



Scale: 5" / 100'
Measured Depth Log

Well Name Rohn State LD10-67-1HN

Location SENE SEC9, T9N, R58W

State COLORADO County WELD

Country USA Rig Number H&P 326

API Number 05-123-37630 Field WILDCAT

Region DJ BASIN Drilling Completed 10/1/2014

Spud Date 9/24/2014

Surface Coordinates 1688' FNL, 330' FEL
40.76853 -103.96114

Bottom Hole Coordinates (PROJ)
1650' FFNLL 660' FFELL

Ground Elevation 4730' K.B. Elevation 4760'

Logged Interval 5177' To 9682' Total Depth 9682'

Formation NIOBRARA, C CHALK

Type of Drilling Fluid LSND

Operator

Company Noble Energy Inc

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name EVAN HOWELL

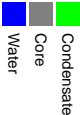
Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202








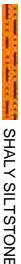














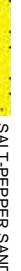





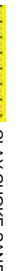
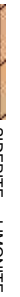
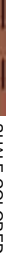



Other

COLUMBINE LOGGING INC. MIKE KERSCHEN
MATT HOPKINS


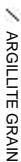
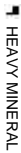




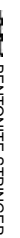





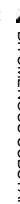
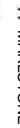
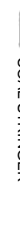





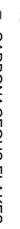
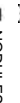



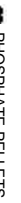



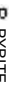


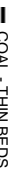
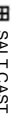








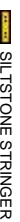

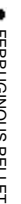





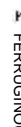




Zone Color Coding



Rock Types

 UNKNOWN	 COAL	 MARLSTONE	 SHALY SANDSTONE
 ANHYDRITE	 CONGLOMERATE	 METAMORPHIC	 SHALY SILTSTONE
 BENTONITE	 DOLOMITE	 NO SAMPLE	 SILTY SHALE
 BRECCIA	 DOLOMITIC LIMESTONE	 SALT	 SILTSTONE
 CHALK	 GRANITE	 SANDSTONE	 TILL
 CEMENT	 GYPSUM	 SALT-PEPPER SANC	 TUFF
 CHERT	 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	 B BENTONITE	 K KAOLIN	 BENTONITE STRINGER
 OOLITE	 BITUMENOUS SUBSTANCE	 M MARLSTONE	 COAL STRINGER
 OSTRACOD	 BRECCIA FRAGMENTS	 M MICACEOUS	 DOLOMITE STRINGER
 PELECYPOD	 C CALCAREOUS	 M MINERAL CRYSTALS	 GYPSUM STRINGER
 PELLET	 C CARBONACEOUS FLAKES	 N NODULES	 LIMESTONE STRINGER
 PISOLITE	 C CHTDK	 P PHOSPHATE PELLETS	 MARLSTONE (CALC) STRG
 PLANT REMAINS	 C CHTLT	 P PYRITE	 MARLSTONE (DOL) STRG
 PLANT SPORES	 C COAL - THIN BEDS	 S SALT CAST	 SANDSTONE STRINGER
 SCAPHOPOD	 D DOLOMITIC	 S SANDY	 SHALE STRINGER
 STROMATOPOROID	 F FELDSPAR	 S SILICEOUS	 SILTSTONE STRINGER
 ECHINOID	 F FERRUGINOUS PELLET	 S SILTY	
 FISH	 F FERRUGINOUS	 T TUFFACEOUS	
 FORAMINIFERA	 A ANHYDRITIC	 G GLAUCONITE	
 F FOSSIL	 A ARGILLACEOUS	 G GYPSIFEROUS	

Stringer

Oil Show

-  PINPOINT
-  VUGGY

Engineering

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

Porosity

-  CONNECTION (DOWN)
-  CONNECTION GAS
-  CONNECTION GAS
-  FENESTRAL
-  TRIP GAS
-  F FRACTURE
-  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 **MS** MUDSTONE

Rounding

 **MINDEPTH** MN DEPTH (DOWN) **AS** ANGULAR **PS** PACKSTONE

 NORMAL FAULT **R** ROUNDED **WS** WACKESTONE

 **(LEFT)** OVERTURNED STRATA **BS** SUBANG

 REVERSE FAULT **RS** SUBRND

Sorting

 CASING **M** MODERATE

Textures

 SIDEWALL CORE (LEFT) **P** POOR

 **(LEFT)** SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE **W** WELL

 SLIDE **C** CHALKY

 **SD** SURVEY **CX** CRYPTOXLN

Slide/Rotate

ROP

ROP

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

Depth Labels

% Lith

GAMMA

GR

Well Bore
TVD

Oil Show

Images

COLUMBINE LOGGING INC.
RIGGED UP ON 09/25/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #331

CONTINUED FROM
Rohn State LD10-67-1HN(VERT)

5,130 5,140 5,150 5,160 5,170 5,180 5,190 5,200 5,210 5,220 5,230 5,240 5,250 5,260 5,270 5,280 5,290 5,300

1000

ROP (ft/h)

428

Mud Wt: 10.20 / 41 Vis

641u

GAS (units)
C1-C4 (PPM)

1384u

380u
C1: 80.4%
C2: 6.2%
C3: 9.3%
C4: 4.1%

980u
C1-C4 (PPM)

1000

ROP (ft/h)

200
GR (units)

200
GR (units)

87

200
GR (units)

50' Sample Intervals

SLTY SH: lt-dk gy, mod frm, sb blk-y-sb
plty, gritty, rthy, silky, occ string of ss

4900 SLTY SH: lt-dk gy, mod frm, sb blk-y-sb
plty, gritty, rthy, silky, occ string of ss

SLTY SH: lt-dk gy, mod frm, sb blk-y-sb
plty, gritty, rthy, silky, occ string of ss

4900 SL
plty

MD: 5,247'
Inclination: 5.74 °
Azimuth: 94.83 °
TVD: 5,128.89'
VS: 868.33'

TVD (ft)

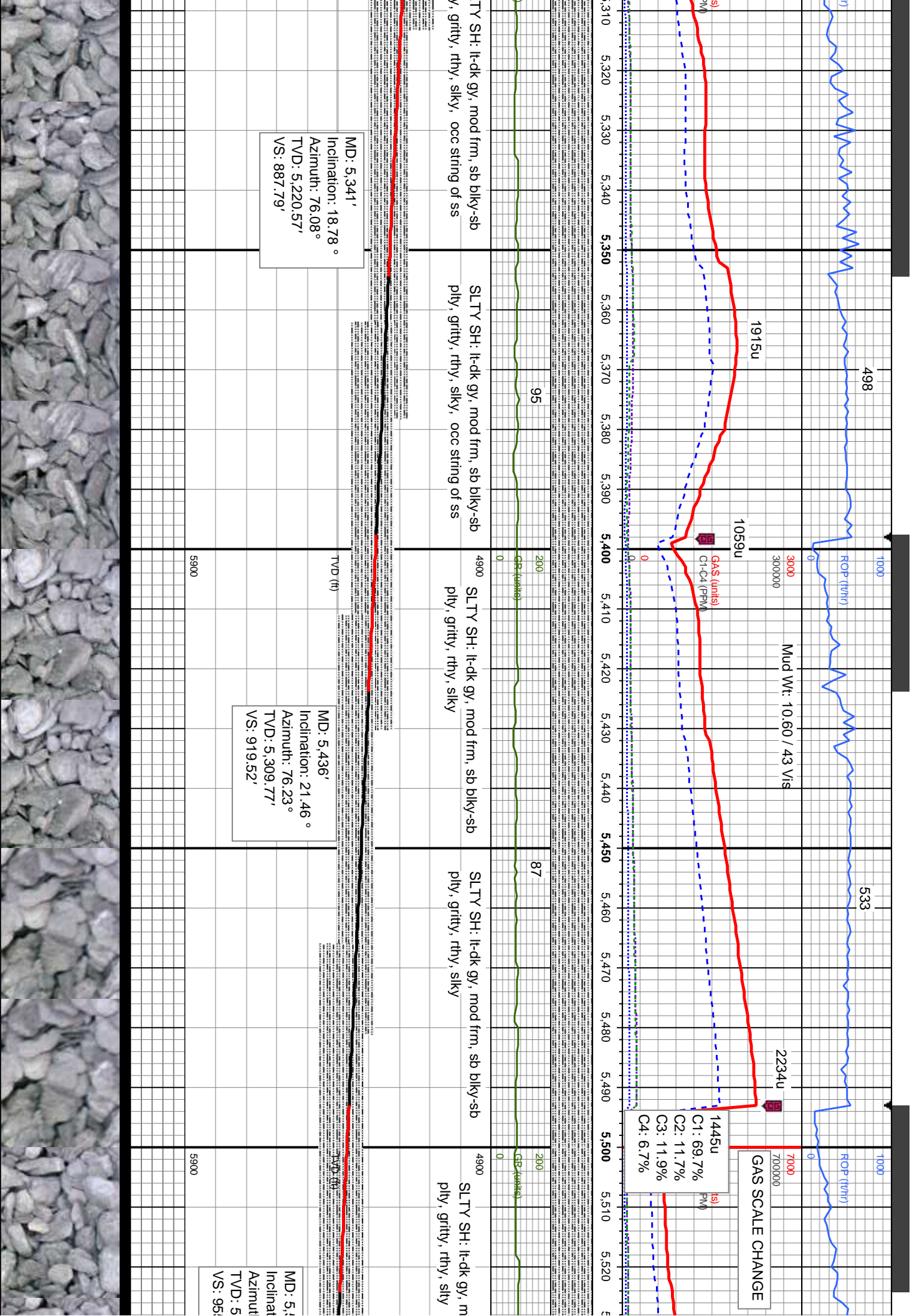
TVD (ft)

