



# Weatherford®

## Surface Logging Systems

Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: Bomhoff 5-8H (HORZ. SEC./LATERAL)  
Location: SW/NW Sec. 9, T4S, R64W. Arapahoe County, CO  
License Number: API 05-005-07180-00      Region: DJ BASIN  
Spud Date: 11/5/2013      Drilling Completed: 11//2013  
Surface Coordinates: 2033' FNL & 250' FWL of SW/NW, Sec. 9, T4S-R64W,  
Arapahoe County, CO.  
Bottom Hole  
Coordinates:  
Ground Elevation (ft): 5606'      K.B. Elevation (ft): 5630'  
Logged Interval (ft): 7925'      To: '      Total Depth (ft): '  
Formation: NIOBRARA  
Type of Drilling Fluid: WATER BASE

Printed by HORIZONTAL.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

Tooke Rockies, Inc.  
(A Weatherford Company)

884 Implement Dr.  
Dickinson, ND 58601  
701-227-4408

717 West Platte  
PO BOX 435  
Casper, WY 82601  
307-265-2124

### OPERATOR

Company: CONOCOPHILLIPS  
Address: 600 N. Dairy Ashford  
WL 3 3056  
Houston, TX 77079

### GEOLOGIST

Name: TODD THIESSE, LOREN MARTIAN  
Company: WEATHERFORD SLS/TOOKE ROCKIES  
Address: PO BOX 435  
CASPER, WY 82602  
307.265.2124


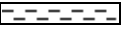

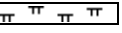
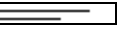
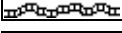




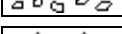


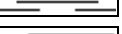
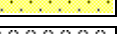
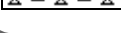


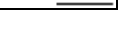
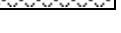
### Supervision

**Project Geologist: John Ostergren- Conoco/Phillips**  
**Drilling Engineer: Gary Hamilton- Conoco/Phillips**  
**Drilling Sup: Bob Strickler- Conoco/Phillips**  
**Company Rep: Richard Perez, Wes Evans(Day Leads)**  
**Company Rep: Frank Holubec, Clint Goins, Wayne Morgan, Clint Valentine, Mike Johnson, Mike Weatherly.(Other)**  
**Well Site Safety: Rainey Schexnider, Jeff**  
**Contact Geologist: Abby Tomkiewicz- Conoco/Phillips**  
**Drilling & Comp. Mgr: Derly Gonzalez-Conoco/Phillips**






























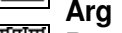




















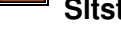






### Comments

**Drilling Co.--H & P, Rig #280**  
**Toolpusher- , Mike Stevens, Josh Coleman**  
**Dir. Co.- Sperry**  
**Mud Co.- Baroid/Haliburton, Dave Howell, Chase Putnam**

### ROCK TYPES

 <b>Anhy</b>	 <b>Clyst</b>	 <b>Gyp</b>	 <b>Mrlst</b>	 <b>Shgy</b>
 <b>Bent</b>	 <b>Coal</b>	 <b>Igne</b>	 <b>Salt</b>	 <b>Sltst</b>
 <b>Brec</b>	 <b>Congl</b>	 <b>Lmst</b>	 <b>Shale</b>	 <b>Ss</b>
 <b>Cht</b>	 <b>Dol</b>	 <b>Meta</b>	 <b>Shcol</b>	 <b>Till</b>

### ACCESSORIES

<b>FOSSIL</b>	 <b>Ostra</b>	 <b>Chtdk</b>	 <b>Sandy</b>	 <b>Ssstrg</b>			
 <b>Algae</b>	 <b>Pelec</b>	 <b>Chtlt</b>	 <b>Silt</b>	<b>TEXTURE</b>			
 <b>Amph</b>	 <b>Pellet</b>	 <b>Dol</b>	 <b>Sil</b>		 <b>Boundst</b>		
 <b>Belm</b>	 <b>Pisolite</b>	 <b>Feldspar</b>	 <b>Sulphur</b>		 <b>Chalky</b>		
 <b>Bioclst</b>	 <b>Plant</b>	 <b>Ferrpel</b>	 <b>Tuff</b>		 <b>Cryxln</b>		
 <b>Brach</b>	 <b>Strom</b>	 <b>Ferr</b>	<b>STRINGER</b>		 <b>Earthy</b>		
 <b>Bryozoa</b>	<b>MINERAL</b>	 <b>Glau</b>			 <b>Anhy</b>	 <b>Finexln</b>	
 <b>Cephal</b>		 <b>Anhy</b>			 <b>Gyp</b>	 <b>Arg</b>	 <b>Grainst</b>
 <b>Coral</b>		 <b>Arggrn</b>			 <b>Hvymin</b>	 <b>Bent</b>	 <b>Lithogr</b>
 <b>Crin</b>		 <b>Arg</b>			 <b>Kaol</b>	 <b>Coal</b>	 <b>Microxln</b>
 <b>Echin</b>		 <b>Bent</b>			 <b>Marl</b>	 <b>Dol</b>	 <b>Mudst</b>
 <b>Fish</b>		 <b>Bit</b>		 <b>Minxl</b>	 <b>Gyp</b>	 <b>Packst</b>	
 <b>Foram</b>		 <b>Brecfrag</b>		 <b>Nodule</b>	 <b>Ls</b>	 <b>Wackest</b>	
 <b>Fossil</b>		 <b>Calc</b>		 <b>Phos</b>	 <b>Mrst</b>		
 <b>Gastro</b>		 <b>Carb</b>		 <b>Pyr</b>	 <b>Sltstrg</b>		
 <b>Oolite</b>			 <b>Salt</b>				

