

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name SEYLER B10-63-1HN HORZ

Location SEC 10 T5N R64W

State COLORADO

Country USA

API Number 05-123-37698

Region DJ BASIN

Spud Date 12/14/2013

Surface Coordinates SWSW SEC 10 T5N R64W
1,198' FSL; 245' FWL

LAT/LON 40.409870/-104.544730

Bottom Hole Coordinates SESE SEC 10 T5N R64W
990' FSL; 700' FEL

Ground Elevation 4,582'

Logged Interval 5,930' To 10,642'

Formation NIOBRARA B CHALK

Type of Drilling Fluid LSND

County WELD

Rig Number H&P 315

AFE # 136850

Field WATTENBERG

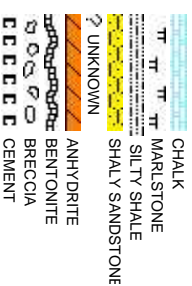
Drilling Completed 12/21/2013

K.B. Elevation 4,606'

Total Depth 10,642'

Company Noble Energy Inc
Address 1625 BROADWAY
DENVER, CO 80202

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



Operator

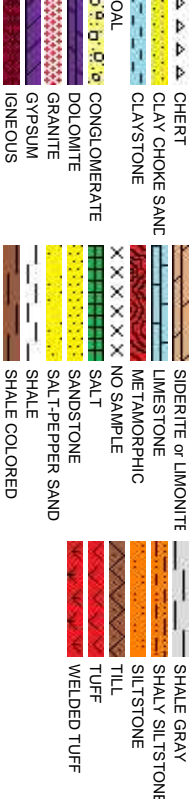
IC
AY SUITE 2200
0202

Geologist

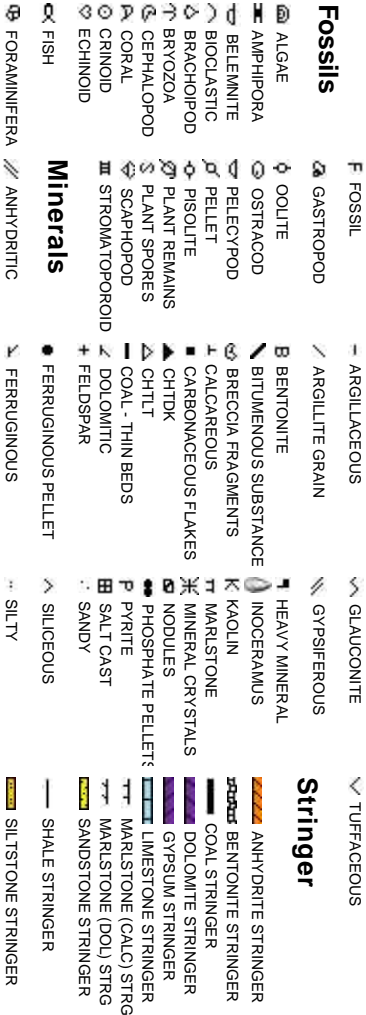
LATHAN MURPHY
OGGING, INC

ST
0223

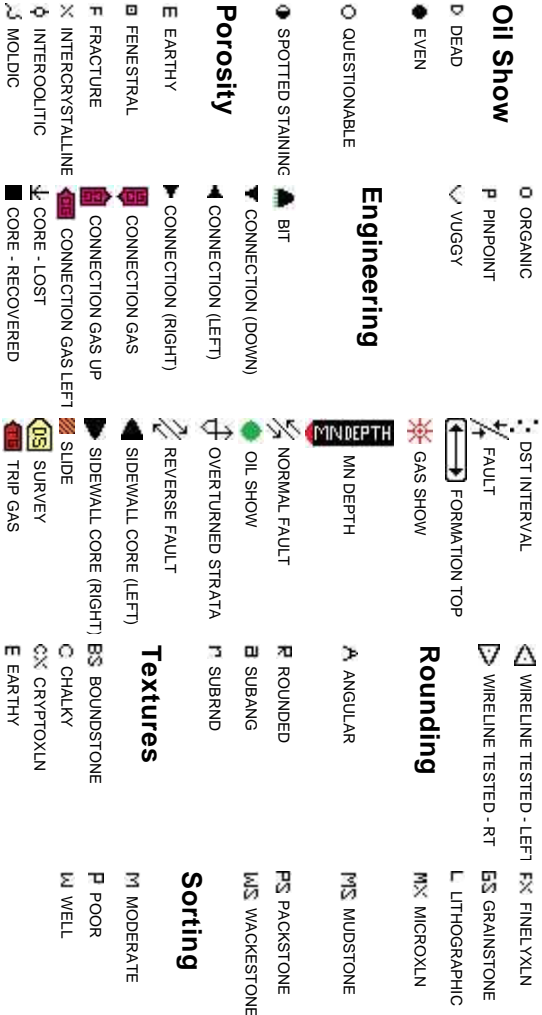
Rock Types



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

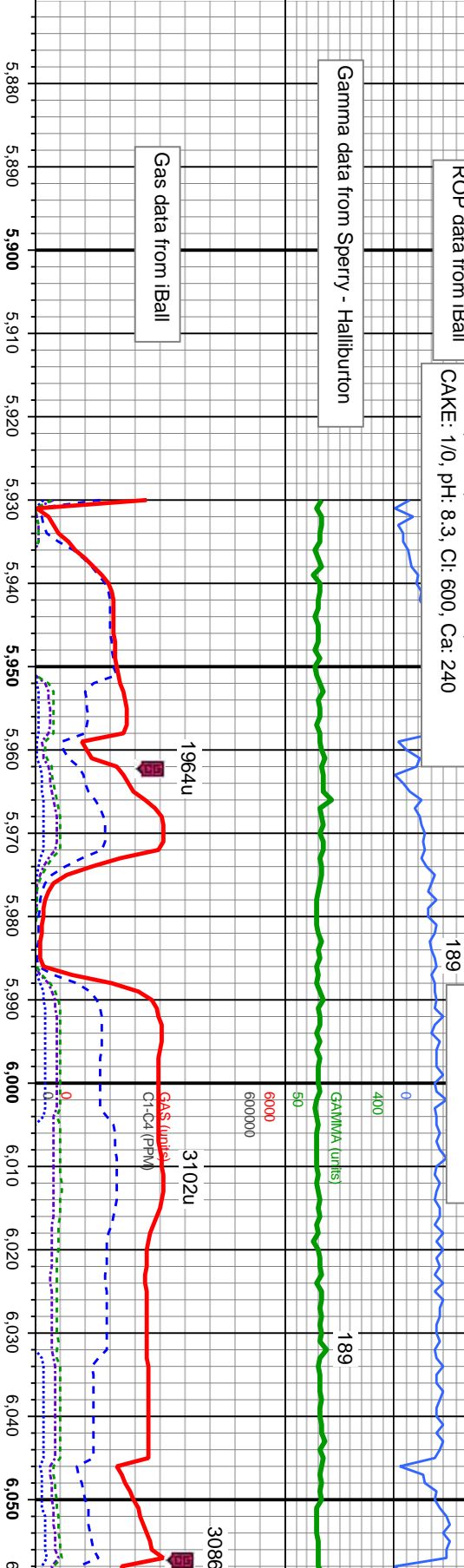
Images

ROP data from iBall

12/17/2013, Mud Wt: 9.80, FVIs: 35
PVIs: 9, YP: 7, GELS: 3/11/14, API Filtr: 10.3
CAKE: 1/0, pH: 8.3, Cl: 600, Ca: 240

