

WELL COMPLETION REPORT
TUNA A15A
GIPPSLAND BASIN, VICTORIA

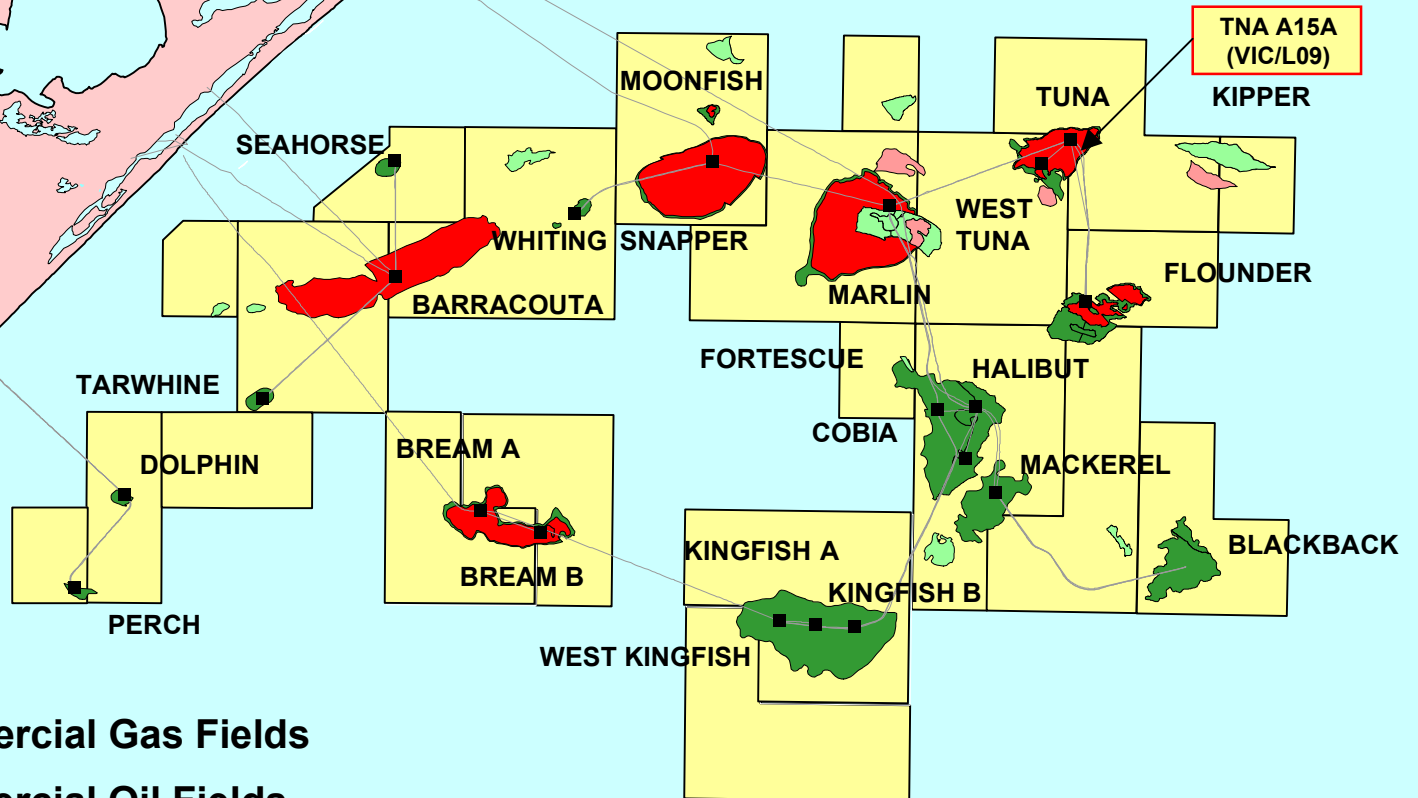
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April 2005

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VICTORIA

I. TUNA FIELD LOCATION MAP

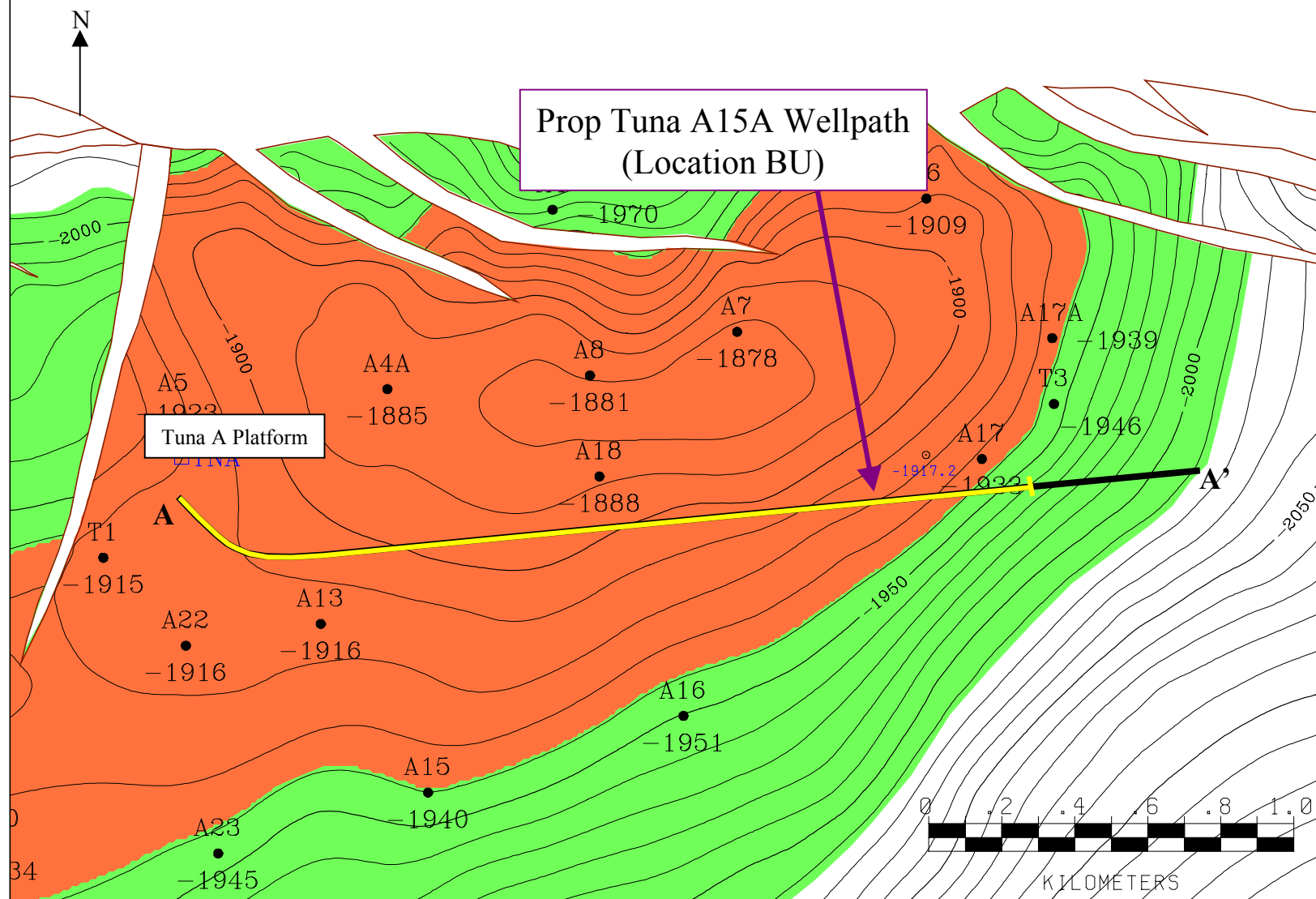


TNA A15A
(VIC/L09)

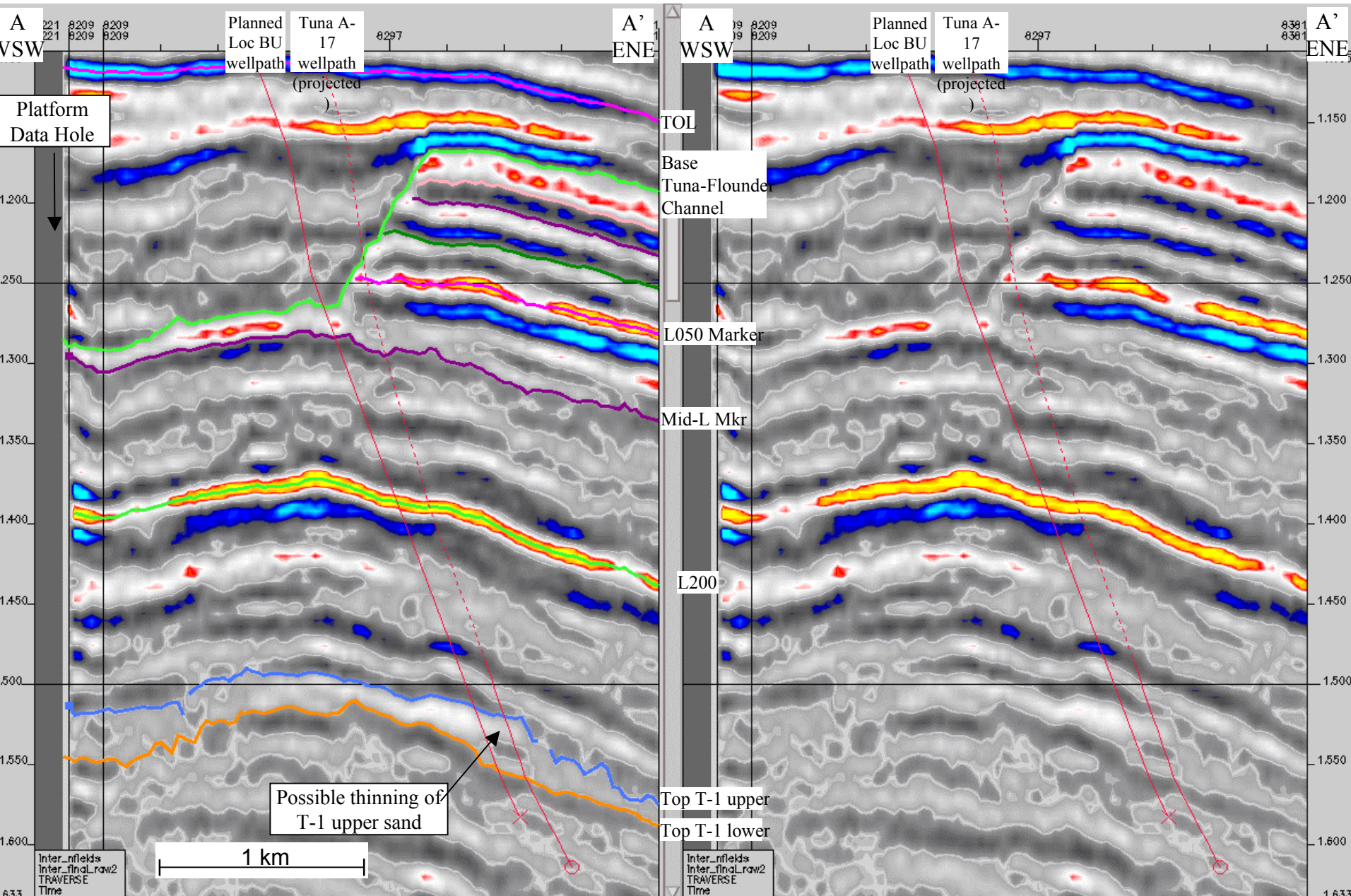
20 KM

- Commercial Gas Fields
- Commercial Oil Fields
- Static Gas Fields
- Static Oil Fields

Tuna Top T-1 Depth Structure Map



TUNA T-1 RESERVOIR
Location BU: Seismic Traverse Along Proposed Wellpath



II. WELL DATA RECORD (cont.)

LOCATION

Field	Tuna	Conductor #15 Surface Coordinates	
Well Name	A15a (Loc BU)	(GDA94) X	624,347.95mE
Conductor Number	Slot 15	(MGA94) Y	5,774,406.79mN
State	Victoria	Latitude	38°10' 10.832"S
Permit/Licence	Vic/L9	Longitude	148° 25' 10.377"E
Geological Basin	Gippsland	Perforations (driller)	3048.0 - 3054.0m MDRT
Top of L-400	2785.4 m MDRT		1959.3 - 1962.5m TVDRT
	1818.5m TVDRT	Datum	GDA94 (GRS80)
MGA94 X	626174.85m E	Projection	MGA94/UTM Zone 55 (S)
MGA94 Y	5774408.09m N		
Top of T-100	3035.6m MDRT		
	1952.7m TVDRT		
MGA94 X	626385.36 m E		
MGA94 Y	5774422.12 m N		

ELEVATIONS & DEPTHS

Water Depth	59.4m
Top Wellhead to MSL	18.3 m
Main Deck Rel to MSL	24.4 m
RT Relative to MSL	31.32m
Average Well Angle	58°
Total Depth	3283.0m MDRT
	2083.4m TVDRT
Plug Back Depth	3249.0m MDRT

DATES

Skid Rig	21/11/2004
Kicked Off	24/11/2004
Development Rig	26.3
Days	
NPT Days	1.26
Rig Released	18/12/2004
I.P. Established	23/12/2004

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	Single
Overriding Royalty	2.5%	Completion Size	3-1/2"
Drilling AFE No.	L0501E210		

WELL CLASSIFICATION

Before Drilling	Oil Development	After Drilling	Cased and Completed
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II. WELL DATA RECORD (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Surface	13 ³ / ₈	54.5	J-55	BTC	550.0
Production	7	26	L-80	LTC	3273.0

CEMENTING RECORD

Casing Details	Cement Type	Dry Cement Volume (sx)	Cement Additives	Mix Water (bbls)	Slurry Volume (bbls)	Slurry Density (ppg)	Cement To / From (mMDRT)	Casing Pressure Test (psi)
LEAD	ABC	390	HALAD 413L 30 gal / 10 bbl Gascon 60 gal / 10 bbl NF-5 0.25 gal / 10 bbl CFR-3L 3 gal / 10 bbl SCR-100L 5 gal / 10 bbl	100	133	13.0	1775 m 2858 m	3000 psi
TAIL	ABC	262	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	32	54	15.8	2858 m 3273 m	

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE

TUNA A15A - Final Well Report

GENERAL

Platform:	Tuna	Rig:	453	Reservoir:	T-1 Sands
Well:	A15A	Well Slot:	#15	RT-MSL (Rig453)	31.32m
Drilling Complexity Index	3.1	Completion Complexity Index	2.8		

DEPTH		PERFORMANCE		MUD	
m MDRT	3,283.00	20" Cond. Hole	N/A	Max Wt (ppg)	10.0
m TVDRT	2,083.00	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	2,247.30	8-1/2" Prod. Hole	225 m/day	Type (Inter. Hole)	N/A
INCLINATION		6" Liner Hole	N/A	Type (Prod. Hole)	KCl/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	60.7/ 58.0 (Tang)	* time to drill interval, incl's Connections & NPT.		Type (Liner Hole)	N/A

Comments: New hole drilled: 542m to 3,283mMDRT (2,741m MDRT drilled).

TIME ANALYSIS

Start Date:	21/11/2004, 2300hrs	Finish Date:	18/12/2004, 0500hrs		
Target Days (P10):	22.4	Total Days:	26.3	% Under Target:	17.4% (over)
AFE Days (P50):	25.1	NPT Days:	1.26	% of Total Days:	4.8%
Supplementary AFE Days (P50):	N/A				

COSTS *(based on projected)*

AFE No.:	L0501E210	Revisions:	--	\$ per m	A \$2.09 k / metre (new hole)
\$ per day:	A\$ 218 k/day	\$ per day (excl. T + L) * Equipment, LWD & Reeves	A\$ 181 k/day		A\$ 1.74 k / metre* * based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	835,000	762,000	2,977,000	923,000	221,000	A\$5,718,000
AFE (Supplement)	--	--	--	--	--	--
Projected	600,000	636,000	3,299,000	925,000	263,000	A\$5,723,000

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

	Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	20"	167	167	N/A
Surface Casing *	13-3/8", 54.5 ppf, K55, BTC	550	544	N/A
Intermediate Casing	N/A	N/A	N/A	15.0 LOT
Prod Casing	7", 26.0ppf, L80, LTC	3,273	2,078	N/A
Prod Liner	--	--	--	--

Comments: * Pre-existing casing strings.

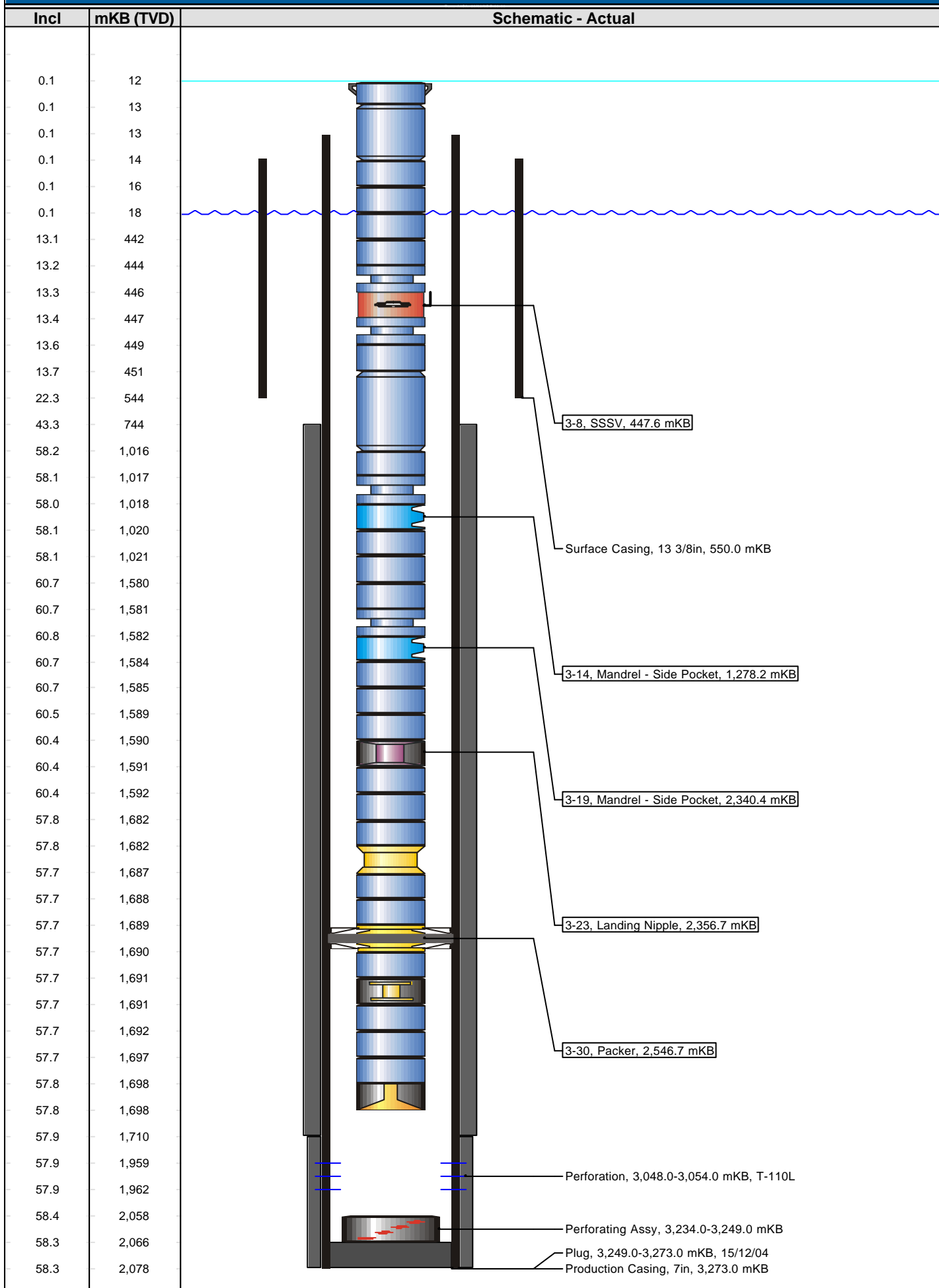
COMPLETION

	Size / Weight / Grade / Thread	MMDRT	MTVDRT	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Ace	2565	1698	Single oil

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	3048-3054	1959-1963	NA	NA	MAXR

Comments: Completion was 3-1/2" 13Cr80 with TR-SSSV and 2 SPM's for gas lift and a packer set at 2548m MDRT.

Tuna A15A: Existing Schematic



III. SAMPLES

CUTTINGS

The cuttings sampling programme for Tuna A15A are detailed in the following table:

Interval	Formation	Sampling Details
Surface Casing to 150m above Top of Latrobe (TOL) 560 m - 1680 m	Gippsland Limestone & Lakes Entrance	30 m sampling interval Spot samples
150 m above TOL to the TOL 1680 m – 3020 m	Lakes Entrance Formation	10 m sampling interval Three sets of washed and oven dried cuttings.
TOL to Total Depth (TD) 3020 m – 3283 m (TD)	Latrobe Group	5 m sampling interval Three sets of washed and oven dried cuttings.

Detailed cuttings descriptions for the interval 1410 mMDRT to 3283 mMDRT (TD) are contained in Appendix 3a.

CONVENTIONAL CORING

No conventional cores were cut in Tuna A15A.

SIDEWALL CORING

No sidewall core samples were shot in Tuna A15A.

IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	560.0	1413.0
MWD Run 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	1413.0	2475.0
MWD Run 3, Powerpulse (Directional & GR)	Schlumberger/Anadrill	2475.0	2630.0
MWD Run 4, Powerpulse (Directional & GR)	Schlumberger/Anadrill	2630.0	3258.2
Run 1: Compact Logging MCG-MDN-MPD-MSS-MDL	Reeves Compact run on Shuttle	543.10	3273.75

V. FORMATION RESERVOIR TOPS

Zone	m TVDSS			M MDRT	m TVT Gross HC Column	
	Predicted	Actual	Diff.		Predicted	Actual
Lakes Entrance	1025.6	1003.5	22.1 high	1310.0		
TOL/M-105 (stringer in gunnard)	1310.6	1305.2	5.4 high	1874.9		
TCC (Top of M-1)	1328.9	1325.8	3.1 high	1912.9		
L-095	1634.0	1641.7	7.7 low	2517.1		
L-110	-	1669.1	-	2568.4	-	2m oil
L-112	-	1674.0	-	2577.7	-	3.5m oil
L-150	-	1685.5	-	2599.2	-	6.5m oil
L-160	-	1695.2	-	2617.0	-	3.2m oil
L-400	1785.6	1787.2	1.6 low	2785.4	4.5m oil	4.3m gas
T-1 Upper	1917.2	1921.4	4.2 low	3035.6	26m oil	2.5m oil
T-1 GOC	1939.0	-	-	-		10m oil
T-1 Lower	1966.3	1969.8	3.5 low	3126.8		
T-1 OOWC vs. COWC	2012.5	1937.6	74.9 high	3066.0		
Total Depth	2042.9	2052.5	9.2 low	3283.0		

VI. GEOLOGICAL ANALYSIS - TUNA A-15A

Objectives

Tuna A15A (pre-drill Location BU) is the first 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 to twin the Tuna A17 well and to target two reservoirs - the primary T-1 reservoir and the secondary L-400 reservoir.

This well was justified primarily on decline curve analysis (DCA) on the Tuna A17 T-1 upper production before A17 failed due to mechanical problems. The A17 produced a total of 2.23Mstb (~0.3Mstb from the T-130 and ~1.93Mstb from the T-120).). Decline curve analysis on the A17 T-120 reservoir indicates that there is remaining oil.

Results

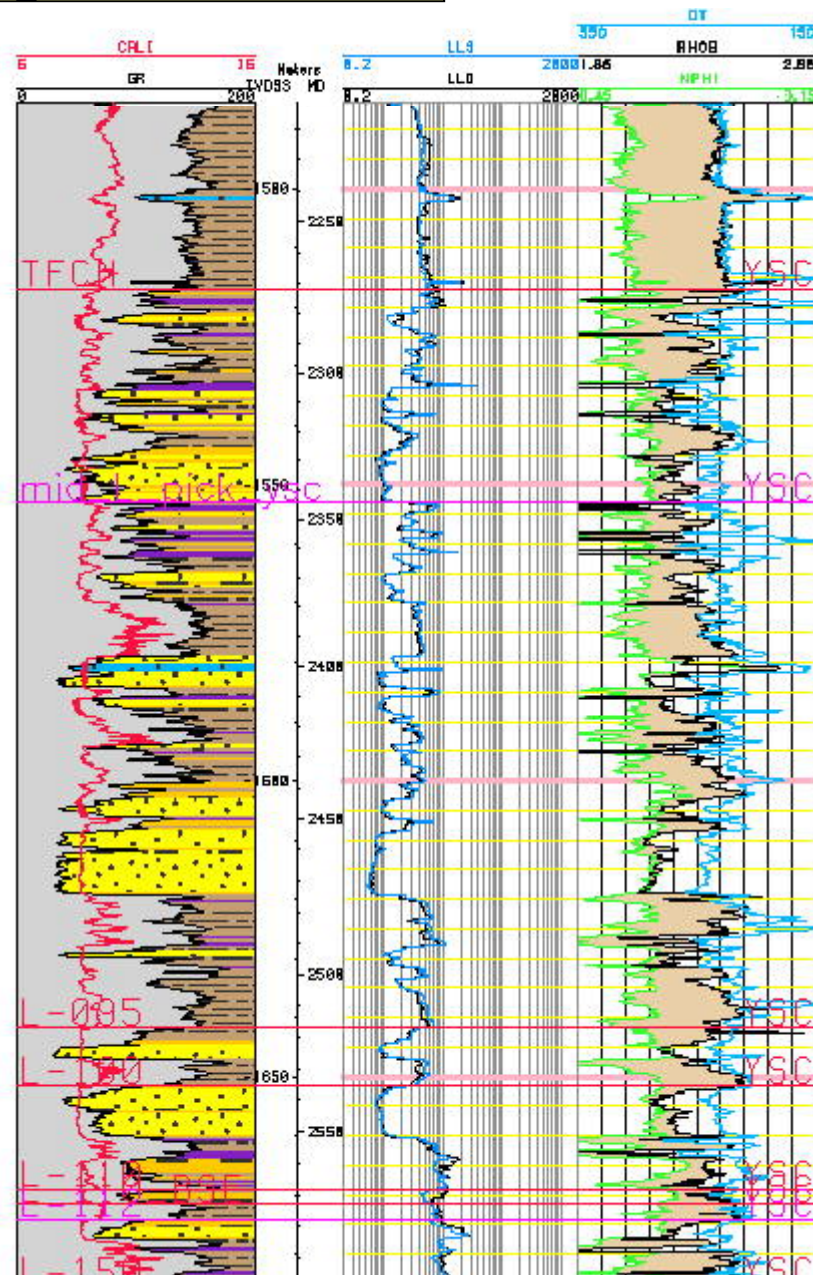
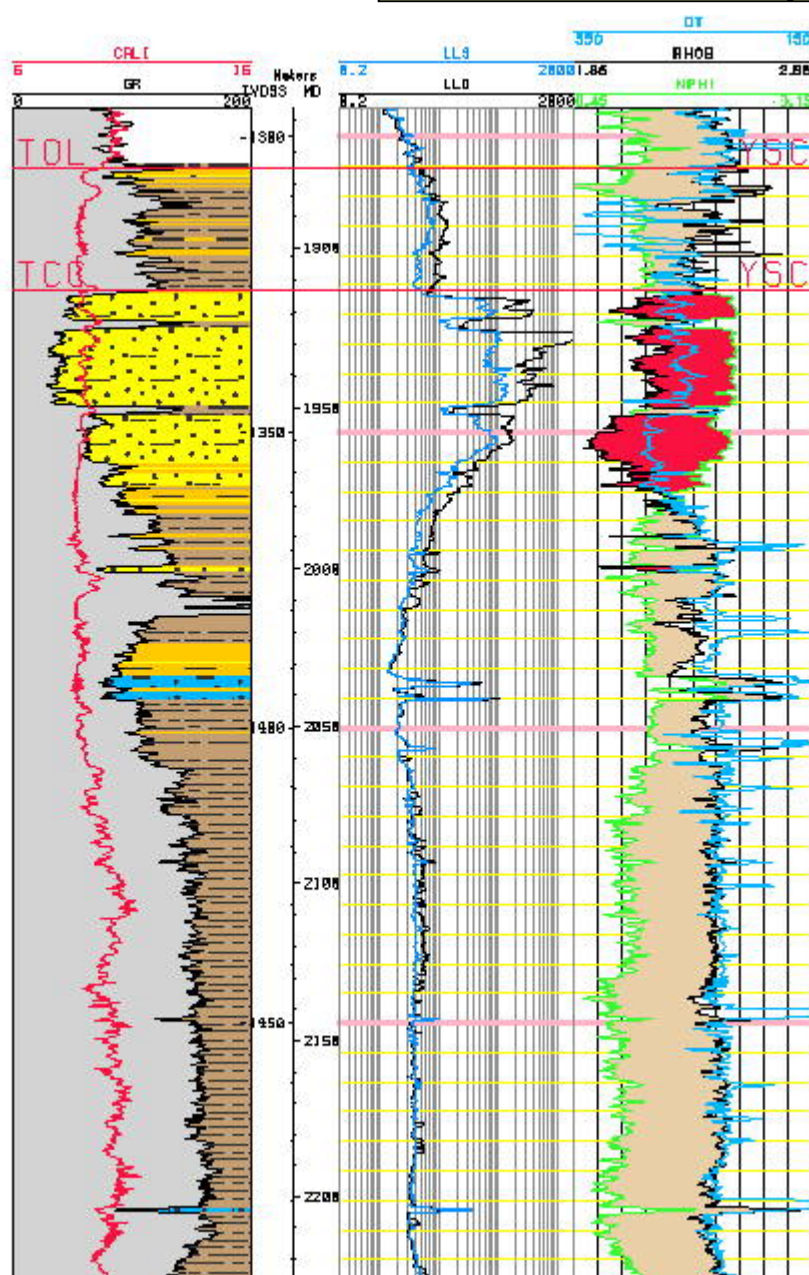
Tuna A15A was drilled to TD after kicking-off from the Tuna A15 original wellbore at 560m MD and logged via Reeves Shuttle on drill pipe.

The Tuna A15A well intersected the top of T-1 at 3035.5m MDRT (1921.4m TVDSS), 4.2m TVD low to prognosis, and intersected the top of L-400 at 2785.5m MDRT (1787.3m TVDSS), 1.6m TVD low to prognosis.

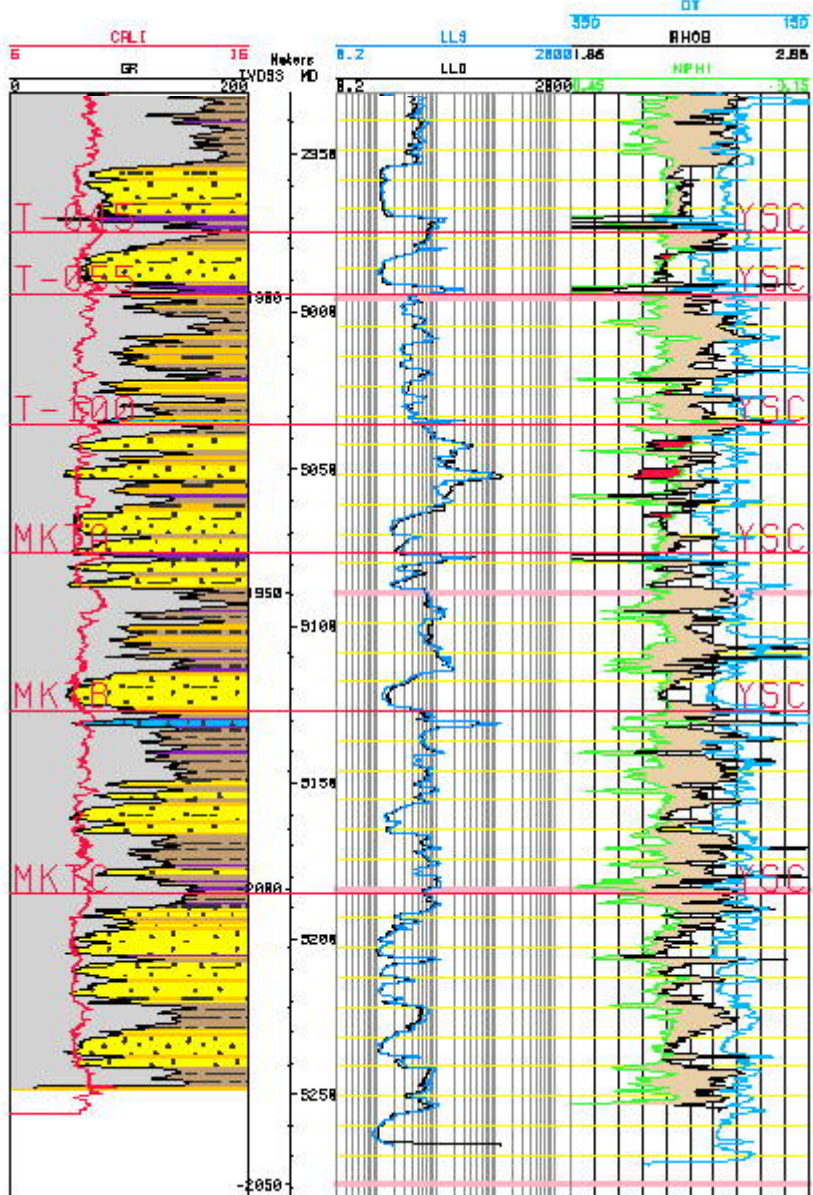
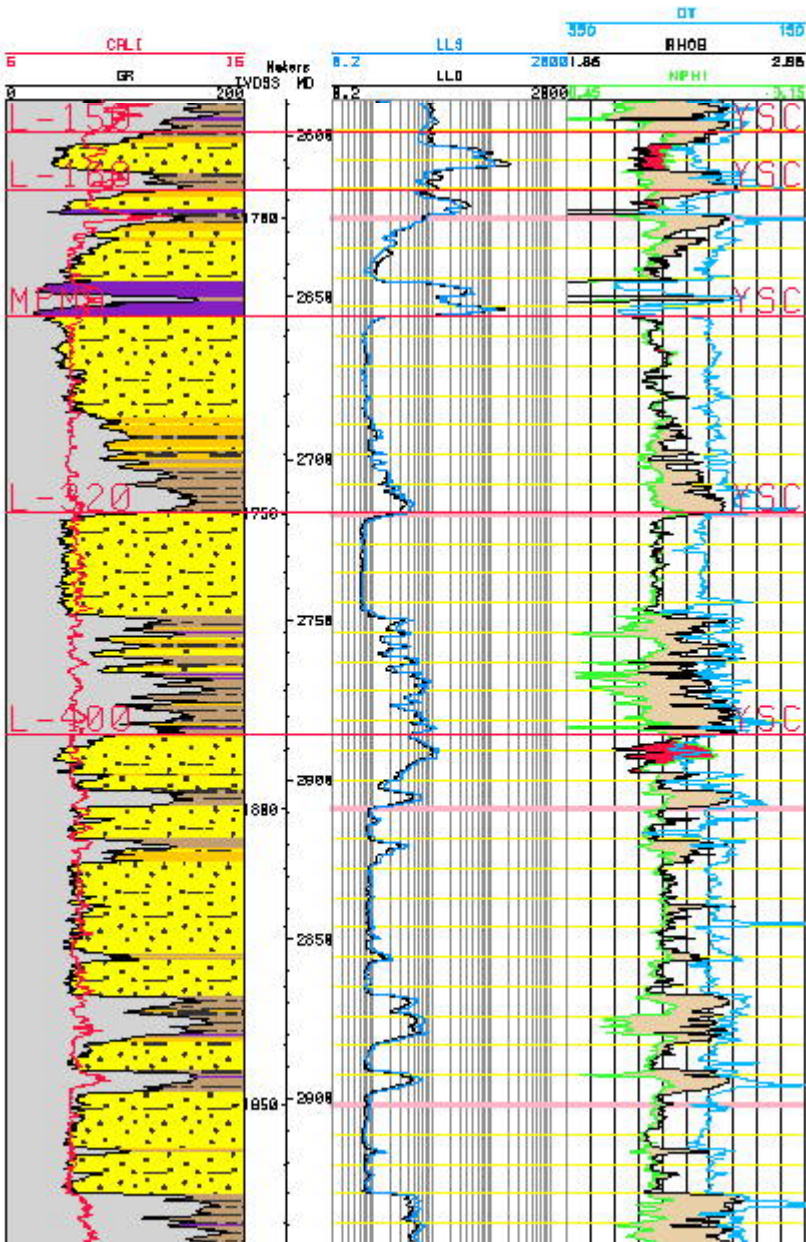
This well encountered the T-1 HPO and LPO at 1923.1m and 1933.2m TVDSS, respectively, and a residual oil zone between 1934.5m and 1937.5m TVDSS. T-1 reservoir current GOC was not observed in this well, which means that the CGOC is at least 16m TVD shallower than the OGOC at 1939m TVDSS.

This well encountered a 2.5m TVT versus 4.5m TVT prognosed oil column in the L-400 sand. In addition, L-110, L-112, L-150 and L-160 sands are oil bearing with gross oil thickness of 2m, 3.5m, 6.5m and 3.2m TVT, respectively.

Geological Analysis: TNA A15A Well Log with Stratigraphic Picks: Part 1 of 2



Geological Analysis: TNA A15A Well Log with Stratigraphic Picks: Part 2 of 2



APPENDIX 1a

TUNA A15A

Survey Data



TNA A15A Final Survey Report

Report Date: December 7, 2004	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 89.480°
Field: Tuna A GDA 94	Vertical Section Origin: S 2.680 m, E 10.780 m
Structure / Slot: Tuna A Rig 453 / 15	TVD Reference Datum: RKB
Well: 15	TVD Reference Elevation: 31.3 m relative to MSL
Borehole: A-15A	Sea Bed / Ground Level Elevation: -59.400 m relative to MSL
UWI/API#:	Magnetic Declination: 13.222°
Survey Name / Date: A15A Surveys / November 24, 2004	Total Field Strength: 59914.804 nT
Tort / AHD / DDI / ERD ratio: 121.947° / 2289.92 m / 6.159 / 1.099	Magnetic Dip: -68.656°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: November 25, 2004
Location Lat/Long: S 38 10 10.832, E 148 25 10.377	Magnetic Declination Model: BGGM 2004
Location Grid N/E Y/X: N 5774406.790 m, E 624347.950 m	North Reference: Grid North
Grid Convergence Angle: -0.87738291°	Total Corr Mag North -> Grid North: +14.099°
Grid Scale Factor: 0.99979043	Local Coordinates Referenced To: Structure Reference Point

Comments	Measured Depth (m)	Inclination (deg)	Azimuth (deg)	TVD (m)	Vertical Section (m)	NS (m)	EW (m)	Closure (m)	Closure Azimuth (deg)	DLS (deg/30 m)
Tie-In	0.00	0.00	0.00	0.00	0.00	-2.68	10.78	0.00	103.96	0.00
	50.00	0.28	235.60	50.00	-0.10	-2.75	10.68	0.12	104.44	0.17
	55.00	0.27	231.70	55.00	-0.12	-2.76	10.66	0.14	104.53	0.13
	60.00	0.26	227.43	60.00	-0.14	-2.78	10.64	0.17	104.63	0.13
	65.00	0.25	222.78	65.00	-0.15	-2.79	10.63	0.19	104.73	0.14
	70.00	0.24	217.77	70.00	-0.17	-2.81	10.61	0.21	104.83	0.14
	75.00	0.23	212.45	75.00	-0.18	-2.83	10.60	0.23	104.93	0.14
	80.00	0.13	216.98	80.00	-0.19	-2.84	10.59	0.25	105.01	0.61
	85.00	0.09	217.23	85.00	-0.19	-2.85	10.59	0.25	105.06	0.24
	90.00	0.07	214.92	90.00	-0.20	-2.85	10.58	0.26	105.09	0.12
	95.00	0.09	227.19	95.00	-0.20	-2.86	10.58	0.27	105.12	0.16
	100.00	0.20	240.05	100.00	-0.21	-2.87	10.57	0.28	105.17	0.68
	105.00	0.32	232.07	105.00	-0.23	-2.88	10.55	0.30	105.26	0.75
	110.00	0.39	243.54	110.00	-0.26	-2.90	10.52	0.33	105.38	0.60
	115.00	0.46	238.84	115.00	-0.29	-2.91	10.49	0.37	105.52	0.47
	120.00	0.55	239.13	120.00	-0.33	-2.94	10.45	0.41	105.69	0.54
	125.00	0.63	238.97	125.00	-0.37	-2.96	10.41	0.47	105.88	0.48
	130.00	0.68	231.86	130.00	-0.42	-2.99	10.36	0.52	106.12	0.57
	135.00	0.87	230.33	135.00	-0.47	-3.04	10.31	0.59	106.41	1.15
	140.00	1.10	232.36	140.00	-0.54	-3.09	10.24	0.68	106.79	1.40
	145.00	1.26	232.52	145.00	-0.62	-3.15	10.16	0.78	107.24	0.96
	150.00	1.61	226.96	149.99	-0.72	-3.23	10.07	0.90	107.81	2.26
	155.00	1.57	229.68	154.99	-0.82	-3.33	9.96	1.04	108.47	0.51
	160.00	1.63	225.55	159.99	-0.93	-3.42	9.86	1.18	109.14	0.78
	165.00	1.67	225.93	164.99	-1.03	-3.52	9.76	1.32	109.85	0.25
	170.00	1.73	226.01	169.99	-1.14	-3.62	9.65	1.47	110.59	0.36
	175.00	1.63	227.05	174.98	-1.25	-3.73	9.54	1.62	111.32	0.63
	180.00	1.52	223.84	179.98	-1.34	-3.82	9.45	1.76	112.03	0.85
	185.00	1.46	221.62	184.98	-1.43	-3.92	9.36	1.89	112.72	0.50
	190.00	1.35	219.75	189.98	-1.51	-4.01	9.28	2.01	113.38	0.71
	195.00	1.29	212.58	194.98	-1.58	-4.10	9.21	2.12	114.01	1.05
	200.00	1.41	194.16	199.98	-1.63	-4.21	9.16	2.22	114.67	2.69
	205.00	1.46	186.63	204.97	-1.65	-4.33	9.14	2.33	115.36	1.17
	210.00	1.45	181.38	209.97	-1.66	-4.46	9.13	2.42	116.03	0.80
	215.00	1.53	185.03	214.97	-1.67	-4.59	9.13	2.53	116.70	0.74
	220.00	1.54	179.86	219.97	-1.68	-4.72	9.12	2.63	117.38	0.83
	225.00	1.61	178.23	224.97	-1.68	-4.86	9.12	2.74	118.05	0.50
	230.00	1.77	171.89	229.97	-1.67	-5.01	9.14	2.85	118.73	1.48
	235.00	2.04	168.27	234.96	-1.64	-5.17	9.16	2.97	119.43	1.77
	240.00	1.94	172.81	239.96	-1.61	-5.34	9.19	3.10	120.16	1.12
	245.00	2.54	159.38	244.96	-1.56	-5.53	9.24	3.24	120.89	4.76
	250.00	2.87	154.15	249.95	-1.47	-5.75	9.34	3.39	121.61	2.47
	255.00	2.99	153.35	254.94	-1.36	-5.97	9.45	3.55	122.30	0.76
	260.00	3.18	153.05	259.94	-1.24	-6.22	9.57	3.74	123.00	1.14
	265.00	3.58	151.62	264.93	-1.11	-6.48	9.71	3.94	123.71	2.45

Tie-In

270.00	3.73	148.96	269.92	-0.95	-6.75	9.87	4.17	124.39	1.36
275.00	3.86	145.71	274.91	-0.77	-7.03	10.04	4.41	124.99	1.51
280.00	3.79	148.14	279.90	-0.60	-7.31	10.23	4.66	125.56	1.06
285.00	3.79	148.08	284.88	-0.42	-7.59	10.40	4.93	126.12	0.02
290.00	3.97	148.67	289.87	-0.25	-7.88	10.58	5.20	126.68	1.11
295.00	4.01	148.95	294.86	-0.07	-8.18	10.76	5.50	127.24	0.27
300.00	4.14	148.42	299.85	0.11	-8.48	10.94	5.80	127.77	0.81
305.00	4.31	148.10	304.84	0.30	-8.79	11.14	6.12	128.29	1.03
310.00	4.51	148.22	309.82	0.50	-9.12	11.34	6.46	128.81	1.20
315.00	4.73	147.40	314.80	0.71	-9.46	11.55	6.83	129.31	1.38
320.00	4.85	146.80	319.79	0.94	-9.81	11.78	7.20	129.79	0.78
325.00	4.96	146.04	324.77	1.17	-10.17	12.02	7.59	130.23	0.77
330.00	4.93	145.44	329.75	1.41	-10.52	12.26	7.98	130.64	0.36
335.00	5.10	145.01	334.73	1.66	-10.88	12.51	8.38	131.02	1.04
340.00	5.22	145.29	339.71	1.91	-11.25	12.77	8.80	131.39	0.74
345.00	5.48	145.41	344.69	2.17	-11.64	13.03	9.23	131.76	1.56
350.00	5.79	145.08	349.66	2.45	-12.04	13.31	9.70	132.12	1.87
355.00	6.40	142.24	354.64	2.76	-12.47	13.63	10.19	132.45	4.08
360.00	6.56	143.11	359.60	3.10	-12.91	13.97	10.72	132.75	1.13
365.00	6.93	142.48	364.57	3.45	-13.38	14.32	11.27	133.05	2.26
370.00	7.33	141.98	369.53	3.82	-13.87	14.70	11.86	133.33	2.43
375.00	7.65	141.92	374.49	4.22	-14.39	15.11	12.48	133.60	1.92
380.00	8.11	141.25	379.44	4.64	-14.92	15.53	13.13	133.85	2.81
385.00	8.60	140.63	384.39	5.09	-15.49	15.99	13.83	134.08	2.99
390.00	8.90	141.16	389.33	5.57	-16.08	16.47	14.56	134.31	1.86
395.00	9.52	140.36	394.27	6.07	-16.70	16.98	15.33	134.53	3.80
400.00	10.00	139.81	399.19	6.61	-17.35	17.52	16.14	134.72	2.93
405.00	10.39	139.84	404.11	7.17	-18.02	18.09	17.00	134.89	2.34
410.00	10.81	139.49	409.03	7.76	-18.72	18.69	17.89	135.06	2.55
415.00	11.20	139.54	413.94	8.37	-19.45	19.31	18.81	135.21	2.34
420.00	11.52	139.53	418.84	9.01	-20.20	19.95	19.77	135.36	1.92
425.00	11.85	139.12	423.73	9.66	-20.97	20.61	20.76	135.50	2.04
430.00	12.16	138.99	428.63	10.33	-21.75	21.29	21.78	135.62	1.87
435.00	12.56	139.10	433.51	11.03	-22.56	21.99	22.82	135.74	2.40
440.00	12.93	139.45	438.39	11.74	-23.40	22.71	23.91	135.86	2.27
445.00	13.14	139.83	443.26	12.46	-24.26	23.44	25.02	135.98	1.36
450.00	13.50	139.82	448.12	13.20	-25.14	24.18	26.15	136.11	2.16
455.00	13.82	139.92	452.98	13.95	-26.04	24.94	27.32	136.23	1.93
460.00	14.13	139.83	457.83	14.72	-26.96	25.72	28.51	136.35	1.86
465.00	14.35	139.81	462.68	15.50	-27.90	26.51	29.73	136.46	1.32
470.00	14.63	140.19	467.52	16.30	-28.86	27.32	30.97	136.57	1.77
475.00	14.70	140.45	472.36	17.10	-29.84	28.13	32.22	136.69	0.58
480.00	15.17	140.90	477.19	17.91	-30.83	28.94	33.50	136.81	2.90
485.00	15.50	141.25	482.01	18.73	-31.86	29.77	34.82	136.94	2.06
490.00	15.80	141.56	486.83	19.56	-32.92	30.62	36.16	137.07	1.87
495.00	16.11	142.03	491.63	20.40	-34.00	31.47	37.53	137.21	2.02
500.00	16.50	142.33	496.43	21.25	-35.10	32.33	38.93	137.36	2.39
505.00	16.84	142.52	501.22	22.12	-36.24	33.20	40.36	137.51	2.07
510.00	17.21	142.88	506.00	22.99	-37.41	34.09	41.82	137.66	2.31
515.00	17.63	143.14	510.77	23.88	-38.60	34.99	43.32	137.81	2.56
520.00	18.02	143.21	515.53	24.79	-39.83	35.91	44.85	137.96	2.34
525.00	18.38	143.07	520.28	25.71	-41.08	36.84	46.41	138.11	2.18
525.60	18.42	143.04	520.85	25.83	-41.23	36.96	46.59	138.13	2.06
530.20	18.90	142.19	525.21	26.71	-42.40	37.85	48.06	138.24	3.60
535.20	19.74	140.78	529.93	27.73	-43.69	38.88	49.71	138.33	5.76
540.20	20.59	139.48	534.62	28.82	-45.01	39.99	51.43	138.39	5.77
545.20	21.45	138.28	539.29	29.99	-46.36	41.17	53.21	138.40	5.77
550.20	22.32	137.17	543.93	31.23	-47.74	42.42	55.06	138.38	5.78
555.20	23.19	136.13	548.54	32.54	-49.15	43.75	56.97	138.33	5.75
560.20	24.07	135.17	553.12	33.93	-50.58	45.15	58.96	138.25	5.76
565.20	24.96	134.27	557.67	35.39	-52.04	46.62	61.00	138.14	5.79
570.20	25.85	133.44	562.19	36.93	-53.53	48.17	63.11	138.02	5.75
575.20	26.75	132.65	566.67	38.53	-55.04	49.79	65.29	137.87	5.79
580.20	27.65	131.91	571.12	40.21	-56.58	51.48	67.54	137.70	5.77
585.20	28.55	131.21	575.53	41.96	-58.14	53.24	69.85	137.52	5.75
589.00	29.24	130.71	578.85	43.33	-59.34	54.63	71.65	137.37	5.77

618.05	30.26	128.56	604.08	54.35	-68.53	65.73	85.77	136.20	1.52
646.25	33.36	120.11	628.05	66.55	-76.86	78.00	100.11	134.58	5.77
675.91	35.36	112.58	652.54	81.47	-84.25	92.99	115.81	132.18	4.75
702.63	36.33	105.02	674.21	96.21	-89.27	107.78	130.03	129.63	5.09
733.00	38.64	97.91	698.32	114.27	-92.91	125.87	146.25	126.43	4.84
761.03	39.81	92.72	720.04	131.89	-94.54	143.51	161.42	123.38	3.73
789.92	43.13	89.10	741.69	151.01	-94.82	162.63	177.62	120.24	4.25
818.99	44.98	87.30	762.58	171.21	-94.18	182.83	194.87	117.25	2.30
847.80	47.68	86.50	782.47	192.03	-93.05	203.64	212.98	114.56	2.88
876.56	51.20	86.13	801.17	213.84	-91.65	225.44	232.36	112.12	3.68
905.54	54.18	86.28	818.73	236.85	-90.12	248.43	253.23	109.94	3.09
933.97	55.48	87.40	835.11	260.07	-88.84	271.64	274.72	108.11	1.68
962.97	56.82	87.65	851.26	284.14	-87.80	295.70	297.36	106.54	1.40
991.43	57.37	88.22	866.72	308.02	-86.94	319.58	320.09	105.22	0.77
1019.71	57.52	87.84	881.94	331.85	-86.12	343.40	342.93	104.08	0.38
1048.27	57.58	86.28	897.27	355.93	-84.89	367.47	366.04	103.01	1.38
1076.89	57.52	85.92	912.62	380.04	-83.24	391.56	389.21	102.00	0.32
1105.47	58.59	85.52	927.74	404.24	-81.43	415.75	412.55	101.08	1.18
1133.77	57.61	85.55	942.70	428.20	-79.56	439.70	435.76	100.26	1.04
1162.39	56.83	85.75	958.19	452.21	-77.74	463.69	459.09	99.52	0.84
1191.32	59.18	86.05	973.52	476.70	-75.99	488.16	482.98	98.85	2.45
1219.94	59.62	86.58	988.09	501.30	-74.40	512.75	507.07	98.26	0.66
1248.97	59.08	86.43	1002.89	526.24	-72.88	537.67	531.55	97.72	0.57
1277.79	58.03	86.59	1017.92	550.79	-71.38	562.22	555.70	97.24	1.10
1306.77	58.66	86.23	1033.13	575.42	-69.84	586.84	579.96	96.79	0.73
1335.78	58.06	86.60	1048.35	600.09	-68.29	611.49	604.28	96.37	0.70
1364.57	57.57	86.58	1063.69	624.42	-66.84	635.81	628.31	96.00	0.51
1393.41	57.66	86.83	1079.13	648.75	-65.44	660.12	652.37	95.66	0.24
1422.51	56.98	86.99	1094.85	673.21	-64.12	684.58	676.60	95.35	0.71
1450.33	56.64	86.78	1110.08	696.47	-62.86	707.83	699.64	95.07	0.41
1479.46	57.97	86.92	1125.81	720.96	-61.51	732.30	723.92	94.80	1.38
1507.99	57.07	86.93	1141.13	745.00	-60.22	756.34	747.77	94.55	0.95
1536.82	57.87	86.73	1156.63	769.28	-58.88	780.61	771.87	94.31	0.85
1565.54	57.56	86.90	1171.97	793.54	-57.53	804.85	795.96	94.09	0.36
1593.79	58.50	87.00	1186.93	817.48	-56.25	828.78	819.75	93.88	1.00
1622.61	58.56	87.45	1201.98	842.04	-55.06	853.33	844.18	93.69	0.40
1650.37	57.58	87.27	1216.66	865.58	-53.98	876.87	867.60	93.52	1.07
1679.42	58.23	87.44	1232.09	890.18	-52.84	901.45	892.08	93.35	0.69
1708.40	58.40	87.72	1247.31	914.82	-51.80	926.09	916.63	93.20	0.30
1736.93	57.36	87.73	1262.48	938.98	-50.84	950.23	940.69	93.06	1.09
1766.08	57.03	87.45	1278.28	963.46	-49.81	974.71	965.08	92.93	0.42
1794.50	57.76	87.64	1293.59	987.39	-48.79	998.63	988.93	92.80	0.79
1823.21	58.21	87.73	1308.81	1011.72	-47.80	1022.95	1013.18	92.68	0.48
1852.32	57.57	87.64	1324.28	1036.37	-46.81	1047.59	1037.75	92.56	0.66
1881.06	56.99	87.97	1339.82	1060.54	-45.88	1071.75	1061.85	92.45	0.67
1909.67	57.43	87.82	1355.31	1084.58	-45.00	1095.79	1085.83	92.35	0.48
1938.53	56.74	87.84	1371.00	1108.80	-44.08	1120.00	1109.99	92.25	0.72
1967.25	56.88	87.42	1386.72	1132.82	-43.09	1144.01	1133.95	92.16	0.40
1996.11	57.45	87.57	1402.37	1157.05	-42.03	1168.24	1158.13	92.06	0.61
2025.12	57.73	87.54	1417.91	1181.53	-40.98	1192.71	1182.55	91.97	0.29
2053.67	58.36	87.19	1433.02	1205.74	-39.87	1216.90	1206.70	91.88	0.73
2082.42	57.95	87.55	1448.19	1230.14	-38.75	1241.30	1231.05	91.79	0.53
2111.01	57.37	87.61	1463.49	1254.28	-37.73	1265.43	1255.14	91.71	0.61
2139.60	57.95	86.56	1478.78	1278.42	-36.50	1289.56	1279.22	91.62	1.11
2168.77	58.27	86.43	1494.19	1303.15	-34.98	1314.28	1303.90	91.52	0.35
2197.28	57.99	86.80	1509.25	1327.33	-33.55	1338.45	1328.03	91.44	0.44
2225.86	58.67	86.16	1524.25	1351.62	-32.06	1362.73	1352.27	91.35	0.91
2254.22	58.23	86.19	1539.09	1375.75	-30.45	1386.84	1376.34	91.26	0.47
2283.11	59.77	86.02	1553.97	1400.47	-28.77	1411.55	1401.01	91.17	1.61
2311.66	60.40	85.97	1568.21	1425.17	-27.04	1436.23	1425.66	91.08	0.66
2340.15	60.76	85.89	1582.20	1449.94	-25.28	1460.98	1450.38	90.99	0.39
2369.07	60.21	85.46	1596.45	1475.05	-23.38	1486.08	1475.45	90.90	0.69
2397.38	59.55	85.55	1610.66	1499.48	-21.46	1510.49	1499.83	90.81	0.70
2426.51	58.94	85.93	1625.55	1524.46	-19.60	1535.46	1524.77	90.73	0.71
2455.03	58.43	86.49	1640.37	1548.78	-17.99	1559.77	1549.06	90.66	0.74
2484.90	58.24	86.32	1656.05	1574.17	-16.39	1585.14	1574.42	90.59	0.24

	2513.69	58.06	86.89	1671.25	1598.60	-14.95	1609.55	1598.82	90.53	0.54
	2542.30	57.65	86.75	1686.47	1622.79	-13.60	1633.74	1623.00	90.48	0.45
	2570.06	57.78	86.75	1701.30	1646.24	-12.27	1657.17	1646.42	90.42	0.14
	2599.26	57.99	86.81	1716.82	1670.94	-10.88	1681.86	1671.10	90.37	0.22
	2627.86	56.29	86.73	1732.34	1694.94	-9.53	1705.85	1695.08	90.32	1.78
	2656.24	56.50	86.48	1748.05	1718.54	-8.13	1729.44	1718.67	90.27	0.31
	2684.69	56.75	86.65	1763.70	1742.27	-6.71	1753.16	1742.38	90.22	0.30
	2713.37	56.92	86.46	1779.39	1766.25	-5.26	1777.12	1766.35	90.17	0.24
	2741.98	56.98	86.40	1794.99	1790.19	-3.77	1801.06	1790.28	90.12	0.08
	2770.28	57.22	86.23	1810.36	1813.92	-2.24	1824.77	1813.99	90.07	0.30
	2799.13	57.34	86.10	1825.95	1838.15	-0.62	1848.99	1838.21	90.02	0.17
	2826.02	57.41	86.35	1840.45	1860.76	0.87	1871.59	1860.81	89.97	0.25
	2856.22	57.46	86.01	1856.71	1886.17	2.57	1896.98	1886.21	89.92	0.29
	2884.80	57.45	86.19	1872.08	1910.22	4.21	1921.02	1910.25	89.87	0.16
	2913.50	57.48	85.91	1887.52	1934.37	5.87	1945.16	1934.39	89.83	0.25
	2941.92	57.79	86.17	1902.73	1958.34	7.53	1969.10	1958.35	89.78	0.40
	2970.86	57.77	86.15	1918.16	1982.78	9.17	1993.53	1982.79	89.74	0.03
	2999.49	57.65	86.30	1933.46	2006.94	10.76	2017.68	2006.95	89.69	0.18
	3028.05	57.86	86.61	1948.69	2031.06	12.26	2041.79	2031.07	89.66	0.35
	3056.80	57.88	86.45	1963.98	2055.38	13.73	2066.09	2055.38	89.62	0.14
	3084.65	57.88	86.55	1978.79	2078.93	15.17	2089.64	2078.93	89.58	0.09
	3113.41	58.07	86.62	1994.04	2103.28	16.62	2113.98	2103.28	89.55	0.21
	3142.57	58.08	86.92	2009.46	2128.01	18.02	2138.69	2128.01	89.52	0.26
	3171.76	58.02	87.02	2024.91	2152.75	19.33	2163.42	2152.75	89.49	0.11
	3200.93	58.30	87.22	2040.30	2177.51	20.57	2188.17	2177.51	89.46	0.34
	3233.10	58.37	87.35	2057.19	2204.87	21.87	2215.52	2204.88	89.43	0.12
	3258.20	58.29	87.35	2070.36	2226.22	22.86	2236.86	2226.22	89.41	0.10
Projection to TD	3283.00	58.30	87.35	2083.40	2247.30	23.83	2257.93	2247.31	89.40	0.01

