



Scale: 5" / 100'  
Measured Depth Log

<b>Well Name</b>	HOLMAN B15-65HNM HORZ	<b>County</b>	WELD
<b>Location</b>	SENW SEC 14 T5N R64W	<b>Rig Number</b>	H&P 315
<b>State</b>	COLORADO	<b>AFE #</b>	136883
<b>Country</b>	USA	<b>Field</b>	KERSEY
<b>API Number</b>	05-123-37200	<b>Drilling Completed</b>	11/13/2013
<b>Region</b>	DJ BASIN		
<b>Spud Date</b>	9/3/2013		
<b>Surface Coordinates</b>	SENW SEC 14 T5N R64W 2,186' FNL; 2,297' FWL LAT/LONG: 40.400560/-104.518540		
<b>Bottom Hole Coordinates</b>	SWNW SEC 15 T5N R64W 535' FWL; 2,600' FNL		
<b>Ground Elevation</b>	4584'	<b>K.B. Elevation</b>	4608'
<b>Logged Interval</b>	5973'	<b>To</b>	13031'
<b>Formation</b>	NIOBRARA B CHALK		
<b>Type of Drilling Fluid</b>	LSND		

**Company** Noble Energy Inc  
**Address** 1625 BROADWAY  
DENVER, CO 80202

**Name** MARK COLE, N  
**Company** COLUMBINE LOGGING  
**Address** 2385 S LIPAN ST  
DENVER, CO 80229



Operator

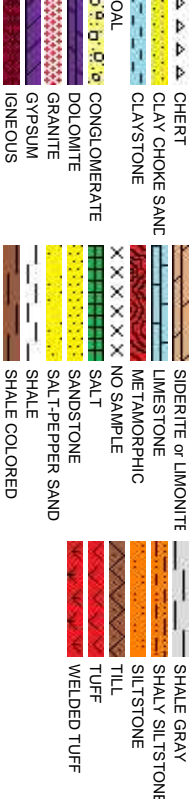
AY SUITE 2200  
0202

Geologist

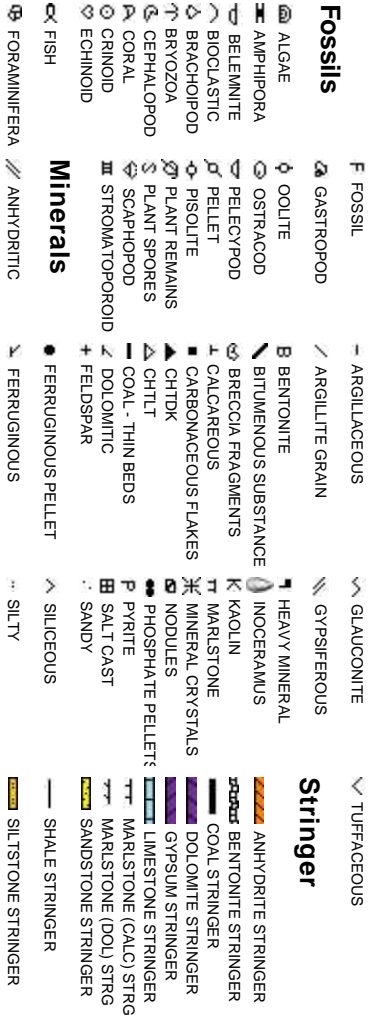
ATHAN MURPHY, JACK WEINERTH  
OGGING, INC

ST  
0223

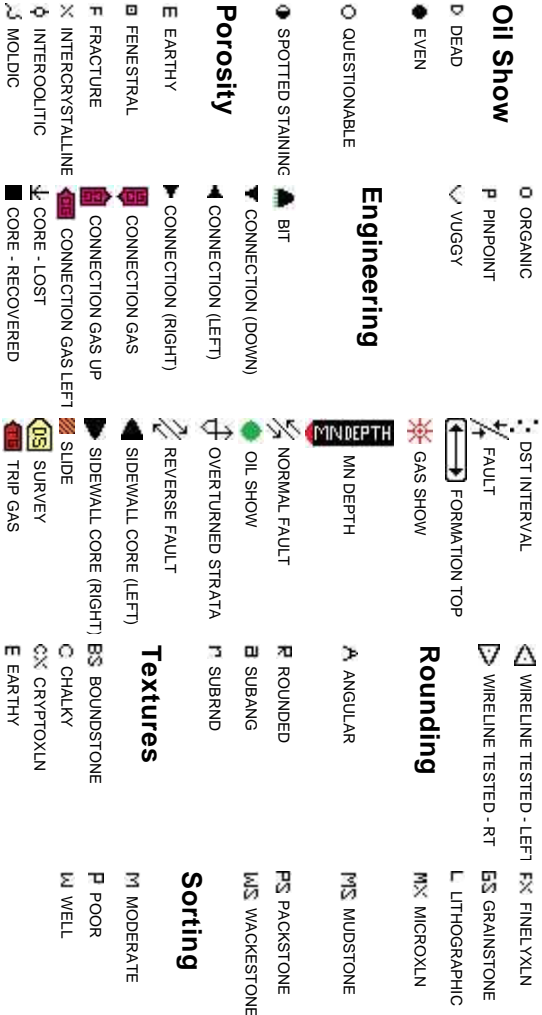
Rock Types



Accessories



Other Symbols



Slide/Rotate

ROP

ROP

Curves

GAMMA

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

Depth Labels

% Lith

Well Bore  
TVD

Oil Show

Images

ROP data from iBall

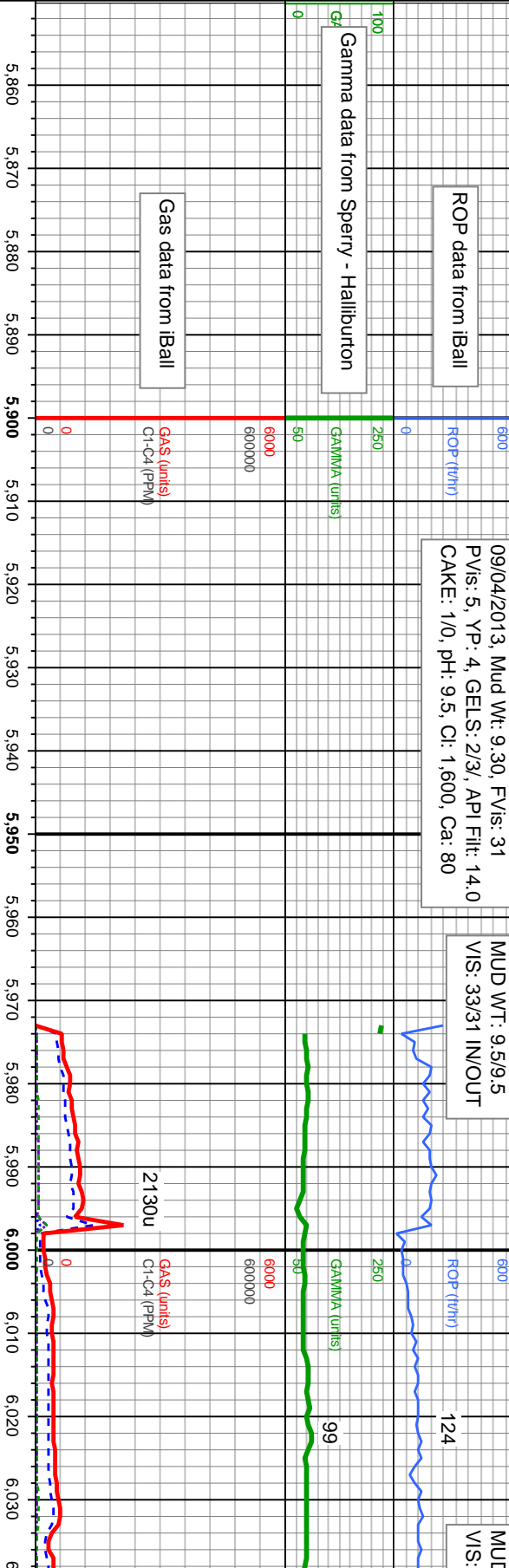
Gamma data from Sperry - Halliburton

Gas data from iBall

09/04/2013, Mud Wt: 9.30, FV/s: 31  
PV/s: 5, YP: 4, GELS: 2/3/, API Fil: 14.0  
CAKE: 1/0, pH: 9.5, Cl: 1.600, Ca: 80

MUD WT: 9.5/9.5  
VIS: 33/31 IN/OUT

MUD  
VIS:



50' Sample Interval @ 5,973' MD

Columbine Logging began logging with  
BloodHound unit 624 on 09/04/2013

MD: 5,942'  
TVD: 5,922.09'  
Inclination: 12.38 °  
Azimuth: 189.13 °  
VS: 21.6'

Bit Data

Bit #: 2  
Type: NOV/ ReedHycalog  
Size: 8.75"  
Depth In: 5,973'  
Jets: 5x14

TVD (ft)

TVD (ft)

SLTY SH: lt - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc

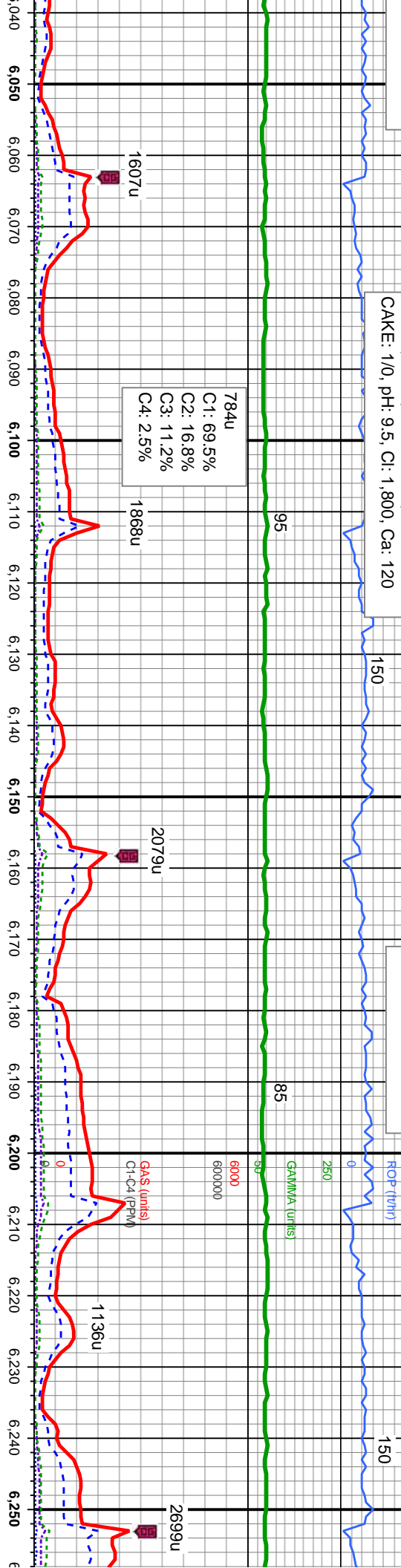
SLTY SH: lt - med gy, occ dk gy, sf  
sb pty, occ sb blkly, silty - grty tex,



D WT: 9.50/9.65  
33/33 IN/OUT

09/05/2013, Mud Wt: 9.40, FVIs: 32  
PVIs: 8, YP: 4, GELS: 4/5/7, API Filtr: 11.0  
CAKE: 1/0, pH: 9.5, Cl: 1,800, Ca: 120

MUD WT: 10.00/10.00  
VIS: 33/32 IN/OUT



MD: 6,057'  
TVD: 6,034.14'  
Inclination: 14.04 °  
Azimuth: 215.5°  
VS: 33.2'

MD: 6,104'  
TVD: 6,079.39'  
Inclination: 17.33 °  
Azimuth: 216.89°  
VS: 41.38'

MD: 6,152'  
TVD: 6,125.22'  
Inclination: 17.37 °  
Azimuth: 230.97°  
VS: 51.89'

MD: 6,199'  
TVD: 6,169.94'  
Inclination: 18.71 °  
Azimuth: 246.22°  
VS: 64.72'

MD: 6,247'  
TVD: 6,214.9'  
Inclination: 22.3 °  
Azimuth: 252.87°  
VS: 80.82'

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&lp, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&lp, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&lp, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&lp, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

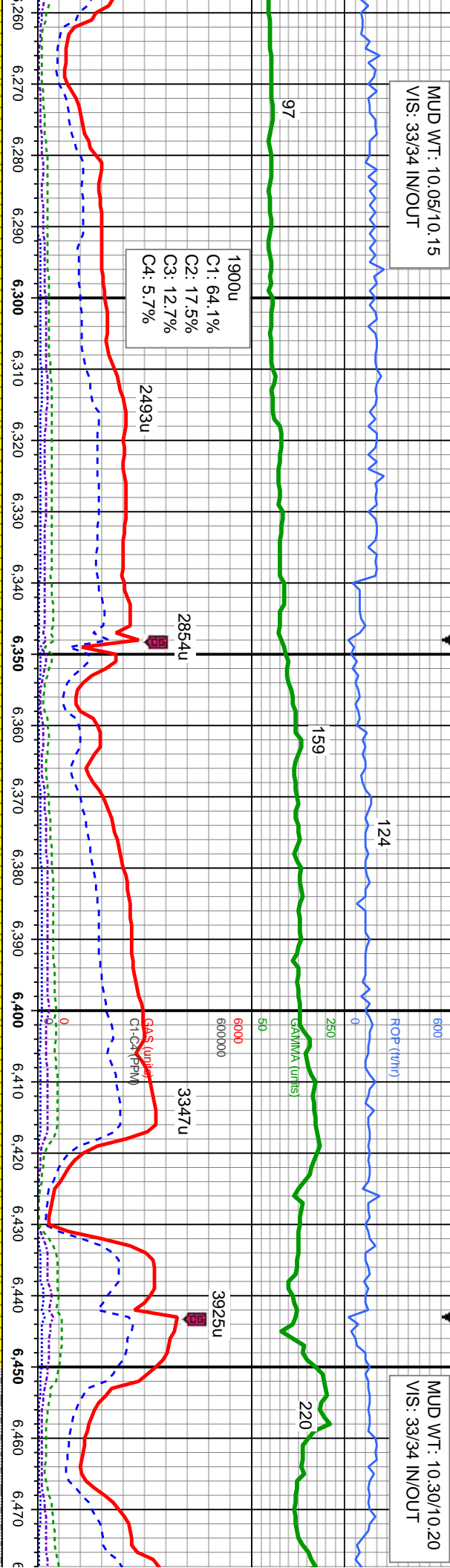
SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&lp, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt





MUD WT: 10.05/10.15  
VIS: 33/34 IN/OUT

MUD WT: 10.30/10.20  
VIS: 33/34 IN/OUT



<<Scale Change>>

25' Sample Interval @ 6,500' MD

Sharon Springs Marker @  
6,450 MD; 6,388' TVD

Niobrara Top  
6,479' MD; (

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
c sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&g, vfg, mod hd wi brit clus,  
- sb rd, calc cmt

