



Scale: 5.26" / 100'
Measured Depth Log

Well Name Storis-E24-78-1HN(HORZ)

Location SWSW SEC 24, T6N R65W

State COLORADO

Country USA

API Number 05-123-38162

Region DJ BASIN

Spud Date 5/5/2014

Surface Coordinates 350' FSL 927' FWL

Bottom Hole Coordinates 4579.30' FNL 23.5' FWL

County WELD

Rig Number H&P 330

AFE # 139621

Field WATTENBERG

Drilling Completed 5/14/2014

Ground Elevation 4,692'

K.B. Elevation 4,722'

Logged Interval 6200 To 11516

Total Depth 11516

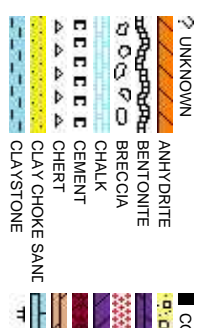
Formation NIOBRARA C CHALK

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

MOHAMMED ALMUBARAK
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

SHALE GRAY

SHALY SANDSTONE

SHALY SILTSTONE

SILTY SHALE

SILTSTONE

TUFF

WELDED TUFF

Accessories

F FOSSIL

GASTROPOD

OOLITE

AMPHIROA

BELEMITE

BIOCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHTLT

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

INOCERAMUS

KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLET:

PYRITE

SALT CAST

SANDY

SILICEOUS

SILT

TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other Symbols

MOLDIC

ORGANIC

DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

FAULT

FORMATION TOP

GAS SHOW

MINDEPTH MN DEPTH

NORMAL FAULT

OIL SHOW

OVERTURNED STRATA

REVERSE FAULT

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

ANGULAR

ROUNDED

SUBANG

SUBRND

E EARTHY

FINELYXLN

GRAINSTONE

L LITHOGRAPHIC

MX MICROXLN

MMS MUDSTONE

PS PACKSTONE

WSS WACKSTONE

Porosity

E EARTHY

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

Engineering

BIT

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

CORE - LOST

CORE - RECOVERED

DST INTERVAL

SLIDE

SURVEY

TRIP GAS

Textures

B\$ BOUNDSTONE

C CHALKY

CX CRYPTOXLN

Sorting

M MODERATE

P POOR

W WELL

Slide/Rotate

50' Sample Interval

3900

ROP (ft/hr)

ROP

ROF

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

C5

BEGAN DRILLING CURVE
@ 01:44 05/09/2014

Bit Data

Bit #: 2

Type: SMITH SD1611

Size: 8.75"

Depth In: 6,161'

Depth Out: 6,614'

Jets: 3x14 : 3x15

S/N: JH6812

COLUMBINE LOGGING INC.
RIGGED UP ON 05/06/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #5630
COLUMBINE BEGAN LOGGING
ON 05/06/2014

Depth Labels

% Lith

Gamma

GAMMA

Well Bore
TVD

Oil Show

Images

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

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

MD: 6,164'
TVD: 6,138.72'
Inclination: 1.4°
Azimuth: 53.5°
VS: -271.02'

MD: 6,212'
TVD: 6,186.69'
Inclination: 2.6°
Azimuth: 17.2°
VS: -269.63'

MUD WT 10.20 VIS 55

6000

110

GAMMA (API)

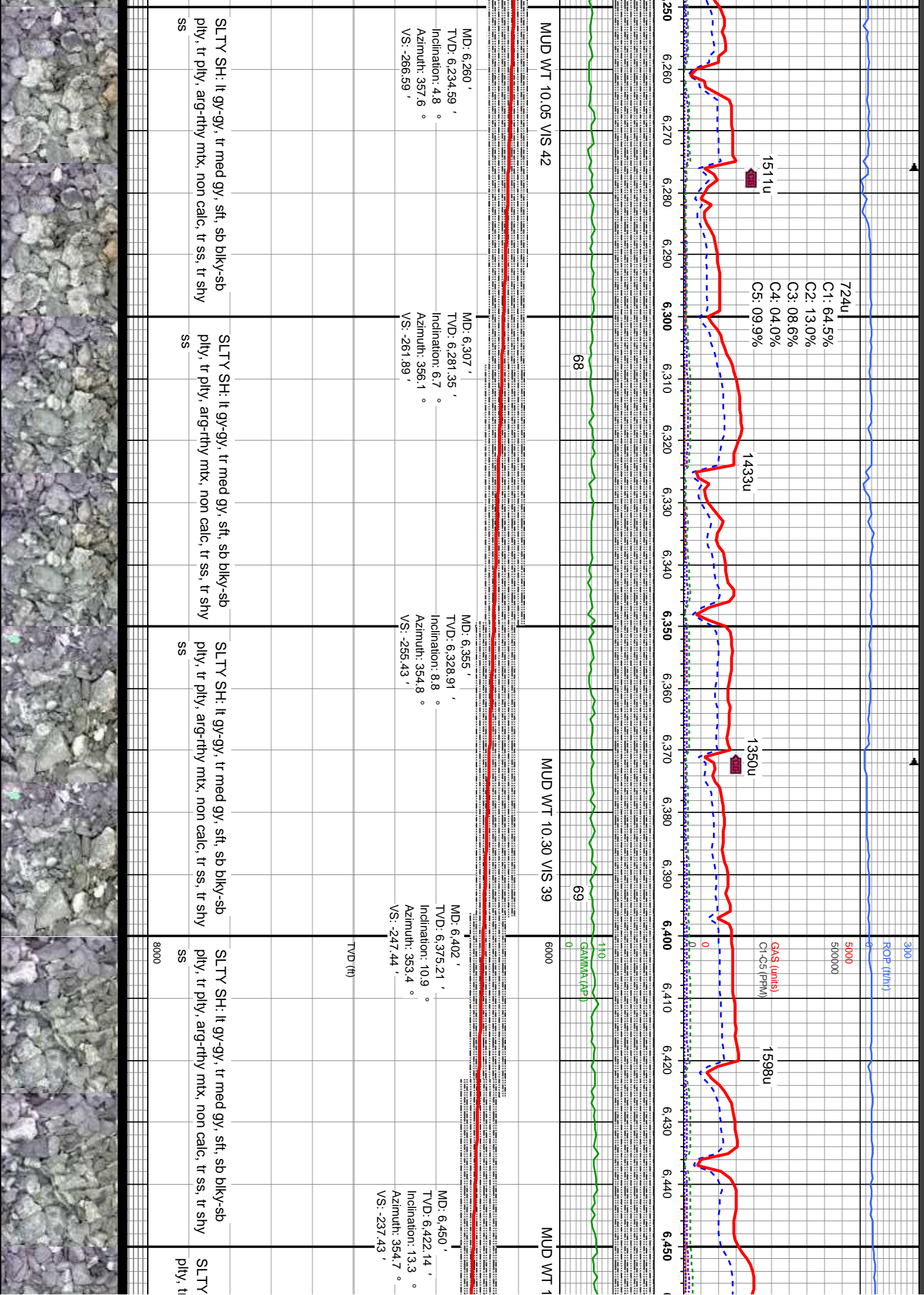
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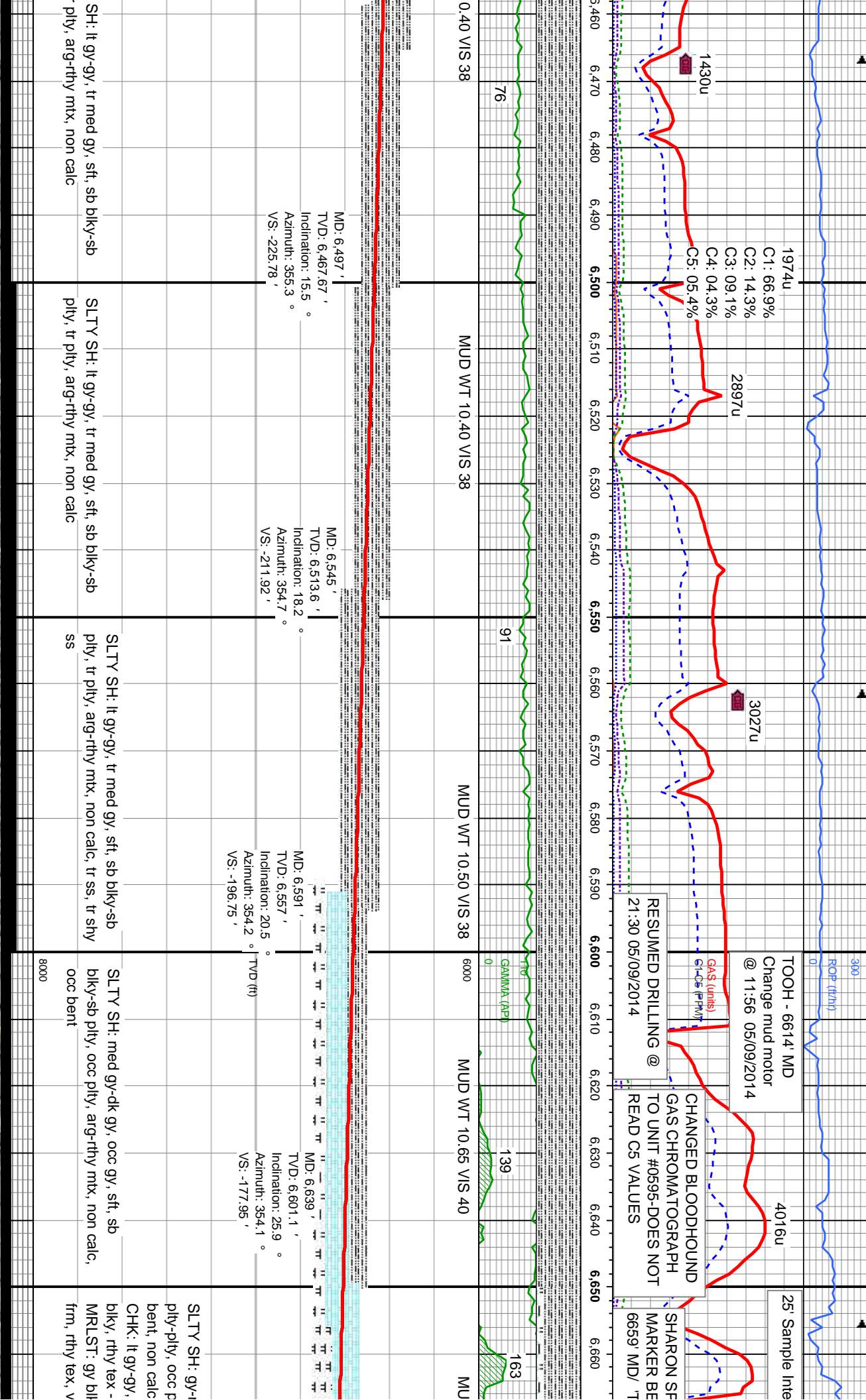
72

