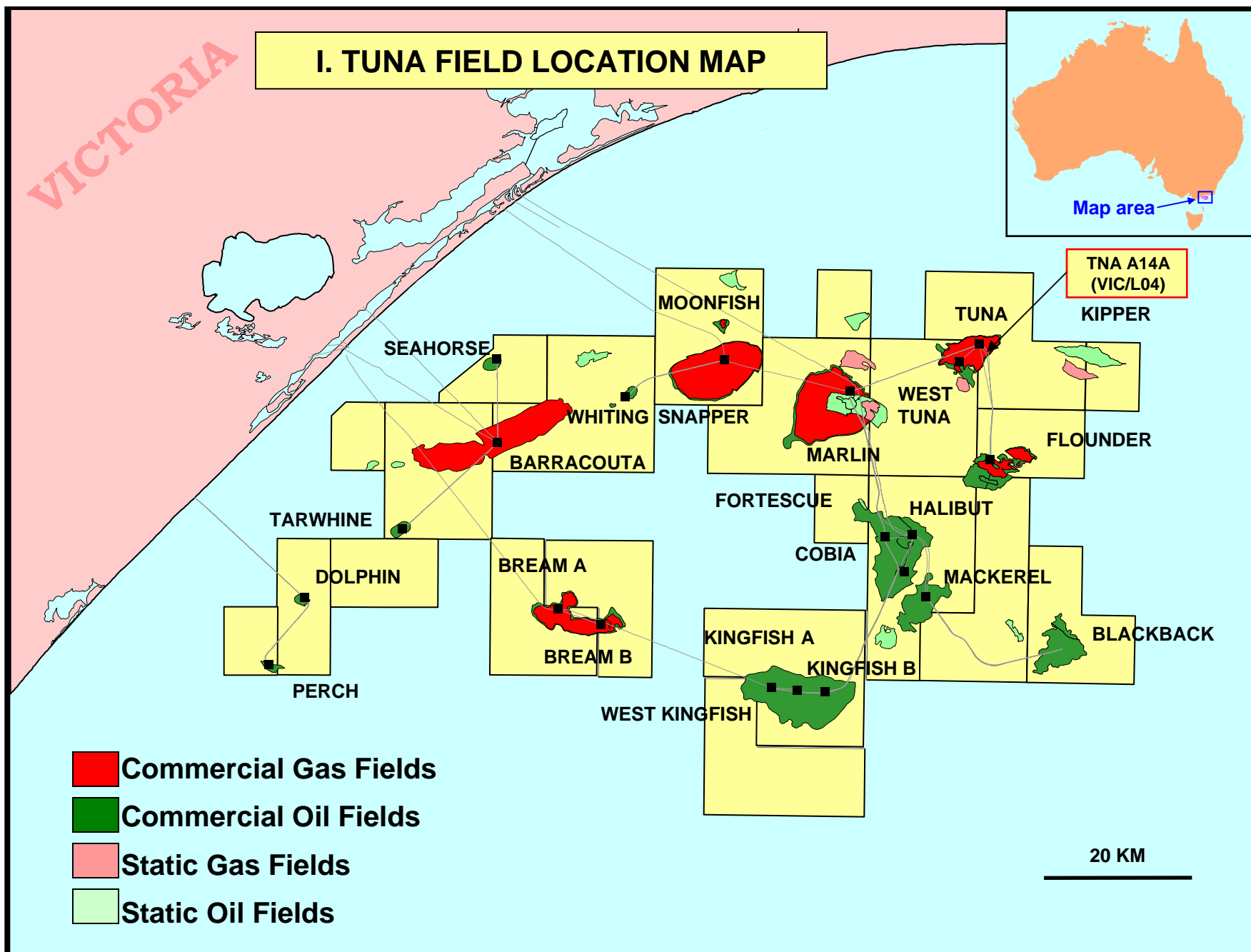


**WELL COMPLETION REPORT**  
**TUNA A14A**  
**GIPPSLAND BASIN, VICTORIA**

Author: Jill Stevens  
Compiler: Sheryl Sazenis  
September 2005

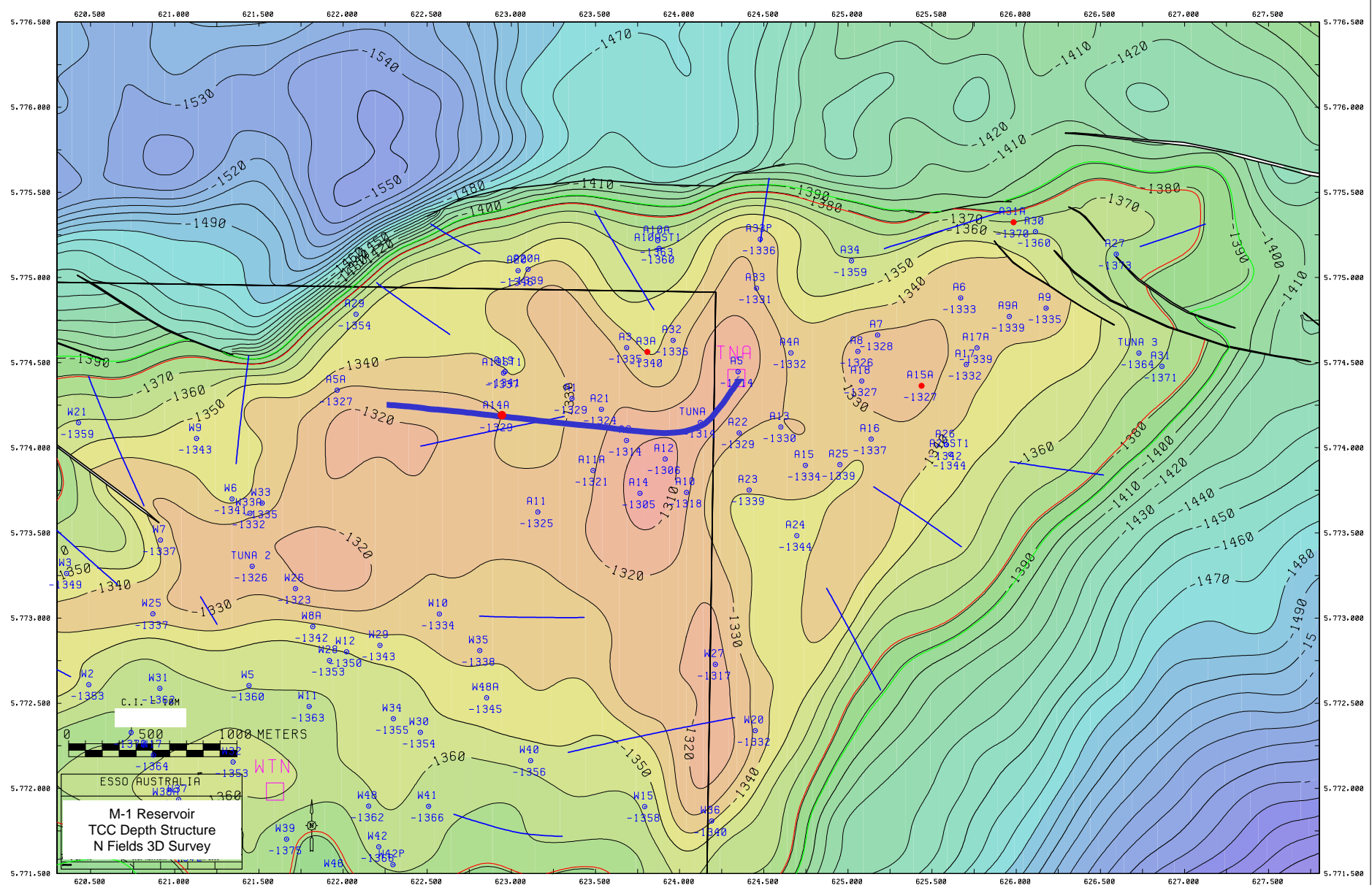
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## II. WELL DATA RECORD: Location Map (Part 1 of 3)

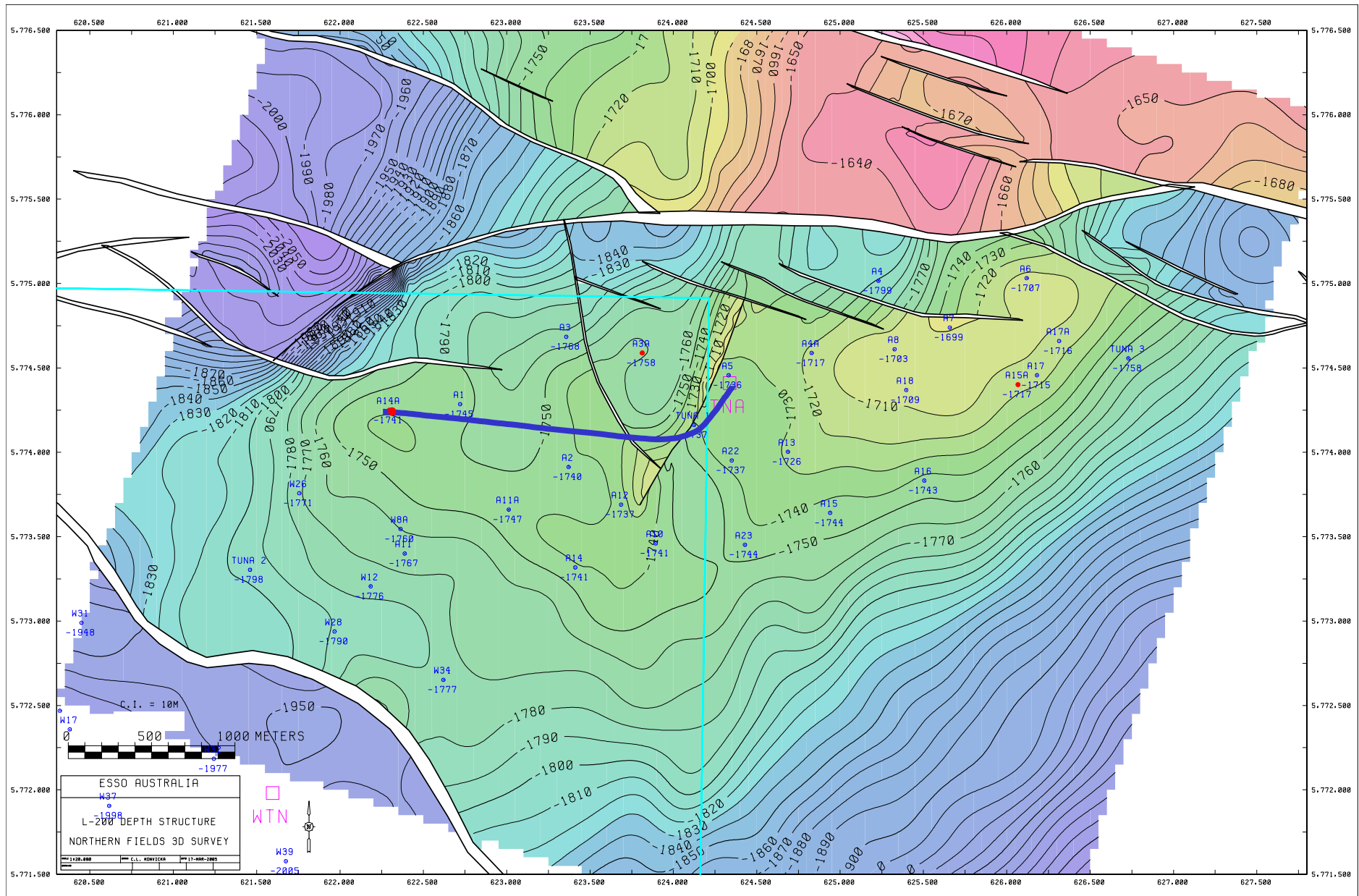
### Tuna Field TNA A14A





## II. WELL DATA RECORD: Location Map (Part 2 of 3)

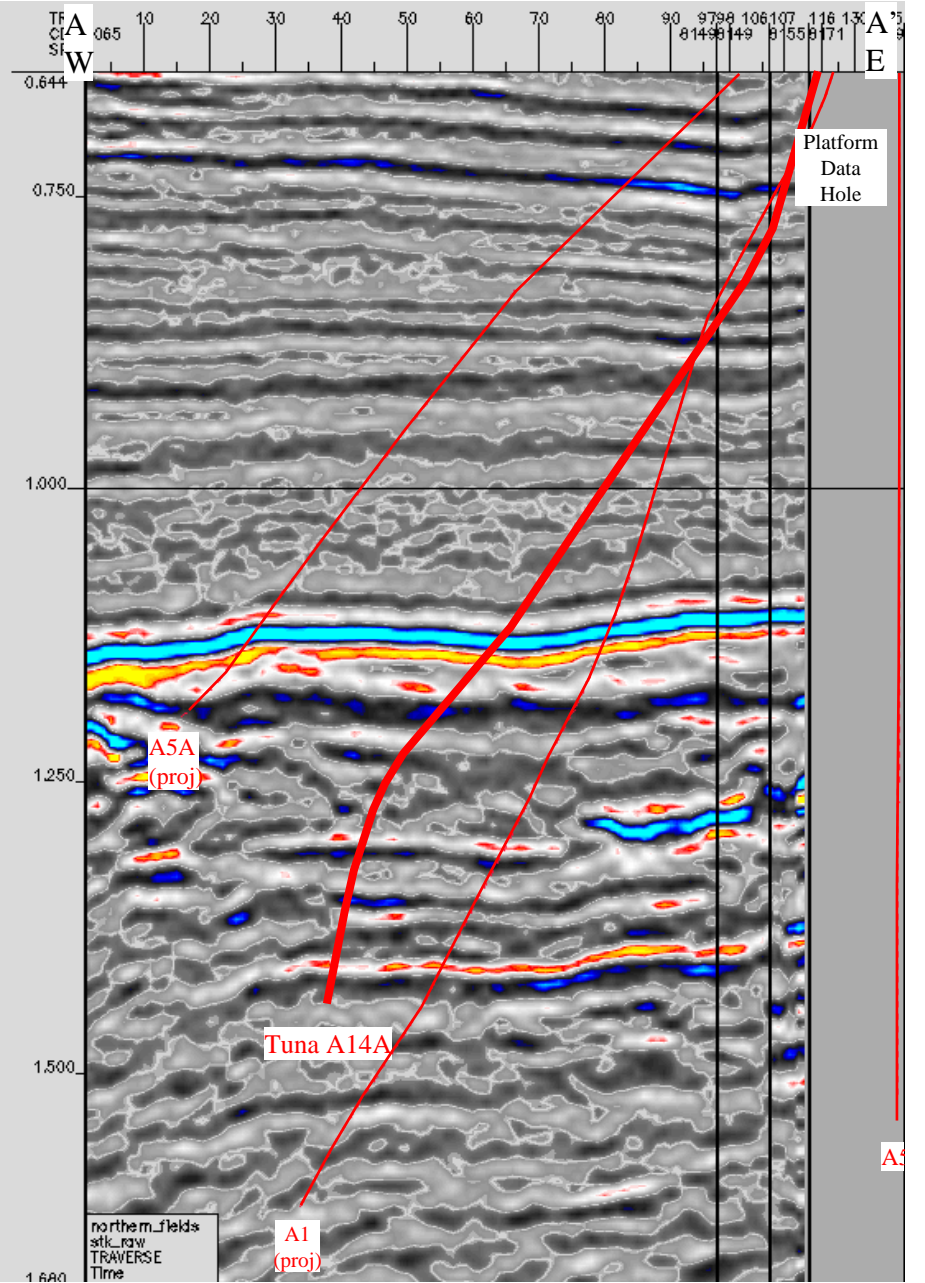
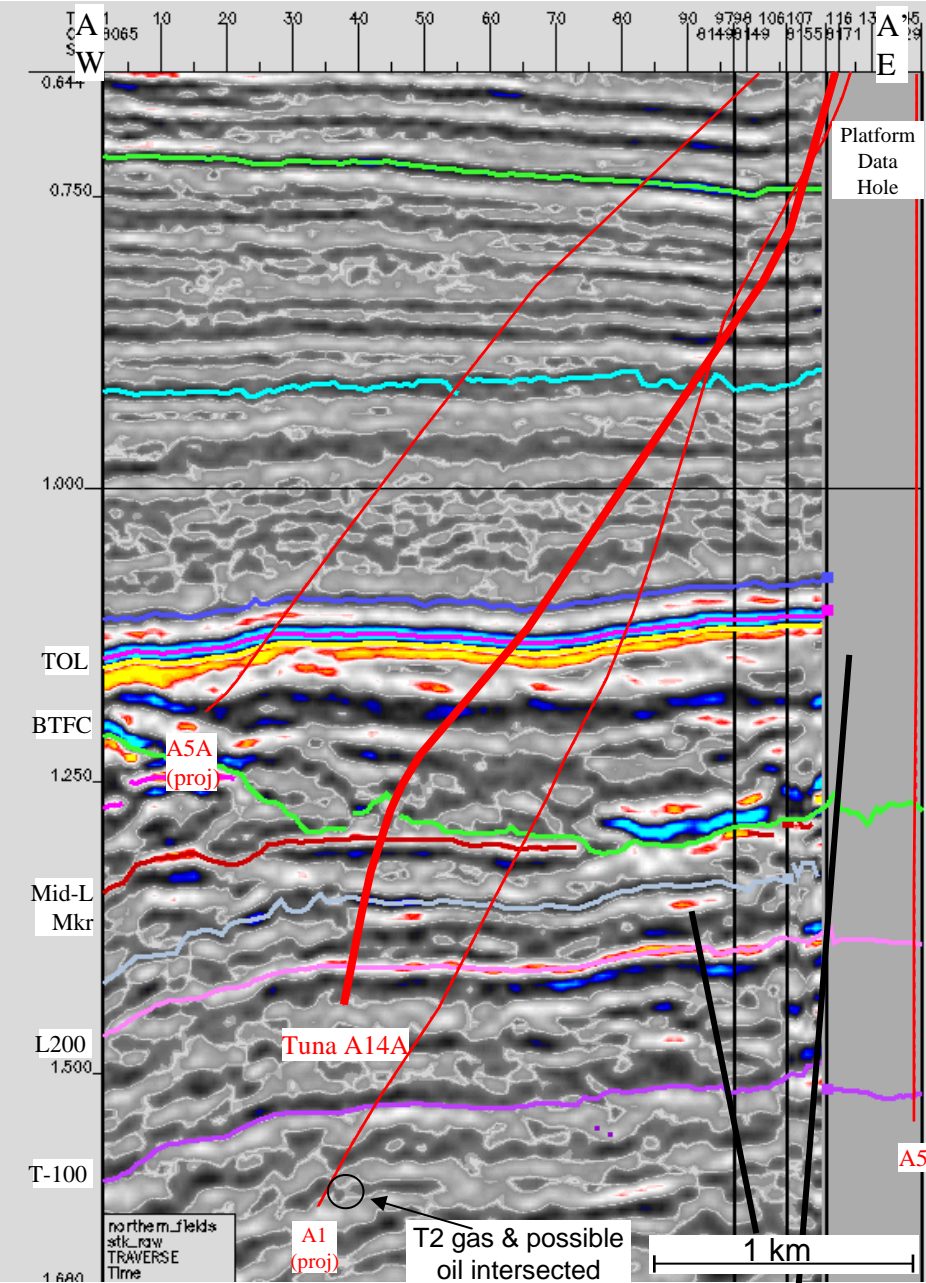
### Tuna Field TNA A14A



II. WELL DATA RECORD: Location Map (Part 3 of 3)  
TUNA A14A Seismic Profile along wellpath

Interpreted

Uninterpreted



## II. WELL DATA RECORD (cont'd)

### LOCATION

<b>Field</b>	<b>Tuna</b>	<b>Conductor #14 Surface Coordinates</b>	
<b>Well Name</b>	<b>A14A (Loc I)</b>	(GDA94 ) X	624,345.81mE
<b>Conductor Number</b>	Slot 14	(MGA94) Y	5,774,406.73mN
<b>State</b>	Victoria	Latitude	38° 10' 10.835"S
<b>Permit/Licence</b>	Vic/L4	Longitude	148° 25'10.289"E
<b>Geological Basin</b>	Gippsland	<b>Perforations (driller)</b>	2962.0 – 2964.5m MDRT
<b>L-095</b>	2945.4 m MDRT		1688.8 – 1690.8m TVDRT
	1675.3 m TVDRT		
MGA94 X	622341.82m E	<b>Datum</b>	GDA94 (GRS80)
MGA94 Y	5774247.86m N	<b>Projection</b>	MGA94/UTM Zone 55 (S)

### ELEVATIONS & DEPTHS

<b>Water Depth</b>	59.40 m
<b>Top Wellhead to MSL</b>	18.98 m
<b>Main Deck Rel to MSL</b>	24.41
<b>RT Relative to MSL</b>	31.32 m
<b>Average Well Angle</b>	69° (tang)
<b>Total Depth</b>	3142.0 mMDRT
	1845.2 mTVDRT
<b>Plug Back Depth</b>	3098.0m MDRT

### DATES

<b>Skid Rig</b>	28/02/2005
<b>Kicked Off</b>	02/03/2005
<b>Development Rig Days</b>	21.3
<b>NPT Days</b>	.24
<b>Rig Released</b>	23/03/2005
<b>I.P. Established</b>	01/04/2005

### MISCELLANEOUS

<b>Operator</b>	Esso Australia Pty Ltd	<b>Contractor</b>	International Sea Drilling Ltd
<b>Esso Interest</b>	50%	<b>Rig Name</b>	Nabors Rig 453
<b>Permittee/Licensee</b>	Esso/BHPP	<b>Equipment Type</b>	Platform
<b>Other Interest</b>	50% J.V. Interest	<b>Completion Type</b>	Single
<b>Overriding Royalty</b>	2.5%	<b>Completion Size</b>	3-1/2"
<b>Drilling AFE No.</b>	L0501F301		

### WELL CLASSIFICATION

<b>Before Drilling</b>	Oil Development	<b>After Drilling</b>	Cased and Completed
------------------------	-----------------	-----------------------	---------------------

## II. WELL DATA RECORD (cont.)

### CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Surface	13 <sup>3</sup> / <sub>8</sub>	54.5	J-55	BTC	748.0
Intermediate window	9 <sup>5</sup> / <sub>8</sub>	40	K-55	BTC	845.0
Production	7	26	L-80	LTC	3136.0

### CEMENTING RECORD

**7"**

Casing details	Cement Type	Dry Cement Volume (sacks)	Cement Additives	Mix Water  (bbls)	Slurry Volume  (bbls)	Slurry Density  (ppg)	Cement to/from  (m MDRT)	Casing Pressure Test (psi)
7"  29 lb/ft	ABC  G	610	HALAD 413L 30 gal / 10 bbl  NF-6 0.25 gal / 10 bbl  CFR-3L 3 gal / 10 bbl  SCR-100L 1 gal / 10 bbl	75	127	15.8	3112.3 to 2133.0	3000 psi

## II. WELL DATA RECORD (cont.)

### DRILLING PERFORMANCE

#### TUNA A14A - Final Well Report

### GENERAL

Platform:	Tuna	Rig:	453	Reservoir:	L Sands
Well:	A14A	Well Slot:	#14	RT-MSL (Rig453)	31.32m
Drilling Complexity Index	3.1	Completion Complexity Index	2.8		

DEPTH		PERFORMANCE		MUD	
m MDRT	3,142.00	20" Cond. Hole	N/A	Max Wt (ppg)	10.1
m TVDRT	1,845.16	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	2105.84	8-1/2" Prod. Hole	295 m/day	Type (Inter. Hole)	N/A
INCLINATION		6" Liner Hole	N/A	Type (Prod. Hole)	KCl/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	70.9/ 69.0 (Tang)	* time to drill interval, incl's Connections & NPT.		Type (Liner Hole)	N/A

Comments: New hole drilled: 850m to 3,142m MDRT (2,292m MDRT drilled).

### TIME ANALYSIS

Start Date:	03/03/2005, 0900hrs	Finish Date:	23/03/2005, 1600hrs		
Target Days (P10):	18.6	Total Days:	21.3	% Under Target:	14.5% (over)
AFE Days (P50):	21.8	NPT Days:	0.24	% of Total Days:	1.1%
Supplementary AFE Days (P50):	N/A				

### COSTS (based on projected)

AFE No.:	L0501E301	Revisions:	--	\$ per m	A \$2.09 k / metre (new hole)
\$ per day:	A\$ 225 k/day	\$ per day (excl. T + L)	A\$ 180 k/day		A\$ 1.53 k / metre*
		* Equipment, LWD & Reeves			* based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	948,000	626,060	2,753,940	828,000	179,000	A\$5,335,000
AFE (Supplement)	--	--	--	--	--	--
Projected	858,000	458,000	2,462,000	807,000	213,000	A\$4,798,000

### CASING (all depths herein are based on Rig453 elevations: RT-MSL=31.32m)

	Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	20"	167	166	N/A
Surface Casing *	13-3/8", 54.5 ppf, K55, BTC	748	693	N/A
Intermediate Casing *	9-5/8", 40 ppf K55, BTC	845	760	13.5 PIT
Prod Casing	7", 29.0 ppf, L80, LTC	3,136	1840	N/A
Prod Liner	--	--	--	--

Comments: \* Pre-existing casing strings.

### COMPLETION

	Size / Weight / Grade / Thread	MMDRT	MTVDR	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Ace	2280	1357	Single oil

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	2962-2964.5 (M-1)	1688.8-1690.8	NA	NA	MAXR

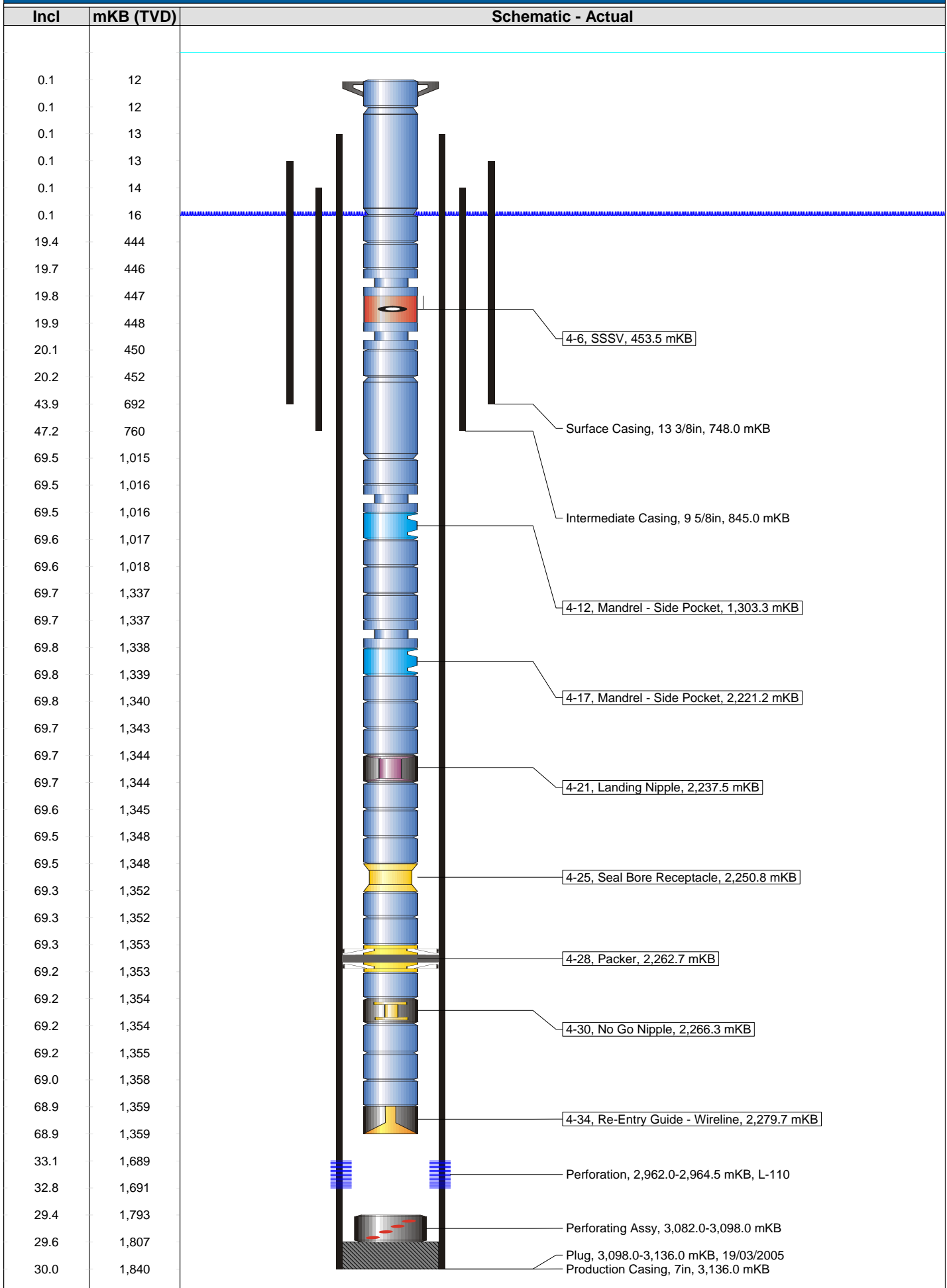
Comments: Completion was 3-1/2" 9.2 ppf, 13Cr80 with TR-SSSV and 1SPM for gas lift, and a packer set at 2263m MDRT.

### ADDITIONAL

		Upper Interval [m MDRT]	Lower Interval [m MDRT]
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	859	3,084

Comments: The 8-1/2" hole interval was logged using the Reeves well shuttle system. All data was retrieved on first attempt.

# Tuna A14A: Existing Schematic





# Tuna A14A: Existing Tubing String Summary

Tubing Description	Run Date	Run Job	Comment	Measured Depth (mKB)
Tubing - Production	18/03/2005	,Drilling and Completion - 00:00 2/03/2005 00:00 23/03/2005	S/O = 67 kips, P/U = 82 kips (inc 38 kips (BW	2,280.00

## Tubing Components

Item .No	Item Description	OD (in)	Wt (lbs/ft)	Grade	Top Thread	Jts	Make	Model	SN	Comments	Max OD (in)	Nom (ID (in	Len (m)	Top (mKB)
4-1	Tubing Hanger	3.500				1	Cameron	MC-2 "11			6.184	4.930	0.52	11.80
4-2	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	2					4.500	2.992	3.51	12.32
4-3	(Tubing Joint(s	3.500	9.20	13CR-80	VAM-ACE	45					4.500	2.992	434.11	15.83
4-4	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	2.17	449.94
4-5	Flow Coupling	3.500			VAM-ACE	1	Halliburton				4.020	2.880	1.39	452.12
4-6	SSSV	3.500			VAM-ACE	1	Halliburton	NE	781LXE27704-F	X profile "2.75	5.200	2.750	1.28	453.50
4-7	Flow Coupling	3.500			VAM-ACE	1	Halliburton				4.020	2.880	1.59	454.78
4-8	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.96	456.37
4-9	(Tubing Joint(s	3.500	9.20	13CR-80	VAM-ACE	87					4.500	2.992	841.42	458.33
4-10	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.97	1,299.75
4-11	Flow Coupling	3.500			VAM-ACE	1	Halliburton				4.020	2.880	1.59	1,301.71
4-12	Mandrel - Side Pocket	3.500			VAM-ACE	1		SF0-2	SPM90305B	Pocket, CAS "1.5 15158	5.968	2.920	2.59	1,303.30
4-13	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.95	1,305.89
4-14	(Tubing Joint(s	3.500	9.20	13CR-80	VAM-ACE	94					4.500	2.992	909.69	1,307.85
4-15	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.96	2,217.54
4-16	Flow Coupling	3.500			VAM-ACE	1	Halliburton				4.020	2.880	1.75	2,219.50
4-17	Mandrel - Side Pocket	3.500			VAM-ACE	1		SF0-2	SPM90305C	,Pocket "1.5 CAS15129	5.968	2.920	2.60	2,221.24
4-18	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.96	2,223.85
4-19	(Tubing Joint(s	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	9.67	2,225.81
4-20	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.97	2,235.48
4-21	Landing Nipple	3.500			VAM-ACE	1	Halliburton	X	811X27525-C	X profile "2.75	3.920	2.750	0.45	2,237.45
4-22	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.96	2,237.90
4-23	(Tubing Joint(s	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	9.67	2,239.87
4-24	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.28	2,249.54
4-25	Seal Bore Receptacle	3.500			VAM-ACE	1	Halliburton	PBR	...812PBA70404	PBR seal unit	5.870	2.880	9.31	2,250.82
4-26	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	0.66	2,260.13
4-27	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.97	2,260.78
4-28	Packer	3.500	26.00		VAM-ACE	1	Halliburton	AHC "7	...812AHC71291	29# - 26	5.960	2.954	1.56	2,262.75
4-29	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.97	2,264.31
4-30	No Go Nipple	3.500			VAM-ACE	1	Halliburton		711XN27517	,XN Profile "2.750 NoGo "2.635	3.920	2.635	0.48	2,266.28
4-31	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.96	2,266.76
4-32	(Tubing Joint(s	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	9.67	2,268.72
4-33	Tubing Pup Joint	3.500	9.20	13CR-80	VAM-ACE	1					4.500	2.992	1.28	2,278.39
4-34	- Re-Entry Guide Wireline	3.500			VAM-ACE	1			812G40021		3.910	2.867	0.33	2,279.67

## COMPLETION SCHEMATIC





### III. SAMPLES

#### CUTTINGS

The cuttings sampling programme for TUNA A14A are detailed in the following table:

Interval	Formation	Sampling Details
Surface Casing to 150m above Top of Latrobe (TOL) 859 m – 2100m	Gippsland Limestone & Lakes Entrance	30 m sampling interval  Spot samples
150 m above TOL to the Top of the M1 Sand.  2100 m – 2150 m	Latrobe Group	10 m sampling interval  Three sets of washed and oven dried cuttings.
TOL to Total Depth (TD)  2150 m – 3142 m (TD)	Latrobe Group	5 m sampling interval  Three sets of washed and oven dried cuttings.

Detailed cuttings descriptions for the interval 859.0mMDRT to 3142.0mMDRT (TD) are contained in Appendix 3a.

#### CONVENTIONAL CORING

No conventional cores were cut in TUNA A14A.

#### SIDEWALL CORING

No sidewall core samples were shot in TUNA A14A.

### IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	843.0	859.0
MWD Run 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	859.0	3121.1
Run 1: Compact Logging MCG-MDN-MPD-MSS-MDL	Reeves Well Shuttle Reeves Compact run on shuttle	844.8	3142.0

## V. FORMATION RESERVOIR TOPS

Zone	m TVDSS			m MDRT	m TVT Gross HC Column	
	Predicted Tops (Rig 453 RT = 31.3m abv MSL)	Actual	Diff.		Predicted	Actual
Top of Lakes Entrance Formation	1079.0	1080.4	1.4 low	1576.0		
TOL	1319.8	1315.5	4.3 high	2246.5		
M105	-	1317.2	-	2251.2	-	6.7m gas
Top Coarse ClasticsTCC/top M-1	1335.7	1328.8	6.9 high	2283.8		48.5m gas 3.9m oil
Intra M-1 marker	1335.7	1337.9	2.2 low	2308.5		
Base Tuna-Flounder Channel	1532	1538.1	6.1 low	2801.4		
L095	1650.9	1644.1	6.8 high	2945.4		
L100	1657.1	1654.9	2.2 high	2958.5	3.0	3.7m oil
L110	1683.2	1673.1	10.1 high	2980.0	3.0	0
L150	1707.4	-	-	sand absent		
L160	1715.4	-	-	sand absent	3.0	0
L200	1745.2	1740.6	4.6 high	3057.7	-	1.0m oil
L200 Residual OWC	1753.2	1745.6	7.6 high	3063.5		
L320	1769.6	1766.8	2.8 high	3087.8		
L320 Residual OWC				3096.8		
TD		1813.9		3142.0		

## VI. GEOLOGICAL ANALYSIS - TUNA A14A

### Objectives

Tuna A14A (pre-drill Location I) is the fourth in a series of 4 wells drilled from the Tuna A platform during the 2004-2005 Tuna Infill Drilling program using " Rig 453".

Tuna A14A was designed to develop attic oil in the L reservoirs updip of the Tuna A1 well. The well targeted a small attic culmination in a fault-bend fold, located on the southern high-side of an antithetic to the main field-bounding fault trend. The Tuna A-1 well intersected 3 oil-bearing sands in the stratigraphic interval from the L-095 to the L-160. The L-095 to the L-160 interval was the primary objective in the A14A well. The key uncertainties identified pre-drill were structural elevation at the well location and the extent of sweep by nearby production wells, namely the A1 and A11A.

The M-1 reservoir was not identified as a target pre-drill because the A14A well was planned to intersect the M-1 oil column less than 100m away from the horizontal segment of the A21 well. As of March, 2005, the A21 well has produced over 2.2 mbo. It was viewed as unlikely that the A14A well would intersect an M-1 oil column of more than 4m TVT due to extensive production by the A21 well. Furthermore, it was expected that the A14A well would intersect the M-1 oil column in relatively low quality lower shoreface sediments.

### Results

Tuna A14A was drilled to TD of 3142m MDRT after kicking-off from the Tuna A14 original wellbore at 843m MDRT and logged via Reeves Shuttle on drillpipe.

The Tuna A14A well intersected the M-1 GOC at 1377.6 mTVDSS and the OWC at 1381.5 m TVDSS. Net oil intersected in the M-1 is 3.9 m TVT. As the M-1 oil leg is in better quality reservoir than expected & due to the thickness of the column, a future completion is planned in the M-1 reservoir.

The A14A is structurally updip of the A1 well at all levels in the target interval; however, only the L-100 is hydrocarbon-bearing in the A14A well, with 3.7mTVT of oil. The top of the L-100 sand was intersected at 1654.9m, 2.2mTVT high to prediction, and the OWC was intersected at 1662.7m. The L-200 sand has 1.0m of lagged oil under the topseal as well as 5.9m of residual oil. The L-320 has a similar residual oil zone.

## **APPENDIX 1a**

### **TUNA A14A**

#### **Survey Data**



# TNA A14A Survey Report

Report Date: March 13, 2005	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 265.870°
Field: Tuna A GDA 94	Vertical Section Origin: S 2.740 m, E 8.640 m
Structure / Slot: Tuna A Rig 453 / 14	TVD Reference Datum: Drillsite Elevation
Well: 14	TVD Reference Elevation: 31.3 m relative to MSL
Borehole: A-14A	Sea Bed / Ground Level Elevation: -59.400 m relative to MSL
UWI/API#:	Magnetic Declination: 13.227°
Survey Name / Date: TNA A14A Surveys / March 5, 2005	Total Field Strength: 59907.080 nT
Tort / AHD / DDI / ERD ratio: 175.119° / 2245.35 m / 5.826 / 1.217	Magnetic Dip: -68.652°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: March 05, 2005
Location Lat/Long: S 38 10 10.835, E 148 25 10.289	Magnetic Declination Model: BGGM 2004
Location Grid N/E Y/X: N 5774406.731 m, E 624345.808 m	North Reference: Grid North
Grid Convergence Angle: -0.87736781°	Total Corr Mag North -> Grid North: +14.104°
Grid Scale Factor: 0.99979043	Local Coordinates Referenced To: Structure Reference Point

Comments	Measured Depth (m)	Inclination (deg)	Azimuth (deg)	TVD (m)	Vertical Section (m)	NS (m)	EW (m)	Closure (m)	Closure Azimuth (deg)	DLS (deg/30 m)
Tie-In	0.00	0.00	0.00	0.00	0.00	-2.74	8.64	0.00	107.59	0.00
	42.42	0.21	338.29	42.42	0.02	-2.67	8.61	0.08	107.21	0.15
	52.42	0.21	300.07	52.42	0.04	-2.64	8.59	0.11	107.09	0.41
	62.42	0.26	272.40	62.42	0.08	-2.63	8.55	0.14	107.10	0.37
	72.42	0.28	264.46	72.42	0.13	-2.63	8.50	0.17	107.20	0.13
	82.42	0.35	255.77	82.42	0.18	-2.64	8.45	0.21	107.37	0.25
	92.42	0.67	251.01	92.42	0.27	-2.67	8.36	0.28	107.70	0.97
	102.42	1.03	241.21	102.42	0.41	-2.73	8.23	0.41	108.36	1.16
	112.42	1.37	233.72	112.42	0.59	-2.85	8.05	0.59	109.45	1.12
	122.42	1.66	228.79	122.41	0.81	-3.01	7.85	0.84	110.99	0.95
	132.42	1.89	224.15	132.41	1.05	-3.23	7.63	1.12	112.92	0.81
	142.42	2.23	218.99	142.40	1.30	-3.49	7.39	1.46	115.31	1.16
	156.42	3.05	210.84	156.39	1.70	-4.03	7.03	2.06	119.81	1.93
	162.42	3.39	208.16	162.38	1.89	-4.32	6.86	2.38	122.20	1.86
	192.42	6.41	210.90	192.26	3.32	-6.54	5.58	4.88	139.52	3.03
	222.42	7.61	210.38	222.04	5.41	-9.69	3.72	8.52	159.01	1.20
	252.42	8.11	211.76	251.76	7.78	-13.20	1.60	12.61	173.10	0.53
	282.42	9.05	214.72	281.42	10.50	-16.94	-0.86	17.09	182.90	1.04
	312.42	10.52	216.53	310.98	13.76	-21.08	-3.83	22.18	190.31	1.50
	342.42	12.18	215.93	340.40	17.58	-25.85	-7.32	28.08	195.82	1.66
	372.42	14.04	214.11	369.61	21.87	-31.42	-11.22	34.89	199.65	1.91
	402.42	15.75	214.17	398.60	26.65	-37.80	-15.55	42.60	202.36	1.71
	432.42	17.82	214.87	427.32	32.06	-44.94	-20.46	51.26	204.48	2.08
	462.42	20.61	216.69	455.65	38.40	-52.94	-26.24	61.13	206.36	2.85
	492.42	23.85	217.46	483.42	45.88	-61.99	-33.08	72.47	208.09	3.25
	522.42	26.89	217.32	510.52	54.40	-72.20	-40.89	85.31	209.52	3.04
	552.42	29.82	214.33	536.92	63.53	-83.76	-49.21	99.56	210.43	3.26
	582.42	31.92	213.50	562.67	73.02	-96.54	-57.80	114.94	210.91	2.14
	612.42	34.09	214.21	587.83	83.08	-110.10	-66.90	131.28	211.28	2.20
	642.42	36.41	215.85	612.32	94.01	-124.28	-76.84	148.59	211.73	2.51
	672.42	39.12	217.27	636.04	106.00	-139.03	-87.79	166.95	212.27	2.85
	702.42	41.41	218.14	658.93	118.93	-154.36	-99.65	186.33	212.84	2.36
	732.42	43.26	219.30	681.10	132.67	-170.12	-112.29	206.50	213.43	2.01
	762.42	44.52	219.57	702.72	147.01	-186.19	-125.50	227.26	213.98	1.27
	792.42	45.69	219.84	723.90	161.72	-202.54	-139.08	248.48	214.48	1.19
	822.42	46.76	219.97	744.65	176.78	-219.15	-152.98	270.10	214.92	1.07

Tie-In

843.00	47.28	220.03	758.68	187.27	-230.69	-162.65	285.13	215.19	0.76
904.39	45.25	234.86	801.24	221.76	-260.59	-195.08	328.62	216.82	5.32
932.94	46.21	242.14	821.19	239.90	-271.25	-212.50	347.85	218.08	5.57
961.56	48.15	247.66	840.65	259.49	-280.13	-231.50	366.90	219.57	4.70
990.36	48.81	250.14	859.74	280.11	-287.89	-251.61	386.06	221.15	2.05
1019.18	48.70	250.09	878.74	300.97	-295.26	-271.99	405.37	222.65	0.12
1047.69	50.03	253.45	897.31	321.95	-302.02	-292.54	424.59	224.09	3.03
1076.29	52.44	256.80	915.22	343.85	-307.74	-314.09	444.04	225.59	3.73
1105.25	55.16	260.93	932.33	367.04	-312.23	-337.01	463.96	227.19	4.46
1133.90	59.28	264.13	947.84	391.08	-315.35	-360.88	484.01	228.85	5.15
1162.43	62.50	265.83	961.71	416.00	-317.52	-385.71	504.58	230.54	3.73
1191.18	64.47	268.24	974.55	441.71	-318.85	-411.40	525.70	232.22	3.05
1219.97	66.62	271.12	986.47	467.86	-318.99	-437.60	546.94	233.91	3.53
1248.60	69.79	272.56	997.10	494.29	-318.13	-464.16	568.34	235.57	3.60
1277.32	69.17	272.58	1007.17	521.00	-316.93	-491.03	590.24	237.16	0.65
1306.12	69.56	274.04	1017.32	547.73	-315.37	-517.94	612.39	238.66	1.48
1334.83	70.05	274.73	1027.23	574.38	-313.31	-544.81	634.63	240.10	0.85
1363.85	69.53	274.43	1037.25	601.30	-311.13	-571.95	657.42	241.45	0.61
1392.58	68.71	275.05	1047.49	627.82	-308.92	-598.70	680.15	242.71	1.05
1421.35	69.78	276.09	1057.69	654.33	-306.30	-625.48	703.03	243.91	1.51
1450.10	69.67	276.71	1067.65	680.85	-303.30	-652.28	726.05	245.06	0.62
1478.89	69.16	276.67	1077.77	707.32	-300.16	-679.05	749.25	246.15	0.53
1507.71	69.56	276.63	1087.93	733.82	-297.04	-705.84	772.71	247.18	0.42
1536.23	68.92	277.18	1098.04	759.99	-293.83	-732.31	796.08	248.14	0.86
1564.74	69.96	277.23	1108.05	786.16	-290.48	-758.79	819.60	249.05	1.10
1593.29	70.90	275.73	1117.62	812.60	-287.45	-785.52	843.65	249.90	1.78
1621.92	70.06	275.64	1127.18	839.19	-284.77	-812.37	868.10	250.68	0.88
1650.59	70.56	275.91	1136.84	865.78	-282.06	-839.23	892.69	251.42	0.59
1679.03	69.62	275.89	1146.53	892.12	-279.31	-865.83	917.16	252.12	0.99
1707.84	69.72	275.31	1156.54	918.74	-276.67	-892.71	942.06	252.78	0.58
1736.55	68.90	275.04	1166.68	945.25	-274.25	-919.46	967.00	253.39	0.90
1765.30	69.06	276.26	1176.99	971.69	-271.61	-946.17	991.94	253.98	1.20
1794.27	69.60	275.64	1187.22	998.38	-268.80	-973.13	1017.18	254.56	0.82
1823.11	69.04	275.44	1197.40	1024.98	-266.19	-999.98	1042.46	255.09	0.61
1852.03	69.53	275.65	1207.63	1051.64	-263.58	-1026.91	1067.89	255.60	0.55
1880.90	69.77	275.83	1217.67	1078.31	-260.87	-1053.84	1093.39	256.10	0.30
1909.68	69.52	275.54	1227.68	1104.90	-258.20	-1080.69	1118.88	256.56	0.39
1938.26	69.13	275.50	1237.78	1131.26	-255.63	-1107.30	1144.24	257.00	0.41
1967.35	69.26	276.18	1248.11	1158.04	-252.86	-1134.36	1170.04	257.43	0.67
1995.91	68.72	276.16	1258.35	1184.27	-249.99	-1160.86	1195.35	257.85	0.57
2024.54	68.39	276.92	1268.81	1210.46	-246.96	-1187.34	1220.66	258.25	0.82
2052.95	70.07	277.52	1278.89	1236.50	-243.62	-1213.69	1245.84	258.65	1.87
2081.73	69.89	277.68	1288.74	1262.98	-240.04	-1240.49	1271.47	259.05	0.24
2110.54	69.42	276.26	1298.76	1289.49	-236.77	-1267.30	1297.23	259.42	1.47
2138.95	68.78	275.98	1308.89	1315.60	-233.94	-1293.69	1322.70	259.75	0.73
2167.43	69.07	276.01	1319.13	1341.76	-231.16	-1320.12	1348.25	260.07	0.31
2196.16	69.34	275.78	1329.33	1368.21	-228.40	-1346.84	1374.14	260.38	0.36
2225.13	69.84	276.05	1339.44	1394.95	-225.60	-1373.85	1400.33	260.67	0.58
2253.85	69.45	275.97	1349.43	1421.45	-222.78	-1400.62	1426.34	260.96	0.41
2282.44	68.89	276.00	1359.59	1447.76	-220.00	-1427.20	1452.18	261.24	0.59
2311.22	68.00	275.66	1370.17	1474.12	-217.28	-1453.83	1478.12	261.50	0.98
2339.17	68.65	275.96	1380.49	1499.71	-214.65	-1479.67	1503.32	261.75	0.76
2368.77	69.10	276.88	1391.16	1526.85	-211.56	-1507.11	1530.06	262.01	0.98
2397.42	69.70	276.63	1401.24	1553.18	-208.41	-1533.74	1556.03	262.26	0.67
2425.56	69.55	276.48	1411.04	1579.11	-205.40	-1559.94	1581.62	262.50	0.22
2454.30	69.27	276.20	1421.14	1605.56	-202.43	-1586.68	1607.77	262.73	0.40
2482.37	69.45	276.06	1431.04	1631.41	-199.62	-1612.80	1633.35	262.94	0.24

