



Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD10-66-1HN

Location SENE SEC9, T9N, R58W, 6 PM

State COLORADO County WELD

Country USA Rig Number H&P 326

API Number 05-123-37628 Field WILDCAT

Region DJ BASIN Drilling Completed 10/17/2014

Spud Date 10/11/2014

Surface Coordinates 1763 FNL, 330 FEL
40.76832/-103.86114

Bottom Hole Coordinates (PROJ)
2310 FFNLL, 660 FFELL

Ground Elevation 4728' K.B. Elevation 4758'

Logged Interval 5115' To 9815' Total Depth 9815'

Formation NIOBRARA C-CHALK

Type of Drilling Fluid LSND

Operator

Company Noble Energy Inc

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name JAMES TAYLOR

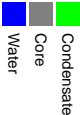
Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

COLUMBINE LOGGING MATT HOPKINS
IRENE KADEL-HARDER

Zone Color Coding



Rock Types

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

Accessories

| | | | |
|----------------|----------------------|-------------------|-----------------------|
| GASTROPOD | ARGILLITE GRAIN | HEAVY MINERAL | ANHYDRITE STRINGER |
| INOCERAMUS | BENTONITE | KAOLIN | BENTONITE STRINGER |
| OOLITE | BITUMENOUS SUBSTANCE | MARLSTONE | COAL STRINGER |
| OSTRACOD | BRECCIA FRAGMENTS | MICACEOUS | DOLOMITE STRINGER |
| PELECYPOD | CALCAREOUS | MINERAL CRYSTALS | GYPSUM STRINGER |
| PELLET | CARBONACEOUS FLAKES | NODULES | LIMESTONE STRINGER |
| PISOLITE | CHTDK | PHOSPHATE PELLETS | MARLSTONE (CALC) STRG |
| PLANT REMAINS | CHTLT | PYRITE | MARLSTONE (DOL) STRG |
| PLANT SPORES | COAL - THIN BEDS | SALT CAST | SANDSTONE STRINGER |
| SCAPHOPOD | DOLOMITIC | SANDY | SHALE STRINGER |
| STROMATOPOROID | FELDSPAR | SILICEOUS | SILTSTONE STRINGER |
| | FERRUGINOUS PELLET | SILTY | |
| | FERRUGINOUS | TUFFACEOUS | |
| | ANHYDRITIC | GLAUCONITE | |
| | ARGILLACEOUS | GYPSIFEROUS | |

Minerals

- ECHINOID
- FISH
- FORAMINIFERA
- F FOSSIL

Stringer

Oil Show

- PINPOINT
- VUGGY





































Engineering

- DEAD
- EVEN
- QUESTIONABLE
- BIT
- SPOTTED STAINING
- CONNECTION (UP)

Porosity

- CONNECTION (DOWN)
- CONNECTION GAS
- CONNECTION GAS
- TRIP GAS
- TRIP GAS (LEFT)
- INTERCRYSTALLINE
- DOWN TIME GAS
- INTEROOLITIC
- DOWN TIME GAS (
- MOLDIC
- CORE - LOST
- ORGANIC
- CORE - RECOVERED

Other Symbols

| | | | | | |
|---|--------------------------|---|------------------------|---|----------------|
|  | DST INTERVAL |  | WIRELINE TESTED - LEFT |  | E EARTHY |
|  | FAULT |  | WIRELINE TESTED - RT |  | FX FINELYXLN |
|  | FORMATION TOP |  | DRILL STEM TEST |  | GS GRAINSTONE |
|  | GAS SHOW |  | MINDEPTH MN DEPTH |  | L LITHOGRAPHIC |
|  | OIL SHOW | | |  | MX MICROXLN |
|  | MINDEPTH MN DEPTH UP | Rounding | | | |
|  | MINDEPTH MN DEPTH (DOWN) |  | ANGULAR |  | PS PACKSTONE |
|  | NORMAL FAULT |  | ROUNDED |  | WS WACKESTONE |
|  | (LEFT) OVERTURNED STRATA |  | SUBANG | | |
|  | REVERSE FAULT |  | SUBRND | Sorting | |
|  | CASING | | |  | M MODERATE |
| Textures | | | | | |
|  | SIDEWALL CORE (LEFT) | | |  | P POOR |
|  | SIDEWALL CORE (RIGHT) |  | BOUNDSTONE |  | W WELL |
|  | SLIDE |  | CHALKY | | |
|  | SURVEY |  | CRYPTOXLN | | |

Slide/Rotate

ROP

ROP

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.
RIGGED UP ON 10/12/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #331

CONTINUED FROM
Rohn State LD10-66-1HN(VERT)

