

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD09-65-1HN(HORZ)

Location SE NE SEC. 9, T9N, R58W

State COLORADO

Country USA

API Number 05-123-37527-00

Region DJ BASIN

Spud Date 10/15/2013

Surface Coordinates 1,763' FNL, 480' FEL

Bottom Hole Coordinates 2,310' FNL, 660' FWL

County WELD

Rig Number H&P 326

AFE # 139470

Field WILDCAT

Drilling Completed 10/21/2013

Ground Elevation 4716'

K.B. Elevation 4746

Logged Interval 1300 To 9710

Total Depth 9710

Formation NIOBRARA B

Type of Drilling Fluid LSND

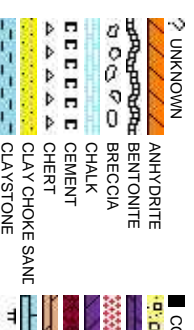
Company NOBLE ENERGY

Name EVAN HOWELL

Company NOBLE ENERGY

Address 1625 Broadway
Denver, CO 80202

Ryan Sullivan
Ted Stockwell



Operator

SY INC.

Geologist

SY INC.

Suite 2200
202

Other

Rock Types

| | | | | |
|----------------------|------------------|-------------|-------------|-----------------|
| AL | CONGLOMERATE | NO SAMPLE | METAMORPHIC | SHALY SILTSTONE |
| DOLomite | SALT | SANDSTONE | SILTSTONE | SILTY SHALE |
| GYPSUM | SALT-PEPPER SANT | SHALE | TUFF | |
| IGNEOUS | SHALE COLORED | WELDED TUFF | | |
| SIDERITE or LIMONITE | SHALE GRAY | | | |
| LIMESTONE | SHALY SANDSTONE | | | |
| MARLSTONE | | | | |

Accessories

| | | | | |
|----------------|-----------------|----------------------|-------------------|-----------------------|
| Fossils | F FOSSIL | ARGILLACEOUS | GLAUCONITE | TUFFACEOUS |
| GASTROPOD | ARGILLITE GRAIN | GYPSIFEROUS | | |
| ALGAE | OOLITE | B BENTONITE | HEAVY MINERAL | |
| AMPHIPORA | OSTRACOD | BITUMENOUS SUBSTANCE | INOCERAMUS | ANHYDRITE STRINGER |
| BELEMITE | PELECYPOD | BRECCIA FRAGMENTS | KAOLIN | BENTONITE STRINGER |
| BIOCLASTIC | PELLET | CALCAREOUS | MARLSTONE | COAL STRINGER |
| BRACHIOPOD | PISOLITE | CARBONACEOUS FLAKES | MINERAL CRYSTALS | DOLomite STRINGER |
| BRYOZOA | PLANT REMAINS | CHTDK | NODULES | GYPSUM STRINGER |
| CEPHALOPOD | PLANT SPORES | CHTLT | PHOSPHATE PELLET: | LIMESTONE STRINGER |
| CORAL | SCAPHOPOD | COAL - THIN BEDS | PYRITE | MARLSTONE (CALC) STRG |
| CRINOID | STROMATOPOROID | DOLOMITIC | SALT CAST | MARLSTONE (DOL) STRG |
| ECHINOID | | FELDSPAR | SANDY | SANDSTONE STRINGER |
| FISH | | | | SHALE STRINGER |
| FORAMINIFERA | ANHYDRITIC | FERRUGINOUS | SILICEOUS | SILTSTONE STRINGER |
| | | | SILTY | |

Other Symbols

| | | | | |
|--------------------|-----------------------|----------------------|------------------------|----------|
| Oil Show | MOLDIC | FAULT | WIRELINE TESTED - LEFT | E EARTHY |
| ORGANIC | FORMATION TOP | WIRELINE TESTED - RT | F FINELYXLN | |
| DEAD | PINPOINT | GAS SHOW | G GRANSTONE | |
| EVEN | VUGGY | MINDEPTH MN DEPTH | L LITHOGRAPHIC | |
| QUESTIONABLE | | | | |
| SPOTTED STAINING | | | | |
| Engineering | NORMAL FAULT | ANGULAR | MX MICROXLN | |
| BIT | OIL SHOW | R ROUNDED | MS MUDSTONE | |
| CONNECTION (LEFT) | OVERTURNED STRATA | S SUBANG | PS PACKSTONE | |
| CONNECTION (RIGHT) | REVERSE FAULT | SUBRND | WS WACKSTONE | |
| CONNECTION GAS | SIDEWALL CORE (LEFT) | | | |
| CONNECTION GAS | SIDEWALL CORE (RIGHT) | | | |
| Textures | SLIDE | B BOUNDSTONE | M MODERATE | |
| CORE - LOST | SURVEY | C CHALKY | P POOR | |
| CORE - RECOVERED | TRIP GAS | CX CRYPTOXLN | W WELL | |
| INTEROOLITIC | DST INTERVAL | | | |

Slide/Rotate

ROP

ROP (ft/hr)

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.
RIGGED UP ON 10/16/2013
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0298
COLUMBINE BEGAN LOGGING
ON 10/16/2013

