



Scale: 5" / 100'
Measured Depth Log

Well Name	Sack 28C-30HZ		
Location	SESW SEC 31 T1N R67W		
State	COLORADO	County	WELD
Country	USA	Rig Number	PRECESION 595
API Number	05123392480000	AFE #	2092856
Region	DJ BASIN	Field	WATTENBERG
Spud Date	1/4/2015	Drilling Completed	1/18/2015
Surface Coordinates	825' FSL 1900' FWL Lat/Long: 40.002606, -104.935759		
Ground Elevation	5,055'	K.B. Elevation	5,080'
Logged Interval	7,000' To 17,428'	Total Depth	17,421'
Formation	CODELL		
Type of Drilling Fluid	LSND		

Operator

Company Anadarko Petroleum Corporation
Address Anadarko Petroleum Corporation
1099 18th Street
Denver CO, 80202

Geologist

Name Gabriel Rubio, Michael Rooks
Company COLUMBINE LOGGING INC.
Address 602 S. Lipan St.
Denver, CO 80223

Zone Color Coding

Oil
Note
Error

Condensate
Core
Water


























































Gas
Pressure
Seal

Rock Types

UNKNOWN	COAL	TR TR TR TR MARLSTONE	SHALY SANDSTONE
ANHYDRITE	CONGLOMERATE	METAMORPHIC	SHALY SILTSTONE
BENTONITE	DOLOMITE	NO SAMPLE	SILTY SHALE
BRECCIA	DOLOMITIC LIMESTONE	SALT	SILTSTONE
CHALK	GRANITE	SANDSTONE	TILL
CEMENT	GYPSSUM	SALT-PEPPER SAND	TUFF
CHERT	IGNEOUS	SHALE	WELDED TUFF
CLAY CHOKO SAND	SIDERITE or LIMONITE	SHALE COLORED	
CLAYSTONE	LIMESTONE	SHALE GRAY	

Accessories

Fossils

Fossils		Stringer	
 GASTROPOD	 ARGILLITE GRAIN	 HEAVY MINERAL	
 INOCERAMUS	 B BENTONITE	 K KAOLIN	
 ALGAE	 O OOLITE	 BITUMENOUS SUBSTANCE	 ANHYDRITE STRINGER
 AMPHIPORA	 O OSTRACOD	 B BRECCIA FRAGMENTS	 B BENTONITE STRINGER
 BELEMNITE	 P PELECYPOD	 C CALCAREOUS	 COAL STRINGER
 BIOCLASTIC	 P PELLET	 C CARBONACEOUS FLAKES	 DOLOMITE STRINGER
 BRACHIOPOD	 P PISOLUTE	 C CHERT	 G GYPSUM STRINGER
 BRYOZOA	 P PLANT REMAINS	 C CHERT	 L LIMESTONE STRINGER
 CEPHALOPOD	 S PLANT SPORES	 C COAL - THIN BEDS	 M MARLSTONE (CALC) STR
 CORAL	 S SCAPHOPOD	 D DOLOMITIC	 M MARLSTONE (DOL) STR
 CRINOID	 S STROMATOPOROID	 F FELDSPAR	 SANDSTONE STRINGER
 ECHINOID	 F FERRUGINOUS PELLET	 S SIDERITE	 SHALE STRINGER
 FISH	 F FERRUGINOUS	 S SILICEOUS	 SILTSTONE STRINGER
 FORAMINIFERA	 A ANHYDRITIC	 G GLAUCONITE	
 F FOSSIL	 A ARGILLACEOUS	 G GYPSIFEROUS	 T TUFFACEOUS



Oil Show

P PINPOINT

Engineering

- DEAD
- EVEN
- QUESTIONABLE
- BIT
- SPOTTED STAINING
- CONNECTION (UP)

Porosity

Porosity	
CONNECTION (DOWN)	
CONNECTION GAS	
CONNECTION GAS (LEFT)	
TRIP GAS	
F FRACTURE	
FENESTRAL	
TRIP GAS (LEFT)	
INTERCRYSTALLINE	
INTERMOLITIC	
DOWN TIME GAS (LEFT)	
DOWN TIME GAS (LEFT)	
CORE - LOST	
CORE - RECOVERED	

Other Symbols

 DST INTERVAL  WIRELINE TESTED - LEFT **E** EARTHY

 FAULT  WIRELINE TESTED - RT **FX** FINELYXLN

 FORMATION TOP  DRILL STEM TEST **GS** GRAINSTONE

 GAS SHOW  **MINDEPTH** MN DEPTH **L** LITHOGRAPHIC


 OIL SHOW **MX** MICROXLN


 **MINDEPTH** MN DEPTH UP **MS** MUDSTONE

Rounding

 **MINDEPTH** MN DEPTH (DOWN) **A** ANGULAR **PS** PACKSTONE

 NORMAL FAULT **R** ROUNDED **WS** WACKSTONE

 OVERTURNED STRATA **B** SUBANG

 REVERSE FAULT **rn** SUBRND

Sorting


 CASING **M** MODERATE

Textures

 SIDEWALL CORE (LEFT) **P** POOR

 SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE **W** WELL

 SLIDE **C** CHALKY

 SURVEY **CX** CRYPTOXLN

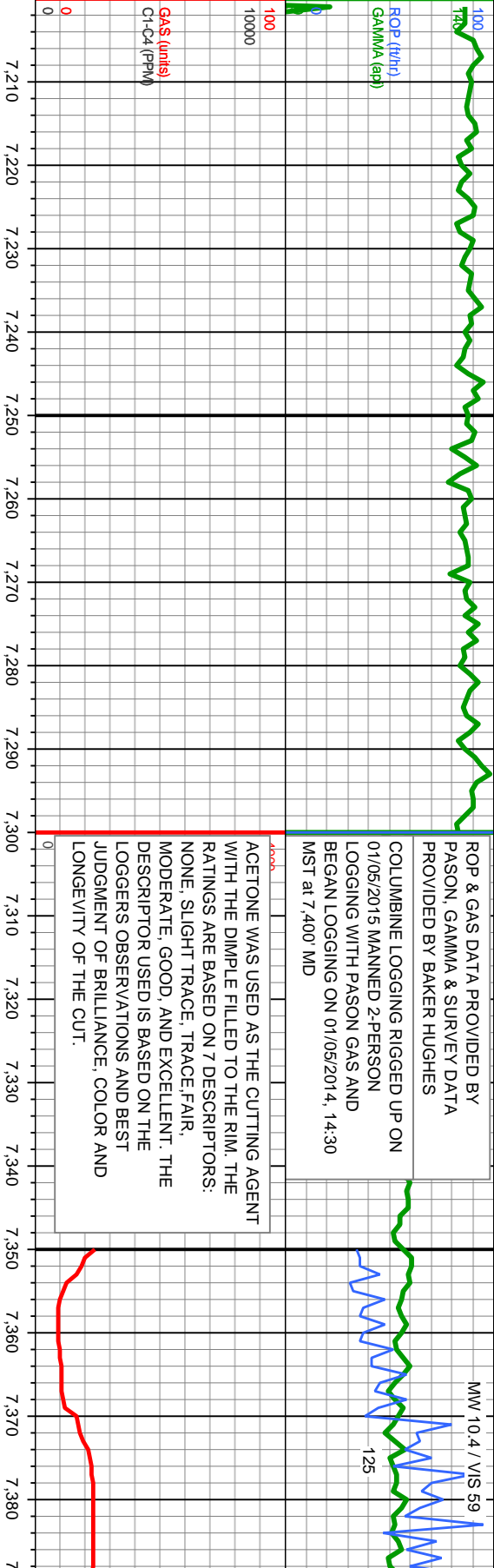
ROP
ROP (ft/hr)
GAMMA



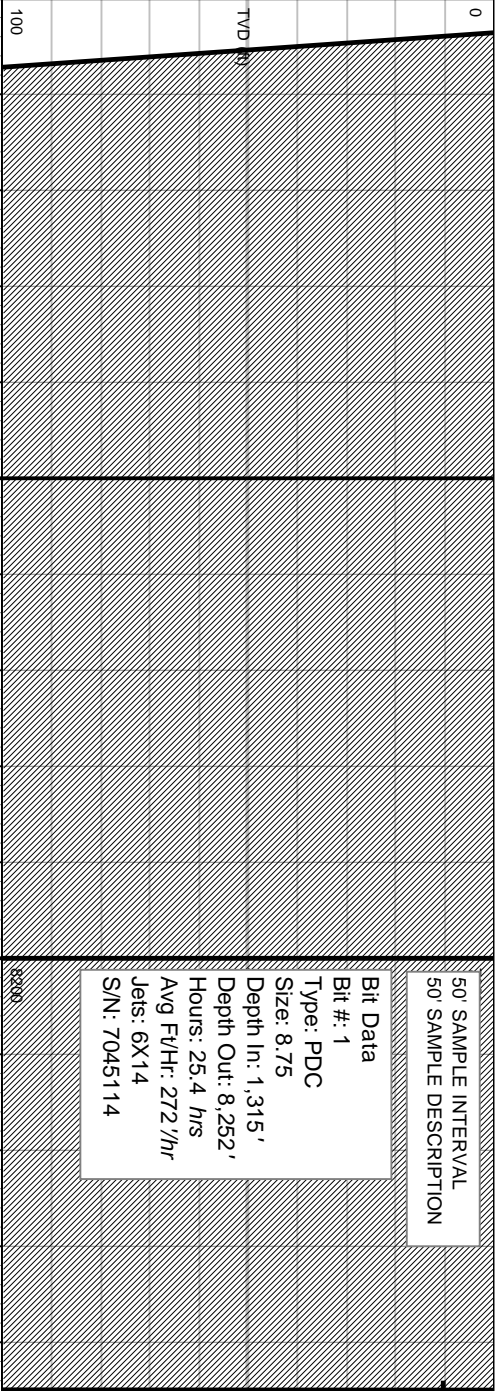
ROP & GAS DATA PROVIDED BY PASON, GAMMA & SURVEY DATA PROVIDED BY BAKER HUGHES
COLUMBINE LOGGING RIGGED UP ON 01/05/2015 MANNED 2-PERSON LOGGING WITH PASON GAS AND BEGAN LOGGING ON 01/05/2014, 14:30 MST at 7,400' MD

ACETONE WAS USED AS THE CUTTING AGENT WITH THE DIMPLE FILLED TO THE RIM. THE RATINGS ARE BASED ON 7 DESCRIPTORS: NONE, SLIGHT TRACE, TRACE, FAIR, MODERATE, GOOD, AND EXCELLENT. THE DESCRIPTOR USED IS BASED ON THE LOGGERS OBSERVATIONS AND BEST JUDGMENT OF BRILLIANCE, COLOR AND LONGEVITY OF THE CUT.

Depth Labels



Well Bore
TVD



Bit Data
Bit #: 1
Type: PDC
Size: 8.75
Depth In: 1,315'
Depth Out: 8,252'
Hours: 25.4 hrs
Avg Ft/Hr: 272/hr
Jets: 6X14
S/N: 7045114

50' SAMPLE INTERVAL
50' SAMPLE DESCRIPTION

100% SLTY SH: lt-medgy, brn, sb ply
occ ply, sft-firm, rthy-grtly, arg-sly

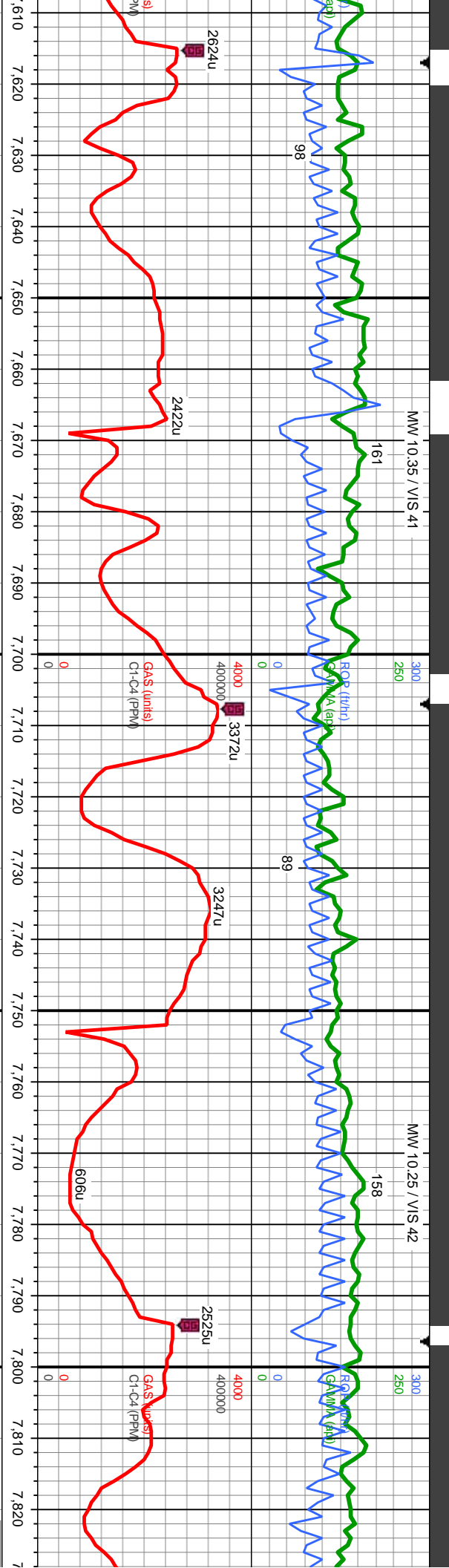
MD: 7,388
TVD: 7.3
Inclinatic
Azimuth
VS: 1.12

Oil Show

E
G
M
F
T
S

Images





NIORARA B TOP
7700' MD / 7631' TVD

MD: 7,703.
TVD: 7,633.09.
Inclination: 35.57 -
Azimuth: 359.75 -
VS: 118.45.

MD: 7,748.
TVD: 7,668.51.
Inclination: 40.55 -
Azimuth: 0.37 -
VS: 146.19.

MD: 7,793.
TVD: 7,701.27.
Inclination: 45.96 -
Azimuth: 2.68.
VS: 176.99.

NIORARA B
7830' MD

MD: 7,613.
TVD: 7,556.3.
Inclination: 27.42 -
Azimuth: 356.94 -
VS: 71.68.

MD: 7,658.
TVD: 7,595.52.
Inclination: 31.22 -
Azimuth: 358.82 -
VS: 93.69.

