COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	Rohn State LD10-67HN HORZ		
Location	Sec. 9, T9N, R58W		
State	COLORADO	**County**	WELD
Country	USA	**Rig Number**	H&P 326
API Number	05-123-37618	**Field**	WILDCAT
Region	DJ BASIN	**Drilling Completed**	9/23/2014
Spud Date	9/17/2014		
Surface Coordinates	1650 FNL, 330 FEL Lat/Long: 40.76863/-103.86114		
Bottom Hole Coordinates	Sec: 10 Twp: 9N 58W 1320 FFNLL 660 FFELL		
Ground Elevation	4730'	**K.B. Elevation**	4760'
Logged Interval	1210'	**Total Depth**	9637'
Formation	NIOBRARA, A MARL		
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

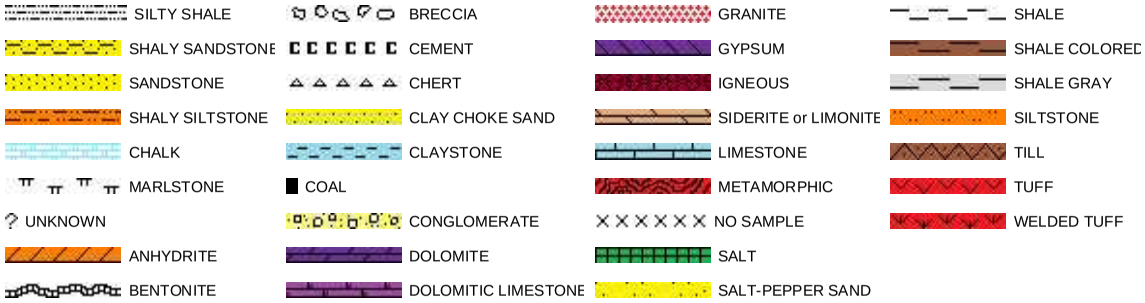
Other

COLUMBINE LOGGING INC. MIKE KERSCHEN

Zone Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

Rock Types



Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHOIPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID
- FISH
- FORAMINIFERA
- F FOSSIL
- GASTROPOD
- INOCERAMUS
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

- ANHYDRITIC
- 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
- K KAOLIN
- MARLSTONE
- MICACEOUS
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- P PYRITE
- SALT CAST
- SANDY
- SILICEOUS
- SILTY
- TUFFACEOUS

Stringer

- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER
- GYPSUM STRINGER
- LIMESTONE STRINGER
- MARLSTONE (CALC) STRG
- MARLSTONE (DOL) STRG
- SANDSTONE STRINGER
- SHALE STRINGER
- SILTSTONE STRINGER

O

Oil Show

- P PINPOINT
- VUGGY
- D DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- E EARTHY
- FENESTRAL
- F FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC
- MOLDIC
- O ORGANIC

Engineering

- BIT
- CONNECTION (UP)
- CONNECTION (DOWN)
- CONNECTION GAS
- CONNECTION GAS (LEFT)
- TRIP GAS
- TRIP GAS (LEFT)
- SLIDE
- MN DEPTH (DOWN)
- MN DEPTH
- DOWN TIME GAS

Other Symbols

DTG DOWN TIME GAS (LEFT)

CORE - LOST

CORE - RECOVERED

DST INTERVAL

FAULT

FORMATION TOP

GAS SHOW

OIL SHOW

MN DEPTH UP

NORMAL FAULT

OVERTURNED STRATA

REVERSE FAULT

CASING

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SURVEY

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

DST DRILL STEM TEST

Rounding

A ANGULAR

R ROUNDED

SA SUBANG

SR SUBRND

Textures

BS BOUNDSTONE

C CHALKY

CX CRYPTOXLN

E EARTHY

FX FINELYXLN

GS GRAINSTONE

L LITHOGRAPHIC

MX MICROXLN

MS MUDSTONE

PS PACKSTONE

WS WACKESTONE

Sorting

M MODERATE

P POOR

W WELL

Slide/Rotate

ROP

ROP

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.
RIGGED UP ON 09/18/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0570

CONTINUED FROM
Rohn State LD10-67HN VERT

900
ROP (ft/hr)
0

363

6000
600000
GAS (units)
C1-C4 (PPM)
0
0

1417u

Pason Down

1023u

219u

1339

Depth Labels

4,960 4,970 4,980 4,990 **5,000** 5,010 5,020 5,030 5,040 **5,050** 5,060 5,070 5,080 5,090 **5,100** 5,110 5,120 5,130

% Lith

GAMMA

GR

200
GR (units)
0

82

4500
TVD (ft)
6500

Well Bore

TVD

50' Sample Intervals

Bit Data
Bit #: 1
Type: STC Sdi 519 HPX
Size: 8.75"
Jets: 7X13
S/N: JJ047

MD: 5,058′
Inclination: 15.59 °
Azimuth: 69.04°
TVD: 4,960.81′
VS: 675.05′

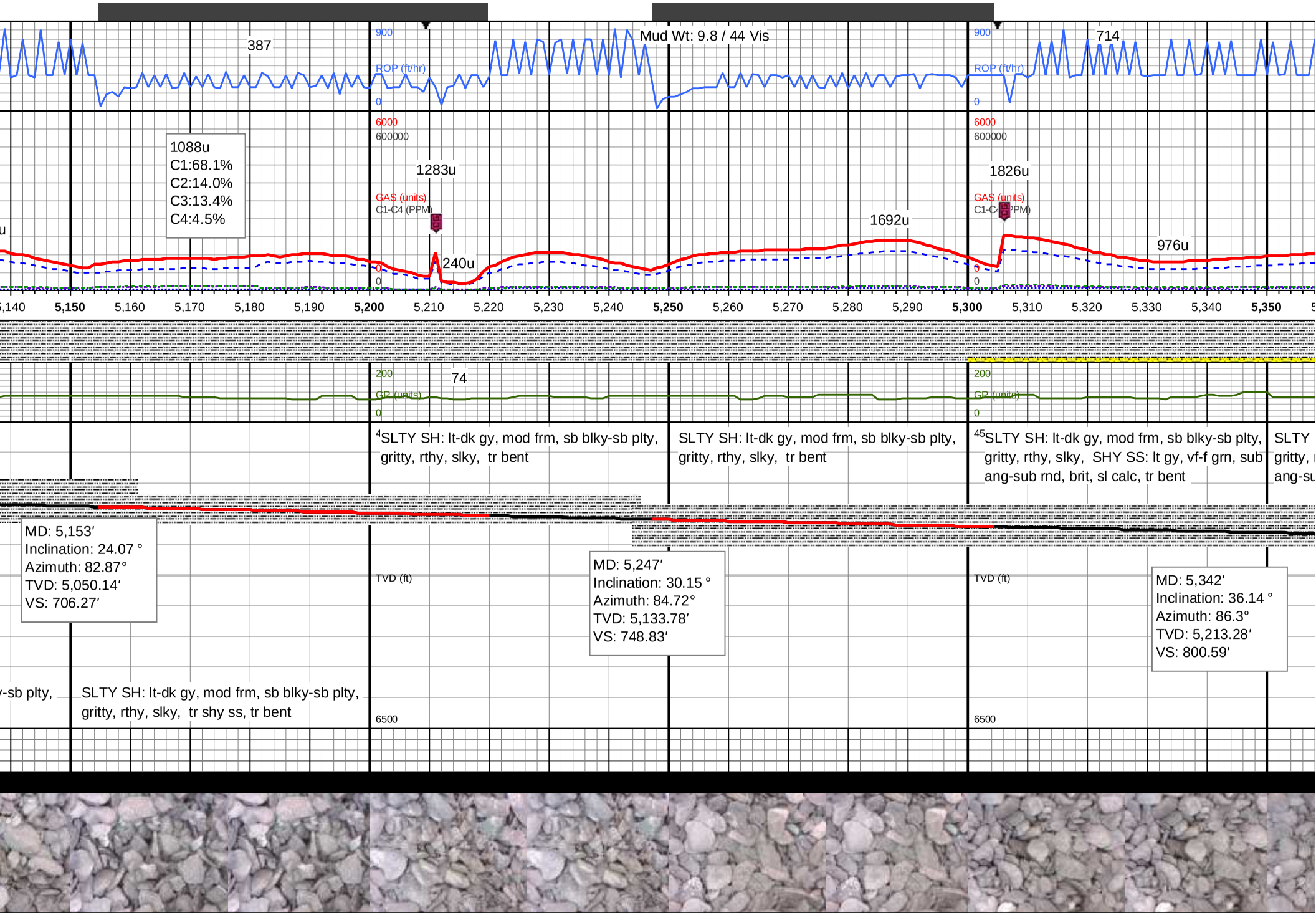
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, tr shy ss

