



Scale: 5" / 100'  
Measured Depth Log

Well Name SACK STATE 30C-30HZ

Location SEC 31 T1N R67W

State CO

County WELD

Country USA

Rig Number PERCISION 595

API Number 05-123-39244-000C

AFE # 2092957

Region DJ BASIN

Field WATTENBERG FIELD

Spud Date 10/16/2014

Drilling Completed 11/11/2014

Surface Coordinates 825' FSL, 895' FWL

Bottom Hole Coordinates 1' FNL, 345' FWL

Ground Elevation 5065'

K.B. Elevation 5078'

Logged Interval 7,300' To 17415'

Total Depth 17415'

Formation CODELL SANDSTONE

Type of Drilling Fluid LSND, OBM

## Operator

Company Anadarko Petroleum Corp.

Address Anadarko Petroleum Corporation  
1099 18th St. #1800  
Denver, CO 80202

## Geologist

Name Ian Harris

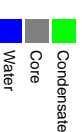
Company Anadarko Petroleum Corp.

Address Anadarko Petroleum Corporation  
1099 18th St. #1800  
Denver, CO 80202

## Other

Wellsite Geologists Rikki Witherspoon, Tracy

## Zone Color Coding



Rock Types

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

Accessories

GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL	ANHYDRITE STRINGER
INOCERAMUS	BENTONITE	KAOLIN	BENTONITE STRINGER
ALGAE	BITUMENOUS SUBSTANCE	MARLSTONE	COAL STRINGER
AMPHIPORA	BRECCIA FRAGMENTS	MICACEOUS	DOLOMITE STRINGER
BELEMNITE	PELECYPOD	CALCAREOUS	GYPSUM STRINGER
BIOCLASTIC	PELLET	CARBONACEOUS FLAKES	LIMESTONE STRINGER
BRACHIOPOD	PISOLITE	CHTDK	MARLSTONE (CALC) STRG
BRYOZOA	PLANT REMAINS	CHTLT	MARLSTONE (DOL) STRG
CEPHALOPOD	PLANT SPORES	COAL - THIN BEDS	SANDSTONE STRINGER
CORAL	SCAPHOPOD	DOLOMITIC	SHALE STRINGER
CRINOID	STROMATOPOROID	FELDSPAR	SILTSTONE STRINGER
ECHINOID		FERRUGINOUS PELLET	
FISH		FERRUGINOUS	TUFFACEOUS
FORAMINIFERA	ANHYDRITIC	GLAUCONITE	
FOSSIL	ARGILLACEOUS	GYPSIFEROUS	

Stringer

Oil Show

PINPOINT
VUGGY





































Engineering

● SPOTTED STAINING	● EVEN	○ QUESTIONABLE	● BIT
▲ CONNECTION (UP)			

Porosity

	CONNECTION GAS
	CONNECTION G
	TRIP GAS
	TRIP GAS (LEFT
	DOWN TIME GAS
	DOWN TIME G
	CORE - LOST
	CORE - RECOVER
	INTERCRYSTALLINE
	FRACTURE
	FENESTRAL
	EARTHY
	MOLDIC
	INTEROOBITIC
	ORGANIC

Other Symbols

	DST INTERVAL		WIRELINE TESTED - LEFT		E EARTHY
	FAULT		WIRELINE TESTED - RT		FX FINELYXLN
	FORMATION TOP		DRILL STEM TEST		GS GRAINSTONE
	GAS SHOW		MNDEPTH MN DEPTH		L LITHOGRAPHIC
	OIL SHOW				MX MICROXLN
	MNDEPTH MN DEPTH UP	<b>Rounding</b>			
	MNDEPTH MN DEPTH (DOWN)		ANGULAR		PS PACKSTONE
	NORMAL FAULT		ROUNDED		WS WACKESTONE
	OVERTURNED STRATA		SUBANG		
	REVERSE FAULT		SUBRND	<b>Sorting</b>	
	CASING				M MODERATE
<b>Textures</b>					
	SIDEWALL CORE (LEFT)				P POOR
	SIDEWALL CORE (RIGHT)		BOUNDSTONE		W WELL
	SLIDE		CHALKY		
	SURVEY		CRYPTOXLN		

ROP & GAS DATA PROVIDED BY PASON  
GAMMA & SURVEY DATA PROVIDED BY  
BAKER HUGHES

ROP

ROP

ROP

Total Gas

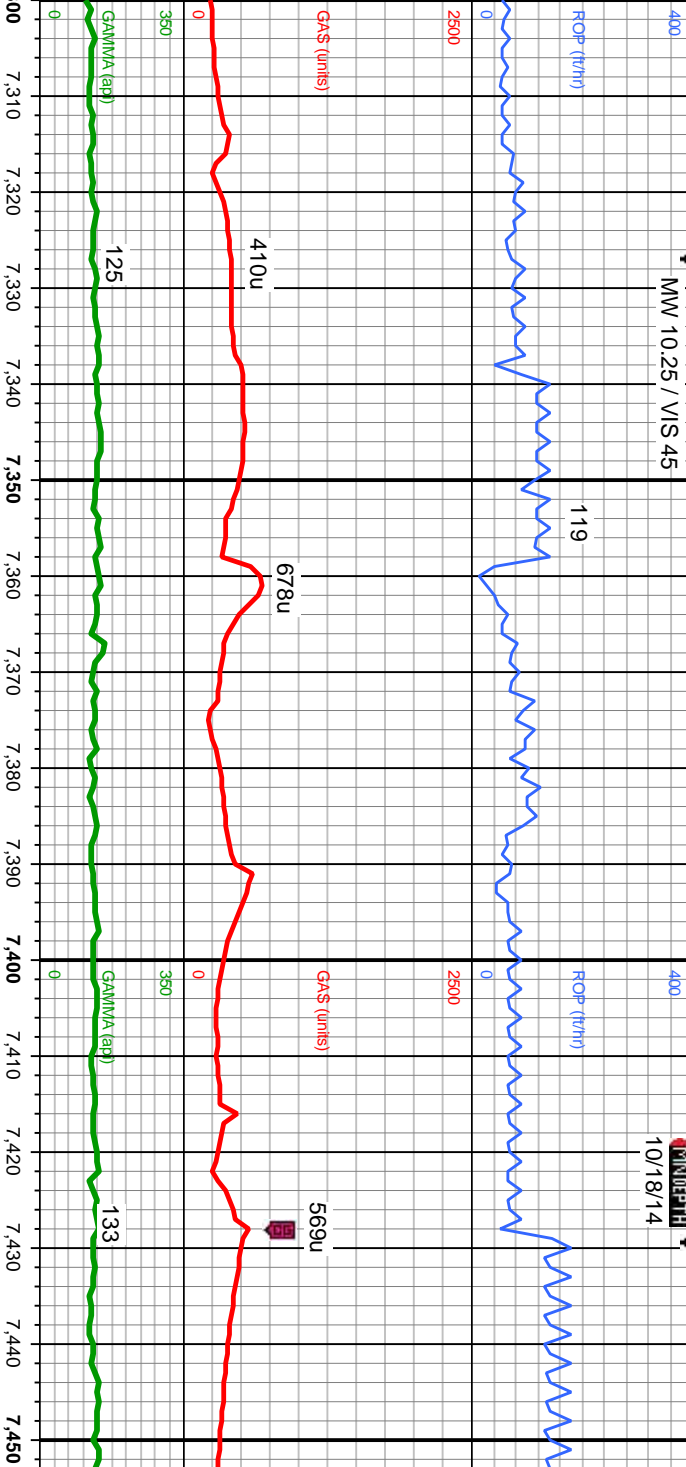
GAS

Curves

GAMMA

Depth Labels

Bit Data  
Bit #: 1  
Type: SD611  
Size: 8.75  
Depth In: 1,299'  
Depth Out: 8,109'  
Jets: 6 x 14  
S/N: JJ5997



COLUMBINE LOGGING RIGGED UP ON  
10/17/2014 MANNED 2-PERSON LOGGING  
WITH PASON GAS BEGAN ON 10/17/2014,  
21:49 MST at 7300' MD

ACETONE WAS USED AS THE CUTTING  
AGENT WITH THE DIMPLE FILLED TO THE  
RIM. THE RATINGS ARE BASED ON 7  
DESCRIPTOR: 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.

50' SAMPLE INTERVAL

MD: 7,381'  
TVD: 7,335.99'  
Inclination: 8.91 °  
Azimuth: 358.52 °  
VS: 8.41'

100% SLTY SH. lt-meddy, brn, sb pty-blky,  
occ pty, stf-firm, rhy-gritty, arg-sily, tr cal incl,  
tr bent, tr shy ss

100% SLTY SH. lt-meddy, occ blk-brn, sb  
pty-blky, occ pty, stf-firm, rhy-gritty, arg-sily,  
scatt bent

100% SLTY SH. lt-meddy, occ blk-brn, sb  
pty-blky, occ pty, stf-firm, rhy-gritty, arg-sily,  
scatt bent

Oil Show

Oil Show

Images



MW 10.25 / VIS 46

400

ROF (ft/h)

MW 10.25 / VIS 45

400

ROF (ft/h)

GAS SCALE CHANGE

6000

924u

Sharon Springs Top  
MD 7461' / TVD 7414'

2109u

Niobrara Top  
MD 7548' / TVD 7496'

4455u

23

2440u

3572u

350

GAS (units)

350

281

350

GAS (units)

160

7.460 7.470 7.480 7.490 7.500 7.510 7.520 7.530 7.540 7.550 7.560 7.570 7.580 7.590 7.600 7.610 7.620 7.630 7.640 7.650 7.660 7.670

7300

7300

MD: 7,471'  
TVD: 7,423.76'  
Inclination: 16.33 °  
Azimuth: 2.2 °  
VS: 28.05'

TVD (ft)

MD: 7,561'  
TVD: 7,507.99'  
Inclination: 24.65 °  
Azimuth: 3.07 °  
VS: 59.49'

TVD (ft)

MD: 7,651'  
TVD: 7,586.83'  
Inclination: 32.85 °  
Azimuth: 0.77 °  
VS: 102.71'

65% CHK: wh-llgy, medgy, crm-brn, mot, pty-blky, sft-frm, fri-brit, silty ip, rthy lstr, wxy, calc, 35% MRLST: med-dk gy, sb pty-blky, frm-mod hd, brit, silty tex, mot, rthy lstr, calc mtx: mod-fast string bl-wh cut, resd ring, no od, no flor

85% MRLST: med-dk gy, sb pty-blky, frm-mod hd, brit, silty tex, mot, rthy lstr, calc mtx, 15% CHK: wh-llgy, medgy, crm-brn, mot, pty-blky, sft-frm, fri-brit, silty ip, rthy lstr, wxy, calc: mod-fast string bl-wh cut, resd ring, no od, no flor

80% MRLST: med gy-dk gy, sb blk-ly-sb pty, sl mod, sft-frm, sl silty, calc, 20% CHK: med gy-llt-gy, mot tex, sb blk-ly-sb pty, sl frm, sl arg, v calc, scat bent; mod-fast string bl-wh cut, resd ring, no od, no flor

50% CHK: med gy-llt-pty, sl frm, sl arg, v cgy-dk gy, sb blk-ly-sb pty, calc: tr bent, mo resd ring, no od, no f

att bent

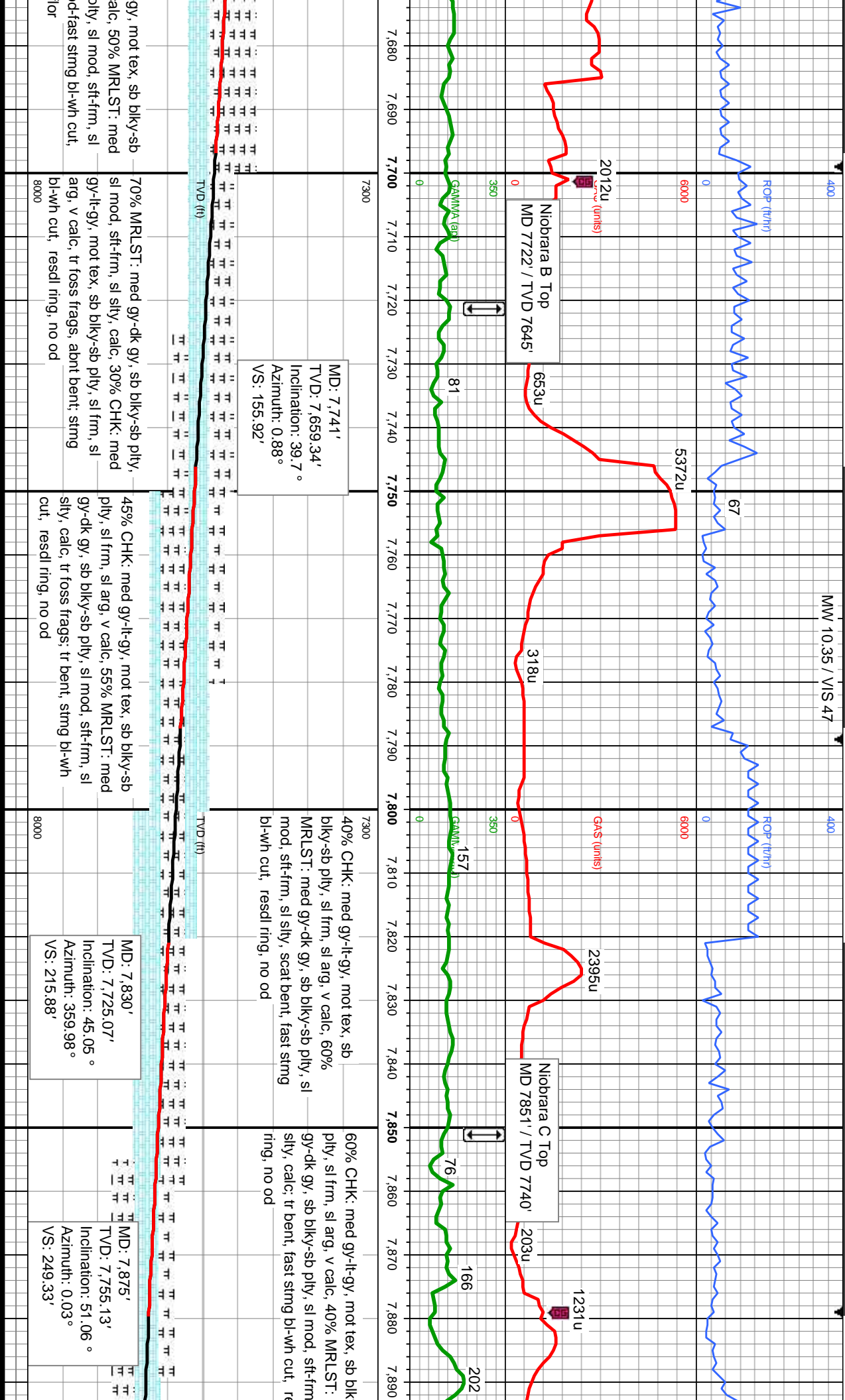
8000

8000

8000





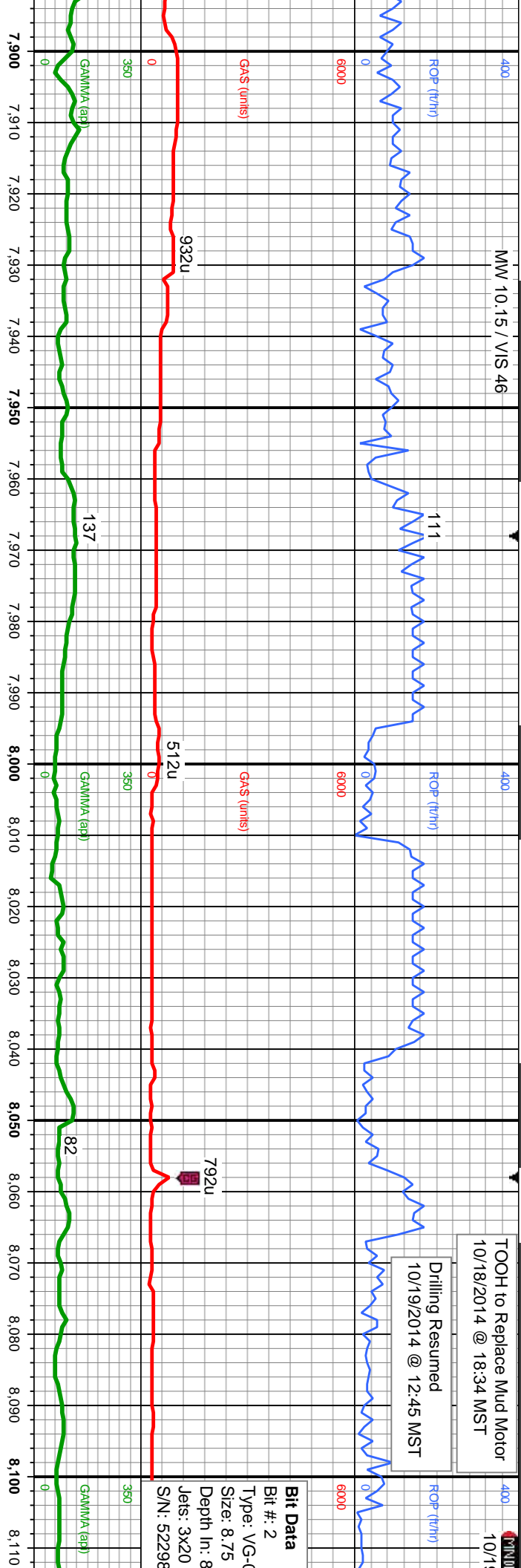


TOOH to Replace Mud Motor  
10/18/2014 @ 18:34 MST

Drilling Resumed  
10/19/2014 @ 12:45 MST

Bit Data

Bit #: 2  
Type: VG-C  
Size: 8.75  
Depth In: 8  
Jets: 3x20  
S/N: 52298



75% CHK: med gy-lt-gy, mot tex, sb blk-y-sb  
ply, sl frm, sl arg, v calc, 25% MRLST: med  
gy-dk gy, sb blk-y-sb ply, sl mod, sft-frm, sl  
silty, calc; tr bent, fast stmg bl-wh cut, resdl  
ring, no od

70% CHK: med gy-lt-gy, mot tex, sb blk-y-sb  
ply, sl frm, sl arg, v calc, 30% MRLST: med  
gy-dk gy, sb blk-y-sb ply, sl mod, sft-frm, sl  
silty, calc; tr bent, fast stmg bl-wh cut, resdl  
ring, no od

80% CHK: med gy-lt-gy, mot tex, sb blk-y-sb  
ply, sl frm, sl arg, v calc, 20% MRLST: med  
gy-dk gy, sb blk-y-sb ply, sl mod, sft-frm, sl  
silty, calc; scat bent, fast stmg yel-brn cut,  
resdl ring, no od