2511.08	69.69	275.84	1441.06	1657.90	-196.83	-1639.56	1659.59	263.15	0.33
2539.79	69.40	275.87	1451.09	1684.39	-194.09	-1666.32	1685.86	263.36	0.30
2568.91	69.36	275.81	1461.35	1711.23	-191.31	-1693.43	1712.49	263.55	0.07
2597.17	69.11	275.50	1471.37	1737.27	-188.71	-1719.73	1738.35	263.74	0.41
2625.95	69.02	275.27	1481.65	1763.79	-186.19	-1746.49	1764.69	263.91	0.24
2654.26	66.44	274.97	1492.38	1789.64	-183.85	-1772.58	1790.41	264.08	2.75
2682.92	63.10	274.75	1504.59	1815.24	-181.65	-1798.41	1815.89	264.23	3.50
2711.56	61.05	274.81	1518.00	1840.24	-179.54	-1823.63	1840.78	264.38	2.15
2740.20	57.50	275.87	1532.64	1864.52	-177.26	-1848.14	1864.96	264.52	3.84
2769.36	52.88	277.77	1549.28	1888.02	-174.43	-1871.90	1888.36	264.68	5.02
2798.03	49.82	277.78	1567.18	1909.93	-171.40	-1894.08	1910.18	264.83	3.20
2826.93	47.30	276.02	1586.31	1931.19	-168.79	-1915.59	1931.38	264.96	2.95
2855.51	44.39	274.85	1606.22	1951.41	-166.84	-1936.00	1951.55	265.07	3.18
2883.79	41.24	275.02	1626.96	1970.38	-165.19	-1955.14	1970.49	265.17	3.34
2912.11	38.64	274.19	1648.67	1988.35	-163.73	-1973.26	1988.43	265.26	2.81
2941.26	35.57	274.11	1671.91	2005.75	-162.45	-1990.80	2005.81	265.33	3.16
2970.11	32.14	274.48	1695.87	2021.65	-161.25	-2006.83	2021.69	265.41	3.57
2998.82	29.63	274.67	1720.51	2036.21	-160.08	-2021.52	2036.24	265.47	2.62
3027.33	29.25	274.48	1745.34	2050.07	-158.96	-2035.48	2050.08	265.53	0.41
3055.52	29.04	274.60	1769.96	2063.64	-157.87	-2049.17	2063.65	265.59	0.23
3084.06	29.42	274.47	1794.86	2077.42	-156.77	-2063.06	2077.42	265.65	0.40
3112.84	29.69	274.29	1819.90	2091.46	-155.69	-2077.22	2091.46	265.71	0.30
3121.10	29.93	274.33	1827.06	2095.52	-155.38	-2081.31	2095.52	265.73	0.87
3142.00	29.97	274.40	1845.17	2105.84	-154.58	-2091.72	2105.84	265.77	0.08

**Survey Type:** Raw Survey

**Survey Error Model:** SLB ISCWSA version 21 \*\*\* 3-D 95.00% Confidence 2.7955 sigma

**Surveying Prog:**

<u>MD From ( m )</u>	<u>MD To ( m )</u>	<u>EOU Freq</u>	<u>Survey Tool Type</u>
0.00	843.00	Act-Stns	SLB_NSG+MSHOT
843.00	3142.00	Act-Stns	SLB_MWD-STD



**APPENDIX 1b**

**TUNA A14A**

**MD-TVD Survey Data Listing**

Report Date:	12 August 2005
Well:	TUNA A14A
Structure / Slot:	Tuna Rig 453 / 14
TVD Reference Datum:	Drillsite Elevation
TVD Reference Elevation:	31.30 m relative to MSL
Sea Bed / Ground Level Elevation:	-59.40 m relative to MSL
Grid Coordinate System:	GDA94/MGA94 Zone 55
Location Lat/Long:	S 38 10 10.835, E 148 25 10.289
Location Grid N/E:	N 5774406.73 m, E 624345.81 m
Survey Azimuth Reference:	Grid North

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0.00	0.00	0.00	31.30	0.00	0.00	5774406.73	624345.81
5	0.02	357.44	5.00	26.30	0.01	0.00	5774406.74	624345.80
10	0.05	354.88	10.00	21.30	0.02	-0.01	5774406.75	624345.80
15	0.07	352.32	15.00	16.30	0.03	-0.01	5774406.75	624345.80
20	0.10	349.76	20.00	11.30	0.03	-0.01	5774406.76	624345.79
25	0.12	347.21	25.00	6.30	0.04	-0.02	5774406.77	624345.79
30	0.15	344.65	30.00	1.30	0.05	-0.02	5774406.78	624345.79
35	0.17	342.09	35.00	-3.70	0.06	-0.02	5774406.79	624345.78
40	0.20	339.53	40.00	-8.70	0.07	-0.03	5774406.80	624345.78
45	0.21	328.43	45.00	-13.70	0.08	-0.03	5774406.81	624345.77
50	0.21	309.32	50.00	-18.70	0.09	-0.05	5774406.82	624345.76
55	0.22	292.93	55.00	-23.70	0.10	-0.06	5774406.83	624345.75
60	0.25	279.10	60.00	-28.70	0.11	-0.08	5774406.83	624345.73
65	0.27	270.35	65.00	-33.70	0.11	-0.10	5774406.84	624345.70
70	0.28	266.38	70.00	-38.70	0.11	-0.13	5774406.84	624345.68
75	0.30	262.22	75.00	-43.70	0.10	-0.15	5774406.83	624345.66
80	0.33	257.87	80.00	-48.70	0.10	-0.18	5774406.83	624345.63
85	0.43	254.54	85.00	-53.70	0.09	-0.21	5774406.82	624345.59
90	0.59	252.16	90.00	-58.70	0.08	-0.26	5774406.81	624345.55
95	0.76	248.48	95.00	-63.70	0.05	-0.31	5774406.78	624345.50
100	0.94	243.58	100.00	-68.70	0.02	-0.38	5774406.75	624345.43
105	1.12	239.28	105.00	-73.70	-0.02	-0.46	5774406.71	624345.35
110	1.29	235.53	110.00	-78.70	-0.08	-0.54	5774406.65	624345.26
115	1.44	232.45	114.99	-83.69	-0.15	-0.64	5774406.58	624345.17
120	1.59	229.98	119.99	-88.69	-0.23	-0.74	5774406.50	624345.07
125	1.72	227.59	124.99	-93.69	-0.33	-0.85	5774406.40	624344.96
130	1.83	225.27	129.99	-98.69	-0.43	-0.96	5774406.29	624344.85
135	1.98	222.82	134.99	-103.69	-0.56	-1.08	5774406.17	624344.73
140	2.15	220.24	139.98	-108.68	-0.69	-1.19	5774406.04	624344.61
145	2.38	217.49	144.98	-113.68	-0.85	-1.32	5774405.88	624344.49
150	2.67	214.58	149.97	-118.67	-1.04	-1.45	5774405.69	624344.36
155	2.97	211.67	154.97	-123.67	-1.23	-1.58	5774405.50	624344.23
160	3.25	209.24	159.96	-128.66	-1.46	-1.71	5774405.27	624344.09
165	3.65	208.40	164.95	-133.65	-1.77	-1.89	5774404.96	624343.92
170	4.15	208.85	169.93	-138.63	-2.14	-2.10	5774404.59	624343.70
175	4.66	209.31	174.91	-143.61	-2.51	-2.32	5774404.22	624343.49
180	5.16	209.77	179.89	-148.59	-2.88	-2.53	5774403.85	624343.28
185	5.66	210.22	184.87	-153.57	-3.25	-2.74	5774403.48	624343.07
190	6.17	210.68	189.85	-158.55	-3.62	-2.96	5774403.11	624342.85
195	6.51	210.86	194.82	-163.52	-4.07	-3.22	5774402.66	624342.59
200	6.71	210.77	199.79	-168.49	-4.60	-3.53	5774402.13	624342.28
205	6.91	210.68	204.75	-173.45	-5.12	-3.84	5774401.61	624341.97
210	7.11	210.60	209.71	-178.41	-5.65	-4.15	5774401.08	624341.66
215	7.31	210.51	214.67	-183.37	-6.17	-4.46	5774400.56	624341.35
220	7.51	210.42	219.64	-188.34	-6.70	-4.77	5774400.03	624341.03
225	7.65	210.50	224.59	-193.29	-7.25	-5.11	5774399.48	624340.70
230	7.74	210.73	229.55	-198.25	-7.84	-5.46	5774398.89	624340.35
235	7.82	210.96	234.50	-203.20	-8.42	-5.81	5774398.30	624340.00
240	7.90	211.19	239.45	-208.15	-9.01	-6.16	5774397.72	624339.64
245	7.99	211.42	244.41	-213.11	-9.59	-6.52	5774397.13	624339.29
250	8.07	211.65	249.36	-218.06	-10.18	-6.87	5774396.55	624338.94
255	8.19	212.01	254.31	-223.01	-10.78	-7.25	5774395.94	624338.55
260	8.35	212.51	259.25	-227.95	-11.41	-7.66	5774395.32	624338.15

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
265	8.50	213.00	264.20	-232.90	-12.03	-8.07	5774394.70	624337.74
270	8.66	213.49	269.14	-237.84	-12.65	-8.48	5774394.07	624337.33
275	8.82	213.99	274.08	-242.78	-13.28	-8.89	5774393.45	624336.92
280	8.97	214.48	279.03	-247.73	-13.90	-9.30	5774392.83	624336.51
285	9.18	214.88	283.96	-252.66	-14.56	-9.75	5774392.17	624336.05
290	9.42	215.18	288.89	-257.59	-15.25	-10.25	5774391.48	624335.56
295	9.67	215.48	293.82	-262.52	-15.94	-10.75	5774390.79	624335.06
300	9.91	215.78	298.74	-267.44	-16.63	-11.24	5774390.10	624334.57
305	10.16	216.08	303.67	-272.37	-17.32	-11.74	5774389.41	624334.07
310	10.40	216.38	308.60	-277.30	-18.01	-12.23	5774388.72	624333.57
315	10.66	216.48	313.51	-282.21	-18.75	-12.77	5774387.98	624333.03
320	10.94	216.38	318.42	-287.12	-19.55	-13.35	5774387.18	624332.45
325	11.22	216.28	323.32	-292.02	-20.34	-13.94	5774386.39	624331.87
330	11.49	216.18	328.22	-296.92	-21.13	-14.52	5774385.60	624331.29
335	11.77	216.08	333.12	-301.82	-21.93	-15.10	5774384.80	624330.71
340	12.05	215.98	338.02	-306.72	-22.72	-15.68	5774384.01	624330.13
345	12.34	215.77	342.91	-311.61	-23.58	-16.30	5774383.14	624329.51
350	12.65	215.47	347.78	-316.48	-24.51	-16.95	5774382.21	624328.86
355	12.96	215.17	352.65	-321.35	-25.44	-17.60	5774381.28	624328.21
360	13.27	214.86	357.52	-326.22	-26.37	-18.24	5774380.36	624327.56
365	13.58	214.56	362.39	-331.09	-27.30	-18.89	5774379.43	624326.91
370	13.89	214.26	367.26	-335.96	-28.23	-19.54	5774378.50	624326.26
375	14.19	214.12	372.11	-340.81	-29.23	-20.23	5774377.50	624325.58
380	14.47	214.13	376.94	-345.64	-30.29	-20.95	5774376.43	624324.86
385	14.76	214.14	381.77	-350.47	-31.36	-21.67	5774375.37	624324.13
390	15.04	214.15	386.60	-355.30	-32.42	-22.39	5774374.31	624323.41
395	15.33	214.16	391.43	-360.13	-33.49	-23.12	5774373.24	624322.69
400	15.61	214.17	396.27	-364.97	-34.55	-23.84	5774372.18	624321.97
405	15.93	214.23	401.07	-369.77	-35.68	-24.61	5774371.05	624321.20
410	16.27	214.35	405.86	-374.56	-36.87	-25.43	5774369.86	624320.38
415	16.62	214.46	410.65	-379.35	-38.06	-26.25	5774368.67	624319.56
420	16.96	214.58	415.43	-384.13	-39.25	-27.07	5774367.48	624318.74
425	17.31	214.70	420.22	-388.92	-40.43	-27.88	5774366.29	624317.92
430	17.65	214.81	425.01	-393.71	-41.62	-28.70	5774365.10	624317.10
435	18.06	215.03	429.76	-398.46	-42.89	-29.60	5774363.84	624316.21
440	18.52	215.33	434.48	-403.18	-44.22	-30.56	5774362.51	624315.25
445	18.99	215.63	439.20	-407.90	-45.56	-31.52	5774361.17	624314.28
450	19.45	215.94	443.92	-412.62	-46.89	-32.49	5774359.84	624313.32
455	19.92	216.24	448.64	-417.34	-48.22	-33.45	5774358.51	624312.36
460	20.38	216.54	453.37	-422.07	-49.56	-34.41	5774357.17	624311.39
465	20.89	216.76	458.04	-426.74	-50.98	-35.47	5774355.75	624310.34
470	21.43	216.88	462.67	-431.37	-52.49	-36.61	5774354.24	624309.20
475	21.97	217.01	467.29	-435.99	-54.00	-37.75	5774352.73	624308.06
480	22.51	217.14	471.92	-440.62	-55.51	-38.89	5774351.22	624306.92
485	23.05	217.27	476.55	-445.25	-57.01	-40.03	5774349.71	624305.78
490	23.59	217.40	481.18	-449.88	-58.52	-41.17	5774348.21	624304.64
495	24.11	217.45	485.75	-454.45	-60.13	-42.40	5774346.60	624303.41
500	24.62	217.42	490.27	-458.97	-61.83	-43.70	5774344.90	624302.11
505	25.12	217.40	494.78	-463.48	-63.53	-45.00	5774343.19	624300.81
510	25.63	217.38	499.30	-468.00	-65.24	-46.30	5774341.49	624299.51
515	26.14	217.35	503.82	-472.52	-66.94	-47.60	5774339.79	624298.21
520	26.64	217.33	508.33	-477.03	-68.64	-48.90	5774338.09	624296.91
525	27.14	217.06	512.79	-481.49	-70.46	-50.24	5774336.27	624295.56
530	27.63	216.56	517.19	-485.89	-72.38	-51.63	5774334.34	624294.18
535	28.12	216.07	521.59	-490.29	-74.31	-53.02	5774332.42	624292.79
540	28.61	215.57	525.99	-494.69	-76.24	-54.41	5774330.49	624291.40
545	29.10	215.07	530.39	-499.09	-78.16	-55.79	5774328.56	624290.02
550	29.58	214.57	534.79	-503.49	-80.09	-57.18	5774326.64	624288.63
555	30.00	214.26	539.13	-507.83	-82.12	-58.59	5774324.61	624287.22
560	30.35	214.12	543.43	-512.13	-84.25	-60.02	5774322.48	624285.79
565	30.70	213.98	547.72	-516.42	-86.38	-61.45	5774320.35	624284.36
570	31.05	213.84	552.01	-520.71	-88.51	-62.88	5774318.22	624282.93
575	31.40	213.71	556.30	-525.00	-90.64	-64.31	5774316.09	624281.50
580	31.75	213.57	560.59	-529.29	-92.77	-65.74	5774313.96	624280.06
585	32.11	213.56	564.83	-533.53	-94.96	-67.22	5774311.76	624278.59
590	32.47	213.68	569.02	-537.72	-97.23	-68.74	5774309.50	624277.07

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
595	32.83	213.80	573.22	-541.92	-99.49	-70.25	5774307.24	624275.55
600	33.19	213.92	577.41	-546.11	-101.75	-71.77	5774304.98	624274.04
605	33.55	214.03	581.60	-550.30	-104.01	-73.29	5774302.72	624272.52
610	33.91	214.15	585.80	-554.50	-106.27	-74.81	5774300.46	624271.00
615	34.29	214.35	589.93	-558.63	-108.58	-76.40	5774298.14	624269.41
620	34.68	214.62	594.02	-562.72	-110.95	-78.05	5774295.78	624267.75
625	35.06	214.90	598.10	-566.80	-113.31	-79.71	5774293.42	624266.10
630	35.45	215.17	602.18	-570.88	-115.67	-81.37	5774291.06	624264.44
635	35.84	215.44	606.26	-574.96	-118.03	-83.02	5774288.70	624262.78
640	36.22	215.72	610.35	-579.05	-120.39	-84.68	5774286.33	624261.13
645	36.64	215.97	614.36	-583.06	-122.81	-86.42	5774283.92	624259.38
650	37.09	216.21	618.32	-587.02	-125.26	-88.25	5774281.46	624257.56
655	37.55	216.45	622.27	-590.97	-127.72	-90.07	5774279.01	624255.73
660	38.00	216.68	626.22	-594.92	-130.18	-91.90	5774276.55	624253.91
665	38.45	216.92	630.17	-598.87	-132.64	-93.72	5774274.09	624252.08
670	38.90	217.16	634.13	-602.83	-135.10	-95.55	5774271.63	624250.26
675	39.32	217.34	638.01	-606.71	-137.61	-97.45	5774269.12	624248.36
680	39.70	217.49	641.82	-610.52	-140.16	-99.43	5774266.56	624246.38
685	40.08	217.63	645.64	-614.34	-142.72	-101.40	5774264.01	624244.40
690	40.46	217.78	649.45	-618.15	-145.28	-103.38	5774261.45	624242.43
695	40.84	217.92	653.27	-621.97	-147.83	-105.36	5774258.90	624240.45
700	41.23	218.07	657.08	-625.78	-150.39	-107.33	5774256.34	624238.47
705	41.57	218.24	660.84	-629.54	-152.98	-109.38	5774253.75	624236.43
710	41.88	218.43	664.53	-633.23	-155.61	-111.48	5774251.12	624234.32
715	42.19	218.63	668.23	-636.93	-158.23	-113.59	5774248.49	624232.22
720	42.49	218.82	671.92	-640.62	-160.86	-115.70	5774245.87	624230.11
725	42.80	219.01	675.62	-644.32	-163.49	-117.80	5774243.24	624228.00
730	43.11	219.21	679.32	-648.02	-166.11	-119.91	5774240.61	624225.90
735	43.37	219.32	682.96	-651.66	-168.77	-122.07	5774237.96	624223.74
740	43.58	219.37	686.57	-655.27	-171.44	-124.27	5774235.28	624221.54
745	43.79	219.41	690.17	-658.87	-174.12	-126.47	5774232.61	624219.34
750	44.00	219.46	693.77	-662.47	-176.80	-128.67	5774229.93	624217.13
755	44.21	219.50	697.38	-666.08	-179.47	-130.87	5774227.25	624214.93
760	44.42	219.55	700.98	-669.68	-182.15	-133.08	5774224.58	624212.73
765	44.62	219.59	704.54	-673.24	-184.85	-135.31	5774221.87	624210.50
770	44.82	219.64	708.07	-676.77	-187.58	-137.57	5774219.15	624208.23
775	45.01	219.68	711.60	-680.30	-190.30	-139.84	5774216.42	624205.97
780	45.21	219.73	715.13	-683.83	-193.03	-142.10	5774213.70	624203.71
785	45.40	219.77	718.66	-687.36	-195.75	-144.36	5774210.97	624201.45
790	45.60	219.82	722.19	-690.89	-198.48	-146.62	5774208.25	624199.18
795	45.78	219.85	725.68	-694.38	-201.23	-148.91	5774205.50	624196.89
800	45.96	219.87	729.14	-697.84	-204.00	-151.23	5774202.73	624194.58
805	46.14	219.89	732.60	-701.30	-206.77	-153.55	5774199.96	624192.26
810	46.32	219.92	736.06	-704.76	-209.53	-155.86	5774197.19	624189.94
815	46.50	219.94	739.52	-708.22	-212.30	-158.18	5774194.42	624187.63
820	46.67	219.96	742.98	-711.68	-215.07	-160.49	5774191.65	624185.31
825	46.83	219.98	746.41	-715.11	-217.86	-162.83	5774188.87	624182.98
830	46.95	219.99	749.82	-718.52	-220.66	-165.18	5774186.07	624180.63
835	47.08	220.01	753.23	-721.93	-223.46	-167.53	5774183.26	624178.28
840	47.20	220.02	756.64	-725.34	-226.27	-169.88	5774180.46	624175.92
845	47.21	220.51	760.07	-728.77	-228.92	-172.35	5774177.81	624173.46
850	47.05	221.72	763.54	-732.24	-231.36	-174.99	5774175.37	624170.82
855	46.88	222.93	767.00	-735.70	-233.79	-177.63	5774172.93	624168.18
860	46.72	224.14	770.47	-739.17	-236.23	-180.27	5774170.50	624165.53
865	46.55	225.34	773.94	-742.64	-238.66	-182.91	5774168.06	624162.89
870	46.39	226.55	777.40	-746.10	-241.10	-185.56	5774165.63	624160.25
875	46.22	227.76	780.87	-749.57	-243.54	-188.20	5774163.19	624157.61
880	46.06	228.97	784.34	-753.04	-245.97	-190.84	5774160.76	624154.97
885	45.89	230.18	787.80	-756.50	-248.41	-193.48	5774158.32	624152.33
890	45.73	231.38	791.27	-759.97	-250.84	-196.12	5774155.89	624149.69
895	45.56	232.59	794.73	-763.43	-253.28	-198.76	5774153.45	624147.05
900	45.40	233.80	798.20	-766.90	-255.71	-201.40	5774151.01	624144.40
905	45.27	235.02	801.67	-770.37	-258.08	-204.09	5774148.65	624141.71
910	45.44	236.29	805.16	-773.86	-259.95	-207.14	5774146.78	624138.66
915	45.61	237.57	808.66	-777.36	-261.81	-210.19	5774144.92	624135.61
920	45.77	238.84	812.15	-780.85	-263.68	-213.24	5774143.05	624132.56

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
925	45.94	240.12	815.64	-784.34	-265.55	-216.29	5774141.18	624129.51
930	46.11	241.39	819.13	-787.83	-267.41	-219.34	5774139.32	624126.47
935	46.35	242.54	822.59	-791.29	-269.15	-222.50	5774137.58	624123.30
940	46.69	243.50	825.99	-794.69	-270.70	-225.82	5774136.03	624119.98
945	47.03	244.47	829.39	-798.09	-272.25	-229.14	5774134.47	624116.66
950	47.37	245.43	832.79	-801.49	-273.81	-232.46	5774132.92	624113.35
955	47.71	246.39	836.19	-804.89	-275.36	-235.78	5774131.37	624110.03
960	48.04	247.36	839.59	-808.29	-276.91	-239.10	5774129.82	624106.71
965	48.23	247.96	842.93	-811.63	-278.32	-242.54	5774128.41	624103.27
970	48.34	248.39	846.24	-814.94	-279.67	-246.03	5774127.06	624099.78
975	48.46	248.82	849.56	-818.26	-281.02	-249.52	5774125.71	624096.28
980	48.57	249.25	852.87	-821.57	-282.36	-253.02	5774124.37	624092.79
985	48.69	249.68	856.19	-824.89	-283.71	-256.51	5774123.02	624089.30
990	48.80	250.11	859.50	-828.20	-285.06	-260.00	5774121.67	624085.81
995	48.79	250.13	862.80	-831.50	-286.34	-263.53	5774120.39	624082.27
1000	48.77	250.12	866.10	-834.80	-287.62	-267.07	5774119.11	624078.74
1005	48.75	250.11	869.39	-838.09	-288.90	-270.60	5774117.83	624075.20
1010	48.74	250.11	872.69	-841.39	-290.18	-274.14	5774116.55	624071.67
1015	48.72	250.10	875.98	-844.68	-291.45	-277.67	5774115.27	624068.13
1020	48.74	250.19	879.27	-847.97	-292.72	-281.22	5774114.01	624064.59
1025	48.97	250.78	882.53	-851.23	-293.90	-284.82	5774112.82	624060.98
1030	49.20	251.37	885.79	-854.49	-295.09	-288.43	5774111.64	624057.38
1035	49.44	251.95	889.04	-857.74	-296.28	-292.03	5774110.45	624053.78
1040	49.67	252.54	892.30	-861.00	-297.46	-295.63	5774109.27	624050.17
1045	49.90	253.13	895.56	-864.26	-298.65	-299.24	5774108.08	624046.57
1050	50.22	253.72	898.76	-867.46	-299.75	-302.92	5774106.98	624042.89
1055	50.65	254.31	901.89	-870.59	-300.74	-306.68	5774105.98	624039.12
1060	51.07	254.89	905.02	-873.72	-301.74	-310.45	5774104.99	624035.36
1065	51.49	255.48	908.15	-876.85	-302.74	-314.22	5774103.99	624031.59
1070	51.91	256.06	911.28	-879.98	-303.74	-317.98	5774102.99	624027.82
1075	52.33	256.65	914.41	-883.11	-304.74	-321.75	5774101.99	624024.06
1080	52.79	257.33	917.41	-886.11	-305.57	-325.66	5774101.16	624020.15
1085	53.26	258.04	920.36	-889.06	-306.35	-329.62	5774100.38	624016.19
1090	53.73	258.76	923.32	-892.02	-307.13	-333.58	5774099.60	624012.23
1095	54.20	259.47	926.27	-894.97	-307.90	-337.53	5774098.83	624008.27
1100	54.67	260.18	929.22	-897.92	-308.68	-341.49	5774098.05	624004.32
1105	55.14	260.89	932.18	-900.88	-309.45	-345.45	5774097.27	624000.36
1110	55.84	261.46	934.90	-903.60	-310.01	-349.60	5774096.72	623996.20
1115	56.56	262.02	937.60	-906.30	-310.55	-353.77	5774096.18	623992.04
1120	57.28	262.58	940.31	-909.01	-311.10	-357.94	5774095.63	623987.87
1125	58.00	263.14	943.02	-911.72	-311.64	-362.10	5774095.09	623983.70
1130	58.72	263.69	945.73	-914.43	-312.18	-366.27	5774094.54	623979.54
1135	59.40	264.20	948.37	-917.07	-312.69	-370.48	5774094.04	623975.33
1140	59.97	264.49	950.80	-919.50	-313.07	-374.83	5774093.66	623970.98
1145	60.53	264.79	953.24	-921.94	-313.45	-379.18	5774093.27	623966.63
1150	61.10	265.09	955.67	-924.37	-313.84	-383.53	5774092.89	623962.28
1155	61.66	265.39	958.10	-926.80	-314.22	-387.88	5774092.51	623957.93
1160	62.23	265.69	960.53	-929.23	-314.60	-392.23	5774092.13	623953.57
1165	62.68	266.05	962.86	-931.56	-314.90	-396.64	5774091.83	623949.16
1170	63.02	266.46	965.10	-933.80	-315.13	-401.11	5774091.60	623944.70
1175	63.36	266.88	967.33	-936.03	-315.36	-405.58	5774091.37	623940.23
1180	63.70	267.30	969.56	-938.26	-315.59	-410.05	5774091.14	623935.76
1185	64.05	267.72	971.79	-940.49	-315.82	-414.51	5774090.90	623931.29
1190	64.39	268.14	974.02	-942.72	-316.05	-418.98	5774090.67	623926.83
1195	64.76	268.62	976.13	-944.83	-316.13	-423.51	5774090.60	623922.30
1200	65.13	269.12	978.20	-946.90	-316.15	-428.06	5774090.58	623917.74
1205	65.50	269.62	980.27	-948.97	-316.18	-432.61	5774090.55	623913.19
1210	65.88	270.12	982.34	-951.04	-316.20	-437.16	5774090.53	623908.64
1215	66.25	270.62	984.41	-953.11	-316.23	-441.71	5774090.50	623904.09
1220	66.62	271.12	986.48	-955.18	-316.25	-446.27	5774090.48	623899.54
1225	67.18	271.37	988.34	-957.04	-316.10	-450.90	5774090.63	623894.90
1230	67.73	271.62	990.19	-958.89	-315.95	-455.54	5774090.78	623890.26
1235	68.28	271.88	992.05	-960.75	-315.80	-460.18	5774090.93	623885.62
1240	68.84	272.13	993.91	-962.61	-315.65	-464.82	5774091.08	623880.98
1245	69.39	272.38	995.76	-964.46	-315.50	-469.46	5774091.23	623876.35
1250	69.76	272.56	997.59	-966.29	-315.33	-474.11	5774091.39	623871.69

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1255	69.65	272.56	999.34	-968.04	-315.12	-478.79	5774091.60	623867.02
1260	69.54	272.57	1001.10	-969.80	-314.91	-483.47	5774091.81	623862.34
1265	69.44	272.57	1002.85	-971.55	-314.70	-488.15	5774092.02	623857.66
1270	69.33	272.57	1004.60	-973.30	-314.49	-492.82	5774092.23	623852.98
1275	69.22	272.58	1006.35	-975.05	-314.28	-497.50	5774092.44	623848.30
1280	69.21	272.72	1008.11	-976.81	-314.04	-502.18	5774092.69	623843.63
1285	69.27	272.97	1009.87	-978.57	-313.77	-506.85	5774092.96	623838.96
1290	69.34	273.22	1011.64	-980.34	-313.50	-511.52	5774093.23	623834.29
1295	69.41	273.48	1013.40	-982.10	-313.23	-516.19	5774093.50	623829.62
1300	69.48	273.73	1015.16	-983.86	-312.96	-520.86	5774093.77	623824.95
1305	69.54	273.98	1016.92	-985.62	-312.69	-525.53	5774094.04	623820.27
1310	69.63	274.13	1018.66	-987.36	-312.35	-530.21	5774094.38	623815.60
1315	69.71	274.25	1020.38	-989.08	-311.99	-534.89	5774094.74	623810.92
1320	69.80	274.37	1022.11	-990.81	-311.63	-539.57	5774095.09	623806.24
1325	69.88	274.49	1023.84	-992.54	-311.28	-544.25	5774095.45	623801.56
1330	69.97	274.61	1025.56	-994.26	-310.92	-548.93	5774095.81	623796.88
1335	70.05	274.73	1027.29	-995.99	-310.56	-553.60	5774096.17	623792.20
1340	69.96	274.68	1029.01	-997.71	-310.18	-558.28	5774096.55	623787.53
1345	69.87	274.62	1030.74	-999.44	-309.81	-562.96	5774096.92	623782.85
1350	69.78	274.57	1032.47	-1001.17	-309.43	-567.64	5774097.30	623778.17
1355	69.69	274.52	1034.20	-1002.90	-309.06	-572.31	5774097.67	623773.49
1360	69.60	274.47	1035.92	-1004.62	-308.68	-576.99	5774098.05	623768.82
1365	69.50	274.45	1037.66	-1006.36	-308.31	-581.66	5774098.42	623764.15
1370	69.35	274.56	1039.45	-1008.15	-307.92	-586.32	5774098.81	623759.49
1375	69.21	274.67	1041.23	-1009.93	-307.53	-590.97	5774099.19	623754.83
1380	69.07	274.78	1043.01	-1011.71	-307.15	-595.63	5774099.58	623750.18
1385	68.93	274.89	1044.79	-1013.49	-306.76	-600.28	5774099.97	623745.52
1390	68.78	274.99	1046.57	-1015.27	-306.38	-604.94	5774100.35	623740.87
1395	68.80	275.14	1048.35	-1017.05	-305.96	-609.59	5774100.77	623736.21
1400	68.99	275.32	1050.12	-1018.82	-305.50	-614.25	5774101.23	623731.56
1405	69.17	275.50	1051.90	-1020.60	-305.05	-618.90	5774101.68	623726.91
1410	69.36	275.68	1053.67	-1022.37	-304.60	-623.55	5774102.13	623722.25
1415	69.54	275.86	1055.44	-1024.14	-304.14	-628.21	5774102.59	623717.60
1420	69.73	276.04	1057.21	-1025.91	-303.69	-632.86	5774103.04	623712.95
1425	69.77	276.17	1058.95	-1027.65	-303.18	-637.52	5774103.55	623708.29
1430	69.75	276.28	1060.69	-1029.39	-302.66	-642.18	5774104.07	623703.63
1435	69.73	276.38	1062.42	-1031.12	-302.14	-646.84	5774104.59	623698.97
1440	69.71	276.49	1064.15	-1032.85	-301.61	-651.50	5774105.11	623694.30
1445	69.69	276.60	1065.88	-1034.58	-301.09	-656.16	5774105.64	623689.64
1450	69.67	276.71	1067.62	-1036.32	-300.57	-660.82	5774106.16	623684.98
1455	69.58	276.70	1069.37	-1038.07	-300.02	-665.47	5774106.70	623680.33
1460	69.49	276.70	1071.13	-1039.83	-299.48	-670.12	5774107.25	623675.68
1465	69.41	276.69	1072.89	-1041.59	-298.93	-674.77	5774107.79	623671.04
1470	69.32	276.68	1074.65	-1043.35	-298.39	-679.42	5774108.34	623666.39
1475	69.23	276.68	1076.41	-1045.11	-297.84	-684.07	5774108.89	623661.74
1480	69.18	276.67	1078.17	-1046.87	-297.30	-688.72	5774109.43	623657.09
1485	69.24	276.66	1079.93	-1048.63	-296.76	-693.37	5774109.97	623652.44
1490	69.31	276.65	1081.69	-1050.39	-296.22	-698.01	5774110.51	623647.79
1495	69.38	276.65	1083.45	-1052.15	-295.67	-702.66	5774111.06	623643.15
1500	69.45	276.64	1085.22	-1053.92	-295.13	-707.31	5774111.60	623638.50
1505	69.52	276.63	1086.98	-1055.68	-294.59	-711.96	5774112.14	623633.85
1510	69.51	276.67	1088.74	-1057.44	-294.04	-716.60	5774112.69	623629.21
1515	69.40	276.77	1090.52	-1059.22	-293.48	-721.24	5774113.25	623624.57
1520	69.28	276.87	1092.29	-1060.99	-292.91	-725.88	5774113.81	623619.92
1525	69.17	276.96	1094.06	-1062.76	-292.35	-730.52	5774114.38	623615.28
1530	69.06	277.06	1095.83	-1064.53	-291.79	-735.17	5774114.94	623610.64
1535	68.95	277.16	1097.61	-1066.31	-291.23	-739.81	5774115.50	623606.00
1540	69.06	277.19	1099.37	-1068.07	-290.65	-744.45	5774116.08	623601.36
1545	69.24	277.20	1101.12	-1069.82	-290.06	-749.10	5774116.67	623596.71
1550	69.42	277.20	1102.88	-1071.58	-289.47	-753.74	5774117.26	623592.07
1555	69.60	277.21	1104.63	-1073.33	-288.89	-758.39	5774117.84	623587.42
1560	69.79	277.22	1106.39	-1075.09	-288.30	-763.03	5774118.43	623582.78
1565	69.97	277.22	1108.14	-1076.84	-287.71	-767.68	5774119.01	623578.13
1570	70.13	276.95	1109.82	-1078.52	-287.18	-772.36	5774119.55	623573.45
1575	70.30	276.69	1111.49	-1080.19	-286.65	-777.04	5774120.08	623568.77
1580	70.46	276.43	1113.17	-1081.87	-286.12	-781.72	5774120.61	623564.09

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1585	70.63	276.17	1114.84	-1083.54	-285.59	-786.40	5774121.14	623559.41
1590	70.79	275.90	1116.52	-1085.22	-285.06	-791.08	5774121.67	623554.73
1595	70.85	275.72	1118.19	-1086.89	-284.55	-795.76	5774122.18	623550.04
1600	70.70	275.71	1119.86	-1088.56	-284.08	-800.45	5774122.65	623545.35
1605	70.56	275.69	1121.53	-1090.23	-283.61	-805.14	5774123.11	623540.66
1610	70.41	275.68	1123.20	-1091.90	-283.15	-809.83	5774123.58	623535.98
1615	70.26	275.66	1124.87	-1093.57	-282.68	-814.52	5774124.05	623531.29
1620	70.12	275.65	1126.54	-1095.24	-282.21	-819.21	5774124.51	623526.60
1625	70.11	275.67	1128.22	-1096.92	-281.74	-823.90	5774124.99	623521.91
1630	70.20	275.72	1129.91	-1098.61	-281.27	-828.58	5774125.46	623517.23
1635	70.29	275.76	1131.59	-1100.29	-280.80	-833.26	5774125.93	623512.54
1640	70.38	275.81	1133.28	-1101.98	-280.32	-837.95	5774126.41	623507.86
1645	70.46	275.86	1134.96	-1103.66	-279.85	-842.63	5774126.88	623503.18
1650	70.55	275.90	1136.65	-1105.35	-279.37	-847.32	5774127.35	623498.49
1655	70.41	275.91	1138.35	-1107.05	-278.89	-851.99	5774127.84	623493.81
1660	70.25	275.90	1140.05	-1108.75	-278.41	-856.67	5774128.32	623489.14
1665	70.08	275.90	1141.75	-1110.45	-277.93	-861.34	5774128.80	623484.46
1670	69.92	275.90	1143.45	-1112.15	-277.44	-866.02	5774129.29	623479.79
1675	69.75	275.89	1145.16	-1113.86	-276.96	-870.70	5774129.77	623475.11
1680	69.62	275.87	1146.87	-1115.57	-276.48	-875.37	5774130.25	623470.44
1685	69.64	275.77	1148.60	-1117.30	-276.02	-880.04	5774130.71	623465.77
1690	69.66	275.67	1150.34	-1119.04	-275.57	-884.70	5774131.16	623461.10
1695	69.68	275.57	1152.08	-1120.78	-275.11	-889.37	5774131.62	623456.44
1700	69.69	275.47	1153.81	-1122.51	-274.65	-894.04	5774132.08	623451.77
1705	69.71	275.37	1155.55	-1124.25	-274.19	-898.70	5774132.53	623447.10
1710	69.66	275.29	1157.30	-1126.00	-273.75	-903.37	5774132.98	623442.44
1715	69.52	275.24	1159.07	-1127.77	-273.33	-908.02	5774133.40	623437.78
1720	69.37	275.20	1160.83	-1129.53	-272.91	-912.68	5774133.82	623433.13
1725	69.23	275.15	1162.60	-1131.30	-272.49	-917.34	5774134.24	623428.47
1730	69.09	275.10	1164.37	-1133.07	-272.06	-922.00	5774134.66	623423.81
1735	68.94	275.05	1166.13	-1134.83	-271.64	-926.66	5774135.09	623419.15
1740	68.92	275.19	1167.92	-1136.62	-271.19	-931.31	5774135.53	623414.50
1745	68.95	275.40	1169.71	-1138.41	-270.73	-935.95	5774135.99	623409.86
1750	68.97	275.61	1171.51	-1140.21	-270.27	-940.59	5774136.45	623405.21
1755	69.00	275.82	1173.30	-1142.00	-269.82	-945.24	5774136.91	623400.57
1760	69.03	276.04	1175.09	-1143.79	-269.36	-949.88	5774137.37	623395.92
1765	69.06	276.25	1176.89	-1145.59	-268.90	-954.53	5774137.83	623391.28
1770	69.15	276.16	1178.65	-1147.35	-268.41	-959.18	5774138.32	623386.63
1775	69.24	276.05	1180.42	-1149.12	-267.93	-963.83	5774138.80	623381.97
1780	69.33	275.95	1182.18	-1150.88	-267.44	-968.49	5774139.29	623377.32
1785	69.43	275.84	1183.95	-1152.65	-266.96	-973.14	5774139.77	623372.67
1790	69.52	275.73	1185.71	-1154.41	-266.47	-977.79	5774140.26	623368.02
1795	69.59	275.63	1187.48	-1156.18	-265.99	-982.45	5774140.74	623363.36
1800	69.49	275.60	1189.24	-1157.94	-265.54	-987.10	5774141.19	623358.71
1805	69.39	275.57	1191.01	-1159.71	-265.09	-991.76	5774141.64	623354.05
1810	69.29	275.53	1192.78	-1161.48	-264.64	-996.41	5774142.09	623349.39
1815	69.20	275.50	1194.54	-1163.24	-264.19	-1001.07	5774142.54	623344.74
1820	69.10	275.46	1196.31	-1165.01	-263.73	-1005.72	5774142.99	623340.08
1825	69.07	275.45	1198.07	-1166.77	-263.28	-1010.38	5774143.45	623335.43
1830	69.16	275.49	1199.84	-1168.54	-262.83	-1015.04	5774143.90	623330.77
1835	69.24	275.53	1201.61	-1170.31	-262.38	-1019.69	5774144.35	623326.12
1840	69.33	275.56	1203.38	-1172.08	-261.93	-1024.35	5774144.80	623321.46
1845	69.41	275.60	1205.15	-1173.85	-261.48	-1029.00	5774145.25	623316.81
1850	69.50	275.64	1206.92	-1175.62	-261.02	-1033.66	5774145.70	623312.15
1855	69.55	275.67	1208.67	-1177.37	-260.56	-1038.32	5774146.17	623307.49
1860	69.60	275.70	1210.41	-1179.11	-260.09	-1042.98	5774146.64	623302.83
1865	69.64	275.73	1212.15	-1180.85	-259.62	-1047.64	5774147.10	623298.16
1870	69.68	275.76	1213.88	-1182.58	-259.16	-1052.31	5774147.57	623293.50
1875	69.72	275.79	1215.62	-1184.32	-258.69	-1056.97	5774148.04	623288.83
1880	69.76	275.82	1217.36	-1186.06	-258.22	-1061.64	5774148.51	623284.17
1885	69.73	275.79	1219.10	-1187.80	-257.75	-1066.30	5774148.98	623279.50
1890	69.69	275.74	1220.84	-1189.54	-257.29	-1070.97	5774149.44	623274.84
1895	69.65	275.69	1222.58	-1191.28	-256.82	-1075.63	5774149.90	623270.18
1900	69.60	275.64	1224.32	-1193.02	-256.36	-1080.30	5774150.37	623265.51
1905	69.56	275.59	1226.06	-1194.76	-255.89	-1084.96	5774150.83	623260.85
1910	69.52	275.54	1227.80	-1196.50	-255.43	-1089.63	5774151.30	623256.18

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1915	69.45	275.53	1229.56	-1198.26	-254.98	-1094.28	5774151.75	623251.53
1920	69.38	275.53	1231.33	-1200.03	-254.53	-1098.94	5774152.20	623246.87
1925	69.31	275.52	1233.09	-1201.79	-254.08	-1103.59	5774152.65	623242.21
1930	69.24	275.51	1234.86	-1203.56	-253.63	-1108.25	5774153.10	623237.56
1935	69.17	275.50	1236.62	-1205.32	-253.18	-1112.91	5774153.55	623232.90
1940	69.14	275.54	1238.39	-1207.09	-252.72	-1117.56	5774154.01	623228.25
1945	69.16	275.66	1240.17	-1208.87	-252.25	-1122.21	5774154.48	623223.60
1950	69.18	275.77	1241.95	-1210.65	-251.77	-1126.86	5774154.96	623218.95
1955	69.20	275.89	1243.72	-1212.42	-251.30	-1131.51	5774155.43	623214.30
1960	69.23	276.01	1245.50	-1214.20	-250.82	-1136.16	5774155.91	623209.65
1965	69.25	276.13	1247.27	-1215.97	-250.34	-1140.81	5774156.38	623205.00
1970	69.21	276.18	1249.06	-1217.76	-249.86	-1145.45	5774156.87	623200.35
1975	69.12	276.17	1250.85	-1219.55	-249.35	-1150.09	5774157.38	623195.71
1980	69.02	276.17	1252.64	-1221.34	-248.85	-1154.74	5774157.88	623191.07
1985	68.93	276.17	1254.44	-1223.14	-248.35	-1159.38	5774158.38	623186.43
1990	68.83	276.16	1256.23	-1224.93	-247.85	-1164.02	5774158.88	623181.79
1995	68.74	276.16	1258.02	-1226.72	-247.35	-1168.66	5774159.38	623177.15
2000	68.67	276.27	1259.84	-1228.54	-246.82	-1173.28	5774159.91	623172.52
2005	68.62	276.40	1261.67	-1230.37	-246.29	-1177.91	5774160.44	623167.90
2010	68.56	276.53	1263.50	-1232.20	-245.76	-1182.53	5774160.97	623163.28
2015	68.50	276.67	1265.33	-1234.03	-245.23	-1187.15	5774161.50	623158.65
2020	68.44	276.80	1267.16	-1235.86	-244.70	-1191.78	5774162.03	623154.03
2025	68.42	276.93	1268.98	-1237.68	-244.17	-1196.40	5774162.56	623149.41
2030	68.71	277.04	1270.75	-1239.45	-243.58	-1201.04	5774163.15	623144.77
2035	69.01	277.14	1272.53	-1241.23	-242.99	-1205.68	5774163.74	623140.13
2040	69.30	277.25	1274.30	-1243.00	-242.40	-1210.32	5774164.33	623135.49
2045	69.60	277.35	1276.07	-1244.77	-241.82	-1214.95	5774164.91	623130.85
2050	69.90	277.46	1277.84	-1246.54	-241.23	-1219.59	5774165.50	623126.22
2055	70.06	277.53	1279.59	-1248.29	-240.63	-1224.24	5774166.10	623121.57
2060	70.03	277.56	1281.30	-1250.00	-240.01	-1228.89	5774166.72	623116.91
2065	69.99	277.59	1283.02	-1251.72	-239.38	-1233.55	5774167.34	623112.26
2070	69.96	277.61	1284.73	-1253.43	-238.76	-1238.21	5774167.97	623107.60
2075	69.93	277.64	1286.44	-1255.14	-238.14	-1242.86	5774168.59	623102.94
2080	69.90	277.67	1288.15	-1256.85	-237.52	-1247.52	5774169.21	623098.29
2085	69.84	277.52	1289.88	-1258.58	-236.93	-1252.17	5774169.80	623093.63
2090	69.76	277.27	1291.62	-1260.32	-236.36	-1256.83	5774170.36	623088.98
2095	69.67	277.03	1293.36	-1262.06	-235.79	-1261.48	5774170.93	623084.33
2100	69.59	276.78	1295.10	-1263.80	-235.23	-1266.13	5774171.50	623079.67
2105	69.51	276.53	1296.83	-1265.53	-234.66	-1270.79	5774172.07	623075.02
2110	69.43	276.29	1298.57	-1267.27	-234.09	-1275.44	5774172.64	623070.37
2115	69.32	276.22	1300.35	-1269.05	-233.58	-1280.09	5774173.15	623065.72
2120	69.21	276.17	1302.13	-1270.83	-233.08	-1284.73	5774173.64	623061.08
2125	69.09	276.12	1303.92	-1272.62	-232.59	-1289.37	5774174.14	623056.43
2130	68.98	276.07	1305.70	-1274.40	-232.09	-1294.02	5774174.64	623051.79
2135	68.87	276.02	1307.49	-1276.19	-231.59	-1298.66	5774175.14	623047.14
2140	68.79	275.98	1309.27	-1277.97	-231.09	-1303.31	5774175.63	623042.50
2145	68.84	275.99	1311.07	-1279.77	-230.61	-1307.95	5774176.12	623037.86
2150	68.89	275.99	1312.87	-1281.57	-230.12	-1312.59	5774176.61	623033.22
2155	68.94	276.00	1314.67	-1283.37	-229.63	-1317.23	5774177.10	623028.58
2160	68.99	276.00	1316.46	-1285.16	-229.15	-1321.87	5774177.58	623023.94
2165	69.05	276.01	1318.26	-1286.96	-228.66	-1326.51	5774178.07	623019.30
2170	69.09	275.99	1320.05	-1288.75	-228.17	-1331.15	5774178.55	623014.66
2175	69.14	275.95	1321.82	-1290.52	-227.69	-1335.80	5774179.03	623010.01
2180	69.19	275.91	1323.60	-1292.30	-227.21	-1340.45	5774179.51	623005.36
2185	69.24	275.87	1325.37	-1294.07	-226.73	-1345.10	5774179.99	623000.71
2190	69.28	275.83	1327.15	-1295.85	-226.25	-1349.75	5774180.47	622996.06
2195	69.33	275.79	1328.92	-1297.62	-225.77	-1354.40	5774180.95	622991.41
2200	69.41	275.82	1330.67	-1299.37	-225.29	-1359.06	5774181.44	622986.75
2205	69.49	275.86	1332.42	-1301.12	-224.81	-1363.72	5774181.92	622982.09
2210	69.58	275.91	1334.16	-1302.86	-224.33	-1368.38	5774182.40	622977.43
2215	69.67	275.96	1335.91	-1304.61	-223.84	-1373.04	5774182.88	622972.77
2220	69.75	276.00	1337.65	-1306.35	-223.36	-1377.70	5774183.37	622968.11
2225	69.84	276.05	1339.39	-1308.09	-222.88	-1382.36	5774183.85	622963.44
2230	69.77	276.04	1341.13	-1309.83	-222.39	-1387.03	5774184.34	622958.78
2235	69.71	276.02	1342.87	-1311.57	-221.90	-1391.69	5774184.83	622954.12
2240	69.64	276.01	1344.61	-1313.31	-221.41	-1396.35	5774185.32	622949.46



MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2245	69.57	275.99	1346.35	-1315.05	-220.91	-1401.01	5774185.81	622944.80
2246	69.56	275.99	1346.70	-1315.40	-220.82	-1401.94	5774185.91	622943.86
2247	69.54	275.99	1347.05	-1315.75	-220.72	-1402.88	5774186.01	622942.93
2248	69.53	275.99	1347.39	-1316.09	-220.62	-1403.81	5774186.11	622942.00
2249	69.52	275.98	1347.74	-1316.44	-220.52	-1404.74	5774186.21	622941.07
2250	69.50	275.98	1348.09	-1316.79	-220.42	-1405.67	5774186.30	622940.13
2251	69.49	275.98	1348.44	-1317.14	-220.33	-1406.61	5774186.40	622939.20
2252	69.48	275.98	1348.78	-1317.48	-220.23	-1407.54	5774186.50	622938.27
2253	69.46	275.97	1349.13	-1317.83	-220.13	-1408.47	5774186.60	622937.34
2254	69.45	275.97	1349.48	-1318.18	-220.03	-1409.40	5774186.70	622936.40
2255	69.43	275.97	1349.84	-1318.54	-219.93	-1410.33	5774186.79	622935.47
2256	69.41	275.97	1350.19	-1318.89	-219.84	-1411.26	5774186.89	622934.55
2257	69.39	275.97	1350.55	-1319.25	-219.74	-1412.19	5774186.99	622933.62
2258	69.37	275.97	1350.90	-1319.60	-219.64	-1413.12	5774187.09	622932.69
2259	69.35	275.98	1351.26	-1319.96	-219.54	-1414.05	5774187.18	622931.76
2260	69.33	275.98	1351.62	-1320.32	-219.45	-1414.98	5774187.28	622930.83
2261	69.31	275.98	1351.97	-1320.67	-219.35	-1415.91	5774187.38	622929.90
2262	69.29	275.98	1352.33	-1321.03	-219.25	-1416.84	5774187.48	622928.97
2263	69.27	275.98	1352.68	-1321.38	-219.15	-1417.77	5774187.57	622928.04
2264	69.25	275.98	1353.04	-1321.74	-219.06	-1418.70	5774187.67	622927.11
2265	69.23	275.98	1353.39	-1322.09	-218.96	-1419.63	5774187.77	622926.18
2266	69.21	275.98	1353.75	-1322.45	-218.86	-1420.56	5774187.87	622925.25
2267	69.19	275.98	1354.10	-1322.80	-218.76	-1421.49	5774187.96	622924.32
2268	69.17	275.98	1354.46	-1323.16	-218.67	-1422.42	5774188.06	622923.39
2269	69.15	275.99	1354.82	-1323.52	-218.57	-1423.35	5774188.16	622922.46
2270	69.13	275.99	1355.17	-1323.87	-218.47	-1424.28	5774188.26	622921.53
2271	69.11	275.99	1355.53	-1324.23	-218.37	-1425.20	5774188.35	622920.60
2272	69.09	275.99	1355.88	-1324.58	-218.28	-1426.13	5774188.45	622919.67
2273	69.07	275.99	1356.24	-1324.94	-218.18	-1427.06	5774188.55	622918.74
2274	69.06	275.99	1356.59	-1325.29	-218.08	-1427.99	5774188.65	622917.81
2275	69.04	275.99	1356.95	-1325.65	-217.98	-1428.92	5774188.74	622916.88
2276	69.02	275.99	1357.30	-1326.00	-217.89	-1429.85	5774188.84	622915.95
2277	69.00	275.99	1357.66	-1326.36	-217.79	-1430.78	5774188.94	622915.03
2278	68.98	276.00	1358.02	-1326.72	-217.69	-1431.71	5774189.04	622914.10
2279	68.96	276.00	1358.37	-1327.07	-217.59	-1432.64	5774189.13	622913.17
2280	68.94	276.00	1358.73	-1327.43	-217.50	-1433.57	5774189.23	622912.24
2281	68.92	276.00	1359.08	-1327.78	-217.40	-1434.50	5774189.33	622911.31
2282	68.90	276.00	1359.44	-1328.14	-217.30	-1435.43	5774189.43	622910.38
2283	68.87	275.99	1359.80	-1328.50	-217.21	-1436.36	5774189.52	622909.45
2284	68.84	275.98	1360.17	-1328.87	-217.11	-1437.28	5774189.62	622908.53
2285	68.81	275.97	1360.54	-1329.24	-217.02	-1438.21	5774189.71	622907.60
2286	68.78	275.96	1360.90	-1329.60	-216.92	-1439.13	5774189.81	622906.67
2287	68.75	275.95	1361.27	-1329.97	-216.83	-1440.06	5774189.90	622905.75
2288	68.72	275.93	1361.64	-1330.34	-216.73	-1440.98	5774189.99	622904.82
2289	68.69	275.92	1362.00	-1330.70	-216.64	-1441.91	5774190.09	622903.90
2290	68.66	275.91	1362.37	-1331.07	-216.55	-1442.83	5774190.18	622902.97
2291	68.63	275.90	1362.74	-1331.44	-216.45	-1443.76	5774190.28	622902.05
2292	68.59	275.89	1363.11	-1331.81	-216.36	-1444.68	5774190.37	622901.12
2293	68.56	275.88	1363.47	-1332.17	-216.26	-1445.61	5774190.47	622900.20
2294	68.53	275.86	1363.84	-1332.54	-216.17	-1446.53	5774190.56	622899.27
2295	68.50	275.85	1364.21	-1332.91	-216.07	-1447.46	5774190.66	622898.35
2296	68.47	275.84	1364.58	-1333.28	-215.98	-1448.39	5774190.75	622897.42
2297	68.44	275.83	1364.94	-1333.64	-215.88	-1449.31	5774190.84	622896.50
2298	68.41	275.82	1365.31	-1334.01	-215.79	-1450.24	5774190.94	622895.57
2299	68.38	275.80	1365.68	-1334.38	-215.70	-1451.16	5774191.03	622894.65
2300	68.35	275.79	1366.05	-1334.75	-215.60	-1452.09	5774191.13	622893.72
2301	68.32	275.78	1366.41	-1335.11	-215.51	-1453.01	5774191.22	622892.80
2302	68.29	275.77	1366.78	-1335.48	-215.41	-1453.94	5774191.32	622891.87
2303	68.25	275.76	1367.15	-1335.85	-215.32	-1454.86	5774191.41	622890.95
2304	68.22	275.75	1367.52	-1336.22	-215.22	-1455.79	5774191.51	622890.02
2305	68.19	275.73	1367.88	-1336.58	-215.13	-1456.71	5774191.60	622889.09
2306	68.16	275.72	1368.25	-1336.95	-215.03	-1457.64	5774191.69	622888.17
2307	68.13	275.71	1368.62	-1337.32	-214.94	-1458.56	5774191.79	622887.24
2308	68.10	275.70	1368.99	-1337.69	-214.84	-1459.49	5774191.88	622886.32
2309	68.07	275.69	1369.35	-1338.05	-214.75	-1460.41	5774191.98	622885.39
2310	68.04	275.67	1369.72	-1338.42	-214.66	-1461.34	5774192.07	622884.47

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2311	68.01	275.66	1370.09	-1338.79	-214.56	-1462.26	5774192.17	622883.54
2312	68.02	275.67	1370.46	-1339.16	-214.47	-1463.19	5774192.26	622882.62
2313	68.04	275.68	1370.83	-1339.53	-214.37	-1464.11	5774192.36	622881.69
2314	68.06	275.69	1371.19	-1339.89	-214.28	-1465.04	5774192.45	622880.77
2315	68.09	275.70	1371.56	-1340.26	-214.18	-1465.96	5774192.54	622879.85
2316	68.11	275.71	1371.93	-1340.63	-214.09	-1466.89	5774192.64	622878.92
2317	68.13	275.72	1372.30	-1341.00	-214.00	-1467.81	5774192.73	622878.00
2318	68.16	275.73	1372.67	-1341.37	-213.90	-1468.74	5774192.83	622877.07
2319	68.18	275.74	1373.04	-1341.74	-213.81	-1469.66	5774192.92	622876.15
2320	68.20	275.75	1373.41	-1342.11	-213.71	-1470.58	5774193.01	622875.22
2321	68.23	275.76	1373.78	-1342.48	-213.62	-1471.51	5774193.11	622874.30
2322	68.25	275.78	1374.15	-1342.85	-213.53	-1472.43	5774193.20	622873.37
2323	68.27	275.79	1374.52	-1343.22	-213.43	-1473.36	5774193.30	622872.45
2324	68.30	275.80	1374.89	-1343.59	-213.34	-1474.28	5774193.39	622871.52
2325	68.32	275.81	1375.26	-1343.96	-213.24	-1475.21	5774193.48	622870.60
2326	68.34	275.82	1375.63	-1344.33	-213.15	-1476.13	5774193.58	622869.68
2327	68.37	275.83	1376.00	-1344.70	-213.06	-1477.06	5774193.67	622868.75
2328	68.39	275.84	1376.37	-1345.07	-212.96	-1477.98	5774193.77	622867.83
2329	68.41	275.85	1376.73	-1345.43	-212.87	-1478.91	5774193.86	622866.90
2330	68.44	275.86	1377.10	-1345.80	-212.77	-1479.83	5774193.95	622865.98
2331	68.46	275.87	1377.47	-1346.17	-212.68	-1480.75	5774194.05	622865.05
2332	68.48	275.88	1377.84	-1346.54	-212.59	-1481.68	5774194.14	622864.13
2333	68.51	275.89	1378.21	-1346.91	-212.49	-1482.60	5774194.24	622863.20
2334	68.53	275.90	1378.58	-1347.28	-212.40	-1483.53	5774194.33	622862.28
2335	68.55	275.92	1378.95	-1347.65	-212.30	-1484.45	5774194.43	622861.35
2336	68.58	275.93	1379.32	-1348.02	-212.21	-1485.38	5774194.52	622860.43
2337	68.60	275.94	1379.69	-1348.39	-212.11	-1486.30	5774194.61	622859.51
2338	68.62	275.95	1380.06	-1348.76	-212.02	-1487.23	5774194.71	622858.58
2339	68.65	275.96	1380.43	-1349.13	-211.93	-1488.15	5774194.80	622857.66
2340	68.66	275.99	1380.79	-1349.49	-211.82	-1489.08	5774194.90	622856.73
2341	68.68	276.02	1381.15	-1349.85	-211.72	-1490.00	5774195.01	622855.80
2342	68.69	276.05	1381.51	-1350.21	-211.62	-1490.93	5774195.11	622854.88
2343	68.71	276.08	1381.87	-1350.57	-211.51	-1491.86	5774195.22	622853.95
2344	68.72	276.11	1382.23	-1350.93	-211.41	-1492.79	5774195.32	622853.02
2345	68.74	276.14	1382.59	-1351.29	-211.30	-1493.71	5774195.43	622852.10
2346	68.75	276.17	1382.95	-1351.65	-211.20	-1494.64	5774195.53	622851.17
2347	68.77	276.20	1383.31	-1352.01	-211.09	-1495.57	5774195.63	622850.24
2348	68.78	276.23	1383.67	-1352.37	-210.99	-1496.49	5774195.74	622849.31
2349	68.80	276.27	1384.03	-1352.73	-210.89	-1497.42	5774195.84	622848.39
2350	68.81	276.30	1384.39	-1353.09	-210.78	-1498.35	5774195.95	622847.46
2351	68.83	276.33	1384.75	-1353.45	-210.68	-1499.27	5774196.05	622846.53
2352	68.85	276.36	1385.12	-1353.82	-210.57	-1500.20	5774196.16	622845.61
2353	68.86	276.39	1385.48	-1354.18	-210.47	-1501.13	5774196.26	622844.68
2354	68.88	276.42	1385.84	-1354.54	-210.36	-1502.05	5774196.36	622843.75
2355	68.89	276.45	1386.20	-1354.90	-210.26	-1502.98	5774196.47	622842.83
2356	68.91	276.48	1386.56	-1355.26	-210.16	-1503.91	5774196.57	622841.90
2357	68.92	276.51	1386.92	-1355.62	-210.05	-1504.84	5774196.68	622840.97
2358	68.94	276.55	1387.28	-1355.98	-209.95	-1505.76	5774196.78	622840.05
2359	68.95	276.58	1387.64	-1356.34	-209.84	-1506.69	5774196.89	622839.12
2360	68.97	276.61	1388.00	-1356.70	-209.74	-1507.62	5774196.99	622838.19
2361	68.98	276.64	1388.36	-1357.06	-209.63	-1508.54	5774197.09	622837.26
2362	69.00	276.67	1388.72	-1357.42	-209.53	-1509.47	5774197.20	622836.34
2363	69.01	276.70	1389.08	-1357.78	-209.42	-1510.40	5774197.30	622835.41
2364	69.03	276.73	1389.44	-1358.14	-209.32	-1511.32	5774197.41	622834.48
2365	69.04	276.76	1389.80	-1358.50	-209.22	-1512.25	5774197.51	622833.56
2366	69.06	276.79	1390.16	-1358.86	-209.11	-1513.18	5774197.62	622832.63
2367	69.07	276.82	1390.52	-1359.22	-209.01	-1514.10	5774197.72	622831.70
2368	69.09	276.86	1390.88	-1359.58	-208.90	-1515.03	5774197.82	622830.78
2369	69.10	276.88	1391.24	-1359.94	-208.80	-1515.96	5774197.93	622829.85
2370	69.13	276.87	1391.59	-1360.29	-208.69	-1516.89	5774198.04	622828.92
2371	69.15	276.86	1391.94	-1360.64	-208.58	-1517.82	5774198.15	622827.99
2372	69.17	276.85	1392.30	-1361.00	-208.47	-1518.75	5774198.26	622827.06
2373	69.19	276.84	1392.65	-1361.35	-208.36	-1519.68	5774198.37	622826.13
2374	69.21	276.83	1393.00	-1361.70	-208.25	-1520.61	5774198.48	622825.20
2375	69.23	276.83	1393.35	-1362.05	-208.14	-1521.54	5774198.59	622824.27
2376	69.25	276.82	1393.70	-1362.40	-208.03	-1522.47	5774198.70	622823.34

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2377	69.27	276.81	1394.05	-1362.75	-207.92	-1523.40	5774198.81	622822.41
2378	69.29	276.80	1394.41	-1363.11	-207.81	-1524.32	5774198.92	622821.48
2379	69.31	276.79	1394.76	-1363.46	-207.70	-1525.25	5774199.03	622820.55
2380	69.34	276.78	1395.11	-1363.81	-207.59	-1526.18	5774199.14	622819.62
2381	69.36	276.77	1395.46	-1364.16	-207.48	-1527.11	5774199.25	622818.69
2382	69.38	276.76	1395.81	-1364.51	-207.37	-1528.04	5774199.36	622817.76
2383	69.40	276.76	1396.17	-1364.87	-207.26	-1528.97	5774199.47	622816.83
2384	69.42	276.75	1396.52	-1365.22	-207.15	-1529.90	5774199.58	622815.91
2385	69.44	276.74	1396.87	-1365.57	-207.04	-1530.83	5774199.69	622814.98
2386	69.46	276.73	1397.22	-1365.92	-206.93	-1531.76	5774199.80	622814.05
2387	69.48	276.72	1397.57	-1366.27	-206.82	-1532.69	5774199.91	622813.12
2388	69.50	276.71	1397.93	-1366.63	-206.71	-1533.62	5774200.02	622812.19
2389	69.52	276.70	1398.28	-1366.98	-206.60	-1534.55	5774200.13	622811.26
2390	69.54	276.69	1398.63	-1367.33	-206.49	-1535.48	5774200.24	622810.33
2391	69.57	276.69	1398.98	-1367.68	-206.38	-1536.41	5774200.35	622809.40
2392	69.59	276.68	1399.33	-1368.03	-206.27	-1537.34	5774200.46	622808.47
2393	69.61	276.67	1399.68	-1368.38	-206.16	-1538.27	5774200.57	622807.54
2394	69.63	276.66	1400.04	-1368.74	-206.05	-1539.20	5774200.68	622806.61
2395	69.65	276.65	1400.39	-1369.09	-205.94	-1540.13	5774200.79	622805.68
2396	69.67	276.64	1400.74	-1369.44	-205.83	-1541.06	5774200.90	622804.75
2397	69.69	276.63	1401.09	-1369.79	-205.72	-1541.99	5774201.01	622803.82
2398	69.70	276.63	1401.44	-1370.14	-205.61	-1542.92	5774201.12	622802.89
2399	69.69	276.62	1401.79	-1370.49	-205.50	-1543.85	5774201.23	622801.96
2400	69.69	276.62	1402.14	-1370.84	-205.39	-1544.78	5774201.34	622801.03
2401	69.68	276.61	1402.49	-1371.19	-205.29	-1545.71	5774201.44	622800.10
2402	69.68	276.61	1402.83	-1371.53	-205.18	-1546.64	5774201.55	622799.17
2403	69.67	276.60	1403.18	-1371.88	-205.07	-1547.57	5774201.66	622798.23
2404	69.66	276.59	1403.53	-1372.23	-204.96	-1548.50	5774201.76	622797.30
2405	69.66	276.59	1403.88	-1372.58	-204.86	-1549.44	5774201.87	622796.37
2406	69.65	276.58	1404.23	-1372.93	-204.75	-1550.37	5774201.98	622795.44
2407	69.65	276.58	1404.58	-1373.28	-204.64	-1551.30	5774202.08	622794.51
2408	69.64	276.57	1404.92	-1373.62	-204.54	-1552.23	5774202.19	622793.58
2409	69.64	276.57	1405.27	-1373.97	-204.43	-1553.16	5774202.30	622792.65
2410	69.63	276.56	1405.62	-1374.32	-204.32	-1554.09	5774202.41	622791.71
2411	69.63	276.56	1405.97	-1374.67	-204.22	-1555.02	5774202.51	622790.78
2412	69.62	276.55	1406.32	-1375.02	-204.11	-1555.96	5774202.62	622789.85
2413	69.62	276.55	1406.66	-1375.36	-204.00	-1556.89	5774202.73	622788.92
2414	69.61	276.54	1407.01	-1375.71	-203.89	-1557.82	5774202.83	622787.99
2415	69.61	276.54	1407.36	-1376.06	-203.79	-1558.75	5774202.94	622787.06
2416	69.60	276.53	1407.71	-1376.41	-203.68	-1559.68	5774203.05	622786.13
2417	69.60	276.53	1408.06	-1376.76	-203.57	-1560.61	5774203.15	622785.20
2418	69.59	276.52	1408.40	-1377.10	-203.47	-1561.54	5774203.26	622784.26
2419	69.58	276.51	1408.75	-1377.45	-203.36	-1562.47	5774203.37	622783.33
2420	69.58	276.51	1409.10	-1377.80	-203.25	-1563.41	5774203.48	622782.40
2421	69.57	276.50	1409.45	-1378.15	-203.15	-1564.34	5774203.58	622781.47
2422	69.57	276.50	1409.80	-1378.50	-203.04	-1565.27	5774203.69	622780.54
2423	69.56	276.49	1410.15	-1378.85	-202.93	-1566.20	5774203.80	622779.61
2424	69.56	276.49	1410.49	-1379.19	-202.82	-1567.13	5774203.90	622778.68
2425	69.55	276.48	1410.84	-1379.54	-202.72	-1568.06	5774204.01	622777.75
2426	69.55	276.48	1411.19	-1379.89	-202.61	-1568.99	5774204.12	622776.81
2427	69.54	276.47	1411.54	-1380.24	-202.51	-1569.92	5774204.22	622775.88
2428	69.53	276.46	1411.90	-1380.60	-202.41	-1570.85	5774204.32	622774.95
2429	69.52	276.45	1412.25	-1380.95	-202.30	-1571.78	5774204.43	622774.02
2430	69.51	276.44	1412.60	-1381.30	-202.20	-1572.71	5774204.53	622773.09
2431	69.50	276.43	1412.95	-1381.65	-202.10	-1573.65	5774204.63	622772.16
2432	69.49	276.42	1413.30	-1382.00	-201.99	-1574.58	5774204.74	622771.23
2433	69.48	276.41	1413.65	-1382.35	-201.89	-1575.51	5774204.84	622770.30
2434	69.47	276.40	1414.01	-1382.71	-201.78	-1576.44	5774204.94	622769.37
2435	69.46	276.39	1414.36	-1383.06	-201.68	-1577.37	5774205.05	622768.44
2436	69.45	276.38	1414.71	-1383.41	-201.58	-1578.30	5774205.15	622767.51
2437	69.44	276.37	1415.06	-1383.76	-201.47	-1579.23	5774205.25	622766.58
2438	69.43	276.36	1415.41	-1384.11	-201.37	-1580.16	5774205.36	622765.65
2439	69.42	276.35	1415.76	-1384.46	-201.27	-1581.09	5774205.46	622764.72
2440	69.41	276.34	1416.12	-1384.82	-201.16	-1582.02	5774205.56	622763.79
2441	69.40	276.33	1416.47	-1385.17	-201.06	-1582.95	5774205.67	622762.86
2442	69.39	276.32	1416.82	-1385.52	-200.96	-1583.88	5774205.77	622761.93

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2443	69.38	276.31	1417.17	-1385.87	-200.85	-1584.81	5774205.87	622761.00
2444	69.37	276.30	1417.52	-1386.22	-200.75	-1585.74	5774205.98	622760.07
2445	69.36	276.29	1417.87	-1386.57	-200.65	-1586.67	5774206.08	622759.14
2446	69.35	276.28	1418.23	-1386.93	-200.54	-1587.60	5774206.18	622758.21
2447	69.34	276.27	1418.58	-1387.28	-200.44	-1588.53	5774206.29	622757.28
2448	69.33	276.26	1418.93	-1387.63	-200.34	-1589.46	5774206.39	622756.35
2449	69.32	276.25	1419.28	-1387.98	-200.23	-1590.39	5774206.49	622755.41
2450	69.31	276.24	1419.63	-1388.33	-200.13	-1591.32	5774206.60	622754.48
2451	69.30	276.23	1419.98	-1388.68	-200.03	-1592.25	5774206.70	622753.55
2452	69.29	276.22	1420.34	-1389.04	-199.92	-1593.18	5774206.80	622752.62
2453	69.28	276.21	1420.69	-1389.39	-199.82	-1594.11	5774206.91	622751.69
2454	69.27	276.20	1421.04	-1389.74	-199.72	-1595.04	5774207.01	622750.76
2455	69.27	276.20	1421.39	-1390.09	-199.62	-1595.97	5774207.11	622749.83
2456	69.28	276.19	1421.74	-1390.44	-199.52	-1596.91	5774207.21	622748.90
2457	69.29	276.19	1422.10	-1390.80	-199.42	-1597.84	5774207.31	622747.97
2458	69.29	276.18	1422.45	-1391.15	-199.32	-1598.77	5774207.41	622747.04
2459	69.30	276.18	1422.80	-1391.50	-199.22	-1599.70	5774207.51	622746.11
2460	69.31	276.17	1423.15	-1391.85	-199.12	-1600.63	5774207.61	622745.18
2461	69.31	276.17	1423.51	-1392.21	-199.02	-1601.56	5774207.71	622744.25
2462	69.32	276.16	1423.86	-1392.56	-198.92	-1602.49	5774207.81	622743.32
2463	69.33	276.16	1424.21	-1392.91	-198.82	-1603.42	5774207.91	622742.39
2464	69.33	276.15	1424.56	-1393.26	-198.72	-1604.35	5774208.01	622741.46
2465	69.34	276.15	1424.92	-1393.62	-198.62	-1605.28	5774208.11	622740.53
2466	69.35	276.14	1425.27	-1393.97	-198.52	-1606.21	5774208.21	622739.60
2467	69.35	276.14	1425.62	-1394.32	-198.42	-1607.14	5774208.31	622738.67
2468	69.36	276.13	1425.97	-1394.67	-198.32	-1608.07	5774208.41	622737.74
2469	69.36	276.13	1426.33	-1395.03	-198.22	-1609.00	5774208.51	622736.81
2470	69.37	276.12	1426.68	-1395.38	-198.12	-1609.93	5774208.61	622735.88
2471	69.38	276.12	1427.03	-1395.73	-198.02	-1610.86	5774208.71	622734.95
2472	69.38	276.11	1427.38	-1396.08	-197.92	-1611.79	5774208.81	622734.01
2473	69.39	276.11	1427.74	-1396.44	-197.82	-1612.72	5774208.91	622733.08
2474	69.40	276.10	1428.09	-1396.79	-197.72	-1613.65	5774209.01	622732.15
2475	69.40	276.10	1428.44	-1397.14	-197.62	-1614.58	5774209.11	622731.22
2476	69.41	276.09	1428.79	-1397.49	-197.52	-1615.51	5774209.21	622730.29
2477	69.42	276.09	1429.15	-1397.85	-197.42	-1616.44	5774209.31	622729.36
2478	69.42	276.08	1429.50	-1398.20	-197.32	-1617.38	5774209.41	622728.43
2479	69.43	276.08	1429.85	-1398.55	-197.22	-1618.31	5774209.51	622727.50
2480	69.43	276.07	1430.20	-1398.90	-197.12	-1619.24	5774209.61	622726.57
2481	69.44	276.07	1430.56	-1399.26	-197.02	-1620.17	5774209.71	622725.64
2482	69.45	276.06	1430.91	-1399.61	-196.92	-1621.10	5774209.81	622724.71
2483	69.46	276.06	1431.26	-1399.96	-196.82	-1622.03	5774209.91	622723.78
2484	69.46	276.05	1431.61	-1400.31	-196.72	-1622.96	5774210.01	622722.85
2485	69.47	276.04	1431.96	-1400.66	-196.63	-1623.89	5774210.10	622721.91
2486	69.48	276.03	1432.31	-1401.01	-196.53	-1624.82	5774210.20	622720.98
2487	69.49	276.02	1432.66	-1401.36	-196.43	-1625.76	5774210.30	622720.05
2488	69.50	276.02	1433.00	-1401.70	-196.33	-1626.69	5774210.39	622719.12
2489	69.51	276.01	1433.35	-1402.05	-196.24	-1627.62	5774210.49	622718.19
2490	69.51	276.00	1433.70	-1402.40	-196.14	-1628.55	5774210.59	622717.25
2491	69.52	275.99	1434.05	-1402.75	-196.04	-1629.48	5774210.69	622716.32
2492	69.53	275.99	1434.40	-1403.10	-195.95	-1630.42	5774210.78	622715.39
2493	69.54	275.98	1434.75	-1403.45	-195.85	-1631.35	5774210.88	622714.46
2494	69.55	275.97	1435.10	-1403.80	-195.75	-1632.28	5774210.98	622713.53
2495	69.56	275.96	1435.45	-1404.15	-195.65	-1633.21	5774211.07	622712.59
2496	69.56	275.96	1435.80	-1404.50	-195.56	-1634.14	5774211.17	622711.66
2497	69.57	275.95	1436.15	-1404.85	-195.46	-1635.08	5774211.27	622710.73
2498	69.58	275.94	1436.49	-1405.19	-195.36	-1636.01	5774211.37	622709.80
2499	69.59	275.93	1436.84	-1405.54	-195.27	-1636.94	5774211.46	622708.87
2500	69.60	275.92	1437.19	-1405.89	-195.17	-1637.87	5774211.56	622707.93
2501	69.61	275.92	1437.54	-1406.24	-195.07	-1638.81	5774211.66	622707.00
2502	69.61	275.91	1437.89	-1406.59	-194.97	-1639.74	5774211.75	622706.07
2503	69.62	275.90	1438.24	-1406.94	-194.88	-1640.67	5774211.85	622705.14
2504	69.63	275.89	1438.59	-1407.29	-194.78	-1641.60	5774211.95	622704.21
2505	69.64	275.89	1438.94	-1407.64	-194.68	-1642.53	5774212.05	622703.27
2506	69.65	275.88	1439.29	-1407.99	-194.59	-1643.47	5774212.14	622702.34
2507	69.66	275.87	1439.64	-1408.34	-194.49	-1644.40	5774212.24	622701.41
2508	69.66	275.86	1439.98	-1408.68	-194.39	-1645.33	5774212.34	622700.48

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2509	69.67	275.86	1440.33	-1409.03	-194.29	-1646.26	5774212.43	622699.55
2510	69.68	275.85	1440.68	-1409.38	-194.20	-1647.19	5774212.53	622698.61
2511	69.69	275.84	1441.03	-1409.73	-194.10	-1648.13	5774212.63	622697.68
2512	69.68	275.84	1441.38	-1410.08	-194.00	-1649.06	5774212.72	622696.75
2513	69.67	275.84	1441.73	-1410.43	-193.91	-1649.99	5774212.82	622695.82
2514	69.66	275.84	1442.08	-1410.78	-193.81	-1650.92	5774212.92	622694.89
2515	69.65	275.84	1442.43	-1411.13	-193.72	-1651.85	5774213.01	622693.95
2516	69.64	275.85	1442.78	-1411.48	-193.62	-1652.79	5774213.11	622693.02
2517	69.63	275.85	1443.13	-1411.83	-193.53	-1653.72	5774213.20	622692.09
2518	69.62	275.85	1443.48	-1412.18	-193.43	-1654.65	5774213.30	622691.16
2519	69.61	275.85	1443.83	-1412.53	-193.34	-1655.58	5774213.39	622690.23
2520	69.60	275.85	1444.18	-1412.88	-193.24	-1656.51	5774213.49	622689.29
2521	69.59	275.85	1444.53	-1413.23	-193.14	-1657.45	5774213.58	622688.36
2522	69.58	275.85	1444.88	-1413.58	-193.05	-1658.38	5774213.68	622687.43
2523	69.57	275.85	1445.23	-1413.93	-192.95	-1659.31	5774213.78	622686.50
2524	69.56	275.85	1445.58	-1414.28	-192.86	-1660.24	5774213.87	622685.56
2525	69.55	275.85	1445.92	-1414.62	-192.76	-1661.17	5774213.97	622684.63
2526	69.54	275.86	1446.27	-1414.97	-192.67	-1662.11	5774214.06	622683.70
2527	69.53	275.86	1446.62	-1415.32	-192.57	-1663.04	5774214.16	622682.77
2528	69.52	275.86	1446.97	-1415.67	-192.48	-1663.97	5774214.25	622681.84
2529	69.51	275.86	1447.32	-1416.02	-192.38	-1664.90	5774214.35	622680.90
2530	69.50	275.86	1447.67	-1416.37	-192.28	-1665.83	5774214.44	622679.97
2531	69.49	275.86	1448.02	-1416.72	-192.19	-1666.77	5774214.54	622679.04
2532	69.48	275.86	1448.37	-1417.07	-192.09	-1667.70	5774214.64	622678.11
2533	69.47	275.86	1448.72	-1417.42	-192.00	-1668.63	5774214.73	622677.18
2534	69.46	275.86	1449.07	-1417.77	-191.90	-1669.56	5774214.83	622676.24
2535	69.45	275.86	1449.42	-1418.12	-191.81	-1670.50	5774214.92	622675.31
2536	69.44	275.87	1449.77	-1418.47	-191.71	-1671.43	5774215.02	622674.38
2537	69.43	275.87	1450.12	-1418.82	-191.62	-1672.36	5774215.11	622673.45
2538	69.42	275.87	1450.47	-1419.17	-191.52	-1673.29	5774215.21	622672.52
2539	69.41	275.87	1450.82	-1419.52	-191.42	-1674.22	5774215.30	622671.58
2540	69.40	275.87	1451.17	-1419.87	-191.33	-1675.16	5774215.40	622670.65
2541	69.40	275.87	1451.52	-1420.22	-191.23	-1676.09	5774215.50	622669.72
2542	69.40	275.87	1451.87	-1420.57	-191.14	-1677.02	5774215.59	622668.79
2543	69.40	275.86	1452.22	-1420.92	-191.04	-1677.95	5774215.69	622667.86
2544	69.39	275.86	1452.58	-1421.28	-190.95	-1678.88	5774215.78	622666.93
2545	69.39	275.86	1452.93	-1421.63	-190.85	-1679.81	5774215.88	622666.00
2546	69.39	275.86	1453.28	-1421.98	-190.76	-1680.74	5774215.97	622665.07
2547	69.39	275.86	1453.63	-1422.33	-190.66	-1681.67	5774216.07	622664.13
2548	69.39	275.85	1453.99	-1422.69	-190.57	-1682.60	5774216.16	622663.20
2549	69.39	275.85	1454.34	-1423.04	-190.47	-1683.54	5774216.26	622662.27
2550	69.39	275.85	1454.69	-1423.39	-190.38	-1684.47	5774216.35	622661.34
2551	69.38	275.85	1455.04	-1423.74	-190.28	-1685.40	5774216.45	622660.41
2552	69.38	275.84	1455.39	-1424.09	-190.19	-1686.33	5774216.54	622659.48
2553	69.38	275.84	1455.75	-1424.45	-190.09	-1687.26	5774216.64	622658.55
2554	69.38	275.84	1456.10	-1424.80	-190.00	-1688.19	5774216.73	622657.62
2555	69.38	275.84	1456.45	-1425.15	-189.90	-1689.12	5774216.83	622656.69
2556	69.38	275.84	1456.80	-1425.50	-189.81	-1690.05	5774216.92	622655.75
2557	69.38	275.83	1457.15	-1425.85	-189.71	-1690.98	5774217.02	622654.82
2558	69.37	275.83	1457.51	-1426.21	-189.61	-1691.91	5774217.11	622653.89
2559	69.37	275.83	1457.86	-1426.56	-189.52	-1692.85	5774217.21	622652.96
2560	69.37	275.83	1458.21	-1426.91	-189.42	-1693.78	5774217.30	622652.03
2561	69.37	275.83	1458.56	-1427.26	-189.33	-1694.71	5774217.40	622651.10
2562	69.37	275.82	1458.92	-1427.62	-189.23	-1695.64	5774217.49	622650.17
2563	69.37	275.82	1459.27	-1427.97	-189.14	-1696.57	5774217.59	622649.24
2564	69.37	275.82	1459.62	-1428.32	-189.04	-1697.50	5774217.69	622648.31
2565	69.37	275.82	1459.97	-1428.67	-188.95	-1698.43	5774217.78	622647.37
2566	69.36	275.82	1460.32	-1429.02	-188.85	-1699.36	5774217.88	622646.44
2567	69.36	275.81	1460.68	-1429.38	-188.76	-1700.29	5774217.97	622645.51
2568	69.36	275.81	1461.03	-1429.73	-188.66	-1701.23	5774218.07	622644.58
2569	69.36	275.81	1461.38	-1430.08	-188.57	-1702.16	5774218.16	622643.65
2570	69.35	275.80	1461.74	-1430.44	-188.48	-1703.09	5774218.25	622642.72
2571	69.34	275.79	1462.09	-1430.79	-188.38	-1704.02	5774218.35	622641.79
2572	69.33	275.78	1462.44	-1431.14	-188.29	-1704.95	5774218.44	622640.86
2573	69.32	275.77	1462.80	-1431.50	-188.20	-1705.88	5774218.53	622639.93
2574	69.31	275.75	1463.15	-1431.85	-188.11	-1706.81	5774218.62	622639.00

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2575	69.31	275.74	1463.51	-1432.21	-188.01	-1707.74	5774218.71	622638.07
2576	69.30	275.73	1463.86	-1432.56	-187.92	-1708.67	5774218.81	622637.14
2577	69.29	275.72	1464.22	-1432.92	-187.83	-1709.60	5774218.90	622636.21
2578	69.28	275.71	1464.57	-1433.27	-187.74	-1710.53	5774218.99	622635.28
2579	69.27	275.70	1464.93	-1433.63	-187.65	-1711.46	5774219.08	622634.35
2580	69.26	275.69	1465.28	-1433.98	-187.55	-1712.39	5774219.17	622633.42
2581	69.25	275.68	1465.64	-1434.34	-187.46	-1713.32	5774219.27	622632.48
2582	69.24	275.67	1465.99	-1434.69	-187.37	-1714.25	5774219.36	622631.55
2583	69.24	275.66	1466.34	-1435.04	-187.28	-1715.18	5774219.45	622630.62
2584	69.23	275.64	1466.70	-1435.40	-187.19	-1716.11	5774219.54	622629.69
2585	69.22	275.63	1467.05	-1435.75	-187.09	-1717.04	5774219.64	622628.76
2586	69.21	275.62	1467.41	-1436.11	-187.00	-1717.97	5774219.73	622627.83
2587	69.20	275.61	1467.76	-1436.46	-186.91	-1718.91	5774219.82	622626.90
2588	69.19	275.60	1468.12	-1436.82	-186.82	-1719.84	5774219.91	622625.97
2589	69.18	275.59	1468.47	-1437.17	-186.72	-1720.77	5774220.00	622625.04
2590	69.17	275.58	1468.83	-1437.53	-186.63	-1721.70	5774220.10	622624.11
2591	69.16	275.57	1469.18	-1437.88	-186.54	-1722.63	5774220.19	622623.18
2592	69.16	275.56	1469.54	-1438.24	-186.45	-1723.56	5774220.28	622622.25
2593	69.15	275.55	1469.89	-1438.59	-186.36	-1724.49	5774220.37	622621.32
2594	69.14	275.53	1470.24	-1438.94	-186.26	-1725.42	5774220.46	622620.39
2595	69.13	275.52	1470.60	-1439.30	-186.17	-1726.35	5774220.56	622619.46
2596	69.12	275.51	1470.95	-1439.65	-186.08	-1727.28	5774220.65	622618.53
2597	69.11	275.50	1471.31	-1440.01	-185.99	-1728.21	5774220.74	622617.60
2598	69.11	275.49	1471.66	-1440.36	-185.90	-1729.14	5774220.83	622616.67
2599	69.10	275.49	1472.02	-1440.72	-185.81	-1730.07	5774220.92	622615.74
2600	69.10	275.48	1472.38	-1441.08	-185.72	-1731.00	5774221.00	622614.81
2601	69.10	275.47	1472.74	-1441.44	-185.64	-1731.93	5774221.09	622613.88
2602	69.09	275.46	1473.09	-1441.79	-185.55	-1732.86	5774221.18	622612.95
2603	69.09	275.45	1473.45	-1442.15	-185.46	-1733.79	5774221.27	622612.02
2604	69.09	275.45	1473.81	-1442.51	-185.37	-1734.72	5774221.36	622611.09
2605	69.09	275.44	1474.17	-1442.87	-185.29	-1735.65	5774221.44	622610.16
2606	69.08	275.43	1474.52	-1443.22	-185.20	-1736.58	5774221.53	622609.23
2607	69.08	275.42	1474.88	-1443.58	-185.11	-1737.51	5774221.62	622608.30
2608	69.08	275.41	1475.24	-1443.94	-185.02	-1738.44	5774221.71	622607.37
2609	69.07	275.41	1475.59	-1444.29	-184.93	-1739.37	5774221.79	622606.44
2610	69.07	275.40	1475.95	-1444.65	-184.85	-1740.30	5774221.88	622605.51
2611	69.07	275.39	1476.31	-1445.01	-184.76	-1741.23	5774221.97	622604.58
2612	69.06	275.38	1476.67	-1445.37	-184.67	-1742.16	5774222.06	622603.65
2613	69.06	275.37	1477.02	-1445.72	-184.58	-1743.09	5774222.14	622602.72
2614	69.06	275.37	1477.38	-1446.08	-184.50	-1744.02	5774222.23	622601.79
2615	69.05	275.36	1477.74	-1446.44	-184.41	-1744.95	5774222.32	622600.86
2616	69.05	275.35	1478.10	-1446.80	-184.32	-1745.88	5774222.41	622599.93
2617	69.05	275.34	1478.45	-1447.15	-184.23	-1746.81	5774222.49	622599.00
2618	69.04	275.33	1478.81	-1447.51	-184.15	-1747.74	5774222.58	622598.07
2619	69.04	275.33	1479.17	-1447.87	-184.06	-1748.67	5774222.67	622597.14
2620	69.04	275.32	1479.53	-1448.23	-183.97	-1749.60	5774222.76	622596.21
2621	69.04	275.31	1479.88	-1448.58	-183.88	-1750.53	5774222.85	622595.28
2622	69.03	275.30	1480.24	-1448.94	-183.80	-1751.46	5774222.93	622594.35
2623	69.03	275.29	1480.60	-1449.30	-183.71	-1752.39	5774223.02	622593.42
2624	69.03	275.29	1480.95	-1449.65	-183.62	-1753.32	5774223.11	622592.49
2625	69.02	275.28	1481.31	-1450.01	-183.53	-1754.25	5774223.20	622591.56
2626	69.02	275.27	1481.67	-1450.37	-183.44	-1755.18	5774223.28	622590.63
2627	68.92	275.26	1482.05	-1450.75	-183.36	-1756.10	5774223.37	622589.71
2628	68.83	275.25	1482.43	-1451.13	-183.28	-1757.02	5774223.45	622588.79
2629	68.74	275.24	1482.81	-1451.51	-183.20	-1757.94	5774223.53	622587.87
2630	68.65	275.23	1483.19	-1451.89	-183.11	-1758.86	5774223.61	622586.95
2631	68.56	275.22	1483.56	-1452.26	-183.03	-1759.78	5774223.70	622586.02
2632	68.47	275.21	1483.94	-1452.64	-182.95	-1760.71	5774223.78	622585.10
2633	68.38	275.20	1484.32	-1453.02	-182.87	-1761.63	5774223.86	622584.18
2634	68.29	275.18	1484.70	-1453.40	-182.78	-1762.55	5774223.94	622583.26
2635	68.20	275.17	1485.08	-1453.78	-182.70	-1763.47	5774224.03	622582.34
2636	68.10	275.16	1485.46	-1454.16	-182.62	-1764.39	5774224.11	622581.42
2637	68.01	275.15	1485.84	-1454.54	-182.54	-1765.31	5774224.19	622580.49
2638	67.92	275.14	1486.22	-1454.92	-182.45	-1766.24	5774224.27	622579.57
2639	67.83	275.13	1486.60	-1455.30	-182.37	-1767.16	5774224.36	622578.65
2640	67.74	275.12	1486.98	-1455.68	-182.29	-1768.08	5774224.44	622577.73