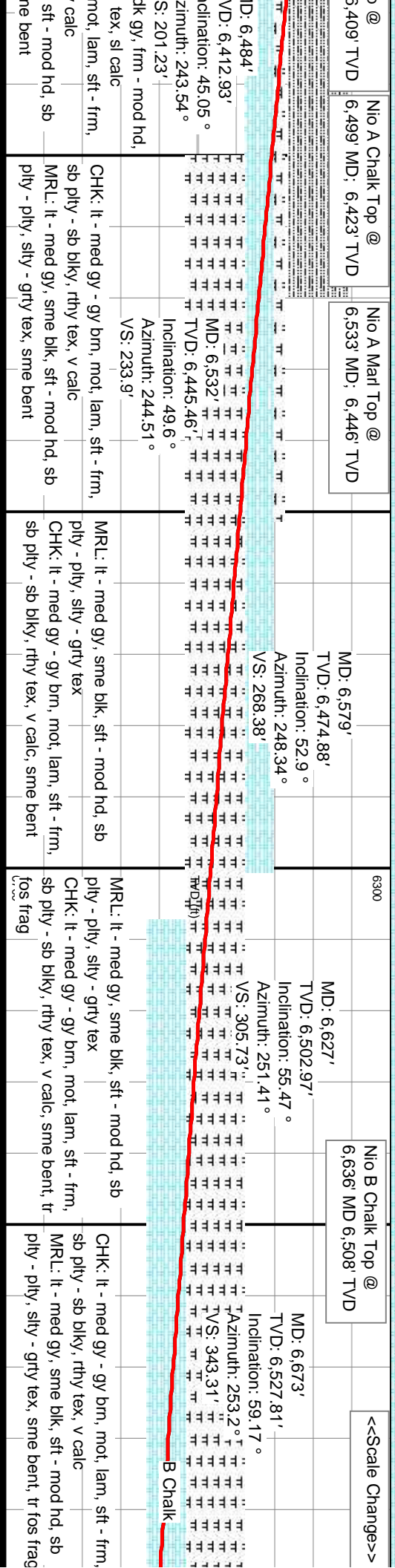
SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&g, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&g, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

SLTY SH: It - med gy, occ dk gy, hd, pty - sb  
pty, occ sb blkly, silty - grty tex, v sl calc  
SHY SS: It gy, s&g, vfg, mod hd wi brit clus,  
sb ang - sb rd, calc cmt

SLTY SH: It - medgy, occ  
sb pty - sb blkly, silty - grty  
CHK: It - med gy - gy brn,  
sb pty - sb blkly, rthy tex, v  
MRL: It - med gy, sme blk,  
pty - pty, silty - grty tex, sr





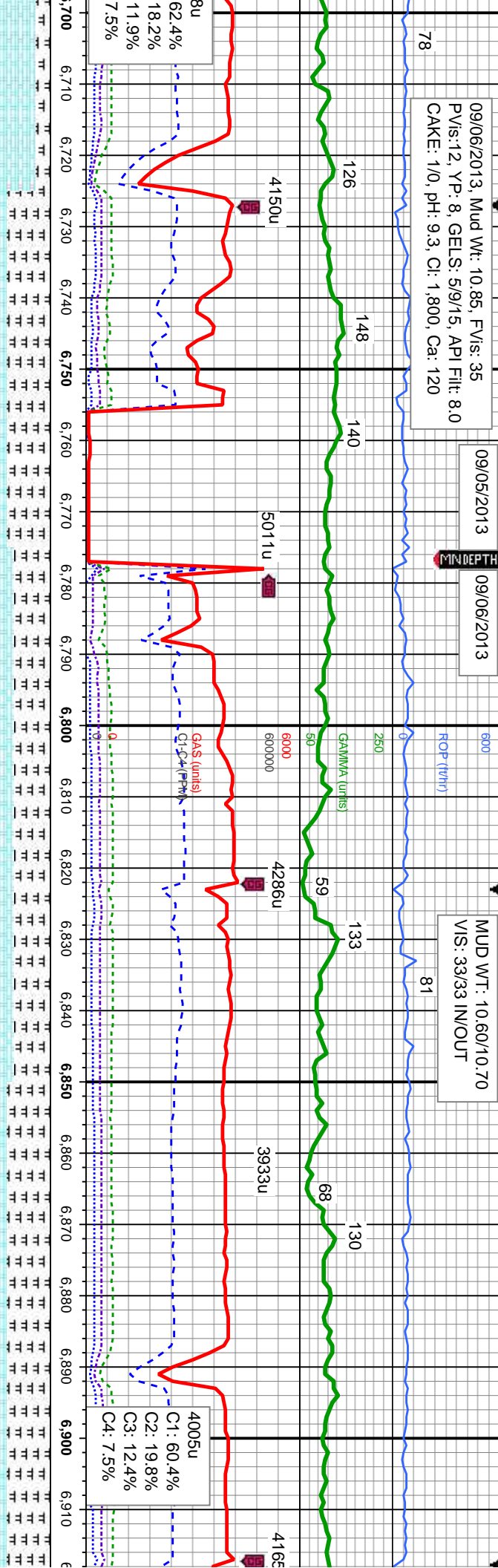


09/06/2013, Mud Wt: 10.85, FVIs: 35  
PVs:12, YP: 8, GELS: 5/9/15, API Filtr: 8.0  
CAKE: 1/0, pH: 9.3, CI: 1,800, Ca: 120

09/05/2013

09/06/2013

MUD WT: 10.60/10.70  
VIS: 33/33 IN/OUT



MD: 6,721'  
TVD: 6,550.73'  
Inclination: 63.76 °  
Azimuth: 254.4 °  
VS: -432.39'

B Chalk

MD: 6,768'  
TVD: 6,570'  
Inclination: 67.83 °  
Azimuth: 253.99 °  
VS: 427.41'

B Chalk

MD: 6,816'  
TVD: 6,585.85'  
Inclination: 73.58 °  
Azimuth: 254.8 °  
VS: 471.74'

Bit Data  
Bit #: 3  
Type: NOV/ Reedhyalog  
Size: 8.75"  
Depth In: 6,777'  
Jets: 5x14

MD: 6,863'  
TVD: 6,596.86'  
Inclination: 79.32 °  
Azimuth: 255.15 °  
VS: 516.53'

MD: 6,900'  
TVD: 6,633.00'  
Inclination: 79.32 °  
Azimuth: 255.15 °  
VS: 516.53'

MD: 6,900'  
TVD: 6,633.00'  
Inclination: 79.32 °  
Azimuth: 255.15 °  
VS: 516.53'

C Chalk

C Chalk

C Chalk

CHK: It - med gy - gy brn, mot, lam, sft - frm,  
sb ply - sb blk, rthy tex, v calc  
MRL: It - med gy, sme blk, sft - mod hd, sb  
ply - ply, sily - grty tex  
frag

MRL: It - med gy, sme blk, sft - mod hd, sb  
ply - ply, sily - grty tex  
CHK: It - med gy - gy brn, mot, lam, sft - frm,  
sb ply - sb blk, rthy tex, v calc, sme bent,  
sme fos frag

MRL: It - med gy, sme blk, sft - mod hd, sb  
ply - ply, sily - grty tex  
CHK: It - med gy - gy brn, mot, lam, sft - frm,  
sb ply - sb blk, rthy tex, v calc, sme bent,  
sme fos frag

MRL: It - med gy, sme blk, sft - mod hd, sb  
ply - ply, sily - grty tex  
CHK: It - med gy - gy brn, mot, lam, sft - frm,  
sb ply - sb blk, rthy tex, v calc, sme bent,  
sme fos frag

MRL: It - med gy, sme blk, sft - mod hd, sb  
ply - ply, sily - grty tex  
CHK: It - med gy - gy brn, mot, lam, sft - frm,  
sb ply - sb blk, rthy tex, v calc, sme bent,  
sme fos frag



MUD WT: 10.60/10.55  
VIS: 33/34 IN/OUT

09/06/2013

09/07/2013

09/07/2013, Mud Wt: 9.30, FV/s: 31  
PV/s: 5, YP: 5, GELS: 4/5/7, API Filtr: 18.0  
CAKE: 1/0, pH: 9.0, Cl: 1.800, Ca: 80

MUD WT: 9.30/9.50  
VIS: 31/31 IN/OUT

124

178

175

175

175

175

175

175

<<No Gamma Inside Casings>>

GAMMA (units)

250

50

6000

6000000

3909u

3544u

GA\$ (units)

C1-C4 (PPM)

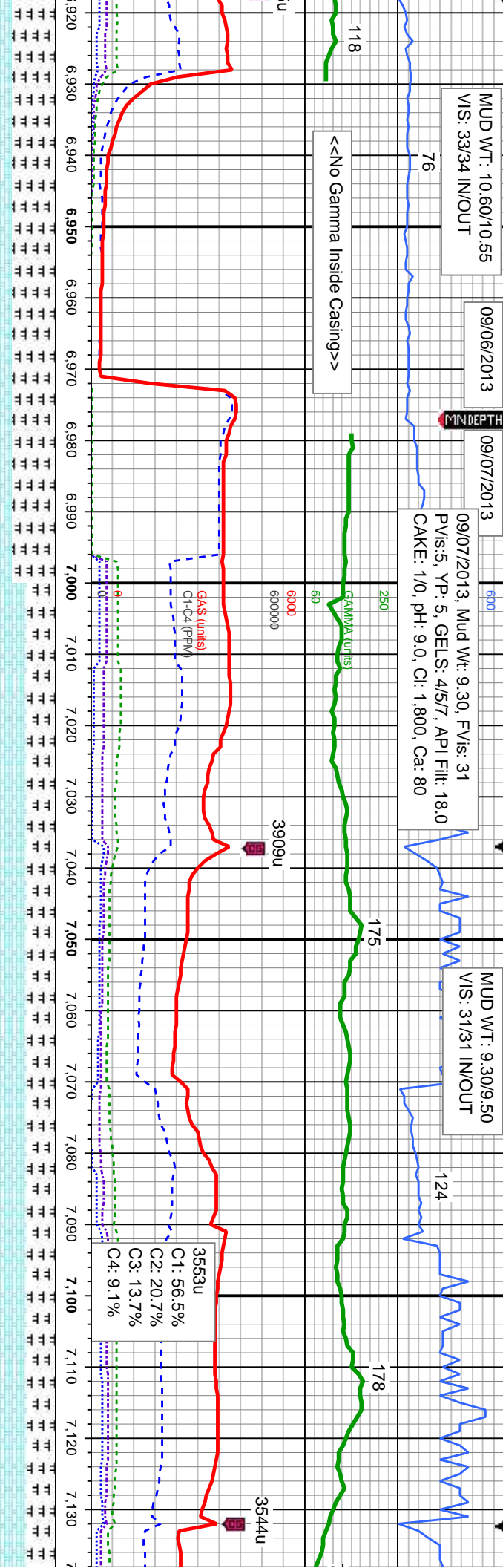
3553u

C1: 56.5%

C2: 20.7%

C3: 13.7%

C4: 9.1%



Bit Data  
Bit #: 4  
Type: Smith MDI513  
Size: 6.12"  
Depth In: 6.977"  
Jets: 5x14

50 Sample Interval @ 7,000' MD

MD: 7,006'  
TVD: 6,606.06'  
Inclination: 91.08°  
Azimuth: 262.19°  
VS: -495.11'

MD: 7,069'  
TVD: 6,604.37'  
Inclination: 92°  
Azimuth: 263.72°  
VS: -502.84'

C Chalk

C Chalk

C Chalk

C Chalk

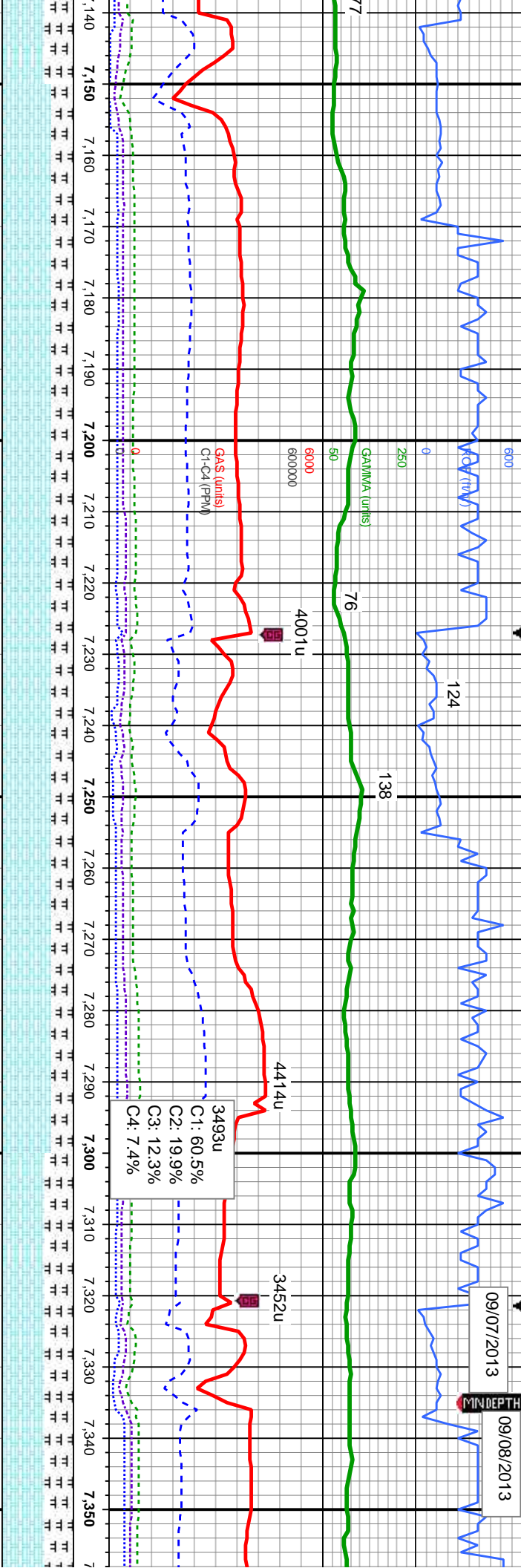
40% CHK: It - med gy - gy brn, mot, lam, sft - frn, sb ply - sb blk, rthy tex, v calc, abnt bent, sme fos frag	60% CHK: It - medgy - gy brn, mot, lam, sft - frn, sb ply - sb blk, rthy tex, v calc	40% MRL: It - medgy, sme blk, pred frn - mod hd, sb ply - sb blk, silty - grty tex, sme bent, abnt fos frag	60% CHK: It - medgy - gy brn, mot, lam, sft - frn, sb ply - sb blk, rthy tex, v calc	40% MRL: It - medgy, sme blk, pred frn - mod hd, sb ply - sb blk, silty - grty tex, sme bent, sme fos frag	60% CHK: It - medgy - gy brn, mot, lam, sft - frn, sb ply - sb blk, rthy tex, v calc	40% MRL: It - medgy, sme blk, pred frn - mod hd, sb ply - sb blk, silty - grty tex, sme bent, sme fos frag
--	--	---	--	--	--	--



