



RIG MONITORING

FORMATION EVALUATION LOG SCALE 1:500

Country : Australia
Field : Longtom
Location : Lat: 38° 6' 11.89" South
Long: 148° 19' 0.92" East
Well : Longtom-2
Company : Apache Energy Ltd
Rig : Ocean Patriot
Rig : Ocean Patriot

LOCATION

Latitude : 38° 6' 11.89" South
Longitude : 148° 19' 0.92" East
UTM Easting = 615,462.43 m
UTM Northing = 5,781,904.33 m

Other Services

FEWD

Permanent Datum : Mean Sea Level Elevation : 0.00 m

Log Measured From : Drill Floor 21.50 m Above Permanent Datum

Drilling Measured From : Drill Floor

MD LOG

KB 0.00 m
DF 21.50 m
GL 0.00 m
WD 56.80 m

Depth Logged : 0 m To 2,600.00 m Unit No. : 197 Job No. : AUFEE0003298447

Date Logged : 10-Nov-04 To 19-Nov-04

Total Depth MD : 2,600.00 m TVD : 2,581.29 m

Spud Date : 10-Nov-04 Plot Type : Field Plot Date : 12-Apr-05

Run No. Size Borehole Record (MD) Run No. Size Borehole Record (MD)

1 914,000 mm 78.30 m 111.00 m
2 311,000 mm 111.00 m 1,009.00 m
3 216,000 mm 1,009.00 m 2,311.00 m
4 216,000 mm 2,311.00 m 2,422.00 m

Size Casing Record (MD) Size Casing Record (MD)
508,000 mm 462.00 kgpm SURFACE 109.90 m
340,000 mm 70.00 kgpm SURFACE 995.20 m
178,000 mm 43.00 kgpm SURFACE 2,420.00 m

LEGEND

Abbreviations and Symbols

Drilling Data

BG Background Gas
BHT Bottomhole Temp
C Carbide Test
CB Core Bit
CG Connection Gas
CKF Check For Flow
CO Circulate Out
DB Diamond Bit
DC Depth Correction
DS Direction Survey
DST Drillstem Test
FLT Flowline Temp.
LAT Logged After Trip
NB New Bit
NR No Returns
PDC Polycrystalline Diamond
Compound Bit
PR Partial Returns
RPM Revs Per Minute
RRB Rerun Bit
STG Short Trip Gas
TB Turbo Drill
TG Trip Gas
U Gas Units
WOB Weight On Bit

Mud Data

Cl- Chloride Ion Conc Rm Mud Resistivity
FC Filter Cake Rmf Filtrate Resistivity
FL Filtrate Loss S Solids Content
G Gels Vis Funnel Viscosity
pH Hydrogen Ion Content MW Mud Weight
PV Plastic Viscosity YP Yield Point

Engineering Data

Core No. Water
DST No. Salt Water
Casing Seat Fresh Water
Side Wall Core Hydrocarbons Smell
Gas Traces H2S Smell
Gas [RFT] Interval Tester
Oil Traces [E-LOG] Wireline Log Run
Oil [LOT] Leakoff Test

Lithology Symbols

Sand Limestone
Sandstone Dolomite
Silt Marl
Siltstone Tuff
Clay Quartzite
Claystone Conglomerate
Shale Gravel
Calcilutite Halite
Calcisiltite Coal
Calcarenite

Drilling Rate m per hr		Measured Depth m	Rotary Mode m	Cuttings Lithology	Visual/Inferred Porosity	Oil Show	EWR Deep	Gas Chromatograph		Calclmtry	Interpreted Lithology	True Vertical Depth m	Lithology Descriptions and Remarks
Gamma Ray api							ohm-metre	Gas Hydrclbn Avg %	GC C1 Avg				
200	100	0					0.2 2 20	10 100 1K 10K 100K	%CaCO3				
400	300	200					0.02 0.2 2		%MgCO3				
0	100	200	MD		good fair poor good		2 20 200						
Keith Ratnam - Data Engineer Magdy El Gammal - Data Engineer Gary Bloom - Data Engineer Steve McDonald - Mud Logger David Hartney - Mud Logger													
Bit 1 914 mm Security XNIC Jets: 1x28, 3x25 TFA: 2.04 In/Out: 78.0/111.0 mMDRT Drilled: 33.0 m HOB: 2.5 Bit Grading:													
Dev @ 82.34m Inc 0.97 deg Az 258.66 deg													
Bit 2 311 mm Hycalog DS40HFGNU Jets: 4x16 TFA: 0.79 In/Out: 109.0/1009.0 mMDRT Drilled: 900.0 m HOB: 12.43 Bit Grading: 1-2 -BT-G-D-EC-TD													
Dev @ 112.76m Inc 0.85 deg Az 147.07 deg													
111.0 mMDRT TD 914mm Section. 508mm Casing shoe set at 109.90 mMDRT													
Drill with Seawater													