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2641	67.65	275.11	1487.35	-1456.05	-182.21	-1769.00	5774224.52	622576.81
2642	67.56	275.10	1487.73	-1456.43	-182.12	-1769.92	5774224.61	622575.89
2643	67.47	275.09	1488.11	-1456.81	-182.04	-1770.84	5774224.69	622574.96
2644	67.38	275.08	1488.49	-1457.19	-181.96	-1771.76	5774224.77	622574.04
2645	67.28	275.07	1488.87	-1457.57	-181.88	-1772.69	5774224.85	622573.12
2646	67.19	275.06	1489.25	-1457.95	-181.79	-1773.61	5774224.94	622572.20
2647	67.10	275.05	1489.63	-1458.33	-181.71	-1774.53	5774225.02	622571.28
2648	67.01	275.04	1490.01	-1458.71	-181.63	-1775.45	5774225.10	622570.36
2649	66.92	275.03	1490.39	-1459.09	-181.54	-1776.37	5774225.18	622569.43
2650	66.83	275.02	1490.76	-1459.46	-181.46	-1777.29	5774225.27	622568.51
2651	66.74	275.00	1491.14	-1459.84	-181.38	-1778.22	5774225.35	622567.59
2652	66.65	274.99	1491.52	-1460.22	-181.30	-1779.14	5774225.43	622566.67
2653	66.55	274.98	1491.90	-1460.60	-181.21	-1780.06	5774225.51	622565.75
2654	66.46	274.97	1492.28	-1460.98	-181.13	-1780.98	5774225.60	622564.83
2655	66.35	274.96	1492.69	-1461.39	-181.05	-1781.89	5774225.67	622563.92
2656	66.24	274.96	1493.12	-1461.82	-180.98	-1782.79	5774225.75	622563.02
2657	66.12	274.95	1493.55	-1462.25	-180.90	-1783.69	5774225.83	622562.12
2658	66.00	274.94	1493.97	-1462.67	-180.82	-1784.59	5774225.90	622561.22
2659	65.89	274.93	1494.40	-1463.10	-180.75	-1785.49	5774225.98	622560.31
2660	65.77	274.93	1494.83	-1463.53	-180.67	-1786.39	5774226.06	622559.41
2661	65.65	274.92	1495.25	-1463.95	-180.59	-1787.30	5774226.13	622558.51
2662	65.54	274.91	1495.68	-1464.38	-180.52	-1788.20	5774226.21	622557.61
2663	65.42	274.90	1496.10	-1464.80	-180.44	-1789.10	5774226.29	622556.71
2664	65.30	274.90	1496.53	-1465.23	-180.36	-1790.00	5774226.36	622555.81
2665	65.19	274.89	1496.96	-1465.66	-180.29	-1790.90	5774226.44	622554.91
2666	65.07	274.88	1497.38	-1466.08	-180.21	-1791.80	5774226.52	622554.01
2667	64.96	274.87	1497.81	-1466.51	-180.13	-1792.70	5774226.59	622553.10
2668	64.84	274.86	1498.24	-1466.94	-180.06	-1793.60	5774226.67	622552.20
2669	64.72	274.86	1498.66	-1467.36	-179.98	-1794.50	5774226.75	622551.30
2670	64.61	274.85	1499.09	-1467.79	-179.90	-1795.41	5774226.82	622550.40
2671	64.49	274.84	1499.51	-1468.21	-179.83	-1796.31	5774226.90	622549.50
2672	64.37	274.83	1499.94	-1468.64	-179.75	-1797.21	5774226.98	622548.60
2673	64.26	274.83	1500.37	-1469.07	-179.67	-1798.11	5774227.05	622547.70
2674	64.14	274.82	1500.79	-1469.49	-179.60	-1799.01	5774227.13	622546.80
2675	64.02	274.81	1501.22	-1469.92	-179.52	-1799.91	5774227.21	622545.89
2676	63.91	274.80	1501.64	-1470.34	-179.44	-1800.81	5774227.28	622544.99
2677	63.79	274.80	1502.07	-1470.77	-179.37	-1801.71	5774227.36	622544.09
2678	63.67	274.79	1502.50	-1471.20	-179.29	-1802.62	5774227.44	622543.19
2679	63.56	274.78	1502.92	-1471.62	-179.21	-1803.52	5774227.51	622542.29
2680	63.44	274.77	1503.35	-1472.05	-179.14	-1804.42	5774227.59	622541.39
2681	63.32	274.76	1503.78	-1472.48	-179.06	-1805.32	5774227.67	622540.49
2682	63.21	274.76	1504.20	-1472.90	-178.98	-1806.22	5774227.74	622539.59
2683	63.09	274.75	1504.63	-1473.33	-178.91	-1807.12	5774227.82	622538.69
2684	63.02	274.75	1505.10	-1473.80	-178.83	-1808.00	5774227.89	622537.81
2685	62.95	274.75	1505.57	-1474.27	-178.76	-1808.88	5774227.97	622536.93
2686	62.88	274.76	1506.04	-1474.74	-178.69	-1809.76	5774228.04	622536.05
2687	62.81	274.76	1506.50	-1475.20	-178.61	-1810.64	5774228.12	622535.16
2688	62.74	274.76	1506.97	-1475.67	-178.54	-1811.52	5774228.19	622534.28
2689	62.66	274.76	1507.44	-1476.14	-178.47	-1812.40	5774228.26	622533.40
2690	62.59	274.76	1507.91	-1476.61	-178.39	-1813.28	5774228.34	622532.52
2691	62.52	274.77	1508.38	-1477.08	-178.32	-1814.16	5774228.41	622531.64
2692	62.45	274.77	1508.85	-1477.55	-178.25	-1815.04	5774228.48	622530.76
2693	62.38	274.77	1509.31	-1478.01	-178.17	-1815.92	5774228.56	622529.88
2694	62.31	274.77	1509.78	-1478.48	-178.10	-1816.81	5774228.63	622529.00
2695	62.24	274.78	1510.25	-1478.95	-178.02	-1817.69	5774228.70	622528.12
2696	62.16	274.78	1510.72	-1479.42	-177.95	-1818.57	5774228.78	622527.24
2697	62.09	274.78	1511.19	-1479.89	-177.88	-1819.45	5774228.85	622526.36
2698	62.02	274.78	1511.66	-1480.36	-177.80	-1820.33	5774228.93	622525.48
2699	61.95	274.78	1512.12	-1480.82	-177.73	-1821.21	5774229.00	622524.60
2700	61.88	274.79	1512.59	-1481.29	-177.66	-1822.09	5774229.07	622523.72
2701	61.81	274.79	1513.06	-1481.76	-177.58	-1822.97	5774229.15	622522.84
2702	61.73	274.79	1513.53	-1482.23	-177.51	-1823.85	5774229.22	622521.96
2703	61.66	274.79	1514.00	-1482.70	-177.44	-1824.73	5774229.29	622521.08
2704	61.59	274.79	1514.47	-1483.17	-177.36	-1825.61	5774229.37	622520.20
2705	61.52	274.80	1514.93	-1483.63	-177.29	-1826.49	5774229.44	622519.32
2706	61.45	274.80	1515.40	-1484.10	-177.21	-1827.37	5774229.51	622518.44

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2707	61.38	274.80	1515.87	-1484.57	-177.14	-1828.25	5774229.59	622517.56
2708	61.30	274.80	1516.34	-1485.04	-177.07	-1829.13	5774229.66	622516.68
2709	61.23	274.80	1516.81	-1485.51	-176.99	-1830.01	5774229.73	622515.80
2710	61.16	274.81	1517.28	-1485.98	-176.92	-1830.89	5774229.81	622514.91
2711	61.09	274.81	1517.74	-1486.44	-176.85	-1831.77	5774229.88	622514.03
2712	61.00	274.83	1518.23	-1486.93	-176.77	-1832.64	5774229.96	622513.16
2713	60.87	274.86	1518.74	-1487.44	-176.69	-1833.50	5774230.04	622512.31
2714	60.75	274.90	1519.25	-1487.95	-176.61	-1834.35	5774230.12	622511.45
2715	60.62	274.94	1519.76	-1488.46	-176.53	-1835.21	5774230.20	622510.60
2716	60.50	274.97	1520.27	-1488.97	-176.45	-1836.07	5774230.28	622509.74
2717	60.38	275.01	1520.78	-1489.48	-176.37	-1836.92	5774230.36	622508.89
2718	60.25	275.05	1521.30	-1490.00	-176.29	-1837.78	5774230.44	622508.03
2719	60.13	275.09	1521.81	-1490.51	-176.21	-1838.63	5774230.52	622507.17
2720	60.00	275.12	1522.32	-1491.02	-176.13	-1839.49	5774230.60	622506.32
2721	59.88	275.16	1522.83	-1491.53	-176.05	-1840.34	5774230.68	622505.46
2722	59.76	275.20	1523.34	-1492.04	-175.97	-1841.20	5774230.76	622504.61
2723	59.63	275.23	1523.85	-1492.55	-175.89	-1842.06	5774230.84	622503.75
2724	59.51	275.27	1524.36	-1493.06	-175.81	-1842.91	5774230.92	622502.90
2725	59.38	275.31	1524.87	-1493.57	-175.73	-1843.77	5774231.00	622502.04
2726	59.26	275.34	1525.38	-1494.08	-175.65	-1844.62	5774231.08	622501.18
2727	59.14	275.38	1525.89	-1494.59	-175.57	-1845.48	5774231.16	622500.33
2728	59.01	275.42	1526.40	-1495.10	-175.49	-1846.33	5774231.24	622499.47
2729	58.89	275.46	1526.91	-1495.61	-175.41	-1847.19	5774231.32	622498.62
2730	58.76	275.49	1527.43	-1496.13	-175.33	-1848.05	5774231.40	622497.76
2731	58.64	275.53	1527.94	-1496.64	-175.25	-1848.90	5774231.48	622496.91
2732	58.52	275.57	1528.45	-1497.15	-175.17	-1849.76	5774231.56	622496.05
2733	58.39	275.60	1528.96	-1497.66	-175.09	-1850.61	5774231.63	622495.19
2734	58.27	275.64	1529.47	-1498.17	-175.01	-1851.47	5774231.71	622494.34
2735	58.14	275.68	1529.98	-1498.68	-174.93	-1852.32	5774231.79	622493.48
2736	58.02	275.71	1530.49	-1499.19	-174.85	-1853.18	5774231.87	622492.63
2737	57.90	275.75	1531.00	-1499.70	-174.77	-1854.04	5774231.95	622491.77
2738	57.77	275.79	1531.51	-1500.21	-174.69	-1854.89	5774232.03	622490.92
2739	57.65	275.83	1532.02	-1500.72	-174.61	-1855.75	5774232.11	622490.06
2740	57.52	275.86	1532.53	-1501.23	-174.53	-1856.60	5774232.19	622489.20
2741	57.37	275.92	1533.09	-1501.79	-174.44	-1857.43	5774232.29	622488.38
2742	57.21	275.99	1533.66	-1502.36	-174.34	-1858.24	5774232.38	622487.57
2743	57.06	276.05	1534.23	-1502.93	-174.25	-1859.06	5774232.48	622486.75
2744	56.90	276.12	1534.80	-1503.50	-174.15	-1859.87	5774232.58	622485.94
2745	56.74	276.18	1535.38	-1504.08	-174.05	-1860.69	5774232.68	622485.12
2746	56.58	276.25	1535.95	-1504.65	-173.96	-1861.50	5774232.77	622484.31
2747	56.42	276.31	1536.52	-1505.22	-173.86	-1862.32	5774232.87	622483.49
2748	56.26	276.38	1537.09	-1505.79	-173.76	-1863.13	5774232.97	622482.68
2749	56.11	276.44	1537.66	-1506.36	-173.66	-1863.95	5774233.06	622481.86
2750	55.95	276.51	1538.23	-1506.93	-173.57	-1864.76	5774233.16	622481.05
2751	55.79	276.57	1538.80	-1507.50	-173.47	-1865.58	5774233.26	622480.23
2752	55.63	276.64	1539.37	-1508.07	-173.37	-1866.39	5774233.36	622479.42
2753	55.47	276.70	1539.94	-1508.64	-173.28	-1867.21	5774233.45	622478.60
2754	55.31	276.77	1540.51	-1509.21	-173.18	-1868.02	5774233.55	622477.79
2755	55.16	276.83	1541.08	-1509.78	-173.08	-1868.84	5774233.65	622476.97
2756	55.00	276.90	1541.65	-1510.35	-172.98	-1869.65	5774233.74	622476.16
2757	54.84	276.96	1542.22	-1510.92	-172.89	-1870.47	5774233.84	622475.34
2758	54.68	277.03	1542.80	-1511.50	-172.79	-1871.28	5774233.94	622474.53
2759	54.52	277.09	1543.37	-1512.07	-172.69	-1872.10	5774234.04	622473.71
2760	54.36	277.16	1543.94	-1512.64	-172.60	-1872.91	5774234.13	622472.90
2761	54.20	277.23	1544.51	-1513.21	-172.50	-1873.73	5774234.23	622472.08
2762	54.05	277.29	1545.08	-1513.78	-172.40	-1874.54	5774234.33	622471.27
2763	53.89	277.36	1545.65	-1514.35	-172.30	-1875.36	5774234.42	622470.45
2764	53.73	277.42	1546.22	-1514.92	-172.21	-1876.17	5774234.52	622469.64
2765	53.57	277.49	1546.79	-1515.49	-172.11	-1876.99	5774234.62	622468.82
2766	53.41	277.55	1547.36	-1516.06	-172.01	-1877.80	5774234.71	622468.01
2767	53.25	277.62	1547.93	-1516.63	-171.92	-1878.62	5774234.81	622467.19
2768	53.10	277.68	1548.50	-1517.20	-171.82	-1879.43	5774234.91	622466.38
2769	52.94	277.75	1549.07	-1517.77	-171.72	-1880.25	5774235.01	622465.56
2770	52.81	277.77	1549.68	-1518.38	-171.62	-1881.04	5774235.11	622464.77
2771	52.70	277.77	1550.30	-1519.00	-171.51	-1881.81	5774235.21	622464.00
2772	52.60	277.77	1550.93	-1519.63	-171.41	-1882.58	5774235.32	622463.22



MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2773	52.49	277.77	1551.55	-1520.25	-171.30	-1883.36	5774235.43	622462.45
2774	52.38	277.77	1552.18	-1520.88	-171.20	-1884.13	5774235.53	622461.68
2775	52.28	277.77	1552.80	-1521.50	-171.09	-1884.90	5774235.64	622460.90
2776	52.17	277.77	1553.43	-1522.13	-170.99	-1885.68	5774235.74	622460.13
2777	52.06	277.77	1554.05	-1522.75	-170.88	-1886.45	5774235.85	622459.36
2778	51.96	277.77	1554.67	-1523.37	-170.77	-1887.22	5774235.95	622458.58
2779	51.85	277.77	1555.30	-1524.00	-170.67	-1888.00	5774236.06	622457.81
2780	51.74	277.77	1555.92	-1524.62	-170.56	-1888.77	5774236.17	622457.03
2781	51.64	277.77	1556.55	-1525.25	-170.46	-1889.55	5774236.27	622456.26
2782	51.53	277.77	1557.17	-1525.87	-170.35	-1890.32	5774236.38	622455.49
2783	51.42	277.77	1557.80	-1526.50	-170.25	-1891.09	5774236.48	622454.71
2784	51.32	277.78	1558.42	-1527.12	-170.14	-1891.87	5774236.59	622453.94
2785	51.21	277.78	1559.05	-1527.75	-170.04	-1892.64	5774236.69	622453.17
2786	51.10	277.78	1559.67	-1528.37	-169.93	-1893.41	5774236.80	622452.39
2787	51.00	277.78	1560.29	-1528.99	-169.82	-1894.19	5774236.90	622451.62
2788	50.89	277.78	1560.92	-1529.62	-169.72	-1894.96	5774237.01	622450.85
2789	50.78	277.78	1561.54	-1530.24	-169.61	-1895.74	5774237.12	622450.07
2790	50.68	277.78	1562.17	-1530.87	-169.51	-1896.51	5774237.22	622449.30
2791	50.57	277.78	1562.79	-1531.49	-169.40	-1897.28	5774237.33	622448.52
2792	50.46	277.78	1563.42	-1532.12	-169.30	-1898.06	5774237.43	622447.75
2793	50.36	277.78	1564.04	-1532.74	-169.19	-1898.83	5774237.54	622446.98
2794	50.25	277.78	1564.67	-1533.37	-169.08	-1899.60	5774237.64	622446.20
2795	50.14	277.78	1565.29	-1533.99	-168.98	-1900.38	5774237.75	622445.43
2796	50.04	277.78	1565.92	-1534.62	-168.87	-1901.15	5774237.86	622444.66
2797	49.93	277.78	1566.54	-1535.24	-168.77	-1901.93	5774237.96	622443.88
2798	49.82	277.78	1567.16	-1535.86	-168.66	-1902.70	5774238.07	622443.11
2799	49.74	277.72	1567.82	-1536.52	-168.57	-1903.44	5774238.16	622442.36
2800	49.65	277.66	1568.49	-1537.19	-168.48	-1904.19	5774238.25	622441.62
2801	49.56	277.60	1569.15	-1537.85	-168.39	-1904.93	5774238.34	622440.87
2802	49.47	277.54	1569.81	-1538.51	-168.30	-1905.68	5774238.43	622440.13
2803	49.39	277.48	1570.47	-1539.17	-168.21	-1906.42	5774238.52	622439.39
2804	49.30	277.42	1571.13	-1539.83	-168.12	-1907.16	5774238.61	622438.64
2805	49.21	277.36	1571.80	-1540.50	-168.03	-1907.91	5774238.70	622437.90
2806	49.13	277.29	1572.46	-1541.16	-167.94	-1908.65	5774238.79	622437.15
2807	49.04	277.23	1573.12	-1541.82	-167.85	-1909.40	5774238.88	622436.41
2808	48.95	277.17	1573.78	-1542.48	-167.76	-1910.14	5774238.97	622435.67
2809	48.86	277.11	1574.44	-1543.14	-167.67	-1910.88	5774239.06	622434.92
2810	48.78	277.05	1575.10	-1543.80	-167.58	-1911.63	5774239.15	622434.18
2811	48.69	276.99	1575.77	-1544.47	-167.49	-1912.37	5774239.24	622433.43
2812	48.60	276.93	1576.43	-1545.13	-167.40	-1913.12	5774239.33	622432.69
2813	48.51	276.87	1577.09	-1545.79	-167.31	-1913.86	5774239.42	622431.95
2814	48.43	276.81	1577.75	-1546.45	-167.22	-1914.61	5774239.51	622431.20
2815	48.34	276.75	1578.41	-1547.11	-167.13	-1915.35	5774239.60	622430.46
2816	48.25	276.69	1579.08	-1547.78	-167.04	-1916.09	5774239.69	622429.71
2817	48.17	276.62	1579.74	-1548.44	-166.95	-1916.84	5774239.78	622428.97
2818	48.08	276.56	1580.40	-1549.10	-166.86	-1917.58	5774239.87	622428.23
2819	47.99	276.50	1581.06	-1549.76	-166.77	-1918.33	5774239.96	622427.48
2820	47.90	276.44	1581.72	-1550.42	-166.68	-1919.07	5774240.05	622426.74
2821	47.82	276.38	1582.38	-1551.08	-166.59	-1919.81	5774240.14	622425.99
2822	47.73	276.32	1583.05	-1551.75	-166.49	-1920.56	5774240.23	622425.25
2823	47.64	276.26	1583.71	-1552.41	-166.40	-1921.30	5774240.32	622424.51
2824	47.56	276.20	1584.37	-1553.07	-166.31	-1922.05	5774240.41	622423.76
2825	47.47	276.14	1585.03	-1553.73	-166.22	-1922.79	5774240.50	622423.02
2826	47.38	276.08	1585.69	-1554.39	-166.13	-1923.53	5774240.59	622422.27
2827	47.29	276.02	1586.36	-1555.06	-166.05	-1924.28	5774240.68	622421.53
2828	47.19	275.98	1587.05	-1555.75	-165.98	-1924.99	5774240.75	622420.82
2829	47.09	275.94	1587.75	-1556.45	-165.91	-1925.70	5774240.82	622420.10
2830	46.99	275.89	1588.45	-1557.15	-165.84	-1926.42	5774240.89	622419.39
2831	46.89	275.85	1589.14	-1557.84	-165.77	-1927.13	5774240.96	622418.67
2832	46.78	275.81	1589.84	-1558.54	-165.70	-1927.85	5774241.02	622417.96
2833	46.68	275.77	1590.54	-1559.24	-165.64	-1928.56	5774241.09	622417.25
2834	46.58	275.73	1591.23	-1559.93	-165.57	-1929.27	5774241.16	622416.53
2835	46.48	275.69	1591.93	-1560.63	-165.50	-1929.99	5774241.23	622415.82
2836	46.38	275.65	1592.63	-1561.33	-165.43	-1930.70	5774241.30	622415.10
2837	46.27	275.61	1593.32	-1562.02	-165.36	-1931.42	5774241.36	622414.39
2838	46.17	275.57	1594.02	-1562.72	-165.30	-1932.13	5774241.43	622413.68

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2839	46.07	275.53	1594.72	-1563.42	-165.23	-1932.85	5774241.50	622412.96
2840	45.97	275.48	1595.41	-1564.11	-165.16	-1933.56	5774241.57	622412.25
2841	45.87	275.44	1596.11	-1564.81	-165.09	-1934.27	5774241.64	622411.53
2842	45.77	275.40	1596.81	-1565.51	-165.02	-1934.99	5774241.70	622410.82
2843	45.66	275.36	1597.50	-1566.20	-164.96	-1935.70	5774241.77	622410.11
2844	45.56	275.32	1598.20	-1566.90	-164.89	-1936.42	5774241.84	622409.39
2845	45.46	275.28	1598.90	-1567.60	-164.82	-1937.13	5774241.91	622408.68
2846	45.36	275.24	1599.59	-1568.29	-164.75	-1937.84	5774241.98	622407.96
2847	45.26	275.20	1600.29	-1568.99	-164.68	-1938.56	5774242.05	622407.25
2848	45.15	275.16	1600.99	-1569.69	-164.61	-1939.27	5774242.11	622406.53
2849	45.05	275.12	1601.68	-1570.38	-164.55	-1939.99	5774242.18	622405.82
2850	44.95	275.08	1602.38	-1571.08	-164.48	-1940.70	5774242.25	622405.11
2851	44.85	275.03	1603.07	-1571.77	-164.41	-1941.41	5774242.32	622404.39
2852	44.75	274.99	1603.77	-1572.47	-164.34	-1942.13	5774242.39	622403.68
2853	44.65	274.95	1604.47	-1573.17	-164.27	-1942.84	5774242.45	622402.96
2854	44.54	274.91	1605.16	-1573.86	-164.21	-1943.56	5774242.52	622402.25
2855	44.44	274.87	1605.86	-1574.56	-164.14	-1944.27	5774242.59	622401.54
2856	44.34	274.85	1606.58	-1575.28	-164.07	-1944.97	5774242.65	622400.84
2857	44.22	274.86	1607.31	-1576.01	-164.02	-1945.64	5774242.71	622400.16
2858	44.11	274.86	1608.04	-1576.74	-163.96	-1946.32	5774242.77	622399.49
2859	44.00	274.87	1608.78	-1577.48	-163.90	-1947.00	5774242.83	622398.81
2860	43.89	274.88	1609.51	-1578.21	-163.84	-1947.68	5774242.89	622398.13
2861	43.78	274.88	1610.24	-1578.94	-163.78	-1948.35	5774242.95	622397.45
2862	43.67	274.89	1610.98	-1579.68	-163.72	-1949.03	5774243.00	622396.78
2863	43.56	274.90	1611.71	-1580.41	-163.67	-1949.71	5774243.06	622396.10
2864	43.44	274.90	1612.44	-1581.14	-163.61	-1950.38	5774243.12	622395.42
2865	43.33	274.91	1613.18	-1581.88	-163.55	-1951.06	5774243.18	622394.75
2866	43.22	274.91	1613.91	-1582.61	-163.49	-1951.74	5774243.24	622394.07
2867	43.11	274.92	1614.64	-1583.34	-163.43	-1952.41	5774243.30	622393.39
2868	43.00	274.93	1615.38	-1584.08	-163.37	-1953.09	5774243.35	622392.72
2869	42.89	274.93	1616.11	-1584.81	-163.32	-1953.77	5774243.41	622392.04
2870	42.78	274.94	1616.84	-1585.54	-163.26	-1954.45	5774243.47	622391.36
2871	42.66	274.94	1617.58	-1586.28	-163.20	-1955.12	5774243.53	622390.68
2872	42.55	274.95	1618.31	-1587.01	-163.14	-1955.80	5774243.59	622390.01
2873	42.44	274.96	1619.04	-1587.74	-163.08	-1956.48	5774243.65	622389.33
2874	42.33	274.96	1619.78	-1588.48	-163.02	-1957.15	5774243.71	622388.65
2875	42.22	274.97	1620.51	-1589.21	-162.96	-1957.83	5774243.76	622387.98
2876	42.11	274.97	1621.25	-1589.95	-162.91	-1958.51	5774243.82	622387.30
2877	42.00	274.98	1621.98	-1590.68	-162.85	-1959.19	5774243.88	622386.62
2878	41.88	274.99	1622.71	-1591.41	-162.79	-1959.86	5774243.94	622385.94
2879	41.77	274.99	1623.45	-1592.15	-162.73	-1960.54	5774244.00	622385.27
2880	41.66	275.00	1624.18	-1592.88	-162.67	-1961.22	5774244.06	622384.59
2881	41.55	275.00	1624.91	-1593.61	-162.61	-1961.89	5774244.11	622383.91
2882	41.44	275.01	1625.65	-1594.35	-162.56	-1962.57	5774244.17	622383.24
2883	41.33	275.02	1626.38	-1595.08	-162.50	-1963.25	5774244.23	622382.56
2884	41.22	275.01	1627.12	-1595.82	-162.44	-1963.92	5774244.29	622381.89
2885	41.13	274.98	1627.89	-1596.59	-162.39	-1964.56	5774244.34	622381.25
2886	41.04	274.96	1628.65	-1597.35	-162.34	-1965.20	5774244.39	622380.61
2887	40.95	274.93	1629.42	-1598.12	-162.29	-1965.84	5774244.44	622379.97
2888	40.85	274.90	1630.19	-1598.89	-162.23	-1966.48	5774244.49	622379.33
2889	40.76	274.87	1630.95	-1599.65	-162.18	-1967.12	5774244.55	622378.69
2890	40.67	274.84	1631.72	-1600.42	-162.13	-1967.76	5774244.60	622378.05
2891	40.58	274.81	1632.49	-1601.19	-162.08	-1968.40	5774244.65	622377.41
2892	40.49	274.78	1633.25	-1601.95	-162.03	-1969.04	5774244.70	622376.77
2893	40.39	274.75	1634.02	-1602.72	-161.98	-1969.68	5774244.75	622376.13
2894	40.30	274.72	1634.79	-1603.49	-161.92	-1970.32	5774244.80	622375.49
2895	40.21	274.69	1635.55	-1604.25	-161.87	-1970.95	5774244.86	622374.85
2896	40.12	274.66	1636.32	-1605.02	-161.82	-1971.59	5774244.91	622374.21
2897	40.03	274.63	1637.09	-1605.79	-161.77	-1972.23	5774244.96	622373.57
2898	39.94	274.60	1637.85	-1606.55	-161.72	-1972.87	5774245.01	622372.93
2899	39.84	274.57	1638.62	-1607.32	-161.67	-1973.51	5774245.06	622372.29
2900	39.75	274.54	1639.39	-1608.09	-161.61	-1974.15	5774245.11	622371.65
2901	39.66	274.52	1640.15	-1608.85	-161.56	-1974.79	5774245.17	622371.01
2902	39.57	274.49	1640.92	-1609.62	-161.51	-1975.43	5774245.22	622370.37
2903	39.48	274.46	1641.69	-1610.39	-161.46	-1976.07	5774245.27	622369.73
2904	39.38	274.43	1642.45	-1611.15	-161.41	-1976.71	5774245.32	622369.09

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2905	39.29	274.40	1643.22	-1611.92	-161.36	-1977.35	5774245.37	622368.45
2906	39.20	274.37	1643.99	-1612.69	-161.30	-1977.99	5774245.42	622367.81
2907	39.11	274.34	1644.75	-1613.45	-161.25	-1978.63	5774245.48	622367.17
2908	39.02	274.31	1645.52	-1614.22	-161.20	-1979.27	5774245.53	622366.53
2909	38.93	274.28	1646.29	-1614.99	-161.15	-1979.91	5774245.58	622365.89
2910	38.83	274.25	1647.05	-1615.75	-161.10	-1980.55	5774245.63	622365.26
2911	38.74	274.22	1647.82	-1616.52	-161.05	-1981.19	5774245.68	622364.62
2912	38.65	274.19	1648.59	-1617.29	-160.99	-1981.83	5774245.73	622363.98
2913	38.55	274.19	1649.38	-1618.08	-160.95	-1982.44	5774245.78	622363.37
2914	38.44	274.18	1650.18	-1618.88	-160.91	-1983.04	5774245.82	622362.77
2915	38.34	274.18	1650.97	-1619.67	-160.86	-1983.64	5774245.87	622362.17
2916	38.23	274.18	1651.77	-1620.47	-160.82	-1984.24	5774245.91	622361.56
2917	38.12	274.18	1652.57	-1621.27	-160.77	-1984.84	5774245.95	622360.96
2918	38.02	274.17	1653.37	-1622.07	-160.73	-1985.45	5774246.00	622360.36
2919	37.91	274.17	1654.16	-1622.86	-160.69	-1986.05	5774246.04	622359.76
2920	37.81	274.17	1654.96	-1623.66	-160.64	-1986.65	5774246.08	622359.16
2921	37.70	274.17	1655.76	-1624.46	-160.60	-1987.25	5774246.13	622358.56
2922	37.60	274.16	1656.56	-1625.26	-160.56	-1987.85	5774246.17	622357.95
2923	37.49	274.16	1657.35	-1626.05	-160.51	-1988.45	5774246.22	622357.35
2924	37.39	274.16	1658.15	-1626.85	-160.47	-1989.06	5774246.26	622356.75
2925	37.28	274.15	1658.95	-1627.65	-160.43	-1989.66	5774246.30	622356.15
2926	37.18	274.15	1659.75	-1628.45	-160.38	-1990.26	5774246.35	622355.55
2927	37.07	274.15	1660.54	-1629.24	-160.34	-1990.86	5774246.39	622354.95
2928	36.97	274.15	1661.34	-1630.04	-160.29	-1991.46	5774246.43	622354.35
2929	36.86	274.14	1662.14	-1630.84	-160.25	-1992.06	5774246.48	622353.74
2930	36.76	274.14	1662.94	-1631.64	-160.21	-1992.67	5774246.52	622353.14
2931	36.65	274.14	1663.73	-1632.43	-160.16	-1993.27	5774246.57	622352.54
2932	36.55	274.14	1664.53	-1633.23	-160.12	-1993.87	5774246.61	622351.94
2933	36.44	274.13	1665.33	-1634.03	-160.08	-1994.47	5774246.65	622351.34
2934	36.33	274.13	1666.13	-1634.83	-160.03	-1995.07	5774246.70	622350.74
2935	36.23	274.13	1666.92	-1635.62	-159.99	-1995.67	5774246.74	622350.13
2936	36.12	274.12	1667.72	-1636.42	-159.94	-1996.28	5774246.78	622349.53
2937	36.02	274.12	1668.52	-1637.22	-159.90	-1996.88	5774246.83	622348.93
2938	35.91	274.12	1669.32	-1638.02	-159.86	-1997.48	5774246.87	622348.33
2939	35.81	274.12	1670.11	-1638.81	-159.81	-1998.08	5774246.92	622347.73
2940	35.70	274.11	1670.91	-1639.61	-159.77	-1998.68	5774246.96	622347.13
2941	35.60	274.11	1671.71	-1640.41	-159.73	-1999.28	5774247.00	622346.52
2942	35.48	274.12	1672.53	-1641.23	-159.68	-1999.85	5774247.04	622345.96
2943	35.36	274.13	1673.36	-1642.06	-159.64	-2000.41	5774247.09	622345.40
2944	35.24	274.15	1674.19	-1642.89	-159.60	-2000.96	5774247.13	622344.85
2945	35.13	274.16	1675.02	-1643.72	-159.56	-2001.52	5774247.17	622344.29
2946	35.01	274.17	1675.85	-1644.55	-159.52	-2002.07	5774247.21	622343.73
2947	34.89	274.18	1676.68	-1645.38	-159.48	-2002.63	5774247.25	622343.18
2948	34.77	274.20	1677.51	-1646.21	-159.43	-2003.18	5774247.29	622342.62
2949	34.65	274.21	1678.34	-1647.04	-159.39	-2003.74	5774247.34	622342.07
2950	34.53	274.22	1679.17	-1647.87	-159.35	-2004.29	5774247.38	622341.51
2951	34.41	274.23	1680.00	-1648.70	-159.31	-2004.85	5774247.42	622340.96
2952	34.29	274.25	1680.83	-1649.53	-159.27	-2005.41	5774247.46	622340.40
2953	34.17	274.26	1681.66	-1650.36	-159.23	-2005.96	5774247.50	622339.85
2954	34.06	274.27	1682.49	-1651.19	-159.18	-2006.52	5774247.54	622339.29
2955	33.94	274.29	1683.32	-1652.02	-159.14	-2007.07	5774247.59	622338.74
2956	33.82	274.30	1684.16	-1652.86	-159.10	-2007.63	5774247.63	622338.18
2957	33.70	274.31	1684.99	-1653.69	-159.06	-2008.18	5774247.67	622337.62
2958	33.58	274.32	1685.82	-1654.52	-159.02	-2008.74	5774247.71	622337.07
2959	33.46	274.34	1686.65	-1655.35	-158.98	-2009.29	5774247.75	622336.51
2960	33.34	274.35	1687.48	-1656.18	-158.93	-2009.85	5774247.79	622335.96
2961	33.22	274.36	1688.31	-1657.01	-158.89	-2010.40	5774247.84	622335.40
2962	33.10	274.38	1689.14	-1657.84	-158.85	-2010.96	5774247.88	622334.85
2963	32.99	274.39	1689.97	-1658.67	-158.81	-2011.52	5774247.92	622334.29
2964	32.87	274.40	1690.80	-1659.50	-158.77	-2012.07	5774247.96	622333.74
2965	32.75	274.41	1691.63	-1660.33	-158.73	-2012.63	5774248.00	622333.18
2966	32.63	274.43	1692.46	-1661.16	-158.69	-2013.18	5774248.04	622332.63
2967	32.51	274.44	1693.29	-1661.99	-158.64	-2013.74	5774248.08	622332.07
2968	32.39	274.45	1694.12	-1662.82	-158.60	-2014.29	5774248.13	622331.51
2969	32.27	274.47	1694.95	-1663.65	-158.56	-2014.85	5774248.17	622330.96
2970	32.15	274.48	1695.78	-1664.48	-158.52	-2015.40	5774248.21	622330.40

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2971	32.06	274.49	1696.63	-1665.33	-158.48	-2015.92	5774248.25	622329.89
2972	31.97	274.49	1697.49	-1666.19	-158.44	-2016.43	5774248.29	622329.38
2973	31.89	274.50	1698.35	-1667.05	-158.40	-2016.94	5774248.33	622328.86
2974	31.80	274.51	1699.21	-1667.91	-158.35	-2017.45	5774248.37	622328.35
2975	31.71	274.51	1700.07	-1668.77	-158.31	-2017.97	5774248.41	622327.84
2976	31.63	274.52	1700.93	-1669.63	-158.27	-2018.48	5774248.46	622327.33
2977	31.54	274.53	1701.78	-1670.48	-158.23	-2018.99	5774248.50	622326.82
2978	31.45	274.53	1702.64	-1671.34	-158.19	-2019.50	5774248.54	622326.31
2979	31.36	274.54	1703.50	-1672.20	-158.15	-2020.01	5774248.58	622325.79
2980	31.28	274.55	1704.36	-1673.06	-158.11	-2020.52	5774248.62	622325.28
2981	31.19	274.55	1705.22	-1673.92	-158.07	-2021.04	5774248.66	622324.77
2982	31.10	274.56	1706.07	-1674.77	-158.03	-2021.55	5774248.70	622324.26
2983	31.01	274.57	1706.93	-1675.63	-157.99	-2022.06	5774248.74	622323.75
2984	30.93	274.57	1707.79	-1676.49	-157.95	-2022.57	5774248.78	622323.24
2985	30.84	274.58	1708.65	-1677.35	-157.90	-2023.08	5774248.82	622322.72
2986	30.75	274.59	1709.51	-1678.21	-157.86	-2023.59	5774248.86	622322.21
2987	30.66	274.59	1710.36	-1679.06	-157.82	-2024.11	5774248.91	622321.70
2988	30.58	274.60	1711.22	-1679.92	-157.78	-2024.62	5774248.95	622321.19
2989	30.49	274.61	1712.08	-1680.78	-157.74	-2025.13	5774248.99	622320.68
2990	30.40	274.61	1712.94	-1681.64	-157.70	-2025.64	5774249.03	622320.17
2991	30.31	274.62	1713.80	-1682.50	-157.66	-2026.15	5774249.07	622319.65
2992	30.23	274.62	1714.66	-1683.36	-157.62	-2026.66	5774249.11	622319.14
2993	30.14	274.63	1715.51	-1684.21	-157.58	-2027.18	5774249.15	622318.63
2994	30.05	274.64	1716.37	-1685.07	-157.54	-2027.69	5774249.19	622318.12
2995	29.96	274.64	1717.23	-1685.93	-157.50	-2028.20	5774249.23	622317.61
2996	29.88	274.65	1718.09	-1686.79	-157.45	-2028.71	5774249.27	622317.10
2997	29.79	274.66	1718.95	-1687.65	-157.41	-2029.22	5774249.31	622316.58
2998	29.70	274.66	1719.80	-1688.50	-157.37	-2029.73	5774249.36	622316.07
2999	29.63	274.67	1720.66	-1689.36	-157.33	-2030.24	5774249.40	622315.57
3000	29.61	274.66	1721.54	-1690.24	-157.29	-2030.73	5774249.44	622315.08
3001	29.60	274.66	1722.41	-1691.11	-157.25	-2031.22	5774249.47	622314.59
3002	29.59	274.65	1723.28	-1691.98	-157.21	-2031.71	5774249.51	622314.10
3003	29.57	274.64	1724.15	-1692.85	-157.18	-2032.20	5774249.55	622313.61
3004	29.56	274.64	1725.02	-1693.72	-157.14	-2032.69	5774249.59	622313.12
3005	29.55	274.63	1725.89	-1694.59	-157.10	-2033.18	5774249.63	622312.63
3006	29.53	274.62	1726.76	-1695.46	-157.06	-2033.67	5774249.67	622312.14
3007	29.52	274.62	1727.63	-1696.33	-157.02	-2034.16	5774249.71	622311.65
3008	29.51	274.61	1728.50	-1697.20	-156.98	-2034.65	5774249.75	622311.16
3009	29.49	274.60	1729.37	-1698.07	-156.94	-2035.14	5774249.79	622310.67
3010	29.48	274.60	1730.24	-1698.94	-156.90	-2035.63	5774249.83	622310.18
3011	29.47	274.59	1731.11	-1699.81	-156.86	-2036.12	5774249.87	622309.69
3012	29.45	274.58	1731.99	-1700.69	-156.82	-2036.61	5774249.91	622309.20
3013	29.44	274.58	1732.86	-1701.56	-156.78	-2037.10	5774249.95	622308.71
3014	29.43	274.57	1733.73	-1702.43	-156.74	-2037.59	5774249.98	622308.22
3015	29.41	274.56	1734.60	-1703.30	-156.70	-2038.08	5774250.02	622307.73
3016	29.40	274.56	1735.47	-1704.17	-156.67	-2038.57	5774250.06	622307.24
3017	29.39	274.55	1736.34	-1705.04	-156.63	-2039.06	5774250.10	622306.75
3018	29.37	274.54	1737.21	-1705.91	-156.59	-2039.55	5774250.14	622306.26
3019	29.36	274.54	1738.08	-1706.78	-156.55	-2040.04	5774250.18	622305.77
3020	29.35	274.53	1738.95	-1707.65	-156.51	-2040.53	5774250.22	622305.28
3021	29.33	274.52	1739.82	-1708.52	-156.47	-2041.02	5774250.26	622304.79
3022	29.32	274.52	1740.69	-1709.39	-156.43	-2041.51	5774250.30	622304.30
3023	29.31	274.51	1741.57	-1710.27	-156.39	-2042.00	5774250.34	622303.81
3024	29.29	274.50	1742.44	-1711.14	-156.35	-2042.49	5774250.38	622303.32
3025	29.28	274.50	1743.31	-1712.01	-156.31	-2042.98	5774250.42	622302.83
3026	29.27	274.49	1744.18	-1712.88	-156.27	-2043.47	5774250.46	622302.34
3027	29.25	274.48	1745.05	-1713.75	-156.23	-2043.96	5774250.49	622301.85
3028	29.25	274.48	1745.92	-1714.62	-156.20	-2044.45	5774250.53	622301.36
3029	29.24	274.49	1746.79	-1715.49	-156.16	-2044.93	5774250.57	622300.87
3030	29.23	274.49	1747.67	-1716.37	-156.12	-2045.42	5774250.61	622300.39
3031	29.22	274.50	1748.54	-1717.24	-156.08	-2045.90	5774250.65	622299.90
3032	29.22	274.50	1749.41	-1718.11	-156.04	-2046.39	5774250.69	622299.42
3033	29.21	274.50	1750.29	-1718.99	-156.00	-2046.87	5774250.73	622298.93
3034	29.20	274.51	1751.16	-1719.86	-155.96	-2047.36	5774250.76	622298.45
3035	29.19	274.51	1752.03	-1720.73	-155.93	-2047.85	5774250.80	622297.96
3036	29.19	274.52	1752.91	-1721.61	-155.89	-2048.33	5774250.84	622297.48

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3037	29.18	274.52	1753.78	-1722.48	-155.85	-2048.82	5774250.88	622296.99
3038	29.17	274.53	1754.66	-1723.36	-155.81	-2049.30	5774250.92	622296.51
3039	29.16	274.53	1755.53	-1724.23	-155.77	-2049.79	5774250.96	622296.02
3040	29.16	274.53	1756.40	-1725.10	-155.73	-2050.27	5774251.00	622295.53
3041	29.15	274.54	1757.28	-1725.98	-155.69	-2050.76	5774251.03	622295.05
3042	29.14	274.54	1758.15	-1726.85	-155.66	-2051.24	5774251.07	622294.56
3043	29.13	274.55	1759.02	-1727.72	-155.62	-2051.73	5774251.11	622294.08
3044	29.13	274.55	1759.90	-1728.60	-155.58	-2052.21	5774251.15	622293.59
3045	29.12	274.56	1760.77	-1729.47	-155.54	-2052.70	5774251.19	622293.11
3046	29.11	274.56	1761.64	-1730.34	-155.50	-2053.19	5774251.23	622292.62
3047	29.10	274.56	1762.52	-1731.22	-155.46	-2053.67	5774251.27	622292.14
3048	29.10	274.57	1763.39	-1732.09	-155.42	-2054.16	5774251.30	622291.65
3049	29.09	274.57	1764.26	-1732.96	-155.39	-2054.64	5774251.34	622291.17
3050	29.08	274.58	1765.14	-1733.84	-155.35	-2055.13	5774251.38	622290.68
3051	29.07	274.58	1766.01	-1734.71	-155.31	-2055.61	5774251.42	622290.19
3052	29.07	274.59	1766.88	-1735.58	-155.27	-2056.10	5774251.46	622289.71
3053	29.06	274.59	1767.76	-1736.46	-155.23	-2056.58	5774251.50	622289.22
3054	29.05	274.59	1768.63	-1737.33	-155.19	-2057.07	5774251.54	622288.74
3055	29.04	274.60	1769.50	-1738.20	-155.15	-2057.55	5774251.57	622288.25
3056	29.05	274.60	1770.38	-1739.08	-155.12	-2058.04	5774251.61	622287.77
3057	29.06	274.59	1771.25	-1739.95	-155.08	-2058.53	5774251.65	622287.28
3058	29.07	274.59	1772.12	-1740.82	-155.04	-2059.01	5774251.69	622286.79
3059	29.09	274.58	1772.99	-1741.69	-155.00	-2059.50	5774251.73	622286.31
3060	29.10	274.58	1773.87	-1742.57	-154.96	-2059.99	5774251.77	622285.82
3061	29.11	274.58	1774.74	-1743.44	-154.92	-2060.48	5774251.81	622285.33
3062	29.13	274.57	1775.61	-1744.31	-154.88	-2060.96	5774251.84	622284.85
3063	29.14	274.57	1776.48	-1745.18	-154.85	-2061.45	5774251.88	622284.36
3064	29.15	274.56	1777.36	-1746.06	-154.81	-2061.94	5774251.92	622283.87
3065	29.17	274.56	1778.23	-1746.93	-154.77	-2062.42	5774251.96	622283.38
3066	29.18	274.55	1779.10	-1747.80	-154.73	-2062.91	5774252.00	622282.90
3067	29.19	274.55	1779.98	-1748.68	-154.69	-2063.40	5774252.04	622282.41
3068	29.21	274.54	1780.85	-1749.55	-154.65	-2063.88	5774252.08	622281.92
3069	29.22	274.54	1781.72	-1750.42	-154.61	-2064.37	5774252.11	622281.44
3070	29.23	274.53	1782.59	-1751.29	-154.58	-2064.86	5774252.15	622280.95
3071	29.25	274.53	1783.47	-1752.17	-154.54	-2065.34	5774252.19	622280.46
3072	29.26	274.52	1784.34	-1753.04	-154.50	-2065.83	5774252.23	622279.98
3073	29.27	274.52	1785.21	-1753.91	-154.46	-2066.32	5774252.27	622279.49
3074	29.29	274.52	1786.08	-1754.78	-154.42	-2066.80	5774252.31	622279.00
3075	29.30	274.51	1786.96	-1755.66	-154.38	-2067.29	5774252.35	622278.52
3076	29.31	274.51	1787.83	-1756.53	-154.34	-2067.78	5774252.38	622278.03
3077	29.33	274.50	1788.70	-1757.40	-154.31	-2068.26	5774252.42	622277.54
3078	29.34	274.50	1789.57	-1758.27	-154.27	-2068.75	5774252.46	622277.06
3079	29.35	274.49	1790.45	-1759.15	-154.23	-2069.24	5774252.50	622276.57
3080	29.37	274.49	1791.32	-1760.02	-154.19	-2069.72	5774252.54	622276.08
3081	29.38	274.48	1792.19	-1760.89	-154.15	-2070.21	5774252.58	622275.60
3082	29.39	274.48	1793.07	-1761.77	-154.11	-2070.70	5774252.62	622275.11
3083	29.41	274.47	1793.94	-1762.64	-154.07	-2071.19	5774252.65	622274.62
3084	29.42	274.47	1794.81	-1763.51	-154.03	-2071.67	5774252.69	622274.14
3085	29.43	274.46	1795.68	-1764.38	-154.00	-2072.16	5774252.73	622273.64
3086	29.44	274.46	1796.55	-1765.25	-153.96	-2072.66	5774252.77	622273.15
3087	29.45	274.45	1797.42	-1766.12	-153.92	-2073.15	5774252.81	622272.66
3088	29.46	274.45	1798.29	-1766.99	-153.88	-2073.64	5774252.84	622272.17
3089	29.47	274.44	1799.16	-1767.86	-153.85	-2074.13	5774252.88	622271.68
3090	29.48	274.43	1800.03	-1768.73	-153.81	-2074.62	5774252.92	622271.18
3091	29.49	274.43	1800.90	-1769.60	-153.77	-2075.11	5774252.96	622270.69
3092	29.49	274.42	1801.77	-1770.47	-153.73	-2075.61	5774252.99	622270.20
3093	29.50	274.41	1802.64	-1771.34	-153.70	-2076.10	5774253.03	622269.71
3094	29.51	274.41	1803.51	-1772.21	-153.66	-2076.59	5774253.07	622269.22
3095	29.52	274.40	1804.38	-1773.08	-153.62	-2077.08	5774253.11	622268.73
3096	29.53	274.40	1805.25	-1773.95	-153.58	-2077.57	5774253.15	622268.23
3097	29.54	274.39	1806.12	-1774.82	-153.55	-2078.07	5774253.18	622267.74
3098	29.55	274.38	1806.99	-1775.69	-153.51	-2078.56	5774253.22	622267.25
3099	29.56	274.38	1807.86	-1776.56	-153.47	-2079.05	5774253.26	622266.76
3100	29.57	274.37	1808.73	-1777.43	-153.43	-2079.54	5774253.30	622266.27
3101	29.58	274.36	1809.60	-1778.30	-153.39	-2080.03	5774253.33	622265.77
3102	29.59	274.36	1810.47	-1779.17	-153.36	-2080.52	5774253.37	622265.28

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3103	29.60	274.35	1811.34	-1780.04	-153.32	-2081.02	5774253.41	622264.79
3104	29.61	274.35	1812.21	-1780.91	-153.28	-2081.51	5774253.45	622264.30
3105	29.62	274.34	1813.08	-1781.78	-153.24	-2082.00	5774253.48	622263.81
3106	29.63	274.33	1813.95	-1782.65	-153.21	-2082.49	5774253.52	622263.32
3107	29.64	274.33	1814.82	-1783.52	-153.17	-2082.98	5774253.56	622262.82
3108	29.64	274.32	1815.69	-1784.39	-153.13	-2083.47	5774253.60	622262.33
3109	29.65	274.31	1816.56	-1785.26	-153.09	-2083.97	5774253.64	622261.84
3110	29.66	274.31	1817.43	-1786.13	-153.06	-2084.46	5774253.67	622261.35
3111	29.67	274.30	1818.30	-1787.00	-153.02	-2084.95	5774253.71	622260.86
3112	29.68	274.30	1819.17	-1787.87	-152.98	-2085.44	5774253.75	622260.37
3113	29.69	274.29	1820.04	-1788.74	-152.94	-2085.93	5774253.79	622259.87
3114	29.72	274.30	1820.90	-1789.60	-152.91	-2086.43	5774253.82	622259.38
3115	29.75	274.30	1821.77	-1790.47	-152.87	-2086.93	5774253.86	622258.88
3116	29.78	274.31	1822.64	-1791.34	-152.83	-2087.42	5774253.90	622258.39
3117	29.81	274.31	1823.51	-1792.21	-152.79	-2087.92	5774253.94	622257.89
3118	29.84	274.31	1824.38	-1793.08	-152.76	-2088.41	5774253.97	622257.39
3119	29.87	274.32	1825.24	-1793.94	-152.72	-2088.91	5774254.01	622256.90
3120	29.90	274.32	1826.11	-1794.81	-152.68	-2089.40	5774254.05	622256.40
3121	29.93	274.33	1826.98	-1795.68	-152.64	-2089.90	5774254.08	622255.91
3122	29.93	274.33	1827.84	-1796.54	-152.61	-2090.40	5774254.12	622255.41
3123	29.93	274.34	1828.71	-1797.41	-152.57	-2090.90	5774254.16	622254.91
3124	29.94	274.34	1829.58	-1798.28	-152.53	-2091.39	5774254.20	622254.41
3125	29.94	274.34	1830.44	-1799.14	-152.49	-2091.89	5774254.24	622253.92
3126	29.94	274.35	1831.31	-1800.01	-152.45	-2092.39	5774254.27	622253.42
3127	29.94	274.35	1832.18	-1800.88	-152.42	-2092.89	5774254.31	622252.92
3128	29.94	274.35	1833.04	-1801.74	-152.38	-2093.38	5774254.35	622252.42
3129	29.95	274.36	1833.91	-1802.61	-152.34	-2093.88	5774254.39	622251.92
3130	29.95	274.36	1834.78	-1803.48	-152.30	-2094.38	5774254.43	622251.43
3131	29.95	274.36	1835.64	-1804.34	-152.26	-2094.88	5774254.46	622250.93
3132	29.95	274.37	1836.51	-1805.21	-152.23	-2095.38	5774254.50	622250.43
3133	29.95	274.37	1837.38	-1806.08	-152.19	-2095.87	5774254.54	622249.93
3134	29.95	274.37	1838.24	-1806.94	-152.15	-2096.37	5774254.58	622249.44
3135	29.96	274.38	1839.11	-1807.81	-152.11	-2096.87	5774254.62	622248.94
3136	29.96	274.38	1839.98	-1808.68	-152.07	-2097.37	5774254.65	622248.44
3137	29.96	274.38	1840.84	-1809.54	-152.04	-2097.87	5774254.69	622247.94
3138	29.96	274.39	1841.71	-1810.41	-152.00	-2098.36	5774254.73	622247.44
3139	29.96	274.39	1842.57	-1811.27	-151.96	-2098.86	5774254.77	622246.95
3140	29.97	274.39	1843.44	-1812.14	-151.92	-2099.36	5774254.81	622246.45
3141	29.97	274.40	1844.31	-1813.01	-151.88	-2099.86	5774254.84	622245.95
3142	29.97	274.40	1845.17	-1813.87	-151.85	-2100.35	5774254.88	622245.45

## **APPENDIX 2a**

### **TUNA A14A**

#### **Petrophysics Evaluation Summary**

**Esso Australia Pty Ltd.**  
**Exploration Department**

**Tuna A14A**  
**Petrophysics Report**

**Petrophysicist: K.Kuttan**



## Tuna A14A Log Interpretation

Tuna A14A is a directional well drilled from the plugged and abandoned Tuna A14 well. It was designed to reach the M-1 Sands (primary target) and L Sands (secondary target). The well was spudded on the 4th of March 2005 through a window cut in the Tuna A14, 9.625inch casing at 845mMD. A 8.5" hole was drilled to 3142mMD and the well was logged with the Reeves Shuttle Logging system from 3130m to 844.8mMD. 7" production casing was then run after logging was completed. The well was completed a single 3½" completion and handed over to Production on the 23rd of March 2005.

