



Scale: 5" / 100'
Measured Depth Log

Well Name Cutthroat LC28-75-1AHNB HORZ

Location SWSE SEC 28 T9N R59W

State COLORADO **County** WELD

Country USA **Rig Number** H&P 273

API Number 05-123-38852 **Field** WILDCAT

Region DJ BASIN **Drilling Completed** 7/12/2014

Spud Date 7/7/2014

Surface Coordinates 340' FSL; 1960' FEL

Ground Elevation 4,843' **K.B. Elevation** 4,867'

Logged Interval 658' **To** 10397' **Total Depth** 10397'

Formation NIOBRARA

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY INC.

Geologist

Name SARAH COMPTON

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

Kevin Donahue Columbine Logging Inc.

Tim Bright Columbine Logging Inc.






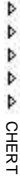














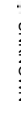












Zone Color Coding

Oil
Note
Error























































Condensate
Core
Water

Gas
Pressure
Seal

Rock Types

	CHALK		CEMENT		IGNEOUS		SHALE GRAY
	MARLSTONE		CHERT		SIDERITE or LIMONITE		SHALY SILSTONE
	SANDSTONE		CLAY CHOKE 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		
	ALGAE		B BENTONITE		HEAVY MINERAL		
	AMPHIPORA		BITUMENOUS SUBSTANCE		INOCERAMUS		ANHYDRITE STRINGER
	BELEMNITE		BRECCIA FRAGMENTS		KAOLIN		BENTONITE STRINGER
	BIOCLASTIC		CALCAREOUS		MARLSTONE		COAL STRINGER
	BRACHIOPOD		CARBONACEOUS FLAKES		MINERAL CRYSTALS		DOLOMITE STRINGER
	BRYOZOA		CHTDK		NODULES		GYPSUM STRINGER
	CEPHALOPOD		CHTLT		PHOSPHATE PELLETS		LIMESTONE STRINGER
	CORAL		COAL - THIN BEDS		P PYRITE		MARLSTONE (CALO) STRG
	CRINOID		DOLOMITIC		SALT CAST		MARLSTONE (DOL) STRG
	ECHINOID		FELDSPAR		SANDY		SANDSTONE STRINGER
	FISH		FERRUGINOUS PELLET		SILICEOUS		SHALE STRINGER
	FORAMINIFERA		FERRUGINOUS		SILTY		SILTSTONE STRINGER

Minerals

Stringer



















Other

Oil Show

	MOLDIC		FAU
	ORGANIC		
	DEAD		P PINPOINT
	EVEN		V VUGGY
	QUESTIONABLE		PRINIF
	SPOTTED STAINING		NOR
			OIL

Engineering

Porosity

	E EARTHY		CONNECTION (LEFT)		REV
	FENESTRAL		CONNECTION (RIGHT)		SIDE
	FENESTRAL		CONNECTION GAS		SIDE
	FRACTURE		CORE - LOST		SLIDE
	INTERCRYSTALLINE		CORE - RECOVERED		SU
	INTEROOLITIC		DST INTERVAL		TR

Core Symbols

LT WIRELINE TESTED - LEFT E EARTHY

FORMATION TOP WIRELINE TESTED - RT FX FINELYXLN

SHOW BS GRAINSTONE

Rounding

TH MN DEPTH L LITHOGRAPHIC

SMAL FAULT A ANGULAR MX MICROXLN

SHOW R ROUNDED MS MUDSTONE

RETURNED STRATA B SUBANG PS PACKSTONE

VERSE FAULT F SUBRND WS WACKESTONE

SMALL CORE (LEFT)

Textures

SMALL CORE (RIGHT)

BS BOUNDSTONE M MODERATE

CRVEY C CHALKY P POOR

IP GAS CX CRYPTOXLN W WELL

Slide/Rotate

ROP

ROP

BEGAN DRILLING CURVE
@ 6:58 AM 07/09/2014

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

COLUMBINE LOGGING INC.
RIGGED UP ON 7/7/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0680
COLUMBINE BEGAN LOGGING
ON 7/8/2014

Depth Labels

% Lith

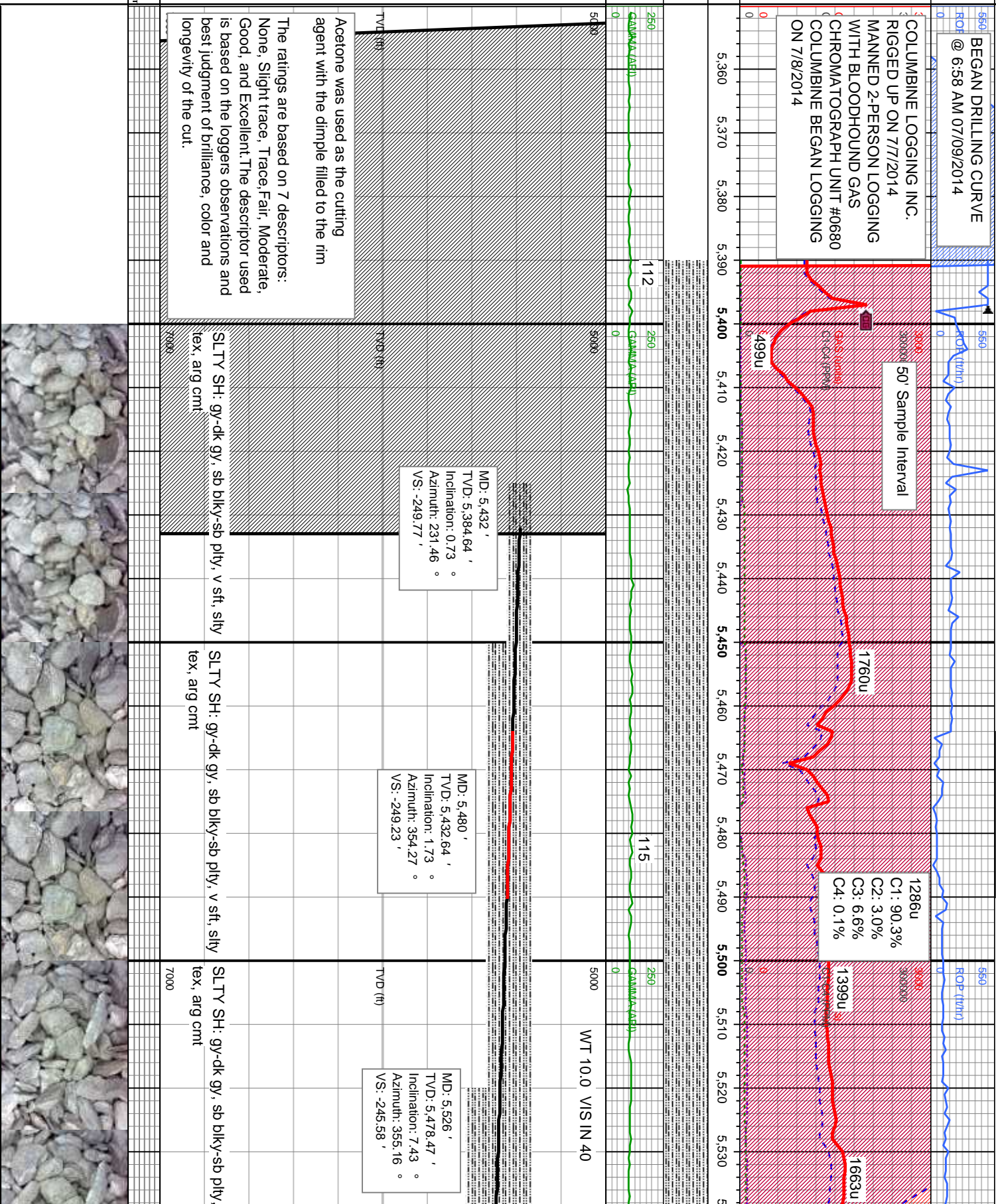
Gamma

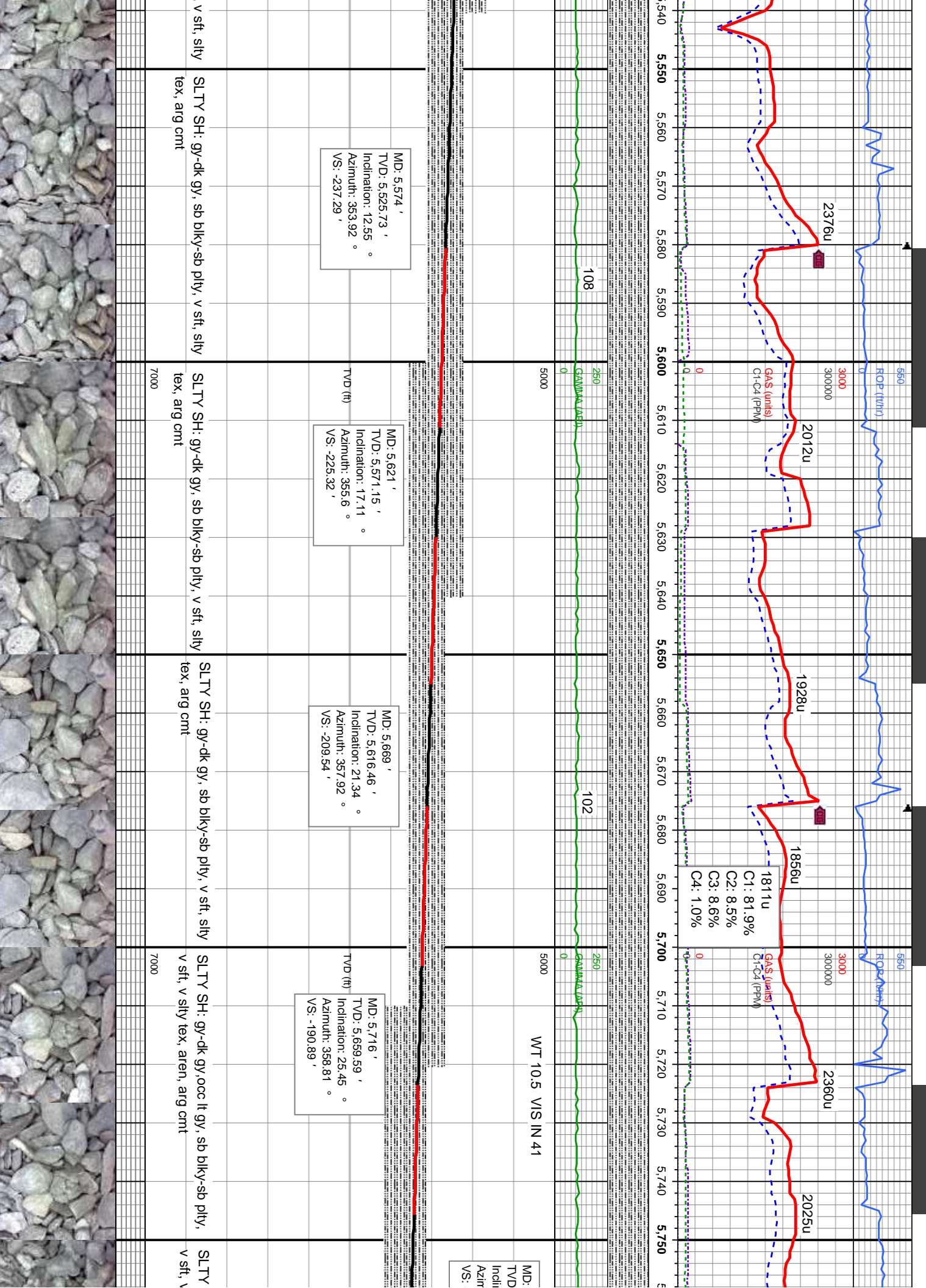
GAMMA

Well Bore
TVD

Oil Show

Images





MD: 5,574 '
TVD: 5,525.73 '
Inclination: 12.55 °
Azimuth: 353.92 °
VS: -237.29 '