Survey Type: Definitive Survey

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

Surveying Prog:

<u>MD From (m)</u>	<u>MD To (m)</u>	<u>EOU Freq</u>	<u>Survey Tool Type</u>
0.00	0.00	Act-Stns	SLB_UNKNOWN (default tool used)
0.00	589.00	Act-Stns	SLB_CNSG+DPIPE
589.00	3283.00	Act-Stns	SLB_MWD-STD

APPENDIX 1b

TUNA A15A

MD-TVD Survey Data Listing

Report Date:	16 March 2005
Well:	TUNA A15A
Structure / Slot:	Tuna Rig 453 / 15
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 10.832, E 148 25 10.377
Location Grid N/E:	N 5774406.79 m, E 624347.95 m
Survey Azimuth Reference:	Grid North

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0.00	0.00	0.00	31.30	0.00	0.00	5774406.79	624347.95
5	0.03	347.56	5.00	26.30	-0.01	-0.01	5774406.78	624347.94
10	0.06	335.12	10.00	21.30	-0.01	-0.02	5774406.78	624347.93
15	0.08	322.68	15.00	16.30	-0.02	-0.03	5774406.77	624347.92
20	0.11	310.24	20.00	11.30	-0.03	-0.04	5774406.76	624347.91
25	0.14	297.80	25.00	6.30	-0.03	-0.05	5774406.75	624347.90
30	0.17	285.36	30.00	1.30	-0.04	-0.06	5774406.75	624347.89
35	0.20	272.92	35.00	-3.70	-0.05	-0.07	5774406.74	624347.88
40	0.22	260.48	40.00	-8.70	-0.06	-0.08	5774406.73	624347.87
45	0.25	248.04	45.00	-13.70	-0.06	-0.09	5774406.73	624347.86
50	0.28	235.60	50.00	-18.70	-0.07	-0.10	5774406.72	624347.85
55	0.27	231.70	55.00	-23.70	-0.08	-0.12	5774406.71	624347.83
60	0.26	227.43	60.00	-28.70	-0.10	-0.14	5774406.69	624347.81
65	0.25	222.78	65.00	-33.70	-0.11	-0.15	5774406.68	624347.79
70	0.24	217.77	70.00	-38.70	-0.13	-0.17	5774406.66	624347.78
75	0.23	212.45	75.00	-43.70	-0.15	-0.18	5774406.64	624347.77
80	0.13	216.98	80.00	-48.70	-0.16	-0.19	5774406.63	624347.76
85	0.09	217.23	85.00	-53.70	-0.17	-0.19	5774406.62	624347.75
90	0.07	214.92	90.00	-58.70	-0.17	-0.20	5774406.62	624347.75
95	0.09	227.19	95.00	-63.70	-0.18	-0.20	5774406.61	624347.75
100	0.20	240.05	100.00	-68.70	-0.19	-0.21	5774406.60	624347.74
105	0.32	232.07	105.00	-73.70	-0.20	-0.23	5774406.59	624347.72
110	0.39	243.54	110.00	-78.70	-0.21	-0.26	5774406.57	624347.69
115	0.46	238.84	115.00	-83.70	-0.23	-0.29	5774406.56	624347.66
120	0.55	239.13	120.00	-88.70	-0.26	-0.33	5774406.53	624347.62
125	0.63	238.97	125.00	-93.70	-0.28	-0.37	5774406.51	624347.58
130	0.68	231.86	130.00	-98.70	-0.31	-0.42	5774406.47	624347.53
135	0.87	230.33	135.00	-103.70	-0.36	-0.47	5774406.43	624347.48
140	1.10	232.36	140.00	-108.70	-0.41	-0.54	5774406.38	624347.41
145	1.26	232.52	145.00	-113.70	-0.47	-0.62	5774406.32	624347.33
150	1.61	226.96	150.00	-118.70	-0.55	-0.72	5774406.23	624347.23
155	1.57	229.68	154.99	-123.69	-0.65	-0.82	5774406.14	624347.13
160	1.63	225.55	159.99	-128.69	-0.74	-0.92	5774406.05	624347.03
165	1.67	225.93	164.99	-133.69	-0.84	-1.03	5774405.95	624346.92
170	1.73	226.01	169.99	-138.69	-0.94	-1.13	5774405.84	624346.82
175	1.63	227.05	174.98	-143.68	-1.05	-1.24	5774405.74	624346.71
180	1.52	223.84	179.98	-148.68	-1.14	-1.34	5774405.65	624346.61
185	1.46	221.62	184.98	-153.68	-1.24	-1.42	5774405.55	624346.52
190	1.35	219.75	189.98	-158.68	-1.33	-1.50	5774405.46	624346.44
195	1.29	212.58	194.98	-163.68	-1.42	-1.57	5774405.37	624346.38
200	1.41	194.16	199.98	-168.68	-1.53	-1.62	5774405.26	624346.33
205	1.46	186.63	204.97	-173.67	-1.65	-1.64	5774405.14	624346.31
210	1.45	181.38	209.97	-178.67	-1.78	-1.65	5774405.01	624346.30
215	1.53	185.03	214.97	-183.67	-1.91	-1.66	5774404.88	624346.29
220	1.54	179.86	219.97	-188.67	-2.04	-1.66	5774404.75	624346.29
225	1.61	178.23	224.97	-193.67	-2.18	-1.66	5774404.61	624346.29
230	1.77	171.89	229.97	-198.67	-2.33	-1.65	5774404.46	624346.30
235	2.04	168.27	234.96	-203.66	-2.49	-1.62	5774404.30	624346.33
240	1.94	172.81	239.96	-208.66	-2.66	-1.59	5774404.13	624346.36
245	2.54	159.38	244.96	-213.66	-2.85	-1.54	5774403.94	624346.41
250	2.87	154.15	249.95	-218.65	-3.07	-1.45	5774403.72	624346.50
255	2.99	153.35	254.94	-223.64	-3.29	-1.33	5774403.49	624346.62
260	3.18	153.05	259.94	-228.64	-3.53	-1.21	5774403.25	624346.74

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
265	3.58	151.62	264.93	-233.63	-3.80	-1.07	5774402.99	624346.87
270	3.73	148.96	269.92	-238.62	-4.07	-0.92	5774402.72	624347.03
275	3.86	145.71	274.91	-243.61	-4.35	-0.74	5774402.44	624347.21
280	3.79	148.14	279.90	-248.60	-4.63	-0.55	5774402.16	624347.39
285	3.79	148.08	284.88	-253.58	-4.91	-0.38	5774401.88	624347.57
290	3.97	148.67	289.87	-258.57	-5.20	-0.20	5774401.59	624347.74
295	4.01	148.95	294.86	-263.56	-5.50	-0.02	5774401.29	624347.92
300	4.14	148.42	299.85	-268.55	-5.80	0.16	5774400.99	624348.11
305	4.31	148.10	304.83	-273.53	-6.11	0.36	5774400.68	624348.30
310	4.51	148.22	309.82	-278.52	-6.44	0.56	5774400.35	624348.51
315	4.73	147.40	314.80	-283.50	-6.78	0.77	5774400.01	624348.72
320	4.85	146.80	319.79	-288.49	-7.13	1.00	5774399.66	624348.95
325	4.96	146.04	324.77	-293.47	-7.49	1.24	5774399.30	624349.18
330	4.93	145.44	329.75	-298.45	-7.84	1.48	5774398.95	624349.43
335	5.10	145.01	334.73	-303.43	-8.20	1.73	5774398.59	624349.68
340	5.22	145.29	339.71	-308.41	-8.57	1.98	5774398.22	624349.93
345	5.48	145.41	344.69	-313.39	-8.96	2.25	5774397.83	624350.20
350	5.79	145.08	349.66	-318.36	-9.36	2.53	5774397.43	624350.48
355	6.40	142.24	354.64	-323.34	-9.79	2.84	5774397.00	624350.79
360	6.56	143.11	359.60	-328.30	-10.23	3.19	5774396.55	624351.13
365	6.93	142.48	364.57	-333.27	-10.70	3.54	5774396.09	624351.49
370	7.33	141.98	369.53	-338.23	-11.19	3.92	5774395.60	624351.87
375	7.65	141.92	374.49	-343.19	-11.71	4.32	5774395.08	624352.27
380	8.11	141.25	379.44	-348.14	-12.24	4.75	5774394.55	624352.70
385	8.60	140.63	384.39	-353.09	-12.81	5.21	5774393.98	624353.16
390	8.90	141.16	389.33	-358.03	-13.40	5.69	5774393.39	624353.64
395	9.52	140.36	394.26	-362.96	-14.02	6.19	5774392.77	624354.14
400	10.00	139.81	399.19	-367.89	-14.67	6.74	5774392.12	624354.69
405	10.39	139.84	404.11	-372.81	-15.34	7.31	5774391.45	624355.26
410	10.81	139.49	409.03	-377.73	-16.04	7.90	5774390.74	624355.85
415	11.20	139.54	413.94	-382.64	-16.77	8.52	5774390.02	624356.47
420	11.52	139.53	418.84	-387.54	-17.52	9.16	5774389.27	624357.11
425	11.85	139.12	423.74	-392.44	-18.29	9.82	5774388.50	624357.77
430	12.16	138.99	428.63	-397.33	-19.07	10.50	5774387.72	624358.45
435	12.56	139.10	433.51	-402.21	-19.88	11.21	5774386.91	624359.15
440	12.93	139.45	438.39	-407.09	-20.72	11.93	5774386.07	624359.87
445	13.14	139.83	443.26	-411.96	-21.58	12.66	5774385.21	624360.60
450	13.50	139.82	448.12	-416.82	-22.46	13.40	5774384.33	624361.35
455	13.82	139.92	452.98	-421.68	-23.36	14.16	5774383.43	624362.11
460	14.13	139.83	457.83	-426.53	-24.28	14.94	5774382.51	624362.89
465	14.35	139.81	462.68	-431.38	-25.22	15.73	5774381.57	624363.68
470	14.63	140.19	467.52	-436.22	-26.18	16.54	5774380.61	624364.48
475	14.70	140.45	472.36	-441.06	-27.15	17.34	5774379.63	624365.29
480	15.17	140.90	477.19	-445.89	-28.15	18.16	5774378.64	624366.11
485	15.50	141.25	482.01	-450.71	-29.18	18.99	5774377.61	624366.94
490	15.80	141.56	486.83	-455.53	-30.24	19.83	5774376.55	624367.78
495	16.11	142.03	491.63	-460.33	-31.31	20.68	5774375.47	624368.63
500	16.50	142.33	496.43	-465.13	-32.42	21.54	5774374.37	624369.49
505	16.84	142.52	501.22	-469.92	-33.56	22.42	5774373.23	624370.37
510	17.21	142.88	506.00	-474.70	-34.72	23.31	5774372.06	624371.25
515	17.63	143.14	510.77	-479.47	-35.92	24.21	5774370.87	624372.15
520	18.02	143.21	515.53	-484.23	-37.15	25.12	5774369.64	624373.07
525	18.38	143.07	520.28	-488.98	-38.40	26.06	5774368.39	624374.01
530	18.88	142.23	525.02	-493.72	-39.67	27.03	5774367.12	624374.98
535	19.71	140.84	529.74	-498.44	-40.96	28.06	5774365.83	624376.01
540	20.56	139.53	534.44	-503.14	-42.28	29.16	5774364.51	624377.11
545	21.42	138.33	539.10	-507.80	-43.63	30.34	5774363.16	624378.28
550	22.29	137.21	543.74	-512.44	-45.01	31.59	5774361.78	624379.53
555	23.16	136.17	548.36	-517.06	-46.41	32.91	5774360.38	624380.86
560	24.03	135.21	552.94	-521.64	-47.84	34.31	5774358.95	624382.26
565	24.92	134.31	557.49	-526.19	-49.30	35.78	5774357.49	624383.73
570	25.81	133.47	562.01	-530.71	-50.79	37.33	5774356.00	624385.27
575	26.71	132.68	566.49	-535.19	-52.30	38.94	5774354.49	624386.89
580	27.61	131.94	570.94	-539.64	-53.83	40.63	5774352.95	624388.58
585	28.51	131.24	575.35	-544.05	-55.40	42.39	5774351.39	624390.34
590	29.28	130.64	579.72	-548.42	-56.98	44.23	5774349.81	624392.18

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
595	29.45	130.27	584.06	-552.76	-58.56	46.14	5774348.23	624394.09
600	29.63	129.90	588.40	-557.10	-60.14	48.05	5774346.65	624396.00
605	29.80	129.53	592.75	-561.45	-61.72	49.96	5774345.07	624397.91
610	29.98	129.16	597.09	-565.79	-63.31	51.87	5774343.48	624399.82
615	30.15	128.79	601.43	-570.13	-64.89	53.78	5774341.90	624401.73
620	30.47	127.98	605.73	-574.43	-66.43	55.80	5774340.36	624403.74
625	31.02	126.48	609.98	-578.68	-67.90	57.97	5774338.89	624405.92
630	31.57	124.98	614.23	-582.93	-69.38	60.15	5774337.41	624408.10
635	32.12	123.48	618.48	-587.18	-70.86	62.33	5774335.93	624410.27
640	32.67	121.98	622.74	-591.44	-72.33	64.50	5774334.46	624412.45
645	33.22	120.48	626.99	-595.69	-73.81	66.68	5774332.98	624414.63
650	33.61	119.16	631.15	-599.85	-75.11	69.12	5774331.68	624417.06
655	33.95	117.89	635.27	-603.97	-76.36	71.64	5774330.43	624419.59
660	34.29	116.62	639.40	-608.10	-77.60	74.17	5774329.19	624422.12
665	34.62	115.35	643.53	-612.23	-78.85	76.70	5774327.94	624424.64
670	34.96	114.08	647.66	-616.36	-80.09	79.22	5774326.69	624427.17
675	35.30	112.81	651.79	-620.49	-81.34	81.75	5774325.45	624429.70
680	35.51	111.42	655.86	-624.56	-82.34	84.47	5774324.45	624432.42
685	35.69	110.01	659.92	-628.62	-83.28	87.24	5774323.51	624435.19
690	35.87	108.59	663.97	-632.67	-84.22	90.01	5774322.57	624437.96
695	36.05	107.18	668.03	-636.73	-85.16	92.78	5774321.63	624440.72
700	36.23	105.76	672.08	-640.78	-86.10	95.54	5774320.69	624443.49
705	36.51	104.47	676.09	-644.79	-86.87	98.41	5774319.91	624446.36
710	36.89	103.29	680.06	-648.76	-87.47	101.39	5774319.32	624449.34
715	37.27	102.12	684.03	-652.73	-88.07	104.37	5774318.72	624452.32
720	37.65	100.95	688.00	-656.70	-88.67	107.35	5774318.12	624455.29
725	38.03	99.78	691.97	-660.67	-89.27	110.33	5774317.52	624458.27
730	38.41	98.61	695.94	-664.64	-89.87	113.30	5774316.92	624461.25
735	38.72	97.54	699.87	-668.57	-90.35	116.35	5774316.44	624464.30
740	38.93	96.61	703.75	-672.45	-90.64	119.50	5774316.15	624467.44
745	39.14	95.69	707.62	-676.32	-90.93	122.64	5774315.86	624470.59
750	39.35	94.76	711.50	-680.20	-91.22	125.79	5774315.57	624473.74
755	39.56	93.84	715.37	-684.07	-91.51	128.93	5774315.28	624476.88
760	39.77	92.91	719.24	-687.94	-91.80	132.08	5774314.99	624480.03
765	40.27	92.22	723.02	-691.72	-91.90	135.35	5774314.89	624483.30
770	40.84	91.60	726.76	-695.46	-91.95	138.66	5774314.84	624486.61
775	41.42	90.97	730.51	-699.21	-92.00	141.97	5774314.79	624489.92
780	41.99	90.34	734.26	-702.96	-92.05	145.28	5774314.74	624493.23
785	42.56	89.72	738.00	-706.70	-92.09	148.59	5774314.69	624496.54
790	43.14	89.10	741.75	-710.45	-92.14	151.90	5774314.65	624499.85
795	43.45	88.79	745.34	-714.04	-92.03	155.38	5774314.76	624503.33
800	43.77	88.48	748.93	-717.63	-91.92	158.85	5774314.87	624506.80
805	44.09	88.17	752.53	-721.23	-91.81	162.33	5774314.98	624510.27
810	44.41	87.86	756.12	-724.82	-91.70	165.80	5774315.09	624513.75
815	44.73	87.55	759.71	-728.41	-91.59	169.28	5774315.20	624517.22
820	45.07	87.27	763.28	-731.98	-91.46	172.78	5774315.33	624520.73
825	45.54	87.13	766.73	-735.43	-91.27	176.39	5774315.52	624524.34
830	46.01	86.99	770.18	-738.88	-91.07	180.00	5774315.72	624527.95
835	46.48	86.86	773.64	-742.34	-90.87	183.61	5774315.91	624531.56
840	46.95	86.72	777.09	-745.79	-90.68	187.22	5774316.11	624535.17
845	47.42	86.58	780.54	-749.24	-90.48	190.83	5774316.31	624538.78
850	47.95	86.47	783.90	-752.60	-90.26	194.52	5774316.52	624542.47
855	48.56	86.41	787.15	-755.85	-90.02	198.31	5774316.77	624546.26
860	49.17	86.34	790.40	-759.10	-89.78	202.10	5774317.01	624550.05
865	49.79	86.28	793.66	-762.36	-89.53	205.89	5774317.26	624553.84
870	50.40	86.21	796.91	-765.61	-89.29	209.68	5774317.50	624557.63
875	51.01	86.15	800.16	-768.86	-89.04	213.47	5774317.75	624561.42
880	51.55	86.15	803.26	-771.96	-88.79	217.39	5774318.00	624565.33
885	52.07	86.17	806.29	-774.99	-88.52	221.35	5774318.27	624569.30
890	52.58	86.20	809.32	-778.02	-88.26	225.32	5774318.53	624573.27
895	53.10	86.23	812.35	-781.05	-88.00	229.29	5774318.79	624577.24
900	53.61	86.25	815.38	-784.08	-87.73	233.26	5774319.06	624581.20
905	54.12	86.28	818.41	-787.11	-87.47	237.22	5774319.32	624585.17
910	54.38	86.46	821.30	-790.00	-87.24	241.29	5774319.55	624589.24
915	54.61	86.65	824.18	-792.88	-87.02	245.37	5774319.77	624593.32
920	54.84	86.85	827.06	-795.76	-86.79	249.45	5774320.00	624597.40

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
925	55.07	87.05	829.94	-798.64	-86.57	253.54	5774320.22	624601.48
930	55.30	87.24	832.82	-801.52	-86.34	257.62	5774320.45	624605.56
935	55.53	87.41	835.68	-804.38	-86.13	261.71	5774320.66	624609.66
940	55.76	87.45	838.47	-807.17	-85.95	265.86	5774320.84	624613.81
945	55.99	87.50	841.25	-809.95	-85.77	270.01	5774321.02	624617.96
950	56.22	87.54	844.04	-812.74	-85.59	274.16	5774321.20	624622.10
955	56.45	87.58	846.82	-815.52	-85.41	278.30	5774321.38	624626.25
960	56.68	87.62	849.61	-818.31	-85.23	282.45	5774321.56	624630.40
965	56.86	87.69	852.37	-821.07	-85.06	286.62	5774321.73	624634.57
970	56.96	87.79	855.08	-823.78	-84.91	290.82	5774321.88	624638.76
975	57.05	87.89	857.80	-826.50	-84.76	295.01	5774322.03	624642.96
980	57.15	87.99	860.51	-829.21	-84.61	299.21	5774322.18	624647.15
985	57.25	88.09	863.23	-831.93	-84.46	303.40	5774322.33	624651.35
990	57.34	88.19	865.95	-834.65	-84.31	307.60	5774322.48	624655.54
995	57.39	88.17	868.65	-837.35	-84.16	311.80	5774322.63	624659.75
1000	57.42	88.10	871.34	-840.04	-84.01	316.02	5774322.77	624663.96
1005	57.44	88.04	874.03	-842.73	-83.87	320.23	5774322.92	624668.17
1010	57.47	87.97	876.72	-845.42	-83.72	324.44	5774323.06	624672.39
1015	57.50	87.90	879.41	-848.11	-83.58	328.65	5774323.21	624676.60
1020	57.52	87.82	882.10	-850.80	-83.43	332.86	5774323.36	624680.81
1025	57.53	87.55	884.78	-853.48	-83.21	337.08	5774323.57	624685.02
1030	57.54	87.28	887.46	-856.16	-83.00	341.29	5774323.79	624689.24
1035	57.55	87.00	890.15	-858.85	-82.78	345.50	5774324.01	624693.45
1040	57.56	86.73	892.83	-861.53	-82.56	349.72	5774324.22	624697.66
1045	57.57	86.46	895.51	-864.21	-82.35	353.93	5774324.44	624701.88
1050	57.58	86.26	898.20	-866.90	-82.11	358.14	5774324.68	624706.09
1055	57.57	86.20	900.88	-869.58	-81.82	362.35	5774324.97	624710.30
1060	57.56	86.13	903.56	-872.26	-81.53	366.56	5774325.26	624714.51
1065	57.54	86.07	906.24	-874.94	-81.25	370.77	5774325.54	624718.72
1070	57.53	86.01	908.93	-877.63	-80.96	374.98	5774325.83	624722.93
1075	57.52	85.94	911.61	-880.31	-80.67	379.19	5774326.12	624727.14
1080	57.64	85.88	914.27	-882.97	-80.37	383.41	5774326.42	624731.36
1085	57.82	85.81	916.91	-885.61	-80.05	387.64	5774326.74	624735.59
1090	58.01	85.74	919.56	-888.26	-79.73	391.87	5774327.06	624739.82
1095	58.20	85.67	922.21	-890.91	-79.42	396.11	5774327.37	624744.05
1100	58.39	85.60	924.85	-893.55	-79.10	400.34	5774327.69	624748.28
1105	58.57	85.53	927.50	-896.20	-78.78	404.57	5774328.01	624752.51
1110	58.43	85.52	930.14	-898.84	-78.45	408.80	5774328.33	624756.75
1115	58.26	85.53	932.78	-901.48	-78.12	413.03	5774328.67	624760.98
1120	58.09	85.54	935.42	-904.12	-77.79	417.26	5774329.00	624765.21
1125	57.91	85.54	938.07	-906.77	-77.46	421.50	5774329.33	624769.44
1130	57.74	85.55	940.71	-909.41	-77.13	425.73	5774329.66	624773.68
1135	57.58	85.56	943.37	-912.07	-76.80	429.95	5774329.98	624777.90
1140	57.44	85.59	946.07	-914.77	-76.49	434.14	5774330.30	624782.09
1145	57.30	85.63	948.78	-917.48	-76.17	438.33	5774330.62	624786.28
1150	57.17	85.66	951.49	-920.19	-75.85	442.52	5774330.94	624790.47
1155	57.03	85.70	954.19	-922.89	-75.53	446.72	5774331.26	624794.66
1160	56.90	85.73	956.90	-925.60	-75.21	450.91	5774331.58	624798.86
1165	57.04	85.78	959.58	-928.28	-74.90	455.12	5774331.89	624803.07
1170	57.45	85.83	962.23	-930.93	-74.60	459.35	5774332.19	624807.30
1175	57.85	85.88	964.88	-933.58	-74.29	463.58	5774332.49	624811.53
1180	58.26	85.93	967.52	-936.22	-73.99	467.81	5774332.80	624815.75
1185	58.67	85.98	970.17	-938.87	-73.69	472.04	5774333.10	624819.98
1190	59.07	86.04	972.82	-941.52	-73.38	476.27	5774333.40	624824.21
1195	59.24	86.12	975.40	-944.10	-73.10	480.54	5774333.69	624828.49
1200	59.31	86.21	977.94	-946.64	-72.82	484.84	5774333.96	624832.79
1205	59.39	86.30	980.49	-949.19	-72.55	489.13	5774334.24	624837.08
1210	59.47	86.40	983.03	-951.73	-72.27	493.43	5774334.52	624841.37
1215	59.54	86.49	985.58	-954.28	-72.00	497.72	5774334.79	624845.67
1220	59.62	86.58	988.12	-956.82	-71.72	502.02	5774335.07	624849.96
1225	59.53	86.55	990.67	-959.37	-71.46	506.31	5774335.33	624854.26
1230	59.43	86.53	993.22	-961.92	-71.19	510.60	5774335.59	624858.55
1235	59.34	86.50	995.77	-964.47	-70.93	514.90	5774335.86	624862.84
1240	59.25	86.48	998.32	-967.02	-70.67	519.19	5774336.12	624867.14
1245	59.15	86.45	1000.87	-969.57	-70.41	523.48	5774336.38	624871.43
1250	59.04	86.44	1003.43	-972.13	-70.15	527.77	5774336.64	624875.72

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1255	58.86	86.46	1006.04	-974.74	-69.89	532.03	5774336.90	624879.98
1260	58.68	86.49	1008.64	-977.34	-69.63	536.29	5774337.16	624884.23
1265	58.50	86.52	1011.25	-979.95	-69.37	540.54	5774337.42	624888.49
1270	58.31	86.55	1013.86	-982.56	-69.11	544.80	5774337.68	624892.75
1275	58.13	86.57	1016.47	-985.17	-68.85	549.06	5774337.94	624897.01
1280	58.08	86.56	1019.08	-987.78	-68.58	553.31	5774338.20	624901.26
1285	58.19	86.50	1021.71	-990.41	-68.32	557.56	5774338.47	624905.51
1290	58.30	86.44	1024.33	-993.03	-68.05	561.81	5774338.74	624909.75
1295	58.40	86.38	1026.96	-995.66	-67.78	566.05	5774339.00	624914.00
1300	58.51	86.31	1029.58	-998.28	-67.52	570.30	5774339.27	624918.25
1305	58.62	86.25	1032.21	-1000.91	-67.25	574.55	5774339.54	624922.50
1310	58.59	86.27	1034.83	-1003.53	-66.99	578.80	5774339.80	624926.75
1315	58.49	86.33	1037.45	-1006.15	-66.72	583.05	5774340.07	624931.00
1320	58.39	86.40	1040.07	-1008.77	-66.45	587.30	5774340.34	624935.24
1325	58.28	86.46	1042.70	-1011.40	-66.19	591.54	5774340.60	624939.49
1330	58.18	86.53	1045.32	-1014.02	-65.92	595.79	5774340.87	624943.74
1335	58.08	86.59	1047.94	-1016.64	-65.65	600.04	5774341.13	624947.99
1340	57.99	86.60	1050.60	-1019.30	-65.40	604.27	5774341.39	624952.22
1345	57.90	86.59	1053.26	-1021.96	-65.15	608.49	5774341.64	624956.44
1350	57.82	86.59	1055.93	-1024.63	-64.90	612.72	5774341.89	624960.66
1355	57.73	86.59	1058.59	-1027.29	-64.65	616.94	5774342.14	624964.89
1360	57.65	86.58	1061.25	-1029.95	-64.39	621.17	5774342.40	624969.11
1365	57.57	86.58	1063.92	-1032.62	-64.14	625.39	5774342.65	624973.34
1370	57.59	86.63	1066.60	-1035.30	-63.90	629.60	5774342.89	624977.55
1375	57.60	86.67	1069.27	-1037.97	-63.66	633.82	5774343.13	624981.77
1380	57.62	86.71	1071.95	-1040.65	-63.41	638.03	5774343.37	624985.98
1385	57.63	86.76	1074.63	-1043.33	-63.17	642.25	5774343.62	624990.20
1390	57.65	86.80	1077.31	-1046.01	-62.93	646.47	5774343.86	624994.41
1395	57.62	86.84	1079.99	-1048.69	-62.69	650.68	5774344.10	624998.62
1400	57.51	86.87	1082.69	-1051.39	-62.47	654.88	5774344.32	625002.83
1405	57.39	86.89	1085.39	-1054.09	-62.24	659.08	5774344.55	625007.03
1410	57.27	86.92	1088.09	-1056.79	-62.01	663.28	5774344.78	625011.23
1415	57.16	86.95	1090.79	-1059.49	-61.78	667.49	5774345.00	625015.43
1420	57.04	86.98	1093.49	-1062.19	-61.56	671.69	5774345.23	625019.64
1425	56.95	86.97	1096.21	-1064.91	-61.33	675.88	5774345.46	625023.83
1430	56.89	86.93	1098.95	-1067.65	-61.10	680.06	5774345.69	625028.00
1435	56.83	86.90	1101.68	-1070.38	-60.88	684.24	5774345.91	625032.18
1440	56.77	86.86	1104.42	-1073.12	-60.65	688.41	5774346.14	625036.36
1445	56.71	86.82	1107.16	-1075.86	-60.42	692.59	5774346.37	625040.54
1450	56.64	86.78	1109.89	-1078.59	-60.19	696.77	5774346.60	625044.72
1455	56.85	86.80	1112.60	-1081.30	-59.96	700.97	5774346.83	625048.92
1460	57.08	86.83	1115.30	-1084.00	-59.73	705.17	5774347.06	625053.12
1465	57.31	86.85	1118.00	-1086.70	-59.50	709.37	5774347.29	625057.32
1470	57.54	86.87	1120.70	-1089.40	-59.27	713.57	5774347.52	625061.52
1475	57.77	86.90	1123.40	-1092.10	-59.04	717.77	5774347.75	625065.72
1480	57.95	86.92	1126.10	-1094.80	-58.81	721.98	5774347.98	625069.92
1485	57.80	86.92	1128.78	-1097.48	-58.58	726.19	5774348.21	625074.14
1490	57.64	86.92	1131.47	-1100.17	-58.35	730.40	5774348.43	625078.35
1495	57.48	86.93	1134.15	-1102.85	-58.13	734.61	5774348.66	625082.56
1500	57.32	86.93	1136.84	-1105.54	-57.90	738.82	5774348.89	625086.77
1505	57.16	86.93	1139.52	-1108.22	-57.68	743.04	5774349.11	625090.98
1510	57.13	86.92	1142.21	-1110.91	-57.45	747.25	5774349.34	625095.19
1515	57.26	86.88	1144.90	-1113.60	-57.21	751.46	5774349.58	625099.40
1520	57.40	86.85	1147.59	-1116.29	-56.98	755.66	5774349.81	625103.61
1525	57.54	86.81	1150.28	-1118.98	-56.75	759.87	5774350.04	625107.82
1530	57.68	86.78	1152.97	-1121.67	-56.51	764.08	5774350.27	625112.03
1535	57.82	86.74	1155.65	-1124.35	-56.28	768.29	5774350.51	625116.24
1540	57.84	86.75	1158.33	-1127.03	-56.05	772.51	5774350.74	625120.46
1545	57.78	86.78	1161.00	-1129.70	-55.81	776.73	5774350.98	625124.68
1550	57.73	86.81	1163.67	-1132.37	-55.58	780.95	5774351.21	625128.90
1555	57.67	86.84	1166.34	-1135.04	-55.34	785.17	5774351.45	625133.12
1560	57.62	86.87	1169.01	-1137.71	-55.11	789.39	5774351.68	625137.34
1565	57.57	86.90	1171.69	-1140.39	-54.87	793.61	5774351.92	625141.56
1570	57.71	86.92	1174.34	-1143.04	-54.65	797.84	5774352.14	625145.79
1575	57.87	86.93	1176.98	-1145.68	-54.42	802.08	5774352.37	625150.03
1580	58.04	86.95	1179.63	-1148.33	-54.19	806.32	5774352.59	625154.26

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1585	58.21	86.97	1182.28	-1150.98	-53.97	810.55	5774352.82	625158.50
1590	58.37	86.99	1184.92	-1153.62	-53.74	814.79	5774353.05	625162.73
1595	58.50	87.02	1187.56	-1156.26	-53.52	819.03	5774353.27	625166.98
1600	58.51	87.10	1190.17	-1158.87	-53.32	823.29	5774353.47	625171.24
1605	58.52	87.18	1192.78	-1161.48	-53.11	827.55	5774353.68	625175.50
1610	58.53	87.25	1195.39	-1164.09	-52.90	831.81	5774353.89	625179.76
1615	58.54	87.33	1198.00	-1166.70	-52.70	836.07	5774354.09	625184.01
1620	58.55	87.41	1200.61	-1169.31	-52.49	840.33	5774354.30	625188.27
1625	58.48	87.43	1203.24	-1171.94	-52.29	844.58	5774354.50	625192.52
1630	58.30	87.40	1205.89	-1174.59	-52.09	848.81	5774354.70	625196.76
1635	58.12	87.37	1208.53	-1177.23	-51.90	853.05	5774354.89	625201.00
1640	57.95	87.34	1211.17	-1179.87	-51.70	857.29	5774355.09	625205.24
1645	57.77	87.30	1213.82	-1182.52	-51.51	861.53	5774355.28	625209.48
1650	57.59	87.27	1216.46	-1185.16	-51.31	865.77	5774355.48	625213.72
1655	57.68	87.30	1219.12	-1187.82	-51.12	870.00	5774355.67	625217.95
1660	57.80	87.33	1221.77	-1190.47	-50.92	874.23	5774355.87	625222.18
1665	57.91	87.36	1224.43	-1193.13	-50.73	878.46	5774356.06	625226.41
1670	58.02	87.38	1227.09	-1195.79	-50.53	882.70	5774356.26	625230.64
1675	58.13	87.41	1229.74	-1198.44	-50.33	886.93	5774356.45	625234.87
1680	58.23	87.45	1232.40	-1201.10	-50.14	891.16	5774356.65	625239.11
1685	58.26	87.49	1235.02	-1203.72	-49.96	895.41	5774356.83	625243.36
1690	58.29	87.54	1237.65	-1206.35	-49.78	899.66	5774357.01	625247.61
1695	58.32	87.59	1240.28	-1208.98	-49.60	903.91	5774357.19	625251.86
1700	58.35	87.64	1242.90	-1211.60	-49.42	908.16	5774357.37	625256.11
1705	58.38	87.69	1245.53	-1214.23	-49.24	912.42	5774357.55	625260.36
1710	58.34	87.72	1248.17	-1216.87	-49.07	916.66	5774357.72	625264.61
1715	58.16	87.72	1250.82	-1219.52	-48.90	920.89	5774357.89	625268.84
1720	57.98	87.72	1253.48	-1222.18	-48.73	925.12	5774358.06	625273.07
1725	57.79	87.73	1256.14	-1224.84	-48.56	929.35	5774358.23	625277.30
1730	57.61	87.73	1258.80	-1227.50	-48.39	933.59	5774358.39	625281.53
1735	57.43	87.73	1261.46	-1230.16	-48.23	937.82	5774358.56	625285.76
1740	57.33	87.70	1264.15	-1232.85	-48.05	942.03	5774358.74	625289.98
1745	57.27	87.65	1266.86	-1235.56	-47.88	946.23	5774358.91	625294.17
1750	57.21	87.60	1269.57	-1238.27	-47.70	950.43	5774359.09	625298.37
1755	57.16	87.56	1272.27	-1240.97	-47.52	954.62	5774359.27	625302.57
1760	57.10	87.51	1274.98	-1243.68	-47.35	958.82	5774359.44	625306.77
1765	57.04	87.46	1277.69	-1246.39	-47.17	963.02	5774359.62	625310.97
1770	57.13	87.48	1280.39	-1249.09	-46.99	967.23	5774359.80	625315.18
1775	57.26	87.51	1283.08	-1251.78	-46.81	971.44	5774359.98	625319.38
1780	57.39	87.54	1285.78	-1254.48	-46.63	975.64	5774360.16	625323.59
1785	57.52	87.58	1288.47	-1257.17	-46.45	979.85	5774360.34	625327.80
1790	57.64	87.61	1291.17	-1259.87	-46.27	984.06	5774360.52	625332.01
1795	57.77	87.64	1293.86	-1262.56	-46.09	988.27	5774360.70	625336.22
1800	57.85	87.66	1296.51	-1265.21	-45.92	992.51	5774360.87	625340.46
1805	57.92	87.67	1299.16	-1267.86	-45.75	996.74	5774361.04	625344.69
1810	58.00	87.69	1301.81	-1270.51	-45.57	1000.98	5774361.21	625348.93
1815	58.08	87.70	1304.46	-1273.16	-45.40	1005.22	5774361.39	625353.16
1820	58.16	87.72	1307.11	-1275.81	-45.23	1009.45	5774361.56	625357.40
1825	58.17	87.72	1309.76	-1278.46	-45.06	1013.69	5774361.73	625361.63
1830	58.06	87.71	1312.42	-1281.12	-44.89	1017.92	5774361.90	625365.87
1835	57.95	87.69	1315.08	-1283.78	-44.72	1022.15	5774362.07	625370.10
1840	57.84	87.68	1317.74	-1286.44	-44.55	1026.38	5774362.24	625374.33
1845	57.73	87.66	1320.39	-1289.09	-44.38	1030.61	5774362.41	625378.56
1850	57.62	87.65	1323.05	-1291.75	-44.21	1034.85	5774362.58	625382.79
1855	57.52	87.67	1325.73	-1294.43	-44.04	1039.06	5774362.75	625387.01
1860	57.42	87.73	1328.44	-1297.14	-43.88	1043.27	5774362.91	625391.21
1865	57.31	87.79	1331.14	-1299.84	-43.72	1047.47	5774363.07	625395.42
1870	57.21	87.84	1333.84	-1302.54	-43.56	1051.67	5774363.23	625399.62
1874	57.13	87.89	1336.00	-1304.70	-43.43	1055.03	5774363.36	625402.98
1875	57.11	87.90	1336.54	-1305.24	-43.40	1055.88	5774363.39	625403.82
1876	57.09	87.91	1337.08	-1305.78	-43.36	1056.72	5774363.43	625404.66
1877	57.07	87.92	1337.62	-1306.32	-43.33	1057.56	5774363.46	625405.50
1878	57.05	87.93	1338.16	-1306.86	-43.30	1058.40	5774363.49	625406.35
1879	57.03	87.95	1338.71	-1307.41	-43.27	1059.24	5774363.52	625407.19
1880	57.01	87.96	1339.25	-1307.95	-43.23	1060.08	5774363.55	625408.03
1881	56.99	87.97	1339.79	-1308.49	-43.20	1060.92	5774363.59	625408.87

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1882	57.00	87.97	1340.33	-1309.03	-43.17	1061.76	5774363.62	625409.71
1883	57.02	87.96	1340.87	-1309.57	-43.14	1062.60	5774363.65	625410.55
1884	57.04	87.95	1341.41	-1310.11	-43.11	1063.44	5774363.68	625411.39
1885	57.05	87.95	1341.95	-1310.65	-43.08	1064.28	5774363.71	625412.23
1886	57.07	87.94	1342.49	-1311.19	-43.05	1065.12	5774363.74	625413.07
1887	57.08	87.94	1343.04	-1311.74	-43.02	1065.96	5774363.77	625413.91
1888	57.10	87.93	1343.58	-1312.28	-42.99	1066.80	5774363.80	625414.75
1889	57.11	87.93	1344.12	-1312.82	-42.96	1067.64	5774363.83	625415.59
1890	57.13	87.92	1344.66	-1313.36	-42.92	1068.48	5774363.86	625416.43
1891	57.14	87.92	1345.20	-1313.90	-42.89	1069.32	5774363.90	625417.27
1892	57.16	87.91	1345.74	-1314.44	-42.86	1070.16	5774363.93	625418.11
1893	57.17	87.91	1346.29	-1314.99	-42.83	1071.00	5774363.96	625418.95
1894	57.19	87.90	1346.83	-1315.53	-42.80	1071.84	5774363.99	625419.79
1895	57.20	87.90	1347.37	-1316.07	-42.77	1072.68	5774364.02	625420.63
1896	57.22	87.89	1347.91	-1316.61	-42.74	1073.52	5774364.05	625421.47
1897	57.24	87.89	1348.45	-1317.15	-42.71	1074.36	5774364.08	625422.31
1898	57.25	87.88	1348.99	-1317.69	-42.68	1075.20	5774364.11	625423.15
1899	57.27	87.88	1349.53	-1318.23	-42.65	1076.04	5774364.14	625423.99
1900	57.28	87.87	1350.08	-1318.78	-42.62	1076.88	5774364.17	625424.83
1901	57.30	87.87	1350.62	-1319.32	-42.58	1077.72	5774364.20	625425.67
1902	57.31	87.86	1351.16	-1319.86	-42.55	1078.56	5774364.24	625426.51
1903	57.33	87.85	1351.70	-1320.40	-42.52	1079.40	5774364.27	625427.35
1904	57.34	87.85	1352.24	-1320.94	-42.49	1080.24	5774364.30	625428.19
1905	57.36	87.84	1352.78	-1321.48	-42.46	1081.08	5774364.33	625429.03
1906	57.37	87.84	1353.33	-1322.03	-42.43	1081.92	5774364.36	625429.87
1907	57.39	87.83	1353.87	-1322.57	-42.40	1082.76	5774364.39	625430.71
1908	57.40	87.83	1354.41	-1323.11	-42.37	1083.60	5774364.42	625431.55
1909	57.42	87.82	1354.95	-1323.65	-42.34	1084.44	5774364.45	625432.39
1910	57.42	87.82	1355.49	-1324.19	-42.31	1085.28	5774364.48	625433.23
1911	57.40	87.82	1356.04	-1324.74	-42.27	1086.12	5774364.51	625434.07
1912	57.37	87.82	1356.58	-1325.28	-42.24	1086.96	5774364.55	625434.91
1913	57.35	87.82	1357.12	-1325.82	-42.21	1087.80	5774364.58	625435.75
1914	57.33	87.82	1357.67	-1326.37	-42.18	1088.64	5774364.61	625436.59
1915	57.30	87.82	1358.21	-1326.91	-42.15	1089.48	5774364.64	625437.42
1916	57.28	87.82	1358.75	-1327.45	-42.12	1090.32	5774364.67	625438.26
1917	57.25	87.83	1359.30	-1328.00	-42.08	1091.15	5774364.71	625439.10
1918	57.23	87.83	1359.84	-1328.54	-42.05	1091.99	5774364.74	625439.94
1919	57.21	87.83	1360.38	-1329.08	-42.02	1092.83	5774364.77	625440.78
1920	57.18	87.83	1360.93	-1329.63	-41.99	1093.67	5774364.80	625441.62
1921	57.16	87.83	1361.47	-1330.17	-41.96	1094.51	5774364.83	625442.46
1922	57.14	87.83	1362.01	-1330.71	-41.92	1095.35	5774364.86	625443.30
1923	57.11	87.83	1362.56	-1331.26	-41.89	1096.19	5774364.90	625444.14
1924	57.09	87.83	1363.10	-1331.80	-41.86	1097.03	5774364.93	625444.97
1925	57.06	87.83	1363.64	-1332.34	-41.83	1097.87	5774364.96	625445.81
1926	57.04	87.83	1364.19	-1332.89	-41.80	1098.70	5774364.99	625446.65
1927	57.02	87.83	1364.73	-1333.43	-41.77	1099.54	5774365.02	625447.49
1928	56.99	87.83	1365.27	-1333.97	-41.73	1100.38	5774365.06	625448.33
1929	56.97	87.83	1365.82	-1334.52	-41.70	1101.22	5774365.09	625449.17
1930	56.94	87.83	1366.36	-1335.06	-41.67	1102.06	5774365.12	625450.01
1931	56.92	87.83	1366.90	-1335.60	-41.64	1102.90	5774365.15	625450.85
1932	56.90	87.84	1367.45	-1336.15	-41.61	1103.74	5774365.18	625451.69
1933	56.87	87.84	1367.99	-1336.69	-41.57	1104.58	5774365.21	625452.52
1934	56.85	87.84	1368.53	-1337.23	-41.54	1105.42	5774365.25	625453.36
1935	56.82	87.84	1369.08	-1337.78	-41.51	1106.25	5774365.28	625454.20
1936	56.80	87.84	1369.62	-1338.32	-41.48	1107.09	5774365.31	625455.04
1937	56.78	87.84	1370.16	-1338.86	-41.45	1107.93	5774365.34	625455.88
1938	56.75	87.84	1370.71	-1339.41	-41.42	1108.77	5774365.37	625456.72
1939	56.74	87.83	1371.25	-1339.95	-41.38	1109.61	5774365.41	625457.56
1940	56.75	87.82	1371.80	-1340.50	-41.35	1110.44	5774365.44	625458.39
1941	56.75	87.80	1372.35	-1341.05	-41.31	1111.28	5774365.48	625459.23
1942	56.76	87.79	1372.90	-1341.60	-41.28	1112.12	5774365.51	625460.06
1943	56.76	87.77	1373.44	-1342.14	-41.24	1112.95	5774365.54	625460.90
1944	56.77	87.76	1373.99	-1342.69	-41.21	1113.79	5774365.58	625461.74
1945	56.77	87.75	1374.54	-1343.24	-41.18	1114.63	5774365.61	625462.57
1946	56.78	87.73	1375.08	-1343.78	-41.14	1115.46	5774365.65	625463.41
1947	56.78	87.72	1375.63	-1344.33	-41.11	1116.30	5774365.68	625464.25

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1948	56.79	87.70	1376.18	-1344.88	-41.07	1117.13	5774365.72	625465.08
1949	56.79	87.69	1376.73	-1345.43	-41.04	1117.97	5774365.75	625465.92
1950	56.80	87.67	1377.27	-1345.97	-41.00	1118.81	5774365.79	625466.75
1951	56.80	87.66	1377.82	-1346.52	-40.97	1119.64	5774365.82	625467.59
1952	56.81	87.64	1378.37	-1347.07	-40.93	1120.48	5774365.86	625468.43
1953	56.81	87.63	1378.92	-1347.62	-40.90	1121.31	5774365.89	625469.26
1954	56.82	87.61	1379.46	-1348.16	-40.86	1122.15	5774365.93	625470.10
1955	56.82	87.60	1380.01	-1348.71	-40.83	1122.99	5774365.96	625470.93
1956	56.83	87.58	1380.56	-1349.26	-40.79	1123.82	5774365.99	625471.77
1957	56.83	87.57	1381.11	-1349.81	-40.76	1124.66	5774366.03	625472.61
1958	56.83	87.56	1381.65	-1350.35	-40.73	1125.49	5774366.06	625473.44
1959	56.84	87.54	1382.20	-1350.90	-40.69	1126.33	5774366.10	625474.28
1960	56.84	87.53	1382.75	-1351.45	-40.66	1127.17	5774366.13	625475.12
1961	56.85	87.51	1383.30	-1352.00	-40.62	1128.00	5774366.17	625475.95
1962	56.85	87.50	1383.84	-1352.54	-40.59	1128.84	5774366.20	625476.79
1963	56.86	87.48	1384.39	-1353.09	-40.55	1129.68	5774366.24	625477.62
1964	56.86	87.47	1384.94	-1353.64	-40.52	1130.51	5774366.27	625478.46
1965	56.87	87.45	1385.49	-1354.19	-40.48	1131.35	5774366.31	625479.30
1966	56.87	87.44	1386.03	-1354.73	-40.45	1132.18	5774366.34	625480.13
1967	56.88	87.42	1386.58	-1355.28	-40.41	1133.02	5774366.37	625480.97
1968	56.89	87.42	1387.12	-1355.82	-40.38	1133.86	5774366.41	625481.81
1969	56.91	87.43	1387.67	-1356.37	-40.34	1134.70	5774366.45	625482.65
1970	56.93	87.43	1388.21	-1356.91	-40.30	1135.54	5774366.48	625483.49
1971	56.95	87.44	1388.75	-1357.45	-40.27	1136.38	5774366.52	625484.32
1972	56.97	87.44	1389.29	-1357.99	-40.23	1137.22	5774366.56	625485.16
1973	56.99	87.45	1389.83	-1358.53	-40.19	1138.06	5774366.59	625486.00
1974	57.01	87.46	1390.38	-1359.08	-40.16	1138.90	5774366.63	625486.84
1975	57.03	87.46	1390.92	-1359.62	-40.12	1139.73	5774366.67	625487.68
1976	57.05	87.47	1391.46	-1360.16	-40.08	1140.57	5774366.70	625488.52
1977	57.07	87.47	1392.00	-1360.70	-40.05	1141.41	5774366.74	625489.36
1978	57.09	87.48	1392.55	-1361.25	-40.01	1142.25	5774366.78	625490.20
1979	57.11	87.48	1393.09	-1361.79	-39.97	1143.09	5774366.82	625491.04
1980	57.13	87.49	1393.63	-1362.33	-39.94	1143.93	5774366.85	625491.88
1981	57.15	87.49	1394.17	-1362.87	-39.90	1144.77	5774366.89	625492.72
1982	57.17	87.50	1394.72	-1363.42	-39.86	1145.61	5774366.93	625493.56
1983	57.19	87.50	1395.26	-1363.96	-39.83	1146.45	5774366.96	625494.40
1984	57.21	87.51	1395.80	-1364.50	-39.79	1147.29	5774367.00	625495.24
1985	57.23	87.51	1396.34	-1365.04	-39.75	1148.13	5774367.04	625496.08
1986	57.25	87.52	1396.88	-1365.58	-39.72	1148.97	5774367.07	625496.92
1987	57.27	87.52	1397.43	-1366.13	-39.68	1149.81	5774367.11	625497.76
1988	57.29	87.53	1397.97	-1366.67	-39.64	1150.65	5774367.15	625498.60
1989	57.31	87.53	1398.51	-1367.21	-39.61	1151.49	5774367.18	625499.43
1990	57.33	87.54	1399.05	-1367.75	-39.57	1152.33	5774367.22	625500.27
1991	57.35	87.54	1399.60	-1368.30	-39.53	1153.17	5774367.26	625501.11
1992	57.37	87.55	1400.14	-1368.84	-39.50	1154.01	5774367.29	625501.95
1993	57.39	87.55	1400.68	-1369.38	-39.46	1154.84	5774367.33	625502.79
1994	57.41	87.56	1401.22	-1369.92	-39.42	1155.68	5774367.37	625503.63
1995	57.43	87.56	1401.76	-1370.46	-39.39	1156.52	5774367.40	625504.47
1996	57.45	87.57	1402.31	-1371.01	-39.35	1157.36	5774367.44	625505.31
1997	57.46	87.57	1402.84	-1371.54	-39.31	1158.21	5774367.48	625506.15
1998	57.47	87.57	1403.38	-1372.08	-39.28	1159.05	5774367.51	625507.00
1999	57.48	87.57	1403.91	-1372.61	-39.24	1159.89	5774367.55	625507.84
2000	57.49	87.57	1404.45	-1373.15	-39.21	1160.74	5774367.58	625508.68
2001	57.50	87.56	1404.99	-1373.69	-39.17	1161.58	5774367.62	625509.53
2002	57.51	87.56	1405.52	-1374.22	-39.13	1162.42	5774367.66	625510.37
2003	57.52	87.56	1406.06	-1374.76	-39.10	1163.27	5774367.69	625511.21
2004	57.53	87.56	1406.59	-1375.29	-39.06	1164.11	5774367.73	625512.06
2005	57.54	87.56	1407.13	-1375.83	-39.03	1164.95	5774367.76	625512.90
2006	57.55	87.56	1407.67	-1376.37	-38.99	1165.80	5774367.80	625513.75
2007	57.56	87.56	1408.20	-1376.90	-38.95	1166.64	5774367.84	625514.59
2008	57.56	87.56	1408.74	-1377.44	-38.92	1167.48	5774367.87	625515.43
2009	57.57	87.56	1409.27	-1377.97	-38.88	1168.33	5774367.91	625516.28
2010	57.58	87.56	1409.81	-1378.51	-38.85	1169.17	5774367.94	625517.12
2011	57.59	87.55	1410.35	-1379.05	-38.81	1170.01	5774367.98	625517.96
2012	57.60	87.55	1410.88	-1379.58	-38.77	1170.86	5774368.02	625518.81
2013	57.61	87.55	1411.42	-1380.12	-38.74	1171.70	5774368.05	625519.65

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2014	57.62	87.55	1411.95	-1380.65	-38.70	1172.54	5774368.09	625520.49
2015	57.63	87.55	1412.49	-1381.19	-38.67	1173.39	5774368.12	625521.34
2016	57.64	87.55	1413.03	-1381.73	-38.63	1174.23	5774368.16	625522.18
2017	57.65	87.55	1413.56	-1382.26	-38.59	1175.08	5774368.20	625523.02
2018	57.66	87.55	1414.10	-1382.80	-38.56	1175.92	5774368.23	625523.87
2019	57.67	87.55	1414.63	-1383.33	-38.52	1176.76	5774368.27	625524.71
2020	57.68	87.55	1415.17	-1383.87	-38.49	1177.61	5774368.30	625525.55
2021	57.69	87.54	1415.71	-1384.41	-38.45	1178.45	5774368.34	625526.40
2022	57.70	87.54	1416.24	-1384.94	-38.41	1179.29	5774368.38	625527.24
2023	57.71	87.54	1416.78	-1385.48	-38.38	1180.14	5774368.41	625528.08
2024	57.72	87.54	1417.31	-1386.01	-38.34	1180.98	5774368.45	625528.93
2025	57.73	87.54	1417.85	-1386.55	-38.31	1181.82	5774368.48	625529.77
2026	57.75	87.53	1418.38	-1387.08	-38.27	1182.67	5774368.52	625530.62
2027	57.77	87.52	1418.91	-1387.61	-38.23	1183.52	5774368.56	625531.47
2028	57.79	87.50	1419.44	-1388.14	-38.19	1184.37	5774368.60	625532.31
2029	57.82	87.49	1419.97	-1388.67	-38.15	1185.21	5774368.64	625533.16
2030	57.84	87.48	1420.50	-1389.20	-38.11	1186.06	5774368.68	625534.01
2031	57.86	87.47	1421.03	-1389.73	-38.07	1186.91	5774368.72	625534.86
2032	57.88	87.46	1421.56	-1390.26	-38.03	1187.76	5774368.76	625535.70
2033	57.90	87.44	1422.08	-1390.78	-37.99	1188.60	5774368.80	625536.55
2034	57.93	87.43	1422.61	-1391.31	-37.95	1189.45	5774368.83	625537.40
2035	57.95	87.42	1423.14	-1391.84	-37.92	1190.30	5774368.87	625538.25
2036	57.97	87.41	1423.67	-1392.37	-37.88	1191.15	5774368.91	625539.09
2037	57.99	87.39	1424.20	-1392.90	-37.84	1191.99	5774368.95	625539.94
2038	58.01	87.38	1424.73	-1393.43	-37.80	1192.84	5774368.99	625540.79
2039	58.04	87.37	1425.26	-1393.96	-37.76	1193.69	5774369.03	625541.64
2040	58.06	87.36	1425.79	-1394.49	-37.72	1194.54	5774369.07	625542.48
2041	58.08	87.35	1426.32	-1395.02	-37.68	1195.38	5774369.11	625543.33
2042	58.10	87.33	1426.85	-1395.55	-37.64	1196.23	5774369.15	625544.18
2043	58.12	87.32	1427.38	-1396.08	-37.60	1197.08	5774369.19	625545.03
2044	58.15	87.31	1427.91	-1396.61	-37.56	1197.93	5774369.22	625545.87
2045	58.17	87.30	1428.44	-1397.14	-37.53	1198.77	5774369.26	625546.72
2046	58.19	87.28	1428.97	-1397.67	-37.49	1199.62	5774369.30	625547.57
2047	58.21	87.27	1429.49	-1398.19	-37.45	1200.47	5774369.34	625548.42
2048	58.23	87.26	1430.02	-1398.72	-37.41	1201.32	5774369.38	625549.26
2049	58.26	87.25	1430.55	-1399.25	-37.37	1202.16	5774369.42	625550.11
2050	58.28	87.23	1431.08	-1399.78	-37.33	1203.01	5774369.46	625550.96
2051	58.30	87.22	1431.61	-1400.31	-37.29	1203.86	5774369.50	625551.81
2052	58.32	87.21	1432.14	-1400.84	-37.25	1204.71	5774369.54	625552.65
2053	58.35	87.20	1432.67	-1401.37	-37.21	1205.55	5774369.58	625553.50
2054	58.36	87.19	1433.20	-1401.90	-37.17	1206.40	5774369.61	625554.35
2055	58.34	87.21	1433.73	-1402.43	-37.14	1207.25	5774369.65	625555.20
2056	58.33	87.22	1434.25	-1402.95	-37.10	1208.10	5774369.69	625556.05
2057	58.31	87.23	1434.78	-1403.48	-37.06	1208.95	5774369.73	625556.90
2058	58.30	87.24	1435.31	-1404.01	-37.02	1209.80	5774369.77	625557.74
2059	58.28	87.26	1435.84	-1404.54	-36.98	1210.64	5774369.81	625558.59
2060	58.27	87.27	1436.36	-1405.06	-36.94	1211.49	5774369.85	625559.44
2061	58.26	87.28	1436.89	-1405.59	-36.90	1212.34	5774369.89	625560.29
2062	58.24	87.29	1437.42	-1406.12	-36.86	1213.19	5774369.93	625561.14
2063	58.23	87.31	1437.95	-1406.65	-36.82	1214.04	5774369.97	625561.99
2064	58.21	87.32	1438.48	-1407.18	-36.78	1214.89	5774370.00	625562.84
2065	58.20	87.33	1439.00	-1407.70	-36.75	1215.74	5774370.04	625563.68
2066	58.18	87.34	1439.53	-1408.23	-36.71	1216.58	5774370.08	625564.53
2067	58.17	87.36	1440.06	-1408.76	-36.67	1217.43	5774370.12	625565.38
2068	58.16	87.37	1440.59	-1409.29	-36.63	1218.28	5774370.16	625566.23
2069	58.14	87.38	1441.11	-1409.81	-36.59	1219.13	5774370.20	625567.08
2070	58.13	87.39	1441.64	-1410.34	-36.55	1219.98	5774370.24	625567.93
2071	58.11	87.41	1442.17	-1410.87	-36.51	1220.83	5774370.28	625568.78
2072	58.10	87.42	1442.70	-1411.40	-36.47	1221.68	5774370.32	625569.62
2073	58.08	87.43	1443.22	-1411.92	-36.43	1222.52	5774370.36	625570.47
2074	58.07	87.44	1443.75	-1412.45	-36.39	1223.37	5774370.39	625571.32
2075	58.06	87.46	1444.28	-1412.98	-36.35	1224.22	5774370.43	625572.17
2076	58.04	87.47	1444.81	-1413.51	-36.32	1225.07	5774370.47	625573.02
2077	58.03	87.48	1445.33	-1414.03	-36.28	1225.92	5774370.51	625573.87
2078	58.01	87.49	1445.86	-1414.56	-36.24	1226.77	5774370.55	625574.72
2079	58.00	87.51	1446.39	-1415.09	-36.20	1227.62	5774370.59	625575.56

