HALLIBURTON | Sperry Drilling

Surface Data Logging
2" MD Drilling Engineering Log

1 : 600

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

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

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**

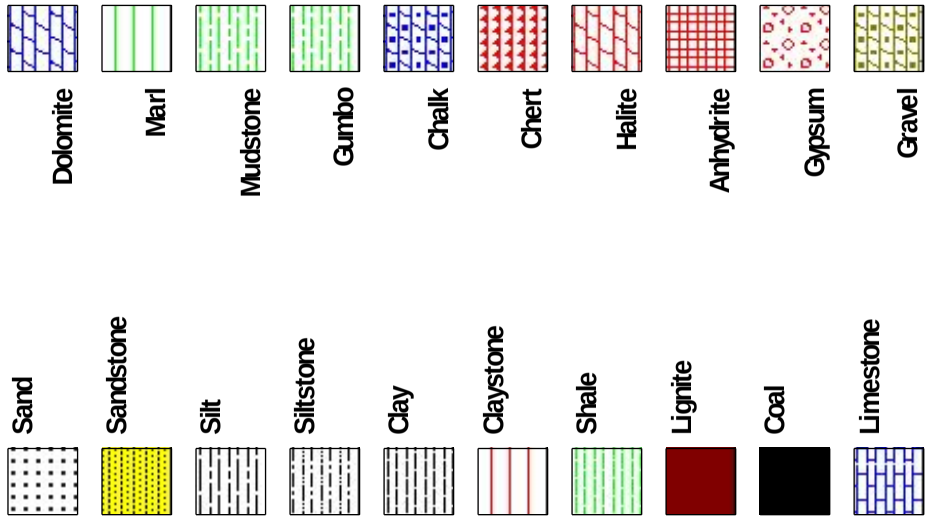
Run No.	Borehole Record (MD) Size	From	To
100	12.250 in	102.00 ft	2,510.00 ft
200	8.500 in	2,510.00 ft	6,364.00 ft
300	8.500 in	6,364.00 ft	8,320.00 ft
400	6.125 in	8,320.00 ft	8,348.00 ft
500	6.125 in	8,348.00 ft	8,640.00 ft
600	6.125 in	8,640.00 ft	8,676.00 ft
800	6.125 in	8,676.00 ft	10,015.00 ft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



Abbreviations and Symbols

Drilling Data

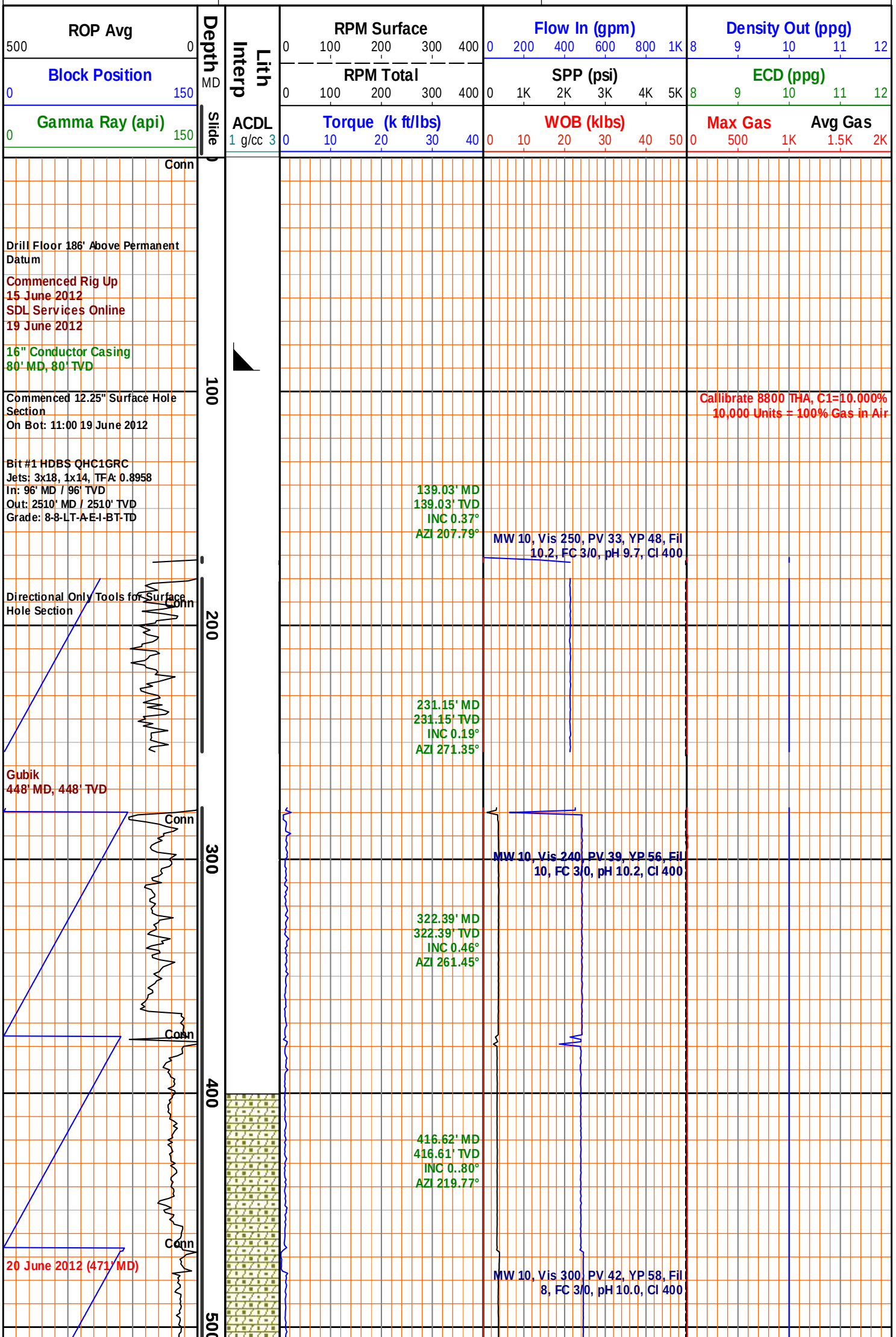
BG	Background Gas
BHT	Bottomhole Temp
C	Carbide Test
CB	Core Bit
CG	Connection Gas
CKF	Check For Flow
CO	Circulate Out
DB	Diamond Bit
DC	Depth Correction
DS	Direction Survey
DST	Drillstem Test
FLT	Flowline Temp.
LAT	Logged After Trip
NB	New Bit
NR	No Returns
PDC	Polycrystalline Diamond Compound Bit
PR	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

