



1 : 500



RIG MONITORING
FORMATION EVALUATION LOG

Country : Australia
Field : Offshore Otway Basin
Location : Lat: 38° 37' 24.33" South
Long: 142° 42' 5.02" East
Well : Martha-1
Company : Santos Ltd
Rig : Ocean Patriot

LOCATION

Latitude : 38° 37' 24.33" South
Longitude : 142° 42' 5.02" East
UTM Easting = 648,109.28 m
UTM Northing = 5,723,638.23 m

Other Services
FEWD

Permanent Datum : Mean Sea Level

Elevation : 0.00 m

Elev. KB

Log Measured From : Drill Floor

21.50 m Above Permanent Datum

DF 76.16 m
GL
WD 54.66 m

Drilling Measured From : Drill Floor

MD LOG

WD 54.66 m

Depth Logged : 76.16 m To 1,800.00 m

Unit No. : 197

Job No. : AU-IN-0003287671

Date Logged : 20-Oct-04 To 29-Oct-04

Total Depth MD : 1,800.00 m TVD : 1,799.03 m

Plot Type : Final

Plot Date : 15-Dec-04

Run No. Size Borehole Record (MD)

Run No.

Size Borehole Record (MD)

To

1	914.400 mm	76.50 m	122.50 m
2	444.500 mm	122.50 m	628.00 m
3	311.150 mm	628.00 m	1,262.00 m
4	311.150 mm	1,262.00 m	1,800.00 m

Size	762.000 mm	459.80 kgpm	74.70 m	120.00 m
Weight	339.725 mm	101.20 kgpm	73.40 m	620.80 m

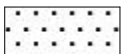
Santos Ltd.

