



Scale: 5" / 100'
Measured Depth Log

Well Name Storis E24-77-1HN

Location SWSW SEC 24, T6N R5W

State COLORADO

Country USA

API Number 05-123-38161

Region DJ BASIN

Spud Date 5/15/2014

Surface Coordinates 350' FSL, 950' FWL

Bottom Hole Coordinates 4423.32' FNL, 601.43' FWL

County WELD

Rig Number H&P 330

Field WATTENBERG

Drilling Completed 5/21/2014

Ground Elevation 4,692'

K.B. Elevation 4,722'

Logged Interval 6202' To 11327'

Total Depth 11327'

Formation NIOBRARA C CHALK

Type of Drilling Fluid LSND

Company NOBLE ENERGY

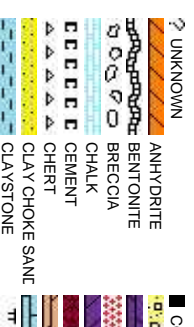
Address 1625 Broadway
Denver, CO 80202

Name RENEE CLACK

Company NOBLE ENERGY

Address 1625 Broadway
Denver, CO 80202

ANDREA ZUIDEMA
JESSICA SIEBERG



Operator

BY INC.

Suite 2200
202

Geologist

LER

BY INC.

Suite 2200
202

Other

Rock Types

CONGLOMERATE

DOLOMITE

GRANITE

GYPSUM

IGNEOUS

SIDERITE or LIMONITE

LIMESTONE

MARLSTONE

METAMORPHIC

NO SAMPLE

SALT

SANDSTONE

SALT-PEPPER SANC

SHALE

SHALE COLORED

LIMESTONE GRAY

SHALY SANDSTONE

SHALY SILTSTONE

SILTY SHALE

SILTSTONE

TUFF

WELDED TUFF

Accessories

F FOSSIL

ARGILLACEOUS

GLAUCONITE

TUFFACEOUS

GASTROPOD

ARGILLITE GRAIN

GYPSIFEROUS

ALGAE

OOLITE

HEAVY MINERAL

AMPHIPORA

OSTRACOD

BITUMENOUS SUBSTANCE

INOCERAMUS

BELEMNITE

PELECYPOD

BRECCIA FRAGMENTS

KAOLIN

BIOCLASTIC

PELLET

CALCAREOUS

MARLSTONE

BRACHIOPOD

PISOLITE

CARBONACEOUS FLAKES

MINERAL CRYSTALS

BRYOZOA

PLANT REMAINS

CHTDK

NODULES

CEPHALOPOD

PLANT SPORES

CHTLT

PHOSPHATE PELLET

CORAL

SCAPHOPOD

COAL - THIN BEDS

PYRITE

CRINOID

DOLOMITIC

SALT CAST

ECHINOID

STROMATOPOROID

FELDSPAR

SANDY

FISH

Minerals

FERRUGINOUS PELLET

SILTACEOUS

FORAMINIFERA

ANHYDRITIC

FERRUGINOUS

SILTY

SILTSTONE STRINGER

Other Symbols

MOLDIC

ORGANIC

PINPOINT

EVEN

QUESTIONABLE

SPOTTED STAINING

OIL SHOW

FAULT

FORMATION TOP

GAS SHOW

MINDEPTH MN DEPTH

WIRELINE TESTED - LEFT

E EARTHY

WIRELINE TESTED - RT

FX FINELYXLN

A ANGULAR

R ROUNDED

MS MUDSTONE

SUBANG

SUBRND

PS PACKSTONE

WS WACKESTONE

CONNECTION (LEFT)

CONNECTION (RIGHT)

REVERSE FAULT

SIDEWALL CORE (LEFT)

FENESTRAL

CONNECTION GAS

SIDEWALL CORE (RIGHT)

F FRACTURE

INTERCRYSTALLINE

CORE - LOST

CORE - RECOVERED

DST INTERVAL

SLIDE

SURVEY

TRIP GAS

BS BOUNDSTONE

C CHALKY

CX CRYPTOXLN

M MODERATE

P POOR

W WELL

Slide/Rotate

ROP

ROF

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.
RIGGED UP ON 05/16/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0595
COLUMBINE BEGAN LOGGING
ON 05/17/2014

Bit Data

Bit #: 3

Type: SMITH SD1611

Size: 8.75"

Depth In: 6,202 '

Depth Out: 7,322 '

Jets: 3X14 : 3X15

S/N: JH5332

50' Sample Interval



2324u
BEGAN DRILLING CURVE
@ 08:17AM on 05/18/2014

1902u
1938u
2669u
C1: 73.9%
C2: 13.6%
C3: 09.9%
C4: 02.6%

Depth Labels

% Lith

Gamma

GAMMA

Well Bore
TVD

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.

Oil Show

Images

TVD (ft)

MD: 6,213 '
TVD: 6,124.64 '
Inclination: 2 °
Azimuth: 353.8 °
VS: -167.67 '

MD: 6,260 '
TVD: 6,171.51 '
Inclination: 6.1 °
Azimuth: 350.4 °
VS: -164.5 '

MD: 6,308 '
TVD: 6,219.07 '
Inclination: 9.4 °
Azimuth: 358.1 °
VS: -158.21 '