75% CHK: med gy-lt-gy, mot tex, sb blk-y-sb  
ply, sl frm, sl arg, v calc, 25% MRLST: med  
gy-dk gy, sb blk-y-sb ply, sl mod, sft-frm, sl  
silty, calc; scat bent, fast stmg yel-brn cut,  
resdl ring, no od

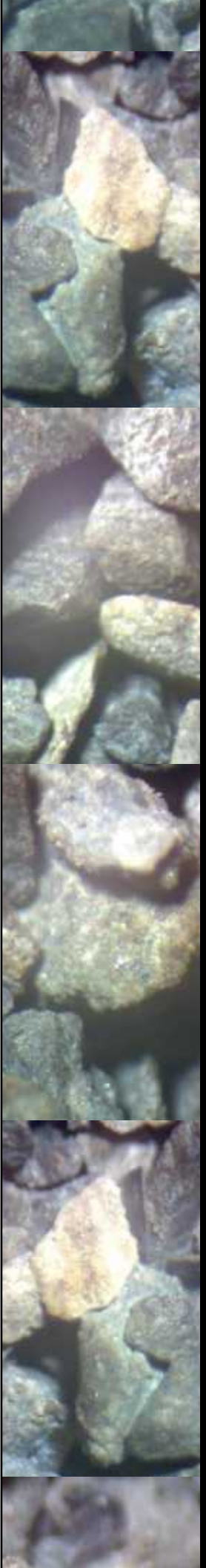
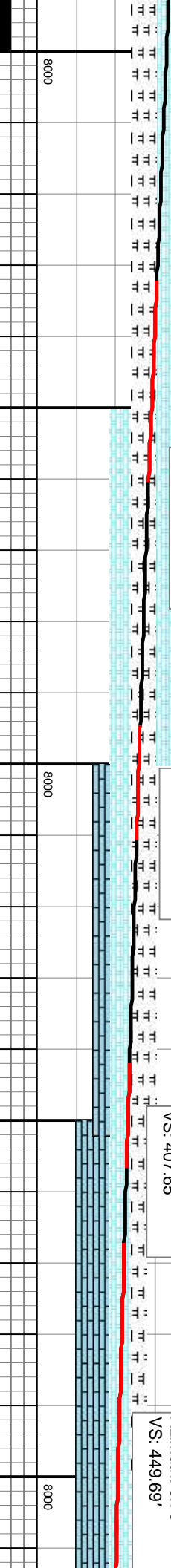
75% CHK:  
ply, sl frm,  
beige-crm,  
tex, mckln,  
mrlst and sl  
resdl ring,

MD: 7,965'  
TVD: 7,803.04'  
Inclination: 64.45 °  
Azimuth: 0.59 °  
VS: 325.28'

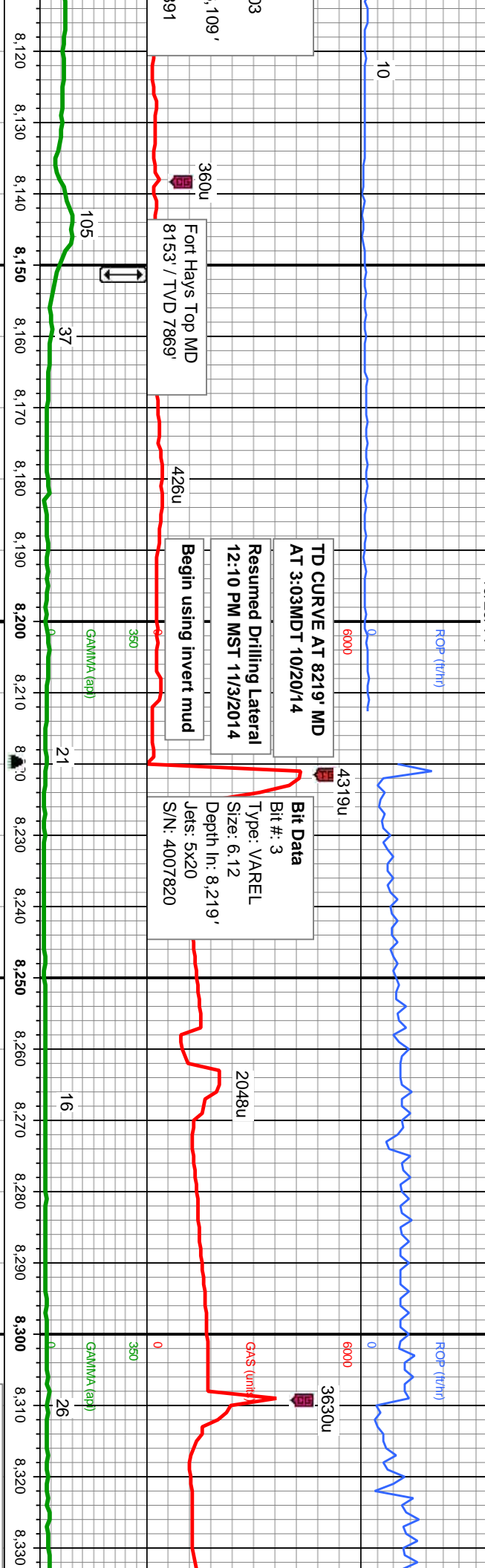
MD: 8,010'  
TVD: 7,821.76'  
Inclination: 66.4 °  
Azimuth: 1.45 °  
VS: 366.19'

MD: 8,055'  
TVD: 7,839.23'  
Inclination: 67.9 °  
Azimuth: 1.04 °  
VS: 407.65'

MD: 8,100'  
TVD: 7,855.24'  
Inclination: 70.41 °  
Azimuth: 0.75 °  
VS: 449.69'







med gy-lt-gy, mot tex, sb blkly-sb  
sl arg, v calc, 25% LMST: wh,  
sft-occ frm, brit, ply-sb blkly, sm  
calc, uphole contaminants of  
ply sh; mod-fast string blshwh cut,  
no od

85% LMST: wh, beige-crm, sft-occ frm, brit,  
ply-sb blkly, sm tex, mcxln, calc, 15% CHK:  
med gy-lt-gy, mot tex, sb blkly-sb ply, sl frm,  
sl arg, v calc, uphole contaminants of mlst  
and stly sh

MD: 8,208'  
TVD: 7,876.7'  
Inclination: 87.87 °  
Azimuth: 356.53 °  
VS: 555.04'

MD: 8,257'  
TVD: 7,877.49'  
Inclination: 90.28 °  
Azimuth: 356.55 °  
VS: 603.95'

MD: 8,144'  
TVD: 7,867.66'  
Inclination: 76.79 °  
Azimuth: 358.27 °  
VS: 491.88'

MD: 8,171'  
TVD: 7,872.97'  
Inclination: 80.55 °  
Azimuth: 356.53 °  
VS: 518.32'

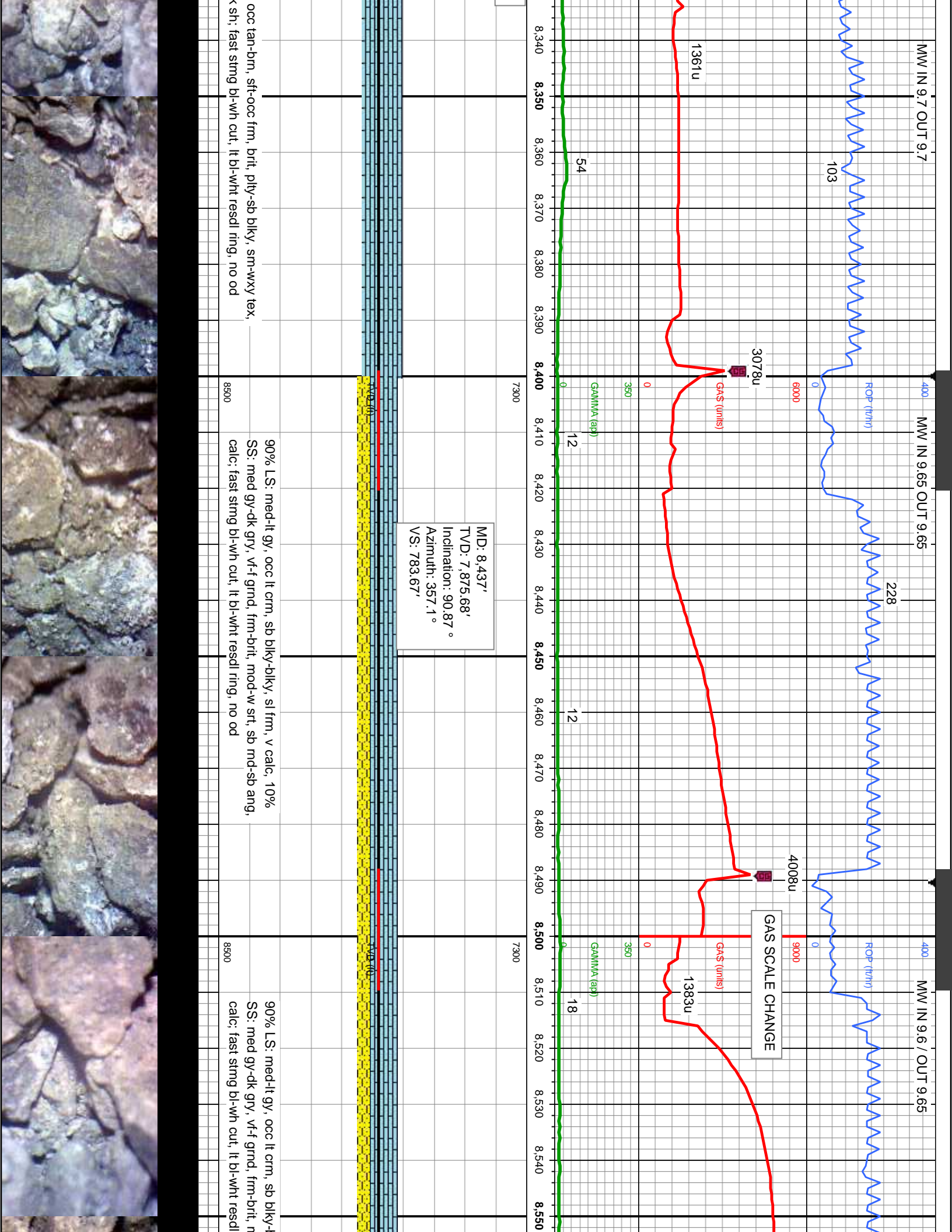
95% LMST: wh, beige-crm, sft-occ frm, brit,  
ply-sb blkly, sm tex, mcxln, calc, 5% CHK:  
med gy-lt-gy, mot tex, sb blkly-sb ply, sl frm,  
sl arg, v calc, uphole contaminants of mlst  
and stly sh

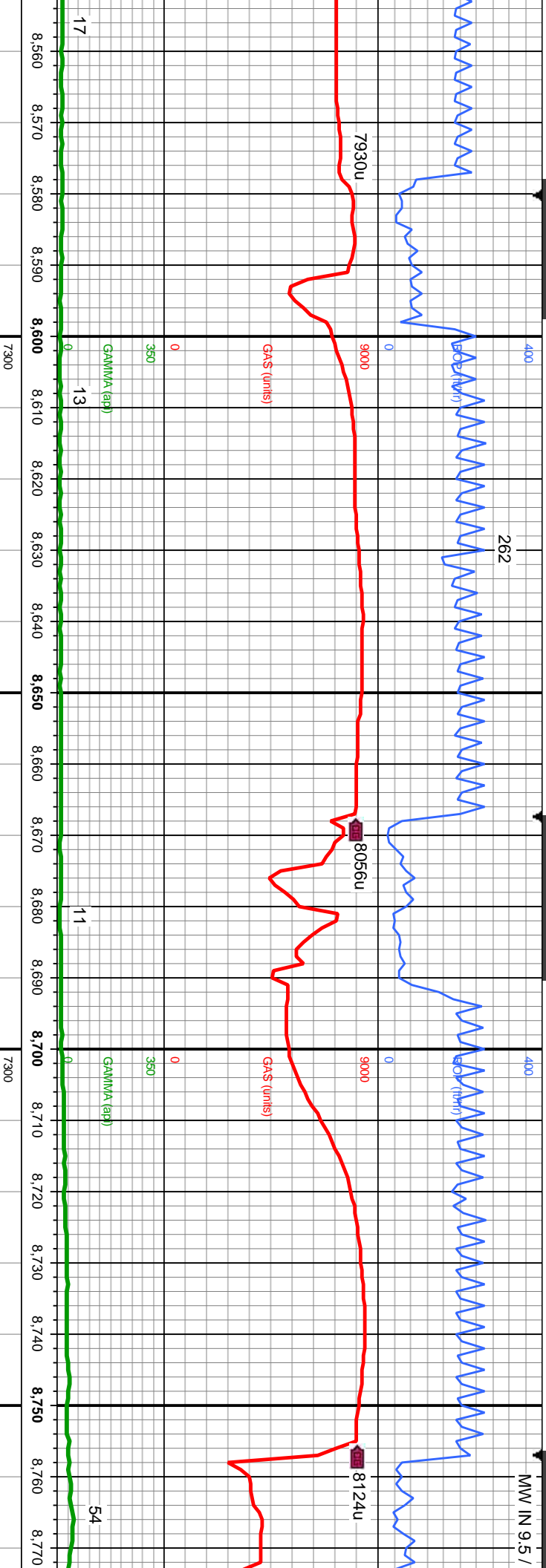
100% LS: brn-tan occ beige-crm, sft-occ frm,  
brit, ply-sb blkly, sm-wxy tex, mcxln, v calc; fast  
string bl-wh cut, lt bl-wh resdl ring, no od

100% LS: beige-crm  
mcxln, v calc, occ bl









MD: 8,616'  
 TVD: 7,874.37'  
 Inclination: 89.97°  
 Azimuth: 358.34°  
 VS: 962.53'

MD: 8,706'  
 TVD: 7,874.16'  
 Inclination: 90.3°  
 Azimuth: 359.49°  
 VS: 1,052.51'

dkly, sl frm, v calc, 10%  
 mod-w srt, sb md-sb ang,  
 ring, no od

85% LS: med-lt gy, occ lt crm, sb blkly-blky, sl frm, v calc, 15%  
 SS: med gy-dk gry, vf-f grnd, frm-bit, mod-w srt, sb md-sb  
 ang, calc, fast stmg bl-wh cut, lt bl-wht resdl ring, no od

75% LS: med-lt gy, occ lt crm, sb blkly-blky, sl frm, v calc,  
 SS: med gy-dk gry, vf-f grnd, frm-bit, mod-w srt, sb md-s  
 calc, fast stmg bl-wh cut, lt bl-wht resdl ring, no od

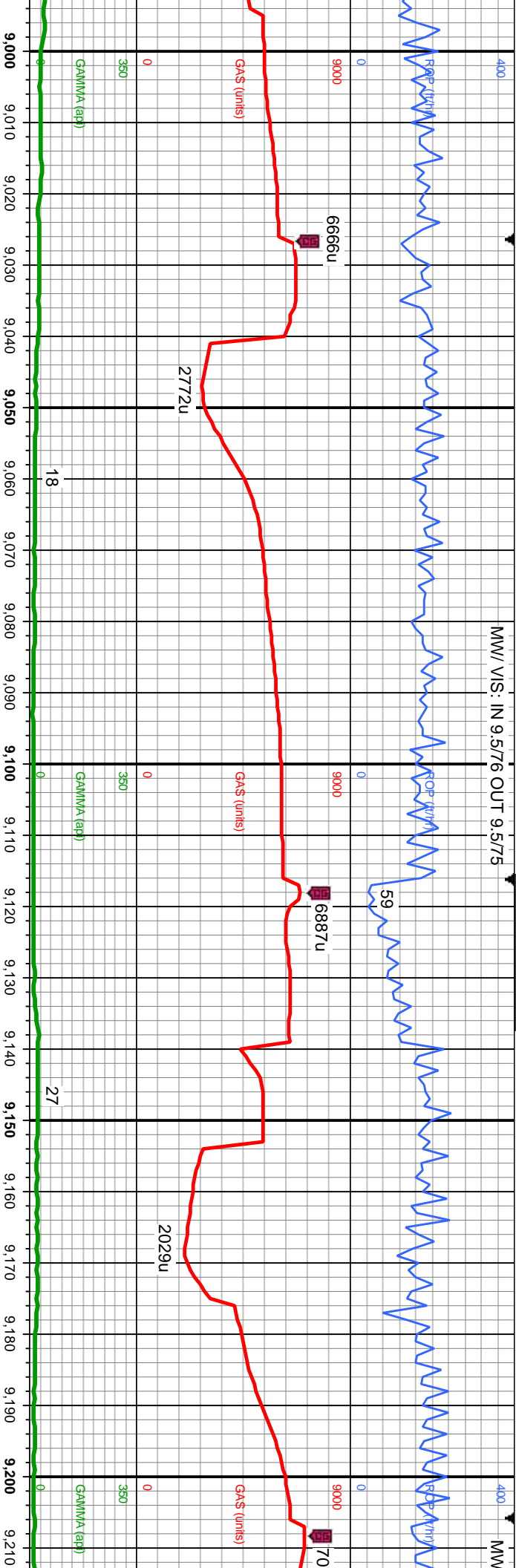








MMW/ VS: IN 9.5/76 OUT 9.5/75



MD: 9,065'  
TVD: 7,879.26'  
Inclination: 89.72 °  
Azimuth: 0.37 °  
VS: 1,411.45'

MD: 9,154'  
TVD: 7,880.49'  
Inclination: 88.7 °  
Azimuth: 1.04 °  
VS: 1,500.44'