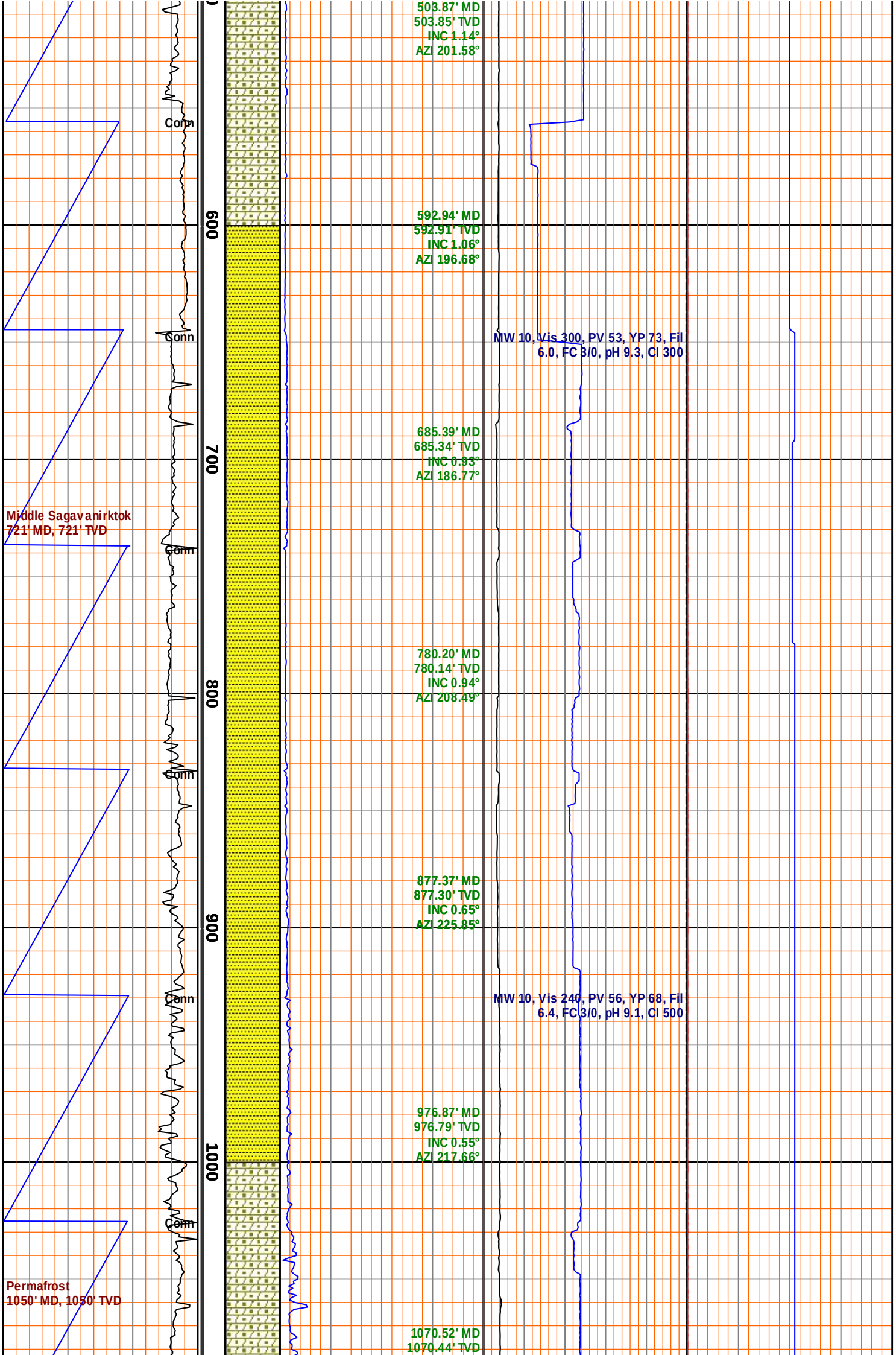
Mud Data

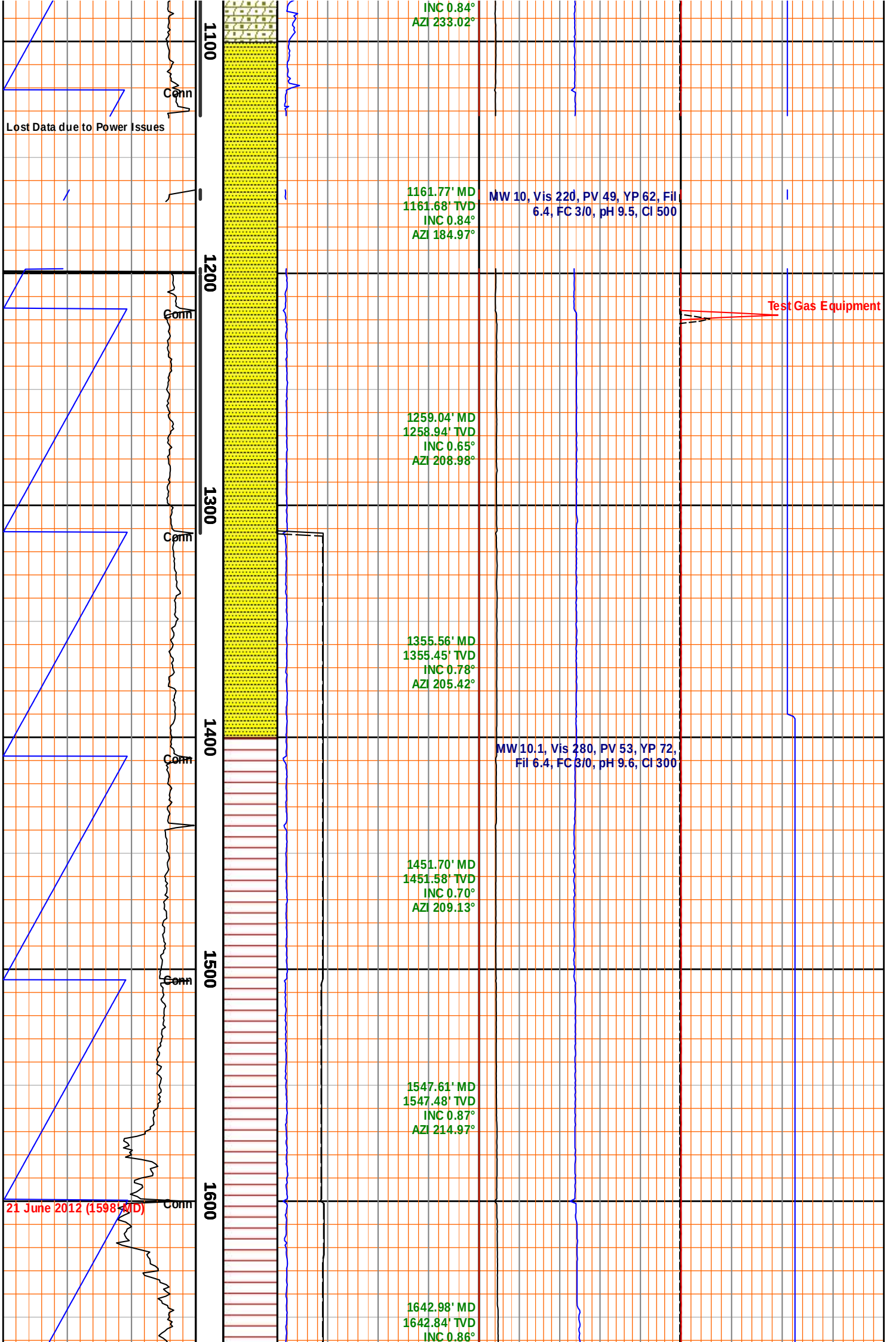
Cl-	Chloride Ion Conc
FC	Filter Cake
FL	Filtrate Loss
G	Gels
pH	Hydrogen Ion Content
PV	Plastic Viscosity
Rm	Mud Resistivity
Rmf	Filtrate Resistivity
S	Solids Content
Vis	Funnel Viscosity
MW	Mud Weight
YP	Yield Point

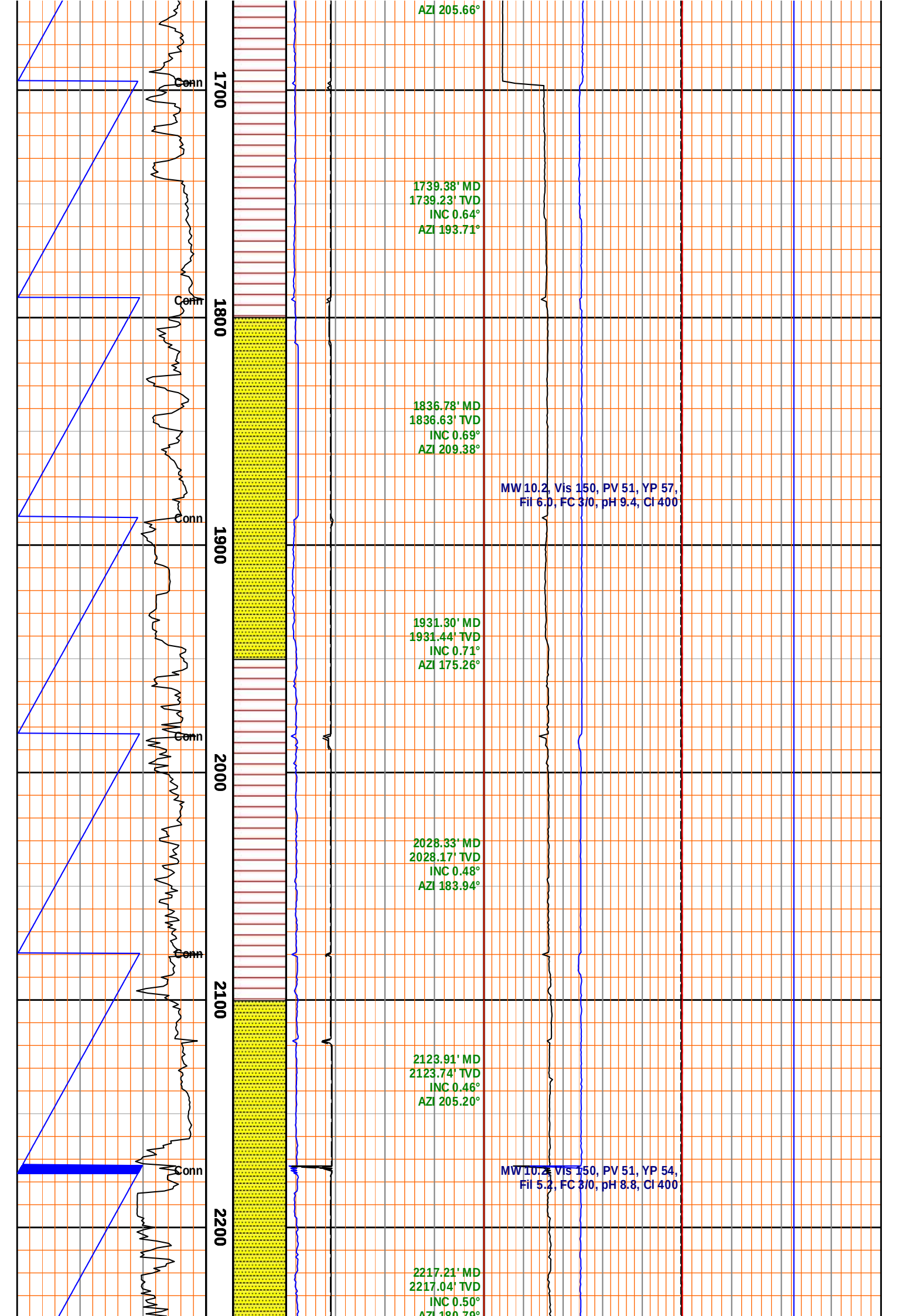
Engineering Data

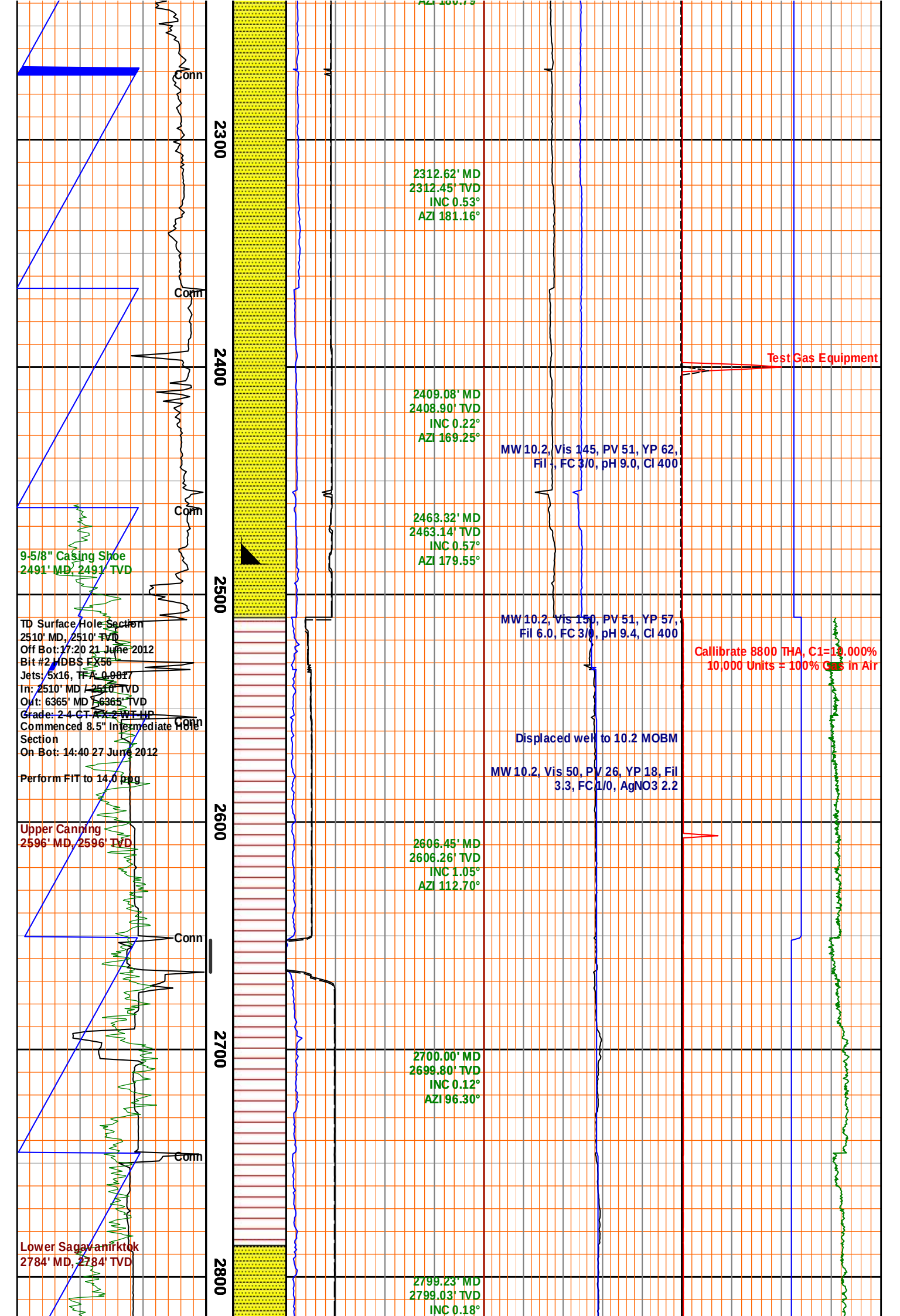
Water
Salt Water
Fresh Water
Hydrocarbons Smell
H2S Smell
Core No.
DST No.
Casing Seat
Side Wall Core
Gas Traces
Gas
Oil Traces
Oil
Bitumen
RFT Interval Tester
E-LOG Wireline Log Run
LOT Leakoff Test
PIT Pressure Integrity

