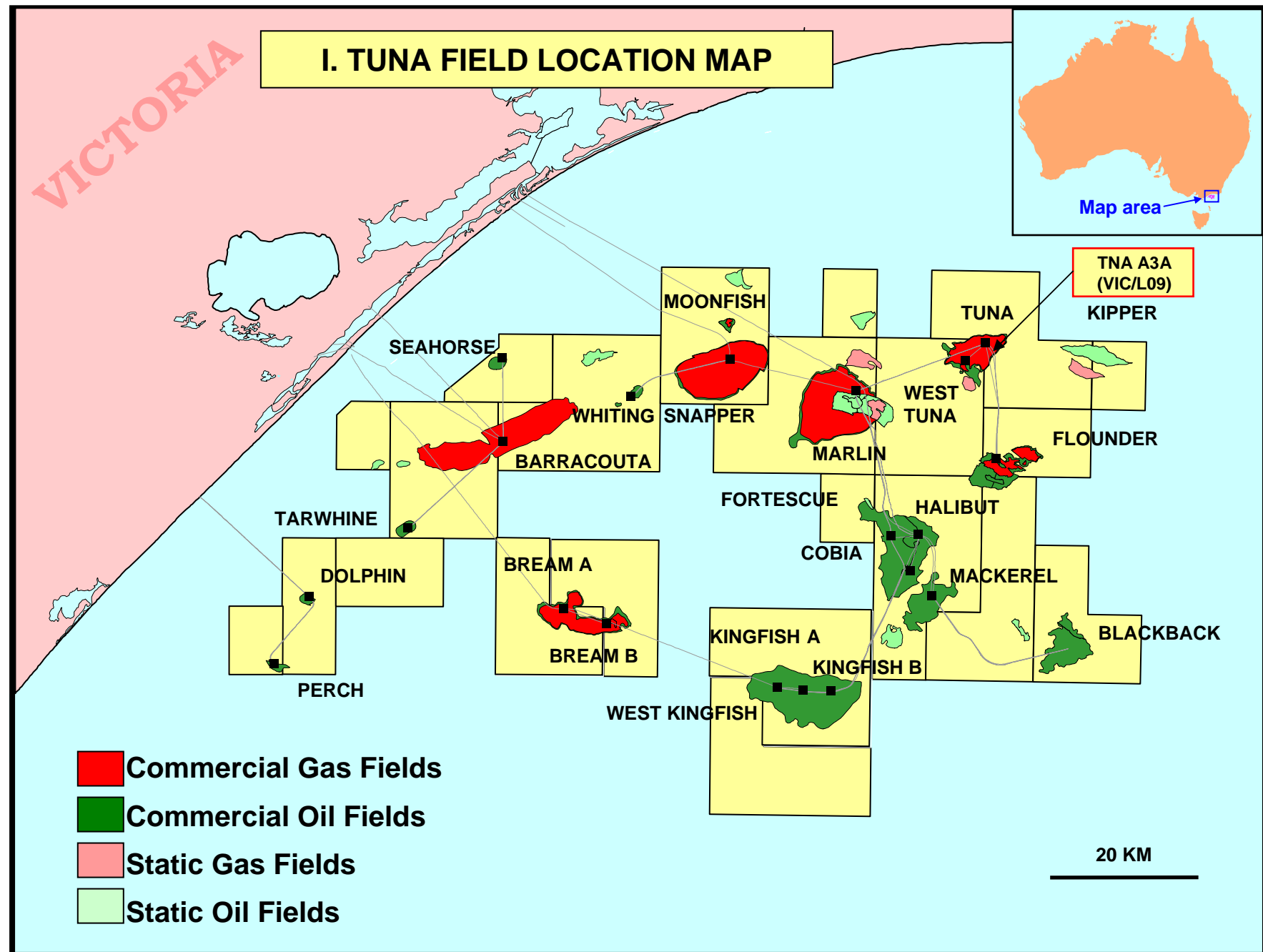


WELL COMPLETION REPORT
TUNA A3A
GIPPSLAND BASIN, VICTORIA

Author: Siew-Chee Yap/Jill Stevens
Compiler: Sheryl Sazenis
August 2005

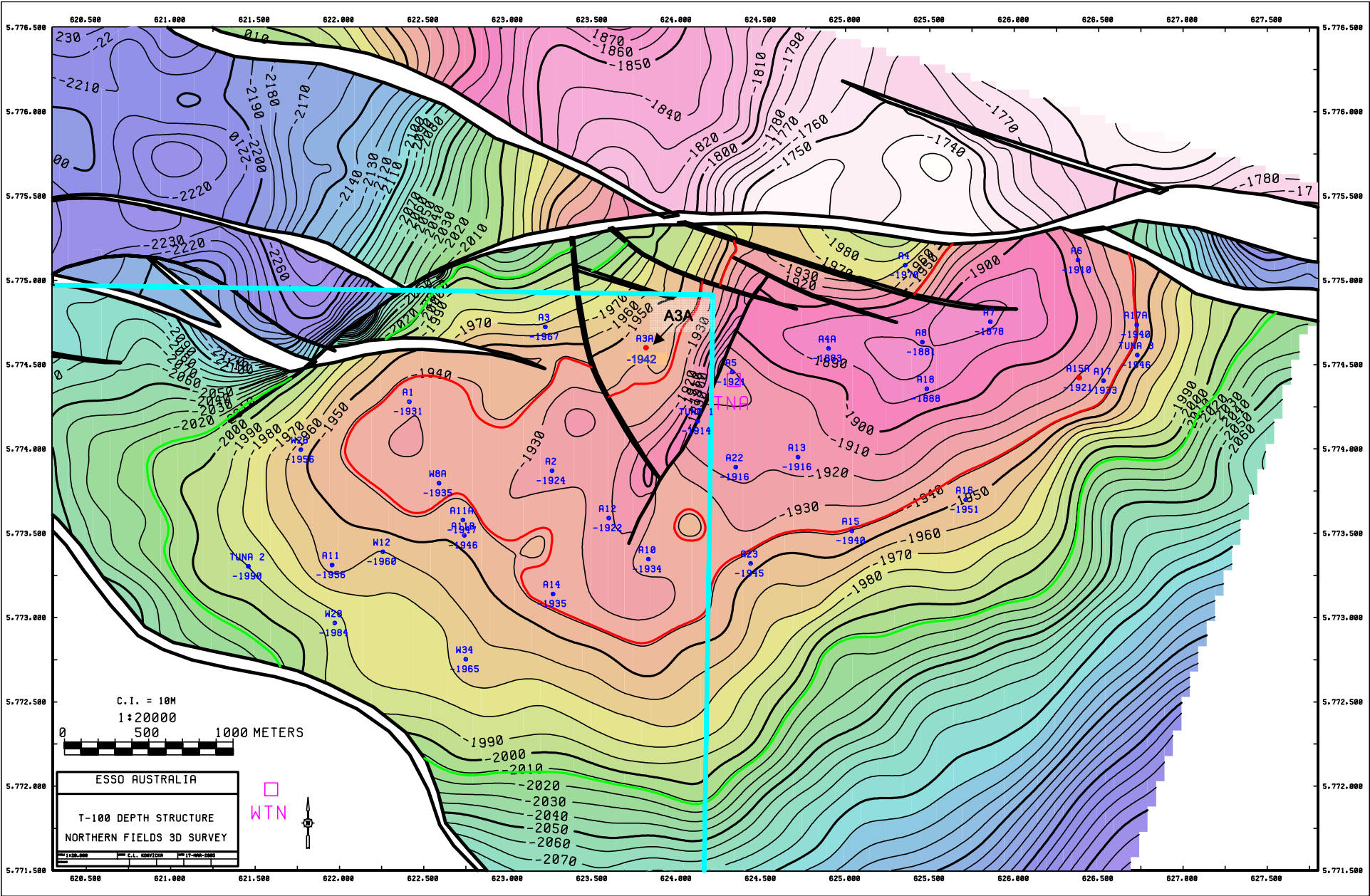
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II. WELL DATA RECORD

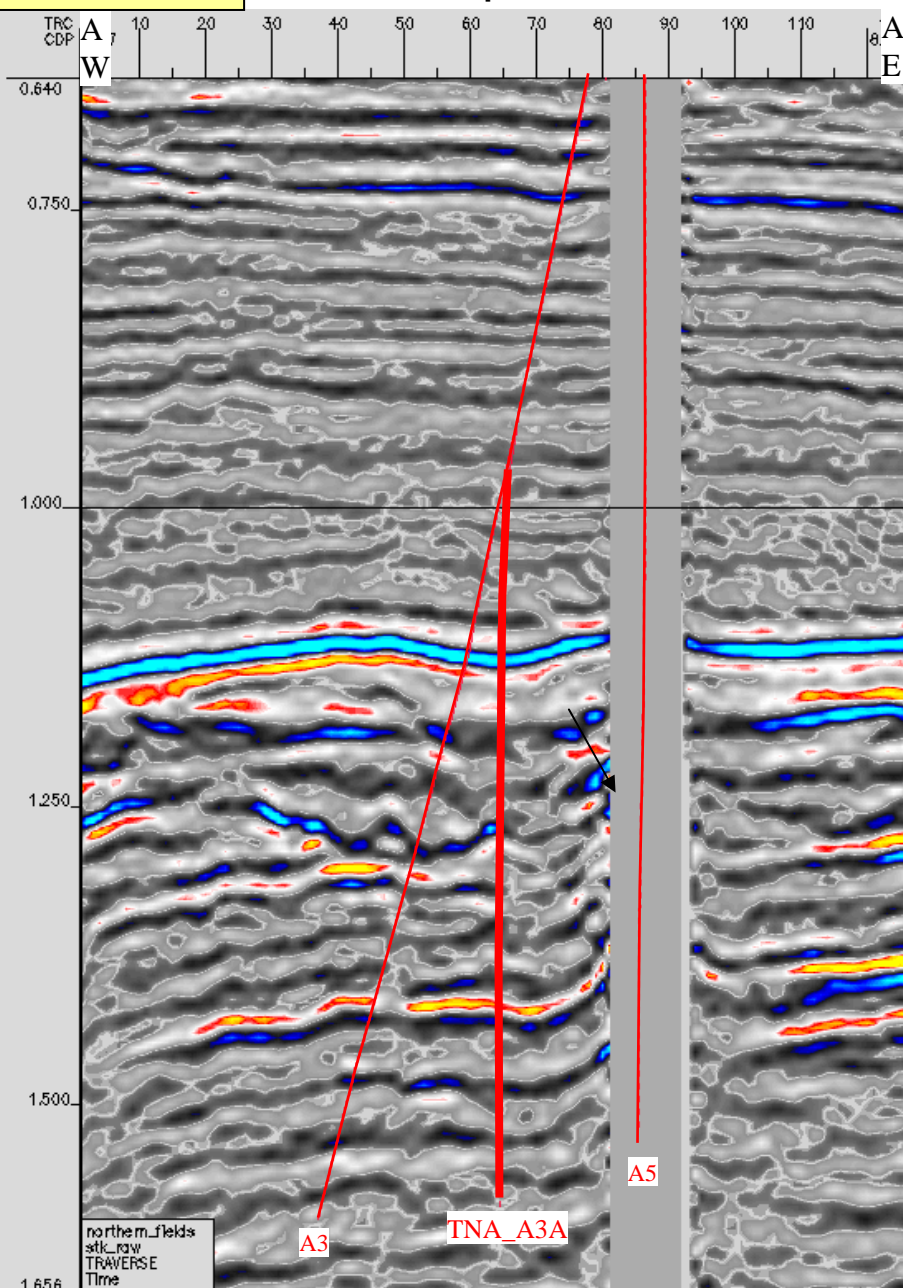
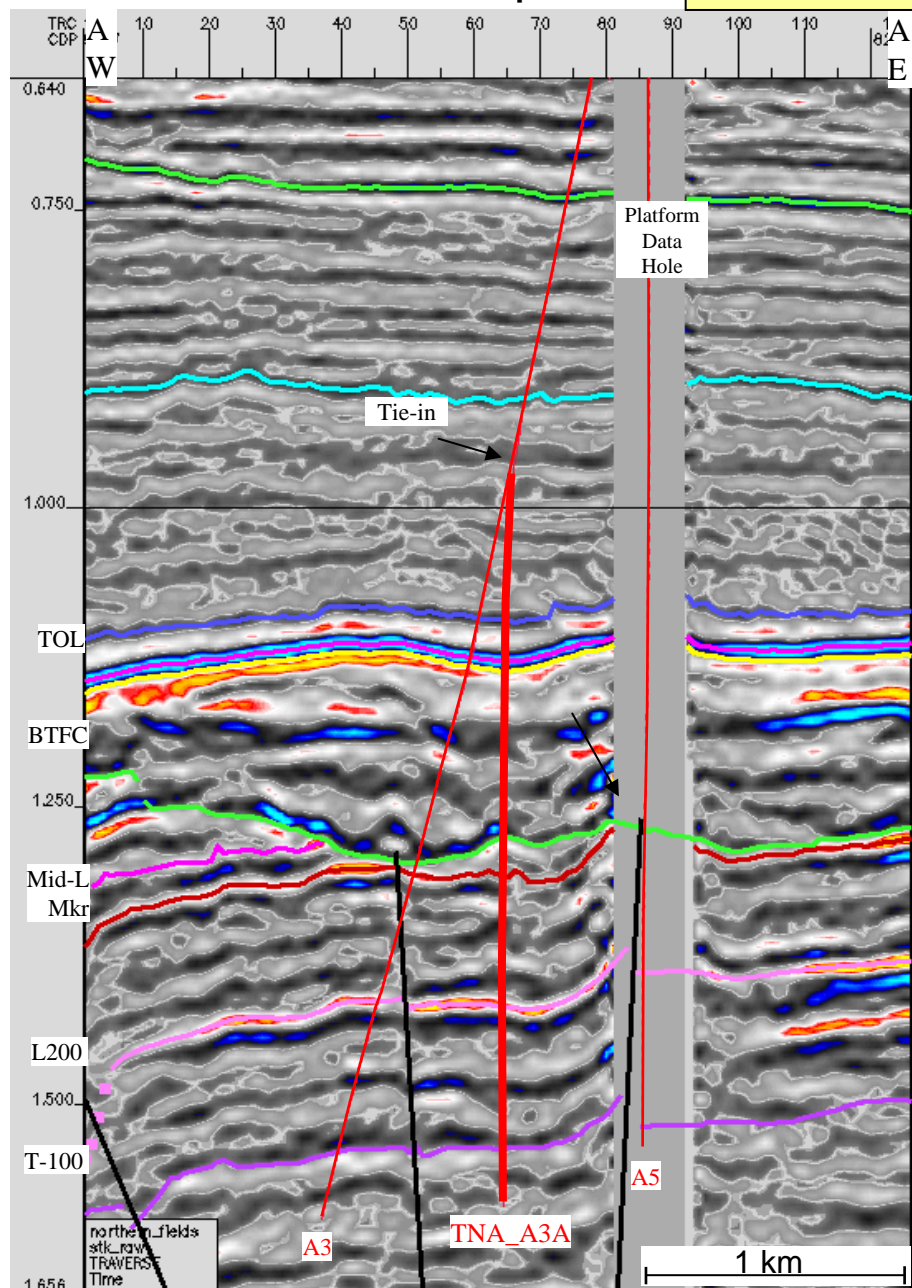
Tuna A3A Top T-1 Reservoir Depth Structure Map



II. WELL DATA RECORD TUNA A3A Seismic Profile

Interpreted

Uninterpreted



II. WELL DATA RECORD (cont'd)

LOCATION

Field	Tuna	Conductor #3 Surface Coordinates	
Well Name	A3A (Loc JW)	(GDA94) X	624,341.44mE
Conductor Number	Slot 3	(MGA94) Y	5,774,409.61mN
State	Victoria	Latitude	38° 10' 10.743"S
Permit/Licence	Vic/L9	Longitude	148° 25'10.108"E
Geological Basin	Gippsland	Perforations (driller)	1575.0- 1577.5m MDRT
Top of T-1	2129.7 m MDRT		1419.5 – 1422.0m TVDRT
	1973.2 TVDRT		
MGA94 X	623816.72m E	Datum	GDA94 (GRS80)
MGA94 Y	5774600.15m N	Projection	MGA94/UTM Zone 55 (S)

ELEVATIONS & DEPTHS

Water Depth	59.40 m
Top Wellhead to MSL	31.32 m
Main Deck Rel to MSL	24.41
RT Relative to MSL	31.32 m
Average Well Angle	3.5° (tang)
Total Depth	2262.0 mMDRT
	2105.2 mTVDRT
Plug Back Depth	---

DATES

Skid Rig	05/02/2005
Kicked Off	06/02/2005
Development Rig Days	13.8
NPT Days	0.15
Rig Released	19/02/2005
I.P. Established	06/03/2005

MISCELLANEOUS

Operator	Esso Australia Pty Ltd	Contractor	International Sea Drilling Ltd
Esso Interest	50%	Rig Name	Nabors Rig 453
Permittee/Licensee	Esso/BHPP	Equipment Type	Platform
Other Interest	50% J.V. Interest	Completion Type	Tandem
Overriding Royalty	2.5%	Completion Size	3-1/2"
Drilling AFE No.	L0501E300		

WELL CLASSIFICATION

Before Drilling	Oil Development	After Drilling	Cased and Completed
------------------------	-----------------	-----------------------	---------------------

II. WELL DATA RECORD (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Surface	13 ³ / ₈	54.5	K-55	BTC	635.3
Intermediate	9 ⁵ / ₈	40	K-55	BTC	1218.0
Production	7	26	L-80	LTC	2261.0

CEMENTING RECORD

7" LINER

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)
Liner Lap At 1097m Liner Hanger At 1154m	ABC G	445	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	55	92	15.8	1400 to 2260	2000 psi

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE

TNA A3A - Final Well Report

GENERAL

Platform:	Tuna	Rig:	453	Reservoir:	T-1 Sands
Well:	A3A	Well Slot:	#3	RT-MSL (Rig453)	31.32m
Drilling Complexity Index	2.5	Completion Complexity Index	2.8		

DEPTH		PERFORMANCE		MUD	
m MDRT	2,262.00	20" Cond. Hole	N/A	Max Wt (ppg)	10.1
m TVDRT	2,105.00	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	557.95	8-1/2" Prod. Hole	314 m/day	Type (Inter. Hole)	N/A
INCLINATION		6" Liner Hole	N/A	Type (Prod. Hole)	KCI/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	39.2/ 3.5 (Tang)	* time to drill interval, incl's Connections & NPT.		Type (Liner Hole)	N/A

Comments: New hole drilled: 1,218m to 2,262m MDRT (1,044m MDRT drilled).

TIME ANALYSIS

Start Date:	05/02/2005, 0900hrs	Finish Date:	19/02/2005, 0500hrs		
Target Days (P10):	15.7	Total Days:	13.8	% Under Target:	12.1% (under)
AFE Days (P50):	17.8	NPT Days:	0.15	% of Total Days:	1.1%
Supplementary AFE Days (P50):	N/A				

COSTS (based on projected)

AFE No.:	L0501E300	Revisions:	--	\$ per m	A \$3.03 k / metre (new hole)	
\$ per day:	A\$ 229 k/day	\$ per day (excl. T + L) * Equipment, LWD & Reeves	A\$ 180 k/day		A\$ 1.40 k / metre*	
					* based on TD not new hole	
	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	760,000	572,400	2,270,530	670,070	147,000	A\$4,420,000
AFE (Supplement)	--	--	--	--	--	--
Projected	615,000	295,000	1,601,285	518,000	138,000	A\$3,167,285

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

	<u>Size / Weight / Grade / Thread</u>	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	20"	167	167	N/A
Surface Casing *	13-3/8", 54.5 ppf, K55, BTC	635	617	N/A
Intermediate Casing *	9-5/8", 40 ppf K55, BTC	1,218	1,084	13.5 PIT
Prod Casing	7", 26.0ppf, L80, LTC	2,261	2,096	N/A
Prod Liner	--	--	--	--

Comments: * Pre-existing casing strings.

COMPLETION

	<u>Size / Weight / Grade / Thread</u>	MMDRT	MTVDRT	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Ace	2092	1936	Tandem oil

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	1575-1577.5 (M-1)	1419-1421	NA	NA	Wireline

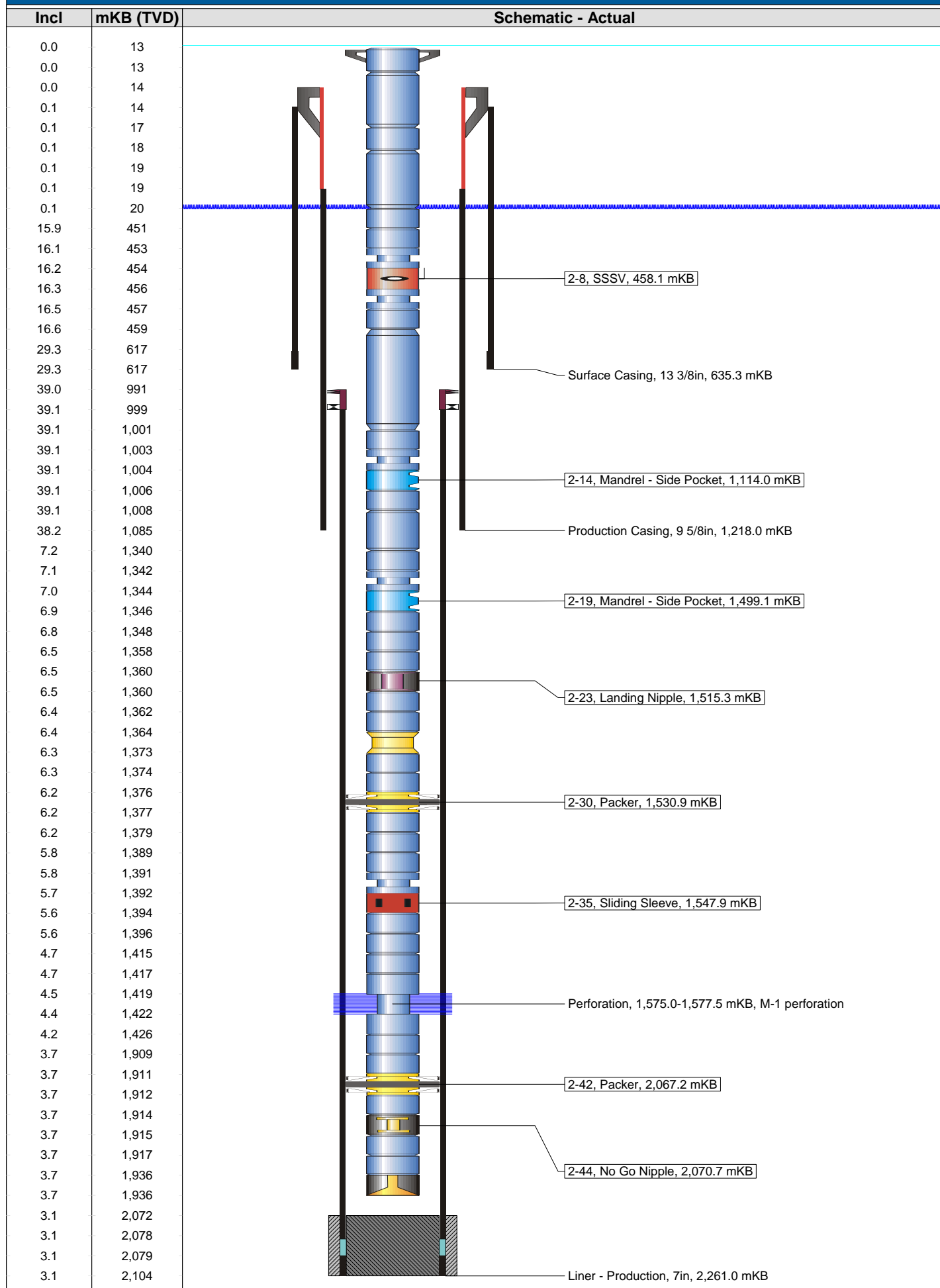
Comments: Completion was 3-1/2" 13Cr80 with TR-SSSV and 2 SPM's for gas lift, a packer set at 2068m MDRT, and another packer at 1532m MDRT.

ADDITIONAL

		Upper Interval [m MDRT]	Lower Interval [m MDRT]
<u>Logs Run</u>	GR-Resistivity-Density-Neutron-Sonic-Caliper	1,200	2,259

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

Tuna A3A: Existing Schematic



III. SAMPLES

CUTTINGS

The cuttings sampling programme for TUNA A3A are detailed in the following table:

Interval	Formation	Sampling Details
Surface Casing to 150m above Top of Latrobe (TOL) 1230 m – 1350 m	Gippsland Limestone & Lakes Entrance	30 m sampling interval Spot samples
150 m above TOL to the Top of the M1 Sand. 1350 m – 1500 m	Latrobe Group	10 m sampling interval Three sets of washed and oven dried cuttings.
TOL to Total Depth (TD) 1500 m – 2262 m (TD)	Latrobe Group	5 m sampling interval Three sets of washed and oven dried cuttings.

Detailed cuttings descriptions for the interval 1230.0mMDRT to 2262.0mMDRT (TD) are contained in Appendix 3a.

CONVENTIONAL CORING

No conventional cores were cut in TUNA A3A.

SIDEWALL CORING

No sidewall core samples were shot in TUNA A3A.

IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	1213.42	1232.0
MWD Run 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	1232.0	2241.93
Run 1: Compact Logging MCG-MDN-MPD-MSS-MDL	Reeves Well Shuttle Reeves Compact run on shuttle	1216.5	2251.6

V. FORMATION RESERVOIR TOPS

Zone	m TVDSS			m MDRT	m TVT Gross HC Column	
	Predicted	Actual	Diff.		Predicted	Actual
Top Lakes Entrance Formation	1080.0	1081.1	1.1 low	1252.0		
Top of Latrobe Group TOL (top of Gurnard Formation)	1325.3	1325.2	0.1 high	1511.5		5.2m Gas
Top Coarse Clastics TCC (Top of M-1)	1339.3	1339.7	0.4 low	1526.1	-	48.7m Gas 4.5m Oil
Base Tuna Flounder Channel TFC	1552.0	1546.5	5.5 high	1733.6		
L-095	1699.2	1672.0	27.2 high	1859.0		
L-110	1728.2	1697.3	30.9 high	1884.6		
L-200	1781.9	1758.3	23.6 high	1945.5		
L-400	1847.7	1815.4	32.3 high	2002.7		
T-055	-	1924.4	-	2112.0		
T-1 Upper (top T-100)	1955.0	1942.1	12.9 high	2129.7		
T-100 Poss. CGOC	1943.5	1951.4	7.9 low	2139.0	12m HC	9.3m gas
T-100 Current OWC	1995.0	-	-	-		1.0m oil
T-100 Base	1995.9	1980.0	15.9 high	2167.9		
T-100 OOWC	2012.5	2012.8	0.0	2200.5		
Total depth	2072.4	2073.9	1.5 low	2262.0		

VI. GEOLOGICAL ANALYSIS - TUNA A3A

Objectives

Tuna A3A (pre-drill Location JW) is the third well in a series of 4 wells to be drilled from the Tuna A platform during the 2004-2005 Tuna Infill Drilling program using " Rig 453". This well was designed and planned as an infill well for the T-1 upper (T-100) reservoir (the only objective for the well) in the northwestern flank of the Tuna field. Prior to Tuna A3A, the Tuna A3 and A1 wells are the only T-1U (T-100) producers on the northwestern flank. Recent interpretation of the Northern Fields 3D survey suggests greater structural complexity than previously recognized and an unpenetrated fault block is interpreted. Tuna A3A well targeted this unpenetrated fault block.

Results

Tuna A3A was drilled to TD after kicking-off from the Tuna A3 original wellbore at 1233m MD and logged via Reeves Shuttle on drillpipe.

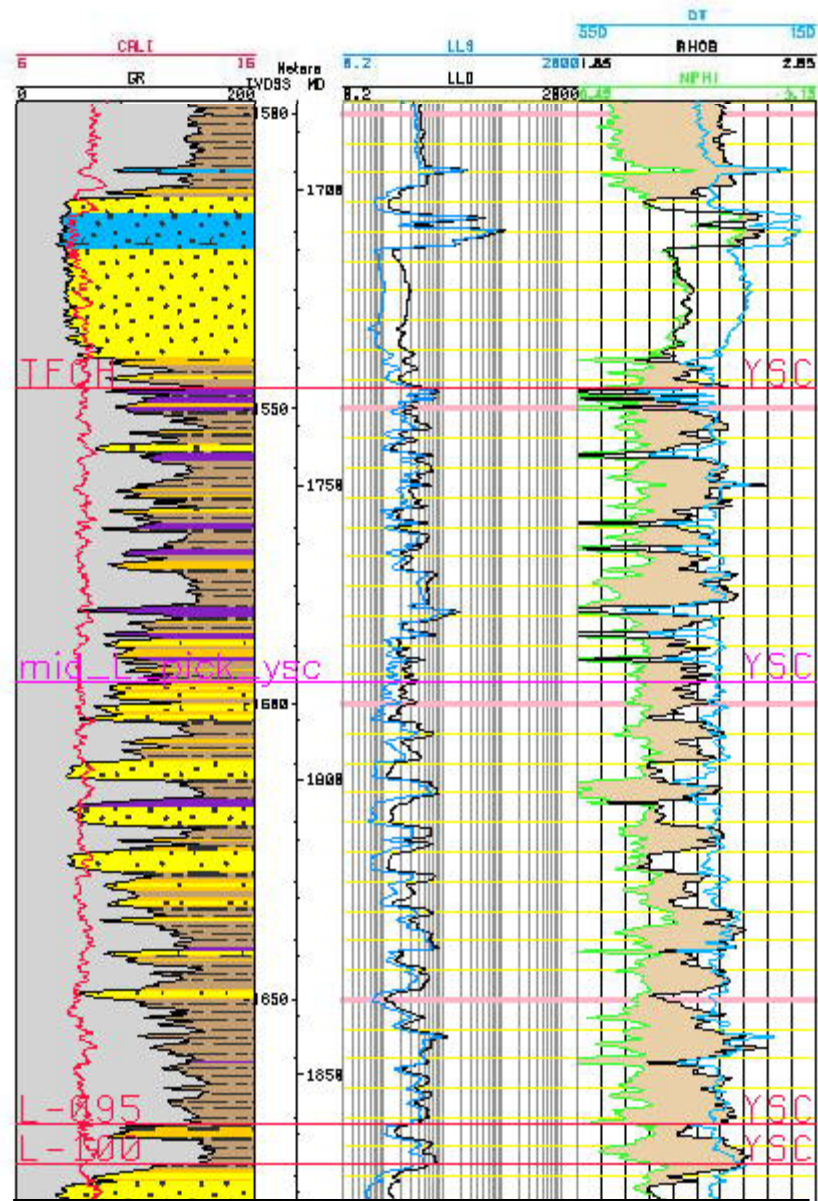
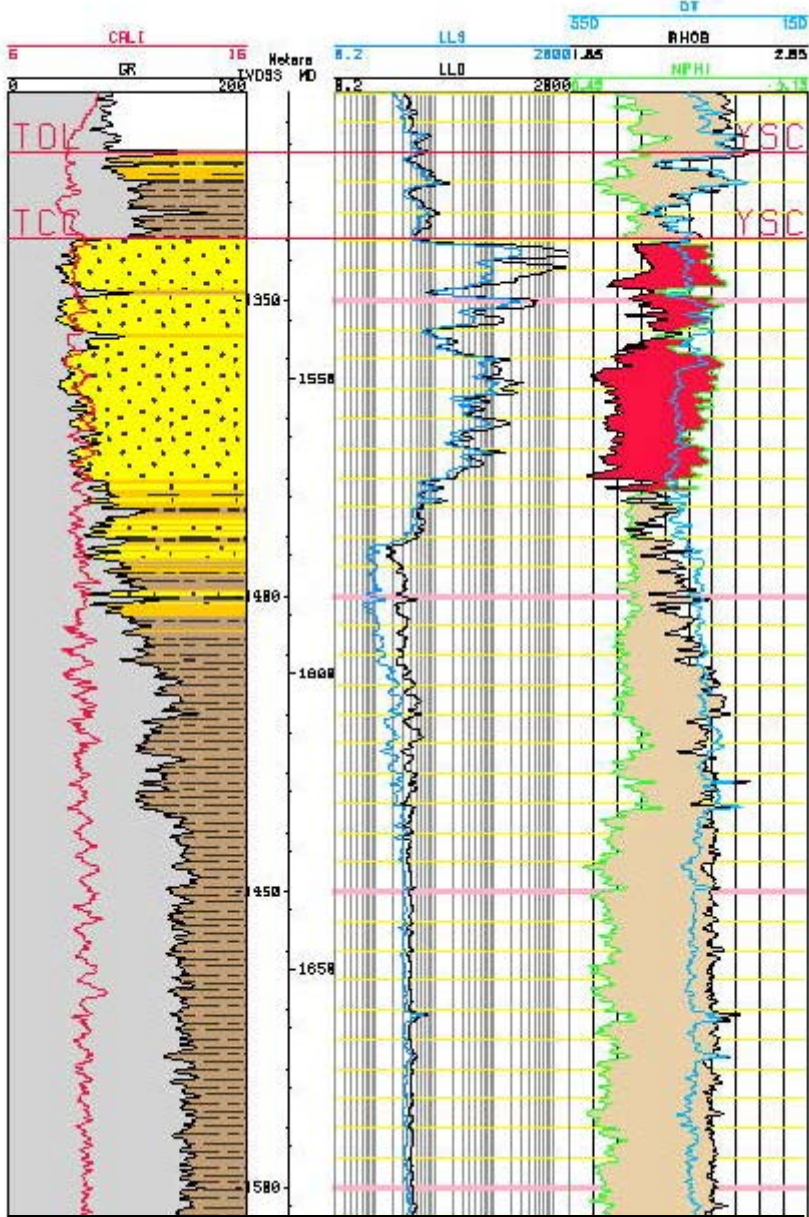
The M-1 reservoir came-in with 4.5m TVD net undrained oil. The current GOC and OWC based on this well penetration in the M-1 are 1388.4m TVDSS and 1392.91m TVDSS, respectively. The actual TCC is 0.4m TVD deeper than prognosed.

The Tuna A3A well intersected the top of T-1 upper (T-100) reservoir at 2129.7m MDRT (2112.0m TVDSS), 12.9m TVD high to prognosis. The well encountered 9.3m TVD of net gas in the T-1 upper (T-100) sand (1942.1 – 1951.4 m TVDSS). The remaining T-1 upper (T-100) sand package is interpreted to be oil-bearing down to 1952.5m TVDSS (current lowest-known-oil), i.e. 1m of net oil. Residual oil is interpreted down to the T-100 OOWC (1976.34 – 2012.8mTVDSS).

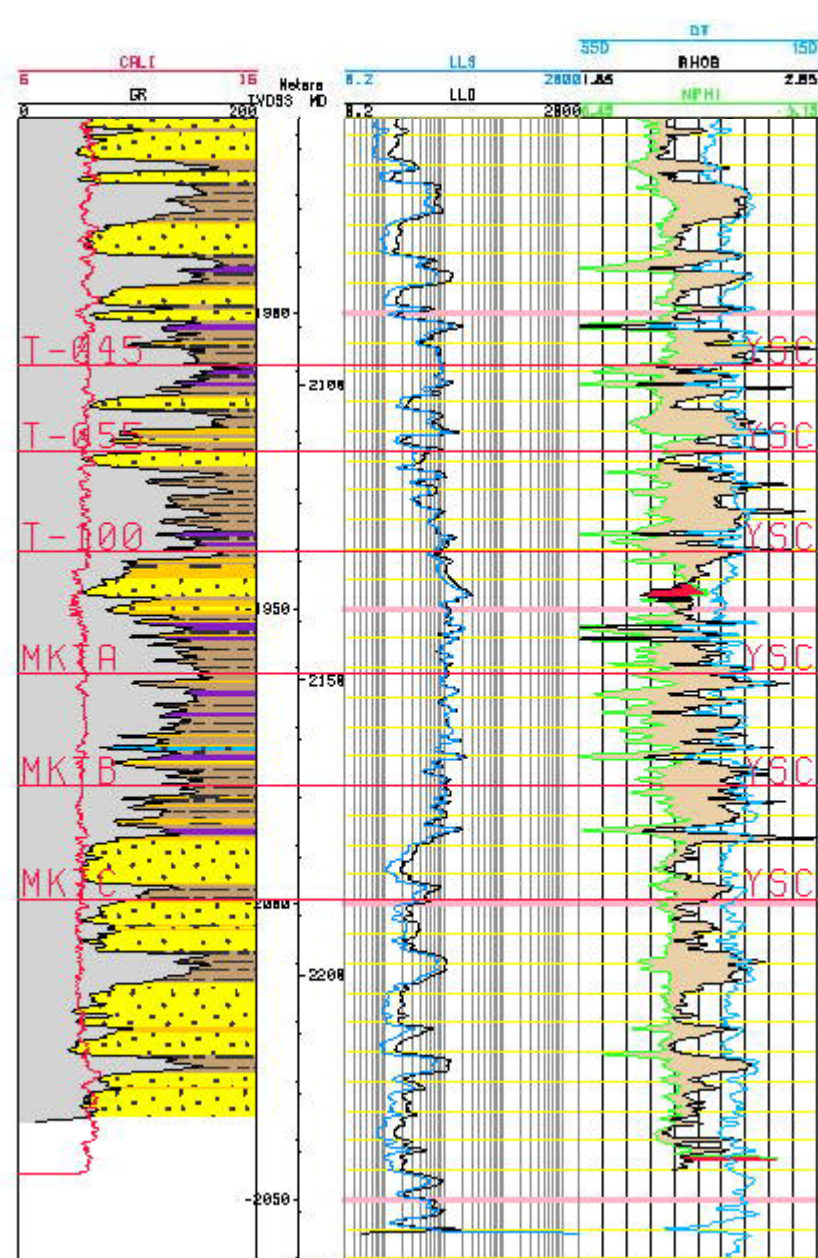
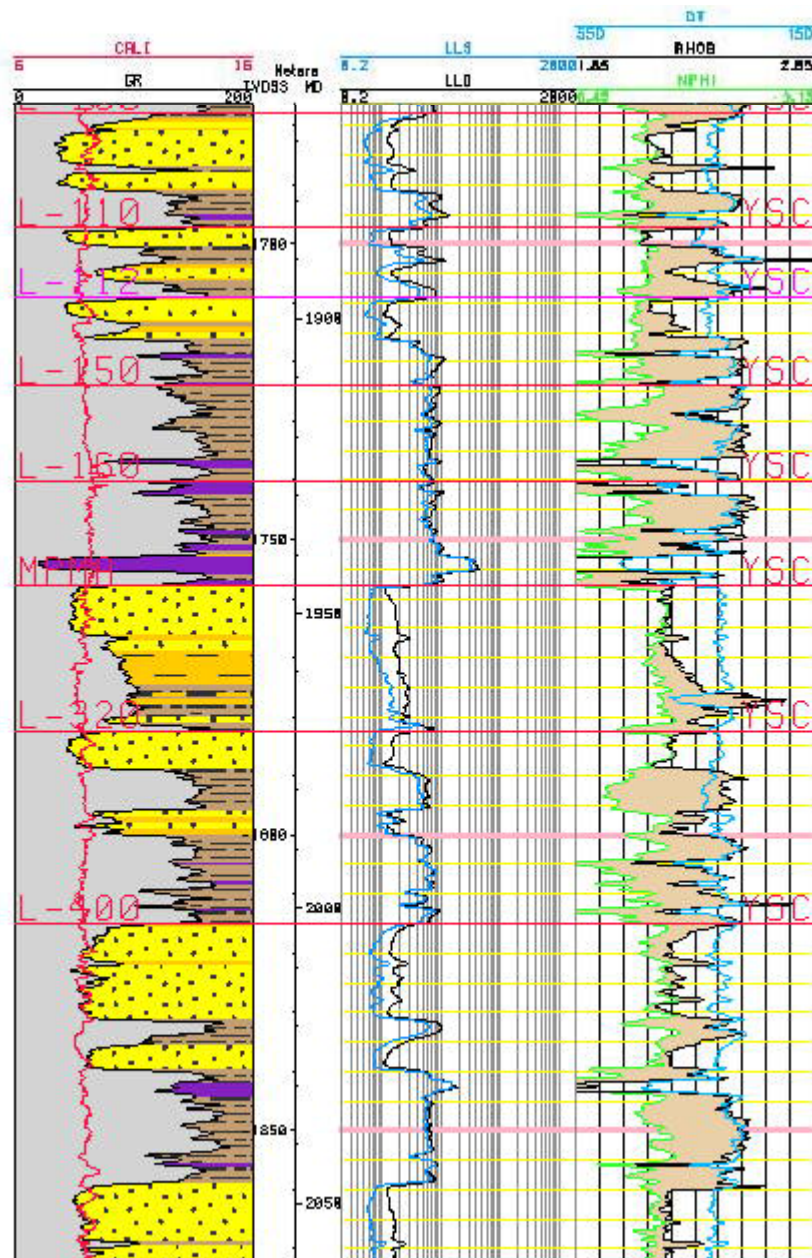
Log results indicate that an additional thin T-055 sand above the T-100 has residual oil from 1924.4 - 1927.0 TVDSS.

The well has been completed to allow for the T-1 upper gas and oil reserves to be perforated at a later date. As the M-1 oil reserves are time-sensitive, the well was perforated in the 4.5m TVD thick M-1 oil column.

