

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Castro federal LD15-75-1HN (Horz)

Location NWNE SEC 15 T9N R58W

State COLORADO

Country USA

API Number 05-123-37484

Region DJ BASIN

Spud Date 1/8/2014

Surface Coordinates SEC 15 T9N R58W
556' FNL 2247' FEL

Bottom Hole Coordinates SEC 15 T9N R58W
660' FSL 2310' FEL

Ground Elevation 4706'

Logged Interval 5015'

Formation NIOBRARA

Type of Drilling Fluid LSND

To 10055

K.B. Elevation 4736'

Total Depth 10055

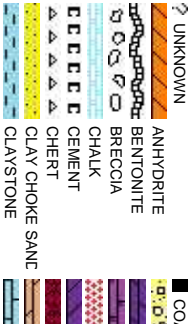
County WELD
Rig Number H&P 326

Field WILDCAT
Drilling Completed 1/14/2014

Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 802

Name Evan Howell
Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 802

Columbine Logging



Operator

Suite 2200

02

Suite 2200
02

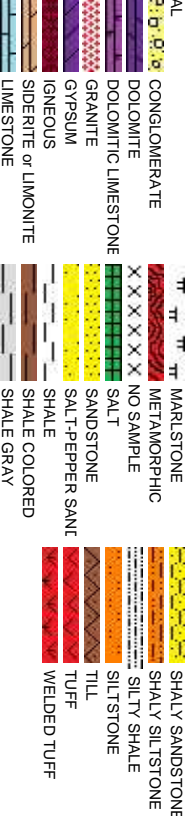
02

Geologist

Other

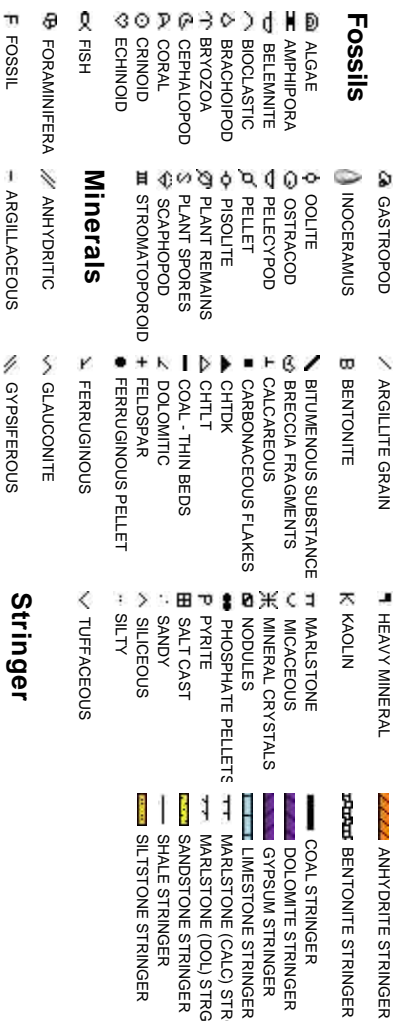
Mike Kerschen
Michael Rooks

Rock Types



Accessories

Fossils

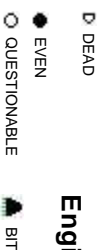


Other Symbols

Oil Show



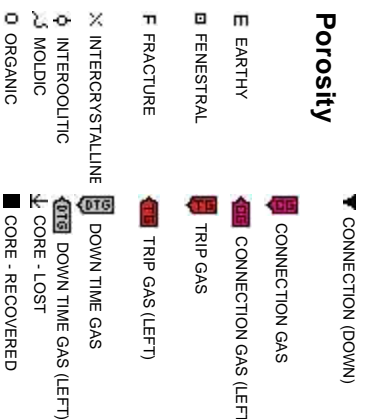
Engineering



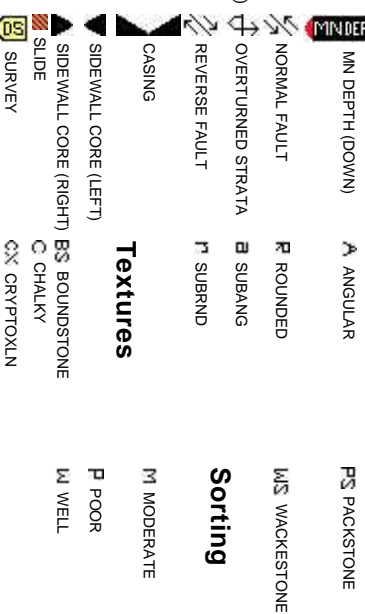
SPOTTED STAINING **CONNECTION (IIP)**



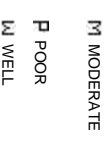
Porosity



Textures



Sorting



Slide/Rotate

ROP
ROF

GAMMA
GR

COLUMBINE LOGGING INC.
RIGGED UP ON 01/08/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Depth Labels

% Lith

50' Sample Interval @ 5015'

Well Bore
TVD

Bit Data
Bit #: 2
Type: SEC MMD 55M
Size: 8 3/4"
Jets: 5X14
S/N: 12220597

MD: 5,061'
TVD: 5,010.07'
Inclination: 1.4°
Azimuth: 222.5°
VS: -501.55'

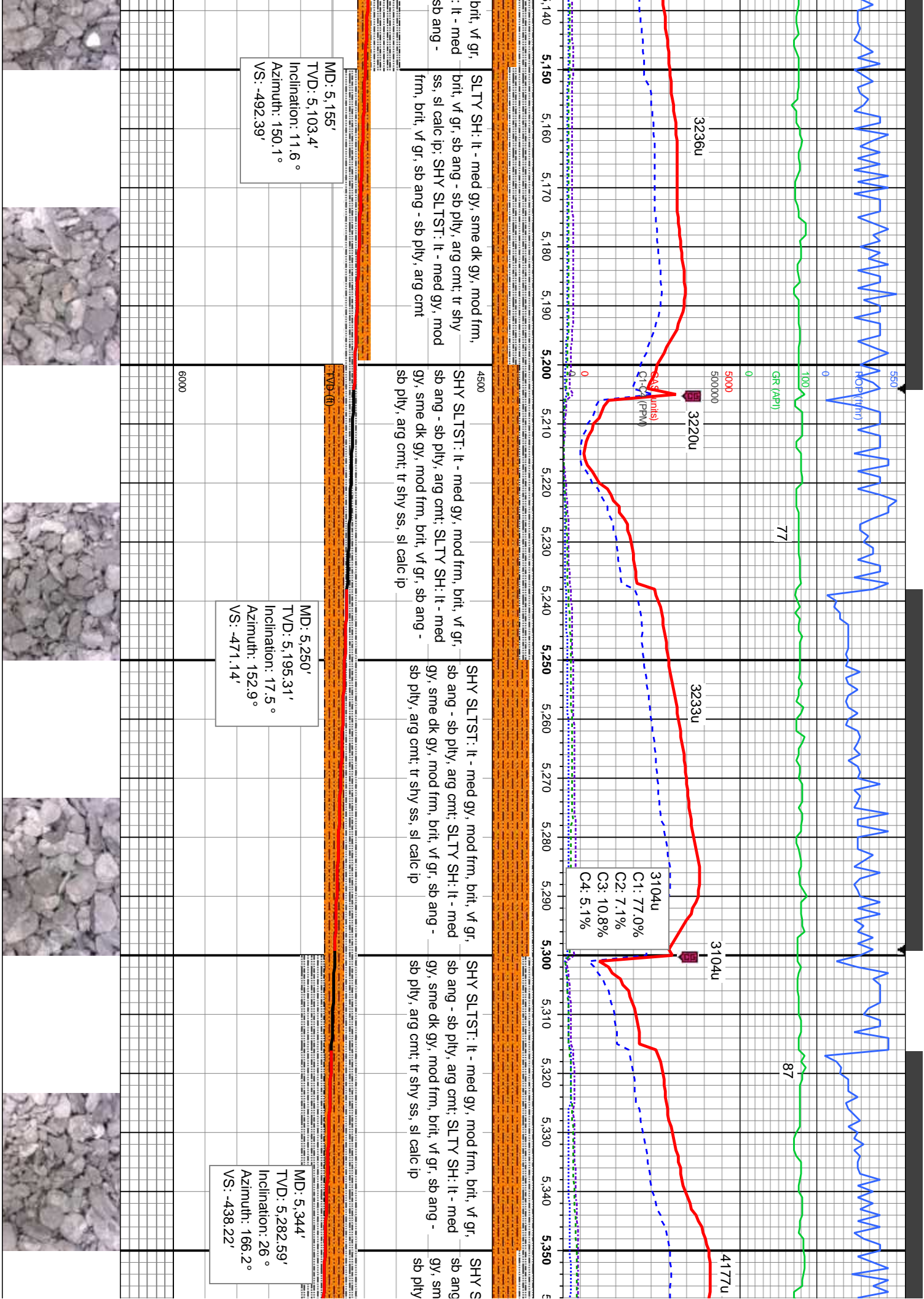
SLTY SH: lt - med gy, mod frm, sft, sb
biky - sb pty, gritty arg cnt; SHY SS: lt
gy-gy, off wh, vf-f gr, sub ang-sub rnd,
mod w strd, frm, brt, sl calc

SHY SLTST: lt - med gy, mod frm,
sb ang - sb pty, arg cnt; SLTY SH
gy, sme dk gy, mod frm, brt, vf gr,
sb pty, arg cnt; tr shy ss, sl calc ip

Oil Show

Images

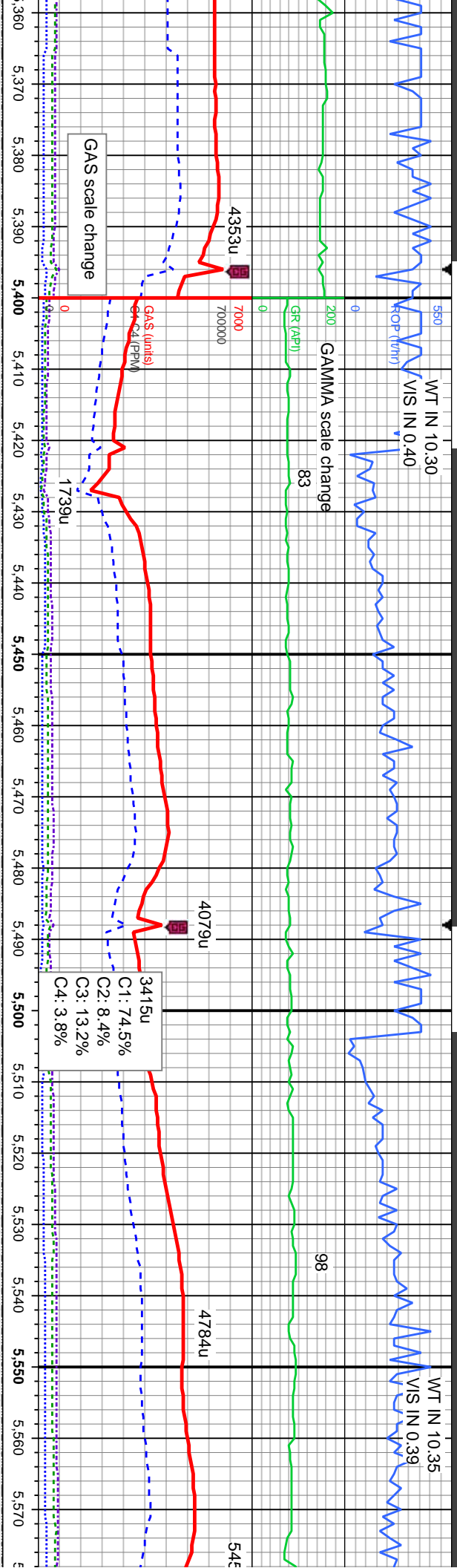




MD: 5,155'
TVD: 5,103.4'
Inclination: 11.6°
Azimuth: 150.1°
VS: -492.39'