Depth Labels

% Lith

GAMMA

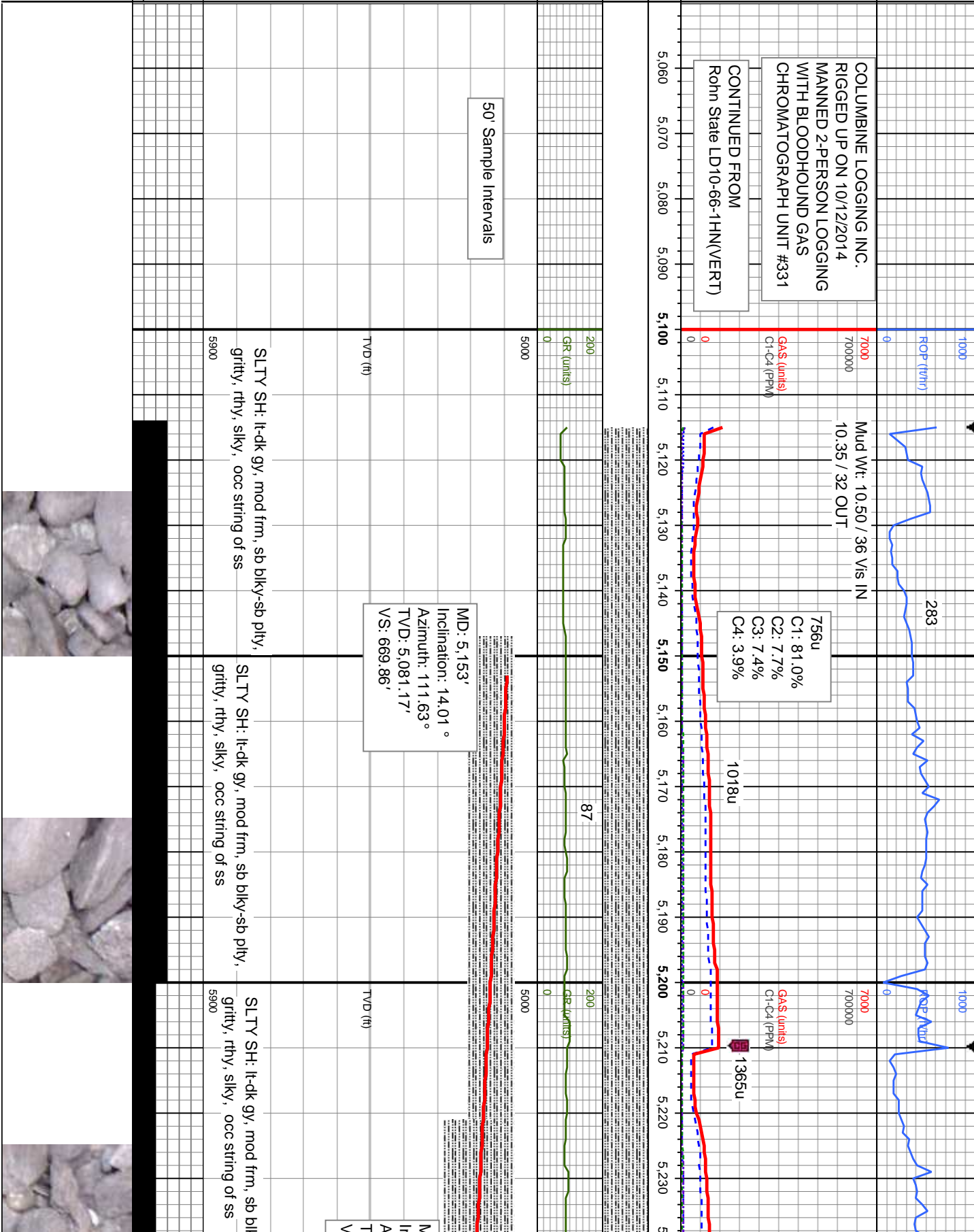
GR

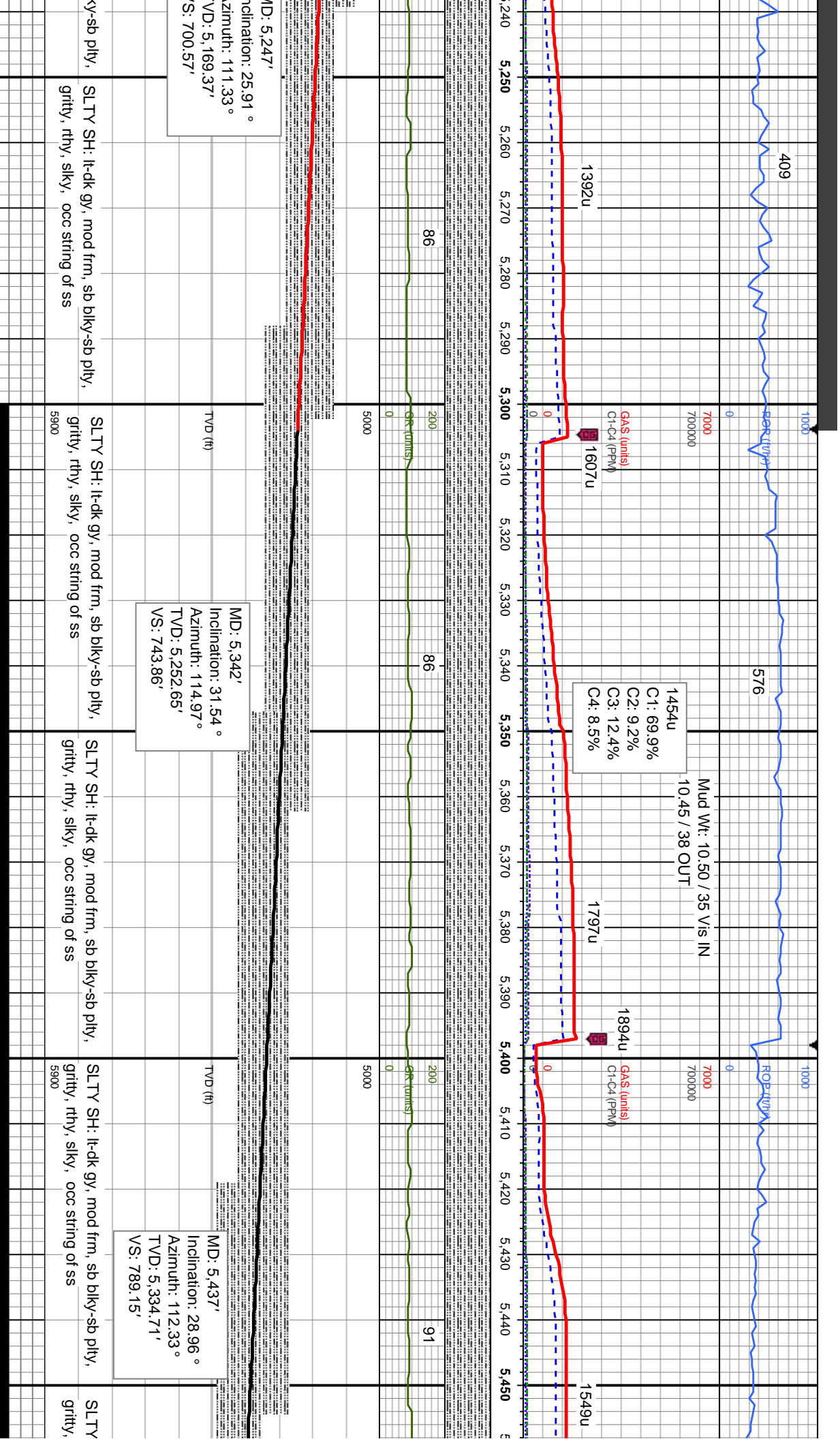
50' Sample Intervals

Well Bore
TVD

Oil Show

Images

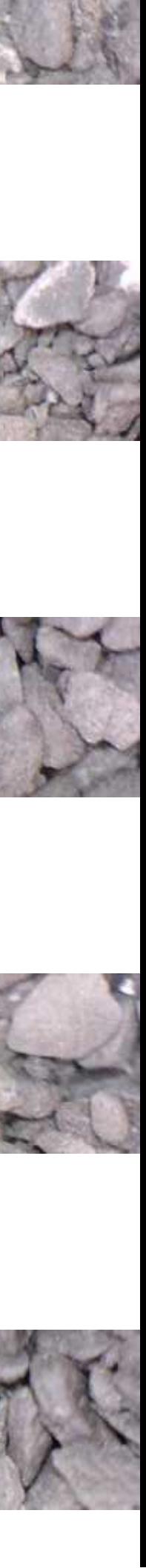


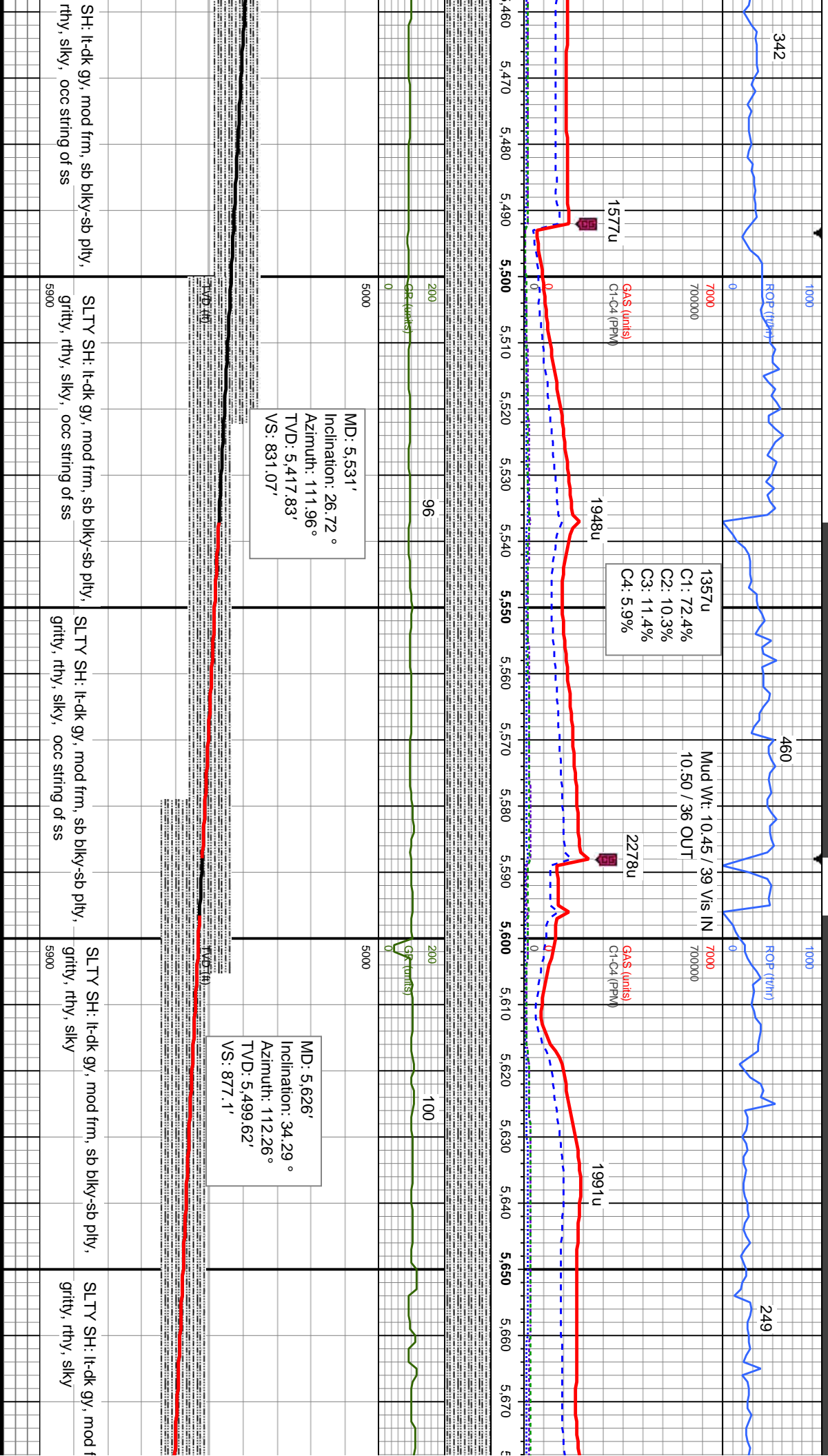


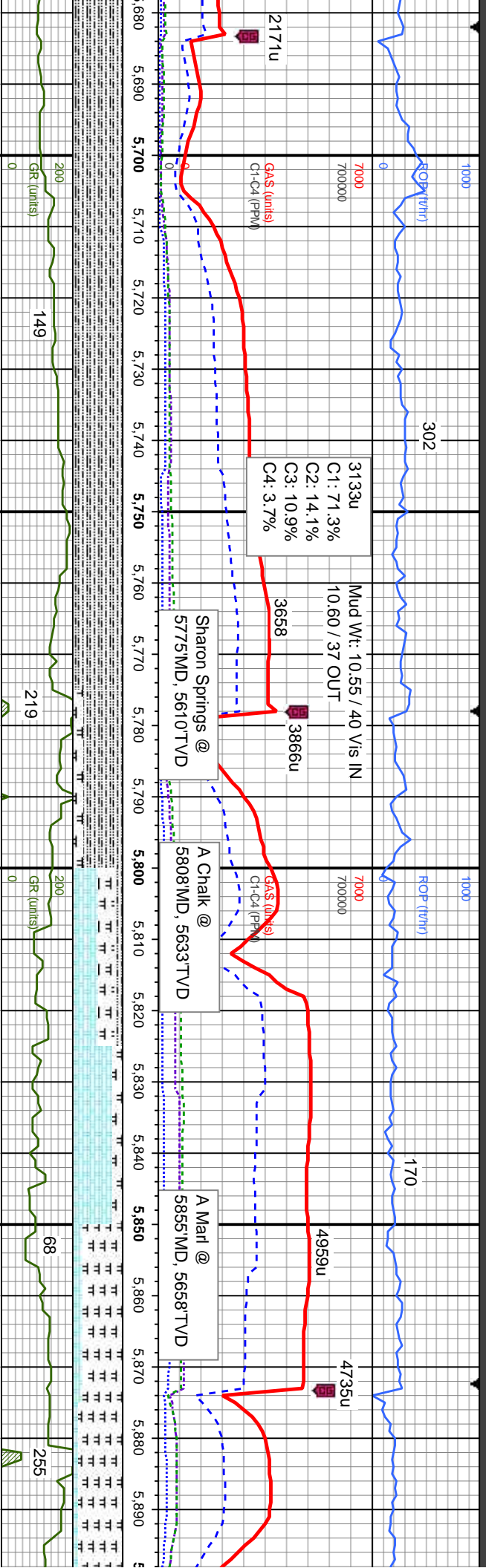
MD: 5,247'
Inclination: 25.91 °
Azimuth: 111.33 °
VD: 5,169.37'
S: 700.57'

MD: 5,342'
Inclination: 31.54 °
Azimuth: 114.97 °
TVD: 5,252.65'
VS: 743.86'

MD: 5,437'
Inclination: 28.96 °
Azimuth: 112.33 °
TVD: 5,334.71'
VS: 789.15'







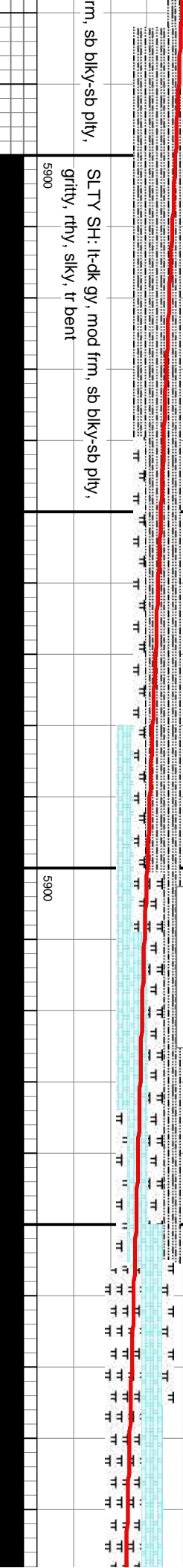
MD: 5,720'
Inclination: 42.27°
Azimuth: 107.93°
TVD: 5,573.36'
VS: 933.28'

SLTY SH: lt - med gy, occ dk gy, sft - mod frm, sb blk - sb ply, arg - rthy mtz, silty - shy tex, non calc, com bent MRLST: med gy - dk gy blk, occ blk, sb blk - sb ply, sme fis, mod frm, rthy tex, sl mot, v calc

MD: 5,815'
Inclination: 53.01°
Azimuth: 95.86°
TVD: 5,637.4'
VS: 1,002.68'

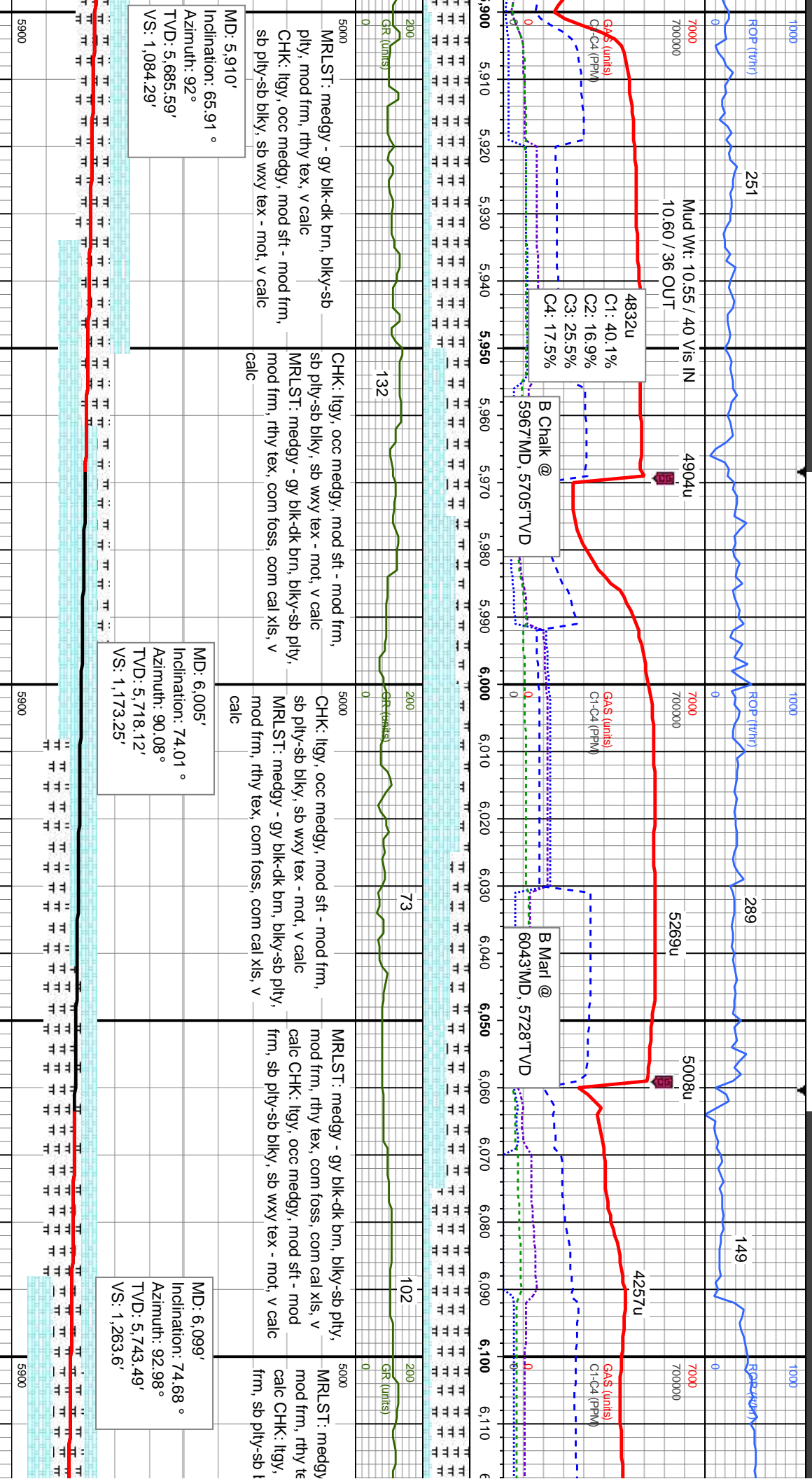
CHK: ltgy, occ medgy, mod sft - mod frm, sb ply-sb blk, sb wxy tex - mot, v calc MRLST: medgy - gy blk-dk brn, blk-sb ply,