Drill with Seawater
Gel Sweeps

Returns to seabed

150.0

200.0

250.0

Dev@ 141.18m Inc 0.89 deg
Az 146.91 deg

Dev@ 167.69m Inc 1.01 deg
Az 154.86 deg

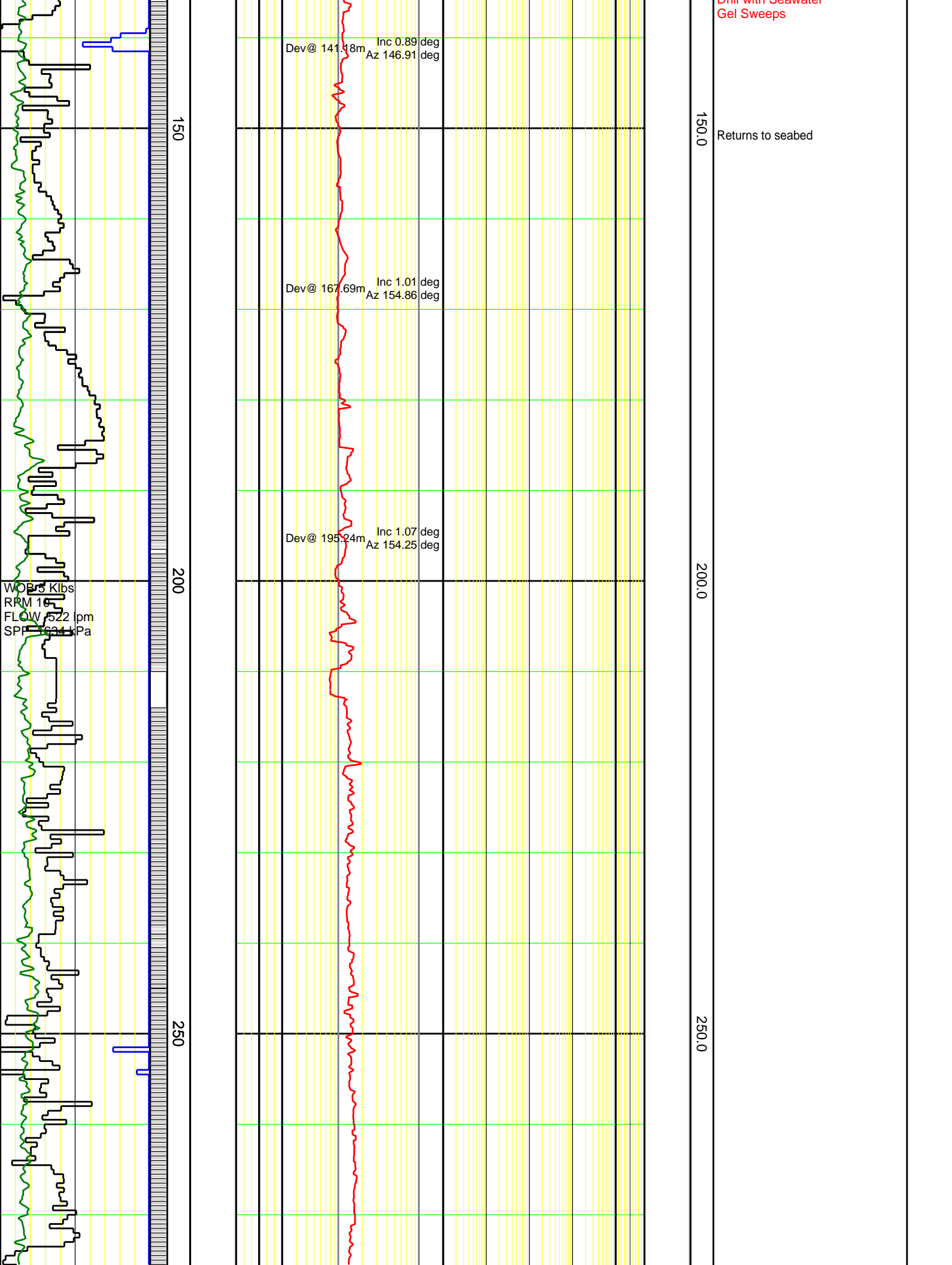
Dev@ 195.24m Inc 1.07 deg
Az 154.25 deg

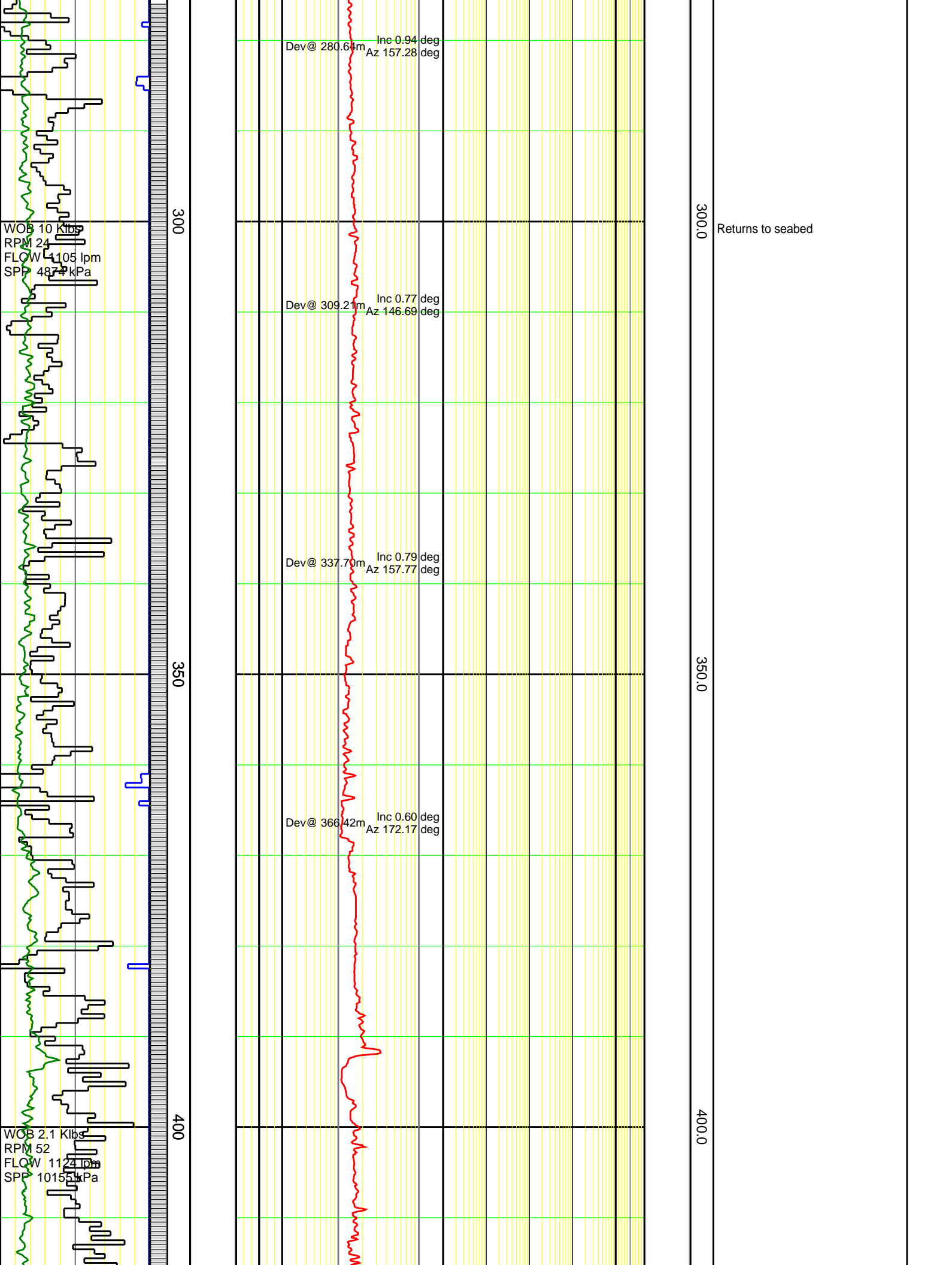
WOB 3 Klbs
RRM 1
FLOW 522 ipm
SPR 1634 kPa