TVD (ft)

8000







DEPTH

05/10/2014

TOOH-6749 MD
@ 23:45 05/09/2014

RESUMED DRILLING @
10:21 05/10/2014

RINGS

D @

NIORARA A CHALK @
6,771 MD / TVD 6,666'

NIORARA A MARL @
6,750 MD / 6,697' TVD

AGITATOR BLOCKED

GAS SCALE CHANGE

SHAKER BYPASSET

NIORARA
6874' MD/

GAS (units)
C1-C5 (PPM)

3301u

4754u

C1: 70.3%
C2: 17.5%
C3: 09.0%
C4: 03.2%

46

120

GAMMA (API)

94

D WT 10.55 VIS 39

MUD WT 10.50 VIS 38

MUD WT 10.50 VIS 36

MUD WT 10

MD: 6,829'
TVD: 6,756.95'
Inclination: 47.6°
Azimuth: 3.4°
VS: -71.91'

MD: 6,686'
TVD: 6,643.17'
Inclination: 27.1°
Azimuth: 0.9°
VS: -157.03'

MD: 6,734'
TVD: 6,684.77'
Inclination: 32.7°
Azimuth: 2.4°
VS: -133.12'

MD: 6,781'
TVD: 6,722.47'
Inclination: 40.5°
Azimuth: 4.5°
VS: -105.18'

TVD (ft)

med gy, tr dk gy, sft, sb
lly, sb fis tex, rthy mtx, occ
mod sft - mod frm, sb pty-sb
mot, v calc
g, blk-sb pty, sme fis, mod
calc

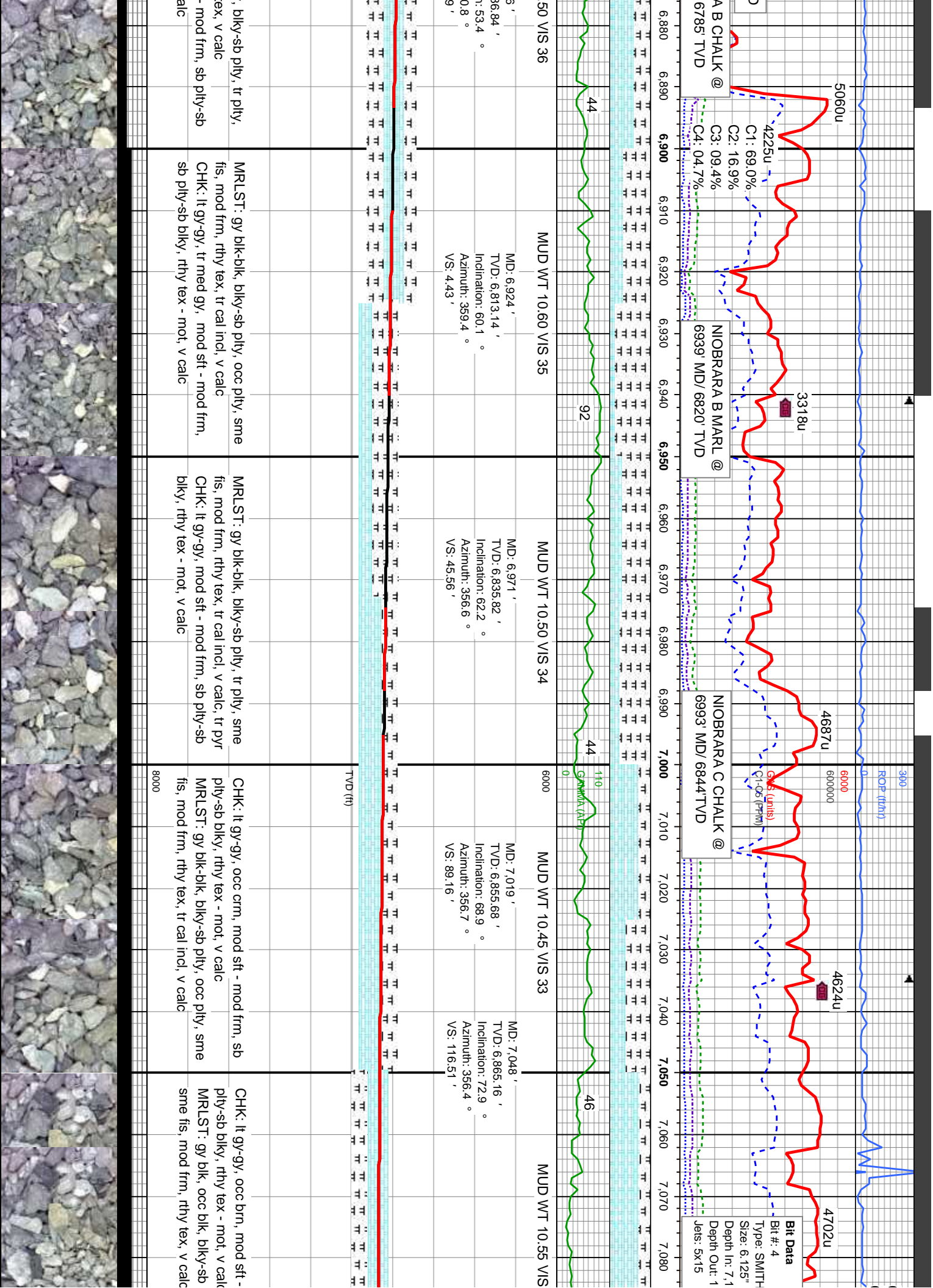
CHK: lt gy-gy, mod sft - mod frm, sb pty-sb
bky, rthy tex - mot, v calc, tr pyr
MRLST: gy blk-blk, blk-sb pty, sme fis,
mod frm, rthy tex, v calc

MRLST: gy blk-blk, blk-sb pty, sme fis,
mod frm, rthy tex, v calc
CHK: lt gy-gy, mod sft - mod frm, sb pty-sb
bky, rthy tex - mot, v calc

MRLST: gy blk-blk, blk-sb pty, sme fis,
mod frm, rthy tex, v calc
CHK: lt gy-gy, mod sft - mod frm, sb pty-sb
bky, rthy tex - mot, v calc

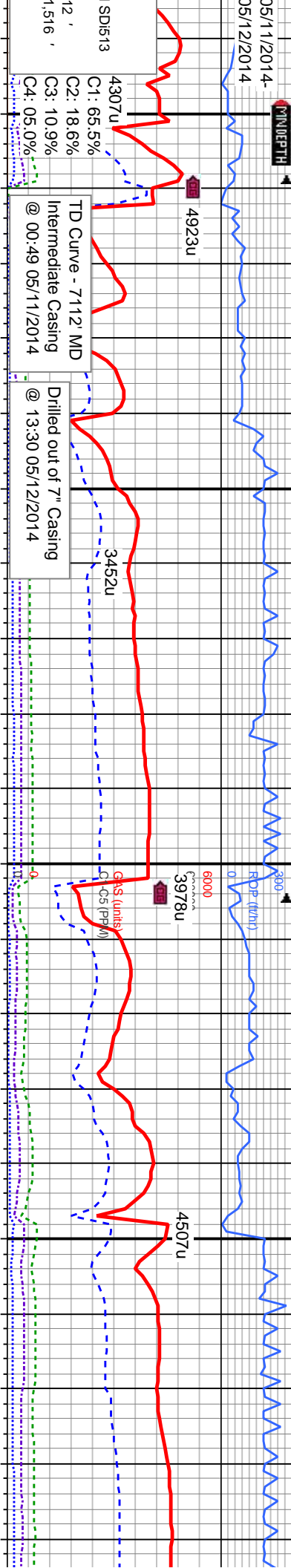
MRLST: gy blk-med gy
sme fis, mod frm, rthy
CHK: lt gy-gy, mod sft
bky, rthy tex - mot, v c





5/11/2014-
5/12/2014

DEPTH



SD513
12' ,
1,516' ,
C1: 65.5%
C2: 18.6%
C3: 10.9%
C4: 05.0%

7,090 7,100 7,110 7,120 7,130 7,140 7,150 7,160 7,170 7,180 7,190 7,200 7,210 7,220 7,230 7,240 7,250 7,260 7,270 7,280 7,290