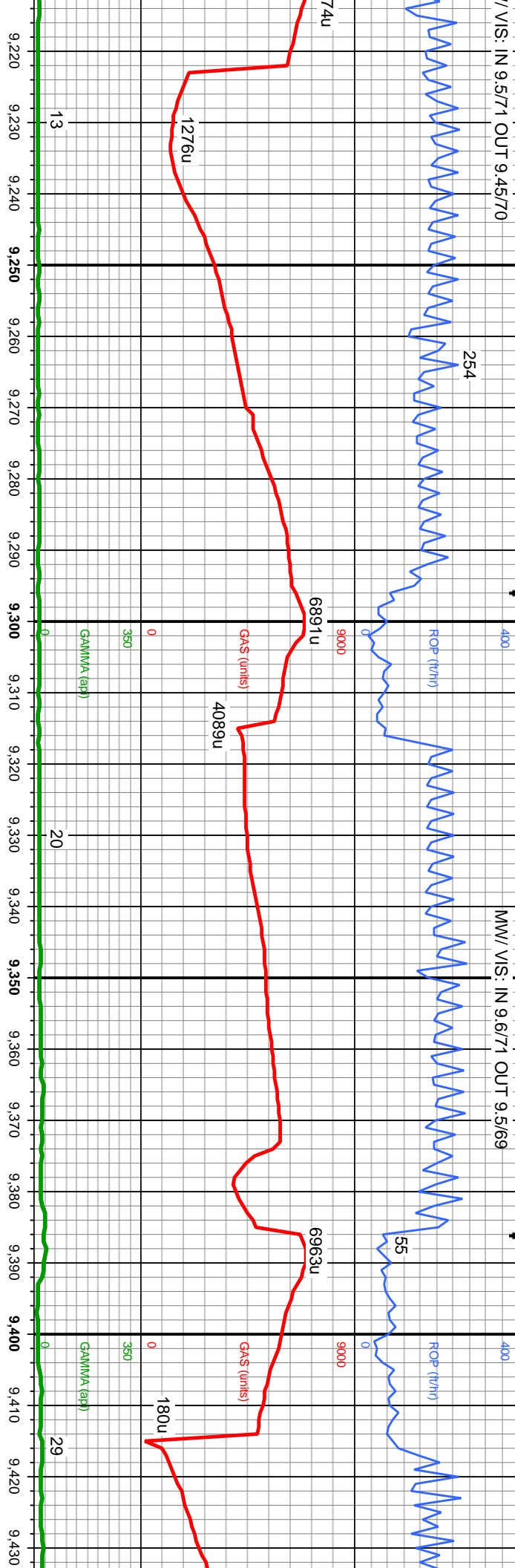
80% LS: med-lt gy, occ lt crm, sb blk-y-bkly, sl frm, v calc, 20%  
SS: med gy-dk gry, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang,  
calc; fast stmg bl-wh cut, lt bl-wht resdl ring, no od

100% LS: med-lt gy, occ lt crm, sb blk-y-bkly, sl frm, v calc, tr SS:  
med gy-dk gry, vf-f grnd, frm-bit, mod-w srt, sb md-sb ang,  
calc; slow stmg mky bl cut, lt bl-wht resdl ring, no od



/// VIS: IN 9.5/71 OUT 9.45/70

MW/ VIS: IN 9.6/71 OUT 9.5/69



MD: 9,334'  
TVD: 7,882.49'  
Inclination: 90.03 °  
Azimuth: 1.42 °  
VS: 1,680.37'

00% LS: med-lt gy, occ lt crm, sb blk-ly-blky, sl frm, v calc, tr  
SS: med gy-dk gry, vf-f grnd, frm-brit, mod-w stf, sb rnd-sb  
ang, calc; slow stmg mky bl cut, lt bl-wht resdl ring, no od

90% LS: med-lt gy, occ lt crm, sb blk-ly-blky, sl frm, v calc, 10%  
SS: med gy-dk gry, vf-f gr, frm-brit, mod-w stf, sb rnd-sb ang,  
calc; slow stmg mky bl cut, lt bl-wht resdl ring, no od

100% LS: med-lt g  
slow-no cut, lt bl-w

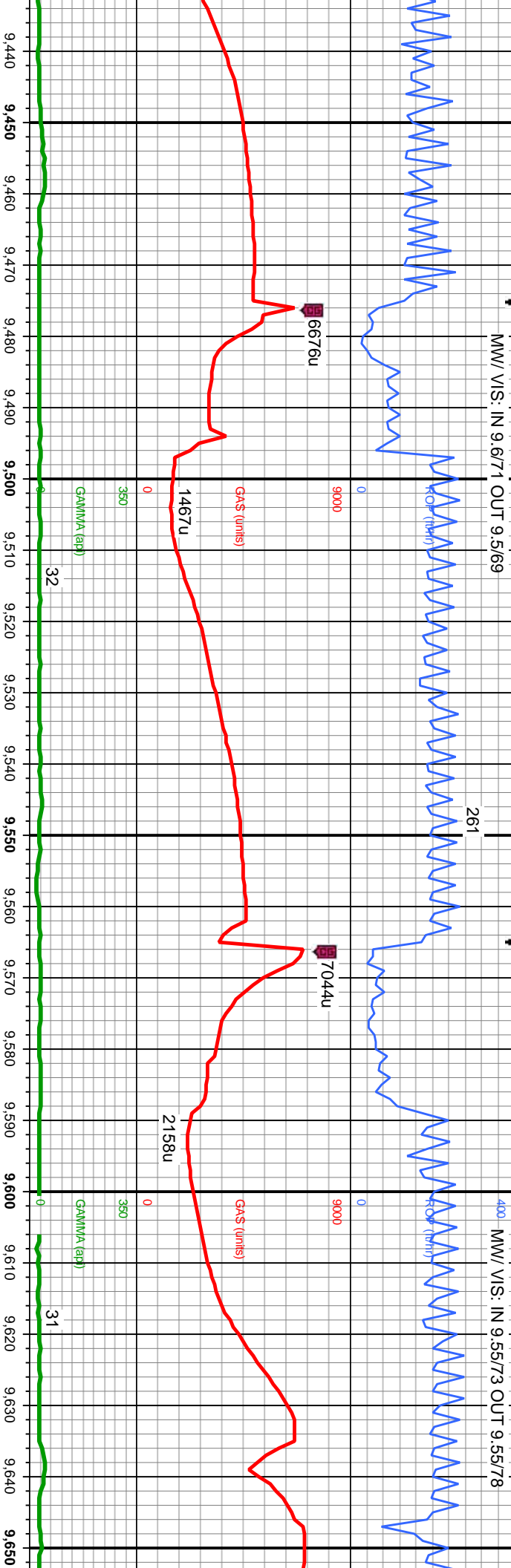




MMW/ VIS: IN 9.67/1 OUT 9.5/69

261

400 MMW/ VIS: IN 9.55/73 OUT 9.55/78



MD: 9,514'  
TVD: 7,882.63'  
Inclination: 89.88 °  
Azimuth: 1.59 °  
VS: 1,860.31'

7300

7300

Y, occ lt crm, sb blkly-blky, sl frm, v calc;  
ht resdl ring, no od

8500

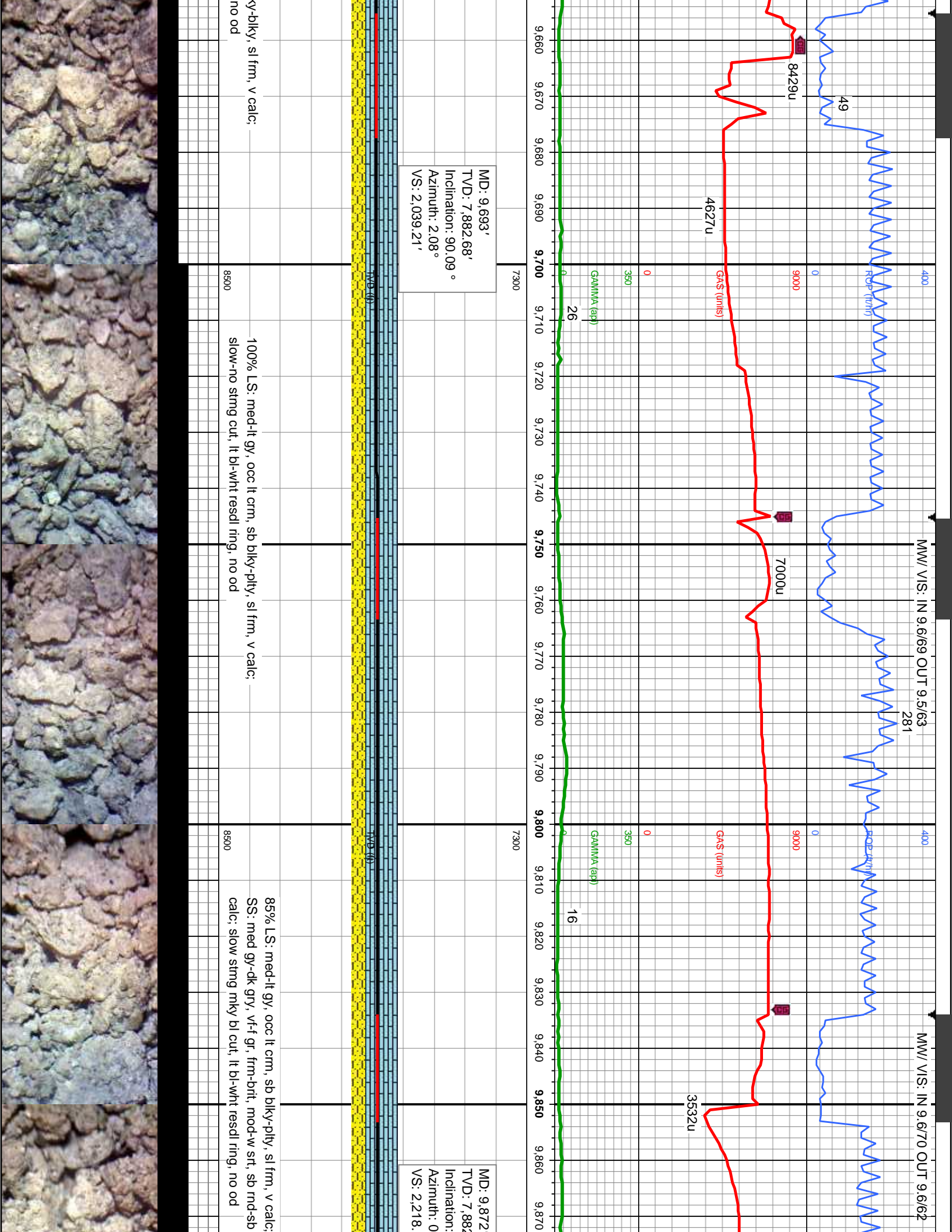
100% LS: med-lt gy, occ lt crm, sb blkly-blky, sl frm, v calc,  
tr SS: med gy-dk gry, vf-f gr, frm-brlt, mod-w srt, sb md-sb  
ang, calc; slow stimg mky bl cut, lt bl-wht resdl ring, no od

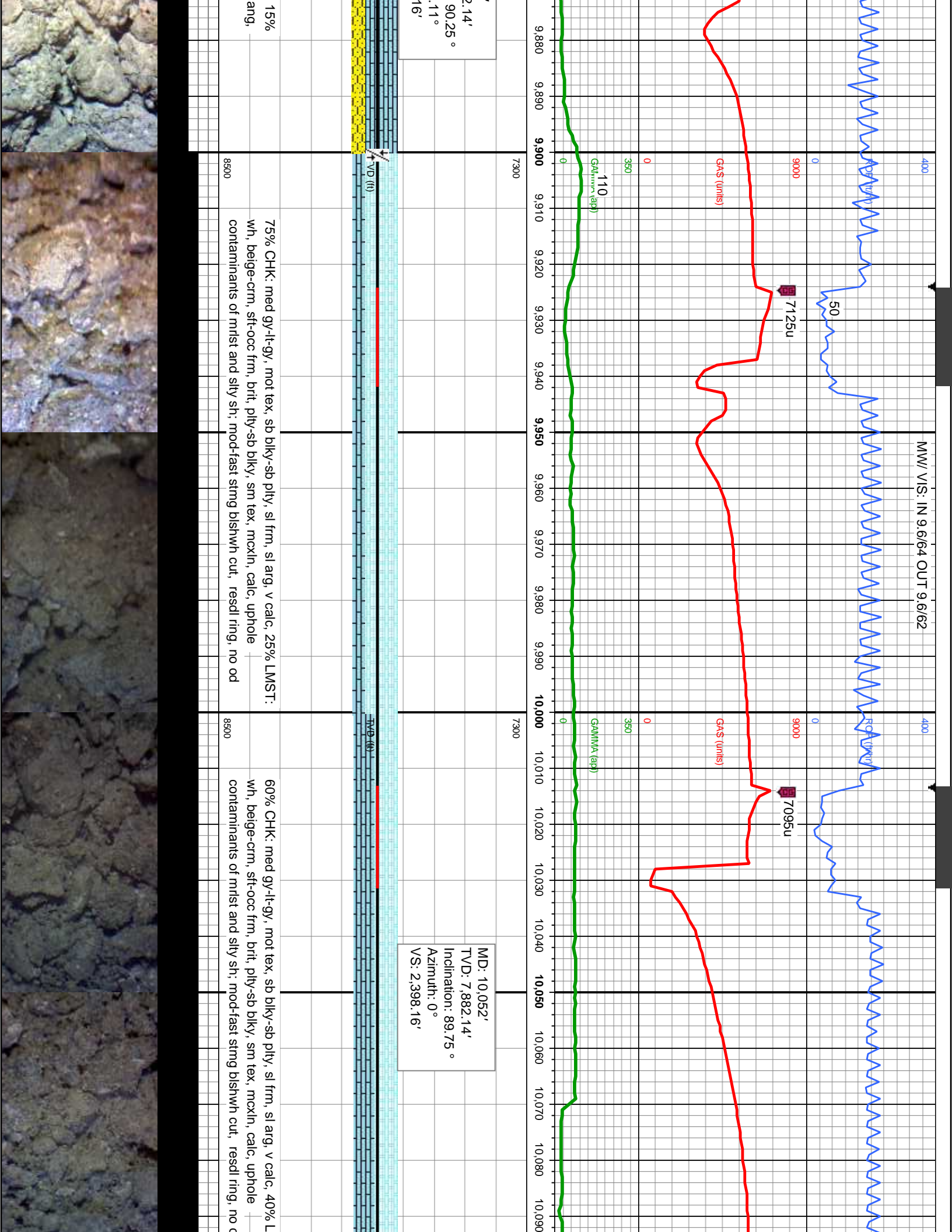
8500

100% LS: med-lt gy, occ lt crm, sb blkly-blky, sl frm, v calc;  
slow-no stimg cut, lt bl-wht resdl ring, no od







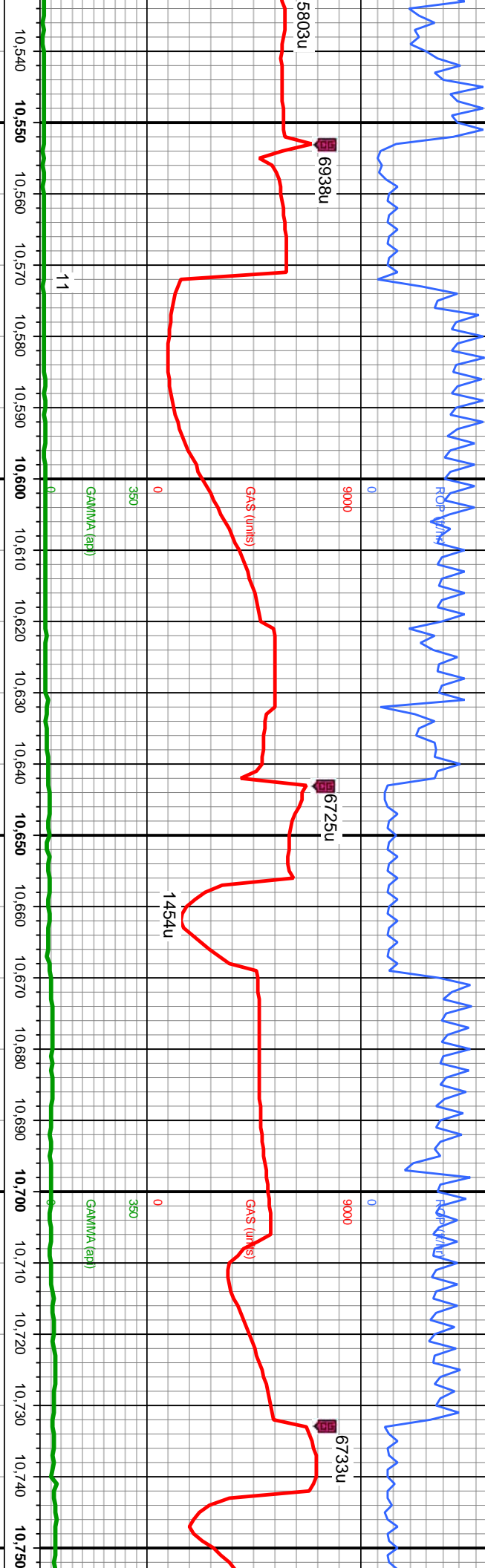












MD: 10,590'  
TVD: 7,877.28'  
Inclination: 90.98 °  
Azimuth: 1.23 °  
VS: 2,936.06'

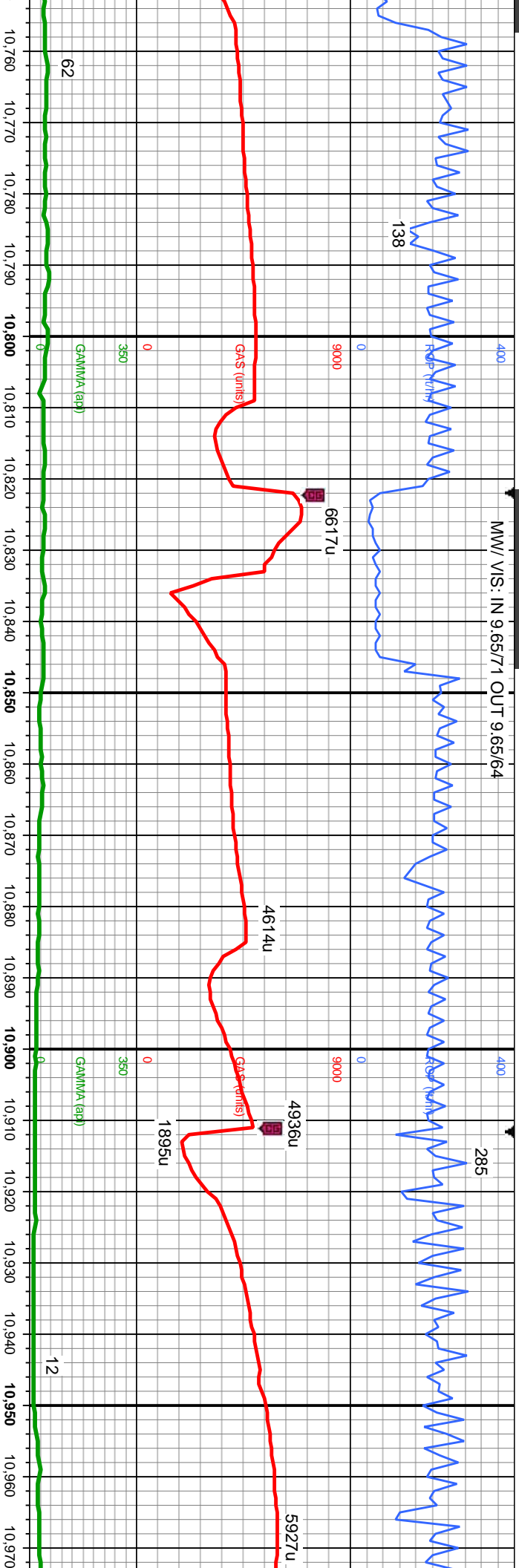
MD: 10,680'  
TVD: 7,876.27'  
Inclination: 90.3 °  
Azimuth: 1.05 °  
VS: 3,026.04'

occ lt crm, sb blkly-pty, sl frm, v calc; 5% vf-f gr, frm-brt, mod-w srt, sb md-sb ang, y bl cut, lt bl-wht resdl ring, no od	8500
95% LS: med-lt gy, occ lt crm, sb blkly-pty, sl frm, v calc; 5% SS: med gy-dk gry, vf-f gr, frm-brt, mod-w srt, sb md-sb ang, calc; slow strng mky bl cut, lt bl-wht resdl ring, no od	8500
80% LS: med-lt gy, occ lt crm, sb blkly med gy-dk gry, vf-f gr, frm-brt, mod-w slow strng mky bl cut, lt bl-wht resdl r	8500





