



Scale: 5" / 100'
Measured Depth Log

Well Name Atwater State LD01-76-1AHN

Location SESW SEC 1 T9N R58W

State COLORADO County WELD

Country USA Rig Number H&P 273

API Number 05-123-39761 Field WILDCAT

Region DJ BASIN Drilling Completed 11/8/2014

Spud Date 10/31/2014

Surface Coordinates 400' FSL; 1450' FWL

Bottom Hole Coordinates 810' FFNL; 2200' FFWL

Ground Elevation 4648' K.B. Elevation 4672'

Logged Interval 4830' To 14605' Total Depth 14605'

Formation NIOBRARA

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name RENEE CLACKER

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








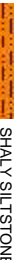




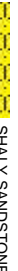




















Zone Color Coding

Oil
Note
Error









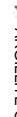
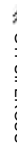

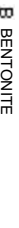

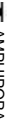


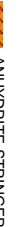
































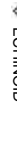
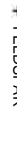

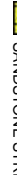
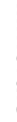

Condensate
Core
Water

Gas
Pres
Sea







Rock Types

 CHALK	 CEMENT	 IGNEOUS	 SHALE GRAY
 MARLSTONE	 CHERT	 SIDERITE or LIMONITE	 SHALY SILTSTONE
 SANDSTONE	 CLAY CHOQE SANC	 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	
 AMPHIPORA	 BITUMENOUS SUBSTANCE	 INOCERAMUS	
 BELEMNITE	 BRECCIA FRAGMENTS	 K KAOLIN	 ANHYDRITE STRINGER
 BIOCLASTIC	 CALCAREOUS	 M MARLSTONE	 BENTONITE STRINGER
 BRACHIOPOD	 CARBONACEOUS FLAKES	 MINERAL CRYSTALS	 COAL STRINGER
 BRYOZOA	 CHTDK	 N NODULES	 DOLOMITE STRINGER
 CEPHALOPOD	 CHLTl	 PHOSPHATE PELLETS	 GYPSUM STRINGER
 CORAL	 COAL - THIN BEDS	 P PYRITE	 LIMESTONE STRINGER
 CRINOID	 DOLOMITIC	 B SALT CAST	 MARLSTONE (CALC) STRG
 ECHINOID	 + FELDSPAR	 S SANDY	 MARLSTONE (DOL) STRG
 FISH	 FERRUGINOUS PELLETT	 S SILICEOUS	 SANDSTONE STRINGER
 FORAMINIFERA	 F FERRUGINOUS	 S SILTY	 SHALE STRINGER
	 ANHYDRITIC		 SILTSTONE STRINGER

Oil Show

 MOLDIC	 ORGANIC
 DEAD	 P PINPOINT
 EVEN	 V VUGGY

Engineering

 QUESTIONABLE	
 SPOTTED STAINING	
 BIT	

Porosity

 CONNECTION (LEFT)	 CONNECTION (RIGHT)
 FENESTRAL	 CONNECTION GAS
 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 **F** SUBRND **WS** WACKESTONE

 SIDEWALL CORE (LEFT)


Textures

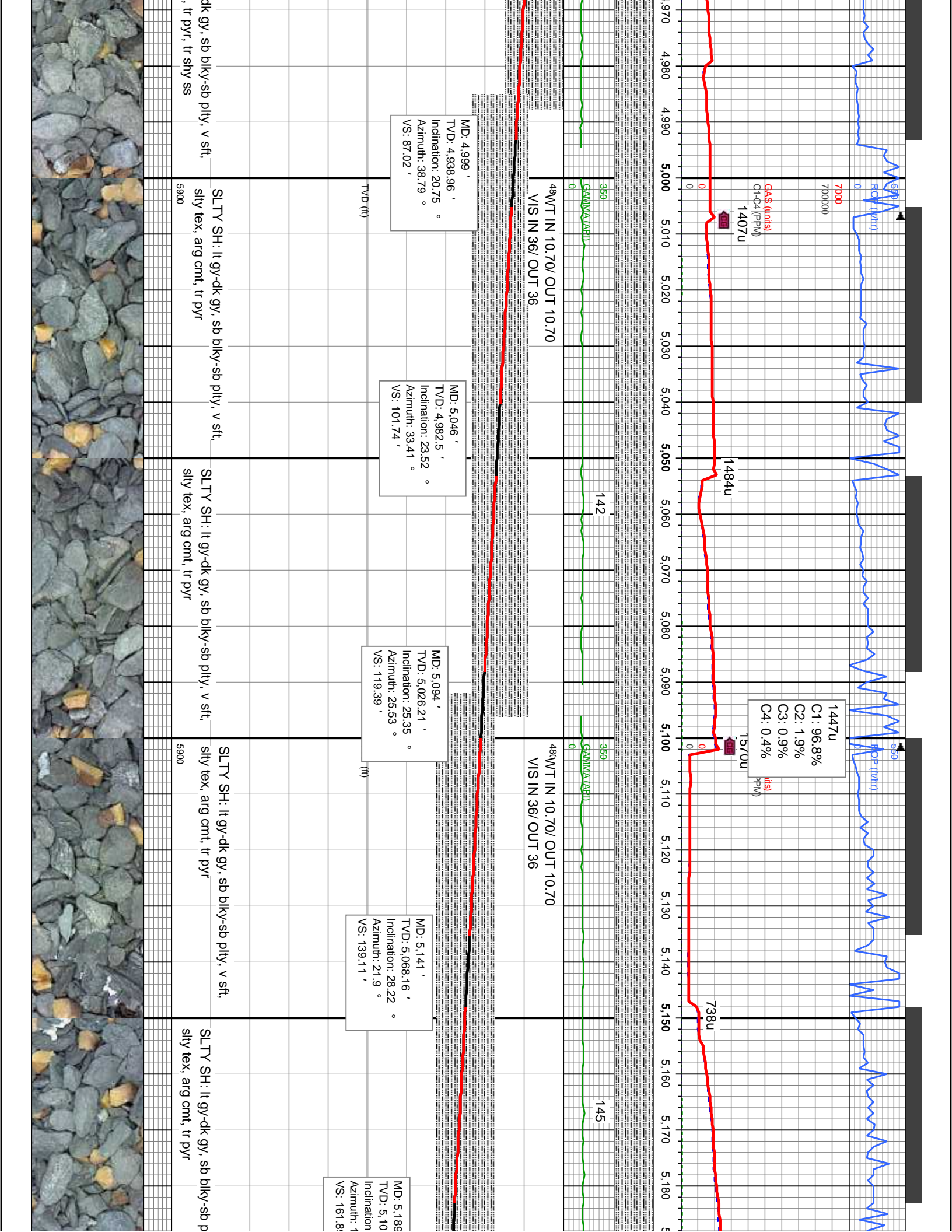
 SIDEWALL CORE (RIGHT)