CHK: wh-lly, medgy, crm-brn, mot, sly, st-frn, fr-brit, sly ip, rthy lstr, wxy, 10% MRLST: med-dk gy, sb ply-biky, mod hd, brit, sly tex, mot, rthy lstr, v calc

85% CHK: lly, medgy, crm-brn, mot, ply-biky, st-frn, fr-brit, sly ip, rthy lstr, wxy, calc: 15% MRLST: med-dk gy, sb ply-biky, frn-mod hd, brit, sly tex, mot, rthy lstr, v calc

65% CHK: lly, medgy, crm-brn, mot, ply-biky, st-frn, fr-brit, sly ip, rthy lstr, wxy, calc: 35% MRLST: med-dk gy, sb ply-biky, frn-mod hd, brit, sly tex, mot, rthy lstr, v calc

80% CHK: lly, medgy, crm-brn, mot, ply-biky, st-frn, fr-brit, sly ip, rthy lstr, wxy, calc: 20% MRLST: med-dk gy, sb ply-biky, frn-mod hd, brit, sly tex, mot, rthy lstr, v calc

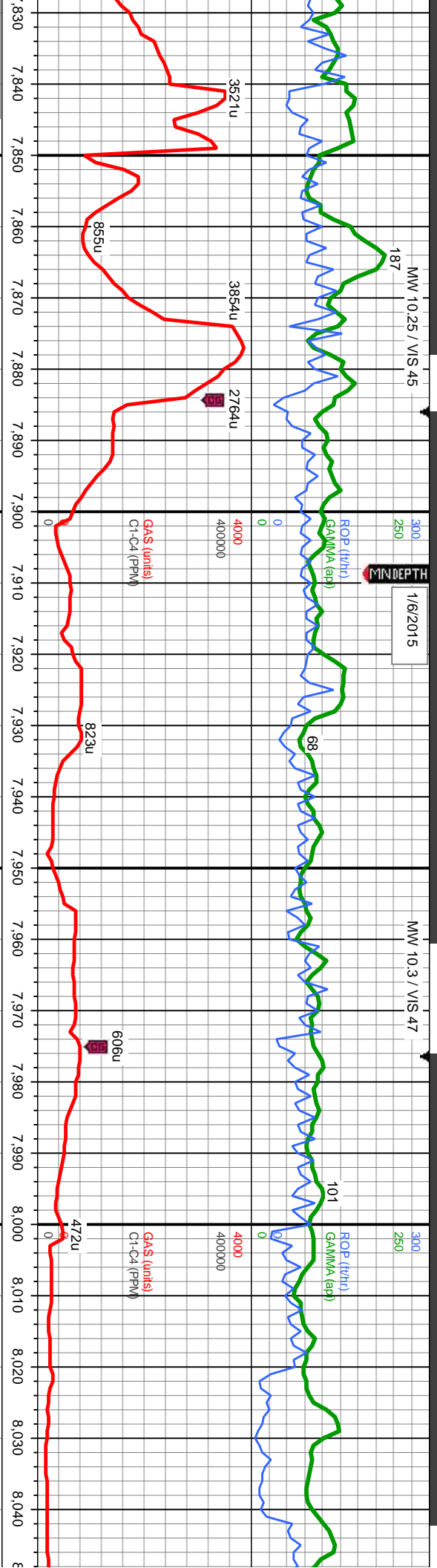
70% CHK: wh-lly, medgy, crm-brn, mot, ply-biky, st-frn, fr-brit, sly ip, rthy lstr, wxy, calc: 30% MRLST: med-dk gy, sb ply-biky, frn-mod hd, brit, sly tex, mot, rthy lstr, v calc



1/6/2015

MW 10.25 / VIS 45

MW 10.3 / VIS 47



MD: 7.838 TVD: 7.731.29 Inclination: 50.32 Azimuth: 2.19 VS: 210.47	MD: 7.883 TVD: 7.758.52 Inclination: 55.2 Azimuth: 2.18 VS: 246.26	MD: 7.928 TVD: 7.782.59 Inclination: 60.08 Azimuth: 1.69 VS: 284.23	MD: 7.973 TVD: 7.803.59 Inclination: 64.27 Azimuth: 1.32 VS: 324.58	MD: 8.018 TVD: 7.821.93 Inclination: 1.14 Azimuth: 67.63 VS: 365.66
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cm-bn, mot, ip, rthy lstr, wxy, 30% sb ply-bkly, rthy lstr, v calc	60% CHK: wh-lgy, medgy, crm-brn, mot, ply-bkly, sft-frn, frt-brt, silty ip, rthy lstr, wxy, calc: 40% MRLST: med-dk gy, sb ply-bkly, frm-mod hd, brt, silty tex, mot, rthy lstr, v calc	85% CHK: wh-lgy, medgy, crm-brn, mot, ply-bkly, sft-frn, frt-brt, silty ip, rthy lstr, wxy, calc: 15% MRLST: med-dk gy, sb ply-bkly, frm-mod hd, brt, silty tex, mot, rthy lstr, v calc	75% CHK: wh-lgy, medgy, crm-brn, mot, ply-bkly, sft-frn, frt-brt, silty ip, rthy lstr, wxy, calc: 25% MRLST: med-dk gy, sb ply-bkly, frm-mod hd, brt, silty tex, mot, rthy lstr, v calc	75% CHK: wh-lgy, medgy, crm-brn, mot, ply-bkly, sft-frn, frt-brt, silty ip, rthy lstr, wxy, calc: 25% MRLST: med-dk gy, sb ply-bkly, frm-mod hd, brt, silty tex, mot, rthy lstr, v calc, scal inst
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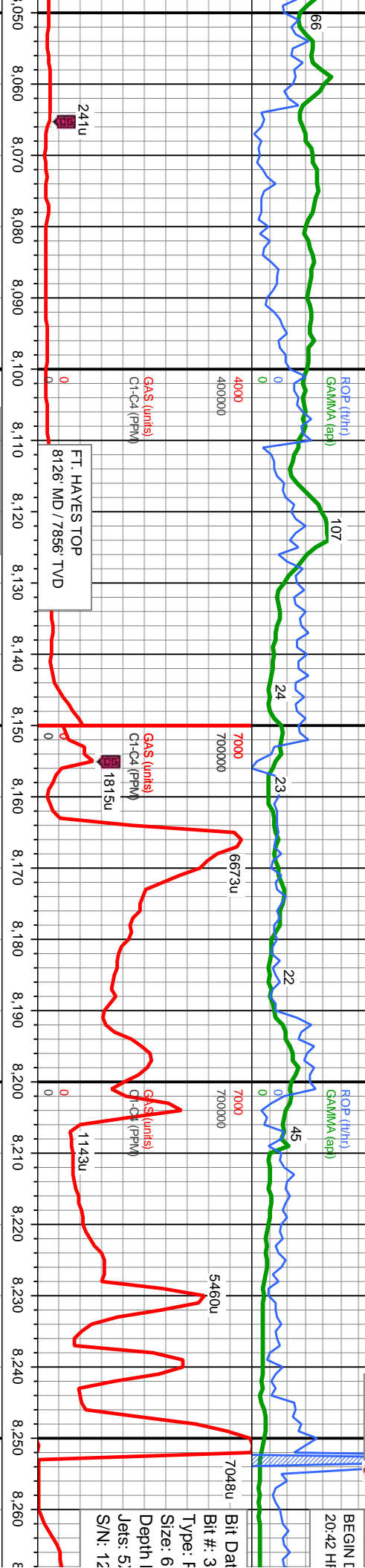
MW 10.3 / VIS 52

MW 10.35 / VIS 52

1/07/2015
1/08/2015

CURVE
@ 11:34

BEGIN L
20:42 H



MD: 8.062.
TVD: 7.837.61
Inclination: 70.61 -
Azimuth: 0.92 -
VS: 406.75.

MD: 8.107.
TVD: 7.851.04
Inclination: 74.65 -
Azimuth: 1.09 -
VS: 449.69.

MD: 8.152.
TVD: 7.861.67
Inclination: 78.03 -
Azimuth: 1.38 -
VS: 493.4

MD: 8.197
TVD: 7.869.26
Inclination: 82.55 -
Azimuth: 1.13 -
VS: 537.73.

MD: 8.252.
TVD: 7.874.04
Inclination: 87.
Azimuth: 0.59
VS: 591.92.

60% LMST: wh, beige-crm, sft-occ frm, brlt,
ply-sb blkly, sm tex, mckln, calc, 40% CHK, med
gy-lt-gy, mot tex, sb blkly-sb ply, sl frm, sl arg, v
calc, no od, no flor, tr mlst

100% LS: brn-tan occ beige-crm, sft-occ frm,
brlt, ply-sb blkly, sm-wxy tex, mckln, v calc, no
flor, tr mlst, O Show: mod-fast sting bl-wh cut,
resd ring, no od, no flor

100% LS: brn-tan occ beige-crm, sft-occ frm, brlt,
ply-sb blkly, sm-wxy tex, mckln, v calc, no flor, O
Show: mod-fast sting bl-wh cut, resd ring, no od,
no flor

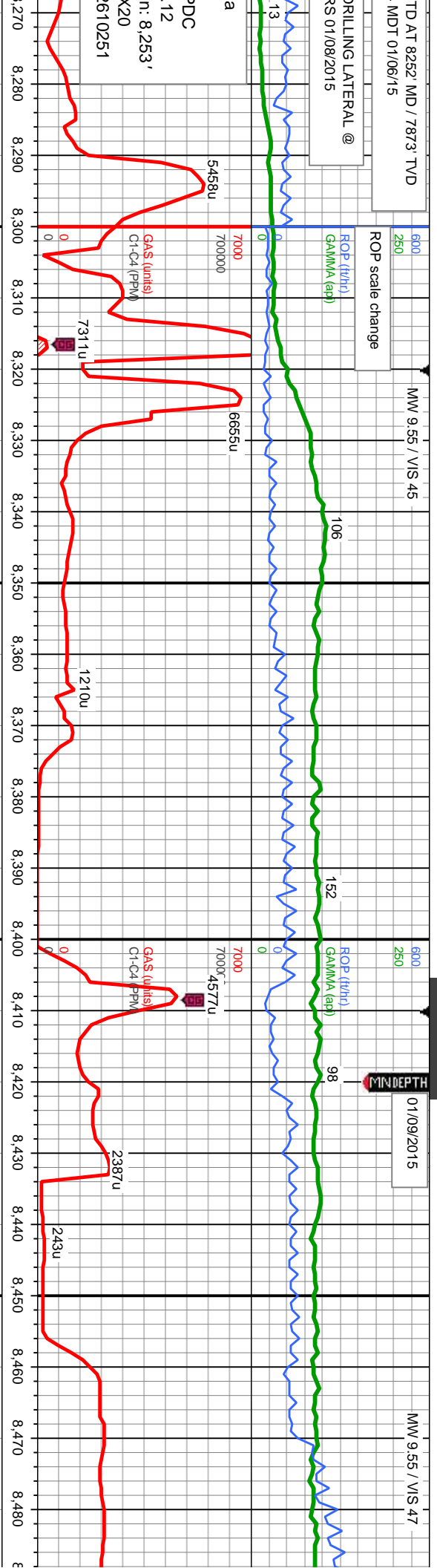
95% LS: brn-tan occ beige-crm, sft-occ frm, brlt,
ply-sb blkly, sm-wxy tex, mckln, v calc, no flor 5%
SS: med gy-dk gvy, vt-f grnd, frm-brlt, mod-w srt, sb
md-sb ang, sl calc mnx, O Show: mod-fast sting
bl-wh cut, resd ring, no od, no flor

100% LS: brn-tan c
ply-sb blkly, sm-wx
mod-fast sting bl-w



TD AT 8252' MD / 7873' TVD
MDT 01/06/15

DRILLING LATERAL @
SS 01/08/2015



100' SAMPLE INTERVAL
100' SAMPLE DESCRIPTION

MD: 8,355.
TVD: 7,878.61
Inclination: 87.44
Azimuth: 0.59
VS: 694.81

TVD - (ft)

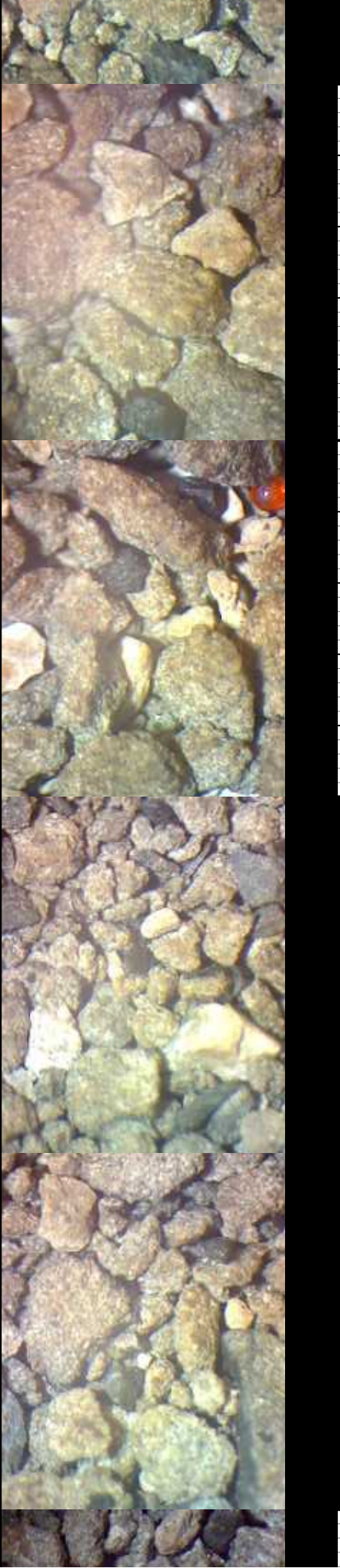
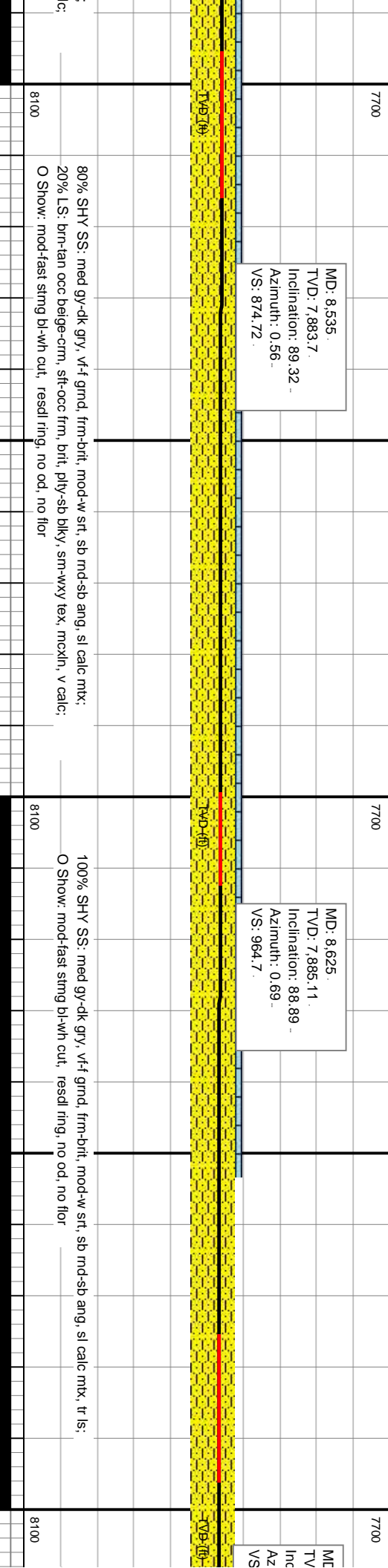
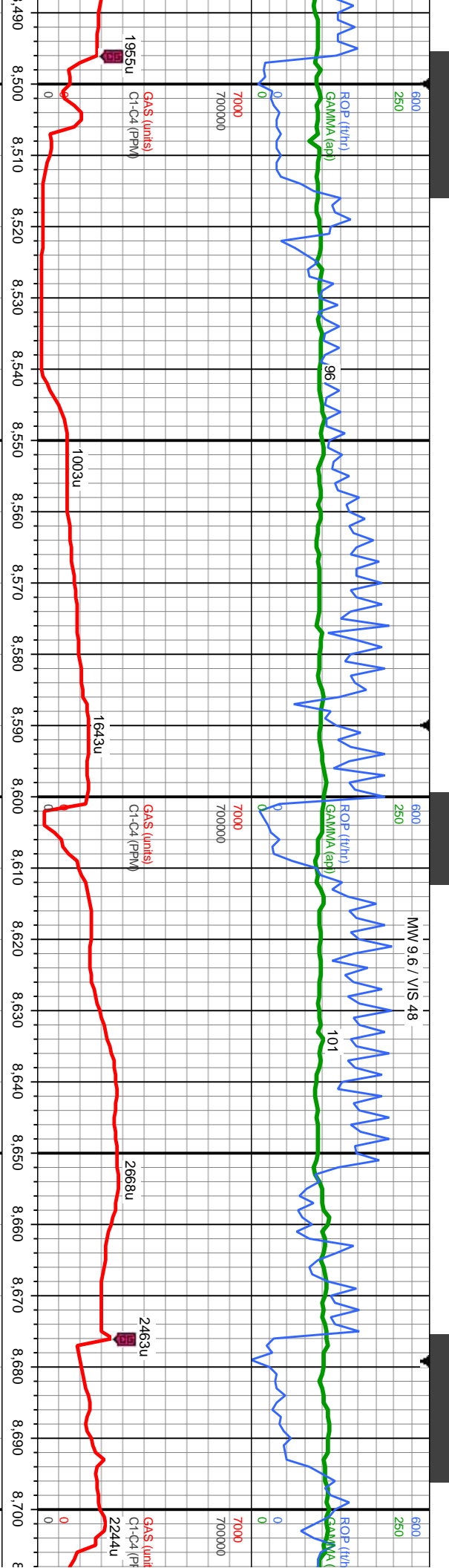
TVD - (ft)