**OTHER SYMBOLS**

**INTERVALS**

- Core
- ◻ Dst

**EVENTS**

- ▽ Rft
- Sidewall

**OIL SHOWS**

- ◼ Even
- ◻ Spotted
- ◻ Ques
- ◻ Dead

**POROSITY TYPE**

- ◻ E
- ◻ Fenest
- ◻ Fracture
- ⊗ Inter
- ◻ Moldic
- ◻ Organic



Pinpoint



Vuggy

**ROUNDING**

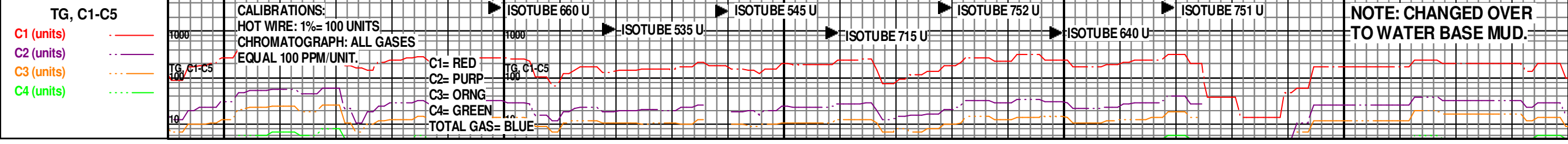
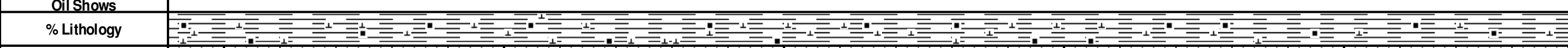
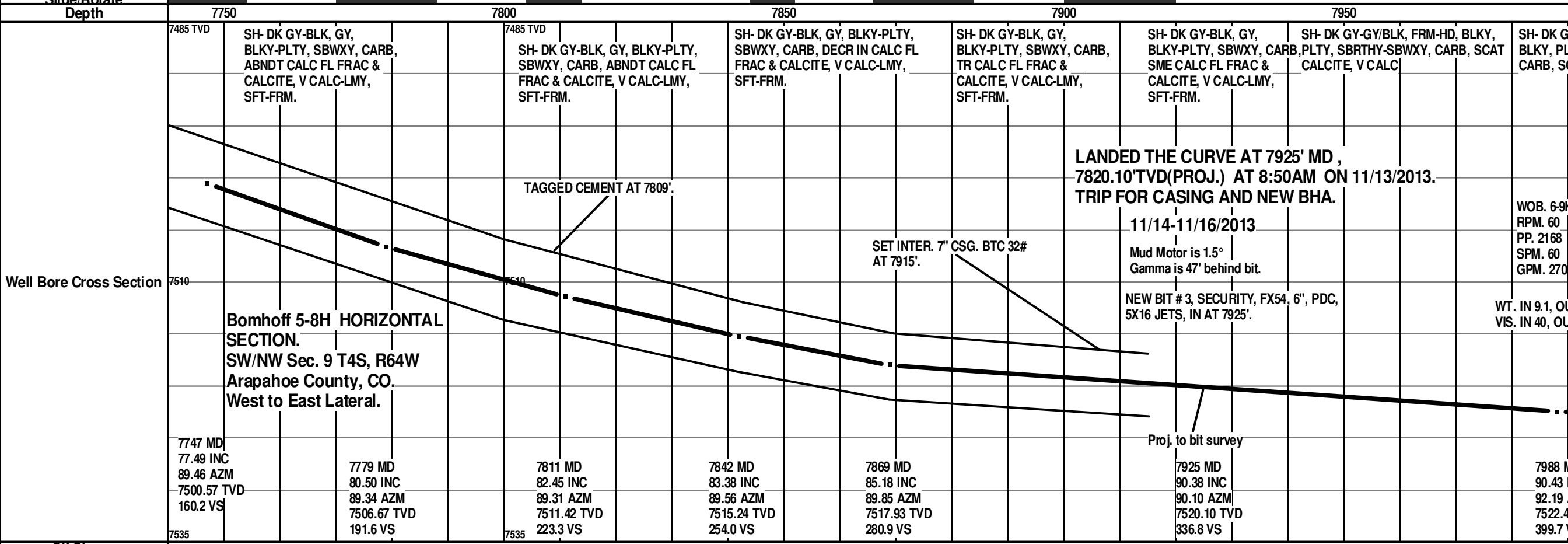
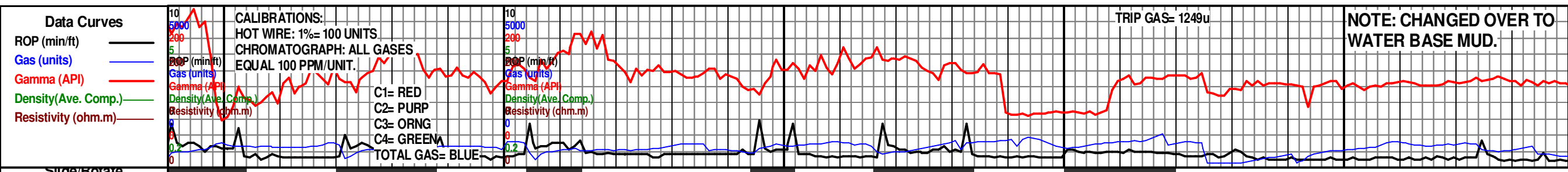
- ◻ R
- ◻ Rounded
- ◻ Subrnd
- ◻ Subang

