C15 3.31
Hexadecanes	C16 2.69
Heptadecanes	C17 2.60
Octadecanes	C18 1.64
Nonadecanes	C19 0.97
Eicosanes	C20 0.79
Heneicosanes	C21 0.57
Docosanes	C22 0.36
Tricosanes	C23 0.26
Tetracosanes	C24 0.17
Pentacosanes	C25 0.13
Hexacosanes	C26 0.08
Heptacosanes	C27 0.06
Octacosanes	C28 0.03
Nonacosanes	C29 0.02
Triacontanes	C30 0.03
Hentriacontanes	C31 0.02
Dotriacontanes	C32 0.00
Tritriacontanes	C33 0.00
Tetratriacontanes	C34 0.00
Pentatriacontanes Plus	C35+ 0.00
TOTAL	100.00

Molecular Weight Calculated *	:	138.9
Density @ 60 °F Calculated *	:	0.7800
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.7901

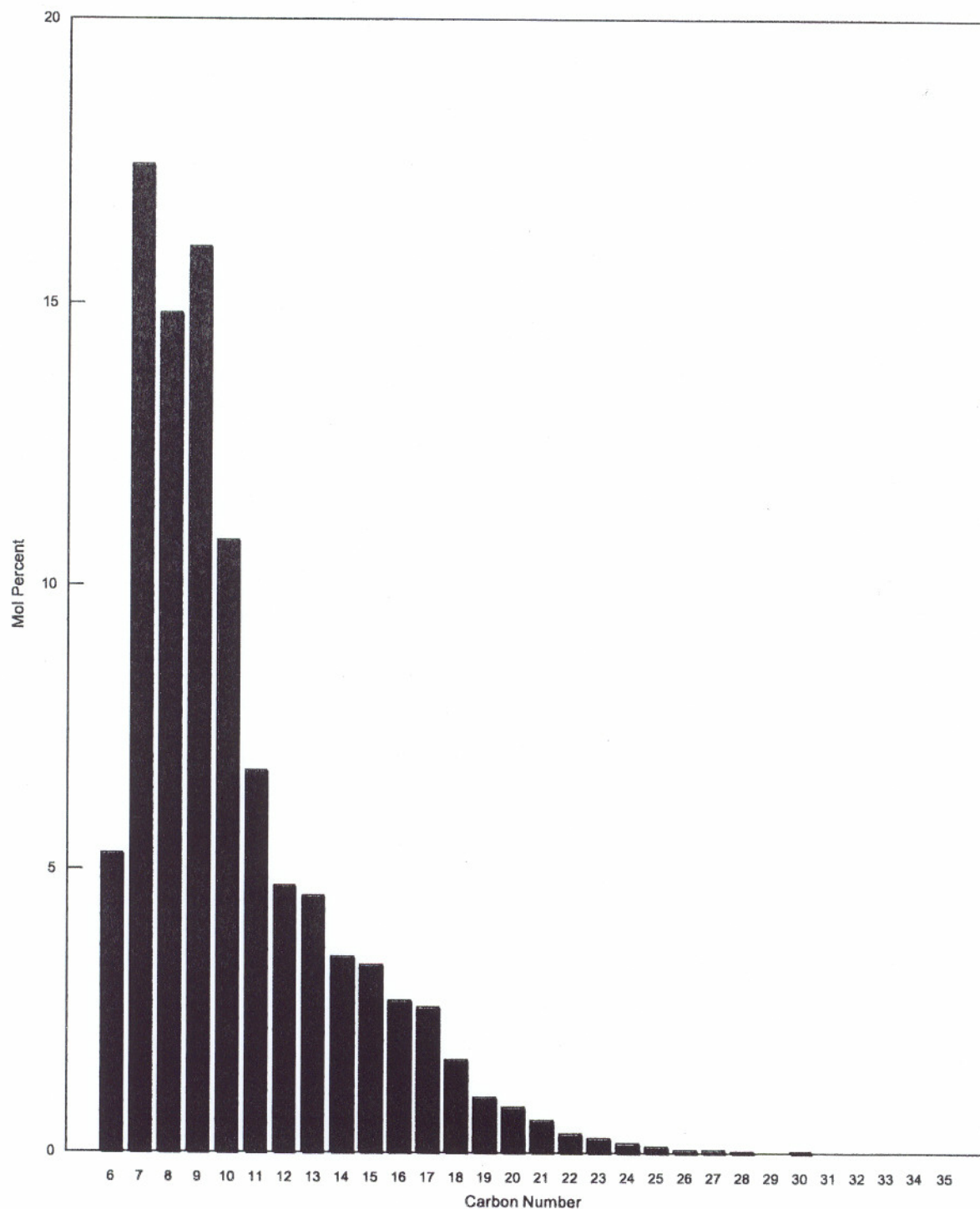
*Calculation based on generalized properties as published by Katz and Firoozabadi



