

WELL COMPLETION REPORT
WEST KINGFISH W27A
GIPPSLAND BASIN, VICTORIA

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December 2006

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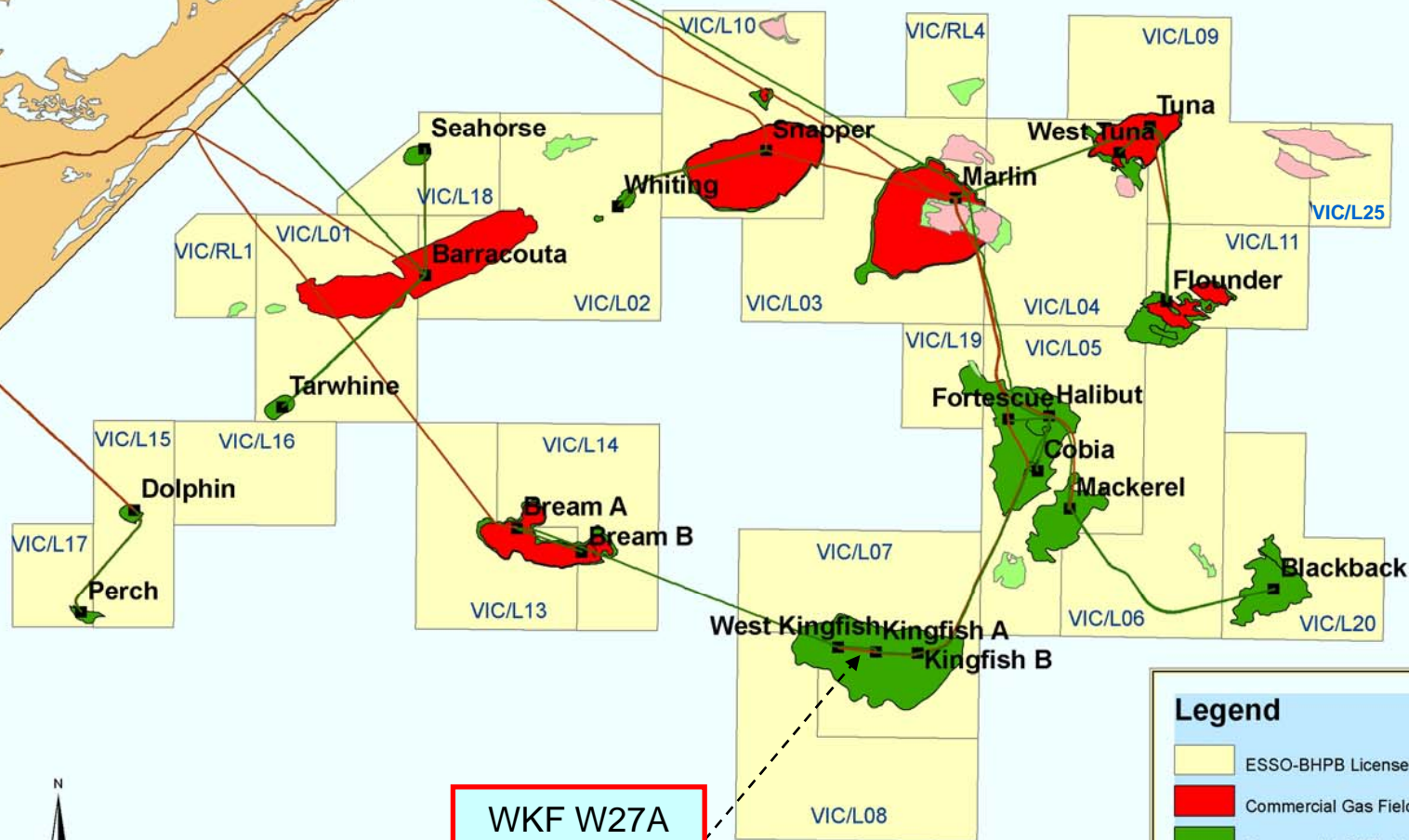
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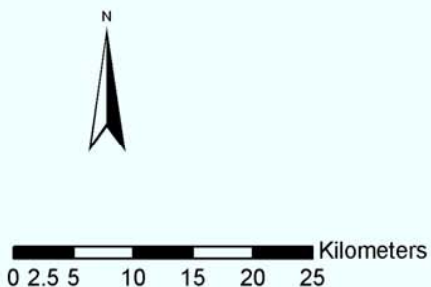
I. WELL COMPLETION REPORT (W27A).
Fig.1: WEST KINGFISH FIELD LOCATION MAP



WKF W27A
(VIC/L7)

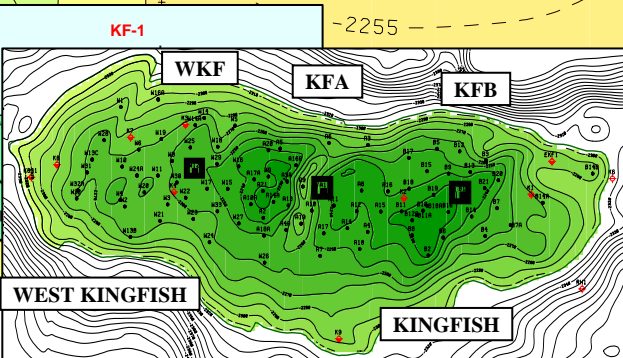
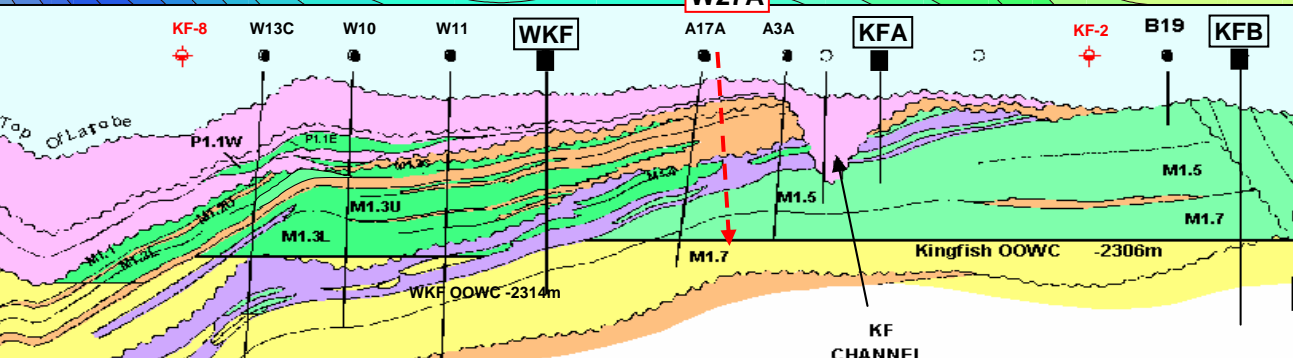
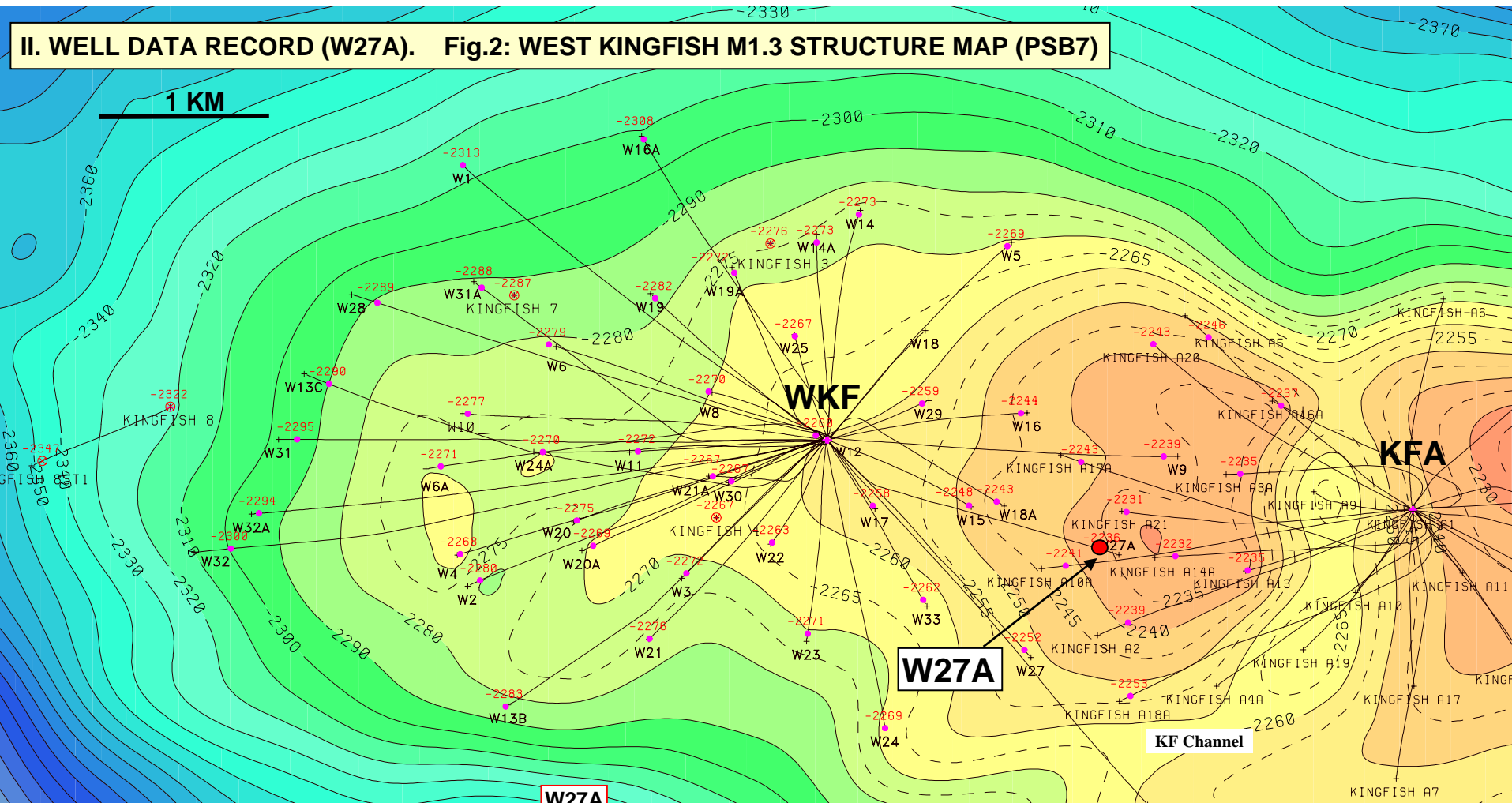
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- Commercial Oil Fields
- Static Gas Fields
- Static Oil Fields
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- Oil Pipeline

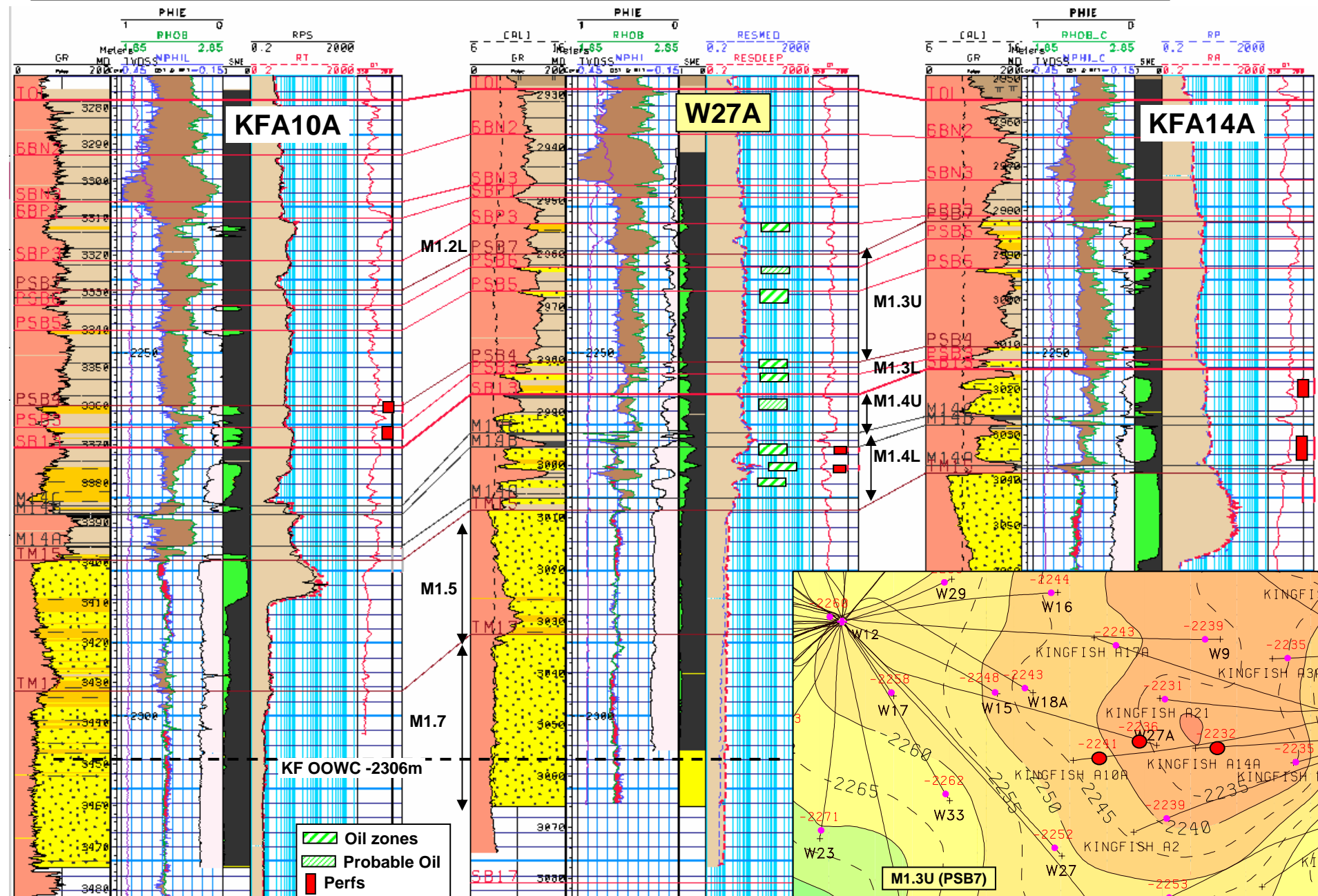


Gippsland Basin, Australia

II. WELL DATA RECORD (W27A). Fig.2: WEST KINGFISH M1.3 STRUCTURE MAP (PSB7)



II. WELL DATA RECORD (WEST KINGFISH W27A). Fig.3: WELL LOG CROSS-SECTION THROUGH W27A



II. WELL DATA RECORD – W27A (cont'd)

LOCATION

Field	West Kingfish
Well Name	W27A (Loc B)
Conductor Number	Slot 27
State	Victoria
Permit/Licence	Vic/L7
Geological Basin	Gippsland
Top of Latrobe	2929.0m MDRT
	2247.2m TVDRT
	-2213.7m TVDSS
(MGA94) X	597857.50m E
(MGA94) Y	5727173.59m N
Latitude	38° 35' 54.744" S
Longitude	148° 07' 25.547" E

Conductor #27 Surface Coordinates

(MGA94) X	596279.88 mE
(MGA94) Y	5727806.02 mN
Latitude	38° 35' 34.851" S
Longitude	148° 06' 20.022" E

Perforations (driller)	2996.7 – 2997.5m MDRT
	2296.5 – 2299.1m TVDRT
	(-2263.1 – 2263.7m TVDSS)
	3000.0 – 3001.0m MDRT
	2298.9 – 2299.6m TVDRT
	(-2265.5 – 2266.2m TVDSS)

Datum GDA94 (Geocentric Datum of Australia)

Spheroid GRS80 (Geodetic Ref. System 1980)

Projection UTM (Universal Transverse Mercator)

Map Grid / Zone MGA Zone 55

Central Meridian 147 deg E

ELEVATIONS & DEPTHS

Water Depth	76.13 m
Main Deck Rel to MSL	25.12m
RT Relative to MSL	33.43m
Average Well Angle	44.3 deg in Latrobe
Max Well Angle	46.1 deg at TD
Total Depth	3095.0m MDRT
	2366.2m TVDRT
	(-2332.8m TVDSS)
Plug Back Depth	3060mMDRT (PBTD)
	(3025 wireline HUD)

DATES

Skid Rig	15/07/2006
Kicked Off	19/07/2006
Development Rig Days	16.3
NPT Days	1.0
Rig Released	31/07/2006
I.P. Established	10/08/2006

MISCELLANEOUS

Operator	Esso Australia Pty Ltd
Esso Interest	50%
Licensee	Esso/BHPBilliton
Other JV Interest	50% (BHPB)
Overriding Royalty	2.5% (Weeks)
Drilling AFE No.	L0501G657

Contractor	International Sea Drilling Ltd
Rig Name	Nabors Rig 453
Equipment Type	Platform
Completion Type	Single
Completion Size	3-1/2"

WELL CLASSIFICATION

Before Drilling	Oil Development	After Drilling	Cased & Completed - Oil well
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II. WELL DATA RECORD – W27A (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread Connection	Depth (mMDRT)
Conductor *	20				178
Surface *	10¾	40.5	K-55	Buttress	895
Production	7	26.0	L-80	Vam Top HC	3090.0
(Tubing)	3½	9.2	13Cr-80	Vam Top	2925.5

* Pre-existing W27 casing strings

CEMENTING RECORD

Casing details	Cement Type	Dry Cement Volume (sacks)	Cement Additives	Mix Water (bbls)	Slurry Volume (bbls)	Slurry Density (ppg)	Cement to/from (m MDRT)	Casing Pressur e Test (psi)
7" 26 lb/ft	AB CLASS G	455	Gascon 30 gal /10 bbl HALAD-413L 30 gal /10 bbl NF-6 0.25gal /10bbl CFR-3L 4.0 gal /10 bbl SCR-100L 6.0 gal /10 bbl	57	95	15.8	TD 3095 to 2860	3000 (15 mins)

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE WEST KINGFISH W27A - Final Well Report

GENERAL

Platform:	West Kingfish	Rig:	453	Reservoir:	M1.3, M1.4 Sands
Well:	W27A	Well Slot:	#27	RT-MSL (Rig453)	33.43
Drilling Complexity Index	3.2	Wellwork Complexity Index	2		

DEPTH	PERFORMANCE	MUD
m MDRT	3095.0	20" Cond. Hole
m TVDRT	2,366.2	12-1/4" Surf. Hole
Vert. Section (m)	1815.0	8-1/2" Prod. Hole
INCLINATION		6" Liner Hole
Max angle (deg) / Ave in Latrobe (deg)	44 / 46 (Tangent)	** time to drill new hole interval from spud to TD, incl. connections & NPT.
		Max Wt (ppg)
		Type (Surf. Hole)
		Type (Inter. Hole)
		Type (Prod. Hole)
		Type (Liner Hole)

Comments: ** New hole drilled: 895m to 3095mMDRT (2200m MDRT drilled, 8.5" hole).

TIME ANALYSIS

Start Drillwell Opns Date:	15/07/2006, 1800hrs	Finish Date (RR):	31/07/2006, 2400hrs	Kick Off (spud) Reach TD	19/07/06, 0645 24/07/06, 0630
Target Days (P10):	18.22	Total Days:	16.25	% Under Target:	10.8% (under)
AFE Days (P50):	20.54	NPT Days:	1.0	% of Total Days:	6.1%
Supplementary AFE Days (P50):	N/A				

COSTS *(based on projected)*

AFE No.:	L0501G657	Revisions:	--	\$ per m	A \$1.81 k / metre (new hole)
\$ per day:	A\$ 252 k/day	\$ per day (excl. T+L)*	A\$ 180 k/day		A\$ 1.29 k / metre*
		* Equipment, LWD & Precision logging			* based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	976,000	735,000	2,442,500	860,600	185,900	A\$5,800,000
AFE (Supplement)	-	-	-	-	-	-
Projected	842,123	404,000	1,920,877	534,000	149,000	A\$3,980,000

CASING *(all depths herein are based on Rig 453 elevations: RT-MSL=33.43m)*

	Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	20"	178	178	N/A
Surface Casing *	10-3/4", 40.5 ppf, K55, Buttress	895	803.6	11.2 (PIT)
Prod Casing	7", 26.0 ppf, L80, Vam Top HC	3090	2362.7	N/A

Comments: * Pre-existing W27 casing strings.

COMPLETION

	Size / Weight / Grade / Thread	MMDRT	MTVDRT	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Ace	2925.5	2244.6	Single oil

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	2996.7- 2997.5	2296.5 – 2297.1	3000.0 – 3001.0	2298.9 – 2299.6	MAXR

Comments: Completion was 3 1/2" 13Cr80 with TR-SSSV and 3 SPMs for gas lift, and one packer.

ADDITIONAL

	Upper Interval [m MDRT]	Lower Interval [m MDRT]
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	895 TD 3095

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

West Kingfish W27A: Existing Schematic

Incl	mKB (TVD)	Schematic - Actual
0.0	12	<p>2-1, Tubing Hanger, 11.7 mKB, 12.2 mKB, 88.9mm</p> <p>2-6, Flow Coupling, 442.0 mKB, 443.7 mKB, 88.9mm</p> <p>2-7, SSSV, 443.7 mKB, 445.0 mKB, 88.9mm</p> <p>2-8, Flow Coupling, 445.0 mKB, 446.8 mKB, 88.9mm</p> <p>2-12, Flow Coupling, 768.3 mKB, 770.1 mKB, 88.9mm</p> <p>2-13, Mandrel - Side Pocket, 770.1 mKB, 772.7 mKB, 88.9mm</p> <p>Surface Casing, 273.1mm, 895.0 mKB</p> <p>2-17, Flow Coupling, 1,219.6 mKB, 1,221.3 mKB, 88.9mm</p> <p>2-18, Mandrel - Side Pocket, 1,221.3 mKB, 1,224.0 mKB, 88.9mm</p> <p>2-22, Flow Coupling, 1,344.1 mKB, 1,345.8 mKB, 88.9mm</p> <p>2-23, Mandrel - Side Pocket, 1,345.8 mKB, 1,348.4 mKB, 88.9mm</p> <p>2-27, Landing Nipple, 1,362.0 mKB, 1,362.5 mKB, 88.9mm</p> <p>2-31, Seal Bore Receptacle, 2,898.6 mKB, 2,907.9 mKB, 88.9mm</p> <p>2-34, Packer, 2,910.4 mKB, 2,912.6 mKB, 88.9mm</p> <p>2-37, No Go Nipple, 2,923.6 mKB, 2,924.0 mKB, 88.9mm</p> <p>2-39, Re-Entry Guide - Wireline, 2,925.3 mKB, 2,925.5 mKB, 88.9mm</p> <p>Perforation, 2,996.7-2,997.5 mKB, M1.4L</p> <p>Perforation, 3,000.0-3,001.0 mKB, M1.4L</p> <p>Perforating Assy, 3,007.6-3,020.0 mKB</p> <p>Cement plug, 3,060.0-3,090.0 mKB</p> <p>Production Casing, 177.8mm, 3,090.0 mKB</p>
0.0	12	
0.0	12	
0.0	13	
0.0	14	
0.0	14	
0.0	15	
20.3	434	
20.4	436	
20.5	438	
20.6	439	
20.7	441	
20.9	443	
42.1	709	
42.1	710	
42.1	711	
42.0	713	
42.0	715	
43.3	787	
43.9	795	
43.7	804	
44.5	1,034	
44.5	1,036	
44.5	1,037	
44.4	1,039	
44.4	1,040	
44.6	1,123	
44.6	1,125	
44.6	1,126	
44.5	1,128	
44.5	1,129	
44.5	1,136	
44.5	1,137	
44.5	1,138	
44.5	1,139	
45.4	1,817	
44.7	2,147	
43.5	2,224	
43.4	2,225	
43.3	2,232	
43.3	2,232	
43.3	2,234	
43.2	2,235	
43.2	2,236	
43.1	2,243	
43.1	2,244	
43.1	2,244	
43.1	2,245	
43.7	2,296	
43.7	2,297	
43.8	2,299	
43.8	2,300	
43.9	2,304	
44.2	2,313	
45.0	2,336	
45.2	2,342	
45.3	2,345	
45.6	2,353	
46.0	2,363	

COMPLETION SCHEMATIC

III. SAMPLES – W27A

CUTTINGS SAMPLES

The cuttings sampling programme for WEST KINGFISH W27A are detailed in the following table:

Interval	Formation	Sampling Details
KOP to ~150 m above predicted Top of Latrobe (TOL prognosed at 2930.7m MDRT) 895.0 – 2780.0m MDRT	Gippsland Limestone & Lakes Entrance Fm	Cuttings samples for description only at 30 m intervals.
~150 m above predicted Top of Latrobe to ~Top of Latrobe (TOL prognosed at 2930.7m MDRT) 2780.0 – 2930.0 mMDRT	Lakes Entrance Formation	Three sets of washed and oven dried cuttings at 10 m intervals.
~Top of Latrobe to Total Depth (TD) (TOL prognosed at 2930.7m MDRT) 2930.0 – 3095.0 mMDRT	Latrobe Group	Three sets of washed and oven dried cuttings at 5 m intervals.

Detailed cuttings descriptions for the interval 895 to 3095m MDRT (TD) are contained in Appendix 3a.

CONVENTIONAL CORING

No conventional cores were cut in WEST KINGFISH W27A.

SIDEWALL CORING

No sidewall core samples were shot in WEST KINGFISH W27A.

IV. LOGS AND SURVEYS – W27A

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	900.0	2489.4
MWD Run 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	2489.4	3095 TD (GR to 3075.1)
Run 1: Drillpipe conveyed Logging: MCG-MDN-MPD- MSS-MDL-MAI	Precision Energy Services (compact logging wireline tools run on drillpipe with Shuttle System, memory mode)	895.0 (2792m top of Latrobe logging)	3095.0 TD (3090 bottom of log interval)

(Precision logs = Compact GR - Dual Neutron - Photo Density - Sonic - Dual Laterolog
Resistivity - Induction Resistivity)

V. RESERVOIR & FORMATION TOPS - W27A

Horizon	m TVDSS			m MDRT	mTVT net oil	mTVT net oil
	Predicted Tops	ACTUAL	Diff. (m)	ACTUAL	Pred.	ACTUAL
Base of Miocene High Velocity Channel	-	-1412.7	-	1800.0		
Lakes Entrance Formation	-1925	-1927.7	2.7 low	2528.0		
Top of Latrobe Group (TOL)	-2215	-2213.7	1.3 high	2929.0		
SBN3 (N.asperus Sequence Boundary)	-2229	-2226.9	2.1 high	2947.0		
Top of M1.2UMD (SBP1,2)	-2231	-2228.6	2.4 high	2949.3		
Top of M1.2L ("SBP3")	-	-2232.2	-	2954.2	-	0.7
Top of M1.3U: PS6 sand (PSB7)	-2235	-2236.4	1.4 low	2960.0	0.8	Prob 1.5 (PS6/PS5)
PS5 sand (PSB6)	-2237	-2238.2	1.2 low	2962.5	Risked out	(incl. above)
PS4 sand (PSB5)	-2241	-2241.2	0.2 low	2966.5	0.5	2.6 + poss 0.3
Top of M1.3L: PS3 sand (PSB4)	-2250	-2251.3	1.3 low	2980.5	0.4	0.4
PS2 sand (PSB3)	-	-2252.8	-	2982.5	0.4	0.5
Base of M1.3L (SB13) / Top of M1.4U	-2256	-2255.7	0.3 high	2986.6	0.7 (M1.4U)	Prob 2.4 (M1.4U)
M1.4C coal (Top M1.4L)	-2263	-2260.8	2.2 high	2993.6	Risked out	2.9 (M1.4L) + poss 0.3
Top of M1.5	-2270	-2271.6	1.6 low	3008.5		Swept
Top of M1.7	-2290	-2288.8	1.2 high	3032.5		Swept
WKF OOWC	-2314	-2314.0	-	3068.1		
Base of M1.7	-	-2323.7	-	3082.0		
TD	-2330	-2332.8	2.8 low	3095.0		

Net pay thickness is based on 10% porosity cutoff because sands are often thin or shaly yet productive.

OOWC = Original Oil-Water Contact

COWC = Current Oil-Water Contact

UMD = Upper M.diversus

U = Upper

L = Lower

(The reason predicted depths were not provided for some tops predrill is that the horizons or zones were of less importance than others, rather than they were unexpected).

VI. GEOLOGICAL ANALYSIS – WEST KINGFISH W27A

Objectives

West Kingfish W27A (predrill Location B) was designed to access oil reserves migrating into the M1.3 and M1.4 sands on a local structural crest west of the Kingfish Channel (Fig.2). The primary objective was capture of life-end oil reserves via additional drainage of the M1.3L sands that continue to produce at the downdip Kingfish A10A and A17A wells. These wells are anticipated to have long-life tails, particularly KFA10A which has flat oil-rate and water cut trends, indicating the M1.3L sands can produce beyond KFA predicted platform life-end, thus attributing incremental reserves capture benefits to the W27A well.

In addition, the proposed well could capture small attic oil volumes in the M1.3U and M1.3L sands in the crestal area. The M1.3U sands are currently not perforated in nearby Kingfish A10A, A14A and A21.

Thirdly, the W27A well may provide further drainage of the M1.4U, M1.4L, and possibly M1.5 sands, producing nearby at KFA A14A and A2. Some of these sands are likely to have oil volumes trickling into them via gravity segregation and updip migration for several years to come. The M1.4L at A2 has produced a cumulative volume of 41.7MBO, and it was considered possible that W27A might encounter this sand. However it was recognised that the M1.4 sands are discontinuous channel sands with the M1.4L sand not present at the offset well A10A.

Reservoir presence and productivity were key risks identified for the M1.3U and M1.3L sands in the vicinity of W27A due to the sands being very thin and moderately shaley in this part of the field resulting from a distal shoreface environment of deposition. This can also put them at risk of formation damage, further limiting their productivity. However, offsetting these factors has been excellent historical performance from the M1.3L in the downdip wells, with cumulative production of 13MBO at W15, 2.6MBO at A10A and 0.7MBO at A17A and continuing good performances. Likewise, the M1.3U PS6 sand was perforated in Oct 2005 in W15 and still produces at a declining but good oil rate of ~50kl/d after a year of production.

It was expected that many of the objective sands might produce at high water cuts, based on nearby well performance, but the combination of multiple reservoir targets located in relatively updip positions and the considerable remaining reserve identified in the M1.3L sand (possibly over one million barrels) made the W27A an attractive well.

Results

West Kingfish oil development well W27A kicked off below the W27 existing surface casing on 19 July 2006 and drilled 8 ½" production hole to a Total Depth of 3095m MDRT (-2332.8mTVDSS). The well was logged with Precision Energy Services' compact wireline tools on drillpipe (Shuttle system) and cased and completed with 3 ½" tubing. The well was handed over to production operations on 31 July 2006.

The Top of Latrobe was intersected at 2929.0m MDRT (-2213.7m TVDSS), 1.3mTVD high to prediction. The primary objective M1.3U and M1.3L reservoir section tops were encountered at 2960.0m and 2980.5m MDRT (-2236.4m and -2251.3m TVDSS) respectively, both about 1.3mTVD low to prediction (Section V).

As expected, the M1.3 sands encountered are very thin and the overall M1.3 interval is quite shaly. Resistivities are generally subdued as a result, however it is interpreted that most of the thin sands are oil-bearing, with the M1.3U PS6/ PS5 sands containing a total of 1.5mTVD probable net oil sand and the PS4 sand 2.6mTVD net oil (Section V). The reservoir quality is low, with the M1.3U sands having average porosity of 11-13% and water saturation 61-70% in the net pay intervals. The M1.3L is slightly better quality with 14% average porosity and 66-69% water saturation in the total 0.9mTVD net oil pay present in thin PS3 and PS2 sands. These M1.3L sands are the stratigraphic equivalent of the strongly producing sands perforated in KFA A10A downdip (Fig.3). The question remains as to the effective productivity of these thin sands in W27A, however they appear to have similar reservoir quality to those in KFA10A, although they are slightly thinner.

