

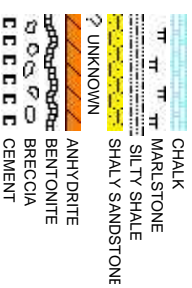
COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	Cockcroft B15-69-1HNM HORZ		
Location	SEC 14 T5N R64W		
State	Colorado	County	Weld
Country	USA		
API Number	05-123-37203	Rig Number	H&P 315
Region	DJ Basin	AFE #	136882
Spud Date	10/27/2013	Field	Kersey
		Drilling Completed	11/2/2013
Surface Coordinates	NENW SEC. 14 T5N R64W 674' FNL; 2,348' FWL Lat/Lon: 40.40465/-104.51854		
Bottom Hole Coordinates	NW/NW SEC. 15 T5N R64W 330' FNL; 2,565' FWL		
Ground Elevation	4585'	K.B. Elevation	4609'
Logged Interval	5942'	To	11709'
Formation	NIO B CHALK		
Type of Drilling Fluid	LSND		
Total Depth	11709'		

Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 80202

Name MARK COLE, N
Company COLUMBINE LOGGING
Address 2385 S Lipan St
Denver, CO 80202



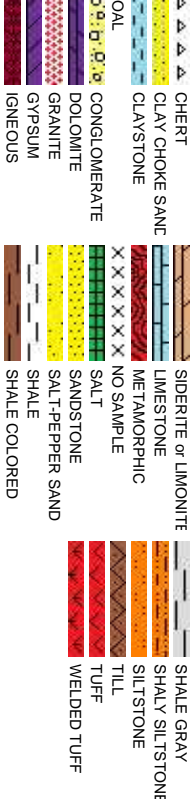
Operator

Operator
Suite 2200
202

Geologist

Geologist
LATHAN MURPHY
LOGGING, INC

Rock Types



Accessories

Fossils	F FOSSIL	- ARGILLACEOUS	✓ GLAUCONITE	✓ TUFACEOUS
GASTROPOD	/ ARGILLITE GRAIN	✓ GYPSIFEROUS	Stringer	
OOLITE	B BENTONITE	HEAVY MINERAL	ANHYDRITE STRINGER	
AMPHIPORA	BITUMENOUS SUBSTANCE	INOCERAMUS	BENTONITE STRINGER	
BELEMNITE	BRECCIA FRAGMENTS	KAOLIN	COAL STRINGER	
BIOCLASTIC	CALCAREOUS	MARLSTONE	DOLOMITE STRINGER	
BRACHIOPOD	CARBONACEOUS FLAKES	MINERAL CRYSTALS	GYPSUM STRINGER	
PISOLUTE	CHTK	NODULES	LIMESTONE STRINGER	
PLANT REMAINS	CHTLT	PHOSPHATE PELLETS	MARLSTONE (CALC) STRG	
CEPHALOPOD	COAL - THIN BEDS	PYRITE	MARLSTONE (DOL) STRG	
CORAL	DOLOMITIC	SALT CAST	SANDSTONE STRINGER	
CRINOID	FELDSPAR	SANDY		
ECHINOID				
Minerals	FISH	FERRUGINOUS PELLET	SILICEOUS	SHALE STRINGER
FORAMINIFERA	ANHYDRITIC	FERRUGINOUS	SILTY	SILTSTONE STRINGER

Other Symbols

Oil Show	ORGANIC	CORE - RECOVERED	TRIP GAS	E EARTHY
DEAD	PINPOINT	DST INTERVAL	WIRELINE TESTED - LEFT	FINELYXLN
EVEN	VUGGY	FAULT	WIRELINE TESTED - RT	GRAINSSTONE
QUESTIONABLE	Engineering	FORMATION TOP	MICROXLN	
SPOTTED STAINING	BIT	GAS SHOW	Rounding	
	MN DEPTH	ANGULAR	MUDSTONE	
Porosity	CONNECTION (DOWN)	NORMAL FAULT	ROUNDED	PACKSTONE
E EARTHY	CONNECTION (LEFT)	OIL SHOW	SUBANG	WACKESTONE
FENESTRAL	CONNECTION (RIGHT)	OVERTURNED STRATATA	SUBRND	
FRACTURE	CONNECTION GAS	REVERSE FAULT	Textures	
INTERCRYSTALLINE	CONNECTION GAS UP	SIDEWALL CORE (LEFT)	BOUNDSTONE	MODERATE
INTEROOLITIC	CONNECTION GAS LEFT	SIDEWALL CORE (RIGHT)	CHALKY	POOR
MOLDIC	CONNECTION GAS RIGHT	SLIDE	CRYPTOXLN	WELL
	CORE - LOST	SURVEY		

Slide/Rotate

ROP

ROI

Curves

GAMMA

ROP data from iBall

Gamma data from Sperry - Halliburton

Total Gas & Chromatograph

GAS

Gas data from iBall

C4

Depth Labels

% Lith

50' Sample Interval @ 5,942' MD

Columbine Logging began logging with BloodHound unit 624 on 10/29/2013

Well Bore
TV D —

TVD

Bit Data

Bit #: 200

Type: Security MMD55

Size: 8.75"

Depth In: 5,942'

Jets: 5x15

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

SLTY SH: It - med gy, occ dk gy, hd, pity - sb
pity, occ sb bilky, sily - grty tex, v sl calc
SHY SS: It gy, s&p, vfg, mod hd wi brit clus, -
sb ang - sb rd, calc cnt

SLTY SH: It - m
pity, occ sb blk
SHY SS: It gy, s
sb ang - sb rd, c

Oil Show

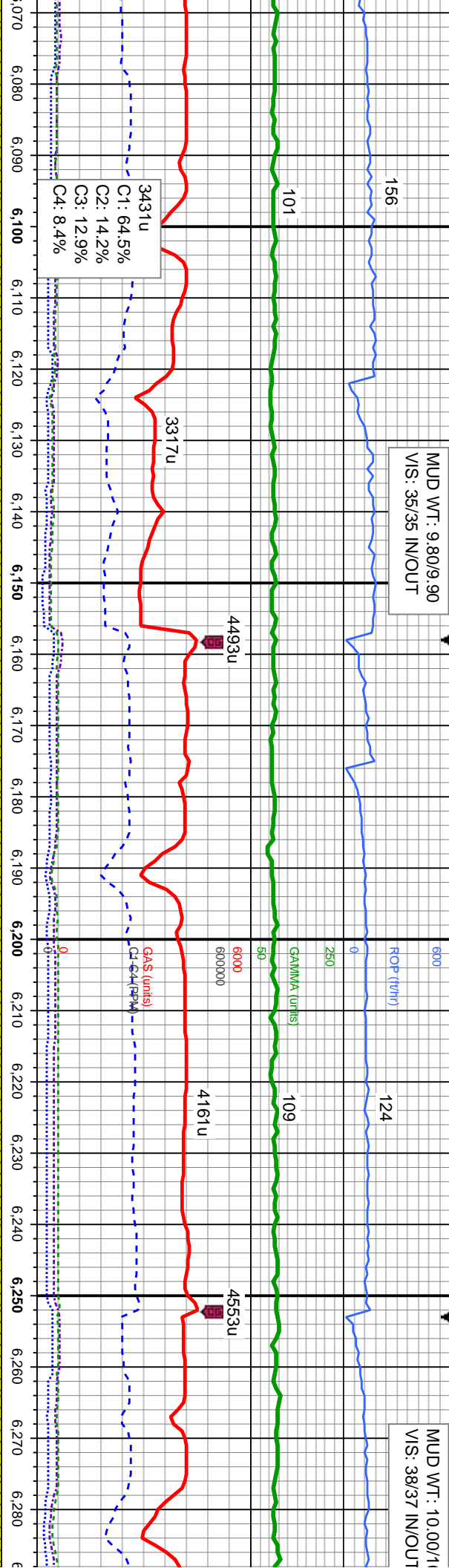
TR 2. FR 3. M 6

Images



MUD WT: 9.80/9.90
VIS: 35/35 IN/OUT

MUD WT: 10.00/11.00
VIS: 38/37 IN/OUT



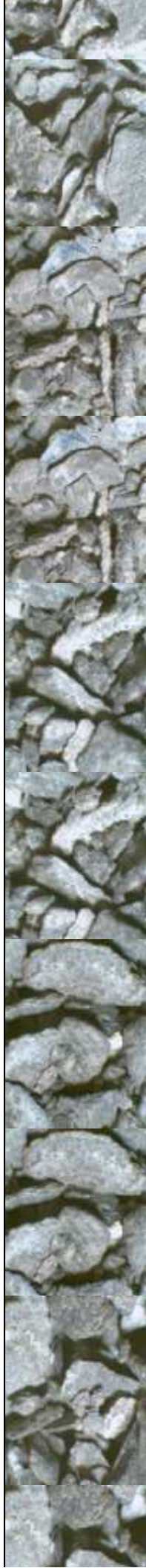
MD: 6,104'
TVD: 6,047.63'
Inclination: 10.53°
Azimuth: 278.4°
VS: -359.9'

MD: 6,152'
TVD: 6,094.46'
Inclination: 14.63°
Azimuth: 279.58°
VS: -349.5'

MD: 6,198'
TVD: 6,138.65'
Inclination: 17.66°
Azimuth: 275.85°
VS: -336.75'

MD: 6,246'
TVD: 6,183.82'
Inclination: 21.78°
Azimuth: 275.35°
VS: -320.57'