MUD WT 10.45 VIS 50

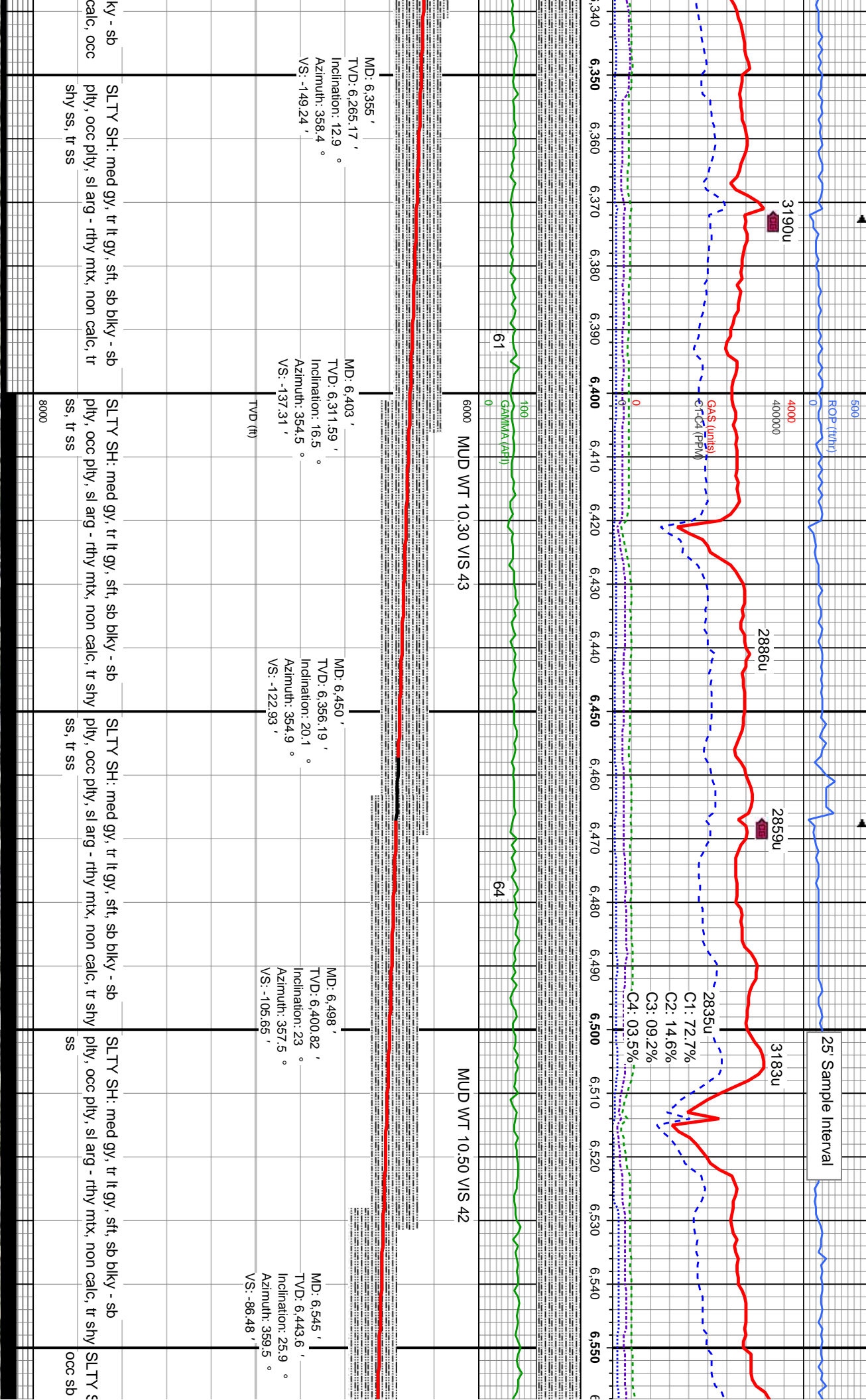
MUD WT 10.40 VIS 46

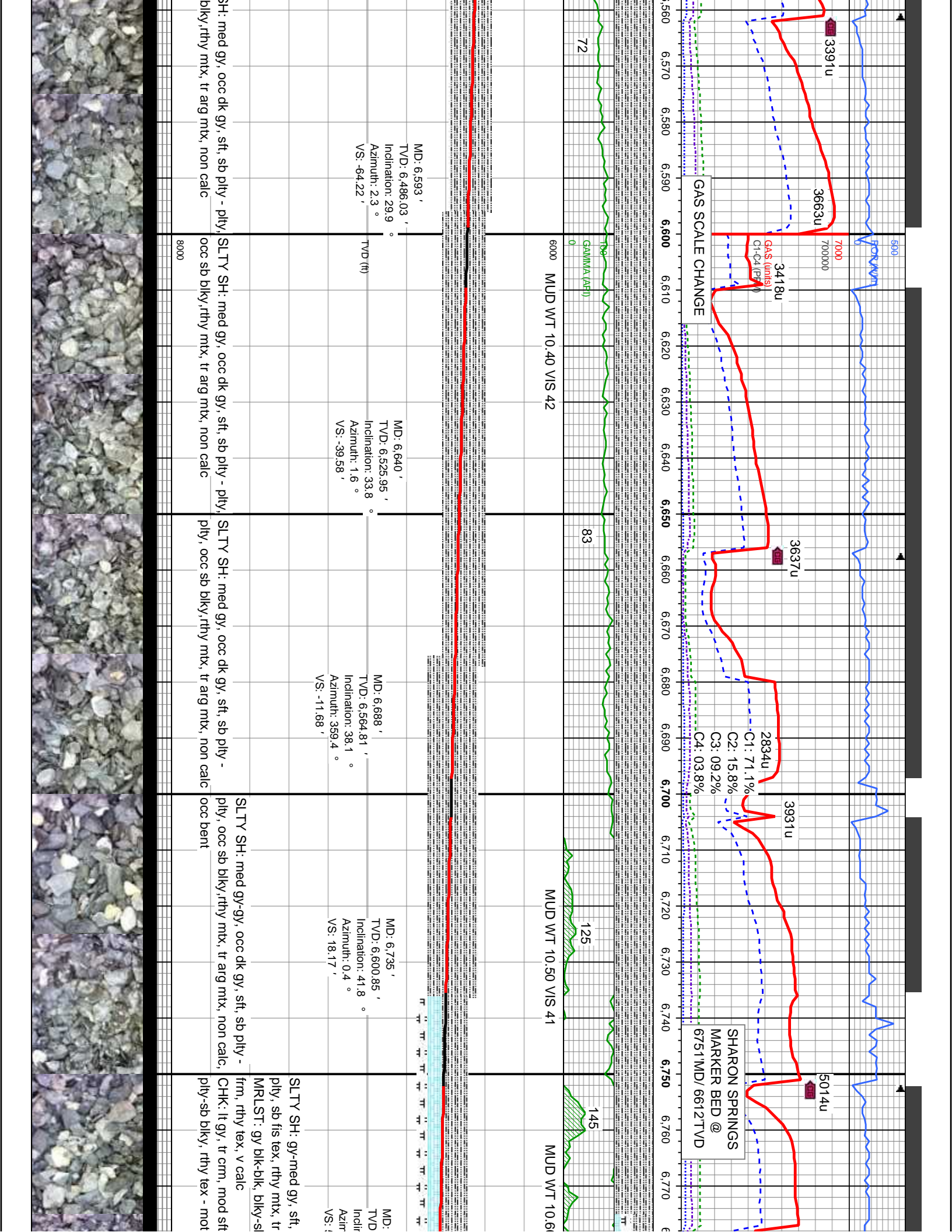
SLTY SH: med gy, tr lt gy, sft, sb blk - sb
ply, occ ply, sl arg - rthy mtx, non calc, occ
shy ss, tr ss

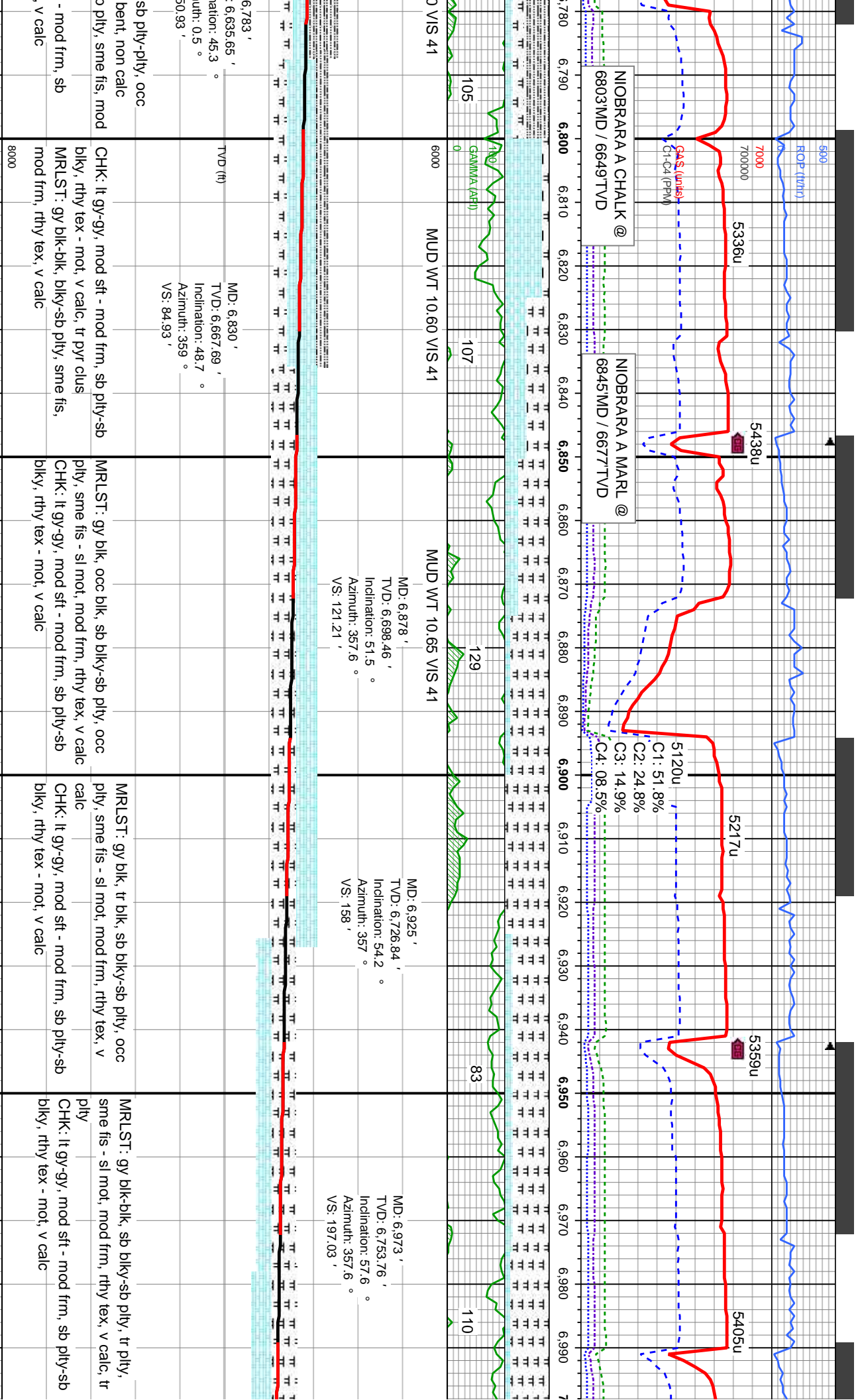
SLTY SH: med gy, tr lt gy, sft, sb blk - sb
ply, occ ply, sl arg - rthy mtx, non calc, occ
shy ss, tr ss

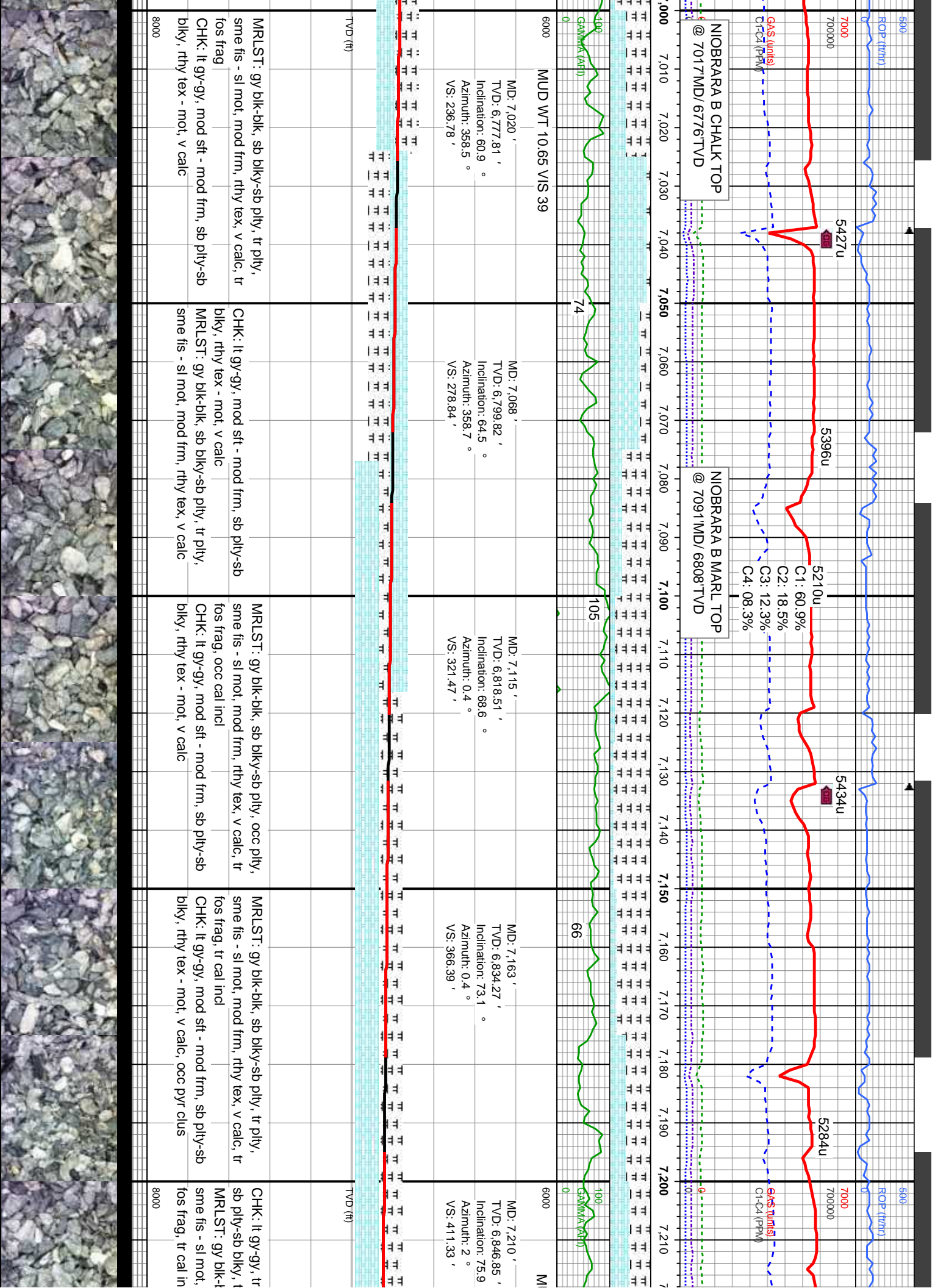
SLTY SH: med gy, tr lt gy, sft, sb blk - sb
ply, occ ply, sl arg - rthy mtx, non
shy ss, tr ss