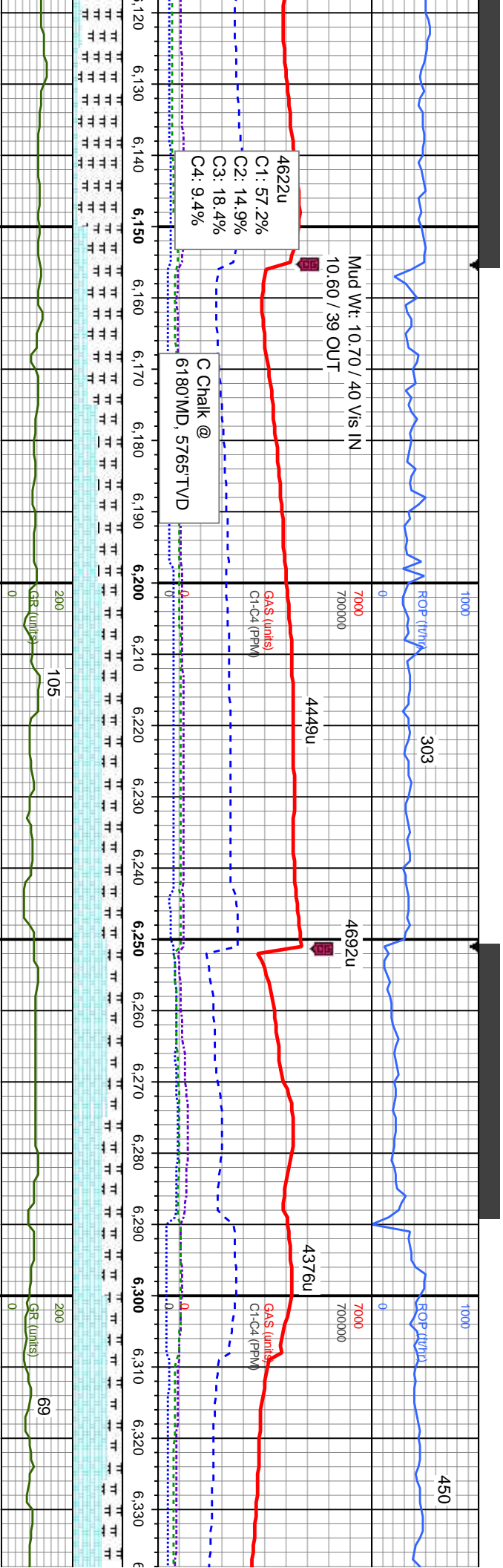
MRLST: medgy - gy blk-dk brn, blk-sb ply, mod frm, rthy tex, v calc, com bent CHK: ltgy, occ medgy, mod sft - mod frm, sb ply-sb blk, sb wxy tex - mot, v calc



SLTY SH: lt-dk gy, mod frm, sb blk-sb ply, gritty, rthy, silty, tr bent







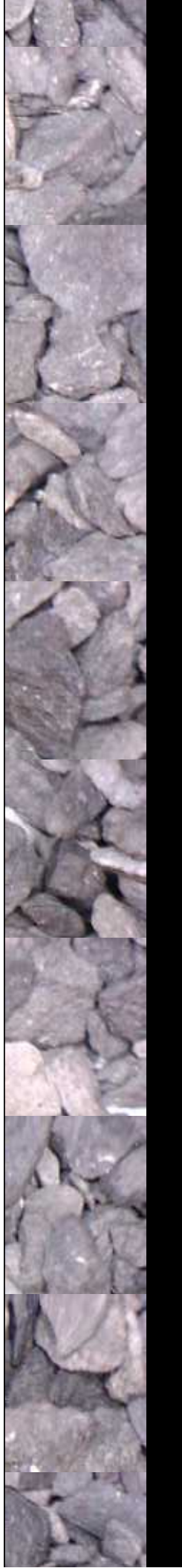
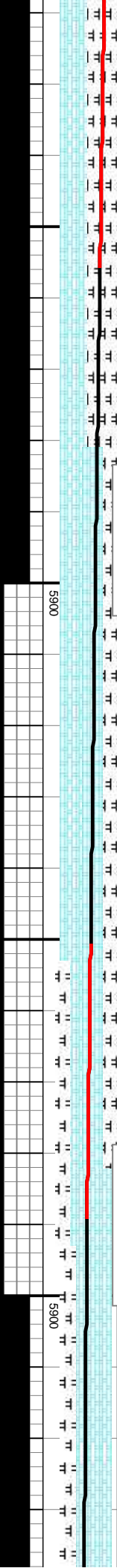
- gy blk-dk brn, blyk-sb pily, mod frm, rthy tex, com foss, com cal xls, v calc

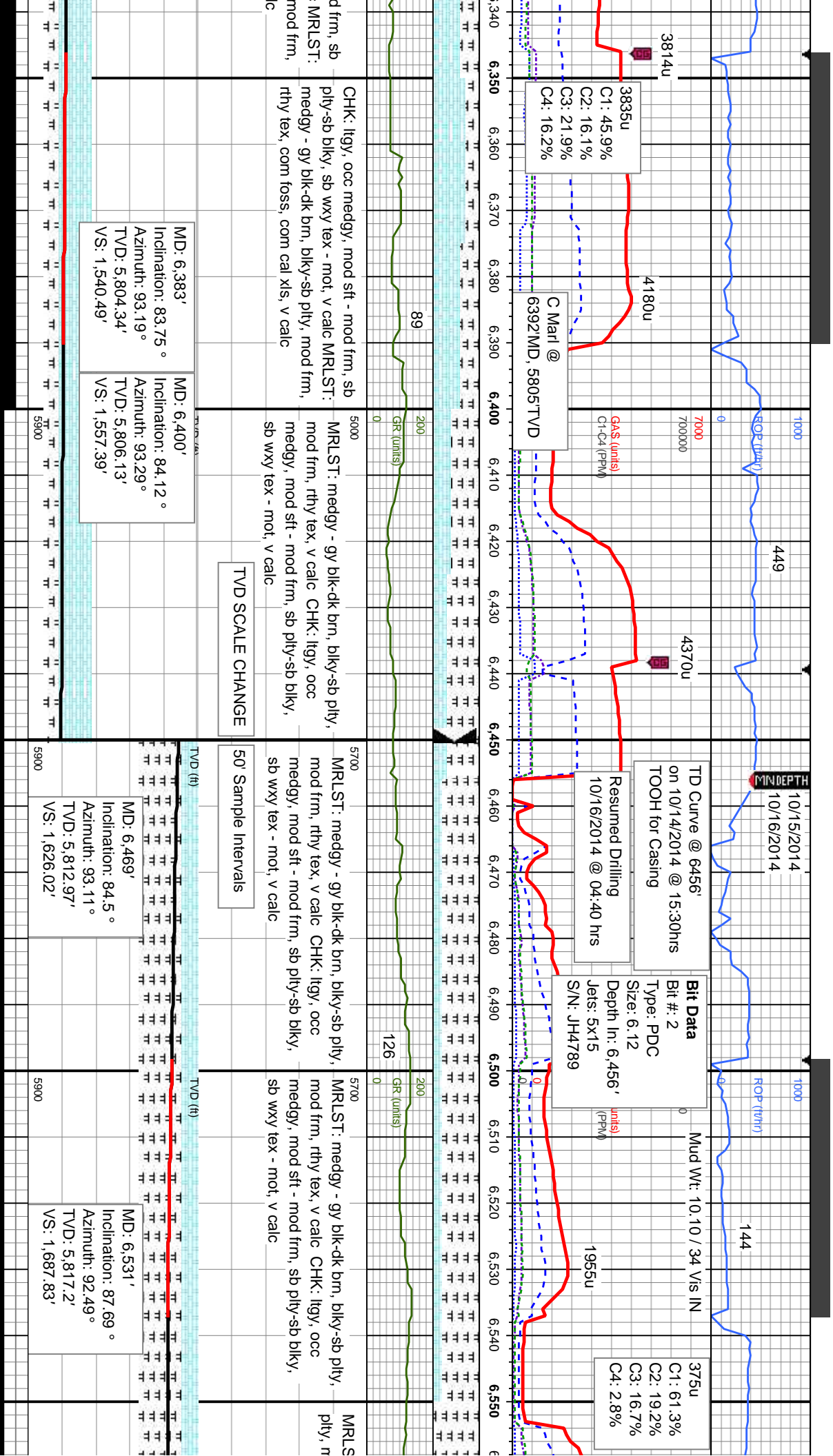
CHK: llyg, occ medgy, mod sft - mod frm, sb pily-sb blyk, sb wxy tex - mot, v calc MRLST: medgy - gy blk-dk brn, blyk-sb pily, mod frm, rthy tex, com foss, com cal xls, v calc

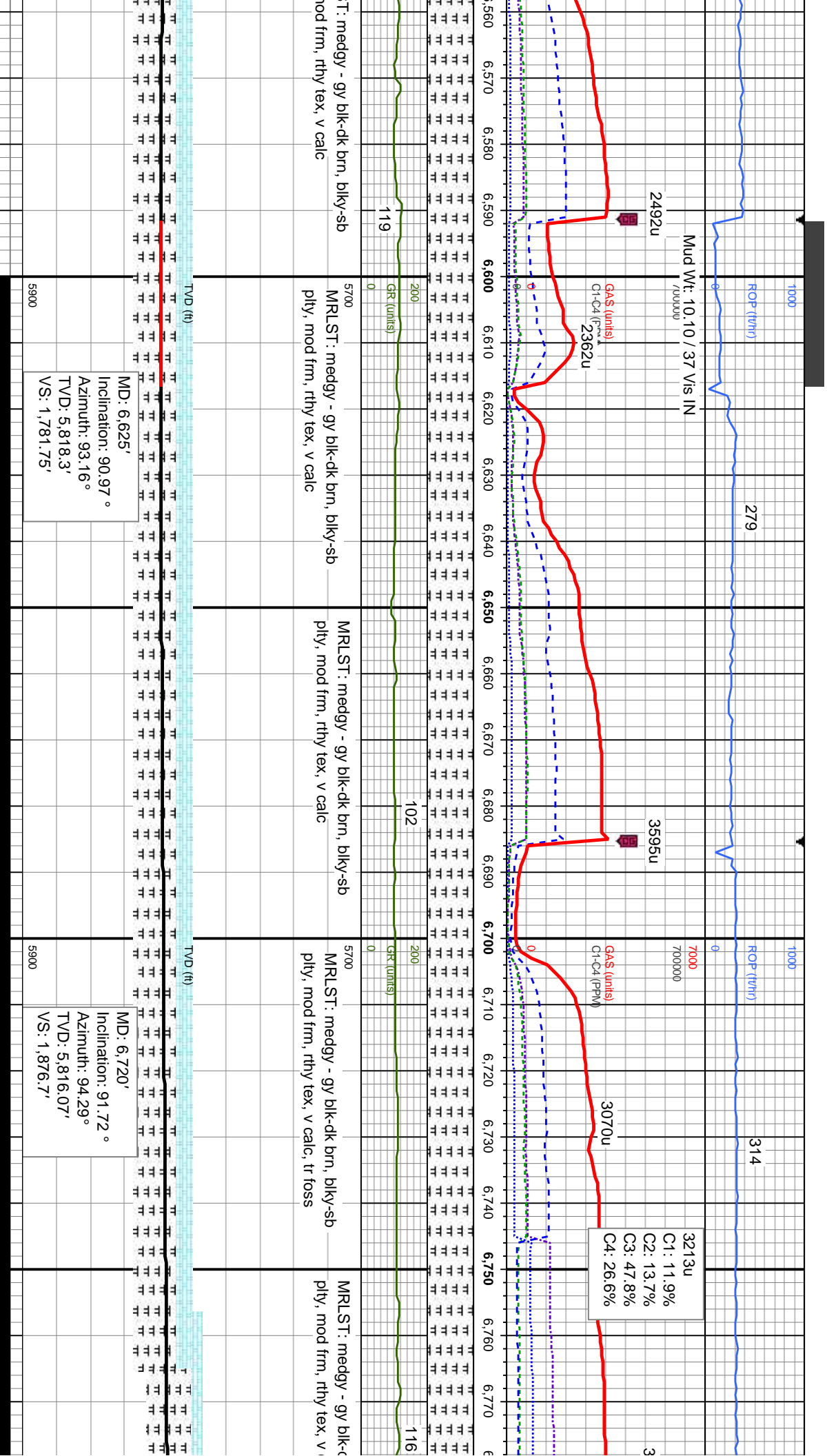
CHK: llyg, occ medgy, mod sft - mod frm, sb pily-sb blyk, sb wxy tex - mot, v calc MRLST: medgy - gy blk-dk brn, blyk-sb pily, mod frm, rthy tex, com foss, com cal xls, v calc

