



Scale: 5" / 100'
Measured Depth Log

Well Name Sharpe State LD02-77HN

Location SWSW SEC 2 T9N R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 273

API Number 05-123-39820

Field WILDCAT

Region DJ BASIN

Drilling Completed 12/29/2014

Spud Date 12/23/2014

Surface Coordinates 615' FSL; 1192' FWL

Bottom Hole Coordinates 330' FFNL; 1320' FFWL

Ground Elevation 4748'

K.B. Elevation 4772'

Logged Interval 4815' To 9665'

Total Depth 9665'

Formation NIOBRARA

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name RENEE CLACKLER

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

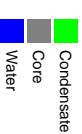
Other

Wellsite Geologist #1 Laura Kellogg













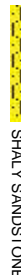







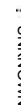
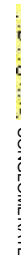




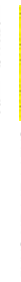






Wellsite Geologist #2 Nick Kopiasz

Wellsite Geological Services Provided By Columbine Logging Inc.



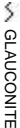
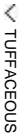

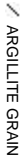
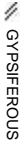

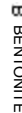
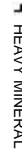

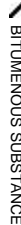
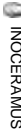
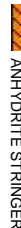



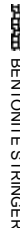
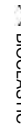

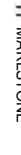
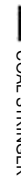




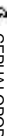





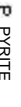


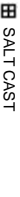







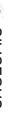












Zone Color Coding



Rock Types







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

Accessories

 F FOSSIL	 ARGILLACEOUS	 GLAUCONITE	 TUFFACEOUS
 GASTROPOD	 ARGILLITE GRAIN	 GYPSIFEROUS	
 OOLITE	 B BENTONITE	 HEAVY MINERAL	
 ALGAE	 BITUMENOUS SUBSTANCE	 INOCERAMUS	 ANHYDRITE STRINGER
 AMPHIPORA	 OSTRACOD	 K KAOLIN	 BENTONITE STRINGER
 BELEMNITE	 PELECYPOD	 BRECCIA FRAGMENTS	 COAL STRINGER
 BIOCLASTIC	 PELLET	 CALCAREOUS	 DOLOMITE STRINGER
 BRACHIOPOD	 PISOLITE	 CARBONACEOUS FLAKES	 GYPSUM STRINGER
 BRYOZOA	 PLANT REMAINS	 NODULES	
 CEPHALOPOD	 PLANT SPORES	 PHOSPHATE PELLETS	 LIMESTONE STRINGER
 CORAL	 SCAPHOPOD	 P PYRITE	 MARLSTONE (CALC) STRG
 CRINOID	 STROMATOPOROID	 SALT CAST	 MARLSTONE (DOL) STRG
 ECHINOID	 FELDSPAR	 SANDY	 SANDSTONE STRINGER
 FISH	 FERRUGINOUS PELLET	 SILTY	 SHALE STRINGER
 FORAMINIFERA	 ANHYDRITIC		 SILTSTONE STRINGER

Minerals

Oil Show

 MOLDIC	 ORGANIC
 DEAD	 PINPOINT
 EVEN	 VUGGY

Engineering

 QUESTIONABLE	 SPOTTED STAINING
 BIT	

Porosity

 CONNECTION (LEFT)	 CONNECTION (RIGHT)
 E EARTHY	 F FENESTRAL
 F FRACTURE	 CORE - LOST
 INTERCRYSTALLINE	 CORE - RECOVERED
 INTEROOLITIC	 DST INTERVAL

Other Symbols

 FAULT  WIRELINE TESTED - LEFT **E** EARTHY

 FORMATION TOP  WIRELINE TESTED - RT **FX** FINELYXLN

 GAS SHOW **GS** GRAINSTONE

MINDEPTH MN DEPTH **L** LITHOGRAPHIC

Rounding


 NORMAL FAULT **A** ANGULAR **MX** MICROXLN

 OIL SHOW **R** ROUNDED **MS** MUDSTONE

 OVERTURNED STRATA **B** SUBANG **PS** PACKSTONE

 REVERSE FAULT **R** SUBRND **WS** WACKESTONE

 SIDEWALL CORE (LEFT)

 SIDEWALL CORE (RIGHT)

Textures

Sorting

SLIDE **BS** BOUNDSTONE **M** MODERATE

SURVEY **C** CHALKY **P** POOR

TRIP GAS **CX** CRYPTOXLN **W** WELL

Slide/Rotate

ROP

ROP

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.
RIGGED UP ON 12/24/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT
#0173 COLUMBINE BEGAN
LOGGING ON 12/24/2014