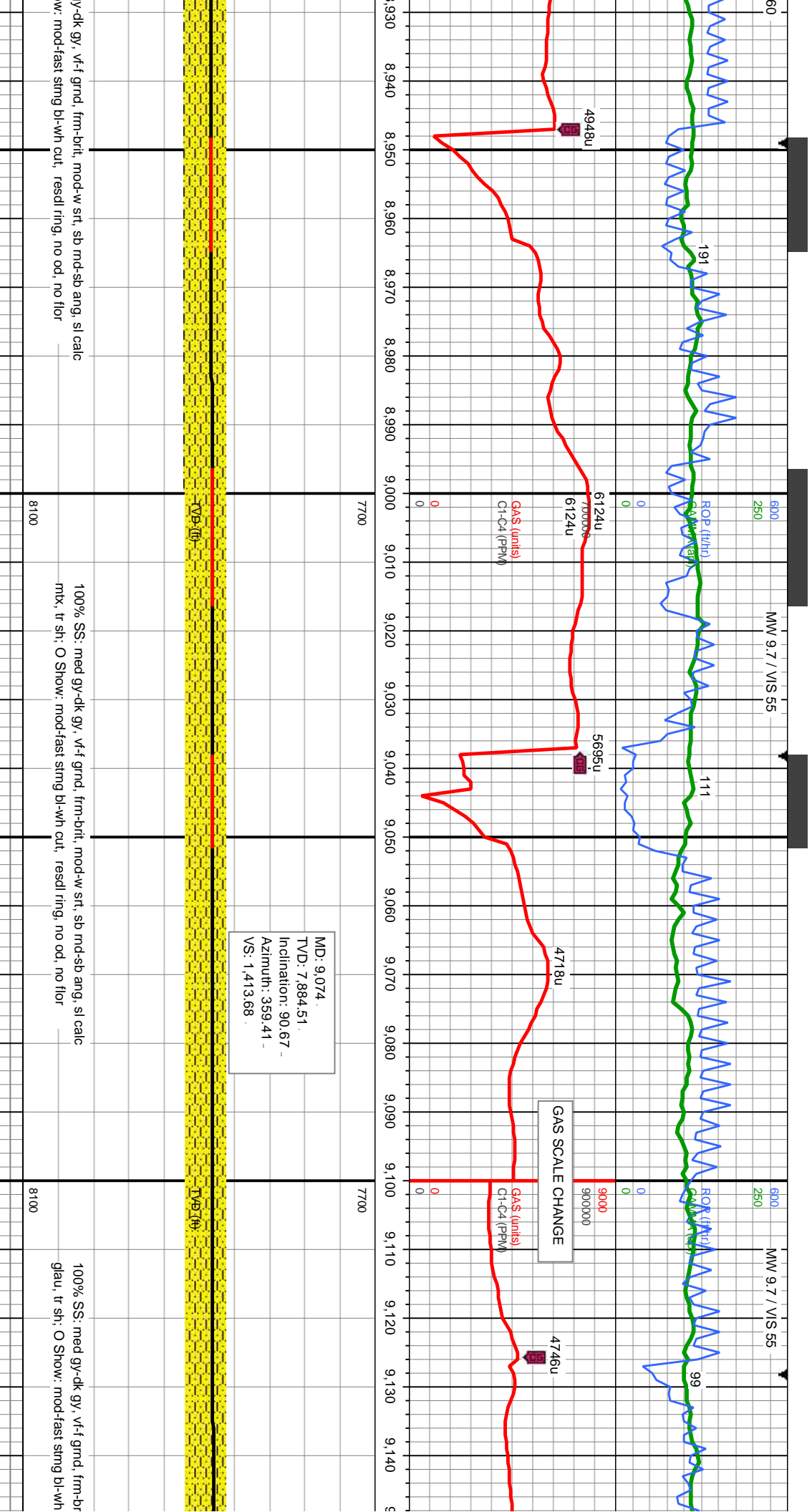
occ beige-crm, sft-occ frm, brt,
y tex, mckln, v calc; O Show:
h cut, resd ring, no od, no flr

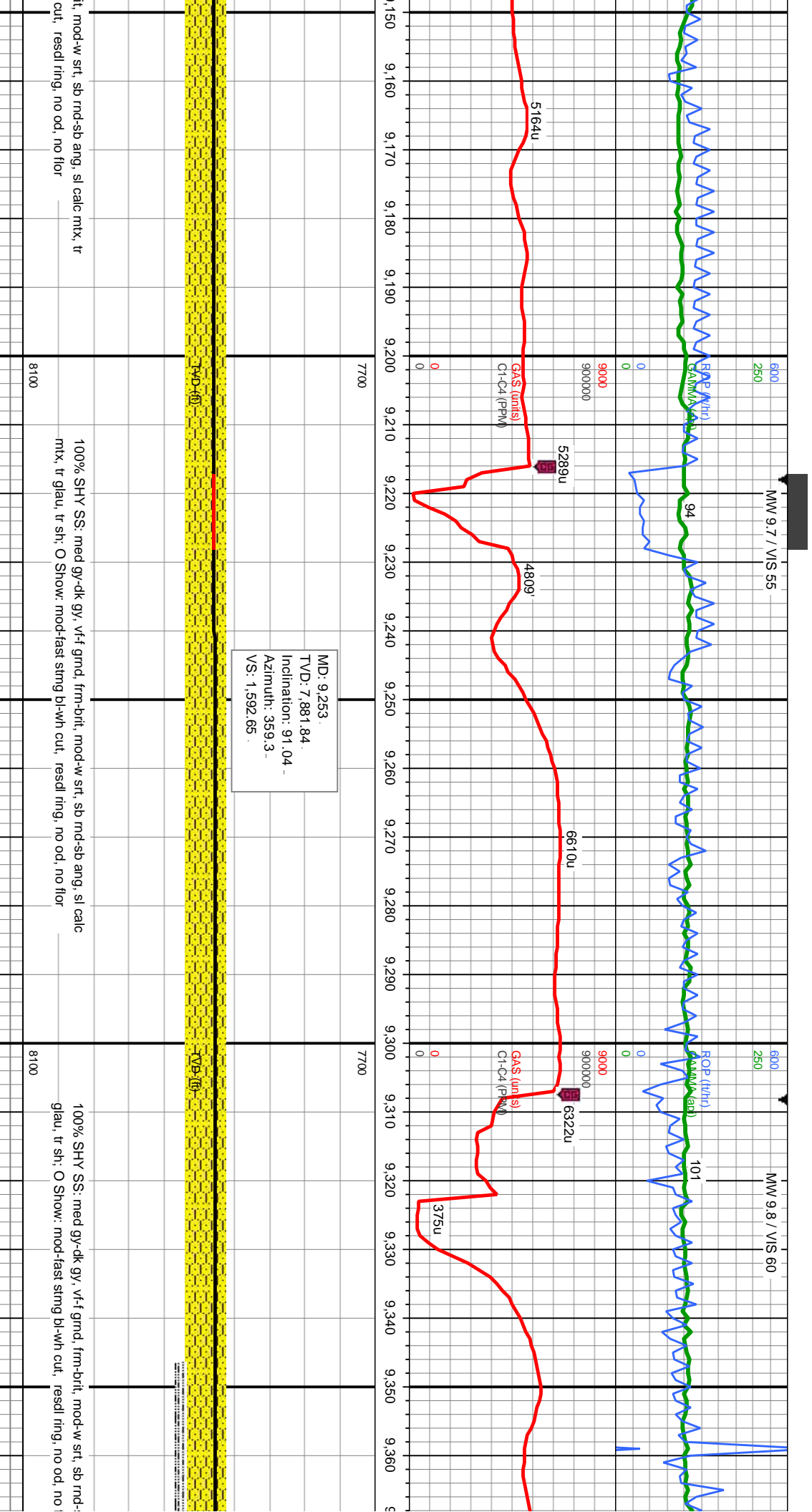
50% LS: brn-tan occ beige-crm, sft-occ frm, brt, ply-sb blk, sm-wxy tex, mckln, v calc;
50% SHY SS: med gy-dk gry, vf-f grnd, frm-brt, mod-w rt, sb rnd-sb ang, sl calc mtx; O
Show: mod-fast sting bl-wh cut, resd ring, no od, no flr

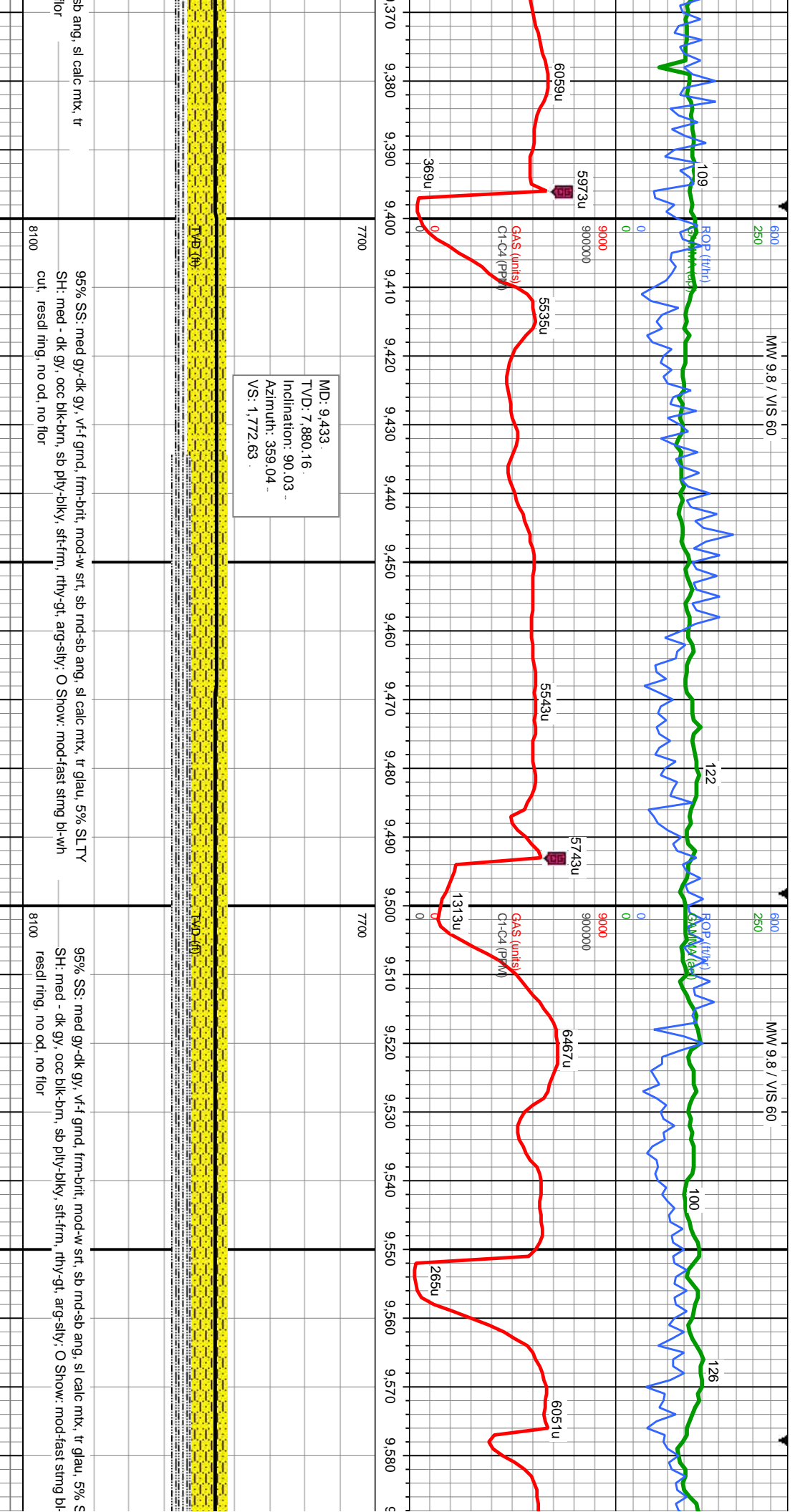
80% SHY SS: med gy-dk gry, vf-f grnd, frm-brt, mod-w rt, sb rnd-sb ang, sl calc mtx
20% LS: brn-tan occ beige-crm, sft-occ frm, brt, ply-sb blk, sm-wxy tex, mckln, v ca
O Show: mod-fast sting bl-wh cut, resd ring, no od, no flr

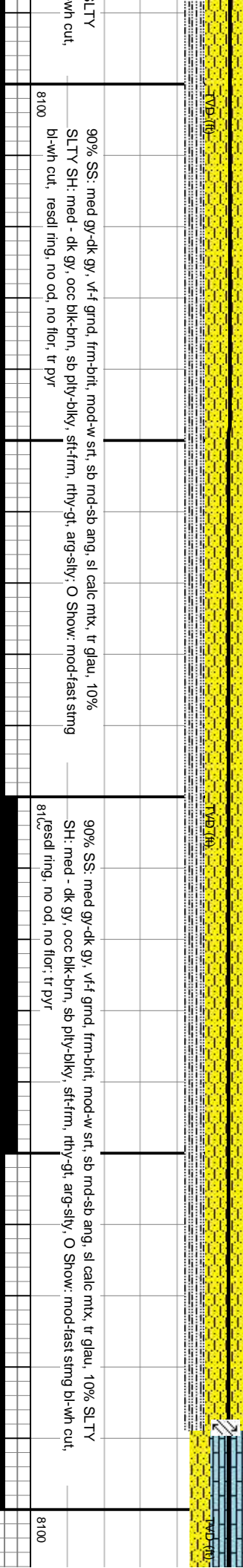
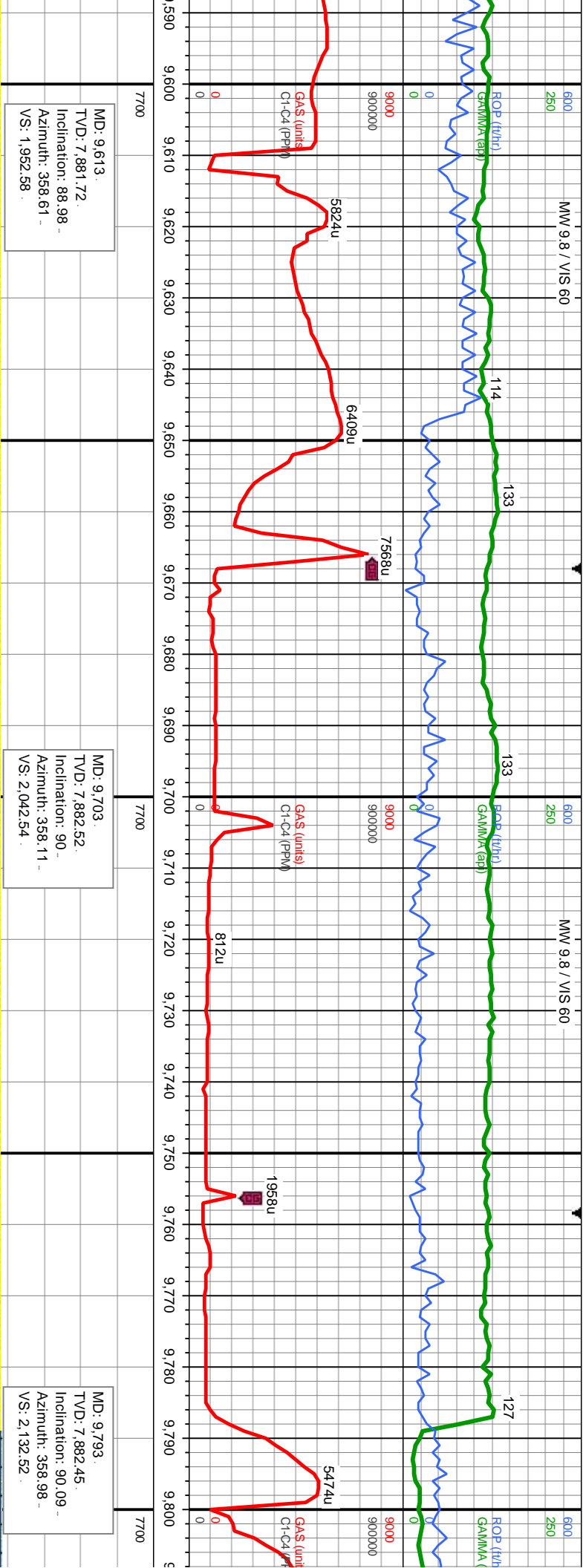