33 MUD WT 10.50 VIS 35
MD: 7,132' ,
TVD: 6,882.9' ,
Inclination: 82.7° ,
Azimuth: 1.3° ,
VS: 198.48'

74
110
92
0
GAMMA (API)

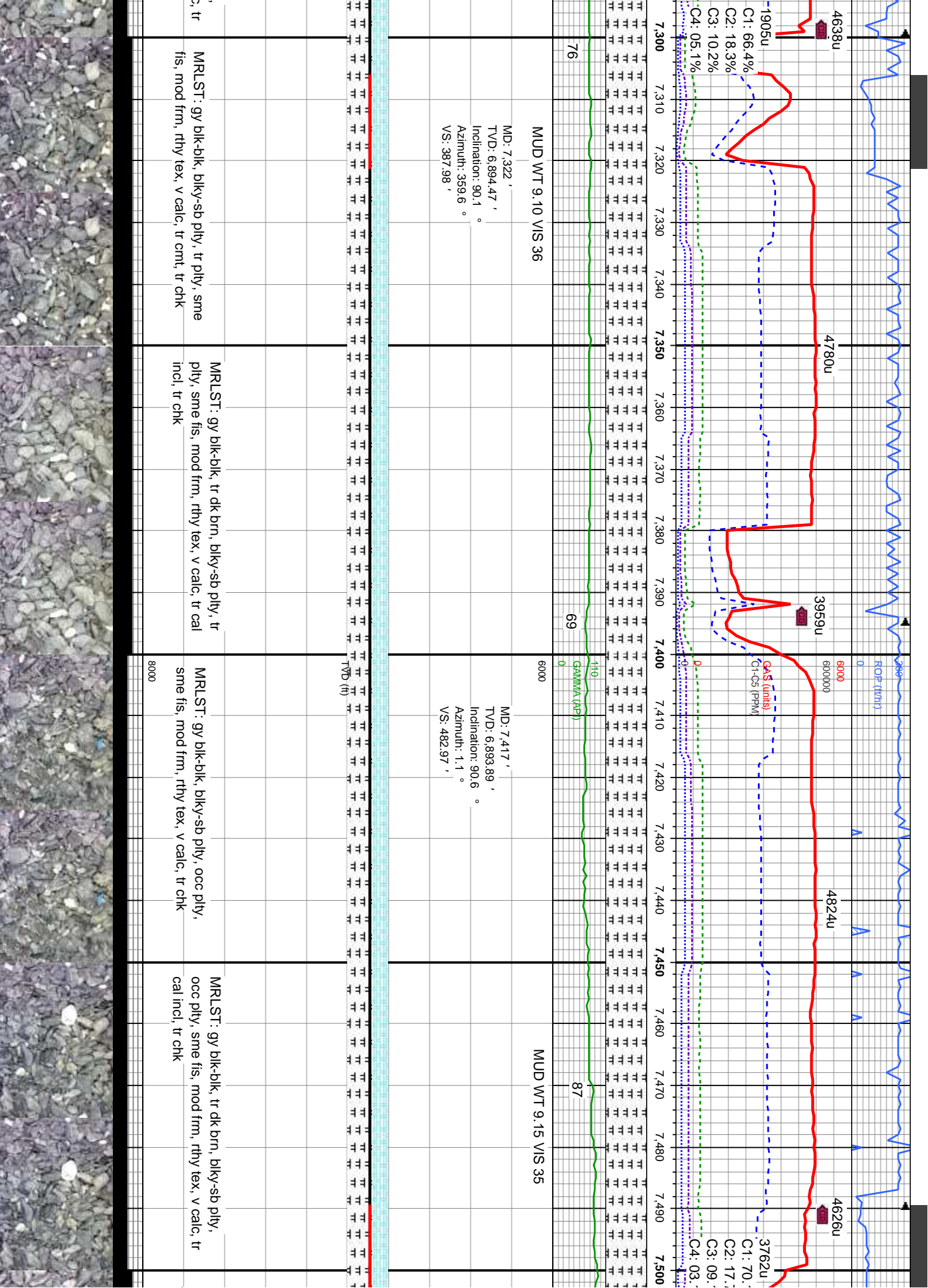
MUD WT 9.02 VIS 32

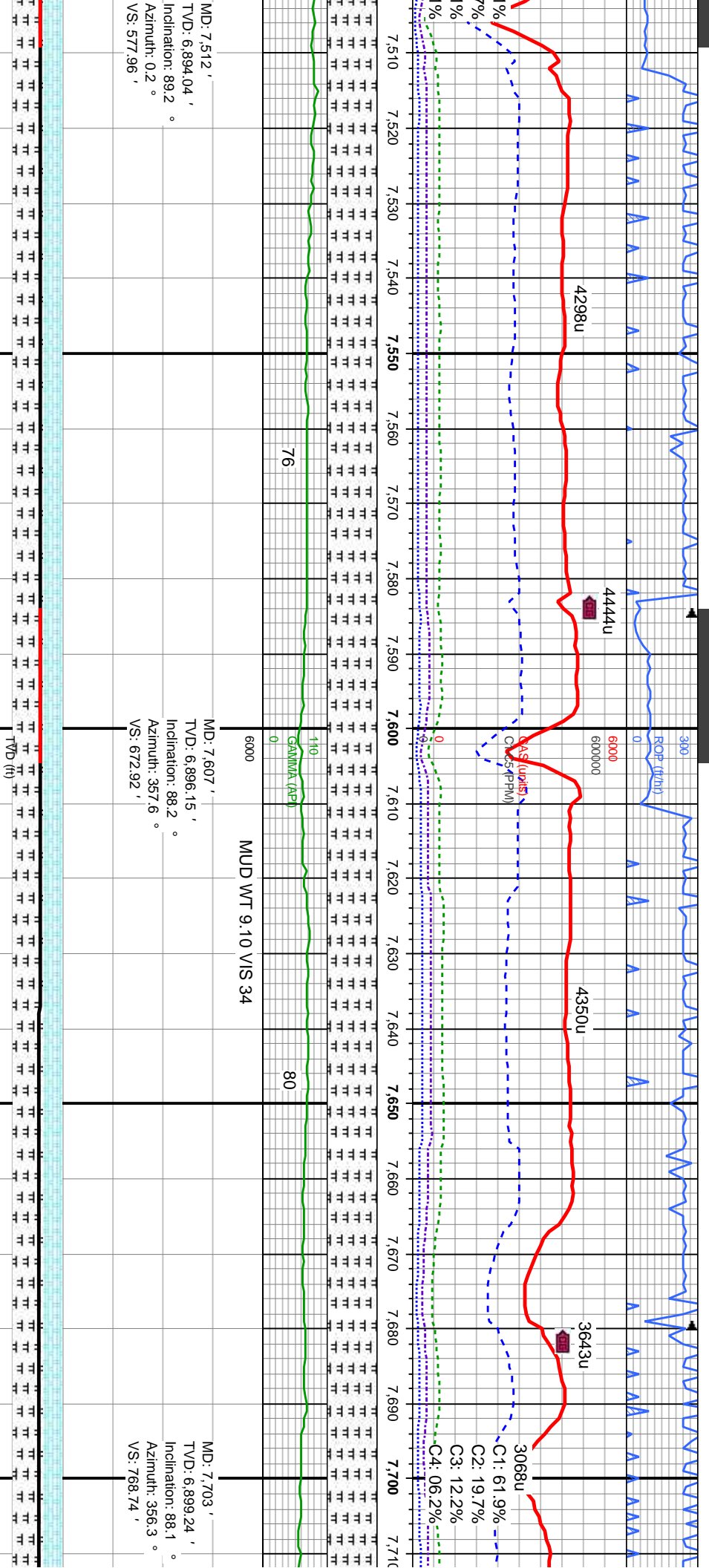
MD: 7,227' ,
TVD: 6,891.76' ,
Inclination: 86.6° ,
Azimuth: 359.9° ,
VS: 293.03'

MUD WT 9.30 VIS 35

mod frm, sb
sme fis, mod frm, rthy tex, v calc, occ cnt
CHK: lt gy-gy, mod sft - mod frm, sb ply-sb
biky, rthy tex - mot, v calc
MRSLT: gy blk-blk, biky-sb ply, occ ply,
MRSLT: gy blk-blk, biky-sb ply, tr ply, sme
fis, mod frm, rthy tex, v calc, occ cnt, occ chk
MRSLT: gy blk-blk, biky-sb ply, occ ply, sme
fis, mod frm, rthy tex, v calc, tr cnt, tr chk
MRSLT: gy blk-blk, tr dk brn, biky-sb ply
occ ply, sme fis, mod frm, rthy tex, v calc
cnt, tr chk