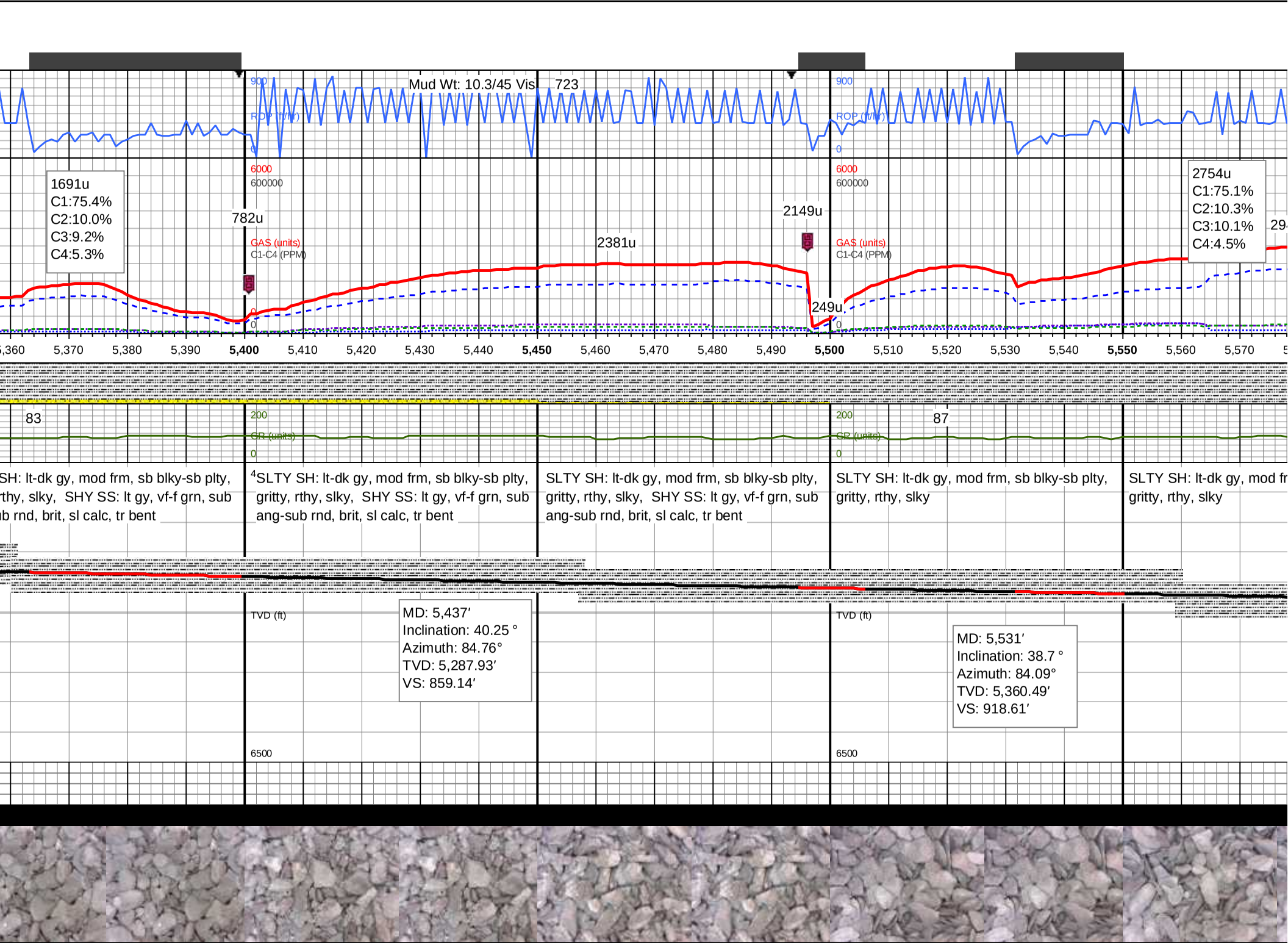
SLTY SH: lt-dk gy, mod frm, sb blky gritty, rthy, slky, tr shy ss