MD: 5,621 '
TVD: 5,571.15 '
Inclination: 17.11 °
Azimuth: 355.6 °
VS: -225.32 '

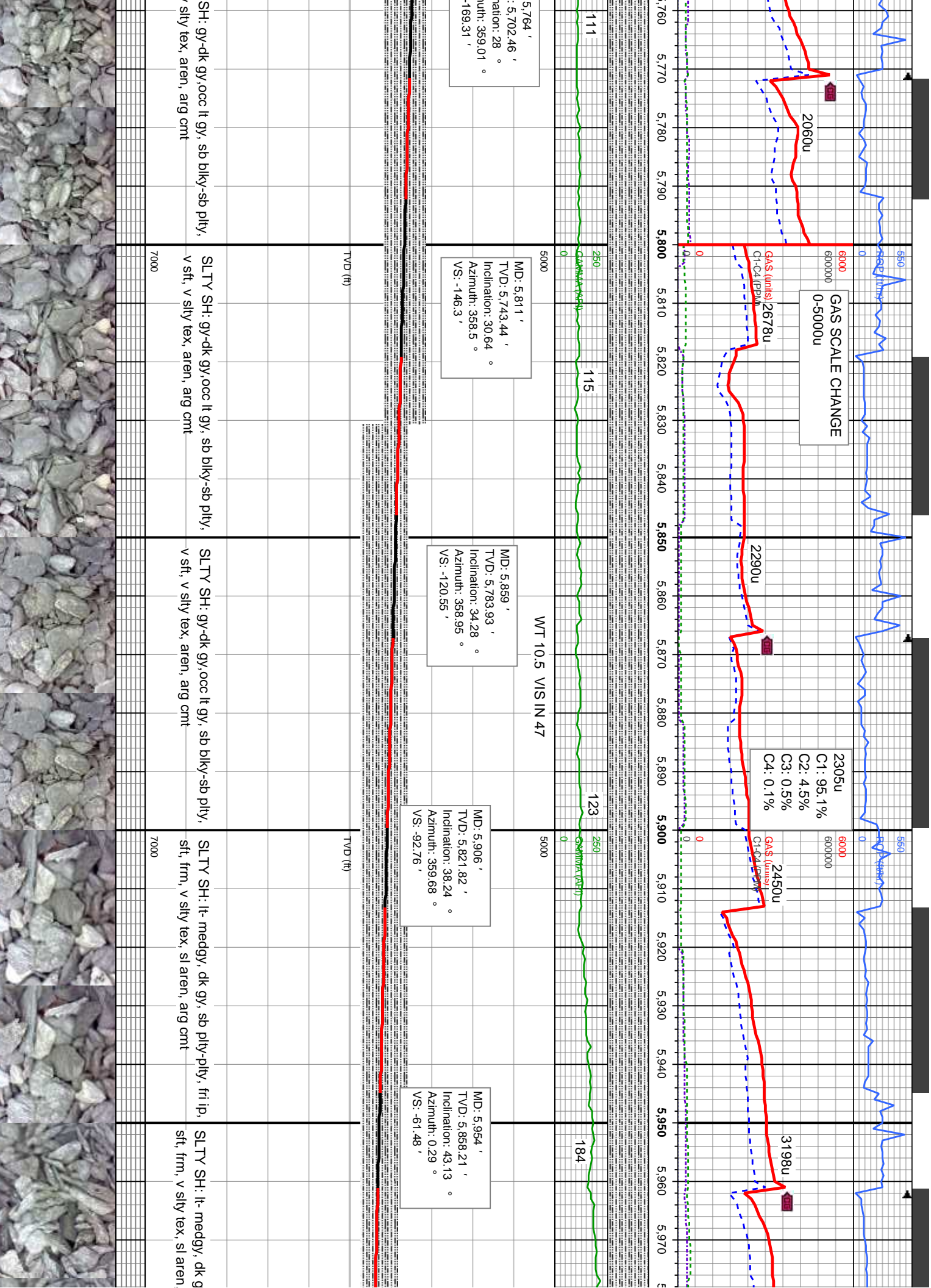
MD: 5,669 '
TVD: 5,616.46 '
Inclination: 21.34 °
Azimuth: 357.92 °
VS: -209.54 '

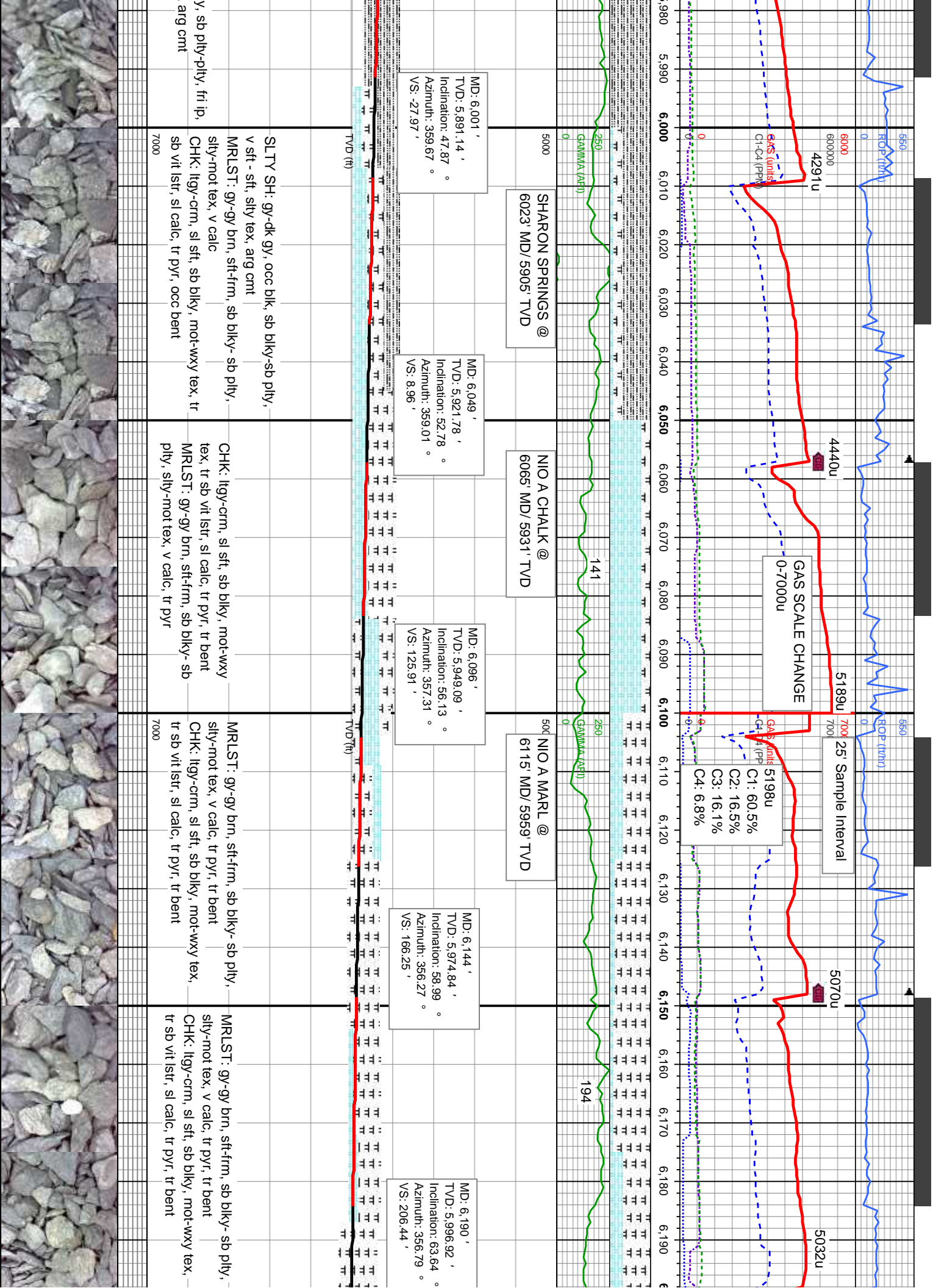
MD: 5,716 '
TVD: 5,659.59 '
Inclination: 25.45 °
Azimuth: 358.81 °
VS: -190.89 '