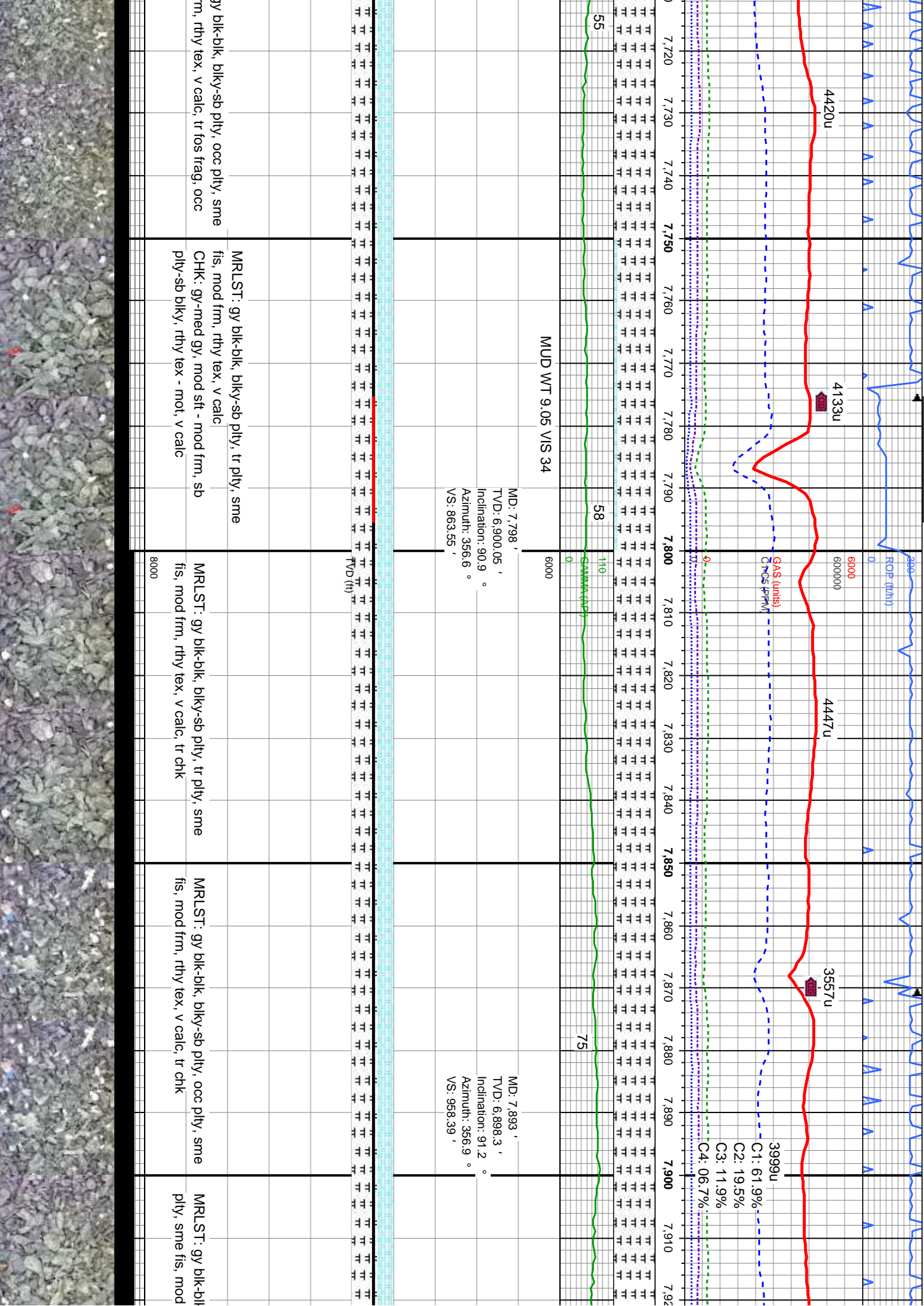


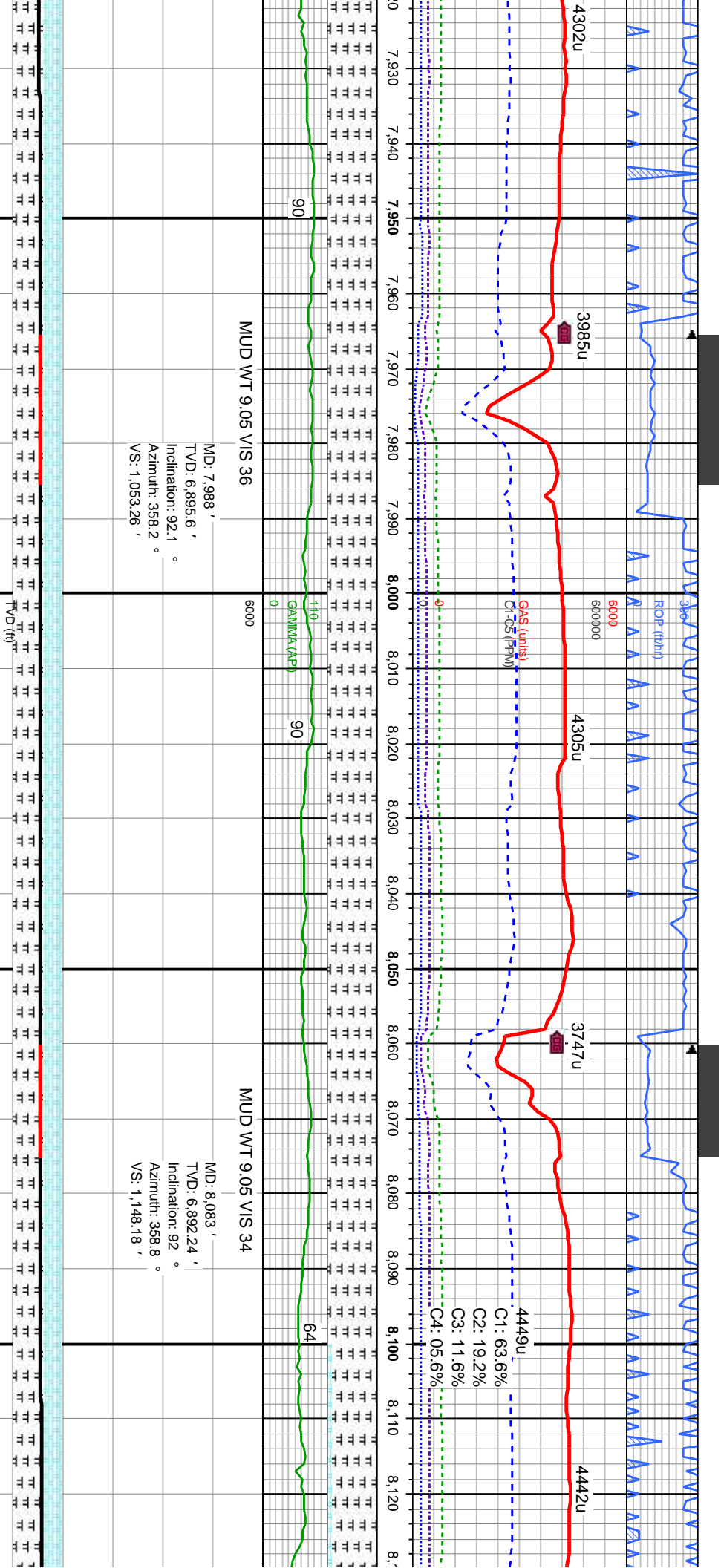




MRSLT: gy blk-blk, blk-y-sb pty, tr pty, sme fis, mod frm, rthy tex, v calc, tr chk	MRSLT: gy blk-blk, tr dk brn, blk-y-sb pty, occ pty, sme fis, mod frm, rthy tex, v calc, occ chk	MRSLT: gy blk-blk, tr dk brn, blk-y-sb pty, occ pty, sme fis, mod frm, rthy tex, v calc, tr chk	MRSLT: gy blk-blk, tr dk brn, blk-y-sb pty, occ pty, sme fis, mod frm, rthy tex, v calc, tr chk	MRSLT: gy blk-blk, tr dk brn, blk-y-sb pty, occ pty, sme fis, mod frm, rthy tex, v calc, tr chk
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, tr dk brn, blk-y-sb pily, tr frm, rthy tex, v calc, tr chk	MRLST: gy blk-blk, blk-y-sb pily, occ pily, sme fis, mod frm, rthy tex, v calc, occ chk	8000	MRLST: gy blk-blk, blk-y-sb pily, occ pily, sme fis, mod frm, rthy tex, v calc, tr pyr clus, tr chk	MRLST: gy blk-dk gy, occ blk, blk-y-sb pily, tr pily, sme fis, mod frm, rthy tex, v calc, occ chk	MRLST: gy blk-blk, blk-y-sb fis, mod frm, rthy tex, v calc CHK: gy-med gy, mod sft - pily-sb blk-y, rthy tex - mot,

05/13/2014

MD: 8,179'

TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

MD: 8,274'

TVD: 6,886.81'

Inclination: 90.8°

Azimuth: 359.9°

VS: 1,339.08'

MD: 8,179'

TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

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TVD: 6,886.81'

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Azimuth: 359.9°

VS: 1,339.08'

360

ROF (ft/h)

6000

600000

3012u

3658u

3617u

C1: 59.0%

C2: 19.9%

C3: 13.6%

C4: 07.5%

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TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

MD: 8,274'

TVD: 6,886.81'

Inclination: 90.8°

Azimuth: 359.9°

VS: 1,339.08'

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TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

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TVD: 6,886.81'

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VS: 1,339.08'

360

ROF (ft/h)

6000

600000

3012u

3658u

3617u

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C2: 19.9%

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TVD: 6,889'

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MD: 8,274'

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VS: 1,339.08'

MD: 8,179'

TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

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Inclination: 90.8°

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360

ROF (ft/h)

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MD: 8,179'

TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

MD: 8,274'

TVD: 6,886.81'

Inclination: 90.8°

Azimuth: 359.9°

VS: 1,339.08'

MD: 8,179'

TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

MD: 8,274'

TVD: 6,886.81'

Inclination: 90.8°

Azimuth: 359.9°

VS: 1,339.08'

MD: 8,179'

TVD: 6,889'

Inclination: 91.9°

Azimuth: 359.6°

VS: 1,244.11'

