

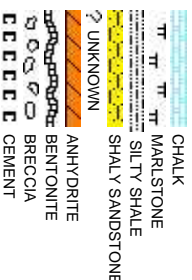


Scale: 5" / 100'
Measured Depth Log

Well Name	Five Rivers K07-65HN HORZ		
Location	SEC 8 T4N R66W		
State	COLORADO	County	WELD
Country	USA		
API Number	05-123-39481	Rig Number	H&P 315
Region	DJ BASIN	AFE #	141858
Spud Date	7/19/2014	Field	WATTENBERG
		Drilling Completed	7/29/2014
Surface Coordinates	NESE 8 4N 66W 6 PM 2256' FSL; 53' FEL LAT/LON: 40.32512/-104.79277		
Bottom Hole Coordinates	NESE 7 4N 66W 2640' FSL; 535' FWL		
Ground Elevation	4699'	K.B. Elevation	4723'
Logged Interval	2000'	To	16501'
Formation	NIO C CHALK		
Type of Drilling Fluid	LSND		
Total Depth	16501'		

Company Noble Energy Inc
Address 1625 BROADWAY
DENVER, CO 80202

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



Operator

AY SUITE 2200
0202

Geologist

ACK WEINERTH
OGGING, INC

ST
0223

Rock Types

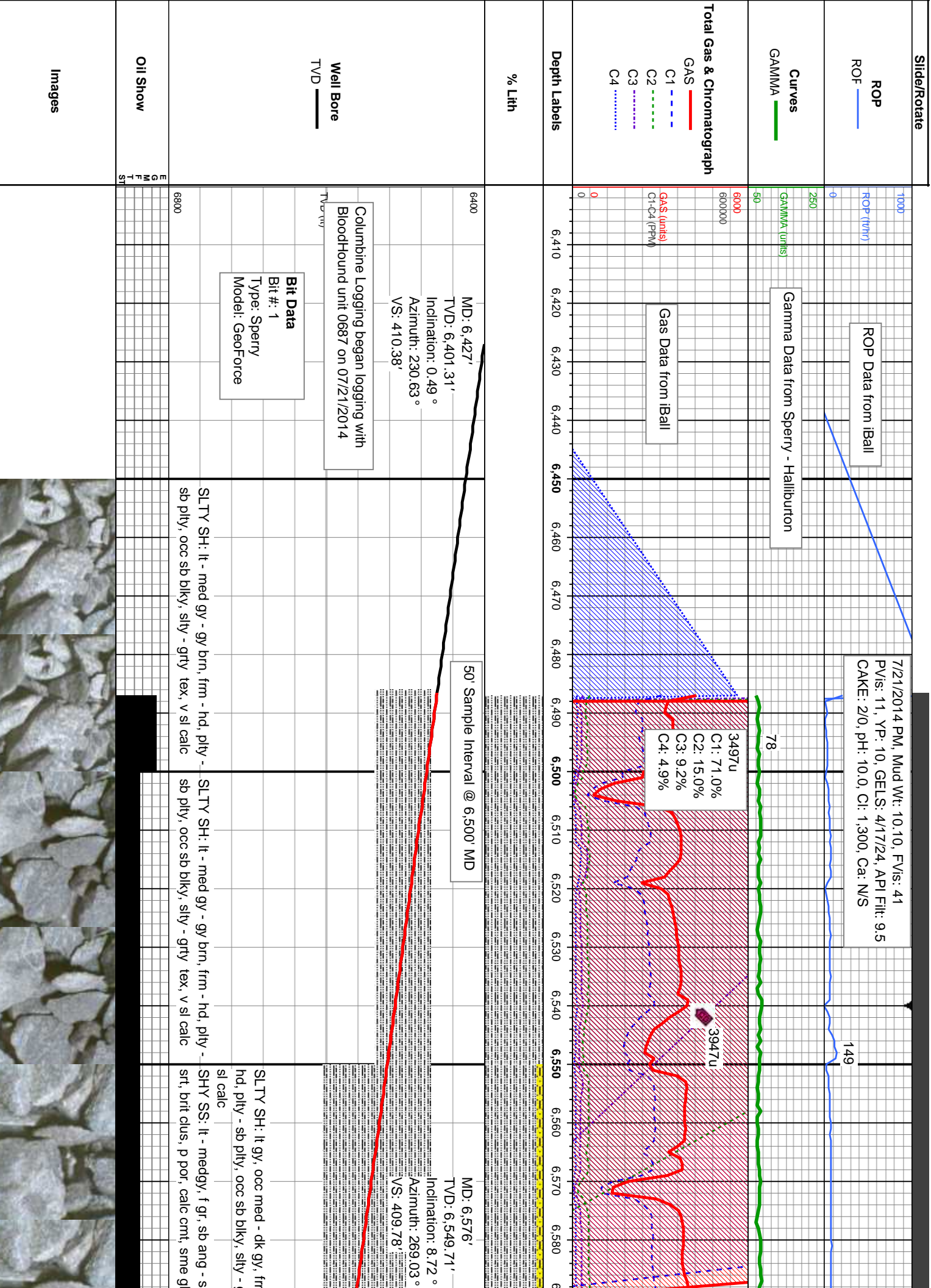
	CHERT		SIDERITE or LIMONITE		SHALE GRAY
	CLAY CHOKE SANC		LIMESTONE		SHALY SILTSTONE
	CLAYSTONE		METAMORPHIC		SILTSTONE
	DOLOMITE		NO SAMPLE		TUFF
	CONGLOMERATE		SALT		WELDED TUFF
	GRANITE		SANDSTONE		
	GYPSUM		SALT-PEPPER SAND		
	IGNEOUS		SHALE		
			SHALE COLORED		

Accessories

Fossils	F FOSSIL	ARGILLACEOUS	GLAUCONITE	TUFACEOUS
GASTROPOD	ARGILLITE GRAIN	GYPSIFEROUS		
ALGAE	OOLITE	HEAVY MINERAL		
AMPHIPORA	OSTRACOD	INOCERAMUS		
BELEMNITE	PELECYPOD	KAOLIN		
BRACHIOPOD	PISOLITE	MARLSTONE		
BRYOZOA	PLANT REMAINS	MINERAL CRYSTALS		
CEPHALOPOD	PLANT SPORES	NODULES		
CORAL	SCAPHOPOD	PHOSPHATE PELLETS		
CRINOID	STROMATOPOROID	PYRITE		
ECHINOID	FELDSPAR	SALT CAST		
FISH	Minerals	SANDY		
FORAMINIFERA	ANHYDRITIC	FERRUGINOUS PELLET	SILTY	SHALE STRINGER
		FERRUGINOUS		SILTSTONE STRINGER

Other Symbols

Oil Show	O ORGANIC	CORE - RECOVERED	TRIP GAS	E EARTHY
DEAD	P PINPOINT	DST INTERVAL	WIRELINE TESTED - LEFT	FINELYXLN
EVEN	V VUGGY	FAULT	WIRELINE TESTED - RT	GS GRAINSTONE
QUESTIONABLE	Engineering	FORMATION TOP	L LITHOGRAPHIC	MX MICROXLN
SPOTTED STAINING	BIT	GAS SHOW	Rounding	
		MN DEPTH	A ANGULAR	MS MUDSTONE
Porosity	CONNECTION (DOWN)	NORMAL FAULT	R ROUNDED	PS PACKSTONE
CONNECTION (LEFT)	CONNECTION (RIGHT)	OIL SHOW	B SUBANG	WS WACKESTONE
FENESTRAL	CONNECTION GAS	OVERTURNED STRATA	R SUBRND	
FRACTURE	CONNECTION GAS UP	REVERSE FAULT		
INTERCRYSTALLINE	CONNECTION GAS LEFT	SIDEWALL CORE (LEFT)	Textures	
INTERCRYSTALLINE	CONNECTION GAS DOWN...	SIDEWALL CORE (RIGHT)	BS BOUNDSTONE	M MODERATE
MOLDIC	CORE - LOST	SLIDE	C CHALKY	P POOR
		SURVEY	CX CRYPTOXLN	W WELL



7/21/2014 PM, Mud Wt: 10.10, FV/s: 41
PV/s: 11, YP: 10, GELS: 4/17/24, API Filt: 9.5
CAKE: 20, pH: 10.0, Cl: 1,300, Ca: N/S

Gas Data from iBall

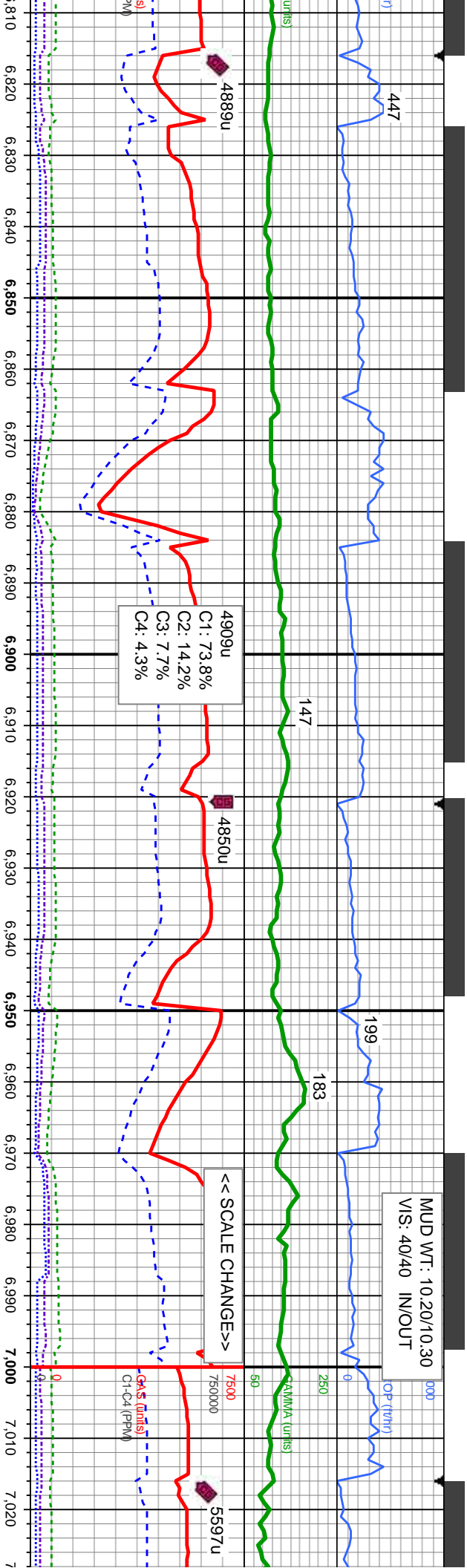
C1: 71.0%
C2: 15.0%
C3: 9.2%
C4: 4.9%

50' Sample Interval @ 6,500' MD

Columbine Logging began logging with
BloodHound unit 0687 on 07/21/2014

Bit Data
Bit #: 1
Type: Sperry
Model: GeoForce





MD: 6,814' TVD: 6,769.12' Inclination: 31.04° Azimuth: 268.12° VS: 403.67'		MD: 6,861' TVD: 6,812.93' Inclination: 34.7° Azimuth: 269.11° VS: 410.36'		25' Sample Interval @ 6,900' MD		Sharon Springs Top @ 6,955 MD, 6,884' TVD		Niobrara Top @ 6,973 MD, 6,897' TVD		6800 Nio A Chalk Top @ 7,003 MD, 6,917' TVD	
SH: lt gy - blk, frm - mod hd, pty - sb occ sb blk, silty - grty tex, v sl calc, no		SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent		MD: 6,909' TVD: 6,851.16' Inclination: 39.65° Azimuth: 269.66° VS: 410.05'		MD: 6,956' TVD: 6,885.84' Inclination: 45.21° Azimuth: 270.44° VS: 410.09'		MD: 7,004' TVD: 6,918.52' Inclination: 48.96° Azimuth: 270.78° VS: 410.47'			
SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent		SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent		SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent		SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent		SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent		SLTY SH: lt gy - lt gy brn, frm - mod hd, pty - sb pty, occ sb blk, silty - grty tex, v sl calc, no bent	



7/21/2014

7/22/2014

MIN DEPTH

MUD WT: 10.30/10.30
VIS: 40/40 IN/OUT

1000

ROP (ft/hr)

170

97

248

GAMMA (units)

250

50

70

4952u

5574u

5552u

C1: 74.4%
C2: 14.6%
C3: 7.1%
C4: 3.8%

GAS (kpsi)
GRC4 (PPM)

7.030 7.040 7.050 7.060 7.070 7.080 7.090 7.100 7.110 7.120 7.130 7.140 7.150 7.160 7.170 7.180 7.190 7.200 7.210 7.220 7.230 7.240

Nio A Marl Top @
7.038' MD: 6.940' TVD

MD: 7.098'
TVD: 6.977.49'
Inclination: 54.4°
Azimuth: 271.86°

<<Scale Change>>

MD: 7.145'
TVD: 7.003.47'
Inclination: 58.49°
Azimuth: 271.79°

Nio B Chalk Top @
7.181' MD: 7.021' TVD

MD: 7.193'
TVD: 7.026.97'
Inclination: 62.86°
Azimuth: 271.85°

Nio B Marl Top @
7.229' MD: 7.042' TVD

MD: 7.240'
TVD: 7.046.7'
Inclination: 6
Azimuth: 271
VS: 416.27'

MD: 7.050'
TVD: 6.948.25'
Inclination: 50.51°
Azimuth: 271.47°
VS: 411.16'

MR: lt - med gy, rr blk, sft - frm, sme mod
hd, sb ply - ply, silty - grty tex
CHK: tan - litgy, mot, lam, v sft - frm, sb ply -
sb blkly, rthy tex, v calc, tr bent, no fos frag

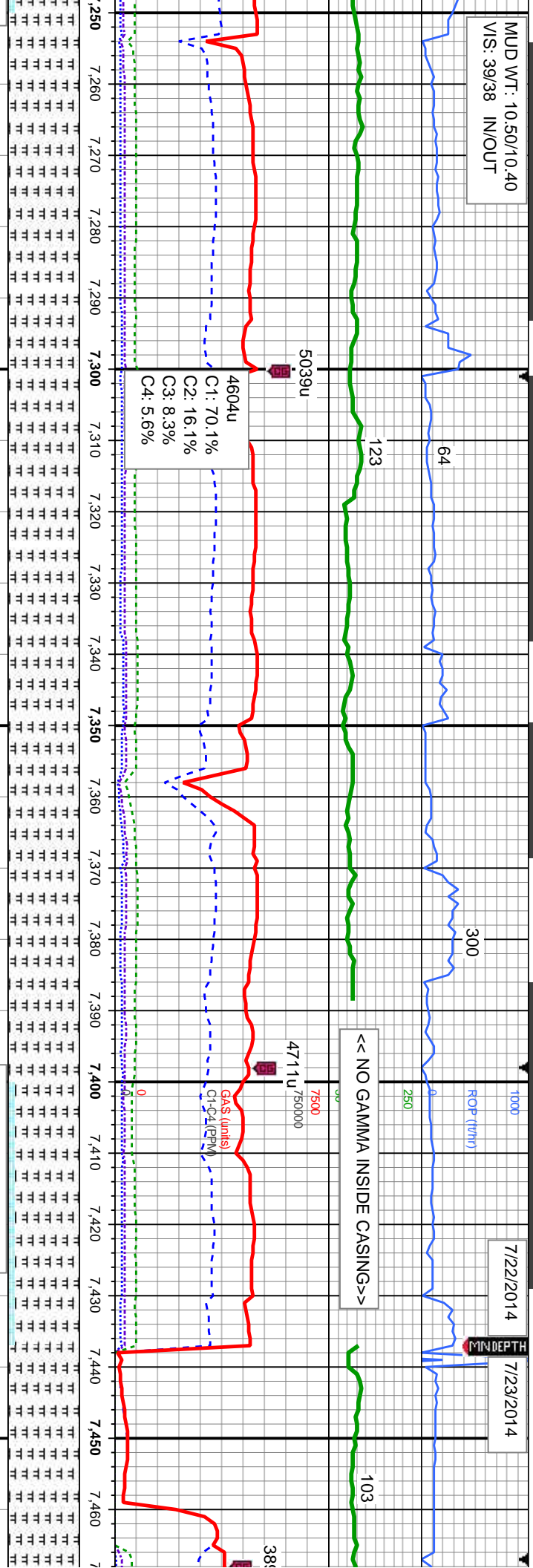
MR: lt - med gy, rr blk, sft - frm, sme mod
hd, sb ply - ply, silty - grty tex, no bent, no
fos frag

