HALLIBURTON | Sperry Drilling

Surface Data Logging
2" MD Formation Evaluation Log

1 : 600

Company	: **Great Bear Petroleum, LLC**
Rig	: **Nabors 105E**
Well	: **Alcor 1**
Field	: **Exploration**
Country	: **USA**
API Number	: **50-223-20026-00-00**

Country : USA
Field : Exploration
Location : Lat: 69° 59' 26.11" North, Long: 148° 40' 40.99" West
Well : Alcor 1
Company : Great Bear Petroleum, LLC
Rig : Nabors 105E

LOCATION
Latitude : **69° 59' 26.11" North**
Longitude : **148° 40' 40.99" West**
UTM Easting = **665,672.48 ft**
UTM Northing = **5,847,838.30 ft**

Other Services

Permanent Datum : **Mean Sea Level** Elevation : **0.00 ft**
Log Measured From : **Drill Floor** **186.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **0.00 ft**
DF **186.00 ft**
GL **163.70 ft**
WD **0.00 ft**

Depth Logged : **102.00 ft** To **10,812.00 ft**
Date Logged : **16-Jun-12** To **09-Aug-12**
Total Depth MD : **10,812.00 ft** TVD : **10,802.05 ft**
Spud Date : **16-Jun-12**

Unit No. : **117**
Job No. : **AK-AM-0009285348**
Plot Type : **Final**
Plot Date : **28-Aug-12**

Run No.	Borehole Record (MD) Size	From	To
100	12.250 in	102.00 ft	2,510.00 ft
200	8.500 in	2,510.00 ft	6,364.00 ft
300	8.500 in	6,364.00 ft	8,320.00 ft
400	6.125 in	8,320.00 ft	8,348.00 ft
500	6.125 in	8,348.00 ft	8,640.00 ft
600	6.125 in	8,640.00 ft	8,676.00 ft
800	6.125 in	8,676.00 ft	10,015.00 ft
900	6.125 in	10,015.00 ft	10,103.00 ft
1000	6.125 in	10,103.00 ft	10,574.00 ft
1100	6.125 in	10,574.00 ft	10,604.00 ft
1200	6.125 in	10,604.00 ft	10,662.00 ft

Run No.	Borehole Record (MD) Size	From	To
1300	6.125 in	10,662.00 ft	10,812.00 ft
1400	6.125 in	10,812.00 ft	10,812.00 ft

Casing Record (MD) Size	Weight	From	To
16.000 in	52.40 lbpf	SURFACE	80.00 ft
9.562 in	46.20 lbpf	SURFACE	2,491.00 ft
7.000 in	28.70 lbpf	SURFACE	8,311.00 ft
4.500 in	11.60 lbpf	8,311.00 ft	10,750.00 ft

LEGEND

Lithology Symbols

Sand, Sandstone, Silt, Siltstone, Clay, Claystone, Shale, Lignite, Coal, Limestone
Dolomite, Marl, Mudstone, Gumbo, Chalk, Chert, Halite, Anhydrite, Gypsum, Gravel

Abbreviations and Symbols

Mud Data

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

Engineering Data

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

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

Test

ROP 500 ft/hr 0
Gamma 0 api 150
WOB 0 klbs 40
RPM 0 rpm 200

Cuttings Lithology

Interpretative Lithology

DEPTH MD

Slide

Gas Max 0 units 2K
Gas Avg 0 units 2K
Resistivity 0 ohms 50

Chromatograph
Gas Analysis
(ppm)
Methane
Ethane
Propane
Total Butane
Total Pentane
10 100 1K 10K 100K 1M

MW In 9 ppg 12
ECD 9 ppg 12

Deviation Surveys

Lithologic Descriptions

Remarks

Conn

Drill Floor 186' Above Permanent Datum

Commenced Rig Up
15 June 2012
SDL Services Online
19 June 2012

16" Conductor Casing
80' MD, 80' TVD

Commenced 12.25" Surface Hole Section
On Bot: 11:00 19 June 2012

Bit #1 HDBS QHC1GRC
Jets: 3x18, 1x14, TFA: 0.8958
In: 96' MD / 96' TVD
Out: 2510' MD / 2510' TVD
Grade: 8-8-LT-A-E-I-BT-TD

Calibrate 8800 THA,
C1=10.000%
10,000 Units = 100% Gas in Air

Calibrate 8900 GC
CI= 1.03 %
C2= 0.500 %
C3= 0.251 %
iC4= 0.250 % nC4= 0.250 %
iC5= 0.102 % nC5= 0.102%

MW 10, Vis 250, PV 33, YP 48, Fil 10.2, FC 3/0, pH 9.7, Cl 400

139.03' MD
139.03' TVD
INC 0.37°
AZI 207.79°

100

Directional Only Tools for Surface Hole Section

Conn

200

Gubik
448' MD, 448' TVD

231.15' MD
231.15' TVD
INC 0.19°
AZI 271.35°

Conn

MW 10, Vis 240, PV 39, YP 56, Fil 10, FC 3/0, pH 10.2, Cl 400

300

322.39' MD
322.39' TVD
INC 0.46°
AZI 261.45°

Conn

400

416.62' MD
416.61' TVD
INC 0..80°
AZI 219.77°

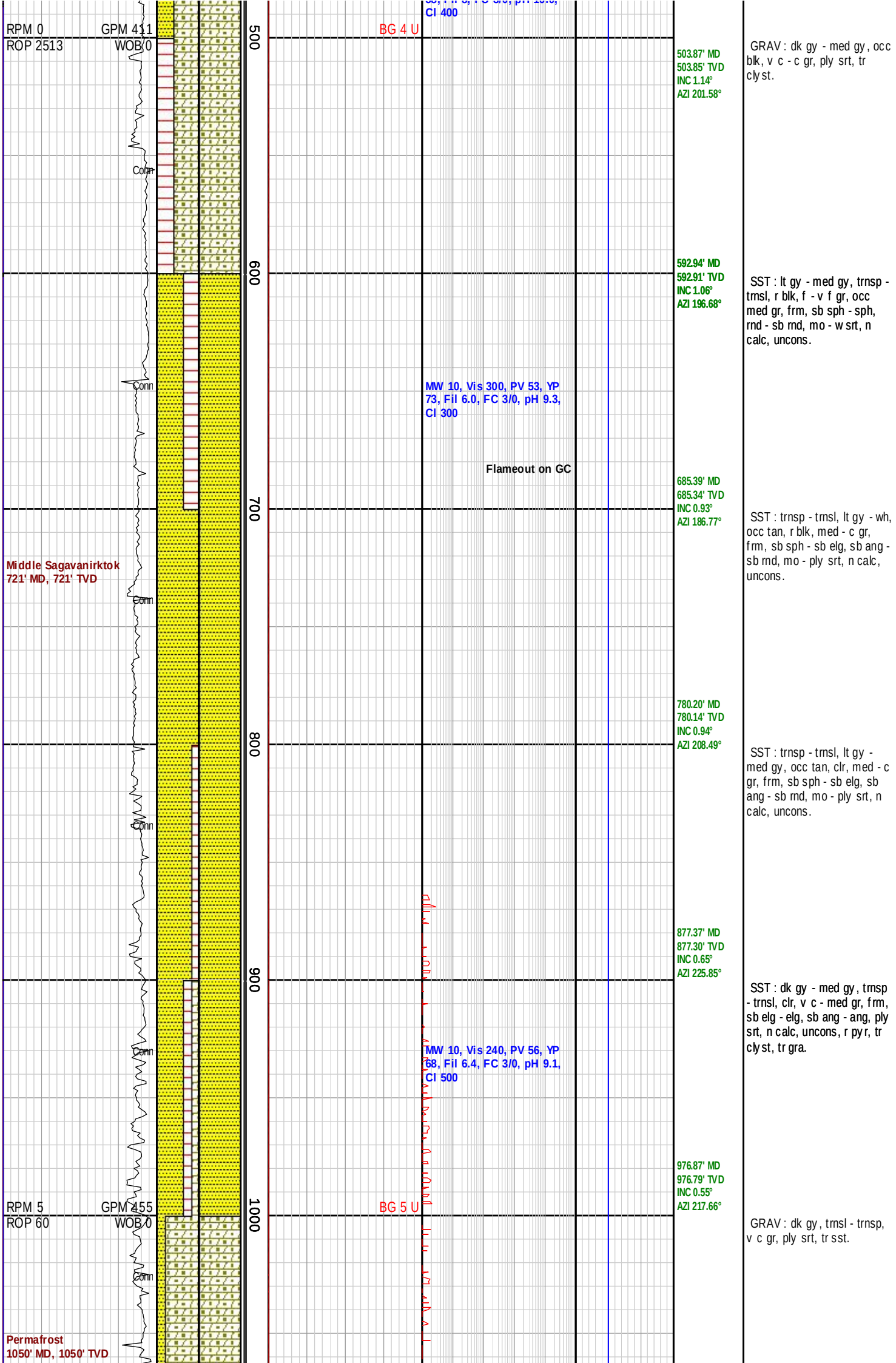
GRAV : dk gy - med gy , occ trnsl, occ blk, v c - c gr, ply srt, tr sst.

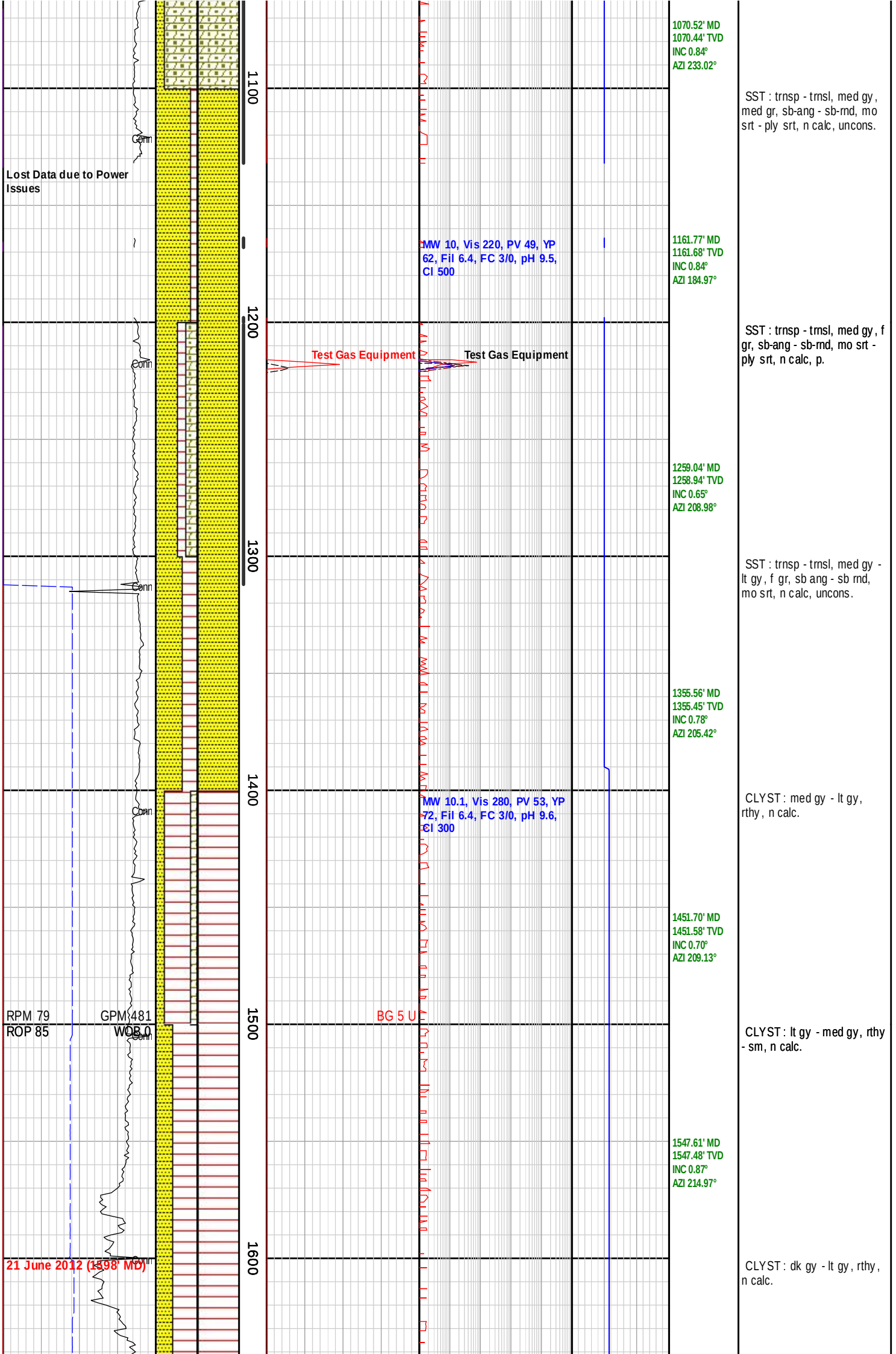
Conn

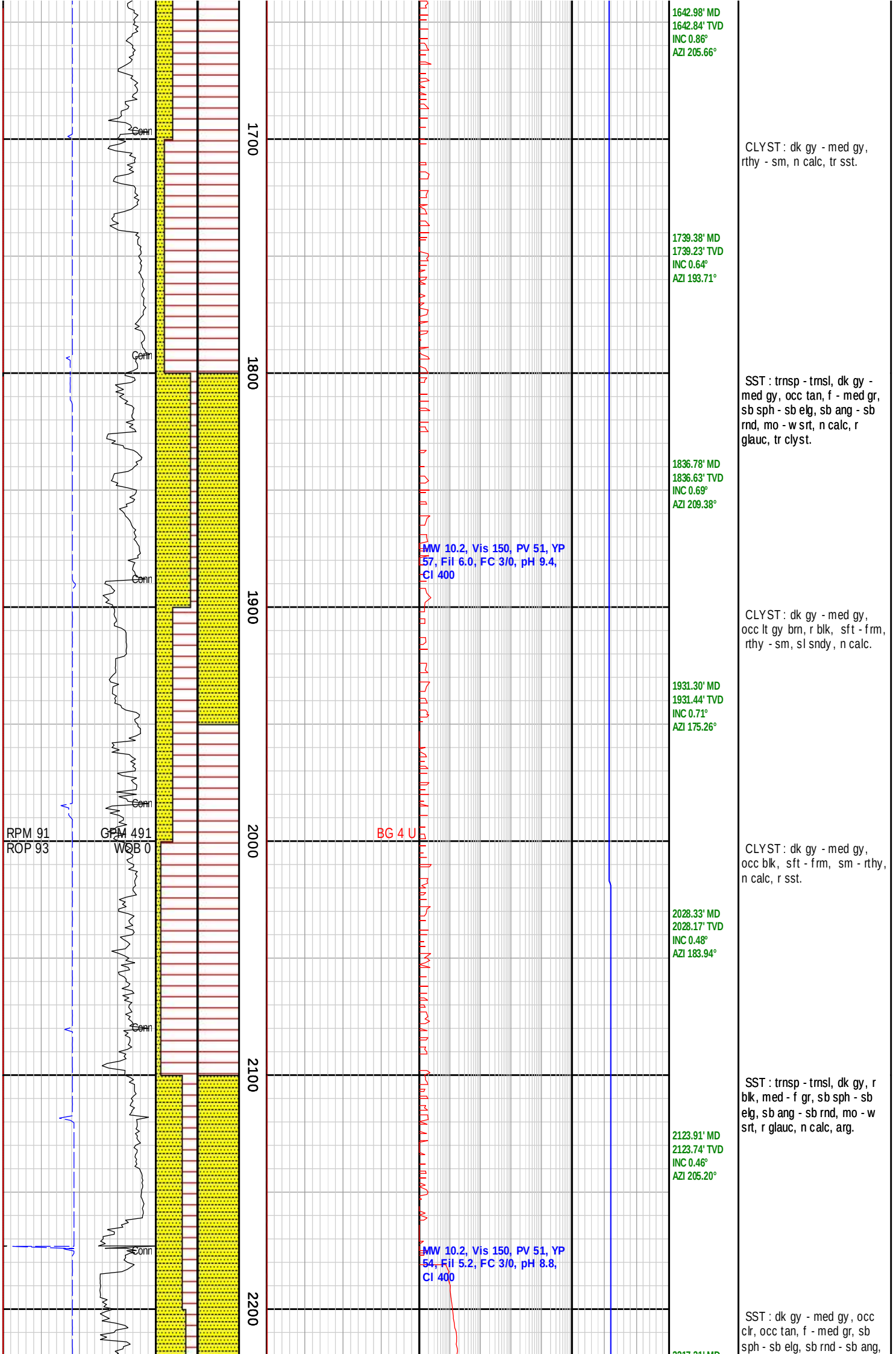
20 June 2012 (471' MD)