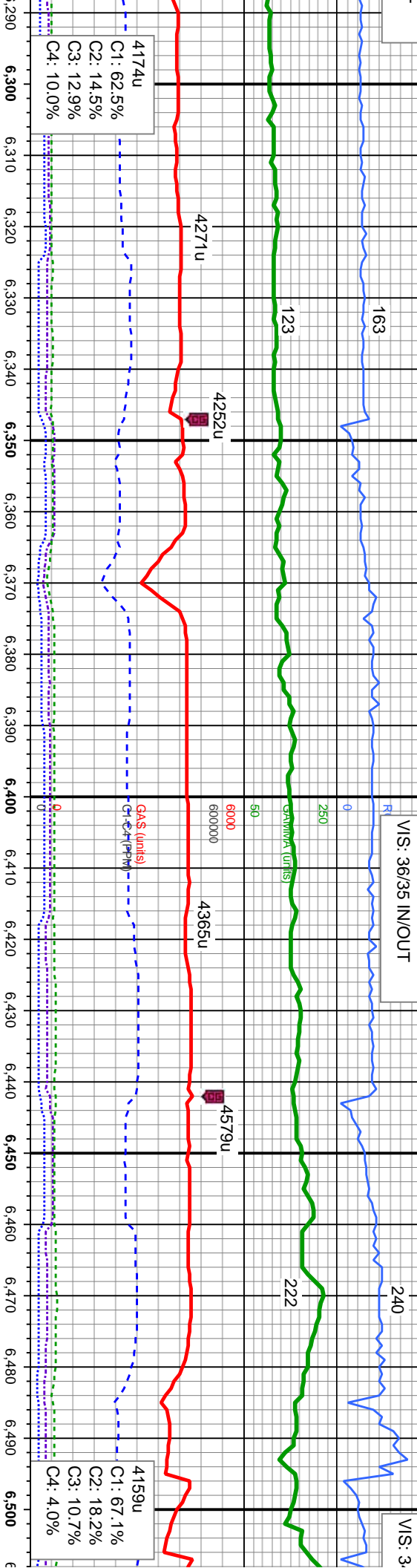
SLTY SH: It - med gy, occ dk gy, hd, pily - sb	SLTY SH: It - med gy, occ dk gy, hd, pily - sb	SLTY SH: It - med gy, occ dk gy, hd, pily - sb	SLTY SH: It - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, silty - grty tex, v sl calc	pily, occ sb blkly, silty - grty tex, v sl calc	pily, occ sb blkly,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



0.00

MUD WT: 10.00/10.00
VIS: 36/35 IN/OUT

MUD V
VIS: 3



6,293

6,226.78

MD: 6,341

TVD: 6,269.17

Inclination: 29.85 °

Azimuth: 274.2 °

301.53

Azimuth: 274.39 °

VS: -279.04

MD: 6,388

TVD: 6,308.78

Inclination: 35.25 °

Azimuth: 271.19 °

VS: -253.78

MD: 6,436

TVD: 6,345.92

Inclination: 43.26 °

Azimuth: 269.76 °

VS: -223.47

MD: 6,483

TVD: 6,378.35

Inclination: 49.42 °

Azimuth: 271.1 °

VS: -189.53

MD: 6,507

TVD: 6,393

Inclination: 27.1 °

Azimuth: 271.1 °

VS: -189.53

25' Sample Interval @ 6,500' MD

Sharon Springs Marker @
6,507' MD: 6,393' TVD

MD: 6,483

TVD: 6,378.35

Inclination: 49.42 °

Azimuth: 271.1 °

VS: -189.53

MD: 6,507

TVD: 6,393

Inclination: 27.1 °

Azimuth: 271.1 °

VS: -189.53

MD: 6,507

TVD: 6,393

Inclination: 27.1 °

Azimuth: 271.1 °

VS: -189.53

MD: 6,507

TVD: 6,393

Inclination: 27.1 °

Azimuth: 271.1 °

VS: -189.53

MD: 6,507

TVD: 6,393

Inclination: 27.1 °

Azimuth: 271.1 °

VS: -189.53

MD: 6,507

TVD: 6,393

SLTY SH: lt - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, slty - grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, slty - grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, slty - grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cnt

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

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

SLTY SH: lt - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, slty - grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cnt

SLTY SH: lt - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, slty - grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cnt

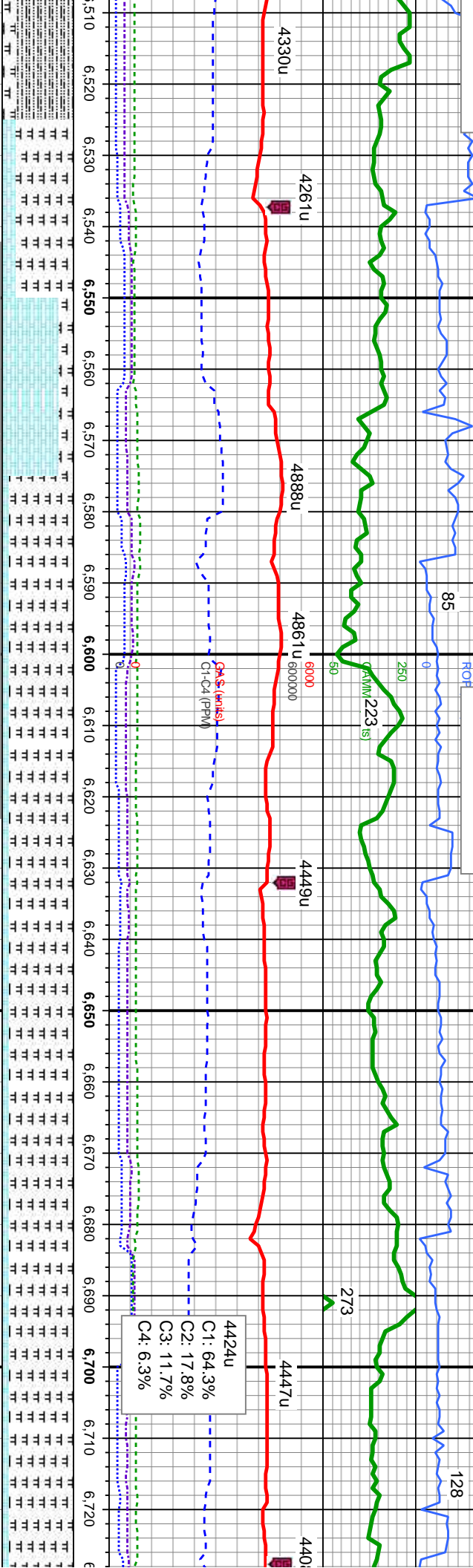
SLTY SH: lt - med gy, occ dk gy, hd, pily - sb
pily, occ sb blkly, slty - grty tex, v sl calc
SHY SS: lt gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cnt

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

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

WT: 10.10/10.20
4/35 IN/OUT

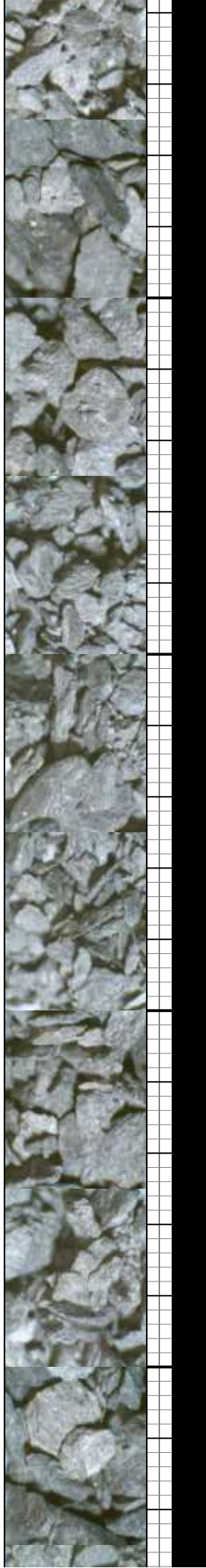
MUD WT: 10.30/10.40
VIS: 36/35 IN/OUT



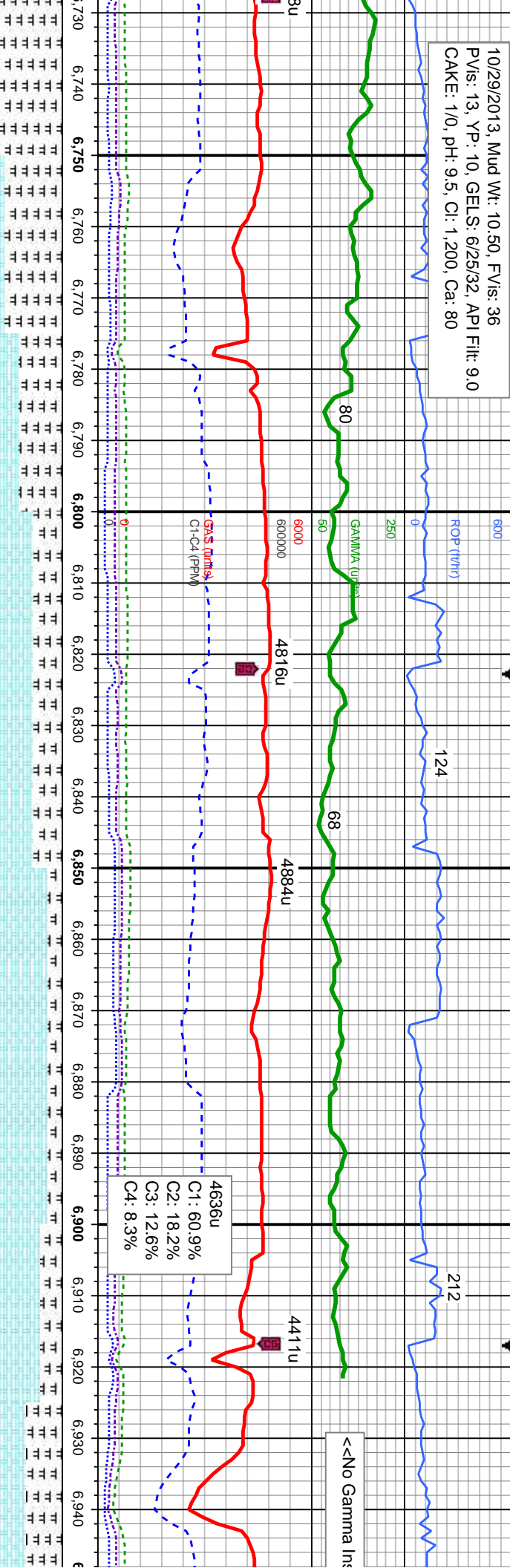
Niobrara Top @ 6,535' MD: 6,412' TVD		Nio A Chalk Top @ 6,566' MD: 6,431' TVD		Nio A Marl Top @ 6,605' MD: 6,454' TVD	
6,510	6,520	6,530	6,540	6,550	6,560
6,570	6,580	6,590	6,600	6,610	6,620
6,630	6,640	6,650	6,660	6,670	6,680
6,690	6,700	6,710	6,720		

MD: 6,531' TVD: 6,409.26' Inclination: 50.4° Azimuth: 270.43° VS: -152.85'		MD: 6,578' TVD: 6,438.41' Inclination: 52.92° Azimuth: 268.82° VS: -116.07'		MD: 6,626' TVD: 6,465.9' Inclination: 57.19° Azimuth: 268.26° VS: -76.88'		MD: 6,673' TVD: 6,489.77' Inclination: 61.75° Azimuth: 267.06° VS: -36.62'		MD: 6,721' TVD: 6,510.62' Inclination: 66.74° Azimuth: 264.14° VS: 6.19° VS: -152.85'	
6,510	6,520	6,530	6,540	6,550	6,560	6,570	6,580	6,590	6,600
6,610	6,620	6,630	6,640	6,650	6,660	6,670	6,680	6,690	6,700
6,710	6,720								