Geological Analysis: TNA A3A Well Log with Stratigraphic Picks: Part 1 of 2



Geological Analysis: TNA A3A Well Log with Stratigraphic Picks: Part 2 of 2



APPENDIX 1a

TUNA A3A

Survey Data

TNA A3A Final Surveys

Report Date: February 11, 2005
 Client: Esso Australia Pty Ltd
 Field: Tuna A GDA 94
 Structure / Slot: Tuna A Rig 453 / 3
 Well: 3
 Borehole: A-3A
 UWI/API#:
 Survey Name / Date: A-3A Surveys / February 6, 2005
 Tort / AHD / DDI / ERD ratio: 97.163° / 605.22 m / 5.317 / 0.287
 Grid Coordinate System: GDA94/MGA94 Zone 55
 Location Lat/Long: S 38 10 10.743, E 148 25 10.108
 Location Grid N/E Y/X: N 5774409.610 m, E 624341.439 m
 Grid Convergence Angle: -0.87733618°
 Grid Scale Factor: 0.99979041

Survey / DLS Computation Method: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 290.880°
 Vertical Section Origin: N 0.140 m, E 4.270 m
 TVD Reference Datum: RKB
 TVD Reference Elevation: 31.3 m relative to MSL
 Sea Bed / Ground Level Elevation: -59.430 m relative to MSL
 Magnetic Declination: 13.226°
 Total Field Strength: 59909.163 nT
 Magnetic Dip: -68.654°
 Declination Date: February 06, 2005
 Magnetic Declination Model: BGGM 2004
 North Reference: Grid North
 Total Corr Mag North -> Grid North: +14.103°
 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	0.14	4.27	0.00	88.12	0.00
	48.42	0.17	298.40	48.42	0.07	0.17	4.21	0.07	87.63	0.11
	53.42	0.16	298.44	53.42	0.09	0.18	4.19	0.09	87.53	0.06
	58.42	0.18	292.19	58.42	0.10	0.19	4.18	0.10	87.43	0.16
	63.42	0.19	287.58	63.42	0.12	0.19	4.17	0.12	87.35	0.11
	68.42	0.16	278.74	68.42	0.13	0.20	4.15	0.13	87.29	0.24
	73.42	0.23	283.77	73.42	0.15	0.20	4.13	0.15	87.23	0.43
	78.42	0.21	289.68	78.42	0.17	0.21	4.12	0.17	87.14	0.18
	83.42	0.24	286.42	83.42	0.19	0.21	4.10	0.19	87.05	0.20
	88.42	0.26	282.09	88.42	0.21	0.22	4.08	0.21	86.96	0.16
	93.42	0.25	270.32	93.42	0.23	0.22	4.05	0.23	86.91	0.32
	98.42	0.28	273.48	98.42	0.25	0.22	4.03	0.25	86.88	0.20
	103.42	0.26	278.55	103.42	0.27	0.22	4.01	0.28	86.82	0.19
	108.42	0.35	272.69	108.42	0.30	0.22	3.98	0.30	86.77	0.57
	113.42	0.41	268.88	113.42	0.33	0.23	3.95	0.33	86.74	0.39
	118.42	0.45	267.92	118.42	0.37	0.22	3.91	0.37	86.72	0.24
	123.42	0.53	271.34	123.42	0.41	0.22	3.87	0.41	86.69	0.51
	128.42	0.57	269.71	128.42	0.45	0.22	3.82	0.46	86.64	0.26
	133.42	0.63	271.76	133.42	0.50	0.23	3.77	0.51	86.58	0.38
	138.42	0.64	271.65	138.42	0.55	0.23	3.71	0.56	86.51	0.06
	143.42	0.74	276.14	143.42	0.61	0.23	3.65	0.62	86.38	0.68
	148.42	0.78	274.95	148.42	0.67	0.24	3.59	0.69	86.21	0.26
	153.42	0.82	273.54	153.42	0.74	0.24	3.52	0.76	86.06	0.27
	158.42	0.89	277.91	158.42	0.81	0.25	3.44	0.84	85.85	0.57
	163.42	0.98	280.40	163.42	0.89	0.26	3.36	0.92	85.52	0.59
	168.42	1.03	279.38	168.41	0.98	0.28	3.27	1.00	85.15	0.32
	173.42	1.14	283.23	173.41	1.07	0.30	3.18	1.10	84.67	0.79
	178.42	1.23	286.05	178.41	1.17	0.32	3.08	1.20	84.02	0.64
	183.42	1.52	289.51	183.41	1.29	0.36	2.97	1.32	83.08	1.81
	188.42	1.72	290.75	188.41	1.44	0.41	2.84	1.46	81.80	1.22
	193.42	2.00	291.14	193.41	1.60	0.47	2.68	1.62	80.13	1.68
	198.42	2.32	290.57	198.40	1.79	0.53	2.51	1.81	77.98	1.92
	203.42	2.77	288.81	203.40	2.01	0.61	2.30	2.03	75.18	2.74
	208.42	3.11	286.12	208.39	2.26	0.68	2.05	2.28	71.56	2.20
	213.42	3.50	284.05	213.38	2.55	0.76	1.78	2.57	66.84	2.45
	218.42	3.78	283.25	218.37	2.87	0.83	1.47	2.89	60.37	1.71
	223.42	4.22	281.21	223.36	3.21	0.91	1.13	3.24	51.12	2.77
	228.42	4.43	280.01	228.35	3.58	0.98	0.76	3.61	37.71	1.37
	233.42	4.62	279.57	233.33	3.97	1.04	0.37	4.01	19.36	1.16
	238.42	4.85	279.05	238.31	4.37	1.11	-0.04	4.42	357.92	1.40
	243.42	5.00	278.44	243.30	4.79	1.18	-0.46	4.85	338.45	0.95
	248.42	5.05	278.23	248.28	5.22	1.24	-0.90	5.28	324.09	0.32

253.42	5.16	278.12	253.26	5.65	1.30	-1.34	5.73	314.24	0.66
258.42	5.39	278.13	258.24	6.10	1.37	-1.79	6.19	307.34	1.38
263.42	5.57	277.78	263.21	6.57	1.43	-2.27	6.66	302.33	1.10
268.42	5.71	277.78	268.19	7.05	1.50	-2.75	7.15	298.59	0.84
273.42	5.80	277.83	273.16	7.54	1.57	-3.25	7.65	295.77	0.54
278.42	5.94	277.86	278.14	8.03	1.64	-3.76	8.17	293.57	0.84
283.42	6.07	278.01	283.11	8.54	1.71	-4.27	8.69	291.81	0.79
288.42	6.27	277.85	288.08	9.07	1.78	-4.81	9.22	290.37	1.20
293.42	6.42	277.30	293.05	9.60	1.86	-5.35	9.78	289.13	0.97
298.42	6.71	278.06	298.02	10.16	1.93	-5.92	10.35	288.09	1.82
303.42	6.89	277.78	302.98	10.74	2.02	-6.51	10.94	287.21	1.10
308.42	7.23	278.00	307.94	11.34	2.10	-7.12	11.55	286.44	2.05
313.42	7.40	277.89	312.90	11.96	2.19	-7.75	12.19	285.77	1.02
318.42	7.78	277.92	317.86	12.60	2.28	-8.40	12.85	285.18	2.28
323.42	8.01	278.04	322.81	13.27	2.37	-9.08	13.54	284.65	1.38
328.42	8.35	277.79	327.76	13.96	2.47	-9.79	14.25	284.18	2.05
333.42	8.60	277.95	332.71	14.68	2.57	-10.52	14.98	283.75	1.51
338.42	8.91	278.33	337.65	15.42	2.68	-11.27	15.75	283.38	1.89
343.42	9.18	278.63	342.59	16.19	2.80	-12.05	16.53	283.07	1.64
348.42	9.44	278.69	347.52	16.98	2.92	-12.85	17.34	282.80	1.56
353.42	9.72	279.27	352.45	17.80	3.05	-13.67	18.17	282.57	1.78
358.42	10.11	279.51	357.38	18.64	3.19	-14.52	19.03	282.39	2.35
363.42	10.34	279.65	362.30	19.51	3.34	-15.39	19.92	282.23	1.39
368.42	10.69	280.26	367.21	20.41	3.49	-16.29	20.83	282.11	2.20
373.42	10.99	280.71	372.12	21.33	3.67	-17.22	21.77	282.02	1.87
378.42	11.40	280.96	377.03	22.29	3.85	-18.17	22.74	281.96	2.48
383.42	11.60	281.18	381.93	23.27	4.04	-19.15	23.74	281.91	1.23
388.42	11.98	281.68	386.82	24.28	4.24	-20.15	24.76	281.89	2.36
393.42	12.37	281.99	391.71	25.32	4.46	-21.18	25.81	281.89	2.37
398.42	12.68	282.08	396.59	26.39	4.68	-22.24	26.90	281.89	1.86
403.42	12.96	282.42	401.47	27.49	4.92	-23.33	28.01	281.91	1.74
408.42	13.28	282.66	406.34	28.61	5.17	-24.43	29.14	281.94	1.95
413.42	13.65	282.95	411.20	29.76	5.42	-25.57	30.30	281.98	2.26
418.42	13.90	283.14	416.05	30.94	5.69	-26.73	31.49	282.02	1.52
423.42	14.15	283.58	420.91	32.14	5.97	-27.91	32.70	282.08	1.63
428.42	14.39	283.78	425.75	33.37	6.26	-29.10	33.93	282.15	1.47
433.42	14.59	283.72	430.59	34.61	6.56	-30.32	35.18	282.21	1.20
438.42	14.82	284.02	435.43	35.87	6.87	-31.55	36.45	282.28	1.45
443.42	15.16	284.25	440.26	37.15	7.18	-32.81	37.74	282.35	2.07
448.42	15.49	284.39	445.08	38.46	7.51	-34.09	39.06	282.42	1.99
453.42	15.84	284.62	449.89	39.81	7.85	-35.39	40.41	282.50	2.13
458.42	16.27	284.56	454.70	41.18	8.20	-36.73	41.79	282.58	2.58
463.42	16.62	284.41	459.50	42.59	8.55	-38.10	43.20	282.65	2.12
468.42	17.17	284.01	464.28	44.03	8.91	-39.51	44.65	282.70	3.37
473.42	17.55	283.59	469.05	45.51	9.26	-40.96	46.14	282.74	2.40
478.42	18.05	283.17	473.81	47.03	9.62	-42.45	47.67	282.76	3.10
483.42	18.40	282.67	478.56	48.57	9.97	-43.97	49.23	282.77	2.30
488.42	18.78	282.37	483.30	50.15	10.31	-45.53	50.83	282.76	2.35
493.42	19.15	281.98	488.03	51.76	10.65	-47.12	52.45	282.74	2.35
498.42	19.57	281.88	492.75	53.40	11.00	-48.74	54.11	282.71	2.53
503.42	19.91	281.74	497.45	55.06	11.34	-50.39	55.80	282.68	2.06
508.42	20.32	281.88	502.15	56.76	11.69	-52.07	57.52	282.66	2.48
513.42	20.74	281.83	506.83	58.49	12.05	-53.79	59.27	282.63	2.52
518.42	21.26	282.14	511.50	60.26	12.43	-55.54	61.06	282.61	3.19
523.42	21.64	282.20	516.15	62.07	12.81	-57.33	62.89	282.60	2.28
528.42	22.13	282.49	520.79	63.91	13.21	-59.15	64.75	282.59	3.01
533.42	22.48	282.63	525.42	65.79	13.62	-61.00	66.65	282.59	2.12
538.42	23.02	282.71	530.03	67.71	14.05	-62.89	68.58	282.59	3.25
543.42	23.32	282.69	534.62	69.65	14.48	-64.81	70.55	282.59	1.80
548.42	23.71	282.75	539.21	71.63	14.92	-66.75	72.55	282.60	2.34
553.42	23.97	282.49	543.78	73.63	15.36	-68.73	74.57	282.60	1.68
558.42	24.40	282.18	548.34	75.65	15.80	-70.73	76.61	282.59	2.69
563.42	24.71	281.99	552.89	77.71	16.23	-72.76	78.69	282.58	1.92

568.42	25.25	281.34	557.42	79.79	16.66	-74.83	80.80	282.55	3.63
573.42	25.58	281.13	561.94	81.91	17.08	-76.93	82.95	282.52	2.05
578.42	25.98	280.61	566.44	84.05	17.49	-79.07	85.12	282.47	2.76
583.42	26.21	280.64	570.93	86.21	17.89	-81.23	87.32	282.42	1.38
588.42	26.34	280.56	575.42	88.39	18.30	-83.40	89.54	282.38	0.81
593.42	26.62	280.69	579.89	90.58	18.71	-85.60	91.76	282.33	1.72
598.42	26.84	280.93	584.36	92.80	19.13	-87.80	94.01	282.29	1.47
603.42	27.32	281.36	588.81	95.04	19.57	-90.04	96.29	282.26	3.11
608.42	27.72	281.97	593.24	97.32	20.04	-92.30	98.60	282.25	2.94
613.42	28.06	282.34	597.66	99.63	20.53	-94.59	100.94	282.25	2.29
618.42	28.39	282.92	602.07	101.97	21.05	-96.89	103.30	282.26	2.57
623.42	28.74	283.27	606.46	104.34	21.59	-99.22	105.69	282.28	2.33
628.42	28.97	283.49	610.84	106.73	22.15	-101.57	108.10	282.30	1.52
633.42	29.29	283.69	615.21	109.15	22.72	-103.94	110.54	282.33	2.01
638.42	29.43	283.81	619.56	111.58	23.30	-106.32	112.99	282.36	0.91
643.42	29.58	283.99	623.92	114.03	23.90	-108.71	115.45	282.40	1.05
648.42	29.77	283.99	628.26	116.48	24.49	-111.11	117.92	282.43	1.14
653.42	29.95	284.12	632.60	118.95	25.10	-113.52	120.41	282.47	1.15
658.42	30.07	284.05	636.93	121.44	25.71	-115.95	122.91	282.50	0.75
663.42	30.21	284.30	641.25	123.93	26.32	-118.38	125.42	282.54	1.13
668.42	30.46	284.31	645.57	126.44	26.95	-120.83	127.94	282.57	1.50
673.42	30.68	284.40	649.87	128.97	27.58	-123.29	130.48	282.61	1.35
678.42	30.84	284.53	654.17	131.51	28.22	-125.77	133.04	282.64	1.04
683.42	30.99	284.67	658.46	134.06	28.86	-128.26	135.60	282.68	1.00
688.42	31.16	284.94	662.74	136.63	29.52	-130.75	138.18	282.72	1.32
693.42	31.37	284.81	667.01	139.21	30.19	-133.26	140.77	282.76	1.32
698.42	31.40	284.85	671.28	141.80	30.86	-135.78	143.38	282.80	0.22
703.42	31.55	284.99	675.55	144.39	31.53	-138.30	145.98	282.84	1.00
708.42	31.73	285.06	679.80	147.00	32.21	-140.83	148.60	282.88	1.10
713.42	31.86	285.27	684.05	149.62	32.90	-143.38	151.24	282.92	1.02
718.42	32.05	285.26	688.29	152.26	33.59	-145.93	153.88	282.96	1.14
723.42	32.23	285.33	692.53	154.91	34.30	-148.49	156.54	283.00	1.10
728.42	32.44	285.47	696.75	157.57	35.01	-151.07	159.21	283.05	1.34
733.42	32.55	285.55	700.97	160.24	35.72	-153.66	161.89	283.09	0.71
738.42	32.69	285.54	705.18	162.93	36.45	-156.26	164.58	283.13	0.84
743.42	32.92	285.76	709.38	165.62	37.18	-158.87	167.29	283.17	1.55
748.42	33.07	285.84	713.58	168.34	37.92	-161.49	170.01	283.21	0.94
753.42	33.14	285.91	717.77	171.06	38.67	-164.11	172.73	283.26	0.48
758.42	33.38	285.98	721.95	173.79	39.42	-166.75	175.47	283.30	1.46
763.42	33.56	286.07	726.12	176.54	40.18	-169.40	178.23	283.34	1.12
768.42	33.60	286.15	730.28	179.29	40.95	-172.06	180.99	283.39	0.36
773.42	33.72	286.28	734.45	182.05	41.72	-174.72	183.75	283.43	0.84
778.42	33.92	286.26	738.60	184.83	42.50	-177.39	186.53	283.47	1.20
783.42	34.08	286.49	742.74	187.61	43.29	-180.07	189.32	283.52	1.23
788.42	34.26	286.53	746.88	190.41	44.09	-182.76	192.13	283.56	1.09
793.42	34.41	286.58	751.01	193.23	44.89	-185.47	194.94	283.61	0.92
798.42	34.67	286.59	755.13	196.05	45.70	-188.18	197.77	283.65	1.56
803.42	34.78	286.80	759.24	198.89	46.52	-190.91	200.62	283.69	0.98
808.42	34.82	286.90	763.34	201.74	47.35	-193.64	203.47	283.74	0.42
813.42	35.02	287.03	767.44	204.60	48.18	-196.38	206.32	283.78	1.28
818.42	35.20	287.07	771.53	207.47	49.02	-199.13	209.19	283.83	1.09
823.42	35.32	287.14	775.62	210.35	49.87	-201.89	212.07	283.88	0.76
828.42	35.48	287.18	779.69	213.24	50.73	-204.66	214.96	283.92	0.97
833.42	35.63	287.28	783.76	216.14	51.59	-207.43	217.87	283.97	0.97
838.42	35.78	287.42	787.82	219.05	52.46	-210.22	220.78	284.01	1.02
843.42	35.84	287.42	791.87	221.97	53.33	-213.01	223.70	284.06	0.36
848.42	36.07	287.50	795.92	224.90	54.22	-215.81	226.63	284.10	1.41
853.42	36.30	287.60	799.96	227.85	55.11	-218.63	229.57	284.15	1.42
858.42	36.37	287.63	803.99	230.81	56.00	-221.45	232.53	284.19	0.43
863.42	36.50	287.69	808.01	233.77	56.90	-224.28	235.49	284.24	0.81
868.42	36.67	287.90	812.02	236.75	57.81	-227.12	238.47	284.28	1.27
873.42	36.91	287.93	816.03	239.74	58.73	-229.97	241.45	284.33	1.44

878.42	37.11	288.02	820.02	242.74	59.66	-232.83	244.46	284.37	1.24
883.42	37.17	288.09	824.01	245.76	60.60	-235.70	247.47	284.42	0.44
888.42	37.35	288.21	827.99	248.78	61.54	-238.58	250.49	284.46	1.16
893.42	37.52	288.20	831.96	251.82	62.49	-241.46	253.52	284.51	1.02
898.42	37.63	288.18	835.92	254.86	63.44	-244.36	256.56	284.55	0.66
903.42	37.77	288.31	839.87	257.92	64.40	-247.26	259.61	284.60	0.97
908.42	38.02	288.35	843.82	260.99	65.37	-250.18	262.68	284.64	1.51
913.42	38.10	288.35	847.76	264.06	66.34	-253.10	265.75	284.69	0.48
918.42	38.20	288.39	851.69	267.15	67.31	-256.03	268.83	284.73	0.62
923.42	38.36	288.36	855.61	270.25	68.29	-258.97	271.92	284.77	0.97
928.42	38.47	288.34	859.53	273.35	69.26	-261.92	275.02	284.81	0.66
933.42	38.61	288.43	863.44	276.46	70.25	-264.88	278.13	284.85	0.90
938.42	38.71	288.35	867.35	279.58	71.23	-267.84	281.25	284.89	0.67
943.42	38.84	288.33	871.24	282.71	72.22	-270.82	284.37	284.93	0.78
948.42	38.88	288.02	875.14	285.84	73.20	-273.80	287.50	284.97	1.19
953.42	38.96	287.72	879.03	288.98	74.16	-276.79	290.64	285.00	1.23
958.42	38.94	286.80	882.92	292.12	75.09	-279.79	293.78	285.02	3.47
963.42	38.91	286.16	886.81	295.25	75.98	-282.80	296.92	285.04	2.42
968.42	38.72	285.14	890.70	298.37	76.83	-285.82	300.05	285.05	4.00
973.42	38.60	284.71	894.61	301.48	77.63	-288.84	303.18	285.04	1.77
978.42	38.43	284.08	898.52	304.57	78.41	-291.85	306.29	285.04	2.57
983.42	38.53	283.80	902.43	307.66	79.16	-294.87	309.40	285.03	1.21
988.42	38.49	283.62	906.35	310.75	79.90	-297.90	312.51	285.01	0.71
993.42	38.55	283.62	910.26	313.84	80.63	-300.92	315.63	285.00	0.36
998.42	38.68	283.54	914.16	316.93	81.36	-303.96	318.75	284.99	0.84
1003.42	38.73	283.49	918.07	320.03	82.09	-307.00	321.87	284.97	0.35
1008.42	38.77	283.55	921.97	323.14	82.82	-310.04	325.00	284.96	0.33
1013.42	38.82	283.50	925.86	326.24	83.56	-313.08	328.13	284.94	0.35
1018.42	38.80	283.50	929.76	329.35	84.29	-316.13	331.27	284.93	0.12
1023.42	38.87	283.64	933.65	332.46	85.02	-319.18	334.40	284.92	0.67
1028.42	38.92	283.56	937.55	335.58	85.76	-322.23	337.54	284.90	0.43
1033.42	38.99	283.56	941.43	338.69	86.50	-325.29	340.68	284.89	0.42
1038.42	39.06	283.58	945.32	341.82	87.24	-328.35	343.83	284.88	0.43
1043.42	38.94	283.63	949.20	344.94	87.98	-331.41	346.98	284.87	0.74
1048.42	38.82	283.75	953.10	348.05	88.72	-334.45	350.12	284.86	0.85
1053.42	38.92	283.78	956.99	351.16	89.47	-337.50	353.25	284.85	0.61
1058.42	38.99	283.79	960.88	354.28	90.22	-340.56	356.40	284.84	0.42
1063.42	39.02	283.85	964.76	357.41	90.97	-343.61	359.54	284.83	0.29
1068.42	39.08	283.86	968.65	360.53	91.72	-346.67	362.69	284.82	0.36
1073.42	39.12	283.81	972.53	363.66	92.48	-349.73	365.85	284.81	0.31
1078.42	39.15	283.94	976.40	366.80	93.23	-352.79	369.00	284.80	0.52
1083.42	39.12	284.00	980.28	369.93	93.99	-355.86	372.16	284.80	0.29
1088.42	39.18	283.96	984.16	373.06	94.76	-358.92	375.31	284.79	0.39
1093.42	39.02	284.03	988.04	376.19	95.52	-361.98	378.47	284.78	1.00
1098.42	38.99	284.06	991.93	379.32	96.28	-365.03	381.61	284.78	0.21
1103.42	38.97	284.07	995.81	382.44	97.05	-368.08	384.76	284.77	0.13
1108.42	39.14	284.18	999.69	385.57	97.82	-371.14	387.91	284.77	1.10
1113.42	39.15	284.16	1003.57	388.70	98.59	-374.20	391.06	284.76	0.10
1118.42	39.12	284.21	1007.45	391.84	99.36	-377.26	394.22	284.76	0.26
1123.42	38.96	284.29	1011.33	394.97	100.14	-380.31	397.37	284.75	1.01
1128.42	39.09	284.32	1015.22	398.09	100.92	-383.36	400.52	284.75	0.79
1133.42	39.10	284.31	1019.10	401.23	101.70	-386.42	403.67	284.74	0.07
1138.42	39.22	284.28	1022.98	404.36	102.48	-389.48	406.83	284.74	0.73
1143.42	39.26	284.30	1026.85	407.50	103.26	-392.54	409.99	284.74	0.25
1148.42	39.29	284.29	1030.72	410.65	104.04	-395.61	413.16	284.73	0.18
1153.42	39.11	284.46	1034.59	413.79	104.82	-398.67	416.32	284.73	1.26
1158.42	39.01	284.56	1038.48	416.92	105.61	-401.72	419.47	284.73	0.71
1163.42	38.92	284.62	1042.36	420.05	106.40	-404.76	422.61	284.73	0.59
1168.42	38.99	284.61	1046.25	423.17	107.20	-407.81	425.75	284.73	0.42
1173.42	38.97	284.64	1050.14	426.30	107.99	-410.85	428.90	284.73	0.17
1178.42	39.04	284.69	1054.02	429.43	108.79	-413.89	432.05	284.73	0.46
1183.42	38.90	284.72	1057.91	432.55	109.59	-416.93	435.19	284.73	0.85
1188.42	38.99	284.78	1061.80	435.68	110.39	-419.97	438.33	284.73	0.59

Tie-In	1193.42	38.85	284.79	1065.69	438.80	111.19	-423.01	441.48	284.73	0.84
	1198.42	38.89	284.79	1069.58	441.92	111.99	-426.04	444.61	284.73	0.24
	1203.42	38.91	284.96	1073.47	445.04	112.79	-429.08	447.75	284.73	0.65
	1208.42	38.86	285.00	1077.37	448.16	113.61	-432.11	450.89	284.73	0.34
	1213.42	38.83	284.98	1081.26	451.28	114.42	-435.14	454.03	284.73	0.20
	1296.11	26.92	289.04	1150.59	495.95	127.27	-478.04	498.78	284.91	4.39
	1306.49	25.31	291.01	1159.91	500.51	128.83	-482.33	503.33	284.96	5.28
	1335.11	24.76	289.29	1185.84	512.62	133.01	-493.70	515.39	285.08	0.96
	1363.48	20.38	290.09	1212.03	523.51	136.67	-503.95	526.24	285.17	4.64
	1392.54	16.76	290.56	1239.58	532.76	139.88	-512.63	535.45	285.26	3.74
	1421.10	13.52	295.99	1267.14	540.20	142.79	-519.49	542.84	285.37	3.71
	1449.53	10.68	305.99	1294.94	546.06	145.80	-524.61	548.57	285.53	3.71
	1478.28	8.01	319.79	1323.31	550.39	148.89	-528.06	552.72	285.75	3.62
	1507.58	6.58	349.37	1352.38	553.05	152.10	-529.69	555.16	286.02	4.06
	1535.84	6.15	21.45	1380.48	553.88	155.10	-529.43	555.74	286.33	3.75
	1564.96	5.02	32.54	1409.46	553.61	157.63	-528.17	555.25	286.62	1.60
	1593.82	3.66	19.66	1438.24	553.37	159.56	-527.19	554.85	286.84	1.73
	1622.40	3.12	11.43	1466.77	553.52	161.18	-526.72	554.88	287.01	0.76
	1651.14	2.95	5.66	1495.47	553.84	162.68	-526.50	555.10	287.17	0.36
	1680.28	2.88	9.33	1524.57	554.19	164.15	-526.30	555.35	287.32	0.21
	1708.79	2.95	6.24	1553.04	554.52	165.59	-526.11	555.58	287.47	0.18
	1737.82	3.03	7.55	1582.03	554.88	167.09	-525.93	555.86	287.63	0.11
	1766.11	2.90	8.01	1610.29	555.21	168.54	-525.73	556.11	287.78	0.14
	1795.09	2.99	4.82	1639.23	555.59	170.02	-525.56	556.40	287.93	0.19
	1823.68	3.04	4.99	1667.78	556.00	171.52	-525.43	556.74	288.08	0.05
	1852.18	3.64	7.05	1696.23	556.42	173.17	-525.26	557.08	288.25	0.64
	1881.10	3.62	7.87	1725.09	556.85	174.99	-525.02	557.42	288.43	0.06
	1909.68	3.98	11.26	1753.61	557.22	176.85	-524.70	557.71	288.63	0.45
	1938.49	3.85	16.31	1782.35	557.46	178.76	-524.24	557.87	288.83	0.38
	1967.45	3.90	16.65	1811.24	557.61	180.64	-523.68	557.95	289.03	0.06
	1996.03	3.86	20.05	1839.76	557.70	182.47	-523.07	557.97	289.23	0.25
	2024.62	3.69	17.48	1868.29	557.76	184.25	-522.47	557.99	289.43	0.25
	2053.61	3.66	18.34	1897.22	557.86	186.02	-521.89	558.03	289.62	0.06
	2082.14	3.77	17.32	1925.69	557.96	187.78	-521.33	558.09	289.81	0.13
	2111.10	3.67	16.78	1954.59	558.09	189.58	-520.78	558.18	290.00	0.11
	2139.54	3.42	16.22	1982.97	558.22	191.26	-520.28	558.28	290.18	0.27
	2167.93	3.33	21.67	2011.31	558.28	192.84	-519.74	558.32	290.36	0.35
	2196.39	3.19	26.00	2039.73	558.19	194.32	-519.08	558.22	290.52	0.30
	2224.95	3.16	25.76	2068.24	558.06	195.75	-518.39	558.07	290.69	0.03
	2241.93	3.10	23.43	2085.20	558.00	196.59	-518.01	558.00	290.78	0.25
Projection to TD	2262.00	3.10	23.43	2105.24	557.95	197.59	-517.58	557.95	290.89	0.00

Survey Type: Definitive Survey

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

Surveying Prog:

MD From (m)

0.00

1213.42

MD To (m)

1213.42

2262.00

EOU Freq

Act-Stns

Act-Stns

Survey Tool Type

SLB_CNSG+DPIPE

SLB_MWD-STD

APPENDIX 1b

TUNA A3A

MD-TVD Survey Data Listing

Report Date:	4 August 2005
Well:	TUNA A3A
Structure / Slot:	Tuna Rig 453 / 3
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 10.743, E 148 25 10.108
Location Grid N/E:	N 5774409.61 m, E 624341.44 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	5774409.61	624341.44
5	0.02	353.64	5.00	26.30	0.00	-0.01	5774409.61	624341.43
10	0.04	347.28	10.00	21.30	0.01	-0.01	5774409.62	624341.42
15	0.05	340.92	15.00	16.30	0.01	-0.02	5774409.62	624341.42
20	0.07	334.56	20.00	11.30	0.01	-0.03	5774409.62	624341.41
25	0.09	328.19	25.00	6.30	0.02	-0.03	5774409.63	624341.41
30	0.11	321.83	30.00	1.30	0.02	-0.04	5774409.63	624341.40
35	0.12	315.47	35.00	-3.70	0.02	-0.05	5774409.63	624341.39
40	0.14	309.11	40.00	-8.70	0.03	-0.05	5774409.64	624341.39
45	0.16	302.75	45.00	-13.70	0.03	-0.06	5774409.64	624341.38
50	0.17	298.41	50.00	-18.70	0.04	-0.07	5774409.65	624341.37
55	0.17	296.46	55.00	-23.70	0.04	-0.08	5774409.65	624341.36
60	0.18	290.73	60.00	-28.70	0.05	-0.09	5774409.66	624341.34
65	0.18	284.79	65.00	-33.70	0.05	-0.11	5774409.66	624341.33
70	0.18	280.33	70.00	-38.70	0.06	-0.12	5774409.67	624341.31
75	0.22	285.64	75.00	-43.70	0.06	-0.14	5774409.67	624341.30
80	0.22	288.65	80.00	-48.70	0.07	-0.16	5774409.68	624341.28
85	0.25	285.05	85.00	-53.70	0.07	-0.18	5774409.68	624341.26
90	0.26	278.37	90.00	-58.70	0.08	-0.20	5774409.69	624341.24
95	0.26	271.32	95.00	-63.70	0.08	-0.22	5774409.69	624341.21
100	0.27	275.08	100.00	-68.70	0.08	-0.25	5774409.69	624341.19
105	0.29	276.70	105.00	-73.70	0.08	-0.27	5774409.69	624341.17
110	0.37	271.49	110.00	-78.70	0.08	-0.30	5774409.69	624341.14
115	0.42	268.58	115.00	-83.70	0.08	-0.33	5774409.69	624341.10
120	0.48	269.00	120.00	-88.70	0.08	-0.37	5774409.69	624341.06
125	0.54	270.82	125.00	-93.70	0.08	-0.42	5774409.69	624341.02
130	0.59	270.36	130.00	-98.70	0.08	-0.47	5774409.69	624340.97
135	0.63	271.73	135.00	-103.70	0.09	-0.52	5774409.69	624340.92
140	0.67	273.07	140.00	-108.70	0.09	-0.58	5774409.70	624340.86
145	0.75	275.76	145.00	-113.70	0.09	-0.64	5774409.70	624340.80
150	0.79	274.50	150.00	-118.70	0.10	-0.71	5774409.71	624340.73
155	0.84	274.92	155.00	-123.70	0.10	-0.78	5774409.71	624340.66
160	0.92	278.70	160.00	-128.70	0.11	-0.85	5774409.72	624340.58
165	1.00	280.08	165.00	-133.70	0.13	-0.94	5774409.74	624340.50
170	1.06	280.60	169.99	-138.69	0.14	-1.02	5774409.75	624340.41
175	1.17	284.12	174.99	-143.69	0.17	-1.12	5774409.77	624340.32
180	1.32	287.14	179.99	-148.69	0.19	-1.22	5774409.80	624340.21
185	1.58	289.90	184.99	-153.69	0.24	-1.34	5774409.84	624340.09
190	1.81	290.87	189.99	-158.69	0.29	-1.48	5774409.90	624339.96
195	2.10	290.96	194.99	-163.69	0.35	-1.64	5774409.96	624339.80
200	2.46	290.01	199.98	-168.68	0.42	-1.83	5774410.03	624339.61
205	2.88	287.96	204.98	-173.68	0.49	-2.05	5774410.10	624339.39
210	3.23	285.47	209.97	-178.67	0.57	-2.30	5774410.18	624339.13
215	3.59	283.80	214.96	-183.66	0.64	-2.59	5774410.25	624338.85
220	3.92	282.61	219.95	-188.65	0.72	-2.91	5774410.33	624338.53
225	4.29	280.83	224.94	-193.64	0.79	-3.26	5774410.40	624338.18
230	4.49	279.87	229.92	-198.62	0.86	-3.64	5774410.47	624337.80
235	4.69	279.41	234.91	-203.61	0.93	-4.03	5774410.53	624337.41
240	4.90	278.86	239.89	-208.59	0.99	-4.44	5774410.60	624336.99
245	5.02	278.37	244.87	-213.57	1.06	-4.87	5774410.67	624336.57
250	5.08	278.20	249.85	-218.55	1.12	-5.31	5774410.73	624336.13
255	5.23	278.12	254.83	-223.53	1.18	-5.75	5774410.79	624335.69
260	5.45	278.02	259.81	-228.51	1.25	-6.21	5774410.86	624335.23

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
265	5.61	277.78	264.79	-233.49	1.32	-6.69	5774410.92	624334.75
270	5.74	277.80	269.76	-238.46	1.38	-7.18	5774410.99	624334.26
275	5.84	277.84	274.73	-243.43	1.45	-7.68	5774411.06	624333.76
280	5.98	277.91	279.71	-248.41	1.52	-8.19	5774411.13	624333.25
285	6.13	277.96	284.68	-253.38	1.59	-8.71	5774411.20	624332.73
290	6.32	277.68	289.65	-258.35	1.67	-9.25	5774411.28	624332.19
295	6.51	277.54	294.62	-263.32	1.74	-9.80	5774411.35	624331.63
300	6.77	277.97	299.59	-268.29	1.82	-10.38	5774411.43	624331.06
305	7.00	277.85	304.55	-273.25	1.90	-10.97	5774411.51	624330.47
310	7.28	277.97	309.51	-278.21	1.99	-11.59	5774411.60	624329.85
315	7.52	277.90	314.47	-283.17	2.08	-12.22	5774411.69	624329.21
320	7.85	277.96	319.42	-288.12	2.17	-12.89	5774411.78	624328.55
325	8.12	277.96	324.38	-293.08	2.27	-13.57	5774411.87	624327.86
330	8.43	277.84	329.32	-298.02	2.36	-14.29	5774411.97	624327.15
335	8.70	278.07	334.27	-302.97	2.47	-15.02	5774412.08	624326.41
340	9.00	278.42	339.21	-307.91	2.58	-15.78	5774412.19	624325.65
345	9.26	278.65	344.15	-312.85	2.70	-16.57	5774412.30	624324.87
350	9.53	278.87	349.08	-317.78	2.82	-17.38	5774412.43	624324.06
355	9.84	279.35	354.01	-322.71	2.95	-18.21	5774412.56	624323.23
360	10.18	279.55	358.93	-327.63	3.10	-19.06	5774412.70	624322.37
365	10.45	279.84	363.85	-332.55	3.25	-19.95	5774412.86	624321.49
370	10.78	280.40	368.76	-337.46	3.41	-20.85	5774413.02	624320.58
375	11.12	280.79	373.67	-342.37	3.58	-21.79	5774413.19	624319.65
380	11.46	281.03	378.58	-347.28	3.77	-22.75	5774413.38	624318.69
385	11.72	281.34	383.47	-352.17	3.96	-23.73	5774413.57	624317.70
390	12.10	281.78	388.37	-357.07	4.17	-24.75	5774413.78	624316.69
395	12.47	282.02	393.25	-361.95	4.39	-25.79	5774414.00	624315.65
400	12.77	282.19	398.13	-366.83	4.62	-26.85	5774414.23	624314.58
405	13.06	282.50	403.00	-371.70	4.86	-27.95	5774414.47	624313.49
410	13.40	282.75	407.87	-376.57	5.11	-29.06	5774414.72	624312.38
415	13.73	283.01	412.73	-381.43	5.37	-30.21	5774414.98	624311.23
420	13.98	283.28	417.59	-386.29	5.64	-31.37	5774415.25	624310.07
425	14.23	283.64	422.44	-391.14	5.93	-32.56	5774415.53	624308.88
430	14.45	283.76	427.28	-395.98	6.22	-33.76	5774415.83	624307.68
435	14.66	283.81	432.12	-400.82	6.52	-34.98	5774416.13	624306.46
440	14.93	284.09	436.95	-405.65	6.83	-36.22	5774416.44	624305.22
445	15.26	284.29	441.78	-410.48	7.15	-37.48	5774416.75	624303.96
450	15.60	284.46	446.60	-415.30	7.48	-38.77	5774417.08	624302.67
455	15.98	284.60	451.41	-420.11	7.82	-40.09	5774417.43	624301.35
460	16.38	284.51	456.22	-424.92	8.17	-41.43	5774417.78	624300.00
465	16.79	284.28	461.01	-429.71	8.52	-42.82	5774418.13	624298.62
470	17.29	283.88	465.79	-434.49	8.88	-44.24	5774418.49	624297.20
475	17.71	283.46	470.56	-439.26	9.23	-45.70	5774418.84	624295.74
480	18.16	283.01	475.31	-444.01	9.59	-47.20	5774419.19	624294.24
485	18.52	282.58	480.06	-448.76	9.93	-48.73	5774419.54	624292.70
490	18.90	282.25	484.80	-453.50	10.28	-50.30	5774419.89	624291.14
495	19.28	281.95	489.52	-458.22	10.62	-51.90	5774420.23	624289.54
500	19.68	281.84	494.23	-462.93	10.97	-53.53	5774420.57	624287.91
505	20.04	281.78	498.94	-467.64	11.31	-55.19	5774420.92	624286.25
510	20.45	281.86	503.63	-472.33	11.67	-56.89	5774421.28	624284.55
515	20.90	281.93	508.31	-477.01	12.03	-58.61	5774421.64	624282.82
520	21.38	282.16	512.97	-481.67	12.41	-60.38	5774422.02	624281.06
525	21.79	282.29	517.62	-486.32	12.80	-62.17	5774422.41	624279.26
530	22.24	282.53	522.25	-490.95	13.20	-64.01	5774422.81	624277.43
535	22.65	282.66	526.87	-495.57	13.62	-65.87	5774423.23	624275.57
540	23.11	282.70	531.48	-500.18	14.04	-67.77	5774423.65	624273.67
545	23.44	282.71	536.07	-504.77	14.48	-69.69	5774424.09	624271.75
550	23.79	282.67	540.66	-509.36	14.92	-71.65	5774424.53	624269.79
555	24.11	282.39	545.22	-513.92	15.36	-73.63	5774424.97	624267.81
560	24.50	282.12	549.78	-518.48	15.80	-75.64	5774425.40	624265.80
565	24.88	281.78	554.32	-523.02	16.23	-77.68	5774425.84	624263.76
570	25.35	281.27	558.85	-527.55	16.65	-79.76	5774426.26	624261.68
575	25.71	280.97	563.36	-532.06	17.07	-81.88	5774426.68	624259.56
580	26.05	280.62	567.86	-536.56	17.48	-84.02	5774427.08	624257.42
585	26.25	280.61	572.35	-541.05	17.88	-86.19	5774427.49	624255.25
590	26.43	280.60	576.83	-545.53	18.29	-88.37	5774427.90	624253.07