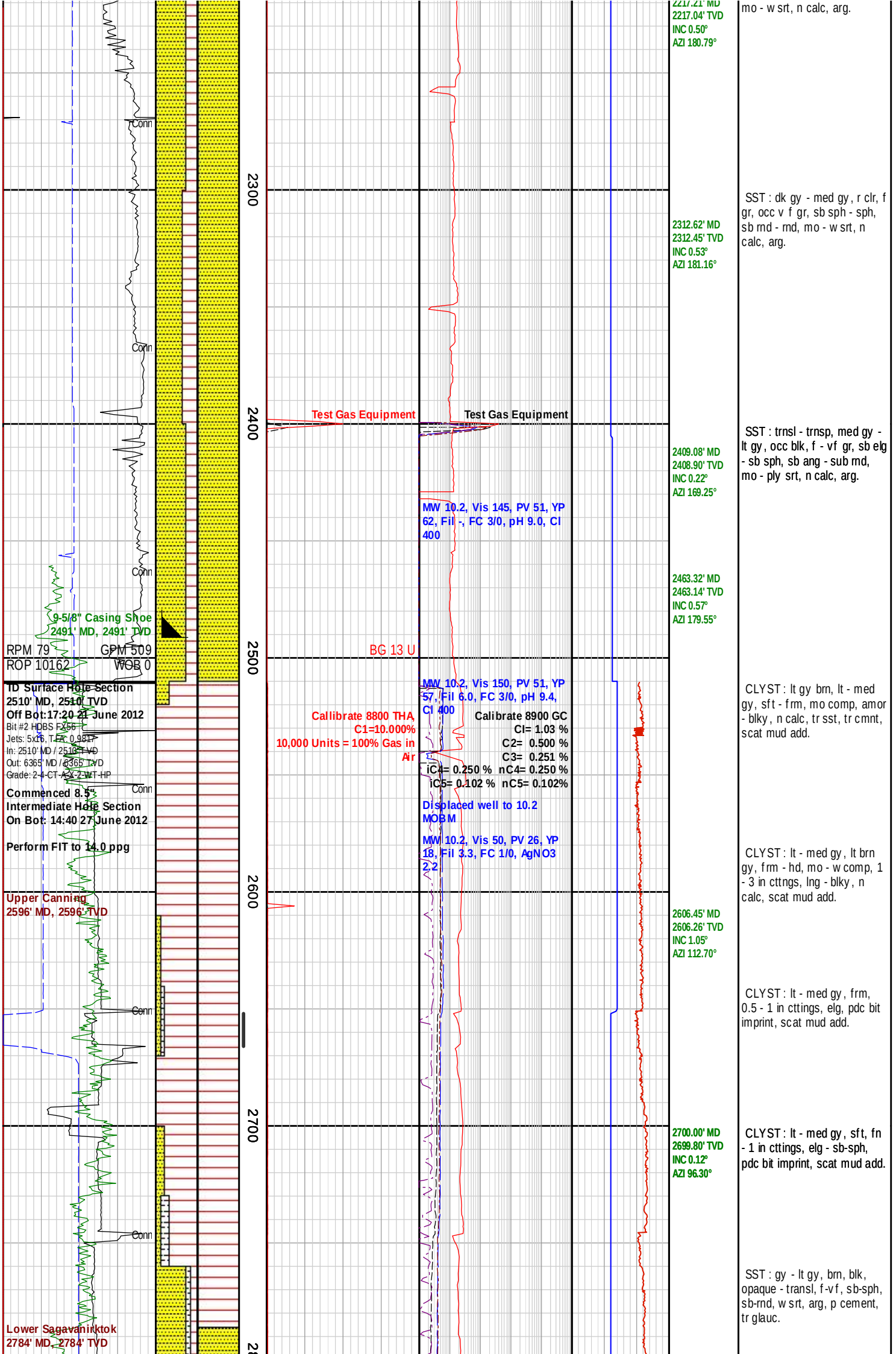
Flameout on GC

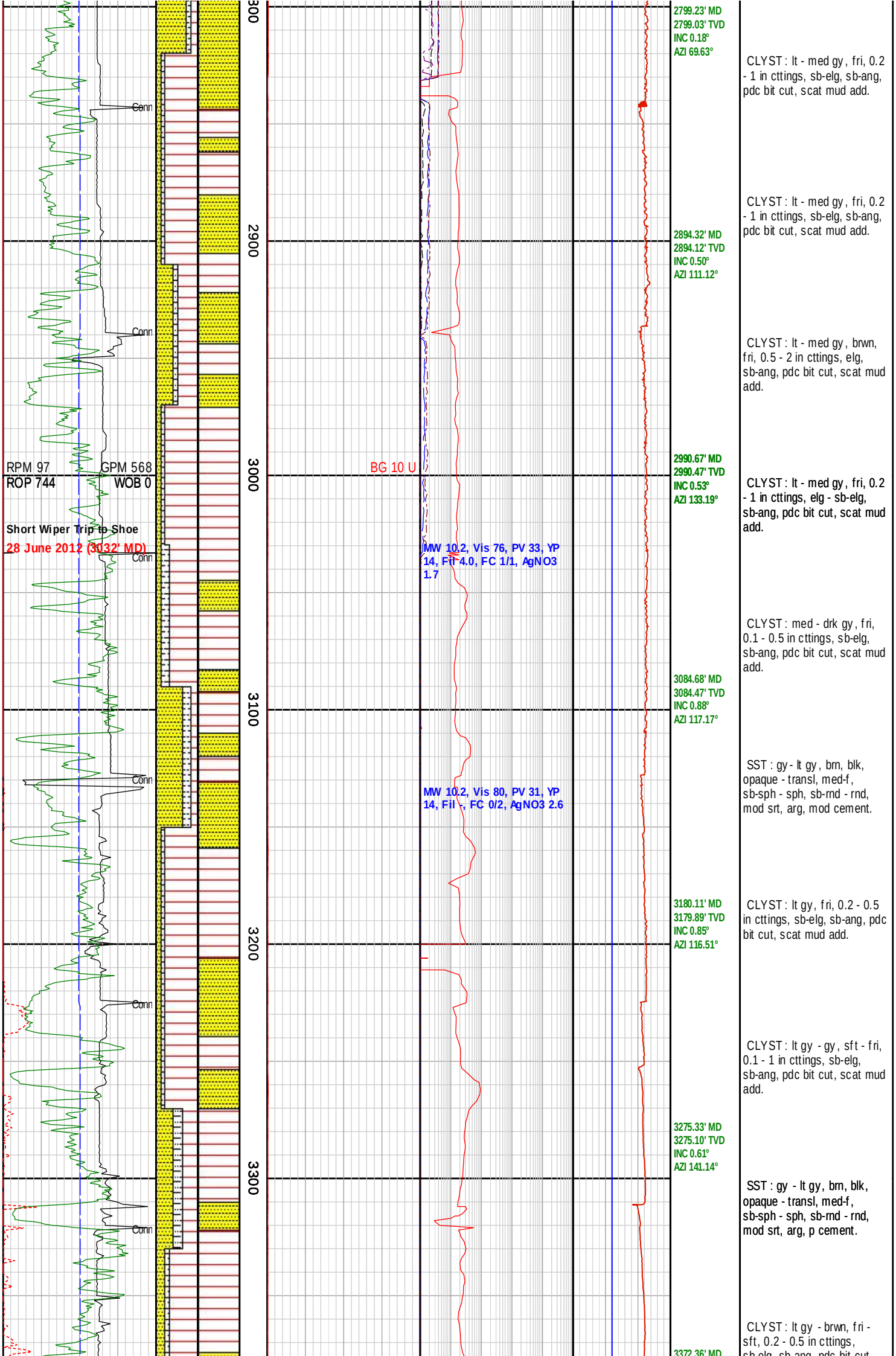
MW 10, Vis 300, PV 42, YP 58, Fil 8, FC 3/0, pH 10.0

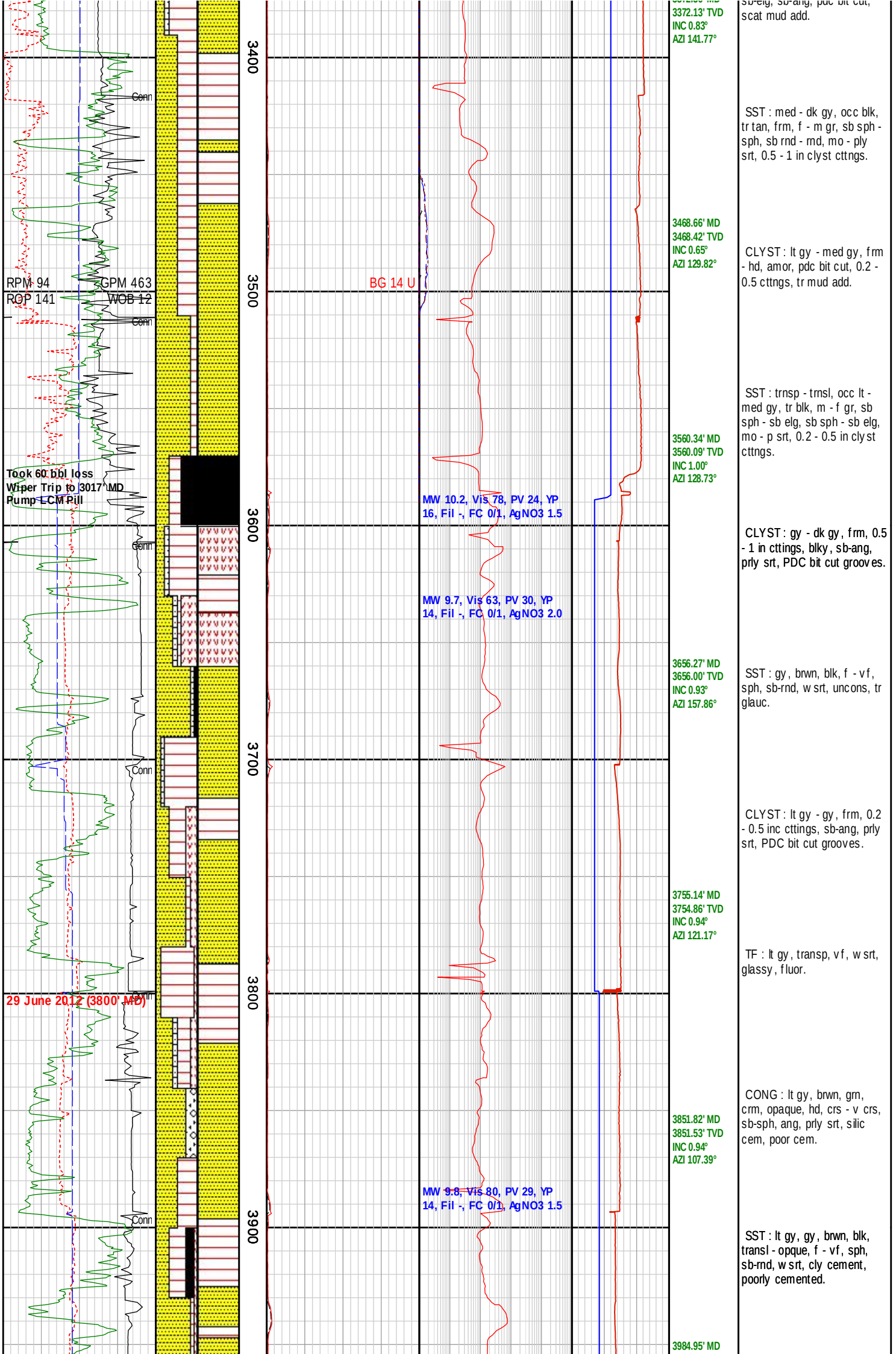

RPM 0
GPM 411
ROP 2513
WOB 0
Conn
Conn
Conn
Conn
Conn
Conn
RPM 5
GPM 455
ROP 60
WOB 0
Conn
Middle Sagavanirktok
721' MD, 721' TVD
Permafrost
1050' MD, 1050' TVD
500
600
700
800
900
1000
BG 4 U
BG 5 U
CI 400
MW 10, Vis 300, PV 53, YP 73, Fil 6.0, FC 3/0, pH 9.3, CI 300
Flameout on GC
MW 10, Vis 240, PV 56, YP 68, Fil 6.4, FC 3/0, pH 9.1, CI 500
503.87' MD
503.85' TVD
INC 1.14°
AZI 201.58°
592.94' MD
592.91' TVD
INC 1.06°
AZI 196.68°
685.39' MD
685.34' TVD
INC 0.93°
AZI 186.77°
780.20' MD
780.14' TVD
INC 0.94°
AZI 208.49°
877.37' MD
877.30' TVD
INC 0.65°
AZI 225.85°
976.87' MD
976.79' TVD
INC 0.55°
AZI 217.66°
GRAV : dk gy - med gy, occ blk, v c - c gr, ply srt, tr cly st.
SST : lt gy - med gy, trnsp - trnsl, r blk, f - v f gr, occ med gr, frm, sb sph - sph, rnd - sb rnd, mo - w srt, n calc, uncons.
SST : trnsp - trnsl, lt gy - wh, occ tan, r blk, med - c gr, frm, sb sph - sb elg, sb ang - sb rnd, mo - ply srt, n calc, uncons.
SST : trnsp - trnsl, lt gy - med gy, occ tan, clr, med - c gr, frm, sb sph - sb elg, sb ang - sb rnd, mo - ply srt, n calc, uncons.
SST : dk gy - med gy, trnsp - trnsl, clr, v c - med gr, frm, sb elg - elg, sb ang - ang, ply srt, n calc, uncons, r pyr, tr cly st, tr gra.
GRAV : dk gy, trnsl - trnsp, v c gr, ply srt, tr sst.