Depth Labels

% Lith

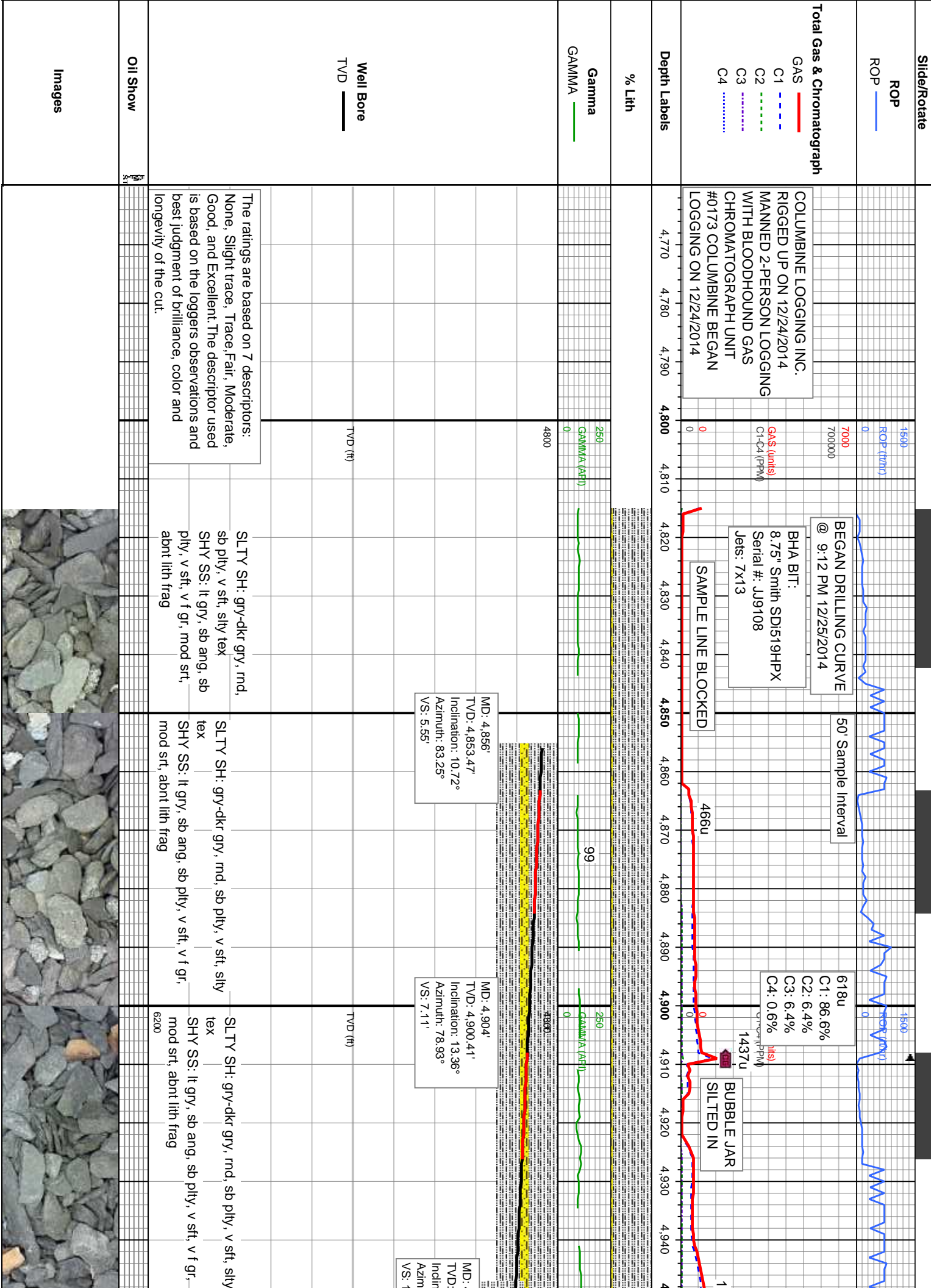
Gamma

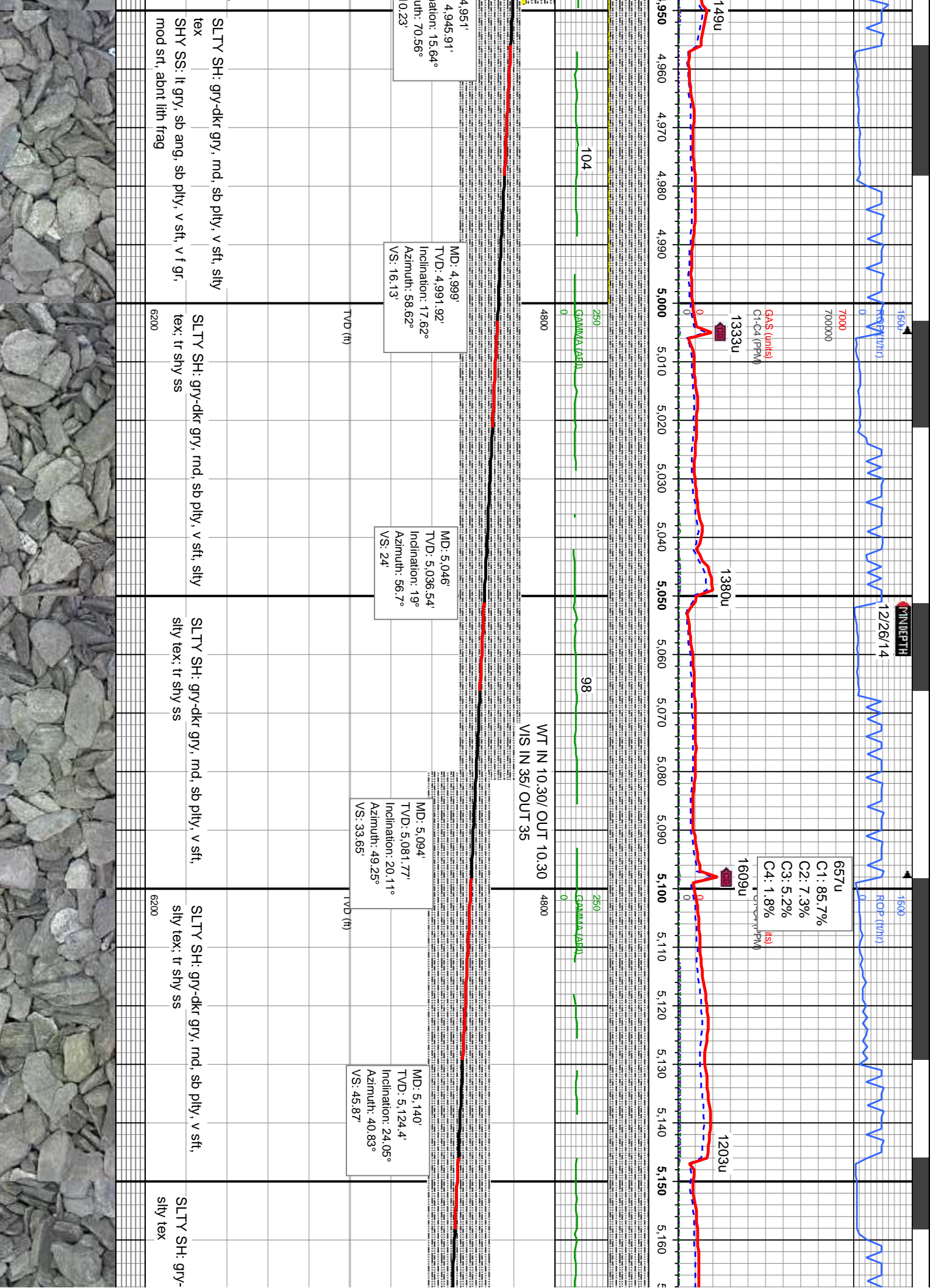
GAMMA

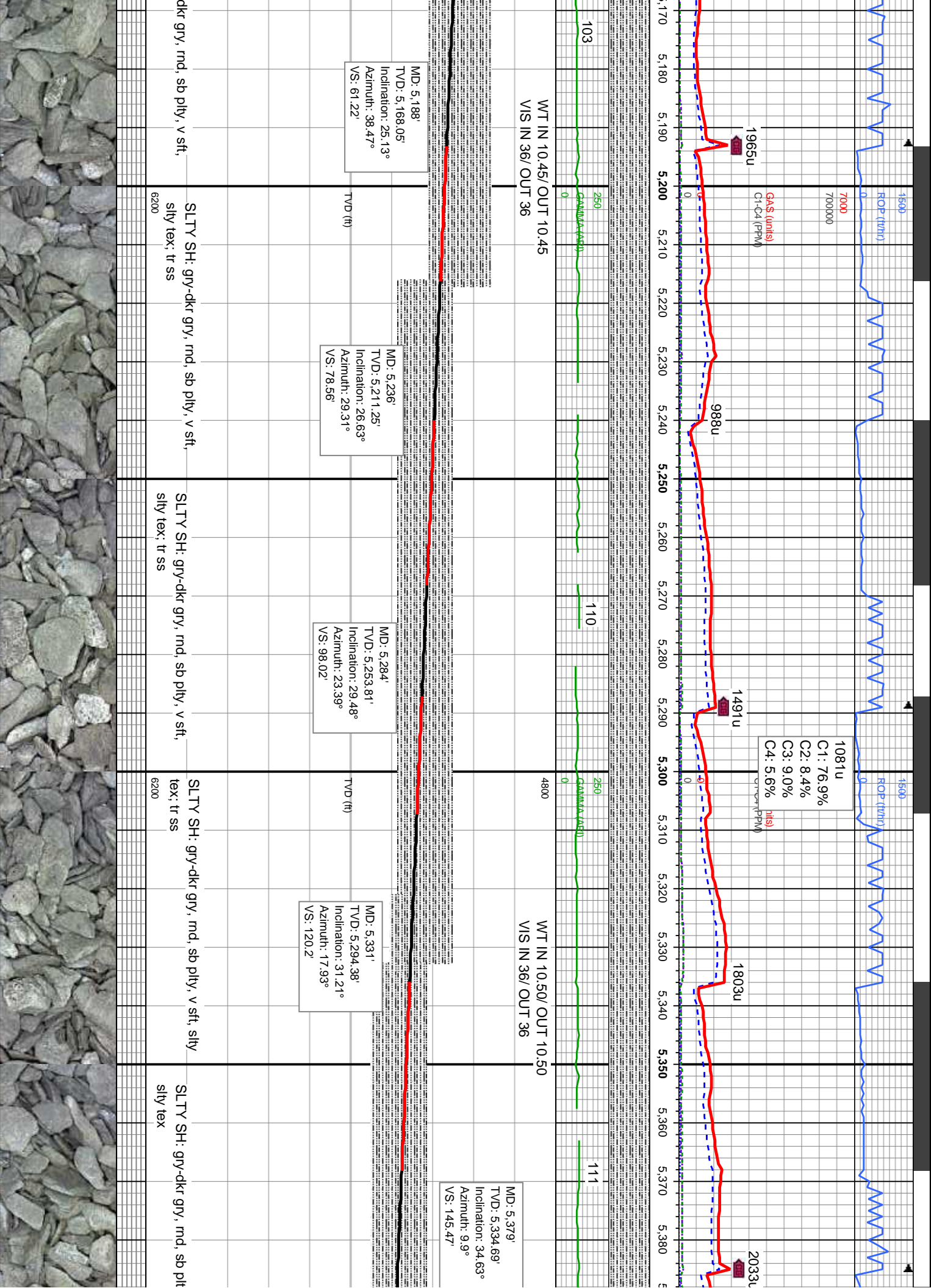
Well Bore
TVD

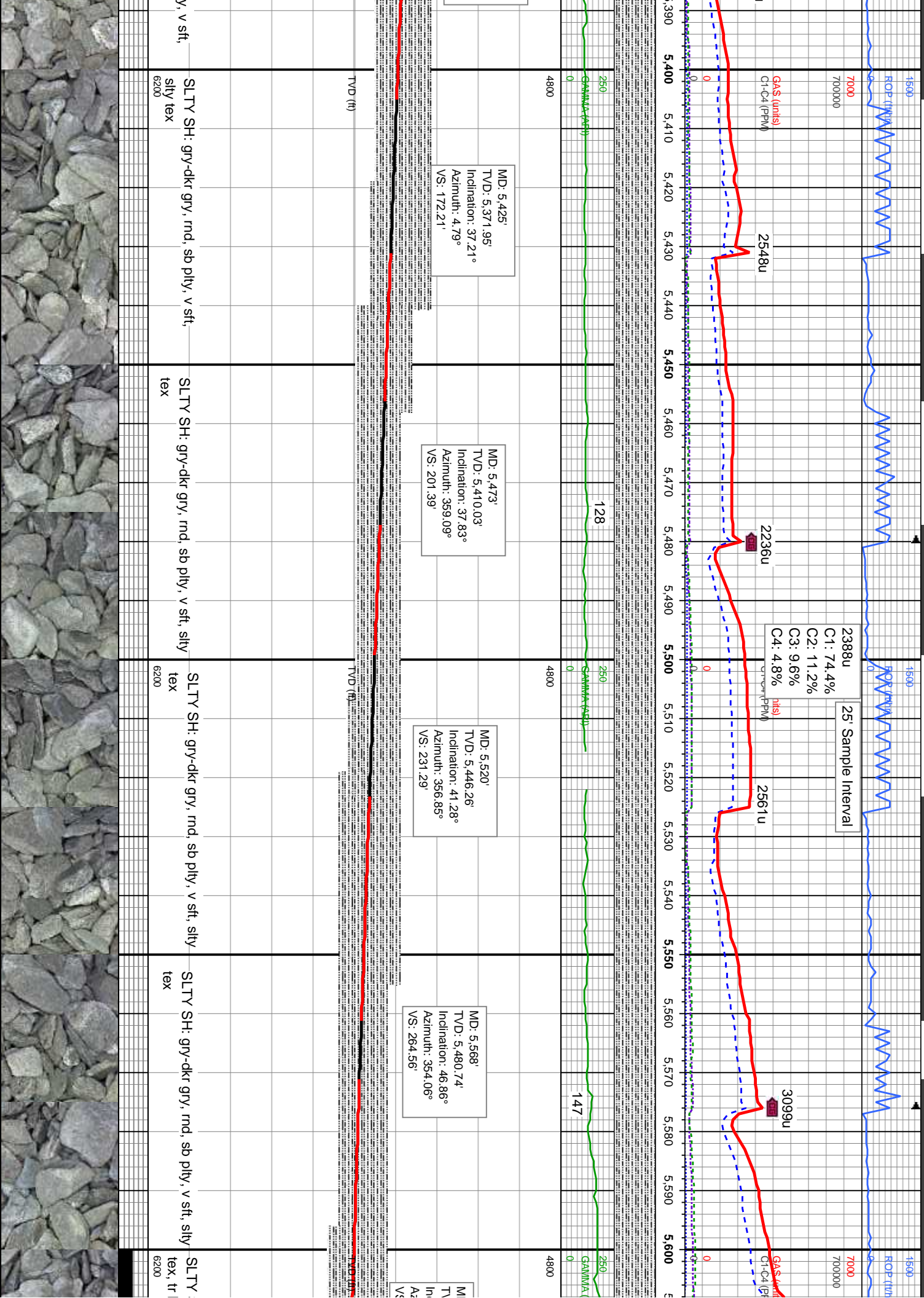
Oil Show

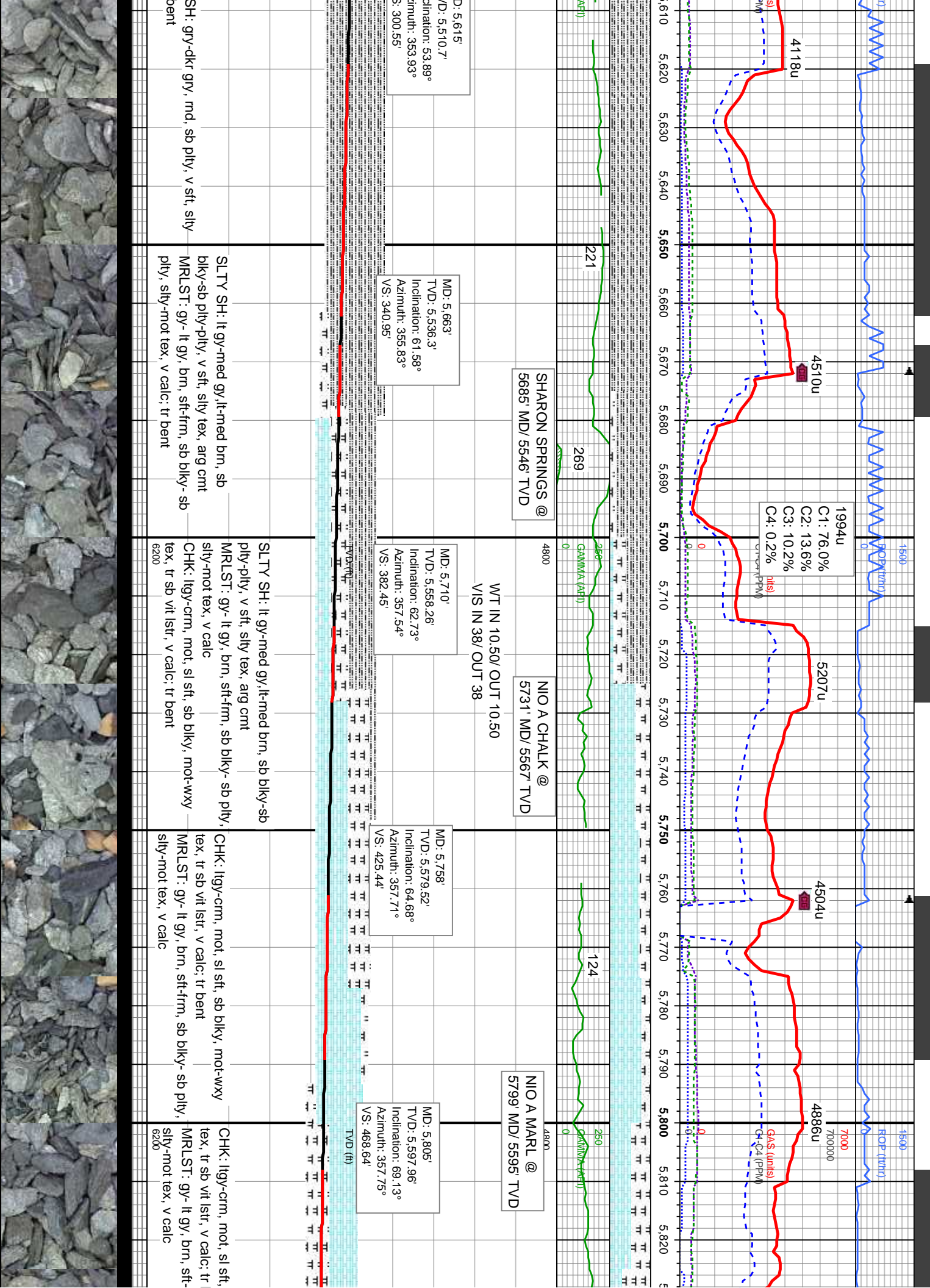
Images

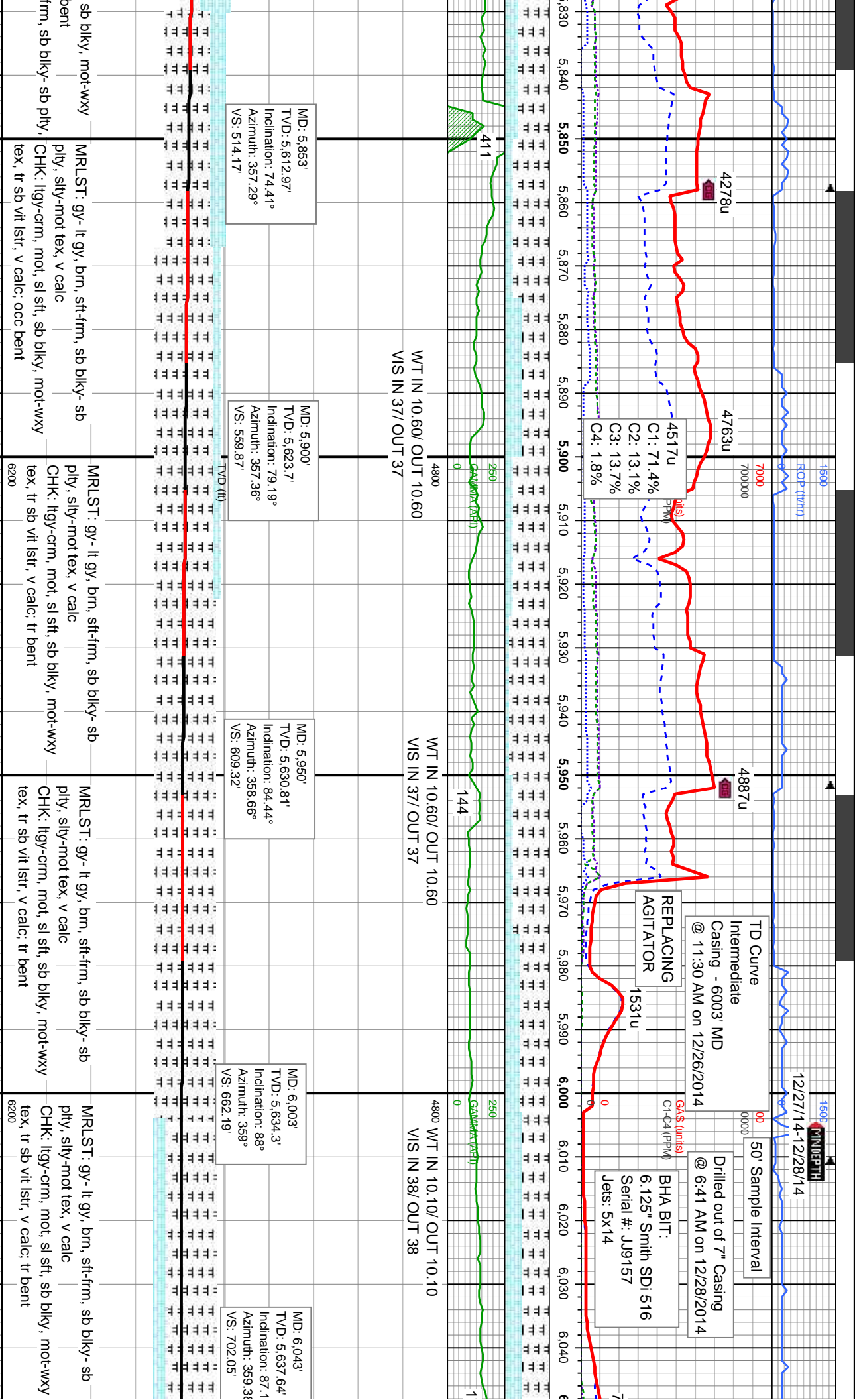


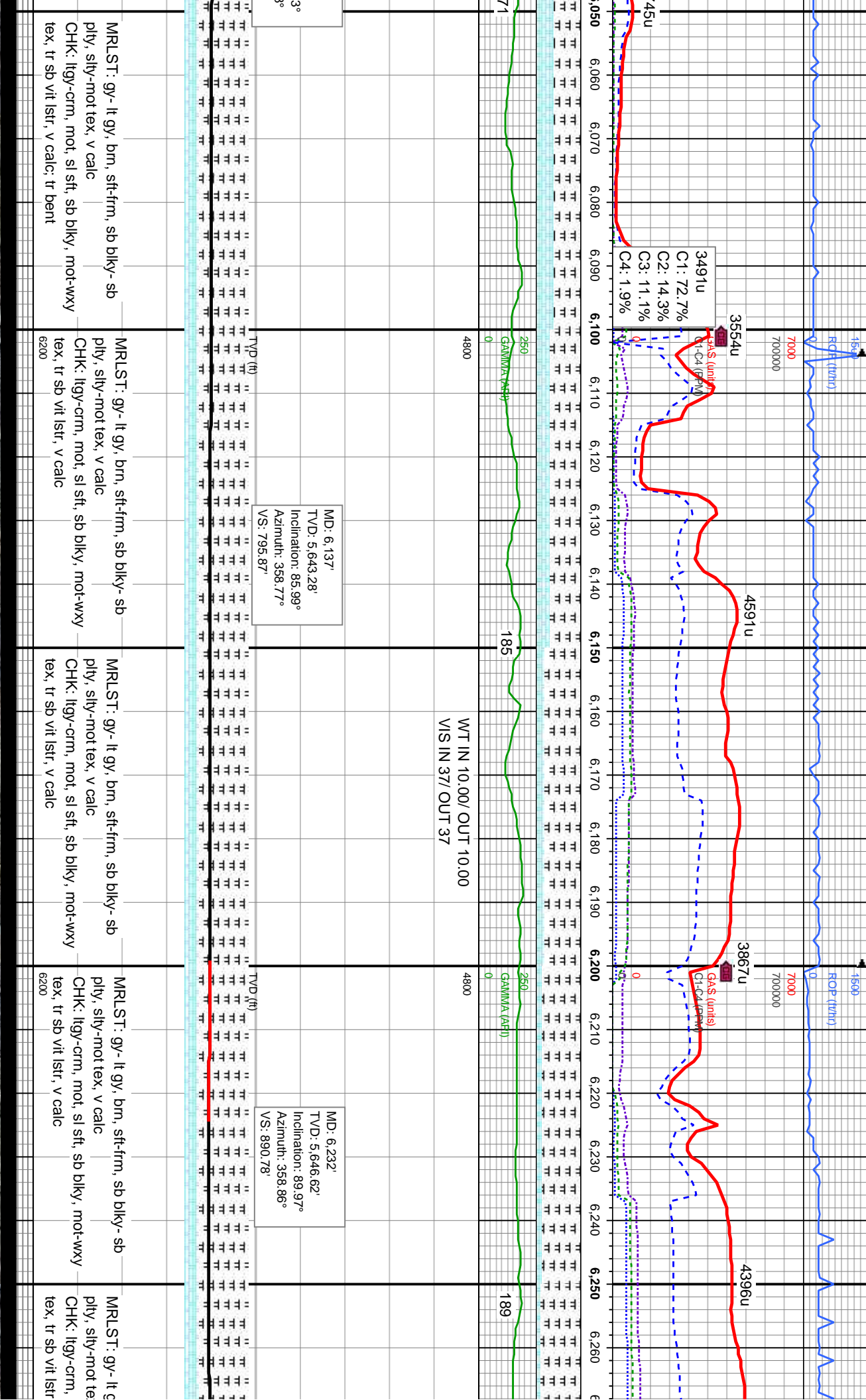


