

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Fiscus Federal LD 23-78HN

Location SEC 23 T9N R58W

State Colorado

Country USA

API Number 051233707000

Region DJ Basin

Spud Date 9/15/2013

Surface Coordinates SENW SEC. 14 T5N R64W
275' FSL; 600' FWL

LAT/LONG: 40.437350/-103.838325

Bottom Hole Coordinates NWNW SEC 23 T9N R58W
660' FWL; 660' FNL

Ground Elevation 4779'

Logged Interval 2000' To 10037'

Formation Nio B Chalk

Type of Drilling Fluid LSND

County Weld

Rig Number H&P 315

Field Wildcat

Drilling Completed 9/21/2013

K.B. Elevation 4803'

Total Depth 10037'

Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 80202

Name NATHAN MURPHY
Company COLUMBINE LOGGING
Address 2385 S Lipan St
Denver, CO 80202

CHALK
MARLSTONE
SILTY SHALE
SHALY SANDSTONE
UNKNOWN
ANHYDRITE
BENTONITE
BRECCIA
CEMENT

Operator

Suite 2200
202

Geologist

PHY, JACK WEINERTH
OGGING, INC

Rock Types

	CHERT		SIDERITE or LIMONITE		SHALE GRAY
	CLAY CHOKE SAND		LIMESTONE		SHALY SILTSTONE
	CLAYSTONE		METAMORPHIC		SILTSTONE
	DOLOMITE		NO SAMPLE		TILL
	CONGLOMERATE		SALT		TUFF
	DOLOMITE		SANDSTONE		WELDED TUFF
	GRANITE		SALT-PEPPER SAND		
	GYPSUM		SHALE		
	IGNEOUS		SHALE COLORED		

Accessories

	F FOSSIL		- ARGILLACEOUS		< GLAUCONITE		< TUFACEOUS
	GASTROPOD		/ ARGILLITE GRAIN		≡ GYPSIFEROUS		Stringer
	OOOLITE		B BENTONITE		≡ HEAVY MINERAL		ANHYDRITE STRINGER
	OSTRACOD		BITUMENOUS SUBSTANCE		≡ INOCERAMUS		BENTONITE STRINGER
	PELECYPOD		BRECCIA FRAGMENTS		K KAOLIN		COAL STRINGER
	BIOCLASTIC		1 CALCAREOUS		M MARLSTONE		GYPSUM STRINGER
	BRACHIOPOD		CARBONACEOUS FLAKES		CHTK		DOLOMITE STRINGER
	BRYOZOA		CHTK		N NODULES		LIMESTONE STRINGER
	PLANT REMAINS		- COAL - THIN BEDS		PHOSPHATE PELLETS		MARLSTONE (CALC) STRG
	CEPHALOPOD		CHTK		P PYRITE		MARLSTONE (DOL) STRG
	CORAL		DOLOMITIC		SALT CAST		SANDSTONE STRINGER
	CRINOID		+ FELDSPAR		FERRUGINOUS PELLET		SHALE STRINGER
	ECHINOID		FERRUGINOUS		≡ SILTY		SILTSTONE STRINGER
	FISH		ANHYDRITIC				
	FORAMINIFERA						

Other Symbols

	O ORGANIC		■ CORE - RECOVERED		E EARTHY
	P PINPOINT		⋮ DST INTERVAL		≡ WIRELINE TESTED - LEFT
	V VUGGY		⚡ FAULT		≡ WIRELINE TESTED - RT
	D DEAD		⬆ FORMATION TOP		G GRAINSTONE
	EVEN		* GAS SHOW		L LITHOGRAPHIC
	QUESTIONABLE				Mx MICROXLN
	SPOTTED STAINING		MN DEPTH		A ANGULAR
	BIT		⚡ NORMAL FAULT		B SUBANG
			OIL SHOW		R SUBRND
Porosity			OVERTURNED STRATA		⚡ REVERSE FAULT
	E EARTHY		SIDEWALL CORE (LEFT)		SIDEWALL CORE (RIGHT)
	F FENESTRAL		SLIDE		OS SURVEY
	F FRACTURE		CONNECTION GAS UP		
	X INTERCRYSTALLINE		CONNECTION GAS LEFT		
	Q INTEROOLITIC		CONNECTION GAS RIGHT		
	M MOLDIC		CORE - LOST		
			TRIP GAS		≡ WIRELINE TESTED - LEFT
			≡ WIRELINE TESTED - RT		G GRAINSTONE
			R ROUNDING		L LITHOGRAPHIC
			Mx MICROXLN		Mx MICROXLN
			Mudstone		Mudstone
			Packstone		Packstone
			Wackestone		Wackestone
			Moderate		Moderate
			Poor		Poor
			Well		Well

Slide/Rotate

ROP

ROF

Curves

GAMMA

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

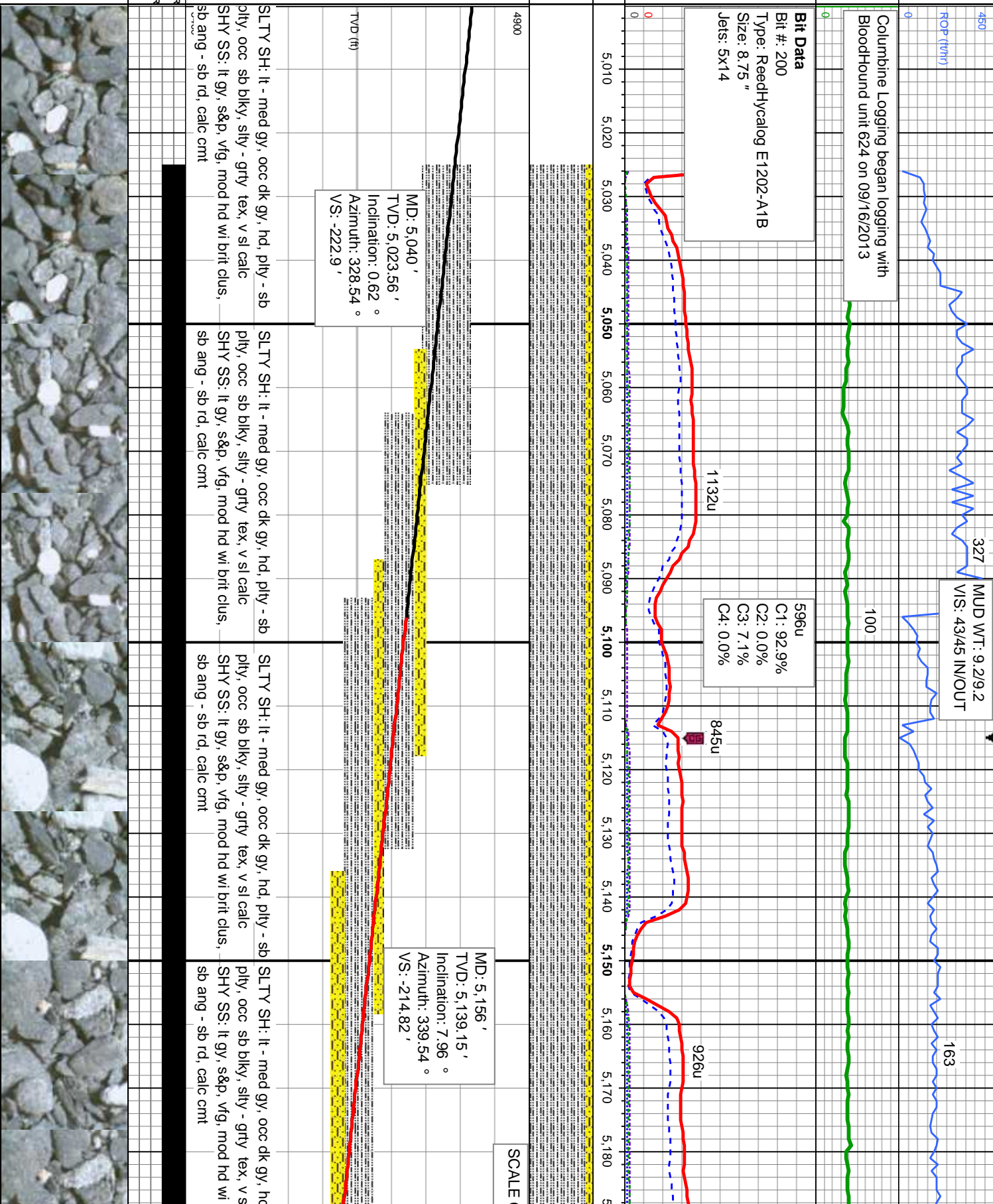
Depth Labels

% Lith

Well Bore
TVD

Oil Show

Images



MUD WT: 9.2/9.2
VIS: 43/45 IN/OUT

596u
C1: 92.9%
C2: 0.0%
C3: 7.1%
C4: 0.0%

MD: 5,040'
TVD: 5,023.56'
Inclination: 0.62°
Azimuth: 328.54°
VS: -222.9'

MD: 5,156'
TVD: 5,139.15'
Inclination: 7.96°
Azimuth: 339.54°
VS: -214.82'