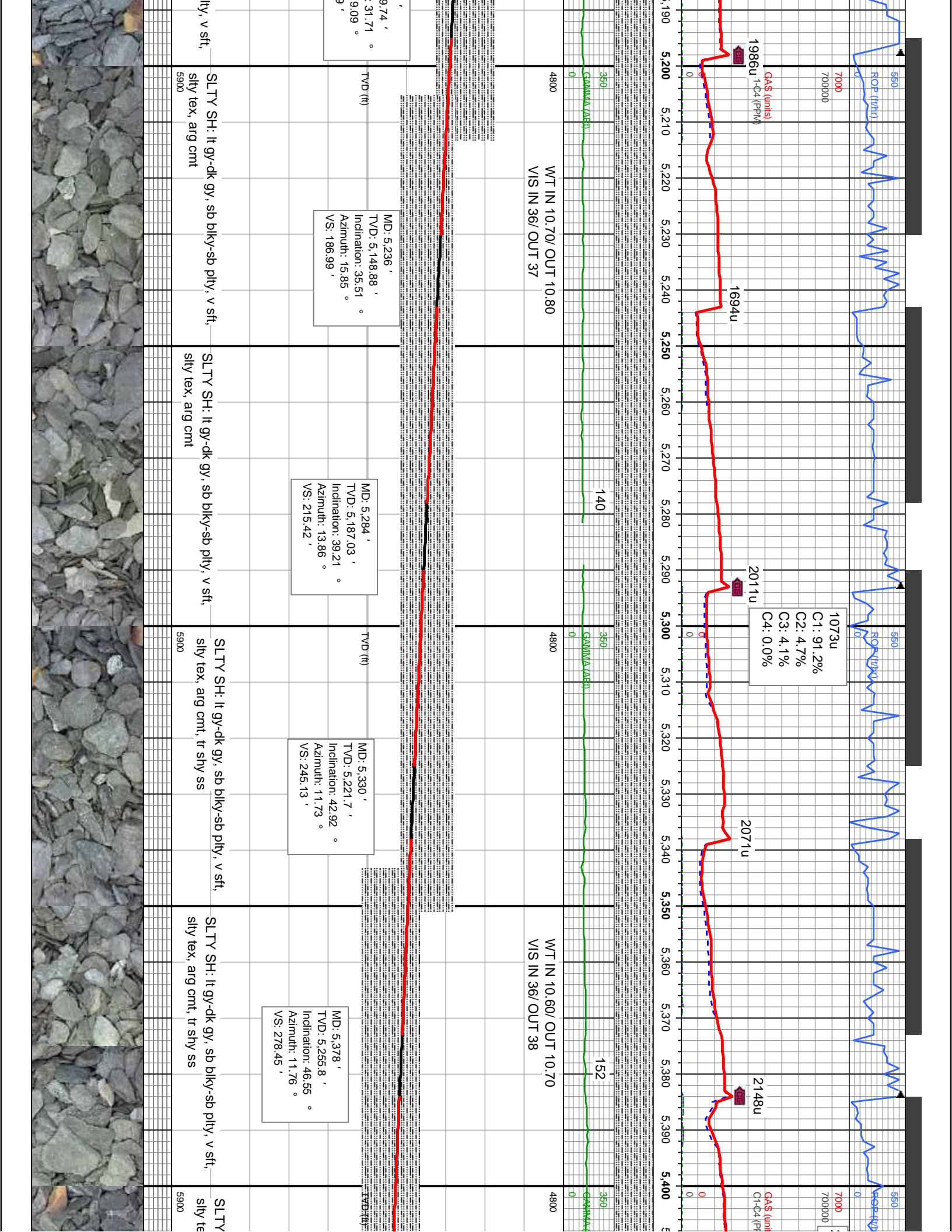
Sorting

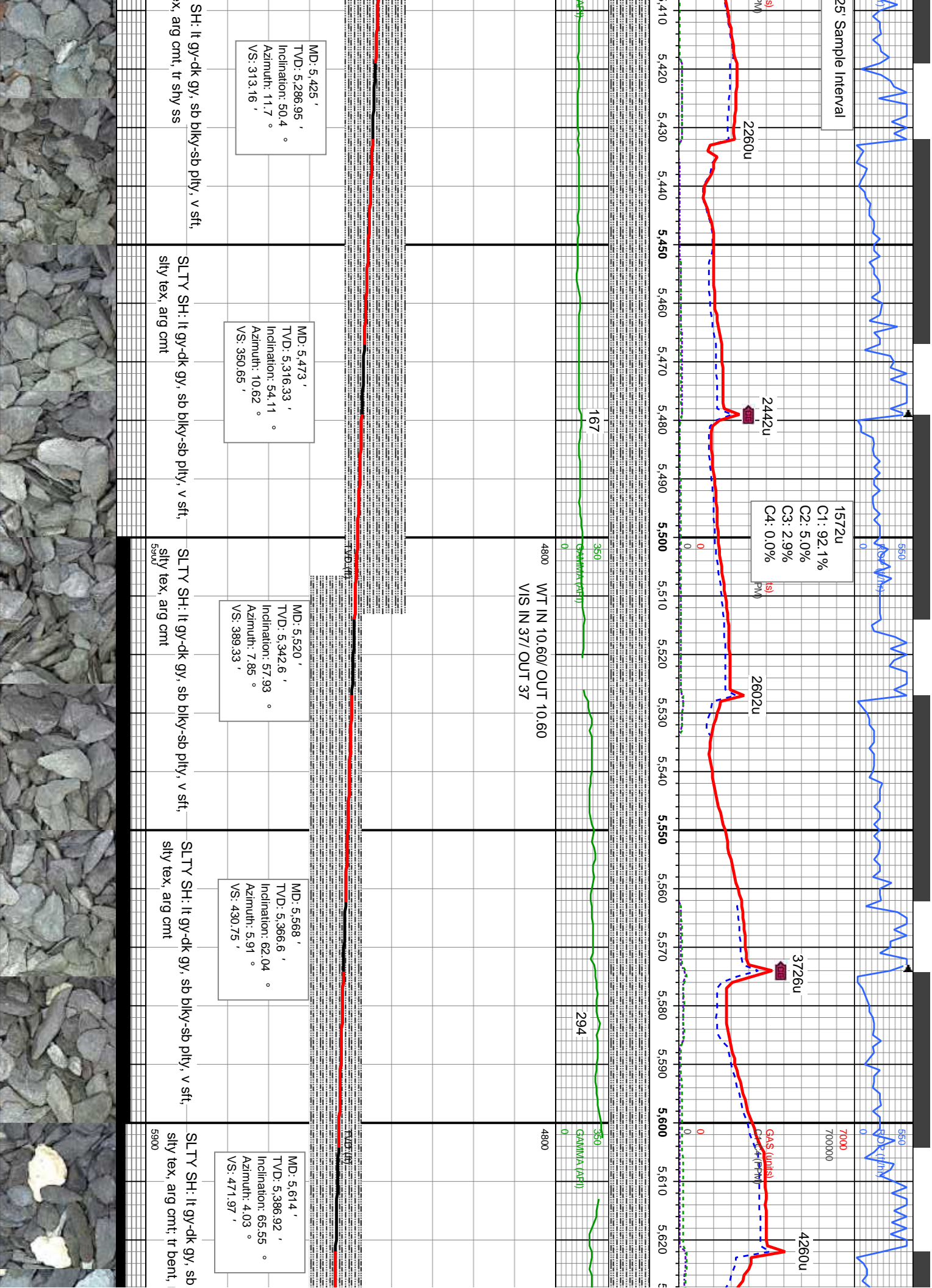
 SLIDE **BS** BOUNDSTONE **M** MODERATE

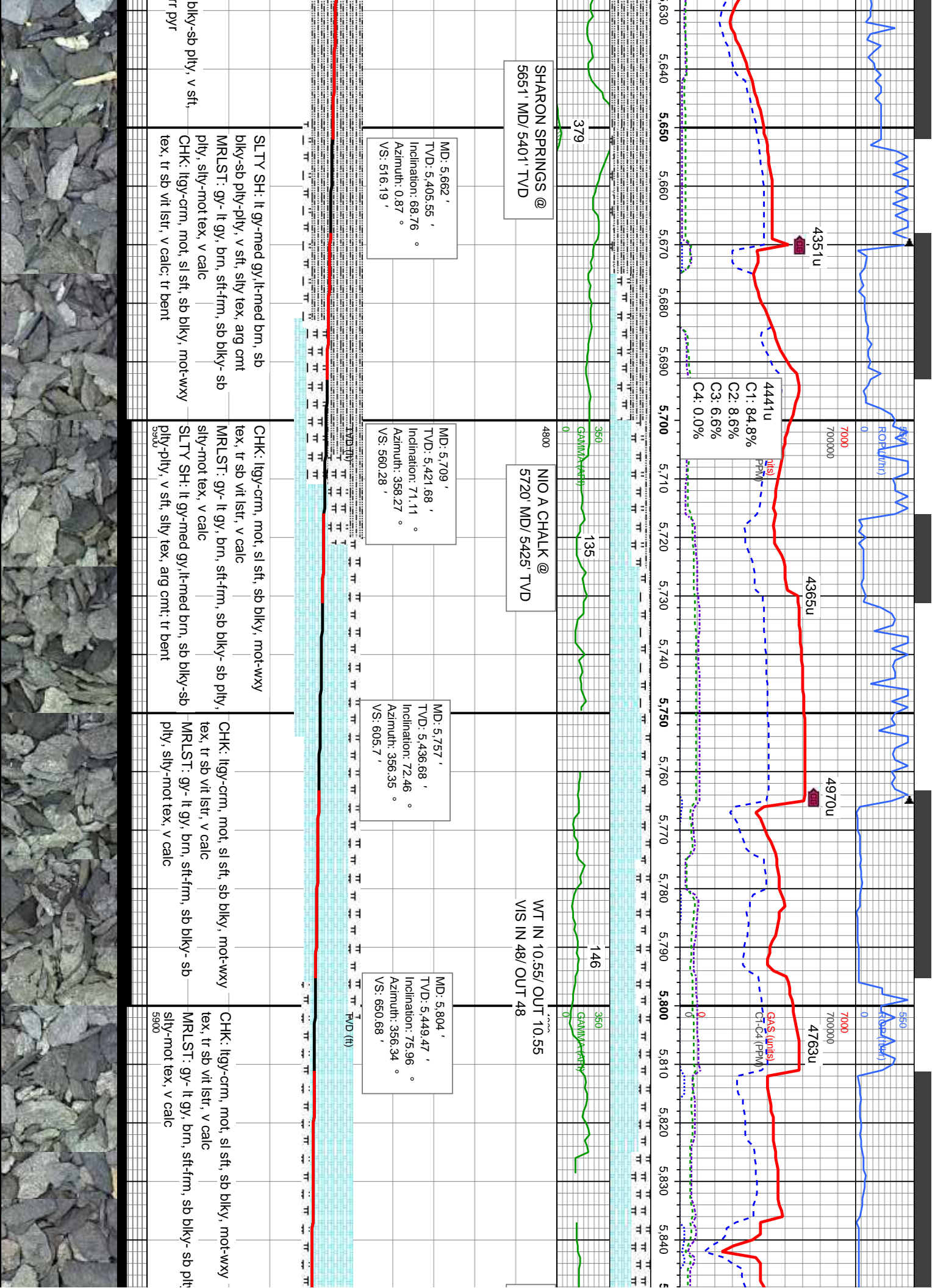
 SURVEY **C** CHALKY **P** POOR

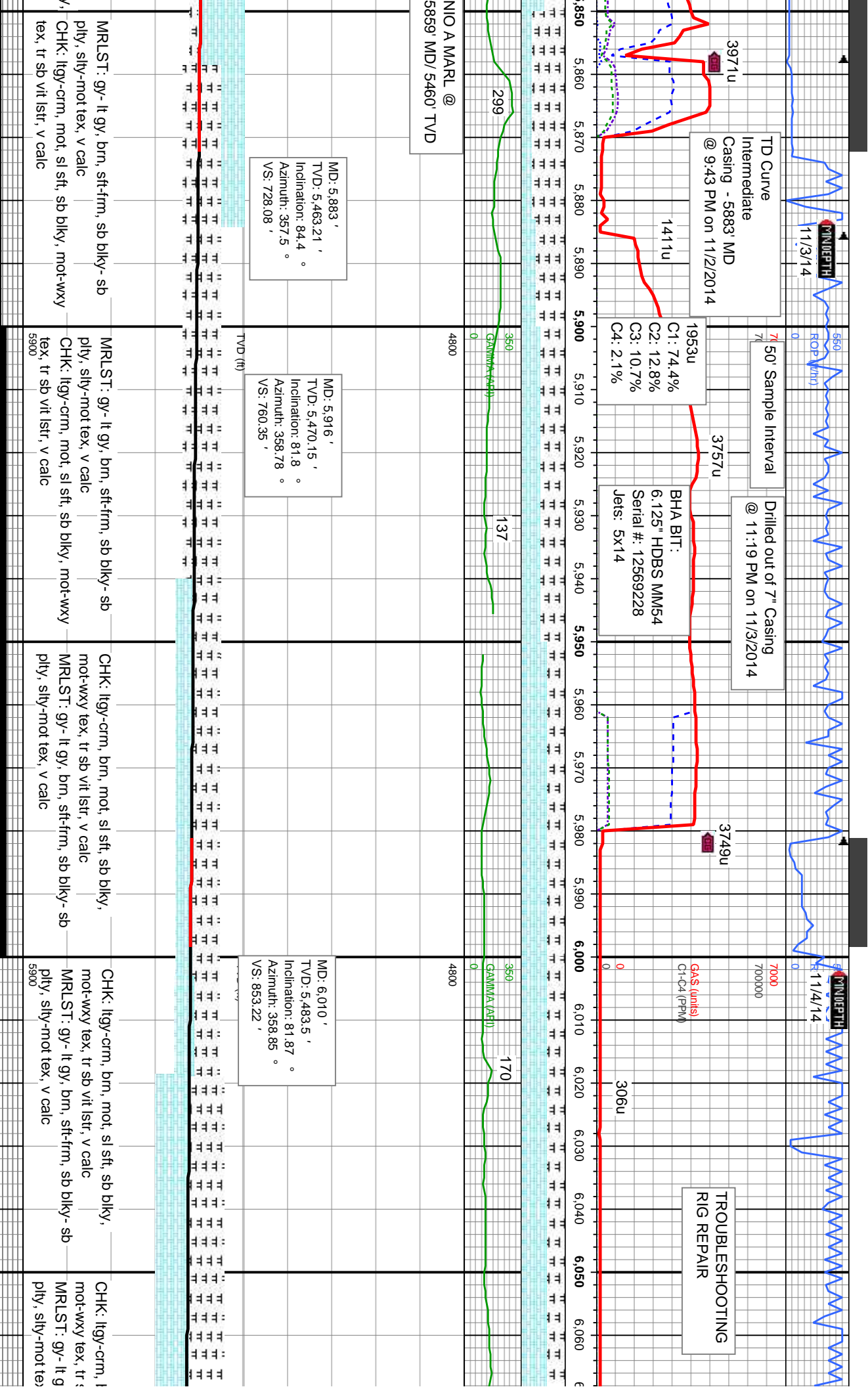
 TRIP GAS **CX** CRYPTOXLN **W** WELL

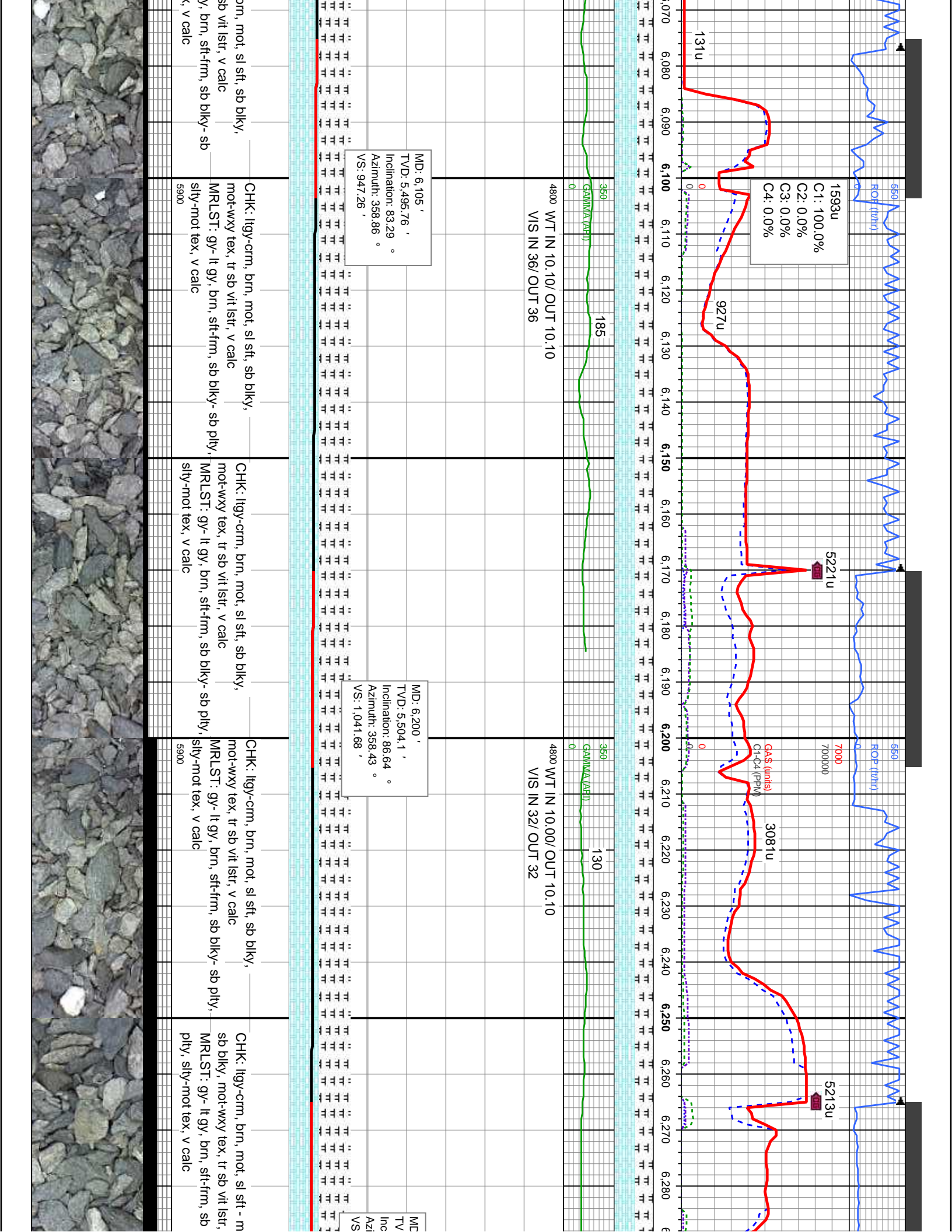


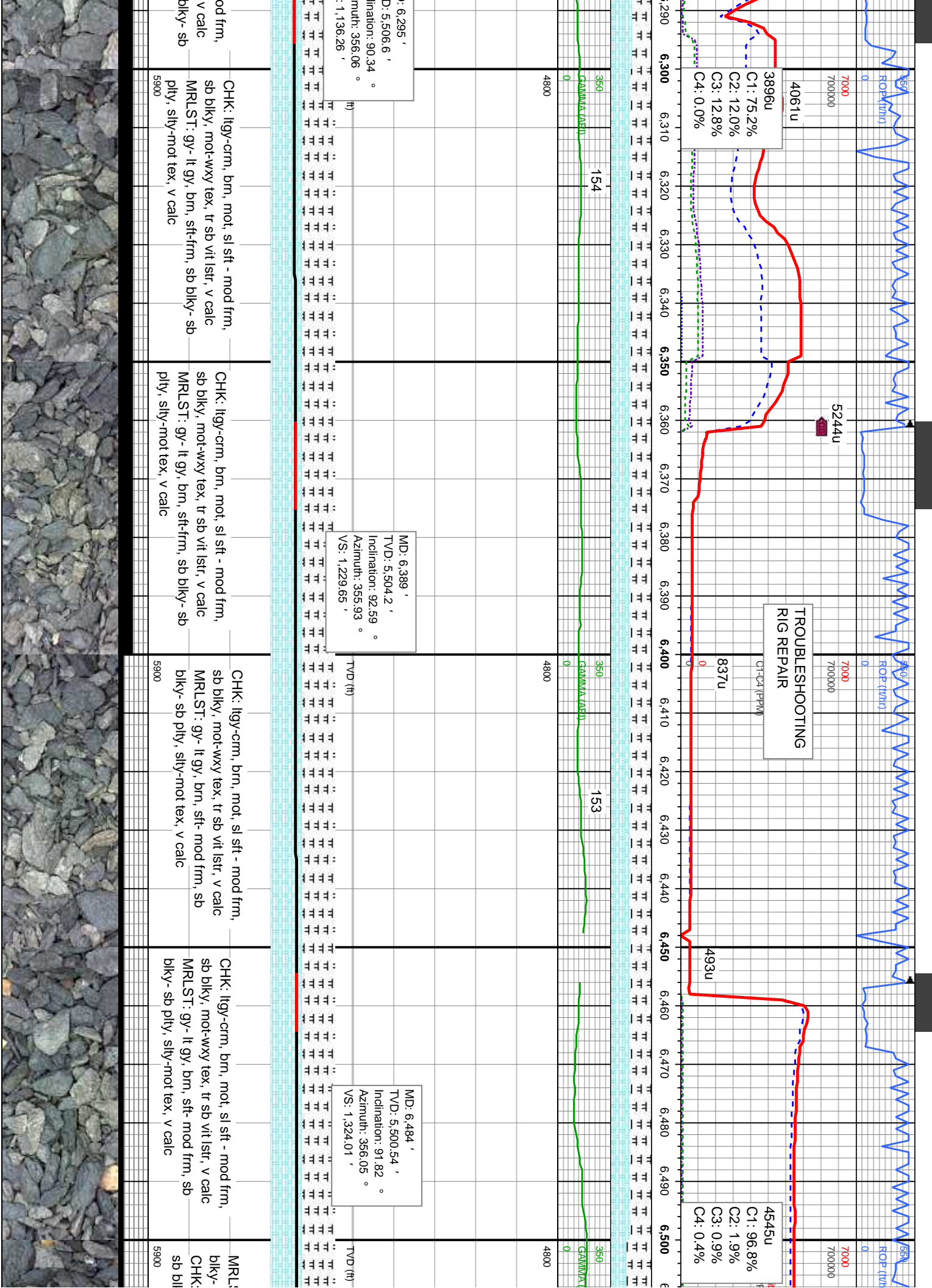


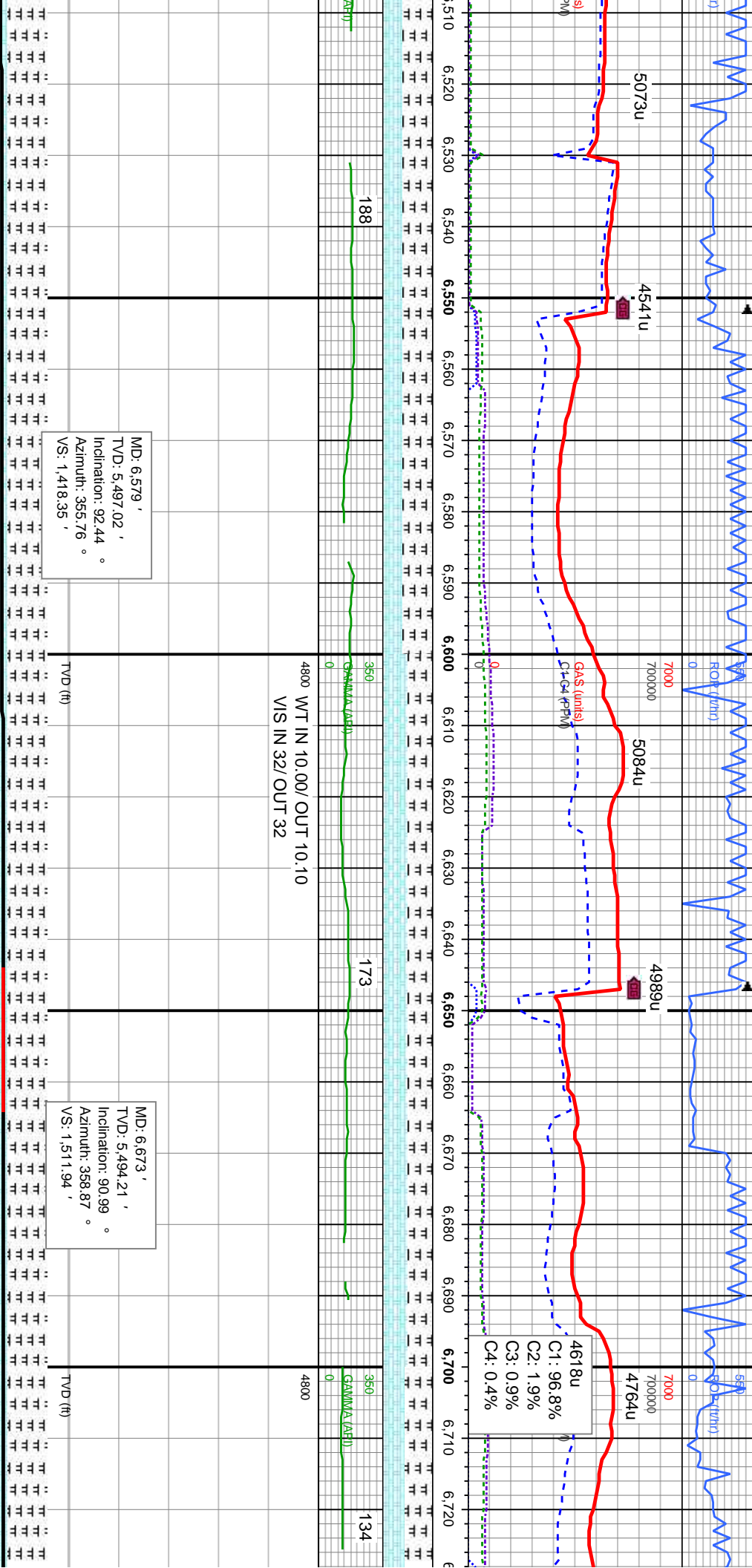






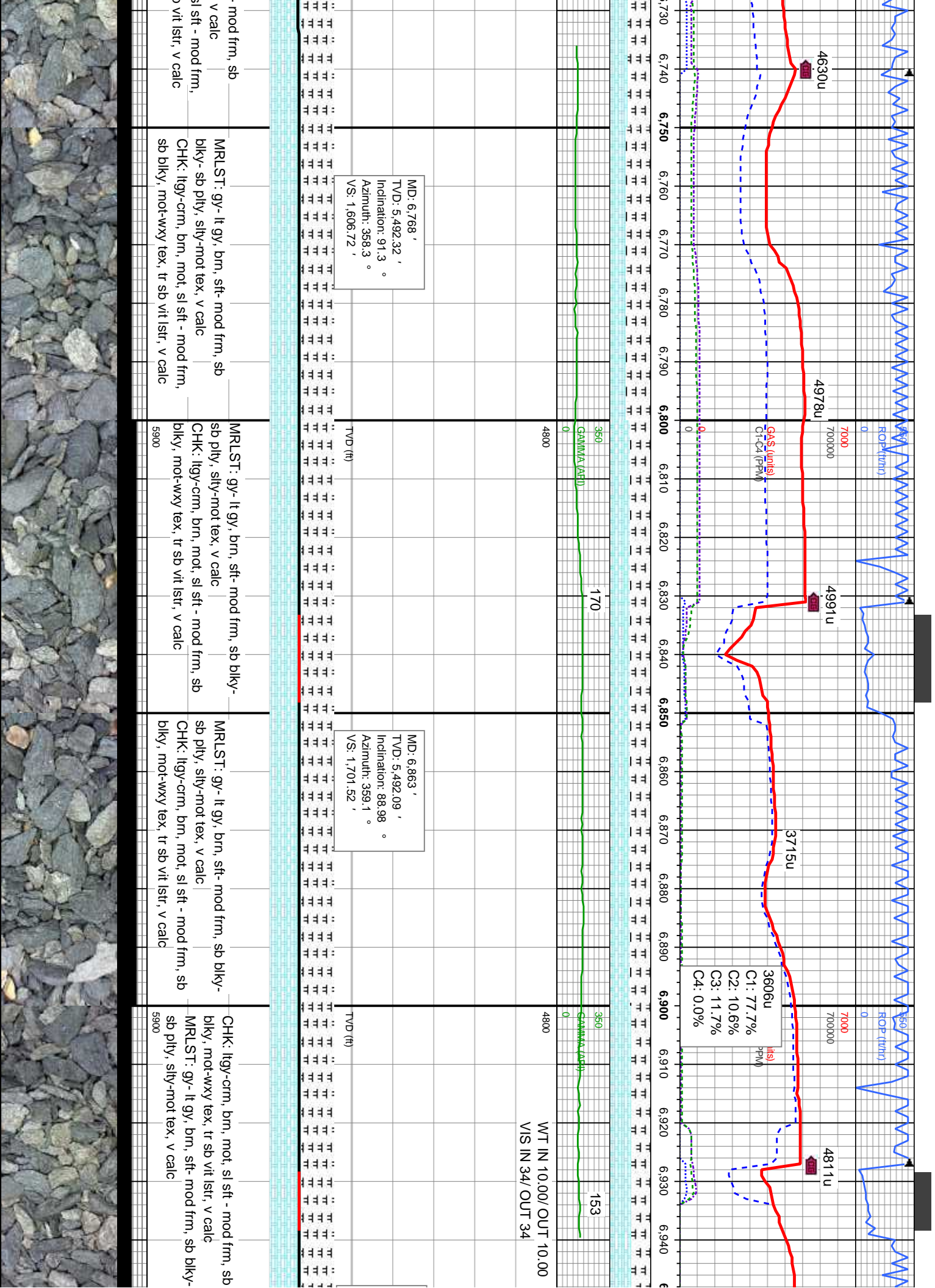


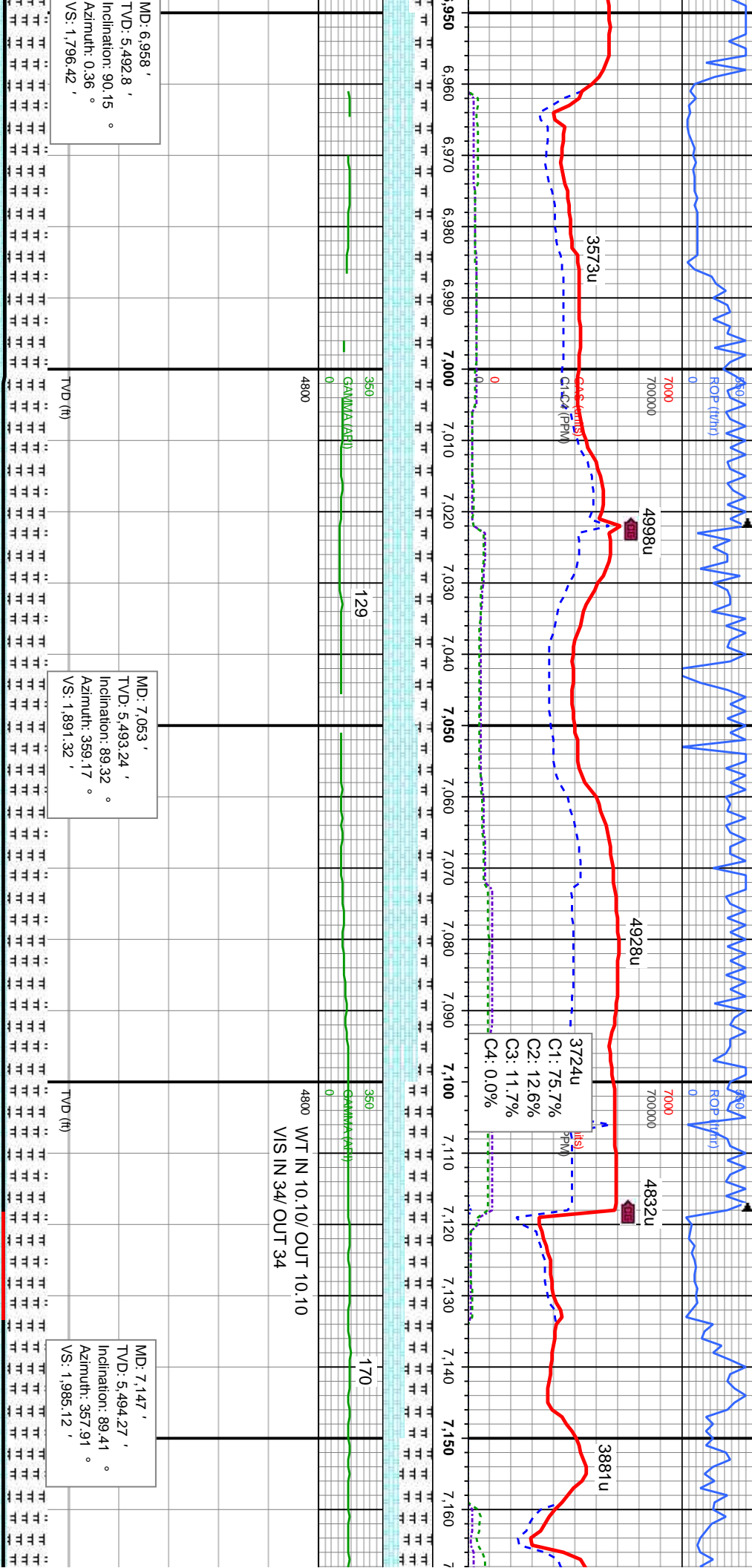




ST: gy- lt gy, brn, sft- mod frm, sb sb pily, silty-mot tex, v calc	MRLLST: gy- lt gy, brn, sft- mod frm, sb biky- sb pily, silty-mot tex, v calc CHK: itgy-crm, brn, mot, sl sft - mod frm, sb biky, mot-wxy tex, tr sb vit lsir, v calc	5900