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
595	26.69	280.77	581.30	-550.00	18.70	-90.56	5774428.31	624250.87
600	26.99	281.07	585.76	-554.46	19.13	-92.78	5774428.74	624248.66
605	27.45	281.55	590.21	-558.91	19.58	-95.02	5774429.19	624246.42
610	27.83	282.09	594.64	-563.34	20.06	-97.29	5774429.67	624244.14
615	28.16	282.52	599.05	-567.75	20.56	-99.59	5774430.17	624241.85
620	28.50	283.03	603.46	-572.16	21.08	-101.90	5774430.69	624239.54
625	28.81	283.34	607.84	-576.54	21.63	-104.23	5774431.24	624237.20
630	29.07	283.55	612.22	-580.92	22.19	-106.59	5774431.80	624234.85
635	29.33	283.73	616.58	-585.28	22.77	-108.96	5774432.38	624232.48
640	29.48	283.87	620.94	-589.64	23.35	-111.34	5774432.96	624230.10
645	29.64	283.99	625.29	-593.99	23.95	-113.74	5774433.55	624227.70
650	29.83	284.03	629.63	-598.33	24.55	-116.14	5774434.15	624225.29
655	29.99	284.10	633.96	-602.66	25.15	-118.56	5774434.76	624222.88
660	30.11	284.13	638.29	-606.99	25.76	-120.99	5774435.37	624220.45
665	30.29	284.30	642.61	-611.31	26.38	-123.43	5774435.99	624218.01
670	30.53	284.34	646.93	-615.63	27.01	-125.88	5774436.61	624215.56
675	30.73	284.44	651.23	-619.93	27.64	-128.35	5774437.25	624213.09
680	30.89	284.57	655.52	-624.22	28.28	-130.83	5774437.89	624210.61
685	31.04	284.76	659.81	-628.51	28.93	-133.32	5774438.54	624208.12
690	31.23	284.90	664.09	-632.79	29.59	-135.81	5774439.20	624205.62
695	31.38	284.82	668.36	-637.06	30.26	-138.33	5774439.87	624203.11
700	31.45	284.89	672.63	-641.33	30.93	-140.84	5774440.54	624200.59
705	31.61	285.01	676.89	-645.59	31.60	-143.37	5774441.21	624198.07
710	31.77	285.13	681.15	-649.85	32.29	-145.91	5774441.89	624195.53
715	31.92	285.27	685.39	-654.09	32.98	-148.45	5774442.59	624192.99
720	32.11	285.28	689.63	-658.33	33.67	-151.01	5774443.28	624190.43
725	32.30	285.37	693.86	-662.56	34.38	-153.58	5774443.99	624187.86
730	32.47	285.50	698.09	-666.79	35.09	-156.16	5774444.70	624185.28
735	32.59	285.55	702.30	-671.00	35.81	-158.75	5774445.42	624182.69
740	32.76	285.61	706.51	-675.21	36.54	-161.35	5774446.15	624180.09
745	32.97	285.79	710.71	-679.41	37.27	-163.96	5774446.88	624177.47
750	33.09	285.86	714.90	-683.60	38.01	-166.59	5774447.62	624174.85
755	33.22	285.93	719.09	-687.79	38.76	-169.22	5774448.37	624172.22
760	33.44	286.01	723.27	-691.97	39.52	-171.86	5774449.13	624169.58
765	33.57	286.10	727.43	-696.13	40.28	-174.51	5774449.89	624166.93
770	33.64	286.19	731.60	-700.30	41.05	-177.17	5774450.66	624164.27
775	33.78	286.27	735.76	-704.46	41.83	-179.83	5774451.44	624161.61
780	33.97	286.33	739.91	-708.61	42.61	-182.51	5774452.22	624158.93
785	34.14	286.50	744.05	-712.75	43.40	-185.19	5774453.01	624156.25
790	34.31	286.55	748.19	-716.89	44.20	-187.89	5774453.81	624153.55
795	34.49	286.58	752.31	-721.01	45.01	-190.60	5774454.61	624150.84
800	34.70	286.66	756.43	-725.13	45.82	-193.32	5774455.43	624148.12
805	34.79	286.83	760.54	-729.24	46.64	-196.05	5774456.25	624145.39
810	34.88	286.94	764.64	-733.34	47.47	-198.78	5774457.08	624142.66
815	35.08	287.04	768.74	-737.44	48.31	-201.52	5774457.92	624139.92
820	35.24	287.09	772.82	-741.52	49.15	-204.27	5774458.76	624137.17
825	35.37	287.15	776.90	-745.60	50.00	-207.03	5774459.61	624134.40
830	35.53	287.21	780.98	-749.68	50.86	-209.80	5774460.47	624131.63
835	35.68	287.32	785.04	-753.74	51.72	-212.58	5774461.33	624128.85
840	35.80	287.42	789.10	-757.80	52.59	-215.37	5774462.20	624126.07
845	35.91	287.45	793.15	-761.85	53.47	-218.17	5774463.08	624123.27
850	36.14	287.53	797.20	-765.90	54.36	-220.97	5774463.96	624120.47
855	36.32	287.61	801.23	-769.93	55.25	-223.79	5774464.86	624117.65
860	36.41	287.65	805.26	-773.96	56.15	-226.61	5774465.75	624114.82
865	36.55	287.76	809.28	-777.98	57.05	-229.45	5774466.66	624111.99
870	36.75	287.91	813.29	-781.99	57.96	-232.29	5774467.57	624109.15
875	36.97	287.96	817.29	-785.99	58.89	-235.14	5774468.50	624106.30
880	37.13	288.04	821.28	-789.98	59.82	-238.01	5774469.43	624103.43
885	37.23	288.13	825.26	-793.96	60.76	-240.88	5774470.37	624100.56
890	37.40	288.21	829.24	-797.94	61.70	-243.76	5774471.31	624097.68
895	37.55	288.19	833.21	-801.91	62.65	-246.65	5774472.26	624094.79
900	37.67	288.22	837.17	-805.87	63.61	-249.55	5774473.21	624091.89
905	37.85	288.32	841.12	-809.82	64.57	-252.45	5774474.17	624088.98
910	38.05	288.35	845.06	-813.76	65.53	-255.37	5774475.14	624086.07
915	38.13	288.36	849.00	-817.70	66.50	-258.30	5774476.11	624083.14
920	38.25	288.38	852.93	-821.63	67.48	-261.23	5774477.09	624080.20

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
925	38.39	288.35	856.85	-825.55	68.46	-264.18	5774478.06	624077.26
930	38.51	288.37	860.77	-829.47	69.43	-267.13	5774479.04	624074.31
935	38.64	288.40	864.68	-833.38	70.42	-270.09	5774480.03	624071.35
940	38.75	288.34	868.58	-837.28	71.40	-273.05	5774481.01	624068.39
945	38.85	288.23	872.48	-841.18	72.39	-276.03	5774482.00	624065.41
950	38.91	287.93	876.37	-845.07	73.36	-279.01	5774482.97	624062.43
955	38.95	287.43	880.26	-848.96	74.31	-282.00	5774483.92	624059.43
960	38.93	286.60	884.15	-852.85	75.23	-285.01	5774484.84	624056.43
965	38.85	285.84	888.04	-856.74	76.11	-288.02	5774485.72	624053.41
970	38.68	285.00	891.94	-860.64	76.94	-291.04	5774486.55	624050.40
975	38.55	284.51	895.84	-864.54	77.74	-294.06	5774487.35	624047.38
980	38.46	283.99	899.76	-868.46	78.50	-297.08	5774488.11	624044.36
985	38.52	283.74	903.67	-872.37	79.25	-300.10	5774488.86	624041.34
990	38.51	283.62	907.58	-876.28	79.99	-303.12	5774489.60	624038.32
995	38.59	283.59	911.49	-880.19	80.72	-306.15	5774490.33	624035.29
1000	38.70	283.52	915.40	-884.10	81.45	-309.19	5774491.06	624032.25
1005	38.74	283.51	919.30	-888.00	82.18	-312.23	5774491.79	624029.21
1010	38.79	283.53	923.20	-891.90	82.92	-315.27	5774492.52	624026.17
1015	38.81	283.50	927.09	-895.79	83.65	-318.32	5774493.26	624023.12
1020	38.82	283.54	930.99	-899.69	84.38	-321.36	5774493.99	624020.07
1025	38.89	283.61	934.88	-903.58	85.12	-324.41	5774494.73	624017.02
1030	38.94	283.56	938.77	-907.47	85.85	-327.47	5774495.46	624013.97
1035	39.01	283.57	942.66	-911.36	86.59	-330.52	5774496.20	624010.91
1040	39.02	283.60	946.55	-915.25	87.33	-333.58	5774496.94	624007.85
1045	38.90	283.67	950.43	-919.13	88.07	-336.64	5774497.68	624004.80
1050	38.85	283.76	954.33	-923.03	88.82	-339.69	5774498.42	624001.75
1055	38.94	283.78	958.22	-926.92	89.56	-342.74	5774499.17	623998.70
1060	39.00	283.81	962.10	-930.80	90.31	-345.79	5774499.92	623995.65
1065	39.04	283.85	965.99	-934.69	91.07	-348.85	5774500.67	623992.59
1070	39.09	283.84	969.87	-938.57	91.82	-351.91	5774501.43	623989.53
1075	39.13	283.85	973.75	-942.45	92.58	-354.97	5774502.18	623986.47
1080	39.14	283.96	977.63	-946.33	93.33	-358.03	5774502.94	623983.41
1085	39.14	283.99	981.51	-950.21	94.10	-361.10	5774503.70	623980.34
1090	39.13	283.98	985.39	-954.09	94.86	-364.16	5774504.47	623977.28
1095	39.01	284.04	989.27	-957.97	95.62	-367.21	5774505.23	623974.22
1100	38.98	284.06	993.15	-961.85	96.39	-370.27	5774505.99	623971.17
1105	39.02	284.10	997.04	-965.74	97.15	-373.32	5774506.76	623968.12
1110	39.14	284.17	1000.92	-969.62	97.92	-376.38	5774507.53	623965.06
1115	39.14	284.18	1004.80	-973.50	98.69	-379.44	5774508.30	623962.00
1120	39.07	284.24	1008.68	-977.38	99.47	-382.49	5774509.08	623958.94
1125	39.00	284.30	1012.56	-981.26	100.24	-385.55	5774509.85	623955.89
1130	39.09	284.32	1016.45	-985.15	101.02	-388.60	5774510.63	623952.84
1135	39.14	284.30	1020.32	-989.02	101.80	-391.65	5774511.41	623949.78
1140	39.23	284.29	1024.20	-992.90	102.58	-394.72	5774512.19	623946.72
1145	39.27	284.30	1028.07	-996.77	103.36	-397.78	5774512.97	623943.66
1150	39.23	284.34	1031.94	-1000.64	104.15	-400.85	5774513.75	623940.59
1155	39.08	284.49	1035.82	-1004.52	104.93	-403.90	5774514.54	623937.53
1160	38.98	284.58	1039.70	-1008.40	105.72	-406.95	5774515.33	623934.49
1165	38.94	284.62	1043.59	-1012.29	106.51	-409.99	5774516.12	623931.44
1170	38.98	284.62	1047.48	-1016.18	107.31	-413.04	5774516.92	623928.40
1175	38.99	284.66	1051.37	-1020.07	108.10	-416.08	5774517.71	623925.36
1180	39.00	284.70	1055.25	-1023.95	108.90	-419.12	5774518.51	623922.31
1185	38.93	284.74	1059.14	-1027.84	109.70	-422.17	5774519.31	623919.27
1190	38.95	284.78	1063.03	-1031.73	110.50	-425.20	5774520.11	623916.23
1195	38.86	284.79	1066.92	-1035.62	111.30	-428.24	5774520.91	623913.20
1200	38.90	284.84	1070.81	-1039.51	112.10	-431.27	5774521.71	623910.16
1205	38.89	284.97	1074.70	-1043.40	112.91	-434.31	5774522.52	623907.13
1210	38.85	284.99	1078.60	-1047.30	113.72	-437.34	5774523.33	623904.10
1215	38.60	285.06	1082.59	-1051.29	114.52	-440.23	5774524.13	623901.21
1220	37.88	285.30	1086.78	-1055.48	115.30	-442.82	5774524.91	623898.61
1225	37.16	285.55	1090.97	-1059.67	116.08	-445.42	5774525.69	623896.02
1230	36.44	285.79	1095.16	-1063.86	116.85	-448.01	5774526.46	623893.43
1235	35.72	286.04	1099.35	-1068.05	117.63	-450.61	5774527.24	623890.83
1240	35.00	286.29	1103.55	-1072.25	118.41	-453.20	5774528.02	623888.24
1245	34.28	286.53	1107.74	-1076.44	119.19	-455.79	5774528.80	623885.64
1250	33.56	286.78	1111.93	-1080.63	119.96	-458.39	5774529.57	623883.05

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1255	32.84	287.02	1116.12	-1084.82	120.74	-460.98	5774530.35	623880.46
1260	32.12	287.27	1120.32	-1089.02	121.52	-463.58	5774531.13	623877.86
1265	31.40	287.51	1124.51	-1093.21	122.30	-466.17	5774531.90	623875.27
1270	30.68	287.76	1128.70	-1097.40	123.07	-468.76	5774532.68	623872.67
1275	29.96	288.00	1132.89	-1101.59	123.85	-471.36	5774533.46	623870.08
1280	29.24	288.25	1137.08	-1105.78	124.63	-473.95	5774534.24	623867.49
1285	28.52	288.49	1141.28	-1109.98	125.41	-476.54	5774535.01	623864.89
1290	27.80	288.74	1145.47	-1114.17	126.18	-479.14	5774535.79	623862.30
1295	27.08	288.99	1149.66	-1118.36	126.96	-481.73	5774536.57	623859.71
1300	26.32	289.78	1154.09	-1122.79	127.72	-483.92	5774537.33	623857.52
1305	25.54	290.73	1158.58	-1127.28	128.47	-485.98	5774538.08	623855.45
1310	25.24	290.80	1163.09	-1131.79	129.21	-488.00	5774538.82	623853.44
1315	25.15	290.50	1167.62	-1136.32	129.94	-489.98	5774539.54	623851.46
1320	25.05	290.20	1172.15	-1140.85	130.66	-491.97	5774540.27	623849.47
1325	24.95	289.90	1176.68	-1145.38	131.39	-493.95	5774541.00	623847.48
1330	24.86	289.60	1181.21	-1149.91	132.12	-495.94	5774541.73	623845.50
1335	24.76	289.30	1185.74	-1154.44	132.85	-497.93	5774542.46	623843.51
1340	24.01	289.43	1190.36	-1159.06	133.50	-499.74	5774543.11	623841.70
1345	23.23	289.57	1194.97	-1163.67	134.14	-501.54	5774543.75	623839.89
1350	22.46	289.71	1199.59	-1168.29	134.79	-503.35	5774544.40	623838.09
1355	21.69	289.85	1204.21	-1172.91	135.43	-505.16	5774545.04	623836.28
1360	20.92	289.99	1208.82	-1177.52	136.08	-506.96	5774545.69	623834.47
1365	20.19	290.11	1213.48	-1182.18	136.70	-508.67	5774546.31	623832.76
1370	19.57	290.20	1218.21	-1186.91	137.25	-510.17	5774546.86	623831.27
1375	18.94	290.28	1222.95	-1191.65	137.80	-511.66	5774547.41	623829.78
1380	18.32	290.36	1227.69	-1196.39	138.35	-513.15	5774547.96	623828.28
1385	17.70	290.44	1232.43	-1201.13	138.91	-514.65	5774548.52	623826.79
1390	17.08	290.52	1237.17	-1205.87	139.46	-516.14	5774549.07	623825.30
1395	16.48	291.03	1241.95	-1210.65	139.99	-517.49	5774549.60	623823.95
1400	15.91	291.98	1246.78	-1215.48	140.50	-518.69	5774550.11	623822.75
1405	15.35	292.93	1251.60	-1220.30	141.01	-519.89	5774550.62	623821.55
1410	14.78	293.88	1256.43	-1225.13	141.52	-521.09	5774551.13	623820.35
1415	14.21	294.83	1261.26	-1229.96	142.03	-522.29	5774551.64	623819.15
1420	13.64	295.78	1266.08	-1234.78	142.54	-523.49	5774552.15	623817.94
1425	13.13	297.36	1270.96	-1239.66	143.06	-524.46	5774552.67	623816.98
1430	12.63	299.12	1275.85	-1244.55	143.59	-525.36	5774553.20	623816.08
1435	12.13	300.88	1280.74	-1249.44	144.12	-526.26	5774553.73	623815.18
1440	11.63	302.64	1285.62	-1254.32	144.65	-527.16	5774554.26	623814.28
1445	11.13	304.40	1290.51	-1259.21	145.18	-528.06	5774554.78	623813.38
1450	10.64	306.22	1295.41	-1264.11	145.71	-528.93	5774555.31	623812.50
1455	10.17	308.62	1300.34	-1269.04	146.24	-529.53	5774555.85	623811.90
1460	9.71	311.02	1305.27	-1273.97	146.78	-530.13	5774556.39	623811.30
1465	9.24	313.42	1310.21	-1278.91	147.32	-530.73	5774556.93	623810.70
1470	8.78	315.82	1315.14	-1283.84	147.86	-531.33	5774557.47	623810.10
1475	8.31	318.22	1320.08	-1288.78	148.40	-531.93	5774558.01	623809.50
1480	7.93	321.53	1325.02	-1293.72	148.94	-532.42	5774558.55	623809.02
1485	7.68	326.57	1329.98	-1298.68	149.49	-532.70	5774559.10	623808.74
1490	7.44	331.62	1334.94	-1303.64	150.04	-532.98	5774559.64	623808.46
1495	7.19	336.67	1339.90	-1308.60	150.58	-533.26	5774560.19	623808.18
1500	6.95	341.72	1344.86	-1313.56	151.13	-533.53	5774560.74	623807.90
1505	6.71	346.77	1349.82	-1318.52	151.68	-533.81	5774561.29	623807.63
1510	6.54	352.12	1354.79	-1323.49	152.22	-533.93	5774561.83	623807.50
1515	6.47	357.79	1359.76	-1328.46	152.75	-533.89	5774562.36	623807.55
1520	6.39	3.47	1364.73	-1333.43	153.28	-533.84	5774562.89	623807.59
1525	6.31	9.14	1369.70	-1338.40	153.81	-533.80	5774563.42	623807.64
1526	6.30	10.28	1370.70	-1339.40	153.92	-533.79	5774563.53	623807.65
1527	6.28	11.42	1371.69	-1340.39	154.02	-533.78	5774563.63	623807.66
1528	6.27	12.55	1372.68	-1341.38	154.13	-533.77	5774563.74	623807.67
1529	6.25	13.69	1373.68	-1342.38	154.24	-533.76	5774563.85	623807.68
1530	6.24	14.82	1374.67	-1343.37	154.34	-533.75	5774563.95	623807.68
1531	6.22	15.96	1375.67	-1344.37	154.45	-533.74	5774564.06	623807.69
1532	6.21	17.09	1376.66	-1345.36	154.55	-533.73	5774564.16	623807.70
1533	6.19	18.23	1377.65	-1346.35	154.66	-533.73	5774564.27	623807.71
1534	6.18	19.36	1378.65	-1347.35	154.77	-533.72	5774564.38	623807.72
1535	6.16	20.50	1379.64	-1348.34	154.87	-533.71	5774564.48	623807.73
1536	6.14	21.51	1380.64	-1349.34	154.98	-533.69	5774564.59	623807.74

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1537	6.10	21.89	1381.63	-1350.33	155.06	-533.65	5774564.67	623807.79
1538	6.07	22.27	1382.63	-1351.33	155.15	-533.61	5774564.76	623807.83
1539	6.03	22.65	1383.62	-1352.32	155.24	-533.56	5774564.85	623807.87
1540	5.99	23.03	1384.62	-1353.32	155.32	-533.52	5774564.93	623807.92
1541	5.95	23.42	1385.61	-1354.31	155.41	-533.48	5774565.02	623807.96
1542	5.91	23.80	1386.61	-1355.31	155.50	-533.43	5774565.11	623808.00
1543	5.87	24.18	1387.60	-1356.30	155.58	-533.39	5774565.19	623808.05
1544	5.83	24.56	1388.60	-1357.30	155.67	-533.35	5774565.28	623808.09
1545	5.79	24.94	1389.59	-1358.29	155.76	-533.31	5774565.37	623808.13
1546	5.76	25.32	1390.59	-1359.29	155.84	-533.26	5774565.45	623808.18
1547	5.72	25.70	1391.59	-1360.29	155.93	-533.22	5774565.54	623808.22
1548	5.68	26.08	1392.58	-1361.28	156.02	-533.18	5774565.63	623808.26
1549	5.64	26.46	1393.58	-1362.28	156.10	-533.13	5774565.71	623808.31
1550	5.60	26.84	1394.57	-1363.27	156.19	-533.09	5774565.80	623808.35
1551	5.56	27.22	1395.57	-1364.27	156.28	-533.05	5774565.89	623808.39
1552	5.52	27.60	1396.56	-1365.26	156.36	-533.00	5774565.97	623808.43
1553	5.48	27.99	1397.56	-1366.26	156.45	-532.96	5774566.06	623808.48
1554	5.45	28.37	1398.55	-1367.25	156.54	-532.92	5774566.15	623808.52
1555	5.41	28.75	1399.55	-1368.25	156.62	-532.87	5774566.23	623808.56
1556	5.37	29.13	1400.54	-1369.24	156.71	-532.83	5774566.32	623808.61
1557	5.33	29.51	1401.54	-1370.24	156.80	-532.79	5774566.41	623808.65
1558	5.29	29.89	1402.53	-1371.23	156.88	-532.74	5774566.49	623808.69
1559	5.25	30.27	1403.53	-1372.23	156.97	-532.70	5774566.58	623808.74
1560	5.21	30.65	1404.52	-1373.22	157.06	-532.66	5774566.67	623808.78
1561	5.17	31.03	1405.52	-1374.22	157.15	-532.62	5774566.75	623808.82
1562	5.13	31.41	1406.51	-1375.21	157.23	-532.57	5774566.84	623808.87
1563	5.10	31.79	1407.51	-1376.21	157.32	-532.53	5774566.93	623808.91
1564	5.06	32.17	1408.50	-1377.20	157.41	-532.49	5774567.01	623808.95
1565	5.02	32.52	1409.50	-1378.20	157.49	-532.44	5774567.10	623808.99
1566	4.97	32.08	1410.50	-1379.20	157.56	-532.41	5774567.17	623809.03
1567	4.92	31.63	1411.49	-1380.19	157.63	-532.37	5774567.23	623809.06
1568	4.88	31.18	1412.49	-1381.19	157.69	-532.34	5774567.30	623809.10
1569	4.83	30.74	1413.49	-1382.19	157.76	-532.31	5774567.37	623809.13
1570	4.78	30.29	1414.49	-1383.19	157.83	-532.27	5774567.44	623809.17
1571	4.74	29.84	1415.48	-1384.18	157.89	-532.24	5774567.50	623809.20
1572	4.69	29.40	1416.48	-1385.18	157.96	-532.20	5774567.57	623809.23
1573	4.64	28.95	1417.48	-1386.18	158.03	-532.17	5774567.64	623809.27
1574	4.59	28.51	1418.47	-1387.17	158.09	-532.13	5774567.70	623809.30
1575	4.55	28.06	1419.47	-1388.17	158.16	-532.10	5774567.77	623809.34
1576	4.50	27.61	1420.47	-1389.17	158.23	-532.07	5774567.84	623809.37
1577	4.45	27.17	1421.47	-1390.17	158.29	-532.03	5774567.90	623809.41
1578	4.41	26.72	1422.46	-1391.16	158.36	-532.00	5774567.97	623809.44
1579	4.36	26.27	1423.46	-1392.16	158.43	-531.96	5774568.04	623809.47
1580	4.31	25.83	1424.46	-1393.16	158.50	-531.93	5774568.10	623809.51
1581	4.26	25.38	1425.45	-1394.15	158.56	-531.89	5774568.17	623809.54
1582	4.22	24.94	1426.45	-1395.15	158.63	-531.86	5774568.24	623809.58
1583	4.17	24.49	1427.45	-1396.15	158.70	-531.83	5774568.31	623809.61
1584	4.12	24.04	1428.45	-1397.15	158.76	-531.79	5774568.37	623809.65
1585	4.08	23.60	1429.44	-1398.14	158.83	-531.76	5774568.44	623809.68
1586	4.03	23.15	1430.44	-1399.14	158.90	-531.72	5774568.51	623809.71
1587	3.98	22.70	1431.44	-1400.14	158.96	-531.69	5774568.57	623809.75
1588	3.93	22.26	1432.43	-1401.13	159.03	-531.66	5774568.64	623809.78
1589	3.89	21.81	1433.43	-1402.13	159.10	-531.62	5774568.71	623809.82
1590	3.84	21.36	1434.43	-1403.13	159.17	-531.59	5774568.77	623809.85
1591	3.79	20.92	1435.43	-1404.13	159.23	-531.55	5774568.84	623809.89
1592	3.75	20.47	1436.42	-1405.12	159.30	-531.52	5774568.91	623809.92
1593	3.70	20.03	1437.42	-1406.12	159.37	-531.48	5774568.97	623809.95
1594	3.66	19.61	1438.42	-1407.12	159.43	-531.45	5774569.04	623809.99
1595	3.64	19.32	1439.42	-1408.12	159.49	-531.44	5774569.10	623810.00
1596	3.62	19.03	1440.41	-1409.11	159.54	-531.42	5774569.15	623810.02
1597	3.60	18.74	1441.41	-1410.11	159.60	-531.40	5774569.21	623810.03
1598	3.58	18.46	1442.41	-1411.11	159.66	-531.39	5774569.27	623810.05
1599	3.56	18.17	1443.41	-1412.11	159.71	-531.37	5774569.32	623810.07
1600	3.54	17.88	1444.41	-1413.11	159.77	-531.36	5774569.38	623810.08
1601	3.52	17.59	1445.41	-1414.11	159.83	-531.34	5774569.44	623810.10
1602	3.51	17.30	1446.40	-1415.10	159.88	-531.32	5774569.49	623810.11

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1603	3.49	17.02	1447.40	-1416.10	159.94	-531.31	5774569.55	623810.13
1604	3.47	16.73	1448.40	-1417.10	160.00	-531.29	5774569.61	623810.15
1605	3.45	16.44	1449.40	-1418.10	160.05	-531.28	5774569.66	623810.16
1606	3.43	16.15	1450.40	-1419.10	160.11	-531.26	5774569.72	623810.18
1607	3.41	15.86	1451.39	-1420.09	160.17	-531.24	5774569.78	623810.19
1608	3.39	15.58	1452.39	-1421.09	160.23	-531.23	5774569.83	623810.21
1609	3.37	15.29	1453.39	-1422.09	160.28	-531.21	5774569.89	623810.23
1610	3.35	15.00	1454.39	-1423.09	160.34	-531.19	5774569.95	623810.24
1611	3.34	14.71	1455.39	-1424.09	160.40	-531.18	5774570.00	623810.26
1612	3.32	14.42	1456.39	-1425.09	160.45	-531.16	5774570.06	623810.28
1613	3.30	14.14	1457.38	-1426.08	160.51	-531.15	5774570.12	623810.29
1614	3.28	13.85	1458.38	-1427.08	160.57	-531.13	5774570.17	623810.31
1615	3.26	13.56	1459.38	-1428.08	160.62	-531.11	5774570.23	623810.32
1616	3.24	13.27	1460.38	-1429.08	160.68	-531.10	5774570.29	623810.34
1617	3.22	12.99	1461.38	-1430.08	160.74	-531.08	5774570.34	623810.36
1618	3.20	12.70	1462.38	-1431.08	160.79	-531.07	5774570.40	623810.37
1619	3.18	12.41	1463.37	-1432.07	160.85	-531.05	5774570.46	623810.39
1620	3.17	12.12	1464.37	-1433.07	160.91	-531.03	5774570.51	623810.40
1621	3.15	11.83	1465.37	-1434.07	160.96	-531.02	5774570.57	623810.42
1622	3.13	11.55	1466.37	-1435.07	161.02	-531.00	5774570.63	623810.44
1623	3.12	11.31	1467.37	-1436.07	161.07	-530.99	5774570.68	623810.45
1624	3.11	11.11	1468.37	-1437.07	161.13	-530.98	5774570.73	623810.46
1625	3.10	10.91	1469.36	-1438.06	161.18	-530.97	5774570.79	623810.46
1626	3.10	10.71	1470.36	-1439.06	161.23	-530.97	5774570.84	623810.47
1627	3.09	10.51	1471.36	-1440.06	161.28	-530.96	5774570.89	623810.48
1628	3.09	10.31	1472.36	-1441.06	161.33	-530.95	5774570.94	623810.49
1629	3.08	10.10	1473.36	-1442.06	161.39	-530.94	5774571.00	623810.50
1630	3.08	9.90	1474.36	-1443.06	161.44	-530.93	5774571.05	623810.50
1631	3.07	9.70	1475.36	-1444.06	161.49	-530.93	5774571.10	623810.51
1632	3.06	9.50	1476.35	-1445.05	161.54	-530.92	5774571.15	623810.52
1633	3.06	9.30	1477.35	-1446.05	161.60	-530.91	5774571.21	623810.53
1634	3.05	9.10	1478.35	-1447.05	161.65	-530.90	5774571.26	623810.54
1635	3.05	8.90	1479.35	-1448.05	161.70	-530.89	5774571.31	623810.54
1636	3.04	8.70	1480.35	-1449.05	161.75	-530.89	5774571.36	623810.55
1637	3.03	8.50	1481.35	-1450.05	161.81	-530.88	5774571.41	623810.56
1638	3.03	8.30	1482.35	-1451.05	161.86	-530.87	5774571.47	623810.57
1639	3.02	8.10	1483.34	-1452.04	161.91	-530.86	5774571.52	623810.57
1640	3.02	7.90	1484.34	-1453.04	161.96	-530.86	5774571.57	623810.58
1641	3.01	7.70	1485.34	-1454.04	162.01	-530.85	5774571.62	623810.59
1642	3.00	7.49	1486.34	-1455.04	162.07	-530.84	5774571.68	623810.60
1643	3.00	7.29	1487.34	-1456.04	162.12	-530.83	5774571.73	623810.61
1644	2.99	7.09	1488.34	-1457.04	162.17	-530.82	5774571.78	623810.61
1645	2.99	6.89	1489.34	-1458.04	162.22	-530.82	5774571.83	623810.62
1646	2.98	6.69	1490.33	-1459.03	162.28	-530.81	5774571.88	623810.63
1647	2.97	6.49	1491.33	-1460.03	162.33	-530.80	5774571.94	623810.64
1648	2.97	6.29	1492.33	-1461.03	162.38	-530.79	5774571.99	623810.65
1649	2.96	6.09	1493.33	-1462.03	162.43	-530.78	5774572.04	623810.65
1650	2.96	5.89	1494.33	-1463.03	162.49	-530.78	5774572.09	623810.66
1651	2.95	5.69	1495.33	-1464.03	162.54	-530.77	5774572.15	623810.67
1652	2.95	5.77	1496.33	-1465.03	162.59	-530.76	5774572.20	623810.68
1653	2.95	5.89	1497.32	-1466.02	162.64	-530.75	5774572.25	623810.68
1654	2.94	6.02	1498.32	-1467.02	162.69	-530.75	5774572.30	623810.69
1655	2.94	6.15	1499.32	-1468.02	162.74	-530.74	5774572.35	623810.70
1656	2.94	6.27	1500.32	-1469.02	162.79	-530.73	5774572.40	623810.70
1657	2.94	6.40	1501.32	-1470.02	162.84	-530.73	5774572.45	623810.71
1658	2.93	6.52	1502.32	-1471.02	162.89	-530.72	5774572.50	623810.72
1659	2.93	6.65	1503.32	-1472.02	162.94	-530.71	5774572.55	623810.72
1660	2.93	6.78	1504.32	-1473.02	162.99	-530.71	5774572.60	623810.73
1661	2.93	6.90	1505.31	-1474.01	163.04	-530.70	5774572.65	623810.74
1662	2.92	7.03	1506.31	-1475.01	163.09	-530.70	5774572.70	623810.74
1663	2.92	7.15	1507.31	-1476.01	163.14	-530.69	5774572.75	623810.75
1664	2.92	7.28	1508.31	-1477.01	163.19	-530.68	5774572.80	623810.76
1665	2.92	7.41	1509.31	-1478.01	163.24	-530.68	5774572.85	623810.76
1666	2.91	7.53	1510.31	-1479.01	163.29	-530.67	5774572.90	623810.77
1667	2.91	7.66	1511.31	-1480.01	163.34	-530.66	5774572.95	623810.78
1668	2.91	7.78	1512.31	-1481.01	163.39	-530.66	5774573.00	623810.78

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1669	2.91	7.91	1513.30	-1482.00	163.44	-530.65	5774573.05	623810.79
1670	2.90	8.04	1514.30	-1483.00	163.49	-530.64	5774573.10	623810.80
1671	2.90	8.16	1515.30	-1484.00	163.55	-530.64	5774573.15	623810.80
1672	2.90	8.29	1516.30	-1485.00	163.60	-530.63	5774573.20	623810.81
1673	2.90	8.41	1517.30	-1486.00	163.65	-530.62	5774573.25	623810.82
1674	2.90	8.54	1518.30	-1487.00	163.70	-530.62	5774573.31	623810.82
1675	2.89	8.67	1519.30	-1488.00	163.75	-530.61	5774573.36	623810.83
1676	2.89	8.79	1520.30	-1489.00	163.80	-530.60	5774573.41	623810.84
1677	2.89	8.92	1521.29	-1489.99	163.85	-530.60	5774573.46	623810.84
1678	2.89	9.04	1522.29	-1490.99	163.90	-530.59	5774573.51	623810.85
1679	2.88	9.17	1523.29	-1491.99	163.95	-530.58	5774573.56	623810.86
1680	2.88	9.29	1524.29	-1492.99	164.00	-530.58	5774573.61	623810.86
1681	2.88	9.25	1525.29	-1493.99	164.05	-530.57	5774573.66	623810.87
1682	2.88	9.14	1526.29	-1494.99	164.10	-530.56	5774573.71	623810.88
1683	2.89	9.04	1527.29	-1495.99	164.15	-530.56	5774573.76	623810.88
1684	2.89	8.93	1528.29	-1496.99	164.20	-530.55	5774573.81	623810.89
1685	2.89	8.82	1529.28	-1497.98	164.25	-530.54	5774573.86	623810.90
1686	2.89	8.71	1530.28	-1498.98	164.30	-530.53	5774573.91	623810.90
1687	2.90	8.60	1531.28	-1499.98	164.35	-530.53	5774573.96	623810.91
1688	2.90	8.49	1532.28	-1500.98	164.40	-530.52	5774574.01	623810.92
1689	2.90	8.38	1533.28	-1501.98	164.45	-530.51	5774574.06	623810.92
1690	2.90	8.28	1534.28	-1502.98	164.50	-530.51	5774574.11	623810.93
1691	2.91	8.17	1535.28	-1503.98	164.55	-530.50	5774574.16	623810.94
1692	2.91	8.06	1536.27	-1504.97	164.60	-530.49	5774574.21	623810.94
1693	2.91	7.95	1537.27	-1505.97	164.65	-530.49	5774574.26	623810.95
1694	2.91	7.84	1538.27	-1506.97	164.70	-530.48	5774574.31	623810.96
1695	2.92	7.73	1539.27	-1507.97	164.75	-530.47	5774574.36	623810.96
1696	2.92	7.63	1540.27	-1508.97	164.80	-530.47	5774574.41	623810.97
1697	2.92	7.52	1541.27	-1509.97	164.86	-530.46	5774574.46	623810.98
1698	2.92	7.41	1542.27	-1510.97	164.91	-530.45	5774574.51	623810.99
1699	2.93	7.30	1543.27	-1511.97	164.96	-530.45	5774574.56	623810.99
1700	2.93	7.19	1544.26	-1512.96	165.01	-530.44	5774574.62	623811.00
1701	2.93	7.08	1545.26	-1513.96	165.06	-530.43	5774574.67	623811.01
1702	2.93	6.98	1546.26	-1514.96	165.11	-530.42	5774574.72	623811.01
1703	2.94	6.87	1547.26	-1515.96	165.16	-530.42	5774574.77	623811.02
1704	2.94	6.76	1548.26	-1516.96	165.21	-530.41	5774574.82	623811.03
1705	2.94	6.65	1549.26	-1517.96	165.26	-530.40	5774574.87	623811.03
1706	2.94	6.54	1550.26	-1518.96	165.31	-530.40	5774574.92	623811.04
1707	2.95	6.43	1551.26	-1519.96	165.36	-530.39	5774574.97	623811.05
1708	2.95	6.33	1552.25	-1520.95	165.41	-530.38	5774575.02	623811.05
1709	2.95	6.25	1553.25	-1521.95	165.46	-530.38	5774575.07	623811.06
1710	2.95	6.29	1554.25	-1522.95	165.51	-530.37	5774575.12	623811.07
1711	2.96	6.34	1555.25	-1523.95	165.56	-530.36	5774575.17	623811.07
1712	2.96	6.38	1556.25	-1524.95	165.62	-530.36	5774575.22	623811.08
1713	2.96	6.43	1557.25	-1525.95	165.67	-530.35	5774575.28	623811.09
1714	2.96	6.48	1558.25	-1526.95	165.72	-530.35	5774575.33	623811.09
1715	2.97	6.52	1559.24	-1527.94	165.77	-530.34	5774575.38	623811.10
1716	2.97	6.57	1560.24	-1528.94	165.82	-530.33	5774575.43	623811.10
1717	2.97	6.61	1561.24	-1529.94	165.87	-530.33	5774575.48	623811.11
1718	2.98	6.66	1562.24	-1530.94	165.93	-530.32	5774575.53	623811.12
1719	2.98	6.70	1563.24	-1531.94	165.98	-530.31	5774575.59	623811.12
1720	2.98	6.75	1564.24	-1532.94	166.03	-530.31	5774575.64	623811.13
1721	2.98	6.79	1565.24	-1533.94	166.08	-530.30	5774575.69	623811.14
1722	2.99	6.84	1566.23	-1534.93	166.13	-530.30	5774575.74	623811.14
1723	2.99	6.88	1567.23	-1535.93	166.18	-530.29	5774575.79	623811.15
1724	2.99	6.93	1568.23	-1536.93	166.24	-530.28	5774575.85	623811.15
1725	2.99	6.97	1569.23	-1537.93	166.29	-530.28	5774575.90	623811.16
1726	3.00	7.02	1570.23	-1538.93	166.34	-530.27	5774575.95	623811.17
1727	3.00	7.06	1571.23	-1539.93	166.39	-530.26	5774576.00	623811.17
1728	3.00	7.11	1572.23	-1540.93	166.44	-530.26	5774576.05	623811.18
1729	3.01	7.15	1573.23	-1541.93	166.50	-530.25	5774576.10	623811.19
1730	3.01	7.20	1574.22	-1542.92	166.55	-530.25	5774576.16	623811.19
1731	3.01	7.24	1575.22	-1543.92	166.60	-530.24	5774576.21	623811.20
1732	3.01	7.29	1576.22	-1544.92	166.65	-530.23	5774576.26	623811.21
1733	3.02	7.33	1577.22	-1545.92	166.70	-530.23	5774576.31	623811.21
1734	3.02	7.38	1578.22	-1546.92	166.75	-530.22	5774576.36	623811.22