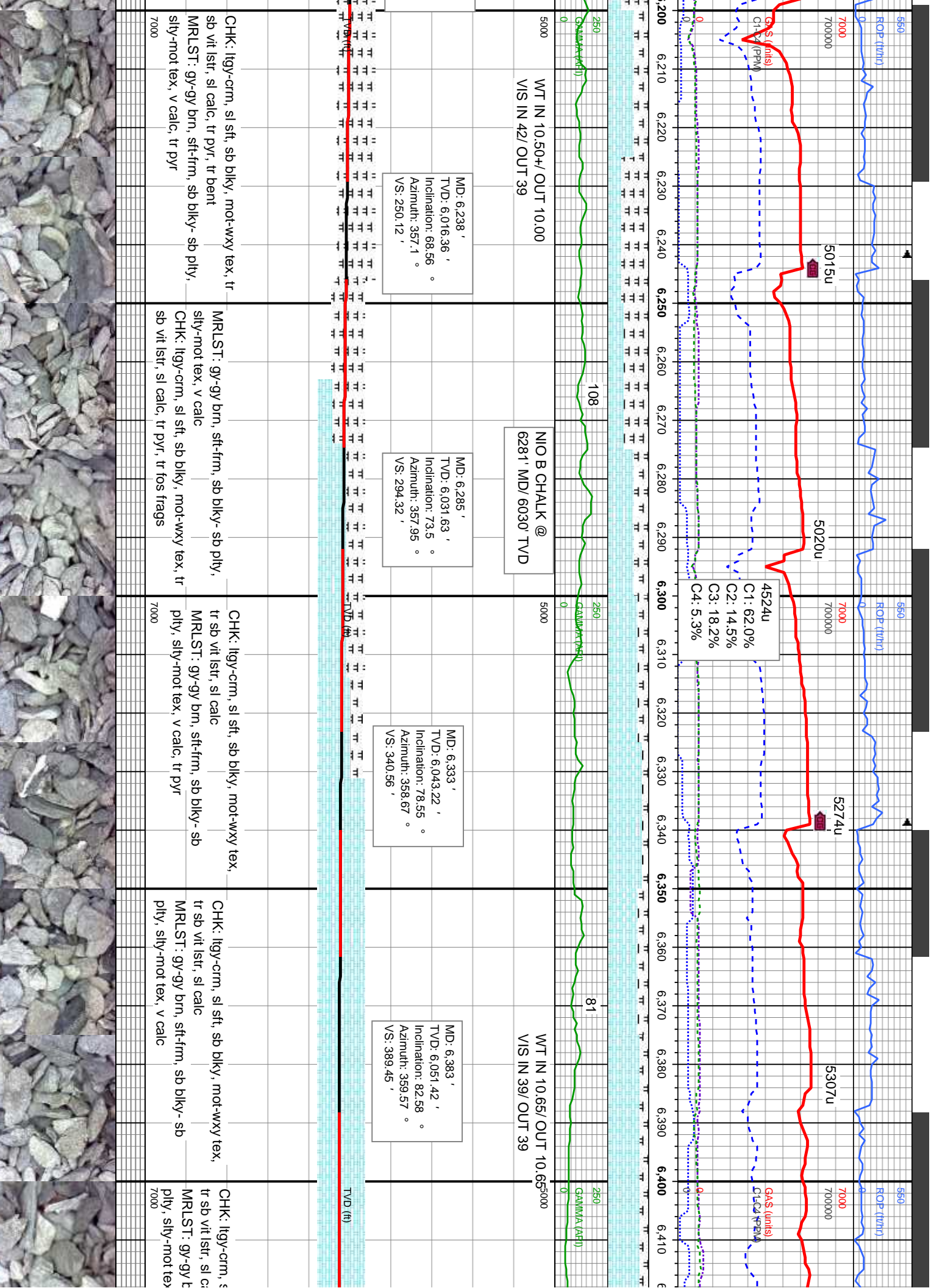
MD: TVD Incl Azir VS:

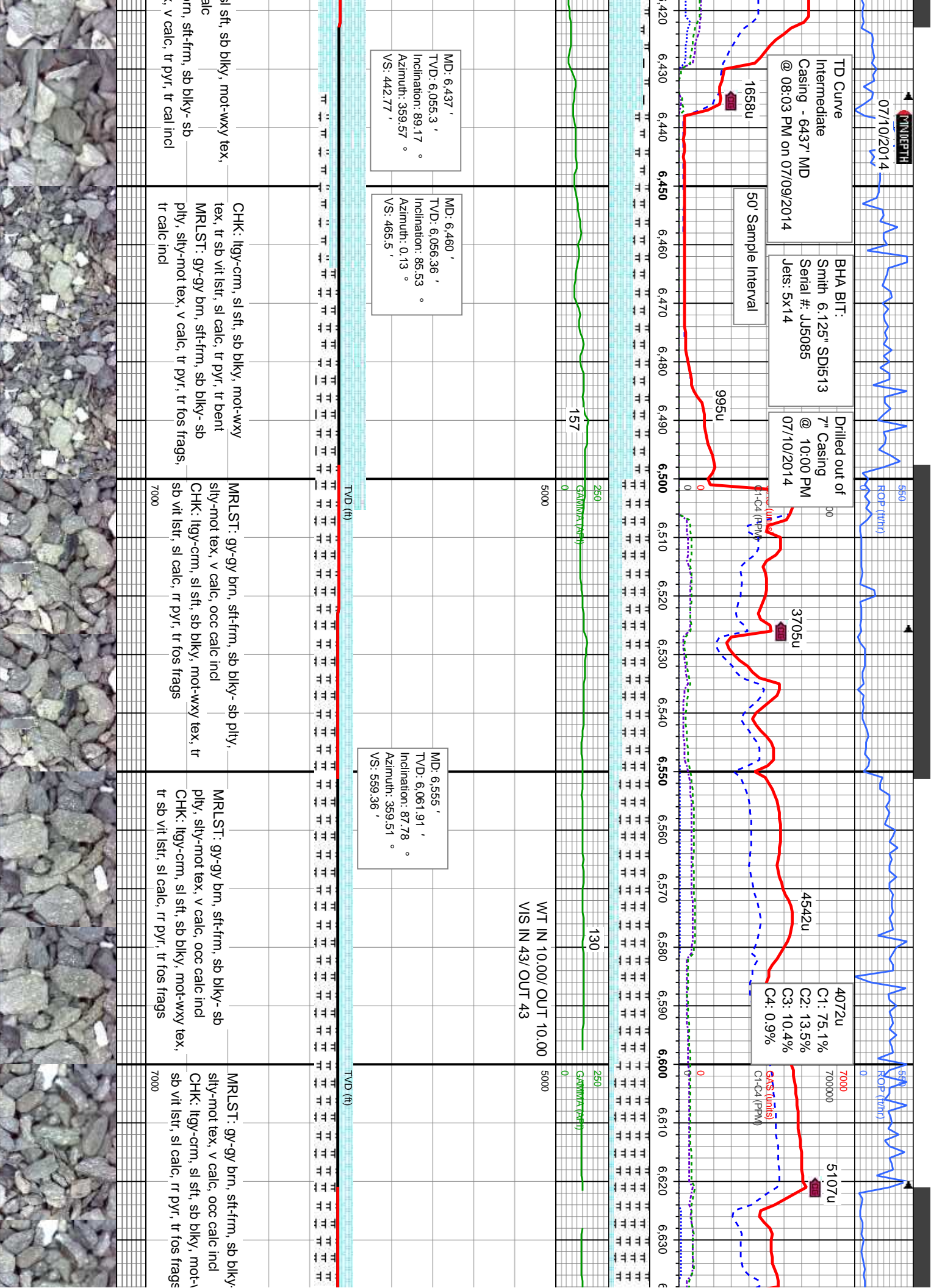
WT 10.5 VIS IN 41

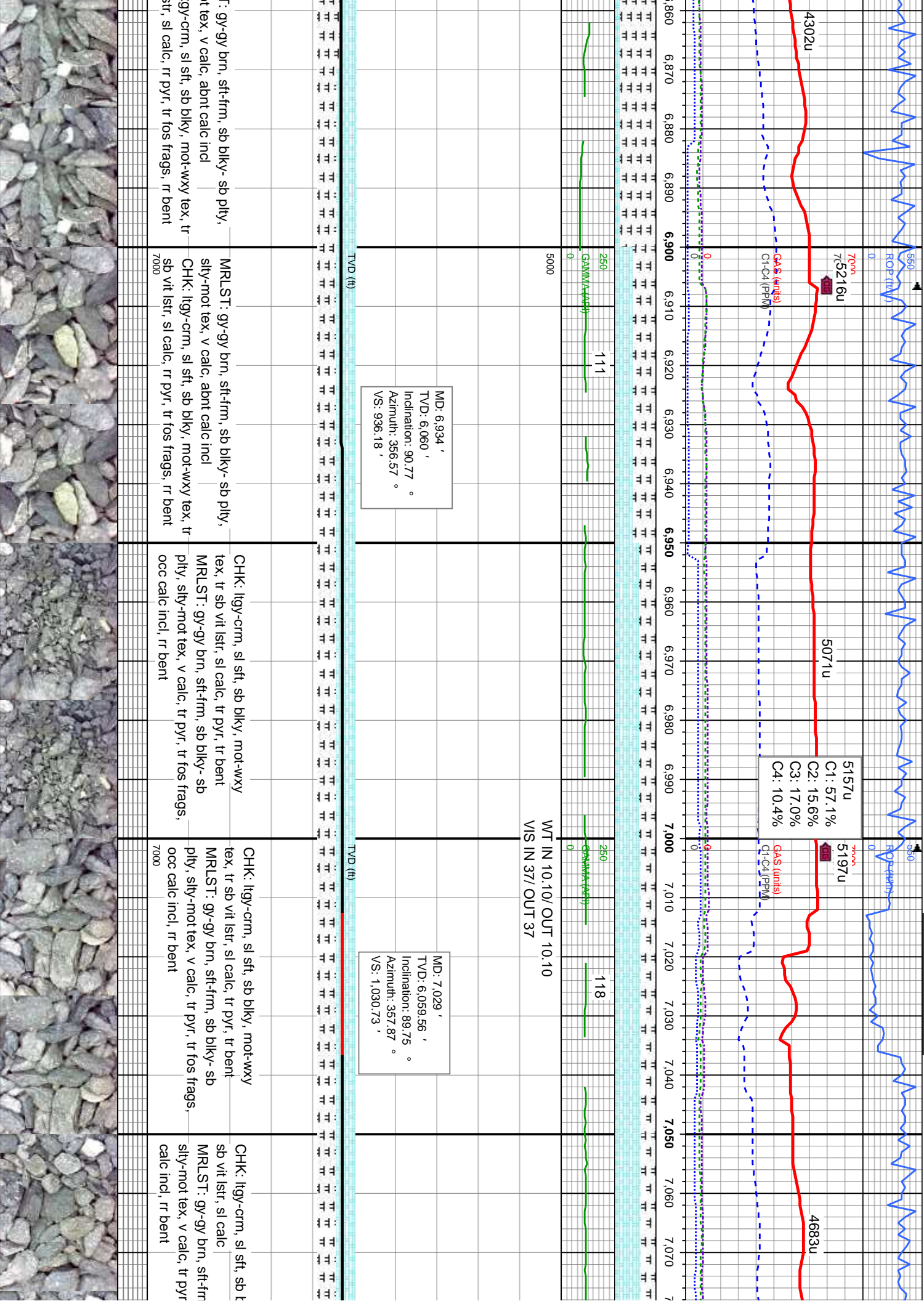
C1: 81.9%
C2: 8.5%
C3: 8.6%
C4: 1.0%

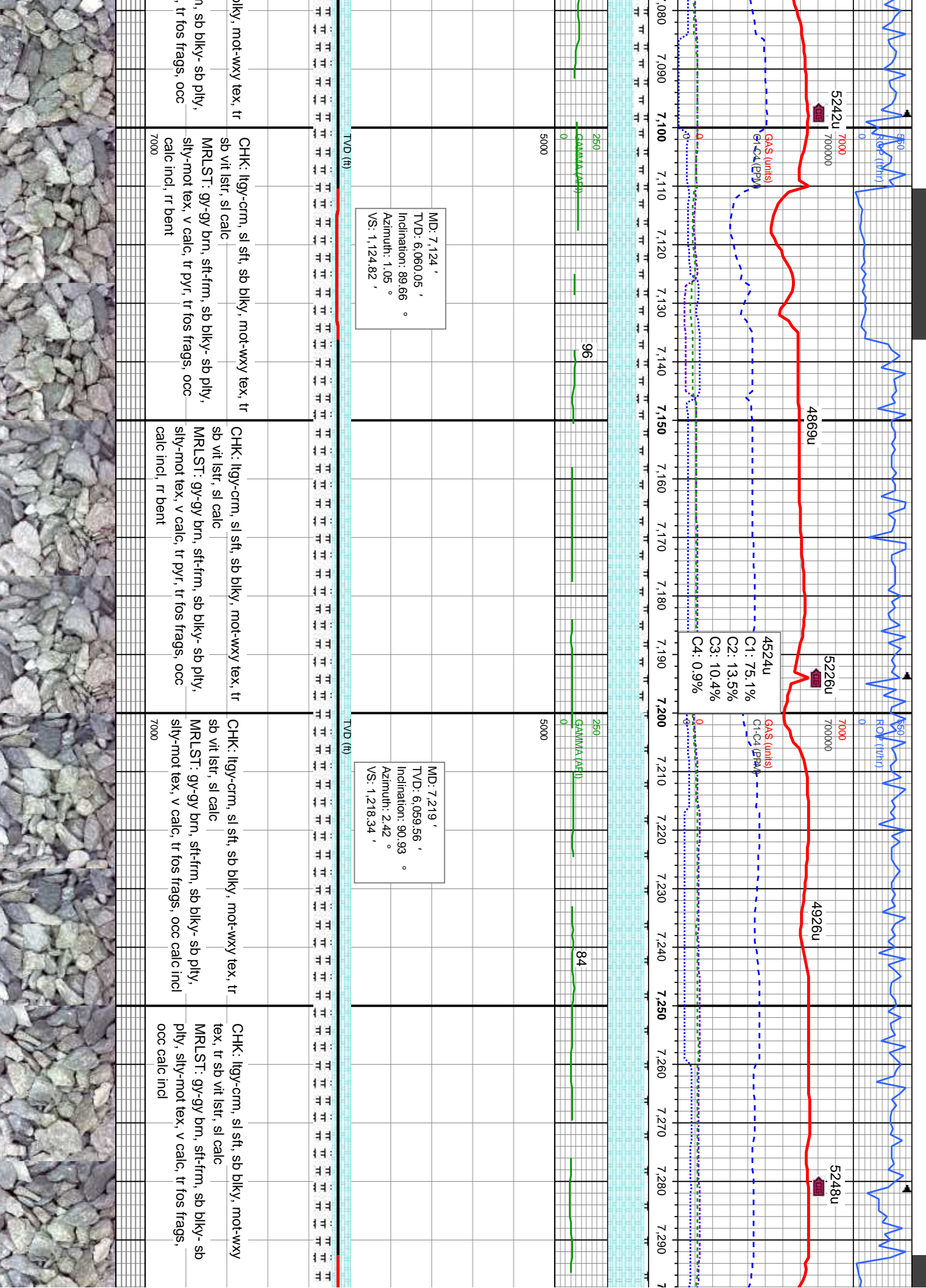


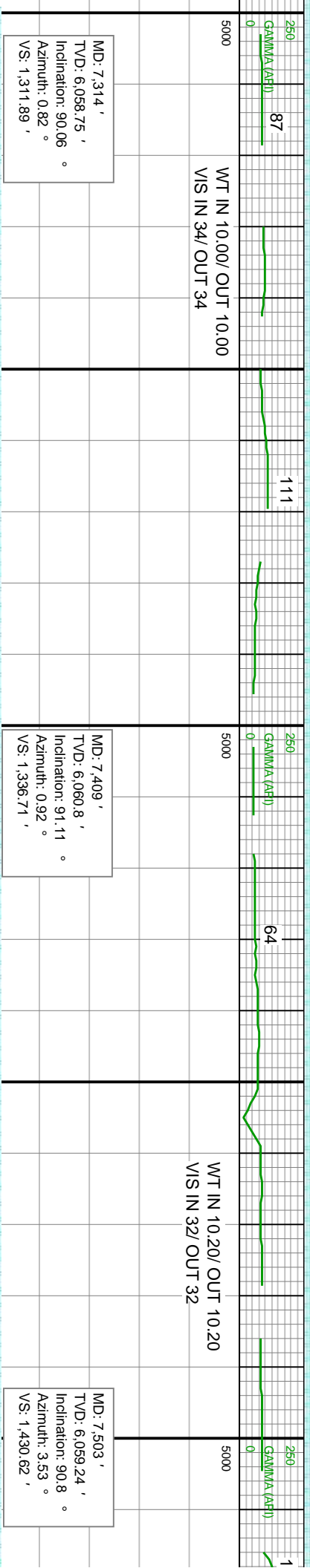
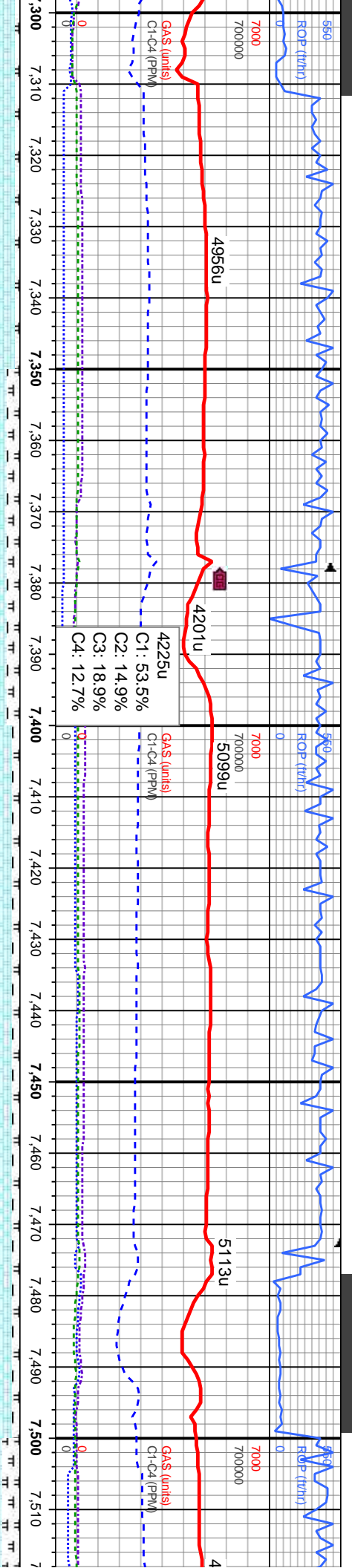












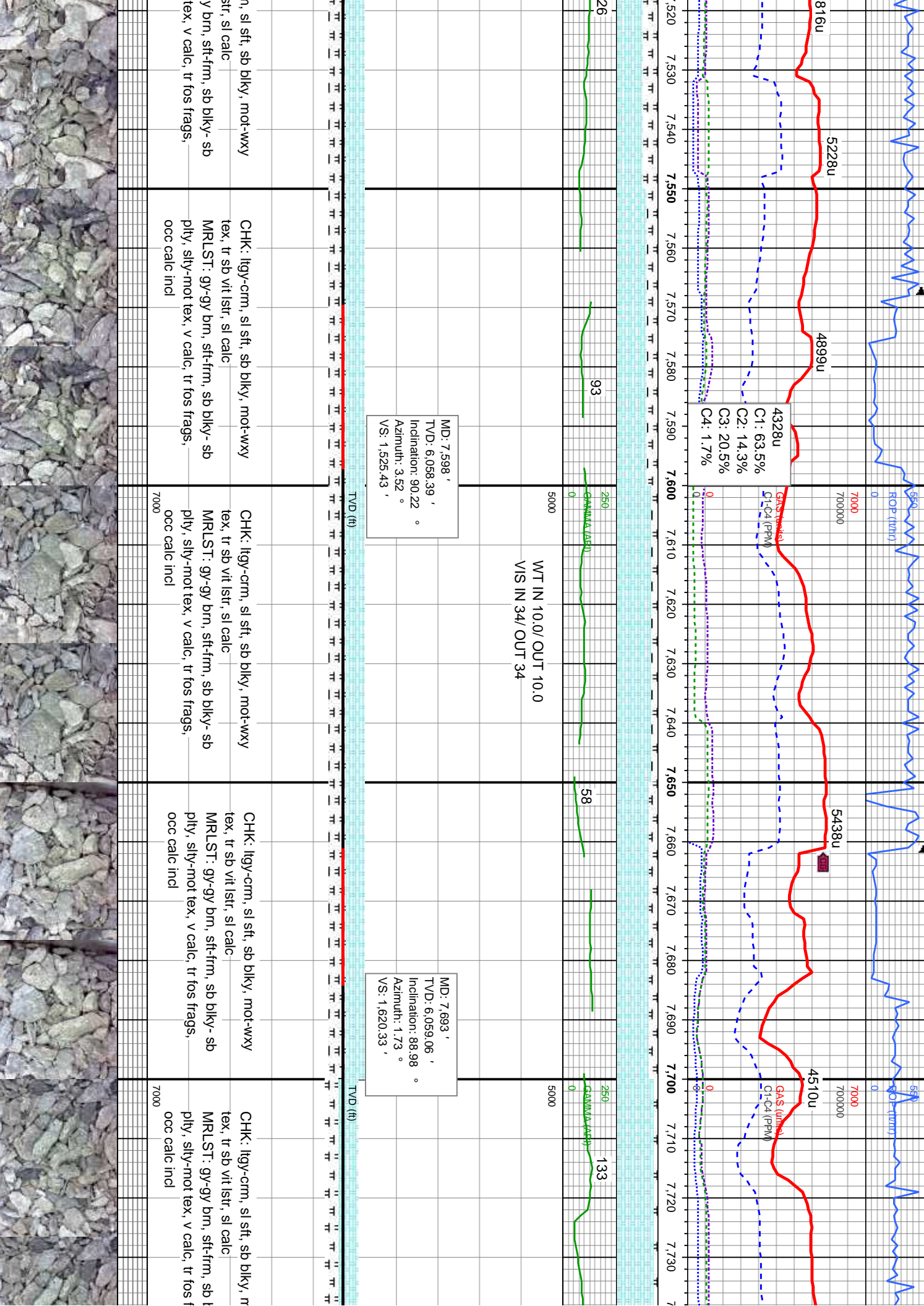
MD: 7.314 '
TVD: 6,058.75 '
Inclination: 90.06 °
Azimuth: 0.82 °
VS: 1,311.89 '