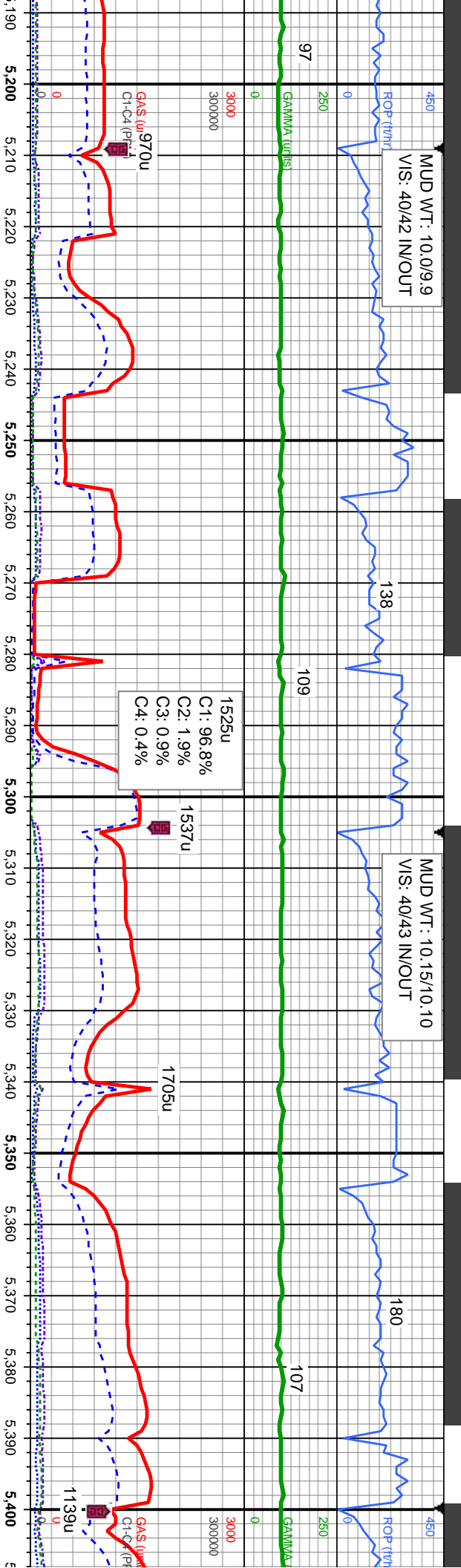
SLTY SH: It - med gy, occ dk gy, hd, plty - sb
ply, occ sb blkly, silty - grty tex, v sl calc
SHY SS: It gy, s&p, vfg, mod hd wi brit clus,
sb ang - sb rd, calc cmt

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

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

SLTY SH: It - med gy, occ dk gy, hd, plty - sb
ply, occ sb blkly, silty - grty tex, v s
SHY SS: It gy, s&p, vfg, mod hd wi
sb ang - sb rd, calc cmt

SCALE



1525u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%

MD: 5,204'
TVD: 5,186.13'
Inclination: 15.39°
Azimuth: 344.43°
VS: -205.54'

MD: 5,251'
TVD: 5,230.94'
Inclination: 19.63°
Azimuth: 342.99°
VS: -191.97'

MD: 5,299'
TVD: 5,275.83'
Inclination: 21.8°
Azimuth: 341.63°
VS: -175.54'

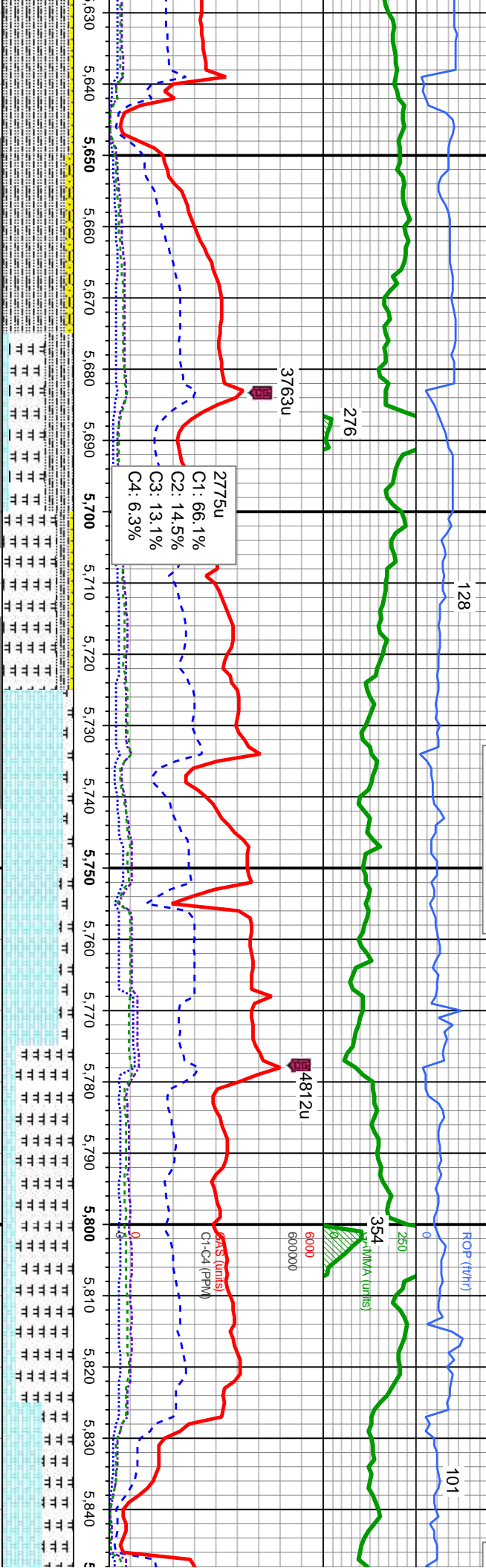
MD: 5,345'
TVD: 5,318.12'
Inclination: 24.54°
Azimuth: 342.99°
VS: -158.3'

MD: 5,393'
TVD: 5,361.23'
Inclination: 27.59°
Azimuth: 346.16°
VS: -137.97'

CHANGE	5100	SCALE CHANGE	5200
	SLTY SH: lt - med gy, occ dk gy, hd, pily - sb pily, occ sb blk, silty - grty tex, v sl calc SHY SS: lt gy, s&g, vfg, mod hd w/ brit clus, sb ang - sb rd, calc cmt		SLTY SH: lt - med gy, occ dk gy, hd, pily - sb pily, occ sb blk, silty - grty tex, v sl calc SHY SS: lt gy, s&g, vfg, mod hd w/ brit clus, sb ang - sb rd, calc cmt
			SLTY SH: lt - med gy, occ dk gy, sl hd-hd, pily - sb pily, occ sb blk, silty - grty tex, v sl calc
			SLTY SH: lt - med gy, occ dk gy, hd, pily - sb pily, occ sb blk, silty - grty tex, v sl calc
			SLTY SH: lt - med gy, occ dk gy, hd, pily - sb pily, occ sb blk, silty - grty tex, v sl calc
			SLTY SH: lt - med gy, occ dk gy, hd, pily - sb pily, occ sb blk, silty - grty tex, v sl calc



MUD WT 10.55 VIS 45



Sharon Springs Marker @ 5.686' MD; 5.582' TVD

Niobrara Top @ 5.692' MD; 5.585' TVD

Nio A Chalk Top @ 5.722' MD; 5.602' TVD

Nio A Marl Top @ 5.778' MD; 5.630' TVD

SCALE CHANGE

MD: 5.678' TVD: 5.577.04' Inclination: 52.35° Azimuth: 359.03° VS: 42.08'

MD: 5.725' TVD: 5.604.15' Inclination: 57.18° Azimuth: 2.13° VS: 80.45'

MD: 5.773' TVD: 5.628.23' Inclination: 62.58° Azimuth: 2.6° VS: 121.92'

MD: 5.820' TVD: 5.648.17' Inclination: 67.19° Azimuth: 3.51° VS: 164.4'

SLTY SH: It - med gy, occ dk gy, frm - mod hd, sb ply - sb blkgy, silty - grty tex, sl calc
 CHK: It - med gy - gy brn, mot, lam, sft - frm, sb ply - sb blkgy, rthy tex, v calc
 MRL: It - med gy, sme blk, sft - mod hd, sb ply - ply, silty - grty tex, abnt bent
 SHY SS: It gy - m gy, s&p, vfg-f gr, mod hd wi brit clus, sb ang - sb rd, calc cmt

CHK: It - med gy, wh, mot, lam, sft - frm, occ
 brit, sb ply - sb blkgy, rthy tex, v calc
 MRL: It - med gy, sme blk, sl hd-mod hd, sb
 ply - ply, silty - grty tex, tr bent

CHK: It - med gy, wh, mot, lam, sft - sl frm,
 sb ply - sb blkgy, rthy tex, v calc
 MRL: It - med gy, sme blk, mod hd, sb ply -
 ply, silty - grty tex, tr bent