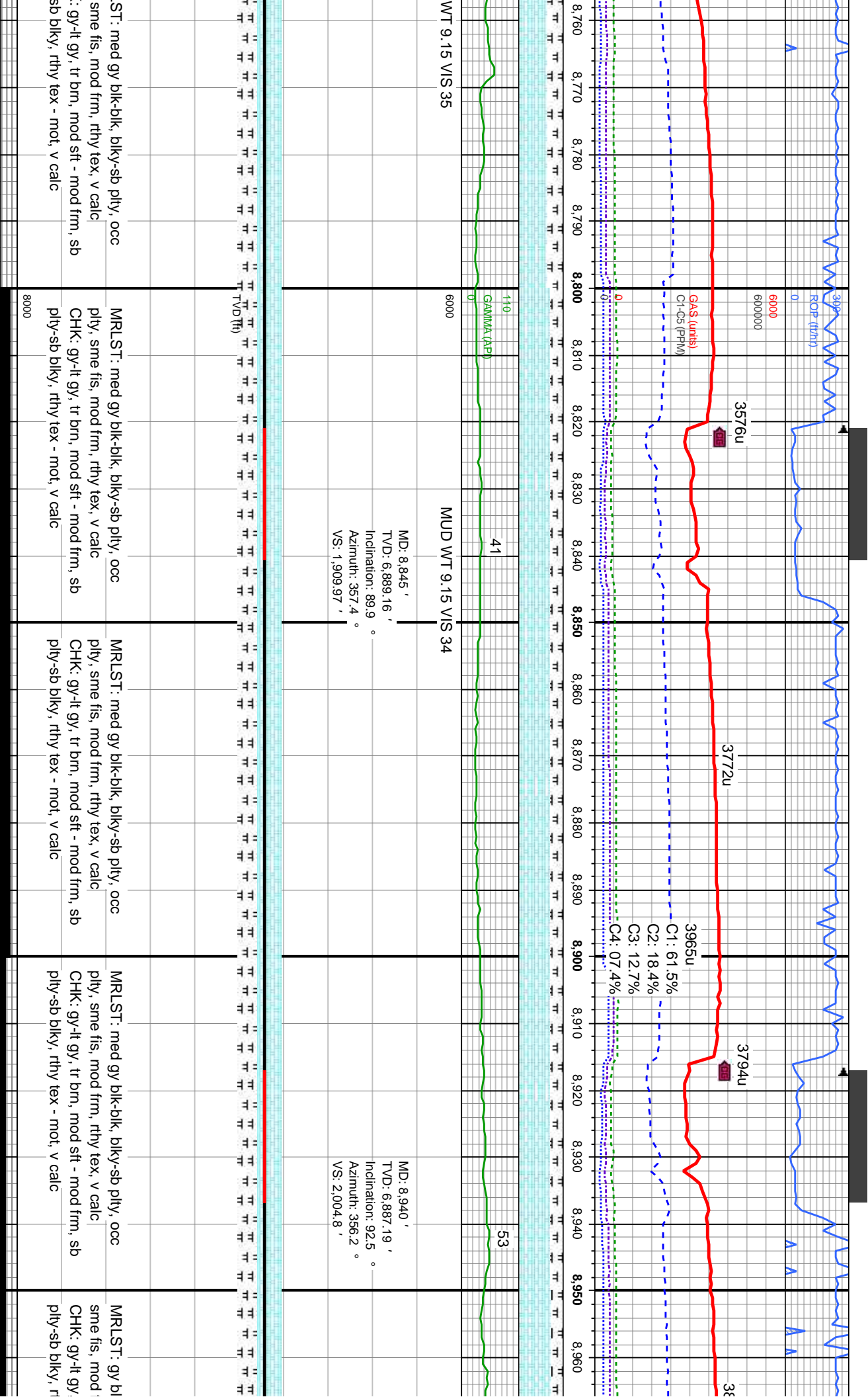
MD: 8,274'

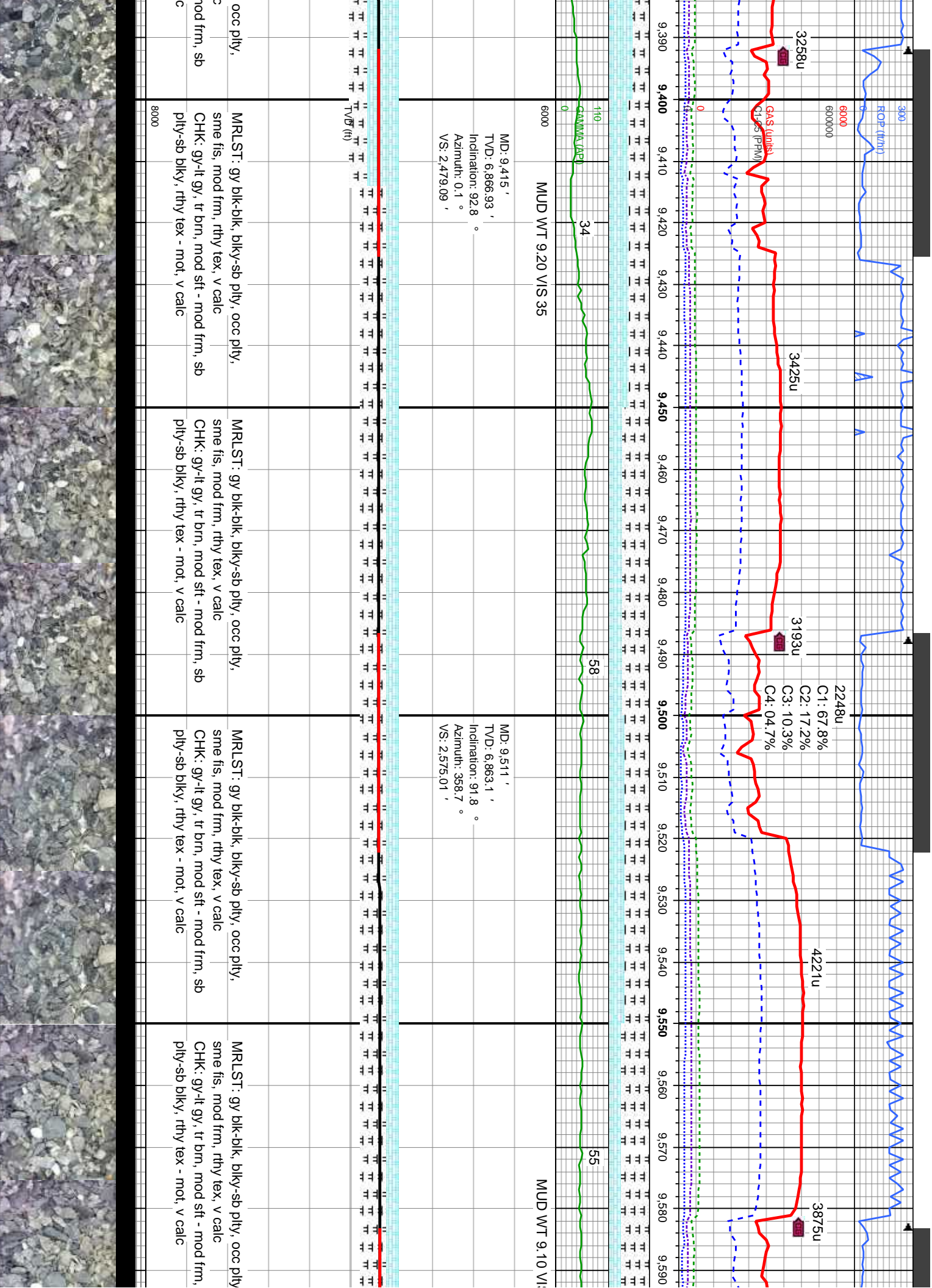
TVD: 6,886.81'