MR: lt - med gy, rr blk, sft - frm, sme mod
hd, sb ply - ply, silty - grty tex
CHK: tan - litgy, mot, lam, v sft - frm, sb ply -
sb blkly, rthy tex, v calc, tr bent, no fos frag

MR: lt - med gy, rr blk, sft - frm, sme mod
hd, sb ply - ply, silty - grty tex
CHK: tan - litgy, mot, lam, v sft - frm, sb ply -
sb blkly, rthy tex, v calc, tr bent, tr fos frag



MUD WT: 10.50/10.40
VIS: 39/38 IN/OUT



7/22/2014 7/23/2014

MD: 7,288'
TVD: 7,062.92'
Inclination: 73.08°
Azimuth: 271.98°
VS: 417.83'

MD: 7,335'
TVD: 7,074.89'
Inclination: 77.41°
Azimuth: 270.04°
VS: 637'

MD: 7,377'
TVD: 7,082.97'
Inclination: 80.42°
Azimuth: 268.65°
VS: 678.15'

Bit Data
Bit #: 3
Type: NOV/ReedHycalog
Model: SKH1513M
Size: 6.12"
Depth In: 7,437'
Jets: 5x13

MD: 7,437'
TVD: 7,090.47'
Inclination: 85.2°
Azimuth: 269.5°
VS: 737.56'

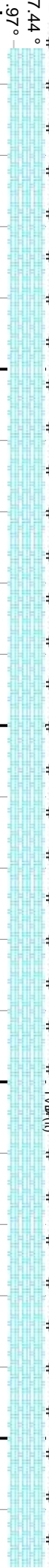
MRL: It - med gy, rr blk, sft - frm, sme mod
hd, sb pily - pily, silty - grty tex, rr bent, tr fos
frag

MRL: It - med gy, rr blk, sft - frm, sme mod
hd, sb pily - pily, silty - grty tex, rr bent, no fos
frag

MRL: It - med gy, rr blk, sft - frm, sme mod
hd, sb pily - pily, silty - grty tex, v abnt bent, no
fos frag

100% CHK: It - medgy brn, mot, lam, v sft -
frm, sb pily - sb blkly, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb pily - pily, silty - grty tex, abnt
bent, tr fos frag

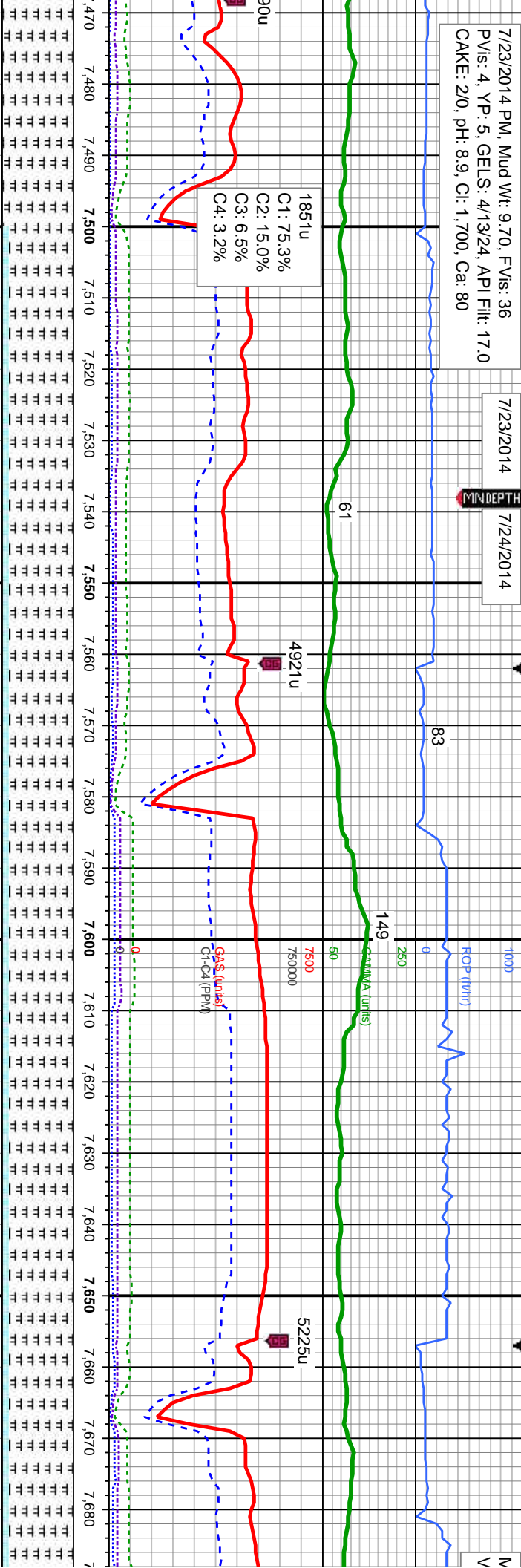
100% MRL: It - r
mod hd, sb pily
fos frag



7/23/2014 PM, Mud Wt: 9.70, FV/s: 36
PV/s: 4, YP: 5, GELS: 4/13/24, API Fil: 17.0
CAKE: 20, pH: 8.9, Cl: 1,700, Ca: 80

7/23/2014 7/24/2014

MINDEPTH



MD: 7,502'
TVD: 7,098.98'
Inclination: 84.86°

Azimuth: 266.6°
VS: 413'

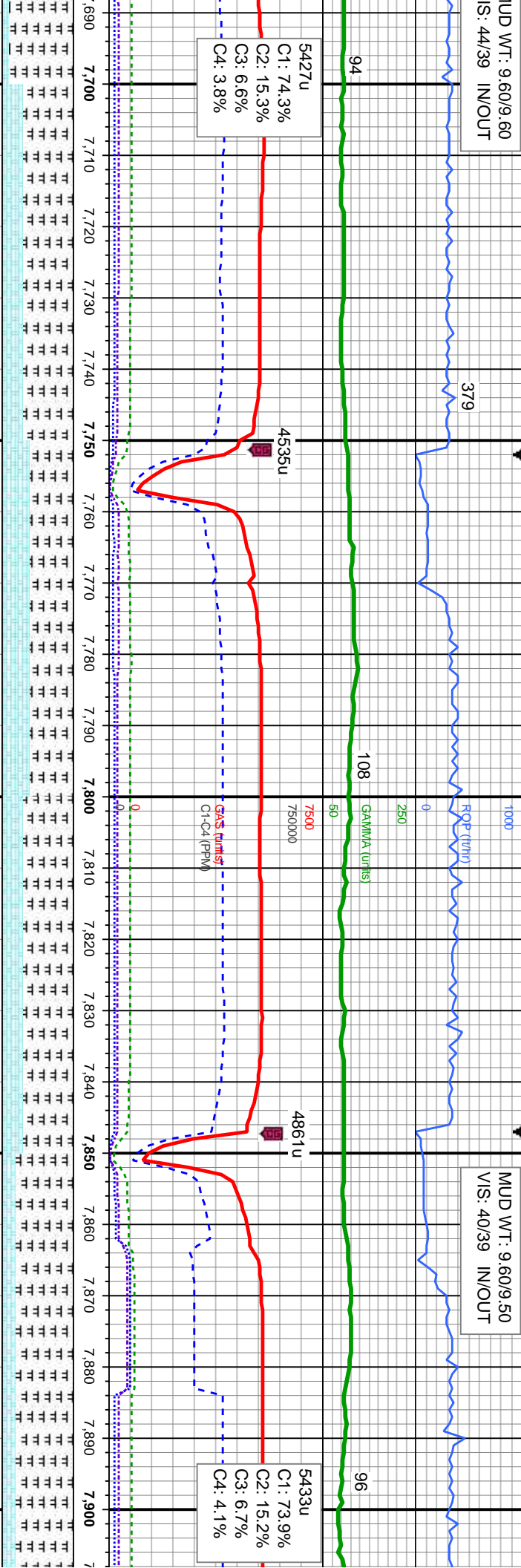
MD: 7,597'
TVD: 7,106.42'
Inclination: 86.15°

Azimuth: 267.36°
VS: 408.01'

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



MUD WT: 9.60/9.60
IS: 44/39 IN/OUT



MUD WT: 9.60/9.50
VIS: 40/39 IN/OUT

MD: 7,691'
TVD: 7,110.33'
Inclination: 89.08°
Azimuth: 267.94°
VS: 404.16'

MD: 7,786'
TVD: 7,111.63'
Inclination: 89.35°
Azimuth: 269.19°
VS: 401.78'

MD: 7,881'
TVD: 7,111.1'
Inclination: 91.29°
Azimuth: 269.23°
VS: 400.47'

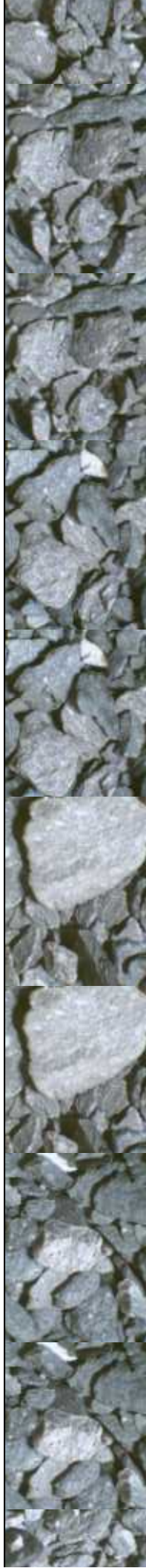
30% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 70% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb pily - pily, silty - grty tex, no bent, no fos frag

40% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 60% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb pily - pily, silty - grty tex, no bent, no fos frag

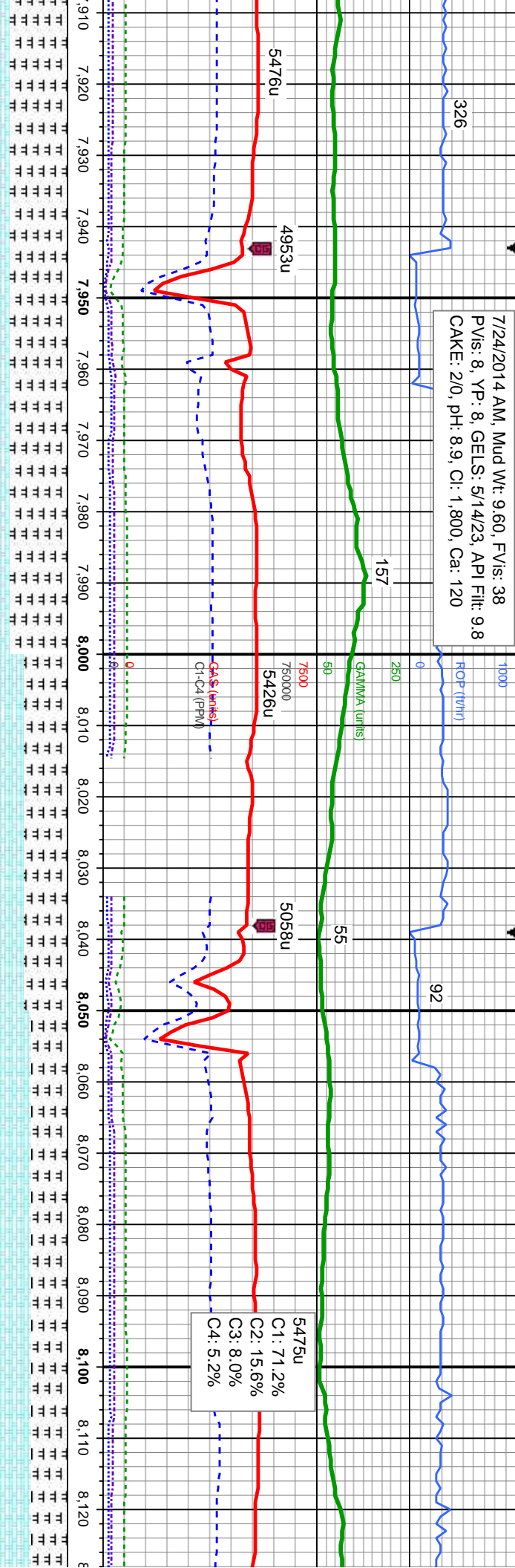
30% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 70% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb pily - pily, silty - grty tex, no bent, tr fos frag

20% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb pily - pily, silty - grty tex, no bent, tr fos frag

20% C



7/24/2014 AM, Mud Wt: 9.60, FV/s: 38
PV/s: 8, YP: 8, GELS: 5/14/23, API Filtr: 9.8
CAKE: 2/0, pH: 8.9, Cl: 1,800, Ca: 120



MD: 7,976'
TVD: 7,108.4'
Inclination: 91.97°

Azimuth: 270.47°
VS: 1,274.33'

HK: It - medgy brn, mot, lam, v sft -
ply - sb blk, rthy tex, v calc
MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, no bent,
frag

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

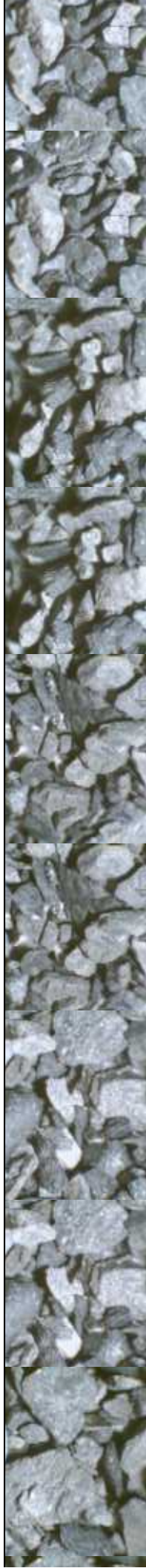
40% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
60% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, v tr bent,
tr fos frag

