



Scale: 5" / 100'
Measured Depth Log

Well Name Trisha LC29-74HNB

Location SWSE SEC 29 T9N R59W

State COLORADO

County WELD

Country UNITED STATES

Rig Number H&P 273

API Number 05-123-38778

Field WILDCAT

Region DJ BASIN

Drilling Completed 6/2/2014

Spud Date 5/22/2014

Surface Coordinates 340' FSL; 2129' FEL

Ground Elevation 4872'

K.B. Elevation 4896'

Logged Interval 5459' To 15548'

Total Depth 15548'

Formation NIOBRARA

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name SARAH COMPTON

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

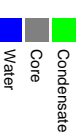
Other

Wellsite Geologist #1 LAURA KELLOGG

Wellsite Geologist #2 TIM BRIGHT

Wellsite Geological Services Provided By Columbine Logging Inc.

Zone Color Coding



Rock Types

| | | | | | |
|--|-----------------|--|-----------------|--|----------------------|
| | CHALK | | CEMENT | | SHALE GRAY |
| | MARLSTONE | | CHERT | | SIDERITE or LIMONITE |
| | SANDSTONE | | CLAY CHOKE SAND | | LIMESTONE |
| | SHALY SANDSTONE | | CLAYSTONE | | METAMORPHIC |
| | SILTY SHALE | | COAL | | NO SAMPLE |
| | UNKNOWN | | CONGLOMERATE | | SALT |
| | 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 | | PELECYPOD PELLET | | CALCAREOUS | | BENTONITE STRINGER |
| | BRACHIOPOD | | RISOLITE | | MINERAL CRYSTALS | | COAL STRINGER |
| | BRYOZOA | | PLANT REMAINS | | CHITDK | | DOLOMITE STRINGER |
| | CEPHALOPOD | | PLANT SPORES | | CHITLT | | GYPSUM STRINGER |
| | CORAL | | SCAPHOPOD | | COAL - THIN BEDS | | LIMESTONE STRINGER |
| | CRINOID | | STROMATOPOROID | | P PYRITE | | MARLSTONE (CALC) STRG |
| | ECHINOID | | FELDSPAR | | SALT CAST | | MARLSTONE (DOL) STRG |
| | FISH | | FERRUGINOUS PELLET | | SANDY | | SANDSTONE STRINGER |
| | FORAMINIFERA | | FERRUGINOUS | | SILTY | | SHALE STRINGER |
| | | | ANHYDRITIC | | | | SILTSTONE STRINGER |

Minerals

Oth

Oil Show

| | | | |
|--|------------------|--|------------|
| | MOLDIC | | ORGANIC |
| | DEAD | | P PINPOINT |
| | EVEN | | V VUGGY |
| | QUESTIONABLE | | |
| | SPOTTED STAINING | | |

Engineering

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

Porosity

| | |
|--|-------------------|
| | CONNECTION (LEFT) |
|--|-------------------|

E EARTHY

| | |
|--|--------------------|
| | CONNECTION (RIGHT) |
|--|--------------------|

F FENESTRAL

| | |
|--|----------|
| | FRACTURE |
|--|----------|

INTERCRYSTALLINE

| | |
|--|------------------|
| | CORE - RECOVERED |
|--|------------------|

CORE - LOST

| | |
|--|--------------|
| | DST INTERVAL |
|--|--------------|

INTEROOLITIC

| | |
|--|----------|
| | FRACTURE |
|--|----------|

er Symbols

ULT  WIRELINE TESTED - LEFT **E** EARTHY

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

GAS SHOW **GS** GRAINSTONE

Rounding

DEPTH MN DEPTH **L** LITHOGRAPHIC

IRRMAL FAULT **A** ANGULAR **MX** MICROXLN

L SHOW **R** ROUNDED **MS** MUDSTONE

VERTURNED STRATA **B** SUBANG **PS** PACKSTONE

VERSE FAULT **F** SUBRND **WS** WACKESTONE

DEWALL CORE (LEFT)

Textures

DEWALL CORE (RIGHT)

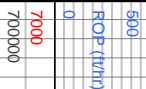
IDE **BS** BOUNDSTONE **M** MODERATE

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

RIP GAS **CX** CRYPTOXLN **W** WELL

Slide/Rotate

ROP
ROP (ft/hr)



Total Gas & Chromatograph

GAS
C1
C2
C3
C4

COLUMBINE LOGGING INC.
RIGGED UP ON 05/23/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0680
COLUMBINE BEGAN LOGGING
ON 05/23/2014

BHA BIT:
Security 8.75" MMD55M
Serial #: 12437588
Jets: 5x16

50' Sample Interval

932u

C1: 90.4%
C2: 3.5%
C3: 6.1%
C4: 0.0%

nl(s)

ppm(l)

2285u

1558u

Depth Labels

% Lith

Gamma

GAMMA



5500



5500

115

MD: 5,526 '
TVD: 5,511.04 '
Inclination: 4.22 °
Azimuth: 333.64 °
VS: -61.51 '

MD: 5,574 '
TVD: 5,558.56
Inclination: 11.4
Azimuth: 340.1
VS: -55.41 '

Well Bore
TVD (ft)

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.

SLTY SH: gy-dk gy, occ blk, sb blk-ss, tr pyr

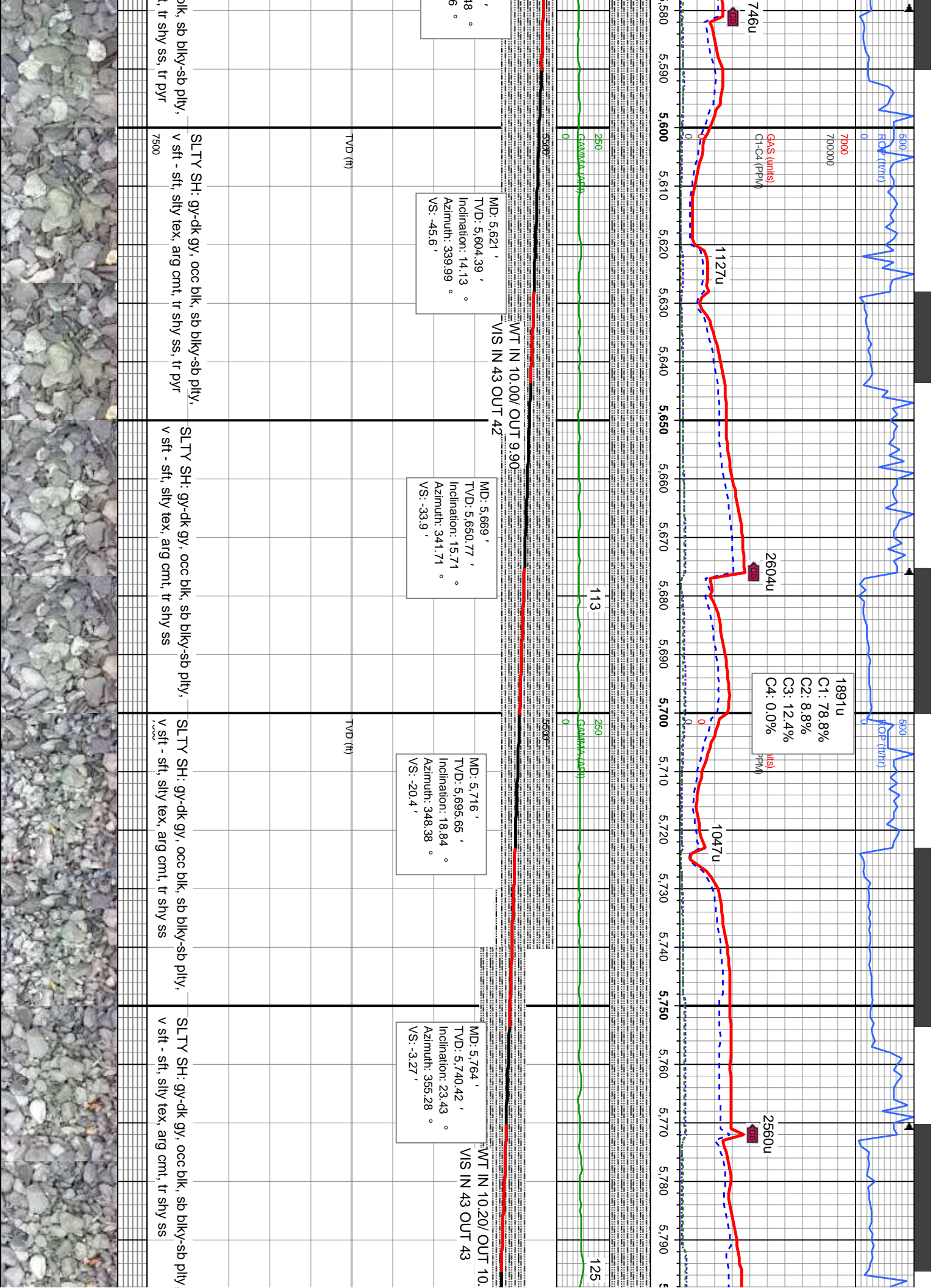
SLTY SH: gy-dk gy, occ blk, sb blk-ss, tr pyr

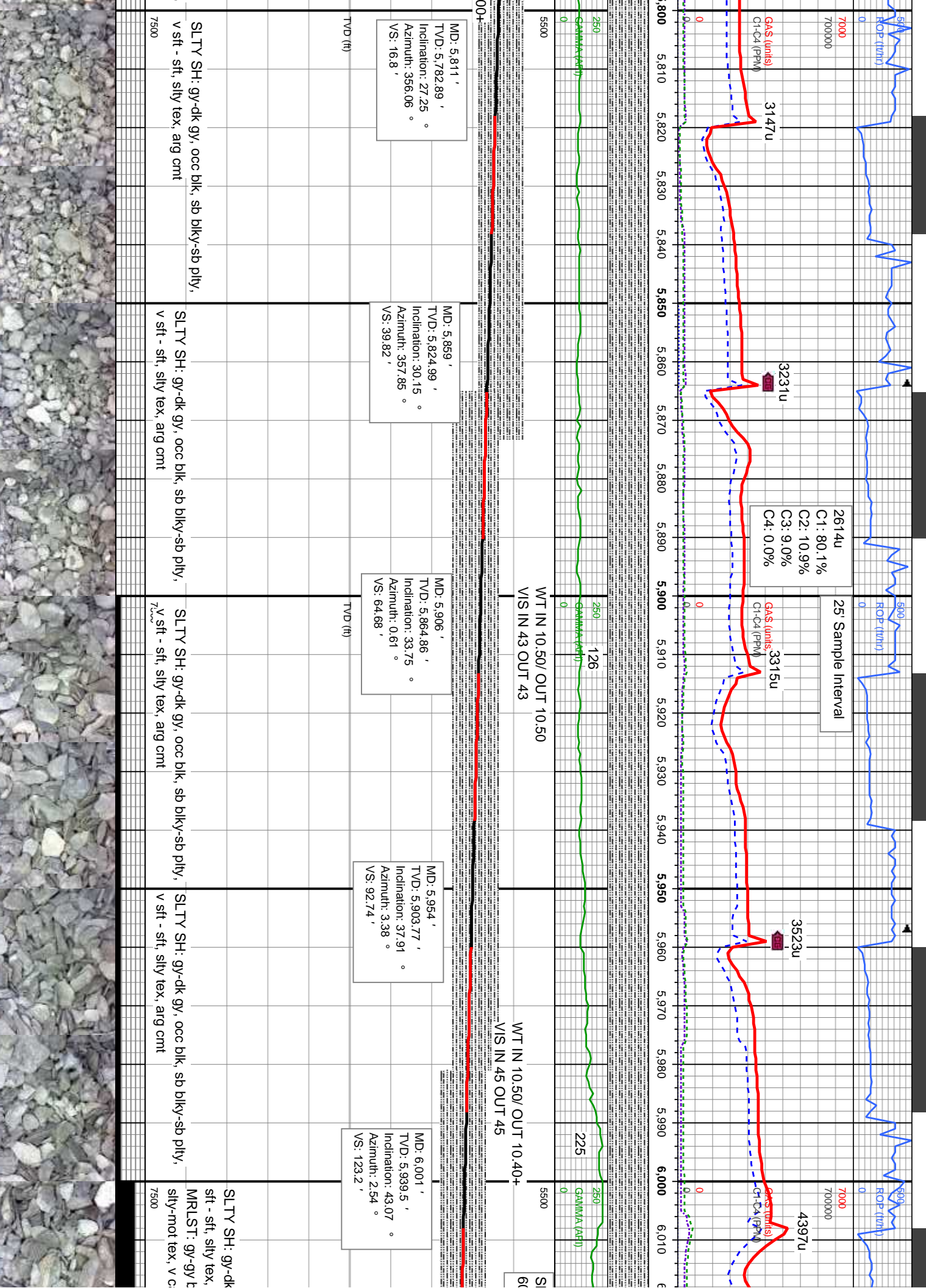
SLTY SH: gy-dk gy, occ blk, sb blk-ss, tr pyr