Gamma data from Sperry - Halliburton

Gas data from iBall



Columbine Logging began logging with
BloodHound unit 624 on 12/17/2013

50' Sample Interval @ 5,930' MD

Bit Data
Bit #: 2
Type: Smith SD1513
Depth In: 5,930'
Jets: 3x13 & 5x12

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

MD: 6,005'
TVD: 5,981.33'
Inclination: 10.83°
Azimuth: 74.22°
VS: -163.34'

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

MD: 6,053'
TVD: 6,027.76'
Inclination: 18°
Azimuth: 72.56°
VS: -151.99'

20
40
60
80



MUD WT: 10.20/10.15
VIS: 40/38 IN/OUT

276

MUD WT: 10.55/10.35
VIS: 38/39 IN/OUT

143

168

1574u

C1: 52.1%
C2: 22.2%
C3: 18.2%
C4: 7.5%

3398u

3432u

3113u

GAS (units)
C1-C4 (PPM)

GAMMA (units)

50

6000

6000000

6.060 6.070 6.080 6.090 6.100 6.110 6.120 6.130 6.140 6.150 6.160 6.170 6.180 6.190 6.200 6.210 6.220 6.230 6.240 6.250 6.260 6.270

MD: 6.100'

TVD: 6.072.12'

Inclination: 20.32°
Azimuth: 77.92°

VS: -137.19'

MD: 6.148'

TVD: 6.117.12'

Inclination: 20.46°
Azimuth: 82.45°

VS: -120.88'

MD: 6.195'

TVD: 6.160.74'

Inclination: 23.23°
Azimuth: 87.08°

VS: -103.56'

MD: 6.243'

TVD: 6.204.14'

Inclination: 27.3°
Azimuth: 89.58°

VS: -83.14'

<<Scale Change>>

6100

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

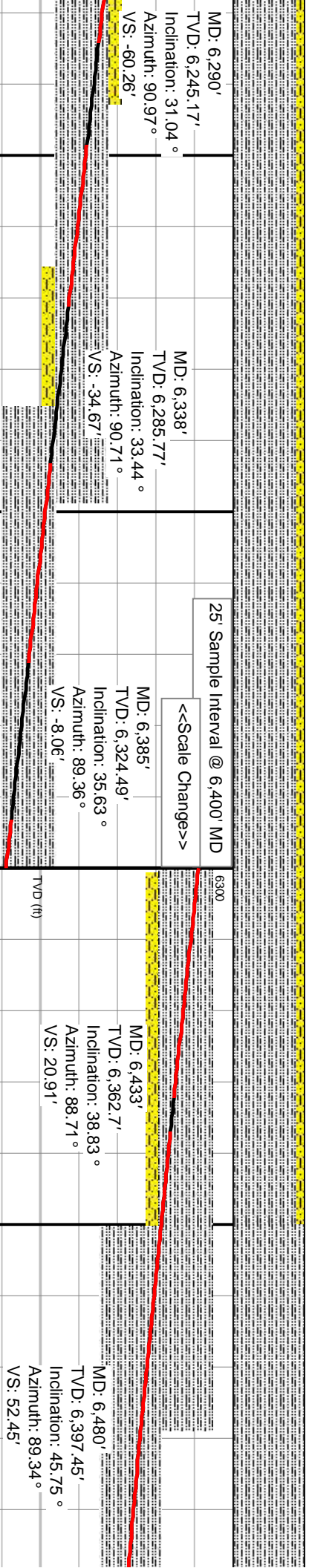
SLTY SH: It - med gy, occ dk gy, hd, pty - sb
pty, occ sb blkly, silty - grty tex, v sl calc
SHY SS: It gy, s&g, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cmt

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 - med gy, occ
pty, occ sb blkly, silty - grt
SHY SS: It gy, s&g, vfg, m
sb ang - sb rd, calc cmt

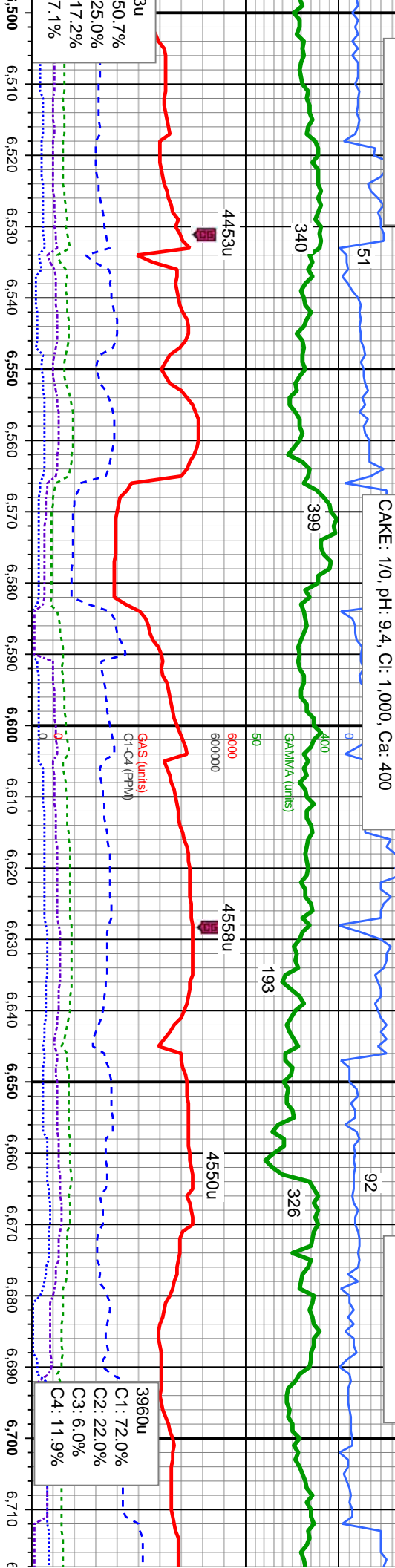




MUD WT: 10.85/10.90
VIS: 37/39 IN/OUT

12/18/2013, Mud Wt: 10.90, F.Vs: 38
PVs: 10, YP: 9, GELS: 39/15, API Fil: 9.8
CAKE: 1/0, pH: 9.4, Cl: 1,000, Ca: 400

MUD WT: 10.90/10.90
VIS: 39/39 IN/OUT



Sharon Springs Marker @
6,566' MD: 6,451' TVD

MD: 6,575'
TVD: 6,456.28'
Inclination: 56.4 °
Azimuth: 92.84 °
VS: 126.82'

Nio A Chalk Top @
6,630' MD: 6,486' TVD

Nio A Marl Top @
6,664' MD: 6,503' TVD

MD: 6,528'
TVD: 6,428.9'
Inclination: 52.33 °
Azimuth: 90.79 °
VS: 88.64'

MD: 6,623'
TVD: 6,482.29'
Inclination: 57.99 °
Azimuth: 93.96 °
VS: 167.16'

MD: 6,670'
TVD: 6,506.05'
Inclination: 61.27 °
Azimuth: 90.77 °
VS: 207.69'