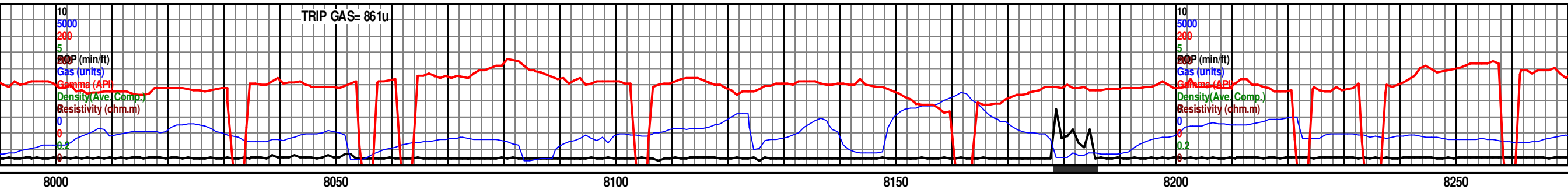


Angular

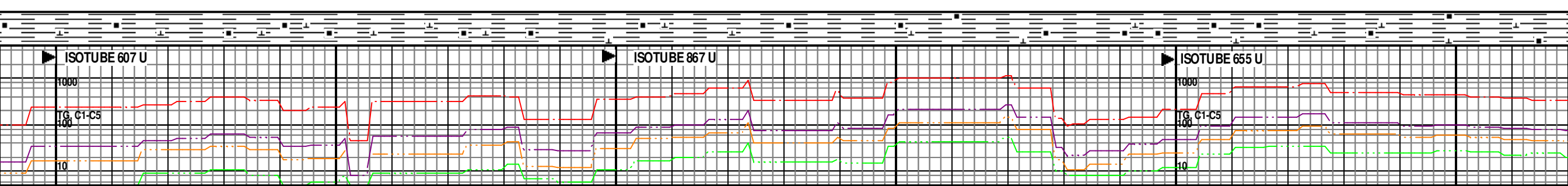
**SORTING**

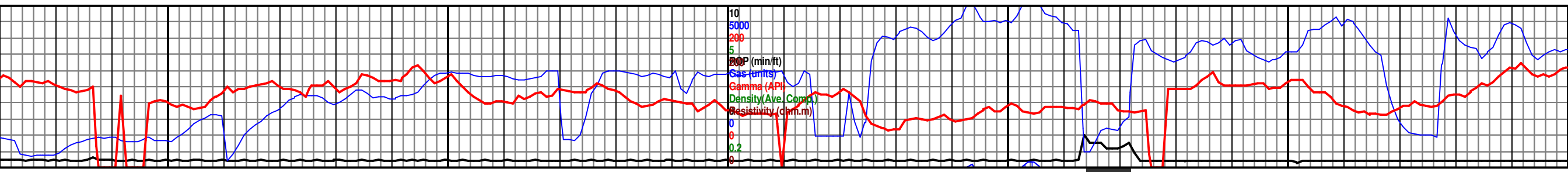
- ◻ W
- ◻ Well
- ◻ M
- ◻ Moderate
- ◻ P
- ◻ Poor