In addition to the M1.3 sands, some thin zones of "ceiling" oil were encountered within the M1.4 section, consisting of 2.4mTVD probable net oil in a shaly M1.4U zone and a total of 2.9m net oil pay within three thin but clean M1.4L oil zones overlying water. Average porosity in the M1.4L sands is 22-24%. The W27A well has been perforated in the upper two of these thin M1.4L oil zones, and flowed at an initial oil rate of 240kl/day and a 75% water cut. Although oil rate has declined, the well was still flowing at 21 kld/day after 3 months. These zones are interpreted to be equivalent to the M1.4L producing interval in KFA A2 that recovered a very large cumulative volume of almost 42MBO over a 30 year period. A small oil zone was also present in the M1.2L section.

VI. GEOLOGICAL ANALYSIS – WEST KINGFISH W27A (continued)

Results (continued)

Once the M1.4 section is depleted, W27A will be recompleted upwards into the M1.3L and it is anticipated that the well will have several further recompletions through its producing life due to the number of oil zones.

APPENDIX 1a

WEST KINGFISH W27A

Survey Data



WKF W-27A Geodetic Survey Report

Report Date: July 24, 2006	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 111.390°
Field: Kingfish GDA 94	Vertical Section Origin: S 5.030 m, E 16.840 m
Structure / Slot: West Kingfish / 27	TVD Reference Datum: RKB
Well: 27	TVD Reference Elevation: 33.43 m relative to MSL
Borehole: WKF W-27A	Sea Bed / Ground Level Elevation: -76.130 m relative to MSL
UWI/API#:	Magnetic Declination: 13.250°
Survey Name / Date: WKF W-27A / July 23, 2006	Total Field Strength: 60119.546 nT
Tort / AHD / DDI / ERD ratio: 112.743° / 1853.85 m / 5.953 / 0.783	Magnetic Dip: -69.061°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: July 23, 2006
Location Lat/Long: S 38 35 34.851, E 148 6 20.022	Magnetic Declination Model: BGGM 2005
Location Grid N/E Y/X: N 5727806.021 m, E 596279.875 m	North Reference: Grid North
Grid Convergence Angle: -0.68968503°	Total Corr Mag North -> Grid North: +13.940°
Grid Scale Factor: 0.99971415	Local Coordinates Referenced To: Structure Reference Point

Comments	Measured Depth (m)	Inclination (deg)	Azimuth (deg)	TVD (m)	Vertical Section (m)	NS (m)	EW (m)	DLS (deg/30 m)	Northing (m)	Easting (m)	Latitude	Longitude
Projected-Up	0.00	0.00	0.00	0.00	0.00	-5.03	16.84	0.00	5727806.02	596279.88	S 38 35 34.851	E 148 6 20.022
	24.53	0.00	0.00	24.53	0.00	-5.03	16.84	0.00	5727806.02	596279.88	S 38 35 34.851	E 148 6 20.022
	110.03	0.10	47.00	110.03	0.03	-4.98	16.89	0.04	5727806.07	596279.93	S 38 35 34.849	E 148 6 20.025
	120.03	0.10	9.20	120.03	0.03	-4.96	16.90	0.19	5727806.09	596279.94	S 38 35 34.849	E 148 6 20.025
	130.03	0.10	77.60	130.03	0.04	-4.95	16.91	0.34	5727806.10	596279.95	S 38 35 34.849	E 148 6 20.025
	140.03	0.10	72.90	140.03	0.05	-4.95	16.93	0.02	5727806.10	596279.96	S 38 35 34.848	E 148 6 20.026
	150.03	0.20	63.20	150.03	0.07	-4.94	16.95	0.31	5727806.11	596279.99	S 38 35 34.848	E 148 6 20.027
	160.03	0.30	103.40	160.03	0.11	-4.94	16.99	0.59	5727806.11	596280.03	S 38 35 34.848	E 148 6 20.029
	170.03	0.30	95.10	170.03	0.16	-4.95	17.05	0.13	5727806.11	596280.08	S 38 35 34.848	E 148 6 20.031
	175.03	0.30	85.40	175.03	0.19	-4.95	17.07	0.30	5727806.11	596280.11	S 38 35 34.848	E 148 6 20.032
	201.03	0.97	204.22	201.03	0.24	-5.14	17.05	1.32	5727805.91	596280.08	S 38 35 34.855	E 148 6 20.031
	231.03	4.14	170.98	231.00	0.77	-6.44	17.12	3.37	5727804.61	596280.15	S 38 35 34.897	E 148 6 20.035
	261.03	7.94	167.27	260.83	2.48	-9.53	17.74	3.82	5727801.52	596280.78	S 38 35 34.997	E 148 6 20.062
	291.03	8.91	162.14	290.50	5.11	-13.77	18.91	1.23	5727797.29	596281.95	S 38 35 35.134	E 148 6 20.112
	321.03	10.89	148.89	320.06	8.83	-18.41	21.09	3.01	5727792.65	596284.12	S 38 35 35.283	E 148 6 20.205
	351.03	13.47	136.69	349.39	14.24	-23.38	24.95	3.63	5727787.68	596287.98	S 38 35 35.443	E 148 6 20.367
	381.03	16.22	134.10	378.38	21.27	-28.84	30.36	2.83	5727782.22	596293.39	S 38 35 35.618	E 148 6 20.593
	411.03	18.39	134.49	407.02	29.49	-35.07	36.74	2.17	5727775.99	596299.77	S 38 35 35.817	E 148 6 20.860
	441.03	20.35	134.10	435.32	38.65	-42.02	43.87	1.96	5727769.05	596306.89	S 38 35 36.040	E 148 6 21.158
	471.03	22.41	133.96	463.26	48.75	-49.62	51.73	2.06	5727761.45	596314.75	S 38 35 36.283	E 148 6 21.486
	501.03	23.99	133.57	490.83	59.67	-57.79	60.26	1.59	5727753.28	596323.29	S 38 35 36.545	E 148 6 21.843
	521.03	25.10	133.63	509.02	67.37	-63.52	66.28	1.67	5727747.55	596329.30	S 38 35 36.728	E 148 6 22.094
	551.03	26.69	133.72	536.01	79.49	-72.57	75.76	1.59	5727738.50	596338.77	S 38 35 37.018	E 148 6 22.490
	581.03	29.36	134.34	562.49	92.50	-82.36	85.89	2.69	5727728.71	596348.90	S 38 35 37.332	E 148 6 22.914
	611.03	32.12	134.68	588.27	106.60	-93.11	96.82	2.77	5727717.96	596359.83	S 38 35 37.676	E 148 6 23.371
	641.03	35.08	134.56	613.26	121.85	-104.77	108.64	2.96	5727706.31	596371.64	S 38 35 38.050	E 148 6 23.865
	671.03	38.14	134.88	637.34	138.28	-117.36	121.35	3.07	5727693.72	596384.35	S 38 35 38.453	E 148 6 24.396
	701.03	41.83	134.54	660.32	155.98	-130.92	135.04	3.70	5727680.17	596398.05	S 38 35 38.887	E 148 6 24.969
	731.03	42.73	134.79	682.51	174.52	-145.11	149.40	0.92	5727665.98	596412.40	S 38 35 39.342	E 148 6 25.569
	761.03	42.25	134.60	704.64	193.13	-159.36	163.80	0.50	5727651.73	596426.80	S 38 35 39.798	E 148 6 26.172
	791.03	41.65	134.86	726.95	211.54	-173.47	178.05	0.62	5727637.63	596441.04	S 38 35 40.250	E 148 6 26.767
	821.03	42.17	135.14	749.27	229.90	-187.64	192.22	0.55	5727623.46	596455.21	S 38 35 40.704	E 148 6 27.360
	851.03	41.89	135.34	771.56	248.27	-201.91	206.36	0.31	5727609.20	596469.34	S 38 35 41.161	E 148 6 27.952
	881.03	43.98	134.91	793.52	266.98	-216.39	220.78	2.11	5727594.73	596483.76	S 38 35 41.625	E 148 6 28.554
Tie-In	900.00	43.65	134.77	807.21	279.03	-225.64	230.09	0.54	5727585.47	596493.07	S 38 35 41.922	E 148 6 28.944
	935.65	43.18	126.30	833.12	302.13	-241.55	248.67	4.91	5727569.57	596511.64	S 38 35 42.430	E 148 6 29.720
	977.13	42.93	120.10	863.45	329.82	-257.04	272.34	3.07	5727554.09	596535.31	S 38 35 42.923	E 148 6 30.705
	993.08	43.43	116.26	875.08	340.65	-262.19	281.96	5.03	5727548.94	596544.92	S 38 35 43.087	E 148 6 31.105
	1022.31	43.90	111.82	896.23	360.80	-270.40	300.38	3.18	5727540.72	596563.34	S 38 35 43.346	E 148 6 31.871
	1051.14	44.91	106.63	916.83	380.94	-277.03	319.42	3.92	5727534.10	596582.37	S 38 35 43.553	E 148 6 32.661
	1079.65	44.55	106.10	937.09	400.93	-282.69	338.67	0.55	5727528.44	596601.62	S 38 35 43.729	E 148 6 33.459
	1108.20	44.87	104.59	957.38	420.90	-288.00	358.04	1.17	5727523.13	596620.98	S 38 35 43.894	E 148 6 34.262
	1137.22	45.84	105.39	977.77	441.42	-293.34	377.99	1.16	5727517.79	596640.92	S 38 35 44.059	E 148 6 35.089
	1166.04	45.56	105.71	997.90	461.94	-298.87	397.86	0.38	5727512.26	596660.78	S 38 35 44.231	E 148 6 35.912
	1194.54	45.09	106.12	1017.94	482.11	-304.43	417.35	0.58	5727506.71	596680.27	S 38 35 44.403	E 148 6 36.721
	1222.94	44.42	106.83	1038.10	502.04	-310.10	436.52	0.88	5727501.04	596699.44	S 38 35 44.580	E 148 6 37.516
	1251.31	44.42	106.51	1058.37	521.83	-315.79	455.54	0.24	5727495.35	596718.45	S 38 35 44.757	E 148 6 38.305
	1280.15	44.56	107.46	1078.94	541.98	-321.70	474.87	0.71	5727489.44	596737.78	S 38 35 44.941	E 148 6 39.106

1308.50	44.38	107.04	1099.17	561.78	-327.59	493.84	0.36	5727483.56	596756.74	S 38 35 45.124	E 148 6 39.893
1337.25	44.58	106.44	1119.68	581.86	-333.39	513.13	0.49	5727477.76	596776.02	S 38 35 45.305	E 148 6 40.693
1365.92	44.50	105.72	1140.12	601.88	-338.96	532.45	0.54	5727472.19	596795.34	S 38 35 45.478	E 148 6 41.494
1394.59	44.88	105.73	1160.50	621.95	-344.42	551.86	0.40	5727466.72	596814.74	S 38 35 45.647	E 148 6 42.299
1423.33	45.36	106.61	1180.78	642.23	-350.10	571.42	0.82	5727461.05	596834.29	S 38 35 45.824	E 148 6 43.110
1452.03	44.83	107.21	1201.04	662.49	-356.01	590.87	0.71	5727455.14	596853.74	S 38 35 46.008	E 148 6 43.916
1480.78	45.03	106.17	1221.40	682.73	-361.84	610.31	0.79	5727449.31	596873.18	S 38 35 46.189	E 148 6 44.723
1509.44	45.00	104.92	1241.66	702.89	-367.27	629.84	0.93	5727443.88	596892.70	S 38 35 46.358	E 148 6 45.532
1538.47	44.10	104.57	1262.34	723.12	-372.46	649.54	0.96	5727438.70	596912.39	S 38 35 46.518	E 148 6 46.349
1567.06	44.72	103.87	1282.77	742.97	-377.37	668.93	0.83	5727433.79	596931.78	S 38 35 46.670	E 148 6 47.153
1595.92	45.22	103.49	1303.19	763.18	-382.19	688.75	0.59	5727428.97	596951.59	S 38 35 46.818	E 148 6 47.974
1624.78	45.89	104.40	1323.39	783.61	-387.16	708.74	0.97	5727424.00	596971.58	S 38 35 46.972	E 148 6 48.803
1653.29	45.64	104.77	1343.28	803.90	-392.30	728.51	0.38	5727418.86	596991.35	S 38 35 47.131	E 148 6 49.622
1682.00	45.36	105.39	1363.41	824.25	-397.63	748.29	0.55	5727413.53	597011.11	S 38 35 47.296	E 148 6 50.442
1711.17	45.32	105.79	1383.91	844.89	-403.21	768.27	0.30	5727407.96	597031.09	S 38 35 47.469	E 148 6 51.270
1739.65	45.30	106.16	1403.94	865.05	-408.78	787.74	0.28	5727402.39	597050.55	S 38 35 47.642	E 148 6 52.078
1768.76	45.59	105.91	1424.36	885.70	-414.51	807.67	0.35	5727396.66	597070.48	S 38 35 47.820	E 148 6 52.904
1797.00	46.07	105.96	1444.04	905.87	-420.07	827.15	0.51	5727391.10	597089.95	S 38 35 47.992	E 148 6 53.712
1825.92	44.61	104.59	1464.37	926.32	-425.49	846.99	1.82	5727385.68	597109.79	S 38 35 48.160	E 148 6 54.534
1854.46	43.86	104.73	1484.82	946.09	-430.53	866.25	0.80	5727380.64	597129.04	S 38 35 48.316	E 148 6 55.333
1883.36	44.38	105.45	1505.56	966.09	-435.77	885.68	0.75	5727375.41	597148.46	S 38 35 48.478	E 148 6 56.138
1911.83	44.80	105.59	1525.84	985.97	-441.12	904.93	0.45	5727370.06	597167.72	S 38 35 48.644	E 148 6 56.937
1940.60	45.03	104.70	1546.21	1006.16	-446.42	924.54	0.70	5727364.76	597187.32	S 38 35 48.808	E 148 6 57.749
1969.38	44.47	104.79	1566.65	1026.29	-451.58	944.14	0.59	5727359.60	597206.91	S 38 35 48.968	E 148 6 58.562
1998.10	45.19	104.75	1587.02	1046.40	-456.74	963.71	0.75	5727354.44	597226.48	S 38 35 49.128	E 148 6 59.373
2026.84	44.39	104.73	1607.41	1066.51	-461.89	983.30	0.84	5727349.29	597246.05	S 38 35 49.287	E 148 7 0.185
2055.41	44.86	104.74	1627.75	1086.44	-467.00	1002.71	0.49	5727344.19	597265.46	S 38 35 49.445	E 148 7 0.990
2084.35	45.47	105.47	1648.15	1106.84	-472.35	1022.52	0.83	5727338.84	597285.27	S 38 35 49.610	E 148 7 1.811
2113.09	44.64	105.30	1668.46	1127.07	-477.74	1042.13	0.88	5727333.44	597304.87	S 38 35 49.778	E 148 7 2.624
2141.70	45.04	105.46	1688.74	1147.14	-483.09	1061.58	0.44	5727328.09	597324.32	S 38 35 49.944	E 148 7 3.431
2171.00	45.20	106.14	1709.42	1167.80	-488.75	1081.56	0.52	5727322.44	597344.29	S 38 35 50.119	E 148 7 4.259
2199.61	44.32	106.04	1729.73	1187.86	-494.33	1100.92	0.93	5727316.86	597363.64	S 38 35 50.292	E 148 7 5.061
2228.55	44.65	105.62	1750.38	1208.04	-499.86	1120.42	0.46	5727311.33	597383.14	S 38 35 50.464	E 148 7 5.870
2257.29	44.90	106.03	1770.78	1228.19	-505.38	1139.90	0.40	5727305.81	597402.61	S 38 35 50.635	E 148 7 6.678
2286.22	45.12	106.37	1791.23	1248.56	-511.09	1159.55	0.34	5727300.11	597422.26	S 38 35 50.813	E 148 7 7.493
2315.06	45.44	106.34	1811.53	1268.98	-516.86	1179.21	0.33	5727294.34	597441.91	S 38 35 50.992	E 148 7 8.308
2343.92	45.19	106.18	1831.82	1289.41	-522.61	1198.91	0.29	5727288.59	597461.61	S 38 35 51.171	E 148 7 9.125
2372.57	45.74	106.04	1851.91	1309.75	-528.27	1218.53	0.59	5727282.93	597481.22	S 38 35 51.347	E 148 7 9.939
2401.20	44.95	105.75	1872.04	1330.02	-533.85	1238.12	0.86	5727277.35	597500.80	S 38 35 51.520	E 148 7 10.751
2429.64	45.68	105.96	1892.04	1350.15	-539.37	1257.57	0.79	5727271.83	597520.25	S 38 35 51.691	E 148 7 11.557
2458.41	45.25	105.79	1912.21	1370.56	-544.98	1277.29	0.47	5727266.22	597539.97	S 38 35 51.865	E 148 7 12.375
2486.82	44.77	105.57	1932.30	1390.55	-550.41	1296.64	0.53	5727260.79	597559.31	S 38 35 52.034	E 148 7 13.177
2516.41	46.01	105.95	1953.08	1411.52	-556.14	1316.91	1.29	5727255.07	597579.57	S 38 35 52.211	E 148 7 14.018
2545.20	45.89	106.93	1973.10	1432.13	-561.99	1336.76	0.74	5727249.22	597599.41	S 38 35 52.393	E 148 7 14.841
2573.91	45.15	106.45	1993.21	1452.55	-567.88	1356.38	0.85	5727243.34	597619.03	S 38 35 52.576	E 148 7 15.655
2602.63	44.75	106.43	2013.54	1472.76	-573.62	1375.84	0.42	5727237.60	597638.48	S 38 35 52.755	E 148 7 16.462
2631.30	44.15	106.49	2034.00	1492.76	-579.31	1395.09	0.63	5727231.91	597657.73	S 38 35 52.932	E 148 7 17.260
2659.74	44.65	105.89	2054.32	1512.58	-584.85	1414.20	0.69	5727226.36	597676.84	S 38 35 53.104	E 148 7 18.053
2688.70	44.18	105.85	2075.01	1532.75	-590.40	1433.70	0.49	5727220.82	597696.33	S 38 35 53.276	E 148 7 18.861
2717.07	44.74	105.74	2095.26	1552.53	-595.81	1452.82	0.60	5727215.41	597715.44	S 38 35 53.444	E 148 7 19.654
2746.30	44.53	106.17	2116.06	1572.97	-601.45	1472.56	0.38	5727209.77	597735.18	S 38 35 53.619	E 148 7 20.473
2774.74	44.90	106.39	2136.27	1592.90	-607.06	1491.77	0.42	5727204.16	597754.38	S 38 35 53.793	E 148 7 21.269
2802.92	44.63	106.63	2156.28	1612.68	-612.70	1510.80	0.34	5727198.53	597773.40	S 38 35 53.969	E 148 7 22.058
2832.64	44.36	106.43	2177.48	1633.43	-618.63	1530.76	0.31	5727192.60	597793.37	S 38 35 54.153	E 148 7 22.886
2861.25	43.93	106.36	2198.01	1653.28	-624.25	1549.88	0.45	5727186.98	597812.48	S 38 35 54.328	E 148 7 23.679
2890.01	43.57	106.33	2218.78	1673.09	-629.85	1568.96	0.38	5727181.38	597831.56	S 38 35 54.502	E 148 7 24.470
2918.76	43.12	106.34	2239.69	1692.75	-635.40	1587.90	0.47	5727175.83	597850.49	S 38 35 54.674	E 148 7 25.256
2947.39	43.00	106.22	2260.61	1712.22	-640.88	1606.66	0.15	5727170.36	597869.25	S 38 35 54.844	E 148 7 26.034
2975.93	43.25	106.36	2281.44	1731.65	-646.35	1625.39	0.28	5727164.89	597887.97	S 38 35 55.014	E 148 7 26.810
3004.95	43.86	106.51	2302.47	1751.57	-652.01	1644.57	0.64	5727159.23	597907.14	S 38 35 55.190	E 148 7 27.606
3033.71	44.54	107.09	2323.09	1771.56	-657.80	1663.76	0.83	5727153.44	597926.33	S 38 35 55.371	E 148 7 28.402
3061.86	45.24	106.91	2343.03	1791.37	-663.61	1682.76	0.76	5727147.63	597945.32	S 38 35 55.551	E 148 7 29.190
3073.71	45.55	107.10	2351.35	1799.78	-666.08	1690.83	0.86	5727145.16	597953.39	S 38 35 55.628	E 148 7 29.525
3095.00	46.10	107.10	2366.19	1815.01	-670.57	1705.43	0.78	5727140.67	597967.98	S 38 35 55.768	E 148 7 30.130

Survey Type: Definitive Survey

Survey Error Model: SLB ISCWSA version 24 *** 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>	<u>Borehole -> Survey</u>
0.00	109.56	Act-Stns	SLB_MWD-STD-Depth Only	WKF-27 -> WKF-27 Final
109.56	175.03	Act-Stns	SLB_MWD-STD	WKF-27 -> WKF-27 Final
175.03	900.00	Act-Stns	SLB_CNSG+DPIPE	WKF-27 -> WKF-27 Final
900.00	3095.00	Act-Stns	SLB_MWD-STD	WKF W-27A -> WKF W-27A

APPENDIX 1b

WEST KINGFISH W27A

Survey Data Listing

Report Date:	12 October 2006
Well:	West Kingfish W27A
Structure / Slot:	NABORS Rig 453
TVD Reference Datum:	Drillsite Elevation
TVD Reference Elevation:	33.43 m relative to MSL
Sea Bed / Ground Level Elevation:	76.13 m relative to MSL
Grid Coordinate System:	GDA94/MGA94 Zone 55
Location Lat/Long:	S -38 35' 34.851", E 148 6' 20.023"
Location Grid N/E:	N 5727806.020 m, E 596279.882 m
Survey Azimuth Reference:	Grid North

*Dnorth and Deast are with respect to top of conductor W27, whereas
NS and EW offsets on Anadrill/Schlumberger survey data are with
respect to No. 1 conductor. Northings and Eastings are absolute grid coordinates.

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0	360	0	33.43	0	0	5727806.02	596279.88
5	0	0	5	28.43	0	0	5727806.02	596279.88
10	0	0	10	23.43	0	0	5727806.02	596279.88
15	0	0	15	18.43	0	0	5727806.02	596279.88
20	0	0	20	13.43	0	0	5727806.02	596279.88
25	0	0.26	25	8.43	0	0	5727806.02	596279.88
30	0.01	3.01	30	3.43	0	0	5727806.02	596279.88
35	0.01	5.75	35	-1.57	0	0	5727806.02	596279.88
40	0.02	8.5	40	-6.57	0	0	5727806.02	596279.88
45	0.02	11.25	45	-11.57	0	0	5727806.02	596279.89
50	0.03	14	50	-16.57	0.01	0.01	5727806.03	596279.89
55	0.04	16.75	55	-21.57	0.01	0.01	5727806.03	596279.89
60	0.04	19.5	60	-26.57	0.01	0.01	5727806.03	596279.89
65	0.05	22.25	65	-31.57	0.01	0.01	5727806.03	596279.89
70	0.05	24.99	70	-36.57	0.02	0.02	5727806.04	596279.9
75	0.06	27.74	75	-41.57	0.02	0.02	5727806.04	596279.9
80	0.06	30.49	80	-46.57	0.02	0.02	5727806.04	596279.91
85	0.07	33.24	85	-51.57	0.03	0.03	5727806.04	596279.91
90	0.08	35.99	90	-56.57	0.03	0.03	5727806.05	596279.92
95	0.08	38.74	95	-61.57	0.04	0.04	5727806.05	596279.92
100	0.09	41.48	100	-66.57	0.04	0.04	5727806.06	596279.92
105	0.09	44.23	105	-71.57	0.04	0.05	5727806.06	596279.93
110	0.10	46.98	110.00	-76.57	0.05	0.05	5727806.07	596279.94
115	0.10	28.22	115.00	-81.57	0.06	0.06	5727806.08	596279.94
120	0.10	9.32	120.00	-86.57	0.06	0.06	5727806.08	596279.95
125	0.10	43.17	125.00	-91.57	0.07	0.07	5727806.09	596279.95
130	0.10	77.37	130.00	-96.57	0.08	0.07	5727806.10	596279.95
135	0.10	75.27	135.00	-101.57	0.08	0.08	5727806.10	596279.96
140	0.10	72.92	140.00	-106.57	0.08	0.09	5727806.10	596279.97
145	0.15	68.08	145.00	-111.57	0.08	0.10	5727806.10	596279.98
150	0.20	63.23	150.00	-116.57	0.09	0.11	5727806.11	596280.00
155	0.25	83.17	155.00	-121.57	0.09	0.13	5727806.11	596280.01
160	0.30	103.27	160.00	-126.57	0.09	0.15	5727806.11	596280.04
165	0.30	99.28	165.00	-131.57	0.09	0.18	5727806.11	596280.06
170	0.30	95.13	170.00	-136.57	0.08	0.20	5727806.10	596280.09
175	0.30	85.46	175.00	-141.57	0.08	0.23	5727806.10	596280.11
180	0.43	108.10	180.00	-146.57	0.08	0.25	5727806.10	596280.13
185	0.56	130.95	185.00	-151.57	0.06	0.26	5727806.08	596280.14
190	0.69	153.80	190.00	-156.57	0.02	0.26	5727806.04	596280.14
195	0.81	176.65	195.00	-161.57	-0.03	0.24	5727805.99	596280.13
200	0.94	199.50	200.00	-166.57	-0.10	0.22	5727805.92	596280.10
205	1.39	199.82	205.00	-171.57	-0.19	0.19	5727805.83	596280.07
210	1.92	194.28	210.00	-176.57	-0.32	0.17	5727805.70	596280.05
215	2.45	188.74	214.99	-181.56	-0.51	0.17	5727805.51	596280.05

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
220	2.97	183.20	219.99	-186.56	-0.74	0.19	5727805.28	596280.07
225	3.50	177.66	224.98	-191.55	-1.02	0.22	5727805.00	596280.10
230	4.03	172.12	229.97	-196.54	-1.34	0.26	5727804.68	596280.15
235	4.64	170.49	234.95	-201.52	-1.71	0.32	5727804.31	596280.21
240	5.28	169.87	239.94	-206.51	-2.14	0.40	5727803.88	596280.28
245	5.91	169.25	244.91	-211.48	-2.61	0.50	5727803.41	596280.38
250	6.54	168.63	249.88	-216.45	-3.15	0.60	5727802.87	596280.49
255	7.18	168.02	254.85	-221.42	-3.73	0.73	5727802.29	596280.61
260	7.81	167.40	259.80	-226.37	-4.37	0.87	5727801.65	596280.75
265	8.07	166.59	264.76	-231.32	-5.04	1.03	5727800.98	596280.91
270	8.23	165.74	269.70	-236.28	-5.73	1.20	5727800.29	596281.08
275	8.39	164.88	274.65	-241.22	-6.43	1.38	5727799.59	596281.26
280	8.55	164.03	279.60	-246.17	-7.13	1.58	5727798.89	596281.46
285	8.71	163.17	284.54	-251.11	-7.85	1.79	5727798.17	596281.68
290	8.88	162.32	289.48	-256.05	-8.58	2.02	5727797.44	596281.90
295	9.17	160.39	294.42	-260.99	-9.32	2.27	5727796.70	596282.15
300	9.50	158.18	299.36	-265.93	-10.08	2.56	5727795.94	596282.45
305	9.83	155.97	304.29	-270.86	-10.84	2.90	5727795.18	596282.78
310	10.16	153.76	309.21	-275.78	-11.62	3.27	5727794.40	596283.15
315	10.49	151.55	314.13	-280.70	-12.41	3.69	5727793.61	596283.57
320	10.82	149.35	319.04	-285.61	-13.21	4.15	5727792.81	596284.03
325	11.23	147.28	323.95	-290.52	-14.02	4.65	5727792.00	596284.53
330	11.66	145.24	328.85	-295.42	-14.83	5.21	5727791.19	596285.09
335	12.09	143.21	333.75	-300.32	-15.66	5.81	5727790.36	596285.70
340	12.52	141.18	338.63	-305.20	-16.49	6.47	5727789.53	596286.35
345	12.95	139.14	343.51	-310.08	-17.32	7.18	5727788.70	596287.06
350	13.38	137.11	348.38	-314.95	-18.17	7.94	5727787.85	596287.83
355	13.83	136.35	353.24	-319.81	-19.02	8.75	5727787.00	596288.63
360	14.29	135.92	358.09	-324.66	-19.89	9.60	5727786.13	596289.48
365	14.75	135.48	362.93	-329.50	-20.79	10.47	5727785.23	596290.35
370	15.21	135.05	367.76	-334.33	-21.71	11.38	5727784.31	596291.27
375	15.67	134.62	372.58	-339.15	-22.64	12.33	5727783.38	596292.21
380	16.13	134.19	377.39	-343.96	-23.60	13.31	5727782.42	596293.19
385	16.51	134.15	382.19	-348.76	-24.58	14.32	5727781.44	596294.20
390	16.87	134.22	386.98	-353.55	-25.58	15.34	5727780.44	596295.23
395	17.23	134.28	391.76	-358.33	-26.60	16.39	5727779.42	596296.28
400	17.59	134.35	396.53	-363.10	-27.65	17.46	5727778.37	596297.35
405	17.95	134.41	401.29	-367.86	-28.71	18.56	5727777.31	596298.44
410	18.32	134.48	406.04	-372.61	-29.80	19.67	5727776.22	596299.55
415	18.65	134.44	410.78	-377.35	-30.91	20.80	5727775.11	596300.68
420	18.98	134.37	415.52	-382.09	-32.04	21.95	5727773.98	596301.83
425	19.30	134.31	420.24	-386.81	-33.19	23.12	5727772.83	596303.00
430	19.63	134.24	424.95	-391.52	-34.35	24.31	5727771.67	596304.20
435	19.96	134.18	429.66	-396.23	-35.53	25.53	5727770.49	596305.41
440	20.28	134.11	434.35	-400.92	-36.73	26.76	5727769.29	596306.64
445	20.62	134.08	439.04	-405.61	-37.94	28.02	5727768.08	596307.90
450	20.97	134.06	443.71	-410.28	-39.18	29.29	5727766.84	596309.17
455	21.31	134.03	448.38	-414.95	-40.43	30.59	5727765.59	596310.47
460	21.65	134.01	453.03	-419.60	-41.70	31.90	5727764.32	596311.79
465	22.00	133.99	457.67	-424.24	-42.99	33.24	5727763.03	596313.12
470	22.34	133.96	462.30	-428.87	-44.30	34.60	5727761.72	596314.48
475	22.62	133.91	466.92	-433.49	-45.63	35.97	5727760.39	596315.86
480	22.88	133.84	471.53	-438.10	-46.97	37.37	5727759.05	596317.25
485	23.15	133.78	476.13	-442.70	-48.32	38.78	5727757.70	596318.66
490	23.41	133.71	480.73	-447.30	-49.69	40.20	5727756.33	596320.09
495	23.67	133.65	485.31	-451.88	-51.07	41.65	5727754.95	596321.53
500	23.94	133.58	489.89	-456.46	-52.46	43.11	5727753.56	596322.99
505	24.21	133.58	494.45	-461.02	-53.86	44.59	5727752.16	596324.47
510	24.49	133.60	499.01	-465.58	-55.28	46.08	5727750.74	596325.96
515	24.77	133.61	503.55	-470.12	-56.72	47.59	5727749.30	596327.47
520	25.04	133.63	508.09	-474.66	-58.17	49.11	5727747.85	596328.99
525	25.31	133.64	512.61	-479.18	-59.64	50.65	5727746.38	596330.53