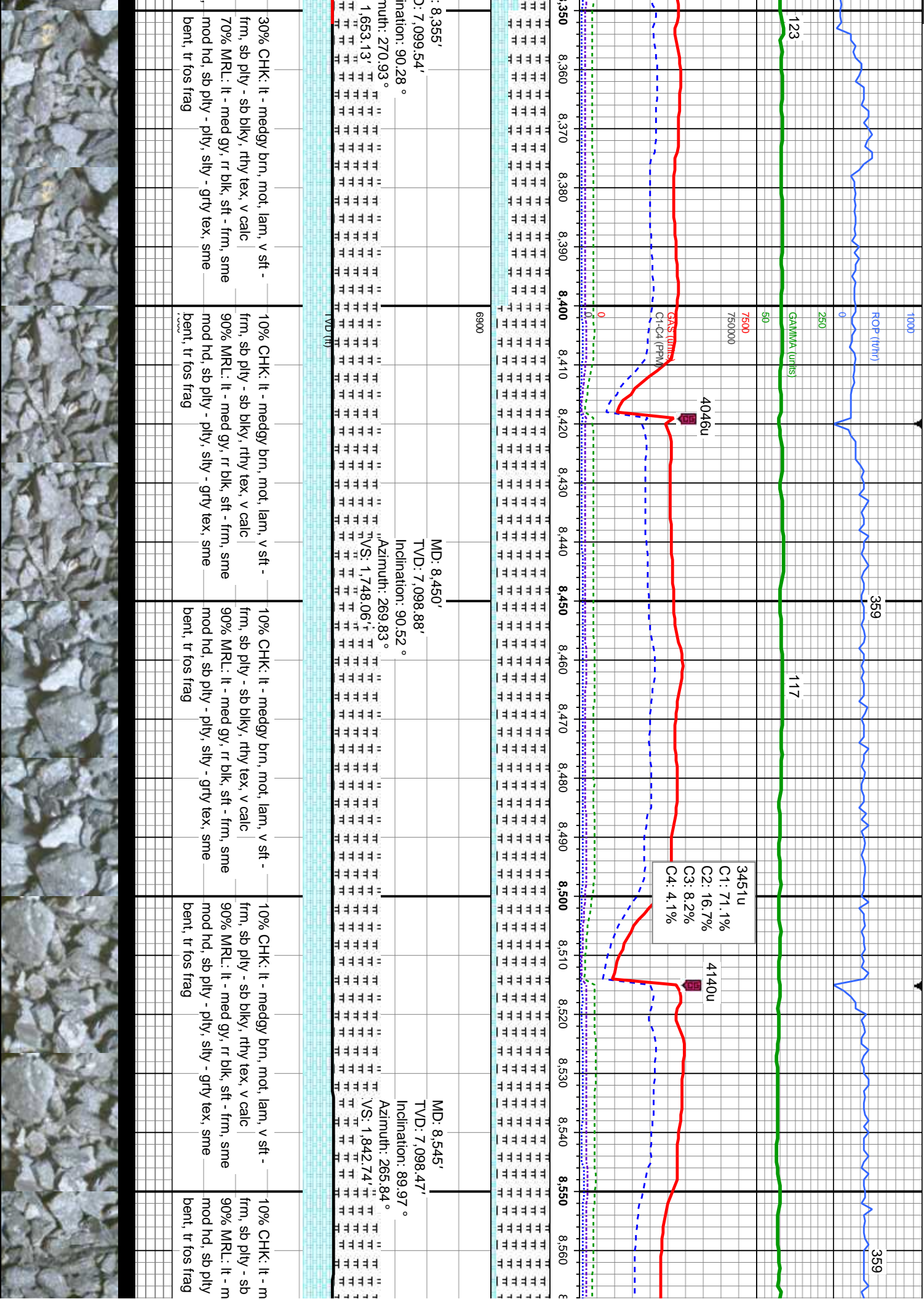
MD: 8,071'
TVD: 7,105.87'
Inclination: 91.08°

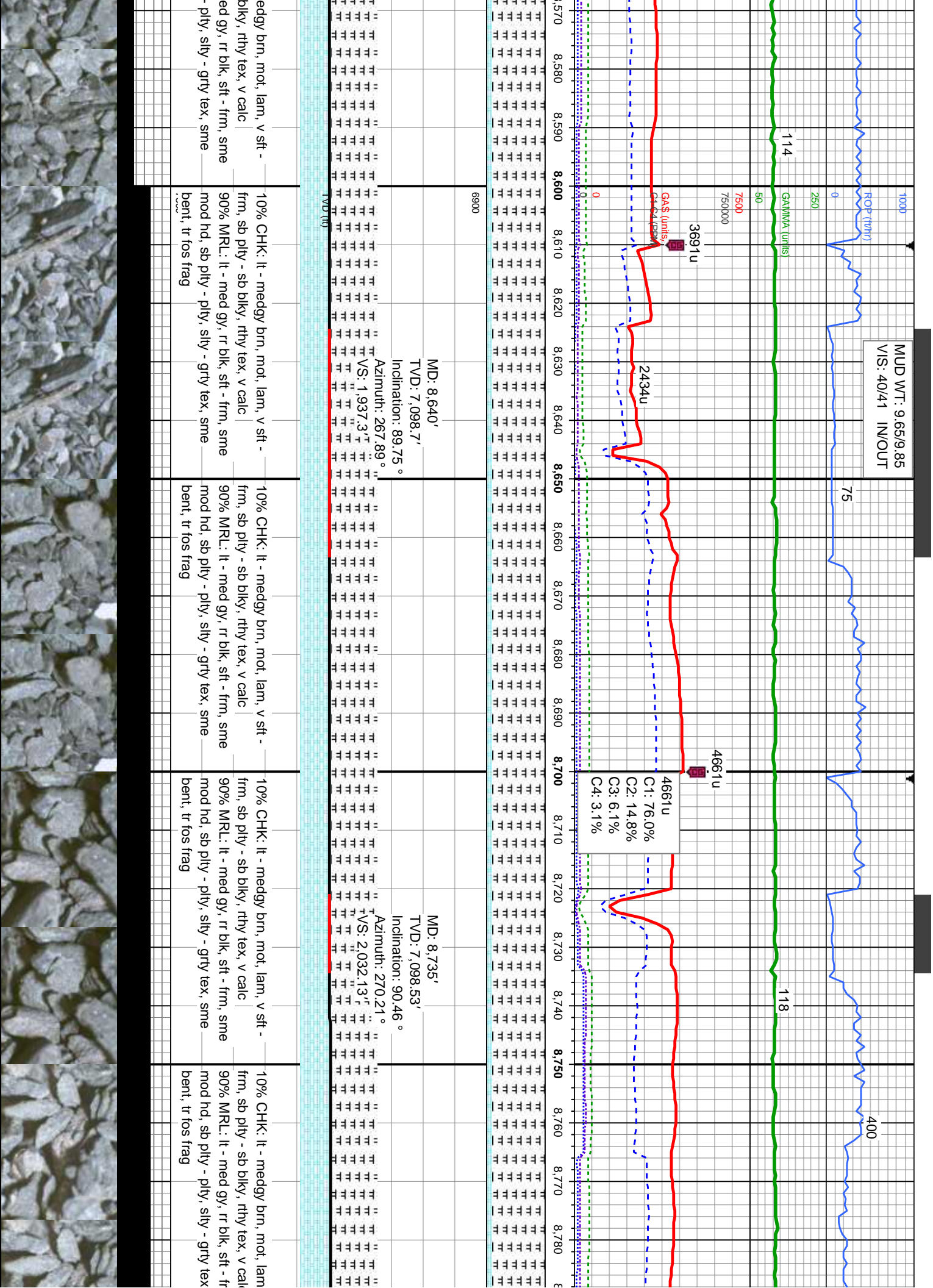
Azimuth: 270.78°
VS: 1,369.25'

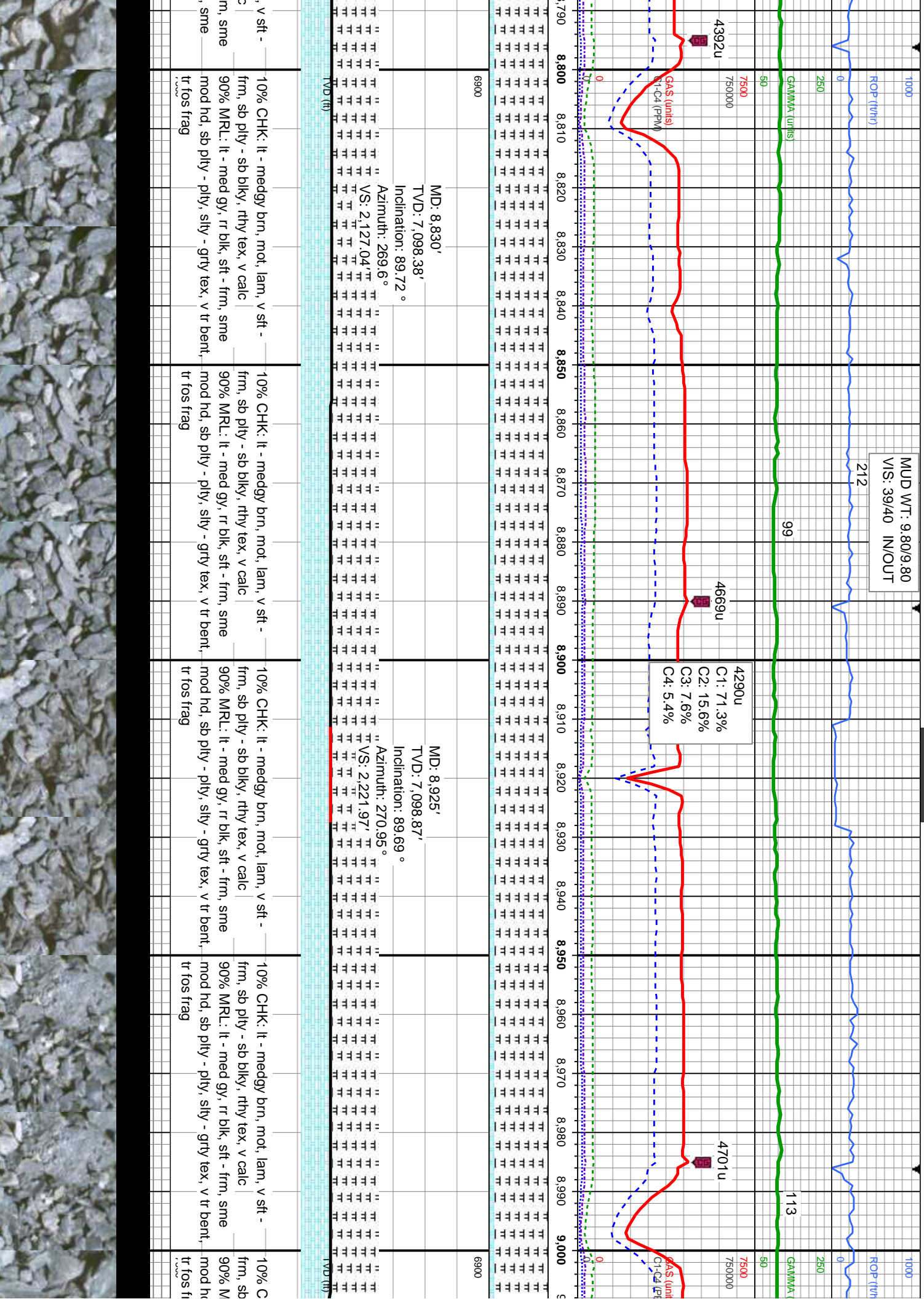
50% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
50% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, v tr bent,
tr fos frag

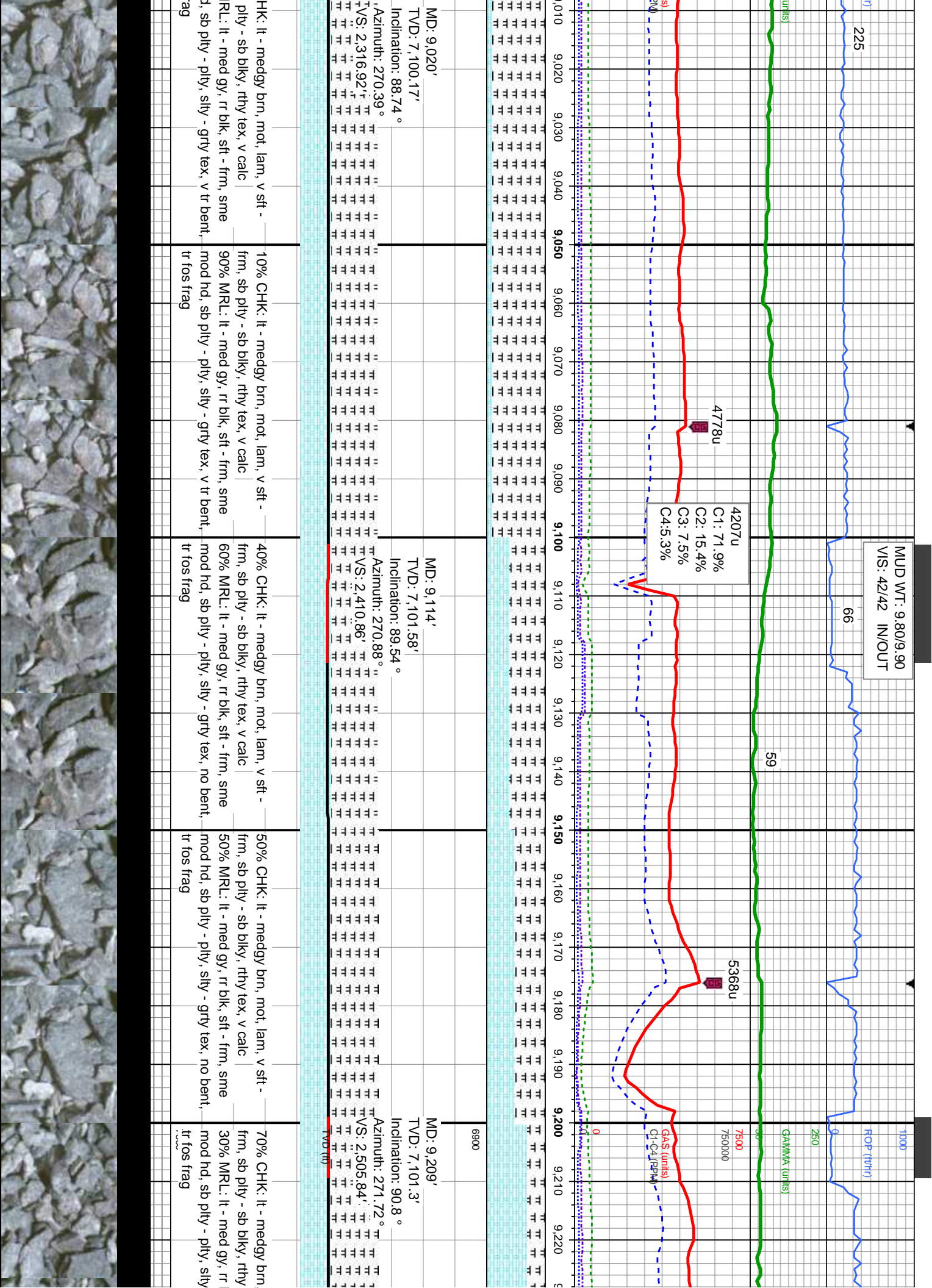
50% CHK: It - medgy brn,
frm, sb ply - sb blk, rthy
50% MRL: It - med gy, rr blk
mod hd, sb ply - ply, silty



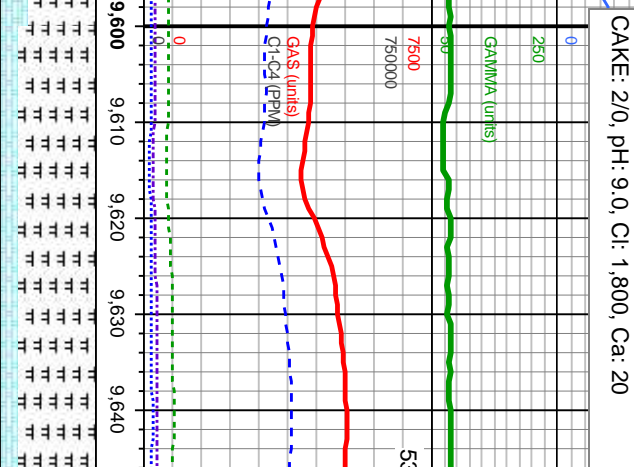








7/24/2014 PM, Mud Wt: 9.85, FVis: 44
PVis: 9, YP: 11, GELS: 5/20/27, API Filt: 8.0