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2080	57.98	87.52	1446.92	-1415.62	-36.16	1228.46	5774370.63	625576.41
2081	57.97	87.53	1447.44	-1416.14	-36.12	1229.31	5774370.67	625577.26
2082	57.96	87.54	1447.97	-1416.67	-36.08	1230.16	5774370.71	625578.11
2083	57.94	87.55	1448.50	-1417.20	-36.04	1231.01	5774370.74	625578.96
2084	57.92	87.55	1449.04	-1417.74	-36.01	1231.85	5774370.78	625579.80
2085	57.90	87.56	1449.57	-1418.27	-35.97	1232.70	5774370.82	625580.64
2086	57.88	87.56	1450.11	-1418.81	-35.94	1233.54	5774370.85	625581.49
2087	57.86	87.56	1450.64	-1419.34	-35.90	1234.38	5774370.89	625582.33
2088	57.84	87.56	1451.18	-1419.88	-35.87	1235.23	5774370.92	625583.18
2089	57.82	87.56	1451.71	-1420.41	-35.83	1236.07	5774370.96	625584.02
2090	57.80	87.57	1452.25	-1420.95	-35.80	1236.92	5774370.99	625584.86
2091	57.78	87.57	1452.78	-1421.48	-35.76	1237.76	5774371.03	625585.71
2092	57.76	87.57	1453.32	-1422.02	-35.72	1238.61	5774371.07	625586.55
2093	57.74	87.57	1453.85	-1422.55	-35.69	1239.45	5774371.10	625587.40
2094	57.72	87.57	1454.39	-1423.09	-35.65	1240.29	5774371.14	625588.24
2095	57.69	87.58	1454.92	-1423.62	-35.62	1241.14	5774371.17	625589.09
2096	57.67	87.58	1455.46	-1424.16	-35.58	1241.98	5774371.21	625589.93
2097	57.65	87.58	1455.99	-1424.69	-35.55	1242.83	5774371.24	625590.77
2098	57.63	87.58	1456.53	-1425.23	-35.51	1243.67	5774371.28	625591.62
2099	57.61	87.58	1457.06	-1425.76	-35.47	1244.51	5774371.31	625592.46
2100	57.59	87.59	1457.60	-1426.30	-35.44	1245.36	5774371.35	625593.31
2101	57.57	87.59	1458.13	-1426.83	-35.40	1246.20	5774371.39	625594.15
2102	57.55	87.59	1458.67	-1427.37	-35.37	1247.05	5774371.42	625594.99
2103	57.53	87.59	1459.20	-1427.90	-35.33	1247.89	5774371.46	625595.84
2104	57.51	87.60	1459.74	-1428.44	-35.30	1248.73	5774371.49	625596.68
2105	57.49	87.60	1460.27	-1428.97	-35.26	1249.58	5774371.53	625597.53
2106	57.47	87.60	1460.81	-1429.51	-35.22	1250.42	5774371.56	625598.37
2107	57.45	87.60	1461.34	-1430.04	-35.19	1251.27	5774371.60	625599.22
2108	57.43	87.60	1461.88	-1430.58	-35.15	1252.11	5774371.64	625600.06
2109	57.41	87.61	1462.41	-1431.11	-35.12	1252.96	5774371.67	625600.90
2110	57.39	87.61	1462.95	-1431.65	-35.08	1253.80	5774371.71	625601.75
2111	57.37	87.61	1463.48	-1432.18	-35.05	1254.64	5774371.74	625602.59
2112	57.39	87.57	1464.02	-1432.72	-35.00	1255.49	5774371.79	625603.44
2113	57.41	87.54	1464.55	-1433.25	-34.96	1256.33	5774371.83	625604.28
2114	57.43	87.50	1465.09	-1433.79	-34.92	1257.18	5774371.87	625605.12
2115	57.45	87.46	1465.62	-1434.32	-34.87	1258.02	5774371.91	625605.97
2116	57.47	87.43	1466.16	-1434.86	-34.83	1258.86	5774371.96	625606.81
2117	57.49	87.39	1466.69	-1435.39	-34.79	1259.71	5774372.00	625607.65
2118	57.51	87.35	1467.23	-1435.93	-34.75	1260.55	5774372.04	625608.50
2119	57.53	87.32	1467.76	-1436.46	-34.70	1261.39	5774372.09	625609.34
2120	57.55	87.28	1468.30	-1437.00	-34.66	1262.24	5774372.13	625610.19
2121	57.57	87.24	1468.83	-1437.53	-34.62	1263.08	5774372.17	625611.03
2122	57.59	87.21	1469.37	-1438.07	-34.57	1263.93	5774372.22	625611.87
2123	57.61	87.17	1469.90	-1438.60	-34.53	1264.77	5774372.26	625612.72
2124	57.63	87.13	1470.44	-1439.14	-34.49	1265.61	5774372.30	625613.56
2125	57.65	87.10	1470.97	-1439.67	-34.44	1266.46	5774372.34	625614.40
2126	57.67	87.06	1471.51	-1440.21	-34.40	1267.30	5774372.39	625615.25
2127	57.69	87.02	1472.04	-1440.74	-34.36	1268.14	5774372.43	625616.09
2128	57.71	86.99	1472.58	-1441.28	-34.32	1268.99	5774372.47	625616.94
2129	57.73	86.95	1473.11	-1441.81	-34.27	1269.83	5774372.52	625617.78
2130	57.76	86.91	1473.65	-1442.35	-34.23	1270.68	5774372.56	625618.62
2131	57.78	86.88	1474.18	-1442.88	-34.19	1271.52	5774372.60	625619.47
2132	57.80	86.84	1474.72	-1443.42	-34.14	1272.36	5774372.65	625620.31
2133	57.82	86.80	1475.25	-1443.95	-34.10	1273.21	5774372.69	625621.15
2134	57.84	86.77	1475.79	-1444.49	-34.06	1274.05	5774372.73	625622.00
2135	57.86	86.73	1476.32	-1445.02	-34.01	1274.89	5774372.77	625622.84
2136	57.88	86.69	1476.86	-1445.56	-33.97	1275.74	5774372.82	625623.69
2137	57.90	86.66	1477.39	-1446.09	-33.93	1276.58	5774372.86	625624.53
2138	57.92	86.62	1477.93	-1446.63	-33.89	1277.43	5774372.90	625625.37
2139	57.94	86.58	1478.46	-1447.16	-33.84	1278.27	5774372.95	625626.22
2140	57.95	86.56	1478.99	-1447.69	-33.80	1279.11	5774372.99	625627.06
2141	57.97	86.55	1479.52	-1448.22	-33.74	1279.96	5774373.04	625627.91
2142	57.98	86.55	1480.05	-1448.75	-33.69	1280.81	5774373.10	625628.76
2143	57.99	86.54	1480.58	-1449.28	-33.64	1281.66	5774373.15	625629.60
2144	58.00	86.54	1481.11	-1449.81	-33.59	1282.50	5774373.20	625630.45
2145	58.01	86.54	1481.63	-1450.33	-33.54	1283.35	5774373.25	625631.30

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2146	58.02	86.53	1482.16	-1450.86	-33.48	1284.20	5774373.30	625632.15
2147	58.03	86.53	1482.69	-1451.39	-33.43	1285.05	5774373.36	625632.99
2148	58.04	86.52	1483.22	-1451.92	-33.38	1285.89	5774373.41	625633.84
2149	58.05	86.52	1483.75	-1452.45	-33.33	1286.74	5774373.46	625634.69
2150	58.06	86.51	1484.28	-1452.98	-33.28	1287.59	5774373.51	625635.54
2151	58.08	86.51	1484.80	-1453.50	-33.23	1288.44	5774373.56	625636.38
2152	58.09	86.50	1485.33	-1454.03	-33.17	1289.28	5774373.62	625637.23
2153	58.10	86.50	1485.86	-1454.56	-33.12	1290.13	5774373.67	625638.08
2154	58.11	86.50	1486.39	-1455.09	-33.07	1290.98	5774373.72	625638.93
2155	58.12	86.49	1486.92	-1455.62	-33.02	1291.83	5774373.77	625639.77
2156	58.13	86.49	1487.45	-1456.15	-32.97	1292.67	5774373.82	625640.62
2157	58.14	86.48	1487.97	-1456.67	-32.91	1293.52	5774373.88	625641.47
2158	58.15	86.48	1488.50	-1457.20	-32.86	1294.37	5774373.93	625642.32
2159	58.16	86.47	1489.03	-1457.73	-32.81	1295.22	5774373.98	625643.16
2160	58.17	86.47	1489.56	-1458.26	-32.76	1296.06	5774374.03	625644.01
2161	58.18	86.46	1490.09	-1458.79	-32.71	1296.91	5774374.08	625644.86
2162	58.20	86.46	1490.62	-1459.32	-32.65	1297.76	5774374.13	625645.71
2163	58.21	86.46	1491.14	-1459.84	-32.60	1298.61	5774374.19	625646.55
2164	58.22	86.45	1491.67	-1460.37	-32.55	1299.45	5774374.24	625647.40
2165	58.23	86.45	1492.20	-1460.90	-32.50	1300.30	5774374.29	625648.25
2166	58.24	86.44	1492.73	-1461.43	-32.45	1301.15	5774374.34	625649.10
2167	58.25	86.44	1493.26	-1461.96	-32.39	1302.00	5774374.39	625649.94
2168	58.26	86.43	1493.79	-1462.49	-32.34	1302.84	5774374.45	625650.79
2169	58.27	86.43	1494.31	-1463.01	-32.29	1303.69	5774374.50	625651.64
2170	58.26	86.45	1494.84	-1463.54	-32.24	1304.54	5774374.55	625652.49
2171	58.25	86.46	1495.37	-1464.07	-32.19	1305.39	5774374.60	625653.33
2172	58.24	86.47	1495.90	-1464.60	-32.14	1306.23	5774374.65	625654.18
2173	58.23	86.48	1496.43	-1465.13	-32.09	1307.08	5774374.70	625655.03
2174	58.22	86.50	1496.95	-1465.65	-32.04	1307.93	5774374.75	625655.88
2175	58.21	86.51	1497.48	-1466.18	-31.99	1308.78	5774374.80	625656.73
2176	58.20	86.52	1498.01	-1466.71	-31.94	1309.63	5774374.85	625657.57
2177	58.19	86.54	1498.54	-1467.24	-31.89	1310.47	5774374.90	625658.42
2178	58.18	86.55	1499.07	-1467.77	-31.84	1311.32	5774374.95	625659.27
2179	58.17	86.56	1499.59	-1468.29	-31.79	1312.17	5774375.00	625660.12
2180	58.16	86.58	1500.12	-1468.82	-31.74	1313.02	5774375.05	625660.96
2181	58.15	86.59	1500.65	-1469.35	-31.69	1313.86	5774375.10	625661.81
2182	58.14	86.60	1501.18	-1469.88	-31.64	1314.71	5774375.15	625662.66
2183	58.13	86.61	1501.71	-1470.41	-31.59	1315.56	5774375.20	625663.51
2184	58.12	86.63	1502.23	-1470.93	-31.54	1316.41	5774375.25	625664.36
2185	58.11	86.64	1502.76	-1471.46	-31.49	1317.26	5774375.30	625665.20
2186	58.10	86.65	1503.29	-1471.99	-31.44	1318.10	5774375.35	625666.05
2187	58.09	86.67	1503.82	-1472.52	-31.39	1318.95	5774375.40	625666.90
2188	58.08	86.68	1504.35	-1473.05	-31.34	1319.80	5774375.45	625667.75
2189	58.07	86.69	1504.87	-1473.57	-31.29	1320.65	5774375.50	625668.59
2190	58.06	86.71	1505.40	-1474.10	-31.24	1321.49	5774375.55	625669.44
2191	58.05	86.72	1505.93	-1474.63	-31.19	1322.34	5774375.60	625670.29
2192	58.04	86.73	1506.46	-1475.16	-31.14	1323.19	5774375.65	625671.14
2193	58.03	86.74	1506.99	-1475.69	-31.09	1324.04	5774375.70	625671.99
2194	58.02	86.76	1507.51	-1476.21	-31.04	1324.89	5774375.75	625672.83
2195	58.01	86.77	1508.04	-1476.74	-30.99	1325.73	5774375.80	625673.68
2196	58.00	86.78	1508.57	-1477.27	-30.94	1326.58	5774375.85	625674.53
2197	57.99	86.80	1509.10	-1477.80	-30.89	1327.43	5774375.90	625675.38
2198	58.01	86.78	1509.62	-1478.32	-30.84	1328.28	5774375.95	625676.23
2199	58.03	86.76	1510.15	-1478.85	-30.78	1329.13	5774376.01	625677.07
2200	58.05	86.74	1510.67	-1479.37	-30.73	1329.98	5774376.06	625677.92
2201	58.08	86.72	1511.20	-1479.90	-30.68	1330.83	5774376.11	625678.77
2202	58.10	86.69	1511.72	-1480.42	-30.63	1331.68	5774376.16	625679.62
2203	58.13	86.67	1512.25	-1480.95	-30.57	1332.52	5774376.21	625680.47
2204	58.15	86.65	1512.77	-1481.47	-30.52	1333.37	5774376.27	625681.32
2205	58.17	86.63	1513.30	-1482.00	-30.47	1334.22	5774376.32	625682.17
2206	58.20	86.60	1513.82	-1482.52	-30.42	1335.07	5774376.37	625683.02
2207	58.22	86.58	1514.35	-1483.05	-30.37	1335.92	5774376.42	625683.87
2208	58.25	86.56	1514.87	-1483.57	-30.31	1336.77	5774376.48	625684.72
2209	58.27	86.54	1515.40	-1484.10	-30.26	1337.62	5774376.53	625685.57
2210	58.29	86.52	1515.92	-1484.62	-30.21	1338.47	5774376.58	625686.42
2211	58.32	86.49	1516.45	-1485.15	-30.16	1339.32	5774376.63	625687.27

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2212	58.34	86.47	1516.97	-1485.67	-30.10	1340.17	5774376.69	625688.12
2213	58.36	86.45	1517.50	-1486.20	-30.05	1341.02	5774376.74	625688.97
2214	58.39	86.43	1518.02	-1486.72	-30.00	1341.87	5774376.79	625689.82
2215	58.41	86.40	1518.55	-1487.25	-29.95	1342.72	5774376.84	625690.67
2216	58.44	86.38	1519.07	-1487.77	-29.89	1343.57	5774376.89	625691.52
2217	58.46	86.36	1519.60	-1488.30	-29.84	1344.42	5774376.95	625692.37
2218	58.48	86.34	1520.12	-1488.82	-29.79	1345.27	5774377.00	625693.21
2219	58.51	86.31	1520.65	-1489.35	-29.74	1346.12	5774377.05	625694.06
2220	58.53	86.29	1521.17	-1489.87	-29.69	1346.97	5774377.10	625694.91
2221	58.55	86.27	1521.70	-1490.40	-29.63	1347.82	5774377.16	625695.76
2222	58.58	86.25	1522.22	-1490.92	-29.58	1348.66	5774377.21	625696.61
2223	58.60	86.22	1522.75	-1491.45	-29.53	1349.51	5774377.26	625697.46
2224	58.63	86.20	1523.27	-1491.97	-29.48	1350.36	5774377.31	625698.31
2225	58.65	86.18	1523.80	-1492.50	-29.42	1351.21	5774377.37	625699.16
2226	58.67	86.16	1524.32	-1493.02	-29.37	1352.06	5774377.42	625700.01
2227	58.65	86.16	1524.85	-1493.55	-29.31	1352.91	5774377.47	625700.86
2228	58.64	86.16	1525.37	-1494.07	-29.26	1353.76	5774377.53	625701.71
2229	58.62	86.16	1525.89	-1494.59	-29.20	1354.61	5774377.59	625702.56
2230	58.61	86.16	1526.42	-1495.12	-29.14	1355.46	5774377.65	625703.41
2231	58.59	86.17	1526.94	-1495.64	-29.09	1356.31	5774377.70	625704.26
2232	58.57	86.17	1527.46	-1496.16	-29.03	1357.16	5774377.76	625705.11
2233	58.56	86.17	1527.99	-1496.69	-28.97	1358.01	5774377.82	625705.96
2234	58.54	86.17	1528.51	-1497.21	-28.92	1358.87	5774377.87	625706.81
2235	58.53	86.17	1529.03	-1497.73	-28.86	1359.72	5774377.93	625707.66
2236	58.51	86.17	1529.56	-1498.26	-28.80	1360.57	5774377.99	625708.51
2237	58.50	86.17	1530.08	-1498.78	-28.75	1361.42	5774378.04	625709.36
2238	58.48	86.17	1530.60	-1499.30	-28.69	1362.27	5774378.10	625710.21
2239	58.47	86.17	1531.13	-1499.83	-28.63	1363.12	5774378.16	625711.06
2240	58.45	86.17	1531.65	-1500.35	-28.58	1363.97	5774378.21	625711.91
2241	58.44	86.18	1532.17	-1500.87	-28.52	1364.82	5774378.27	625712.77
2242	58.42	86.18	1532.70	-1501.40	-28.46	1365.67	5774378.33	625713.62
2243	58.40	86.18	1533.22	-1501.92	-28.40	1366.52	5774378.38	625714.47
2244	58.39	86.18	1533.74	-1502.44	-28.35	1367.37	5774378.44	625715.32
2245	58.37	86.18	1534.27	-1502.97	-28.29	1368.22	5774378.50	625716.17
2246	58.36	86.18	1534.79	-1503.49	-28.23	1369.07	5774378.55	625717.02
2247	58.34	86.18	1535.31	-1504.01	-28.18	1369.92	5774378.61	625717.87
2248	58.33	86.18	1535.84	-1504.54	-28.12	1370.77	5774378.67	625718.72
2249	58.31	86.18	1536.36	-1505.06	-28.06	1371.62	5774378.73	625719.57
2250	58.30	86.19	1536.88	-1505.58	-28.01	1372.47	5774378.78	625720.42
2251	58.28	86.19	1537.41	-1506.11	-27.95	1373.32	5774378.84	625721.27
2252	58.26	86.19	1537.93	-1506.63	-27.89	1374.17	5774378.90	625722.12
2253	58.25	86.19	1538.45	-1507.15	-27.84	1375.02	5774378.95	625722.97
2254	58.23	86.19	1538.97	-1507.67	-27.78	1375.87	5774379.01	625723.82
2255	58.27	86.19	1539.49	-1508.19	-27.72	1376.73	5774379.07	625724.67
2256	58.32	86.18	1540.01	-1508.71	-27.66	1377.58	5774379.13	625725.53
2257	58.38	86.17	1540.52	-1509.22	-27.60	1378.44	5774379.18	625726.38
2258	58.43	86.17	1541.04	-1509.74	-27.55	1379.29	5774379.24	625727.24
2259	58.48	86.16	1541.55	-1510.25	-27.49	1380.15	5774379.30	625728.09
2260	58.54	86.16	1542.07	-1510.77	-27.43	1381.00	5774379.36	625728.95
2261	58.59	86.15	1542.58	-1511.28	-27.37	1381.86	5774379.42	625729.80
2262	58.64	86.14	1543.10	-1511.80	-27.31	1382.71	5774379.48	625730.66
2263	58.70	86.14	1543.61	-1512.31	-27.26	1383.57	5774379.53	625731.51
2264	58.75	86.13	1544.13	-1512.83	-27.20	1384.42	5774379.59	625732.37
2265	58.80	86.13	1544.64	-1513.34	-27.14	1385.28	5774379.65	625733.22
2266	58.86	86.12	1545.16	-1513.86	-27.08	1386.13	5774379.71	625734.08
2267	58.91	86.11	1545.67	-1514.37	-27.02	1386.99	5774379.77	625734.94
2268	58.96	86.11	1546.19	-1514.89	-26.96	1387.84	5774379.82	625735.79
2269	59.02	86.10	1546.70	-1515.40	-26.91	1388.70	5774379.88	625736.65
2270	59.07	86.10	1547.22	-1515.92	-26.85	1389.55	5774379.94	625737.50
2271	59.12	86.09	1547.73	-1516.43	-26.79	1390.41	5774380.00	625738.36
2272	59.18	86.09	1548.25	-1516.95	-26.73	1391.26	5774380.06	625739.21
2273	59.23	86.08	1548.76	-1517.46	-26.67	1392.12	5774380.12	625740.07
2274	59.28	86.07	1549.28	-1517.98	-26.61	1392.97	5774380.17	625740.92
2275	59.34	86.07	1549.79	-1518.49	-26.56	1393.83	5774380.23	625741.78
2276	59.39	86.06	1550.31	-1519.01	-26.50	1394.68	5774380.29	625742.63
2277	59.44	86.06	1550.82	-1519.52	-26.44	1395.54	5774380.35	625743.49

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2278	59.50	86.05	1551.34	-1520.04	-26.38	1396.39	5774380.41	625744.34
2279	59.55	86.04	1551.85	-1520.55	-26.32	1397.25	5774380.47	625745.20
2280	59.60	86.04	1552.37	-1521.07	-26.27	1398.10	5774380.52	625746.05
2281	59.66	86.03	1552.88	-1521.58	-26.21	1398.96	5774380.58	625746.91
2282	59.71	86.03	1553.40	-1522.10	-26.15	1399.81	5774380.64	625747.76
2283	59.76	86.02	1553.91	-1522.61	-26.09	1400.67	5774380.70	625748.62
2284	59.79	86.02	1554.41	-1523.11	-26.03	1401.53	5774380.76	625749.48
2285	59.81	86.02	1554.91	-1523.61	-25.97	1402.40	5774380.82	625750.35
2286	59.83	86.01	1555.41	-1524.11	-25.91	1403.26	5774380.88	625751.21
2287	59.86	86.01	1555.91	-1524.61	-25.85	1404.13	5774380.94	625752.08
2288	59.88	86.01	1556.41	-1525.11	-25.79	1404.99	5774381.00	625752.94
2289	59.90	86.01	1556.91	-1525.61	-25.73	1405.86	5774381.06	625753.80
2290	59.92	86.01	1557.41	-1526.11	-25.67	1406.72	5774381.12	625754.67
2291	59.94	86.01	1557.90	-1526.60	-25.61	1407.59	5774381.18	625755.53
2292	59.97	86.00	1558.40	-1527.10	-25.55	1408.45	5774381.24	625756.40
2293	59.99	86.00	1558.90	-1527.60	-25.49	1409.32	5774381.30	625757.26
2294	60.01	86.00	1559.40	-1528.10	-25.42	1410.18	5774381.36	625758.13
2295	60.03	86.00	1559.90	-1528.60	-25.36	1411.04	5774381.42	625758.99
2296	60.05	86.00	1560.40	-1529.10	-25.30	1411.91	5774381.49	625759.86
2297	60.08	86.00	1560.90	-1529.60	-25.24	1412.77	5774381.55	625760.72
2298	60.10	85.99	1561.39	-1530.09	-25.18	1413.64	5774381.61	625761.59
2299	60.12	85.99	1561.89	-1530.59	-25.12	1414.50	5774381.67	625762.45
2300	60.14	85.99	1562.39	-1531.09	-25.06	1415.37	5774381.73	625763.32
2301	60.16	85.99	1562.89	-1531.59	-25.00	1416.23	5774381.79	625764.18
2302	60.19	85.99	1563.39	-1532.09	-24.94	1417.10	5774381.85	625765.04
2303	60.21	85.99	1563.89	-1532.59	-24.88	1417.96	5774381.91	625765.91
2304	60.23	85.98	1564.39	-1533.09	-24.82	1418.83	5774381.97	625766.77
2305	60.25	85.98	1564.89	-1533.59	-24.76	1419.69	5774382.03	625767.64
2306	60.28	85.98	1565.38	-1534.08	-24.70	1420.56	5774382.09	625768.50
2307	60.30	85.98	1565.88	-1534.58	-24.64	1421.42	5774382.15	625769.37
2308	60.32	85.98	1566.38	-1535.08	-24.58	1422.28	5774382.21	625770.23
2309	60.34	85.97	1566.88	-1535.58	-24.52	1423.15	5774382.27	625771.10
2310	60.36	85.97	1567.38	-1536.08	-24.46	1424.01	5774382.33	625771.96
2311	60.39	85.97	1567.88	-1536.58	-24.40	1424.88	5774382.39	625772.83
2312	60.40	85.97	1568.37	-1537.07	-24.33	1425.74	5774382.45	625773.69
2313	60.42	85.97	1568.87	-1537.57	-24.27	1426.61	5774382.52	625774.56
2314	60.43	85.96	1569.36	-1538.06	-24.21	1427.48	5774382.58	625775.43
2315	60.44	85.96	1569.85	-1538.55	-24.15	1428.35	5774382.64	625776.30
2316	60.45	85.96	1570.34	-1539.04	-24.09	1429.22	5774382.70	625777.17
2317	60.47	85.96	1570.83	-1539.53	-24.03	1430.09	5774382.76	625778.04
2318	60.48	85.95	1571.32	-1540.02	-23.96	1430.96	5774382.83	625778.91
2319	60.49	85.95	1571.81	-1540.51	-23.90	1431.83	5774382.89	625779.77
2320	60.51	85.95	1572.30	-1541.00	-23.84	1432.70	5774382.95	625780.64
2321	60.52	85.94	1572.79	-1541.49	-23.78	1433.56	5774383.01	625781.51
2322	60.53	85.94	1573.29	-1541.99	-23.72	1434.43	5774383.07	625782.38
2323	60.54	85.94	1573.78	-1542.48	-23.65	1435.30	5774383.13	625783.25
2324	60.56	85.94	1574.27	-1542.97	-23.59	1436.17	5774383.20	625784.12
2325	60.57	85.93	1574.76	-1543.46	-23.53	1437.04	5774383.26	625784.99
2326	60.58	85.93	1575.25	-1543.95	-23.47	1437.91	5774383.32	625785.86
2327	60.59	85.93	1575.74	-1544.44	-23.41	1438.78	5774383.38	625786.72
2328	60.61	85.92	1576.23	-1544.93	-23.35	1439.65	5774383.44	625787.59
2329	60.62	85.92	1576.72	-1545.42	-23.28	1440.51	5774383.51	625788.46
2330	60.63	85.92	1577.22	-1545.92	-23.22	1441.38	5774383.57	625789.33
2331	60.64	85.92	1577.71	-1546.41	-23.16	1442.25	5774383.63	625790.20
2332	60.66	85.91	1578.20	-1546.90	-23.10	1443.12	5774383.69	625791.07
2333	60.67	85.91	1578.69	-1547.39	-23.04	1443.99	5774383.75	625791.94
2334	60.68	85.91	1579.18	-1547.88	-22.97	1444.86	5774383.81	625792.81
2335	60.69	85.90	1579.67	-1548.37	-22.91	1445.73	5774383.88	625793.68
2336	60.71	85.90	1580.16	-1548.86	-22.85	1446.60	5774383.94	625794.54
2337	60.72	85.90	1580.65	-1549.35	-22.79	1447.47	5774384.00	625795.41
2338	60.73	85.90	1581.14	-1549.84	-22.73	1448.33	5774384.06	625796.28
2339	60.75	85.89	1581.64	-1550.34	-22.67	1449.20	5774384.12	625797.15
2340	60.76	85.89	1582.13	-1550.83	-22.60	1450.07	5774384.19	625798.02
2341	60.74	85.88	1582.62	-1551.32	-22.54	1450.94	5774384.25	625798.89
2342	60.72	85.86	1583.11	-1551.81	-22.47	1451.81	5774384.32	625799.76
2343	60.71	85.85	1583.61	-1552.31	-22.41	1452.68	5774384.38	625800.62

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2344	60.69	85.83	1584.10	-1552.80	-22.34	1453.54	5774384.45	625801.49
2345	60.67	85.82	1584.59	-1553.29	-22.28	1454.41	5774384.51	625802.36
2346	60.65	85.80	1585.08	-1553.78	-22.21	1455.28	5774384.58	625803.23
2347	60.63	85.79	1585.58	-1554.28	-22.14	1456.15	5774384.64	625804.09
2348	60.61	85.77	1586.07	-1554.77	-22.08	1457.01	5774384.71	625804.96
2349	60.59	85.76	1586.56	-1555.26	-22.01	1457.88	5774384.78	625805.83
2350	60.57	85.74	1587.05	-1555.75	-21.95	1458.75	5774384.84	625806.70
2351	60.55	85.73	1587.55	-1556.25	-21.88	1459.62	5774384.91	625807.57
2352	60.53	85.71	1588.04	-1556.74	-21.82	1460.49	5774384.97	625808.43
2353	60.52	85.70	1588.53	-1557.23	-21.75	1461.35	5774385.04	625809.30
2354	60.50	85.68	1589.02	-1557.72	-21.69	1462.22	5774385.10	625810.17
2355	60.48	85.67	1589.52	-1558.22	-21.62	1463.09	5774385.17	625811.04
2356	60.46	85.65	1590.01	-1558.71	-21.55	1463.96	5774385.23	625811.90
2357	60.44	85.64	1590.50	-1559.20	-21.49	1464.82	5774385.30	625812.77
2358	60.42	85.62	1591.00	-1559.70	-21.42	1465.69	5774385.37	625813.64
2359	60.40	85.61	1591.49	-1560.19	-21.36	1466.56	5774385.43	625814.51
2360	60.38	85.59	1591.98	-1560.68	-21.29	1467.43	5774385.50	625815.38
2361	60.36	85.58	1592.47	-1561.17	-21.23	1468.30	5774385.56	625816.24
2362	60.34	85.57	1592.97	-1561.67	-21.16	1469.16	5774385.63	625817.11
2363	60.33	85.55	1593.46	-1562.16	-21.09	1470.03	5774385.69	625817.98
2364	60.31	85.54	1593.95	-1562.65	-21.03	1470.90	5774385.76	625818.85
2365	60.29	85.52	1594.44	-1563.14	-20.96	1471.77	5774385.83	625819.71
2366	60.27	85.51	1594.94	-1563.64	-20.90	1472.63	5774385.89	625820.58
2367	60.25	85.49	1595.43	-1564.13	-20.83	1473.50	5774385.96	625821.45
2368	60.23	85.48	1595.92	-1564.62	-20.77	1474.37	5774386.02	625822.32
2369	60.21	85.46	1596.41	-1565.11	-20.70	1475.24	5774386.09	625823.19
2370	60.19	85.46	1596.92	-1565.62	-20.63	1476.10	5774386.16	625824.05
2371	60.17	85.47	1597.42	-1566.12	-20.57	1476.96	5774386.22	625824.91
2372	60.14	85.47	1597.92	-1566.62	-20.50	1477.82	5774386.29	625825.77
2373	60.12	85.47	1598.42	-1567.12	-20.43	1478.69	5774386.36	625826.63
2374	60.10	85.48	1598.92	-1567.62	-20.36	1479.55	5774386.43	625827.50
2375	60.07	85.48	1599.42	-1568.12	-20.29	1480.41	5774386.49	625828.36
2376	60.05	85.48	1599.93	-1568.63	-20.23	1481.27	5774386.56	625829.22
2377	60.03	85.49	1600.43	-1569.13	-20.16	1482.14	5774386.63	625830.08
2378	60.00	85.49	1600.93	-1569.63	-20.09	1483.00	5774386.70	625830.95
2379	59.98	85.49	1601.43	-1570.13	-20.02	1483.86	5774386.77	625831.81
2380	59.96	85.49	1601.93	-1570.63	-19.96	1484.72	5774386.83	625832.67
2381	59.93	85.50	1602.44	-1571.14	-19.89	1485.59	5774386.90	625833.53
2382	59.91	85.50	1602.94	-1571.64	-19.82	1486.45	5774386.97	625834.40
2383	59.89	85.50	1603.44	-1572.14	-19.75	1487.31	5774387.04	625835.26
2384	59.86	85.51	1603.94	-1572.64	-19.68	1488.17	5774387.10	625836.12
2385	59.84	85.51	1604.44	-1573.14	-19.62	1489.03	5774387.17	625836.98
2386	59.82	85.51	1604.94	-1573.64	-19.55	1489.90	5774387.24	625837.84
2387	59.79	85.52	1605.45	-1574.15	-19.48	1490.76	5774387.31	625838.71
2388	59.77	85.52	1605.95	-1574.65	-19.41	1491.62	5774387.38	625839.57
2389	59.75	85.52	1606.45	-1575.15	-19.35	1492.48	5774387.44	625840.43
2390	59.72	85.53	1606.95	-1575.65	-19.28	1493.35	5774387.51	625841.29
2391	59.70	85.53	1607.45	-1576.15	-19.21	1494.21	5774387.58	625842.16
2392	59.68	85.53	1607.96	-1576.66	-19.14	1495.07	5774387.65	625843.02
2393	59.65	85.54	1608.46	-1577.16	-19.07	1495.93	5774387.71	625843.88
2394	59.63	85.54	1608.96	-1577.66	-19.01	1496.79	5774387.78	625844.74
2395	59.61	85.54	1609.46	-1578.16	-18.94	1497.66	5774387.85	625845.60
2396	59.58	85.55	1609.96	-1578.66	-18.87	1498.52	5774387.92	625846.47
2397	59.56	85.55	1610.46	-1579.16	-18.80	1499.38	5774387.99	625847.33
2398	59.54	85.56	1610.97	-1579.67	-18.74	1500.24	5774388.05	625848.19
2399	59.52	85.57	1611.48	-1580.18	-18.67	1501.10	5774388.11	625849.05
2400	59.50	85.58	1611.99	-1580.69	-18.61	1501.95	5774388.18	625849.90
2401	59.47	85.60	1612.51	-1581.21	-18.55	1502.81	5774388.24	625850.76
2402	59.45	85.61	1613.02	-1581.72	-18.48	1503.67	5774388.31	625851.62
2403	59.43	85.62	1613.53	-1582.23	-18.42	1504.53	5774388.37	625852.47
2404	59.41	85.64	1614.04	-1582.74	-18.36	1505.38	5774388.43	625853.33
2405	59.39	85.65	1614.55	-1583.25	-18.29	1506.24	5774388.50	625854.19
2406	59.37	85.66	1615.06	-1583.76	-18.23	1507.10	5774388.56	625855.04
2407	59.35	85.68	1615.57	-1584.27	-18.16	1507.95	5774388.63	625855.90
2408	59.33	85.69	1616.09	-1584.79	-18.10	1508.81	5774388.69	625856.76
2409	59.31	85.70	1616.60	-1585.30	-18.04	1509.67	5774388.75	625857.62

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2410	59.29	85.71	1617.11	-1585.81	-17.97	1510.52	5774388.82	625858.47
2411	59.26	85.73	1617.62	-1586.32	-17.91	1511.38	5774388.88	625859.33
2412	59.24	85.74	1618.13	-1586.83	-17.84	1512.24	5774388.94	625860.19
2413	59.22	85.75	1618.64	-1587.34	-17.78	1513.10	5774389.01	625861.04
2414	59.20	85.77	1619.15	-1587.85	-17.72	1513.95	5774389.07	625861.90
2415	59.18	85.78	1619.67	-1588.37	-17.65	1514.81	5774389.14	625862.76
2416	59.16	85.79	1620.18	-1588.88	-17.59	1515.67	5774389.20	625863.61
2417	59.14	85.81	1620.69	-1589.39	-17.53	1516.52	5774389.26	625864.47
2418	59.12	85.82	1621.20	-1589.90	-17.46	1517.38	5774389.33	625865.33
2419	59.10	85.83	1621.71	-1590.41	-17.40	1518.24	5774389.39	625866.19
2420	59.08	85.85	1622.22	-1590.92	-17.33	1519.09	5774389.46	625867.04
2421	59.06	85.86	1622.73	-1591.43	-17.27	1519.95	5774389.52	625867.90
2422	59.03	85.87	1623.24	-1591.94	-17.21	1520.81	5774389.58	625868.76
2423	59.01	85.88	1623.76	-1592.46	-17.14	1521.67	5774389.65	625869.61
2424	58.99	85.90	1624.27	-1592.97	-17.08	1522.52	5774389.71	625870.47
2425	58.97	85.91	1624.78	-1593.48	-17.01	1523.38	5774389.77	625871.33
2426	58.95	85.92	1625.29	-1593.99	-16.95	1524.24	5774389.84	625872.18
2427	58.93	85.94	1625.81	-1594.51	-16.89	1525.09	5774389.90	625873.04
2428	58.91	85.96	1626.33	-1595.03	-16.83	1525.94	5774389.96	625873.89
2429	58.90	85.98	1626.85	-1595.55	-16.78	1526.80	5774390.01	625874.74
2430	58.88	86.00	1627.36	-1596.06	-16.72	1527.65	5774390.07	625875.60
2431	58.86	86.02	1627.88	-1596.58	-16.66	1528.50	5774390.12	625876.45
2432	58.84	86.04	1628.40	-1597.10	-16.61	1529.35	5774390.18	625877.30
2433	58.82	86.06	1628.92	-1597.62	-16.55	1530.21	5774390.24	625878.15
2434	58.81	86.08	1629.44	-1598.14	-16.49	1531.06	5774390.29	625879.01
2435	58.79	86.10	1629.96	-1598.66	-16.44	1531.91	5774390.35	625879.86
2436	58.77	86.12	1630.48	-1599.18	-16.38	1532.76	5774390.41	625880.71
2437	58.75	86.14	1631.00	-1599.70	-16.33	1533.62	5774390.46	625881.56
2438	58.73	86.16	1631.52	-1600.22	-16.27	1534.47	5774390.52	625882.42
2439	58.72	86.18	1632.04	-1600.74	-16.21	1535.32	5774390.58	625883.27
2440	58.70	86.19	1632.56	-1601.26	-16.16	1536.17	5774390.63	625884.12
2441	58.68	86.21	1633.08	-1601.78	-16.10	1537.03	5774390.69	625884.97
2442	58.66	86.23	1633.60	-1602.30	-16.04	1537.88	5774390.75	625885.83
2443	58.65	86.25	1634.12	-1602.82	-15.99	1538.73	5774390.80	625886.68
2444	58.63	86.27	1634.64	-1603.34	-15.93	1539.58	5774390.86	625887.53
2445	58.61	86.29	1635.16	-1603.86	-15.87	1540.44	5774390.92	625888.38
2446	58.59	86.31	1635.68	-1604.38	-15.82	1541.29	5774390.97	625889.24
2447	58.57	86.33	1636.20	-1604.90	-15.76	1542.14	5774391.03	625890.09
2448	58.56	86.35	1636.72	-1605.42	-15.70	1542.99	5774391.08	625890.94
2449	58.54	86.37	1637.24	-1605.94	-15.65	1543.85	5774391.14	625891.79
2450	58.52	86.39	1637.76	-1606.46	-15.59	1544.70	5774391.20	625892.65
2451	58.50	86.41	1638.28	-1606.98	-15.53	1545.55	5774391.25	625893.50
2452	58.48	86.43	1638.80	-1607.50	-15.48	1546.40	5774391.31	625894.35
2453	58.47	86.45	1639.32	-1608.02	-15.42	1547.25	5774391.37	625895.20
2454	58.45	86.47	1639.84	-1608.54	-15.37	1548.11	5774391.42	625896.06
2455	58.43	86.49	1640.36	-1609.06	-15.31	1548.96	5774391.48	625896.91
2456	58.42	86.48	1640.88	-1609.58	-15.26	1549.81	5774391.53	625897.76
2457	58.42	86.48	1641.41	-1610.11	-15.20	1550.66	5774391.59	625898.61
2458	58.41	86.47	1641.93	-1610.63	-15.15	1551.51	5774391.64	625899.46
2459	58.40	86.47	1642.46	-1611.16	-15.10	1552.36	5774391.69	625900.31
2460	58.40	86.46	1642.98	-1611.68	-15.04	1553.21	5774391.75	625901.15
2461	58.39	86.46	1643.51	-1612.21	-14.99	1554.06	5774391.80	625902.00
2462	58.39	86.45	1644.03	-1612.73	-14.94	1554.91	5774391.85	625902.85
2463	58.38	86.44	1644.56	-1613.26	-14.88	1555.76	5774391.91	625903.70
2464	58.37	86.44	1645.08	-1613.78	-14.83	1556.60	5774391.96	625904.55
2465	58.37	86.43	1645.61	-1614.31	-14.78	1557.45	5774392.01	625905.40
2466	58.36	86.43	1646.13	-1614.83	-14.72	1558.30	5774392.07	625906.25
2467	58.35	86.42	1646.66	-1615.36	-14.67	1559.15	5774392.12	625907.10
2468	58.35	86.42	1647.18	-1615.88	-14.62	1560.00	5774392.17	625907.95
2469	58.34	86.41	1647.71	-1616.41	-14.56	1560.85	5774392.23	625908.80
2470	58.33	86.40	1648.23	-1616.93	-14.51	1561.70	5774392.28	625909.65
2471	58.33	86.40	1648.76	-1617.46	-14.46	1562.55	5774392.33	625910.50
2472	58.32	86.39	1649.28	-1617.98	-14.40	1563.40	5774392.39	625911.35
2473	58.32	86.39	1649.81	-1618.51	-14.35	1564.25	5774392.44	625912.20
2474	58.31	86.38	1650.33	-1619.03	-14.29	1565.10	5774392.49	625913.05
2475	58.30	86.38	1650.86	-1619.56	-14.24	1565.95	5774392.55	625913.90

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2476	58.30	86.37	1651.38	-1620.08	-14.19	1566.80	5774392.60	625914.75
2477	58.29	86.36	1651.91	-1620.61	-14.13	1567.65	5774392.65	625915.60
2478	58.28	86.36	1652.43	-1621.13	-14.08	1568.50	5774392.71	625916.45
2479	58.28	86.35	1652.96	-1621.66	-14.03	1569.35	5774392.76	625917.29
2480	58.27	86.35	1653.48	-1622.18	-13.97	1570.20	5774392.81	625918.14
2481	58.26	86.34	1654.01	-1622.71	-13.92	1571.05	5774392.87	625918.99
2482	58.26	86.34	1654.53	-1623.23	-13.87	1571.90	5774392.92	625919.84
2483	58.25	86.33	1655.06	-1623.76	-13.81	1572.74	5774392.97	625920.69
2484	58.25	86.33	1655.58	-1624.28	-13.76	1573.59	5774393.03	625921.54
2485	58.24	86.32	1656.11	-1624.81	-13.71	1574.44	5774393.08	625922.39
2486	58.23	86.34	1656.64	-1625.34	-13.66	1575.29	5774393.13	625923.24
2487	58.23	86.36	1657.16	-1625.86	-13.61	1576.14	5774393.18	625924.09
2488	58.22	86.38	1657.69	-1626.39	-13.56	1576.99	5774393.23	625924.94
2489	58.21	86.40	1658.22	-1626.92	-13.51	1577.84	5774393.28	625925.78
2490	58.21	86.42	1658.75	-1627.45	-13.46	1578.68	5774393.33	625926.63
2491	58.20	86.44	1659.27	-1627.97	-13.41	1579.53	5774393.38	625927.48
2492	58.20	86.46	1659.80	-1628.50	-13.36	1580.38	5774393.43	625928.33
2493	58.19	86.48	1660.33	-1629.03	-13.31	1581.23	5774393.48	625929.17
2494	58.18	86.50	1660.86	-1629.56	-13.26	1582.07	5774393.53	625930.02
2495	58.18	86.52	1661.38	-1630.08	-13.21	1582.92	5774393.58	625930.87
2496	58.17	86.54	1661.91	-1630.61	-13.15	1583.77	5774393.63	625931.72
2497	58.16	86.56	1662.44	-1631.14	-13.10	1584.62	5774393.68	625932.57
2498	58.16	86.58	1662.97	-1631.67	-13.05	1585.47	5774393.73	625933.41
2499	58.15	86.60	1663.50	-1632.20	-13.00	1586.31	5774393.78	625934.26
2500	58.15	86.62	1664.02	-1632.72	-12.95	1587.16	5774393.84	625935.11
2501	58.14	86.64	1664.55	-1633.25	-12.90	1588.01	5774393.89	625935.96
2502	58.13	86.66	1665.08	-1633.78	-12.85	1588.86	5774393.94	625936.81
2503	58.13	86.68	1665.61	-1634.31	-12.80	1589.71	5774393.99	625937.65
2504	58.12	86.70	1666.13	-1634.83	-12.75	1590.55	5774394.04	625938.50
2505	58.11	86.72	1666.66	-1635.36	-12.70	1591.40	5774394.09	625939.35
2506	58.11	86.74	1667.19	-1635.89	-12.65	1592.25	5774394.14	625940.20
2507	58.10	86.76	1667.72	-1636.42	-12.60	1593.10	5774394.19	625941.05
2508	58.10	86.78	1668.24	-1636.94	-12.55	1593.95	5774394.24	625941.89
2509	58.09	86.80	1668.77	-1637.47	-12.50	1594.79	5774394.29	625942.74
2510	58.08	86.82	1669.30	-1638.00	-12.45	1595.64	5774394.34	625943.59
2511	58.08	86.84	1669.83	-1638.53	-12.40	1596.49	5774394.39	625944.44
2512	58.07	86.86	1670.36	-1639.06	-12.35	1597.34	5774394.44	625945.29
2513	58.06	86.88	1670.88	-1639.58	-12.30	1598.19	5774394.49	625946.13
2514	58.06	86.89	1671.41	-1640.11	-12.25	1599.03	5774394.54	625946.98
2515	58.04	86.88	1671.94	-1640.64	-12.20	1599.88	5774394.59	625947.83
2516	58.03	86.88	1672.48	-1641.18	-12.16	1600.72	5774394.63	625948.67
2517	58.01	86.87	1673.01	-1641.71	-12.11	1601.57	5774394.68	625949.52
2518	58.00	86.87	1673.54	-1642.24	-12.06	1602.41	5774394.73	625950.36
2519	57.98	86.86	1674.07	-1642.77	-12.02	1603.26	5774394.77	625951.21
2520	57.97	86.86	1674.60	-1643.30	-11.97	1604.10	5774394.82	625952.05
2521	57.96	86.85	1675.14	-1643.84	-11.92	1604.95	5774394.87	625952.90
2522	57.94	86.85	1675.67	-1644.37	-11.87	1605.80	5774394.91	625953.74
2523	57.93	86.84	1676.20	-1644.90	-11.83	1606.64	5774394.96	625954.59
2524	57.91	86.84	1676.73	-1645.43	-11.78	1607.49	5774395.01	625955.43
2525	57.90	86.83	1677.26	-1645.96	-11.73	1608.33	5774395.06	625956.28
2526	57.88	86.83	1677.80	-1646.50	-11.69	1609.18	5774395.10	625957.13
2527	57.87	86.82	1678.33	-1647.03	-11.64	1610.02	5774395.15	625957.97
2528	57.85	86.82	1678.86	-1647.56	-11.59	1610.87	5774395.20	625958.82
2529	57.84	86.82	1679.39	-1648.09	-11.55	1611.71	5774395.24	625959.66
2530	57.83	86.81	1679.92	-1648.62	-11.50	1612.56	5774395.29	625960.51
2531	57.81	86.81	1680.46	-1649.16	-11.45	1613.40	5774395.34	625961.35
2532	57.80	86.80	1680.99	-1649.69	-11.40	1614.25	5774395.38	625962.20
2533	57.78	86.80	1681.52	-1650.22	-11.36	1615.09	5774395.43	625963.04
2534	57.77	86.79	1682.05	-1650.75	-11.31	1615.94	5774395.48	625963.89
2535	57.75	86.79	1682.59	-1651.29	-11.26	1616.79	5774395.52	625964.73
2536	57.74	86.78	1683.12	-1651.82	-11.22	1617.63	5774395.57	625965.58
2537	57.73	86.78	1683.65	-1652.35	-11.17	1618.48	5774395.62	625966.42
2538	57.71	86.77	1684.18	-1652.88	-11.12	1619.32	5774395.67	625967.27
2539	57.70	86.77	1684.71	-1653.41	-11.08	1620.17	5774395.71	625968.12
2540	57.68	86.76	1685.25	-1653.95	-11.03	1621.01	5774395.76	625968.96
2541	57.67	86.76	1685.78	-1654.48	-10.98	1621.86	5774395.81	625969.81

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2542	57.65	86.75	1686.31	-1655.01	-10.94	1622.70	5774395.85	625970.65
2543	57.65	86.75	1686.84	-1655.54	-10.89	1623.55	5774395.90	625971.50
2544	57.66	86.75	1687.38	-1656.08	-10.84	1624.39	5774395.95	625972.34
2545	57.66	86.75	1687.91	-1656.61	-10.79	1625.24	5774396.00	625973.18
2546	57.67	86.75	1688.45	-1657.15	-10.74	1626.08	5774396.05	625974.03
2547	57.67	86.75	1688.98	-1657.68	-10.70	1626.92	5774396.09	625974.87
2548	57.68	86.75	1689.51	-1658.21	-10.65	1627.77	5774396.14	625975.72
2549	57.68	86.75	1690.05	-1658.75	-10.60	1628.61	5774396.19	625976.56
2550	57.69	86.75	1690.58	-1659.28	-10.55	1629.46	5774396.24	625977.40
2551	57.69	86.75	1691.12	-1659.82	-10.50	1630.30	5774396.28	625978.25
2552	57.70	86.75	1691.65	-1660.35	-10.46	1631.14	5774396.33	625979.09
2553	57.70	86.75	1692.18	-1660.88	-10.41	1631.99	5774396.38	625979.94
2554	57.70	86.75	1692.72	-1661.42	-10.36	1632.83	5774396.43	625980.78
2555	57.71	86.75	1693.25	-1661.95	-10.31	1633.68	5774396.48	625981.62
2556	57.71	86.75	1693.79	-1662.49	-10.26	1634.52	5774396.52	625982.47
2557	57.72	86.75	1694.32	-1663.02	-10.22	1635.36	5774396.57	625983.31
2558	57.72	86.75	1694.86	-1663.56	-10.17	1636.21	5774396.62	625984.16
2559	57.73	86.75	1695.39	-1664.09	-10.12	1637.05	5774396.67	625985.00
2560	57.73	86.75	1695.92	-1664.62	-10.07	1637.90	5774396.72	625985.84
2561	57.74	86.75	1696.46	-1665.16	-10.02	1638.74	5774396.76	625986.69
2562	57.74	86.75	1696.99	-1665.69	-9.98	1639.59	5774396.81	625987.53
2563	57.75	86.75	1697.53	-1666.23	-9.93	1640.43	5774396.86	625988.38
2564	57.75	86.75	1698.06	-1666.76	-9.88	1641.27	5774396.91	625989.22
2565	57.76	86.75	1698.59	-1667.29	-9.83	1642.12	5774396.96	625990.07
2566	57.76	86.75	1699.13	-1667.83	-9.79	1642.96	5774397.00	625990.91
2567	57.77	86.75	1699.66	-1668.36	-9.74	1643.81	5774397.05	625991.75
2568	57.77	86.75	1700.20	-1668.90	-9.69	1644.65	5774397.10	625992.60
2569	57.78	86.75	1700.73	-1669.43	-9.64	1645.49	5774397.15	625993.44
2570	57.78	86.75	1701.26	-1669.96	-9.59	1646.34	5774397.20	625994.29
2571	57.79	86.75	1701.80	-1670.50	-9.55	1647.18	5774397.24	625995.13
2572	57.79	86.75	1702.33	-1671.03	-9.50	1648.03	5774397.29	625995.98
2573	57.80	86.76	1702.86	-1671.56	-9.45	1648.87	5774397.34	625996.82
2574	57.81	86.76	1703.39	-1672.09	-9.40	1649.72	5774397.39	625997.67
2575	57.82	86.76	1703.92	-1672.62	-9.36	1650.57	5774397.43	625998.51
2576	57.82	86.76	1704.45	-1673.15	-9.31	1651.41	5774397.48	625999.36
2577	57.83	86.76	1704.99	-1673.69	-9.26	1652.26	5774397.53	626000.20
2578	57.84	86.77	1705.52	-1674.22	-9.21	1653.10	5774397.58	626001.05
2579	57.84	86.77	1706.05	-1674.75	-9.17	1653.95	5774397.62	626001.90
2580	57.85	86.77	1706.58	-1675.28	-9.12	1654.79	5774397.67	626002.74
2581	57.86	86.77	1707.11	-1675.81	-9.07	1655.64	5774397.72	626003.59
2582	57.87	86.77	1707.64	-1676.34	-9.02	1656.48	5774397.77	626004.43
2583	57.87	86.78	1708.18	-1676.88	-8.98	1657.33	5774397.81	626005.28
2584	57.88	86.78	1708.71	-1677.41	-8.93	1658.18	5774397.86	626006.12
2585	57.89	86.78	1709.24	-1677.94	-8.88	1659.02	5774397.91	626006.97
2586	57.89	86.78	1709.77	-1678.47	-8.83	1659.87	5774397.96	626007.82
2587	57.90	86.78	1710.30	-1679.00	-8.78	1660.71	5774398.00	626008.66
2588	57.91	86.79	1710.83	-1679.53	-8.74	1661.56	5774398.05	626009.51
2589	57.92	86.79	1711.37	-1680.07	-8.69	1662.40	5774398.10	626010.35
2590	57.92	86.79	1711.90	-1680.60	-8.64	1663.25	5774398.15	626011.20
2591	57.93	86.79	1712.43	-1681.13	-8.59	1664.10	5774398.19	626012.04
2592	57.94	86.80	1712.96	-1681.66	-8.55	1664.94	5774398.24	626012.89
2593	57.94	86.80	1713.49	-1682.19	-8.50	1665.79	5774398.29	626013.73
2594	57.95	86.80	1714.02	-1682.72	-8.45	1666.63	5774398.34	626014.58
2595	57.96	86.80	1714.56	-1683.26	-8.40	1667.48	5774398.38	626015.43
2596	57.97	86.80	1715.09	-1683.79	-8.36	1668.32	5774398.43	626016.27
2597	57.97	86.81	1715.62	-1684.32	-8.31	1669.17	5774398.48	626017.12
2598	57.98	86.81	1716.15	-1684.85	-8.26	1670.01	5774398.53	626017.96
2599	57.99	86.81	1716.68	-1685.38	-8.21	1670.86	5774398.57	626018.81
2600	57.95	86.81	1717.22	-1685.92	-8.17	1671.70	5774398.62	626019.65
2601	57.89	86.81	1717.76	-1686.46	-8.12	1672.54	5774398.67	626020.49
2602	57.83	86.80	1718.31	-1687.01	-8.07	1673.38	5774398.72	626021.33
2603	57.77	86.80	1718.85	-1687.55	-8.02	1674.22	5774398.76	626022.16
2604	57.71	86.80	1719.39	-1688.09	-7.98	1675.06	5774398.81	626023.00
2605	57.65	86.79	1719.93	-1688.63	-7.93	1675.89	5774398.86	626023.84
2606	57.59	86.79	1720.48	-1689.18	-7.88	1676.73	5774398.91	626024.68
2607	57.53	86.79	1721.02	-1689.72	-7.84	1677.57	5774398.95	626025.52