MW/ VIS: IN 9.65/71 OUT 9.65/64



MD: 10,769'  
TVD: 7,875.8'  
Inclination: 90.3°  
Azimuth: 0.37°  
VS: 3,115.03'

MD: 10,949'  
TVD: 7,875.63'  
Inclination: 89.81°  
Azimuth: 0.32°  
VS: 3,295.02'

80% LS: med-lt gy, occ lt crm, sb blk-y-ply, sl frm, v calc; 20% SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb ang, calc; slow strng mky bl cut, lt bl-wht resdl ring, no od

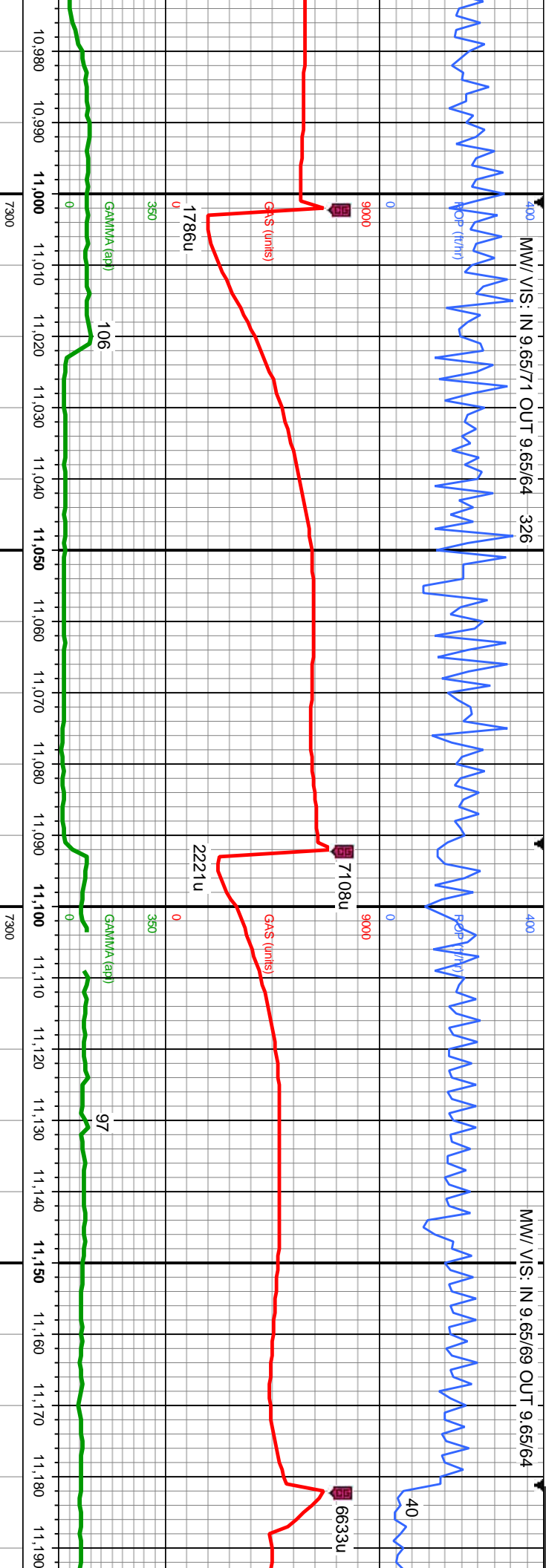
70% LS: med-lt gy, occ lt crm, sb blk-y-ply, sl frm, v calc; 20% SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb ang, calc; strng mky bl-wh cut, lt bl-wht resdl ring, no od





400 MW/ VIS: IN 9.65/71 OUT 9.65/64 326

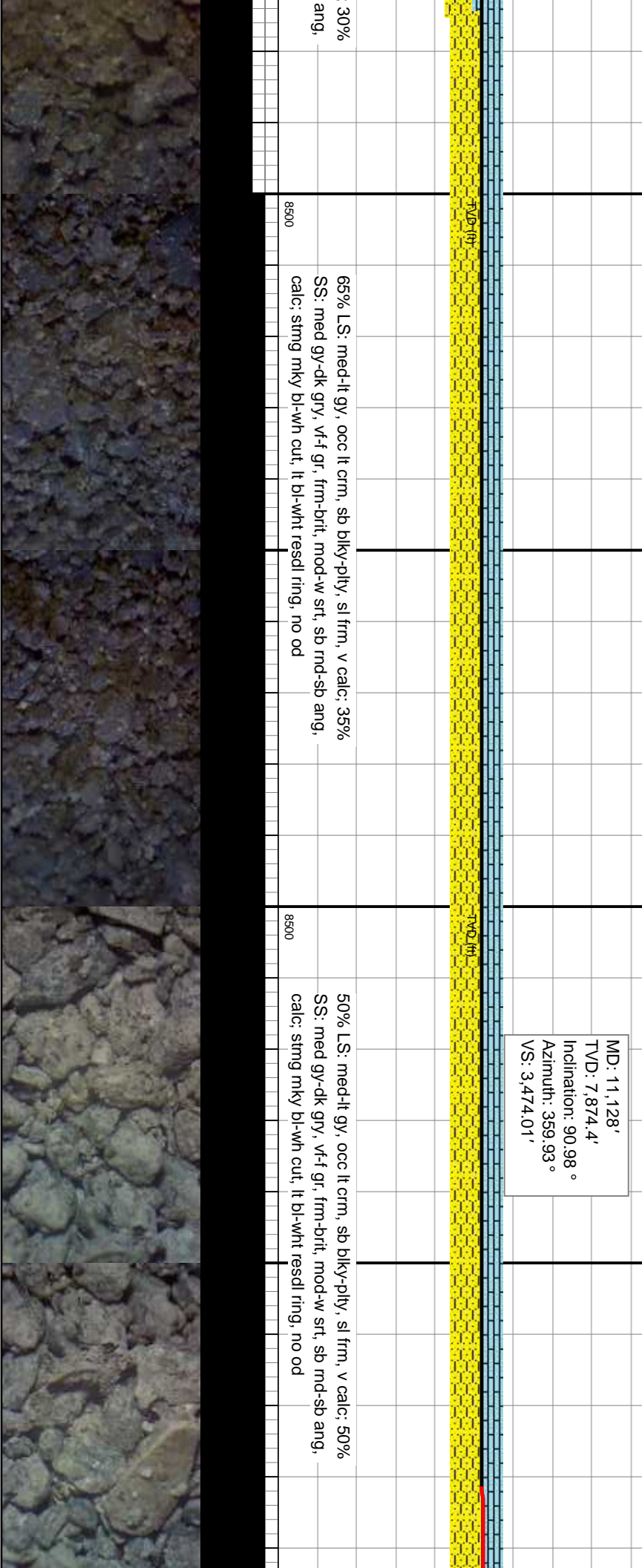
MW/ VIS: IN 9.65/69 OUT 9.65/64



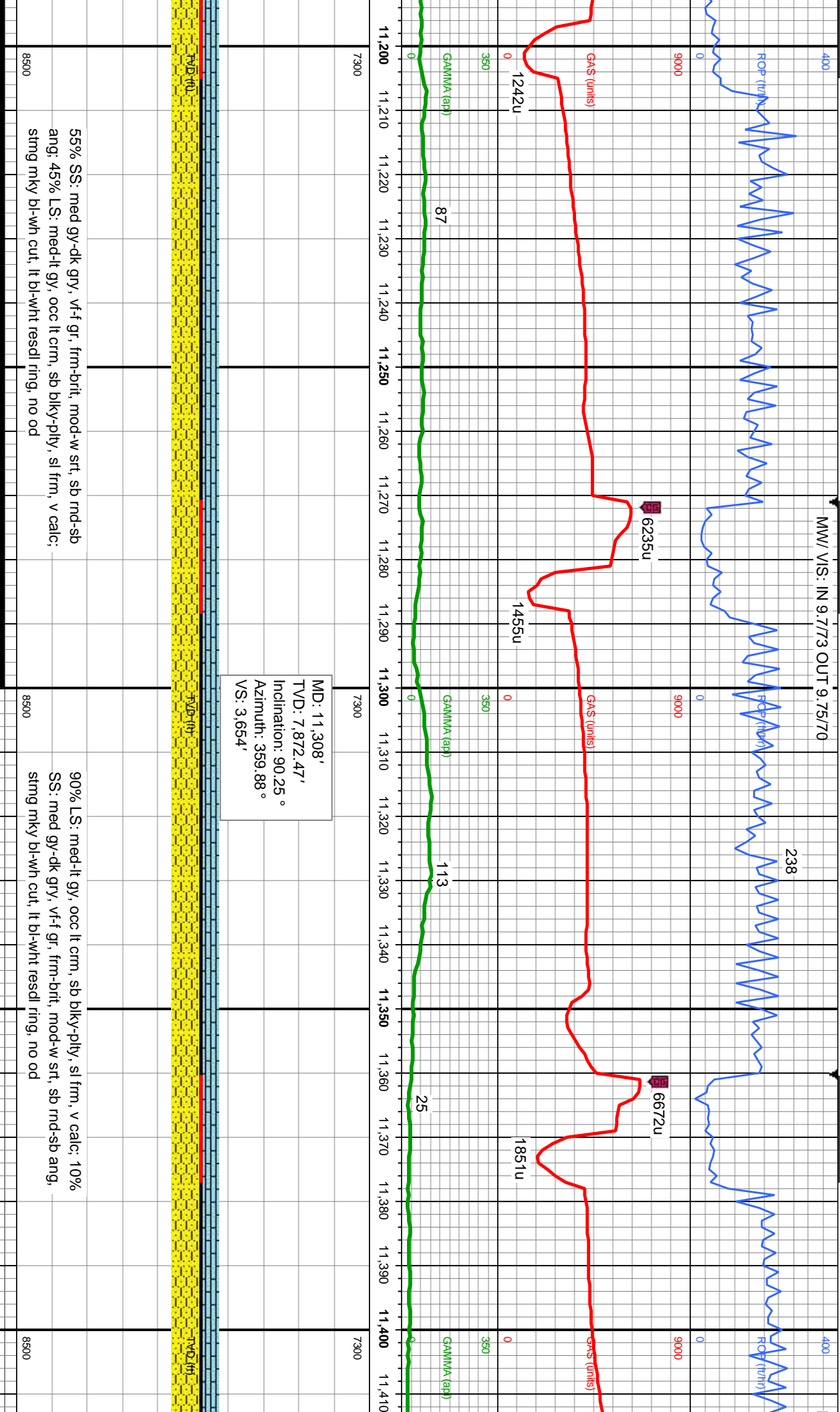
MD: 11,128'  
TVD: 7,874.4'  
Inclination: 90.98 °  
Azimuth: 359.93 °  
VS: 3,474.01'

65% LS: med-lt gy, occ lt crm, sb blk-y-pily, sl frm, v calc; 35%  
SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb ang,  
calc; stmg mky bl-wh cut, lt bl-wht resdl ring, no od

50% LS: med-lt gy, occ lt crm, sb blk-y-pily, sl frm, v calc; 50%  
SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb md-sb ang,  
calc; stmg mky bl-wh cut, lt bl-wht resdl ring, no od



MW/ VIS: IN 9.7773 OUT 9.75170



55% SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb ang; 45% LS: med-lt gy, occ lt crm, sb blk-y-pily, sl frm, v calc; stimg mky bl-wh cut, lt bl-whl resdl ring, no od

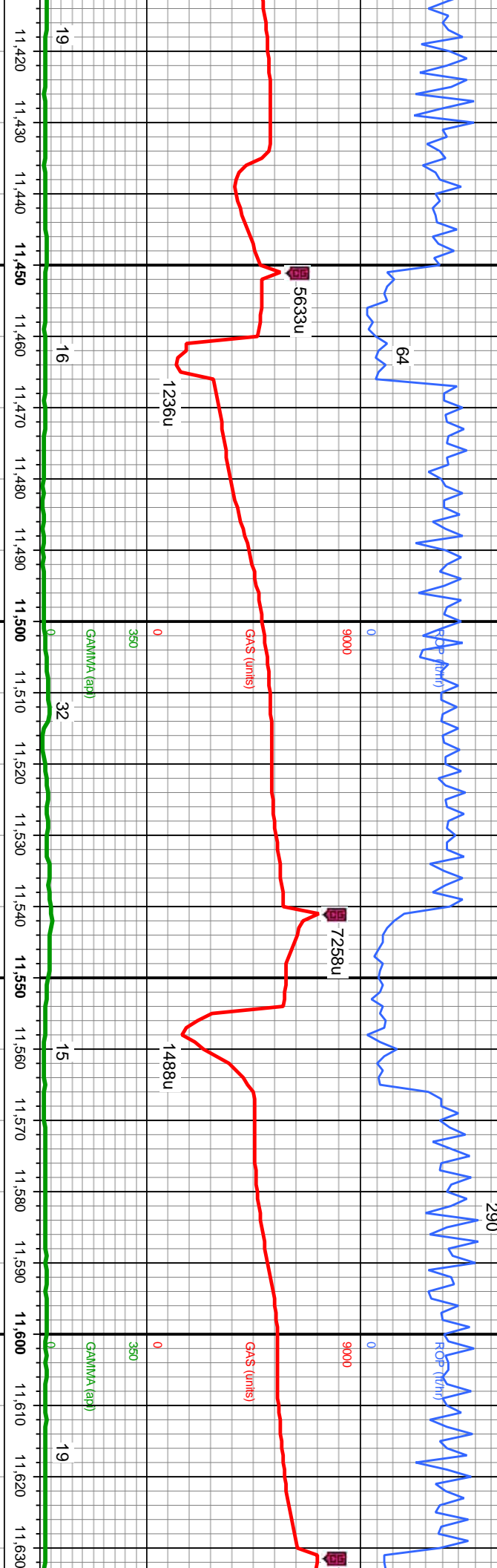
90% LS: med-lt gy, occ lt crm, sb blk-y-pily, sl frm, v calc; 10% SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb ang; stimg mky bl-wh cut, lt bl-whl resdl ring, no od