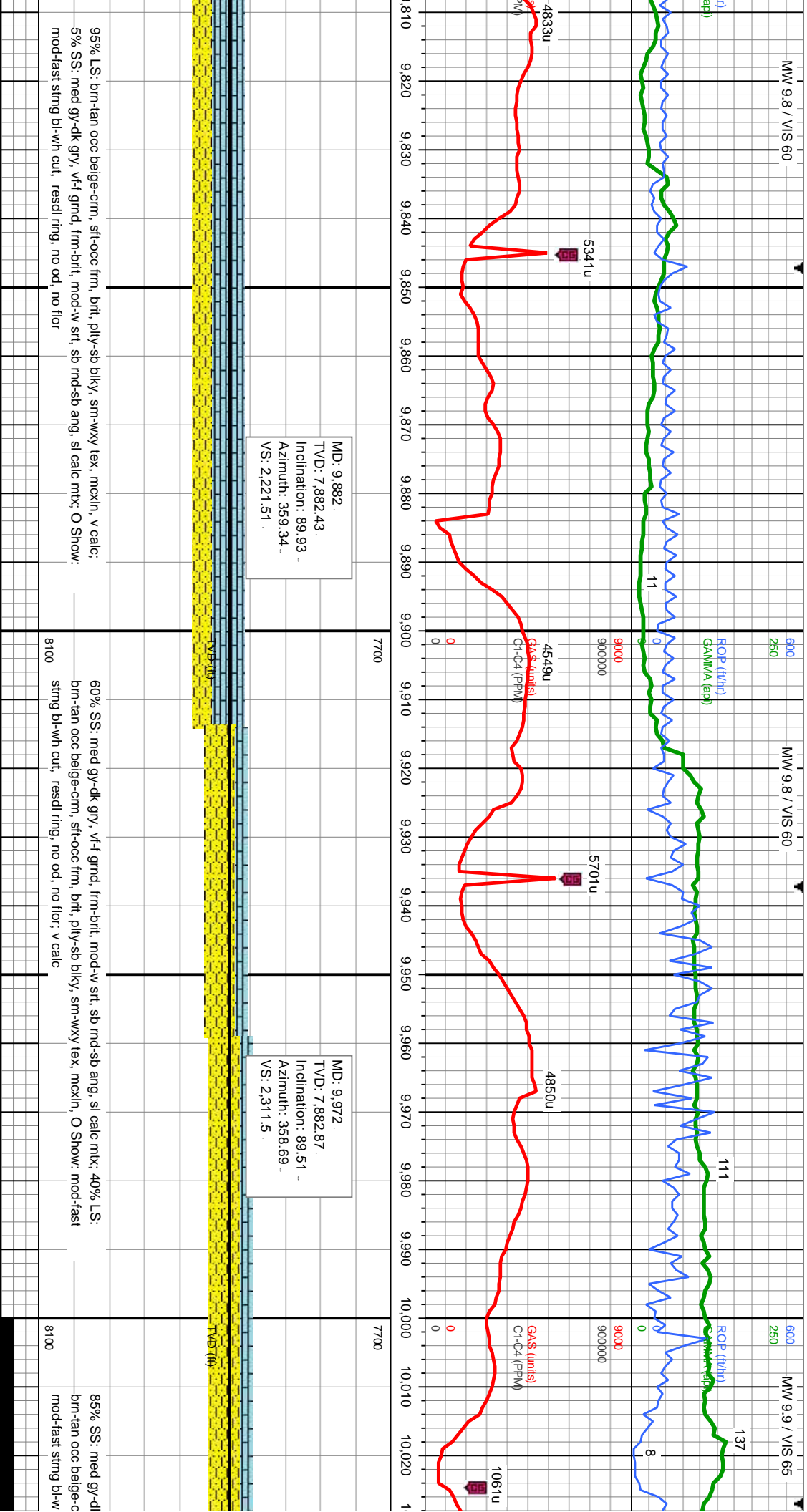


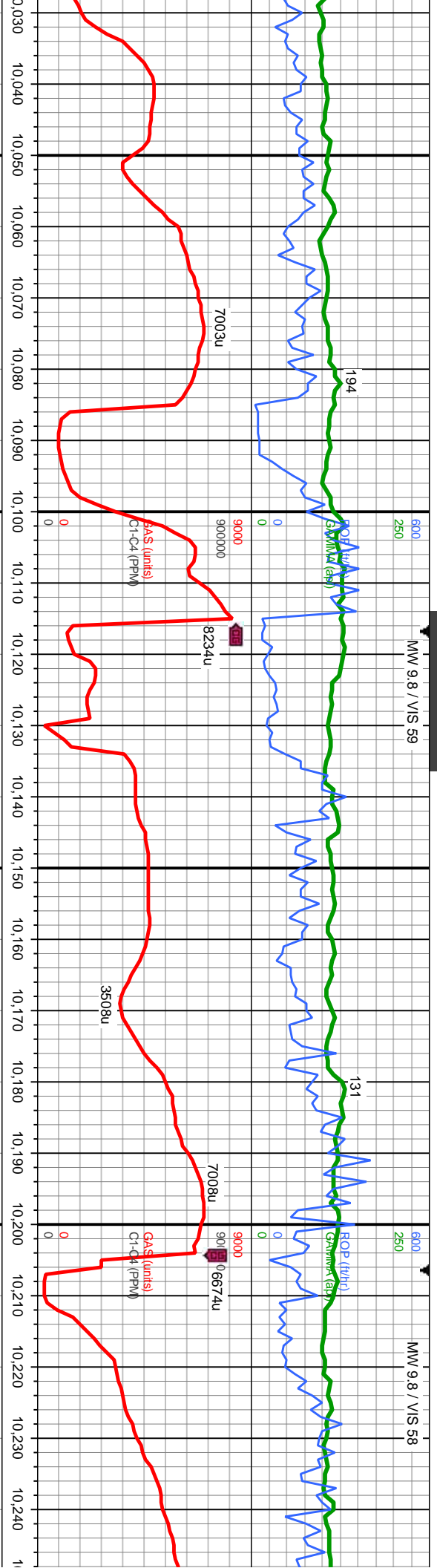




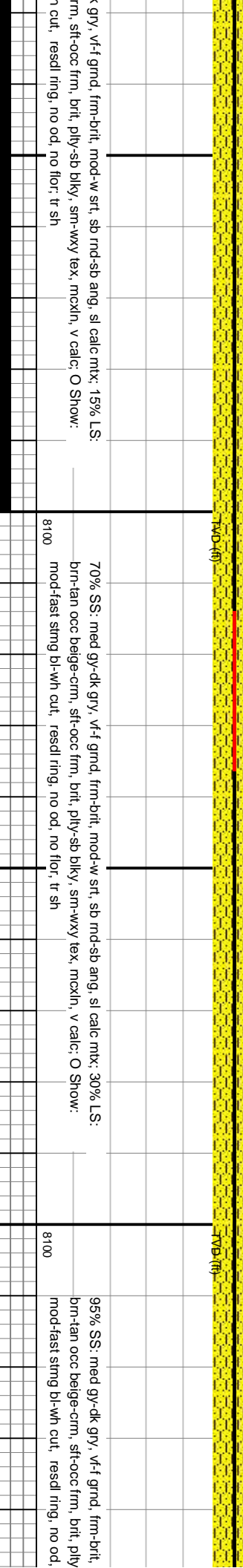








MD: 10,152.
TVD: 7,883.45.
Inclination: 90.12 -
Azimuth: 359.18 -
VS: 2,491.47.



01/10/2015

MW 9.85 / VIS 58

MINDEPTH

ROP (ft/hr)

ROP (ft/hr)

GAMMA (api)

127

133

6004u

6799u
9000
900000

GAS (units)
C1-C4 (3548u)

8283u
9000
900000

2062u
GAS (units)
C1-C4 (PPM)

10,250 10,260 10,270 10,280 10,290 10,300 10,310 10,320 10,330 10,340 10,350 10,360 10,370 10,380 10,390 10,400 10,410 10,420 10,430 10,440 10,450 10,460

7700

7700

MD: 10,331
TVD: 7,883.17
Inclination: 90.06
Azimuth: 359.6
VS: 2,670.46

MD: 10,421
TVD: 7,882.45
Inclination: 90.86
Azimuth: 359.42
VS: 2,760.45

TVD (ft)

TVD (ft)

mod-w srt, sb md-sb ang, sl calc mtk; 5% LS;
-sb blkly, sm-wxy tex, mckln, v calc O Show:
no flr; tr sh

60% SS: med gy-dk gy, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calc mtk, tr glau,
40% SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, srt-frm, rthy-gt, arg-sily; O Show:
mod-fast stmg bl-wh cut, resdl ring, no od, no flr

60% SS: med gy-dk gy, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang, s
SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, srt-frm, rthy-gt, arg-s
stmg bl-wh cut, resdl ring, no od, no flr

8100

8100

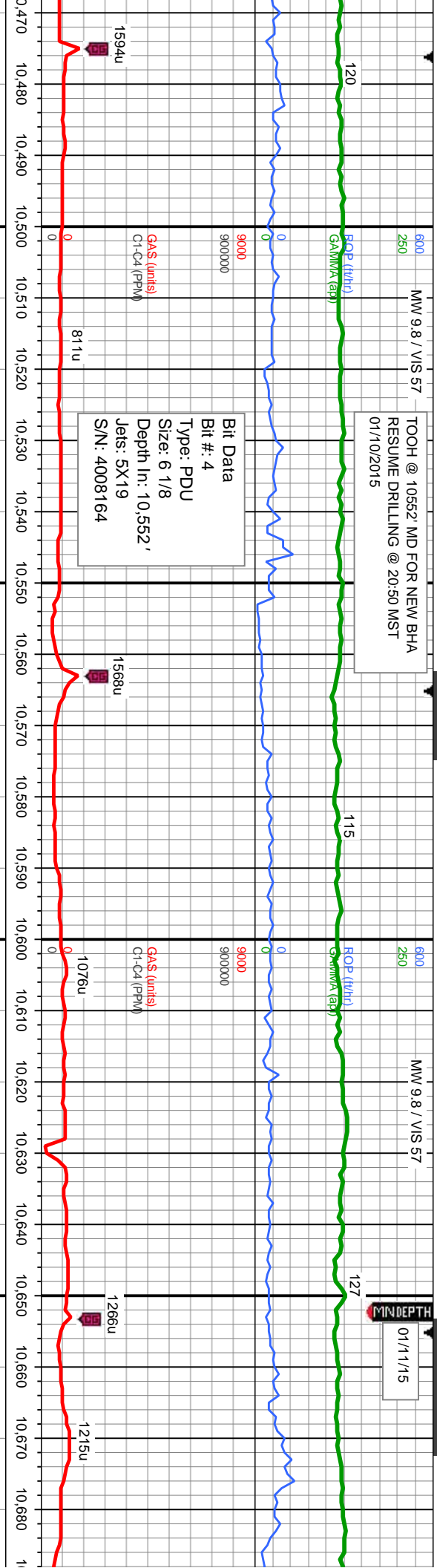


TOOH @ 10552' MD FOR NEW BHA
RESUME DRILLING @ 20:50 MST
01/10/2015

MW 9.8 / VIS 57

01/1/15

MINDEPTH



Bit Data
Bit #: 4
Type: PDU
Size: 6 1/8
Depth In: 10,552'
Jets: 5X19
S/N: 4008164

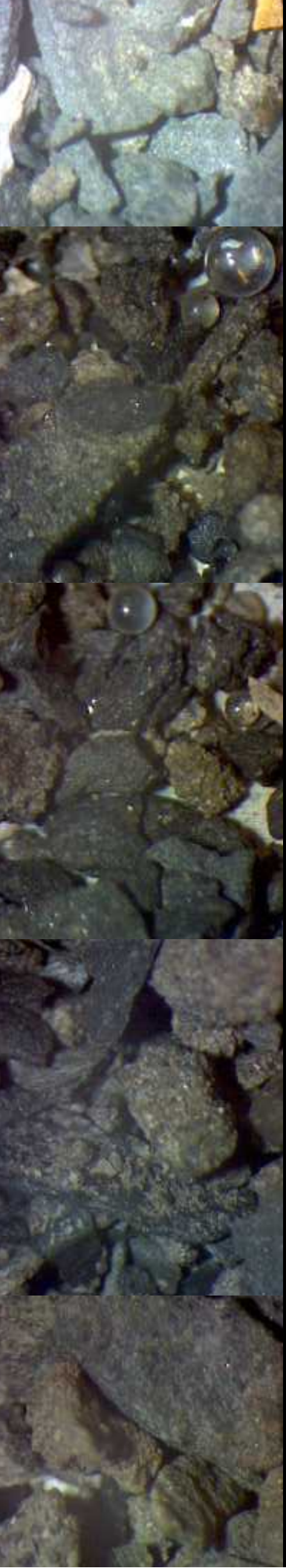
MD: 10,502.
TVD: 7,879.64
Inclination: 90.92
Azimuth: 358.61
VS: 2.941.4

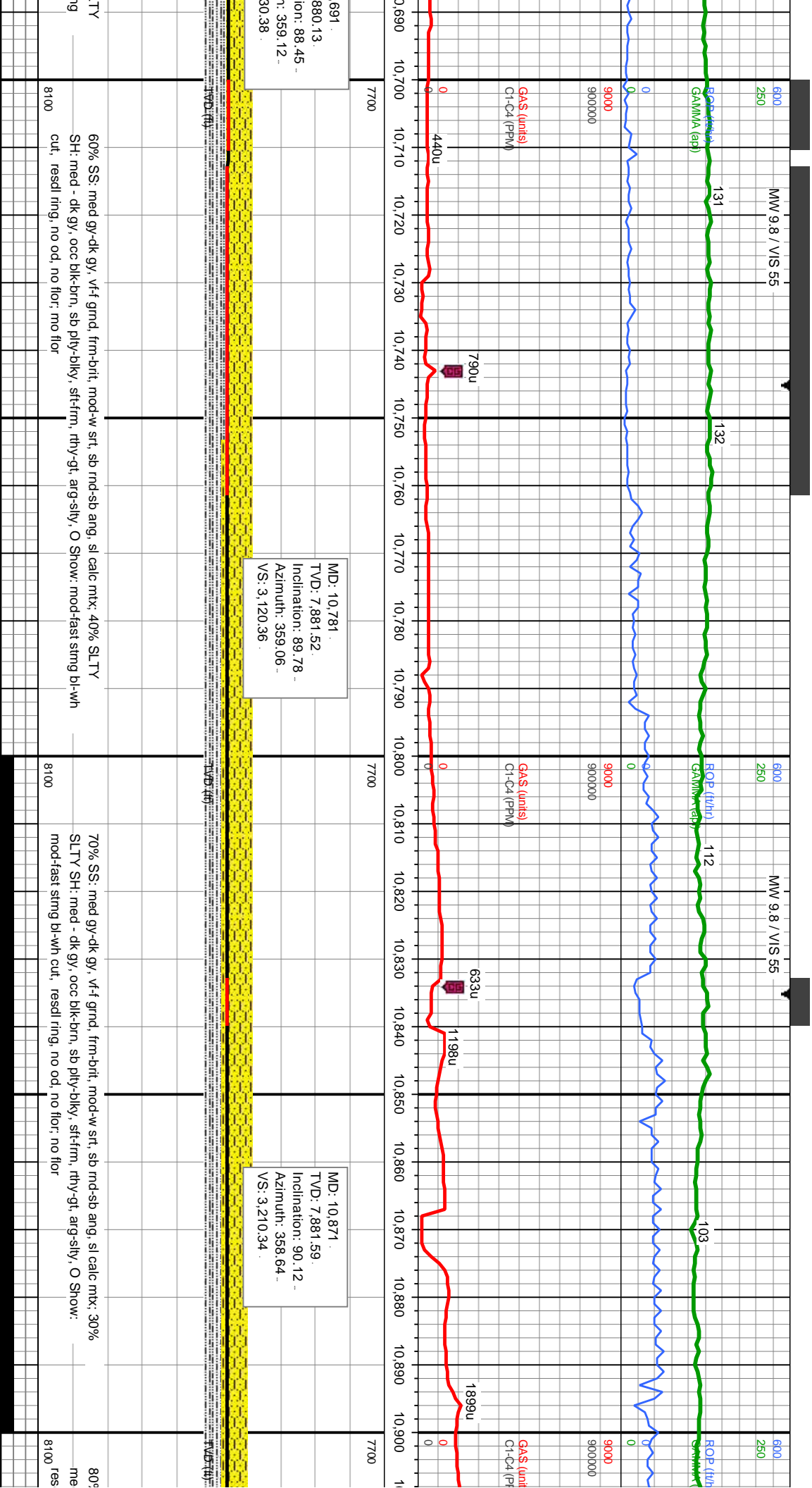
MD: 10
TVD: 7
Inclination:
Azimuth:
VS: 3.0