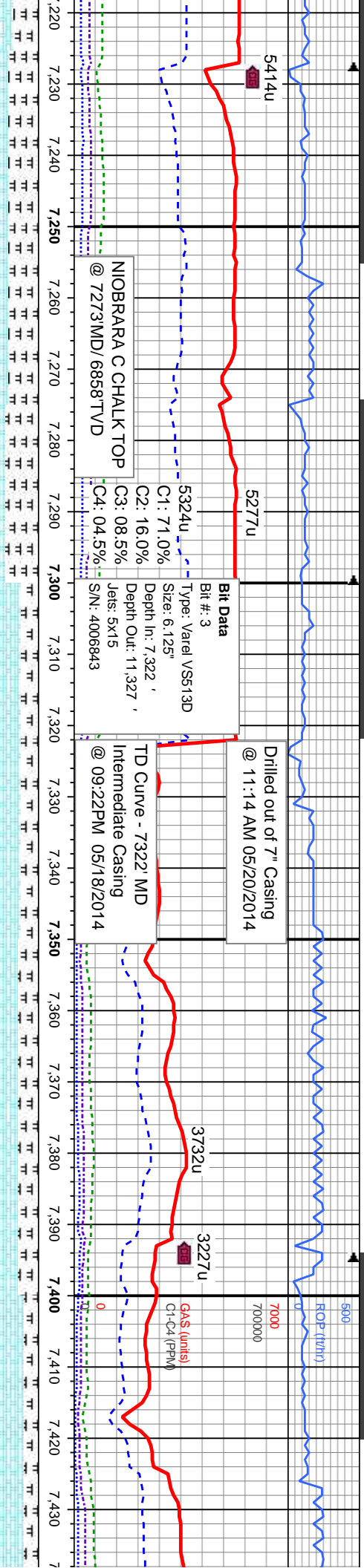












NIOBRARA C CHALK TOP
@ 7273MD/ 6858 TVD

Bit Data
Bit #: 3
Type: Varel VS513D
Size: 6.125"
Depth In: 7.322 '
Depth Out: 11.327 '
Jets: 5x15
S/N: 4006843

Dilled out of 7" Casing
@ 11:14 AM 05/20/2014

TD Curve - 7322' MD
Intermediate Casing
@ 09:22PM 05/18/2014

MD: 7.258 '
TVD: 6,856.93 '
Inclination: 79.8 °
Azimuth: 3.1 °
VS: 458.03 '

MD: 7.324 '
TVD: 6,865.22 '
Inclination: 85.7 °
Azimuth: 0.6 °
VS: 523.07 '

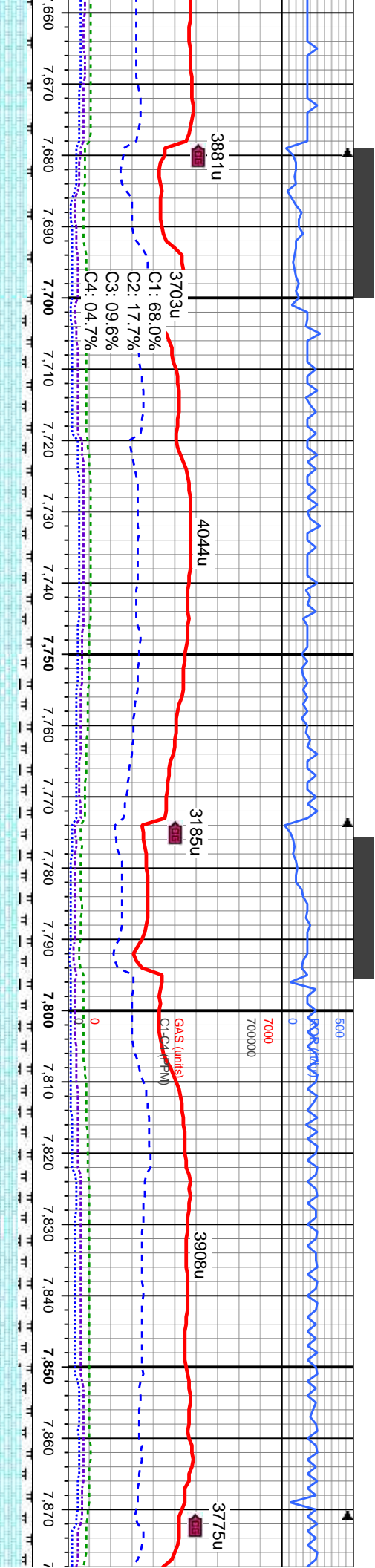
MD: 7.419 '
TVD: 6,870.16 '
Inclination: 88.3 °
Azimuth: 359.8 °
VS: 617.02 '

JD WT 10.70 VIS 39

MUD WT 9.40 VIS 33

med gy, mod sft - mod frm, r ply, rthy tex - mot, v calc	MRLST: gy blk-blk, sb blk-sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, v calc, tr cal incl	CHK: lt gy-gy, mod sft - mod frm, sb ply-sb blk, tr blk, rthy tex - mot, v calc	CHK: lt gy-gy, mod sft - mod frm, sb ply-sb blk, tr blk, rthy tex - mot, v calc	MRLST: gy blk-blk, sb blk-sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, v calc, tr cal incl
mod frm, rthy tex, v calc, tr	sb ply-sb blk, rthy tex - mot, v calc			CHK: lt gy-gy, mod sft - mod frm, sb ply-sb blk, tr blk, rthy tex - mot, v calc
				MRLST: gy blk-blk, sb blk-sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, v calc



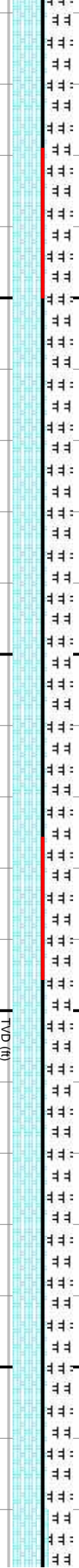


MUD WT 9.10 VIS 38

MD: 7,705 '
TVD: 6,864.09 '
Inclination: 90.9 °
Azimuth: 358.4 °
VS: 898.63 '

MUD WT 9.10 VIS 37

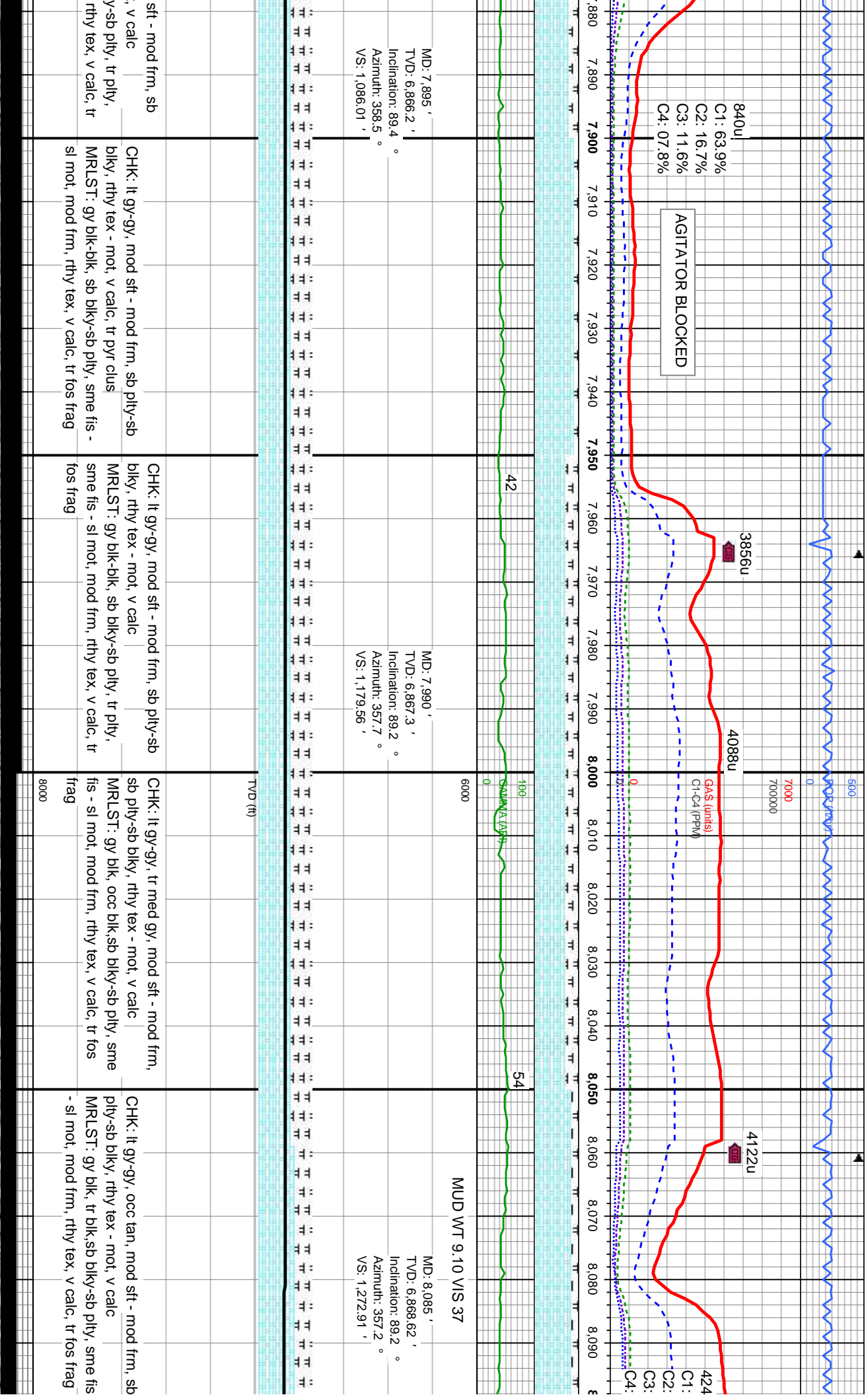
MD: 7,800 '
TVD: 6,864.53 '
Inclination: 88.5 °
Azimuth: 358.8 °
VS: 992.31 '