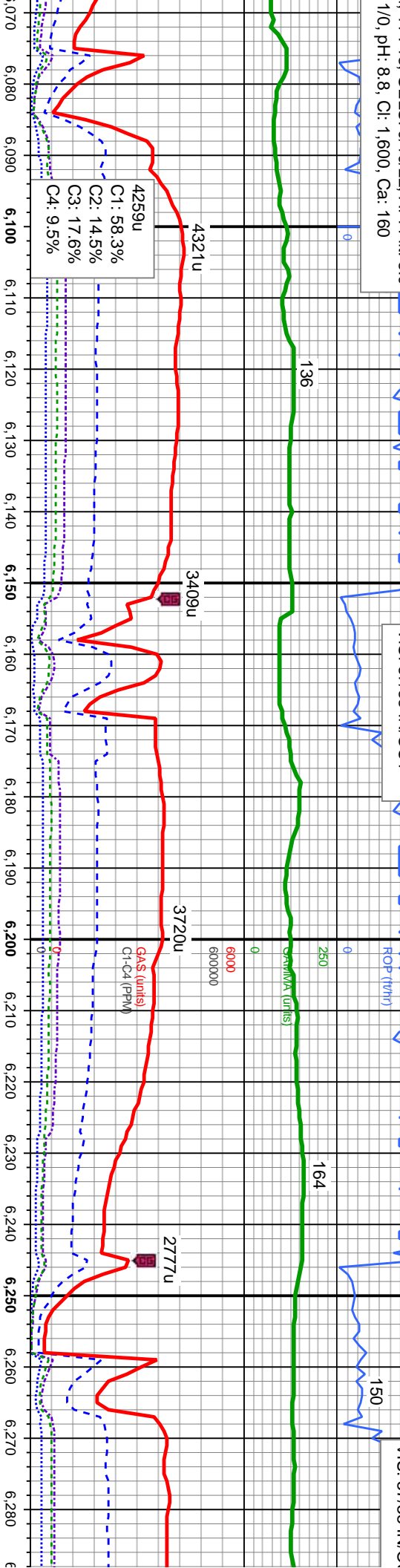
546.4' on: 48.3° VS: 355.67°
 d, ply - sb ply, rr sb
 calc
 p, vfg-f gr, mod hd wi
 calc cmt



013, Mud Wt: 10.55, FV/s: 41
 4, YP: 13, GELS: 0/10/22, API Filtr: 8.0
 1/0, pH: 8.8, Cl: 1,600, Ca: 160

MUD WT: 10.00/9.80
 VIS: 37/38 IN/OUT

MUD WT: 10.10
 VIS: 37/38 IN/OUT



MD: 6.090 '
 TVD: 5,714.43 '
 Inclination: 83.6 °
 Azimuth: 359.67 °
 VS: 424.81 '

MD: 6.183 '
 TVD: 5,722.94 '
 Inclination: 85.9 °
 Azimuth: 0.61 °
 VS: 517.41 '

MD: 6.276 '
 TVD: 5,727.04 '
 Inclination: 89.04 °
 Azimuth: 1.26 °
 VS: 610.29 '

medgy - gy brn, mot, lam, sft - 40% CHK: It - medgy - gy brn, mot, lam, sft -
 frm, sb plty - sb blk, rhy tex, v calc
 medgy, sme blk, pred frm - 60% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb plty - sb blk, silty - grfy tex, tr bent, tr fos frag

medgy - gy brn, mot, lam, sft - 30% CHK: It - medgy - gy brn, mot, lam, sft -
 frm, sb plty - sb blk, rhy tex, v calc
 medgy, sme blk, pred frm - 70% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb plty - sb blk, silty - grfy tex, tr bent, tr fos frag

medgy - gy brn, mot, lam, sft - 10% CHK: It - medgy - gy brn, mot, lam, sft -
 frm, sb plty - sb blk, rhy tex, v calc
 medgy, sme blk, pred frm - 90% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb plty - sb blk, silty - grfy tex, tr bent, tr fos frag

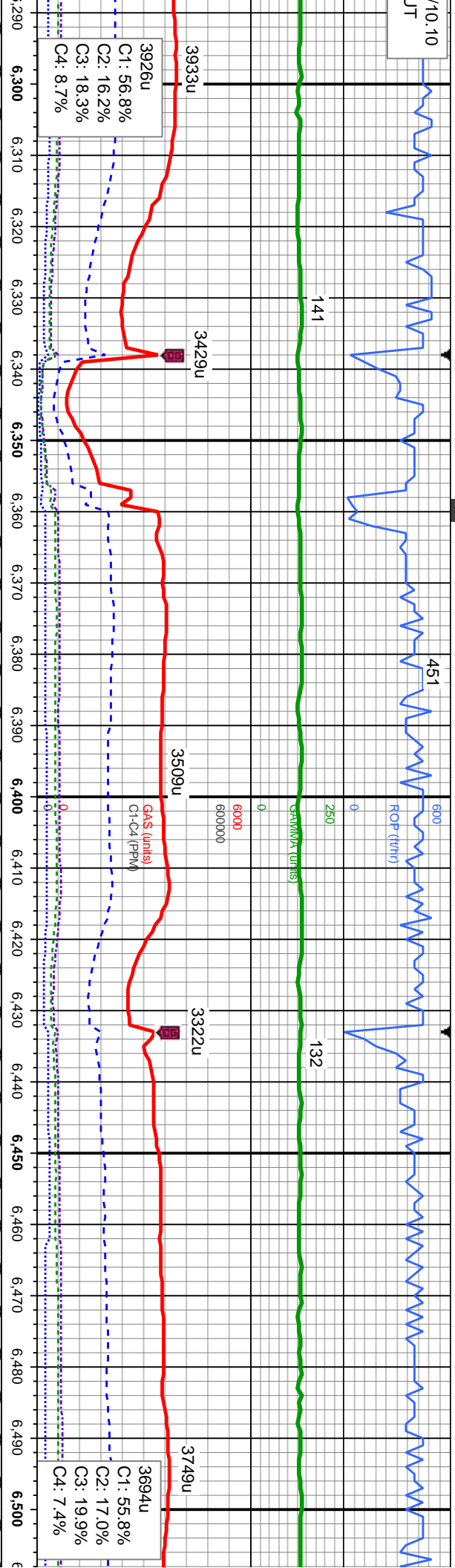
medgy - gy brn, mot, lam, sft - 10% CHK: It - medgy - gy brn, mot, lam, sft -
 frm, sb plty - sb blk, rhy tex, v calc
 medgy, sme blk, pred frm - 90% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb plty - sb blk, silty - grfy tex, tr bent, tr fos frag



5660
 BE

10.10

JT



5660

MD: 6,371 '
 TVD: 5,727.83 '
 Inclination: 90 °
 Azimuth: 0.67 °
 VS: 705.27 '

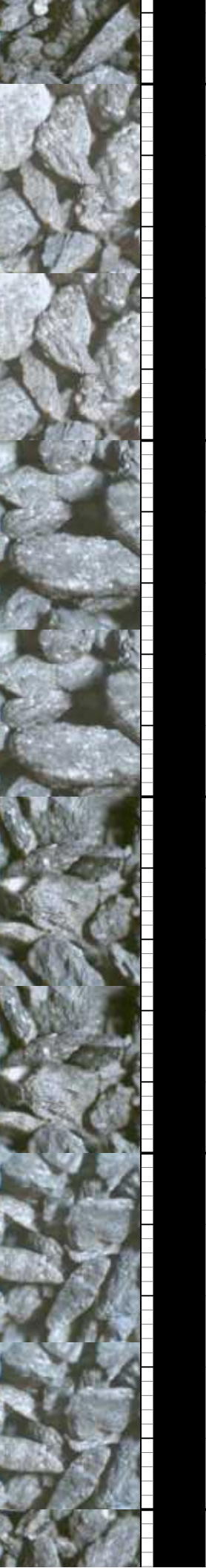
MD: 6,466 '
 TVD: 5,727.58 '
 Inclination: 90.31 °
 Azimuth: 359.62 °
 VS: 800.26 '

10% CHK: It - medgy - gy brn, mot, lam, sft - 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, sme fos frag