FINAL FORMATION EVALUATION LOG

Martha-1

Depth: 76.16 - 1800.00 mMDRT

Scale: 1:500



Sand



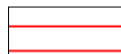
Sandstone



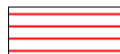
Silt



Siltstone



Clay



Claystone



Shale



Calcilutite



Calcsiltite



Calcarenite



Limestone



Dolomite



Marl



Conglomerate



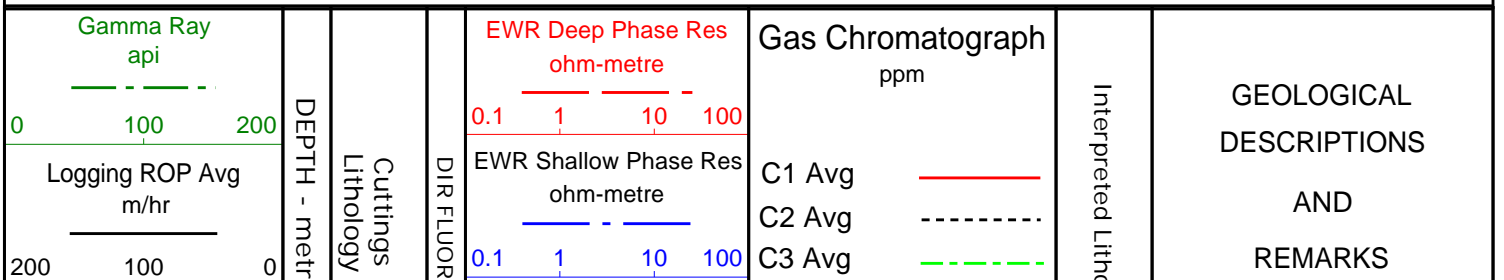
Coal

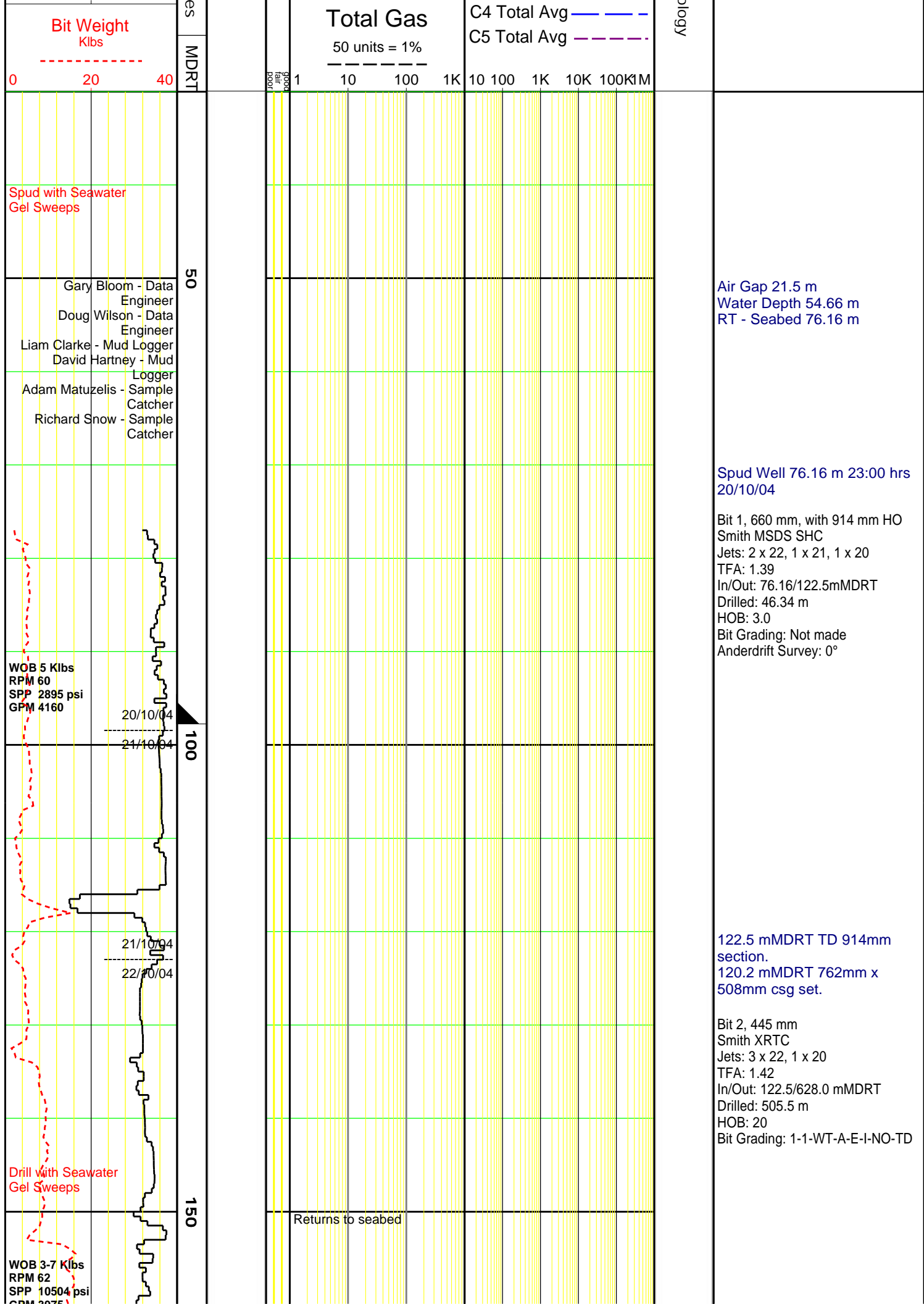


No Sample



No Description





WOB 8 Klbs
RPM 135
SPP 1924 psi
GPM 908

MW: 1.07 sg
FV: 55
PV/YP: 24/34
Gels: 6/13/17
O/W/S: 0/9/1/9
Cl: 36000 mg/L

WOB 4-20 Klbs
RPM 140
SPP 2013 psi
GPM 876

WOB 10-19 Klbs
RPM 138
SPP 2135 psi
GPM 1026

00

350

400

Returns to seabed

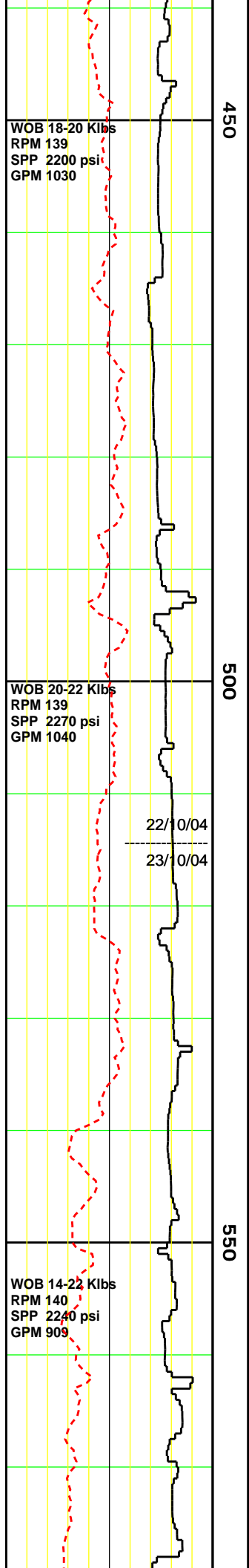
Returns to Surface

Survey 1°

Survey 0.5°