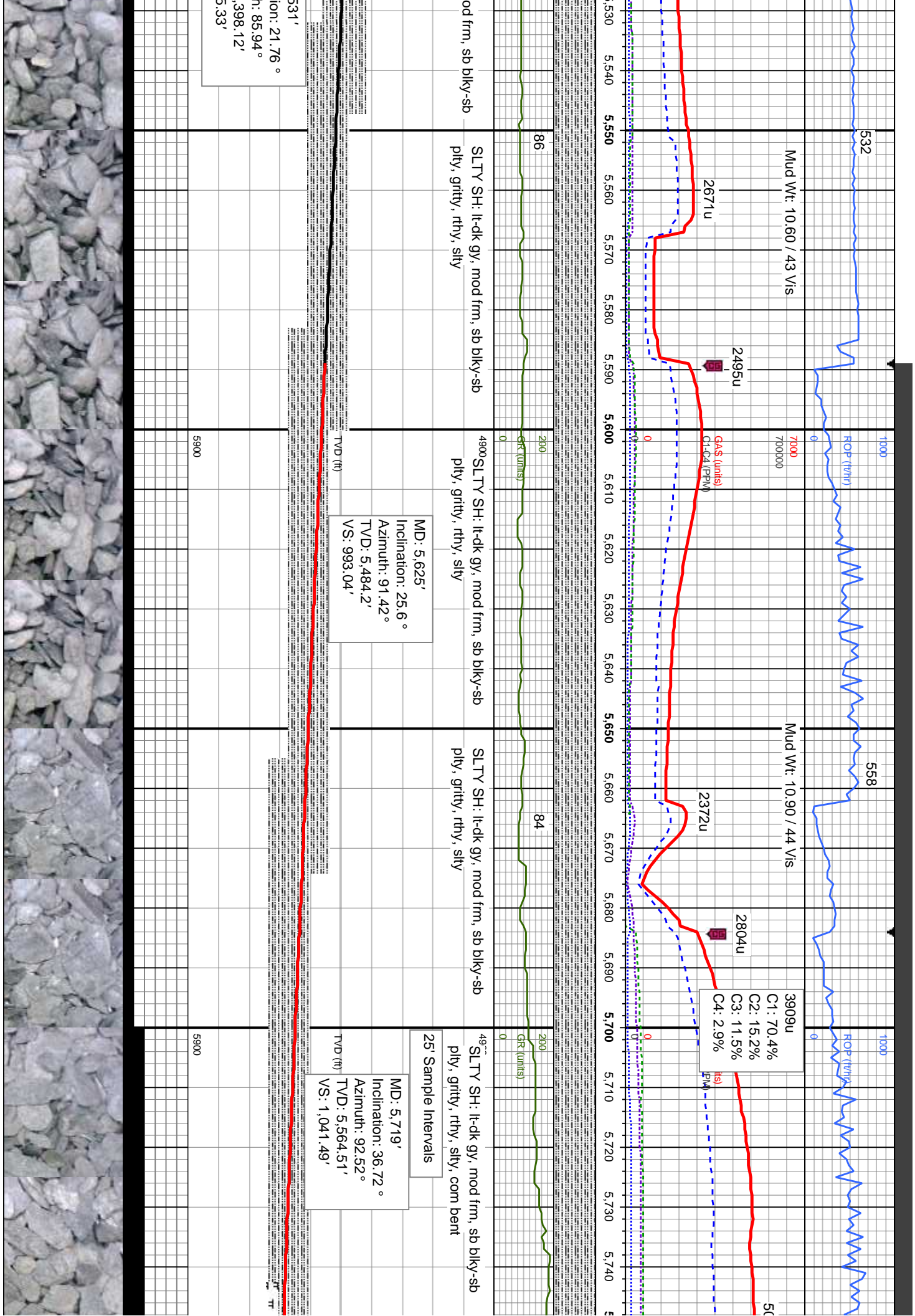
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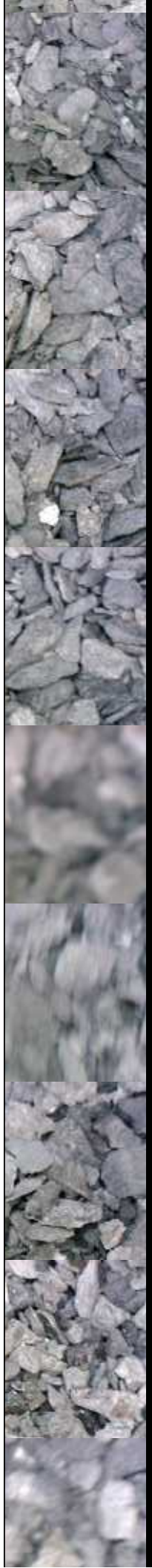
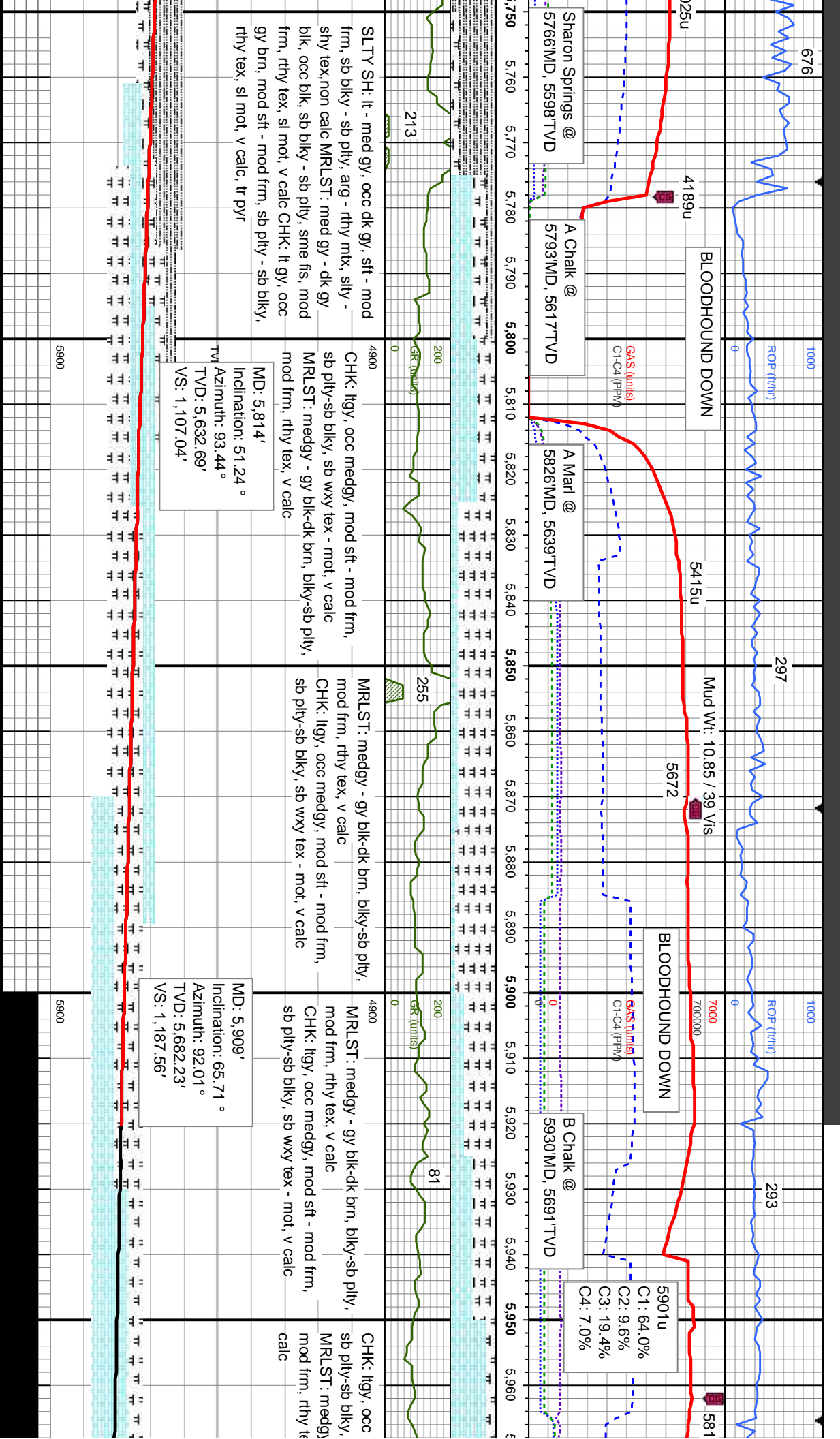
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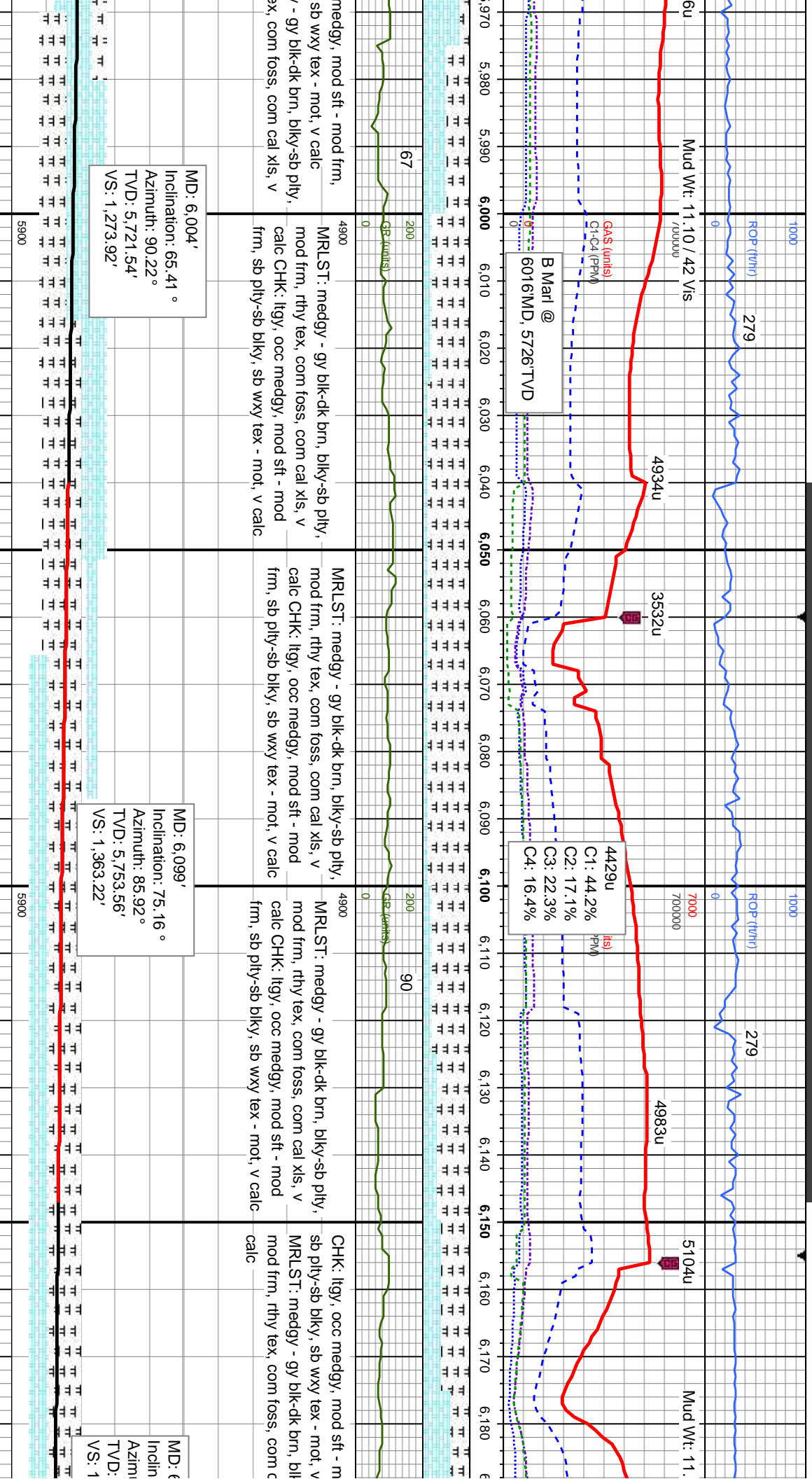
E
O
M
F
T
S