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1735	3.02	7.42	1579.22	-1547.92	166.81	-530.21	5774576.42	623811.22
1736	3.02	7.47	1580.22	-1548.92	166.86	-530.21	5774576.47	623811.23
1737	3.03	7.51	1581.21	-1549.91	166.91	-530.20	5774576.52	623811.24
1738	3.03	7.55	1582.21	-1550.91	166.96	-530.19	5774576.57	623811.24
1739	3.02	7.57	1583.21	-1551.91	167.01	-530.19	5774576.62	623811.25
1740	3.02	7.59	1584.21	-1552.91	167.06	-530.18	5774576.67	623811.26
1741	3.02	7.60	1585.21	-1553.91	167.12	-530.17	5774576.72	623811.26
1742	3.01	7.62	1586.21	-1554.91	167.17	-530.17	5774576.78	623811.27
1743	3.01	7.63	1587.21	-1555.91	167.22	-530.16	5774576.83	623811.28
1744	3.00	7.65	1588.20	-1556.90	167.27	-530.15	5774576.88	623811.28
1745	3.00	7.67	1589.20	-1557.90	167.32	-530.15	5774576.93	623811.29
1746	2.99	7.68	1590.20	-1558.90	167.37	-530.14	5774576.98	623811.30
1747	2.99	7.70	1591.20	-1559.90	167.42	-530.13	5774577.03	623811.31
1748	2.98	7.72	1592.20	-1560.90	167.47	-530.12	5774577.08	623811.31
1749	2.98	7.73	1593.20	-1561.90	167.53	-530.12	5774577.13	623811.32
1750	2.97	7.75	1594.20	-1562.90	167.58	-530.11	5774577.19	623811.33
1751	2.97	7.76	1595.20	-1563.90	167.63	-530.10	5774577.24	623811.33
1752	2.96	7.78	1596.19	-1564.89	167.68	-530.10	5774577.29	623811.34
1753	2.96	7.80	1597.19	-1565.89	167.73	-530.09	5774577.34	623811.35
1754	2.96	7.81	1598.19	-1566.89	167.78	-530.08	5774577.39	623811.35
1755	2.95	7.83	1599.19	-1567.89	167.83	-530.08	5774577.44	623811.36
1756	2.95	7.85	1600.19	-1568.89	167.88	-530.07	5774577.49	623811.37
1757	2.94	7.86	1601.19	-1569.89	167.94	-530.06	5774577.54	623811.38
1758	2.94	7.88	1602.19	-1570.89	167.99	-530.05	5774577.60	623811.38
1759	2.93	7.89	1603.19	-1571.89	168.04	-530.05	5774577.65	623811.39
1760	2.93	7.91	1604.18	-1572.88	168.09	-530.04	5774577.70	623811.40
1761	2.92	7.93	1605.18	-1573.88	168.14	-530.03	5774577.75	623811.40
1762	2.92	7.94	1606.18	-1574.88	168.19	-530.03	5774577.80	623811.41
1763	2.91	7.96	1607.18	-1575.88	168.24	-530.02	5774577.85	623811.42
1764	2.91	7.98	1608.18	-1576.88	168.29	-530.01	5774577.90	623811.42
1765	2.91	7.99	1609.18	-1577.88	168.35	-530.01	5774577.95	623811.43
1766	2.90	8.01	1610.18	-1578.88	168.40	-530.00	5774578.01	623811.44
1767	2.90	7.91	1611.17	-1579.87	168.45	-529.99	5774578.06	623811.44
1768	2.91	7.80	1612.17	-1580.87	168.50	-529.99	5774578.11	623811.45
1769	2.91	7.69	1613.17	-1581.87	168.55	-529.98	5774578.16	623811.46
1770	2.91	7.58	1614.17	-1582.87	168.60	-529.98	5774578.21	623811.46
1771	2.92	7.47	1615.17	-1583.87	168.65	-529.97	5774578.26	623811.47
1772	2.92	7.36	1616.17	-1584.87	168.70	-529.96	5774578.31	623811.47
1773	2.92	7.25	1617.17	-1585.87	168.75	-529.96	5774578.36	623811.48
1774	2.92	7.14	1618.17	-1586.87	168.81	-529.95	5774578.41	623811.48
1775	2.93	7.03	1619.16	-1587.86	168.86	-529.95	5774578.47	623811.49
1776	2.93	6.92	1620.16	-1588.86	168.91	-529.94	5774578.52	623811.50
1777	2.93	6.81	1621.16	-1589.86	168.96	-529.94	5774578.57	623811.50
1778	2.94	6.70	1622.16	-1590.86	169.01	-529.93	5774578.62	623811.51
1779	2.94	6.59	1623.16	-1591.86	169.06	-529.92	5774578.67	623811.51
1780	2.94	6.48	1624.16	-1592.86	169.11	-529.92	5774578.72	623811.52
1781	2.95	6.37	1625.16	-1593.86	169.16	-529.91	5774578.77	623811.52
1782	2.95	6.26	1626.15	-1594.85	169.21	-529.91	5774578.82	623811.53
1783	2.95	6.15	1627.15	-1595.85	169.26	-529.90	5774578.87	623811.54
1784	2.96	6.04	1628.15	-1596.85	169.32	-529.90	5774578.92	623811.54
1785	2.96	5.93	1629.15	-1597.85	169.37	-529.89	5774578.98	623811.55
1786	2.96	5.82	1630.15	-1598.85	169.42	-529.88	5774579.03	623811.55
1787	2.96	5.71	1631.15	-1599.85	169.47	-529.88	5774579.08	623811.56
1788	2.97	5.60	1632.15	-1600.85	169.52	-529.87	5774579.13	623811.56
1789	2.97	5.49	1633.15	-1601.85	169.57	-529.87	5774579.18	623811.57
1790	2.97	5.38	1634.14	-1602.84	169.62	-529.86	5774579.23	623811.58
1791	2.98	5.27	1635.14	-1603.84	169.67	-529.86	5774579.28	623811.58
1792	2.98	5.16	1636.14	-1604.84	169.72	-529.85	5774579.33	623811.59
1793	2.98	5.05	1637.14	-1605.84	169.77	-529.84	5774579.38	623811.59
1794	2.99	4.94	1638.14	-1606.84	169.83	-529.84	5774579.43	623811.60
1795	2.99	4.83	1639.14	-1607.84	169.88	-529.83	5774579.49	623811.60
1796	2.99	4.83	1640.14	-1608.84	169.93	-529.83	5774579.54	623811.61
1797	2.99	4.83	1641.13	-1609.83	169.98	-529.82	5774579.59	623811.61
1798	3.00	4.84	1642.13	-1610.83	170.03	-529.82	5774579.64	623811.62
1799	3.00	4.84	1643.13	-1611.83	170.09	-529.81	5774579.69	623811.62
1800	3.00	4.85	1644.13	-1612.83	170.14	-529.81	5774579.75	623811.63

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1801	3.00	4.86	1645.13	-1613.83	170.19	-529.81	5774579.80	623811.63
1802	3.00	4.86	1646.13	-1614.83	170.24	-529.80	5774579.85	623811.64
1803	3.00	4.87	1647.13	-1615.83	170.30	-529.80	5774579.90	623811.64
1804	3.01	4.87	1648.12	-1616.82	170.35	-529.79	5774579.96	623811.65
1805	3.01	4.88	1649.12	-1617.82	170.40	-529.79	5774580.01	623811.65
1806	3.01	4.88	1650.12	-1618.82	170.45	-529.78	5774580.06	623811.65
1807	3.01	4.89	1651.12	-1619.82	170.51	-529.78	5774580.11	623811.66
1808	3.01	4.90	1652.12	-1620.82	170.56	-529.77	5774580.17	623811.66
1809	3.01	4.90	1653.12	-1621.82	170.61	-529.77	5774580.22	623811.67
1810	3.02	4.91	1654.12	-1622.82	170.66	-529.77	5774580.27	623811.67
1811	3.02	4.91	1655.12	-1623.82	170.71	-529.76	5774580.32	623811.68
1812	3.02	4.92	1656.11	-1624.81	170.77	-529.76	5774580.38	623811.68
1813	3.02	4.93	1657.11	-1625.81	170.82	-529.75	5774580.43	623811.69
1814	3.02	4.93	1658.11	-1626.81	170.87	-529.75	5774580.48	623811.69
1815	3.02	4.94	1659.11	-1627.81	170.92	-529.74	5774580.53	623811.69
1816	3.03	4.94	1660.11	-1628.81	170.98	-529.74	5774580.59	623811.70
1817	3.03	4.95	1661.11	-1629.81	171.03	-529.73	5774580.64	623811.70
1818	3.03	4.96	1662.11	-1630.81	171.08	-529.73	5774580.69	623811.71
1819	3.03	4.96	1663.10	-1631.80	171.13	-529.73	5774580.74	623811.71
1820	3.03	4.97	1664.10	-1632.80	171.19	-529.72	5774580.80	623811.72
1821	3.04	4.97	1665.10	-1633.80	171.24	-529.72	5774580.85	623811.72
1822	3.04	4.98	1666.10	-1634.80	171.29	-529.71	5774580.90	623811.73
1823	3.04	4.99	1667.10	-1635.80	171.34	-529.71	5774580.95	623811.73
1824	3.05	5.01	1668.10	-1636.80	171.40	-529.70	5774581.01	623811.74
1825	3.07	5.09	1669.10	-1637.80	171.46	-529.70	5774581.06	623811.74
1826	3.09	5.16	1670.09	-1638.79	171.51	-529.69	5774581.12	623811.75
1827	3.11	5.23	1671.09	-1639.79	171.57	-529.68	5774581.18	623811.75
1828	3.13	5.30	1672.09	-1640.79	171.63	-529.68	5774581.24	623811.76
1829	3.15	5.37	1673.09	-1641.79	171.69	-529.67	5774581.30	623811.77
1830	3.17	5.45	1674.09	-1642.79	171.75	-529.67	5774581.35	623811.77
1831	3.19	5.52	1675.09	-1643.79	171.80	-529.66	5774581.41	623811.78
1832	3.22	5.59	1676.08	-1644.78	171.86	-529.65	5774581.47	623811.79
1833	3.24	5.66	1677.08	-1645.78	171.92	-529.65	5774581.53	623811.79
1834	3.26	5.74	1678.08	-1646.78	171.98	-529.64	5774581.59	623811.80
1835	3.28	5.81	1679.08	-1647.78	172.03	-529.63	5774581.64	623811.80
1836	3.30	5.88	1680.08	-1648.78	172.09	-529.63	5774581.70	623811.81
1837	3.32	5.95	1681.08	-1649.78	172.15	-529.62	5774581.76	623811.82
1838	3.34	6.03	1682.07	-1650.77	172.21	-529.62	5774581.82	623811.82
1839	3.36	6.10	1683.07	-1651.77	172.27	-529.61	5774581.88	623811.83
1840	3.38	6.17	1684.07	-1652.77	172.32	-529.60	5774581.93	623811.83
1841	3.40	6.24	1685.07	-1653.77	172.38	-529.60	5774581.99	623811.84
1842	3.43	6.31	1686.07	-1654.77	172.44	-529.59	5774582.05	623811.85
1843	3.45	6.39	1687.06	-1655.76	172.50	-529.58	5774582.11	623811.85
1844	3.47	6.46	1688.06	-1656.76	172.56	-529.58	5774582.17	623811.86
1845	3.49	6.53	1689.06	-1657.76	172.61	-529.57	5774582.22	623811.87
1846	3.51	6.60	1690.06	-1658.76	172.67	-529.57	5774582.28	623811.87
1847	3.53	6.68	1691.06	-1659.76	172.73	-529.56	5774582.34	623811.88
1848	3.55	6.75	1692.06	-1660.76	172.79	-529.55	5774582.40	623811.88
1849	3.57	6.82	1693.05	-1661.75	172.85	-529.55	5774582.45	623811.89
1850	3.59	6.89	1694.05	-1662.75	172.90	-529.54	5774582.51	623811.90
1851	3.62	6.96	1695.05	-1663.75	172.96	-529.53	5774582.57	623811.90
1852	3.64	7.04	1696.05	-1664.75	173.02	-529.53	5774582.63	623811.91
1853	3.64	7.07	1697.05	-1665.75	173.08	-529.52	5774582.69	623811.92
1854	3.64	7.10	1698.05	-1666.75	173.14	-529.51	5774582.75	623811.93
1855	3.64	7.13	1699.04	-1667.74	173.21	-529.50	5774582.82	623811.93
1856	3.64	7.16	1700.04	-1668.74	173.27	-529.50	5774582.88	623811.94
1857	3.64	7.19	1701.04	-1669.74	173.33	-529.49	5774582.94	623811.95
1858	3.64	7.22	1702.04	-1670.74	173.40	-529.48	5774583.00	623811.96
1859	3.64	7.24	1703.04	-1671.74	173.46	-529.47	5774583.07	623811.97
1860	3.63	7.27	1704.03	-1672.73	173.52	-529.46	5774583.13	623811.97
1861	3.63	7.30	1705.03	-1673.73	173.58	-529.45	5774583.19	623811.98
1862	3.63	7.33	1706.03	-1674.73	173.65	-529.45	5774583.26	623811.99
1863	3.63	7.36	1707.03	-1675.73	173.71	-529.44	5774583.32	623812.00
1864	3.63	7.39	1708.03	-1676.73	173.77	-529.43	5774583.38	623812.01
1865	3.63	7.41	1709.02	-1677.72	173.83	-529.42	5774583.44	623812.02
1866	3.63	7.44	1710.02	-1678.72	173.90	-529.41	5774583.51	623812.02

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1867	3.63	7.47	1711.02	-1679.72	173.96	-529.41	5774583.57	623812.03
1868	3.63	7.50	1712.02	-1680.72	174.02	-529.40	5774583.63	623812.04
1869	3.63	7.53	1713.02	-1681.72	174.09	-529.39	5774583.69	623812.05
1870	3.63	7.56	1714.01	-1682.71	174.15	-529.38	5774583.76	623812.06
1871	3.63	7.58	1715.01	-1683.71	174.21	-529.37	5774583.82	623812.07
1872	3.63	7.61	1716.01	-1684.71	174.27	-529.36	5774583.88	623812.07
1873	3.63	7.64	1717.01	-1685.71	174.34	-529.36	5774583.95	623812.08
1874	3.62	7.67	1718.01	-1686.71	174.40	-529.35	5774584.01	623812.09
1875	3.62	7.70	1719.00	-1687.70	174.46	-529.34	5774584.07	623812.10
1876	3.62	7.73	1720.00	-1688.70	174.53	-529.33	5774584.13	623812.11
1877	3.62	7.75	1721.00	-1689.70	174.59	-529.32	5774584.20	623812.11
1878	3.62	7.78	1722.00	-1690.70	174.65	-529.31	5774584.26	623812.12
1879	3.62	7.81	1723.00	-1691.70	174.71	-529.31	5774584.32	623812.13
1880	3.62	7.84	1723.99	-1692.69	174.78	-529.30	5774584.39	623812.14
1881	3.62	7.87	1724.99	-1693.69	174.84	-529.29	5774584.45	623812.15
1882	3.63	7.98	1725.99	-1694.69	174.90	-529.28	5774584.51	623812.16
1883	3.64	8.10	1726.99	-1695.69	174.97	-529.27	5774584.58	623812.17
1884	3.66	8.21	1727.98	-1696.68	175.03	-529.26	5774584.64	623812.18
1885	3.67	8.33	1728.98	-1697.68	175.10	-529.25	5774584.71	623812.19
1886	3.68	8.45	1729.98	-1698.68	175.17	-529.24	5774584.77	623812.20
1887	3.69	8.57	1730.98	-1699.68	175.23	-529.22	5774584.84	623812.21
1888	3.71	8.69	1731.98	-1700.68	175.30	-529.21	5774584.90	623812.22
1889	3.72	8.81	1732.97	-1701.67	175.36	-529.20	5774584.97	623812.24
1890	3.73	8.93	1733.97	-1702.67	175.43	-529.19	5774585.04	623812.25
1891	3.74	9.04	1734.97	-1703.67	175.49	-529.18	5774585.10	623812.26
1892	3.76	9.16	1735.97	-1704.67	175.56	-529.17	5774585.17	623812.27
1893	3.77	9.28	1736.96	-1705.66	175.62	-529.16	5774585.23	623812.28
1894	3.78	9.40	1737.96	-1706.66	175.69	-529.15	5774585.30	623812.29
1895	3.80	9.52	1738.96	-1707.66	175.75	-529.14	5774585.36	623812.30
1896	3.81	9.64	1739.96	-1708.66	175.82	-529.12	5774585.43	623812.31
1897	3.82	9.76	1740.96	-1709.66	175.88	-529.11	5774585.49	623812.32
1898	3.83	9.87	1741.95	-1710.65	175.95	-529.10	5774585.56	623812.34
1899	3.85	9.99	1742.95	-1711.65	176.01	-529.09	5774585.62	623812.35
1900	3.86	10.11	1743.95	-1712.65	176.08	-529.08	5774585.69	623812.36
1901	3.87	10.23	1744.95	-1713.65	176.14	-529.07	5774585.75	623812.37
1902	3.88	10.35	1745.94	-1714.64	176.21	-529.06	5774585.82	623812.38
1903	3.90	10.47	1746.94	-1715.64	176.28	-529.05	5774585.88	623812.39
1904	3.91	10.59	1747.94	-1716.64	176.34	-529.04	5774585.95	623812.40
1905	3.92	10.70	1748.94	-1717.64	176.41	-529.02	5774586.02	623812.41
1906	3.93	10.82	1749.94	-1718.64	176.47	-529.01	5774586.08	623812.42
1907	3.95	10.94	1750.93	-1719.63	176.54	-529.00	5774586.15	623812.44
1908	3.96	11.06	1751.93	-1720.63	176.60	-528.99	5774586.21	623812.45
1909	3.97	11.18	1752.93	-1721.63	176.67	-528.98	5774586.28	623812.46
1910	3.98	11.32	1753.93	-1722.63	176.73	-528.97	5774586.34	623812.47
1911	3.97	11.49	1754.92	-1723.62	176.80	-528.95	5774586.41	623812.49
1912	3.97	11.67	1755.92	-1724.62	176.87	-528.94	5774586.47	623812.50
1913	3.97	11.84	1756.92	-1725.62	176.93	-528.92	5774586.54	623812.52
1914	3.96	12.02	1757.92	-1726.62	177.00	-528.90	5774586.61	623812.54
1915	3.96	12.19	1758.92	-1727.62	177.06	-528.89	5774586.67	623812.55
1916	3.95	12.37	1759.91	-1728.61	177.13	-528.87	5774586.74	623812.57
1917	3.95	12.54	1760.91	-1729.61	177.20	-528.85	5774586.81	623812.58
1918	3.94	12.72	1761.91	-1730.61	177.26	-528.84	5774586.87	623812.60
1919	3.94	12.89	1762.91	-1731.61	177.33	-528.82	5774586.94	623812.62
1920	3.93	13.07	1763.90	-1732.60	177.40	-528.81	5774587.00	623812.63
1921	3.93	13.24	1764.90	-1733.60	177.46	-528.79	5774587.07	623812.65
1922	3.92	13.42	1765.90	-1734.60	177.53	-528.77	5774587.14	623812.66
1923	3.92	13.59	1766.90	-1735.60	177.59	-528.76	5774587.20	623812.68
1924	3.92	13.77	1767.89	-1736.59	177.66	-528.74	5774587.27	623812.70
1925	3.91	13.95	1768.89	-1737.59	177.73	-528.72	5774587.34	623812.71
1926	3.91	14.12	1769.89	-1738.59	177.79	-528.71	5774587.40	623812.73
1927	3.90	14.30	1770.89	-1739.59	177.86	-528.69	5774587.47	623812.75
1928	3.90	14.47	1771.89	-1740.59	177.93	-528.68	5774587.53	623812.76
1929	3.89	14.65	1772.88	-1741.58	177.99	-528.66	5774587.60	623812.78
1930	3.89	14.82	1773.88	-1742.58	178.06	-528.64	5774587.67	623812.79
1931	3.88	15.00	1774.88	-1743.58	178.12	-528.63	5774587.73	623812.81
1932	3.88	15.17	1775.88	-1744.58	178.19	-528.61	5774587.80	623812.83

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1933	3.87	15.35	1776.87	-1745.57	178.26	-528.59	5774587.87	623812.84
1934	3.87	15.52	1777.87	-1746.57	178.32	-528.58	5774587.93	623812.86
1935	3.87	15.70	1778.87	-1747.57	178.39	-528.56	5774588.00	623812.88
1936	3.86	15.87	1779.87	-1748.57	178.46	-528.55	5774588.06	623812.89
1937	3.86	16.05	1780.86	-1749.56	178.52	-528.53	5774588.13	623812.91
1938	3.85	16.22	1781.86	-1750.56	178.59	-528.51	5774588.20	623812.92
1939	3.85	16.32	1782.86	-1751.56	178.65	-528.50	5774588.26	623812.94
1940	3.85	16.33	1783.86	-1752.56	178.72	-528.48	5774588.33	623812.96
1941	3.85	16.34	1784.86	-1753.56	178.78	-528.46	5774588.39	623812.98
1942	3.86	16.35	1785.85	-1754.55	178.85	-528.44	5774588.46	623813.00
1943	3.86	16.36	1786.85	-1755.55	178.91	-528.42	5774588.52	623813.02
1944	3.86	16.37	1787.85	-1756.55	178.98	-528.40	5774588.59	623813.04
1945	3.86	16.39	1788.85	-1757.55	179.04	-528.38	5774588.65	623813.06
1946	3.86	16.40	1789.84	-1758.54	179.11	-528.36	5774588.72	623813.08
1947	3.86	16.41	1790.84	-1759.54	179.17	-528.34	5774588.78	623813.10
1948	3.87	16.42	1791.84	-1760.54	179.24	-528.32	5774588.85	623813.11
1949	3.87	16.43	1792.84	-1761.54	179.30	-528.30	5774588.91	623813.13
1950	3.87	16.45	1793.83	-1762.53	179.37	-528.28	5774588.98	623813.15
1951	3.87	16.46	1794.83	-1763.53	179.43	-528.27	5774589.04	623813.17
1952	3.87	16.47	1795.83	-1764.53	179.50	-528.25	5774589.11	623813.19
1953	3.88	16.48	1796.83	-1765.53	179.56	-528.23	5774589.17	623813.21
1954	3.88	16.49	1797.83	-1766.53	179.63	-528.21	5774589.23	623813.23
1955	3.88	16.50	1798.82	-1767.52	179.69	-528.19	5774589.30	623813.25
1956	3.88	16.52	1799.82	-1768.52	179.76	-528.17	5774589.36	623813.27
1957	3.88	16.53	1800.82	-1769.52	179.82	-528.15	5774589.43	623813.29
1958	3.88	16.54	1801.82	-1770.52	179.89	-528.13	5774589.49	623813.31
1959	3.89	16.55	1802.81	-1771.51	179.95	-528.11	5774589.56	623813.33
1960	3.89	16.56	1803.81	-1772.51	180.01	-528.09	5774589.62	623813.34
1961	3.89	16.57	1804.81	-1773.51	180.08	-528.07	5774589.69	623813.36
1962	3.89	16.59	1805.81	-1774.51	180.14	-528.06	5774589.75	623813.38
1963	3.89	16.60	1806.81	-1775.51	180.21	-528.04	5774589.82	623813.40
1964	3.89	16.61	1807.80	-1776.50	180.27	-528.02	5774589.88	623813.42
1965	3.90	16.62	1808.80	-1777.50	180.34	-528.00	5774589.95	623813.44
1966	3.90	16.63	1809.80	-1778.50	180.40	-527.98	5774590.01	623813.46
1967	3.90	16.64	1810.80	-1779.50	180.47	-527.96	5774590.08	623813.48
1968	3.90	16.72	1811.79	-1780.49	180.53	-527.94	5774590.14	623813.50
1969	3.90	16.83	1812.79	-1781.49	180.60	-527.92	5774590.21	623813.52
1970	3.90	16.95	1813.79	-1782.49	180.66	-527.90	5774590.27	623813.54
1971	3.90	17.07	1814.79	-1783.49	180.73	-527.88	5774590.33	623813.56
1972	3.89	17.19	1815.78	-1784.48	180.79	-527.85	5774590.40	623813.58
1973	3.89	17.31	1816.78	-1785.48	180.85	-527.83	5774590.46	623813.61
1974	3.89	17.43	1817.78	-1786.48	180.92	-527.81	5774590.53	623813.63
1975	3.89	17.55	1818.78	-1787.48	180.98	-527.79	5774590.59	623813.65
1976	3.89	17.67	1819.78	-1788.48	181.05	-527.77	5774590.66	623813.67
1977	3.89	17.79	1820.77	-1789.47	181.11	-527.75	5774590.72	623813.69
1978	3.89	17.91	1821.77	-1790.47	181.17	-527.73	5774590.78	623813.71
1979	3.88	18.02	1822.77	-1791.47	181.24	-527.70	5774590.85	623813.73
1980	3.88	18.14	1823.77	-1792.47	181.30	-527.68	5774590.91	623813.75
1981	3.88	18.26	1824.76	-1793.46	181.37	-527.66	5774590.98	623813.78
1982	3.88	18.38	1825.76	-1794.46	181.43	-527.64	5774591.04	623813.80
1983	3.88	18.50	1826.76	-1795.46	181.50	-527.62	5774591.10	623813.82
1984	3.88	18.62	1827.76	-1796.46	181.56	-527.60	5774591.17	623813.84
1985	3.88	18.74	1828.75	-1797.45	181.62	-527.58	5774591.23	623813.86
1986	3.87	18.86	1829.75	-1798.45	181.69	-527.56	5774591.30	623813.88
1987	3.87	18.98	1830.75	-1799.45	181.75	-527.53	5774591.36	623813.90
1988	3.87	19.09	1831.75	-1800.45	181.82	-527.51	5774591.43	623813.92
1989	3.87	19.21	1832.75	-1801.45	181.88	-527.49	5774591.49	623813.95
1990	3.87	19.33	1833.74	-1802.44	181.95	-527.47	5774591.55	623813.97
1991	3.87	19.45	1834.74	-1803.44	182.01	-527.45	5774591.62	623813.99
1992	3.87	19.57	1835.74	-1804.44	182.07	-527.43	5774591.68	623814.01
1993	3.86	19.69	1836.74	-1805.44	182.14	-527.41	5774591.75	623814.03
1994	3.86	19.81	1837.73	-1806.43	182.20	-527.39	5774591.81	623814.05
1995	3.86	19.93	1838.73	-1807.43	182.27	-527.36	5774591.88	623814.07
1996	3.86	20.05	1839.73	-1808.43	182.33	-527.34	5774591.94	623814.09
1997	3.85	19.96	1840.73	-1809.43	182.39	-527.32	5774592.00	623814.12
1998	3.85	19.87	1841.72	-1810.42	182.46	-527.30	5774592.06	623814.14

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1999	3.84	19.78	1842.72	-1811.42	182.52	-527.28	5774592.13	623814.16
2000	3.84	19.69	1843.72	-1812.42	182.58	-527.26	5774592.19	623814.18
2001	3.83	19.60	1844.72	-1813.42	182.64	-527.24	5774592.25	623814.20
2002	3.82	19.51	1845.72	-1814.42	182.70	-527.22	5774592.31	623814.22
2003	3.82	19.42	1846.71	-1815.41	182.77	-527.19	5774592.38	623814.24
2004	3.81	19.33	1847.71	-1816.41	182.83	-527.17	5774592.44	623814.26
2005	3.81	19.24	1848.71	-1817.41	182.89	-527.15	5774592.50	623814.29
2006	3.80	19.15	1849.71	-1818.41	182.95	-527.13	5774592.56	623814.31
2007	3.79	19.06	1850.71	-1819.41	183.02	-527.11	5774592.63	623814.33
2008	3.79	18.97	1851.70	-1820.40	183.08	-527.09	5774592.69	623814.35
2009	3.78	18.88	1852.70	-1821.40	183.14	-527.07	5774592.75	623814.37
2010	3.78	18.79	1853.70	-1822.40	183.20	-527.05	5774592.81	623814.39
2011	3.77	18.70	1854.70	-1823.40	183.27	-527.02	5774592.87	623814.41
2012	3.77	18.61	1855.69	-1824.39	183.33	-527.00	5774592.94	623814.43
2013	3.76	18.52	1856.69	-1825.39	183.39	-526.98	5774593.00	623814.46
2014	3.75	18.43	1857.69	-1826.39	183.45	-526.96	5774593.06	623814.48
2015	3.75	18.34	1858.69	-1827.39	183.51	-526.94	5774593.12	623814.50
2016	3.74	18.25	1859.69	-1828.39	183.58	-526.92	5774593.19	623814.52
2017	3.74	18.16	1860.68	-1829.38	183.64	-526.90	5774593.25	623814.54
2018	3.73	18.08	1861.68	-1830.38	183.70	-526.88	5774593.31	623814.56
2019	3.72	17.99	1862.68	-1831.38	183.76	-526.86	5774593.37	623814.58
2020	3.72	17.90	1863.68	-1832.38	183.83	-526.83	5774593.44	623814.60
2021	3.71	17.81	1864.67	-1833.37	183.89	-526.81	5774593.50	623814.62
2022	3.71	17.72	1865.67	-1834.37	183.95	-526.79	5774593.56	623814.65
2023	3.70	17.63	1866.67	-1835.37	184.01	-526.77	5774593.62	623814.67
2024	3.69	17.54	1867.67	-1836.37	184.08	-526.75	5774593.68	623814.69
2025	3.69	17.49	1868.67	-1837.37	184.14	-526.73	5774593.75	623814.71
2026	3.69	17.52	1869.66	-1838.36	184.20	-526.71	5774593.81	623814.73
2027	3.69	17.55	1870.66	-1839.36	184.26	-526.69	5774593.87	623814.75
2028	3.69	17.58	1871.66	-1840.36	184.32	-526.67	5774593.93	623814.77
2029	3.69	17.61	1872.66	-1841.36	184.38	-526.65	5774593.99	623814.79
2030	3.68	17.64	1873.66	-1842.36	184.44	-526.63	5774594.05	623814.81
2031	3.68	17.67	1874.65	-1843.35	184.50	-526.61	5774594.11	623814.83
2032	3.68	17.70	1875.65	-1844.35	184.56	-526.59	5774594.17	623814.85
2033	3.68	17.73	1876.65	-1845.35	184.63	-526.57	5774594.23	623814.87
2034	3.68	17.76	1877.65	-1846.35	184.69	-526.55	5774594.30	623814.89
2035	3.68	17.79	1878.65	-1847.35	184.75	-526.53	5774594.36	623814.91
2036	3.68	17.82	1879.64	-1848.34	184.81	-526.51	5774594.42	623814.93
2037	3.68	17.85	1880.64	-1849.34	184.87	-526.49	5774594.48	623814.95
2038	3.68	17.88	1881.64	-1850.34	184.93	-526.47	5774594.54	623814.97
2039	3.68	17.91	1882.64	-1851.34	184.99	-526.45	5774594.60	623814.99
2040	3.67	17.94	1883.64	-1852.34	185.05	-526.43	5774594.66	623815.01
2041	3.67	17.97	1884.63	-1853.33	185.11	-526.41	5774594.72	623815.02
2042	3.67	18.00	1885.63	-1854.33	185.17	-526.39	5774594.78	623815.04
2043	3.67	18.03	1886.63	-1855.33	185.24	-526.37	5774594.84	623815.06
2044	3.67	18.05	1887.63	-1856.33	185.30	-526.35	5774594.90	623815.08
2045	3.67	18.08	1888.63	-1857.33	185.36	-526.33	5774594.97	623815.10
2046	3.67	18.11	1889.62	-1858.32	185.42	-526.31	5774595.03	623815.12
2047	3.67	18.14	1890.62	-1859.32	185.48	-526.29	5774595.09	623815.14
2048	3.67	18.17	1891.62	-1860.32	185.54	-526.27	5774595.15	623815.16
2049	3.66	18.20	1892.62	-1861.32	185.60	-526.25	5774595.21	623815.18
2050	3.66	18.23	1893.62	-1862.32	185.66	-526.24	5774595.27	623815.20
2051	3.66	18.26	1894.61	-1863.31	185.72	-526.22	5774595.33	623815.22
2052	3.66	18.29	1895.61	-1864.31	185.78	-526.20	5774595.39	623815.24
2053	3.66	18.32	1896.61	-1865.31	185.84	-526.18	5774595.45	623815.26
2054	3.66	18.33	1897.61	-1866.31	185.91	-526.16	5774595.51	623815.28
2055	3.67	18.29	1898.61	-1867.31	185.97	-526.14	5774595.58	623815.30
2056	3.67	18.25	1899.60	-1868.30	186.03	-526.12	5774595.64	623815.32
2057	3.67	18.22	1900.60	-1869.30	186.09	-526.10	5774595.70	623815.34
2058	3.68	18.18	1901.60	-1870.30	186.15	-526.08	5774595.76	623815.36
2059	3.68	18.15	1902.60	-1871.30	186.21	-526.06	5774595.82	623815.38
2060	3.68	18.11	1903.59	-1872.29	186.28	-526.04	5774595.89	623815.40
2061	3.69	18.08	1904.59	-1873.29	186.34	-526.02	5774595.95	623815.42
2062	3.69	18.04	1905.59	-1874.29	186.40	-526.00	5774596.01	623815.44
2063	3.70	18.00	1906.59	-1875.29	186.46	-525.98	5774596.07	623815.46
2064	3.70	17.97	1907.59	-1876.29	186.52	-525.96	5774596.13	623815.48

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2065	3.70	17.93	1908.58	-1877.28	186.58	-525.94	5774596.19	623815.50
2066	3.71	17.90	1909.58	-1878.28	186.65	-525.92	5774596.26	623815.52
2067	3.71	17.86	1910.58	-1879.28	186.71	-525.90	5774596.32	623815.54
2068	3.72	17.83	1911.58	-1880.28	186.77	-525.88	5774596.38	623815.56
2069	3.72	17.79	1912.58	-1881.28	186.83	-525.86	5774596.44	623815.58
2070	3.72	17.75	1913.57	-1882.27	186.89	-525.84	5774596.50	623815.60
2071	3.73	17.72	1914.57	-1883.27	186.96	-525.82	5774596.56	623815.62
2072	3.73	17.68	1915.57	-1884.27	187.02	-525.80	5774596.63	623815.64
2073	3.73	17.65	1916.57	-1885.27	187.08	-525.78	5774596.69	623815.66
2074	3.74	17.61	1917.57	-1886.27	187.14	-525.76	5774596.75	623815.68
2075	3.74	17.58	1918.56	-1887.26	187.20	-525.74	5774596.81	623815.70
2076	3.75	17.54	1919.56	-1888.26	187.26	-525.72	5774596.87	623815.72
2077	3.75	17.50	1920.56	-1889.26	187.33	-525.70	5774596.93	623815.74
2078	3.75	17.47	1921.56	-1890.26	187.39	-525.68	5774597.00	623815.76
2079	3.76	17.43	1922.55	-1891.25	187.45	-525.66	5774597.06	623815.78
2080	3.76	17.40	1923.55	-1892.25	187.51	-525.64	5774597.12	623815.80
2081	3.77	17.36	1924.55	-1893.25	187.57	-525.62	5774597.18	623815.82
2082	3.77	17.33	1925.55	-1894.25	187.63	-525.60	5774597.24	623815.84
2083	3.77	17.30	1926.55	-1895.25	187.70	-525.58	5774597.30	623815.86
2084	3.76	17.29	1927.54	-1896.24	187.76	-525.56	5774597.37	623815.87
2085	3.76	17.27	1928.54	-1897.24	187.82	-525.54	5774597.43	623815.89
2086	3.76	17.25	1929.54	-1898.24	187.88	-525.53	5774597.49	623815.91
2087	3.75	17.23	1930.54	-1899.24	187.94	-525.51	5774597.55	623815.93
2088	3.75	17.21	1931.54	-1900.24	188.01	-525.49	5774597.61	623815.95
2089	3.75	17.19	1932.53	-1901.23	188.07	-525.47	5774597.68	623815.97
2090	3.74	17.17	1933.53	-1902.23	188.13	-525.45	5774597.74	623815.99
2091	3.74	17.15	1934.53	-1903.23	188.19	-525.43	5774597.80	623816.01
2092	3.74	17.14	1935.53	-1904.23	188.25	-525.41	5774597.86	623816.03
2093	3.73	17.12	1936.53	-1905.23	188.32	-525.39	5774597.92	623816.05
2094	3.73	17.10	1937.52	-1906.22	188.38	-525.37	5774597.99	623816.06
2095	3.73	17.08	1938.52	-1907.22	188.44	-525.35	5774598.05	623816.08
2096	3.72	17.06	1939.52	-1908.22	188.50	-525.33	5774598.11	623816.10
2097	3.72	17.04	1940.52	-1909.22	188.56	-525.32	5774598.17	623816.12
2098	3.72	17.02	1941.51	-1910.21	188.63	-525.30	5774598.23	623816.14
2099	3.71	17.01	1942.51	-1911.21	188.69	-525.28	5774598.30	623816.16
2100	3.71	16.99	1943.51	-1912.21	188.75	-525.26	5774598.36	623816.18
2101	3.70	16.97	1944.51	-1913.21	188.81	-525.24	5774598.42	623816.20
2102	3.70	16.95	1945.51	-1914.21	188.87	-525.22	5774598.48	623816.22
2103	3.70	16.93	1946.50	-1915.20	188.94	-525.20	5774598.54	623816.24
2104	3.69	16.91	1947.50	-1916.20	189.00	-525.18	5774598.61	623816.26
2105	3.69	16.89	1948.50	-1917.20	189.06	-525.16	5774598.67	623816.27
2106	3.69	16.88	1949.50	-1918.20	189.12	-525.14	5774598.73	623816.29
2107	3.68	16.86	1950.50	-1919.20	189.18	-525.13	5774598.79	623816.31
2108	3.68	16.84	1951.49	-1920.19	189.25	-525.11	5774598.85	623816.33
2109	3.68	16.82	1952.49	-1921.19	189.31	-525.09	5774598.92	623816.35
2110	3.67	16.80	1953.49	-1922.19	189.37	-525.07	5774598.98	623816.37
2111	3.67	16.78	1954.49	-1923.19	189.43	-525.05	5774599.04	623816.39
2112	3.66	16.76	1955.49	-1924.19	189.49	-525.03	5774599.10	623816.41
2113	3.65	16.74	1956.48	-1925.18	189.55	-525.01	5774599.16	623816.42
2114	3.64	16.72	1957.48	-1926.18	189.61	-525.00	5774599.22	623816.44
2115	3.64	16.70	1958.48	-1927.18	189.67	-524.98	5774599.28	623816.46
2116	3.63	16.68	1959.48	-1928.18	189.73	-524.96	5774599.34	623816.48
2117	3.62	16.66	1960.48	-1929.18	189.79	-524.94	5774599.40	623816.49
2118	3.61	16.64	1961.47	-1930.17	189.85	-524.93	5774599.46	623816.51
2119	3.60	16.62	1962.47	-1931.17	189.91	-524.91	5774599.52	623816.53
2120	3.59	16.60	1963.47	-1932.17	189.97	-524.89	5774599.57	623816.55
2121	3.58	16.59	1964.47	-1933.17	190.03	-524.87	5774599.63	623816.56
2122	3.57	16.57	1965.47	-1934.17	190.08	-524.86	5774599.69	623816.58
2123	3.57	16.55	1966.46	-1935.16	190.14	-524.84	5774599.75	623816.60
2124	3.56	16.53	1967.46	-1936.16	190.20	-524.82	5774599.81	623816.62
2125	3.55	16.51	1968.46	-1937.16	190.26	-524.80	5774599.87	623816.63
2126	3.54	16.49	1969.46	-1938.16	190.32	-524.79	5774599.93	623816.65
2127	3.53	16.47	1970.46	-1939.16	190.38	-524.77	5774599.99	623816.67
2128	3.52	16.45	1971.45	-1940.15	190.44	-524.75	5774600.05	623816.69
2129	3.51	16.43	1972.45	-1941.15	190.50	-524.73	5774600.11	623816.71
2130	3.50	16.41	1973.45	-1942.15	190.56	-524.72	5774600.17	623816.72

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2131	3.50	16.39	1974.45	-1943.15	190.62	-524.70	5774600.23	623816.74
2132	3.49	16.37	1975.45	-1944.15	190.68	-524.68	5774600.29	623816.76
2133	3.48	16.35	1976.44	-1945.14	190.74	-524.66	5774600.35	623816.78
2134	3.47	16.33	1977.44	-1946.14	190.80	-524.64	5774600.41	623816.79
2135	3.46	16.31	1978.44	-1947.14	190.86	-524.63	5774600.46	623816.81
2136	3.45	16.29	1979.44	-1948.14	190.91	-524.61	5774600.52	623816.83
2137	3.44	16.27	1980.44	-1949.14	190.97	-524.59	5774600.58	623816.85
2138	3.43	16.25	1981.43	-1950.13	191.03	-524.57	5774600.64	623816.86
2139	3.42	16.23	1982.43	-1951.13	191.09	-524.56	5774600.70	623816.88
2140	3.42	16.31	1983.43	-1952.13	191.15	-524.54	5774600.76	623816.90
2141	3.42	16.50	1984.43	-1953.13	191.21	-524.52	5774600.81	623816.92
2142	3.41	16.69	1985.43	-1954.13	191.26	-524.50	5774600.87	623816.94
2143	3.41	16.88	1986.43	-1955.13	191.32	-524.48	5774600.93	623816.96
2144	3.41	17.08	1987.42	-1956.12	191.37	-524.46	5774600.98	623816.98
2145	3.40	17.27	1988.42	-1957.12	191.43	-524.44	5774601.04	623816.99
2146	3.40	17.46	1989.42	-1958.12	191.48	-524.42	5774601.09	623817.01
2147	3.40	17.65	1990.42	-1959.12	191.54	-524.41	5774601.15	623817.03
2148	3.39	17.84	1991.42	-1960.12	191.60	-524.39	5774601.20	623817.05
2149	3.39	18.04	1992.42	-1961.12	191.65	-524.37	5774601.26	623817.07
2150	3.39	18.23	1993.41	-1962.11	191.71	-524.35	5774601.32	623817.09
2151	3.38	18.42	1994.41	-1963.11	191.76	-524.33	5774601.37	623817.11
2152	3.38	18.61	1995.41	-1964.11	191.82	-524.31	5774601.43	623817.13
2153	3.38	18.80	1996.41	-1965.11	191.87	-524.29	5774601.48	623817.15
2154	3.37	19.00	1997.41	-1966.11	191.93	-524.27	5774601.54	623817.17
2155	3.37	19.19	1998.41	-1967.11	191.98	-524.25	5774601.59	623817.18
2156	3.37	19.38	1999.40	-1968.10	192.04	-524.23	5774601.65	623817.20
2157	3.36	19.57	2000.40	-1969.10	192.10	-524.22	5774601.70	623817.22
2158	3.36	19.76	2001.40	-1970.10	192.15	-524.20	5774601.76	623817.24
2159	3.36	19.96	2002.40	-1971.10	192.21	-524.18	5774601.82	623817.26
2160	3.36	20.15	2003.40	-1972.10	192.26	-524.16	5774601.87	623817.28
2161	3.35	20.34	2004.39	-1973.09	192.32	-524.14	5774601.93	623817.30
2162	3.35	20.53	2005.39	-1974.09	192.37	-524.12	5774601.98	623817.32
2163	3.35	20.72	2006.39	-1975.09	192.43	-524.10	5774602.04	623817.34
2164	3.34	20.92	2007.39	-1976.09	192.49	-524.08	5774602.09	623817.36
2165	3.34	21.11	2008.39	-1977.09	192.54	-524.06	5774602.15	623817.37
2166	3.34	21.30	2009.39	-1978.09	192.60	-524.04	5774602.21	623817.39
2167	3.33	21.49	2010.38	-1979.08	192.65	-524.02	5774602.26	623817.41
2168	3.33	21.68	2011.38	-1980.08	192.71	-524.01	5774602.32	623817.43
2169	3.32	21.83	2012.38	-1981.08	192.76	-523.98	5774602.37	623817.46
2170	3.32	21.98	2013.38	-1982.08	192.81	-523.96	5774602.42	623817.48
2171	3.31	22.14	2014.38	-1983.08	192.86	-523.94	5774602.47	623817.50
2172	3.31	22.29	2015.38	-1984.08	192.92	-523.91	5774602.52	623817.52
2173	3.31	22.44	2016.37	-1985.07	192.97	-523.89	5774602.58	623817.55
2174	3.30	22.59	2017.37	-1986.07	193.02	-523.87	5774602.63	623817.57
2175	3.30	22.75	2018.37	-1987.07	193.07	-523.85	5774602.68	623817.59
2176	3.29	22.90	2019.37	-1988.07	193.12	-523.82	5774602.73	623817.62
2177	3.29	23.05	2020.37	-1989.07	193.18	-523.80	5774602.78	623817.64
2178	3.28	23.20	2021.37	-1990.07	193.23	-523.78	5774602.84	623817.66
2179	3.28	23.35	2022.37	-1991.07	193.28	-523.75	5774602.89	623817.68
2180	3.27	23.51	2023.36	-1992.06	193.33	-523.73	5774602.94	623817.71
2181	3.27	23.66	2024.36	-1993.06	193.38	-523.71	5774602.99	623817.73
2182	3.26	23.81	2025.36	-1994.06	193.44	-523.68	5774603.04	623817.75
2183	3.26	23.96	2026.36	-1995.06	193.49	-523.66	5774603.10	623817.78
2184	3.25	24.11	2027.36	-1996.06	193.54	-523.64	5774603.15	623817.80
2185	3.25	24.27	2028.36	-1997.06	193.59	-523.62	5774603.20	623817.82
2186	3.24	24.42	2029.35	-1998.05	193.64	-523.59	5774603.25	623817.84
2187	3.24	24.57	2030.35	-1999.05	193.70	-523.57	5774603.30	623817.87
2188	3.23	24.72	2031.35	-2000.05	193.75	-523.55	5774603.36	623817.89
2189	3.23	24.88	2032.35	-2001.05	193.80	-523.52	5774603.41	623817.91
2190	3.22	25.03	2033.35	-2002.05	193.85	-523.50	5774603.46	623817.94
2191	3.22	25.18	2034.35	-2003.05	193.90	-523.48	5774603.51	623817.96
2192	3.21	25.33	2035.34	-2004.04	193.96	-523.46	5774603.56	623817.98
2193	3.21	25.48	2036.34	-2005.04	194.01	-523.43	5774603.62	623818.01
2194	3.20	25.64	2037.34	-2006.04	194.06	-523.41	5774603.67	623818.03
2195	3.20	25.79	2038.34	-2007.04	194.11	-523.39	5774603.72	623818.05
2196	3.19	25.94	2039.34	-2008.04	194.16	-523.36	5774603.77	623818.07