MD: 6,718'
TVD: 6,52
Inclination
Azimuth: 8
VS: 250.6

SLTY SH: lt - med gy, sme dk gy - blk, firm
-hd, pily - sb pily, occ sb blk, stly - grty tex,
sl calc, abnt bent

SLTY SH: lt - med gy, sme dk gy - blk, firm
-hd, pily - sb pily, occ sb blk, stly - grty tex,
sl calc, abnt bent

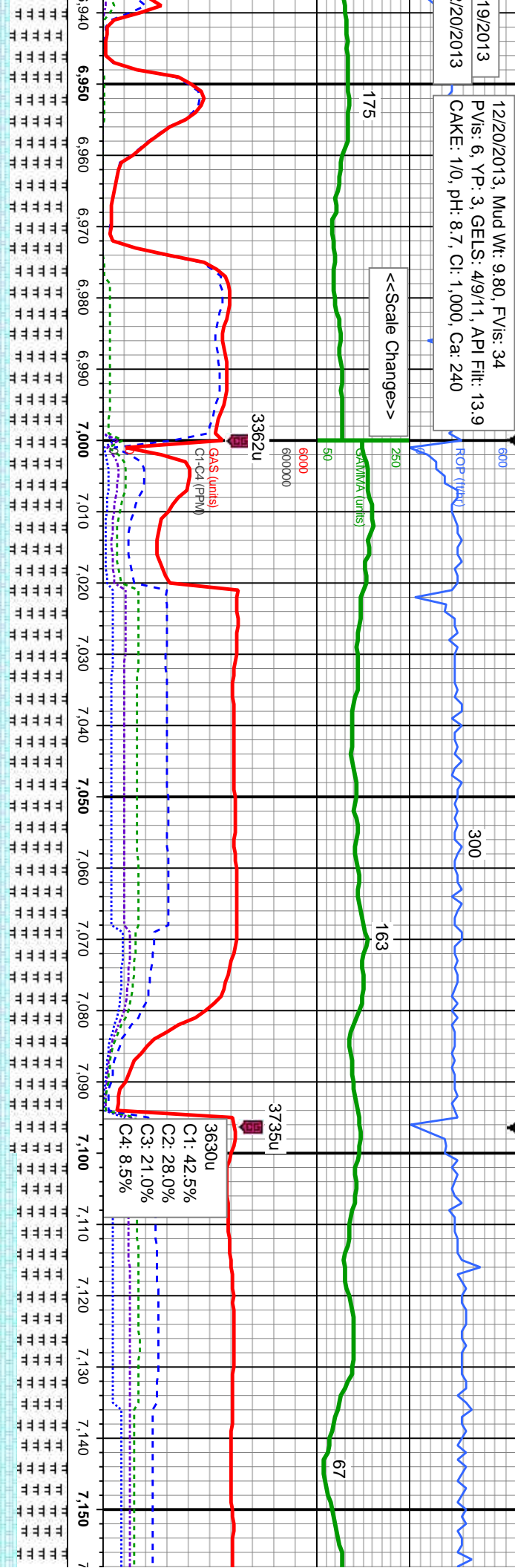
CHK: pred tan w/ wh, sme lgy, mot, lam, sft
- frm, sb pily - sb blk, rthy tex, v calc
MRL: lt - med gy, occ blk, sft - mod hd, sb
pily - pily, stly - grty tex, sme bent

CHK: pred tan w/ wh, sme lgy, mot, lam, sft
- frm, sb pily - sb blk, rthy tex, v calc
MRL: lt - med gy, occ blk, sft - mod hd, sb
pily - pily, stly - grty tex, sme bent

MRL: lt - med g
pily - pily, stly -
CHK: pred tan v
- frm, sb pily - s



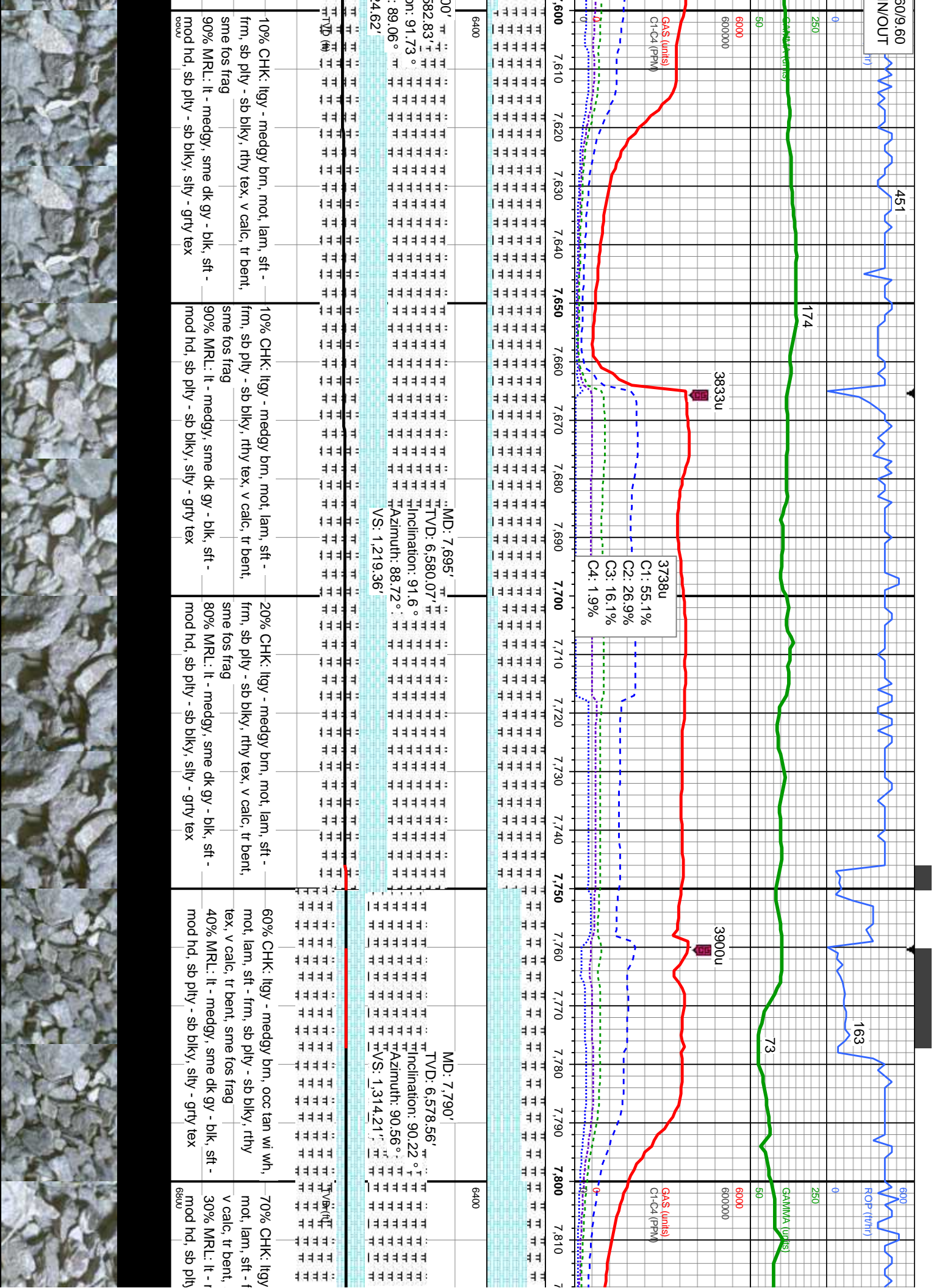
12/20/2013, Mud Wt: 9.80, FV/s: 34
PV/s: 6, YP: 3, GELS: 4/9/11, API Fil: 13.9
CAKE: 1/0, pH: 8.7, Cl: 1.000, Ca: 240