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
530	25.58	133.66	517.13	-483.70	-61.12	52.21	5727744.90	596332.09
535	25.84	133.67	521.63	-488.20	-62.62	53.77	5727743.40	596333.66
540	26.11	133.69	526.13	-492.70	-64.13	55.36	5727741.89	596335.24
545	26.37	133.70	530.61	-497.18	-65.66	56.96	5727740.36	596336.84
550	26.64	133.72	535.09	-501.66	-67.20	58.57	5727738.82	596338.45
555	27.04	133.80	539.55	-506.12	-68.76	60.20	5727737.26	596340.08
560	27.49	133.91	543.99	-510.56	-70.35	61.85	5727735.67	596341.73
565	27.93	134.01	548.42	-514.99	-71.96	63.52	5727734.06	596343.40
570	28.38	134.11	552.83	-519.40	-73.60	65.22	5727732.42	596345.10
575	28.82	134.22	557.22	-523.79	-75.27	66.93	5727730.75	596346.81
580	29.27	134.32	561.59	-528.16	-76.96	68.67	5727729.06	596348.55
585	29.72	134.38	565.94	-532.51	-78.69	70.43	5727727.33	596350.31
590	30.18	134.44	570.27	-536.84	-80.43	72.21	5727725.59	596352.09
595	30.64	134.50	574.59	-541.15	-82.20	74.02	5727723.81	596353.90
600	31.10	134.55	578.88	-545.45	-84.00	75.85	5727722.02	596355.73
605	31.56	134.61	583.15	-549.72	-85.83	77.70	5727720.19	596357.58
610	32.02	134.67	587.40	-553.97	-87.68	79.57	5727718.34	596359.45
615	32.51	134.66	591.63	-558.20	-89.56	81.47	5727716.46	596361.35
620	33.00	134.64	595.83	-562.40	-91.46	83.39	5727714.56	596363.28
625	33.50	134.62	600.01	-566.58	-93.38	85.34	5727712.64	596365.23
630	33.99	134.60	604.17	-570.74	-95.33	87.32	5727710.69	596367.20
635	34.48	134.58	608.30	-574.87	-97.31	89.32	5727708.71	596369.21
640	34.98	134.56	612.41	-578.98	-99.31	91.35	5727706.71	596371.24
645	35.48	134.60	616.50	-583.07	-101.33	93.41	5727704.69	596373.29
650	35.99	134.66	620.55	-587.12	-103.38	95.48	5727702.64	596375.37
655	36.50	134.71	624.59	-591.16	-105.46	97.59	5727700.56	596377.47
660	37.01	134.76	628.59	-595.16	-107.57	99.71	5727698.45	596379.59
665	37.52	134.82	632.57	-599.14	-109.70	101.86	5727696.32	596381.74
670	38.03	134.87	636.52	-603.09	-111.86	104.03	5727694.16	596383.91
675	38.63	134.84	640.45	-607.01	-114.05	106.23	5727691.97	596386.11
680	39.24	134.78	644.33	-610.90	-116.26	108.46	5727689.76	596388.34
685	39.86	134.72	648.19	-614.76	-118.50	110.72	5727687.52	596390.60
690	40.47	134.67	652.01	-618.58	-120.77	113.01	5727685.25	596392.89
695	41.09	134.61	655.80	-622.37	-123.06	115.33	5727682.96	596395.22
700	41.70	134.55	659.55	-626.12	-125.38	117.69	5727680.64	596397.57
705	41.95	134.57	663.27	-629.84	-127.72	120.07	5727678.30	596399.95
710	42.10	134.61	666.99	-633.55	-130.07	122.45	5727675.95	596402.33
715	42.25	134.66	670.69	-637.26	-132.43	124.84	5727673.59	596404.72
720	42.40	134.70	674.39	-640.96	-134.80	127.23	5727671.22	596407.11
725	42.55	134.74	678.08	-644.65	-137.17	129.63	5727668.85	596409.51
730	42.70	134.78	681.76	-648.33	-139.56	132.03	5727666.46	596411.91
735	42.67	134.76	685.43	-652.00	-141.95	134.44	5727664.07	596414.32
740	42.59	134.73	689.11	-655.68	-144.33	136.84	5727661.69	596416.73
745	42.51	134.70	692.79	-659.36	-146.71	139.24	5727659.31	596419.13
750	42.43	134.67	696.48	-663.05	-149.08	141.65	5727656.94	596421.53
755	42.35	134.64	700.17	-666.74	-151.45	144.04	5727654.57	596423.93
760	42.27	134.61	703.87	-670.44	-153.81	146.44	5727652.21	596426.32
765	42.17	134.63	707.57	-674.14	-156.17	148.83	5727649.85	596428.71
770	42.07	134.68	711.28	-677.85	-158.53	151.21	5727647.49	596431.10
775	41.97	134.72	715.00	-681.57	-160.88	153.59	5727645.14	596433.47
780	41.87	134.76	718.72	-685.29	-163.23	155.96	5727642.79	596435.85
785	41.77	134.81	722.44	-689.01	-165.58	158.33	5727640.44	596438.21
790	41.67	134.85	726.17	-692.75	-167.93	160.69	5727638.09	596440.57
795	41.72	134.90	729.91	-696.48	-170.27	163.05	5727635.75	596442.93
800	41.81	134.94	733.64	-700.21	-172.62	165.40	5727633.40	596445.29
805	41.89	134.99	737.36	-703.93	-174.98	167.76	5727631.04	596447.64
810	41.98	135.04	741.08	-707.65	-177.34	170.12	5727628.68	596450.01
815	42.07	135.08	744.80	-711.37	-179.71	172.49	5727626.31	596452.37
820	42.15	135.13	748.51	-715.08	-182.09	174.85	5727623.93	596454.74
825	42.13	135.17	752.21	-718.78	-184.47	177.22	5727621.55	596457.10
830	42.09	135.20	755.92	-722.49	-186.84	179.58	5727619.18	596459.47
835	42.04	135.23	759.63	-726.21	-189.22	181.94	5727616.80	596461.82

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
840	41.99	135.27	763.35	-729.92	-191.60	184.30	5727614.42	596464.18
845	41.95	135.30	767.07	-733.64	-193.97	186.65	5727612.05	596466.53
850	41.90	135.33	770.79	-737.36	-196.35	189.00	5727609.67	596468.88
855	42.17	135.28	774.50	-741.07	-198.73	191.35	5727607.29	596471.23
860	42.51	135.21	778.20	-744.77	-201.12	193.72	5727604.90	596473.60
865	42.86	135.14	781.88	-748.45	-203.52	196.11	5727602.50	596475.99
870	43.21	135.07	785.53	-752.10	-205.94	198.52	5727600.08	596478.40
875	43.56	135.00	789.16	-755.73	-208.37	200.95	5727597.65	596480.83
880	43.91	134.92	792.78	-759.35	-210.81	203.39	5727595.21	596483.27
885	43.91	134.88	796.38	-762.95	-213.26	205.85	5727592.76	596485.73
890	43.82	134.84	799.98	-766.55	-215.70	208.30	5727590.32	596488.19
895	43.74	134.81	803.59	-770.16	-218.14	210.76	5727587.88	596490.64
900	43.65	134.77	807.21	-773.77	-220.57	213.21	5727585.45	596493.09
905	43.59	133.58	810.83	-777.40	-222.98	215.68	5727583.04	596495.56
910	43.52	132.40	814.45	-781.02	-225.32	218.20	5727580.70	596498.08
915	43.45	131.21	818.09	-784.65	-227.62	220.76	5727578.40	596500.64
920	43.39	130.02	821.72	-788.29	-229.85	223.36	5727576.17	596503.24
925	43.32	128.83	825.36	-791.93	-232.03	226.01	5727573.99	596505.89
930	43.25	127.64	829.00	-795.57	-234.15	228.70	5727571.87	596508.58
935	43.19	126.45	832.65	-799.22	-236.21	231.43	5727569.81	596511.31
940	43.15	125.65	836.30	-802.87	-238.22	234.19	5727567.80	596514.08
945	43.12	124.90	839.95	-806.52	-240.19	236.98	5727565.83	596516.87
950	43.09	124.16	843.60	-810.17	-242.13	239.80	5727563.89	596519.68
955	43.06	123.41	847.25	-813.82	-244.03	242.63	5727561.99	596522.51
960	43.03	122.66	850.91	-817.48	-245.89	245.49	5727560.13	596525.37
965	43.00	121.91	854.57	-821.14	-247.71	248.37	5727558.31	596528.25
970	42.97	121.17	858.23	-824.80	-249.49	251.27	5727556.53	596531.16
975	42.94	120.42	861.89	-828.46	-251.23	254.20	5727554.79	596534.08
980	43.02	119.41	865.55	-832.12	-252.93	257.15	5727553.08	596537.03
985	43.18	118.21	869.20	-835.77	-254.58	260.14	5727551.44	596540.02
990	43.33	117.00	872.84	-839.41	-256.17	263.18	5727549.85	596543.06
995	43.46	115.97	876.47	-843.04	-257.70	266.25	5727548.32	596546.14
1000	43.54	115.21	880.10	-846.67	-259.18	269.36	5727546.84	596549.24
1005	43.62	114.45	883.72	-850.29	-260.63	272.48	5727545.39	596552.37
1010	43.70	113.69	887.34	-853.91	-262.03	275.63	5727543.99	596555.52
1015	43.78	112.93	890.96	-857.53	-263.40	278.81	5727542.62	596558.69
1020	43.86	112.17	894.56	-861.13	-264.73	282.00	5727541.29	596561.89
1025	43.99	111.34	898.17	-864.74	-266.01	285.22	5727540.00	596565.11
1030	44.17	110.44	901.76	-868.33	-267.25	288.47	5727538.76	596568.35
1035	44.34	109.54	905.34	-871.91	-268.45	291.75	5727537.57	596571.63
1040	44.52	108.64	908.91	-875.48	-269.59	295.06	5727536.43	596574.94
1045	44.69	107.74	912.48	-879.04	-270.68	298.39	5727535.34	596578.27
1050	44.87	106.84	916.02	-882.59	-271.73	301.75	5727534.29	596581.63
1055	44.86	106.56	919.57	-886.14	-272.74	305.13	5727533.28	596585.01
1060	44.80	106.47	923.11	-889.68	-273.74	308.51	5727532.28	596588.39
1065	44.73	106.37	926.66	-893.23	-274.73	311.89	5727531.29	596591.77
1070	44.67	106.28	930.22	-896.79	-275.72	315.26	5727530.30	596595.15
1075	44.61	106.19	933.77	-900.34	-276.71	318.64	5727529.31	596598.52
1080	44.55	106.08	937.34	-903.91	-277.68	322.01	5727528.34	596601.89
1085	44.61	105.82	940.90	-907.47	-278.64	325.38	5727527.37	596605.26
1090	44.67	105.55	944.46	-911.02	-279.59	328.76	5727526.43	596608.64
1095	44.72	105.29	948.01	-914.58	-280.53	332.15	5727525.49	596612.03
1100	44.78	105.02	951.56	-918.13	-281.45	335.55	5727524.57	596615.43
1105	44.83	104.76	955.11	-921.68	-282.35	338.95	5727523.67	596618.83
1110	44.93	104.64	958.65	-925.22	-283.25	342.36	5727522.77	596622.25
1115	45.10	104.78	962.19	-928.76	-284.15	345.78	5727521.87	596625.67
1120	45.26	104.92	965.71	-932.28	-285.05	349.21	5727520.97	596629.10
1125	45.43	105.05	969.23	-935.79	-285.97	352.65	5727520.05	596632.53
1130	45.60	105.19	972.73	-939.30	-286.90	356.09	5727519.12	596635.97
1135	45.77	105.33	976.22	-942.79	-287.85	359.54	5727518.17	596639.42
1140	45.81	105.42	979.71	-946.28	-288.80	363.00	5727517.22	596642.88
1145	45.76	105.48	983.19	-949.76	-289.75	366.45	5727516.27	596646.33

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1150	45.72	105.53	986.68	-953.25	-290.71	369.90	5727515.31	596649.79
1155	45.67	105.59	990.17	-956.75	-291.67	373.35	5727514.35	596653.23
1160	45.62	105.64	993.67	-960.24	-292.63	376.79	5727513.39	596656.67
1165	45.57	105.70	997.17	-963.74	-293.60	380.23	5727512.42	596660.11
1170	45.49	105.77	1000.67	-967.24	-294.56	383.66	5727511.46	596663.55
1175	45.41	105.84	1004.18	-970.75	-295.54	387.09	5727510.48	596666.97
1180	45.33	105.91	1007.69	-974.26	-296.51	390.51	5727509.51	596670.40
1185	45.25	105.98	1011.21	-977.78	-297.48	393.93	5727508.53	596673.81
1190	45.16	106.05	1014.73	-981.30	-298.46	397.34	5727507.56	596677.22
1195	45.08	106.13	1018.26	-984.83	-299.45	400.74	5727506.57	596680.63
1200	44.96	106.26	1021.80	-988.37	-300.43	404.14	5727505.59	596684.02
1205	44.84	106.38	1025.34	-991.91	-301.42	407.53	5727504.60	596687.41
1210	44.73	106.51	1028.89	-995.46	-302.42	410.90	5727503.60	596690.79
1215	44.61	106.63	1032.44	-999.01	-303.42	414.27	5727502.60	596694.16
1220	44.49	106.76	1036.01	-1002.58	-304.43	417.63	5727501.59	596697.51
1225	44.42	106.81	1039.58	-1006.15	-305.44	420.98	5727500.58	596700.87
1230	44.42	106.75	1043.15	-1009.72	-306.45	424.33	5727499.57	596704.22
1235	44.42	106.69	1046.72	-1013.29	-307.46	427.68	5727498.56	596707.57
1240	44.42	106.64	1050.29	-1016.86	-308.46	431.04	5727497.56	596710.92
1245	44.42	106.58	1053.86	-1020.43	-309.46	434.39	5727496.56	596714.27
1250	44.42	106.52	1057.43	-1024.00	-310.46	437.74	5727495.56	596717.63
1255	44.44	106.63	1061.00	-1027.57	-311.46	441.10	5727494.56	596720.98
1260	44.46	106.80	1064.57	-1031.14	-312.47	444.45	5727493.55	596724.33
1265	44.49	106.96	1068.14	-1034.71	-313.48	447.80	5727492.54	596727.69
1270	44.51	107.13	1071.70	-1038.28	-314.51	451.15	5727491.51	596731.03
1275	44.54	107.29	1075.27	-1041.84	-315.55	454.50	5727490.47	596734.38
1280	44.56	107.46	1078.83	-1045.40	-316.59	457.85	5727489.43	596737.73
1285	44.53	107.39	1082.40	-1048.97	-317.64	461.19	5727488.37	596741.08
1290	44.50	107.31	1085.96	-1052.53	-318.69	464.54	5727487.33	596744.42
1295	44.47	107.24	1089.53	-1056.10	-319.73	467.88	5727486.29	596747.77
1300	44.43	107.17	1093.10	-1059.67	-320.77	471.23	5727485.25	596751.11
1305	44.40	107.09	1096.67	-1063.24	-321.80	474.57	5727484.22	596754.45
1310	44.39	107.01	1100.24	-1066.81	-322.82	477.92	5727483.20	596757.80
1315	44.43	106.90	1103.82	-1070.39	-323.84	481.26	5727482.18	596761.14
1320	44.46	106.80	1107.39	-1073.95	-324.86	484.61	5727481.16	596764.49
1325	44.49	106.70	1110.95	-1077.52	-325.87	487.97	5727480.15	596767.85
1330	44.53	106.59	1114.52	-1081.09	-326.87	491.32	5727479.15	596771.21
1335	44.56	106.49	1118.08	-1084.65	-327.87	494.69	5727478.15	596774.57
1340	44.57	106.37	1121.64	-1088.21	-328.86	498.05	5727477.16	596777.93
1345	44.56	106.25	1125.20	-1091.78	-329.85	501.42	5727476.17	596781.30
1350	44.54	106.12	1128.77	-1095.34	-330.83	504.79	5727475.19	596784.67
1355	44.53	105.99	1132.33	-1098.90	-331.80	508.16	5727474.22	596788.04
1360	44.52	105.87	1135.90	-1102.47	-332.76	511.53	5727473.26	596791.41
1365	44.50	105.74	1139.46	-1106.03	-333.71	514.90	5727472.31	596794.78
1370	44.55	105.72	1143.03	-1109.60	-334.66	518.27	5727471.36	596798.16
1375	44.62	105.72	1146.59	-1113.16	-335.61	521.65	5727470.41	596801.53
1380	44.69	105.72	1150.15	-1116.72	-336.57	525.03	5727469.45	596804.92
1385	44.75	105.73	1153.70	-1120.27	-337.52	528.42	5727468.50	596808.30
1390	44.82	105.73	1157.25	-1123.82	-338.48	531.81	5727467.54	596811.69
1395	44.89	105.74	1160.79	-1127.36	-339.43	535.20	5727466.59	596815.09
1400	44.97	105.90	1164.33	-1130.90	-340.39	538.60	5727465.63	596818.48
1405	45.05	106.05	1167.87	-1134.44	-341.37	542.00	5727464.65	596821.88
1410	45.14	106.20	1171.40	-1137.97	-342.35	545.40	5727463.67	596825.28
1415	45.22	106.35	1174.92	-1141.49	-343.35	548.80	5727462.67	596828.69
1420	45.30	106.51	1178.44	-1145.01	-344.35	552.21	5727461.67	596832.09
1425	45.33	106.64	1181.95	-1148.53	-345.37	555.62	5727460.65	596835.50
1430	45.24	106.75	1185.47	-1152.04	-346.39	559.02	5727459.63	596838.90
1435	45.14	106.85	1189.00	-1155.57	-347.41	562.42	5727458.61	596842.30
1440	45.05	106.96	1192.53	-1159.10	-348.44	565.81	5727457.58	596845.69
1445	44.96	107.06	1196.06	-1162.63	-349.48	569.19	5727456.54	596849.07
1450	44.87	107.17	1199.60	-1166.17	-350.52	572.56	5727455.50	596852.44
1455	44.85	107.10	1203.15	-1169.72	-351.56	575.93	5727454.46	596855.81

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1460	44.89	106.92	1206.69	-1173.26	-352.59	579.30	5727453.43	596859.18
1465	44.92	106.74	1210.23	-1176.80	-353.61	582.68	5727452.41	596862.56
1470	44.96	106.56	1213.77	-1180.34	-354.62	586.06	5727451.40	596865.94
1475	44.99	106.38	1217.31	-1183.88	-355.63	589.45	5727450.39	596869.33
1480	45.02	106.20	1220.84	-1187.41	-356.62	592.84	5727449.40	596872.73
1485	45.03	105.99	1224.38	-1190.95	-357.60	596.24	5727448.42	596876.12
1490	45.02	105.77	1227.91	-1194.48	-358.57	599.64	5727447.45	596879.53
1495	45.02	105.55	1231.45	-1198.02	-359.52	603.05	5727446.50	596882.93
1500	45.01	105.33	1234.98	-1201.55	-360.46	606.46	5727445.56	596886.34
1505	45.00	105.11	1238.52	-1205.09	-361.39	609.87	5727444.63	596889.75
1510	44.98	104.91	1242.05	-1208.62	-362.31	613.28	5727443.71	596893.17
1515	44.83	104.85	1245.59	-1212.16	-363.21	616.69	5727442.81	596896.58
1520	44.67	104.79	1249.15	-1215.71	-364.11	620.10	5727441.91	596899.98
1525	44.52	104.73	1252.70	-1219.28	-365.01	623.49	5727441.01	596903.37
1530	44.36	104.67	1256.28	-1222.85	-365.90	626.88	5727440.12	596906.76
1535	44.21	104.61	1259.86	-1226.43	-366.78	630.25	5727439.24	596910.14
1540	44.13	104.53	1263.44	-1230.01	-367.66	633.62	5727438.36	596913.51
1545	44.24	104.41	1267.03	-1233.60	-368.53	637.00	5727437.49	596916.88
1550	44.35	104.29	1270.61	-1237.18	-369.39	640.38	5727436.63	596920.26
1555	44.46	104.17	1274.18	-1240.75	-370.25	643.77	5727435.76	596923.65
1560	44.57	104.04	1277.74	-1244.31	-371.11	647.17	5727434.91	596927.05
1565	44.68	103.92	1281.30	-1247.87	-371.96	650.58	5727434.06	596930.46
1570	44.77	103.83	1284.86	-1251.43	-372.80	653.99	5727433.22	596933.88
1575	44.86	103.77	1288.40	-1254.97	-373.64	657.42	5727432.38	596937.30
1580	44.94	103.70	1291.94	-1258.51	-374.48	660.84	5727431.54	596940.73
1585	45.03	103.63	1295.48	-1262.05	-375.31	664.28	5727430.71	596944.16
1590	45.12	103.57	1299.01	-1265.58	-376.15	667.72	5727429.87	596947.60
1595	45.20	103.50	1302.54	-1269.11	-376.98	671.17	5727429.04	596951.05
1600	45.31	103.62	1306.06	-1272.63	-377.81	674.62	5727428.21	596954.50
1605	45.43	103.78	1309.57	-1276.14	-378.65	678.07	5727427.37	596957.96
1610	45.55	103.93	1313.08	-1279.65	-379.51	681.54	5727426.51	596961.42
1615	45.66	104.09	1316.57	-1283.14	-380.37	685.00	5727425.65	596964.88
1620	45.78	104.25	1320.06	-1286.63	-381.25	688.47	5727424.77	596968.35
1625	45.89	104.40	1323.55	-1290.12	-382.14	691.95	5727423.88	596971.83
1630	45.84	104.47	1327.03	-1293.60	-383.03	695.42	5727422.99	596975.30
1635	45.80	104.53	1330.51	-1297.08	-383.93	698.89	5727422.09	596978.78
1640	45.76	104.60	1334.00	-1300.57	-384.83	702.36	5727421.19	596982.24
1645	45.71	104.66	1337.49	-1304.06	-385.74	705.82	5727420.28	596985.71
1650	45.67	104.73	1340.98	-1307.55	-386.64	709.28	5727419.38	596989.17
1655	45.62	104.81	1344.48	-1311.05	-387.55	712.74	5727418.47	596992.62
1660	45.57	104.91	1347.98	-1314.55	-388.47	716.19	5727417.55	596996.08
1665	45.53	105.02	1351.48	-1318.05	-389.39	719.64	5727416.63	596999.52
1670	45.48	105.13	1354.98	-1321.55	-390.32	723.09	5727415.70	597002.97
1675	45.43	105.24	1358.49	-1325.06	-391.25	726.52	5727414.77	597006.41
1680	45.38	105.35	1362.00	-1328.57	-392.19	729.96	5727413.83	597009.84
1685	45.36	105.43	1365.51	-1332.08	-393.14	733.39	5727412.88	597013.27
1690	45.35	105.50	1369.03	-1335.60	-394.09	736.81	5727411.93	597016.70
1695	45.34	105.57	1372.54	-1339.11	-395.04	740.24	5727410.98	597020.13
1700	45.34	105.64	1376.06	-1342.63	-396.00	743.67	5727410.02	597023.55
1705	45.33	105.71	1379.57	-1346.14	-396.96	747.09	5727409.06	597026.97
1710	45.32	105.77	1383.09	-1349.66	-397.92	750.51	5727408.10	597030.39
1715	45.32	105.84	1386.60	-1353.17	-398.89	753.93	5727407.13	597033.82
1720	45.31	105.90	1390.12	-1356.69	-399.86	757.35	5727406.16	597037.23
1725	45.31	105.97	1393.64	-1360.20	-400.84	760.77	5727405.18	597040.65
1730	45.31	106.03	1397.15	-1363.72	-401.82	764.19	5727404.20	597044.07
1735	45.30	106.10	1400.67	-1367.24	-402.80	767.60	5727403.22	597047.48
1740	45.30	106.16	1404.18	-1370.76	-403.79	771.02	5727402.23	597050.90
1745	45.35	106.11	1407.70	-1374.27	-404.78	774.43	5727401.24	597054.31
1750	45.40	106.07	1411.21	-1377.78	-405.77	777.85	5727400.25	597057.73
1755	45.45	106.03	1414.72	-1381.29	-406.75	781.27	5727399.27	597061.15
1760	45.50	105.99	1418.23	-1384.80	-407.73	784.70	5727398.29	597064.58
1765	45.55	105.94	1421.73	-1388.30	-408.72	788.13	5727397.30	597068.01

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1770	45.61	105.91	1425.23	-1391.80	-409.70	791.56	5727396.32	597071.44
1775	45.70	105.92	1428.72	-1395.29	-410.68	795.00	5727395.34	597074.88
1780	45.78	105.93	1432.21	-1398.78	-411.66	798.44	5727394.36	597078.33
1785	45.87	105.94	1435.70	-1402.27	-412.65	801.89	5727393.37	597081.77
1790	45.95	105.95	1439.18	-1405.75	-413.63	805.34	5727392.39	597085.23
1795	46.04	105.96	1442.65	-1409.22	-414.62	808.80	5727391.40	597088.68
1800	45.92	105.82	1446.12	-1412.69	-415.61	812.26	5727390.41	597092.14
1805	45.67	105.58	1449.61	-1416.18	-416.58	815.71	5727389.44	597095.59
1810	45.41	105.34	1453.11	-1419.68	-417.53	819.15	5727388.49	597099.03
1815	45.16	105.11	1456.63	-1423.20	-418.46	822.58	5727387.56	597102.46
1820	44.91	104.87	1460.16	-1426.73	-419.38	825.99	5727386.64	597105.88
1825	44.66	104.63	1463.71	-1430.28	-420.28	829.40	5727385.74	597109.28
1830	44.50	104.61	1467.27	-1433.84	-421.16	832.80	5727384.86	597112.68
1835	44.37	104.63	1470.84	-1437.41	-422.05	836.18	5727383.97	597116.06
1840	44.24	104.66	1474.42	-1440.99	-422.93	839.56	5727383.09	597119.44
1845	44.11	104.68	1478.01	-1444.58	-423.81	842.93	5727382.21	597122.81
1850	43.98	104.71	1481.60	-1448.17	-424.69	846.29	5727381.33	597126.18
1855	43.87	104.74	1485.20	-1451.77	-425.58	849.65	5727380.44	597129.53
1860	43.96	104.87	1488.81	-1455.38	-426.46	853.00	5727379.56	597132.88
1865	44.05	104.99	1492.40	-1458.97	-427.36	856.36	5727378.66	597136.24
1870	44.14	105.12	1495.99	-1462.56	-428.26	859.72	5727377.76	597139.60
1875	44.23	105.24	1499.58	-1466.15	-429.17	863.08	5727376.84	597142.96
1880	44.32	105.37	1503.16	-1469.73	-430.10	866.44	5727375.92	597146.33
1885	44.40	105.46	1506.73	-1473.30	-431.03	869.81	5727374.99	597149.70
1890	44.48	105.48	1510.30	-1476.87	-431.96	873.19	5727374.06	597153.07
1895	44.55	105.51	1513.87	-1480.44	-432.90	876.57	5727373.12	597156.45
1900	44.63	105.53	1517.43	-1484.00	-433.84	879.95	5727372.18	597159.83
1905	44.70	105.56	1520.99	-1487.56	-434.78	883.33	5727371.24	597163.22
1910	44.77	105.58	1524.54	-1491.11	-435.72	886.72	5727370.30	597166.61
1915	44.83	105.49	1528.09	-1494.66	-436.67	890.12	5727369.35	597170.00
1920	44.87	105.34	1531.63	-1498.20	-437.61	893.52	5727368.41	597173.40
1925	44.91	105.18	1535.17	-1501.74	-438.54	896.92	5727367.48	597176.80
1930	44.95	105.03	1538.71	-1505.28	-439.46	900.33	5727366.56	597180.21
1935	44.99	104.87	1542.25	-1508.82	-440.37	903.74	5727365.65	597183.62
1940	45.03	104.72	1545.79	-1512.36	-441.27	907.16	5727364.75	597187.04
1945	44.94	104.71	1549.32	-1515.89	-442.17	910.58	5727363.85	597190.46
1950	44.85	104.73	1552.87	-1519.43	-443.07	913.99	5727362.95	597193.87
1955	44.75	104.75	1556.41	-1522.98	-443.96	917.40	5727362.06	597197.28
1960	44.65	104.76	1559.97	-1526.54	-444.86	920.80	5727361.16	597200.68
1965	44.56	104.78	1563.53	-1530.10	-445.76	924.19	5727360.26	597204.08
1970	44.49	104.79	1567.09	-1533.66	-446.65	927.58	5727359.37	597207.47
1975	44.61	104.78	1570.66	-1537.22	-447.54	930.98	5727358.48	597210.86
1980	44.74	104.78	1574.21	-1540.78	-448.44	934.37	5727357.58	597214.26
1985	44.86	104.77	1577.76	-1544.33	-449.34	937.78	5727356.68	597217.66
1990	44.99	104.76	1581.30	-1547.87	-450.24	941.19	5727355.78	597221.08
1995	45.11	104.75	1584.83	-1551.40	-451.14	944.62	5727354.88	597224.50
2000	45.14	104.75	1588.36	-1554.93	-452.05	948.04	5727353.97	597227.93
2005	45.00	104.75	1591.89	-1558.46	-452.95	951.47	5727353.07	597231.35
2010	44.86	104.74	1595.43	-1562.00	-453.85	954.88	5727352.17	597234.76
2015	44.72	104.74	1598.98	-1565.55	-454.74	958.29	5727351.28	597238.17
2020	44.58	104.73	1602.53	-1569.10	-455.64	961.69	5727350.38	597241.57
2025	44.44	104.73	1606.10	-1572.67	-456.53	965.08	5727349.49	597244.96
2030	44.44	104.73	1609.67	-1576.24	-457.42	968.46	5727348.60	597248.34
2035	44.52	104.73	1613.24	-1579.81	-458.31	971.85	5727347.71	597251.73
2040	44.61	104.73	1616.80	-1583.37	-459.20	975.24	5727346.82	597255.12
2045	44.69	104.74	1620.36	-1586.93	-460.10	978.64	5727345.92	597258.52
2050	44.77	104.74	1623.91	-1590.48	-460.99	982.04	5727345.03	597261.92
2055	44.85	104.74	1627.46	-1594.03	-461.89	985.45	5727344.13	597265.33
2060	44.96	104.86	1631.00	-1597.57	-462.79	988.86	5727343.23	597268.74
2065	45.06	104.98	1634.53	-1601.10	-463.70	992.28	5727342.32	597272.16
2070	45.17	105.11	1638.06	-1604.63	-464.62	995.70	5727341.40	597275.58
2075	45.27	105.23	1641.58	-1608.15	-465.55	999.12	5727340.47	597279.01