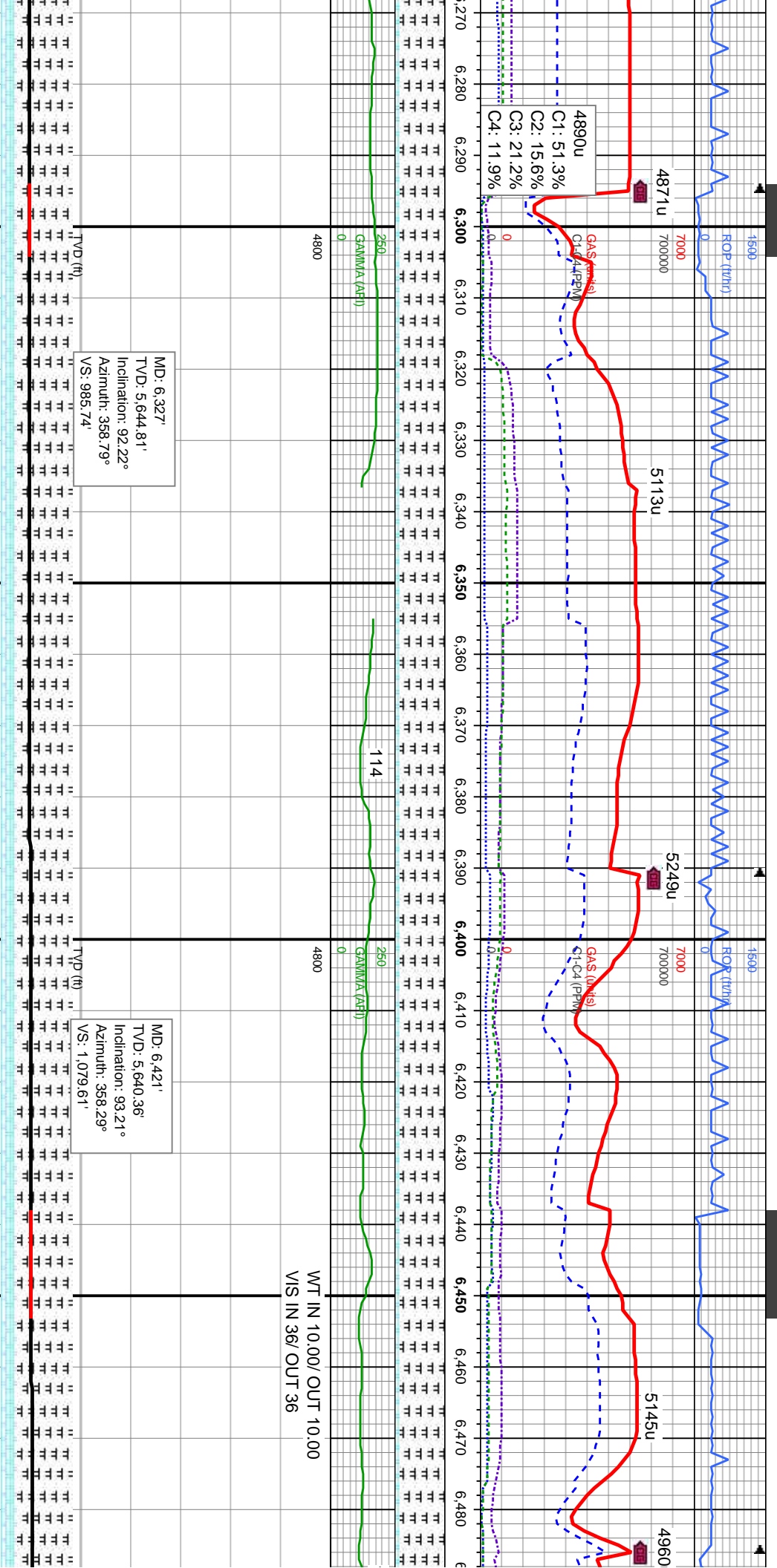






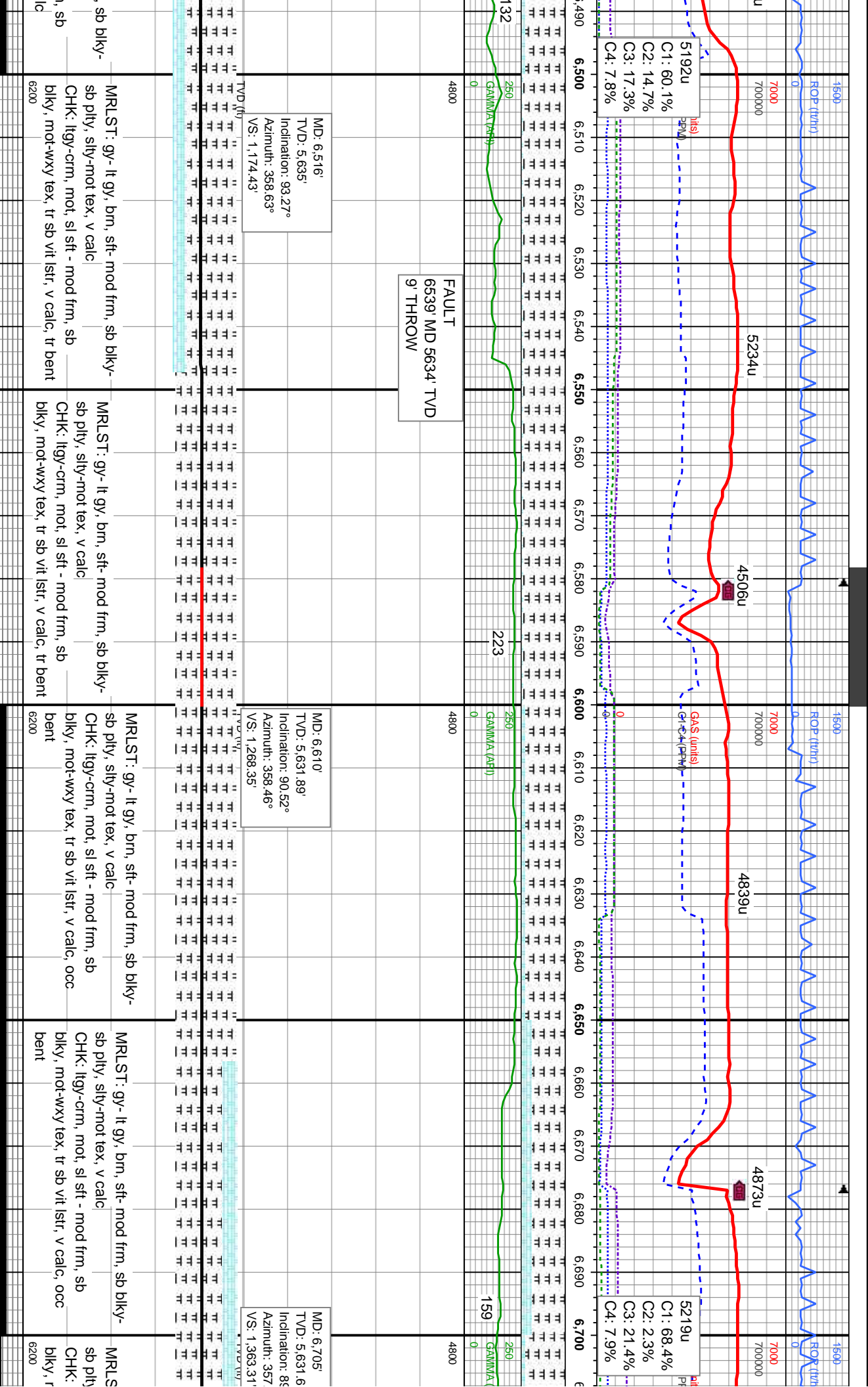


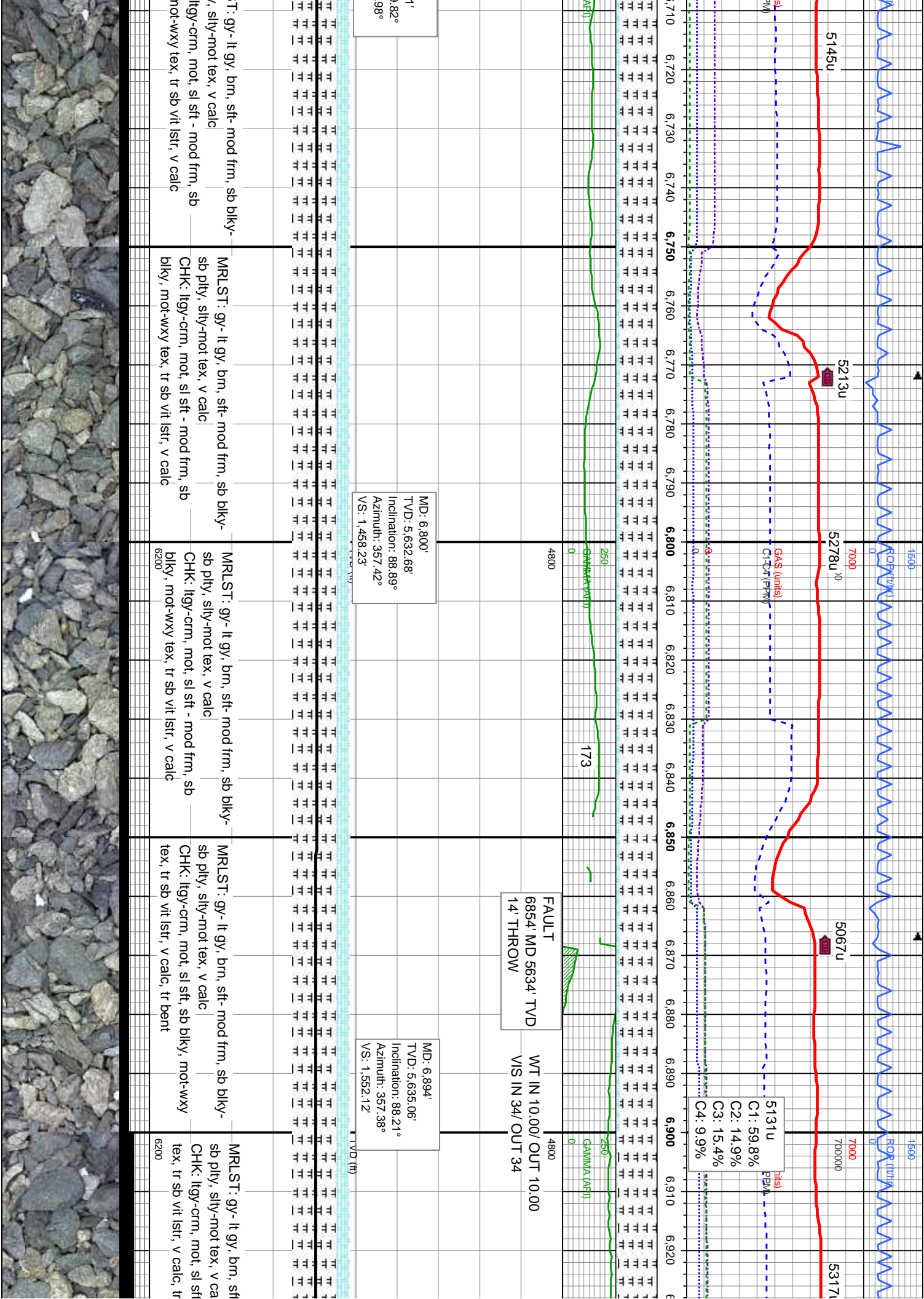




y, brn, sft-frm, sb blk-y- sb x, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blk-y- sb plty, silty-mot tex, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blk-y- sb plty, silty-mot tex, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blk-y- sb plty, silty-mot tex, v calc
mot, sl sft, sb blk-y, mot-wxy v calc	CHK: ltgy-crm, mot, sl sft - mod frm, sb blk-y, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, mot, sl sft - mod frm, sb blk-y, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, mot, sl sft - mod frm, sb blk-y, mot-wxy tex, tr sb vit lstr, v ca