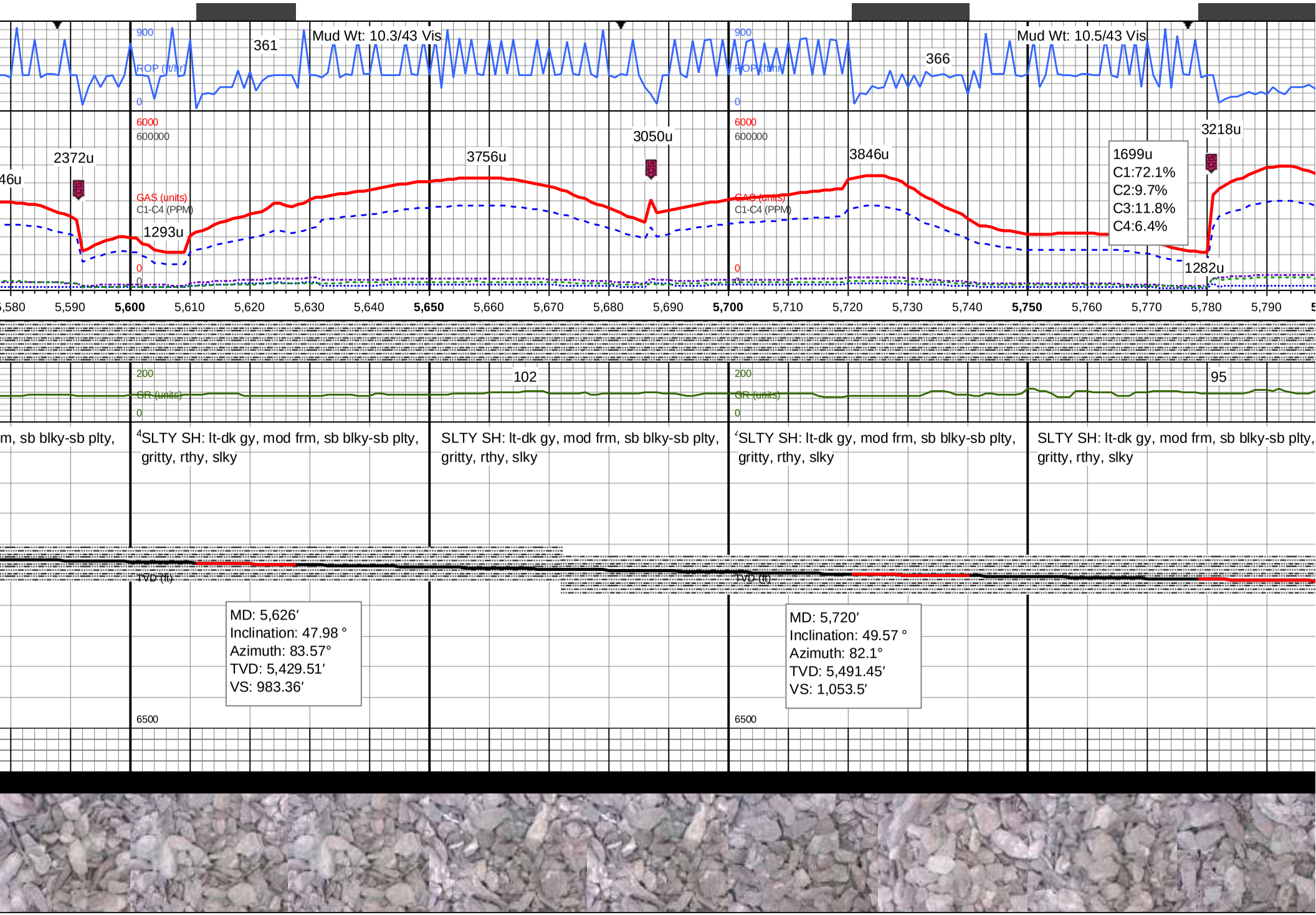
Oil Show

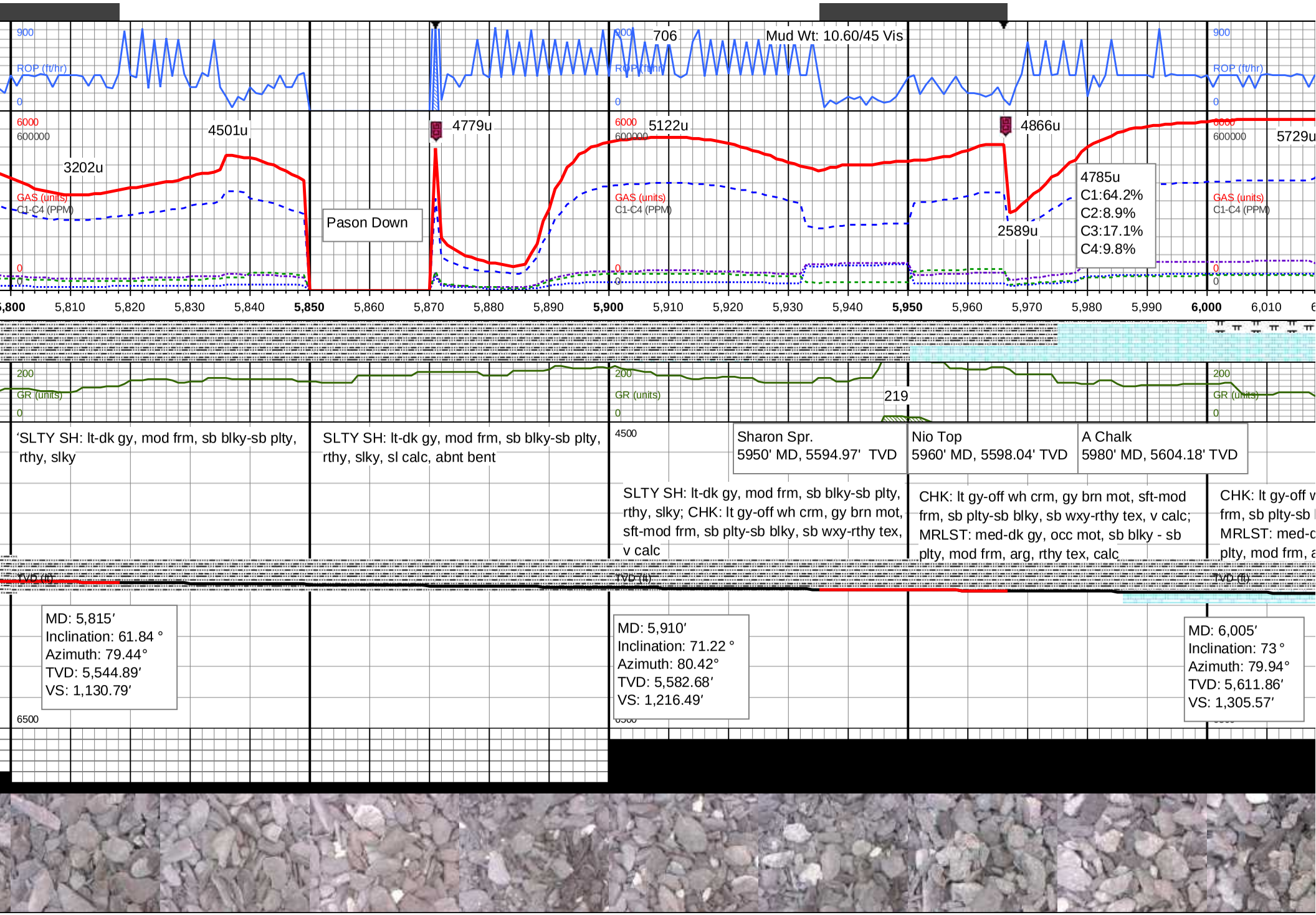
E
G
M
F
T
ST

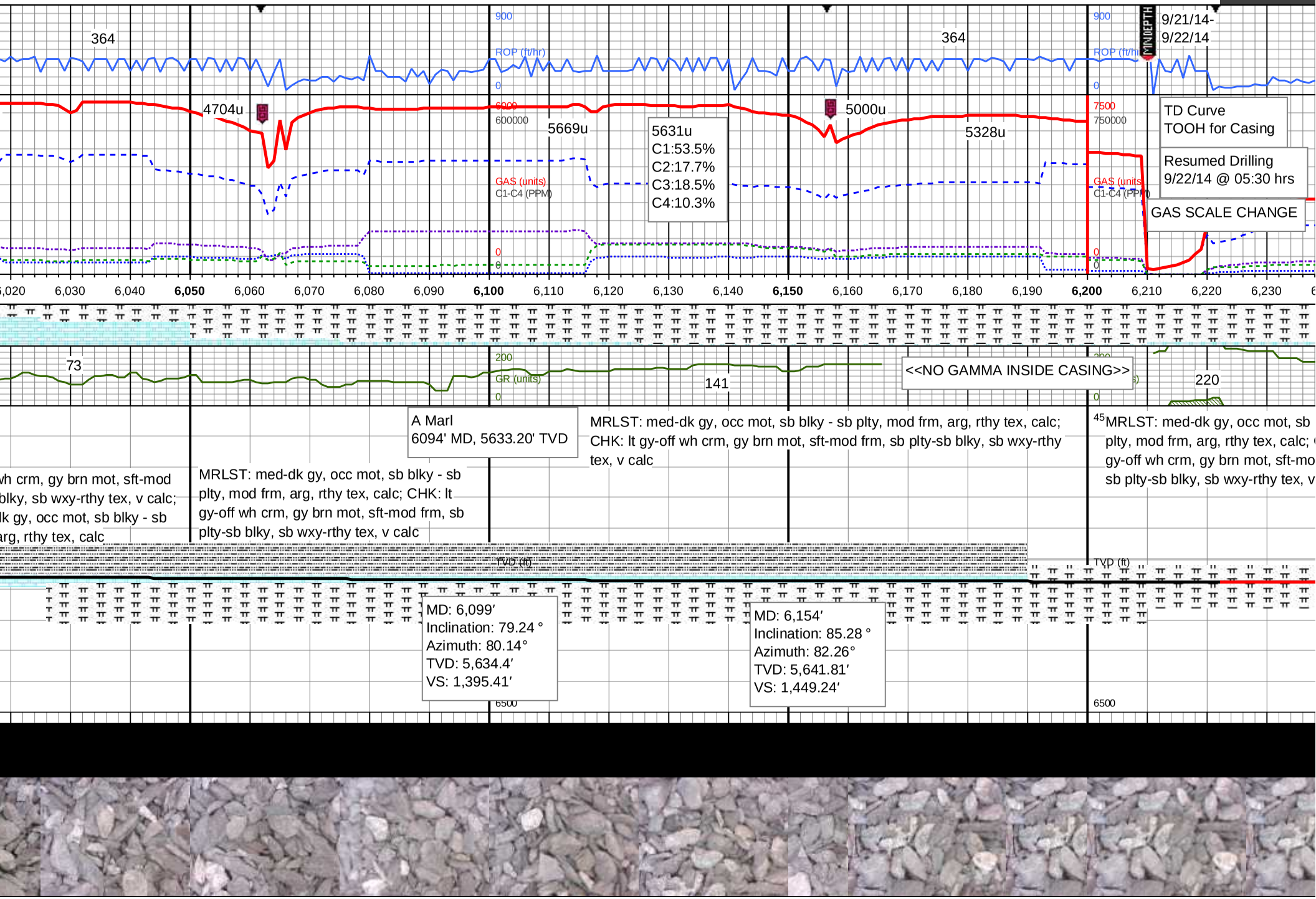
Images

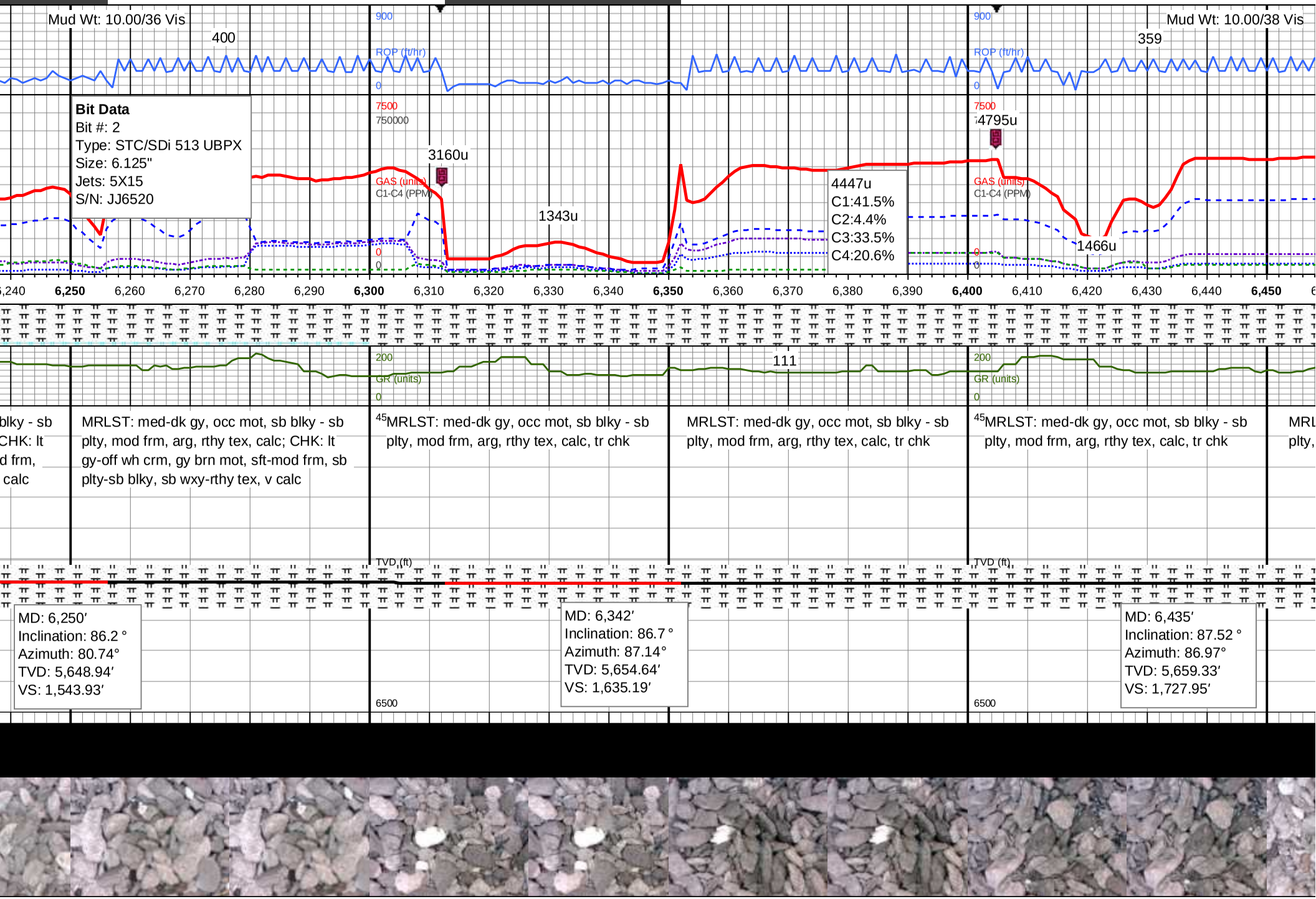

387
Mud Wt: 9.8 / 44 Vis
714
900
ROP (ft/hr)
0
6000
600000
1088u
C1:68.1%
C2:14.0%
C3:13.4%
C4:4.5%
1283u
1826u
GAS (units)
C1-C4 (PPM)
1692u
976u
240u
5,140
5,150
5,160
5,170
5,180
5,190
5,200
5,210
5,220
5,230
5,240
5,250
5,260
5,270
5,280
5,290
5,300
5,310
5,320
5,330
5,340
5,350
200
GR (units)
74
[4]SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, tr bent
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, tr bent
[45]SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, SHY SS: lt gy, vf-f grn, sub ang-sub rnd, brit, sl calc, tr bent
MD: 5,153′
Inclination: 24.07 °
Azimuth: 82.87°
TVD: 5,050.14′
VS: 706.27′
MD: 5,247′
Inclination: 30.15 °
Azimuth: 84.72°
TVD: 5,133.78′
VS: 748.83′
MD: 5,342′
Inclination: 36.14 °
Azimuth: 86.3°
TVD: 5,213.28′
VS: 800.59′
TVD (ft)
6500
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, tr shy ss, tr bent