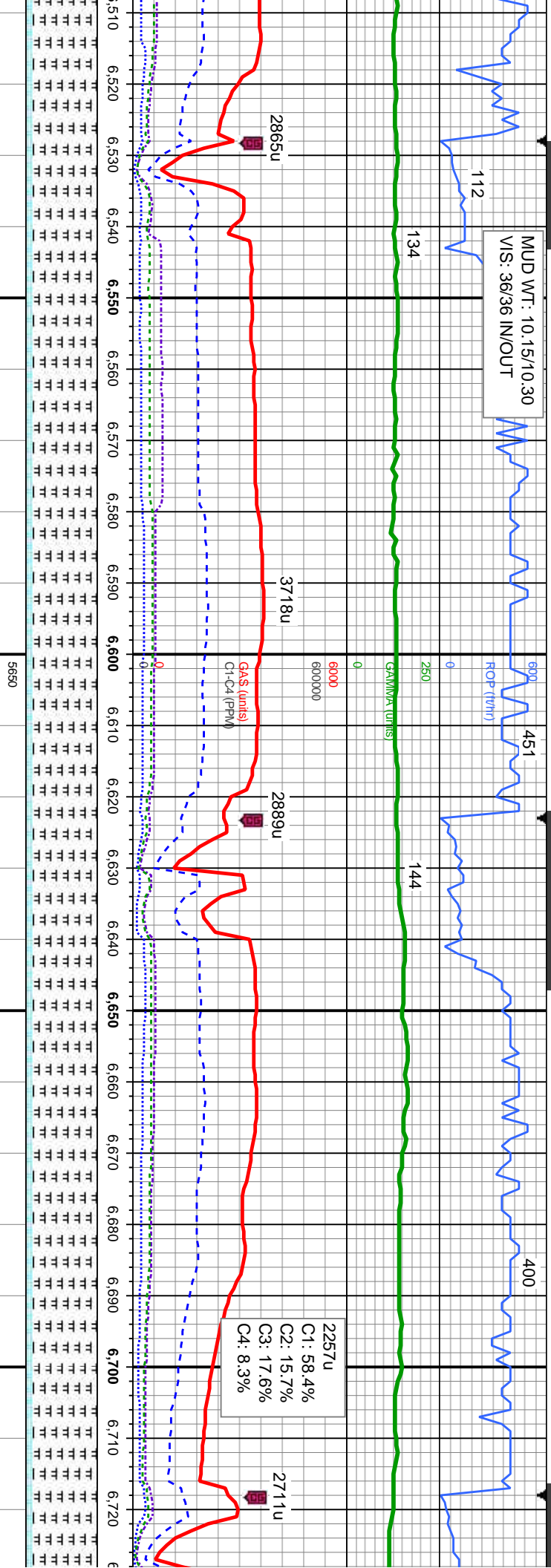
10% CHK: It - medgy - gy brn, mot, lam, sft - frm, sb ply - sb blk, rthy tex, v calc
 90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, sme bent, sme fos frag

10% CHK: It - medgy - gy brn, mot, lam, sft - 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, sme fos frag

10% CHK: It - medgy - gy brn, mot, lam, sft - 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, sme fos frag



MUD WT: 10.15/10.30
VIS: 36/36 IN/OUT



MD: 6.561 '
TVD: 5,726.58 '
Inclination: 90.89 °
Azimuth: 359.76 °
VS: 895.26 '

TVD (ft)

MD: 6.656 '
TVD: 5,723.67 '
Inclination: 92.62 °
Azimuth: 1.86 °
VS: 990.19 '

HK: It - medgy - gy brn, mot, lam, sft -
ply - sb blk, rhy tex, v calc
MRL: It - medgy, sme blk, pred frm -
mod hd, sb ply - sb blk, sily - grfy tex, sme
fos frag
10% CHK: It - medgy - gy brn, mot, lam, sft -
frm, sb ply - sb blk, rhy tex, v calc
90% MRL: It - medgy, sme blk, pred frm -
mod hd, sb ply - sb blk, sily - grfy tex, abnt
bent, sme fos frag
10% CHK: It - medgy - gy brn, mot, lam, sft -
frm, sb ply - sb blk, rhy tex, v calc
90% MRL: It - medgy, sme blk, pred frm -
mod hd, sb ply - sb blk, sily - grfy tex, abnt
bent, sme fos frag
10% CHK: It - medgy - gy brn, mot, lam, sft -
frm, sb ply - sb blk, rhy tex, v calc
90% MRL: It - medgy, sme blk, pred frm -
mod hd, sb ply - sb blk, sily - grfy tex, abnt
bent, sme fos frag



09/20/2013, Mud Wt: 10.10, FVis: 37
 PVS:10, YP: 7, GELS: 3/6/11, API Filtr 9.0
 CAKE: 1/0, pH: 9.5, CI: 1,600, Ca: 200

600
 ROP (ft/hr)
 250
 0

451

MUD WT: 10.10/10.20
 VIS: 36/37 IN/OUT

2111u
 C1: 51.8%
 C2: 15.9%
 C3: 19.9%
 C4: 12.4%

3135u

MD: 6,751 '
 TVD: 5,719.79 '
 Inclination: 92.06 °
 Azimuth: 2.3 °
 VS: 1,085.03 '

TVD (ft)

MD: 6,845 '
 TVD: 5,717.28 '
 Inclination: 90.99 °
 Azimuth: 1.06 °
 VS: 1,179.11 '

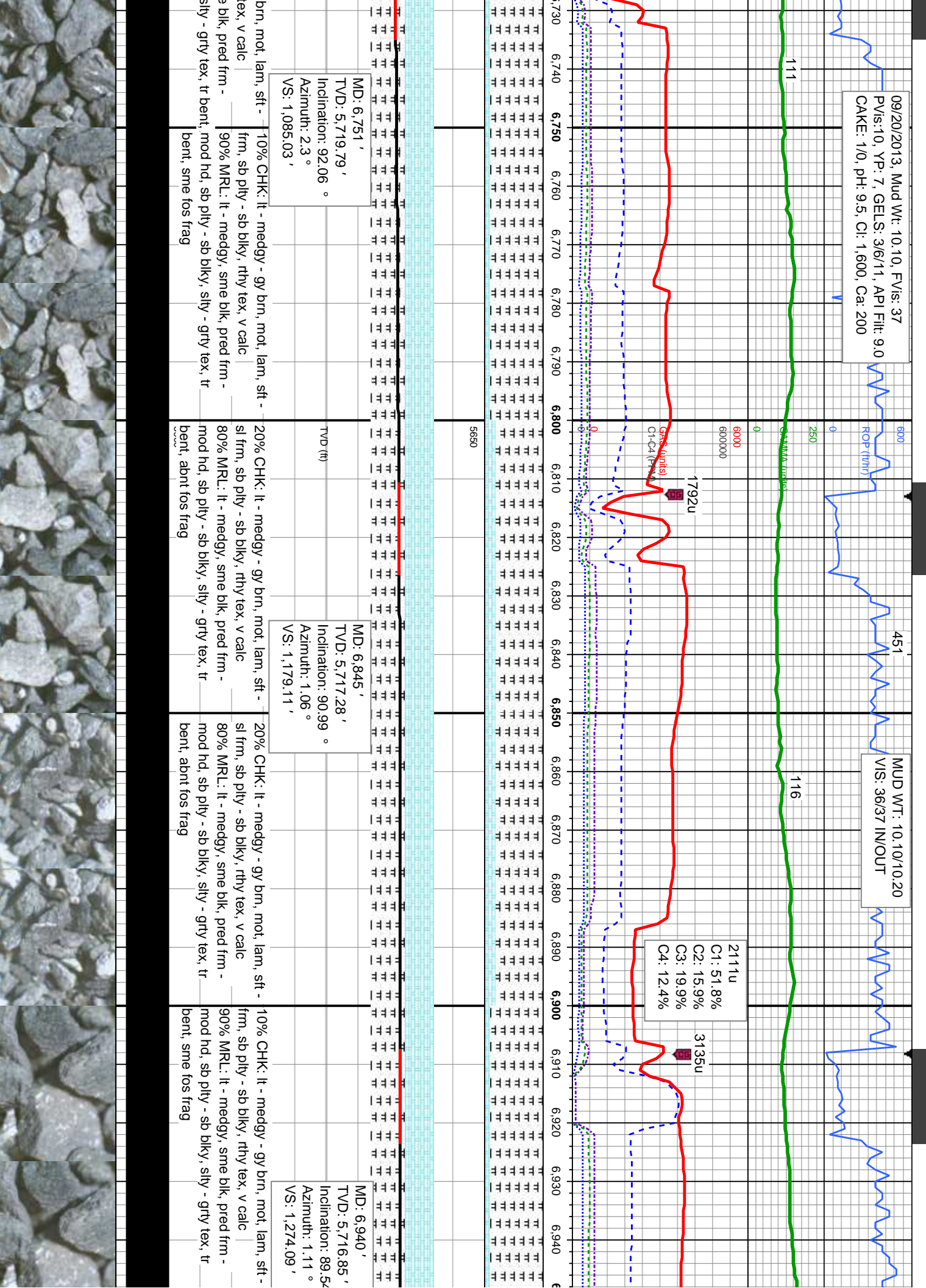
MD: 6,940 '
 TVD: 5,716.85 '
 Inclination: 89.5-
 Azimuth: 1.11 °
 VS: 1,274.09 '