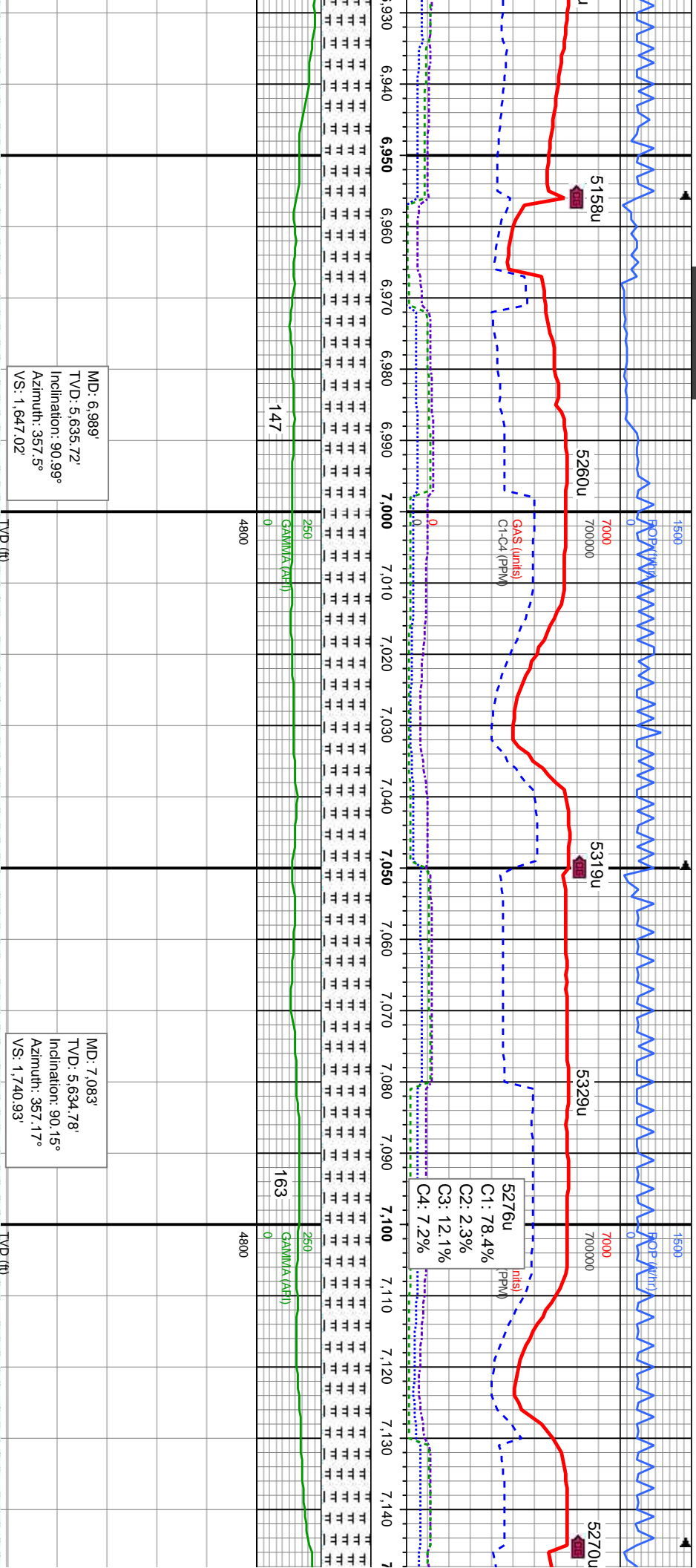
T: gy- lt gy, brn, sft- mod frm, sb blk-
sily-mot tex, v calc
ltgy-crm, mot, sl sft - mod frm, sb
mot-wxy tex, tr sb vit lstr, v calc

MRLST: gy- lt gy, brn, sft- mod frm, sb blk-
sb pily, sily-mot tex, v calc
CHK: ltgy-crm, mot, sl sft - mod frm, sb
blk, mot-wxy tex, tr sb vit lstr, v calc

MRLST: gy- lt gy, brn, sft- mod frm, sb blk-
sb pily, sily-mot tex, v calc
CHK: ltgy-crm, mot, sl sft - mod frm, sb
blk, mot-wxy tex, tr sb vit lstr, v calc

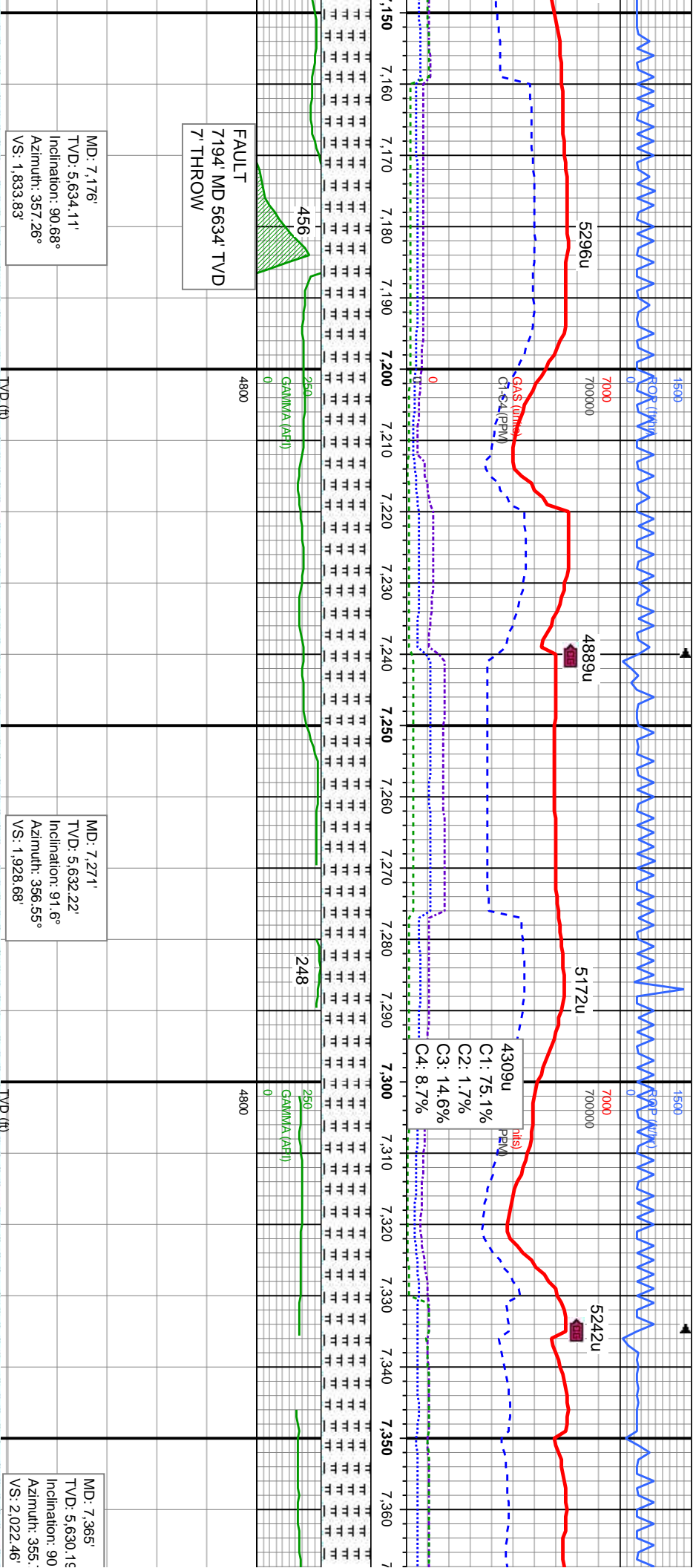
MRLST: gy- lt gy, brn, sft- mod frm, sb blk-
sb pily, sily-mot tex, v calc
CHK: ltgy-crm, mot, sl sft, sb blk, mot-wxy
tex, tr sb vit lstr, v calc, tr bent

MRLST: gy- lt gy, brn, sft-
sb pily, sily-mot tex, v ca
CHK: ltgy-crm, mot, sl sft
tex, tr sb vit lstr, v calc, tr