09/07/2013

09/08/2013

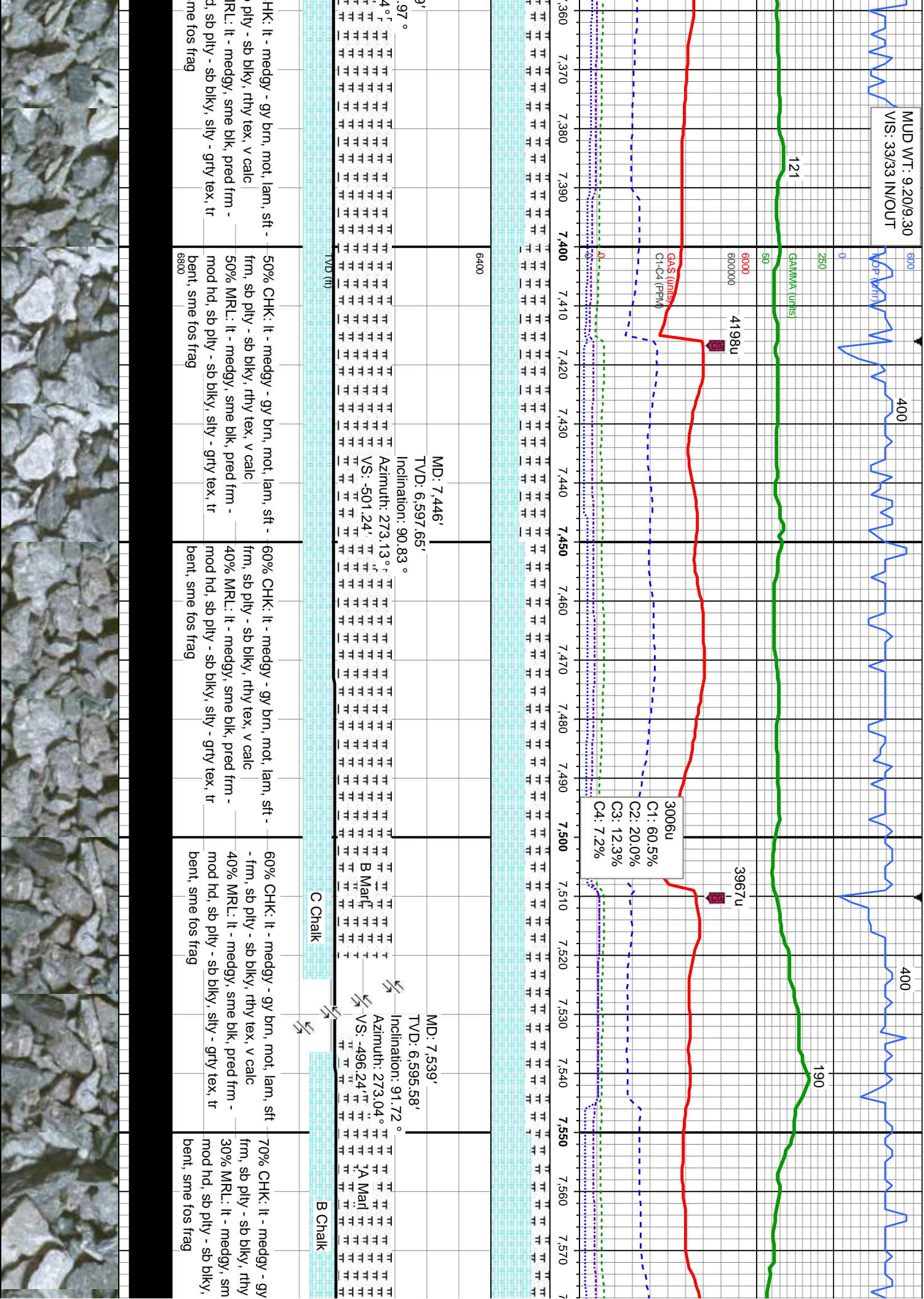
MIN DEPTH



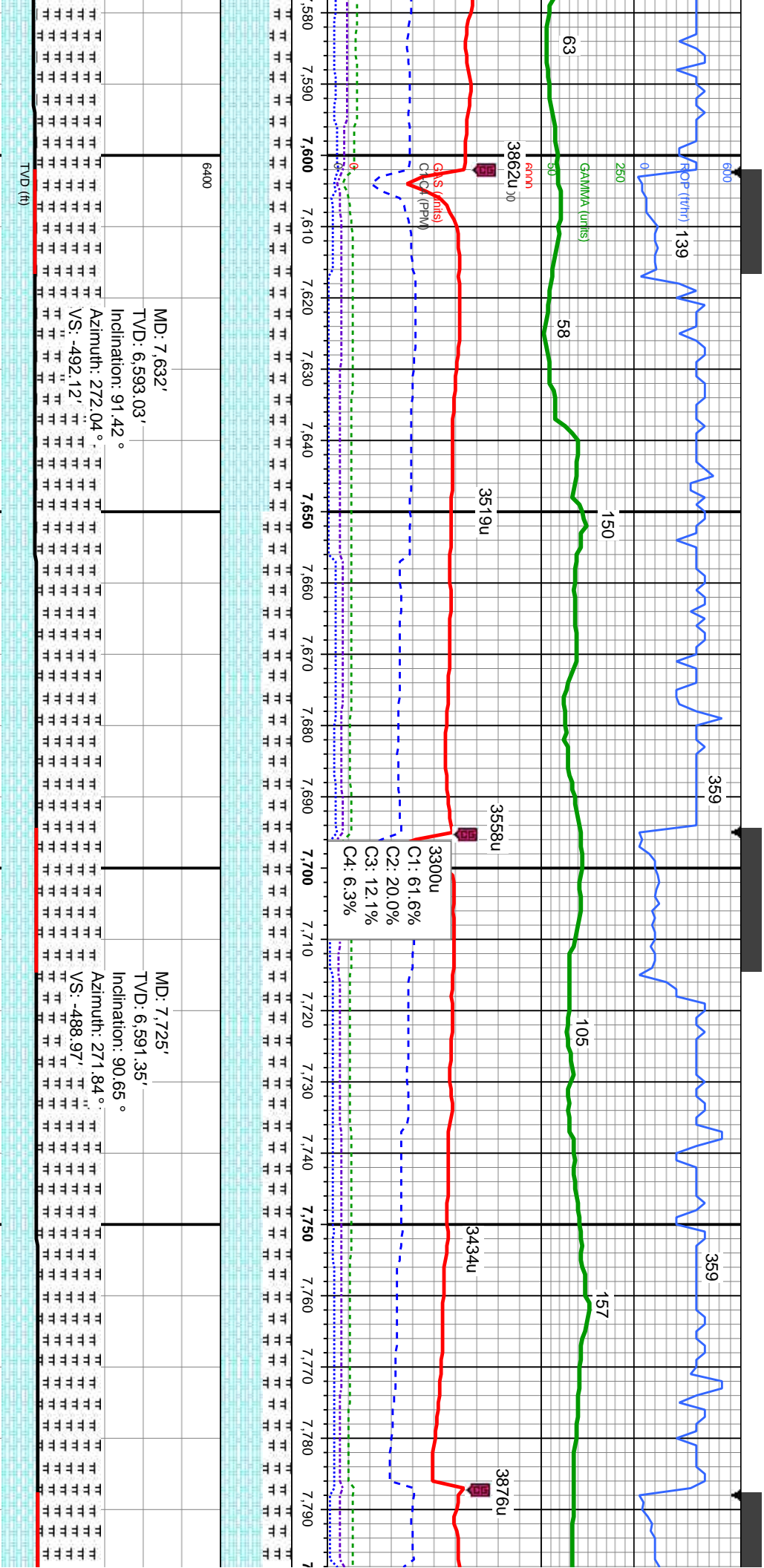
MD: 7.164'	MD: 7.259'	MD: 7.354'
TVD: 6,601.2'	TVD: 6,598.98'	TVD: 6,598.2'
Inclination: 91.82 °	Inclination: 90.86 °	Inclination: 89
Azimuth: 269.36 °	Azimuth: 270.86 °	Azimuth: 272
VS: -508.56'	VS: -508.38'	VS: -505.68'
Marl		
alk		

70% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr bent, sme fos frag	70% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, sme fos frag	60% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 40% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr bent, sme fos frag
--	--	--



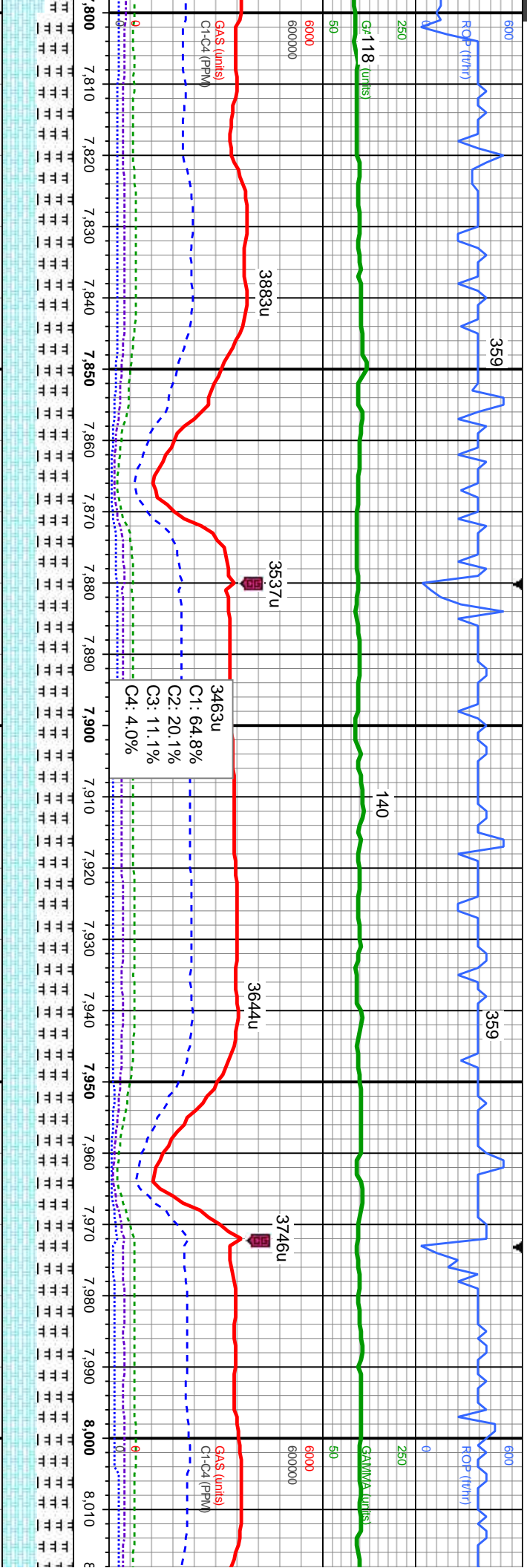




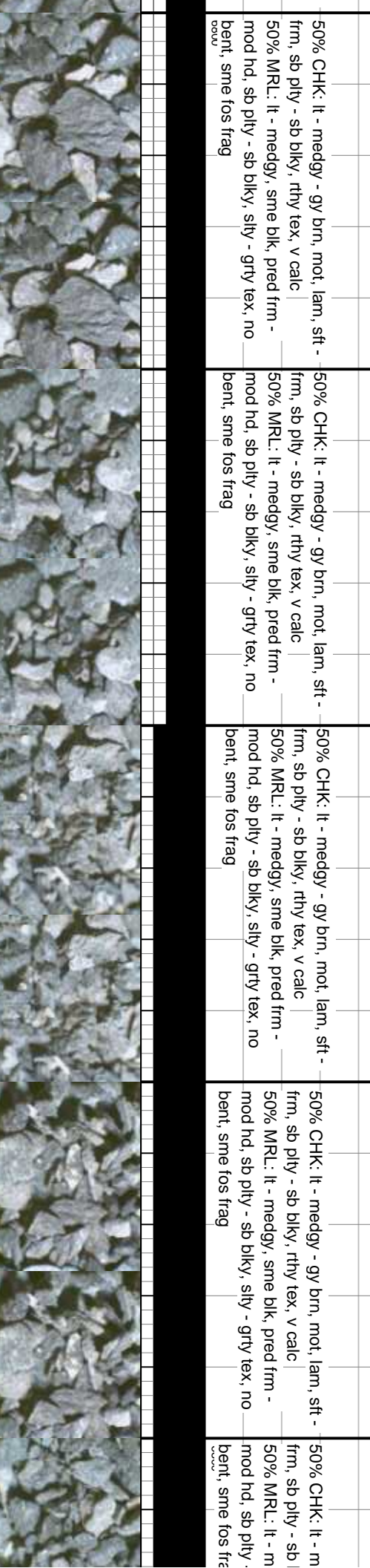


brn, mot, lam, sft - tex, v calc	70% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
e blk, pred frm - sily - grty tex, tr	30% MRL: lt - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, sme bent, sme fos frag	40% MRL: lt - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, sme bent, sme fos frag	40% MRL: lt - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, no bent, sme fos frag	40% MRL: lt - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, no bent, sme fos frag