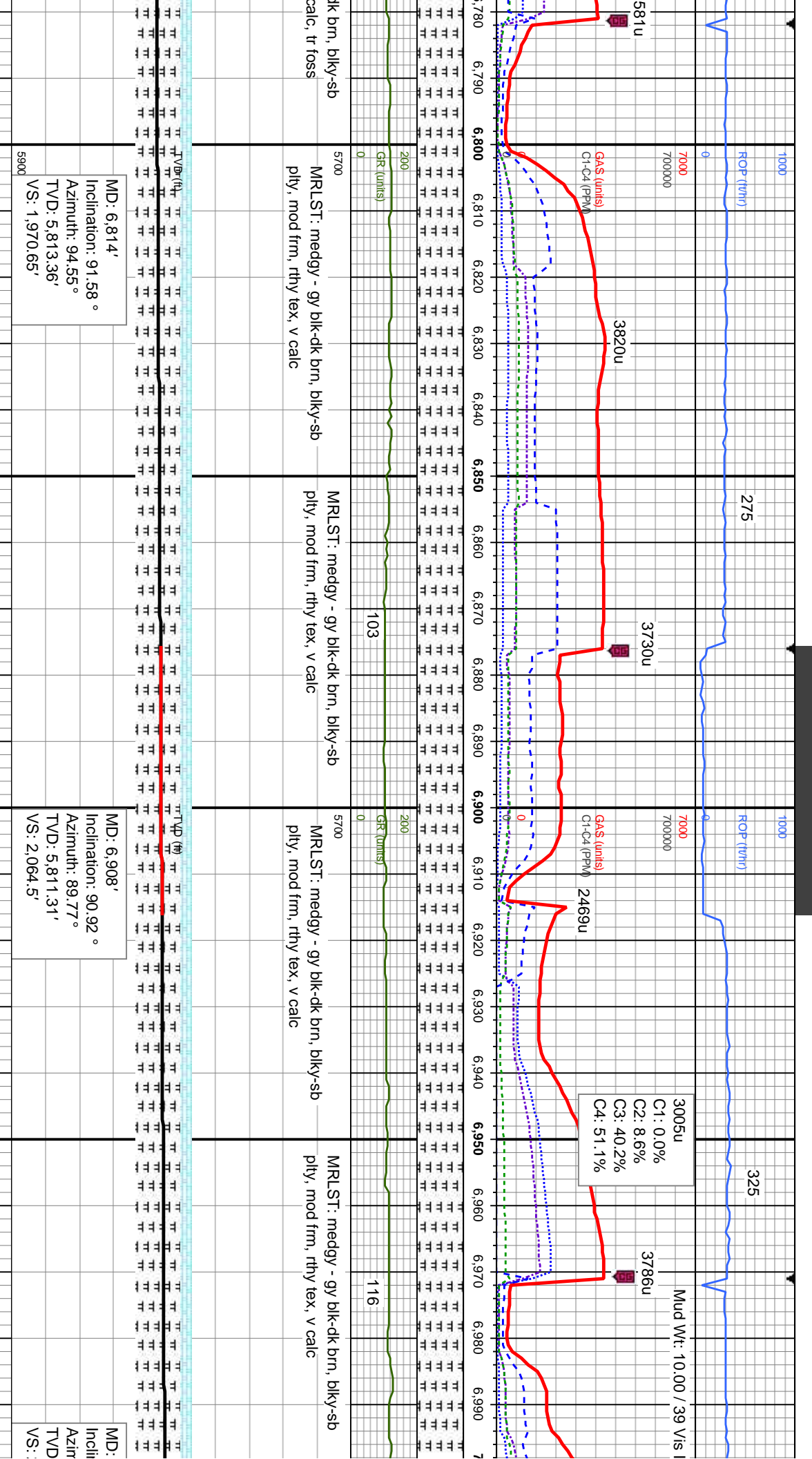
MD: 6,194'
Inclination: 74.4°
Azimuth: 92.9°
TVD: 5,768.81'
VS: 1,355.11'

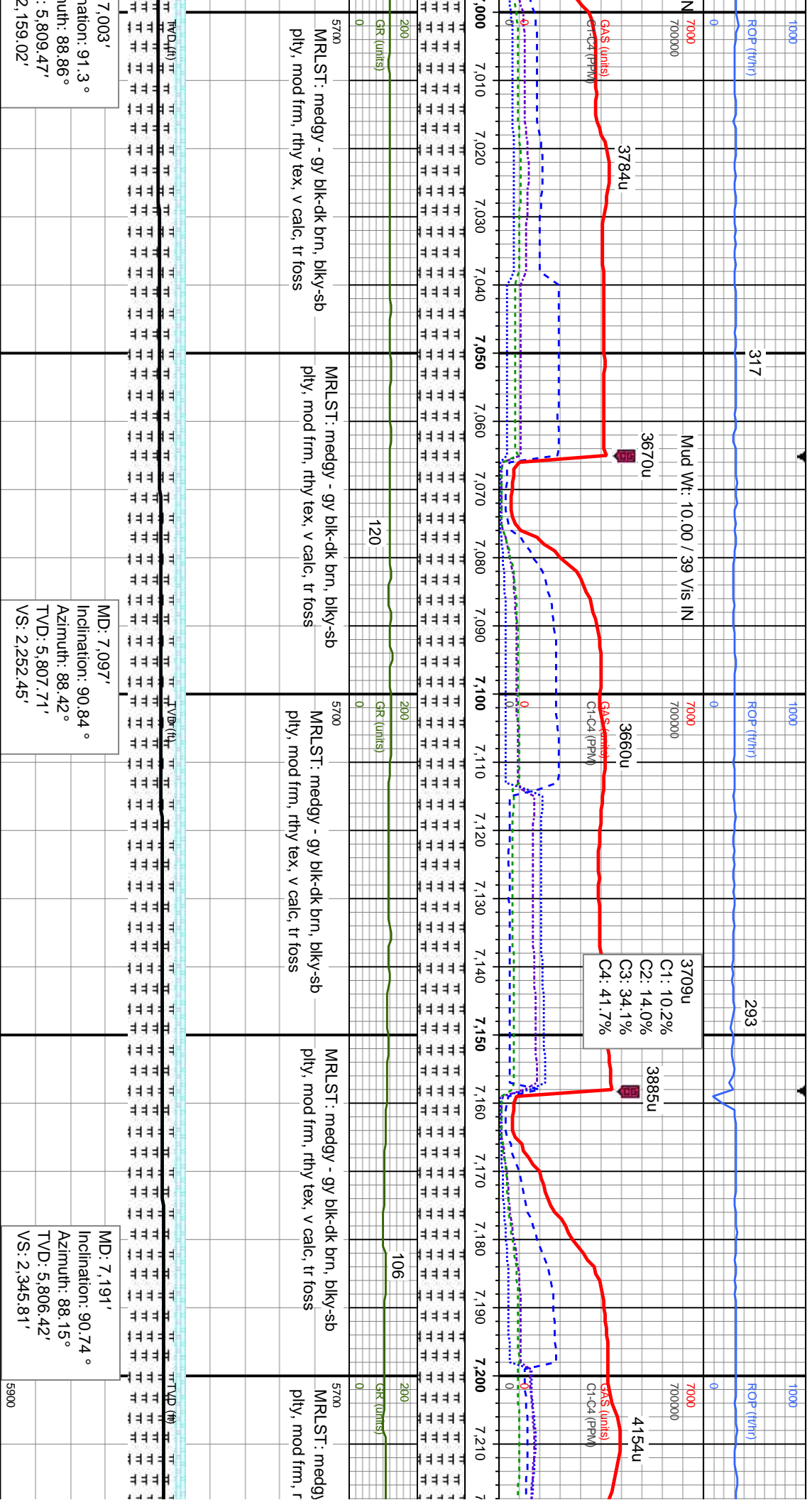
MD: 6,289'
Inclination: 79.26°
Azimuth: 95.04°
TVD: 5,790.45'
VS: 1,447.56'