Survey 1°

Survey 0°

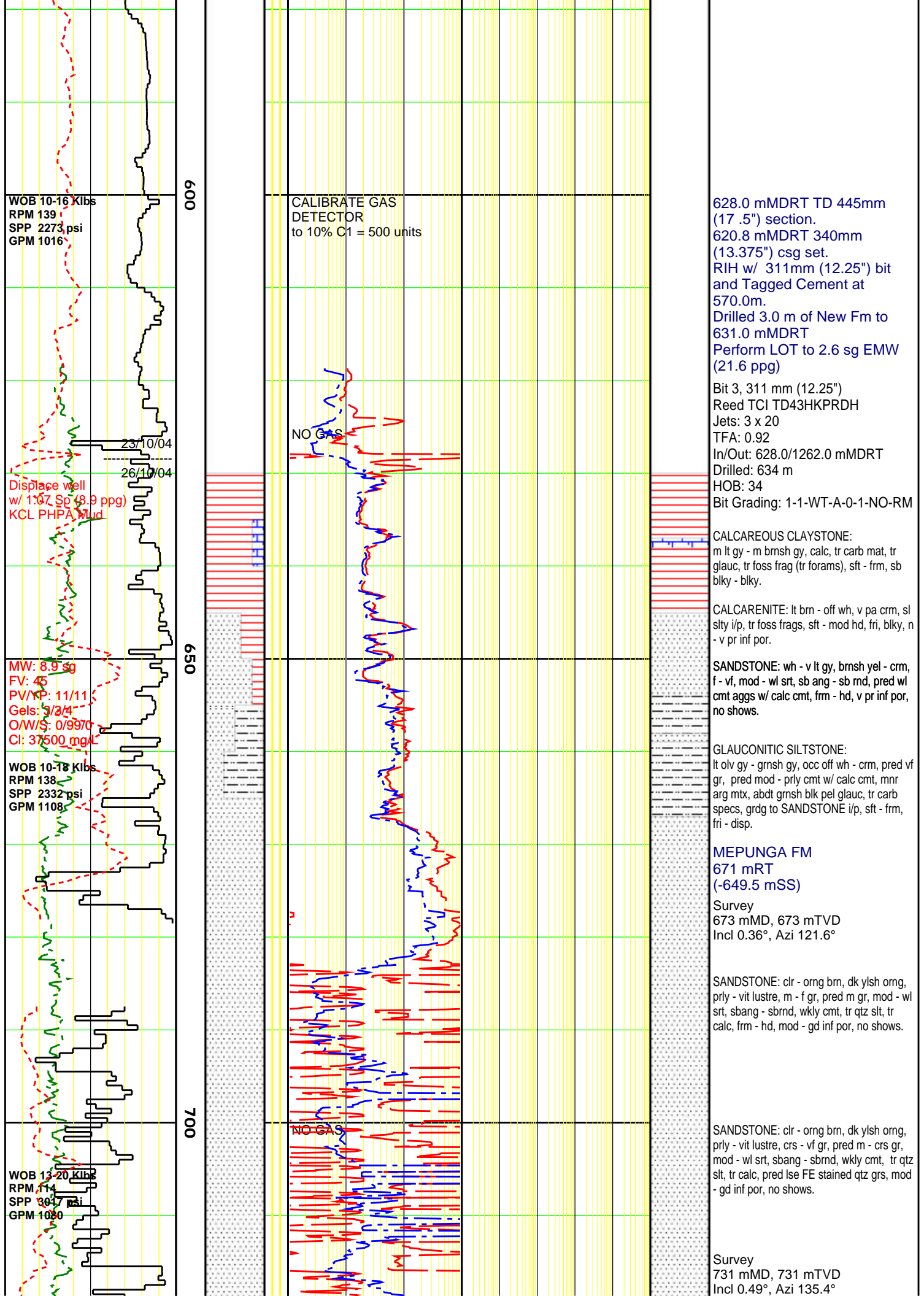


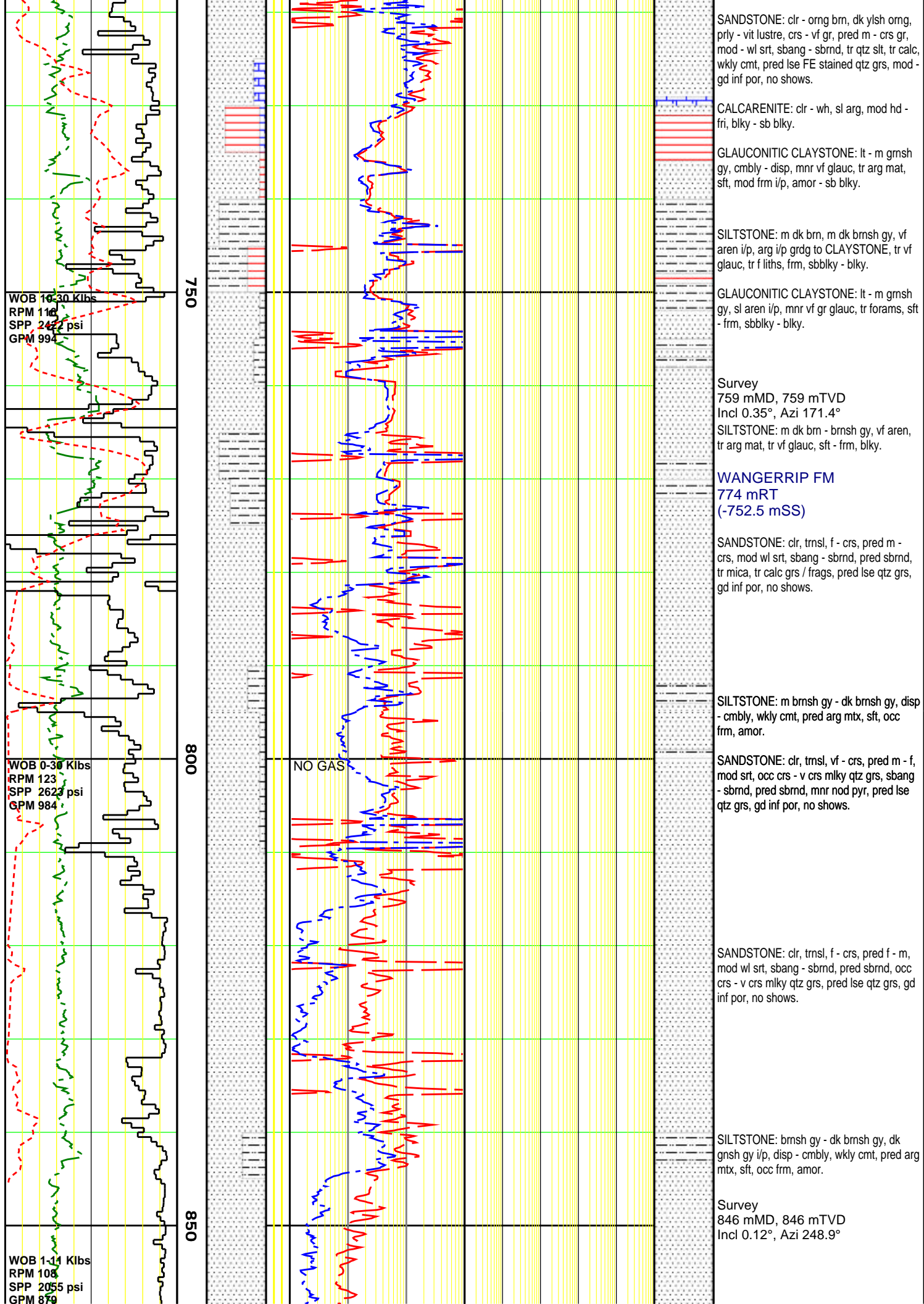
Survey 0.5°

Survey 0.5°

Survey 0°

Survey 0°





MW: 9.0 sg
FV: 47
PV/YP: 15/18
Gelst 6/8/9
O/W/S: 0/99/1
Cl: 38000 mg/L

26/10/04
27/10/04

WOB 1-14Klbs
RPM 99
SPP 1748 psi
GPM 857

WOB 4-15Klbs
RPM 92
SPP 1674 psi
GPM 805

006

950

NO GAS

96/3/1/tr/tr

96/4/tr/tr

94/1/tr/1/1

Rmf = 0.18 ohmm @ 75F

SANDSTONE: clr, trnsl, f - crs, pred m gr, mod wl srt, sbang - sbnd, pred sbnd, occ crs - v crs mlky qtz grs, pred lse qtz grs, fr - gd inf por, no shows.

Survey
872 mMD, 872 mTVD
Incl 0.05°, Azi 166.1°

SANDSTONE: clr, trnsl, f - v crs, pred m - crs, mod srt, sbang - sbnd, pred sbnd, occ crs - v crs mlky qtz grs, pred lse qtz grs, fr - gd inf por, no shows.