MD: 5,250'
TVD: 5,195.31'
Inclination: 17.5°
Azimuth: 152.9°
VS: -471.14'

MD: 5,344'
TVD: 5,282.59'
Inclination: 26°
Azimuth: 166.2°
VS: -438.22'



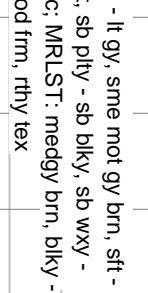
LTST: It - med gy, mod frm, brit, vf gr, - sb pty, arg cmt; SLTY SH: It - med dk gy, mod frm, brit, vf gr, sb ang - arg cmt; tr shy ss, sl calc ip

SLTY SH: It - med gy, sme dk gy, mod frm, -
brit, vf gr, sb ang - sb ply, arg cnt; tr shy ss,
sl calc lp; SHY SLTST: It - med gy, mod frm,
brit, vf gr, sb ang - sb ply, arg cnt

SLTY SH: It - med gy, sme dk gy, mod fmm,
brit, vf gr, sb ang - sb ply, arg cmt; tr shy ss,
sl calc ip; SHY SLTST: It - med gy, mod fmm,
brit, vf gr, sb ang - sb ply, arg cmt

SLTY SH: It - med gy, sme dk gy, mod frm,
brif, v/ gr, sb ang - sb plty, arg cmt, tr shy ss,
sl calc lp; SHY SLTST: It - med gy, mod frm,
brif, v/ gr, sb ang - sb plty, arg cmt

SLTY SH: It - med gy, sm
brt, vf gr, sb ang - sb plty;
sl calc ip; SHY SLTST: It -
brt, vf gr, sb ang - sb plty.



CHIK: off wh crm - lt gy, sme mot gy brn, sft -
mod frm, fri - brit, sb ply - sb blyk, sb wxy -
sb rthy tex, v calc; MRLST: medgy brn, blyk -
sb ply, sb fis, mod frm, rthy tex, tr bent, tr
fos frags

CHIK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - bri, sb ply - sb biky, sb wxy -
sb rthy tex, v calc: MRLST: medgy brn, biky -
sb ply, sb fis, mod frm, rthy tex, tr bent, tr
fos frags

CHK: lk gy - off wh crm , sme mot gy brn, sft
- r - mod frm, firi - brit, sb ply - sb blk, sb wxy -
msb rthy tex, v calc; MRLST - medgy brn, blk -
sb ply, sb fis, mod frm, rthy tex, tr bent, tr
os frags

Resumed Drilling

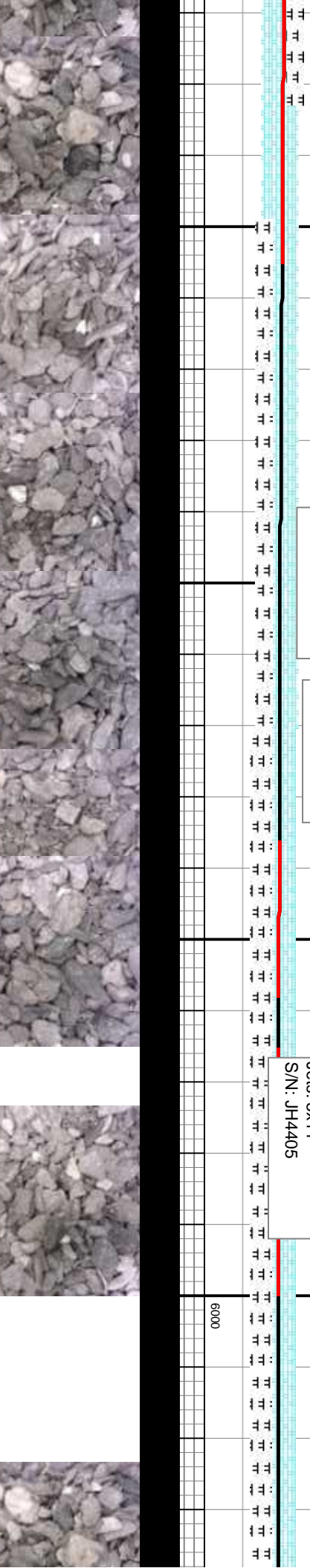
HK: lk gy - off wh crm , sme mot gy
mod frm, fri - brit, sb ply - sb blk, ,
rthy tex, v calc; MRLST: medgy t
ply, sb fis, mod frm, rthy tex —

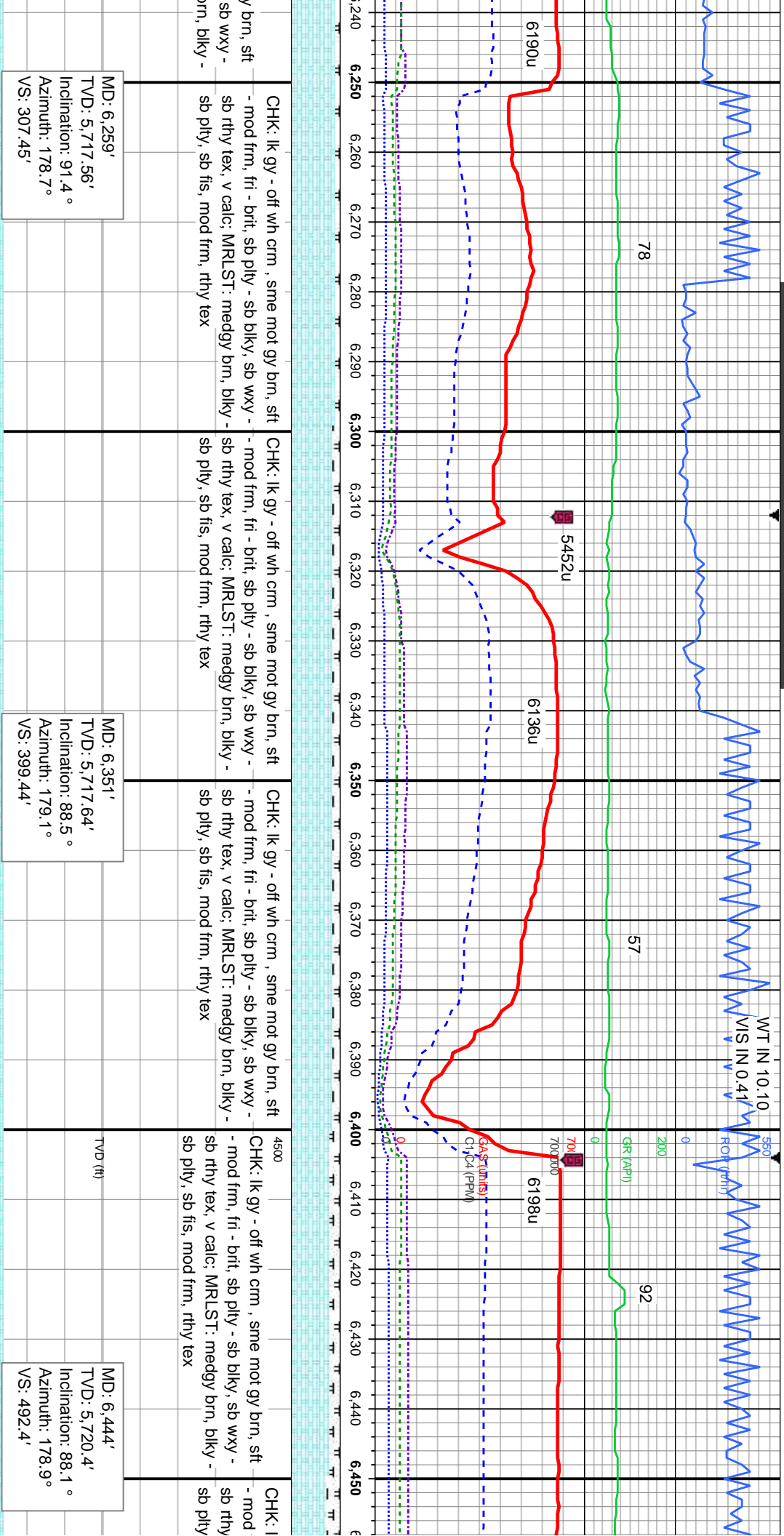
MD: 6,100'
TVD: 5,707.16'
Inclination: 82.4°
Azimuth: 180.1°
VS: 149.01'

MD: 6,116'	
TVD: 5,709.33'	
Inclination: 82 °	
Azimuth: 179.9 °	
VS: 164.86'	

Bit Data
Bit #: 3
Type: SMITH SDI 513
Size: 6 1/8"
Jets: 5x11
S/N: JH4405

TV D (ft)