- med gy, sme blk, sft - mod hd, sb ty, silty - grty tex - med gy - gy brn, mot, lam, sft - frm, - sb blkly, rthy tex, v calc - med gy, occ dk gy, hd, pily - sb c sb blkly, silty - grty tex, v sl calc, abnt	MRL: It - med gy, sme blk, sft - mod hd, sb pily - pily, silty - grty tex CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc, sme bent	MRL: It - med gy, sme blk, sft - mod hd, sb pily - pily, silty - grty tex CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc, sme bent	MRL: It - med gy, sme blk, sft - mod hd, sb pily - pily, silty - grty tex CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blkly, rthy tex, v calc, tr bent	MRL: pred It - med gy, oc hd, sb pily - sb blkly, silty CHK: It - med gy - gy brn sb pily - sb blkly, rthy tex, frag
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10/29/2013, Mud Wt: 10.50, FVis: 36
PVs: 13, YP: 10, GELS: 6/25/32, API Filtr: 9.0
CAKE: 1/0, pH: 9.5, Cl: 1,200, Ca: 80



Nio B Chalk Top @
6,756' MD; 6,523' TVD

MD: 6,768	
TVD: 6,527.41	

Inclination: 71.39 °

Azimuth: 265.69 °
VS: 49.77' ± 11'

MD: 6,816
TVD: 6,540.98

Inclination: 75.76°

AZIMUTH: 267.30
VS: 95.47

MD. 6863 '

TVD: 6,551.49

Inclination: 78.38 °
Azimuth: 267.74 °

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MD: 6,919
TYD: 6,560.27'

Inclination: 83.58°

TOOH @
to run 7" c

occ dk gy, sft - mod	MRL: pred lt - med gy, occ dk gy, sft - mod
- grty tex	hd, sb ply - sb biky, sfty - grty tex
, mot, lam, sft - frm,	CHK: lt - med gy - gy brn, mot, lam, sft - frm,
v calc, tr bent, tr fos	sb ply - sb biky, rthy tex, v calc, tr bent, tr fos
	frag

CHK: it - med gy - gy brn, mot, lam, sft -
frm, sb ply - sb biky, rthy tex, v calc, tr bent,
tr fos frag
MR: pred it - med gy, ooc dk gy, sft - mod
hd, sb ply - sb biky, sfty - grfy tex

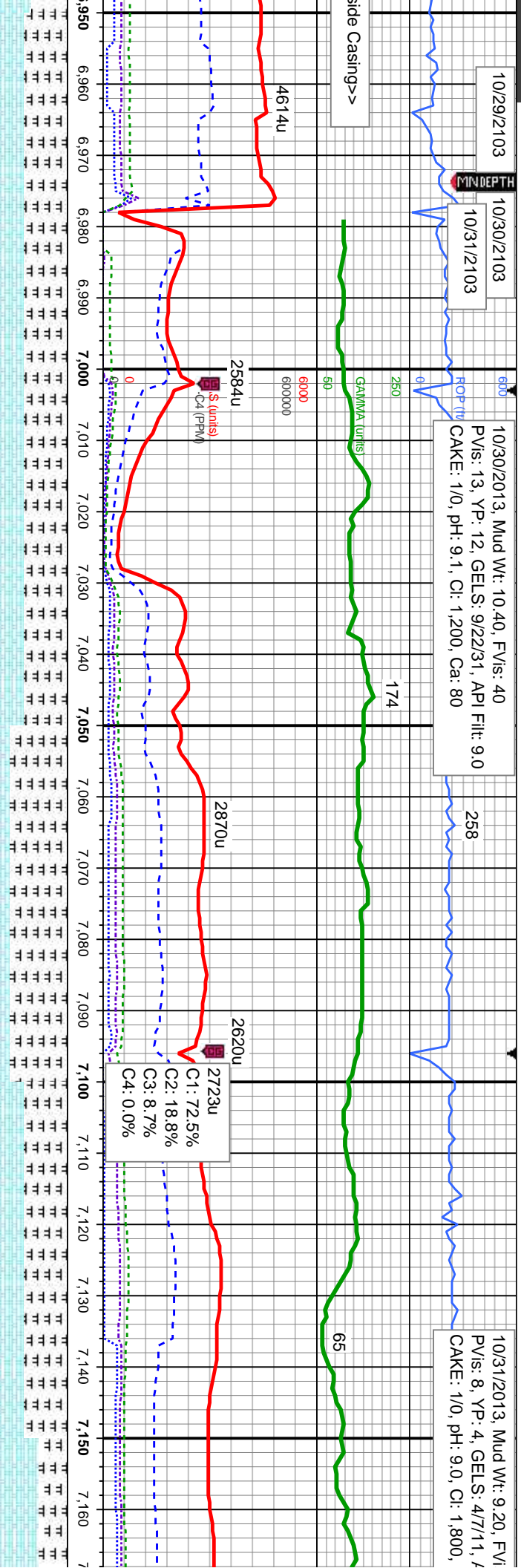
CHK: it - med gy - gy brn, mot, lam, sft - frm,
sb ply - sb biky, rthy tex, v calc, tr bent, smæ
fos frag

MR.L: pred it - med gy, occ dk gy, sft - mod
hd, sb ply - sb biky, silty - grty tex

CHK: It - med gy - gy brn, mot, lam, sft - firm
sb pily - sb blkly, rthy tex, v calc, tr bent, sm
fos frag

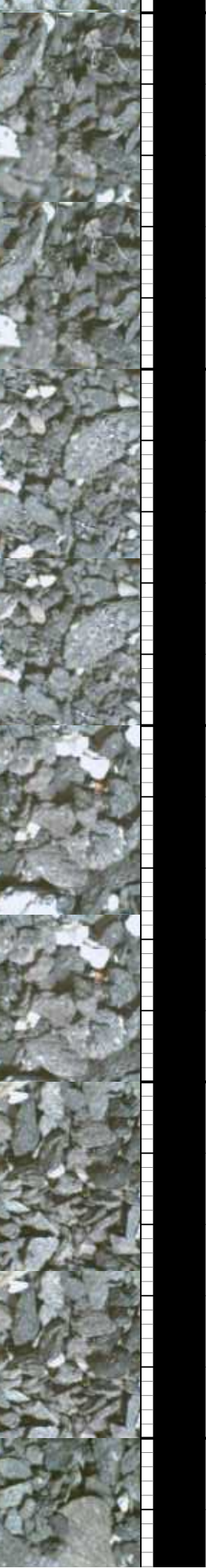
MRL: pried It - med gy, sme dk gy - blk, sft -
mod hd, sb pily - sb blkly, sily - gtry tex

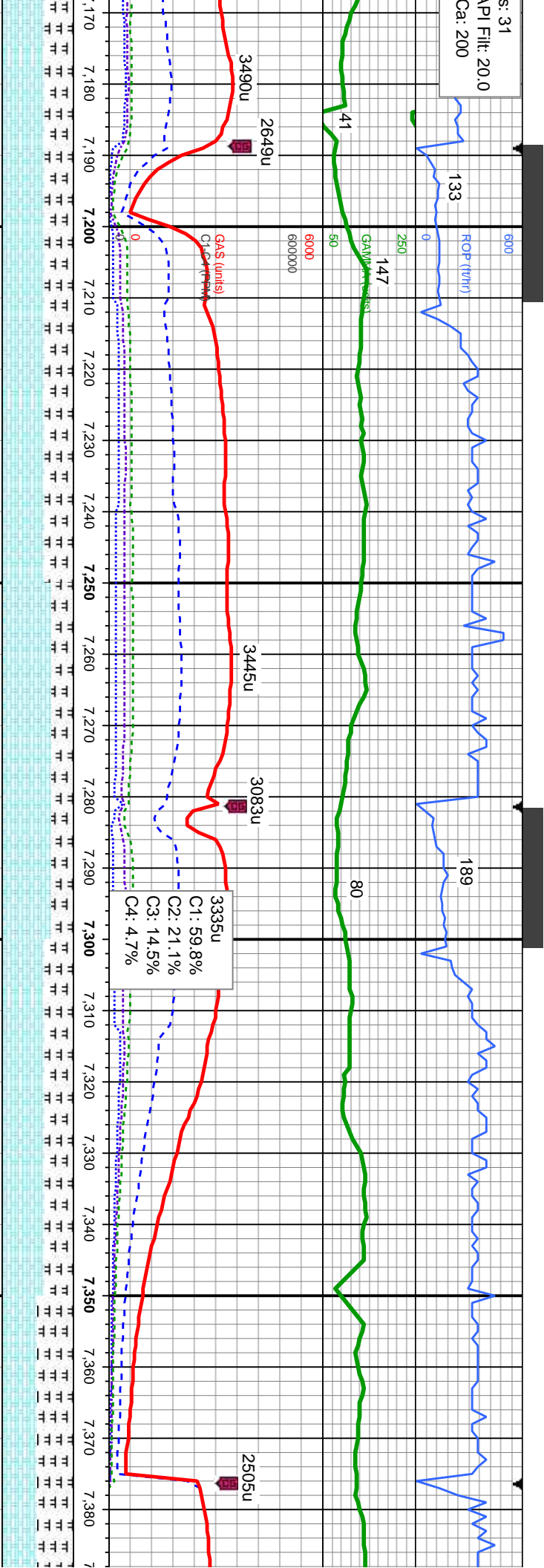




6,973' MD		50' Sample Interval @ 7,000' MD	
Casing		Bit Data	
		Bit #: 300	
		Type: Varel VS513D	
		Size: 6.12"	
		Depth In: 6973'	
		Jets: 5x14	
		MD: 7,034'	
		TVD: 6,567.57'	
		Inclination: 89.14°	
		Azimuth: 268.9°	
		VS: 310.35'	

TVD (ft)	
40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v calc, about bent, about fos frag	40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v calc
60% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex	60% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, no bent, tr fos frag
20% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v calc	20% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v calc
80% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, no bent, tr fos frag	80% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, no bent, tr fos frag
40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v calc	40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkly, rthy tex, v calc
60% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, no bent, tr fos frag	60% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, silty - grty tex, no bent, tr fos frag