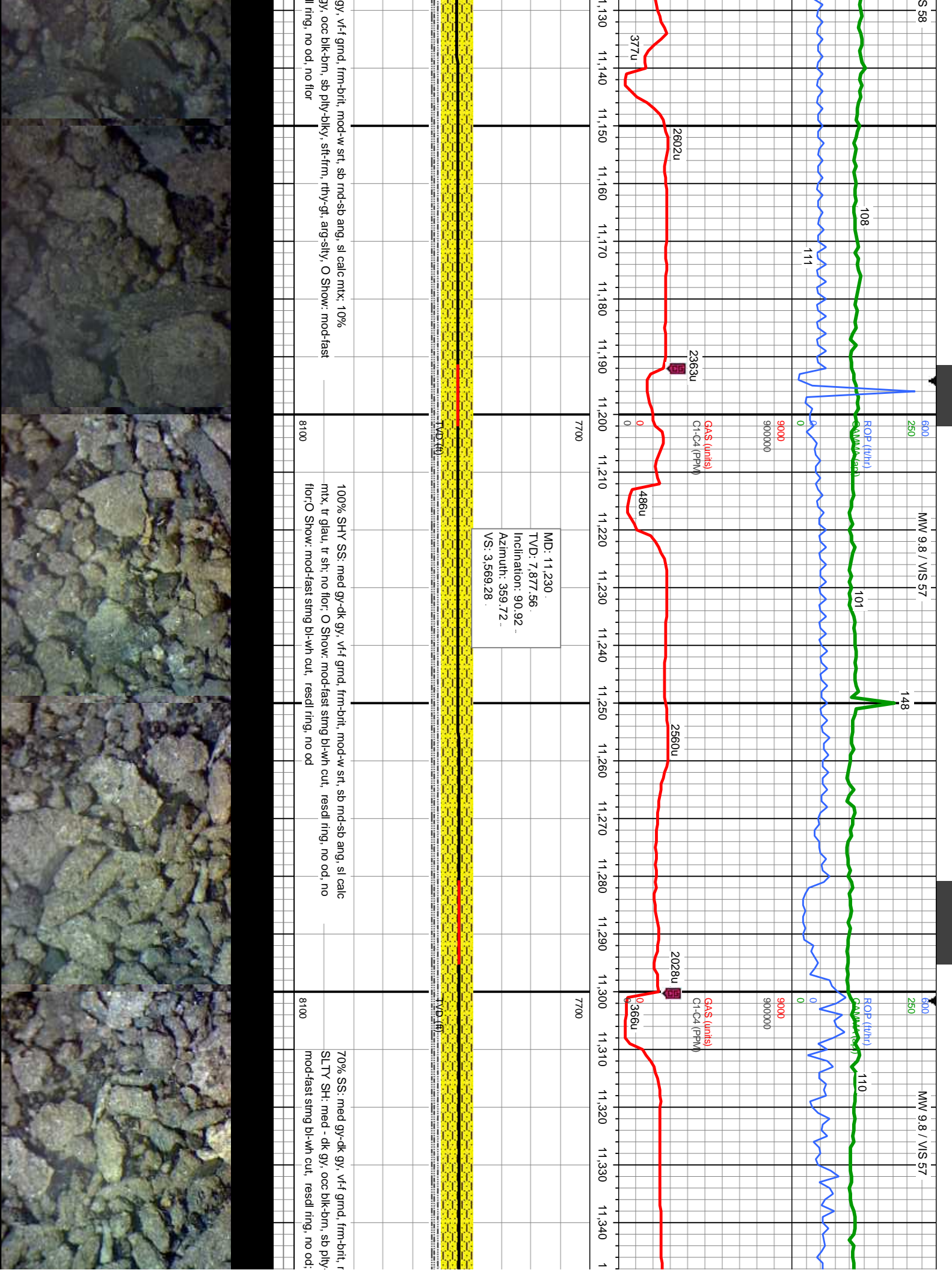
sl calic mtk, tr glau, 40%
ly; O Show: mod-fast

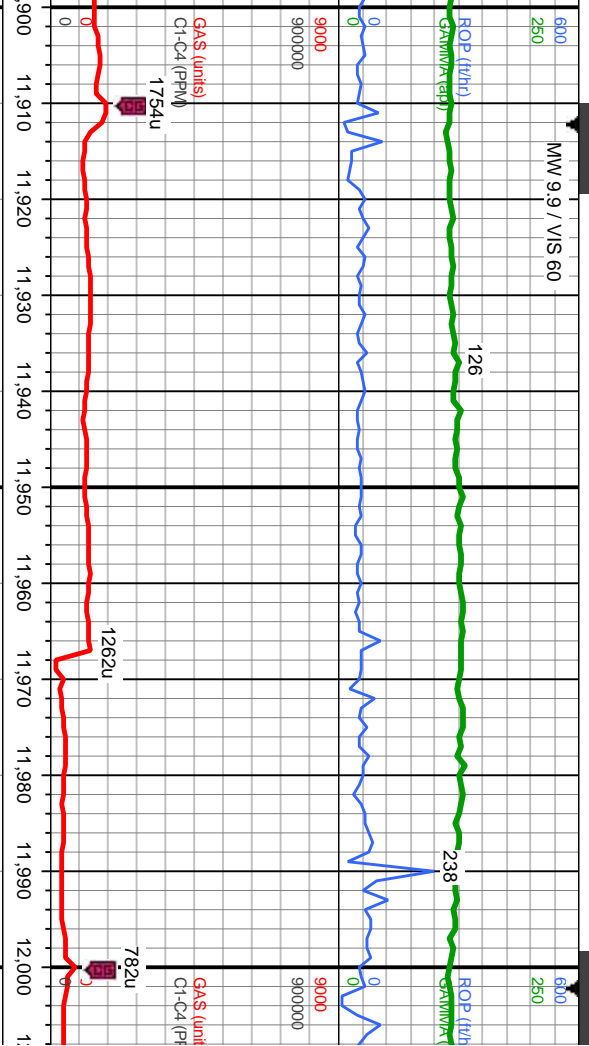
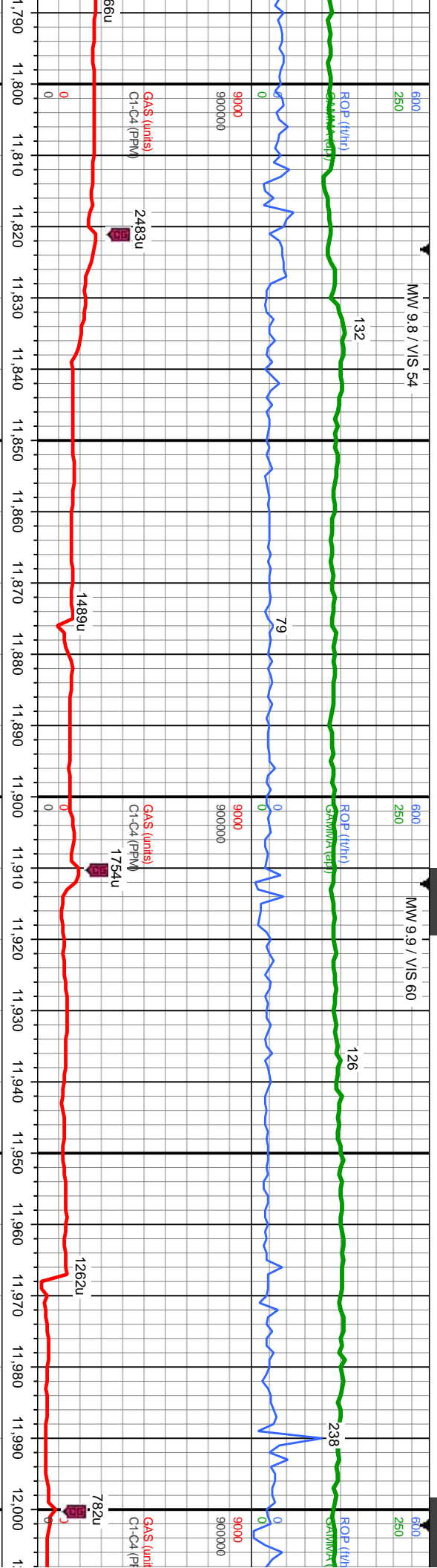
55% SLTY SH: med - dk gy, ooc blk-brn, sb ply-blky, stf-firm, rthy-gt, arg-sily; 45% SS: med
gy-dk gy, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calic mtk, O Show: mod-fast simg
bl-wh cut, resdl ring, no od, no flr; tr pyr

60% SS: med gy-dk gy, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calic mtk; 40% SL
SH: med - dk gy, ooc blk-brn, sb ply-blky, stf-firm, rthy-gt, arg-sily; O Show: mod-fast simg
bl-wh cut, resdl ring, no od, no flr

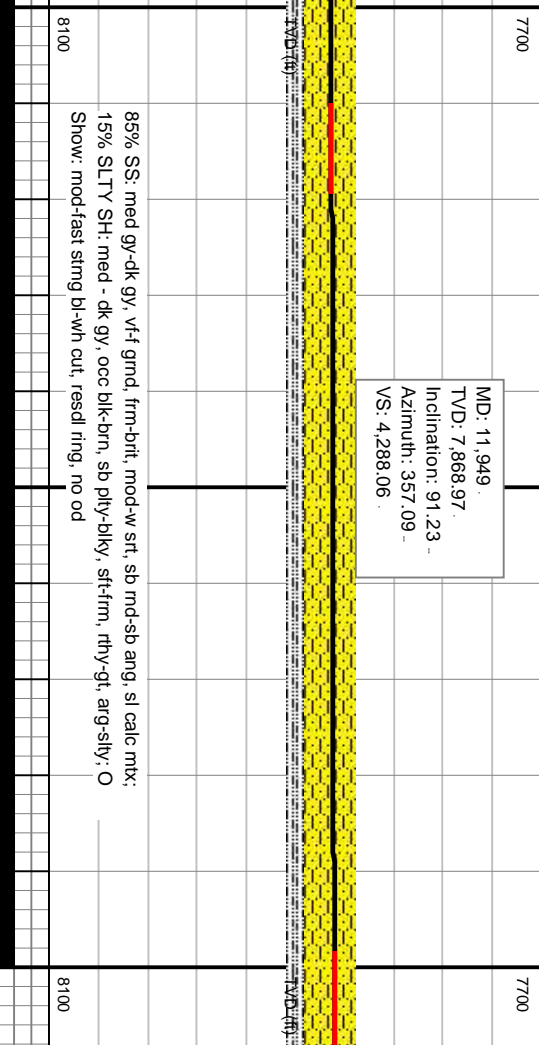
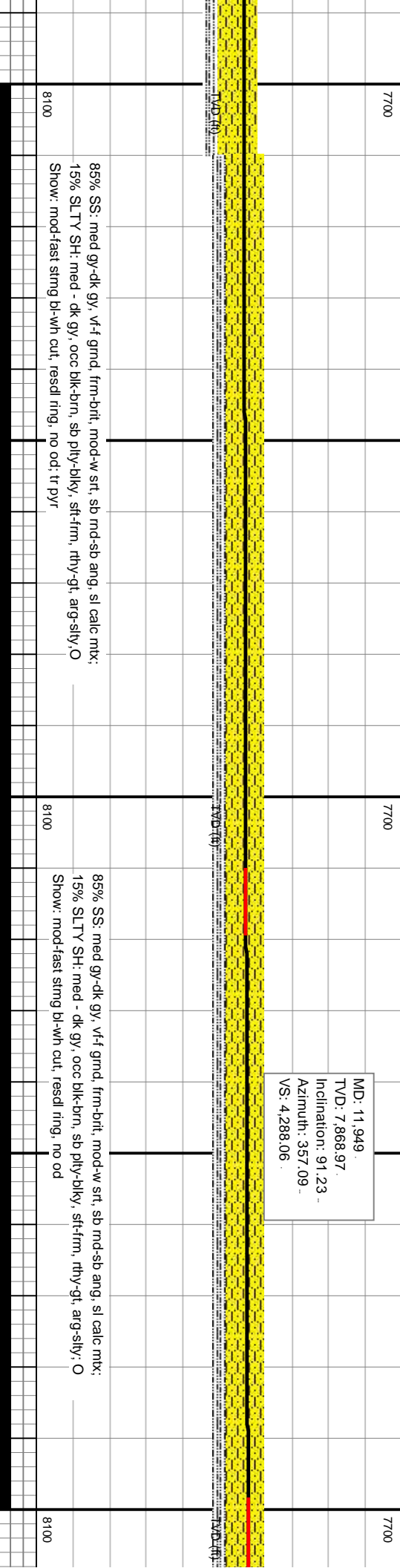








MD: 11,949
TVD: 7,868.97
Inclination: 91.23
Azimuth: 357.09
VS: 4,288.06



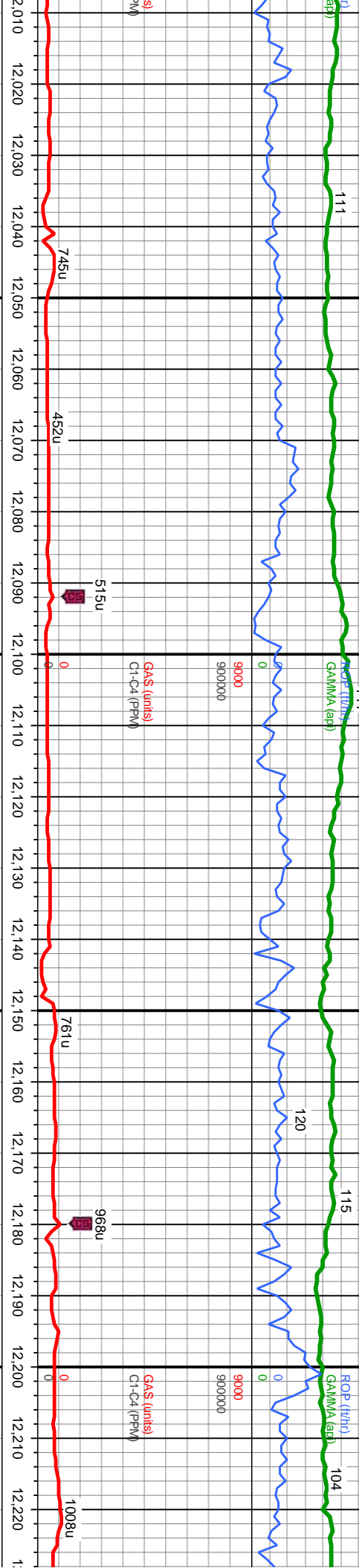
85% SS: med gy-dk gy, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calc mtk;
15% SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, srt-frm, rthy-gt, arg-sily, O
Show: mod-fast string bl-wh cut, resd ring, no od: tr pyr

85% SS: med gy-dk gy, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calc mtk;
15% SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, srt-frm, rthy-gt, arg-sily, O
Show: mod-fast string bl-wh cut, resd ring, no od



MW 9.9 / VIS 59 01/12/2015 MW 9.8 / VIS 60 MW 9.8 / VIS

MINDEPTH



MD: 12,038.
TVD: 7,866.7.
Inclination: 91.69 -
Azimuth: 357.51 -
VS: 4,376.94.

MD: 12,128.
TVD: 7,863.73.
Inclination: 92.09 -
Azimuth: 357.73 -
VS: 4,466.81.

85% SS: med gy-dk gy, v-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calc mtk;
15% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, srt-frm, rthy-gt, arg-sily/O
Show: mod-fast string bl-wh cut, resd ring, no od

70% SS: med gy-dk gy, v-f grnd, frm-bit, mod-w srt, sb md-sb ang, sl calc mtk; 30%
SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, srt-frm, rthy-gt, arg-sily; O Show:
mod-fast string bl-wh cut, resd ring, no od

70% SS: med gy-dk gy,
SH: med - dk gy, occ blk
bl-wh cut, resd ring, no



6.60

MW 9.8 / VIS 58

MW 9.8 / VIS 58

101

93

95

90

ROP (ft/hr)
GAMMA (api)

ROP (ft/hr)
GAMMA (api)

9000
9000000

9000
9000000

GAS (units)
Cl-C4 (PPM)

GAS (units)
Cl-C4 (PPM)

840u

803u

0 860u

0

MD: 12,308
TVD: 7,857.42
Inclination: 91.93 -
Azimuth: 359.11 -
VS: 4,646.64

TVD (ft)