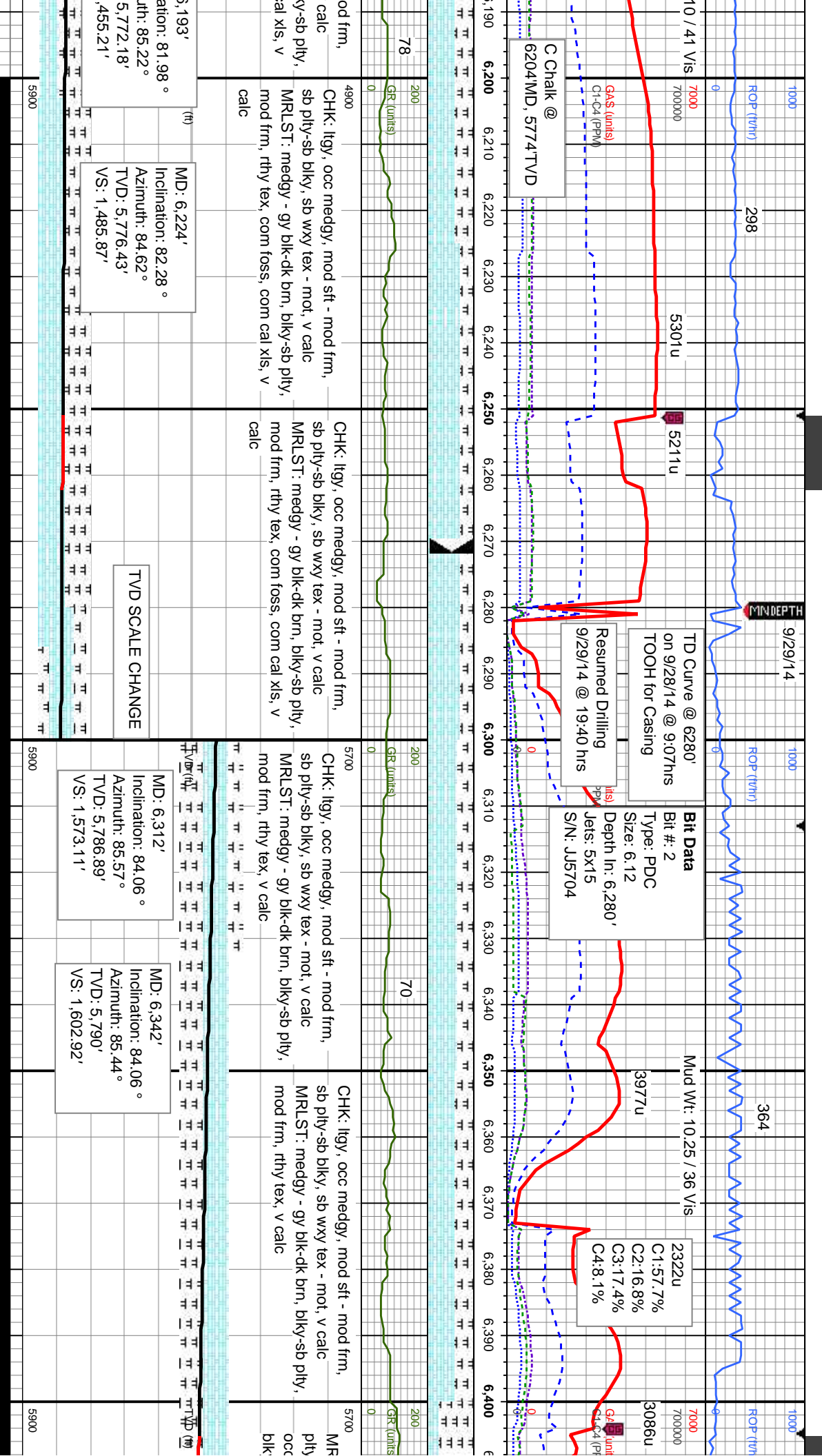


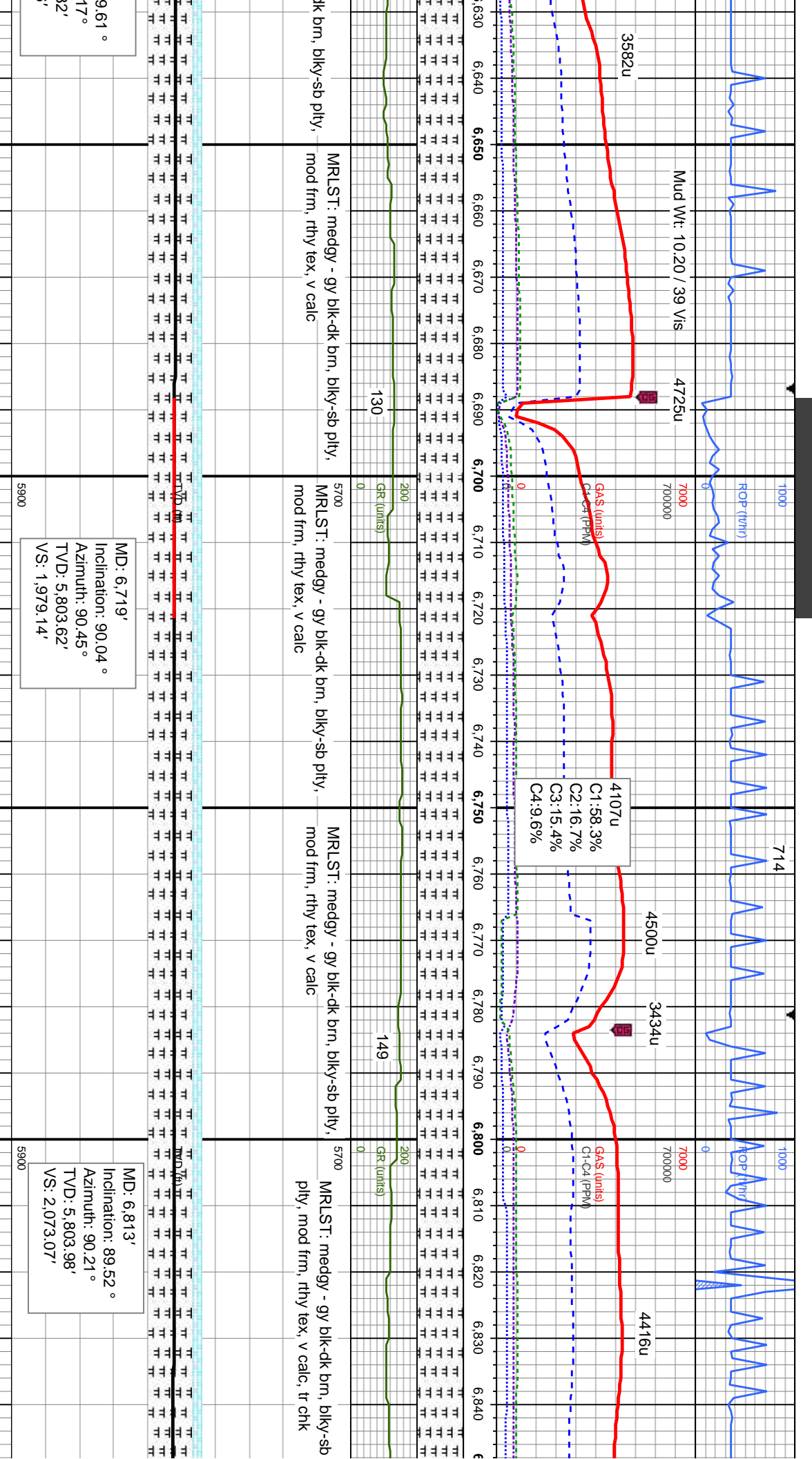


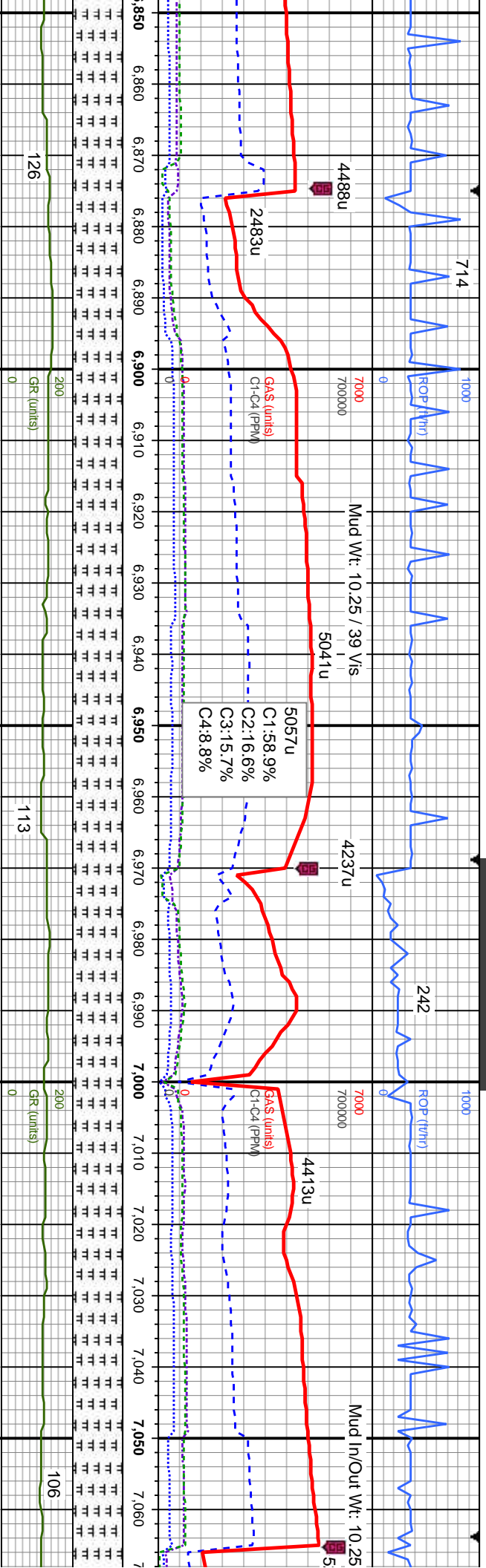










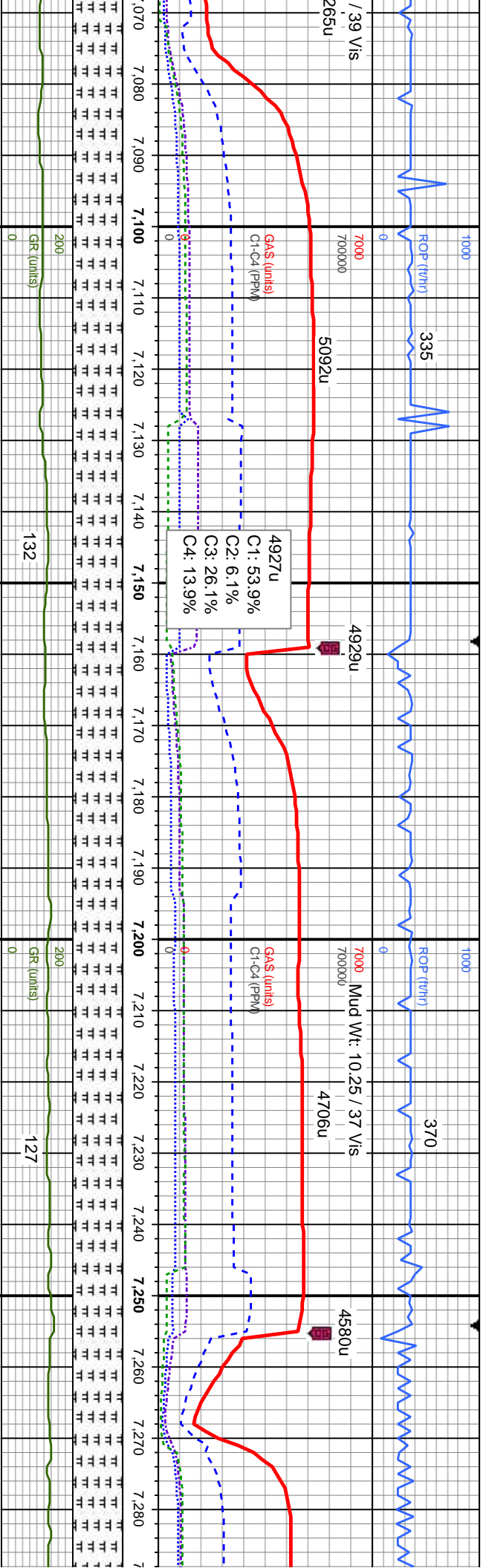


MRLST: medgy - gy blk-dk brn, blk-y-sb ply, mod frm, rthy tex, v calc, tr chk	5700	MRLST: medgy - gy blk-dk brn, blk-y-sb ply, mod frm, rthy tex, v calc, tr chk	5700	MRLST: medgy - gy blk-dk brn, blk-y-sb ply, mod frm, rthy tex, v calc, tr chk	5700	MRLST: medgy - gy blk-dk brn, blk-y-sb ply, mod frm, rthy tex, v calc, tr chk	5700	MRLST: medgy - gy blk-dk brn, blk-y-sb ply, mod frm, rthy tex, v calc, tr foss, tr chk	5700