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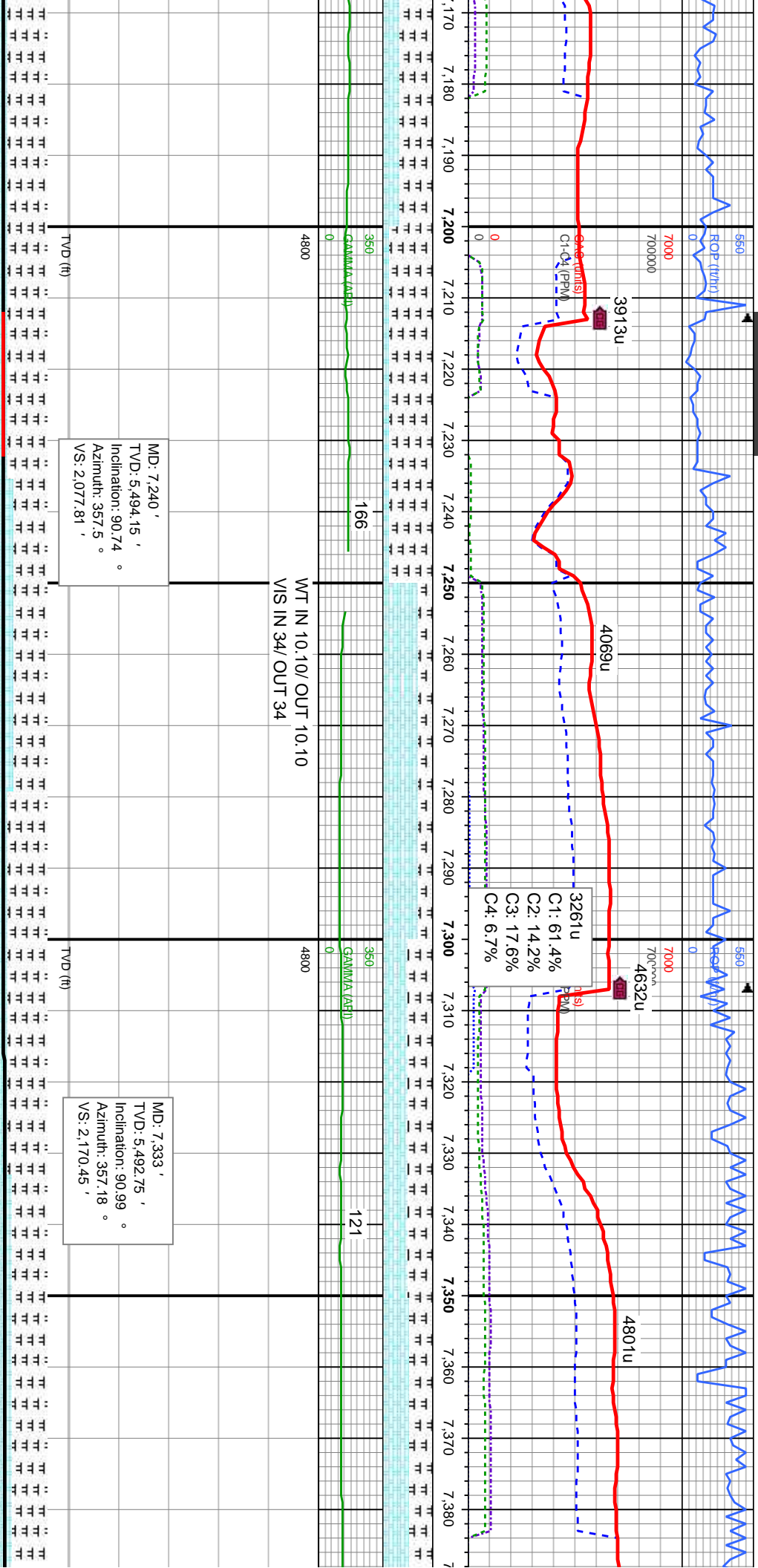






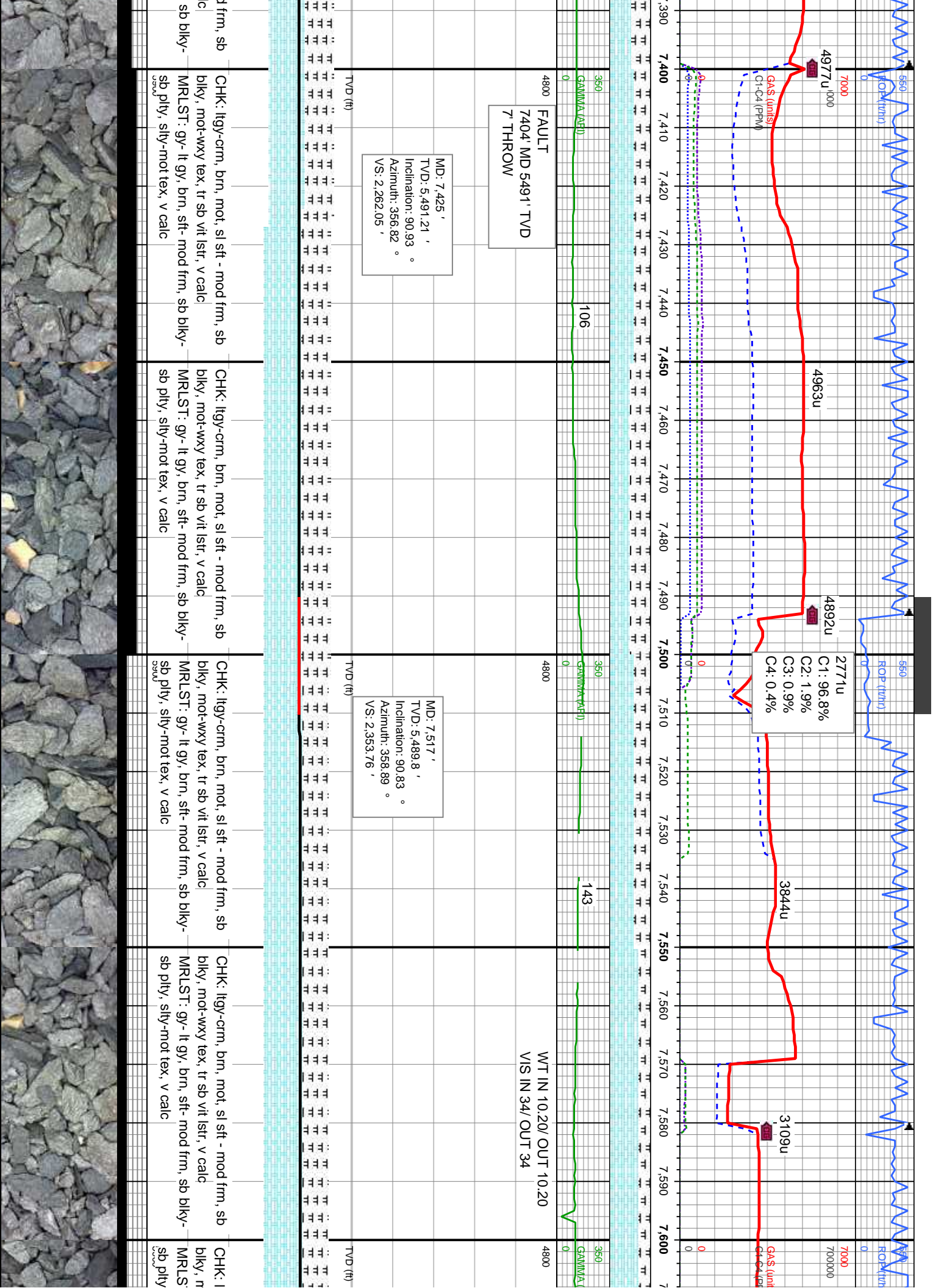
CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, slty-mot tex, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, slty-mot tex, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, slty-mot tex, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, slty-mot tex, v calc CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, slty-mot tex, v calc CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc
5900	5900	5900	5900	5900