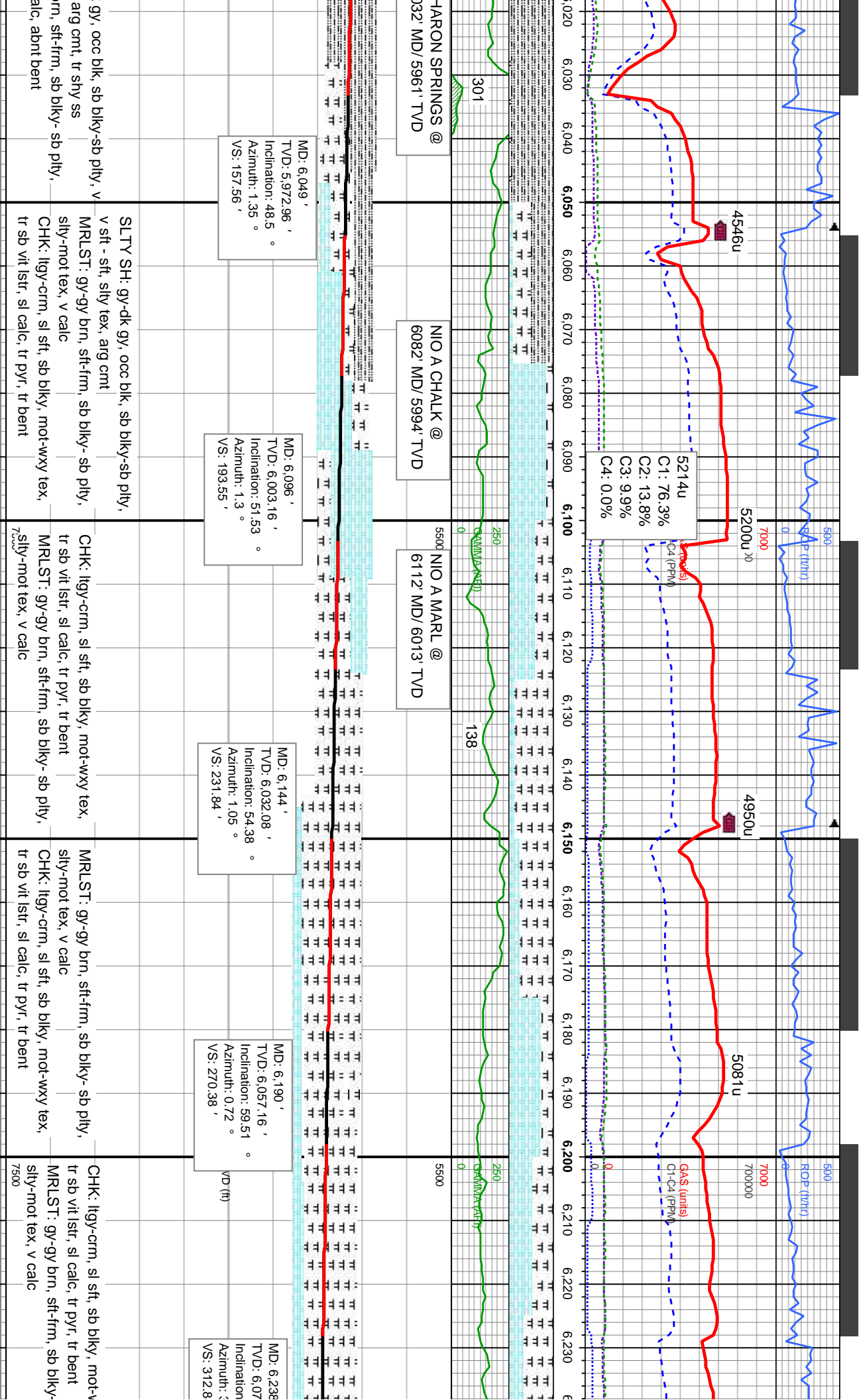
Oil Show

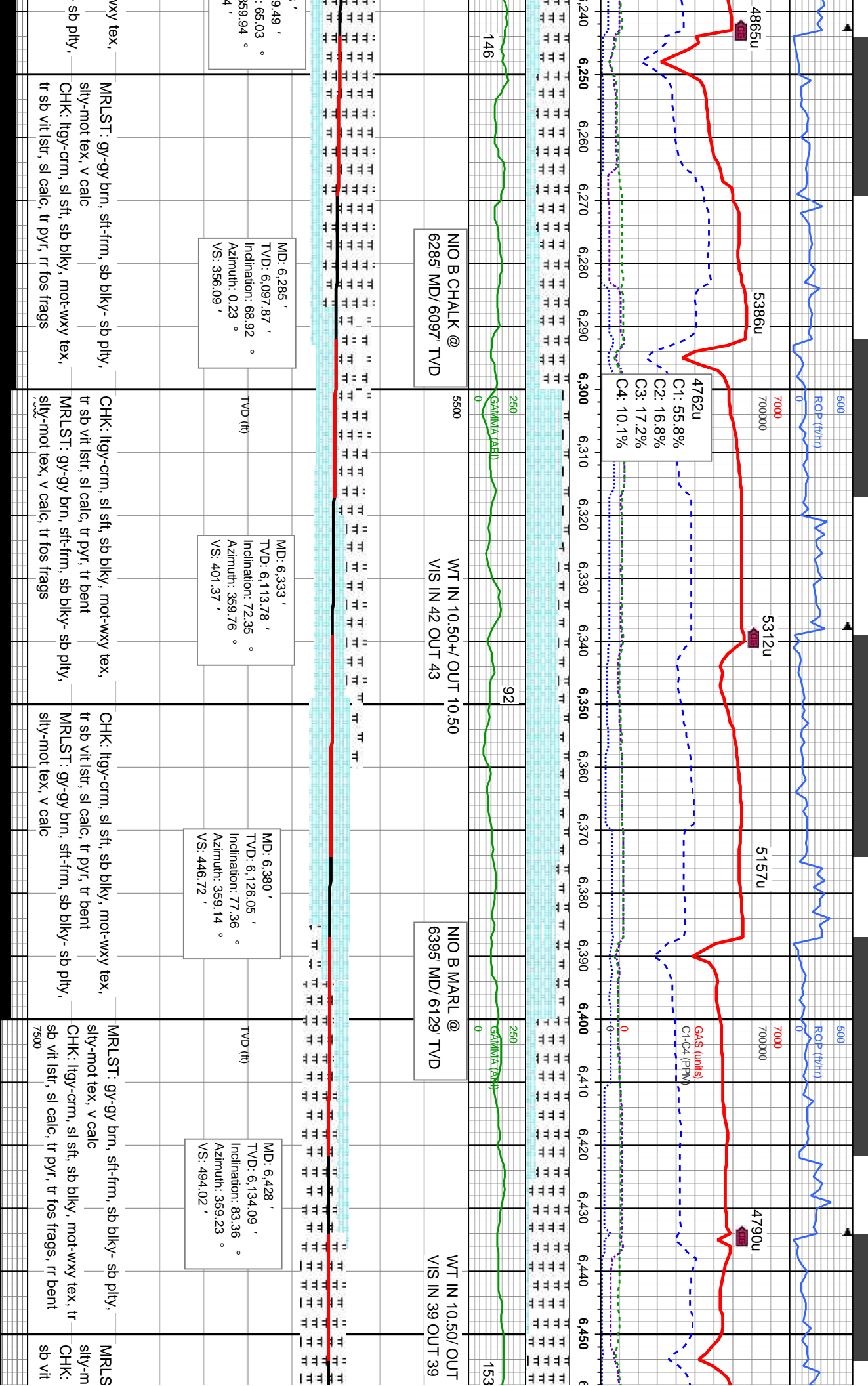
Images

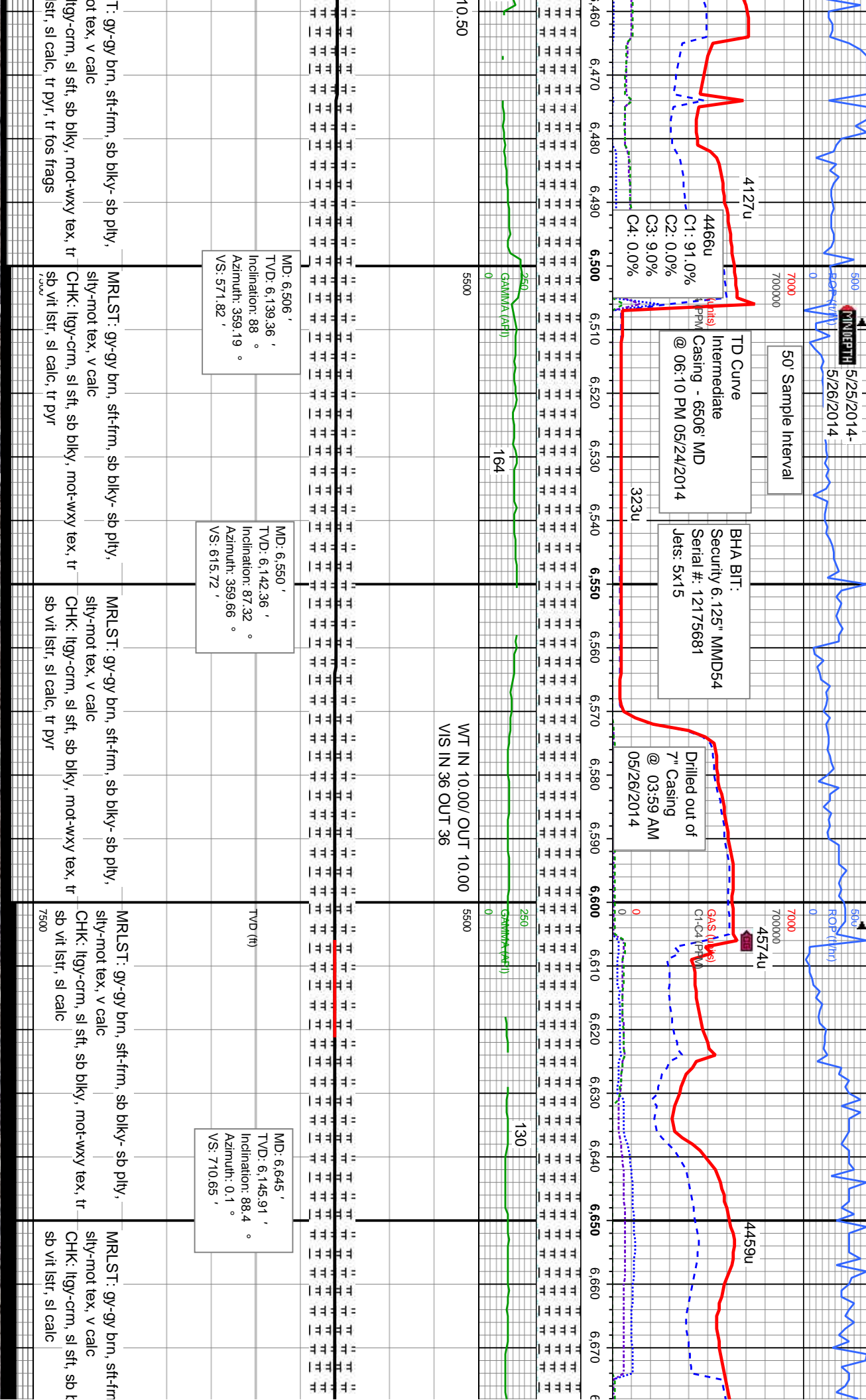












MD: 6,506 '
TVD: 6,139.36 '
Inclination: 88 °
Azimuth: 359.19 °
VS: 571.82 '

MD: 6,550 '
TVD: 6,142.36 '
Inclination: 87.32 °
Azimuth: 359.66 °
VS: 615.72 '

MD: 6,645 '
TVD: 6,145.91 '
Inclination: 88.4 °
Azimuth: 0.1 °
VS: 710.65 '

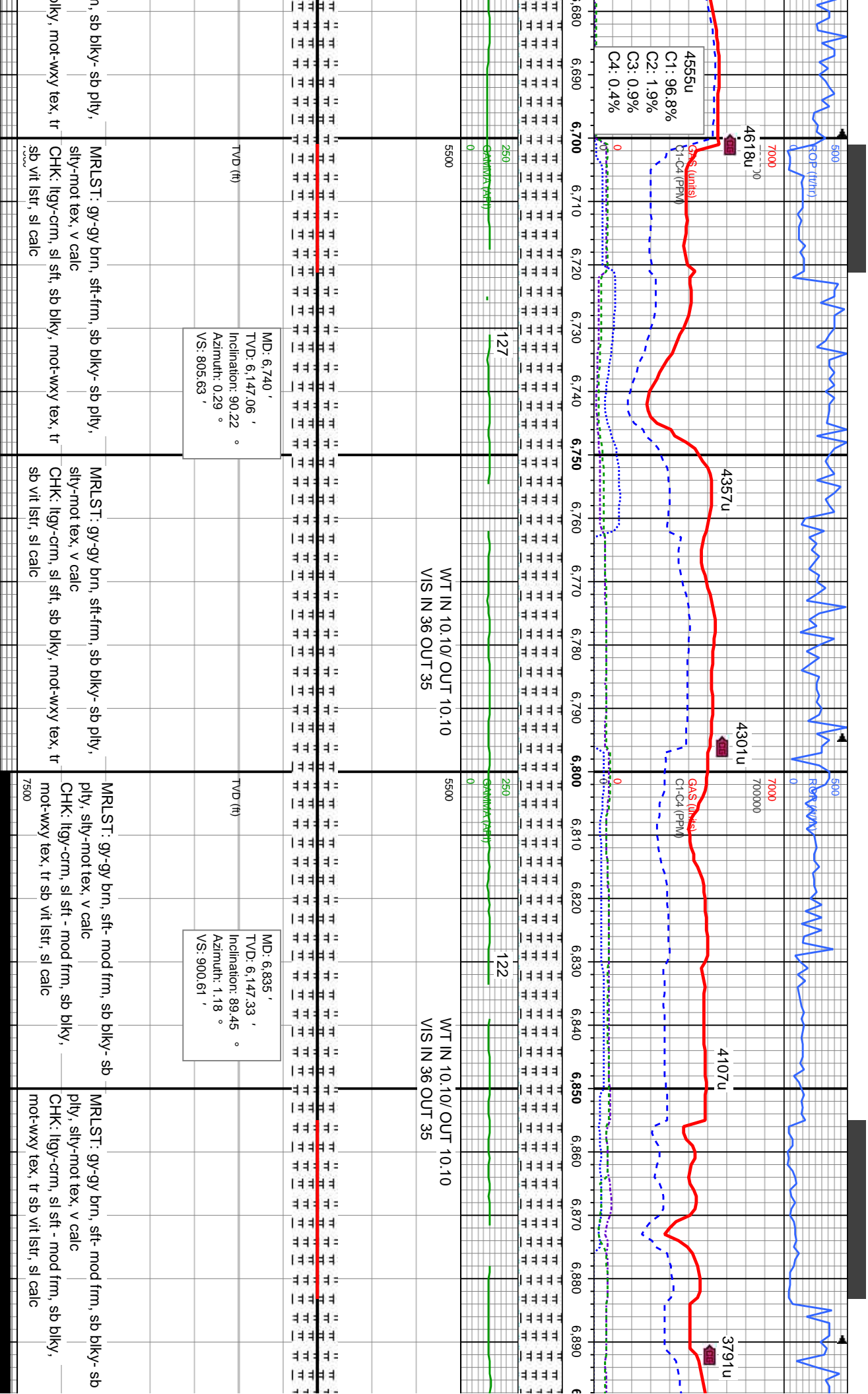
T: gy-gy brn, sft-frm, sb blk-y- sb ply,
ot tex, v calc
MRLST: gy-gy brn, sft-frm, sb blk-y- sb ply,
sily-mot tex, v calc
CHK: lly-gy-crm, sl sft, sb blk-y, mot-wxy tex, tr
sly vit lstr, sl calc, tr pyr, tr fos frags