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2080	45.38	105.36	1645.10	-1611.67	-466.49	1002.55	5727339.53	597282.44
2085	45.45	105.47	1648.61	-1615.18	-467.44	1005.99	5727338.58	597285.87
2090	45.31	105.44	1652.12	-1618.69	-468.39	1009.42	5727337.63	597289.30
2095	45.16	105.41	1655.64	-1622.21	-469.33	1012.84	5727336.69	597292.72
2100	45.02	105.38	1659.17	-1625.74	-470.27	1016.25	5727335.75	597296.13
2105	44.87	105.35	1662.71	-1629.28	-471.21	1019.66	5727334.81	597299.54
2110	44.73	105.32	1666.26	-1632.83	-472.14	1023.06	5727333.88	597302.94
2115	44.67	105.31	1669.81	-1636.38	-473.07	1026.45	5727332.95	597306.33
2120	44.74	105.34	1673.37	-1639.94	-474.00	1029.84	5727332.02	597309.72
2125	44.81	105.37	1676.92	-1643.49	-474.93	1033.23	5727331.09	597313.12
2130	44.88	105.39	1680.46	-1647.03	-475.87	1036.63	5727330.15	597316.52
2135	44.95	105.42	1684.00	-1650.57	-476.80	1040.04	5727329.22	597319.92
2140	45.02	105.45	1687.54	-1654.11	-477.75	1043.44	5727328.27	597323.33
2145	45.06	105.54	1691.07	-1657.64	-478.69	1046.85	5727327.33	597326.73
2150	45.09	105.65	1694.61	-1661.18	-479.64	1050.26	5727326.38	597330.14
2155	45.11	105.77	1698.13	-1664.70	-480.60	1053.67	5727325.42	597333.55
2160	45.14	105.88	1701.66	-1668.23	-481.57	1057.08	5727324.45	597336.96
2165	45.17	106.00	1705.19	-1671.76	-482.54	1060.49	5727323.48	597340.37
2170	45.19	106.12	1708.71	-1675.28	-483.52	1063.90	5727322.50	597343.78
2175	45.08	106.13	1712.24	-1678.81	-484.51	1067.30	5727321.51	597347.18
2180	44.92	106.11	1715.77	-1682.34	-485.49	1070.70	5727320.53	597350.58
2185	44.77	106.09	1719.32	-1685.89	-486.47	1074.09	5727319.55	597353.97
2190	44.62	106.07	1722.87	-1689.44	-487.45	1077.46	5727318.57	597357.35
2195	44.46	106.06	1726.44	-1693.01	-488.42	1080.83	5727317.60	597360.71
2200	44.32	106.03	1730.01	-1696.58	-489.38	1084.19	5727316.64	597364.08
2205	44.38	105.96	1733.59	-1700.16	-490.35	1087.55	5727315.67	597367.44
2210	44.44	105.89	1737.16	-1703.73	-491.31	1090.92	5727314.71	597370.80
2215	44.50	105.82	1740.73	-1707.30	-492.26	1094.29	5727313.76	597374.17
2220	44.55	105.74	1744.29	-1710.86	-493.22	1097.66	5727312.80	597377.54
2225	44.61	105.67	1747.85	-1714.42	-494.17	1101.04	5727311.85	597380.92
2230	44.66	105.64	1751.41	-1717.98	-495.12	1104.42	5727310.90	597384.31
2235	44.71	105.71	1754.96	-1721.54	-496.07	1107.81	5727309.95	597387.69
2240	44.75	105.78	1758.52	-1725.09	-497.02	1111.19	5727309.00	597391.08
2245	44.79	105.85	1762.07	-1728.64	-497.98	1114.58	5727308.04	597394.46
2250	44.84	105.93	1765.61	-1732.18	-498.95	1117.97	5727307.07	597397.85
2255	44.88	106.00	1769.16	-1735.73	-499.92	1121.36	5727306.10	597401.24
2260	44.92	106.06	1772.70	-1739.27	-500.89	1124.75	5727305.13	597404.64
2265	44.96	106.12	1776.24	-1742.81	-501.87	1128.15	5727304.15	597408.03
2270	45.00	106.18	1779.78	-1746.35	-502.86	1131.54	5727303.16	597411.42
2275	45.03	106.24	1783.31	-1749.88	-503.84	1134.94	5727302.17	597414.82
2280	45.07	106.30	1786.84	-1753.41	-504.84	1138.33	5727301.18	597418.22
2285	45.11	106.36	1790.37	-1756.94	-505.83	1141.73	5727300.19	597421.62
2290	45.16	106.37	1793.90	-1760.47	-506.83	1145.13	5727299.19	597425.01
2295	45.22	106.36	1797.42	-1763.99	-507.83	1148.54	5727298.19	597428.42
2300	45.27	106.36	1800.94	-1767.51	-508.83	1151.94	5727297.19	597431.82
2305	45.33	106.35	1804.46	-1771.03	-509.83	1155.35	5727296.19	597435.23
2310	45.38	106.35	1807.97	-1774.54	-510.83	1158.77	5727295.19	597438.65
2315	45.44	106.34	1811.48	-1778.05	-511.84	1162.18	5727294.18	597442.06
2320	45.40	106.31	1814.99	-1781.56	-512.84	1165.60	5727293.18	597445.48
2325	45.35	106.28	1818.51	-1785.08	-513.84	1169.02	5727292.18	597448.90
2330	45.31	106.26	1822.02	-1788.59	-514.83	1172.43	5727291.19	597452.31
2335	45.27	106.23	1825.54	-1792.11	-515.83	1175.84	5727290.19	597455.72
2340	45.22	106.20	1829.06	-1795.63	-516.82	1179.25	5727289.20	597459.13
2345	45.21	106.17	1832.58	-1799.15	-517.81	1182.66	5727288.21	597462.54
2350	45.31	106.15	1836.10	-1802.67	-518.80	1186.07	5727287.22	597465.95
2355	45.40	106.13	1839.62	-1806.18	-519.79	1189.49	5727286.23	597469.37
2360	45.50	106.10	1843.12	-1809.69	-520.78	1192.91	5727285.24	597472.79
2365	45.59	106.08	1846.62	-1813.19	-521.77	1196.34	5727284.25	597476.22
2370	45.69	106.05	1850.12	-1816.69	-522.76	1199.77	5727283.26	597479.66
2375	45.67	106.02	1853.61	-1820.18	-523.75	1203.21	5727282.27	597483.10
2380	45.53	105.96	1857.11	-1823.68	-524.73	1206.65	5727281.29	597486.53
2385	45.40	105.91	1860.62	-1827.19	-525.71	1210.07	5727280.31	597489.96

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2390	45.26	105.86	1864.13	-1830.70	-526.69	1213.49	5727279.33	597493.38
2395	45.12	105.81	1867.66	-1834.22	-527.65	1216.90	5727278.37	597496.79
2400	44.98	105.76	1871.19	-1837.76	-528.62	1220.31	5727277.40	597500.19
2405	45.05	105.78	1874.72	-1841.29	-529.58	1223.71	5727276.44	597503.59
2410	45.18	105.81	1878.25	-1844.82	-530.54	1227.12	5727275.48	597507.00
2415	45.30	105.85	1881.77	-1848.34	-531.51	1230.54	5727274.51	597510.42
2420	45.43	105.89	1885.29	-1851.86	-532.49	1233.96	5727273.53	597513.84
2425	45.56	105.93	1888.79	-1855.36	-533.46	1237.39	5727272.56	597517.27
2430	45.67	105.96	1892.29	-1858.86	-534.45	1240.82	5727271.57	597520.71
2435	45.60	105.93	1895.78	-1862.35	-535.43	1244.26	5727270.59	597524.14
2440	45.53	105.90	1899.28	-1865.85	-536.41	1247.69	5727269.61	597527.58
2445	45.45	105.87	1902.79	-1869.36	-537.38	1251.12	5727268.64	597531.01
2450	45.38	105.84	1906.30	-1872.87	-538.36	1254.55	5727267.66	597534.43
2455	45.30	105.81	1909.81	-1876.38	-539.33	1257.97	5727266.69	597537.85
2460	45.22	105.78	1913.33	-1879.90	-540.30	1261.39	5727265.72	597541.27
2465	45.14	105.74	1916.86	-1883.43	-541.26	1264.80	5727264.76	597544.68
2470	45.05	105.70	1920.39	-1886.96	-542.22	1268.21	5727263.80	597548.09
2475	44.97	105.66	1923.92	-1890.49	-543.18	1271.62	5727262.84	597551.50
2480	44.89	105.62	1927.46	-1894.03	-544.13	1275.02	5727261.89	597554.90
2485	44.80	105.58	1931.01	-1897.58	-545.08	1278.41	5727260.94	597558.29
2490	44.90	105.61	1934.55	-1901.12	-546.02	1281.81	5727259.99	597561.69
2495	45.11	105.68	1938.09	-1904.66	-546.98	1285.21	5727259.04	597565.09
2500	45.32	105.74	1941.61	-1908.18	-547.94	1288.63	5727258.08	597568.51
2505	45.53	105.80	1945.12	-1911.69	-548.91	1292.05	5727257.11	597571.94
2510	45.74	105.87	1948.62	-1915.19	-549.89	1295.49	5727256.13	597575.38
2515	45.95	105.93	1952.10	-1918.67	-550.87	1298.94	5727255.15	597578.83
2520	46.00	106.07	1955.57	-1922.14	-551.86	1302.40	5727254.16	597582.28
2525	45.97	106.24	1959.05	-1925.62	-552.86	1305.85	5727253.16	597585.74
2530	45.95	106.41	1962.52	-1929.09	-553.87	1309.30	5727252.15	597589.19
2535	45.93	106.58	1966.00	-1932.57	-554.89	1312.75	5727251.13	597592.63
2540	45.91	106.75	1969.48	-1936.05	-555.92	1316.19	5727250.09	597596.07
2545	45.89	106.92	1972.96	-1939.53	-556.96	1319.63	5727249.06	597599.51
2550	45.77	106.85	1976.44	-1943.01	-558.01	1323.06	5727248.01	597602.94
2555	45.64	106.77	1979.93	-1946.50	-559.04	1326.48	5727246.98	597606.37
2560	45.51	106.68	1983.43	-1950.00	-560.07	1329.90	5727245.95	597609.79
2565	45.38	106.60	1986.94	-1953.51	-561.09	1333.32	5727244.93	597613.20
2570	45.25	106.52	1990.46	-1957.03	-562.11	1336.72	5727243.91	597616.61
2575	45.13	106.45	1993.98	-1960.55	-563.11	1340.12	5727242.91	597620.01
2580	45.07	106.45	1997.51	-1964.08	-564.12	1343.52	5727241.90	597623.40
2585	45.00	106.44	2001.04	-1967.61	-565.12	1346.91	5727240.90	597626.80
2590	44.93	106.44	2004.58	-1971.15	-566.12	1350.30	5727239.90	597630.19
2595	44.86	106.44	2008.12	-1974.69	-567.12	1353.69	5727238.90	597633.57
2600	44.79	106.43	2011.67	-1978.24	-568.12	1357.07	5727237.90	597636.95
2605	44.70	106.43	2015.22	-1981.79	-569.11	1360.44	5727236.91	597640.33
2610	44.60	106.45	2018.78	-1985.35	-570.11	1363.81	5727235.91	597643.70
2615	44.49	106.46	2022.34	-1988.91	-571.10	1367.18	5727234.92	597647.06
2620	44.39	106.47	2025.91	-1992.48	-572.09	1370.53	5727233.93	597650.42
2625	44.28	106.48	2029.49	-1996.06	-573.08	1373.89	5727232.93	597653.77
2630	44.18	106.49	2033.07	-1999.64	-574.07	1377.23	5727231.95	597657.11
2635	44.22	106.41	2036.66	-2003.23	-575.06	1380.57	5727230.96	597660.45
2640	44.30	106.31	2040.24	-2006.81	-576.05	1383.92	5727229.97	597663.80
2645	44.39	106.20	2043.81	-2010.38	-577.03	1387.27	5727228.99	597667.16
2650	44.48	106.10	2047.38	-2013.95	-578.00	1390.64	5727228.02	597670.52
2655	44.57	105.99	2050.95	-2017.52	-578.97	1394.01	5727227.05	597673.89
2660	44.65	105.89	2054.51	-2021.08	-579.93	1397.38	5727226.09	597677.26
2665	44.56	105.88	2058.07	-2024.64	-580.89	1400.76	5727225.13	597680.64
2670	44.48	105.88	2061.63	-2028.20	-581.85	1404.13	5727224.17	597684.01
2675	44.40	105.87	2065.20	-2031.77	-582.81	1407.50	5727223.21	597687.38
2680	44.32	105.86	2068.78	-2035.35	-583.77	1410.86	5727222.25	597690.74
2685	44.24	105.86	2072.36	-2038.93	-584.72	1414.22	5727221.30	597694.10
2690	44.21	105.84	2075.94	-2042.51	-585.68	1417.57	5727220.34	597697.46
2695	44.30	105.83	2079.52	-2046.09	-586.63	1420.93	5727219.39	597700.81

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2700	44.40	105.81	2083.10	-2049.67	-587.58	1424.29	5727218.44	597704.18
2705	44.50	105.79	2086.67	-2053.24	-588.54	1427.66	5727217.48	597707.54
2710	44.60	105.77	2090.23	-2056.80	-589.49	1431.04	5727216.53	597710.92
2715	44.70	105.75	2093.79	-2060.36	-590.45	1434.42	5727215.57	597714.30
2720	44.72	105.78	2097.34	-2063.91	-591.40	1437.81	5727214.62	597717.69
2725	44.68	105.86	2100.89	-2067.46	-592.36	1441.19	5727213.66	597721.07
2730	44.65	105.93	2104.45	-2071.02	-593.32	1444.57	5727212.70	597724.45
2735	44.61	106.00	2108.01	-2074.58	-594.29	1447.95	5727211.73	597727.83
2740	44.58	106.08	2111.57	-2078.14	-595.26	1451.32	5727210.76	597731.20
2745	44.54	106.15	2115.13	-2081.70	-596.24	1454.69	5727209.78	597734.57
2750	44.58	106.20	2118.70	-2085.26	-597.21	1458.06	5727208.80	597737.94
2755	44.64	106.24	2122.25	-2088.82	-598.20	1461.43	5727207.82	597741.31
2760	44.71	106.28	2125.81	-2092.38	-599.18	1464.81	5727206.84	597744.69
2765	44.77	106.31	2129.36	-2095.93	-600.17	1468.19	5727205.85	597748.07
2770	44.84	106.35	2132.91	-2099.48	-601.16	1471.57	5727204.86	597751.45
2775	44.90	106.39	2136.45	-2103.02	-602.16	1474.95	5727203.86	597754.83
2780	44.85	106.43	2140.00	-2106.57	-603.15	1478.33	5727202.87	597758.22
2785	44.80	106.48	2143.54	-2110.11	-604.15	1481.72	5727201.87	597761.60
2790	44.75	106.52	2147.09	-2113.66	-605.15	1485.09	5727200.87	597764.97
2795	44.71	106.56	2150.64	-2117.21	-606.16	1488.46	5727199.86	597768.35
2800	44.66	106.61	2154.20	-2120.77	-607.16	1491.83	5727198.86	597771.72
2805	44.61	106.62	2157.76	-2124.33	-608.17	1495.20	5727197.85	597775.08
2810	44.57	106.58	2161.32	-2127.89	-609.17	1498.56	5727196.85	597778.45
2815	44.52	106.55	2164.88	-2131.45	-610.17	1501.93	5727195.85	597781.81
2820	44.47	106.52	2168.45	-2135.02	-611.17	1505.29	5727194.85	597785.17
2825	44.43	106.48	2172.02	-2138.59	-612.16	1508.64	5727193.86	597788.53
2830	44.38	106.45	2175.59	-2142.16	-613.16	1512.00	5727192.86	597791.88
2835	44.32	106.42	2179.16	-2145.73	-614.14	1515.35	5727191.88	597795.23
2840	44.25	106.41	2182.74	-2149.31	-615.13	1518.70	5727190.89	597798.58
2845	44.17	106.40	2186.33	-2152.90	-616.12	1522.04	5727189.90	597801.93
2850	44.10	106.39	2189.92	-2156.49	-617.10	1525.38	5727188.92	597805.27
2855	44.02	106.38	2193.51	-2160.08	-618.08	1528.72	5727187.94	597808.60
2860	43.95	106.36	2197.11	-2163.68	-619.06	1532.05	5727186.96	597811.94
2865	43.88	106.36	2200.71	-2167.28	-620.04	1535.38	5727185.98	597815.26
2870	43.82	106.35	2204.31	-2170.88	-621.01	1538.70	5727185.00	597818.59
2875	43.76	106.35	2207.92	-2174.49	-621.99	1542.02	5727184.03	597821.91
2880	43.70	106.34	2211.54	-2178.11	-622.96	1545.34	5727183.06	597825.22
2885	43.63	106.34	2215.15	-2181.72	-623.94	1548.65	5727182.08	597828.54
2890	43.57	106.33	2218.77	-2185.34	-624.91	1551.96	5727181.11	597831.85
2895	43.49	106.33	2222.40	-2188.97	-625.87	1555.27	5727180.15	597835.15
2900	43.41	106.33	2226.03	-2192.60	-626.84	1558.57	5727179.18	597838.45
2905	43.34	106.34	2229.66	-2196.23	-627.81	1561.86	5727178.21	597841.74
2910	43.26	106.34	2233.30	-2199.87	-628.77	1565.15	5727177.25	597845.04
2915	43.18	106.34	2236.95	-2203.51	-629.74	1568.44	5727176.28	597848.32
2920	43.11	106.33	2240.59	-2207.16	-630.70	1571.72	5727175.32	597851.60
2925	43.09	106.31	2244.24	-2210.81	-631.66	1575.00	5727174.36	597854.88
2929	43.08	106.30	2247.17	-2213.74	-632.43	1577.62	5727173.59	597857.50
2930	43.07	106.29	2247.90	-2214.47	-632.62	1578.28	5727173.40	597858.16
2931	43.07	106.29	2248.63	-2215.20	-632.81	1578.93	5727173.21	597858.81
2932	43.06	106.28	2249.36	-2215.93	-633.00	1579.59	5727173.02	597859.47
2933	43.06	106.28	2250.09	-2216.66	-633.20	1580.24	5727172.82	597860.12
2934	43.06	106.28	2250.82	-2217.39	-633.39	1580.90	5727172.63	597860.78
2935	43.05	106.27	2251.55	-2218.12	-633.58	1581.55	5727172.44	597861.44
2936	43.05	106.27	2252.28	-2218.85	-633.77	1582.21	5727172.25	597862.09
2937	43.04	106.26	2253.01	-2219.58	-633.96	1582.86	5727172.06	597862.75
2938	43.04	106.26	2253.74	-2220.31	-634.15	1583.52	5727171.87	597863.40
2939	43.04	106.26	2254.47	-2221.04	-634.34	1584.17	5727171.68	597864.06
2940	43.03	106.25	2255.20	-2221.77	-634.54	1584.83	5727171.48	597864.71
2941	43.03	106.25	2255.93	-2222.51	-634.73	1585.48	5727171.29	597865.37
2942	43.02	106.24	2256.67	-2223.24	-634.92	1586.14	5727171.10	597866.02
2943	43.02	106.24	2257.40	-2223.97	-635.11	1586.79	5727170.91	597866.68
2944	43.01	106.23	2258.13	-2224.70	-635.30	1587.45	5727170.72	597867.33

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2945	43.01	106.23	2258.86	-2225.43	-635.49	1588.10	5727170.53	597867.99
2946	43.01	106.23	2259.59	-2226.16	-635.68	1588.76	5727170.34	597868.64
2947	43.00	106.22	2260.32	-2226.89	-635.87	1589.41	5727170.15	597869.30
2948	43.01	106.22	2261.05	-2227.62	-636.06	1590.07	5727169.96	597869.95
2949	43.01	106.23	2261.78	-2228.35	-636.25	1590.72	5727169.77	597870.61
2950	43.02	106.23	2262.51	-2229.09	-636.44	1591.38	5727169.58	597871.26
2951	43.03	106.24	2263.25	-2229.82	-636.63	1592.03	5727169.38	597871.92
2952	43.04	106.24	2263.98	-2230.55	-636.83	1592.69	5727169.19	597872.57
2953	43.05	106.25	2264.71	-2231.28	-637.02	1593.35	5727169.00	597873.23
2954	43.06	106.25	2265.44	-2232.01	-637.21	1594.00	5727168.81	597873.88
2955	43.07	106.26	2266.17	-2232.74	-637.40	1594.66	5727168.62	597874.54
2956	43.08	106.26	2266.90	-2233.47	-637.59	1595.31	5727168.43	597875.19
2957	43.08	106.27	2267.63	-2234.20	-637.78	1595.97	5727168.24	597875.85
2958	43.09	106.27	2268.36	-2234.93	-637.97	1596.62	5727168.05	597876.51
2959	43.10	106.28	2269.09	-2235.66	-638.17	1597.28	5727167.85	597877.16
2960	43.11	106.28	2269.82	-2236.39	-638.36	1597.93	5727167.66	597877.82
2961	43.12	106.29	2270.55	-2237.12	-638.55	1598.59	5727167.47	597878.47
2962	43.13	106.29	2271.28	-2237.85	-638.74	1599.25	5727167.28	597879.13
2963	43.14	106.30	2272.01	-2238.58	-638.93	1599.90	5727167.09	597879.79
2964	43.15	106.30	2272.74	-2239.31	-639.12	1600.56	5727166.90	597880.44
2965	43.15	106.31	2273.47	-2240.04	-639.32	1601.22	5727166.70	597881.10
2966	43.16	106.31	2274.20	-2240.77	-639.51	1601.87	5727166.51	597881.76
2967	43.17	106.32	2274.93	-2241.50	-639.70	1602.53	5727166.32	597882.41
2968	43.18	106.32	2275.66	-2242.23	-639.89	1603.18	5727166.13	597883.07
2969	43.19	106.33	2276.39	-2242.96	-640.09	1603.84	5727165.93	597883.72
2970	43.20	106.33	2277.12	-2243.69	-640.28	1604.50	5727165.74	597884.38
2971	43.21	106.34	2277.84	-2244.42	-640.47	1605.16	5727165.55	597885.04
2972	43.22	106.34	2278.57	-2245.14	-640.66	1605.81	5727165.36	597885.70
2973	43.22	106.35	2279.30	-2245.87	-640.86	1606.47	5727165.16	597886.35
2974	43.23	106.35	2280.03	-2246.60	-641.05	1607.13	5727164.97	597887.01
2975	43.24	106.36	2280.76	-2247.33	-641.24	1607.78	5727164.78	597887.67
2976	43.25	106.36	2281.49	-2248.06	-641.43	1608.44	5727164.58	597888.32
2977	43.27	106.37	2282.22	-2248.79	-641.63	1609.10	5727164.39	597888.98
2978	43.29	106.37	2282.94	-2249.51	-641.82	1609.76	5727164.20	597889.64
2979	43.31	106.38	2283.67	-2250.24	-642.02	1610.42	5727164.00	597890.30
2980	43.34	106.38	2284.40	-2250.97	-642.21	1611.07	5727163.81	597890.96
2981	43.36	106.39	2285.13	-2251.70	-642.40	1611.73	5727163.62	597891.62
2982	43.38	106.39	2285.85	-2252.42	-642.60	1612.39	5727163.42	597892.27
2983	43.40	106.40	2286.58	-2253.15	-642.79	1613.05	5727163.23	597892.93
2984	43.42	106.40	2287.31	-2253.88	-642.98	1613.71	5727163.04	597893.59
2985	43.44	106.41	2288.03	-2254.60	-643.18	1614.37	5727162.84	597894.25
2986	43.46	106.41	2288.76	-2255.33	-643.37	1615.03	5727162.65	597894.91
2987	43.48	106.42	2289.49	-2256.05	-643.57	1615.69	5727162.45	597895.57
2988	43.50	106.42	2290.21	-2256.78	-643.76	1616.35	5727162.26	597896.23
2989	43.52	106.43	2290.93	-2257.51	-643.96	1617.01	5727162.06	597896.89
2990	43.55	106.43	2291.66	-2258.23	-644.15	1617.67	5727161.87	597897.55
2991	43.57	106.44	2292.39	-2258.95	-644.35	1618.33	5727161.67	597898.21
2992	43.59	106.44	2293.11	-2259.68	-644.54	1618.99	5727161.48	597898.88
2993	43.61	106.45	2293.83	-2260.40	-644.74	1619.65	5727161.28	597899.54
2994	43.63	106.45	2294.56	-2261.13	-644.93	1620.32	5727161.09	597900.20
2995	43.65	106.46	2295.28	-2261.85	-645.13	1620.98	5727160.89	597900.86
2996	43.67	106.46	2296.01	-2262.57	-645.33	1621.64	5727160.69	597901.52
2997	43.69	106.47	2296.73	-2263.30	-645.52	1622.30	5727160.50	597902.18
2998	43.71	106.47	2297.45	-2264.02	-645.72	1622.96	5727160.30	597902.85
2999	43.73	106.48	2298.17	-2264.74	-645.91	1623.63	5727160.11	597903.51
3000	43.76	106.48	2298.90	-2265.47	-646.11	1624.29	5727159.91	597904.17
3001	43.78	106.49	2299.62	-2266.19	-646.31	1624.95	5727159.71	597904.84
3002	43.80	106.49	2300.34	-2266.91	-646.50	1625.62	5727159.52	597905.50
3003	43.82	106.50	2301.06	-2267.63	-646.70	1626.28	5727159.32	597906.16
3004	43.84	106.51	2301.78	-2268.35	-646.90	1626.95	5727159.12	597906.83
3005	43.86	106.51	2302.50	-2269.07	-647.09	1627.61	5727158.93	597907.49
3006	43.88	106.53	2303.22	-2269.80	-647.29	1628.27	5727158.73	597908.16

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3007	43.91	106.55	2303.95	-2270.52	-647.49	1628.94	5727158.53	597908.82
3008	43.93	106.57	2304.67	-2271.24	-647.69	1629.60	5727158.33	597909.49
3009	43.96	106.59	2305.39	-2271.96	-647.88	1630.27	5727158.14	597910.15
3010	43.98	106.61	2306.11	-2272.68	-648.08	1630.93	5727157.94	597910.82
3011	44.00	106.63	2306.82	-2273.40	-648.28	1631.60	5727157.74	597911.48
3012	44.03	106.65	2307.54	-2274.11	-648.48	1632.26	5727157.54	597912.15
3013	44.05	106.67	2308.26	-2274.83	-648.68	1632.93	5727157.34	597912.81
3014	44.07	106.69	2308.98	-2275.55	-648.88	1633.60	5727157.14	597913.48
3015	44.10	106.71	2309.70	-2276.27	-649.08	1634.26	5727156.94	597914.15
3016	44.12	106.73	2310.42	-2276.99	-649.28	1634.93	5727156.74	597914.81
3017	44.14	106.75	2311.14	-2277.71	-649.48	1635.60	5727156.54	597915.48
3018	44.17	106.77	2311.85	-2278.42	-649.68	1636.26	5727156.34	597916.15
3019	44.19	106.79	2312.57	-2279.14	-649.88	1636.93	5727156.14	597916.81
3020	44.22	106.81	2313.29	-2279.86	-650.09	1637.60	5727155.93	597917.48
3021	44.24	106.83	2314.00	-2280.57	-650.29	1638.27	5727155.73	597918.15
3022	44.26	106.85	2314.72	-2281.29	-650.49	1638.93	5727155.53	597918.82
3023	44.29	106.87	2315.44	-2282.01	-650.69	1639.60	5727155.33	597919.48
3024	44.31	106.89	2316.15	-2282.72	-650.90	1640.27	5727155.12	597920.15
3025	44.33	106.91	2316.87	-2283.44	-651.10	1640.94	5727154.92	597920.82
3026	44.36	106.93	2317.58	-2284.15	-651.30	1641.61	5727154.72	597921.49
3027	44.38	106.95	2318.30	-2284.87	-651.51	1642.28	5727154.51	597922.16
3028	44.40	106.97	2319.01	-2285.58	-651.71	1642.95	5727154.31	597922.83
3029	44.43	107.00	2319.73	-2286.30	-651.92	1643.62	5727154.10	597923.50
3030	44.45	107.02	2320.44	-2287.01	-652.12	1644.28	5727153.90	597924.17
3031	44.48	107.04	2321.15	-2287.72	-652.33	1644.95	5727153.69	597924.84
3032	44.50	107.06	2321.87	-2288.44	-652.53	1645.62	5727153.49	597925.51
3033	44.52	107.08	2322.58	-2289.15	-652.74	1646.29	5727153.28	597926.18
3034	44.55	107.09	2323.29	-2289.86	-652.94	1646.96	5727153.08	597926.85
3035	44.57	107.08	2324.01	-2290.58	-653.15	1647.64	5727152.87	597927.52
3036	44.60	107.08	2324.72	-2291.29	-653.36	1648.31	5727152.66	597928.19
3037	44.62	107.07	2325.43	-2292.00	-653.56	1648.98	5727152.46	597928.86
3038	44.65	107.06	2326.14	-2292.71	-653.77	1649.65	5727152.25	597929.53
3039	44.67	107.06	2326.85	-2293.42	-653.98	1650.32	5727152.04	597930.20
3040	44.70	107.05	2327.56	-2294.13	-654.18	1650.99	5727151.84	597930.88
3041	44.72	107.04	2328.27	-2294.84	-654.39	1651.67	5727151.63	597931.55
3042	44.75	107.04	2328.99	-2295.55	-654.59	1652.34	5727151.42	597932.22
3043	44.77	107.03	2329.70	-2296.26	-654.80	1653.01	5727151.22	597932.90
3044	44.80	107.02	2330.41	-2296.97	-655.01	1653.69	5727151.01	597933.57
3045	44.82	107.02	2331.11	-2297.68	-655.21	1654.36	5727150.81	597934.24
3046	44.85	107.01	2331.82	-2298.39	-655.42	1655.03	5727150.60	597934.92
3047	44.87	107.01	2332.53	-2299.10	-655.63	1655.71	5727150.39	597935.59
3048	44.90	107.00	2333.24	-2299.81	-655.83	1656.38	5727150.19	597936.27
3049	44.92	106.99	2333.95	-2300.52	-656.04	1657.06	5727149.98	597936.94
3050	44.95	106.99	2334.66	-2301.23	-656.25	1657.73	5727149.77	597937.62
3051	44.97	106.98	2335.36	-2301.93	-656.45	1658.41	5727149.57	597938.29
3052	44.99	106.97	2336.07	-2302.64	-656.66	1659.09	5727149.36	597938.97
3053	45.02	106.97	2336.78	-2303.35	-656.87	1659.76	5727149.15	597939.64
3054	45.04	106.96	2337.49	-2304.06	-657.07	1660.44	5727148.95	597940.32
3055	45.07	106.95	2338.19	-2304.76	-657.28	1661.12	5727148.74	597941.00
3056	45.09	106.95	2338.90	-2305.47	-657.49	1661.79	5727148.53	597941.68
3057	45.12	106.94	2339.60	-2306.17	-657.69	1662.47	5727148.33	597942.35
3058	45.14	106.93	2340.31	-2306.88	-657.90	1663.15	5727148.12	597943.03
3059	45.17	106.93	2341.01	-2307.59	-658.11	1663.83	5727147.91	597943.71
3060	45.19	106.92	2341.72	-2308.29	-658.31	1664.51	5727147.71	597944.39
3061	45.22	106.92	2342.42	-2308.99	-658.52	1665.18	5727147.50	597945.07
3062	45.24	106.91	2343.13	-2309.70	-658.73	1665.86	5727147.29	597945.75
3063	45.27	106.93	2343.83	-2310.40	-658.93	1666.54	5727147.09	597946.43
3064	45.30	106.94	2344.54	-2311.11	-659.14	1667.22	5727146.88	597947.11
3065	45.32	106.96	2345.24	-2311.81	-659.35	1667.90	5727146.67	597947.79
3066	45.35	106.98	2345.94	-2312.51	-659.55	1668.58	5727146.46	597948.47
3067	45.37	106.99	2346.65	-2313.22	-659.76	1669.26	5727146.26	597949.15
3068	45.40	107.01	2347.35	-2313.92	-659.97	1669.95	5727146.05	597949.83

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3069	45.43	107.02	2348.05	-2314.62	-660.18	1670.63	5727145.84	597950.51
3070	45.45	107.04	2348.75	-2315.32	-660.39	1671.31	5727145.63	597951.19
3071	45.48	107.06	2349.45	-2316.02	-660.60	1671.99	5727145.42	597951.87
3072	45.51	107.07	2350.15	-2316.72	-660.81	1672.67	5727145.21	597952.55
3073	45.53	107.09	2350.85	-2317.42	-661.02	1673.35	5727145.00	597953.24
3074	45.56	107.10	2351.55	-2318.12	-661.23	1674.03	5727144.79	597953.92
3075	45.58	107.10	2352.25	-2318.82	-661.44	1674.72	5727144.58	597954.60
3076	45.61	107.10	2352.95	-2319.52	-661.65	1675.40	5727144.37	597955.28
3077	45.63	107.10	2353.65	-2320.22	-661.86	1676.08	5727144.16	597955.97
3078	45.66	107.10	2354.35	-2320.92	-662.07	1676.77	5727143.95	597956.65
3079	45.69	107.10	2355.05	-2321.62	-662.28	1677.45	5727143.74	597957.33
3080	45.71	107.10	2355.75	-2322.32	-662.49	1678.14	5727143.53	597958.02
3081	45.74	107.10	2356.45	-2323.02	-662.70	1678.82	5727143.32	597958.70
3082	45.76	107.10	2357.15	-2323.72	-662.91	1679.50	5727143.11	597959.39
3083	45.79	107.10	2357.84	-2324.41	-663.12	1680.19	5727142.90	597960.07
3084	45.82	107.10	2358.54	-2325.11	-663.33	1680.87	5727142.69	597960.76
3085	45.84	107.10	2359.24	-2325.81	-663.54	1681.56	5727142.48	597961.44
3086	45.87	107.10	2359.93	-2326.50	-663.76	1682.25	5727142.26	597962.13
3087	45.89	107.10	2360.63	-2327.20	-663.97	1682.93	5727142.05	597962.81
3088	45.92	107.10	2361.32	-2327.90	-664.18	1683.62	5727141.84	597963.50
3089	45.94	107.10	2362.02	-2328.59	-664.39	1684.30	5727141.63	597964.19
3090	45.97	107.10	2362.72	-2329.29	-664.60	1684.99	5727141.42	597964.88
3091	46.00	107.10	2363.41	-2329.98	-664.81	1685.68	5727141.21	597965.56
3092	46.02	107.10	2364.11	-2330.68	-665.02	1686.37	5727141.00	597966.25
3093	46.05	107.10	2364.80	-2331.37	-665.24	1687.06	5727140.78	597966.94
3094	46.07	107.10	2365.49	-2332.06	-665.45	1687.74	5727140.57	597967.63
3095	46.10	107.10	2366.19	-2332.76	-665.66	1688.43	5727140.36	597968.31

APPENDIX 2a

WEST KINGFISH W27A

Petrophysics Evaluation Summary

Esso Australia Pty Ltd.
Exploration Department

West Kingfish W27A
Petrophysics Report

Petrophysicist: K.Kuttan
October 2006

West Kingfish W27A Petrophysical Analysis

West Kingfish W27A was designed to capture oil reserves in the M1.3U, M1.3L, M1.4 and possibly M1.5 sands near the structural crest, west of the Kingfish Channel. The M1.3U and M1.3L reservoirs are present in the nearby Kingfish A14A and A21; however these are yet to be perforated.