TVD (ft)

gy-gy, occ tan, mod sft - mod frm, sb blk, rthy tex - mot, v calc	CHK: lt gy-gy, occ tan, mod sft - mod frm, sb ply-sb blk, tr blk, rthy tex - mot, v calc	CHK: lt gy-gy, occ tan, mod sft - mod frm, sb ply-sb blk, tr blk, rthy tex - mot, v calc	CHK: lt gy-gy, tr tan, mod ply-sb blk, rthy tex - mot
gy blk-blk, sb blk-sb ply, tr ply, F: gy blk-blk, sb blk-sb ply, tr ply, - sl mot, mod frm, rthy tex, v	MRLST: gy blk-blk, sb blk-sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, v calc	MRLST: gy blk, occ blk-sb blk-sb ply, tr ply, sme fis - sl mot, mod frm, rthy tex, v calc	MRLST: gy blk-blk, sb blk-sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, v calc





MD: 7.895 '
TVD: 6,866.2 '
Inclination: 89.4 °
Azimuth: 358.5 °
VS: 1,086.01 '

MD: 7.990 '
TVD: 6,867.3 '
Inclination: 89.2 °
Azimuth: 357.7 °
VS: 1,179.56 '

MD: 8.085 '
TVD: 6,868.62 '
Inclination: 89.2 °
Azimuth: 357.2 °
VS: 1,272.91 '

sft - mod frm, sb
v calc
y-sb ply, tr ply,
rthy tex, v calc, tr

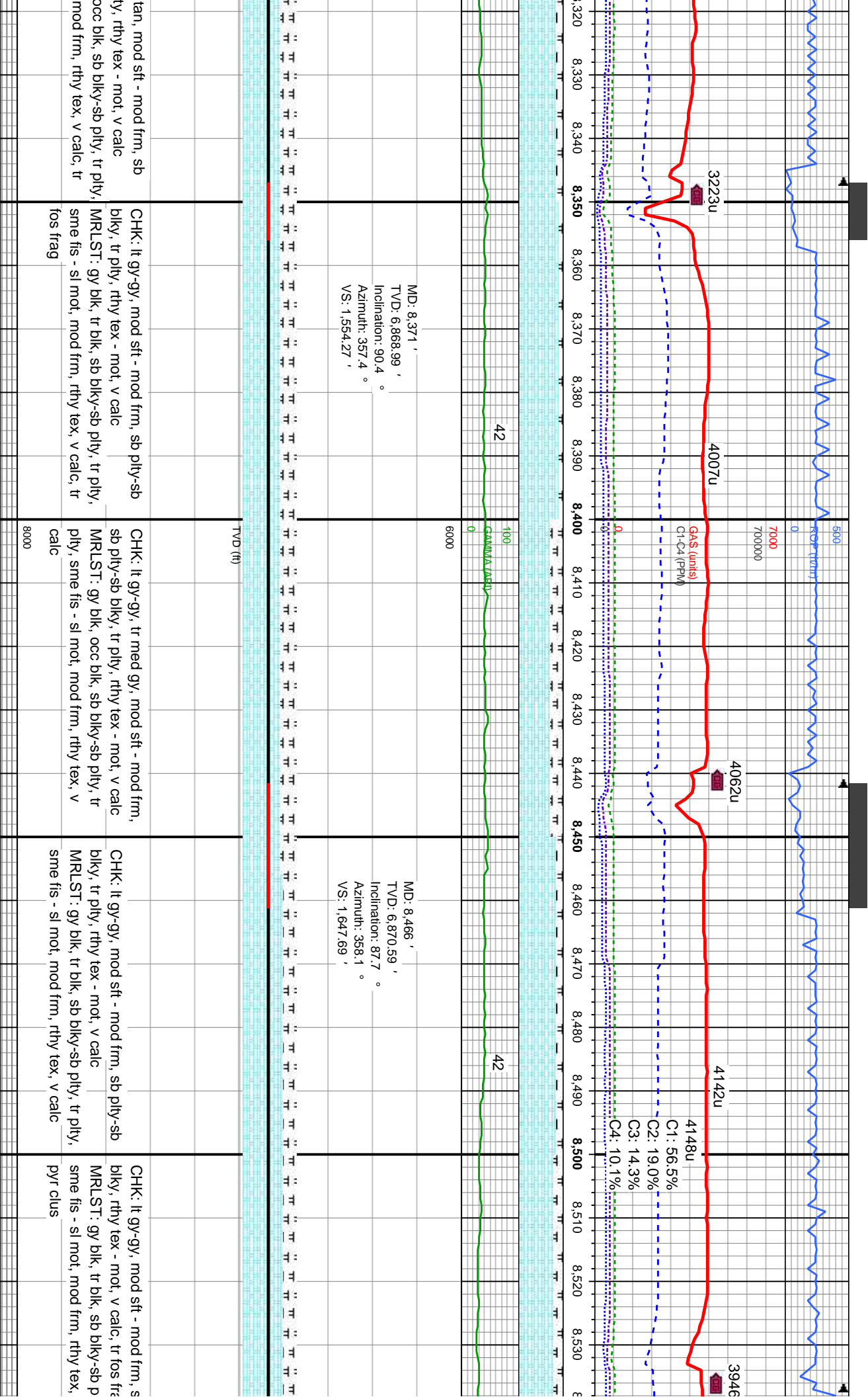
CHK: lt gy-gy, mod sft - mod frm, sb ply-sb
biky, rthy tex - mot, v calc, tr pyr clus
MRLST: gy blk-blk, sb biky-sb ply, sme fis -
sl mot, mod frm, rthy tex, v calc, tr fos frag

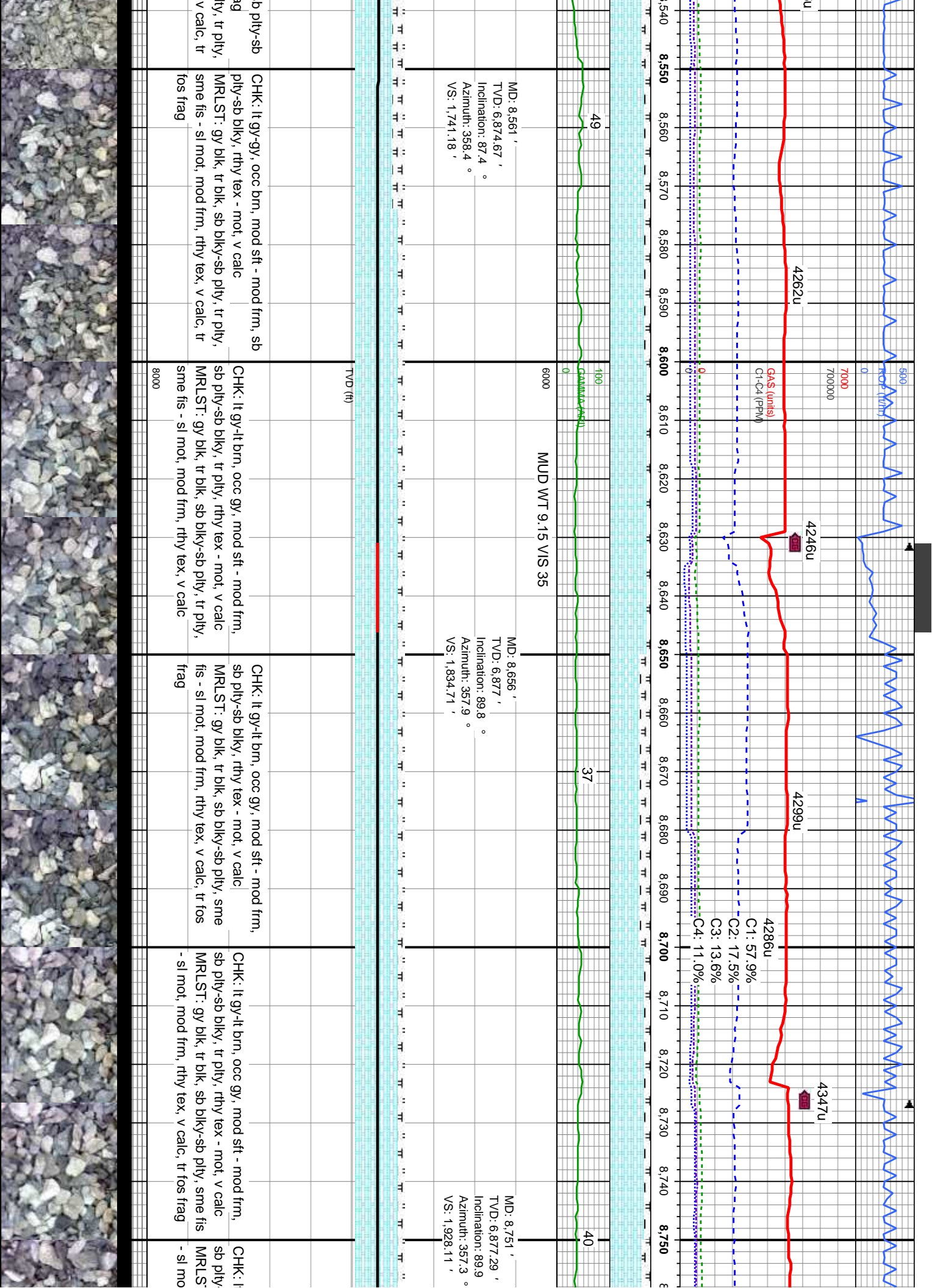
CHK: lt gy-gy, mod sft - mod frm, sb ply-sb
biky, rthy tex - mot, v calc
MRLST: gy blk-blk, sb biky-sb ply, tr ply,
sme fis - sl mot, mod frm, rthy tex, v calc, tr
fos frag