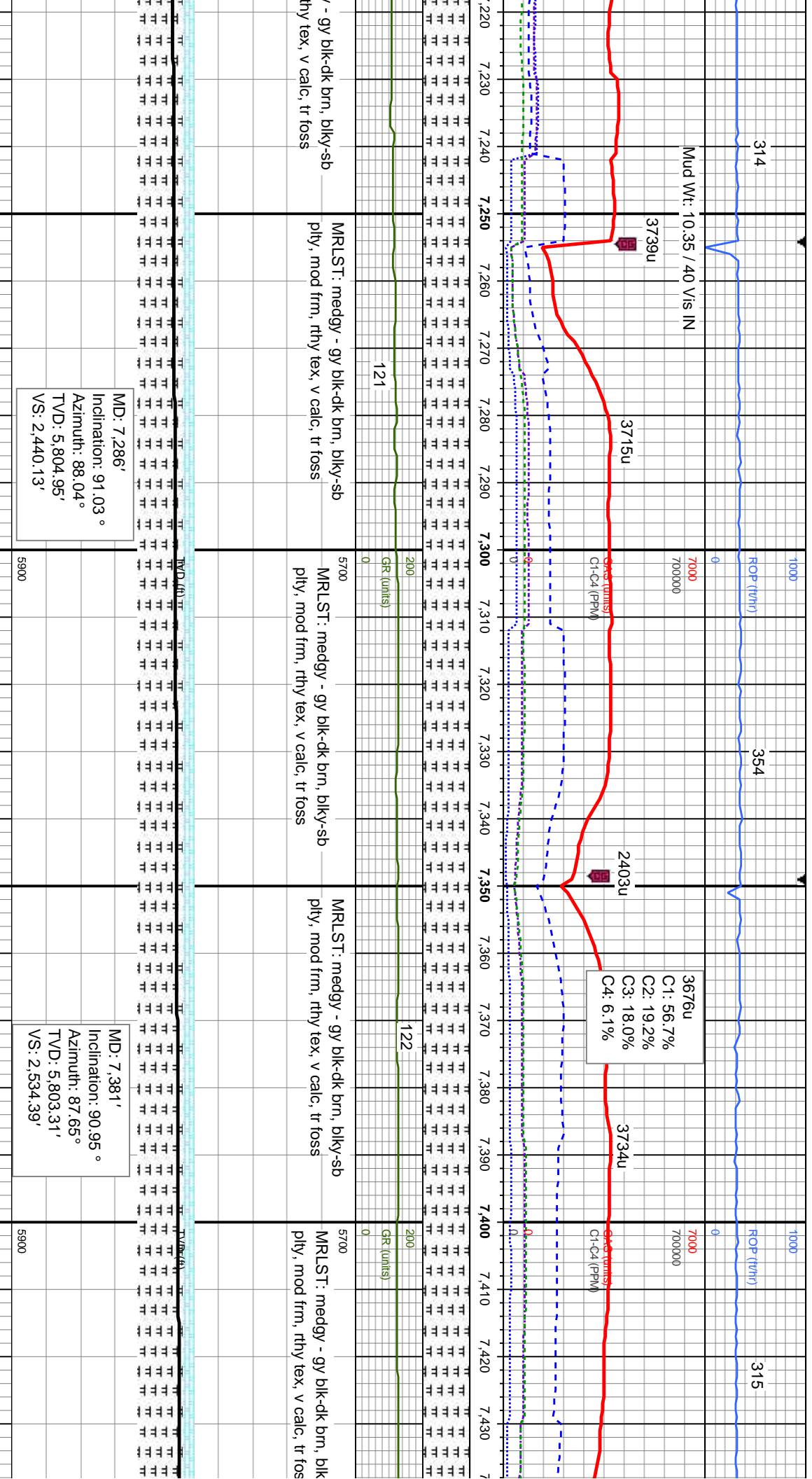


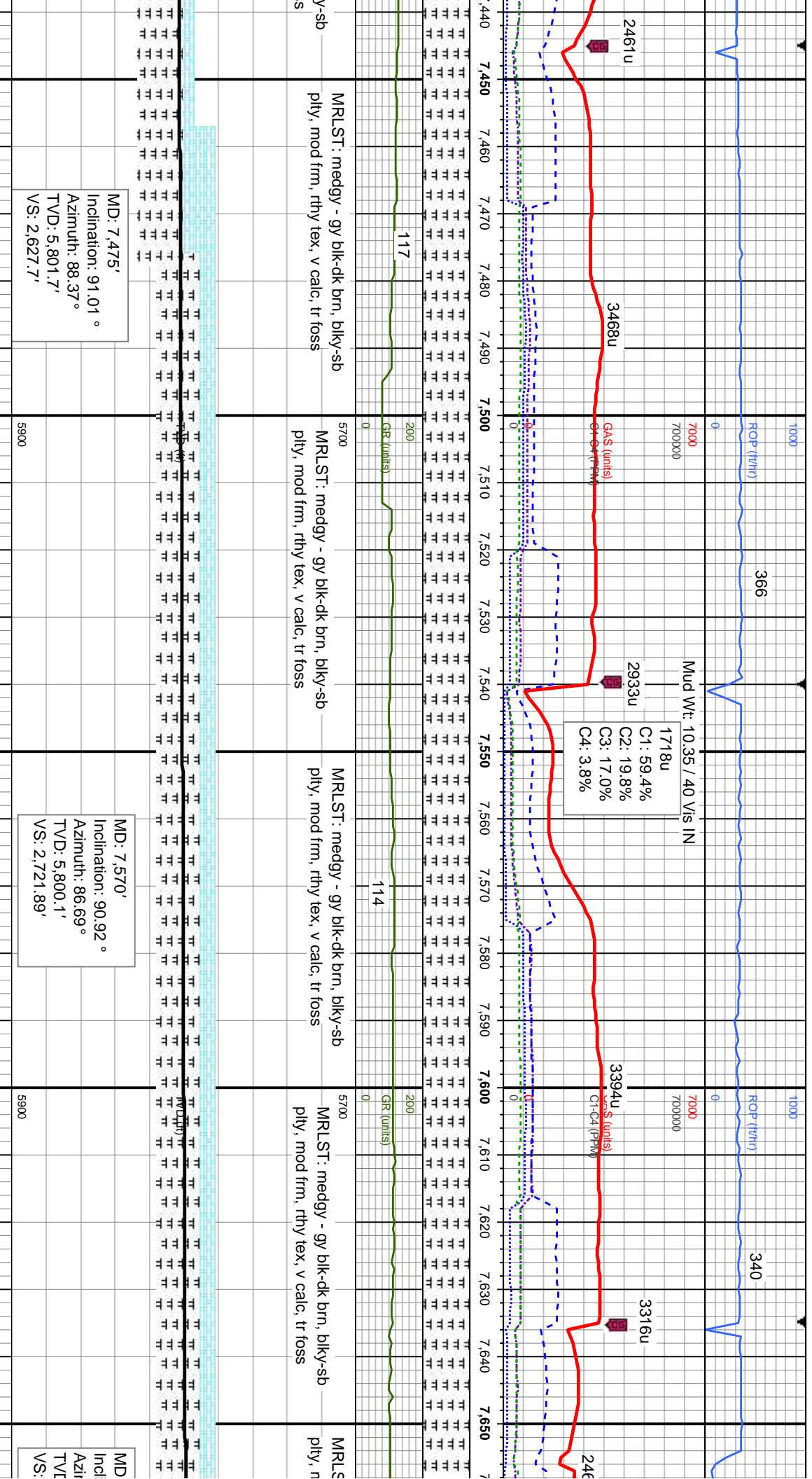


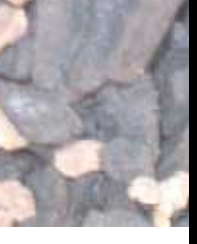
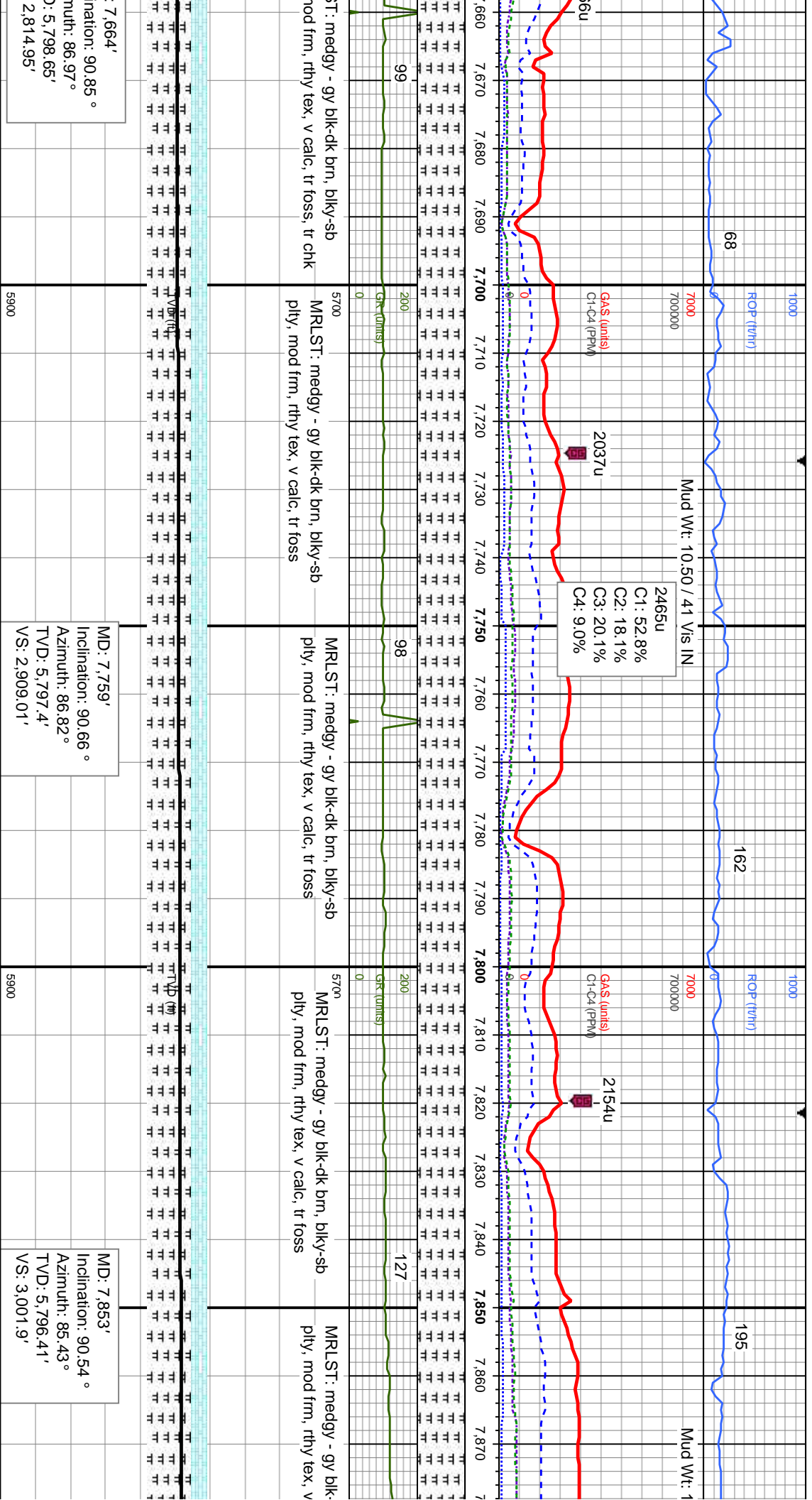


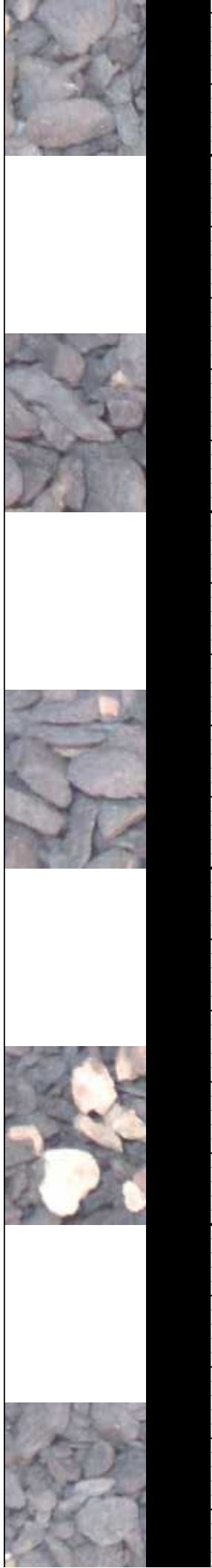
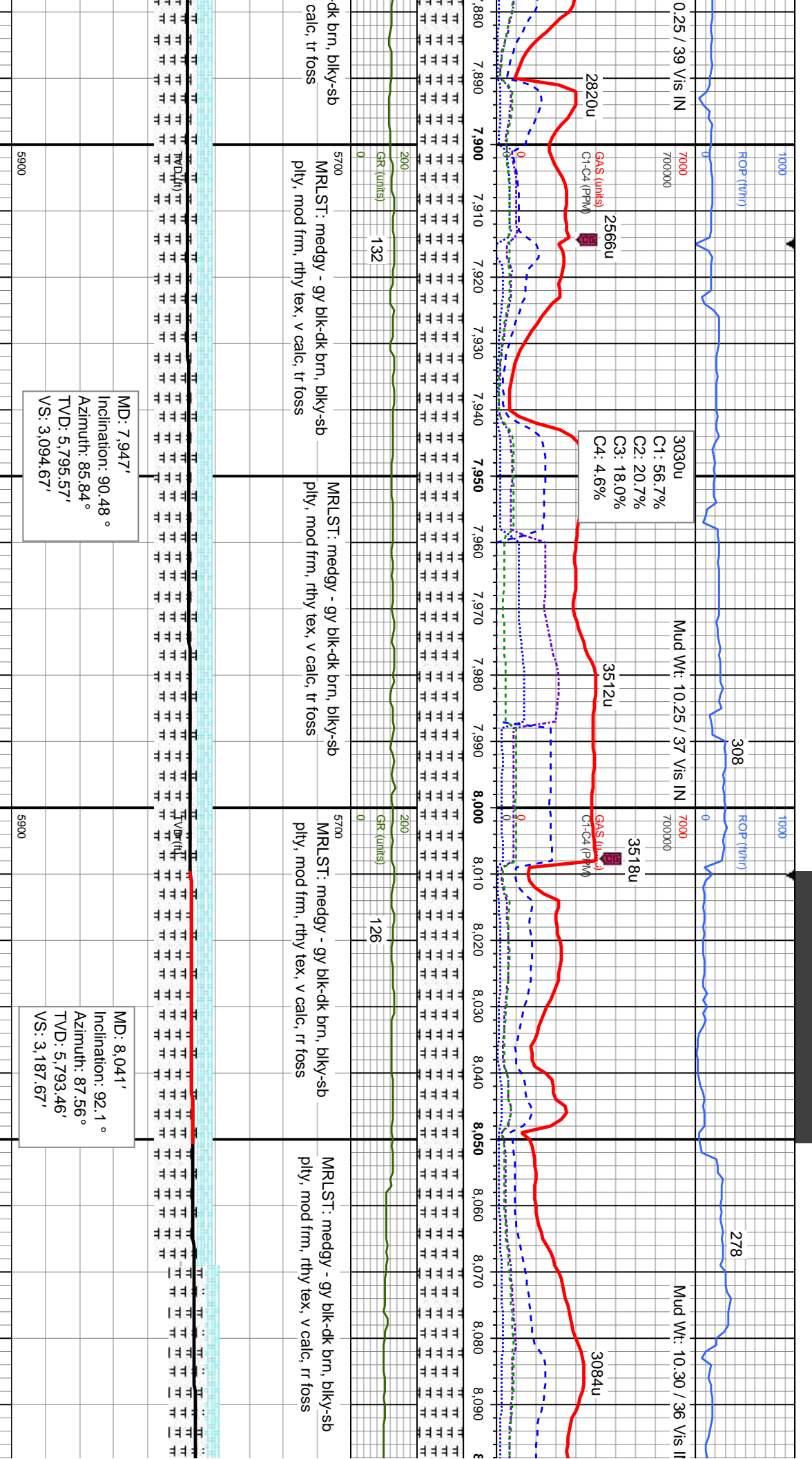