West Kingfish W27A was kicked off at 899mMD out the 10.75inch casing of the abandoned West Kingfish W27 well. A 8.5 inch directional hole was drilled from 899mMD to a total depth of 3093.0 mMD. The well was logged with Precision Energy Services compact shuttle system from 3089mMD (first reading) to 895m MD. After completing the logging operations, the well was completed with 7" production casing and 3.5 inch tubing.

The Precision Energy Services Shuttle logs have been analysed for porosity, water saturation and net pay over the interval 2940-3055mMD.

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

DATA

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

Survey/Log	Suite	Company	Top (m MDRT)	Bottom (m MDRT)
Compact Gamma Ray - Compact Dual Neutron - Compact Photodensity - Compact Sonic - Compact Dual Laterolog- Compact Induction	1	Precision Energy Services	895	3089

Deviation

The well angle over the West Kingfish reservoirs was about 44 degrees.

Mud Data

Mud Type : KCl/Glycol/PHPA
Mud Weight: 9.7 ppg
Rm: 0.105 @ 25 °C
Rmf: 0.08 @ 25 °C
Rmc: 0.081 @ 25 °C
BHT: 93.8 °C

Hole Size

899- 3093 mMD 8.5 inches

Data Acquisition & Log Quality

All log data were of acceptable quality.

Data Processing

Because of the shaly and thinly bedded nature of the upper West Kingfish reservoirs a combination of unfiltered and filtered logs (both provided by Precision) as shown below were used in the interpretation. However, the unfiltered density log (DEN) provided by Precision was considered to be too “noisy” to be used in the interpretation. Hence a 3 point-equal-weighting filter was used to filter this log. The deep and shallow resistivity (DDL and DSSL), the filtered DEN and associated curves, photoelectric – (PDPE), density correction(DCOR) and caliper (CLDC), were depth-matched to the gamma ray (GRGC) which had been depth-matched and merged with LWD gamma ray (GRM1). The neutron porosity log

(NPRL) was depth matched to the filtered and GR-depth-matched DEN. Similarly, the compressional sonic log (DT35) was depth matched to the DEN.

No environmental corrections other than those applied in the field were applied to the final logs.

Logs	Status
GRGC	filtered
DDL	Unfiltered
DSL	Unfiltered
DEN	3 point, equal weighting
NPRL	Unfiltered
PDPE	Filtered
DT35	Filtered

INTERPRETATION

Logs Used

The primary logs used in the interpretation were, DDL (deep resistivity), DEN (bulk density), NPRL (thermal neutron porosity in LPU), DT35 (compressional sonic) and U (photoelectric effect). U was generated from the photoelectric curve PDPE using the following relationship:

$$U = (PDPE - 0.16) * ((DEN + 0.1883) / 1.0704).$$

The reason for the adjusting the formation photoelectric curve is the fact that measured values appear to be higher than the theoretical values in clean quartz sands (of the order of 2.1+ vs the theoretical value of 1.81)

Coal intervals were identified using a coal flag (Flag_coal). A temperature log was created using the following data:

Depth(mMD)	Temperature (deg. C)
92.2	10
3089	103.8

The temperature at depth 92.2 mMD represents the temperature of the sea-bed and the temperature at 3089m mD (first reading of the Precision logs) is the estimated formation temperature –BHT +10 deg.

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 30000ppm NaCl equivalent. This salinity was used as the formation water salinity for all the sands.

Hydrocarbon Type Identification

In West Kingfish the only hydrocarbons to be found is oil

Shale Volume, Porosity and Water Saturation

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

ELAN+ MODEL

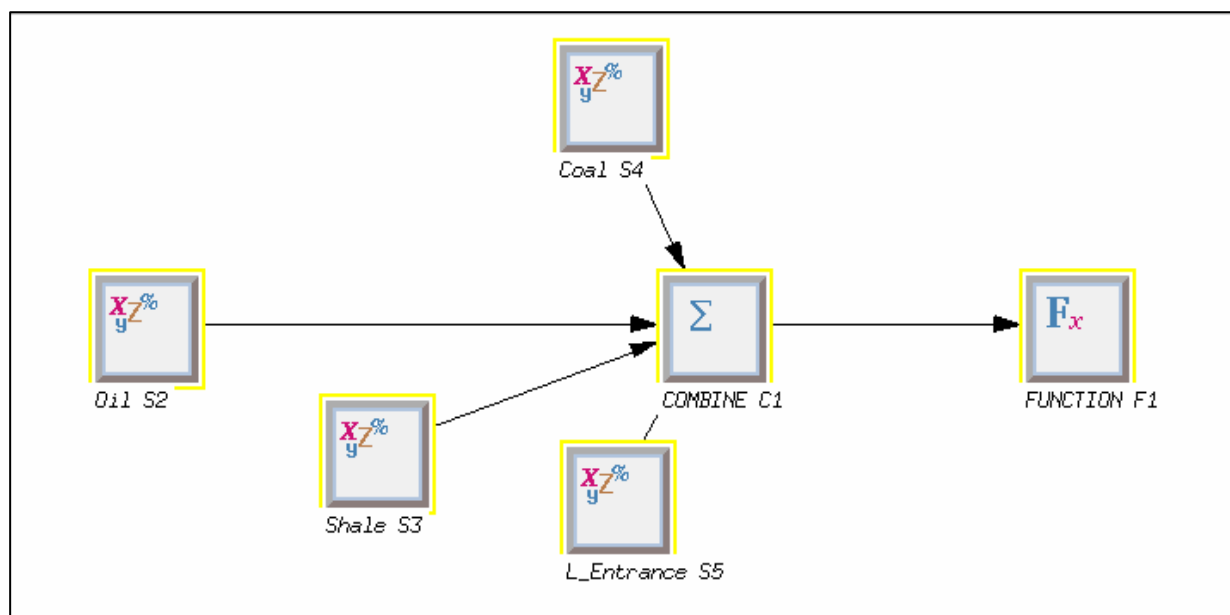


Figure 1: Elan + Model and Module Configuration

ELAN Input Channels

Log Curve Selector		Selector Options	
Compound Name Spec		WEST KINGFISH W27A	
TEMP_CH	TEMP;*	TEMP TEMP TEMP@Elan_Input;5 [A1806882]	
RHOB_IFAC_CH	IFRH;*		
NPHI_IFAC_CH	INPH;*		
RHOB_CH	DEN:BPB;*	DEN DEN DEN@Elan_Input;15 [A1806867]	
NPHI_CH	NPRL:BPB;*	NPRL NPRL NPRL@Elan_Input;15 [A1806875]	
DT_CH	DT35:BPB;*	DT35 DT35 DT35@Elan_Input;14 [A1806861]	
U_CH	U;*	U U U@Elan_Input;5 [A1806869]	
CUDC_CH/RT_CH	DDLL:BPB;*	DDLL DDLL DDLL@Elan_Input;13 [A1806857]	
PRB2_CH	DEPT:BPB;*	DEPT DEPT DEPT@Elan_Input;7 [A1806887]	
PRB3_CH	PRB3;*		
PRB4_CH	FLAG_COAL;*	FLAG_COAL FLAG_COAL FLAG_COAL@Elan_In	
PRB5_CH	PRB5;*		
M_CH	MXP;*		

ELAN Global Parameters

Reference Index	MD
Processing Interval	2940.0000(m) To 3055.0000(m)
Sampling Rate	0.1(m)
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	IMMOVABLE_HYDROCARBONReference

ELAN Zone Definition

Name	Bottom To Top
Glau_Shale	2940.0(m) To 2946.0(m)
C_Clastics	2946.0(m) To 3083.0(m)

ELAN Process Definition

Process SOLVE2 "Oil"

Equations	RHOB	NPHI	DT	U	CUDC_DWA	CT2
Volumes	QUAR	ORTH	GLAU	ILLI	XWAT	UOIL

Constraint Zones	Bottom	Top
UNDEFINED	3088.9956(m)	2940.0000(m)

Constraints Applied	
UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW

Process SOLVE3 "Shale"

Equations	RHOB	NPHI	U	CUDC_DWA	
Volumes	QUAR	PYRI	GLAU	ILLI	XWAT
					UWAT

Constraint Zones	Bottom	Top
UNDEFINED	3088.9956(m)	2940.0000(m)

Process SOLVE4 "Coal"

Equations	RHOB
Volumes	COAL

Constraint Zones	Bottom	Top
UNDEFINED	3088.9956(m)	2940.0000(m)

Process **COMBINE 1 "COMBINE"**

Order SOL.2 SOL.3 SOL.4 SOL.5

Combine Method

"C_Clastics " 10134.5000 (m) Internal Average

Probability Functions

```
probability(SOL.4, PRB4_CH)
prob3 = linear((ILLI_VOL.SOL.3+GLAU_VOL.SOL.3), 0.2, 0, 0.6, 1)
probability(SOL.3, prob3)
```