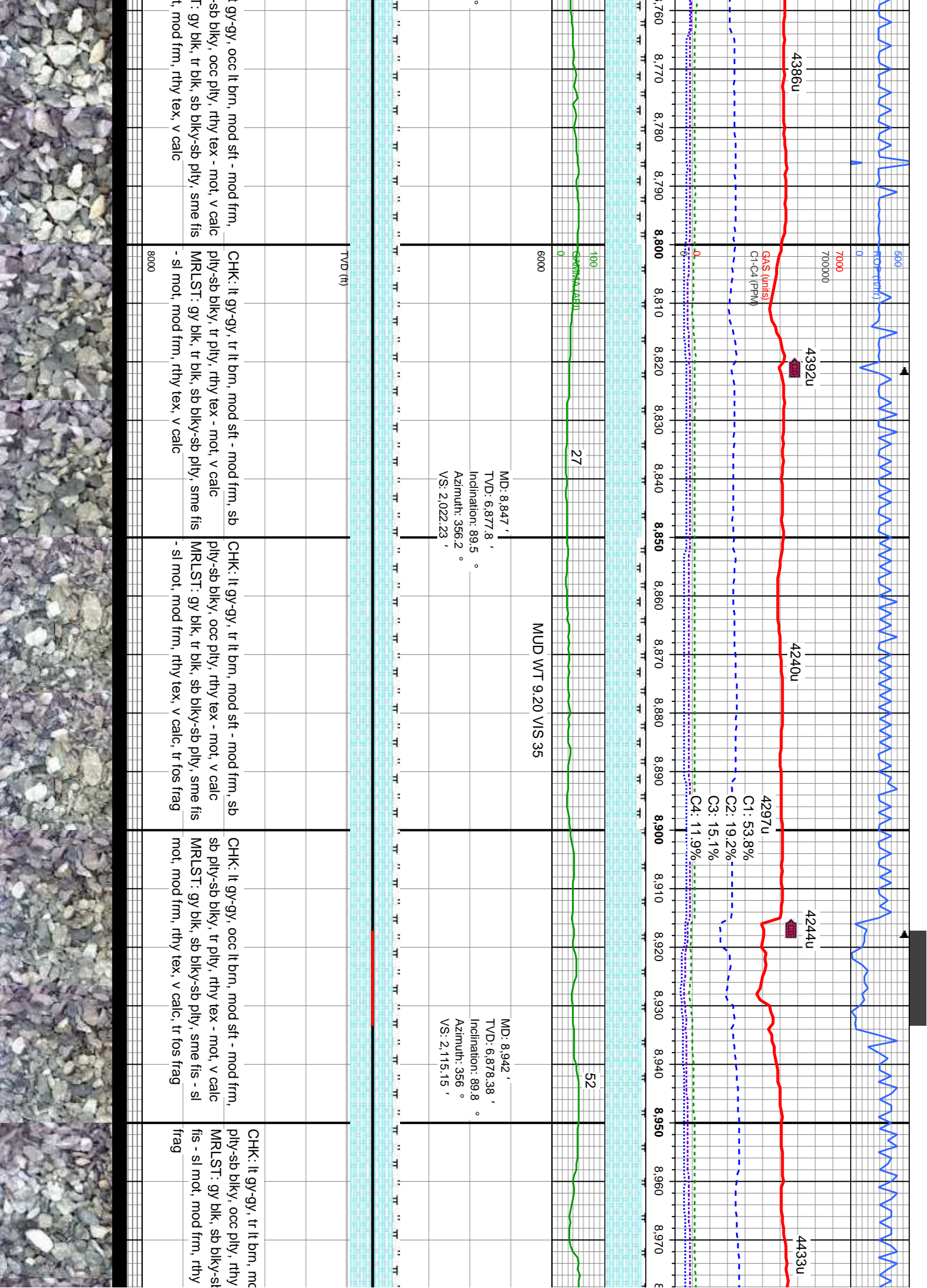
CHK: lt gy-gy, tr med gy, mod sft - mod frm,
sb ply-sb biky, rthy tex - mot, v calc
MRLST: gy blk, occ blk, sb biky-sb ply, sme
fis - sl mot, mod frm, rthy tex, v calc, tr fos
frag

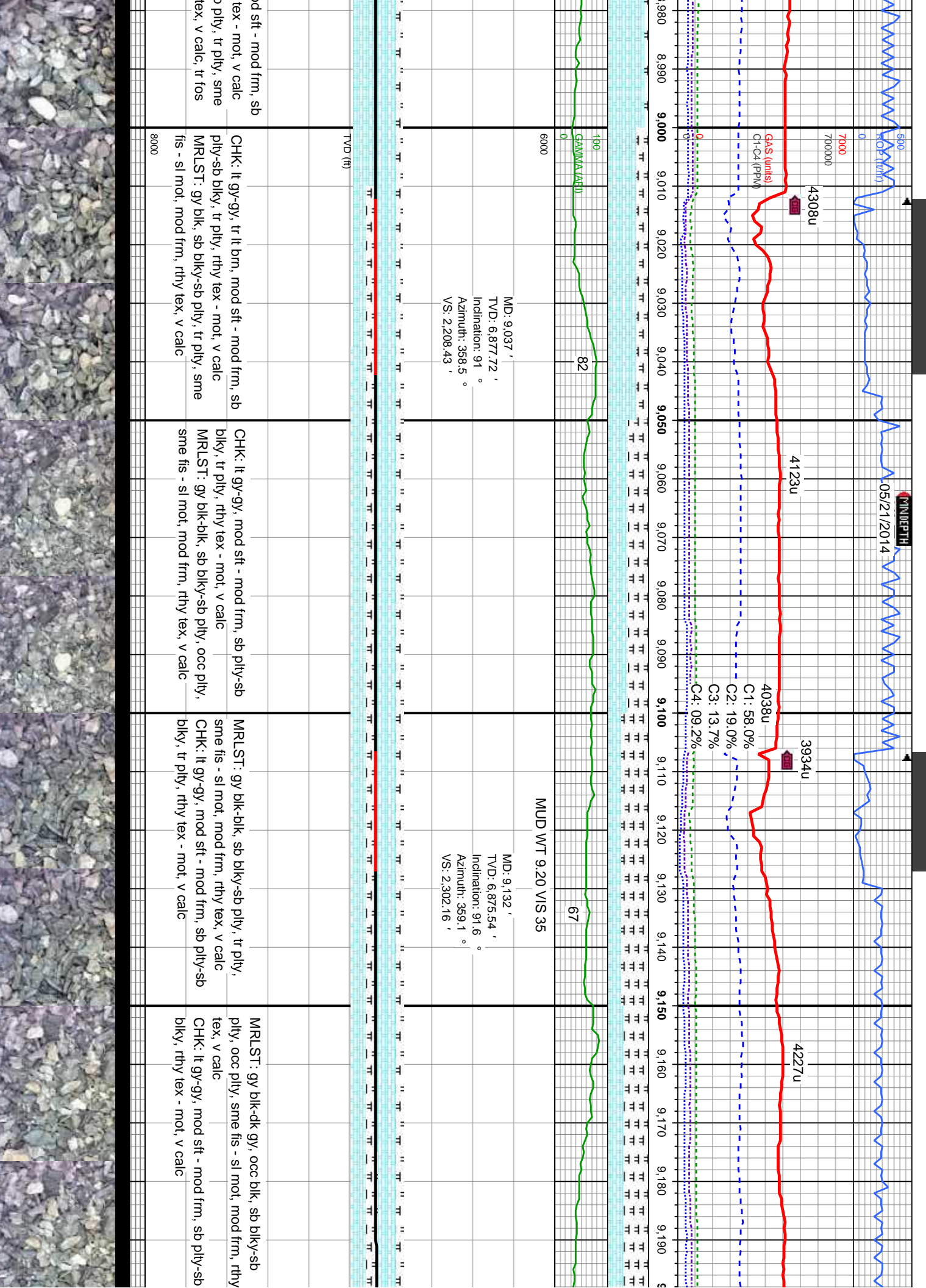
CHK: lt gy-gy, occ tan, mod sft - mod frm, sb
ply-sb biky, rthy tex - mot, v calc
MRLST: gy blk, tr blk, sb biky-sb ply, sme fis
- sl mot, mod frm, rthy tex, v calc, tr fos frag