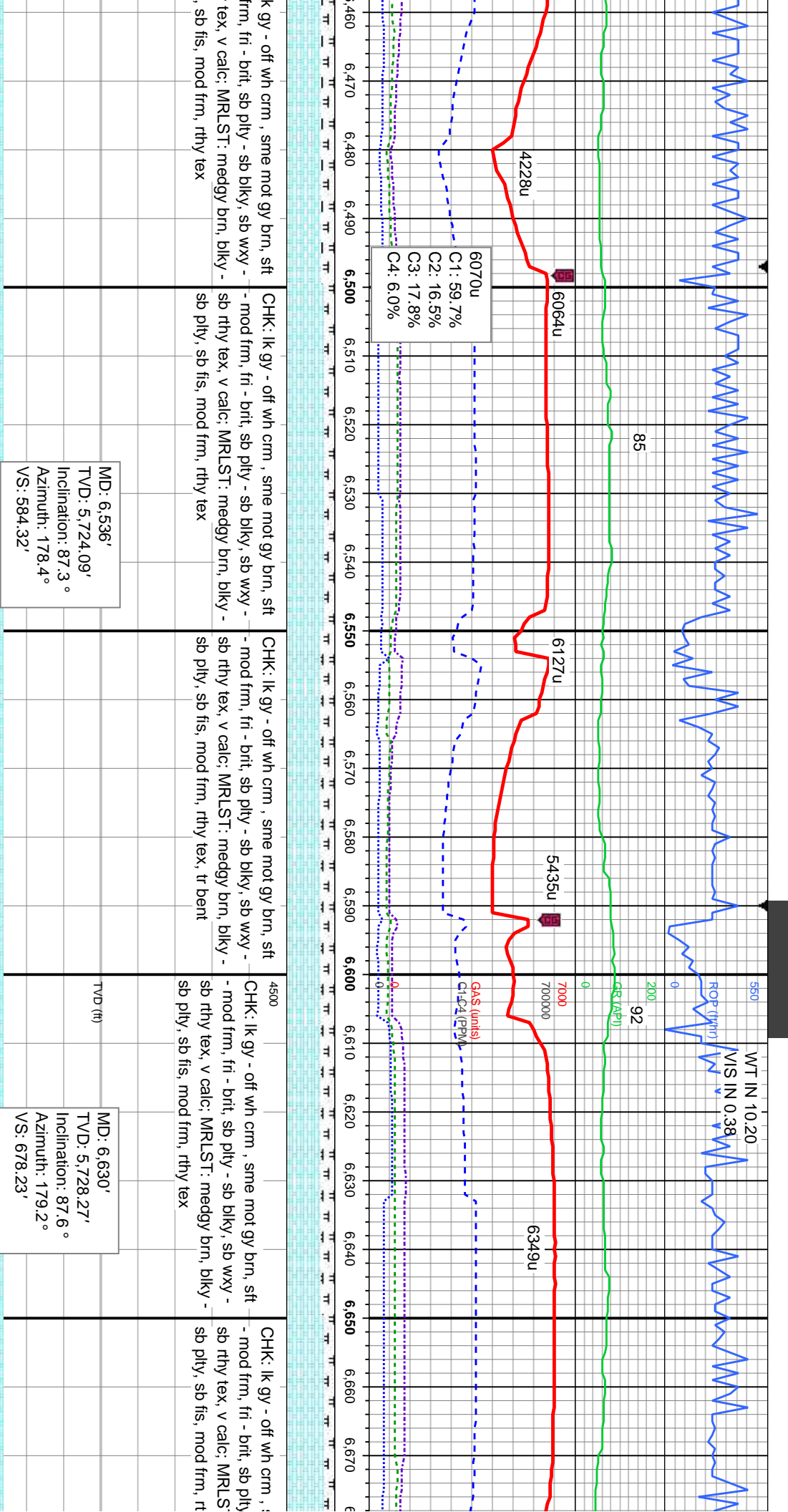
CHK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - brit, sb pily - sb blk, sb wxy -
sb rthy tex, v calc: MRLST: medgy brn, blk -
sb pily, sb fis, mod frm, rthy tex

CHK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - brit, sb pily - sb blk, sb wxy -
sb rthy tex, v calc: MRLST: medgy brn, blk -
sb pily, sb fis, mod frm, rthy tex

CHK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - brit, sb pily - sb blk, sb wxy -
sb rthy tex, v calc: MRLST: medgy brn, blk -
sb pily, sb fis, mod frm, rthy tex

4500
TVD (ft)
6000





lk gy - off wh crm , sme mot gy brn, sft
- frm, fri - brit, sb ply - sb blk, sb wxy -
tex, v calc; MRLST: medgy brn, blk -
sb fis, mod frm, rthy tex

CHK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - brit, sb ply - sb blk, sb wxy -
sb rthy tex, v calc; MRLST: medgy brn, blk -
sb ply, sb fis, mod frm, rthy tex

CHK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - brit, sb ply - sb blk, sb wxy -
sb rthy tex, v calc; MRLST: medgy brn, blk -
sb ply, sb fis, mod frm, rthy tex, tr bent

4500
CHK: lk gy - off wh crm , sme mot gy brn, sft
- mod frm, fri - brit, sb ply - sb blk, sb wxy -
sb rthy tex, v calc; MRLST: medgy brn, blk -
sb ply, sb fis, mod frm, rthy tex

CHK: lk gy - off wh crm , ;
- mod frm, fri - brit, sb ply
sb rthy tex, v calc; MRLS
sb ply, sb fis, mod frm, r

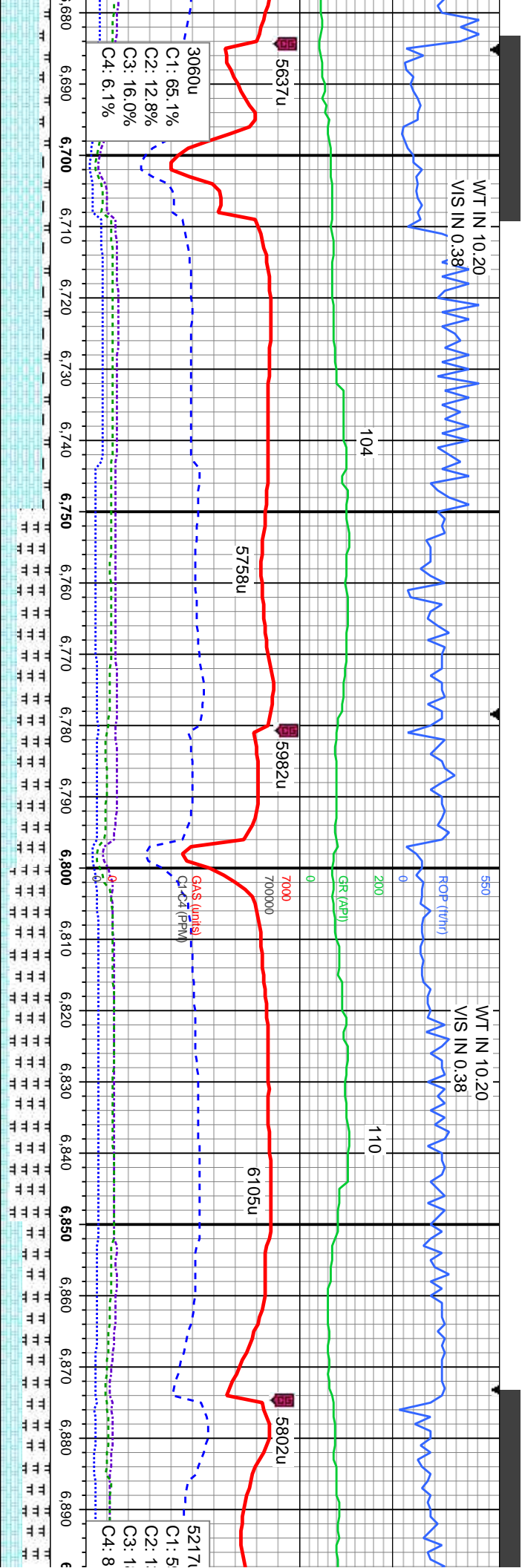
MD: 6,536'
TVD: 5,724.09'
Inclination: 87.3°
Azimuth: 178.4°
VS: 584.32'

MD: 6,630'
TVD: 5,728.27'
Inclination: 87.6°
Azimuth: 179.2°
VS: 678.23'

TVD (ft)