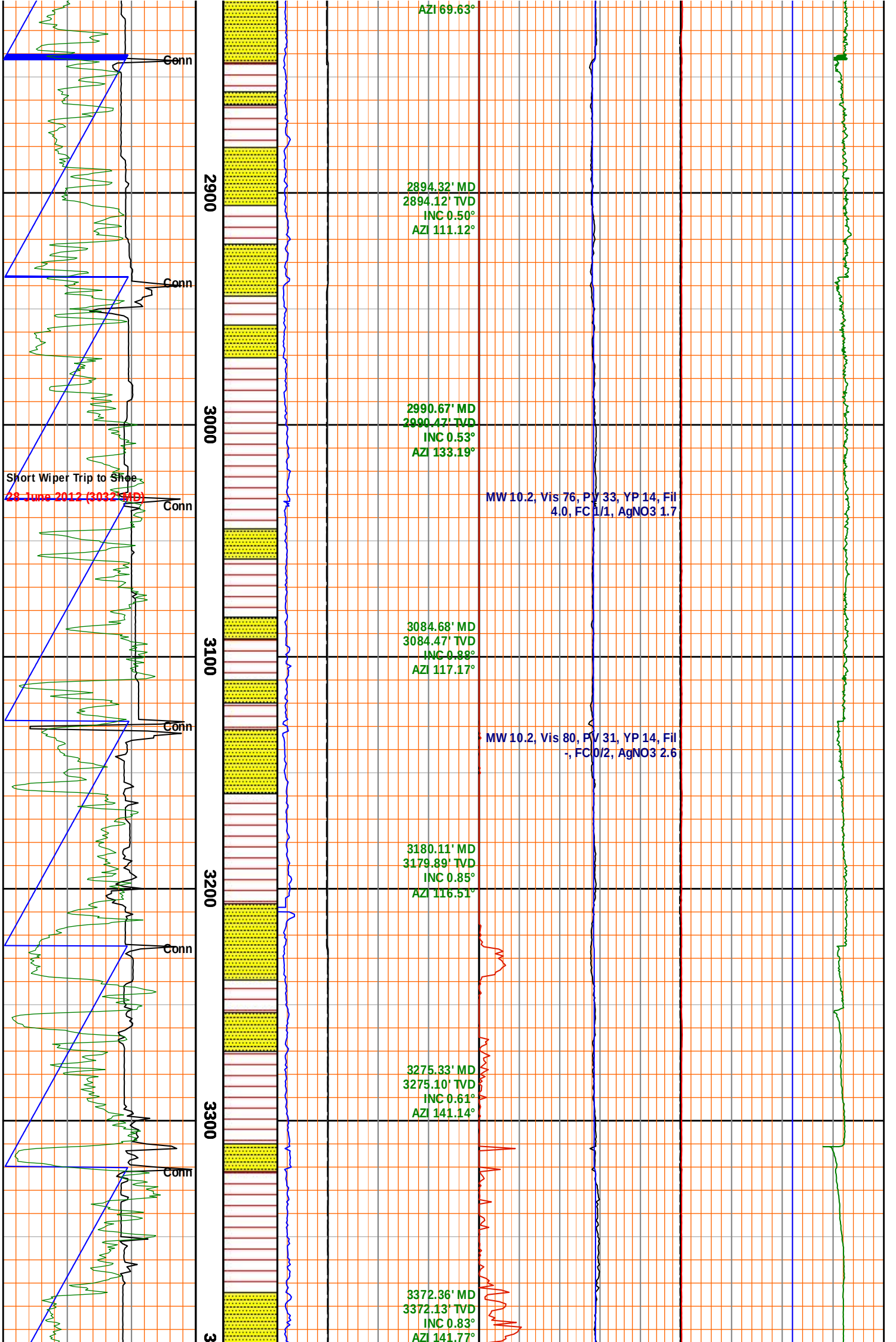

ROP Avg
500
0
Block Position
0
150
Gamma Ray (api)
0
150
Depth MD
Slide
Lith
Interp
ACDL
1 g/cc 3
RPM Surface
0 100 200 300 400
RPM Total
0 100 200 300 400
Torque (k ft/lbs)
0 10 20 30 40
Flow In (gpm)
0 200 400 600 800 1K
SPP (psi)
0 1K 2K 3K 4K 5K
WOB (klbs)
0 10 20 30 40 50
Density Out (ppg)
8 9 10 11 12
ECD (ppg)
8 9 10 11 12
Max Gas
Avg Gas
0 500 1K 1.5K 2K
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
Directional Only Tools for Surface Hole Section
Gubik
448' MD, 448' TVD
20 June 2012 (471' MD)
100
200
300
400
500
Calibrate 8800 THA, C1=10.000%
10,000 Units = 100% Gas in Air
139.03' MD
139.03' TVD
INC 0.37°
AZI 207.79°
MW 10, Vis 250, PV 33, YP 48, Fil 10.2, FC 3/0, pH 9.7, Cl 400
231.15' MD
231.15' TVD
INC 0.19°
AZI 271.35°
MW 10, Vis 240, PV 39, YP 56, Fil 10, FC 3/0, pH 10.2, Cl 400
322.39' MD
322.39' TVD
INC 0.46°
AZI 261.45°
416.62' MD
416.61' TVD
INC 0..80°
AZI 219.77°
MW 10, Vis 300, PV 42, YP 58, Fil 8, FC 3/0, pH 10.0, Cl 400

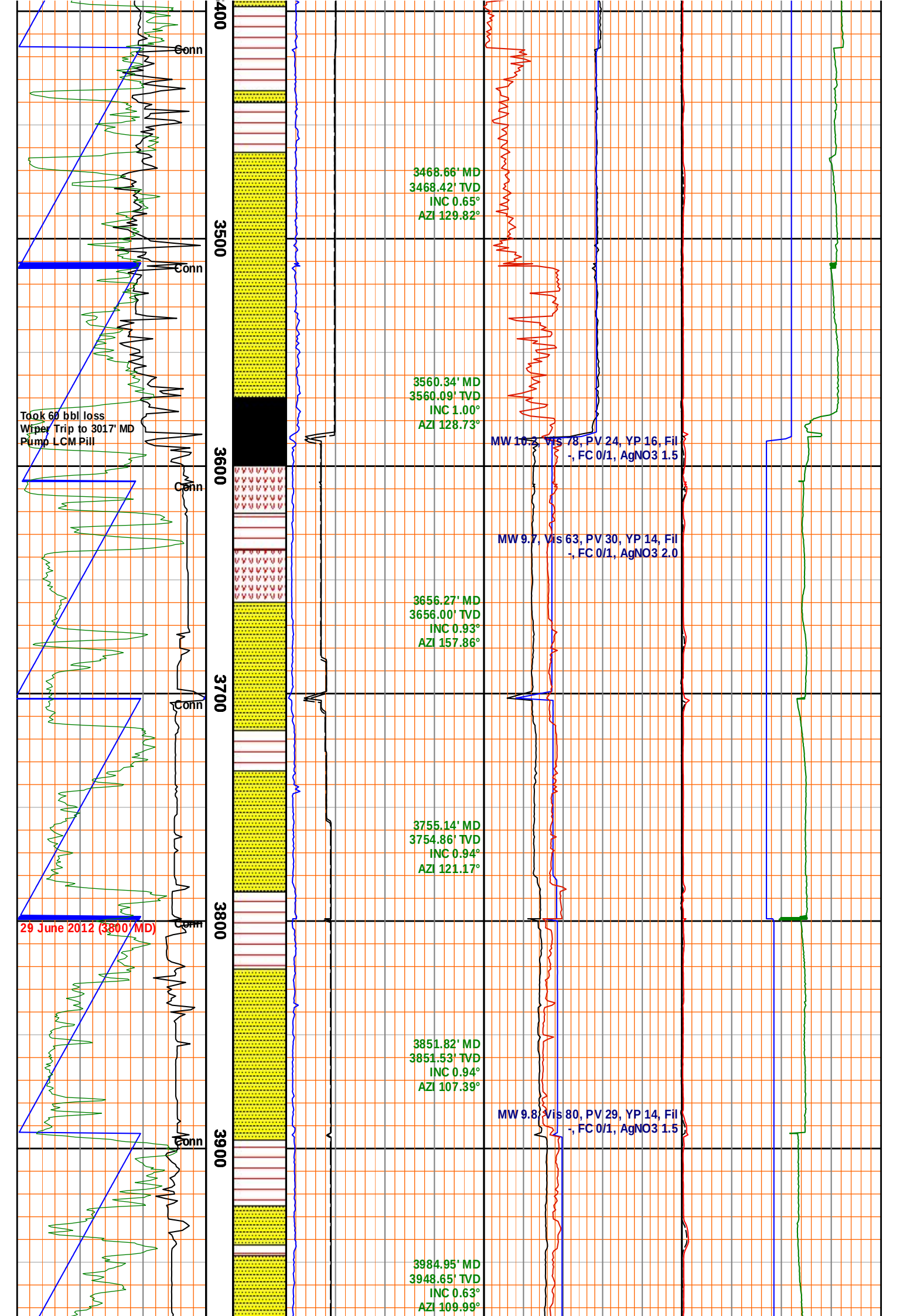

503.87' MD
503.85' TVD
INC 1.14°
AZI 201.58°
592.94' MD
592.91' TVD
INC 1.06°
AZI 196.68°
MW 10, Vis 300, PV 53, YP 73, Fil
6.0, FC 3/0, pH 9.3, Cl 300
685.39' MD
685.34' TVD
INC 0.93°
AZI 186.77°
780.20' MD
780.14' TVD
INC 0.94°
AZI 208.49°
877.37' MD
877.30' TVD
INC 0.65°
AZI 225.85°
MW 10, Vis 240, PV 56, YP 68, Fil
6.4, FC 3/0, pH 9.1, Cl 500
976.87' MD
976.79' TVD
INC 0.55°
AZI 217.66°
1070.52' MD
1070.44' TVD
Conn
Conn
Conn
Conn
Conn
Conn
Middle Sagavanirktok
721' MD, 721' TVD
Permafrost
1050' MD, 1050' TVD
600
700
800
900
1000

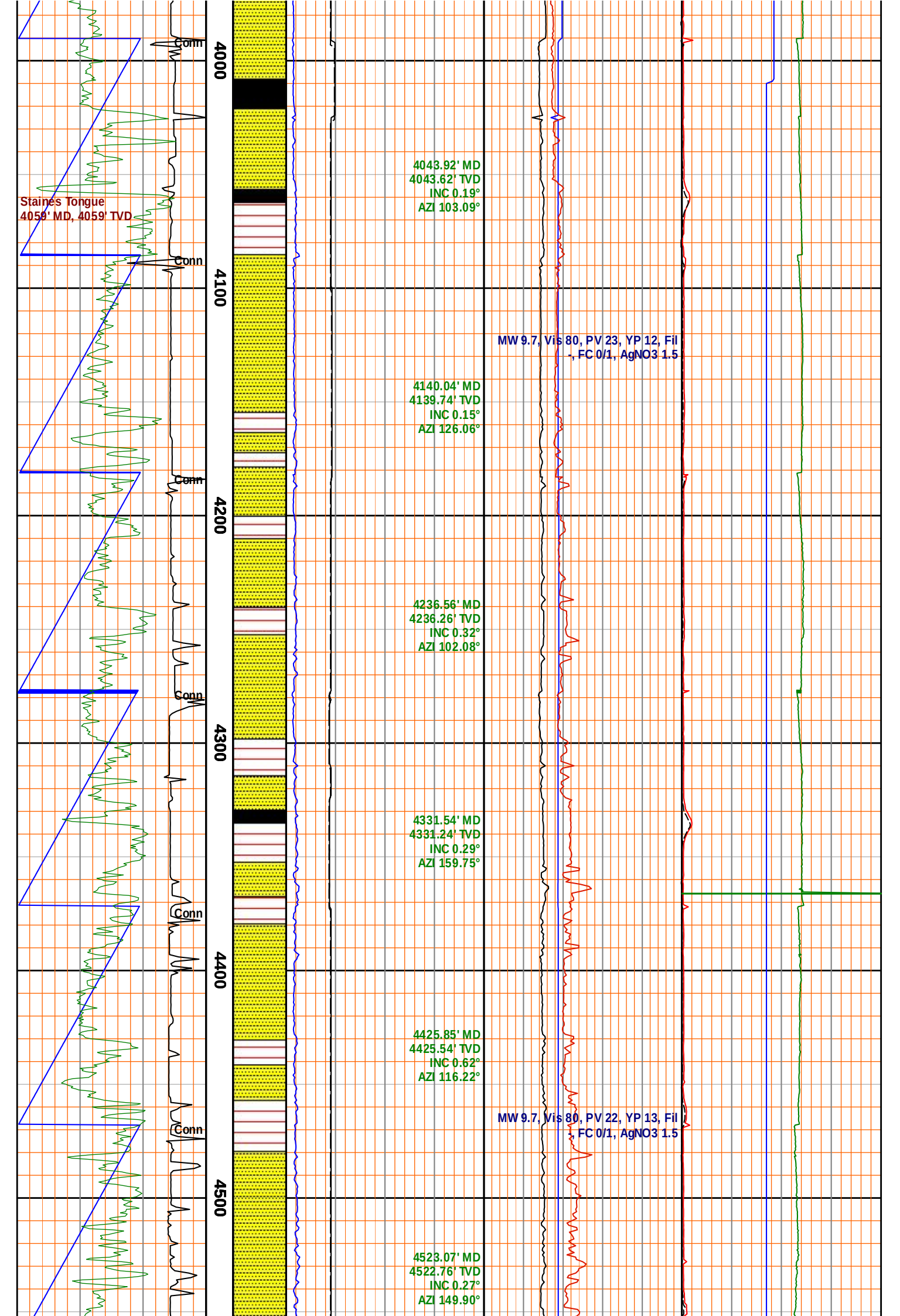

1100
1200
1300
1400
1500
1600
Conn
Conn
Conn
Conn
Conn
Conn
Lost Data due to Power Issues
21 June 2012 (1598' MD)
INC 0.84°
AZI 233.02°
1161.77' MD
1161.68' TVD
INC 0.84°
AZI 184.97°
MW 10, Vis 220, PV 49, YP 62, Fil
6.4, FC 3/0, pH 9.5, Cl 500
Test Gas Equipment
1259.04' MD
1258.94' TVD
INC 0.65°
AZI 208.98°
1355.56' MD
1355.45' TVD
INC 0.78°
AZI 205.42°
MW 10.1, Vis 280, PV 53, YP 72,
Fil 6.4, FC 3/0, pH 9.6, Cl 300
1451.70' MD
1451.58' TVD
INC 0.70°
AZI 209.13°
1547.61' MD
1547.48' TVD
INC 0.87°
AZI 214.97°
1642.98' MD
1642.84' TVD
INC 0.86°