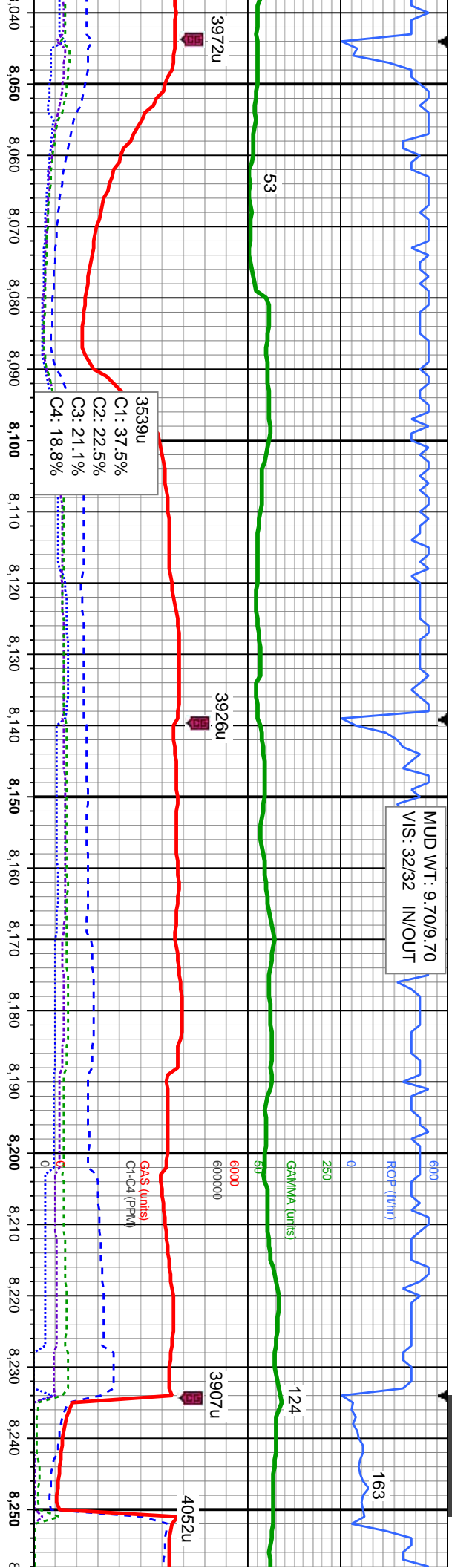


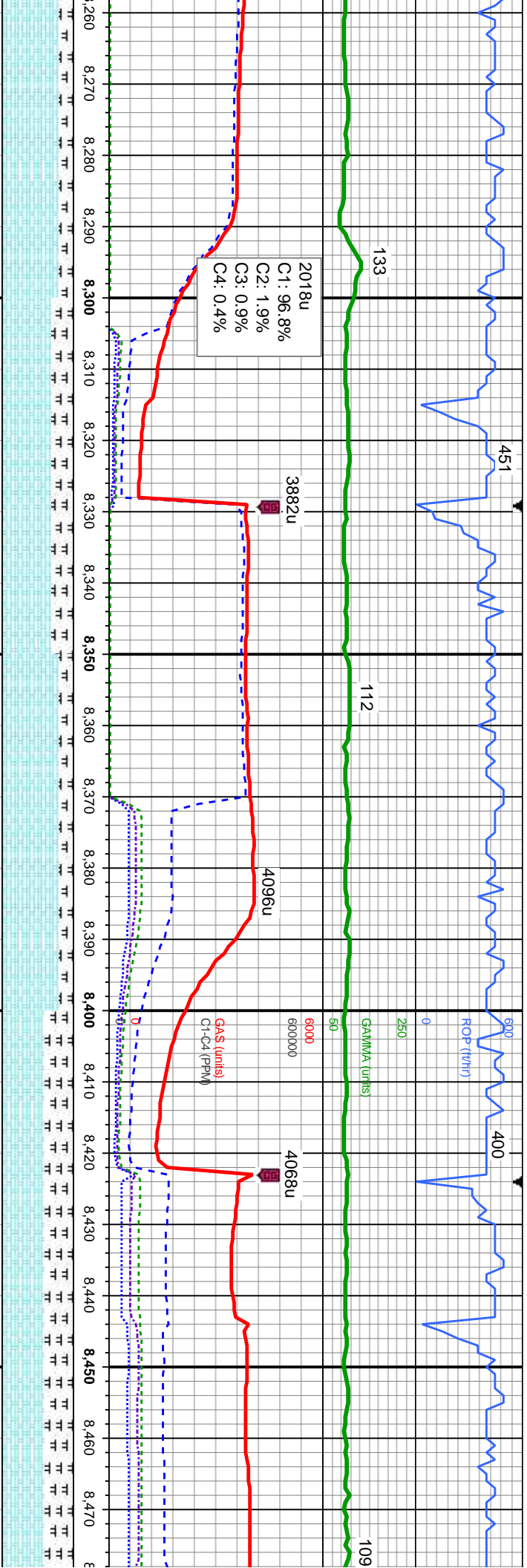
50' Sample Interval @ 6,950' MD		Bit Data	
MD: 6,955'	MD: 7,031'	Bit #: 3	MD: 7,126'
TVD: 6,575.47'	TVD: 6,578.92'	Type: Security MMD54	TVD: 6,582.7'
Inclination: 87.17°	Inclination: 87.63°	Size: 6.12"	Inclination: 87.81°
Azimuth: 89.75°	Azimuth: 89.9°	Depth In: 6,933'	Azimuth: 89.81°
VS: 481.08'	VS: 556.9'	Jets: 5x13	VS: 651.71'

20% CHK: lgy - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc, tr bent, tr fos frag	20% CHK: lgy - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc, tr bent, tr fos frag	20% CHK: lgy - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc, tr bent, tr fos frag	30% CHK: lgy - medgy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc, tr bent, tr fos frag
80% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex	80% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex	80% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex	70% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex





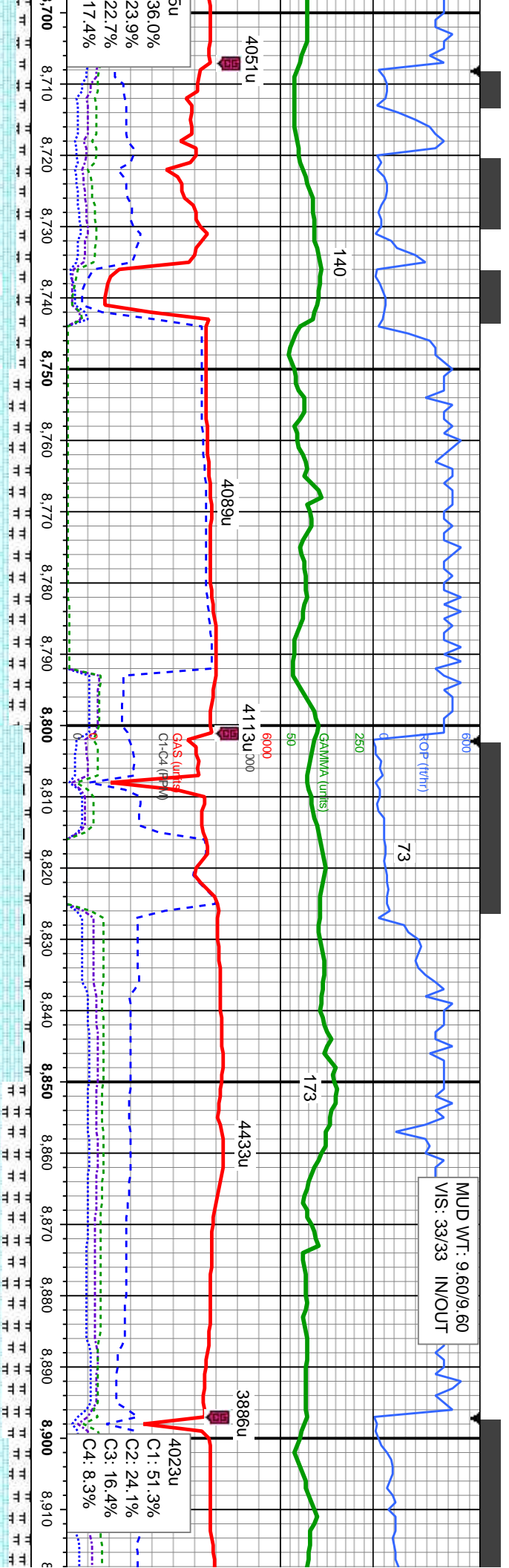
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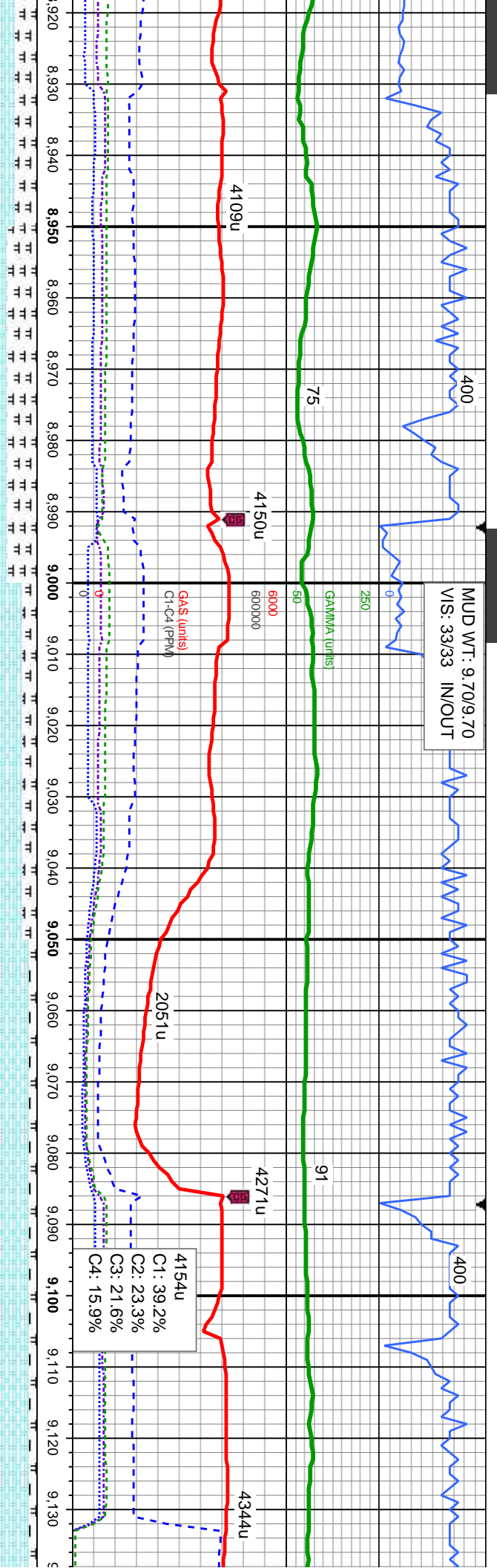


8,264'	MD: 8,359'	6400	MD: 8,453'
6,580.7'	TVD: 6,580.47'		TVD: 6,581.05'
Inclination: 90.03°	Inclination: 90.25°		Inclination: 89.04°
uth: 89.83°	Azimuth: 89.23°		Azimuth: 88.21°
1,787.91'	VS: 1,882.76'		VS: 1,976.52'

CHK: lgy - medgy brn, occ tan wi wh, lam, sft - frm, sb ply - sb blk, rthy	70% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v	80% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v	60% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v	60% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v
MR: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, silty - grty tex	30% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, silty - grty tex	20% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, silty - grty tex	40% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, silty - grty tex	40% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, silty - grty tex



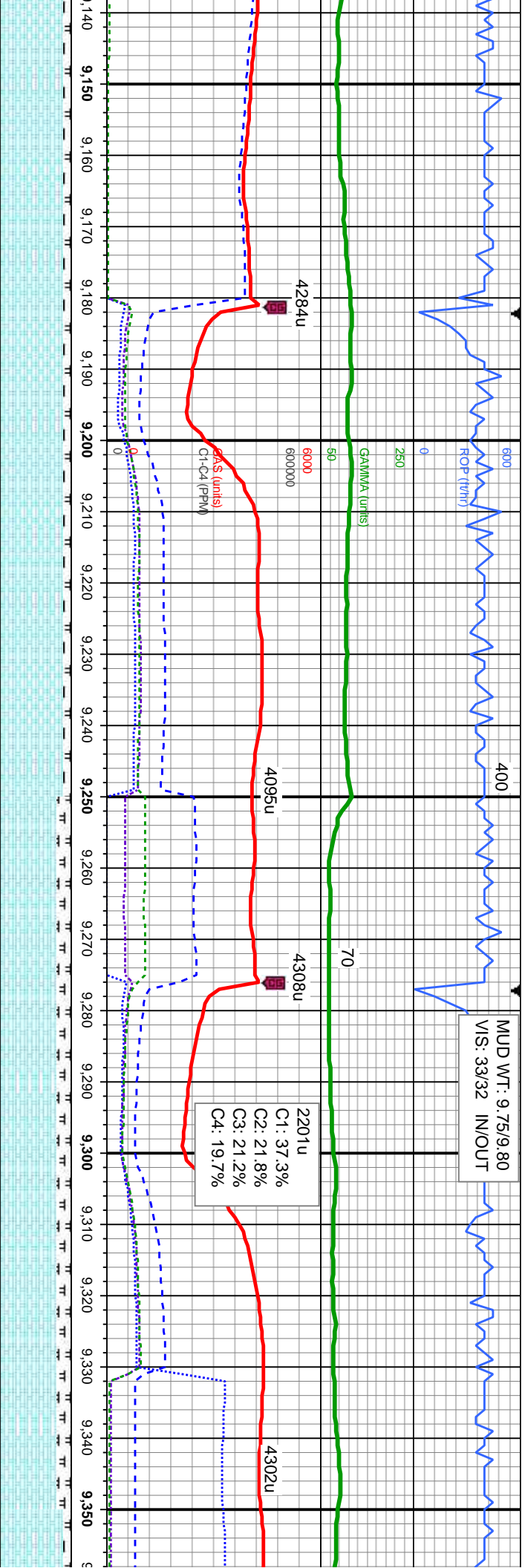
[illegible]