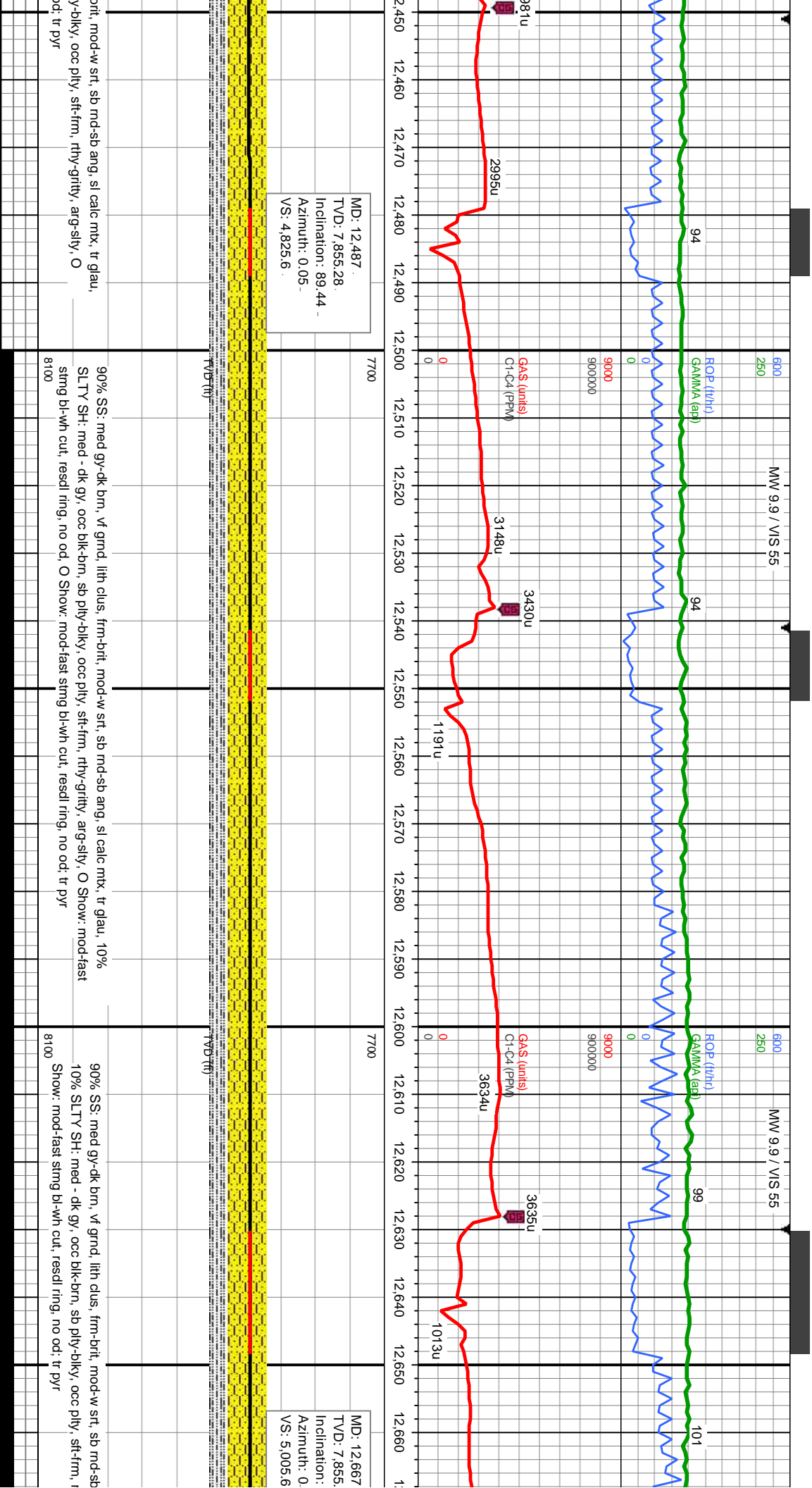
TVD (ft)

vf-f grnd, frm-brt, mod-w st, sb md-sb ang, sl calic mx; 30% SLTY
od sb ply-blky, sft-frm, rthy-gt, arg-sily; O Show: mod-fast stmg

70% SS: med gy-dk gy, vf-f grnd, frm-brt, mod-w st, sb md-sb ang, sl calic mx; 30%
SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, sft-frm, rthy-gt, arg-sily; O Show:
mod-fast stmg bl-wh cut, resd ring, no od

80% SS: med gy-dk brn, vf grnd, lith clus, frm-l
20% SLTY SH: med - dk gy, occ blk-brn, sb ply
Show: mod-fast stmg bl-wh cut, resd ring, no c





MW 9.9 / VIS 55

MW 9.9 / VIS 54

600
250

600
250

ROP (ft/hr)
GAMMA (api)

ROP (ft/hr)
GAMMA (api)

98

101

104

0
9000
900000

0
9000
900000

GAS (units)
Cl-C4 (PPM)

GAS (units)
Cl-C4 (PPM)

3033u

3457u

2657u

2834u

12.670 12.680 12.690 12.700 12.710 12.720 12.730 12.740 12.750 12.760 12.770 12.780 12.790 12.800 12.810 12.820 12.830 12.840 12.850 12.860 12.870 12.880 12.890

25
90.58

7700

7700

MD: 12.846.
TVD: 7.852.67.
Inclination: 91.07 -
Azimuth: 0.84 -
VS: 5.184.57.

TVD (ft)

TVD (ft)

ang, sl calc mtx, tr glau,
thy-gritty, arg-sily, O

95% SS: med gy-dk brn, vf grnd, lith clus, frm-brt, mod-w-srt, sb md-sb ang, sl calc mtx, tr glau,
5% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, srt-frm, rthy-gritty, arg-sily, O Show:
mod-fast stng bl-wh cut, resdl ring, no od; tr pyr

8100

7700

7700

8100



MW 9.9 / VIS 54

MW 9.8 / VIS 53



MD: 13.026.
TVD: 7,849.8.
Inclination: 90.76 -
Azimuth: 0.97 -
VS: 5,364.52 -



95% SS: med gy-dk brn, vf grnd, lith clus, frm-brit, mod-w-srt, sb md-sb ang, sl calc mx, tr glau;
5% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, srt-frm, rthy-gritty, arg-sily, tr pyr

95% SS: med gy-dk brn, vf grnd, lith clus, frm-brit, mod-w-srt, sb md-sb ang, sl calc mx, tr glau;
5% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, srt-frm, rthy-gritty, arg-sily, tr pyr

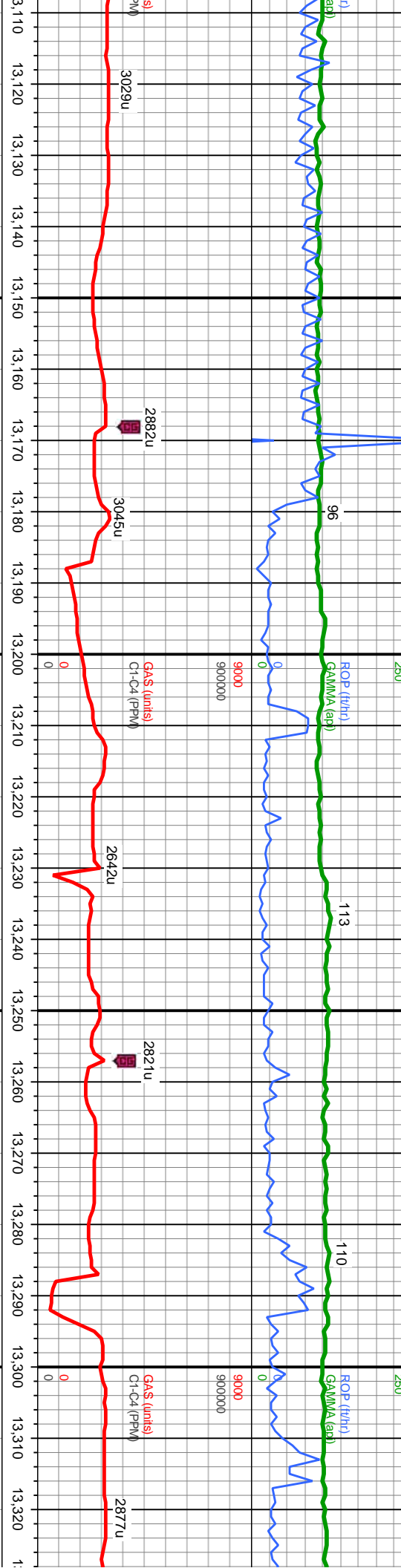
mod-fast sting bl-wh cut, resd ring, no od



MW 9.8 / VIS 53

MW 9.8 / VIS 55

MW 9.8 / VIS 60



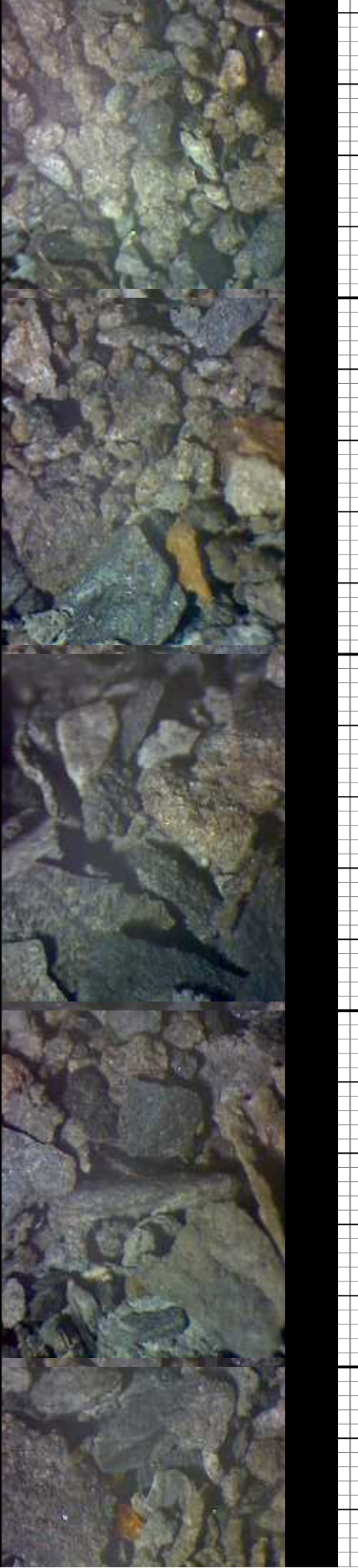
D: 13.116.
D/D: 7.849.18.
Inclination: 90.03 -
Azimuth: 0.71 -
S: 5.454.51 -

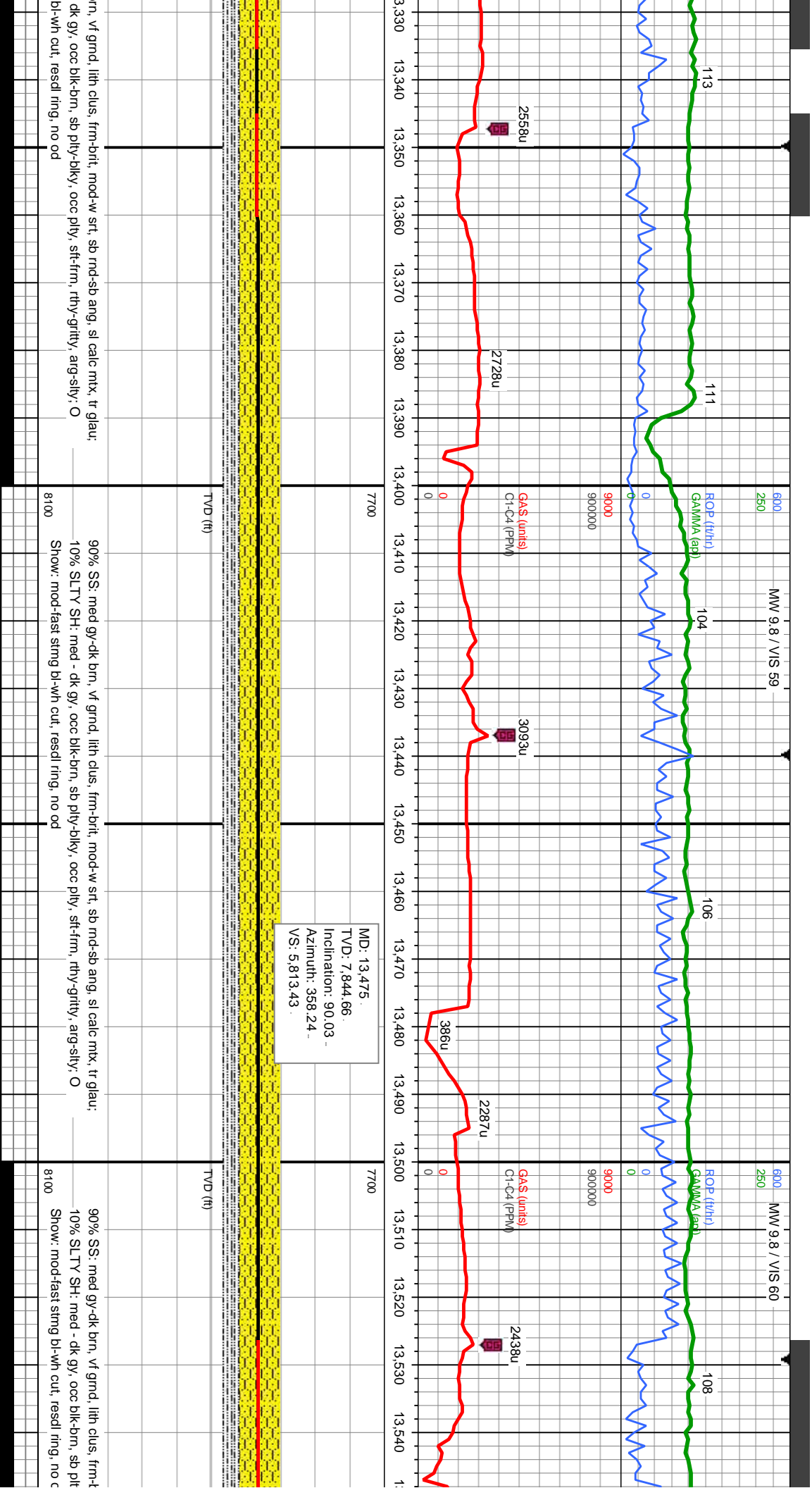
MD: 13.296.
TVD: 7.846.91.
Inclination: 91.41 -
Azimuth: 359.32 -
VS: 5.634.49 -

00% SS: med gy-dk brn, vif grnd, lith clus, frm-brit, mod-w srt, sb md-sb ang, sl calic mtk, tr glau;
0% SLTY SH: med - dk gy, ooc blk-brn, sb ply-blky, ooc ply, sft-frm, rthy-gritty, arg-sily; O
Show: mod-fast sting bl-wh cut, resd ring, no od

90% SS: med gy-dk brn, vif grnd, lith clus, frm-brit, mod-w srt, sb md-sb ang, sl calic mtk, tr glau;
10% SLTY SH: med - dk gy, ooc blk-brn, sb ply-blky, ooc ply, sft-frm, rthy-gritty, arg-sily; O
Show: mod-fast sting bl-wh cut, resd ring, no od

80% SS: med gy-dk brn, vif grnd, lith clus, frm-brit, mod-w srt, sb md-sb ang, sl calic mtk, tr glau;
20% SLTY SH: med - dk gy, ooc blk-brn, sb ply-blky, ooc ply, sft-frm, rthy-gritty, arg-sily; O
Show: mod-fast sting bl-wh cut, resd ring, no od





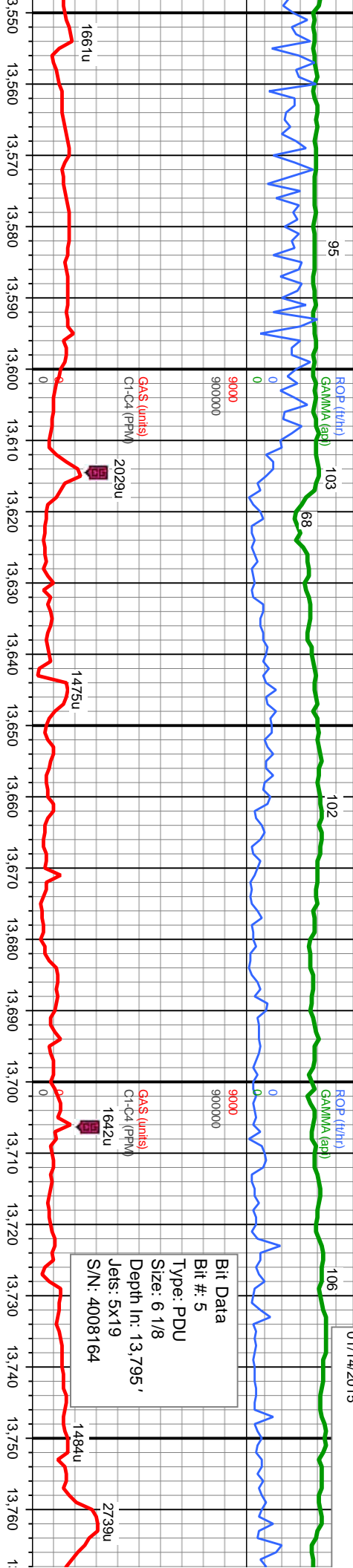
01/13/2015

MINDEPTH

MW 9.8 / VIS 56

MW 9.8 / VIS 56

TOOH @ 08:41MST, 13795' MD FOF
01/13/2015
RESUME DRILLING @ 04:40 MST
01/14/2015



MD: 13,655.
TVD: 7,845.4.
Inclination: 89.5 -
Azimuth: 357.46 -
VS: 5,993.31

MD: 13,745.
TVD: 7,845.51
Inclination: 90.36 -
Azimuth: 356.59
VS: 6,083.19

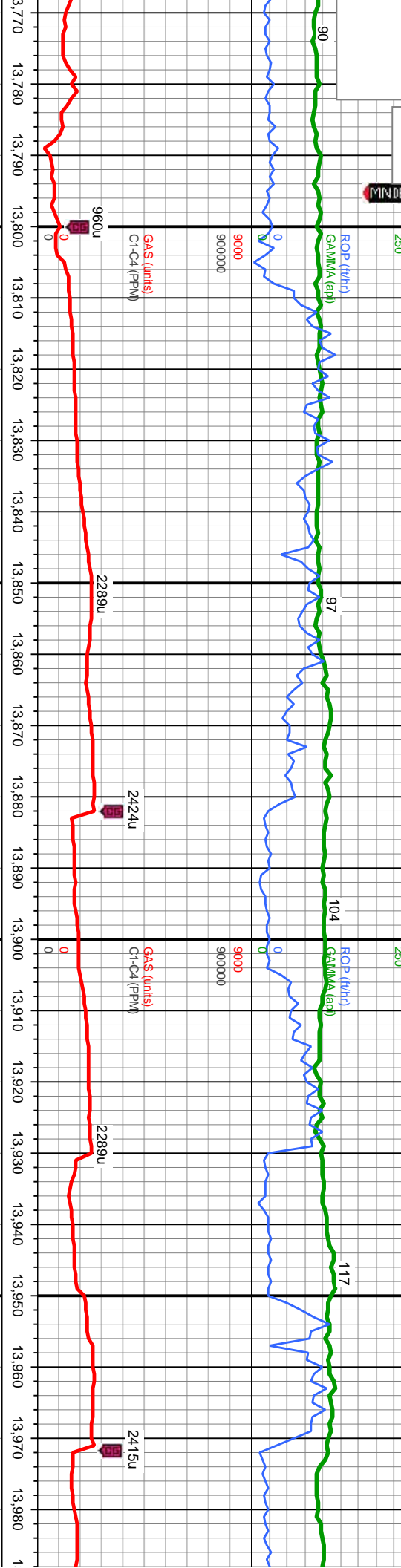
Bit Data
Bit #: 5
Type: PDU
Size: 6 1/8
Depth In: 13,795'
Jets: 5x19
S/N: 4008164