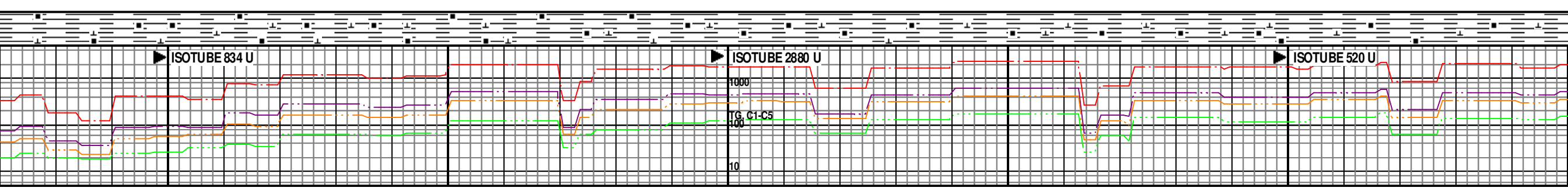


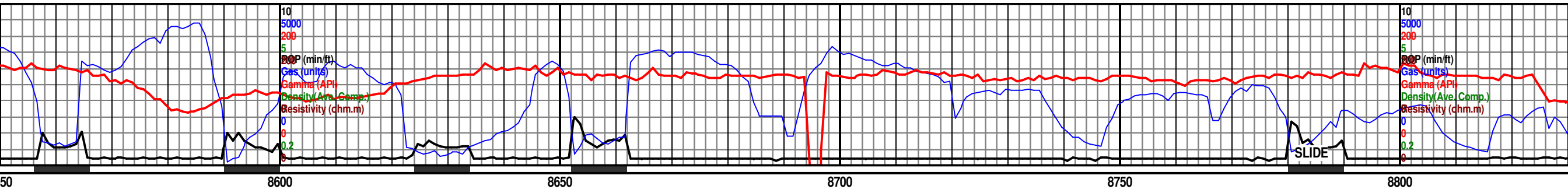
8000	8050	8100	8150	8200	8250
Y-GY/BLK, FRM-HD, SBRTHY-SBWXY, CAT CALCITE, V CALC	SH- DK GY-MOT GY/BLK, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, V CALC	SH- DK GY, SLI FRM-FRM, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, V CALC	SH- DK GY, SLI FRM-FRM, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, V CALC	SH- DK GY, SLI FRM-FRM, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, V CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, ABNT CALCITE, COM INTBD CALCITE, V CALC
WT. 9.10, VIS. 39, PV. 12, YP. 14, WL. 6.8, FC. 2/32, CORR. SLDS. 4.7, MBT. 2.5, pH. 11.3, CL. 1300, LGS/HGS. 3.7/1.0%.	<b>TRIP FOR NEW BHA/TOOLS AT 8052'</b> BIT # 4, Re Run # 3 SECURITY, FX54, 6", PDC, 5X16 JETS, IN AT 8052'. Mud Motor is 1.5° Gamma is 53.13' behind bit. Survey is 64' behind bit.			WOB. 8-9K RPM. 60 PP. 2830 SPM. 60 GPM. 270	
JT 9.1 JT 40				WT. IN 9.1, OUT 9.1 VIS. IN 37, OUT 35	
MD INC AZM 8 TVD VS	8020 MD 90.93 INC 92.06 AZM 7522.11 TVD 431.7 VS	8083 MD 91.05 INC 91.37 AZM 7521.02 TVD 494.7 VS	8115 MD 91.24 INC 91.27 AZM 7520.38 TVD 526.7 VS		8210 MD 92.47 INC 90.69 AZM 7517.30 TVD 621.6 VS



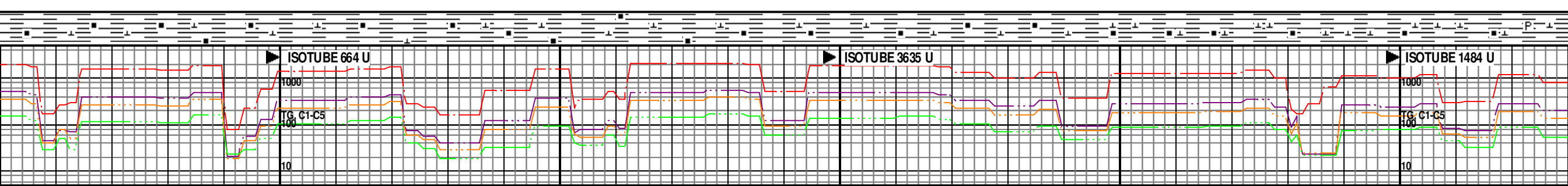


8300	8350	8400	8450	8500	8550
M-HD, BLKY, SBPLTY, CARB, ABNT CALCITE, COM CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, ABNT CALCITE, COM INTBD CALCITE W/ CALCITE FLD FRAC, V CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, ABNT CALCITE, COM INTBD CALCITE W/ CALCITE FLD FRAC, V CALC	7485 TVS SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, ABNT CALCITE, COM INTBD CALCITE W/ CALCITE FLD FRAC, V CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, COM CALCITE (DECR), SCAT INTBD CALCITE W/ CALCITE FLD FRAC, V CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, CALCITE FLD FRAC, V CALC
11/17/2013					
<p>8305 MD 93.08 INC 89.81 AZM 7512.70 TVD 716.5 VS</p>		<p>8399 MD 94.27 INC 90.02 AZM 7506.67 TVD 810.3 VS</p>		<p>8526 MD 94.09 INC 90.25 AZM 7498.16 TVD 937.0 VS</p>	
<p>WOB. 9-10K RPM. 60 PP. 2800 SPM. 60 GPM. 270</p> <p>WT. IN 9.1+, OUT 9.1 VIS. IN 37, OUT 36</p>					