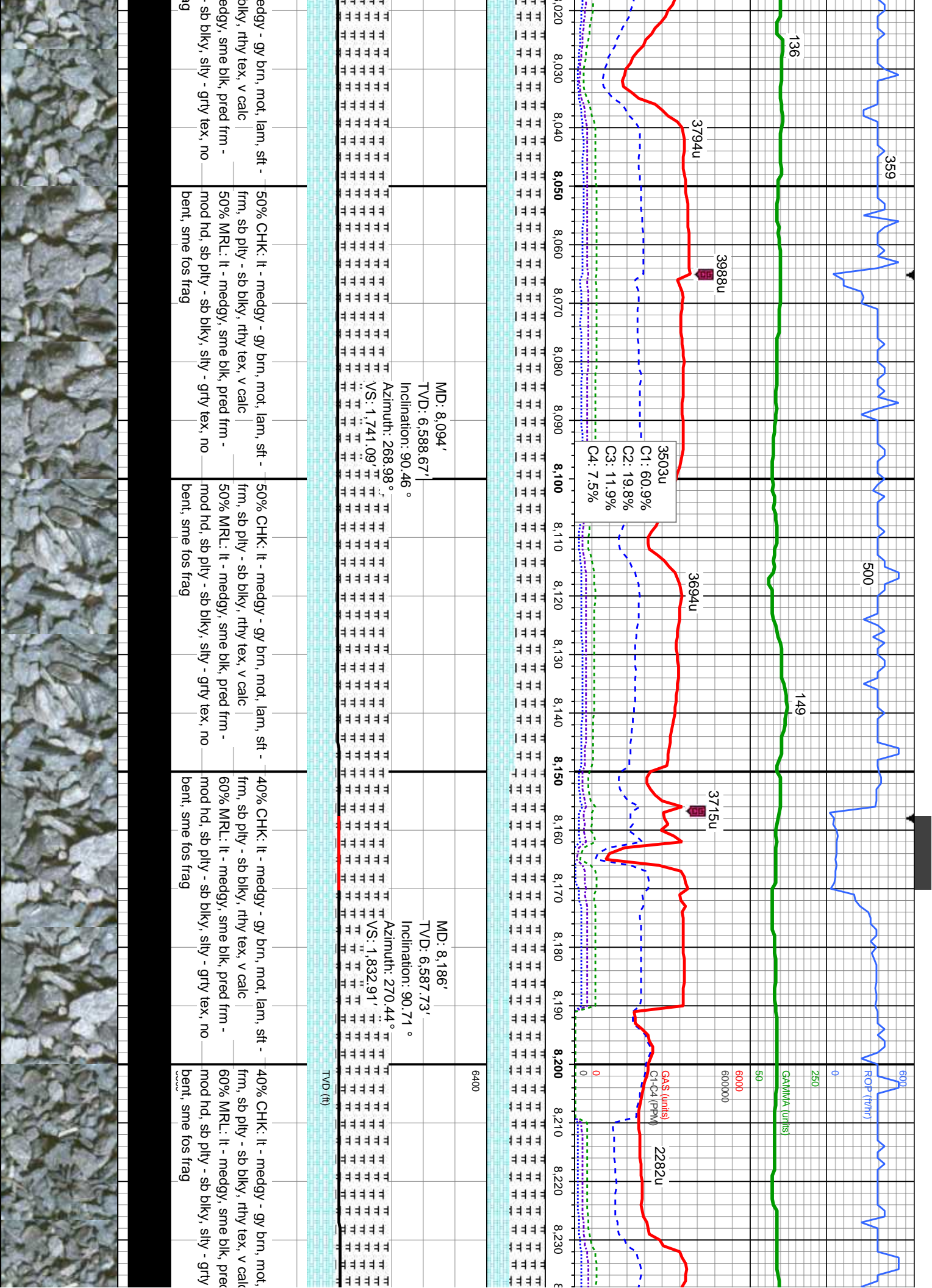


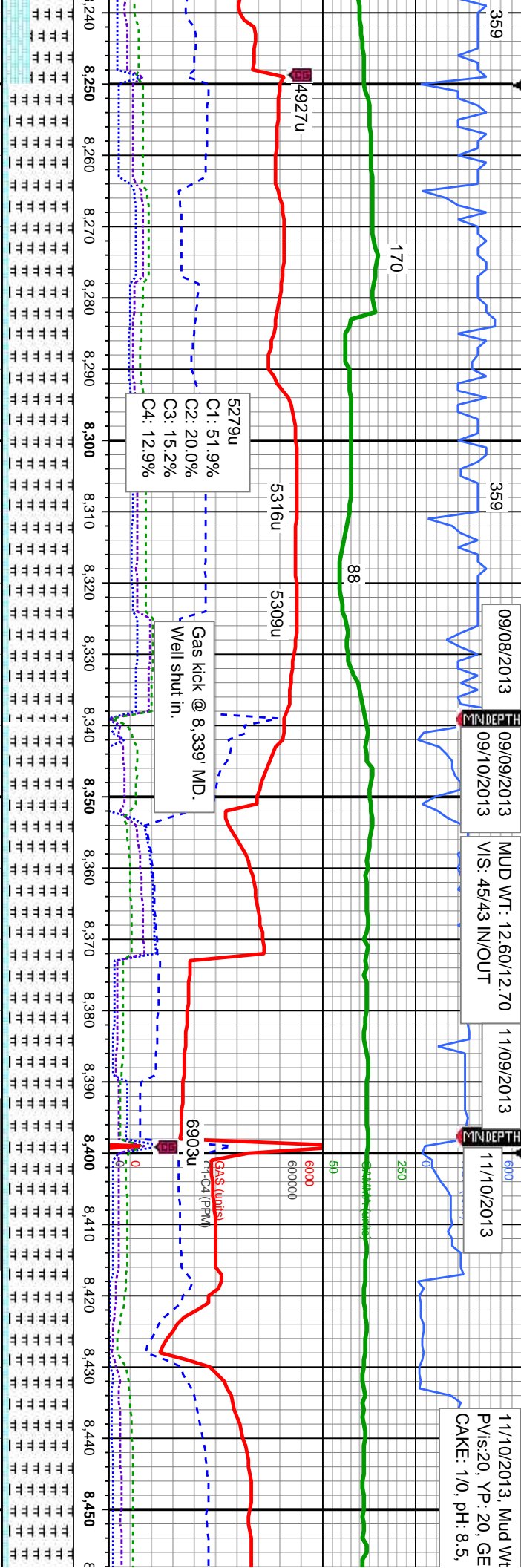


MD: 7,817' TVD: 6,590.56' Inclination: 90.34 ° Azimuth: 271.46 ° VS: -486.32'		MD: 7,909' TVD: 6,589.81' Inclination: 90.59 ° Azimuth: 271.05 ° VS: 1,556.48'		MD: 8,001' TVD: 6,589.19' Inclination: 90.18 ° Azimuth: 269.67 ° VS: 1,648.23'	
TVD (ft)		TVD (ft)		TVD (ft)	
50% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc		50% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc		50% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	
50% MRL: lt - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, sme fos frag		50% MRL: lt - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, sme fos frag		50% MRL: lt - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, sme fos frag	









MD: 8,276'  
TVD: 6,585.43'  
Inclination: 92.22°  
Azimuth: 271.06°

MD: 8,337'  
TVD: 6,582.23'  
Inclination: 93.8°  
Azimuth: 272.62°

Well control completed @ 11:30 on 09/10/2013.  
Well TDed @ 8,339' MD.  
Well re-entered and began drilling again on 11/09/2013

Bit Data  
Bit #: 5  
Type: Varel VS513D  
Size: 6.12"  
Depth In: 8,339'  
Jets: 5x15

MD: 8,429'  
TVD: 6,576.85'  
Inclination: 92.9°  
Azimuth: 271.65°  
VS: 2,074.57'

B Chalk

A Marl

B Chalk

10% CHK: It - medgy - gy brn, mot, lam, stf - frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, v about bent, sme fos frag

10% CHK: It - medgy - gy brn, mot, lam, stf - frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, v about bent, sme fos frag

10% CHK: It - medgy - gy brn, mot, lam, stf - frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, about bent, sme fos frag

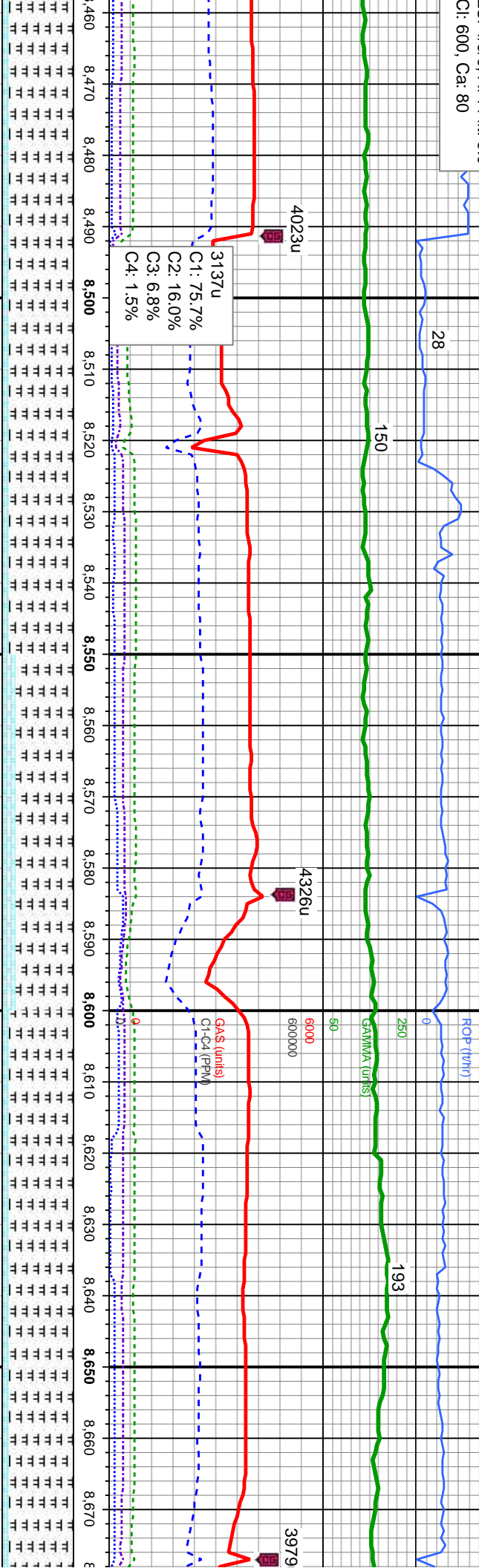
10% CHK: It - medgy - gy brn, mot, lam, stf - frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, sme bent, tr fos frag

10% CHK: It - medgy - gy brn, mot, lam, stf - frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, bent,



13.20, FV/s: 40  
LS: 4/6/9, API Filtr: 9.0  
CI: 600, Ca: 80

MUD WT: 13.60/13.10 IN/OUT



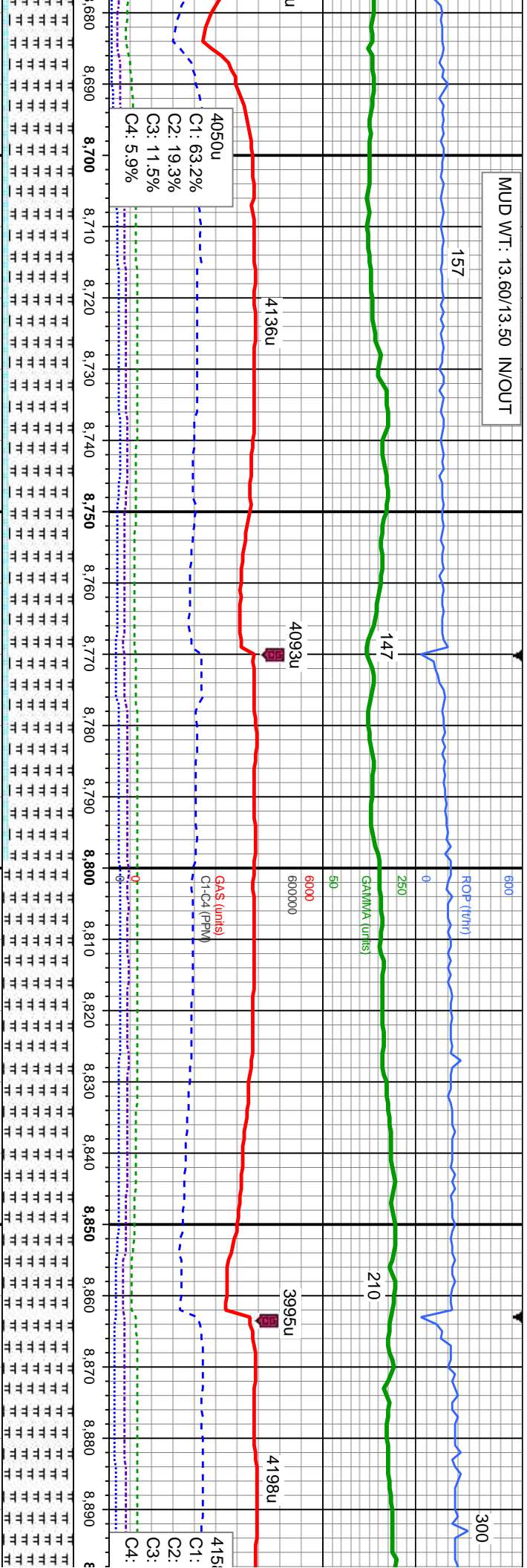
MD: 8,521'  
TVD: 6,574.92'  
Inclination: 89.51 °  
Azimuth: 271.1 °  
VS: 2,166.16'

MD: 8,613'  
TVD: 6,575.73'  
Inclination: 89.48 °  
Azimuth: 271.04 °  
VS: 2,257.83'

CHK: It - medgy - gy brn, mot, lam, sft - b ply - sb blk, rthy tex, v calc	10% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	20% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	10% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	10% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc
MRL: It - medgy, sme blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, sme bent, tr fos frag	90% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, sme bent, tr fos frag	80% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, sme bent, tr fos frag	90% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, sme bent, tr fos frag	90% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, sme bent, tr fos frag



MUD WT: 13.60/13.50 IN/OUT



MD: 8,706'  
TVD: 6,576.85'  
Inclination: 89.14°  
Azimuth: 270.84°

MD: 8,798'  
TVD: 6,578.26'  
Inclination: 89.11°  
Azimuth: 271.05°

MD: 8,891'  
TVD: 6,579.55'  
Inclination: 89.29°  
Azimuth: 271.03°

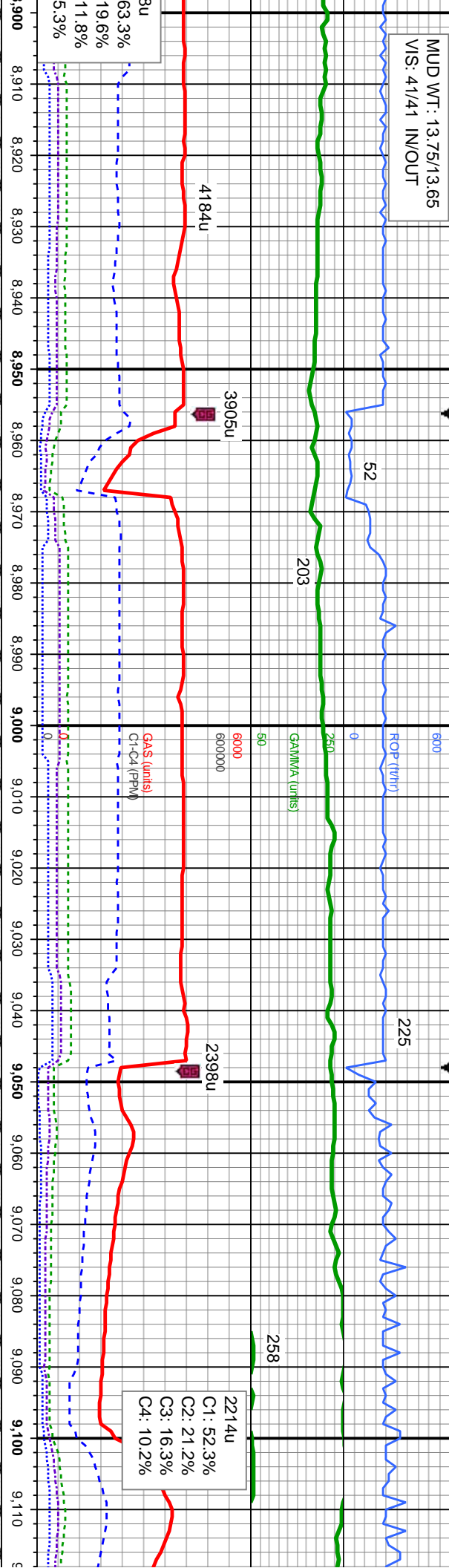
VS: 2,350.51' VS: 2,442.18' VS: 2,534.84'

brn, mot, lam, sft - tex, v calc	10% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	10% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pty - sb blk, sily - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pty - sb blk, sily - grty tex, tr bent, tr fos frag
sb blk, pred frm - sb blk, sily - grty	90% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pty - sb blk, sily - grty tex, tr bent, tr fos frag	90% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pty - sb blk, sily - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pty - sb blk, sily - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pty - sb blk, sily - grty tex, tr bent, tr fos frag