Depth Labels

% Lith

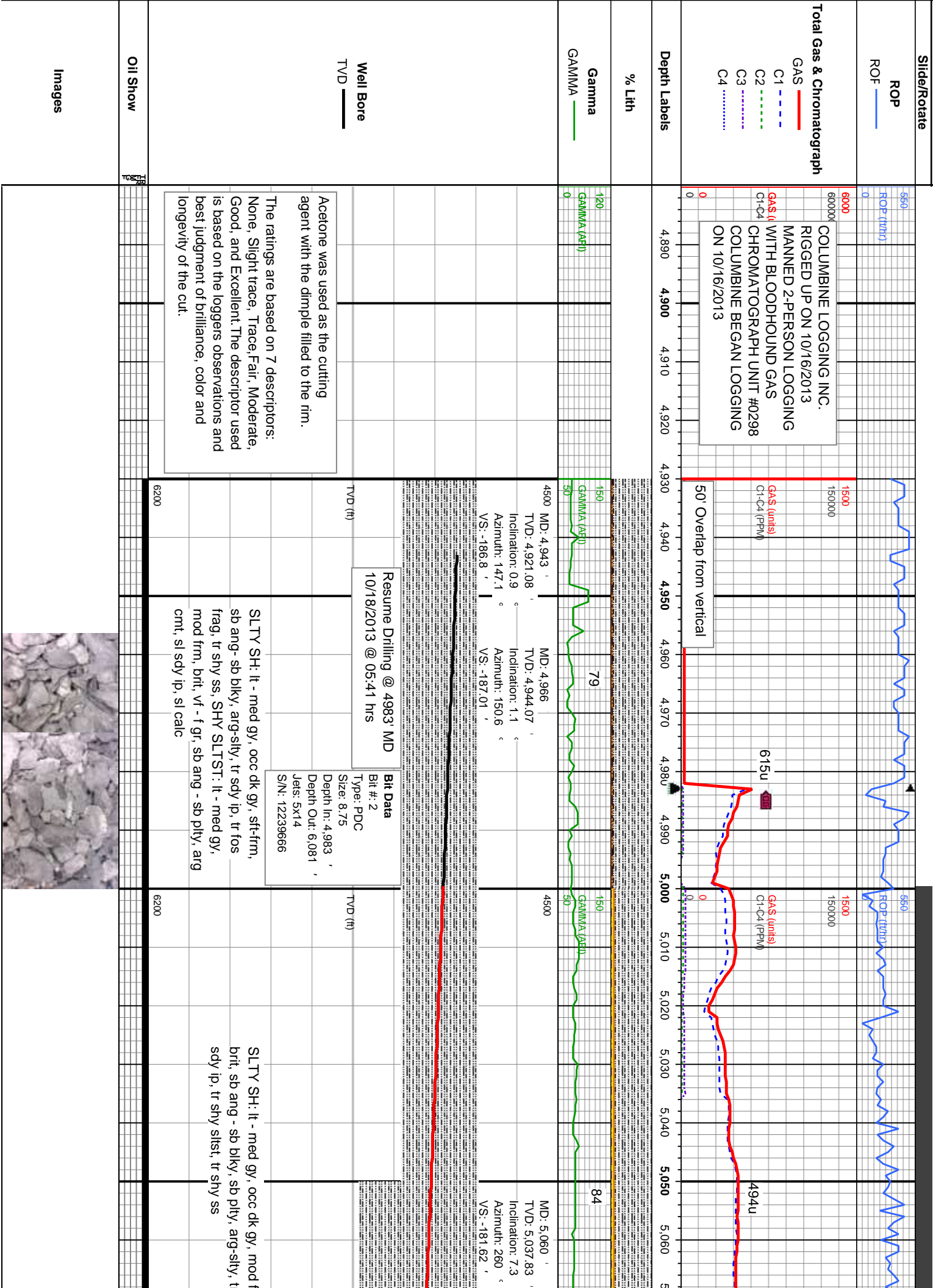
Gamma

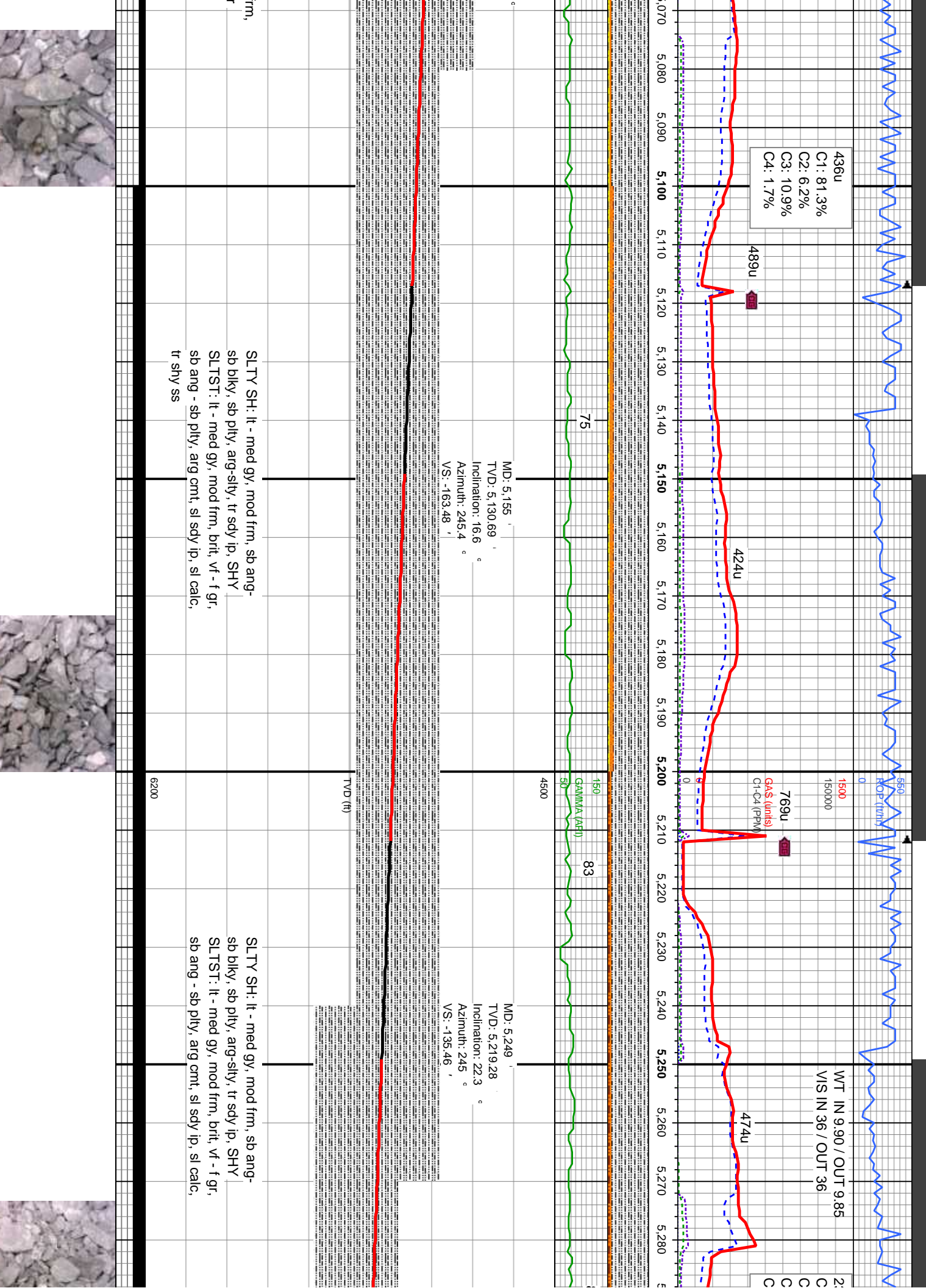
GAMMA

Well Bore
TVD

Oil Show

Images



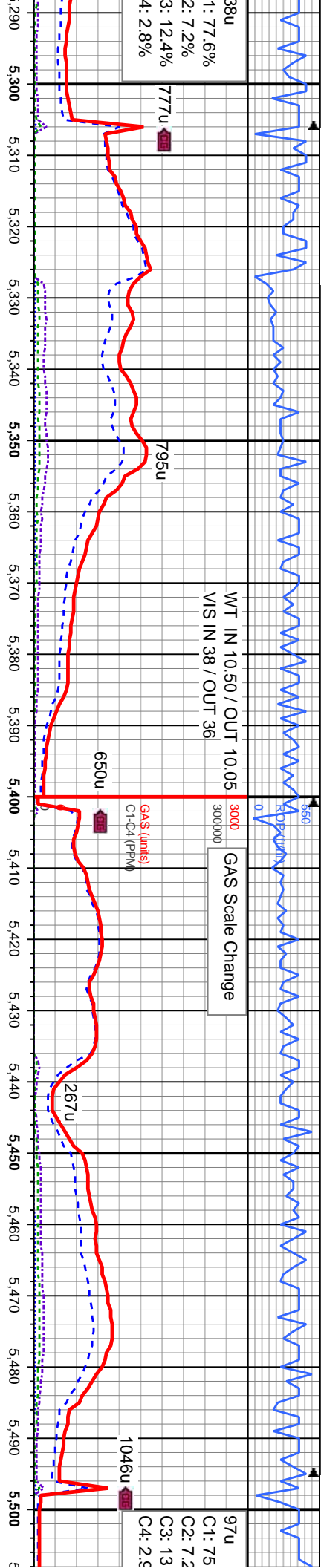


1: 77.6%
2: 7.2%
3: 12.4%
4: 2.8%

WT IN 10.50 / OUT 10.05
VIS IN 38 / OUT 36

GAS Scale Change
3000
300000

97u
C1: 75
C2: 7.2
C3: 13
C4: 2.8



MD: 5,344
TVD: 5,305.18
Inclination: 28.2
Azimuth: 248.9
VS: -98.6

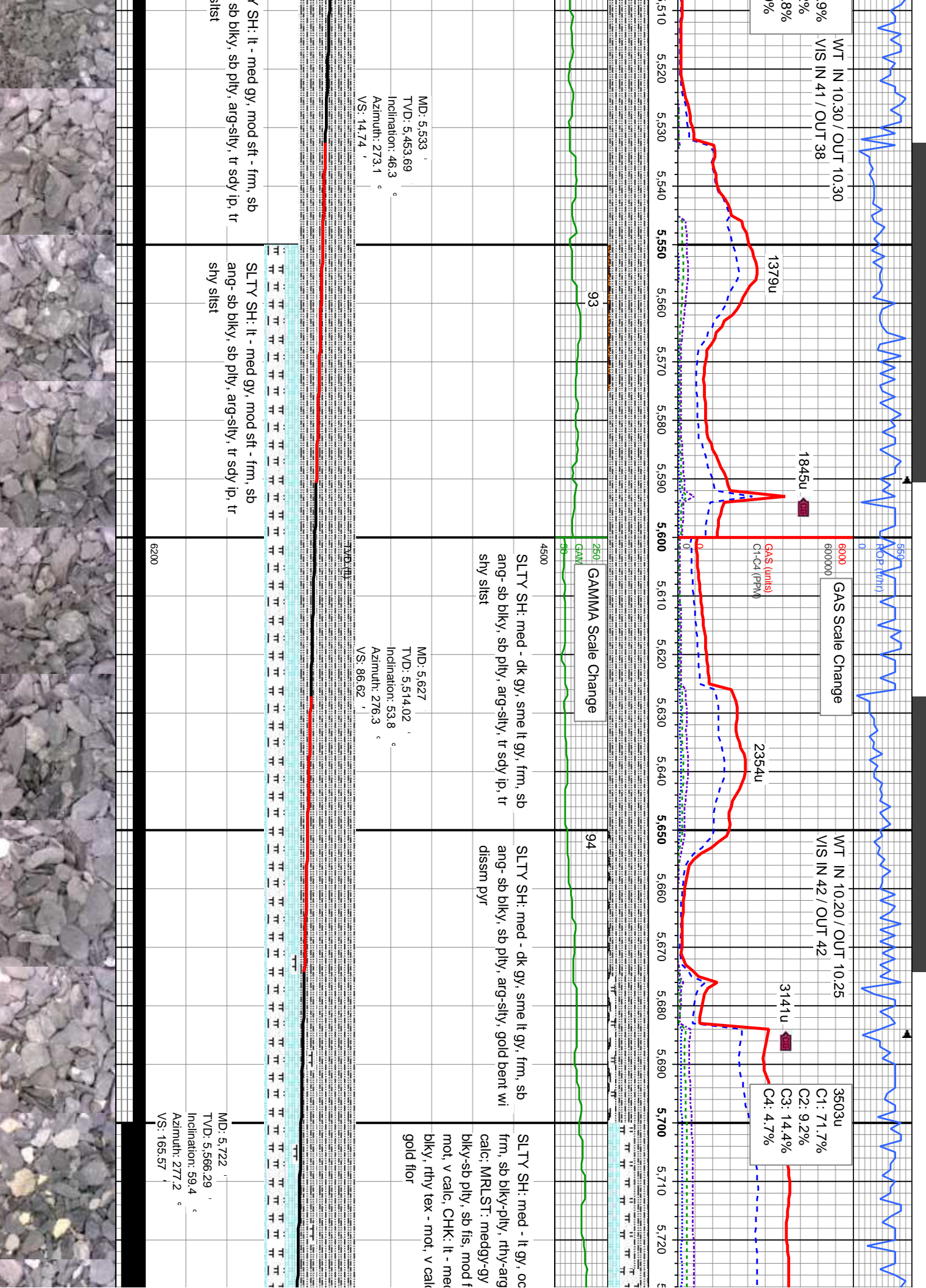
MD: 5,438
TVD: 5,383.59
Inclination: 38.7
Azimuth: 261.2
VS: -49.31