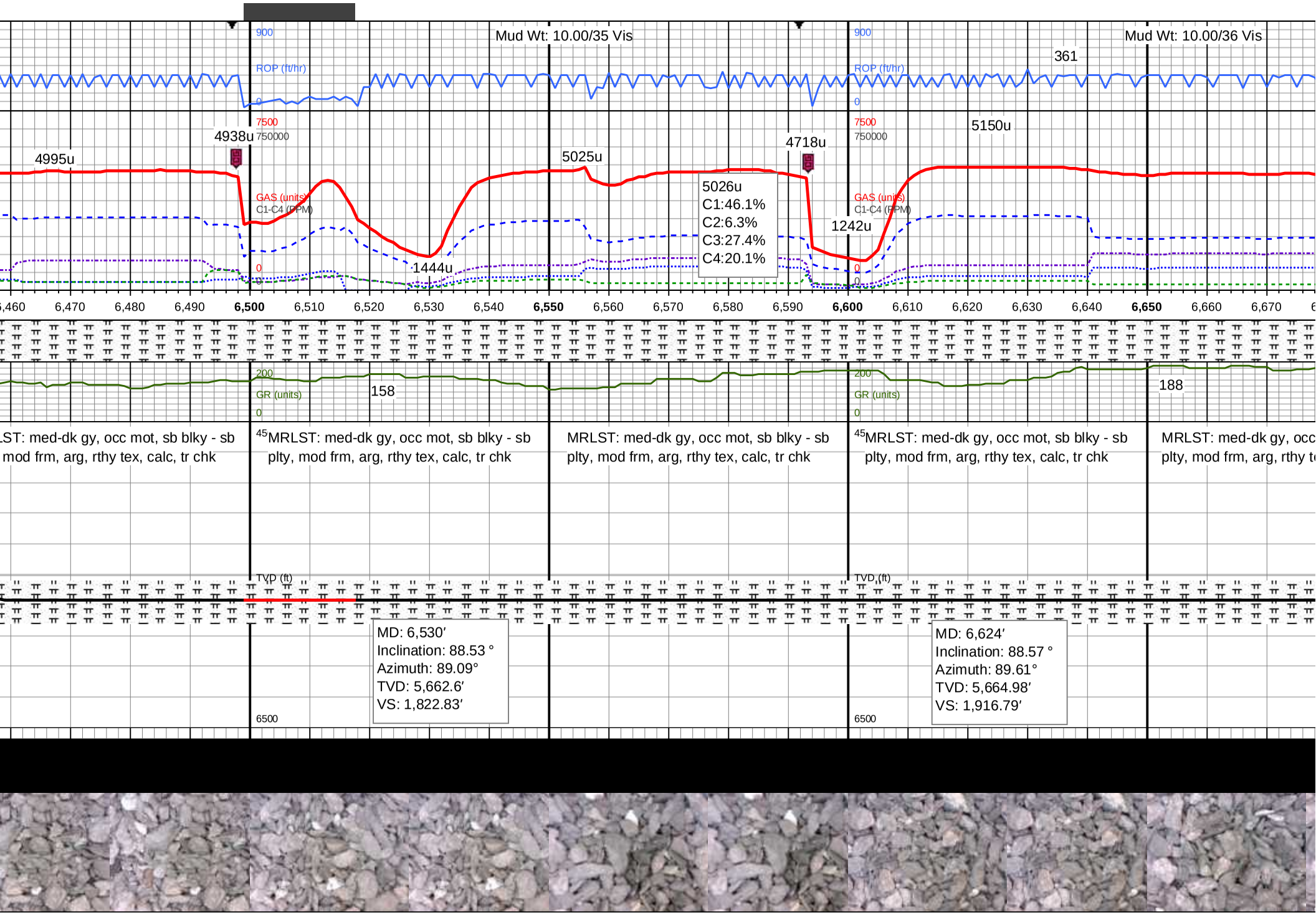

Mud Wt: 10.3/45 Vis 723
900
ROP (MW)
0
6000
600000
1691u
C1:75.4%
C2:10.0%
C3:9.2%
C4:5.3%
782u
GAS (units)
C1-C4 (PPM)
2381u
2149u
249u
2754u
C1:75.1%
C2:10.3%
C3:10.1%
C4:4.5%
5,360
5,370
5,380
5,390
5,400
5,410
5,420
5,430
5,440
5,450
5,460
5,470
5,480
5,490
5,500
5,510
5,520
5,530
5,540
5,550
5,560
5,570
83
200
GR (units)
87
SH: lt-dk gy, mod frm, sb blky-sb plty, rthy, slky, SHY SS: lt gy, vf-f grn, sub ub rnd, brit, sl calc, tr bent
4SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, SHY SS: lt gy, vf-f grn, sub ang-sub rnd, brit, sl calc, tr bent
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky, SHY SS: lt gy, vf-f grn, sub ang-sub rnd, brit, sl calc, tr bent
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky
SLTY SH: lt-dk gy, mod fr gritty, rthy, slky
TVD (ft)
MD: 5,437′
Inclination: 40.25 °
Azimuth: 84.76°
TVD: 5,287.93′
VS: 859.14′
6500
MD: 5,531′
Inclination: 38.7 °
Azimuth: 84.09°
TVD: 5,360.49′
VS: 918.61′

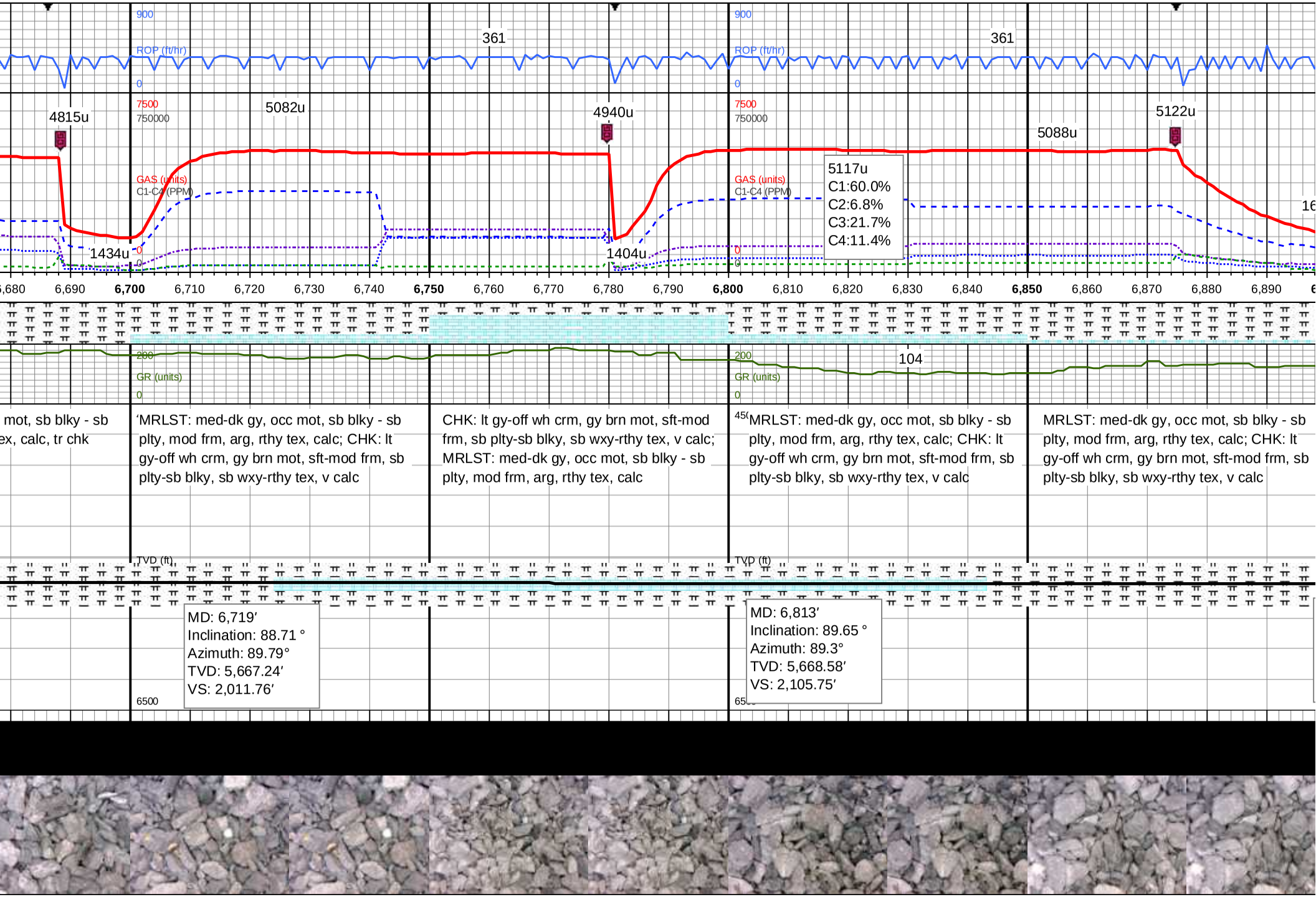

900
ROP (ft/hr)
0
361
Mud Wt: 10.3/43 Vis
6000
600000
2372u
46u
3756u
3050u
GAS (units)
C1-C4 (PPM)
1293u
0
0
900
ROP (ft/hr)
0
366
Mud Wt: 10.5/43 Vis
6000
600000
3846u
3218u
1699u
C1:72.1%
C2:9.7%
C3:11.8%
C4:6.4%
GAS (units)
C1-C4 (PPM)
1282u
0
0
5,580
5,590
5,600
5,610
5,620
5,630
5,640
5,650
5,660
5,670
5,680
5,690
5,700
5,710
5,720
5,730
5,740
5,750
5,760
5,770
5,780
5,790
200
GR (units)
0
102
200
GR (units)
0
95
m, sb blky-sb plty,
4SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky
4SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, gritty, rthy, slky
TVD (ft)
TVD (ft)
MD: 5,626′
Inclination: 47.98 °
Azimuth: 83.57°
TVD: 5,429.51′
VS: 983.36′
MD: 5,720′
Inclination: 49.57 °
Azimuth: 82.1°
TVD: 5,491.45′
VS: 1,053.5′
6500
6500