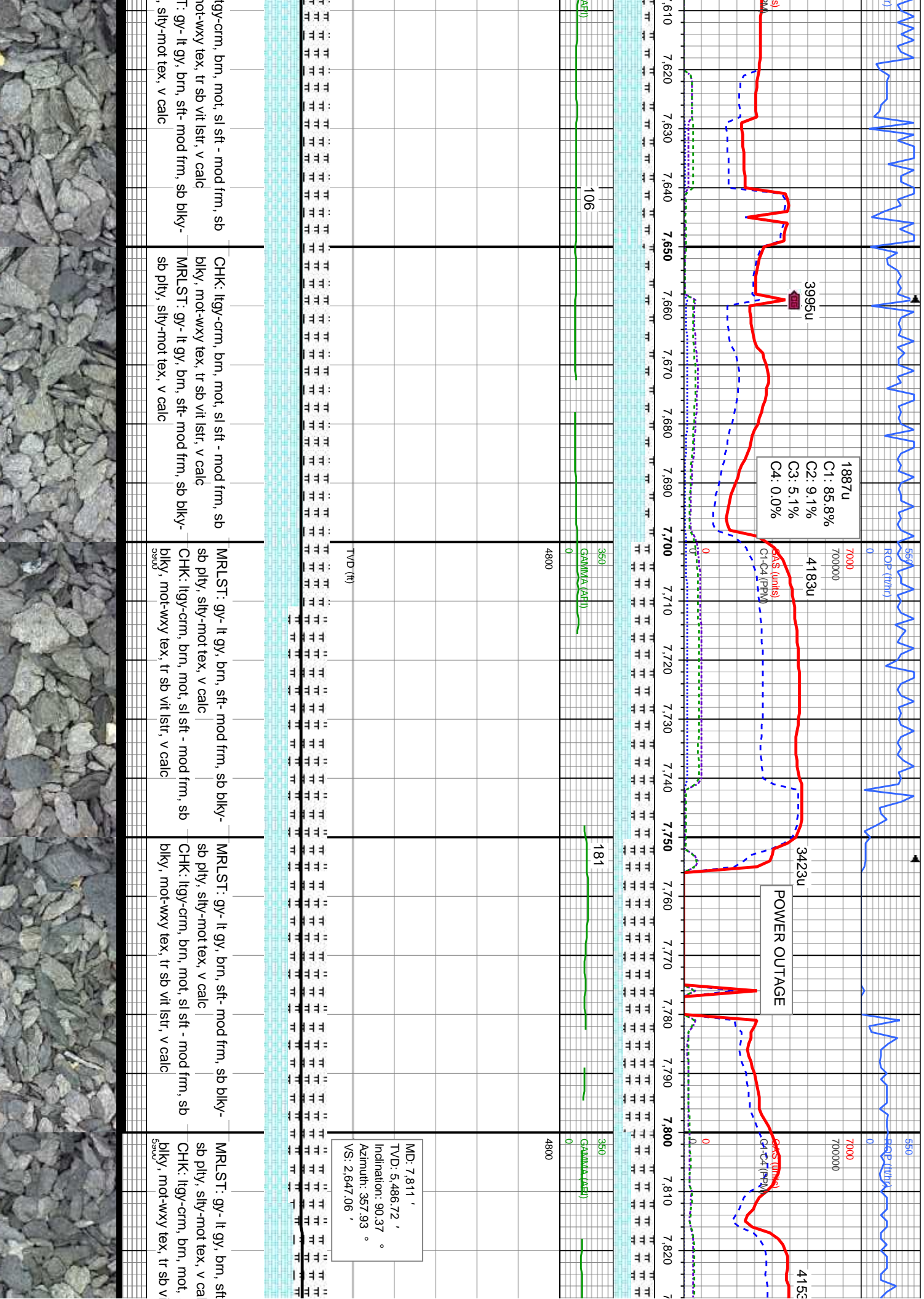


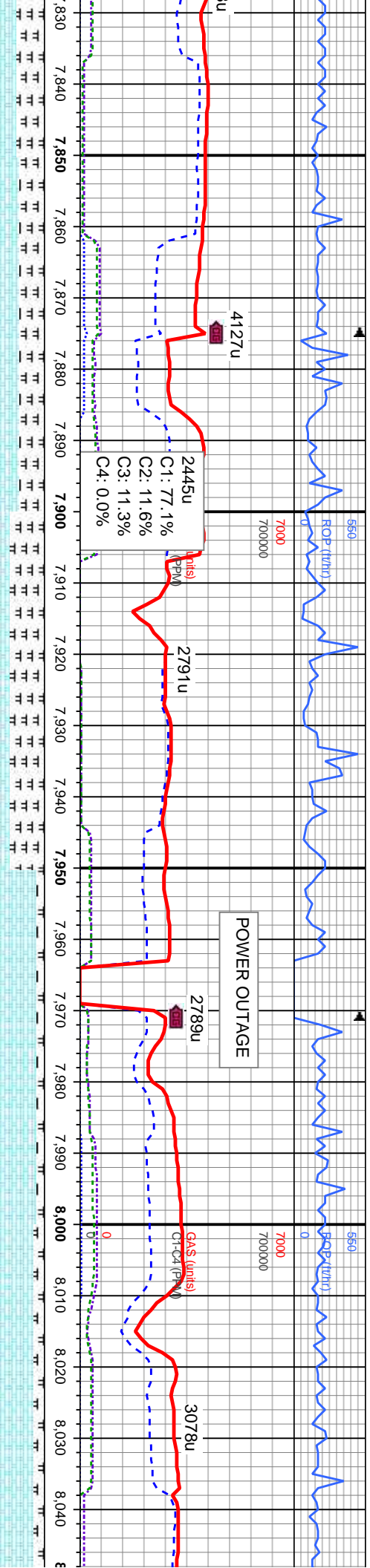


gy, brn, sft- mod frm, sb	MRLST: gy- lt gy, brn, sft- mod frm, sb blyy- sb pily, slty-mot tex, v calc	CHK: lgy-crm, brn, mot, sl sft - mod frm, sb blyy, mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blyy- sb pily, slty-mot tex, v calc	CHK: lgy-crm, brn, mot, sl sft - mod frm, sb blyy, mot-wxy tex, tr sb vit lstr, v calc
ly-mot tex, v calc				
brn, mot, sl sft - mod frm,				
ty tex, tr sb vit lstr, v calc				









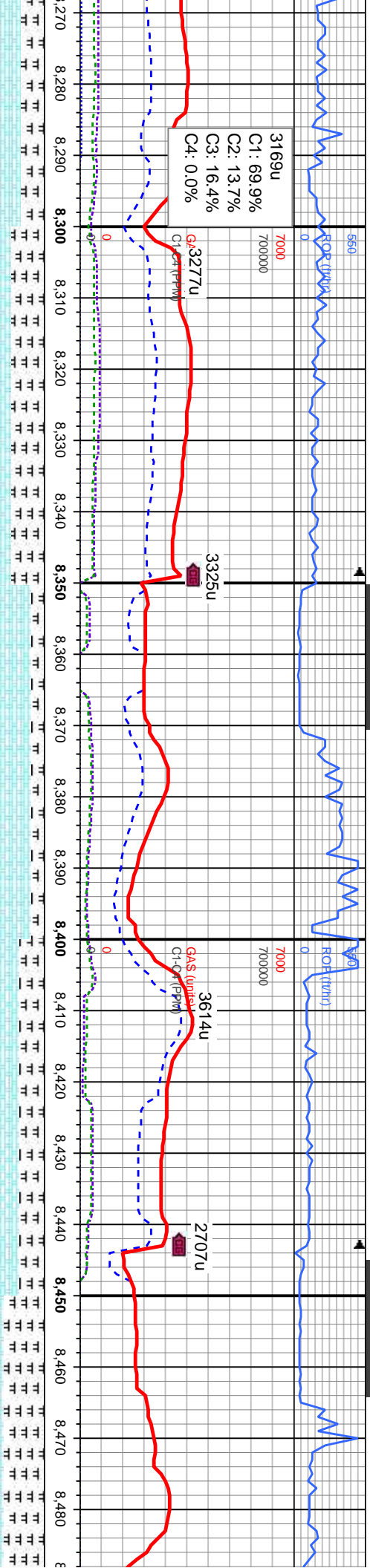
WT IN 10.30/ OUT 10.30
VIS IN 34/ OUT 34

WT IN 10.30/ OUT 10.30
VIS IN 36/ OUT 36

MD: 8.001 '
TVD: 5,486.51 '
Inclination: 89.75 °
Azimuth: 357.26 °
VS: 2.836.41 '

mod frm, sb blkyc	MRLST: gy- lt gy, brn, sft- mod frm, sb blkyc	MRLST: gy- lt gy, brn, sft- mod frm, sb blkyc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc
sl sft - mod frm, sb blkyc	sb ply, silty-mot tex, v calc	sb ply, silty-mot tex, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc
tr lstr, v calc	blkyc, mot-wxy tex, tr sb vit lstr, v calc	blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkyc, mot-wxy tex, tr sb vit lstr, v calc





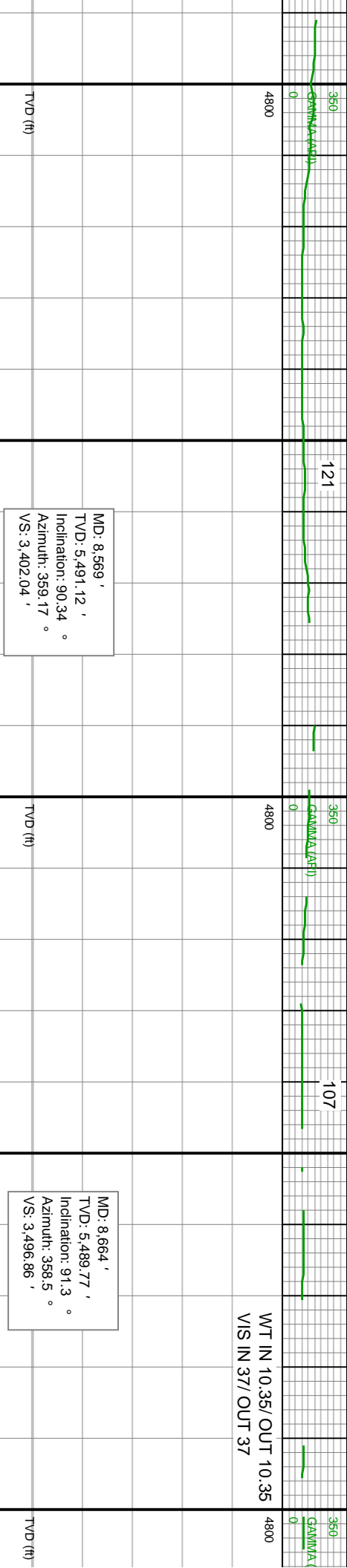
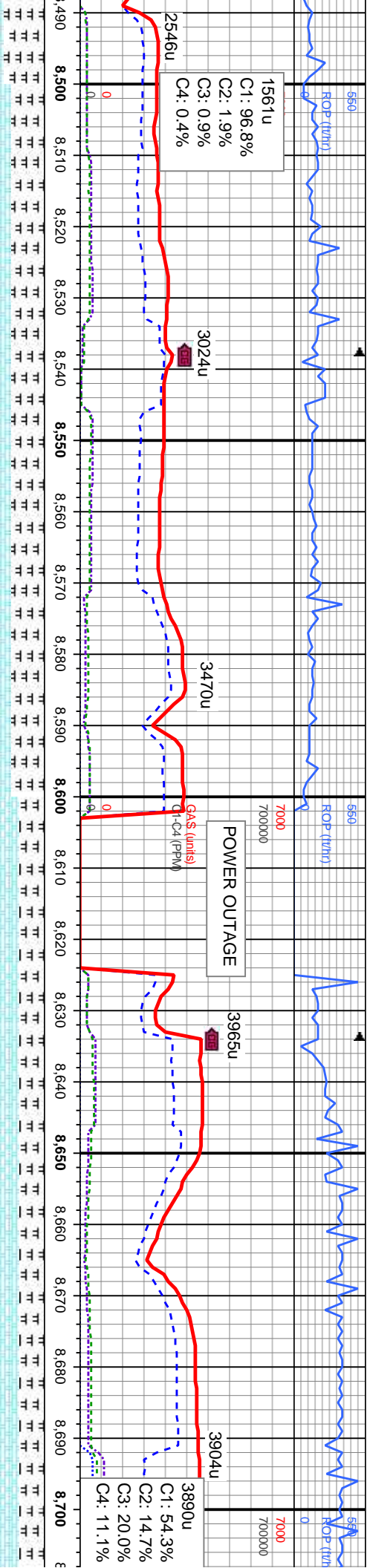
MD: 8,285 '
TVD: 5,490.13 '
Inclination: 88.7 °
Azimuth: 355.96 °
VS: 3,118.89 '

MD: 8,380 '
TVD: 5,491.59 '
Inclination: 89.54 °
Azimuth: 357.54 °
VS: 3,213.43 '

MD: 8,474 '
TVD: 5,491.69 '
Inclination: 90.34 °
Azimuth: 358.95 °
VS: 3,307.19 '

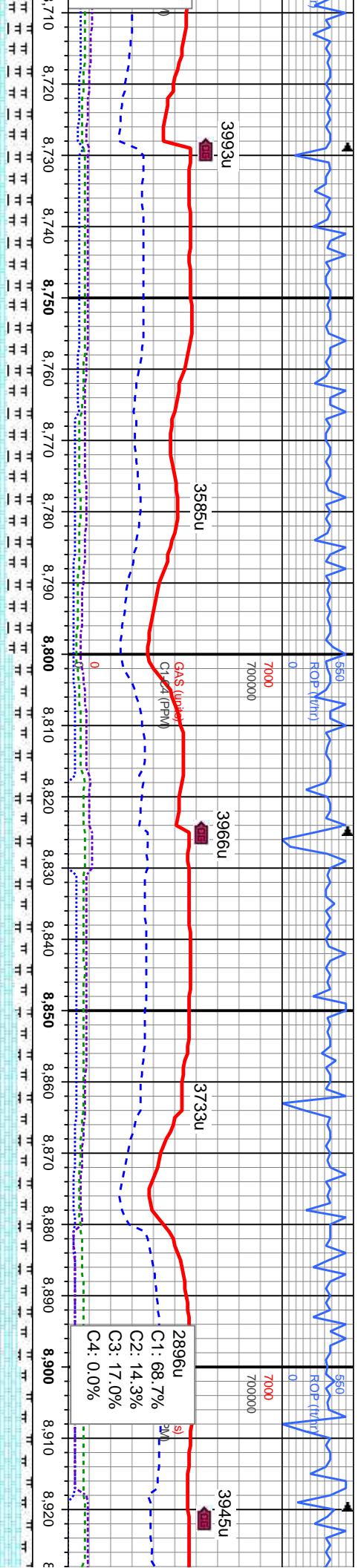
brn, mot, sl sft - mod frm, sb tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blyk- sb ply, silty-mot tex, v calc CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blyk, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blyk, mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft- mod frm, sb blyk- sb ply, silty-mot tex, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blyk- sb ply, silty-mot tex, v calc CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blyk, mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft- mod frm, sb blyk- sb ply, silty-mot tex, v calc CHK: ltgy-crm, brn, mot, sl sft - mo blyk, mot-wxy tex, tr sb vit lstr, v ce
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sb blkly-	MR LST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, silty-mot tex, v calc	MR LST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, silty-mot tex, v calc	MR LST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, silty-mot tex, v calc	MR LST: gy- lt gy, brn, sft- mod frm, sb blkly- sb plty, silty-mot tex, v calc
CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc
5900	5900	5900	5900	5900





MD: 8,759 '
TVD: 5,487.57 '
Inclination: 91.36 °
Azimuth: 358.52 °
VS: 3,591.62 '

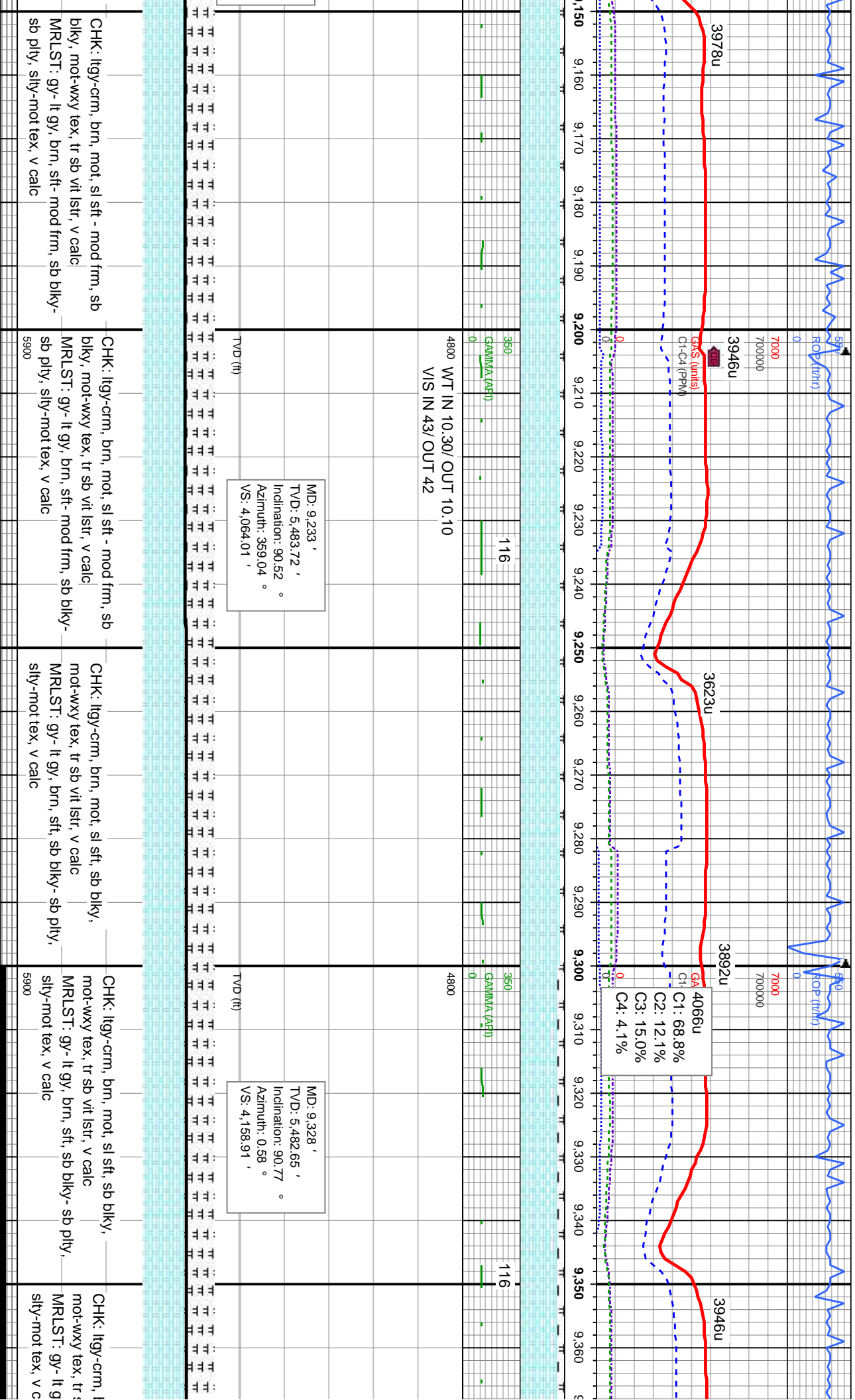
TVD (ft)