6000

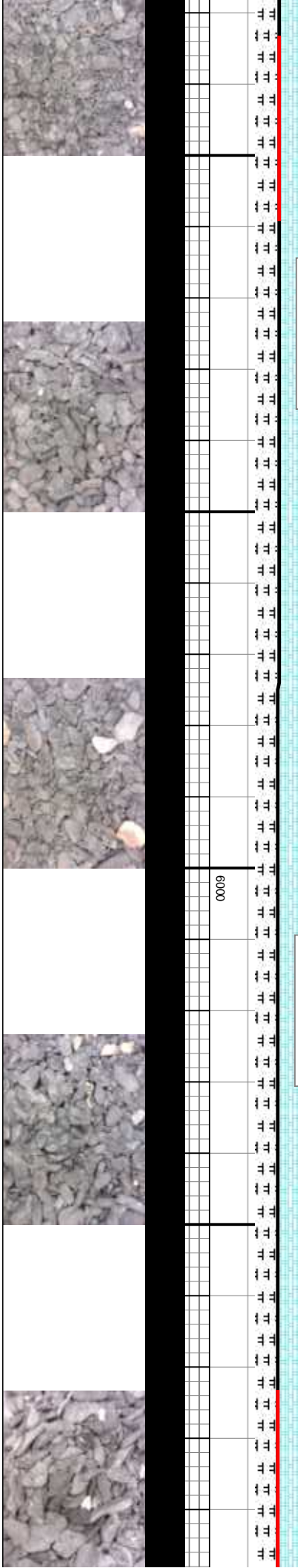


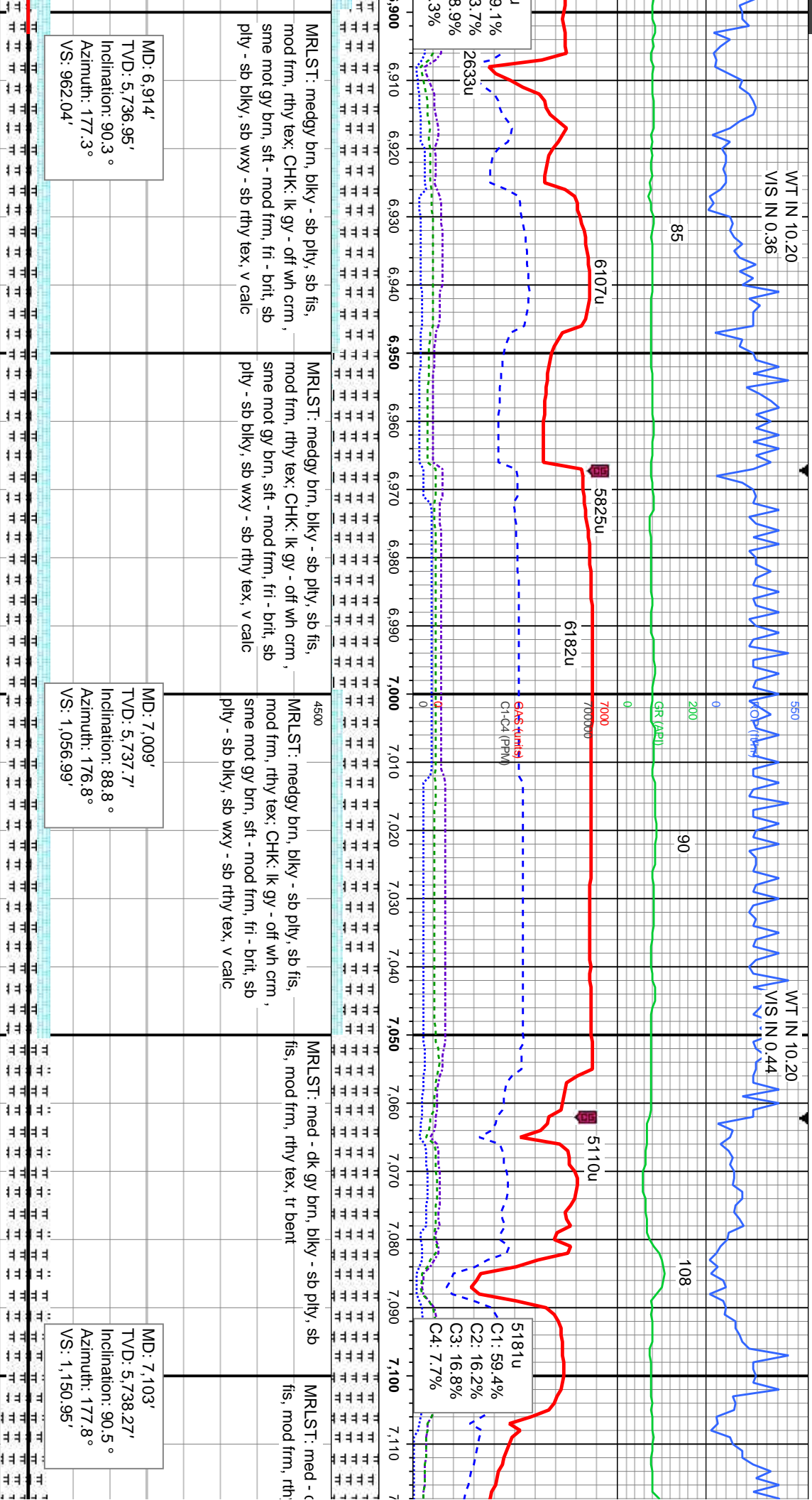


3060u C1: 65.1% C2: 12.8% C3: 16.0% C4: 6.1%	CHK: lk gy - off wh crm , sme mot gy brn, sft - mod frm, fri - brit, sb pty - sb blk, sb wxy - sb rthy tex, v calc; MRLST: medgy brn, blk - sb pty, sb fis, mod frm, rthy tex	MRLST: medgy brn, blk - sb pty, sb fis, mod frm, rthy tex; CHK: lk gy - off wh crm , sme mot gy brn, sft - mod frm, fri - brit, sb pty - sb blk, sb wxy - sb rthy tex, v calc	4500 MRLST: medgy brn, blk - sb pty, sb fis, mod frm, rthy tex; CHK: lk gy - off wh crm , sme mot gy brn, sft - mod frm, fri - brit, sb pty - sb blk, sb wxy - sb rthy tex, v calc	MRLST: medgy brn, blk - sb pty, sb fis, mod frm, rthy tex; CHK: lk gy - off wh crm , sme mot gy brn, sft - mod frm, fri - brit, sb pty - sb blk, sb wxy - sb rthy tex, v calc
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MD: 6,725'
TVD: 5,731.5'
Inclination: 88.5°
Azimuth: 177.8°
VS: 773.17'

MD: 6,820'
TVD: 5,734.99'
Inclination: 87.3°
Azimuth: 177.8°
VS: 868.09'





MD: 6,914'
TVD: 5,736.95'
Inclination: 90.3°
Azimuth: 177.3°
VS: 962.04'

MD: 7,009'
TVD: 5,737.7'
Inclination: 88.8°
Azimuth: 176.8°
VS: 1,056.99'

MD: 7,103'
TVD: 5,738.27'
Inclination: 90.5°
Azimuth: 177.8°
VS: 1,150.95'

MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex: CHK: lk gy - off wh crm,
sme mot gy brn, sft - mod frm, fri - brit, sb
pty - sb blkly, sb wxy - sb rthy tex, v calc

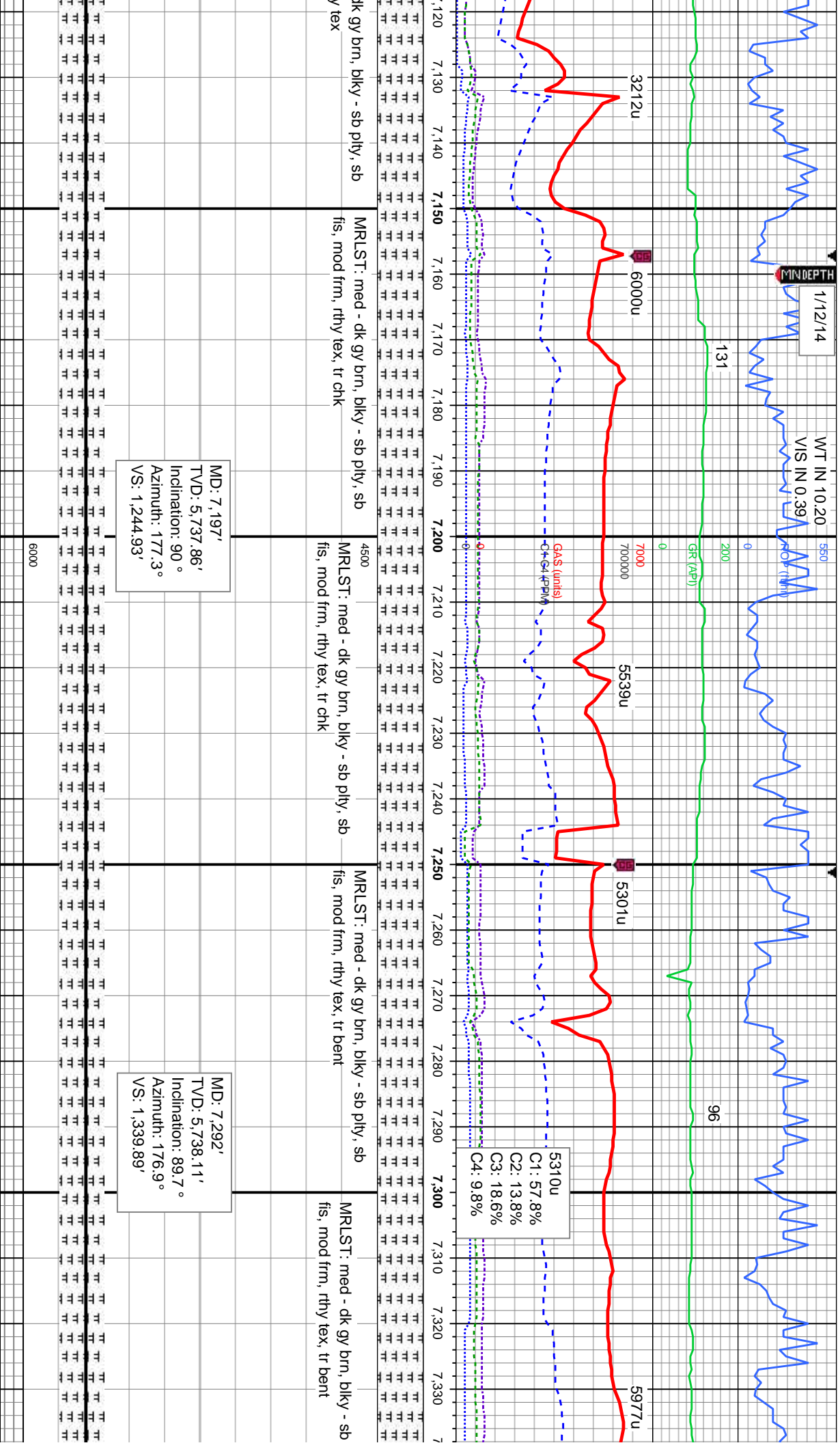
MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex: CHK: lk gy - off wh crm,
sme mot gy brn, sft - mod frm, fri - brit, sb
pty - sb blkly, sb wxy - sb rthy tex, v calc

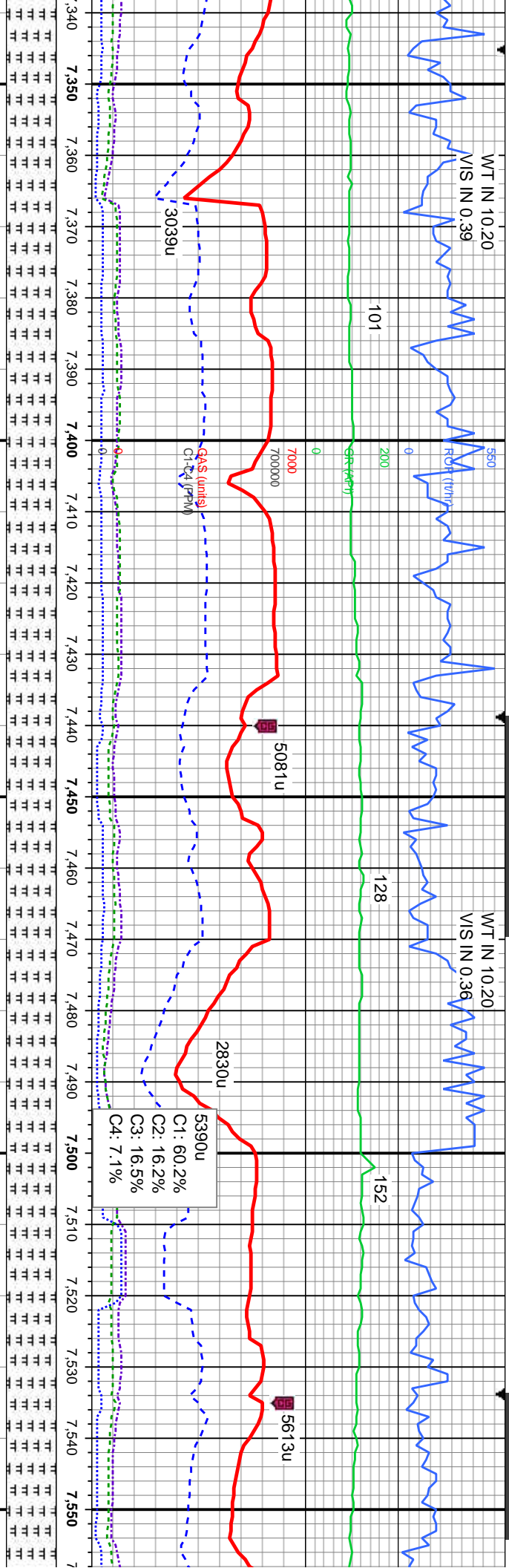
MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex: CHK: lk gy - off wh crm,
sme mot gy brn, sft - mod frm, fri - brit, sb
pty - sb blkly, sb wxy - sb rthy tex, v calc