TVD (ft)

TVD (ft)

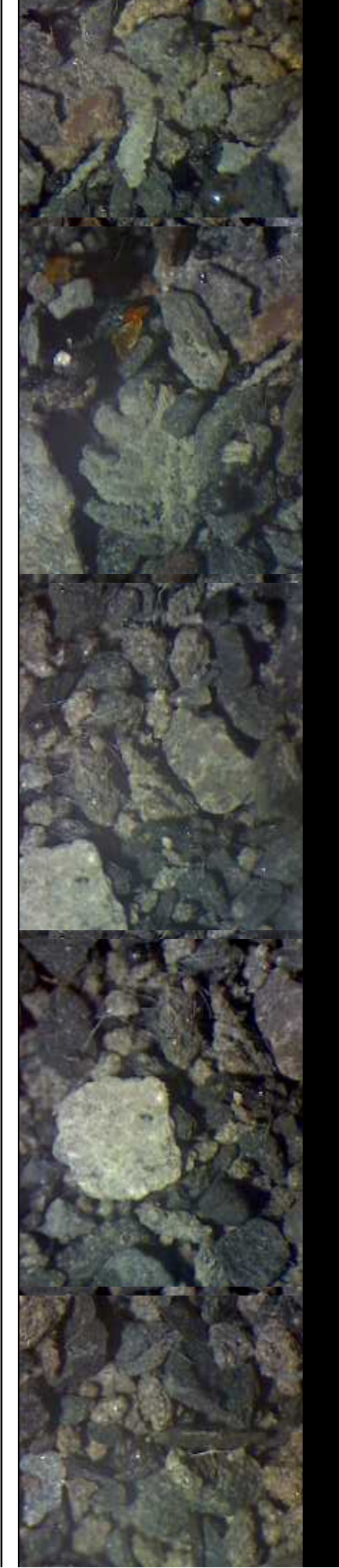
grit, mod-w srt, sb md-sb ang, sl calc mtx, tr glau;
y-biky, occ ply, sft-frm, rthy-grtity, arg-sily; O
90% SS: med gy-dk brn, vf grnd, lith clus, frm-brt, mod-w srt, sb md-sb ang, sl calc mtx, tr glau;
10% SLTY SH: med - dk gy, occ blk-brn, sb ply-biky, occ ply, sft-frm, rthy-grtity, arg-sily; O
Show: mod-fast sting bl-wh cut, resdl ring, no od
60% SS: med gy-dk brn, vf grnd, lith clus, frm-brt, mod-w srt, sb md-s
40% SLTY SH: med - dk gy, occ blk-brn, sb ply-biky, occ ply, sft-frm,
Show: mod-fast sting bl-wh cut, resdl ring, no od

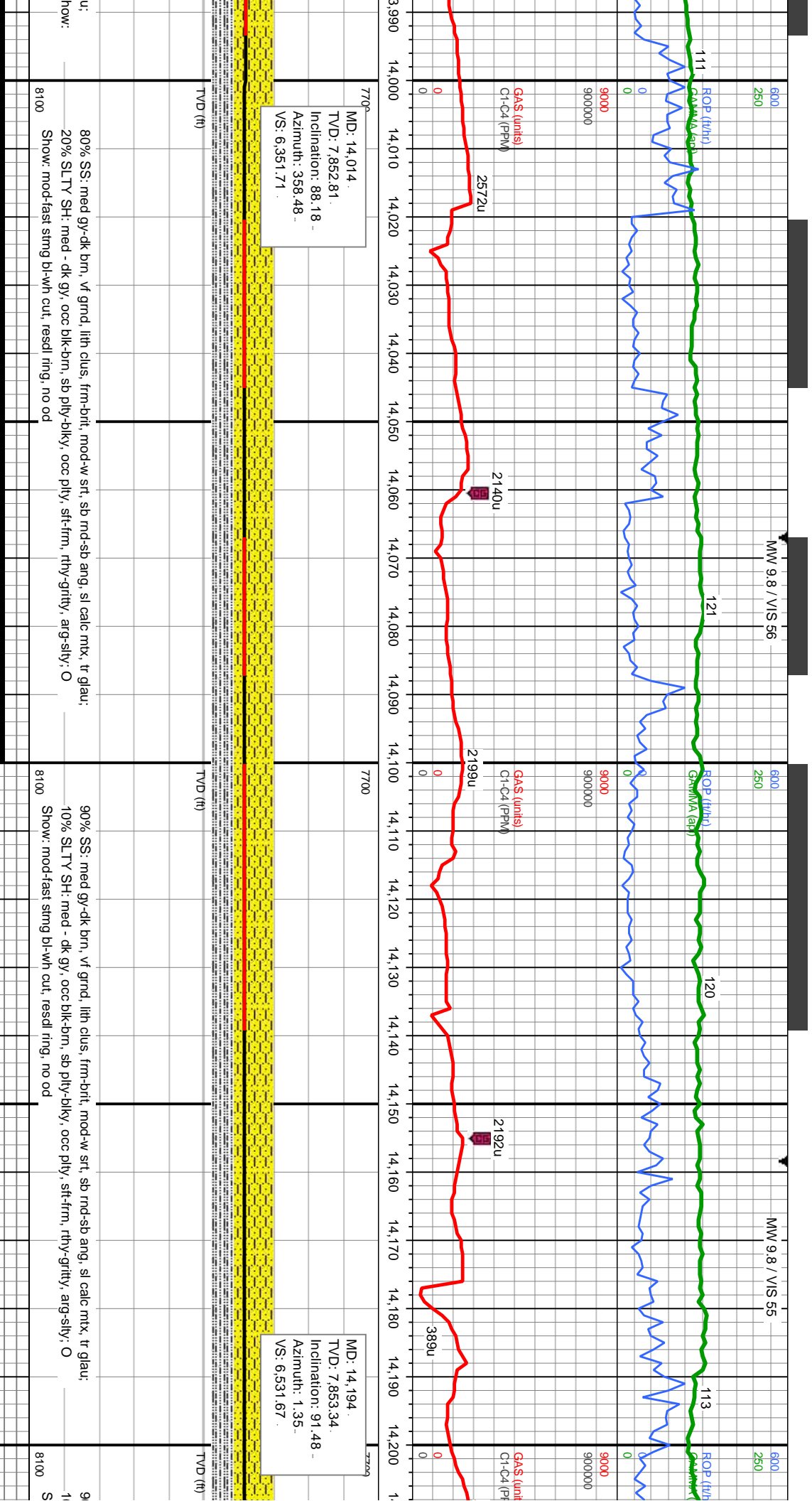




MD: 13,834.
TVD: 7,846.79
Inclination: 87.99
Azimuth: 356.27
VS: 6.172.01

7700	TVD (ft)	7700	TVD (ft)
60% SS: med gy-ck brn, vif grnd, lith clus, frm-brt, mod-w srt, sb md-sb ang, sl calc mtx, tr glau; 40% SLTY SH: med - dk gy, occ blk-brn, sb ply-biky, occ ply, st-frm, rthy-gritty, arg-sily, O Show: 8100 mod-fast sting bl-wh cut, resd ring, no od			
70% SS: med gy-ck brn, vif grnd, lith clus, frm-brt, mod-w srt, sb md-sb ang, sl calc mtx, tr glau; 30% SLTY SH: med - dk gy, occ blk-brn, sb ply-biky, occ ply, st-frm, rthy-gritty, arg-sily, O S 8100 mod-fast sting bl-wh cut, resd ring, no od			

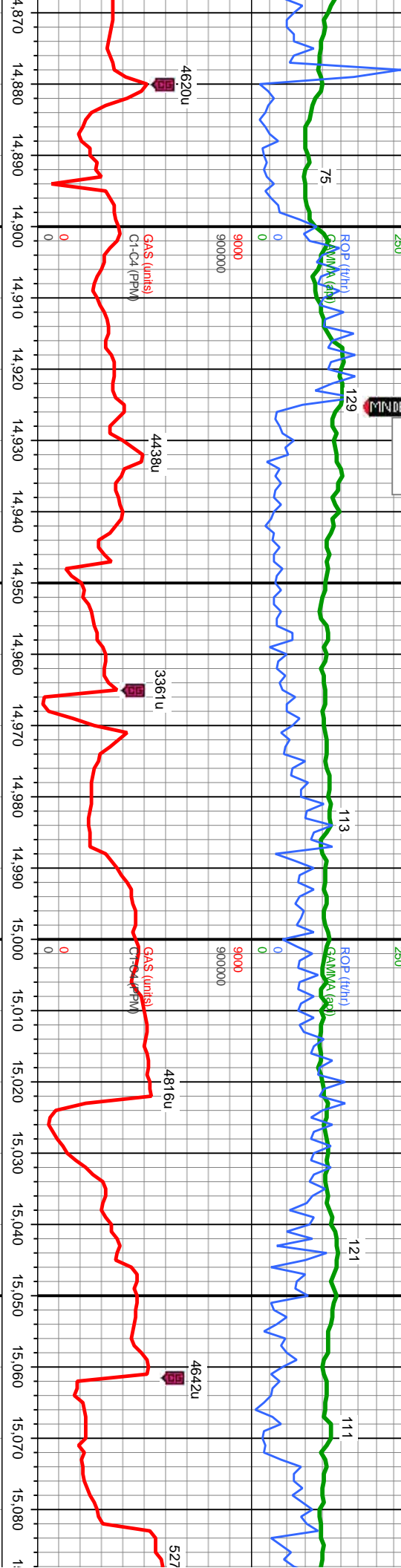




01/15/15

MW 9.8 / VIS 46

MW 9.8 / VIS 4



MD: 14,912.
TVD: 7,850.18.
Inclination: 90.7 -
Azimuth: 2.73 -
VS: 7,248.88

MD: 11.
TVD: 7.
Incline:
Azimu
VS: 7.

TVD (ft)

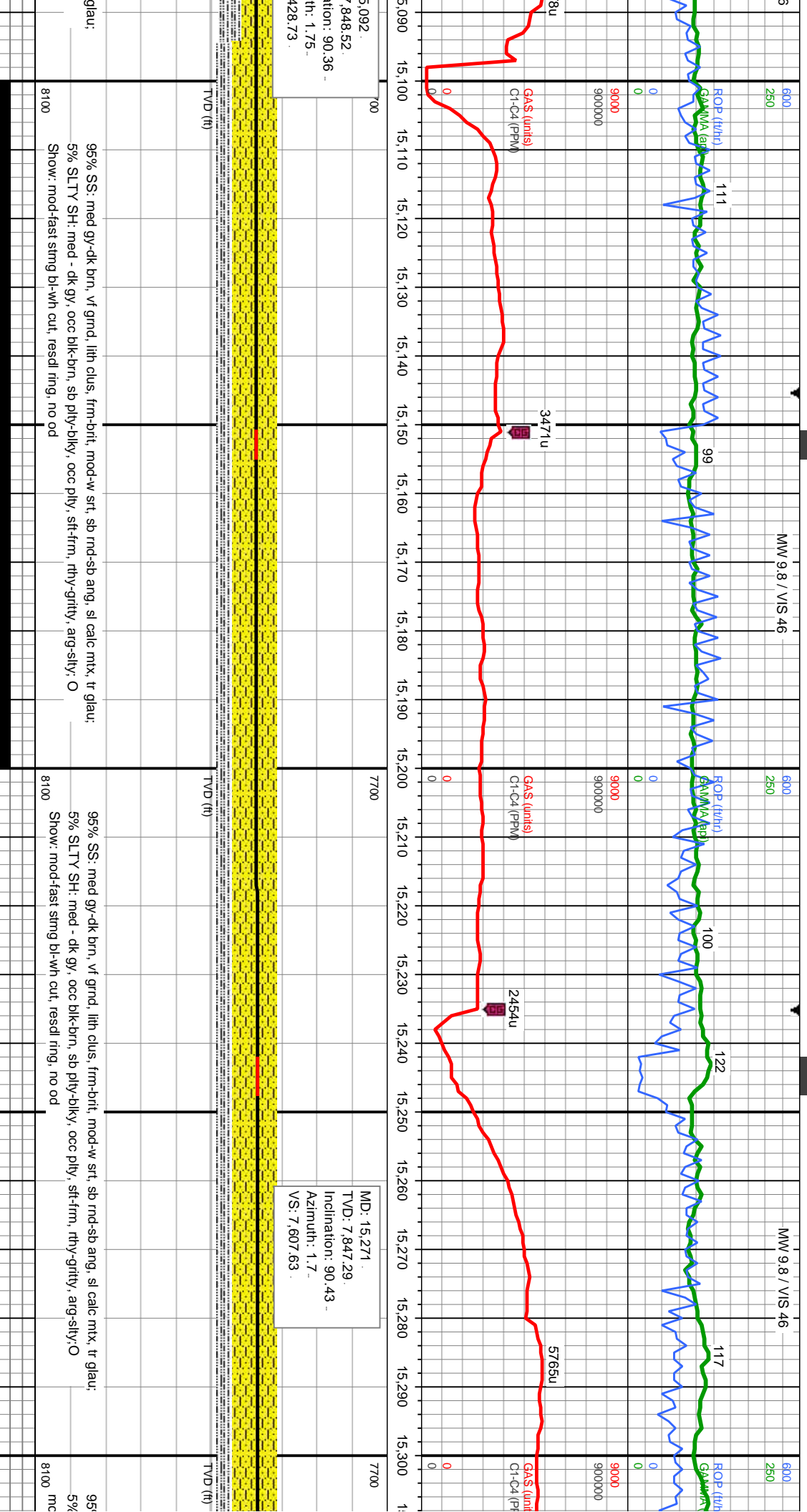
TVD (ft)

sd ang, sl calc mix, tr glau;
rthy-gritty, arg-sily, O

95% SS: med gy-dk brn, v f grnd, lith clus, frm-brt, mod-w st, sb md-sb ang, sl calc mix, tr glau;
5% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, st-frm, rthy-gritty, arg-sily, O
Show: mod-fast sting bl-wh cut, resd ring, no od