The Reeves wireline equivalent logs have been analysed for porosity, water saturation and net pay over the interval 2251 - 3097 mMD.

Note that all depth quoted in this report are logged mMDRT unless otherwise specified

### DATA

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

Survey/Log	Suite	Company	Top (m MDRT)	Bottom (m MDRT)
Compact Gamma Ray - Compact Dual Neutron - Compact Photodensity - Compact Sonic - Compact Dual Laterolog	1	Reeves	844.8	3130

### Deviation

The well angle over the M and L reservoirs was 67 degrees.

### Mud Data

Mud Type : KCl/Glycol/PHPA  
Mud Weight: 10.0 ppg  
Rm: 0.107 @ 25 °C  
Rmf: 0.084 @ 25 °C  
Rmc: 0.258 @ 25 °C  
BHT: 85.4 °C

### Hole Size

829 – 3406 mMDRT 8½ inches

### Data Acquisition & Log Quality

No problems were encountered in the acquisition of the logs. As for the data quality the resistivity data is not totally satisfactory. The apparent “jagged” nature of the deep laterolog in a number of intervals is not in keeping with responses observed in previous wells logged with conventional wireline or LWD resistivity logs. However, as the resistivity logs were able to clearly identify hydrocarbon bearing zones from water bearing intervals it was felt there was insufficient justification for re-running the logs

### Data Processing

The only depth adjustment to the logs was made by Reeves logging in that the memory logs were depth matched to the LWD GR. resistivity, density, neutron, gr and sonic logs from the two suites were merged. The DDL (deep laterolog).

## INTERPRETATION

### Logs Used

The primary logs used in the interpretation were DDLL (deep resistivity), GRGC (compact gamma ray), DEN (bulk density) and NPRL (thermal neutron porosity in LPU). In addition coal intervals were identified using a coal flag (Flag\_coal). Hydrocarbon types were denoted using a hydrocarbon flag (Flag\_rhoh). A temperature log was created using the following data. The listed temperatures were derived from a geothermal gradient determined from the maximum measured temperatures during logging:

Depth	Temperature (deg. C)
2000	57.58
3142	86.0

### Formation Water Salinity

$R_{wa}$  analysis using  $a = 1$ ,  $m = 2$  and  $n = 2$  indicates clean water sands have an apparent formation water salinity of 22,000 ppm NaCl equivalent.

### Hydrocarbon Type Identification

In the M-1 reservoir, the density-neutron logs suggest that it is gas bearing down to 2418m MD and the PHIX-DT plot (Fig.1) suggest that GOC is probably at 2619.5mMD (1377.6m TVDSS).

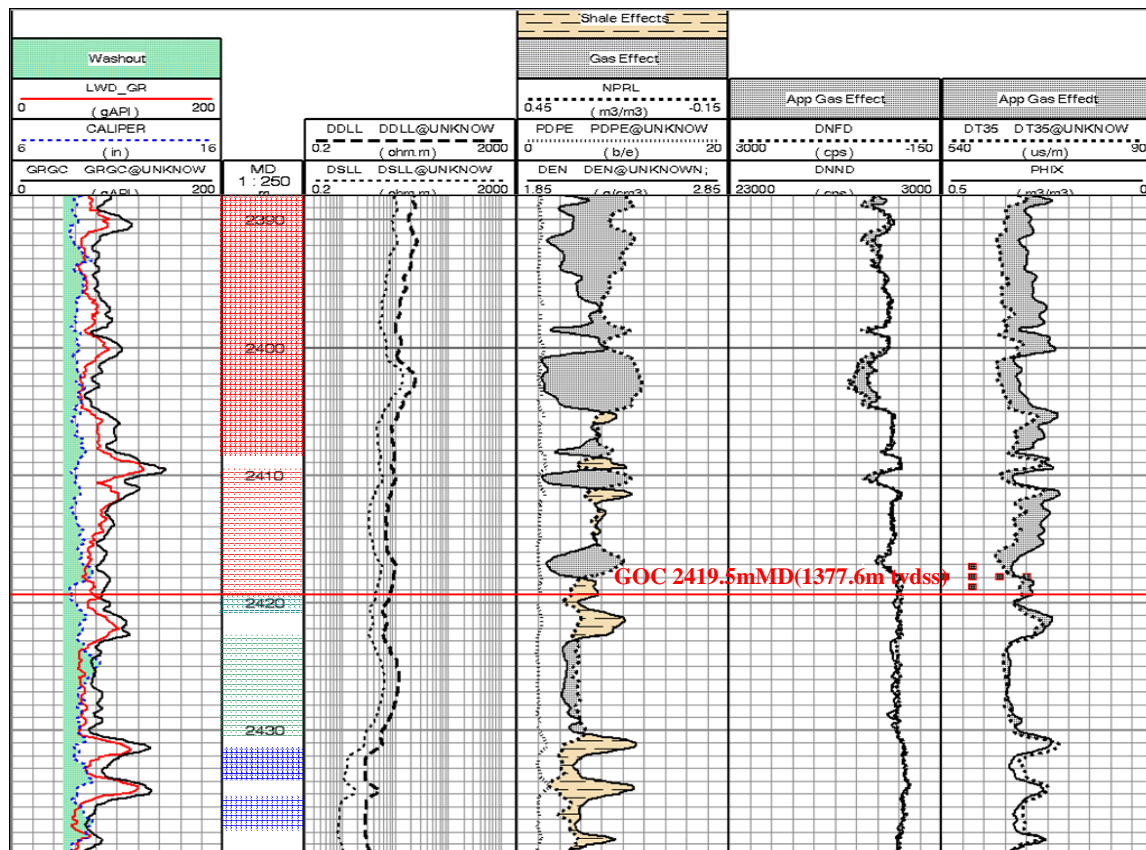


Figure 1: M-1 Hydrocarbon Type and Fluid Contacts

There are three other hydrocarbon bearing zones in the well and they are all occur in clean reservoirs. The hydrocarbon type present in these is interpreted to be oil due to the absence of gas effect on the density-neutron logs.

Shale Volume, Porosity and Water Saturation

Schlumberger's Geoframe ELAN+ module was used to determine mineral volumes, total porosity, effective porosity and effective saturation. The details of the models are illustrated in the figures and tables below.

ELAN+ MODEL

ELAN Processes

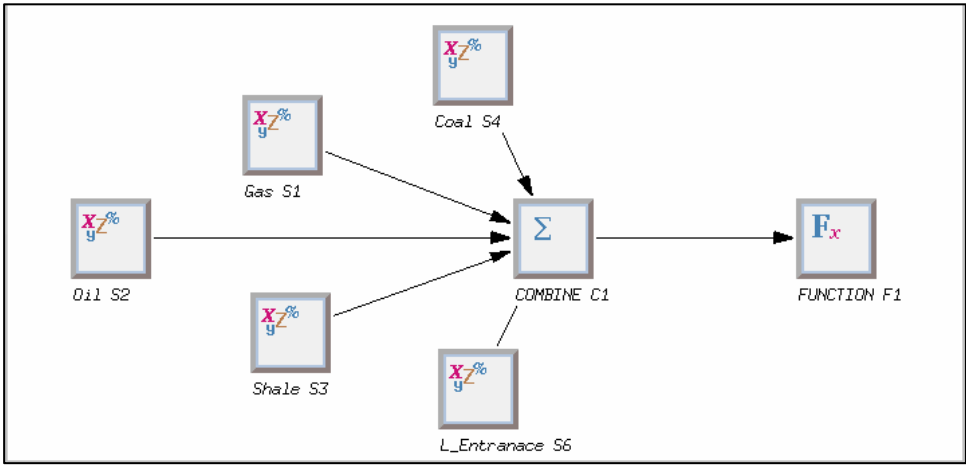


Figure 2: Elan + Model and Module Configuration

ELAN Input Channels

Log Curve Selector		Selector Options	
		Compound Name Spec	TUNA A14A
TEMP_CH	TEMP;*	TEMP	TEMP@Elan_Input;2 [A1997114]
RHOB_IFAC_CH	IFRH;*		
NPFI_IFAC_CH	INPH;*		
RHOB_CH	DEN:BPB;*	DEN	DEN@Elan_Input;7 [A1997106]
NPFI_CH	NPRL:BPB;*	NPRL	NPRL@UNKNOWN;7 [A2000208]
CUDC_CH/RT_CH	DDLL:BPB;*	DDLL	DDLL@Elan_Input;6 [A1997096]
GR_CH	GRGC:BPB;*	GRGC	GRGC@Elan_Input;7 [A1997109]
PRB1_CH	FLAG_RHOH;*	FLAG_RHOH	FLAG_RHOH@Elan_Input;2 [A1997107]
PRB2_CH	DEPT	DEPT	DEPT@Elan_Input;4 [A1997093]
PRB3_CH	PRB3;*		
PRB4_CH	FLAG_COAL;*	FLAG_COAL	FLAG_COAL@Elan_Input;3 [A1997108]
PRB6_CH	PRB6;*		
M_CH	MXP;*		
N_CH	SXP;*		

### ELAN Global Parameters

---

Reference Index	MD
Processing Interval	2245.0(m) To 3098.5(m)
Sampling Rate	0.1(m)
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	IMMOVABLE_HYDROCARBON

---

### ELAN Zone Definition

---

Name	Bottom To Top
Coarse Clastics	3104.7(m) To 2284.0000(m)
Gurnard	2284.0000(m) To 2245.00(m)

---

### ELAN Process Definition

#### Process SOLVE1 "Gas"

Equations	RHOB	NPHI	CUDC_DWA	GR	CT1	CT3	CT4
Volumes	QUAR	ORTH	PYRI	ILLI	XWAT	UWAT	UGAS

User Constraints   pyrcut=if((PRB2\_CH<2284), PYRI,0)  
constraint(pyrlim, PYRI<pyrcut)

Constraint Zones	Bottom	Top
UNDEFINED	3104.7000(m )	2468.0000(m )
U Gurnard	2468.0000(m )	2245.0000(m )

#### Constraints Applied

UNDEFINED	- pyrlim
U Gurnard	- pyrlim
UNDEFINED	- IrreducibleXWater
U Gurnard	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
U Gurnard	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW
U Gurnard	- WaterBaseMud_SXO_gt_SW

---

#### Process SOLVE2 "Oil"

Equations	RHOB	NPHI	CUDC_DWA	GR	CT2	CT3
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XOIL UOIL

#### Constraints Applied

UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW

---

---

**Process            SOLVE3 "Shale"**

Equations	RHOB	CUDC_DWA	GR	
Volumes	QUAR	ILLI	XWAT	UWAT
Constraint Zones	Bottom		Top	
UNDEFINED	3104.7000(m )		2245.0000(m )	

---

**Process            SOLVE4 "Coal"**

Equations	RHOB			
Volumes	COAL			
Constraint Zones	Bottom		Top	
UNDEFINED	3104.7000(m )		2245.0000(m )	

---

**Process            SOLVE6 "L\_Entranace"**

Equations	RHOB			
Volumes	ILLI			
Constraint Zones	Bottom		Top	
UNDEFINED	3104.7000(m )		2245.0000(m )	

---

**Process            COMBINE 1 "COMBINE"**

Order	SOL.2	SOL.1	SOL.3	SOL.4	SOL.6
-------	-------	-------	-------	-------	-------

**Combine Method**

"Tuna            " 10186.0234 (m ) Internal Average  
"L Entrance    " 7378.6089 (m ) Sol.6

**Probability Functions**

```
probability(SOL.6, 0)  
probability(SOL.4, PRB4_CH)  
  
prob3 = linear(ILLI_VOL.SOL.3, 0.35, 0, 0.55, 1)  
probability(SOL.3, prob3)  
  
prob1 = if (PRB1_CH <=0.25, 1, 0)  
probability(SOL.1, prob1)
```

---

**Process            FUNCTION 1 "FUNCTION"**

Outputs	VCL	SXWI	SWT	SUWI	PIGN	PHIT
---------	-----	------	-----	------	------	------

**User-defined Function/n**

```
swt_cmp=if((PRB4_CH > 0),1,(UWAT_VOL + XBWA_VOL)/(UWAT_VOL + XBWA_VOL + UOIL_VOL + UGAS_VOL))  
output(SWT, swt_cmp)
```

---

## ELAN Different Parameters

Parameters		Coarse Cl	Gurnard
CUDC_UWAT	(mS/m )	8.716	7.017
CUDC_UBWA	(mS/m )	4.254	6.000
GR_QUAR	(gAPI )	40.000	90.000
CT4_QUAR	( )	0.010	0.050
RW	(ohm.m )	0.515	0.515
CUDC_UNC_ZP	(mS/m )	0.044	0.040
GR_UNC_WM	( )	0.300	0.100

## LAN Same Parameters

Parameter	Value	Parameter	Value
RHOB_QUAR	2.650(g/cm3 )	RHOB_CALC	2.710(g/cm3 )
RHOB_DOLO	2.847(g/cm3 )	RHOB_ORTH	2.570(g/cm3 )
RHOB_PYRI	4.990(g/cm3 )	RHOB_GLAU	2.650(g/cm3 )
RHOB_ILLI	2.780(g/cm3 )	RHOB_KAOL	2.620(g/cm3 )
RHOB_COAL	1.200(g/cm3 )	RHOB_IGNE	3.000(g/cm3 )
RHOB_XWAT	1.014(g/cm3 )	RHOB_UWAT	0.994(g/cm3 )
RHOB_XOIL	0.700(g/cm3 )	RHOB_UOIL	0.700(g/cm3 )
RHOB_XGAS	-0.051(g/cm3 )	RHOB_UGAS	-0.051(g/cm3 )
RHOB_XBWA	1.000(g/cm3 )	NPHI_QUAR	-0.059(m3/m3 )
NPHI_CALC	0.000(m3/m3 )	NPHI_DOLO	0.032(m3/m3 )
NPHI_ORTH	-0.010(m3/m3 )	NPHI_PYRI	0.008(m3/m3 )
NPHI_GLAU	0.410(m3/m3 )	NPHI_ILLI	0.247(m3/m3 )
NPHI_KAOL	0.450(m3/m3 )	NPHI_COAL	0.450(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	0.039(m3/m3 )	NPHI_UGAS	0.039(m3/m3 )
NPHI_XBWA	1.000(m3/m3 )	DT_QUAR	55.500(us/m )
DT_CALC	47.800(us/m )	DT_DOLO	43.500(us/m )
DT_ORTH	60.000(us/m )	DT_ILLI	60.000(us/m )
DT_KAOL	91.318(us/m )	DT_COAL	121.920(us/m )
DT_IGNE	16.916(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	289.865(us/m )	DT_XBWA	189.000(us/m )
U_QUAR	5.000( )	U_CALC	14.100( )
U_DOLO	9.100( )	U_ILLI	9.900( )
U_KAOL	5.100( )	U_COAL	1.000( )
U_XWAT	0.692( )	U_UWAT	0.000( )
U_XOIL	0.136( )	U_UOIL	0.000( )
U_XGAS	0.012( )	U_UGAS	0.000( )
U_XBWA	0.398( )	CXDC_ILLI	-999.250(mS/m )
CXDC_KAOL	-999.250(mS/m )	CUDC_GLAU	-999.250(mS/m )
CUDC_ILLI	-999.250(mS/m )	CUDC_KAOL	-999.250(mS/m )
GR_CALC	11.000(gAPI )	GR_DOLO	3.000(gAPI )
GR_ORTH	200.000(gAPI )	GR_PYRI	0.000(gAPI )
GR_GLAU	150.000(gAPI )	GR_ILLI	235.000(gAPI )
GR_KAOL	98.000(gAPI )	GR_COAL	40.000(gAPI )
GR_IGNE	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 )
EX1_QUAR	0.000( )	EX1_CALC	0.000( )
EX1_ORTH	0.000( )	EX1_PYRI	0.000( )
EX1_ILLI	0.000( )	EX1_COAL	0.000( )

EX1_XWAT	0.000( )	EX1_UWAT	0.000( )
EX1_XOIL	0.000( )	EX1_UOIL	0.000( )
EX1_XGAS	0.000( )	EX1_UGAS	0.000( )
EX1_XBWA	0.000( )	CT1_QUAR	0.000( )
CT1_CALC	0.000( )	CT1_DOLO	0.000( )
CT1_ORTH	0.000( )	CT1_PYRI	0.000( )
CT1_GLAU	0.000( )	CT1_ILLI	0.000( )
CT1_KAOL	0.000( )	CT1_COAL	0.000( )
CT1_IGNE	0.000( )	CT1_XWAT	0.000( )
CT1_UWAT	0.000( )	CT1_XOIL	0.000( )
CT1_UOIL	0.000( )	CT1_XGAS	1.000( )
CT1_UGAS	-0.300( )	CT1_XBWA	0.000( )
CT2_QUAR	0.000( )	CT2_CALC	0.000( )
CT2_DOLO	0.000( )	CT2_ORTH	0.000( )
CT2_PYRI	0.000( )	CT2_GLAU	0.000( )
CT2_ILLI	0.000( )	CT2_KAOL	0.000( )
CT2_COAL	0.000( )	CT2_IGNE	0.000( )
CT2_XWAT	0.000( )	CT2_UWAT	0.000( )
CT2_XOIL	1.000( )	CT2_UOIL	-0.300( )
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_PYRI	0.000( )	CT3_GLAU	0.000( )
CT3_ILLI	0.000( )	CT3_KAOL	0.000( )
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( )
CT4_CALC	0.000( )	CT4_ORTH	0.000( )
CT4_PYRI	-1.000( )	CT4_GLAU	0.000( )
CT4_ILLI	0.000( )	CT4_COAL	0.000( )
CT4_XWAT	0.000( )	CT4_UWAT	0.000( )
CT4_XOIL	0.000( )	CT4_UOIL	0.000( )
CT4_XGAS	0.000( )	CT4_UGAS	0.000( )
CT4_XBWA	0.000( )	ARHOB_GLAU	2.960(g/cm3 )
ARHOB_ILLI	2.780(g/cm3 )	ARHOB_KAOL	2.620(g/cm3 )
WCLP_GLAU	0.156(m3/m3 )	WCLP_ILLI	0.170(m3/m3 )
WCLP_KAOL	0.058(m3/m3 )	CBWA_GLAU	-999.250(mS/m )
CBWA_ILLI	-999.250(mS/m )	CBWA_KAOL	-999.250(mS/m )
CECA_GLAU	0.233(meq/g )	CECA_ILLI	0.200(meq/g )
CECA_KAOL	0.090(meq/g )	RMF	0.160(ohm.m )
MST	61.880(degC )	RW	0.460(ohm.m )
RWT	-999.250(degC )	SALIN_ISOL	-999.250(ppk )
SALIN_PARA	-999.250(ppk )	SALIN_XWAT	12.924(ppk )
SALIN_UWAT	30.000(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( )
CT4_ZP	0.000( )	RHOB_UNC_ZP	0.027(g/cm3 )
NPHI_UNC_ZP	0.015(m3/m3 )	DT_UNC_ZP	2.250(us/m )
U_UNC_ZP	0.225( )	CXDC_UNC_ZP	0.072(mS/m )
GR_UNC_ZP	2.250(gAPI )	EX1_UNC_ZP	0.015( )
CT1_UNC_ZP	0.015( )	CT2_UNC_ZP	0.015( )
CT3_UNC_ZP	0.015( )	CT4_UNC_ZP	0.015( )
VOLS_UNC_ZP	0.015(m3/m3 )	RHOB_UNC_WM	1.000( )
NPHI_UNC_WM	1.000( )	DT_UNC_WM	0.300( )
U_UNC_WM	0.400( )	CXDC_UNC_WM	0.500( )
CUDC_UNC_WM	0.700( )	EX1_UNC_WM	1.000( )

CT1_UNC_WM	0.200 ( )	CT2_UNC_WM	0.200 ( )
CT3_UNC_WM	0.900 ( )	CT4_UNC_WM	1.000 ( )
VOLS_UNC_WM	1.000 ( )	A_ZP	1.000 ( )
N_ZP	2.000 ( )	C_DWA	0.000 ( )
M_DWA	2.000 ( )	BVIRR	0.010 (m <sup>3</sup> /m <sup>3</sup> )

## RESULTS AND DISCUSSION

The M105 and M1 sands are both gas bearing (Fig. 3) with an interpreted GOC at 2419.5m MD (1377.5m TVDSS). The interpretation indicates an oil column which extends from the GOC to down to LPO at 2430.6mMD. The interval from 2431.6m to 2452.9m MD is water bearing with residual oil. The average residual oil saturation is 19%.

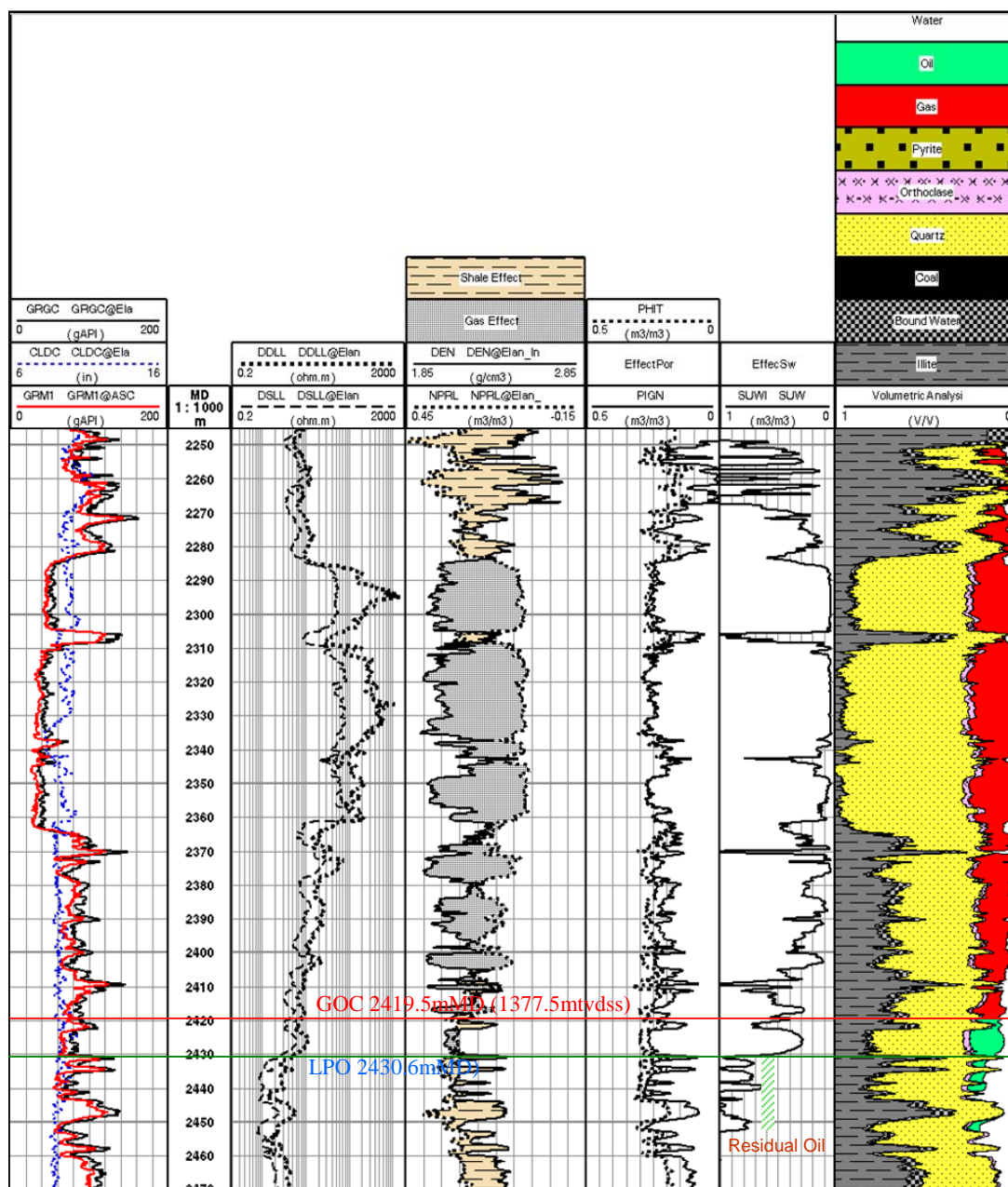


Figure 3: M-105 and M-1 Reservoir



A 4.9m MD (4.2m TVDSS) oil column is present in the L100. An OWC contact is interpreted at 2967.8m MD (1662.7m TVDSS). A

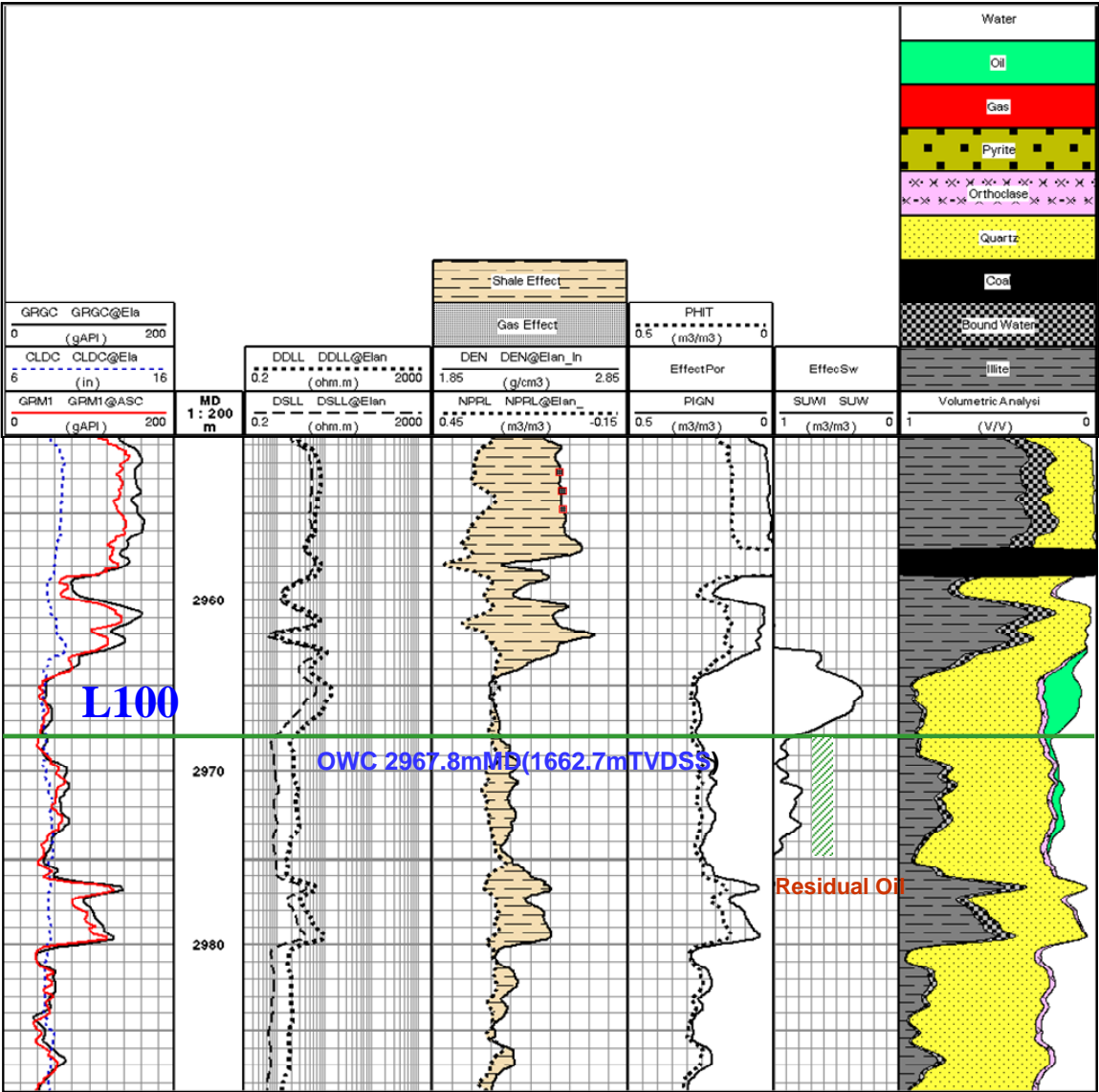


Figure 4: L100 Reservoir

The L200 reservoir has a very thin oil (1.2m MD) at the very top of the sand with an interpreted OWC at 3059m MD (1741.7m TVDSS).

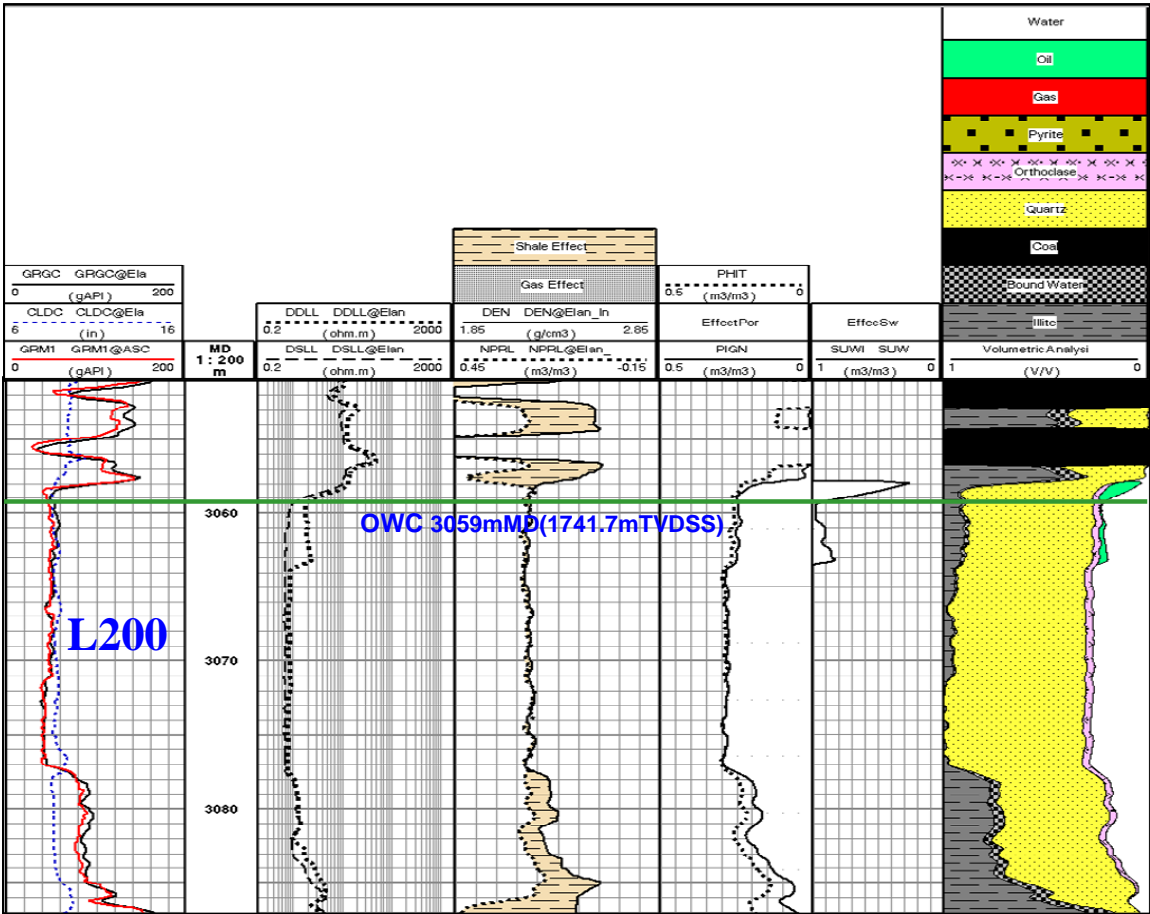


Figure 5: L200 Reservoir

A summary of the petrophysical analysis is presented in Table 1.

## Tuna A14A

Petrophysical Summary 2251 - 3197m MD

Depth Reference:

Mean VCL, Mean PHIE (or PIGN), Mean SWE (or SUWI) is based on a PHIE or PIGN cutoff

Primary: MDKB

0.08 for Gas, 0.12 for oil and water

Zone	Top Depth mMD	Top Depth mTVDSS	Bottom Depth mMD	Bottom Depth mTVDSS	Gross Thickness mMD	Gross Thickness mTVD	Net/Gross	Mean VCL	Mean PHIE	Mean SWE	Comments	Net Pay Thickness mMD	Net Pay Thickness mTVD
M-105_Gas	2251.2	1317.2	2283.8	1328.8	32.6	11.6	0.58	0.47	0.155	0.34	Gas bearing	18.9	6.7
M-1_Gas	2283.8	1328.8	2419.5	1377.6	135.7	48.8	0.99	0.20	0.217	0.16	Gas bearing, GOC 2419.5mMD.1377.5tvdss	134.7	48.5
M-1_Oil	2419.5	1377.6	2430.6	1381.5	11.1	3.9	1.00	0.26	0.231	0.40	Oil bearing, LPO 2430.6mMD	11.1	3.9
M-1_Resid_Oil	2431.6	1381.9	2452.9	1389.4	21.3	7.5	0.81	0.30	0.227	0.81	Water bearing, residual oil		
M-1_Water	2452.9	1389.4	2460.8	1392.1	7.9	2.8	0.87	0.31	0.195	1.00	Water bearing		
T-F-1	2760.0	1512.6	2771.8	1519.5	11.8	6.9	0.78	0.21	0.226	1.00	Water bearing		
T-F-2	2776.4	1522.4	2782.1	1525.9	5.7	3.6	0.60	0.42	0.171	1.00	Water bearing		
T-F-3	2783.5	1526.8	2786.1	1528.4	2.6	1.6	0.98	0.31	0.213	1.00	Water bearing		
T-F-4	2798.0	1535.9	2801.4	1538.1	3.4	2.2	0.99	0.31	0.195	1.00	Water bearing		
L-X-1	2819.5	1550.1	2823.6	1552.8	4.1	2.7	0.72	0.51	0.150	1.00	Water bearing		
L-X-2	2825.8	1554.3	2843.8	1566.8	18.0	12.5	0.87	0.25	0.215	1.00	Water bearing		
L-X-3	2851.4	1572.1	2855.7	1575.1	4.3	3.0	0.92	0.29	0.182	1.00	Water bearing		
L-X-4	2857.6	1576.5	2867.9	1584.0	10.3	7.6	0.83	0.28	0.196	1.00	Water bearing		
L-X-5	2872.4	1587.3	2874.6	1588.9	2.2	1.6	0.86	0.41	0.187	1.00	Water bearing		
L-X-6	2878.1	1591.5	2885.8	1597.2	7.7	5.7	1.00	0.14	0.247	1.00	Water bearing		
L-X-7	2890.2	1600.6	2900.6	1608.6	10.4	8.0	0.94	0.23	0.229	1.00	Water bearing		
L-X-8	2906.5	1613.1	2908.9	1614.9	2.4	1.8	0.67	0.36	0.162	1.00	Water bearing		
L-076	2918.8	1622.7	2933.9	1634.8	15.1	12.0	0.89	0.26	0.208	1.00	Water bearing		
L-077	2938.9	1638.7	2941.1	1640.5	2.2	1.8	0.50	0.38	0.157	1.00	Water bearing		
L-095	2945.4	1644.1	2950.1	1648.0	4.7	3.9	0.91	0.28	0.216	1.00	Water bearing		
L-100U_Water	2958.5	1654.9	2960.3	1656.4	1.8	1.5	0.78	0.36	0.174	1.00	Water bearing		
L-100L_Oil	2962.9	1658.6	2967.8	1662.7	4.9	4.1	0.91	0.15	0.238	0.46	Oil bearing, OWC 2967.8mMD, 1662.7mtvdss	4.5	3.7
L-100L_Resid_Oil	2967.8	1662.7	2974.7	1668.5	6.9	5.9	1.00	0.20	0.224	0.88	Water bearing, residual oil		
L-100L_Water	2974.7	1668.5	2980.0	1673.1	5.3	4.5	0.47	0.25	0.189	1.00	Water bearing		
L-110	2980.0	1673.1	2990.6	1682.2	10.6	9.1	1.00	0.13	0.255	1.00	Water bearing		
L-120	2998.1	1688.6	3000.9	1691.0	2.8	2.4	0.86	0.23	0.218	1.00	Water bearing		
L-180	3045.5	1729.9	3049.9	1733.8	4.4	3.8	0.84	0.32	0.191	1.00	Water bearing		
L-200_Oil	3057.7	1740.6	3059.0	1741.7	1.3	1.1	0.88	0.18	0.210	0.49	Oil bearing, OWC 3059.0mMD, 1741.7mtvdss	1.2	1.0
L-200_Resid_Oil	3059.0	1741.7	3063.5	1745.6	4.5	3.9	1.00	0.11	0.244	0.91	Water bearing, residual oil		
L-200_Water	3063.5	1745.6	3084.5	1764.0	21.0	18.3	0.99	0.11	0.249	1.00	Water bearing		
L-320_Resid_Oil	3087.8	1766.8	3096.8	1774.7	9.0	7.8	0.99	0.09	0.232	0.95	Water bearing, residual oil		

Table 1

## **APPENDIX 3a**

### **TUNA A14A**

#### **Lithology/Show Descriptions**

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
			<p>Previous Well History: Tuna A14 Plugged and Abandoned on 04 March 2005.</p> <p>Milled the 9.625" Casing : Top of window at 844.5 mMDRT. : Bottom of window at 859.0 mMDRT.</p> <p>TNA A14A Kick-off point at 859.0 mMDRT at 1745 hrs on 05 March 2005.</p> <p>PIT at 862.0 mMDRT (771.6 mTVDRT), 620 psi with 8.80 ppg mud (13.50 ppg EMW). Drill with KCl/PHPA/Glycol mud system.</p> <p>Drilled from 859.0 to 3142.0 mMDRT with a Smith PDC bit on steerable motor assembly. Bit Details: Bit # 3, Size: 8.5", Manufacturer / Type: Smith S73VPX. Serial #: JT7330 Jets: 20 x 6, TFA: 1.841 sq.in, HOB: 109.70, Grading: <b>1-5-WT-A-X-I-BT-TD</b>. Krevs: 1694.0, RPM: 35-120 ( + 175 RPM DHM). Average ROP: 2283.0 / 109.70 = 20.8 m/hr. Rotating: 1814.0 metres / Rotating HOB = 69.77, Average Rotating ROP = 26.0 m/hr Steering: 469.0 metres / Steering HOB = 39.93 , Average Steering ROP = 11.7 m/hr.</p> <p><b>Spot 1 metre samples from 859.0-862.0 mMDRT.</b></p> <p>Spot 30 metre samples from 862.0-2100.0 mMDRT (approximately 150.0 metres above prognosed TOL at 2262.9 mMDRT = 1351.2 mTVDRT).</p> <p>Actual TOL at 2246.5 mMDRT = 1346.8 mTVDRT.</p> <p>Bagged 10 metre samples from 2100.0-2150.0 mMDRT.</p> <p>Bagged 5 metre samples from 2150.0 mMDRT to TD of 3142.0 mMDRT (1845.2 mTVDRT).</p> <p><b>Geologist on Rig from 1040.0 mMDRT (885.9 mTVDRT), at 0830 hrs 06 March 2005.</b></p>
859	870	100	CALCILUTITE:light olive grey, occasionally pale olive grey, trace pale grey, occasionally disseminated pyrite, grading to CALCISILTITE in part, soft to occasionally firm, sub blocky.
870	900	100	CALCILUTITE:light olive grey, occasionally pale olive grey, trace pale grey, trace disseminated pyrite, grading to CALCISILTITE in part, soft to occasionally firm, sub blocky.
900	930	100	<b>Midnight depth 05 March 2005 = 906.0 mMDRT (802.8 mTVDRT)</b> CALCILUTITE:light olive grey, occasionally pale olive grey, trace pale grey, occasionally disseminated pyrite, trace carbonaceous specks, grading to CALCISILTITE in part, soft to occasionally firm, sub blocky.
930	960	100	CALCILUTITE: as above.
960	990	100	CALCILUTITE:light olive green grey, light olive grey, light grey, trace fossil fragments, trace disseminated pyrite, trace glauconite, trace carbonaceous specks, grading to CALCISILTITE in part, soft to occasionally firm, sub blocky.
990	1020	100	CALCILUTITE: as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
1020	1050	100	CALCILUTITE: as above, trace very fine CALCARENITE.
1050	1080	100	CALCILUTITE: as above.
1080	1110	100	CALCILUTITE: light olive green grey, light olive grey, light grey, grading to CALCISILTITE in part, trace fossil fragments, trace disseminated pyrite, trace carbonaceous specks, trace dolomite, trace glauconite, soft to occasionally firm, sub blocky.
1110	1140	100	CALCILUTITE: as above.
1140	1170	100	CALCILUTITE: as above.
1170	1200	100	CALCILUTITE: light olive grey to light grey, occasionally light olive green grey, grading to CALCISILTITE in part, trace disseminated pyrite, trace carbonaceous specks, trace glauconite, soft to firm, sub blocky.
1200	1230	100	CALCILUTITE: as above. <b>Midnight depth 06 March 2005 = 1255.0 mMDRT (999.7 mTVDRT)</b>
1230	1260	100	CALCILUTITE: as above.
1260	1290	100	CALCILUTITE: light olive grey to light grey, occasionally light olive green grey, grading to CALCISILTITE in part, trace disseminated pyrite, trace carbonaceous specks, rare glauconite, soft to firm, sub blocky.
1290	1320	100	CALCILUTITE: as above.
1320	1350	100	CALCILUTITE: light olive grey to light grey, occasionally light olive greenish grey, grading to CALCISILTITE in part, trace disseminated pyrite, trace carbonaceous specks, rare glauconite, trace forams, trace ooids, soft to firm, sub blocky.
1350	1380	100	CALCILUTITE: as above.
1380	1410	100	CALCILUTITE: as above, rare nodular pyrite.
1410	1440	100	CALCILUTITE: light olive grey to light grey, occasionally light olive greenish grey, grading to CALCISILTITE in part, trace disseminated pyrite, trace carbonaceous specks, rare glauconite, trace forams, trace ooids, rare micromicaceous, soft to firm, sub blocky.
1440	1470	100	CALCILUTITE: as above.
1470	1500	100	CALCILUTITE: as above.
1500	1530	100	CALCILUTITE: light olive grey to light grey, occasionally light olive greenish grey, grading to CALCISILTITE in part, trace disseminated pyrite, trace carbonaceous specks, rare glauconite, trace gastropods, trace ooids, rare micromicaceous, soft to firm, sub blocky.
1530	1560	100	CALCILUTITE: as above.
1576	Spot sample	100	CALCILUTITE: as above.
1560	1590	80	CALCILUTITE: light olive grey to light grey, occasionally light olive greenish grey, grading to CALCISILTITE in part, trace disseminated pyrite, rare glauconite, trace gastropods, trace ooids, rare micromicaceous, soft to firm, sub blocky.
		20	CALCAREOUS CLAYSTONE: medium grey, to medium dark grey, very calcareous grading to CALCILUTITE, silty in part, trace micromicaceous, trace disseminated pyrite, moderately hard to hard, sub blocky to blocky.
		Trace	DOLOMITE: Trace, dark yellowish orange to moderate yellowish brown, moderately hard to hard, blocky. <b>Top of Lakes Entrance prognosed at 1576.8 mMDRT (1110.3 mTVDRT).</b>
			<b>Actual Top of Lakes Entrance at 1575.0 mMDRT (1111.5 mTVDRT).</b>
1590	1620	50	CALCILUTITE: as above.
		50	CALCAREOUS CLAYSTONE: as above, trace micromicaceous.
1620	1650	30	CALCILUTITE: as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From      To		%	Lithology / Show Description
1650	1680	70	CALCAREOUS CLAYSTONE: medium grey, to medium dark grey, greenish grey in part, very calcareous (20-30%) grading to CALCILUTITE/CALCISILTITE, silty in part, trace micromicaceous, trace disseminated pyrite, trace carbonaceous specks, common ooids, firm to moderately hard, sub blocky to blocky.
		30	CALCILUTITE: as above.
		70	CALCAREOUS CLAYSTONE: generally as above, sub blocky to occasionally sub fissile.
<b>Midnight depth 07 March 2005 = 1686.0 mMDRT (1149.0 mTVDRT)</b>			
1680	1710	10	CALCILUTITE: as above.
		90	CALCAREOUS CLAYSTONE: light grey, to light brown grey, greenish grey in part, 20% calcareous, trace micromicaceous, trace disseminated pyrite, common ooids, rare carbonaceous microlaminations, occasionally nodular pyrite, firm to moderately hard, sub blocky to blocky.
1710	1740	10	CALCILUTITE: as above.
		90	CALCAREOUS CLAYSTONE: as above.
1749	1770	Trace	CALCILUTITE: as above.
		100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally medium dark grey, 20% calcareous, common ooids, trace micromicaceous, rare carbonaceous specks, trace disseminated pyrite, rare nodular pyrite, rare glauconite, firm to moderately hard, sub blocky to blocky.
1770	1800	Trace	CALCILUTITE: as above.
		100	CALCAREOUS CLAYSTONE: as above.
		Trace	DOLOMITE: Trace, light brown to moderate yellowish brown to hard, blocky.
1800	1830	Trace	CALCILUTITE: as above.
		100	CALCAREOUS CLAYSTONE: generally as above, trace pyrite laminations, trace forams, rare micromicaceous.
1830	1860	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally medium dark grey, greenish grey, 15% calcareous, common ooids, trace micromicaceous, rare carbonaceous specks, trace disseminated pyrite, rare glauconite, firm to moderately hard, sub blocky to blocky
1860	1890	100	CALCAREOUS CLAYSTONE: as above.
1890	1920	100	CALCAREOUS CLAYSTONE: as above.
1920	1950	100	CALCAREOUS CLAYSTONE: light grey to occasionally medium grey, trace ooids, 15% calcareous, trace micromicaceous, rare carbonaceous specks, trace disseminated pyrite, rare glauconite, firm to moderately hard, sub blocky to blocky
1950	1980	100	CALCAREOUS CLAYSTONE: as above.
1980	2010	100	CALCAREOUS CLAYSTONE: generally as above, rare ooids.
2010	2040	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally medium dark grey, greenish grey, 15% calcareous, trace micromicaceous, trace disseminated pyrite, rare glauconite, rare carbonaceous specks, rare ooids, rare gastropods, moderately hard, sub blocky to blocky.
2040	2070	100	CALCAREOUS CLAYSTONE: generally as above, (no gastropods).
2070	2100	100	CALCAREOUS CLAYSTONE: generally as above, rare nodular pyrite.
<b>Bagged 10 metre samples from 2100.0 mMDRT (1295.1 mTVDRT), 150.0 metres above the Top of Latrobe prognosed at 2262.9 mMDRT (1351.2 mTVDRT).</b>			
2100	2110	100	CALCAREOUS CLAYSTONE: medium grey to medium brown grey, greenish grey, trace fine arenaceous, 15% calcareous, trace micromicaceous, trace disseminated pyrite, rare glauconite, rare carbonaceous specks, rare ooids, moderately hard, sub blocky to blocky.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2110	2120	100	CALCAREOUS CLAYSTONE: as above. <b>Midnight depth 08 March 2005 = 2120.0 mMDRT (1302.1 mTVDRT)</b>
2120	2130	100	CALCAREOUS CLAYSTONE: as above, light brown to light grey in part.
2130	2140	100	CALCAREOUS CLAYSTONE: as above.
2140	2150	100	CALCAREOUS CLAYSTONE: as above, light grey to light grey brown.
2150	2160	100	CALCAREOUS CLAYSTONE: light grey to light grey brown, silty in part, 15% calcareous, trace micromicaceous, trace disseminated pyrite, rare glauconite, rare carbonaceous specks, rare ooids, firm to moderately hard, sub blocky to blocky. <b>Carbide Lag check at 2160.0 mMDRT:</b> <b>Theoretical strokes=5100/Actual strokes=5350. Lag adjusted for 4.9% overgauge.</b>
2160	2170	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, occasionally medium dark grey, silty in part, 15% calcareous, trace micromicaceous, trace disseminated pyrite, rare glauconite, rare carbonaceous specks, rare ooids, firm to moderately hard, sub blocky.
2170	2180	100	CALCAREOUS CLAYSTONE: as above, rare forams.
2180	2190	100	CALCAREOUS CLAYSTONE: as above, nil forams. <b>Baracarb added to the mud system at 2200.0 mMDRT, at 0400 hrs 09 March 2005.</b>
2190	2200	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, occasionally greenish grey, silty in part, 15% calcareous, trace micromicaceous, trace disseminated pyrite, rare glauconite, rare carbonaceous specks, rare ooids, firm to moderately hard, sub blocky.
2200	2210	100	CALCAREOUS CLAYSTONE: as above, trace nodular pyrite.
2210	2220	100	CALCAREOUS CLAYSTONE: as above, no nodular pyrite.
2220	2230	100	CALCAREOUS CLAYSTONE: medium to light grey to light olive grey, occasionally greenish grey, silty in part, 10% calcareous, trace micromicaceous, trace disseminated pyrite, rare glauconite, rare carbonaceous specks, rare ooids, firm to moderately hard, sub blocky.
2230	2240	100	CALCAREOUS CLAYSTONE: as above. <b>Top of Latrobe at 2246.5 mMDRT (1346.8 mTVDRT).</b> <b>Bagged 5 metre samples from 2250.0 mMDRT (1348.1 mTVDRT).</b> <b>Gas rising at 2245.5 mMDRT. Peak of 246 / 30 units BG.</b>
2240	2250	85 15	CALCAREOUS CLAYSTONE: as above. CLAYSTONE: light olive brown to moderate yellow, trace glauconite, soft, amorphous, dispersive. <b>Gas Peak at 2250.5 mMDRT: 108 / 60 units BG.</b>
2250	2255	80 10 10	CALCAREOUS CLAYSTONE: as above. CLAYSTONE: as above. SILTSTONE: pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, soft to firm, sub-blocky. <b>Gas Peak at 2257.0 mMDRT: 644 / 200 units BG.</b>
2255	2260	10 5 80	CLAYSTONE 1: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky. CLAYSTONE 2: light olive brown to moderate yellow, trace glauconite, soft, amorphous, dispersive. SILTSTONE: pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, soft to firm, sub-blocky.



## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m) From To</b>		<b>%</b>	<b>Lithology / Show Description</b>
2260	2265	5	SANDSTONE: translucent to occasionally smoky grey, coarse to very coarse, occasionally fractured quartz grains, occasionally bit crushed to rock flour, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		5	CLAYSTONE 1: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		5	CLAYSTONE 2: light olive brown to moderate yellow, trace glauconite, soft, amorphous, dispersive.
2265	2270	90	SILTSTONE: as above.
		5	SANDSTONE: as above.
		10	CLAYSTONE 1: as above.
		Trace	CLAYSTONE 2: as above.
		80	SILTSTONE: as above.
2270	2275	10	SANDSTONE: clear to translucent to occasionally smoky grey and yellowish grey, coarse to dominantly very coarse, occasionally fractured quartz grains, occasionally bit crushed to rock flour, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence. <b>Gas Peak at 2273.0 mMDRT: 943 / 200 units BG.</b> <b>Gas Peak at 2275.5 mMDRT: 1255 / 500 units BG.</b>
		5	CLAYSTONE 1: as above.
		Trace	CLAYSTONE 2: as above.
		85	SILTSTONE: as above.
		10	SANDSTONE: clear to translucent to occasionally yellowish grey, dominantly fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace pyrite cement, trace nodular pyrite, trace glauconite, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence. <b>Gas Peak at 2280.0 mMDRT: 820 / 250 units BG.</b>
2275	2280	5	CLAYSTONE 1: as above.
		Trace	CLAYSTONE 2: as above.
		80	SILTSTONE: as above.
		15	SANDSTONE: clear to translucent to occasionally yellowish grey, medium to dominantly coarse, moderately well sorted, sub angular to sub rounded, common pyrite cement, common nodular pyrite, trace glauconite, loose, hard, poor inferred and visible porosity. Nil fluorescence.
2280	2285	5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		80	SILTSTONE: pale red to pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		15	SANDSTONE: clear to translucent to occasionally smokey grey and yellowish grey, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace pyrite cement, common nodular pyrite, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence. <b>Top of Coarse Clastics at 2284.0 mMDRT/ 1360.1 mTVDRT.</b> <b>Gas Peak at 2286.0 mMDRT: 981 / 500 units BG.</b>
2285	2290	5	CLAYSTONE : as above.
		40	SILTSTONE: as above.

## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m) From To</b>		<b>%</b>	<b>Lithology / Show Description</b>
2290	2295	55	SANDSTONE: clear to translucent to occasionally yellowish grey, fine to very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, common nodular pyrite, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		Trace	CLAYSTONE : as above.
		10	SILTSTONE: as above.
2295	2300	90	SANDSTONE: clear to translucent, medium to occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, trace pyrite cement, trace nodular pyrite, trace glauconite, loose, hard, good inferred and visible porosity. Nil fluorescence.
		5	CLAYSTONE : as above.
		10	SILTSTONE: as above.
2300	2305	85	SANDSTONE: clear to translucent, medium to occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace pyrite cement, trace glauconite, loose, hard, fair inferred and visible porosity. Nil fluorescence.
		10	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		10	SILTSTONE: pale red to pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
2305	2310	80	SANDSTONE: clear to translucent, occasionally milky white, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, common nodular pyrite, trace pyrite cement, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		20	CLAYSTONE : as above.
		35	SILTSTONE 1: as above.
2310	2315	10	SILTSTONE 2: dark reddish brown to blackish red, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
		35	SANDSTONE: as above.
		10	CLAYSTONE : as above.
2315	2320	20	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: carbonaceous, as above.
		65	SANDSTONE: clear to translucent, occasionally milky white, fine to occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2315	2320	15	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		10	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.

## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m) From To</b>		<b>%</b>	<b>Lithology / Show Description</b>
		75	SANDSTONE: clear to translucent, occasionally milky white, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2320	2325	Trace	COAL: black, sub vitreous, brittle, sub fissile, angular.
		10	CLAYSTONE : as above.
		5	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		85	SANDSTONE: clear to translucent, occasionally white, fine to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, trace glauconite, loose, hard, fair inferred and visible porosity. Nil fluorescence.
2325	2330	Trace	COAL: trace, as above.
		15	CLAYSTONE: as above.
		5	SILTSTONE 1: arenaceous, as above.
		80	SANDSTONE: as above.
2330	2332	15	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		10	SILTSTONE 1: arenaceous, as above.
		75	SANDSTONE: as above.
			<b>Wiper trip at 2332.0 mMDRT (1377.5 mTVDRT) to change out saver sub.</b>
			<b>Midnight depth 09 March 2005 = 2332.0 mMDRT (1377.5 mTVDRT)</b>
			<b>Service Top Drive/Slip and Cut.</b>
			<b>Trip Gas= 60 units (Reserval=153 units). Back on Bottom drilling at 0325 hrs 10 March 2005.</b>
2332	2335	15	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		75	SANDSTONE: as above.
			<b>Sample at 2335 deemed unrepresentative following immediately after the wiper trip.</b>
			<b>Percentages of 2332 sample duplicated at 2335 sample.</b>
2335	2340	Trace	COAL: black, sub vitreous, brittle, sub fissile, angular.
		90	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		Trace	SILTSTONE 1: pale red to pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		10	SANDSTONE: as above.
2340	2345	65	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		5	SILTSTONE 1: pale red to pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		Trace	SILTSTONE 2: dark reddish brown to blackish red, very carbonaceous grading to silty
			COAL, firm to moderately hard, sub blocky.
		30	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, trace glauconite, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.

## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m)</b>		<b>%</b>	<b>Lithology / Show Description</b>
<b>From</b>	<b>To</b>		
2345	2450	65	CLAYSTONE: as above.
		5	SILTSTONE 1: arenaceous, as above.
		30	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, trace glauconite, loose, hard, fair inferred and visible porosity. Nil fluorescence.
2350	2355	25	CLAYSTONE: as above.
		75	SANDSTONE: clear to translucent, coarse to dominantly very coarse, occasionally medium, moderately well sorted, sub angular to sub rounded, rare light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2355	2360	15	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		85	SANDSTONE: clear to translucent, coarse to commonly very coarse, occasionally medium, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2360	2365	20	CLAYSTONE: as above.
		80	SANDSTONE: clear to translucent, medium to dominantly coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2365	2370	80	CLAYSTONE: as above.
		20	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2370	2375	85	CLAYSTONE: as above.
		15	SANDSTONE: as above.
2375	2380	70	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		30	SANDSTONE: as above.
2380	2385	70	CLAYSTONE: as above.
		10	SILTSTONE: light brown to light brownish grey, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		20	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, common very light greyish argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
2385	2390	35	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		55	SANDSTONE: generally as above, coarse to dominantly very coarse, fair to good inferred and visible porosity. Nil fluorescence.
2390	2395	35	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.

## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m) From To</b>		<b>%</b>	<b>Lithology / Show Description</b>
2395	2400	15	SILTSTONE: light brown to light brownish grey, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		50	SANDSTONE: clear to translucent, occasionally smokey grey, coarse to dominantly very coarse, occasionally medium, poorly sorted, sub angular to sub rounded, trace pale greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair inferred and visible porosity. Nil fluorescence.
		20	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		40	SILTSTONE: as above.
		40	SANDSTONE: clear to translucent, occasionally smokey grey, coarse to dominantly very coarse, occasionally fine to medium, poorly sorted, sub angular to sub rounded, trace pale greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair inferred and visible porosity. Nil fluorescence.
2400	2405	20	CLAYSTONE: as above.
		50	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, occasionally frosted, coarse to dominantly very coarse, occasionally fine to medium, poorly sorted, sub angular to sub rounded, common pale greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, hard, fair inferred and visible porosity. Nil fluorescence.
2405	2410	10	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		70	SILTSTONE: light brown to light brownish grey, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		20	SANDSTONE: clear to translucent, dominantly very fine grading to arenaceous Siltstone, moderately well sorted, sub angular to sub rounded, common pale greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, hard, fair inferred and visible porosity. Nil fluorescence.
			<b>Gas Peak at 2412.5 mMDRT: 694 / 300 units BG.</b>
2410	2415	10	CLAYSTONE: as above.
		80	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: dark reddish brown to blackish red, very carbonaceous grading to silty COAL, trace micromicaceous, moderately hard, blocky.
		10	SANDSTONE: as above. <b>Gas Peak at 2418.5 mMDRT: 697 / 400 units BG.</b>
2415	2420	15	CLAYSTONE: as above.
		50	SILTSTONE 1: arenaceous, as above.
		35	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, hard, fair inferred and visible porosity. <b>FLUORESCENCE: trace, dull, pinpoint greenish yellow fluorescence, slow crush cut, thin ring residue.</b> <b>Mudlog bar: 0</b> <b>Gas Peak at 2421.5 mMDRT: 717 / 300 units BG.</b>
2420	2425	5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.

## Tuna A14A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2425	2430	70	SILTSTONE: light brown to light brownish grey, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, soft to firm, sub-blocky.
		25	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, common light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, hard, fair inferred and visible porosity. <b>FLUORESCENCE: 5%, moderately bright, spotted greenish yellow fluorescence, slow bleeding direct cut, thick ring residue.</b> <b>Mudlog bar: 0.3</b> <b>Gas Peak at 2427.0 mMDRT: 855 / 300 units BG.</b>
		5	CLAYSTONE: as above.
		35	SILTSTONE : arenaceous, as above.
2430	2435	60	SANDSTONE: as above. <b>FLUORESCENCE: 15%, moderately bright to bright, even greenish yellow fluorescence, slow bleeding direct cut, thin ring residue.</b> <b>Mudlog bar: 0.5</b> <b>Gas Peak at 2430.5 mMDRT: 832 / 360 units BG.</b>
		10	CLAYSTONE: as above.
		40	SILTSTONE : arenaceous, as above.
		50	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, hard, fair to good inferred and visible porosity. <b>FLUORESCENCE: 10%, moderately bright, even greenish yellow fluorescence, slow bleeding direct cut, thick ring residue.</b> <b>Mudlog bar: 0.5</b>
2435	2440	Trace	CLAYSTONE: as above.
		30	SILTSTONE : arenaceous, as above.
		70	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, hard, fair inferred and visible porosity. <b>FLUORESCENCE: 5%, moderately bright, pinpoint greenish yellow fluorescence, slow bleeding direct cut, thin ring residue.</b> <b>Mudlog bar: 0.3</b> <b>Gas Peak at 2442.0 mMDRT: 748 / 400 units BG.</b>
2440	2445	70	SILTSTONE : arenaceous, as above.
		30	SANDSTONE: clear to translucent, rare greyish pink quartz grains, fine to very coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, moderate pyrite cement, hard, fair inferred and visible porosity. <b>FLUORESCENCE: 5%, moderately bright, pinpoint greenish yellow fluorescence, slow bleeding direct cut, thin ring residue.</b> <b>Mudlog bar: 0.3</b> <b>High Gas readings dropping off after 2443.0 mMDRT.</b>
2445	2450	Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		75	SILTSTONE: light grey to light brownish grey, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, slightly calcareous, soft to firm, sub-blocky.
		10	SILTSTONE 2: moderate brown to dusky brown, very carbonaceous grading to silty COAL, trace micromicaceous, trace pyrite, firm to moderately hard, sub blocky.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2450	2455	15	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity. Fluorescence: trace, cavings.
		80	SILTSTONE 1 : arenaceous, as above.
		10	SILTSTONE 2 : carbonaceous, as above.
		10	SANDSTONE: clear to translucent, rare greyish pink quartz grains, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, moderate pyrite cement, hard, poor inferred and visible porosity. Fluorescence: trace, cavings.
2455	2460	85	SILTSTONE 1 : arenaceous, as above.
		Trace	SILTSTONE 2 : carbonaceous, as above.
		15	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, common light greyish brown argillaceous matrix, trace nodular pyrite, moderate pyrite cement, hard, poor inferred and visible porosity. Fluorescence: trace, cavings.
2460	2465	95	SILTSTONE 1 : arenaceous, as above.
		Trace	SILTSTONE 2 : carbonaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
2465	2470	95	SILTSTONE 1 : arenaceous, as above.
		Trace	SILTSTONE 2 : carbonaceous, as above.
		5	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, moderate pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2470	2475	5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		90	SILTSTONE 1: light grey to light brownish grey, very arenaceous grading to very fine Sandstone, common micromicaceous, trace glauconite, slightly calcareous, soft to firm, sub-blocky.
		Trace	SILTSTONE 2: moderate brown to dusky brown, very carbonaceous grading to silty COAL, trace micromicaceous, trace pyrite, firm to moderately hard, sub blocky.
		5	SANDSTONE: as above. Nil fluorescence.
2475	2480		<b>Very slow ROP between 2479.5 to 2481.5 mMDRT due to dolomite stringer.</b>
		5	CLAYSTONE: as above.
		95	SILTSTONE 1 : arenaceous, as above.
		Trace	SANDSTONE: as above. Nil fluorescence.
2480	2485	Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
		90	SILTSTONE 1 : arenaceous, as above.
		Trace	SANDSTONE: clear to translucent, very fine to medium dominantly very fine, moderately well sorted, sub angular to sub rounded, common light greyish brown argillaceous matrix, trace nodular pyrite, hard, poor inferred and visible porosity. Nil fluorescence.
		10	DOLOMITE: as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2485	2490	Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, sub-blocky.
		Trace	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2490	2495	Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: as above.
		Trace	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2495	2500	Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		100	SILTSTONE 1: as above.
		Trace	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2500	2505	Trace	CLAYSTONE: as above.
		100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, sub-blocky.
		Trace	SANDSTONE: Trace, clear to translucent, fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, hard, poor inferred and visible porosity. Nil fluorescence.
		Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
2505	2510	Trace	CLAYSTONE: as above.
		90	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, sub-blocky.
		5	SANDSTONE: as above. Nil fluorescence.
		5	DOLOMITE: as above.
2510	2515	5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		90	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		5	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2515	2520		<b>Slow ROP between 2517.5 to 2518.5 mMDRT due to dolomite stringer.</b>
		5	CLAYSTONE: as above.
		85	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
2520	2525	5	DOLOMITE: as above.
		Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
		Trace	DOLOMITE: as above.



## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2525	2530		<b>Slow ROP between 2528.0 to 2531.0 mMDRT due to dolomite stringer.</b>
		5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		90	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		Trace	SANDSTONE: Trace, clear to translucent, fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, hard, poor inferred and visible porosity. Nil fluorescence.
2530	2535	5	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
		5	CLAYSTONE: as above.
		90	SILTSTONE 1: arenaceous, as above.
2535	2540	5	DOLOMITE: as above.
		5	CLAYSTONE: as above.
		95	SILTSTONE 1: arenaceous, as above.
2540	2545	Trace	DOLOMITE: as above.
		Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
2545	2550	Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
		100	SILTSTONE 1: arenaceous, as above.
		Trace	DOLOMITE: as above.
2550	2555	Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
		Trace	DOLOMITE: as above.
2555	2560	5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		95	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		Trace	SANDSTONE: Trace, clear to translucent, fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace light greyish brown argillaceous matrix, trace nodular pyrite, hard, poor inferred and visible porosity. Nil fluorescence.
		Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
		Trace	CLAYSTONE: as above.
2560	2565	95	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, good inferred and visible porosity. Nil fluorescence.
		Trace	DOLOMITE: as above.
		Trace	CLAYSTONE: as above.
2565	2570		

## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m) From To</b>		<b>%</b>	<b>Lithology / Show Description</b>
2570	2575	90	SILTSTONE 1: arenaceous, as above.
		10	SANDSTONE: clear to translucent, occasionally greyish pink quartz grains, coarse to very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, good inferred and visible porosity. Nil fluorescence.
		Trace	DOLOMITE: as above.
		Trace	CLAYSTONE: as above.
		95	SILTSTONE 1: arenaceous, as above.
2575	2580	5	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
		Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
2580	2585	Trace	DOLOMITE: as above.
		Trace	CLAYSTONE: as above.
		95	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
2585	2590	Trace	DOLOMITE: as above.
		5	CLAYSTONE: as above.
		90	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
2590	2595	Trace	DOLOMITE: as above.
		Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
2595	2600	95	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		Trace	DOLOMITE: as above.
2600	2605	95	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2605	2610	100	SILTSTONE 1: arenaceous, as above.
		Trace	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2610	2615	Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.

## **Tuna A14A Lithology / Show Descriptions**

<b>Interval (m) From To</b>		<b>%</b>	<b>Lithology / Show Description</b>
2615	2620	100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		Trace	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
		Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
2620	2625	5	CLAYSTONE: as above.
		90	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2625	2630	100	SILTSTONE 1: arenaceous, as above.
2630	2635	95	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		5	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		100	SILTSTONE 1: arenaceous, as above.
2635	2640	100	SILTSTONE 1: arenaceous, as above.
2640	2645	Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
2645	2650		<b>Midnight depth 10 March 2005 = 2650.0 mMDRT (1490.3 mTVDRT)</b>
		Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
2650	2655	Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
2655	2660	Trace	CLAYSTONE: as above.
		100	SILTSTONE 1: arenaceous, as above.
2660	2665	95	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		5	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		100	SILTSTONE 1: arenaceous, as above.
2665	2670	Trace	SANDSTONE: as above. Nil fluorescence.
		95	SILTSTONE 1: arenaceous, as above.
2670	2675	5	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From      To		%	Lithology / Show Description
2675	2680	Trace	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		100	SILTSTONE: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, common micromicaceous, strong dolomitic matrix, soft to firm, amorphous to sub-blocky.
		Trace	SANDSTONE: clear to translucent, very fine to occasionally coarse, poorly sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
2680	2685	5	CLAYSTONE: as above.
		90	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
2685	2690	5	CLAYSTONE: as above.
		90	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
2690	2695	5	CLAYSTONE: light blueish grey to pale blue, trace micromicaceous, trace glauconite, moderately hard to hard, blocky.
		85	SILTSTONE: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		10	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
<b>Barablock added to the mud system at 2700.0 mMDRT, at 0415 hrs 11 March 2005. Barablock seen in 2705.0 mMDRT sample.</b>			
2695	2700	5	CLAYSTONE: as above.
		85	SILTSTONE 1: arenaceous, as above.
		10	SANDSTONE: as above. Nil fluorescence.
2700	2705	5	CLAYSTONE: as above.
		80	SILTSTONE 1: arenaceous, as above.
		15	SANDSTONE: as above. Nil fluorescence.
2705	2710	Trace	CLAYSTONE: as above.
		95	SILTSTONE 1: arenaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
2710	2715	5	CLAYSTONE: greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		80	SILTSTONE: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		15	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace very light grey argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
2715	2720	5	CLAYSTONE: as above.
		75	SILTSTONE 1: arenaceous, as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m)		%	Lithology / Show Description
From	To		
2720	2725	20	SANDSTONE: as above. Nil fluorescence.
		Trace	CLAYSTONE: as above.
		85	SILTSTONE 1: arenaceous, as above.
		15	SANDSTONE: as above. Nil fluorescence.
2725	2730	5	CLAYSTONE: greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		80	SILTSTONE 1: arenaceous, as above.
		15	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: Trace, moderate yellowish brown to dark yellowish orange, moderately hard to hard, bit crushed to amorphous.
2730	2735	5	CLAYSTONE: as above.
		65	SILTSTONE: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		25	SANDSTONE: clear to translucent, fine to occasionally coarse, dominantly fine, poorly sorted, sub angular to sub rounded, trace very light grey argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor inferred and visible porosity. Nil fluorescence.
		5	DOLOMITE: as above.
2735	2740	10	CLAYSTONE: greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		70	SILTSTONE 1: arenaceous, as above.
		15	SANDSTONE: as above. Nil fluorescence.
		5	DOLOMITE: as above.
2740	2745	10	CLAYSTONE: as above.
		80	SILTSTONE 1: arenaceous, as above.
		10	SANDSTONE: as above. Nil fluorescence.
		Trace	DOLOMITE: as above.
2745	2750	5	CLAYSTONE: greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		75	SILTSTONE 1: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		15	SILTSTONE 2: blackish red to very dark red, very carbonaceous grading to silty COAL, moderately hard to hard, sub blocky to blocky.
		5	SANDSTONE: clear to translucent, fine to occasionally coarse, dominantly fine, poorly sorted, sub angular to sub rounded, trace very light grey argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor inferred and visible porosity. Nil fluorescence.
2750	2755		Gas Peak at 2754.5 mMDRT: 63 / 20 units BG.
		5	CLAYSTONE: as above.
		70	SILTSTONE 1: arenaceous, as above.
		20	SILTSTONE 2: carbonaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
			Gas Peak at 2759.5 mMDRT: 139 / 35 units BG.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2755	2760	Trace	CLAYSTONE: as above.
		60	SILTSTONE 1: arenaceous, as above.
		30	SILTSTONE 2: carbonaceous, as above.
		5	SANDSTONE: as above.
			Nil fluorescence.
2760	2765	5	CLAYSTONE: light greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		30	SILTSTONE 1: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		Trace	SILTSTONE 2: blackish red to very dark red, very carbonaceous grading to silty COAL, moderately hard to hard, sub blocky to blocky.
		65	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, poorly sorted, sub angular to sub rounded, trace very light grey argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor inferred and visible porosity.
			Nil fluorescence.
			<b>Tuna Flounder Channel at 2769.0 mMDRT/ 1549.1 mTVDR.</b>
2765	2770	5	CLAYSTONE: as above.
		45	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		50	SANDSTONE: as above.
2770	2775	5	CLAYSTONE: as above.
		30	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
		55	SANDSTONE: as above.
2775	2780	5	COAL: black, sub vitreous, brittle, angular.
		15	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		60	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly fine, poorly sorted, sub angular to sub rounded, trace very light grey argillaceous matrix, trace nodular pyrite, trace pyrite cement, trace silica cement, loose, hard, poor inferred and visible porosity.
			Nil fluorescence.
2780	2785	5	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		75	SANDSTONE: clear to translucent, very fine to rare coarse, dominantly fine, poorly sorted, sub angular to sub rounded, trace very light grey argillaceous matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor inferred and visible porosity.
			Nil fluorescence.
			<b>Gas Peak at 2789.5 mMDRT: 55 / 30 units BG.</b>
2785	2790	10	CLAYSTONE: as above.
		15	SILTSTONE 1: arenaceous, as above.
		75	SANDSTONE: clear to translucent, very fine to commonly coarse, dominantly medium, poorly sorted, sub angular to sub rounded, nil matrix, common nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity.
			Nil fluorescence.
2790	2795	30	CLAYSTONE: light greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2795	2800	5	SILTSTONE 1: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		Trace	SILTSTONE 2: blackish red to very dark red, very carbonaceous grading to silty COAL, moderately hard to hard, sub blocky to blocky.
		65	SANDSTONE: clear to translucent, fine to dominantly coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, fair to good inferred and visible porosity.
			Nil fluorescence.
		40	CLAYSTONE: as above.
2800	2805	Trace	SILTSTONE 1: arenaceous, as above.
		60	SANDSTONE: clear to translucent, very fine to dominantly medium, occasionally coarse, moderately well sorted, sub angular to dominantly sub rounded, nil matrix, trace nodular pyrite, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity.
			Nil fluorescence.
2805	2810	30	CLAYSTONE: as above.
		Trace	SILTSTONE 1: arenaceous, as above.
		70	SANDSTONE: as above.
2810	2815		Nil fluorescence.
		10	CLAYSTONE: light greyish blue green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		15	SILTSTONE 1: light brown to pale brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, trace glauconite, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE 2: blackish red to very dark red, very carbonaceous grading to silty COAL, moderately hard to hard, sub blocky to blocky.
		70	SANDSTONE: as above.
2815	2820		Nil fluorescence.
		10	CLAYSTONE: as above.
		60	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 1: carbonaceous, as above.
		30	SANDSTONE: clear to translucent, very fine to very coarse, poorly sorted, sub angular to sub rounded, common light grey argillaceous matrix, trace pyrite cement, occasionally loose, hard, fair inferred and visible porosity.
2820	2825		Nil fluorescence.
		15	CLAYSTONE: as above.
		70	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 1: carbonaceous, as above.
		15	SANDSTONE: clear to translucent, very fine to occasionally coarse, dominantly fine, poorly sorted, sub angular to sub rounded, common light grey argillaceous matrix, trace pyrite cement, occasionally loose, hard, poor to fair inferred and visible porosity.
2825	2830		Nil fluorescence.
		10	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		50	SANDSTONE: clear to translucent, occasionally pale grey, medium to coarse, occasionally very fine, moderately poorly sorted, sub angular to sub rounded, occasionally rounded, rare light grey argillaceous matrix, trace pyrite cement, occasionally hard aggregates, fair inferred and visible porosity.
			Nil fluorescence.
			<b>Midnight depth 11 March 2005 = 2828.0 mMDRT (1587.1 mTVDRT)</b>
		30	SILTSTONE 1: arenaceous, as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m)		%	Lithology / Show Description
From	To		
2830	2835	70	SANDSTONE: as above. Nil fluorescence.
		20	SILTSTONE 1: arenaceous, as above.
		80	SANDSTONE: as above. Nil fluorescence.
2835	2840	10	CLAYSTONE: light grey to light green grey, trace glauconite, soft to moderately hard, sub blocky.
		20	SILTSTONE: light grey brown to light grey, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		70	SANDSTONE: clear to translucent, occasionally pale grey, fine to medium, commonly coarse, moderately well sorted, sub angular to sub rounded, trace pyrite cement, occasionally loose, hard, fair inferred and visible porosity. Nil fluorescence.
2840	2845	10	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		50	SANDSTONE: as above. Nil fluorescence.
2845	2850		<b>Gas Peak at 2846.5 mMDRT: 52 / 20 units BG.</b>
		Trace	COAL: black, sub vitreous, brittle, sub fissile, angular, woody texture, occasionally silty grading to carbonaceous SILTSTONE.
		30	CLAYSTONE: as above.
		30	SILTSTONE 1: arenaceous, as above.
		40	SANDSTONE: as above. Nil fluorescence.
2850	2855		<b>Gas Peak at 2851.5 mMDRT: 53 / 25 units BG.</b>
		5	COAL: as above.
		20	CLAYSTONE: light grey to light green grey, trace glauconite, soft to moderately hard, sub blocky.
		5	SILTSTONE 1: light grey brown to light grey, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		10	SILTSTONE 2: blackish red to dusky red, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
		60	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to dominantly sub rounded, trace light grey argillaceous matrix, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
2855	2860	5	COAL: as above.
		20	CLAYSTONE: as above.
		15	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
		60	SANDSTONE: as above. Nil fluorescence.
2860	2865	Trace	COAL: as above.
		20	CLAYSTONE: as above.
		10	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: carbonaceous, as above.
		50	SANDSTONE: as above. Nil fluorescence.
			<b>Gas Peak at 2867.0 mMDRT: 101 / 20 units BG.</b>



## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2865	2870	15	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		65	SANDSTONE: as above. Nil fluorescence. <b>Gas Peak at 2870.5 mMDRT: 60 / 30 units BG.</b>
2870	2875	20	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		60	SANDSTONE: as above. Nil fluorescence. <b>Gas Peak at 2874.0 mMDRT: 50 / 25 units BG.</b>
2875	2880	5	COAL: black, sub vitreous, brittle, sub fissile, angular, woody texture, occasionally silty grading to carbonaceous SILTSTONE.
		15	CLAYSTONE: light grey to light green grey, trace glauconite, soft to moderately hard, sub blocky.
		20	SILTSTONE 1: light grey brown to light grey, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		60	SANDSTONE: clear to translucent, fine to occasionally very coarse, rare fractured quartz grains, poorly sorted, sub angular to dominantly sub rounded, trace light grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
2880	2885	Trace	COAL: as above.
		15	CLAYSTONE: as above.
		15	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: blackish red to dusky red, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
2885	2890	70	SANDSTONE: as above. Nil fluorescence.
		30	CLAYSTONE: as above.
		10	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
2890	2895	60	SANDSTONE: as above. Nil fluorescence.
		25	CLAYSTONE: pale green to pale blue, occasionally greyish blue green, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		20	SILTSTONE 1: light brown to moderate brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE 2: moderate brown to dusky brown, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
2895	2900	50	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly coarse, moderately poorly sorted, sub angular to sub rounded, trace light grey argillaceous matrix, trace glauconite, trace pyrite nodules, trace pyrite cement, commonly loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
		15	CLAYSTONE: as above.
		25	SILTSTONE 1: arenaceous, as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2900	2905	60	SANDSTONE: clear to translucent, fine to medium, occasionally coarse, poorly sorted, sub angular to sub rounded, abundant pale grey brown argillaceous matrix, trace glauconite, trace pyrite nodules, trace pyrite cement, trace frosted to grey quartz grains, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
		10	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		50	SANDSTONE: clear to translucent, fine to commonly coarse, poorly sorted, sub angular to sub rounded, abundant pale grey brown argillaceous matrix, trace glauconite, trace pyrite nodules, trace pyrite cement, trace frosted to grey quartz grains, loose, hard, poor to fair inferred and visible porosity. Nil fluorescence.
2905	2910		<b>Gas Peak at 2906.0 mMDRT: 48 / 20 units BG.</b>
		10	COAL: black to blackish red, sub vitreous, brittle, sub fissile, angular, occasionally woody texture, silty grading to carbonaceous SILTSTONE, moderately hard, sub blocky.
		10	CLAYSTONE: pale green to pale blue, occasionally greyish blue green, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		25	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		10	SILTSTONE 2: moderate brown to dark reddish brown, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
2910	2915	45	SANDSTONE: clear to translucent, fine to commonly very coarse, poorly sorted, sub angular to sub rounded, common very light brown argillaceous matrix, trace glauconite, common pyrite nodules, trace pyrite cement, hard aggregates, occasionally loose, poor to fair inferred and visible porosity. Nil fluorescence.
		5	COAL: as above.
		10	CLAYSTONE: as above.
		35	SILTSTONE 1: arenaceous, as above.
2915	2820	50	SANDSTONE: as above. Nil fluorescence.
		10	COAL: as above.
		10	CLAYSTONE: as above.
		50	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
2920	2925	20	SANDSTONE: clear to translucent, fine to dominantly medium, moderately well sorted, sub angular to sub rounded, common very light brown argillaceous matrix, trace glauconite, loose, poor to fair inferred and visible porosity. Nil fluorescence.
		Trace	COAL: as above.
		15	CLAYSTONE: as above.
		45	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
2925	2930	30	SANDSTONE: as above. Nil fluorescence.
		10	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: carbonaceous, as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
2930	2935	45	SANDSTONE: clear to translucent, medium to dominantly coarse, occasionally fine, moderately well sorted, sub angular to sub rounded, trace very light brown argillaceous matrix, common to abundant pyrite nodules, trace pyrite cement, trace glauconite, loose, poor to fair inferred and visible porosity. Nil fluorescence.
		15	CLAYSTONE: pale green to pale blue, occasionally greyish blue green, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		30	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		55	SANDSTONE: clear to translucent, very fine to occasionally coarse, dominantly medium, moderately poorly sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, occasionally loose, poor inferred and visible porosity. Nil fluorescence.
2935	2940	<b>Due to increasing torque and drag, Radiagreen EME salt (a torque and drag lubricant) added to the mud system at 2937.0 mMDRT, and a 2% by volume concentration was achieved at 2957.0 mMDRT.</b>	
		25	CLAYSTONE: as above.
		30	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: moderate brown to dark reddish brown, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
2940	2945	40	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately poorly sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, occasionally loose, poor inferred and visible porosity. Nil fluorescence.
		30	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		30	SANDSTONE: clear to translucent, very fine to occasionally coarse, dominantly medium, moderately poorly sorted, sub angular to sub rounded, abundant very light brownish grey argillaceous matrix, abundant pyrite nodules, trace pyrite cement, hard aggregates, occasionally loose, poor inferred and visible porosity. Nil fluorescence.
2945	2950	70	CLAYSTONE: pale green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		5	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		25	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately poorly sorted, sub angular to sub rounded, nil matrix, common pyrite nodules, trace pyrite cement, loose, poor to fair inferred and visible porosity. Nil fluorescence.
2950	2955	40	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.

## Tuna A14A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2955	2960	40	SANDSTONE: clear to translucent, occasionally frosted, occasionally fine to dominantly very coarse, moderately well sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix in part, trace pyrite nodules, trace pyrite cement, loose, fair to good inferred and visible porosity. <b>FLUORESCENCE: 5%, moderately bright, spotted greenish yellow fluorescence, moderately rapid blooming direct cut, thick ring residue.</b> <b>Mudlog bar: 0.5</b> <b>Top of L-095 Sand at 2958.0 mMDRT/ 1685.7 mTVDRT.</b> <b>Gas Peak at 2960.5 mMDRT: 55 / 20 units BG.</b>
		30	CLAYSTONE: as above.
		30	SILTSTONE 1: arenaceous, as above.
		40	SANDSTONE: clear to translucent, medium to occasionally very coarse, moderately poorly sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix matrix, abundant pyrite nodules, trace pyrite cement, trace silica ooids, trace silica forams, loose, poor to fair inferred and visible porosity. Nil fluorescence. <b>Top of L-100 Sand at 2961.5 mMDRT/ 1688.7 mTVDRT.</b> <b>Gas Peak at 2965.5 to 2967.5 mMDRT: 91 / 35 units BG.</b>
2960	2965	10	CLAYSTONE: pale green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		50	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		40	SANDSTONE: clear to translucent very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix in part, common pyrite nodules, trace pyrite cement, hard aggregates, loose, poor to fair inferred and visible porosity. <b>FLUORESCENCE: 5%, pale to moderately bright, spotted greenish yellow fluorescence, slow bleeding direct cut, thick ring residue.</b> <b>Mudlog bar: 0.3</b>
2965	2970	10	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		50	SANDSTONE: as above. <b>FLUORESCENCE: 5%, pale to moderately bright, spotted greenish yellow fluorescence, moderately rapid blooming direct cut, thick ring residue.</b> <b>Mudlog bar: 0.3</b>
2970	2975	35	CLAYSTONE: as above.
		30	SILTSTONE 1: arenaceous, as above.
		35	SANDSTONE: clear to translucent, occasionally frosted, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace very light brownish grey argillaceous matrix in part, common pyrite nodules, trace pyrite cement, commonly loose, hard, poor to fair inferred and visible porosity. <b>FLUORESCENCE: Trace, dull, spotted greenish yellow fluorescence, no direct cut, very slow crush cut, thin ring residue.</b> <b>Mudlog bar: 0.3</b> <b>Midnight depth 12 March 2005 = 2980.0 mMDRT (1704.5 mTVDRT)</b> <b>Gas Peak at 2978.5 to 2967.5 mMDRT: 53 / 35 units BG.</b>
2975	2980	30	CLAYSTONE: pale green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.

## Tuna A14A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2980	2985	5	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		65	SANDSTONE: clear to translucent, very fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, nil matrix, common pyrite nodules, trace pyrite cement, loose, hard, fair inferred and visible porosity. Nil fluorescence.
		10	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
2985	2990	70	SANDSTONE: clear to translucent, fine to coarse, moderately well sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, occasionally loose, fair inferred and visible porosity. <b>FLUORESCENCE: 5%, moderately bright, spotted greenish yellow fluorescence, very slow bleeding direct cut, thin ring residue.</b> <b>Mudlog bar: 0.3</b>
		5	CLAYSTONE: as above.
		5	SILTSTONE 1: arenaceous, as above.
		90	SANDSTONE: clear to translucent, fine to occasionally coarse, dominantly medium, moderately well sorted, sub angular to dominantly sub rounded, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard, loose, fair inferred and visible porosity. Nil fluorescence.
2990	2995	5	CLAYSTONE: pale green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		20	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		75	SANDSTONE: as above. <b>FLUORESCENCE: Trace, dull to moderately bright, spotted greenish yellow fluorescence, no direct cut, slow crush cut, thin ring residue.</b> <b>Mudlog bar: 0.0</b>
			<b>Top of L-110 Sand at 2997.5 mMDRT/ 1719.4 mTVDR.</b>
2995	3000	5	CLAYSTONE: as above.
		35	SILTSTONE 1: arenaceous, as above.
		60	SANDSTONE: as above. Nil fluorescence.
3000	3005	10	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		50	SANDSTONE: clear to translucent, fine to medium, occasionally coarse, moderately well sorted, sub rounded occasionally sub angular, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard, loose, fair to good inferred and visible porosity. Nil fluorescence. <b>Gas Peak at 3008.0 mMDRT: 56 / 37 units BG.</b>
3005	3010	20	CLAYSTONE: as above.
		60	SILTSTONE 1: arenaceous, as above.
		20	SANDSTONE: as above. Nil fluorescence. <b>Gas Peak at 3014.0 mMDRT: 105 / 38 units BG.</b>
3010	3015	10	CLAYSTONE: as above.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
3015	3020	50	SILTSTONE 1: arenaceous, as above.
		40	SANDSTONE: as above. Nil fluorescence.
			<b>Top of L-150 Sand at 3018.0 mMDRT/ 1737.2 mTVDRT.</b>
		10	CLAYSTONE: as above.
		60	SILTSTONE 1: arenaceous, as above.
3020	3025	30	SANDSTONE: as above. Nil fluorescence.
			<b>Gas Peak at 3023.5 mMDRT: 104 / 65 units BG.</b>
		20	CLAYSTONE: as above.
		40	SILTSTONE 1: arenaceous, as above.
		40	SANDSTONE: clear to translucent, occasionally fine to very coarse, poorly sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix, common pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, occasionally loose, poor to fair inferred and visible porosity. Nil fluorescence.
3025	3030		<b>Top of L-160 Sand at 3027.0 mMDRT/ 1745.1 mTVDRT.</b>
		5	CLAYSTONE: pale green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		75	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE 2: moderate brown to dark reddish brown, very carbonaceous grading to silty COAL, firm to moderately hard, sub blocky.
		15	SANDSTONE: clear to translucent, very fine to occasionally coarse, poorly sorted, sub angular to sub rounded, abundant very light brownish grey argillaceous matrix, common pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, occasionally loose, poor to fair inferred and visible porosity. Nil fluorescence.
3030	3035		<b>Gas Peak at 3032.0 mMDRT: 118 / 59 units BG.</b>
		10	CLAYSTONE: as above.
		70	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
		20	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, dominantly loose, poor to fair inferred and visible porosity. Nil fluorescence.
3035	3040		<b>Gas Peak at 3032.0 mMDRT: 157 / 65 units BG.</b>
		5	CLAYSTONE: as above.
		60	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
		25	SANDSTONE: as above. Nil fluorescence.
3040	3045	Trace	CLAYSTONE: as above.
		85	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
		5	SANDSTONE: as above. Nil fluorescence.
			<b>Gas Peak at 3047.0 mMDRT: 104 / 80 units BG.</b>

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From      To		%	Lithology / Show Description
3045	3050	10	CLAYSTONE: as above.
		75	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: carbonaceous, as above.
		10	SANDSTONE: clear to translucent, medium to occasionally very coarse, moderately well sorted, sub angular to sub rounded, common very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, hard aggregates, occasionally loose, poor to fair inferred and visible porosity. Nil fluorescence.
3050	3055		<b>Gas Peak at 3053.0 mMDRT: 102 / 70 units BG.</b>
		5	COAL: black, sub vitreous, brittle, sub fissile, angular.
		5	CLAYSTONE: pale green to pale blue, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		75	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE 2: brownish black, very carbonaceous grading to silty COAL, trace pyrite, moderately hard, sub blocky to blocky.
		5	SANDSTONE: as above. Nil fluorescence.
3055	3060		<b>Top of L-200 Sand at 3058.0 mMDRT/ 1772.1 mTVDRT.</b>
			<b>Gas Peak at 3058.0 mMDRT: 131 / 60 units BG.</b>
		10	COAL: as above.
		5	CLAYSTONE: as above.
		70	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: carbonaceous, as above.
3060	3065	10	SANDSTONE: as above. Nil fluorescence.
			<b>Gas readings dropping off after 3064.0 mMDRT.</b>
			<b>L-200 Sand (Possible OWC) at 3064.0 mMDRT/ 1777.4 mTVDRT.</b>
		5	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		75	SANDSTONE: clear to translucent, very fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to predominantly sub rounded, common very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, occasionally loose, poor to fair inferred and visible porosity. Nil fluorescence.
3065	3070	5	CLAYSTONE: as above.
		15	SILTSTONE 1: arenaceous, as above.
		80	SANDSTONE: as above. Nil fluorescence.
3070	3075		<b>Gas Peak at 3070.5 mMDRT: 99 / 50 units BG.</b>
		10	CLAYSTONE: as above.
		25	SILTSTONE 1: arenaceous, as above.
		65	SANDSTONE: clear to translucent, medium to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to predominantly sub rounded, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, commonly loose, poor to fair inferred and visible porosity. Nil fluorescence.
			<b>Gas Peak at 3078.0 mMDRT: 71 / 40 units BG.</b>



## **Tuna A14A Lithology / Show Descriptions**

Interval (m)		%	Lithology / Show Description
From	To		
3075	3080	20	CLAYSTONE: greenish grey to medium grey, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		40	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		40	SANDSTONE: as above. Nil fluorescence.
3080	3085	40	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		40	SANDSTONE: clear to translucent, fine to dominantly very coarse, moderately poorly sorted, sub angular to sub rounded, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, hard aggregates, occasionally loose, poor to fair inferred and visible porosity. Nil fluorescence.
			<b>Top of L-320 Sand at 3088.0 mMDRT/ 1798.5 mTVDRT.</b> <b>Gas Peak at 3089.5 mMDRT: 106 / 50 units BG.</b>
3085	3090	Trace	CLAYSTONE: as above.
		75	SILTSTONE 1: arenaceous, as above.
		25	SANDSTONE: clear to translucent, fine to very coarse, dominantly coarse, moderately poorly sorted, sub angular to sub rounded, rare very light brownish grey argillaceous matrix, trace pyrite nodules, hard, loose, fair inferred and visible porosity. Nil fluorescence.
3090	3095	15	CLAYSTONE: greenish grey to medium grey, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		50	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE 2: brownish black, very carbonaceous grading to silty COAL, trace pyrite, moderately hard, sub blocky to blocky.
		30	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace very light brownish grey argillaceous matrix, trace glauconite, hard, loose, fair to good inferred and visible porosity. Nil fluorescence.
3095	3100	5	CLAYSTONE: as above.
		20	SILTSTONE 1: arenaceous, as above.
		75	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard, loose, fair to good inferred and visible porosity. Nil fluorescence.
3100	3105	5	CLAYSTONE: greenish grey to medium grey, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		65	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE 2: brownish black, very carbonaceous grading to silty COAL, trace pyrite, moderately hard, sub blocky to blocky.
		25	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace very light brownish grey argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard, loose, fair to good inferred and visible porosity. Nil fluorescence.



## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
3105	3110	5	CLAYSTONE: as above.
		65	SILTSTONE 1: arenaceous, as above.
		5	SILTSTONE 2: carbonaceous, as above.
		25	SANDSTONE: as above. Nil fluorescence. <b>Gas Peak at 3113.0 mMDRT: 218 / 55 units BG.</b>
3110	3115	5	CLAYSTONE: as above.
		80	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		15	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to sub rounded, nil matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard, loose, fair to good inferred and visible porosity. Nil fluorescence. <b>Gas Peak at 3118.0 to 3121.0 mMDRT: 142 / 65 units BG.</b>
3115	3120	5	COAL: brownish black to black, sub vitreous, brittle, uneven, woody texture, silty in part grading to carbonaceous SILTSTONE, sub fissile to sub blocky.
		5	CLAYSTONE: greenish grey to medium grey, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		75	SILTSTONE 1: light brownish grey to light brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		10	SILTSTONE 2: brownish black, very carbonaceous grading to silty COAL, trace pyrite, moderately hard, sub blocky to blocky.
		5	SANDSTONE: as above. Nil fluorescence.
3120	3125	5	COAL: as above.
		5	CLAYSTONE: as above.
		65	SILTSTONE 1: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		15	SILTSTONE 2: brownish black to dusky brown, very carbonaceous grading to silty COAL, trace pyrite, moderately hard, sub blocky to blocky.
		10	SANDSTONE: as above. Nil fluorescence.
3125	3130	5	COAL: as above.
		75	SILTSTONE 1: arenaceous, as above.
		10	SILTSTONE 2: carbonaceous, as above.
		10	SANDSTONE: as above. Nil fluorescence.
3130	3135	Trace	COAL: as above.
		10	CLAYSTONE: greenish grey to medium grey, trace micromicaceous, trace glauconite, slightly calcareous, moderately hard to hard, blocky.
		65	SILTSTONE 1: arenaceous, as above.
		Trace	SILTSTONE 2: carbonaceous, as above.
		25	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, trace light brown argillaceous matrix, trace pyrite nodules, trace pyrite cement, trace glauconite, hard aggregates, poor inferred and visible porosity. Nil fluorescence.
3135	3140	20	CLAYSTONE: greenish grey to medium blueish grey, trace glauconite, slightly calcareous, moderately hard to hard, blocky.

## **Tuna A14A Lithology / Show Descriptions**

Interval (m) From To		%	Lithology / Show Description
3140	3142 <b>TD</b>	15	SILTSTONE 1: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace micromicaceous, soft to firm, amorphous to sub-blocky.
		65	SANDSTONE: clear to translucent, medium to commonly very coarse, moderately well sorted, sub angular to sub rounded, trace light brown argillaceous matrix, trace pyrite nodules, trace glauconite, loose, hard, fair to good inferred and visible porosity. Nil fluorescence.
		15	CLAYSTONE: as above.
		15 70	SILTSTONE 1: arenaceous, as above. SANDSTONE: as above.

TNA A14A TD criterion:

Drill to the Measured Depth equivalent to the TVDRT of the L-200 Possible OWC of 1784.52 m. Then drill 60.0 mMDRT rathole for Reeves wireline logging.

Based on the Inclination this MD (for the equivalent TVDRT of 1784.52 m) was 3072.2 mMDRT. Decided to drill to 3142 .0 mMDRT, taking into account the casing tally.

The final Schlumberger Direction Driller's projected TVDRT was 1845.2 m for the drilled TD of 3142.0 mMDRT.

**TNA A14A reached a TD of 3142.0 mMDRT = 1845.2 mTVDRT (-1813.9 mTVDSS) at 14:15 hrs 13 March 2005.**

CBU. POOH to shoe.

Wiper Trip.

Trip gas 68 units at 08:10 hrs, 14 March 2005.

Last circulation at 11:36 hrs, 14 March 2005.

Start POOH at 11:40 hrs, 14 March 2005 for Reeves Wireline Logging Run #1..

**IN ALL OF THE ABOVE FLUORESCENCE DESCRIPTIONS, "TRACE TO 5%" IN QUANTITY WOULD MOST LIKELY BE CAVINGS AND SHOULD BE DISREGARDED. THE "TRACE TO 5%" IN QUANTITY HAS BEEN RECORDED AS SEEN IN THE SAMPLES.**

## Tuna A14A Lithology / Show Descriptions

Interval (m) From To	%	Lithology / Show Description
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Logging Interval.

Reeves Logging:  
As per the Logging protocol:

Interval to be logged: from TD to 80 mTVDRT above the TOL.

TOL at 2246.5 mMDRT = 1346.8 mTVDRT.

80.0 mTVDRT above = 1266.8 mTVDRT = 2019.0 mMDRT.

At Logging speed from TD 3142.0 to 2019.0 mMDRT.

At Tripping speed from 2019.0 mMDRT to the top of the milled window at 844.8 mMDRT.

Actual:

At **Logging speed** from **TD (3142.0 mMDRT)** to **2019.0 mMDRT**.

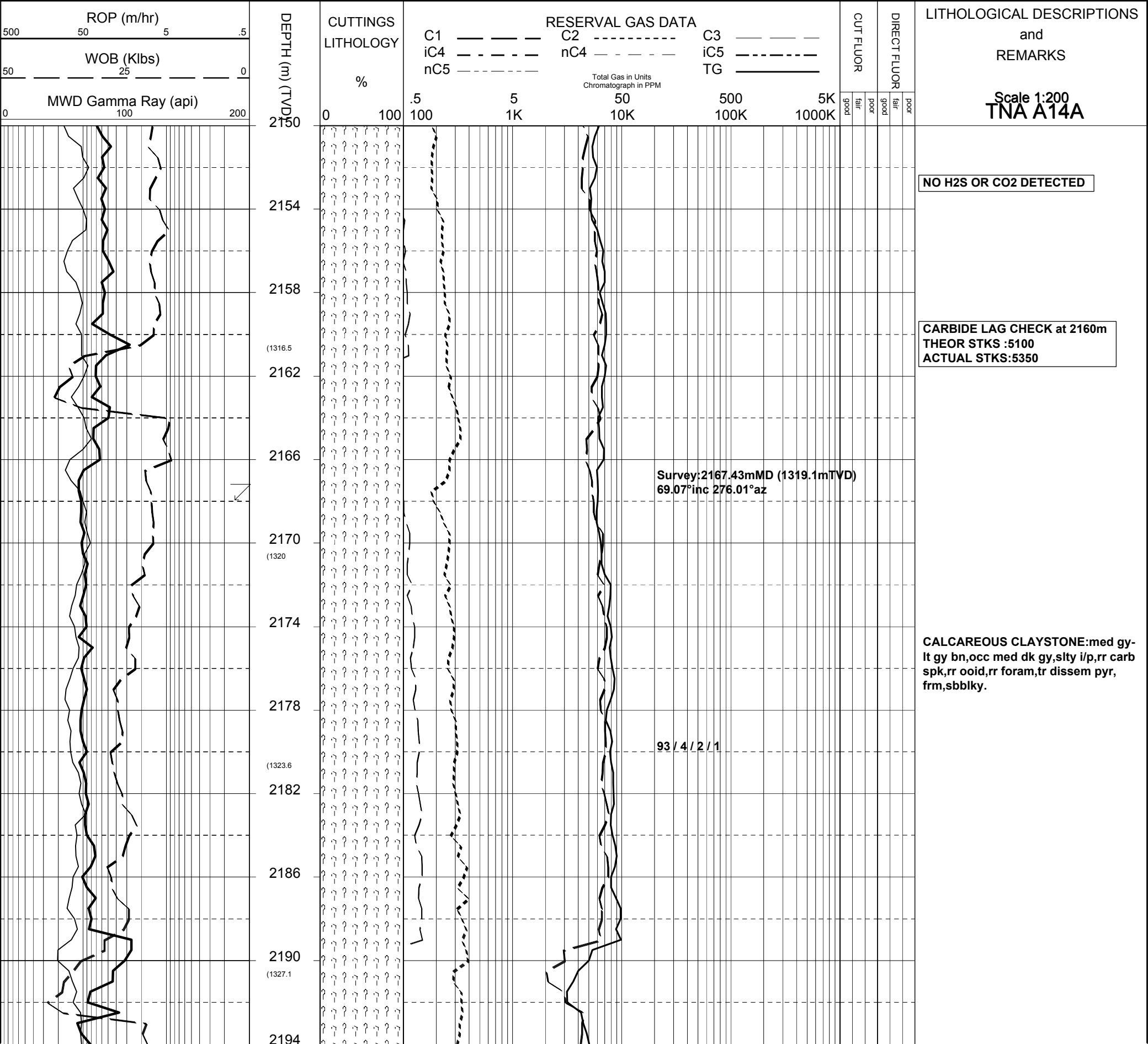
At Tripping Speed from **2019.0 mMDRT** to **Surface**.

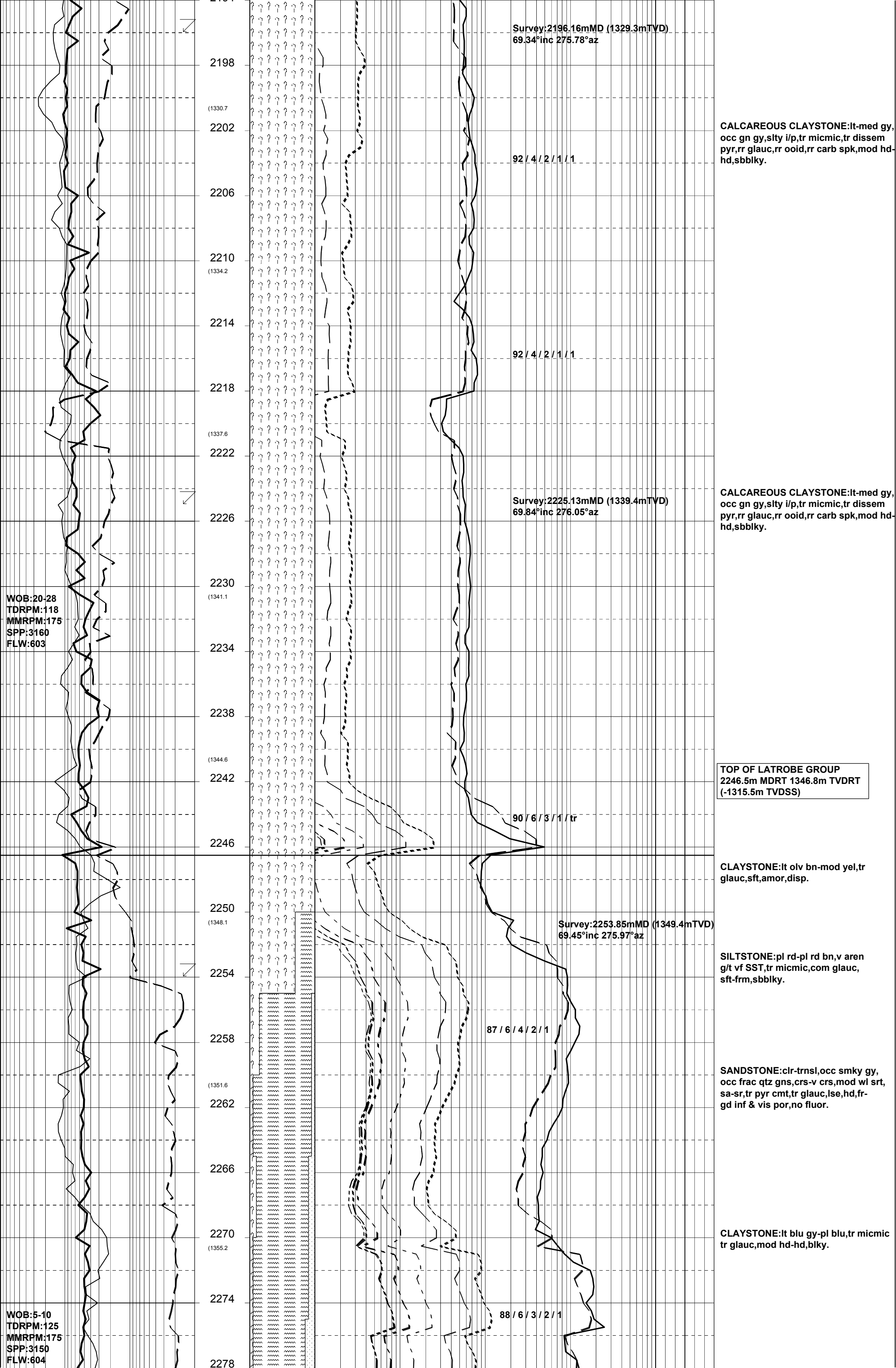
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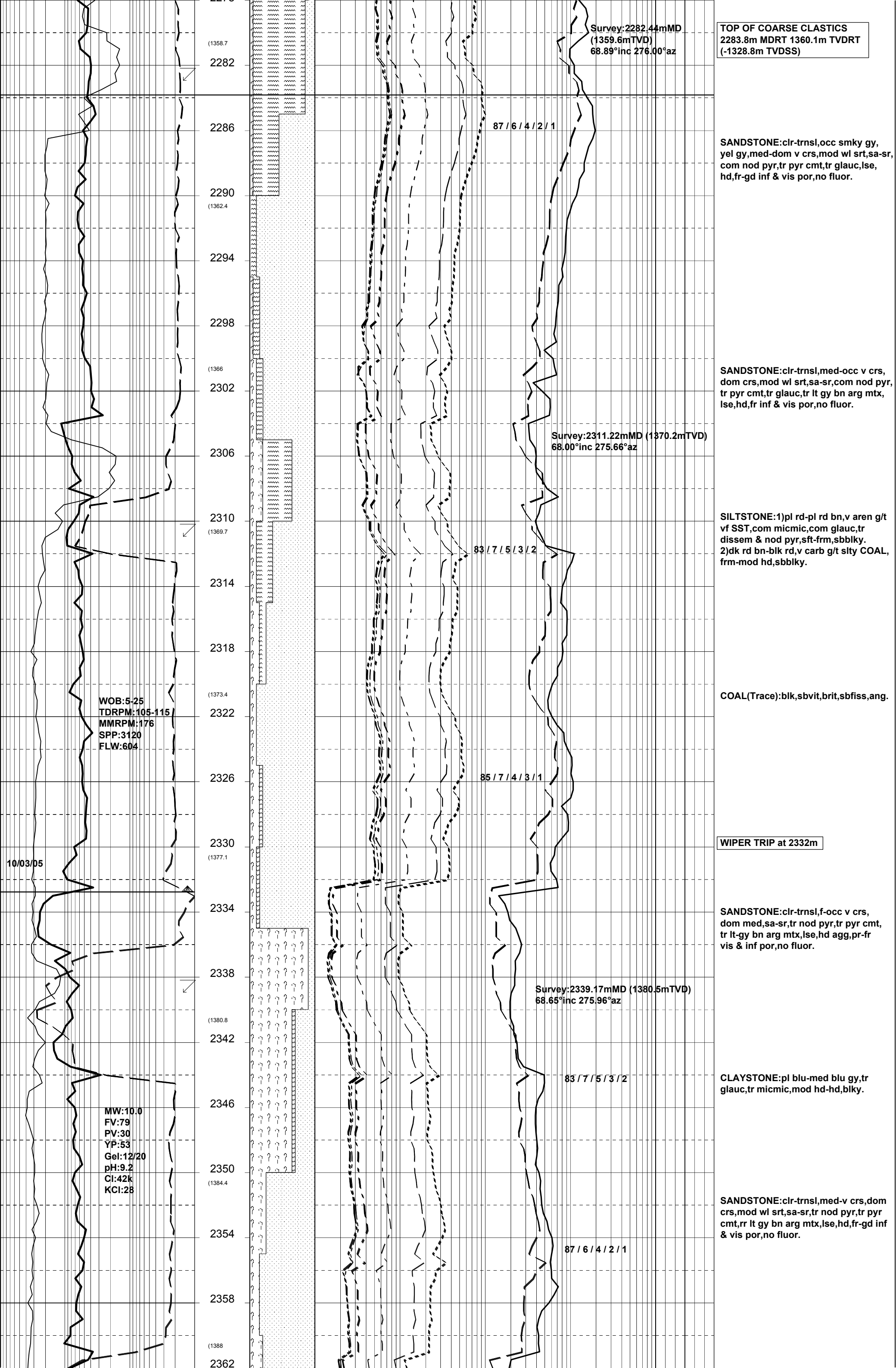
## **APPENDIX 4a**

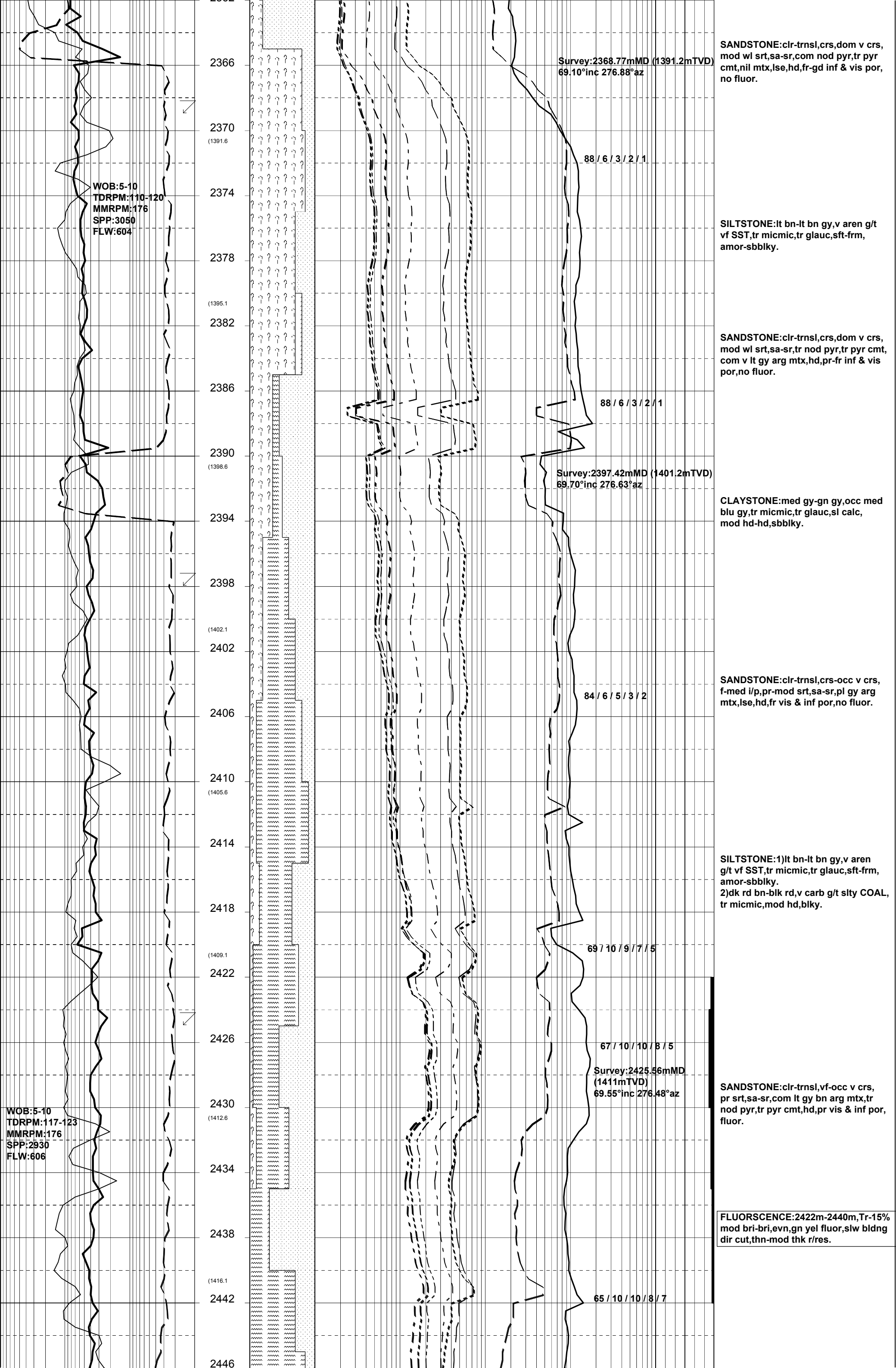
### **TUNA A14A**

#### **Mud Log**

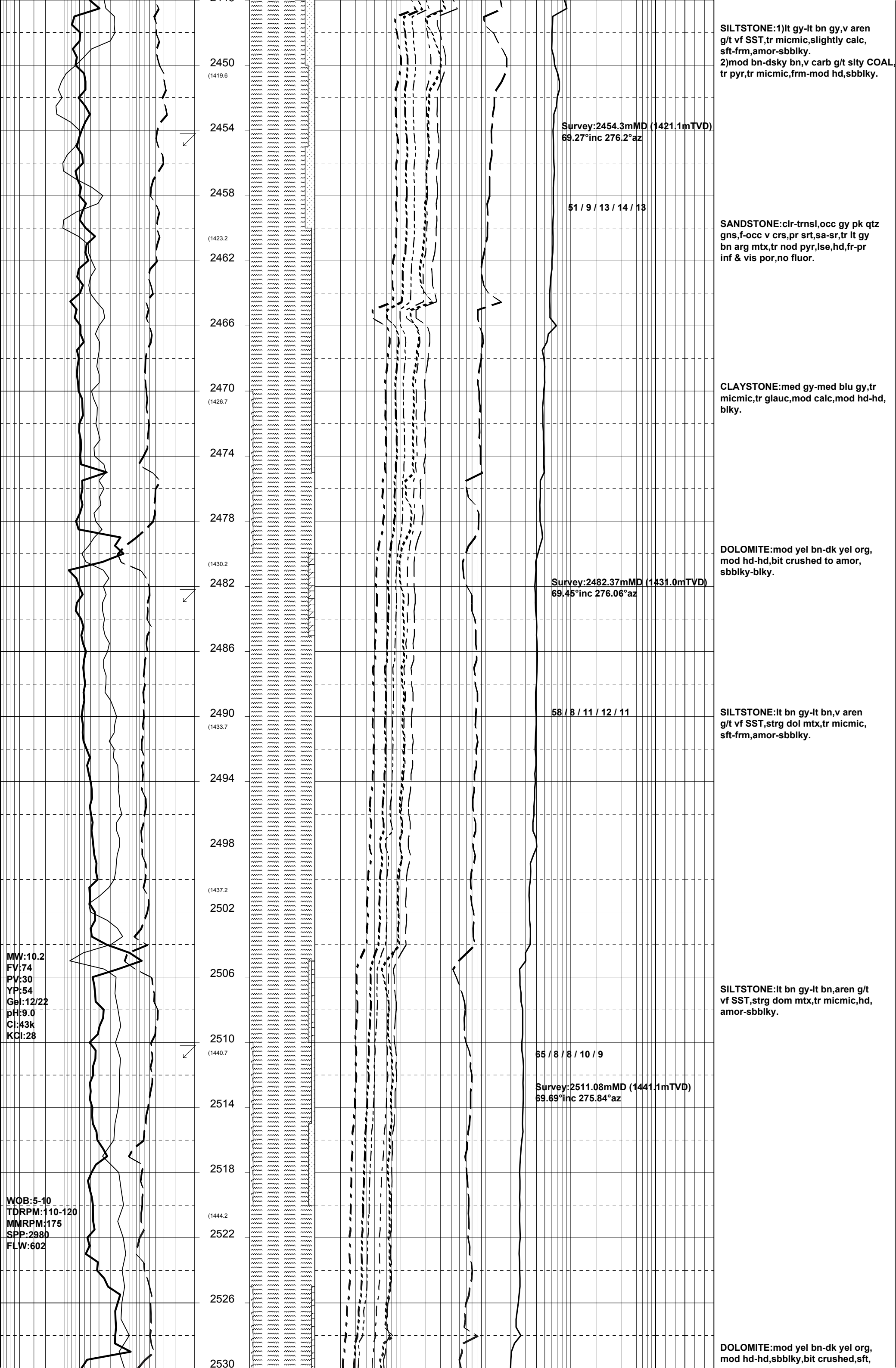












SILTSTONE:1)lt gy-lt bn gy,v aren g/t vf SST,tr micmic,slightly calc, sft-frm,amor-sbblky.  
2)mod bn-dsky bn,v carb g/t slty COAL tr pyr,tr micmic,frm-mod hd,sbblky.

Survey:2454.3mMD (1421.1mTVD)  
69.27°inc 276.2°az

51 / 9 / 13 / 14 / 13

SANDSTONE:clr-trnsl,occ gy pk qtz gns,f-occ v crs,pr srt,sa-sr,tr lt gy bn arg mtx,tr nod pyr,lse,hd,fr-pr inf & vis por,no fluor.

CLAYSTONE:med gy-med blu gy,tr micmic,tr glauc,mod calc,mod hd-hd, blky.

DOLOMITE:mod yel bn-dk yel org, mod hd-hd,bit crushed to amor, sbblky-blky.

Survey:2482.37mMD (1431.0mTVD)  
69.45°inc 276.06°az

58 / 8 / 11 / 12 / 11

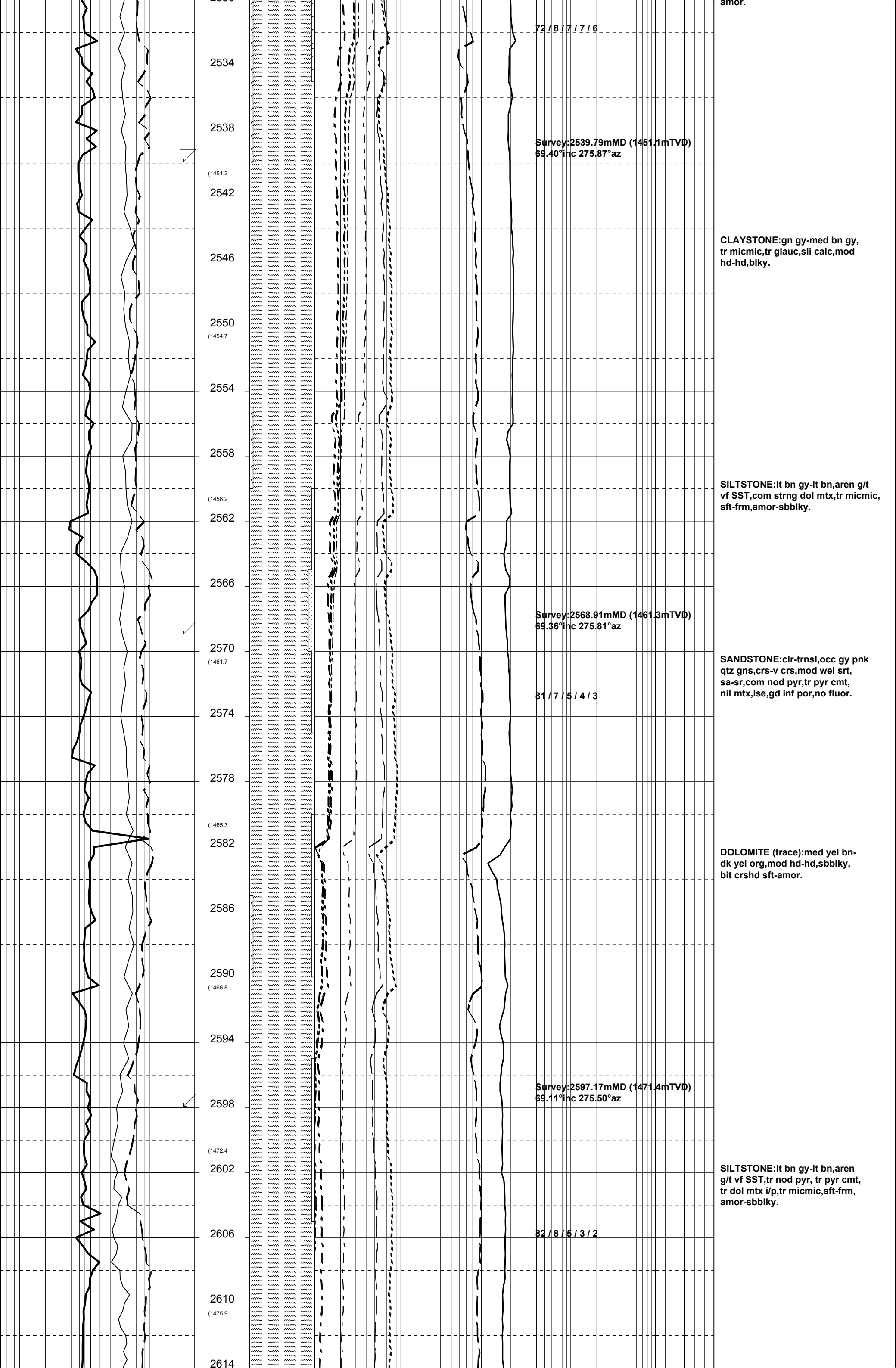
SILTSTONE:lt bn gy-lt bn,v aren g/t vf SST,strg dol mtx,tr micmic, sft-frm,amor-sbblky.

SILTSTONE:lt bn gy-lt bn,aren g/t vf SST,strg dom mtx,tr micmic,hd, amor-sbblky.

65 / 8 / 8 / 10 / 9

Survey:2511.08mMD (1441.1mTVD)  
69.69°inc 275.84°az

DOLOMITE:mod yel bn-dk yel org, mod hd-hd,sbblky,bit crushed,sft,



WOB:5-10  
TDRPM:110  
MMRPM:175  
SPP:2950  
FLW:605

MW:10.1  
FV:56  
PV:30  
YP:47  
Gel:11/21  
pH:9.3  
Cl:41k  
KCl:28

11/03/05

WOB:5-10  
TDRPM:110  
MMRPM:165  
SPP:2600  
FLW:560

SILTSTONE:lt bn gy-med bn,com  
arg,tr aren i/p g/t vf SST,micmic,  
sft-occ frm,com amor,sbblky.

Survey:2625.95mMD (1481.6mTVD)  
69.02°inc 275.27°az

CLAYSTONE:gn gy-med bn gy,  
tr micmic,tr glauc,sli calc,mod  
hd-hd,blky.

86 / 7 / 4 / 2 / 1

Survey:2654.26mMD (1492.4mTVD)  
66.44°inc 274.97°az

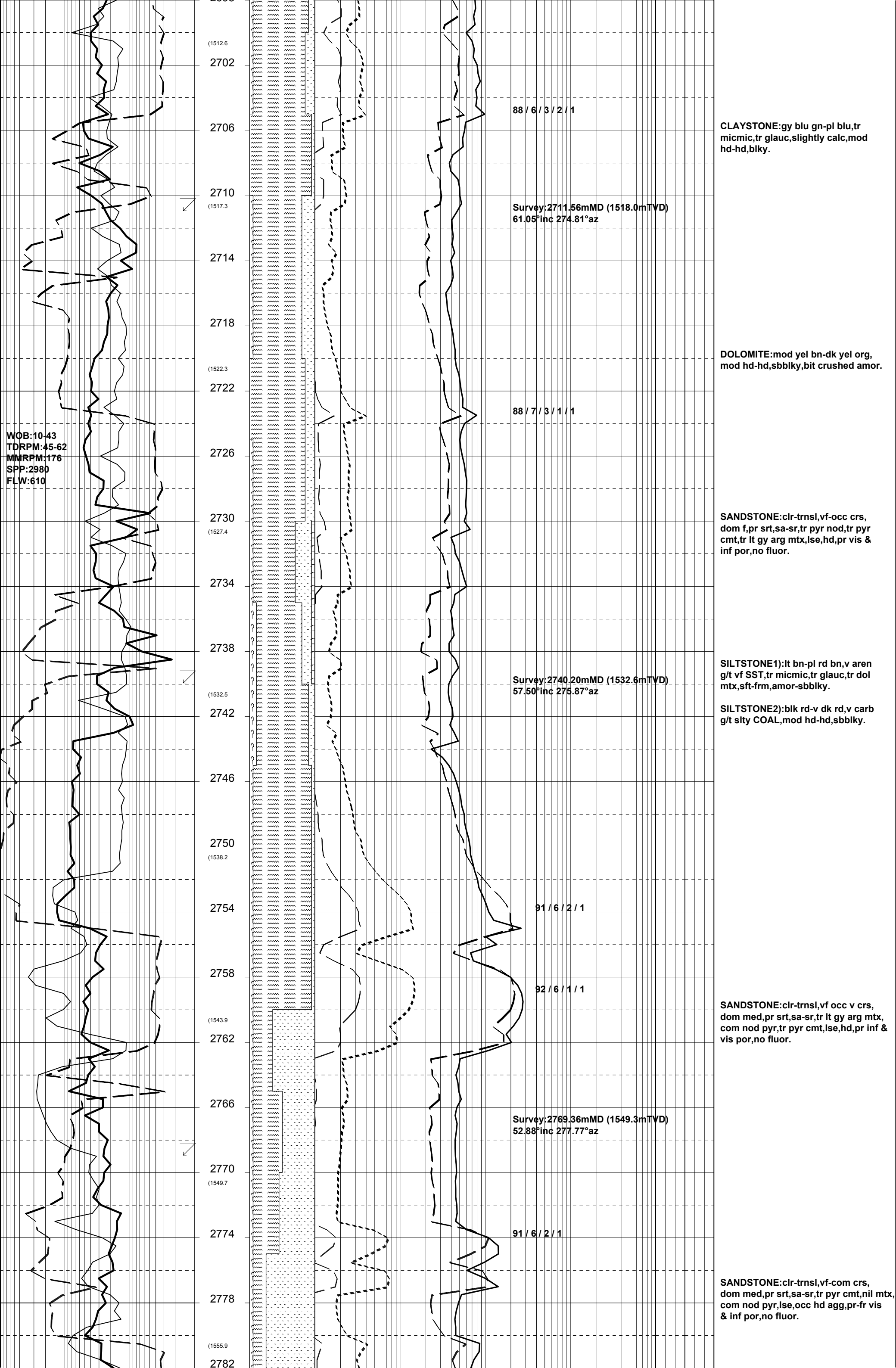
SILTSTONE:lt bn gy-med bn,com  
arg,tr aren i/p,micmic,sft-occ  
frm,com amor,sbblky.

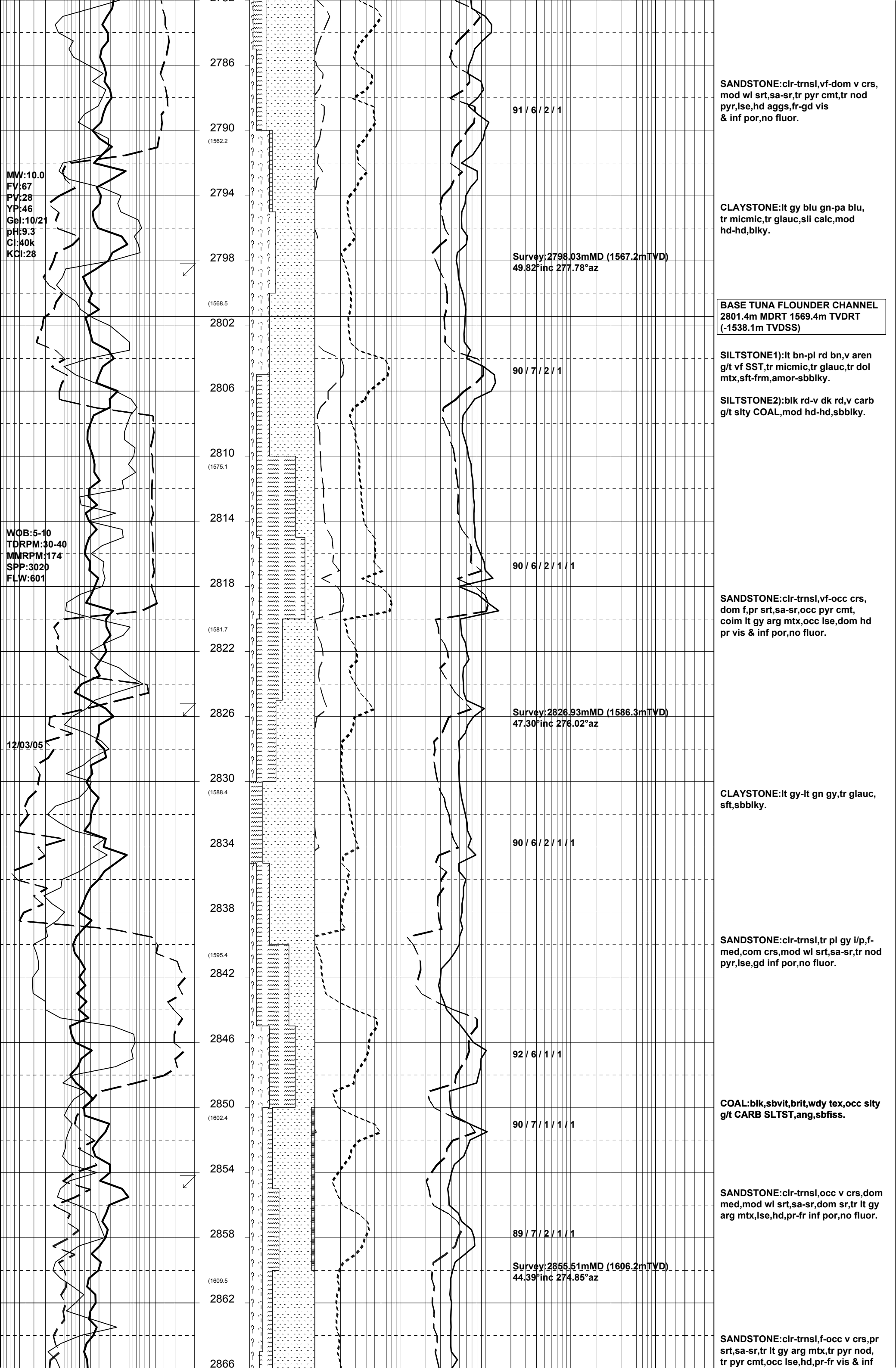
SANDSTONE:clr-trnsl,crs-  
v crs,mod wl srt,sa-sr,tr pyr  
cmt,nil mtX,tr nod pyr,lse,  
fr-gd inf por,no fluor.

Survey:2682.92mMD (1504.6mTVD)  
63.10°inc 274.75°az

86 / 7 / 4 / 2 / 1

SILTSTONE:lt gy bn-med dk bn,  
vf aren i/p,micmic,sft-frm,com  
amor,sbblky.





WOB:5  
TDRPM:60  
MMRPM:174  
SPP:2910  
FLW:596

WOB:2-40  
TDRPM:62  
MMRPM:177  
SPP:2950  
FLW:605

2870  
(1616.8)

2874

2878

2882  
(1624.2)

2886

2890  
(1631.7)

2894

2898  
(1639.4)

2902

2906

2910  
(1647)

2914

2918  
(1655)

2922

2926

2930  
(1662.9)

2934

2938

2942  
(1670.9)

2946

2950

89 / 7 / 2 / 1 / 1

89 / 7 / 2 / 1 / 1

84 / 9 / 3 / 2 / 2

Survey:2883.79mMD (1627.0mTVD)  
41.24°inc 275.02°az

86 / 8 / 3 / 2 / 1

88 / 7 / 3 / 1 / 1

Survey:2912.11mMD (1648.7mTVD)  
38.64°inc 274.19°az

83 / 8 / 5 / 3 / 1

84 / 8 / 5 / 2 / 1

82 / 8 / 5 / 3 / 2

Survey:2941.26mMD (1671.9mTVD)  
35.57°inc 274.11°az

82 / 8 / 5 / 3 / 2

por,no fluor.

SANDSTONE:clr-trnsl,occ v crs,pr  
srt,sa-sr,occ frac qtz gns,tr wh arg  
mtx,tr pyr cmt,tr pyr nod,pr-fr inf &  
vis por,no fluor.

SANDSTONE:clr-trnsl,f-med,occ crs,  
pr srt,sa-sr,tr pyr cmt,abdt pl gy bn  
arg mtx,tr frstd gy qtz gns,lse,mod hd,  
pr-fr inf & vis por,no fluor.

SANDSTONE:clr-trnsl,med,f-crs i/p,  
mod wl srt,sa-sr,occ pl gy bn arg mtx,  
tr nod pyr,lse,mod hd,pr-fr inf & vis  
por,no fluor.

COAL:blk,rd bn,dk bn,dll,ea occ  
g/t CARB SLTST,unevn,sft,sbblky.

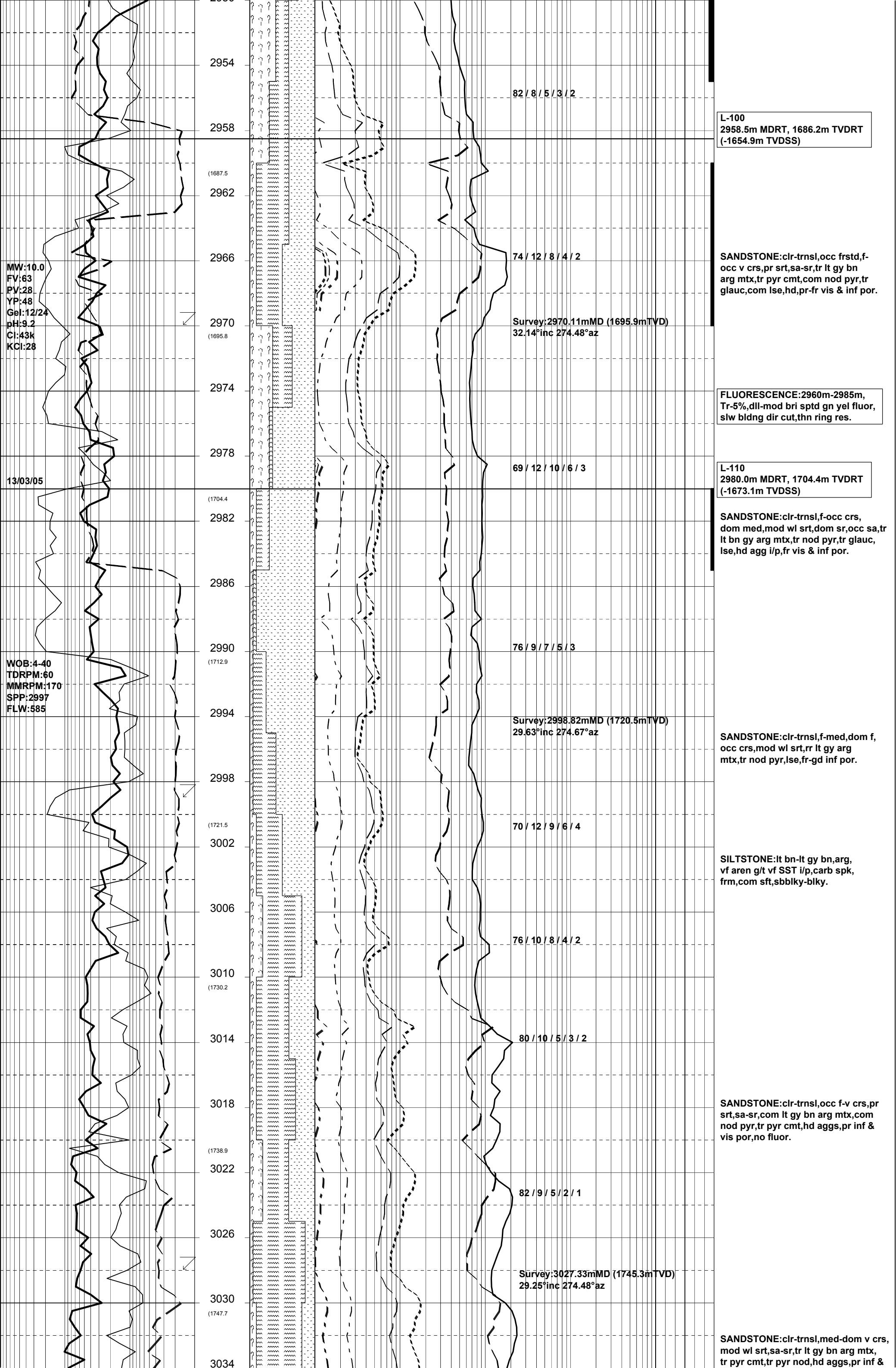
SANDSTONE:clr-trnsl,med-crs,f i/p,  
mod wl srt,sr-sa,occ pl gy bn arg mtx,  
com nod pyr,tr pyr cmt,lse,mod hd,fr  
vis & inf por,no fluor.

CLAYSTONE:pl gn-pl blu,tr  
micmic,tr glauc,sli calc,mod hd-  
hd,blky.

SANDSTONE:clr-trnsl,occ frstd,  
v crs,occ f,mod wl srt,sa-sr,  
com bn gy arg mtx i/p,tr pyr  
cmt,tr nod pyr,occ lse,hd,fr-  
gd inf por.

L-095  
2945.4m MDRT, 1675.4m TVDRT  
(-1644.1m TVDSS)

FLUORESCENCE:2950m-2955m,Tr-5%  
pl-mod bri sptd gn yel fluor,  
mod rapid blmng dir cut,v slw crsh  
cut,thk ring res.



WOB:5  
TDRPM:60  
MMRPM:170  
SPP:2780  
FLW:555

MW:10.0  
FV:61  
PV:29  
YP:51  
Gel:12/24  
pH:9.3  
Cl:44k  
KCl:28

WOB:5-8  
TDRPM:120  
MMRPM:175  
SPP:3120  
FLW:603

3038

(1756.4)

3042

3046

3050

(1765.1)

3054

3058

(1773.9)

3062

3066

3070

(1782.6)

3074

3078

(1791.3)

3082

3086

3090

(1800)

3094

3098

(1808.7)

3102

3106

3110

(1817.4)

3114

3118

82 / 9 / 5 / 2 / 1

Survey:3055.52mMD (1770.0mTVD)  
29.04°inc 274.60°az

85 / 8 / 4 / 2 / 1

Survey:3084.06mMD (1794.9mTVD)  
29.42°inc 274.47°az

78 / 11 / 7 / 3 / 1

Survey:3112.84mMD (1819.9mTVD)  
29.69°inc 274.29°az

77 / 10 / 8 / 4 / 1

vis por,no fluor.