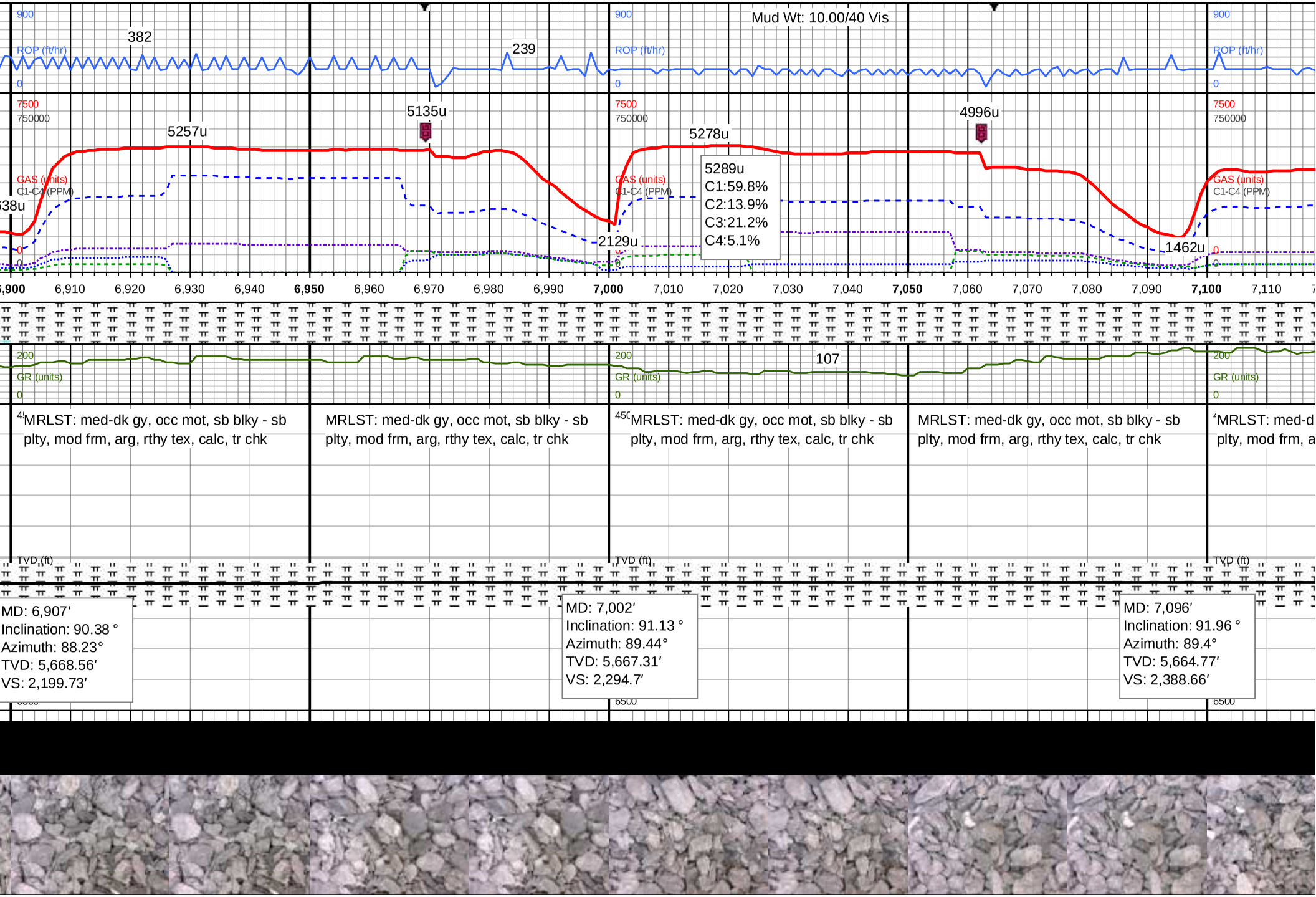

ROP (ft/hr)
900
0
6000
600000
GAS (units)
C1-C4 (PPM)
3202u
4501u
4779u
5122u
4866u
2589u
5729u
706
Mud Wt: 10.60/45 Vis
Pason Down
4785u
C1:64.2%
C2:8.9%
C3:17.1%
C4:9.8%
5,800
5,810
5,820
5,830
5,840
5,850
5,860
5,870
5,880
5,890
5,900
5,910
5,920
5,930
5,940
5,950
5,960
5,970
5,980
5,990
6,000
6,010
GR (units)
200
0
219
4500
'SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, rthy, slky
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, rthy, slky, sl calc, abnt bent
Sharon Spr.
5950' MD, 5594.97' TVD
Nio Top
5960' MD, 5598.04' TVD
A Chalk
5980' MD, 5604.18' TVD
SLTY SH: lt-dk gy, mod frm, sb blky-sb plty, rthy, slky; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc; MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
TVD (ft)
MD: 5,815'
Inclination: 61.84 °
Azimuth: 79.44°
TVD: 5,544.89'
VS: 1,130.79'
6500
MD: 5,910'
Inclination: 71.22 °
Azimuth: 80.42°
TVD: 5,582.68'
VS: 1,216.49'
MD: 6,005'
Inclination: 73 °
Azimuth: 79.94°
TVD: 5,611.86'
VS: 1,305.57'

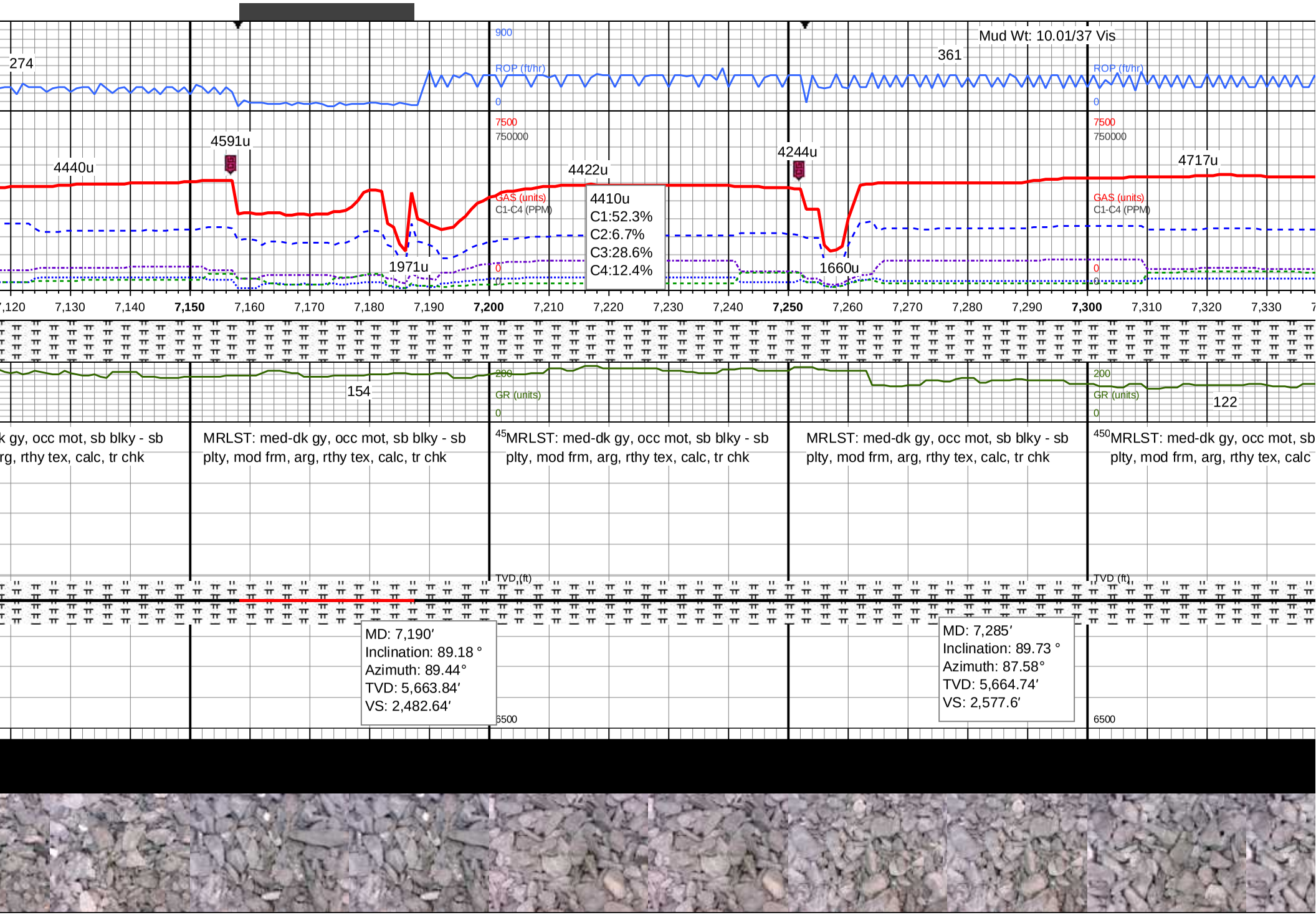

364
364
900
ROP (ft/hr)
0
MINDEPTH
9/21/14-
9/22/14
4704u
5669u
5000u
5328u
5631u
C1:53.5%
C2:17.7%
C3:18.5%
C4:10.3%
6000
600000
7500
750000
GAS (units)
C1-C4 (PPM)
TD Curve
TOOH for Casing
Resumed Drilling
9/22/14 @ 05:30 hrs
GAS SCALE CHANGE
6,020
6,030
6,040
6,050
6,060
6,070
6,080
6,090
6,100
6,110
6,120
6,130
6,140
6,150
6,160
6,170
6,180
6,190
6,200
6,210
6,220
6,230
73
200
GR (units)
141
<<NO GAMMA INSIDE CASING>>
220
A Marl
6094' MD, 5633.20' TVD
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
wh crm, gy brn mot, sft-mod
blky, sb wxy-rthy tex, v calc;
lk gy, occ mot, sb blky - sb
arg, rthy tex, calc
45MRLST: med-dk gy, occ mot, sb
plty, mod frm, arg, rthy tex, calc;
gy-off wh crm, gy brn mot, sft-mo
sb plty-sb blky, sb wxy-rthy tex, v
TVD (ft)
TVD (ft)
MD: 6,099′
Inclination: 79.24 °
Azimuth: 80.14°
TVD: 5,634.4′
VS: 1,395.41′
MD: 6,154′
Inclination: 85.28 °
Azimuth: 82.26°
TVD: 5,641.81′
VS: 1,449.24′
6500
6500