Company : Esso Australia Limited
Well : MLA-A24A

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File : E -24040

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # P-84033012





Company : Esso Australia Limited
Well : MLA-A24A

Page : 4 of 7
File : E -24040

COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # P-84033012 ex Sinlge Phase Cylinder 12875-QA Sample 1.05

Component		Stock Tank	Stock Tank	Reservoir
		Liquid	Gas	Fluid
		Mol %	Mol %	Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.12	7.64	7.52
Nitrogen	N2	0.00	0.17	0.17
Methane	C1	0.46	77.51	76.33
Ethane	C2	0.24	6.40	6.31
Propane	C3	0.49	3.58	3.53
Iso-Butane	iC4	0.19	0.54	0.53
N-Butane	nC4	0.64	1.25	1.24
Iso-Pentane	iC5	0.54	0.39	0.39
N-Pentane	nC5	0.83	0.46	0.47
Hexanes	C6	5.23	0.58	0.65
Heptanes	C7	17.25	0.72	0.97
Octanes	C8	14.66	0.32	0.54
Nonanes	C9	15.80	0.20	0.44
Decanes	C10	10.70	0.10	0.26
Undecanes	C11	6.68	0.06	0.16
Dodecanes Plus	C12+	26.17	0.08	0.49
TOTAL		100.00	100.00	100.00
Ratios				
Molar Ratio	:	0.0153	0.9847	1.0000
Mass Ratio	:	0.0841	0.9159	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	24.1424 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	48786 SCF	--
Stream Properties				
Molecular Weight	:	136.6	23.12	24.9
Density obs. (gm/cc)	:	0.7788 @ 60 °F	--	0.3851 @ PT*
Gravity (AIR = 1.000)	:	50.0 °API @ 60 °F	0.801	235.6
GHV (BTU/scf)	:	--	1202	--
Hexanes Plus Properties				
Mol %	:	96.49	2.06	3.51
Molecular Weight	:	139.6	103.0	118.4
Density (gm/cc @ 60 °F)	:	0.7830	0.6930	0.7350
Gravity (°API @ 60 °F)	:	49.0	72.5	60.8
Heptanes Plus Properties				
Mol %	:	91.25	1.48	2.86
Molecular Weight	:	142.8	110.4	126.3
Density (gm/cc @ 60 °F)	:	0.7868	0.7022	0.7466
Gravity (°API @ 60 °F)	:	48.2	69.8	57.8
Decanes Plus Properties				
Mol %	:	43.55	0.24	0.91
Molecular Weight	:	181.4	149.2	169.0
Density (gm/cc @ 60 °F)	:	0.8172	0.7420	0.7969
Gravity (°API @ 60 °F)	:	41.5	59.0	45.9
Undecanes Plus Properties				
Mol %	:	32.85	0.14	0.65
Molecular Weight	:	196.8	160.1	186.1
Density (gm/cc @ 60 °F)	:	0.8264	0.7513	0.8103
Gravity (°API @ 60 °F)	:	39.6	56.6	43.0
Dodecanes Plus Properties				
Mol %	:	26.17	0.08	0.49
Molecular Weight	:	209.6	170.0	201.6
Density (gm/cc @ 60 °F)	:	0.8335	0.7592	0.8218
Gravity (°API @ 60 °F)	:	38.1	54.7	40.5

* (P)ressure : 5000 psig * (T)emperature : 66 °F



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FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # P-84032418