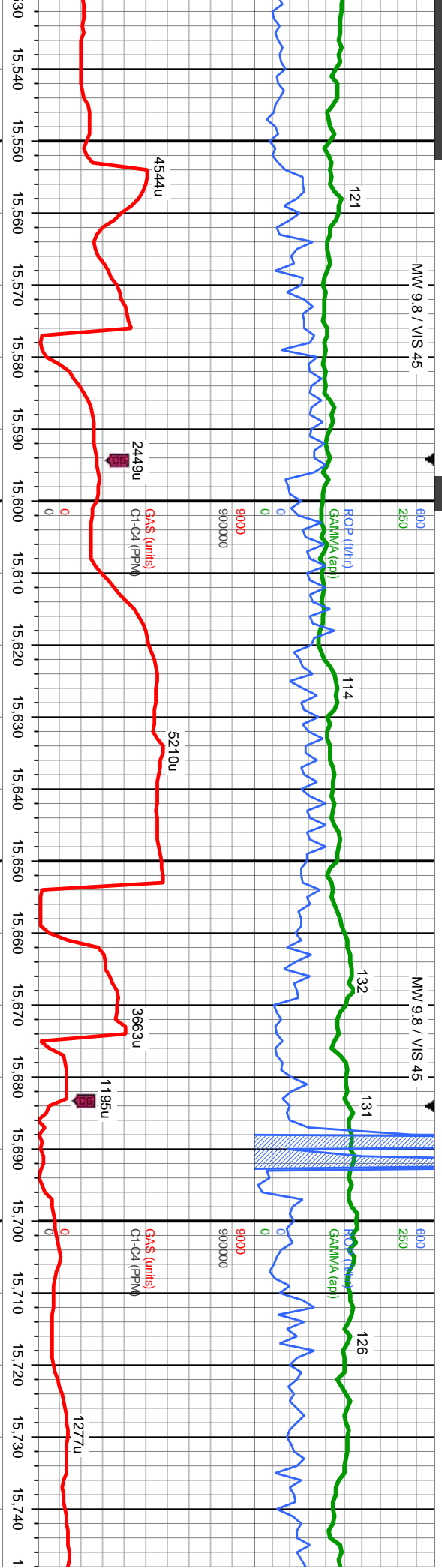
95% SS: med gy-dk brn, v f grnd, lith clus, frm-brt, mod-w st, sb md-sb ang, sl calc mix, tr
5% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, st-frm, rthy-gritty, arg-sily, O
Show: mod-fast sting bl-wh cut, resd ring, no od





MW 9.8 / VIS 45

MW 9.8 / VIS 45

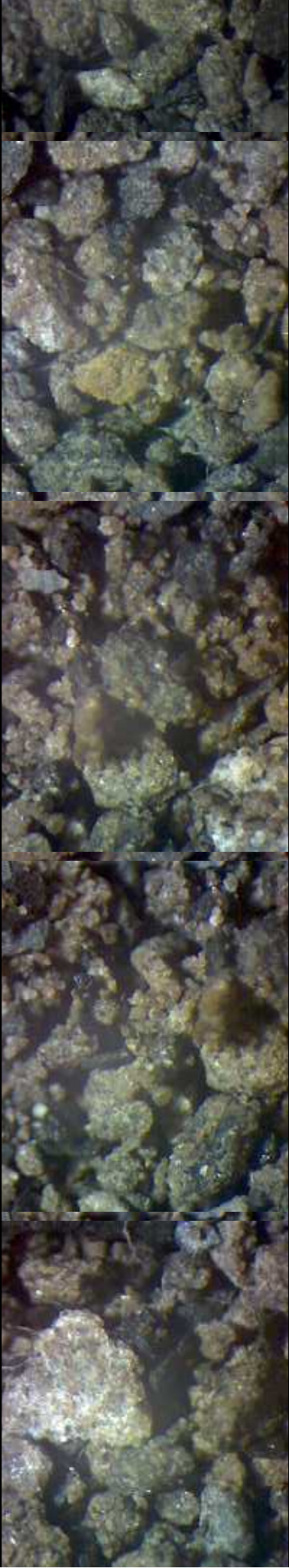


MD: 15,541.
TVD: 7,845.25.
Inclination: 90.12 -
Azimuth: 2.18 -
VS: 7.877.44.

MD: 15,631.
TVD: 7,845.31.
Inclination: 89.81 -
Azimuth: 2.21 -
VS: 7.967.37.

MD: 15,720.
TVD: 7,845.74.
Inclination: 89.63 -
Azimuth: 1.94 -
VS: 8.056.31.

TVD (ft)	
7700	8100
90% SS: med gy-dk brn, vf grnd, lith clus, frm-brt, mod-w st, sb md-sb ang, sl calc mx, tr glau; 10% SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, occ ply, sft-frm, rthy-gritty, ang-sily; O Show: mod-fast sting bl-wh cut, resdl ring, no od	



MW 9.8 / VIS 46

MW 9.8 / VIS 45

MW 9.86 / V

01/16/15
01/17/15

MINDEPTH

ROP (ft/hr)

96

122

128

13

GAMMA (api)

250

600

0

9000

900000

GAS (units)
Cl-C4 (PPM)

1120u

7350u

6280u

1502u

1634u

921u

TOOH @ 18:26 MST, 16114' MD FOR N
01/15/2015
RESUME DRILLING @ 02:35 MST
01/17/2015

MD: 15,990
TVD: 7,846.78
Inclination: 89.9
Azimuth: 0.81
VS: 8,326.21

MD: 16,169
TVD: 7,844.48
Inclination: 91.57
Azimuth: 359.97
VS: 8,505.18

TVD (ft)

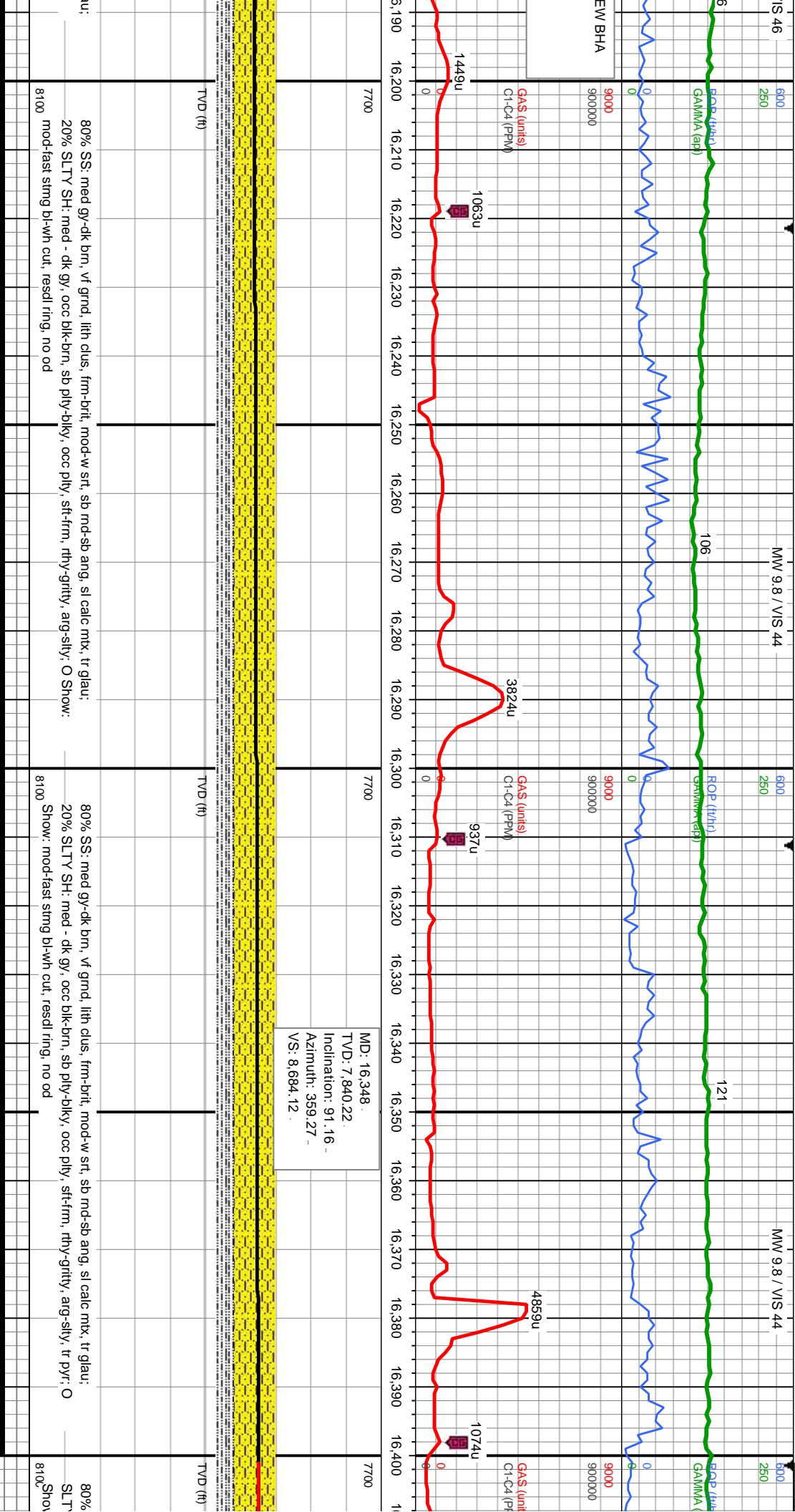
TVD (ft)

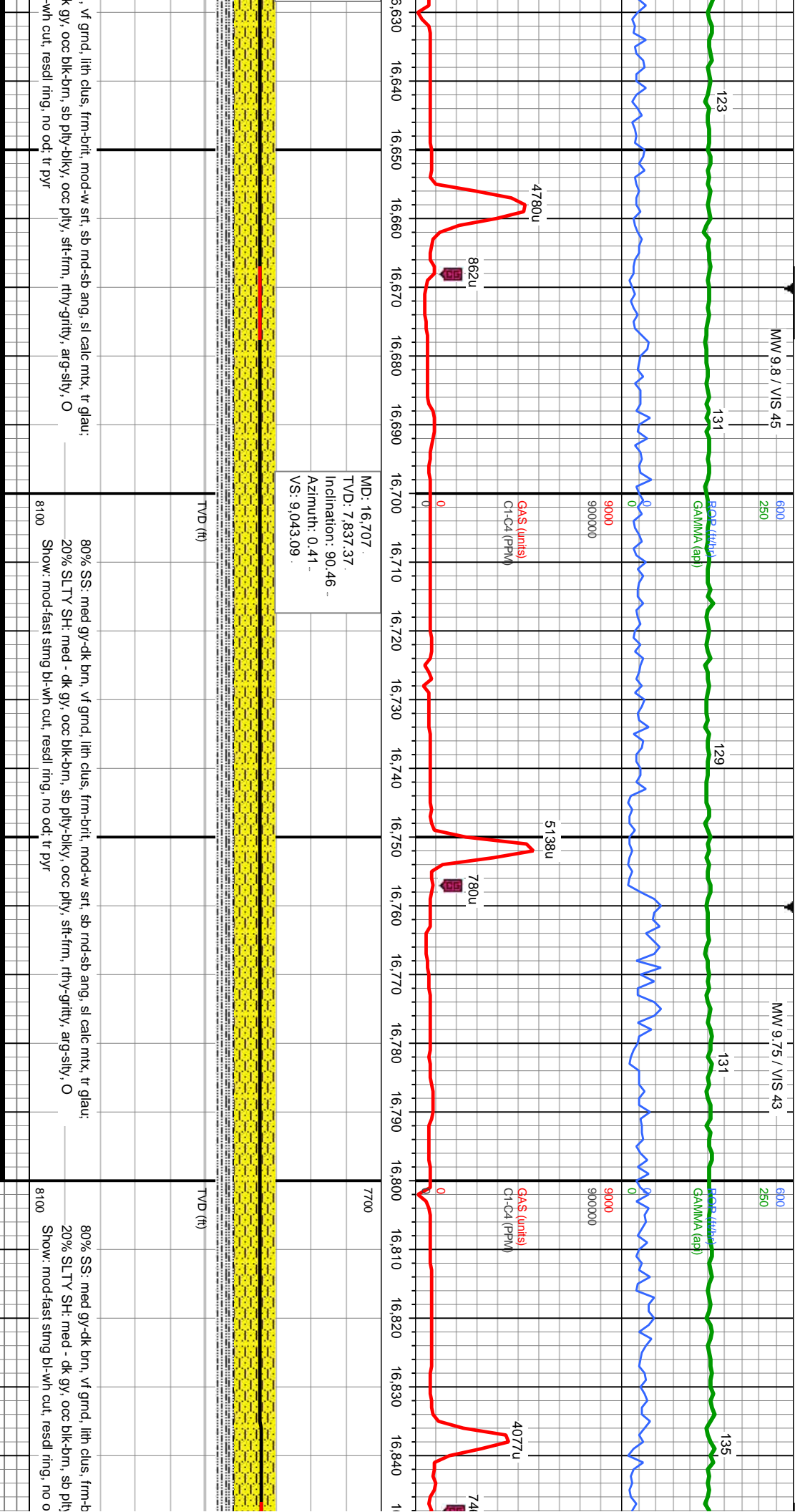
sb ang, sl calc mtx, tr glau;
rthy-gritty, arg-sily; O Show:

95% SS: med gy-dk brn, vf grnd, lith clus, firm-brt, mod-w srt, sb rnd-sb ang, sl calc mtx, tr glau;
5% SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, occ ply, sft-firm, rthy-gritty, arg-sily; O Show:
mod-fast string bl-wh cut, resd ring, no od

90% SS: med gy-dk brn, vf grnd, lith clus, firm-brt, mod-w srt, sb rnd-sb ang, sl calc mtx, tr glau;
10% SLTY SH: med - dk gy, occ blk-brn, sb ply-blky, occ ply, sft-firm, rthy-gritty, arg-sily; O
Show: mod-fast string bl-wh cut, resd ring, no od







MD: 16.707
TVD: 7.837.37
Inclination: 90.46
Azimuth: 0.41
VS: 9.043.09

TVD (ft)

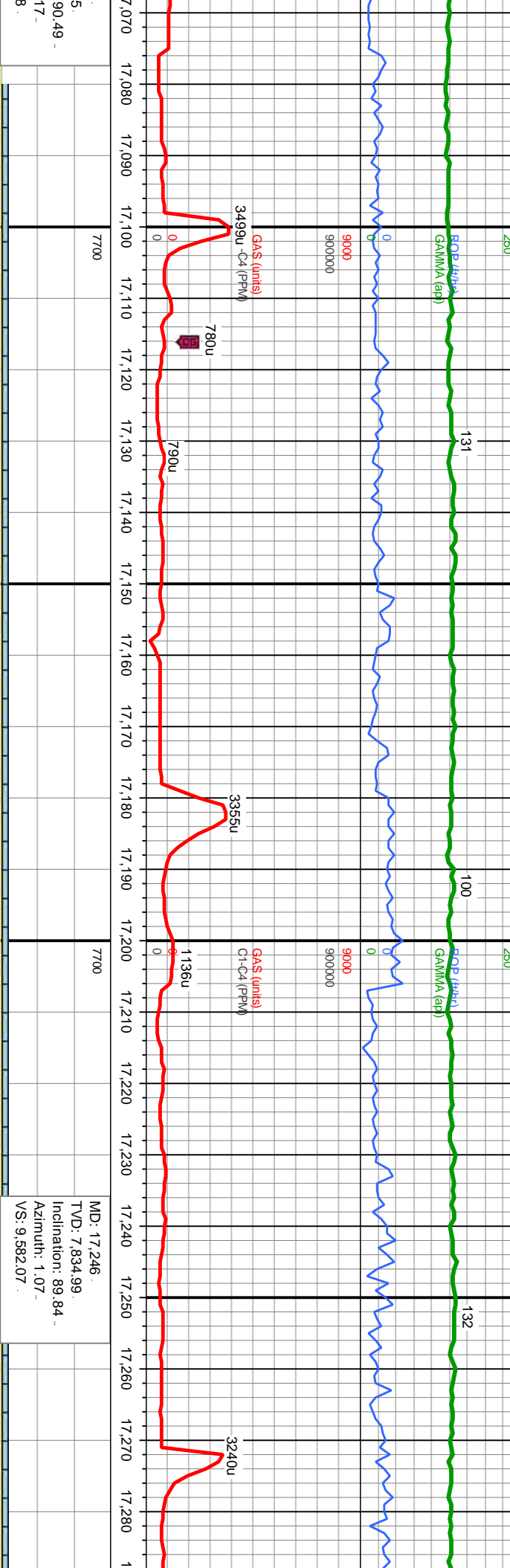
TVD (ft)

80% SS: med gy-dk brn, v/gmnd, lith clus, frm-brit, mod-w st, sb rnd-sb ang, sl calc mtx, tr glau;
20% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, st-frn, rthy-gritty, arg-sily, O
Show: mod-fast stng bl-wh cut, resd ring, no od; tr pyr

8100

8100





b ang, sl calic mtx, tr glau;
rthy-gritty, arg-sily, tr ls; O

70% SS: med gy-dk brn, vf grnd, lith clus, frm-brit, mod-w srt, sb rnd-sb ang, sl calic mtx, tr glau;
30% SLTY SH: med - dk gy, occ blk-brn, sb pily-blky, occ pily, sft-frm, rthy-gritty, arg-sily, O
Show: mod-fast stmg bl-wh cut, resdl ring, no od; tr pyr, tr ls

8100