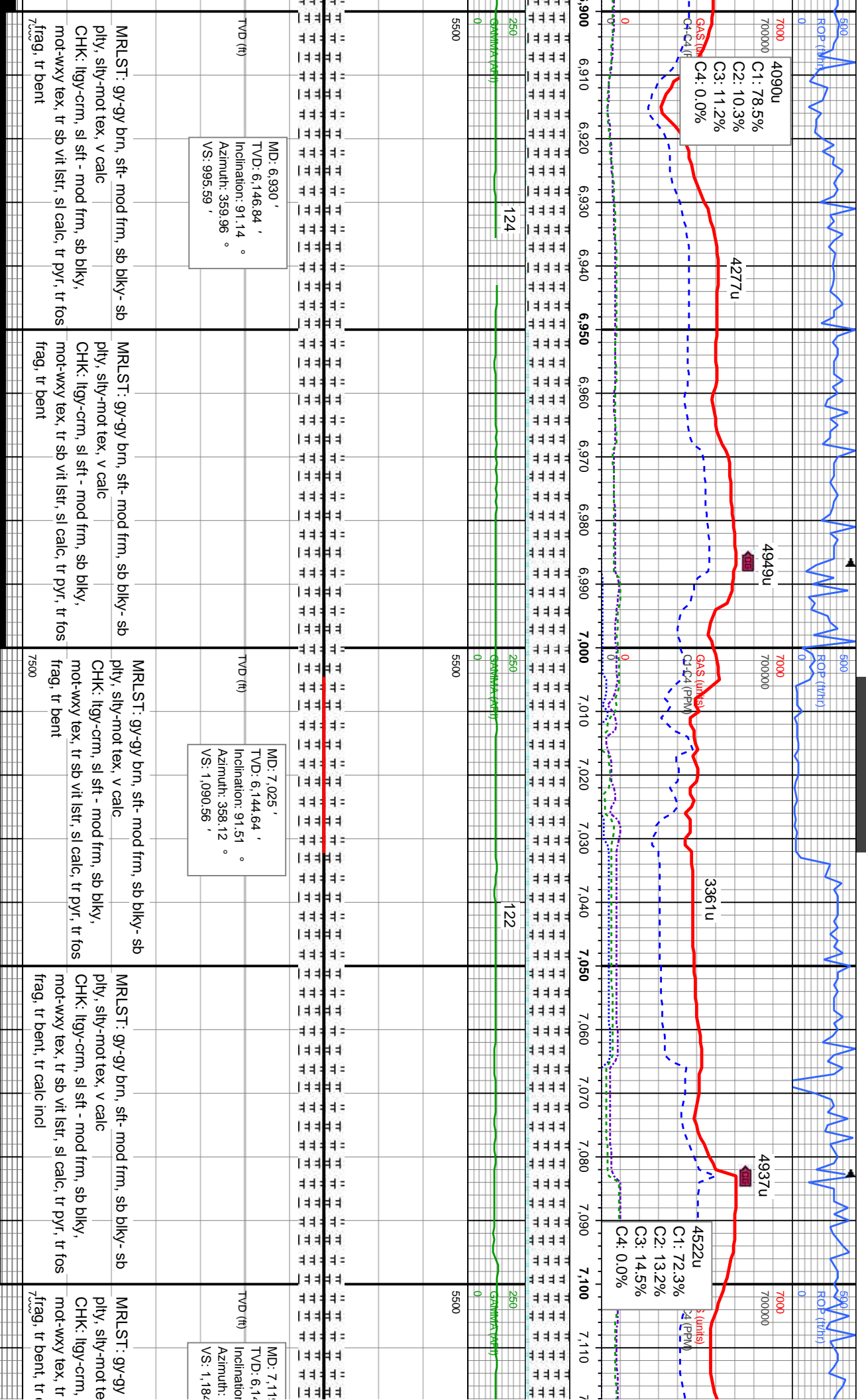
MRLST: gy-gy brn, sft-frm, sb blk-y- sb ply,
sily-mot tex, v calc
CHK: lly-gy-crm, sl sft, sb blk-y, mot-wxy tex, tr
sly vit lstr, sl calc, tr pyr

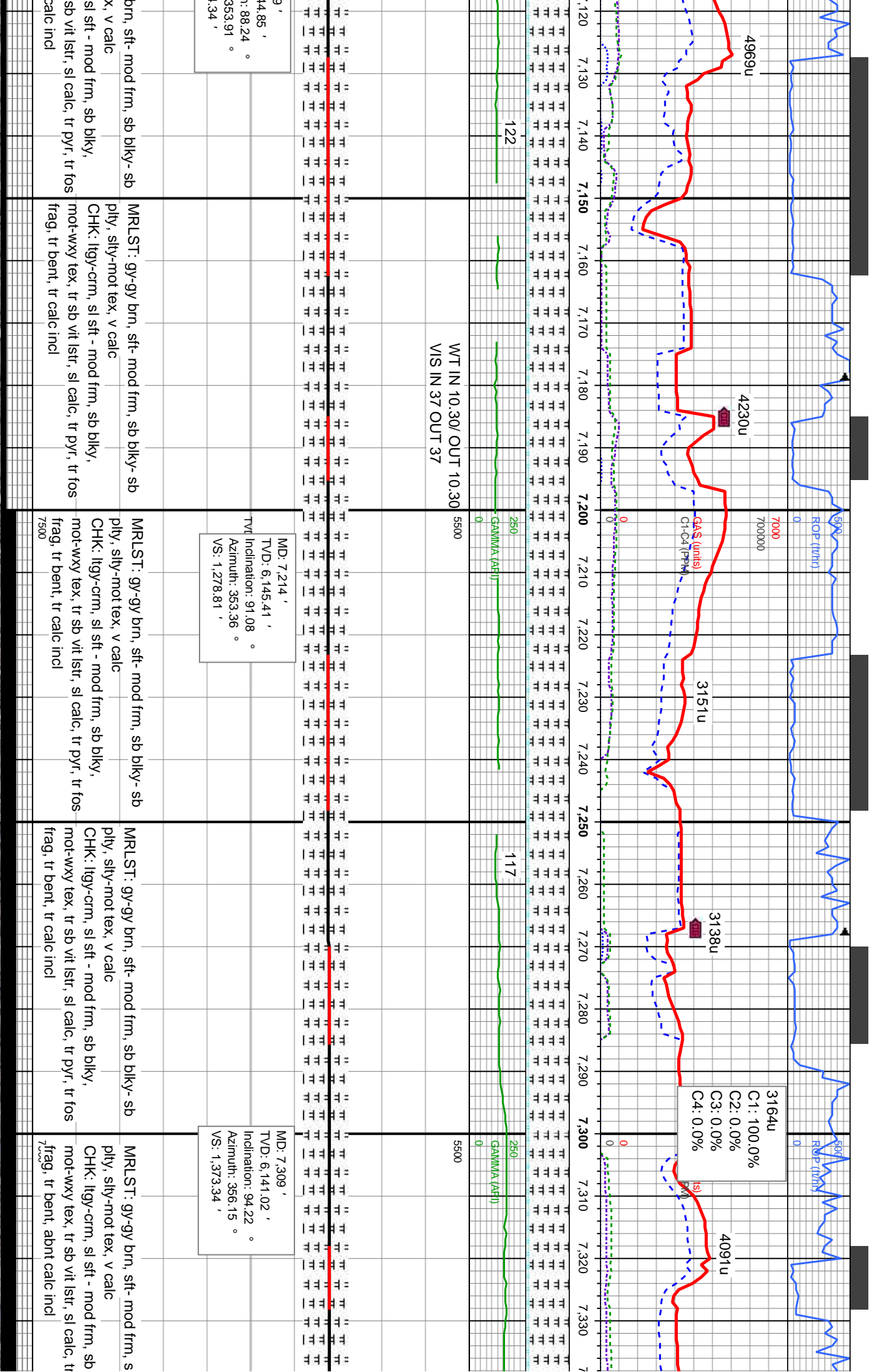
MRLST: gy-gy brn, sft-frm, sb blk-y- sb ply,
sily-mot tex, v calc
CHK: lly-gy-crm, sl sft, sb blk-y, mot-wxy tex, tr
sly vit lstr, sl calc

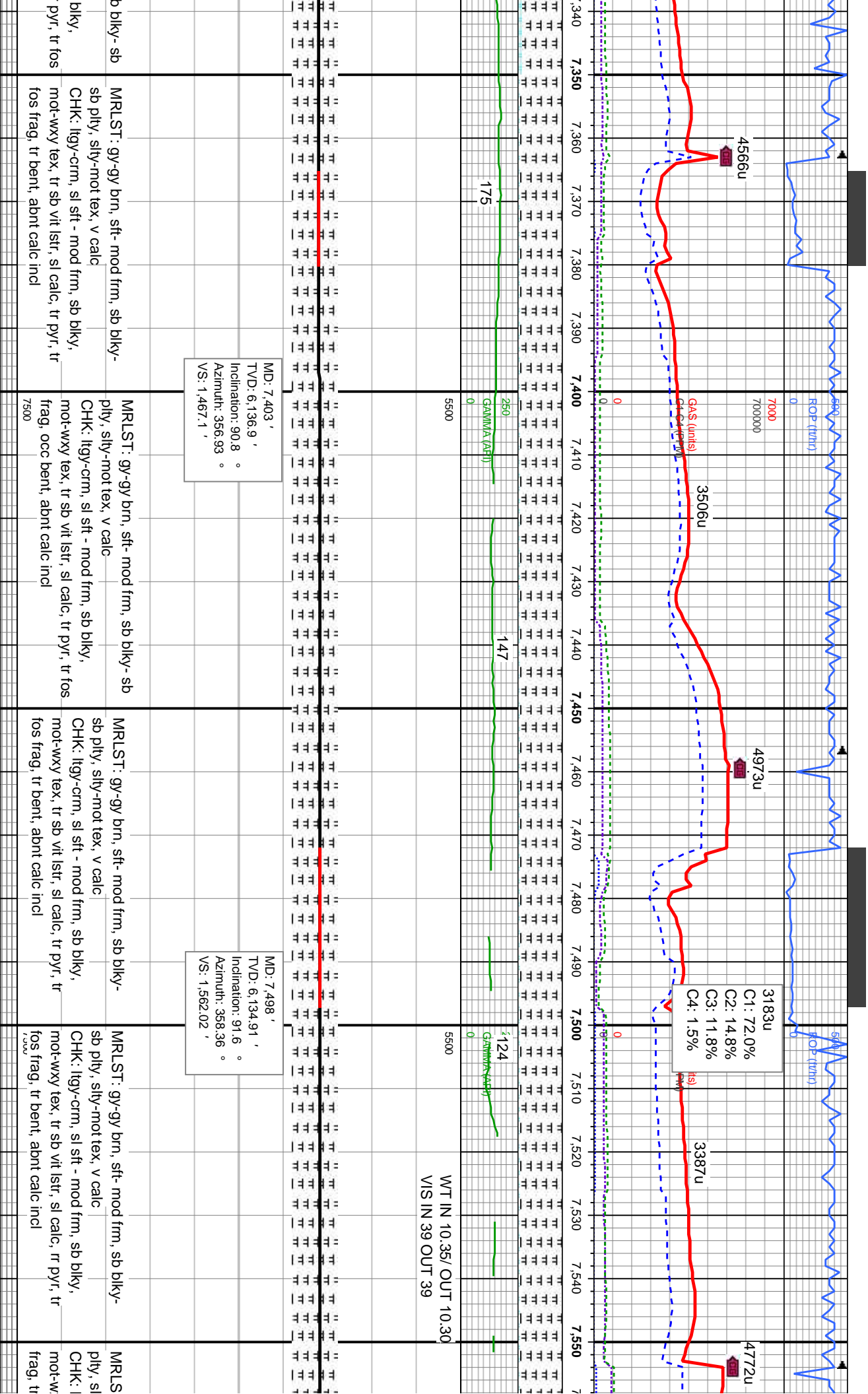
MRLST: gy-gy brn, sft-frm, sb blk-y- sb ply,
sily-mot tex, v calc
CHK: lly-gy-crm, sl sft, sb blk-y, mot-wxy tex, tr
sly vit lstr, sl calc