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2608	57.47	86.79	1721.56	-1690.26	-7.79	1678.41	5774399.00	626026.36
2609	57.41	86.78	1722.10	-1690.80	-7.74	1679.25	5774399.05	626027.20
2610	57.35	86.78	1722.65	-1691.35	-7.69	1680.09	5774399.10	626028.04
2611	57.29	86.78	1723.19	-1691.89	-7.65	1680.93	5774399.14	626028.87
2612	57.23	86.77	1723.73	-1692.43	-7.60	1681.76	5774399.19	626029.71
2613	57.17	86.77	1724.28	-1692.98	-7.55	1682.60	5774399.24	626030.55
2614	57.11	86.77	1724.82	-1693.52	-7.50	1683.44	5774399.29	626031.39
2615	57.05	86.77	1725.36	-1694.06	-7.46	1684.28	5774399.33	626032.23
2616	56.99	86.76	1725.90	-1694.60	-7.41	1685.12	5774399.38	626033.07
2617	56.94	86.76	1726.45	-1695.15	-7.36	1685.96	5774399.43	626033.91
2618	56.88	86.76	1726.99	-1695.69	-7.31	1686.80	5774399.47	626034.74
2619	56.82	86.75	1727.53	-1696.23	-7.27	1687.64	5774399.52	626035.58
2620	56.76	86.75	1728.07	-1696.77	-7.22	1688.47	5774399.57	626036.42
2621	56.70	86.75	1728.62	-1697.32	-7.17	1689.31	5774399.62	626037.26
2622	56.64	86.75	1729.16	-1697.86	-7.13	1690.15	5774399.66	626038.10
2623	56.58	86.74	1729.70	-1698.40	-7.08	1690.99	5774399.71	626038.94
2624	56.52	86.74	1730.24	-1698.94	-7.03	1691.83	5774399.76	626039.78
2625	56.46	86.74	1730.79	-1699.49	-6.98	1692.67	5774399.81	626040.62
2626	56.40	86.74	1731.33	-1700.03	-6.94	1693.51	5774399.85	626041.45
2627	56.34	86.73	1731.87	-1700.57	-6.89	1694.34	5774399.90	626042.29
2628	56.29	86.73	1732.42	-1701.12	-6.84	1695.18	5774399.95	626043.13
2629	56.30	86.72	1732.97	-1701.67	-6.79	1696.01	5774400.00	626043.96
2630	56.31	86.71	1733.52	-1702.22	-6.74	1696.85	5774400.05	626044.79
2631	56.31	86.70	1734.08	-1702.78	-6.69	1697.68	5774400.10	626045.62
2632	56.32	86.69	1734.63	-1703.33	-6.64	1698.51	5774400.15	626046.46
2633	56.33	86.68	1735.18	-1703.88	-6.59	1699.34	5774400.19	626047.29
2634	56.34	86.68	1735.74	-1704.44	-6.54	1700.17	5774400.24	626048.12
2635	56.34	86.67	1736.29	-1704.99	-6.50	1701.00	5774400.29	626048.95
2636	56.35	86.66	1736.84	-1705.54	-6.45	1701.83	5774400.34	626049.78
2637	56.36	86.65	1737.40	-1706.10	-6.40	1702.66	5774400.39	626050.61
2638	56.37	86.64	1737.95	-1706.65	-6.35	1703.50	5774400.44	626051.44
2639	56.37	86.63	1738.50	-1707.20	-6.30	1704.33	5774400.49	626052.28
2640	56.38	86.62	1739.06	-1707.76	-6.25	1705.16	5774400.54	626053.11
2641	56.39	86.61	1739.61	-1708.31	-6.20	1705.99	5774400.59	626053.94
2642	56.39	86.61	1740.16	-1708.86	-6.15	1706.82	5774400.64	626054.77
2643	56.40	86.60	1740.72	-1709.42	-6.10	1707.65	5774400.69	626055.60
2644	56.41	86.59	1741.27	-1709.97	-6.05	1708.48	5774400.74	626056.43
2645	56.42	86.58	1741.82	-1710.52	-6.00	1709.32	5774400.79	626057.26
2646	56.42	86.57	1742.38	-1711.08	-5.95	1710.15	5774400.84	626058.10
2647	56.43	86.56	1742.93	-1711.63	-5.90	1710.98	5774400.89	626058.93
2648	56.44	86.55	1743.48	-1712.18	-5.85	1711.81	5774400.93	626059.76
2649	56.45	86.54	1744.04	-1712.74	-5.80	1712.64	5774400.98	626060.59
2650	56.45	86.53	1744.59	-1713.29	-5.76	1713.47	5774401.03	626061.42
2651	56.46	86.53	1745.14	-1713.84	-5.71	1714.30	5774401.08	626062.25
2652	56.47	86.52	1745.70	-1714.40	-5.66	1715.14	5774401.13	626063.08
2653	56.48	86.51	1746.25	-1714.95	-5.61	1715.97	5774401.18	626063.92
2654	56.48	86.50	1746.81	-1715.51	-5.56	1716.80	5774401.23	626064.75
2655	56.49	86.49	1747.36	-1716.06	-5.51	1717.63	5774401.28	626065.58
2656	56.50	86.48	1747.91	-1716.61	-5.46	1718.46	5774401.33	626066.41
2657	56.51	86.48	1748.46	-1717.16	-5.41	1719.29	5774401.38	626067.24
2658	56.52	86.49	1749.01	-1717.71	-5.36	1720.13	5774401.43	626068.08
2659	56.52	86.50	1749.56	-1718.26	-5.31	1720.96	5774401.48	626068.91
2660	56.53	86.50	1750.11	-1718.81	-5.26	1721.80	5774401.53	626069.74
2661	56.54	86.51	1750.66	-1719.36	-5.21	1722.63	5774401.58	626070.58
2662	56.55	86.51	1751.21	-1719.91	-5.16	1723.46	5774401.63	626071.41
2663	56.56	86.52	1751.76	-1720.46	-5.11	1724.30	5774401.68	626072.24
2664	56.57	86.53	1752.31	-1721.01	-5.06	1725.13	5774401.73	626073.08
2665	56.58	86.53	1752.86	-1721.56	-5.01	1725.96	5774401.78	626073.91
2666	56.59	86.54	1753.41	-1722.11	-4.96	1726.80	5774401.83	626074.74
2667	56.59	86.54	1753.96	-1722.66	-4.91	1727.63	5774401.88	626075.58
2668	56.60	86.55	1754.51	-1723.21	-4.86	1728.46	5774401.93	626076.41
2669	56.61	86.56	1755.06	-1723.76	-4.81	1729.30	5774401.98	626077.25
2670	56.62	86.56	1755.61	-1724.31	-4.76	1730.13	5774402.03	626078.08
2671	56.63	86.57	1756.16	-1724.86	-4.71	1730.96	5774402.08	626078.91
2672	56.64	86.57	1756.71	-1725.41	-4.66	1731.80	5774402.13	626079.75
2673	56.65	86.58	1757.27	-1725.97	-4.61	1732.63	5774402.18	626080.58

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2674	56.66	86.59	1757.82	-1726.52	-4.56	1733.47	5774402.23	626081.41
2675	56.66	86.59	1758.37	-1727.07	-4.51	1734.30	5774402.28	626082.25
2676	56.67	86.60	1758.92	-1727.62	-4.46	1735.13	5774402.33	626083.08
2677	56.68	86.60	1759.47	-1728.17	-4.41	1735.97	5774402.38	626083.91
2678	56.69	86.61	1760.02	-1728.72	-4.36	1736.80	5774402.43	626084.75
2679	56.70	86.62	1760.57	-1729.27	-4.31	1737.63	5774402.48	626085.58
2680	56.71	86.62	1761.12	-1729.82	-4.26	1738.47	5774402.53	626086.41
2681	56.72	86.63	1761.67	-1730.37	-4.21	1739.30	5774402.58	626087.25
2682	56.73	86.63	1762.22	-1730.92	-4.16	1740.13	5774402.63	626088.08
2683	56.74	86.64	1762.77	-1731.47	-4.11	1740.97	5774402.68	626088.92
2684	56.74	86.65	1763.32	-1732.02	-4.06	1741.80	5774402.73	626089.75
2685	56.75	86.65	1763.87	-1732.57	-4.01	1742.64	5774402.78	626090.58
2686	56.76	86.64	1764.41	-1733.11	-3.96	1743.47	5774402.83	626091.42
2687	56.76	86.63	1764.96	-1733.66	-3.91	1744.31	5774402.88	626092.25
2688	56.77	86.63	1765.51	-1734.21	-3.86	1745.14	5774402.93	626093.09
2689	56.78	86.62	1766.05	-1734.75	-3.81	1745.98	5774402.98	626093.93
2690	56.78	86.61	1766.60	-1735.30	-3.76	1746.81	5774403.03	626094.76
2691	56.79	86.61	1767.15	-1735.85	-3.71	1747.65	5774403.08	626095.60
2692	56.79	86.60	1767.69	-1736.39	-3.66	1748.48	5774403.13	626096.43
2693	56.80	86.59	1768.24	-1736.94	-3.61	1749.32	5774403.18	626097.27
2694	56.81	86.59	1768.79	-1737.49	-3.56	1750.16	5774403.23	626098.10
2695	56.81	86.58	1769.34	-1738.04	-3.51	1750.99	5774403.28	626098.94
2696	56.82	86.58	1769.88	-1738.58	-3.46	1751.83	5774403.33	626099.78
2697	56.82	86.57	1770.43	-1739.13	-3.41	1752.66	5774403.38	626100.61
2698	56.83	86.56	1770.98	-1739.68	-3.35	1753.50	5774403.43	626101.45
2699	56.83	86.56	1771.52	-1740.22	-3.30	1754.33	5774403.48	626102.28
2700	56.84	86.55	1772.07	-1740.77	-3.25	1755.17	5774403.53	626103.12
2701	56.85	86.54	1772.62	-1741.32	-3.20	1756.01	5774403.58	626103.95
2702	56.85	86.54	1773.17	-1741.87	-3.15	1756.84	5774403.64	626104.79
2703	56.86	86.53	1773.71	-1742.41	-3.10	1757.68	5774403.69	626105.62
2704	56.86	86.52	1774.26	-1742.96	-3.05	1758.51	5774403.74	626106.46
2705	56.87	86.52	1774.81	-1743.51	-3.00	1759.35	5774403.79	626107.30
2706	56.88	86.51	1775.35	-1744.05	-2.95	1760.18	5774403.84	626108.13
2707	56.88	86.50	1775.90	-1744.60	-2.90	1761.02	5774403.89	626108.97
2708	56.89	86.50	1776.45	-1745.15	-2.85	1761.85	5774403.94	626109.80
2709	56.89	86.49	1776.99	-1745.69	-2.80	1762.69	5774403.99	626110.64
2710	56.90	86.48	1777.54	-1746.24	-2.75	1763.53	5774404.04	626111.47
2711	56.91	86.48	1778.09	-1746.79	-2.70	1764.36	5774404.09	626112.31
2712	56.91	86.47	1778.64	-1747.34	-2.65	1765.20	5774404.14	626113.14
2713	56.92	86.46	1779.18	-1747.88	-2.60	1766.03	5774404.19	626113.98
2714	56.92	86.46	1779.73	-1748.43	-2.55	1766.87	5774404.24	626114.82
2715	56.92	86.46	1780.27	-1748.97	-2.50	1767.71	5774404.29	626115.65
2716	56.93	86.45	1780.82	-1749.52	-2.44	1768.54	5774404.34	626116.49
2717	56.93	86.45	1781.36	-1750.06	-2.39	1769.38	5774404.40	626117.33
2718	56.93	86.45	1781.91	-1750.61	-2.34	1770.21	5774404.45	626118.16
2719	56.93	86.45	1782.46	-1751.16	-2.29	1771.05	5774404.50	626119.00
2720	56.93	86.45	1783.00	-1751.70	-2.24	1771.89	5774404.55	626119.84
2721	56.94	86.44	1783.55	-1752.25	-2.18	1772.72	5774404.61	626120.67
2722	56.94	86.44	1784.09	-1752.79	-2.13	1773.56	5774404.66	626121.51
2723	56.94	86.44	1784.64	-1753.34	-2.08	1774.40	5774404.71	626122.35
2724	56.94	86.44	1785.18	-1753.88	-2.03	1775.23	5774404.76	626123.18
2725	56.94	86.44	1785.73	-1754.43	-1.97	1776.07	5774404.81	626124.02
2726	56.95	86.43	1786.27	-1754.97	-1.92	1776.91	5774404.87	626124.86
2727	56.95	86.43	1786.82	-1755.52	-1.87	1777.74	5774404.92	626125.69
2728	56.95	86.43	1787.36	-1756.06	-1.82	1778.58	5774404.97	626126.53
2729	56.95	86.43	1787.91	-1756.61	-1.77	1779.42	5774405.02	626127.36
2730	56.95	86.43	1788.45	-1757.15	-1.71	1780.25	5774405.08	626128.20
2731	56.96	86.42	1789.00	-1757.70	-1.66	1781.09	5774405.13	626129.04
2732	56.96	86.42	1789.55	-1758.25	-1.61	1781.93	5774405.18	626129.87
2733	56.96	86.42	1790.09	-1758.79	-1.56	1782.76	5774405.23	626130.71
2734	56.96	86.42	1790.64	-1759.34	-1.51	1783.60	5774405.28	626131.55
2735	56.97	86.41	1791.18	-1759.88	-1.45	1784.44	5774405.34	626132.38
2736	56.97	86.41	1791.73	-1760.43	-1.40	1785.27	5774405.39	626133.22
2737	56.97	86.41	1792.27	-1760.97	-1.35	1786.11	5774405.44	626134.06
2738	56.97	86.41	1792.82	-1761.52	-1.30	1786.95	5774405.49	626134.89
2739	56.97	86.41	1793.36	-1762.06	-1.24	1787.78	5774405.54	626135.73

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2740	56.98	86.40	1793.91	-1762.61	-1.19	1788.62	5774405.60	626136.57
2741	56.98	86.40	1794.45	-1763.15	-1.14	1789.46	5774405.65	626137.40
2742	56.98	86.40	1795.00	-1763.70	-1.09	1790.29	5774405.70	626138.24
2743	56.99	86.39	1795.54	-1764.24	-1.03	1791.13	5774405.76	626139.08
2744	57.00	86.39	1796.09	-1764.79	-0.98	1791.97	5774405.81	626139.92
2745	57.01	86.38	1796.63	-1765.33	-0.93	1792.81	5774405.86	626140.75
2746	57.01	86.38	1797.17	-1765.87	-0.87	1793.64	5774405.92	626141.59
2747	57.02	86.37	1797.71	-1766.41	-0.82	1794.48	5774405.97	626142.43
2748	57.03	86.36	1798.26	-1766.96	-0.76	1795.32	5774406.02	626143.27
2749	57.04	86.36	1798.80	-1767.50	-0.71	1796.16	5774406.08	626144.11
2750	57.05	86.35	1799.34	-1768.04	-0.66	1797.00	5774406.13	626144.94
2751	57.06	86.35	1799.89	-1768.59	-0.60	1797.83	5774406.19	626145.78
2752	57.06	86.34	1800.43	-1769.13	-0.55	1798.67	5774406.24	626146.62
2753	57.07	86.33	1800.97	-1769.67	-0.49	1799.51	5774406.29	626147.46
2754	57.08	86.33	1801.52	-1770.22	-0.44	1800.35	5774406.35	626148.29
2755	57.09	86.32	1802.06	-1770.76	-0.39	1801.18	5774406.40	626149.13
2756	57.10	86.32	1802.60	-1771.30	-0.33	1802.02	5774406.46	626149.97
2757	57.11	86.31	1803.15	-1771.85	-0.28	1802.86	5774406.51	626150.81
2758	57.12	86.30	1803.69	-1772.39	-0.22	1803.70	5774406.56	626151.65
2759	57.12	86.30	1804.23	-1772.93	-0.17	1804.54	5774406.62	626152.48
2760	57.13	86.29	1804.78	-1773.48	-0.12	1805.37	5774406.67	626153.32
2761	57.14	86.29	1805.32	-1774.02	-0.06	1806.21	5774406.73	626154.16
2762	57.15	86.28	1805.86	-1774.56	-0.01	1807.05	5774406.78	626155.00
2763	57.16	86.27	1806.41	-1775.11	0.05	1807.89	5774406.83	626155.84
2764	57.17	86.27	1806.95	-1775.65	0.10	1808.73	5774406.89	626156.67
2765	57.18	86.26	1807.49	-1776.19	0.15	1809.56	5774406.94	626157.51
2766	57.18	86.26	1808.04	-1776.74	0.21	1810.40	5774407.00	626158.35
2767	57.19	86.25	1808.58	-1777.28	0.26	1811.24	5774407.05	626159.19
2768	57.20	86.24	1809.12	-1777.82	0.32	1812.08	5774407.10	626160.02
2769	57.21	86.24	1809.66	-1778.36	0.37	1812.91	5774407.16	626160.86
2770	57.22	86.23	1810.21	-1778.91	0.42	1813.75	5774407.21	626161.70
2771	57.22	86.23	1810.75	-1779.45	0.48	1814.59	5774407.27	626162.54
2772	57.23	86.22	1811.29	-1779.99	0.54	1815.43	5774407.32	626163.38
2773	57.23	86.22	1811.83	-1780.53	0.59	1816.27	5774407.38	626164.22
2774	57.24	86.21	1812.37	-1781.07	0.65	1817.11	5774407.44	626165.06
2775	57.24	86.21	1812.91	-1781.61	0.70	1817.95	5774407.49	626165.90
2776	57.24	86.20	1813.45	-1782.15	0.76	1818.79	5774407.55	626166.74
2777	57.25	86.20	1813.99	-1782.69	0.82	1819.63	5774407.61	626167.58
2778	57.25	86.20	1814.53	-1783.23	0.87	1820.47	5774407.66	626168.42
2779	57.26	86.19	1815.07	-1783.77	0.93	1821.31	5774407.72	626169.26
2780	57.26	86.19	1815.61	-1784.31	0.99	1822.15	5774407.77	626170.09
2781	57.26	86.18	1816.15	-1784.85	1.04	1822.99	5774407.83	626170.93
2782	57.27	86.18	1816.70	-1785.40	1.10	1823.83	5774407.89	626171.77
2783	57.27	86.17	1817.24	-1785.94	1.15	1824.66	5774407.94	626172.61
2784	57.28	86.17	1817.78	-1786.48	1.21	1825.50	5774408.00	626173.45
2785	57.28	86.16	1818.32	-1787.02	1.27	1826.34	5774408.06	626174.29
2786	57.29	86.16	1818.86	-1787.56	1.32	1827.18	5774408.11	626175.13
2787	57.29	86.15	1819.40	-1788.10	1.38	1828.02	5774408.17	626175.97
2788	57.29	86.15	1819.94	-1788.64	1.44	1828.86	5774408.22	626176.81
2789	57.30	86.15	1820.48	-1789.18	1.49	1829.70	5774408.28	626177.65
2790	57.30	86.14	1821.02	-1789.72	1.55	1830.54	5774408.34	626178.49
2791	57.31	86.14	1821.56	-1790.26	1.60	1831.38	5774408.39	626179.33
2792	57.31	86.13	1822.10	-1790.80	1.66	1832.22	5774408.45	626180.17
2793	57.31	86.13	1822.64	-1791.34	1.72	1833.06	5774408.51	626181.01
2794	57.32	86.12	1823.18	-1791.88	1.77	1833.90	5774408.56	626181.85
2795	57.32	86.12	1823.72	-1792.42	1.83	1834.74	5774408.62	626182.69
2796	57.33	86.11	1824.26	-1792.96	1.89	1835.58	5774408.67	626183.53
2797	57.33	86.11	1824.80	-1793.50	1.94	1836.42	5774408.73	626184.36
2798	57.34	86.11	1825.34	-1794.04	2.00	1837.26	5774408.79	626185.20
2799	57.34	86.10	1825.88	-1794.58	2.05	1838.10	5774408.84	626186.04
2800	57.34	86.11	1826.42	-1795.12	2.11	1838.94	5774408.90	626186.88
2801	57.34	86.12	1826.96	-1795.66	2.17	1839.78	5774408.95	626187.72
2802	57.35	86.13	1827.50	-1796.20	2.22	1840.62	5774409.01	626188.56
2803	57.35	86.14	1828.04	-1796.74	2.28	1841.46	5774409.07	626189.41
2804	57.35	86.15	1828.58	-1797.28	2.33	1842.30	5774409.12	626190.25
2805	57.36	86.15	1829.12	-1797.82	2.39	1843.14	5774409.18	626191.09

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2806	57.36	86.16	1829.66	-1798.36	2.44	1843.98	5774409.23	626191.93
2807	57.36	86.17	1830.20	-1798.90	2.50	1844.82	5774409.29	626192.77
2808	57.36	86.18	1830.74	-1799.44	2.55	1845.66	5774409.34	626193.61
2809	57.37	86.19	1831.28	-1799.98	2.61	1846.50	5774409.40	626194.45
2810	57.37	86.20	1831.82	-1800.52	2.66	1847.34	5774409.45	626195.29
2811	57.37	86.21	1832.35	-1801.05	2.72	1848.18	5774409.51	626196.13
2812	57.37	86.22	1832.89	-1801.59	2.78	1849.02	5774409.56	626196.97
2813	57.38	86.23	1833.43	-1802.13	2.83	1849.86	5774409.62	626197.81
2814	57.38	86.24	1833.97	-1802.67	2.89	1850.70	5774409.68	626198.65
2815	57.38	86.25	1834.51	-1803.21	2.94	1851.54	5774409.73	626199.49
2816	57.38	86.26	1835.05	-1803.75	3.00	1852.38	5774409.79	626200.33
2817	57.39	86.27	1835.59	-1804.29	3.05	1853.22	5774409.84	626201.17
2818	57.39	86.28	1836.13	-1804.83	3.11	1854.06	5774409.90	626202.01
2819	57.39	86.28	1836.67	-1805.37	3.16	1854.90	5774409.95	626202.85
2820	57.39	86.29	1837.21	-1805.91	3.22	1855.74	5774410.01	626203.69
2821	57.40	86.30	1837.75	-1806.45	3.27	1856.58	5774410.06	626204.53
2822	57.40	86.31	1838.28	-1806.98	3.33	1857.43	5774410.12	626205.37
2823	57.40	86.32	1838.82	-1807.52	3.39	1858.27	5774410.17	626206.21
2824	57.40	86.33	1839.36	-1808.06	3.44	1859.11	5774410.23	626207.05
2825	57.41	86.34	1839.90	-1808.60	3.50	1859.95	5774410.29	626207.89
2826	57.41	86.35	1840.44	-1809.14	3.55	1860.79	5774410.34	626208.73
2827	57.41	86.34	1840.98	-1809.68	3.61	1861.63	5774410.40	626209.58
2828	57.41	86.33	1841.52	-1810.22	3.66	1862.47	5774410.45	626210.42
2829	57.41	86.32	1842.06	-1810.76	3.72	1863.31	5774410.51	626211.26
2830	57.42	86.31	1842.59	-1811.29	3.78	1864.15	5774410.57	626212.10
2831	57.42	86.29	1843.13	-1811.83	3.83	1864.99	5774410.62	626212.94
2832	57.42	86.28	1843.67	-1812.37	3.89	1865.83	5774410.68	626213.78
2833	57.42	86.27	1844.21	-1812.91	3.94	1866.67	5774410.73	626214.62
2834	57.42	86.26	1844.75	-1813.45	4.00	1867.51	5774410.79	626215.46
2835	57.42	86.25	1845.29	-1813.99	4.06	1868.35	5774410.85	626216.30
2836	57.43	86.24	1845.82	-1814.52	4.11	1869.20	5774410.90	626217.14
2837	57.43	86.23	1846.36	-1815.06	4.17	1870.04	5774410.96	626217.98
2838	57.43	86.22	1846.90	-1815.60	4.23	1870.88	5774411.01	626218.83
2839	57.43	86.20	1847.44	-1816.14	4.28	1871.72	5774411.07	626219.67
2840	57.43	86.19	1847.98	-1816.68	4.34	1872.56	5774411.13	626220.51
2841	57.43	86.18	1848.51	-1817.21	4.39	1873.40	5774411.18	626221.35
2842	57.44	86.17	1849.05	-1817.75	4.45	1874.24	5774411.24	626222.19
2843	57.44	86.16	1849.59	-1818.29	4.51	1875.08	5774411.30	626223.03
2844	57.44	86.15	1850.13	-1818.83	4.56	1875.92	5774411.35	626223.87
2845	57.44	86.14	1850.67	-1819.37	4.62	1876.76	5774411.41	626224.71
2846	57.44	86.13	1851.21	-1819.91	4.67	1877.60	5774411.46	626225.55
2847	57.44	86.11	1851.74	-1820.44	4.73	1878.45	5774411.52	626226.39
2848	57.45	86.10	1852.28	-1820.98	4.79	1879.29	5774411.58	626227.23
2849	57.45	86.09	1852.82	-1821.52	4.84	1880.13	5774411.63	626228.08
2850	57.45	86.08	1853.36	-1822.06	4.90	1880.97	5774411.69	626228.92
2851	57.45	86.07	1853.90	-1822.60	4.96	1881.81	5774411.74	626229.76
2852	57.45	86.06	1854.44	-1823.14	5.01	1882.65	5774411.80	626230.60
2853	57.45	86.05	1854.97	-1823.67	5.07	1883.49	5774411.86	626231.44
2854	57.46	86.03	1855.51	-1824.21	5.12	1884.33	5774411.91	626232.28
2855	57.46	86.02	1856.05	-1824.75	5.18	1885.17	5774411.97	626233.12
2856	57.46	86.01	1856.59	-1825.29	5.24	1886.01	5774412.02	626233.96
2857	57.46	86.01	1857.13	-1825.83	5.29	1886.85	5774412.08	626234.80
2858	57.46	86.02	1857.66	-1826.36	5.35	1887.70	5774412.14	626235.64
2859	57.46	86.03	1858.20	-1826.90	5.41	1888.54	5774412.20	626236.48
2860	57.46	86.03	1858.74	-1827.44	5.47	1889.38	5774412.25	626237.33
2861	57.46	86.04	1859.28	-1827.98	5.52	1890.22	5774412.31	626238.17
2862	57.46	86.05	1859.82	-1828.52	5.58	1891.06	5774412.37	626239.01
2863	57.46	86.05	1860.35	-1829.05	5.64	1891.90	5774412.43	626239.85
2864	57.46	86.06	1860.89	-1829.59	5.69	1892.74	5774412.48	626240.69
2865	57.46	86.07	1861.43	-1830.13	5.75	1893.58	5774412.54	626241.53
2866	57.46	86.07	1861.97	-1830.67	5.81	1894.42	5774412.60	626242.37
2867	57.46	86.08	1862.51	-1831.21	5.87	1895.26	5774412.66	626243.21
2868	57.46	86.08	1863.04	-1831.74	5.92	1896.11	5774412.71	626244.05
2869	57.46	86.09	1863.58	-1832.28	5.98	1896.95	5774412.77	626244.89
2870	57.46	86.10	1864.12	-1832.82	6.04	1897.79	5774412.83	626245.74
2871	57.45	86.10	1864.66	-1833.36	6.10	1898.63	5774412.88	626246.58

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2872	57.45	86.11	1865.20	-1833.90	6.15	1899.47	5774412.94	626247.42
2873	57.45	86.12	1865.73	-1834.43	6.21	1900.31	5774413.00	626248.26
2874	57.45	86.12	1866.27	-1834.97	6.27	1901.15	5774413.06	626249.10
2875	57.45	86.13	1866.81	-1835.51	6.33	1901.99	5774413.11	626249.94
2876	57.45	86.13	1867.35	-1836.05	6.38	1902.83	5774413.17	626250.78
2877	57.45	86.14	1867.89	-1836.59	6.44	1903.68	5774413.23	626251.62
2878	57.45	86.15	1868.42	-1837.12	6.50	1904.52	5774413.29	626252.46
2879	57.45	86.15	1868.96	-1837.66	6.55	1905.36	5774413.34	626253.31
2880	57.45	86.16	1869.50	-1838.20	6.61	1906.20	5774413.40	626254.15
2881	57.45	86.17	1870.04	-1838.74	6.67	1907.04	5774413.46	626254.99
2882	57.45	86.17	1870.58	-1839.28	6.73	1907.88	5774413.52	626255.83
2883	57.45	86.18	1871.11	-1839.81	6.78	1908.72	5774413.57	626256.67
2884	57.45	86.18	1871.65	-1840.35	6.84	1909.56	5774413.63	626257.51
2885	57.45	86.19	1872.19	-1840.89	6.90	1910.40	5774413.69	626258.35
2886	57.45	86.18	1872.73	-1841.43	6.96	1911.24	5774413.75	626259.19
2887	57.45	86.17	1873.27	-1841.97	7.02	1912.09	5774413.80	626260.03
2888	57.45	86.16	1873.80	-1842.50	7.07	1912.93	5774413.86	626260.87
2889	57.45	86.15	1874.34	-1843.04	7.13	1913.77	5774413.92	626261.72
2890	57.46	86.14	1874.88	-1843.58	7.19	1914.61	5774413.98	626262.56
2891	57.46	86.13	1875.42	-1844.12	7.25	1915.45	5774414.04	626263.40
2892	57.46	86.12	1875.95	-1844.65	7.31	1916.29	5774414.09	626264.24
2893	57.46	86.11	1876.49	-1845.19	7.36	1917.13	5774414.15	626265.08
2894	57.46	86.10	1877.03	-1845.73	7.42	1917.97	5774414.21	626265.92
2895	57.46	86.09	1877.57	-1846.27	7.48	1918.81	5774414.27	626266.76
2896	57.46	86.08	1878.11	-1846.81	7.54	1919.66	5774414.33	626267.60
2897	57.46	86.07	1878.64	-1847.34	7.60	1920.50	5774414.38	626268.44
2898	57.46	86.06	1879.18	-1847.88	7.65	1921.34	5774414.44	626269.29
2899	57.46	86.05	1879.72	-1848.42	7.71	1922.18	5774414.50	626270.13
2900	57.47	86.04	1880.26	-1848.96	7.77	1923.02	5774414.56	626270.97
2901	57.47	86.03	1880.80	-1849.50	7.83	1923.86	5774414.62	626271.81
2902	57.47	86.02	1881.33	-1850.03	7.89	1924.70	5774414.68	626272.65
2903	57.47	86.01	1881.87	-1850.57	7.94	1925.54	5774414.73	626273.49
2904	57.47	86.00	1882.41	-1851.11	8.00	1926.38	5774414.79	626274.33
2905	57.47	85.99	1882.95	-1851.65	8.06	1927.22	5774414.85	626275.17
2906	57.47	85.98	1883.48	-1852.18	8.12	1928.07	5774414.91	626276.01
2907	57.47	85.97	1884.02	-1852.72	8.18	1928.91	5774414.97	626276.85
2908	57.47	85.96	1884.56	-1853.26	8.23	1929.75	5774415.02	626277.70
2909	57.48	85.95	1885.10	-1853.80	8.29	1930.59	5774415.08	626278.54
2910	57.48	85.94	1885.64	-1854.34	8.35	1931.43	5774415.14	626279.38
2911	57.48	85.93	1886.17	-1854.87	8.41	1932.27	5774415.20	626280.22
2912	57.48	85.92	1886.71	-1855.41	8.47	1933.11	5774415.26	626281.06
2913	57.48	85.91	1887.25	-1855.95	8.53	1933.95	5774415.31	626281.90
2914	57.49	85.91	1887.79	-1856.49	8.58	1934.80	5774415.37	626282.74
2915	57.50	85.92	1888.32	-1857.02	8.64	1935.64	5774415.43	626283.59
2916	57.51	85.93	1888.86	-1857.56	8.70	1936.48	5774415.49	626284.43
2917	57.52	85.94	1889.39	-1858.09	8.76	1937.32	5774415.55	626285.27
2918	57.53	85.95	1889.93	-1858.63	8.82	1938.17	5774415.61	626286.11
2919	57.54	85.96	1890.46	-1859.16	8.87	1939.01	5774415.66	626286.96
2920	57.55	85.97	1891.00	-1859.70	8.93	1939.85	5774415.72	626287.80
2921	57.56	85.98	1891.53	-1860.23	8.99	1940.69	5774415.78	626288.64
2922	57.57	85.99	1892.07	-1860.77	9.05	1941.54	5774415.84	626289.48
2923	57.58	86.00	1892.60	-1861.30	9.11	1942.38	5774415.90	626290.33
2924	57.59	86.01	1893.14	-1861.84	9.17	1943.22	5774415.96	626291.17
2925	57.61	86.02	1893.67	-1862.37	9.22	1944.06	5774416.01	626292.01
2926	57.62	86.02	1894.21	-1862.91	9.28	1944.91	5774416.07	626292.85
2927	57.63	86.03	1894.74	-1863.44	9.34	1945.75	5774416.13	626293.70
2928	57.64	86.04	1895.28	-1863.98	9.40	1946.59	5774416.19	626294.54
2929	57.65	86.05	1895.82	-1864.52	9.46	1947.43	5774416.25	626295.38
2930	57.66	86.06	1896.35	-1865.05	9.52	1948.28	5774416.31	626296.22
2931	57.67	86.07	1896.89	-1865.59	9.57	1949.12	5774416.36	626297.07
2932	57.68	86.08	1897.42	-1866.12	9.63	1949.96	5774416.42	626297.91
2933	57.69	86.09	1897.96	-1866.66	9.69	1950.80	5774416.48	626298.75
2934	57.70	86.10	1898.49	-1867.19	9.75	1951.65	5774416.54	626299.60
2935	57.71	86.11	1899.03	-1867.73	9.81	1952.49	5774416.60	626300.44
2936	57.73	86.12	1899.56	-1868.26	9.87	1953.33	5774416.66	626301.28
2937	57.74	86.12	1900.10	-1868.80	9.92	1954.18	5774416.71	626302.12

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2938	57.75	86.13	1900.63	-1869.33	9.98	1955.02	5774416.77	626302.97
2939	57.76	86.14	1901.17	-1869.87	10.04	1955.86	5774416.83	626303.81
2940	57.77	86.15	1901.70	-1870.40	10.10	1956.70	5774416.89	626304.65
2941	57.78	86.16	1902.24	-1870.94	10.16	1957.55	5774416.95	626305.49
2942	57.79	86.17	1902.77	-1871.47	10.22	1958.39	5774417.01	626306.34
2943	57.79	86.17	1903.31	-1872.01	10.27	1959.23	5774417.06	626307.18
2944	57.79	86.17	1903.84	-1872.54	10.33	1960.08	5774417.12	626308.02
2945	57.79	86.17	1904.37	-1873.07	10.39	1960.92	5774417.18	626308.87
2946	57.79	86.17	1904.91	-1873.61	10.44	1961.76	5774417.23	626309.71
2947	57.79	86.17	1905.44	-1874.14	10.50	1962.61	5774417.29	626310.56
2948	57.79	86.17	1905.97	-1874.67	10.56	1963.45	5774417.35	626311.40
2949	57.79	86.17	1906.51	-1875.21	10.61	1964.30	5774417.40	626312.25
2950	57.78	86.16	1907.04	-1875.74	10.67	1965.14	5774417.46	626313.09
2951	57.78	86.16	1907.57	-1876.27	10.73	1965.99	5774417.52	626313.93
2952	57.78	86.16	1908.11	-1876.81	10.78	1966.83	5774417.57	626314.78
2953	57.78	86.16	1908.64	-1877.34	10.84	1967.67	5774417.63	626315.62
2954	57.78	86.16	1909.17	-1877.87	10.90	1968.52	5774417.69	626316.47
2955	57.78	86.16	1909.70	-1878.40	10.95	1969.36	5774417.74	626317.31
2956	57.78	86.16	1910.24	-1878.94	11.01	1970.21	5774417.80	626318.15
2957	57.78	86.16	1910.77	-1879.47	11.07	1971.05	5774417.86	626319.00
2958	57.78	86.16	1911.30	-1880.00	11.12	1971.89	5774417.91	626319.84
2959	57.78	86.16	1911.84	-1880.54	11.18	1972.74	5774417.97	626320.69
2960	57.78	86.16	1912.37	-1881.07	11.24	1973.58	5774418.03	626321.53
2961	57.78	86.16	1912.90	-1881.60	11.29	1974.43	5774418.08	626322.37
2962	57.78	86.16	1913.44	-1882.14	11.35	1975.27	5774418.14	626323.22
2963	57.78	86.16	1913.97	-1882.67	11.41	1976.12	5774418.20	626324.06
2964	57.77	86.15	1914.50	-1883.20	11.46	1976.96	5774418.25	626324.91
2965	57.77	86.15	1915.04	-1883.74	11.52	1977.80	5774418.31	626325.75
2966	57.77	86.15	1915.57	-1884.27	11.58	1978.65	5774418.37	626326.60
2967	57.77	86.15	1916.10	-1884.80	11.63	1979.49	5774418.42	626327.44
2968	57.77	86.15	1916.64	-1885.34	11.69	1980.34	5774418.48	626328.28
2969	57.77	86.15	1917.17	-1885.87	11.75	1981.18	5774418.54	626329.13
2970	57.77	86.15	1917.70	-1886.40	11.80	1982.02	5774418.59	626329.97
2971	57.77	86.15	1918.24	-1886.94	11.86	1982.87	5774418.65	626330.82
2972	57.77	86.16	1918.77	-1887.47	11.92	1983.71	5774418.70	626331.66
2973	57.76	86.16	1919.30	-1888.00	11.97	1984.56	5774418.76	626332.50
2974	57.76	86.17	1919.84	-1888.54	12.03	1985.40	5774418.82	626333.35
2975	57.75	86.17	1920.37	-1889.07	12.08	1986.24	5774418.87	626334.19
2976	57.75	86.18	1920.91	-1889.61	12.14	1987.09	5774418.93	626335.03
2977	57.74	86.18	1921.44	-1890.14	12.19	1987.93	5774418.98	626335.88
2978	57.74	86.19	1921.98	-1890.68	12.25	1988.77	5774419.04	626336.72
2979	57.74	86.19	1922.51	-1891.21	12.30	1989.62	5774419.09	626337.56
2980	57.73	86.20	1923.04	-1891.74	12.36	1990.46	5774419.15	626338.41
2981	57.73	86.20	1923.58	-1892.28	12.42	1991.30	5774419.21	626339.25
2982	57.72	86.21	1924.11	-1892.81	12.47	1992.15	5774419.26	626340.09
2983	57.72	86.21	1924.65	-1893.35	12.53	1992.99	5774419.32	626340.94
2984	57.71	86.22	1925.18	-1893.88	12.58	1993.83	5774419.37	626341.78
2985	57.71	86.22	1925.71	-1894.41	12.64	1994.68	5774419.43	626342.63
2986	57.71	86.23	1926.25	-1894.95	12.69	1995.52	5774419.48	626343.47
2987	57.70	86.23	1926.78	-1895.48	12.75	1996.36	5774419.54	626344.31
2988	57.70	86.24	1927.32	-1896.02	12.81	1997.21	5774419.59	626345.16
2989	57.69	86.25	1927.85	-1896.55	12.86	1998.05	5774419.65	626346.00
2990	57.69	86.25	1928.39	-1897.09	12.92	1998.90	5774419.71	626346.84
2991	57.69	86.26	1928.92	-1897.62	12.97	1999.74	5774419.76	626347.69
2992	57.68	86.26	1929.45	-1898.15	13.03	2000.58	5774419.82	626348.53
2993	57.68	86.27	1929.99	-1898.69	13.08	2001.43	5774419.87	626349.37
2994	57.67	86.27	1930.52	-1899.22	13.14	2002.27	5774419.93	626350.22
2995	57.67	86.28	1931.06	-1899.76	13.20	2003.11	5774419.98	626351.06
2996	57.66	86.28	1931.59	-1900.29	13.25	2003.96	5774420.04	626351.90
2997	57.66	86.29	1932.12	-1900.82	13.31	2004.80	5774420.10	626352.75
2998	57.66	86.29	1932.66	-1901.36	13.36	2005.64	5774420.15	626353.59
2999	57.65	86.30	1933.19	-1901.89	13.42	2006.49	5774420.21	626354.43
3000	57.65	86.31	1933.73	-1902.43	13.47	2007.33	5774420.26	626355.28
3001	57.66	86.32	1934.26	-1902.96	13.52	2008.17	5774420.31	626356.12
3002	57.67	86.33	1934.79	-1903.49	13.58	2009.02	5774420.37	626356.97
3003	57.68	86.34	1935.33	-1904.03	13.63	2009.86	5774420.42	626357.81

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3004	57.68	86.35	1935.86	-1904.56	13.68	2010.71	5774420.47	626358.66
3005	57.69	86.36	1936.39	-1905.09	13.73	2011.55	5774420.52	626359.50
3006	57.70	86.37	1936.93	-1905.63	13.79	2012.40	5774420.57	626360.34
3007	57.71	86.38	1937.46	-1906.16	13.84	2013.24	5774420.63	626361.19
3008	57.71	86.39	1938.00	-1906.70	13.89	2014.08	5774420.68	626362.03
3009	57.72	86.40	1938.53	-1907.23	13.94	2014.93	5774420.73	626362.88
3010	57.73	86.41	1939.06	-1907.76	13.99	2015.77	5774420.78	626363.72
3011	57.73	86.42	1939.60	-1908.30	14.05	2016.62	5774420.84	626364.56
3012	57.74	86.44	1940.13	-1908.83	14.10	2017.46	5774420.89	626365.41
3013	57.75	86.45	1940.66	-1909.36	14.15	2018.30	5774420.94	626366.25
3014	57.76	86.46	1941.20	-1909.90	14.20	2019.15	5774420.99	626367.10
3015	57.76	86.47	1941.73	-1910.43	14.26	2019.99	5774421.04	626367.94
3016	57.77	86.48	1942.26	-1910.96	14.31	2020.84	5774421.10	626368.78
3017	57.78	86.49	1942.80	-1911.50	14.36	2021.68	5774421.15	626369.63
3018	57.79	86.50	1943.33	-1912.03	14.41	2022.53	5774421.20	626370.47
3019	57.79	86.51	1943.86	-1912.56	14.47	2023.37	5774421.25	626371.32
3020	57.80	86.52	1944.40	-1913.10	14.52	2024.21	5774421.31	626372.16
3021	57.81	86.53	1944.93	-1913.63	14.57	2025.06	5774421.36	626373.01
3022	57.82	86.54	1945.47	-1914.17	14.62	2025.90	5774421.41	626373.85
3023	57.82	86.56	1946.00	-1914.70	14.67	2026.75	5774421.46	626374.69
3024	57.83	86.57	1946.53	-1915.23	14.73	2027.59	5774421.52	626375.54
3025	57.84	86.58	1947.07	-1915.77	14.78	2028.43	5774421.57	626376.38
3026	57.84	86.59	1947.60	-1916.30	14.83	2029.28	5774421.62	626377.23
3027	57.85	86.60	1948.13	-1916.83	14.88	2030.12	5774421.67	626378.07
3028	57.86	86.61	1948.67	-1917.37	14.94	2030.97	5774421.72	626378.91
3029	57.86	86.60	1949.20	-1917.90	14.99	2031.81	5774421.78	626379.76
3030	57.86	86.60	1949.73	-1918.43	15.04	2032.66	5774421.83	626380.61
3031	57.86	86.59	1950.26	-1918.96	15.09	2033.50	5774421.88	626381.45
3032	57.86	86.59	1950.79	-1919.49	15.14	2034.35	5774421.93	626382.30
3033	57.86	86.58	1951.33	-1920.03	15.19	2035.19	5774421.98	626383.14
3034	57.86	86.58	1951.86	-1920.56	15.24	2036.04	5774422.03	626383.99
3035	57.86	86.57	1952.39	-1921.09	15.29	2036.88	5774422.08	626384.83
3036	57.87	86.57	1952.92	-1921.62	15.35	2037.73	5774422.13	626385.68
3037	57.87	86.56	1953.45	-1922.15	15.40	2038.57	5774422.19	626386.52
3038	57.87	86.55	1953.99	-1922.69	15.45	2039.42	5774422.24	626387.37
3039	57.87	86.55	1954.52	-1923.22	15.50	2040.26	5774422.29	626388.21
3040	57.87	86.54	1955.05	-1923.75	15.55	2041.11	5774422.34	626389.06
3041	57.87	86.54	1955.58	-1924.28	15.60	2041.96	5774422.39	626389.90
3042	57.87	86.53	1956.11	-1924.81	15.65	2042.80	5774422.44	626390.75
3043	57.87	86.53	1956.64	-1925.34	15.70	2043.65	5774422.49	626391.59
3044	57.87	86.52	1957.18	-1925.88	15.76	2044.49	5774422.54	626392.44
3045	57.87	86.52	1957.71	-1926.41	15.81	2045.34	5774422.60	626393.28
3046	57.87	86.51	1958.24	-1926.94	15.86	2046.18	5774422.65	626394.13
3047	57.87	86.50	1958.77	-1927.47	15.91	2047.03	5774422.70	626394.98
3048	57.87	86.50	1959.30	-1928.00	15.96	2047.87	5774422.75	626395.82
3049	57.87	86.49	1959.84	-1928.54	16.01	2048.72	5774422.80	626396.67
3050	57.88	86.49	1960.37	-1929.07	16.06	2049.56	5774422.85	626397.51
3051	57.88	86.48	1960.90	-1929.60	16.11	2050.41	5774422.90	626398.36
3052	57.88	86.48	1961.43	-1930.13	16.17	2051.25	5774422.96	626399.20
3053	57.88	86.47	1961.96	-1930.66	16.22	2052.10	5774423.01	626400.05
3054	57.88	86.47	1962.49	-1931.19	16.27	2052.94	5774423.06	626400.89
3055	57.88	86.46	1963.03	-1931.73	16.32	2053.79	5774423.11	626401.74
3056	57.88	86.45	1963.56	-1932.26	16.37	2054.63	5774423.16	626402.58
3057	57.88	86.45	1964.09	-1932.79	16.42	2055.48	5774423.21	626403.43
3058	57.88	86.45	1964.62	-1933.32	16.47	2056.33	5774423.26	626404.27
3059	57.88	86.46	1965.15	-1933.85	16.53	2057.17	5774423.31	626405.12
3060	57.88	86.46	1965.69	-1934.39	16.58	2058.02	5774423.37	626405.96
3061	57.88	86.47	1966.22	-1934.92	16.63	2058.86	5774423.42	626406.81
3062	57.88	86.47	1966.75	-1935.45	16.68	2059.71	5774423.47	626407.65
3063	57.88	86.47	1967.28	-1935.98	16.73	2060.55	5774423.52	626408.50
3064	57.88	86.48	1967.81	-1936.51	16.78	2061.40	5774423.57	626409.35
3065	57.88	86.48	1968.34	-1937.04	16.84	2062.24	5774423.63	626410.19
3066	57.88	86.48	1968.88	-1937.58	16.89	2063.09	5774423.68	626411.04
3067	57.88	86.49	1969.41	-1938.11	16.94	2063.93	5774423.73	626411.88
3068	57.88	86.49	1969.94	-1938.64	16.99	2064.78	5774423.78	626412.73
3069	57.88	86.49	1970.47	-1939.17	17.04	2065.62	5774423.83	626413.57

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3070	57.88	86.50	1971.00	-1939.70	17.09	2066.47	5774423.88	626414.42
3071	57.88	86.50	1971.53	-1940.23	17.15	2067.32	5774423.94	626415.26
3072	57.88	86.50	1972.07	-1940.77	17.20	2068.16	5774423.99	626416.11
3073	57.88	86.51	1972.60	-1941.30	17.25	2069.01	5774424.04	626416.95
3074	57.88	86.51	1973.13	-1941.83	17.30	2069.85	5774424.09	626417.80
3075	57.88	86.52	1973.66	-1942.36	17.35	2070.70	5774424.14	626418.64
3076	57.88	86.52	1974.19	-1942.89	17.40	2071.54	5774424.19	626419.49
3077	57.88	86.52	1974.72	-1943.42	17.46	2072.39	5774424.25	626420.34
3078	57.88	86.53	1975.26	-1943.96	17.51	2073.23	5774424.30	626421.18
3079	57.88	86.53	1975.79	-1944.49	17.56	2074.08	5774424.35	626422.03
3080	57.88	86.53	1976.32	-1945.02	17.61	2074.92	5774424.40	626422.87
3081	57.88	86.54	1976.85	-1945.55	17.66	2075.77	5774424.45	626423.72
3082	57.88	86.54	1977.38	-1946.08	17.72	2076.61	5774424.50	626424.56
3083	57.88	86.54	1977.91	-1946.61	17.77	2077.46	5774424.56	626425.41
3084	57.88	86.55	1978.45	-1947.15	17.82	2078.30	5774424.61	626426.25
3085	57.88	86.55	1978.98	-1947.68	17.87	2079.15	5774424.66	626427.10
3086	57.89	86.55	1979.51	-1948.21	17.92	2080.00	5774424.71	626427.94
3087	57.90	86.56	1980.04	-1948.74	17.97	2080.84	5774424.76	626428.79
3088	57.90	86.56	1980.57	-1949.27	18.02	2081.69	5774424.81	626429.64
3089	57.91	86.56	1981.10	-1949.80	18.07	2082.54	5774424.86	626430.48
3090	57.92	86.56	1981.63	-1950.33	18.12	2083.38	5774424.91	626431.33
3091	57.92	86.57	1982.16	-1950.86	18.17	2084.23	5774424.96	626432.18
3092	57.93	86.57	1982.69	-1951.39	18.22	2085.07	5774425.01	626433.02
3093	57.94	86.57	1983.22	-1951.92	18.27	2085.92	5774425.06	626433.87
3094	57.94	86.57	1983.75	-1952.45	18.32	2086.77	5774425.11	626434.71
3095	57.95	86.58	1984.28	-1952.98	18.37	2087.61	5774425.16	626435.56
3096	57.95	86.58	1984.81	-1953.51	18.43	2088.46	5774425.21	626436.41
3097	57.96	86.58	1985.34	-1954.04	18.48	2089.31	5774425.26	626437.25
3098	57.97	86.58	1985.87	-1954.57	18.53	2090.15	5774425.32	626438.10
3099	57.97	86.58	1986.40	-1955.10	18.58	2091.00	5774425.37	626438.95
3100	57.98	86.59	1986.93	-1955.63	18.63	2091.84	5774425.42	626439.79
3101	57.99	86.59	1987.46	-1956.16	18.68	2092.69	5774425.47	626440.64
3102	57.99	86.59	1987.99	-1956.69	18.73	2093.54	5774425.52	626441.49
3103	58.00	86.59	1988.52	-1957.22	18.78	2094.38	5774425.57	626442.33
3104	58.01	86.60	1989.05	-1957.75	18.83	2095.23	5774425.62	626443.18
3105	58.01	86.60	1989.58	-1958.28	18.88	2096.08	5774425.67	626444.02
3106	58.02	86.60	1990.11	-1958.81	18.93	2096.92	5774425.72	626444.87
3107	58.03	86.60	1990.64	-1959.34	18.98	2097.77	5774425.77	626445.72
3108	58.03	86.61	1991.17	-1959.87	19.03	2098.62	5774425.82	626446.56
3109	58.04	86.61	1991.70	-1960.40	19.08	2099.46	5774425.87	626447.41
3110	58.05	86.61	1992.23	-1960.93	19.13	2100.31	5774425.92	626448.26
3111	58.05	86.61	1992.77	-1961.47	19.18	2101.15	5774425.97	626449.10
3112	58.06	86.62	1993.30	-1962.00	19.23	2102.00	5774426.02	626449.95
3113	58.07	86.62	1993.83	-1962.53	19.28	2102.85	5774426.07	626450.80
3114	58.07	86.63	1994.35	-1963.05	19.33	2103.69	5774426.12	626451.64
3115	58.07	86.64	1994.88	-1963.58	19.38	2104.54	5774426.17	626452.49
3116	58.07	86.65	1995.41	-1964.11	19.43	2105.39	5774426.22	626453.34
3117	58.07	86.66	1995.94	-1964.64	19.48	2106.24	5774426.27	626454.18
3118	58.07	86.67	1996.47	-1965.17	19.52	2107.08	5774426.31	626455.03
3119	58.07	86.68	1997.00	-1965.70	19.57	2107.93	5774426.36	626455.88
3120	58.07	86.69	1997.53	-1966.23	19.62	2108.78	5774426.41	626456.73
3121	58.07	86.70	1998.06	-1966.76	19.67	2109.63	5774426.46	626457.57
3122	58.07	86.71	1998.59	-1967.29	19.72	2110.47	5774426.50	626458.42
3123	58.07	86.72	1999.11	-1967.81	19.76	2111.32	5774426.55	626459.27
3124	58.07	86.73	1999.64	-1968.34	19.81	2112.17	5774426.60	626460.12
3125	58.07	86.74	2000.17	-1968.87	19.86	2113.02	5774426.65	626460.96
3126	58.07	86.75	2000.70	-1969.40	19.91	2113.86	5774426.70	626461.81
3127	58.07	86.76	2001.23	-1969.93	19.95	2114.71	5774426.74	626462.66
3128	58.08	86.77	2001.76	-1970.46	20.00	2115.56	5774426.79	626463.51
3129	58.08	86.78	2002.29	-1970.99	20.05	2116.40	5774426.84	626464.35
3130	58.08	86.79	2002.82	-1971.52	20.10	2117.25	5774426.89	626465.20
3131	58.08	86.80	2003.34	-1972.04	20.15	2118.10	5774426.93	626466.05
3132	58.08	86.81	2003.87	-1972.57	20.19	2118.95	5774426.98	626466.89
3133	58.08	86.82	2004.40	-1973.10	20.24	2119.79	5774427.03	626467.74
3134	58.08	86.83	2004.93	-1973.63	20.29	2120.64	5774427.08	626468.59
3135	58.08	86.84	2005.46	-1974.16	20.34	2121.49	5774427.13	626469.44

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3136	58.08	86.85	2005.99	-1974.69	20.39	2122.34	5774427.17	626470.28
3137	58.08	86.86	2006.52	-1975.22	20.43	2123.18	5774427.22	626471.13
3138	58.08	86.87	2007.05	-1975.75	20.48	2124.03	5774427.27	626471.98
3139	58.08	86.88	2007.58	-1976.28	20.53	2124.88	5774427.32	626472.83
3140	58.08	86.89	2008.10	-1976.80	20.58	2125.73	5774427.37	626473.67
3141	58.08	86.90	2008.63	-1977.33	20.62	2126.57	5774427.41	626474.52
3142	58.08	86.91	2009.16	-1977.86	20.67	2127.42	5774427.46	626475.37
3143	58.08	86.92	2009.69	-1978.39	20.72	2128.27	5774427.51	626476.22
3144	58.08	86.92	2010.22	-1978.92	20.76	2129.12	5774427.55	626477.06
3145	58.08	86.93	2010.75	-1979.45	20.81	2129.96	5774427.60	626477.91
3146	58.07	86.93	2011.28	-1979.98	20.85	2130.81	5774427.64	626478.76
3147	58.07	86.94	2011.81	-1980.51	20.90	2131.66	5774427.69	626479.60
3148	58.07	86.94	2012.34	-1981.04	20.94	2132.50	5774427.73	626480.45
3149	58.07	86.94	2012.87	-1981.57	20.99	2133.35	5774427.78	626481.30
3150	58.06	86.95	2013.39	-1982.09	21.03	2134.20	5774427.82	626482.15
3151	58.06	86.95	2013.92	-1982.62	21.08	2135.05	5774427.87	626482.99
3152	58.06	86.95	2014.45	-1983.15	21.12	2135.89	5774427.91	626483.84
3153	58.06	86.96	2014.98	-1983.68	21.17	2136.74	5774427.96	626484.69
3154	58.06	86.96	2015.51	-1984.21	21.21	2137.59	5774428.00	626485.54
3155	58.05	86.96	2016.04	-1984.74	21.26	2138.44	5774428.05	626486.38
3156	58.05	86.97	2016.57	-1985.27	21.30	2139.28	5774428.09	626487.23
3157	58.05	86.97	2017.10	-1985.80	21.35	2140.13	5774428.14	626488.08
3158	58.05	86.97	2017.63	-1986.33	21.39	2140.98	5774428.18	626488.93
3159	58.05	86.98	2018.16	-1986.86	21.44	2141.83	5774428.22	626489.77
3160	58.04	86.98	2018.69	-1987.39	21.48	2142.67	5774428.27	626490.62
3161	58.04	86.98	2019.22	-1987.92	21.53	2143.52	5774428.31	626491.47
3162	58.04	86.99	2019.75	-1988.45	21.57	2144.37	5774428.36	626492.32
3163	58.04	86.99	2020.27	-1988.97	21.62	2145.21	5774428.40	626493.16
3164	58.04	86.99	2020.80	-1989.50	21.66	2146.06	5774428.45	626494.01
3165	58.03	87.00	2021.33	-1990.03	21.70	2146.91	5774428.49	626494.86
3166	58.03	87.00	2021.86	-1990.56	21.75	2147.76	5774428.54	626495.70
3167	58.03	87.00	2022.39	-1991.09	21.79	2148.60	5774428.58	626496.55
3168	58.03	87.01	2022.92	-1991.62	21.84	2149.45	5774428.63	626497.40
3169	58.03	87.01	2023.45	-1992.15	21.88	2150.30	5774428.67	626498.25
3170	58.02	87.01	2023.98	-1992.68	21.93	2151.15	5774428.72	626499.09
3171	58.02	87.02	2024.51	-1993.21	21.97	2151.99	5774428.76	626499.94
3172	58.02	87.02	2025.04	-1993.74	22.02	2152.84	5774428.81	626500.79
3173	58.03	87.03	2025.56	-1994.26	22.06	2153.69	5774428.85	626501.64
3174	58.04	87.04	2026.09	-1994.79	22.10	2154.54	5774428.89	626502.49
3175	58.05	87.04	2026.62	-1995.32	22.15	2155.39	5774428.94	626503.33
3176	58.06	87.05	2027.15	-1995.85	22.19	2156.23	5774428.98	626504.18
3177	58.07	87.06	2027.67	-1996.37	22.23	2157.08	5774429.02	626505.03
3178	58.08	87.06	2028.20	-1996.90	22.27	2157.93	5774429.06	626505.88
3179	58.09	87.07	2028.73	-1997.43	22.32	2158.78	5774429.11	626506.73
3180	58.10	87.08	2029.26	-1997.96	22.36	2159.63	5774429.15	626507.58
3181	58.11	87.08	2029.78	-1998.48	22.40	2160.48	5774429.19	626508.42
3182	58.12	87.09	2030.31	-1999.01	22.44	2161.33	5774429.23	626509.27
3183	58.13	87.10	2030.84	-1999.54	22.49	2162.17	5774429.28	626510.12
3184	58.14	87.10	2031.37	-2000.07	22.53	2163.02	5774429.32	626510.97
3185	58.15	87.11	2031.89	-2000.59	22.57	2163.87	5774429.36	626511.82
3186	58.16	87.12	2032.42	-2001.12	22.62	2164.72	5774429.40	626512.67
3187	58.17	87.12	2032.95	-2001.65	22.66	2165.57	5774429.45	626513.52
3188	58.18	87.13	2033.48	-2002.18	22.70	2166.42	5774429.49	626514.36
3189	58.19	87.14	2034.00	-2002.70	22.74	2167.26	5774429.53	626515.21
3190	58.20	87.15	2034.53	-2003.23	22.79	2168.11	5774429.58	626516.06
3191	58.20	87.15	2035.06	-2003.76	22.83	2168.96	5774429.62	626516.91
3192	58.21	87.16	2035.59	-2004.29	22.87	2169.81	5774429.66	626517.76
3193	58.22	87.17	2036.11	-2004.81	22.91	2170.66	5774429.70	626518.61
3194	58.23	87.17	2036.64	-2005.34	22.96	2171.51	5774429.75	626519.45
3195	58.24	87.18	2037.17	-2005.87	23.00	2172.36	5774429.79	626520.30
3196	58.25	87.19	2037.70	-2006.40	23.04	2173.20	5774429.83	626521.15
3197	58.26	87.19	2038.22	-2006.92	23.09	2174.05	5774429.87	626522.00
3198	58.27	87.20	2038.75	-2007.45	23.13	2174.90	5774429.92	626522.85
3199	58.28	87.21	2039.28	-2007.98	23.17	2175.75	5774429.96	626523.70
3200	58.29	87.21	2039.81	-2008.51	23.21	2176.60	5774430.00	626524.55
3201	58.30	87.22	2040.33	-2009.03	23.26	2177.45	5774430.04	626525.39

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3202	58.30	87.22	2040.86	-2009.56	23.30	2178.30	5774430.09	626526.24
3203	58.30	87.23	2041.38	-2010.08	23.34	2179.15	5774430.13	626527.09
3204	58.31	87.23	2041.91	-2010.61	23.38	2180.00	5774430.17	626527.94
3205	58.31	87.24	2042.43	-2011.13	23.42	2180.85	5774430.21	626528.79
3206	58.31	87.24	2042.96	-2011.66	23.46	2181.70	5774430.25	626529.64
3207	58.31	87.24	2043.48	-2012.18	23.50	2182.55	5774430.29	626530.49
3208	58.32	87.25	2044.01	-2012.71	23.54	2183.40	5774430.33	626531.34
3209	58.32	87.25	2044.53	-2013.23	23.58	2184.25	5774430.37	626532.20
3210	58.32	87.26	2045.06	-2013.76	23.62	2185.10	5774430.41	626533.05
3211	58.32	87.26	2045.58	-2014.28	23.66	2185.95	5774430.45	626533.90
3212	58.32	87.26	2046.11	-2014.81	23.70	2186.80	5774430.49	626534.75
3213	58.33	87.27	2046.63	-2015.33	23.74	2187.65	5774430.53	626535.60
3214	58.33	87.27	2047.16	-2015.86	23.78	2188.50	5774430.57	626536.45
3215	58.33	87.28	2047.68	-2016.38	23.82	2189.35	5774430.61	626537.30
3216	58.33	87.28	2048.21	-2016.91	23.86	2190.20	5774430.65	626538.15
3217	58.33	87.28	2048.73	-2017.43	23.90	2191.05	5774430.69	626539.00
3218	58.34	87.29	2049.26	-2017.96	23.94	2191.90	5774430.73	626539.85
3219	58.34	87.29	2049.78	-2018.48	23.98	2192.75	5774430.77	626540.70
3220	58.34	87.30	2050.31	-2019.01	24.02	2193.60	5774430.81	626541.55
3221	58.34	87.30	2050.83	-2019.53	24.06	2194.45	5774430.85	626542.40
3222	58.35	87.31	2051.36	-2020.06	24.10	2195.30	5774430.89	626543.25
3223	58.35	87.31	2051.88	-2020.58	24.14	2196.15	5774430.93	626544.10
3224	58.35	87.31	2052.41	-2021.11	24.18	2197.00	5774430.97	626544.95
3225	58.35	87.32	2052.93	-2021.63	24.22	2197.85	5774431.01	626545.80
3226	58.35	87.32	2053.46	-2022.16	24.26	2198.70	5774431.05	626546.65
3227	58.36	87.33	2053.98	-2022.68	24.30	2199.55	5774431.09	626547.50
3228	58.36	87.33	2054.51	-2023.21	24.34	2200.40	5774431.13	626548.35
3229	58.36	87.33	2055.03	-2023.73	24.39	2201.25	5774431.17	626549.20
3230	58.36	87.34	2055.56	-2024.26	24.43	2202.10	5774431.21	626550.05
3231	58.37	87.34	2056.08	-2024.78	24.47	2202.95	5774431.25	626550.90
3232	58.37	87.35	2056.61	-2025.31	24.51	2203.80	5774431.30	626551.75
3233	58.37	87.35	2057.13	-2025.83	24.55	2204.65	5774431.34	626552.60
3234	58.37	87.35	2057.66	-2026.36	24.59	2205.50	5774431.37	626553.45
3235	58.36	87.35	2058.18	-2026.88	24.63	2206.35	5774431.41	626554.30
3236	58.36	87.35	2058.71	-2027.41	24.66	2207.20	5774431.45	626555.15
3237	58.36	87.35	2059.23	-2027.93	24.70	2208.05	5774431.49	626556.00
3238	58.35	87.35	2059.76	-2028.46	24.74	2208.90	5774431.53	626556.85
3239	58.35	87.35	2060.28	-2028.98	24.78	2209.75	5774431.57	626557.70
3240	58.35	87.35	2060.81	-2029.51	24.82	2210.60	5774431.61	626558.55
3241	58.34	87.35	2061.33	-2030.03	24.86	2211.45	5774431.65	626559.40
3242	58.34	87.35	2061.86	-2030.56	24.90	2212.30	5774431.69	626560.25
3243	58.34	87.35	2062.38	-2031.08	24.94	2213.15	5774431.73	626561.10
3244	58.34	87.35	2062.91	-2031.61	24.98	2214.00	5774431.77	626561.95
3245	58.33	87.35	2063.43	-2032.13	25.02	2214.85	5774431.81	626562.80
3246	58.33	87.35	2063.96	-2032.66	25.06	2215.70	5774431.85	626563.65
3247	58.33	87.35	2064.48	-2033.18	25.10	2216.55	5774431.89	626564.50
3248	58.32	87.35	2065.01	-2033.71	25.14	2217.40	5774431.93	626565.35
3249	58.32	87.35	2065.53	-2034.23	25.18	2218.25	5774431.96	626566.20
3250	58.32	87.35	2066.06	-2034.76	25.22	2219.10	5774432.00	626567.05
3251	58.31	87.35	2066.58	-2035.28	25.25	2219.95	5774432.04	626567.90
3252	58.31	87.35	2067.11	-2035.81	25.29	2220.80	5774432.08	626568.75
3253	58.31	87.35	2067.63	-2036.33	25.33	2221.65	5774432.12	626569.60
3254	58.30	87.35	2068.16	-2036.86	25.37	2222.51	5774432.16	626570.45
3255	58.30	87.35	2068.68	-2037.38	25.41	2223.36	5774432.20	626571.30
3256	58.30	87.35	2069.21	-2037.91	25.45	2224.21	5774432.24	626572.15
3257	58.29	87.35	2069.73	-2038.43	25.49	2225.06	5774432.28	626573.00
3258	58.29	87.35	2070.26	-2038.96	25.53	2225.91	5774432.32	626573.85
3259	58.29	87.35	2070.78	-2039.48	25.57	2226.76	5774432.36	626574.70
3260	58.29	87.35	2071.31	-2040.01	25.61	2227.61	5774432.40	626575.55
3261	58.29	87.35	2071.84	-2040.54	25.65	2228.46	5774432.44	626576.40
3262	58.29	87.35	2072.36	-2041.06	25.69	2229.31	5774432.48	626577.25
3263	58.29	87.35	2072.89	-2041.59	25.73	2230.16	5774432.52	626578.10
3264	58.29	87.35	2073.41	-2042.11	25.77	2231.01	5774432.55	626578.95
3265	58.29	87.35	2073.94	-2042.64	25.81	2231.85	5774432.59	626579.80
3266	58.29	87.35	2074.46	-2043.16	25.84	2232.70	5774432.63	626580.65
3267	58.29	87.35	2074.99	-2043.69	25.88	2233.55	5774432.67	626581.50

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3268	58.29	87.35	2075.51	-2044.21	25.92	2234.40	5774432.71	626582.35
3269	58.29	87.35	2076.04	-2044.74	25.96	2235.25	5774432.75	626583.20
3270	58.29	87.35	2076.57	-2045.27	26.00	2236.10	5774432.79	626584.05
3271	58.30	87.35	2077.09	-2045.79	26.04	2236.95	5774432.83	626584.90
3272	58.30	87.35	2077.62	-2046.32	26.08	2237.80	5774432.87	626585.75
3273	58.30	87.35	2078.14	-2046.84	26.12	2238.65	5774432.91	626586.60
3274	58.30	87.35	2078.67	-2047.37	26.16	2239.50	5774432.95	626587.45
3275	58.30	87.35	2079.19	-2047.89	26.20	2240.35	5774432.99	626588.30
3276	58.30	87.35	2079.72	-2048.42	26.24	2241.20	5774433.03	626589.15
3277	58.30	87.35	2080.24	-2048.94	26.28	2242.05	5774433.07	626590.00
3278	58.30	87.35	2080.77	-2049.47	26.32	2242.90	5774433.11	626590.85
3279	58.30	87.35	2081.30	-2050.00	26.36	2243.75	5774433.14	626591.70
3280	58.30	87.35	2081.82	-2050.52	26.40	2244.60	5774433.18	626592.55
3281	58.30	87.35	2082.35	-2051.05	26.43	2245.45	5774433.22	626593.40
3282	58.30	87.35	2082.87	-2051.57	26.47	2246.30	5774433.26	626594.25
3283	58.30	87.35	2083.40	-2052.10	26.51	2247.15	5774433.30	626595.10

APPENDIX 2a

TUNA A15A

Petrophysics Evaluation Summary

Esso Australia Pty Ltd.
Exploration Department

Tuna A15A
F or mation Evaluation
Log Interpretation Report

Petrophysicists: A. Miller & J. Lawer
April 2005

Tuna A15A Log Interpretation

Tuna A-15A was drilled as a re-entry from the Tuna A15 well which was plugged & abandoned just prior to drilling. The A15A well was designed as a production hole targeting an oil column in the T Sands.