SANDSTONE: clr, trnsl, f - v crs, pred f - m, mod srt, sbang - sbnd, pred sbnd, occ crs - v crs mlky qtz grs, wkly calc, rr sft wk calc cmt, pred lse qtz grs, occ f qtz aggs, sft, fri, fr - gd inf por, no shows.

PEBBLE POINT FM
934 mRT
(-912.5 mSS)

SANDSTONE: clr, trnsl, f - v crs, pred f - m, mod srt, sbang - sbnd, pred sbnd, occ crs - v crs mlky qtz grs, wkly calc, com slty frags, tr wkly cmt f qtz aggs, pred lse qtz grs, gd inf por, no shows.

SILTSTONE: m brnsh gy - dk brnsh gy, aren, tr vf lith, tr calc, fri-sft, sbbkly.

Survey
961 mMD, 961 mTVD
Incl 1.59°, Azi 200.7°

SANDSTONE: clr, trnsl, f - v crs, pred f - m, mod srt, sbang - sbnd, pred sbnd, occ crs - v crs mlky qtz grs, com slty frags, tr wkly calc cmt, rr f qtz aggs, pred lse qtz grs, fri, gd inf por, no shows.

SILTSTONE: m brnsh gy - dk brnsh gy, aren, tr vf lith, tr calc, tr diss pyr, tr glauc, fri - sft, sbbkly.

MASSACRE SHALE FM
993 mRT
(-971.5 mSS)

Survey
989 mMD, 989 mTVD
Incl 1.27°, Azi 184.6°

FLOW CHECK @ 992m
CARBIDE LAG 31 MIN B/U

WOB 1-20Klbs
RPM 94
SPP 1749 psi
GPM 810

WOB 3-35Klbs
RPM 101
SPP 2069 psi
GPM 886

WOB 5-35Klbs
RPM 120
SPP 2517 psi
GPM 928.5

1000

1050

1100

98/2/tr/tr/tr

92/5/2/1/tr

93/4/2/1/tr

96/4/tr/tr/tr

95/3/1/1/tr

98/2/tr/tr/tr

97/3/tr/tr/tr

97/3/tr/tr/tr

264 BBLs EXCESS IN OPEN HOLE - 384 MM (15.1 ") AVERAGE OPEN HOLE SIZE

SILTSTONE: m brnsh gy, disp, pred aren, mnr arg, tr f glauc, tr diss pyr, tr carb mat, sft - frm, pred sft, fri, amor - sbbly.

SANDSTONE: clr, trns, occ lt brnsh gy, f - m, pred vf - f, mod srt, sbang - sbrnd, pred sbrnd, tr wk calc cmt, tr pyr, tr liths, occ f - vf qtz aggs grdg i/p to SILTSTONE, pred lse qtz grs, fr inf por, no shows.

SILTSTONE: m - dk brnsh gy, disp, pred aren, mnr arg, tr f glauc, tr diss pyr, tr carb mat, intrlam w/ SANDSTONE, sft - frm, fri, amor - sbbly.

TIMBOON SANDSTONE 1030 mRT (-1008.5 mSS)

SANDSTONE: clr, trns, occ lt brnsh gy, vf - m, pred vf - f, mod srt, sbang - sbrnd, tr mod strng sil cmt, intrlam w/ SILTSTONE, tr pyr, tr liths, occ f - vf qtz aggs, pred lse qtz grs, pr inf por, no shows.

Survey
1047 mMD, 1046.8 mTVD
Incl 2.47°, Azi 218.6°
SANDSTONE: clr, trns, pa yel, occ lt olv gy - pa gy, f - m, pred f gr, mod - wl srt, sbang - sbrnd, rr mod - strng sil cmt, tr pyr cmt, tr pyr, tr liths, occ olv gy fri aggs, pred lse qtz grs, pr - fr inf por, no shows.

SANDSTONE: clr, trns, occ lt olv gy - pa gy, lt - m brnsh gy, f - crs, com v crs, pred f gr, pr - mod srt, sbang - sbrnd, wkly calc, wk - mod sil cmt, wk calc cmt, tr arg mt, tr pyr, tr vf glauc, occ olv gy mod hd aggs, pred lse qtz grs, pr - fr inf por, no shows.

SILTSTONE: m - dk brnsh gy, olv gy, m - dk gy, pred aren, mnr arg, grdg to vf SANDSTONE, wkly calc, tr f glauc, tr - com carb spec, tr diss pyr, frm, occ frm - hd, sbbly - bly.