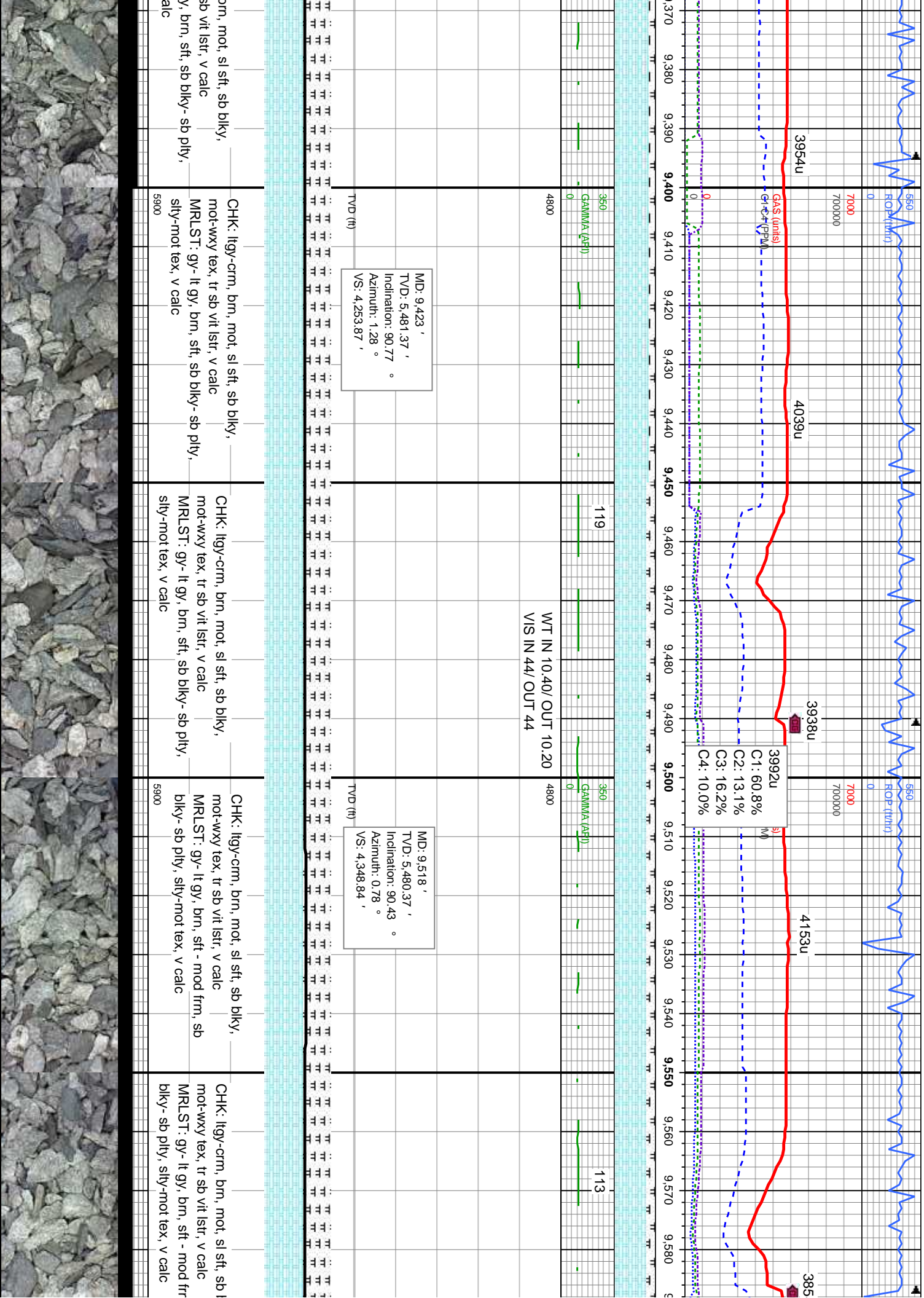
WT IN 10.30/ OUT 10.30
VIS IN 38/ OUT 38

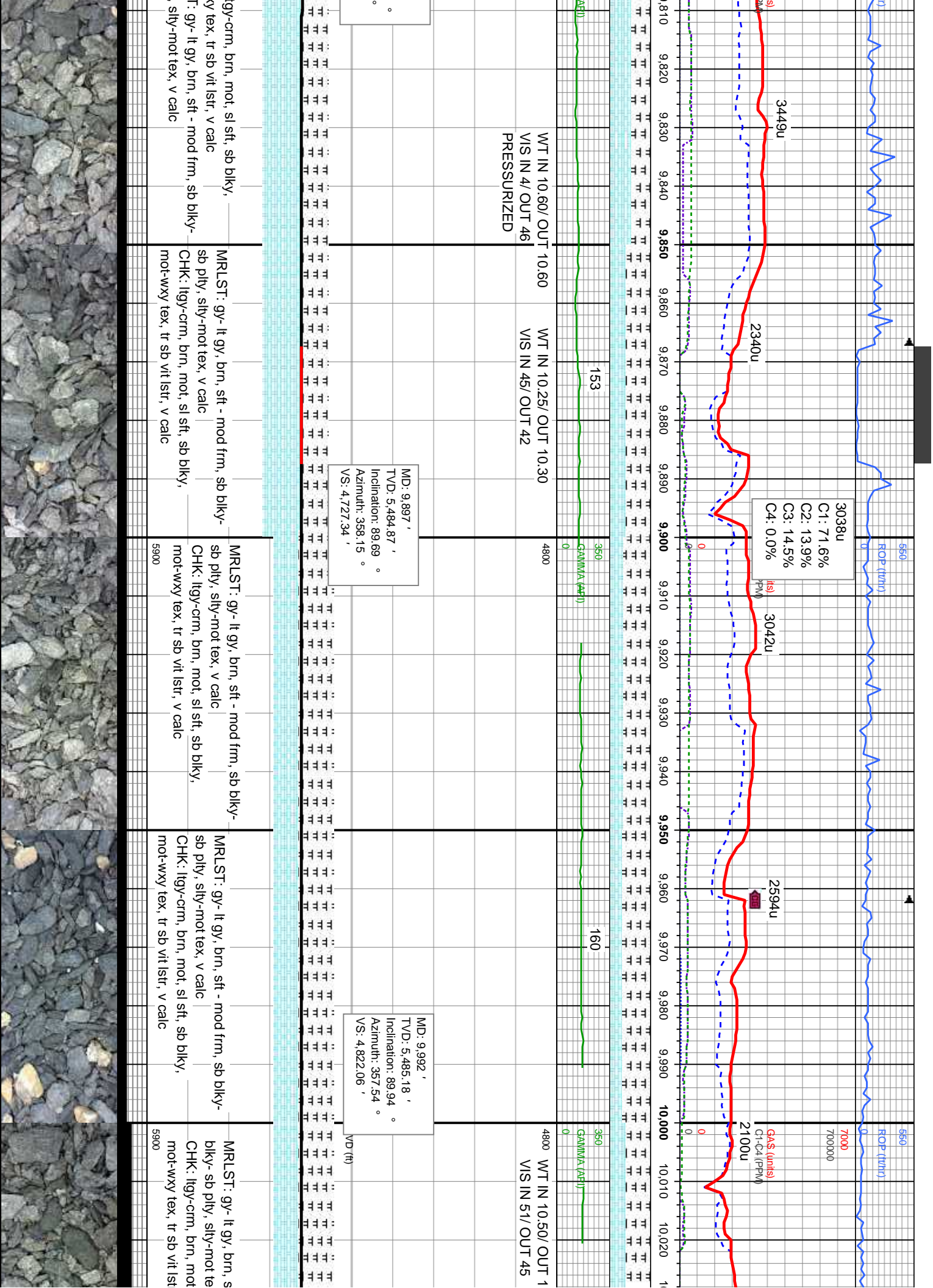
TVD (ft)

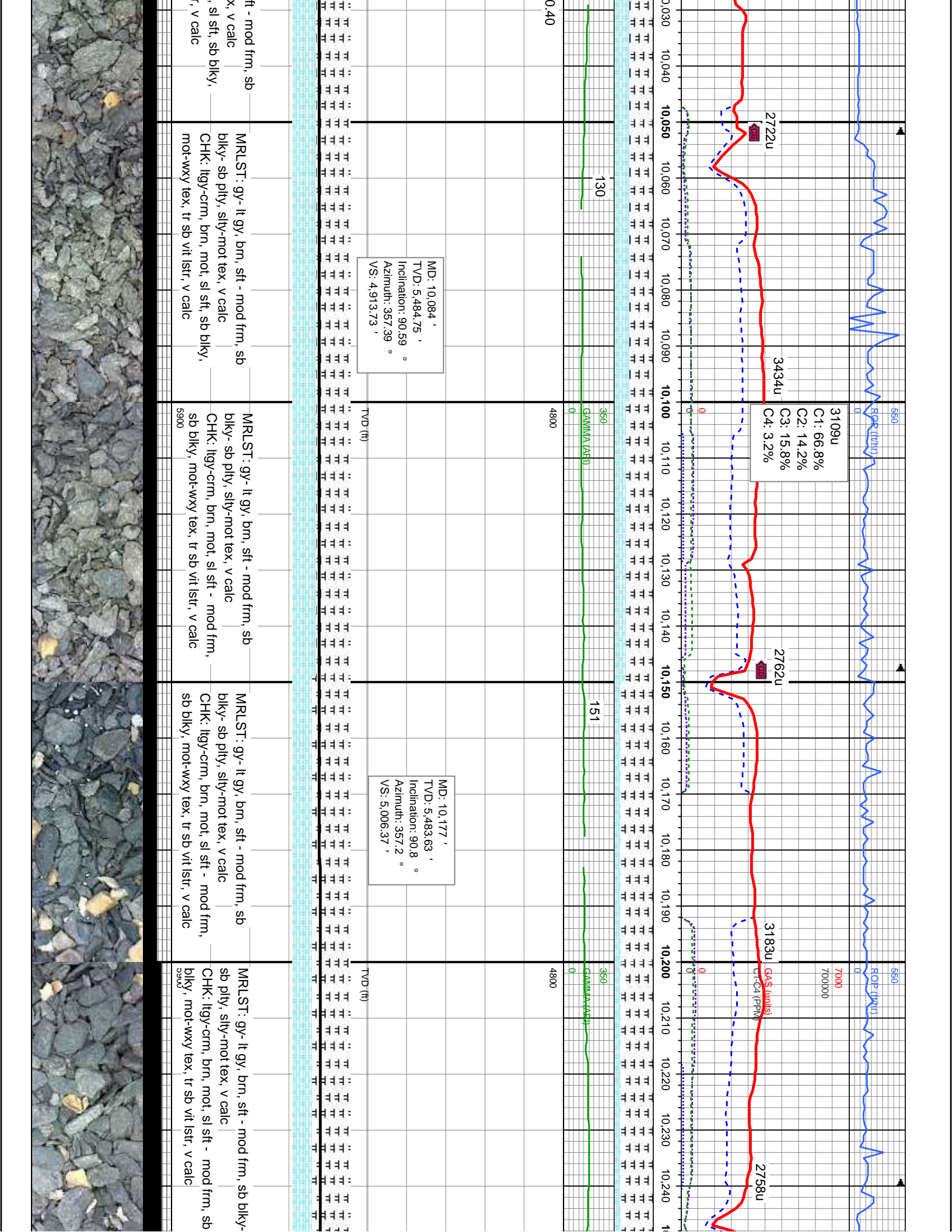
CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb
sb blkly, mot-wxy tex, tr sb vit lstr, v calc
MRLST: gy- lt gy, brn, sft- mod frm, sb
blkly- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb
blkly- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb
sb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

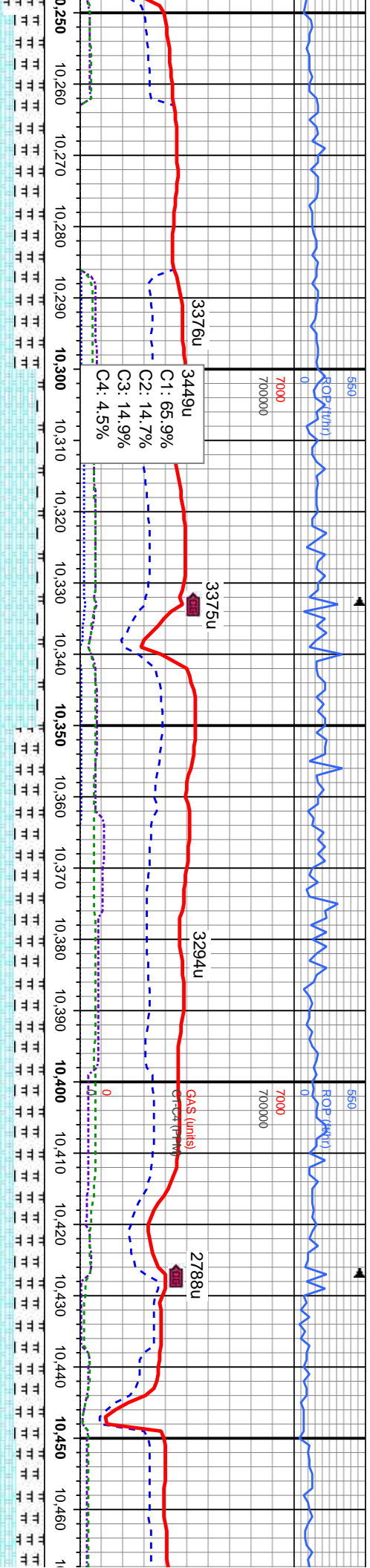








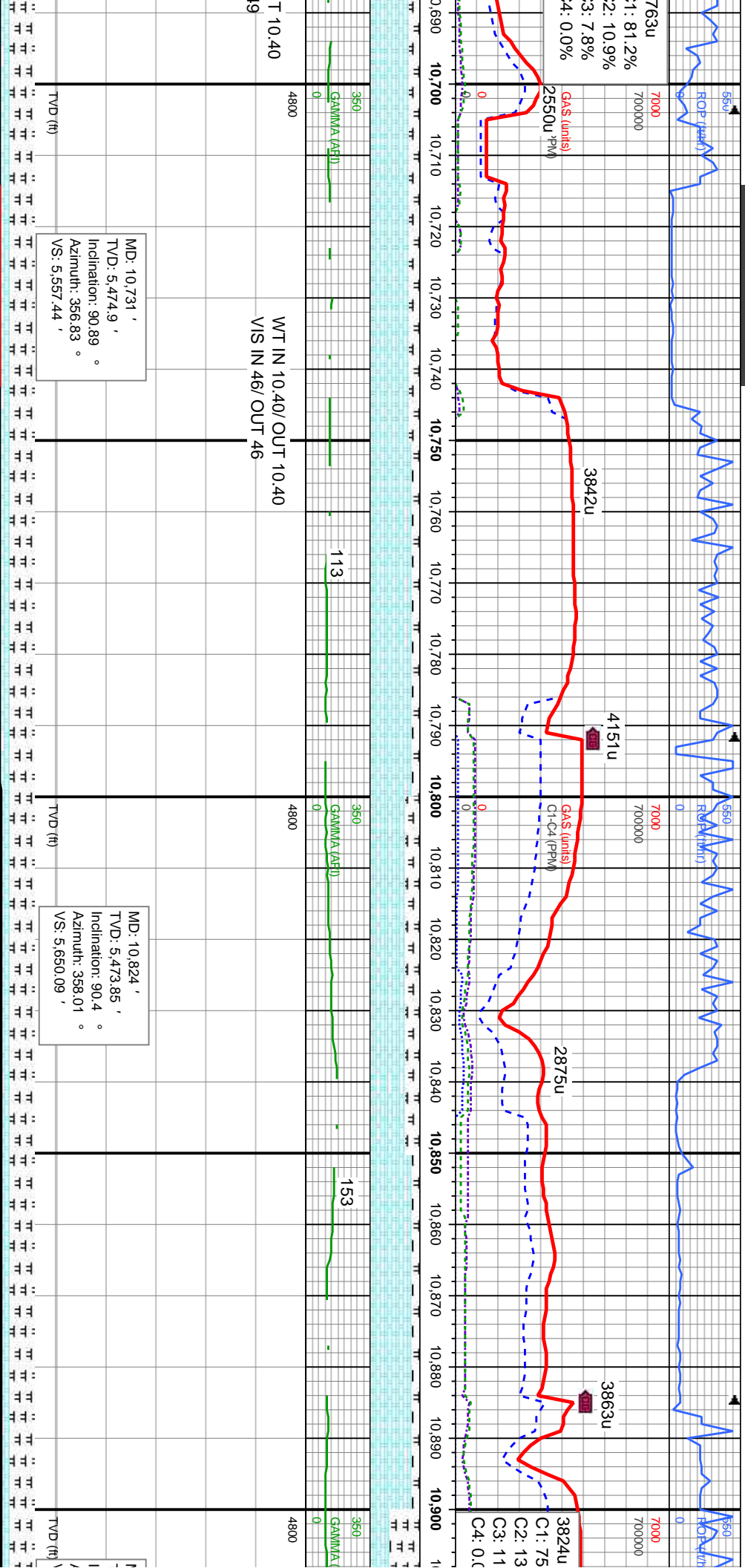




160	350	134	350	171
WT IN 10.40/ OUT 10.50				
VIS IN 46/ OUT 45				
MD: 10,269 ' TVD: 5,482.59 ' Inclination: 90.49 ° Azimuth: 357.14 ° VS: 5,097.99 '				
TVD (ft)				