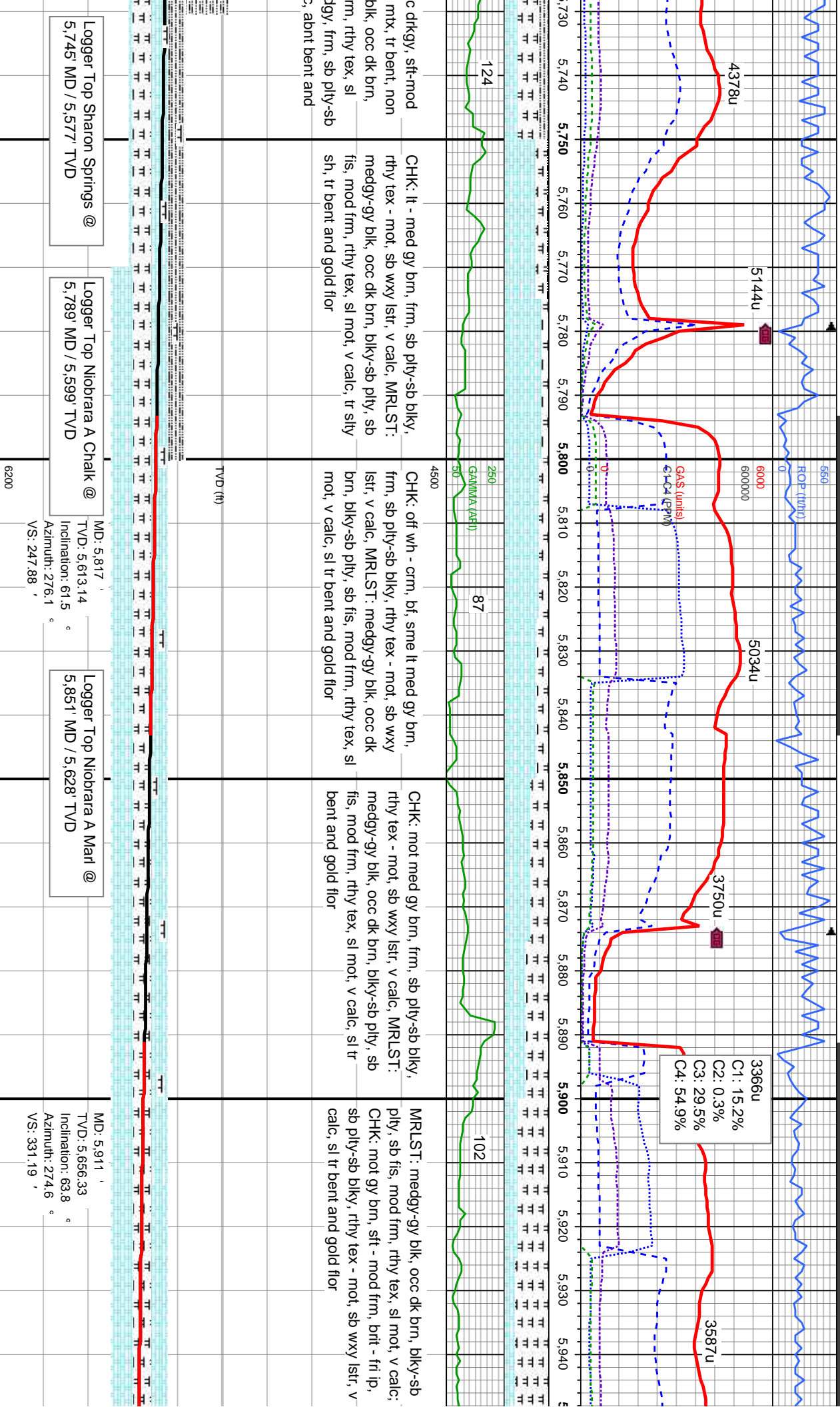
SLTY SH: lt - med gy, mod sft - frm, sb
ang- sb blkly, sb ply, arg-sltly, tr sdy ip
grdg to occ shy slst

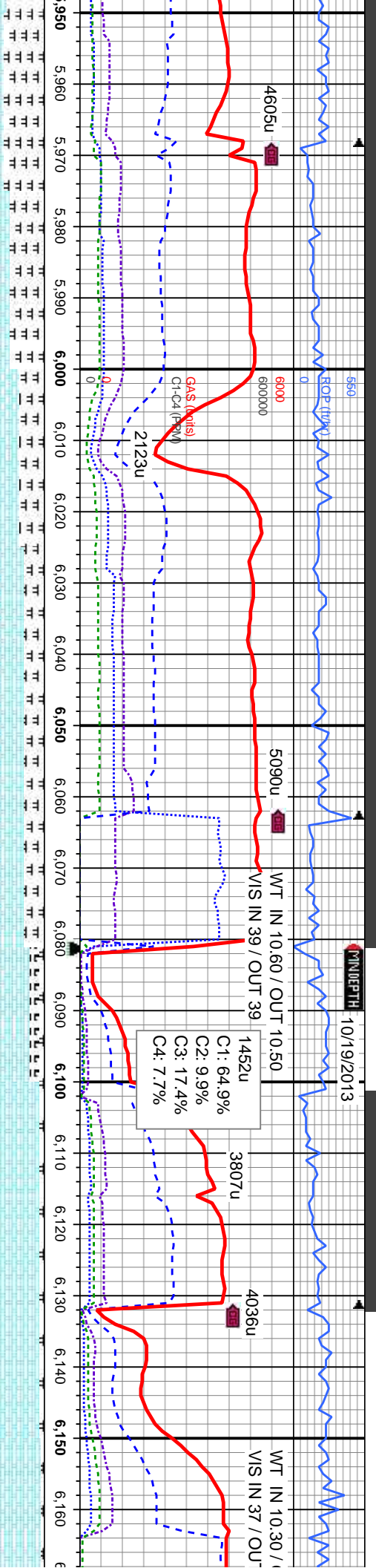
SLTY SH: lt - med gy, mod sft - frm, sb
ang- sb blkly, sb ply, arg-sltly, tr sdy ip, tr
shy slst

6200









MRSLST: medgy-gy blk, occ dk brn, blk-y-sb
ply, sb fis, mod frm, rthy tex, sl mot, v calc;
CHK: mot gy brn, sne bf, mod frm, brt, sb
ply-sb blk, rthy tex - mot, sb wxy istr, v
calc, sl tr bent and gold flor

CHK: off wh crm - bf, mot bf - gy brn, frm,
brt, sb ply-sb blk, rthy tex - mot, sb wxy
istr, v calc; MRLST: medgy-gy blk, occ dk
brn, blk-y-sb ply, sb fis, mod frm, rthy tex, sl
mot, v calc

CHK: off wh crm - bf, mot bf - gy brn, frm,
brt, sb ply-sb blk, rthy tex - mot, sb wxy
istr, v calc; MRLST: medgy-gy blk, occ dk
brn, blk-y-sb ply, sb fis, mod frm, rthy tex, sl
mot, v calc

CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb ply-sb blk, rthy tex - mot, sb wxy
istr, v calc; MRLST: medgy-gy blk, occ dk
brn, blk-y-sb ply, sb fis, mod frm, rthy tex, sl
mot, calc

CHK: off wh crm
frm, sb ply-sb b
istr, v calc, tr fos
blk, occ dk brn,
frm, rthy tex, sl