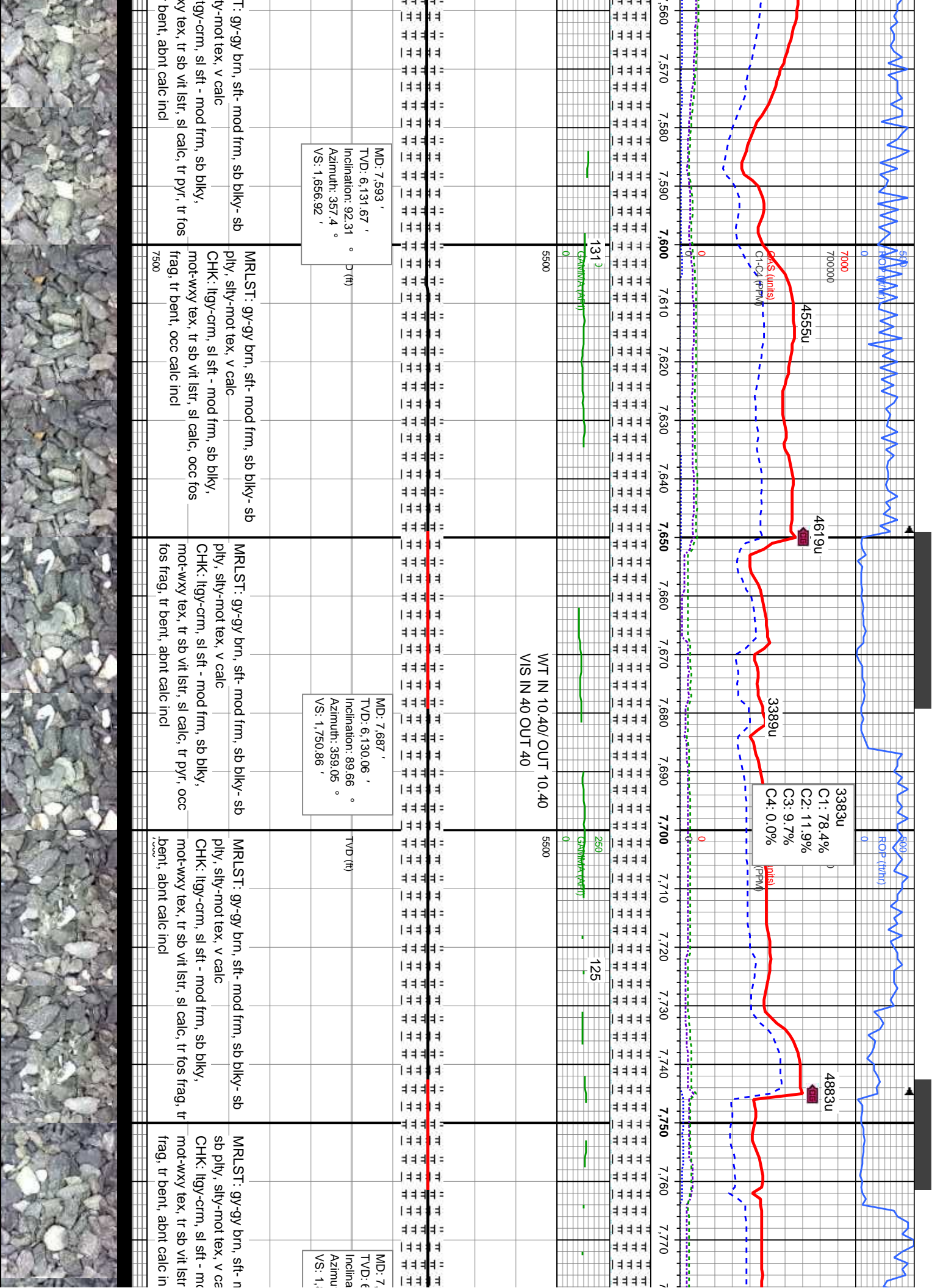


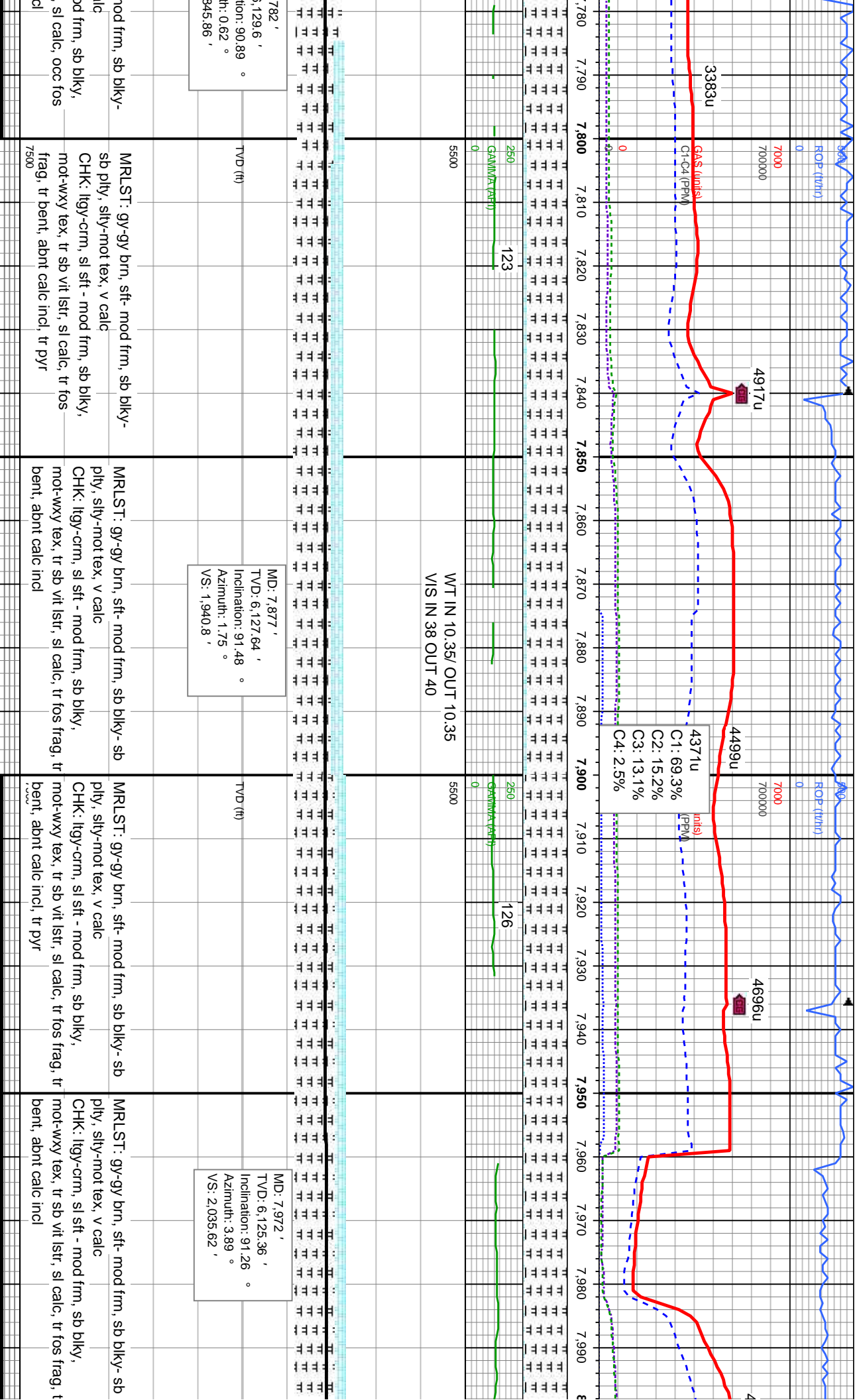


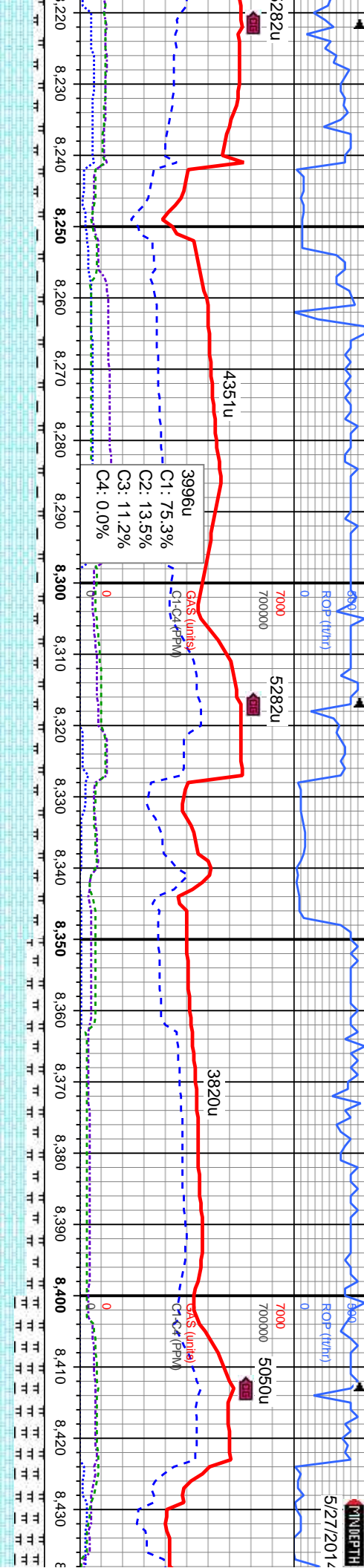












WT IN 10.20/ OUT 10.30
VIS IN 38 OUT 40

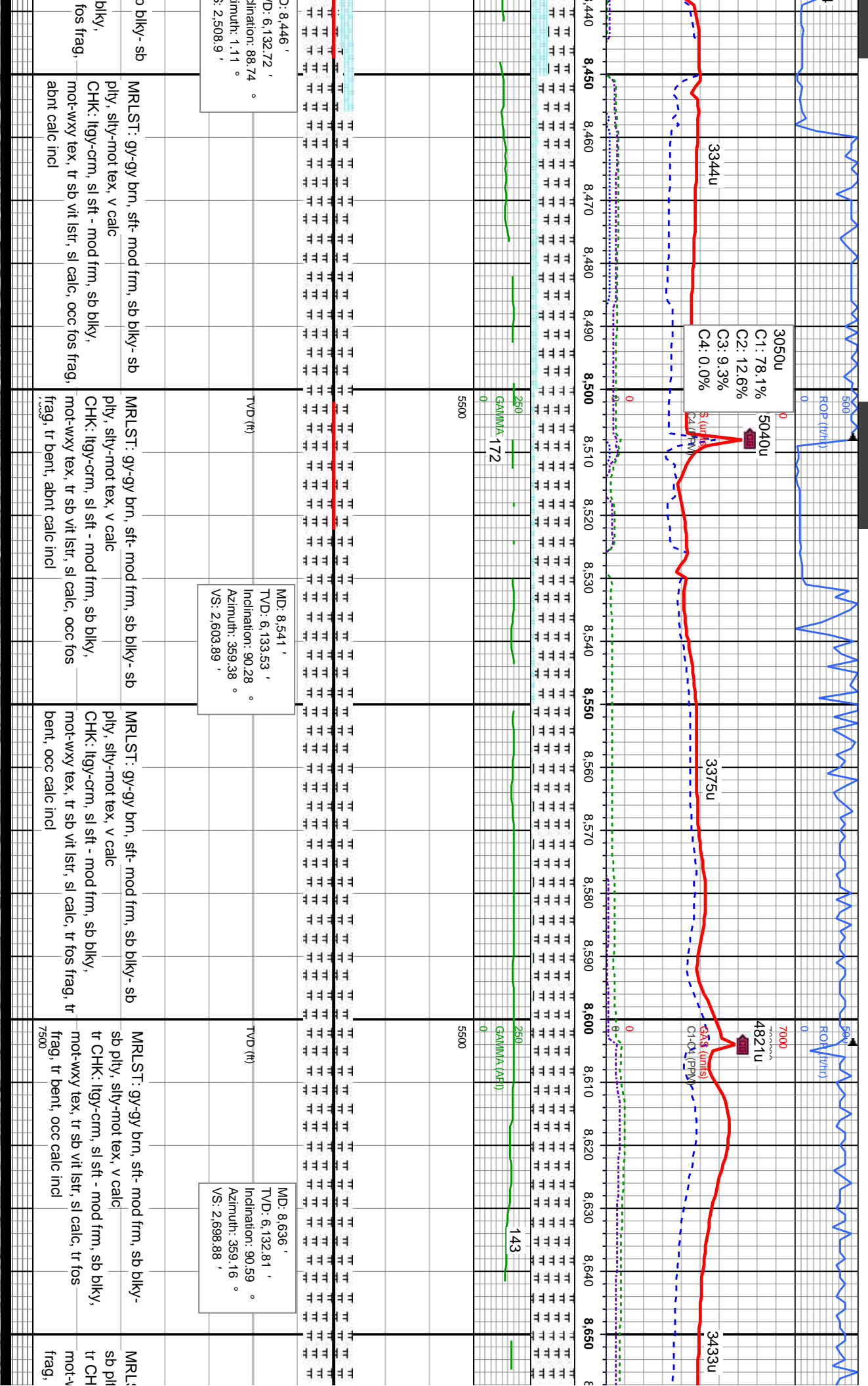
WT IN 10.40/ OUT 10.40
VIS IN 40 OUT 40

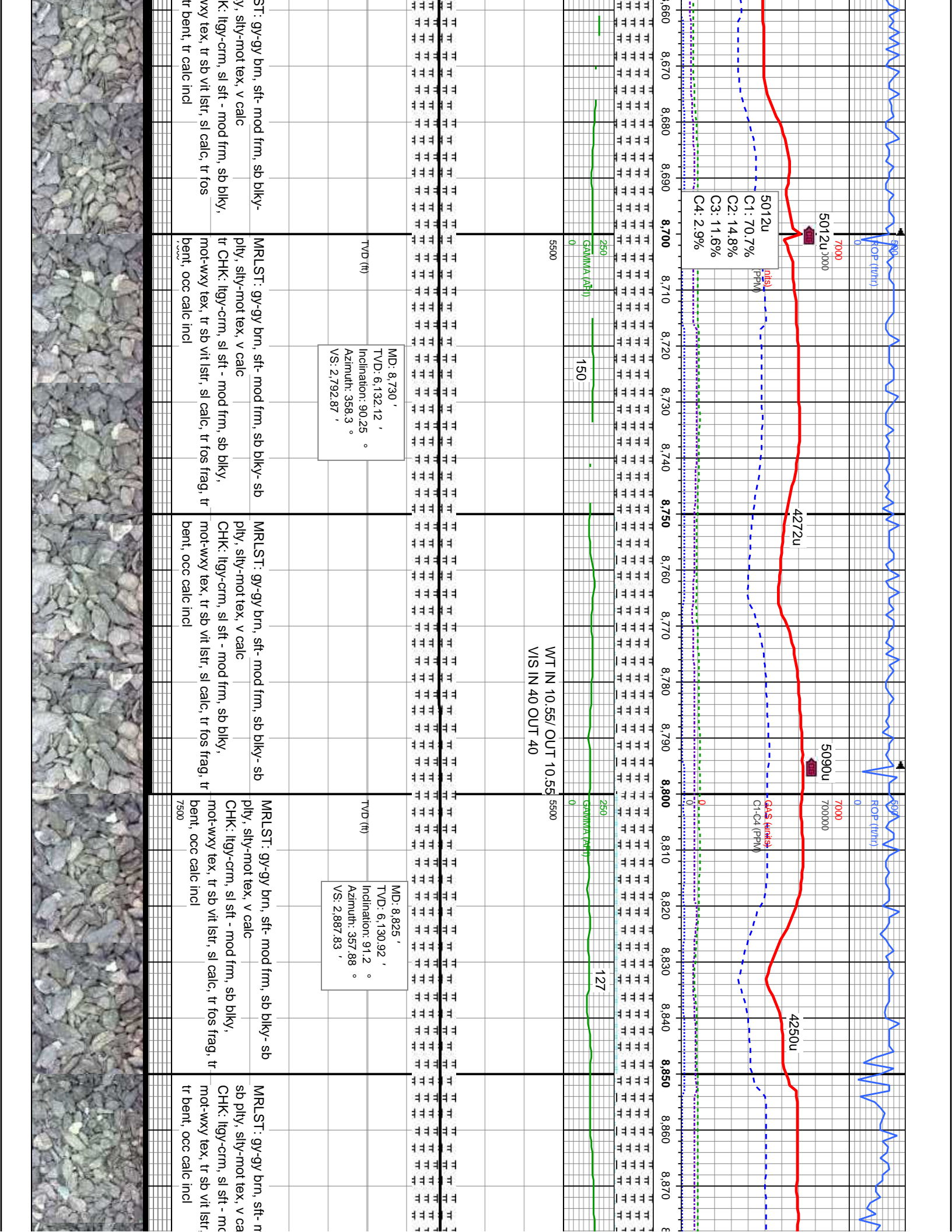
MD: 8,256 '
TVD: 6,125.68 '
Inclination: 87.57 °
Azimuth: 1.26 °
VS: 2,319.08 '