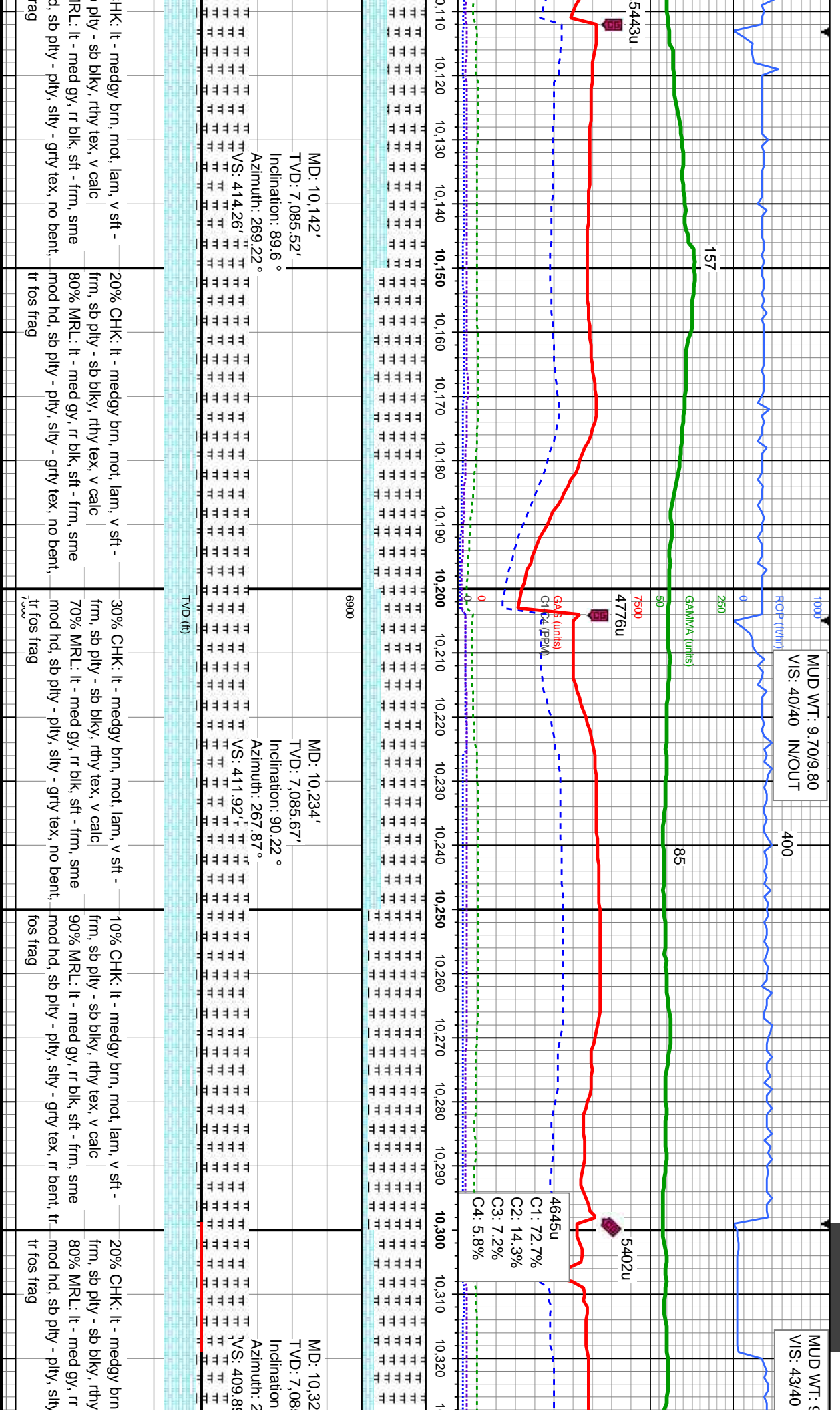
MD: 9,586'
TVD: 7,093.33'
Inclination: 91.63 °

Azimuth: 270.06°

VS: 415.19'

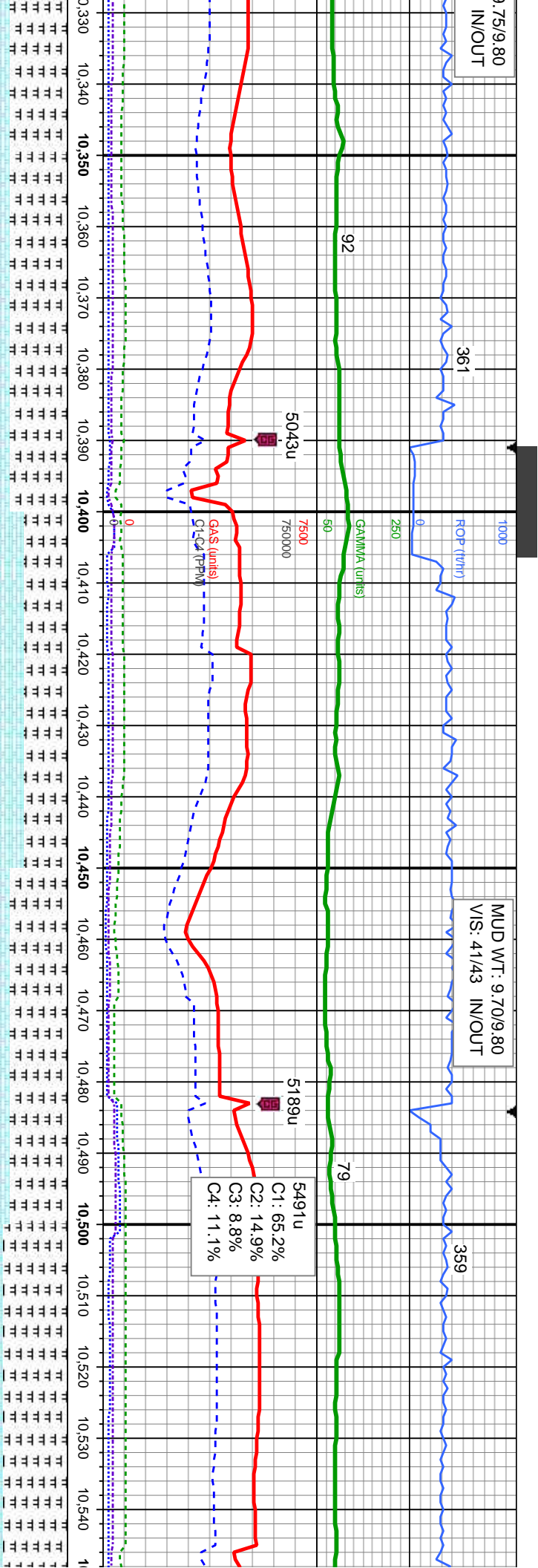
20% CHK: It - medgy brn, mot, lam, v sft - frim, sb ply - sb blkly, rthy tex, v calc 80% MRL: It - med gy, r blk, sft - frim, sme mod hd, sb ply - ply, slty - grty tex, no ben	It fcs frag	7.50
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20% CHK: It - medgy brn, mot, lam, v sft - frim, sb ply - sb blkly, rthy tex, v calc 80% MRL: It - med gy, r blk, sft - frim, sme mod hd, sb ply - ply, slty - grty tex, no ben	It fcs frag	7.50
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7.75/9.80
IN/OUT

MUD WT: 9.70/9.80
VIS: 41/43 IN/OUT



7'

MD: 10,419'

TV D: 7,086.68'

Inclination: 89.32°

Azimuth: 270.36°

VS: 409.87'

VS: 409.87'

VS: 409.87'

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VS: 409.87'

VS: 409.87'

VS: 409.87'

VS: 409.87'

MD: 10,512'

TV D: 7,087.08'

Inclination: 90.19°

Azimuth: 270.64°

VS: 410.68'

VS: 410.68'

VS: 410.68'

VS: 410.68'

VS: 410.68'

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VS: 410.68'

VS: 410.68'

mot, lam, v sft -
tex, v calc
blk, sft - frm, sme
- grty tex, rr bent,

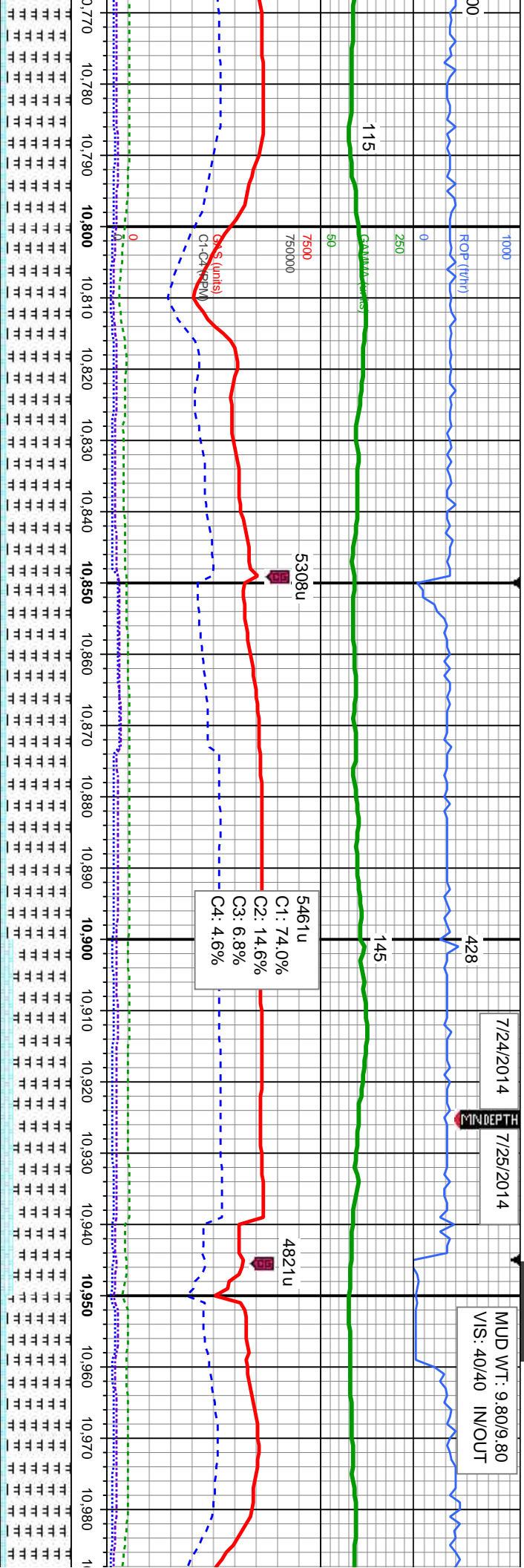
20% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
80% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, no bent,
tr fos frag

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

10% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, no bent,
tr fos frag

TV D (ft)





edgy brn, mot, lam, v sft -
bly, rthy tex, v calc
ed gy, r blk, sft - frm, sme
- pty, sfty - gtry tex, no bent,

10% CHK: It - medgy brn, mot, lam, v sft -
frn, sb ply - sb biky, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frn, sme
mod hci, sb ply - ply, slty - gfty tex, no bent,
it fos frag

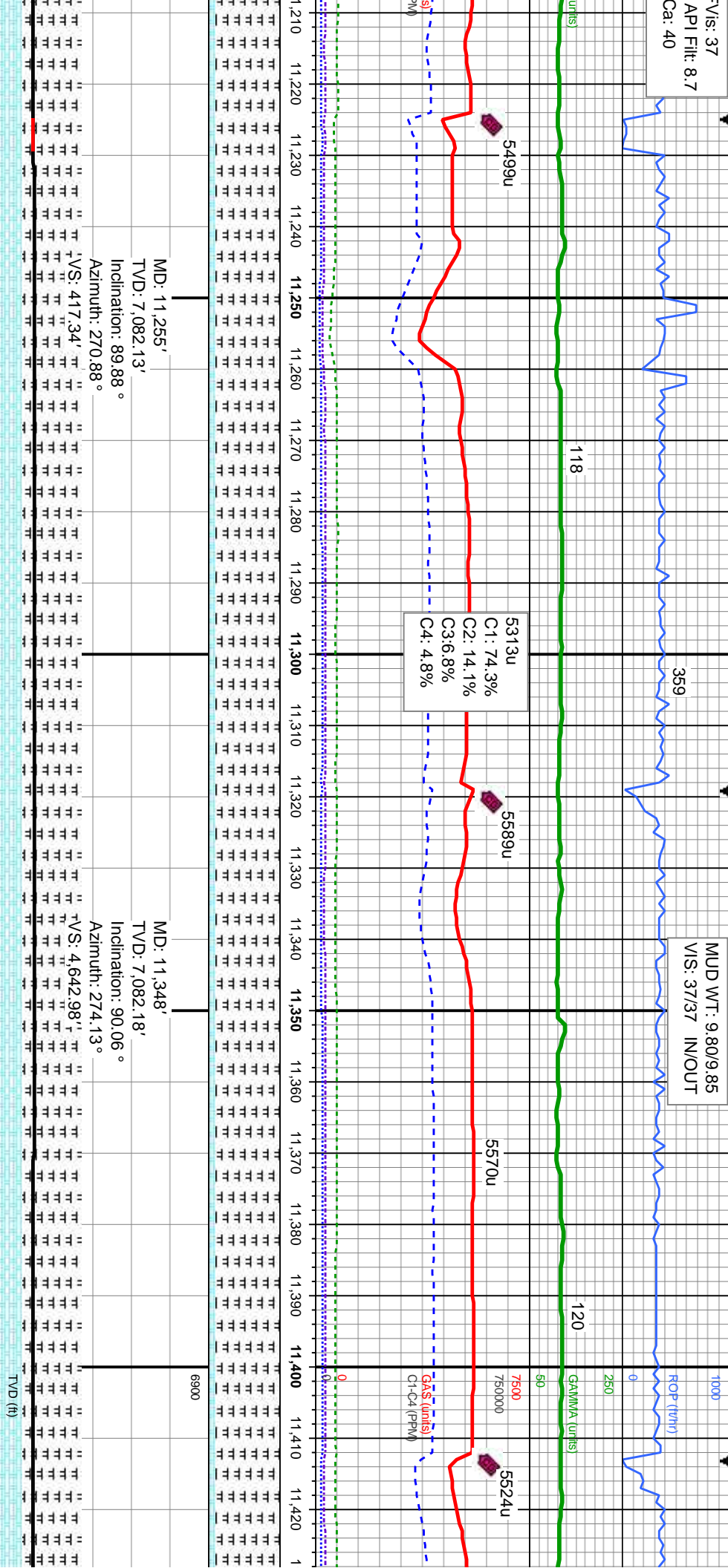
10% CHK: It - medgy brn, mot, lam, v sft - frim, sb ply - sb blkly, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frim, sme mod hd, sb ply - ply, slty - gfty tex, no bent, t fcs frag

20% CHK: It - medgy brn, mot, lam, v sft - frim, sb ply - sb blkly, rthy tex. v calc 80% MRL: It - med gy, rr blk, sft - frim, sme mod hd, sb ply - ply, sily - gtry tex, no bent, tr fos frag

10% CHK: It - meegy brn, mot, larr
firm, sb pty - sb blk, rthy tex, v cal
90% MRL: It - med gy, rr blk, stt - fi
mod hd, sb pty - pty, silty - grty tex
tr fos frag