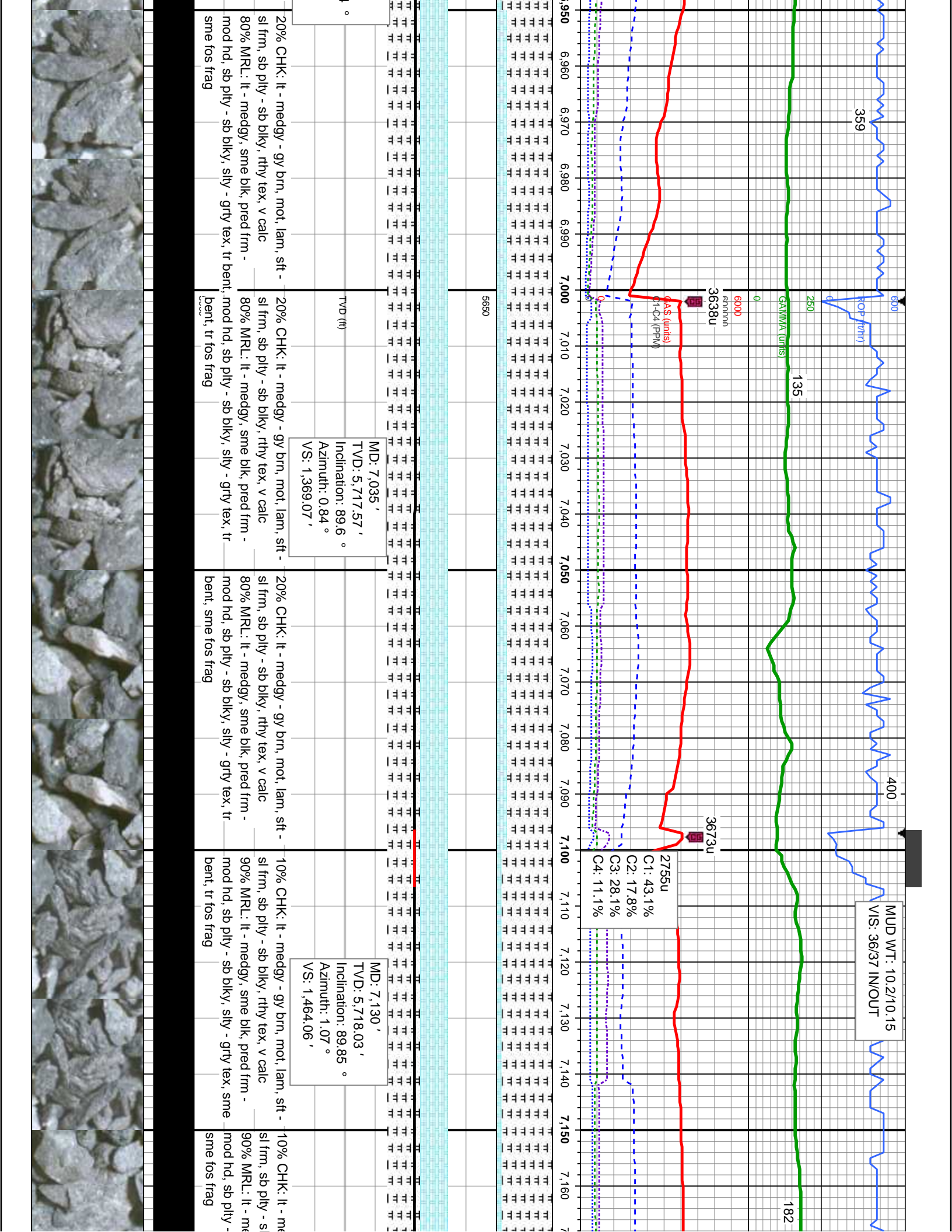
10% CHK: It - medgy - gy brn, mot, lam, sft -
 frm, sb pily - sb blk, rthy tex, v calc
 90% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb pily - sb blk, sily - grty tex, tr
 bent, sme fos frag

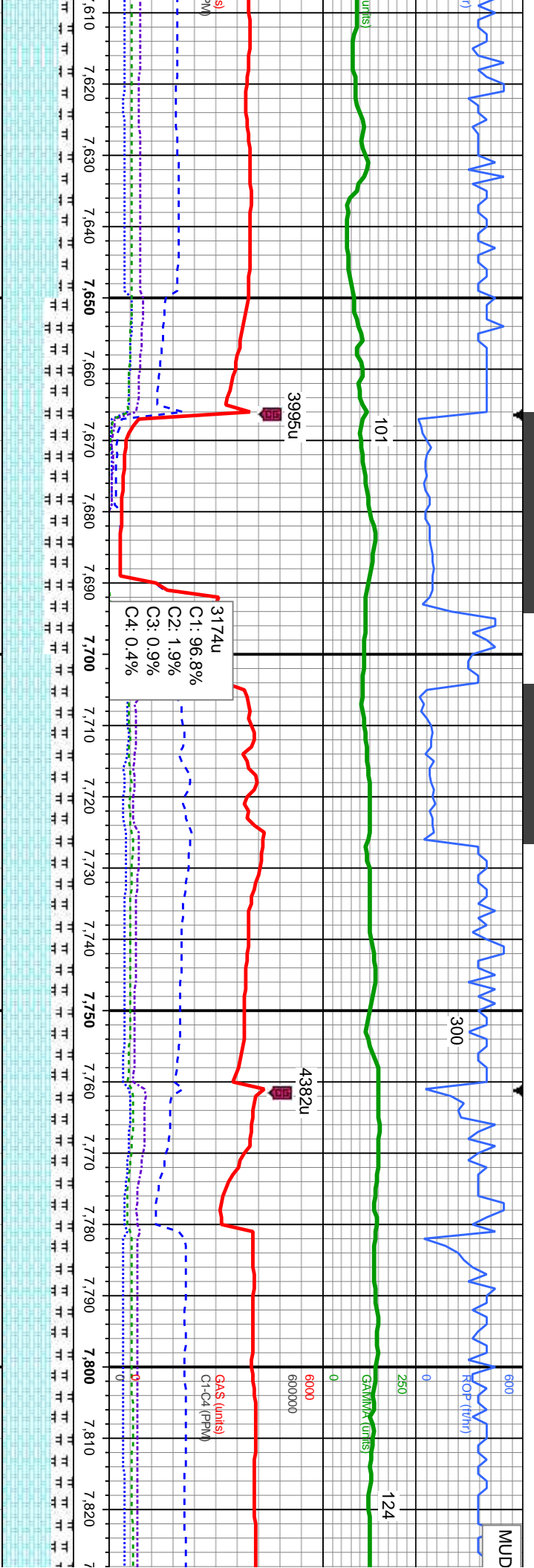
20% CHK: It - medgy - gy brn, mot, lam, sft -
 sl frm, sb pily - sb blk, rthy tex, v calc
 80% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb pily - sb blk, sily - grty tex, tr
 bent, abnt fos frag

20% CHK: It - medgy - gy brn, mot, lam, sft -
 sl frm, sb pily - sb blk, rthy tex, v calc
 80% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb pily - sb blk, sily - grty tex, tr
 bent, abnt fos frag

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







7610	7620	7630	7640	7650	7660	7670	7680	7690	7700	7710	7720	7730	7740	7750	7760	7770	7780	7790	7800	7810	7820	
TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT

52' 33.3° 8.24°

MD: 7,699' TVD: 5,703.04' Inclination: 90.96° Azimuth: 358.86° VS: 2,032.7'

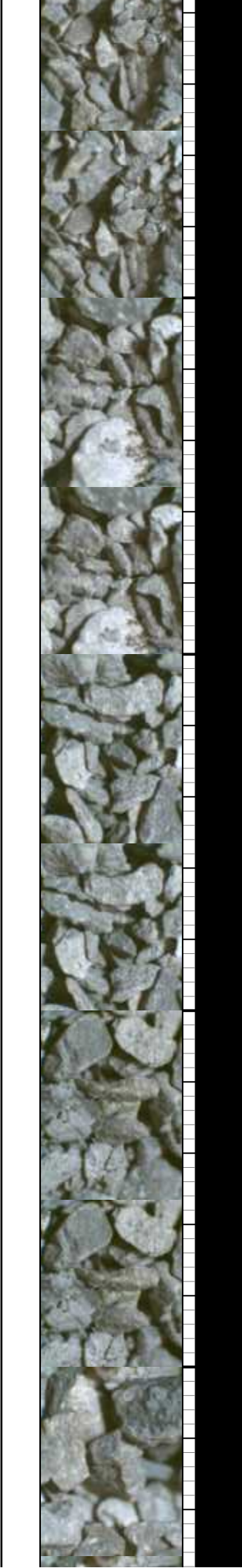
MD: 7,794' TVD: 5,702.34' Inclination: 89.88° Azimuth: 358.44° VS: 2,127.67'

CHK: It - medgy - gy brn, mot, lam, sft - 60% CHK: It - medgy - gy brn, mot, lam, sft - 70% CHK: It - medgy - gy brn, mot, lam, sft - 70% CHK: It - medgy - gy brn, mot, lam, sft -

n, sb pily - sb blk, rthy tex, v calc 40% MRL: It - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, sme bent, rr fos frag

sl frm, sb pily - sb blk, rthy tex, v calc 30% MRL: It - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, sme bent, rr fos frag

sl frm, sb pily - sb blk, rthy tex, v calc 30% MRL: It - medgy, sme blk, pred frm - mod hd, sb pily - sb blk, sily - grty tex, sme bent, rr fos frag