Component	Mol %
Hexanes minus	C6- 2.76
Hexanes	C6 3.87
Heptanes	C7 15.39
Octanes	C8 14.08
Nonanes	C9 15.85
Decanes	C10 10.63
Undecanes	C11 6.60
Dodecanes	C12 4.69
Tridecanes	C13 4.59
Tetradecanes	C14 3.41
Pentadecanes	C15 3.34
Hexadecanes	C16 2.28
Heptadecanes	C17 2.75
Octadecanes	C18 1.61
Nonadecanes	C19 1.32
Eicosanes	C20 1.30
Heneicosanes	C21 1.12
Docosanes	C22 0.92
Tricosanes	C23 0.77
Tetracosanes	C24 0.57
Pentacosanes	C25 0.61
Hexacosanes	C26 0.49
Heptacosanes	C27 0.26
Octacosanes	C28 0.15
Nonacosanes	C29 0.23
triacontanes	C30 0.26
Hentriacontanes	C31 0.15
Dotriacontanes	C32 0.00
Tritriacontanes	C33 0.00
Tetratriacontanes	C34 0.00
Pentatriacontanes Plus	C35+ 0.00
TOTAL	100.00

Molecular Weight Calculated *	:	148.7
Density @ 60 °F Calculated *	:	0.7901
Molecular Weight Measured	:	---
Density @ 60 °F Measured	:	0.7901

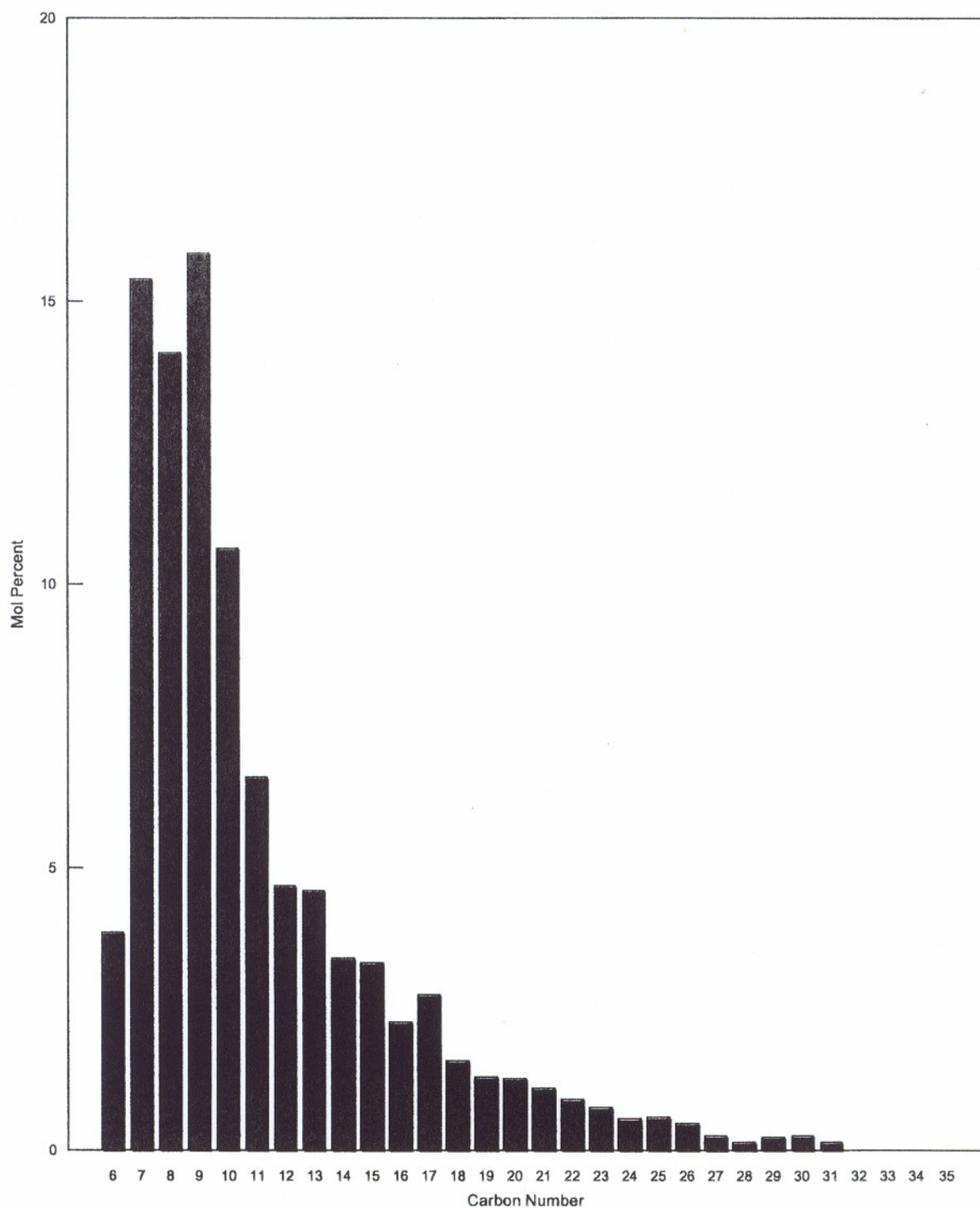
*Calculation based on generalized properties as published by Katz and Firoozabadi