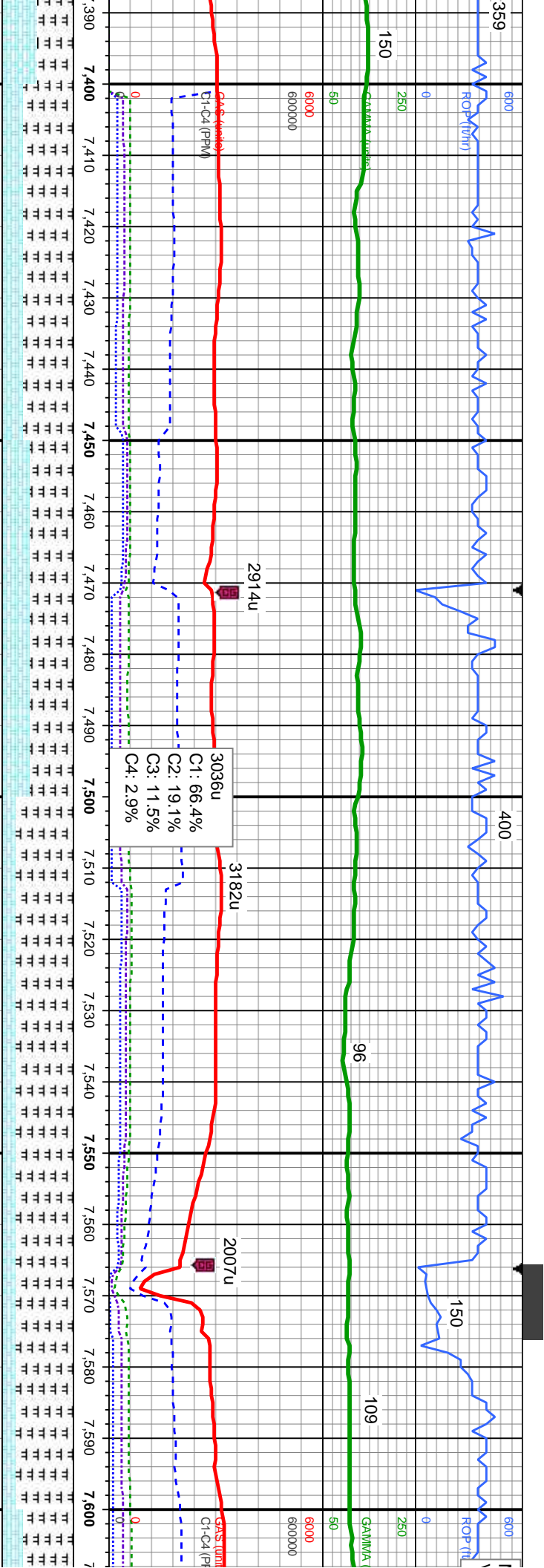




6350	MD: 7.219 TVD: 6,572.03 Inclination: 89.23 ° Azimuth: 268.12 ° VS: 494.59'		MD: 7.314 TVD: 6,571.62 Inclination: 91.26 ° Azimuth: 268.28 ° VS: 589.19'
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blky, rthy tex, v calc	60% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blky, rthy tex, v calc	70% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blky, rthy tex, v calc	60% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blky, rthy tex, v calc	50% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blky, rthy tex, v calc
It - med gy, sme dk gy - blk, sft - mod hd, sb pily - sb blky, sily - grty tex, tr	40% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pily - sb blky, sily - grty tex, no bent, sme fos frag	30% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pily - sb blky, sily - grty tex, no bent, sme fos frag	40% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pily - sb blky, sily - grty tex, no bent, sme fos frag	50% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pily - sb blky, sily - no bent, sme fos frag



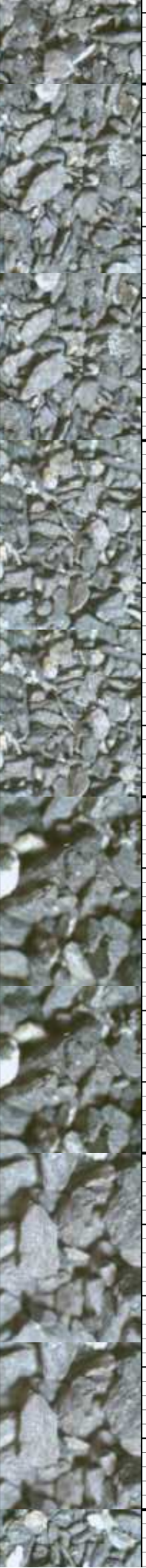


MD: 7,409 '
TVD: 6,569.48 '
Inclination: 91.32 °
Azimuth: 268.85 °
VS: 683.82 '

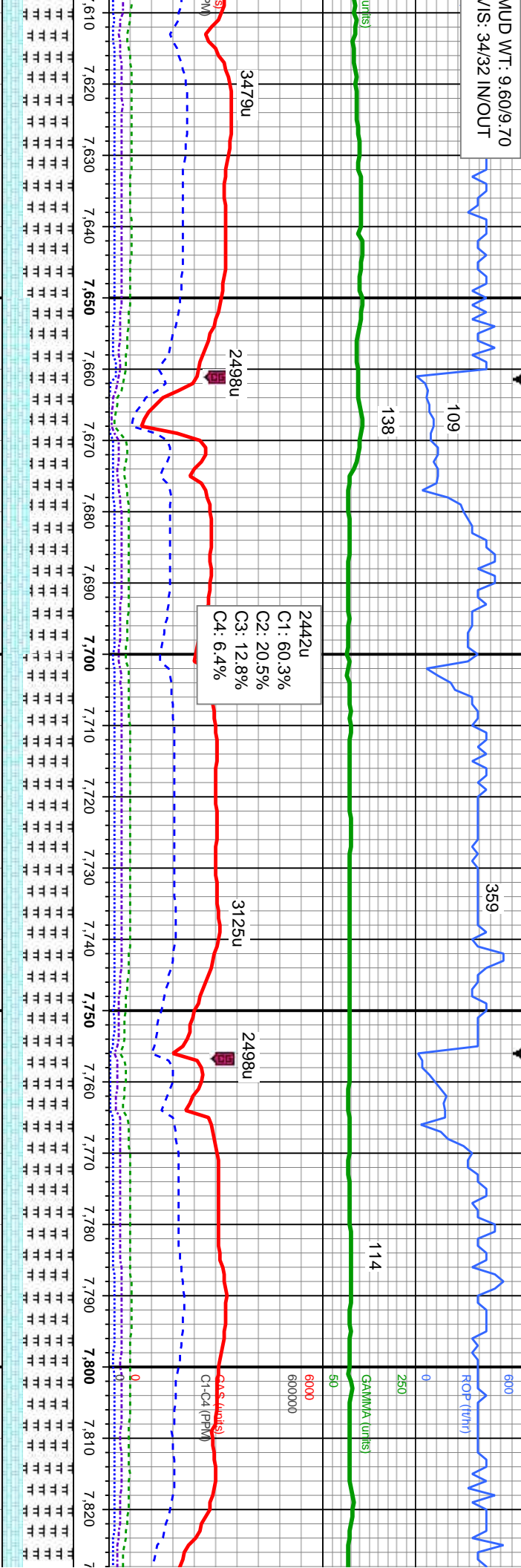
MD: 7,504 '
TVD: 6,566.92 '
Inclination: 91.76 °
Azimuth: 268.95 °
VS: 778.48 '

MD: 7,599 '
TVD: 6,564.65 '
Inclination: 90.99 °
Azimuth: 268.55 °
VS: 873.13 '

TVD (ft)	
lam, sft -	30% CHK: lt - med gy - gy brn, mot, lam, sft -
frn, sb ply - sb blk, rthy tex, v calc	40% CHK: lt - med gy - gy brn, mot, lam, sft -
70% MRL: pred lt - med gy, sme dk gy - blk,	60% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,	sft - mod hd, sb ply - sb blk, silty - grty tex,
sme bent, sme fos frag	abt bent, sme fos frag
lam, sft -	20% CHK: lt - med gy - gy brn, mot, lam, sft -
frn, sb ply - sb blk, rthy tex, v calc	80% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,	sme bent, sme fos frag
abt bent, sme fos frag	20% CHK: lt - med gy - gy brn, mot, lam, sft -
frn, sb ply - sb blk, rthy tex, v calc	80% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,	abt bent, sme fos frag
abt bent, sme fos frag	30% C
frn, sb	70% M
sft - mod	abt bent



MUD WT: 9.60/9.70
V/S: 34/32 IN/OUT



MD: 7.693 '
TVD: 6,563.84 '
Inclination: 90 °
Azimuth: 268.02 °
VS: 966.75 '

MD: 7.788 '
TVD: 6,563.94 '
Inclination: 89.88 °
Azimuth: 268.82 °
VS: 1,061.38 '

HK: lt - med gy - gy brn, mot, lam, sft -
ply - sb blk, rthy tex, v calc
RL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,
abt bent, abnt fos frag

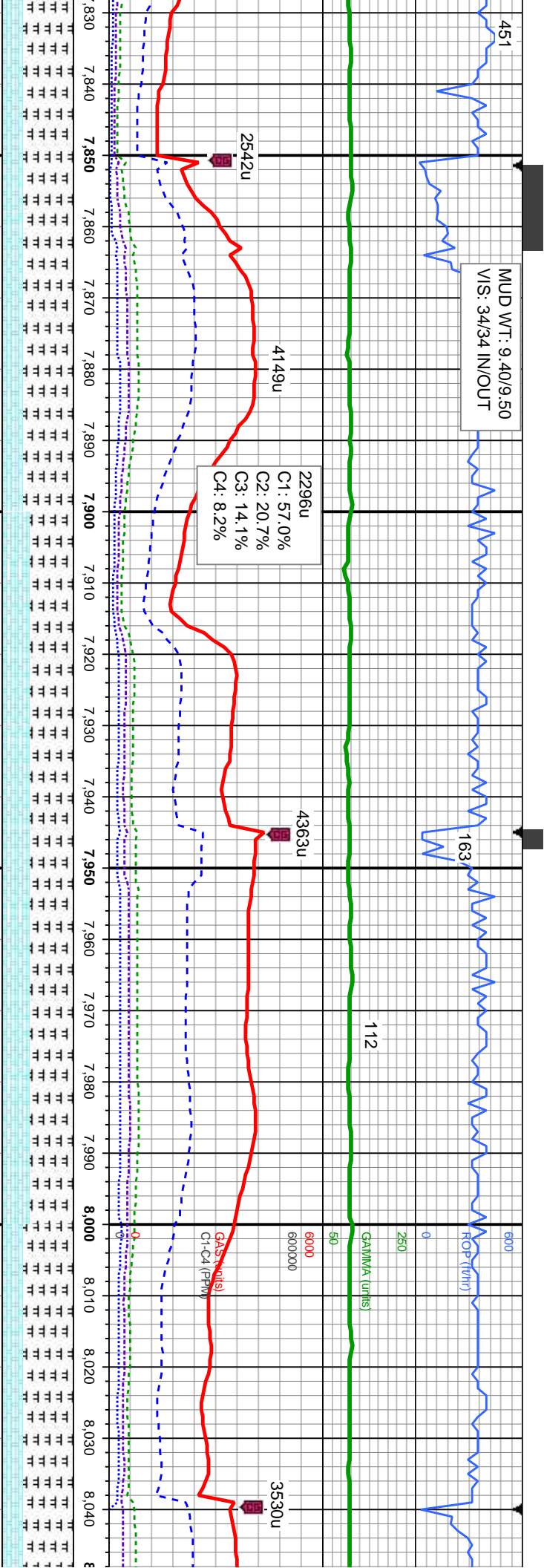
40% CHK: lt - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
60% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,
abt bent, abnt fos frag