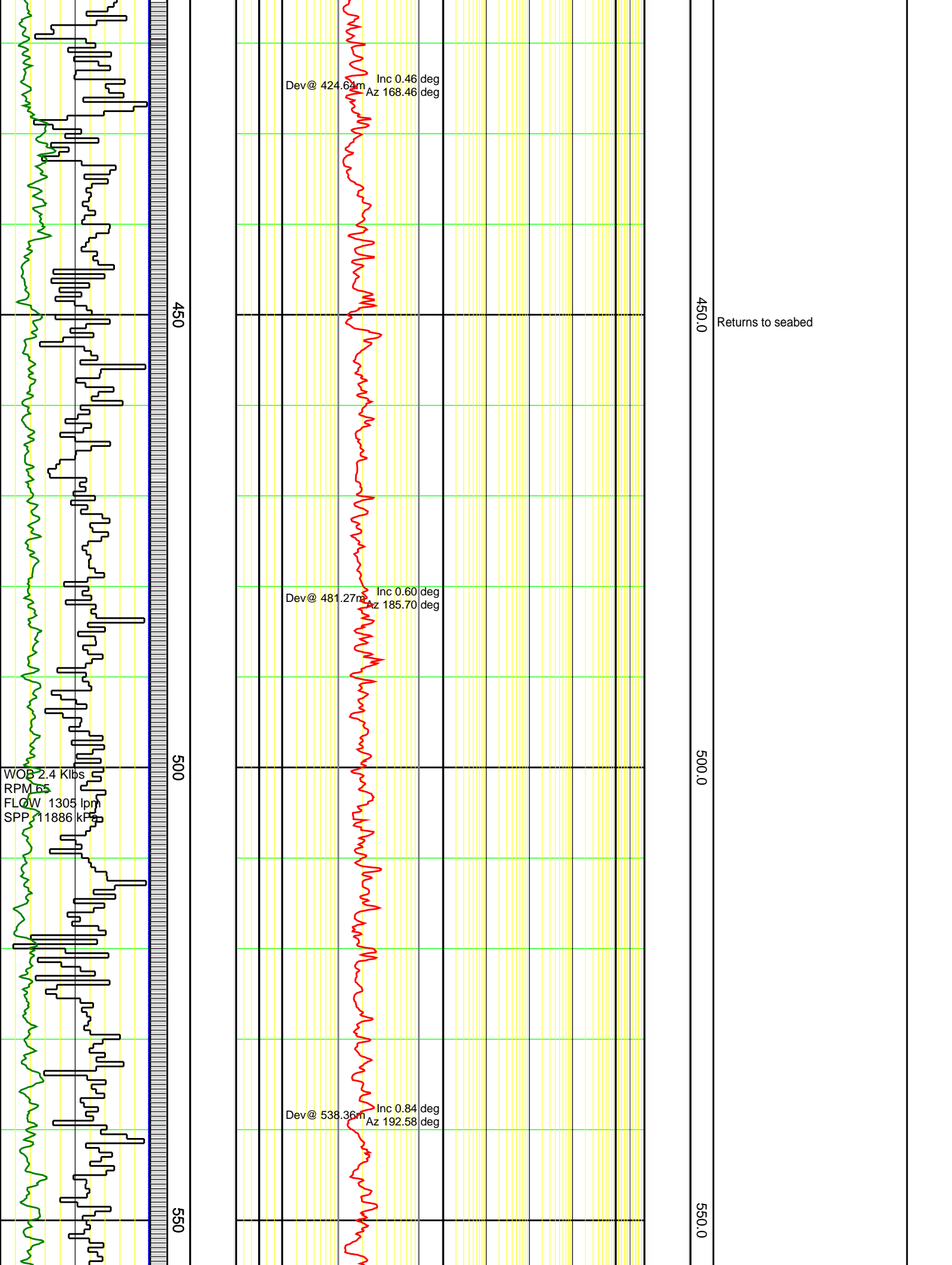
150

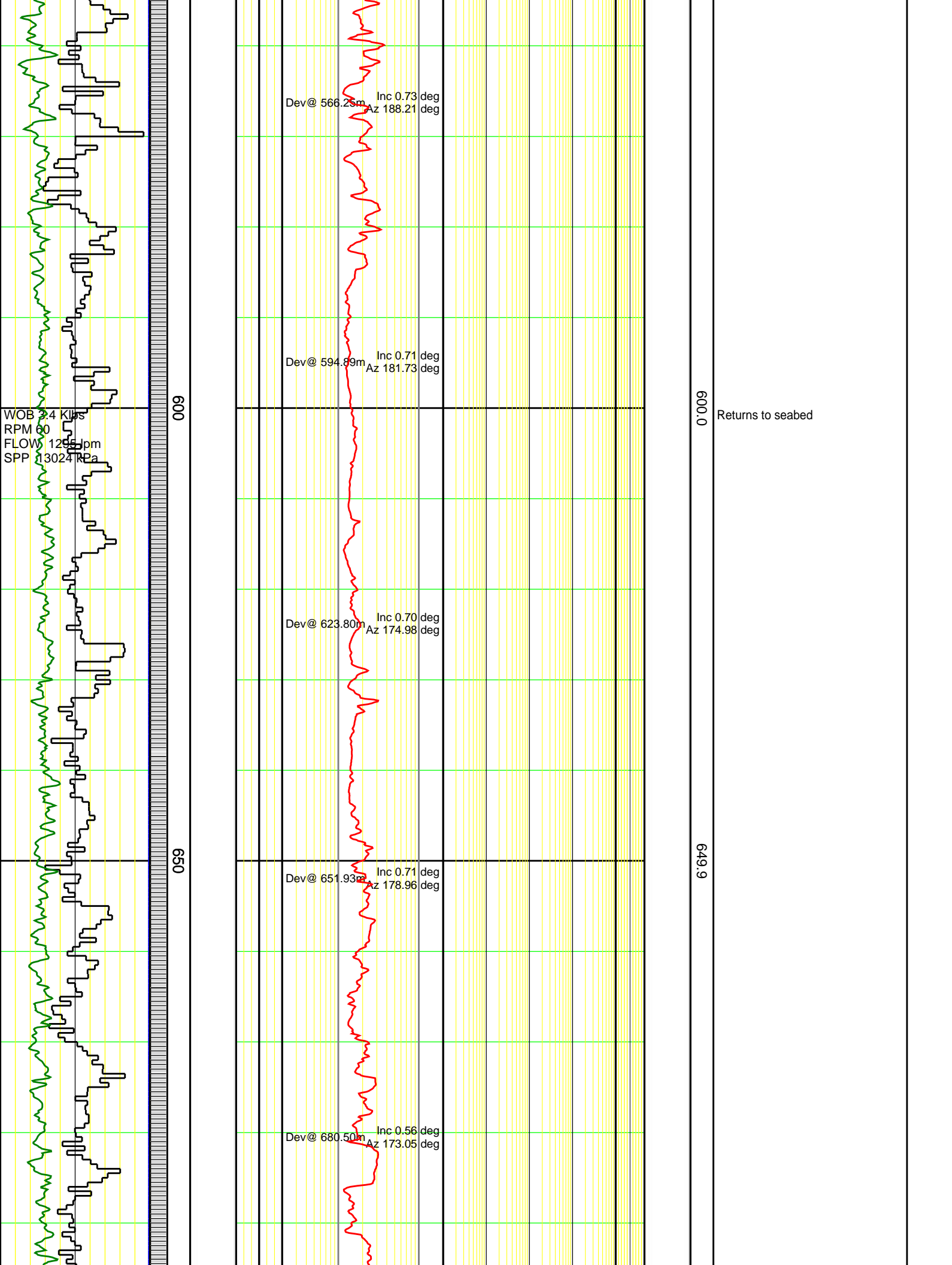
200

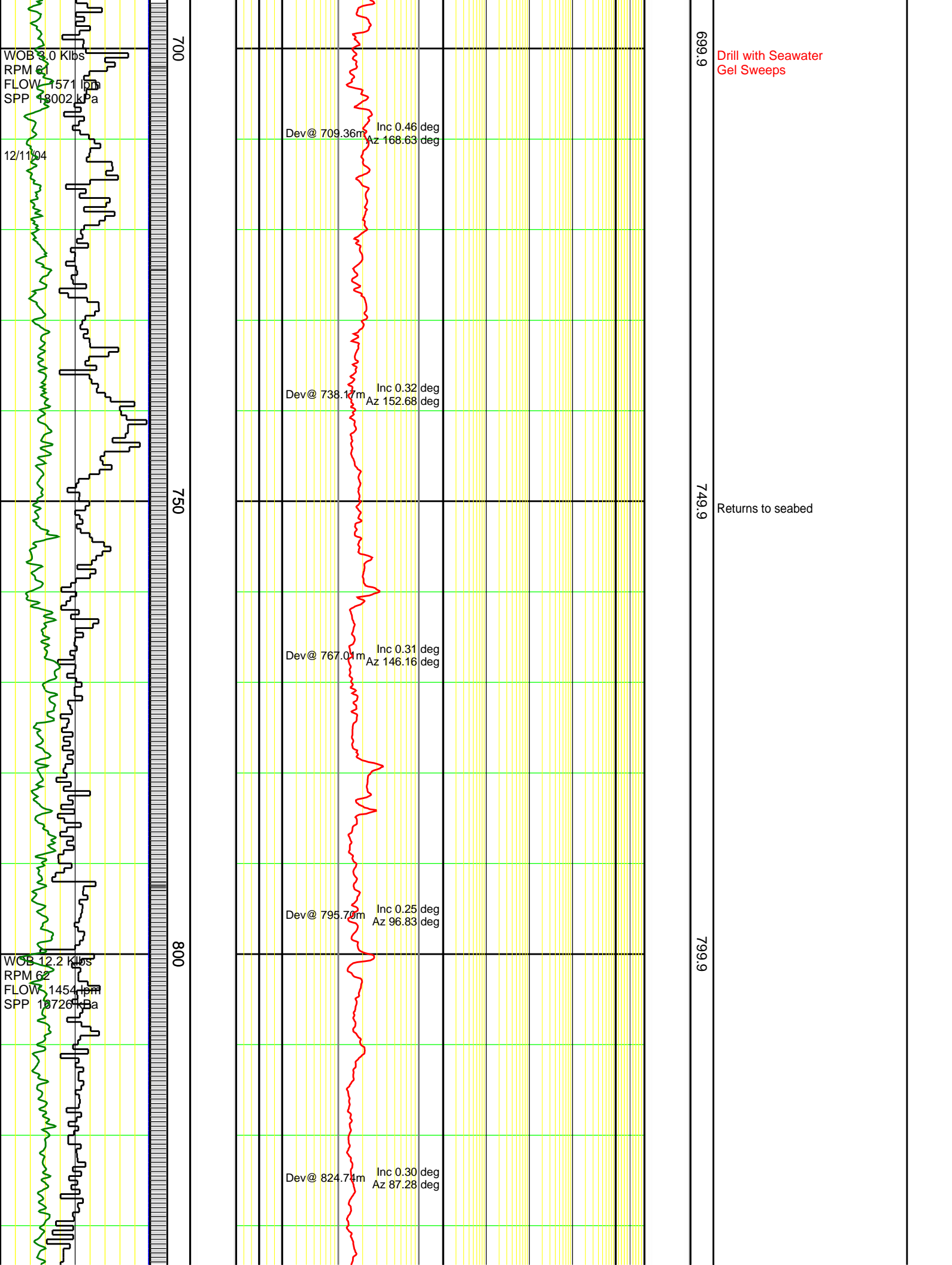
250

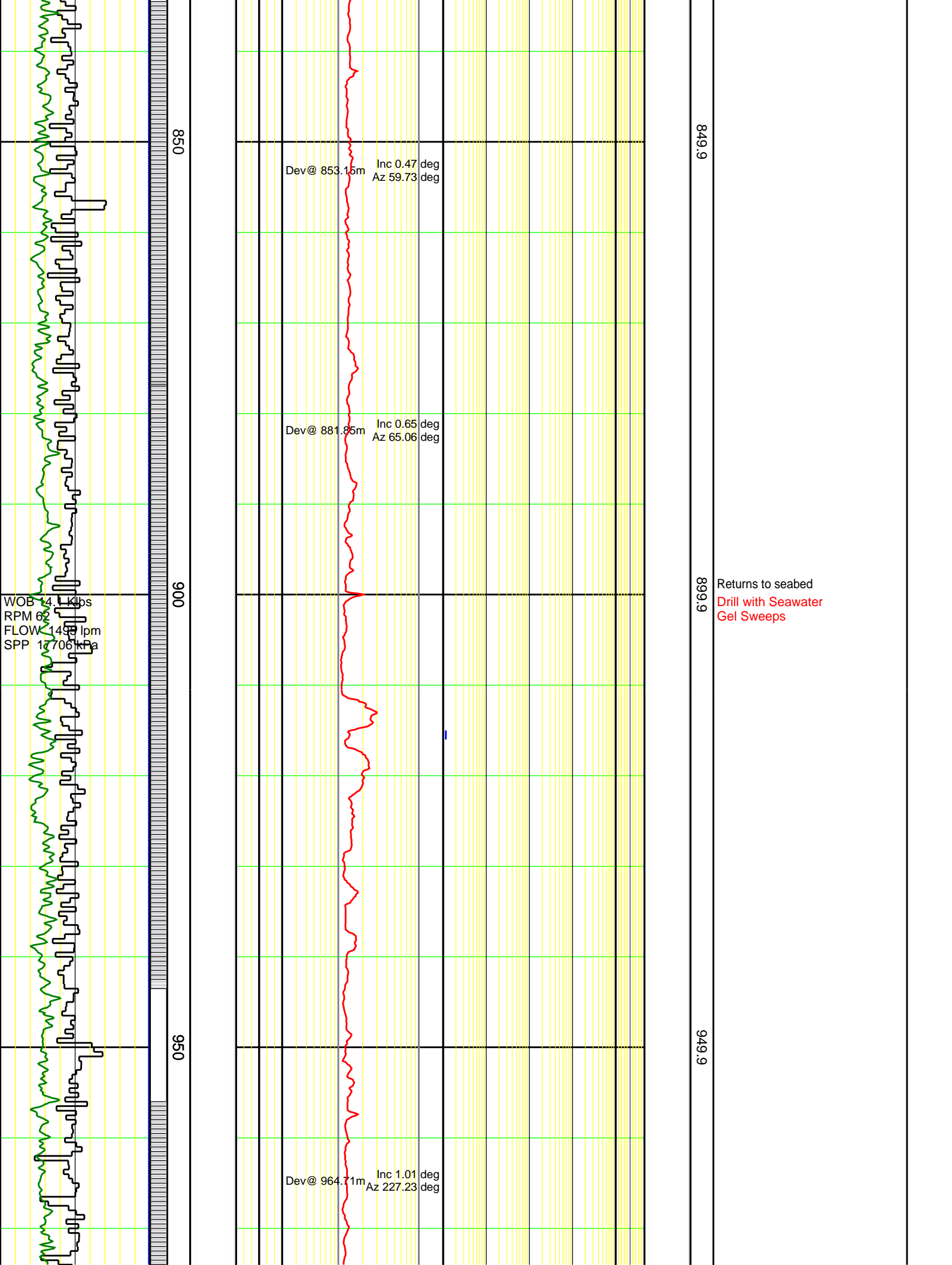


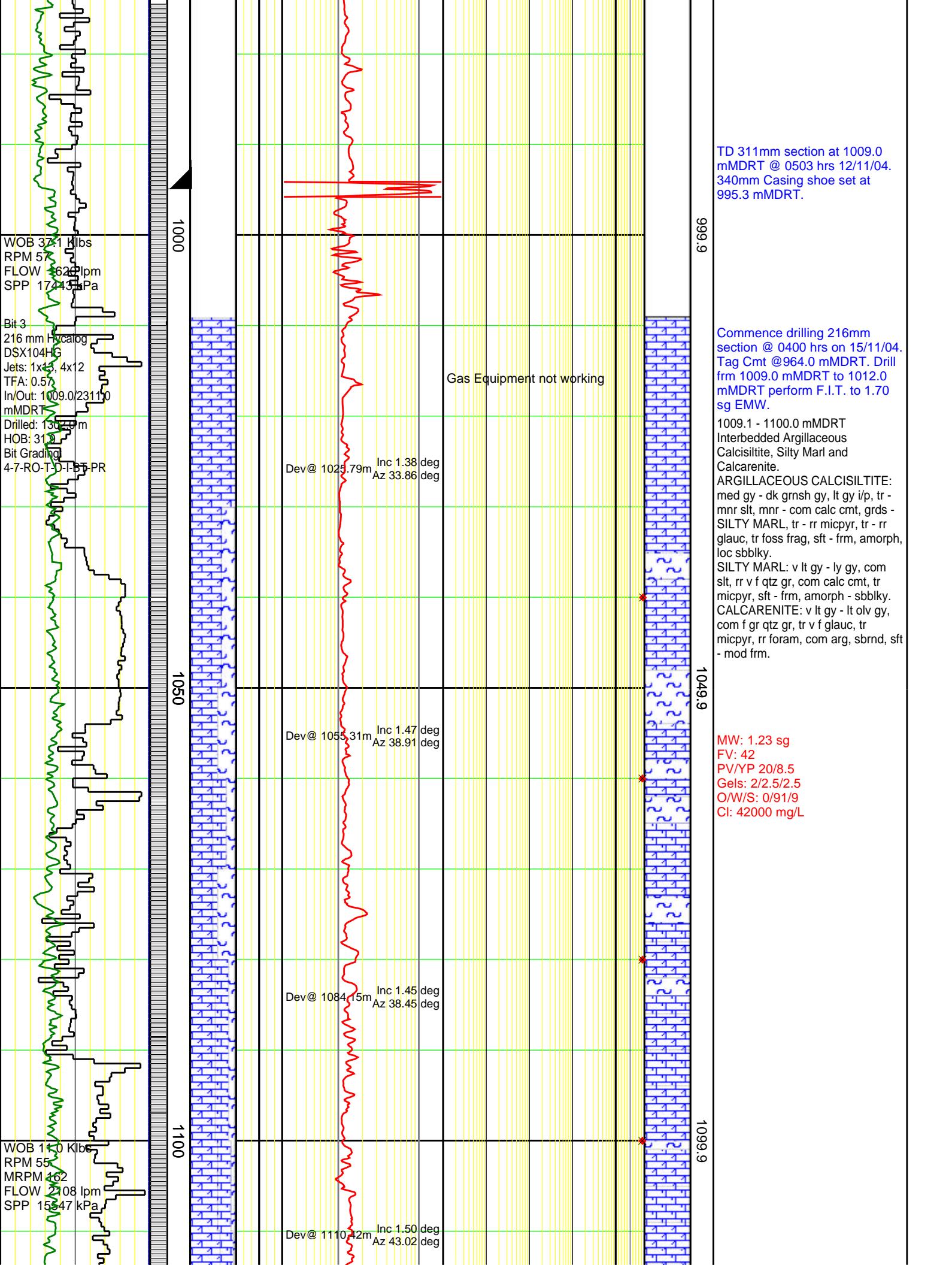












TD 311mm section at 1009.0
mMDRT @ 0503 hrs 12/11/04.
340mm Casing shoe set at
995.3 mMDRT.

Commence drilling 216mm
section @ 0400 hrs on 15/11/04.
Tag Cmt @964.0 mMDRT. Drill
frm 1009.0 mMDRT to 1012.0
mMDRT perform F.I.T. to 1.70
sg EMW.

1009.1 - 1100.0 mMDRT
Interbedded Argillaceous
Calcisiltite, Silty Marl and
Calcarenite.
ARGILLACEOUS CALCISILTITE:
med gy - dk grnsh gy, lt gy i/p, tr -
mnr silt, mnr - com calc cmt, grds -
SILTY MARL, tr - rr micpyr, tr - rr
glauc, tr foss frag, sft - frm, amorph,
loc sbbiky.
SILTY MARL: v lt gy - ly gy, com
silt, rr v f qtz gr, com calc cmt, tr
micpyr, sft - frm, amorph - sbbiky.
CALCARENITE: v lt gy - lt olv gy,
com f gr qtz gr, tr v f glauc, tr
micpyr, rr foram, com arg, sbrnd, sft
- mod frm.