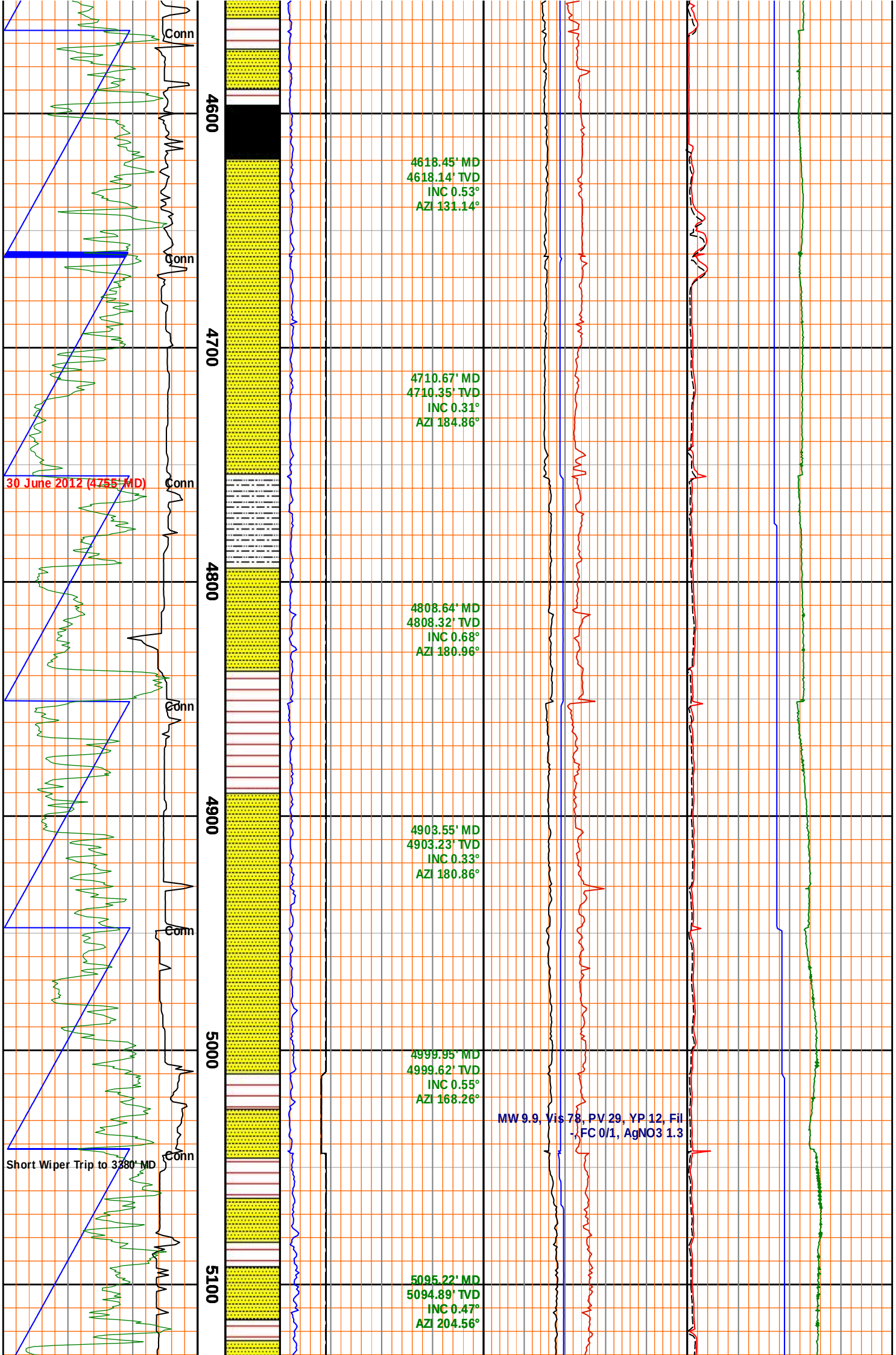

AZI 205.66°
1700
Conn
1739.38' MD
1739.23' TVD
INC 0.64°
AZI 193.71°
1800
Conn
1836.78' MD
1836.63' TVD
INC 0.69°
AZI 209.38°
MW 10.2, Vis 150, PV 51, YP 57,
Fil 6.0, FC 3/0, pH 9.4, Cl 400
1900
Conn
1931.30' MD
1931.44' TVD
INC 0.71°
AZI 175.26°
2000
Conn
2028.33' MD
2028.17' TVD
INC 0.48°
AZI 183.94°
2100
Conn
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
2200
2217.21' MD
2217.04' TVD
INC 0.50°

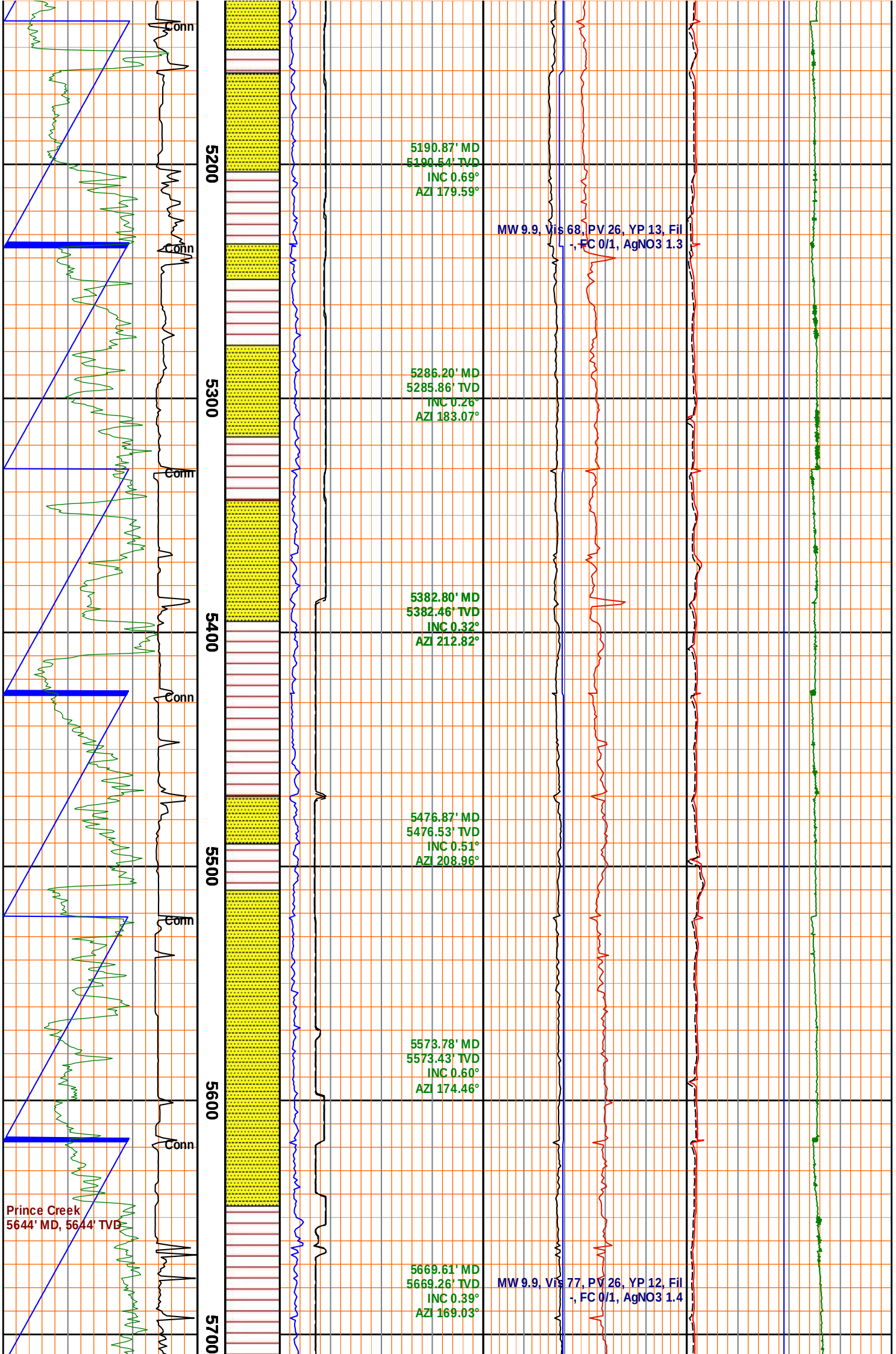

Conn
2300
2312.62' MD
2312.45' TVD
INC 0.53°
AZI 181.16°
Conn
2400
Test Gas Equipment
2409.08' MD
2408.90' TVD
INC 0.22°
AZI 169.25°
MW 10.2, Vis 145, PV 51, YP 62,
Fil -, FC 3/0, pH 9.0, Cl 400
Conn
2463.32' MD
2463.14' TVD
INC 0.57°
AZI 179.55°
9-5/8" Casing Shoe
2491' MD, 2491' TVD
2500
MW 10.2, Vis 150, PV 51, YP 57,
Fil 6.0, FC 3/0, pH 9.4, Cl 400
Callibrate 8800 THA, C1=10.000%
10,000 Units = 100% Gas in Air
TD 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
Conn
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°
Conn
2700
2700.00' MD
2699.80' TVD
INC 0.12°
AZI 96.30°
Conn
Lower Sagavanirktok
2784' MD, 2784' TVD
2800
2799.23' MD
2799.03' TVD
INC 0.18°