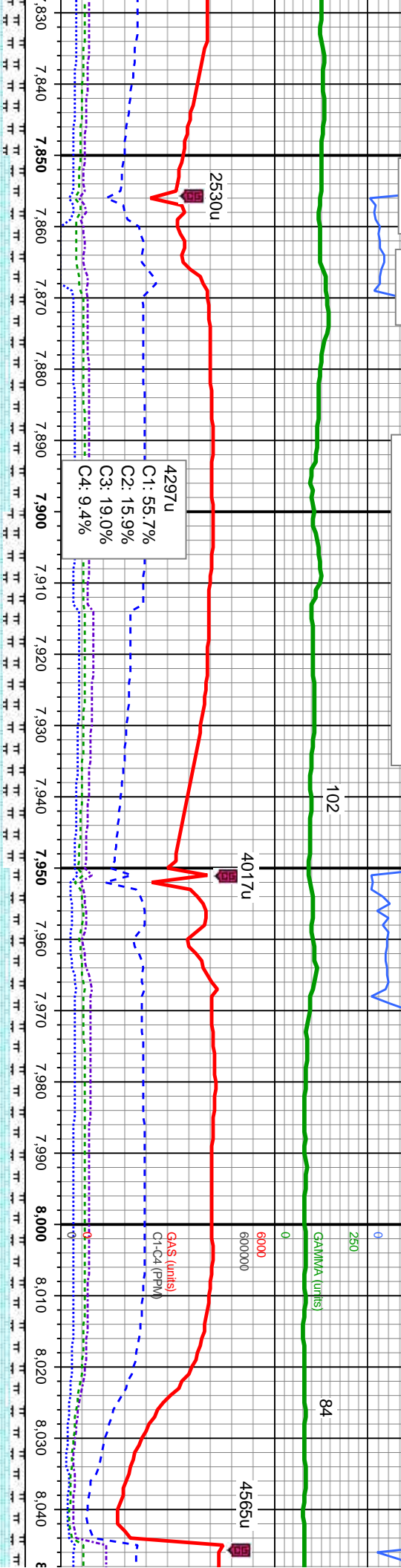
WT: 10.10 VIS: 33

9/20/13
9/21/13

09/21/2013, Mud Wt: 10.10, FVis: 37
PVs: 10, YP: 8, GELS: 3/6/11, API Filtr: 7.5
CAKE: 1/0, pH: 9.5, Cl: 1,600, Ca: 160

MUD WT: 10.20 VIS: 38

600
ROP (ft/hr)
250
0
GAMMA (units)
60000
600000
84
4565u



MD: 7.889'
TVD: 5,703.06'
Inclination: 89.26 °
Azimuth: 357.6 °
VS: 2,222.61'

MD: 7.984'
TVD: 5,704.62'
Inclination: 88.86 °
Azimuth: 358.61 °
VS: 2,317.54'

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

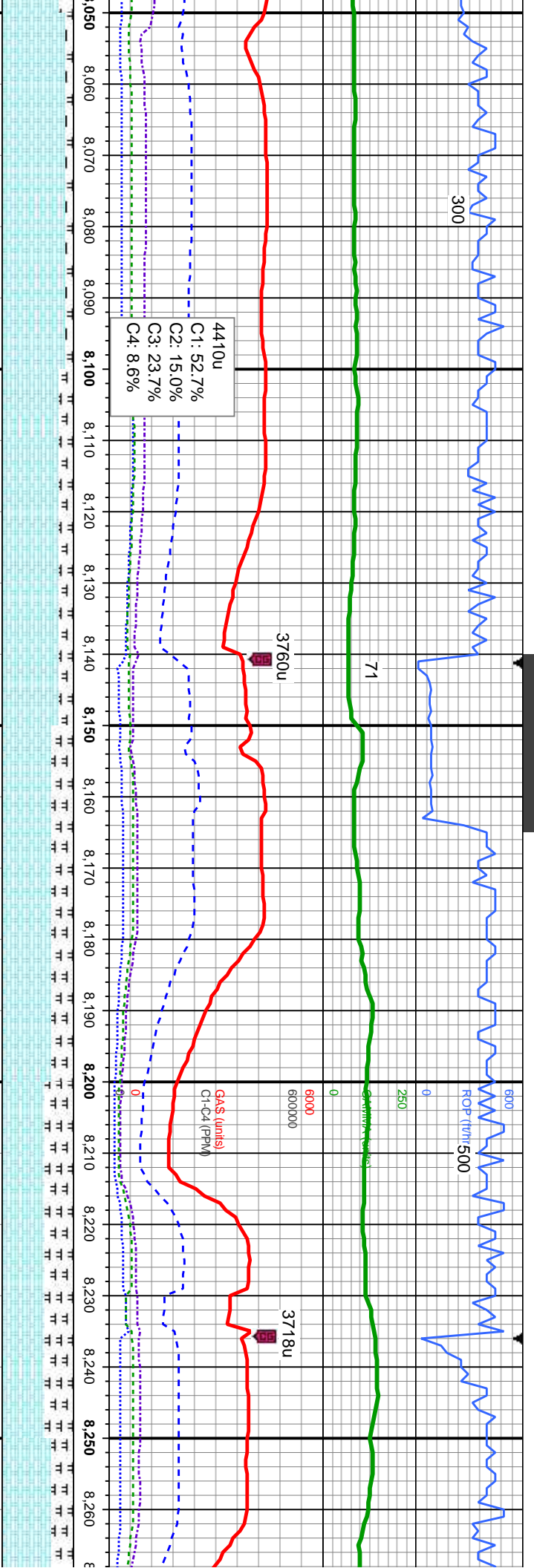
70% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc
30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, sme bent, tr fos frag

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

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



5650



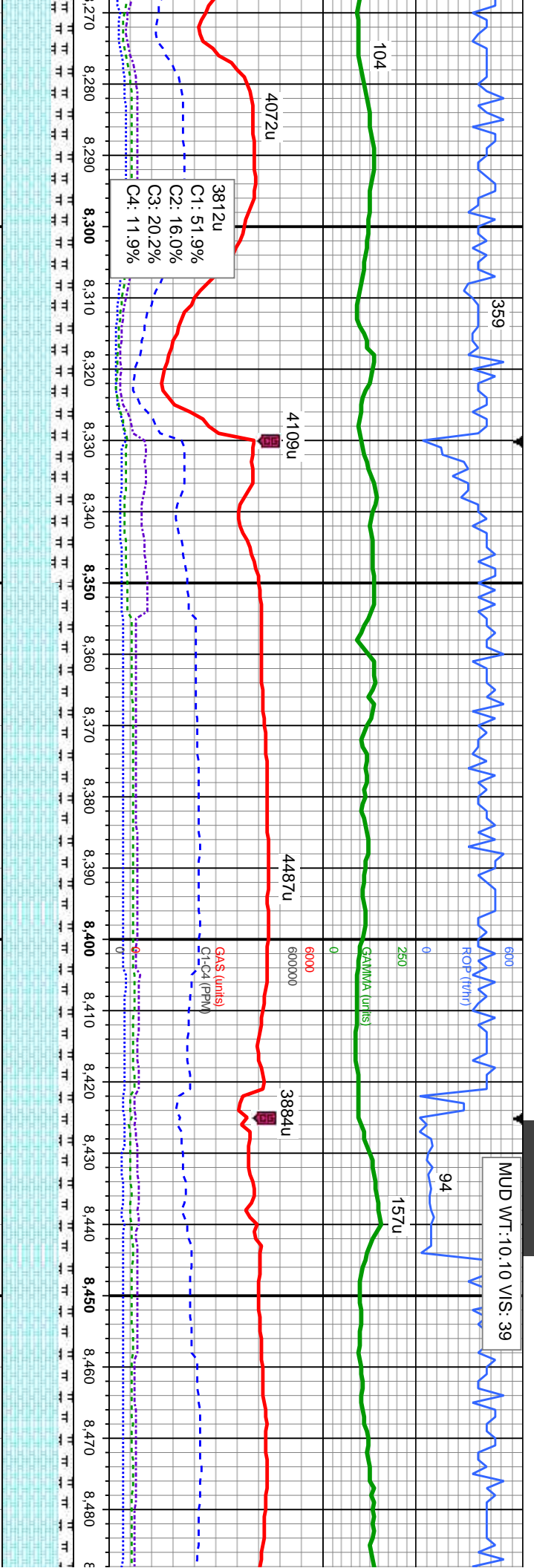
MD: 8,079'
 TVD: 5,704.72'
 Inclination: 91.02°
 Azimuth: 359.22°
 VS: 2,412.52'

MD: 8,174'
 TVD: 5,704.54'
 Inclination: 89.2°
 Azimuth: 358.08°
 VS: 2,507.48'

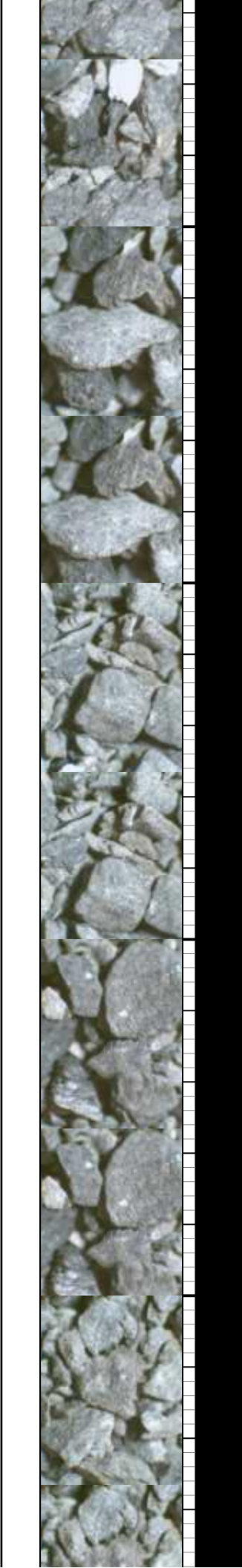
TVD (ft)