MW: 1.23 sg
FV: 42
PV/YP 20/8.5
Gels: 2/2.5/2.5
O/W/S: 0/91/9
Cl: 42000 mg/L

Gas Equipment not working

Dev@ 1025.79m Inc 1.38 deg
Az 33.86 deg

Dev@ 1055.31m Inc 1.47 deg
Az 38.91 deg

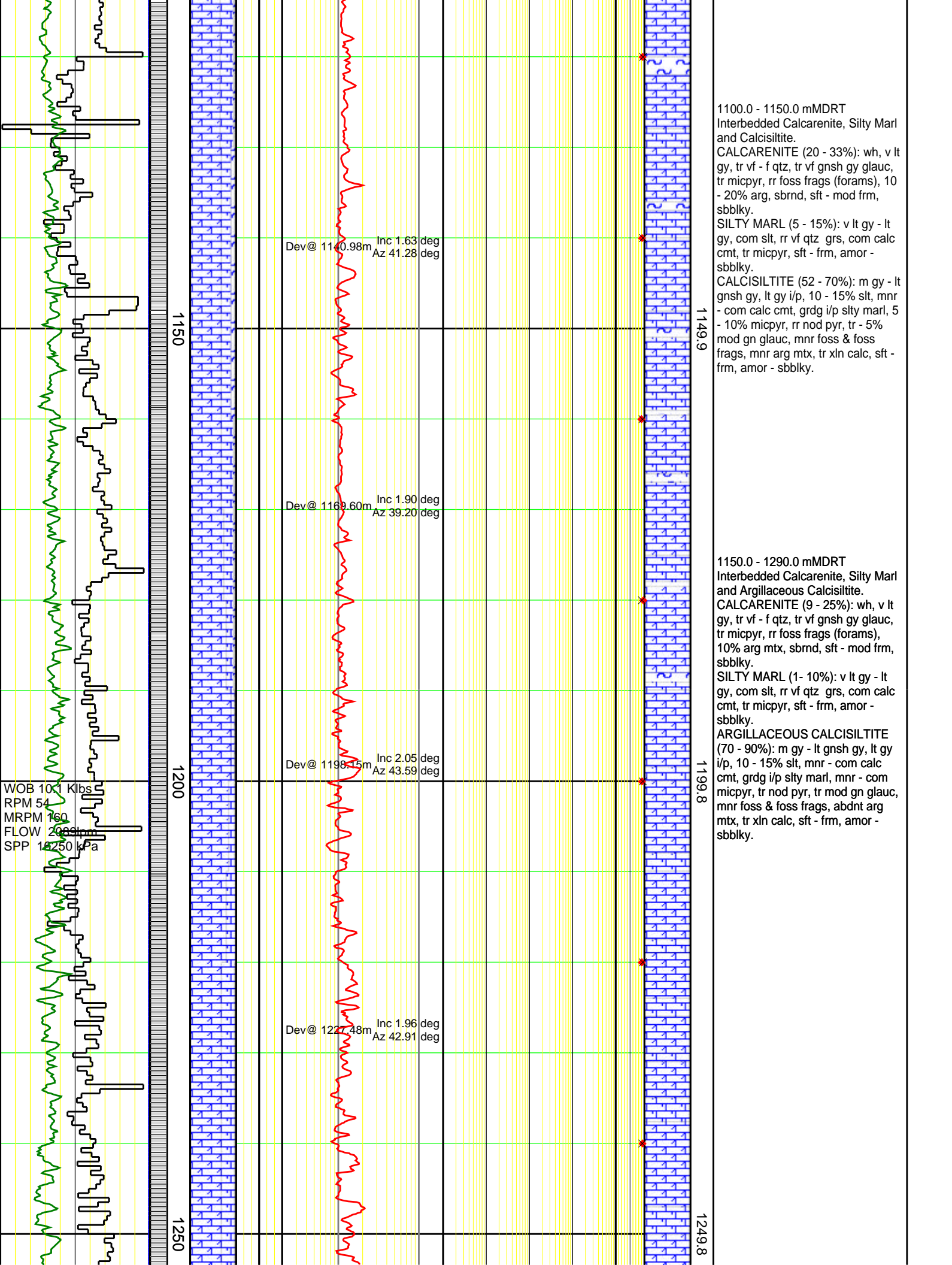
Dev@ 1084.15m Inc 1.45 deg
Az 38.45 deg

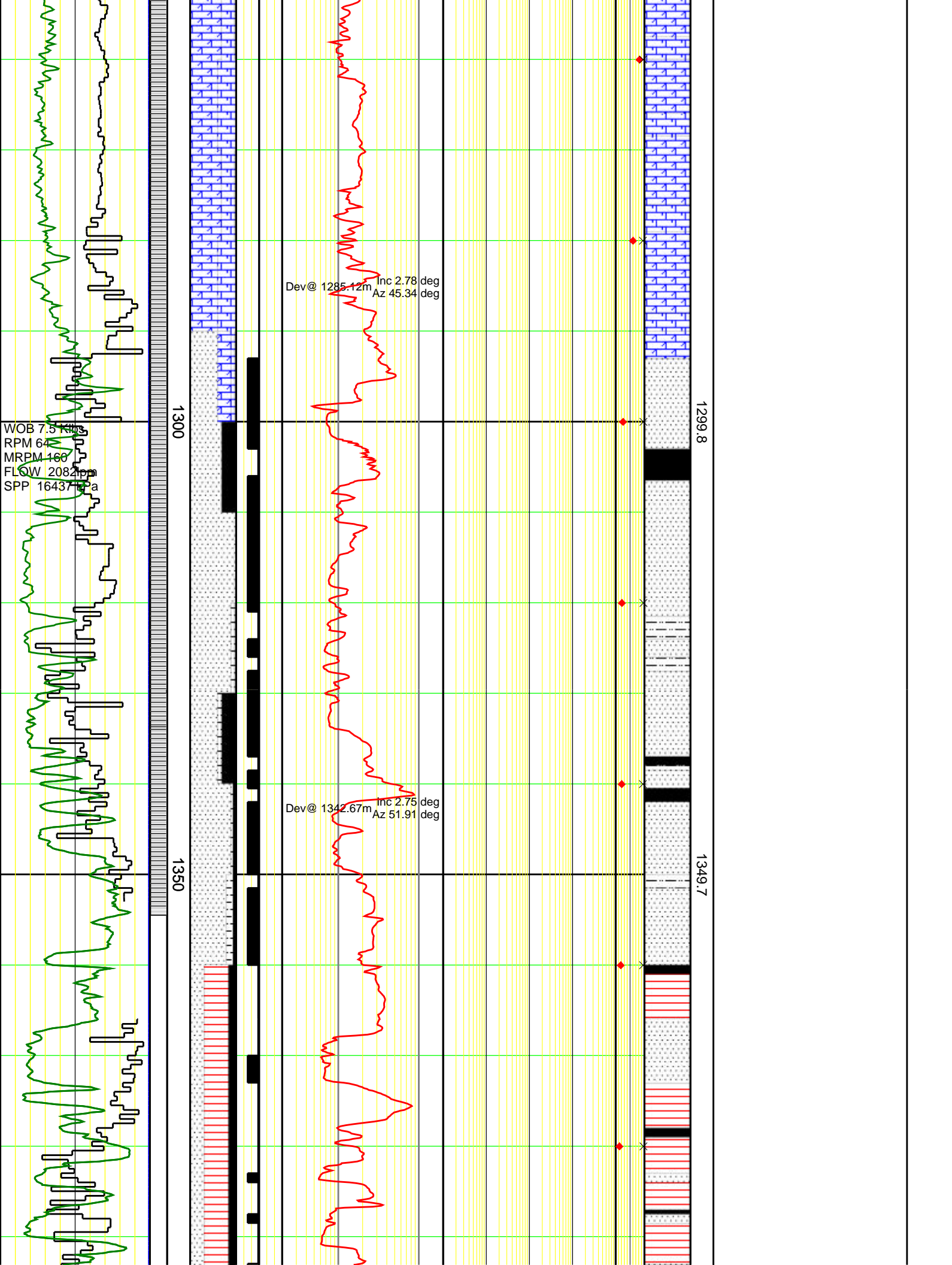
Dev@ 1110.42m Inc 1.50 deg
Az 43.02 deg

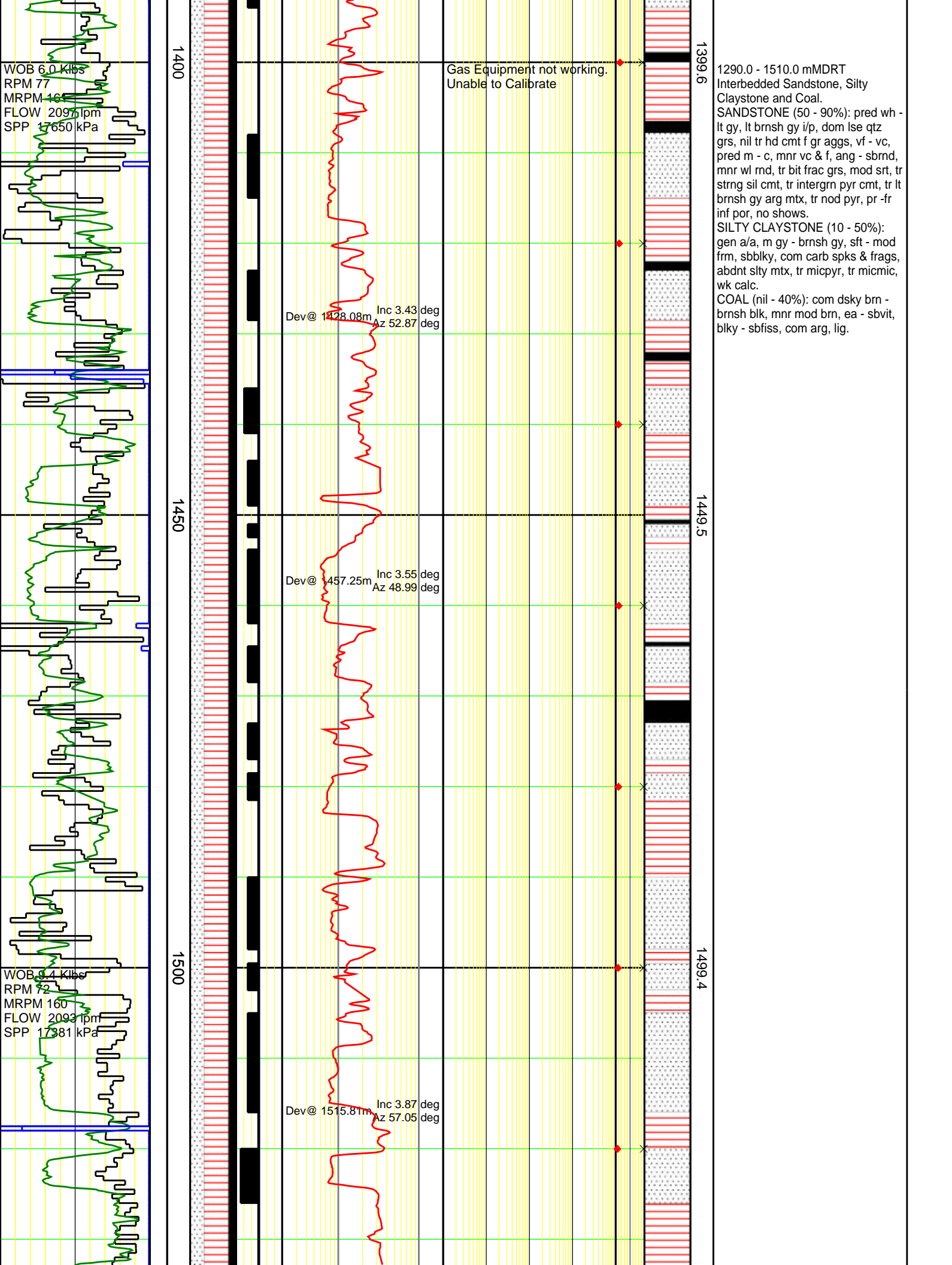
WOB 371 Klbs
RPM 57
FLOW 462 lpm
SPP 17447 kPa

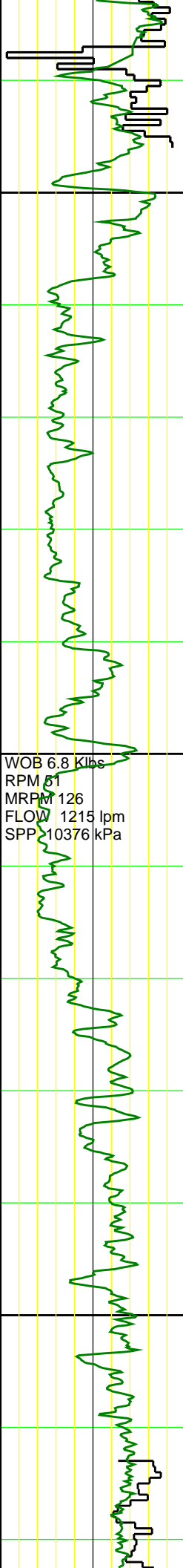
Bit 3
216 mm Hycalog
DSX104HG
Jets: 1x3, 4x12
TFA: 0.5
In/Out: 1009.0/2311.0
mMDRT
Drilled: 130.0m
HOB: 31.0
Bit Grading
4-7-RO-T-D-I-S-PR