MD: 8,929'	MD: 9,024'	MD: 9,118'
TVD: 6,567.09'	TVD: 6,567.01'	TVD: 6,568.37'
Inclination: 90.8 °	Inclination: 89.29 °	Inclination: 89.05 °
Azimuth: 91.28 °	Azimuth: 91.66 °	Azimuth: 91.35 °
VS: 2,451.3'	VS: 2,546.28'	VS: 2,640.24'

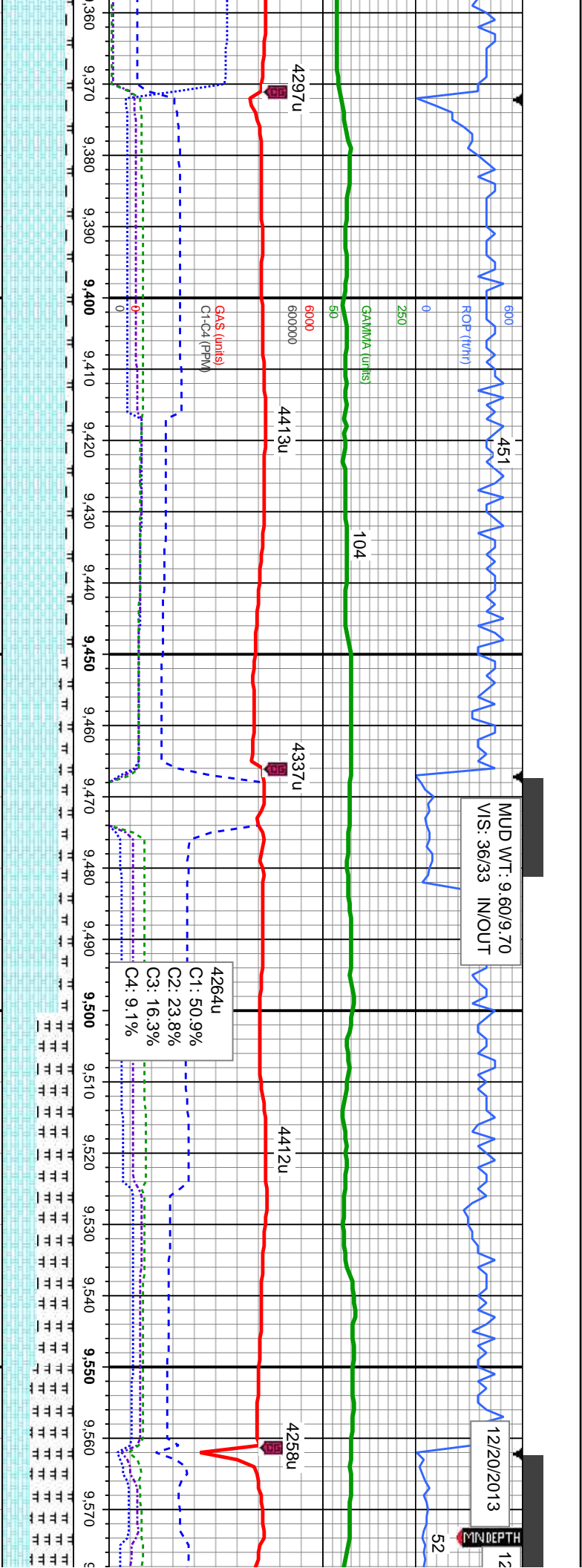
medgy brn, occ tan wi wh, sb ply - sb blk, rthy tex, v	60% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v	80% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v	90% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v	90% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v
medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, rthy tex, sme bent, sme fos frag	40% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, rthy tex, sme bent, sme fos frag	20% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, rthy tex, sme bent, sme fos frag	10% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, rthy tex, sme bent, sme fos frag	10% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blk, rthy tex, sme bent, sme fos frag



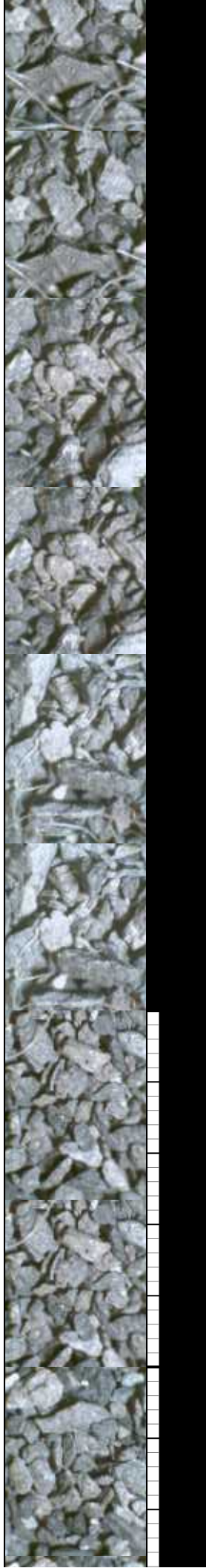


6400		MD: 9,213'	
		TVD: 6,570.44'	
		Inclination: 88.46 °	
		Azimuth: 91.28 °	
		VS: 2,735.19'	
90% CHK: Itgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v	90% CHK: Itgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v	80% CHK: Itgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v	80% CHK: Itgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v
10% MRL: It - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, sme bent, sme fos frag	10% MRL: It - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, sme bent, sme fos frag	20% MRL: It - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, sme bent, sme fos frag	20% MRL: It - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, sme bent, sme fos frag





MD: 9,403'	MD: 9,498'	
TVD: 6,574.84'	TVD: 6,578.16'	
Inclination: 88.46 °	Inclination: 87.54 °	
Azimuth: 91.99 °	Azimuth: 90.92 °	
VS: 2,925.11'	VS: 3,020.02'	
90% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v	50% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v	40% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v
10% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grfy tex, sme bent, sme fos frag	50% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grfy tex, sme bent, abnt fos frag	60% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grfy tex, sme bent, abnt fos frag