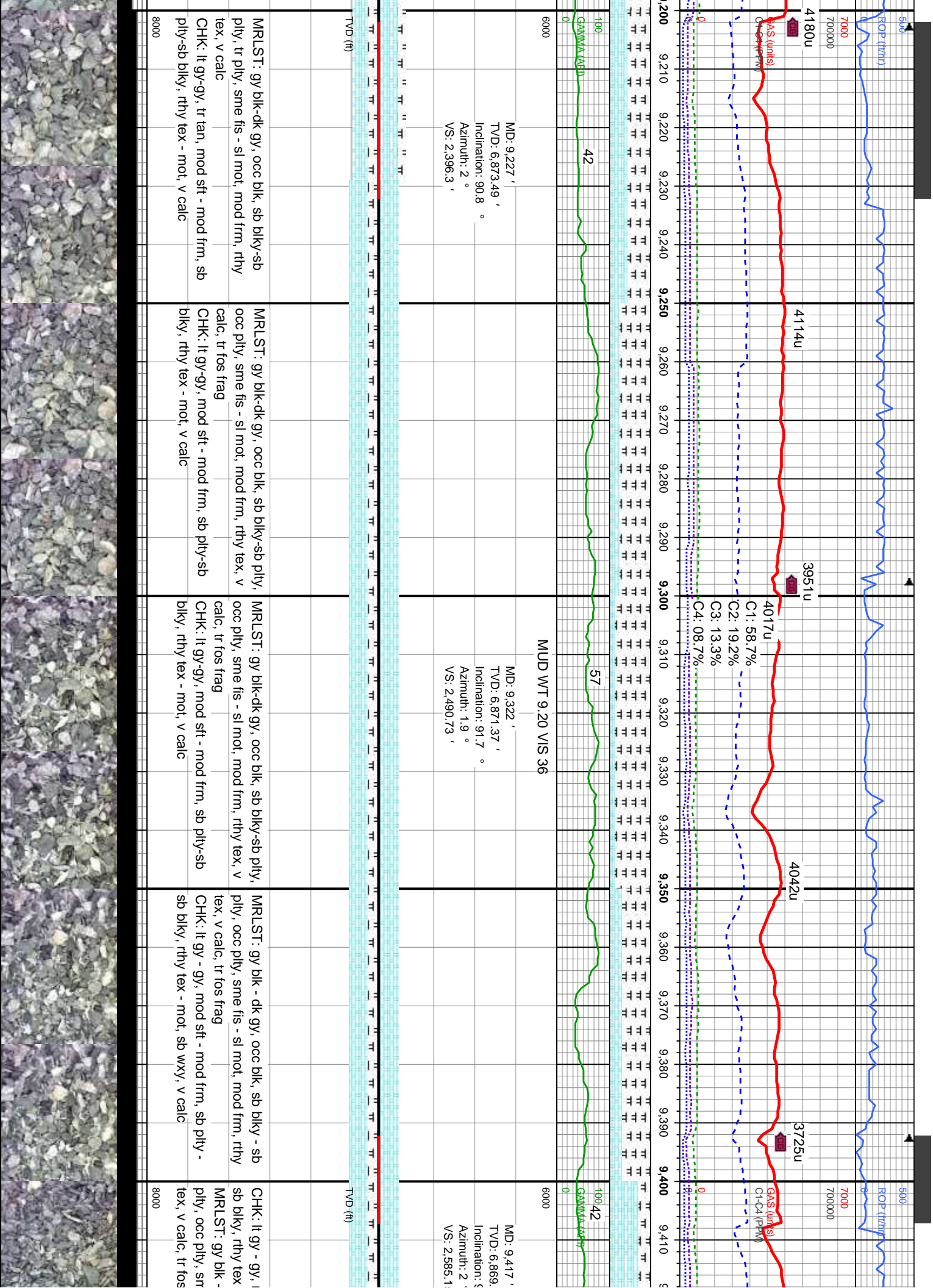


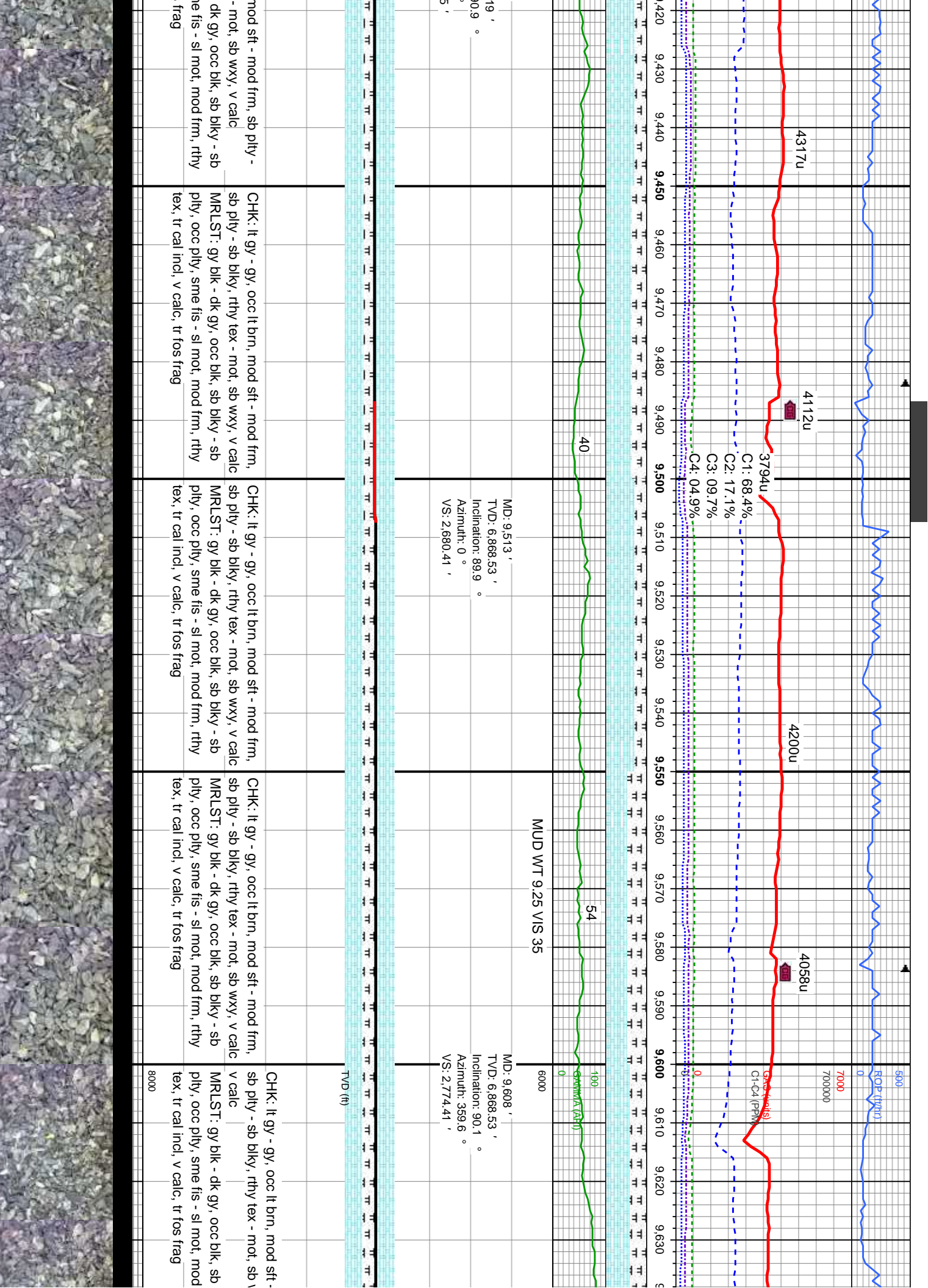


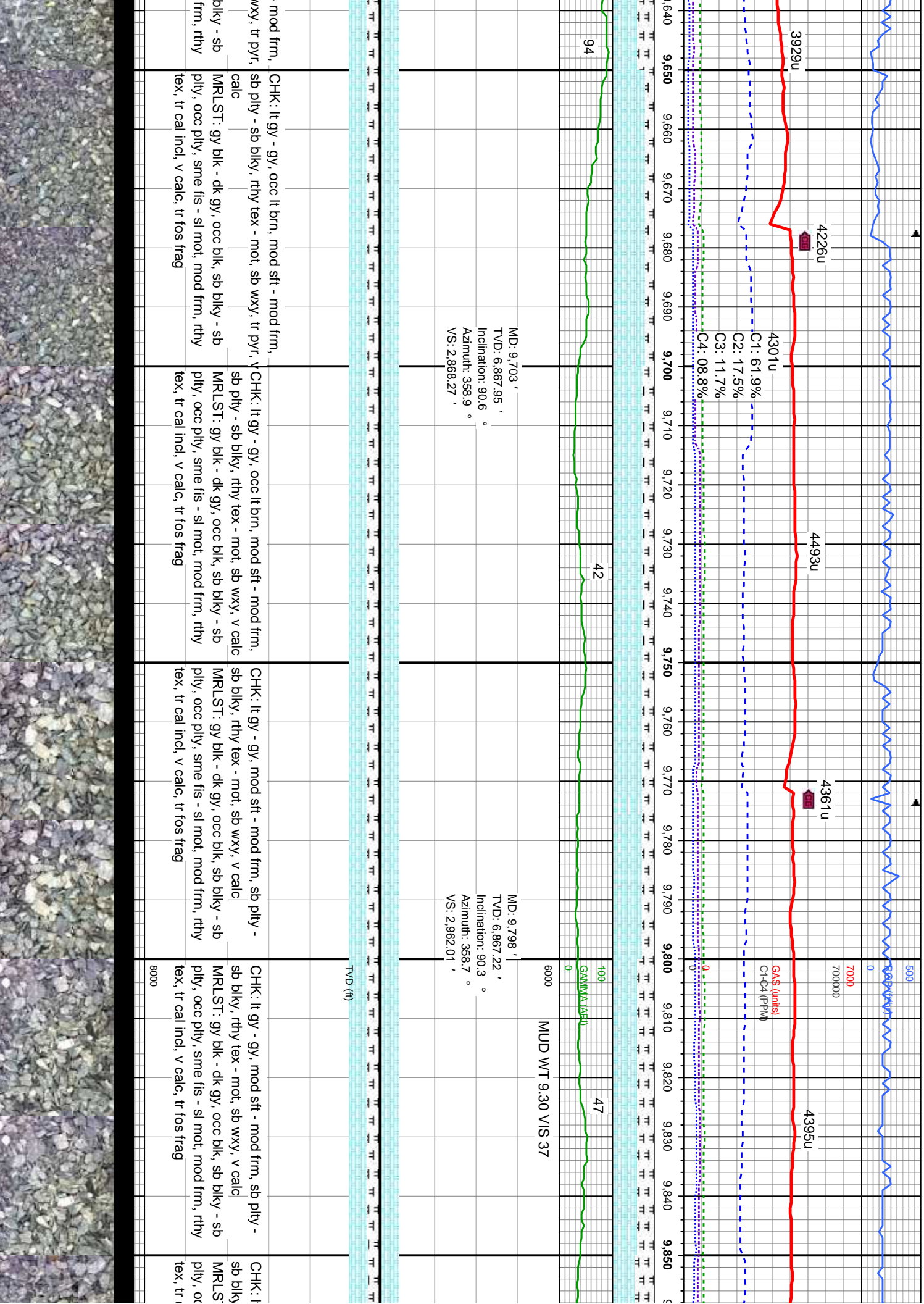


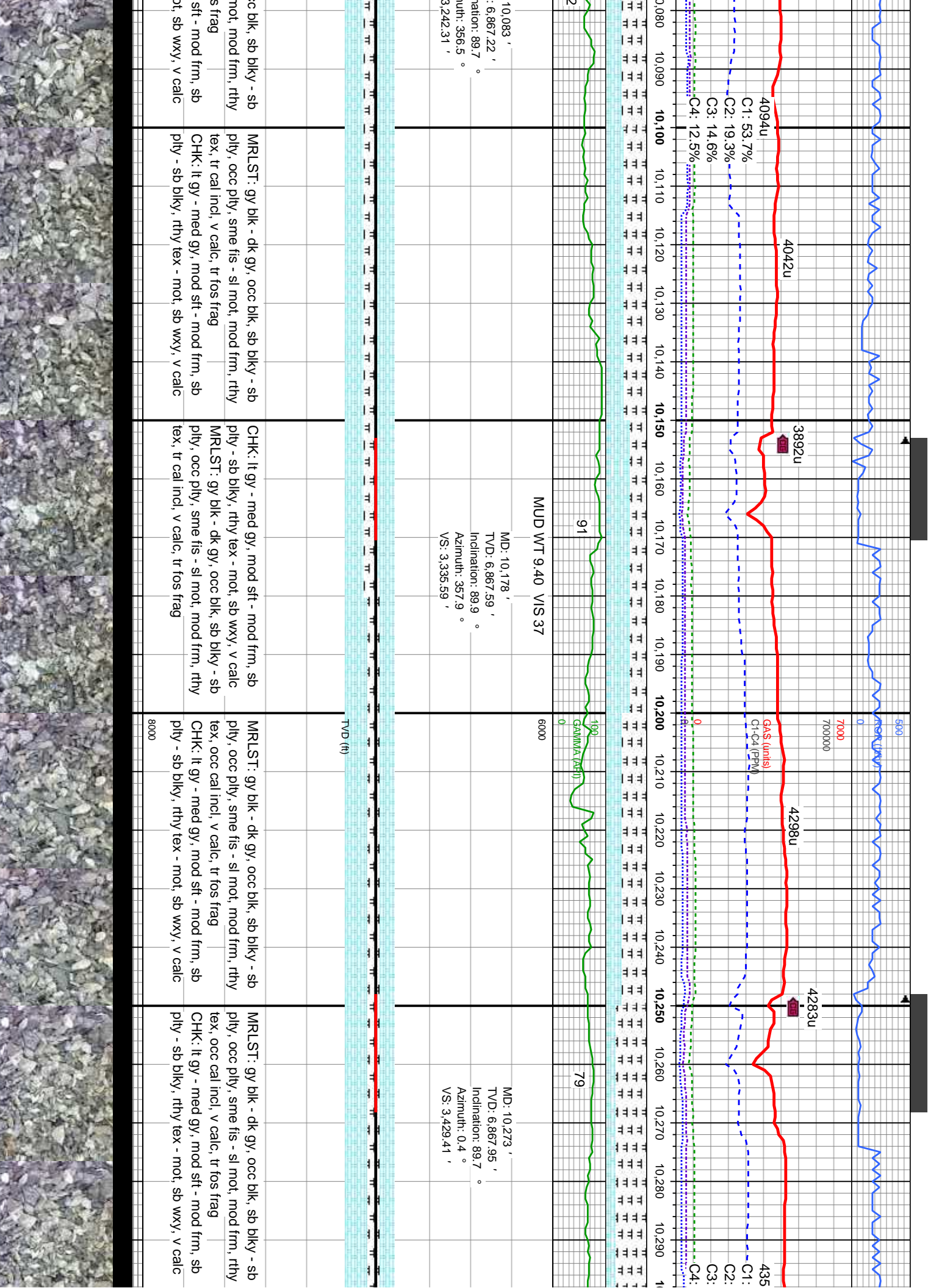