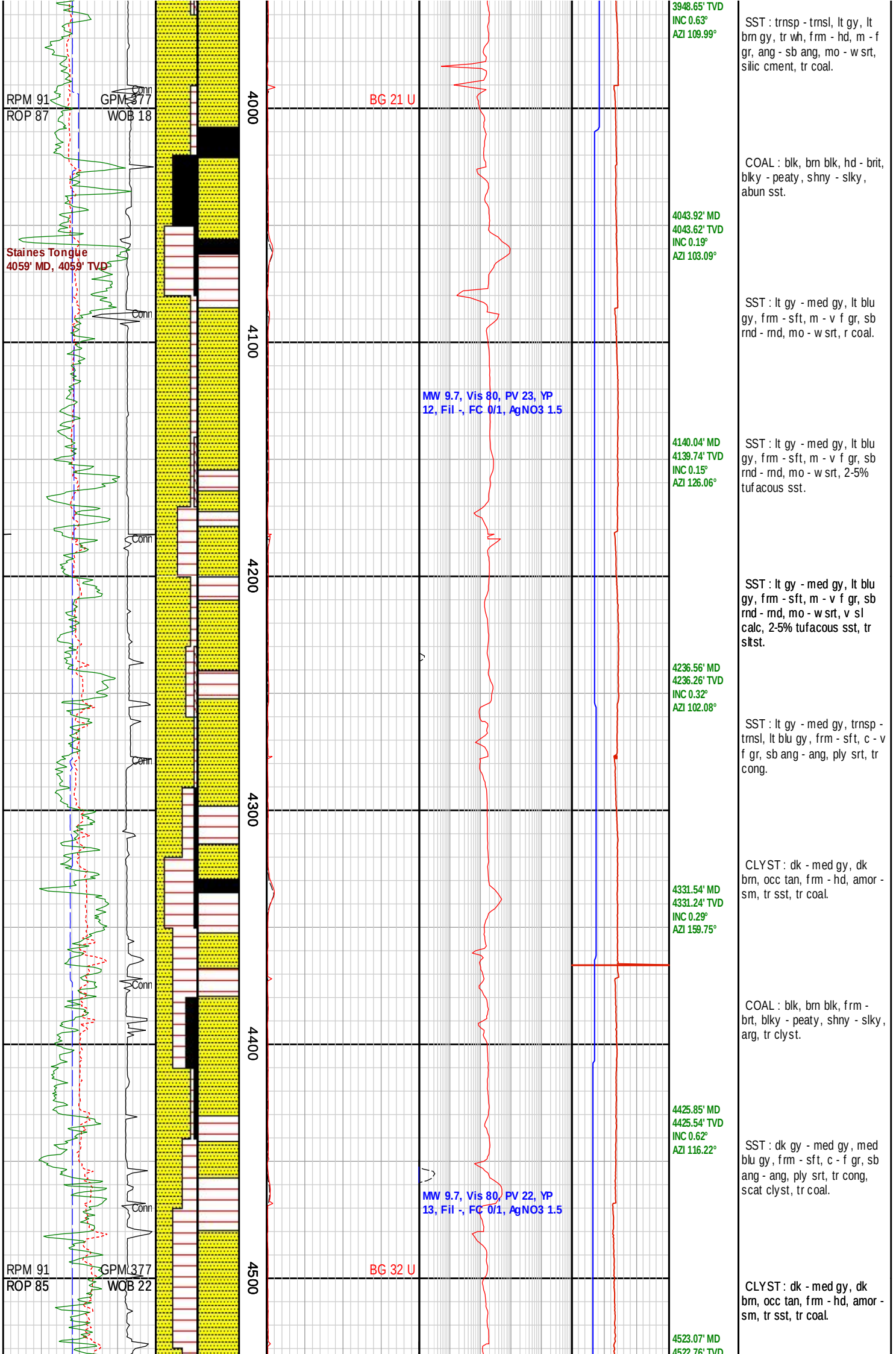

1100
1200
1300
1400
1500
1600
Conn
Lost Data due to Power Issues
MW 10, Vis 220, PV 49, YP 62, Fil 6.4, FC 3/0, pH 9.5, Cl 500
Test Gas Equipment
Test Gas Equipment
MW 10.1, Vis 280, PV 53, YP 72, Fil 6.4, FC 3/0, pH 9.6, Cl 300
RPM 79
ROP 85
GPM 481
WOB 0
BG 5 U
21 June 2012 (1598' MD)
1070.52' MD
1070.44' TVD
INC 0.84°
AZI 233.02°
1161.77' MD
1161.68' TVD
INC 0.84°
AZI 184.97°
1259.04' MD
1258.94' TVD
INC 0.65°
AZI 208.98°
1355.56' MD
1355.45' TVD
INC 0.78°
AZI 205.42°
1451.70' MD
1451.58' TVD
INC 0.70°
AZI 209.13°
1547.61' MD
1547.48' TVD
INC 0.87°
AZI 214.97°
SST : trnsp - trnsl, med gy, med gr, sb-ang - sb-rnd, mo srt - ply srt, n calc, uncons.
SST : trnsp - trnsl, med gy, f gr, sb-ang - sb-rnd, mo srt - ply srt, n calc, p.
SST : trnsp - trnsl, med gy - lt gy, f gr, sb ang - sb rnd, mo srt, n calc, uncons.
CLYST : med gy - lt gy, rthy, n calc.
CLYST : lt gy - med gy, rthy - sm, n calc.
CLYST : dk gy - lt gy, rthy, n calc.

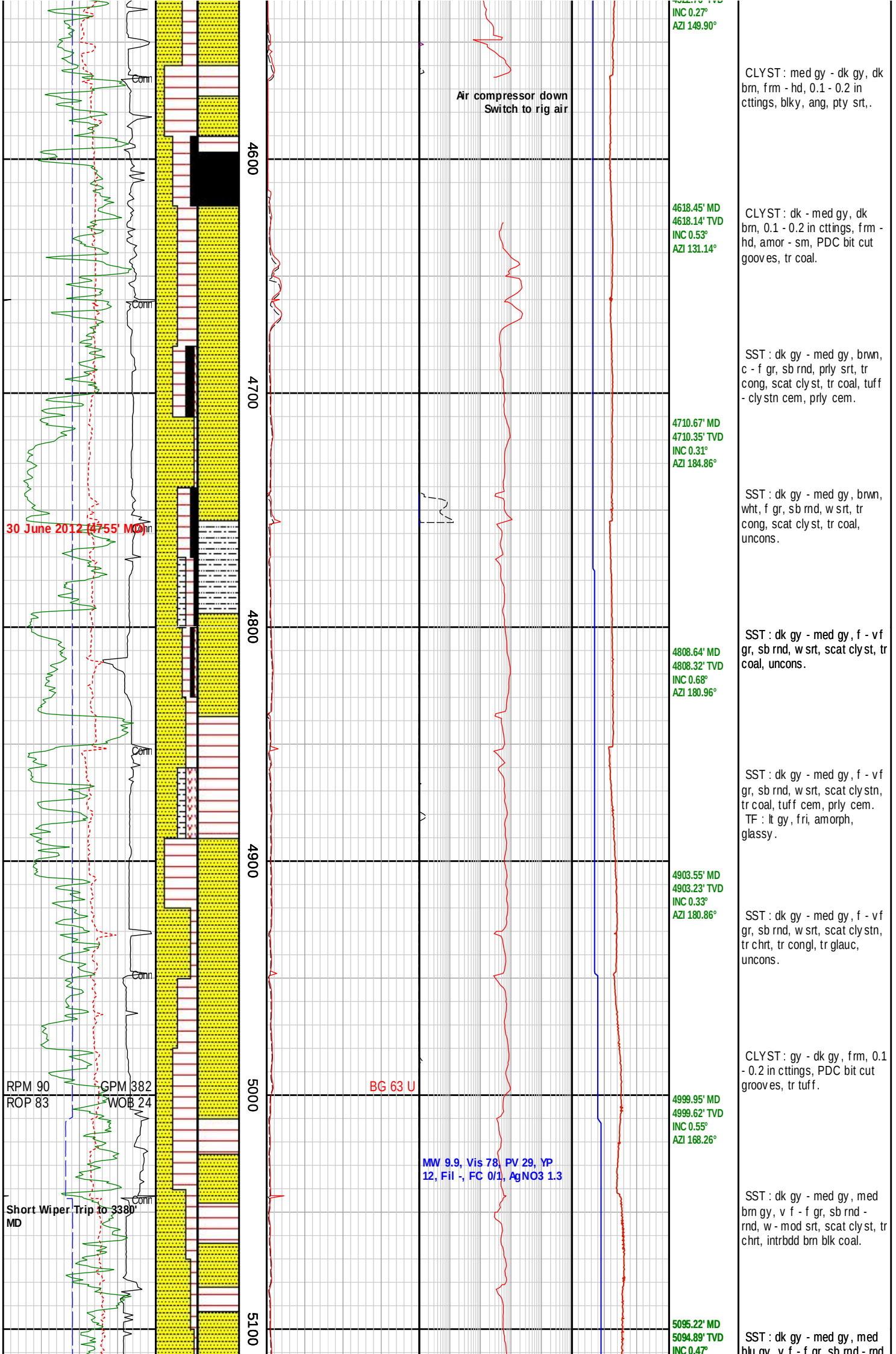

1700
1800
1900
2000
2100
2200
Conn
Conn
Conn
Conn
Conn
Conn
RPM 91
ROP 93
GPM 491
WOB 0
BG 4 U
1642.98' MD
1642.84' TVD
INC 0.86°
AZI 205.66°
1739.38' MD
1739.23' TVD
INC 0.64°
AZI 193.71°
1836.78' MD
1836.63' TVD
INC 0.69°
AZI 209.38°
MW 10.2, Vis 150, PV 51, YP 57, Fil 6.0, FC 3/0, pH 9.4, Cl 400
1931.30' MD
1931.44' TVD
INC 0.71°
AZI 175.26°
2028.33' MD
2028.17' TVD
INC 0.48°
AZI 183.94°
2123.91' MD
2123.74' TVD
INC 0.46°
AZI 205.20°
MW 10.2, Vis 150, PV 51, YP 54, Fil 5.2, FC 3/0, pH 8.8, Cl 400
CLYST : dk gy - med gy, rthy - sm, n calc, tr sst.
SST : trnsp - trnsl, dk gy - med gy, occ tan, f - med gr, sb sph - sb elg, sb ang - sb rnd, mo - w srt, n calc, r glauc, tr clyst.
CLYST : dk gy - med gy, occ lt gy brn, r blk, sft - frm, rthy - sm, sl sndy, n calc.
CLYST : dk gy - med gy, occ blk, sft - frm, sm - rthy, n calc, r sst.
SST : trnsp - trnsl, dk gy, r blk, med - f gr, sb sph - sb elg, sb ang - sb rnd, mo - w srt, r glauc, n calc, arg.
SST : dk gy - med gy, occ clr, occ tan, f - med gr, sb sph - sb elg, sb rnd - sb ang,

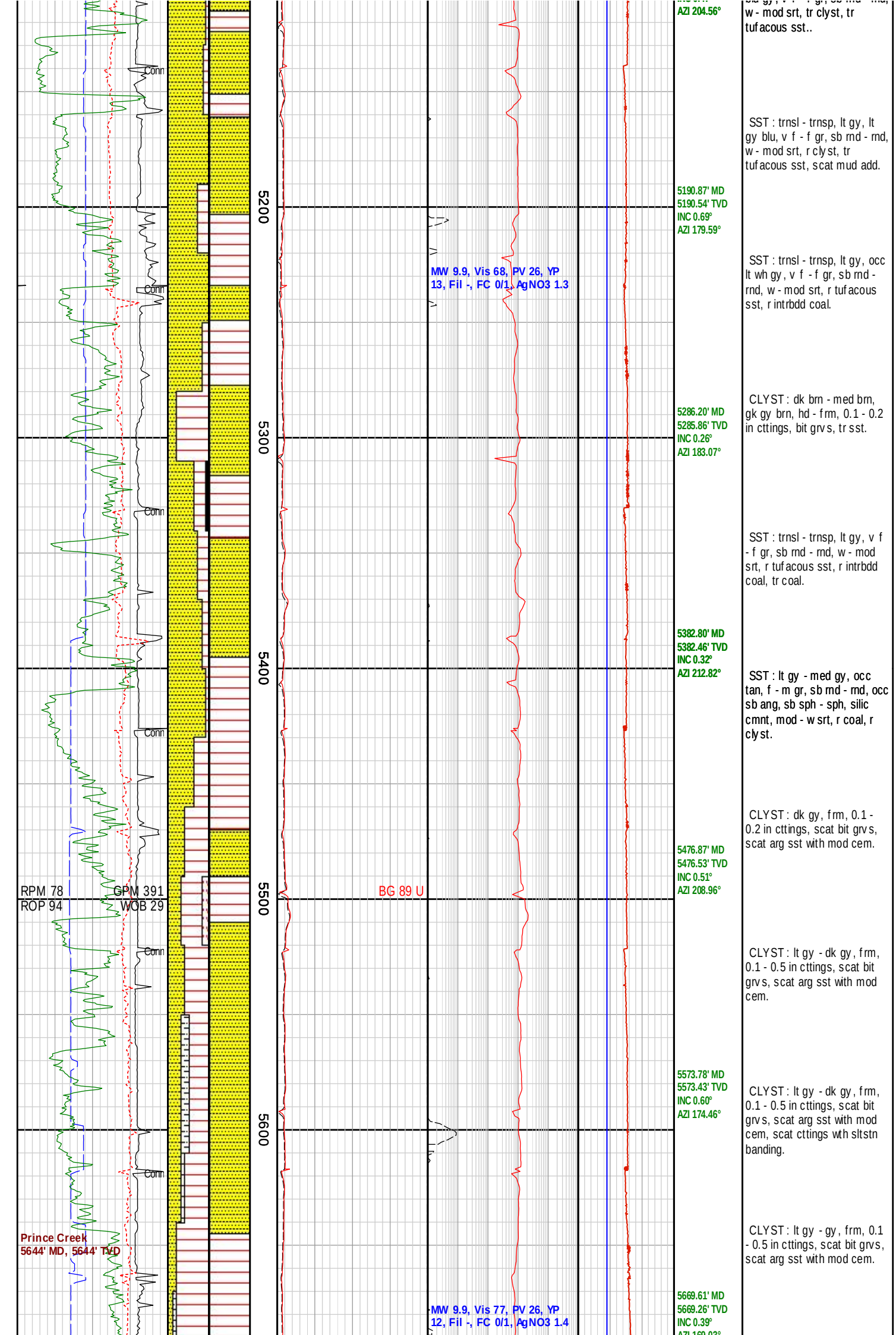

2217.21' MD
2217.04' TVD
INC 0.50°
AZI 180.79°
mo - w srt, n calc, arg.
2300
2312.62' MD
2312.45' TVD
INC 0.53°
AZI 181.16°
SST : dk gy - med gy, r clr, f gr, occ v f gr, sb sph - sph, sb rnd - rnd, mo - w srt, n calc, arg.
Conn
Conn
Conn
Test Gas Equipment
Test Gas Equipment
2400
2409.08' MD
2408.90' TVD
INC 0.22°
AZI 169.25°
SST : trnsl - trnsp, med gy - lt gy, occ blk, f - vf gr, sb elg - sb sph, sb ang - sub rnd, mo - ply srt, n calc, arg.
MW 10.2, Vis 145, PV 51, YP 62, Fil -, FC 3/0, pH 9.0, Cl 400
2463.32' MD
2463.14' TVD
INC 0.57°
AZI 179.55°
9-5/8" Casing Shoe
2491' MD, 2491' TVD
RPM 79
GPM 509
ROP 10162
WOB 0
BG 13 U
2500
MW 10.2, Vis 150, PV 51, YP 57, Fil 6.0, FC 3/0, pH 9.4, Cl 400
Calibrate 8800 THA, C1=10.000% 10,000 Units = 100% Gas in Air
Calibrate 8900 GC
Cl= 1.03 %
C2= 0.500 %
C3= 0.251 %
iC4= 0.250 % nC4= 0.250 %
iC5= 0.102 % nC5= 0.102%
CLYST : lt gy brn, lt - med gy, sft - frm, mo comp, amor - blky, n calc, tr sst, tr cmnt, scat mud add.
ID Surface Hole Section
2510' MD, 2510' TVD
Off Bot:17:20 21 June 2012
Bit #2 HDBS FX56
Jets: 5x16, TFA: 0.9817
In: 2510' MD / 2510' TVD
Out: 6365' MD / 6365' TVD
Grade: 2-4-CT-A-X-2-WT-HP
Commenced 8.5" Intermediate Hole Section
On Bot: 14:40 27 June 2012
Perform FIT to 14.0 ppg
Displaced well to 10.2 MOBM
MW 10.2, Vis 50, PV 26, YP 18, Fil 3.3, FC 1/0, AgNO3 2.2
Upper Canning
2596' MD, 2596' TVD
2600
2606.45' MD
2606.26' TVD
INC 1.05°
AZI 112.70°
CLYST : lt - med gy, lt brn gy, frm - hd, mo - w comp, 1 - 3 in cttngs, lng - blky, n calc, scat mud add.
Conn
CLYST : lt - med gy, frm, 0.5 - 1 in cttings, elg, pdc bit imprint, scat mud add.
2700
2700.00' MD
2699.80' TVD
INC 0.12°
AZI 96.30°
CLYST : lt - med gy, sft, fn - 1 in cttings, elg - sb-sph, pdc bit imprint, scat mud add.
Conn
Lower Sagavanirktok
2784' MD, 2784' TVD
SST : gy - lt gy, brn, blk, opaque - transl, f-vf, sb-sph, sb-rnd, w srt, arg, p cement, tr glauc.