V/S: 37
API Filtr: 8.7
Ca: 40

MUD WT: 9.80/9.85
VIS: 37/37 IN/OUT



MD: 11,255'
TVD: 7,082.13'
Inclination: 89.88°
Azimuth: 270.88°

MD: 11,348'
TVD: 7,082.18'
Inclination: 90.06°
Azimuth: 274.13°

HK: It - medgy brn, mot, lam, v sft -
ply - sb blk, rthy tex, v calc
RL: It - med gy, rr blk, sft - frm, sme
d, sb ply - ply, silty - grty tex, sme
fos frag

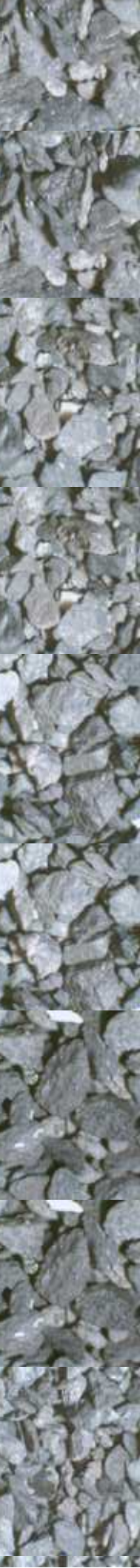
10% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, sme
bent, tr fos frag

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

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

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

TVD (ft)



MUD WT: 9.85/9.80
VIS: 37/35 IN/OUT



MD: 11,633'
TVD: 7,081.44'

Inclination: 89.84 °

Azimuth: 274.63°

TVS: 4,927.82'

二二
 二二
 二二
 二二
 二二
 二二
 二二

1 :
1 :
1 :
1 :
1 :

[illegible]

ddy brn, mot, lam, v

ky, rthy tex, v calc

gy, rr blk, sft - frm

olty, slty - grty tex, s

[illegible]

MUD WT: 9.90/9.90
VIS: 38/35 IN/OUT

34

4510u
C1: 71.9%
C2: 15.1%
C3: 7.5%
C4: 5.4%

5514u

5566u

5551u

150

MUD WT: 9.80/9.80
VIS: 34/40 IN/OUT

326

250
GAMMA (units)

86

5619u

7500
7500000
GAS (units)
G1-C4 (PM)

11,870 11,880 11,890 11,900 11,910 11,920 11,930 11,940 11,950 11,960 11,970 11,980 11,990 12,000 12,010 12,020 12,030 12,040 12,050 12,060 12,070 12,080 12,090

MD: 11,918'
TVD: 7,090.07'
Inclination: 88.27°
Azimuth: 267.11°

MD: 12,013'
TVD: 7,091.99'
Inclination: 89.41°
Azimuth: 267.76°

fr m, sb pty - sb blk, rthy tex, v calc
80% MRL: It - med gy, rr blk, sft - frm, sme
mod hcd, sb pty - pty, silty - grty tex, sme
bent, tr fos frag

edgy brn, mot, lam, v sft -
bly, rthy tex, v calc
ed gy, rr blk, sft - frm, sme
- pty, silty - grty tex, sme

20% CHK: It - medgy brn, mot, lam, v sft -
frm, sb pty - sb blk, rthy tex, v calc
80% MRL: It - med gy, rr blk, sft - frm, sme
mod hcd, sb pty - pty, silty - grty tex, sme
bent, tr fos frag

30% CHK: It - medgy brn, mot, lam, v sft -
frm, sb pty - sb blk, rthy tex, v calc
70% MRL: It - med gy, rr blk, sft - frm, sme
mod hcd, sb pty - pty, silty - grty tex, sme
bent, tr fos frag

30% CHK: It - medgy brn, mot, lam, v sft -
frm, sb pty - sb blk, rthy tex, v calc
70% MRL: It - med gy, rr blk, sft - frm, sme
mod hcd, sb pty - pty, silty - grty tex, sme
bent, tr fos frag

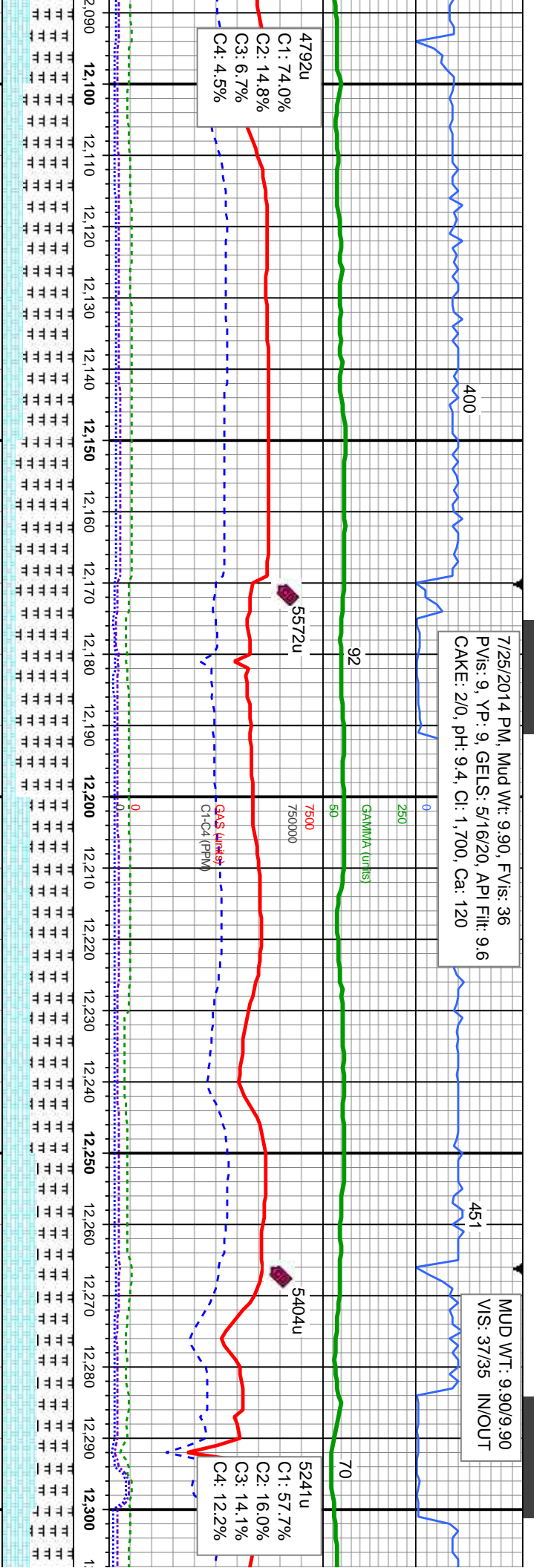
40% CHK: It - medgy brn, mot, lam, v sft -
frm, sb pty - sb blk, rthy tex, v ca
60% MRL: It - med gy, rr blk, sft -
mod hcd, sb pty - pty, silty - grty tex, sme
bent, tr fos frag

TVD (ft)



7/25/2014 PM, Mud Wt: 9.90, FV/s: 36
PV/s: 9, YP: 9, GELS: 5/16/20, API Filtr: 9.6
CAKE: 2/0, pH: 9.4, Cl: 1,700, Ca: 120

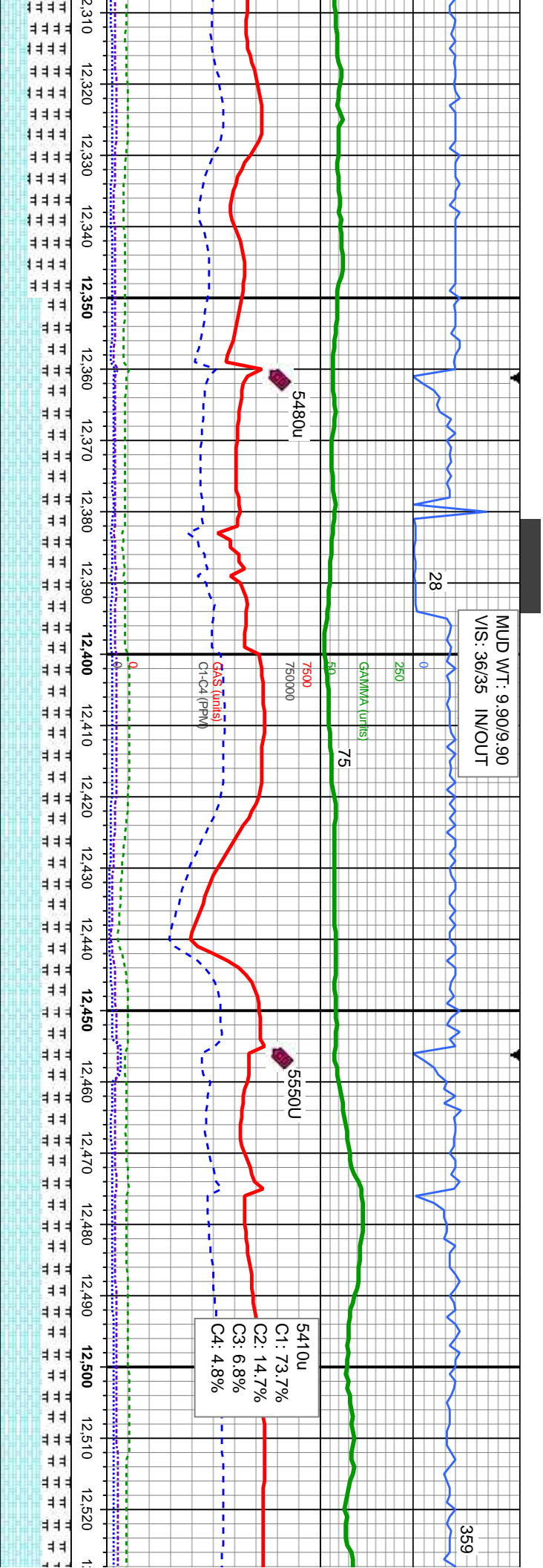
MUD WT: 9.90/9.90
VIS: 37/35 IN/OUT



MD: 12,108'		MD: 12,202'		MD: 12,297'	
TVD: 7,092.76'		TVD: 7,093.02'		TVD: 7,092.64'	
Inclination: 89.66°		Inclination: 90.03°		Inclination: 90.43°	
Azimuth: 267.43°		Azimuth: 267.49°		Azimuth: 267.75°	
VS: 434.1'		VS: 429.94'		VS: 425.99'	
TVD (ft)		TVD (ft)		TVD (ft)	
6900		6900		6900	

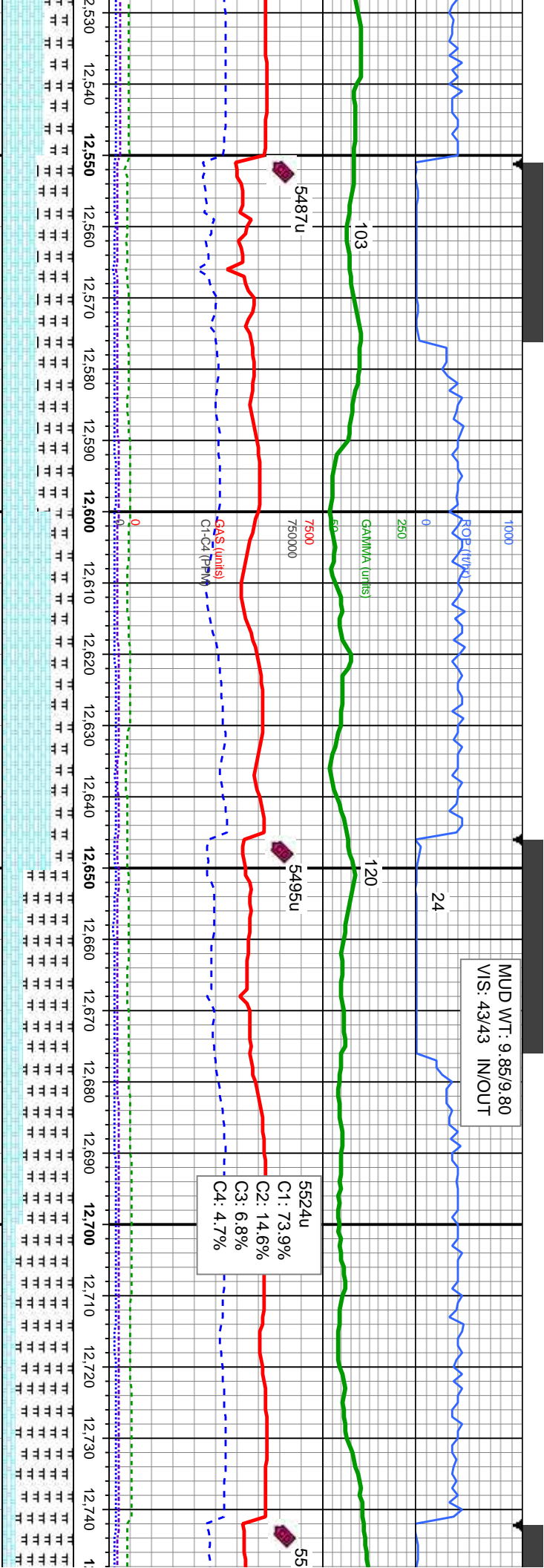
30% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	20% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	40% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	50% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	40% C
70% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb ply - ply, silty - grty tex, sme bent, tr fos frag	80% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb ply - ply, silty - grty tex, sme bent, tr fos frag	60% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb ply - ply, silty - grty tex, rr bent, no fos frag	50% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb ply - ply, silty - grty tex, rr bent, no fos frag	60% M