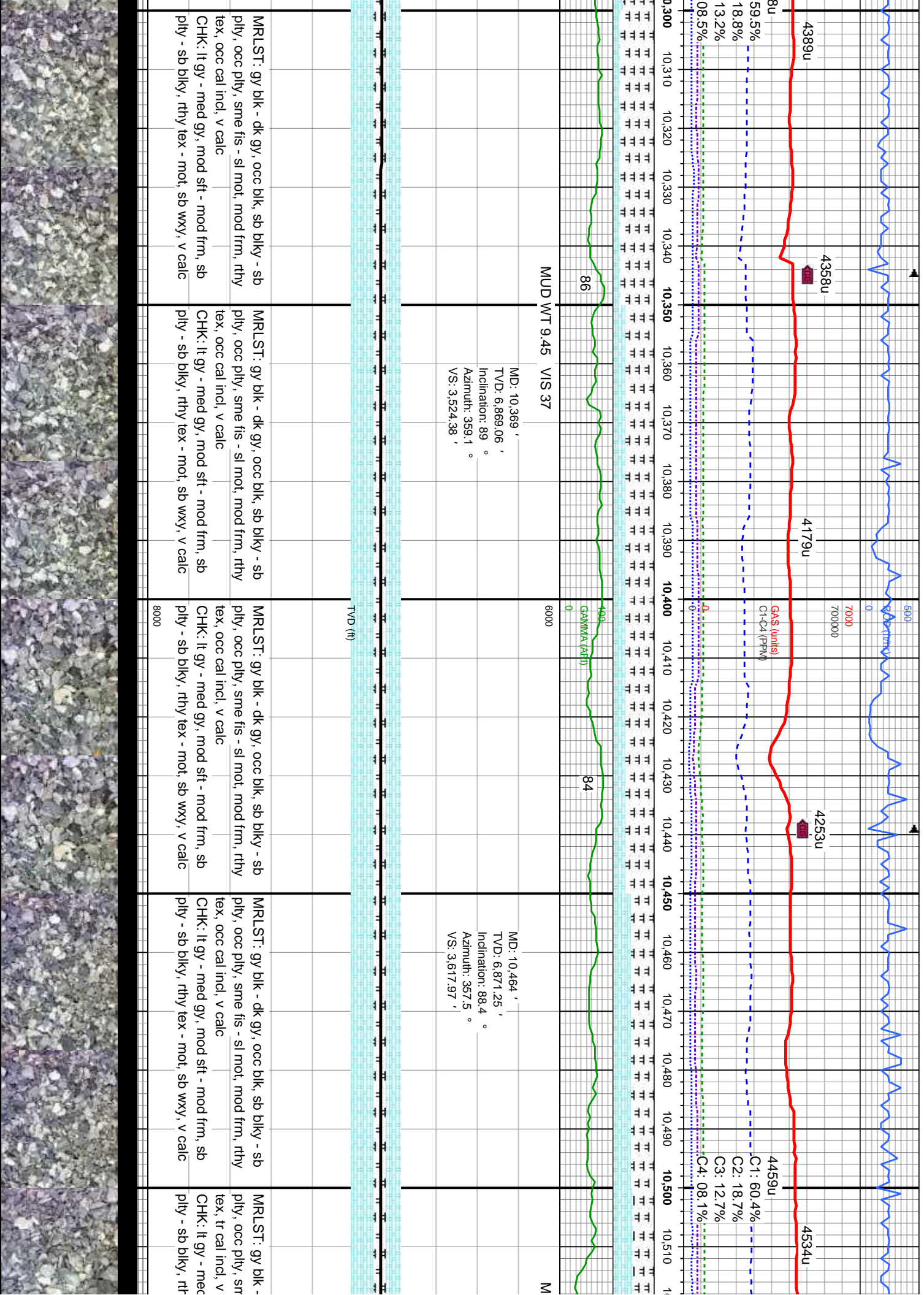


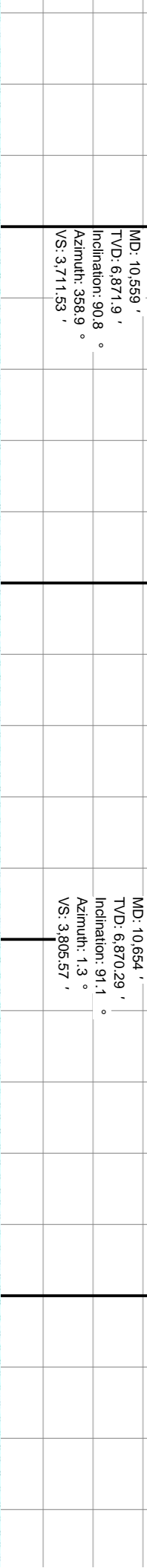
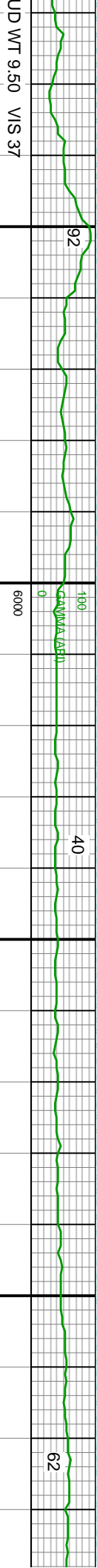
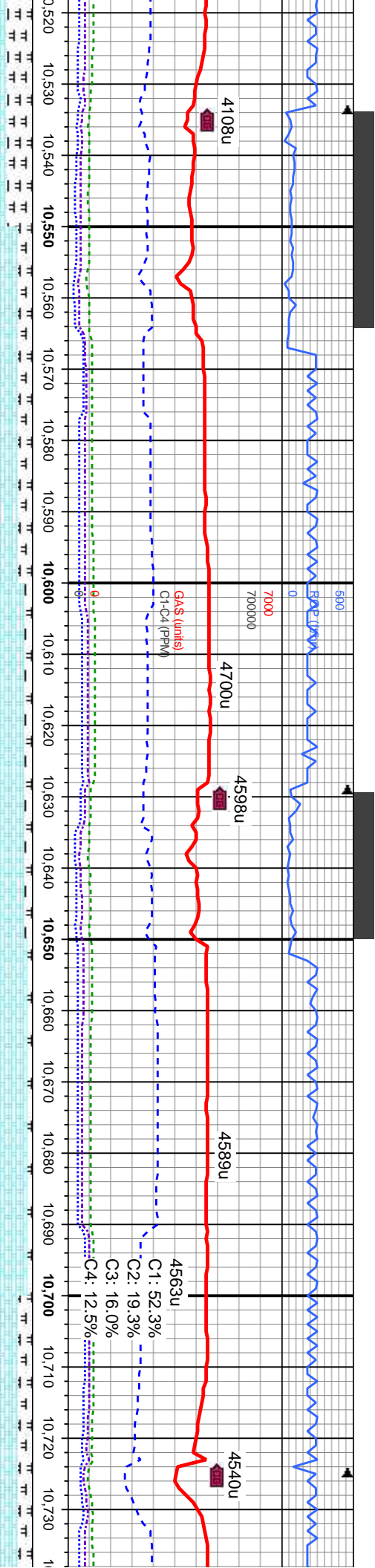