Survey
1075.5 mMD, 1075.4 mTVD
Incl 2.33°, Azi 211.0°

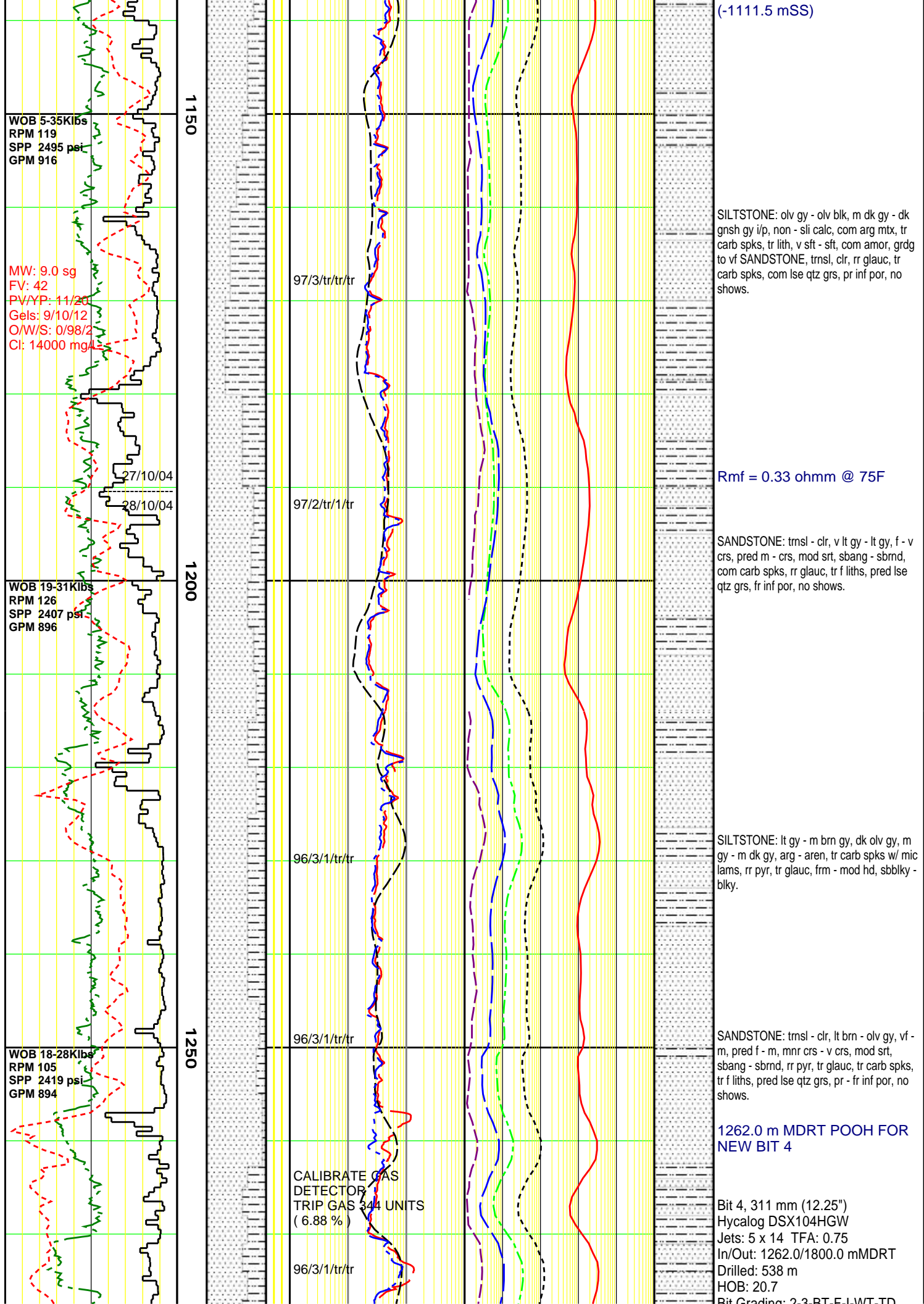
SANDSTONE: clr, trns, lt olv gy - pa gy, lt - m brnsh gy, vf - m gr, pred vf - f, mod srt, sbang - sbrnd, pred sbrnd, wkly calc, wk - mod sil cmt, wk calc cmt, rr pyr cmt, tr arg mt, tr vf glauc, tr pyr, pred lse qtz grs, pr - fr inf por, no shows.

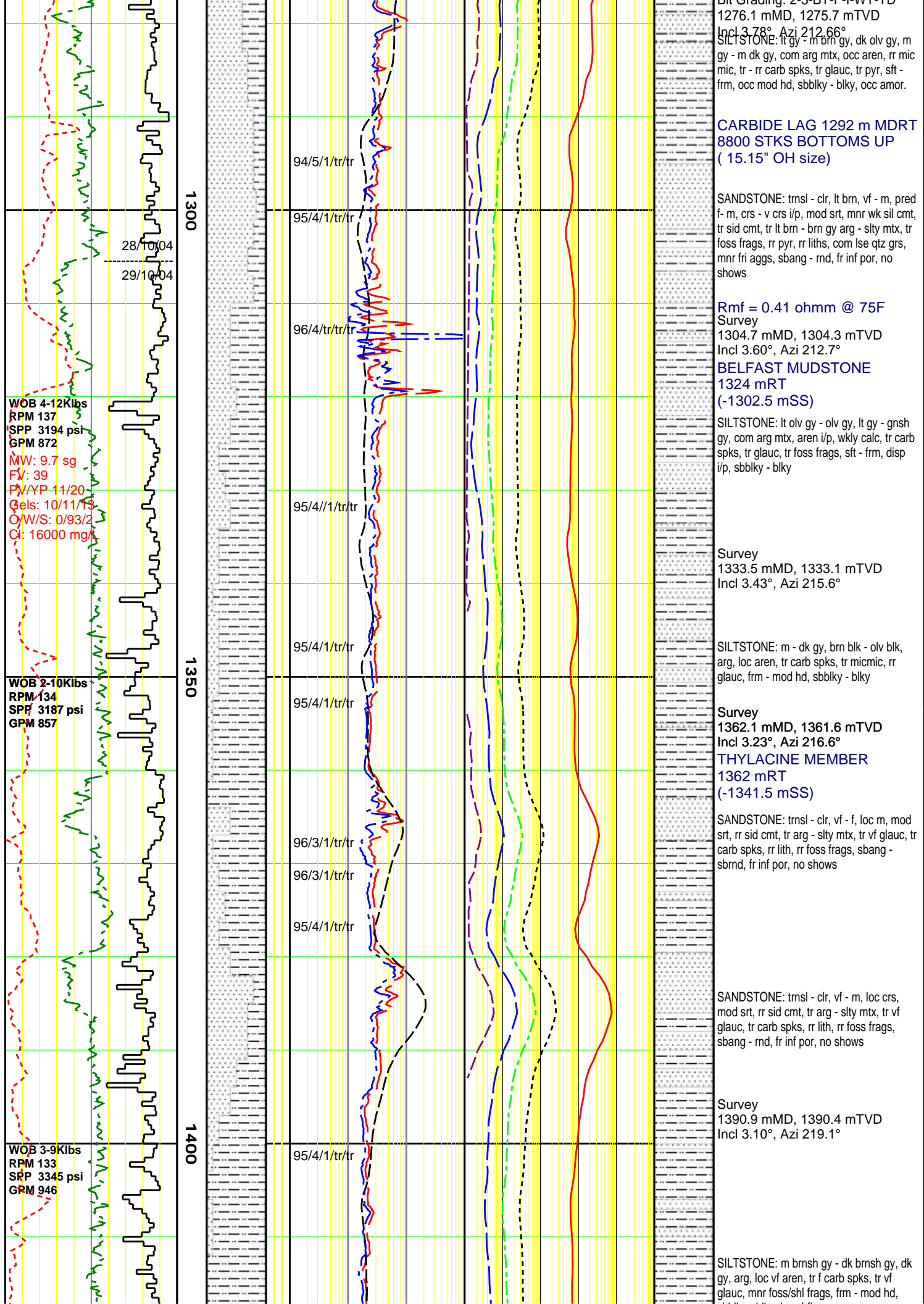
Survey
1104 mMD, 1104 mTVD
Incl 2.36°, Azi 211.1°