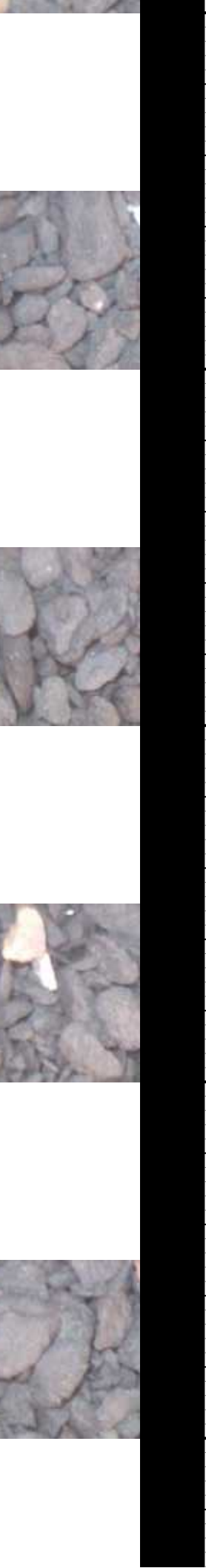
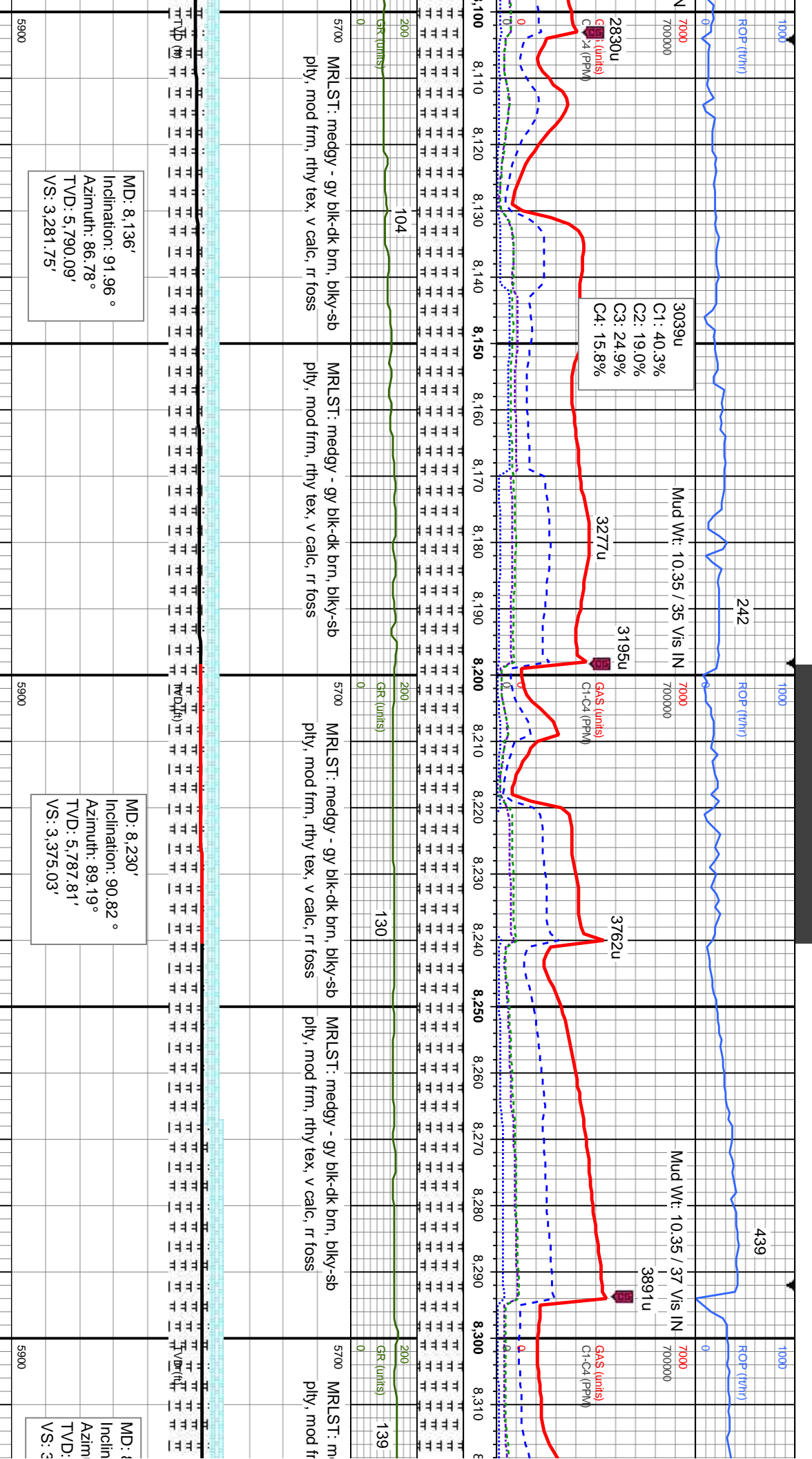