SANDSTONE:clr-trnsl,med-occ v crs,  
dom crs,mod wl srt,sa-sr,com lt gy bn  
arg mtx,tr pyr nod,tr pyr cmt,hd aggs,  
occ lse,pr-fr inf & vis por,no fluor.

COAL:blk,sbvit,brit,ang,sbfiss.

L-200  
3057.7m MDRT, 1771.9m TVDRT  
(-1740.6m TVDSS)

SANDSTONE:clr-trnsl,vf-occ v crs,  
dom med,mod wl srt,pred sr,sa,tr lt gy  
bn arg mtx,tr pyr nod,tr pyr cmt,tr  
glauc,hd aggs,occ lse,pr-fr inf & vis  
por,no fluor.

L-200 (RESIDUAL OWC)  
3063.5m MDRT, 1776.9m TVDRT  
(-17445.6m TVDSS)

SANDSTONE:clr-trnsl,med-occ v crs,  
dom med,mod wl srt,sa-sr,tr lt gy bn  
arg mtx,tr pyr nod,tr pyr cmt,tr glauc,  
hd aggs,occ lse,pr-fr inf & vis por,  
no fluor.

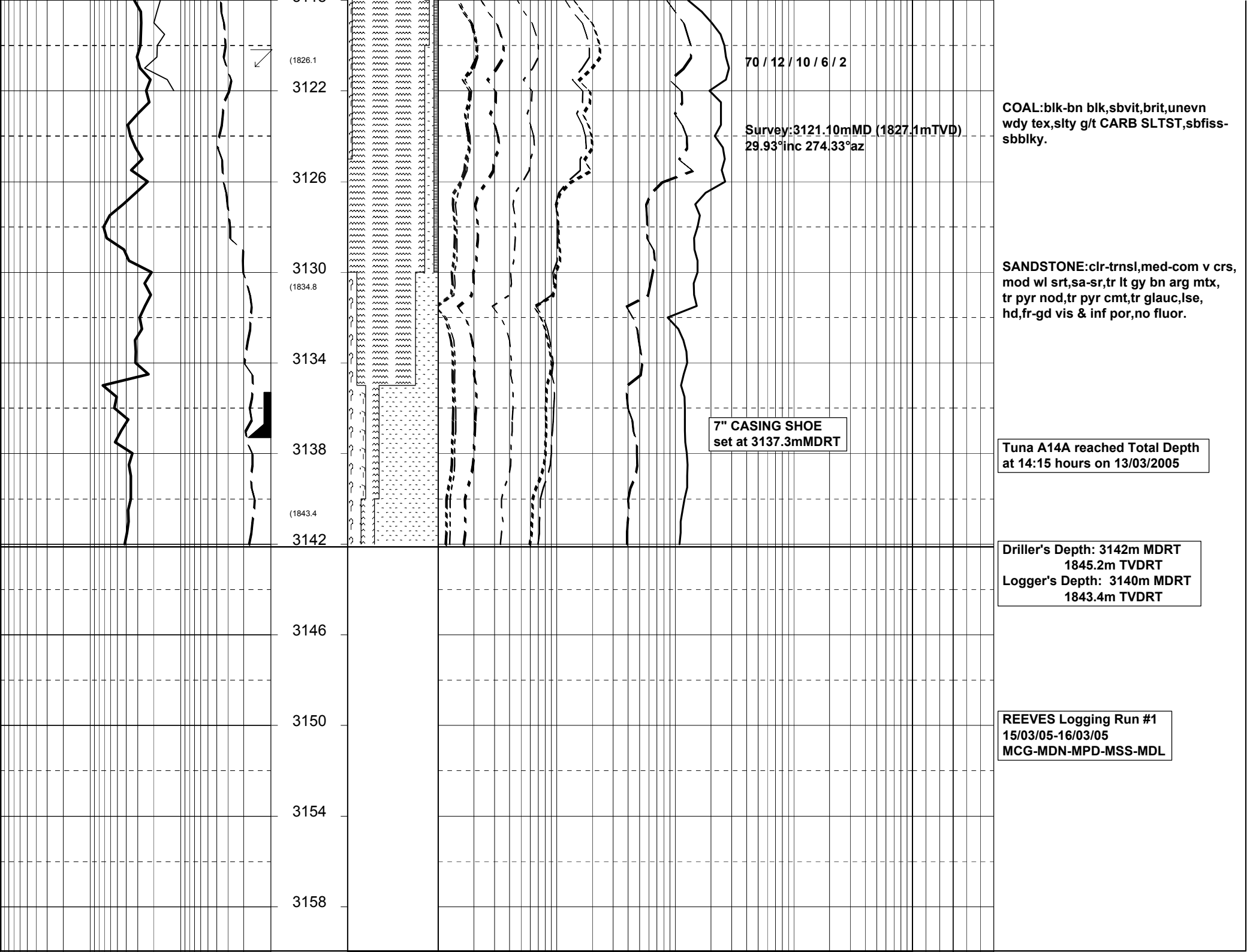
L-320  
3087.8m MDRT, 1798.1m TVDRT  
(-1766.8m TVDSS)

SANDSTONE:clr-trnsl,med-dom v crs,  
mod wl srt,sa-sr,tr lt gy bn arg mtx,tr  
glauc,lse,hd,fr-gd inf & vis por,no  
fluor.

SANDSTONE:clr-trnsl,med-dom crs,  
mod wl srt,sa-sr,tr lt gy bn arg mtx,  
tr pyr nod,tr pyr cmt,tr glauc,lse,hd,  
fr-gd inf & vis por,no fluor.

SILTSTONE:1)lt bn-pl bn,v aren g/t  
vf SST,tr micmic,sft-frm,amor-sbblky.  
  
2)bn blk-dsky bn,v carb g/t slty COAL  
tr pyr,frm-mod hd,sbblky.





**APPENDIX 4b**

**TUNA A14A**

**Well Completion Log**

# WELL COMPLETION LOG

## Scale – 1:200

# TUNA A-14A

## Gippsland Basin, Victoria

**Concession: Vic/L9**



**POST-DRILL  
LOCATION:  
*L-095***

Latitude: 38° 10' 16.975" S  
Longitude: 148° 23' 48.052" E  
MGA X: 622341.82 mE  
MGA Y: 5774247.86 mN  
Depth: 2945.4m MDRT  
(-1644.1mTVDSS)

Datum: GDA94 (GRS80)  
Projection: MGA/ UTM Zone 55 (S)

**DATES:**

Spudded: 02/03/2005  
Rig Released: 23/03/2005  
I.P. Established: 01/04/2005  
(Initial production)

**COMPILED BY:**

Sheryl Sazenis

**DRAFTED BY:**

Andrew Hodgson

**DRILLED BY:**

Nabors Rig 453

**ELEVATION:**

G.L.: -59.4 m  
R.T.: 31.32 m above MSL  
Water Depth: 59.4 m

**TOTAL DEPTH:**

3142.0m MDRT

## PLUGGED BACK T.D.:

## Not Plugged Back

**CLASSIFICATION:**

## Development

**STATUS:**

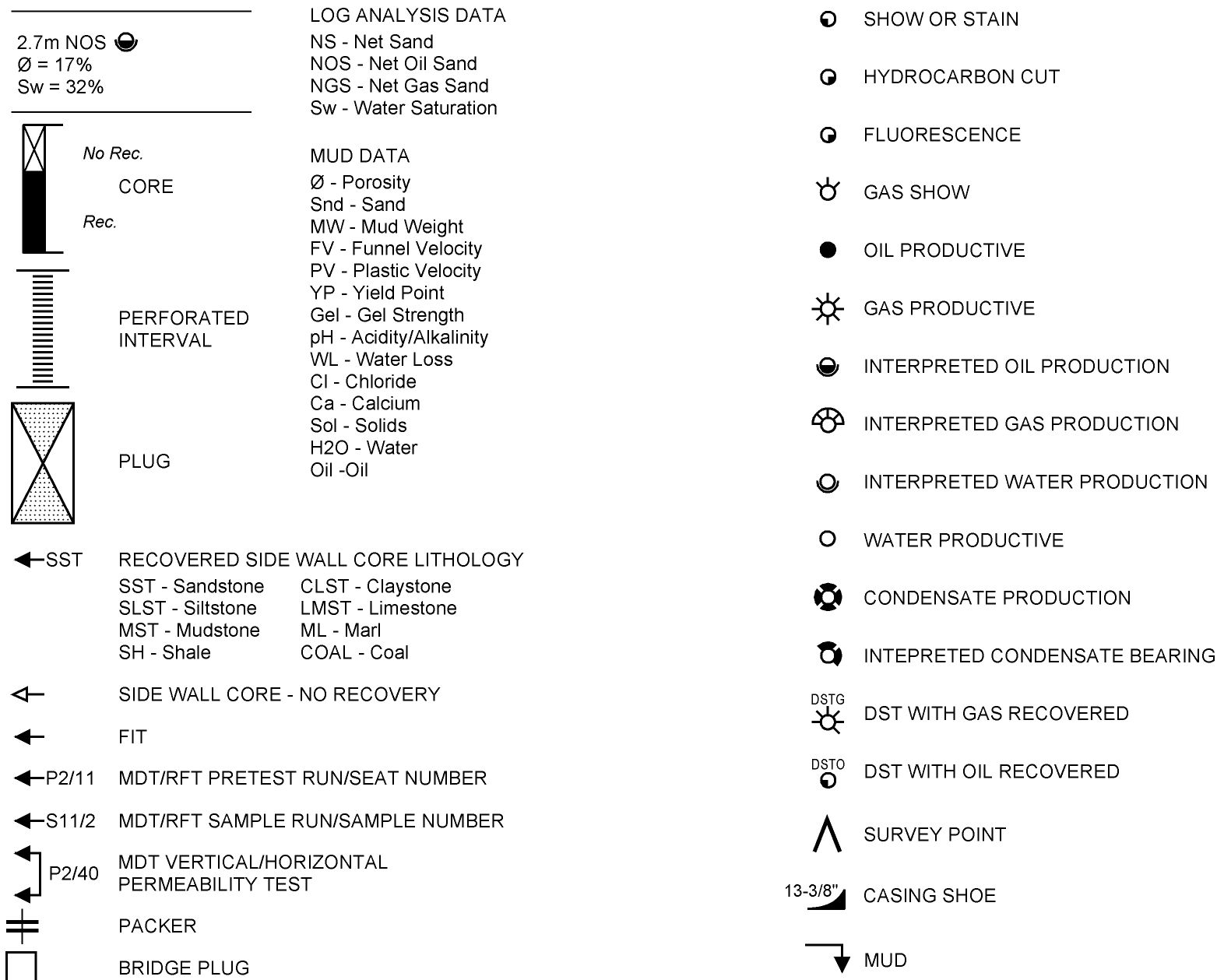
## Cased and Completed

**SERVICE COMPANIES:**

DRILLING CONTRACTOR:	Nabors Rig 453
MWD/DIRECT. DRLG:	Schlumberger Anadrill
GYRO SURVEYING:	SDI
CORING:	n/a
TC LOGGING:	Reeves (Compact Shuttle Logging System)
CEMENTING:	Halliburton
CASING:	Weatherford
LOGGING:	Reeves (Shuttle)/Schlumberger(MDT-TLC &CHDT)

PRODUCTION TESTING:	n/a
DIVERS:	n/a
MUD LOGGING:	Geoservices Overseas S.A.
PRESSURE RECORDING:	n/a
WELL VELOCITY SURVEY:	n/a
MUD ENGINEERING:	Halliburton- Baroid
LINER:	n/a

## LEGEND



## LITHOLOGICAL SYMBOLS

	Sandstone		Dolomite		Mica		Pelecypods
	Siltstone		Marl		Chert		Echinoids
	Mudstone		Anhydrite		Carbonaceous Matter		Fish Remains
	Claystone		Volcanics		Calcareous		Plant Remains
	Shale		Basement		Glauconite		Spores
	Coal		Granule		Corals		Leaves
	Limestone		Oolites		Bryozoans		Foram
	Micritic Limestone		Dolomitic		Brachiopods		Fossils
	Grain Limestone		Pyrite		Gastropods		
	Skeletal Limestone		Pyrite		Cephalopods		

## LOGGING AND SURVEYING

LOGGING AND SURVEYING				
Anadrill Schlumberger		Interval (mMDRT)	Reeves	Interval (mMDRT)
MWD (Directional & GR) – 2 Runs		843.0 mMDRT - 3121.1 mMDRT	MCG-MDN-MPD-MSS-MDL	844.8 mMDRT - 3142.0 mMDRT
Date	04 March 2005 - 05 March 2005	05 March 2005 - 14 March 2005	15 March 2005 - 16 March 2005	
Run	MWD #1	MWD #2	Wireline Run #1 on shuttle	
Log	Powerpulse Directional & GR	Powerpulse Directional & GR	MCG-MDN-MPD-MSS-MDL	
Depth Driller	859.0 mMDRT	3142.0 mMDRT	3142.0 mMDRT	
Depth Logger	859.0 mMDRT	3142.0 mMDRT	3142.0 mMDRT	
Bottom Log Interval	859.0 mMDRT	3121.1 mMDRT	3142.0 mMDRT	
Top Log Interval	843 mMDRT	859.0 mMDRT	844.8 mMDRT	
Casing Driller	844.5 mMDRT	844.5 mMDRT	844.5 mMDRT	
Casing Logger	----	----	844.8 mMDRT	
Casing Size	9 5/8"	9 5/8"	9 5/8"	
Casing Weight	40.0 ppf	40.0 ppf	40.0 ppf	
Bit Size	8.5"	8.5"	8.5"	
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL	
Density	9.25 ppg	10.05 ppg	10.00 ppg	
Rm @ Measured Temp.	N/A	N/A	0.107 ohmm @ 25°C	
Rmf @ Measured Temp.	N/A	N/A	0.084 ohmm @ 25°C	
Rmc @ Measured Temp.	N/A	N/A	0.258 ohmm @ 25°C	
Max. Recorded Temp.	65.0°C	85.0°C	85.4°C	
Equipment / Location	Sale	Sale	Sale	
Recorded By	D.Hastie/L.Johnston	D.Hastie/L.Johnston	G. McManus/R. Tench	
Witnessed By	Trevor Lobo	Trevor Lobo	Trevor Lobo	

## CORES

## PERFORATIONS

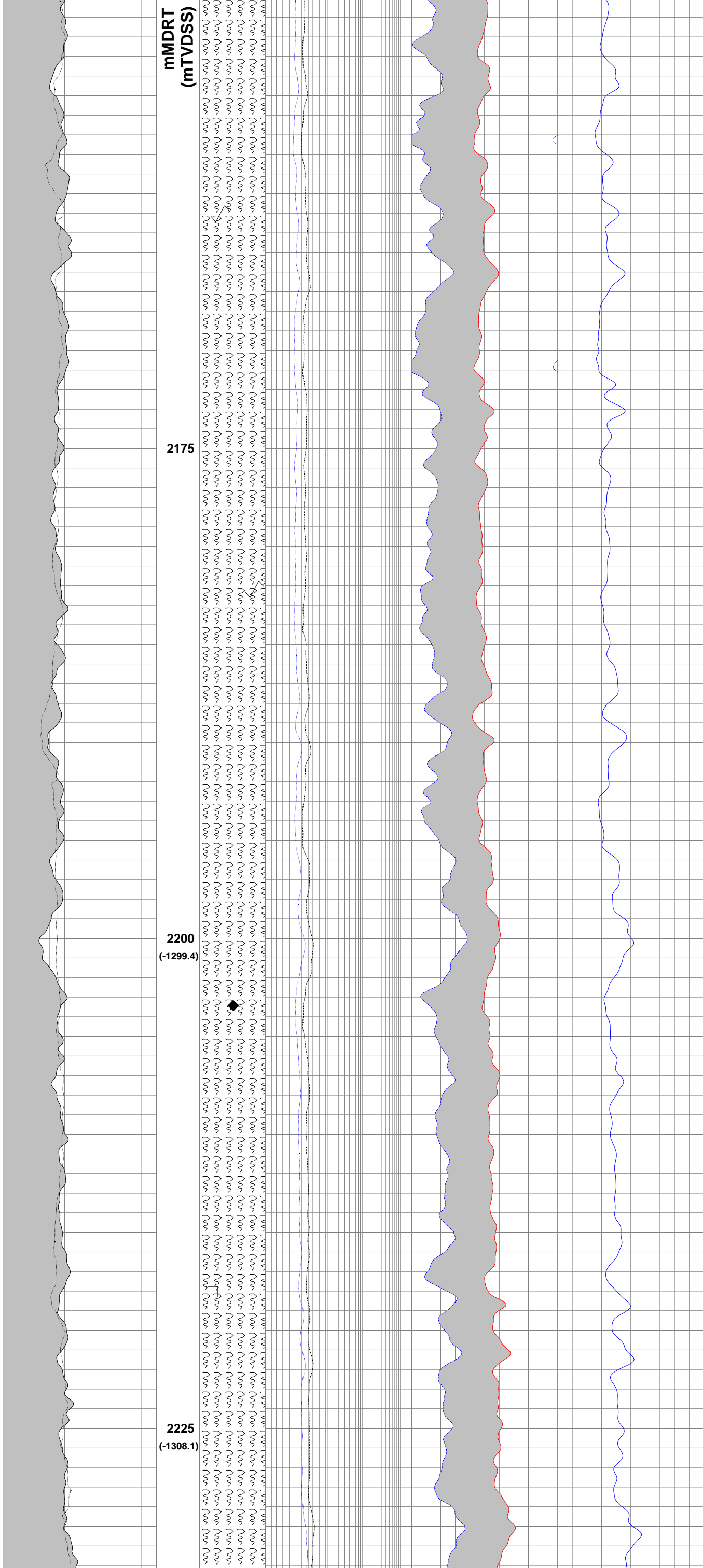
CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Shots/ft
----	----	---	2962.0	2964.5	Wireline

## CASING

## PLUGS

CASING				PLUGS		
Size	Set @ (mMDRT)	Sx Cmt	Formation	From (mMDRT)	To (mMDRT)	Sx Cmt
13.375"	748.0	---	Gippsland Limestone			
9.625" whipstock	845.0	---	Latrobe Group			
7" Liner	3136.0	610	Latrobe Group	--	--	--

DEPTH			LITHOLOGY	TEST			COMPLETION	MUD / SURVEY DATA	PLUGS	FORMATION	PALYNOLOGY	AGE
Caliper	IN	16		Deep Laterolog	Formation Density	Compensated Sonic						
Gamma Ray	GAPI	200		0.2 OHMM 2000	1.85 G/C3 2.85	500 US/M 100						
			Shallow Laterolog	Neutron Porosity	Effective Porosity							
			0.2 OHMM 2000	0.45 V/V -0.15	0.5 V/V 0							

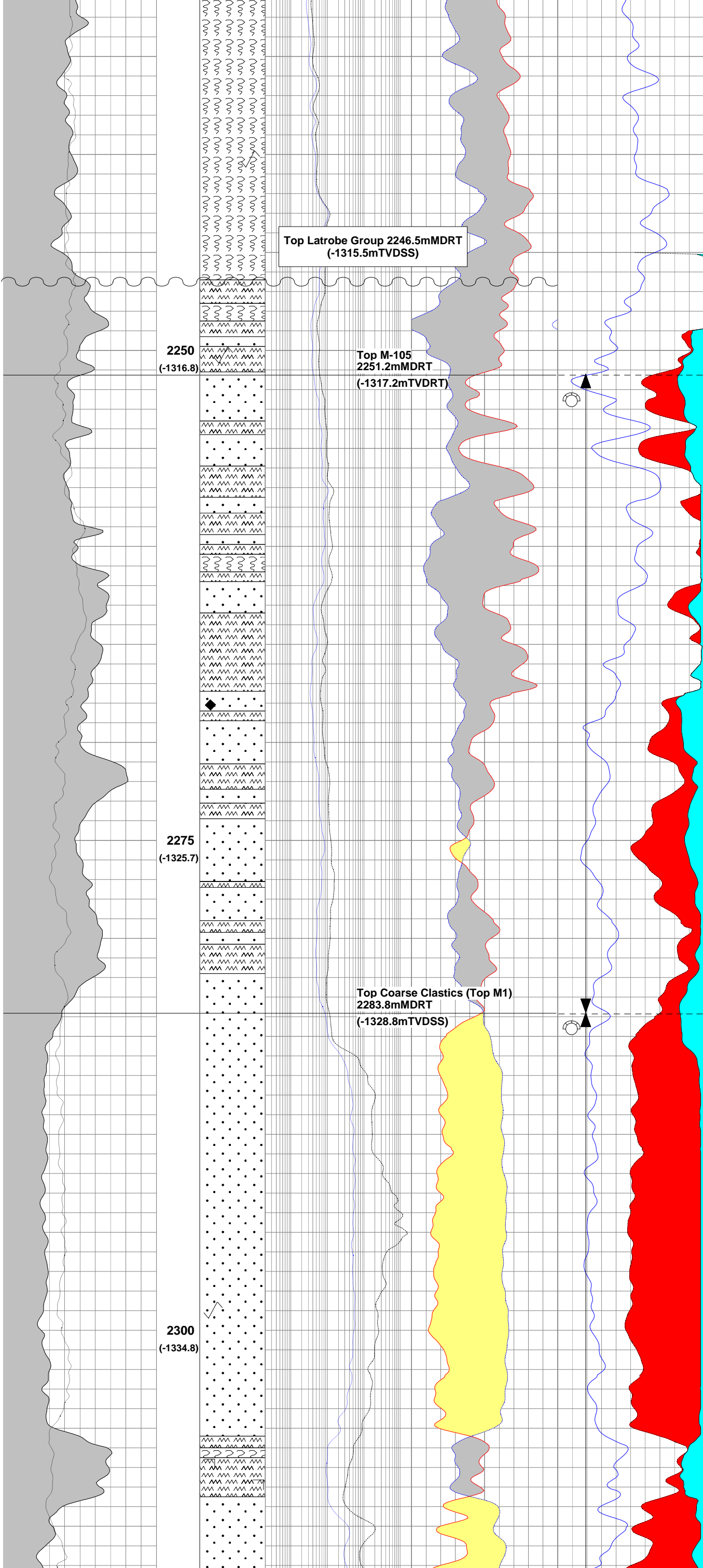


13.375"  
748.0m

9 5/8"  
Milled  
Window  
845.0m

LAKES ENTRANCE FM

OLIGOCENE - MIOCENE



Top Latrobe Group 2246.5mMDRT  
(-1315.5mTVDSS)

2250  
(-1316.8)

Top M-105  
2251.2mMDRT  
(-1317.2mTVDRT)

Gas bearing  
18.9 MT Net  
6.7 TVT Net  
Ø = 15 %  
Sw= 34 %

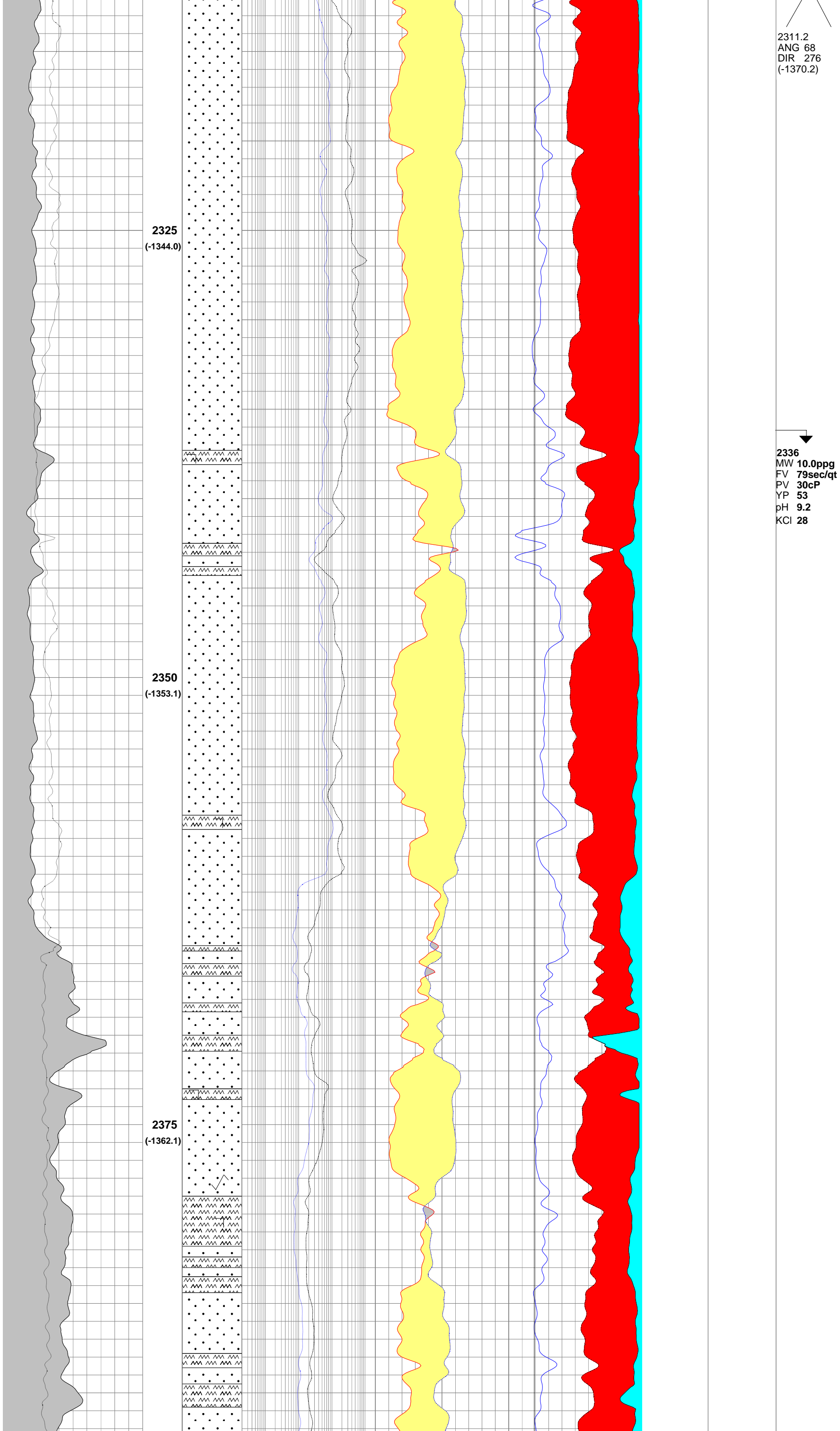
2275  
(-1325.7)

Top Coarse Clastics (Top M1)  
2283.8mMDRT  
(-1328.8mTVDSS)

Gas bearing  
134.7 MT Net  
48.5 TVT Net  
Ø = 22 %  
Sw= 16 %

2300  
(-1334.8)

2253.9  
ANG 69  
DIR 276  
(-1349.4)



2400  
(-1370.8)

2425  
(-1379.5)

2450  
(-1388.3)

FLUORSCENCE:2422  
-2440m,Tr-15% mod  
bri-bri, evn, gn yel  
fluor, slw bldng dir  
cut, thn-mod thk  
r/res.

Oil bearing  
11.1 MT Net  
3.9 TVT Net  
Ø = 23 %  
Sw= 40 %

Residual oil  
Ø = 23 %  
Sw=81 %

2397.4  
ANG 70  
DIR 277  
(-1401.2)

2454.3  
ANG 69  
DIR 276  
(-1421.1)



2475  
(-1397.1)

2500  
(-1405.9)

2525  
(-1414.6)

2550  
(-1423.4)

2504  
MW 10.2ppg  
FV 74sec/qt  
PV 30cP  
YP 54  
pH 9  
KCl 28

2511.1  
ANG 70  
DIR 276  
(-1441.1)

2575  
(-1432.2)

2600  
(-1441.1)

2625  
(-1450.0)

2597.2  
ANG 69  
DIR 275  
(-1471.4)

2629  
MW 10.1ppg  
FV 56sec/qt  
DV

PV 30CP  
YP 47  
pH 9.3  
KCl 28

2650  
(-1459.1)

2675  
(-1469.9)

2700  
(-1481.3)

2682.9  
ANG 63  
DIR 275  
(-1504.6)

LATROBE GROUP

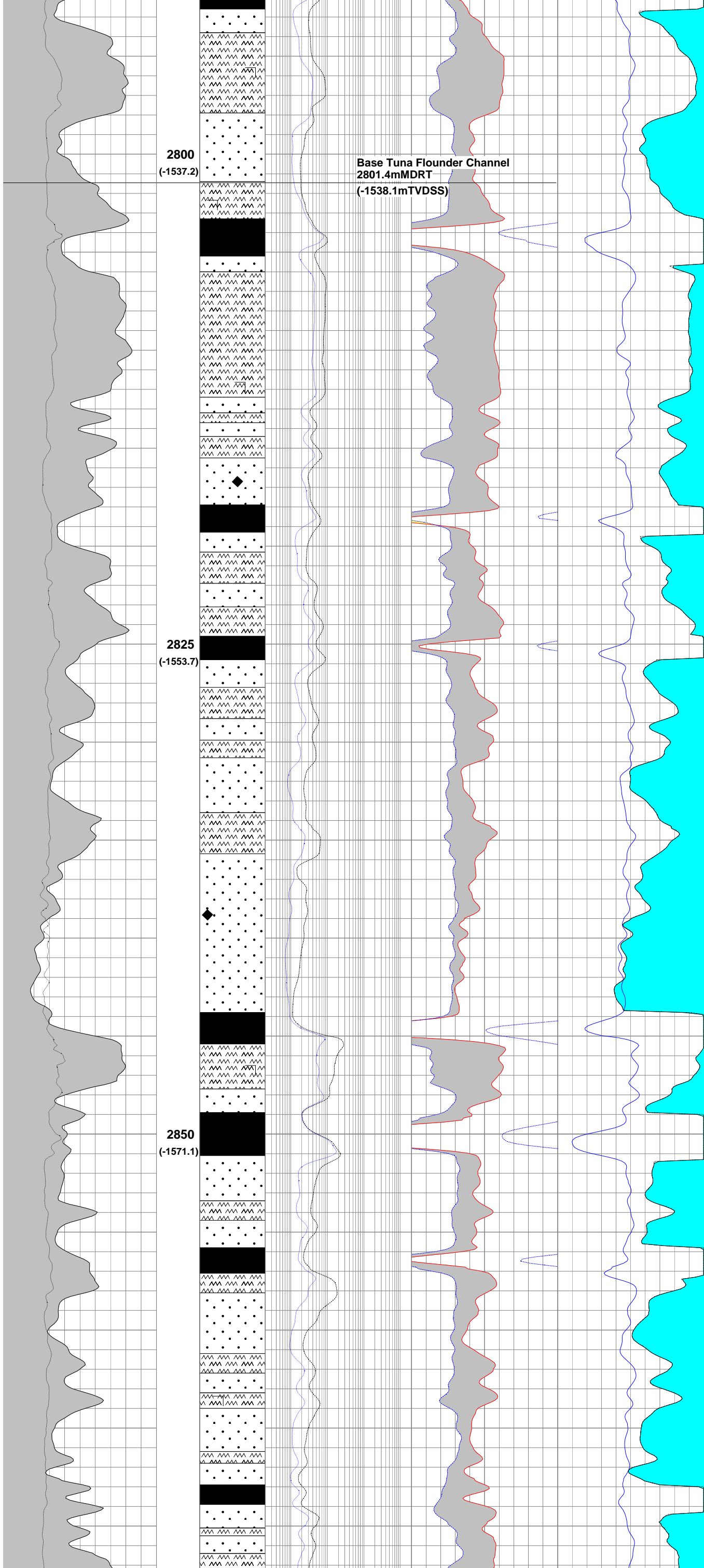
PALEOCENE - EARLY EOCENE

2725  
(-1493.6)

2750  
(-1506.9)

2775  
(-1521.5)

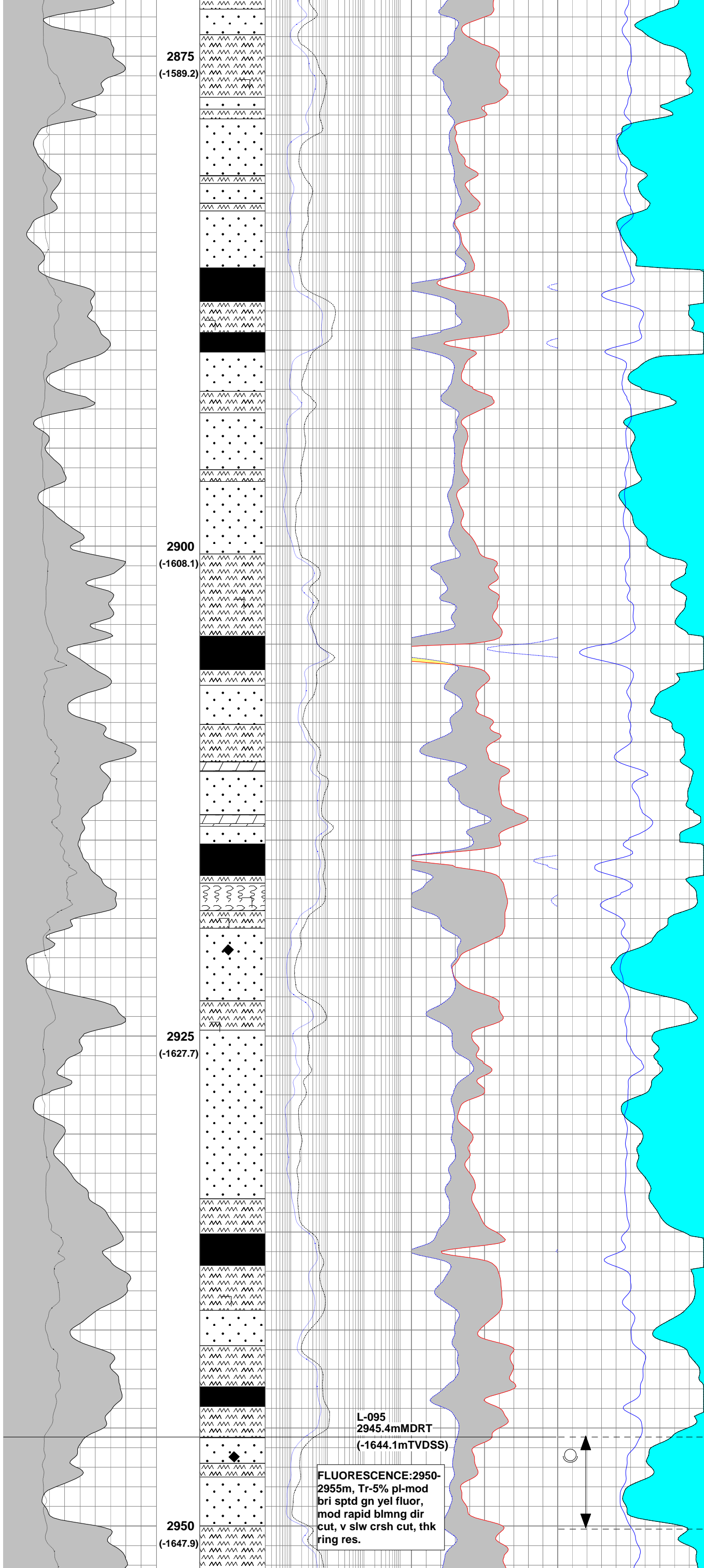
2769.4  
ANG 53  
DIR 278  
(-1549.3)



2794  
MW 10.0ppg  
FV 67sec/qt  
PV 28cP  
YP 46  
pH 9.3  
KCl 28

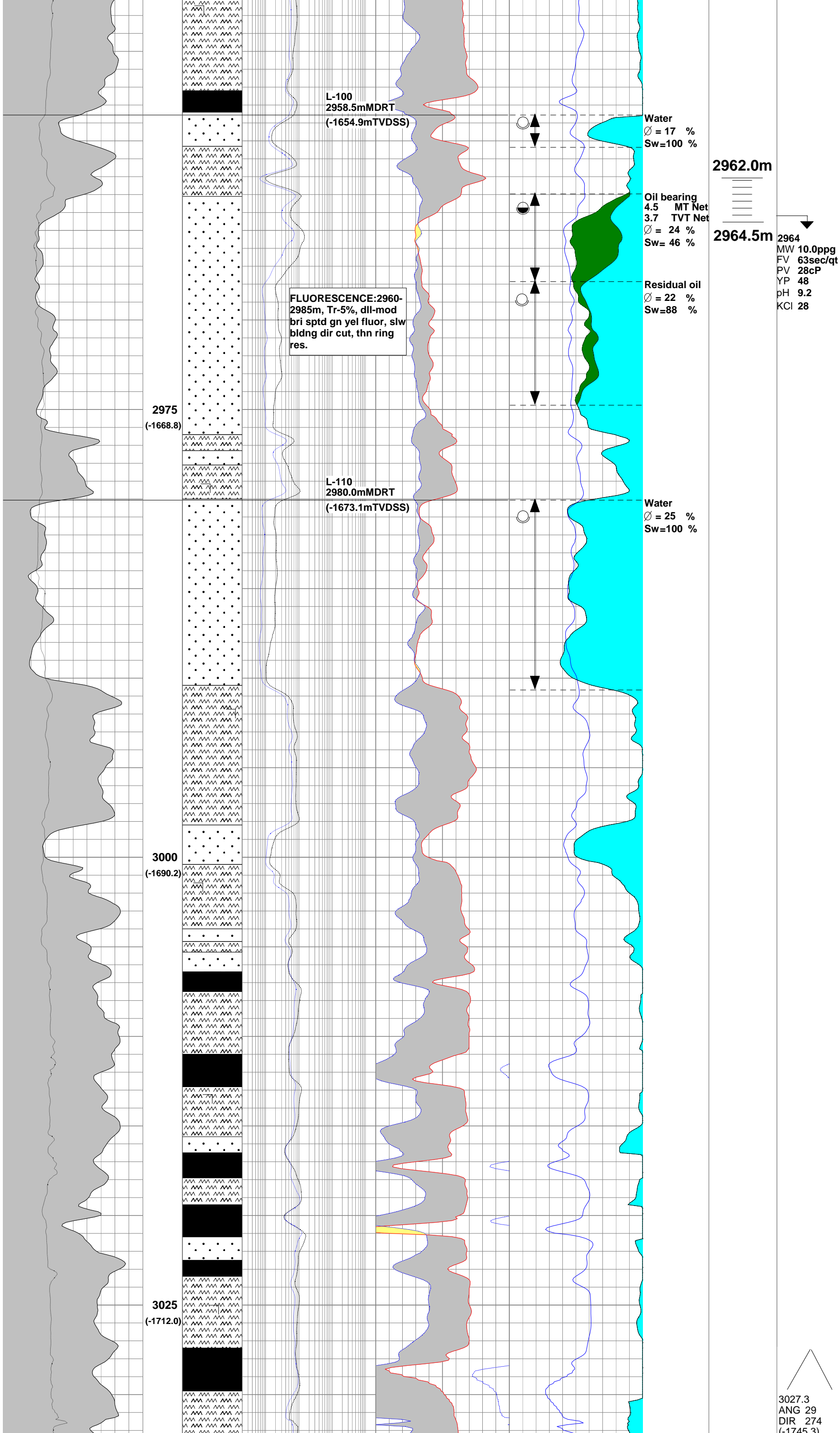
2855.5  
ANG 44  
DIR 275  
(-1606.2)

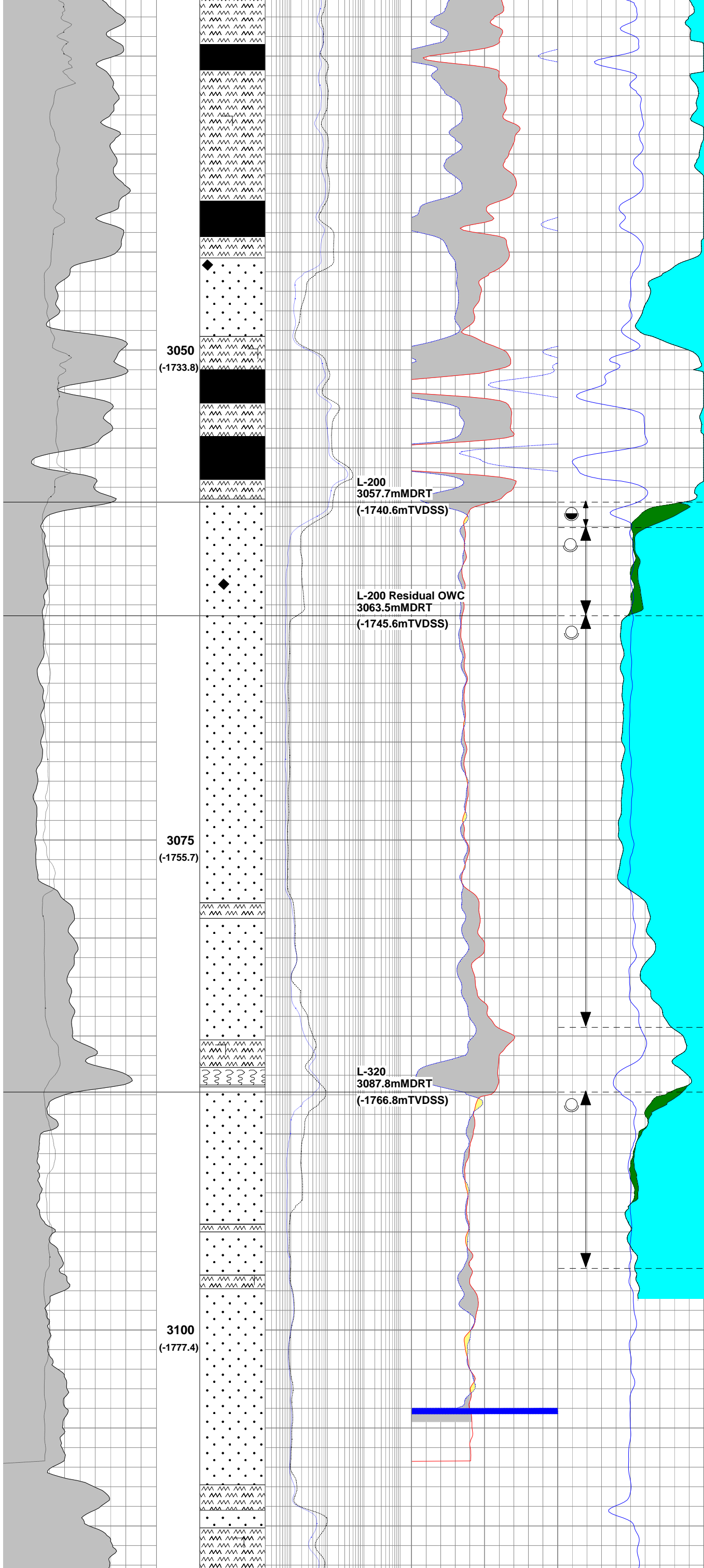




2941.3  
ANG 36  
DIR 274  
(-1671.9)

Water  
Ø = 22 %  
Sw=100 %



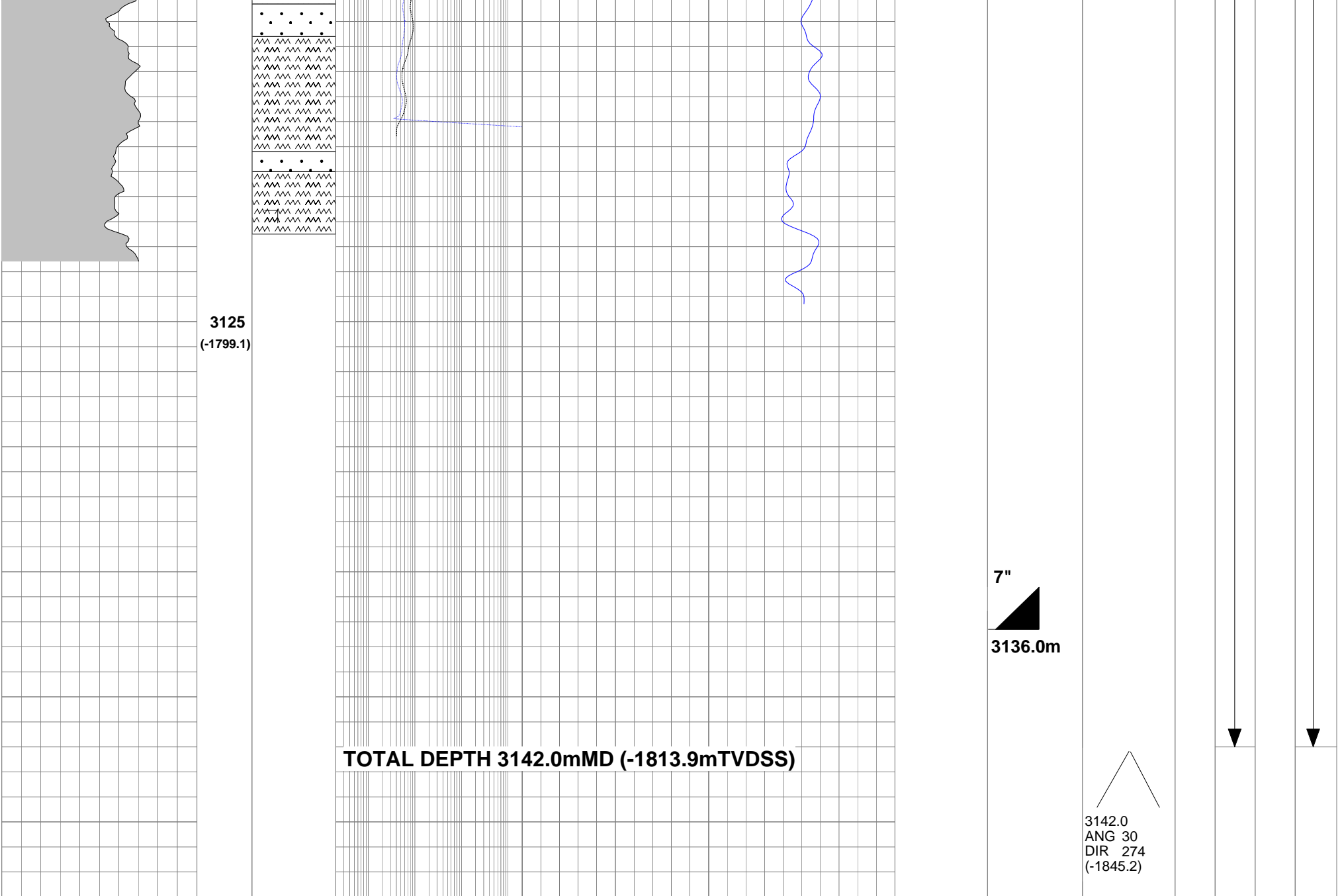


Oil bearing  
1.2 MT Net  
1.0 TVT Net  
Ø = 21 %  
Sw = 49 %  
  
Residual oil  
Ø = 24 %  
Sw = 91 %  
  
Water  
Ø = 25 %  
Sw = 100 %

Residual oil  
Ø = 23 %  
Sw = 95 %

3089  
MW 10.0ppg  
FV 61sec/qt  
PV 29cP  
YP 51  
pH 9.3  
KCl 25





GRGC	Gamma Ray	Tuna A14a Initial Production Date: 01/04/2005 0 kL/day, 100%watercut
CLDC	Density Caliper	
DDLL	Deep Laterolog	
DSLL	Medium Laterolog	
DEN	Compensated Density	
NPRL	Neutron Porosity	
DT35	Compensated Sonic	
PHIE	Effective Porosity	
VUWA	Bulk Volume Water	