MD: 6,907'
Inclination: 88.8 °
Azimuth: 89.78 °
TVD: 5,805.35'
VS: 2,167.01'

MD: 7,002'
Inclination: 90.41 °
Azimuth: 90.79 °
TVD: 5,806.01'
VS: 2,261.94'





gy - gy blk-dk brn, blk-y-sb
rthy tex, v calc, tr foss, tr
chk

5700
MRLST: medgy - gy blk-dk brn, blk-y-sb
ply, mod frm, rthy tex, v calc, tr foss, tr
chk

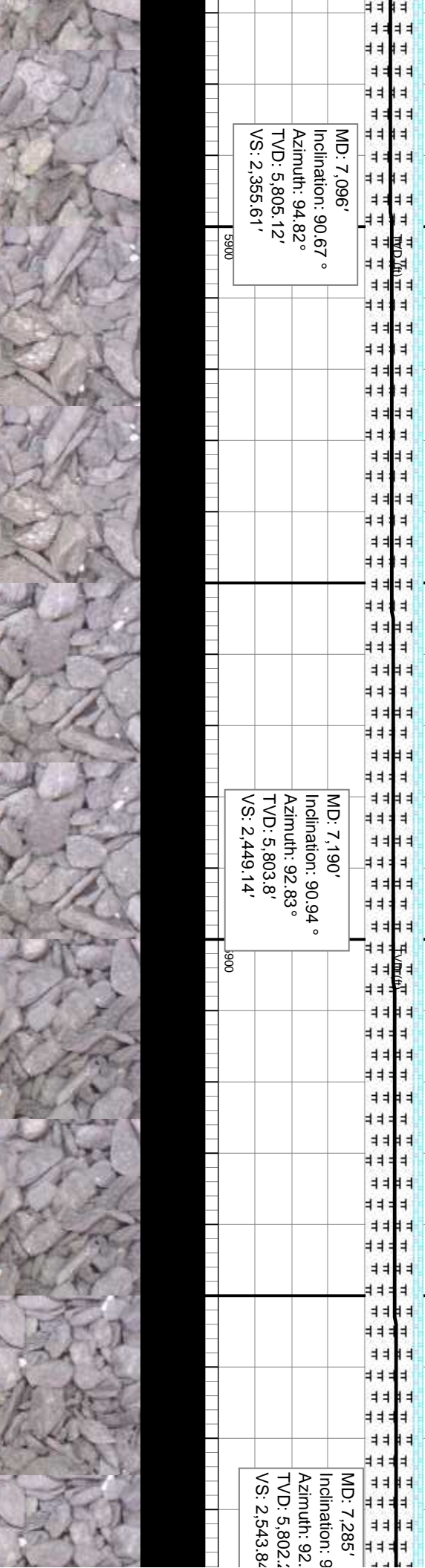
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ply, mod frm, rthy tex, v calc, tr foss, tr
chk

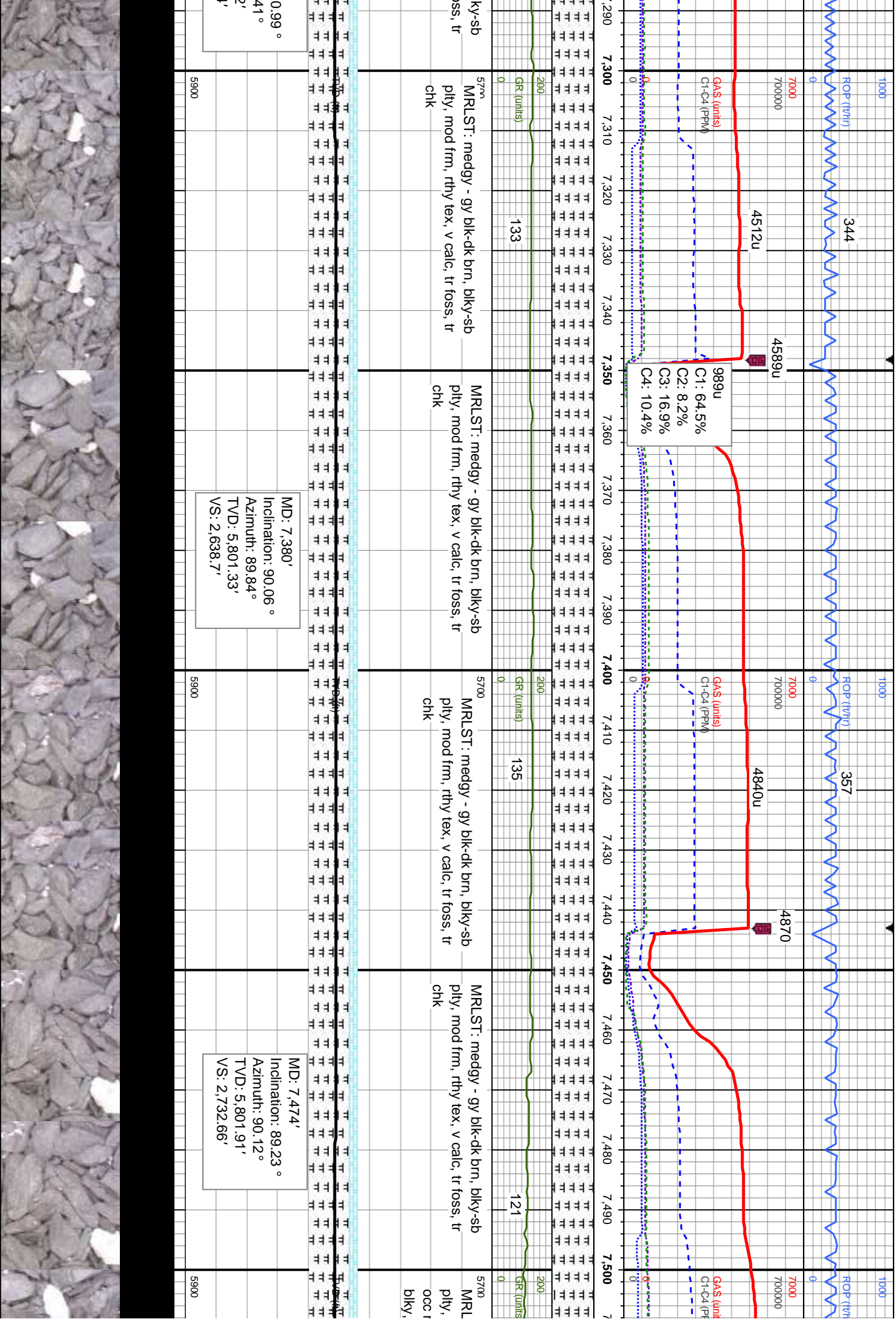
5700
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ply, mod frm, rthy tex, v calc, tr foss, tr
chk