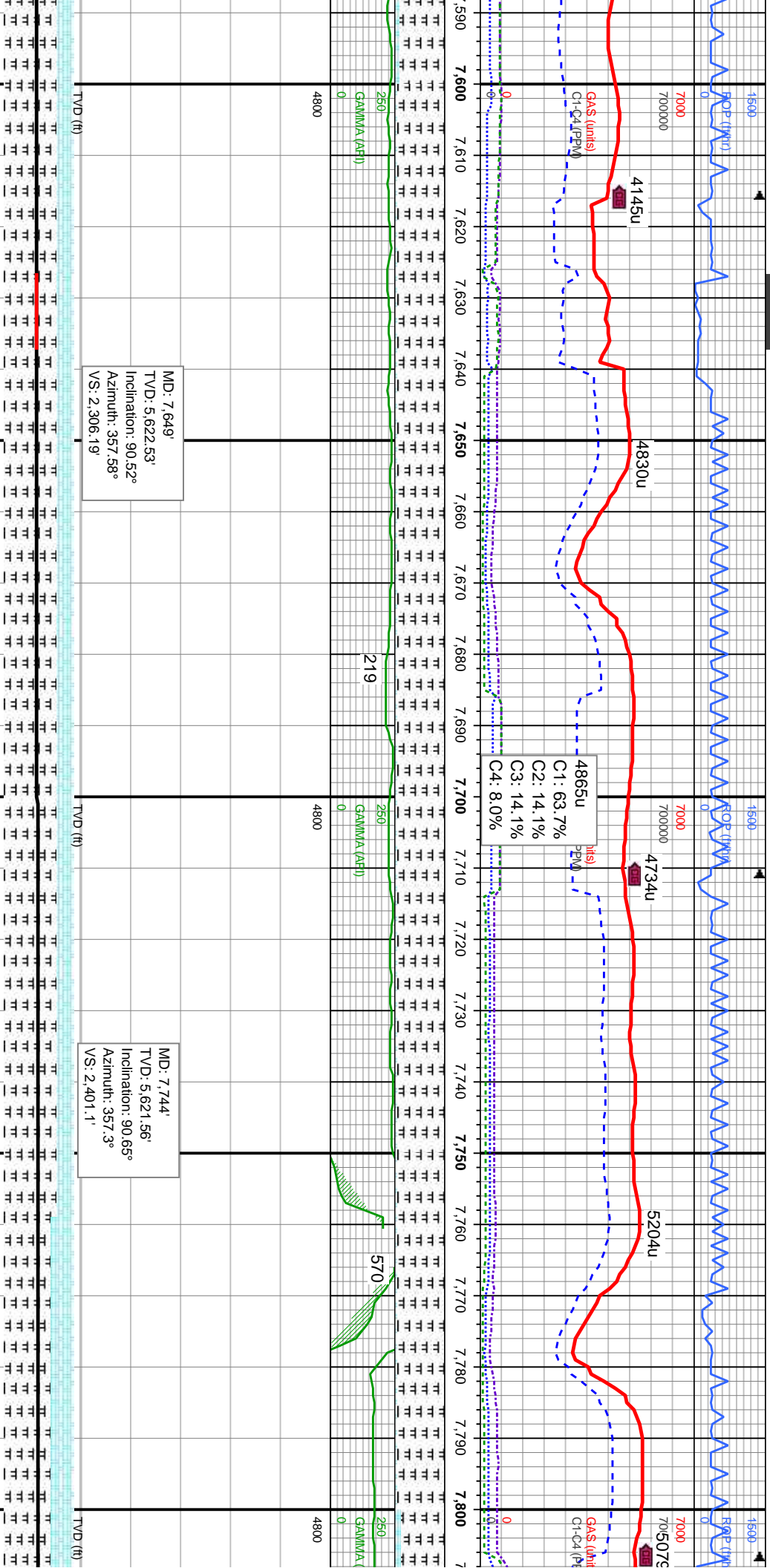
mod frm, sb blk-	MRLST: gy- lt gy, brn, sft, sb blk- sb ply,	MRLST: gy- lt gy, brn, sft- mod frm, sb blk-	MRLST: gy- lt gy, brn, sft- mod frm, sb blk-
, sb blk, mot-wxy	sily-mot tex, v calc	sb ply, sily-mot tex, v calc	sb ply, sily-mot tex, v calc
bent	CHK: ltgy-frm, mot, sl sft, sb blk, mot-wxy	CHK: ltgy-frm, mot, sl sft, sb blk, mot-wxy	CHK: ltgy-frm, mot, sl sft, sb blk, mot-wxy
	tex, tr sb vit lstr, v calc, tr bent	tex, tr sb vit lstr, v calc, tr bent	tex, tr sb vit lstr, v calc
	6200		6200





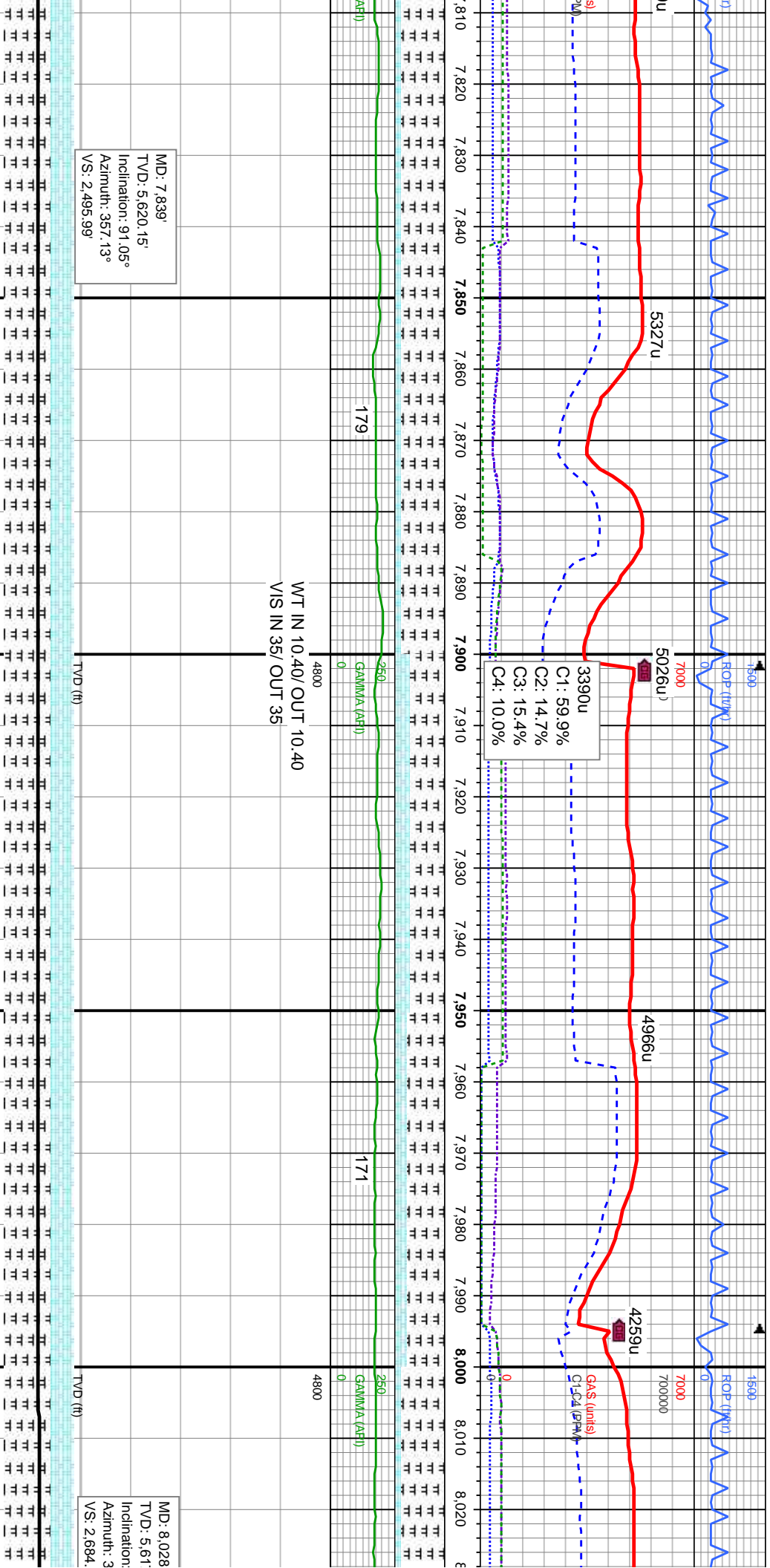
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6200		6200		6200		6200	





sb pily, mot-wxy	MRLST: gy- lt gy, brn, sft, sb blkly- sb pily, sily-mot tex, v calc CHK: ltgy-crm, mot, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	6200
sb pily, mot-wxy	MRLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, sily-mot tex, v calc CHK: ltgy-crm, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	6200
sb pily, mot-wxy	MRLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, sily-mot tex, v calc CHK: ltgy-crm, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	6200
sb pily, mot-wxy	MRLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, sily-mot tex, v calc CHK: ltgy-crm, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	6200





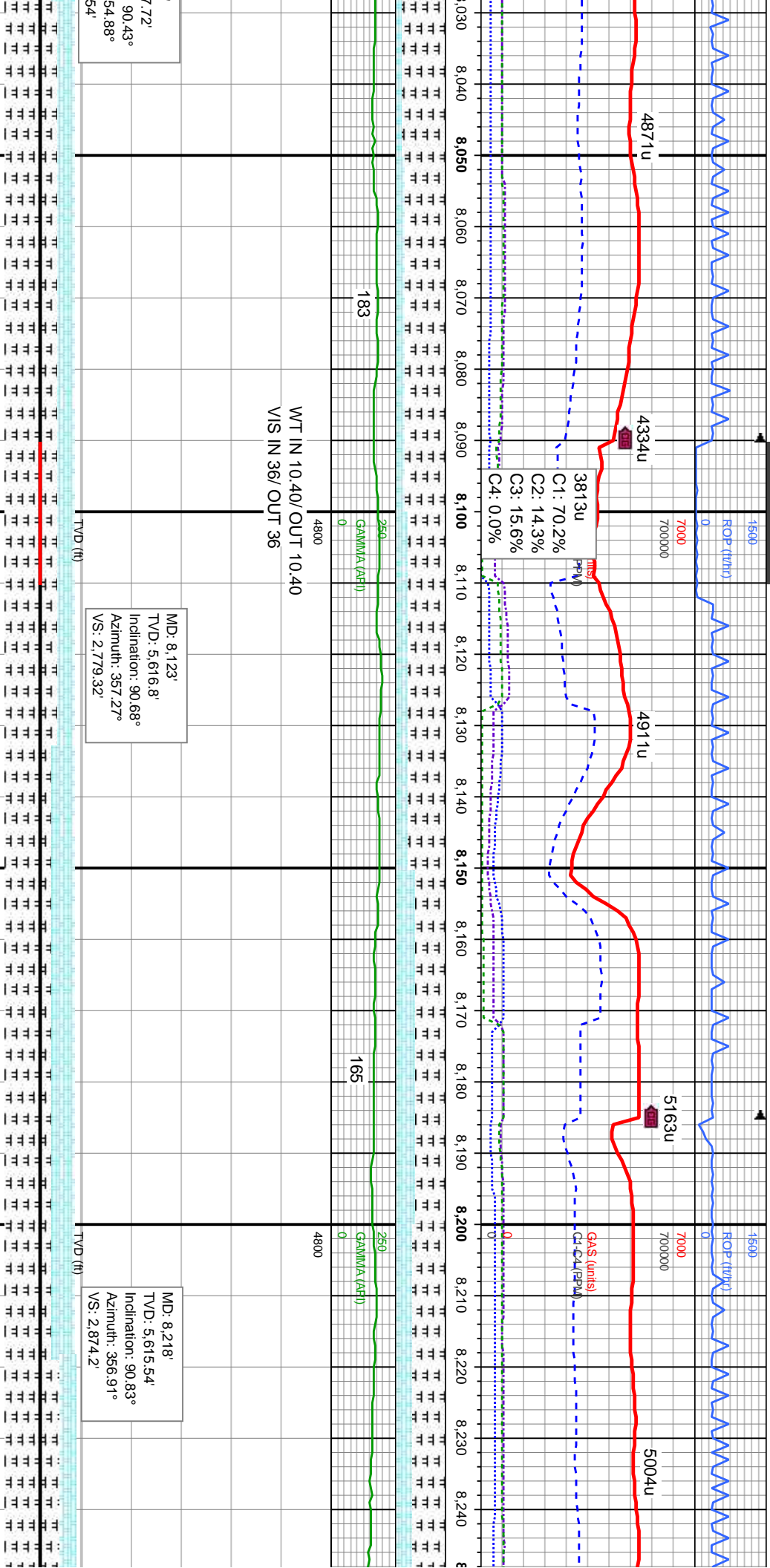
MD: 7,839'
TVD: 5,620.15'
Inclination: 91.05°
Azimuth: 357.13°
VS: 2,495.99