MRLST: med - dk gy brn, blkly - sb pty, sb
fis, mod frm, rthy tex, tr bent

MRLST: med - c
fis, mod frm, rth







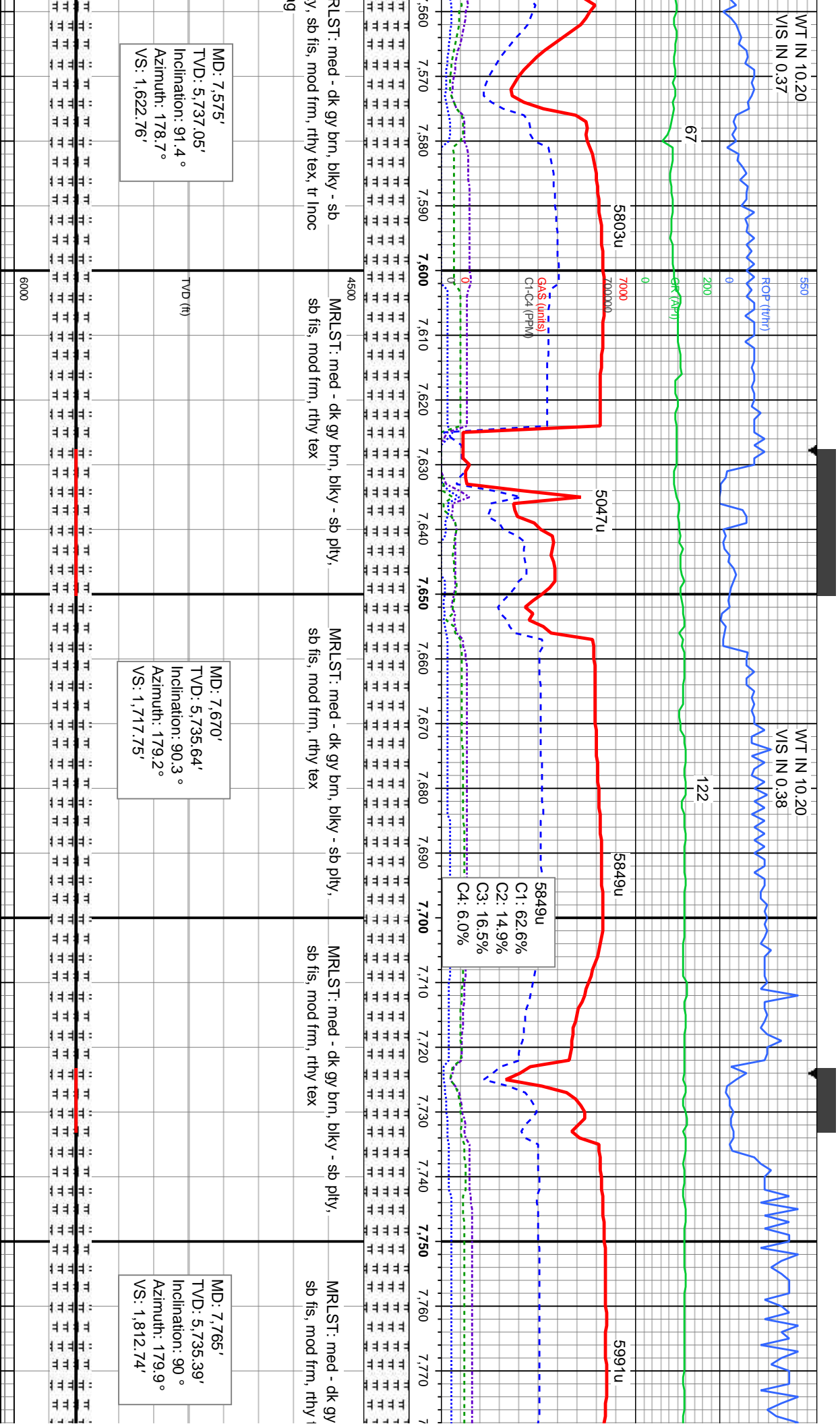
MD: 7,386'
TVD: 5,738.93'
Inclination: 89.3°
Azimuth: 177.1°
VS: 1,433.85'

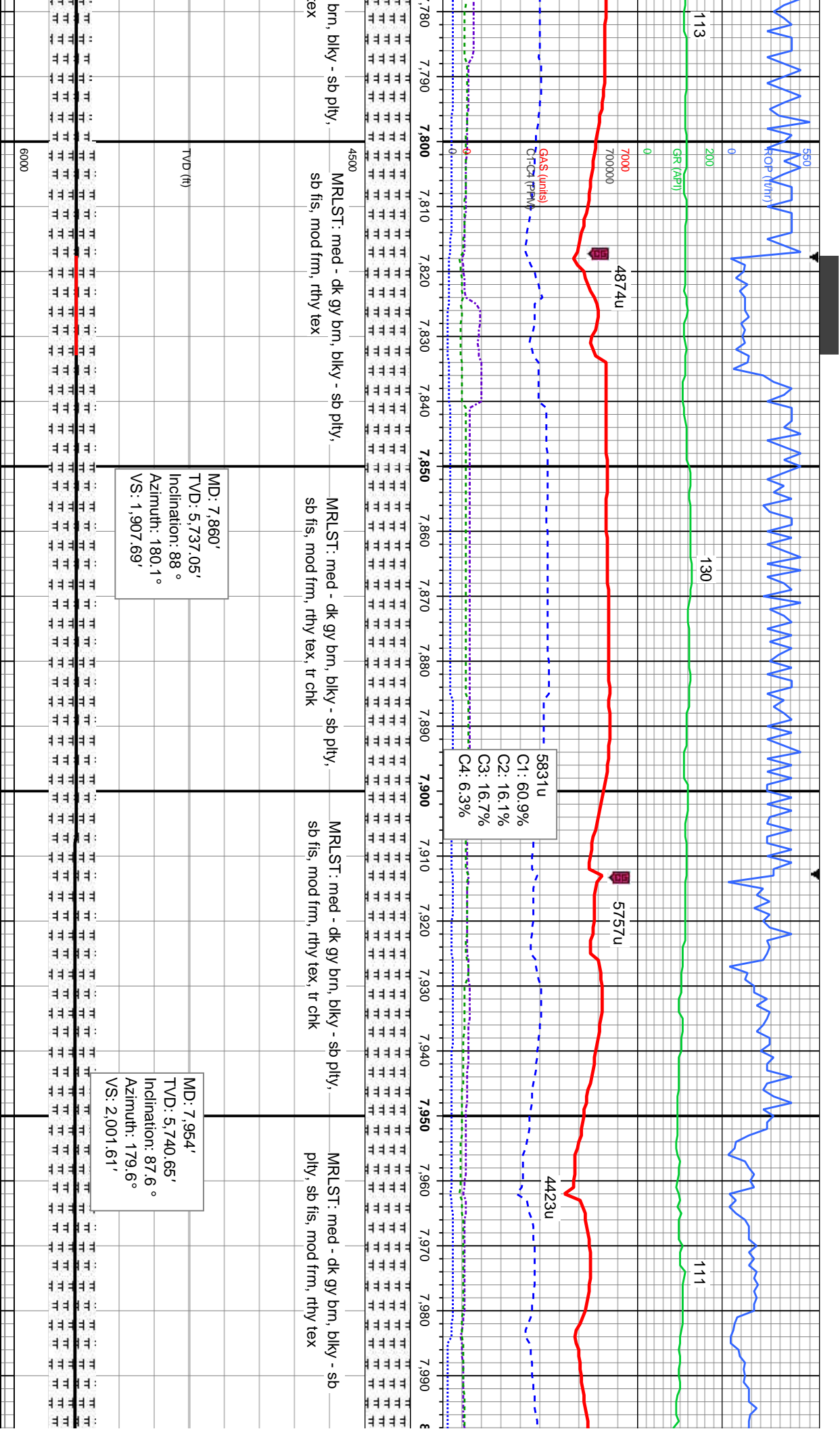
MD: 7,481'
TVD: 5,738.85'
Inclination: 90.8°
Azimuth: 176.8°
VS: 1,528.8'

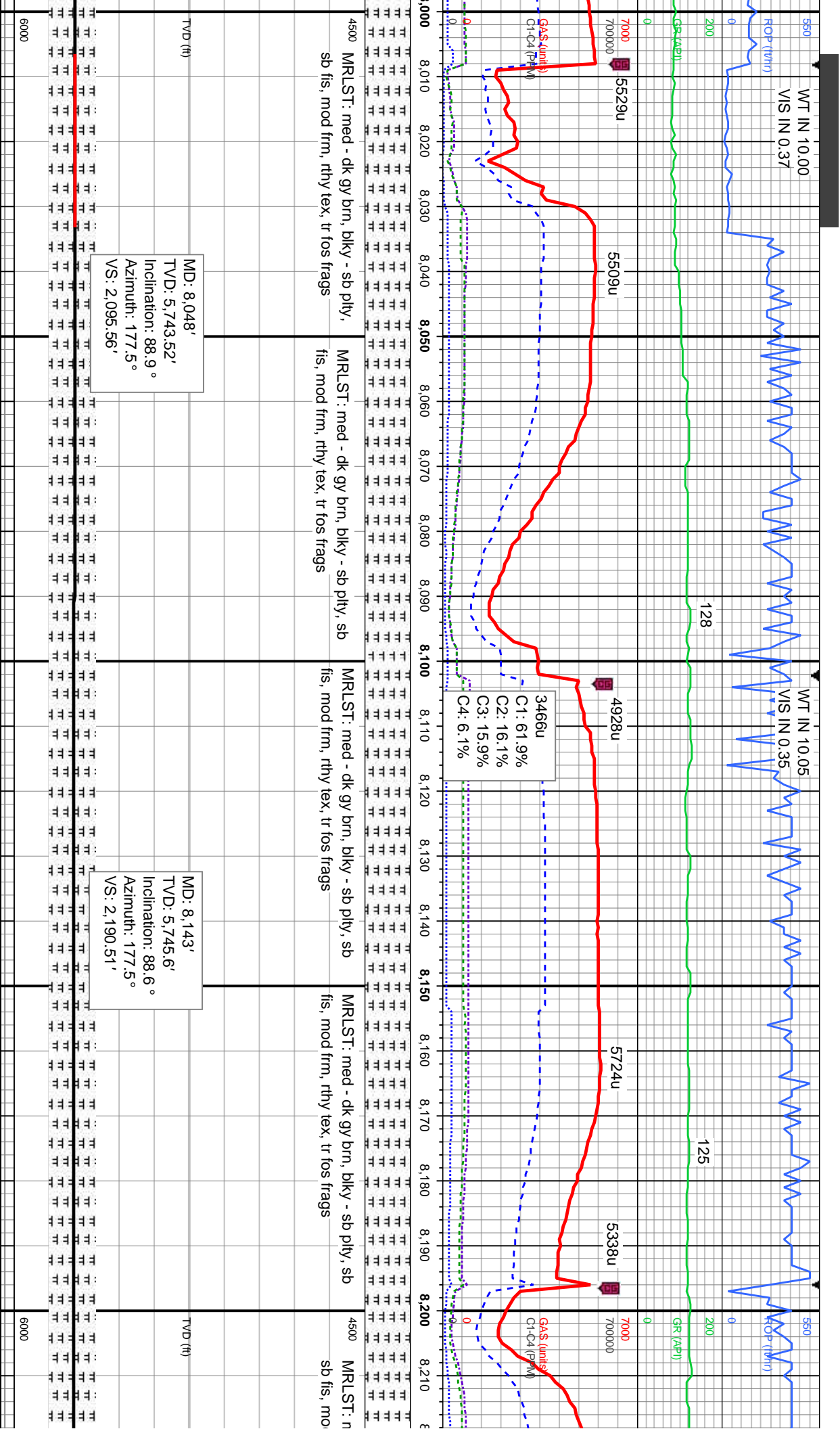
ply, sb
MRSLT: med - dk gy brn, blkly - sb
fis, mod frm, rthy tex, tr bent
4500
MRSLT: med - dk gy brn, blkly - sb
ply, sb fis, mod frm, rthy tex
MRSLT: med - dk gy brn, blkly - sb
ply, sb fis, mod frm, rthy tex
MRSLT: med - dk gy brn, blkly - sb
ply, sb fis, mod frm, rthy tex