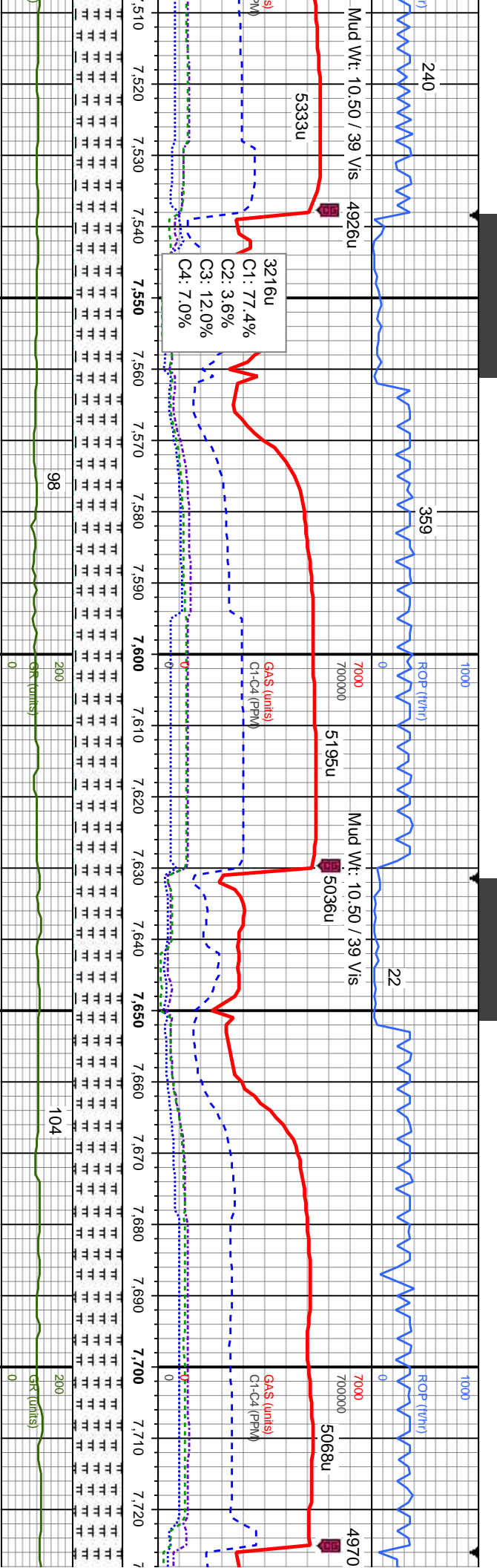
MD: 7,096'
Inclination: 90.67°
Azimuth: 94.82°
TVD: 5,805.12'
VS: 2,355.61'

MD: 7,190'
Inclination: 90.94°
Azimuth: 92.83°
TVD: 5,803.8'
VS: 2,449.14'

MD: 7,285'
Inclination: 90.94°
Azimuth: 92.83°
TVD: 5,803.8'
VS: 2,449.14'







ST: medgy - gy blk-dk brn, blk-y-sb
mod frm, rthy tex, v calc CHK: lgy,
medgy, mod sft - mod frm, sb ply-sb
sb wxy tex - mot, v calc

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

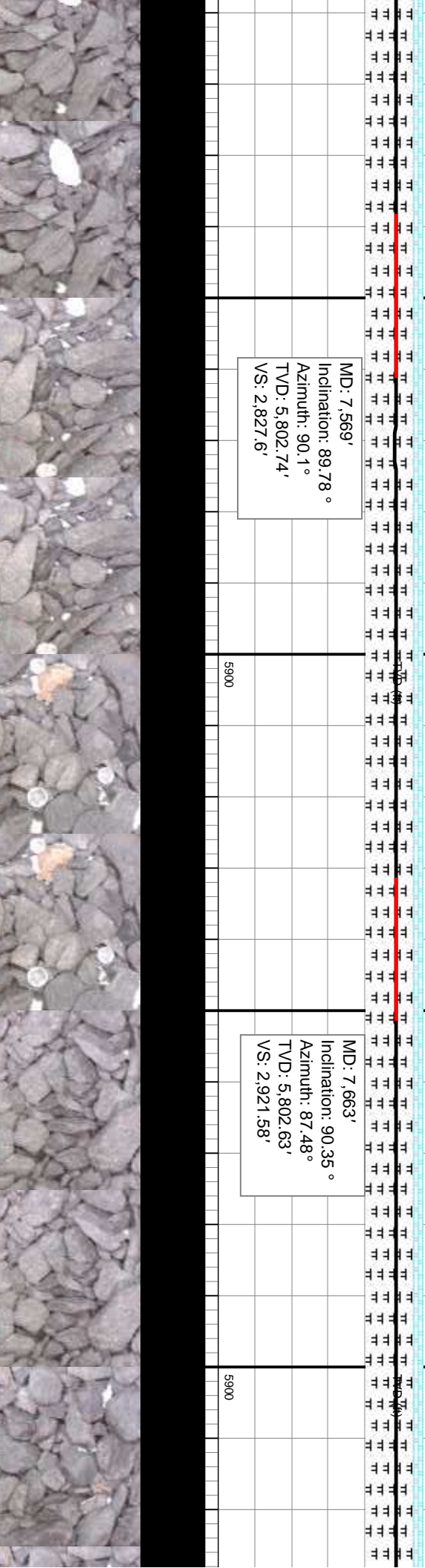
MRLST: medgy - gy blk-dk brn, blk-y-sb
ply, mod frm, rthy tex, v calc CHK: lgy,
occ medgy, mod sft - mod frm, sb ply-sb
blk-y, sb wxy tex - mot, v calc

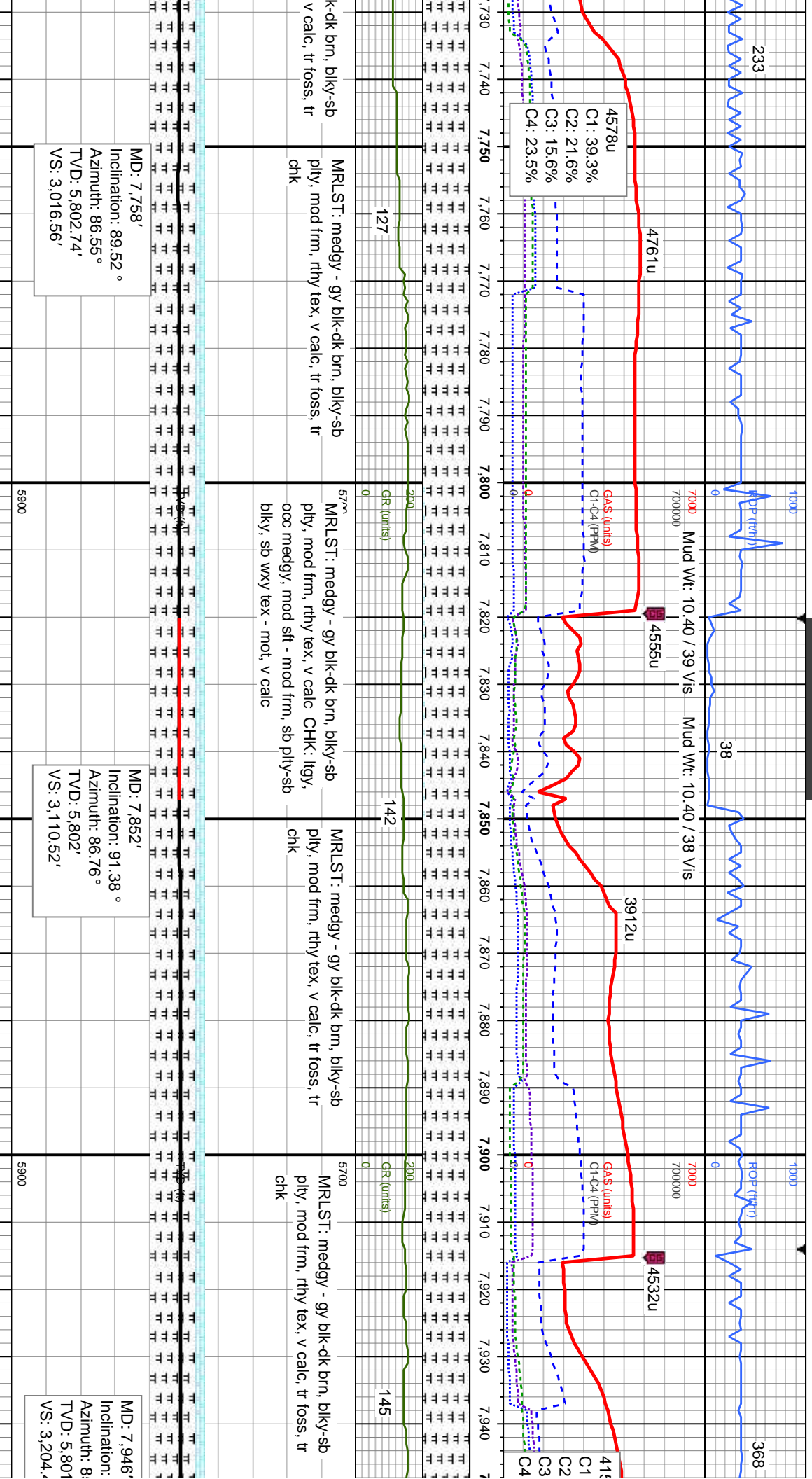
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ply, mod frm, rthy tex, v calc, tr foss, tr
chk