MUD WT: 13.75/13.65  
VIS: 41/41 IN/OUT



MD: 8,983'  
TVD: 6,580.45'  
Inclination: 89.6°  
Azimuth: 269.99°

VS: 2,626.57'

FVD(ft)

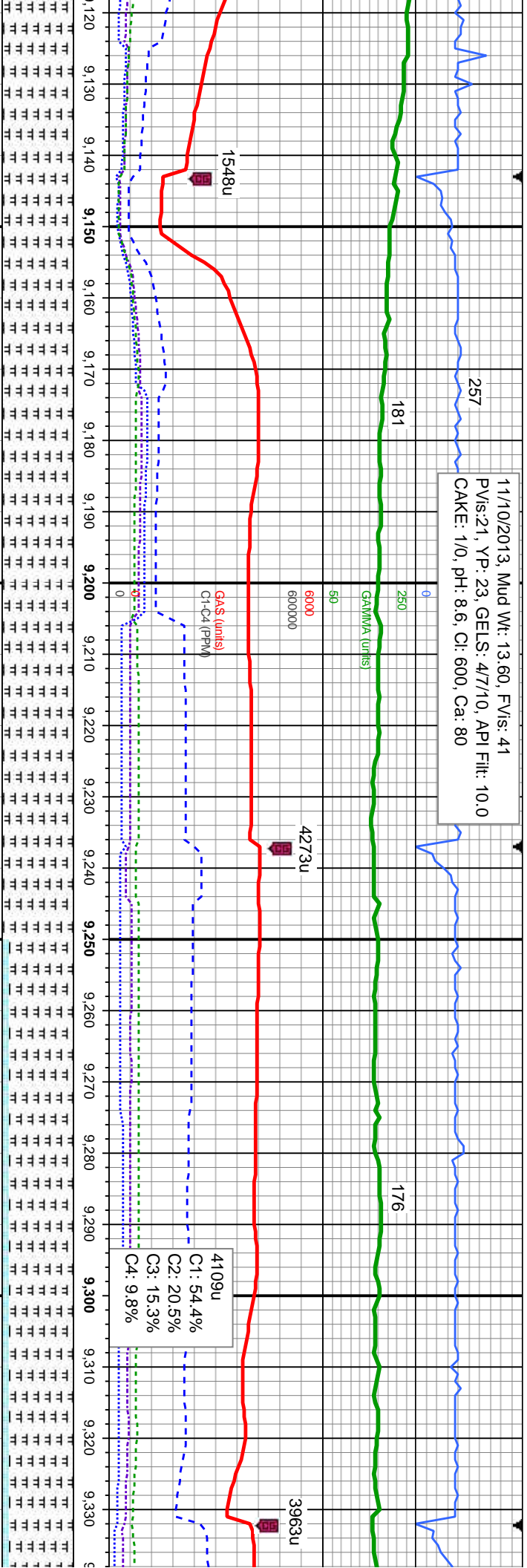
MD: 9,078'  
TVD: 6,581.11'  
Inclination: 89.6°  
Azimuth: 269.63°

VS: 2,721.38'

100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, slty - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, slty - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, slty - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, slty - grty tex, tr bent, tr fos frag	100% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, slty - grty tex, tr bent, tr fos frag
--	--	--	--	--



11/10/2013, Mud Wt: 13.60, FVIs: 41  
PVIs: 21, YP: 23, GELS: 47710, API Filtr: 10.0  
CAKE: 1/0, pH: 8.6, CI: 600, Ca: 80



MD: 9,173'  
TVD: 6,581.65'  
Inclination: 89.75 °

Azimuth: 269.74 °

VS: -470.1'

medgy, occ blk, pred frm -  
sb pily - sb blkly, silty - grty  
100% MRL: lt - medgy, occ blk, pred frm -  
mod hd, sme sft, sb pily - sb blkly, silty - grty  
tex, v abnt bent, tr fos frag

100% MRL: lt - medgy, occ blk, pred frm -  
mod hd, sme sft, sb pily - sb blkly, silty - grty  
tex, v abnt bent, tr fos frag

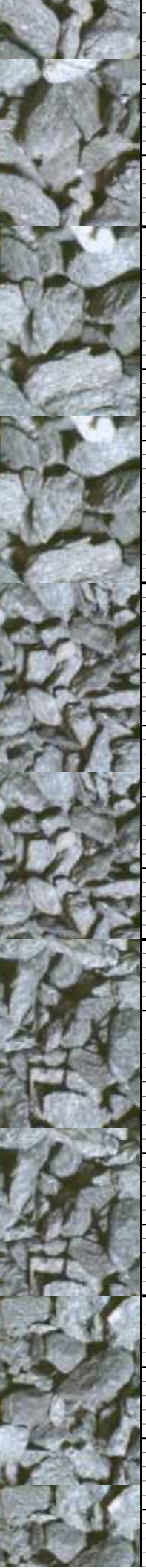
MD: 9,268'  
TVD: 6,581.62'  
Inclination: 90.28 °

Azimuth: 270.42 °

VS: -469.97'

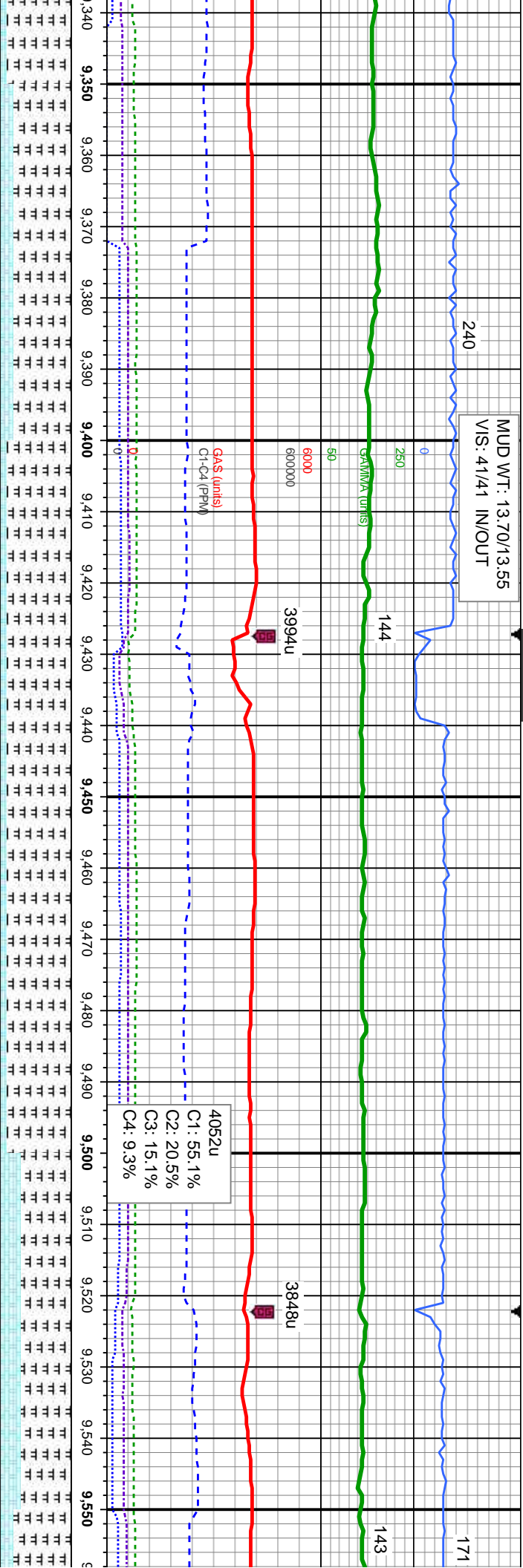
10% CHK: lt - medgy - gy brn, mot, lam, sft  
- frm, sb pily - sb blkly, rthy tex, v calc  
90% MRL: lt - medgy, occ blk, pred frm -  
mod hd, sme sft, sb pily - sb blkly, silty - grty  
tex, tr bent, n fos frag

10% CHK: lt - medgy - gy brn, mot  
- frm, sb pily - sb blkly, rthy tex, v c  
90% MRL: lt - medgy, occ blk, pred  
mod hd, sme sft, sb pily - sb blkly,  
tex, tr bent, n fos frag





MUD WT: 13.70/13.55  
VIS: 41/41 IN/OUT



MD: 9,363'  
TVD: 6,581.16'  
Inclination: 90.28°

Azimuth: 270.55°

MD: 9,458'  
TVD: 6,580.74'  
Inclination: 90.22°

Azimuth: 269.32°

MD: 9,553'  
TVD: 6,580.25  
Inclination: 90.0

Azimuth: 269.2

20% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 80% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, stly - grty tex, tr bent, n fos frag

10% CHK: It - medgy - gy brn, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, occ blk, pred frm - hd, sme sft, sb ply - sb blk, stly - grty tex, tr bent, n fos frag

10% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 90% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, stly - grty tex, tr bent, n fos frag

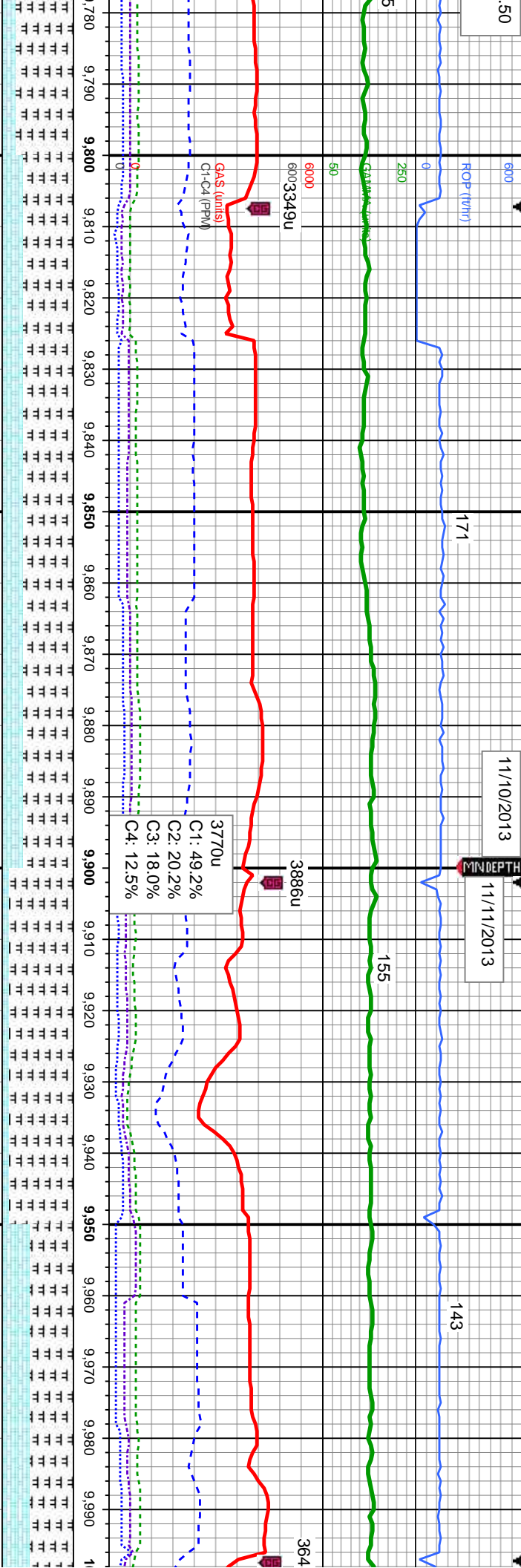
30% CHK: It - medgy - gy brn, sme blk, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 70% MRL: It - medgy, occ dk gy- blk, pred frm - mod hd, sme sft, sb ply - sb blk, stly - grty tex, tr bent, n fos frag

20% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 80% MRL: It - medgy, occ dk gy- blk, pred frm - mod hd, sme sft, sb ply - sb blk, stly - grty tex, tr bent, n fos frag





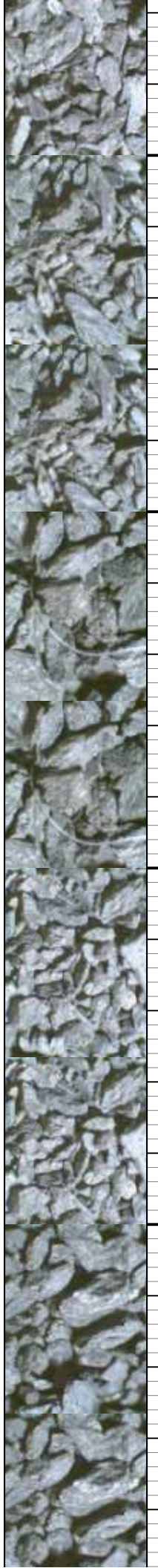




MD: 9.838'  
TVD: 6,576.3'  
Inclination: 89.6°  
Azimuth: 268.46°  
VS: -474.03'

MD: 9.932'  
TVD: 6,576.58'  
Inclination: 90.06°  
Azimuth: 268.5°  
VS: -476.52'