TVD (ft)
MD: 6,024
TVD: 5,693.11
Inclination: 78.4
Azimuth: 269.5

Drilled out of 7" Casing @
22:50 hrs 10/19/2013

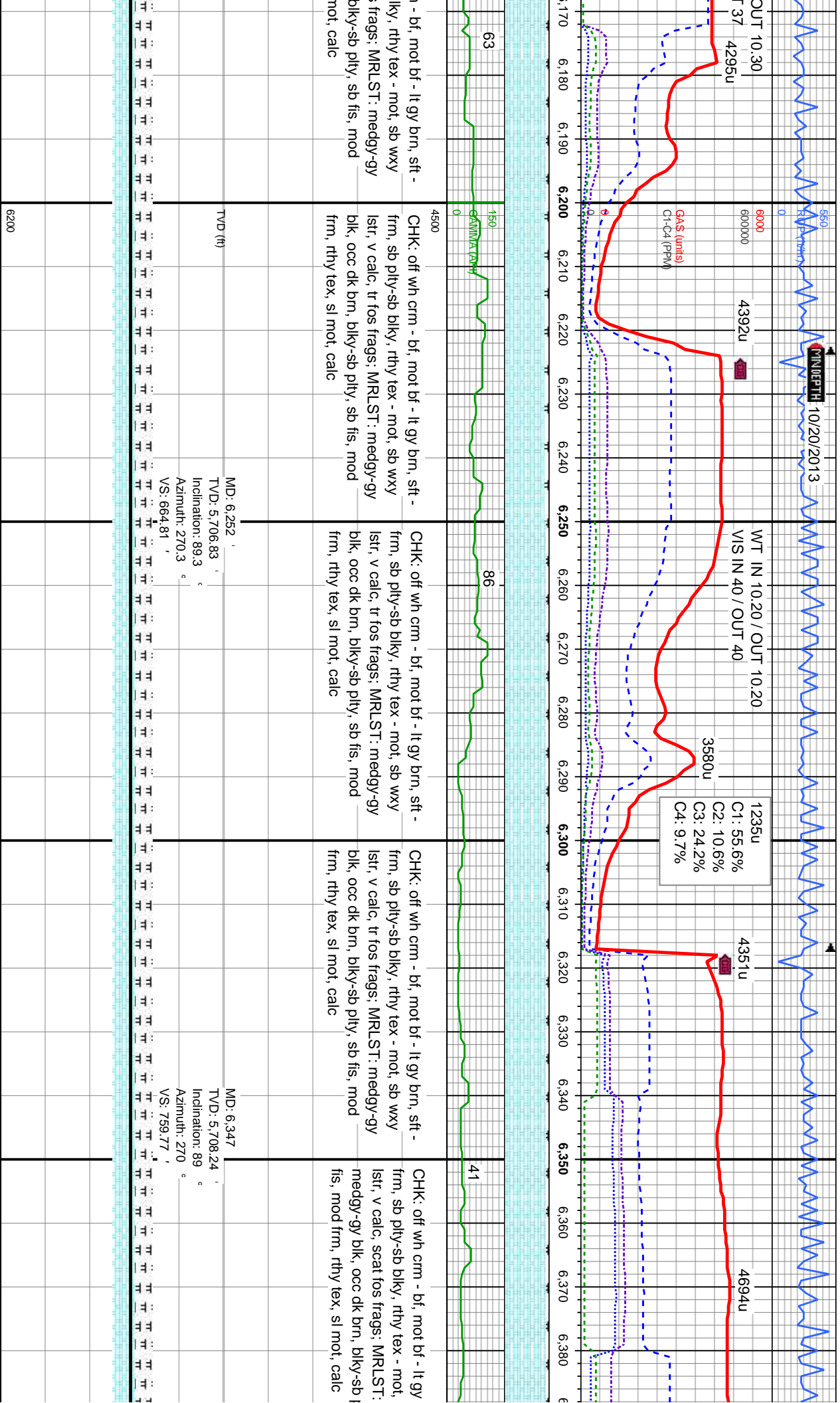
MD: 6,098
TVD: 5,702.95
Inclination: 86.3
Azimuth: 270

MD: 6,159
TVD: 5,705.45
Inclination: 89
Azimuth: 270.3

Logger Top Niobrara B Chalk @
5,998' MD / 5,686' TVD

MD: 6,006
TVD: 5,689.09
Inclination: 75.8
Azimuth: 269.8
VS: 420.14





- bf, mot bf - lt gy brn, sft -
blk, rthy tex - mot, sb wxy
frags; MRLST: medgy-gy
blkly-sb pty, sb fis, mod
mot, calc

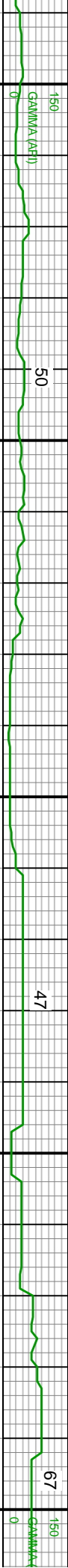
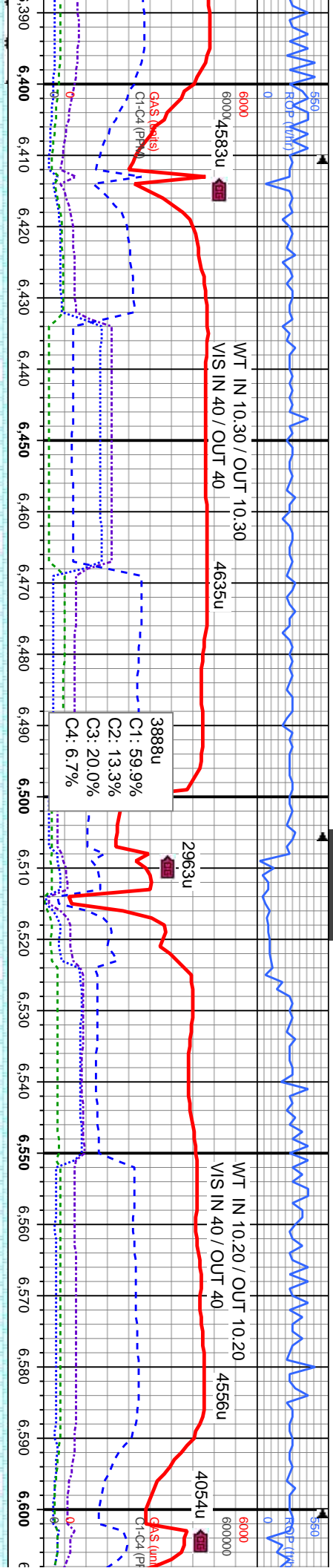
CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pty-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, tr fos frags; MRLST: medgy-gy
blk, occ dk brn, blkly-sb pty, sb fis, mod
frm, rthy tex, sl mot, calc

CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pty-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, tr fos frags; MRLST: medgy-gy
blk, occ dk brn, blkly-sb pty, sb fis, mod
frm, rthy tex, sl mot, calc

CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pty-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, tr fos frags; MRLST: medgy-gy
blk, occ dk brn, blkly-sb pty, sb fis, mod
frm, rthy tex, sl mot, calc

CHK: off wh crm - bf, mot bf - lt gy
frm, sb pty-sb blkly, rthy tex - mot,
lstr, v calc, scat fos frags; MRLST:
medgy-gy blk, occ dk brn, blkly-sb p
fis, mod frm, rthy tex, sl mot, calc

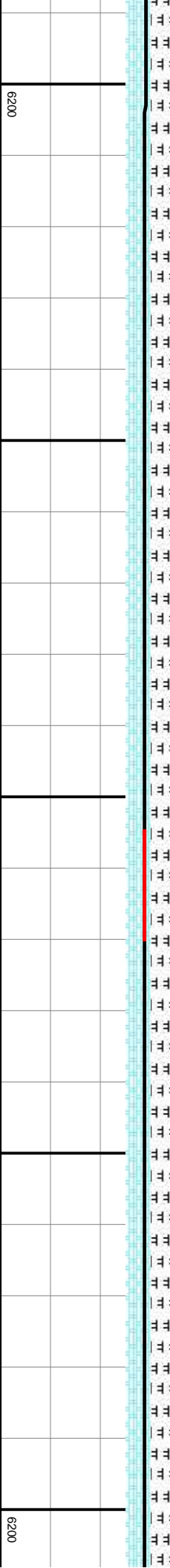


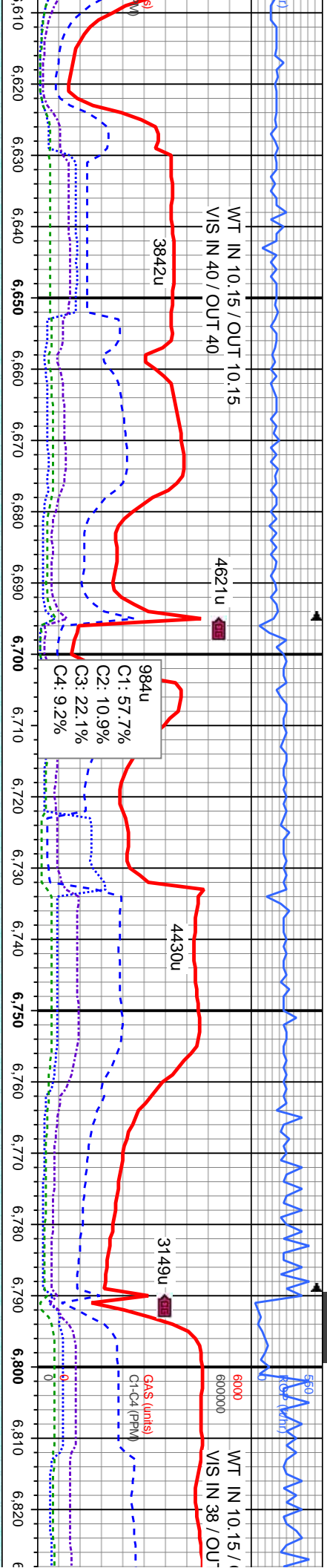


| Depth (ft) | Log Description |
|------------|---|
| 4500 | CHK: off wh crm - bf, mot bf - lt gy brn, sft - frm, sb pily-sb blkly, rthy tex - mot, sb wxy lstr, v calc, occ fos frags, occ mlst frags |
| 4500 | CHK: off wh crm - bf, mot bf - lt gy brn, sft - frm, sb pily-sb blkly, rthy tex - mot, sb wxy lstr, v calc, occ fos frags, tr mlst frags |
| 4500 | CHK: off wh crm - bf, mot bf - lt gy brn, sft - frm, sb pily-sb blkly, rthy tex - mot, sb wxy lstr, v calc, occ fos frags, tr mlst frags |

| MD: 6.441 | TVD: 5,710.21 | Inclination: 88.6 | VS: 853.71 |
|----------------|---------------|-------------------|------------|
| Azimuth: 269.5 | | | |

| MD: 6.536 | TVD: 5,710.79 | Inclination: 90.7 | VS: 948.61 |
|----------------|---------------|-------------------|------------|
| Azimuth: 268.8 | | | |





off wh crm - bf, mot bf - lt gy brn, sft -
b pily-sb blkly, rthy tex - mot, sb wxy
calc, occ fos frags, scat mlst frags

CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pily-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, occ fos frags, occ mlst frags

CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pily-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, occ fos frags, occ mlst frags

CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pily-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, occ fos frags, occ mlst frags,
occ dul gn mnrl flr

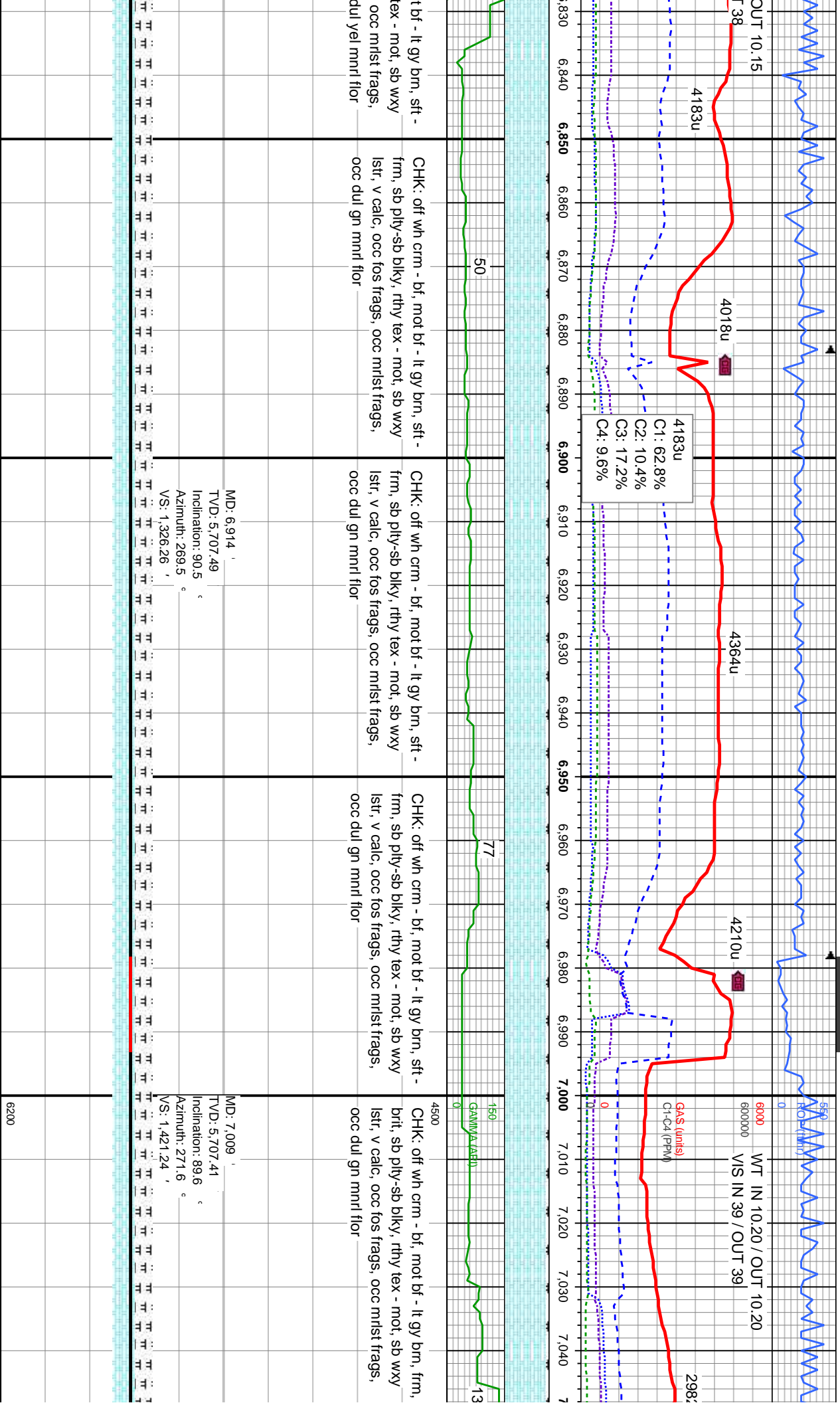
CHK: off wh crm - bf, mot bf - lt gy brn, sft -
frm, sb pily-sb blkly, rthy tex - mot, sb wxy
lstr, v calc, occ fos frags,
tr bent wi dissim pyr and

MD: 6.630
TVD: 5,709.72
Inclination: 90.6
Azimuth: 268.6
VS: 1,042.49

MD: 6.725
TVD: 5,709.06
Inclination: 90.2
Azimuth: 268.6
VS: 1,137.36

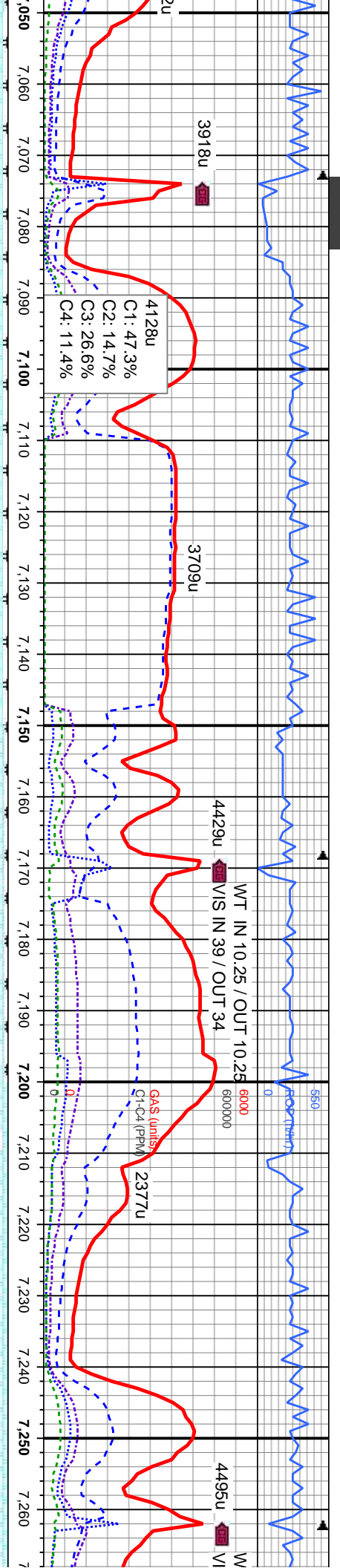
MD: 6.819
TVD: 5,708.4
Inclination: 90.6
Azimuth: 270.7
VS: 1,231.3





MD: 6,914
TVD: 5,707.49
Inclination: 90.5
Azimuth: 269.5
VS: 1,326.26

MD: 7,009
TVD: 5,707.41
Inclination: 89.6
Azimuth: 271.6
VS: 1,421.24



CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, tr fos frags; MRLST: medgy-gy blk, occ dk brn, blk-sb pily, sb fis, mod frm, rthy tex, sl mot, calc, occ dul gn mnrl flr

CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, tr fos frags; MRLST: medgy-gy blk, occ dk brn, blk-sb pily, sb fis, mod frm, rthy tex, sl mot, calc, occ dul gn mnrl flr

CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex - mot, sb wxy lstr, v calc, occ fos frags, occ mlst frags, occ dul gn mnrl flr

CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex - mot, sb wxy lstr, v calc, occ fos frags, occ mlst frags, occ dul gn mnrl flr