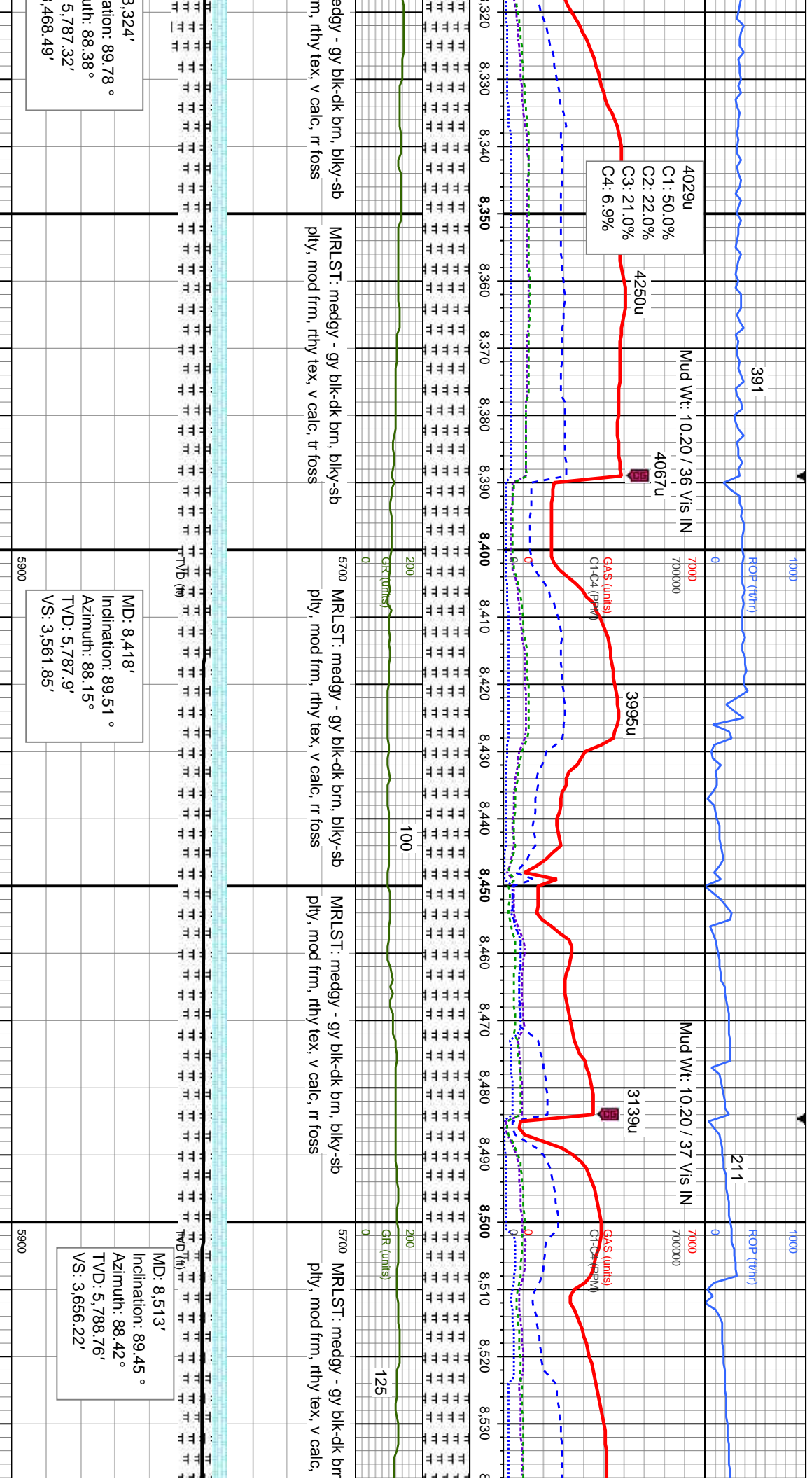










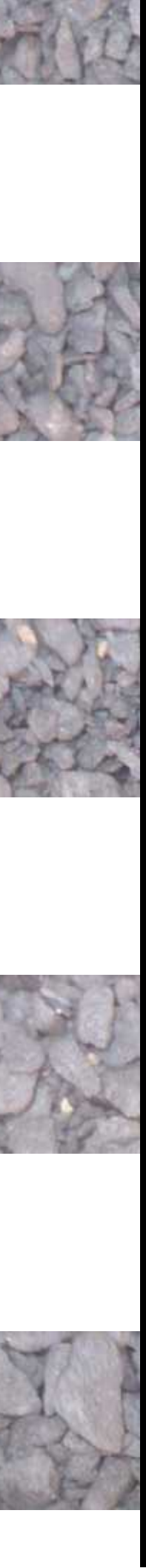
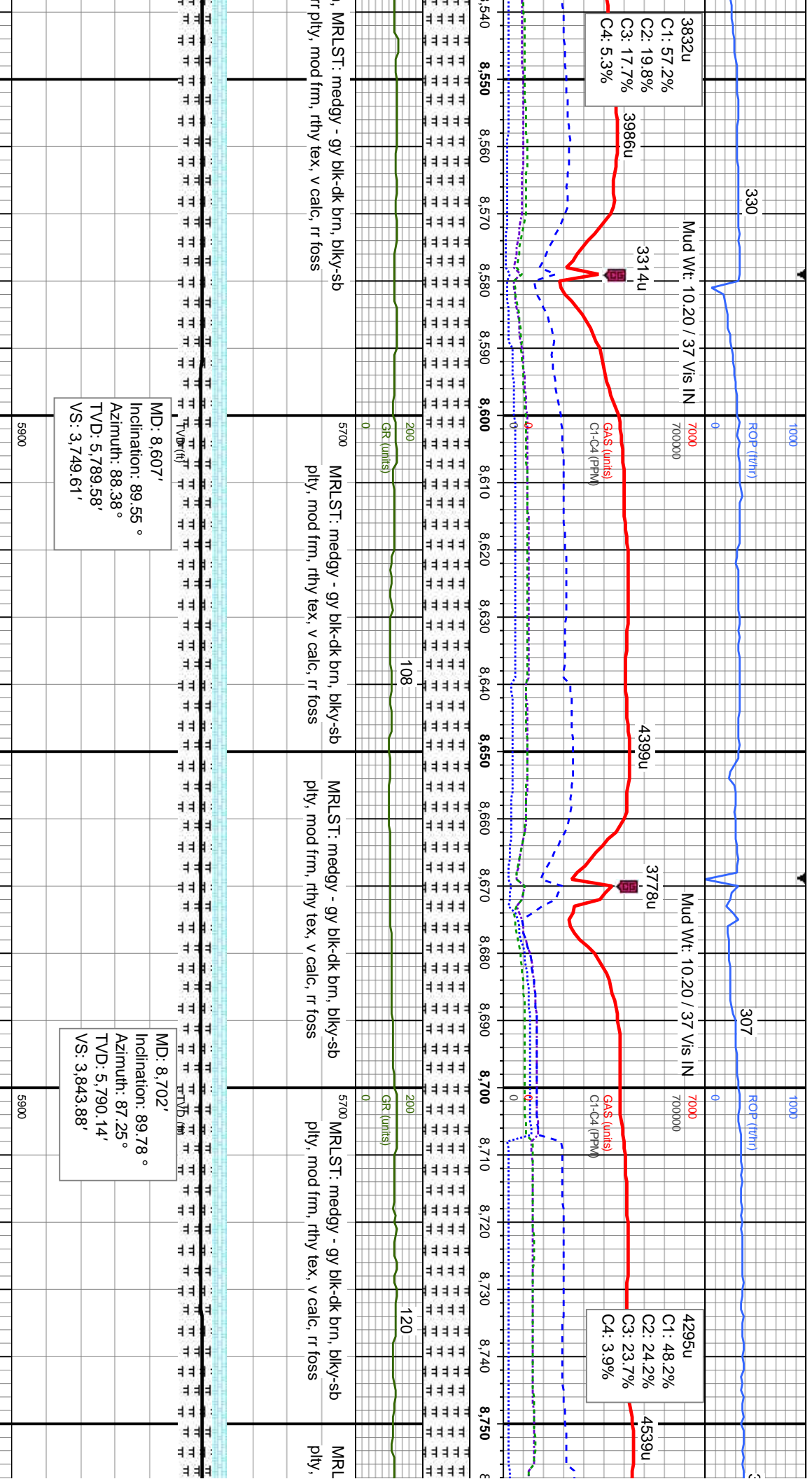


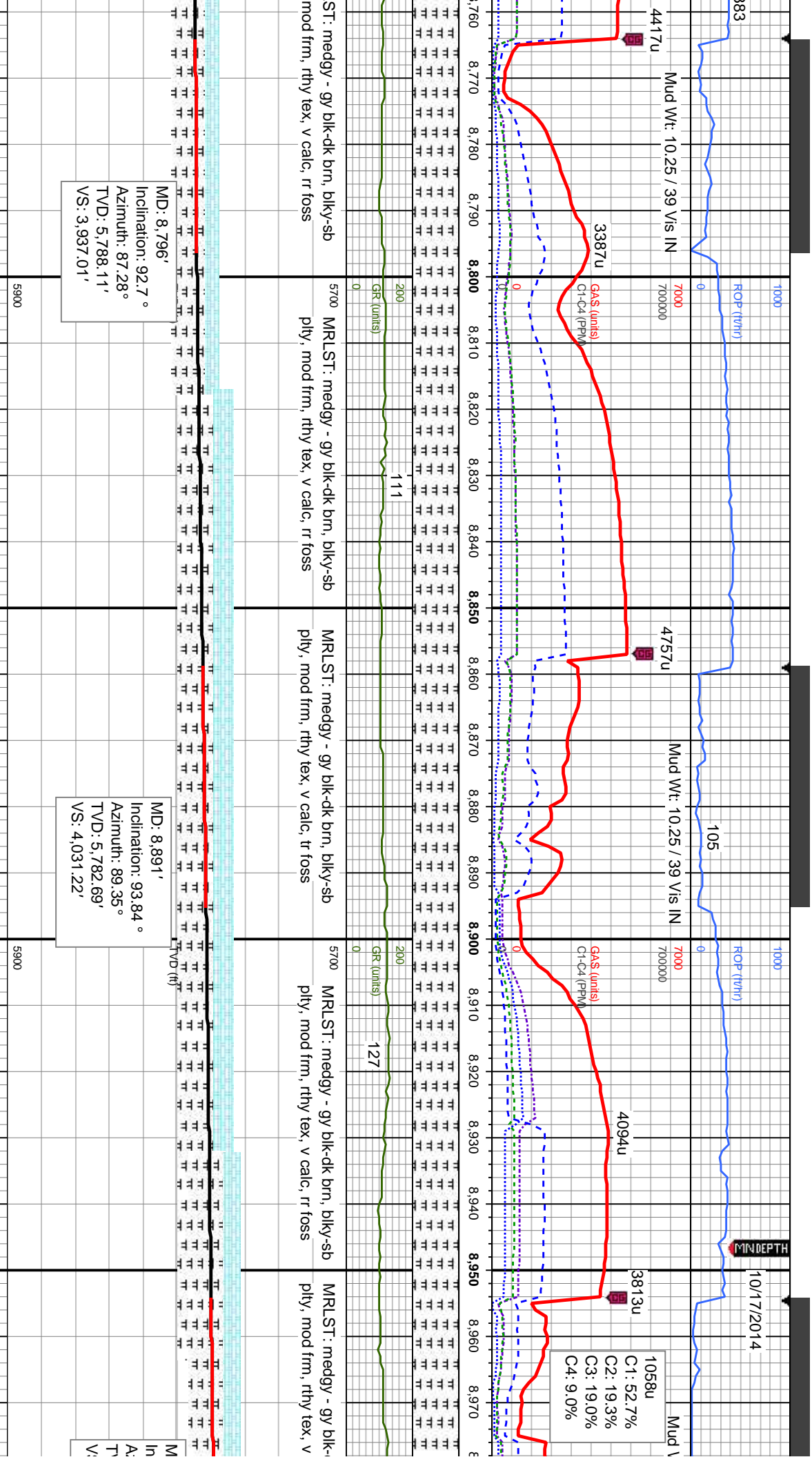
3,324'
ation: 89.78 °
uth: 88.38 °
5,787.32'
,468.49'

MD: 8,418'
Inclination: 89.51 °
Azimuth: 88.15 °
TVD: 5,787.9'
VS: 3,561.85'

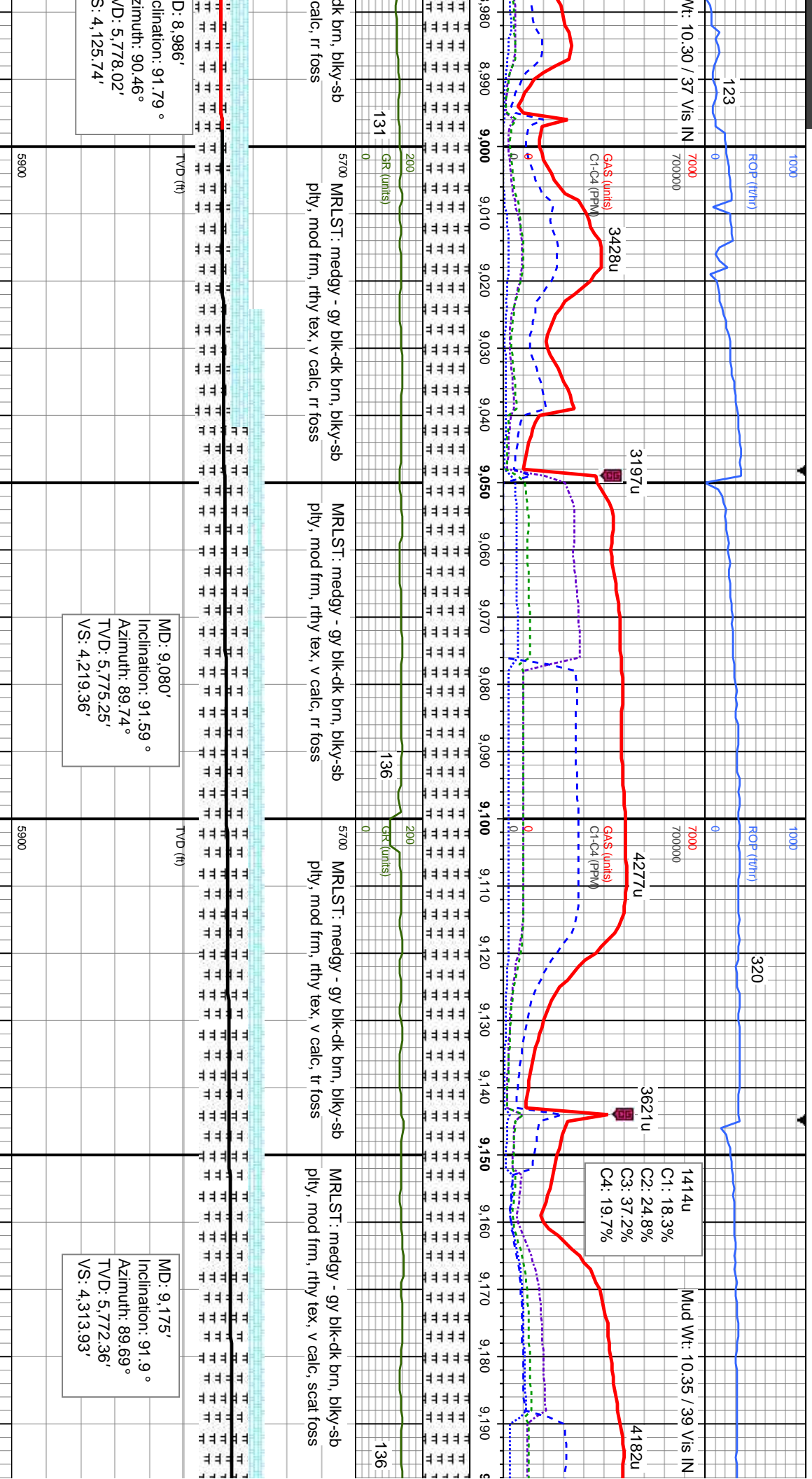
MD: 8,513'
Inclination: 89.45 °
Azimuth: 88.42 °
TVD: 5,788.76'
VS: 3,656.22'







A vertical strip of four images showing a dark, textured surface, likely a rock or mineral specimen, with a white background on the right side. The texture is rough and granular, with some lighter-colored mineral inclusions visible.