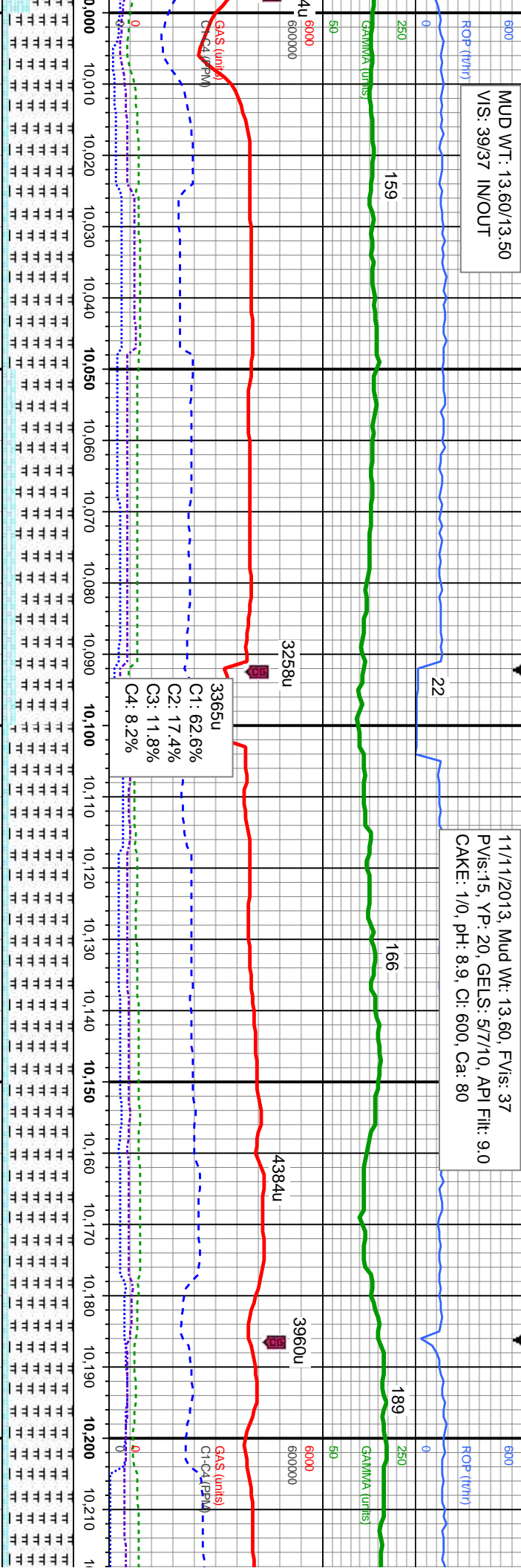
brn, mot, lam, sft - 30% CHK: It - medgy - gy brn, sme blk, mot, 30% CHK: It - medgy - gy brn, occ blk, mot, - frm, sb ply - sb blk, rthy tex, v calc lam, sft - si frm, sb ply - sb blk, rthy tex, v calc 70% MRL: It - medgy, occ dk gy- blk, pred 70% MRL: It - medgy, blk, frm - mod hd, sme frm - mod hd, sme sft, sb ply - sb blk, silty - sft, sb ply - sb blk, silty - grty tex, rr bent, n fos grty tex, tr bent, n fos frag





MUD WT: 13.60/13.50  
VIS: 39/37 IN/OUT

11/11/2013, Mud Wt: 13.60, FVIs: 37  
PVIs:15, YP: 20, GELS: 5/7/10, API Filtr: 9.0  
CAKE: 1/0, pH: 8.9, CI: 600, Ca: 80



MD: 10,027'  
TVD: 6,576.17'  
Inclination: 90.43 °  
Azimuth: 268.6 °

MD: 10,122'  
TVD: 6,576.64'  
Inclination: 89.01 °  
Azimuth: 268.24 °

MD: 10,211'  
TVD: 6,577'  
Inclination:  
Azimuth: 21

VS: -478.93'

VS: 3,763.71'

VS: 3,858.6

B Chalk

B Chalk

TVD (ft)

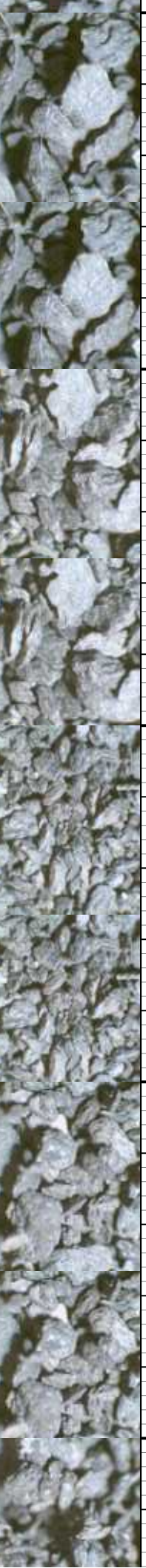
10% CHK: lt - medgy - gy brn, sme blk, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc  
90% MRL: lt - medgy, occ blk, pred frm - hd, mod hd, sme sft, sb ply - sb blk, silty - grty tex, abnt bent, rr fos frag

20% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc  
80% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, silty - grty tex, sme bent, rr fos frag

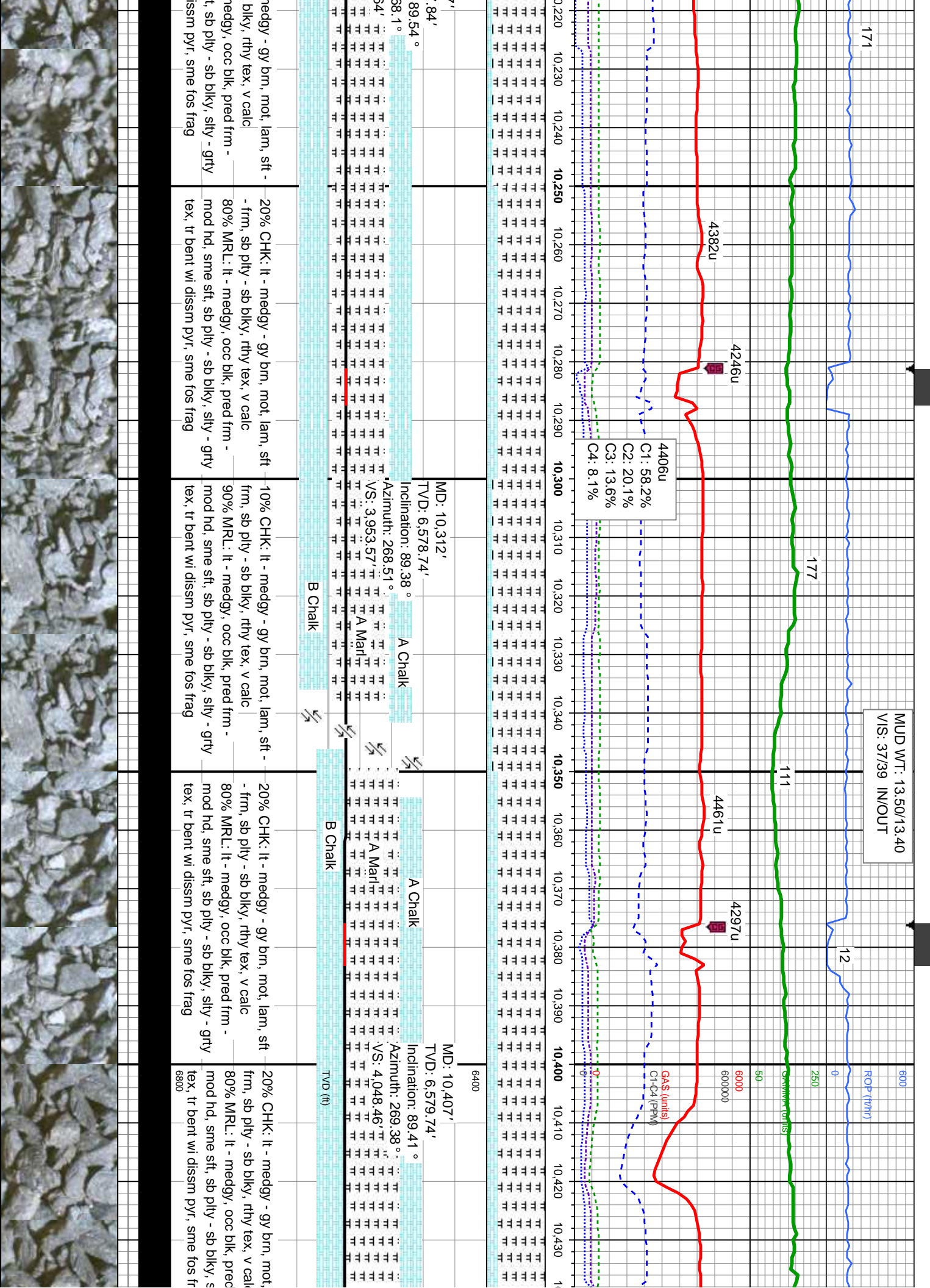
10% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc  
90% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, silty - grty tex, sme bent wi dissn pyr, sme fos frag

10% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc  
90% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, silty - grty tex, sme bent wi dissn pyr, sme fos frag

10% CHK: lt - n frm, sb ply - sb blk, rthy tex, v calc  
90% MRL: lt - n mod hd, sme sft, sb ply - sb blk, silty - grty tex, tr bent wi d

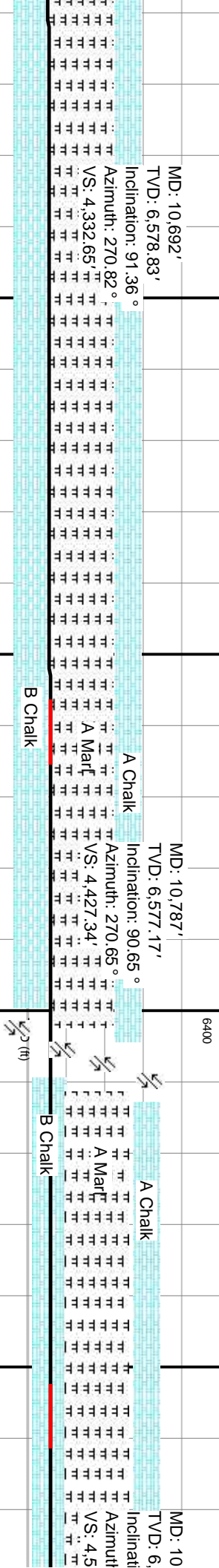
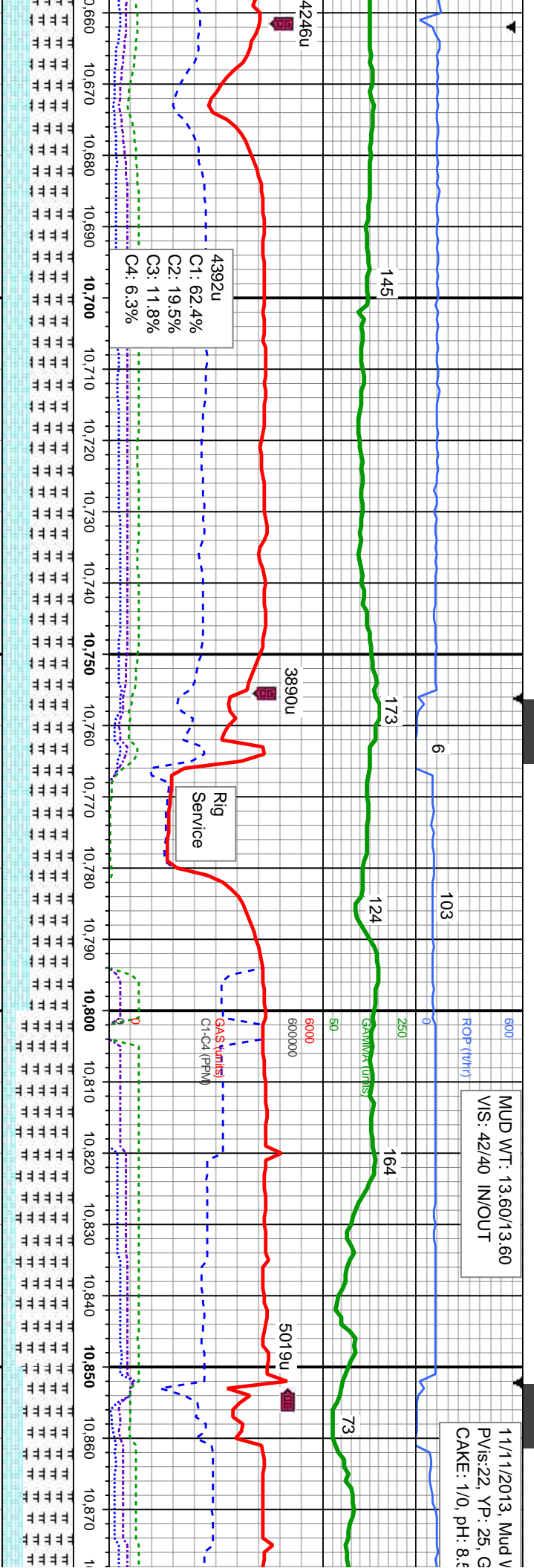




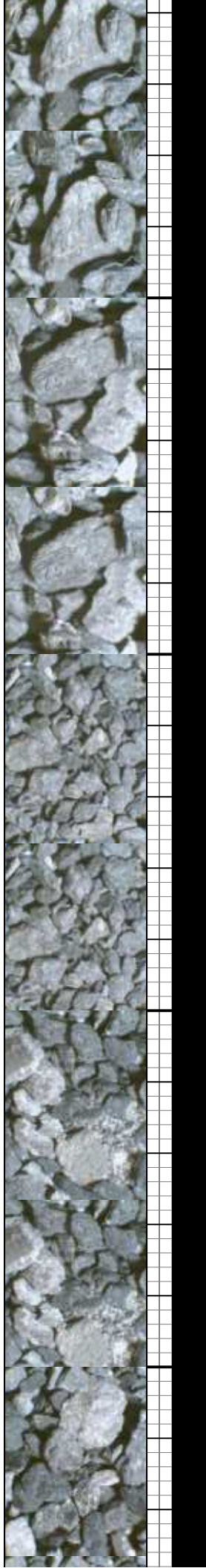




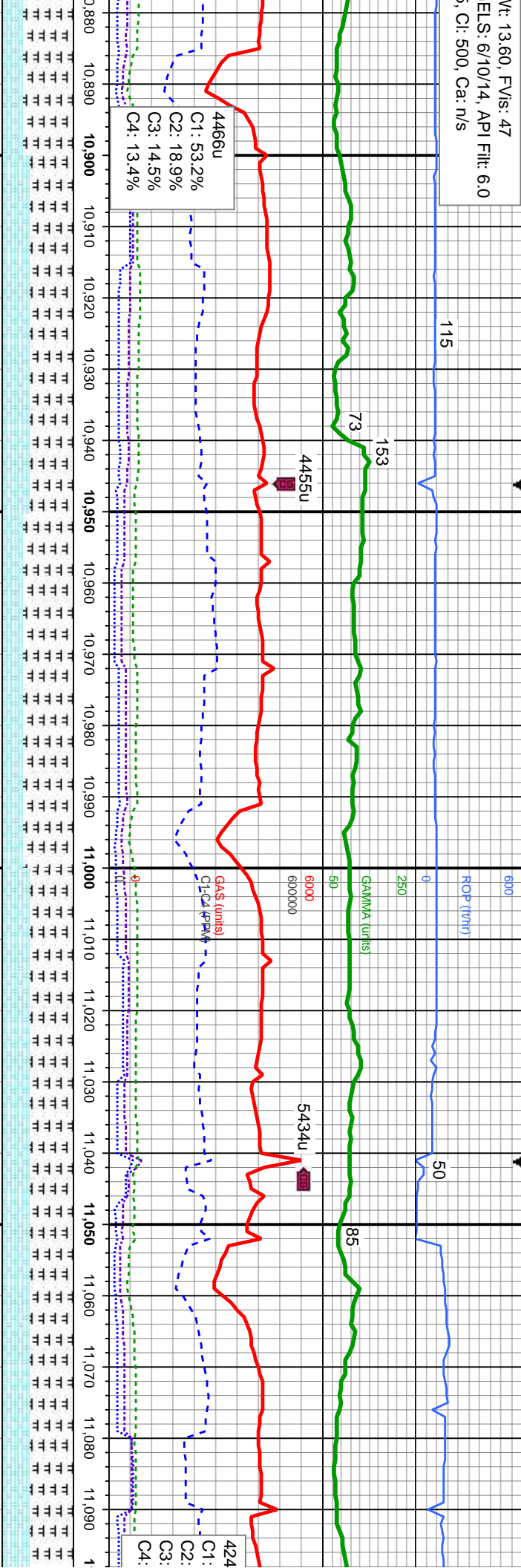




HK: It - medgy - gy brn, mot, lam, sft sb ply - sb blk, rthy tex, v calc	40% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 60% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, sily - grty tex, tr bent, abnt fos frag	40% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 60% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, sily - grty tex, tr bent, abnt fos frag	20% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 80% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, sily - grty tex, tr bent, abnt fos frag	30% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 70% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, sily - grty tex, tr bent, abnt fos frag
---	---	---	---	---