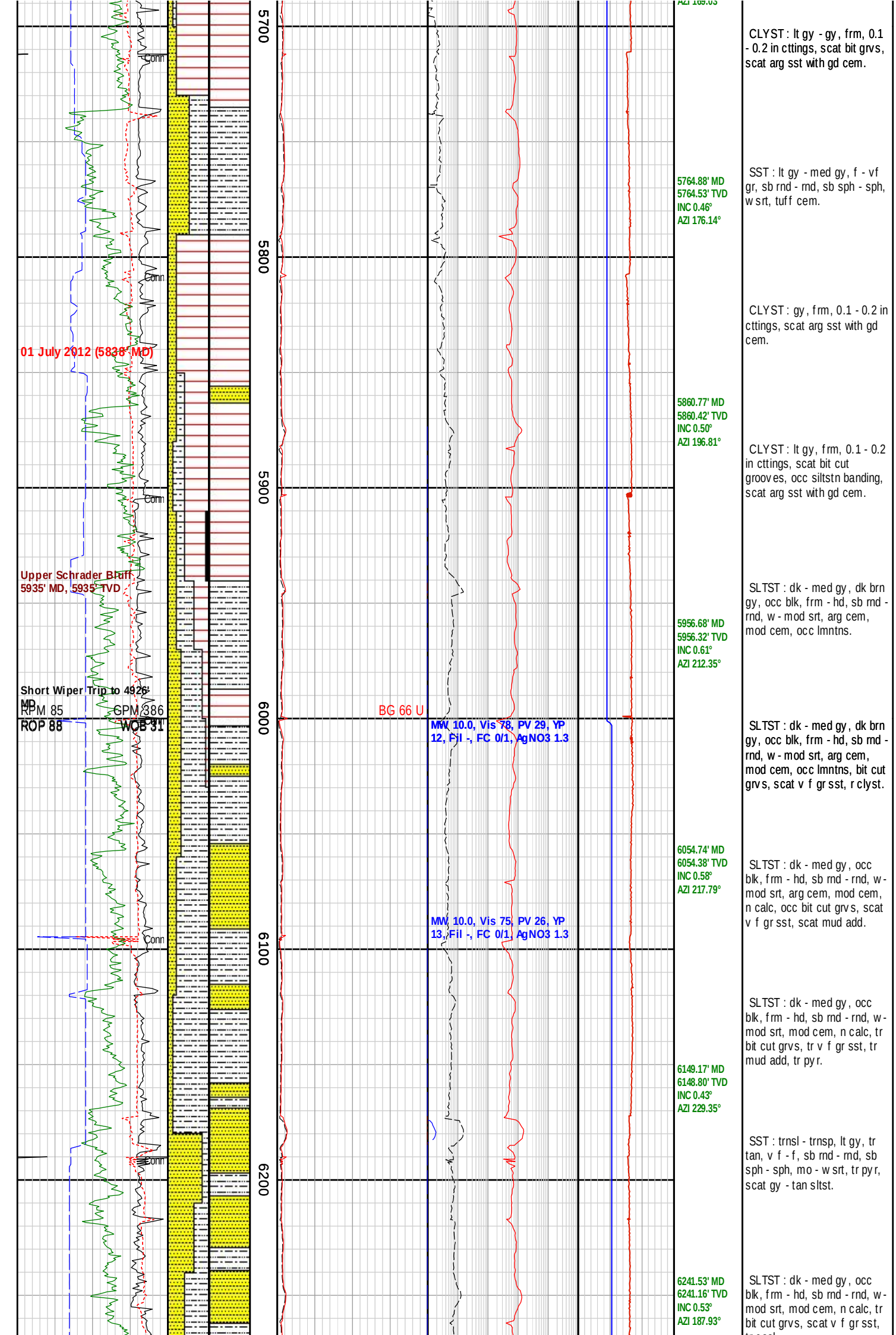

2799.23' MD
2799.03' TVD
INC 0.18°
AZI 69.63°
CLYST : lt - med gy , fri, 0.2 - 1 in cttings, sb-elg, sb-ang, pdc bit cut, scat mud add.
2894.32' MD
2894.12' TVD
INC 0.50°
AZI 111.12°
CLYST : lt - med gy , fri, 0.2 - 1 in cttings, sb-elg, sb-ang, pdc bit cut, scat mud add.
CLYST : lt - med gy , brwn, fri, 0.5 - 2 in cttings, elg, sb-ang, pdc bit cut, scat mud add.
2990.67' MD
2990.47' TVD
INC 0.53°
AZI 133.19°
CLYST : lt - med gy , fri, 0.2 - 1 in cttings, elg - sb-elg, sb-ang, pdc bit cut, scat mud add.
3084.68' MD
3084.47' TVD
INC 0.88°
AZI 117.17°
CLYST : med - drk gy , fri, 0.1 - 0.5 in cttings, sb-elg, sb-ang, pdc bit cut, scat mud add.
SST : gy - lt gy , brn, blk, opaque - transl, med-f, sb-sph - sph, sb-rnd - rnd, mod srt, arg, mod cement.
3180.11' MD
3179.89' TVD
INC 0.85°
AZI 116.51°
CLYST : lt gy , fri, 0.2 - 0.5 in cttings, sb-elg, sb-ang, pdc bit cut, scat mud add.
CLYST : lt gy - gy , sft - fri, 0.1 - 1 in cttings, sb-elg, sb-ang, pdc bit cut, scat mud add.
3275.33' MD
3275.10' TVD
INC 0.61°
AZI 141.14°
SST : gy - lt gy , brn, blk, opaque - transl, med-f, sb-sph - sph, sb-rnd - rnd, mod srt, arg, p cement.
CLYST : lt gy - brwn, fri - sft, 0.2 - 0.5 in cttings,
3372.36' MD
2900
3000
3100
3200
3300
Conn
RPM 97
GPM 568
ROP 744
WOB 0
Short Wiper Trip to Shoe
28 June 2012 (3032' MD)
BG 10 U
MW 10.2, Vis 76, PV 33, YP 14, Fil 4.0, FC 1/1, AgNO3 1.7
MW 10.2, Vis 80, PV 31, YP 14, Fil -, FC 0/2, AgNO3 2.6

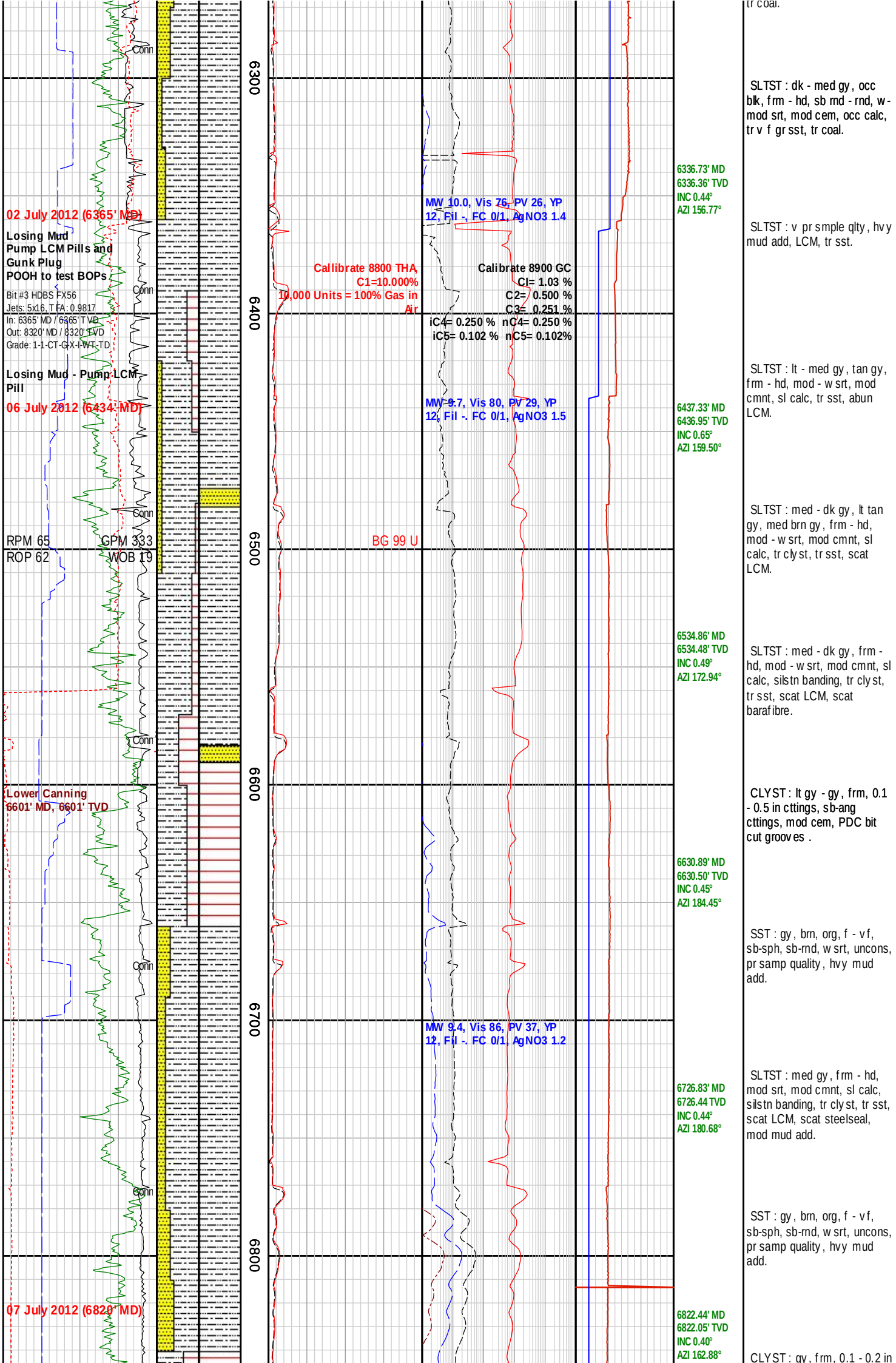

3400
3500
3600
3700
3800
3900
Conn
Conn
Conn
Conn
Conn
RPM 94
GPM 463
ROP 141
WOB 12
BG 14 U
Took 60 bbl loss
Wiper Trip to 3017' MD
Pump LCM Pill
29 June 2012 (3800' MD)
MW 10.2, Vis 78, PV 24, YP 16, Fil -, FC 0/1, AgNO3 1.5
MW 9.7, Vis 63, PV 30, YP 14, Fil -, FC 0/1, AgNO3 2.0
MW 9.8, Vis 80, PV 29, YP 14, Fil -, FC 0/1, AgNO3 1.5
3372.13' TVD
INC 0.83°
AZI 141.77°
3468.66' MD
3468.42' TVD
INC 0.65°
AZI 129.82°
3560.34' MD
3560.09' TVD
INC 1.00°
AZI 128.73°
3656.27' MD
3656.00' TVD
INC 0.93°
AZI 157.86°
3755.14' MD
3754.86' TVD
INC 0.94°
AZI 121.17°
3851.82' MD
3851.53' TVD
INC 0.94°
AZI 107.39°
3984.95' MD
sb-elg, sb-ang, pdc bit cut, scat mud add.
SST : med - dk gy, occ blk, tr tan, frm, f - m gr, sb sph - sph, sb rnd - rnd, mo - ply srt, 0.5 - 1 in clyst cttngs.
CLYST : lt gy - med gy, frm - hd, amor, pdc bit cut, 0.2 - 0.5 cttngs, tr mud add.
SST : trnsp - trnsl, occ lt - med gy, tr blk, m - f gr, sb sph - sb elg, sb sph - sb elg, mo - p srt, 0.2 - 0.5 in clyst cttngs.
CLYST : gy - dk gy, frm, 0.5 - 1 in cttings, blky, sb-ang, prly srt, PDC bit cut grooves.
SST : gy, brwn, blk, f - vf, sph, sb-rnd, w srt, uncons, tr glauc.
CLYST : lt gy - gy, frm, 0.2 - 0.5 inc cttings, sb-ang, prly srt, PDC bit cut grooves.
TF : lt gy, transp, vf, w srt, glassy, fluor.
CONG : lt gy, brwn, grn, crm, opaque, hd, crs - v crs, sb-sph, ang, prly srt, silic cem, poor cem.
SST : lt gy, gy, brwn, blk, transl - opque, f - vf, sph, sb-rnd, w srt, cly cement, poorly cemented.


RPM 91
ROP 87
GPM 377
WOB 18
Conn
Staines Tongue
4059' MD, 4059' TVD
4000
4100
4200
4300
4400
4500
BG 21 U
BG 32 U
MW 9.7, Vis 80, PV 23, YP 12, Fil -, FC 0/1, AgNO3 1.5
MW 9.7, Vis 80, PV 22, YP 13, Fil -, FC 0/1, AgNO3 1.5
RPM 91
ROP 85
GPM 377
WOB 22
3948.65' TVD
INC 0.63°
AZI 109.99°
SST : trnsp - trnsl, lt gy, lt brn gy, tr wh, frm - hd, m - f gr, ang - sb ang, mo - w srt, silic cment, tr coal.
COAL : blk, brn blk, hd - brit, blky - peaty, shny - slky, abun sst.
4043.92' MD
4043.62' TVD
INC 0.19°
AZI 103.09°
SST : lt gy - med gy, lt blu gy, frm - sft, m - v f gr, sb rnd - rnd, mo - w srt, r coal.
4140.04' MD
4139.74' TVD
INC 0.15°
AZI 126.06°
SST : lt gy - med gy, lt blu gy, frm - sft, m - v f gr, sb rnd - rnd, mo - w srt, 2-5% tufacous sst.
SST : lt gy - med gy, lt blu gy, frm - sft, m - v f gr, sb rnd - rnd, mo - w srt, v sl calc, 2-5% tufacous sst, tr sltst.
4236.56' MD
4236.26' TVD
INC 0.32°
AZI 102.08°
SST : lt gy - med gy, trnsp - trnsl, lt blu gy, frm - sft, c - v f gr, sb ang - ang, ply srt, tr cong.
CLYST : dk - med gy, dk brn, occ tan, frm - hd, amor - sm, tr sst, tr coal.
4331.54' MD
4331.24' TVD
INC 0.29°
AZI 159.75°
COAL : blk, brn blk, frm - brt, blky - peaty, shny - slky, arg, tr clyst.
4425.85' MD
4425.54' TVD
INC 0.62°
AZI 116.22°
SST : dk gy - med gy, med blu gy, frm - sft, c - f gr, sb ang - ang, ply srt, tr cong, scat clyst, tr coal.
CLYST : dk - med gy, dk brn, occ tan, frm - hd, amor - sm, tr sst, tr coal.
4523.07' MD


INC 0.27°
AZI 149.90°
Air compressor down
Switch to rig air
CLYST : med gy - dk gy, dk brn, frm - hd, 0.1 - 0.2 in cttings, blky, ang, pty srt,.
4618.45' MD
4618.14' TVD
INC 0.53°
AZI 131.14°
CLYST : dk - med gy, dk brn, 0.1 - 0.2 in cttings, frm - hd, amor - sm, PDC bit cut gooves, tr coal.
SST : dk gy - med gy, brwn, c - f gr, sb rnd, prly srt, tr cong, scat clyst, tr coal, tuff - clystn cem, prly cem.
4710.67' MD
4710.35' TVD
INC 0.31°
AZI 184.86°
SST : dk gy - med gy, brwn, wht, f gr, sb rnd, w srt, tr cong, scat clyst, tr coal, uncons.
30 June 2012 (4755' MD)
4808.64' MD
4808.32' TVD
INC 0.68°
AZI 180.96°
SST : dk gy - med gy, f - vf gr, sb rnd, w srt, scat clyst, tr coal, uncons.
SST : dk gy - med gy, f - vf gr, sb rnd, w srt, scat clystn, tr coal, tuff cem, prly cem.
TF : lt gy, fri, amorph, glassy.
4903.55' MD
4903.23' TVD
INC 0.33°
AZI 180.86°
SST : dk gy - med gy, f - vf gr, sb rnd, w srt, scat clystn, tr chrt, tr congl, tr glauc, uncons.
RPM 90
GPM 382
ROP 83
WOB 24
BG 63 U
CLYST : gy - dk gy, frm, 0.1 - 0.2 in cttings, PDC bit cut grooves, tr tuff.
4999.95' MD
4999.62' TVD
INC 0.55°
AZI 168.26°
MW 9.9, Vis 78, PV 29, YP 12, Fil -, FC 0/1, AgNO3 1.3
Short Wiper Trip to 3380' MD
SST : dk gy - med gy, med brn gy, v f - f gr, sb rnd - rnd, w - mod srt, scat clyst, tr chrt, intrbdd brn blk coal.
5095.22' MD
5094.89' TVD
INC 0.47°
SST : dk gy - med gy, med
4600
4700
4800
4900
5000
5100
Conn