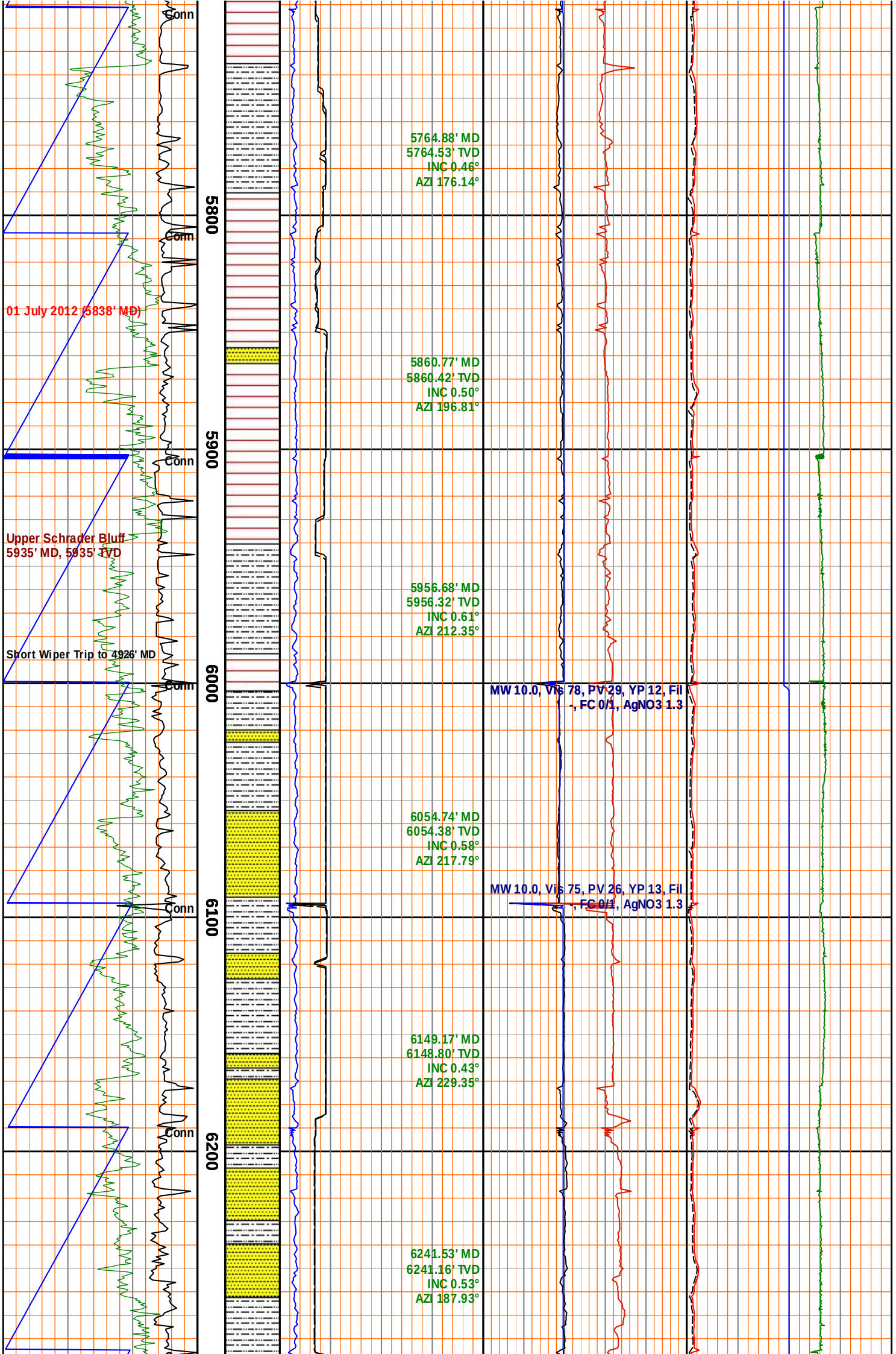

AZI 69.63°
Conn
2894.32' MD
2894.12' TVD
INC 0.50°
AZI 111.12°
2900
Conn
2990.67' MD
2990.47' TVD
INC 0.53°
AZI 133.19°
3000
Short Wiper Trip to Shoe
28 June 2012 (3032' MD)
Conn
MW 10.2, Vis 76, PV 33, YP 14, Fil 4.0, FC 1/1, AgNO3 1.7
3084.68' MD
3084.47' TVD
INC 0.88°
AZI 117.17°
3100
Conn
MW 10.2, Vis 80, PV 31, YP 14, Fil -, FC 0/2, AgNO3 2.6
3180.11' MD
3179.89' TVD
INC 0.85°
AZI 116.51°
3200
Conn
3275.33' MD
3275.10' TVD
INC 0.61°
AZI 141.14°
3300
Conn
3372.36' MD
3372.13' TVD
INC 0.83°
AZI 141.77°

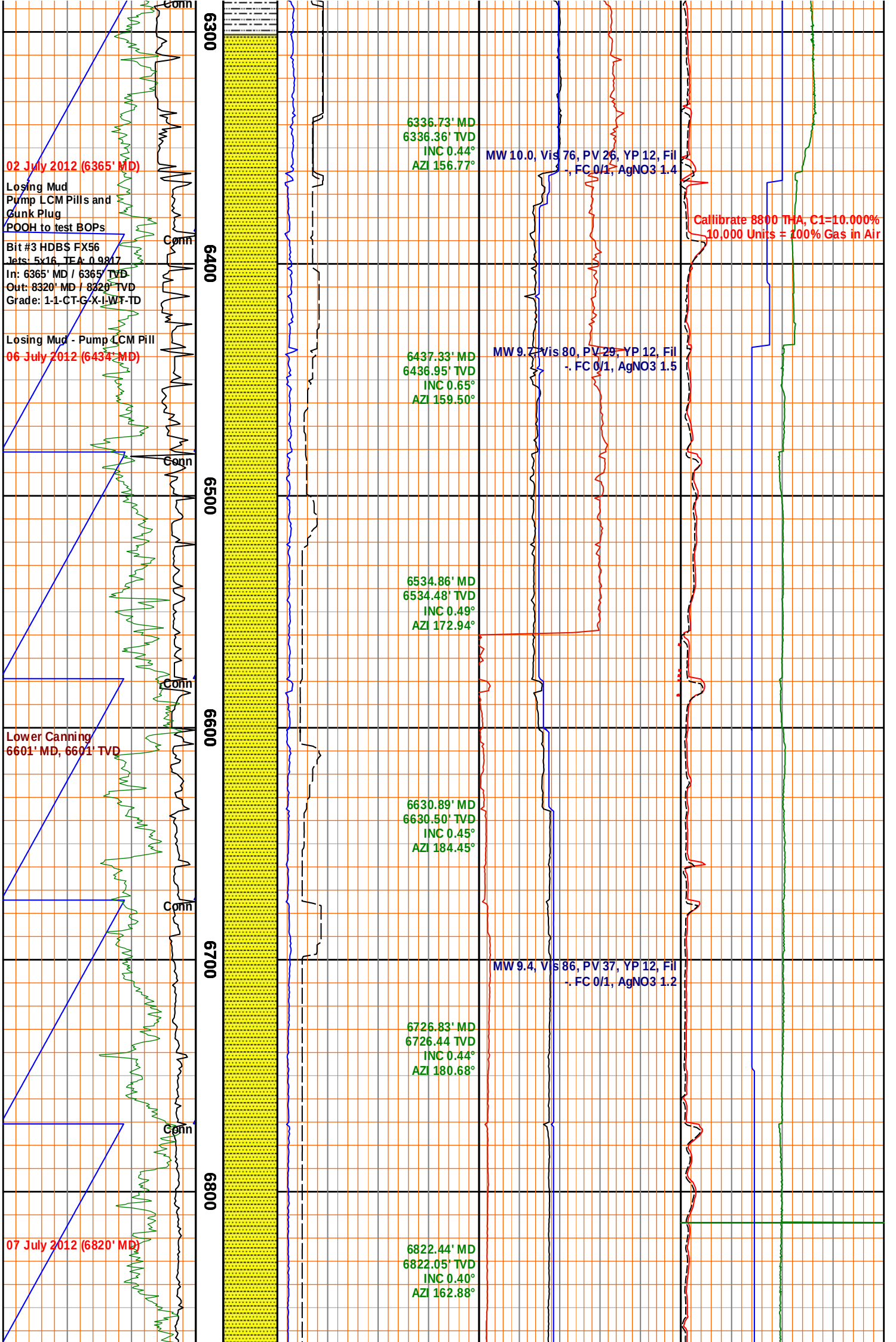

3400
3500
3600
3700
3800
3900
Conn
Conn
Conn
Conn
Conn
Conn
Took 60 bbl loss
Wiper Trip to 3017' MD
Pump LCM Pill
29 June 2012 (3800' MD)
3468.66' MD
3468.42' TVD
INC 0.65°
AZI 129.82°
3560.34' MD
3560.09' TVD
INC 1.00°
AZI 128.73°
MW 10.3, Vis 78, PV 24, YP 16, Fil
-, FC 0/1, AgNO3 1.5
MW 9.7, Vis 63, PV 30, YP 14, Fil
-, FC 0/1, AgNO3 2.0
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°
MW 9.8, Vis 80, PV 29, YP 14, Fil
-, FC 0/1, AgNO3 1.5
3984.95' MD
3948.65' TVD
INC 0.63°
AZI 109.99°

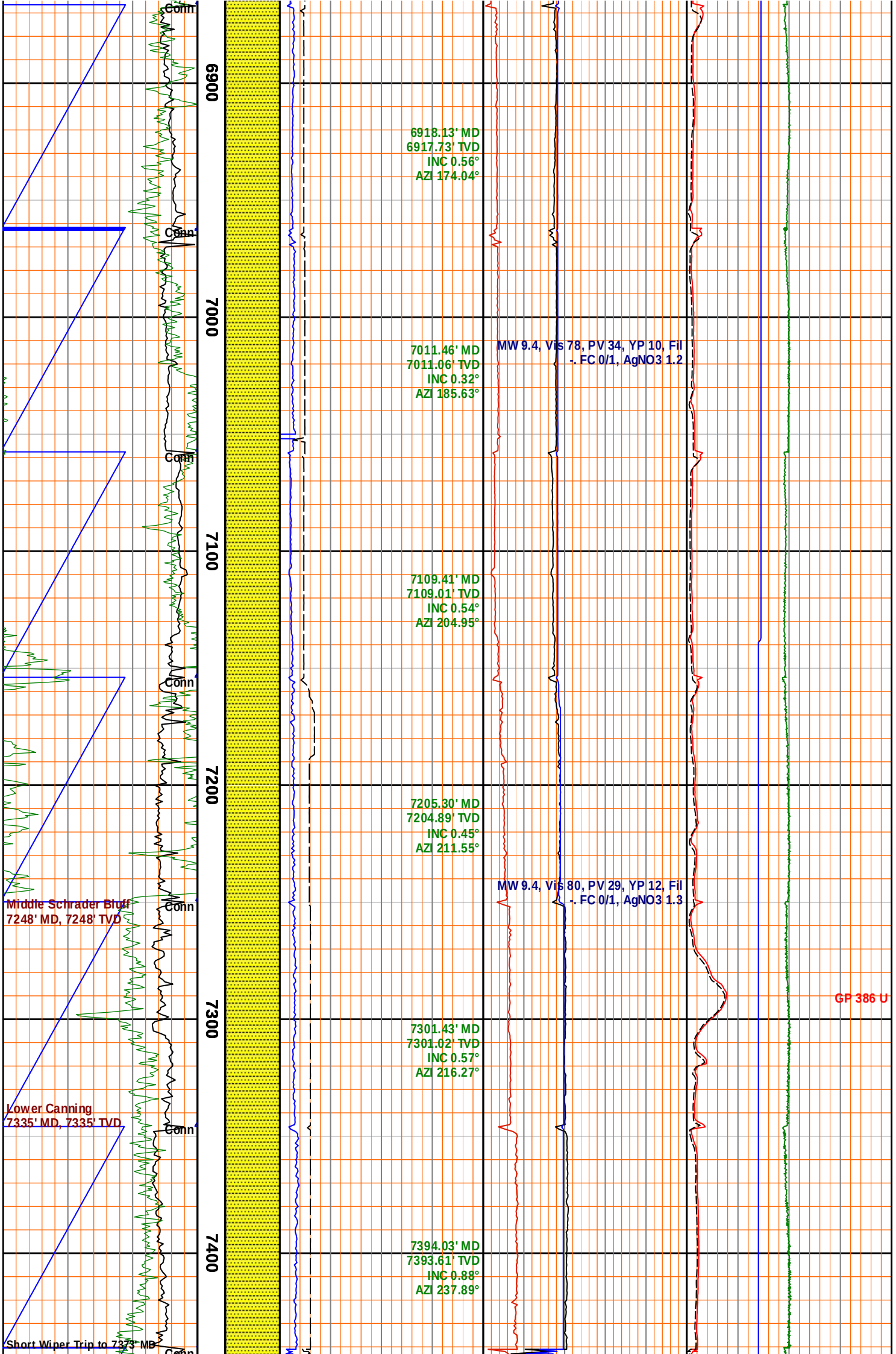

Conn
4000
Staines Tongue
4059' MD, 4059' TVD
Conn
4043.92' MD
4043.62' TVD
INC 0.19°
AZI 103.09°
4100
MW 9.7, Vis 80, PV 23, YP 12, Fil
-, FC 0/1, AgNO3 1.5
4140.04' MD
4139.74' TVD
INC 0.15°
AZI 126.06°
Conn
4200
4236.56' MD
4236.26' TVD
INC 0.32°
AZI 102.08°
Conn
4300
4331.54' MD
4331.24' TVD
INC 0.29°
AZI 159.75°
Conn
4400
4425.85' MD
4425.54' TVD
INC 0.62°
AZI 116.22°
Conn
MW 9.7, Vis 80, PV 22, YP 13, Fil
-, FC 0/1, AgNO3 1.5
4500
4523.07' MD
4522.76' TVD
INC 0.27°
AZI 149.90°