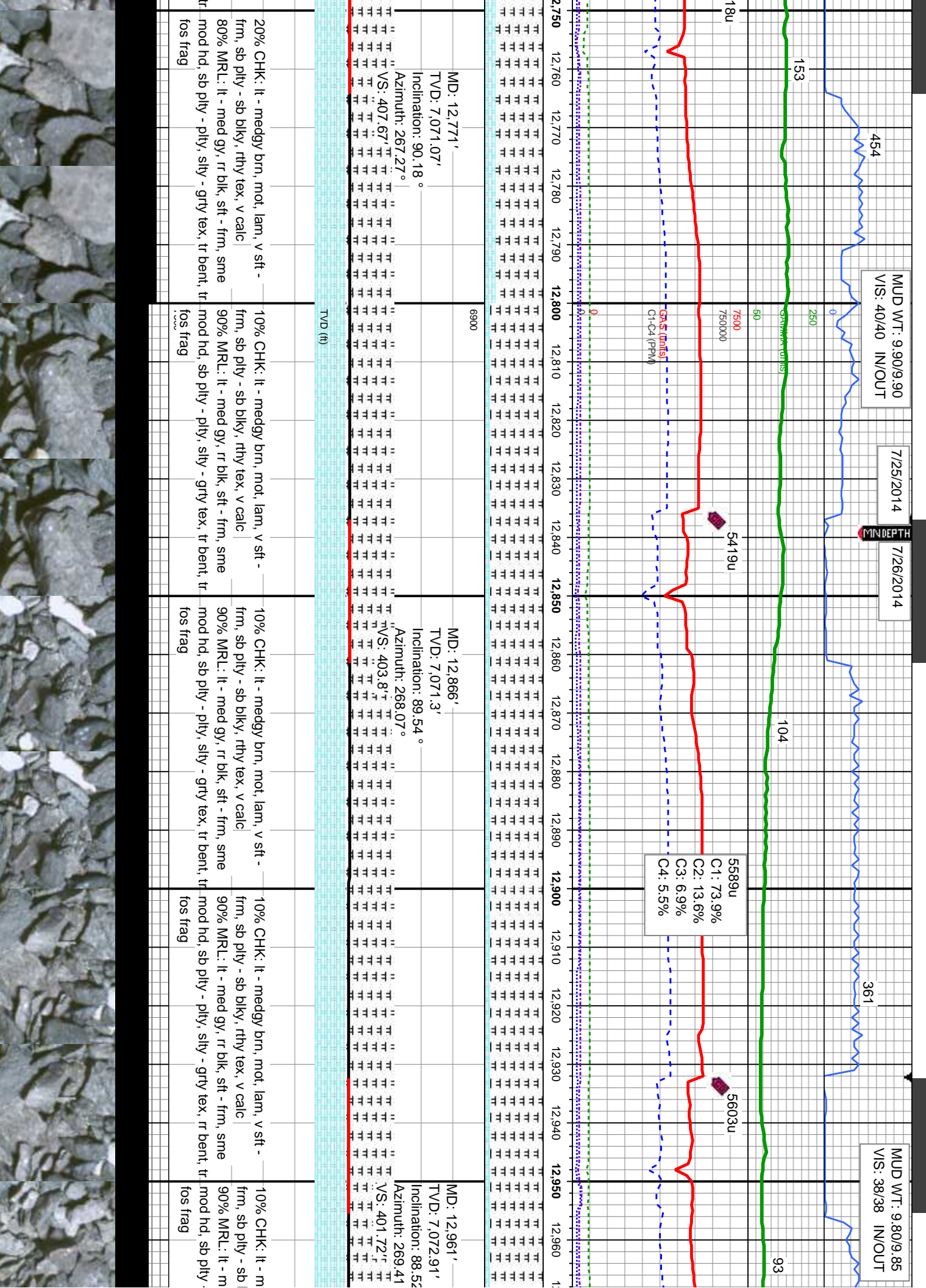
6900		MD: 12,392'		MD: 12,487'	
TVD: 7,090.03'		TVD: 7,084.28'		TVD: 7,084.28'	
Inclination: 92.71 °		Inclination: 94.23 °		Inclination: 94.23 °	
Azimuth: 268.04 °		Azimuth: 267.19 °		Azimuth: 267.19 °	
VS: 422.5"		VS: 418.56"		VS: 418.56"	
CHK: It - medgy brn, mot, lam, v sft -	60% CHK: It - medgy brn, mot, lam, v sft -	CHK: It - medgy brn, mot, lam, v sft -	60% CHK: It - medgy brn, mot, lam, v sft -	CHK: It - medgy brn, mot, lam, v sft -	60% CHK: It - medgy brn, mot, lam, v sft -
ply - sb blk, rthy tex, v calc	frn, sb ply - sb blk, rthy tex, v calc	ply - sb blk, rthy tex, v calc	frn, sb ply - sb blk, rthy tex, v calc	ply - sb blk, rthy tex, v calc	frn, sb ply - sb blk, rthy tex, v calc
MRL: It - med gy, rr blk, sft - frm, sme	40% MRL: It - med gy, rr blk, sft - frm, sme	MRL: It - med gy, rr blk, sft - frm, sme	40% MRL: It - med gy, rr blk, sft - frm, sme	MRL: It - med gy, rr blk, sft - frm, sme	40% MRL: It - med gy, rr blk, sft - frm, sme
d, sb ply - ply, slty - grty tex, tr bent,	mod hd, sb ply - ply, slty - grty tex, tr bent,	d, sb ply - ply, slty - grty tex, tr bent,	mod hd, sb ply - ply, slty - grty tex, tr bent,	d, sb ply - ply, slty - grty tex, tr bent,	mod hd, sb ply - ply, slty - grty tex, tr bent,
frag	no fos frag	frag	no fos frag	frag	no fos frag

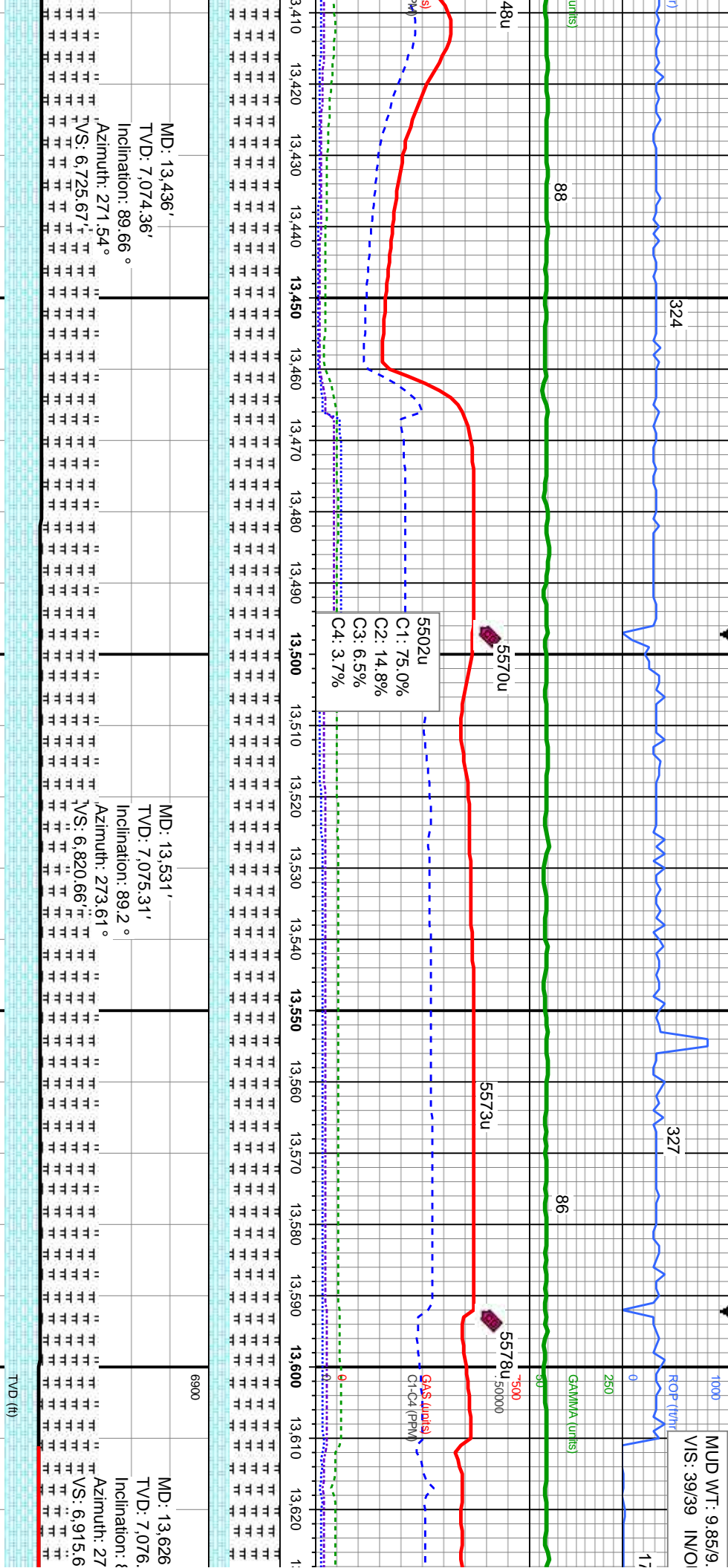




MD: 12,582' TVD: 7,077.58' Inclination: 93.86° Azimuth: 267.87° VS: 414.47'		50% CHK: It - medgy brn, mot, lam, v sft - frm, sb plty - sb blk, rthy tex, v calc 50% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb plty - plty, silty - grty tex, tr bent, no fos frag
MD: 12,676' TVD: 7,072.83' Inclination: 91.94° Azimuth: 268.3° VS: 411.34'		70% CHK: It - medgy brn, mot, lam, v sft - frm, sb plty - sb blk, rthy tex, v calc 30% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb plty - plty, silty - grty tex, tr bent, no fos frag
MD: 12,676' TVD: 7,072.83' Inclination: 91.94° Azimuth: 268.3° VS: 411.34'		30% CHK: It - medgy brn, mot, lam, v sft - frm, sb plty - sb blk, rthy tex, v calc 70% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb plty - plty, silty - grty tex, tr bent, tr fos frag
MD: 12,676' TVD: 7,072.83' Inclination: 91.94° Azimuth: 268.3° VS: 411.34'		20% CHK: It - medgy brn, mot, lam, v sft - frm, sb plty - sb blk, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb plty - plty, silty - grty tex, tr bent, tr fos frag







MD: 13,436'
TVD: 7,074.36'
Inclination: 89.66 °
Azimuth: 271.54 °
VS: 6,725.67'

MD: 13,531'
TVD: 7,075.31'
Inclination: 89.2 °
Azimuth: 273.61 °
VS: 6,820.66'

MD: 13,626'
TVD: 7,076'
Inclination: {
Azimuth: {
VS: 6,915.6'

HK: It - medgy brn, mot, lam, v sft -
ply - sb blk, rthy tex, v calc
MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grfy tex, abnt
bent, tr tos frag

30% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grfy tex, abnt
bent, tr tos frag

30% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grfy tex, abnt
bent, tr tos frag

30% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
70% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grfy tex, abnt
bent, tr tos frag

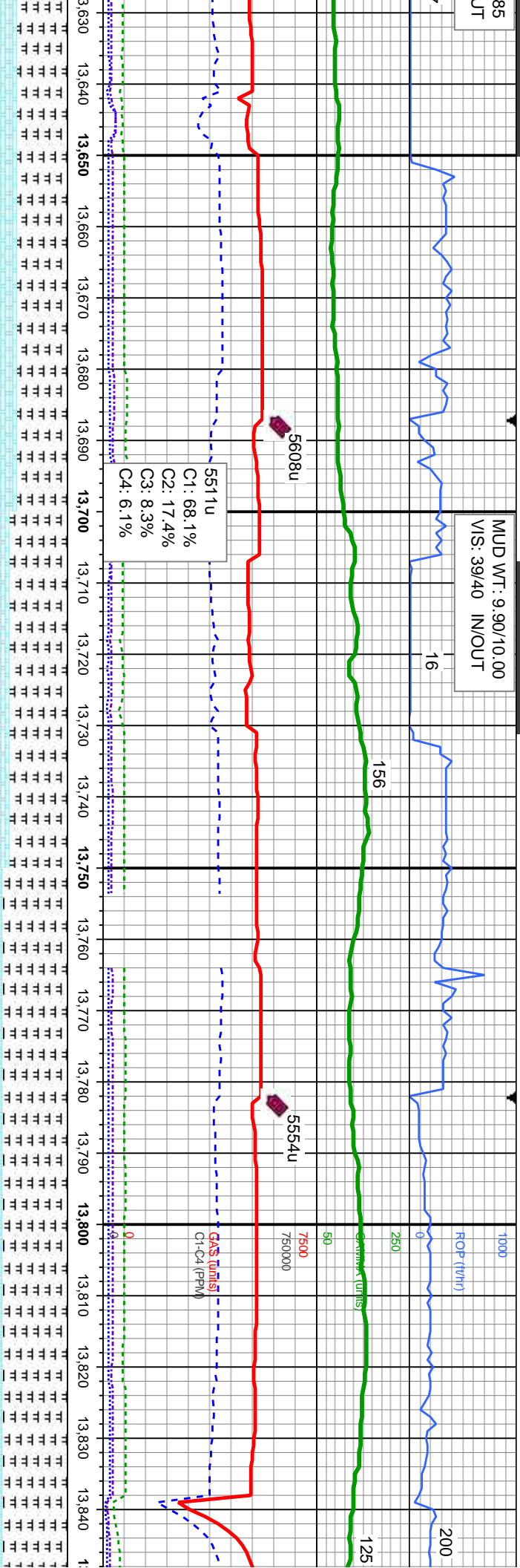
30% CHK: It - medgy brn
frm, sb ply - sb blk, rthy
70% MRL: It - med gy, rr
mod hd, sb ply - ply, silty
bent, tr tos frag

TVD (ft)



85
JT

MUD WT: 9.90/10.00
VIS: 39/40 IN/OUT



MD: 13,720'

TVD: 7,077.13'

Inclination: 90.31°

Azimuth: 270.93°

VS: 7.009.62

6900

MD: 13.815'

MD: 13,013
TVD: 7,077.16'

Inclination: 89.66°

Inclination: 89.66°

Azimuth: 268

TVD (ft)

mot, lam, v sft -
tex, v calc
blk, sft - frm, sme
- qrv tex, sme

30% CHK: lt - meedy brn, mot, larn, v sft -
frm, sb pily - sb blk, rthy tex, v calc
70% MRL: lt - med gy, rr blk, sft - frm, sme
mod hd, sb pily - pily, silty - grty tex, sme
bent, tr fos frag

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

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex. v calc 90% MRL: It - med gy, r blk, sft - frm, smæ mod hd, sb ply - ply, slty - grty tex, about, tr fos frag

10% CHK: lt - medgy brn, mot, lam, v sft -
frn, sb pily - sb blk, rthy tex, v calc
90% MRL: lt - med gy, rr blk, sft - frn, sme
mod hd, sb pily - pily, silty - grty tex, sme
bent, tr fos frag



[illegible]

MD: 13.910'
TVD: 7,076.78'
Inclination: 90.8°
Azimuth: 268.53°
VS: 413.88'

MD: 14.005'
TVD: 7,075.07'
Inclination: 91.26°
Azimuth: 267.47°
VS: 410.57'

6900

Time	Lat	Long	Alt	Temp	Hum	Wind	Dir	Speed	Pressure	Clouds	Visibility	Remarks
00:00	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:05	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:10	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:15	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:20	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:25	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:30	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:35	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:40	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:45	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:50	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
00:55	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:00	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:05	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:10	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:15	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:20	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:25	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:30	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:35	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:40	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:45	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:50	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
01:55	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:00	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:05	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:10	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:15	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:20	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:25	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:30	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:35	26.53	413.88	268	26.5	75	10	100	10	1013	0	10	
02:40	26.53	413.88	268									