AZI 204.56°
w - mod srt, tr clyst, tr tufacous sst..
Conn
SST : trnsl - trnsp, lt gy, lt gy blu, v f - f gr, sb rnd - rnd, w - mod srt, r clyst, tr tufacous sst, scat mud add.
5200
5190.87' MD
5190.54' TVD
INC 0.69°
AZI 179.59°
MW 9.9, Vis 68, PV 26, YP 13, Fil -, FC 0/1, AgNO3 1.3
SST : trnsl - trnsp, lt gy, occ lt wh gy, v f - f gr, sb rnd - rnd, w - mod srt, r tufacous sst, r intrbdd coal.
5300
5286.20' MD
5285.86' TVD
INC 0.26°
AZI 183.07°
CLYST : dk brn - med brn, gk gy brn, hd - frm, 0.1 - 0.2 in cttings, bit grvs, tr sst.
SST : trnsl - trnsp, lt gy, v f - f gr, sb rnd - rnd, w - mod srt, r tufacous sst, r intrbdd coal, tr coal.
5400
5382.80' MD
5382.46' TVD
INC 0.32°
AZI 212.82°
SST : lt gy - med gy, occ tan, f - m gr, sb rnd - rnd, occ sb ang, sb sph - sph, silic cmnt, mod - w srt, r coal, r clyst.
RPM 78
GPM 391
ROP 94
WOB 29
BG 89 U
CLYST : dk gy, frm, 0.1 - 0.2 in cttings, scat bit grvs, scat arg sst with mod cem.
5500
5476.87' MD
5476.53' TVD
INC 0.51°
AZI 208.96°
CLYST : lt gy - dk gy, frm, 0.1 - 0.5 in cttings, scat bit grvs, scat arg sst with mod cem.
5573.78' MD
5573.43' TVD
INC 0.60°
AZI 174.46°
CLYST : lt gy - dk gy, frm, 0.1 - 0.5 in cttings, scat bit grvs, scat arg sst with mod cem, scat cttings wth sltstn banding.
5600
Prince Creek
5644' MD, 5644' TVD
CLYST : lt gy - gy, frm, 0.1 - 0.5 in cttings, scat bit grvs, scat arg sst with mod cem.
MW 9.9, Vis 77, PV 26, YP 12, Fil -, FC 0/1, AgNO3 1.4
5669.61' MD
5669.26' TVD
INC 0.39°


5700
5800
5900
6000
6100
6200
Conn
01 July 2012 (5838' MD)
Upper Schrader Bluff
5935' MD, 5935' TVD
Short Wiper Trip to 4926' MD
RPM 85
GPM 386
ROP 88
WOB 31
BG 66 U
MW 10.0, Vis 78, PV 29, YP 12, Fil -, FC 0/1, AgNO3 1.3
MW 10.0, Vis 75, PV 26, YP 13, Fil -, FC 0/1, AgNO3 1.3
AZI 169.03
5764.88' MD
5764.53' TVD
INC 0.46°
AZI 176.14°
5860.77' MD
5860.42' TVD
INC 0.50°
AZI 196.81°
5956.68' MD
5956.32' TVD
INC 0.61°
AZI 212.35°
6054.74' MD
6054.38' TVD
INC 0.58°
AZI 217.79°
6149.17' MD
6148.80' TVD
INC 0.43°
AZI 229.35°
6241.53' MD
6241.16' TVD
INC 0.53°
AZI 187.93°
CLYST : lt gy - gy, frm, 0.1 - 0.2 in cttings, scat bit grvs, scat arg sst with gd cem.
SST : lt gy - med gy, f - vf gr, sb rnd - rnd, sb sph - sph, w srt, tuff cem.
CLYST : gy, frm, 0.1 - 0.2 in cttings, scat arg sst with gd cem.
CLYST : lt gy, frm, 0.1 - 0.2 in cttings, scat bit cut grooves, occ siltstn banding, scat arg sst with gd cem.
SLTST : dk - med gy, dk brn gy, occ blk, frm - hd, sb rnd - rnd, w - mod srt, arg cem, mod cem, occ lmntns.
SLTST : dk - med gy, dk brn gy, occ blk, frm - hd, sb rnd - rnd, w - mod srt, arg cem, mod cem, occ lmntns, bit cut grvs, scat v f gr sst, r clyst.
SLTST : dk - med gy, occ blk, frm - hd, sb rnd - rnd, w - mod srt, arg cem, mod cem, n calc, occ bit cut grvs, scat v f gr sst, scat mud add.
SLTST : dk - med gy, occ blk, frm - hd, sb rnd - rnd, w - mod srt, mod cem, n calc, tr bit cut grvs, tr v f gr sst, tr mud add, tr pyr.
SST : trnsl - trnsp, lt gy, tr tan, v f - f, sb rnd - rnd, sb sph - sph, mo - w srt, tr pyr, scat gy - tan sltst.
SLTST : dk - med gy, occ blk, frm - hd, sb rnd - rnd, w - mod srt, mod cem, n calc, tr bit cut grvs, scat v f gr sst,



tr coal.

SLTST : dk - med gy, occ blk, frm - hd, sb rnd - rnd, w - mod srt, mod cem, occ calc, tr v f gr sst, tr coal.

SLTST : v pr smple qlty, hvy mud add, LCM, tr sst.

SLTST : lt - med gy, tan gy, frm - hd, mod - w srt, mod cmnt, sl calc, tr sst, abun LCM.

SLTST : med - dk gy, lt tan gy, med brn gy, frm - hd, mod - w srt, mod cmnt, sl calc, tr clyst, tr sst, scat LCM.

SLTST : med - dk gy, frm - hd, mod - w srt, mod cmnt, sl calc, silstn banding, tr clyst, tr sst, scat LCM, scat barafibre.

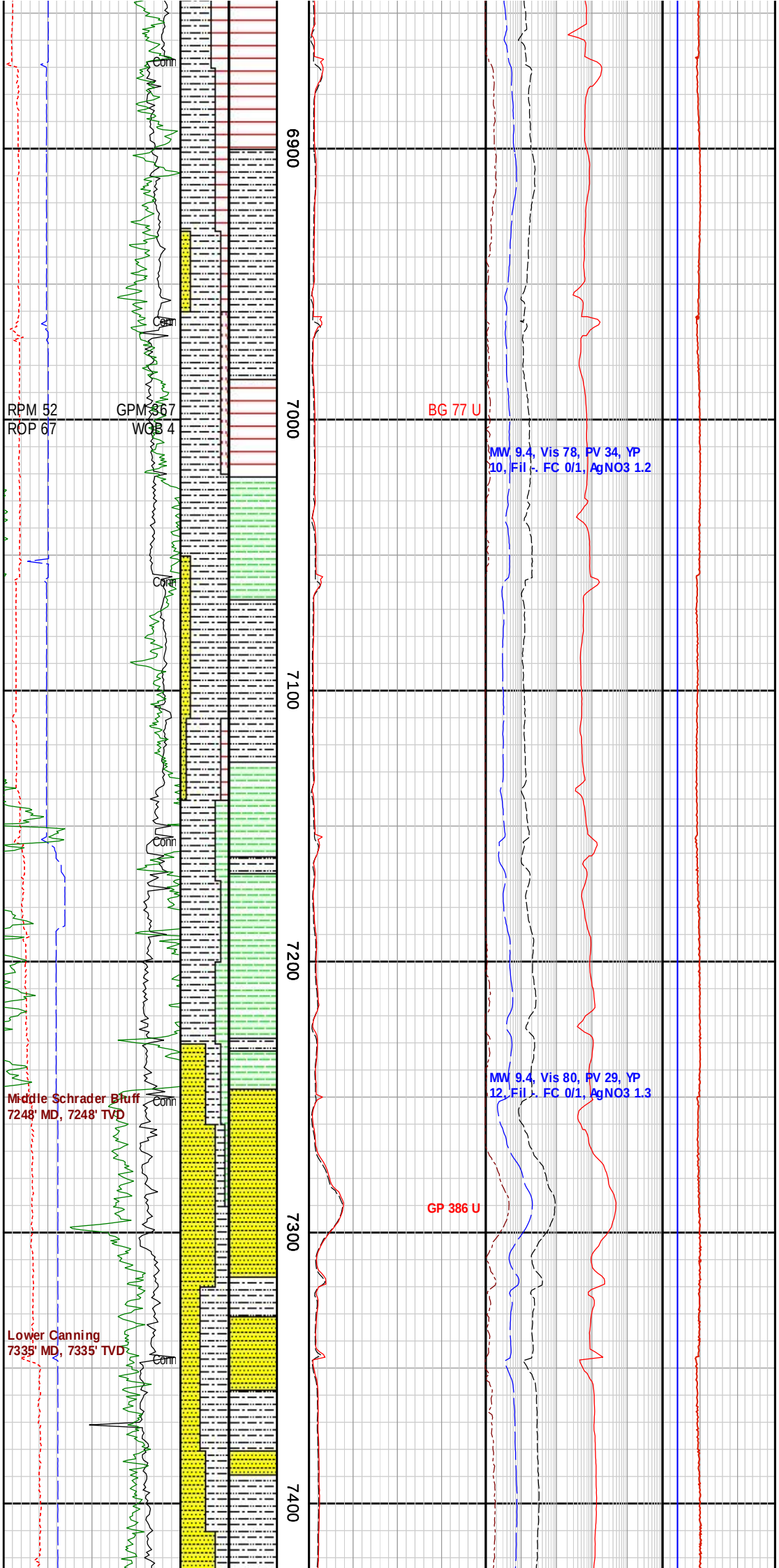
CLYST : lt gy - gy, frm, 0.1 - 0.5 in cttings, sb-ang cttings, mod cem, PDC bit cut grooves .

SST : gy, brn, org, f - vf, sb-sph, sb-rnd, w srt, uncons, pr samp quality, hvy mud add.

SLTST : med gy, frm - hd, mod srt, mod cmnt, sl calc, silstn banding, tr clyst, tr sst, scat LCM, scat steelseal, mod mud add.

SST : gy, brn, org, f - vf, sb-sph, sb-rnd, w srt, uncons, pr samp quality, hvy mud add.

CLYST : gy, frm, 0.1 - 0.2 in



cttings, ang cttings, mod cem, scat PDC bit cut grooves.

6918.13' MD
6917.73' TVD
INC 0.56°
AZI 174.04°

SLTST : med gy, frm - hd, well srt, mod cmnt, sl calc, silstn banding, tr clyst, tr sst, scat LCM, scat steelseal, scat mud add.

TF : lt gy, sft, glassy, amorph, seen as sharp boundary from siltstn on bit cut grooved ctting.

7011.46' MD
7011.06' TVD
INC 0.32°
AZI 185.63°

SLTST : med gy - drk gy, frm - hd, well srt, mod cmnt, sl calc, silstn banding.

SLTST : med gy - drk gy, med brn gy, frm - hd, w - mod srt, mod cmnt, sl calc, slst bndng, tr sst, tr qrtz, r mud add.

7109.41' MD
7109.01' TVD
INC 0.54°
AZI 204.95°

SLTST : med gy - drk gy, frm - hd, mod srt, mod cmnt, sl calc, slst bndng, tr lt blu gy sh, r mud add.

7205.30' MD
7204.89' TVD
INC 0.45°
AZI 211.55°

SLTST : dk - med gy, dk blu gy, frm - hd, mod srt, mod cmnt, v sl calc, tr lt blu gy sh, r f gr sst.

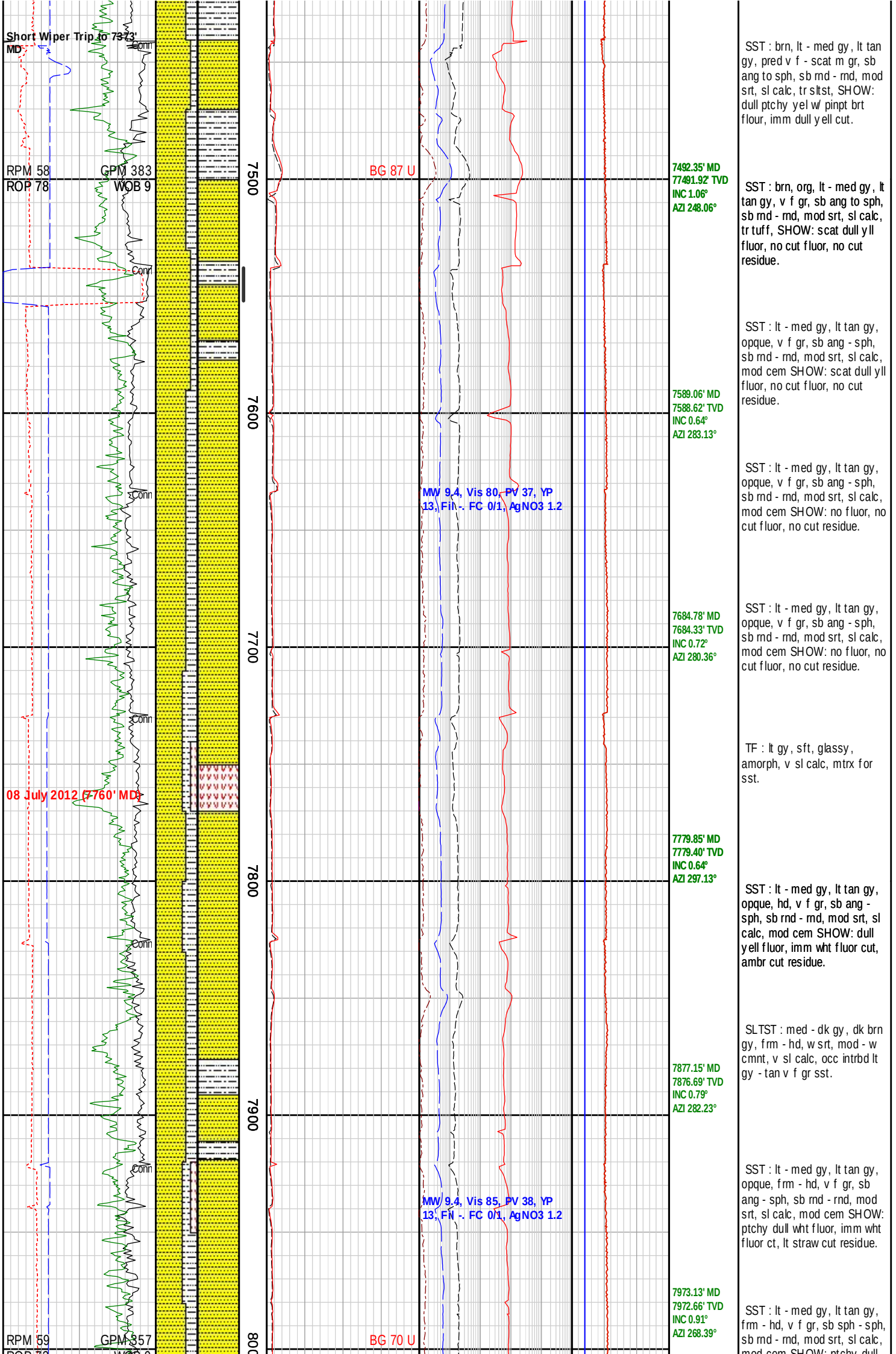
SST : lt - med gy, lt tan gy, brn gy, v f gr, sb sph to sph, sb rnd - rnd, mod srt, sl calc, tr sltst, SHOW: dull ptchy yel flour, slow stmg dull yel cut.

