



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

Well Name: Howard 24N-22HZ  
 Location: Weld County, CO.  
 License Number: 05123382330000  
 Spud Date: 10/20/13  
 Surface Coordinates: 800'FSL & 905'FEL, SEC.27, T1N-R67W  
 Region: Weld County  
 Drilling Completed: 10/28/13  
 Bottom Hole Coordinates: 2175'FSL & 916'FEL, SEC.22, T1N-R67W  
 Ground Elevation (ft): 5068' K.B. Elevation (ft): 5084'  
 Logged Interval (ft): 7000' To: 7900' Total Depth (ft): 14800'  
 Formation: Niobrara B  
 Type of Drilling Fluid: Water Based Mud

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

#### OPERATOR

Company: Anadarko Petroleum Corporation  
 Address: Granite Tower  
 1099 18th Street, #1800  
 Denver, CO 80202

#### GEOLOGIST

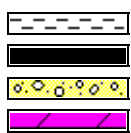
Name: Scott Crozier / Ben Thompson  
 Company: Great Divide Consulting, Inc  
 Address: P.O. Box 630263  
 Highlands Ranch, CO 80163

#### Comments

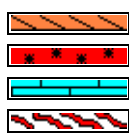
#### ROCK TYPES



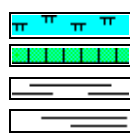
Anhy  
Bent  
Brec  
Cht



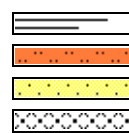
Clyst  
Coal  
Congl  
Dol



Gyp  
Igne  
Lmst  
Meta

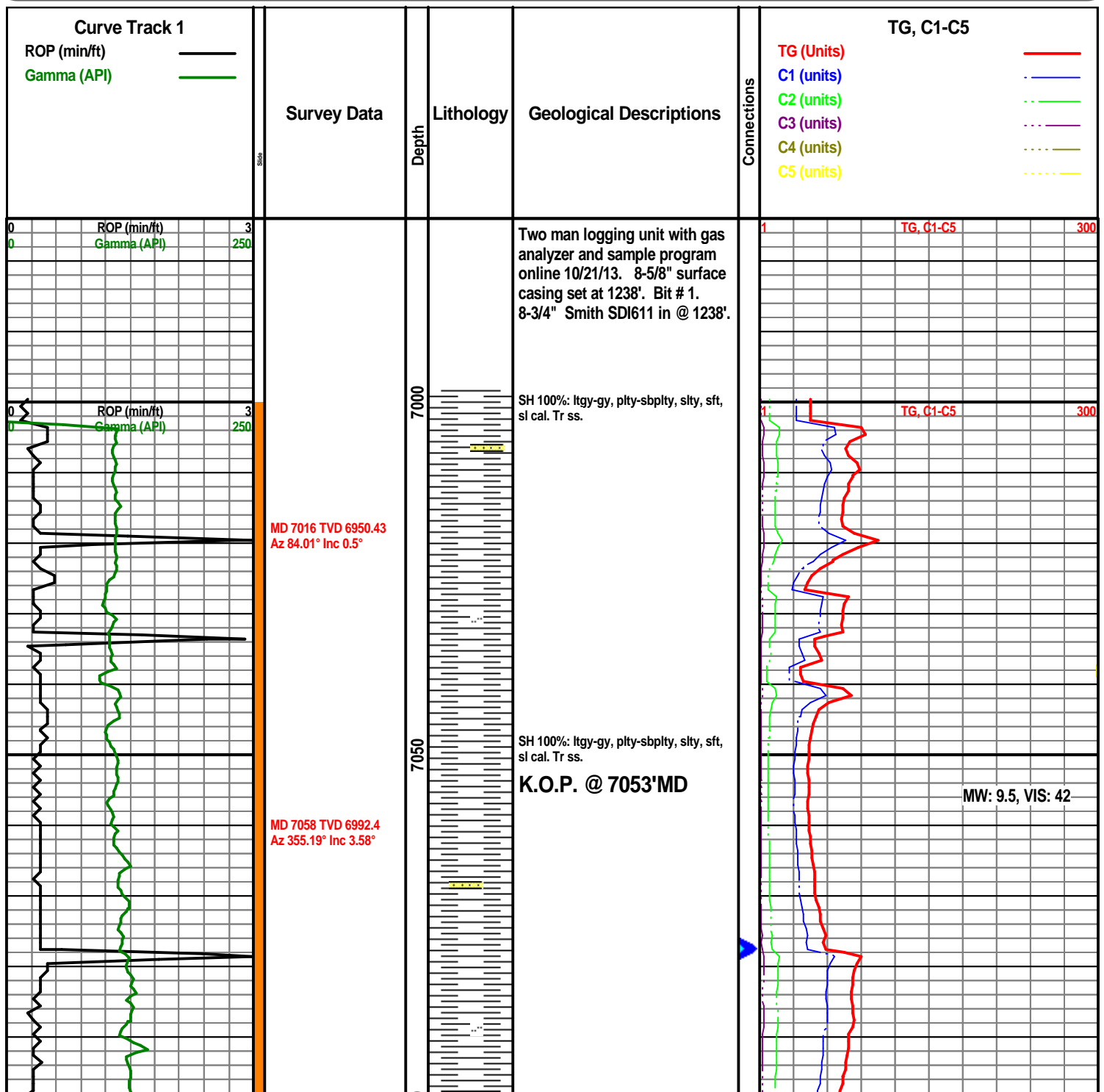


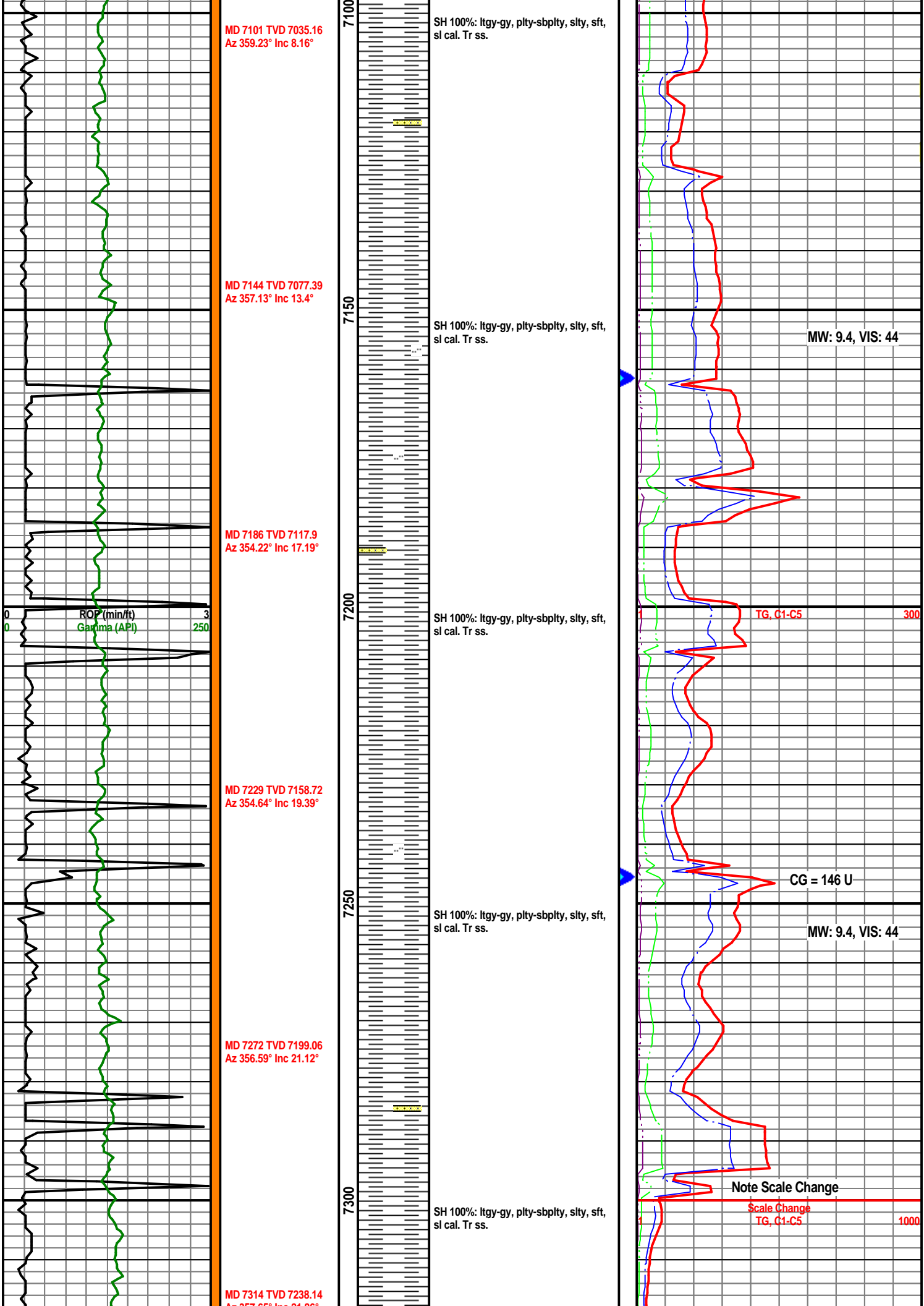
Mrlst  
Salt  
Shale  
Shcol

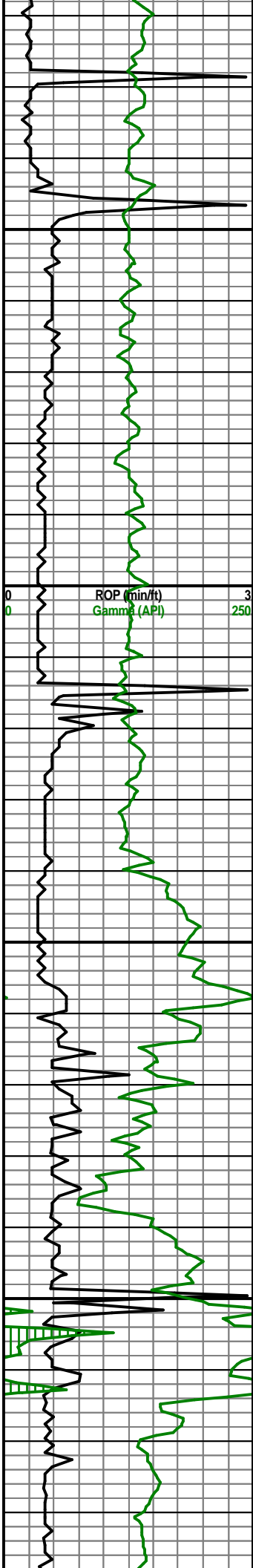


Shgy  
Sltst  
Ss  
Till

<b>BS</b>	<b>Boundst</b>
<b>C</b>	<b>Chalky</b>
<b>CX</b>	<b>CryxIn</b>
<b>E</b>	<b>Earthy</b>
<b>FX</b>	<b>FinexIn</b>
<b>GS</b>	<b>Grainst</b>
<b>L</b>	<b>Lithogr</b>
<b>MX</b>	<b>MicroxIn</b>
<b>MS</b>	<b>Mudst</b>
<b>PS</b>	<b>Packst</b>
<b>WS</b>	<b>Wackest</b>







MD 7357 TVD 7277.6  
Az 357.65° Inc 21.86°

MD 7399 TVD 7314.97  
Az 357.31° Inc 29.33°

MD 7442 TVD 7351.66  
Az 356.24° Inc 33.49°

MD 7484 TVD 7385.78  
Az 355.04° Inc 37.83°

MD 7527 TVD 7419.07  
Az 352.99° Inc 40.7°

7350

7400

7450

7500

SH 100%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Tr ss.

SH 100%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Tr ss.

Sharon Spgs Top @  
7439' MD / 7349' TVD

SH 100%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Tr Bent. Tr Pyt.

Niobrara A Top @  
7464' MD, 7370' TVD

SH 90%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Chalky Mrlst 10%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. Tr Pyt.

Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

MW: 9.4, VIS: 44

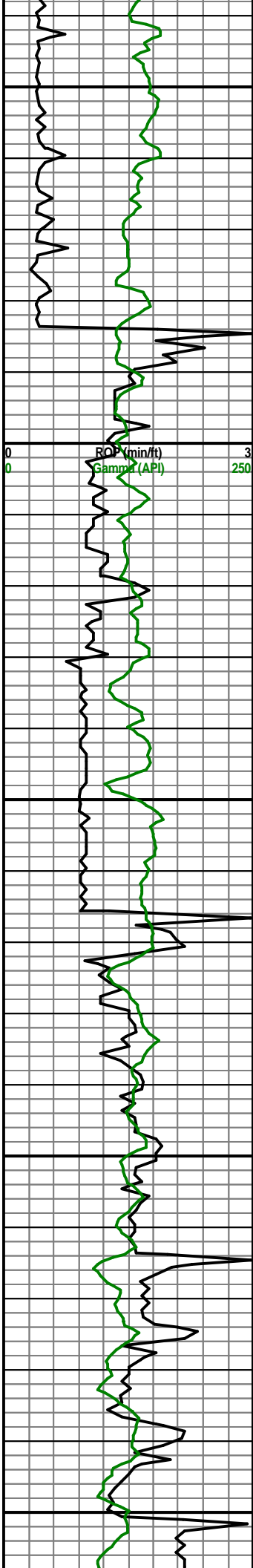
TG, C1-C5

1000

MW: 9.6, VIS: 42

PG = 901 U

On Gas Buster



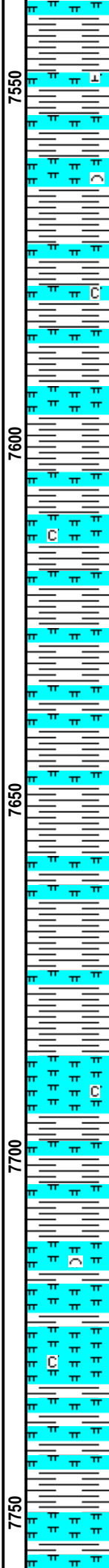
MD 7567 TVD 7448.39  
Az 352.55° Inc 45.01°

MD 7609 TVD 7476.74  
Az 354.71° Inc 50.05°

MD 7652 TVD 7502.72  
Az 359.08° Inc 55.59°

MD 7695 TVD 7525.23  
Az 0.89° Inc 61.25°

MD 7737 TVD 7543.45  
Az 1.67° Inc 67.32°



Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

T.O.O.H for mud motor @ 9:20PM 10/22/13. B.O.B and drilling ahead with Bit# 2 8.75 Hughes VG-03 in at 7583 @ 6:52AM 10/23/13.

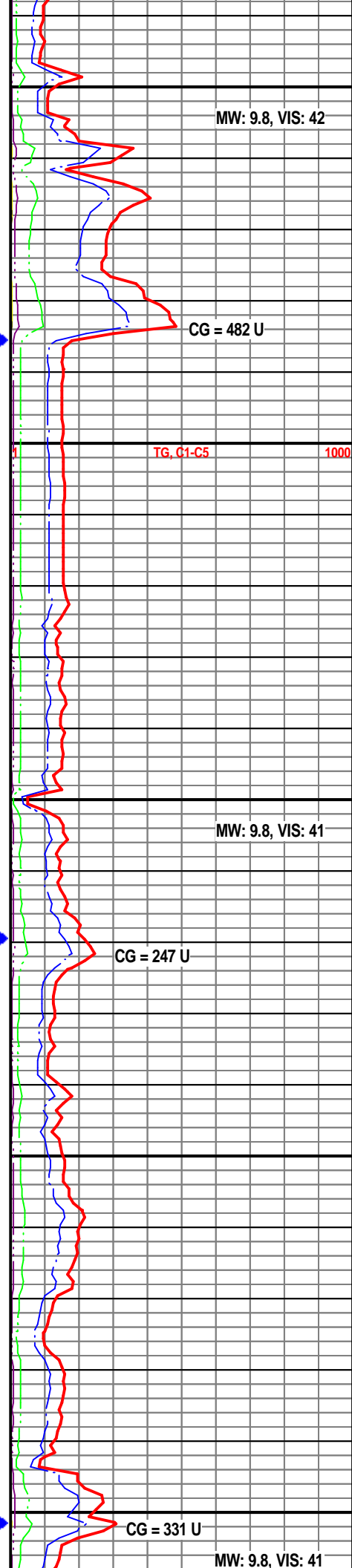
Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Niobrara B Top @ 7714' MD. 7534' TVD

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.



MW: 9.8, VIS: 42

CG = 482 U

TG, C1-C5

1000

MW: 9.8, VIS: 41

CG = 247 U

CG = 331 U

MW: 9.8, VIS: 41