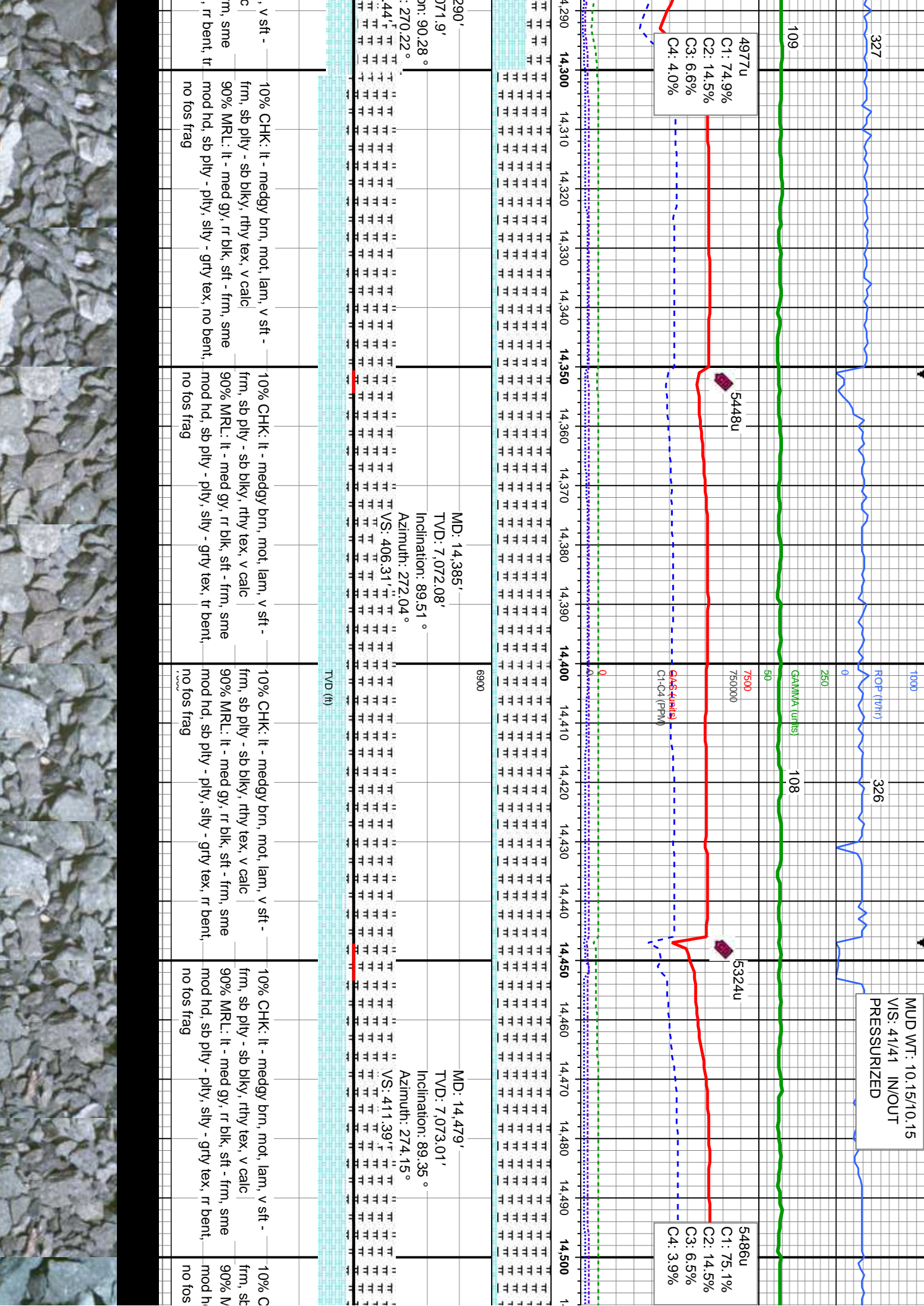
20% CHK: It - medgy brn, mot, lam, v sft - frn, sb pily - sb blk, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frn, sme mod hd, sb pily - pily, slty - grty tex, abnt bent, tr fos frag	20% CHK: It - medgy brn, mot, lam, v sft - frn, sb pily - sb blk, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frn, sme mod hd, sb pily - pily, slty - grty tex, abnt bent, tr fos frag	20% CHK: It - medgy brn, mot, lam, v sft - frn, sb pily - sb blk, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frn, sme mod hd, sb pily - pily, slty - grty tex, abnt bent, tr fos frag	30% CHK: It - medgy brn, mot, lam, v sft - frn, sb pily - sb blk, rthy tex, v calc 70% MRL: It - med gy, rr blk, sft - frn, sme mod hd, sb pily - pily, slty - grty tex, abnt ⁷ bent, tr fos frag	40% CHK: It - n frn, sb pily - sb 60% MRL: It - n mod hd, sb pily bent, tr fos frag
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20% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blkly, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb pily - pily, slty - grty tex, abnt bent, tr fos frag	20% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blkly, rthy tex, v calc 80% MRL: It - med gy, rr blk, sft - frm, sme mod hd, sb pily - pily, slty - grty tex, abnt bent, tr fos frag
---	---

20% CHK: lt - medgy brn, mot, lam, v sft - frim, sb ply - sb blkky, rthy tex, v calc 80% MRL: lt - med gy, rr blk, sft - frim, sme mod hd, sb ply - ply, slty - grty tex, abnt bent, tr fos frag	30% CHK: lt - medgy brn, mot, lam, v sft - frim, sb ply - sb blkky, rthy tex, v calc 70% MRL: lt - med gy, rr blk, sft - frim, sme mod hd, sb ply - ply, slty - grty tex, abnt bent, tr fos frag
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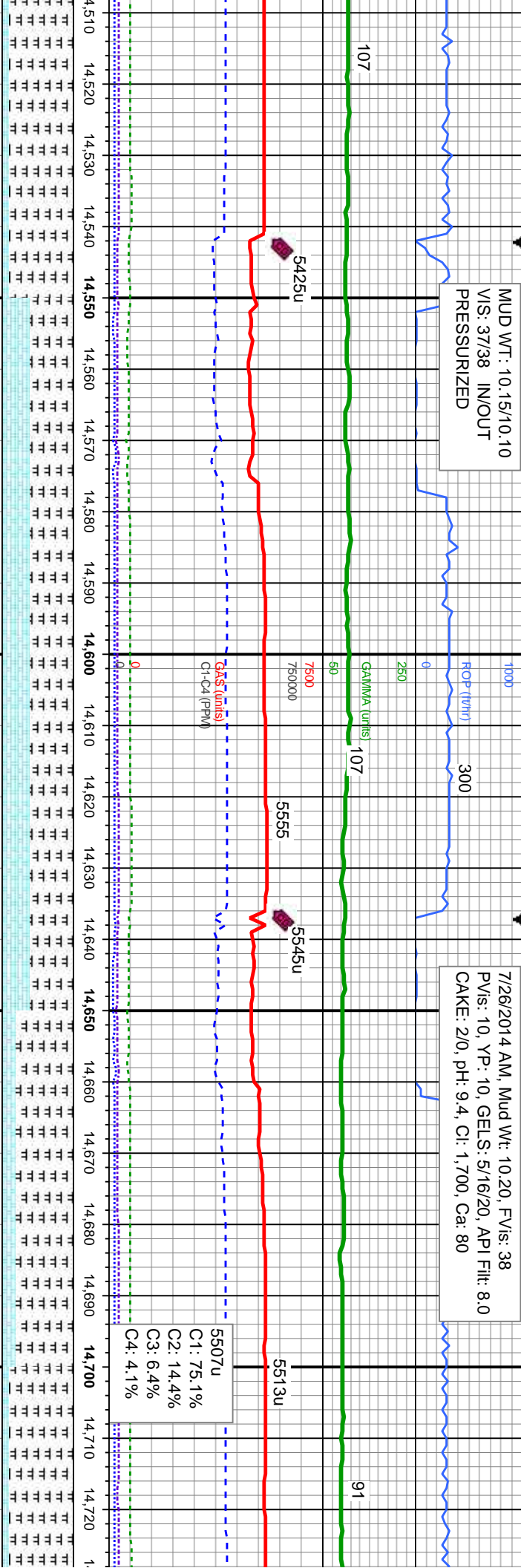
30% CHK: lt - medgy brn, mot, lam, v sft - frn, sb pily - sb blkly, rthy tex, v calc	40% CHK: lt - n frn, sb pily - sb
70% MRL: lt - med gy, rr blk, sft - frn, sme	60% MRL: lt - n
mod hd, sb pily - pily, silty - grty tex, abnt	mod hd, sb pily
7 _{lent} bent, tr fos frag	bent, tr fos frag

[illegible]



MUD WT: 10.15/10.10
VIS: 37/38 IN/OUT
PRESSURIZED

7/26/2014 AM, Mud Wt: 10.20, FV/Is: 38
PV/Is: 10, YP: .10, GELS: 5/16/20, API Filtr: 8.0
CAKE: 2/0, pH: 9.4, CI: 1,700, Ca: 80



MD: 14,574'
TVD: 7,073.81'
Inclination: 89.69 °
Azimuth: 274.5 °
VS: 418.55'

MD: 14,669'
TVD: 7,074.63'
Inclination: 89.32 °
Azimuth: 271.51 °
VS: 7,967.24'

HK: It - medgy brn, mot, lam, v sft -
ply - sb blk, rthy tex, v calc
MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, tr bent,
frag

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

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

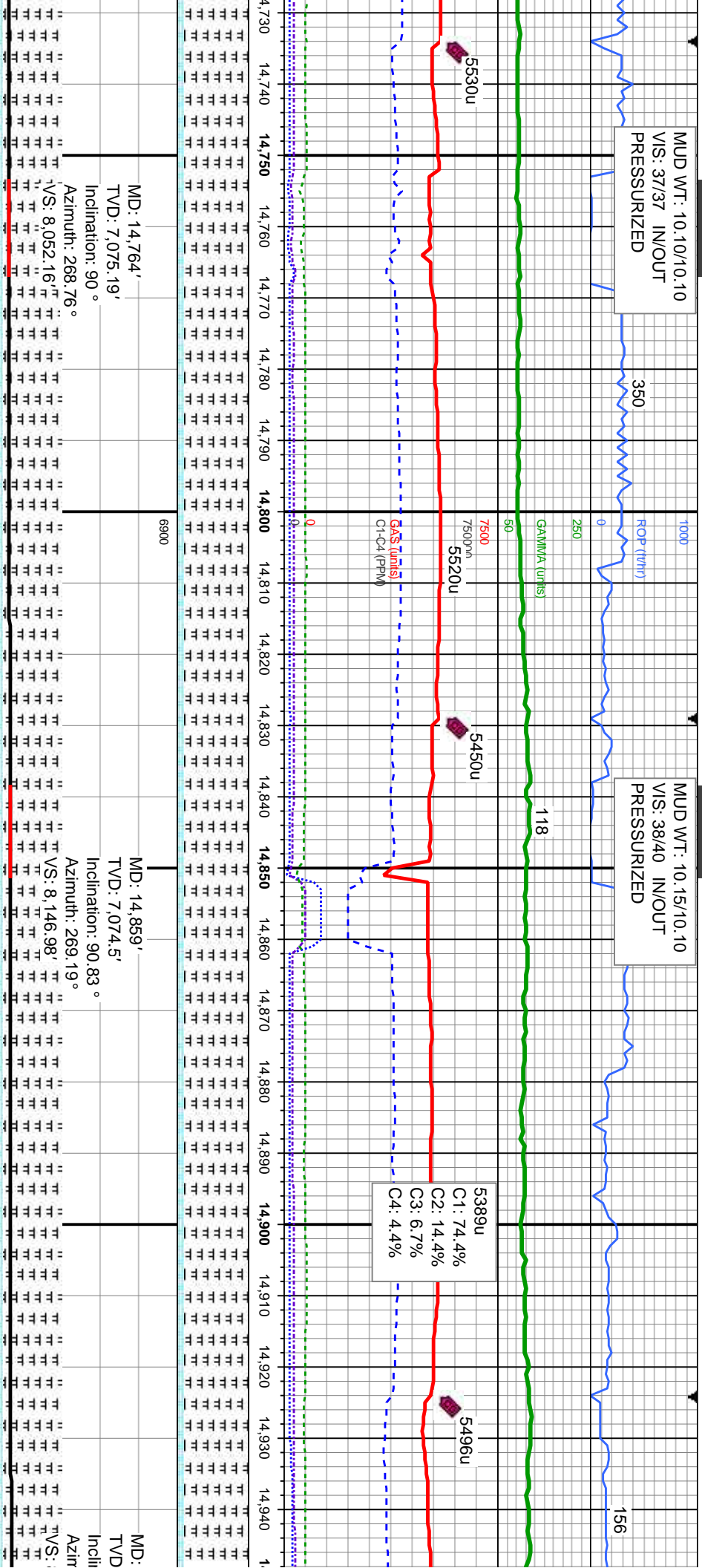
20% CHK: It - medgy brn, mot, lam, v sft -
frm, sb ply - sb blk, rthy tex, v calc
80% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb ply - ply, silty - grty tex, tr bent,
no fos frag

10% CHK: It - medgy brn,
frm, sb ply - sb blk, rthy
90% MRL: It - med gy, rr blk
mod hd, sb ply - ply, silty
no fos frag



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

MUD WT: 10.15/10.10
VIS: 38/40 IN/OUT
PRESSURIZED

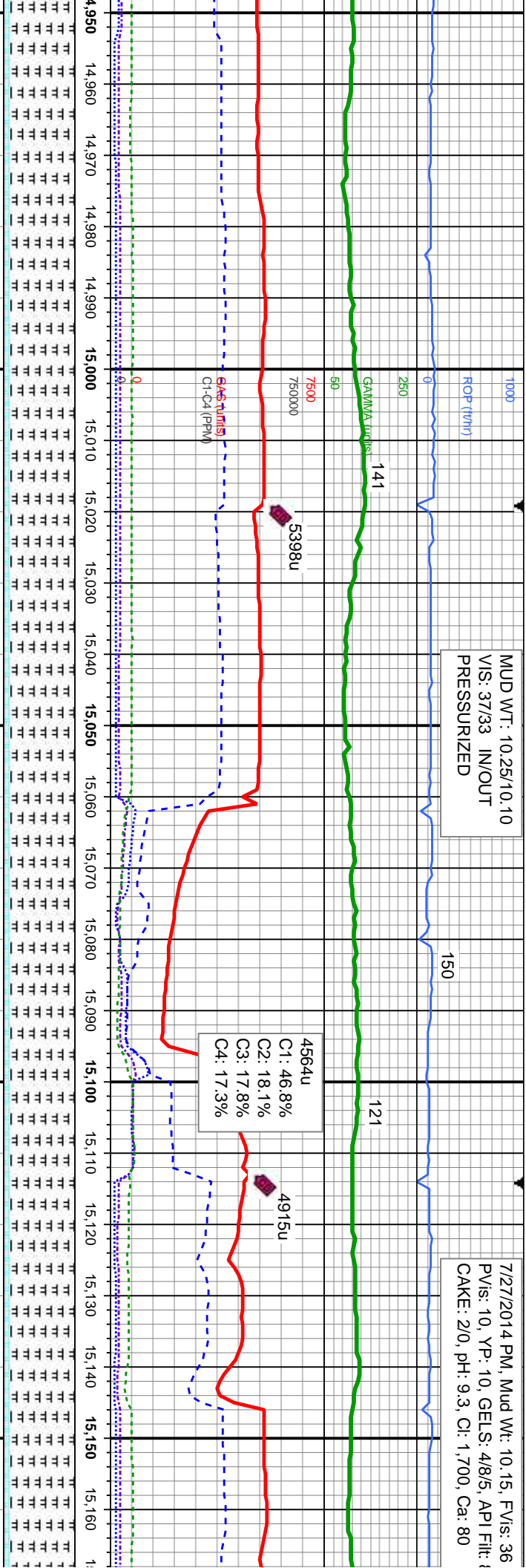


mod. lam, v sft - tex, v calc	10% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	10% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	10% CHK: It - medgy brn, mot, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc
blk, sft - frm, sme	90% MRL: It - med gy, rr blk, sft - frm, sme	90% MRL: It - med gy, rr blk, sft - frm, sme	90% MRL: It - med gy, rr blk, sft - frm, sme
- grty tex, tr bent,	mod hd, sb ply - ply, silty - grty tex, tr bent, no fos frag	mod hd, sb ply - ply, silty - grty tex, tr bent, no fos frag	mod hd, sb ply - ply, silty - grty tex, tr bent, fos frag



MUD WT: 10.25/10.10
VIS: 37/33 IN/OUT
PRESSURIZED

7/27/2014 PM, Mud Wt: 10.15, FVis: 36
PVis: 10, YP: 10, GELS: 4/8/5, API Filtr: 8
CAKE: 20, pH: 9.3, Cl: 1.700, Ca: 80



14,954'
: 7.073.05'
uth: 268.67°

MD: 15,048'
TVD: 7,071.22'
Inclination: 91.3°
Azimuth: 268.57°

MD: 15,143'
TVD: 7,069.01'
Inclination: 91.36°
Azimuth: 267.8°

TVD (ft)