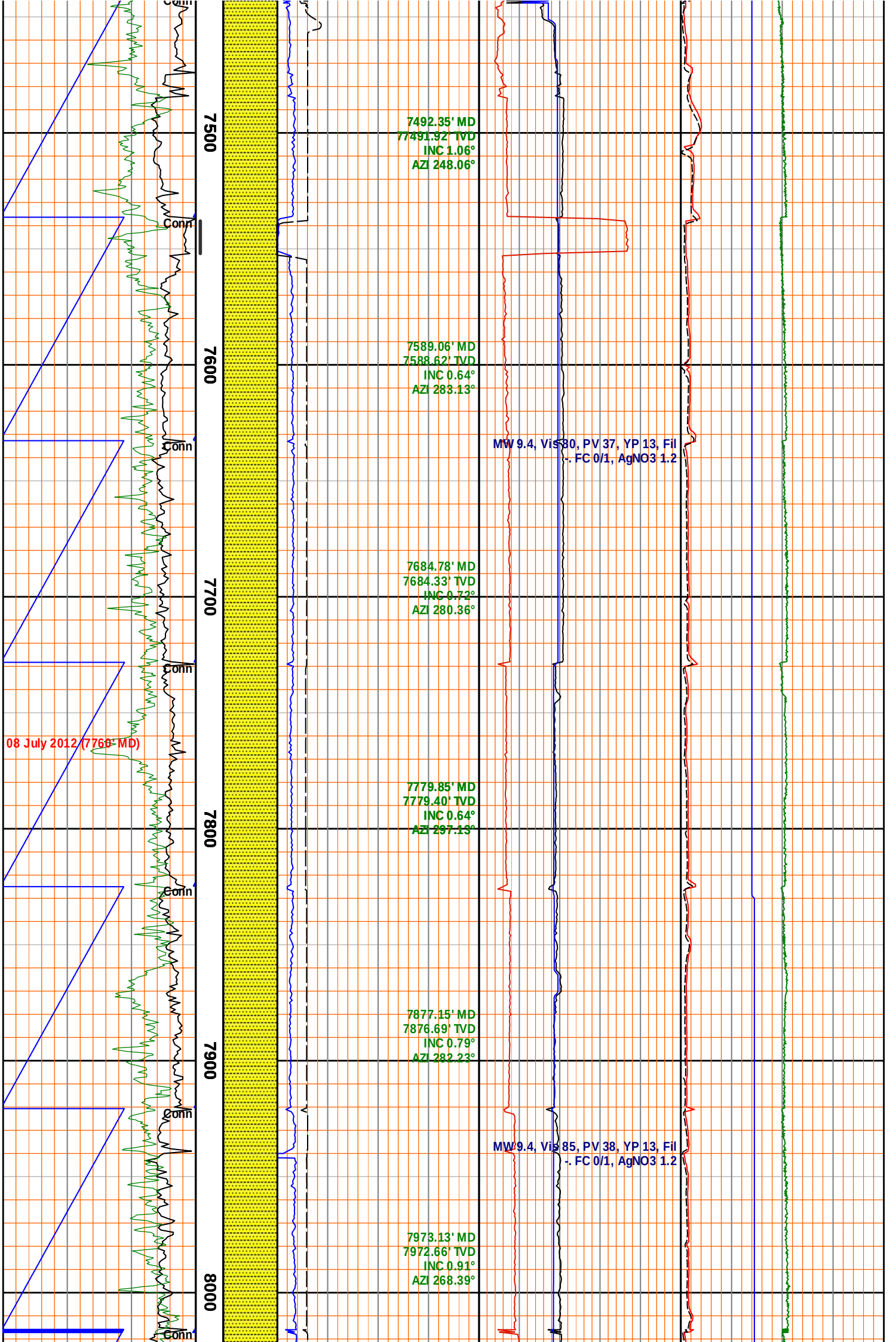

Conn
4600
4618.45' MD
4618.14' TVD
INC 0.53°
AZI 131.14°
Conn
4700
4710.67' MD
4710.35' TVD
INC 0.31°
AZI 184.86°
30 June 2012 (4755' MD)
Conn
4800
4808.64' MD
4808.32' TVD
INC 0.68°
AZI 180.96°
Conn
4900
4903.55' MD
4903.23' TVD
INC 0.33°
AZI 180.86°
Conn
5000
4999.95' MD
4999.62' TVD
INC 0.55°
AZI 168.26°
MW 9.9, Vis 78, PV 29, YP 12, Fil
-, FC 0/1, AgNO3 1.3
Conn
Short Wiper Trip to 3380' MD
5100
5095.22' MD
5094.89' TVD
INC 0.47°
AZI 204.56°

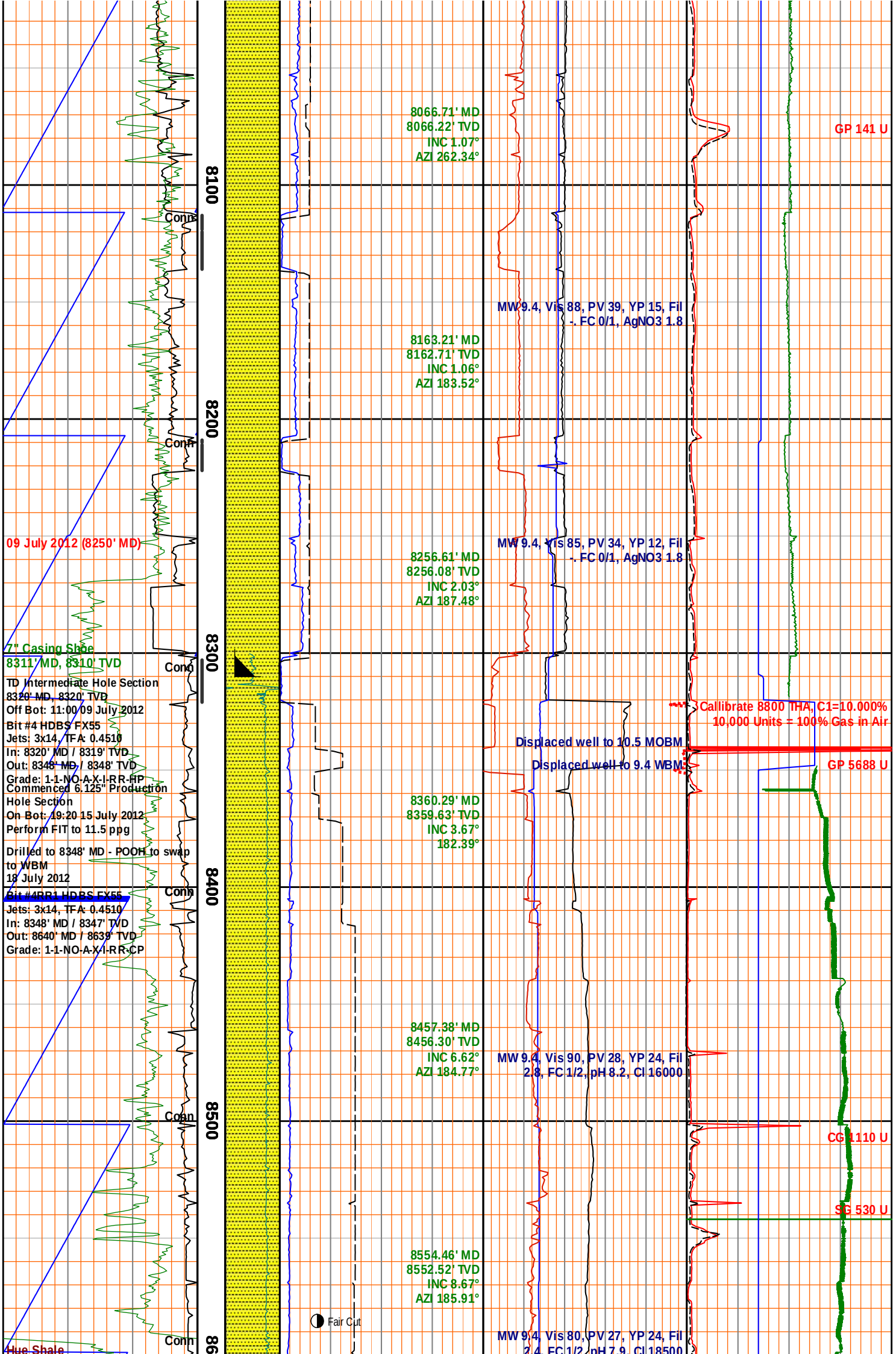

Conn
Conn
Conn
Conn
Conn
Conn
5200
5300
5400
5500
5600
5700
5190.87' MD
5190.54' TVD
INC 0.69°
AZI 179.59°
MW 9.9, Vis 68, PV 26, YP 13, Fil
-, FC 0/1, AgNO3 1.3
5286.20' MD
5285.86' TVD
INC 0.26°
AZI 183.07°
5382.80' MD
5382.46' TVD
INC 0.32°
AZI 212.82°
5476.87' MD
5476.53' TVD
INC 0.51°
AZI 208.96°
5573.78' MD
5573.43' TVD
INC 0.60°
AZI 174.46°
Prince Creek
5644' MD, 5644' TVD
5669.61' MD
5669.26' TVD
INC 0.39°
AZI 169.03°
MW 9.9, Vis 77, PV 26, YP 12, Fil
-, FC 0/1, AgNO3 1.4