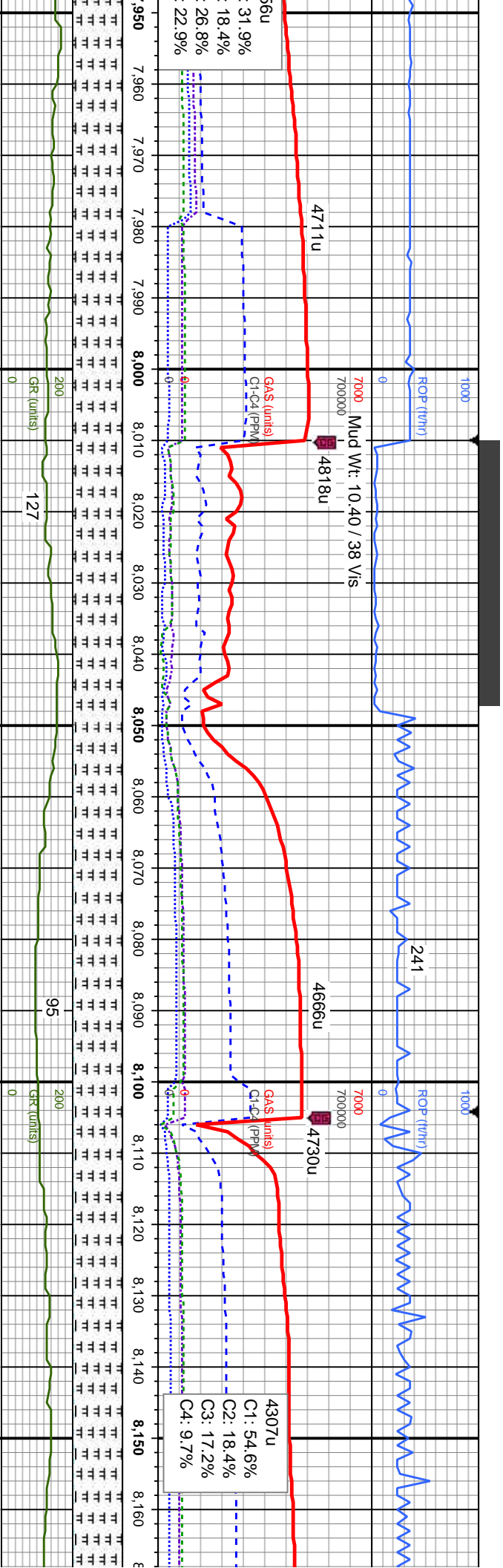
MRLST: medgy - gy blk
ply, mod frm, rthy tex,
chk

MD: 7,569'
Inclination: 89.78 °
Azimuth: 90.1 °
TVD: 5,802.74'
VS: 2,827.6'

MD: 7,663'
Inclination: 90.35 °
Azimuth: 87.48 °
TVD: 5,802.63'
VS: 2,921.58'







MRLST: medgy - gy blk-dk brn, blk-y-sb
ply, mod frm, rthy tex, v calc, tr foss, tr
chk

MRLST: medgy - gy blk-dk brn, blk-y-sb
ply, mod frm, rthy tex, v calc, tr foss, tr
chk

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

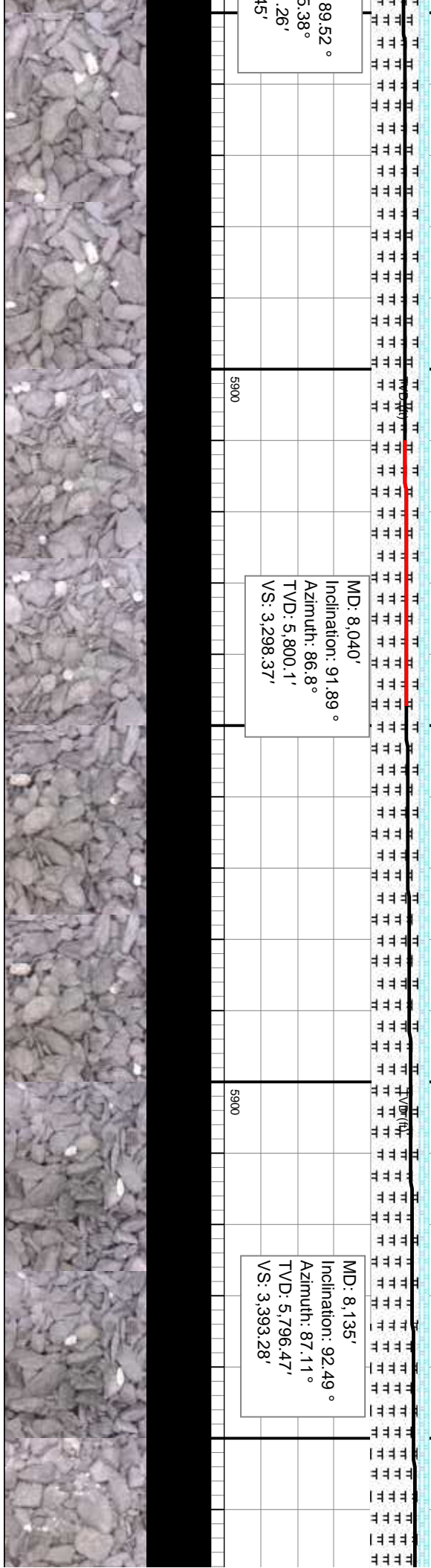
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occ medgy, mod sft - mod frm, sb ply-sb
blk-y, sb wxy tex - mot, v calc

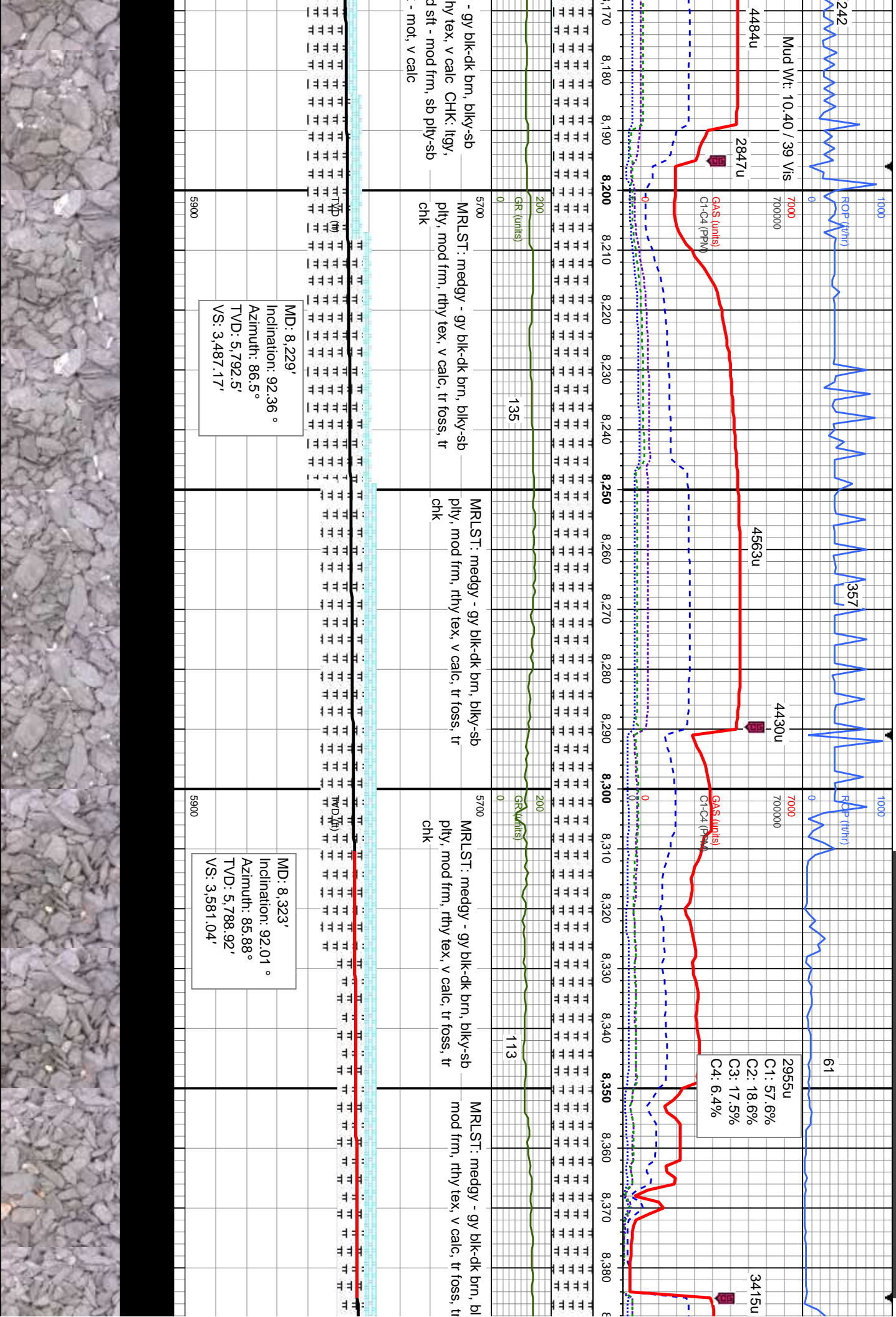
MRLST: medgy
ply, mod frm, r
occ medgy, mo
blk-y, sb wxy tex