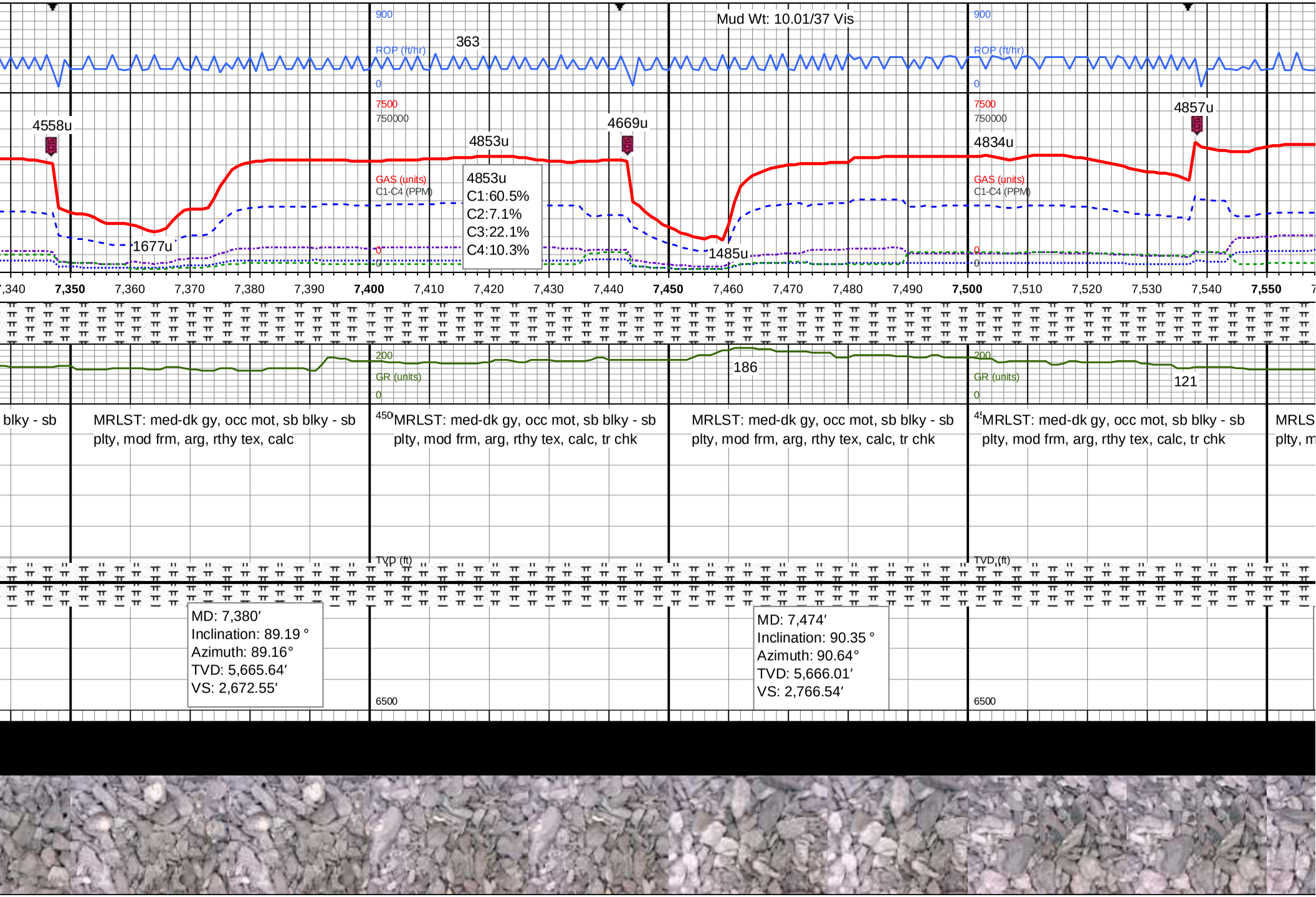

Mud Wt: 10.00/36 Vis
400
900
ROP (ft/hr)
0
7500
750000
Bit Data
Bit #: 2
Type: STC/SDi 513 UBPX
Size: 6.125"
Jets: 5X15
S/N: JJ6520
3160u
GAS (units)
C1-C4 (PPM)
1343u
4447u
C1:41.5%
C2:4.4%
C3:33.5%
C4:20.6%
Mud Wt: 10.00/38 Vis
359
4795u
1466u
6,240
6,250
6,260
6,270
6,280
6,290
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
6,400
6,410
6,420
6,430
6,440
6,450
200
GR (units)
0
111
blky - sb
CHK: lt
d frm,
calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
45MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
45MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRL
plty,
TVD (ft)
6500
MD: 6,250′
Inclination: 86.2 °
Azimuth: 80.74°
TVD: 5,648.94′
VS: 1,543.93′
MD: 6,342′
Inclination: 86.7 °
Azimuth: 87.14°
TVD: 5,654.64′
VS: 1,635.19′
MD: 6,435′
Inclination: 87.52 °
Azimuth: 86.97°
TVD: 5,659.33′
VS: 1,727.95′

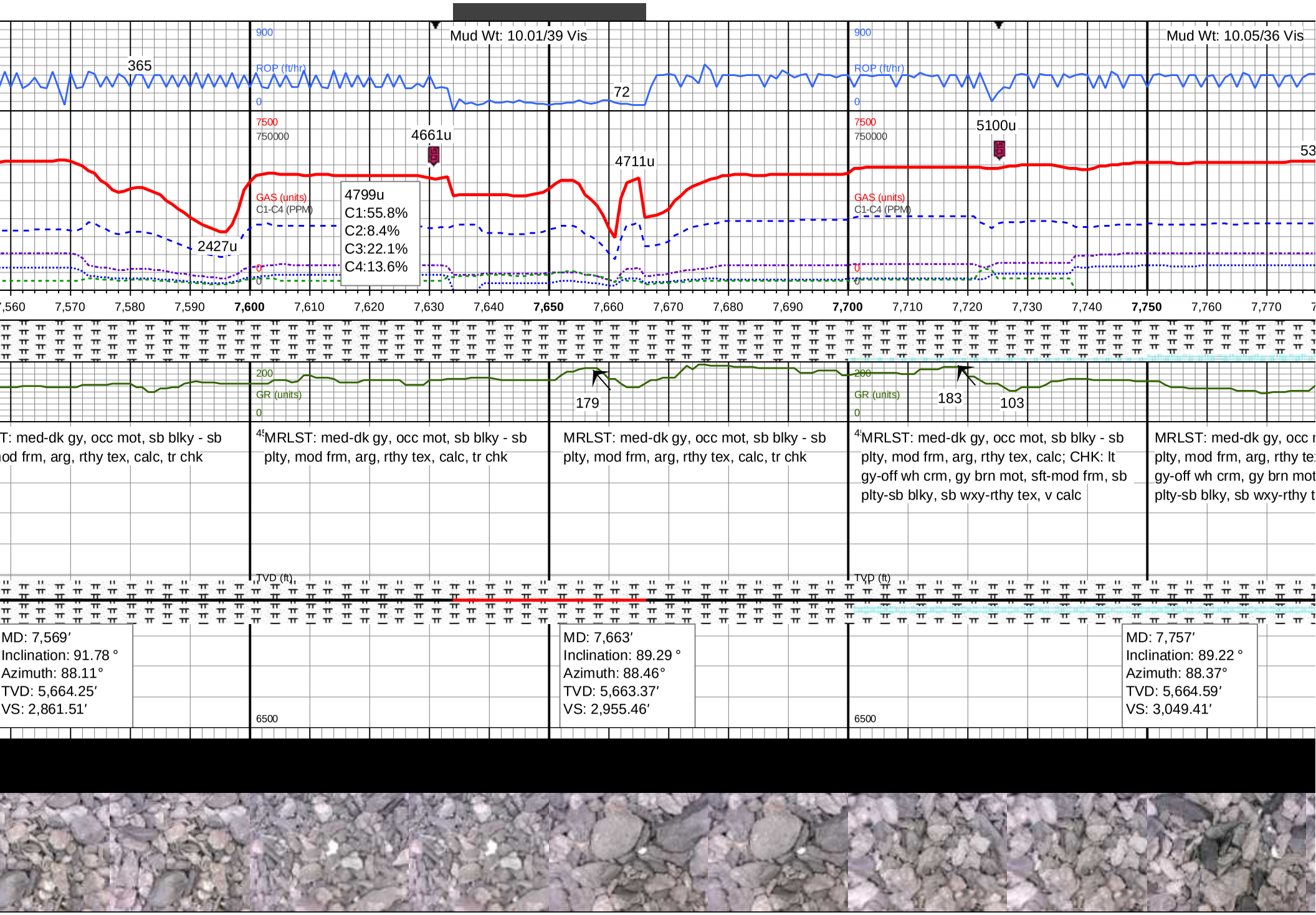

Mud Wt: 10.00/35 Vis
Mud Wt: 10.00/36 Vis
ROP (ft/hr)
900
0
7500
750000
GAS (units)
C1-C4 (PPM)
4995u
4938u
1444u
5025u
5026u
C1:46.1%
C2:6.3%
C3:27.4%
C4:20.1%
4718u
1242u
361
5150u
6,460
6,470
6,480
6,490
6,500
6,510
6,520
6,530
6,540
6,550
6,560
6,570
6,580
6,590
6,600
6,610
6,620
6,630
6,640
6,650
6,660
6,670
200
GR (units)
0
158
188
LST: med-dk gy, occ mot, sb blky - sb
mod frm, arg, rthy tex, calc, tr chk
45MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc, tr chk
45MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ
plty, mod frm, arg, rthy t
TVD (ft)
6500
MD: 6,530′
Inclination: 88.53 °
Azimuth: 89.09°
TVD: 5,662.6′
VS: 1,822.83′
MD: 6,624′
Inclination: 88.57 °
Azimuth: 89.61°
TVD: 5,664.98′
VS: 1,916.79′