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))
output(SWT, swt_cmp)
```

RESULTS AND DISCUSSION

A summary of the petrophysical analysis is detailed in Table 1 and illustrated in Fig. 2.

Intervals.2954.0-2956.0mMD(M1.2Oil), 2960.0-2965.8mMD(M1.3UOil), 2966.4-2970.9(M1.3UOil), 2974.7-2975.3 (M1.3UPossOil)

These 4 zones are interpreted to be oil bearing although the calculated effective water saturations are high. The main reason for suggesting that these zones are likely to be oil bearing is the fact that nearby well at this structural level are all oil bearing. The high water saturation observed in each of the zone is probably due to the thin bedded nature of the reservoirs. The logging tools, in particular, the resistivity tool are not able to resolve the beds.

Intervals 2980.6 – 2981.4mMD(M1.3LOil), 2982.5-2983.4mMD(M1.3LOil)

Both these zones are interpreted to be oil bearing although they have high effective water saturations. Similar to the M1.2UOil and M1.3UOil zones, the high water saturations are ascribed to primarily to the thin bedded nature of the sands

Intervals: 2983.8 – 2986.5mMD(M1.3LResOil)

This interval is interpreted to be a residual oil zones although the effective water saturation is similar to that in the M1.3UOil and M1.3LOil zones. The observed decreasing resistivity with increasing porosity which is generally typical of water be oil or residual oil zones, is the main reason for suggesting that this zone is residual oil zone.

Interval 2987.4 – 2990.6mMD(M1.4UOil),2990.6 – 2993.5mMD(M1.4UResOil)

The effective water saturation in the interval 2987.4-2990.6mMD is lower than that in the interval 2990.6 – 2993.5mMD. This difference may indicate that the upper interval may be oil bearing and the lower interval to be a residual oil zone. However, the upper interval is shaly relative to the lower zone and therefore both intervals could be residual oil zones. Nevertheless, given this uncertainty it is worthwhile perforation the upper zone when all the oil zones below these intervals have been depleted

Interval 2994.2 – 2994.7mMD(M1.4LPossOil)

This zone is a very thin shaly sand that lies between two coals. The effective water saturation suggests that it could be oil bearing.

Interval 2995.6 – 2998.0(M1.4LOil), 2998.0- 2999.0(M1.4LResOil)

The effective water saturation and the resistivity response suggest that the interval 2995.6-2998.0mMD is clearly oil bearing with the interval 2998.0-2999.0mMD to be a residual oil zone. An OWC is interpreted at 2999.0mMD.

Interval 2999.6 – 3000.8mMD (M1.4LOil)

This interval is clearly oil bearing as indicated by the effective water saturation. It is postulated that the thin shale in the interval 2999.0-2999.8mMD is acting a barrier to flow and thereby trapping oil in this small interval. There is indication from the resistivity log of the presence of a possible OWC at 3000.8mMD. This has been borne out to some extent by the results of the perforations. Two intervals 2996.7-2997.5mMD and 3000.0-3001.0mMD were perforated and put on production on the 1st August 2006. The well flowed 239klo/d with a water cut of 71%. The most recent well test (2 nd October 2006) indicated a flow rate of 56klo/d with a water cut of 92%.

Interval 3002.4 – 3003.6mMD(M1.4LOil)

An oil zone is interpreted to be present in this interval with an OWC at 3003.6mMD.

All the intervals below 3003.6mMD are all residual oil zones.

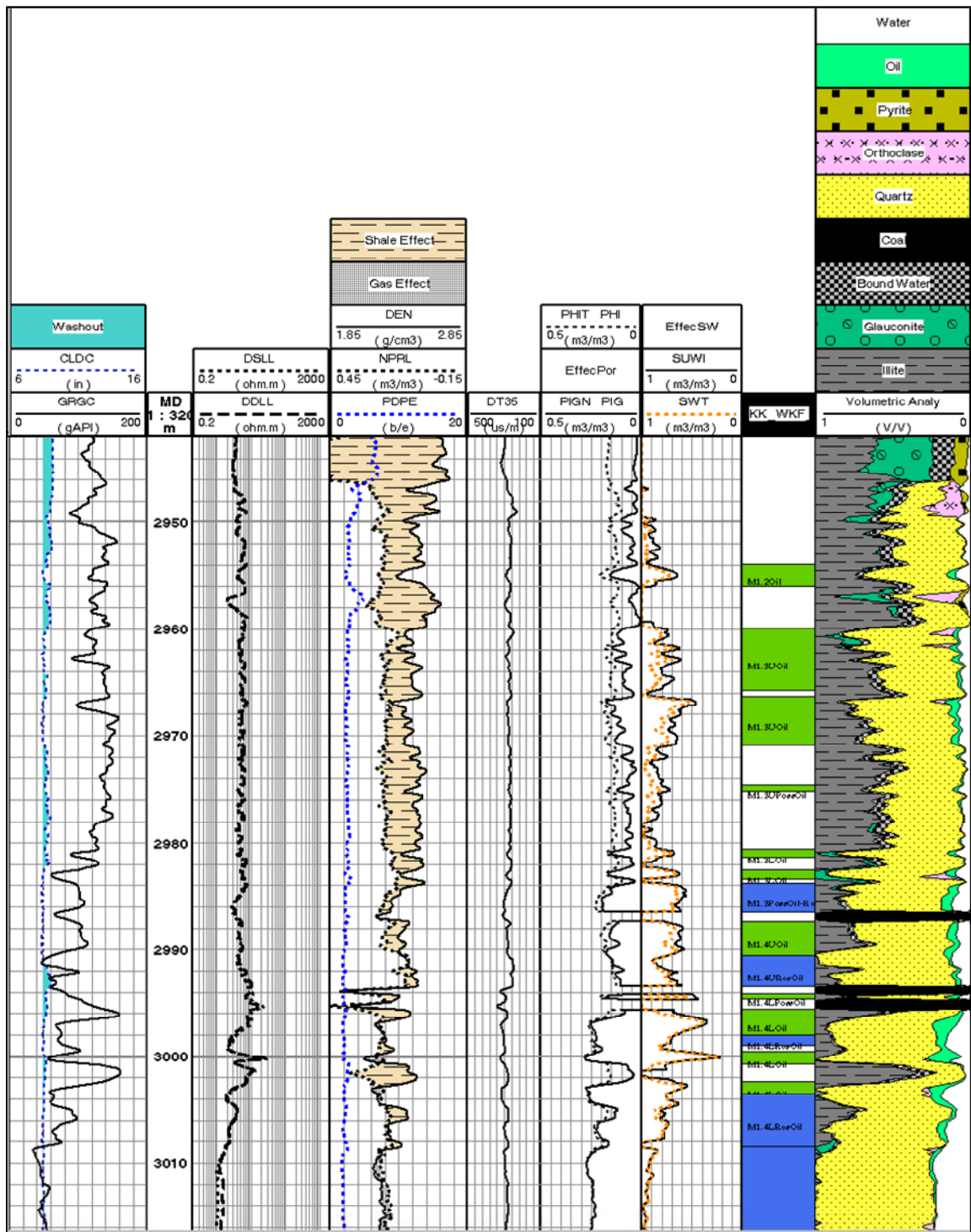


Fig. 2 West Kingfish W27A Interval 2940.0 – 3055 mMD

West Kingfish W27A

Petrophysical Summary 2940.0 - 3055.0m MD

Depth Reference:

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

Primary: mDKB

0.10 for oil & water

Zone	Top Depth mMD	Top Depth mTVDSS	Bottom Depth mMD	Bottom Depth mTVDSS	Gross Thickness mMD	Gross Thickness mTVD	Net/Gross	Mean VCL	Mean PHIE	Mean SWE	Comments	Net Pay Thickness mMD	Net Pay Thickness mTVD
M1.2Oil	2954.0	2232.0	2956.0	2233.5	2.0	1.5	0.45	0.34	0.137	0.68	Oil bearing	0.9	0.7
M1.3UOil	2960.0	2236.4	2965.8	2240.6	5.8	4.2	0.36	0.26	0.119	0.70	Probably oil bearing	2.1	1.5
M1.3UOil	2966.4	2241.1	2970.9	2244.3	4.5	3.3	0.80	0.29	0.129	0.61	Oil bearing	3.6	2.6
M1.3UPossOil	2974.7	2247.1	2975.3	2247.6	0.6	0.4	0.58	0.35	0.115	0.72	Possibly oil bearing	0.4	0.3
M1.3LOil	2980.6	2251.4	2981.4	2252.0	0.8	0.6	0.75	0.19	0.136	0.69	Oil bearing	0.6	0.4
M1.3LOil	2982.5	2252.8	2983.4	2253.4	0.9	0.7	0.83	0.12	0.144	0.66	Oil bearing	0.8	0.5
M1.3LResOil	2983.8	2253.7	2986.5	2255.7	2.7	2.0	0.93	0.21	0.171	0.61	Most likely residual oil		
M1.4UOil	2987.4	2256.3	2990.6	2258.6	3.2	2.3	1.02	0.24	0.143	0.64	Probably oil bearing	3.3	2.4
M1.4UResOil	2990.6	2258.6	2993.5	2260.7	2.9	2.1	0.84	0.09	0.127	0.76	Most likely residual oil		
M1.4LPossOil	2994.2	2261.3	2994.7	2261.6	0.5	0.4	0.70	0.20	0.162	0.46	Possibly oil bearing	0.3	0.3
M1.4LOil	2995.6	2262.3	2998.0	2264.0	2.4	1.7	0.77	0.15	0.214	0.46	Oil bearing, OWC at 2998.0m MD	1.9	1.3
M1.4LResOil	2998.0	2264.0	2999.0	2264.7	1.0	0.7	1.00	0.12	0.225	0.71	Residual oil		
M1.4LOil	2999.6	2265.2	3000.8	2266.0	1.2	0.9	0.96	0.11	0.243	0.41	Oil bearing, possible OWC at 3000.8mMD	1.1	0.8
M1.4LOil	3002.4	2267.2	3003.6	2268.1	1.2	0.9	0.96	0.13	0.229	0.63	Oil bearing, OWC at 3003.6.0m MD	1.2	0.8
M1.4LResOil	3003.6	2268.1	3008.5	2271.6	4.9	3.5	1.00	0.15	0.190	0.77	Residual oil		
M1.5ResOil	3008.5	2271.6	3055.0	2304.7	46.5	33.2	1.00	0.03	0.252	0.94	Residual oil		

Table 1



ExxonMobil

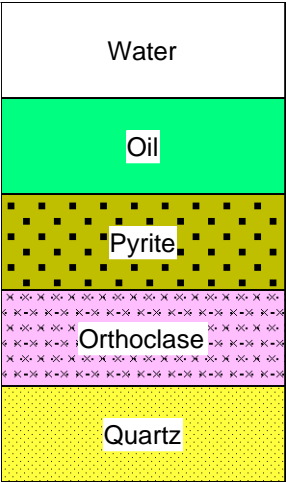
WEST KINGFISH W27A

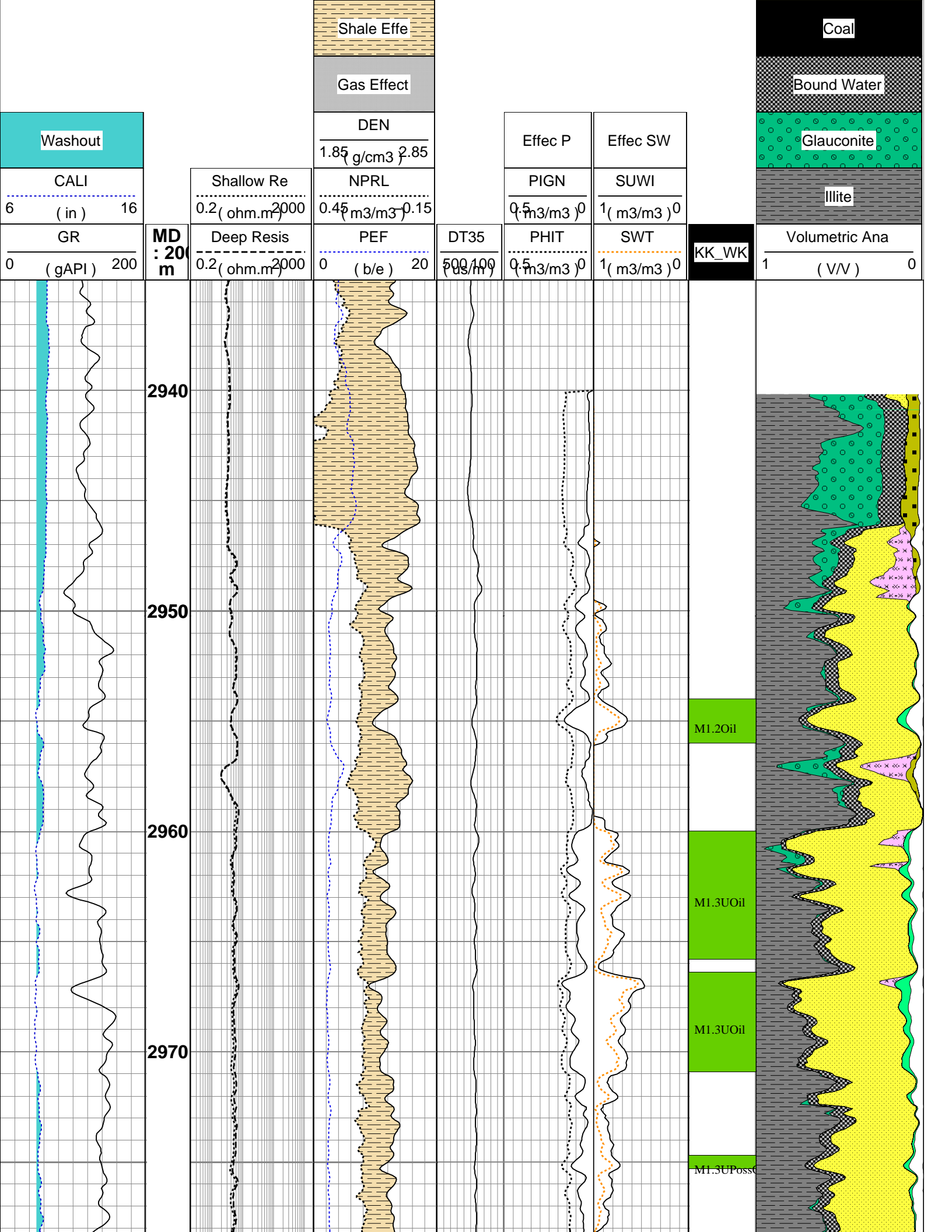
Petrophysical Analysis

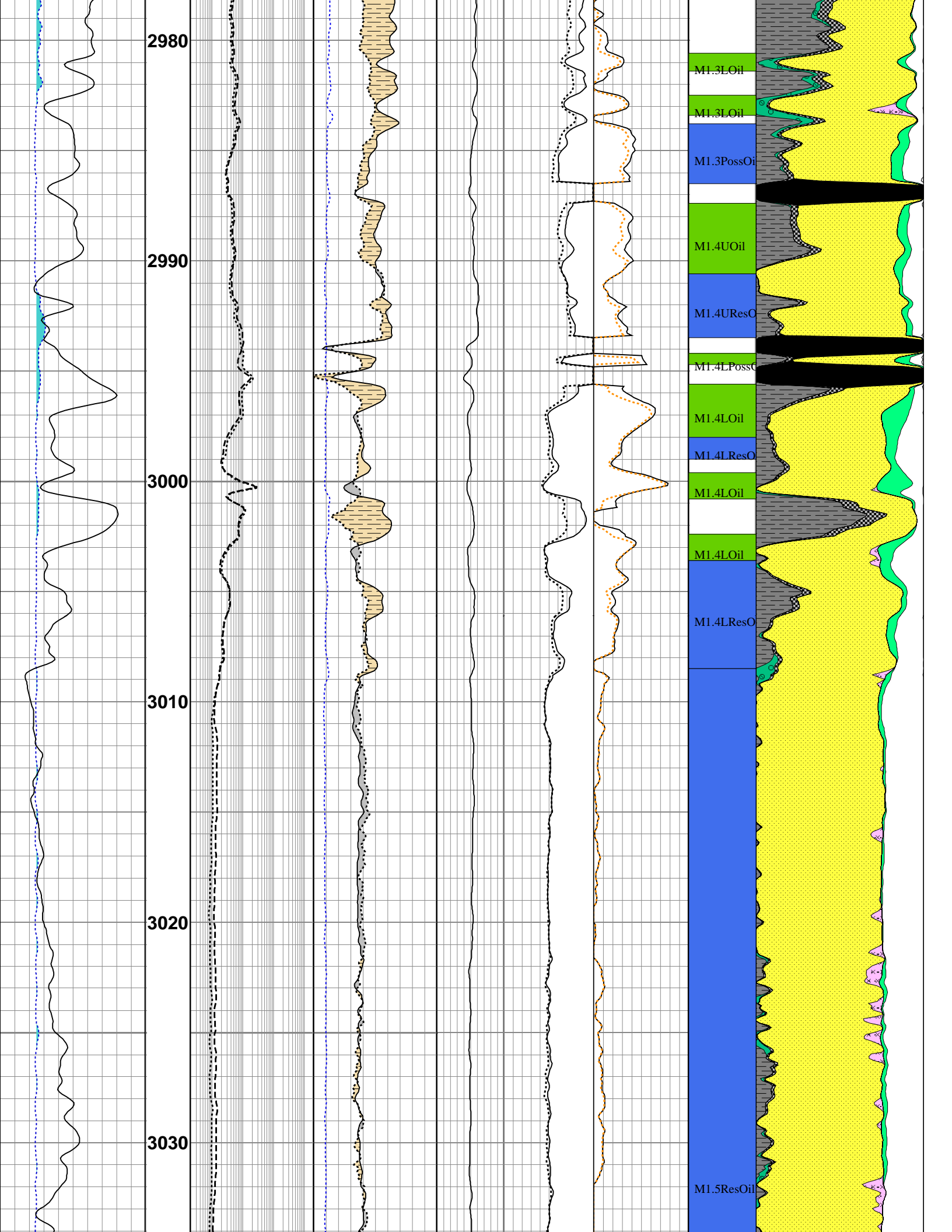
COMPANY:	Esso Australia Pty. Ltd.
WELL:	WEST KINGFISH W27A
BOREHOLE:	
FIELD:	WEST KINGFISH
STATE:	Victoria
COUNTRY:	AUSTRALIA

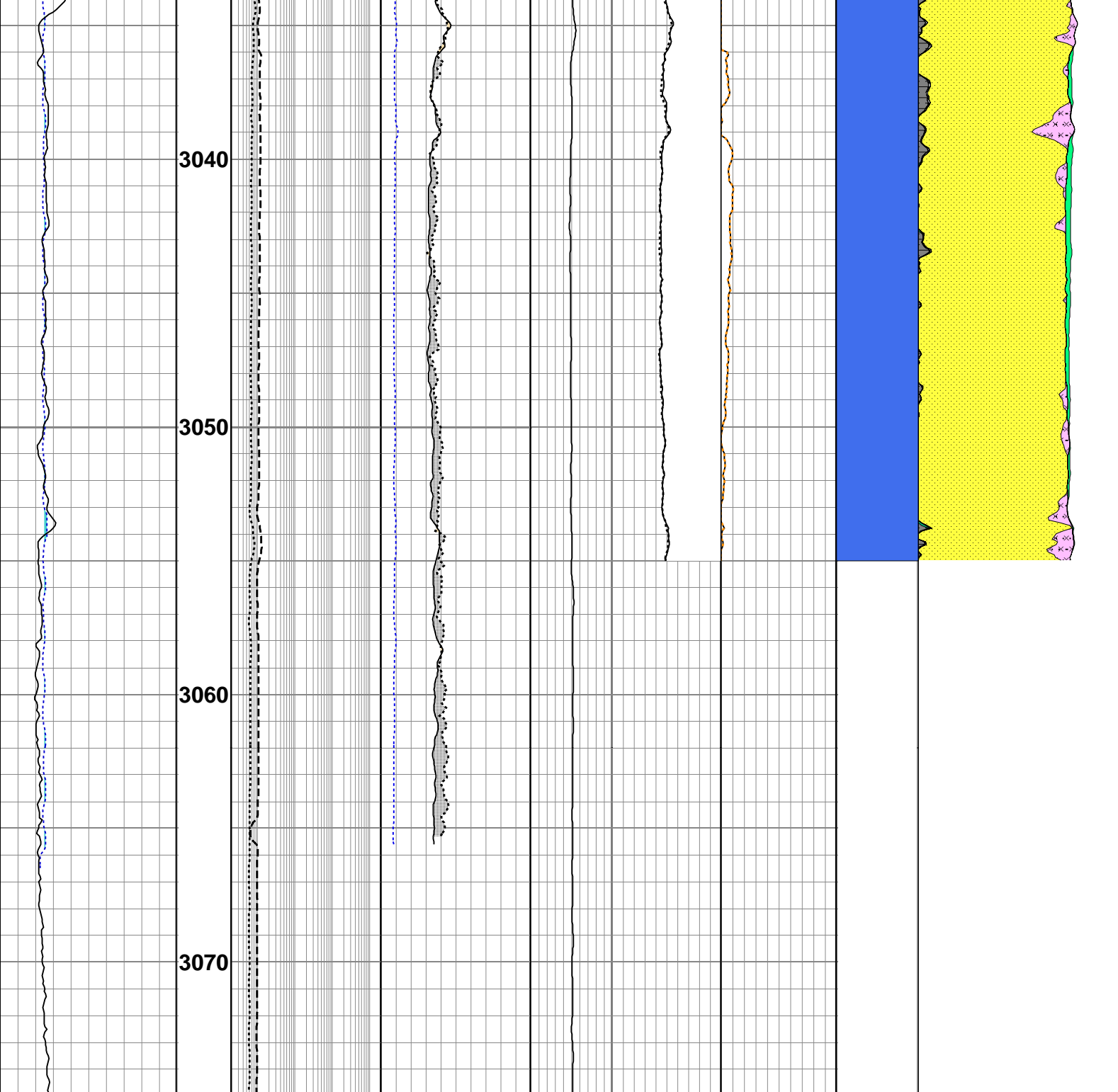
PETROPHYSICIST:	KUMAR KUTTAN
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Date Logged:	26-Jul-06	Date of Analysis:	Oct 2006
Well Location:	<FL>		
Elevations:	K.B. 33.43 m	D.F. <>	
Latitude:	<LATI>	G.L. 76.13 m	
Longitude:	<LONG>		









APPENDIX 3a

WEST KINGFISH W27A

Lithology/Show Descriptions

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
Geologist on rig at 1600 hrs, 19 July 2006 at 1634.0 mMDRT / 1329.8 mTVDR.			
30 metre spot samples from 895.0 to 2780.0 mMDRT.			
895	900	0	100% Cement
900	905	15	15% CALCILUTITE: very light grey to light grey, trace fossil fragments, trace carbonaceous material, soft, amorphous. 85% Cement.
905	910	40	40% CALCILUTITE: as above. 60% Cement.
910	915	50	50% CALCILUTITE: as above. 50% Cement.
915	920	70	70% CALCILUTITE: as above. 30% Cement.
920	930	98	98% CALCILUTITE: as above. 2% Cement.
930	960	100	CALCILUTITE: very light grey to light grey, trace fossil fragments, trace carbonaceous material, soft, amorphous.
960	990	100	CALCILUTITE: as above.
990	1020	100	CALCILUTITE: very light grey to light grey, silty in part, trace fossil fragments, trace carbonaceous material, dispersive, soft to firm, amorphous to sub-blocky.
1020	1050	100	CALCILUTITE: very light grey to light grey, silty in part, trace fossil fragments, trace carbonaceous material, dispersive, soft to firm, amorphous to sub-blocky.
1050	1080	100	CALCILUTITE: as above.
1080	1105	100	CALCILUTITE: as above.
1105	1115	100	CALCILUTITE: as above.
10 metre bagged samples collected from 1105.0 to 1115.0 mMDRT due to higher than background gas (40 – 50 units above background gas).			
1115	1140	100	CALCILUTITE: very light grey to light grey, silty in part, trace fossil fragments, trace carbonaceous material, dispersive, soft to firm, amorphous to sub-blocky.
1140	1150	80	CALCISILTITE: as above.
		20	CALCARENITE: light grey, translucent, very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite, trace fossil fragments, friable to moderately hard, very poor inferred and visual porosity. No Fluorescence.
1150	1170	70	CALCILUTITE: very light grey to light grey, silty in part, trace fossil fragments, trace carbonaceous material, dispersive, soft, amorphous to sub-blocky.
		30	CALCISILTITE: light brown grey, arenaceous in part, trace carbonaceous material, trace fossil fragments, trace glauconite, trace lithics, firm to moderately hard, sub-blocky to sub-fissile.
1170	1200	50	CALCILUTITE: as above.
		50	CALCISILTITE: as above.
		Trace	CALCARENITE: light grey, translucent, very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite, trace fossil fragments, friable to moderately hard, very poor inferred and visual porosity. No Fluorescence.
1200	1230	60	CALCISILTITE: as above.
		40	CALCILUTITE: very light grey to light grey, medium grey, silty in part, trace fossil fragments, trace carbonaceous material, dispersive, soft, amorphous to sub-blocky.
1230	1260	80	CALCISILTITE: light brown grey, medium grey, arenaceous in part, trace carbonaceous material, trace glauconite, trace lithics, firm to moderately hard, sub-fissile to sub-blocky.
		20	CALCILUTITE: as above.
1260	1290	70	CALCISILTITE: as above.
		30	CALCILUTITE: as above.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1290	1320	80	CALCISILTITE: as above.
		20	CALCILUTITE: as above.
1320	1350	60	CALCISILTITE: as above.
		40	CALCILUTITE: as above.
1350	1380	70	CALCISILTITE: light brown grey, medium grey, arenaceous in part, trace carbonaceous material, trace glauconite, trace lithics, firm to moderately hard, sub-fissile, amorphous to sub-blocky.
		30	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace fossil fragments, trace lithics, sft to firm, amorphous to sub-blocky.
1380	1410	60	CALCISILTITE: as above.
		40	CALCILUTITE: as above.
1410	1440	70	CALCISILTITE: as above.
		30	CALCILUTITE: as above.
1440	1470	60	CALCISILTITE: as above.
		40	CALCILUTITE: as above.
1470	1500	50	CALCISILTITE: light brown grey, medium grey, arenaceous in part, trace carbonaceous material, trace glauconite, trace lithics, soft to firm, amorphous to sub-blocky.
		50	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace fossil fragments, trace lithics, sft to firm, amorphous to sub-blocky.
1500	1530	50	CALCISILTITE: as above.
		50	CALCILUTITE: as above.
1530	1560	60	CALCILUTITE: as above
		40	CALCISILTITE: as above
1560	1590	60	CALCISILTITE: light brown grey, medium grey, arenaceous in part, trace carbonaceous material, trace glauconite, trace lithics, soft to firm, amorphous to sub-blocky.
		40	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace fossil fragments, trace lithics, soft to firm, amorphous to sub-blocky.
1590	1620	60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
1620	1650	70	CALCILUTITE: as above.
		30	CALCISILTITE: as above.
1650	1680	60	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace lithics, soft to firm, sub-blocky.
		40	CALCISILTITE: light brown grey, medium grey in part, arenaceous in part, trace carbonaceous material, trace lithics, soft to firm, moderately hard in part, sub-blocky.
1680	1710	80	CALCILUTITE: as above.
		20	CALCISILTITE: as above.
1710	1740	80	CALCILUTITE: as above.
		20	CALCISILTITE: as above.
1740	1770	80	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace fossil fragments, soft to firm, dispersive in part, amorphous to sub-blocky.
		20	CALCISILTITE: very light brown grey, arenaceous in part, trace carbonaceous material, trace fossil fragments, trace lithics, soft to firm,sub-blocky.
1770	1800	80	CALCILUTITE: very light grey to light grey, medium grey in part, silty in part, trace carbonaceous material, trace fossil fragments, soft to firm, dispersive in part, amorphous to sub-blocky.
		20	CALCISILTITE: as above.
			Base of Miocene High Velocity Channel = 1800.0 mMDRT/ 1446.2 mTVDRT / -1412.8 mTVDSS.
1800	1830	95	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace disseminated pyrite, trace glauconite, dominantly soft, amorphous to sub-blocky.
		5	CALCISILTITE: very light brown grey, arenaceous in part, trace carbonaceous material, trace lithics, soft to firm, rare moderately hard, amorphous to sub-blocky.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1830	1860	100	CALCILUTITE: medium grey, very light grey to light grey in part, trace silty, trace to rare disseminated and pyrite nodules, trace fossil fragments, trace carbonaceous material, dispersive in part, soft to firm, rare moderately hard, sub-blocky to amorphous.
1860	1890	100	CALCILUTITE: medium grey to medium dark grey, light grey in part, silty in part, trace glauconite, trace disseminated pyrite, trace lithics, trace fossil fragments, soft to firm, sub-blocky.
1890	1920	100	CALCILUTITE: as above.
1920	1950	100	CALCILUTITE: light to medium grey, trace silty, trace disseminated pyrite, trace glauconite, trace fossil fragments, dispersive in part, soft to firm, rare moderately hard, sub-blocky to amorphous.
1950	1980	100	CALCILUTITE: as above.
1980	2010	100	CALCILUTITE: medium grey, very light to light grey in part, trace silty, trace disseminated pyrite, trace glauconite, dispersive in part, soft to firm, rare moderately hard, sub-blocky to amorphous.
2010	2040	100	CALCILUTITE: as above.
2040	2070	100	CALCILUTITE: light to medium grey, very light grey in part, silty in part, trace disseminated pyrite, trace lithics, dispersive in part, soft to firm, amorphous to sub-blocky.
2070	2100	100	CALCILUTITE: light to medium grey, very light grey in part, silty in part, trace disseminated pyrite, trace fossil fragments, dispersive to firm, amorphous to sub-blocky.
2100	2130	100	CALCILUTITE: as above.
2130	2160	100	CALCILUTITE: light to medium grey, very light grey in part, silty in part, trace disseminated pyrite, trace carbonaceous specks, dispersive to firm, amorphous to sub-blocky.
2160	2190	100	CALCILUTITE: light to medium grey, very light grey in part, silty in part, trace disseminated and pyrite nodules, trace carbonaceous specks, dispersive to firm, amorphous to sub-blocky.
2190	2220	100	CALCILUTITE: as above.
2220	2250	100	CALCILUTITE: light medium grey, very light grey, light olive grey, trace disseminated pyrite, trace pyrite nodules, trace glauconite, trace lithics, soft to firm, amorphous to sub-blocky.
2250	2280	100	CALCILUTITE: as above.
2280	2310	100	CALCILUTITE: light to medium grey, very light grey, light olive grey, silty in part, trace disseminated pyrite, trace lithics, trace glauconite, trace carbonaceous flecks, soft to firm, sub-blocky to amorphous.
2310	2340	100	CALCILUTITE: light to medium grey, very light grey, light olive grey, silty in part, trace disseminated pyrite, trace lithics, trace glauconite, trace carbonaceous flecks, soft to firm, moderately hard in part, sub-blocky to amorphous.
2340	2370	100	CALCILUTITE: as above.
2370	2400	100	CALCILUTITE: as above.
2400	2430	100	CALCILUTITE: light medium grey, light brown grey, silty in part, trace disseminated and pyrite nodules, trace lithics, trace carbonaceous specks, soft to firm, moderately hard in part, sub-blocky.