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2197	3.19	25.99	2040.34	-2009.04	194.21	-523.34	5774603.82	623818.10
2198	3.19	25.99	2041.33	-2010.03	194.26	-523.32	5774603.87	623818.12
2199	3.19	25.98	2042.33	-2011.03	194.31	-523.29	5774603.92	623818.15
2200	3.19	25.97	2043.33	-2012.03	194.36	-523.27	5774603.97	623818.17
2201	3.19	25.96	2044.33	-2013.03	194.41	-523.24	5774604.02	623818.19
2202	3.18	25.95	2045.33	-2014.03	194.46	-523.22	5774604.07	623818.22
2203	3.18	25.94	2046.33	-2015.03	194.51	-523.19	5774604.12	623818.24
2204	3.18	25.94	2047.33	-2016.03	194.56	-523.17	5774604.17	623818.27
2205	3.18	25.93	2048.32	-2017.02	194.61	-523.15	5774604.22	623818.29
2206	3.18	25.92	2049.32	-2018.02	194.66	-523.12	5774604.27	623818.32
2207	3.18	25.91	2050.32	-2019.02	194.71	-523.10	5774604.32	623818.34
2208	3.18	25.90	2051.32	-2020.02	194.76	-523.07	5774604.37	623818.36
2209	3.18	25.89	2052.32	-2021.02	194.81	-523.05	5774604.42	623818.39
2210	3.18	25.89	2053.32	-2022.02	194.86	-523.03	5774604.47	623818.41
2211	3.17	25.88	2054.31	-2023.01	194.91	-523.00	5774604.52	623818.44
2212	3.17	25.87	2055.31	-2024.01	194.96	-522.98	5774604.57	623818.46
2213	3.17	25.86	2056.31	-2025.01	195.01	-522.95	5774604.62	623818.49
2214	3.17	25.85	2057.31	-2026.01	195.06	-522.93	5774604.67	623818.51
2215	3.17	25.84	2058.31	-2027.01	195.11	-522.90	5774604.72	623818.53
2216	3.17	25.84	2059.31	-2028.01	195.16	-522.88	5774604.77	623818.56
2217	3.17	25.83	2060.31	-2029.01	195.21	-522.86	5774604.82	623818.58
2218	3.17	25.82	2061.30	-2030.00	195.26	-522.83	5774604.87	623818.61
2219	3.17	25.81	2062.30	-2031.00	195.31	-522.81	5774604.92	623818.63
2220	3.17	25.80	2063.30	-2032.00	195.36	-522.78	5774604.97	623818.65
2221	3.16	25.79	2064.30	-2033.00	195.41	-522.76	5774605.02	623818.68
2222	3.16	25.78	2065.30	-2034.00	195.46	-522.74	5774605.07	623818.70
2223	3.16	25.78	2066.30	-2035.00	195.51	-522.71	5774605.12	623818.73
2224	3.16	25.77	2067.29	-2035.99	195.56	-522.69	5774605.17	623818.75
2225	3.16	25.75	2068.29	-2036.99	195.61	-522.66	5774605.22	623818.78
2226	3.16	25.62	2069.29	-2037.99	195.66	-522.64	5774605.27	623818.80
2227	3.15	25.48	2070.29	-2038.99	195.71	-522.62	5774605.32	623818.82
2228	3.15	25.34	2071.29	-2039.99	195.76	-522.59	5774605.37	623818.84
2229	3.15	25.20	2072.29	-2040.99	195.81	-522.57	5774605.42	623818.87
2230	3.14	25.07	2073.29	-2041.99	195.86	-522.55	5774605.47	623818.89
2231	3.14	24.93	2074.28	-2042.98	195.91	-522.53	5774605.52	623818.91
2232	3.14	24.79	2075.28	-2043.98	195.96	-522.50	5774605.57	623818.93
2233	3.13	24.66	2076.28	-2044.98	196.01	-522.48	5774605.62	623818.96
2234	3.13	24.52	2077.28	-2045.98	196.06	-522.46	5774605.66	623818.98
2235	3.12	24.38	2078.28	-2046.98	196.11	-522.44	5774605.71	623819.00
2236	3.12	24.24	2079.28	-2047.98	196.16	-522.41	5774605.76	623819.03
2237	3.12	24.11	2080.28	-2048.98	196.20	-522.39	5774605.81	623819.05
2238	3.11	23.97	2081.27	-2049.97	196.25	-522.37	5774605.86	623819.07
2239	3.11	23.83	2082.27	-2050.97	196.30	-522.34	5774605.91	623819.09
2240	3.11	23.69	2083.27	-2051.97	196.35	-522.32	5774605.96	623819.12
2241	3.10	23.56	2084.27	-2052.97	196.40	-522.30	5774606.01	623819.14
2242	3.10	23.43	2085.27	-2053.97	196.45	-522.28	5774606.06	623819.16
2243	3.10	23.43	2086.27	-2054.97	196.50	-522.25	5774606.11	623819.18
2244	3.10	23.43	2087.27	-2055.97	196.55	-522.23	5774606.16	623819.20
2245	3.10	23.43	2088.26	-2056.96	196.60	-522.21	5774606.21	623819.23
2246	3.10	23.43	2089.26	-2057.96	196.65	-522.19	5774606.26	623819.25
2247	3.10	23.43	2090.26	-2058.96	196.70	-522.17	5774606.31	623819.27
2248	3.10	23.43	2091.26	-2059.96	196.75	-522.15	5774606.36	623819.29
2249	3.10	23.43	2092.26	-2060.96	196.80	-522.13	5774606.41	623819.31
2250	3.10	23.43	2093.26	-2061.96	196.85	-522.10	5774606.46	623819.33
2251	3.10	23.43	2094.25	-2062.95	196.90	-522.08	5774606.51	623819.35
2252	3.10	23.43	2095.25	-2063.95	196.95	-522.06	5774606.56	623819.38
2253	3.10	23.43	2096.25	-2064.95	197.00	-522.04	5774606.61	623819.40
2254	3.10	23.43	2097.25	-2065.95	197.05	-522.02	5774606.66	623819.42
2255	3.10	23.43	2098.25	-2066.95	197.10	-522.00	5774606.71	623819.44
2256	3.10	23.43	2099.25	-2067.95	197.15	-521.98	5774606.76	623819.46
2257	3.10	23.43	2100.25	-2068.95	197.20	-521.95	5774606.81	623819.48
2258	3.10	23.43	2101.24	-2069.94	197.25	-521.93	5774606.86	623819.51
2259	3.10	23.43	2102.24	-2070.94	197.30	-521.91	5774606.91	623819.53
2260	3.10	23.43	2103.24	-2071.94	197.35	-521.89	5774606.95	623819.55
2261	3.10	23.43	2104.24	-2072.94	197.40	-521.87	5774607.00	623819.57
2262	3.10	23.43	2105.24	-2073.94	197.45	-521.85	5774607.05	623819.59

APPENDIX 2a

TUNA A3A

Petrophysics Evaluation Summary



Esso Australia Pty Ltd.
Exploration Department

**Tuna A3A
Formation Evaluation
Log Interpretation Report**

**Petrophysicist: P J Tarabbia
Aug 2005**

Tuna A3A Log Interpretation

Tuna A-3A was drilled as a re-entry from the Tuna A3 well which was plugged & abandoned in Jan/Feb 2005. The Tuna A3A well was designed to access reserves and targeted the oil column in the M1 sands.

The well was spudded on the 6th February 2005 by milling a window in the 9 5/8" casing of the Tuna A3 production well at 1216mMDRT. The 8½" hole was drilled to a total depth of 2262mMDRT (2105.2mTVDRT) and a 7" production casing was run to 2260mMDRT. Tuna A3A was completed on the 19th February 2005 as an M1 oil producer with a single 3½" completion string run to 2092mMDRT.

The Reeves wireline equivalent logs have been analysed for porosity, water saturation and net pay over the interval 1500 – 2225 mMDRT.

#Note: All depths quoted in this report are logged mMDRT unless otherwise specified.

DATA

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

Survey/Log	Company	Top (m MDRT)	Hole size (inches)	Bottom (m MDRT)
Compact Gamma Ray - Compact Dual Neutron - Compact Photodensity - Compact Sonic - Compact Dual Laterolog	Reeves	1216.5	8 1/2	2242.9 (1st reading)

Deviation

The well inclination over the M-1 reservoirs (from to 1500 - 1590m MDRT) was from 6-5 degrees.

Mud Data

Mud Type : KCl/Glycol/PHPA
Mud Weight: 10 ppg
RT: 31.3m
Rm: 0.095 @ 25 °C
Rmf: 0.071 @ 25 °C
Rmc: 0.134 @ 25 °C
BHT: 87.6 °C @2207.9m

Hole Size

1216.5 – 2262 mMDRT 8½ inches

Data Acquisition & Log Quality

No problems were encountered in the acquisition of the logs and the data quality of all the logs is acceptable.

Data Processing

The DDLL (deep laterolog), DSLL (shallow laterolog), DEN (bulk density), NPRL (neutron porosity), DT35 (compressional sonic) and GGCE (borehole corrected gamma ray) curves were depth aligned to the LWD GR curve. All coal zones were manually picked and a coal flag (flag_coal) was created.

In addition, temperature (temp) and hydrocarbon flag (flag_rhoh) curves were also generated. All the new curves were used as inputs for the final petrophysical interpretation.

INTERPRETATION

Logs Used

The primary logs used in the interpretation were DDLL (deep resistivity), GGCE (borehole corrected gamma ray), DEN (bulk density) and NPRL (thermal neutron porosity in LPU).

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 25,000 ppm NaCl equivalent.

Hydrocarbon Type Identification

M1- Tuna-Flounder Channel sands

The density-neutron cross-over in the M1 sands indicate gas with a LKG down to at least 1570.2mMDRT (1382.7mTVDSS). Below this depth, the increase in clay within the sands makes it difficult to determine the GOC present in the reservoir. However, the fluorescence (from the mudlog) and the presence of elevated resistivity suggest that the HKO is at 1575mMDRT (1388.42mTVDSS).

T series sands

Residual hydrocarbon was identified in the T-055 sand.

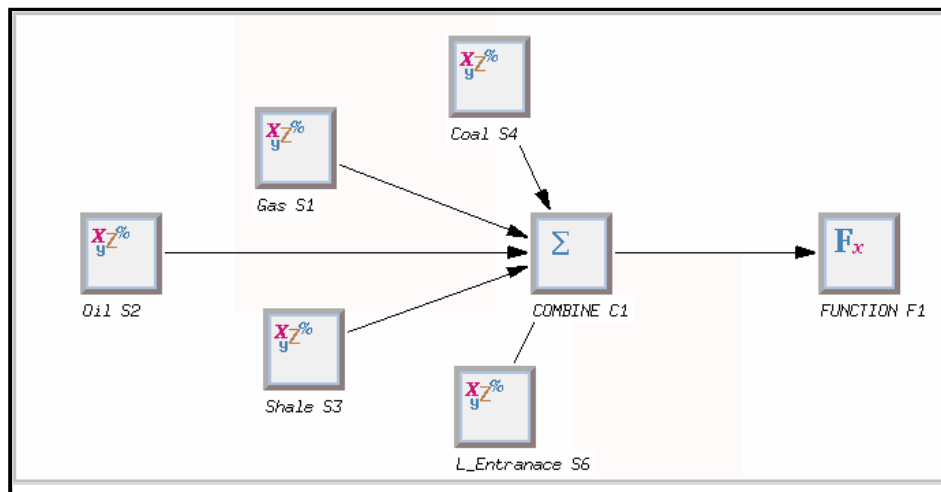
The density-neutron cross-over in the T-1 sand indicates the hydrocarbon type is gas with a LKG down to at least 2136.2mMDRT (1948.2mTVDSS). Below this depth, the increase in clay within the sands makes it difficult to determine with certainty the current GOC present in the reservoir. However, the fluorescence (from the mudlog) and the presence of elevated resistivity suggest that the HKO is at 2139mMDRT (1951.4mTVDSS).

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



ELAN Input Channels

Name	Curve
Temp_CH	TEMP
RHOB_IFAC_CH	IFRH
NPFI_IFAC_CH	INPH
RHOB_CH	DEN:BPB
NPFI_CH	NPRL:BPB

ELAN Global Parameters

Reference Index	MD
Processing Interval	1500 (m) To 2240 (m)
Sampling Rate	0.3281 (m)
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	WATER

ELAN Zone Definition

Name	Bottom To Top
T Sands	2240.0000 (m) To 1940.0000 (m)
M Sands	1940.0000 (m) To 1526.0000 (m)
Gurnard	1526.0000 (m) To 1500.0000 (m)

ELAN Process Definiton

Process	SOLVE1 "Gas"						
Equations	RHOB	NPFI	CUDC_DWA	GR	CT2	CT3	
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XGAS	UGAS
User Constraints	constraint(maxDolomite, DOLO<0)						
Constraint Zones	Bottom			Top			
UNDEFINED	2240.0000 (m)		1500.0000 (m)				

Constraints Applied

UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW

Process	SOLVE2 "Oil"						
Equations	RHOB	NPFI	CUDC_DWA	GR	CT1	CT3	
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XOIL	UOIL
User Constraints	constraint (maxDolmite, DOLO<0)						
Constraint Zones	Bottom			Top			
UNDEFINED	2240.0000 (m)		1500.0000 (m)				

Constraints Applied

UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW

Process	SOLVE3 "Shale"				
Equations	RHOB	CUDC_DWA	GR	CT3	
Volumes	QUAR	ILLI	XWAT	UWAT	
Constraint Zones	Bottom		Top		
UNDEFINED	2240.0000 (m)		1500.0000 (m)		

ELAN Process Definiton (Con't)

Process SOLVE4 "Coal"
Equations RHOB
Volumes COAL

Constraint Zones Bottom Top
UNDEFINED 2240.0000 (m) 1500.0000 (m)

Process SOLVE6 "L_Entranace"
Equations RHOB
Volumes CALC

Constraint Zones Bottom Top
UNDEFINED 2240.0000 (m) 1500.0000 (m)

Process COMBINE 1 "COMBINE"
Order SOL.2 SOL.1 SOL.3 SOL.4 SOL.6
Combine Method
 "Tuna " 7349.0815 (m) Internal Average
 "LE " 4957.3491 (m) Sol.6
Probability Functions
 probability(SOL.6, 0)

probability(SOL.4, PRB4_CH)

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

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

Process FUNCTION 1 "FUNCTION"
Outputs VCL 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 Probability Expressions

probability(SOL.6, 0)

probability(SOL.4, PRB4_CH)

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

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

ELAN Model Constraints

Model 1:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	7349.0815	-999.25
	constraints		
	UNDEFINED	- IrreducibleXWater	
	UNDEFINED	- IrreducibleUWater	
	UNDEFINED	- WaterBaseMud_SXO_gt_SW	
Model 2:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	7349.0815	-999.25
	constraints		
	UNDEFINED	- IrreducibleXWater	
	UNDEFINED	- IrreducibleUWater	
	UNDEFINED	- WaterBaseMud_SXO_gt_SW	
Model 3:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	7349.0815	-999.25
	constraints		
Model 4:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	7349.0815	-999.25
	constraints		
Model 6:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	7349.0815	-999.25
	constraints		

ELAN Different Parameters

Parameters	T Sands	M Sands	Gurnard
n*****	*****	*****	*****
CXDC_XWAT (mS/m)	20.038	17.937	15.097
CXDC_XBWA (mS/m)	11.445	10.876	9.089
CUDC_UWAT (mS/m)	9.500	8.608	7.324
CUDC_UBWA (mS/m)	3.000	4.100	9.000
WCLP_ILLI (m3/m3)	0.133	0.131	0.261
RW (ohm.m)	0.459	0.458	0.458
CUDC_UNC_ZP (mS/m)	0.046	0.045	0.045
RHOB_IFAC_ZP ()	0.800	0.300	0.300
NPHI_IFAC_ZP ()	0.800	0.500	0.500

ELAN 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_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	1.074 (g/cm3)	RHOB_UWAT	0.987 (g/cm3)
RHOB_XOIL	0.700 (g/cm3)	RHOB_UOIL	0.700 (g/cm3)
RHOB_XGAS	-0.006 (g/cm3)	RHOB_UGAS	-0.006 (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_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	0.090 (m3/m3)	NPHI_UGAS	0.090 (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_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_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)	CT1_QUAR	0.000
CT1_CALC	0.000	CT1_DOLO	0.000
CT1_ORTH	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	1.000
CT1_UOIL	-0.100	CT1_XGAS	1.000
CT1_UGAS	0.000	CT1_XBWA	0.000
CT2_QUAR	0.000	CT2_CALC	0.000
CT2_DOLO	0.000	CT2_ORTH	0.000
CT2_ILLI	0.000	CT2_KAOL	0.000

Parameter	Value	Parameter	Value
CT2_XWAT	0.000	CT2_UWAT	0.000
CT2_XOIL	0.000	CT2_UOIL	0.000
CT2_XGAS	1.000	CT2_UGAS	-0.500
CT2_XBWA	0.000	CT3_QUAR	-0.100
CT3_CALC	0.000	CT3_ORTH	1.000
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
ARHOB_ILLI	2.780 (g/cm3)	ARHOB_KAOL	2.620 (g/cm3)
WCLP_ILLI	0.154 (m3/m3)	WCLP_KAOL	0.061 (m3/m3)
CBWA_ILLI	-999.250 (mS/m)	CBWA_KAOL	-999.250 (mS/m)
CECA_ILLI	0.200 (meq/g)	CECA_KAOL	0.090 (meq/g)
RMF	0.160 (ohm.m)	MST	61.880 (degC)
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
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)
CT1_UNC_ZP	0.015	CT2_UNC_ZP	0.015
CT3_UNC_ZP	0.015	VOLS_UNC_ZP	0.015 (m3/m3)
RHOB_UNC_WM	1.000	NPHI_UNC_WM	1.000
DT_UNC_WM	0.300	U_UNC_WM	0.400
CXDC_UNC_WM	0.500	CUDC_UNC_WM	0.700
GR_UNC_WM	0.300	CT1_UNC_WM	0.200
CT2_UNC_WM	0.200	CT3_UNC_WM	0.900
VOLS_UNC_WM	1.000	RHOB_IFAC_ZP	1.000
NPHI_IFAC_ZP	1.000	A_ZP	1.000
N_ZP	2.000	C_DWA	0.000
M_DWA	2.000	BVIRR	0.010 (m3/m3)

RESULTS AND DISCUSSION

The top of the Latrobe Group occurs at 1511mMDRT in this well. The sands of the Gurnard Formation are hydrocarbon bearing (Fig 1). From the lack of fluorescence (indicated by the mudlog) and weakly developed sealing shales (above a large gas column), it is interpreted that gas is the main hydrocarbon phase. A total of 5.25m of net pay sand is present and is distributed among four thin units. The four thin sands have an average effective porosity of 11% and average effective water saturation of 48%.

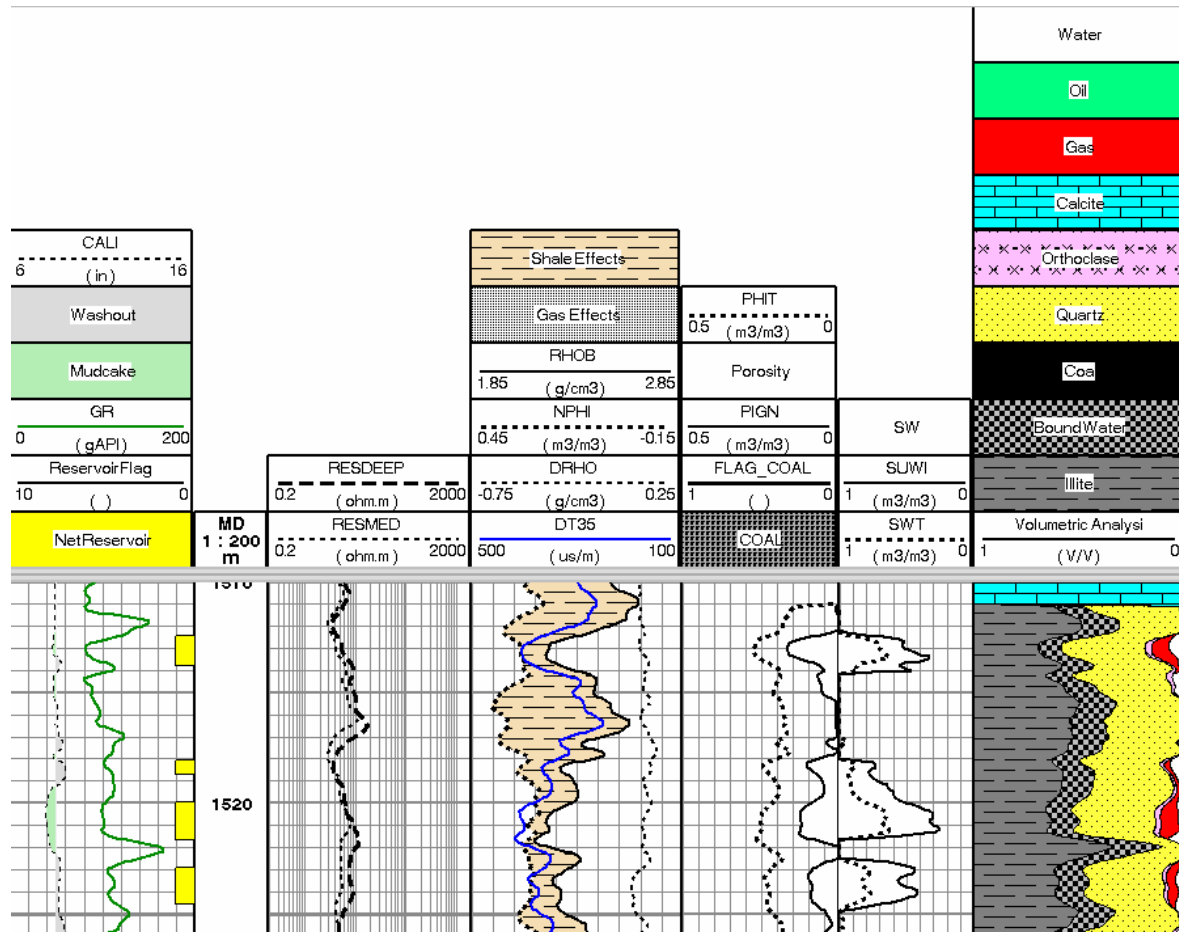


Figure 1. Gurnard Formation.

The underlying M1 reservoir unit contains a 48m gas column (Fig 2). The sands in this interval are well defined and it is interpreted that there is gas down to 1575mMDRT. The sands of this unit have an average effective porosity of 23% and average effective water saturation of 24%.

There is a thin oil column below the gas cap. This 4.5m oil interval has an interpreted OWC at 1579.5mMDRT. The sands within the oil zone have an average effective porosity of 24% and average effective water saturation of 64%.

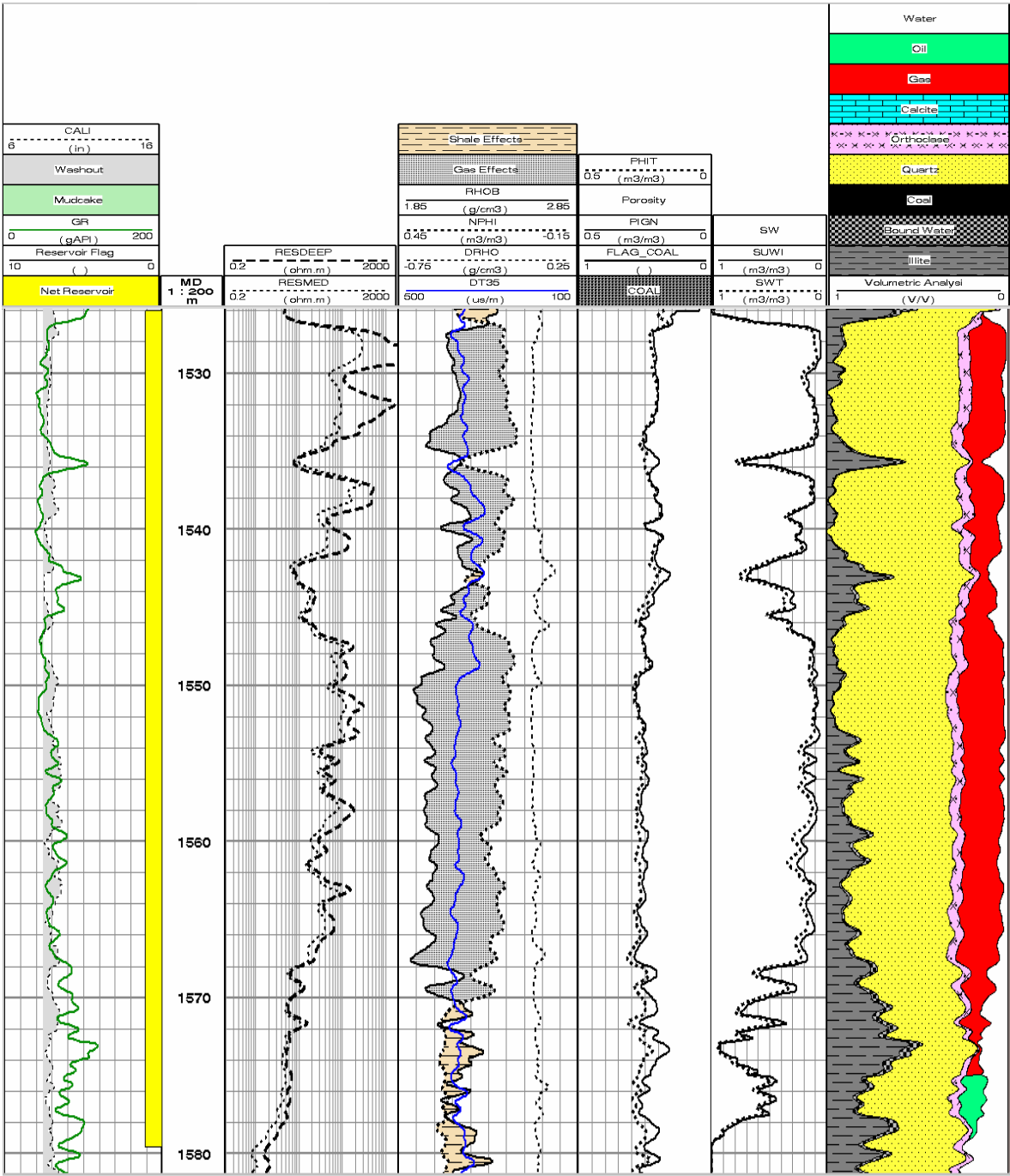


Figure 2. M-1 reservoir unit.

The T-055 sand was intersected in this well at 2112mMDRT (Fig 3). This sand has a calculated residual hydrocarbon saturation of 20%.

The T-100 sand is interpreted to be gas saturated with a small oil leg present at its base. A total of 9.3m is gas bearing and the effective porosity calculated was 17%. The average effective water saturation for the gas zone of the T-100 sand was 44% which is influenced by the lower quality upward fining package. In the best part of the T-100 sand the effective water saturation is as low as 23%. The oil leg is approx 1m thick with a calculated effective porosity of 17% and an effective water saturation of 81%. A residual oil zone persists below this sand to the original OWC of 2200.5 mMDRT.

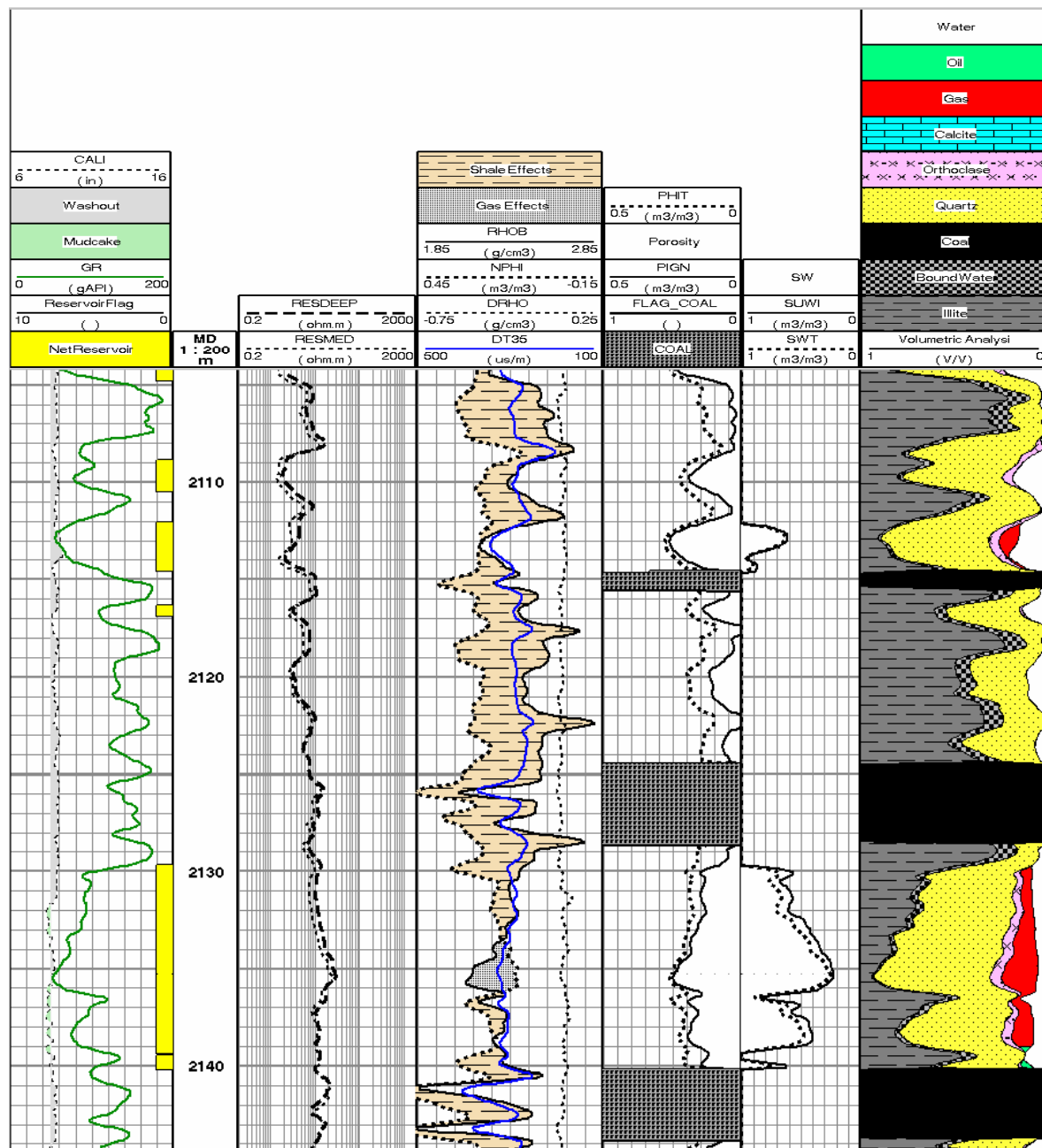


Figure 3. T series sands.

Tuna A3A

Petrophysical Summary 1511.5 - 2224.5m 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
GURNARD	1511.5	1325.22	1526.1	1339.74	14.60	14.52	0.36	0.50	0.11	0.48		Gas bearing	5.25	5.22
M1-GAS	1526.1	1339.74	1575.0	1388.42	48.90	48.68	1.00	0.15	0.23	0.24		Gas bearing	48.95	48.73
GOC at 1575mMD (1388.42mTVDSS)														
M1-OIL	1575.0	1388.42	1579.5	1392.91	4.50	4.49	1.00	0.26	0.24	0.64		Oil bearing	4.50	4.49
OWC at 1579.5mMD (1392.91mTVDSS)														
M1-WATER	1699.5	1512.71	1733.6	1546.77	34.10	34.05	0.81	0.11	0.22	1.00		Water bearing		
L_Sands	1743.0	1556.16	1859.0	1671.98	116.00	115.83	0.51	0.38	0.20	1.00		Water bearing		
L-095	1859.0	1671.98	1884.6	1697.53	25.60	25.55	0.55	0.18	0.25	1.00		Water bearing		
L-110	1884.6	1697.53	1945.5	1758.29	60.90	60.76	0.22	0.23	0.24	1.00		Water bearing		
L-200	1945.5	1758.29	2002.7	1815.36	57.20	57.07	0.58	0.21	0.22	1.00		Water bearing		
L-400	2002.7	1815.36	2112.0	1924.4	109.30	109.00	0.46	0.19	0.22	1.00		Water bearing		
T-055	2112.0	1924.43	2114.6	1927.03	2.60	2.60	1.00	0.22	0.20	0.80		Residual Oil		
T1-Gas	2129.7	1942.1	2139.0	1951.38	9.30	9.28	1.00	0.28	0.17	0.44		Gas bearing	9.30	9.28
GOC at 2139mMD (1951.38mTVDSS)														
T1-OIL	2139.0	1951.38	2140.1	1952.48	1.10	1.10	0.91	0.51	0.13	0.81		Oil bearing	1.00	1.00
T1 to OOWC	2164.0	1976.34	2200.5	2012.78	36.50	36.44	0.47	0.17	0.19	0.91		Residual Oil		
T1-LOWER	2200.5	2012.78	2224.5	2036.74	24.00	23.96	0.87	0.17	0.20	1.00		Water bearing		

APPENDIX 3a

TUNA A3A

Lithology/Show Descriptions

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
<p>Previous Well History: Tuna A3 Plugged and Abandoned on 05 February 2005.</p> <p>Milled the 9.625" Casing: Top of window at 1216.7 mMDRT. : Bottom of window at 1218.1 mMDRT.</p> <p>TNA A3A Kick-off point at 1232.0 mMDRT at 0900 hrs on 06 February 2005.</p> <p>PIT at 1233.0 mMDRT (1096.5 mTVDRT), 700 psi with 9.80 ppg mud (13.50 ppg EMW). Drill with KCl/PHPA/Glycol mud system.</p> <p>Drilled from 1232.0 to 2262.0 mMDRT with a Smith PDC bit on steerable motor assembly. Bit Details: Bit # 1, Size: 8.5", Manufacturer / Type: Smith S73PX. Serial #: JT6967-R1 Jets: 20 x 6, TFA: 1.841 sq.in, HOB: 55.40, Grading: 1-2-WT-A-X-IN-BT-TD. Krevs: 880.0, RPM: 100-105 (+ 174 RPM DHM). Average ROP: 1030.0 / 55.4 = 18.6 m/hr. Rotating: 891.0 metres / Rotating HOB = 46.97, Average Rotating ROP = 19.0 m/hr Steering: 139.0 metres / Steering HOB = 8.43 , Average Steering ROP = 16.5 m/hr.</p> <p>Spot 5 metre samples from 1228.0-1232.0 mMDRT.</p> <p>Spot 30 metre samples from 1230.0-1350.0 mMDRT (approximately 150.0 metres above prognosed TOL at 1513 .5 mMDRT = 1356.6 mTVDRT).</p> <p>Actual TOL at 1511.5 mMDRT = 1356.3 mTVDRT.</p> <p>Bagged 10 metre samples from 1350.0-1500.0 mMDRT.</p> <p>Bagged 5 metre samples from 1500.0 mMDRT to TD of 2262.0 mMDRT (2105.2 mTVDRT).</p> <p>Geologist on board from 1232.0 mMDRT (1092.2 mTVDRT), at 0830 hrs 07 February 2005. Top of Lakes Entrance prognosed at 1251.4 mMDRT (1111.3 mTVDRT). Actual Top of Lakes Entrance at 1252.0 mMDRT (1112.4 mTVDRT).</p>			
1230	1240	100	<p>CALCILUTITE: light olive grey to light grey, occasionally light green grey, argillaceous, grading to CALCAREOUS CLAYSTONE, silty in part, trace forams, trace ooids, trace disseminated pyrite, trace carbonaceous specks, soft to occasionally moderately hard, amorphous to sub blocky.</p> <p>Trace CALCAREOUS CLAYSTONE: medium grey, to medium dark grey, very calcareous grading to CALCILUTITE, silty in part, trace trace forams, trace micromica, trace disseminated pyrite, rare glauconite specks, moderately hard to hard, sub blocky to blocky.</p> <p>Midnight depth 07 February 2005 = 1293.0 mMDRT (1151.0 mTVRDT)</p>