MMW/ VIS: IN 9.7/73 OUT 9.75/70

MMW/ VIS: IN 9.7/63 OUT 9.7/59

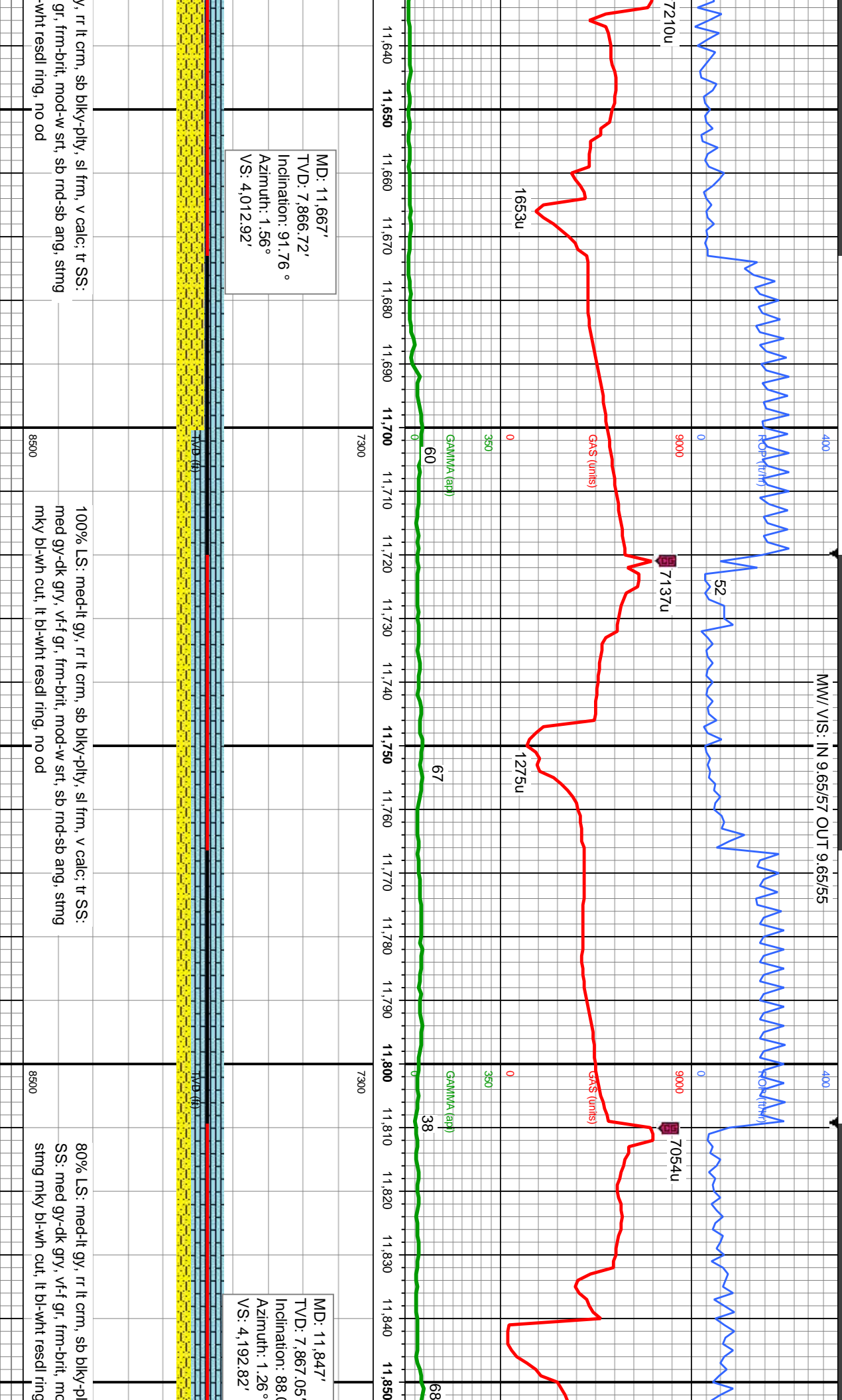


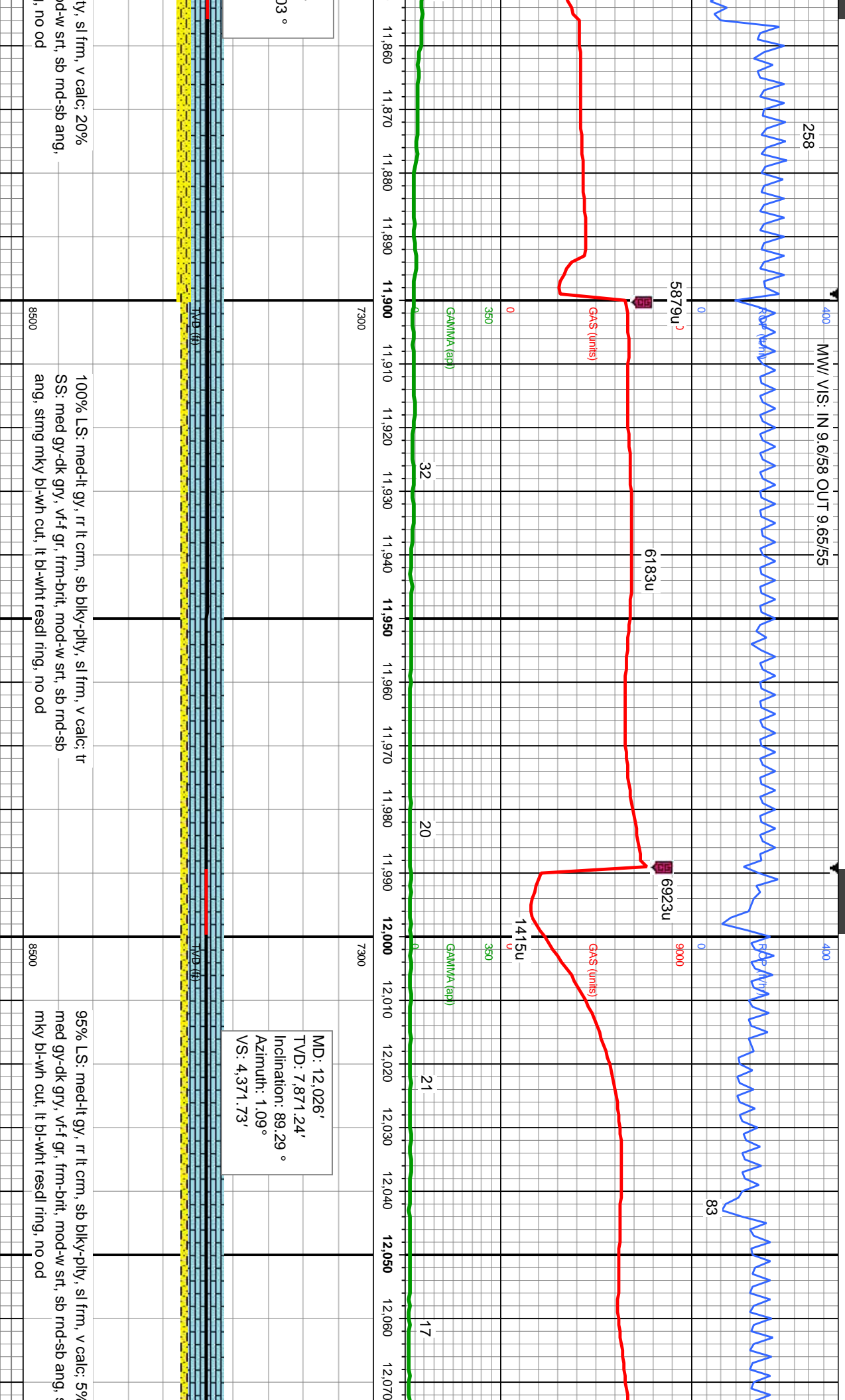
MD: 11,488'  
TVD: 7,870.77'  
Inclination: 90.83 °  
Azimuth: 0.19 °  
VS: 3,833.99'

TVD (ft)		TVD (ft)	
95% LS: med-lt gy, occ lt crm, sb blk-y-pty, sl frm, v calc; 5% SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb md-sb ang, sting mky bl-wh cut, lt bl-wht resd ring, no od		95% LS: med-lt gy, rr lt crm, sb blk-y-pty, sl frm, v calc; 5% SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb md-sb ang, sting mky bl-wh cut, lt bl-wht resd ring, no od	
8500		8500	



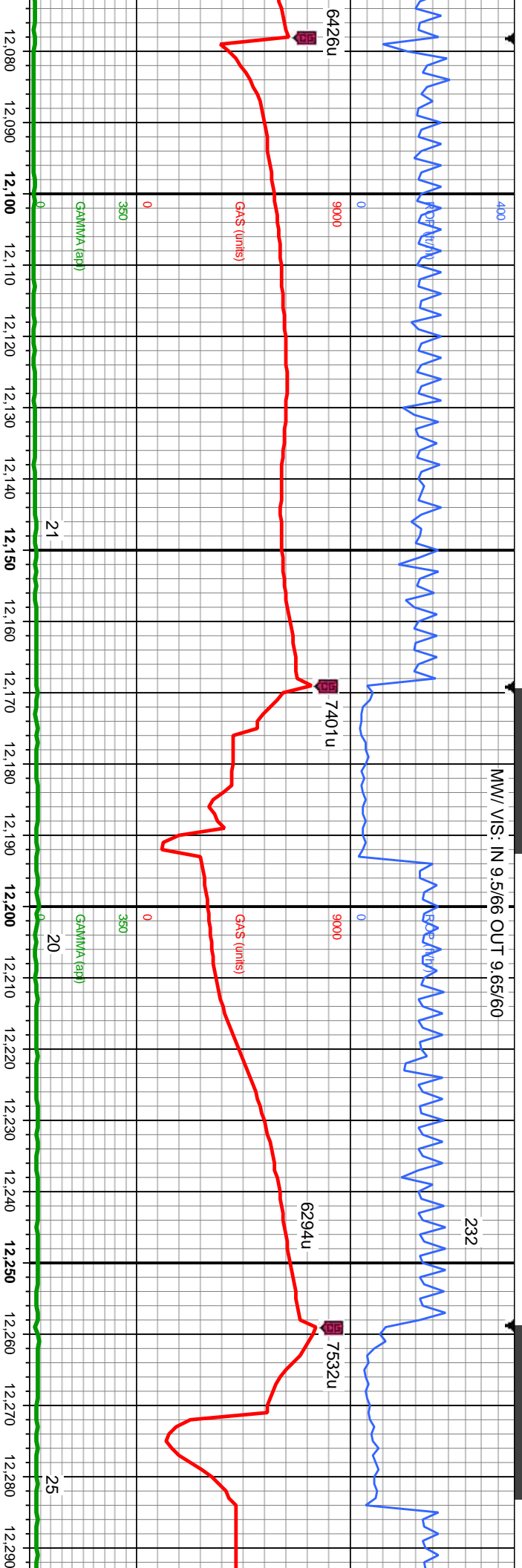








MMW/ VIS: IN 9.5/66 OUT 9.65/60



MD: 12,206'  
TVD: 7,872.31'  
Inclination: 90.03 °  
Azimuth: 0.19 °  
VS: 4,551.71'

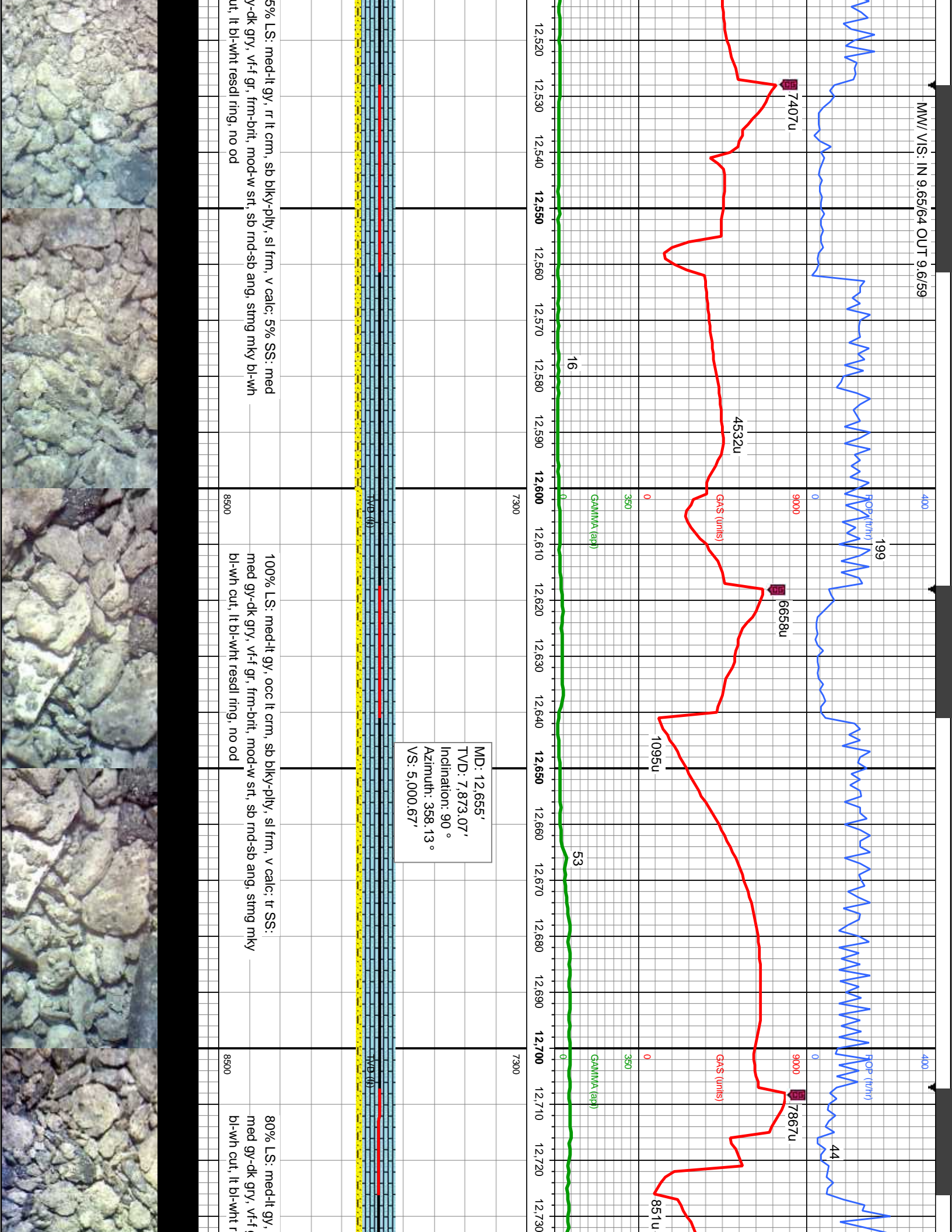
MD: 12,206'  
TVD: 7,872.31'  
Inclination: 90.03 °  
Azimuth: 0.19 °  
VS: 4,551.71'

SS: stmg	100% LS: med-lt gy, rr lt crm, sb blk-pilty, sl frm, v calc; tr SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb ang, stmg mky bl-wh cut, lt bl-wht resdl ring, no od	8500
SS: stmg	100% LS: med-lt gy, rr lt crm, sb blk-pilty, sl frm, v calc; tr SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb ang, stmg mky bl-wh cut, lt bl-wht resdl ring, no od	8500





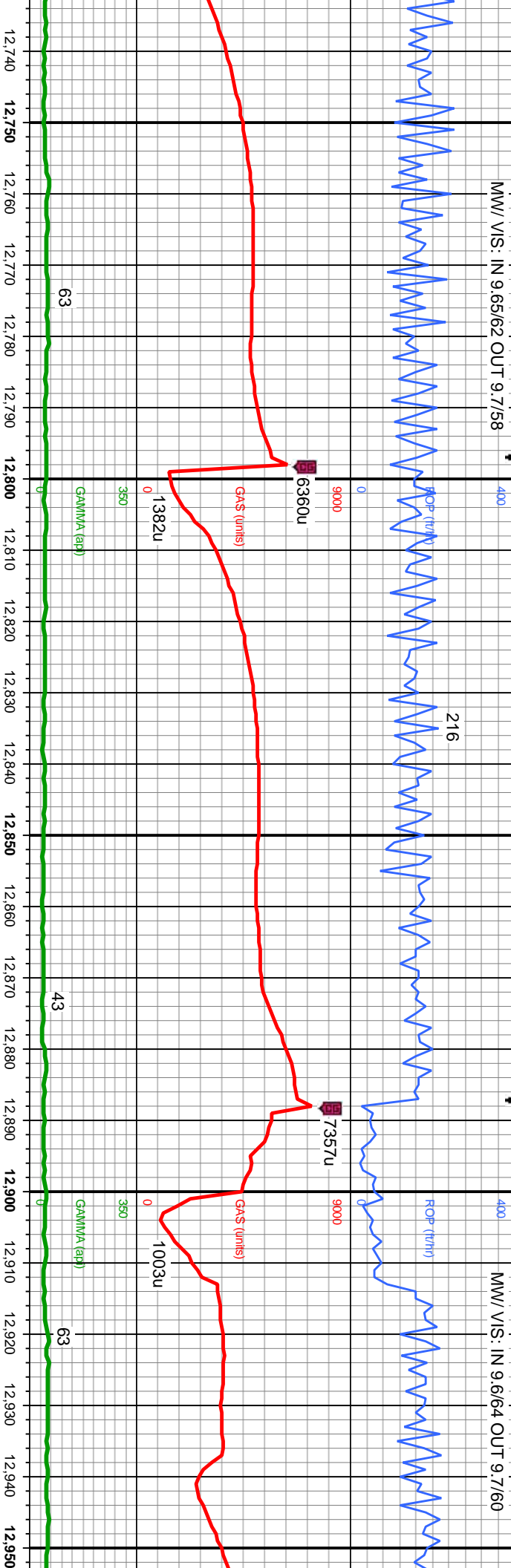






MW/ VIS: IN 9.65/62 OUT 9.7/58

MW/ VIS: IN 9.6/64 OUT 9.7/60



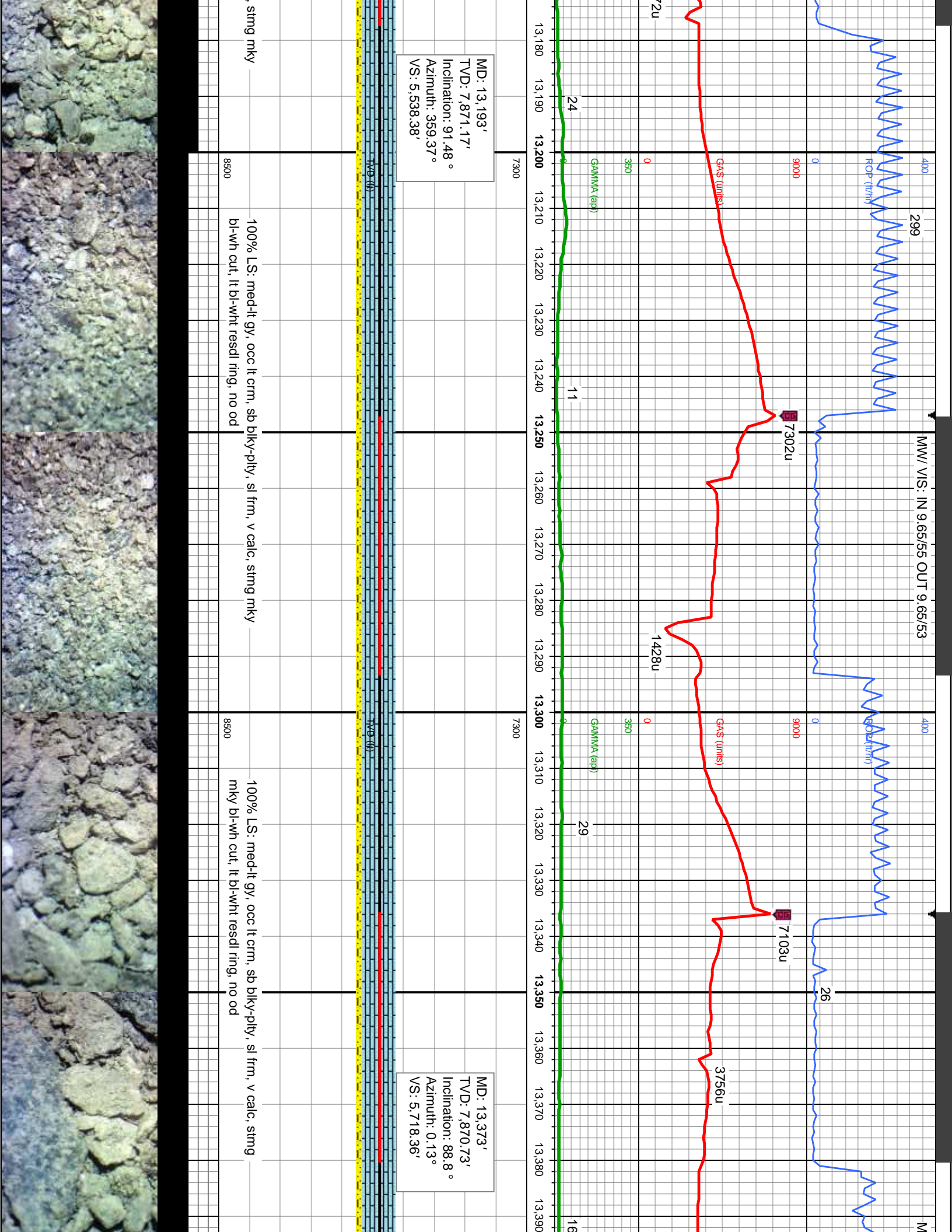
MD: 12,834'  
TVD: 7,875.38'  
Inclination: 88.52 °  
Azimuth: 357.71 °  
VS: 5,179.54'

occ lt crm, sb blk-y-pty, sl frm, v calc; 20% SS: gr, frm-bit, mod-w srt, sb rnd-sb ang, sting mky resd ring, no od		90% LS: med-lt gy, occ lt crm, sb blk-y-pty, sl frm, v calc; 10% SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb ang, sting mky bl-wh cut, lt bl-wht resd ring, no od		100% LS: med-lt gy, occ lt crm, sb blk-y-pty, sl frm, v calc; 10% SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb ang, sting mky bl-wh cut, lt bl-wht resd ring, no od	
8500		8500		8500	