2430	2460	100	CALCILUTITE: as above.
2460	2490	100	CALCILUTITE: as above.
2490	2508	100	CALCILUTITE: light to medium grey, very light brown grey, silty in part, trace disseminated and pyrite nodules, trace lithics, trace carbonaceous specks, soft to firm, moderately hard in part, sub-blocky.
2508	2520	100	Bit Trip at 2508.0 mMDRT / 1947.0 mTVDRT due to a siezed Mud Motor.
			CALCILUTITE: light medium grey, very light grey in part, silty in part, trace disseminated and pyrite nodules, trace lithics, trace carbonaceous specks, soft to firm, sub-blocky.
		Trace	CALCAREOUS CLAYSTONE: medium light grey to medium grey, silty in part, moderately calcareous, firm to moderately hard, sub-fissile in part to sub-blocky.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2520	2550	90	CALCILUTITE: as above.
		10	CALCAREOUS CLAYSTONE: as above
			Top of Lakes Entrance = 2528.0 mMDRT/1961.1 mTVDRT/-1927.7 mTVDSS.
2550	2580	80	CALCILUTITE: as above.
		20	CALCAREOUS CLAYSTONE: medium light grey to medium grey, silty in part, moderately calcareous, trace glauconite, firm to moderately hard, sub-fissile in part to sub-blocky.
2580	2610	60	CALCILUTITE: light medium grey, very light grey in part, silty in part, trace disseminated and pyrite nodules, trace lithics, trace carbonaceous specks, soft to firm, sub-blocky.
		40	CALCAREOUS CLAYSTONE: medium light grey to medium grey, silty in part, moderately calcareous, trace disseminated and pyrite nodules, firm to moderately hard, sub-fissile in part to sub-blocky.
2610	2640	60	CALCAREOUS CLAYSTONE: as above
		40	CALCILUTITE: as above.
2640	2670	90	CALCAREOUS CLAYSTONE: light to medium grey, light brown grey, moderately calcareous, silty in part, trace disseminated pyrite, trace lithics, trace fossil fragments, firm to occasionally moderately hard, sub-blocky to sub-fissile.
		10	CALCILUTITE: as above.
2670	2700	100	CALCAREOUS CLAYSTONE: as above.
		Trace	CALCILUTITE: as above.
2700	2730	100	CALCAREOUS CLAYSTONE: light to medium grey, light brown grey, moderately calcareous, silty in part, trace disseminated pyrite, trace lithics firm to occasionally moderately hard, sub-blocky to sub-fissile.
2730	2740	100	CALCAREOUS CLAYSTONE: as above, trace to rare disseminated and pyrite nodules.
2740	2760	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, light brownish grey, silty in part, moderately calcareous, trace disseminated pyrite, trace fossil fragments, soft to moderately hard, sub-blocky to sub-fissile.
2760	2780	100	CALCAREOUS CLAYSTONE: as above, trace glauconite.
			10 metre bagged samples from 2780 to 2930.0 mMDRT.
2780	2790	100	CALCAREOUS CLAYSTONE: as above.
2790	2800	100	CALCAREOUS CLAYSTONE: light grey to light brown grey, medium grey in part, moderately calcareous, trace disseminated pyrite, soft to firm, moderately hard in part, sub-blocky to occasionally sub-fissile.
			Baracarb at a concentration of 5 ppb, added to the Mud system at 2883.0 mMDRT (2213.7 mTVDRT / -2180.3 mTVDSS).
			Baracarb seen in samples from 2900.0 mMDRT to 3095.0 mMDRT (TD).
2800	2810	100	CALCAREOUS CLAYSTONE: as above.
2810	2820	100	CALCAREOUS CLAYSTONE: light grey to light brown grey, medium grey, silty in part, moderately calcareous, trace disseminated pyrite, trace glauconite, soft to firm, sub-blocky.
2820	2830	100	CALCAREOUS CLAYSTONE: as above.
2830	2840	100	CALCAREOUS CLAYSTONE: light grey to light brown grey, medium grey, silty in part, moderately calcareous, trace disseminated and pyrite nodules, trace glauconite, soft to moderately hard, sub-blocky.
2840	2850	100	CALCAREOUS CLAYSTONE: light to light medium grey, light brown grey, light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace glauconite, trace fossil fragments, soft to firm, moderately hard in part, sub-blocky.
2850	2860	100	CALCAREOUS CLAYSTONE: as above.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
			Carbide Lag check at 2854.0 mMDRT: Theoretical in/out strokes: 9278 Actual in/out strokes: 10150 Difference = 871 strokes. Hole overgauge by 25%. Lag adjusted.
2860	2870	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, light olive grey, silty in part, moderately calcareous, trace disseminated and pyrite nodules, trace fossil fragments, soft to firm, moderately hard in part, sub-blocky.
2870	2880	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace pyrite nodules, trace glauconite, trace fossils fragments, soft to firm, occasionally moderately hard, sub-blocky.
2880	2890	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, light olive grey, silty in part, moderately calcareous, trace to common pyrite nodules, trace fossils fragments, soft to firm, occasionally moderately hard, sub-blocky.
2890	2900	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace pyrite nodules, trace glauconite, trace fossil fragments, firm to moderately hard, sub-blocky.
2900	2910	100	CALCAREOUS CLAYSTONE: as above.
2910	2920	100	CALCAREOUS CLAYSTONE: light medium grey to light brown grey, light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace pyrite nodules, trace fossil fragments, firm to moderately hard, sub-blocky.
			Top of Latrobe = 2929.0 mMDRT / 2247.2 mTVDRT / -2213.8 mTVDSS.
2920	2930	90	CALCAREOUS CLAYSTONE: as above.
		5	SILTSTONE: pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, firm, trace glauconite, sub-fissile to sub-blocky.
		5	SANDSTONE: white to pale green, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, hard aggregates, tight visual and inferred porosity. No Fluorescence.
			5 metre bagged samples from 2930.0 mMDRT to 3095.0 mMDRT (TD).
2930	2935	80	CALCAREOUS CLAYSTONE: 70% as above.
			CLAYSTONE: 10% light olive brown to medium olive brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		10	SILTSTONE: as above.
		10	SANDSTONE: as above.
2935	2940	75	CALCAREOUS CLAYSTONE: 60% light to medium grey to light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace pyrite nodules, trace glauconite, firm to moderately hard, sub-blocky.
			CLAYSTONE: 15% light olive brown to medium olive brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		15	SILTSTONE: pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky.
		10	SANDSTONE: white to pale green, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, hard aggregates, tight visual and inferred porosity. No Fluorescence.
2940	2945	60	CLAYSTONE: 40% as above.
			CALCAREOUS CLAYSTONE: 20% as above.
		35	SILTSTONE: 25% medium light grey to medium grey, common micro pyrite matrix, hard.
			SILTSTONE: 10% as above.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2945	2950	5	SANDSTONE: white to pale green, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, hard aggregates, tight visual and inferred porosity, blocky, common rock flour. No Fluorescence. SBN3 = 2947.0 mMDRT / 2260.3 mTVDRT / -2226.9 mTVDSS.
		55	CLAYSTONE: 50% light olive brown to medium olive brown, non calcareous, soft, dispersive, amorphous, common rock flour. CALCAREOUS CLAYSTONE: 5% light to medium grey, light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace pyrite nodules, trace glauconite, firm to moderately hard, sub-blocky.
		25	SILTSTONE: 10% medium light grey to medium grey, common micro pyrite matrix, hard. SILTSTONE: 15% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky.
		20	SANDSTONE: clear to translucent, fine to coarse, poorly sorted, sub-angular to sub-rounded, weak siliceous cement, dominantly loose, generally clean, poor inferred and visual porosity. No Fluorescence.
2950	2955	20	CLAYSTONE: light olive brown to medium olive brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		60	SILTSTONE: 30% medium light grey to medium grey, common micro pyrite matrix, hard. SILTSTONE: 30% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky.
		20	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, weak siliceous cement, trace pyrite nodules, trace fractured quartz grains, dominantly loose, fair inferred and visual porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, very slow blooming direct cut, thin greenish yellow ring residue. Top of M1.3 Upper = 2960.0 mMDRT / 2269.8 mTVDRT / -2236.4 mTVDSS.
		20	CLAYSTONE: as above.
2955	2960	50	SILTSTONE: 20% medium light grey to medium grey, common micro pyrite matrix, hard. SILTSTONE: 30% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky.
		30	SANDSTONE: clear to translucent, rare pale green, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, weak pyrite cement, weak siliceous cement, trace pyrite nodules, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: Trace, dull to moderately bright spotted green yellow Fluorescence, moderate fast blooming direct cut, thin greenish yellow ring residue. Top of PS5 Sand = 2962.5 mMDRT / 2271.6 mTVDRT / -2238.2 mTVDSS.
		20	CLAYSTONE: as above.
2960	2965	10	CLAYSTONE: as above.
		70	SILTSTONE: 40% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 30% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2965	2970	20	SANDSTONE: clear to translucent, fine to very coarse, poor sorted, sub-angular to sub-rounded, weak pyritic cement, weak siliceous cement, trace pyrite nodules, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: Trace, dull to moderately bright pin-point green yellow Fluorescence, no direct cut, very slow crush cut, no ring residue. Top of PS4 Sand = 2967.0 mMDRT / 2274.9 mTVDRT / -2241.5 mTVDSS.
		20	CLAYSTONE: light olive brown to medium olive brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		60	SILTSTONE: 40% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 20% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
2970	2975	20	SANDSTONE: clear to translucent, rare greyish pink, coarse to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderate pyritic cement, weak siliceous cement, trace pyrite nodules, occasionally fractured quartz grains, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: 5% dull to moderately bright spotted green yellow Fluorescence, slow diffusive direct cut, thin greenish yellow film residue.
		10	CLAYSTONE: as above.
		75	SILTSTONE: 50% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 25% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
2975	2980	15	SANDSTONE: clear to translucent, rare very pale orange, coarse to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderate pyritic cement, weak siliceous cement, trace pyrite nodules, occasionally fractured quartz grains, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: 3%, dull to moderately bright patchy to spotted green yellow Fluorescence, very slow to slow blooming direct cut, thin greenish yellow ring residue.
		10	CLAYSTONE: as above.
		70	SILTSTONE: 20% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 50% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
2980	2985	20	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderate pyritic cement, weak siliceous cement, occasionally fractured quartz grains, dominantly loose, occasionally hard aggregates, poor to fair inferred and visual porosity. FLUORESCENCE: 7%, dull to moderately bright spotted green yellow Fluorescence, very slow diffusive direct cut, thin greenish yellow film residue. Top of M1.3 Lower = 2980.5 mMDRT / 2284.8 mTVDRT / -2251.4 mTVDSS.
		5	CLAYSTONE: as above.
		65	SILTSTONE: 25% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 45% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2985	2990	30	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderate pyritic cement, occasionally fractured quartz grains, trace pyrite nodules, dominantly loose, occasionally hard aggregates, poor to fair info and visual porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, very slow blooming direct cut, thin greenish yellow ring residue. Base M1.3 Lower / Top M1.4 Upper = 2987.5 mMDRT / 2289.8 mTVDRT / -2256.4 mTVDSS.
		5	COAL: dusky brown to greyish black, dull, moderately hard, sub-blocky, uneven.
		60	SILTSTONE: 30% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 30% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
2290	2295	35	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, weak siliceous cement, trace pyrite nodules, dominantly loose, poor to fair inferred porosity. FLUORESCENCE: 5%, dull to moderately bright spotted green yellow Fluorescence, moderately fast blooming direct cut, thin greenish yellow ring residue.
		5	COAL: as above.
		55	SILTSTONE: 50% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 5% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
2295	3000	40	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderate pyritic cement, weak siliceous cement, trace pyrite nodules, occasionally fractured quartz grains, hard aggregates, occasionally loose, poor visual and inferred porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, slow blooming direct cut, thin greenish yellow film residue. M14 Coal / Top M1.4 Upper= 2994.0 mMDRT / 2294.5 mTVDRT / -2261.1 mTVDSS.
		40	SILTSTONE: 35% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 5% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
		60	SANDSTONE: clear to translucent, fine to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderate pyritic cement, weak siliceous cement, trace pyrite nodules, dominantly loose, generally clean, poor to trace visual and inferred porosity. FLUORESCENCE: 2%, dull to moderately bright spotted green yellow Fluorescence, very slow diffusive direct cut, thin greenish yellow ring residue.
3000	3005	30	SILTSTONE: 25% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 5% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
		70	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, dominantly loose, generally clean, poor to fair inferred porosity. FLUORESCENCE: 7%, dull to moderately bright spotted green yellow Fluorescence, very slow blooming direct cut, thin greenish yellow ring residue.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3005	3010	30	Top of M1.5 = 3008.5 mMDRT / 2305.0 mTVDRT / -2271.6 mTVDSS. SILTSTONE: 15% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 10% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
		70	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visual porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, slow blooming direct cut, thin greenish yellow ring residue.
3010	3015	20	SILTSTONE: 5% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 15% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
		80	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visual porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, slow diffusive direct cut, thin greenish yellow ring residue.
3015	3020	15	SILTSTONE: 5% medium light grey to medium grey, common micro pyritic matrix, hard. SILTSTONE: 10% pale brown to dark yellow brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, trace glauconite, firm to moderately hard, sub-fissile to sub-blocky