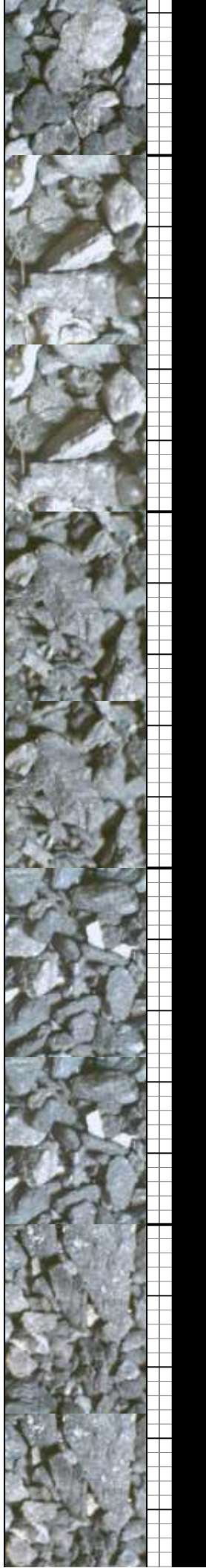


W: 13.60, FVIs: 47  
ELS: 6/10/14, API Filt: 6.0  
s, Cl: 500, Ca: n/s

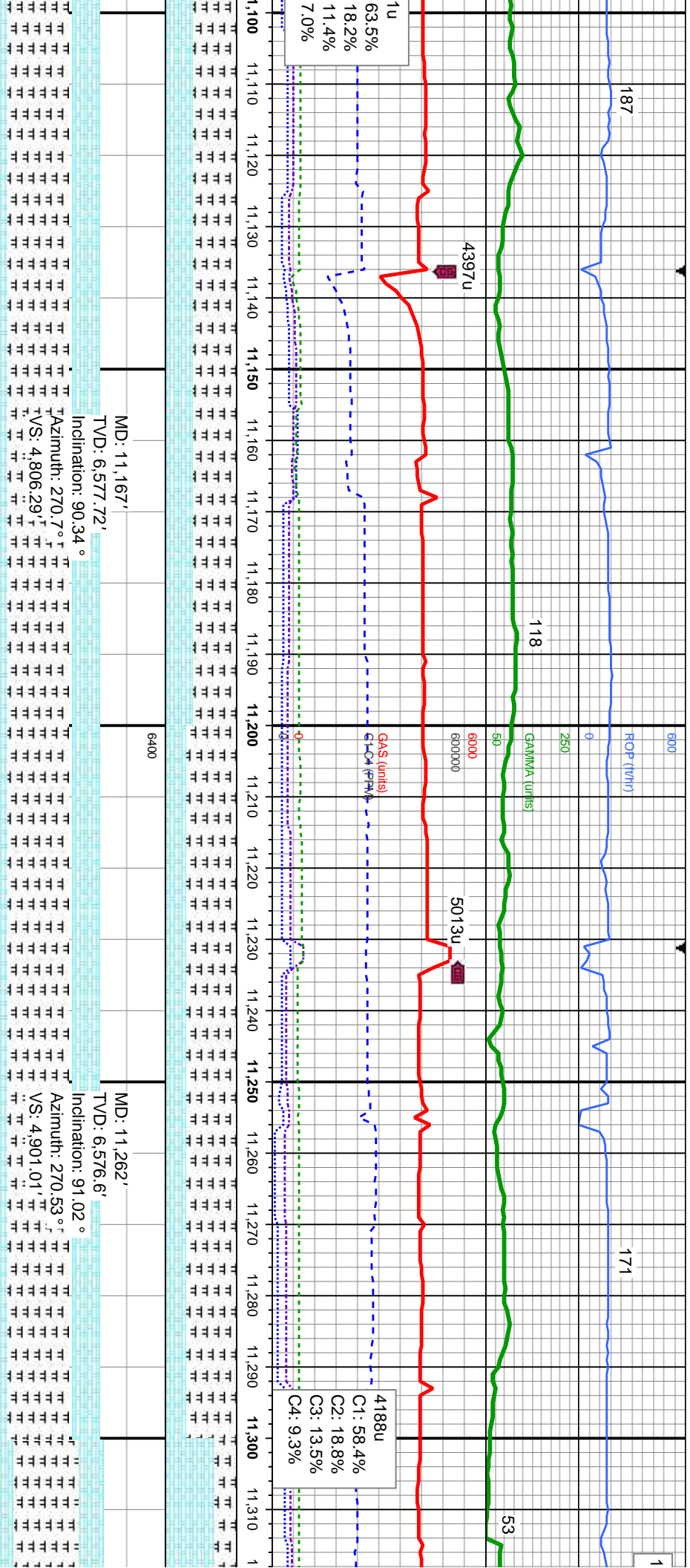


MD: 10,977'		MD: 11,072'	
TVD: 6,577.16'		TVD: 6,577.42'	
Inclination: 90.4°		Inclination: 89.29°	
Azimuth: 270.53°		Azimuth: 270.08°	
VS: 4,616.79'		VS: 4,711.55'	
A Chalk		A Chalk	
B Chalk		B Chalk	

40% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	40% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	40% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	40% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
60% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, sily - grty bent, tr fos frag	60% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, sily - grty bent, tr fos frag	60% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, sily - grty bent, tr fos frag	60% MRL: It - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, sily - grty bent, tr fos frag







40% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	40% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	30% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	30% CHK: lt - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc
60% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, tr bent, tr fos frag	60% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, tr bent, tr fos frag	70% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, tr bent, tr fos frag	70% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, slty - grty tex, tr bent, tr fos frag

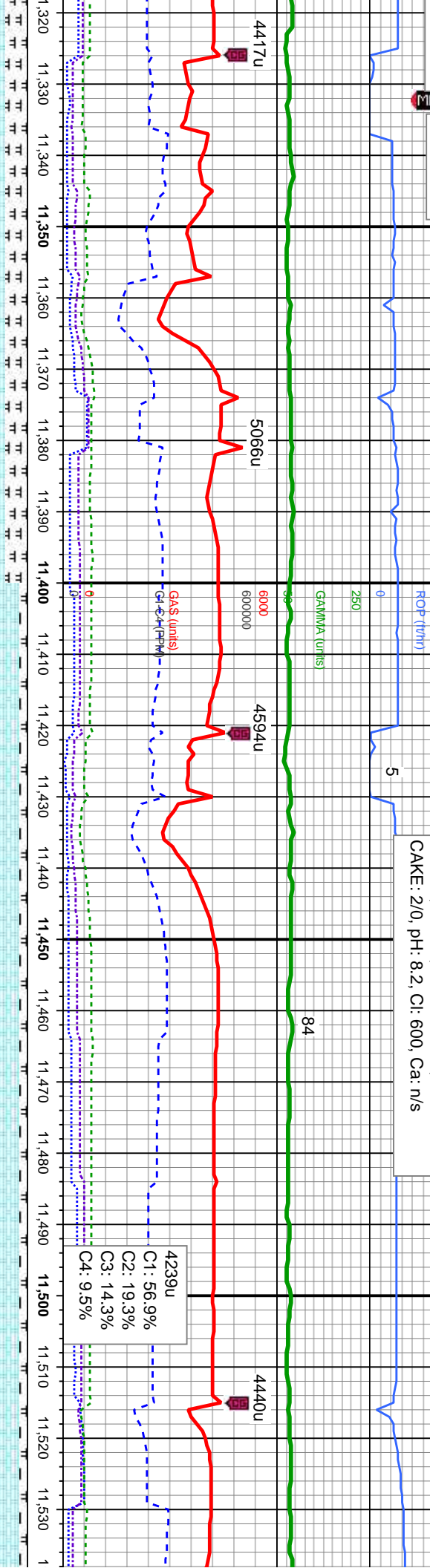


11/11/2013

11/12/2013

MINDEPTH

11/12/2013, Mud Wt: 13.50, FV/s: 42  
PV/s:23, YP: 21, GELS: 6/9/14, API Filt: 6.0  
CAKE: 2/0, pH: 8.2, CI: 600, Ca: n/s



MD: 11,357'

TVD: 6,575.83'

Inclination: 89.91°

Azimuth: 269.94°

VS: 4,995.77'

MD: 11,452'

TVD: 6,576'

Inclination: 89.88°

Azimuth: 270.58°

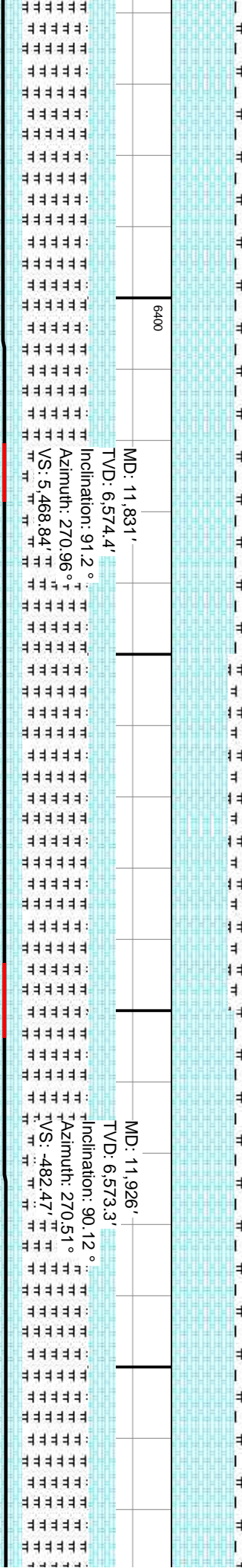
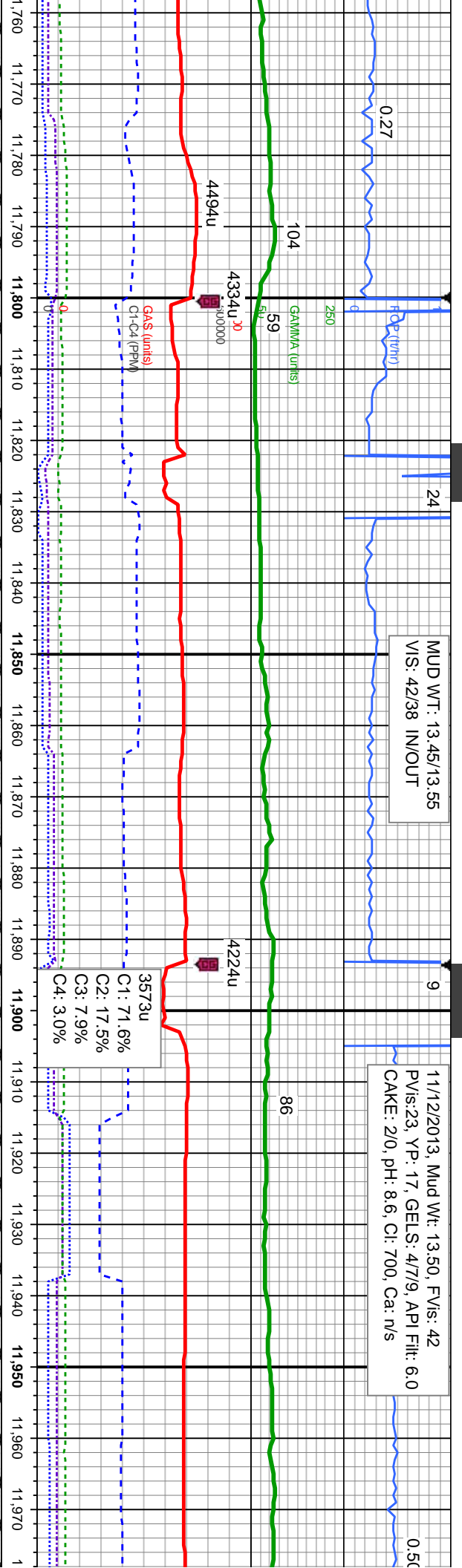
VS: 5,090.53'

medgy - gy brn, mot, lam, sft	70% CHK: lt - medgy - gy brn, mot, lam, sft	90% CHK: tan, lt - medgy brn, mot, lam, sft	90% CHK: tan, lt - medgy brn, mot, lam, sft
sb blkly, rthy tex, v calc	- frm, sb ply - sb blkly, rthy tex, v calc	- frm, sb ply - sb blkly, rthy tex, v calc	- frm, sb ply - sb blkly, rthy tex, v calc
medgy, occ blk, pred frm -	30% MRL: lt - medgy, occ blk, pred frm -	10% MRL: lt - medgy, occ blk, pred frm -	10% MRL: lt - medgy, occ blk, pred frm -
ft, sb ply - sb blkly, silty -	mod hd, sme sft, sb ply - sb blkly, silty -	mod hd, sme sft, sb ply - sb blkly, silty -	mod hd, sme sft, sb ply - sb blkly, silty -
tr fos frag	tex, tr bent, tr fos frag	grty tex, no bent, abnt inoc	grty tex, no bent, abnt inoc