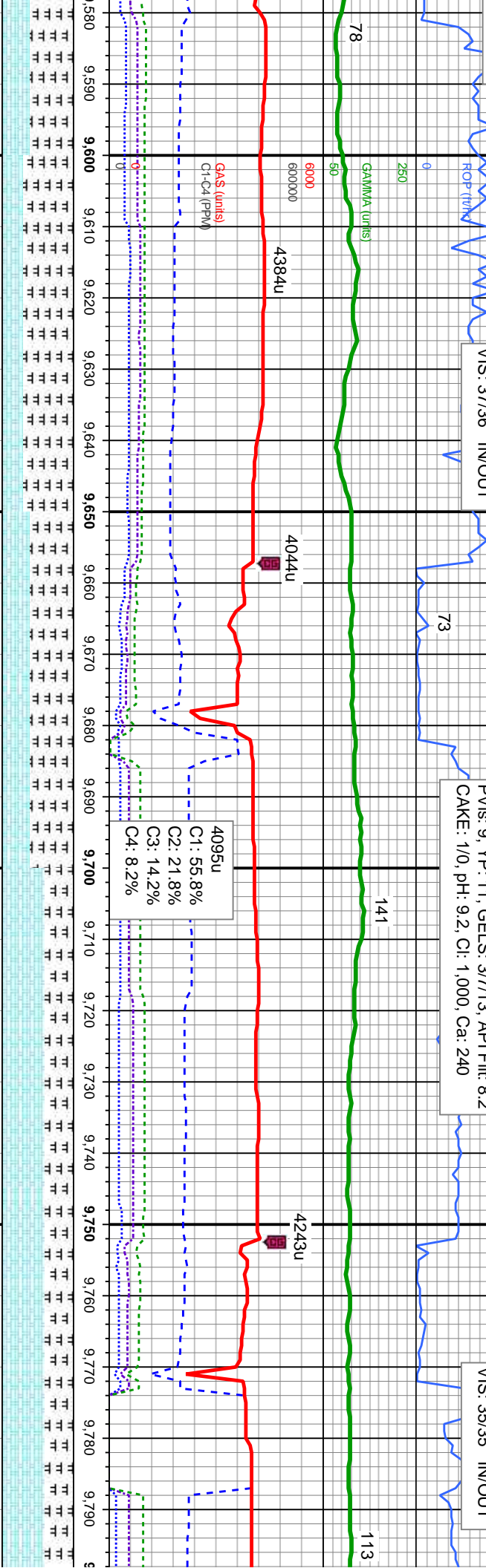


12/21/2013

MUD WT: 9.80/9.65
VIS: 37/36 IN/OUT

12/21/2013, Mud Wt: 9.70, FVIs: 35
PVIs: 9, YP: 11, GELS: 37/13, API Filt: 8.2
CAKE: 1/0, pH: 9.2, Cl: 1,000, Ca: 240

MUD WT: 9.65/9.60
VIS: 35/35 IN/OUT



MD: 9,593'
TVD: 6,582.09'

MD: 9,688'
TVD: 6,585.05'

MD: 9,783'
TVD: 6,585.95'

Inclination: 87.72°
Azimuth: 88.58°
VS: 3,114.8'

Inclination: 88.71°
Azimuth: 87.85°
VS: 3,209.46'

Inclination: 90.22°
Azimuth: 88.44°
VS: 3,304.14'

30% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, V

40% CHK: lgy - medgy brn, occ tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, V

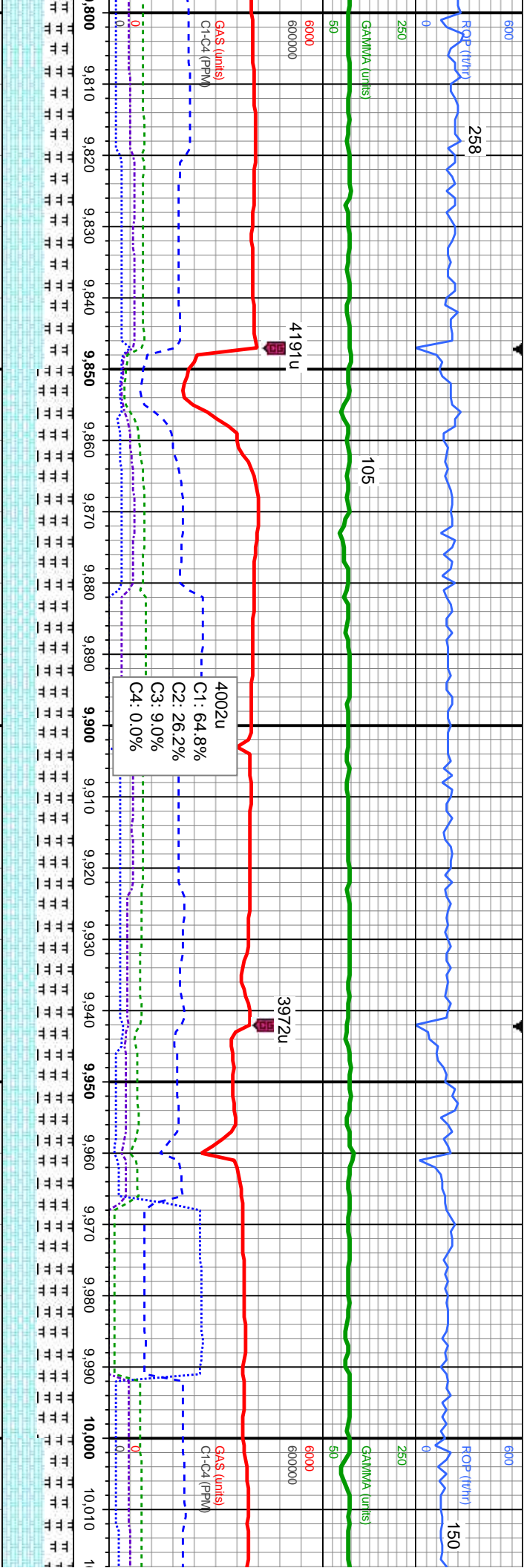
60% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, V

60% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, abnt bent, sme fos frag

40% MRL: lt - medgy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, abnt bent, abnt fos frag

40% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, abnt bent, abnt fos frag

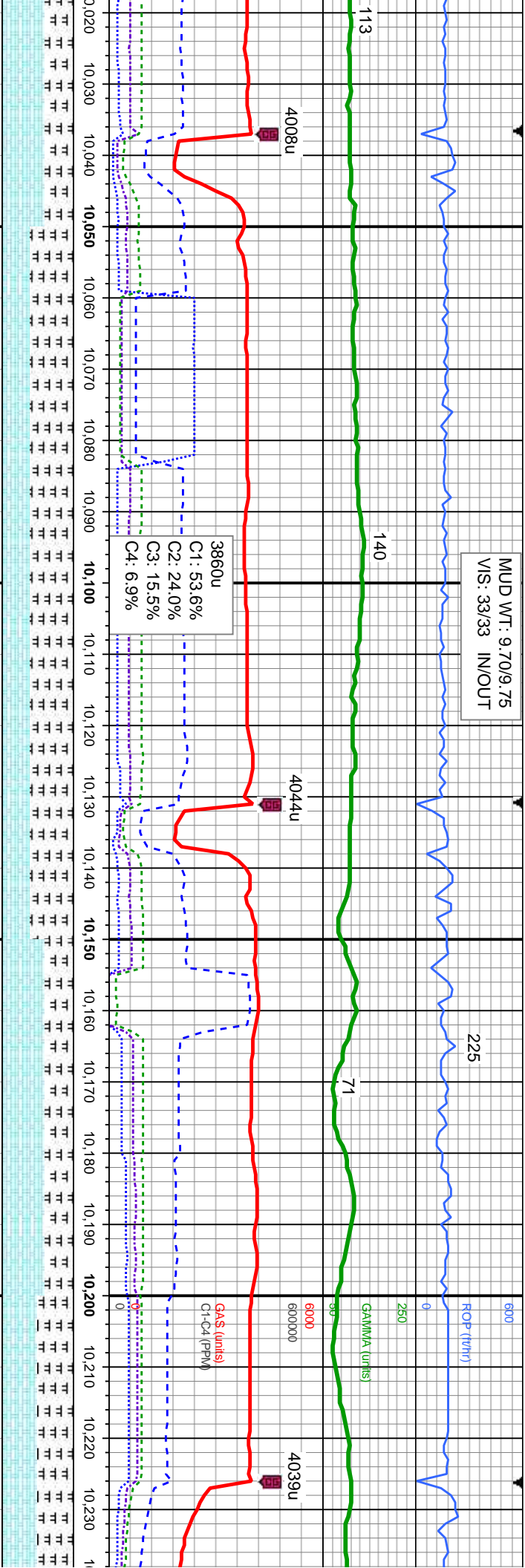




6400	MD: 9,878'	TV: 6,584.98'	Inclination: 90.95°	Azimuth: 90.12°	VS: 3,398.96'
6400	MD: 9,973'	TV: 6,584.39'	Inclination: 89.75°	Azimuth: 88.45°	VS: 3,493.77'