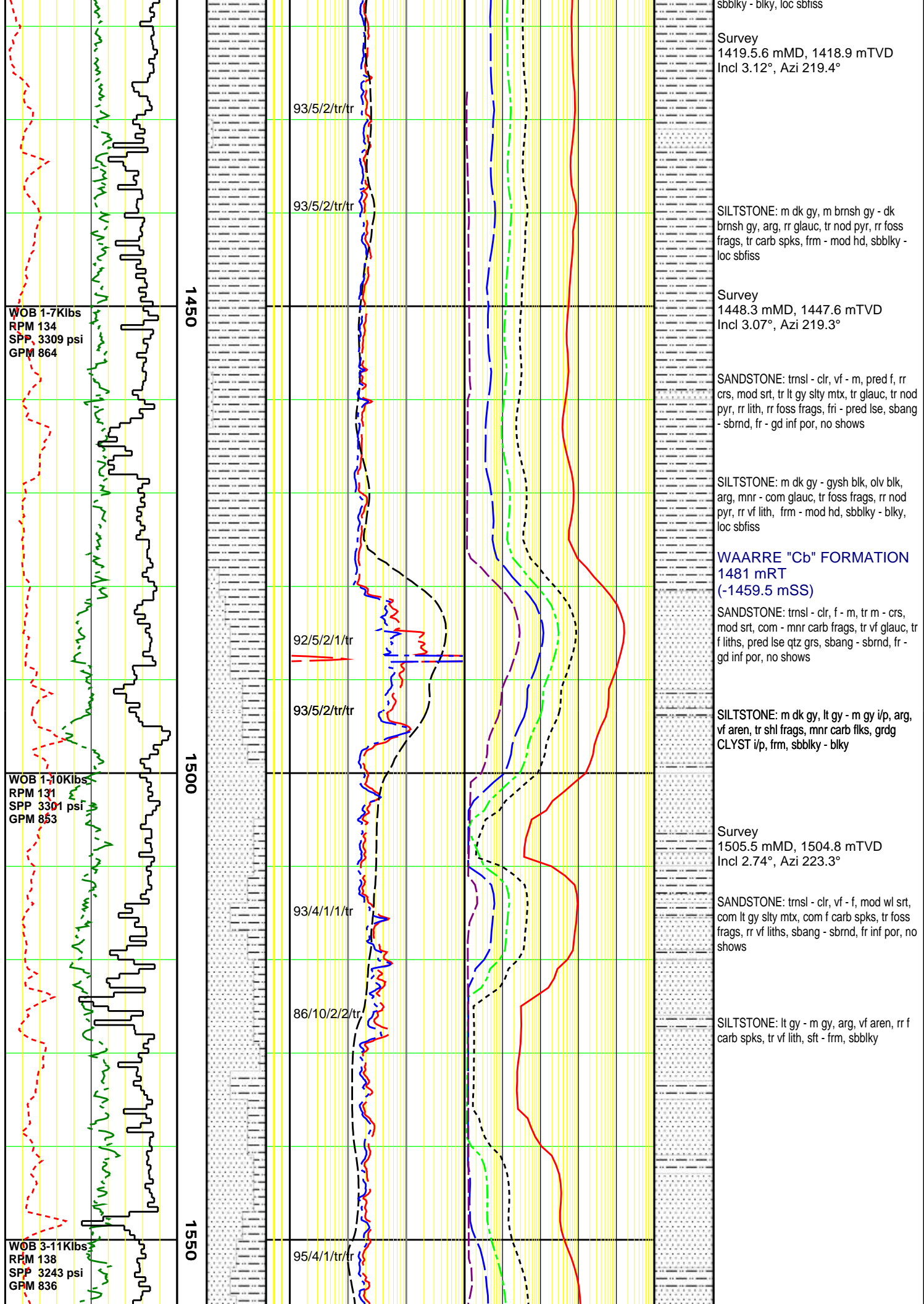
SILTSTONE: m - dk brnsh gy, olv gy, m - dk gy, pred aren, mnr arg, grdg to vf SANDSTONE, wkly calc, tr f glauc, tr - com carb spec, tr diss pyr, frm, occ frm - hd, sbbly - bly.