30% CHK: lt - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
70% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,
abt bent, abnt fos frag

30% CHK: lt - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
70% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex, v
abt bent, abnt fos frag

30% CHK: lt - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
70% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex, v
abt bent, abnt fos frag

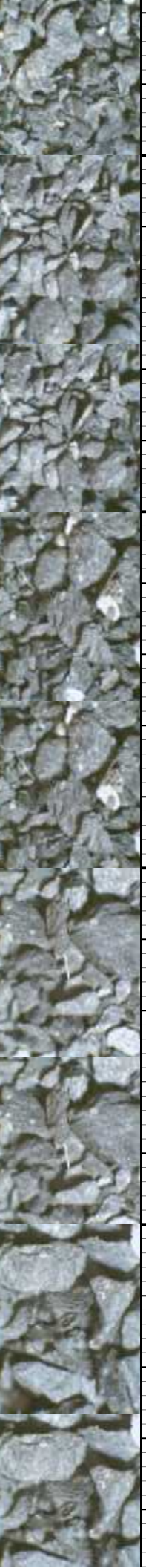


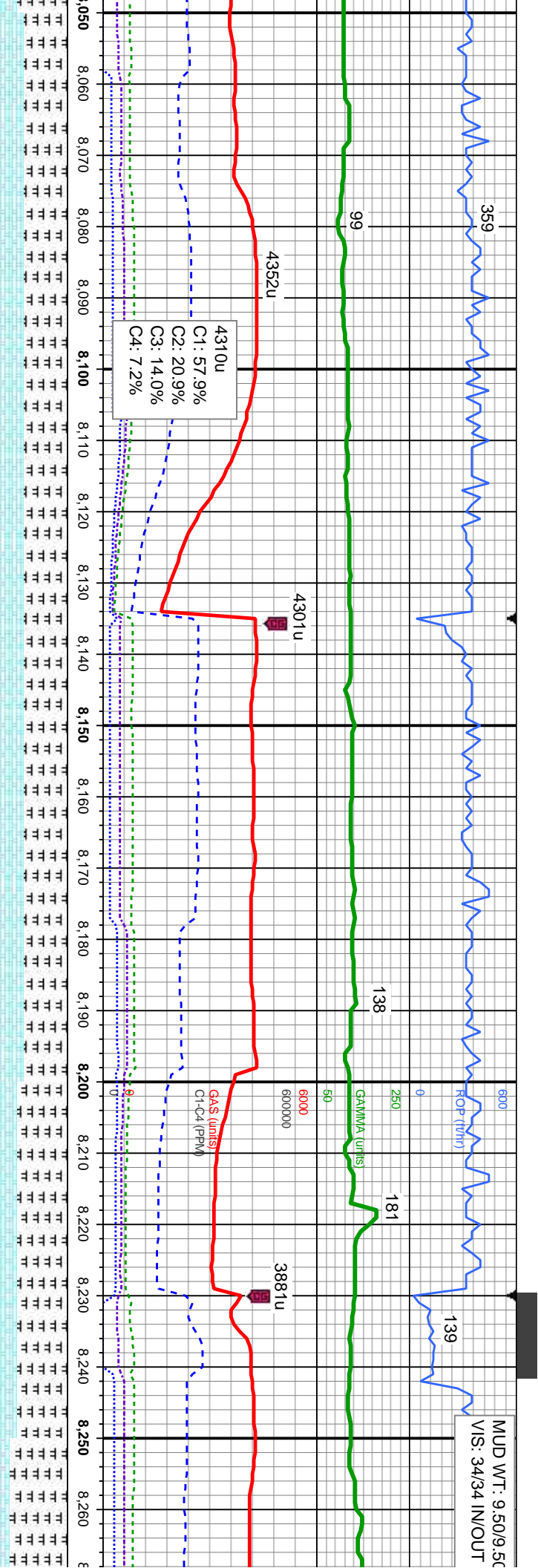


MD: 7.883 '
TVD: 6,564.71 '
Inclination: 89.2 °
Azimuth: 270.29 °
VS: 1,156.16 '

MD: 7.978 '
TVD: 6,565.96 '
Inclination: 89.29 °
Azimuth: 269.96 °
VS: 1,250.99 '

gy brn, mot, lam, sft y tex, v calc	30% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	40% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	40% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	30% CHK: lt - med gy - gy brn, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc
gy, sme dk gy - blk, blk, sily - grty tex,	70% MRL: pred lt - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, sily - grty tex, abt bent, abnt fos frag	60% MRL: pred lt - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, sily - grty tex, abt bent, abnt fos frag	60% MRL: pred lt - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, sily - grty tex, abt bent, abnt fos frag	70% MRL: pred lt - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, sily - grty tex, abt bent, abnt fos frag





MD: 8,073 '
TVD: 6,567.34 '
Inclination: 89.04 °
Azimuth: 269.46 °
VS: 1,345.77 '

MD: 8,168 '
TVD: 6,568.08 '
Inclination: 90.06 °
Azimuth: 270.2 °
VS: 1,440.58 '

MD: 8,263 '
TVD: 6,569.21 '
Inclination: 88.3 °
Azimuth: 270.0 °
VS: 1,535.41 '

40% CHK: lt - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blk, rthy tex, v calc
60% MRL: pred lt - med gy, sme dk gy -
blk, sft - mod hd, sb pily - sb blk, silty - grty
tex, abnt bent, abnt fos frag

40% CHK: lt - med gy - gy brn, mot, lam, sft
- frm, sb pily - sb blk, rthy tex, v calc
60% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb pily - sb blk, silty - grty tex,
abnt bent, abnt fos frag

40% CHK: lt - med gy - gy brn, mot, lam,
sft - frm, sb pily - sb blk, rthy tex, v calc
60% MRL: pred lt - med gy, sme dk gy -
blk, sft - mod hd, sb pily - sb blk, silty - grty
tex, abnt bent, abnt fos frag

30% CHK: lt - med gy - gy brn, mot, lam, sft -
frm, sb pily - sb blk, rthy tex, v calc
70% MRL: pred lt - med gy, sme dk gy - blk,
sft - mod hd, sb pily - sb blk, silty - grty tex,
abnt bent, abnt fos frag

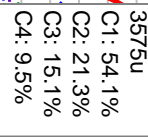
20% CHK: lt - n
- frm, sb pily - s
80% MRL: prec
sft - mod hd, sb
abnt bent, abnt

TVD (ft)

6350

11/01/2013

73



VS: 1,819.94'

VS: 1,914.82

20% CHK: lt - med gy - gy brn, mot, lam, sft - firm, sb ply - sb blkly, rthy tex, v calc
80% MRL: pred lt - med gy, sme dk gy - blk, sft - mod hd, sb ply - sb blkly, slty - grty tex, abnt bent, sme fos frag

30% C
firm, sb
70% M
sift - m
some be

MUD WT: 9.50/9.60
VIS: 33/34 IN/OUT

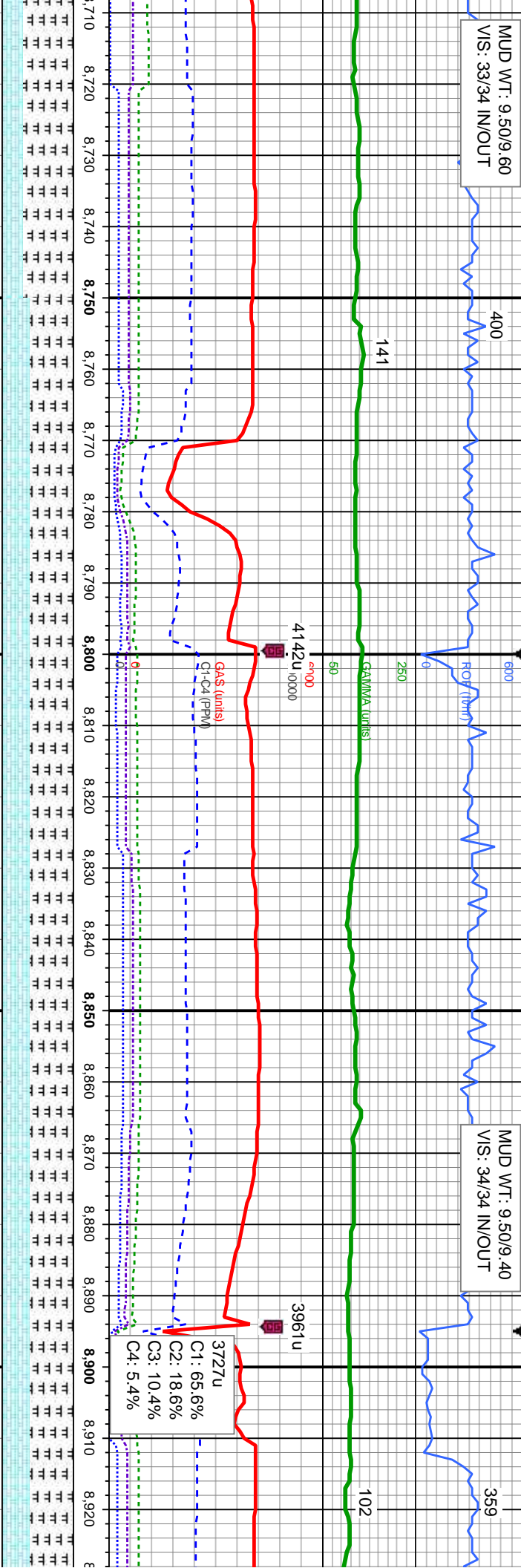
400

141

MUD WT: 9.50/9.40
VIS: 34/34 IN/OUT

359

102



MD: 8.737
TVD: 6,573.23
Inclination: 90.96 °
Azimuth: 270.28 °
VS: 2,008.67'