The well was spudded on 24th November 2004 by milling a window in the 13 $\frac{3}{8}$ " casing of the Tuna A15 production well. The 8 $\frac{1}{2}$ " hole was drilled to a total depth of 3283 mMDRT (2083.4 mTVDRT) and a 7" production casing was run to 3274 mMDRT. Tuna A15A was completed on the 18th December 2004 as a T-1 oil producer with a single 3 $\frac{1}{2}$ " completion string run to 2564.54 mMDRT.

The 8 $\frac{1}{2}$ " hole over the reservoir section was logged with Reeves' Shuttle Logging System over the interval 3245 mMDRT up to 1650m MDRT.

The Reeves wireline equivalent logs have been analysed for porosity, water saturation and net pay over the interval 1875 – 3247 mMDRT.

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

DATA

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

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
Compact Gamma Ray - Compact Dual Neutron - Compact Photodensity - Compact Sonic - Compact Dual Laterolog	Reeves	1650	3245 (1st reading)

Deviation

The well angle over the T-1 reservoirs (from to 3028 - 3283m MDRT) was 58 degrees.

Mud Data

Mud Type : KCl/Glycol/PHPA
Mud Weight: 10 ppg
Rm: 0.115 @ 25 °C
Rmf: 0.088 @ 25 °C
Rmc: 0.173 @ 25 °C
BHT: 97.4 °C

Hole Size

560 – 3283 mMDRT 8 $\frac{1}{2}$ 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) and DT35 (compressional sonic) curves were depth aligned to the GGCE (borehole corrected gamma ray) 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

The density-neutron cross-over in the M-1 indicates that it is gas-bearing in the clean sands down to at least 2001 mMDRT (1373.5 mTVDSS). Below this depth, the shaliness of the sands makes it difficult to determine the hydrocarbon type present in the reservoirs. The PHIX-DT plot in Figure 1 suggest that the M-1 is gas-bearing down to 2011 mMDRT (1379 mTVDSS) as indicated by the apparent gas effect. This depth is also the pre-production GOC. The current GOC has been observed to vary between 1380 to 1382 mTVDSS in other wells and these deeper GOC depths are probably due to the injection of gas into the M-1. On the basis of these observations, it is suggested that current GOC in the M-1 in Tuna A15A is probably at 2015 mMDRT (1381 mTVDSS).

In the L series of sands, the L-150 and L-160 reservoirs which are relatively clean show apparent gas effects as indicated by the density-neutron cross-over. However, the extent of the cross-over is not significant as that which would be exhibited by truly gas-bearing sand and hence these sands are interpreted to be oil-bearing. The other L series sands which lack density-neutron cross-over are interpreted to be oil-bearing as indicated by the lack of any apparent gas effect in the PHIX-DT plot as shown in Figure 2. The L 400 sand is clearly gas-bearing down to 2793.4 mMDRT as indicated by the density-neutron crossover.

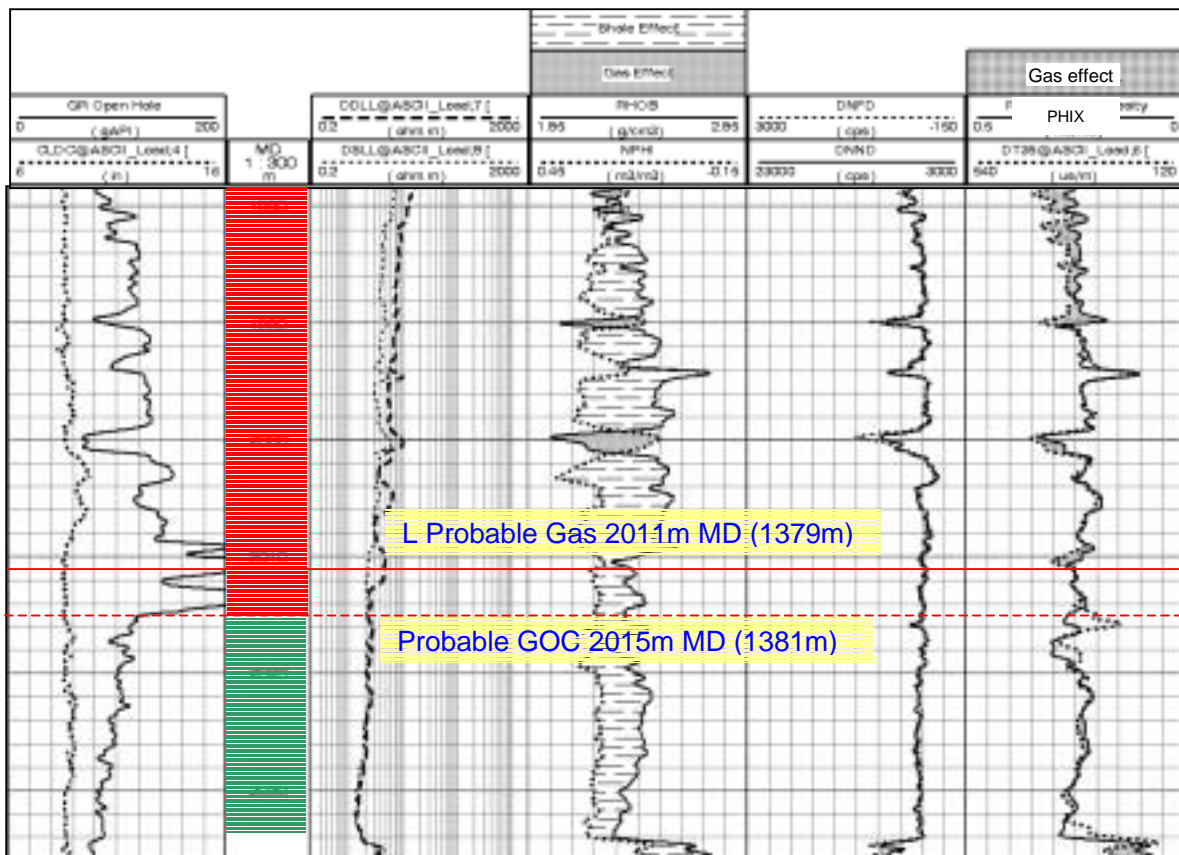


Figure 1: M-1 Hydrocarbon Type

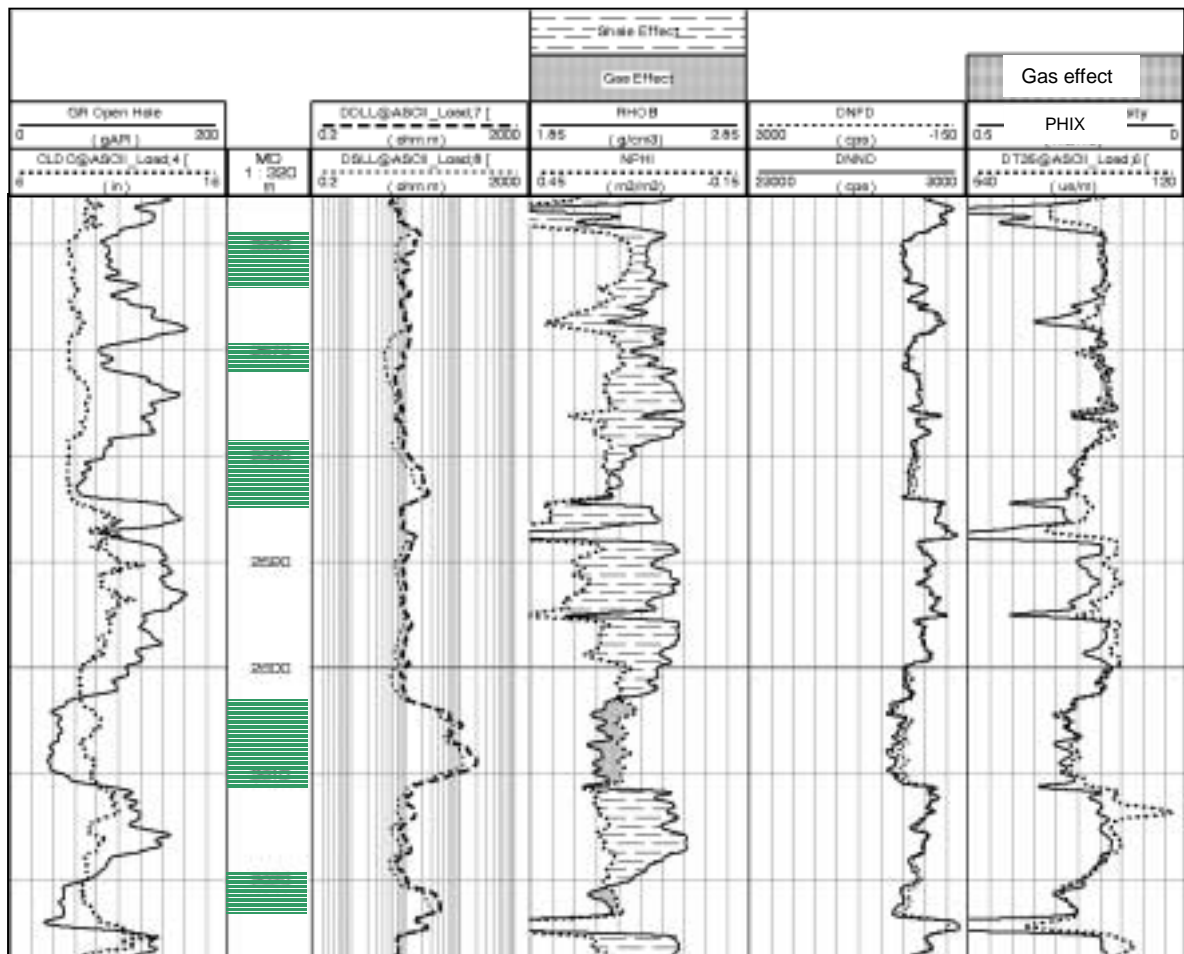


Figure 2: L Sands Hydrocarbon Type

Shale Volume, Porosity and Water Saturation

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

ELAN+ MODEL

ELAN Processes

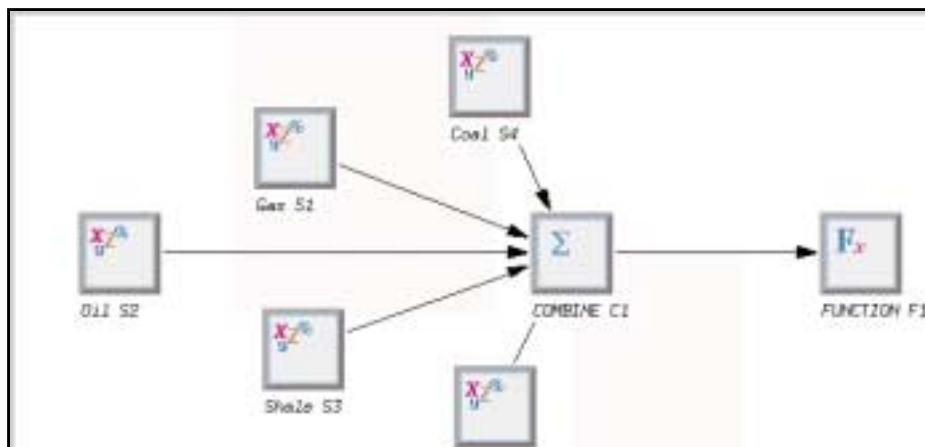


Figure 3: ELAN+ model module configuration

ELAN Input Channels

Component Name	Channel Name
TEMP_CH	TEMP;*
RHOB_IFAC_CH	IFRH;*
NPHI_IFAC_CH	INPH;*
RHOB_CH	DEN:BPB
NPHI_CH	NPBL:BPB

Clay Input
Special Fluids

DRY
IMMOVABLE_HYDROCARBON

Figure 4: ELAN+ model input channels

ELAN Global Parameters

Reference Index	MD
Processing Interval	1700.0220(m) To
	3259.0000(m)
Sampling Rate	0.1(m)
Uncertainty Channel	FALSE

ELAN Zone Definition

Name	Bottom To Top
TUNA A31A	3259.9883(m) To 2970.0000(m)
kh	2970.0000(m) To 2040.0000(m)
oil	2040.0000(m) To 2005.0000(m)
upper	2005.0000(m) To 1700.0220(m)

ELAN Process Definition

Process	SOLVE1 "Gas"						
Equations	RHOB	NPHI	CUDC_DWA	GR	CT1	CT3	
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XGAS	UGAS
User Constraints	constraint(maxDolomite, DOLO<0)						
Constraint Zones	Bottom			Top			
UNDEFINED	3259.9883(m)		1700.0220(m)				

Constraints Applied

UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW

Process	SOLVE2 "Oil"						
Equations	RHOB	NPHI	CUDC_DWA	GR	CT3		
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XOIL	UOIL
User Constraints	constraint(maxDolomite, DOLO<0)						
Constraint Zones	Bottom			Top			
UNDEFINED	3259.9883(m)		1700.0220(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 3259.9883(m) 1700.0220(m)

Process SOLVE4 "Coal"
Equations RHOB
Volumes COAL

Constraint Zones Bottom Top
UNDEFINED 3259.9883(m) 1700.0220(m)

Process SOLVE6 "L_Entranace"
Equations RHOB
Volumes CALC

Constraint Zones Bottom Top
UNDEFINED 3259.9883(m) 1700.0220(m)

Process COMBINE 1 "COMBINE"
Order SOL.2 SOL.1 SOL.3 SOL.4 SOL.6
Combine Method
"UNDEFINED " 10695.5000 (m) Internal Average
"LE " 6069.5537 (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	SXWI	SWT	SUWI	PIGN	PHIT
User-defined Function/n	swt_cmp=if((PRB4_CH > 0),1,(UWAT_VOL + XBWA_VOL)/(UWAT_VOL + XBWA_VOL + UOIL_VOL + UGAS_VOL))					
output(SWT,	swt_cmp)					

ELAN 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	10695.5000	-999.25
	constraints		
	UNDEFINED	- IrreducibleXWater	
	UNDEFINED	- IrreducibleUWater	
	UNDEFINED	- WaterBaseMud_SXO_gt_SW	
Model 2:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	10695.5000	-999.25
	constraints		
	UNDEFINED	- IrreducibleXWater	
	UNDEFINED	- IrreducibleUWater	
	UNDEFINED	- WaterBaseMud_SXO_gt_SW	
Model 3:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	10695.5000	-999.25
	constraints		
Model 4:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	10695.5000	-999.25
	constraints		
Model 6:	Constraint Zones		
	Name	Boundary	Temperature
	UNDEFINED	10695.5000	-999.25
	constraints		

ELAN Different Parameters

Parameters n*****		TUNA A31A *****	kh *****	oil *****	upper *****
CXDC_XWAT	(mS/m)	20.038	18.619	14.161	13.997
CXDC_XBWA	(mS/m)	11.445	10.627	8.004	7.906
CUDC_UWAT	(mS/m)	11.700	20.000	17.789	17.600
CUDC_UBWA	(mS/m)	4.444	4.127	20.000	3.070
GR_QUAR	(gAPI)	25.000	25.000	25.000	35.000
RW	(ohm.m)	0.387	0.209	0.183	0.183
CUDC_UNC_ZP	(mS/m)	0.051	0.067	0.063	0.063

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	0.970 (g/cm3)	RHOB_UWAT	0.970 (g/cm3)
RHOB_XOIL	0.700 (g/cm3)	RHOB_UOIL	0.700 (g/cm3)
RHOB_XGAS	0.011 (g/cm3)	RHOB_UGAS	0.011 (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	0.143 (m3/m3)	NPHI_UGAS	0.143 (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	0.000
CT1_UOIL	0.000	CT1_XGAS	1.000
CT1_UGAS	-0.800	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	1.000	CT2_UOIL	-0.200
CT2_XGAS	0.000	CT2_UGAS	0.000
CT2_XBWA	0.000	CT3_QUAR	-0.050
CT3_CALC	0.000	CT3_ORTH	1.000
CT3_ILLI	0.000	CT3_KAOL	0.000
CT3_COAL	0.000	CT3_XWAT	0.000
CT3_UWAT	0.000	CT3_XOIL	0.000
CT3_UOIL	0.000	CT3_XGAS	0.000
CT3_UGAS	0.000	CT3_XBWA	0.000
ARHOB_ILLI	2.780 (g/cm3)	ARHOB_KAOL	2.620 (g/cm3)
WCLP_ILLI	0.154 (m3/m3)	WCLP_KAOL	0.058 (m3/m3)
CBWA_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	0.009 (m3/m3)

RESULTS AND DISCUSSION

The top of the La Trobe Group occurs at 1921 mMDRT in this well with the underlying M1 reservoirs containing a gas column that extends from this depth to at least down to 2001 mMDRT. As discussed previously the gas column probably extends down to 2015 mMDRT (probable depth of postulated current GOC). The clean sands with the gas column have an average porosity that varies from 19 – 20% and average water saturation that varies from 8 – 22%. It is clear from the logs that the M-1 reservoir quality is poor below 2009 mMDRT and the calculated effective water saturation suggest that M-1 is water bearing below 2009 mMDRT (1378 mTVDSS) with only residual hydrocarbons. Recent infill drilling and RSTA logging suggest that the current M-1 GOC is between 1380 m and 1382 mTVDSS and that there is at least 1.2 to 3.0m TVDSS of oil column reaming in the M-1. Therefore it is postulated that in Tuna A15A, the interval between 2009 m (1378 mTVDSS) and 2015 mMDRT (1381 mTVDSS) is gas bearing and probably capable of flowing. It is however difficult to define the extent of the remaining oil column in this well. The high effective water saturation observed in this interval is probably due to the reservoir being finely laminated sand/shale interbeds. Below 2022 mMDRT it is very likely that the reservoir has been swept and the calculated effective water saturations represent the residual oil.

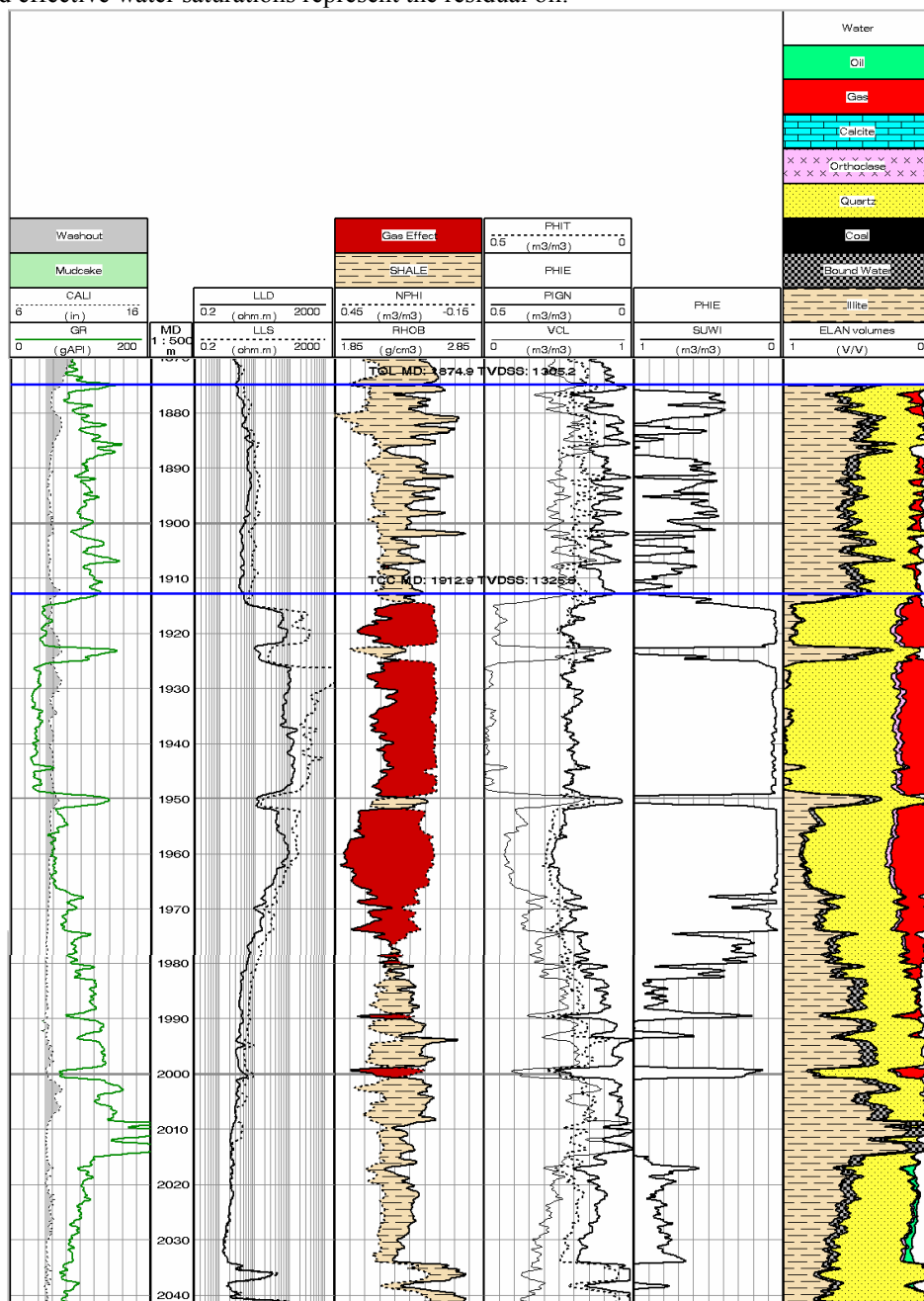


Figure 5: M1 reservoir section

The top of the L100 Sands are intersected by the well at 2535.5 mMDRT. The two shallowest L100 sands are water-bearing while the underlying sands are interpreted to be oil-bearing. The underlying 110, 112, 150 and 160 reservoirs are interpreted to be oil-bearing and have average PHIE between 14 - 22% and average SWE between 10 - 28%.

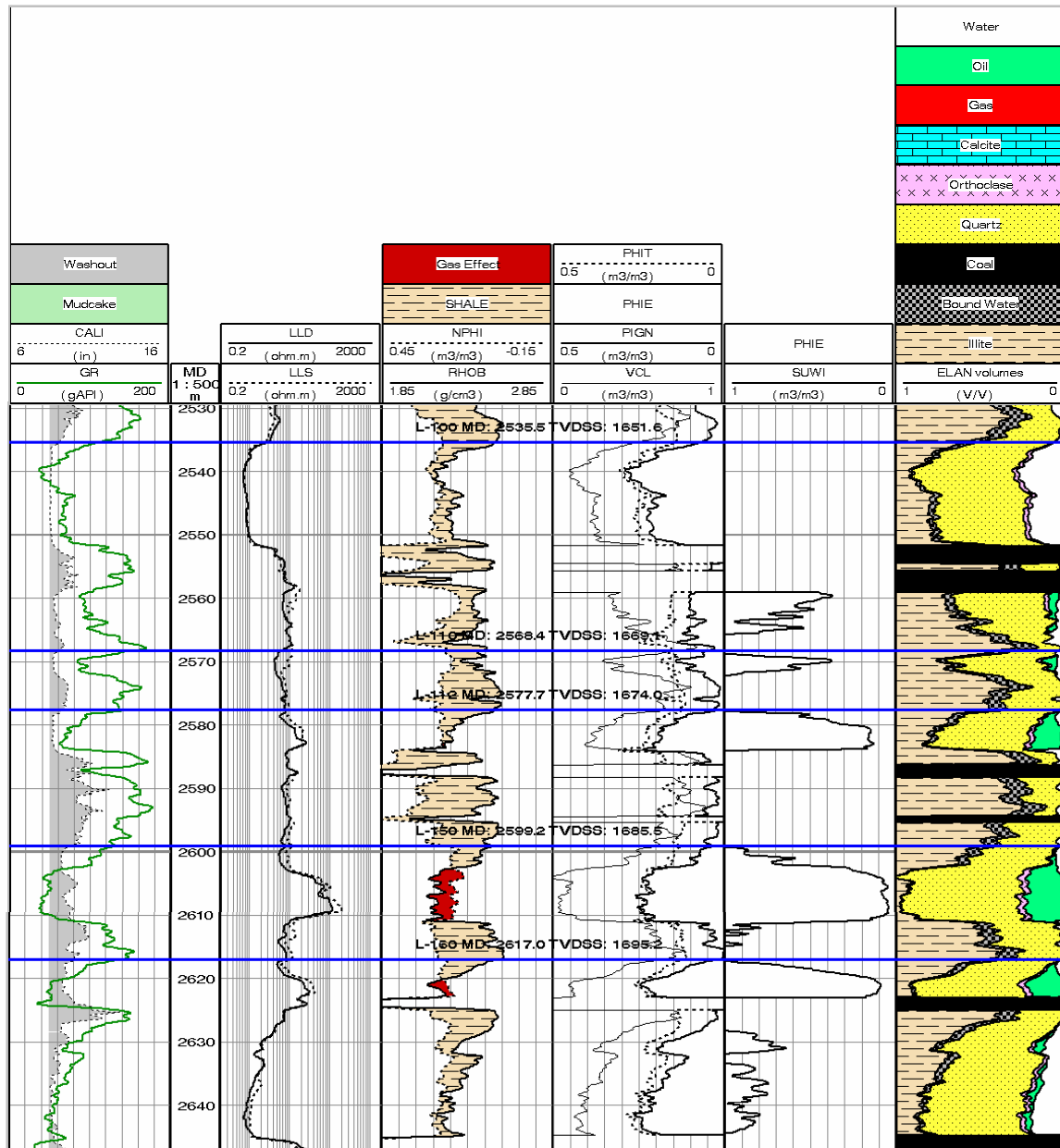


Figure 6: L100 reservoir section

The L400 sands are interpreted to be gas bearing in the interval 2785 – 2793.42 mMDRT with a GOC at 2793.42 mMDRT. The oil column extends from this depth down to 2798 mMDRT.

The gas sand has an average PHIE of 19% and an average SWE of 35% while the oil-bearing sand has an average PHIE of 23% and an average SWE of 43%. The deeper L400 reservoir sands are interpreted to contain residual oil.

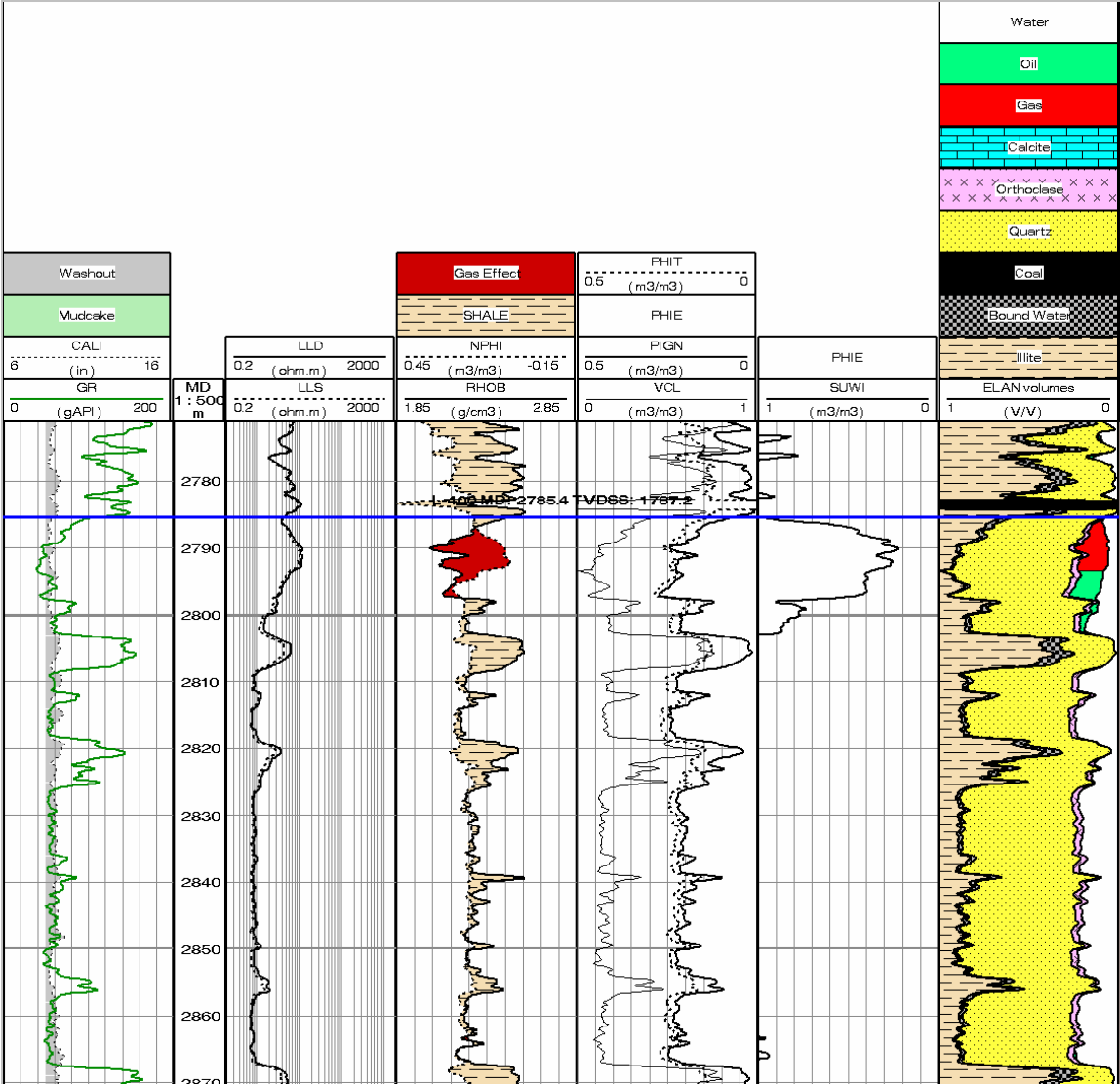


Figure 5: L400 reservoir section

						Water	
						Oil	
						Gas	
						Calcite	
						Orthoclase	
						Quartz	
						Coal	
						Bound Water	
						Illite	
						ELAN volumes (V/V)	
						1 0	
Washout						PHIT (m ³ /m ³)	0
Mudcake						PHIE	
CALI 6 (in) 16		LLD 0.2 (ohm.m) 2000		NPHI 0.45 (m ³ /m ³) -0.15	PIGN 0.5 (m ³ /m ³) 0	PHIE	
GR 0 (gAPI) 200	MD 1 : 500 m	LLS 0.2 (ohm.m) 2000		RHOB 1.85 (g/cm ³) 2.85	VCL 0 (m ³ /m ³) 1	SUWI 1 (m ³ /m ³) 0	
	3030			T-100 MD: 3035.6 TVDSS: 1921.4			
	3040						
	3050						
	3060						
	3070			MKT-A MD: 3076.9 TVDSS: 1943.5			
	3080						
	3090						
	3100						
	3110						
	3120			MKT-B MD: 3126.8 TVDSS: 1963.2			
	3130						

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Table 1: Tuna A15A
Petrophysical Analysis Summary

Net Reservoir Thickness is based on a PHIE Cut-off: 0.08 volume per volume for GAS
0.12 volume per volume for OIL & WATER

Depth Reference: MDKB (with TVD statistics also included)
Mean PHIE, Mean VCL, Mean SWE is of Net Reservoir Thickness Interval
Curves - PIGN, VCL, SUWI (2005 ELAN+ model)

Zone	Top Depth MD (m)	Bottom Depth MD (m)	Top Depth TVDSS (m)	Bottom Depth TVDSS (m)	Gross Thickness MD (m)	Gross Thickness TVD (m)	Net Reservoir Thickness MD (m)	Net Reservoir Thickness TVD (m)	Net Res/Gross Thickness Ratio	Net Res VCL (m3/m3)	Net Res PHIE (m3/m3)	Net Res SWE (m3/m3)	Fluid Type	Net Pay Thickness MD (m)	Net Pay Thickness TVD (m)
M1	1912.90	1922.73	1325.77	1331.11	9.83	5.34	9.68	5.26	0.98	0.15	0.19	0.15	Gas	9.68	5.26
M1	1923.90	1949.58	1331.75	1345.74	25.68	14.00	25.68	14.00	1.00	0.06	0.20	0.08	Gas	25.68	14.00
M1	1950.95	2001.17	1346.49	1373.78	50.22	27.28	42.80	23.28	0.85	0.32	0.19	0.22	Gas	42.80	23.28
M1	2014.88	2022.00	1381.13	1384.94	7.12	3.82	4.27	2.29	0.60	0.48	0.15	0.76	Oil	4.27	2.29
M1	2022.00	2039.50	1384.94	1394.22	17.50	9.28	10.30	5.46	0.59	0.38	0.15	0.78	Oil	10.30	5.46
L095	2523.01	2527.38	1644.91	1647.23	4.37	2.33	4.04	2.15	0.92	0.09	0.24	1.00	Water	-	-
L100	2535.53	2551.74	1651.57	1660.21	16.21	8.64	15.30	8.16	0.94	0.22	0.22	1.00	Water	-	-
L110	2568.76	2572.57	1669.30	1671.33	3.81	2.03	0.60	0.32	0.16	0.30	0.14	0.38	Oil	0.60	0.32
L112	2578.00	2584.56	1674.22	1677.71	6.56	3.49	5.40	2.87	0.82	0.30	0.18	0.25	Oil	5.40	2.87
L150	2599.52	2611.48	1685.66	1692.15	11.96	6.49	8.90	4.83	0.74	0.09	0.22	0.10	Oil	8.90	4.83
L160	2617.27	2623.09	1695.29	1698.45	5.82	3.16	4.24	2.30	0.73	0.18	0.20	0.15	Oil	4.24	2.30
L200	2655.80	2711.91	1716.50	1747.29	56.11	30.78	47.90	26.29	0.85	0.20	0.21	1.00	Water	-	-
L320	2716.61	2749.66	1749.85	1767.86	33.05	18.01	32.20	17.54	0.97	0.12	0.24	1.00	Water	-	-

Table 1 (continued): Tuna A15A
Petrophysical Analysis Summary

Zone	Top Depth MD (m)	Bottom Depth MD (m)	Top Depth TVDSS (m)	Bottom Depth TVDSS (m)	Gross Thickness MD (m)	Gross Thickness TVD (m)	Net Reservoir Thickness MD (m)	Net Reservoir Thickness TVD (m)	Net Res/Gross Thickness Ratio	Net Res VCL (m3/m3)	Net Res PHIE (m3/m3)	Net Res SWE (m3/m3)	Fluid Type	Net Pay Thickness MD (m)	Net Pay Thickness TVD (m)
L400	2785.39	2793.42	1787.23	1791.57	8.03	4.34	7.77	4.20	0.97	0.20	0.19	0.35	Gas	7.77	4.20
L400	2793.42	2798.00	1791.57	1794.04	4.58	2.48	4.58	2.48	1.00	0.12	0.23	0.43	Oil	4.58	2.48
L400	2798.00	2803.50	1794.04	1797.01	5.50	2.97	5.15	2.78	0.94	0.23	0.18	0.83	Residual Oil	-	-
T045	2980.34	2991.16	1891.93	1897.71	10.82	5.78	10.10	5.40	0.93	0.19	0.21	0.96	Residual Oil	-	-
T055	3021.92	3026.59	1914.12	1916.61	4.67	2.49	4.43	2.36	0.95	0.33	0.15	0.88	Residual Oil	-	-
T100	3038.73	3044.55	1923.07	1926.17	5.82	3.10	4.60	2.45	0.79	0.19	0.18	0.26	Oil	4.60	2.45
T100	3045.57	3053.64	1926.71	1931.00	8.07	4.29	5.30	2.82	0.66	0.13	0.20	0.17	Oil	5.30	2.82
T100	3054.10	3057.68	1931.25	1933.15	3.58	1.90	1.10	0.58	0.31	0.30	0.15	0.30	Oil	1.10	0.58
T100	3060.30	3076.86	1934.54	1943.35	16.56	8.81	13.71	7.29	0.83	0.21	0.19	0.80	Residual Oil	-	-
MKTA	3079.65	3087.86	1944.83	1949.19	8.21	4.36	6.30	3.35	0.77	0.23	0.19	0.77	Residual Oil	-	-
MKTA	3095.40	3109.88	1953.19	1960.87	14.48	7.68	1.10	0.58	0.08	0.37	0.13	0.65	Residual Oil	-	-
MKTA	3114.65	3126.74	1963.40	1969.79	12.09	6.39	9.20	4.87	0.76	0.18	0.20	0.93	Residual Oil	-	-

APPENDIX 3a

TUNA A15A

Lithology/Show Descriptions

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
			<p>Last casing (20.0") at 163.0 mMDRT. 13.375" Whipstock at 552.0 mMDRT. 12.25" Window milled from 542.5 to 554.0 mMDRT. Rat hole drilled from 554.0 to 560.0 mMDRT. TNA A15A Kick-off point at 560.0 mMDRT at 0500 hrs on 24 November 2004.</p> <p>PIT at 560.0 mMDRT (542.0 mTVDRT), 580 psi with 8.7 ppg mud (15.0 ppg EMW). Drill with KCl/PHPA/Glycol mud system.</p> <p>Drilled from 560.0 to 1413.0 mMDRT with a Smith PDC bit on steerable motor assembly. Bit Details: Bit # 1, Size: 8.5", Manufacturer / Type: Smith S73PX. Serial #: JT6967 Jets: 18 x 6, TFA: 1.491 sq.in, HOB: 36.10, Grading: 1-1-WT-A-X-IN-PN-PP. Krevs: 503, RPM: 0-120 (+170 RPM DHM), Average ROP: 853.0 / 36.1 = 23.6 m/hr. Rotating: 650.0 metres / Rotating HOB = 24.96, Average Rotating ROP = 26.0 m/hr Steering: 203.0 metres / Steering HOB = 11.14 , Average Steering ROP = 18.2 m/hr.</p> <p>Spot 1 metre samples from 552-570 mMDRT Spot 30 metre samples from 570-1680 mMDRT (150 metres above TOL). Bagged 10 metre samples from 1680-3020 mMDRT (T1 upper at 3030.3 mMDRT). Bagged 5 metre samples from 3020 mMDRT to TD of 3283.0 mMDRT.</p> <p>Geologist on board from 1413.0 mMDRT (1090.8 mTVDRT), at 1000 hrs 28 November. Top of Lakes Entrance picked at 1310.0 mMDRT (1034.8 mTVDRT) on change of cuttings from CALCILUTITE to CALCAREOUS CLAYSTONE. POOH on 28 November 2004 at 00:00 hrs due to plugged nozzle and pump pressure drop, resulting in MWD tool failure. Bit on surface at 0600 hrs. MWD tool sent to Schlumberger yard to determine the cause of failure. Change out MWD tool.</p> <p>Bit to Gamma=18.78 m, Bit to DNI=19.43 m. RIH at 0940 hrs, on bottom drilling at 1410 hrs from 1413.0 mMDRT. TRIP GAS = 12 UNITS</p> <p>Drill from 1413.0 to 2475.0 mMDRT with the same Smith PDC bit on steerable motor assembly. Bit Details: Bit # 1 (RR), Size: 8.5", Manufacturer / Type: Smith S73PX, Serial #: JT6967 Jets: 18 x 6, TFA: 1.491 sq.in, HOB: 48.6, Grading: 2-6-WT-A-X-IN-CT-BHA. Krevs:186/813,RPM: 0-120 (+170 RPM DHM), Average ROP: 1062.0/48.60 = 21.9 m/hr. Rotating: 923.0 metres / Rotating HOB =36.76 , Average Rotating ROP = 25.1 m/hr. Steering: 139.0 metres / Steering HOB =11.84, Average Steering ROP = 11.7 m/hr.</p>
1410	1440	100	CALCAREOUS CLAYSTONE: light grey to light olive grey, occasionally medium grey, green grey to dark green grey, 35% calcareous, 10% silt, trace Foraminifera, trace to 1% micromica, trace disseminated pyrite, firm to soft, 10% washing out, blocky to predominantly subblocky,
1440	1470	100	CALCAREOUS CLAYSTONE: as above, trace glauconitic clay.
1470	1500	100	CALCAREOUS CLAYSTONE: as above, trace micromica, trace carbonaceous specks.

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
1500	1530	100	CALCAREOUS CLAYSTONE: medium to medium dark grey, dark green – grey, rare disseminated pyrite, trace foraminifera, rare ooids, trace glauconite specks, soft to firm, occasionally moderately hard where silty, sub blocky.
1530	1560	100	CALCAREOUS CLAYSTONE: as above. Midnight 28/29 November 2004 depth=1565.0 mMDRT=1171.4 mTVDRT.
1560	1590	100	CALCAREOUS CLAYSTONE: dark green grey, medium to dark grey, trace to rare foraminifera and ooids, trace disseminated pyrite, trace glauconitic clay, firm, soft to moderately hard, sub blocky.
1590	1620	100	CALCAREOUS CLAYSTONE: as above, trace disseminated pyrite, calcareous vn matrix.
1620	1650	100	CALCAREOUS CLAYSTONE: olive grey to light olive grey, minor disseminated pyrite, trace Foraminifera, very soft to firm, amorphous to sub blocky . 570.0- 1680 mMDRT: Spot samples at 30 metre intervals. TOP OF LATROBE prognosed at 1818 mMDRT, then changed to 1886 mMDRT. Bagged samples from 150 metres above TOL. 1680.0 mMDRT: Start bagging samples at 10 metre intervals (1680-3020 mMDRT).
1650	1680	100	CALCAREOUS CLAYSTONE: as above, soft to firm, occasionally moderately hard, sub blocky to blocky.
1680	1690	100	CALCAREOUS CLAYSTONE: as above, occasionally pale yellowish brown, 30% calcareous.
1690	1700	100	CALCAREOUS CLAYSTONE: as above. Start adding Barablock to Mud System, at 1700.0 mMDRT. Samples from 1700.0 mMDRT contaminated with black specks of Barablock.
1700	1710	100	CALCAREOUS CLAYSTONE: dark green grey, medium dark grey, rare to trace foraminifera, trace ooids, rare disseminated pyrite, trace glauconite, firm to soft, sub blocky.
1710	1720	100	CALCAREOUS CLAYSTONE: as above, very dispersive, 30% washing out.
1720	1730	100	CALCAREOUS CLAYSTONE: medium to dark grey, occasionally dark green grey, trace forams, trace ooids, trace disseminated pyrite, trace glauconite, soft to firm, sub-blocky to blocky
1730	1740	100	CALCAREOUS CLAYSTONE: as above.
1740	1750	100	CALCAREOUS CLAYSTONE: as above.
1750	1760	100	CALCAREOUS CLAYSTONE: as above, very dispersive.
1760	1770	100	CALCAREOUS CLAYSTONE: as above, dispersive.
1770	1780	100	CALCAREOUS CLAYSTONE: as above,
1780	1790	100	CALCAREOUS CLAYSTONE: as above.
1790	1800	100	CALCAREOUS CLAYSTONE: medium to dark grey, occasionally dark green grey, trace fossil fragments (forams), trace disseminated pyrite, soft to firm, dispersive, sub blocky.
1800	1810	100	CALCAREOUS CLAYSTONE: medium to dark grey, occasionally dark green grey, trace fossil fragments (forams), trace disseminated pyrite, very soft to firm, very dispersive, amorphous to sub-blocky.
1810	1820	100	CALCAREOUS CLAYSTONE: as above, soft to firm, occasionally moderately hard, sub-blocky to blocky.
1820	1830	100	CALCAREOUS CLAYSTONE: as above.
1830	1840	100	CALCAREOUS CLAYSTONE: as above.
1840	1850	100	CALCAREOUS CLAYSTONE: as above.
1850	1860	100	CALCAREOUS CLAYSTONE: as above.
1860	1870	100	CALCAREOUS CLAYSTONE: as above, very soft to firm, amorphous to sub-blocky 1874.0 mMDRT = 1336.0 mTVDRT = 1304.7 mTVDSS, Gamma increase/ROP increase/High gas (from 3 to 66 units) at the correct lag depth.

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
1870	1880	60	CALCAREOUS CLAYSTONE: light to medium grey, olive grey, trace disseminated pyrite, very soft to firm, dispersive, amorphous to sub-blocky
		40	SILTSTONE: dark yellowish orange to moderate yellow brown, 30% clay grading to SILTY CLAYSTONE, 10% calcareous, trace micromica, trace glauconite clay, trace nodular pyrite, soft to firm, sub blocky to blocky.
		Tr	SANDSTONE: Trace, quartose, yellowish grey, very fine to fine, moderately sorted, sub angular, common argillaceous matrix, tight visual porosity. FLUORESCENCE: Nil.
1880	1890	15	CALCAREOUS CLAYSTONE: as above
		70	SILTSTONE: as above
		15	SANDSTONE: quartose, translucent to occasionally yellowish grey, very fine to medium, rare very coarse, poorly sorted, angular to sub angular, trace silica cement, common white argillaceous matrix, rare glauconite, occasionally loose quartz grains, friable, tight visual porosity, crushed to rock flour by the PDC bit.
1890	1900	5	CALCAREOUS CLAYSTONE: as above
		70	SILTSTONE: as above
		25	SANDSTONE: quartose, translucent, pale brown to yellowish grey, very fine to medium, moderately sorted, sub-angular to sub-rounded, trace silica cement, common white argillaceous matrix, rare glauconite, occasionally loose quartz grains, friable, tight visual porosity, crushed to rock flour by the PDC bit. FLUORESCENCE: Nil.
1900	1910	Trace	CALCAREOUS CLAYSTONE: as above
		90	SILTSTONE: as above
		10	SANDSTONE: as above. FLUORESCENCE: Nil.
1910	1920	5	SILTSTONE: as above
		95	SANDSTONE: clear to translucent, occasionally off white, very fine to coarse, predominantly medium grained, moderately well sorted, sub-angular to sub-rounded, moderate calcareous cement, trace pyrite cement, rare nodular pyrite, trace glauconite, loose, friable, fair inferred porosity. FLUORESCENCE: Nil.
1920	1930	10	SILTSTONE: as above
		90	SANDSTONE: clear to translucent, off white to smokey grey, fine to coarse, predominantly coarse grained, moderately well sorted, sub-angular to sub-rounded, moderate calcareous cement, trace pyrite cement, rare nodular pyrite, rare glauconite, loose quartz grains, fair to good inferred porosity. FLUORESCENCE: Nil.
1930	1940	5	SILTSTONE: as above
		95	SANDSTONE: as above, fine to coarse, predominantly coarse grained. FLUORESCENCE: Nil.
1940	1950	trace	SILTSTONE: as above
		100	SANDSTONE: as above, fine to coarse, predominantly medium grained. FLUORESCENCE: Nil.
1950	1960		29/30 November Midnight Depth=1958.0 mMDRT=1381.6 mTVDR.
		15	SILTSTONE: as above
		85	SANDSTONE: milky white to off white, occasionally translucent, smokey grey, medium to coarse, predominantly coarse grained. FLUORESCENCE: Nil.
			SILTSTONE: as above
1960	1970	10	SILTSTONE: as above

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1970	1980	90	SANDSTONE: milky white to off white, occasionally translucent, smokey grey, medium to coarse, predominantly coarse grained.
			FLUORESCENCE: Nil.
		20	SILTSTONE: as above
1980	1990	80	SANDSTONE: clear to translucent, occasionally pale yellow, very fine to coarse, predominantly fine grained, moderately sorted, sub angular to sub rounded, moderately calcareous cement, trace pyrite cement, common white argillaceous matrix, rare nodular pyrite, hard aggregates, poor visual porosity
			FLUORESCENCE: Trace, dull, pale greenish yellow pinpoint mineral fluorescence.
		25	SILTSTONE: as above.
1990	2000	75	SANDSTONE: as above.
			FLUORESCENCE: Nil.
		40	SILTSTONE: as above.
2000	2010	60	SANDSTONE: as above.
			FLUORESCENCE: nil
		50	SILTSTONE: light brown to pale brown, argillaceous grading to SILTY CLAYSTONE, trace glauconite, soft to firm, sub-blocky.
2010	2020	50	SANDSTONE: translucent, off white to smokey grey, fine to coarse, predominantly coarse, sub-angular to sub-rounded, occasionally rounded coarse grains, weak calcareous cement, trace pyrite cement, rare nodular pyrite nodules, rare glauconite, loose quartz grains, fair to good inferred porosity.
		Trace	FLUORESCENCE: trace dull pale greenish yellow pinpoint fluorescence, milky white moderately rapid cut, thin ring residue.
		5	CLAYSTONE: medium grey to medium dark grey, trace micromica, moderately hard to hard, blocky.
2020	2030	70	SILTSTONE: as above.
		25	SANDSTONE: as above, medium to coarse.
		Trace	FLUORESCENCE: trace dull pale greenish yellow pinpoint fluorescence, milky white bleeding cut, thick ring residue.
2030	2040	20	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, off white to white, very fine to fine, predominantly fine, moderately well sorted, sub angular to sub rounded, moderately calcareous cement, trace pyrite cement, common white argillaceous matrix, trace nodular pyrite, hard aggregates, poor visual porosity.
			FLUORESCENCE: nil
2040	2050	70	SILTSTONE: as above.
		25	SANDSTONE: as above.
			FLUORESCENCE: nil
2050	2060	5	DOLOMITE: pale brown to moderate brown, hard to very hard, blocky.
		85	SILTSTONE:
		10	SANDSTONE: clear to translucent, off white to white, fine to coarse, poorly sorted, sub angular to sub rounded, trace silica cement, trace dolomite cement, rare nodular pyrite, hard aggregates, poor visual porosity.
2060	2070		FLUORESCENCE: nil
		5	DOLOMITE: as above.
		100	SILTSTONE: light brown to pale brown, argillaceous, grading to SILTY CLAYSTONE, trace micromicaceous, moderately hard to hard, blocky.
2060	2070	Trace	SANDSTONE: Trace as above
		Trace	DOLOMITE: Trace as above
		90	SILTSTONE: light brown to pale brown, argillaceous, grading to SILTY CLAYSTONE, trace micromicaceous, moderately hard to hard, sub-blocky to blocky.