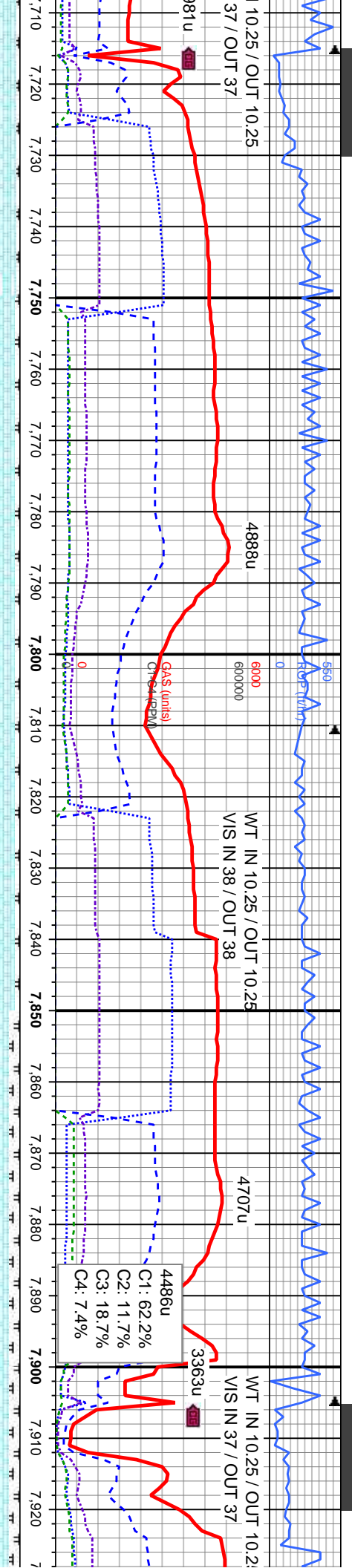
CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex - mot, sb wxy lstr, v calc, occ fos frags, occ mlst frags, occ dul gn mnrl flr

MD: 7,104 '
TVD: 5,709.23 '
Inclination: 88.2 °
Azimuth: 270.3 °
VS: 1,516.21 '

MD: 7,199 '
TVD: 5,712.3 '
Inclination: 88.1 °
Azimuth: 270.7 °
VS: 1,611.14 '

MD: 7,200 '
TVD: 5,712.3 '
Inclination: 88.1 °
Azimuth: 270.7 °
VS: 1,611.14 '

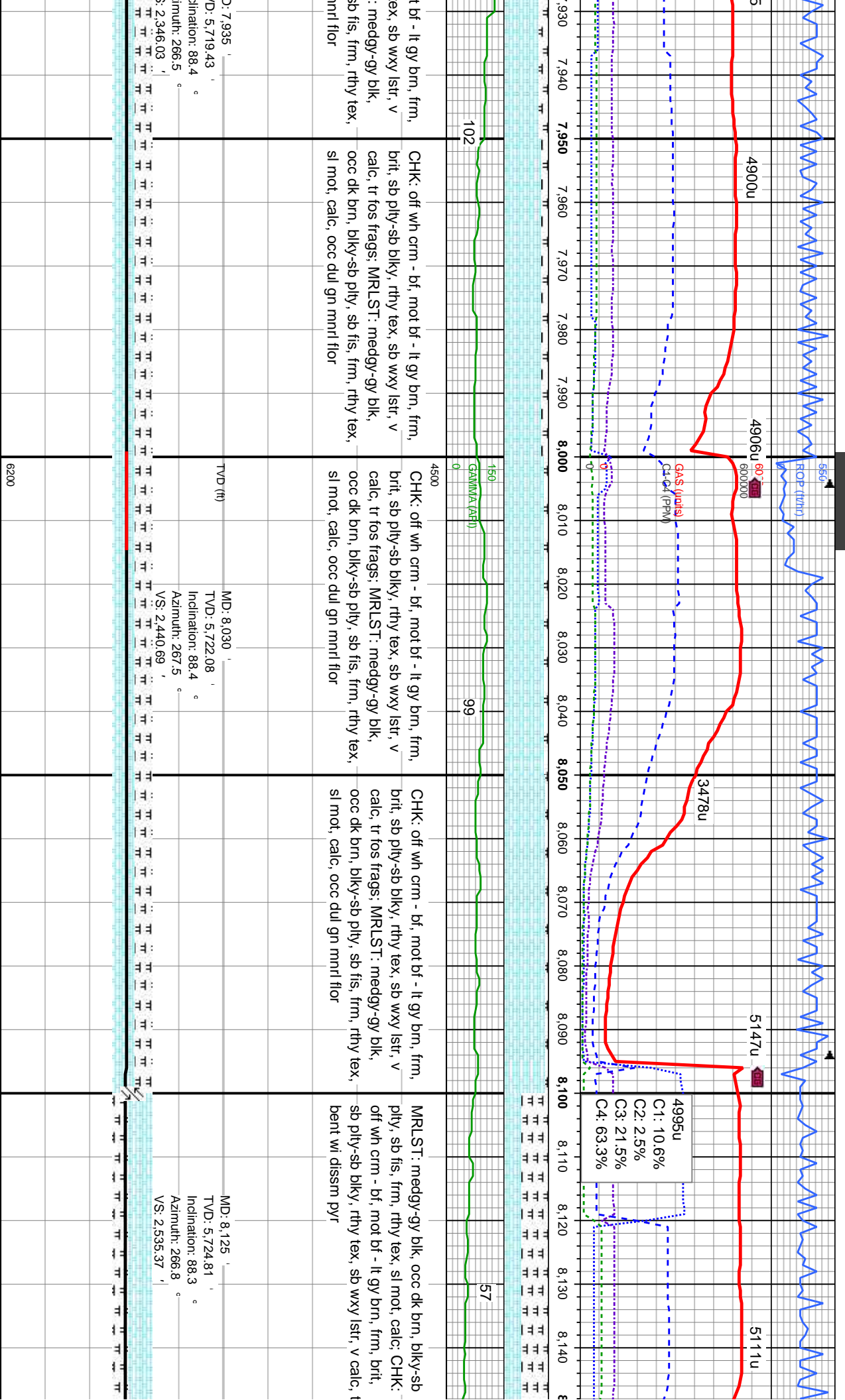


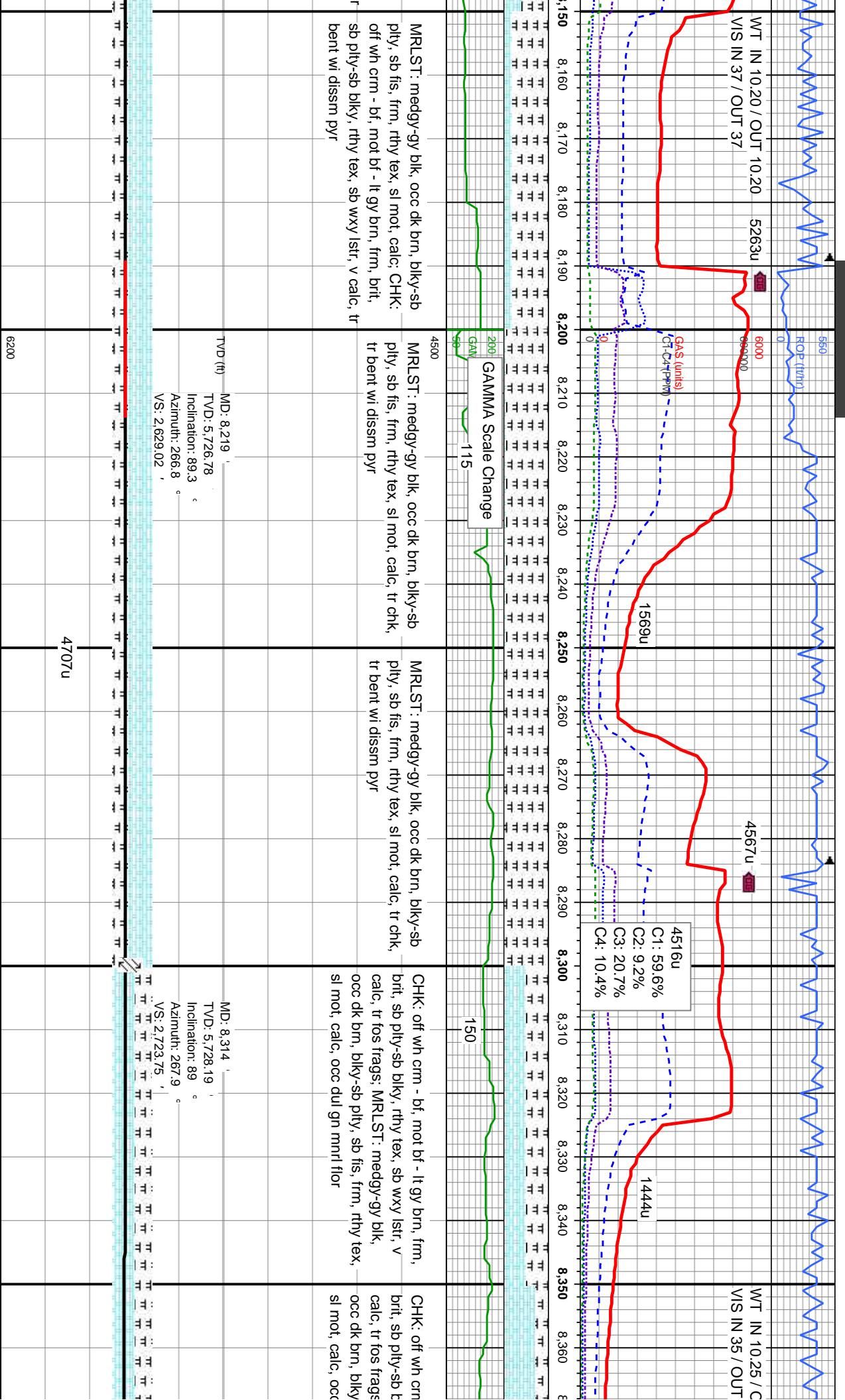


| | | | |
|---|--|--|--|
| off wh crm - bf, mot bf - lt gy bm, frm, pty-sb blk, rthy tex, sb wxy istr, v tr fos frags: MRLST: medgy-gy blk, dk brn, blk-ty-sb pty, sb fis, mod frm, x, sl mot, calc, occ dul gn mnrl flr | CHK: off wh crm - bf, mot bf - lt gy bm, frm, brit, sb pty-sb blk, rthy tex, sb wxy istr, v calc, tr fos frags: MRLST: medgy-gy blk, occ dk brn, blk-ty-sb pty, sb fis, mod frm, rthy tex, sl mot, calc, occ dul gn mnrl flr | CHK: off wh crm - bf, mot bf - lt gy bm, frm, brit, sb pty-sb blk, rthy tex, sb wxy istr, v calc, tr fos frags: MRLST: medgy-gy blk, occ dk brn, blk-ty-sb pty, sb fis, mod frm, rthy tex, sl mot, calc, occ dul gn mnrl flr | CHK: off wh crm - bf, mot bf - lt gy bm, frm, brit, sb pty-sb blk, rthy tex, sb wxy istr, v calc, tr fos frags: MRLST: medgy-gy blk, occ dk brn, blk-ty-sb pty, sb fis, mod frm, rthy tex, sl mot, calc, occ dul gn mnrl flr |
|---|--|--|--|