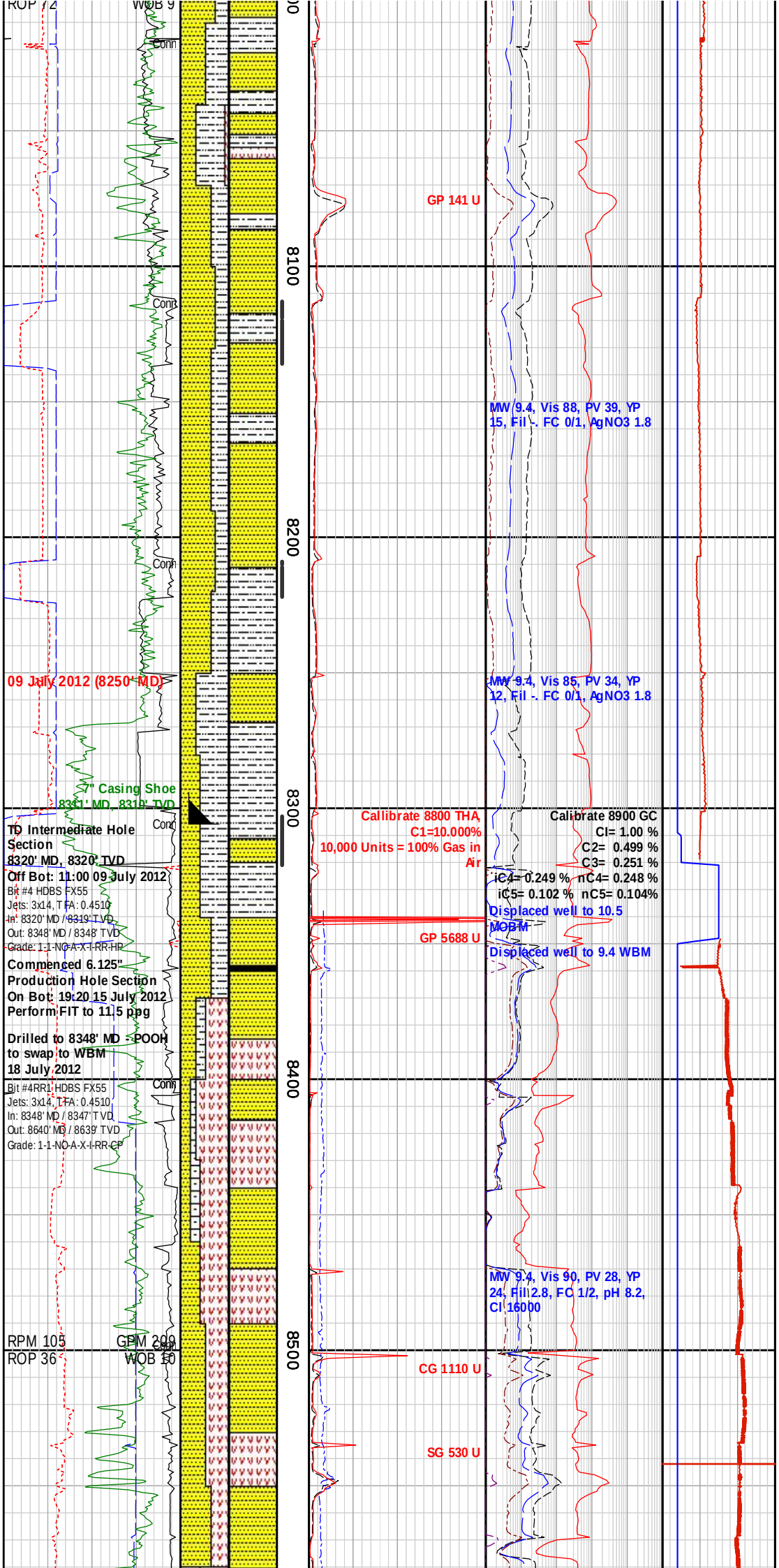
7301.43' MD
7301.02' TVD
INC 0.57°
AZI 216.27°

SLTST : med - dk gy, dk brn gy, hd - frm, w - mod srt, mod cmnt, v sl calc, sh lmntns, tr intrbd lt gy - tan, v f gr sst.

7394.03' MD
7393.61' TVD
INC 0.88°
AZI 237.89°

SST : lt - med gy, lt tan gy, brn gy, v f gr, sb sph to sph, sb rnd - rnd, mod srt, sl calc, tr sltst, SHOW: dull ptchy yel w/ pinpt brt flour, slow stmg pinpt yel cut.


Short Wiper Trip to 7773' MD
Conn
RPM 58
GPM 383
ROP 78
WOB 9
Conn
Conn
Conn
Conn
Conn
08 July 2012 (7760' MD)
RPM 59
GPM 357
7500
7600
7700
7800
7900
8000
BG 87 U
MW 9.4, Vis 80, PV 37, YP 13, Fil -. FC 0/1, AgNO3 1.2
MW 9.4, Vis 85, PV 38, YP 13, Fil -. FC 0/1, AgNO3 1.2
BG 70 U
7492.35' MD
7491.92' TVD
INC 1.06°
AZI 248.06°
7589.06' MD
7588.62' TVD
INC 0.64°
AZI 283.13°
7684.78' MD
7684.33' TVD
INC 0.72°
AZI 280.36°
7779.85' MD
7779.40' TVD
INC 0.64°
AZI 297.13°
7877.15' MD
7876.69' TVD
INC 0.79°
AZI 282.23°
7973.13' MD
7972.66' TVD
INC 0.91°
AZI 268.39°
SST : brn, lt - med gy, lt tan gy, pred v f - scat m gr, sb ang to sph, sb rnd - rnd, mod srt, sl calc, tr sltst, SHOW: dull ptchy yel w/ pinpt brt flour, imm dull yell cut.
SST : brn, org, lt - med gy, lt tan gy, v f gr, sb ang to sph, sb rnd - rnd, mod srt, sl calc, tr tuff, SHOW: scat dull yll fluor, no cut fluor, no cut residue.
SST : lt - med gy, lt tan gy, opque, v f gr, sb ang - sph, sb rnd - rnd, mod srt, sl calc, mod cem SHOW: scat dull yll fluor, no cut fluor, no cut residue.
SST : lt - med gy, lt tan gy, opque, v f gr, sb ang - sph, sb rnd - rnd, mod srt, sl calc, mod cem SHOW: no fluor, no cut fluor, no cut residue.
SST : lt - med gy, lt tan gy, opque, v f gr, sb ang - sph, sb rnd - rnd, mod srt, sl calc, mod cem SHOW: no fluor, no cut fluor, no cut residue.
TF : lt gy, sft, glassy, amorph, v sl calc, mtrx for sst.
SST : lt - med gy, lt tan gy, opque, hd, v f gr, sb ang - sph, sb rnd - rnd, mod srt, sl calc, mod cem SHOW: dull yell fluor, imm wht fluor cut, ambr cut residue.
SLTST : med - dk gy, dk brn gy, frm - hd, w srt, mod - w cmnt, v sl calc, occ intrbd lt gy - tan v f gr sst.
SST : lt - med gy, lt tan gy, opque, frm - hd, v f gr, sb ang - sph, sb rnd - rnd, mod srt, sl calc, mod cem SHOW: ptchy dull wht fluor, imm wht fluor ct, lt straw cut residue.
SST : lt - med gy, lt tan gy, frm - hd, v f gr, sb sph - sph, sb rnd - rnd, mod srt, sl calc,



mod cem SHOW: ptchy dull wht fluor, imm blu wht fluor ct.

SLTST : dk - med gy, dk brn gy, frm - hd, w srt, mod - w cmnt, v sl calc, occ intrbd lt gy - tan v f gr sst, tr tan tuff w/ dull mnrl flour.

SST : med - dk gy, med tan gy, frm - hd, v f gr, r f gr, sb sph - sph, sb rnd - rnd, mod srt, sl calc, mod cem SHOW: ptchy dull wht fluor, slw pnpnt blu wht fluor ct.

SST : med - dk gy, med tan gy, frm - hd, v f gr, r f gr, sb sph - sph, sb rnd - rnd, mod srt, sl calc, mod cem, tr tuff SHOW: ptchy dull yel fluor, imm pnpnt blu wht fluor ct.

SST : med - dk gy, lt tan gy, trnsp - trnsl, frm - hd, v f - med gr, sb sph - sph, sb rnd - rnd, mod srt, sl calc, mod cem, tr tuff, tr slst, SHOW: spkld dull yel fluor, imm dull wht ct.

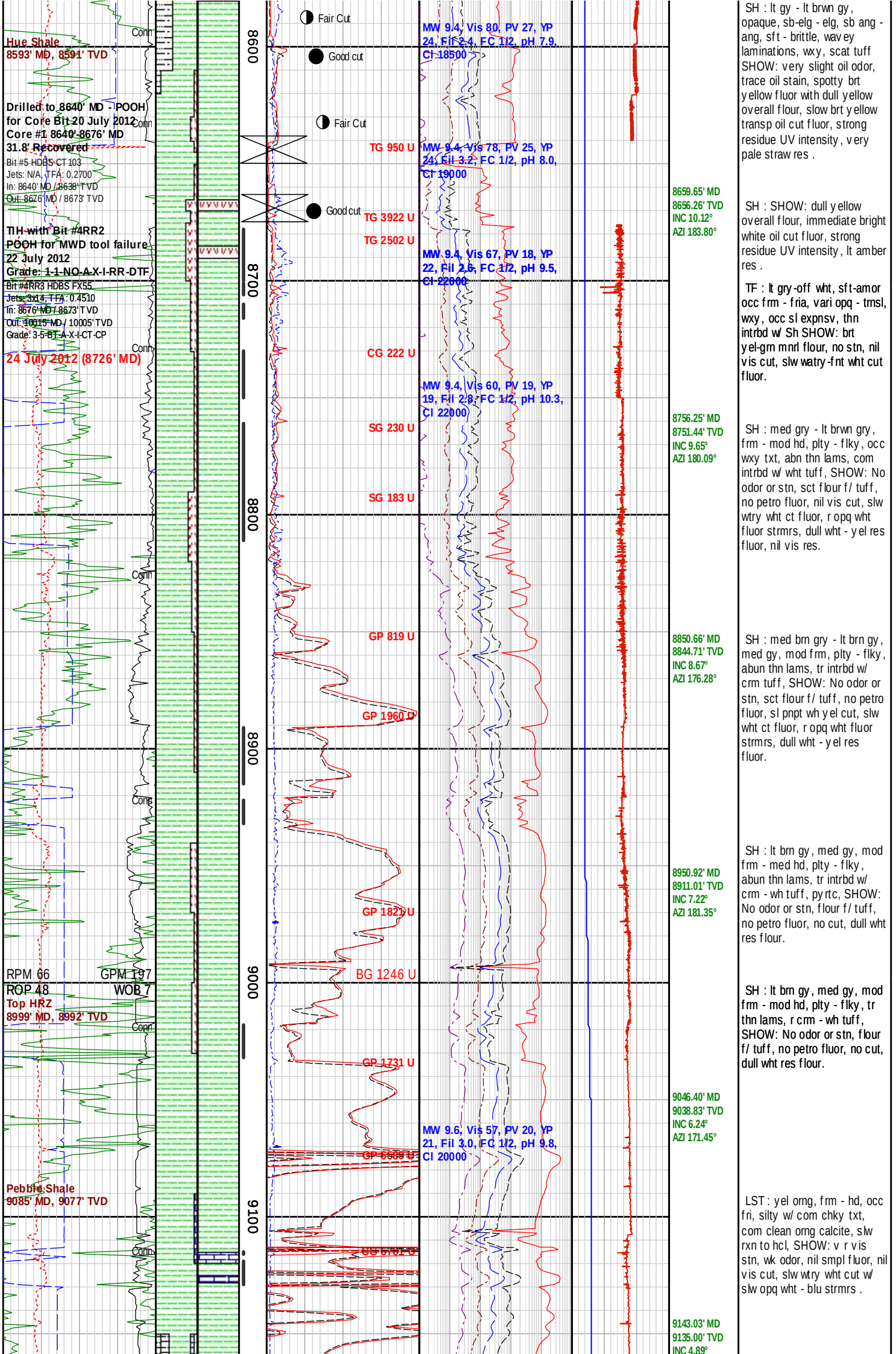
SLTST : dk - med gy, dk brn gy, frm - hd, w srt, mod - w cmnt, v sl calc, occ intrbd lt gy - tan v f gr sst, tr tan tuff w/ dull mnrl flour.

SST : lt - med gry, mod hd - hd, slty - v f gr - r f gr, sb rnd-rnd, mod - wl srt, wk calc, mod - wl cem, v r v fn blk flks SHOW: no spl fluor, no vis cut or cut fluor, no odor, v r lt brn stn .

TF : lt gry - lt tan gry, sft, amorph, cly to slty txt, wk calc, tr vari hued frags, occ tf Sltst, slt fizz with HCL.

SST : lt - med gry, tn gy, mod hd - hd, v f gr - r f gr, sb rnd-rnd, mod - wl srt, wk calc, ply cem, tuffaceous cem SHOW: no fluor, no vis cut or cut fluor, no odor, no stn .

TF : lt gry - lt tan gry, sft, amorph, cly txt, wk calc, slt fizz with HCL.



SH : lt gy - lt brwn gy, opaque, sb-elg - elg, sb ang - ang, sft - brittle, wavey laminations, wxy, scat tuff SHOW: very slight oil odor, trace oil stain, spotty brt yellow fluor with dull yellow overall flour, slow brt yellow transp oil cut fluor, strong residue UV intensity, very pale straw res .

SH : SHOW: dull yellow overall flour, immediate bright white oil cut fluor, strong residue UV intensity, lt amber res .

TF : lt gry-off wht, sft-amor occ frm - fria, vari opq - trnsl, wxy, occ sl expnsv, thn intrbd w/ Sh SHOW: brt yel-grn mnrl flour, no stn, nil vis cut, slw watry-fnt wht cut fluor.

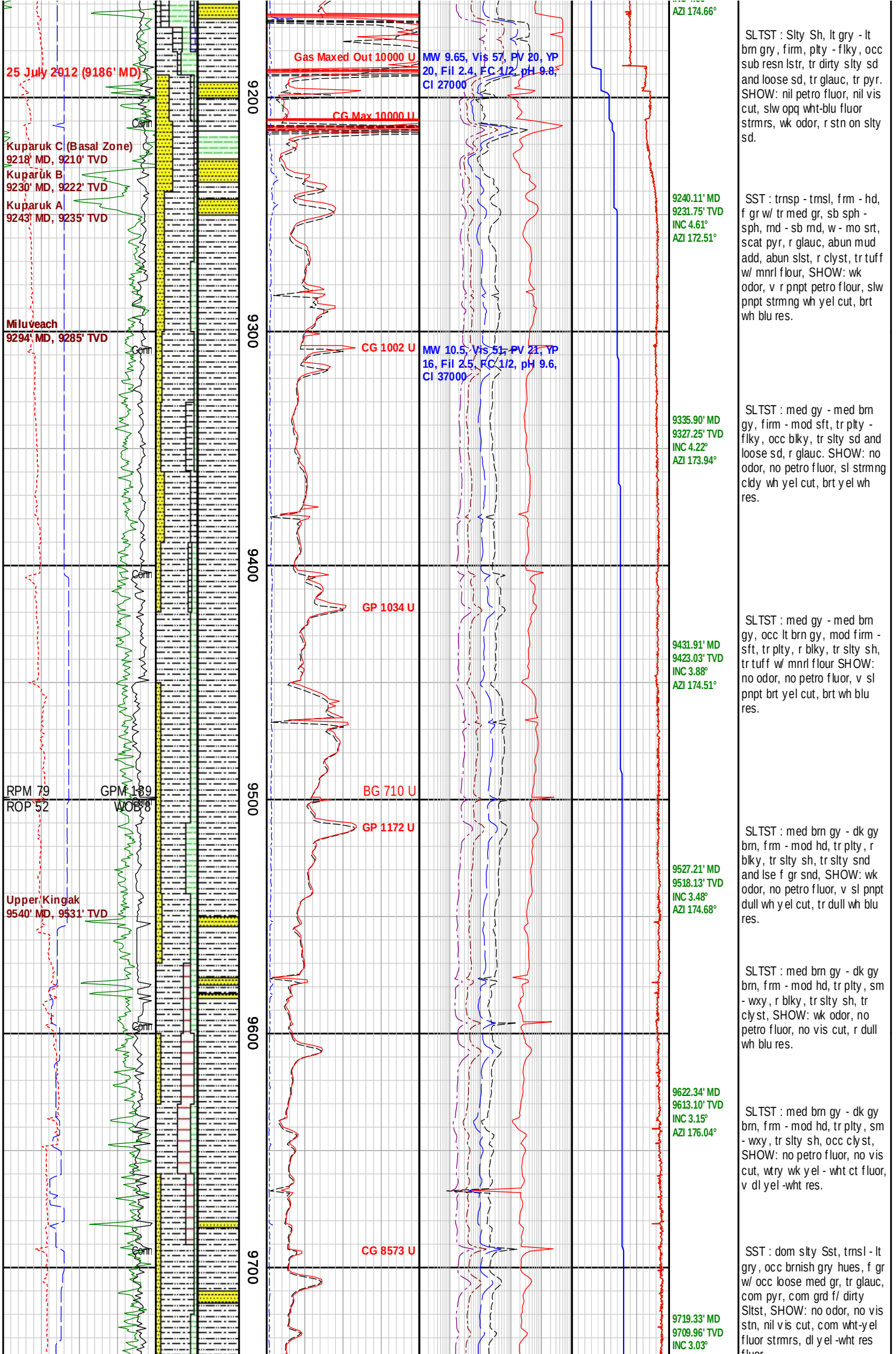
SH : med gry - lt brwn gry, frm - mod hd, plty - flky, occ wxy txt, abn thn lams, com intrbd w/ wht tuff, SHOW: No odor or stn, sct flour f/ tuff, no petro fluor, nil vis cut, slw wtry wht ct fluor, r opq wht fluor strmrs, dull wht - yel res fluor, nil vis res.