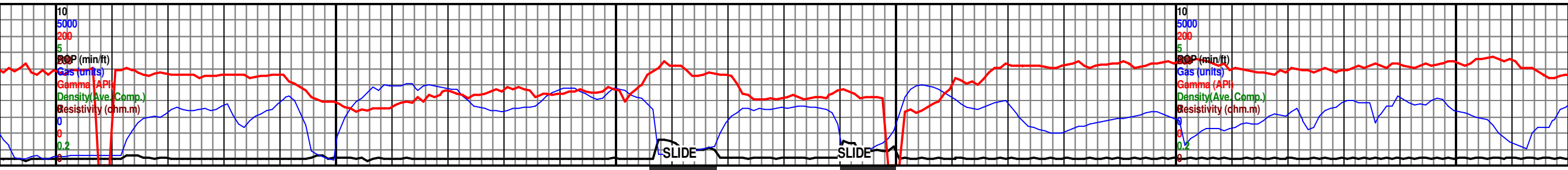


SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, OCC CALCITE, SME CALCITE FLD FRAC, V CALC		7485 TVD	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, OCC CALCITE, SME CALCITE FLD FRAC, V CALC		8650	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, OCC CALCITE, SME CALCITE FLD FRAC, V CALC		8700	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SME CALCITE, DECR CALCITE FLD FRAC, V CALC		8750	SH- DK GY-BLK, GY, BLKY-PLTY, SBWXY, V CALC-LMY, CARB, SME CALC FL FRAC & CALCITE, SFT-FRM.		8800	7485 TVD	SH- DK GY-BLK, GY, BLKY-PLTY, SBWXY, V CALC-LMY, CARB, SME CALC FL FRAC & CALCITE, SFT-FRM.	
X			WT. 9.15, VIS. 36, PV. 10, YP. 10, WL. 5.8, FC. 2/32, CORR. SLDS. 3.7, MBT. 2.5, pH. 10.5, CL. 1500, LGS/HGS. 1.3/2.4%.			WOB. 6-7K RPM. 60 PP. 2860 SPM. 60 GPM. 270			WT. IN 9.1+, OUT 9.1 VIS. IN 35, OUT 35								
CP#1, TARGET @ 1000' VS= 8589' MD, 7500'TVD.																	
8558 MD 94.27 INC 89.83 AZM 7495.83 TVD 968.9 VS	8589 MD 93.65 INC 89.42 AZM 7493.69 TVD 999.9 VS	7510					8684 MD 89.51 INC 89.76 AZM 7491.07 TVD 1094.8 VS						8779 MD 89.81 INC 89.92 AZM 7491.63 TVD 1189.8 VS	7510			
		7535												7535			