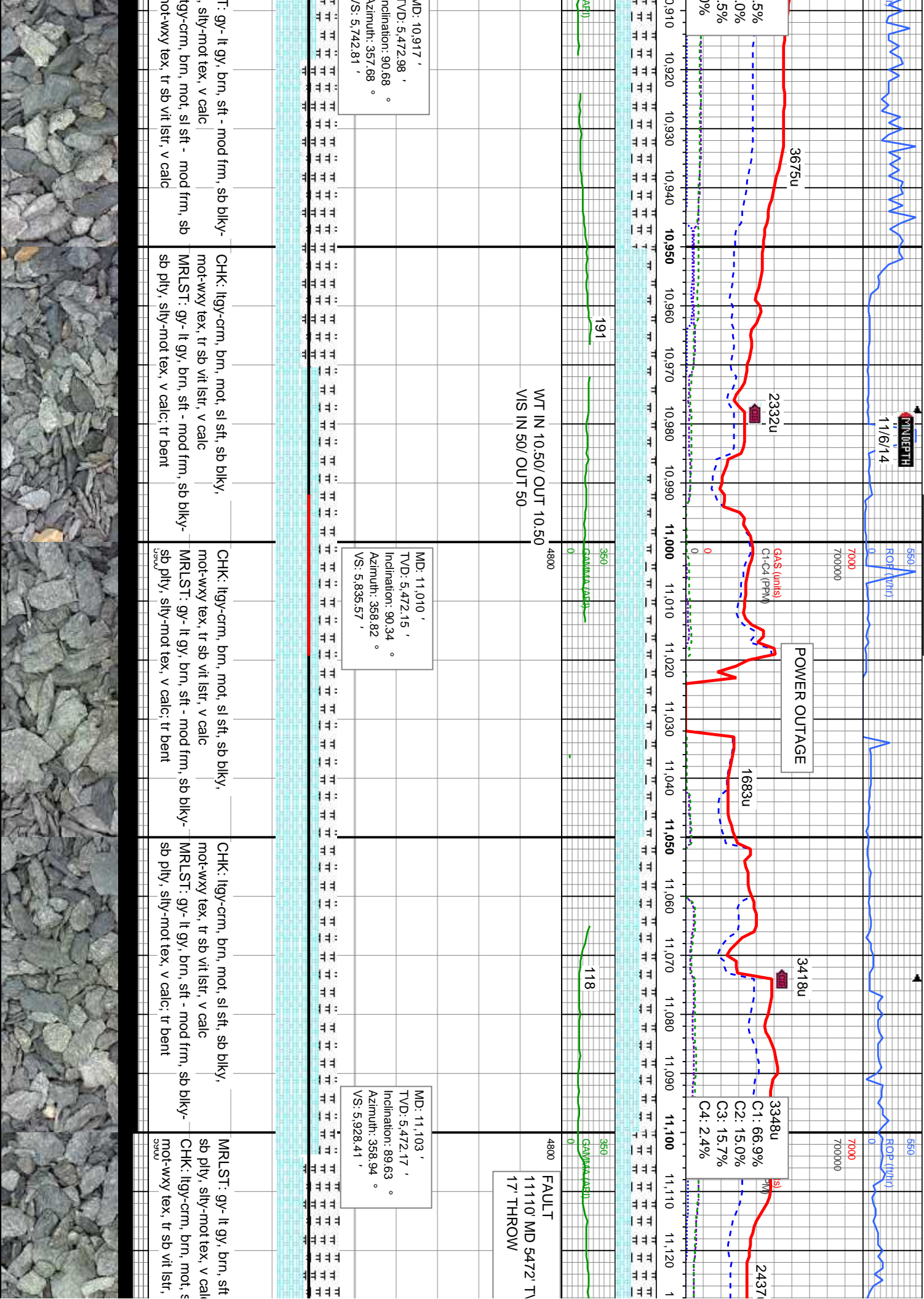
MRLST: gy- lt gy, brn, sft - mod frm, sb blk- sb pily, silty-mot tex, v calc	CHK: ltgy-crm, brn, mot, sl sft, sb blk- mot-wxy tex, tr sb vit lstr, v calc	MRLST: gy- lt gy, brn, sft - mod frm, sb blk- sb pily, silty-mot tex, v calc	CHK: ltgy-crm, brn, mot, sl sft - mod frm, sb blk- mot-wxy tex, tr sb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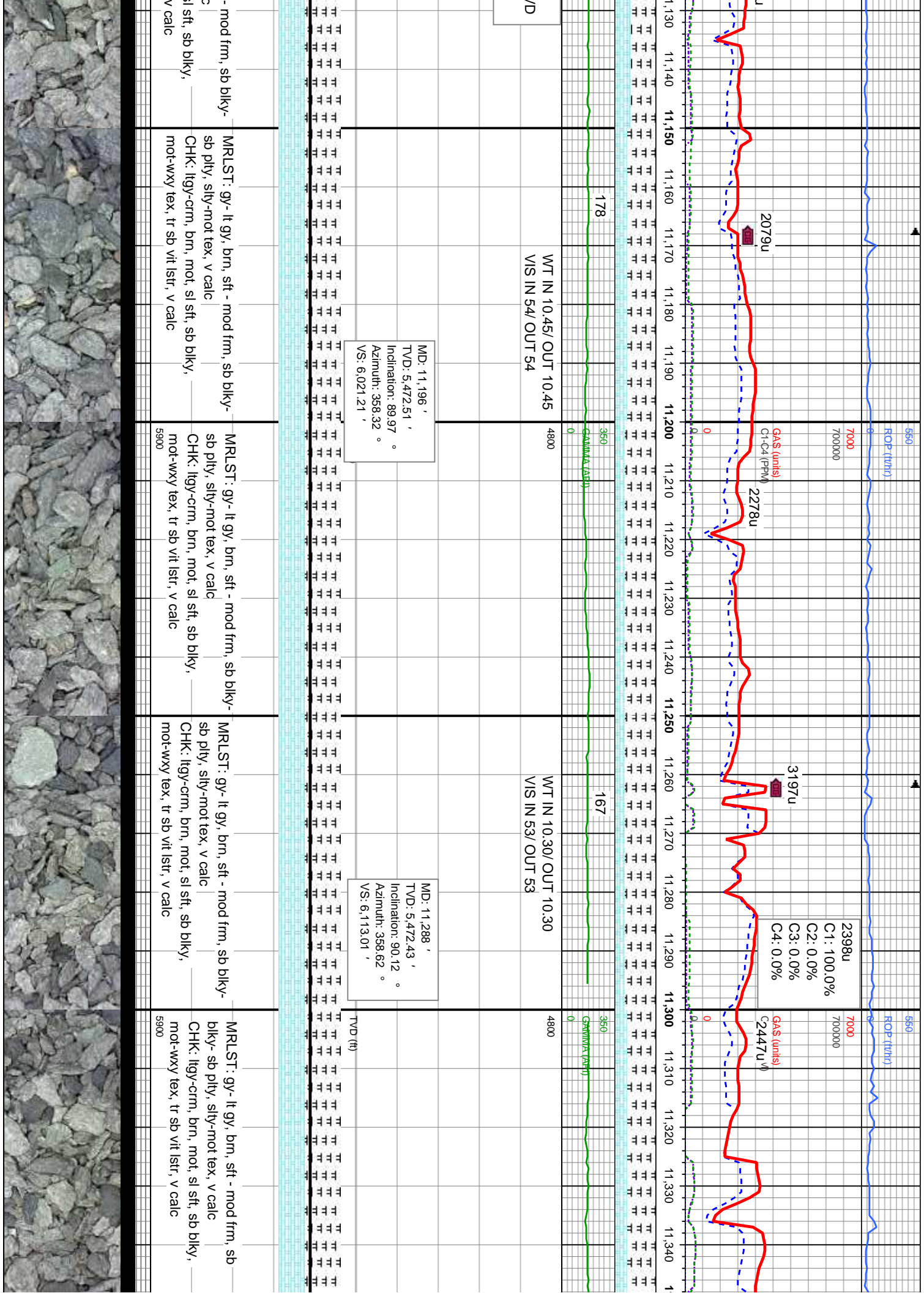


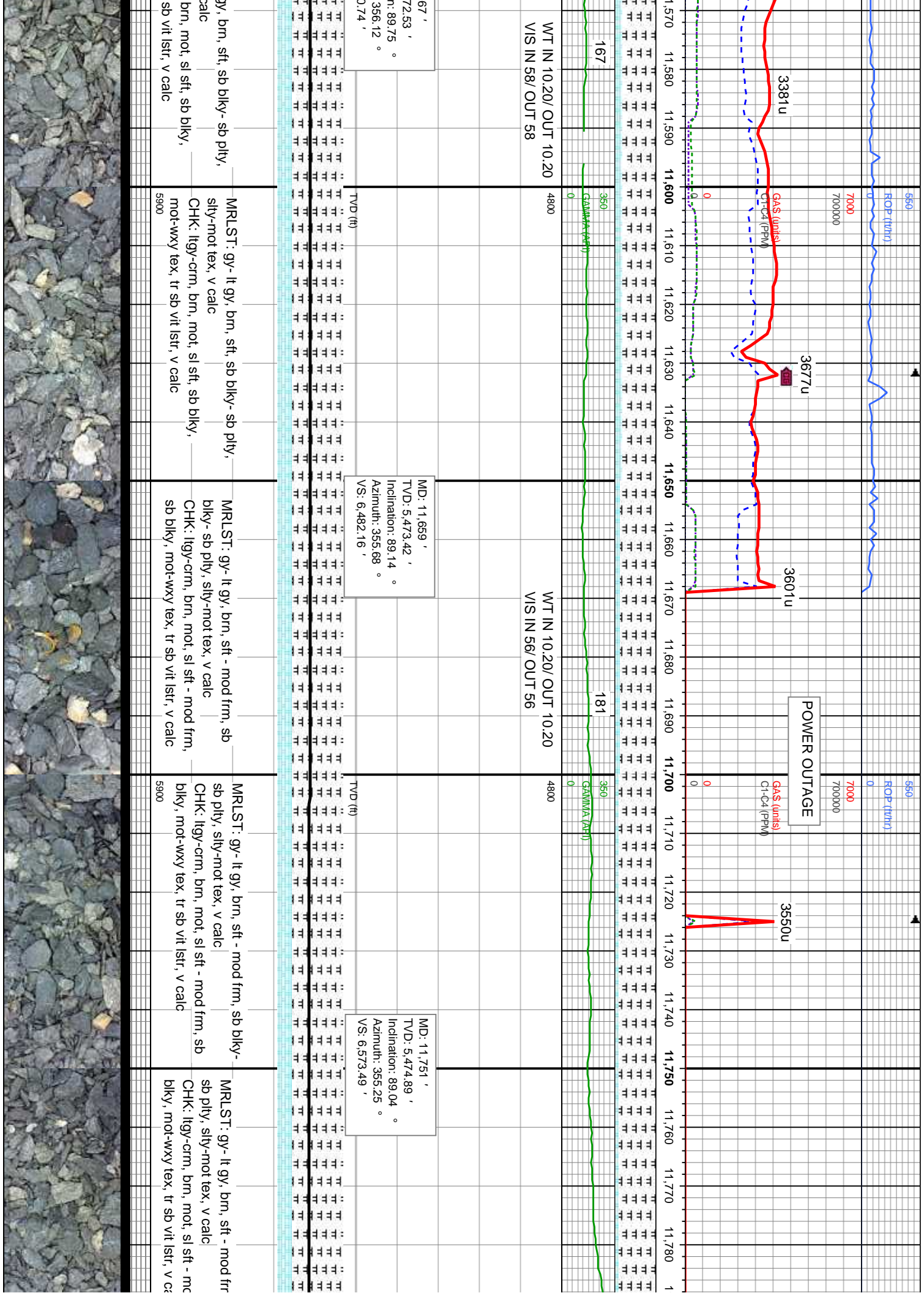


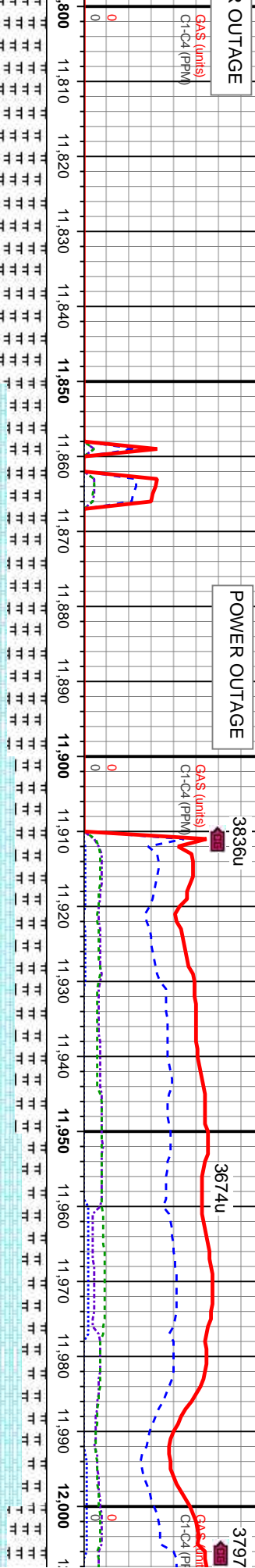
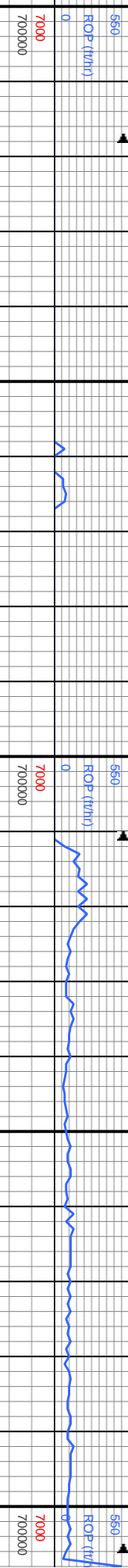
CHK: ltgy-crm, brn, mot, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, v calc	CHK: ltgy-crm, brn, mot, sl sft, sb blkly, mot-wxy tex, tr sb vit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











WT IN 10.10/ OUT 10.10
VIS IN 55/ OUT 55

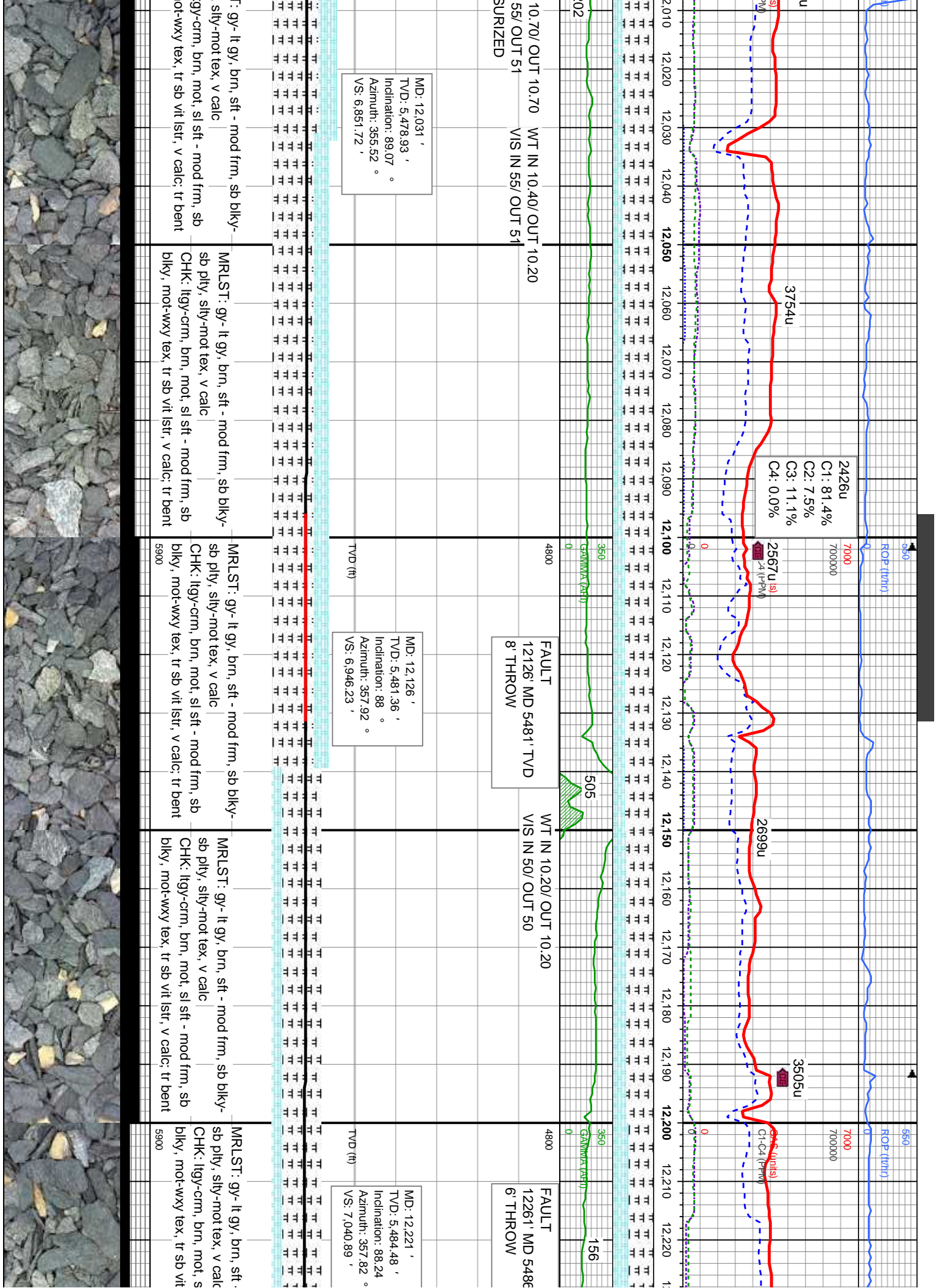
MD: 11,842 '
TVD: 5,476.23 '
Inclination: 89.26 °
Azimuth: 356.13 °
VS: 6,663.87 '