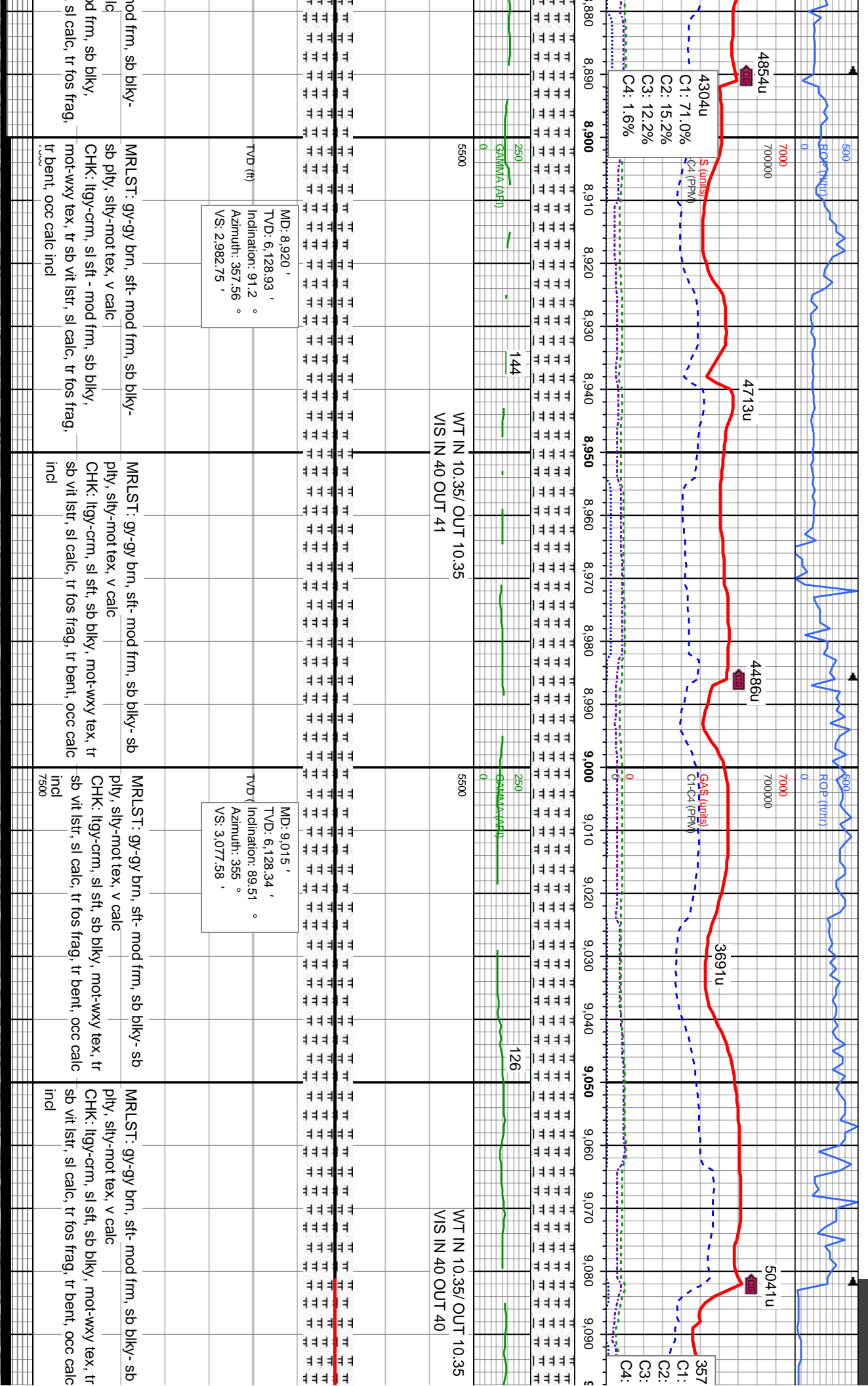
MD: 8,351 '
TVD: 6,129.69 '
Inclination: 87.6 °
Azimuth: 0.39 °
VS: 2,413.97 '

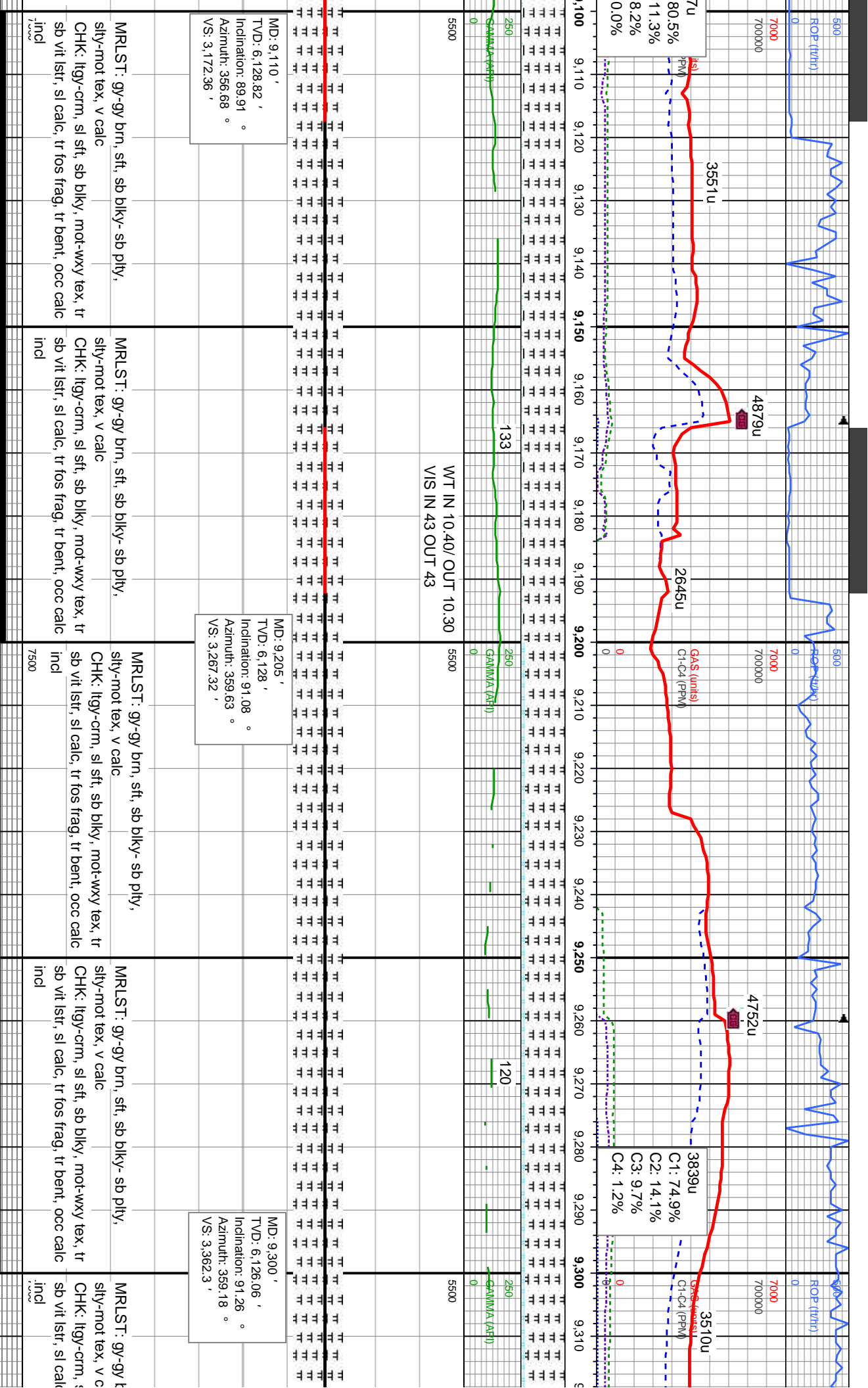
| | | | | | | | | | | |
|----------------------------------|--|--|--|--|--|--|--|--|---|--|
| l sft, sb blkly, mot-wxy tex, tr | CHK: lly-crm, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, sl calc | CHK: lly-crm, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, sl calc | MRSLT: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr calc incl, rr pyr, tr bent, | MRSLT: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr calc incl, rr pyr, tr fos frags | CHK: lly-crm, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, sl calc | MRSLT: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, tr calc incl, rr pyr, tr fos frags | CHK: lly-crm, sl sft, sb blkly, mot-wxy tex, tr sb vit lstr, sl calc | MRSLT: gy-gy brn, sft-frm, sb blkly- sb ply, silty-mot tex, v calc, occ calc incl, occ fos frags | MRSLT: gy-gy brn, sft- mod frm, sl ply, silty-mot tex, v calc | CHK: lly-crm, sl sft - mod frm, sb mot-wxy tex, tr sb vit lstr, sl calc, tr abnt calc incl |
|----------------------------------|--|--|--|--|--|--|--|--|---|--|