WOB 110 Klbs
RPM 55
MRPM 462
FLOW 2108 lpm
SPP 15347 kPa









1550

1600

1650

Dev@ 1601.75m Inc 4.29 deg
Az 57.36 deg

Dev@ 1630.27m Inc 4.38 deg
Az 57.32 deg

Dev@ 1659.04m Inc 5.12 deg
Az 55.37 deg

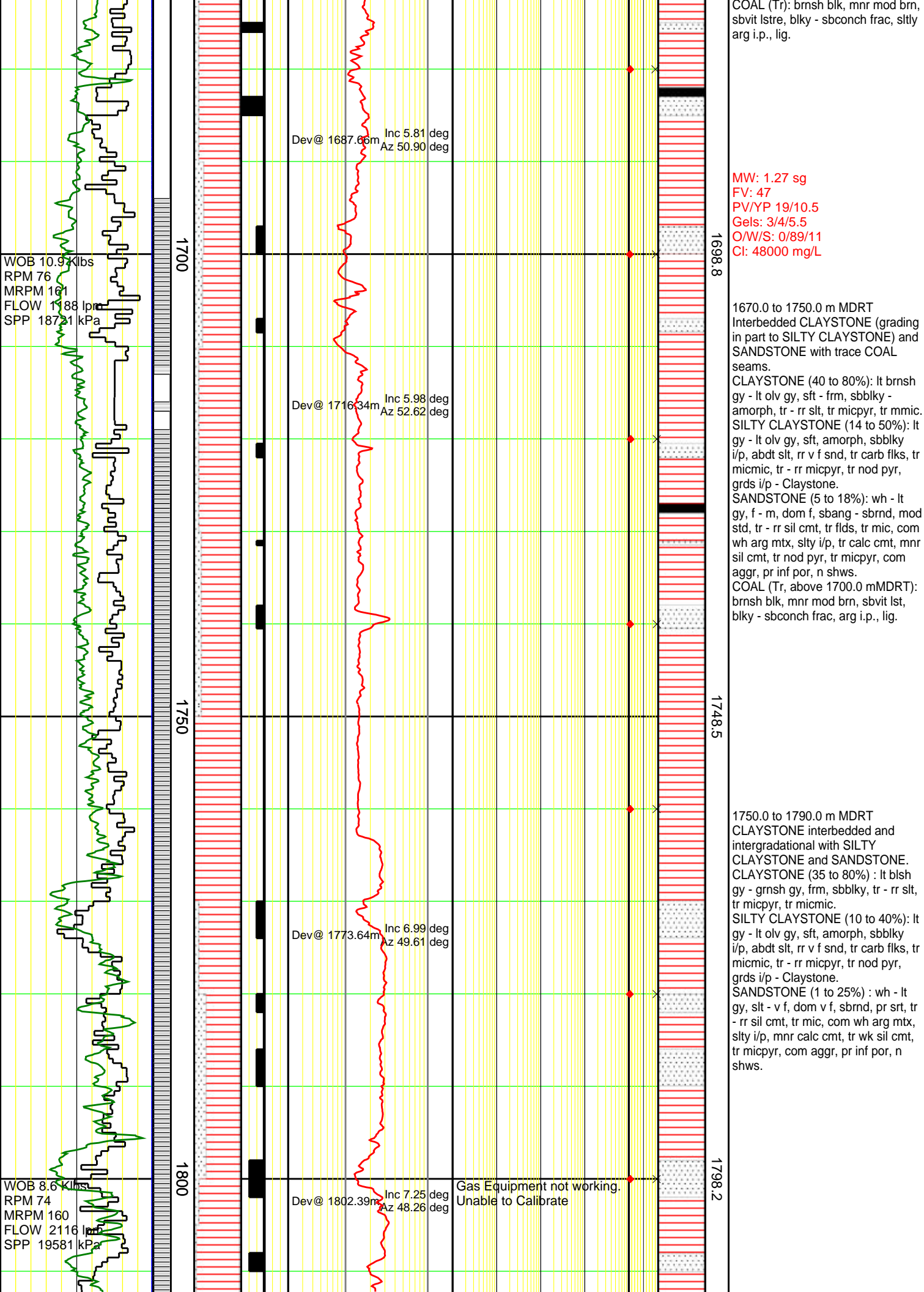
1515.3

1510.0 - 1580.0 mMDRT
Interbedded Sandstone, Silty
Claystone and Coal seams.
SANDSTONE (10 to 60%): Qtzose,
pred wh - lt gy, m - c, dom m, sbnd
- rnd, rr sbang, mod wl srt, tr bit frac
grs, tr - 5% sil cmt, tr lt brnsh gy arg
mtx, slty i/p, tr nod pyr, tr micpyr, fr
- gd inf por, no shows.
SILTY CLAYSTONE (10 to 55%):
m gy - brnsh gy, sft - mod frm,
sbbiky, com carb spks & frags,
abndt slty mtx, tr micpyr, tr micmic,
tr c frags, wk calc.
COAL (10 to 80%): dsky brn - brnsh
blk, mnr mod brn, ea to subvit, blk
- sbconch, sli arg i/p, lig.

No data due to database failure
from 1545 mMDRT to 1665
mMDRT.

1580.0 to 1640.0 m MDRT
Interbedded WEATHERED
VOLCANICS, SANDSTONE and
SILTY CLAYSTONE with trace to
minor COAL seams.
SANDSTONE (14 to 25%): wh - lt
gy, f - m, dom m, sbang - sbnd,
mod srt, tr sil cmt, com wh - lt brnsh
gy arg mtx, slty i/p, tr nod pyr, tr
micpyr, pr inf por, n shw, pos qtz vn
@ 1620.0 mMDRT, clr - trnsint, m -
v c, dom v c, sbang, rr ang, pr srt, tr
- rr sil cmt, tr micpyr, lse, pr inf por,
n shw.
SILTY CLAYSTONE (40 to 80%): lt
brn - p yelsh brn, com - abdt slt, rr v
f qtz, tr carb flks, tr mmic, tr micpyr,
rr nod pyr, sft, disp i/p.
VOLCANIC (5 to 32%): wh, grnsh
gy, bit cr, sft - frm, aggr i/p, com -
abdt slt, mnr feld lths in aggr, tr alt
yelsh gy feld, tr mic, mnr chl, tr
micpyr, loc nod pyr, mnr, pl bl gm &
lt gy micxln ang aggr, hd.
COAL (Trace to 10%): brnsh blk,
mnr mod brn, sbvitr lstre, blk
- sbconch frac, arg i/p, lig.

1640.0 to 1670.0 m MDRT
Interbedded SANDSTONE and
SILTY CLAYSTONE.
SANDSTONE (5 to 14%): wh - lt
gy, f - med, dom f, sbang - sbnd,
mod std, tr - rr sil cmt, com wh - arg
mtx, slty i.p., tr calc cmt, tr nod pyr,
tr micpyr, fr - loc aggr, gd inf por, n
shw.
SILTY CLAYSTONE (14 to 80%): lt
brnsh gy - lt olv gy, sft, amorph,
sbbiky i.p., abdt slt, rr v f snd, tr
carb flks, tr mmic, tr - rr micpyr, tr
nod pyr, grd i.p. - CLAYSTONE.



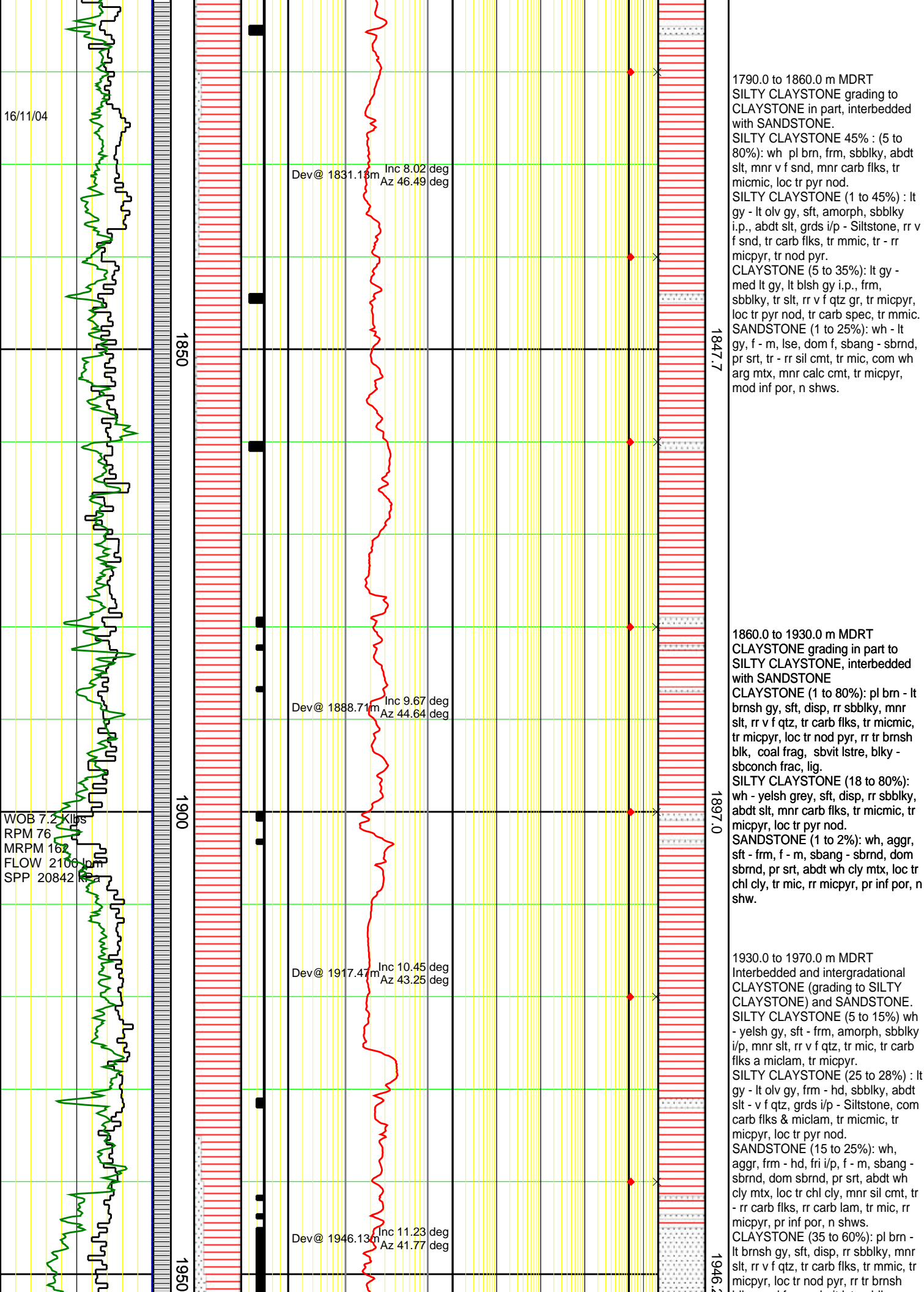
COAL (Tr): brnsh blk, mntr mod brn, sbvit lstre, blk - sbconch frac, slty arg i.p., lig.