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1240	1270	70	CALCILUTITE: light olive grey to light grey, occasionally light green grey, argillaceous, grading to CALCAREOUS CLAYSTONE, silty in part, trace forams, trace ooids, trace disseminated pyrite, trace carbonaceous specks, soft to occasionally moderately hard, amorphous to sub blocky.
		30	CALCAREOUS CLAYSTONE: medium grey, to medium dark grey, very calcareous grading to CALCILUTITE, silty in part, trace Foraminifera, trace micromica, trace disseminated pyrite, moderately hard to hard, sub blocky to blocky.
1270	1300	Trace	CALCILUTITE: as above.
		100	CALCAREOUS CLAYSTONE: as above, light medium grey to medium grey occasionally medium dark grey.
1300	1320	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally medium dark grey, very calcareous grading to CALCILUTITE, silty in part, trace Foraminifera, trace micromica, trace disseminated pyrite, soft to moderately hard, dispersive, sub blocky.
1320	1350	100	CALCAREOUS CLAYSTONE: as above.
			Bagged 10 metre samples from 1350.0 to 1500.0 mMDRT.
1350	1360	100	CALCAREOUS CLAYSTONE: as above.
1360	1370	100	CALCAREOUS CLAYSTONE: as above, trace ooids.
1370	1380	100	CALCAREOUS CLAYSTONE: as above, common ooids, trace mica flakes.
1380	1390	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally greenish grey, very calcareous, silty in part, common ooids, trace Foraminifera, trace micromica, trace disseminated pyrite, trace glauconite, soft to moderately hard, dispersive, sub blocky.
1390	1400	100	CALCAREOUS CLAYSTONE: as above.
1400	1410	100	CALCAREOUS CLAYSTONE: as above, trace ooids.
1410	1420	100	CALCAREOUS CLAYSTONE: as above.
			Baracarb added to mud system at 1414.0 mMDRT.
			Mud weight increased from 9.85 to 9.95 ppg as a result of addition of Baracarb to the mud system.
			The concentration of Baracarb was maintained at 5 ppb till TD.
			Baracarb seen in the samples from 1420 mMDRT.
1420	1430	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally greenish grey, very calcareous, silty in part, nil ooids, trace Foraminifera, trace micromica, trace disseminated pyrite, trace glauconite, soft to moderately hard, dispersive, sub blocky
1430	1440	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally medium dark grey, very calcareous, silty in part, trace ooids, trace Foraminifera, trace micromica, trace disseminated pyrite, trace glauconite, soft to dominantly moderately hard, dispersive, sub blocky to blocky.
			Metal shavings in samples 1450, 1460 and 1470. Informed Coman. Samples from 1480 onwards had no metal shavings.
1440	1450	100	CALCAREOUS CLAYSTONE: as above.
1450	1460	100	CALCAREOUS CLAYSTONE: as above.
1460	1470	100	CALCAREOUS CLAYSTONE: as above.
1470	1480	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally medium dark grey, very calcareous, silty in part, trace ooids, trace Foraminifera, trace micromica, trace disseminated pyrite, trace nodular pyrite, trace glauconite, trace carbonaceous specks, soft to moderately hard, dispersive, sub blocky to blocky.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1480	1490	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally medium dark grey, very calcareous, silty in part, trace ooids, trace Foraminifera, trace micromica, trace disseminated pyrite, trace glauconite, soft to moderately hard, dispersive, sub blocky to blocky.
1490	1500	100	CALCAREOUS CLAYSTONE: as above.
1500	1505	100	CALCAREOUS CLAYSTONE: light medium grey to medium grey occasionally medium dark grey and greenish grey, common ooids, common Foraminifera, trace disseminated pyrite, trace glauconite, soft to moderately hard, dispersive, amorphous to sub blocky.
1505	1510	100	CALCAREOUS CLAYSTONE: as above. Top of Latrobe at 1511.5 mMDRT (1356.3 mTVDRT).
1510	1515	85	Gas rising at 1512.0 mMDRT. Peak of 263 / 35 units BG. CALCAREOUS CLAYSTONE: as above.
		5	CLAYSTONE: greyish yellow to moderate yellow, trace glauconite, soft, amorphous, dispersive.
		5	SILTSTONE: pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, trace micromica, 10% calcareous, soft to firm, sub-blocky.
		5	SANDSTONE: smoky grey to light grey, occasionally translucent, coarse to very coarse, dominantly very coarse, occasionally fractured quartz grains, moderately well sorted, trace pyrite cement, trace glauconite, trace nodular pyrite, hard, loose, good to excellent inferred porosity. No fluorescence. Gas Peak at 1517.0 mMDRT: 1080 / 35 units BG.
1515	1520		Raise Mud weight at 1535 mMDRT from 9.95 to 10.10 ppg.
		20	CALCAREOUS CLAYSTONE: as above.
		10	CLAYSTONE: as above.
		60	SILTSTONE: as above.
1520	1525	10	SANDSTONE: as above. Top of Coarse Clastics at 1526.0 mMDRT (1370.7 mTVDRT).
			Gas Peak at 1526.0 mMDRT: 1966 / 35 units BG.
		10	CALCAREOUS CLAYSTONE: as above.
		10	CLAYSTONE: as above.
1525	1530	70	SILTSTONE: as above, common micromica.
		10	SANDSTONE: as above.
		10	CLAYSTONE: greyish yellow to moderate yellow, trace glauconite, soft, amorphous, dispersive.
		75	SILTSTONE: pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, trace micromica, 10% calcareous, soft to firm, sub-blocky.
1530	1535	15	SANDSTONE: as above.
		10	CLAYSTONE: as above.
		75	SILTSTONE: as above.
		15	SANDSTONE: as above, occasionally very coarse fractured quartz grains.
1535	1540	5	CLAYSTONE: as above.
		80	SILTSTONE: as above.
		15	SANDSTONE: clear to translucent, occasionally yellowish grey, fine to very coarse, poorly sorted, sub angular to sub rounded, common light brown silty matrix grading to arenaceous Siltstone, trace pyrite cement, trace micromica, trace glauconite, trace nodular pyrite, hard aggregates, poor to fair inferred porosity. No fluorescence.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1540	1545	Trace	CLAYSTONE: greyish yellow to moderate yellow, trace glauconite, soft, amorphous, dispersive.
		50	SILTSTONE: pale reddish brown to light brown, very arenaceous grading to very fine Sandstone, trace micromica, 5% calcareous, soft to firm, sub-blocky.
		50	SANDSTONE: clear to translucent, medium to very coarse, occasionally very coarse fractured quartz grains, moderately sorted, sub angular to sub rounded, trace pyrite cement, trace micromica, rare glauconite, rare nodular pyrite, hard, loose, very good inferred porosity. No fluorescence.
1545	1550	Trace	CLAYSTONE: as above.
		20	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, medium to very coarse, occasionally very coarse fractured quartz grains, moderately sorted, sub angular to sub rounded, trace pyrite cement, trace micromica, rare glauconite, rare nodular pyrite, hard, loose, very good inferred porosity. No fluorescence.
1550	1555	10	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, trace pyrite cement, trace micromica, rare glauconite, rare nodular pyrite, hard, sandstone crushed to rock flour by PDC bit, loose, fair to good inferred porosity. No fluorescence.
1555	1560	5	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, common micromica, trace glauconite, trace disseminated and nodular pyrite, soft to firm, sub-blocky.
		95	SANDSTONE: clear to translucent, occasionally greyish orange, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, trace pyrite cement, trace micromica, rare glauconite, rare nodular pyrite, hard, sandstone crushed to rock flour by PDC bit, loose, good to very good inferred porosity. No fluorescence.
1560	1565	10	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace micromica, trace glauconite, trace disseminated pyrite, rare nodular pyrite, hard, sandstone crushed to rock flour by PDC bit, loose, fair to good inferred porosity. No fluorescence
1565	1570	5	CLAYSTONE: light blueish grey to medium blueish grey, silty in part, moderately hard to hard, sub blocky.
		5	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, common micromica, trace glauconite, trace disseminated and nodular pyrite, soft to firm, sub-blocky.
		90	SANDSTONE: as above. Gas Peak at 1573.0 mMDRT: 700 / 180 units BG.
1570	1575	5	SILTSTONE: as above.
		95	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace micromica, trace glauconite, trace disseminated pyrite, rare nodular pyrite, hard, sandstone crushed to rock flour by PDC bit, loose, fair to good inferred porosity. FLUORESCENCE: 20%, dull pale yellowish green patchy fluorescence, very slow bleeding direct cut, thick ring residue. Mudlog bar: 1.0
1575	1580	5	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1580	1585	95	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace micromica, trace glauconite, trace disseminated pyrite, rare nodular pyrite, hard, sandstone occasionally crushed to rock flour by PDC bit, loose, good inferred and visual porosity. FLUORESCENCE: 40%, moderately bright to bright even yellowish green fluorescence, moderately rapid blooming direct cut, thick ring residue. Mudlog Bar: 1.5
		5	SILTSTONE: as above.
1585	1590	95	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace micromica, trace glauconite, trace disseminated pyrite, trace nodular pyrite, hard, sandstone occasionally crushed to rock flour by PDC bit, loose, good inferred and visual porosity. FLUORESCENCE: 40%, moderately bright to bright even yellowish green fluorescence, moderately rapid blooming direct cut, thick ring residue. Mudlog Bar: 1.5
		10	CLAYSTONE: light blueish grey to medium blueish grey, silty in part, moderately hard to hard, sub blocky.
1590	1595	70	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, common micromica, trace glauconite, trace disseminated and nodular pyrite, soft to firm, sub-blocky.
		20	SANDSTONE: as above, with trace cavings fluorescence in cuttings.
1595	1600	20	CLAYSTONE: as above.
		70	SILTSTONE: as above.
1600	1605	10	SANDSTONE: clear to translucent, medium to coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace micromica, trace glauconite, trace disseminated pyrite, trace nodular pyrite, hard, sandstone occasionally crushed to rock flour by PDC bit, loose, good inferred and visual porosity. No Fluorescence.
		20	CLAYSTONE: as above.
1605	1610	70	SILTSTONE: as above.
		10	SANDSTONE: as above. No Fluorescence.
1610	1615	10	CLAYSTONE: as above.
		80	SILTSTONE: as above.
1615	1620	10	SANDSTONE: as above. No Fluorescence.
		10	CLAYSTONE: light olive grey to light grey, trace nodular pyrite, firm, amorphous to sub blocky.
1615	1620	80	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, common micromica, trace glauconite, trace disseminated and nodular pyrite, soft to firm, sub-blocky.
		10	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace micromica, hard, loose, good inferred and visual porosity. No Fluorescence.
1615	1620	5	CLAYSTONE: as above.
		90	SILTSTONE: as above.
1615	1620	5	SANDSTONE: as above. No Fluorescence.

Tuna A3A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
1620	1625	5	CLAYSTONE: as above.
		90	SILTSTONE: as above.
		5	SANDSTONE: as above. No Fluorescence.
1625	1630	5	CLAYSTONE: as above.
		90	SILTSTONE: as above.
		5	SANDSTONE: as above. No Fluorescence.
1630	1635	5	CLAYSTONE: as above.
		95	SILTSTONE: as above.
		Trace	SANDSTONE: as above, trace cavings. No Fluorescence.
1635	1640	5	CLAYSTONE: light olive grey to light grey, trace nodular pyrite, firm, amorphous to sub blocky.
		95	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, common micromica, trace glauconite, trace disseminated and nodular pyrite, soft to firm, sub-blocky.
1640	1645	5	CLAYSTONE: as above.
		95	SILTSTONE: as above.
1645	1650	10	CLAYSTONE: as above.
		90	SILTSTONE: as above.
1650	1655	10	CLAYSTONE: light olive grey to light grey, trace nodular pyrite, firm, amorphous to sub blocky.
		90	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, common micromica, trace glauconite, trace disseminated and nodular pyrite, soft to firm, sub-blocky.
1655	1660	5	CLAYSTONE: as above.
		95	SILTSTONE: as above.
1660	1665	5	CLAYSTONE: as above.
		95	SILTSTONE: as above.
1665	1670	5	CLAYSTONE: as above.
		95	SILTSTONE: as above.
1670	1675	5	CLAYSTONE: light blueish grey to medium blueish grey, occasionally light blue, silty in part, trace glauconite, moderately hard, sub blocky.
		95	SILTSTONE: light brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, common nodular pyrite, soft to firm, amorphous to sub-blocky.
1675	1680	Trace	CLAYSTONE: as above.
		100	SILTSTONE: as above.
1680	1685	5	CLAYSTONE: as above.
		95	SILTSTONE: as above, trace nodular pyrite, soft to firm, amorphous to sub-blocky.
1685	1690	5	CLAYSTONE: as above.
		95	SILTSTONE: as above, common nodular pyrite, soft to firm, amorphous to sub-blocky.
1690	1695	Trace	CLAYSTONE: as above.
		100	SILTSTONE: as above.
Barablock added to the mud system at 1700 mMDRT.			
The concentration of Barablock in the mud system was maintained at 4 ppb till TD.			
1695	1700	Trace	CLAYSTONE: as above.
		90	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		10	SANDSTONE: clear to translucent, occasionally milky white, coarse to very coarse, dominantly very coarse, moderately well sorted, common fractured quartz grains, sub angular to dominantly sub rounded, trace pyrite cement, common nodular pyrite, hard, loose, good inferred and visual porosity. FLUORESCENCE: Trace, moderately bright pinpoint yellowish green fluorescence, very slow blooming direct cut, no ring residue. Mudlog Bar: 0.0
1700	1705	Trace	CLAYSTONE: light blueish grey to medium blueish grey, occasionally light blue, silty in part, trace glauconite, trace micromica, moderately hard, sub blocky.
		85	SILTSTONE: light brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, common nodular pyrite, soft to firm, amorphous to sub-blocky.
		15	SANDSTONE: clear to translucent, occasionally milky white, medium to very coarse, dominantly coarse, moderately well sorted, common fractured quartz grains, sub angular to dominantly sub rounded, trace pyrite cement, common nodular pyrite, hard, loose, good inferred and visual porosity. No fluorescence.
1705	1710	Trace	CLAYSTONE: as above.
		15	SILTSTONE: as above.
		85	SANDSTONE: clear to translucent, occasionally milky white, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, common nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred and visual porosity. FLUORESCENCE: 5%, dull patchy (from bit crushed rock flour) yellowish green fluorescence, very slow bleeding direct cut, thin ring residue. Mudlog Bar: 0.5
1710	1715	10	SILTSTONE: as above.
		90	SANDSTONE: as above. FLUORESCENCE: 5%, as above. Mudlog Bar: 0.5
1715	1720	5	SILTSTONE: as above.
		95	SANDSTONE: clear to translucent, medium to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred and visual porosity. FLUORESCENCE: 5%, dull pinpoint yellowish green fluorescence, no direct cut, very slow bleeding crush cut, no ring residue. Mudlog Bar: 0.0
720	1725	5	SILTSTONE: as above.
		95	SANDSTONE: as above. No fluorescence.
1725	1730	5	SILTSTONE: as above.
		95	SANDSTONE: as above. No fluorescence.
1730	1735	5	SILTSTONE: light brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, common nodular pyrite, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE: greyish brown to dusky brown, carbonaceous grading to silty Coal, common black carbonaceous laminations, trace micromica, soft to firm, sub-blocky.
		90	SANDSTONE: as above, dominantly medium. No fluorescence. First coal at 1738.0 mMDRT. Gas Peak at 1733.0 mMDRT: 156 / 38 units BG. Base of TFC at 1736.0 mMDRT (1580.2 mTVDRT).

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1735	1740	5	COAL: black, sub vitreous, brittle, common nodular pyrite, silty grading to carbonaceous Siltstone, angular, sub blocky.
		5	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		85	SANDSTONE: clear to translucent, fine to medium, occasionally very coarse, dominantly medium, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, common nodular pyrite, hard, loose, occasionally bit crushed to rock flour, poor to fair inferred and visual porosity. No fluorescence.
1740	1745	Trace	COAL: as above.
		25	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		70	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence. Gas Peak at 1745.0 mMDRT: 136 / 28 units BG.
1745	1750	Trace	COAL: as above.
		65	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		30	SANDSTONE: as above. No fluorescence.
1750	1755	Trace	COAL: as above.
		60	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		40	SANDSTONE: as above. No fluorescence. Gas Peak at 1756.0 mMDRT: 104 / 34 units BG.
1755	1760	Trace	COAL: as above.
		80	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		20	SANDSTONE: as above. No fluorescence.
			Gas Peak at 1762.0 mMDRT: 101/ 34 units BG.
1760	1765	Trace	COAL: as above.
		90	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		10	SANDSTONE: as above. No fluorescence.
			Gas Peak at 1770.0 mMDRT: 190 / 44 units BG.
1765	1770	85	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		15	SANDSTONE: as above. No fluorescence.
			Gas Peak at 1774.0 mMDRT: 165 / 40 units BG.
1770	1775	Trace	COAL: black, sub vitreous, brittle, trace micromica, common nodular pyrite, occasionally brownish black, silty grading to carbonaceous Siltstone, angular, sub blocky.
		90	SILTSTONE: light brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, common nodular pyrite, soft to firm, amorphous to sub-blocky.
		5	SILTSTONE: greyish brown to dusky brown, carbonaceous grading to silty Coal, common black carbonaceous laminations, trace micromica, soft to firm, sub-blocky.
		5	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
			Gas Peak at 1778.0 mMDRT: 124 / 53 units BG.

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Interval (m) From To		%	Lithology / Show Description
1775	1780	5	COAL: as above.
		75	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		20	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace nodular pyrite, hard, loose, trace white argillaceous matrix and occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
1780	1785	Trace	COAL: as above.
		95	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		5	SANDSTONE: as above. No fluorescence.
1785	1790	Trace	COAL: as above.
		40	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		60	SANDSTONE: clear to translucent, very fine to medium, dominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, trace micromica, hard, loose, trace white argillaceous matrix and occasionally bit crushed to rock flour, poor to fair inferred porosity. No fluorescence.
1790	1795	60	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		40	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, trace micromica, hard, loose, trace white argillaceous matrix and occasionally bit crushed to rock flour, poor to fair inferred porosity. No fluorescence.
1795	1800	45	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		50	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly very coarse, poorly sorted, sub angular to sub rounded, trace pyrite cement, trace nodular pyrite, hard, loose, occasionally bit crushed to rock flour, poor to fair inferred porosity. FLUORESCENCE: Trace from cavings, dull pinpoint yellowish green fluorescence, very slow bleeding direct cut, thin film residue. Mudlog Bar: 0.0
1800	1805	35	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		60	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
1805	1810	Trace	COAL: black, sub vitreous, brittle, trace micromica, common nodular pyrite, occasionally brownish black, silty grading to carbonaceous Siltstone, angular, sub blocky.
		20	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		75	SANDSTONE: as above.
1810	1815	45	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SILTSTONE: carbonaceous , as above, grading to silty Coal.
		50	SANDSTONE: as above.
1815	1820	Trace	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		30	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.

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Interval (m) From To		%	Lithology / Show Description
1820	1825	70	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, occasionally fractured quartz grains, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
		Trace	COAL: black, sub vitreous, brittle, trace micromica, common nodular pyrite, occasionally brownish black, silty grading to carbonaceous Siltstone, angular, sub blocky.
		20	SILTSTONE: light brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, common nodular pyrite, soft to firm, amorphous to sub-blocky.
		Trace	SILTSTONE: greyish brown to dusky brown, carbonaceous grading to silty Coal, common black carbonaceous laminations, trace micromica, soft to firm, sub-blocky.
1825	1830	80	SANDSTONE: clear to translucent, fine to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, occasionally fractured quartz grains, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
		Trace	COAL: as above.
		40	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.
1830	1835	60	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, poor to fair inferred porosity. No fluorescence.
		Trace	COAL: as above.
		30	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		Trace	SILTSTONE: carbonaceous , as above, grading to silty Coal.
1835	1840	70	SANDSTONE: as above. FLUORESCENCE: Trace moderately bright pinpoint orange yellow fluorescence, very slow blooming direct cut, thin ring residue. Mudlog Bar: 0.0
		Trace	COAL: as above.
		60	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		40	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, poor to fair inferred porosity. No fluorescence.
1840	1845	Trace	COAL: as above.
		5	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		75	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		20	SANDSTONE: as above.
1845	1850	5	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		90	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		5	SANDSTONE: clear to translucent, very fine to medium, dominantly fine, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, poor inferred porosity. No fluorescence.
1850	1855	95	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SANDSTONE: as above.
1855	1860	95	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SANDSTONE: as above.
1860	1865	95	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		5	SANDSTONE: as above.
1865	1870	40	SILTSTONE: arenaceous , as above, grading to very fine Sandstone.
		60	SANDSTONE: as above.
1870	1875	10	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		90	SANDSTONE: clear to translucent, fine to very coarse, dominantly medium to coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
1875	1880	5	COAL: as above.
		60	SILTSTONE: as above.
		35	SANDSTONE: as above.
1880	1885	5	COAL: as above.
		65	SILTSTONE: as above.
		30	SANDSTONE: as above.
			Top of L 095 Sand at 1886.0 mMDRT (1730.0 mTVDRT).
1885	1890	60	SILTSTONE: as above.
		40	SANDSTONE: as above.
1890	1895	50	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		50	SANDSTONE: clear to translucent, very fine to medium, dominantly very fine to fine, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair inferred porosity. No fluorescence.
1895	1900	70	SILTSTONE: as above.
		30	SANDSTONE: as above.
1900	1905	70	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, very fine to coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair inferred porosity. No fluorescence.
1905	1910	50	SILTSTONE: as above.
		50	SANDSTONE: as above.
			Top of L 110 Sand at 1917.0 mMDRT (1760.9 mTVDRT).

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1910	1915	70	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
1915	1920	30	SANDSTONE: as above.
		60	SILTSTONE: as above.
		40	SANDSTONE: clear to translucent, very fine to coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair inferred porosity. No fluorescence.
1920	1925	60	SILTSTONE: as above.
1925	1930	40	SANDSTONE: as above.
			Midnight depth 09 February 2005 = 1926.0 mMDRT (1770.0 mTVRDT)
		5	COAL: black, sub vitreous, brittle, trace micromica, common nodular pyrite, occasionally brownish black, silty grading to carbonaceous Siltstone, angular, sub blocky.
		80	SILTSTONE: as above.
1930	1935	15	SANDSTONE: as above.
			Top of L 150 Sand at 1937.0 mMDRT (1780.9 mTVDRDT).
		5	COAL: as above.
		50	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
1935	1940	45	SANDSTONE: as above.
		5	COAL: as above.
		20	SILTSTONE: as above.
		75	SANDSTONE: clear to translucent, very fine to coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair inferred porosity. No fluorescence.
1940	1945		Top of L 160 Sand at 1945.0 mMDRT (1788.9 mTVDRDT).
		10	COAL: as above.
		60	SILTSTONE: as above.
		30	SANDSTONE: as above.
1945	1950	15	COAL: black, sub vitreous, brittle, trace micromica, common nodular pyrite, occasionally brownish black, silty grading to carbonaceous Siltstone, angular, sub blocky.
1950	1955	60	SILTSTONE: as above.
		25	SANDSTONE: as above.
		5	COAL: as above.
		10	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
1955	1960	85	SANDSTONE: clear to translucent, medium to coarse, occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair inferred porosity. No fluorescence.
		10	COAL: black, sub vitreous, brittle, trace micromica, common nodular pyrite, occasionally brownish black, silty grading to carbonaceous Siltstone, angular, sub blocky.
		55	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1960	1965	35	SANDSTONE: as above.
		Trace	COAL: as above.
		40	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair inferred porosity. No fluorescence.
1965	1970		Top of L 200 Sand at 1971.0 mMDRT (1814.8 mTVDRT).
		60	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
1970	1975	40	SANDSTONE: as above.
		10	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
1975	1980	80	SILTSTONE: as above.
		20	SANDSTONE: as above.
1980	1985	20	SILTSTONE: as above.
		80	SANDSTONE: as above.
1985	1990	50	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		50	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
1990	1995	75	SILTSTONE: as above.
		25	SANDSTONE: as above.
1995	2000	Trace	COAL: trace, brownish black, earthy, uneven fracture, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.
		95	SILTSTONE: as above.
		5	SANDSTONE: as above.
		5	COAL: as above.
2000	2005	80	SILTSTONE: as above.
		15	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, common angular fractured quartz grains, trace micromica, common pyrite cement, common disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
		Trace	COAL: as above.
2005	2010	25	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		75	SANDSTONE: as above.
2010	2015	5	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2015	2020	95	SANDSTONE: as above.
		Trace	SILTSTONE: as above.
		100	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, common angular fractured quartz grains, trace micromica, common pyrite cement, common disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
2020	2025	Trace	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		50	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		50	SANDSTONE: as above.
2025	2030		Gas Peak at 2029.0 mMDRT: 170 / 65 units BG.
		5	COAL: trace, brownish black, earthy, uneven fracture, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.
		10	SILTSTONE: as above.
		85	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, common angular fractured quartz grains, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
			Top of L 400 Sand at 2041.0 mMDRT (1884.6 mTVDRT).
		5	COAL: as above.
2030	2035	10	SILTSTONE: as above.
		85	SANDSTONE: as above.
2035	2040	10	COAL: as above.
		20	SILTSTONE: as above.
		70	SANDSTONE: as above.
2040	2045	10	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		90	SANDSTONE: clear to translucent, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, common disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
2045	2050	Trace	COAL: as above.
		70	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, rare moderate orange pink, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
2050	2055	25	SILTSTONE: as above.
		75	SANDSTONE: as above.
2055	2060	Trace	COAL: trace, brownish black, earthy, uneven fracture, common pyrite laminations, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		Trace	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		10	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		90	SANDSTONE: clear to translucent, rare moderate orange pink, medium to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, common bit crushed to rock flour, fair to good inferred porosity. No fluorescence.
2060	2065	Trace	SILTSTONE: as above.
		100	SANDSTONE: clear to translucent, medium to occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
2065	2070	10	SILTSTONE: as above.
		90	SANDSTONE: as above.
2070	2075	Trace	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		15	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		85	SANDSTONE: as above.
2075	2080	Trace	CLAYSTONE: as above.
		20	SILTSTONE: as above.
		80	SANDSTONE: as above.
2080	2085	Trace	CLAYSTONE: as above.
		40	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. No fluorescence.
2085	2090	5	COAL: trace, brownish black, earthy, uneven fracture, common pyrite laminations, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.
		20	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		75	SANDSTONE: as above.
2090	2095	15	COAL: as above.
		15	SILTSTONE: as above.
		70	SANDSTONE: as above.
2095	2100	Trace	COAL: as above.
		25	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		75	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, good inferred porosity. FLUORESCENCE: Trace, moderately bright to bright pinpoint greenish yellow fluorescence, slow bleeding direct cut, thin ring residue. Mudlog Bar: 0.0
2100	2105	Trace	COAL: as above.
		70	SILTSTONE: as above.
		30	SANDSTONE: as above. FLUORESCENCE: Trace, moderately bright to bright pinpoint greenish yellow fluorescence, very slow bleeding direct cut, thick ring residue. Mudlog Bar: 0.0
2105	2110	80	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		20	SANDSTONE: clear to translucent, fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, poor to fair inferred porosity. FLUORESCENCE: Trace, moderately bright pinpoint greenish yellow fluorescence, very slow bleeding direct cut, thick ring residue. Mudlog Bar: 0.0
2110	2115	35	SILTSTONE: as above.
		65	SANDSTONE: as above, common nodular pyrite. FLUORESCENCE: Trace, moderately bright patchy greenish yellow fluorescence, slow bleeding direct cut, thick ring residue. Mudlog Bar: 0.0
2115	2120	80	SILTSTONE: as above.
		20	SANDSTONE: as above. No fluorescence.
2120	2125	80	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		20	SANDSTONE: as above. No fluorescence.
2125	2130	5	COAL: trace, brownish black, earthy, uneven fracture, trace pyrite nodules, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.
		90	SILTSTONE: as above.
		5	SANDSTONE: as above. No fluorescence. Top of T1 Upper at 2130.0 mMDRT (1973.5 mTVDRT).
			Gas Peak from 2130.5 to 2140.5 mMDRT: 213 / 65 units BG, with an increase in the ratios of the C4 and C5 components.
2130	2135	35	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2135	2140	65	SANDSTONE: clear to translucent, coarse to very coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, occasionally bit crushed to rock flour, very good inferred and visual porosity. FLUORESCENCE: 30%, bright even greenish yellow fluorescence, fast blooming direct cut, very thick ring residue. Mudlog Bar: 1.0
		5	SILTSTONE: as above.
		95	SANDSTONE: clear to translucent, fine to very coarse, occasionally bit crushed to fine grained and rock flour, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, very good inferred and visual porosity. FLUORESCENCE: 70%, bright even greenish yellow fluorescence, fast blooming direct cut, very thick ring residue. Mudlog Bar: 2.0
2140	2145	5	COAL: trace, brownish black, earthy, uneven fracture, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.
		90	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, occasionally silty blackish brown with carbonaceous laminations grading to carbonaceous Siltstone, trace disseminated pyrite, trace micromica, soft to firm, amorphous to sub-blocky.
		5	SANDSTONE: clear to translucent, coarse to very coarse, dominantly very coarse, moderately well sorted, sub angular to predominantly sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, very good inferred and visual porosity. FLUORESCENCE: 5%, bright spotted greenish yellow fluorescence, moderately rapid blooming direct cut, very thick ring residue. Mudlog Bar: 0.3
2145	2150	Trace	COAL: as above.
		95	SILTSTONE: as above.
		5	SANDSTONE: as above. FLUORESCENCE: 5%, bright spotted greenish yellow fluorescence, slow bleeding direct cut, thin ring residue. Mudlog Bar: 0.0
Spot 2150	2155	100	SILTSTONE: bit crushed as above, slow drilling, no dolomite seen in sample.
		5	COAL: as above.
		95	SILTSTONE: as above.
2155	2160	Trace	SANDSTONE: as above.
		Trace	COAL: as above.
		100	SILTSTONE: as above.
2160	2165	Trace	SANDSTONE: as above.
		25	COAL: trace, brownish black, earthy, uneven fracture, common pyrite nodules, silty grading to carbonaceous Siltstone, moderately hard, sub blocky.
		70	SILTSTONE: as above.
2165	2170	5	SANDSTONE: as above. FLOURESCENCE: samples 2155, 2160, 2165 and 2170 had trace fluorescence (3 to 7 grains) as cavings from above, moderately bright pinpoint greenish yellow fluorescence, very slow bleeding direct cut, thin ring residue.
		95	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2170	2175	5	SANDSTONE: clear to translucent, fine to medium, dominantly medium, moderately well sorted, sub angular to sub rounded, trace micromica, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, fair inferred and visual porosity. No fluorescence.
		95	SILTSTONE: as above.
2175	2180	5	SANDSTONE: as above. No fluorescence.
		30	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, trace nodular pyrite, common carbonaceous laminations, soft to firm in part, amorphous to sub blocky.
2180	2185	70	SANDSTONE: clear to translucent, fine to very coarse, dominantly coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, fair to good inferred porosity. FLUORESCENCE: 50%, bright even greenish yellow fluorescence, moderately rapid blooming direct cut, thick ring residue. Mudlog Bar: 2.0
		40	SILTSTONE: as above.
		60	SANDSTONE: as above. FLUORESCENCE: 20%, bright even greenish yellow fluorescence, moderately rapid blooming direct cut, thick ring residue. Mudlog Bar: 1.0
		40	SILTSTONE: as above.
2185	2190	60	SANDSTONE: clear to translucent, very fine to very coarse, dominantly fine to medium, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, fair to good inferred porosity. FLUORESCENCE: 40%, bright even greenish yellow fluorescence, fast blooming direct cut, thick ring residue. Mudlog Bar: 2.0
		20	SILTSTONE: as above.
2190	2195	80	SANDSTONE: clear to translucent, occasionally white, very fine to coarse, dominantly very fine to fine, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, trace white argillaceous matrix and bit crushed rock flour, minor aggregates, trace silica cement, fair to good inferred and visual porosity. FLUORESCENCE: 50%, bright even greenish yellow fluorescence, moderately rapid blooming direct cut, thick ring residue. Mudlog Bar: 2.0
		20	SILTSTONE: as above.
2195	2200	60	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, trace nodular pyrite, common carbonaceous laminations, soft to firm in part, amorphous to sub blocky.
		40	SANDSTONE: clear to translucent, occasionally white, very fine to coarse, dominantly very fine to fine, occasionally medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, trace bit crushed rock flour, minor aggregates, trace silica cement, fair to good inferred and visual porosity. FLUORESCENCE: 40%, bright even greenish yellow fluorescence, moderately rapid blooming direct cut, thick ring residue. Mudlog Bar: 2.0
2200	2205	70	SILTSTONE: as above.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2205	2210	30	SANDSTONE: clear to translucent, occasionally white, very fine to coarse, dominantly very fine to fine, occasionally medium to coarse, moderately well sorted, sub angular to sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, trace white argillaceous matrix and bit crushed rock flour, trace aggregates, trace silica cement, fair to good inferred and visual porosity. FLUORESCENCE: 20%, bright patchy greenish yellow fluorescence, slow bleeding direct cut, thick ring residue. Mudlog Bar: 0.5
		70	SILTSTONE: as above. SANDSTONE: clear to translucent, occasionally white, very fine to coarse, dominantly very fine to fine, occasionally medium to coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, trace white argillaceous matrix and bit crushed rock flour, trace aggregates, trace silica cement, fair to good inferred and visual porosity. FLUORESCENCE: Trace to 5% (cavings?), bright pinpoint greenish yellow fluorescence, very slow bleeding direct cut, thick ring residue. Mudlog Bar: 0.0
2210	2215	30	SILTSTONE: as above.
		70	SANDSTONE: as above. FLUORESCENCE: Trace (cavings?), bright pinpoint greenish yellow fluorescence, very slow bleeding direct cut, thick ring residue. Mudlog Bar: 0.0 Midnight depth 10 February 2005 = 2217.0 mMDRT (2061.0 mTVRDT)
2215	2220	5	CLAYSTONE: pale blue to medium blueish grey, trace micromica, moderately hard, sub blocky to blocky.
		20	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, trace nodular pyrite, common carbonaceous laminations, soft to firm in part, amorphous to sub blocky.
		75	SANDSTONE: clear to translucent, occasionally white, very fine to very coarse, dominantly coarse, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, loose, trace white argillaceous matrix and bit crushed rock flour, trace aggregates, trace silica cement, fair to good inferred and visual porosity. No fluorescence.
2220	2225	20	SILTSTONE: as above.
		80	SANDSTONE: as above. No fluorescence.
2225	2230	5	CLAYSTONE: as above.
		10	SILTSTONE: as above.
2230	2235	85	SANDSTONE: as above. No fluorescence.
		Trace	CLAYSTONE: as above.
		10	SILTSTONE: as above.
2235	2240	90	SANDSTONE: clear to translucent, occasionally white, fine to coarse, dominantly fine to medium, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite cement, trace disseminated and nodular pyrite, hard, dominantly loose, trace bit crushed rock flour, trace aggregates, trace silica cement, fair to good inferred porosity. No fluorescence.
		20	SILTSTONE: as above.
		80	SANDSTONE: as above. No fluorescence.
2240	2245	60	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, trace nodular pyrite, common carbonaceous laminations, soft to firm in part, amorphous to sub blocky.

Tuna A3A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2245	2250	40	SANDSTONE: as above. No fluorescence.
		60	SILTSTONE: as above.
2250	2255	40	SANDSTONE: as above. No fluorescence.
		60	SILTSTONE: as above.
2255	2260	40	SANDSTONE: as above. No fluorescence.
		50	SILTSTONE: pale brown to moderate brown, arenaceous grading to very fine Sandstone, trace micromica, trace disseminated pyrite, trace nodular pyrite, common carbonaceous laminations, soft to firm in part, amorphous to sub blocky.
2260	2262 (TD)	50	SANDSTONE: as above. No fluorescence.
		50	SILTSTONE: as above.
		50	SANDSTONE: as above. No fluorescence.

TNA A3A TD criterion:

Drill to the Measured Depth equivalent to the TVDRT of the OOWC of 2043.82 m. Then drill 60.0 mMDRT rathole for Reeves wireline logging.

Based on the Inclination this MD (for the equivalent TVDRT of 2043.82 m) was 2200.5 mMDRT. Decided to drill to 2262.0 mMDRT.

The final Schlumberger Direction Driller's projected TVDRT was 2105.2 m for the drilled TD of 2262.0 mMDRT.

TNA A3A reached a TD of 2262.0 mMDRT = 2105.2 mTVDRT (-2073.9 mTVDSS) at 03:20 hrs 11 February 2005.

CBU. POOH to shoe.

Wiper Trip.

Trip gas 58 units at 12:25 hrs, 11 February 2005.

Last circulation at 14:00 hrs 11 February 2005.

Start POOH at 14:06 hrs 11 February 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 A3A Lithology / Show Descriptions

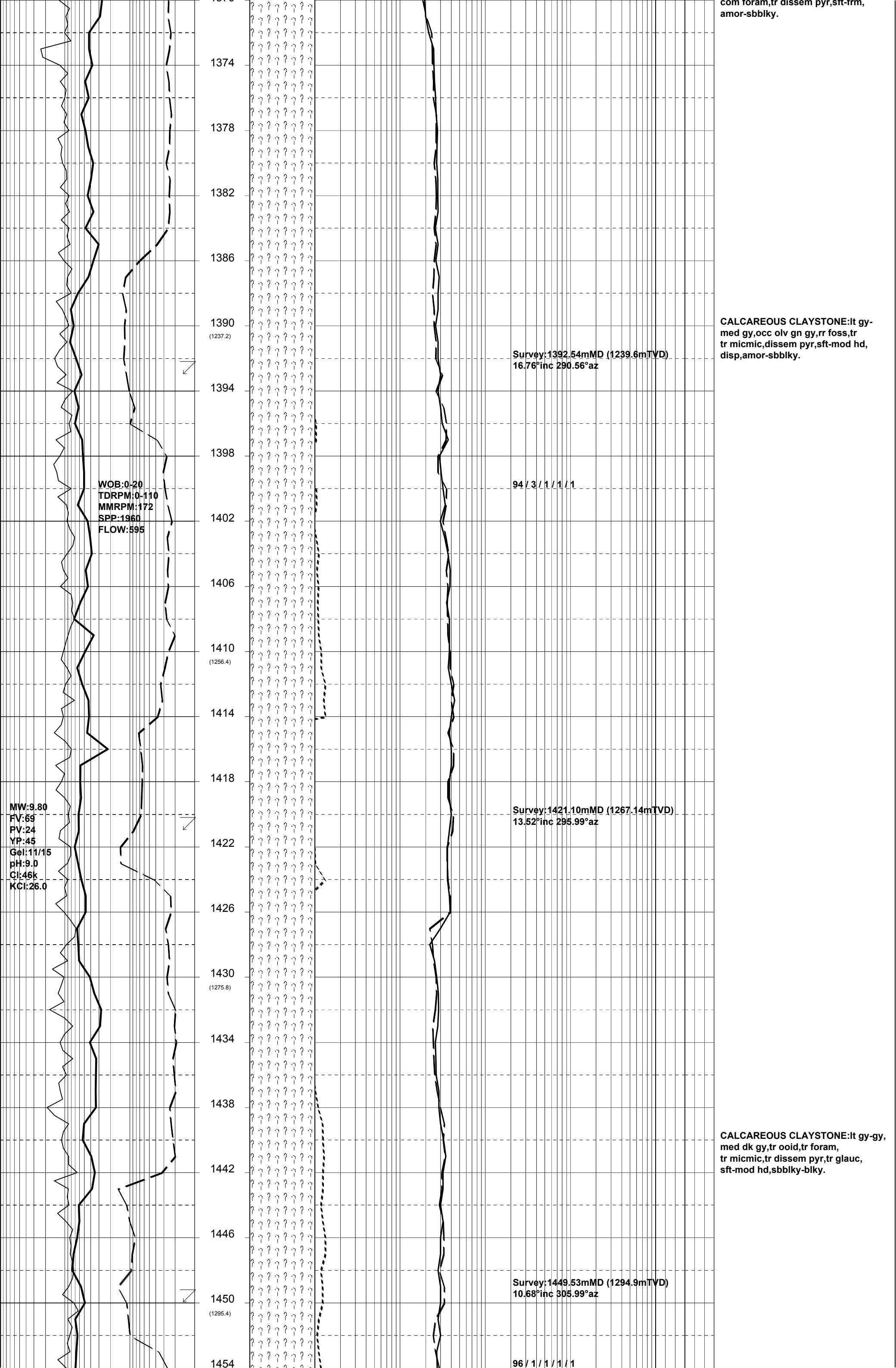
Interval (m) From To		%	Lithology / Show Description
			Logging Interval.
			Reeves Logging: As per the Logging protocol:
			Interval to be logged: from TD to 80 mTVDRT above the TOL.
			TOL at 1511.5 mMDRT = 1356.6 mTVDRT. 80.0 mTVDRT above = 1276.6 mTVDRT = 1430.0 mMDRT.
			At Logging speed from TD 2262.0 to 1430.0 mMDRT.
			At Tripping speed from 1430.0 mMDRT to the bottom of the milled window at 1218.1 mMDRT.
			Actual:
			At Logging speed from TD (2259.0 mMDRT) to 1216.0 mMDRT. At Tripping Speed from 1216.0 mMDRT to Surface .