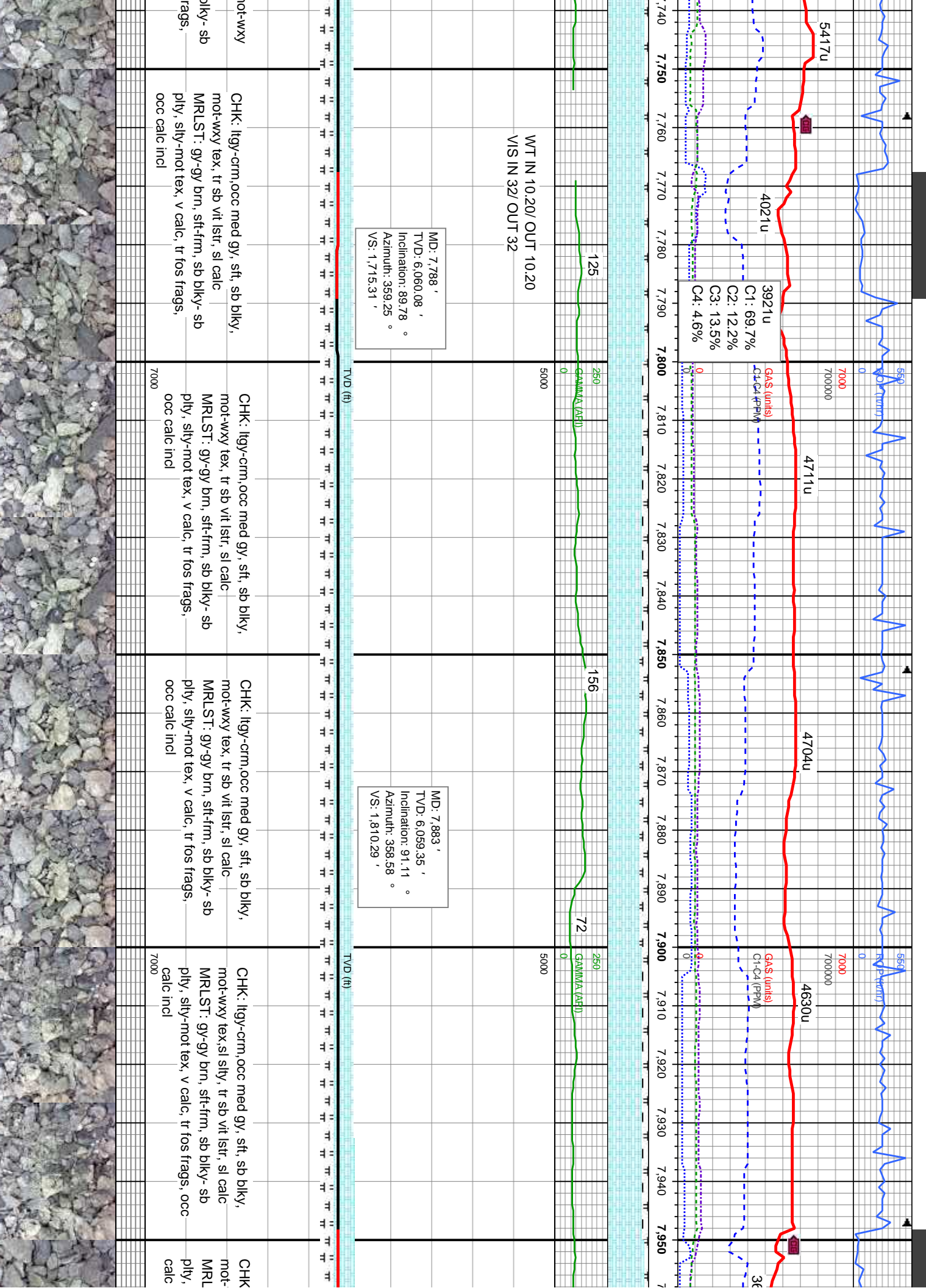
MD: 7.409 '
TVD: 6,060.8 '
Inclination: 91.11 °
Azimuth: 0.92 °
VS: 1,336.71 '

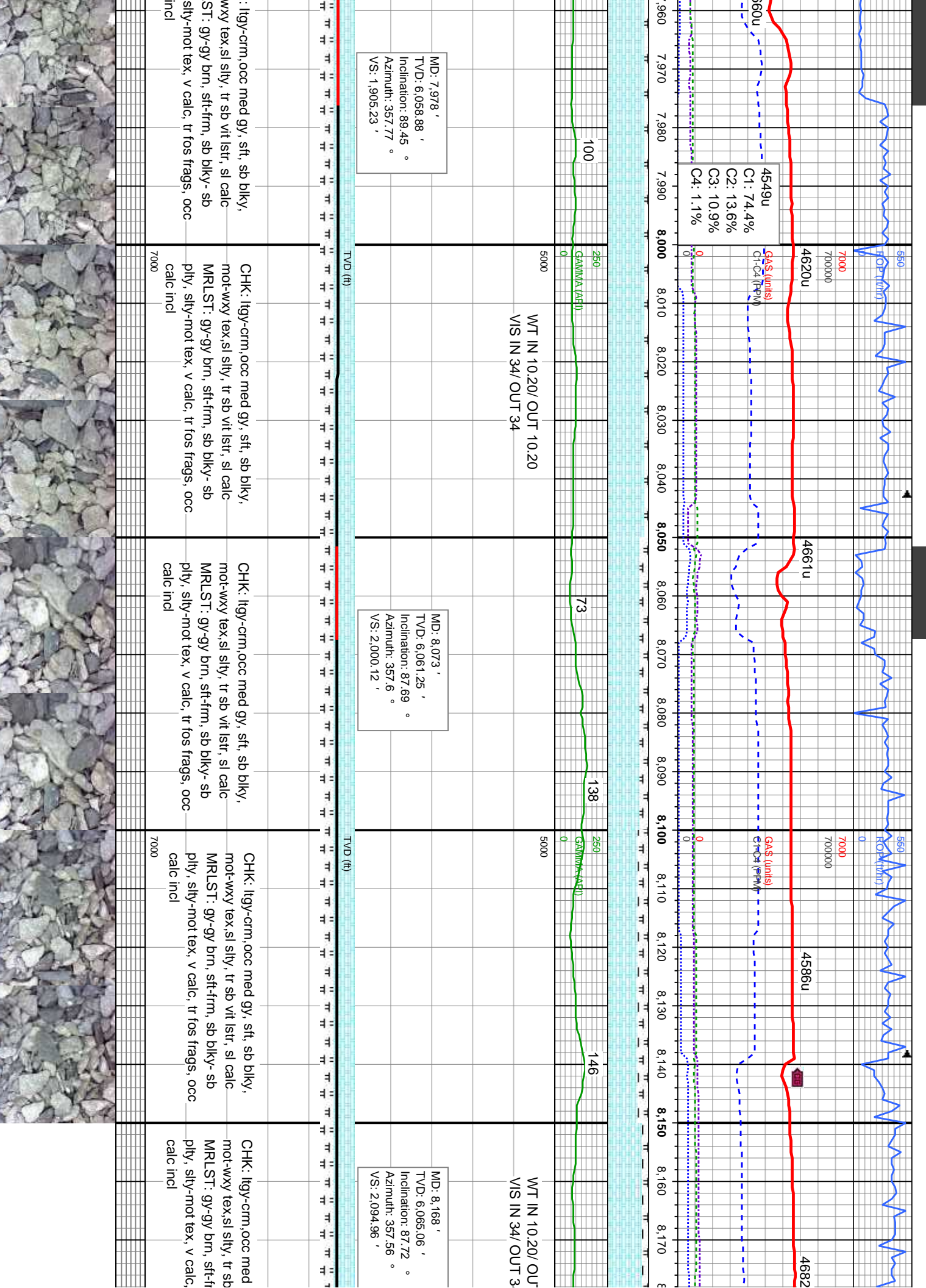
MD: 7.503 '
TVD: 6,059.24 '
Inclination: 90.8 °
Azimuth: 3.53 °
VS: 1,430.62 '

TVD (ft)									
WT IN 10.00/ OUT 10.00 VIS IN 34/ OUT 34									
CHK: llyg-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blk- sb ply, silty-mot tex, v calc, tr fos frags, occ calc incl									
CHK: llyg-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blk- sb ply, silty-mot tex, v calc, tr fos frags, occ calc incl									
CHK: llyg-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blk- sb ply, silty-mot tex, v calc, tr fos frags, occ calc incl									
CHK: llyg-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blk- sb ply, silty-mot tex, v calc, tr fos frags, occ calc incl									
CHK: llyg-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blk- sb ply, silty-mot tex, v calc, tr fos frags, occ calc incl									









4549u
C1: 74.4%
C2: 13.6%
C3: 10.9%
C4: 1.1%

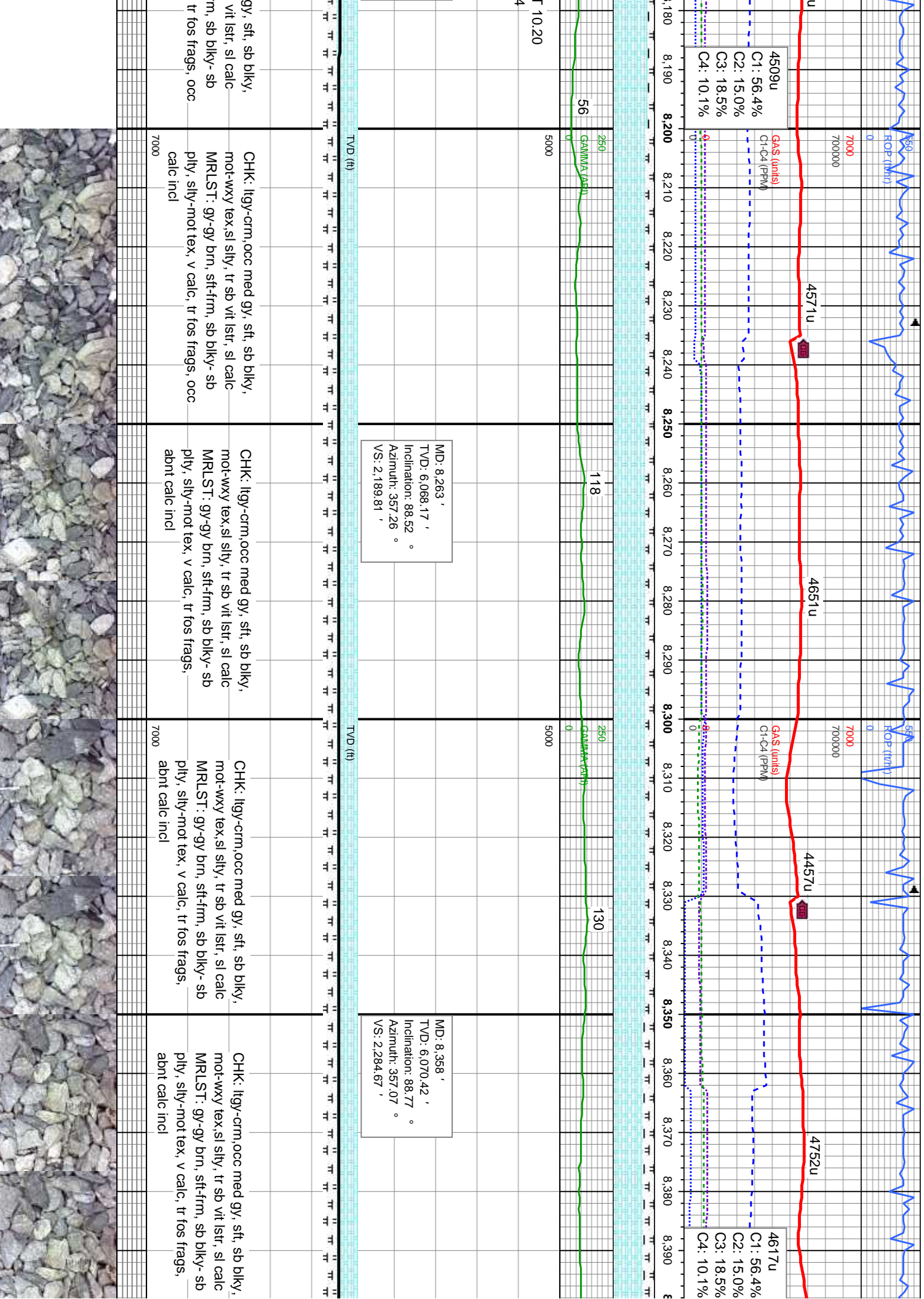
MD: 7,978 '
TVD: 6,058.88 '
Inclination: 89.45 °
Azimuth: 357.77 °
VS: 1,905.23 '