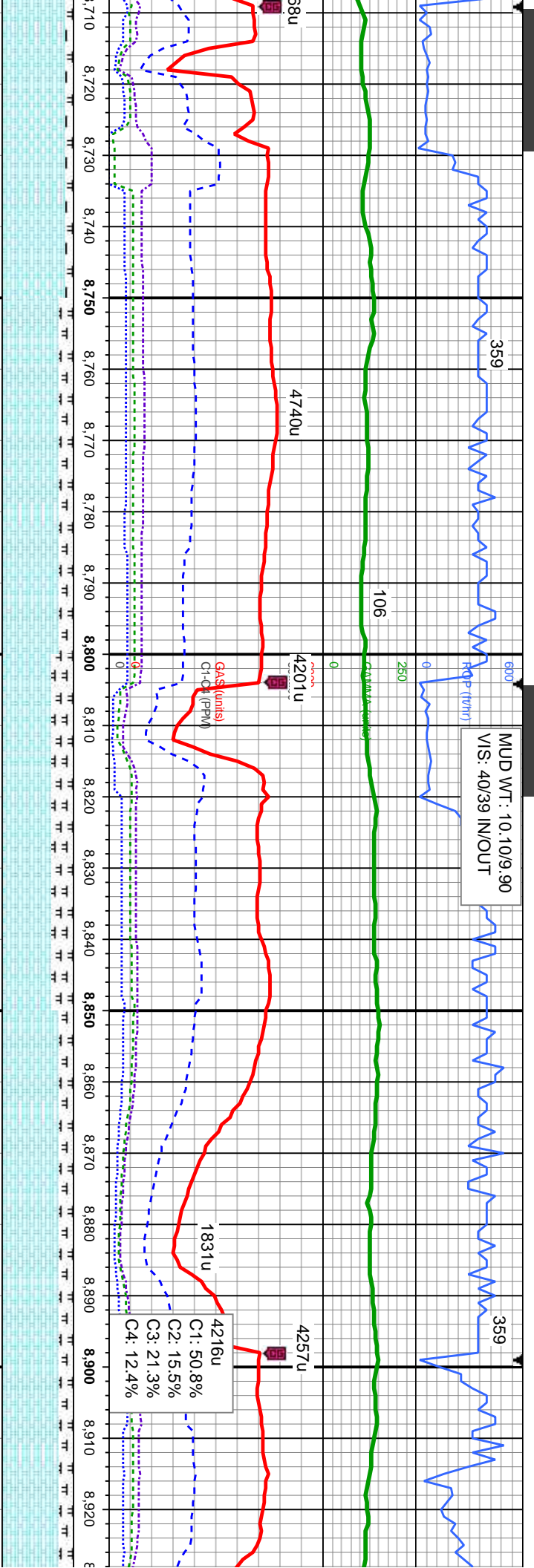
90% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc	80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc	70% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc	60% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc	70% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rthy tex, v calc
10% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr fos frag	20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr fos frag	30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr fos frag	40% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr fos frag	30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr fos frag





Depth (ft)	MD (ft)	TVD (ft)	Inclination (°)	Azimuth (°)	VS
8270 - 8350	8,363'	5,704.98'	91.2°	357°	2.696:17'
8350 - 8420	8,363'	5,704.98'	91.2°	357°	2.696:17'
8420 - 8450	8,458'	5,703.34'	90.77°	358.51°	2.791:1'





MUD WT: 10.10/9.90
VIS: 40/39 IN/OUT

4216u
C1: 50.8%
C2: 15.5%
C3: 21.3%
C4: 12.4%

MD: 8,743 '
TVD: 5,699.69 '
Inclination: 90.74 °
Azimuth: 359.26 °
VS: 3,076.01 '

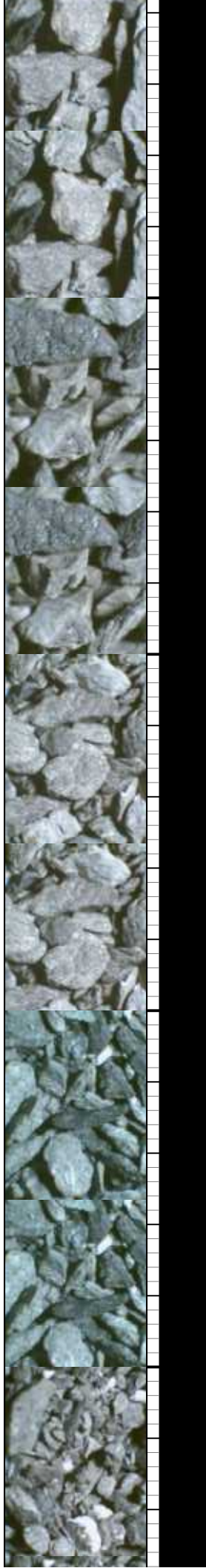
MD: 8,838 '
TVD: 5,699.71 '
Inclination: 89.23 °
Azimuth: 358.63 °
VS: 3,171 '

80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, sily - grty tex, no bent, tr fos frag

70% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, sily - grty tex, tr bent, tr fos frag

80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, sily - grty tex, no bent, tr fos frag

80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, sily - grty tex, no bent, tr fos frag

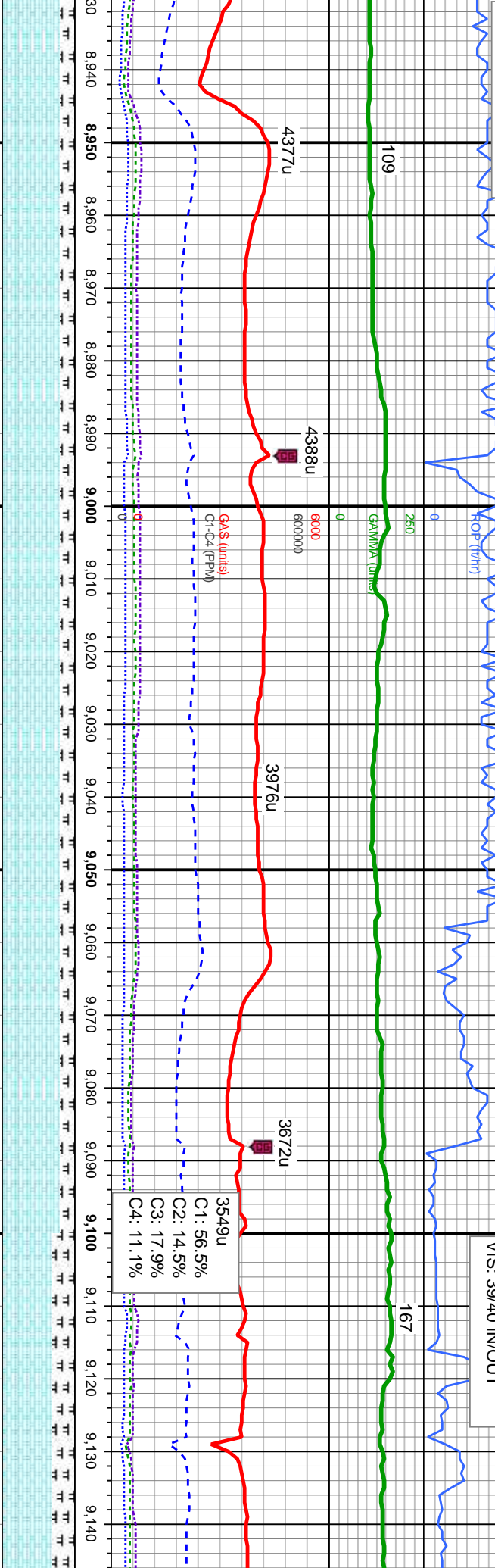


8710	8720	8730	8740	8750	8760	8770	8780	8790	8800	8810	8820	8830	8840	8850	8860	8870	8880	8890	8900	8910	8920	
TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT

5650

MUD WT: 10.10 VIS: 40

MUD WT: 10.15/10.10
VIS: 39/40 IN/OUT



3,933' 5,700.91' 89.32° 359.24° 265.98'

MD: 9,028' TVD: 5,702.52' 88.74° 358.07° 3,360.95'

MD: 9,122' TVD: 5,703.74' 89.78° 359.91° 3,454.92'

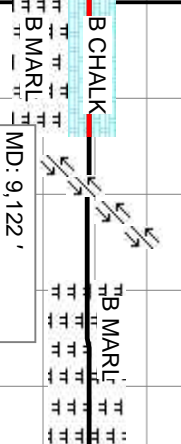
80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc 20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, tr fos frag

80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc 20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, tr fos frag

80% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc 20% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, tr fos frag