MD: 8.832
TVD: 6,570.98
Inclination: 91.76 °
Azimuth: 270 °
VS: 2,103.48'

MD: 8.927
TVD: 6,561.45
Inclination: 91.76 °
Azimuth: 270 °
VS: 2,198.67'

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

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

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

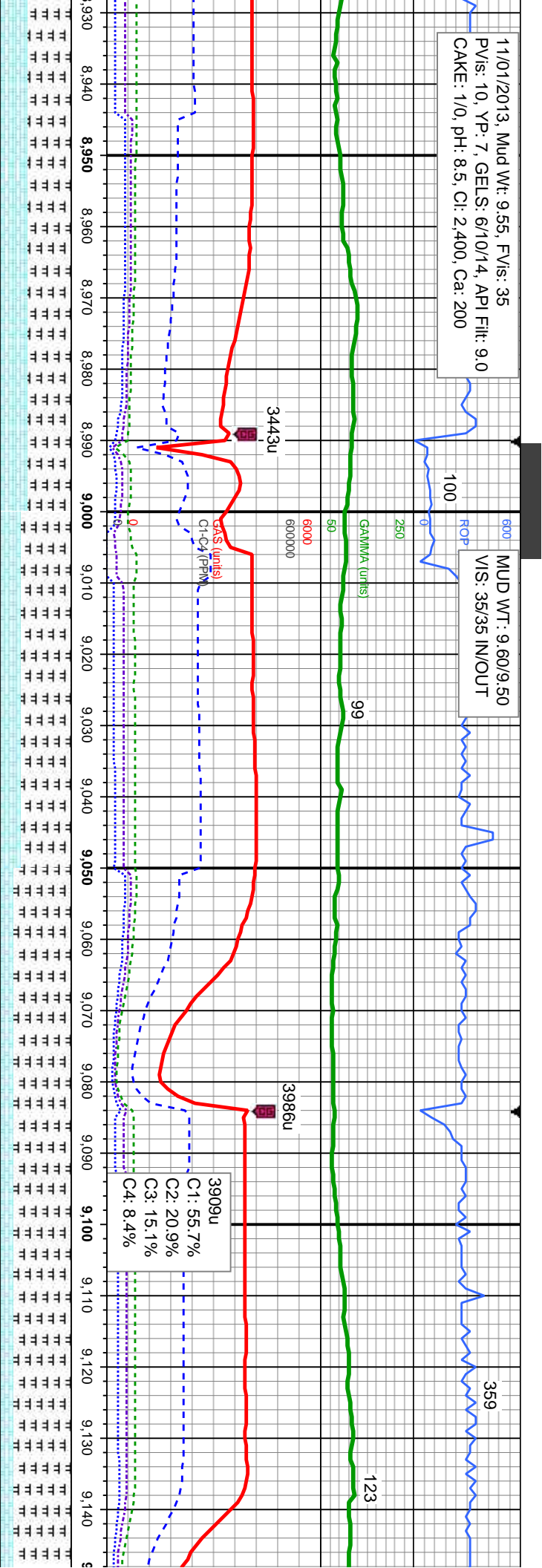
40% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb pily - sb blk, rthy tex, v calc 60% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pily - sb blk, silty - grty tex, abnt bent, abnt fos frag

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



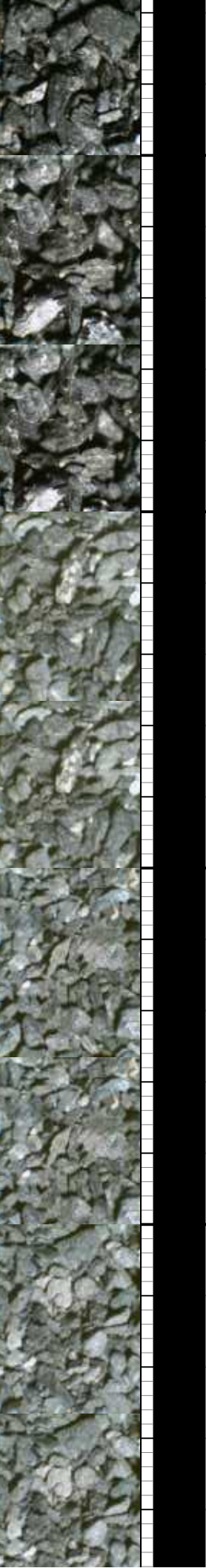
11/01/2013, Mud Wt: 9.55, FVIs: 35
PVIs: 10, YP: 7, GELS: 6/10/14, API Filt: 9.0
CAKE: 1/0, pH: 8.5, Cl: 2.400, Ca: 200

MUD WT: 9.60/9.50
VIS: 35/35 IN/OUT

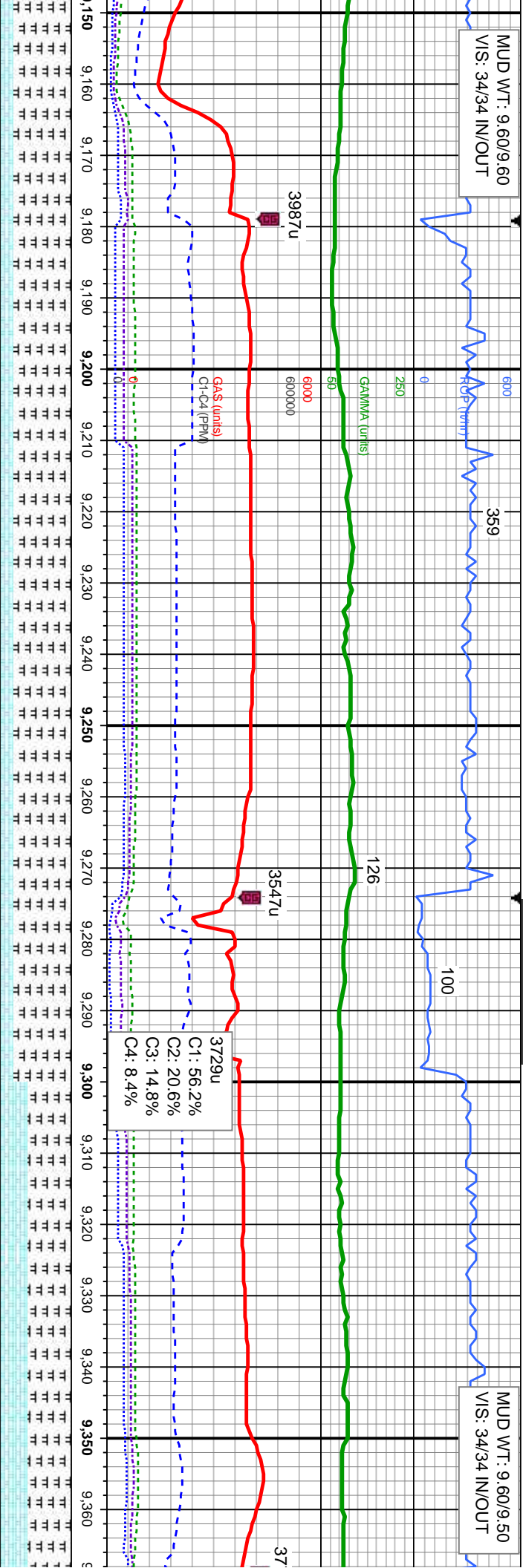


3.2'	91.6°	69.74°	26'
MD: 9.022	TVD: 6,566.66	Inclination: 90.25°	Azimuth: 269.53°
VS: 2,293.03'			

gy brn, mot, lam, sft	40% CHK: lt - med gy - gy brn, mot, lam, sft	30% CHK: lt - med gy - gy brn, mot, lam, sft	20% CHK: lt - med gy - gy brn, mot, lam, sft	20% CHK: lt - med gy - gy brn, mot, lam, sft
vy 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	- frm, sb ply - sb blkly, rthy tex, v calc
gy, sme dk gy - blk,	60% MRL: pred lt - med gy, sme dk gy - blk,	70% MRL: pred lt - med gy, sme dk gy - blk,	80% MRL: pred lt - med gy, sme dk gy - blk,	80% MRL: pred lt - med gy, sme dk gy - blk,
blkly, silty - grty tex,	sft - mod hd, sb ply - sb blkly, silty - grty tex,	sft - mod hd, sb ply - sb blkly, silty - grty tex,	sft - mod hd, sb ply - sb blkly, silty - grty tex,	sft - mod hd, sb ply - sb blkly, silty - grty tex,
	sme bent, abnt fos frag	abnt bent, abnt fos frag	tr bent, sme fos frag	tr bent, sme fos frag



MUD WT: 9.60/9.60
VIS: 34/34 IN/OUT



MUD WT: 9.60/9.50
VIS: 34/34 IN/OUT

MD: 9,212
TVD: 6,564.44
Inclination: 91.45 °
Azimuth: 269.05 °
VS: 2,482.45 '

MD: 9,307
TVD: 6,562.71
Inclination: 90.65 °
Azimuth: 269.02 °
VS: 2,577.15 '

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

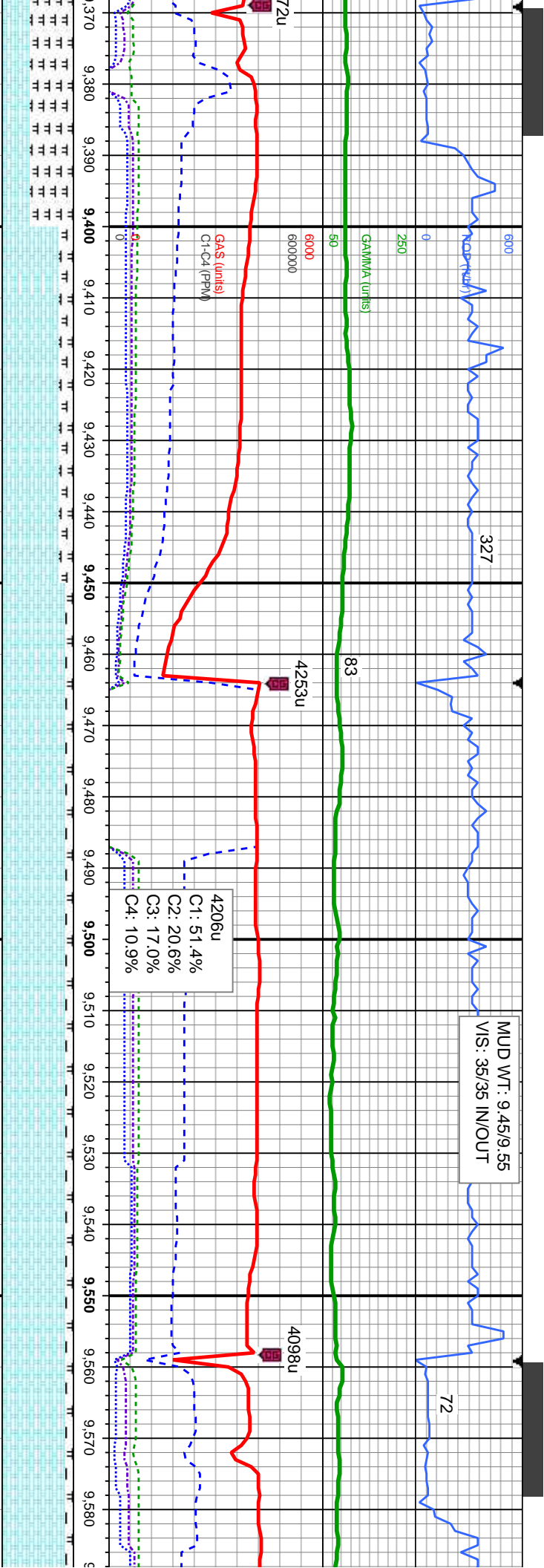
20% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
80% MRL: pred It - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, sily - grty tex,
It bent, sme fos frag