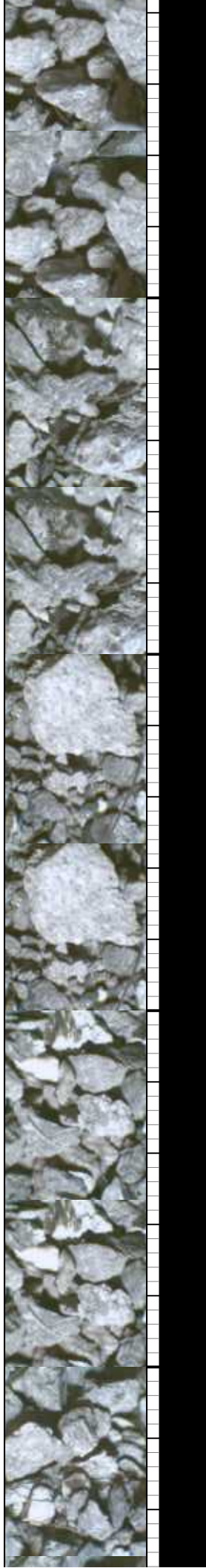






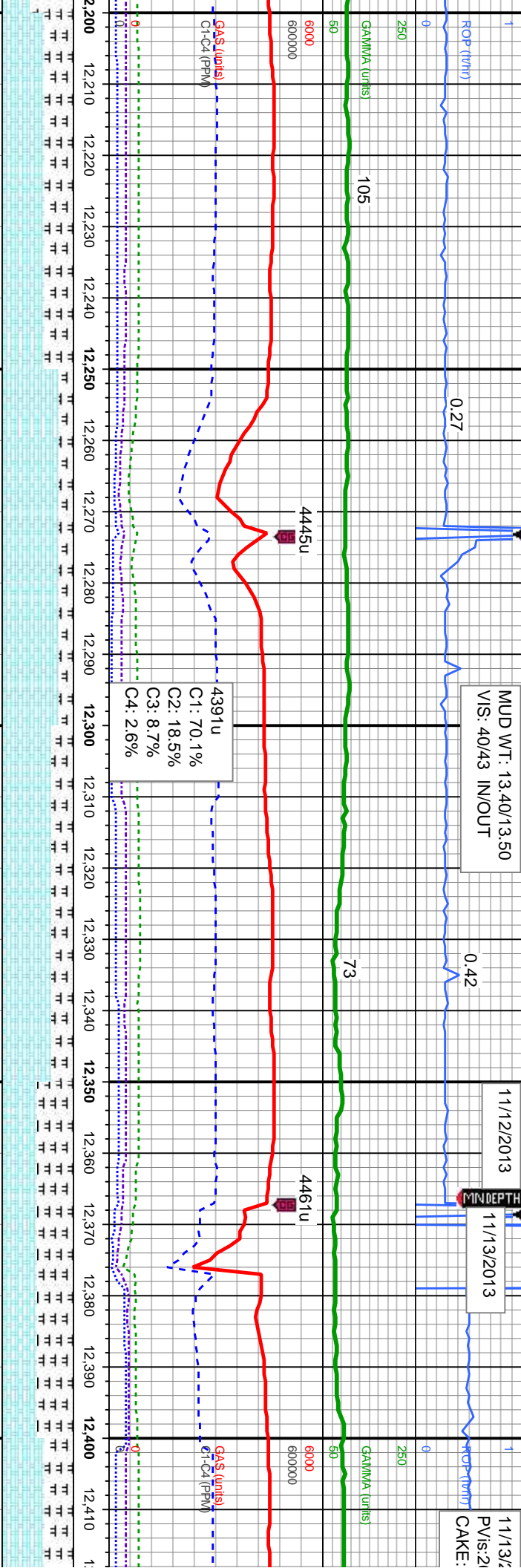


MD: 11,831'	MD: 11,926'
TVD: 6,574.4'	TVD: 6,573.3'
Inclination: 91.2°	Inclination: 90.12°
Azimuth: 270.96°	Azimuth: 270.51°
VS: 5,468.84'	VS: 482.47'
CHK: tan, lt - medgy brn, mot, lam, frm, sb pily - sb blk, rthy tex, v calc	90% CHK: tan, lt - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, sily - tex, tr bent, abnt Inoc	10% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb pily - sb blk, sily - grty tex, sme bent, abnt Inoc



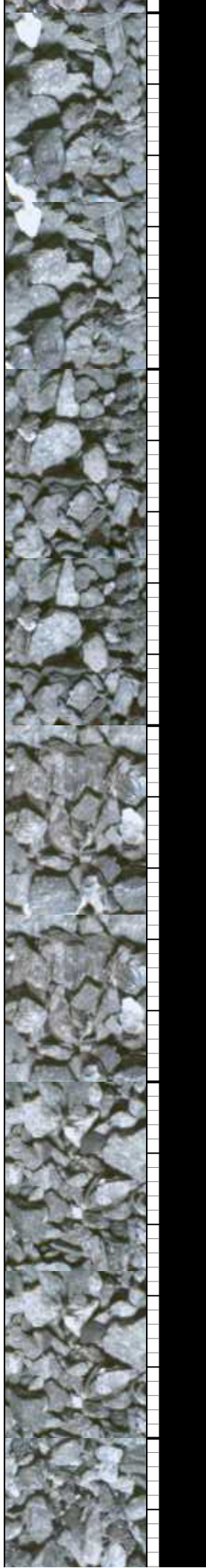






MD: 12,211'	MD: 12,306'	MD: 12,401'
TVD: 6,574'	TVD: 6,574.61'	TVD: 6,574.86'
Inclination: 89.04°	Inclination: 90.22°	Inclination: 89.48°
Azimuth: 271.07°	Azimuth: 271.79°	Azimuth: 272.21°
VS: -478.19'	VS: -475.82'	VS: -472.5'

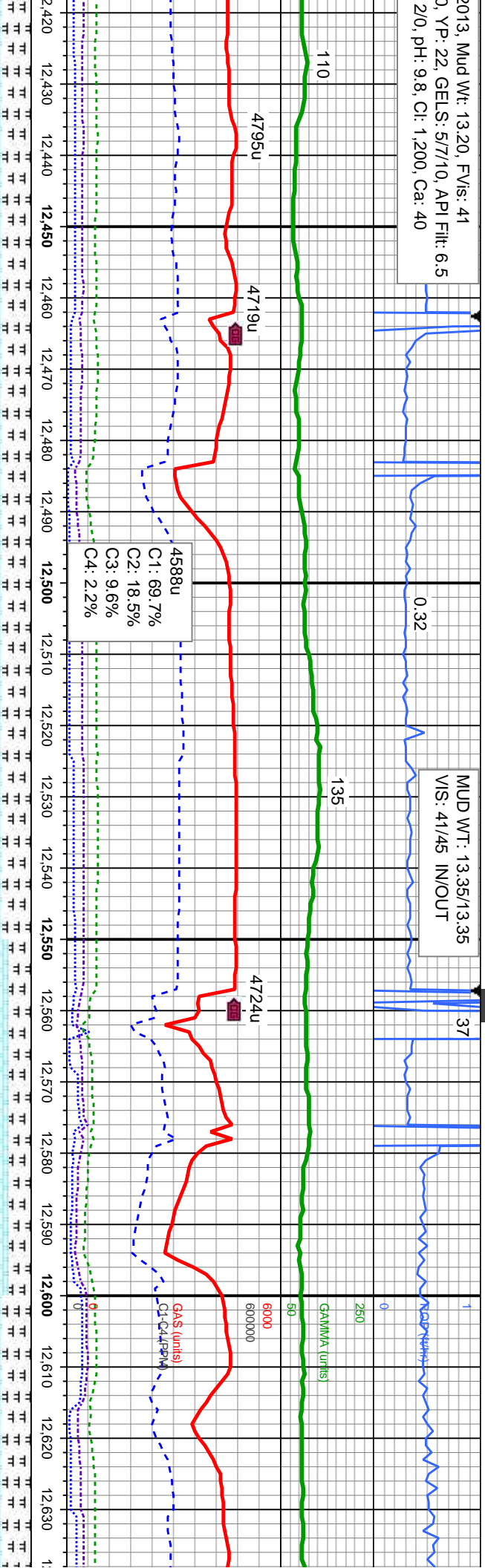
70% CHK: tan-crm, lt - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc 30% MRL: lt - medgy, blk, pred frm - hd, sme sft, sb ply - sb blk, silty - grty tex, no bent, abnt Inoc	80% CHK: tan-crm, lt - medgy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 20% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, silty - grty tex, no bent, abnt Inoc	70% CHK: tan-crm, lt - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc 30% MRL: lt - medgy, blk, pred frm - hd, sme sft, sb ply - sb blk, silty - grty tex, no bent, abnt Inoc	50% CHK: tan, lt - medgy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 50% MRL: lt - medgy, occ blk, pred frm - mod hd, sme sft, sb ply - sb blk, silty - grty tex, no bent, abnt Inoc	60% CHK: lt - frm, sb ply - sb blk, rthy tex, v calc 40% MRL: lt - mod hd, sme sft, tr bent, abnt
--	--	--	--	---





2013, Mud Wt: 13.20, FV/s: 41  
0, YP: 22, GELS: 5/7/10, API Filt: 6.5  
2/0, pH: 9.8, Cl: 1,200, Ca: 40

MUD WT: 13.35/13.35  
VIS: 41/45 IN/OUT



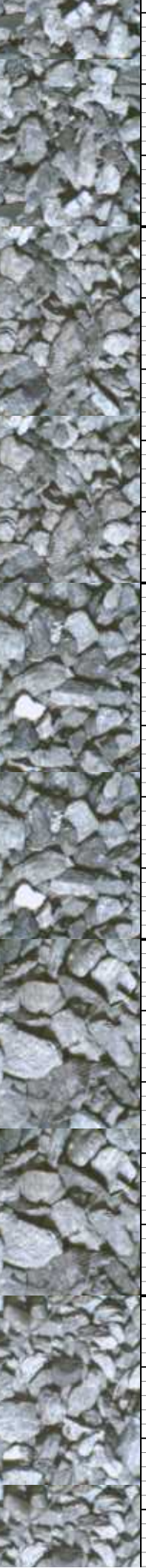
MD: 12,495'  
TV/D: 6,574.58'

MD: 12,590'  
TV/D: 6,573.02'

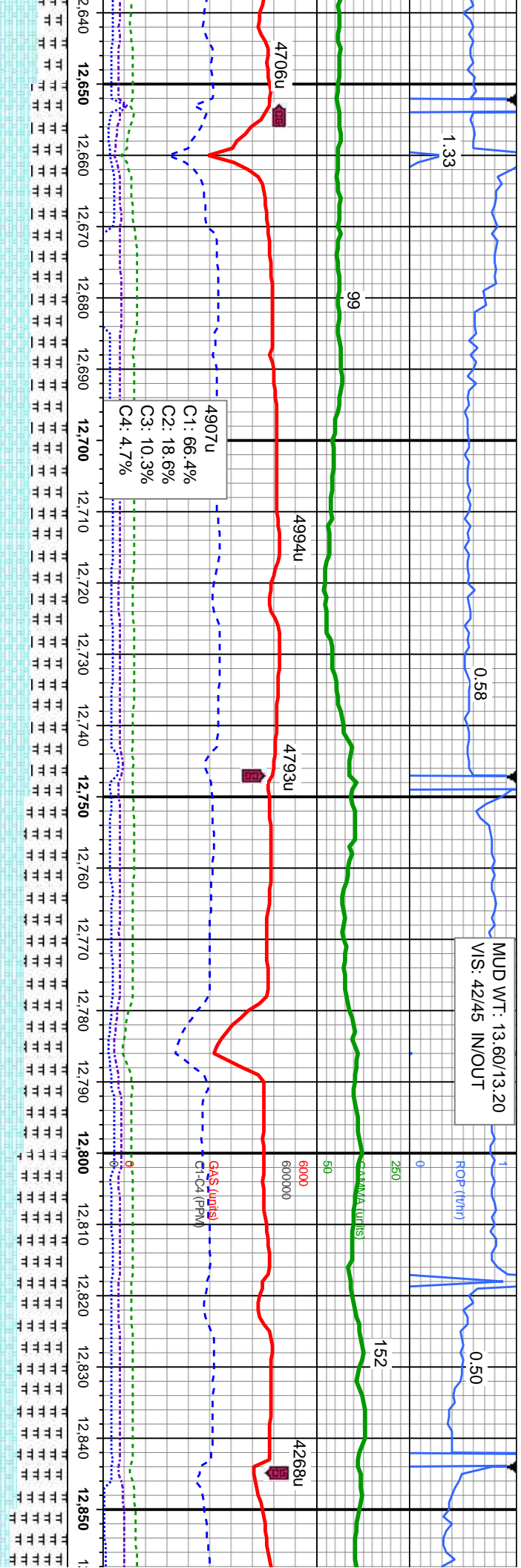
Inclination: 90.86°  
Azimuth: 272.83°  
VS: 6,130.13'

Inclination: 91.02°  
Azimuth: 271.88°  
VS: 6,224.57'

Depth (ft)	Description
60% CHK: It - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% CHK: It - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
40% MRL: It - medgy, occ blk, pred frm - mod hcl, sme sft, sb pily - sb blk, sily - grty tex, tr bent, abnt fos frag - Inoc	40% MRL: It - medgy, occ blk, pred frm - mod hcl, sme sft, sb pily - sb blk, sily - grty tex, tr bent, abnt fos frag - Inoc
70% CHK: It - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	70% CHK: It - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
30% MRL: It - medgy, occ blk, pred frm - mod hcl, sme sft, sb pily - sb blk, sily - grty tex, tr bent, abnt fos frag - Inoc	30% MRL: It - medgy, occ blk, pred frm - mod hcl, sme sft, sb pily - sb blk, sily - grty tex, tr bent, abnt fos frag - Inoc
60% CHK: It - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% CHK: It - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
40% MRL: It - medgy, occ blk, pred frm - mod hcl, sme sft, sb pily - sb blk, sily - grty tex, tr bent, abnt fos frag - Inoc	40% MRL: It - medgy, occ blk, pred frm - mod hcl, sme sft, sb pily - sb blk, sily - grty tex, tr bent, abnt fos frag - Inoc







MD: 12,685'

TV D: 6,570.44'

• Inclination:  $92.1^\circ$

Azimuth: 272.59°

TVS: 6,319.01'  $\pi$ 

MD: 12,780'

TVĐ: 6,566.17'

Inclination:  $93.05^\circ$

Azimuth:  $272.53^{\circ}$ 

VS: -456.53'

6400

TV D ( $\hbar$ )

50% CHK: It - medgy brn, mot, lam, sft -  
frn, sb pty - sb blk, rthy tex, v calc  
50% MR: It - medgy, occ blk, pred frn -  
mod hd, sme sft, sb pty - sb blk, sfty - gfty  
tex, rr bent, abnt fos frag - Inoc

50% CHK: It - meedy brn, mot, larn, sft -  
frn, sb ply - sb blk, rthy tex, v calc  
50% MRL: It - meedy, occ blk, pried frn -  
mod hd, sme sft, sb ply - sb blk, sfty -  
grty tex,  $\pi$  bent, abnt fos frag - Inoc

40% CHK: It - meddy brn, mot, lam, sft -  
frn, sb ply - sb blk, rthy tex, v calc  
60% MRL: It - meddy, occ blk, pred frn -  
mod hd, sme sft, sb ply - sb blk, sly - grty  
tex, rr bent, abnt fos frag - Inoc

30% CHK: It - medgy bñ, mot, lam, sft -  
frñ, sb ply - sb blyk, rthy tex, v calc  
70% MRL: It - medgy, occ blyk, pred frñ -  
mod hd, sme sft, sb ply - sb blyk, sfty -  
gfty tex, sme bent, abñt fos frag - Inoc

20%  
firm, s  
80%  
mod  
arty t







9.0

3,080 13,090 13,1

16:08 hrs MST

Services Provided