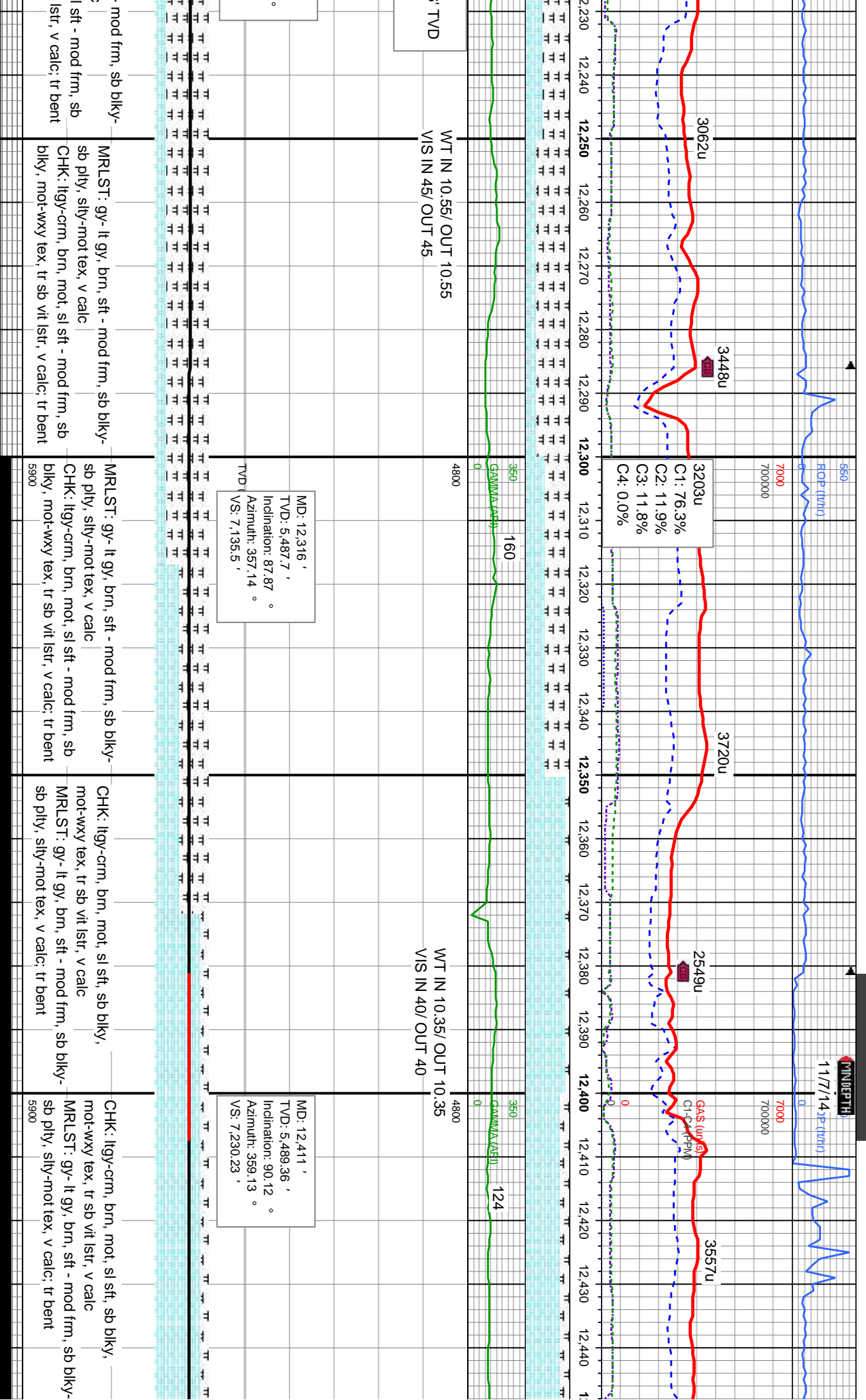
WT IN 10.10/ OUT 10.30
VIS IN 55/ OUT 54

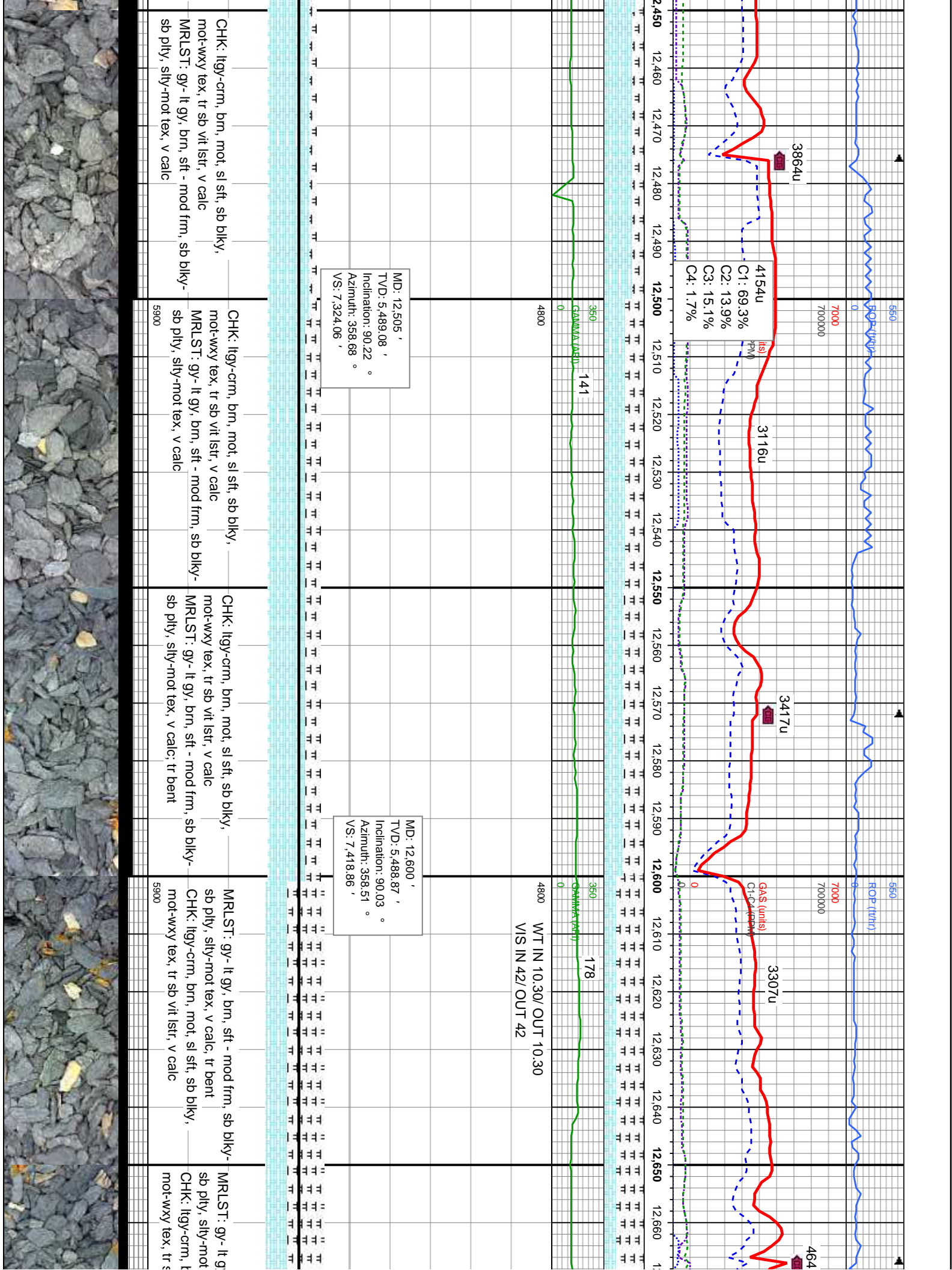
MD: 11,937 '
TVD: 5,477.51 '
Inclination: 89.2 °
Azimuth: 356.2 °
VS: 6,758.32 '

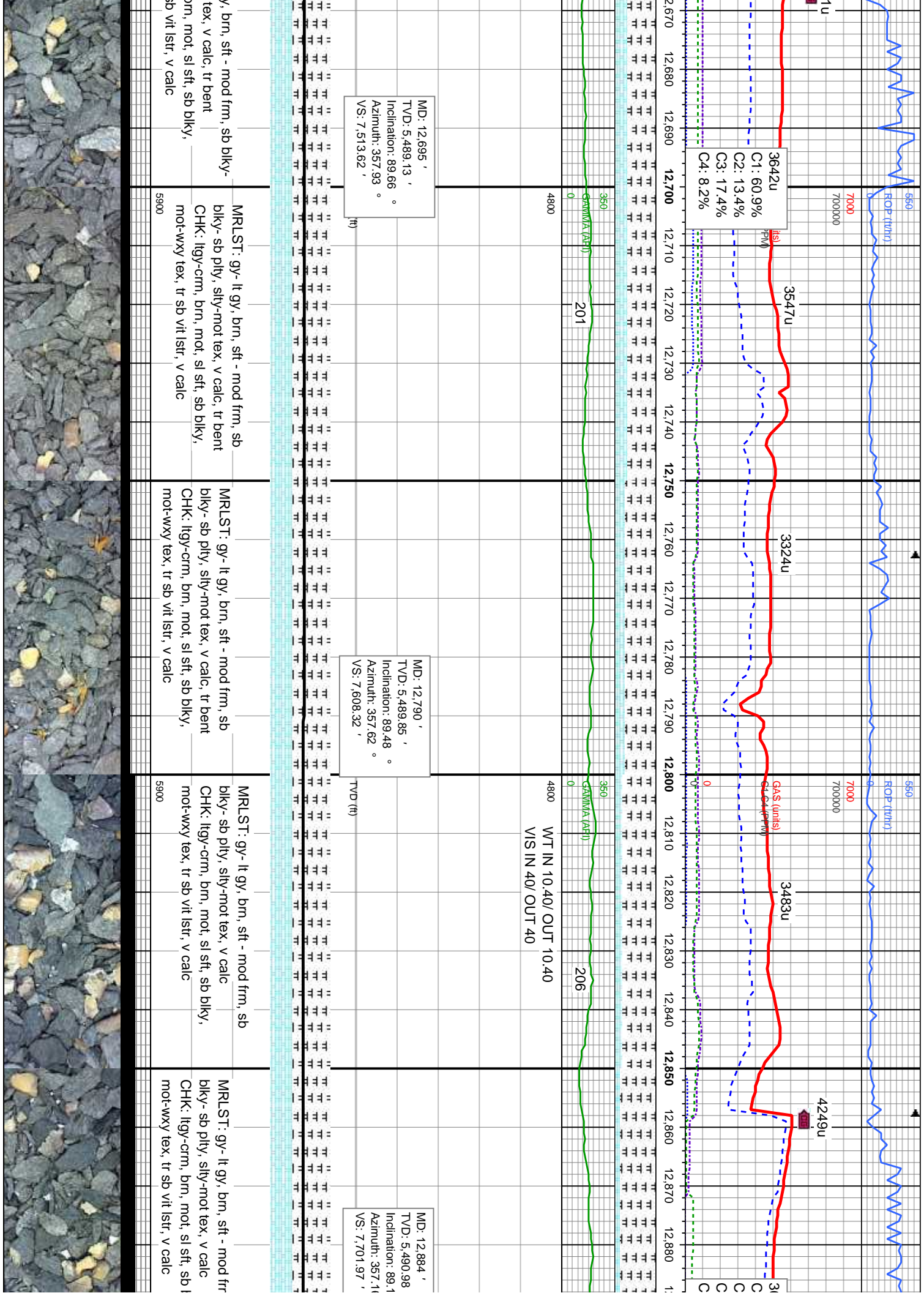
MRSLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, silty-mot tex, v calc	MRSLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, silty-mot tex, v calc	MRSLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, silty-mot tex, v calc	MRSLST: gy- lt gy, brn, sft - mod frm, sb blkly- sb pily, silty-mot tex, v calc
CHK: lity-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc, tr bent	CHK: lity-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc, tr bent	CHK: lity-crm, brn, mot, sl sft - mod frm, sb blkly, mot-wxy tex, tr sb vit lstr, v calc, tr bent	CHK: lity-crm, brn, mot, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, v calc











3642u
C1: 60.9%
C2: 13.4%
C3: 17.4%
C4: 8.2%

MD: 12,695 '
TVD: 5,489.13 '
Inclination: 89.66 °
Azimuth: 357.93 °
VS: 7,513.62 '

MD: 12,790 '
TVD: 5,489.85 '
Inclination: 89.48 °
Azimuth: 357.62 °
VS: 7,608.32 '

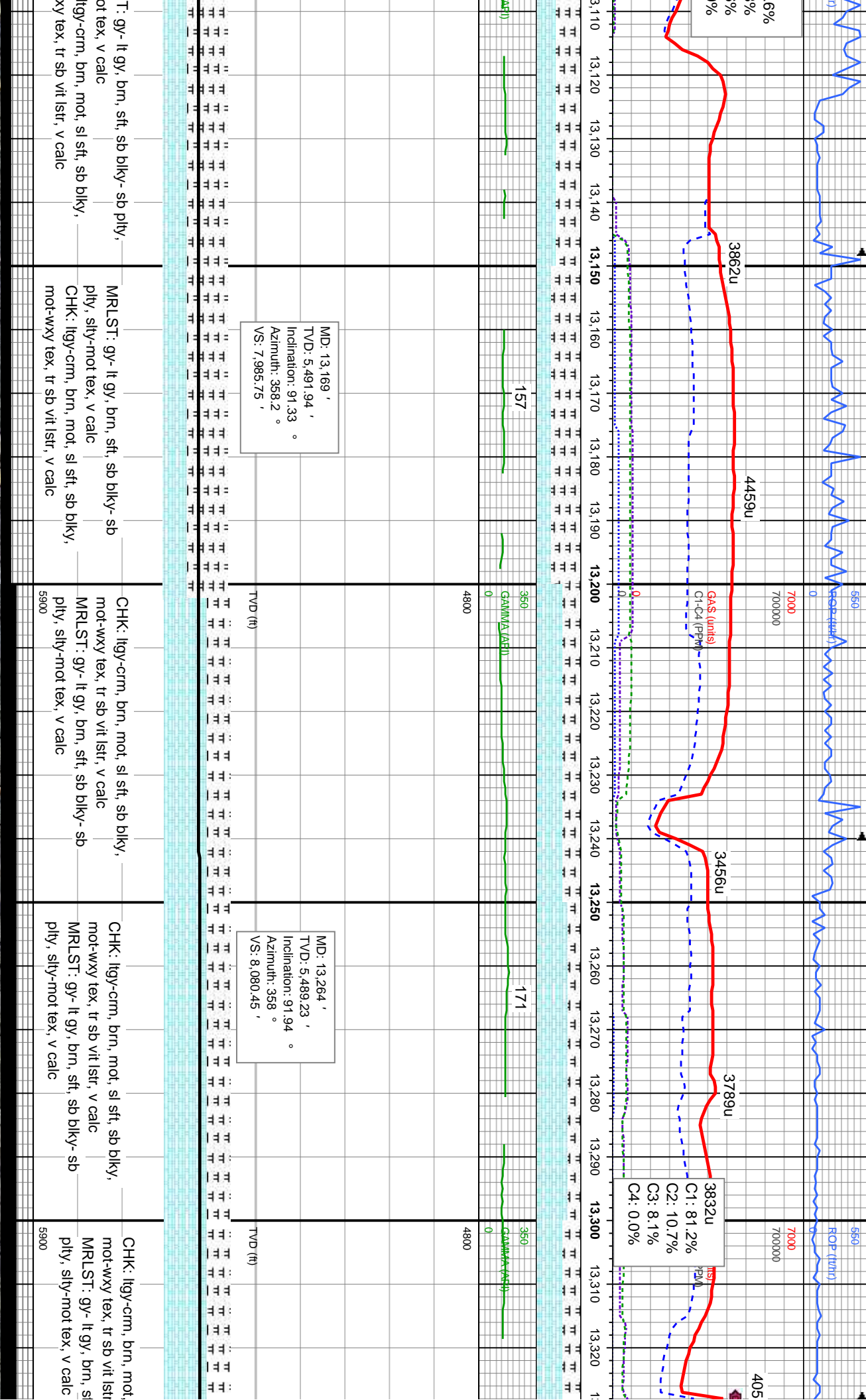
MD: 12,884 '
TVD: 5,490.98 '
Inclination: 89.1 °
Azimuth: 357.11 °
VS: 7,701.97 '