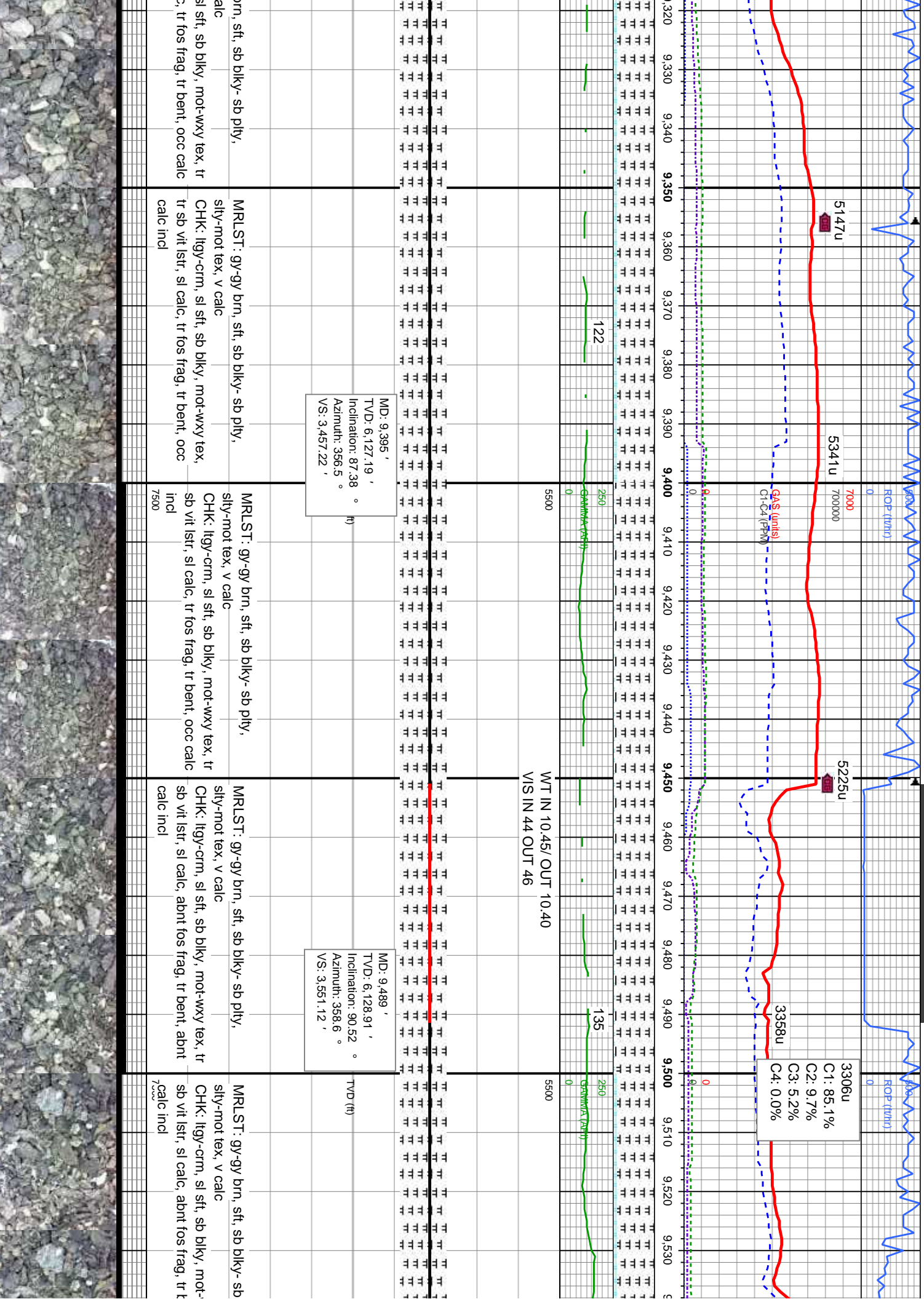


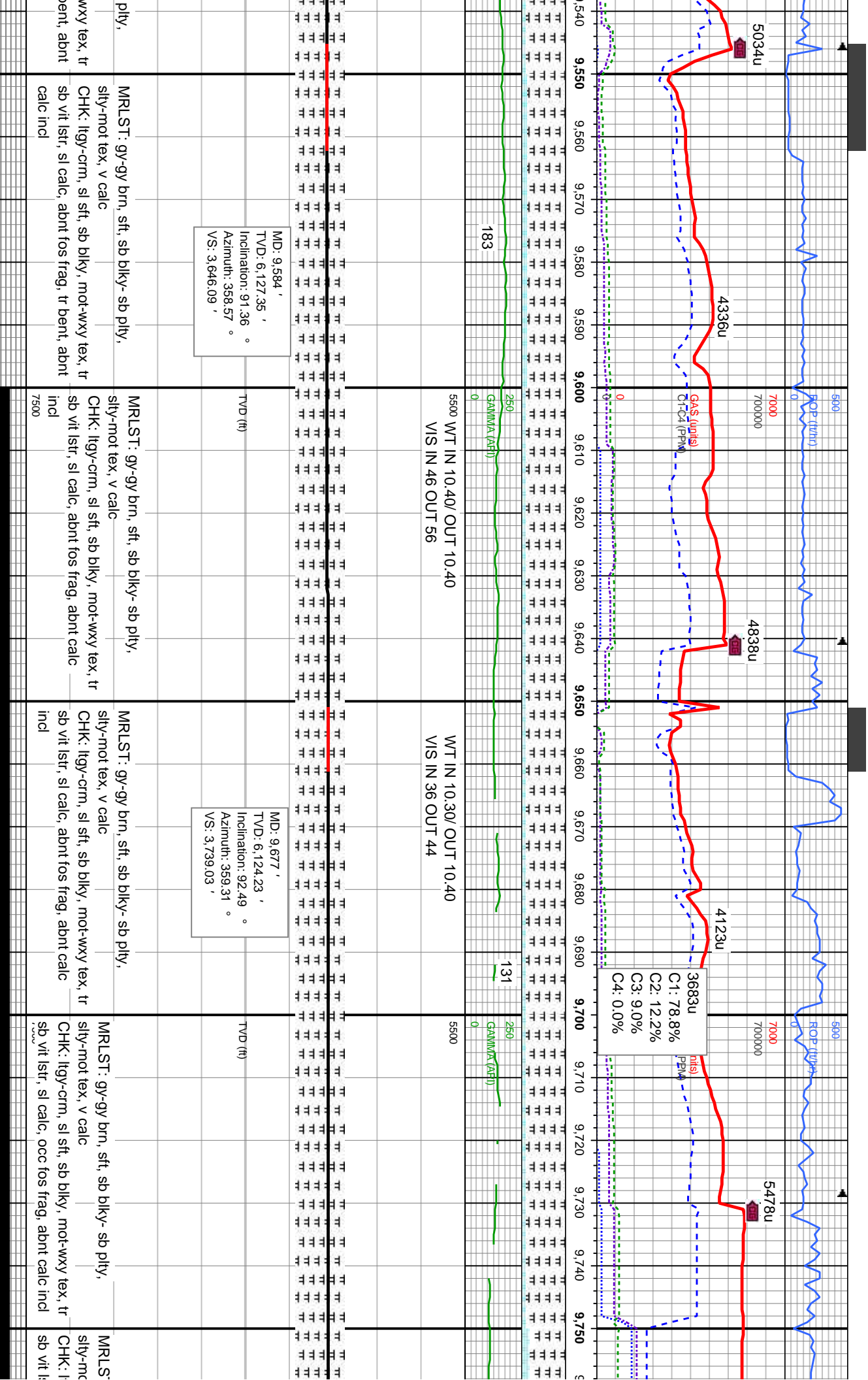


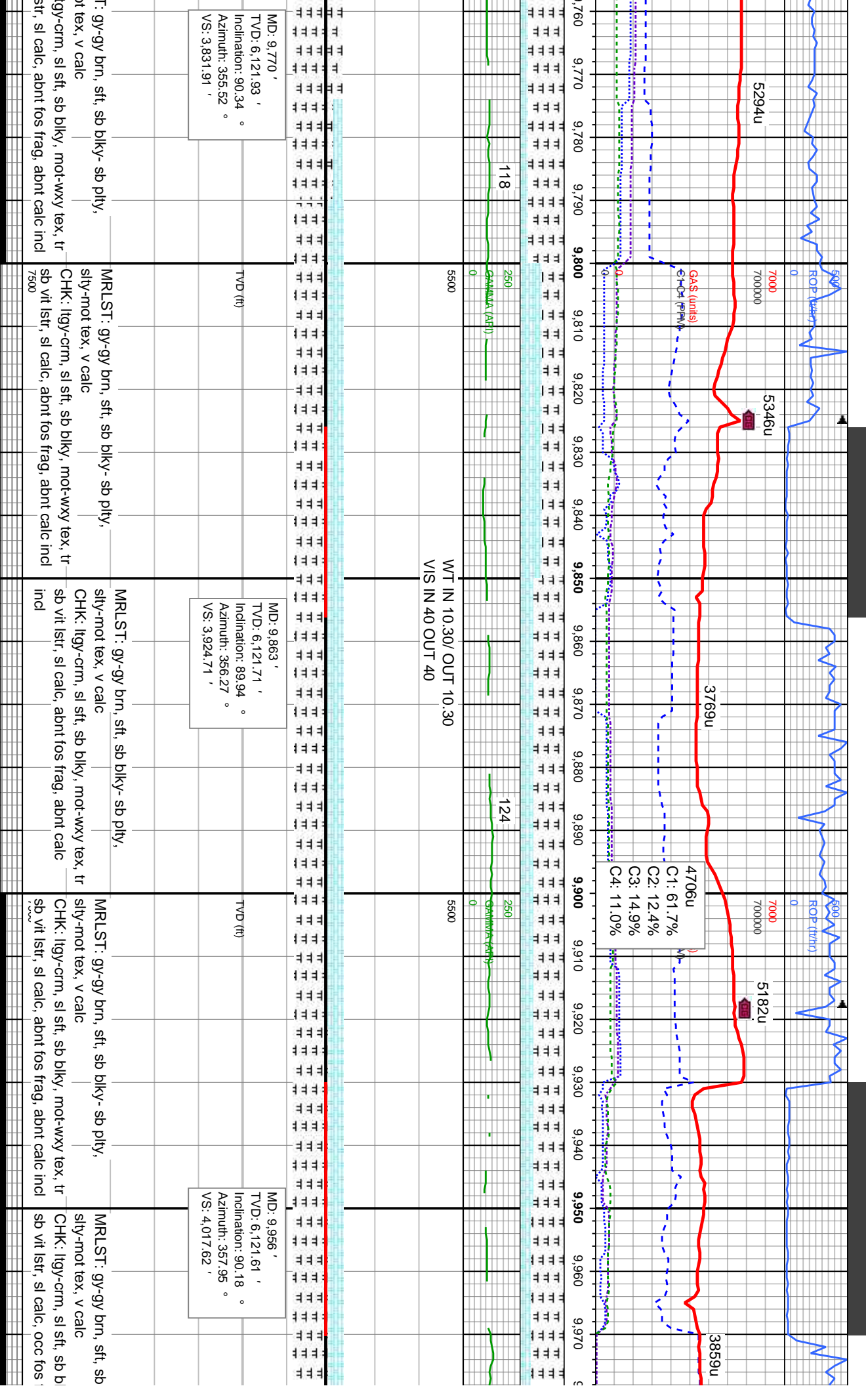






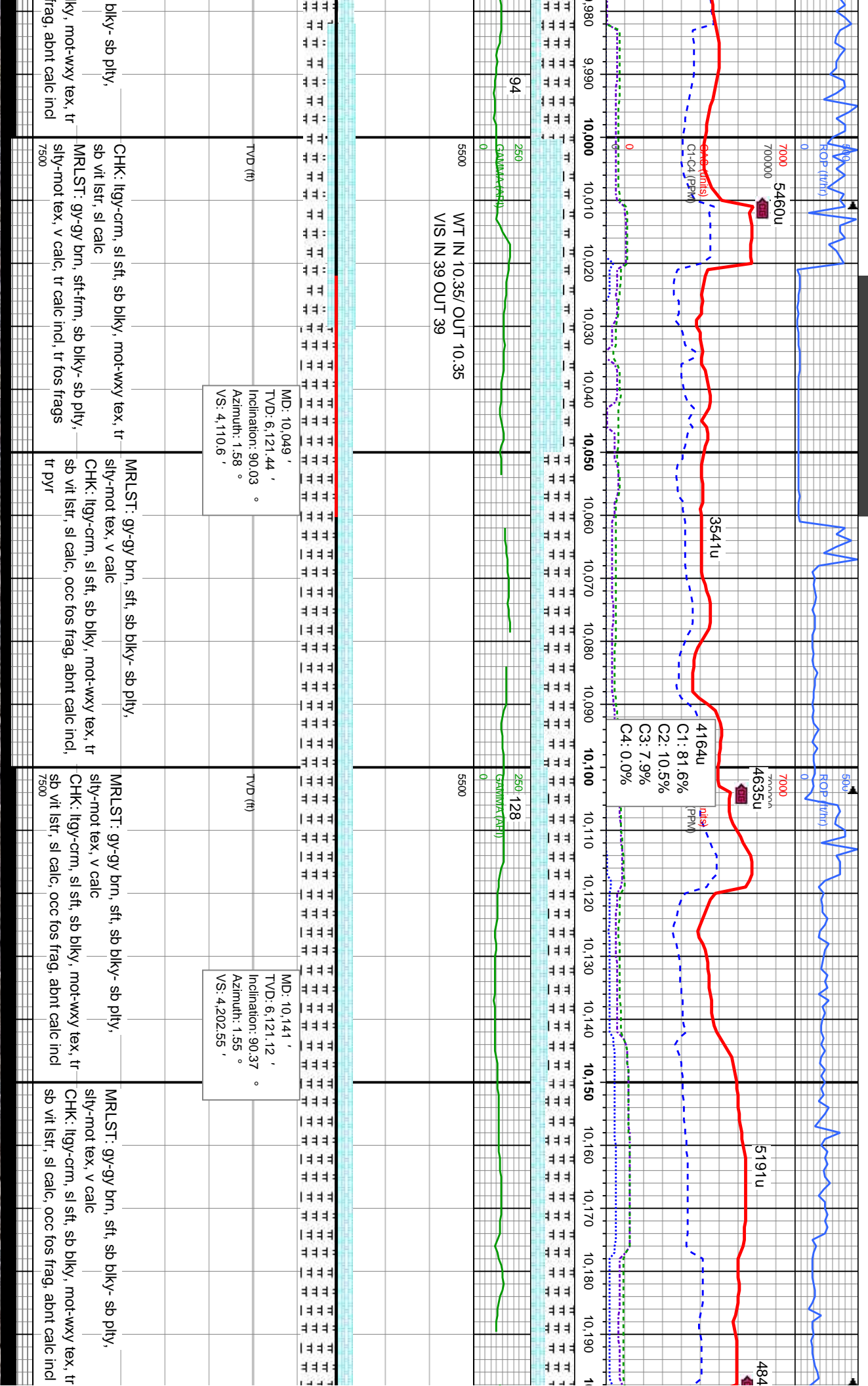






C1: 61.7%
C2: 12.4%
C3: 14.9%
C4: 11.0%

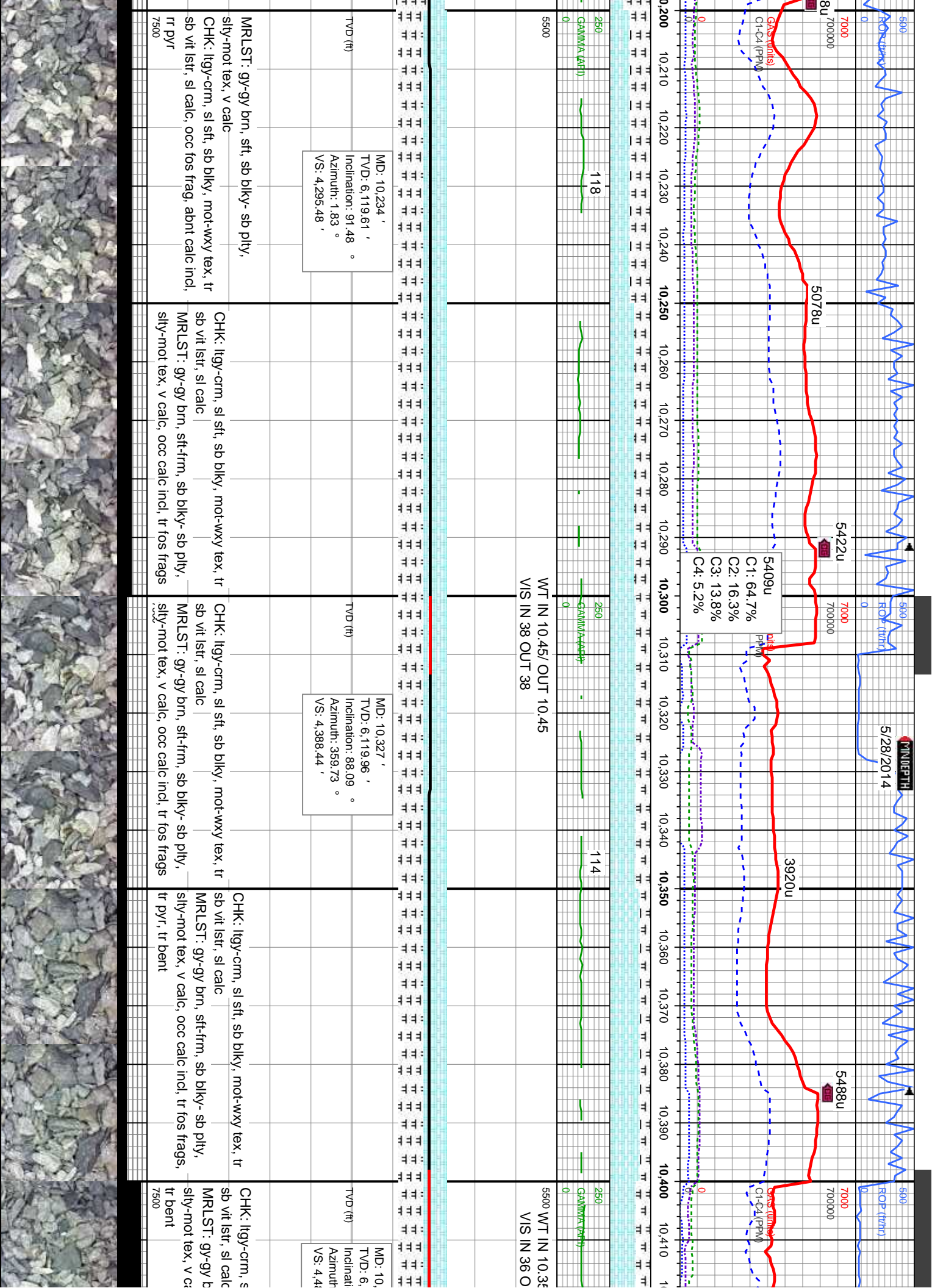
WT IN 10.30/ OUT 10.30
VIS IN 40 OUT 40

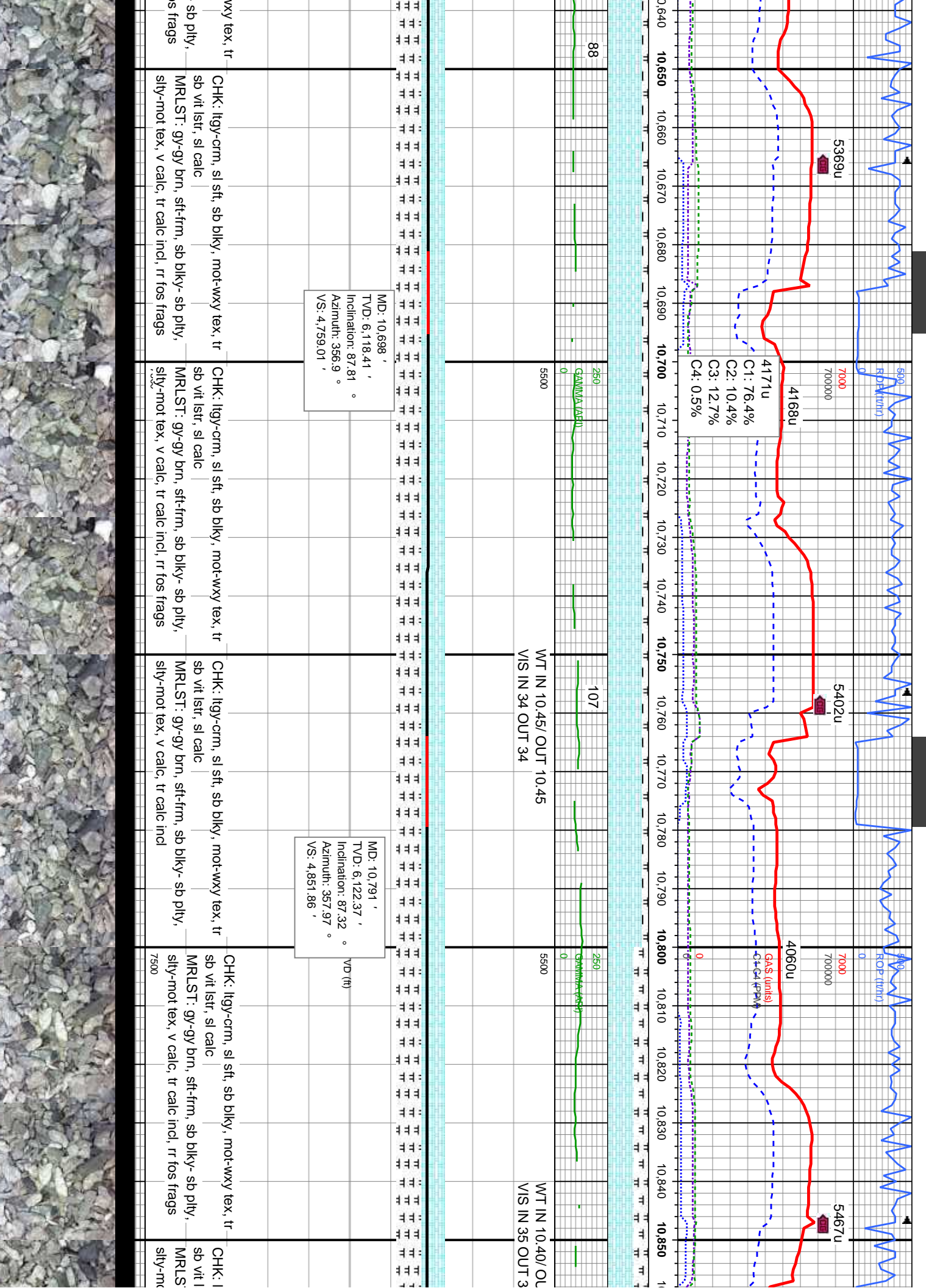


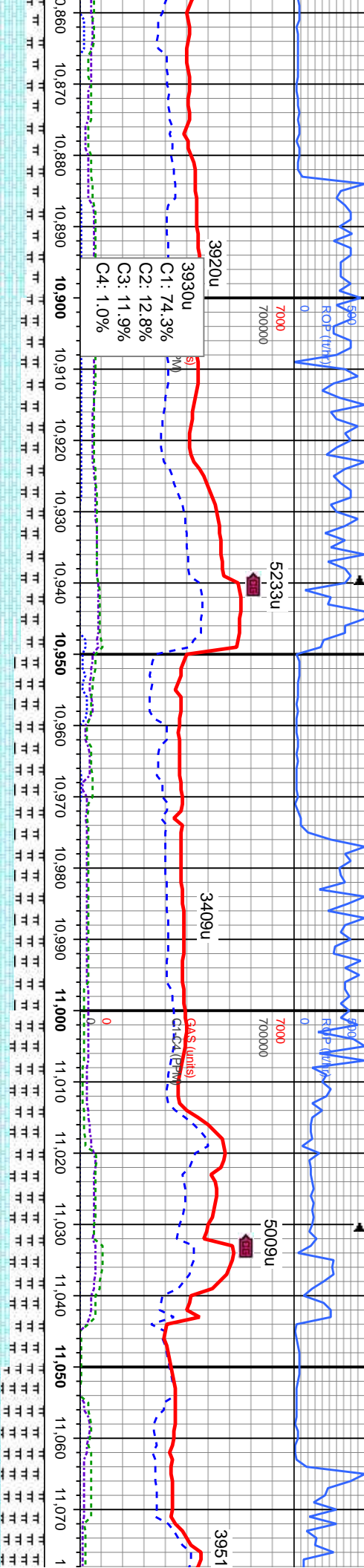
MD: 10,049 '
TVD: 6,121.44 '