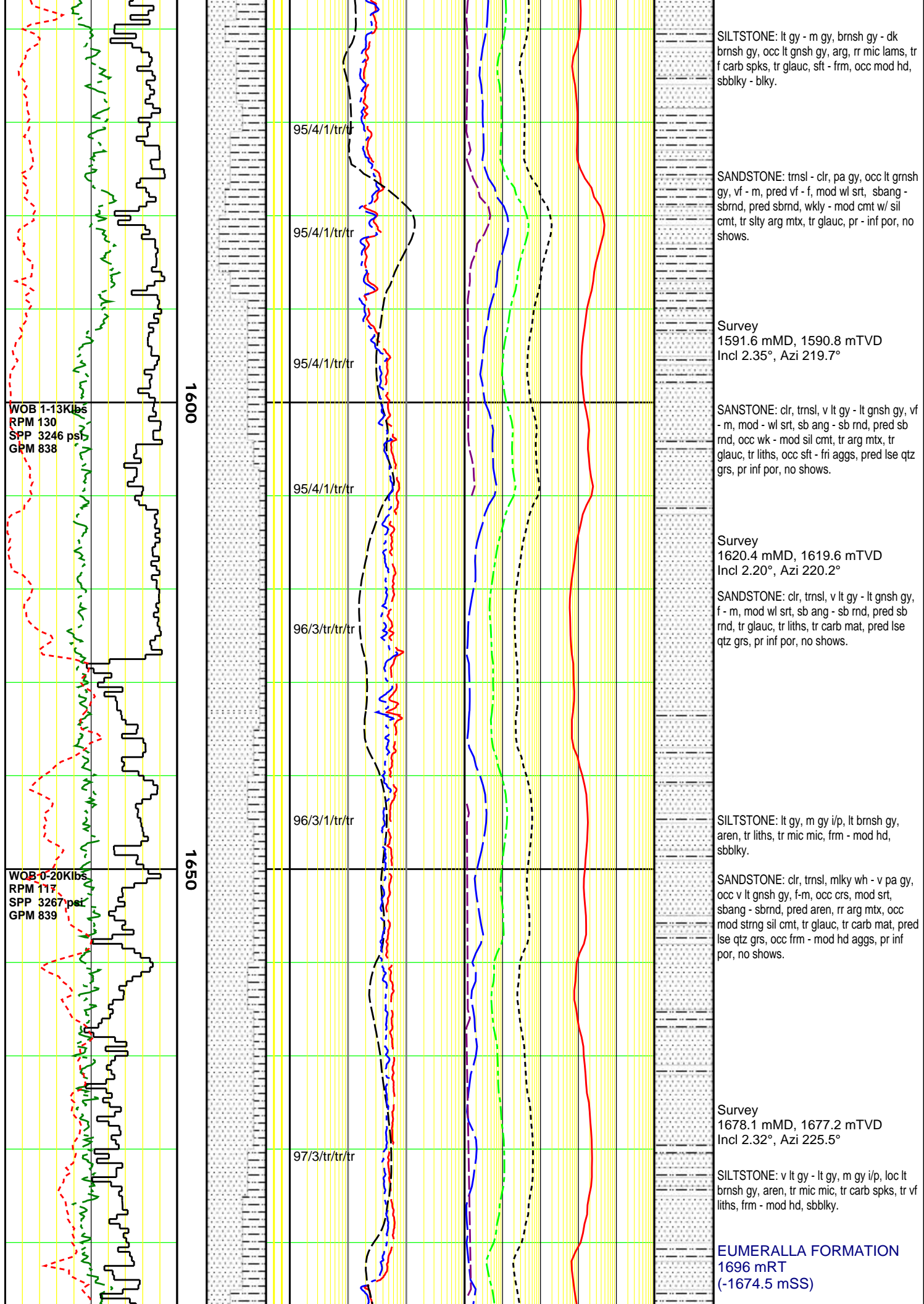
Survey
1132.6 mMD, 1132.5 mTVD
Incl 2.43°, Azi 210.4°