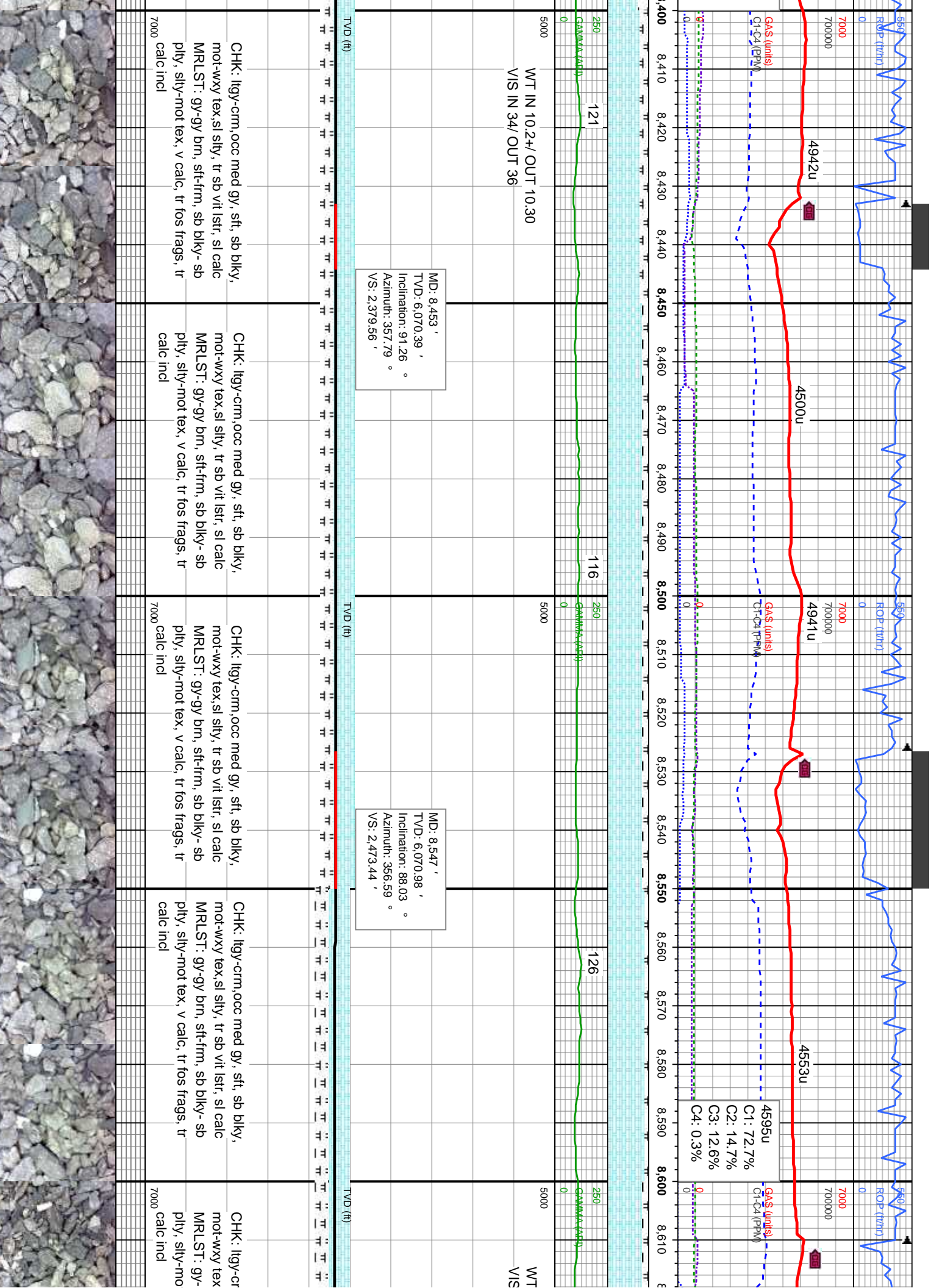
MD: 8,073 '
TVD: 6,061.25 '
Inclination: 87.69 °
Azimuth: 357.6 °
VS: 2,000.12 '

MD: 8,168 '
TVD: 6,065.06 '
Inclination: 87.72 °
Azimuth: 357.56 °
VS: 2,094.96 '

WT IN 10.20/ OUT 10.20
VIS IN 34/ OUT 34

WT IN 10.20/ OUT 10.20
VIS IN 34/ OUT 34

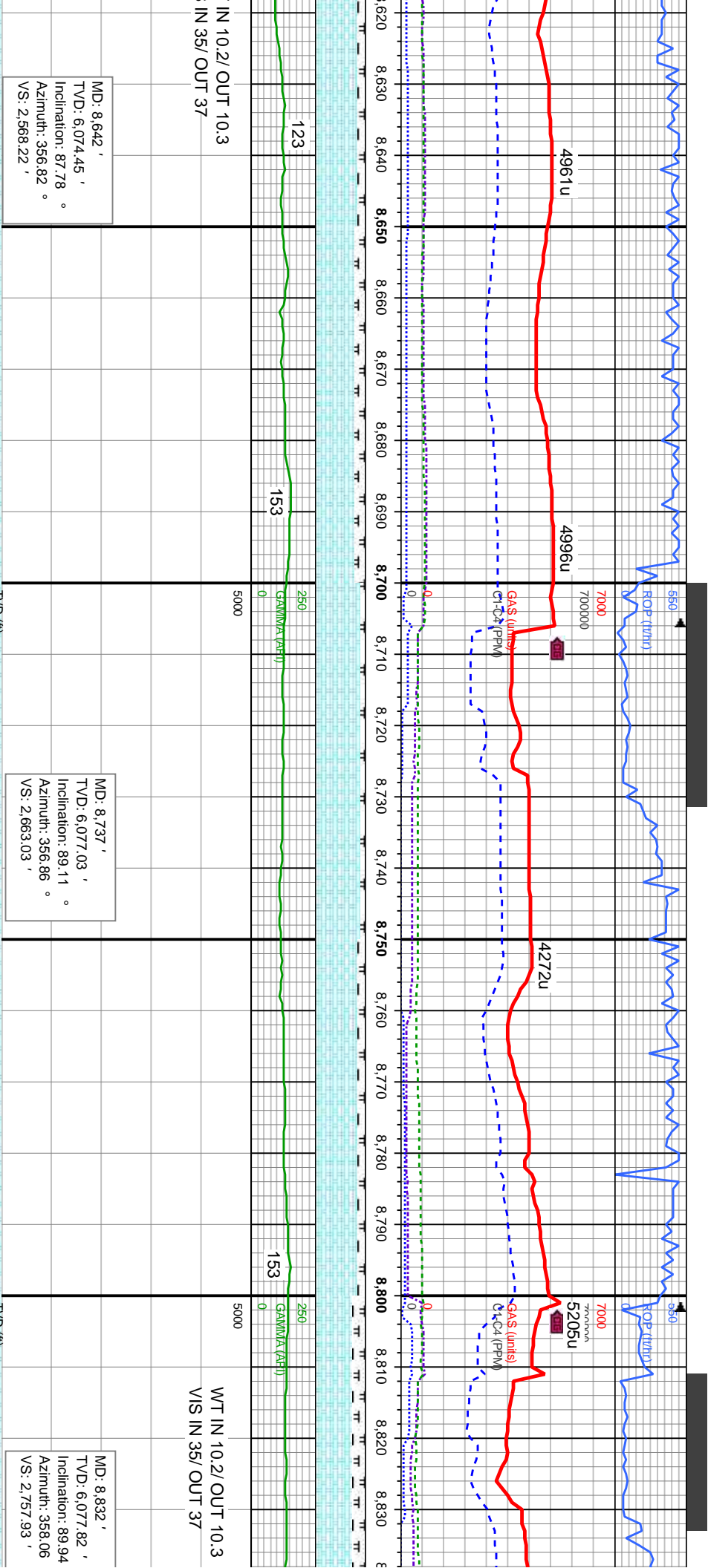




MD: 8.453 '
TVD: 6,070.39 '
Inclination: 91.26 °
Azimuth: 357.79 °
VS: 2.379.56 '