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

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

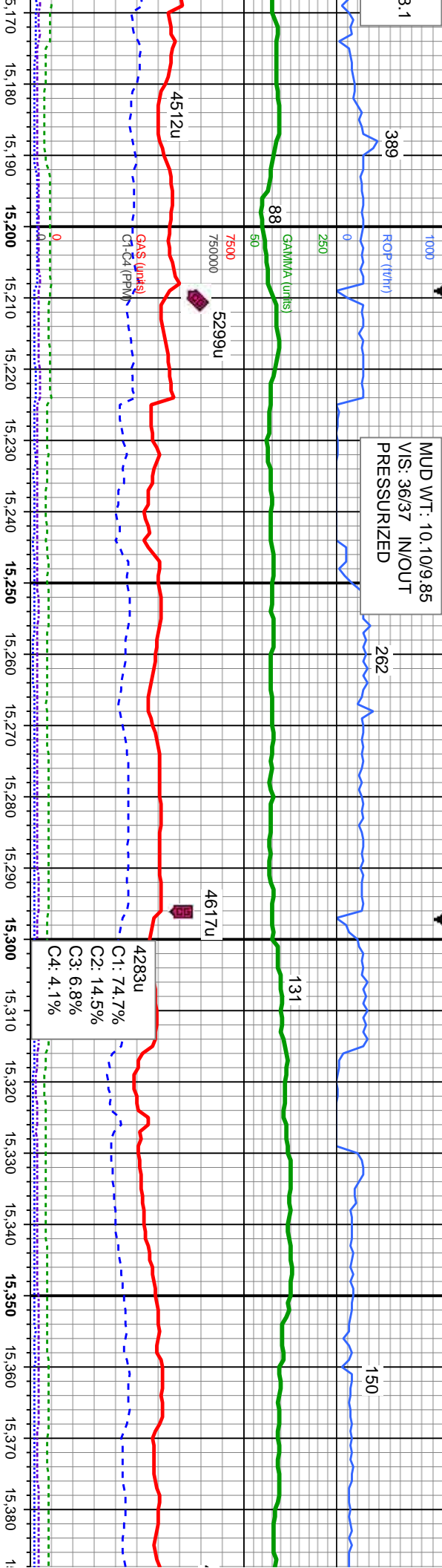
10% CHK: It - medgy brn, mot, lam, v sft -
frm, sb pily - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme
mod hd, sb pily - pily, silty - grty tex, v abnt
bent, sme fos frag

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

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



MUD WT: 10.10/9.85
VIS: 36/37 IN/OUT
PRESSURIZED



MD: 15,238'
TVD: 7,067.25'
Inclination: 90.77 °
Azimuth: 268.4 °

MD: 15,333'
TVD: 7,066.4'
Inclination: 90.25 °
Azimuth: 269.09 °

TVD (ft)

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag

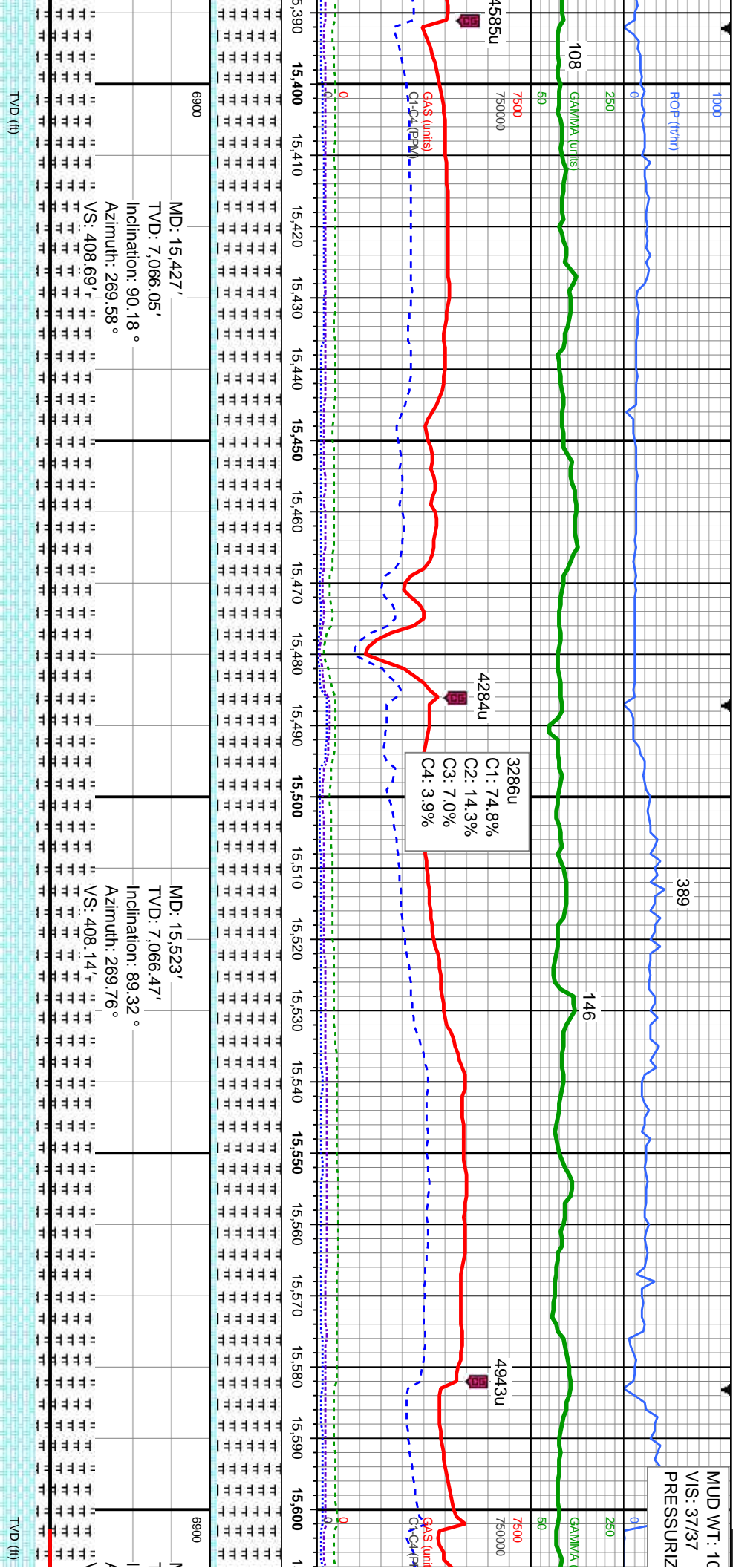
10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc
90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag



MUD WT: 10
VIS: 37/37
PRESSURIZ



20/10.10
N/OUT
ED

7/27/2014

7/28/2014-
7/29/2014

7/29/2014 AM, Mud Wt: 10.30, FV/s: 40
PV/s: 11, YP: 12, GELS: 5/11/15, API Filt: 8.9
CAKE: 2/0, pH: 9.1, Cl: 1,700, Ca: 120

1000
ROP (ft/hr)

120

109

122

250
GAMMA (units)

50

5387u

5132u

7500
7500000

4991u
C1: 74.0%
C2: 14.7%
C3: 6.9%
C4: 4.5%

645 (units)
C1-C4 (PPM)

15,610 15,620 15,630 15,640 15,650 15,660 15,670 15,680 15,690 15,700 15,710 15,720 15,730 15,740 15,750 15,760 15,770 15,780 15,790 15,800 15,810 15,820 1

TOOH FOR MOTOR AT 15,695' MD

MD: 15,713'
TVD: 7,067.28'
Inclination: 89.94°
Azimuth: 270.93°

MD: 15,808'
TVD: 7,067.61'
Inclination: 89.66°
Azimuth: 270.62°

VS: 408.14°
Incination: 89.78°
Azimuth: 270.25°

VS: 9,094.39°
Incination: 89.66°
Azimuth: 270.62°

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag

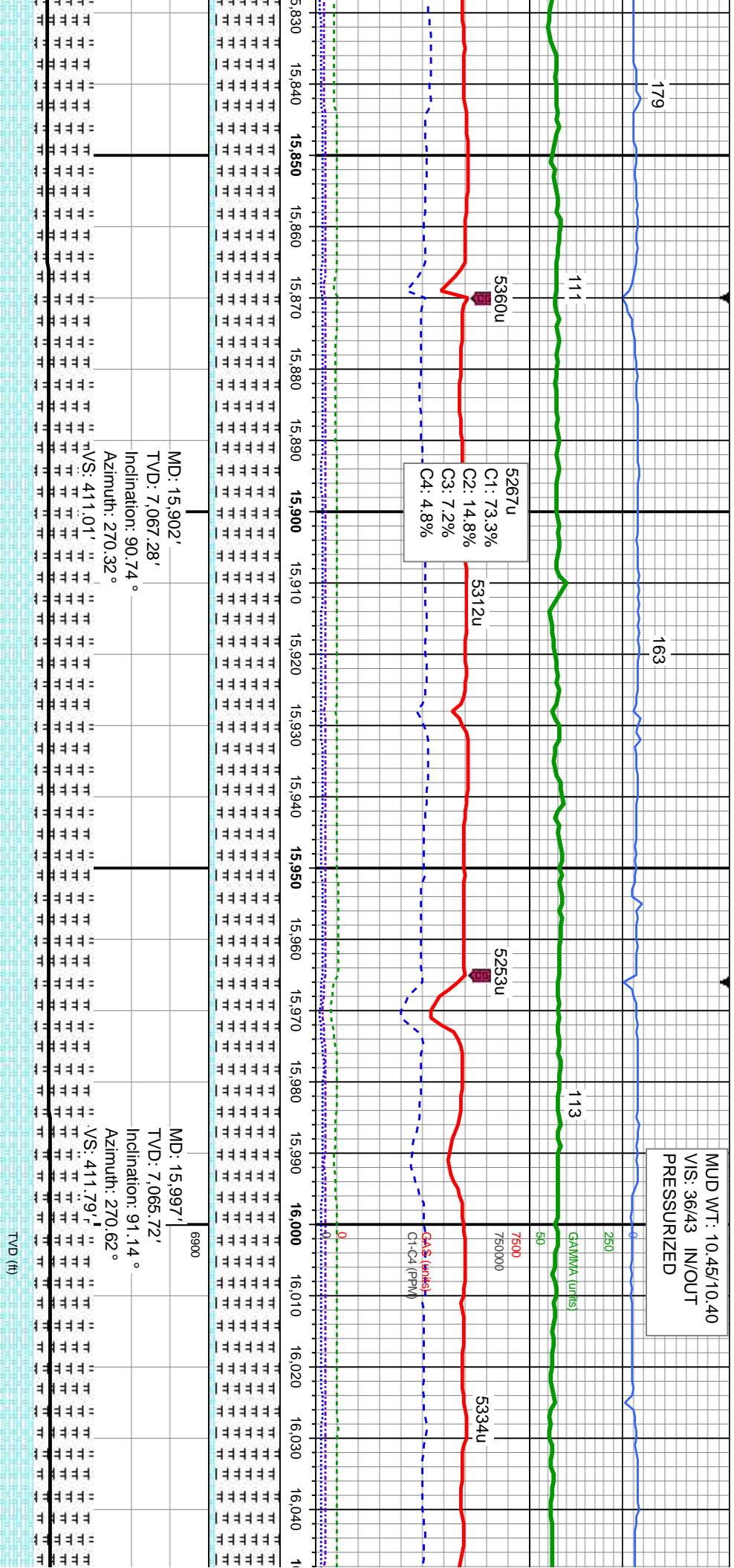
TVD (ft)

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grty tex, v abnt bent, sme fos frag



MUD WT: 10.45/10.40
VIS: 36/43 IN/OUT
PRESSURIZED

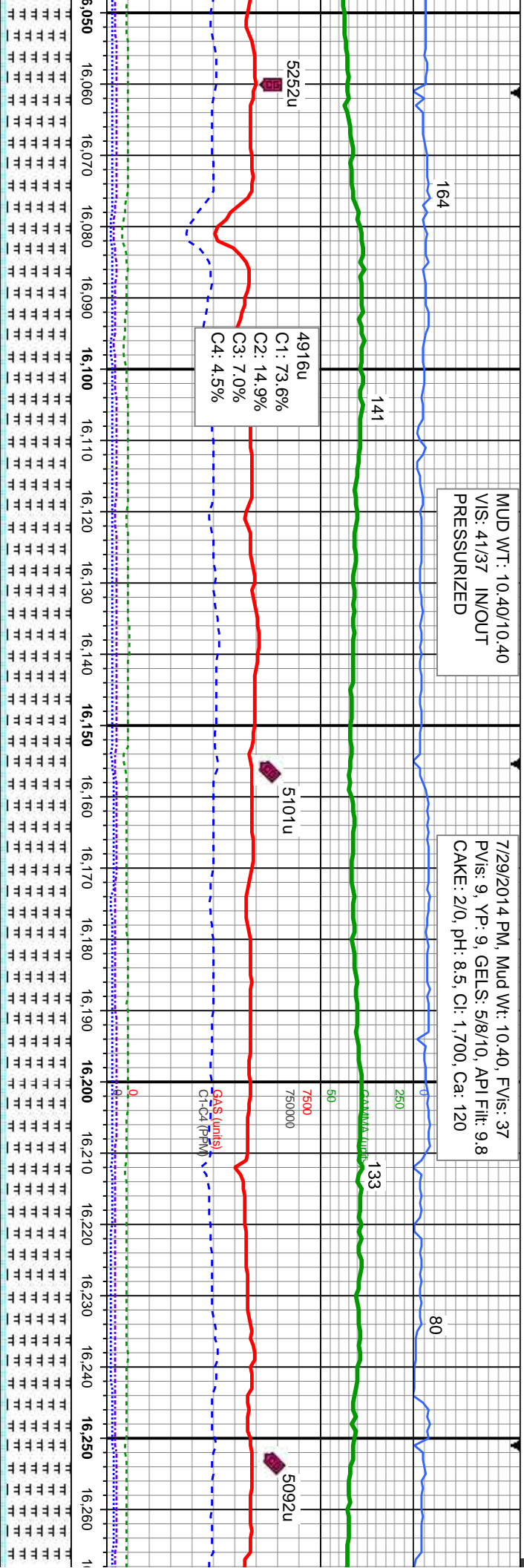


mod, lam, v sft - tex, v calc	10% CHK: It - medgy brn, mod, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	10% CHK: It - medgy brn, mod, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc	10% CHK: It - medgy brn, mod, lam, v sft - frm, sb ply - sb blk, rthy tex, v calc
blk, sft - frm, sme	90% MRL: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



MUD WT: 10.40/10.40
VIS: 41/37 IN/OUT
PRESSURIZED

7/29/2014 PM, Mud Wt: 10.40, FV/s: 37
PV/s: 9, YP: 9, GELS: 5/8/10, API Filt: 9.8
CAKE: 2/0, pH: 8.5, Cl: 1,700, Ca: 120



MD: 16,092'
TVD: 7,064.19'
Inclination: 90.71°
Azimuth: 270.25°

MD: 16,187'
TVD: 7,062.35'
Inclination: 91.51°
Azimuth: 270.99°

VS: 412.51' VS: 413.54'

TVD (ft)

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grfy tex, v abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grfy tex, v abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grfy tex, v abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grfy tex, abnt bent, sme fos frag

10% CHK: It - medgy brn, mot, lam, v sft - frm, sb pily - sb blk, rthy tex, v calc 90% MRL: It - med gy, rr blk, sft - frm, sme mod hcd, sb pily - pily, silty - grfy tex, abnt bent, sme fos frag