C1: 59.9%
C2: 14.7%
C3: 15.4%
C4: 10.0%

gy- lt gy, brn, sft - mod frm, sb blk-	MRLST: gy- lt gy, brn, sft - mod frm, sb blk-	MRLST: gy- lt gy, brn, sft - mod frm, sb blk-
sly-mot tex, v calc	sb pty, sly-mot tex, v calc	sb pty, sly-mot tex, v calc
lgy-gy, mot, sl sft - mod frm, sb blk-	CHK: lgy-gy, mot, sl sft - mod frm, sb blk-	CHK: lgy-gy, mot, sl sft - mod frm, sb
gy tex, tr sb vit lstr, v calc; tr bent	mot-wxy tex, tr sb vit lstr, v calc; tr bent	mot-wxy tex, tr sb vit lstr, v calc
		6200

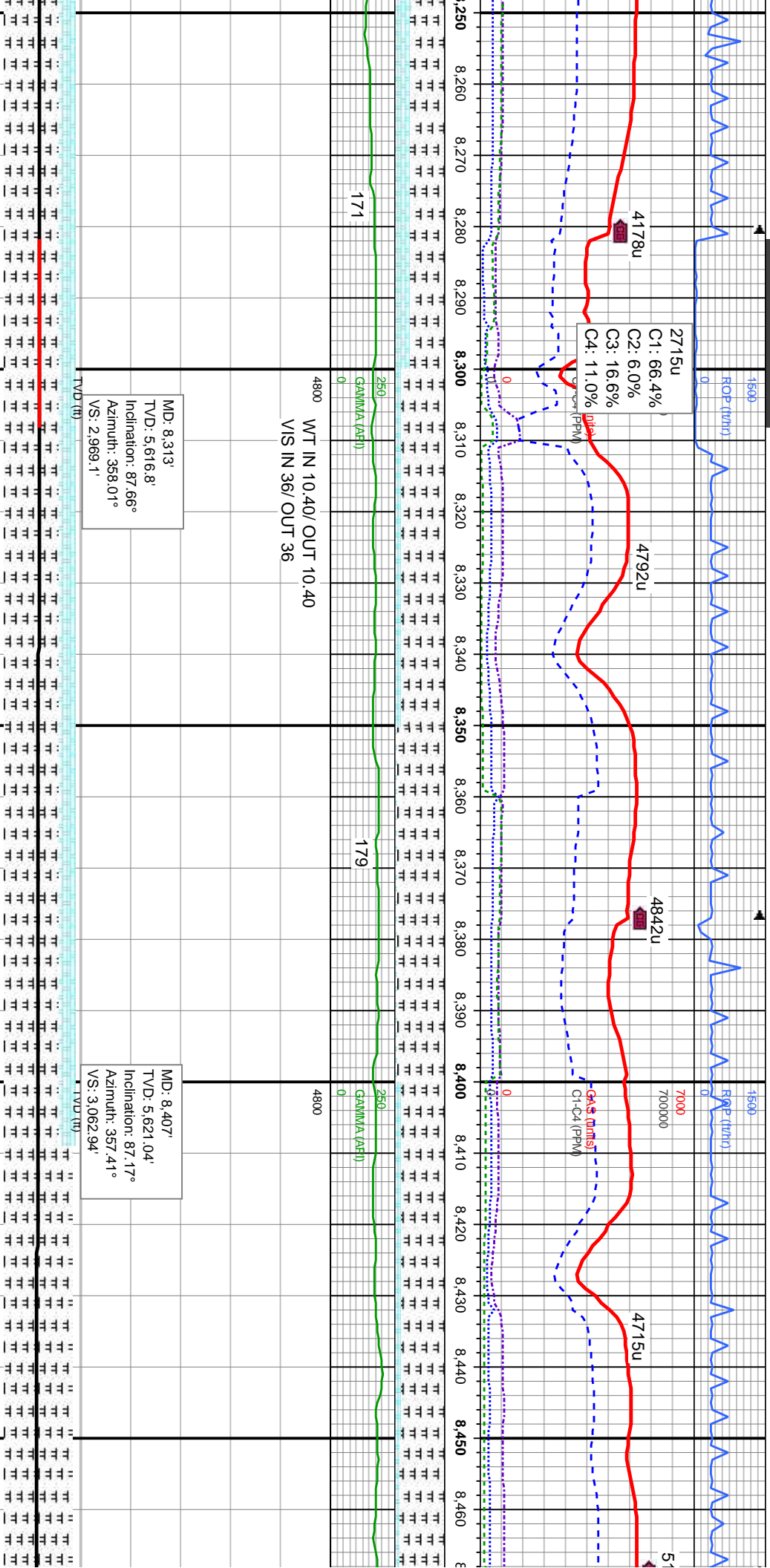
MD: 8,028'
TVD: 5,61'
Inclination:
Azimuth: 3
VS: 2,684.





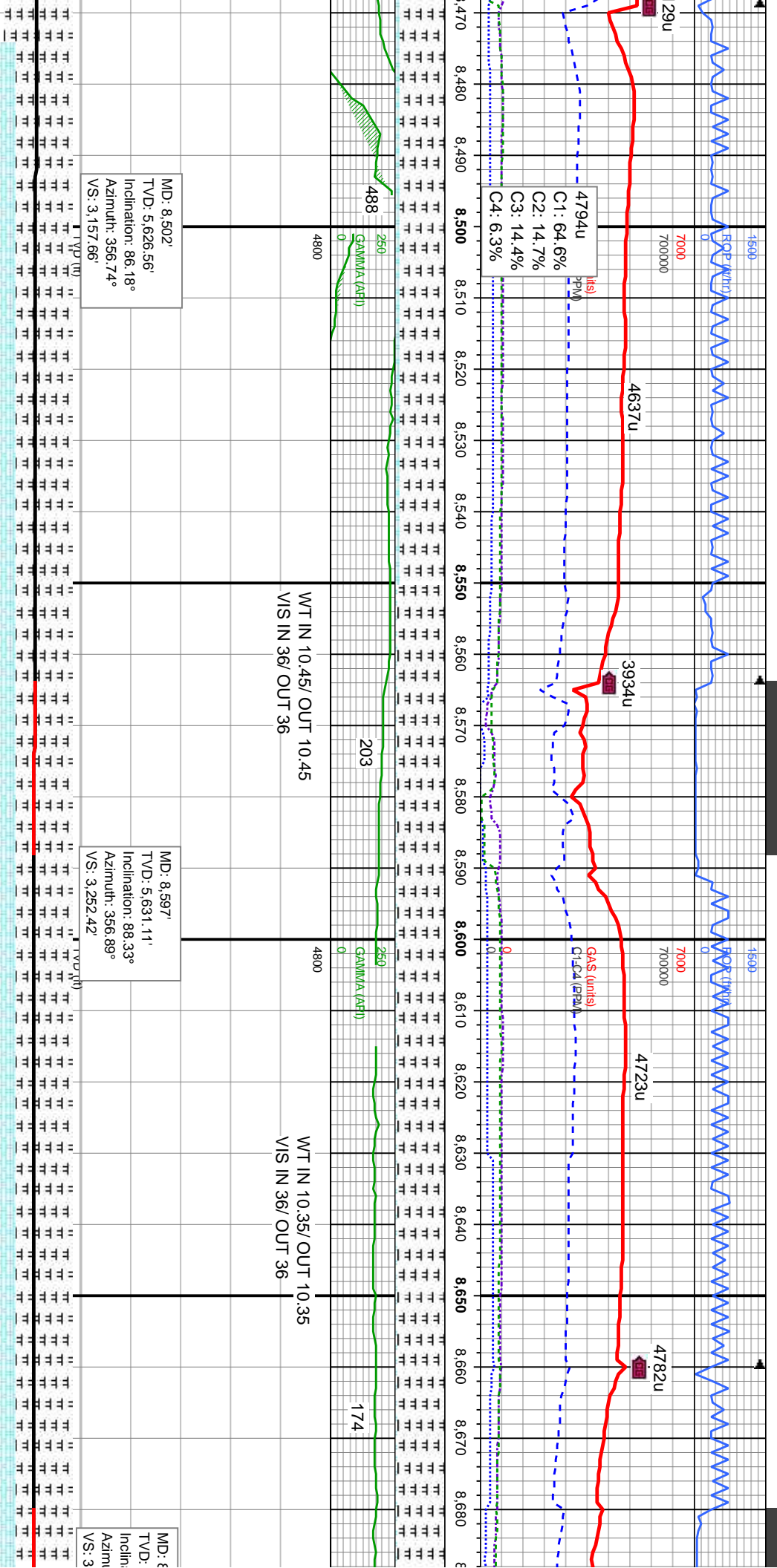
7.72' 90.43° 54.88° 54'	WT IN 10.40/ OUT 10.40 VIS IN 36/ OUT 36	MD: 8.123' TVD: 5,616.8' Inclination: 90.68° Azimuth: 357.27° VS: 2.779.32	MD: 8.218' TVD: 5,615.54' Inclination: 90.83° Azimuth: 356.91° VS: 2.874.2'
mod frm, sb blk- sft - mod frm, sb it lstr, v calc	MRLST: gy- lt gy, brn, sft - mod frm, sb blk- sb plty, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk- mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft - mod frm, sb blk- sb plty, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk- mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft - mod frm, sb blk- sb plty, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk- mot-wxy tex, tr sb vit lstr, v calc; tr bent