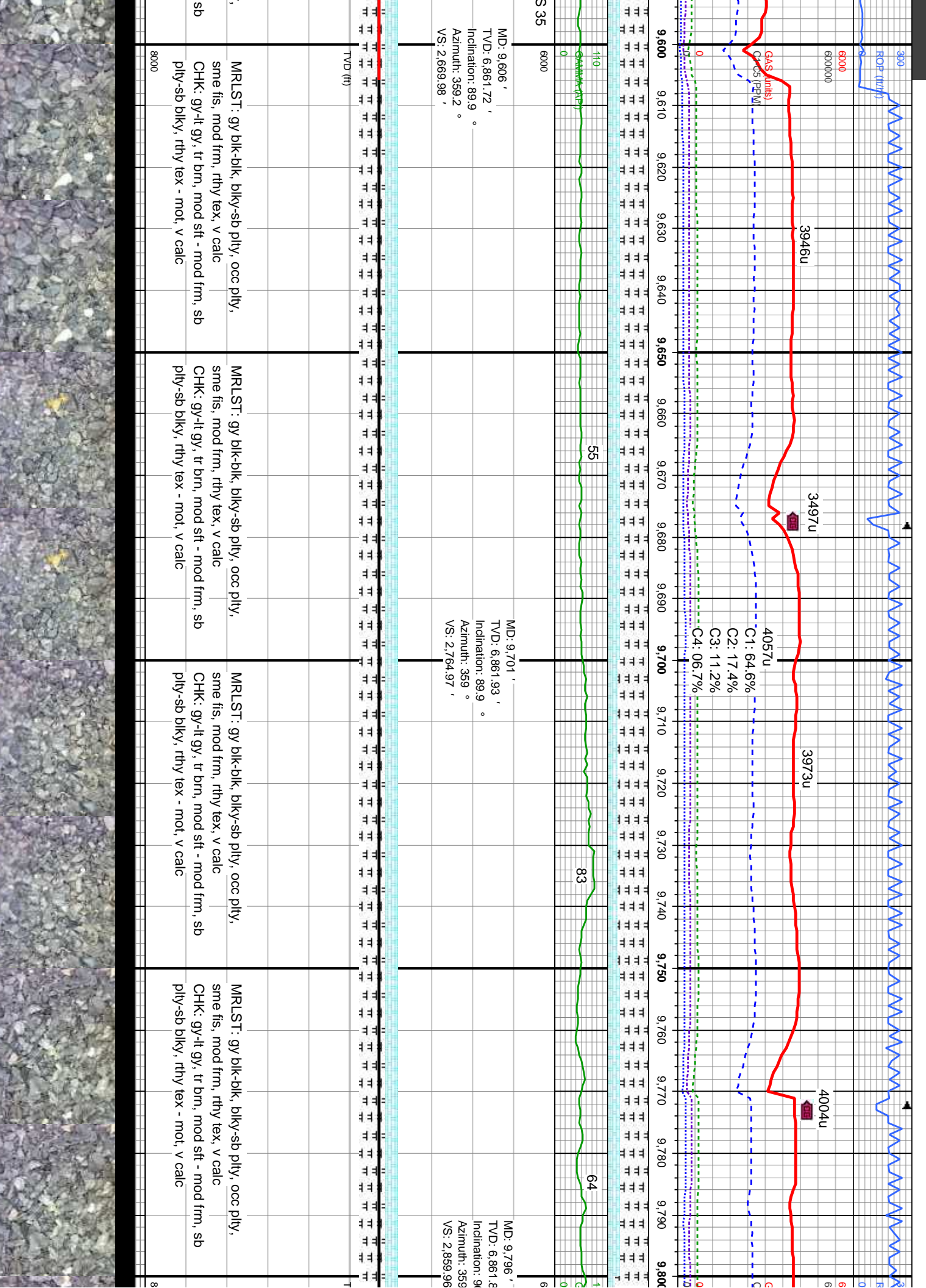
Inclination: 90.8°

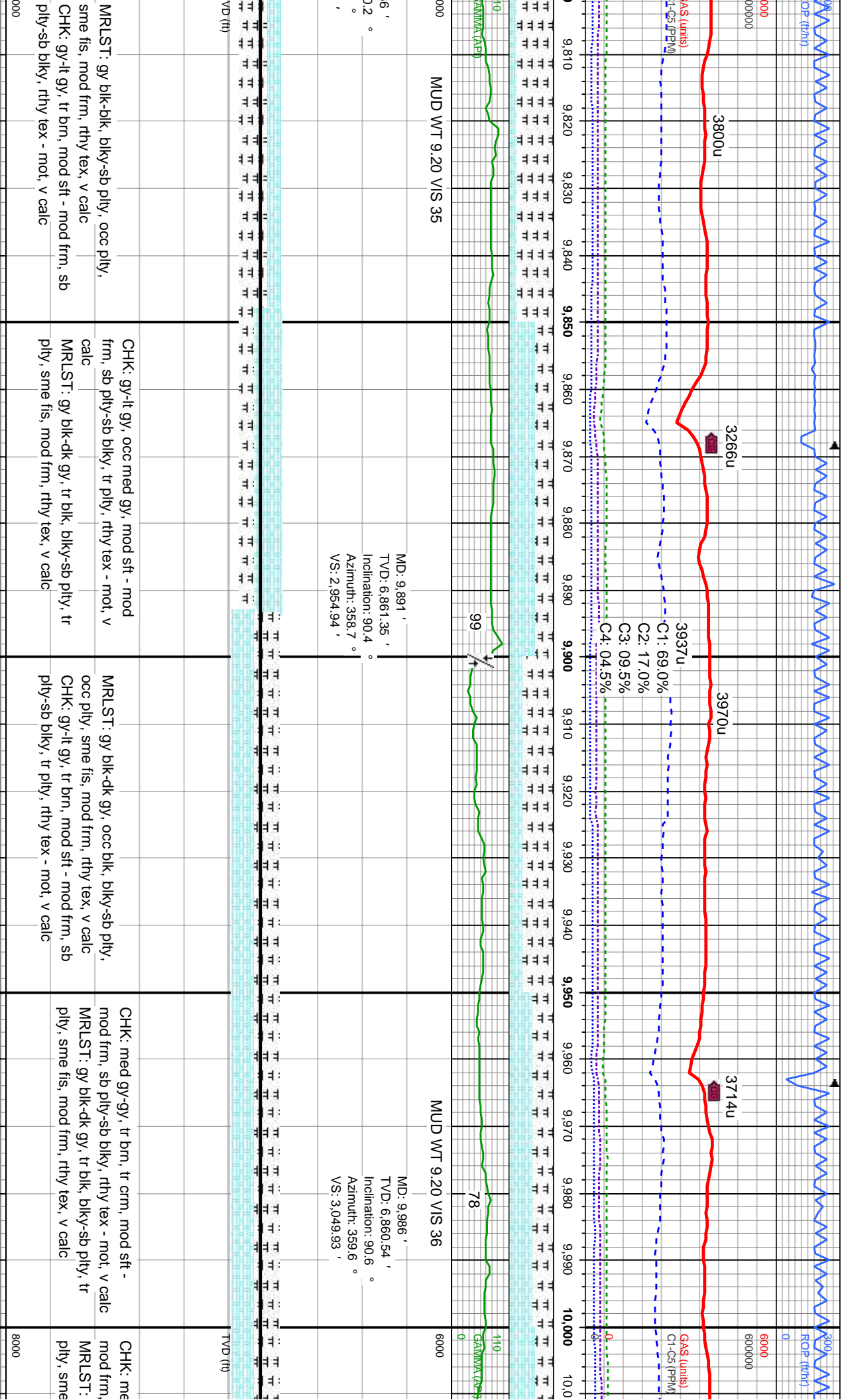
Azimuth: 359.9°

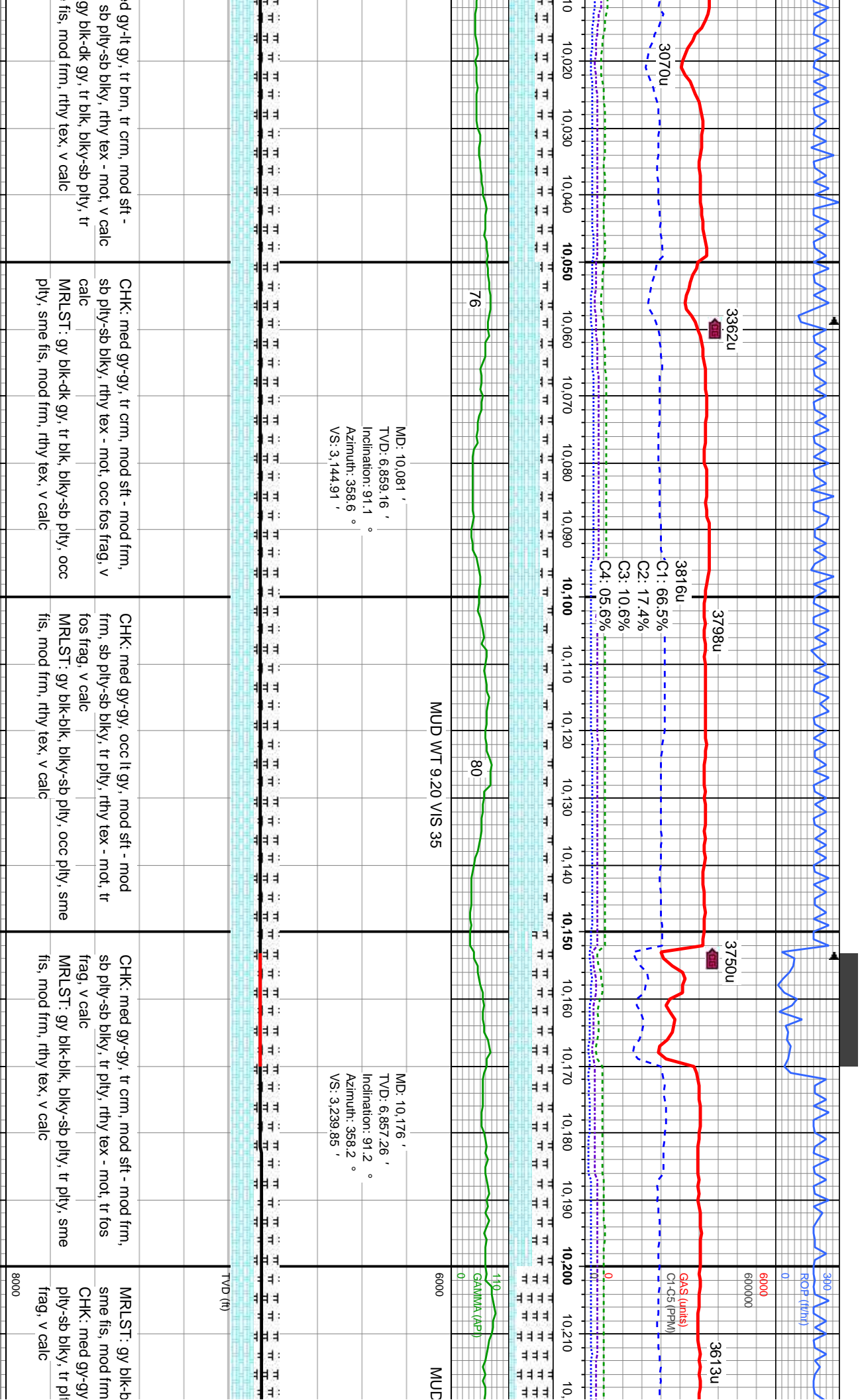
VS: 1,339.08'