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
2070	2080	10	SANDSTONE: as above.
			FLUORESCENCE: nil.
		90	SILTSTONE: as above.
2080	2090	10	SANDSTONE: as above.
			SANDSTONE: translucent, off white to light grey, very fine to fine, moderately sorted, sub-angular to sub-rounded, trace weak calcareous cement, trace to locally common hard to very hard light brown dolomitic cement, rare pyrite, loose, poor inferred porosity.
			FLUORESCENCE: nil.
2090	2100	90	SILTSTONE: as above.
		10	SANDSTONE: as above.
		95	SILTSTONE: as above.
2100	2110	5	SANDSTONE: as above.
		100	SILTSTONE: pale brown, pale yellowish brown, moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace mica flakes, dispersive, soft to firm, sub blocky.
		Trace	SANDSTONE: translucent, off white to light grey, very fine to fine, moderately sorted, sub-angular to sub-rounded, trace weak calcareous cement, trace to locally common hard to very hard light brown dolomitic cement, rare pyrite, loose, poor inferred porosity.
2110	2120	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: as above.
2120	2130	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: pale brown, pale yellowish brown, moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace mica flakes, dispersive, soft to firm, sub blocky.
2130	2140	Trace	SANDSTONE: translucent, off white to light grey, very fine to fine, moderately sorted, sub-angular to sub-rounded, trace weak calcareous cement, trace to locally common hard to very hard light brown dolomitic cement, rare pyrite, loose, poor inferred porosity.
		100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
2140	2150	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: as above.
2150	2160	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: pale brown, pale yellowish brown, moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace mica flakes, dispersive, soft to firm, sub blocky.
2160	2170	Trace	SANDSTONE: translucent, off white to light grey, very fine to fine, moderately sorted, sub-angular to sub-rounded, trace weak calcareous cement, trace to locally common hard to very hard light brown dolomitic cement, rare pyrite, loose, poor inferred porosity.
		100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
2170	2180	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: as above.
2180	2190	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: as above.
2190	2200	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: pale brown, pale yellowish brown, moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace mica flakes, trace carbonaceous specks, dispersive, soft to firm, sub blocky.
2200	2210	100	SILTSTONE: as above.
		Trace	SANDSTONE: as above.
		100	SILTSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		Trace	SANDSTONE: translucent, off white to light grey, very fine to fine, moderately sorted, sub-angular to sub-rounded, trace weak calcareous cement, trace to locally common hard to very hard light brown dolomitic cement, rare pyrite, loose, poor inferred porosity.
2210	2220	100	SILTSTONE: pale brown, pale yellowish brown, moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace mica flakes, dispersive, soft to firm, sub blocky.
2220	2230	Trace	SANDSTONE: as above.
		100	SILTSTONE: as above.
2230	2240	Trace	SANDSTONE: as above.
		100	SILTSTONE: pale brown, pale to moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace to rare carbonaceous inclusions, trace mica flakes, dispersive, soft to firm, sub-blocky.
2240	2250	100	SILTSTONE: as above.
2250	2260	100	SILTSTONE: as above.
2260	2270	100	SILTSTONE: pale brown, occasionally dusky brown, carbonaceous, grading to SILTY CLAYSTONE, firm, blocky.
		Trace	SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub-angular to sub-rounded, loose quartz grains, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: Nil.
2270	2280	Trace	COAL: brown-black to black, dull to earthy, soft, sub-blocky to blocky, uneven, silty, lignitic with trace nodular pyrite.
		95	SILTSTONE: pale brown, pale to moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace to rare carbonaceous inclusions, trace mica flakes, dispersive, soft to firm, sub-blocky.
		5	SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub-angular to sub-rounded, loose quartz grains, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: trace moderately bright yellowish green pinpoint fluorescence, moderately rapid blooming cut, thin film residue.
2280	2290	5	COAL: as above.
		90	SILTSTONE: as above.
		5	SANDSTONE: clear to translucent, pale grey, very fine to coarse, predominantly fine, moderately well sorted, sub-angular to sub-rounded, loose quartz grains, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: trace moderately bright yellowish green pinpoint fluorescence, moderately rapid blooming cut, thick film residue.
2290	2300	Trace	COAL: as above.
		95	SILTSTONE: as above.
		5	SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub-angular to sub-rounded, loose quartz grains, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: trace moderately bright yellowish green pinpoint fluorescence, moderately rapid blooming cut, thin ring residue.
2300	2310	15	COAL: as above.
		70	SILTSTONE: pale brown, pale to moderate yellowish brown, grey brown, argillaceous grading to SILTY CLAYSTONE, micromicaceous, trace to rare carbonaceous inclusions in part, trace nodular pyrite, dispersive, soft to firm, sub-blocky.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		15	SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub-angular to sub-rounded, abundant off white argillaceous matrix, loose quartz grains, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: trace to 5%, moderately bright yellowish green pinpoint fluorescence, moderately rapid blooming cut, thick ring residue.
2310	2320	Trace 60 40	COAL: as above. SILTSTONE: as above. SANDSTONE: as above. FLUORESCENCE: trace to 5% (fluorescence in matrix/rock flour), moderately bright yellowish green pinpoint fluorescence, moderately rapid blooming cut, thick ring residue. 30 November/01 December 2004 Midnight depth=2330.0 mMDRT=1576.7 mTVDRT.
2320	2330	Trace 30 70	COAL: as above. SILTSTONE: as above. SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub-angular to sub-rounded, abundant off white argillaceous matrix, loose quartz grains, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: trace, moderately bright yellowish green pinpoint fluorescence, moderately rapid blooming cut, thin ring residue.
2330	2340	Trace 15 85	COAL: as above. SILTSTONE: as above. SANDSTONE: as above. FLUORESCENCE: Nil
2340	2350	5 25 70	COAL: brown-black to black, dull to earthy, soft, blocky, uneven, silty, disseminated pyrite. SILTSTONE: pale brown, pale to moderate brown, argillaceous grading to SILTY CLAYSTONE, carbonaceous in part grading to CARBONACEOUS SILTSTONE, micromicaceous, dispersive, soft to firm, sub-blocky. SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace nodular pyrite, trace off white argillaceous matrix, loose, friable, fair inferred porosity. FLUORESCENCE: Nil
2350	2360	5 70 25	COAL: as above. SILTSTONE: as above. SANDSTONE: as above, abundant white argillaceous matrix. FLUORESCENCE: Nil
2360	2370	70 30	SILTSTONE: as above. SANDSTONE: as above. FLUORESCENCE: Nil
2370	2380	65 35	SILTSTONE: as above. SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace nodular pyrite, common white argillaceous matrix, loose, friable, poor inferred porosity. FLUORESCENCE: Nil
2380	2390	40 60	SILTSTONE: as above. SANDSTONE: as above. FLUORESCENCE: Nil
2390	2400	50 50	SILTSTONE: as above. SANDSTONE: as above. FLUORESCENCE: Nil

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
2400	2410	5	COAL: brown-black to black, dull to earthy, soft to brittle, blocky, uneven, silty, disseminated pyrite.
		35	SILTSTONE: pale to moderate brown, moderate yellowish brown, argillaceous grading to SILTY CLAYSTONE, carbonaceous in part grading locally to CARBONACEOUS SILTSTONE, micromicaceous, dispersive, soft to firm, sub-blocky to blocky.
		60	SANDSTONE: clear to translucent, fine to medium, occasionally coarse, moderately sorted, sub angular to sub rounded, trace nodular pyrite, common off white argillaceous matrix, loose, occasionally firm aggregates, poor to fair visual porosity. FLUORESCENCE: 10%, moderately bright pale yellowish green spotted fluorescence, instant fast bleeding cut, moderately thick yellowish white ring residue. Slow ROP of 1.2 m/hr at 2401.2 mMDRT = 1612.3 mTVDRT. Spot sample did not have any dolomite or pyrite. The slow ROP attributed to firm hard aggregates seen in sample 2410.0 mMDRT. Correlation with TNA A17A redrill log shows a similar (3 metre MD) interval of slow ROP at about 1615.0 mTVDRT.
2410	2420	Trace	COAL: as above.
		50	SILTSTONE: as above.
		50	SANDSTONE: as above. FLUORESCENCE: 5%, moderately bright pale yellowish green spotted fluorescence, instant fast blooming cut, thick yellowish white ring residue.
2420	2430	60	SILTSTONE: as above.
		40	SANDSTONE: clear to translucent, fine to coarse, moderately sorted, sub angular to sub rounded, trace nodular pyrite, common off white argillaceous matrix, loose, common firm aggregates, poor to fair visual porosity. FLUORESCENCE: Nil
2430	2440	80	SILTSTONE: as above.
		20	SANDSTONE: as above. FLUORESCENCE: Nil
2440	2450	30	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent occasionally very light grey, fine to coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace nodular pyrite, trace off-white argillaceous matrix, loose, friable, fair visual porosity. FLUORESCENCE: Nil
2450	2460	10	SILTSTONE: as above.
		90	SANDSTONE: as above. FLUORESCENCE: Nil
2460	2470	25	SILTSTONE: pale brown to dark yellowish brown, grey brown, argillaceous grading to SILTY CLAYSTONE, trace micromicaceous, common white argillaceous matrix, dispersive, soft to firm, sub-blocky.
		75	SANDSTONE: as above. FLUORESCENCE: Nil
2470	2475	50	SILTSTONE: as above.
		50	SANDSTONE: as above. FLUORESCENCE: Nil

BU Sample

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
<p>01/02/03 December 2004 Midnight depth=2475.0 mMDRT=1651.1 mTVDRT.</p> <p>At 18:40 hrs 01 December 2004, stop drilling at stand-down at 2475.0 mMDRT=1650.8 mTVDRT to change the BHA and bit, saver sub and service the top drive. CBU and rack back 2 stand and backream to clean up the hole. Start POOH at 21:50 hrs.</p> <p>Bit on surface at 05:30 hrs on 02 December 2004. Change out Bit and BHA.</p> <p>Start RIH at 11:00 hrs. Precautionary wash down and ream from 2389.0 to 2475.0 mMDRT. Trip Gas =12 units. Bit on bottom drilling from 2475.0 mMDRT at 01:30 hrs, 03 December 2004. Bit Details: Bit # 2, Size: 8.5", Manufacturer / Type: Reed Hycalog RSX 163, Serial #: 207942 Jets: 18 x 2, 21 x 4. TFA: 1.850 sq.in, HOB: xxx, Grading: 0-1-CT-T-X-IN-NO-TRQ.</p> <p>Gamma to Bit = 18.78 m DNI to Bit = 19.43 m Krevs: 207, RPM: 0-122 (+ 170 RPM DHM). Average ROP: 155.0 / 11.4 = 13.6 m/hr. Rotating: 150.0 metres / Rotating HOB = 11.06, Average Rotating ROP = 13.6 m/hr Steering: 5.0 metres / Steering HOB = 0.34, Average Steering ROP = 14.7 m/hr</p>			
2475	2480	Trace	COAL: brown-black to black, dull to earthy, brittle, sub-blocky, silty grading to CARBONACEOUS SILTSTONE, disseminated pyrite.
		30	SILTSTONE: pale brown to dark yellowish brown, grey brown, argillaceous grading to SILTY CLAYSTONE, trace micromicaceous, common white argillaceous matrix, dispersive, soft to firm, sub-blocky.
		70	SANDSTONE: clear to translucent occasionally very light grey, fine to coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace nodular pyrite, trace off-white argillaceous matrix, loose, friable, fair visual porosity. FLUORESCENCE: Nil
2480	2490	5	COAL: as above.
		45	SILTSTONE: as above, trace micromicaceous, trace carbonaceous specks locally grading to CARBONACEOUS SILTSTONE.
		50	SANDSTONE: as above. FLUORESCENCE: Nil.
2490	2500	5	COAL: as above.
		25	SILTSTONE: as above, trace micromicaceous, trace carbonaceous specks locally grading to CARBONACEOUS SILTSTONE.
		70	SANDSTONE: clear to translucent occasionally light grey, very fine to medium predominantly fine, moderately well sorted, sub angular to sub rounded, trace nodular pyrite, trace off-white argillaceous matrix, loose, friable, fair visual porosity. FLUORESCENCE: NilFLUORESCENCE: Nil.
2500	2510	40	SILTSTONE: as above.
		60	SANDSTONE: as above. FLUORESCENCE: Nil
2510	2520	60	SILTSTONE: as above.
		40	SANDSTONE: as above. FLUORESCENCE: Nil
2520	2530	40	SILTSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2530	2540	60	SANDSTONE: as above. FLUORESCENCE: Nil
		Trace	COAL: brown-black to black, dull to earthy, brittle, sub-blocky, silty grading to CARBONACEOUS SILTSTONE, disseminated pyrite.
		30	SILTSTONE: pale brown to dark yellowish brown, grey brown, argillaceous grading to SILTY CLAYSTONE, locally with carbonaceous specks grading to CARBONACEOUS SILTSTONE, trace micromicaceous, common white argillaceous matrix, dispersive, soft to firm, sub-blocky.
2540	2550	70	SANDSTONE: clear to translucent occasionally off white, fine to coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace nodular pyrite, abundant off-white argillaceous matrix, rare olive brown quartzite grains, hard aggregates, rock flour of quartz crushed by PDC bit, poor visual porosity. FLUORESCENCE: Nil
		20	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent occasionally off white, fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, rare olive brown quartzite grains, loose, friable, poor to fair visual porosity. FLUORESCENCE: Trace to 5%, dull pinpoint pale yellowish green fluorescence, moderately rapid blooming instant cut, thin yellowish ring residue.
2550	2560	20	COAL: as above.
		50	SILTSTONE: as above.
		30	SANDSTONE: as above. FLUORESCENCE: Trace, moderately bright pinpoint yellowish green fluorescence, rapid blooming instant cut, thick yellowish ring residue.
2560	2570	Trace	COAL: as above.
		60	SILTSTONE: as above.
		40	SANDSTONE: as above. FLUORESCENCE: Trace, moderately bright pinpoint yellowish green fluorescence, slow bleeding instant cut, thin blueish white ring residue.
2570	2580	5	COAL: brown-black to black, dull to earthy, brittle, blocky, trace nodular pyrite, trace mica flakes. (GAS PEAK: 2574.0 mMDRT= 323 units)
		30	SILTSTONE: as above.
		65	SANDSTONE: clear to translucent occasionally pale grey, fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, rare olive brown quartzite grains, loose, friable, poor to fair visual porosity. FLUORESCENCE: Trace, moderately bright pinpoint yellowish green fluorescence, slow bleeding instant cut, thin blueish white ring residue.
2580	2590	10	COAL: as above. (GAS PEAK: 2589.0 mMDRT= 595units)
		20	SILTSTONE: as above.
		70	SANDSTONE: as above. FLUORESCENCE: Nil.
2590	2600	5	COAL: as above.
		5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		20	SILTSTONE: as above.
2600	2610	70	SANDSTONE: as above. FLUORESCENCE: Nil.
		5	CLAYSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		10	SILTSTONE: as above.
		85	SANDSTONE: clear to translucent, fine to coarse, poorly sorted, sub angular to sub rounded, common silica cement in coarse aggregates, loose, friable, locally hard aggregates where coarse, poor to fair visual porosity. FLUORESCENCE: Nil. Spot sample at 1613.5 mMDRT (1723.9 mTVDRT) analysed due to the slow ROP of 0.44 m/hr. No nodular pyrite, no dolomite in sample. Increasing torque from 2604 to 2615.0 mMDRT.
Spot	2613.5	5	CLAYSTONE: as above.
		5	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, medium to coarse, predominantly coarse, moderately sorted, sub angular to sub rounded, common silica cement in coarse aggregates, hard coarse aggregates, poor visual porosity. FLUORESCENCE: Nil.
2610	2620	15	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: moderate brown to moderate yellowish brown, light brown, trace pyrite, common mica flakes, soft to firm, moderately hard, sub blocky to blocky.
		75	SANDSTONE: clear to translucent, occasionally milky white, fine to coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, occasionally angular fractured grains, strong silica cement, hard aggregates, poor visual porosity. FLUORESCENCE: Nil.
Spot	2626.0		Spot at 2626 m, to check sample for cause of slow ROP of 0.9 m/hr.
		5	COAL: as above, with pyrite cement and nodular pyrite.
		50	CLAYSTONE: as above
		10	SILTSTONE: as above.
		40	SANDSTONE: as above, with pyrite cement and nodular pyrite, strong silica cement, hard aggregates, poor visual porosity. FLUORESCENCE: Nil.
2620	2630	Trace	COAL: as above.
		50	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: moderate brown to moderate yellowish brown, light brown, common mica flakes, soft to firm, moderately hard, sub blocky to blocky.
		40	SANDSTONE: clear to translucent, occasionally white, fine to coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, strong silica cement, trace pyrite cement and nodular pyrite, hard aggregates, very poor to poor visual porosity. FLUORESCENCE: Nil. 03/04/05 December 2004 Midnight depth=2630.0 mMDRT=1733.0 mTVDRT. At 23:30 hrs, 03 December 2004, POOH at 2630.0 mMDRT to change the roller reamer. Bit on surface at 07:00 hrs 04 December 2004. Work on Top drive after RIH to 523.0 mMDRT (inside casing). Continue RIH while washing down. Trip gas = 62 units. On bottom drilling from 2630.0 mMDRT at 02:15 hrs 05 December 2004.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
			Bit Details: Bit # 2 (RR1), Size: 8.5", Manufacturer / Type: Reed Hycalog RSX 163, Serial #: 207942 Jets: 18 x 2, 21 x 4. TFA: 1.850 sq.in, HOB: xxx, Grading: 1-3-WT-TS-X-IN-CT-TD . Gamma to Bit = 18.76 m DNI to Bit = 19.40 m Krevs: 639, RPM: 0-123 (+170 RPM DHM), Average ROP: 653.0 / 37.40 = 17.5 m/hr. Rotating: 646.0 metres / Rotating HOB = 35.53, Average Rotating ROP = 18.2 m/hr Steering: 7.0 metres / Steering HOB = 1.87, Average Steering ROP = 3.7 m/hr
2630	2640	40	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: moderate brown to moderate yellowish brown, light brown, common mica flakes, soft to firm, moderately hard, sub blocky to blocky.
		50	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, well sorted, sub angular to sub rounded, strong silica cement, trace white argillaceous matrix, trace pyrite cement and nodular pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Nil.
2640	2650	20	COAL: black to brownish black, occasionally brown, sub vitreous, earthy in part, trace micromicaceous, brittle, moderately hard.
		40	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		5	SILTSTONE: as above.
2650	2660	35	SANDSTONE: as above. FLUORESCENCE: Nil.
		10	CLAYSTONE: as above.
		10	SILTSTONE: moderate brown to moderate yellowish brown, light brown, common mica flakes, soft to firm, moderately hard, sub blocky to blocky.
2660	2670	80	SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately sorted, sub angular to sub rounded, trace silica cement, rare white argillaceous generally unconsolidated matrix, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
		10	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: as above.
2670	2680	80	SANDSTONE: as above. FLUORESCENCE: Nil.
		20	CLAYSTONE: as above.
		Trace	SILTSTONE: as above.
2680	2690	80	SANDSTONE: as above. FLUORESCENCE: Nil.
		10	CLAYSTONE: as above.
		Trace	SILTSTONE: as above.
2690	2700	90	SANDSTONE: clear to translucent, very fine to occasionally coarse grains, predominantly medium, moderately sorted, sub angular to sub rounded, trace silica cement, rare white argillaceous generally unconsolidated matrix, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
		50	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		50	SANDSTONE: as above. FLUORESCENCE: Nil.
2700	2710	70	CLAYSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2710	2720	30	SANDSTONE: clear to translucent, occasionally milky white, very fine to coarse, predominantly coarse, occasionally fractured grains, moderately well sorted, sub angular to sub rounded, trace silica cement, trace pyrite cement, trace nodular pyrite, loose grains, fair inferred porosity. FLUORESCENCE: Nil.
		60	CLAYSTONE: as above.
		40	SANDSTONE: clear to translucent, occasionally milky white, fine to coarse, predominantly coarse, occasionally fractured grains, moderately well sorted, sub angular to sub rounded, trace silica cement, trace pyrite cement, trace nodular pyrite, trace moderate orange pink quartzite grains, loose, fair inferred porosity. FLUORESCENCE: Nil.
2720	2730	5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		95	SANDSTONE: clear to translucent, occasionally milky white, fine to coarse, predominantly coarse, occasionally fractured grains, moderately well sorted, sub angular to sub rounded, trace silica cement, trace pyrite cement, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: Nil.
2730	2740	5	CLAYSTONE: as above.
		5	SILTSTONE: moderate brown to light brown, argillaceous grading to SILTY CLAYSTONE, common micromicaceous, soft to moderately hard, sub blocky.
		90	SANDSTONE: clear to translucent, occasionally milky white, fine to coarse, predominantly coarse, occasionally fractured grains, moderately well sorted, sub angular to sub rounded, trace silica cement, trace pyrite cement, trace nodular pyrite, trace pale pink quartzite grains, loose, fair inferred porosity. FLUORESCENCE: Nil.
		Trace	COAL: black, sub vitreous, friable, sub blocky, uneven. (GAS PEAK: 2749.0 mMDRT= 17/10 BG units)
2750	2760	5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: as above.
		85	SANDSTONE: as above. FLUORESCENCE: Nil.
		Trace	COAL: as above. (GAS PEAK: 2759.5 mMDRT= 20/12 BG units)
		Trace	CLAYSTONE: as above.
2760	2770	15	SILTSTONE: as above.
		85	SANDSTONE: as above. FLUORESCENCE: Nil.
		5	COAL: as above. (GAS PEAK: 2763.0 mMDRT= 18/10 BG units)
		5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		20	SILTSTONE: 1. moderate brown to light brown, argillaceous grading to SILTY CLAYSTONE, common micromicaceous, soft to moderately hard, sub blocky. SILTSTONE: 2. brownish black, dark brown, carbonaceous grading to CARBONACEOUS SILTSTONE, trace micromicaceous, firm to moderately hard, sub blocky.
2770	2780	70	SANDSTONE: as above. FLUORESCENCE: Nil.
		5	COAL: as above. (GAS PEAK: 2771.0 mMDRT= 40/12 BG units)
		5	CLAYSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
2780	2790	30	SILTSTONE: moderate brown to light brown, yellowish brown, common micromicaceous, soft to moderately hard, sub blocky.
		60	SANDSTONE: as above. FLUORESCENCE: Nil.
		5	COAL: as above. (GAS PEAK: 2789.5 mMDRT= 580/BG26 units)
		5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		20	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, fine to coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, common white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
2790	2800	5	COAL: as above. (GAS PEAK: 2799.0 mMDRT= 129/14 BG units)
		10	SILTSTONE: as above.
		85	SANDSTONE: as above. FLUORESCENCE: Nil.
2800	2810	5	COAL: as above.
		20	SILTSTONE: as above.
		75	SANDSTONE: clear to translucent, fine to coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, loose, fair inferred porosity.
2810	2820	Trace	FLUORESCENCE: Trace, dull yellowish green pinpoint fluorescence, no instant cut, very slow bleeding crush cut, thin film residue.
		Trace	COAL: as above.
		5	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		85	SANDSTONE: clear to translucent, fine to coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace pyrite cement, common white argillaceous matrix, trace nodular pyrite, loose, fair inferred porosity.
		Trace	FLUORESCENCE: Trace, dull yellowish green pinpoint fluorescence, no instant cut, very slow bleeding crush cut, thin film residue. Trace splintery coal cavings in 2820.0 sample.
2820	2830	Trace	COAL: as above. (GAS PEAK: 2823.0 mMDRT= 29/11 BG units)
		Trace	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, fine to occasionally coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, slightly calcareous, loose, fair inferred porosity. FLUORESCENCE: Nil.
2830	2840	Trace	CLAYSTONE: as above.
		Trace	SILTSTONE: as above.
		100	SANDSTONE: clear to translucent, fine to occasionally coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, slightly calcareous, loose, fair inferred porosity. FLUORESCENCE: Nil.
On 05 December 2004, at 15:15 hrs, at the stand down of 2847.5 mMDRT, due to the torque increasing from 13 to 15 Kftlbs, add radiagreen (a torque reducing lubricant) while continuing to circulate with no drilling. Continue drilling at 16:30 hrs.			

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
2840	2850	Trace	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		5	SILTSTONE: moderate brown to light brown, yellowish brown, common micromicaceous, soft to moderately hard, sub blocky.
		95	SANDSTONE: clear to translucent, fine to coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, slightly calcareous, loose, fair inferred porosity. FLUORESCENCE: Nil.
2850	2860	Trace	CLAYSTONE: as above.
		Trace	SILTSTONE: as above.
		100	SANDSTONE: clear to translucent, fine to coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, slightly calcareous, trace disseminated pyrite, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
2860	2870	Trace	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		Trace	SILTSTONE: as above.
		100	SANDSTONE: clear to translucent, fine to very coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace silica cement, white argillaceous matrix, rare disseminated pyrite, loose, fair to good inferred porosity. FLUORESCENCE: Nil.
2870	2880	5	CLAYSTONE: as above.
		20	SILTSTONE: as above.
		75	SANDSTONE: clear to translucent, fine to very coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, trace silica cement, white argillaceous matrix, rare disseminated pyrite, trace pyrite cement, trace nodular pyrite, loose, fair to good inferred porosity. FLUORESCENCE: Nil.
2880	2890	10	CLAYSTONE: as above.
		30	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, very fine to coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, white argillaceous matrix, rare disseminated pyrite, trace pyrite cement, trace nodular pyrite, loose, fair to good inferred porosity. FLUORESCENCE: Nil.
2890	2900	20	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		30	SILTSTONE: as above.
		50	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, white argillaceous matrix, rare disseminated pyrite, trace pyrite cement, trace nodular pyrite, loose, fair to good inferred porosity. FLUORESCENCE: Nil.
2900	2910	5	CLAYSTONE: as above.
		5	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, fine to very coarse, poor to moderate sorted, sub angular to sub rounded, trace silica cement, white argillaceous matrix, rare disseminated pyrite cement, dominantly unconsolidated, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
2910	2920	5	CLAYSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
		5	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, fine to very coarse, poor to moderate sorted, sub angular to sub rounded, trace silica cement, white argillaceous matrix, rare disseminated pyrite cement, dominantly unconsolidated, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
2920	2930	5	CLAYSTONE: light to medium grey, blueish grey, silty, soft to firm, sub blocky.
		5	SILTSTONE: light to moderate brown yellowish brown, common mica flakes, soft to moderately hard, sub blocky.
		90	SANDSTONE: clear to translucent, fine to very coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace silica cement, trace white argillaceous matrix, rare disseminated pyrite, trace pyrite cement, dominantly unconsolidated, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
2930	2940	10	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, fine to very coarse, predominantly fine to medium, moderately well sorted, sub angular to sub rounded, trace silica cement, trace white argillaceous matrix, rare disseminated pyrite, trace pyrite cement, dominantly unconsolidated, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
2930	2940	10	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		80	SANDSTONE: as above.
2940	2950	10	CLAYSTONE: as above.
		10	SILTSTONE: light to moderate brown yellowish brown, common mica flakes, soft to moderately hard, sub blocky.
		80	SANDSTONE: as above.
2950	2960	10	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		10	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, fine to coarse, predominantly fine to medium, moderately well sorted, sub angular to sub rounded, trace silica cement, trace white argillaceous matrix, rare disseminated pyrite, unconsolidated, fair visual porosity. FLUORESCENCE: Nil.
			05/06 December 2004 Midnight depth=2062.0 mMDRT=1914.0 mTVDR.
2960	2970	5	COAL: dark brown to black, black, earthy, brittle, sub blocky.
		Trace	CLAYSTONE: as above.
		20	SILTSTONE: as above.
		75	SANDSTONE: clear to translucent, fine to coarse, predominantly fine to medium, moderately well sorted, sub angular to sub rounded, trace silica cement, trace white argillaceous matrix, rare disseminated pyrite, unconsolidated, fair visual porosity. FLUORESCENCE: Nil.
2970	2980	5	COAL: dark brown to black, black, earthy, brittle, sub blocky. (GAS PEAK: 2972.0 mMDRT= 58/10 BG units)
		15	CLAYSTONE: as above.
		20	SILTSTONE: light to moderate brown yellowish brown, common mica flakes, soft to moderately hard, sub blocky.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2980	2990	60	SANDSTONE: clear to translucent, fine to coarse, predominantly fine to medium, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, rare disseminated pyrite, trace pyrite nodules, unconsolidated, fair visual porosity. FLUORESCENCE: Trace to 5%, pale to moderate bright, pale yellow green pinpoint fluorescence, slow bleeding cut, thin ring residue. Mudlog BAR : Zero
		Trace	COAL: dark brown to black, black, earthy, brittle, sub blocky. (GAS PEAK: 2993.0 mMDRT= 83/20 BG units)
		10	CLAYSTONE: as above.
		20	SILTSTONE: as above.
		70	SANDSTONE: as above. FLUORESCENCE: Trace to 5%, pale to moderate bright, pale yellow green pinpoint fluorescence, moderate rapid bleeding cut, thick ring residue. Mudlog BAR : Half
2990	3000	Trace	COAL: as above.
		10	CLAYSTONE: as above.
		40	SILTSTONE: as above.
		50	SANDSTONE: as above. FLUORESCENCE: Trace to 5%, pale to moderate bright, pale yellow green pinpoint fluorescence, rapid bleeding cut, thick ring residue. Mudlog BAR : Half
3000	3010	Trace	COAL: as above.
		20	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		70	SILTSTONE: light to moderate brown yellowish brown, common mica flakes, soft to moderately hard, sub blocky.
		10	SANDSTONE: clear to translucent, fine to coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, unconsolidated, fair to good visual porosity. FLUORESCENCE: 10 to 15%, moderate bright spotted greenish yellow fluorescence, moderately rapid bleeding cut, thin ring residue. Mudlog BAR : Half
3010	3020	Trace	COAL: dark brown to black, black, earthy, brittle, sub blocky.
		10	CLAYSTONE: as above.
		80	SILTSTONE: as above.
		10	SANDSTONE: clear to translucent, fine to coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, unconsolidated, fair inferred porosity. FLUORESCENCE: Nil. Start sampling at 5 metre intervals from 3020.0 m to 3283.0 mMDRT (TD). Top of T1 sands prognosed at 3030.3 mMDRT.
3020	3025	Trace	COAL: as above.
		10	CLAYSTONE: as above.
		60	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, poor inferred porosity. FLUORESCENCE: Nil.
3025	3030	Trace	COAL: dark brown to black, black, earthy, brittle, sub blocky. (GAS PEAK: 3026.0 mMDRT= 80/20 BG units)
		Trace	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		90	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3030	3035	10	SANDSTONE: clear to translucent, fine to occasionally very coarse, predominantly coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, poor to fair inferred porosity. FLUORESCENCE: Nil.
		Trace	CLAYSTONE: as above.
		60	SILTSTONE: as above.
3035	3040	40	SANDSTONE: clear to translucent, occasionally milky white, medium to very coarse, predominantly coarse, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: Nil.
		Trace	COAL: dark brown to black, black, earthy, brittle, sub blocky. (GAS PEAK: 3045.5 mMDRT= 134/20 BG units)
		Trace	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		70	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.
		30	SANDSTONE: clear to translucent, fine to occasionally very coarse, predominantly coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, poor to fair inferred porosity. FLUORESCENCE: Nil. Drill break at 3048.0 mMDRT / 1959.4 mTVDRT. Flow check. Static.
3040	3045	Trace	COAL: as above. (GAS PEAK: 3048.0 mMDRT= 100/30 BG units)
		Trace	CLAYSTONE: as above.
		70	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, poor inferred porosity. FLUORESCENCE: Trace, dull pale yellowish green pinpoint fluorescence, slow bleeding direct cut, thin ring residue. Mudlog Bar: Zero
3045	3050	Trace	CLAYSTONE: as above.
		20	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, poor inferred porosity. FLUORESCENCE: 5-10%, moderate bright yellowish green spotted fluorescence, moderately rapid bleeding direct cut, thin film residue. (GAS PEAK: 3048.0 mMDRT= 100/30 BG units) Mudlog Bar: One
3050	3055	5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		70	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.
		25	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair to good inferred porosity. FLUORESCENCE: 20-30 %, moderate bright blueish white even fluorescence, rapid streaming direct cut, thin ring residue. (GAS PEAK: 3054.0 mMDRT= 409/30 BG units) Mudlog Bar: One
3055	3060	5	COAL: dark brownish black to black, earthy, trace micromicaceous moderate hard, sub blocky. (GAS PEAK: 3059.5 mMDRT= 191/30 BG units)

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		40	SILTSTONE: as above.
		55	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 20-30 %, moderate bright blueish white even fluorescence, moderately rapid streaming direct cut, thick ring residue.
3060	3065	Trace	COAL: as above. (GAS PEAK: 3067.0 mMDRT= 216/84 BG units)
		40	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.
		60	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 10-15 %, moderate bright blueish white even fluorescence, moderately rapid bleeding direct cut, thick ring residue.
			Mudlog Bar: One
3065	3070	30	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 20-25 %, moderate bright blueish white even fluorescence, moderately rapid streaming direct cut, thin ring residue.
			Mudlog Bar: Half
3070	3075	40	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 35-40 %, moderate bright blueish white even fluorescence, rapid blooming direct cut, thick ring residue.
			Mudlog Bar: One
3075	3080	30	COAL: black, sub vitreous, brittle, moderate hard, blocky, uneven fracture, trace pyrite. (GAS PEAK: 3077.0 mMDRT= 229/84 BG units)
		10	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: Trace-5 %, dull pale yellowish green pinpoint fluorescence, slow bleeding direct cut, thin ring residue.
			Mudlog Bar: One
3080	3085	5	COAL: as above.
		5	CLAYSTONE: medium grey to medium blueish grey, silty, firm, moderately hard to hard, blocky.
		20	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.
		70	SANDSTONE: clear to translucent, very fine occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace silica cement, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 5-10 %, moderate bright to bright blueish white even FLUORESCENCEe, moderate rapid bleeding direct cut, thin ring residue.
			Mudlog Bar: Half

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3085	3090	30	COAL: black, sub vitreous, brittle, moderate hard, blocky, uneven fracture, trace pyrite. (Broad GAS PEAK: 3086.0 to 3090.0 mMDRT= 175/80 BG units)
		30	SILTSTONE: as above
		40	SANDSTONE: clear to translucent, very fine occasionally coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace silica cement, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 10-15 %, moderate bright to bright blueish white spotted fluorescence, moderate rapid bleeding direct cut, thin ring residue. Mudlog Bar: One
3090	3095	10	COAL: as above
		30	SILTSTONE: as above
		60	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: trace to 5%, dull pale yellowish green pinpoint fluorescence, slow bleeding direct cut, thin film residue. Mudlog Bar: Zero
3095	3100	5	COAL: as above
		40	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.
		55	SANDSTONE: clear to translucent, very fine occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, loose, poor to fair inferred porosity. FLUORESCENCE: 5-10 %, moderate bright to bright blueish white spotted fluorescence, very slow bleeding direct cut, thin ring residue. Mudlog Bar: Half At 3105.0 mMDRT, one shaker was down. Circulated (from 1340 hrs to 1800 hrs, 06 December 2004) with no drilling till the shaker was fixed. Samples 3090, 3095, 3100, and 3105 were circulated out during this period.
3100	3105	5	COAL: black, sub vitreous, brittle, moderate hard, blocky, uneven fracture, trace pyrite.
		70	SILTSTONE: as above
		25	SANDSTONE: clear to translucent, very fine occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 5-10 %, moderate bright to bright blueish white spotted fluorescence, slow bleeding direct cut, thin ring residue. Mudlog Bar: Half
3105	3110	50	SILTSTONE: light to moderate brown yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky.
		50	SANDSTONE: clear to translucent, very fine occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair to good inferred porosity. FLUORESCENCE: 5-10 %, dull yellowish green spotted fluorescence, moderately rapid streaming direct cut, thin film residue. Mudlog Bar: Half
3110	3115	20	COAL: black, sub vitreous, brittle, moderate hard, blocky, uneven fracture, trace pyrite.
		50	SILTSTONE: as above

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		30	SANDSTONE: clear to translucent, fine medium, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, poor to fair inferred porosity. FLUORESCENCE: Trace, from cavings as above.
			Mudlog Bar: Zero
3115	3120	10	COAL: as above.
		60	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: 20-30%, moderately bright yellowish green even fluorescence, moderately fast streaming direct cut, thin film residue.
			Mudlog Bar: One
3120	3125	Trace	Mudlog Bar: Zero COAL: as above.
		60	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
		40	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: Trace to 5%, dull pale yellowish green pinpoint fluorescence, moderately fast streaming direct cut, thin film residue.
			Mudlog Bar: Half
3125	3130	70	SILTSTONE: as above.
		30	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, fair inferred porosity. FLUORESCENCE: Trace to 5%, moderate bright yellowish green pinpoint fluorescence, moderately fast streaming direct cut, thin film residue.
			Mudlog Bar: Zero
3130	3135	60	SILTSTONE: as above.
		40	SANDSTONE: as above. FLUORESCENCE: Trace-5%, as above.
			Mudlog Bar: Zero
3135	3140	60	SILTSTONE: as above.
		40	SANDSTONE: clear to translucent, fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, trace nodular pyrite, common carbonaceous inclusions, predominantly loose, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
3140	3145	50	SILTSTONE: as above.
		50	SANDSTONE: as above. FLUORESCENCE: Nil.
3145	3150	60	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
		40	SANDSTONE: as above. FLUORESCENCE: Nil.
			06/07 December 2004 Midnight depth=3151.0 mMDRT=2014.0 mTVDRT.
3150	3155	50	SILTSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3155	3160	50	SANDSTONE: clear to translucent, fine to occasionally coarse, poor to moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, common carbonaceous inclusions, predominantly loose, fair to good inferred and visual porosity. FLUORESCENCE: Nil.
		30	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, occasionally off white, fine to occasionally coarse, poor to moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, common carbonaceous inclusions, predominantly loose, fair inferred and visual porosity. FLUORESCENCE: Trace to 5%, dull pale yellowish green pinpoint fluorescence, moderately fast streaming direct cut, thin ring residue.
3160	3165		Mudlog Bar: Half
		5	CLAYSTONE: light grey to light greenish grey, silty, firm, soft to moderately hard, sub blocky.
		30	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
		65	SANDSTONE: clear to translucent, occasionally off white, fine to occasionally coarse, poor to moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, common carbonaceous inclusions, predominantly loose, fair inferred and visual porosity. FLUORESCENCE: 10-15%, moderately bright blueish white spotted fluorescence, fast streaming direct cut, thin ring residue.
			Mudlog Bar: Half
3165	3170	50	SILTSTONE: as above.
		50	SANDSTONE: clear to translucent, very fine to medium, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Trace to 5%, dull pale yellowish green pinpoint fluorescence, moderately fast streaming direct cut, thin film residue.
			Mudlog Bar: Zero
3170	3175	50	SILTSTONE: as above.
		50	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly medium, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Nil.
3175	3180	70	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
		30	SANDSTONE: clear to translucent, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace disseminated pyrite, loose, poor inferred porosity. FLUORESCENCE: Nil.
3180	3185	80	SILTSTONE: as above.
		20	SANDSTONE: clear to translucent, very fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, trace nodular pyrite, loose, poor inferred porosity. FLUORESCENCE: trace, cavings.
3185	3190	75	SILTSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3190	3195	25	SANDSTONE: clear to translucent, fine to medium, occasionally coarse, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace disseminated pyrite, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
		Trace	CLAYSTONE: light grey to light greenish grey, silty, firm, soft to moderately hard, sub blocky.
		75	SILTSTONE: as above.
3195	3200	25	SANDSTONE: as above. FLUORESCENCE: Trace, cavings , dull pale greenish yellow pinpoint fluorescence, no direct cut, very slow bleeding crush cut, thin ring residue.
		Trace	CLAYSTONE: as above.
		50	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
3200	3205	50	SANDSTONE: clear to translucent, occasionally white, very fine to coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair to good inferred porosity. FLUORESCENCE: Trace to 5%, dull pale yellowish green pinpoint fluorescence, very slow bleeding crush cut, thin film residue.
			Mudlog Bar: Half
		30	SILTSTONE: as above.
3205	3210	70	SANDSTONE: clear to translucent, occasionally white, very fine to occasionally coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Trace to 5%, dull pale yellowish green pinpoint fluorescence, slow bleeding crush cut, thin ring residue.
			Mudlog Bar: Half
		20	SILTSTONE: as above.
3210	3215	80	SANDSTONE: clear to translucent, occasionally white, very fine to occasionally very coarse, predominantly fine, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Trace, cavings , dull pale greenish yellow pinpoint fluorescence, no direct cut, very slow bleeding crush cut, thin ring residue.
		40	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, occasionally white, very fine to occasionally very coarse, predominantly fine, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Trace, cavings , dull pale greenish yellow pinpoint fluorescence, no direct cut, very slow bleeding crush cut, thin ring residue.
3215	3220	40	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
		60	SANDSTONE: as above. FLUORESCENCE: Nil.
		40	SILTSTONE: as above.
3220	3225	60	SANDSTONE: clear to translucent, occasionally white, very fine to occasionally very coarse, predominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Nil
3225	3230	60	SILTSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3230	3235	40	SANDSTONE: clear to translucent, occasionally white, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Trace, cavings ,
		75	SILTSTONE: as above.
		25	SANDSTONE: clear to translucent, very fine to medium, dominantly fine, moderately well sorted, sub angular to sub rounded, common white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, poor to fair inferred porosity. FLUORESCENCE: Nil.
3235	3240	30	SILTSTONE: light to moderate brown, common carbonaceous laminations, firm to hard, trace micromicaceous, trace disseminated pyrite, sub blocky.
		70	SANDSTONE: clear to translucent, very fine to occasionally very coarse, dominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
3240	3245	50	SILTSTONE: light to moderate brown, dark yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky to blocky.
		50	SANDSTONE: clear to translucent, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, common white argillaceous matrix, trace disseminated pyrite, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
3245	3250	85	SILTSTONE: as above.
		15	SANDSTONE: clear to translucent, very fine to occasionally very coarse, dominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
3250	3255	80	SILTSTONE: as above.
		20	SANDSTONE: clear to translucent, very fine to medium, dominantly fine, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, loose, fair inferred porosity. FLUORESCENCE: Nil.
3255	3260	5	CLAYSTONE: greyish green to greyish blue green, silty, trace micromicaceous, soft to moderately hard, sub blocky to blocky.
		55	SILTSTONE: light to moderate brown, dark yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky to blocky.
		40	SANDSTONE: clear to translucent, very fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, disseminated pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
3260	3265	5	CLAYSTONE: as above.
		35	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, fine to coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, loose, fair inferred porosity. FLUORESCENCE: Nil.
3265	3270	5	CLAYSTONE: as above.
		15	SILTSTONE: as above.

Tuna A15A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
3270	3275	80	SANDSTONE: clear to translucent, very fine to medium, dominantly medium, moderately well sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
		10	COAL: brownish black to black, sub vitreous, brittle uneven, silty in part, grading to CARBONACEOUS SILTSTONE. (GAS PEAK: 3274.5 mMDRT= 28/11 BG units)
		5	CLAYSTONE: greyish green to greyish blue green, silty, trace micromicaceous, soft to moderately hard, sub blocky to blocky.
		55	SILTSTONE: light to moderate brown, dark yellowish brown, trace micromicaceous, soft to moderately hard, sub blocky to blocky.
		30	SANDSTONE: clear to translucent, very fine to medium, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, trace pyrite cement, loose, fair inferred porosity. FLUORESCENCE: Nil.
3275	3280	Trace	COAL: as above.
		20	CLAYTONE: as above.
		20	SILTSTONE: as above.
		40	SANDSTONE: clear to translucent, very fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, disseminated pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil.
3280	3283.0 (TD)	20	CLAYTONE: as above.
		20	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, very fine to occasionally coarse, poorly sorted, sub angular to sub rounded, trace white argillaceous matrix, disseminated pyrite cement, trace nodular pyrite, loose, fair inferred porosity. FLUORESCENCE: Nil. TNA A15A TD criterion: Rathole logging of 60.0 metres MD below the TI OOWC. T1 OOWC at (-2012.5 mTVDSS) = 2043.8 mTVDRT = 3207.5 mMDRT. TD = 3207.5 + 60.0 = 3267.5 mMDRT. Decided to drill to 3283.0 mMDRT = 2083.4 mTVDRT (-2052.1 mTVDSS) taking into consideration the Casing Tally. TNA A15A reached a TD of 3283.0 mMDRT = 2083.4 mTVDRT = (-2052.1 mTVDSS) at 12:15 hrs 07 December 2004. CBU. POOH. BOP stack test. Wiper Trip. Trip gas 23 units at 09:50 hrs, 09 December 2004. Last circulation at 12:10 hrs 09 December 2004. Start POOH at 12:20 hrs 09 December 2004 for Reeves Wireline Logging.
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 A15A Lithology / Show Descriptions

Interval (m)			
From	To	%	Lithology / Show Description

Logging Interval (Drilling Program: Section 10)

Reeves Logging:

At Logging speed from TD to 80 mTVDRT above the TOL.

At Tripping speed from 80 mTVDRT above the TOL to surface.

Top of Latrobe= 1875.0 mMDRT = 1335.5 mTVDRT
- 80.0 mTVDRT
= 1255.5 mTVDRT

= 1723.8 mMDRT.

At **Logging speed** from TD (**3283.0 mMDRT**) to **1755.0 mMDRT**.

At Tripping Speed from 1755.0 mMDRT to Surface.

APPENDIX 4a

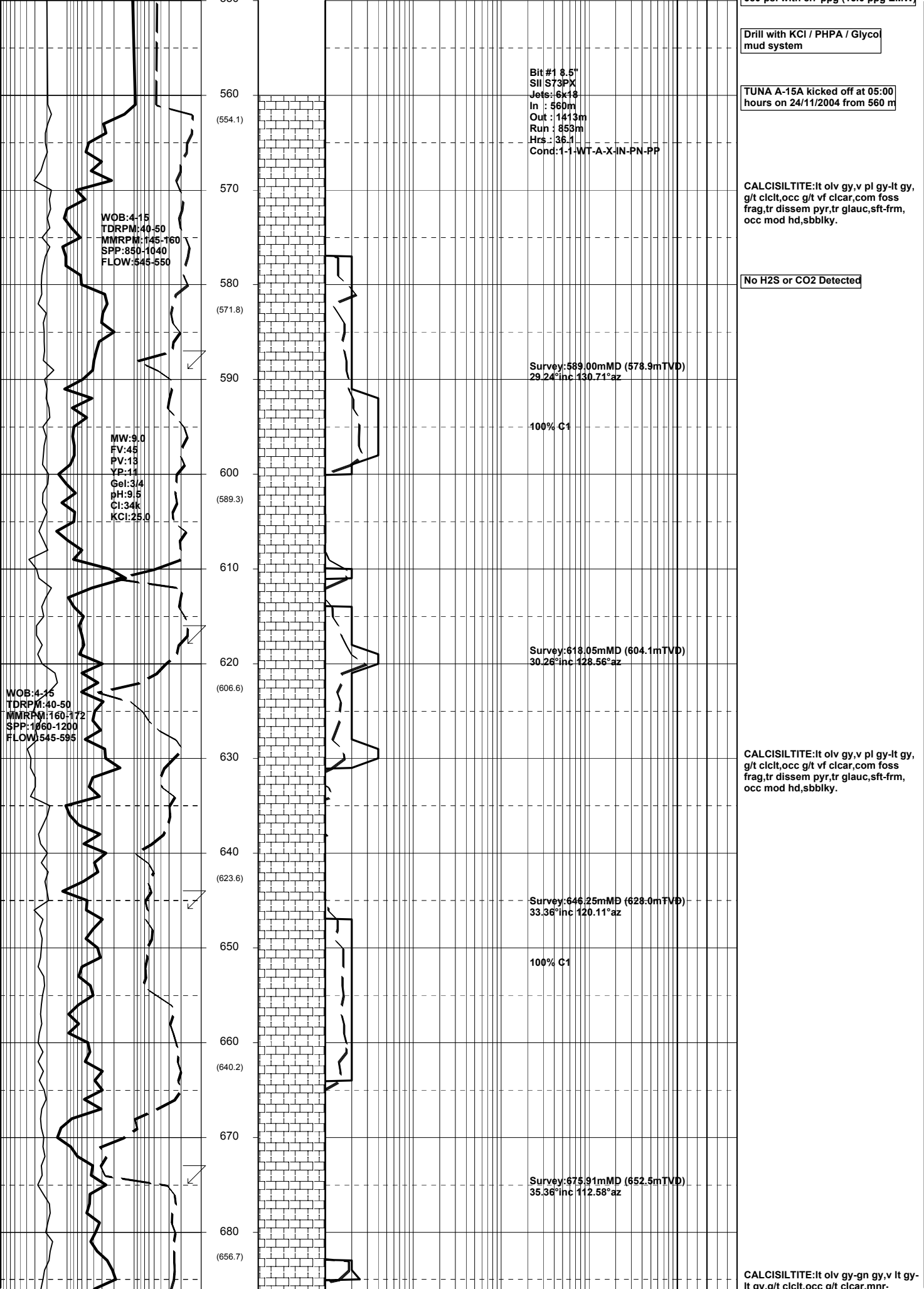
TUNA A-15A

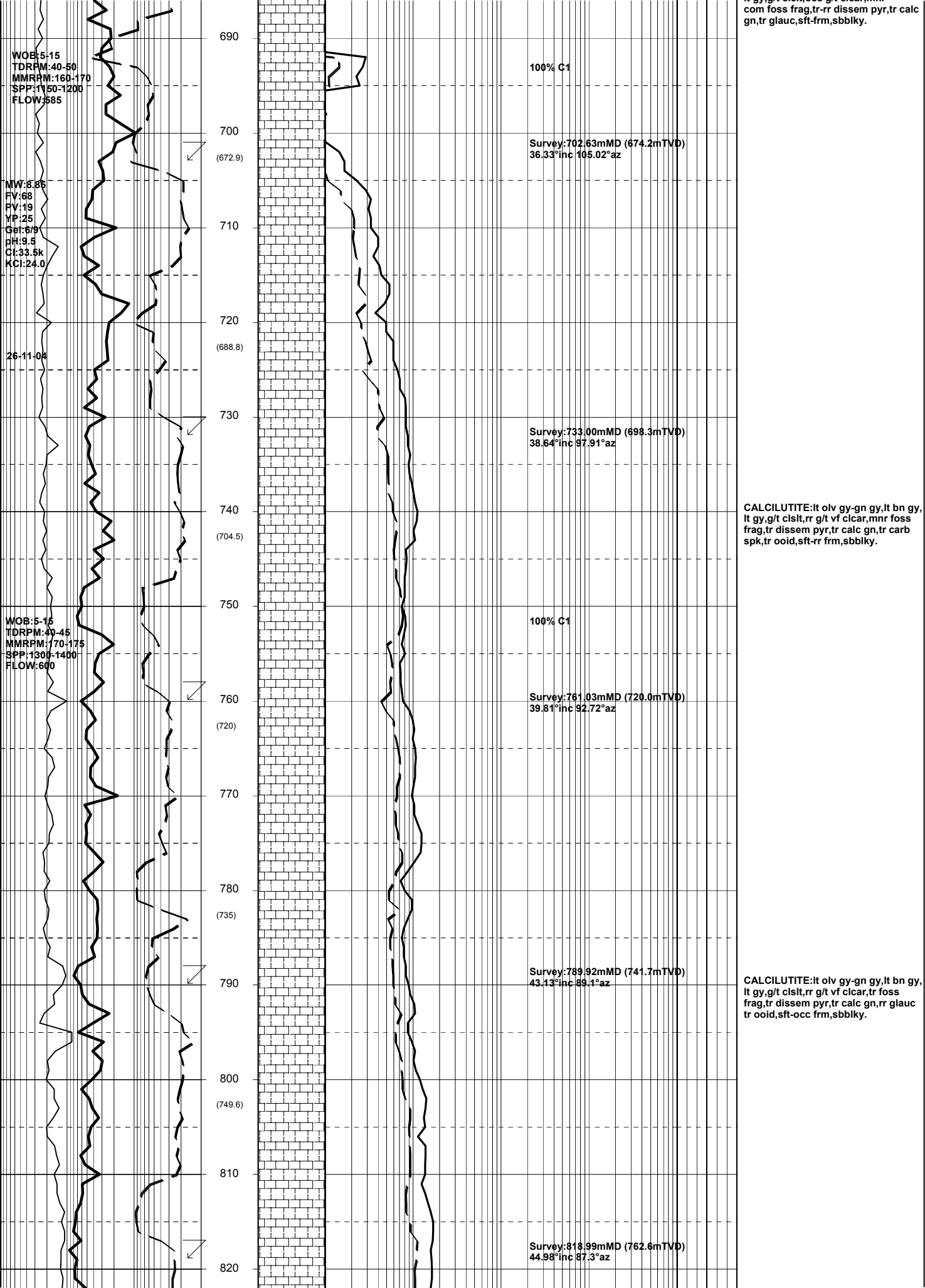
Mud Log

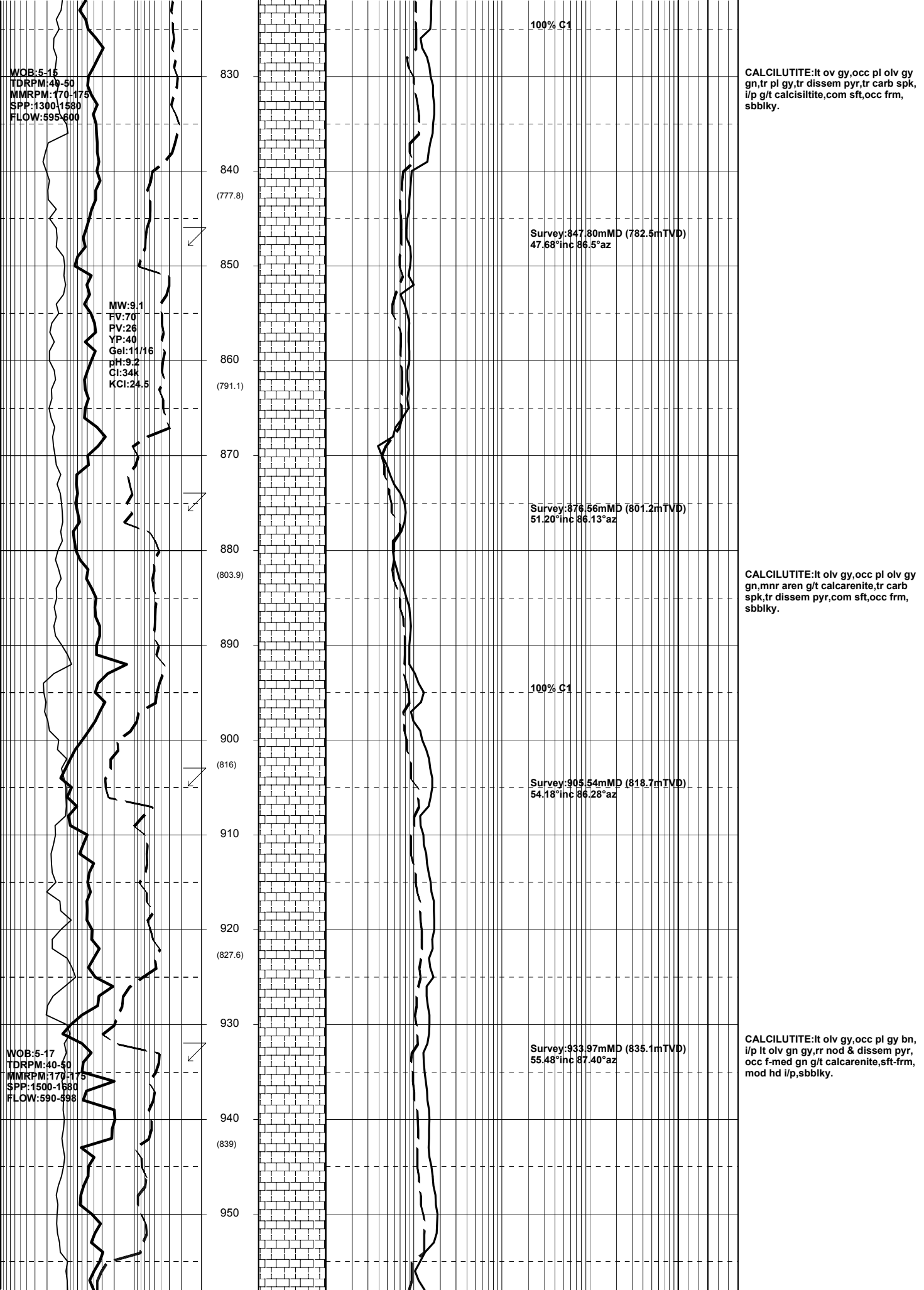


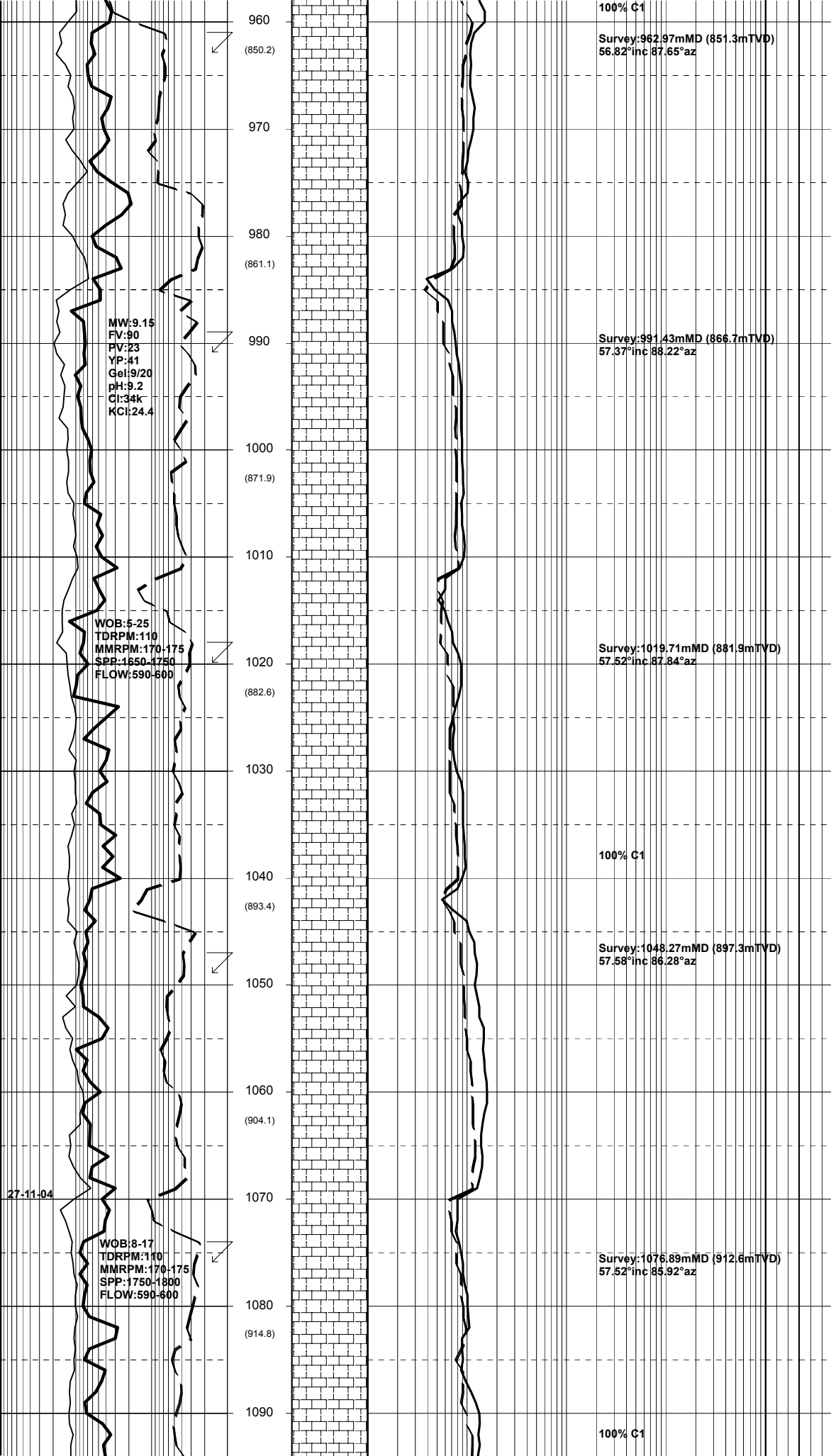
ROP (m/hr)				DEPTH (m) (TVD)	CUTTINGS LITHOLOGY	TOTAL GAS & CHROMATOGRAPH DATA						CUT FLUOR	DIRECT FLUOR	LITHOLOGICAL DESCRIPTIONS and REMARKS								
WOB (tons)						%	C1	C2	C3	iC4	nC4				iC5	TG						
MWD Gamma Ray (api)																	Total Gas in Units Chromatograph in Percent					
																	.5	5	50	500	5K	
500	50	5	.5	0	100	.01	.1	1	10	100	good	fair	poor									
				500											<div>PREVIOUS WELL HISTORY Plugged & Abandoned November, 2000</div> <div>13-3/8" Surface Casing 736.0mKB 9 5/8" Intermediate Casing 1965.0mKB 7" Production Liner 2542mKB</div> <div>9 5/8" casing cut and pulled from 573.0mKB. EZSV set on cement plug at 555.0mKB</div> <div>13 3/8" Whipstock set at 552.0mKB 12 1/4" Window milled from 542.5mKB to 554.0mKB. Rat hole drilled from 554.0mKB to 560.0mKB</div> <div>PIT @ 560mMD 542mTVD: 580 psi with 8.7 ppq (15.0 ppq EMW)</div>							
				510																		
				520																		
				530																		
				540																		
				550																		