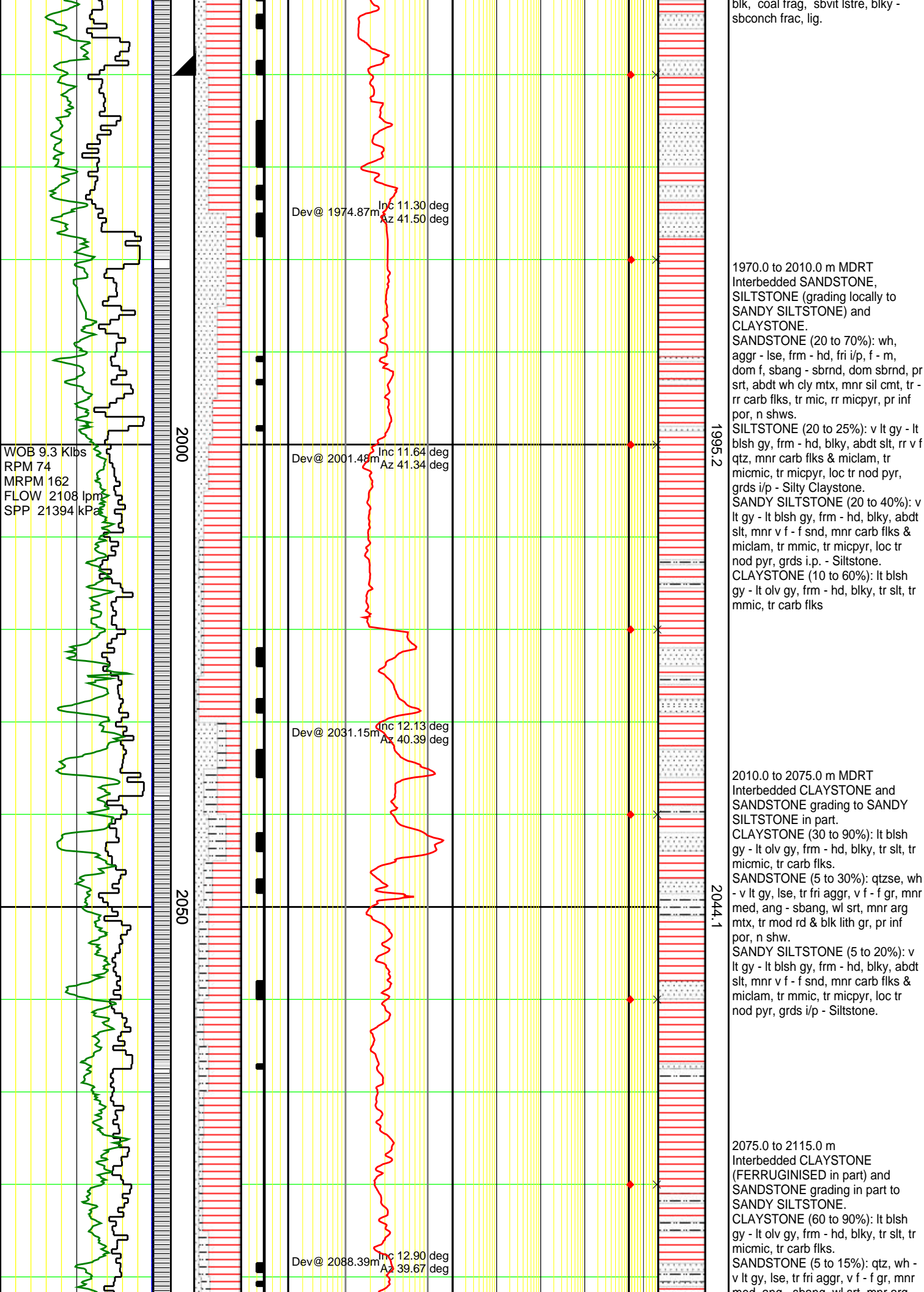
MW: 1.27 sg
FV: 47
PV/YP 19/10.5
Gels: 3/4/5.5
O/W/S: 0/89/11
Cl: 48000 mg/L

1670.0 to 1750.0 m MDRT
Interbedded CLAYSTONE (grading in part to SILTY CLAYSTONE) and SANDSTONE with trace COAL seams.
CLAYSTONE (40 to 80%): lt brnsh gy - lt olv gy, sft - frm, sbblky - amorph, tr - rr slt, tr micpyr, tr mmic.
SILTY CLAYSTONE (14 to 50%): lt gy - lt olv gy, sft, amorph, sbblky i/p, abdt slt, rr v f snd, tr carb flks, tr micmic, tr - rr micpyr, tr nod pyr, grds i/p - Claystone.
SANDSTONE (5 to 18%): wh - lt gy, f - m, dom f, sbang - sbrnd, mod std, tr - rr sil cmt, tr flds, tr mic, com wh arg mtz, slty i/p, tr calc cmt, mntr sil cmt, tr nod pyr, tr micpyr, com aggr, pr inf por, n shws.
COAL (Tr, above 1700.0 mMDRT): brnsh blk, mntr mod brn, sbvit lst, blk - sbconch frac, arg i.p., lig.

1750.0 to 1790.0 m MDRT
CLAYSTONE interbedded and intergradational with SILTY CLAYSTONE and SANDSTONE.
CLAYSTONE (35 to 80%): lt blsh gy - grnsh gy, frm, sbblky, tr - rr slt, tr micpyr, tr micmic.
SILTY CLAYSTONE (10 to 40%): lt gy - lt olv gy, sft, amorph, sbblky i/p, abdt slt, rr v f snd, tr carb flks, tr micmic, tr - rr micpyr, tr nod pyr, grds i/p - Claystone.
SANDSTONE (1 to 25%): wh - lt gy, slt - v f, dom v f, sbrnd, pr srt, tr - rr sil cmt, tr mic, com wh arg mtz, slty i/p, mntr calc cmt, tr wk sil cmt, tr micpyr, com aggr, pr inf por, n shws.