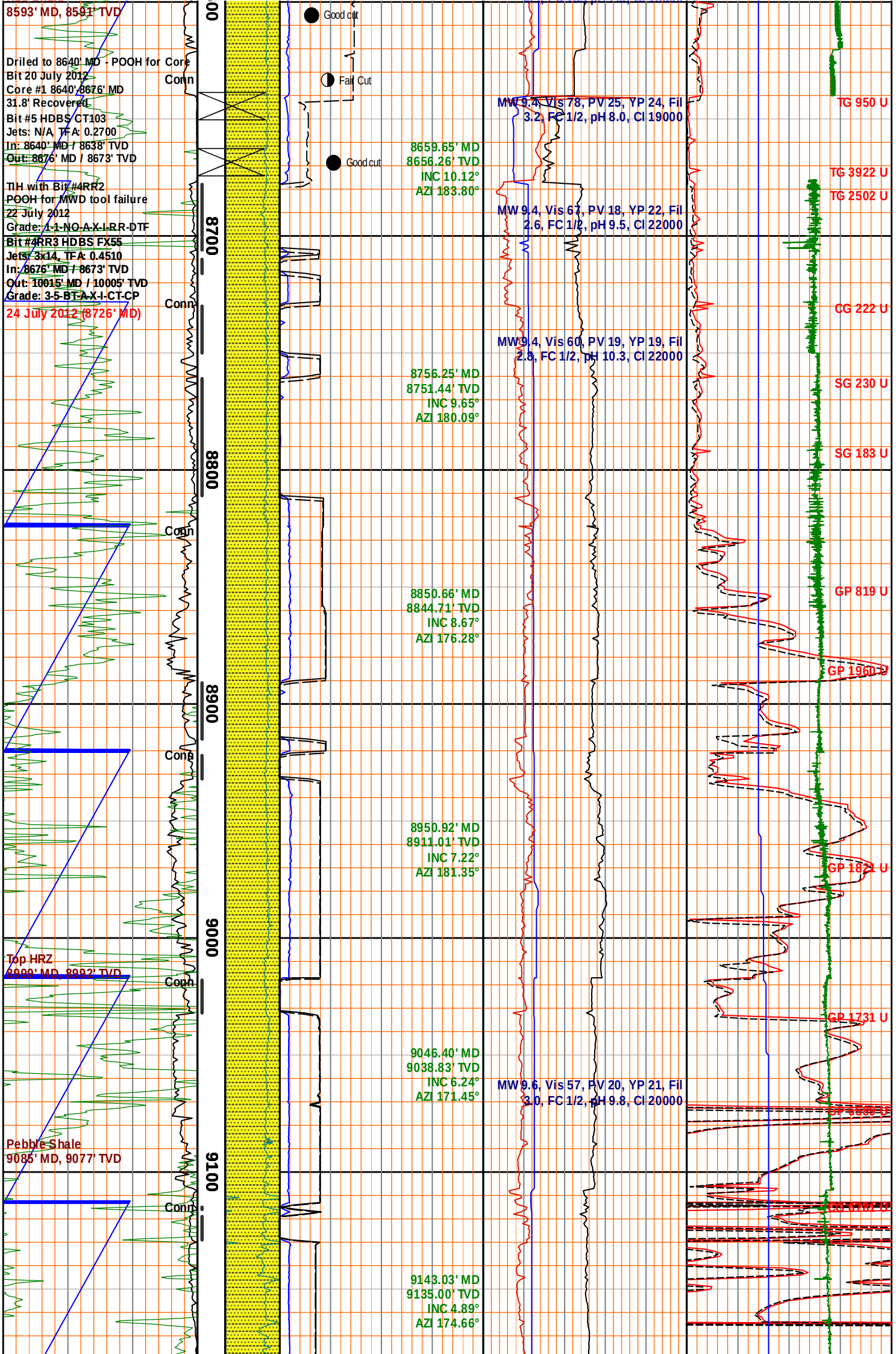

Conn
5800
Conn
01 July 2012 (5838' MD)
5764.88' MD
5764.53' TVD
INC 0.46°
AZI 176.14°
5860.77' MD
5860.42' TVD
INC 0.50°
AZI 196.81°
5900
Conn
Upper Schrader Bluff
5935' MD, 5935' TVD
5956.68' MD
5956.32' TVD
INC 0.61°
AZI 212.35°
Short Wiper Trip to 4926' MD
6000
Conn
MW 10.0, Vis 78, PV 29, YP 12, Fil
-, FC 0/1, AgNO3 1.3
6054.74' MD
6054.38' TVD
INC 0.58°
AZI 217.79°
MW 10.0, Vis 75, PV 26, YP 13, Fil
-, FC 0/1, AgNO3 1.3
Conn
6100
6149.17' MD
6148.80' TVD
INC 0.43°
AZI 229.35°
Conn
6200
6241.53' MD
6241.16' TVD
INC 0.53°
AZI 187.93°

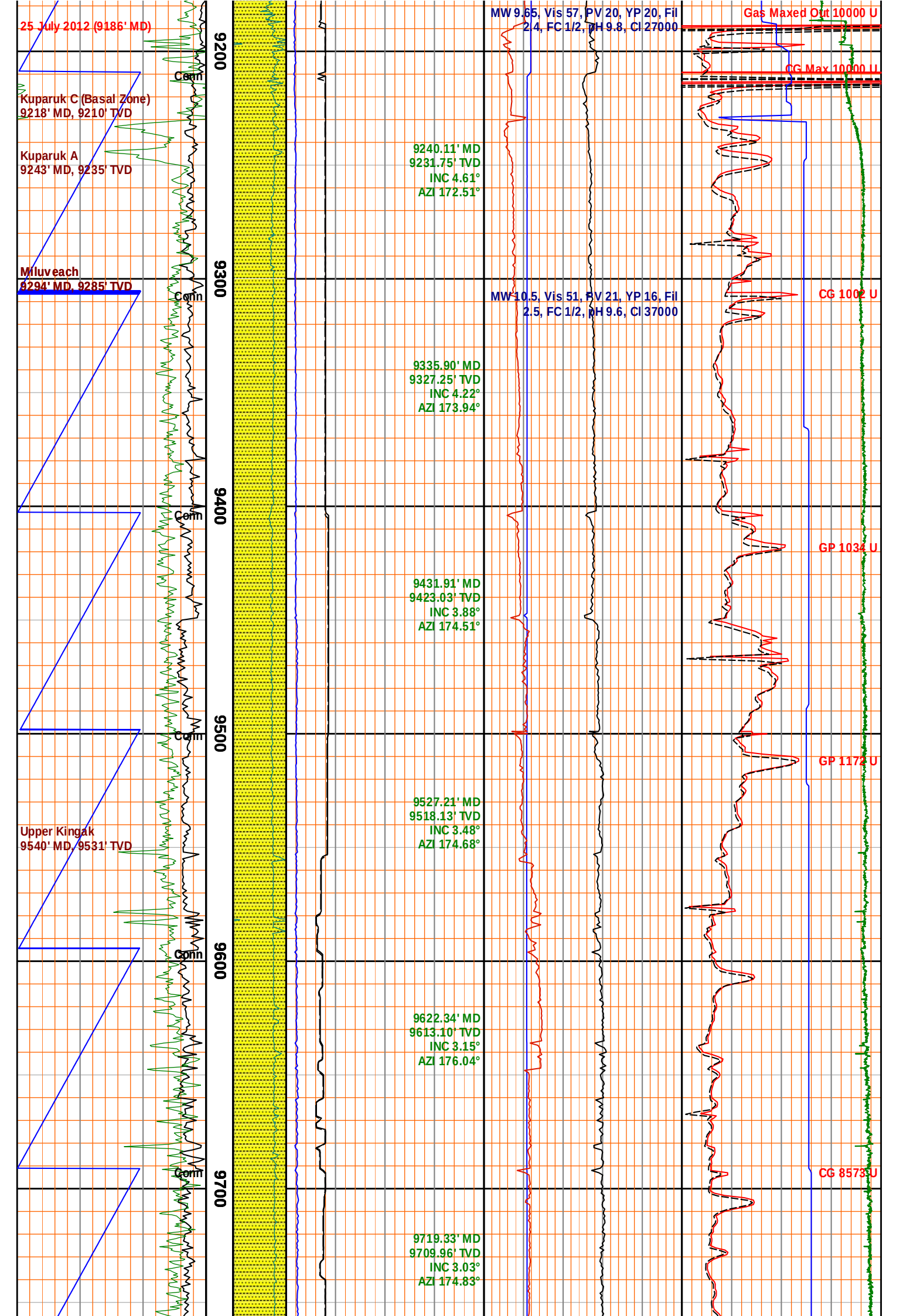

Conn
6300
02 July 2012 (6365' MD)
Losing Mud
Pump LCM Pills and
Gunk Plug
POOH to test BOPs
Bit #3 HDBS FX56
Jets: 5x16, TFA: 0.9817
In: 6365' MD / 6365' TVD
Out: 8320' MD / 8320' TVD
Grade: 1-1-CT-G-X-I-WT-TD
Conn
6400
Losing Mud - Pump LCM Pill
06 July 2012 (6434' MD)
Conn
6500
Conn
Lower Canning
6601' MD, 6601' TVD
6600
Conn
6700
Conn
6800
07 July 2012 (6820' MD)
6336.73' MD
6336.36' TVD
INC 0.44°
AZI 156.77°
MW 10.0, Vis 76, PV 26, YP 12, Fil
-, FC 0/1, AgNO3 1.4
Calibrate 8800 THA, C1=10.000%
10,000 Units = 100% Gas in Air
6437.33' MD
6436.95' TVD
INC 0.65°
AZI 159.50°
MW 9.7, Vis 80, PV 29, YP 12, Fil
-, FC 0/1, AgNO3 1.5
6534.86' MD
6534.48' TVD
INC 0.49°
AZI 172.94°
6630.89' MD
6630.50' TVD
INC 0.45°
AZI 184.45°
MW 9.4, Vis 86, PV 37, YP 12, Fil
-, FC 0/1, AgNO3 1.2
6726.83' MD
6726.44 TVD
INC 0.44°
AZI 180.68°
6822.44' MD
6822.05' TVD
INC 0.40°
AZI 162.88°

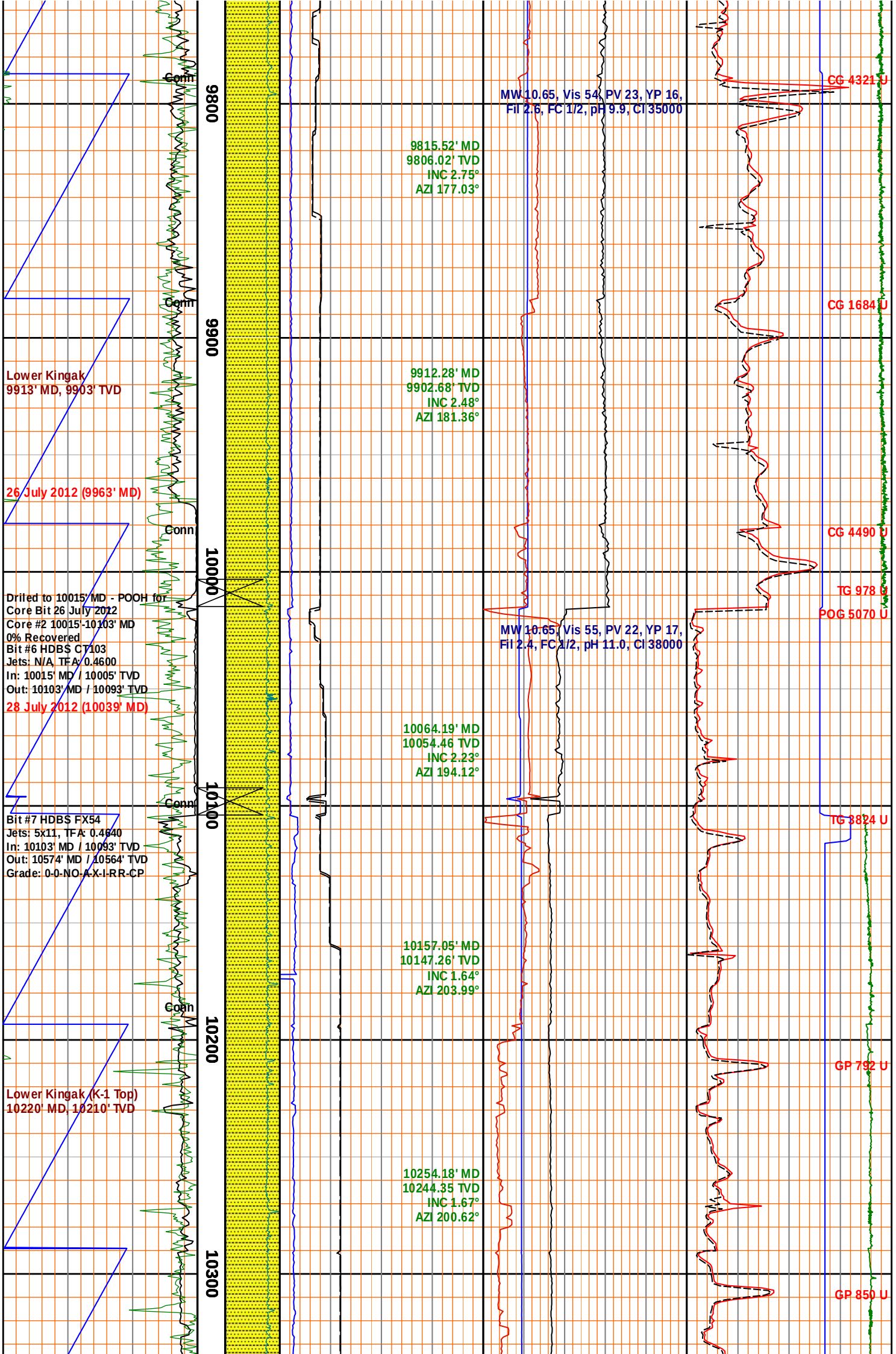

6900
7000
7100
7200
7300
7400
Conn
6918.13' MD
6917.73' TVD
INC 0.56°
AZI 174.04°
7011.46' MD
7011.06' TVD
INC 0.32°
AZI 185.63°
MW 9.4, Vis 78, PV 34, YP 10, Fil
-. FC 0/1, AgNO3 1.2
7109.41' MD
7109.01' TVD
INC 0.54°
AZI 204.95°
7205.30' MD
7204.89' TVD
INC 0.45°
AZI 211.55°
MW 9.4, Vis 80, PV 29, YP 12, Fil
-. FC 0/1, AgNO3 1.3
Middle Schrader Bluff
7248' MD, 7248' TVD
GP 386 U
7301.43' MD
7301.02' TVD
INC 0.57°
AZI 216.27°
Lower Canning
7335' MD, 7335' TVD
7394.03' MD
7393.61' TVD
INC 0.88°
AZI 237.89°
Short Wiper Trip to 7373' MD