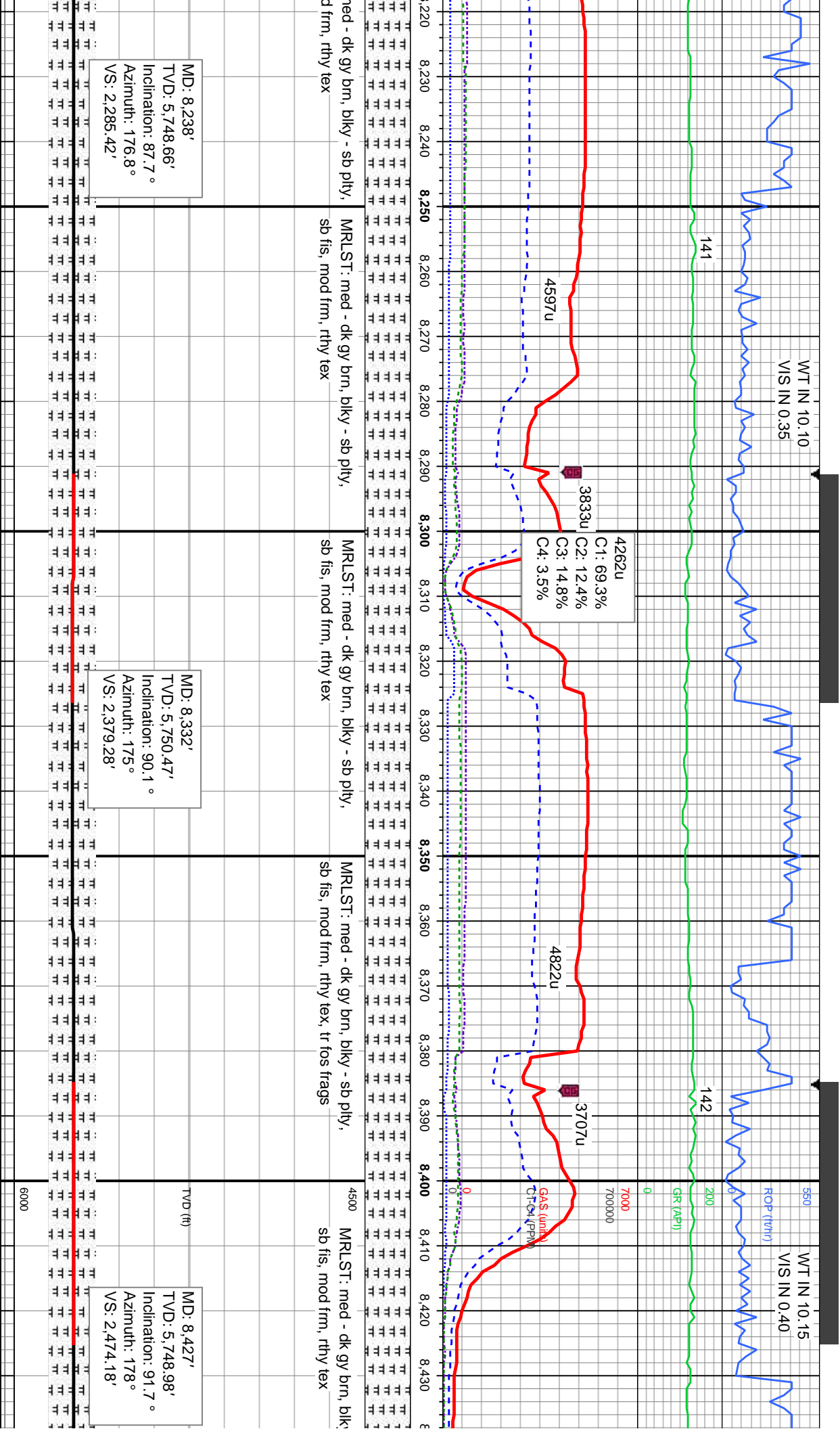
TVD (ft)