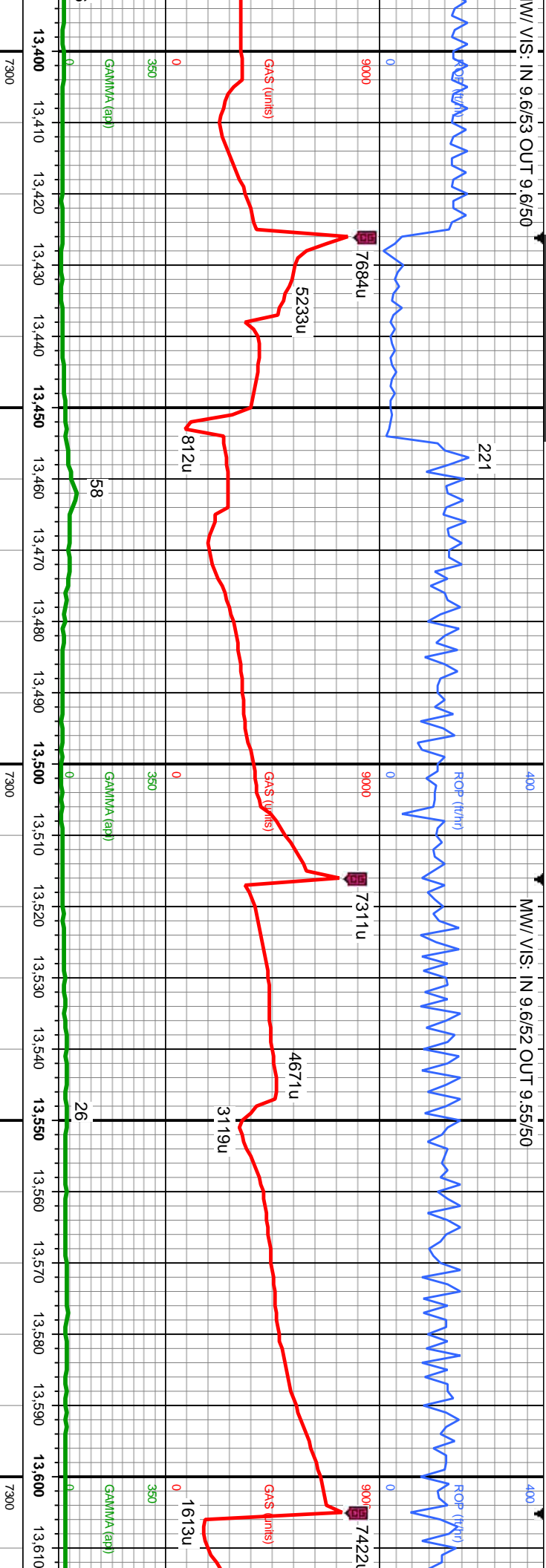






MW/ VIS: IN 9.6/53 OUT 9.6/50

MW/ VIS: IN 9.6/52 OUT 9.55/50



MD: 13,562'  
TVD: 7,875.45'  
Inclination: 88.18 °  
Azimuth: 359.32 °  
VS: 5,897.29'

INCH (ft)	INCH (ft)	INCH (ft)
7300	7300	7300
13,400	13,410	13,420
13,430	13,440	13,450
13,460	13,470	13,480
13,490	13,500	13,510
13,520	13,530	13,540
13,550	13,560	13,570
13,580	13,590	13,600
13,610		

100% LS: med-lt gy, occ lt crm, sb blk-pily, sl frm, v calc, stmg mky  
bl-wh cut, lt bl-wht resd ring, no od

100% LS: med-lt gy, occ lt crm, sb blk-pily, sl frm, v calc; tr SS: med  
gy-dk gry, vf-f gr, frm-brlt, mod-w srt, sb rnd-sb ang, stmg mky bl-wh  
cut, lt bl-wht resd ring, no od

1  
n  
n



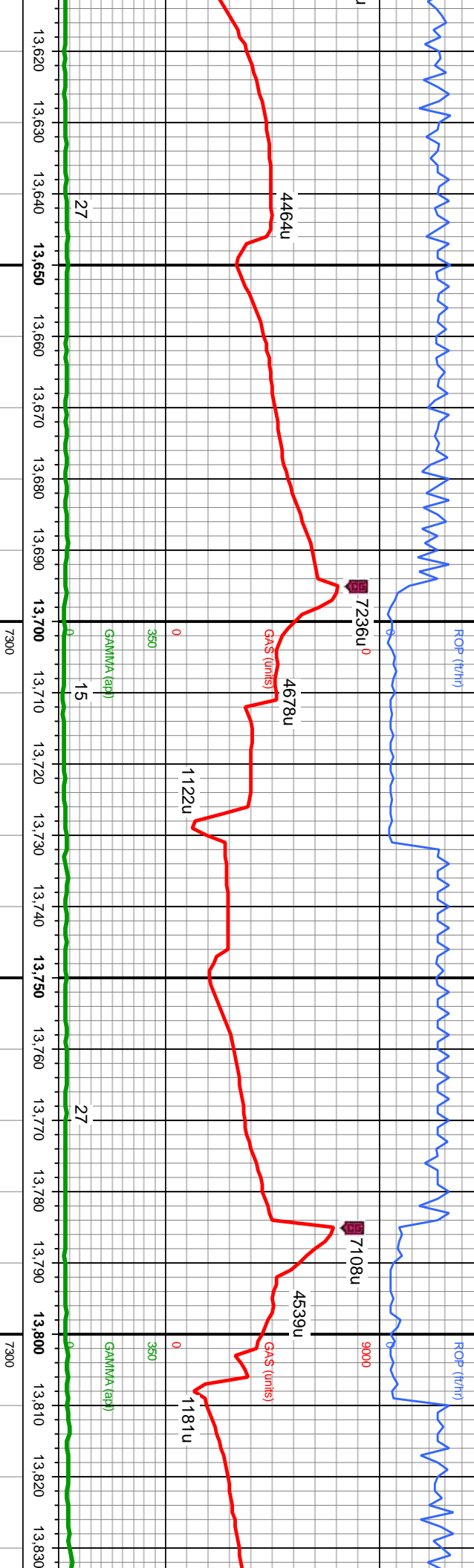


MW/ VIS: IN 9.6/54 OUT 9.6/49

MW/ VIS: IN 9.65/56 OUT 9.6/52

DEPTH 117714

MW/ VIS: IN 9.65/56 OUT 9.6/52



MD: 13.731'  
TVD: 7,880.27'  
Inclination: 88.73 °  
Azimuth: 0.46 °  
VS: 6,076.23'

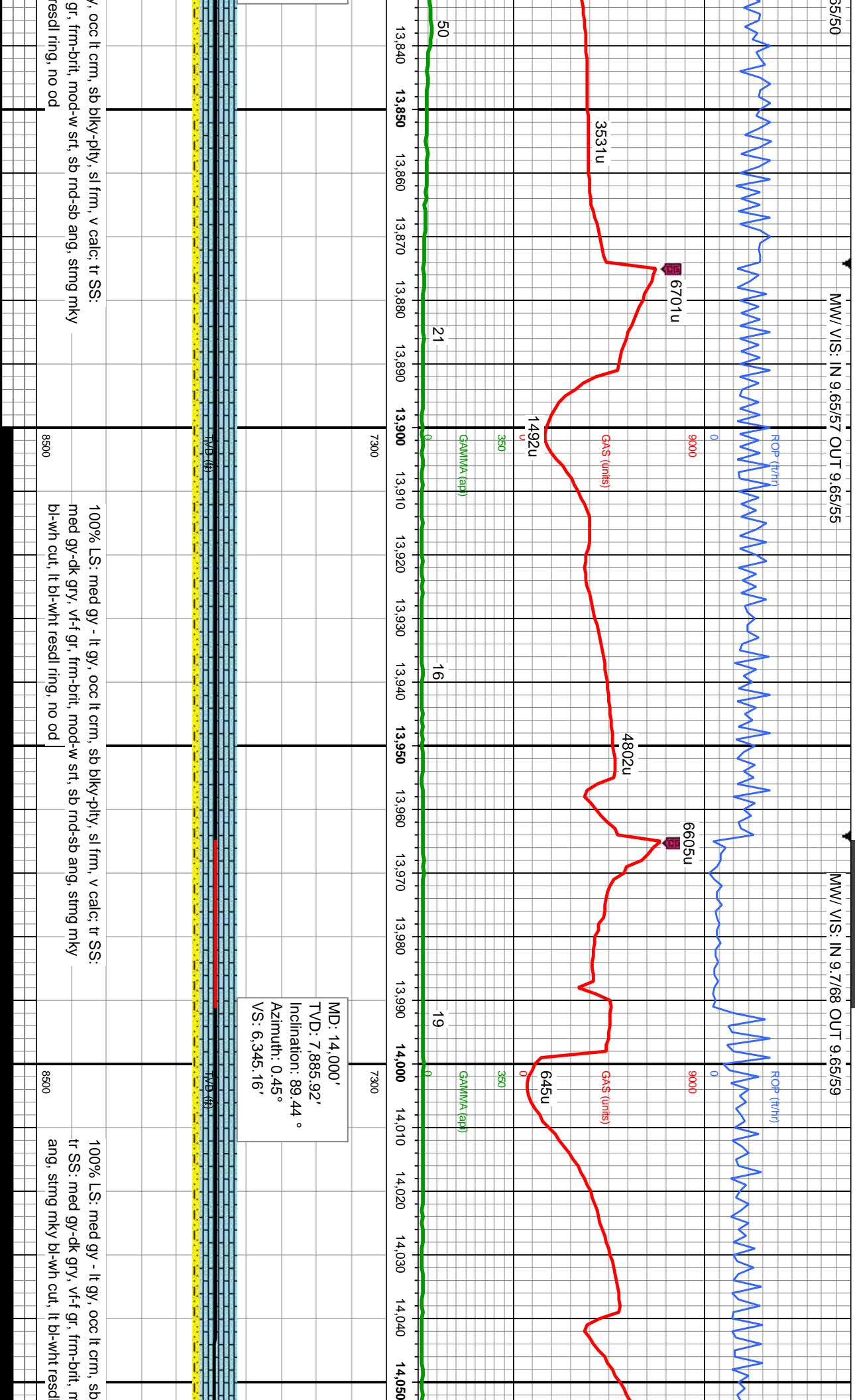
MD: 13.821'  
TVD: 7,882.53'  
Inclination: 88.39 °  
Azimuth: 0.03 °  
VS: 6,166.2'

00% LS: med-lt gy, occ lt crm, sb blk-y-pily, sl frm, v calc; tr SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb md-sb ang, stmg blk-b-wh cut, lt bl-wht resdl ring, no od

100% LS: med-lt gy, occ lt crm, sb blk-y-pily, sl frm, v calc, stmg mky bl-wh cut, lt bl-wht resdl ring, no od

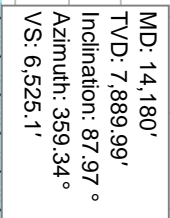
100% LS: med-lt gy, med gy-dk gry, vf-f blk-b-wh cut, lt bl-wht







MM/ VIS: IN 9.7/5



Resume drilling w/ bit #4  
@ 13:03 hrs 11/09/14

100% Ls: med gy - lt gy, occ lt cm, sb dlky-ply, sl frm, v  
med gy-dk gry, vf gr, frm-bitl, mod-w st, sb md-sb ang, s;  
bl-wh cut, lt bl-wht resdl ring, no od

400



100% LS, med gy - lt gy, occ lt crm, sb blk-y-ply, sl frm, v calc; tr SS, med gy-dk gry, vf-gr, frm-brn, mod-w str, sb md-sb ang, string mky bl-wh cut, lt bl-wh resdl ring, no od





MMW/ VIS: IN 9.7/50 OUT 9.75/47

MMW/ VIS: IN 9.7/50 OUT 9.7/48

400

ROP (ft/hr)

ROP (ft/hr)

ROP (ft/hr)

7643u

5104u

5631u

6314u

GA\$ (units)

GA\$ (units)

GA\$ (units)

Codell Sandstone Top  
14,601' MD / 7899' TVD

GAMMA (cp)

GAMMA (cp)

GAMMA (cp)

100

14,500 14,510 14,520 14,530 14,540 14,550 14,560 14,570 14,580 14,590 14,600 14,610 14,620 14,630 14,640 14,650 14,660 14,670 14,680 14,690 14,700 14,710

7300

7300

7300

MD: 14,539'  
TVD: 7,898.65'  
Inclination: 88.86 °  
Azimuth: 359.98 °  
VS: 6,883.99'

MD:  
TVD:  
Inclin:  
Azim  
VS: 7

8500

8500

8500

100% LS: med-lt gy, occ lt crm, sb blkly-pily, sl frm, v calc, stmg  
mky bl-wh cut, lt bl-wht resdl ring, no od

95% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w st, sb rnd-sb  
ang, calc mtx; 5% LS: med gy - lt gy, occ lt crm, sb blkly-pily, sl frm, v  
calc; stmg mky bl-wh cut, lt bl-wht resdl ring, no od

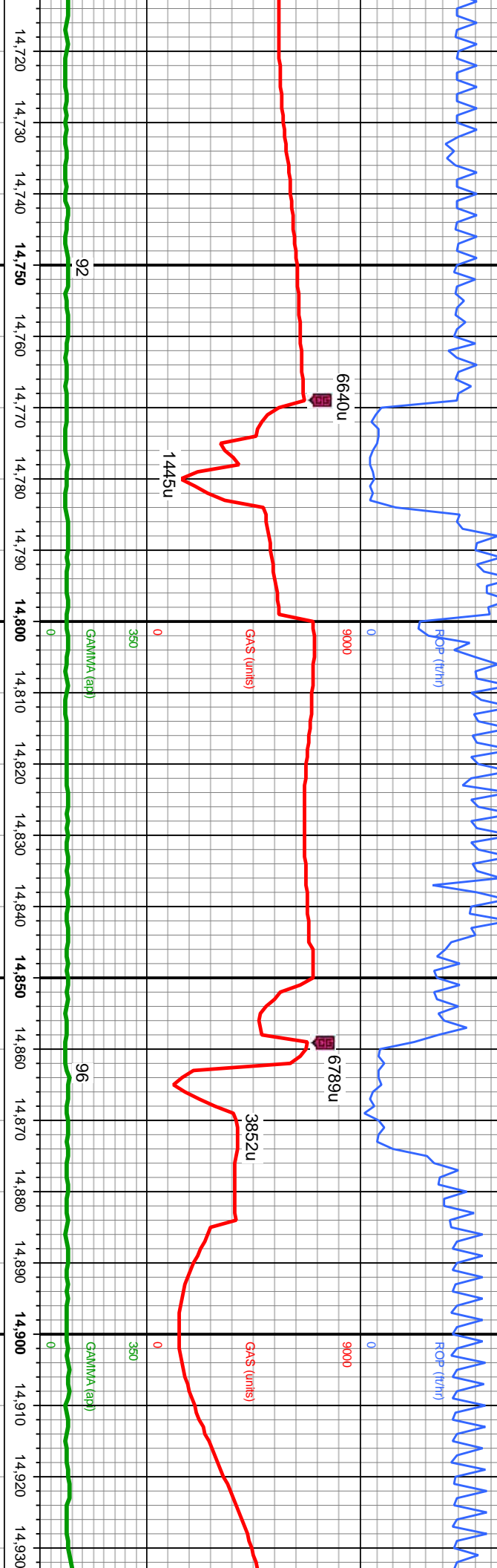
1  
m  
S

TVD (ft)

TVD (ft)

TVD (ft)





14,718'  
7,901.54'  
ation: 89.29 °  
uth: 359.34 °  
,062.97'

MD: 14,898'  
TVD: 7,901.98'  
Inclination: 90.43 °  
Azimuth: 0.01 °  
VS: 7,242.96'

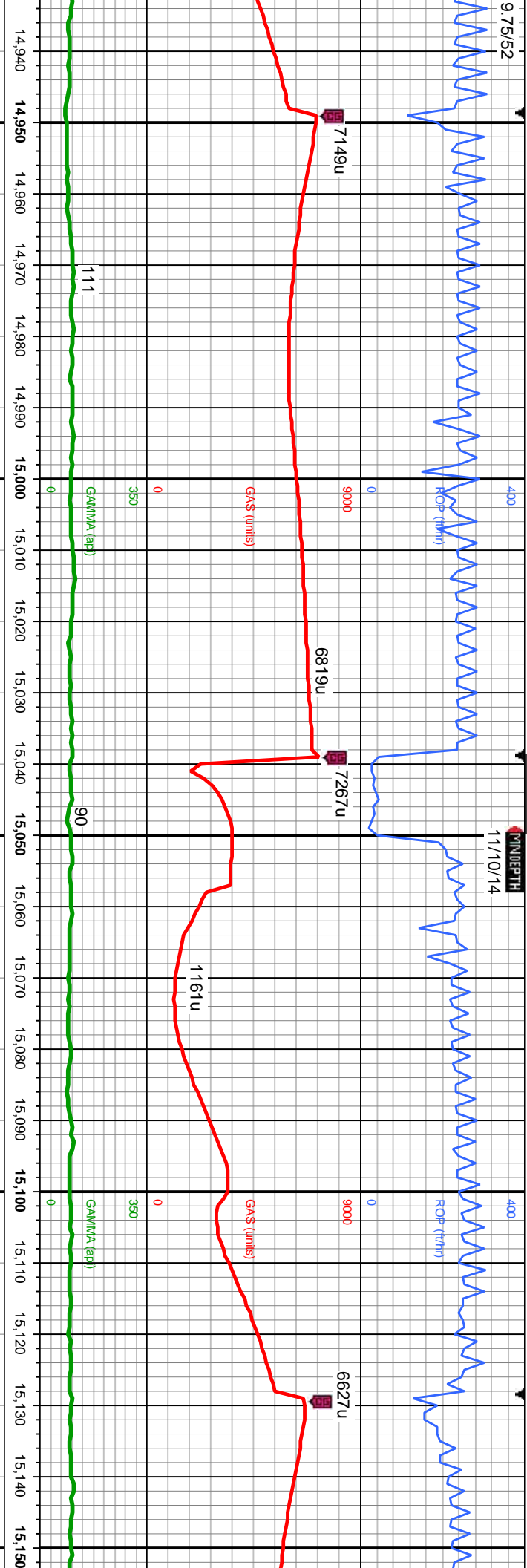
100% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb md-sb ang, mod calc mt; tr LS: med gy - lt gy, occ lt crm, sb blk-pily, sl frm, v calc; string mky bl-wh cut, lt bl-wh resd ring, no od

100% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb md-sb ang, mod calc mt; string mky bl-wh cut, lt bl-wh resd ring, no od

100% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb md-sb ang, mod calc mt; string mky bl-wh cut, lt bl-wh resd ring, no od