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FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY
On Stock Tank Oil from atmospheric flash of sample in cylinder # P-84032418





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COMPOSITIONAL ANALYSIS OF BOTTOM HOLE RESERVOIR FLUID

Cylinder # P-84032418 ex Single Phase Cylinder 12883-QA Sample 3.04

Component	Stock Tank		Stock Tank		Reservoir
	Liquid	Mol %	Gas	Mol %	Fluid
					Mol %
Hydrogen Sulphide	H2S	0.00	0.00		0.00
Carbon Dioxide	CO2	0.13	8.47		8.35
Nitrogen	N2	0.00	0.14		0.14
Methane	C1	0.46	77.20		76.13
Ethane	C2	0.22	6.14		6.06
Propane	C3	0.42	3.19		3.15
Iso-Butane	iC4	0.17	0.50		0.50
N-Butane	nC4	0.57	1.17		1.16
Iso-Pentane	iC5	0.50	0.38		0.38
N-Pentane	nC5	0.76	0.45		0.45
Hexanes	C6	3.85	0.60		0.65
Heptanes	C7	15.32	0.77		0.97
Octanes	C8	14.01	0.37		0.56
Nonanes	C9	15.77	0.23		0.45
Decanes	C10	10.58	0.12		0.27
Undecanes	C11	6.57	0.07		0.16
Dodecanes Plus	C12+	30.67	0.20		0.62
TOTAL		100.00	100.00		100.00

Ratios

Molar Ratio	:	0.0140	0.9860	1.0000
Mass Ratio	:	0.0815	0.9185	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	25.3694 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	50410 SCF	--

Stream Properties

Molecular Weight	:	147.3	23.49	25.2
Density obs. (gm/cc)	:	0.7902 @ 60 °F	--	0.3838 @ PT*
Gravity (AIR = 1.000)	:	47.4 °API @ 60 °F	0.814	236.9
GHV (BTU/scf)	:	--	1202	--

Hexanes Plus Properties

Mol %	:	96.77	2.36	3.68
Molecular Weight	:	150.4	106.8	122.8
Density (gm/cc @ 60 °F)	:	0.7940	0.6978	0.7380
Gravity (°API @ 60 °F)	:	46.5	71.1	60.0

Heptanes Plus Properties

Mol %	:	92.92	1.76	3.03
Molecular Weight	:	153.2	114.6	131.1
Density (gm/cc @ 60 °F)	:	0.7969	0.7071	0.7493
Gravity (°API @ 60 °F)	:	45.9	68.4	57.2

Decanes Plus Properties

Mol %	:	47.82	0.39	1.05
Molecular Weight	:	195.7	154.8	173.1
Density (gm/cc @ 60 °F)	:	0.8268	0.7469	0.7962
Gravity (°API @ 60 °F)	:	39.5	57.8	46.1

Undecanes Plus Properties

Mol %	:	37.24	0.27	0.78
Molecular Weight	:	213.2	164.0	190.8
Density (gm/cc @ 60 °F)	:	0.8362	0.7545	0.8088
Gravity (°API @ 60 °F)	:	37.6	55.9	43.3

Dodecanes Plus Properties

Mol %	:	30.67	0.20	0.62
Molecular Weight	:	227.4	170.0	206.4
Density (gm/cc @ 60 °F)	:	0.8432	0.7592	0.8188
Gravity (°API @ 60 °F)	:	36.2	54.7	41.1

* (P)ressure : 5000 psig * (T)emperature : 66 °F