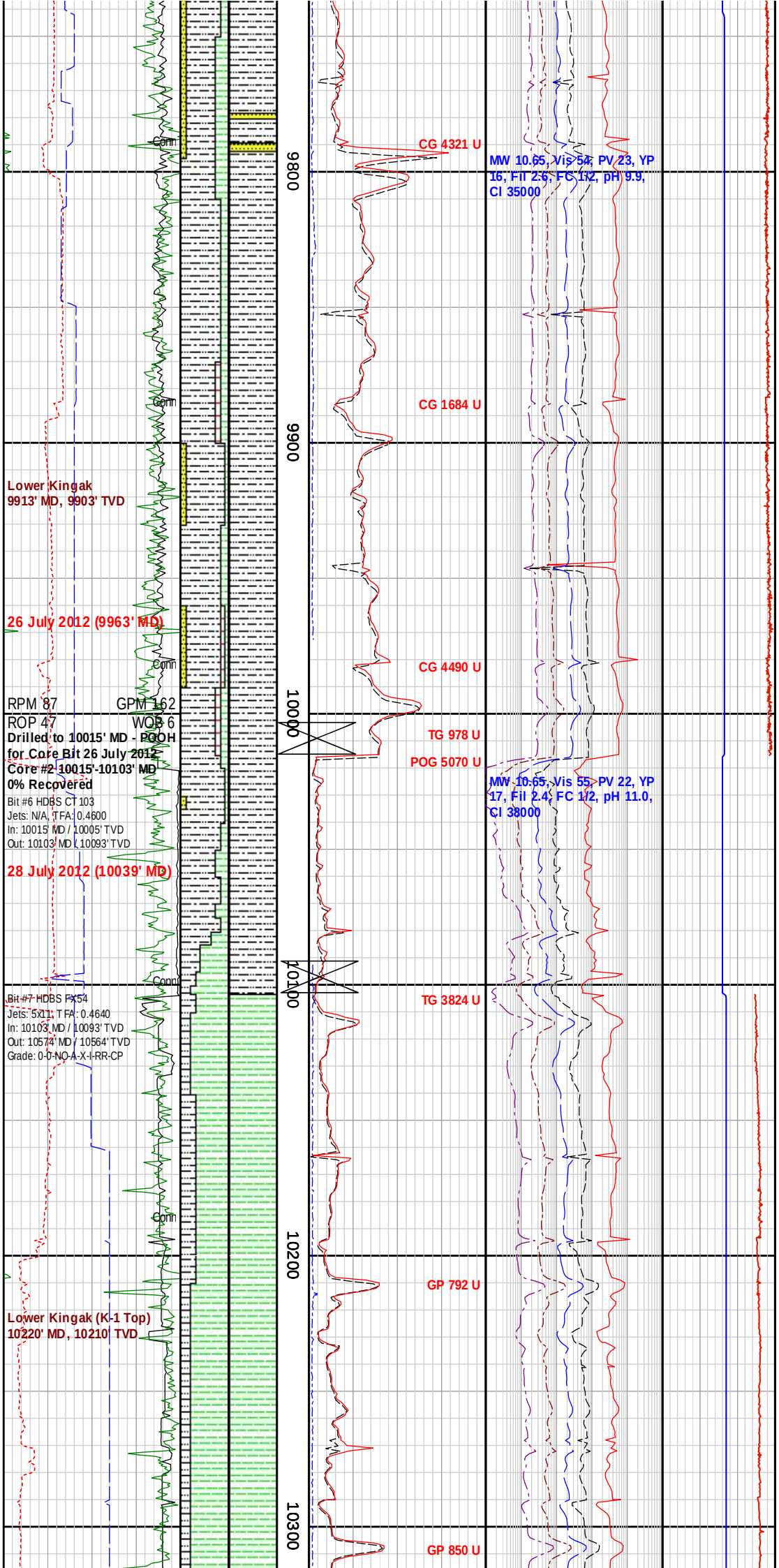
SH : med brn gry - lt brn gy, med gy, mod frm, plty - flky, abun thn lams, tr intrbd w/ crm tuff, SHOW: No odor or stn, sct flour f/ tuff, no petro fluor, sl pnpt wh yel cut, slw wht ct fluor, r opq wht fluor strmrs, dull wht - yel res fluor.

SH : lt brn gy, med gy, mod frm - med hd, plty - flky, abun thn lams, tr intrbd w/ crm - wh tuff, pyrtc, SHOW: No odor or stn, flour f/ tuff, no petro fluor, no cut, dull wht res flour.

SH : lt brn gy, med gy, mod frm - mod hd, plty - flky, tr thn lams, r crm - wh tuff, SHOW: No odor or stn, flour f/ tuff, no petro fluor, no cut, dull wht res flour.

LST : yel orng, frm - hd, occ fri, silty w/ com chky txt, com clean orng calcite, slw rxn to hcl, SHOW: v r vis stn, wk odor, nil smpl fluor, nil vis cut, slw wtry wht cut w/ slw opq wht - blu strmrs .


25 July 2012 (9186' MD)
Kuparuk C (Basal Zone)
9218' MD, 9210' TVD
Kuparuk B
9230' MD, 9222' TVD
Kuparuk A
9243' MD, 9235' TVD
Miluveach
9294' MD, 9285' TVD
Upper Kingak
9540' MD, 9531' TVD
Gas Maxed Out 10000 U
CG Max 10000 U
CG 1002 U
GP 1034 U
BG 710 U
GP 1172 U
CG 8573 U
MW 9.65, Vis 57, PV 20, YP 20, Fil 2.4, FC 1/2, pH 9.8, Cl 27000
MW 10.5, Vis 51, PV 21, YP 16, Fil 2.5, FC 1/2, pH 9.6, Cl 37000
RPM 79
GPM 139
ROP 52
WOB 6
9200
9300
9400
9500
9600
9700
AZI 174.66°
9240.11' MD
9231.75' TVD
INC 4.61°
AZI 172.51°
9335.90' MD
9327.25' TVD
INC 4.22°
AZI 173.94°
9431.91' MD
9423.03' TVD
INC 3.88°
AZI 174.51°
9527.21' MD
9518.13' TVD
INC 3.48°
AZI 174.68°
9622.34' MD
9613.10' TVD
INC 3.15°
AZI 176.04°
9719.33' MD
9709.96' TVD
INC 3.03°
SLTST : Slty Sh, lt gry - lt brn gry, firm, plty - flky, occ sub resn lstr, tr dirty slty sd and loose sd, tr glauc, tr pyr. SHOW: nil petro fluor, nil vis cut, slw opq wht-blu fluor strmrs, wk odor, r stn on slty sd.
SST : trnsp - trnsl, frm - hd, f gr w/ tr med gr, sb sph - sph, rnd - sb rnd, w - mo srt, scat pyr, r glauc, abun mud add, abun slst, r clyst, tr tuff w/ mnrl flour, SHOW: wk odor, v r pnpt petro flour, slw pnpt strmng wh yel cut, brt wh blu res.
SLTST : med gy - med brn gy, firm - mod sft, tr plty - flky, occ blky, tr slty sd and loose sd, r glauc. SHOW: no odor, no petro fluor, sl strmng cldy wh yel cut, brt yel wh res.
SLTST : med gy - med brn gy, occ lt brn gy, mod firm - sft, tr plty, r blky, tr slty sh, tr tuff w/ mnrl flour SHOW: no odor, no petro fluor, v sl pnpt brt yel cut, brt wh blu res.
SLTST : med brn gy - dk gy brn, frm - mod hd, tr plty, r blky, tr slty sh, tr slty snd and lse f gr snd, SHOW: wk odor, no petro fluor, v sl pnpt dull wh yel cut, tr dull wh blu res.
SLTST : med brn gy - dk gy brn, frm - mod hd, tr plty, sm - wxy, r blky, tr slty sh, tr clyst, SHOW: wk odor, no petro fluor, no vis cut, r dull wh blu res.
SLTST : med brn gy - dk gy brn, frm - mod hd, tr plty, sm - wxy, tr slty sh, occ clyst, SHOW: no petro fluor, no vis cut, wtry wk yel - wht ct fluor, v dl yel -wht res.
SST : dom slty Sst, trnsl - lt gry, occ brnish gry hues, f gr w/ occ loose med gr, tr glauc, com pyr, com grd f/ dirty Sltst, SHOW: no odor, no vis stn, nil vis cut, com wht-yel fluor strmrs, dl yel -wht res



rfluor.

SLTST : med brn gy - lt gy brn, frm fri - mod hd, plty - flky, slty - occ wxy, occ slty Sh, tr lams, sct slty Sst, com glauc + pyr, SHOW: no petro odor or fluor, nil vis cut, wtry yel - wht cut, r wht - blu fluor strmrs f/ sdy smpls.

SLTST : med brn gy - med brn - dsky yel brn, fria-frm, rnd-plty, crmbly, slty-grtty, sb resn lstr, com pyr, incrs orgnc, com slty Sh, tr lams when Shly. SHOW: no vis cut, v wk slw wtry wht-yel cut fluor.

SH : com slty Sh, yelish brn-dk brn gry, firm - md hd, plty rnd ctgs, slty txt, com lams, com pyr, grdg f/ Sltst SHOW: v wk sheen + odor, dl yel fluor, nil vis ct, abd yel-wht fluor strmrs, r stn.

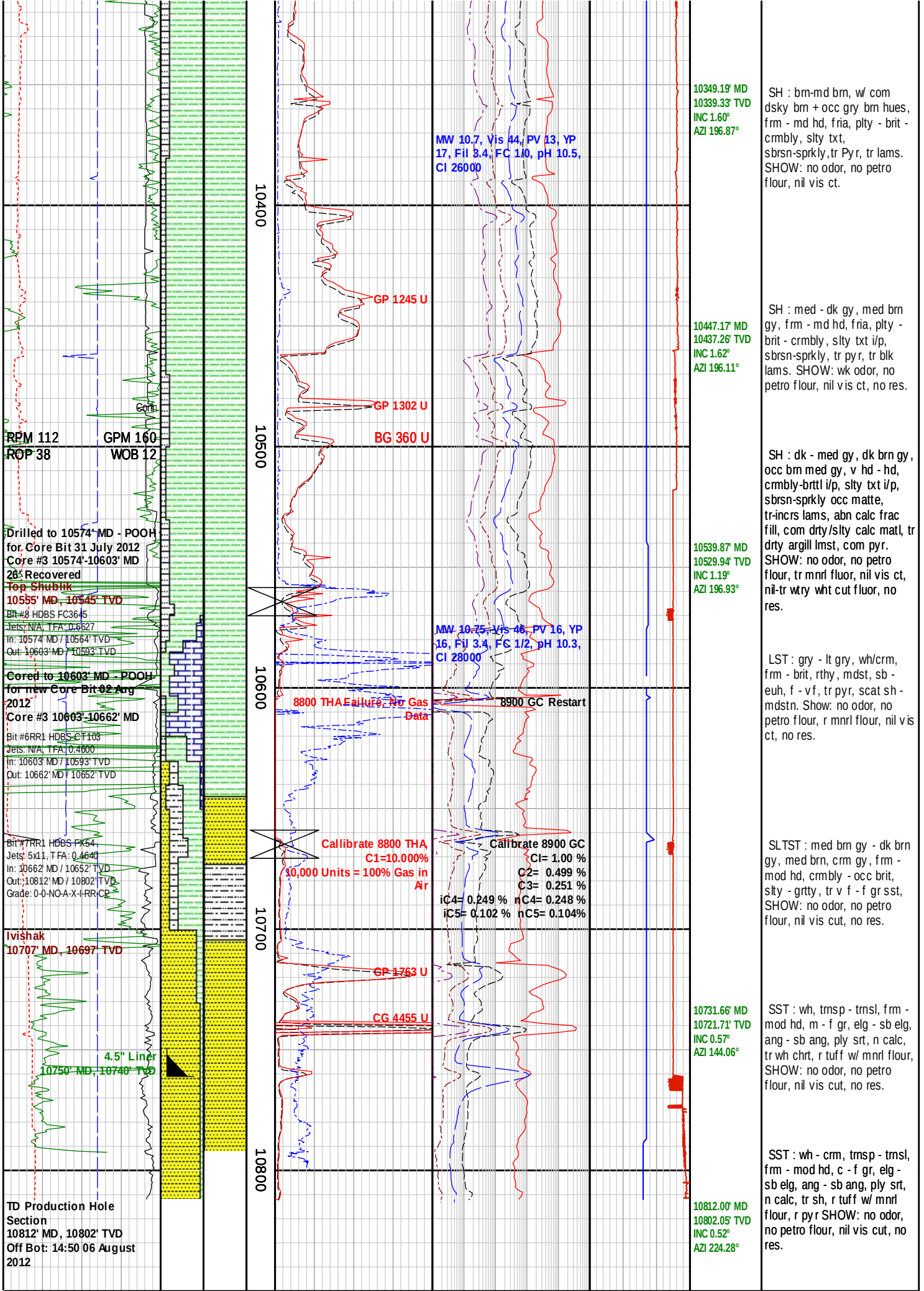
SLTST : med brn gy - med brn, fria-frm-md hd, rnd-plty, crmbly-occ flky, slty-grtty, sb resn lstr, com pyr, r glauc, com grdg to slty lam Sh . SHOW: no vis cut, v fnt slw yel fluor strmrs, r stn.

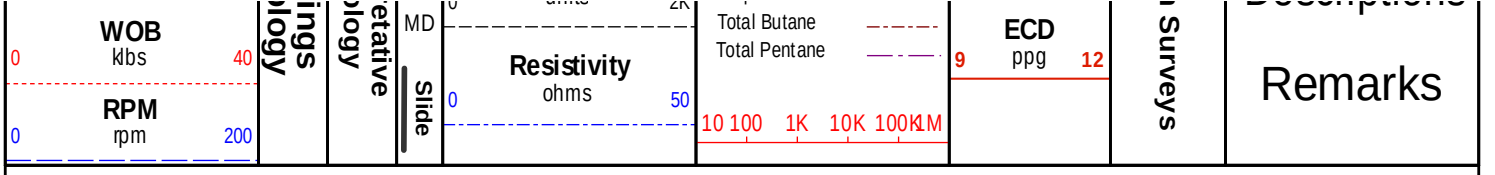
SLTST : gryish brn-dsky brn, fria-frm, brit - crmbly -occ flky, slty - grtty, sb resn lstr, tr pyr, com as a slty Sh, tr lams slty lams, com sprkls f/ mica, com Tf, poss slough. SHOW: tr fluor f/ Tf, nil vis ct, nil to v wtry wht ct fluor, tr opq wht-blu slw fluor strmrs, dl wht resid fluor, no vis stn, no odor.

SH : lt gy - med gy, ooc blk, occ lt brn gy, frm - md hd, fria ip, plty - brit - crmbly, slty txt, tr tuff w/ mnrl flour, SHOW: no odor, no petro flour, nil vis ct.

SH : slty Sh, pl brn-md brn, w/ com dsky brn + occ gry brn hues, frm - md hd, fria, plty - brit - crmbly, slty txt, sbrsn-sprkly, w/ abn mica sprkls, tr Pyr, v orgnc, tr lams. SHOW: no odor, no petro flour, nil vis ct, v dl wtry yel-wht cut fluor.

SH : slty Sh, pl brn-md brn, w/ com dsky brn + occ gry brn hues, frm - md hd, fria, plty - brit - crmbly, slty txt, sbrsn-sprkly,tr Pyr, tr lams. SHOW: no odor, no petro flour, nil vis ct, v dl wtry yel-wht cut fluor.