MD: 15,077'  
TVD: 7,900.49'  
Inclination: 90.52 °  
Azimuth: 0.82 °  
VS: 7,421.94'

gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb  
stimg mky bl-wh cut, lt bl-wht resdl ring, no od

100% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb  
ang, mod calc mtx, stimg mky bl-wh cut, lt bl-wht resdl ring, no od

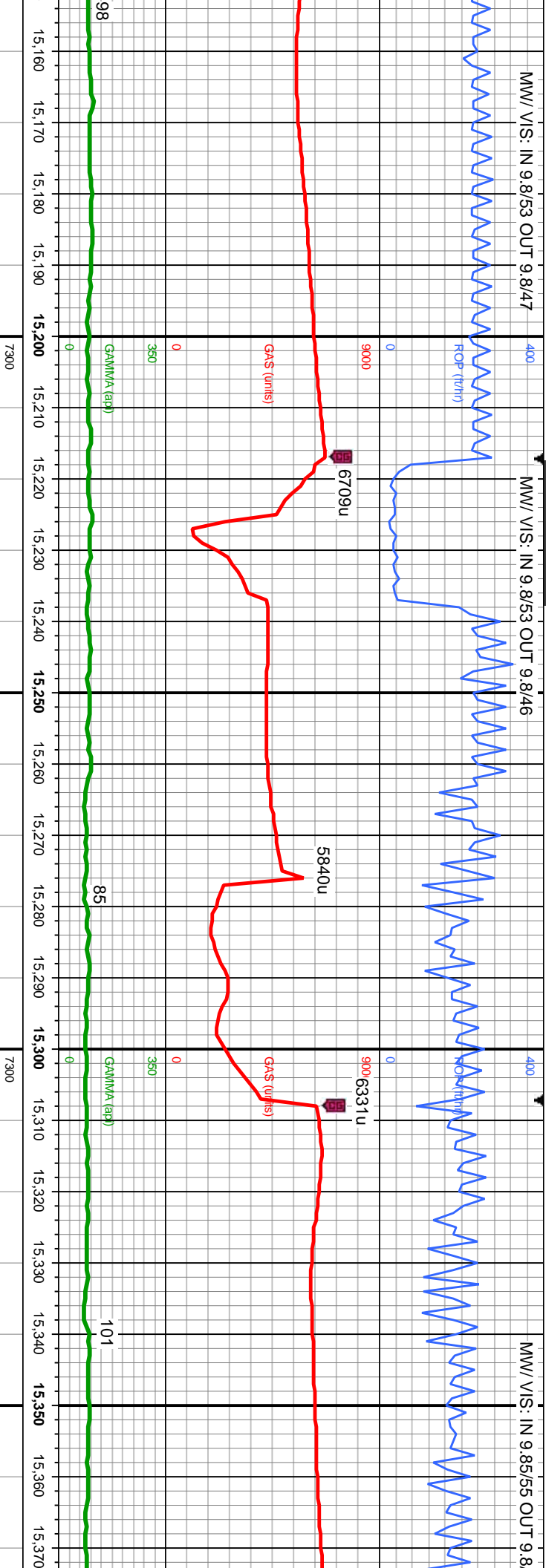
100% SHY SS: med gy-dk gry, vf-f gr, i  
ang, mod calc mtx, stimg mky bl-wh cut



MW/ VIS: IN 9.8/53 OUT 9.8/47

MW/ VIS: IN 9.8/53 OUT 9.8/46

MW/ VIS: IN 9.85/55 OUT 9.8



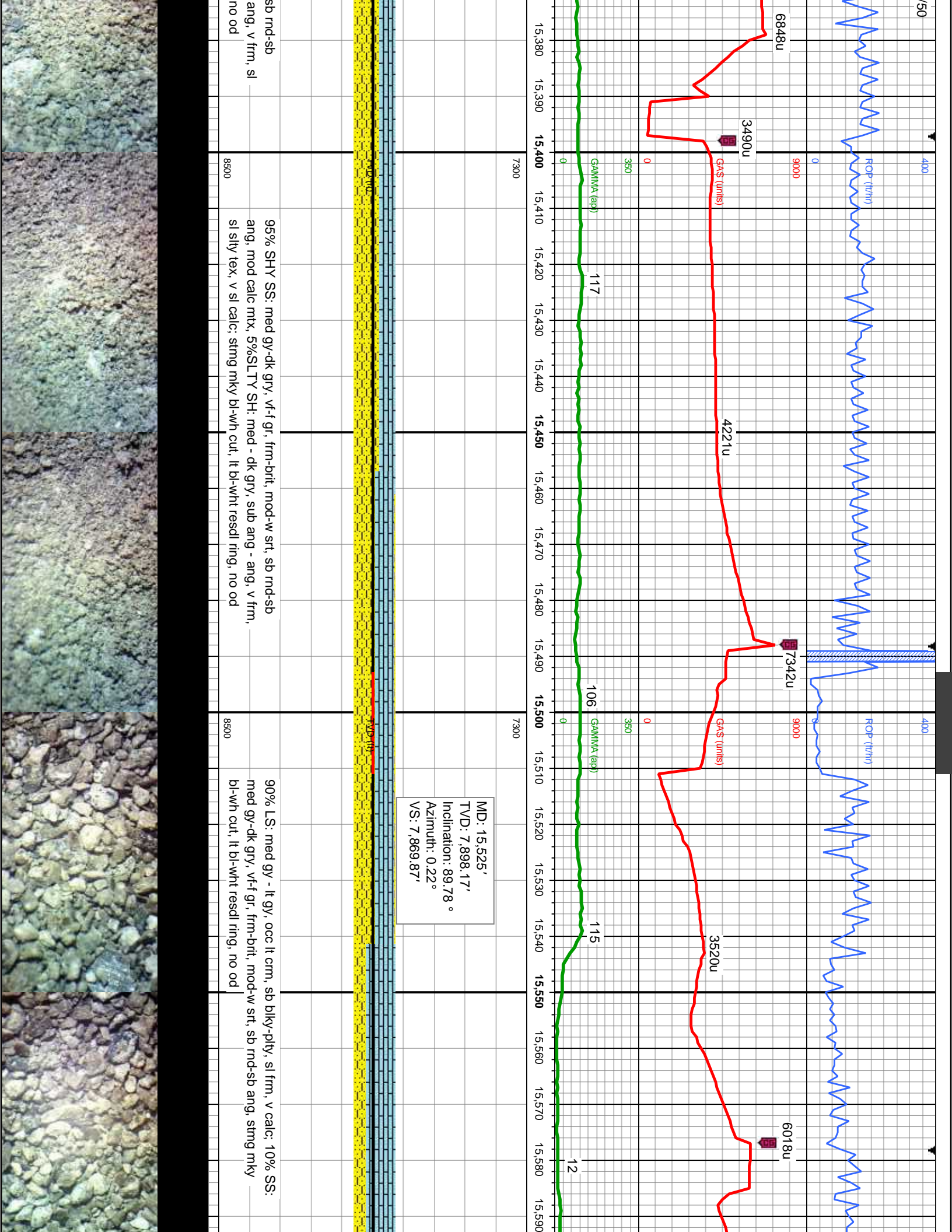
frm-bit, mod-w srt, sb rnd-sb  
, lt bl-wht resdl ring, no od

100% SHY SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt, sb rnd-sb  
ang, mod calc mtx; sting mky bl-wh cut, lt bl-wht resdl ring, no od

95% SHY SS: med gy-dk gry, vf-f gr, frm-bit, mod-w srt,   
ang, mod calc mtx, 5%SLTY SH: med - dk gry, sub ang -  
sily tex, v sl calc; sting mky bl-wh cut, lt bl-wht resdl ring,

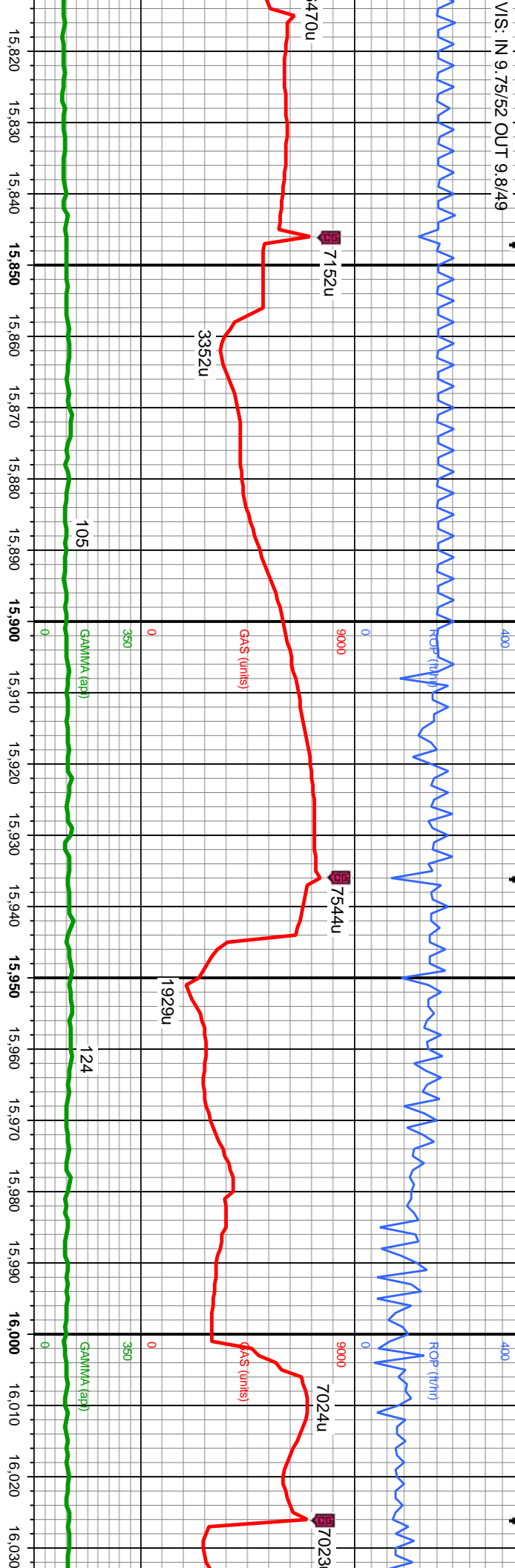












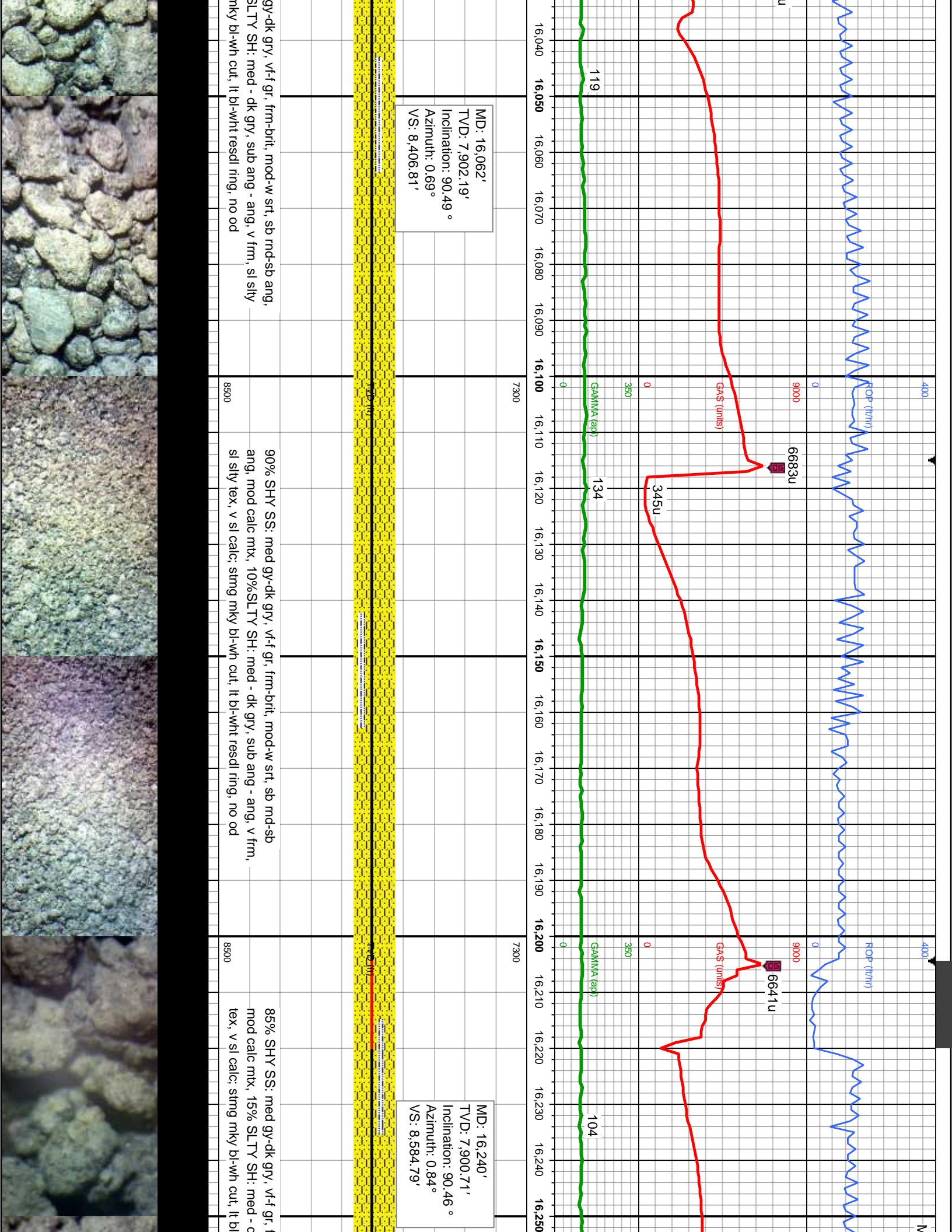
MD: 15,883'  
TVD: 7,902.51'  
Inclination: 89.72 °  
Azimuth: 0.74 °  
VS: 8,227.83'

100% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb ang, mod calc mtx, 10%SLTY SH: med - dk gry, sub ang - ang, v frm, sl silty tex, v sl calc; stimg mky bl-wh cut, lt bl-wht resdl ring, no od

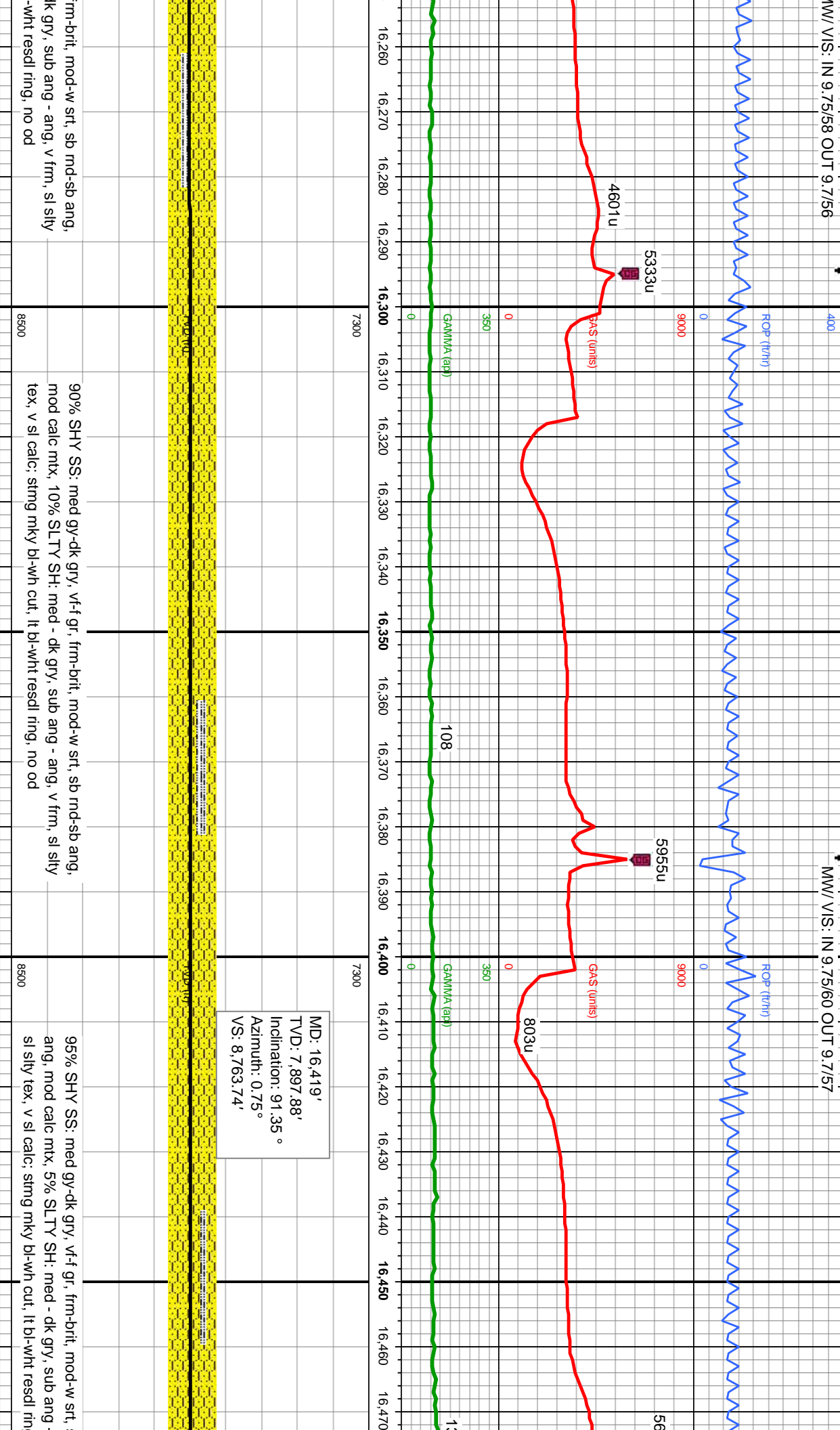
90% SHY SS: med gy-dk gry, vf-f gr, frm-brit, mod-w srt, sb rnd-sb ang, mod calc mtx, 10%SLTY SH: med - dk gry, sub ang - ang, v frm, sl silty tex, v sl calc; stimg mky bl-wh cut, lt bl-wht resdl ring, no od

90% SHY SS: med mod calc mtx, 10%SLTY SH: med - dk gry, sub ang - ang, v frm, sl silty tex, v sl calc; stimg mky bl-wh cut, lt bl-wht resdl ring, no od