MRLST: gy- lt gy, brn, sft - mod frm, sb bly- sb pily, slty-mot tex, v calc, tr bent
CHK: lly-frm, brn, mot, sl sft, sb bly, mot-wxy tex, tr sb vit lstr, v calc

MRLST: gy- lt gy, brn, sft - mod frm, sb bly- sb pily, slty-mot tex, v calc, tr bent
CHK: lly-frm, brn, mot, sl sft, sb bly, mot-wxy tex, tr sb vit lstr, v calc

MRLST: gy- lt gy, brn, sft - mod frm, sb bly- sb pily, slty-mot tex, v calc
CHK: lly-frm, brn, mot, sl sft, sb bly, mot-wxy tex, tr sb vit lstr, v calc

MRLST: gy- lt gy, brn, sft - mod frm, sb bly- sb pily, slty-mot tex, v calc
CHK: lly-frm, brn, mot, sl sft, sb bly, mot-wxy tex, tr sb vit lstr, v calc



MD: 13,169 '
TVD: 5,491.94 '
Inclination: 91.33 °
Azimuth: 358.2 °
VS: 7,985.75 '

MD: 13,264 '
TVD: 5,489.23 '
Inclination: 91.94 °
Azimuth: 358 °
VS: 8,080.45 '

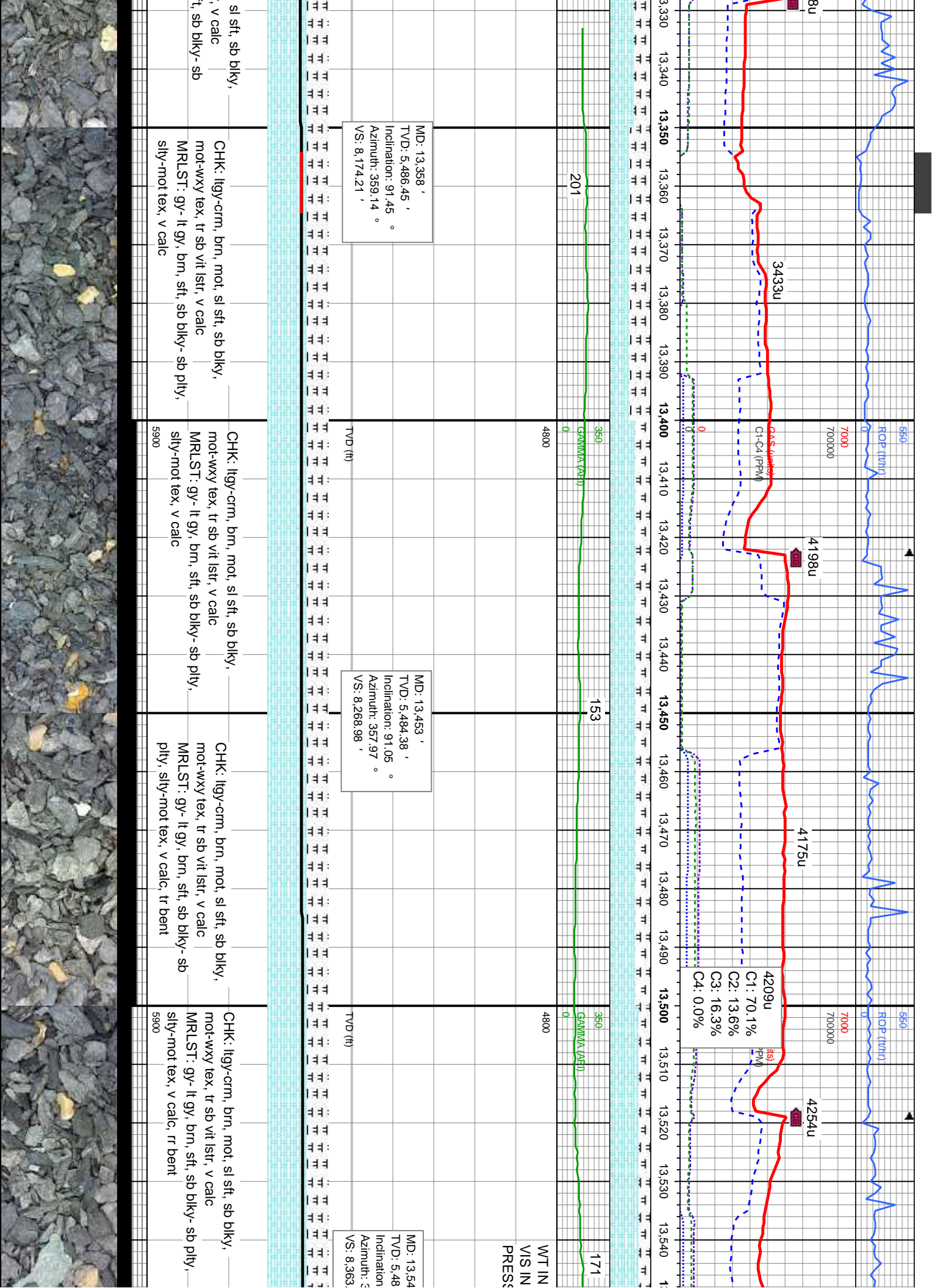
T: gy- lt gy, brn, sft, sb blk- sb pty,
ot tex, v calc
MRLST: gy- lt gy, brn, sft, sb blk- sb
pty, silty-mot tex, v calc
CHK: lgy-crm, brn, mot, sl sft, sb blk,
xy tex, tr sb vit lstr, v calc
mot-wxy tex, v calc

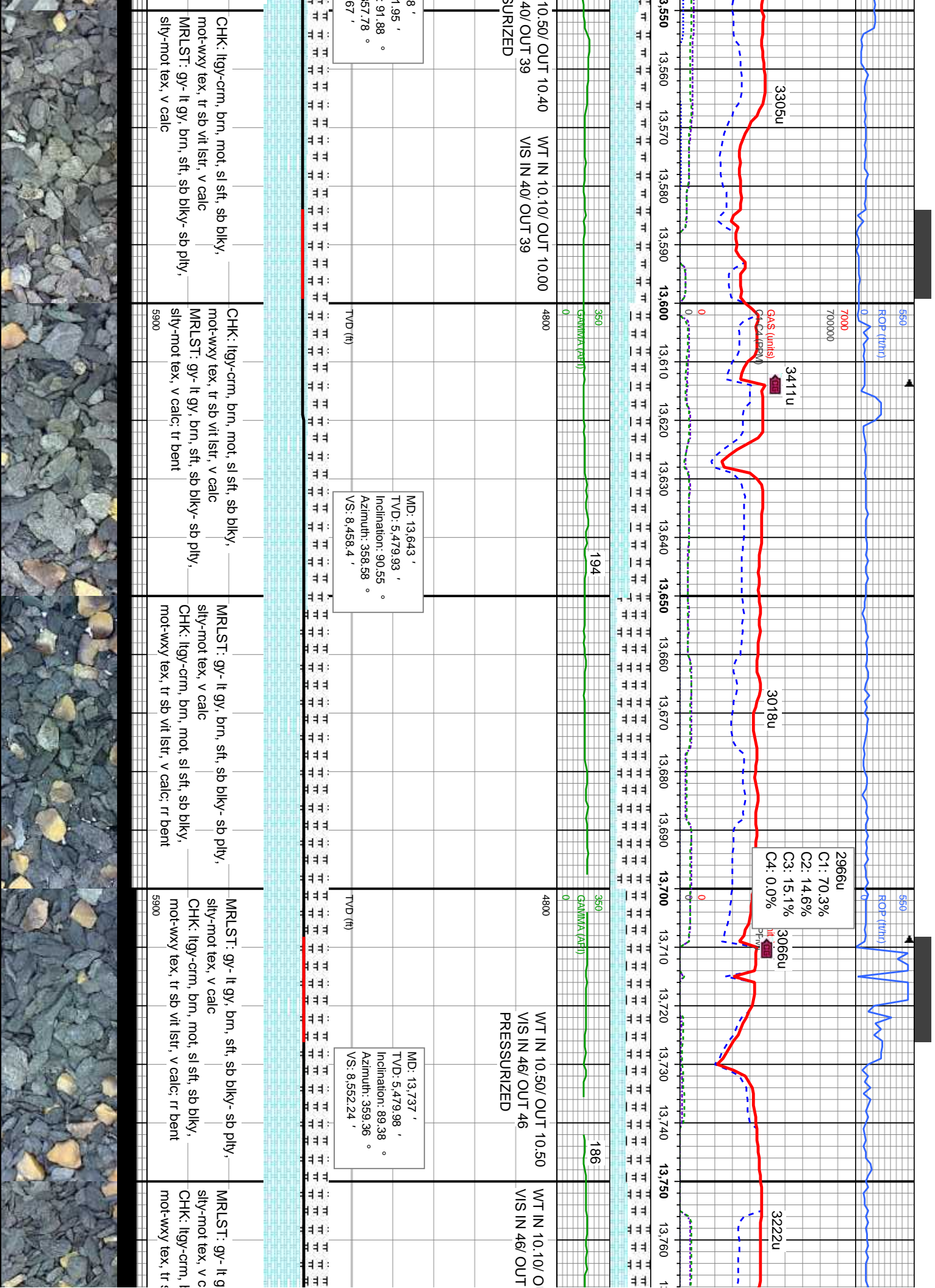
CHK: lgy-crm, brn, mot, sl sft, sb blk,
mot-wxy tex, tr sb vit lstr, v calc
MRLST: gy- lt gy, brn, sft, sb blk- sb
pty, silty-mot tex, v calc

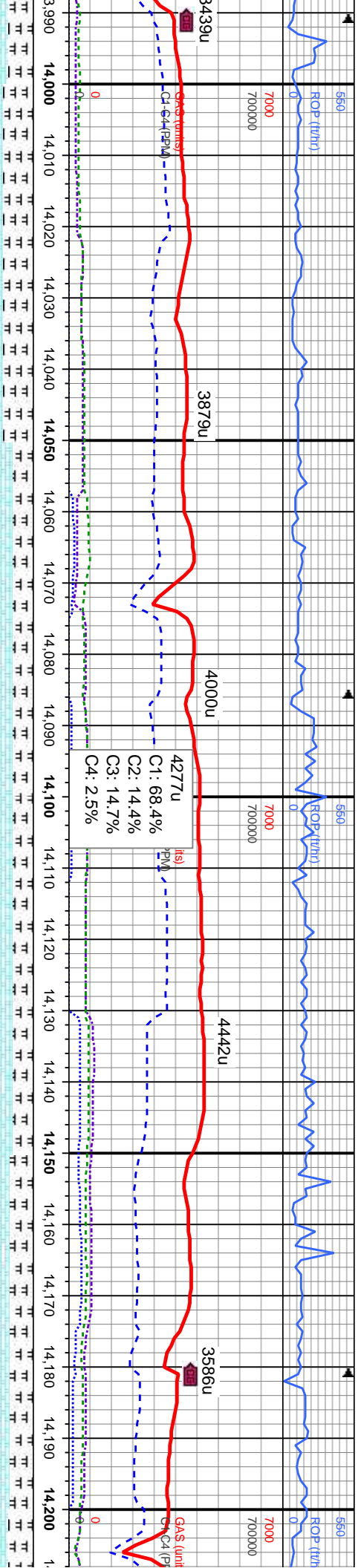
CHK: lgy-crm, brn, mot, sl sft, sb blk,
mot-wxy tex, tr sb vit lstr, v calc
MRLST: gy- lt gy, brn, sft, sb blk- sb
pty, silty-mot tex, v calc

CHK: lgy-crm, brn, mot,
mot-wxy tex, tr sb vit lstr,
MRLST: gy- lt gy, brn, sl
pty, silty-mot tex, v calc









MD: 14.021 '
TVD: 5,482.12 '
Inclination: 89.32 °
Azimuth: 358.56 °
VS: 8,835.78 '

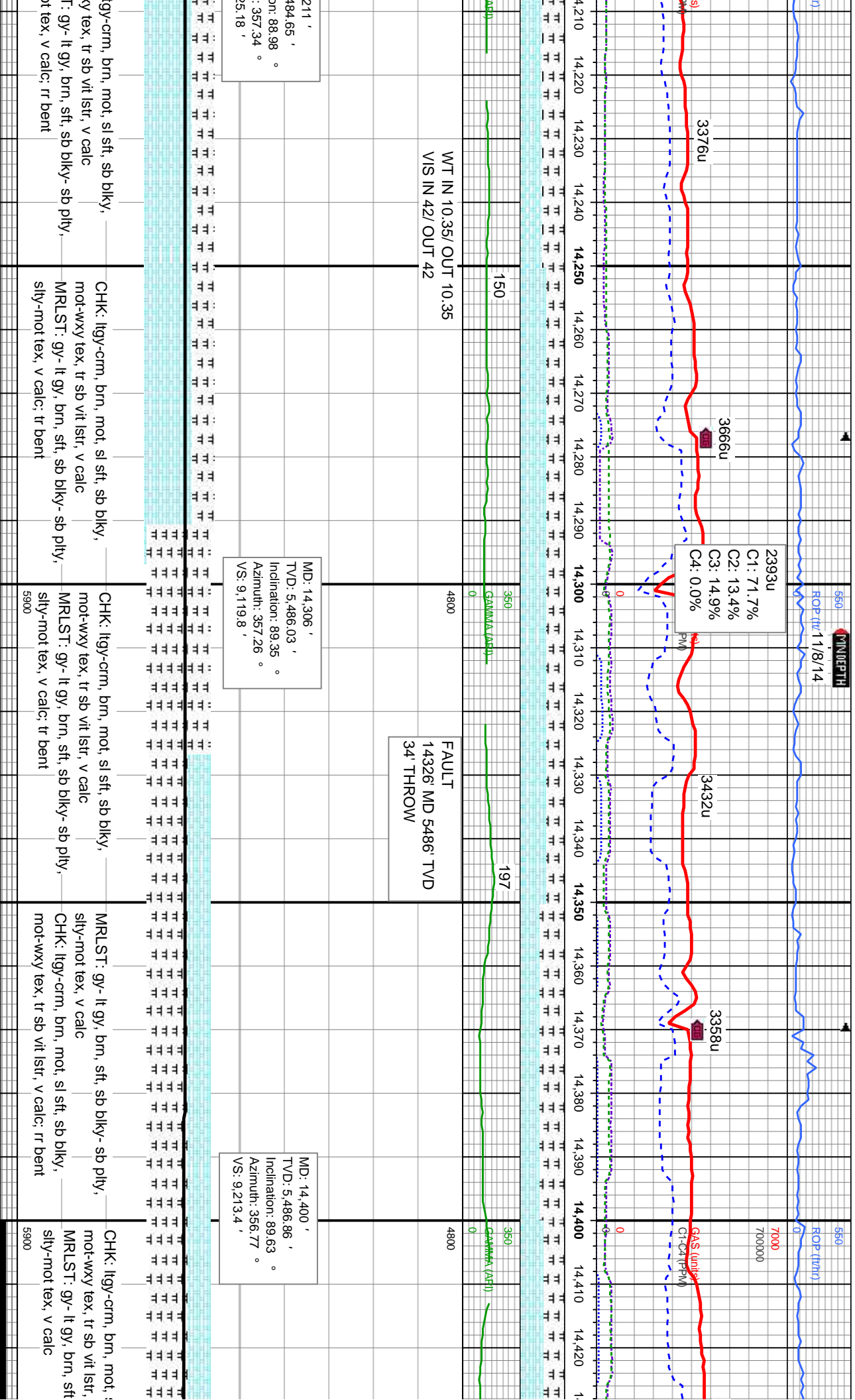
MD: 14.116 '
TVD: 5,483.24 '
Inclination: 89.32 °
Azimuth: 357.69 °
VS: 8,930.52 '

MD: 14.
TVD: 5.
Inclination:
Azimuth
VS: 9,02

WT IN 10.40/ OUT 10.40
VIS IN 41/ OUT 41

ky, - mot-wxy tex, tr sb vit lstr, v calc; rr bent	CHK: ltgy-crm, brn, mot, sl sft, sb blk, - mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft, sb blk, - sily-mot tex, v calc; rr bent	CHK: ltgy-crm, brn, mot, sl sft, sb blk, - mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft, sb blk, - sily-mot tex, v calc; rr bent	CHK: ltgy-crm, brn, mot, sl sft, sb blk, - mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft, sb blk, - sily-mot tex, v calc; rr bent	CHK: ltgy-crm, brn, mot, sl sft, sb blk, - mot-wxy tex, tr sb vit lstr, v calc MRLST: gy- lt gy, brn, sft, sb blk, - sily-mot tex, v calc; rr bent
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14,650 14,660 14,670 14,680 14,690 14,700