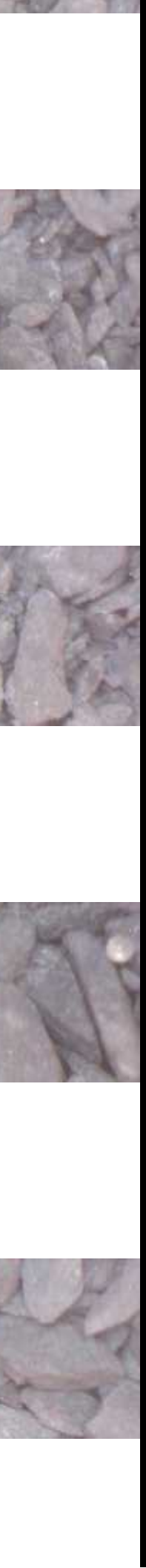
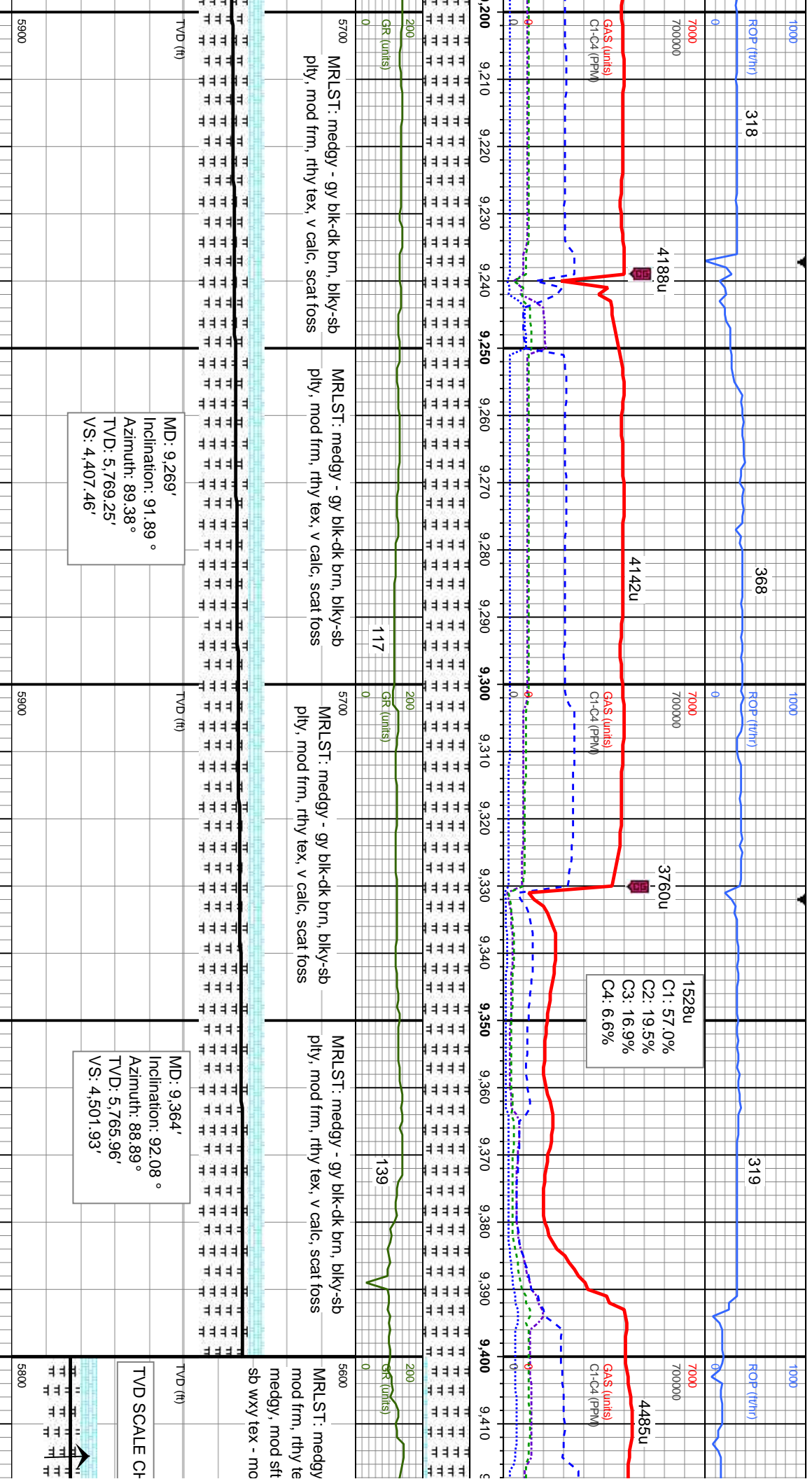


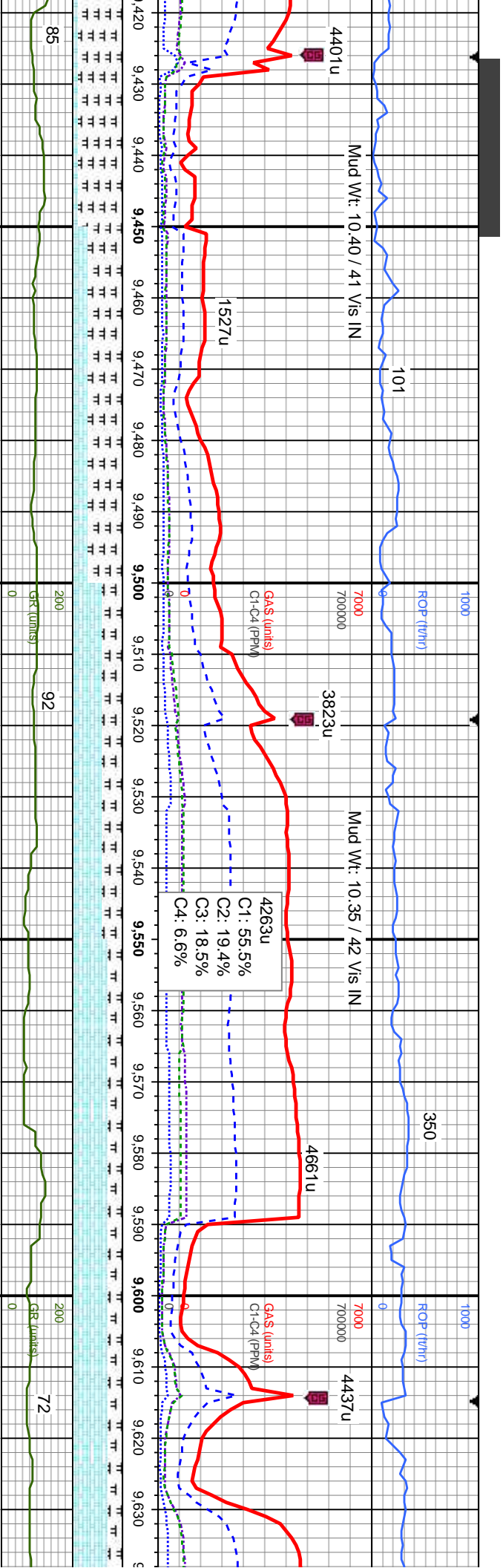
D: 8,986'
Inclination: 91.79 °
Azimuth: 90.46 °
VD: 5,778.02'
VS: 4,125.74'

MD: 9,080'
Inclination: 91.59 °
Azimuth: 89.74 °
TVD: 5,775.25'
VS: 4,219.36'

MD: 9,175'
Inclination: 91.9 °
Azimuth: 89.69 °
TVD: 5,772.36'
VS: 4,313.93'

1414u
C1: 18.3%
C2: 24.8%
C3: 37.2%
C4: 19.7%





- gy blk-dk brn, blkly-sb pty,
x, v calc CHK: lty, occ
- mod frm, sb pty-sb blkly,
t, v calc

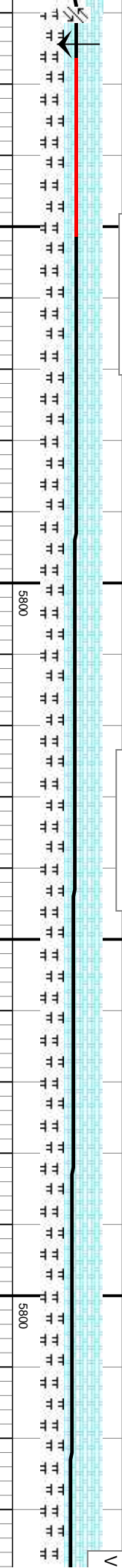
MRLST: medgy - gy blk-dk brn, blkly-sb pty,
mod frm, rthy tex, v calc CHK: lty, occ
medgy, mod sft - mod frm, sb pty-sb blkly,
sb wxy tex - mot, v calc

CHK: lty, occ medgy, mod sft - mod frm, sb
pty-sb blkly, sb wxy tex - mot, v calc MRLST:
medgy - gy blk-dk brn, blkly-sb pty, mod frm,
rthy tex, com foss, com cal xls, v calc

CHK: lty, occ medgy, mod sft - mod frm, sb
pty-sb blkly, sb wxy tex - mot, v calc MRLST:
medgy - gy blk-dk brn, blkly-sb pty, mod frm,
rthy tex, com foss, com cal xls, v calc

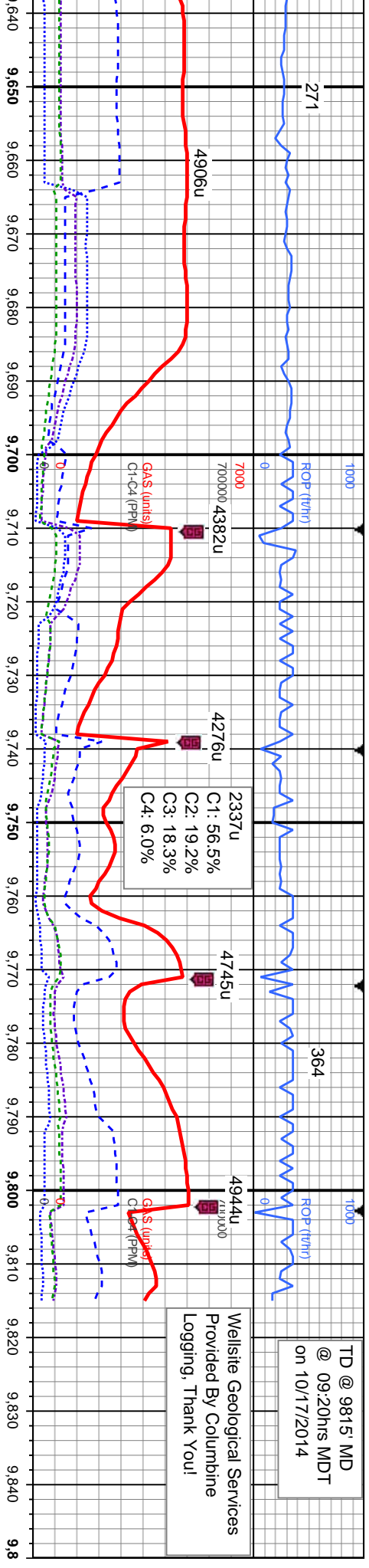
MD: 9,458'
Inclination: 89.43 °
Azimuth: 88.89 °
TVD: 5,764.72'
VS: 4,595.39'

MD: 9,533'
Inclination: 88.88 °
Azimuth: 88.14 °
TVD: 5,765.82'
VS: 4,669.92'



TD @ 9815 MD
@ 09:20hrs MDT
on 10/17/2014

Wellsite Geological Services
Provided By Columbine
Logging, Thank You!



mod frm, sb
c MRLST:
mod frm,
calc

CHK: Itgy, occ medgy, mod sft - mod frm, sb
ply-sb blkly, sb wxy tex - mot, v calc MRLST:
medgy - gy blk-dk brn, blkly-sb ply, mod frm,
rthy tex, com foss, com cal xls, v calc

5600
CHK: Itgy, occ medgy, mod sft - mod frm, sb
ply-sb blkly, sb wxy tex - mot, v calc MRLST:
medgy - gy blk-dk brn, blkly-sb ply, mod frm,
rthy tex, com foss, com cal xls, v calc

5600
CHK: Itgy, occ medgy, mod sft - mod frm, sb
ply-sb blkly, sb wxy tex - mot, v calc MRLST:
medgy - gy blk-dk brn, blkly-sb ply, mod frm,
rthy tex, com foss, com cal xls, v calc

PROJ TO BIT

D: 9,647'
clination: 88.77 °
zimuth: 87.44 °
VD: 5,768.05'
S: 4,783.04'

MD: 9,742'
Inclination: 88.63 °
Azimuth: 87.17 °
TVD: 5,770.2'
VS: 4,877.18'

MD: 9,753'
Inclination: 88.66 °
Azimuth: 87.43 °
TVD: 5,770.46'
VS: 4,888.08'

MD: 9,815'
Inclination: 88.66 °
Azimuth: 87.43 °
TVD: 5,771.91'
VS: 4,949.54'