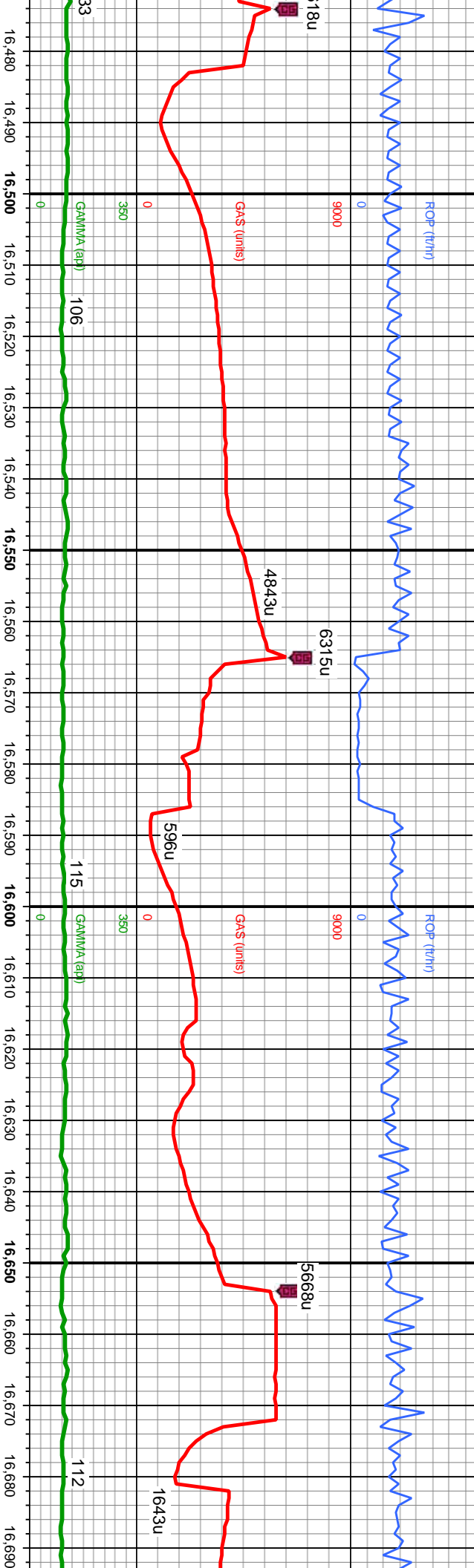


MW/ VIS: IN 9.8/63 OUT 9.8/58

MINDEPTH  
11/11/14

400 MW/ VIS: IN 9.85/64 OUT 9.8/59

MW/ V



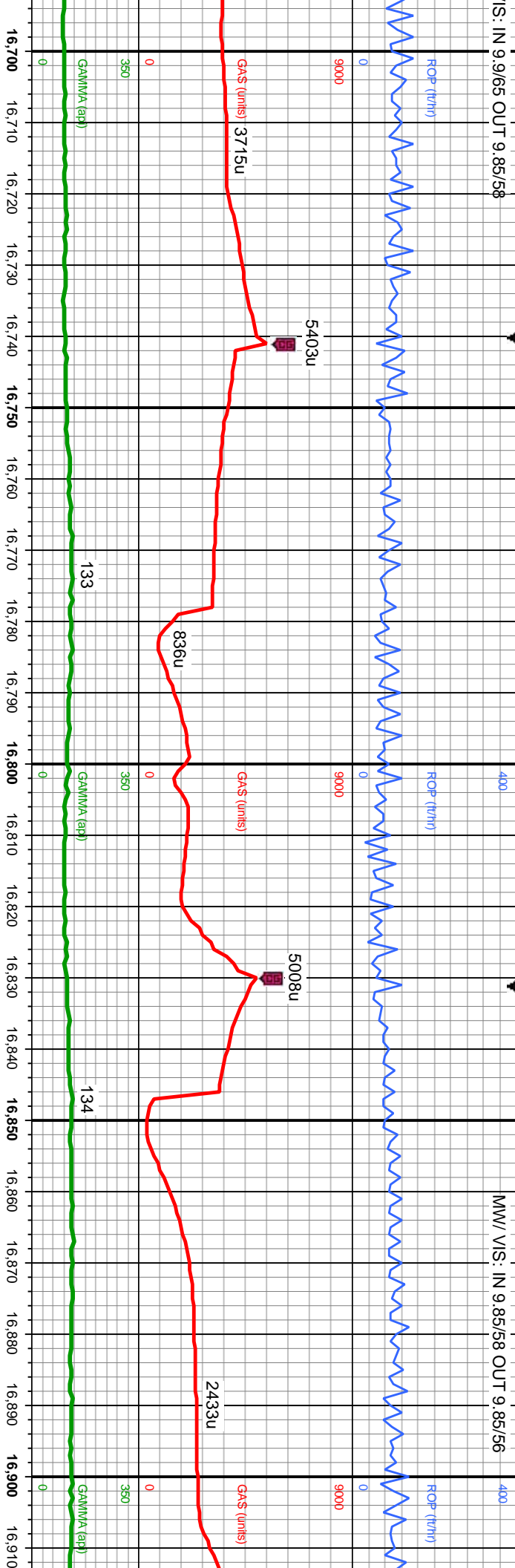
MD: 16,599'  
TVD: 7,895.57'  
Inclination: 90.12 °  
Azimuth: 359.66 °  
VS: 8,943.72'

sb md-sb ang, v frm, g, no od

95% SHY SS: med gy-dk gry, v-f gr, frm-bit, mod-w srt, sb md-sb ang, mod calc mtx, 5% SLTY SH: med - dk gry, sub ang - ang, v frm, silty tex, v sl calc; stimg mky bl-wh cut, lt bl-wht resd ring, no od







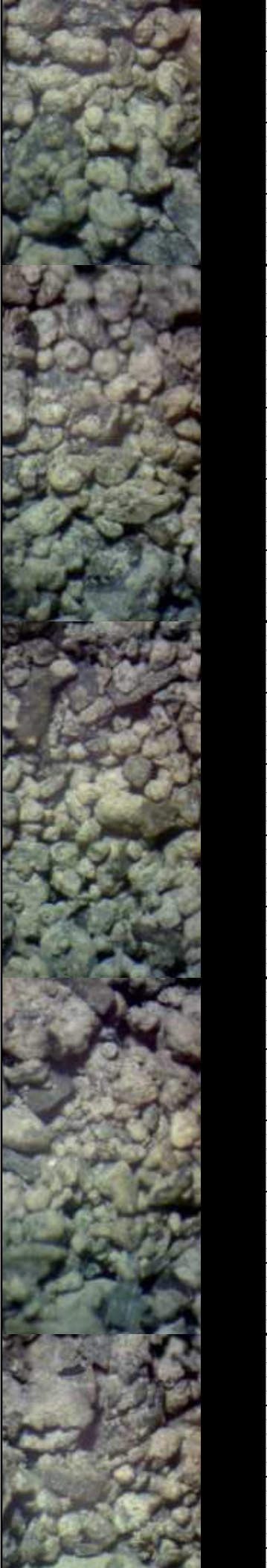
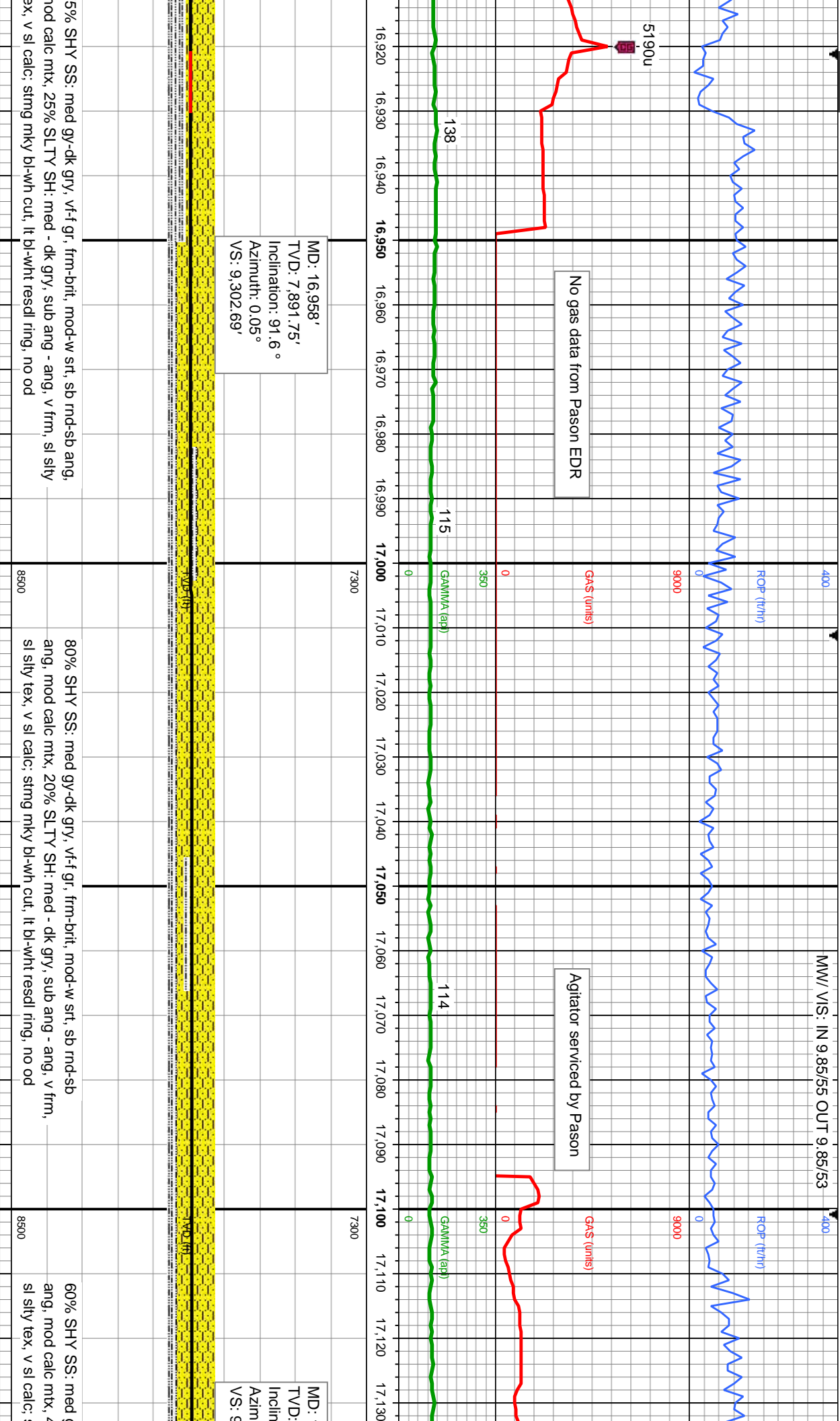
MD: 16,778'  
TVD: 7,894.82'  
Inclination: 90.36°  
Azimuth: 359.57°  
VS: 9,122.72'

60% SHY SS: med gy-dk gry, v-f gr, frm-brit, mod-w srt, sb md-sb-ang, mod calc mtx, 40% SLTY SH: med - dk gry, sub ang - ang, v frm, sl stly tex, v sl calc, stmg mky bl-wh cut, lt bl-wht resd ring, no od

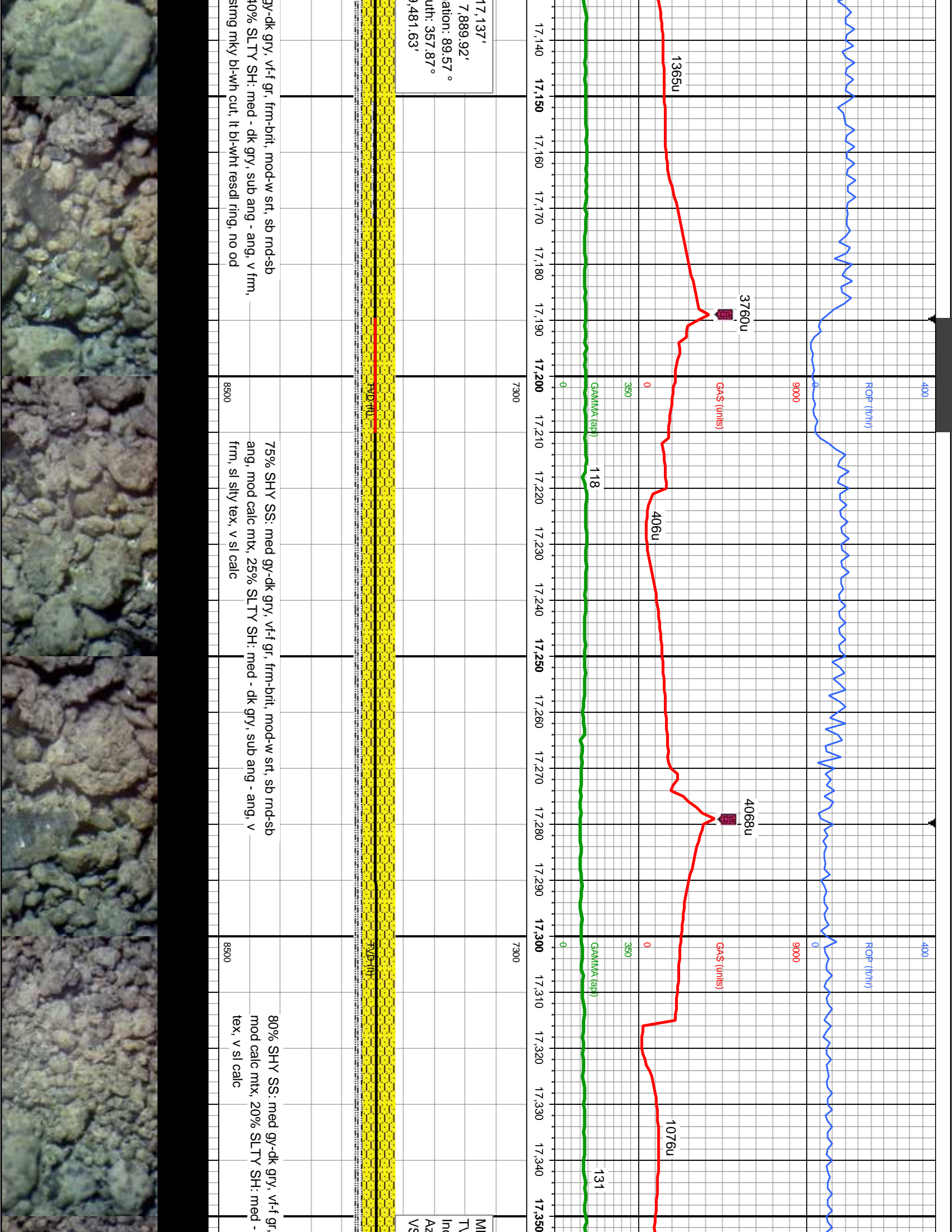
50% SHY SS: med gy-dk gry, vfr-bit, mod-w str, sb rnd-sb ang, mod calc mtx, 50% SLTY SH: med - dk gry, sub ang - ang, v frm, sl stly tex, v sl calc, stimg mky bl-wb cut, lt bl-wht resdl ring, no od

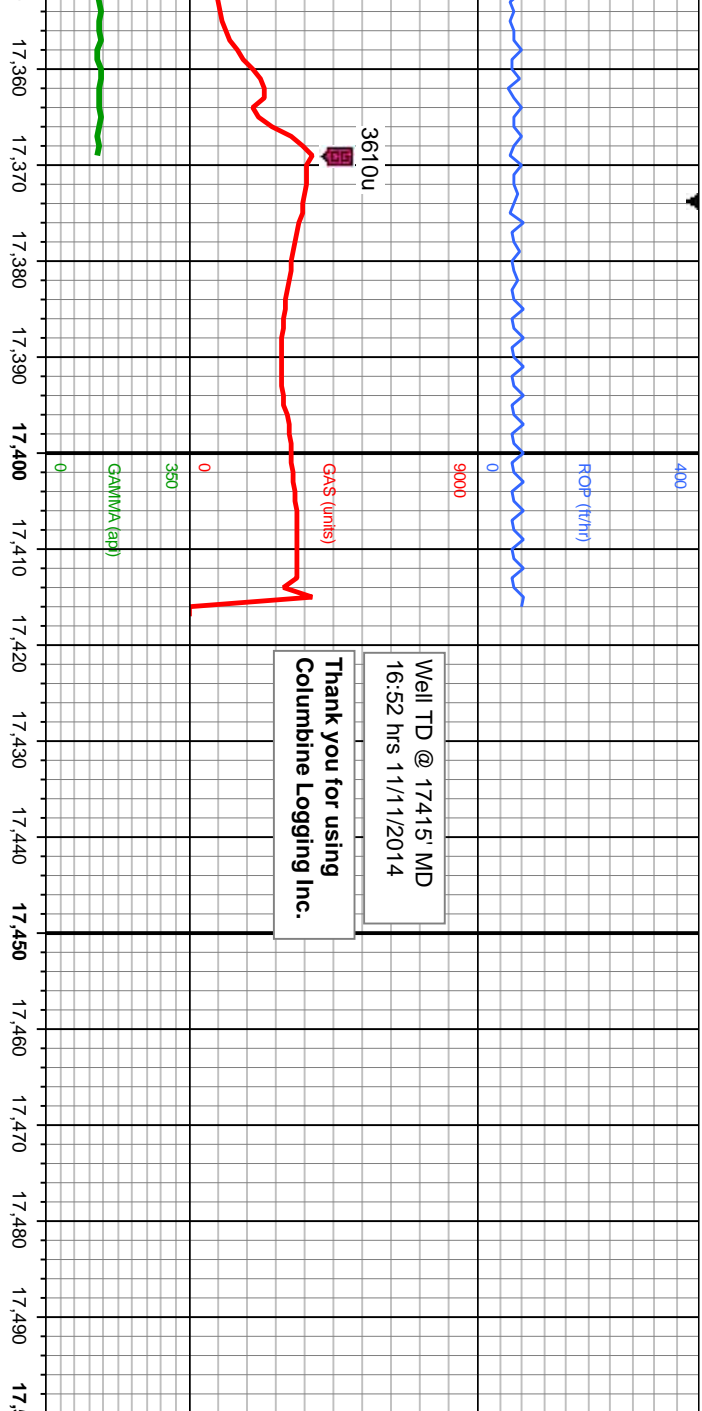
7	m	te
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MMW/ VIS: IN 9.85/55 OUT 9.85/53









3610u

FROF (ft/hr)

9000

GAS (units)

0

350

GAMMA (cp)

0

Well TD @ 17415' MD  
16:52 hrs 11/11/2014

Thank you for using  
Columbine Logging Inc.

D: 17,361'  
D: 7,885.52'  
Inclination: 92.68 °  
Azimuth: 357.72 °  
VS: 9,705.4'

MD: 17,415'  
TVD: 7,883'  
Inclination: 92.68 °  
Azimuth: 357.72 °  
VS: 9,759.32'

Projection to Bit

TVD (ft)

frm-brit, mod-w srt, sb md-sb ang,  
dk gry, sub ang - ang, v frm, sl sily

8500