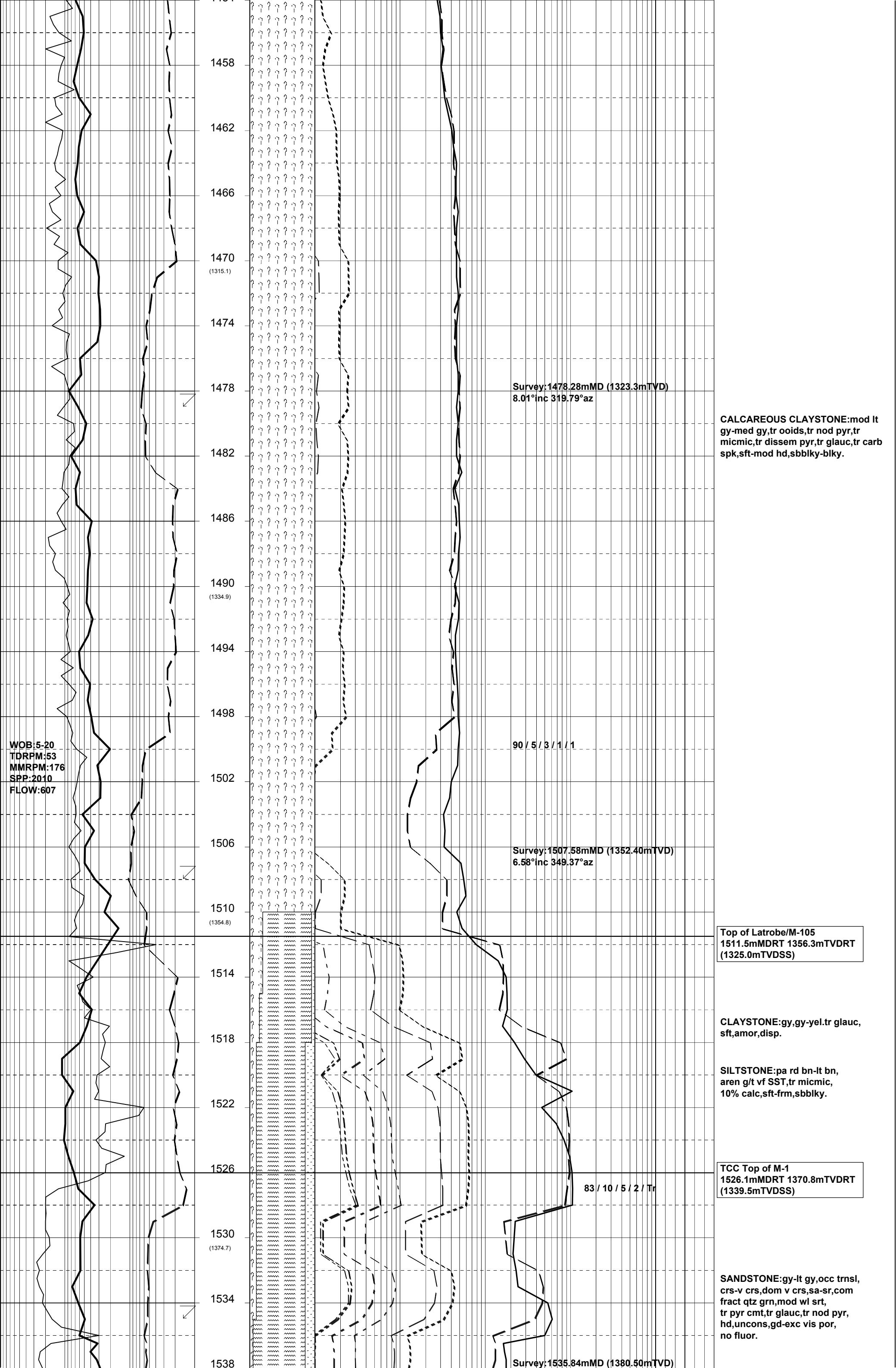
APPENDIX 4a

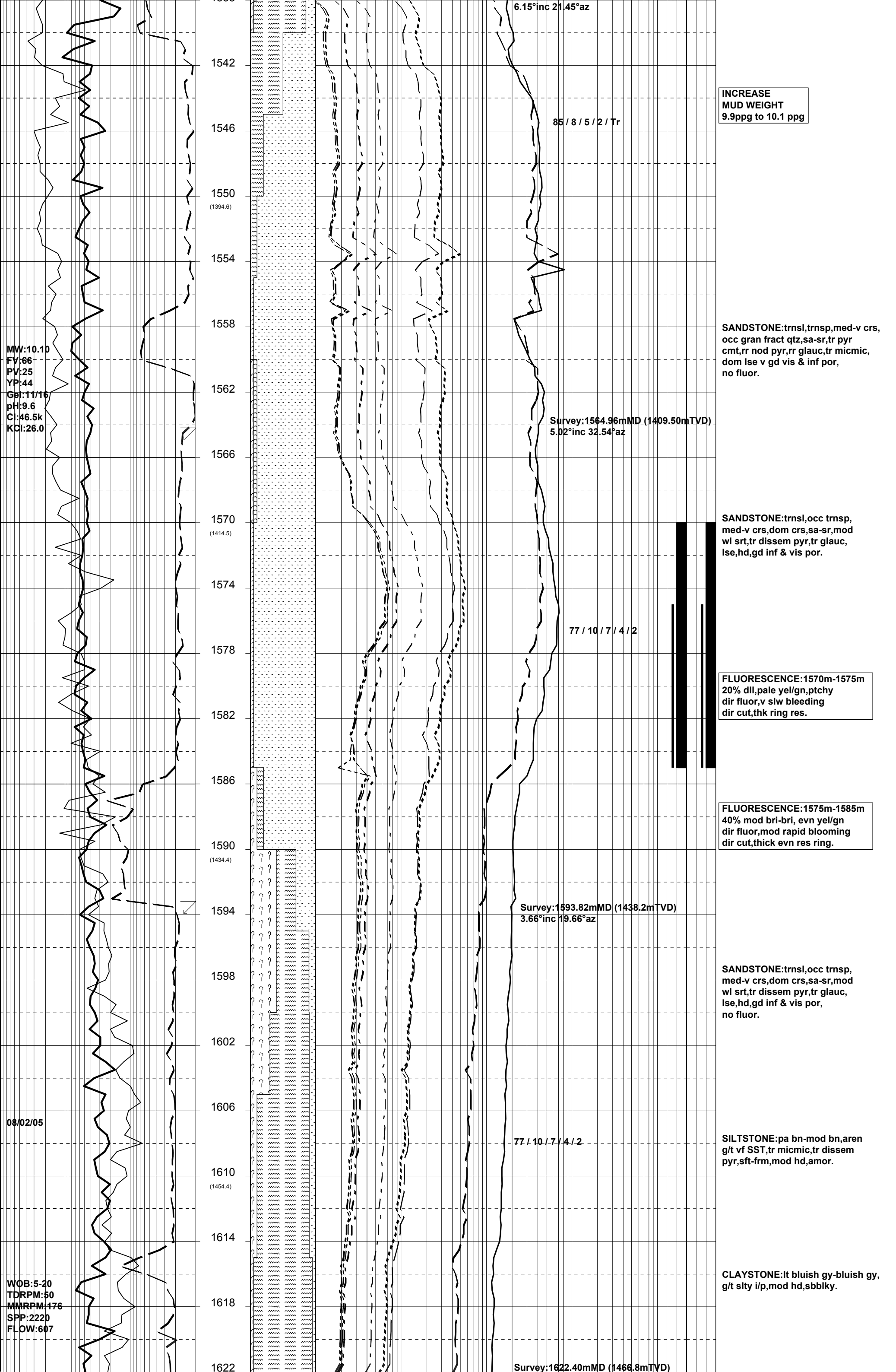
TUNA A3A

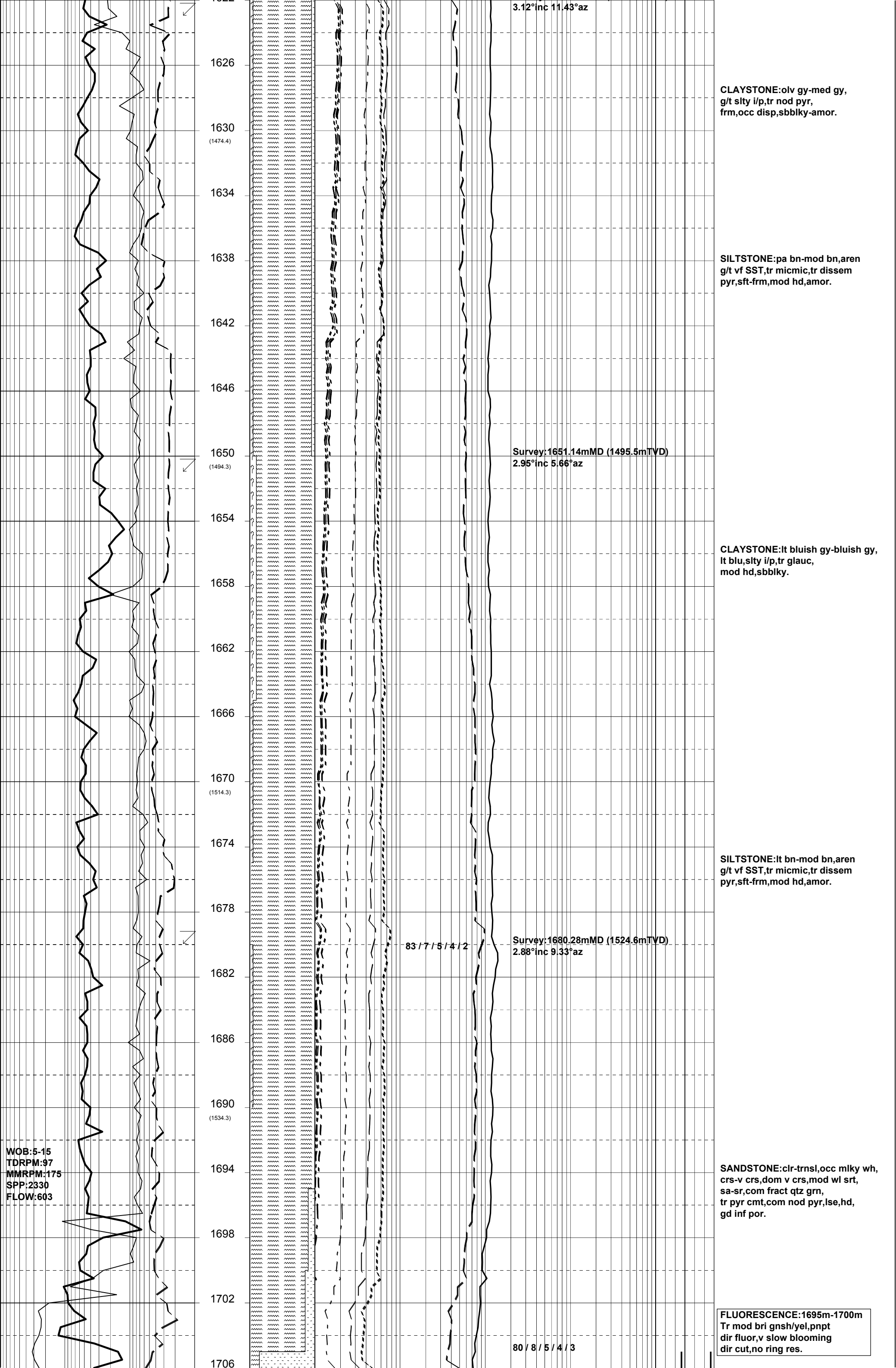
Mud Log

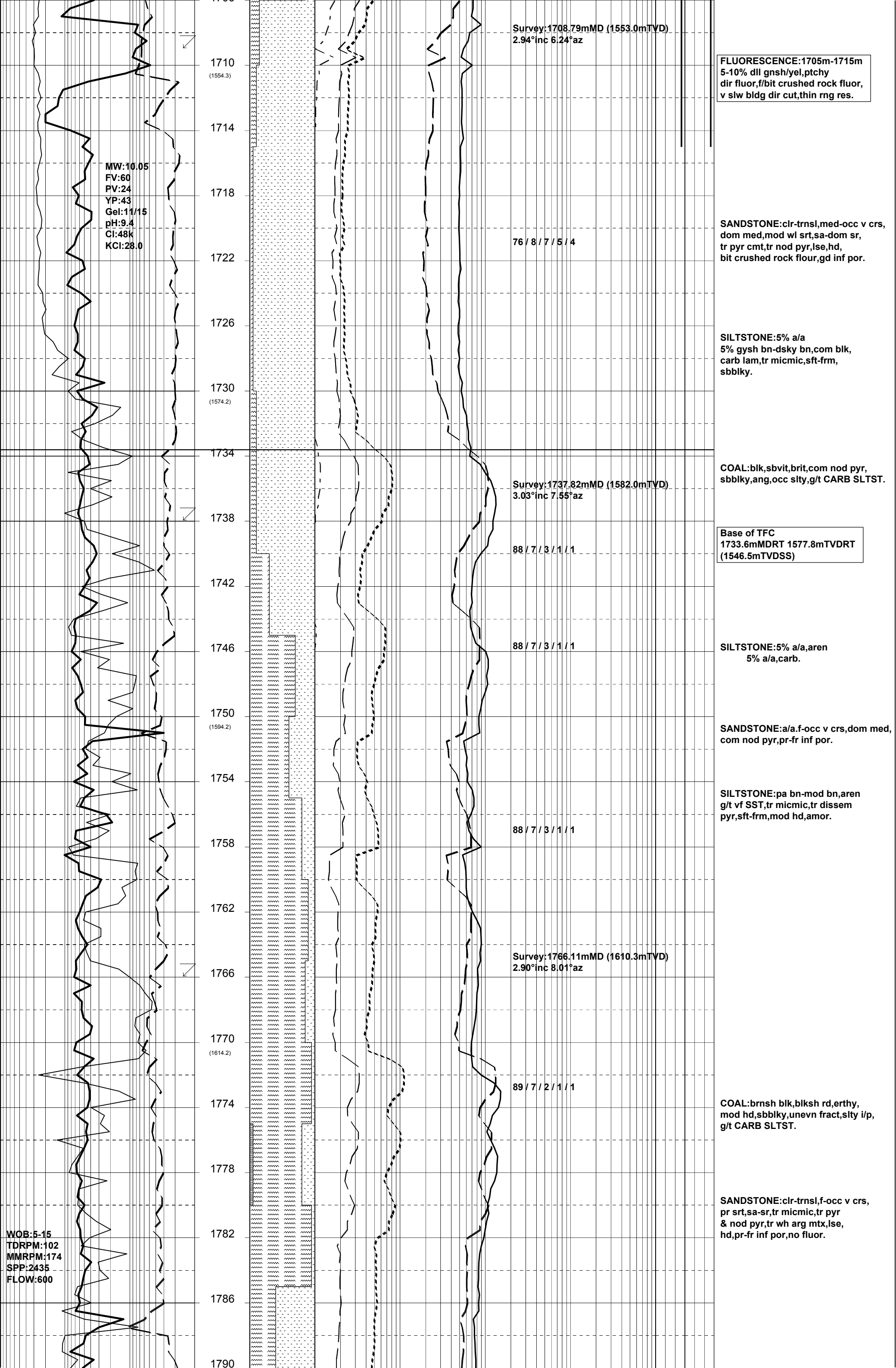
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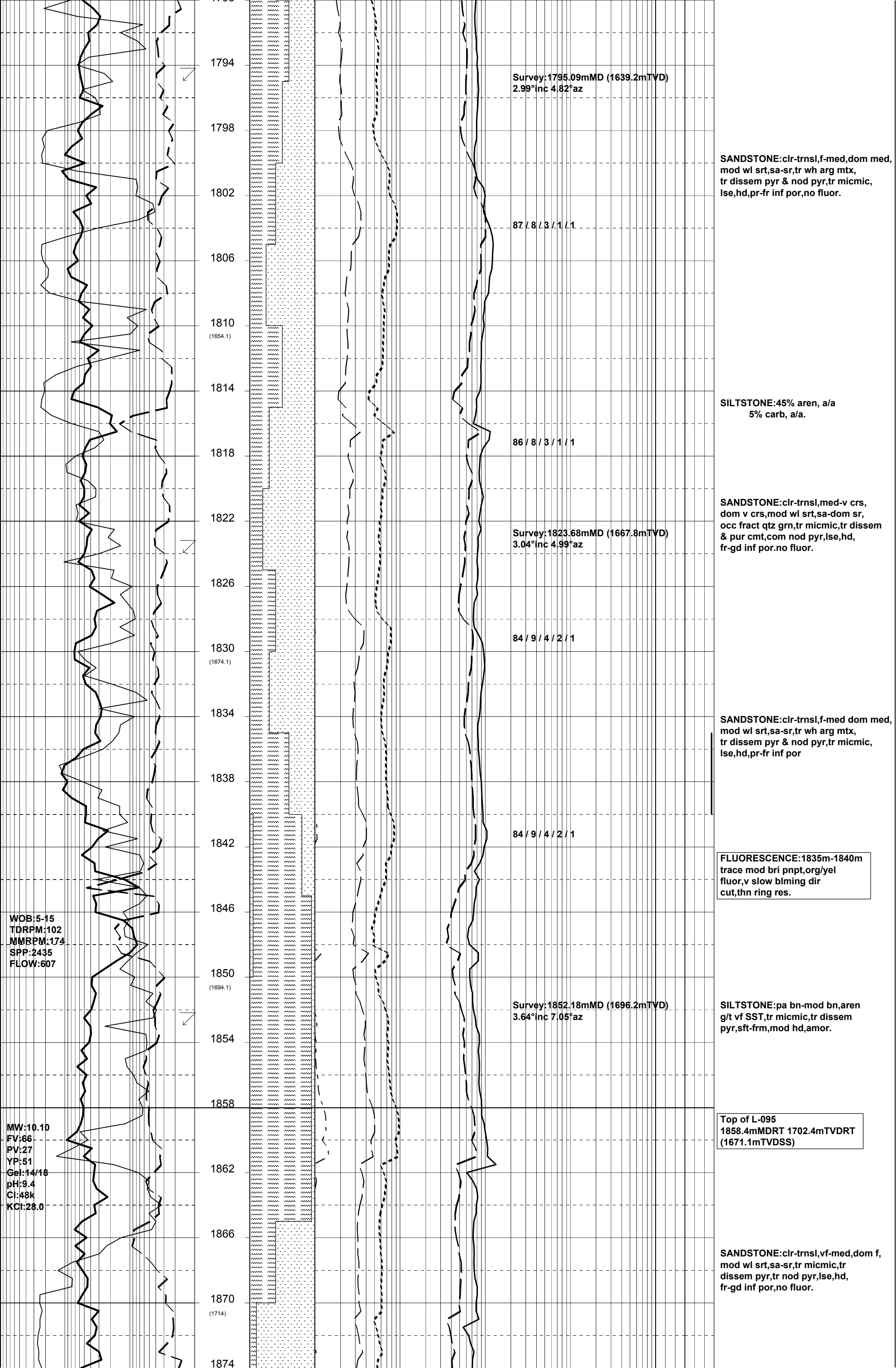


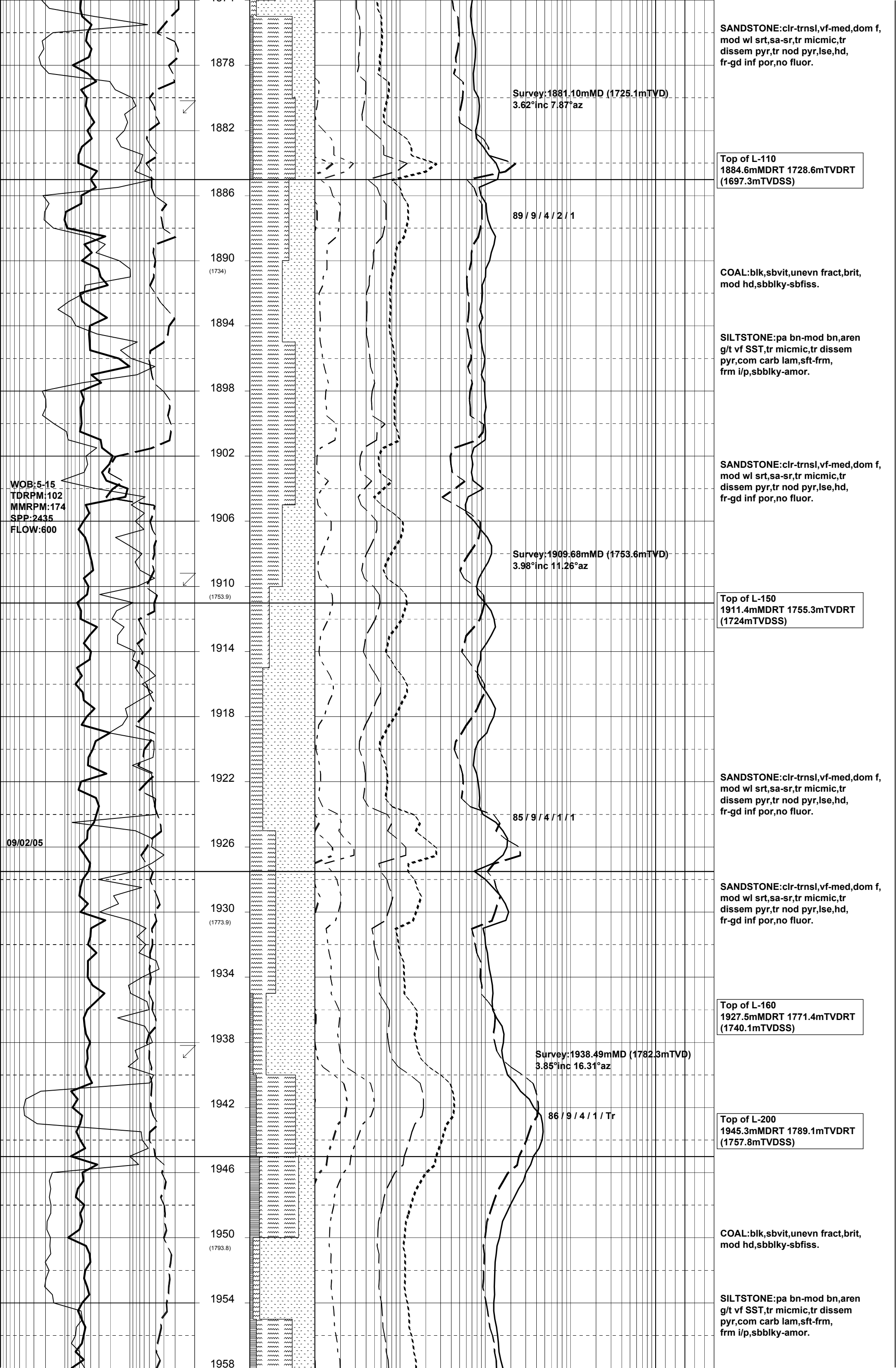












SANDSTONE:clr-trnsl,vf-med,dom f, mod wl srt,sa-sr,tr micmic,tr disse pyr,tr nod pyr,lse,hd, fr-gd inf por,no fluor.

Top of L-110
1884.6mMDRT 1728.6mTVDRT
(1697.3mTVDSS)

COAL:blk,sbvit,unevn fract,brit, mod hd,sbblky-sbfiss.

SILTSTONE:pa bn-mod bn,aren g/t vf SST,tr micmic,tr disse pyr,com carb lam,sft-frm, frm i/p,sbblky-amor.

SANDSTONE:clr-trnsl,vf-med,dom f, mod wl srt,sa-sr,tr micmic,tr disse pyr,tr nod pyr,lse,hd, fr-gd inf por,no fluor.

Top of L-150
1911.4mMDRT 1755.3mTVDRT
(1724mTVDSS)

SANDSTONE:clr-trnsl,vf-med,dom f, mod wl srt,sa-sr,tr micmic,tr disse pyr,tr nod pyr,lse,hd, fr-gd inf por,no fluor.

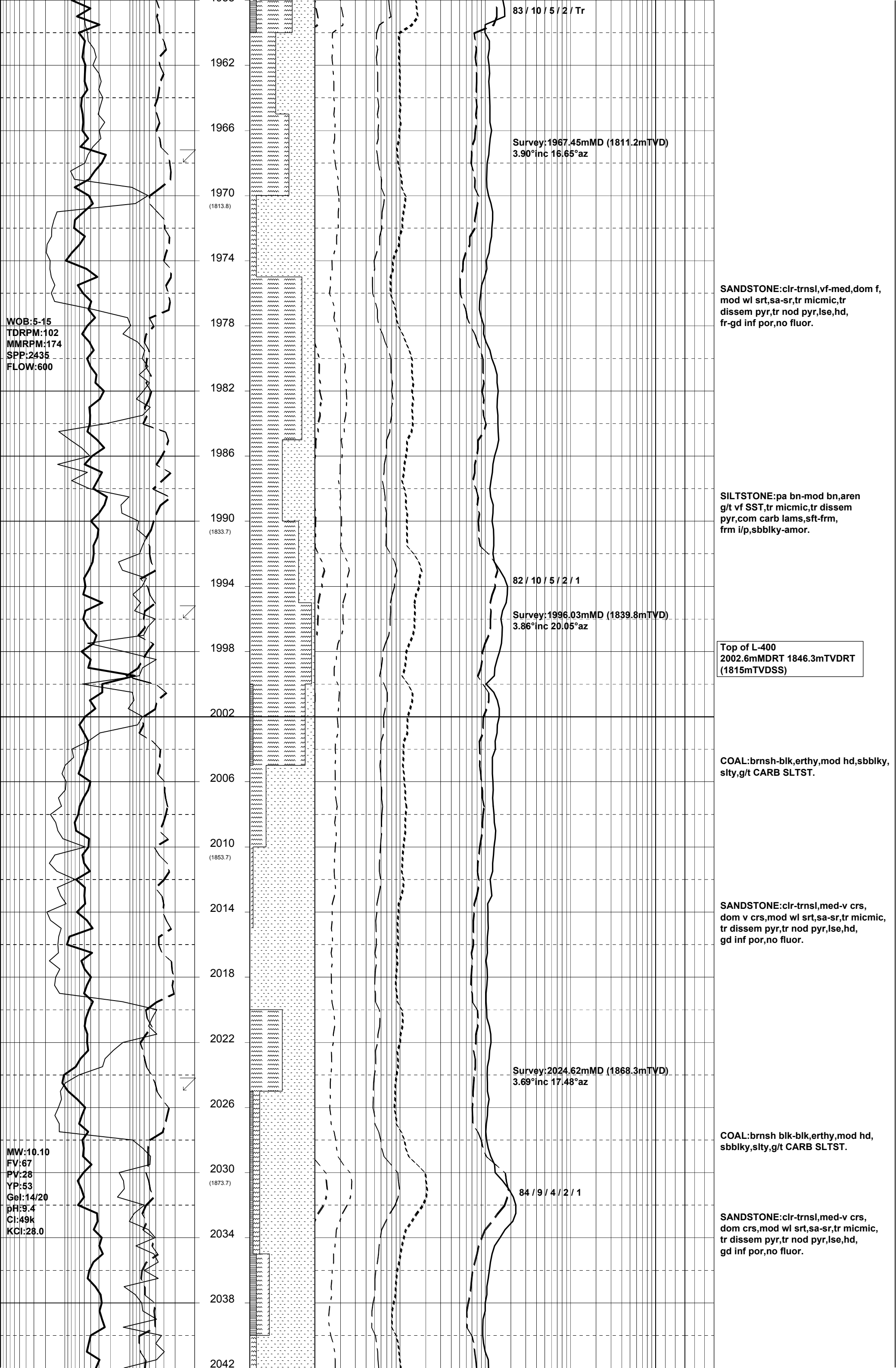
SANDSTONE:clr-trnsl,vf-med,dom f, mod wl srt,sa-sr,tr micmic,tr disse pyr,tr nod pyr,lse,hd, fr-gd inf por,no fluor.

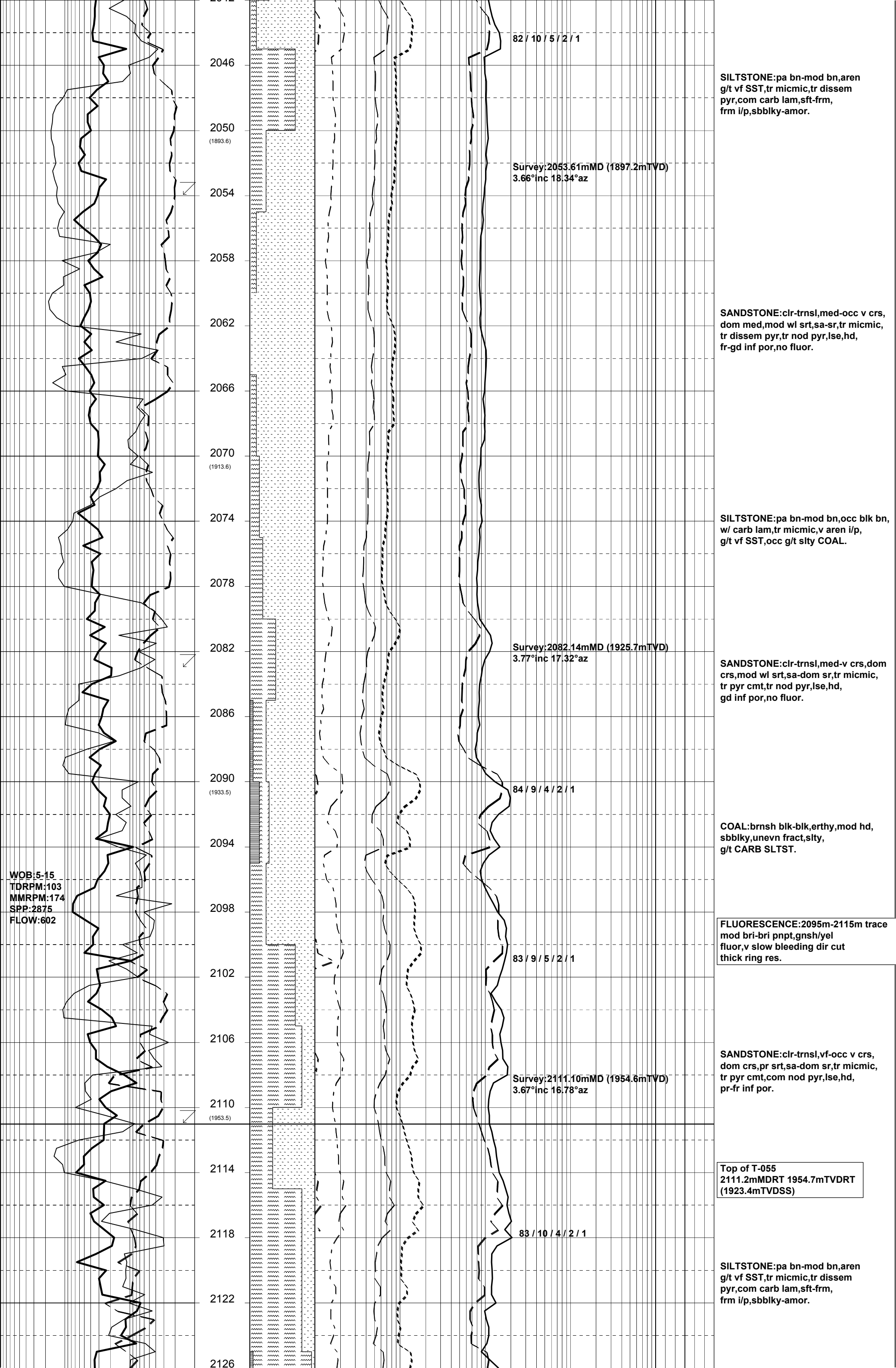
Top of L-160
1927.5mMDRT 1771.4mTVDRT
(1740.1mTVDSS)

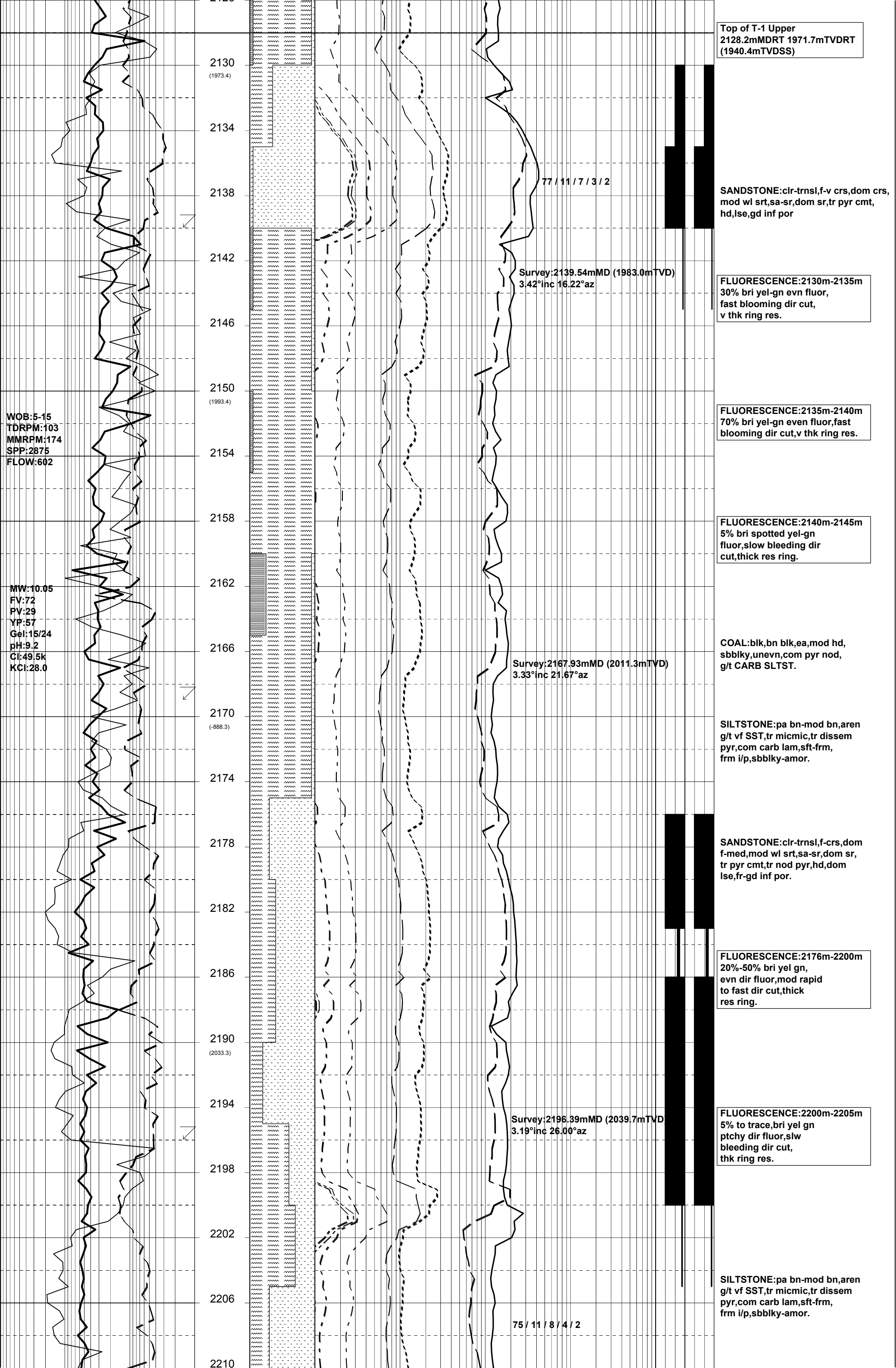
Top of L-200
1945.3mMDRT 1789.1mTVDRT
(1757.8mTVDSS)

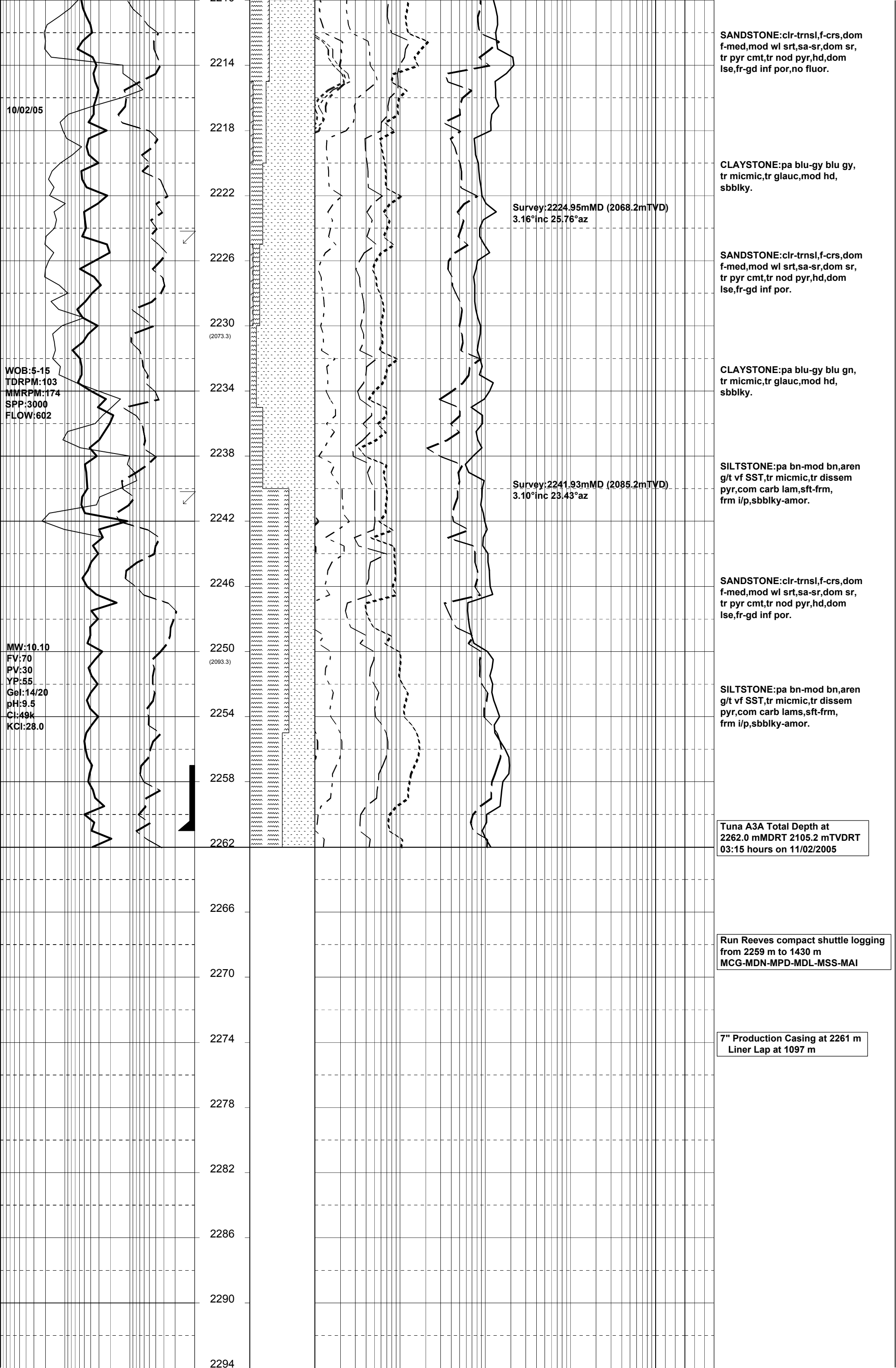
COAL:blk,sbvit,unevn fract,brit, mod hd,sbblky-sbfiss.

SILTSTONE:pa bn-mod bn,aren g/t vf SST,tr micmic,tr disse pyr,com carb lam,sft-frm, frm i/p,sbblky-amor.









[illegible]

APPENDIX 4b

TUNA A3A

Well Completion Log

WELL COMPLETION LOG

Scale – 1:200

TUNA A-3A

Gippsland Basin, Victoria
Concession: VIC/L9



POST-DRILL
LOCATION:
(Top T-1)

Latitude: 38° 10' 04.823" S
Longitude: 148° 24' 48.430" E
MGA X: 623816.72 mE
MGA Y: 5774600.15 mN
Depth: 2129.7m MDRT
(-1941.85mTVDSS)

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

DATES:

Spudded: 06/02/2005
Rig Released: 19/02/2005
I.P. Established: 06/03/2005
(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:

2262.0m 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

2.7m NOS

Ø = 17%

Sw = 32%

No Rec.

CORE

Rec.