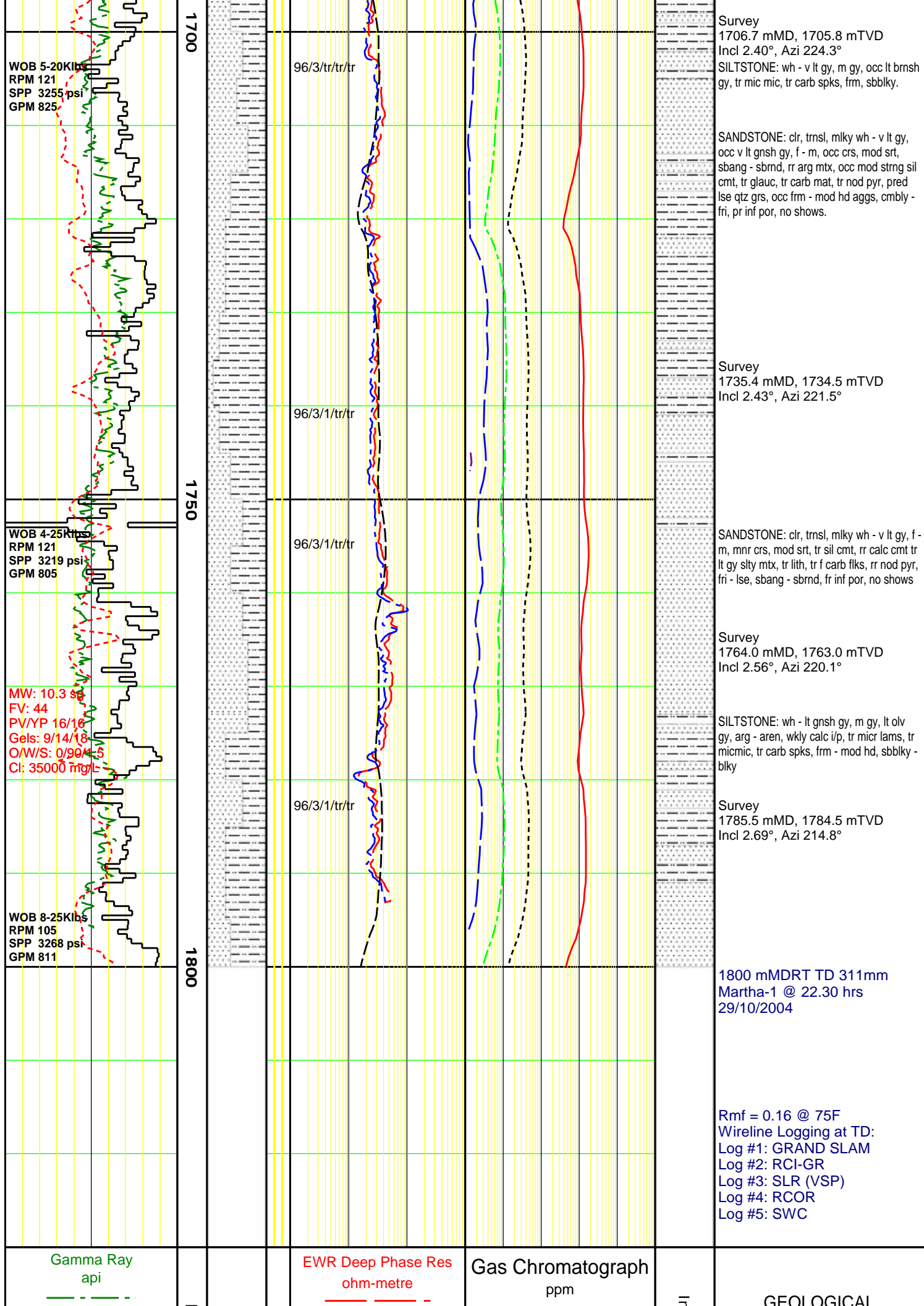
PAARATTE FORMATION 1133 mRT

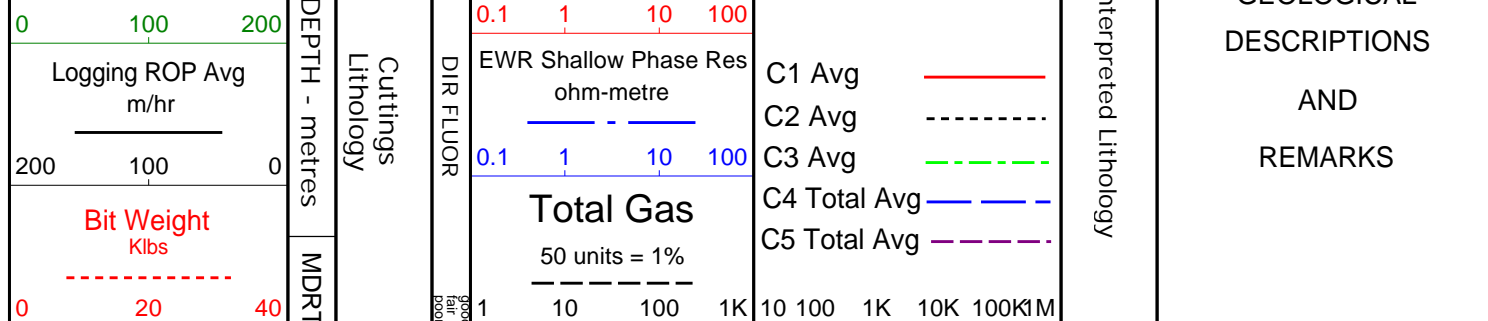












Santos

DIRECTIONAL SURVEY REPORT

Santos Ltd
Martha-1
Offshore Otway Basin
Victoria
Australia
AU-IN-0003287671

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/foot)
76.160	0.00	0.00	76.160	0.000 N	0.000 E	997.840	TIE-IN
672.920	0.36	121.62	672.916	0.973 S	1.579 E	-0.017	0.0002
731.000	0.56	135.36	730.994	1.269 S	1.933 E	0.046	0.0012
759.740	0.35	171.41	759.733	1.456 S	2.044 E	0.144	0.0037
846.090	0.12	248.92	846.083	1.749 S	1.999 E	0.417	0.0012
872.680	0.05	166.11	872.673	1.770 S	1.975 E	0.447	0.0014
960.620	1.59	200.68	960.601	2.947 S	1.554 E	1.667	0.0054
989.350	1.27	184.55	989.322	3.636 S	1.389 E	2.339	0.0054
1017.990	2.00	214.08	1017.951	4.367 S	1.083 E	3.120	0.0116
1046.870	2.47	218.63	1046.809	5.269 S	0.413 E	4.241	0.0053
1075.510	2.33	211.04	1075.424	6.250 S	0.272 W	5.435	0.0037
1104.150	2.36	211.11	1104.040	7.253 S	0.876 W	6.607	0.0003
1132.600	2.43	210.35	1132.465	8.273 S	1.483 W	7.793	0.0008
1161.230	2.65	210.29	1161.067	9.368 S	2.123 W	9.061	0.0024
1189.870	2.78	210.70	1189.675	10.538 S	2.812 W	10.418	0.0014
1218.570	3.07	212.16	1218.337	11.787 S	3.577 W	11.882	0.0032
1247.390	3.46	212.50	1247.111	13.175 S	4.455 W	13.525	0.0042
1276.080	3.78	212.66	1275.743	14.702 S	5.431 W	15.337	0.0034
1304.670	3.60	212.65	1304.274	16.251 S	6.424 W	17.177	0.0019
1333.520	3.43	215.56	1333.070	17.716 S	7.415 W	18.945	0.0026
1362.110	3.23	216.60	1361.611	19.059 S	8.393 W	20.602	0.0022
1390.880	3.10	219.06	1390.337	20.315 S	9.367 W	22.184	0.0020
1419.530	3.12	219.42	1418.945	21.519 S	10.351 W	23.727	0.0003
1448.270	3.07	219.27	1447.643	22.719 S	11.334 W	25.266	0.0006
1476.850	2.88	220.27	1476.185	23.858 S	12.282 W	26.735	0.0020
1505.480	2.74	223.28	1504.780	24.906 S	13.216 W	28.119	0.0021
1591.580	2.35	219.65	1590.795	27.765 S	15.755 W	31.891	0.0015
1620.360	2.20	220.22	1619.553	28.641 S	16.488 W	33.023	0.0016
1651.360	2.43	227.31	1650.527	29.541 S	17.355 W	34.246	0.0036
1678.050	2.32	225.45	1677.194	30.302 S	18.155 W	35.317	0.0016
1706.720	2.40	224.26	1705.840	31.138 S	18.987 W	36.467	0.0010
1735.430	2.43	221.48	1734.525	32.024 S	19.809 W	37.655	0.0013
1763.960	2.56	220.08	1763.028	32.965 S	20.620 W	38.882	0.0015
1785.460	2.69	214.76	1784.505	33.746 S	21.216 W	39.862	0.0039

CALCULATION BASED ON MINIMUM CURVATURE METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD

VERTICAL SECTION IS COMPUTED ALONG A CLOSURE OF 301.25 DEGREES (GRID)

A TOTAL CORRECTION OF 11.95 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

A TOTAL CORRECTION OF 11.30 DEGS FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 1785.460 METRES
IS 1858.452 METRES ALONG 301.25 DEGREES (GRID)

Date Printed:15 December 2004