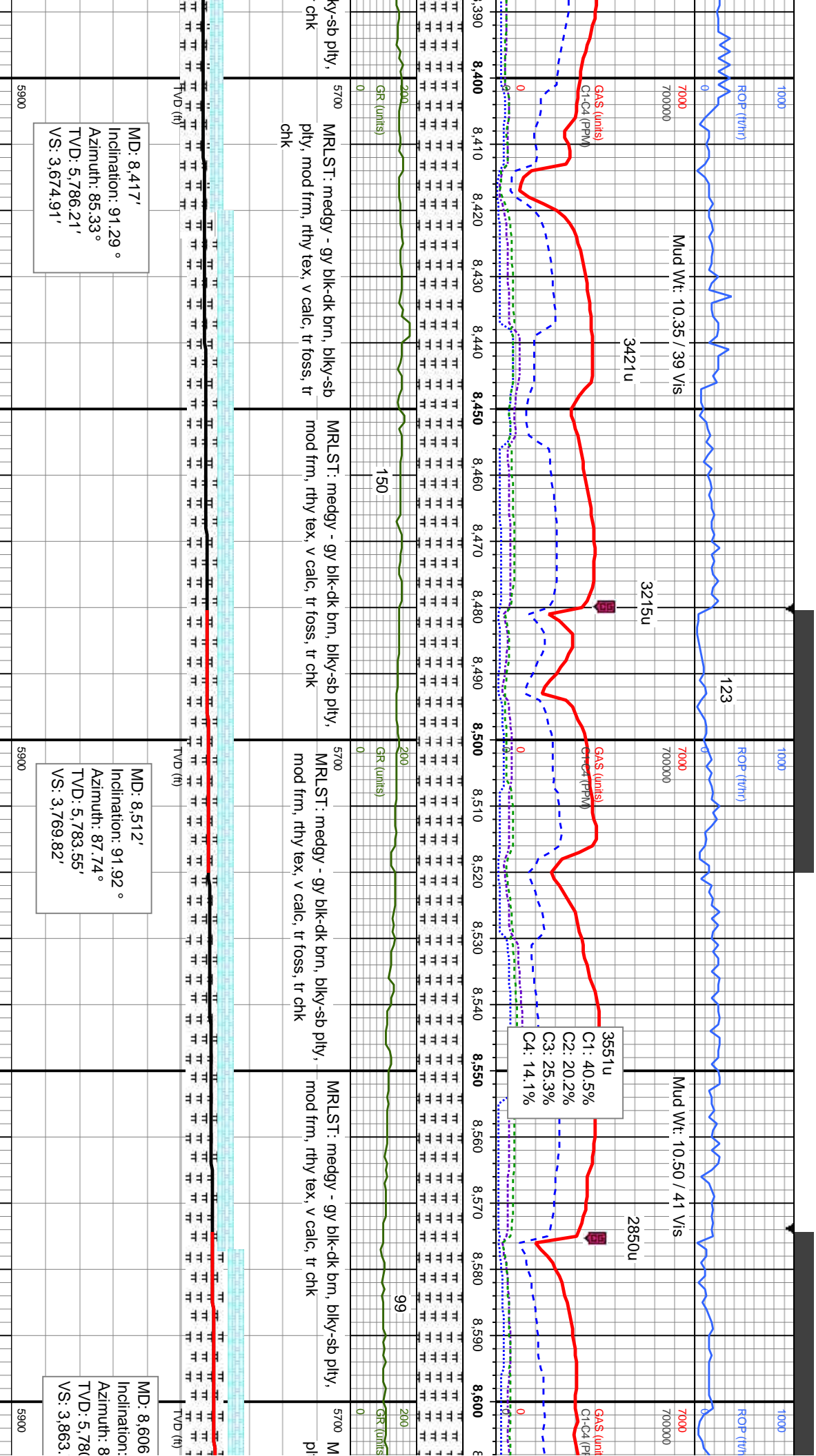
89.52°
5.38°
.26'
15'

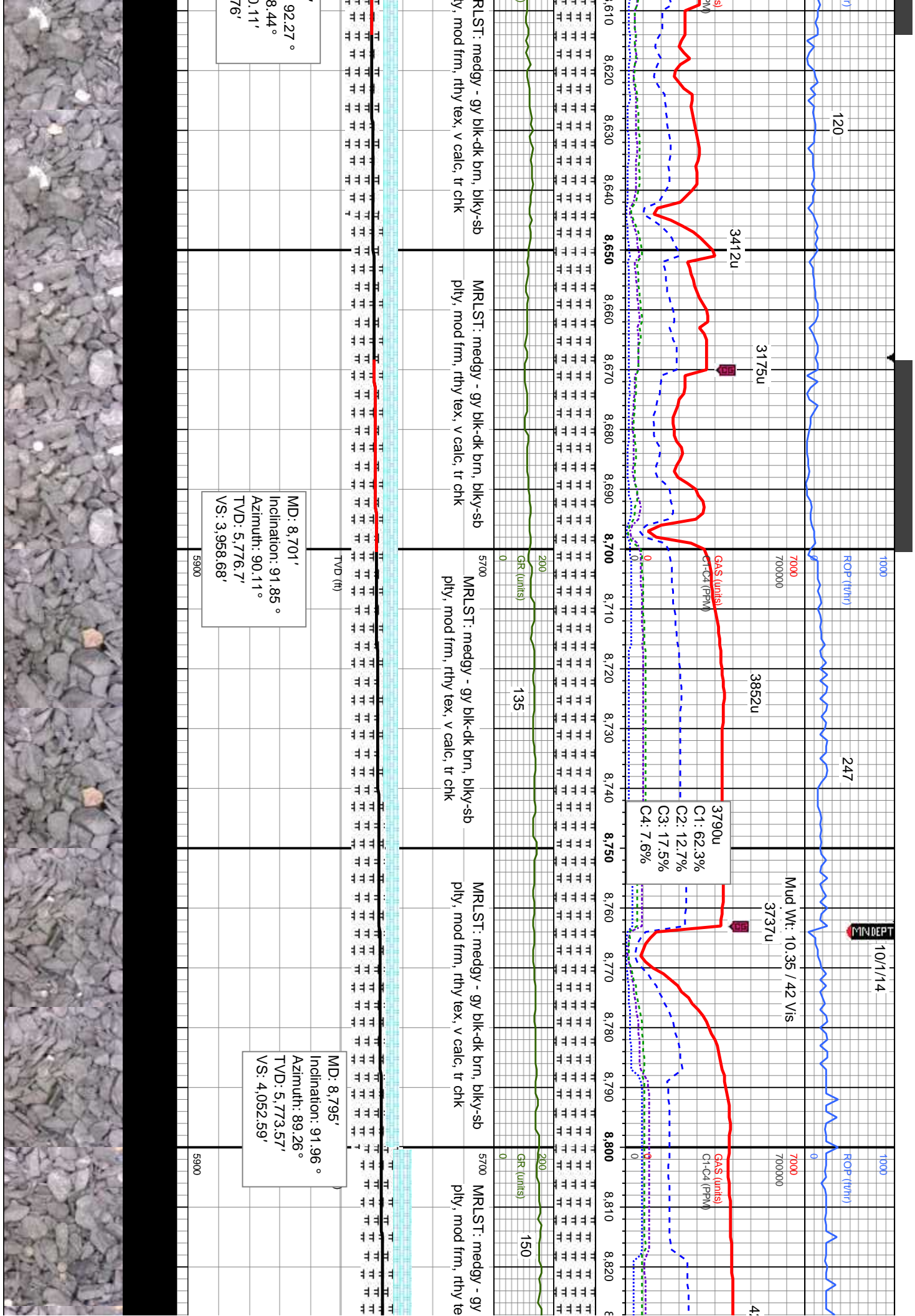
MD: 8,040'
Inclination: 91.89°
Azimuth: 86.8°
TVD: 5,800.1'
VS: 3,298.37'