Inclination: 90.03 °
Azimuth: 1.58 °
VS: 4,110.6 '

4164u
C1: 81.6%
C2: 10.5%
C3: 7.9%
C4: 0.0%

MD: 10,141 '
TVD: 6,121.12 '
Inclination: 90.37 °
Azimuth: 1.55 °
VS: 4,202.55 '







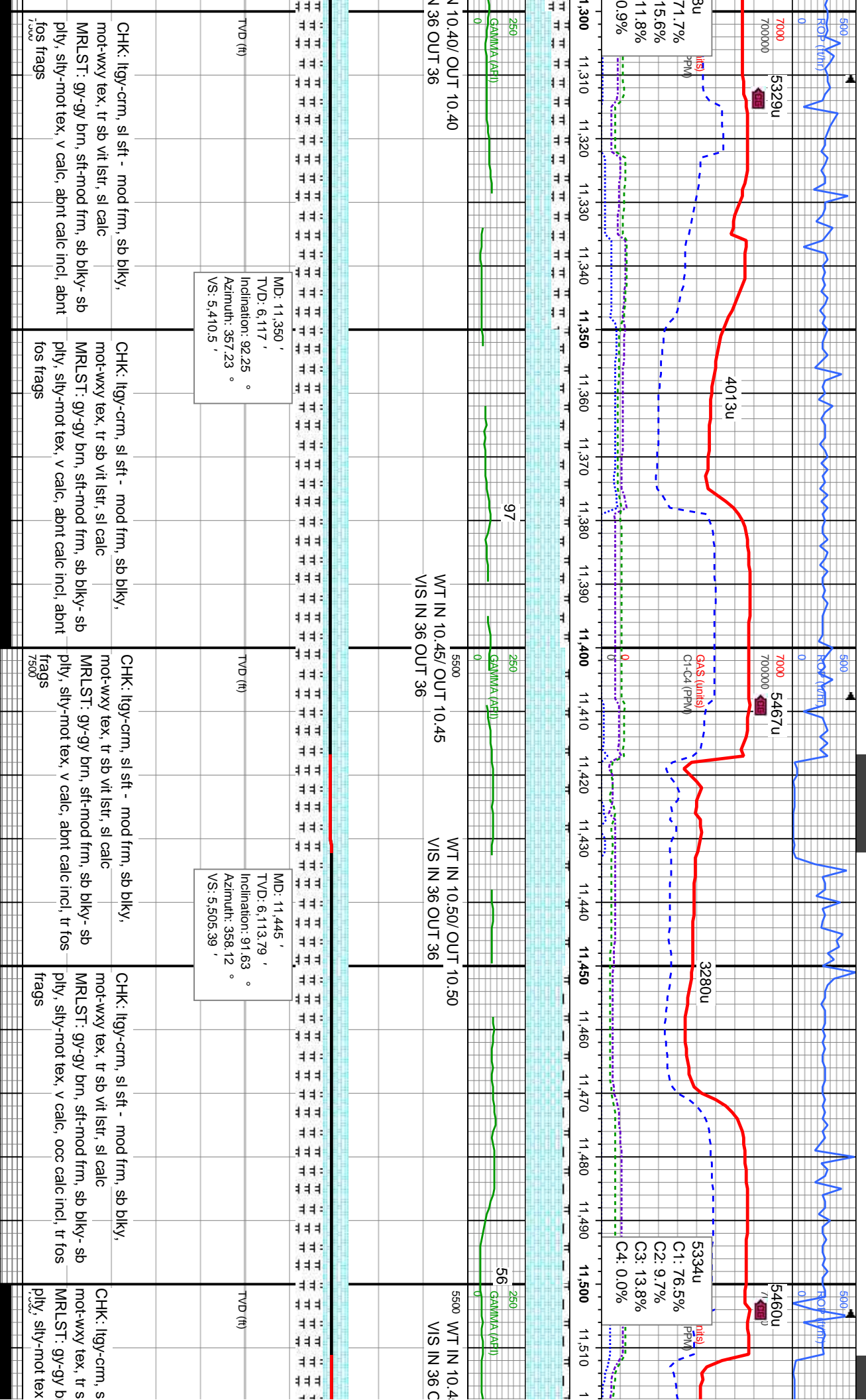
MD: 10,883 '
TVD: 6,125.82 '
Inclination: 88.37 °
Azimuth: 358.9 °
VS: 4,943.77 '

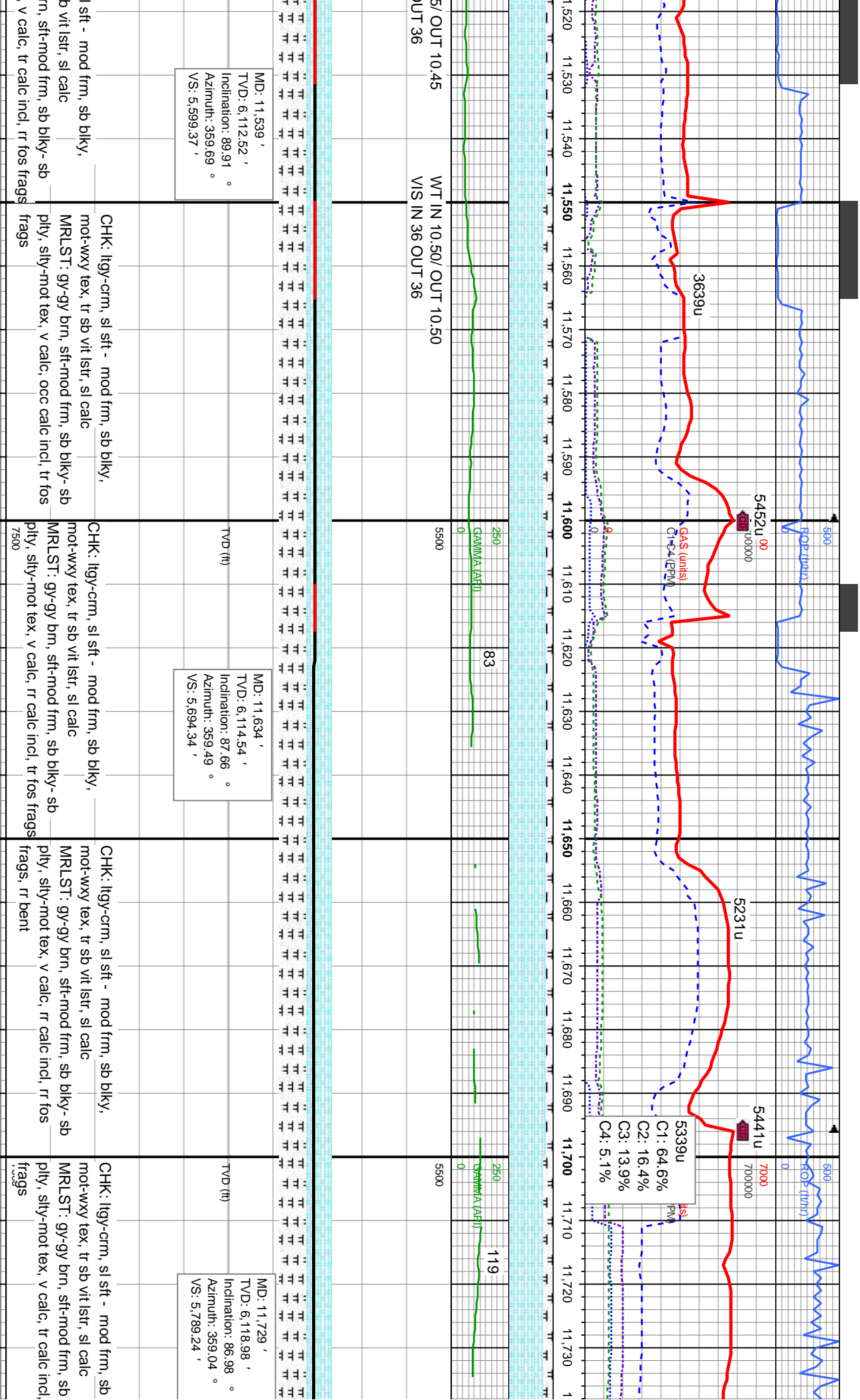
MD: 10,976 '
TVD: 6,127.22 '
Inclination: 89.91 °
Azimuth: 359.75 °
VS: 5,036.75 '