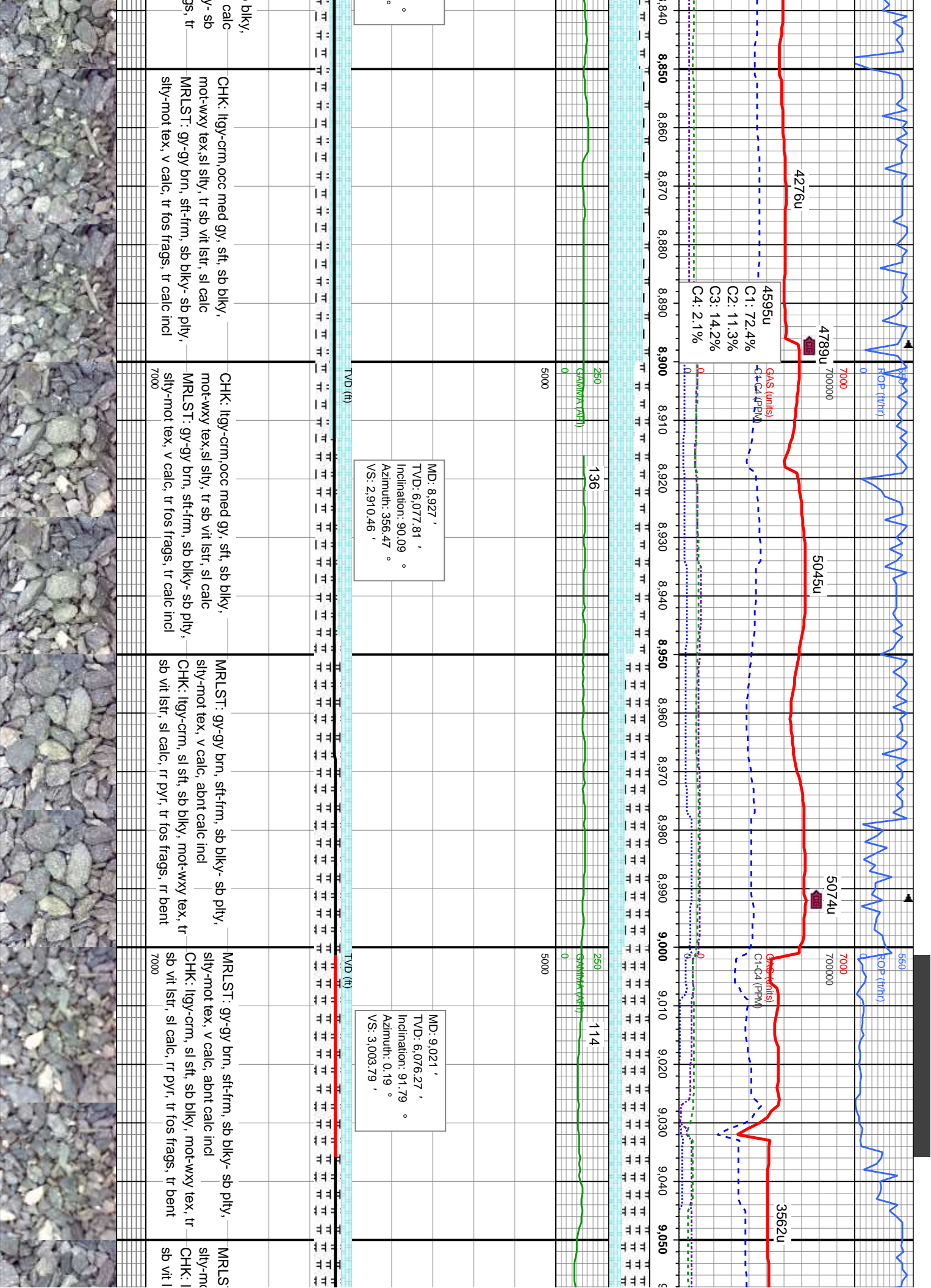
MD: 8.547 '
TVD: 6,070.98 '
Inclination: 88.03 °
Azimuth: 356.59 °
VS: 2.473.44 '

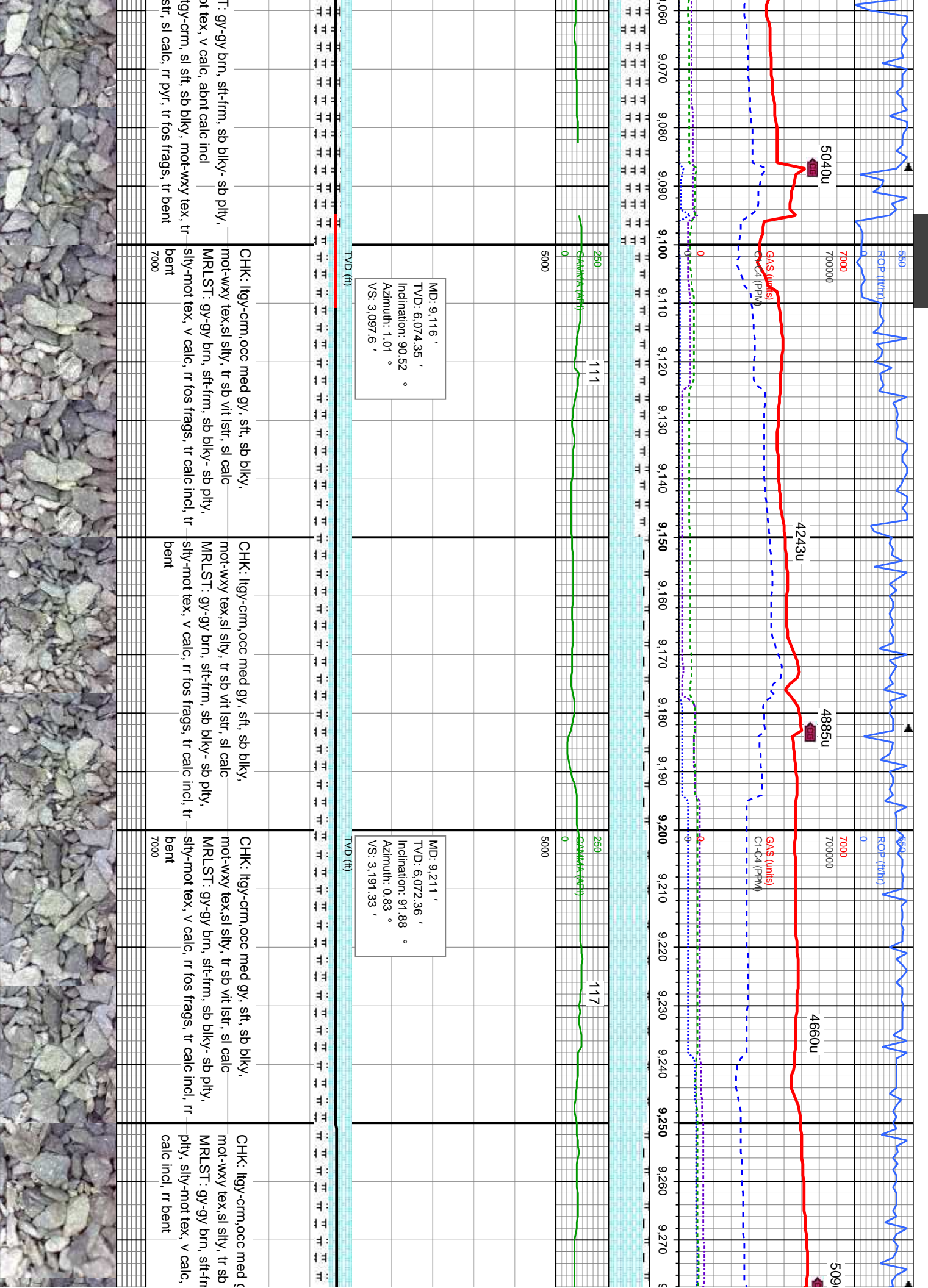
4595u
C1: 72.7%
C2: 14.7%
C3: 12.6%
C4: 0.3%

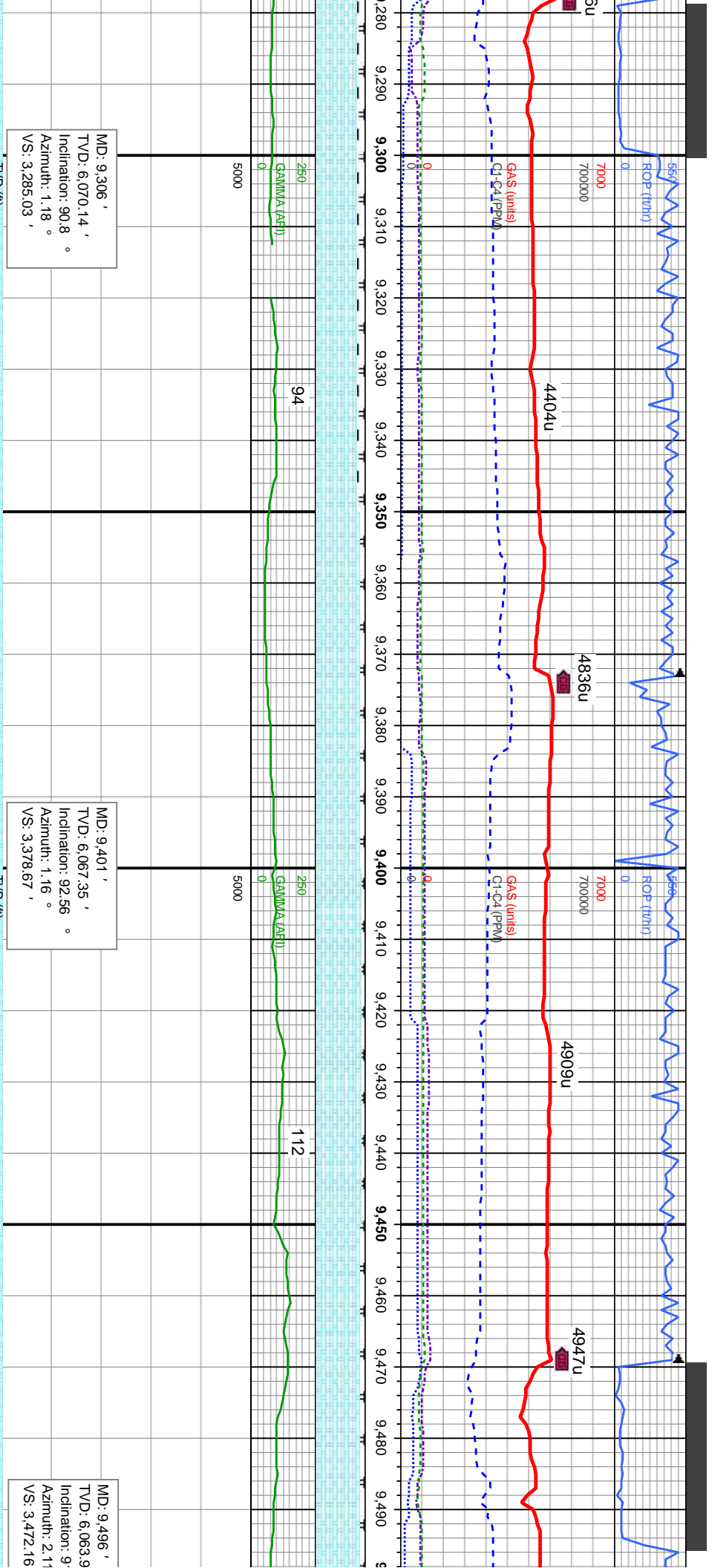


IN 10.2/ OUT 10.3 IN 35/ OUT 37	123	153	5000	MD: 8.737 ' TVD: 6,077.03 ' Inclination: 89.11 ° Azimuth: 356.86 ° VS: 2.663.03 '	WT IN 10.2/ OUT 10.3 VIS IN 35/ OUT 37
m,occ med gy, sft, sb blkly, sl silty, tr sb vit lstr, sl calc gy brn, sft-frm, sb blkly- sb t tex, v calc, tr fos frags, tr	CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl silty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr fos frags, tr calc incl	CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl silty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr fos frags, tr calc incl	CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl silty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr fos frags, tr calc incl	CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl silty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr fos frags, tr calc incl	