		85	SANDSTONE: clear to translucent, fine to coarse, dominantly medium, moderately well sorted, sub-rounded to sub-angular, trace pyrite nodules, loose, clean, fair inferred and visual porosity. FLUORESCENCE: Trace, dull to moderately bright spotted green yellow Fluorescence, very slow diffusive crush cut, thin greenish yellow ring residue.
3020	3025	5	CLAYSTONE: light bluish grey to light grey, hard, blocky.
		20	SILTSTONE: pale brown to greyish brown, very arenaceous grading to very fine SANDSTONE in part, carbonaceous grading to SILTY COAL, trace micromicaceous, firm to moderately hard, sub-fissile to sub-blocky.
		75	SANDSTONE: clear to translucent, dominantly fine to medium, moderately well sorted, sub-rounded to sub-angular, loose, clean, fair inferred and visual porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, very slow diffusive crush cut, very thin greenish yellow ring residue.
3025	3030	10	CLAYSTONE: as above.
		25	SILTSTONE: as above.
		65	SANDSTONE: clear to translucent, dominantly fine to medium, occasionally coarse, moderately well sorted, sub-rounded to sub-angular, loose, clean, fair inferred and visual porosity. FLUORESCENCE: 5%, dull to moderately bright spotted green yellow Fluorescence, slow diffusive direct cut, thin greenish yellow ring residue. Top of M1.7 = 3032.5 mMDRT / 2322.2 mTVDRT / -2288.8 mTVDSS.
3030	3035	20	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, dominantly fine to medium, occasionally coarse, moderately well sorted, sub-rounded to sub-angular, loose, clean, fair inferred and visual porosity. FLUORESCENCE: 5%, dull to moderately bright spotted green yellow Fluorescence, very slow diffusive direct cut, thin greenish yellow ring residue.
3035	3040	10	CLAYSTONE: as above.
		10	SILTSTONE: as above.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3040	3045	80	SANDSTONE: clear to translucent, fine to dominantly very coarse, well sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, loose, clean, fair inferred porosity. FLUORESCENCE: 7%, dull to moderately bright patchy to spotted green yellow Fluorescence, slow blooming direct cut, thin greenish yellow ring residue.
		10	CLAYSTONE: as above.
		5	SILTSTONE: as above.
3045	3050	85	SANDSTONE: clear to translucent, dominantly medium to very coarse, well sorted, sub-angular to sub-rounded, weak pyritic cement on very coarse grains, trace pyrite nodules, loose, clean, fair inferred porosity. FLUORESCENCE: 7%, dull to moderately bright patchy to spotted green yellow Fluorescence, slow blooming direct cut, thin greenish yellow ring residue.
		5	CLAYSTONE: as above.
		5	SILTSTONE: as above.
3050	3055	90	SANDSTONE: clear to translucent, dominantly fine to medium, occasionally very coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement on coarse grains, trace pyrite nodules, loose, clean, fair inferred porosity. FLUORESCENCE: 3%, dull to moderately bright spotted green yellow Fluorescence, slow blooming direct cut, thin greenish yellow ring residue.
		5	CLAYSTONE: light bluish grey to light grey, hard, blocky.
		95	SANDSTONE: clear to translucent, dominantly fine to medium, rare coarse, well sorted, sub-rounded to sub-angular, trace pyrite nodules, loose, clean, poor to fair inferred and visual porosity. No Fluorescence.
3055	3060	5	CLAYSTONE: as above.
		95	SANDSTONE: clear to translucent, dominantly fine to medium, rare coarse, well sorted, sub-rounded to sub-angular, trace pyrite nodules, loose clean, poor to fair inferred and visual porosity. No Fluorescence.
3060	3065	5	CLAYSTONE: as above.
		95	SANDSTONE: clear to translucent, fine to coarse, dominantly medium, well sorted, sub-angular to sub-rounded, trace pyrite nodules, loose clean, fair inferred and visual porosity. No Fluorescence.
3065	3070	5	CLAYSTONE: as above.
		95	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visual porosity. No Fluorescence.
3070	3075	10	CLAYSTONE: light bluish grey to light grey, soft in part to hard, dispersive in part, blocky.
		90	SANDSTONE: clear to translucent, dominantly fine to occasionally coarse, moderately well sorted, sub-angular to sub-rounded, trace white argillaceous matrix, dominantly loose, generally clean, poor to fair inferred and visual porosity. No Fluorescence.
3075	3080	30	CLAYSTONE: as above.
		70	SANDSTONE: clear to translucent, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace white argillaceous matrix, dominantly loose, generally clean, poor inferred and visual porosity. No Fluorescence.
3080	3085	20	CLAYSTONE: light grey to light bluish grey, soft in part to hard, dispersive in part, blocky.
		15	SILTSTONE: pale brown to dark yellowish brown, very arenaceous grading to very fine SANDSTONE, trace micromicaceous, firm to moderately hard, sub-fissile to sub-blocky, trace rock flour.

West Kingfish W27A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3085	3090	65	SANDSTONE: clear to translucent, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, trace white argillaceous matrix, dominantly loose, generally clean, poor inferred and visual porosity. No Fluorescence.
		5	COAL: greyish brown to brownish black, dull, moderately hard, sub-blocky, uneven, silty in part grading to Carbonaceous Siltstone.
		15	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, fine to very coarse, poor sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, trace white argillaceous matrix, dominantly loose, generally clean, poor inferred and visual porosity. No Fluorescence.
3090	3095 TD	10	CLAYSTONE: as above.
		10	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, fine to very coarse, dominantly medium, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, trace pyrite nodules, trace white argillaceous matrix, dominantly loose, generally clean, poor to fair inferred and visual porosity. No Fluorescence.
WKF W27A reached a TD of 3095.0 mMDRT = 2366.2 mTVDRT (-2332.8 mTVDSS) at 0630 hrs on 24 July 2006.			

APPENDIX 4a

WEST KINGFISH W27A

Mud Log






































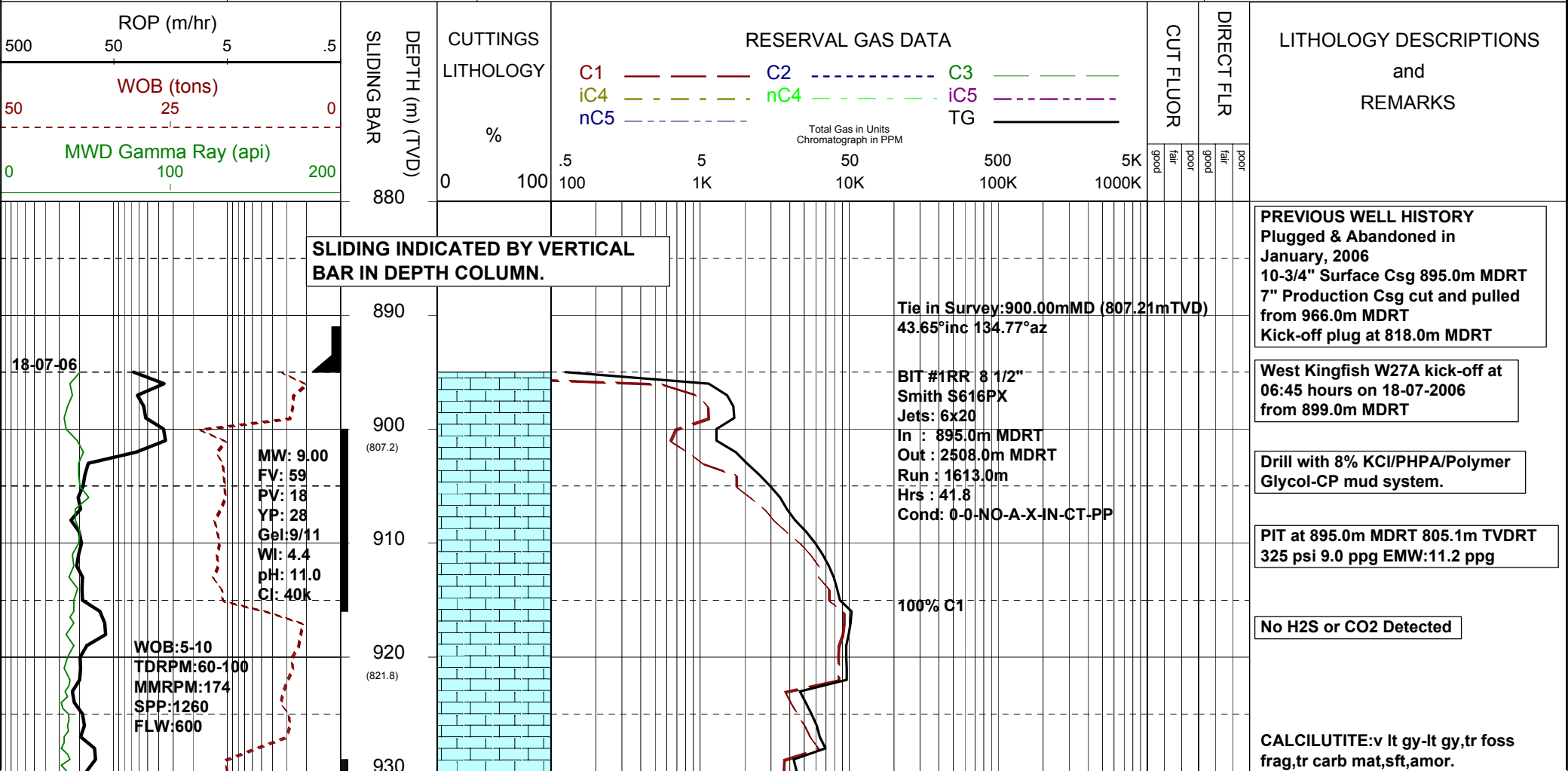
MASTERLOG

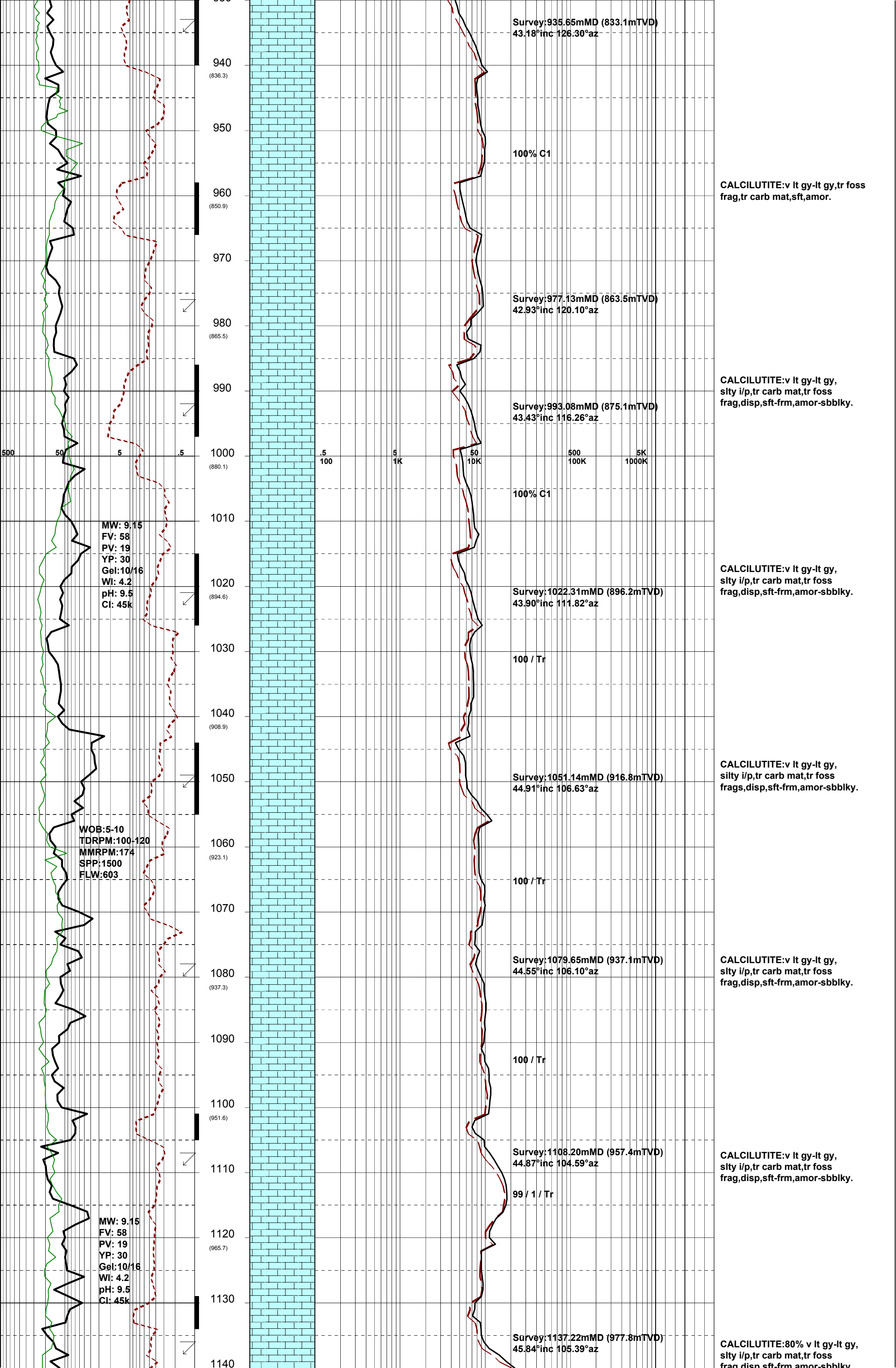
WKF-W27A

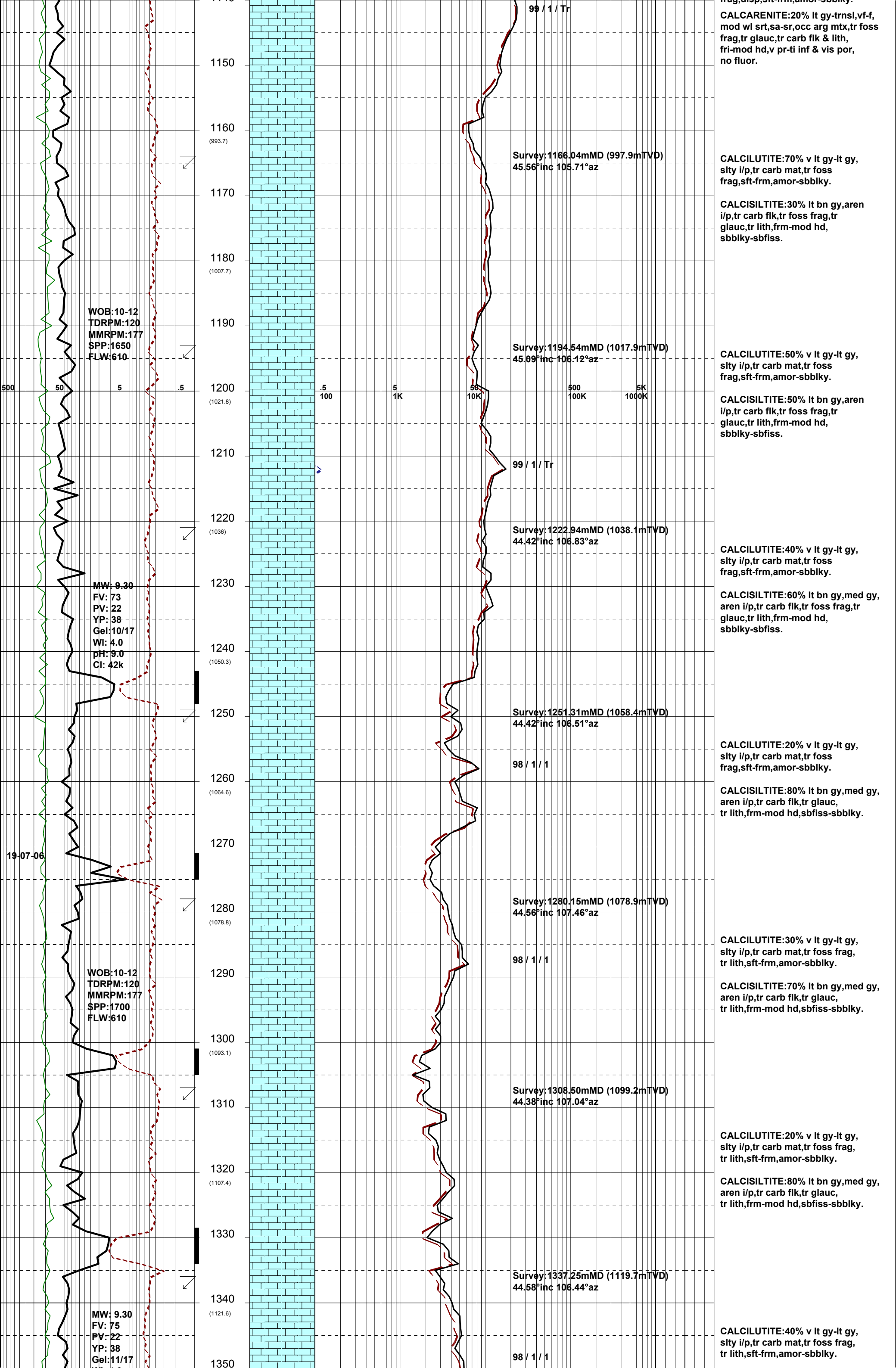


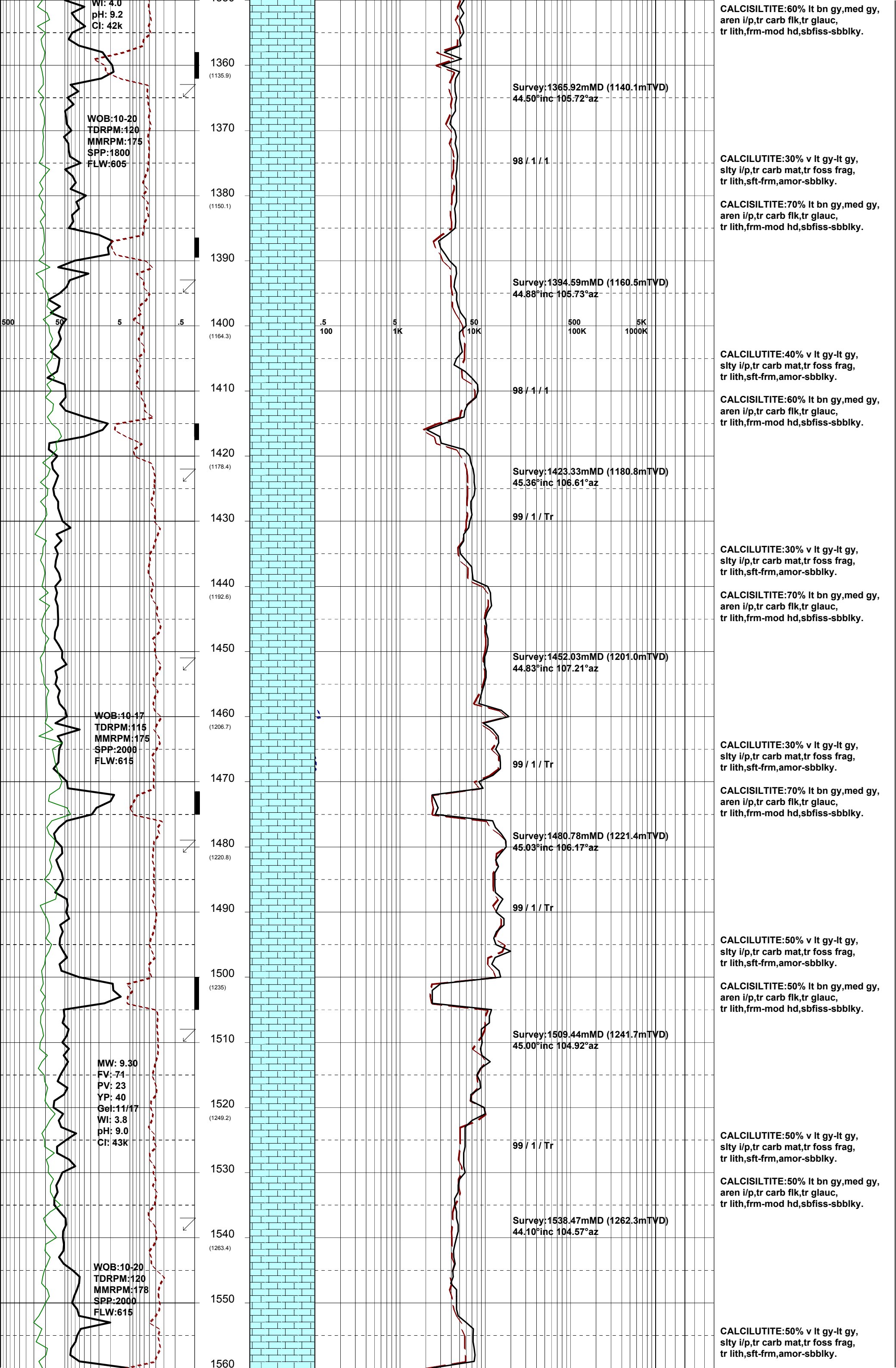
GENERAL	SURFACE POSITON	HOLE / CASING INFO	DATE / DEPTH	ENGINEERS
Country : AUSTRALIA Permit : VIC L7 Field : Kingfish Basin : GIPPSLAND Well Type : DEVELOPMENT Rig Name : NABORS 453	Longitude : 148 06 20.022E Latitude : 38 35 34.851S MGA Co-ord X : 596279.88mE MGA Co-ord Y : 5727806.02mN RT to MSL : 33.43m RT to Sea Bed : 109.56m	8-1/2" Hole to 3095.0m MDRT 10-3/4" Csg Shoe at 895.0m MDRT 7" Production Csg at 3090.0m MDRT	Spud Date : 18-07-2006 Total Depth Date : 24-07-2006 Total Depth : 3095.0m MDRT True Vertical Depth : 2366.2m TVDRT Log Scale : 1/ 500	Steve Oades Mark Smith Noel Elliott

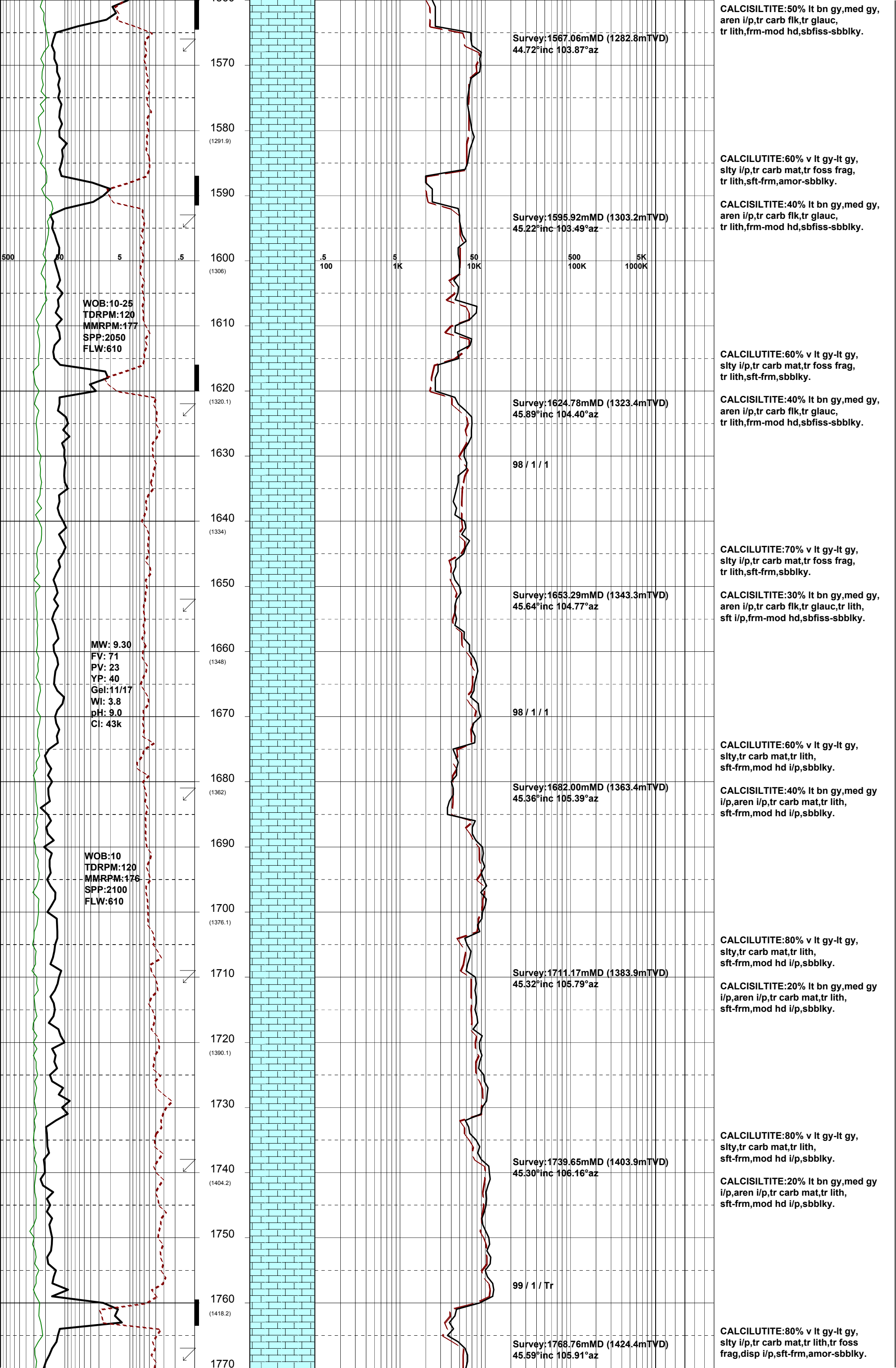
ABBREVIATIONS		LITHOLOGY LEGEND				ENGINEERING LEGEND	
MW Mud Weight	WOB Weight on Bit (klbs)	 CLAYSTONE	 MARL	 BRYOZOA	 CARB FRAGMENT	 CASING SHOE	 WIRELINE LOGS
FV Funnel Viscosity	RPM Rotations Per Min	 SILTSTONE	 LIMESTONE	 RADIOLARITES	 QUARTZITE	 LINER HANGER	MDT POINTS:
PV Plastic Viscosity	FLW Flow Rate (gpm)	 SANDSTONE	 DOLOMITE	 ECHINOIDS	 INTRUSIVES	 BIT CHANGE	 PRESSURE ONLY
YP Yield Point	SPP Pump Pressure (psi)	 SHALE	 CHERT	 CORALS	 GLAUCONITE	 DEVIA. SURVEY	 SAMPLE
Gel Gel Strength	RR Re-Run Bit	 CONGLOMERATE		 FORAMINIFERA	 PYRITE	 SWC UNRECOV	 SEAL FAILURE
WL Water Loss	TG Trip Gas	 COAL		 LITHIC FRAGMENT	 CEMENT	 SIDEWALL CORE	 TIGHT
KCl Potassium Chloride	CG Connection Gas					 CORE	 SLIDING
Cl Chlorides	BG Background Gas						
Incl Inclination	DGP Drilled Gas Peak						
Az Azimuth	MM Mud Motor						

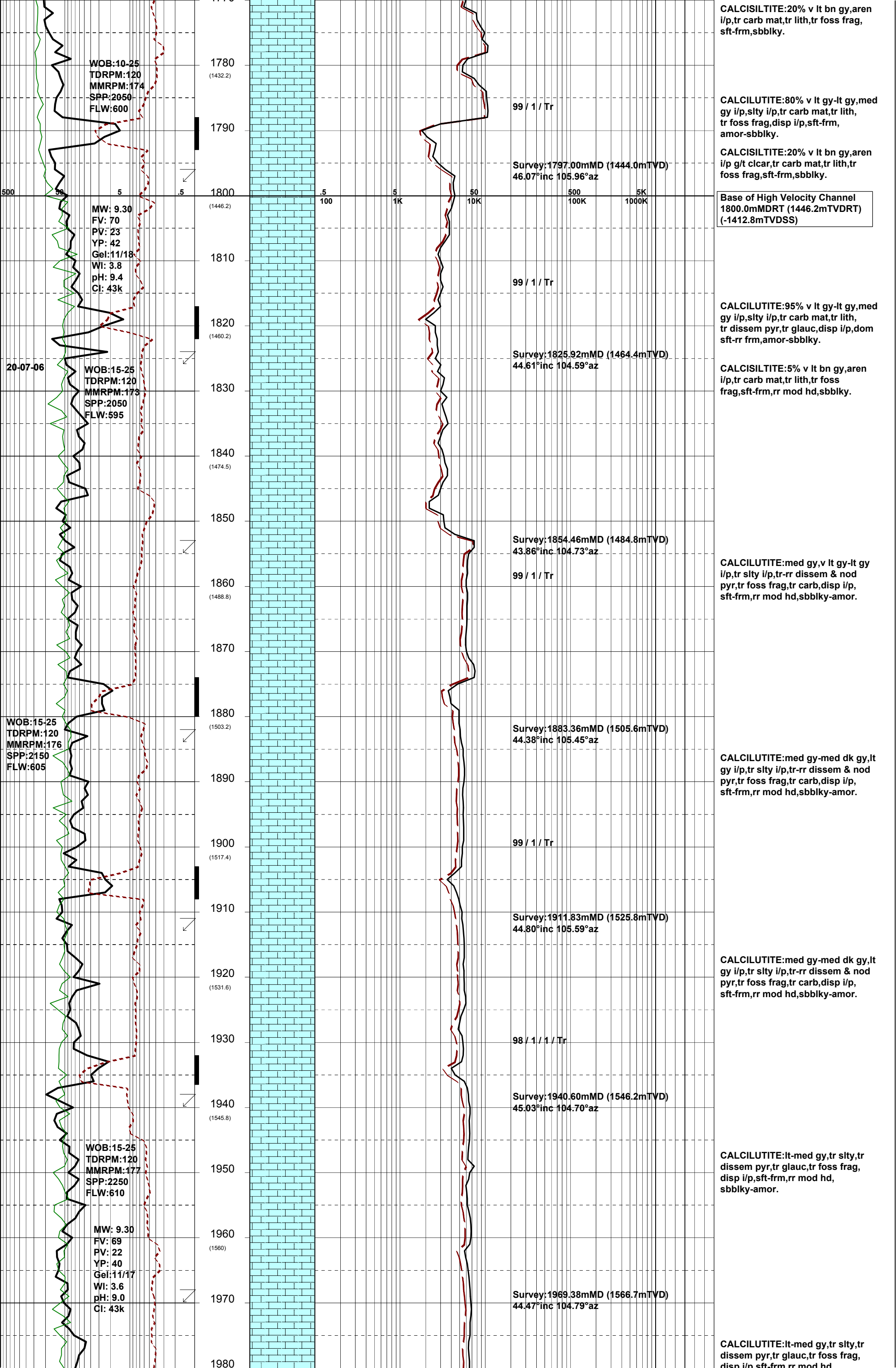


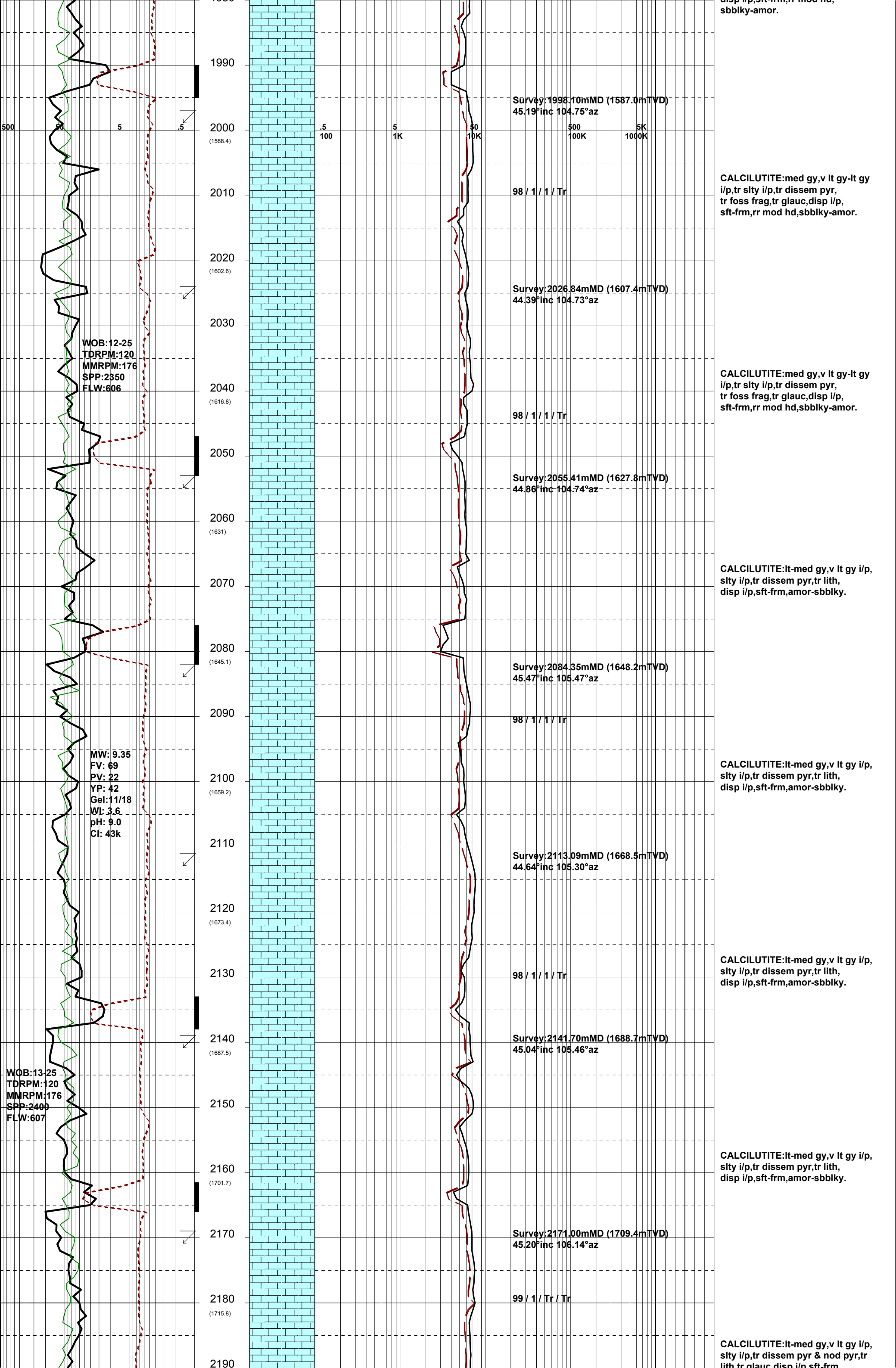


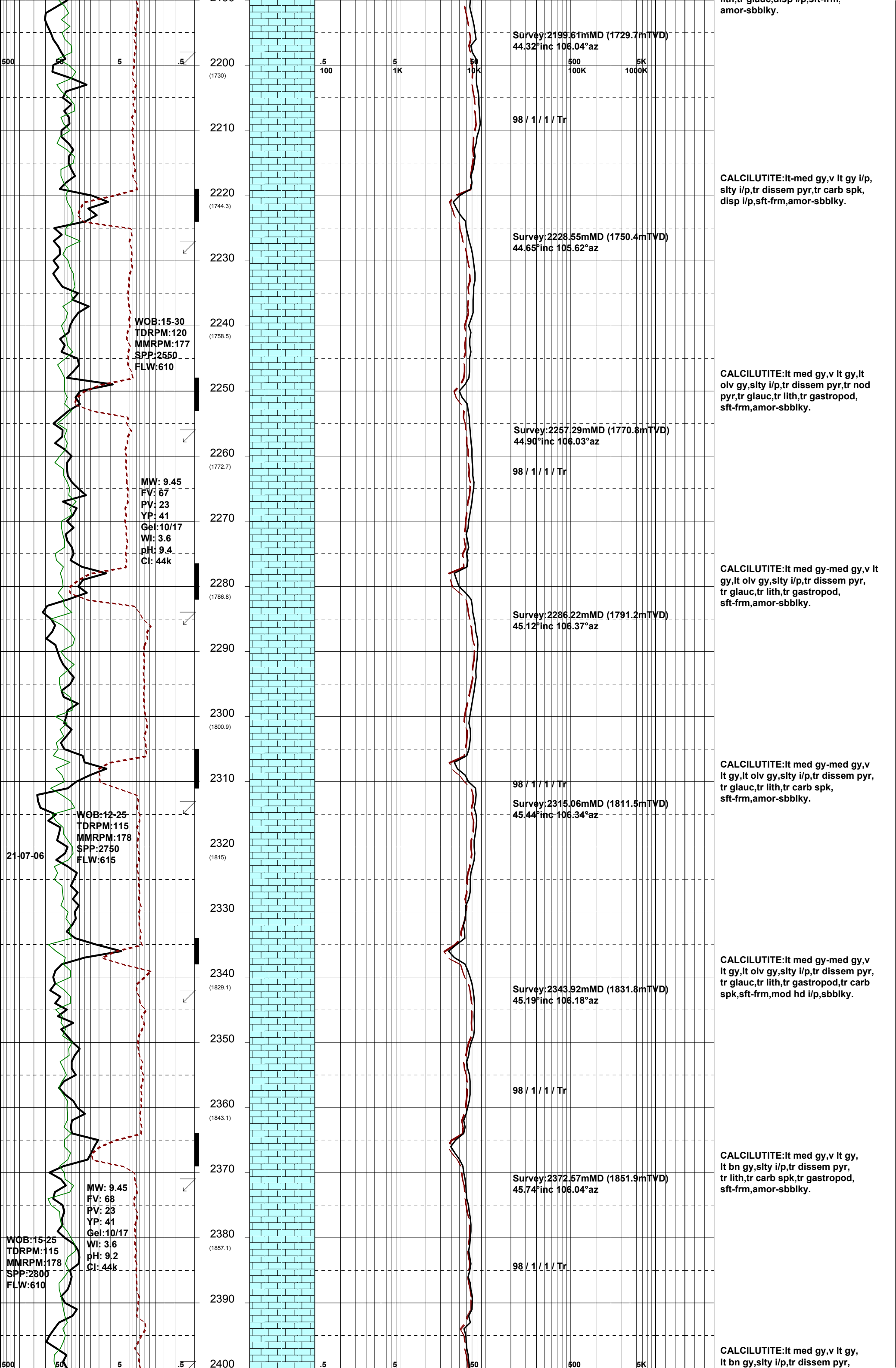


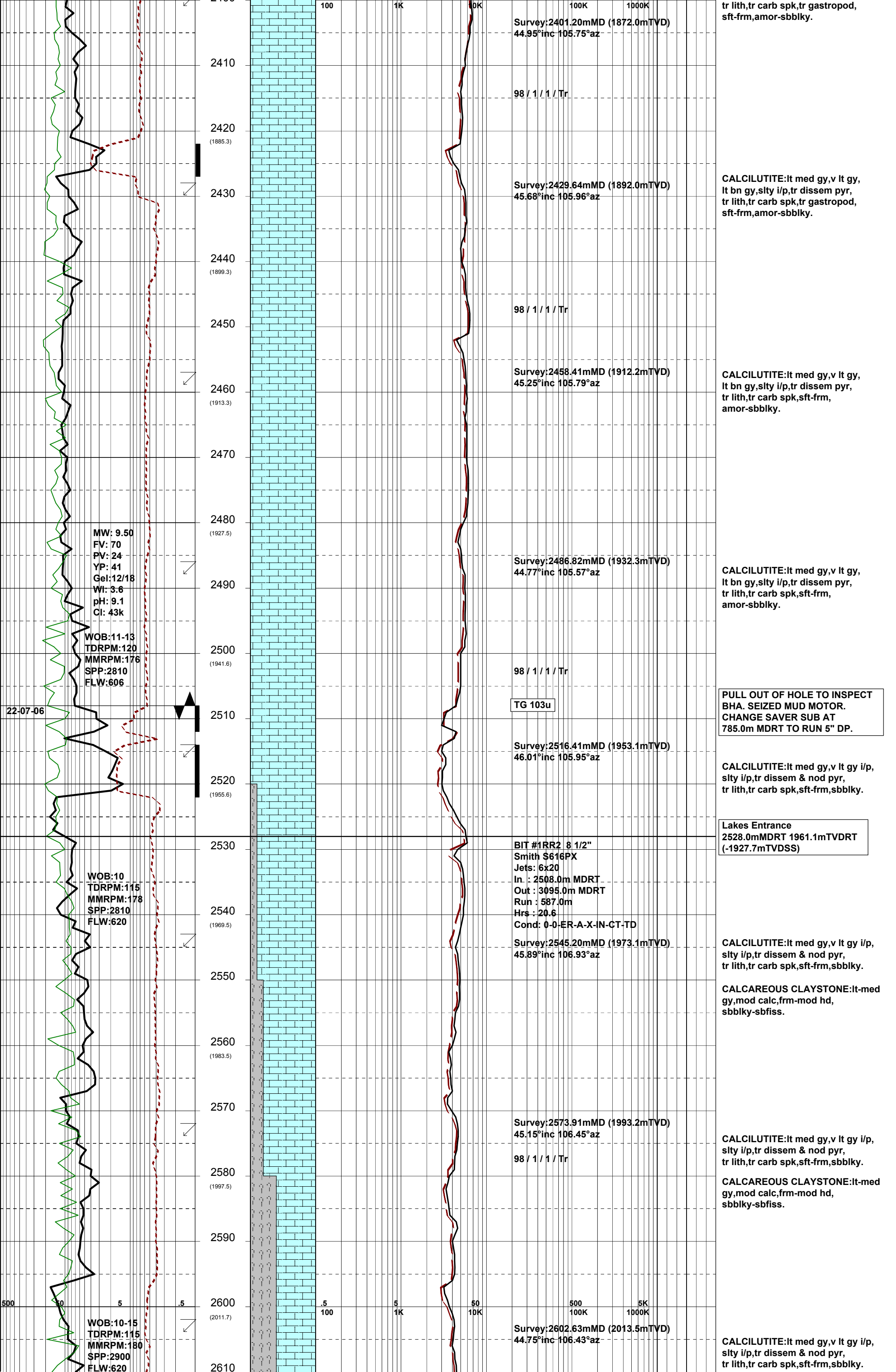


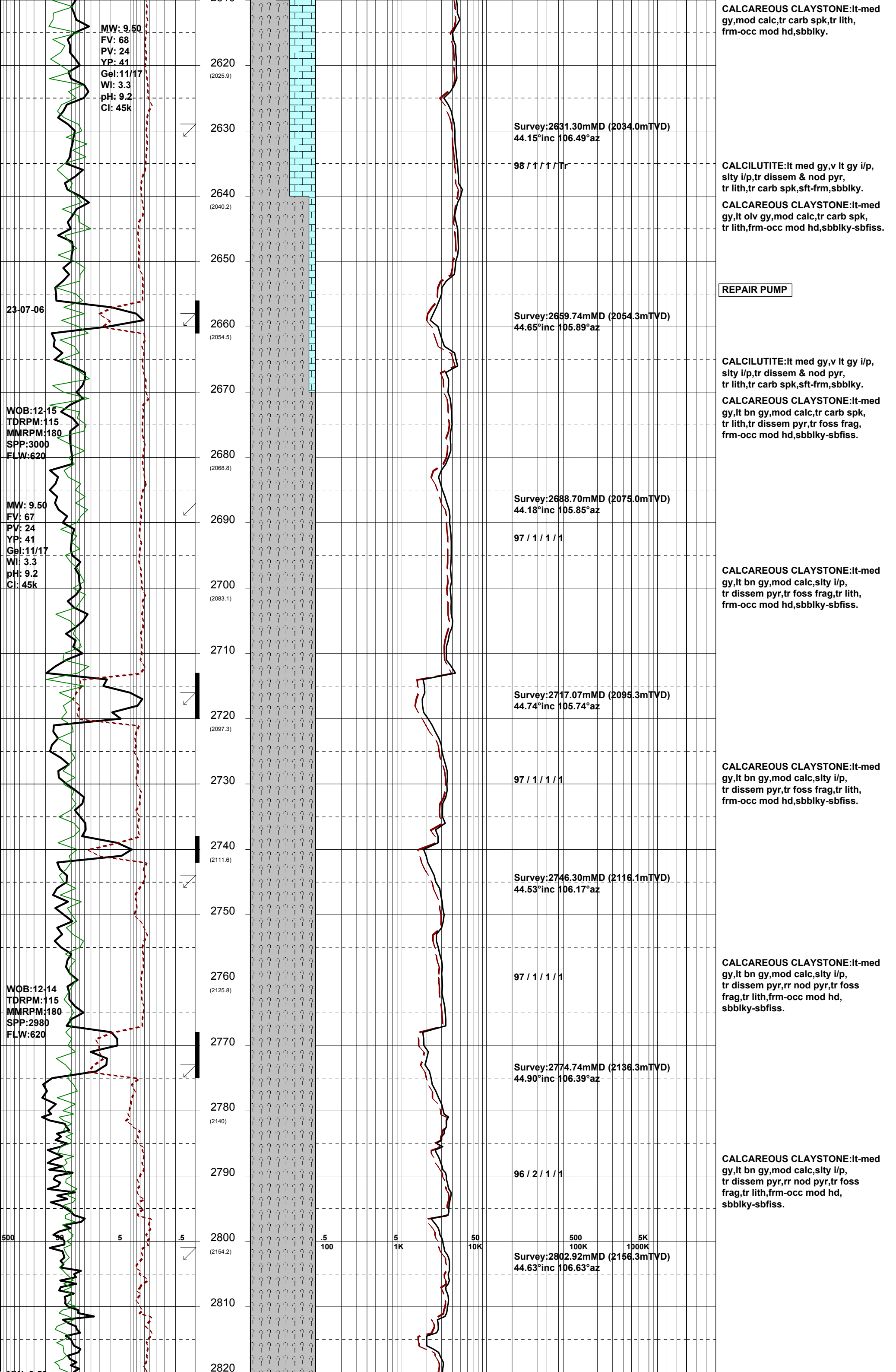


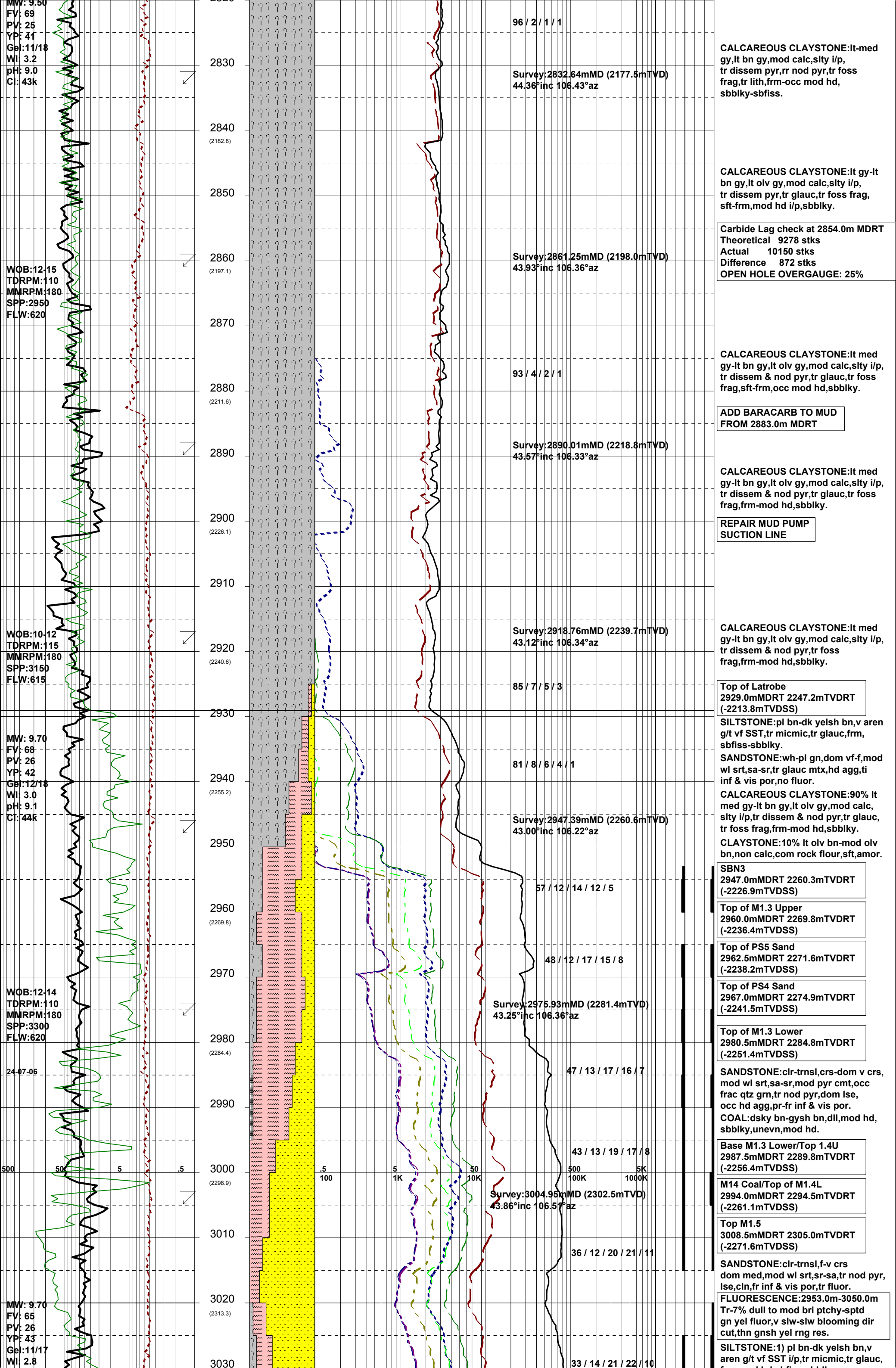












WOB: 15
TDRPM: 110
MMRPM: 181
SPP: 3400
FLW: 625

MW: 9.70
FV: 66
PV: 26
YP: 42
Gel: 11/18
WI: 2.8
pH: 9.5
Cl: 43k

Survey: 3033.71mMD (2323.1mTVD)
44.54°inc 107.09°az

Survey: 3061.86mMD (2343.0mTVD)
45.24°inc 106.91°az

Survey: 3073.71mMD (2351.4mTVD)
45.55°inc 107.10°az

Projection to TD
Survey: 3095.00mMDRT (2366.19mTVDRT)
46.10°inc 107.10°az

CLAYSTONE: lt blsh gy-lt gy, hd, blk.

SANDSTONE: clr-trns, f-dom v crs, wl srt, sa-sr, wk pyr cmt, tr nod pyr, lse, cln, fr inf & tr vis por, fluor.

SANDSTONE: clr-trns, dom f-dom v crs, wl srt, sa-sr, wk pyr cmt on crs grn, tr nod pyr, lse, cln, fr inf & vis por, no fluor.

CLAYSTONE: lt blsh gy-lt gy, hd, blk.

SANDSTONE: clr-trns, f-crs, dom med, wl srt, sa-sr, tr nod pyr, lse, cln, fr inf & vis por, no fluor.

SANDSTONE: clr-trns, dom f occ crs, mod wl srt, sa-sr, tr wh arg mt, dom lse, gen cln, pr-fr inf & vis por, no fluor.

CLAYSTONE: lt blsh gy-lt gy, hd, blk.

SANDSTONE: clr-trns, dom f, occ crs, mod wl srt, sa-sr, tr wh arg mt, dom lse, gen cln, pr-fr inf & vis por, no fluor.

SILTSTONE: pl bn-dk yelsh bn, v aren g/t vf SST i/p, tr micmic, frm-mod hd, sbfiss-sbblk.

SANDSTONE: clr-trns, f-v crs, pr srt, sa-sr, wk pyr cmt, tr wh arg, mt, tr nod pyr, dom lse, gen cln, pr inf & vis por, no fluor.

COAL: gysh bn-bnsh blk, dll, mod hd, sbblk, unevn, slty i/p g/t CARB SLTST.

WKF-W27A reached Total Depth of 3095.0m MDRT 2366.2m TVDRT (-2332.8m TVDSS) at 06:30 hours on 24-07-2006

Run Precision Energy Services compact shuttle logging from 3090.0m MDRT to 2815.0m MDRT, 1270.0m MDRT to 1045.0m MDRT MCG-MDN-MPD-MSS-MDL

7" Production Casing shoe set at 3090.0m MDRT

APPENDIX 4b

WEST KINGFISH W27A

Well Completion Log



WELL COMPLETION LOG
Scale – 1:200
WEST KINGFISH W27A

Gippsland Basin, Victoria
Concession: VIC/L7

POST-DRILL LOCATION: <i>Top of Latrobe</i>	Latitude:	38° 35' 54.744" S	COMPILED BY:	Sheryl Sazenis
	Longitude:	148° 07' 25.547" E	DRAFTED BY:	Arnaldo Ribeiro
	MGA X:	597857.50 mE	DRILL RIG:	Nabors Rig 453
	MGA Y:	5727173.59 mN	Spheroid:	GRS80
ELEVATION:	Depth:	2929.0 mMDRT 2247.2 mTVDRT (-2213.7 mTVDSS)	Datum:	GDA94
	G.L.:	-76.13 m	Projection:	UTM
	R.T.:	33.43 m	Map Grid/Cent Meridian	MGA Zone 55 / 147 deg E
	Water Depth:	76.13 m	TOTAL DEPTH:	3095.0 mMDRT / 2366.2 mTVDRT
DATES:	Spudded:	18/07/2006	PLUGGED BACK T.D.:	3060 mMDRT (3025m wireline HUD)
	Rig Released:	31/07/2006	CLASSIFICATION:	Oil Development
	I.P. Established:	10/08/2006 (Initial production)	STATUS:	Cased and Completed – Oil Well
SERVICE COMPANIES:				
DRILLING CONTRACTOR:	International Sea Drilling Limited (Nabors Rig 453)		PRODUCTION TESTING:	n/a
MWD/DIRECT. DRLG:	Schlumberger Anadrill		DIVERS:	n/a
GYRO SURVEYING:	SDI (Scientific Drilling Int.)		MUD LOGGING:	Geoservices Overseas S.A.
CORING:	n/a		PRESSURE RECORDING:	n/a
PIPE CONVEYED	Precision Energy Services (Compact Shuttle		WELL VELOCITY SURVEY:	n/a
LOGGING:	Logging System)		MUD ENGINEERING:	Halliburton- Baroid
CEMENTING:	Halliburton		LINER:	n/a
CASING:	Weatherford			

LEGEND

2.7m NOS Ø = 17% Sw = 32%		LOG ANALYSIS DATA	SHOW OR STAIN
<div><div>No Rec.</div><div>Rec.</div></div>		NS - Net Sand	HYDROCARBON CUT
CORE		NOS - Net Oil Sand	FLUORESCENCE
PERFORATED INTERVAL		NGS - Net Gas Sand	GAS SHOW
PLUG		Sw - Water Saturation	OIL PRODUCTIVE
		MUD DATA	GAS PRODUCTIVE
		Ø - Porosity	INTERPRETED OIL PRODUCTION
		Snd - Sand	INTERPRETED GAS PRODUCTION
		MW - Mud Weight	INTERPRETED WATER PRODUCTION
		FV - Funnel Velocity	WATER PRODUCTIVE
		PV - Plastic Velocity	CONDENSATE PRODUCTION
		YP - Yield Point	INTEPRETED CONDENSATE BEARING
		Gel - Gel Strength	DSTG DST WITH GAS RECOVERED
		pH - Acidity/Alkalinity	DSTO DST WITH OIL RECOVERED
		WL - Water Loss	SURVEY POINT
		Cl - Chloride	13-3/8" CASING SHOE
		Ca - Calcium	MUD
		Sol - Solids	
		H2O - Water	
		Oil -Oil	
←SST	RECOVERED SIDE WALL CORE LITHOLOGY		
	SST - Sandstone		
	CLST - Claystone		
	SLST - Siltstone		
	LMST - Limestone		
	MST - Mudstone		
	ML - Marl		
	SH - Shale		
	COAL - Coal		
←	SIDE WALL CORE - NO RECOVERY		
←	FIT		
←P2/11	MDT/RFT PRETEST RUN/SEAT NUMBER		
←S11/2	MDT/RFT SAMPLE RUN/SAMPLE NUMBER		
←P2/40	MDT VERTICAL/HORIZONTAL PERMEABILITY TEST		
	PACKER		
□	BRIDGE PLUG		

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

LOGGING AND SURVEYING			
Anadrill Schlumberger	Interval (mMDRT)	Precision Energy Services Logging	Interval (mMDRT)
MWD (Directional & GR) – 2 Runs	900.0m - 3095m MDRT (GR 900m – 3075.1m MDRT)	MCG-MDN-MPD-MSS-MDL-MAI – 1 Run (GR-Neutron-Density-Sonic-Dual Laterlog-Induction)	3090.0m - 895.0m MDRT (Main log from 3090 – 2792m MD)

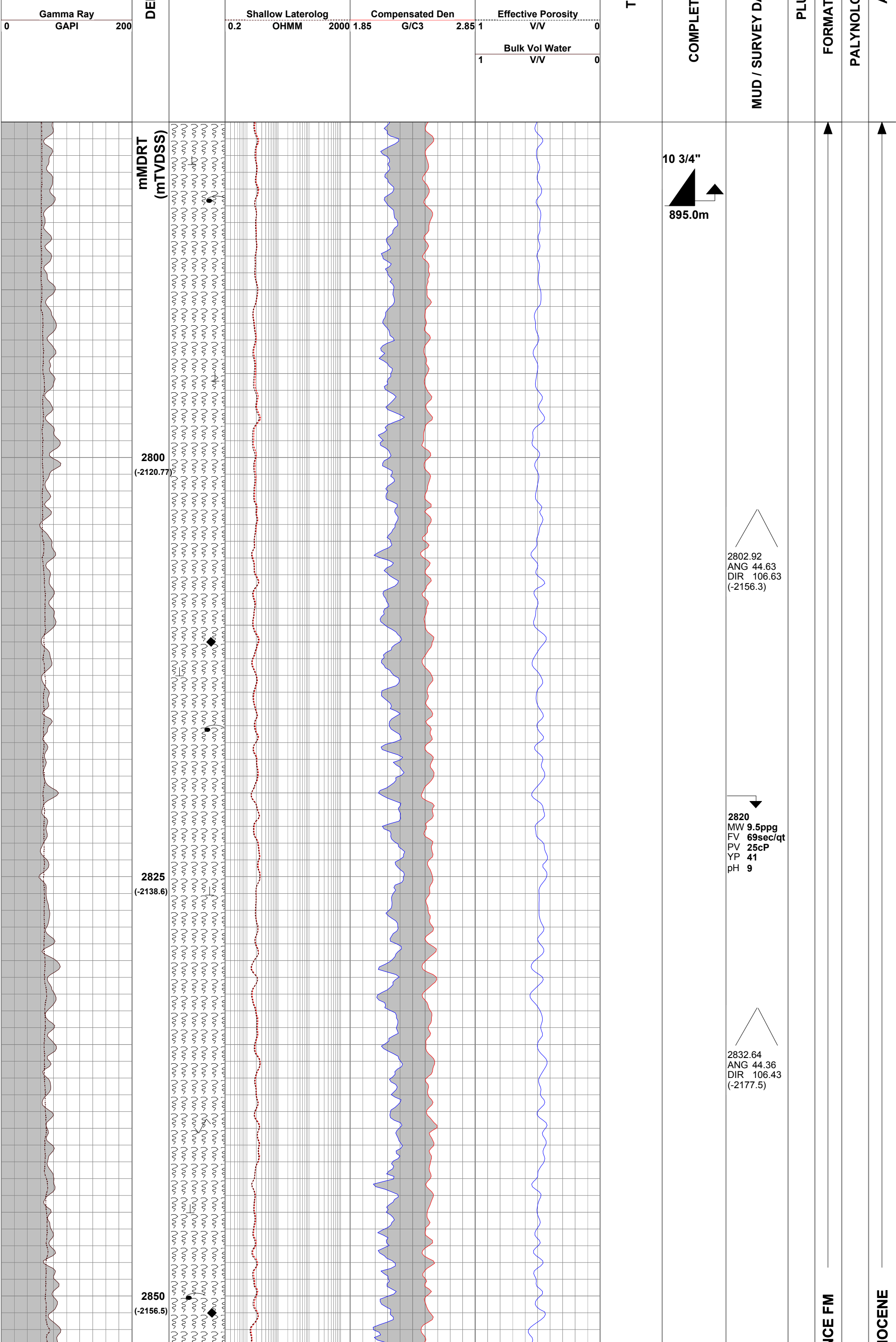
WELL DATA				
Date	18 July 2006 - 21 July 2006	22 July 2006 - 24 July 2006	25 July 2006 - 26 July 2006	
Run	MWD # 1	MWD # 2	Wireline Run #1 on shuttle	
Log	Powerpulse Directional & GR	Powerpulse Directional & GR	MCG-MDN-MPD-MSS-MDL	
Depth Driller	2508.0m MDRT	3095.0m MDRT	3093.0m MDRT	
Depth Logger	2508.0m MDRT	3095.0m MDRT	3093.0m MDRT	
Bottom Log Interval	2489.4m MDRT	3075.1m MDRT	3090.0m MDRT	
Top Log Interval	900.0m MDRT	2489.4m MDRT	895.0m MDRT	
Casing Driller	895.0m MDRT	895.0m MDRT	895.0m MDRT	
Casing Logger	895.0m MDRT	895.0m MDRT	895.0m MDRT	
Casing Size	10.75"	10.75"	10.75"	
Casing Weight	40.5 ppf	40.5 ppf	40.5 ppf	
Bit Size	8.5"	8.5"	8.5"	
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL	
Density	9.5 ppg	9.7 ppg	9.7 ppg	
Rm @ Measured Temp.	N/A	N/A	0.105 ohm-m @ 25°C	
Rmf @ Measured Temp.	N/A	N/A	0.08 ohm-m @ 25°C	
Rmc @ Measured Temp.	N/A	N/A	0.081 ohm-m @ 25°C	
Max. Recorded Temp.	71.3°C	83.00°C	93.80°C	
Equipment / Location	Sale	Sale	Sale	
Recorded By	C. Skiba / S. Xu	C. Skiba / S. Xu	B.Moss / R. Tench	
Witnessed By	T. Lobo / D. van der Aa	T. Lobo / D. van der Aa	T. Lobo / D. van der Aa	

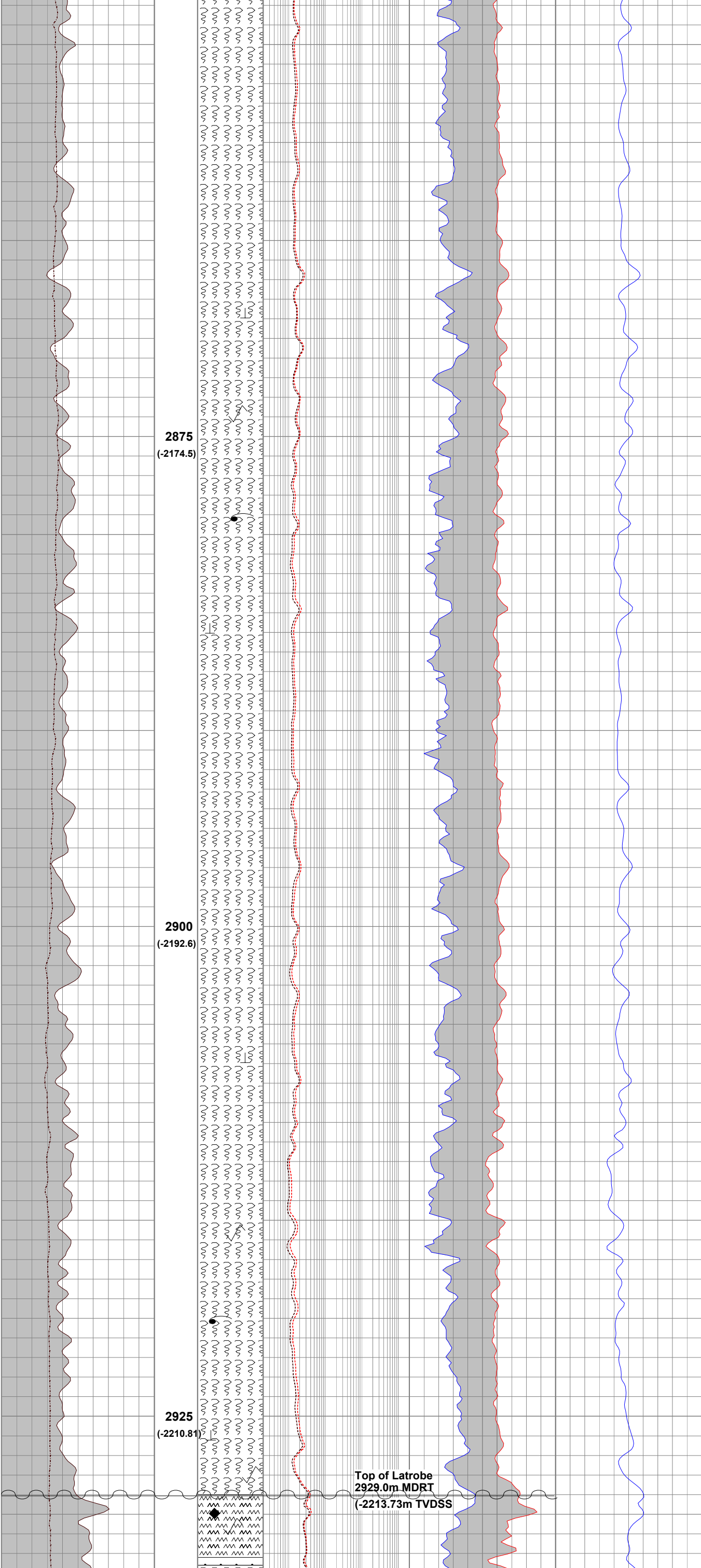
CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Gun Type
---	---		3000.0	3001.0	MaxR
---	---		2996.7	2997.5	MaxR

CASING				PLUGS		
Size	Set @ (mMDRT)	SX Cmt	Formation	From (mMDRT)	To (mMDRT)	SXCmt
10.75" *	895.0	---	Gippsland Limestone			
7"	3090.0	455	Latrobe Group	3095.0(TD)	3060.0 (PBD) (3025 wireline HUD)	---
3.5"(Tubing)	2925.5	---				

*(Pre-existing W27 casing)

Caliper			LITHOLOGY	Deep Laterolog			Neutron Porosity		Compensated Sonic		EST	TION	ATA	JGS	TION	DGY	AGE
6	IN	16		0.2	OHMM	2000	0.45	V/V	-0.15	500							





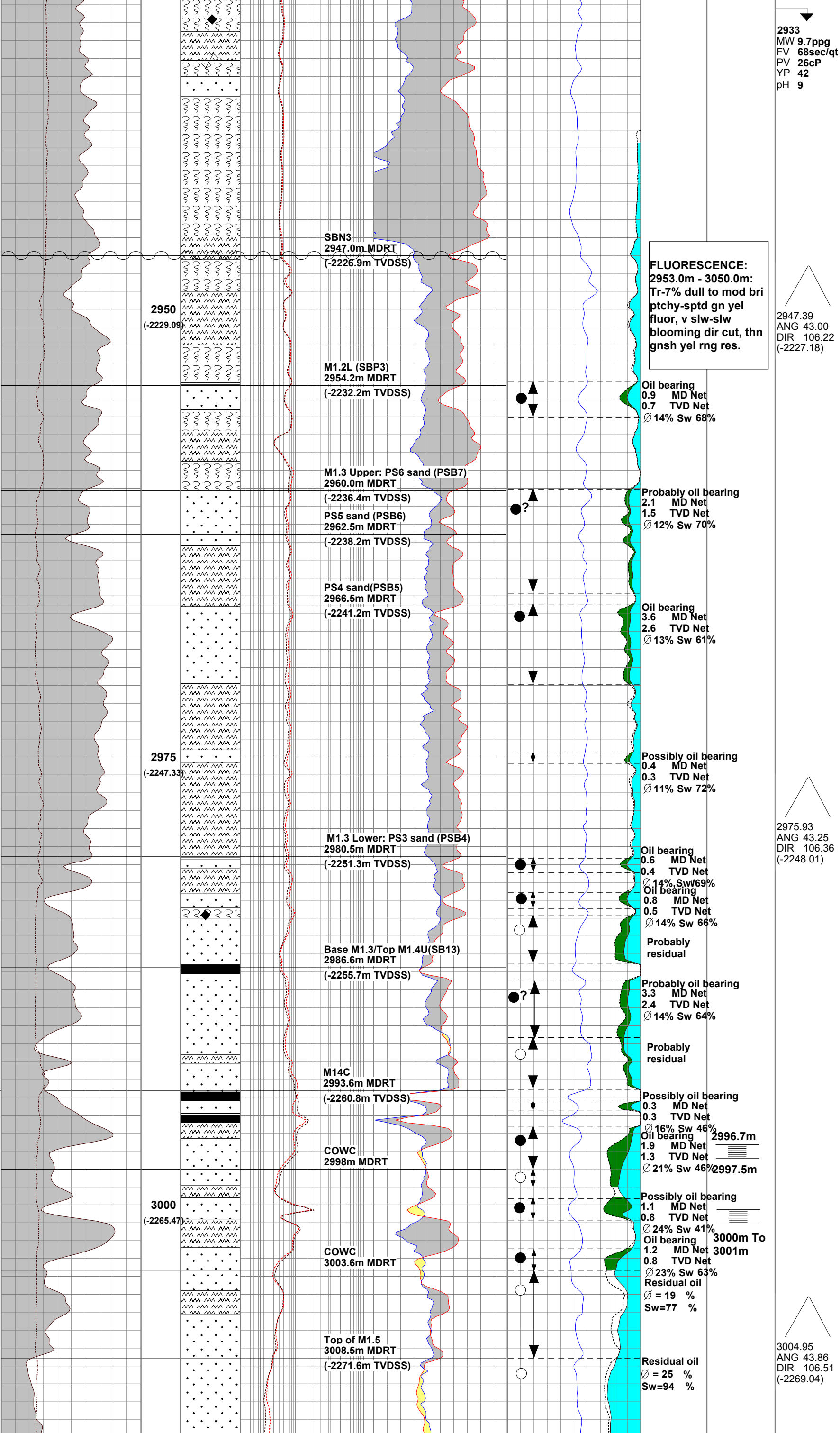
2861.25
ANG 43.93
DIR 106.36
(-2198.0)

2890.01
ANG 43.57
DIR 106.33
(-2218.8)

2918.76
ANG 43.12
DIR 106.34
(-2206.26)

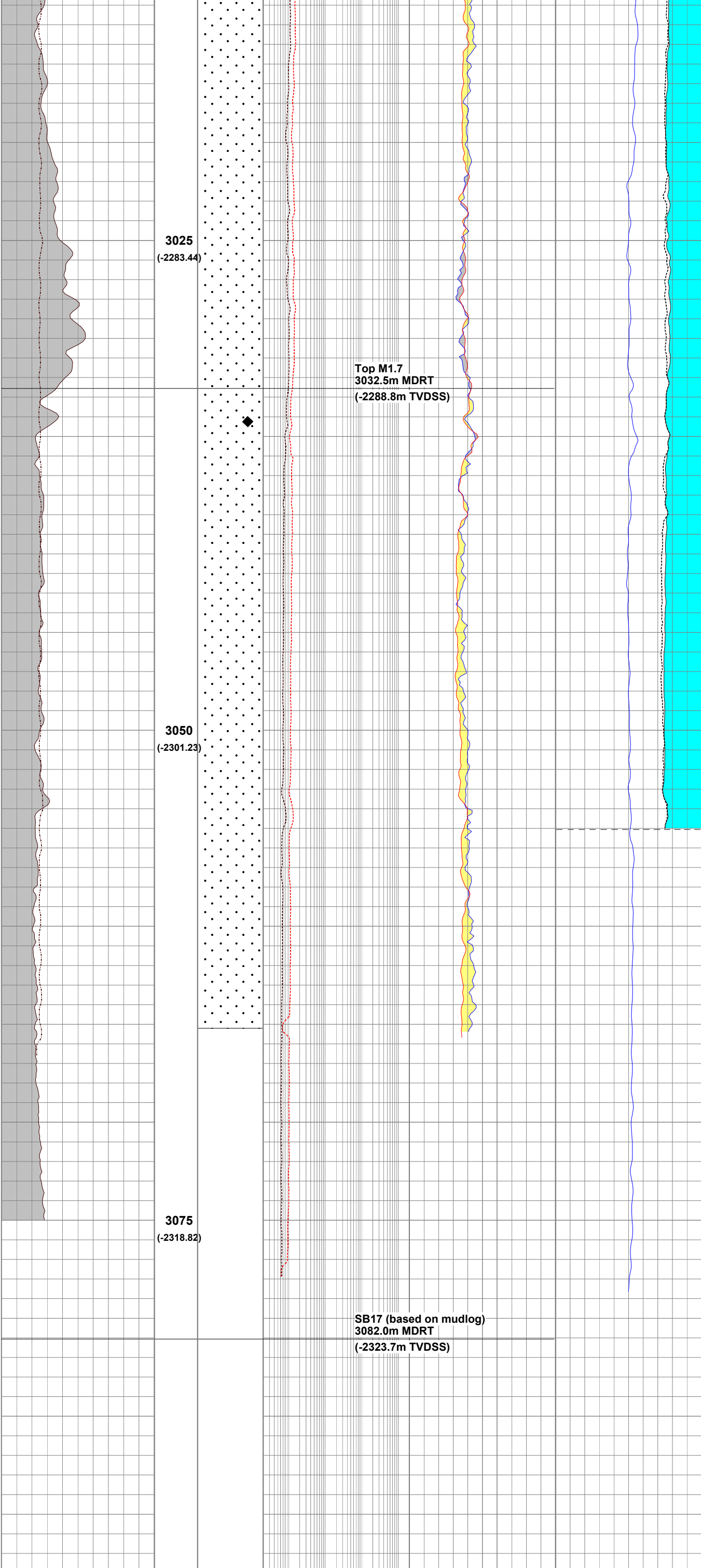
LAKES ENTRAN

OLIGOCENE - MI



BE GROUP

Y EOCENE



3020
MW 9.7ppg
FV 65sec/qt
PV 26cP
YP 43
pH 9.4

3033.71
ANG 44.54
DIR 107.09
(-2289.66)

3061.86
ANG 45.24
DIR 106.91
(-2309.6)

3073.71
ANG 45.55
DIR 107.10
(-2317.92)

3079
MW 9.7ppg
FV 66sec/qt
PV 26cP
YP 42
pH 9.5

7"
3090.0m

LATRO

EARL

[illegible]