Window Depth 542.5m (TVD 536.81m)



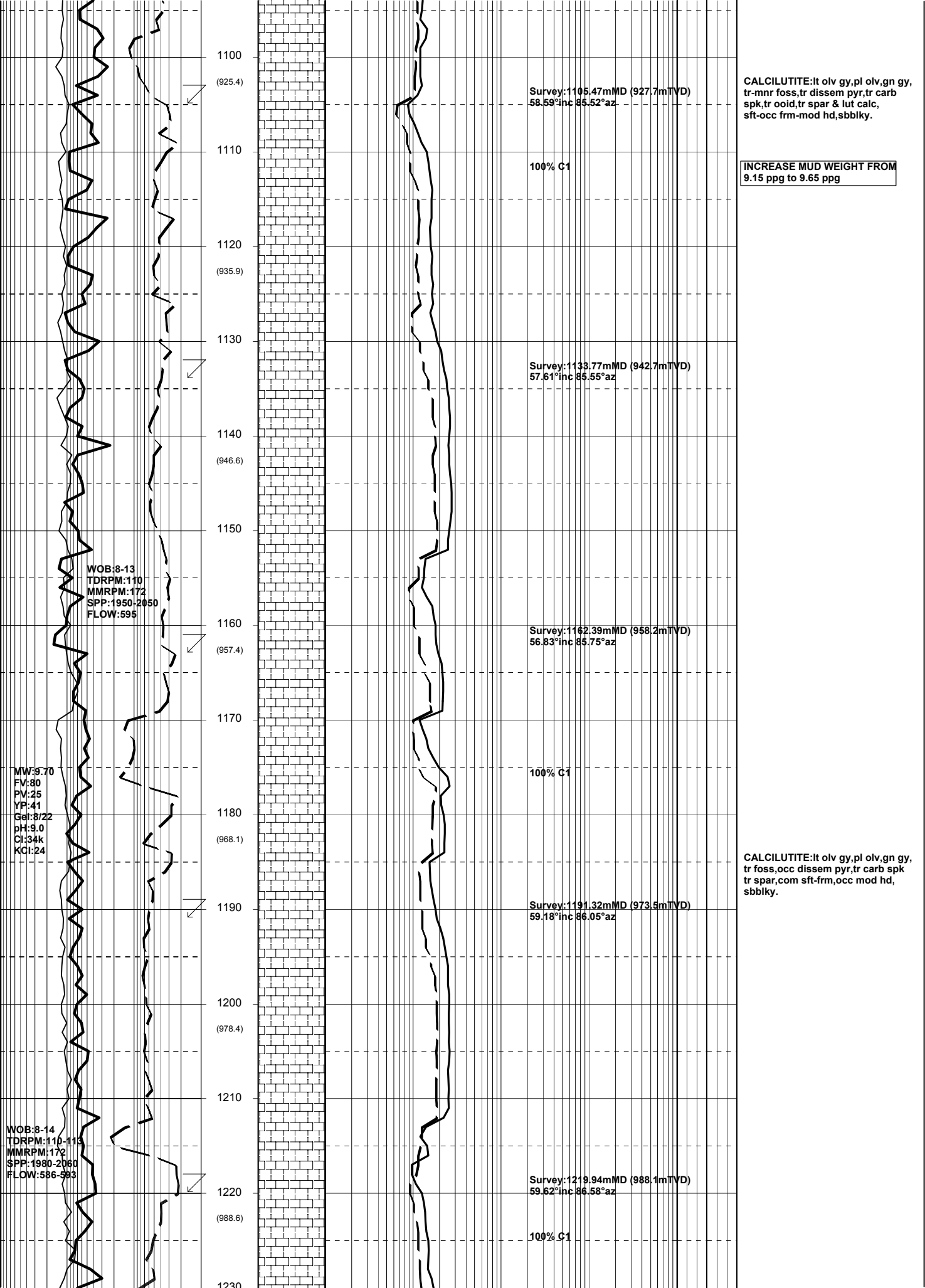


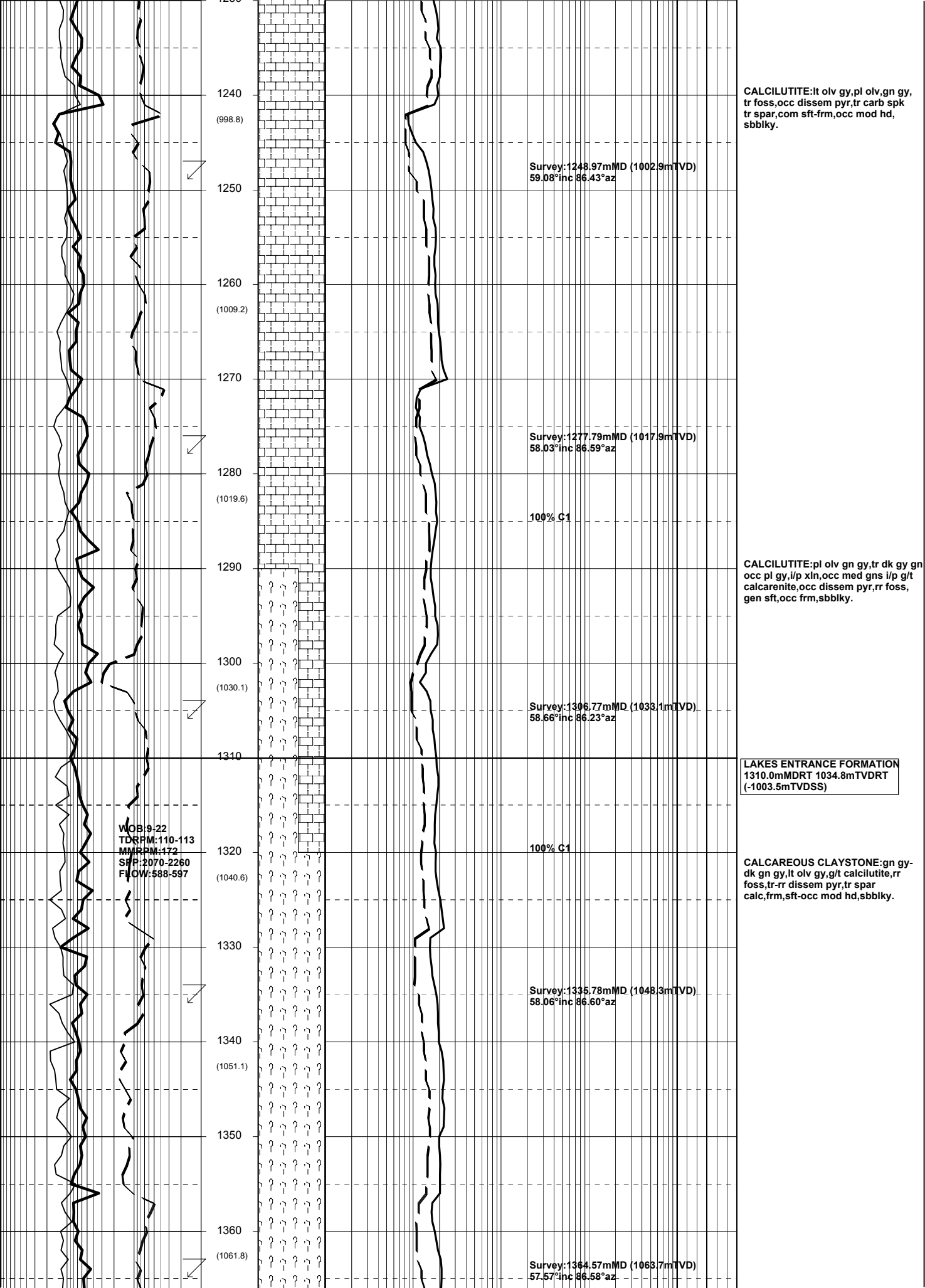


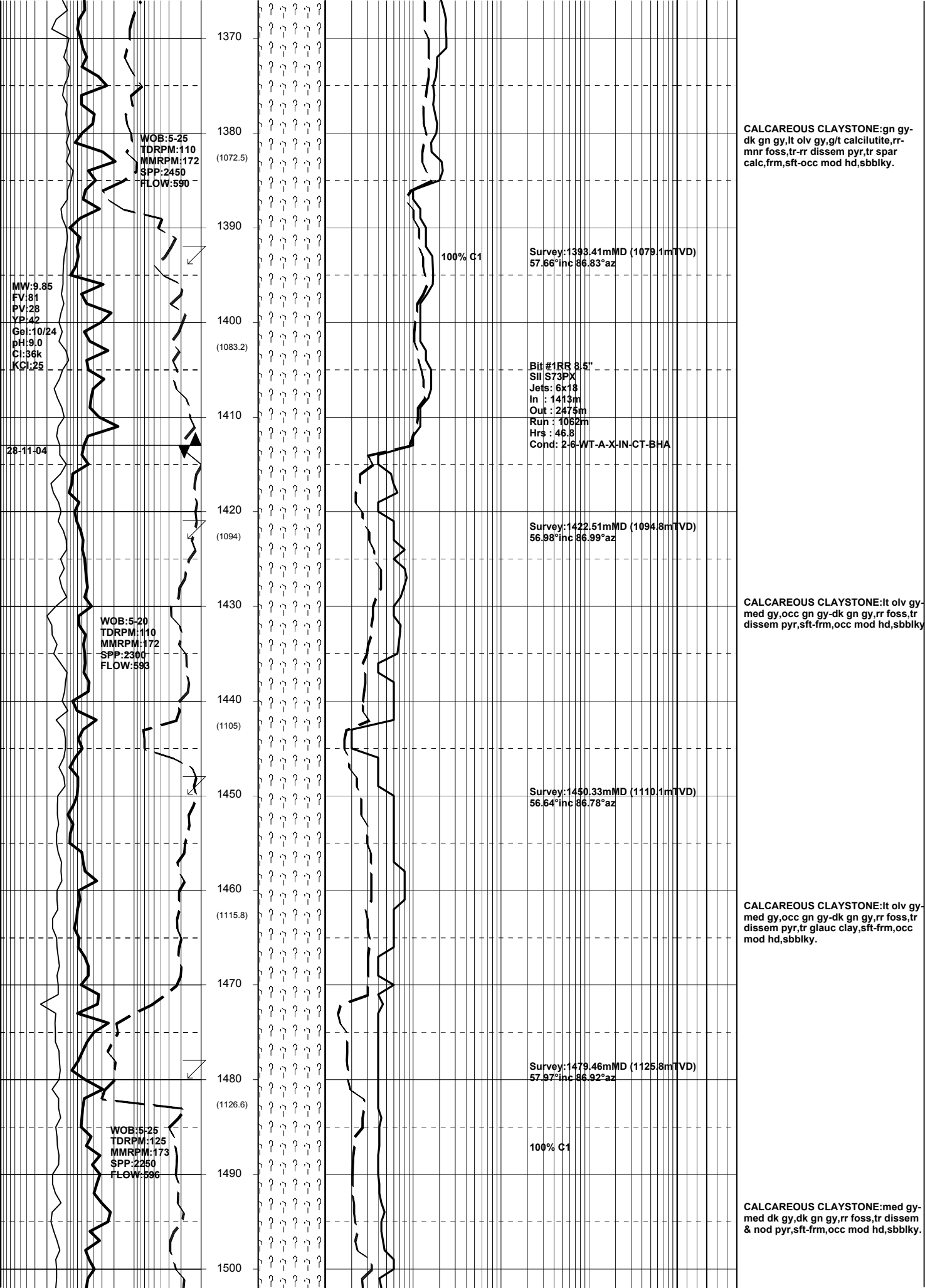


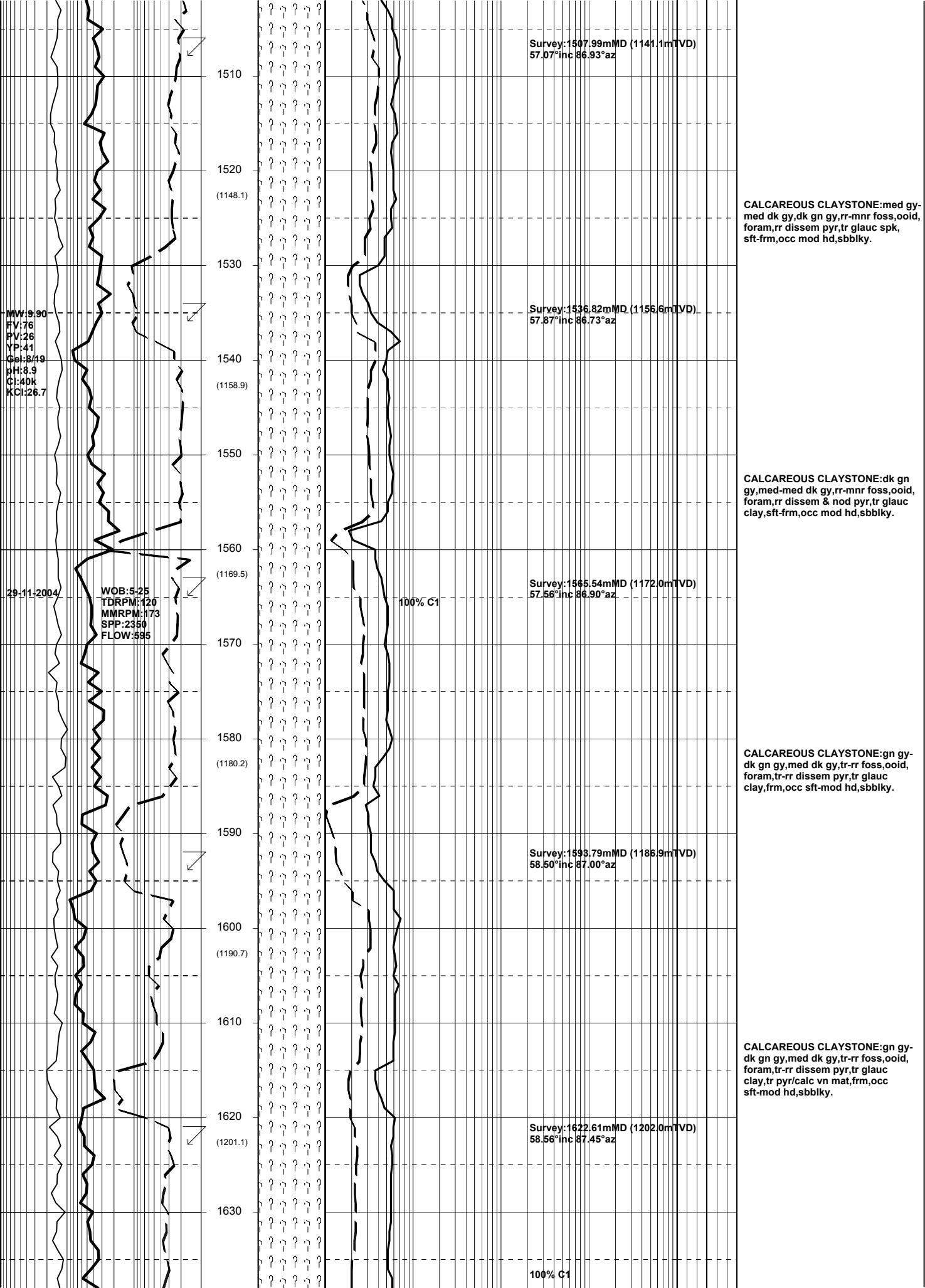
CALCILUTITE:gn gy,lt olv gy,med lt gy,dk gn gy,mnr-com foss,tr glauc,tr carb spk,tr dissem pyr,tr spar & lut calc,sft-frn,tr hd,sbbiky-rr blkly.

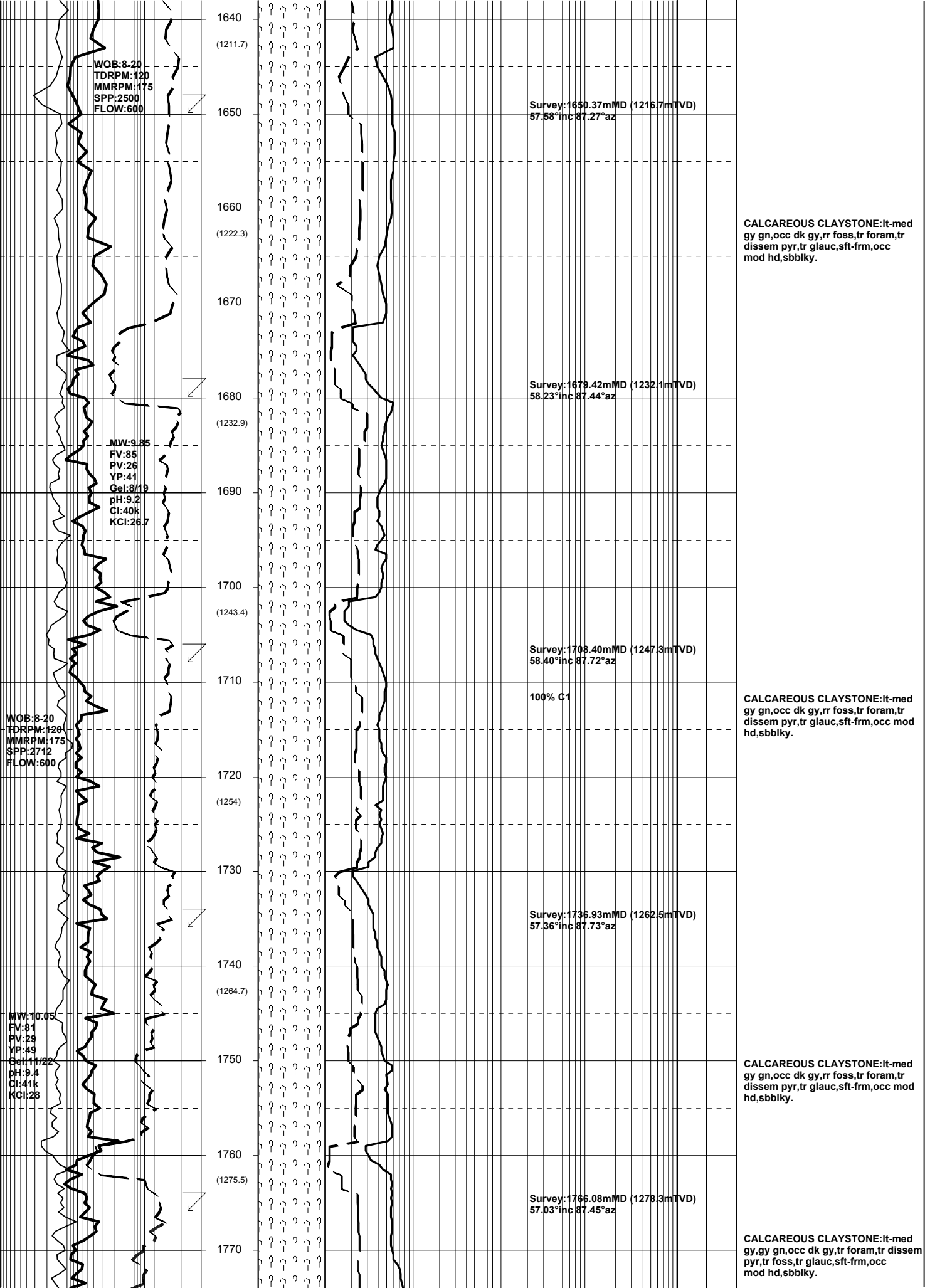
CALCILUTITE:lt olv gy,pl olv,gn gy, tr-mnr foss,tr dissem pyr,tr glauc, tr carb spk,tr ooid,tr spar calc, sft-occ frn-mod hd,sbbiky.

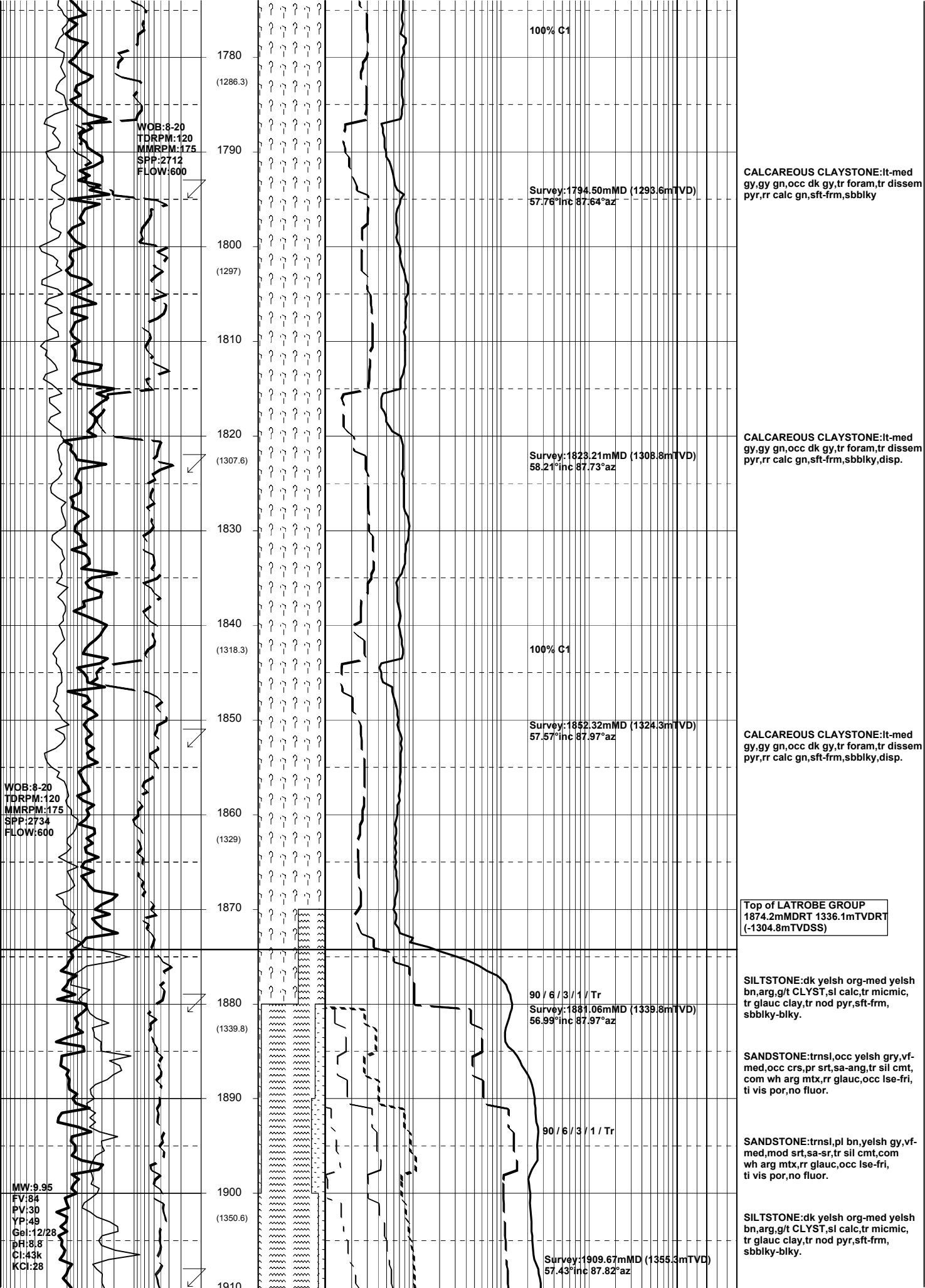


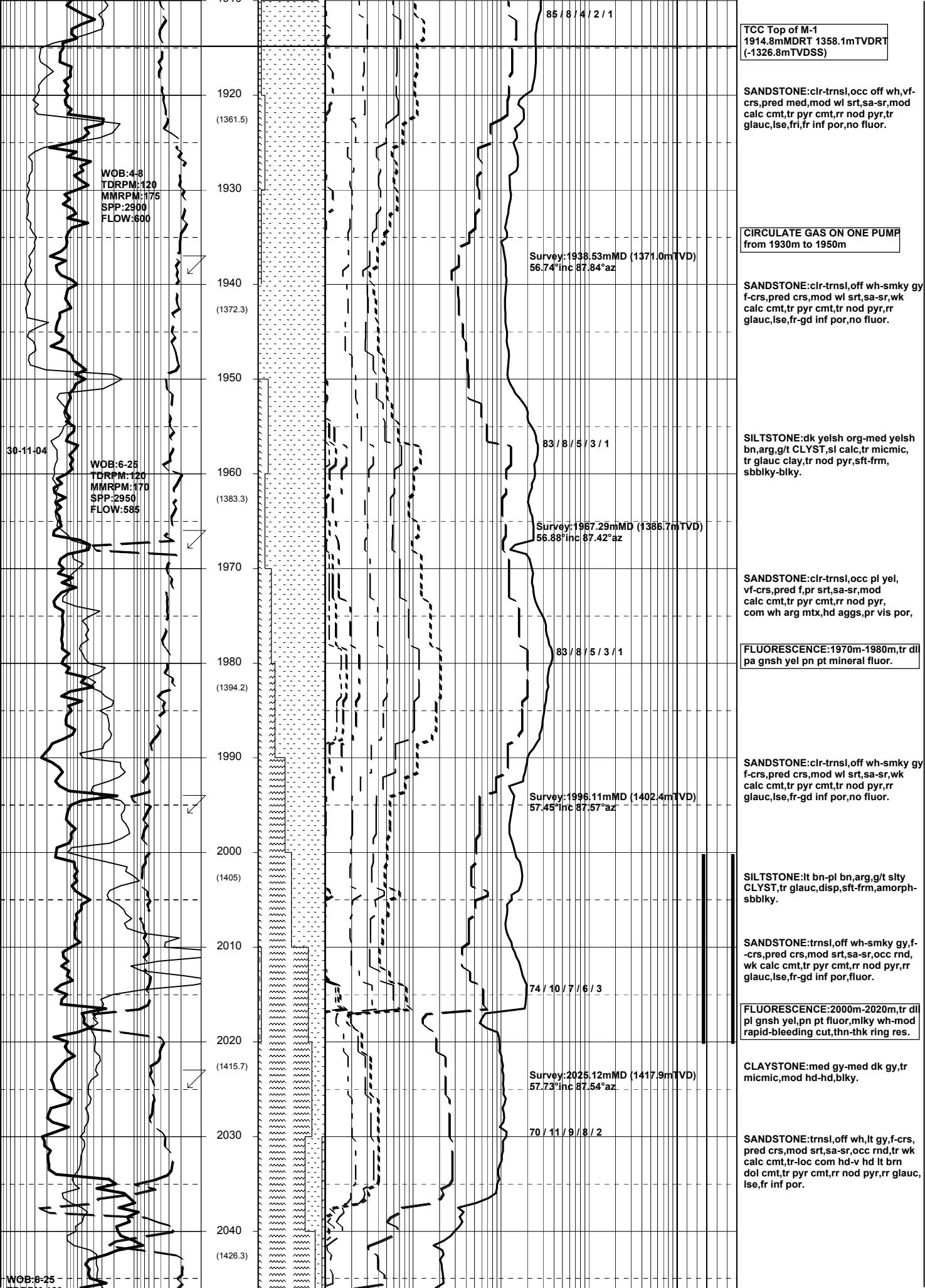












MRPM:120
MMRPM:170
SPP:2993
FLOW:585

MW:10.0
FV:84
PV:28
YP:47
Gel:11/24
DH:8.9
CI:43.5k
KCI:28

WOB:6-25
TDRPM:122
MMRPM:170
SPP:3064
FLOW:585

2050
2060
(1436.9)
2070
2080
(1447.4)
2090
2100
(1458.1)
2110
2120
(1468.8)
2130
2140
(1479.5)
2150
2160
(1490.1)
2170
2180

Survey:2053.16mMD (1433.0mTVD)
58.36°inc 87.19°az

80 / 5 / 6 / 6 / 3

Survey:2082.42mMD (1448.2mTVD)
58.95°inc 87.55°az

Survey:2111.01mMD (1468.5mTVD)
57.37°inc 87.61°az

84 / 5 / 7 / 3 / 1

Survey:2139.60mMD (1478.8mTVD)
57.95°inc 86.56°az

83 / 4 / 6 / 6 / 1

Survey:2168.77mMD (1494.2mTVD)
58.27°inc 86.43°az

SILTSTONE:lt bn-pl bn,arg,g/t slty
CLYST,tr glauc,disp,sft-frm,loc-5%
hd-v hd dol cmt & incl.

SANDSTONE:trnsi,off wh,lt gy,vf-f,
mod srt,sa-sr,occ md,tr wk
calc cmt,tr-loc com hd-v hd lt brn
dol cmt,tr pyr cmt,rr nod pyr,rr glauc,
lse,fr inf por,,

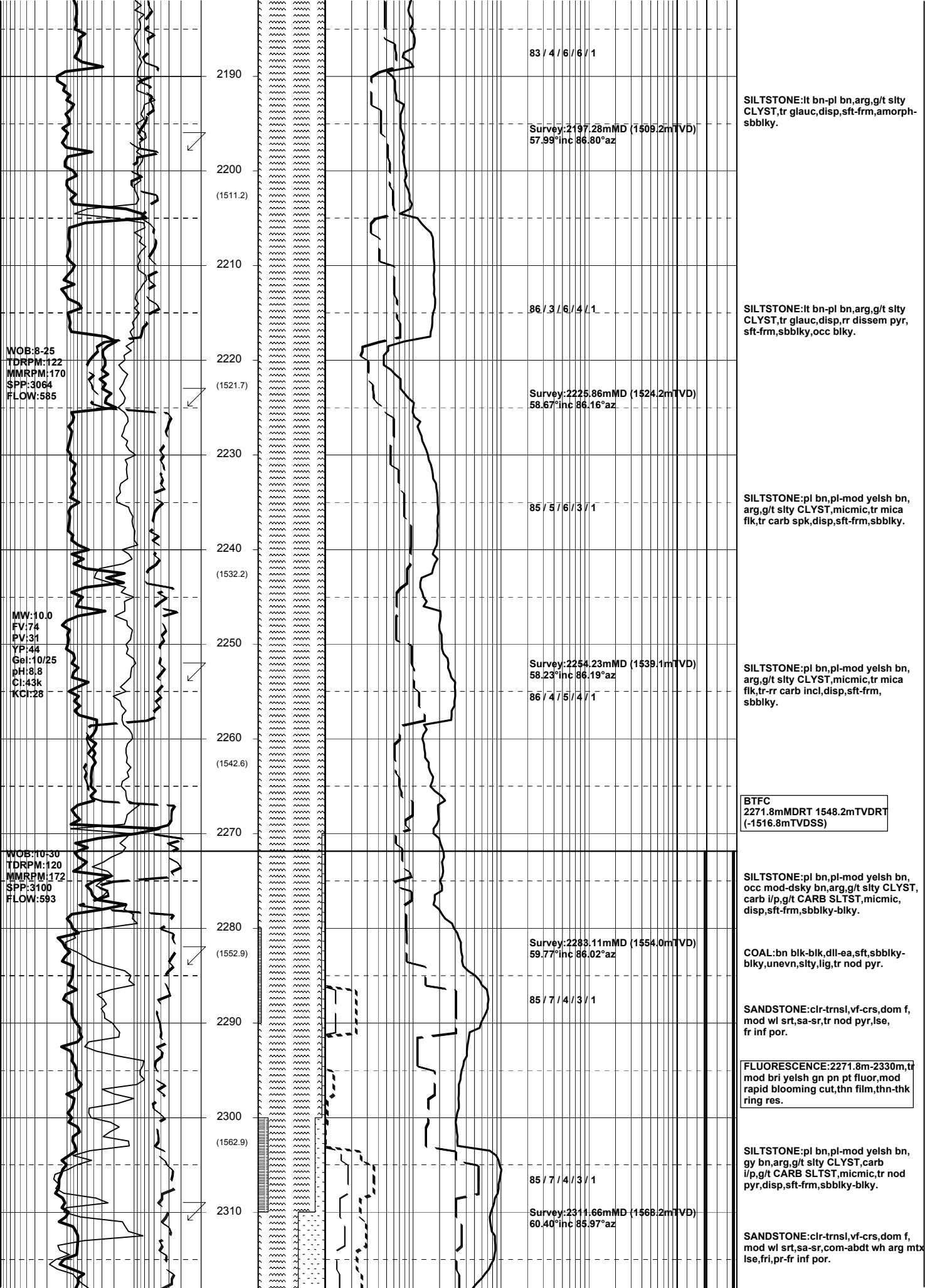
SILTSTONE:lt bn-pl bn,arg,g/t slty
CLYST,tr glauc,disp,sft-frm,amorph-
sbbiky.

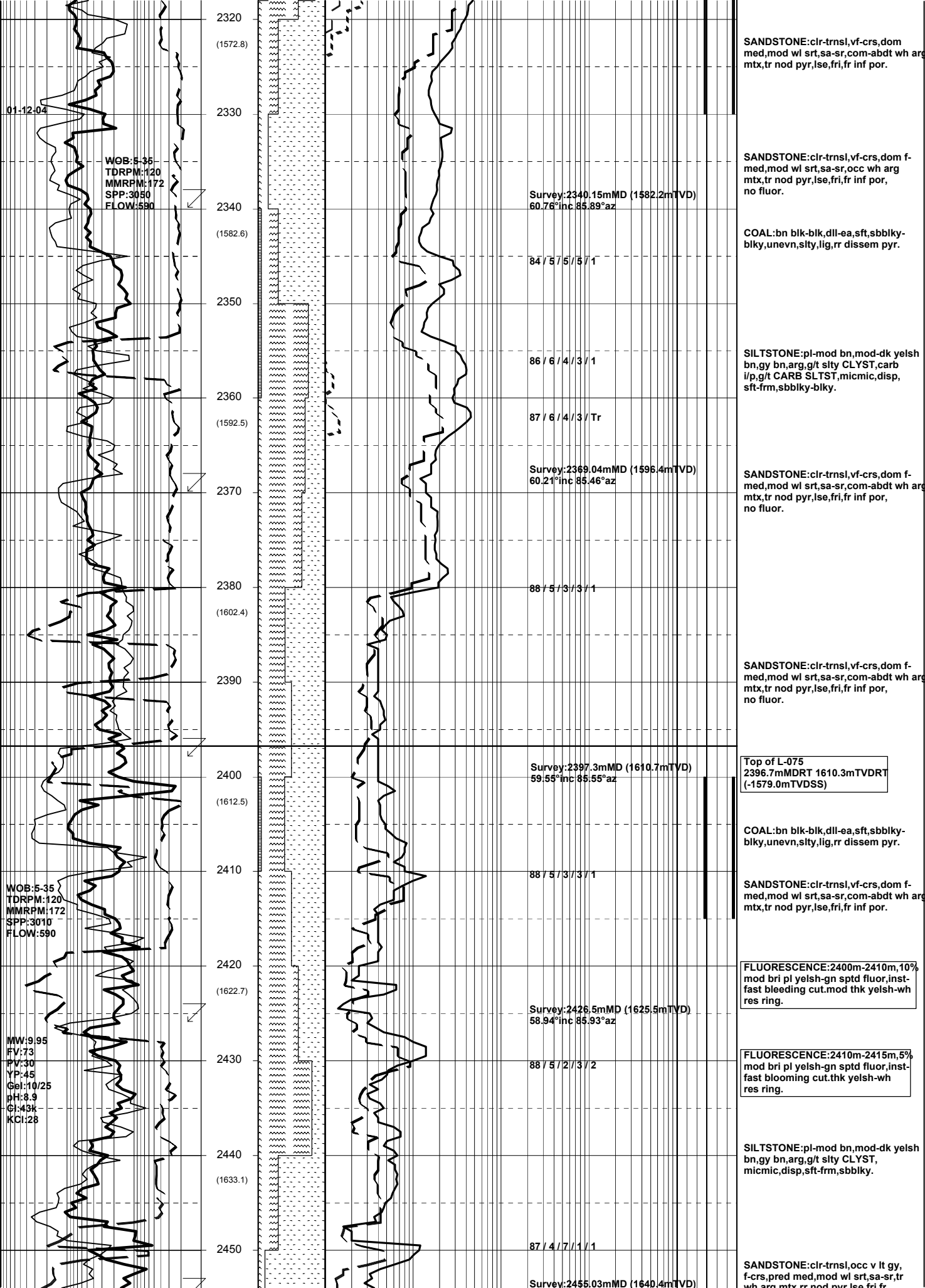
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CLYST,tr glauc,disp,sft-frm,amorph-
sbbiky.

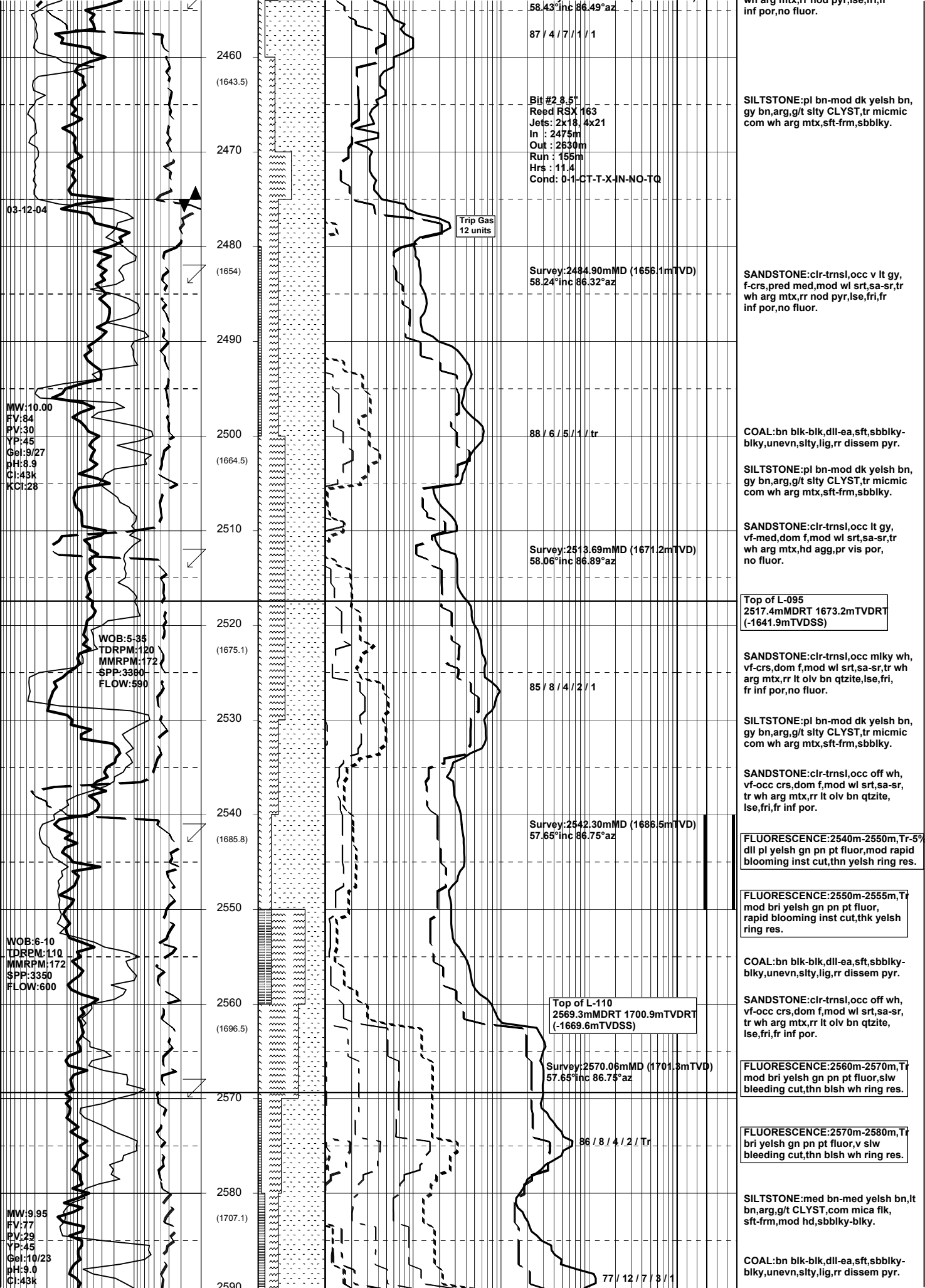
SILTSTONE:lt bn-pl bn,arg,g/t slty
CLYST,tr glauc,disp,sft-frm,amorph-
sbbiky.

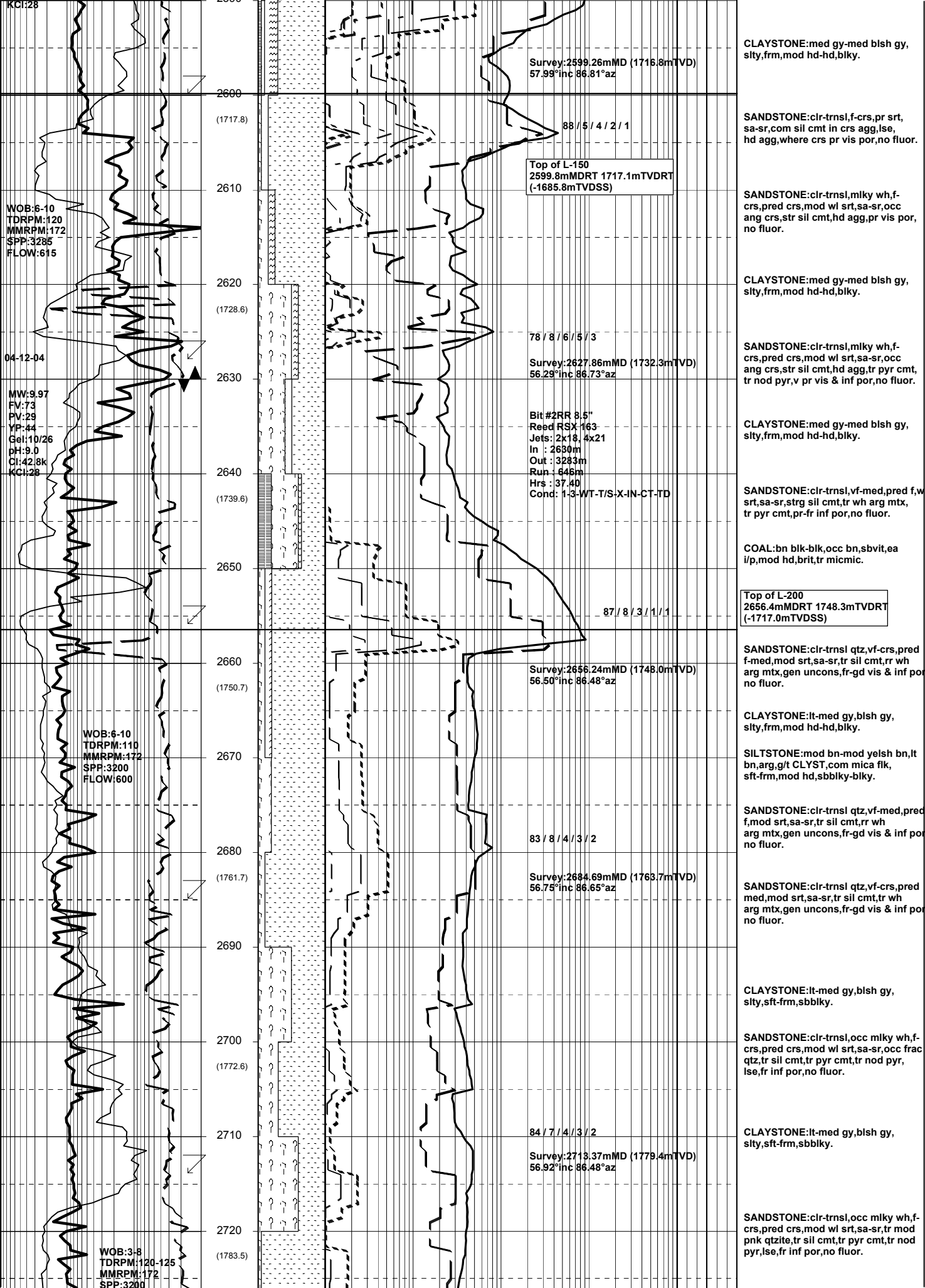
SILTSTONE:lt bn-pl bn,arg,g/t slty
CLYST,tr glauc,disp,sft-frm,amorph-
sbbiky.

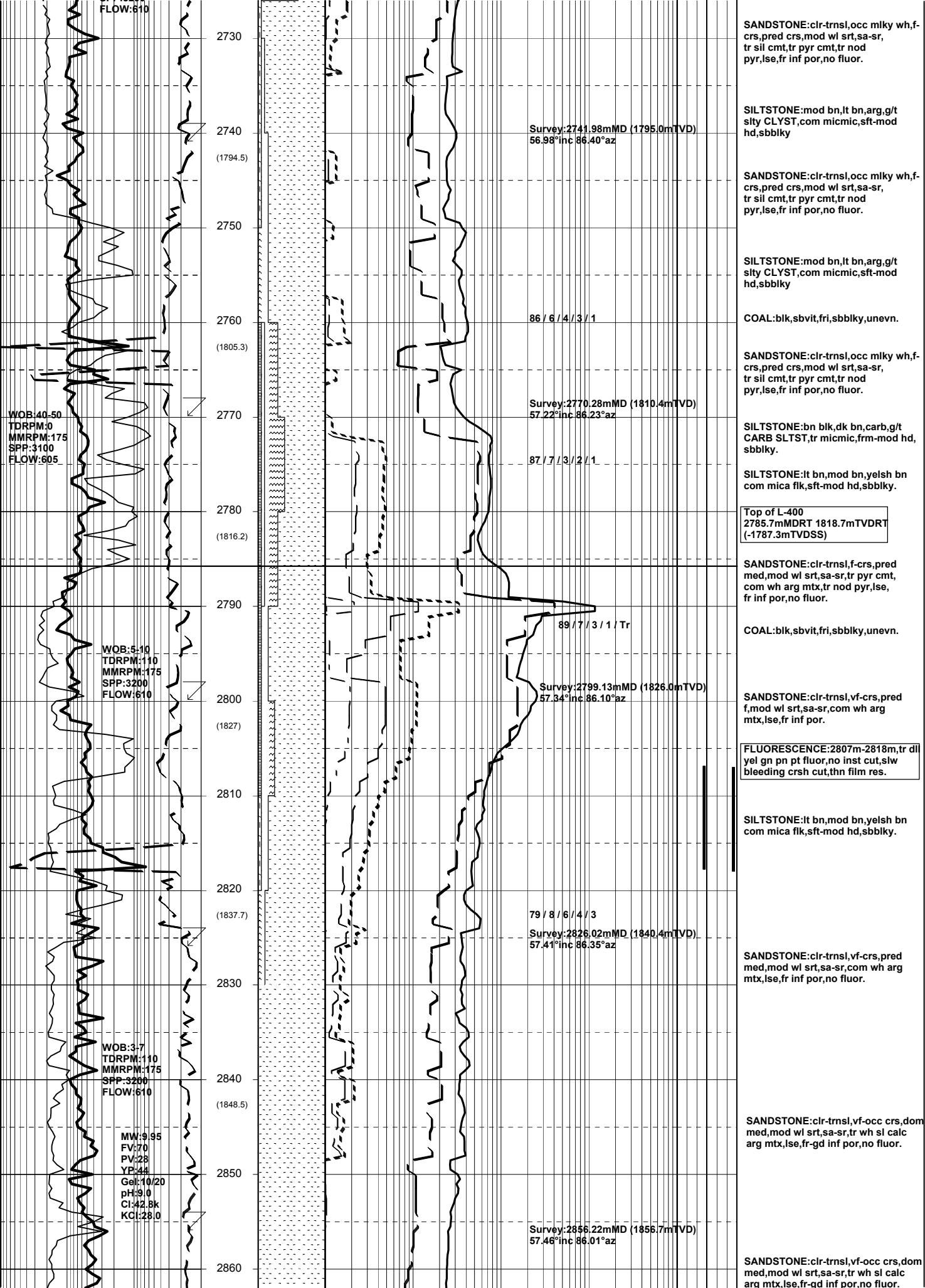
SILTSTONE:lt bn-pl bn,arg,g/t slty
CLYST,tr glauc,disp,sft-frm,amorph-
sbbiky.