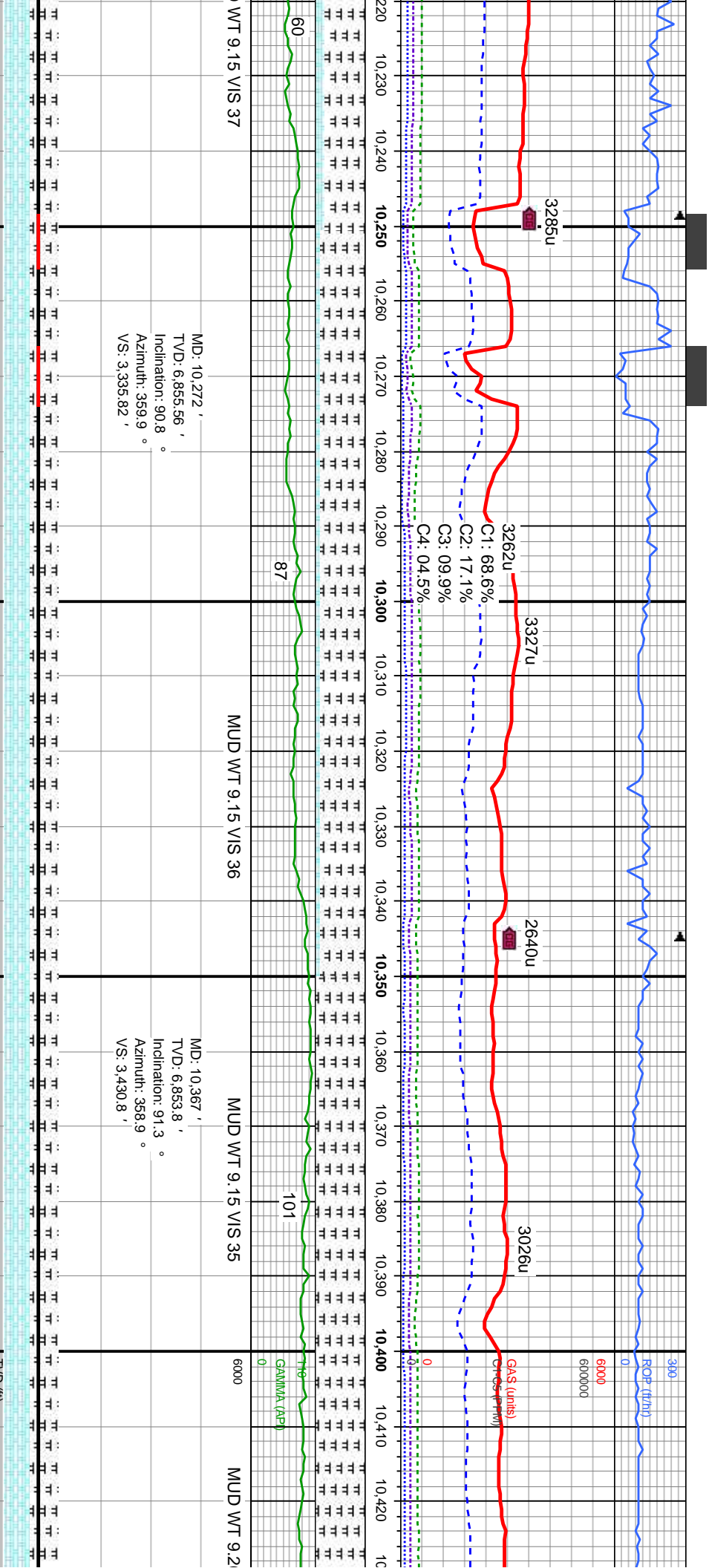












WT 9.15 VIS 37

MUD WT 9.15 VIS 36

MUD WT 9.15 VIS 35

MUD WT 9.2

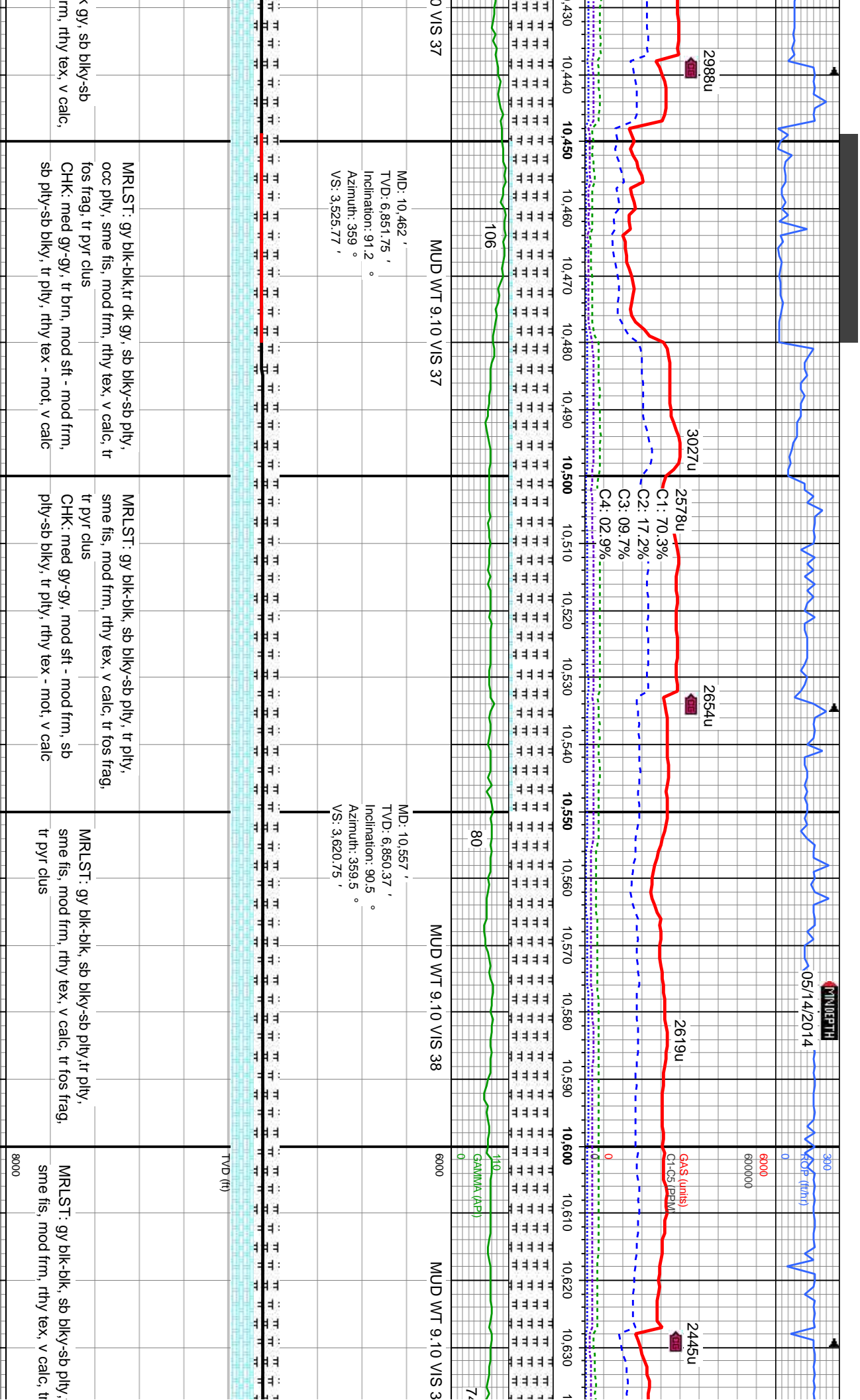
MD: 10,272 '
TVD: 6,856.56 '
Inclination: 90.8 °
Azimuth: 359.9 °
VS: 3,335.82 '