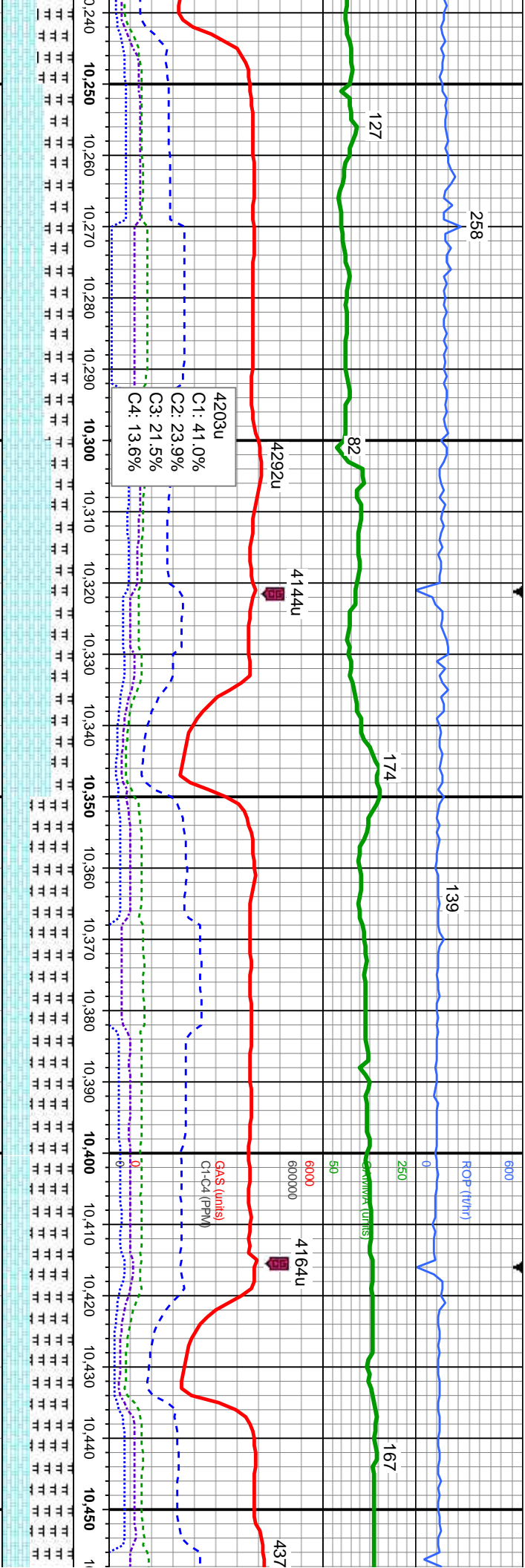
60% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	50% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	50% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	50% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc
40% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex, abnt bent, abnt fos frag	50% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex, abnt bent, abnt fos frag	50% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex, sme bent, abnt fos frag	50% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex, sme bent, abnt fos frag	40% MRL: lt - mod hd, sb pily - sb blk, abnt bent, abnt fos frag





MD: 10.067'		MD: 10.162'	
TVD: 6,584.92'		TVD: 6,585.58'	
Inclination: 89.6°		Inclination: 89.6°	
Azimuth: 88.9°		Azimuth: 88.76°	
VS: 3,587.53'		VS: 3,682.31'	
- medgy brn, sme tan wi	40% CHK: lgy - medgy brn, sme tan wi	60% CHK: lgy - medgy brn, sme tan wi	50% CHK: lgy - medgy brn, sme tan wi
sst - frm, sb ply - sb blk, y	wh, mot, lam, sft - frm, sb ply - sb blk, rthy	wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc	wh, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc
medgy, occ dk gy - blk, sft -	60% MRL: lt - medgy, occ dk gy - blk, sft -	40% MRL: lt - medgy, occ dk gy - blk, sft -	50% MRL: lt - medgy, occ dk gy - blk, sft -
y - sb blk, sily - grty tex,	mod hd, sb ply - sb blk, sily - grty tex, abnt	mod hd, sb ply - sb blk, sily - grty tex, abnt	mod hd, sb ply - sb blk, sily - grty tex,
it fos frag	bent, abnt fos frag	abnt bent, abnt fos frag	bent, abnt fos frag

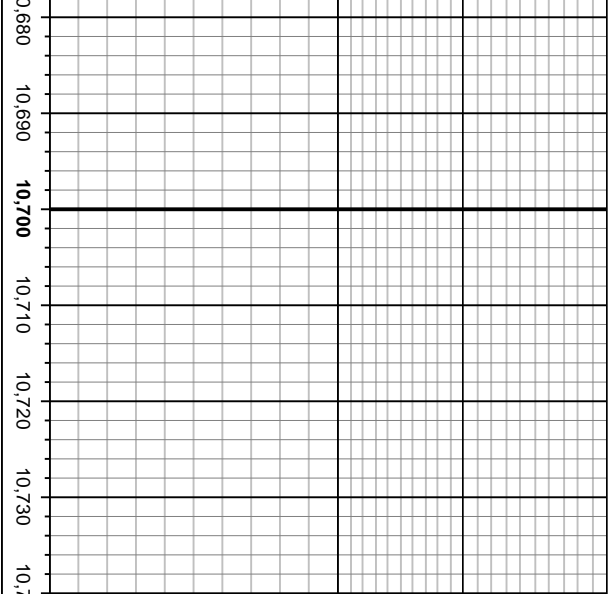




MD: 10,257'		MD: 10,352'		MD: 10,447'	
TVD: 6,585.66'		TVD: 6,584.44'		TVD: 6,582.7'	
Inclination: 90.31°		Inclination: 91.17°		Inclination: 90.92°	
Azimuth: 89.72°		Azimuth: 90.07°		Azimuth: 89.83°	
VS: 3,777.13"		VS: 3,872"		VS: 3,966.87'	

an wi wh, rthy tex,	60% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	70% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	40% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	40% CHK: lgy - medgy brn, sme tan wi wh, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc	60% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, sily - grty tex, sme bent, about fos frag
lk, sft - tex, about	40% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, sily - grty tex, about bent, about fos frag	30% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, sily - grty tex, sme bent, about fos frag	60% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, sily - grty tex, sme bent, about fos frag	60% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, sily - grty tex, sme bent, about fos frag	60% MRL: lt - medgy, occ dk gy - blk, sft - mod hd, sb pily - sb blk, sily - grty tex, sme bent, about fos frag





TD @ 10,642' MD @ 11:53 hrs MST
on 12/21/2013

Wellsite Geological Services Provided
By Columbine Logging