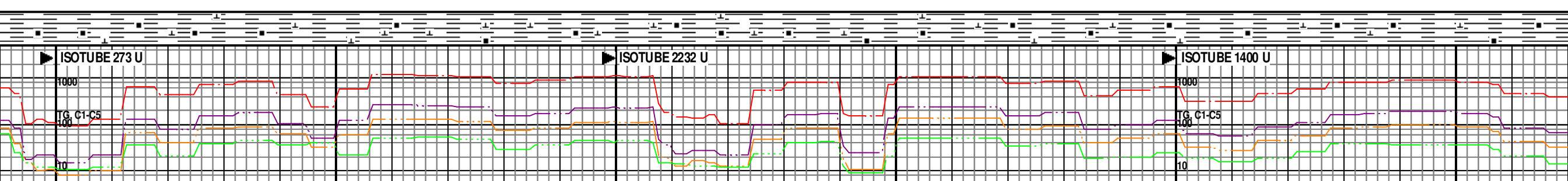




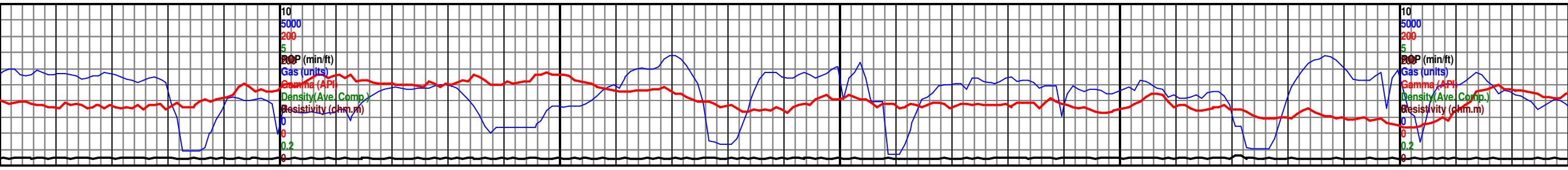




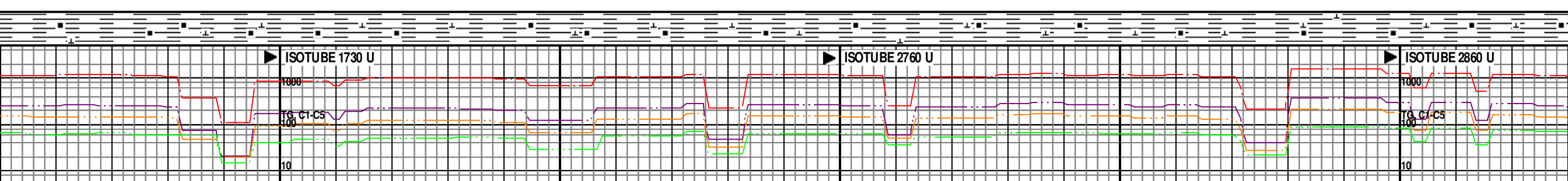
DK GY, Y, CARB LMY, SME CALCITE,	7485 TVD SH- LT GY-GY, SME DK GY, BLKY-PLTY, SBWXY, CARB LAM IN PT, V CALC-LMY, SME CALC FL FRAC & CALCITE, SFT-FRM.	SH- LT GY-GY, SME DK GY, BLKY-PLTY, SBWXY, CARB, CARB LAM IN PT, V CALC-LMY, SME CALC FL FRAC & CALCITE, SFT-FRM.	SH- PRED GY W/ SCAT DK GY-LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SME CALCITE FLD FRAC, V CALC	SH- PRED GY W/ SCAT DK GY-LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SME CALCITE FLD FRAC, V CALC	7485 TVD SH- PRED GY W/ SCAT DK GY-LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SME CALCITE FLD FRAC, V CALC	SH- DK GY-GY, SBPLTY-PLTY, S OCC CALCITE, S V CALC
					X CP#3, TARGET @ 2000' VS= 9589' MD, 7495'TVD.	
7510					WT. IN 9.2, OUT 9.1+ VIS. IN 40, OUT 39 WOB. 5-6K RPM. 65 PP. 3230 SPM. 65 GPM. 269	7510
7535	9443 MD 92.54 INC 90.30 AZM 7494.83 TVD 1853.6 VS		9538 MD 90.12 INC 89.67 AZM 7492.59 TVD 1948.6 VS		9633 MD 89.13 INC 89.80 AZM 7493.21 TVD 2043.5 VS	7535

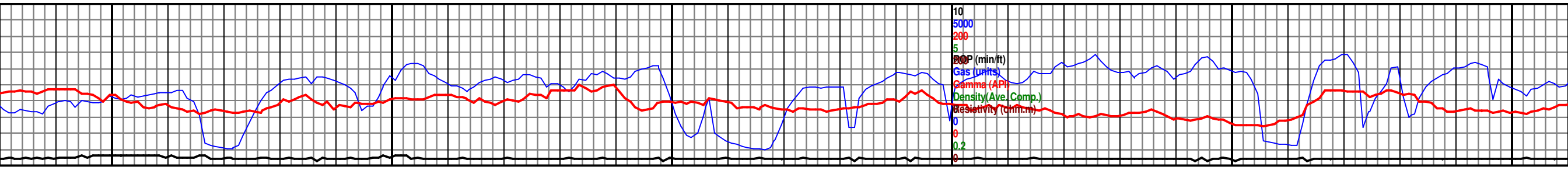




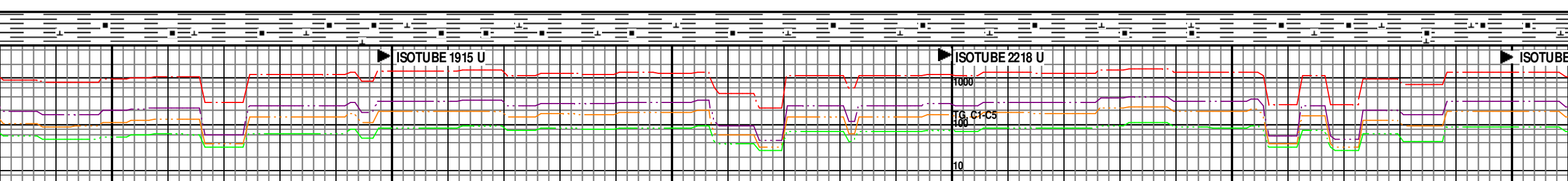


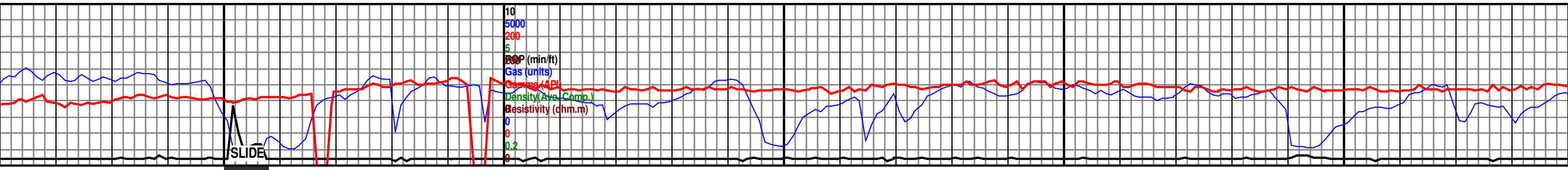
50	10000	10050	10100	10150	10200
SH- DK GY-GY, FRM-HD, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, SCAT CALCITE FLD FRAC, V CALC	7487 SH- DK GY-GY, FRM-HD, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, SCAT CALCITE FLD FRAC, V CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, SCAT CALCITE FLD FRAC, V CALC	SH- GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM INTBD & CALCITE FLD FRAC, V CALC	SH- GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM INTBD & CALCITE FLD FRAC, V CALC	7485 SH- GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM INTBD & CALCITE FLD FRAC, V CALC
<p>CP #4, TARGET @ 2500' VS= 10,090'MD, 7495'TVD</p> <p>11/18/2013</p>					
	7510				7510
				<p>WOB. 6-7K RPM. 65 PP. 3350 SPM. 60 GPM. 269</p> <p>WT. IN 9.2+, OUT 9.1 VIS. IN 40, OUT 41</p>	
	<p>10013 MD 89.51 INC 90.79 AZM 7494.03 TVD 2423.5 VS</p>		<p>10108 MD 89.32 INC 90.68 AZM 7495.00 TVD 2518.5 VS</p>		<p>10203 MD 89.69 INC 90.66 AZM 7495.82 TVD 2613.5 VS</p>
	7535				7535