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

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

40% CHK: It - n
- frm, sb ply - s
60% MRL: prec
sft - mod hd, sb
sme bent, It fos





MD: 9.402
TVD: 6,562.42
Inclination: 89.69 °
Azimuth: 269.32 °
VS: 2,671.88'

TVD (ft)

med gy - gy brn, mot, lam, sft
b blk, rthy tex, v calc
It - med gy, sme dk gy - blk,
ply - sb blk, silty - grty tex,
frag

80% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
20% MRL: pred It - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,
6.~
sme bent, tr fos frag

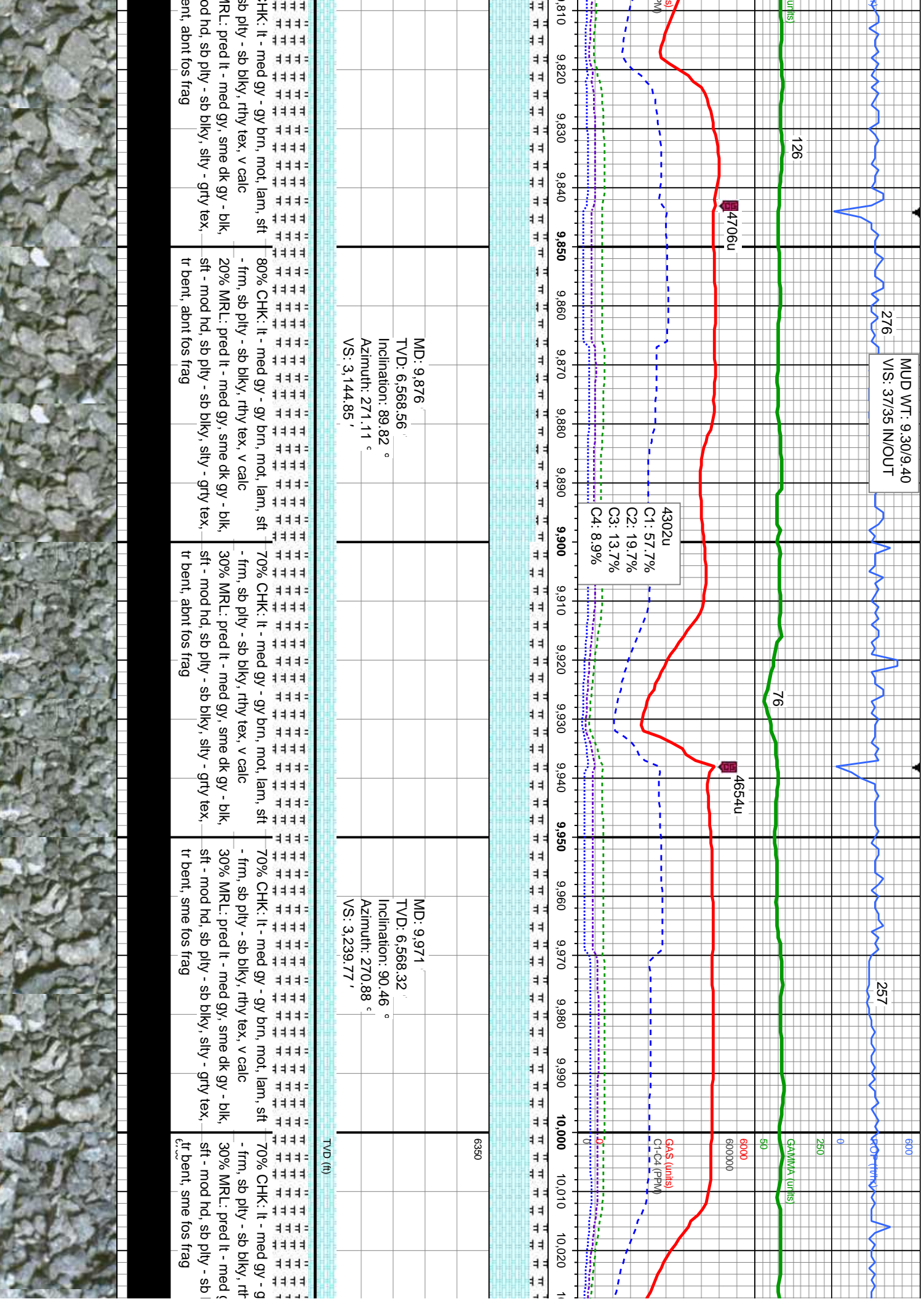
90% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
10% MRL: pred It - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,
tr bent, tr fos frag

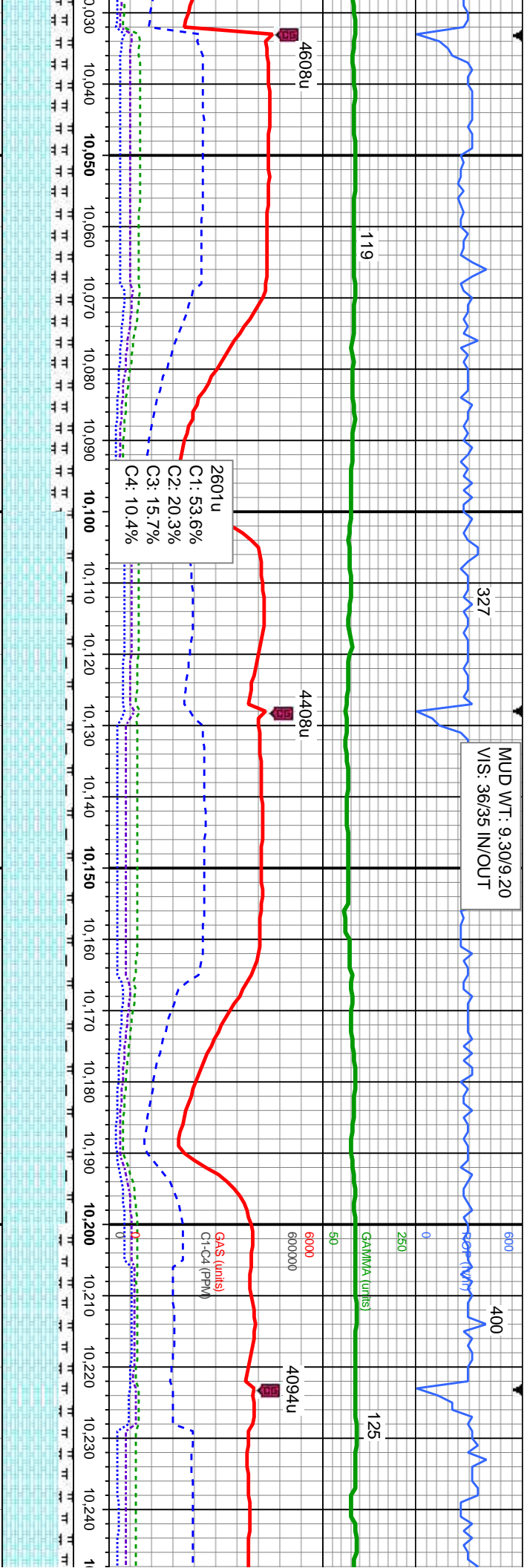
90% CHK: It - med gy - gy brn, mot, lam, sft
- frm, sb ply - sb blk, rthy tex, v calc
10% MRL: pred It - med gy, sme dk gy - blk,
sft - mod hd, sb ply - sb blk, silty - grty tex,
tr bent, tr fos frag

90% CHK: It - med gy - gy brn, mo
- frm, sb ply - sb blk, rthy tex, v c
10% MRL: pred It - med gy, sme d
sft - mod hd, sb ply - sb blk, silty
tr bent, tr fos frag