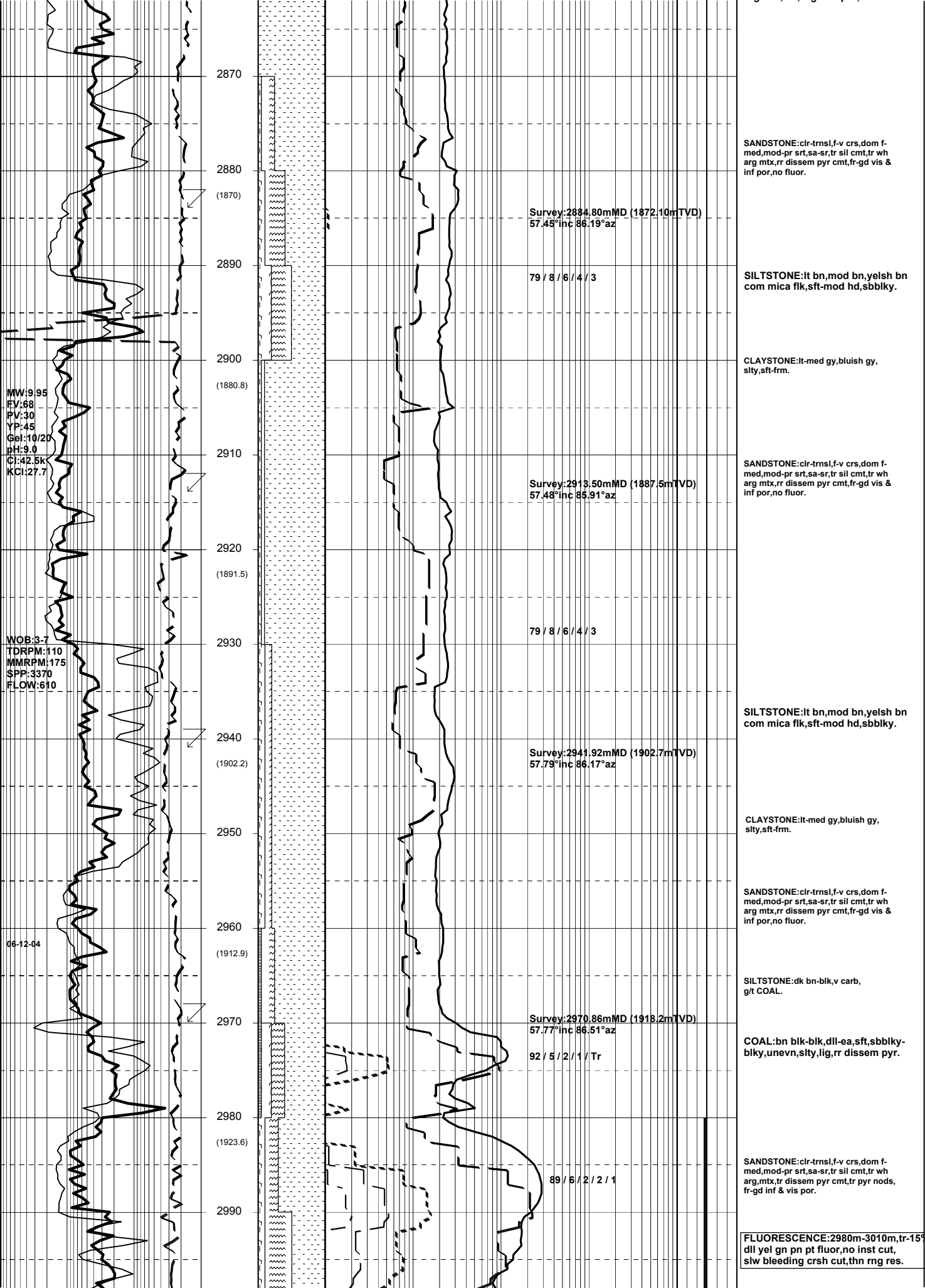


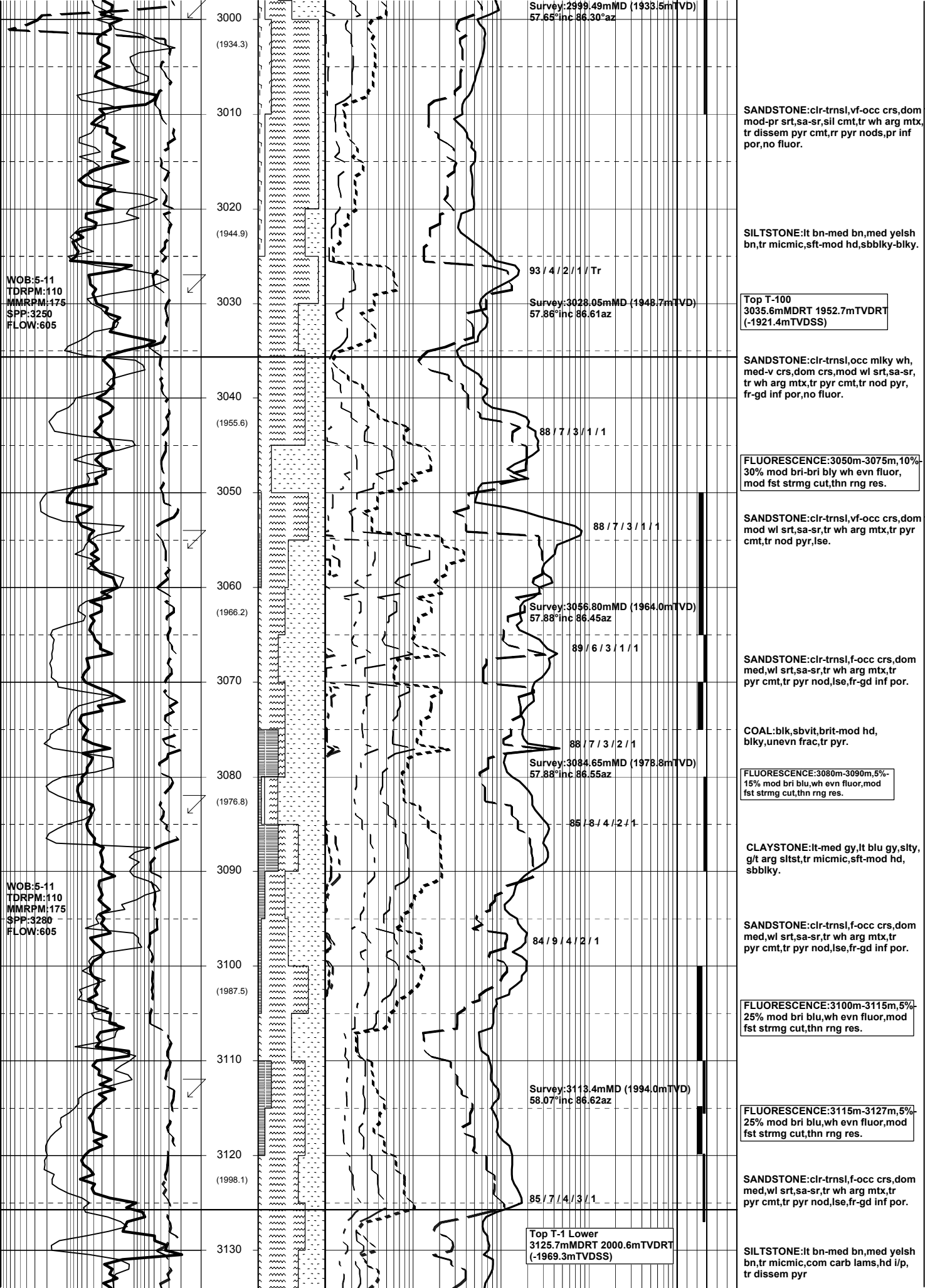


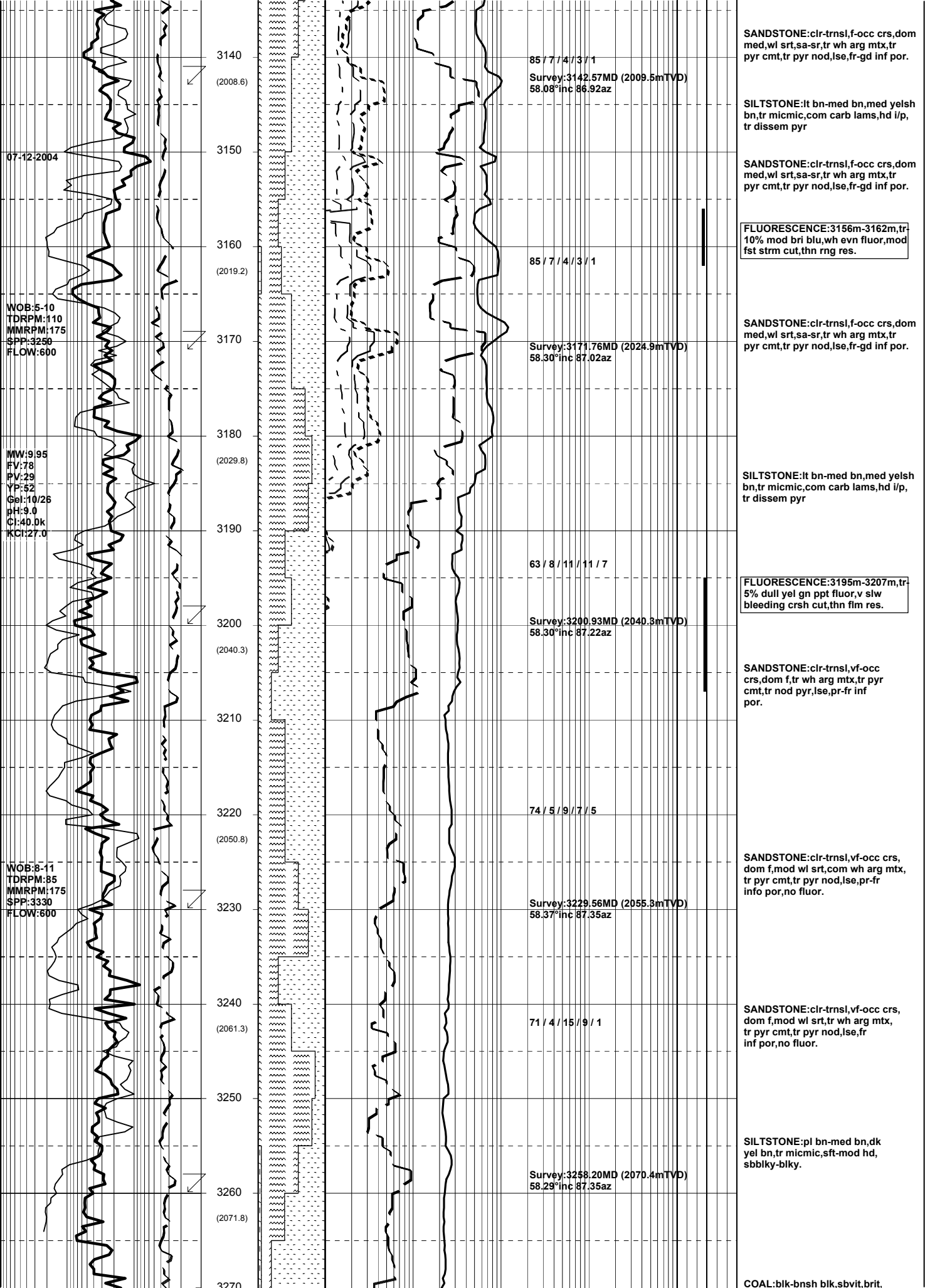


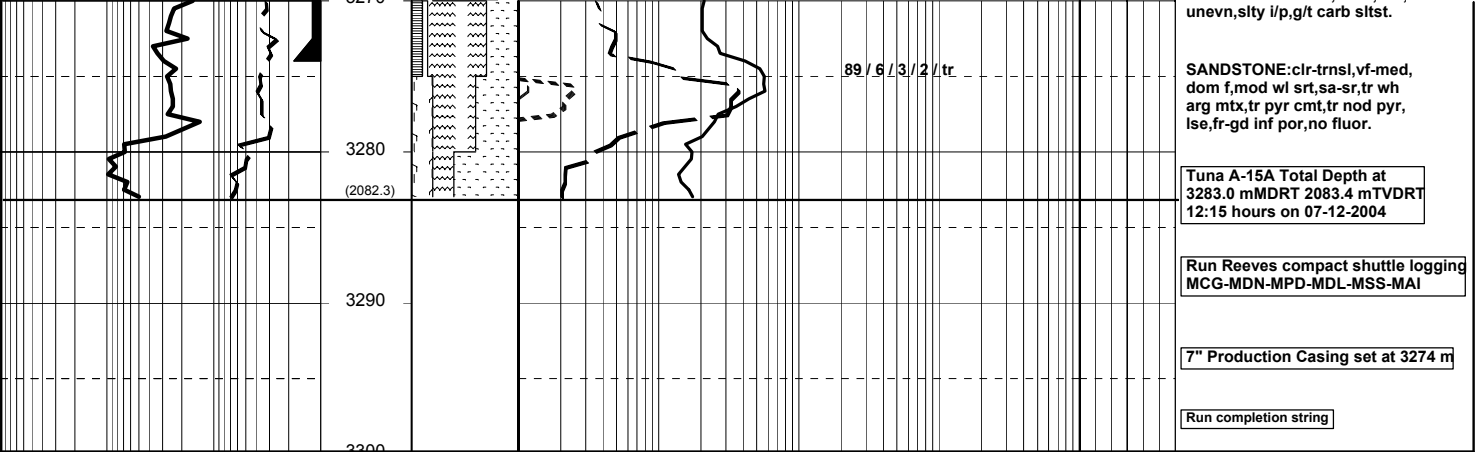












APPENDIX 4b

TUNA A-15A

Well Completion Log

Scale – 1:200

Gippsland Basin, Victoria
Concession: VIC/L9

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

TA

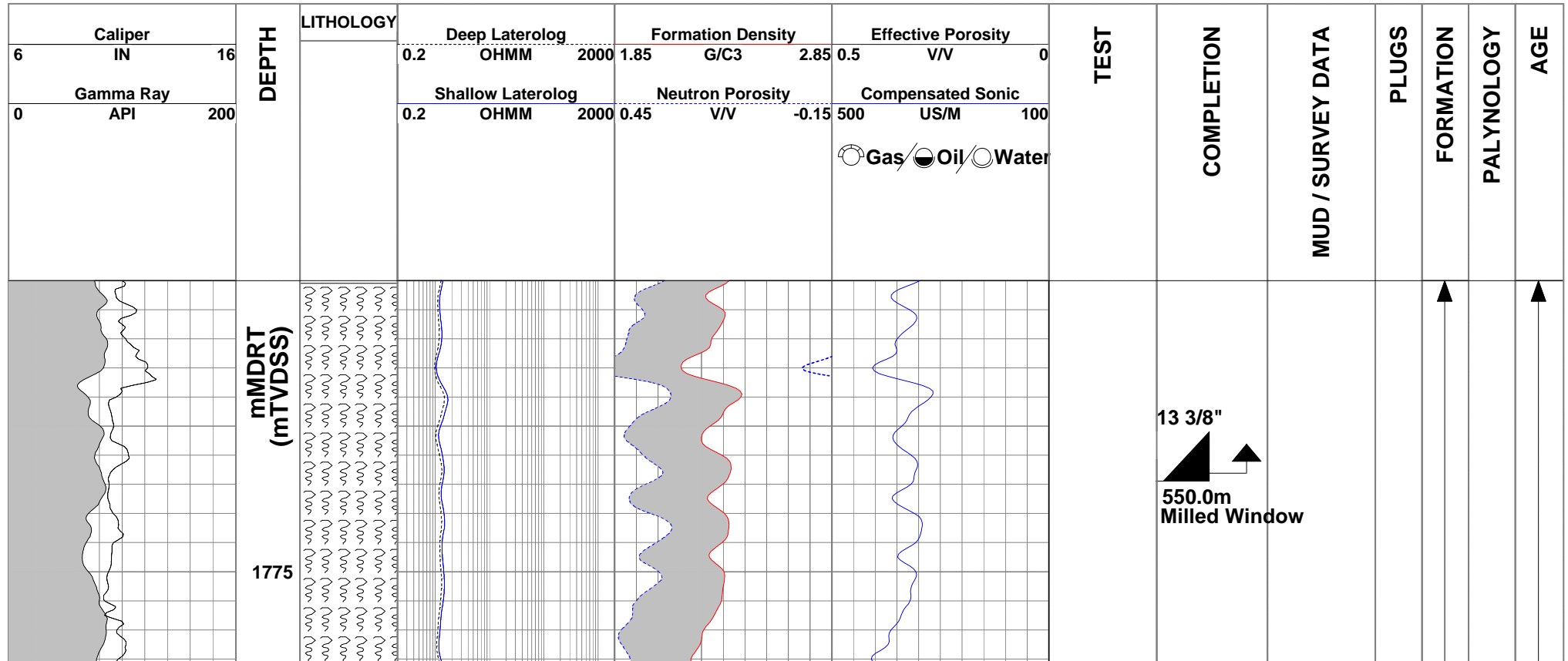
Foram

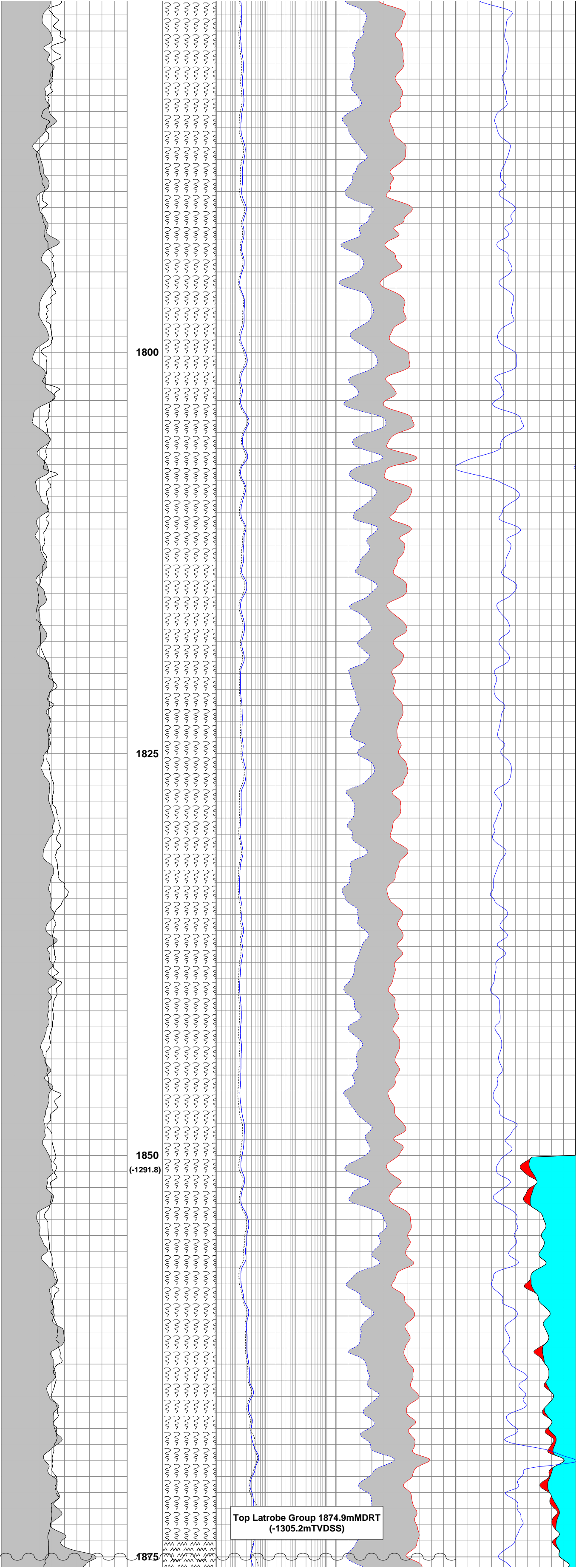
LOGGING AND SURVEYING				
Anadrill Schlumberger		Interval (mMDRT)	Reeves	Interval (mMDRT)
MWD (Directional & GR) – 4 Runs		560.0 - 3258.2	MCG-MDN-MPD-MSS-MDL	543.10 -3273.75
Date	25/11/04 -28/11/04	28/11/04 -02/12/04	02/12/04 -04/12/04	04/12/04- 07/12/04
Run	MWD #1	MWD #2	MWD #3	MWD #4
Log	Powerpulse Directional & GR	Powerpulse Directional & GR	Powerpulse Directional & GR	Powerpulse Directional & GR
Depth Driller	1413.0 mMDRT	2475.0 mMDRT	2630.0 mMDRT	3283.0 mMDRT
Depth Logger	1413.0 mMDRT	2475.0 mMDRT	2630.0 mMDRT	3283.0 mMDRT
Bottom Log Interval	1413.0 mMDRT	2475.0 mMDRT	2630.0 mMDRT	3258.2 mMDRT
Top Log Interval	560.0 mMDRT	1413.0 mMDRT	2475.0 mMDRT	2630.0 mMDRT
Casing Driller	552.0 mMDRT	552.0 mMDRT	552.0 mMDRT	552.0 mMDRT
Casing Logger	----	----	----	----
Casing Size	13 3/8"	13 3/8"	13 3/8"	13 3/8"
Casing Weight	54.5 ppf	54.5 ppf	54.5 ppf	54.5 ppf
Bit Size	8.5"	8.5"	8.5"	8.5"
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL
Density	9.85 ppg	9.97 ppg	9.95 ppg	10.0 ppg
Rm @ Measured Temp.	N/A	N/A	N/A	N/A
Rmf @ Measured Temp.	N/A	N/A	N/A	N/A
Rmc @ Measured Temp.	N/A	N/A	N/A	N/A
Max. Recorded Temp.	65.21°C	74.51°C	77.65°C	89.42°C
Equipment / Location	Sale	Sale	Sale	Sale
Recorded By	A.DeCastro/R. Borjas	A.DeCastro/R. Borjas	A.DeCastro/R. Borjas	A.DeCastro/R. Borjas/D.Hastie
Witnessed By	Trevor Lobo	Trevor Lobo	Trevor Lobo	Trevor Lobo

WELL DATA (Cont.)				
Date	09/12/04-11/12/04			
Run	Wireline Run #1 on shuttle			
Log	MCG-MDN-MPD-MSS-MDL			
Depth Driller	3283.0 mMDRT			
Depth Logger	3283.0 mMDRT			
Bottom Log Interval	3273.75 mMDRT			
Top Log Interval	543.1 mMDRT			
Casing Driller	552.0 mMDRT			
Casing Logger	----			
Casing Size	13 3/8"			
Casing Weight	54.5 ppf			
Bit Size	8.5"			
Type of Fluid in Hole	KCI/PHPA/GLYCOL			
Density	9.95 ppg			
Rm @ Measured Temp.	0.122 ohmm @ 25°C			
Rmf @ Measured Temp.	0.089 ohmm @ 25°C			
Rmc @ Measured Temp.	0.175 ohmm @ 25°C			
Max. Recorded Temp.	85.60°C			
Equipment / Location	Sale			
Recorded By	G. McManus/R. Tench			
Witnessed By	Trevor Lobo			

CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Shots/ft
----	----	---	3048	3054	MaxR

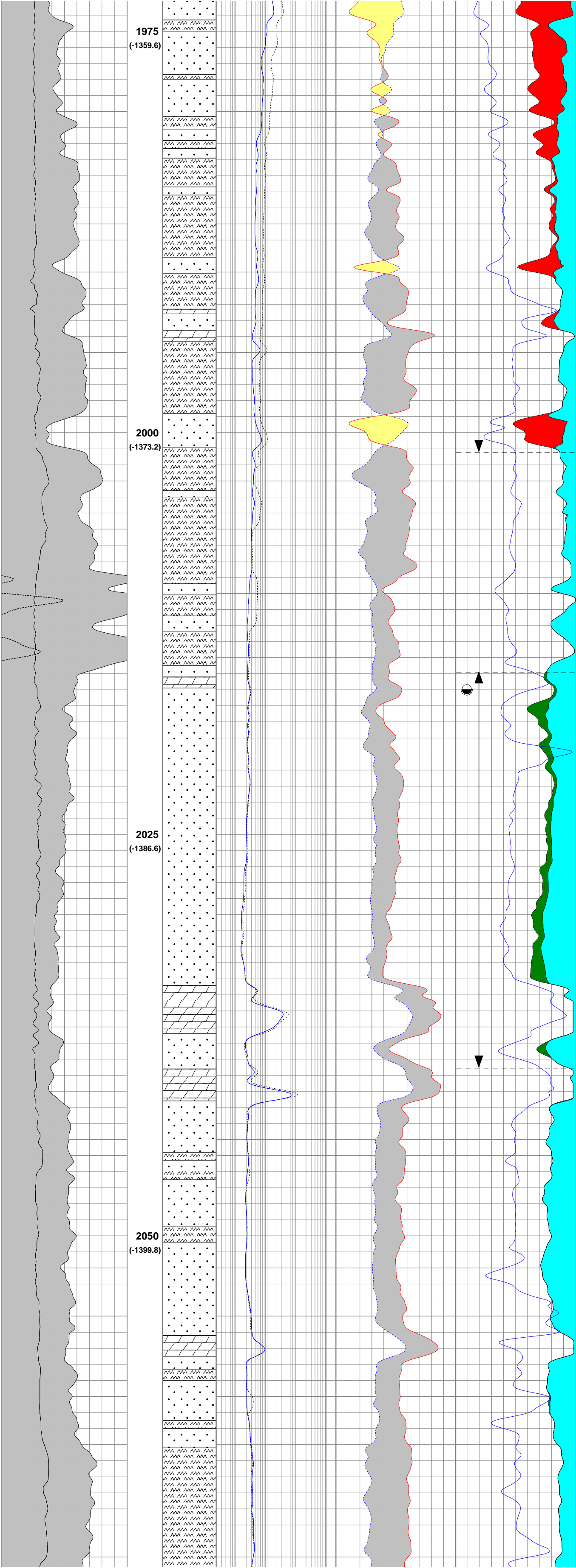
CASING				PLUGS		
Size	Set @ (mMDRT)	Sx Cmt	Formation	From (mMDRT)	To (mMDRT)	Sx Cmt
20"	163.0	---	Gippsland Limestone			
13.375"	550.0 Milled Window	---	Gippsland Limestone	3249.0	3273	
7"	3273.0	652	Latrobe Group			





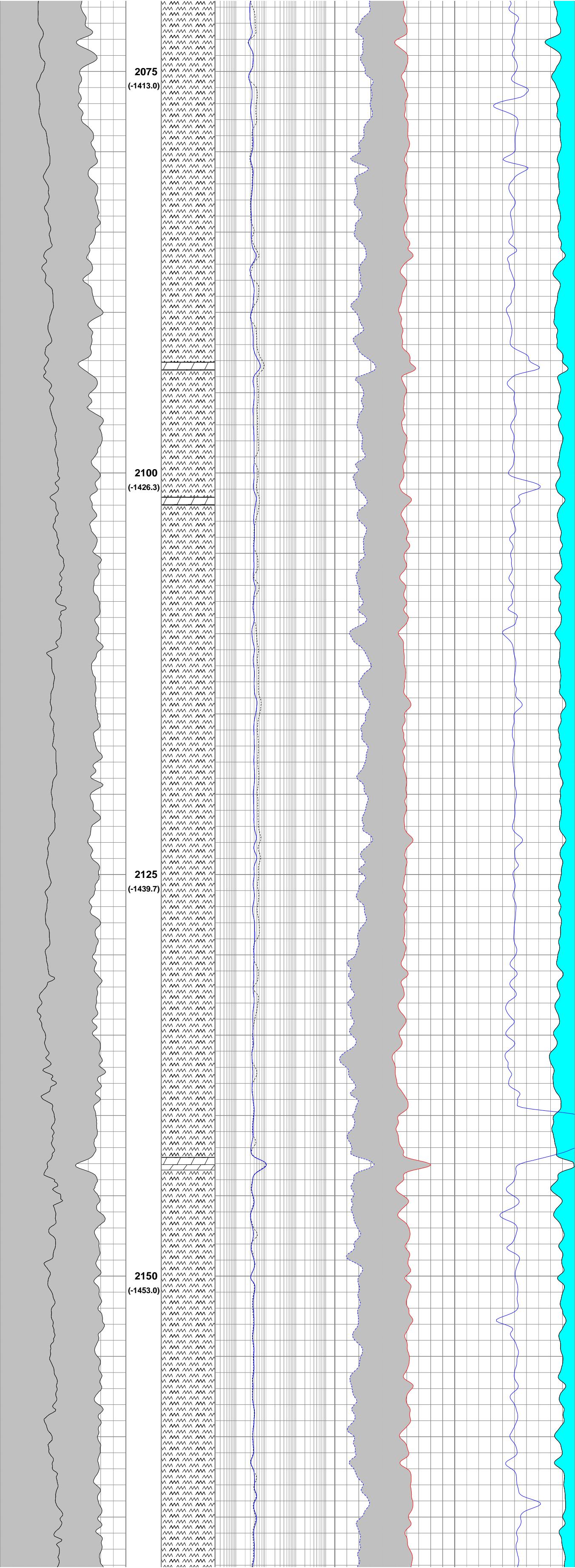
LAKES ENTRANCE FM

OLIGOCENE - MIOCENE

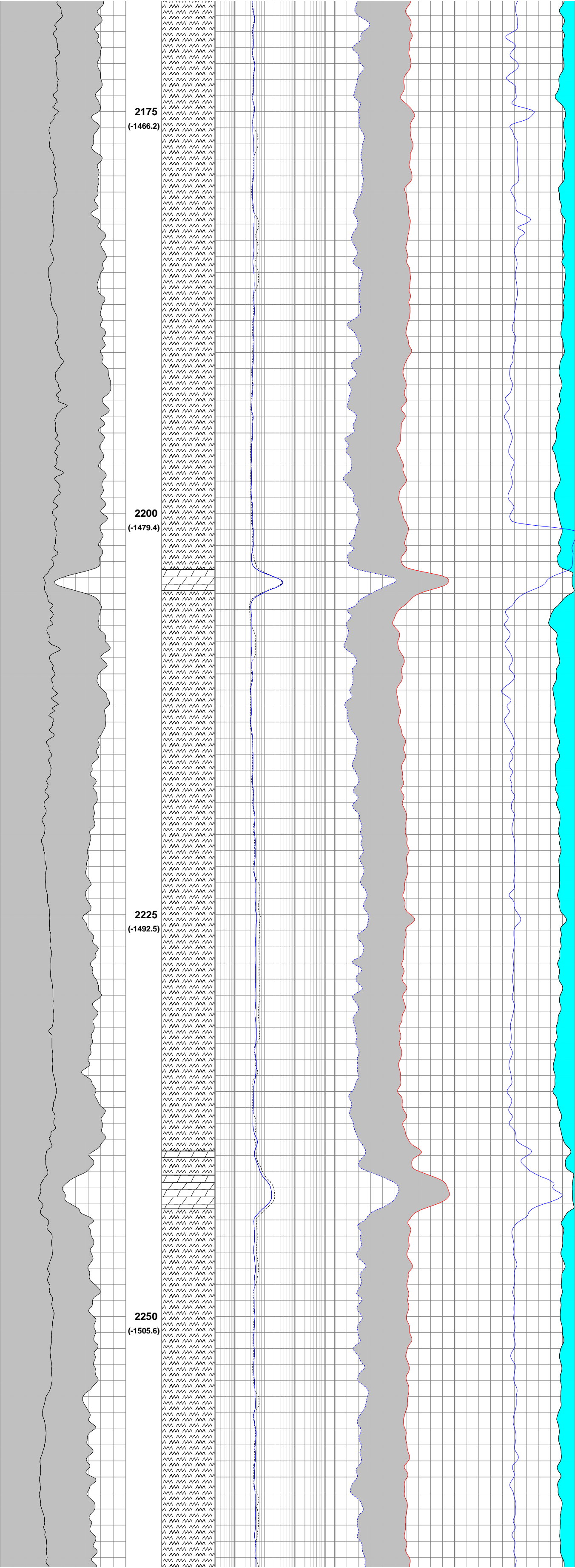


1996.1
ANG 57.4
DIR 87.6
(-1371.1)

2065
MW 10.0ppg
FV 84sec/qt
PV 28cP
YP 47
pH 8.9
KCl 28

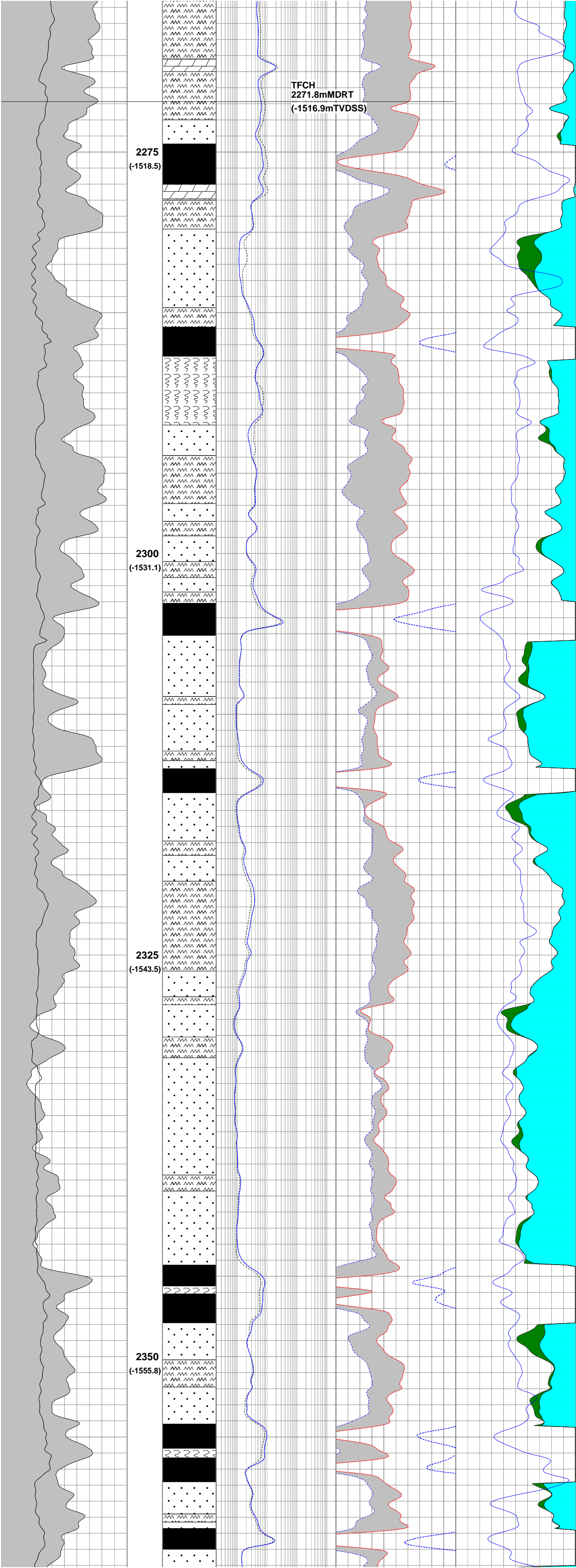


2082.4
ANG 58.0
DIR 87.6
(-1416.9)

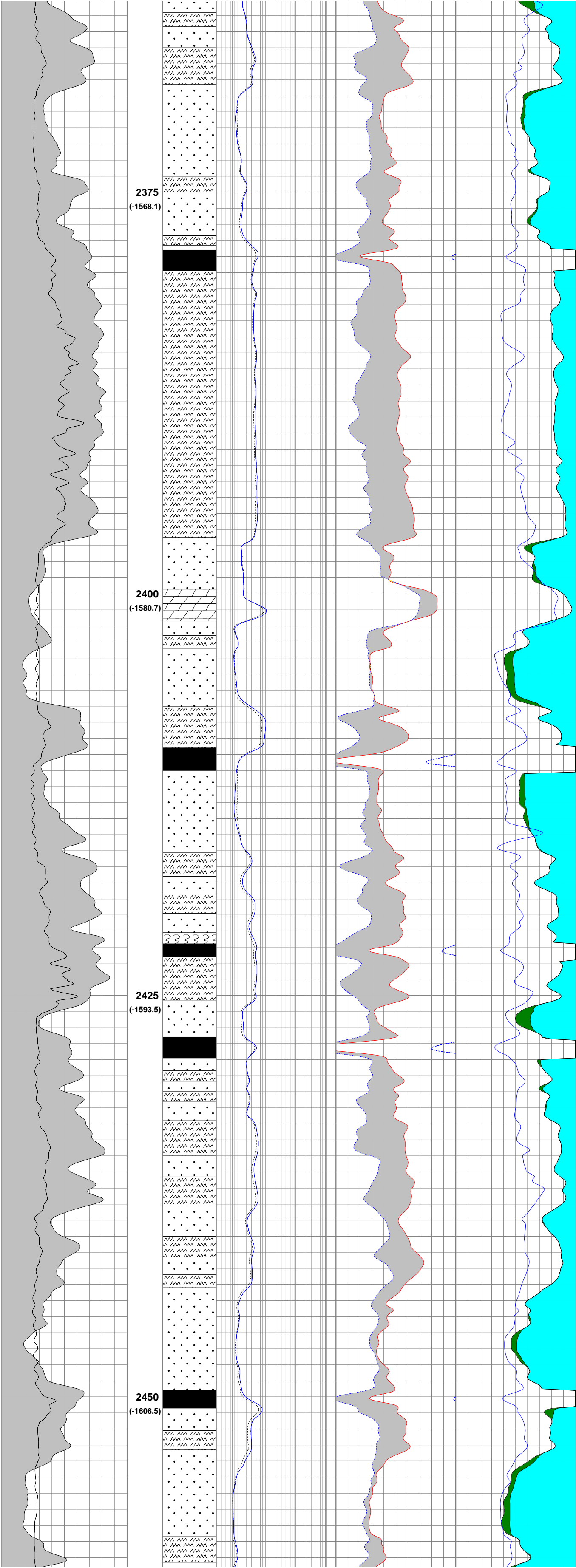


2197.3
ANG 58.0
DIR 86.8
(-1478.0)

2246
MW 10.0ppg
FV 74sec/qt
PV 31cP
YP 44
pH 8.8
KCl 28

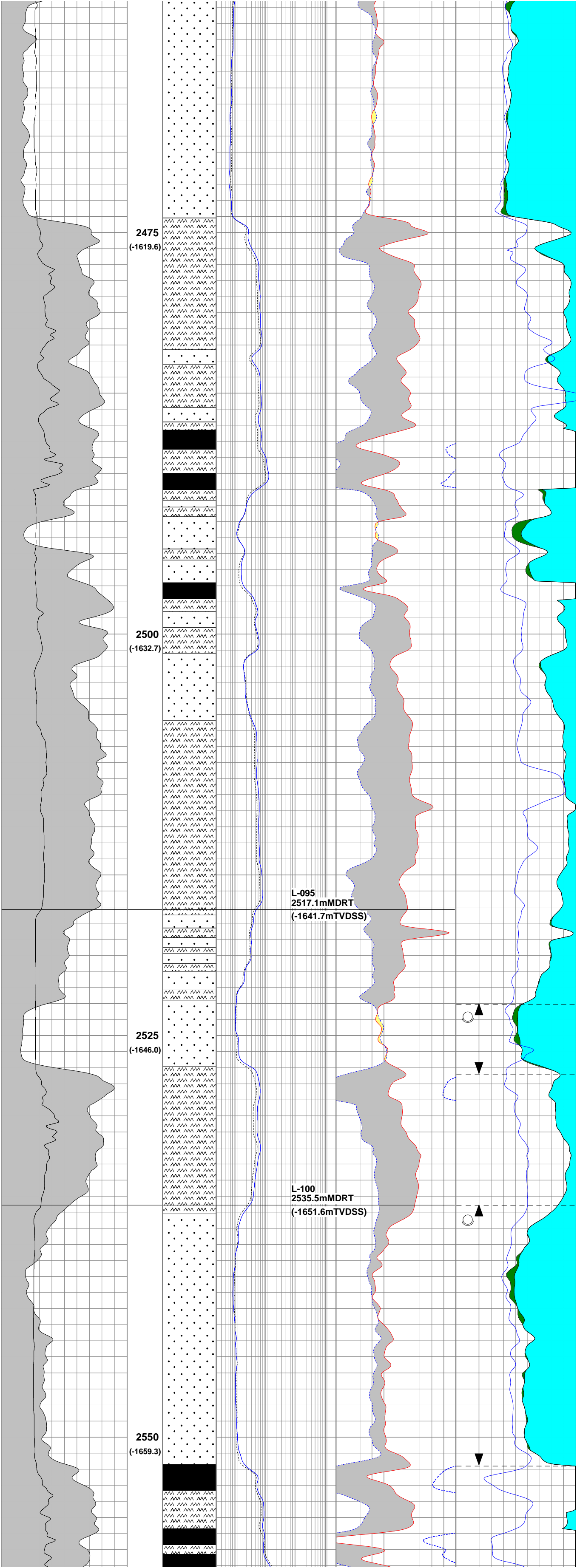


PALEOCENE - EARLY EOCENE



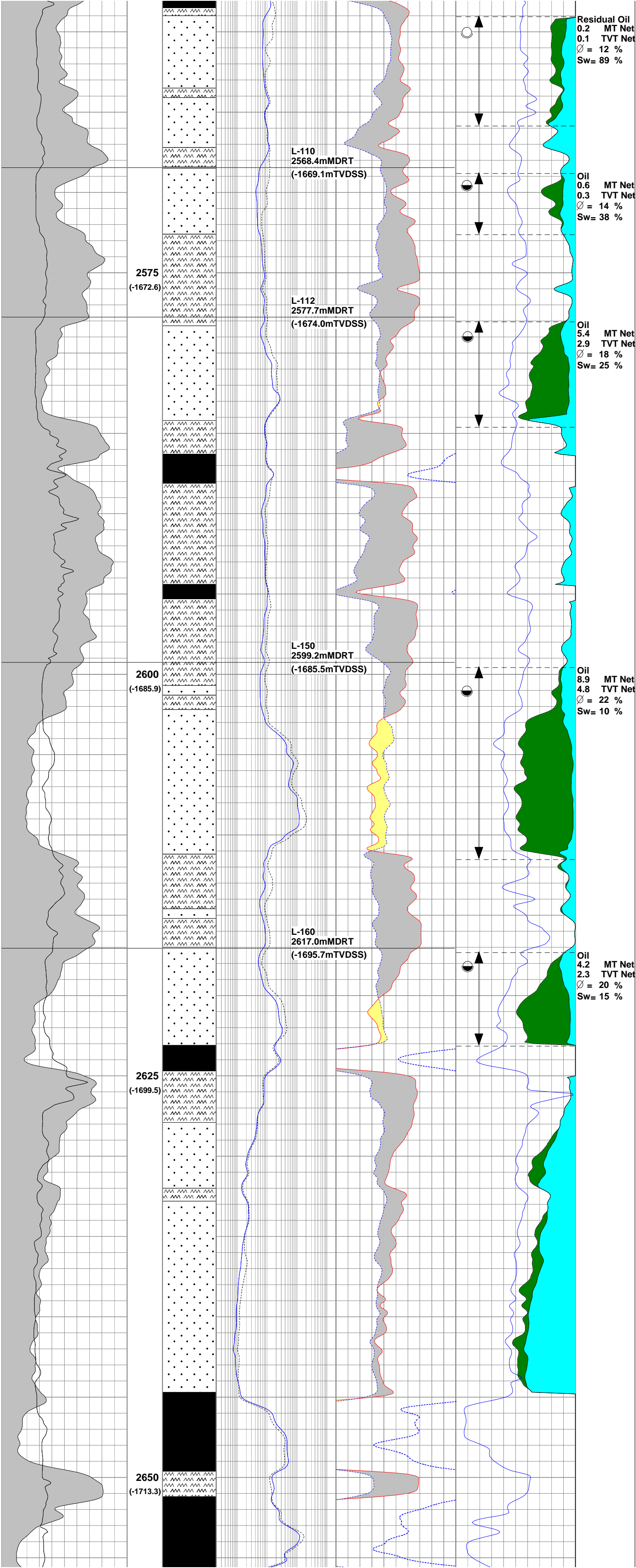
2426
MW 10.0ppg
FV 73sec/qt
PV 30cP
YP 45
pH 8.9
KCI 28

2426.5
ANG 58.9
DIR 85.9
(-1594.3)

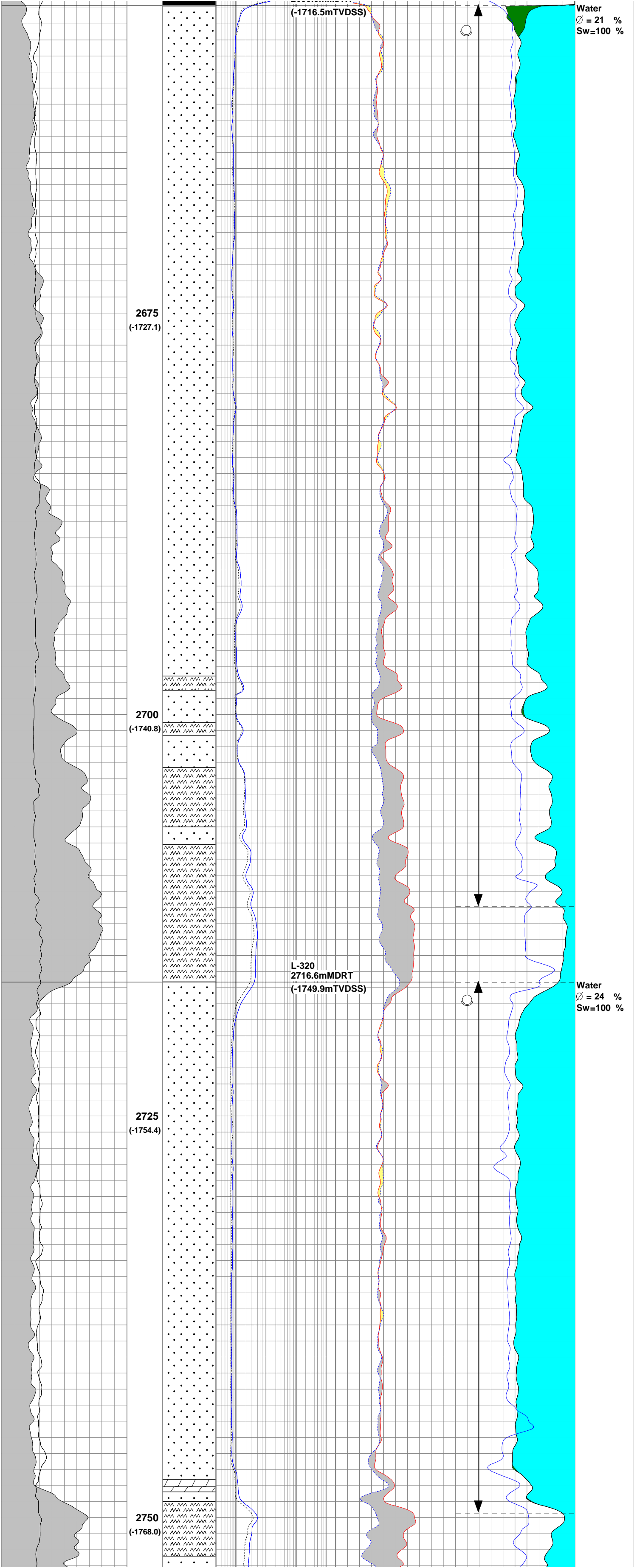


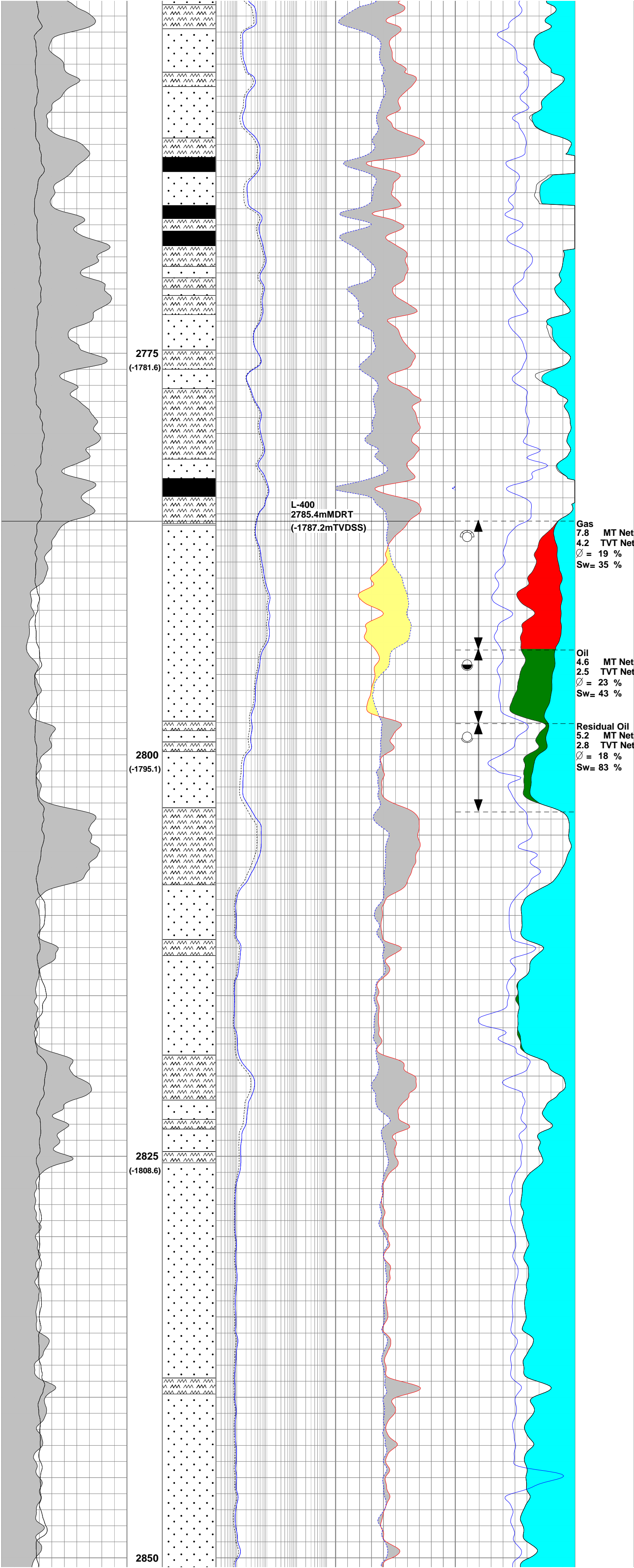
2496
MW 10.0ppg
FV 84sec/qt
PV 30cP
YP 45
pH 8.9
KCl 28

2542.3
ANG 57.7
DIR 86.8
(-1655.2)



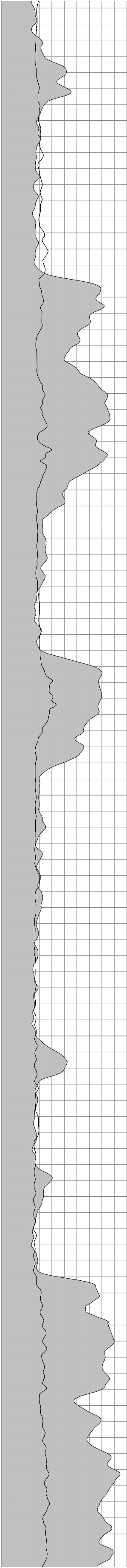
LATROBE GROUP





2799.1
ANG 57.3
DIR 86.1
(-1794.7)

2846
MW 10.0ppg
FV 70sec/qt
PV 28cP
YP 44
nH 0.7

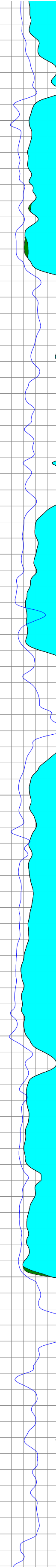
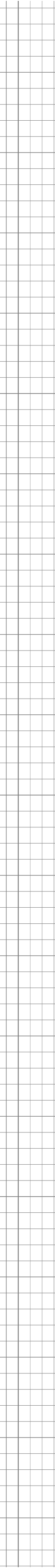
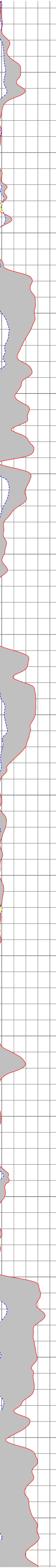
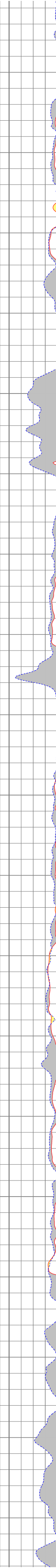
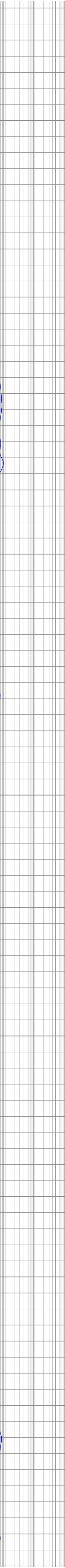
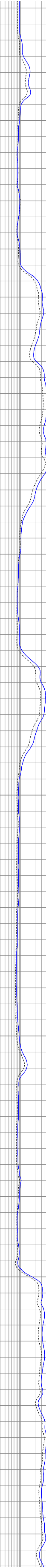
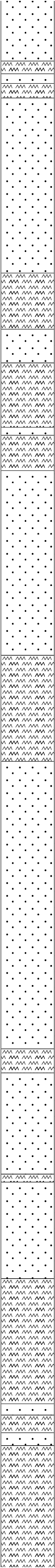


(-1822.1)

2875
(-1835.5)

2900
(-1849.0)

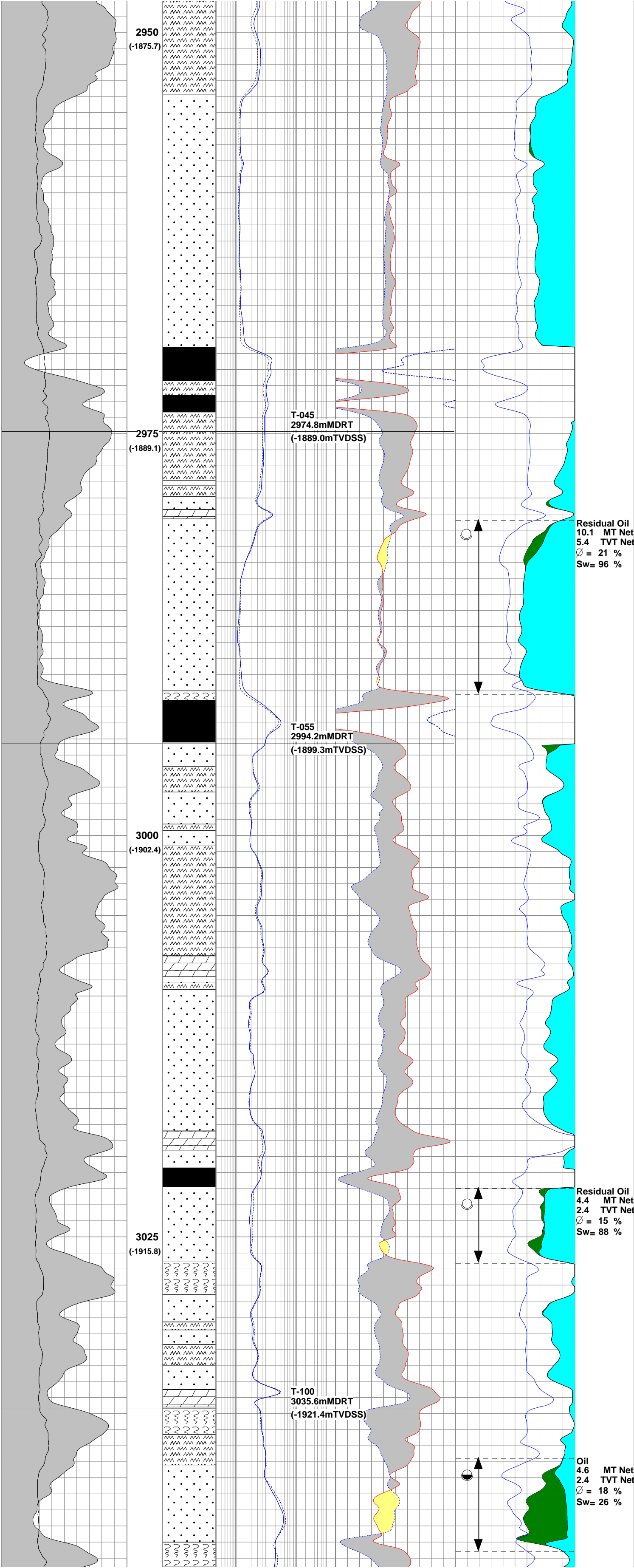
2925
(-1862.4)



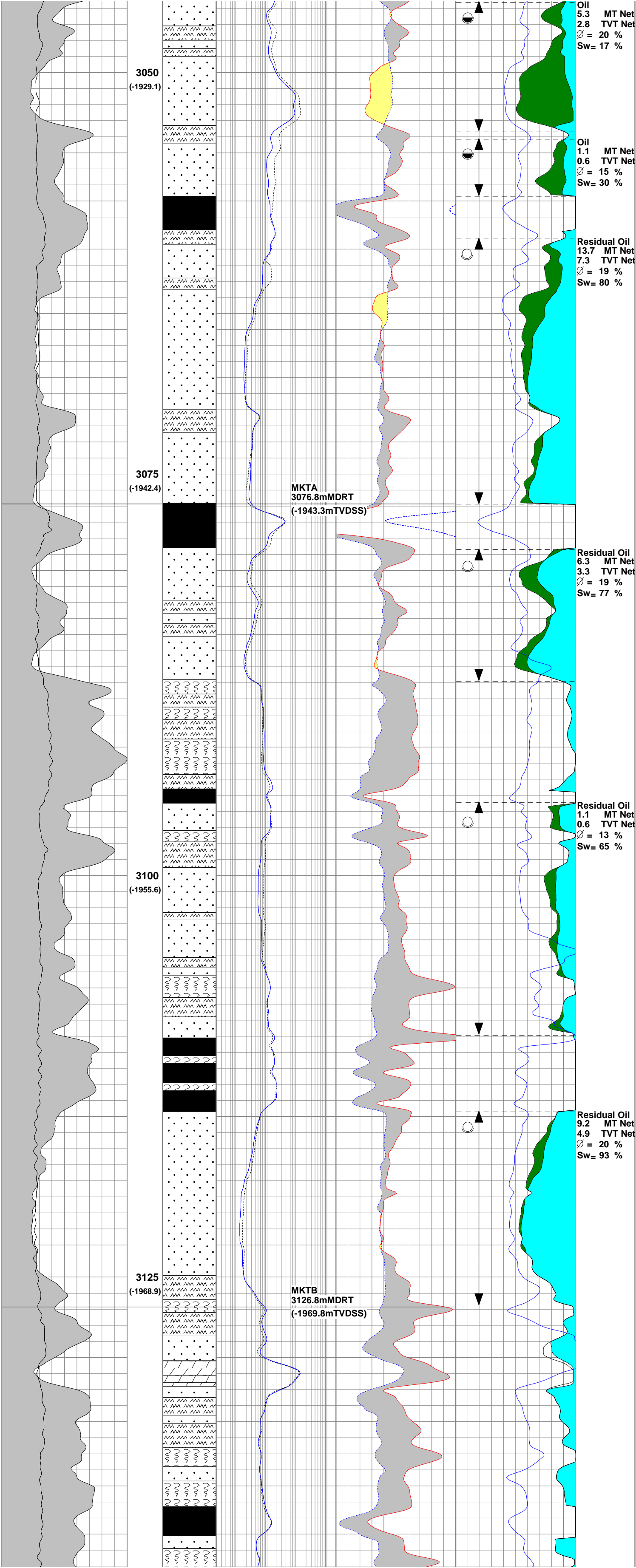
pH 9.0
KCl 26

2884.8
ANG 57.4
DIR 86.2
(-1840.8)

2903
MW 10.0ppg
FV 68sec/qt
PV 30cP
YP 45
pH 9.0
KCl 28



2999.5
ANG 57.7
DIR 86.3
(-1902.2)

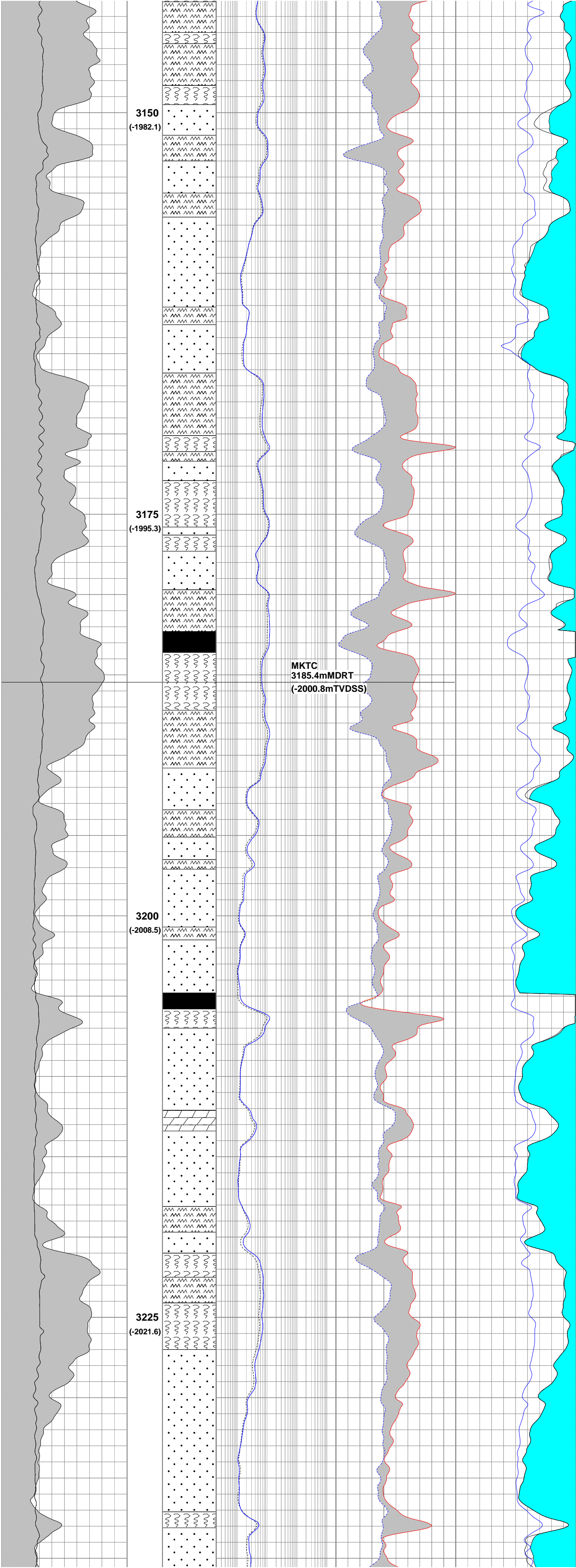


3048.0m

3054.0m

3084.6
ANG 57.9
DIR 86.5
(-1947.5)

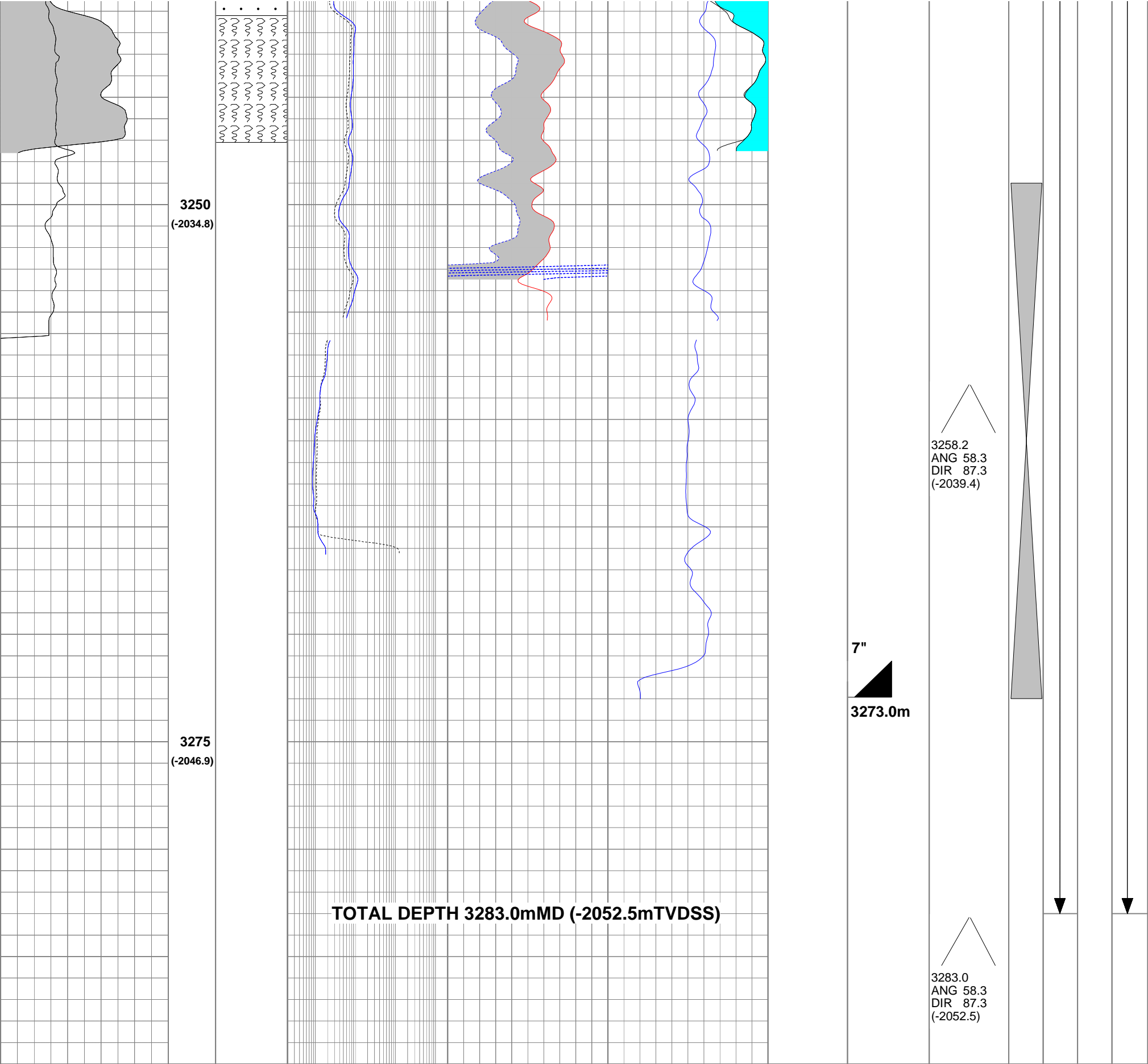
CRETACEOUS



3171.8
ANG 58.0
DIR 87.0
(-1993.6)

3181
MW 10.0ppg
FV 78sec/qt
PV 29cP
YP 52
pH 9.0
KCl 27

3233.1
ANG 58.4
DIR 87.3
(-2026.1)



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 A15a
Initial Production Date:
23/12/2004
1900 BOPD