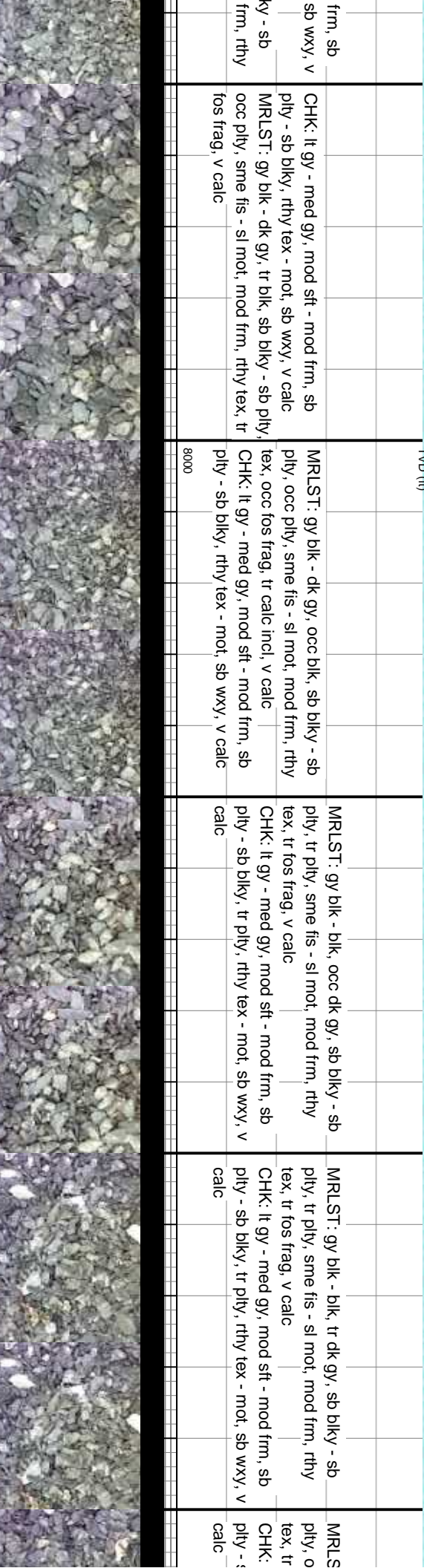
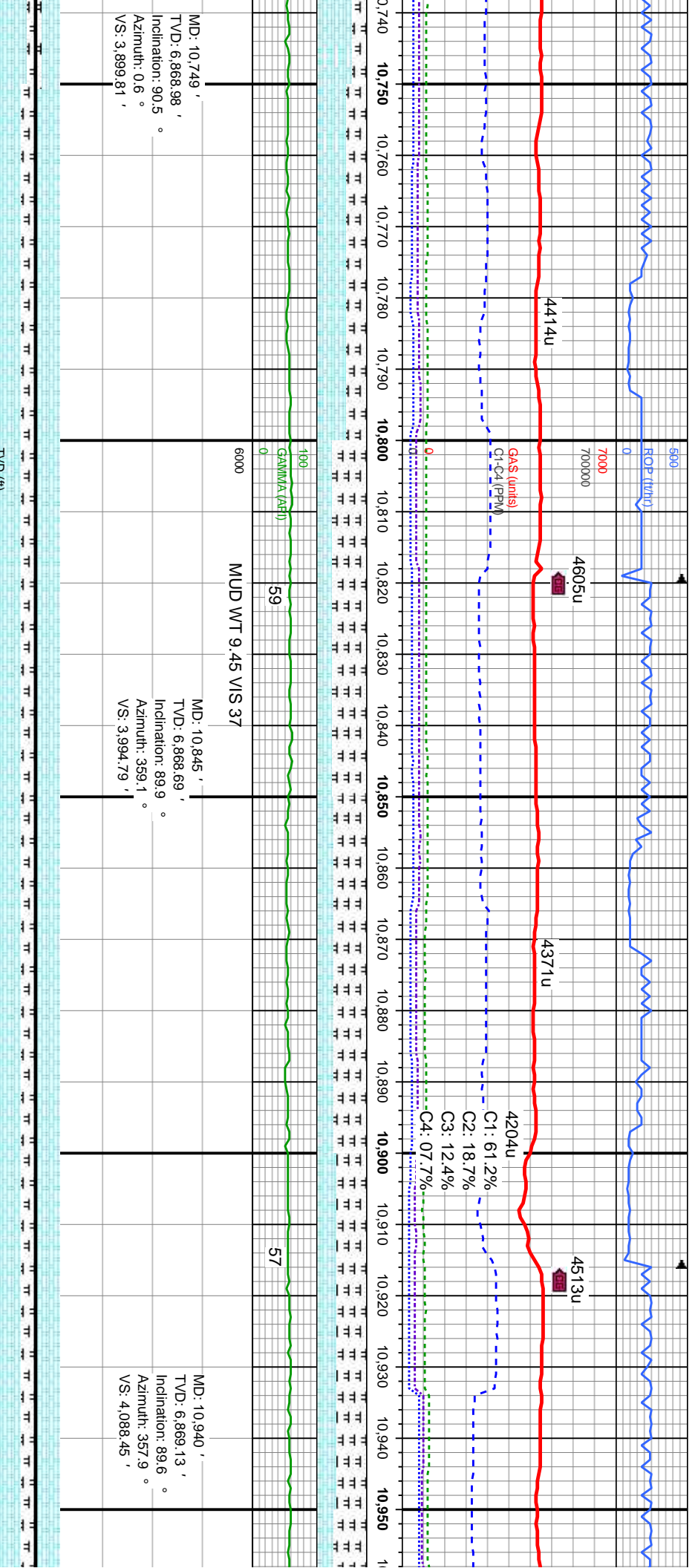


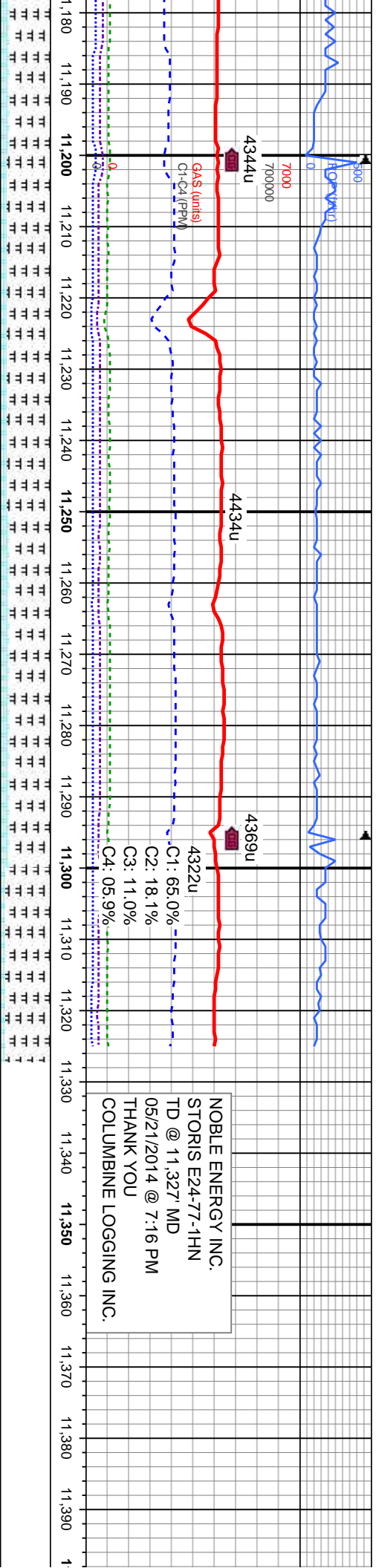




UD WT 9.50 VIS 37	92	6000	40	62
MD: 10,559 ' TVD: 6,871.9 ' Inclination: 90.8 ° Azimuth: 358.9 ° VS: 3,711.53 '	MD: 10,554 ' TVD: 6,870.29 ' Inclination: 91.1 ° Azimuth: 1.3 ° VS: 3,805.57 '	MD: 10,554 ' TVD: 6,870.29 ' Inclination: 91.1 ° Azimuth: 1.3 ° VS: 3,805.57 '	MD: 10,554 ' TVD: 6,870.29 ' Inclination: 91.1 ° Azimuth: 1.3 ° VS: 3,805.57 '	MD: 10,554 ' TVD: 6,870.29 ' Inclination: 91.1 ° Azimuth: 1.3 ° VS: 3,805.57 '
dk gy, occ blk, sb blk - sb e fis - sl mot, mod frm, rthy calc	CHK: lt gy - med gy, mod sft - mod frm, sb blk - sb blk, rthy tex - mot, sb wxy, v calc MRLST: gy blk - dk gy, occ blk, sb blk - sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, tr cal incl, v calc	CHK: lt gy - med gy, occ wht, mod sft - mod frm, sb blk - sb blk, rthy tex - mot, sb wxy, v calc MRLST: gy blk - dk gy, occ blk, sb blk - sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, tr cal incl, v calc	CHK: lt gy - med gy, occ wht, mod sft - mod frm, sb blk - sb blk, rthy tex - mot, sb wxy, v calc MRLST: gy blk - dk gy, occ blk, sb blk - sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, tr cal incl, v calc	CHK: lt gy - med gy, mod sft - mod frm, sb blk - sb blk, rthy tex - mot, sb wxy, v calc MRLST: gy blk - dk gy, tr blk, sb blk - sb blk, rthy tex - mot, sb wxy, v calc MRLST: gy blk - dk gy, tr blk, sb blk - sb blk, rthy tex - mot, sb wxy, v calc







MD: 11,223 '
TVD: 6,871.59 '
Inclination: 89.2 °
Azimuth: 353.1 °
VS: 4,364.55 '

MD: 11,257 '
TVD: 6,872.09 '
Inclination: 89.2 °
Azimuth: 352.6 °
VS: 4,397.36 '

gy, sb blkly - sb ply, mod frm, rthy tex, tr	MRLST: gy blk - blk, tr dk gy, sb blkly - sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, occ fos frag, tr calc incl, v calc	MRLST: gy blk - blk, tr dk gy, sb blkly - sb ply, occ ply, sme fis - sl mot, mod frm, rthy tex, occ fos frag, v calc	MRLST: gy blk - blk, occ dk gy, sb blkly - sb ply, tr ply, sme fis - sl mot, mod frm, rthy tex, tr fos frag, tr calc incl, v calc
sft - mod frm, sb	CHK: lt gy - med gy, mod sft - mod frm, sb	CHK: lt gy - med gy, mod sft - mod frm, sb	CHK: lt gy - med gy, mod sft - mod frm, sb
ex - mot, sb wxy, v	ply - sb blkly, rthy tex - mot, sb wxy, v calc	ply - sb blkly, rthy tex - mot, sb wxy, v calc	ply - sb blkly, rthy tex - mot, sb wxy, v calc
8000			