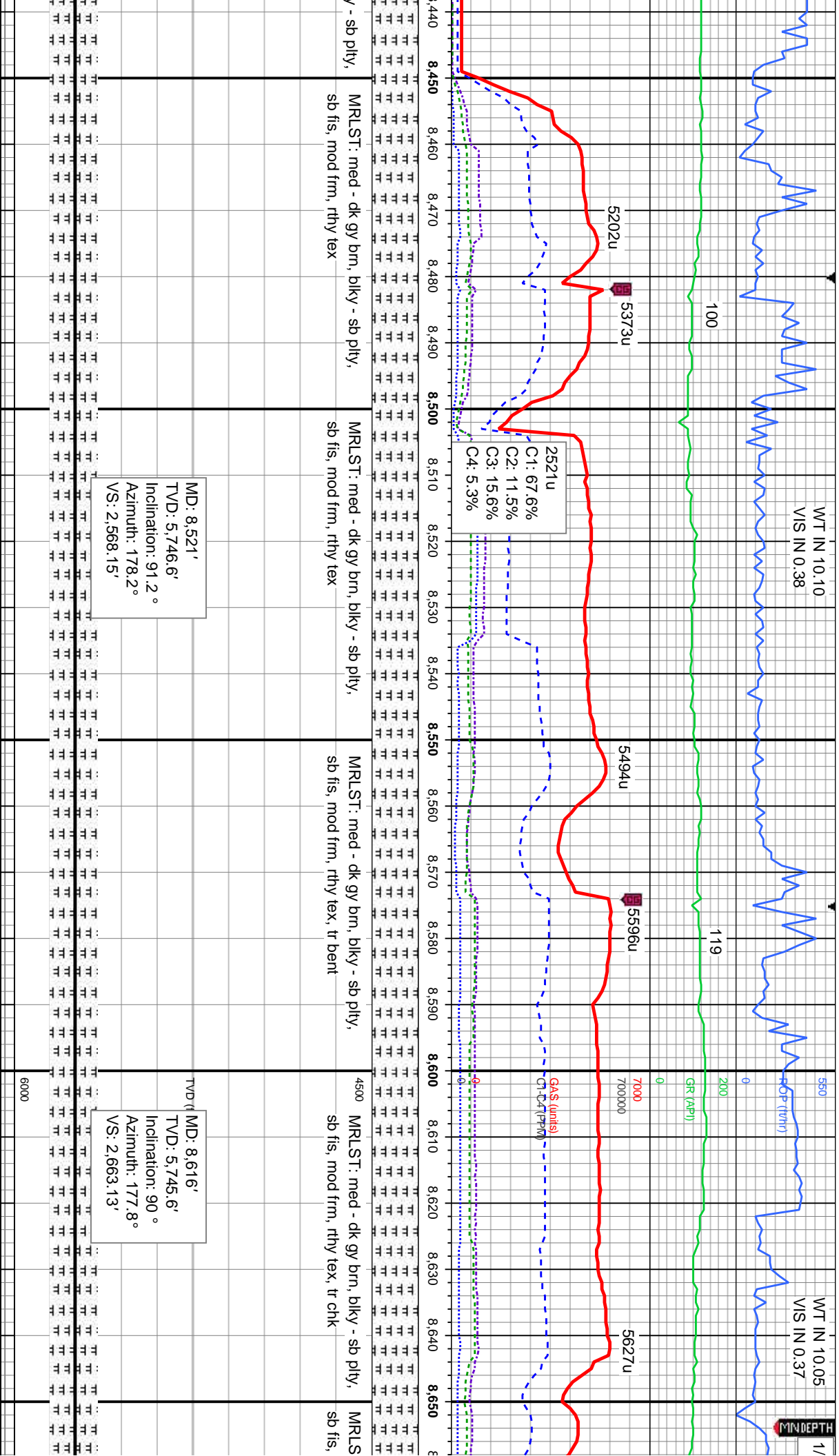
6000

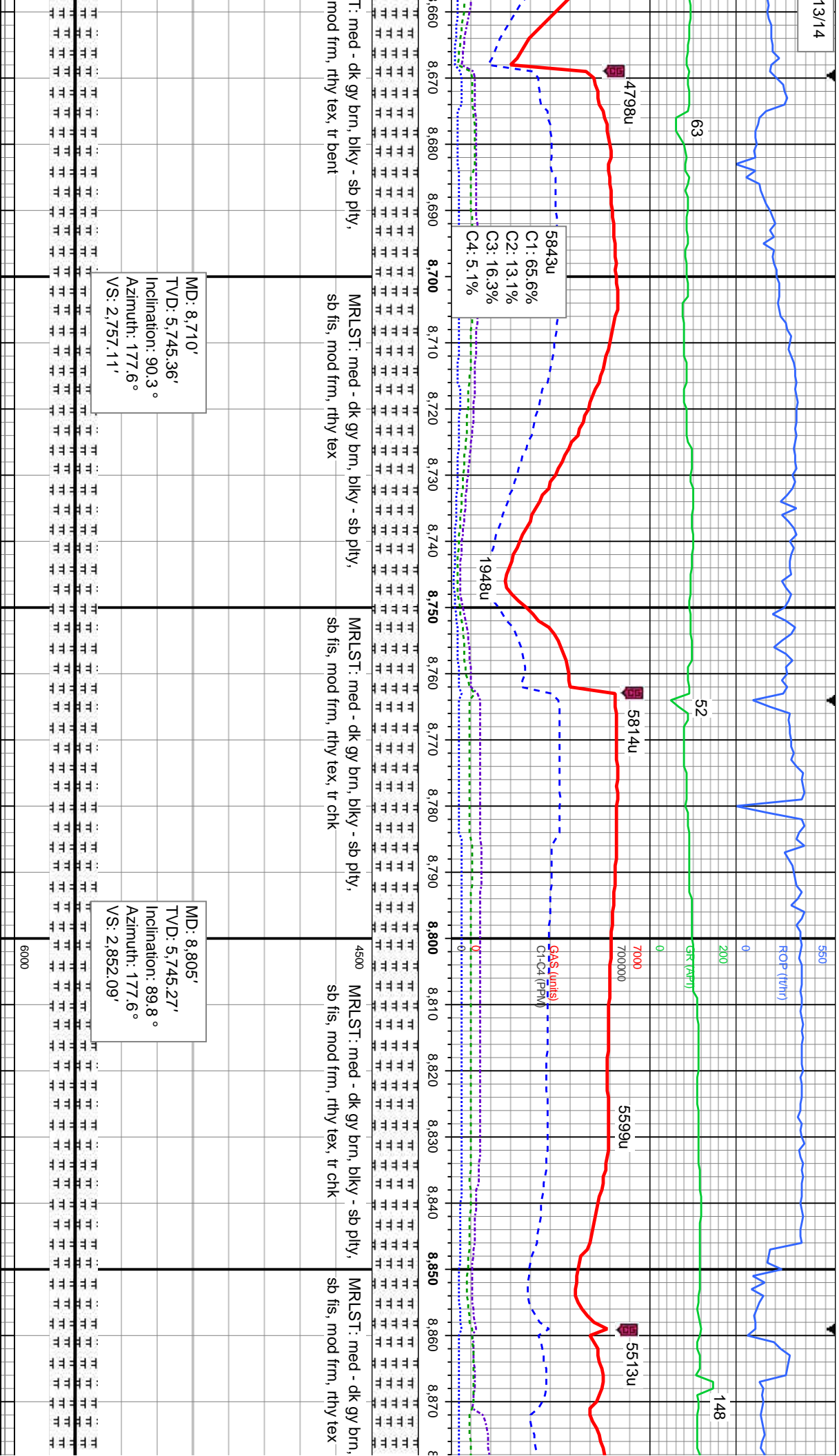








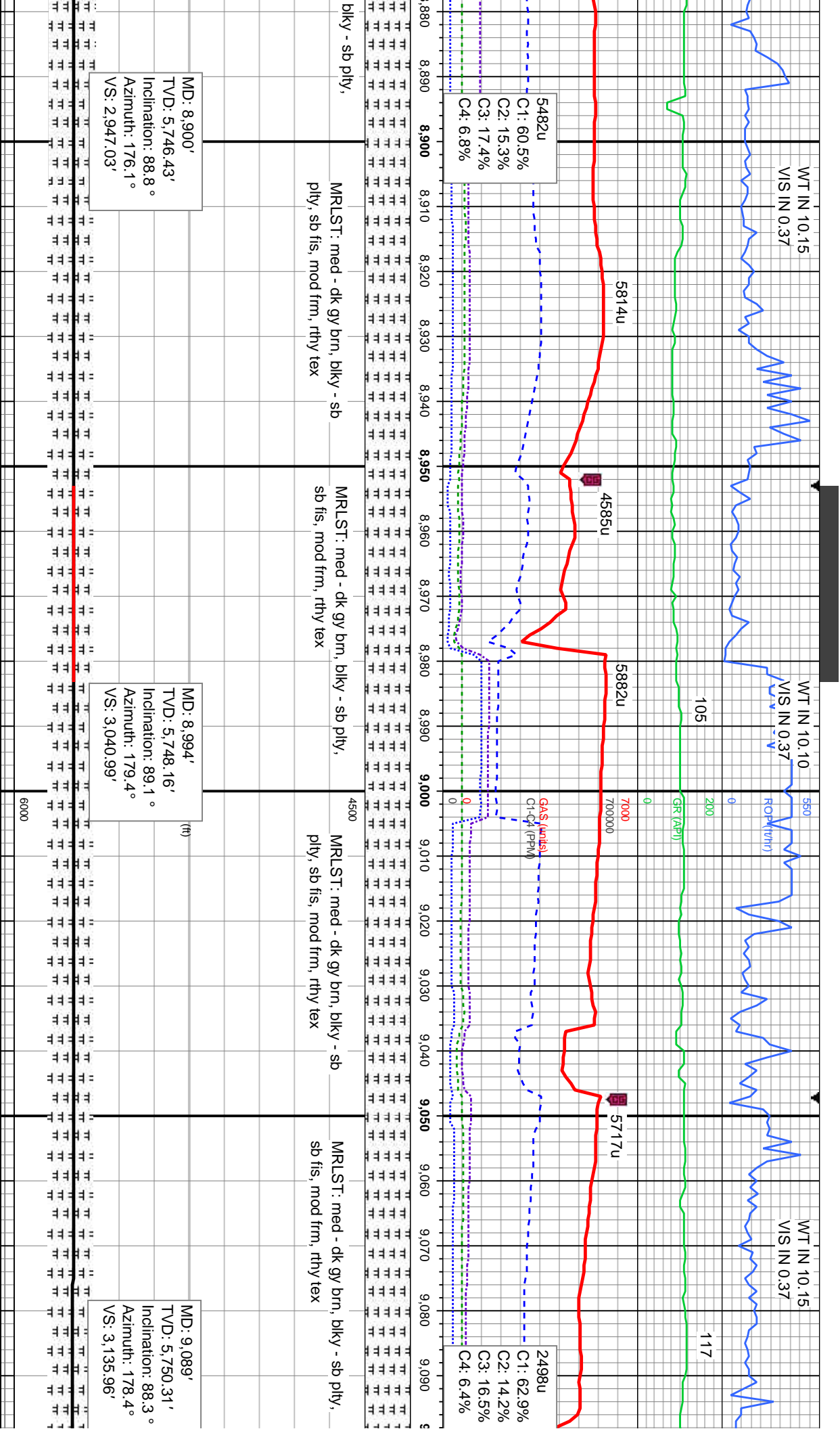


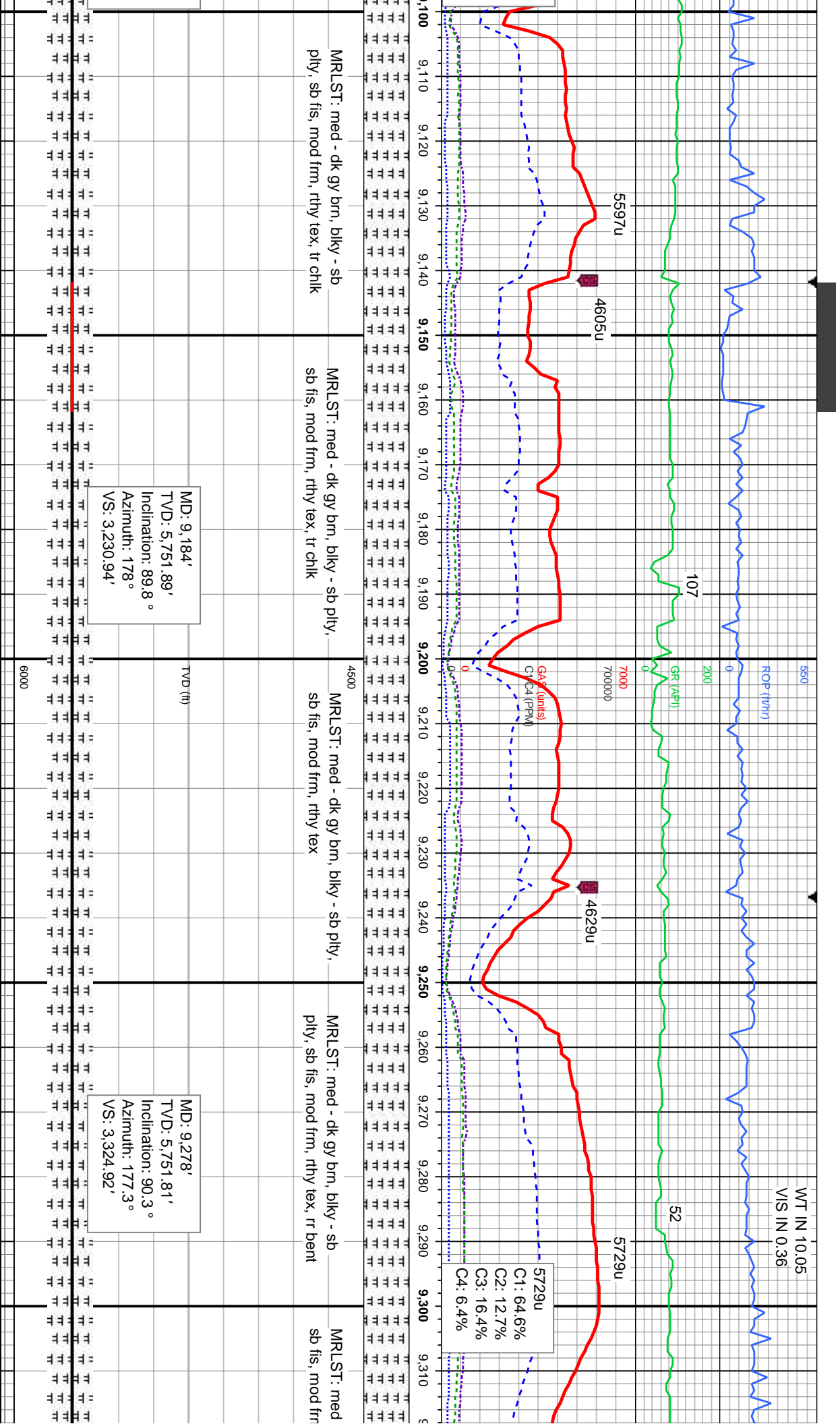


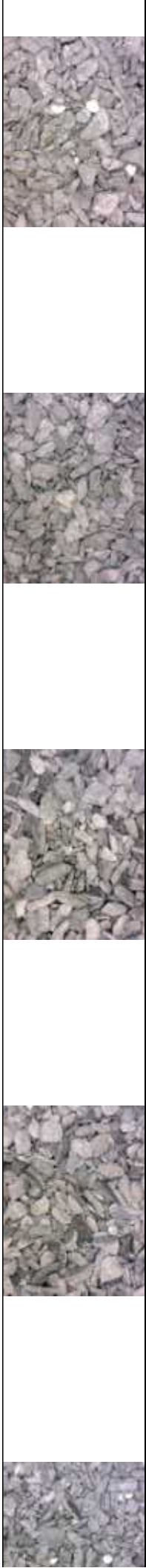
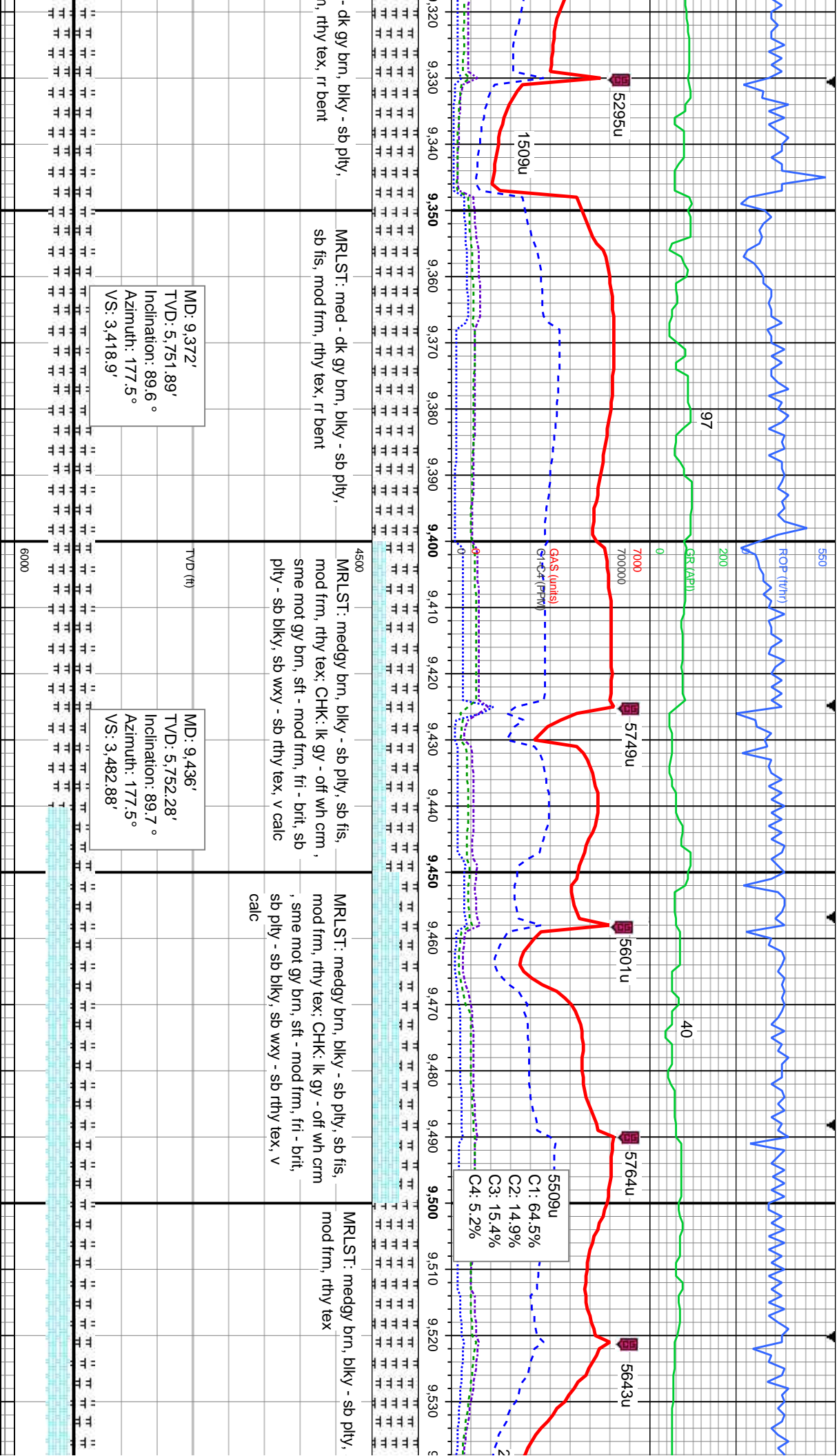
MD: 8,710'
TVD: 5,745.36'
Inclination: 90.3 °
Azimuth: 177.6 °
VS: 2,757.11'