| | | | |
|--|---|---|---|
| MD: 7,746 TVD: 5,716.7 Inclination: 88.3 Azimuth: 267 VS: 2,157.55 | MD: 7,841 TVD: 5,718.11 Inclination: 90 Azimuth: 268.2 VS: 2,252.31 | MD: 7,841 TVD: 5,718.11 Inclination: 90 Azimuth: 268.2 VS: 2,252.31 | MD: 7,841 TVD: 5,718.11 Inclination: 90 Azimuth: 268.2 VS: 2,252.31 |
|--|---|---|---|







MRLST: medgy-gy blk, occ dk brn, blk-y-sb
ply, sb fis, frm, rthy tex, sl mot, calc; CHK:
off wh crm - bf, mot bf - lt gy brn, frm, brit,
sb ply-sb blk, rthy tex, sb wxy lstr, v calc, tr
bent wi dissim pyr

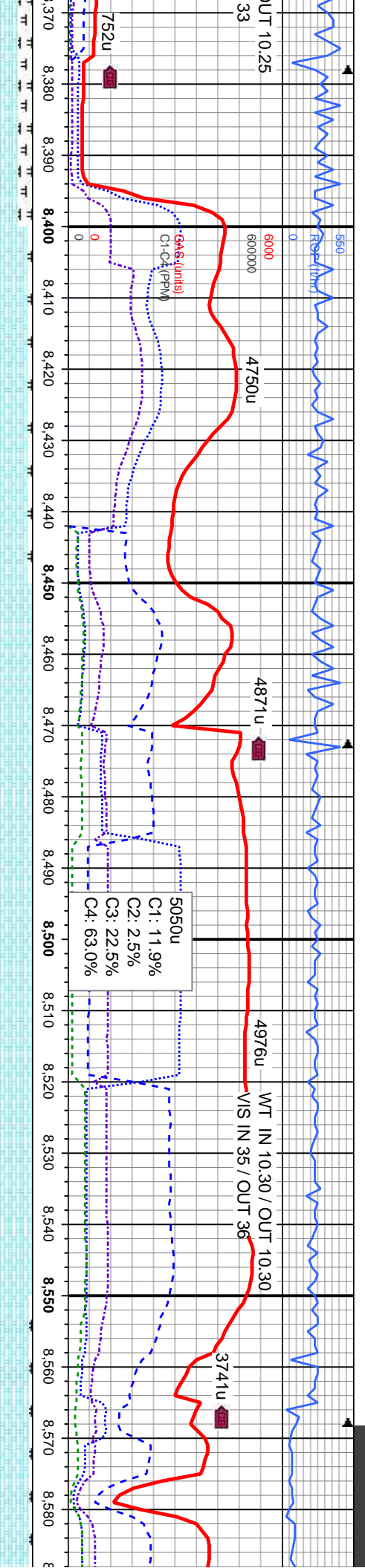
MRLST: medgy-gy blk, occ dk brn, blk-y-sb
ply, sb fis, frm, rthy tex, sl mot, calc, tr chk,
tr bent wi dissim pyr

MRLST: medgy-gy blk, occ dk brn, blk-y-sb
ply, sb fis, frm, rthy tex, sl mot, calc, tr chk,
tr bent wi dissim pyr

CHK: off wh crm - bf, mot bf - lt gy brn, frm,
brit, sb ply-sb blk, rthy tex, sb wxy lstr, v
calc, tr fos frags; MRLST: medgy-gy blk,
occ dk brn, blk-y-sb ply, sb fis, frm, rthy tex,
sl mot, calc, occ dul gn mnrl flr

CHK: off wh crm
brit, sb ply-sb t
calc, tr fos frags
occ dk brn, blk
sl mot, calc, occ





GAMMA Scale Change

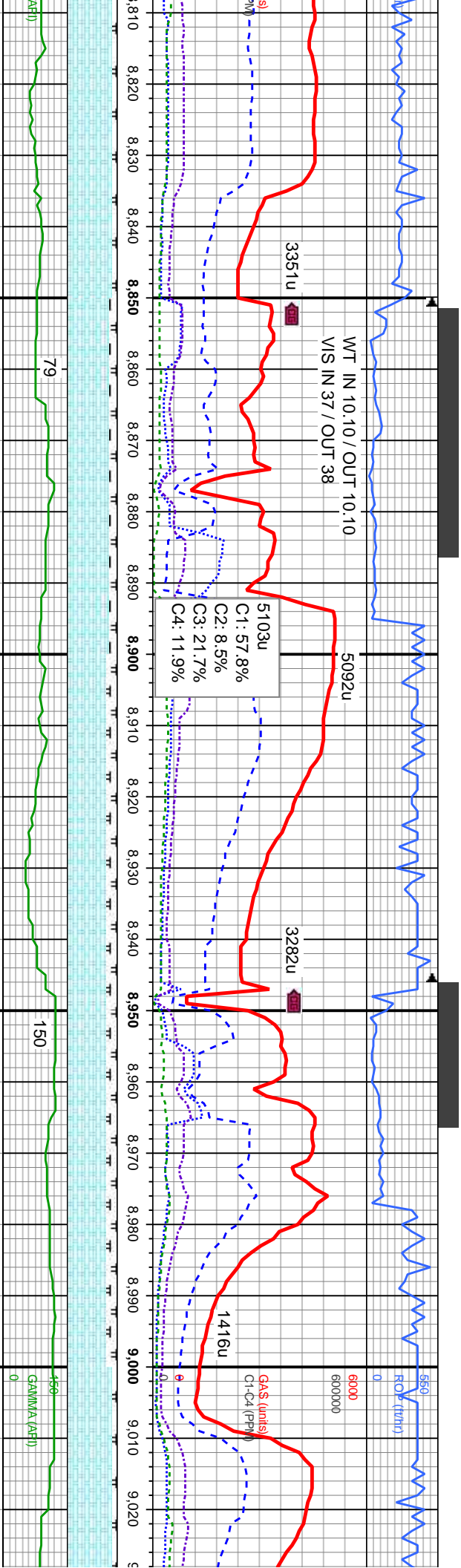
5050u
C1: 11.9%
C2: 2.5%
C3: 22.5%
C4: 63.0%

| | | | |
|--|---|---|---|
| off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v |
| occ dk brn, blk, rthy tex, sb fis, frm, rthy tex, occ dul gn mnrl flr | calc, tr mrlst, occ dul gn mnrl flr | calc, tr mrlst, occ dul gn mnrl flr | calc, tr mrlst, occ dul gn mnrl flr |

MD: 8.409
TVD: 5,730.18
Inclination: 88.6
Azimuth: 267.7
VS: 2,818.52

MD: 8.504
TVD: 5,732.59
Inclination: 88.5
Azimuth: 267
VS: 2,913.23





off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pty-sb blk, rthy tex, sb wxy lstr, v r fos frags: MRLST: medgy-gy blk, k brn, blk, sb pty, sb fis, frm, rthy tex, calc, occ dul gn mnrl flr

CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pty-sb blk, rthy tex, sb wxy lstr, v calc, tr fos frags: MRLST: medgy-gy blk, occ dk brn, blk, sb pty, sb fis, frm, rthy tex, sl mot, calc, occ dul gn mnrl flr

CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pty-sb blk, rthy tex, sb wxy lstr, v calc, tr fos frags: MRLST: medgy-gy blk, occ dk brn, blk, sb pty, sb fis, frm, rthy tex, sl mot, calc, occ dul gn mnrl flr