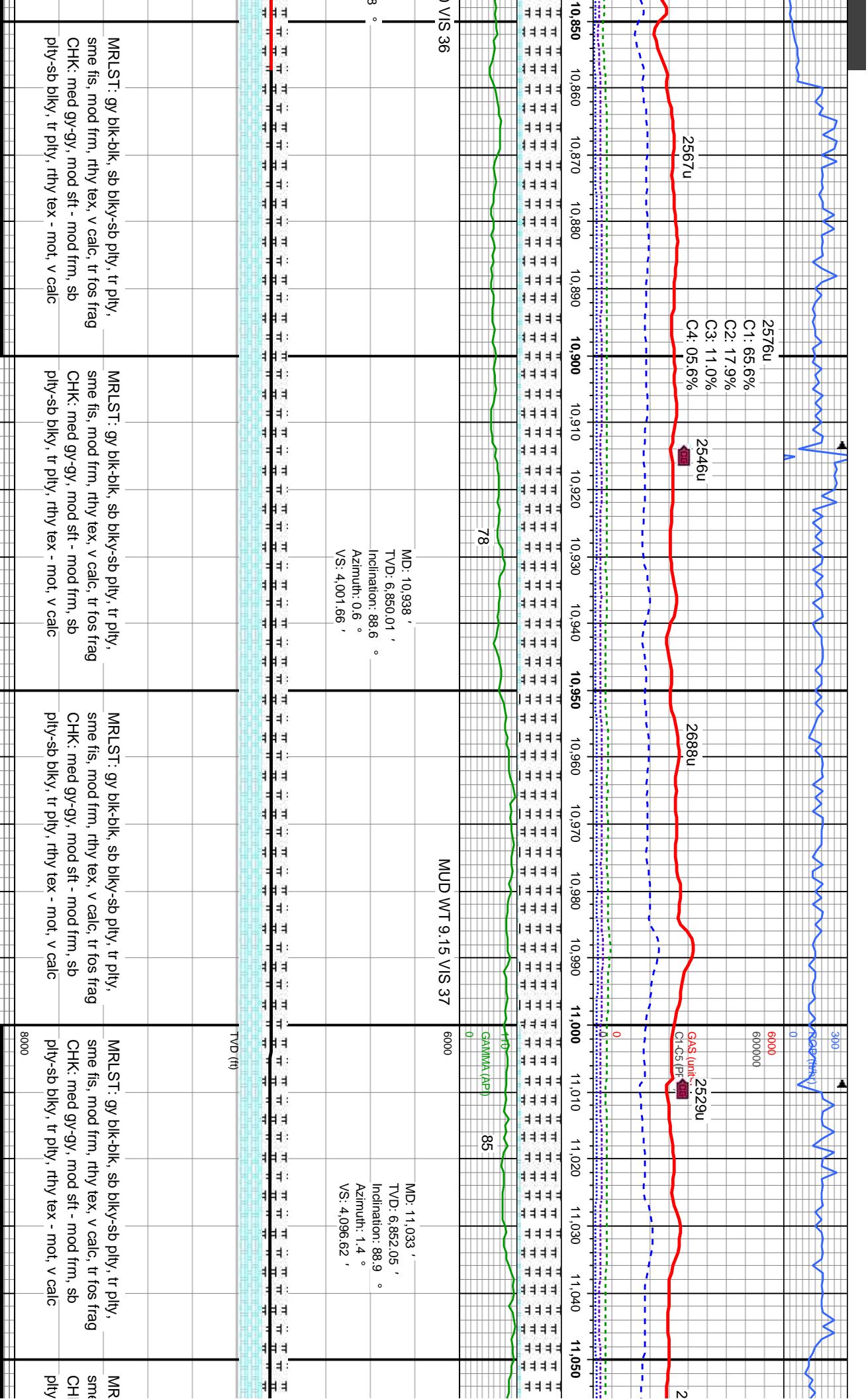
MD: 10,367 '
TVD: 6,853.8 '
Inclination: 91.3 °
Azimuth: 358.9 °
VS: 3,430.8 '

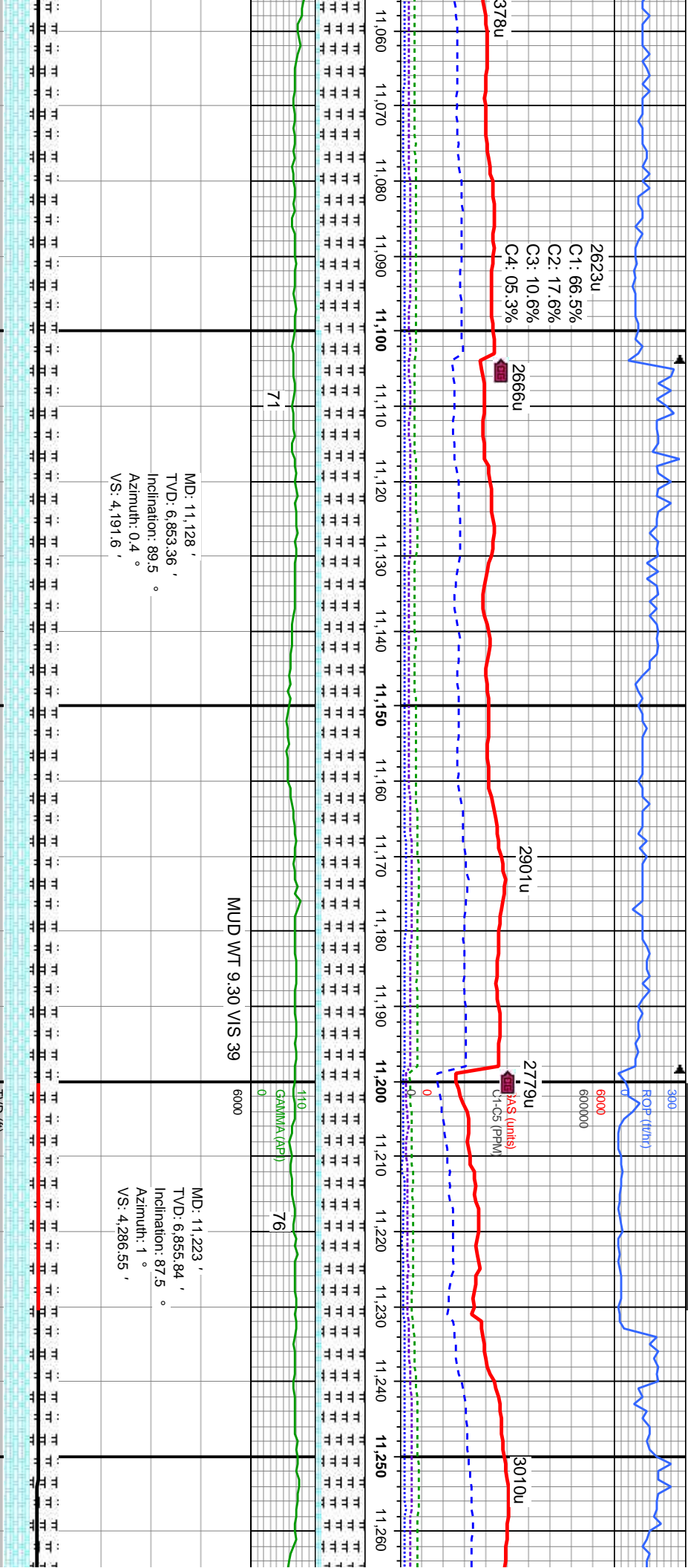
lk, blk-y-sb pily, occ pily, rthy tex, v calc mod sft - mod frm, sb y, rthy tex - mot, occ fos	MRLST: gy blk-blk, sb blk-y-sb pily, tr pily, sme fis, mod frm, rthy tex, v calc CHK: med gy-gy, mod sft - mod frm, sb pily-sb blk-y, tr pily, rthy tex - mot, v calc	MRLST: gy blk-blk, tr dk gy, sb blk-y-sb pily, occ pily, sme fis, mod frm, rthy tex, v calc, tr fos frag CHK: med gy-gy, tr brn, mod sft - mod frm, sb pily-sb blk-y, tr pily, rthy tex - mot, v calc	MRLST: gy blk-blk, occ dk gy, sb blk-y-sb pily, tr pily, sme fis, mod frm, rthy tex, v calc, tr chk, occ fos frag, tr chk	MRLST: gy blk-blk, occ dl pily, tr pily, sme fis, mod f tr chk, tr fos frag, occ chk
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TVD (ft)



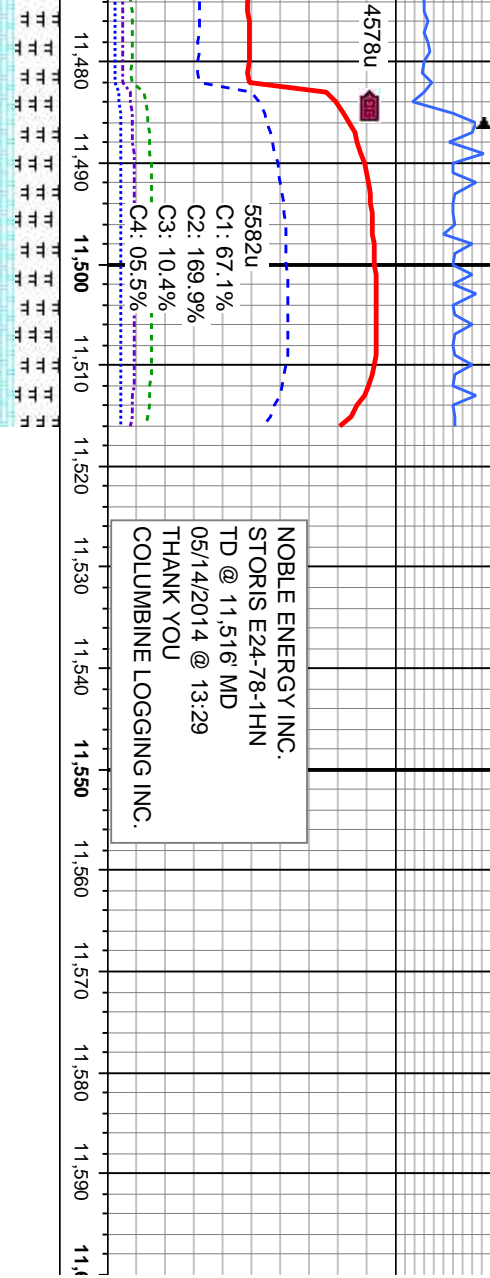






11,060	11,070	11,080	11,090	11,100	11,110	11,120	11,130	11,140	11,150	11,160	11,170	11,180	11,190	11,200	11,210	11,220	11,230	11,240	11,250	11,260
MRLST: gy blk-blk, sb blk-y-sb pty, tr pty, sme fis, mod frm, rthy tex, v calc, tr fos frag																				
CHK: med gy-gy, mod sft - mod frm, sb pty-sb blk-y, tr pty, rthy tex - mot, v calc																				





MUD WT 9.30 VIS 39

blky-sb pty, tr pty, sme fis, mod frm, rthy
sft - mod frm, sb pty-sb blky, tr pty, rthy