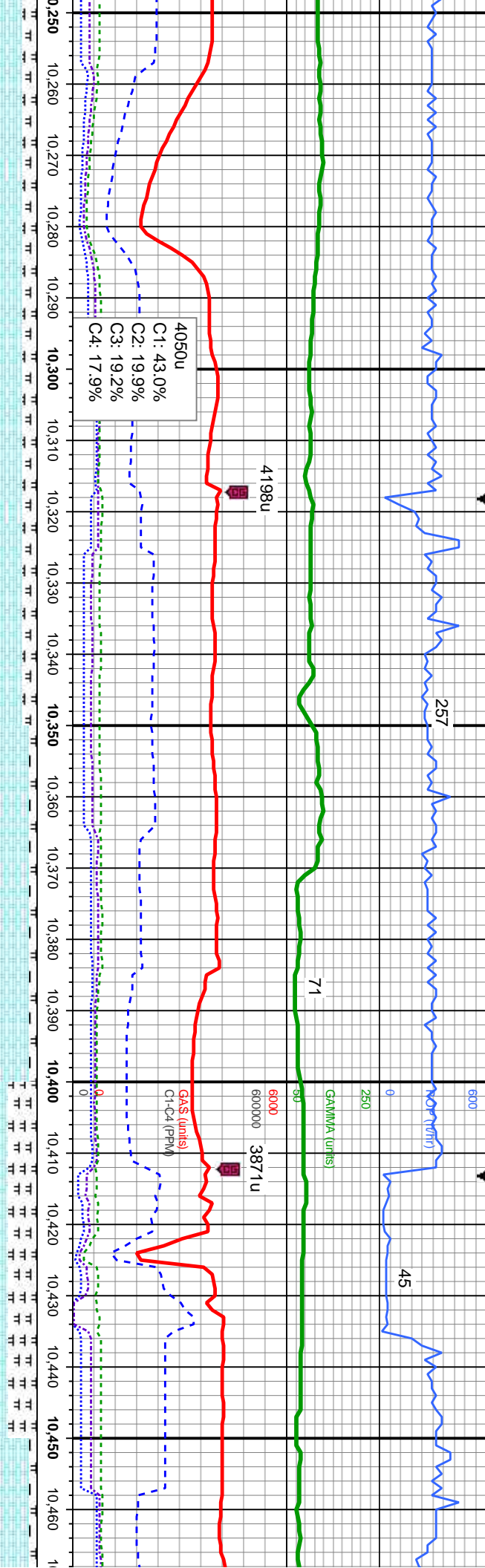
MD: 9.4
TVD: 6
Inclinat
Azimut
VS: 2.8







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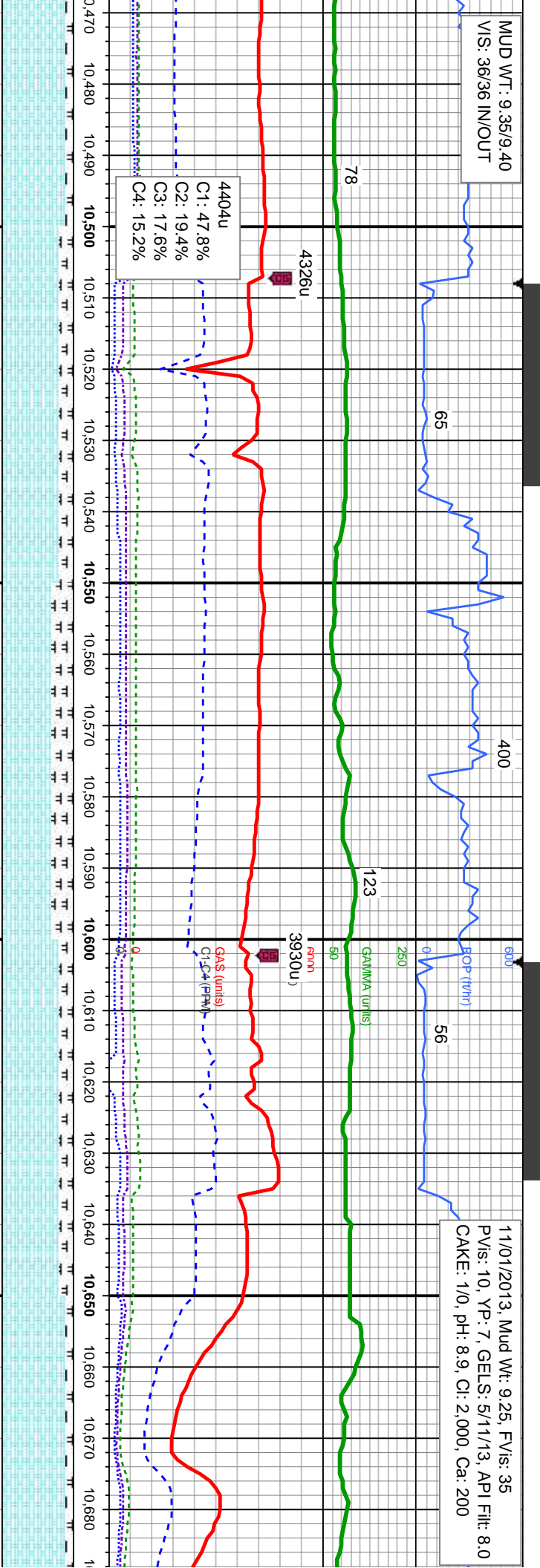
MD: 10,350 TV/D: 6,566.46 Inclination: 91.36 ° Azimuth: 272.34 ° VS: 3,618.27 '		MD: 10,445 TV/D: 6,564.13 Inclination: 91.45 ° Azimuth: 272.69 ° VS: 3,713.23 '	
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80% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 20% MRL: pred It - med gy, sme dk gy - blk sft - mod hd, sb ply - sb blk, silty - grfy tex, tr bent, tr fos frag	80% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 20% MRL: pred It - med gy, sme dk gy - blk sft - mod hd, sb ply - sb blk, silty - grfy tex, tr bent, tr fos frag	90% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 10% MRL: pred It - med gy, sme dk gy - blk sft - mod hd, sb ply - sb blk, silty - grfy tex, tr bent, tr fos frag	60% CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc 40% MRL: pred It - med gy, sme dk gy - blk sft - mod hd, sb ply - sb blk, silty - grfy tex, sme bent, tr fos frag	90% CHK: It - r - frm, sb ply - s 10% MRL: pred sft - mod hd, sb tr bent, tr fos fra
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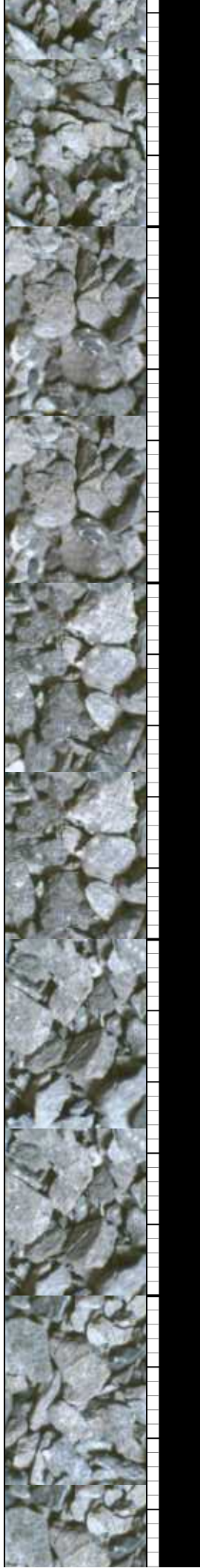
MUD WT: 9.35/9.40
VIS: 36/36 IN/OUT

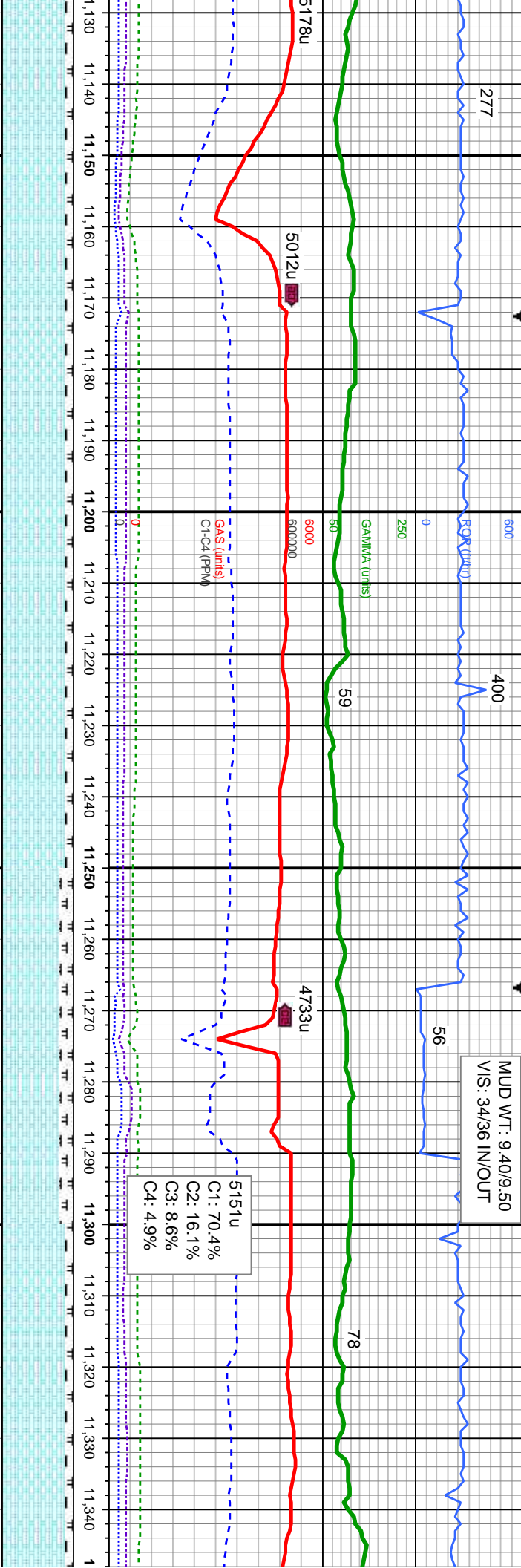
11/01/2013, Mud Wt: 9.25, FVIs: 35
PVIs: 10, YP: 7, GELS: 5/11/13, API Fil: 8.0
CAKE: 1/0, pH: 8.9, CI: 2.000, Ca: 200



MD: 10,540 TVD: 6,562.37 Inclination: 90.68 ° Azimuth: 270.4 ° VS: 3,808.15 '		MD: 10,635 TVD: 6,562.75 Inclination: 88.86 ° Azimuth: 268.54 ° VS: 3,902.92 '	
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med gy - gy brn, mot, lam, sft	80% CHK: It - med gy brn, sme tan, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	70% CHK: It - med gy brn, sme tan, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	80% CHK: It - med gy brn, sme tan, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc	90% CHK: It - med gy brn, sme tan, lam, sft - frm, sb pty - sb blk, rthy
o blk, rthy tex, v calc	20% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, no bent, abnt fos frag	30% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, bent, abnt fos frag	20% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, no bent, abnt fos frag	10% MRL: pred It - med gy, sme dk sft - mod hd, sb pty - sb blk, silty - no bent, sme fos frag
It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, no bent, abnt fos frag				





6350	MD: 11,205 TVD: 6,566.25 Inclination: 92.29 ° Azimuth: 268.7 ° VS: 4,470.75'	MD: 11,300 TVD: 6,563.2 Inclination: 91.39 ° Azimuth: 268.81 ° VS: 4,565.38'
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90% CHK: It - med gy brn, sme crm, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc 10% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, sme bent, sme fos frag	90% CHK: It - med gy brn, sme crm, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc 10% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, sme bent, sme fos frag	80% CHK: It - med gy brn, sme crm, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc 20% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, sme bent, sme fos frag	90% CHK: It - med gy brn, sme crm, mot, lam, sft - frm, sb pty - sb blk, rthy tex, v calc 10% MRL: pred It - med gy, sme dk gy - blk, sft - mod hd, sb pty - sb blk, silty - grty tex, sme bent, sme fos frag
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