RPM 112
GPM 160
ROP 38
WOB 12
Comb
Drilled to 10574' MD - POOH for Core Bit 31 July 2012
Core #3 10574'-10603' MD
26' Recovered
Top Shublik
10555' MD, 10545' TVD
Bit #8 HDBS FC3645
Jets: N/A, TFA: 0.6627
In: 10574' MD / 10564' TVD
Out: 10603' MD / 10593' TVD
Cored to 10603' MD - POOH for new Core Bit 02 Aug 2012
Core #3 10603'-10662' MD
Bit #6RR1 HDBS CT103
Jets: N/A, TFA: 0.4600
In: 10603' MD / 10593' TVD
Out: 10662' MD / 10652' TVD
Bit #7RR1 HDBS FX54
Jets: 5x11, TFA: 0.4640
In: 10662' MD / 10652' TVD
Out: 10812' MD / 10802' TVD
Grade: 0-0-NO-A-X-I-RR-CP
Ivishak
10707' MD, 10697' TVD
4.5" Liner
10750' MD, 10740' TVD
TD Production Hole Section
10812' MD, 10802' TVD
Off Bot: 14:50 06 August 2012
10400
10500
10600
10700
10800
GP 1245 U
GP 1302 U
BG 360 U
MW 10.7, Vis 44, PV 13, YP 17, Fil 3.4, FC 1/0, pH 10.5, Cl 26000
MW 10.75, Vis 46, PV 16, YP 16, Fil 3.4, FC 1/2, pH 10.3, Cl 28000
8800 THA Failure, No Gas Data
8900 GC Restart
Calibrate 8800 THA, C1=10.000% 10,000 Units = 100% Gas in Air
Calibrate 8900 GC
Cl= 1.00 %
C2= 0.499 %
C3= 0.251 %
iC4= 0.249 % nC4= 0.248 %
iC5= 0.102 % nC5= 0.104%
GP 1763 U
CG 4455 U
10349.19' MD
10339.33' TVD
INC 1.60°
AZI 196.87°
10447.17' MD
10437.26' TVD
INC 1.62°
AZI 196.11°
10539.87' MD
10529.94' TVD
INC 1.19°
AZI 196.93°
10731.66' MD
10721.71' TVD
INC 0.57°
AZI 144.06°
10812.00' MD
10802.05' TVD
INC 0.52°
AZI 224.28°
SH : brn-md brn, w/ com dsky brn + occ gry brn hues, frm - md hd, fria, plty - brit - crmbly, slty txt, sbrsn-sprkly,tr Pyr, tr lams. SHOW: no odor, no petro flour, nil vis ct.
SH : med - dk gy, med brn gy, frm - md hd, fria, plty - brit - crmbly, slty txt i/p, sbrsn-sprkly, tr pyr, tr blk lams. SHOW: wk odor, no petro flour, nil vis ct, no res.
SH : dk - med gy, dk brn gy, occ brn med gy, v hd - hd, crmbly-brttl i/p, slty txt i/p, sbrsn-sprkly occ matte, tr-incrs lams, abn calc frac fill, com drty/slty calc matl, tr drty argill lmst, com pyr. SHOW: no odor, no petro flour, tr mnrl fluor, nil vis ct, nil-tr wtry wht cut fluor, no res.
LST : gry - lt gry, wh/crm, frm - brit, rthy, mdst, sb - euh, f - vf, tr pyr, scat sh - mdstn. Show: no odor, no petro flour, r mnrl flour, nil vis ct, no res.
SLTST : med brn gy - dk brn gy, med brn, crm gy, frm - mod hd, crmbly - occ brit, slty - grtty, tr v f - f gr sst, SHOW: no odor, no petro flour, nil vis cut, no res.
SST : wh, trnsp - trnsl, frm - mod hd, m - f gr, elg - sb elg, ang - sb ang, ply srt, n calc, tr wh chrt, r tuff w/ mnrl flour, SHOW: no odor, no petro flour, nil vis cut, no res.
SST : wh - crm, trnsp - trnsl, frm - mod hd, c - f gr, elg - sb elg, ang - sb ang, ply srt, n calc, tr sh, r tuff w/ mnrl flour, r pyr SHOW: no odor, no petro flour, nil vis cut, no res.
ROP
500 ft/hr 0
Gamma
0 api 150
Cuttings Lithology
Interpreted Lithology
DEPTH
Gas Max
0 units 2K
Gas Avg
0 units 2K
Chromatograph
Gas Analysis
(ppm)
Methane
Ethane
Propane
MW In
9 ppg 12
Deviation
Lithologic Descriptions



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Great Bear Petroleum, LLC
Alcor 1
Exploration
North Slope Borough Alaska
USA
AK-XX-0009285348

Measured Depth (feet)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (feet)*	*Latitude (feet)*	*Departure (feet)*	*Vertical Section (feet)*	*Dogleg (deg/100ft)*
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
139.03	0.37	207.79	139.03	0.40 S	0.21 W	0.24	0.27
231.15	0.19	271.35	231.15	0.66 S	0.50 W	0.32	0.36
322.39	0.46	261.45	322.39	0.71 S	1.01 W	0.11	0.30
416.62	0.80	219.77	416.61	1.27 S	1.81 W	0.19	0.58
503.87	1.11	201.58	503.85	2.52 S	2.51 W	0.93	0.49
592.94	1.04	196.68	592.90	4.10 S	3.06 W	2.02	0.13
685.39	0.95	186.77	685.34	5.66 S	3.39 W	3.21	0.21
780.20	0.94	208.49	780.14	7.13 S	3.85 W	4.25	0.38
877.37	0.65	225.85	877.30	8.21 S	4.63 W	4.80	0.38
976.87	0.55	217.66	976.79	8.98 S	5.33 W	5.12	0.13
1070.52	0.84	233.02	1070.44	9.75 S	6.15 W	5.37	0.37
1161.77	0.84	184.97	1161.68	10.82 S	6.74 W	6.00	0.75
1259.04	0.65	208.98	1258.94	12.01 S	7.07 W	6.87	0.37
1355.56	0.78	205.42	1355.45	13.09 S	7.62 W	7.53	0.14
1451.70	0.70	209.13	1451.58	14.19 S	8.18 W	8.20	0.10
1547.61	0.87	214.97	1547.48	15.30 S	8.89 W	8.81	0.20
1642.98	0.86	205.66	1642.84	16.54 S	9.61 W	9.52	0.15
1739.38	0.64	193.71	1739.23	17.71 S	10.05 W	10.31	0.28
1836.78	0.69	209.38	1836.63	18.75 S	10.47 W	11.01	0.19
1931.60	0.71	175.26	1931.44	19.84 S	10.70 W	11.83	0.43
2028.33	0.48	183.94	2028.17	20.84 S	10.68 W	12.71	0.25
2123.91	0.46	205.20	2123.74	21.58 S	10.87 W	13.26	0.18
2217.21	0.50	180.79	2217.04	22.33 S	11.04 W	13.82	0.22
2312.62	0.53	181.16	2312.45	23.19 S	11.05 W	14.56	0.03
2409.08	0.22	169.25	2408.90	23.82 S	11.02 W	15.11	0.33
2463.32	0.57	179.55	2463.14	24.19 S	11.00 W	15.45	0.66
2510.66	0.67	119.99	2510.48	24.56 S	10.76 W	15.89	1.31
2606.45	1.05	112.70	2606.26	25.18 S	9.47 W	17.07	0.41
2700.00	0.12	96.30	2699.80	25.52 S	8.58 W	17.81	1.00
2799.23	0.18	69.63	2799.03	25.48 S	8.33 W	17.90	0.09
2894.32	0.50	111.12	2894.12	25.58 S	7.80 W	18.25	0.40
2990.67	0.53	133.19	2990.47	26.03 S	7.08 W	19.00	0.21

3084.68	0.88	117.17	3084.47	26.66 S	6.13 W	20.03	0.42
3180.11	0.85	116.51	3179.89	27.31 S	4.84 W	21.23	0.03
3275.33	0.61	141.14	3275.10	28.02 S	3.89 W	22.32	0.41
3372.36	0.83	141.77	3372.12	28.97 S	3.13 W	23.53	0.23
3468.66	0.65	129.82	3468.42	29.87 S	2.28 W	24.73	0.25
3560.34	1.00	128.73	3560.09	30.71 S	1.26 W	25.96	0.38
3656.27	0.94	157.86	3656.00	31.96 S	0.31 W	27.52	0.51
3755.14	0.94	121.17	3754.86	33.13 S	0.69 E	29.04	0.60
3851.82	0.94	107.39	3851.53	33.78 S	2.13 E	30.32	0.23
3948.95	0.63	109.99	3948.65	34.20 S	3.39 E	31.31	0.32
4043.92	0.19	103.09	4043.62	34.41 S	4.03 E	31.82	0.47
4140.04	0.15	126.06	4139.74	34.52 S	4.29 E	32.04	0.08
4236.56	0.32	102.08	4236.26	34.65 S	4.66 E	32.34	0.20
4331.54	0.29	159.75	4331.23	34.93 S	5.00 E	32.75	0.31
4425.85	0.62	116.22	4425.54	35.38 S	5.54 E	33.41	0.48
4523.07	0.27	149.90	4522.76	35.81 S	6.13 E	34.08	0.43
4618.45	0.53	131.14	4618.14	36.30 S	6.57 E	34.72	0.30
4710.67	0.31	184.86	4710.35	36.83 S	6.87 E	35.33	0.46
4808.64	0.68	180.96	4808.32	37.67 S	6.84 E	36.05	0.38
4903.55	0.33	180.86	4903.23	38.51 S	6.83 E	36.76	0.37
4999.95	0.55	168.26	4999.62	39.24 S	6.92 E	37.44	0.25
5095.22	0.47	204.56	5094.89	40.04 S	6.85 E	38.10	0.34
5190.87	0.69	179.59	5190.53	40.98 S	6.69 E	38.83	0.35
5286.20	0.26	183.07	5285.86	41.77 S	6.68 E	39.51	0.45
5382.80	0.32	212.82	5382.46	42.21 S	6.52 E	39.82	0.17
5476.87	0.51	208.96	5476.53	42.80 S	6.18 E	40.15	0.20
5573.78	0.60	174.46	5573.43	43.68 S	6.02 E	40.84	0.35
5669.61	0.39	169.03	5669.26	44.50 S	6.13 E	41.60	0.22
5764.88	0.46	176.14	5764.53	45.20 S	6.22 E	42.25	0.09
5860.77	0.50	196.81	5860.41	45.98 S	6.12 E	42.88	0.18
5956.68	0.61	212.35	5956.32	46.82 S	5.73 E	43.41	0.19
6054.74	0.58	217.79	6054.37	47.65 S	5.14 E	43.84	0.07
6149.17	0.43	229.35	6148.80	48.26 S	4.58 E	44.08	0.19
6241.53	0.53	187.93	6241.16	48.91 S	4.26 E	44.48	0.38
6336.73	0.44	156.77	6336.35	49.68 S	4.34 E	45.19	0.29
6388.96	0.51	174.23	6388.58	50.09 S	4.44 E	45.61	0.31
6437.33	0.65	159.50	6436.95	50.57 S	4.56 E	46.07	0.42
6534.86	0.49	172.94	6534.48	51.50 S	4.81 E	47.00	0.21
6630.89	0.45	184.45	6630.50	52.28 S	4.83 E	47.69	0.11
6726.83	0.44	180.68	6726.44	53.03 S	4.79 E	48.32	0.03
6822.44	0.40	162.88	6822.05	53.71 S	4.89 E	48.96	0.14
6918.13	0.56	174.04	6917.73	54.50 S	5.04 E	49.71	0.19
7011.46	0.32	185.63	7011.06	55.21 S	5.06 E	50.34	0.27
7109.41	0.54	204.95	7109.01	55.90 S	4.84 E	50.83	0.27
7205.30	0.45	211.55	7204.89	56.63 S	4.45 E	51.27	0.11
7301.43	0.57	216.27	7301.02	57.34 S	3.97 E	51.64	0.13
7394.03	0.88	237.89	7393.61	58.09 S	3.09 E	51.85	0.44
7492.35	1.06	248.06	7491.92	58.83 S	1.61 E	51.75	0.25
7589.06	0.64	283.13	7588.62	59.04 S	0.25 E	51.26	0.67
7684.78	0.72	280.36	7684.33	58.81 S	0.86 W	50.50	0.09
7779.85	0.64	297.13	7779.40	58.46 S	1.92 W	49.67	0.22
7877.15	0.79	282.23	7876.69	58.07 S	3.06 W	48.76	0.24
7973.13	0.91	268.39	7972.66	57.95 S	4.47 W	47.95	0.25
8066.71	1.07	262.34	8066.22	58.09 S	6.07 W	47.27	0.20
8163.21	1.06	183.52	8162.71	59.10 S	7.02 W	47.67	1.40
8256.61	2.03	187.48	8256.08	61.60 S	7.29 W	49.70	1.04
8276.71	2.22	188.14	8276.16	62.34 S	7.39 W	50.29	0.95
8360.29	3.67	182.39	8359.63	66.62 S	7.73 W	53.82	1.77
8396.65	4.99	183.01	8395.88	69.36 S	7.86 W	56.13	3.63
8428.91	5.96	184.13	8428.00	72.43 S	8.06 W	58.70	3.02
8457.38	6.62	184.77	8456.30	75.54 S	8.30 W	61.27	2.33
8491.89	7.22	186.53	8490.55	79.68 S	8.71 W	64.64	1.84
8525.32	8.06	186.68	8523.69	84.09 S	9.23 W	68.21	2.51
8554.46	8.67	185.91	8552.52	88.30 S	9.69 W	71.63	2.13
8598.25	9.50	184.77	8595.76	95.19 S	10.33 W	77.27	1.94
8659.65	10.12	183.80	8656.26	105.62 S	11.11 W	85.92	1.04
8693.51	9.83	182.61	8689.61	111.48 S	11.44 W	90.82	1.05
8723.57	9.80	181.00	8719.23	116.60 S	11.60 W	95.18	0.92
8756.25	9.65	180.09	8751.44	122.12 S	11.65 W	99.93	0.66
8790.22	8.91	178.99	8784.96	127.60 S	11.61 W	104.70	2.24
8825.57	8.56	177.37	8819.90	132.96 S	11.44 W	109.43	1.21
8850.66	8.67	176.28	8844.71	136.71 S	11.23 W	112.78	0.78
8950.92	7.22	181.35	8944.01	150.55 S	10.89 W	124.94	1.60
9046.40	6.24	171.45	9038.83	161.68 S	10.26 W	134.89	1.59
9143.03	4.89	174.66	9135.00	170.98 S	9.10 W	143.52	1.43
9240.11	4.61	172.51	9231.75	178.97 S	8.20 W	150.89	0.34

9335.90	4.22	173.94	9327.25	186.29 S	7.33 W	157.66	0.42
9431.91	3.88	174.51	9423.03	193.03 S	6.64 W	163.85	0.36
9527.21	3.48	174.68	9518.13	199.12 S	6.07 W	169.41	0.42
9622.34	3.07	176.04	9613.10	204.54 S	5.62 W	174.32	0.44
9719.33	3.05	174.83	9709.96	209.70 S	5.21 W	179.00	0.07
9815.52	2.76	177.03	9806.02	214.56 S	4.86 W	183.38	0.32
9912.28	2.50	181.36	9902.68	219.00 S	4.79 W	187.26	0.34
10064.19	2.23	194.12	10054.46	225.18 S	5.59 W	192.21	0.39
10157.05	1.66	203.99	10147.27	228.16 S	6.58 W	194.30	0.71
10254.18	1.66	200.62	10244.36	230.76 S	7.65 W	196.02	0.10
10349.19	1.60	196.87	10339.33	233.32 S	8.52 W	197.80	0.13
10447.17	1.59	196.11	10437.27	235.93 S	9.29 W	199.68	0.02
10539.87	1.20	196.93	10529.94	238.09 S	9.93 W	201.23	0.42
10731.66	0.57	144.06	10721.71	240.79 S	9.95 W	203.55	0.51
10778.66	0.52	224.28	10768.71	241.13 S	9.97 W	203.84	1.50
10812.00	0.52	224.28	10802.05	241.35 S	10.18 W	203.92	0.00

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 DIRECTION OF 150.00 DEGREES (TRUE)
A TOTAL CORRECTION OF 20.87 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10812.00 FEET
IS 241.56 FEET ALONG 182.41 DEGREES (TRUE)

Date Printed:28 August 2012