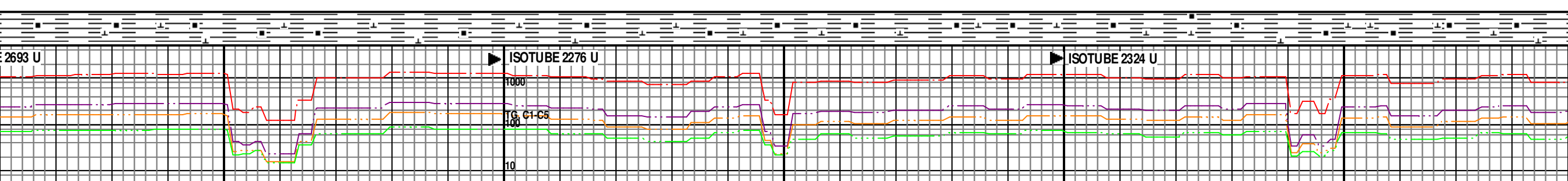


10250	10300	10350	10400	10450	10500
HD, BLKY, BWXY, CARB, INTBD & CALCITE FLD	SH- GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM INTBD & CALCITE FLD FRAC, V CALC	SH- DK GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM CALCITE FLD FRAC, V CALC	SH- GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM INTBD & CALCITE FLD FRAC, V CALC	SH- DK GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM CALCITE FLD FRAC, V CALC	SH- DK GY-SCAT LT GY, FRM-HD, BLKY, SBPLTY-PLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, COM CALCITE FLD FRAC, V CALC
				7485 7510 WOB. 7-8K RPM. 65 PP. 3473 SPM. 59 GPM. 266 WT. IN 9.2+, OUT 9.0 VIS. IN 41, OUT 40	
	10297 MD 90.00 INC 90.86 AZM 7496.07 TVD 2707.5 VS		10392 MD 89.63 INC 90.41 AZM 7496.38 TVD 2802.5 VS		10487 MD 89.57 INC 90.30 AZM 7497.05 TVD 2897.5 VS





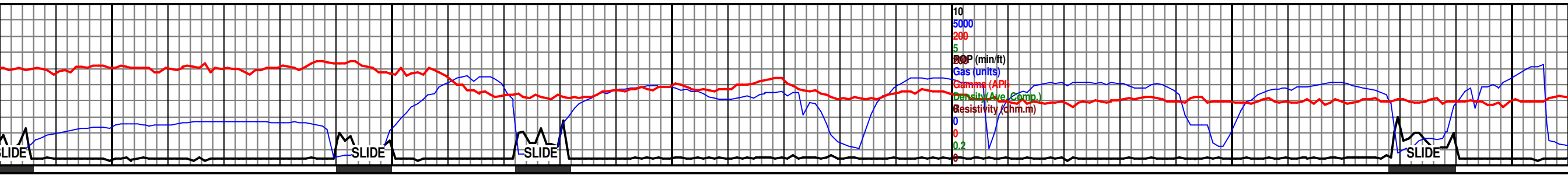
10550	10600	10650	10700	10750
GY-GY, FRM-HD, BLKY, SBPLTY, SBWXY, CARB, SCAT CALCITE, SCAT FLD FRAC, V CALC	SH- DK GY-GY, FRM-HD, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, SCAT CALCITE FLD FRAC, V CALC	7485 TVD SH- DK GY-GY-SME LT GY, FRM-HD, BLKY, SBPLTY, SBRTHY-SBWXY, CARB, SCAT CALCITE, SCAT CALCITE FL FRAC, V CALC	SH- GY-DK GY, LT GY, BLKY-PLTY, SBWXY, CARB W/ OCC CARB LAM, V CALC-LMY, SME CALC FL FRAC & CALCITE, SFT-FRM.	SH- GY-DK GY, LT GY, BLKY-PLTY, SBWXY, CARB W/ OCC CARB LAM, V CALC-LMY, SME CALC FL FRAC & CALCITE, SFT-FRM.
	X			
<b>CP #5, TARGET @ 3000' VS= 10,590' MD, 7495' TVD</b>				
		7510		
	WT. 9.25, VIS. 40, PV. 15, YP. 13, WL. 4.0, FC. 2/32, CORR. SLDS. 3.7, MBT. 5.0, pH. 8.7, CL. 2100, LGS/HGS. 0.3/3.4%.		WOB. 7-9K RPM. 65 PP. 3445 SPM. 60 GPM. 269	
	10582 MD 90.18 INC 90.10 AZM 7497.25 TVD 2992.5 VS	7535	10677 MD 90.80 INC 89.68 AZM 7496.44 TVD 3087.5 VS	10772 MD 90.68 INC 89.27 AZM 7495.21 TVD 3182.5 VS