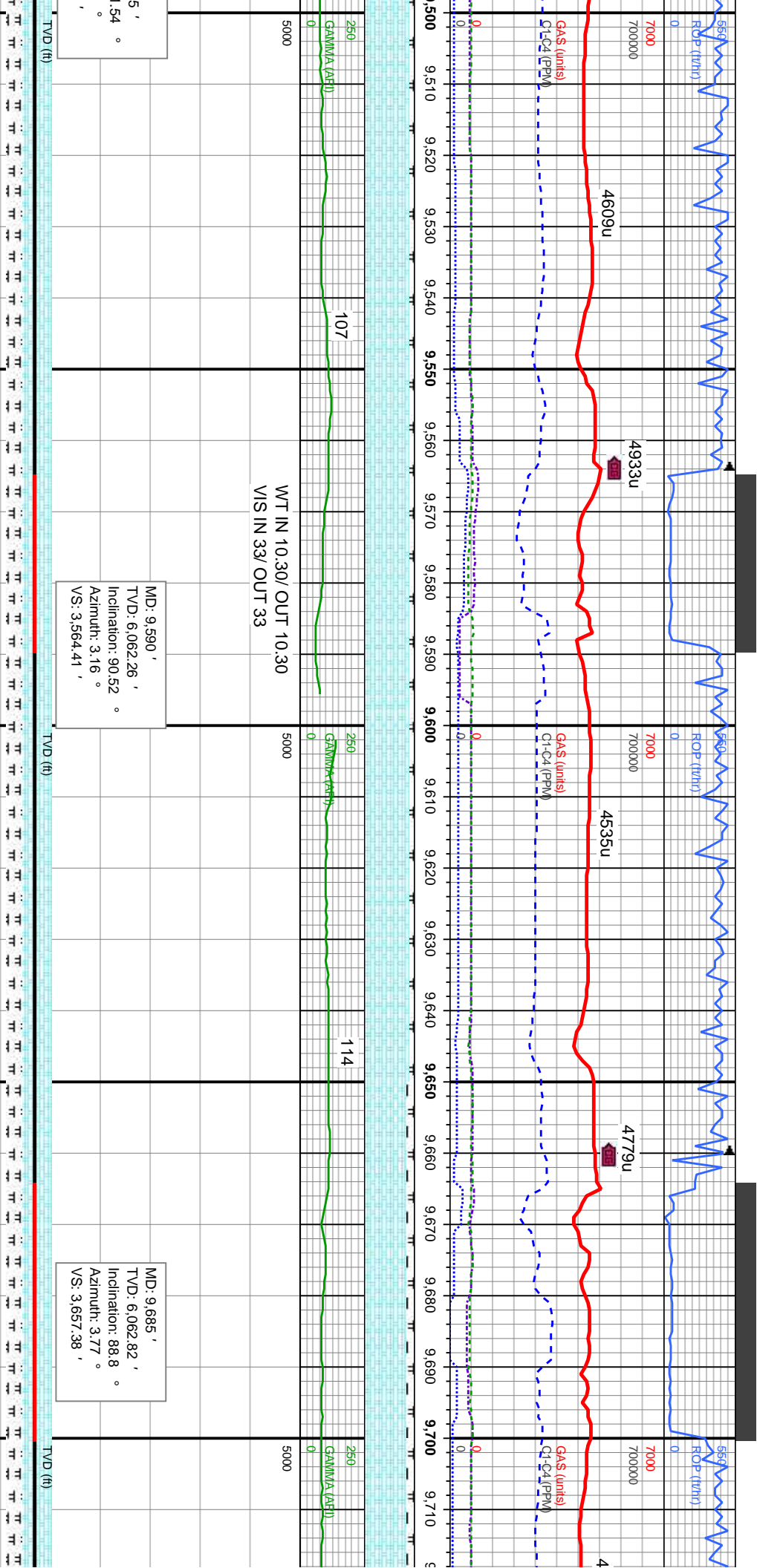






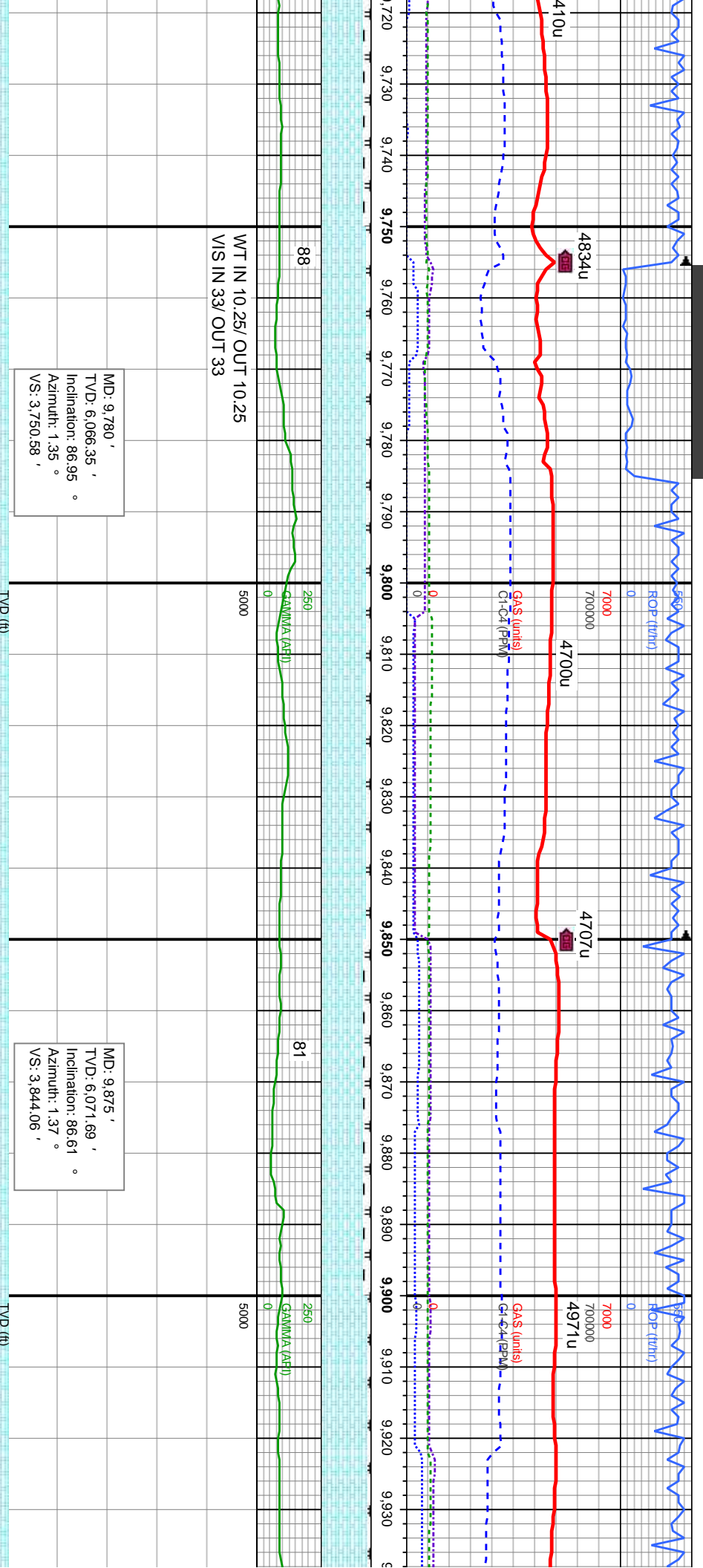
sft, sb blkly, vit lstr, sl calc n, sb blkly- sb rrr fos frags, tr bent	CHK: lly- crm, occ med gy, sft, sb blkly, mot-wxy tex, sl sily, tr sb vit lstr, sl calc MRLST: gy- gy brn, sft- frm, sb blkly- sb sily- mot tex, v calc, rr fos frags, tr calc incl, rr bent	CHK: lly- crm, occ med gy, sft, sb blkly, mot-wxy tex, sl sily, tr sb vit lstr, sl calc MRLST: gy- gy brn, sft- frm, sb blkly- sb ply, sily- mot tex, v calc, rr fos frags, tr calc incl, rr bent	CHK: lly- crm, occ med gy, sft, sb blkly, mot-wxy tex, sl sily, tr sb vit lstr, sl calc MRLST: gy- gy brn, sft- frm, sb blkly- sb ply, sily- mot tex, v calc, rr fos frags, tr calc incl	CHK: lly- crm, occ med gy, sft, sb blkly, mot-wxy tex, sl sily, tr sb vit lstr, sl calc MRLST: gy- gy brn, sft- frm, sb blkly- sb ply, sily- mot tex, v calc, rr fos frags, tr calc incl, rr pyr





CHK: lly-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, slty-mot tex, v calc, rr fos frags, rr calc incl	TVD (ft)	107	WT IN 10.30/ OUT 10.30 VIS IN 33/ OUT 33	5000	114	5000	CHK: lly-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, slty-mot tex, v calc, rr calc incl	TVD (ft)	7000
CHK: lly-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, slty-mot tex, v calc, rr fos frags, rr calc incl	TVD (ft)	107	WT IN 10.30/ OUT 10.30 VIS IN 33/ OUT 33	5000	114	5000	CHK: lly-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc MRLST: gy-gy brn, sft-frm, sb blkly- sb ply, slty-mot tex, v calc, rr calc incl	TVD (ft)	7000





cc med gy, sft, sb blkly, tr sb vit lstr, sl calc		CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc		CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc		CHK: ltgy-crm,occ med gy, sft, sb blkly, mot-wxy tex,sl slty, tr sb vit lstr, sl calc	
m, sft-frm, sb blkly- sb plty, calc, rr calc incl, rr bent		MRLST: gy-gy brn, sft-frm, sb blkly- sb plty, slty-mot tex, v calc, rr calc incl		MRLST: gy-gy brn, sft-frm, sb blkly- sb plty, slty-mot tex, v calc, rr calc incl, rr bent, rr pyr		MRLST: gy-gy brn, sft-frm, sb blkly- sb plty, slty-mot tex, v calc, rr calc incl, rr bent, rr pyr, rr fos frags	
		7000				7000	