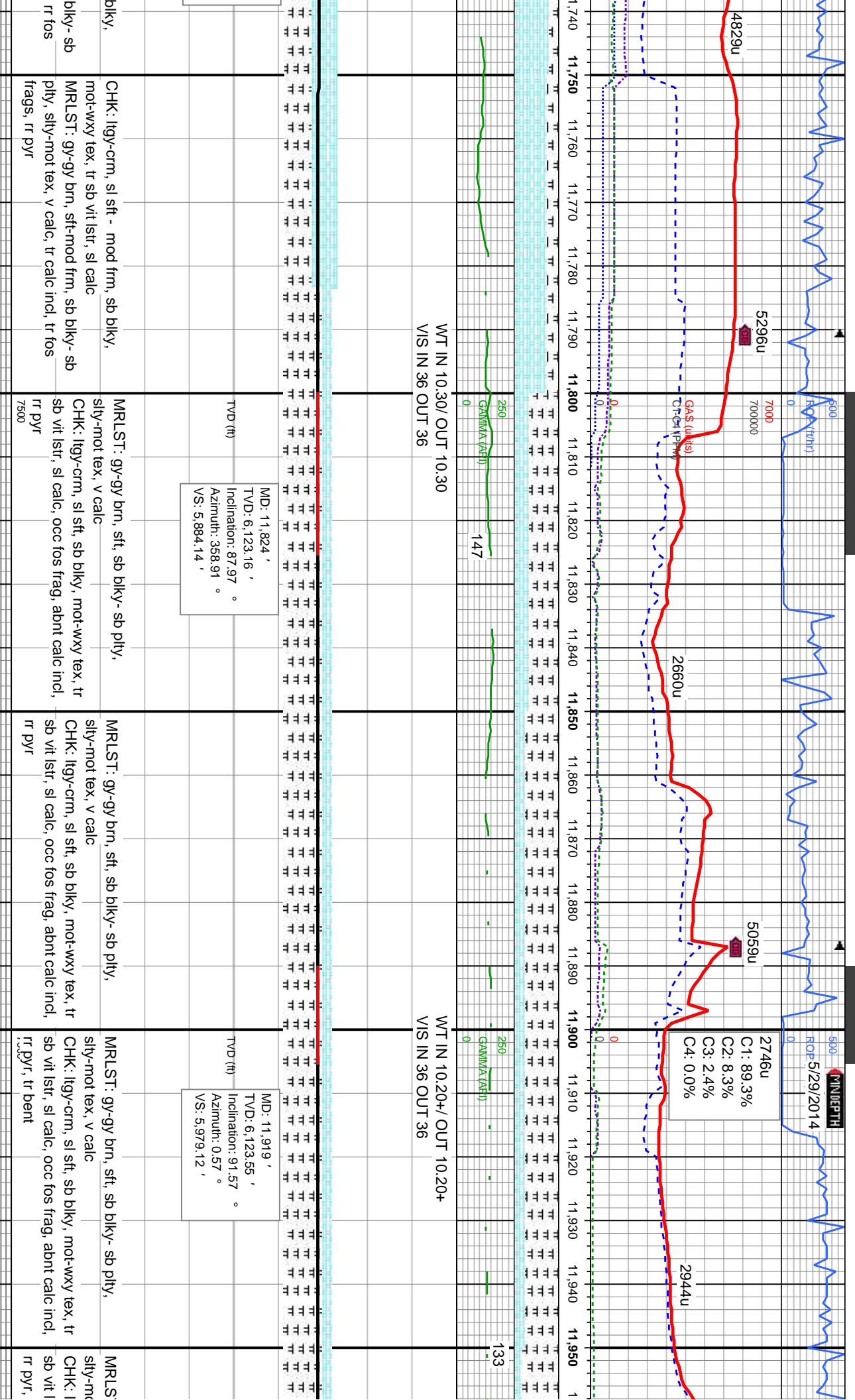
MD: 11,069 '
TVD: 6,126.44 '
Inclination: 91.05 °
Azimuth: 358.38 °
VS: 5,129.74 '

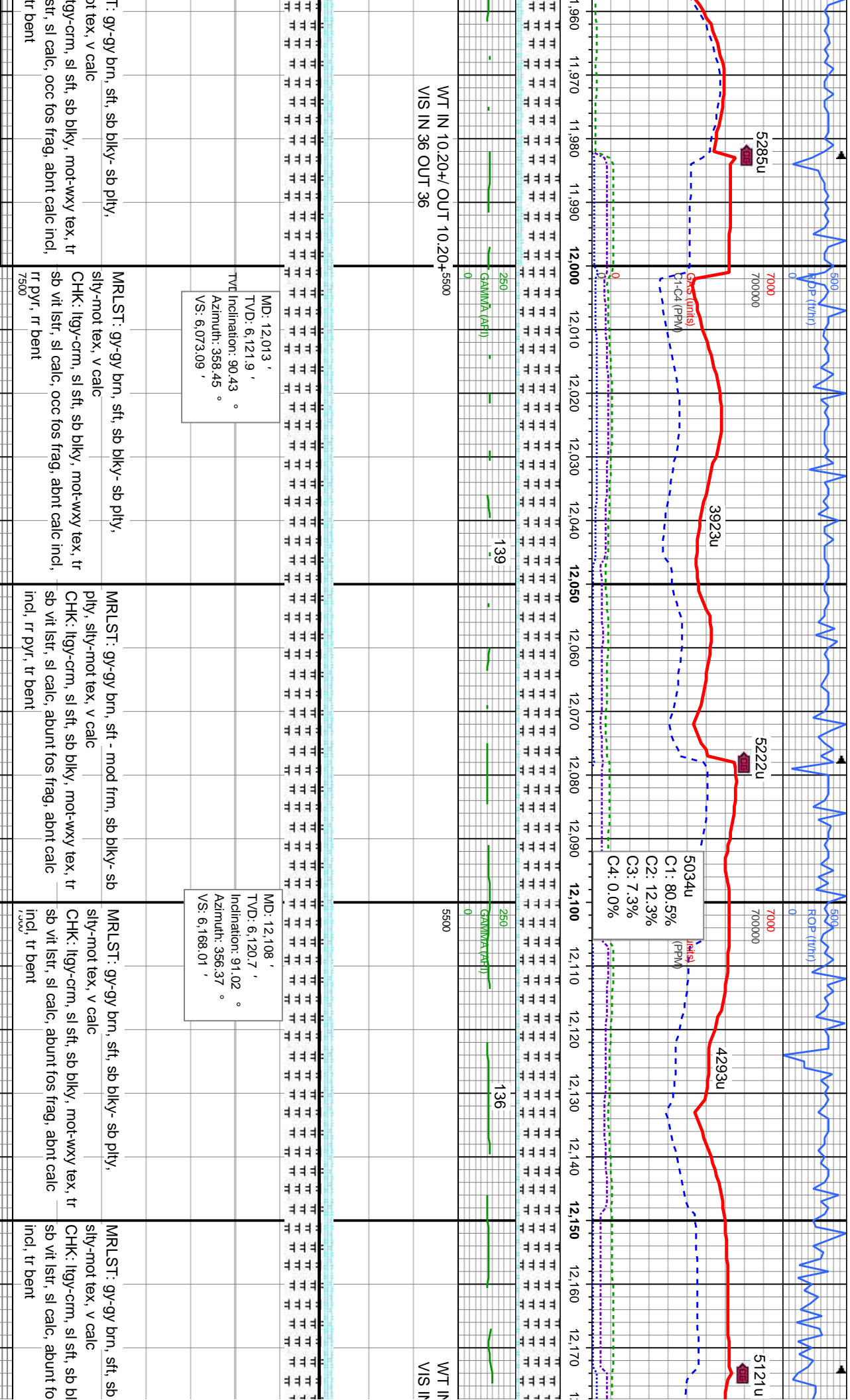
| | | | | | | | |
|---|--|---|---|---|---|---|---|
| gy-crm, sl sft, sb blk, mot-wxy tex, tr | CHK: Itgy-crm, sl sft, sb blk, mot-wxy tex, tr | MRLST: gy-gy brn, sft-fm, sb blk- sb ply, sly-mot tex, v calc, occ calc incl, occ fos frags | CHK: Itgy-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc | MRLST: gy-gy brn, sft-fm, sb blk- sb ply, sly-mot tex, v calc, abnt calc incl, abnt fos frags | CHK: Itgy-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc | MRLST: gy-gy brn, sft-fm, sb blk- sb ply, sly-mot tex, v calc, abnt calc incl, abnt fos frags | CHK: Itgy-crm, sl sft, sb blk, mot-wxy tex, tr sb vit lstr, sl calc |
|---|--|---|---|---|---|---|---|

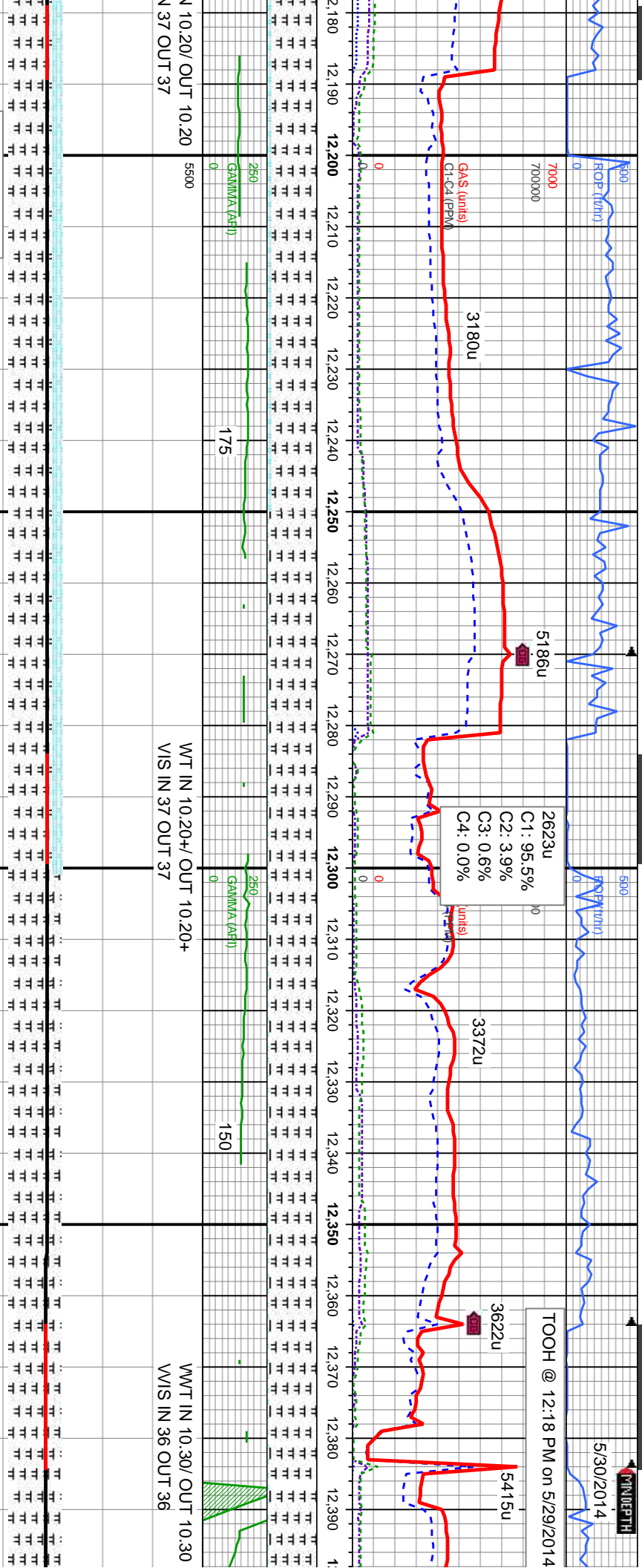












MD: 12,203 '
TVD: 6,121.34 '
Inclination: 88.21 °
Azimuth: 355.5 °
VS: 6,262.8 '

MD: 12,298 '
TVD: 6,124.43 '
Inclination: 88.06 °
Azimuth: 355.96 °
VS: 6,357.53 '

MD: 12,369 '
TVD: 6,126.04 '
Inclination: 89.35 °
Azimuth: 357.79 °
VS: 6,428.42 '

| | | | |
|---------------------|---|---|---|
| blky- sb pty, | MRLST: gy-gy brn, sft, sb blky- sb pty, | MRLST: gy-gy brn, sft, sb blky- sb pty, | MRLST: gy-gy brn, sft, sb blky- sb pty, |
| ky, mot-wxy tex, tr | sily-mot tex, v calc | sily-mot tex, v calc | sily-mot tex, v calc |
| s frag, occ calc | CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr | CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr | CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr |
| | sb vit lstr, sl calc, abunt fos frag, occ calc | sb vit lstr, sl calc, abunt fos frag, occ calc | sb vit lstr, sl calc, abunt fos frag, abnt calc |
| | incl, tr bent | incl | incl |
| | 7500 | | |