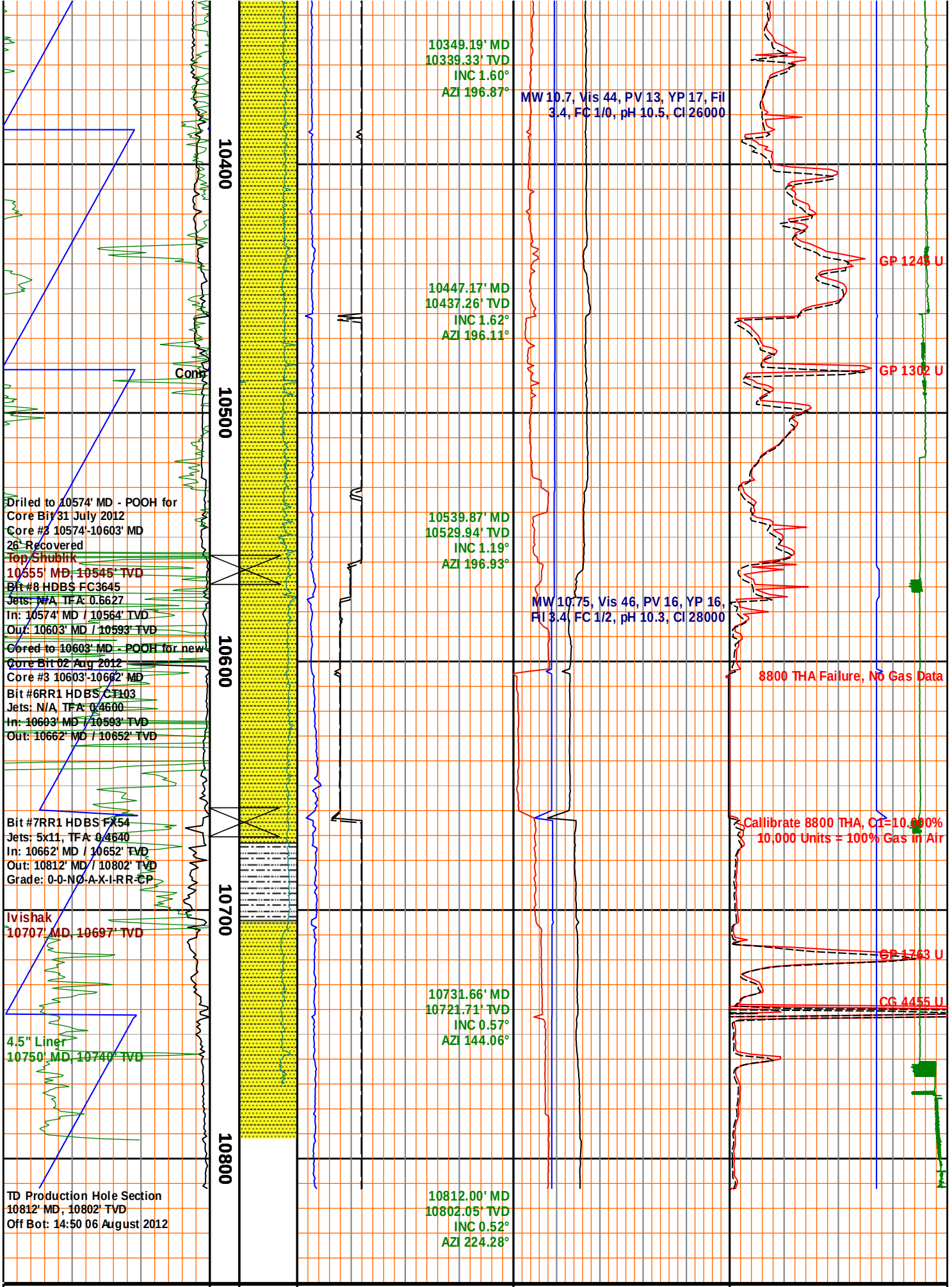

7500
7600
7700
7800
7900
8000
Conn
Conn
Conn
Conn
Conn
Conn
08 July 2012 (7768' MD)
7492.35' MD
7491.92' TVD
INC 1.06°
AZI 248.06°
7589.06' MD
7588.62' TVD
INC 0.64°
AZI 283.13°
MW 9.4, Vis 80, PV 37, YP 13, Fil
-. FC 0/1, AgNO3 1.2
7684.78' MD
7684.33' TVD
INC 0.72°
AZI 280.36°
7779.85' MD
7779.40' TVD
INC 0.64°
AZI 297.13°
7877.15' MD
7876.69' TVD
INC 0.79°
AZI 282.23°
MW 9.4, Vis 85, PV 38, YP 13, Fil
-. FC 0/1, AgNO3 1.2
7973.13' MD
7972.66' TVD
INC 0.91°
AZI 268.39°


8100
8200
8300
8400
8500
Conn
Conn
Conn
Conn
Conn
09 July 2012 (8250' MD)
7" Casing Shoe
8311' MD, 8310' TVD
TD Intermediate Hole Section
8320' MD, 8320' TVD
Off Bot: 11:00 09 July 2012
Bit #4 HDBS FX55
Jets: 3x14, TFA: 0.4510
In: 8320' MD / 8319' TVD
Out: 8348' MD / 8348' TVD
Grade: 1-1-NO-A-X-I-RR-HP
Commenced 6.125" Production Hole Section
On Bot: 19:20 15 July 2012
Perform FIT to 11.5 ppg
Drilled to 8348' MD - POOH to swap to WBM
18 July 2012
Bit #4RR1 HDBS FX55
Jets: 3x14, TFA: 0.4510
In: 8348' MD / 8347' TVD
Out: 8640' MD / 8639' TVD
Grade: 1-1-NO-A-X-I-RR-CP
Hue Shale
8066.71' MD
8066.22' TVD
INC 1.07°
AZI 262.34°
8163.21' MD
8162.71' TVD
INC 1.06°
AZI 183.52°
8256.61' MD
8256.08' TVD
INC 2.03°
AZI 187.48°
8360.29' MD
8359.63' TVD
INC 3.67°
182.39°
8457.38' MD
8456.30' TVD
INC 6.62°
AZI 184.77°
8554.46' MD
8552.52' TVD
INC 8.67°
AZI 185.91°
Fair Cut
GP 141 U
MW 9.4, Vis 88, PV 39, YP 15, Fil -. FC 0/1, AgNO3 1.8
MW 9.4, Vis 85, PV 34, YP 12, Fil -. FC 0/1, AgNO3 1.8
Callibrate 8800 THA, C1=10.000%
10,000 Units = 100% Gas in Air
Displaced well to 10.5 MOBM
Displaced well to 9.4 WBM
GP 5688 U
MW 9.4, Vis 90, PV 28, YP 24, Fil 2.8, FC 1/2, pH 8.2, Cl 16000
CG 1110 U
SG 530 U
MW 9.4, Vis 80, PV 27, YP 24, Fil 2.4, FC 1/2, pH 7.9, Cl 18500


8593' MD, 8591' TVD
Drilled to 8640' MD - POOH for Core
Bit 20 July 2012
Core #1 8640'-8676' MD
31.8' Recovered
Bit #5 HDBS CT103
Jets: N/A, TFA: 0.2700
In: 8640' MD / 8638' TVD
Out: 8676' MD / 8673' TVD
TIH with Bit #4RR2
POOH for MWD tool failure
22 July 2012
Grade: 1-1-NO-A-X-I-RR-DTF
Bit #4RR3 HDBS FX55
Jets: 3x14, TFA: 0.4510
In: 8676' MD / 8673' TVD
Out: 10015' MD / 10005' TVD
Grade: 3-5-BT-A-X-I-CT-CP
24 July 2012 (8726' MD)
Top HRZ
8999' MD, 8992' TVD
Pebble Shale
9085' MD, 9077' TVD
Conn
8700
8800
8900
9000
9100
Good cut
Fair Cut
Good cut
8659.65' MD
8656.26' TVD
INC 10.12°
AZI 183.80°
8756.25' MD
8751.44' TVD
INC 9.65°
AZI 180.09°
8850.66' MD
8844.71' TVD
INC 8.67°
AZI 176.28°
8950.92' MD
8911.01' TVD
INC 7.22°
AZI 181.35°
9046.40' MD
9038.83' TVD
INC 6.24°
AZI 171.45°
9143.03' MD
9135.00' TVD
INC 4.89°
AZI 174.66°
MW 9.4, Vis 78, PV 25, YP 24, Fil 3.2, FC 1/2, pH 8.0, Cl 19000
MW 9.4, Vis 67, PV 18, YP 22, Fil 2.6, FC 1/2, pH 9.5, Cl 22000
MW 9.4, Vis 60, PV 19, YP 19, Fil 2.8, FC 1/2, pH 10.3, Cl 22000
MW 9.6, Vis 57, PV 20, YP 21, Fil 3.0, FC 1/2, pH 9.8, Cl 20000
TG 950 U
TG 3922 U
TG 2502 U
CG 222 U
SG 230 U
SG 183 U
GP 819 U
GP 1731 U


25 July 2012 (9186' MD)
Kuparuk C (Basal Zone)
9218' MD, 9210' TVD
Kuparuk A
9243' MD, 9235' TVD
Miluveach
9294' MD, 9285' TVD
Upper Kingak
9540' MD, 9531' TVD
Conn
9200
9300
9400
9500
9600
9700
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
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°
AZI 174.83°
Gas Maxed Out 10000 U
CG Max 10000 U
CG 1002 U
GP 1034 U
GP 1172 U
CG 8573 U


Conn
9800
Conn
9900
Lower Kingak
9913' MD, 9903' TVD
26 July 2012 (9963' MD)
Conn
10000
Drilled to 10015' MD - POOH for
Core Bit 26 July 2012
Core #2 10015'-10103' MD
0% Recovered
Bit #6 HDBS CT103
Jets: N/A, TFA: 0.4600
In: 10015' MD / 10005' TVD
Out: 10103' MD / 10093' TVD
28 July 2012 (10039' MD)
Conn
10100
Bit #7 HDBS FX54
Jets: 5x11, TFA: 0.4640
In: 10103' MD / 10093' TVD
Out: 10574' MD / 10564' TVD
Grade: 0-0-NO-A-X-I-RR-CP
Conn
10200
Lower Kingak (K-1 Top)
10220' MD, 10210' TVD
10300
MW 10.65, Vis 54, PV 23, YP 16,
Fil 2.6, FC 1/2, pH 9.9, Cl 35000
9815.52' MD
9806.02' TVD
INC 2.75°
AZI 177.03°
9912.28' MD
9902.68' TVD
INC 2.48°
AZI 181.36°
MW 10.65, Vis 55, PV 22, YP 17,
Fil 2.4, FC 1/2, pH 11.0, Cl 38000
10064.19' MD
10054.46 TVD
INC 2.23°
AZI 194.12°
10157.05' MD
10147.26' TVD
INC 1.64°
AZI 203.99°
10254.18' MD
10244.35 TVD
INC 1.67°
AZI 200.62°
CG 4321 U
CG 1684 U
CG 4490 U
TG 978 U
POG 5070 U
TG 3824 U
GP 792 U
GP 850 U



ROP Avg 500 0

Block Position 0 150

Gamma Ray (api) 0 150

Depth MD

Slide

Lith

Interp

ACDL 1 g/cc 3

RPM Surface 0 100 200 300 400

RPM Total 0 100 200 300 400

Torque (k ft/lbs) 0 10 20 30 40

Flow In (gpm) 0 200 400 600 800 1K

SPP (psi) 0 1K 2K 3K 4K 5K

WOB (klbs) 0 10 20 30 40 50

Density Out (ppg) 8 9 10 11 12

ECD (ppg) 8 9 10 11 12

Max Gas 0 500 1K 1.5K 2K

Avg Gas

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HALLIBURTON

DIRECTIONAL SURVEY REPORT

Great Bear Petroleum, LLC
Alcor 1
Exploration
North Slope Borough Alaska
USA
AK-XX-0009285348
All depths reference the driller's pipe tally.

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)

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