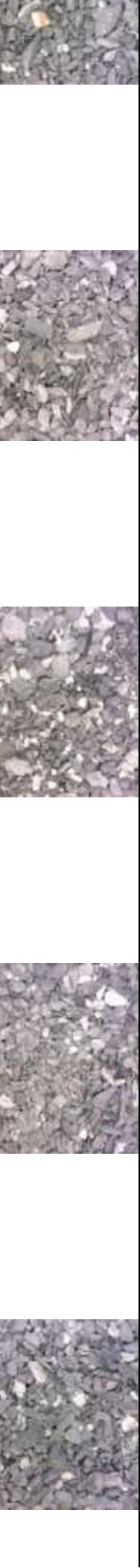
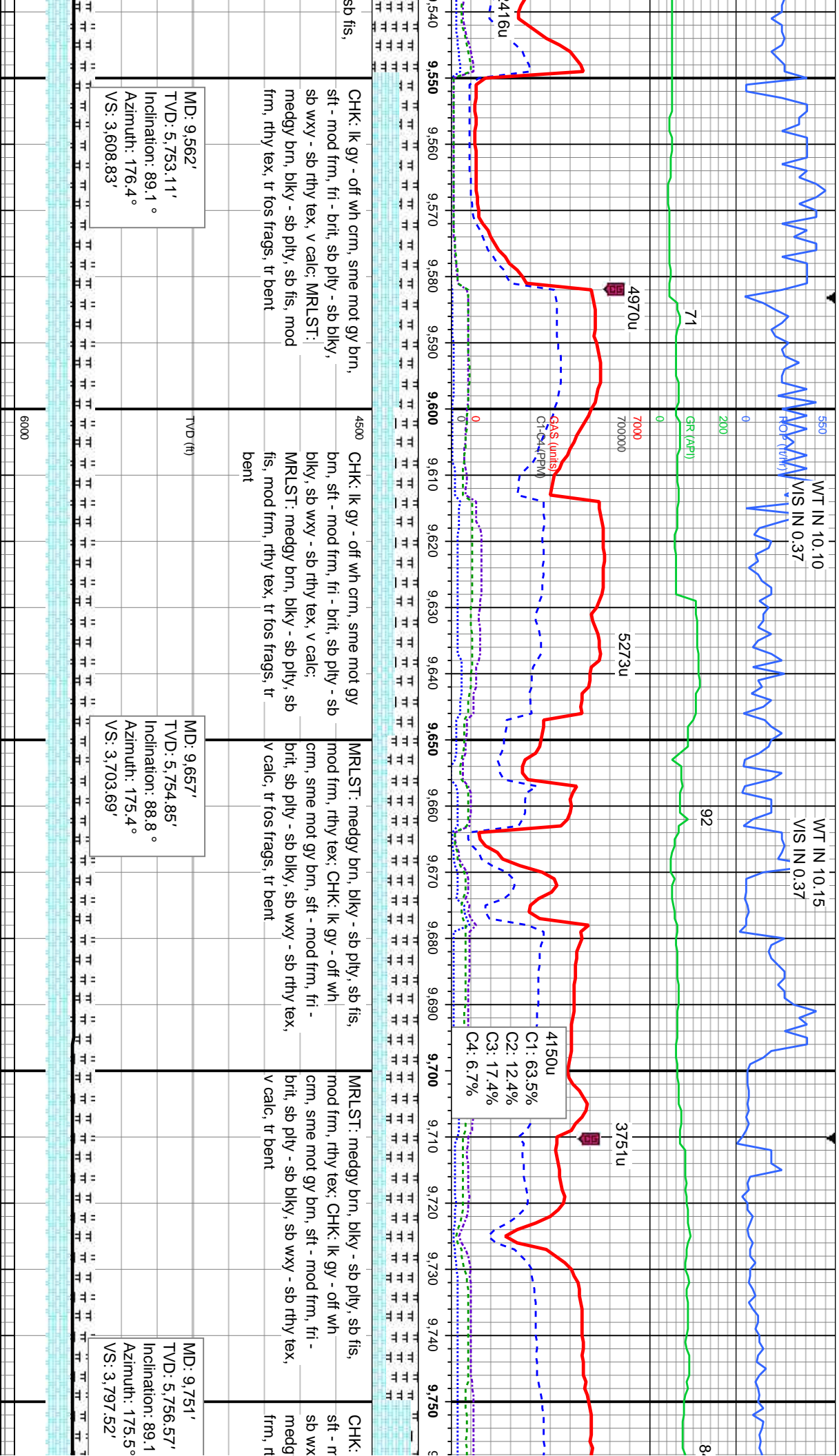
MD: 8,805'
TVD: 5,745.27'
Inclination: 89.8 °
Azimuth: 177.6 °
VS: 2,852.09'

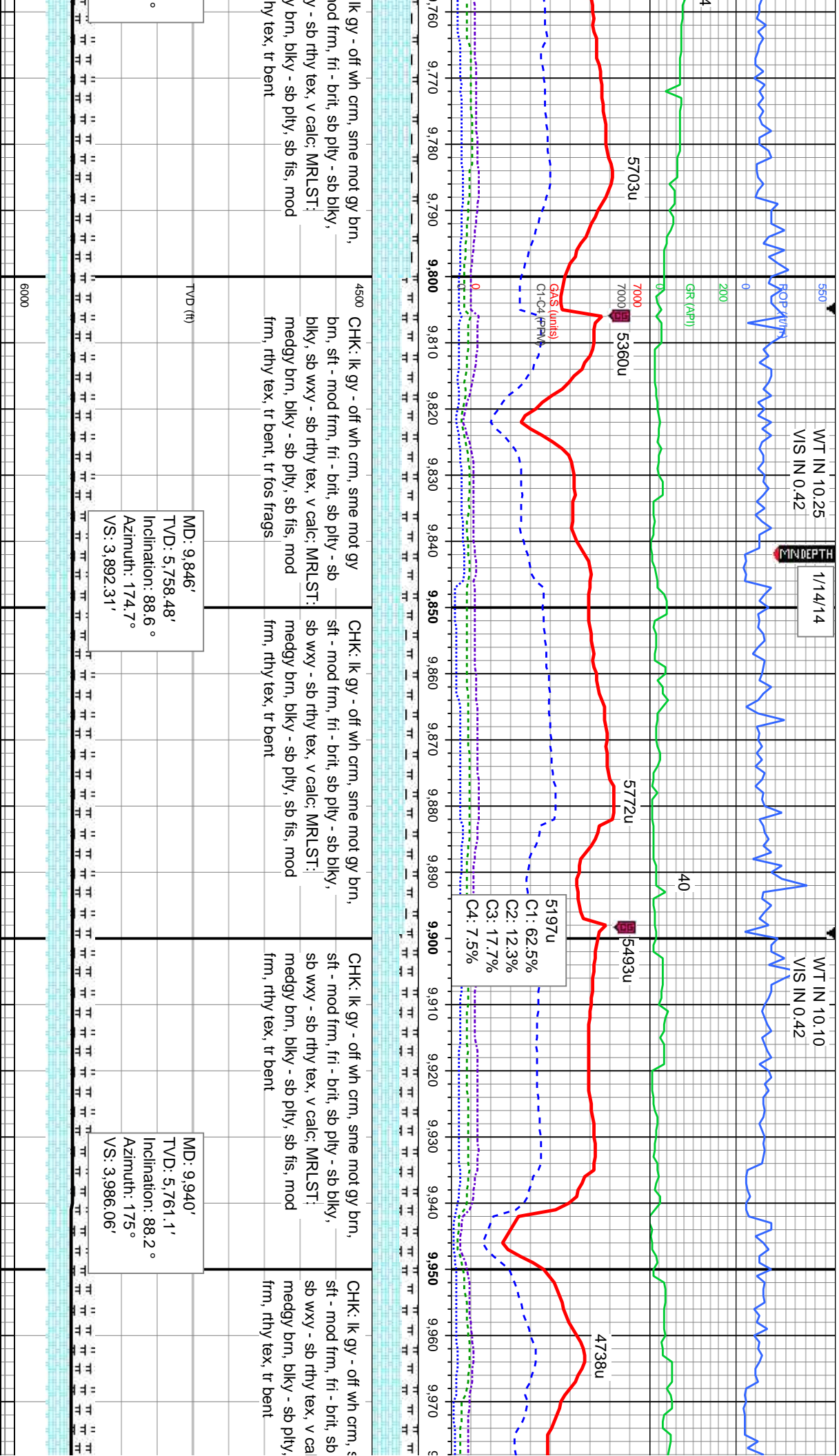












lk gy - off wh crm, sme mot gy brn,
mod frm, fri - brit, sb ply - sb blk,
y - sb rthy tex, v calc; MRLST;
y brn, blk y - sb ply, sb fis, mod
hy tex, tr bent

CHK: lk gy - off wh crm, sme mot gy
brn, sft - mod frm, fri - brit, sb ply - sb
blk y, sb wxy - sb rthy tex, v calc; MRLST;
medgy brn, blk y - sb ply, sb fis, mod
frm, rthy tex, tr bent, tr fos frags

CHK: lk gy - off wh crm, sme mot gy brn,
sft - mod frm, fri - brit, sb ply - sb blk y,
sb wxy - sb rthy tex, v calc; MRLST;
medgy brn, blk y - sb ply, sb fis, mod
frm, rthy tex, tr bent

CHK: lk gy - off wh crm, sme mot gy brn,
sft - mod frm, fri - brit, sb ply - sb blk y,
sb wxy - sb rthy tex, v calc; MRLST;
medgy brn, blk y - sb ply, sb fis, mod
frm, rthy tex, tr bent

CHK: lk gy - off wh crm, sme mot gy brn,
sft - mod frm, fri - brit, sb ply - sb blk y,
sb wxy - sb rthy tex, v calc; MRLST;
medgy brn, blk y - sb ply, sb fis, mod
frm, rthy tex, tr bent