Gas Equipment not working.
Unable to Calibrate



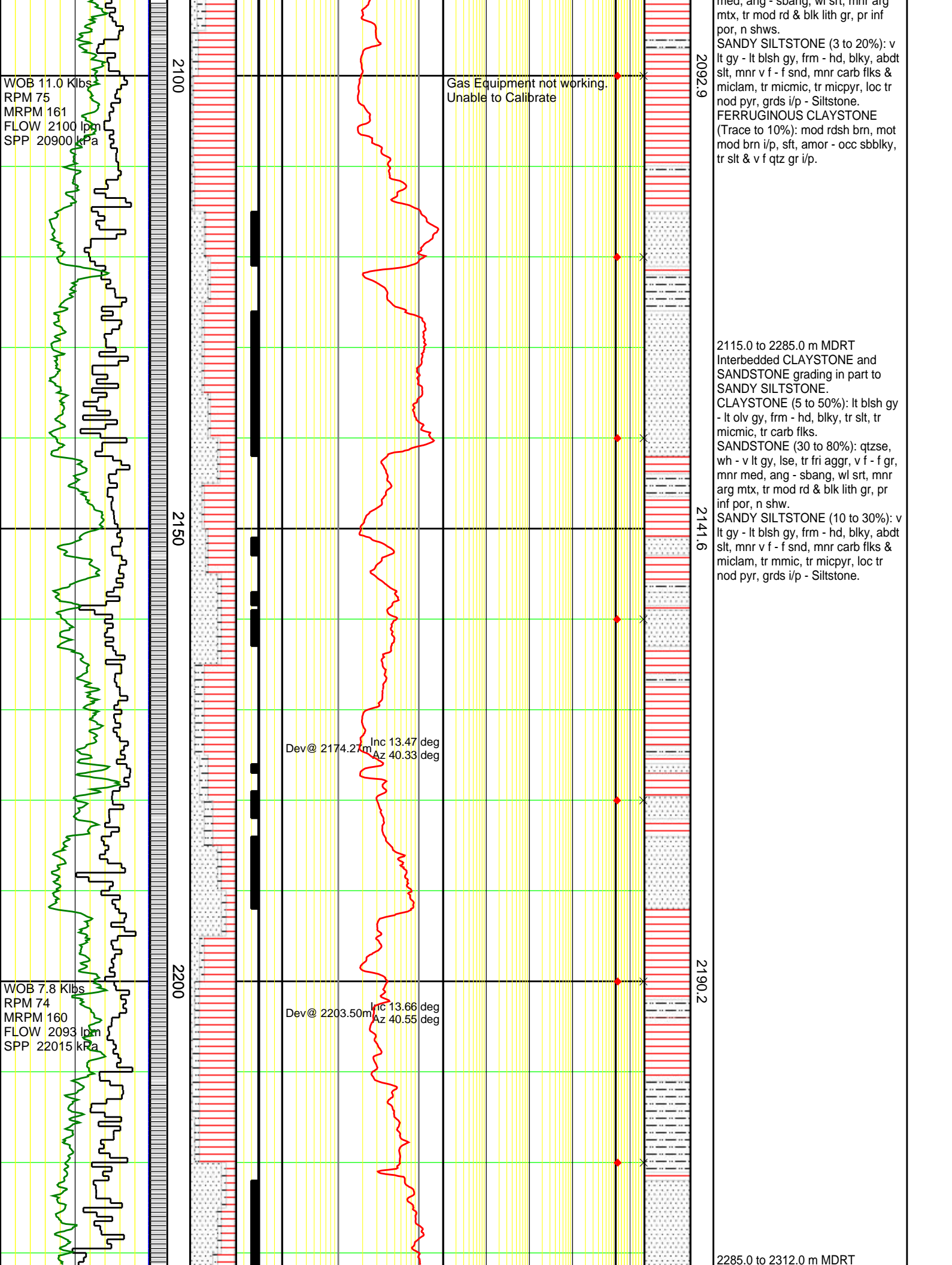


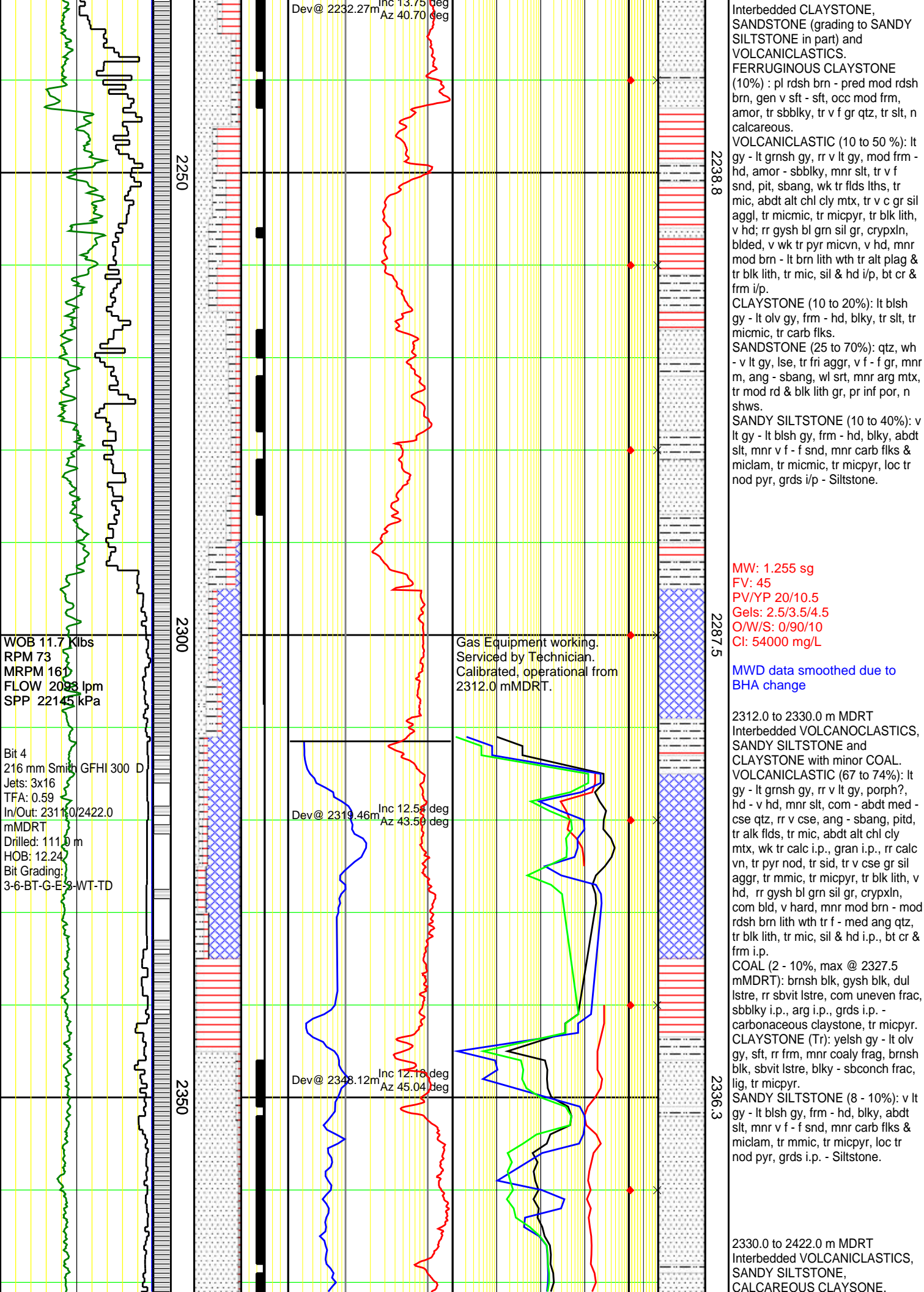
blk, coal frag, sbvnt lstre, blkly - sbconch frac, lig.

1970.0 to 2010.0 m MDRT
Interbedded SANDSTONE, SILTSTONE (grading locally to SANDY SILTSTONE) and CLAYSTONE.
SANDSTONE (20 to 70%): wh, aggr - lse, frm - hd, fri i/p, f - m, dom f, sbang - sbrnd, dom sbrnd, pr srt, abdt wh cly mtx, mnr sil cmt, tr - rr carb flks, tr mic, rr micpyr, pr inf por, n shws.
SILTSTONE (20 to 25%): v lt gy - lt blsh gy, frm - hd, blkly, abdt slt, rr v f qtz, mnr carb flks & miclam, tr micmic, tr micpyr, loc tr nod pyr, grds i/p - Silty Claystone.
SANDY SILTSTONE (20 to 40%): v lt gy - lt blsh gy, frm - hd, blkly, abdt slt, mnr v f - f snd, mnr carb flks & miclam, tr mmic, tr micpyr, loc tr nod pyr, grds i.p. - Siltstone.
CLAYSTONE (10 to 60%): lt blsh gy - lt olv gy, frm - hd, blkly, tr slt, tr mmic, tr carb flks

2010.0 to 2075.0 m MDRT
Interbedded CLAYSTONE and SANDSTONE grading to SANDY SILTSTONE in part.
CLAYSTONE (30 to 90%): lt blsh gy - lt olv gy, frm - hd, blkly, tr slt, tr micmic, tr carb flks.
SANDSTONE (5 to 30%): qtzse, wh - v lt gy, lse, tr fri aggr, v f - f gr, mnr med, ang - sbang, wl srt, mnr arg mtx, tr mod rd & blk lith gr, pr inf por, n shw.
SANDY SILTSTONE (5 to 20%): v lt gy - lt blsh gy, frm - hd, blkly, abdt slt, mnr v f - f snd, mnr carb flks & miclam, tr mmic, tr micpyr, loc tr nod pyr, grds i/p - Siltstone.

2075.0 to 2115.0 m
Interbedded CLAYSTONE (FERRUGINISED in part) and SANDSTONE grading in part to SANDY SILTSTONE.
CLAYSTONE (60 to 90%): lt blsh gy - lt olv gy, frm - hd, blkly, tr slt, tr micmic, tr carb flks.
SANDSTONE (5 to 15%): qtz, wh - v lt gy, lse, tr fri aggr, v f - f gr, mnr med, ang - sbang, wl srt, mnr arg





Interbedded CLAYSTONE, SANDSTONE (grading to SANDY SILTSTONE in part) and VOLCANICLASTICS. FERRUGINOUS CLAYSTONE (10%): pl rdsh brn - pred mod rdsh brn, gen v sft - sft, occ mod frm, amor, tr sbbiky, tr v f gr qtz, tr slt, n calcareous. VOLCANICLASTIC (10 to 50 %): lt gy - lt grnsh gy, rr v lt gy, mod frm - hd, amor - sbbiky, mntr slt, tr v f snd, pit, sbang, wk tr flds lths, tr mic, abdt alt chl cly mtx, tr v c gr sil aggl, tr micmic, tr micpyr, tr blk lith, v hd; rr gysh bl grn sil gr, crypxln, blded, v wk tr pyr micvn, v hd, mntr mod brn - lt brn lith wth tr alt plag & tr blk lith, tr mic, sil & hd i/p, bt cr & frm i/p. CLAYSTONE (10 to 20%): lt blsh gy - lt olv gy, frm - hd, blk, tr slt, tr micmic, tr carb flks. SANDSTONE (25 to 70%): qtz, wh - v lt gy, lse, tr fri aggr, v f - f gr, mntr m, ang - sbang, wl srt, mntr arg mtx, tr mod rd & blk lith gr, pr inf por, n shws. SANDY SILTSTONE (10 to 40%): v lt gy - lt blsh gy, frm - hd, blk, abdt slt, mntr v f - f snd, mntr carb flks & miclam, tr micmic, tr micpyr, loc tr nod pyr, grds i/p - Siltstone.

MW: 1.255 sg
FV: 45
PV/YP 20/10.5
Gels: 2.5/3.5/4.5
O/W/S: 0/90/10
Cl: 54000 mg/L

MWD data smoothed due to BHA change

2312.0 to 2330.0 m MDRT
Interbedded VOLCANOCLASTICS, SANDY SILTSTONE and CLAYSTONE with minor COAL. VOLCANICLASTIC (67 to 74%): lt gy - lt grnsh gy, rr v lt gy, porph?, hd - v hd, mntr slt, com - abdt med - cse qtz, rr v cse, ang - sbang, pitd, tr alk flds, tr mic, abdt alt chl cly mtx, wk tr calc i.p., gran i.p., rr calc vn, tr pyr nod, tr sid, tr v cse gr sil aggr, tr mmic, tr micpyr, tr blk lith, v hd, rr gysh bl grn sil gr, crypxln, com bld, v hard, mntr mod brn - mod rdsh brn lith wth tr f - med ang qtz, tr blk lith, tr mic, sil & hd i.p., bt cr & frm i.p. COAL (2 - 10%, max @ 2327.5 mMDRT): brnsh blk, gysh blk, dul lstre, rr sbvit lstre, com uneven frac, sbbiky i.p., arg i.p., grds i.p. - carbonaceous claystone, tr micpyr. CLAYSTONE (Tr): yelsh gy - lt olv gy, sft, rr frm, mntr coaly frag, brnsh blk, sbvit lstre, blk - sbconch frac, lig, tr micpyr. SANDY SILTSTONE (8 - 10%): v lt gy - lt blsh gy, frm - hd, blk, abdt slt, mntr v f - f snd, mntr carb flks & miclam, tr mmic, tr micpyr, loc tr nod pyr, grds i.p. - Siltstone.

2330.0 to 2422.0 m MDRT
Interbedded VOLCANICLASTICS, SANDY SILTSTONE, CALCAREOUS CLAYSTONE.