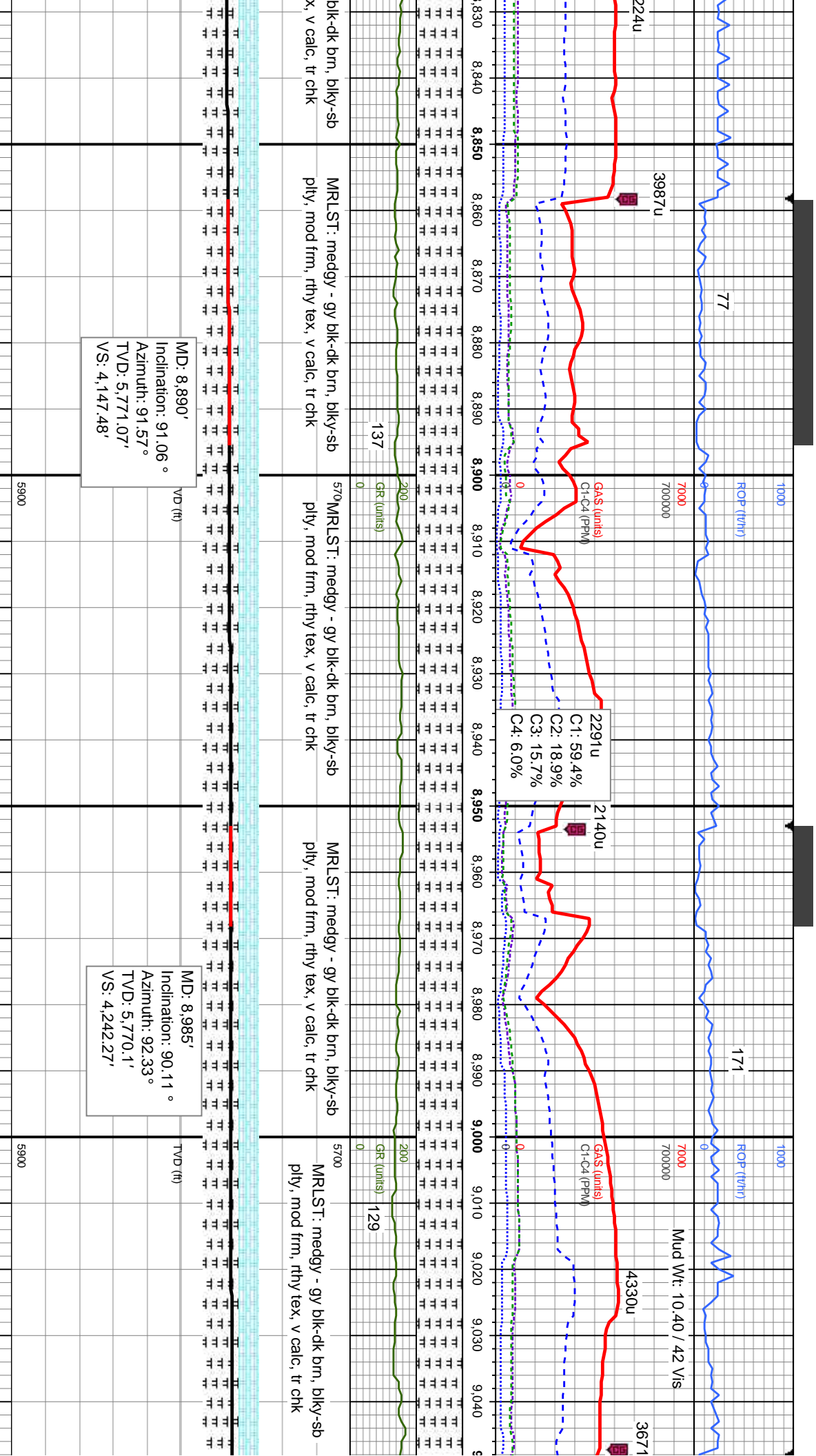
MD: 8,135'
Inclination: 92.49°
Azimuth: 87.11°
TVD: 5,796.47'
VS: 3,393.28'

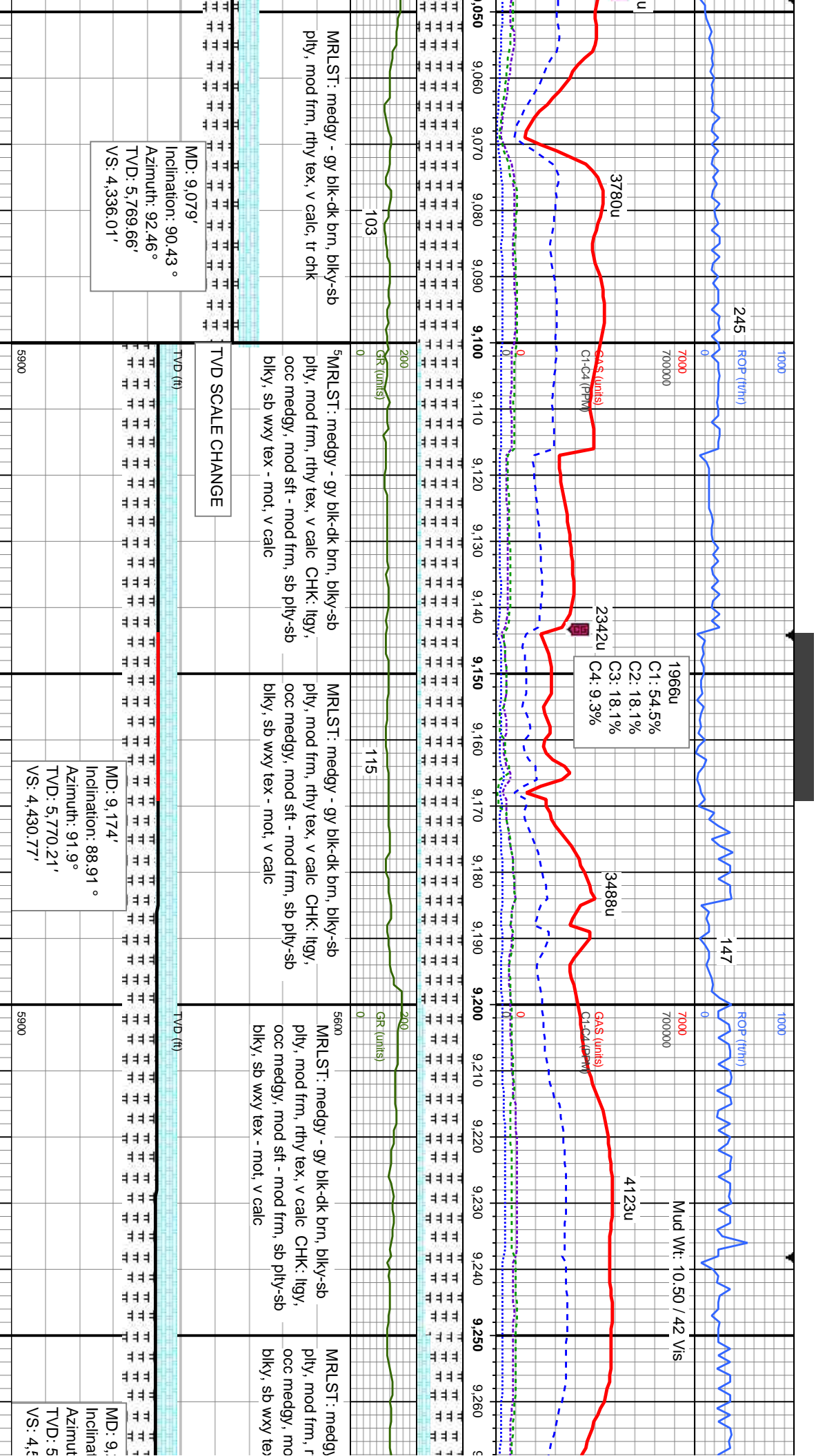






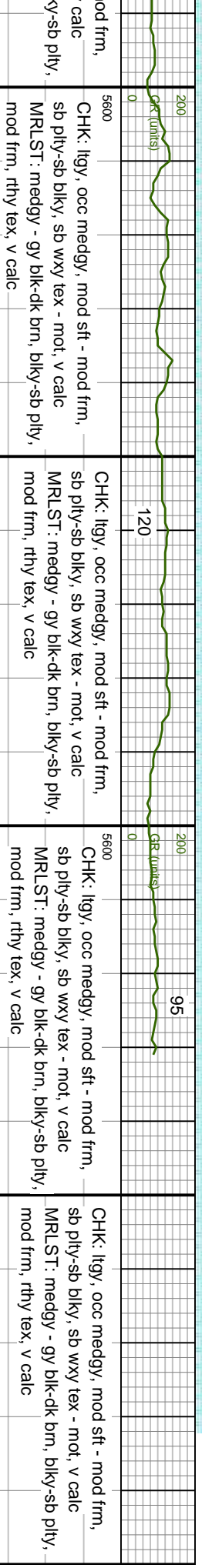
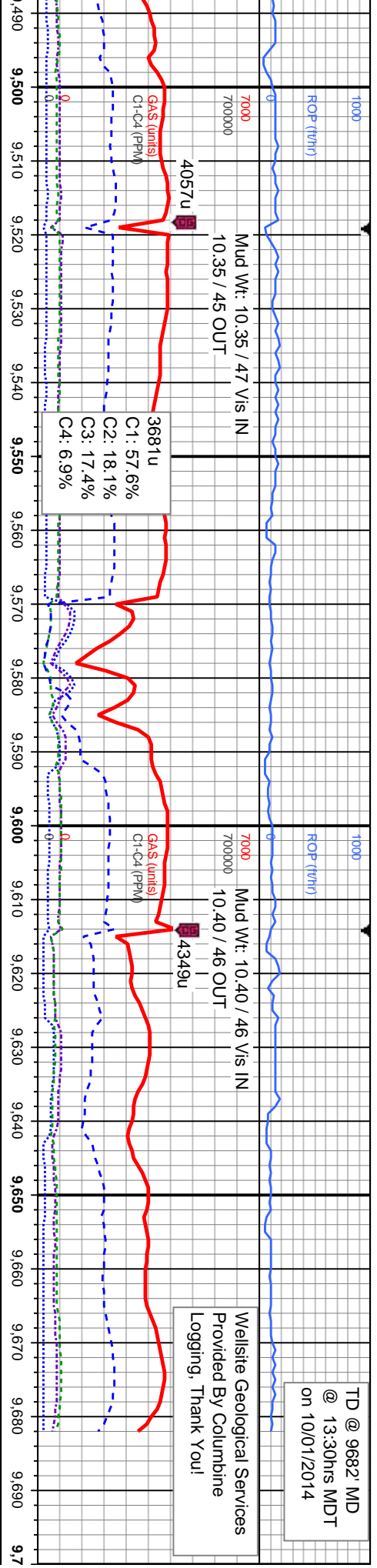






TD @ 9682' MD
@ 13:30hrs MDT
on 10/01/2014

Wellsite Geological Services
Provided By Columbine
Logging. Thank You!



PROJ TO BIT

MD: 9,552'		MD: 9,620'		MD: 9,682'	
Inclination: 89.97°		Inclination: 90.01°		Inclination: 90.01°	
Azimuth: 87.37°		Azimuth: 86.85°		Azimuth: 86.85°	
TVD: 5,775.28'		TVD: 5,775.29'		TVD: 5,775.28'	
VS: 4,808.46'		VS: 4,876.45'		VS: 4,938.44'	