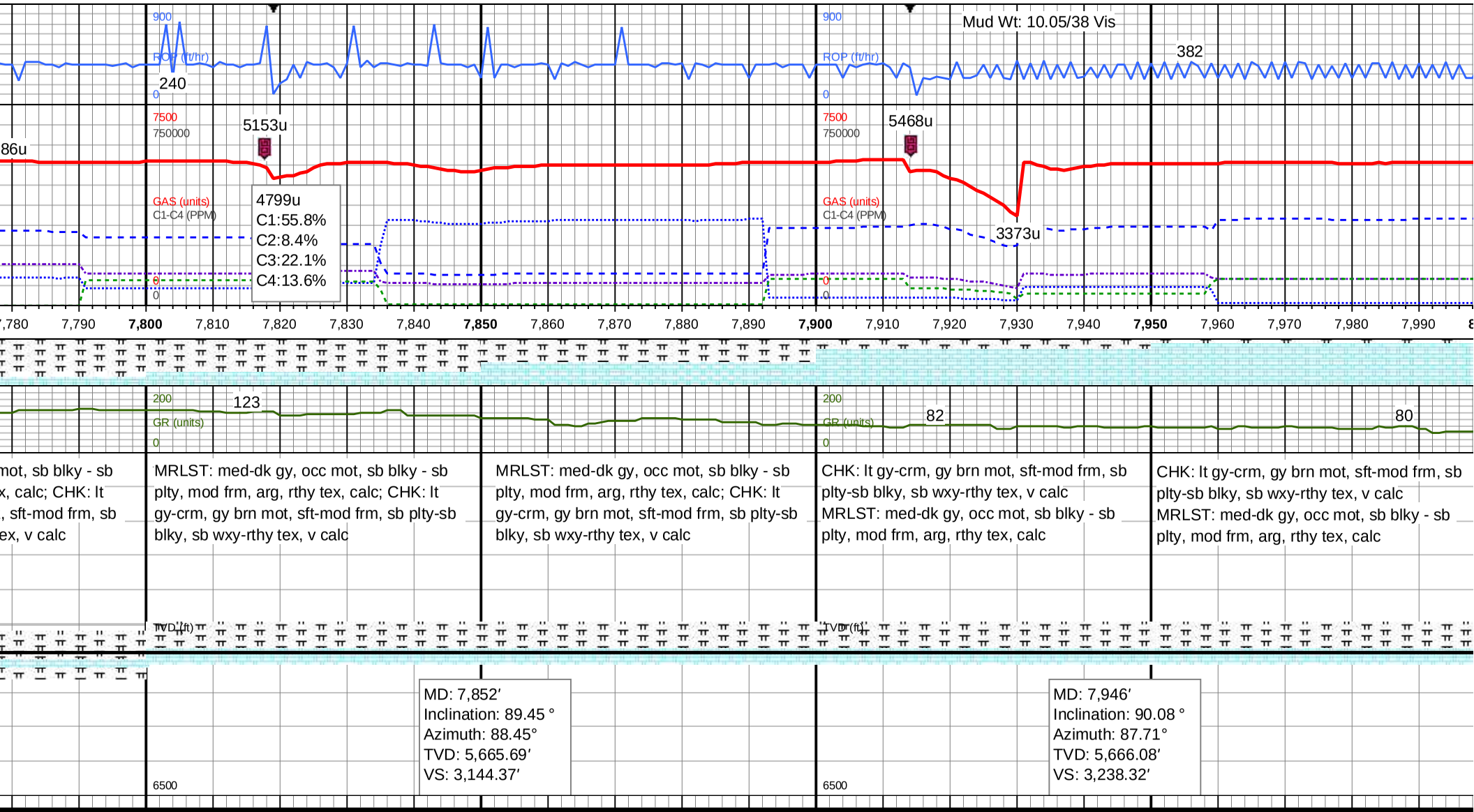

900
ROP (ft/hr)
0
361
361
7500
750000
4815u
5082u
4940u
5088u
5122u
GAS (units)
C1-C4 (PPM)
1434u
1404u
5117u
C1:60.0%
C2:6.8%
C3:21.7%
C4:11.4%
6,680
6,690
6,700
6,710
6,720
6,730
6,740
6,750
6,760
6,770
6,780
6,790
6,800
6,810
6,820
6,830
6,840
6,850
6,860
6,870
6,880
6,890
200
GR (units)
0
104
mot, sb blky - sb
ex, calc, tr chk
'MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc; MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
TVD (ft)
MD: 6,719'
Inclination: 88.71 °
Azimuth: 89.79°
TVD: 5,667.24'
VS: 2,011.76'
6500
MD: 6,813'
Inclination: 89.65 °
Azimuth: 89.3°
TVD: 5,668.58'
VS: 2,105.75'

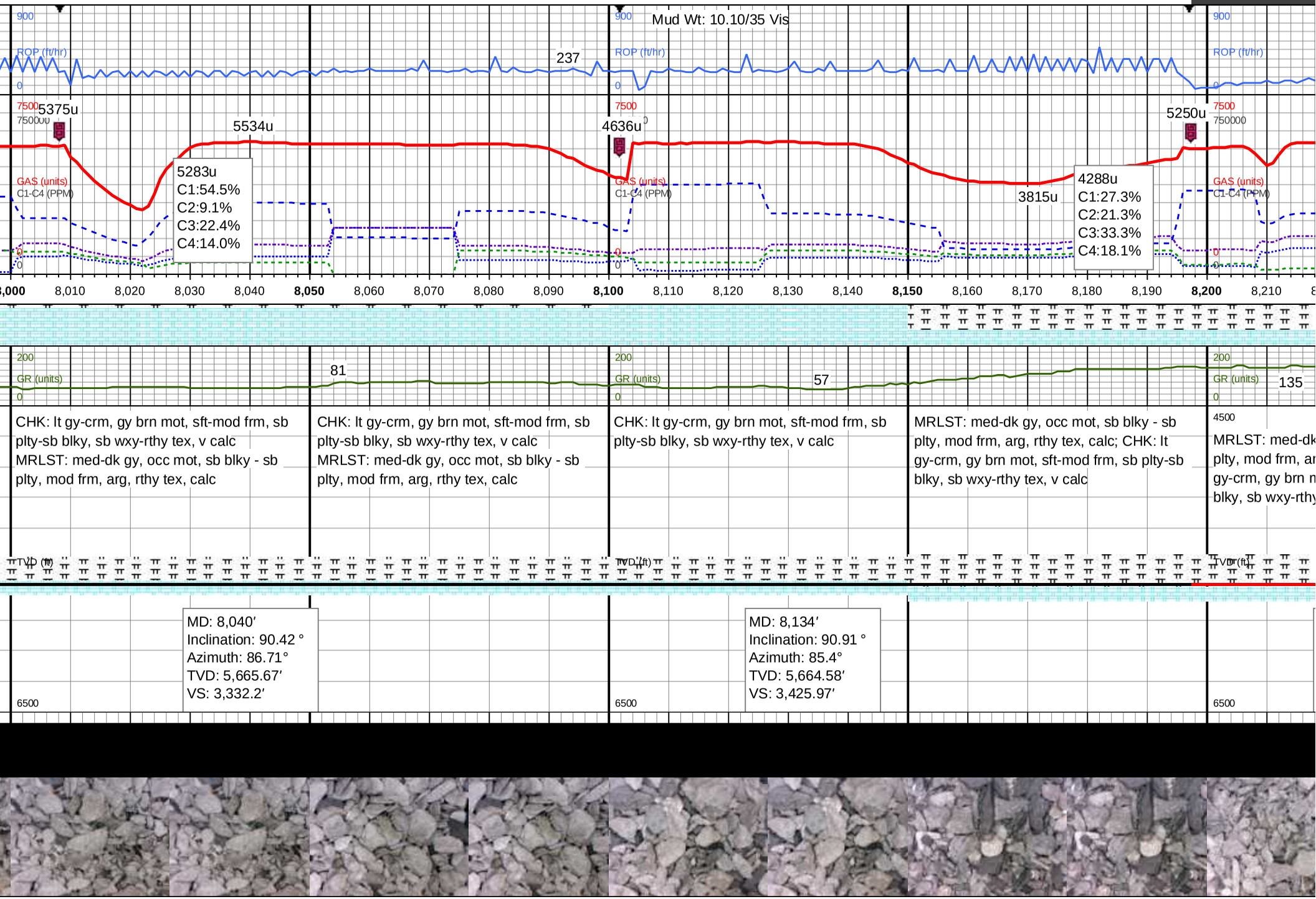

Mud Wt: 10.00/40 Vis
ROP (ft/hr)
382
239
GAS (units)
C1-C4 (PPM)
5257u
5135u
5278u
4996u
5289u
C1:59.8%
C2:13.9%
C3:21.2%
C4:5.1%
2129u
1462u
6,900
6,910
6,920
6,930
6,940
6,950
6,960
6,970
6,980
6,990
7,000
7,010
7,020
7,030
7,040
7,050
7,060
7,070
7,080
7,090
7,100
GR (units)
107
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
TVD (ft)
MD: 6,907′
Inclination: 90.38 °
Azimuth: 88.23°
TVD: 5,668.56′
VS: 2,199.73′
MD: 7,002′
Inclination: 91.13 °
Azimuth: 89.44°
TVD: 5,667.31′
VS: 2,294.7′
MD: 7,096′
Inclination: 91.96 °
Azimuth: 89.4°
TVD: 5,664.77′
VS: 2,388.66′