PERFORATED
INTERVAL

PLUG

←SST

RECOVERED SIDE WALL CORE LITHOLOGY

SST - Sandstone

SLST - Siltstone

MST - Mudstone

SH - Shale

CLST - Claystone

LMST - Limestone

ML - Marl

COAL - Coal

←

SIDE WALL CORE - NO RECOVERY

←

FIT

←P2/11

MDT/RFT PRETEST RUN/SEAT NUMBER

←S11/2

MDT/RFT SAMPLE RUN/SAMPLE NUMBER

←P2/40

MDT VERTICAL/HORIZONTAL
PERMEABILITY TEST

PACKER

BRIDGE PLUG

LOG ANALYSIS DATA

NS - Net Sand

NOS - Net Oil Sand

NGS - Net Gas Sand

Sw - Water Saturation

MUD DATA

Ø - Porosity

Snd - Sand

MW - Mud Weight

FV - Funnel Velocity

PV - Plastic Velocity

YP - Yield Point

Gel - Gel Strength

pH - Acidity/Alkalinity

WL - Water Loss

Cl - Chloride

Ca - Calcium

Sol - Solids

H2O - Water

Oil -Oil

SHOW OR STAIN

HYDROCARBON CUT

FLUORESCENCE

GAS SHOW

OIL PRODUCTIVE

GAS PRODUCTIVE

INTERPRETED OIL PRODUCTION

INTERPRETED GAS PRODUCTION

INTERPRETED WATER PRODUCTION

WATER PRODUCTIVE

CONDENSATE PRODUCTION

INTEPRETED CONDENSATE BEARING

DSTG

DST WITH GAS RECOVERED

DSTO

DST WITH OIL RECOVERED

SURVEY POINT

13-3/8"

CASING SHOE

MUD

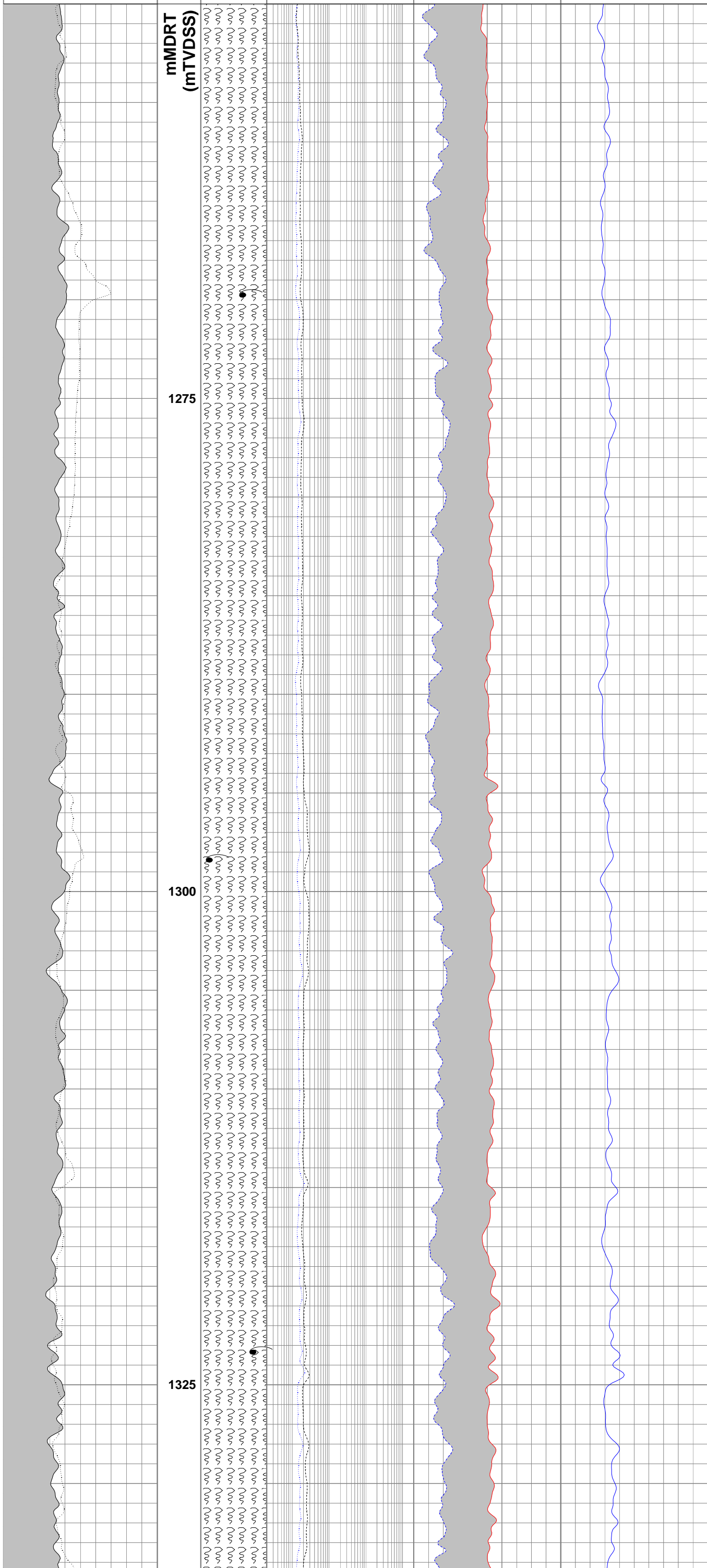
	Sandstone		Dolomite		Mica		Pelecypods
	Siltstone		Marl		Chert		Echinoids
	Mudstone		Anhydrite		Carbonaceous Matter		Fish Remains
	Claystone		Volcanics		Calcareous		Plant Remains
	Shale		Basement		Glauconite		Spores
	Coal		Granule		Corals		Leaves
	Limestone		Oolites		Bryozoans		Foram
	Micritic Limestone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

LOGGING AND SURVEYING				
Anadrill Schlumberger		Interval (mMDRT)	Reeves	Interval (mMDRT)
MWD (Directional & GR) – 2 Runs		1213.42 -2241.93	MCG-MDN-MPD-MSS-MDL	1216.5 – 2251.6
Date	06 February 2005 - 07 February 2005	07 February 2005 - 11 February 2005	11 February 2005 - 12 February 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	1232.0 mMDRT	2262.0 mMDRT	2262.0 mMDRT	
Depth Logger	1232.0 mMDRT	2262.0 mMDRT	2262.0 mMDRT	
Bottom Log Interval	1232.0 mMDRT	2241.93 mMDRT	2251.6 mMDRT	
Top Log Interval	1213.42mMDRT	1232.0 mMDRT	1216.5 mMDRT	
Casing Driller	1218.1 mMDRT	1218.1 mMDRT	1218.1 mMDRT	
Casing Logger	----	----	----	
Casing Size	9 5/8"	9 5/8"	9 5/8"	
Casing Weight	47.0 ppf	47.0 ppf	47.0 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	10.10 ppg	10.10 ppg	
Rm @ Measured Temp.	N/A	N/A	0.095 ohmm @ 25°C	
Rmf @ Measured Temp.	N/A	N/A	0.071 ohmm @ 25°C	
Rmc @ Measured Temp.	N/A	N/A	0.134 ohmm @ 25°C	
Max. Recorded Temp.	47.84°C	77.65°C	87.6°C	
Equipment / Location	Sale	Sale	Sale	
Recorded By	D.Hastie/R.Borjas	D.Hastie/R.Borjas	G. McManus/R. Tench	
Witnessed By	Trevor Lobo	Trevor Lobo	Trevor Lobo	

CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Shots/ft
----	----	---	1575	1577.5	Wireline

CASING				PLUGS		
Size	Set @ (mMDRT)	Sx Cmt	Formation	From (mMDRT)	To (mMDRT)	Sx Cmt
13.375"	635.3	---	Gippsland Limestone			
9.625"	1218.0	---	Latrobe Group			
7" Liner	2261.0	445	Latrobe Group	--	--	--

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

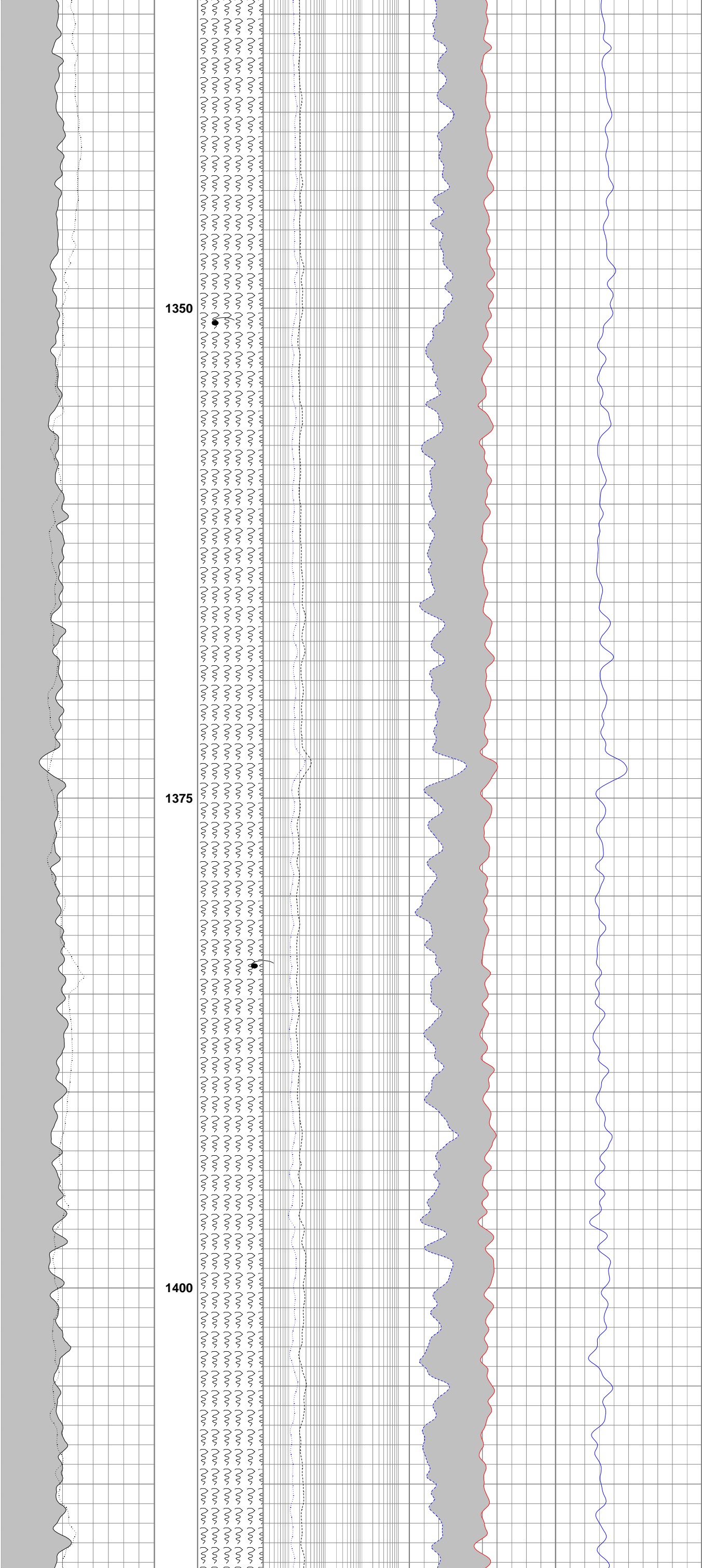


13 3/8"
635.3m

9 5/8"
1218.0m

1263
MW 9.8ppg
FV 54sec/qt
PV 18cP
YP 27
pH 9
KCl 28

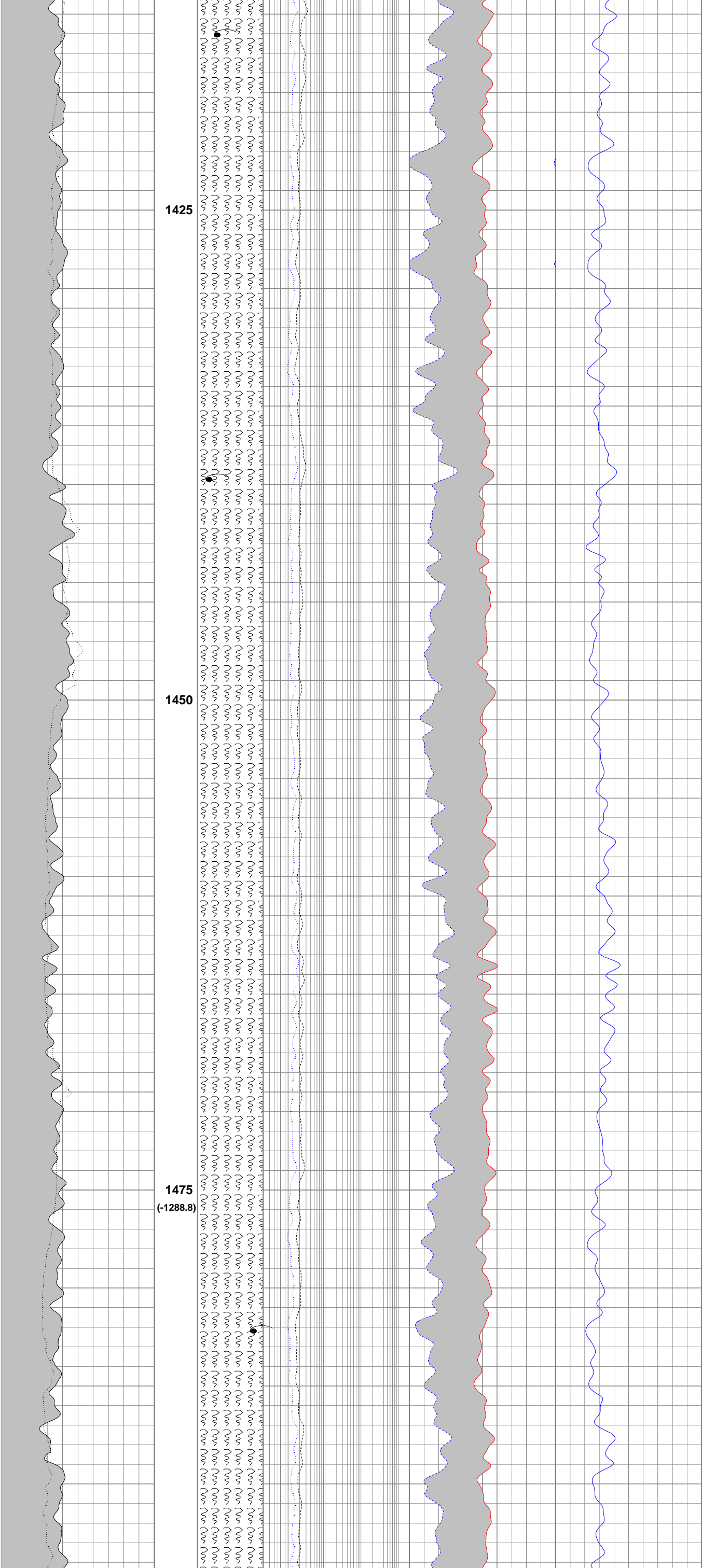
1296.1
ANG 27
DIR 289
(-1119.3)



1363.5
ANG 20
DIR 290
(-1180.7)

LAKES ENTRANCE FM

OLIGOCENE - MIOCENE



1425

1450

1475
(-1288.8)

1420
MW 9.8ppg
FV 69sec/qt
PV 24cP
YP 45
pH 9
KCl 28

1449.5
ANG 11
DIR 306
(-1263.6)

1500
(-1313.6)

Top Latrobe Group/M-105/Gurnard
1511.5mMDRT (-1325.2mTVDSS)

Gas bearing
5.2 MT Net
5.2 TVT Net
Ø = 11 %
Sw= 48 %

1525
(-1338.4)

Top Coarse Clastics (Top M1)
1526.1mMDRT
(-1339.7mTVDSS)

Gas bearing
49.0 MT Net
48.7 TVT Net
Ø = 23 %
Sw= 24 %

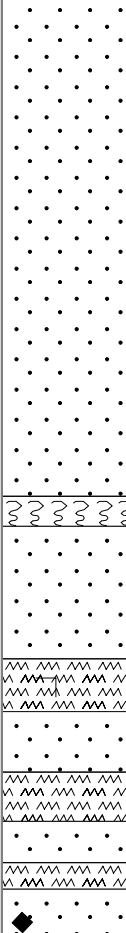
1535.8
ANG 6
DIR 21
(-1349.2)

1550
(-1363.3)

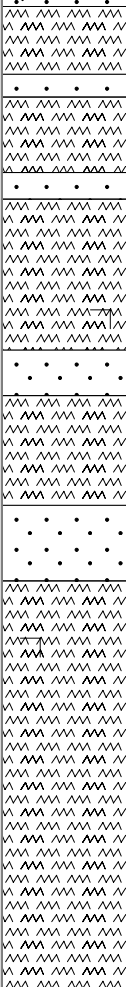
1559
MW 10.1ppg
FV 66sec/qt
PV 25cP
YP 44
pH 10
KCl 28

FLUORESCENCE:1570m-
1575m, 20% dil, pale
yel/gn, ptchy dir fluor, v
slw bleeding
dir cut, thk ring res.

1575
(-1388.2)



1600
(-1413.1)



1625
(-1438.1)



1650
(-1463.0)



FLUORESCENCE:1575m-1585m, 40% mod bri-bri, evn yel/gn dir fluor, mod rapid blooming dir cut, thick evn res ring.



Oil bearing
4.5 MT Net
4.5 TVT Net
Ø = 24 %
Sw= 64 %

1575.0m
1577.5m

1622.4
ANG 3
DIR 11
(-1466.8)

1675
(-1488.0)

FLUORESCENCE:1695-1
700m, Tr mod bri
gnsh/yel, pnpt dir fluor, v
slow blooming dir cut,
no ring res.

1700
(-1513.0)

Water
Ø = 22 %
Sw=100 %

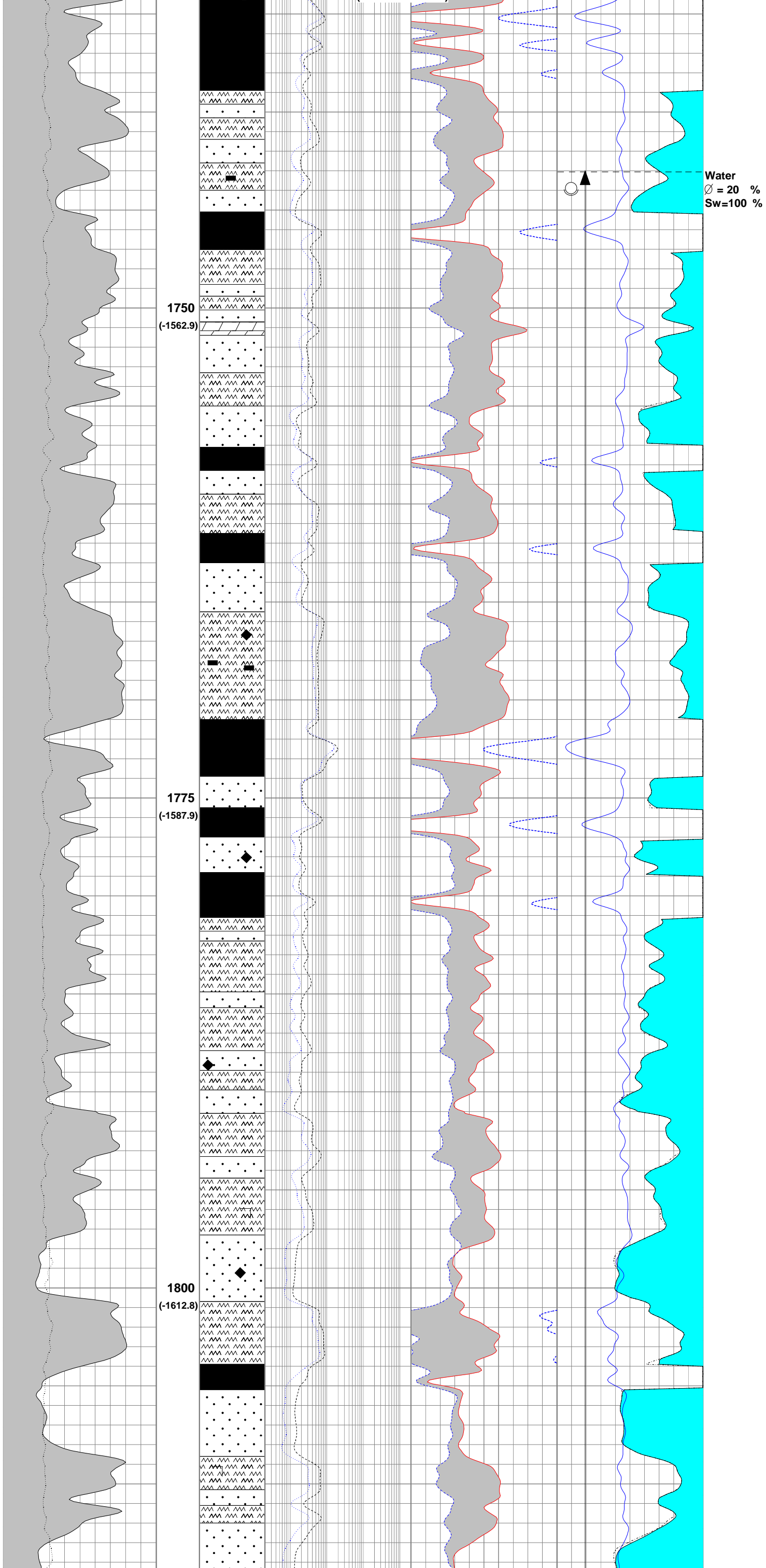
FLUORESCENCE:1705-1
715m, 5-10% dll gnsh/yel,
ptchy dir fluor, f/bit
crushed rock fluor, v slw
bldg dir cut, thin rng res.

1708.8
ANG 3
DIR 6
(-1521.7)

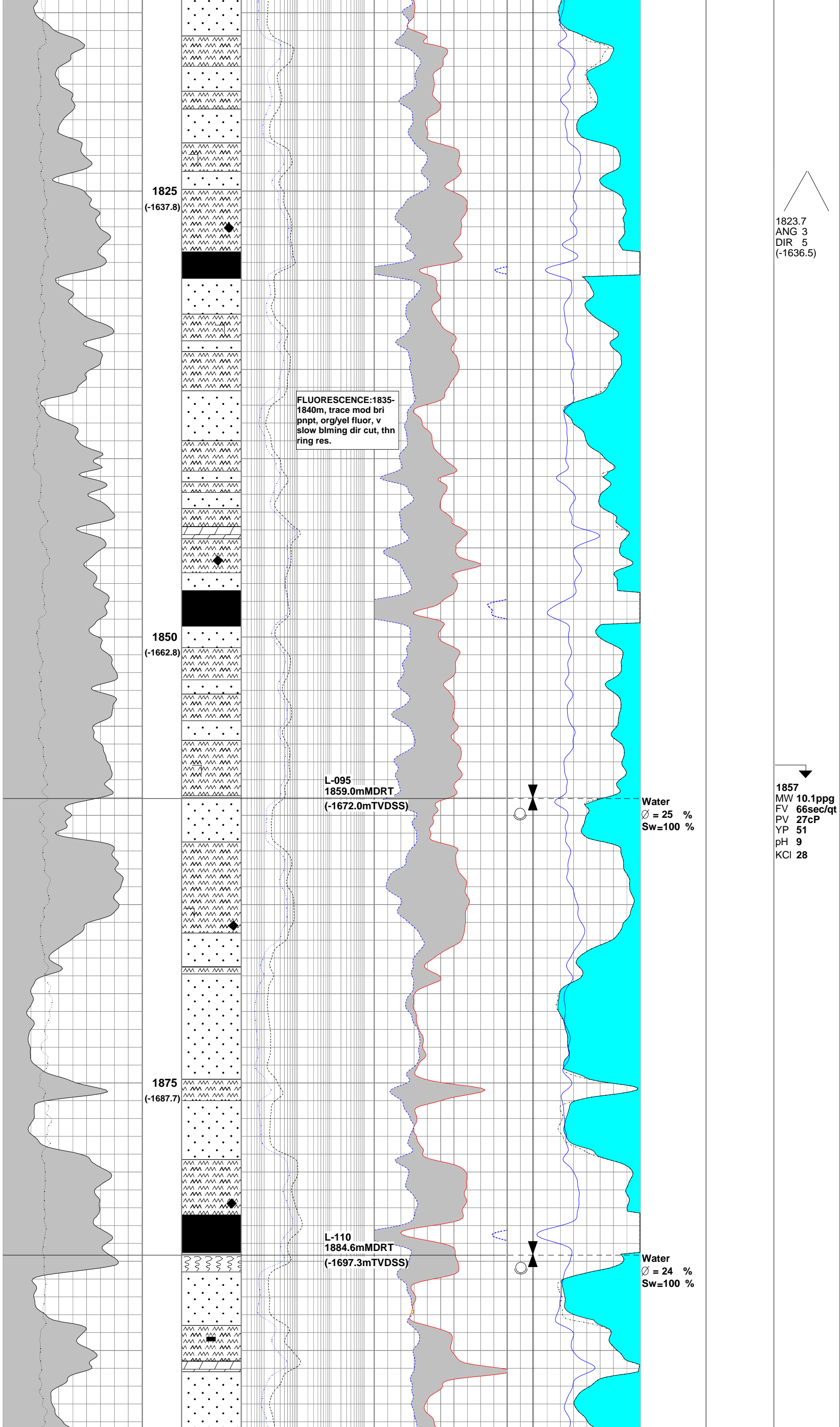
1716
MW 10.1ppg
FV 60sec/qt
PV 24cP
YP 43
pH 9
KCl 28

1725
(-1537.9)

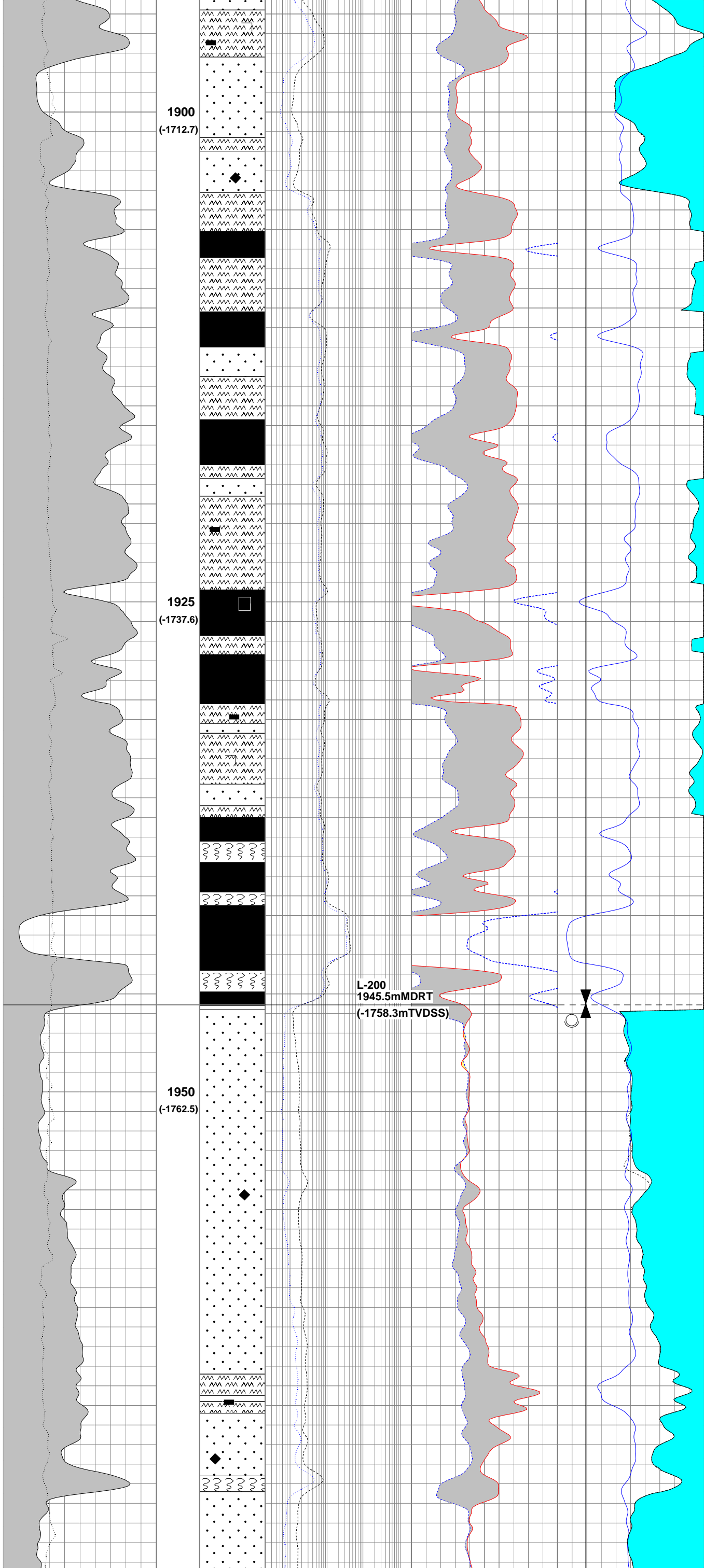
Tuna Flounder Channel
1733.6mMDRT
(-1546.5mTVDSS)



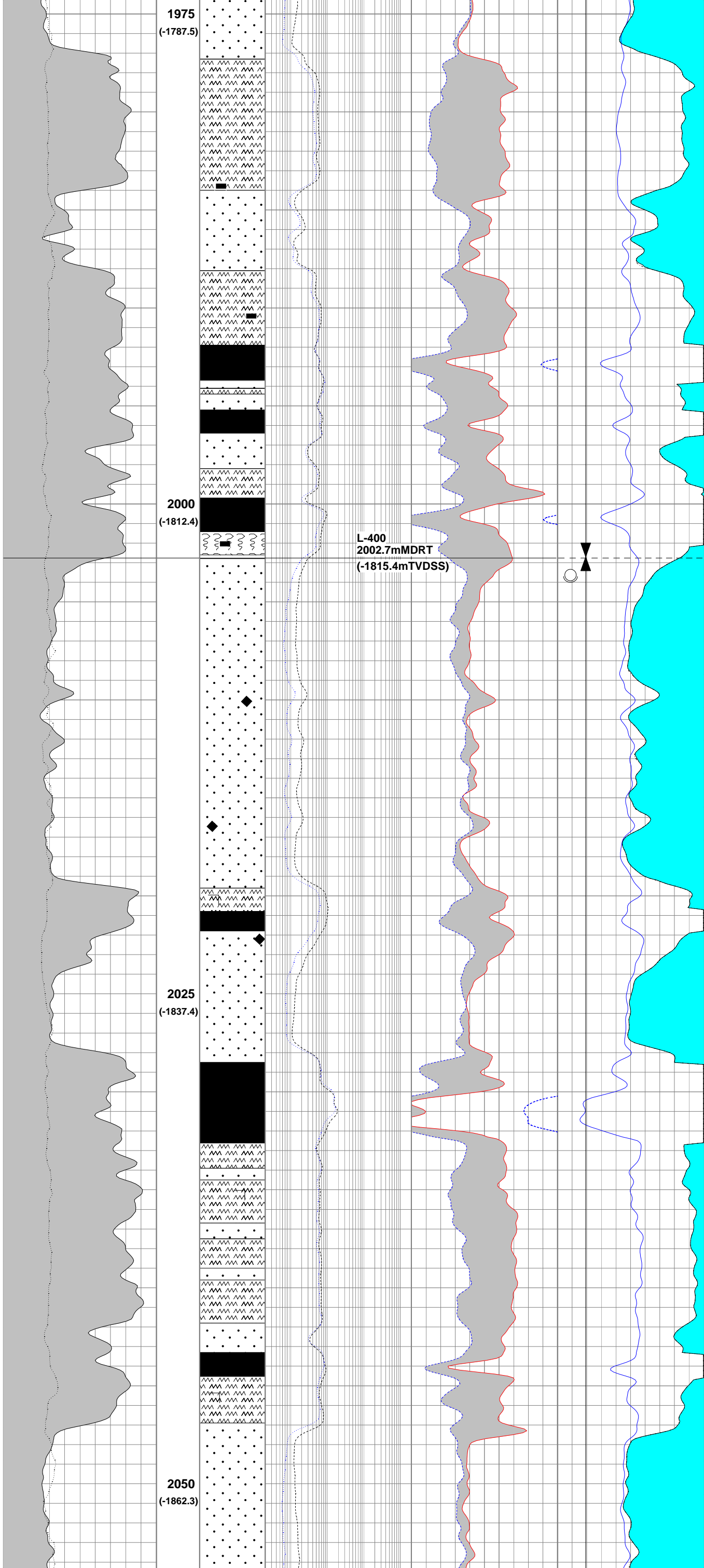
PALEOCENE - EARLY EOCENE



LATROBE GROUP

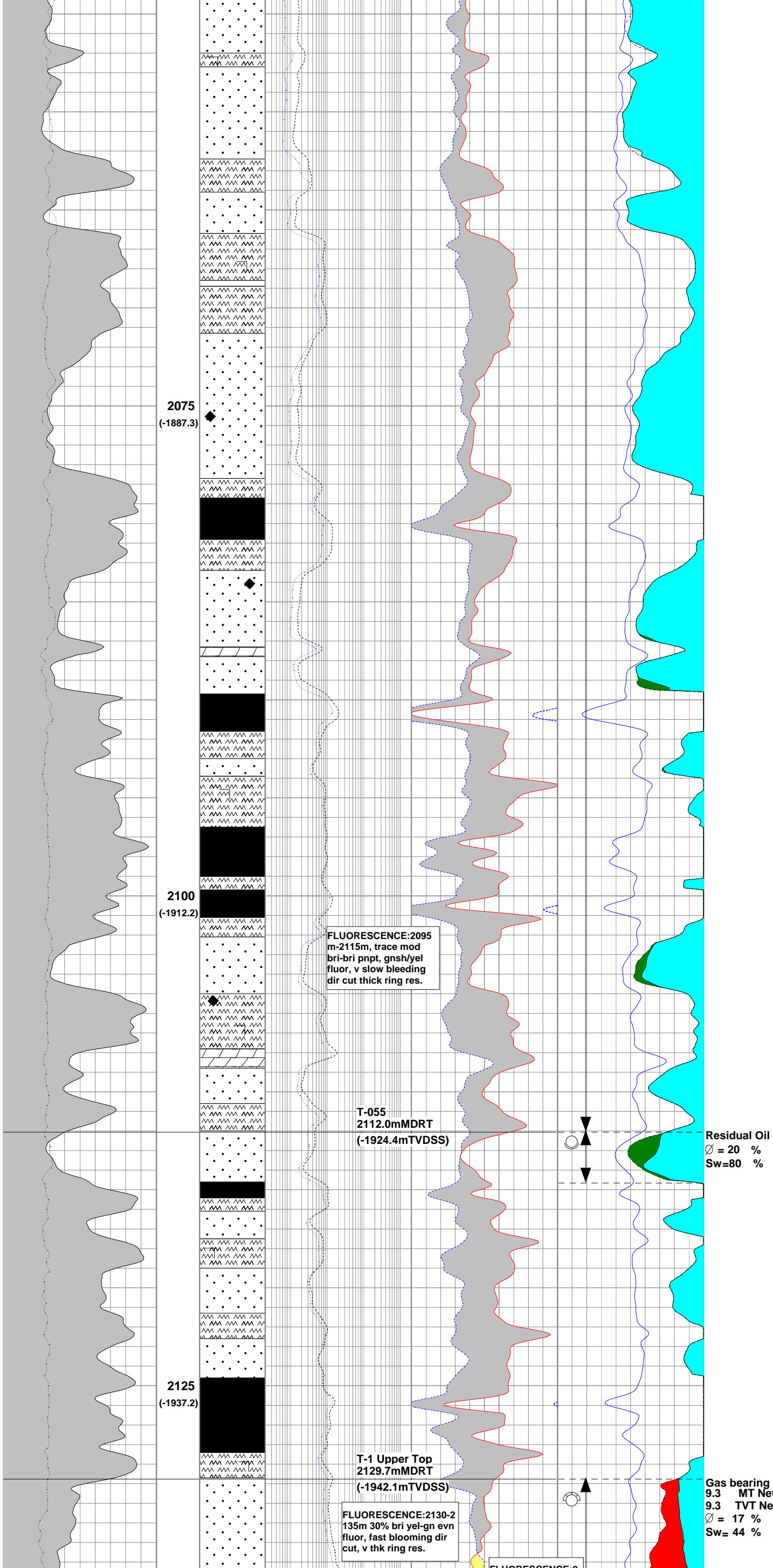


1938.5
ANG 4
DIR 16
(-1751.1)



2024.6
ANG 4
DIR 17
(-1837.0)

2028
MW 10.1ppg
FV 67sec/qt
PV 28cP
YP 53
pH 9
KCI 25



FLUORESCENCE:2095
m-2115m, trace mod
bri-bri pnpt, gnsh/yel
fluor, v slow bleeding
dir cut thick ring res.

T-055
2112.0mMDRT
(-1924.4mTVDSS)

Residual Oil
Ø = 20 %
Sw=80 %

2075
(-1887.3)

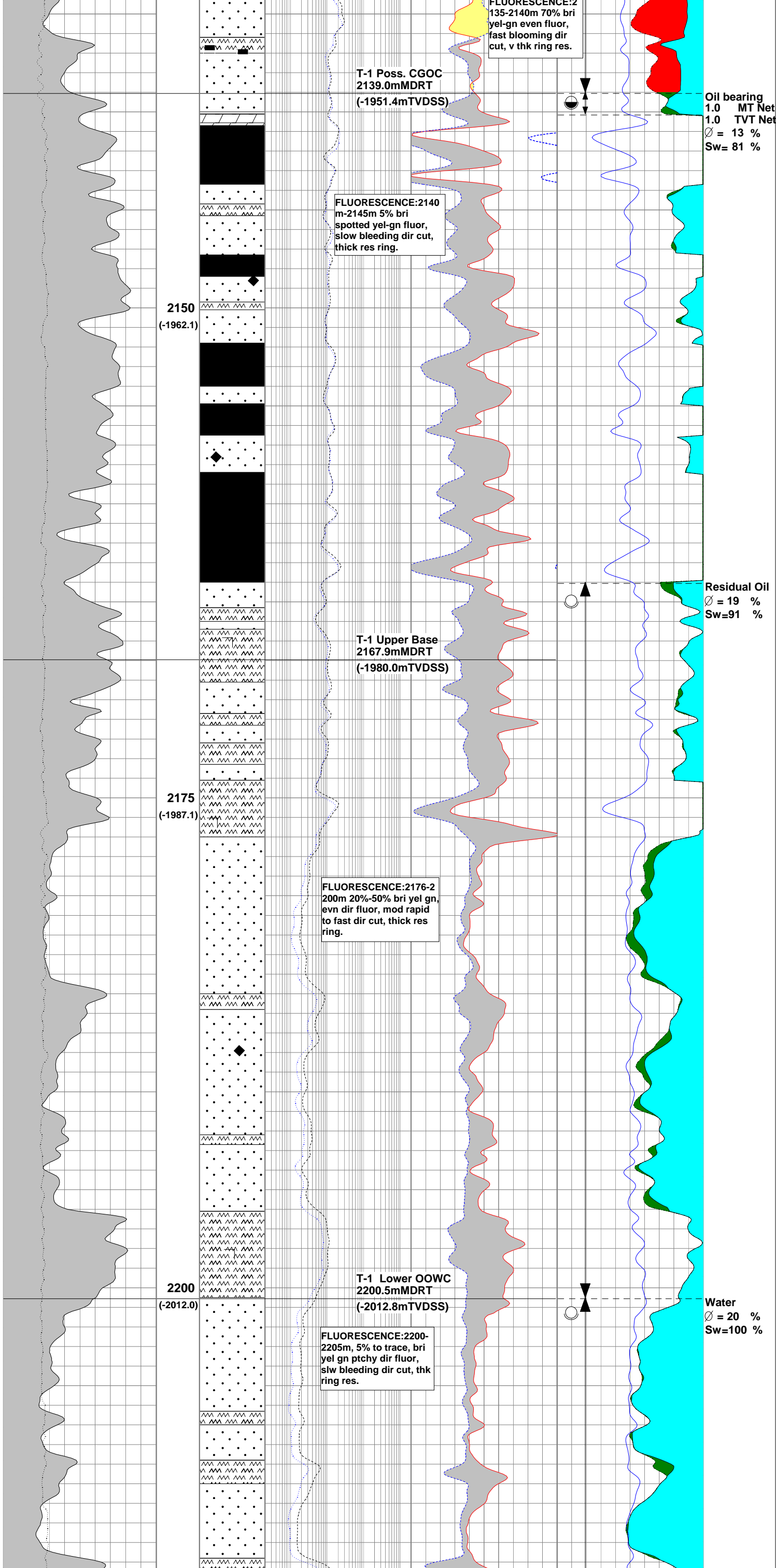
2100
(-1912.2)

2125
(-1937.2)

T-1 Upper Top
2129.7mMDRT
(-1942.1mTVDSS)

FLUORESCENCE:2130-2
135m 30% bri yel-gn evn
fluor, fast blooming dir
cut, v thk ring res.

Gas bearing
9.3 MT Net
9.3 TVT Net
Ø = 17 %
Sw= 44 %

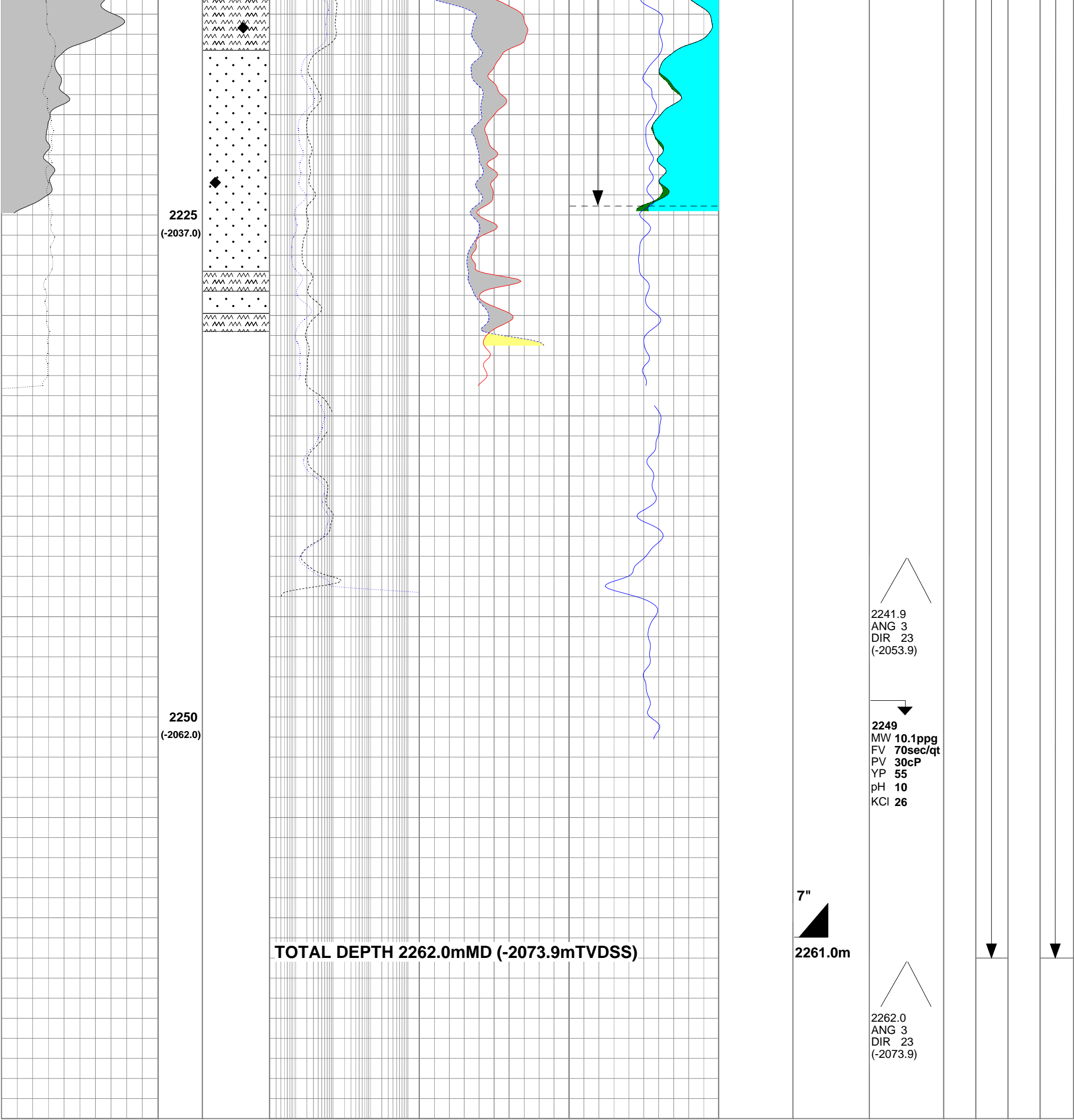


2139.5
ANG 3
DIR 16
(-1951.7)

2162
MW 10.1ppg
FV 72sec/qt
PV 29cP
YP 57
pH 9
KCl 26

2167.9
ANG 3
DIR 22
(-1980.0)

CRETACEOUS



GRGC	Gamma Ray
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

Tuna A3a
Initial Production Date: 06/03/2005
220kL/day, 0%watercut