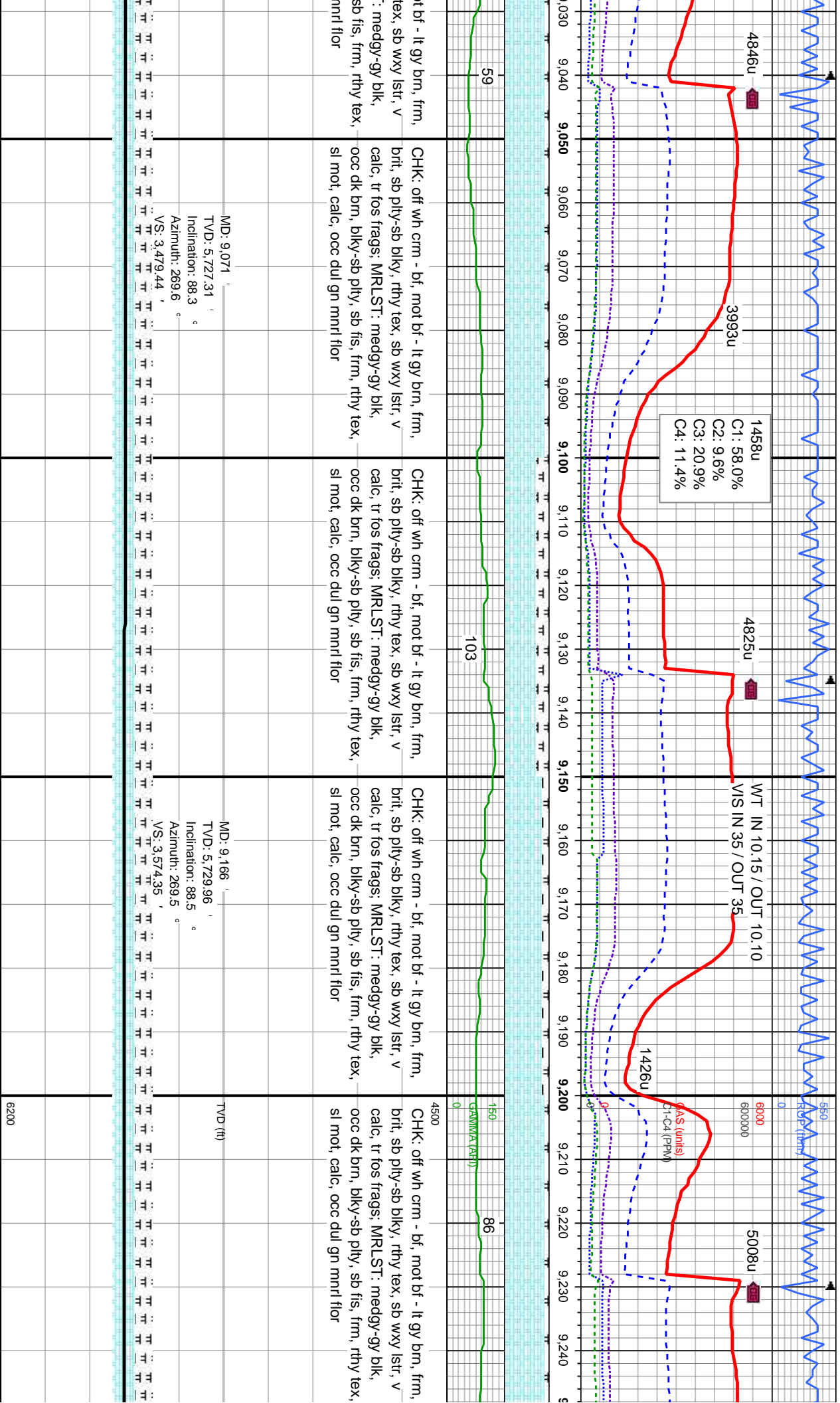
CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pty-sb blk, rthy tex, sb wxy lstr, v calc, tr fos frags: MRLST: medgy-gy blk, occ dk brn, blk, sb pty, sb fis, frm, rthy tex, sl mot, calc, occ dul gn mnrl flr

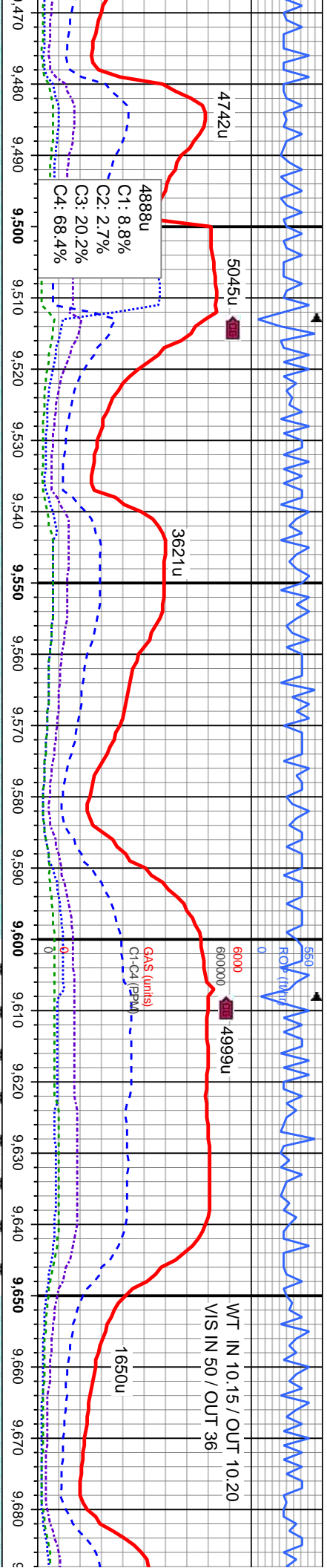
MD: 8,882 ' TVD: 5,725.48 ' Inclination: 91.9 ° Azimuth: 270 ° VS: 3,290.56 ' 79

MD: 8,976 ' TVD: 5,724.91 ' Inclination: 88.8 ° Azimuth: 270.3 ° VS: 3,384.51 ' 150

6200



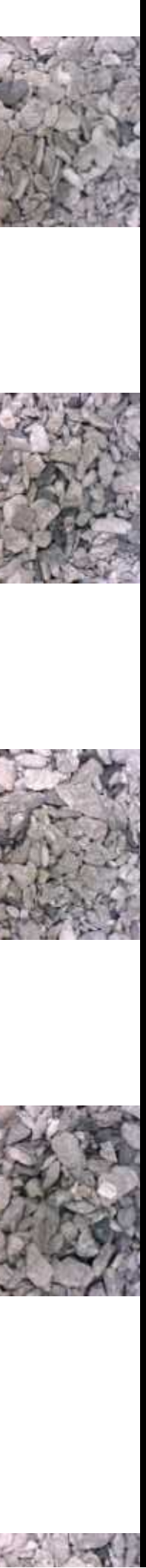


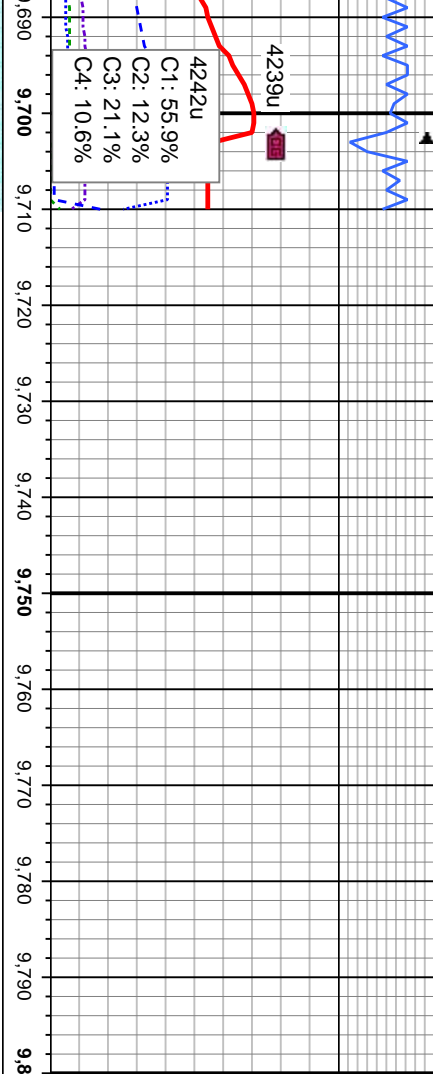


| | | |
|-----|---|---|
| 67 | n - bf, mot bf - lt gy brn, frm, blk, rthy tex, sb wxy lstr, v calc, occ mrlst, occ dul gn mnl flr | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, occ mrlst, occ dul gn mnl flr |
| 94 | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, occ mrlst, occ dul gn mnl flr | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, occ mrlst, occ dul gn mnl flr |
| 104 | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, tr mrlst, occ dul gn mnl flr | CHK: off wh crm - bf, mot bf - lt gy brn, frm, brit, sb pily-sb blk, rthy tex, sb wxy lstr, v calc, occ mrlst, occ dul gn mnl flr |

MD: 9,544
TVD: 5,736.06
Inclination: 89.9
Azimuth: 268.6

MD: 9,646
TVD: 5,735.97
Inclination: 90.2
Azimuth: 268.9





bm, frm,
y lstr, v

NOBLE ENERGY INC
ROHN STATE LD09-65-1HN
TD @ 9,710' MD
10/21/2013 @ 16:22 hrs

Thank you for choosing
Columbine Logging Inc.

MD: 9,710'
TVD: 5,735.75'
Inclination: 90.2°
Azimuth: 268.9°
VS: 4,117.9'