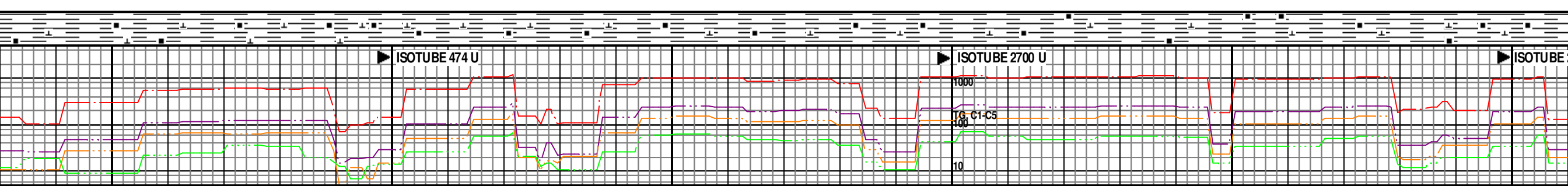


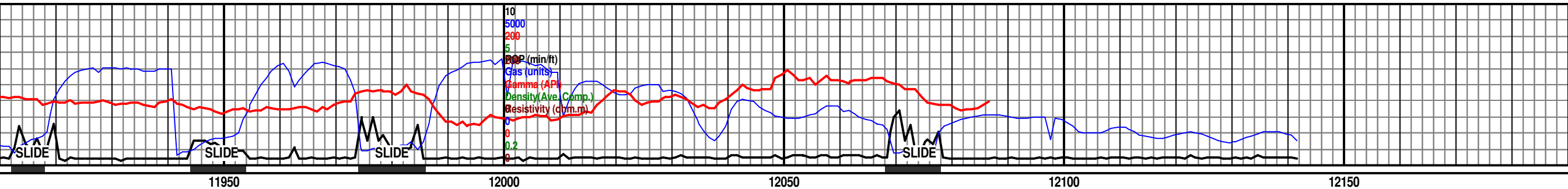






11650		11700		11750		11800		11850		11900	
SH- DK GY-GY/BLK, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, CARB, SCAT CALC FLD FRAC, V CALC		SH- DK GY-GY, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, SME LSE CALCITE, CARB, V CALC		SH- DK GY-GY, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, SME LSE CALCITE, CARB, V CALC		SH- DK GY-GY, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, SME LSE CALCITE, CARB, V CALC		SH- DK GY-GY, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, SME LSE CALCITE, CARB, V CALC		SH- DK GY-GY, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, SME LSE CALCITE, CARB, V CALC	
								11/19/2013			
WT. IN 9.2, OUT 9.1+ VIS. IN 43, OUT 40										WT. IN VIS. IN	
WOB. 12-13K RPM. 0 PP. 3652 SPM. 60 GPM. 270										W R P S G	
		11721 MD 90.37 INC 91.35 AZM 7480.03 TVD -4130.5 VS						11816 MD 91.05 INC 91.29 AZM 7478.86 TVD -4225.5 VS		1191 90.2 91.4 7477 4320	





11950	12000	12050	12100	12150
K GY-GY, FRM-HD, PLTY, HY-SBWXY, SCAT INTBD CALCITE, CALCITE, CARB, V CALC	SH- DK GY-GY, FRM-HD, PLTY, SBRTHY-SBWXY, SCAT INTBD CALCITE, SME LSE CALCITE, CARB, V CALC	SH- GY, FRM-HD, SBPLTY, SBRTHY-SBWXY, OCC INTBD CALCITE, SCAT LSE CALCITE, CARB, V CALC	SH- DK GY-GY-OCC LT GY, FRM-HD, SBPLTY, SBRTHY-SBWXY, DECR INTBD CALCITE, DECR LSE CALCITE, CARB, V CALC	SH- DK GY-GY-OCC LT GY, FRM-HD, SBPLTY, SBRTHY-SBWXY, OCC INTBD CALCITE, SME LSE CALCITE, CARB, V CALC
9.2, OUT 9.1 43, OUT 43			WT. IN 9.2+, OUT 9.1 VIS. IN 43, OUT 43	
WOB. 6-7K RPM. 65 PP. 3829 SPM. 60 GPM. 269			WOB. 6-7K RPM. 65 PP. 3840 SPM. 60 GPM. 266	
11 MD 5 INC 9 AZM 7.79 TVD 1.4 VS	12006 MD 92.22 INC 92.51 AZM 7475.74 TVD 4415.4 VS	12078 MD 93.52 INC 92.36 AZM 7472.13 TVD 4487.2 VS	12142 MD 93.52 INC 92.36 AZM 7468.21 TVD 4551.1 VS	
	7460 TVD			
	7485			
	7510			
				CP #8, TARGET @ TD = 11,142' MD, 7470' TVD
				TD @ 12142 'MD, 7468' TVD ON 11/19/2013 AT 5:00am DRILLERS DEPTH.
				Projection to bit survey