MR LST: gy- lt gy, brn, sft - mod frm, sb blk- sb pily, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk, mot-wxy tex, tr sb vit lsfr, v calc; tr bent	MR LST: gy- lt gy, brn, sft - mod frm, sb blk- sb pily, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk, mot-wxy tex, tr sb vit lsfr, v calc; tr bent	MR LST: gy- lt gy, brn, sft - mod frm, sb blk- sb pily, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk, mot-wxy tex, tr sb vit lsfr, v calc; tr bent	MR LST: gy- lt gy, brn, sft - mod frm, sb blk- sb pily, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb blk, mot-wxy tex, tr sb vit lsfr, v calc; tr bent
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C1: 64.6%
C2: 14.7%
C3: 14.4%
C4: 6.3%

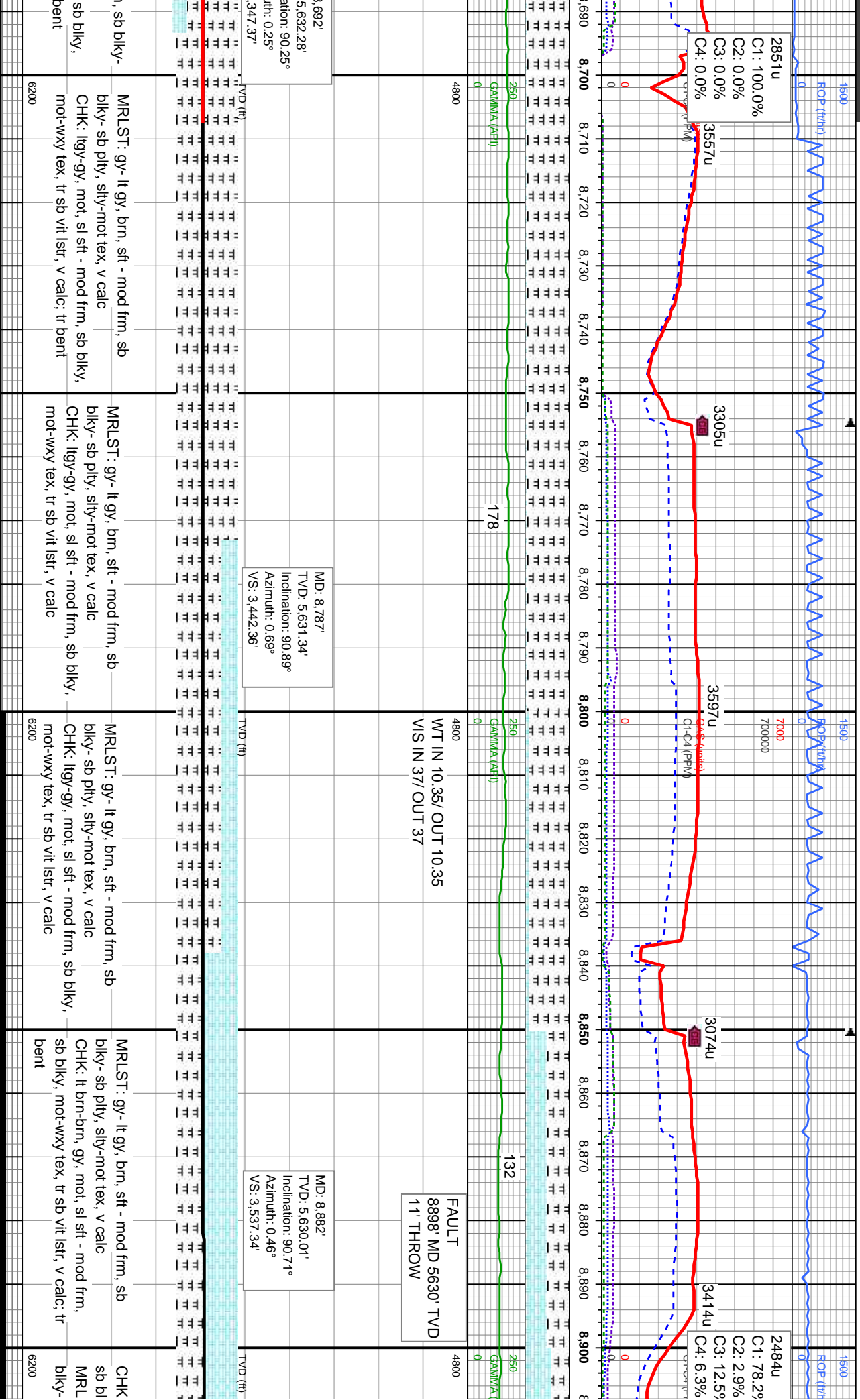
MD: 8.502'
TVD: 5.626.56'
Inclination: 86.18°
Azimuth: 356.74°
VS: 3.157.66'

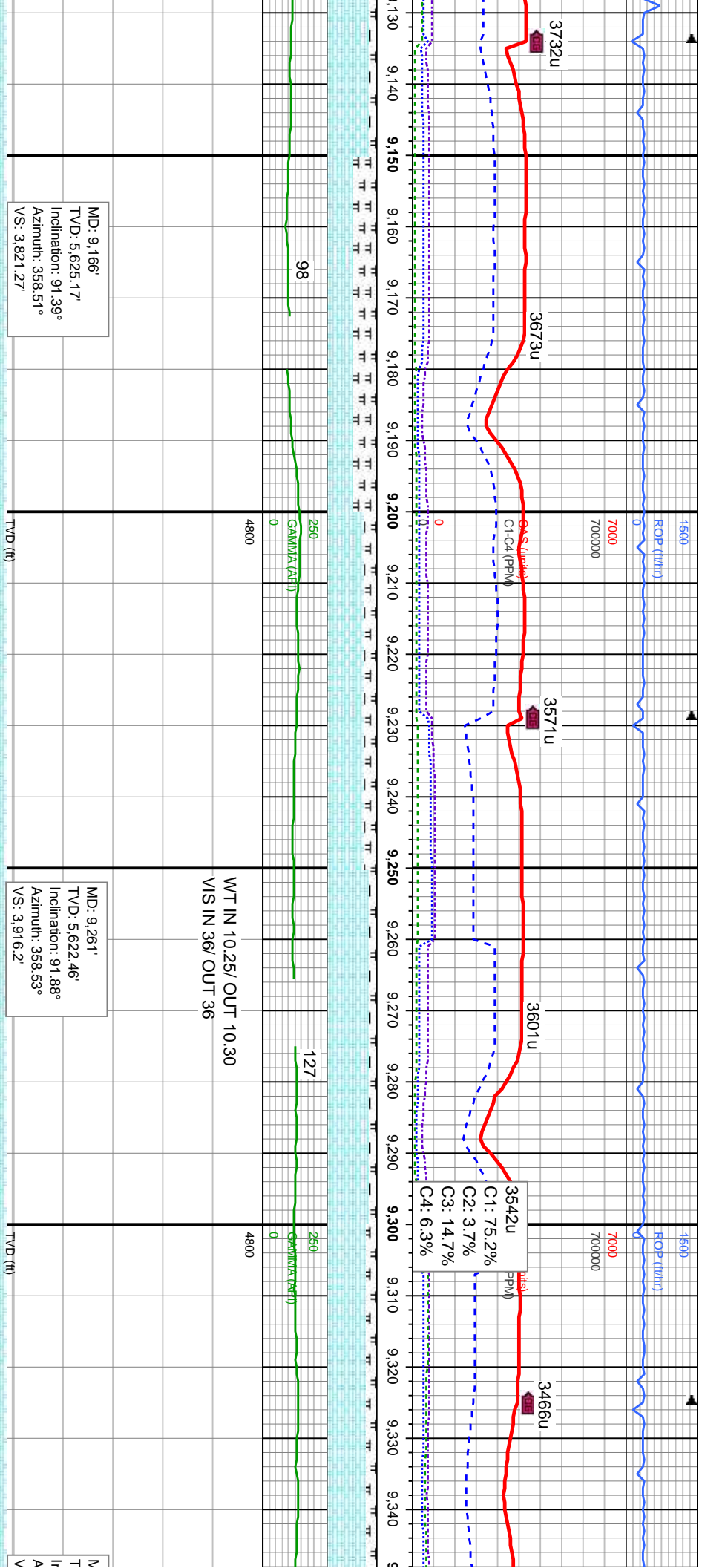
MD: 8.597'
TVD: 5.631.11'
Inclination: 88.33°
Azimuth: 356.89°
VS: 3.252.42'

MD: 8.597'
TVD: 5.631.11'
Inclination: 88.33°
Azimuth: 356.89°
VS: 3.252.42'

gy, brn, sft - mod frm, sb y-mot tex, v calc rn, mot, sl sft - mod frm, sb ex, tr sb vit lstr, v calc: rr	MRLST: gy- lt gy, brn, sft - mod frm, sb biky- sb pily, silty-mot tex, v calc CHK: ltgy-gy, brn, mot, sl sft - mod frm, sb biky, mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft - mod frm, sb biky- sb pily, silty-mot tex, v calc CHK: ltgy-gy, mot, sl sft - mod frm, sb biky, mot-wxy tex, tr sb vit lstr, v calc: rr bent	MRLST: gy- lt gy, brn, sft - mod frm, sb sb pily, silty-mot tex, v calc CHK: ltgy-gy, mot, sl sft - mod frm, sb biky, mot-wxy tex, tr sb vit lstr, v calc: rr bent	MRLST: gy- lt gy, brn, sft - mod frm sb pily, silty-mot tex, v calc CHK: ltgy-gy, mot, sl sft - mod frm, sb mot-wxy tex, tr sb vit lstr, v calc: rr
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it, sl sft - mod frm, o vit lstr, v calc	CHK: It gy-crm, lt brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: It gy-crm, lt brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: It gy-crm, lt brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc
- mod frm, sb blkly-c; rr bent	MRLST: gy- lt gy, brn, sft - mod frm, sb blkly-sb ply, silty-mot tex, v calc; rr bent	MRLST: gy- lt gy, brn, sft - mod frm, sb blkly-sb ply, silty-mot tex, v calc; rr bent	MRLST: gy- lt gy, brn, sft - mod frm, sb blkly-sb ply, silty-mot tex, v calc; rr bent