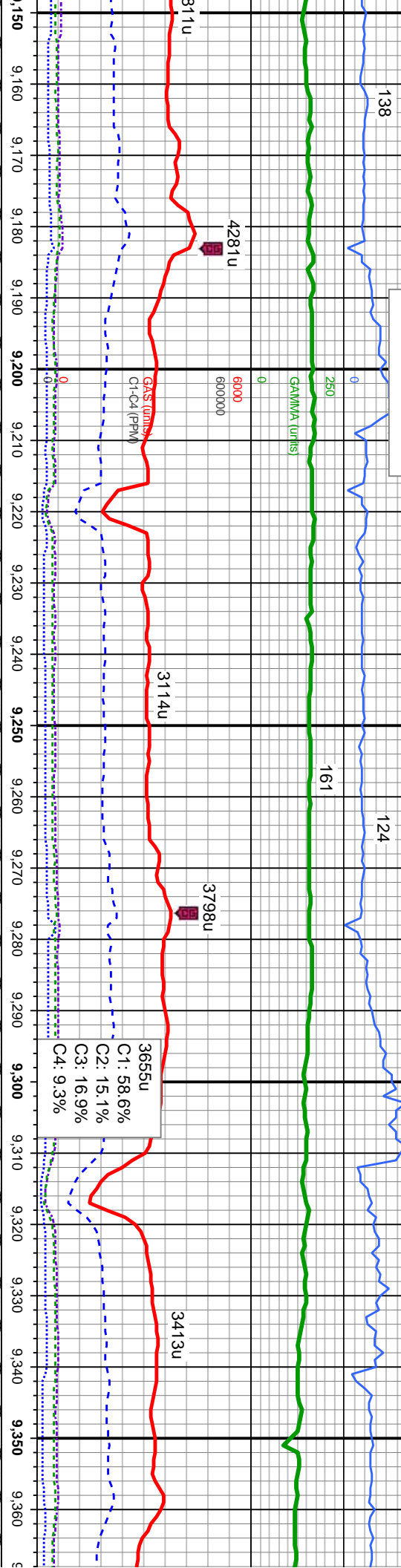
70% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc 30% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, no bent, tr fos frag

8930	8940	8950	8960	8970	8980	8990	9000	9010	9020	9030	9040	9050	9060	9070	9080	9090	9100	9110	9120	9130	9140	
TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT



MUD WT: 10.20/10.25
VIS: 39/40 IN/OUT

MUD WT: 10.20 VIS: 40



MD: 9,218 '
TVD: 5,703.48 '
Inclination: 90.52 °
Azimuth: 358.19 °
VS: 3,550.91 '

MD: 9,313 '
TVD: 5,701.59 '
Inclination: 91.76 °
Azimuth: 356.97 °
VS: 3,645.82 '

20% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
80% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr bent, tr fos frag

30% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
70% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr bent, tr fos frag

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

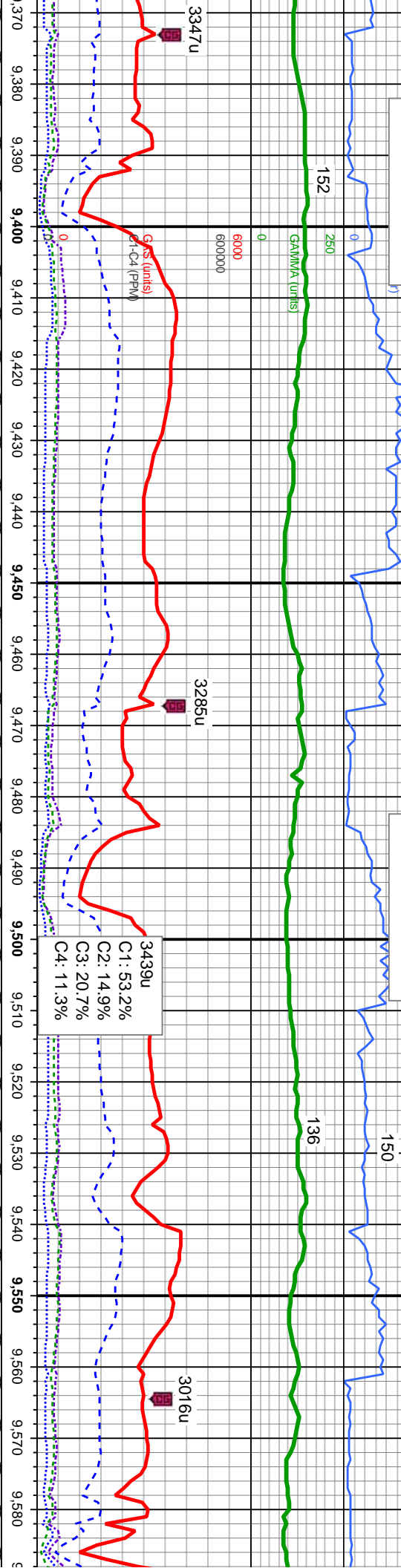
10% CHK: It - medgy - gy brn, crm, mot, lam, sft - sl frm, sb ply - sb blk, rhy tex, v calc
90% MRL: It - medgy, sme blk, pred frm - mod hd, sb ply - sb blk, silty - grty tex, tr bent, tr fos frag

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



MUD WT: 10.10/10.20
VIS: 39/39 IN/OUT

MUD WT: 10.20/10.10
VIS: 39/39 IN/OUT



3347u

3285u

3016u

3439u
 C1: 53.2%
 C2: 14.9%
 C3: 20.7%
 C4: 11.3%

5650

MD: 9,407'
 TVD: 5,698.9'
 Inclination: 91.51°
 Azimuth: 359.14°
 VS: 3,739.73'

MD: 9,502'
 TVD: 5,695.96'
 Inclination: 92.04°
 Azimuth: 0.39°
 VS: 3,834.67'

edgy - gy brn, crm, mot, lam,
 sft - sl frm, sb ply, rthy tex, v calc
 edgy, sme blk, pred frm -
 - sb blk, sily - grty tex, tr

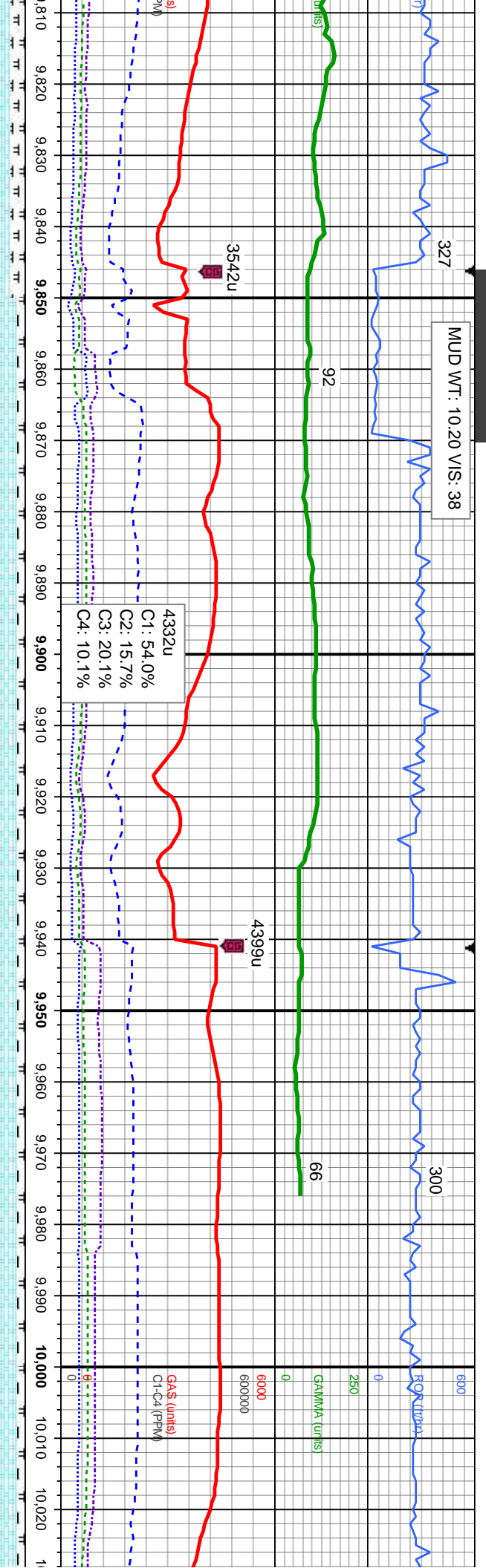
10% CHK: It - medgy - gy brn, crm, mot, lam,
 sft - sl frm, sb ply - sb blk, rthy tex, v calc
 90% MRL: It - medgy, sme blk, pred frm -
 mod hd, sb ply - sb blk, sily - grty tex, tr
 bent, abnt fos frag

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

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

50% CHK: It - medgy - gy brn, crm, l
 sft - sl frm, sb ply - sb blk, rthy tex
 50% MRL: It - medgy, sme blk, pred
 mod hd, sb ply - sb blk, sily - grty
 abnt fos frag





MD: 9,882'
 TVD: 5,690.21'
 Inclination: 89.72°
 Azimuth: 0.12°
 VS: 4,214.5'

4332u
 C1: 54.0%
 C2: 15.7%
 C3: 20.1%
 C4: 10.1%

MD: 9,975'
 TVD: 5,689.58'
 Inclination: 91.05°
 Azimuth: 0.4°
 VS: 4,307.5'

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

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

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

90% CHK: It - medgy - gy
 sft - sl frm, sb ply - sb blk
 10% MRL: It - medgy, sm
 mod hd, sb ply - sb blk,
 bent, rr fos frag



M
 TVD (ft)
 In
 Az
 VS

5650