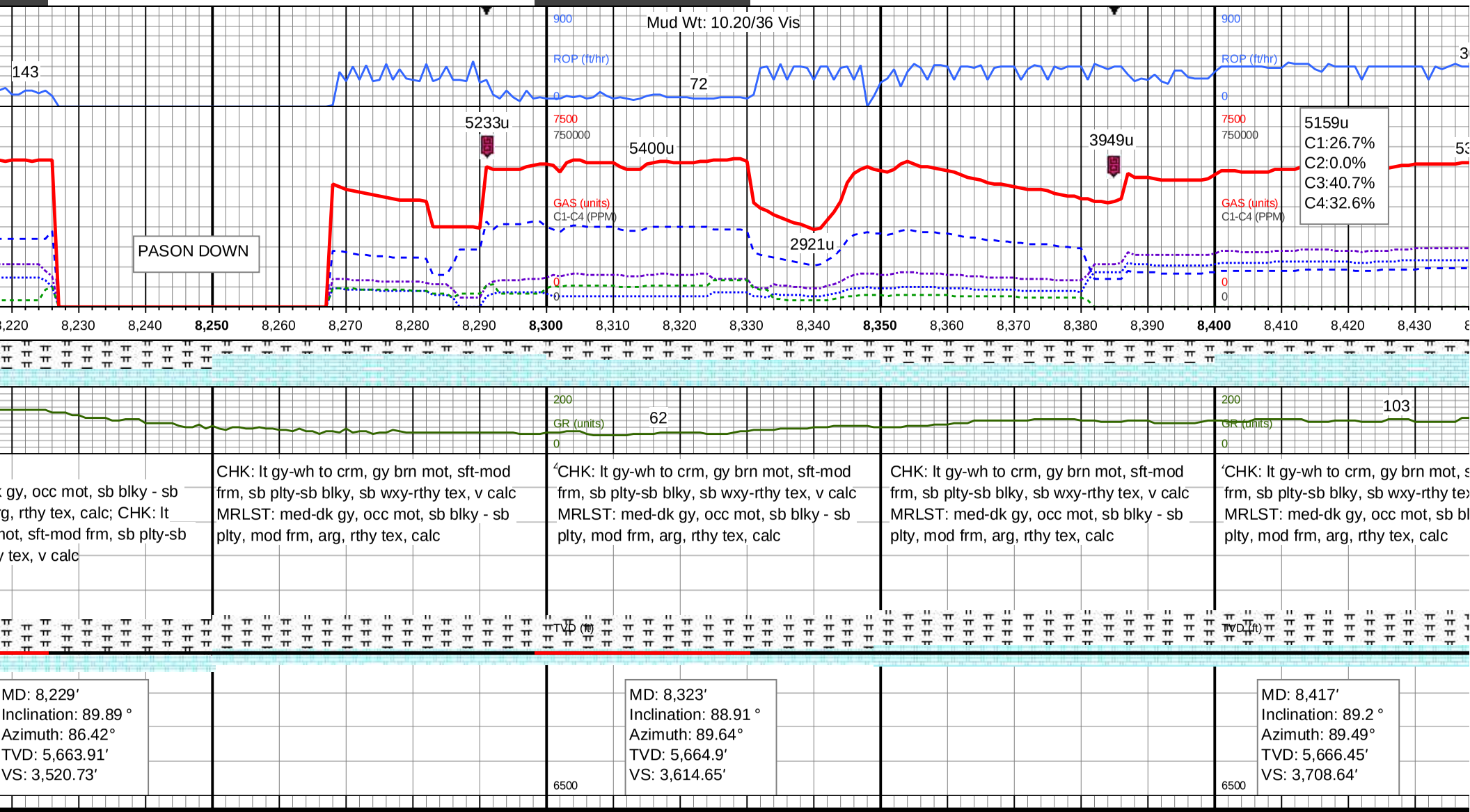

Mud Wt: 10.01/37 Vis
274
361
900
ROP (ft/hr)
0
7500
750000
GAS (units)
C1-C4 (PPM)
4591u
4440u
4422u
4244u
4717u
4410u
C1:52.3%
C2:6.7%
C3:28.6%
C4:12.4%
1971u
1660u
7,120
7,130
7,140
7,150
7,160
7,170
7,180
7,190
7,200
7,210
7,220
7,230
7,240
7,250
7,260
7,270
7,280
7,290
7,300
7,310
7,320
7,330
200
GR (units)
0
154
122
k gy, occ mot, sb blky - sb
rg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc, tr chk
45MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc, tr chk
450MRLST: med-dk gy, occ mot, sb
plty, mod frm, arg, rthy tex, calc
TVD (ft)
MD: 7,190′
Inclination: 89.18 °
Azimuth: 89.44°
TVD: 5,663.84′
VS: 2,482.64′
MD: 7,285′
Inclination: 89.73 °
Azimuth: 87.58°
TVD: 5,664.74′
VS: 2,577.6′
6500

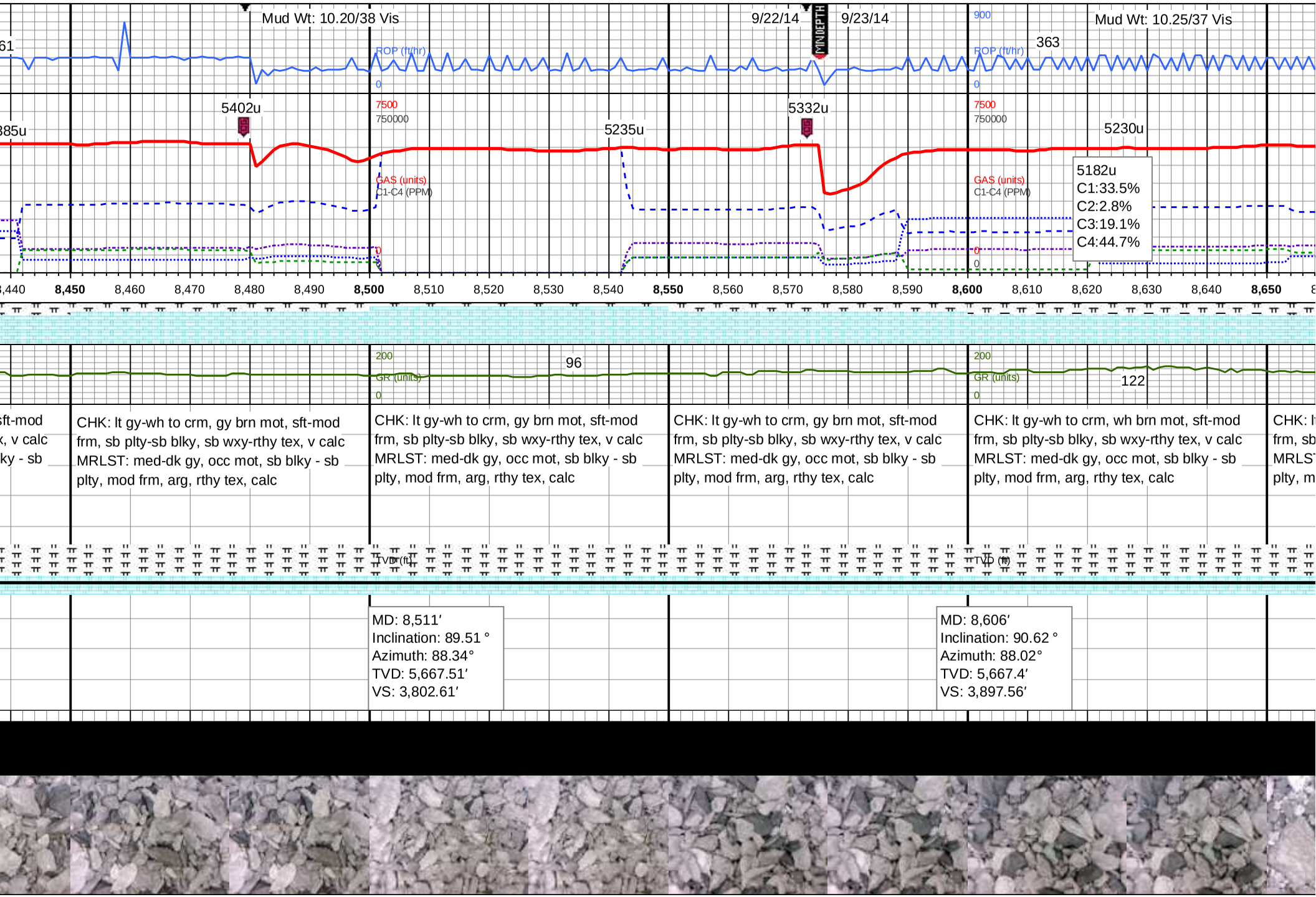

Mud Wt: 10.01/37 Vis
900
ROP (ft/hr)
0
363
7500
750000
4558u
4669u
4857u
4853u
4834u
GAS (units)
C1-C4 (PPM)
4853u
C1:60.5%
C2:7.1%
C3:22.1%
C4:10.3%
1677u
1485u
7,340
7,350
7,360
7,370
7,380
7,390
7,400
7,410
7,420
7,430
7,440
7,450
7,460
7,470
7,480
7,490
7,500
7,510
7,520
7,530
7,540
7,550
200
GR (units)
0
186
121
blky - sb
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
450
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
4
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRLS
plty, m
TVD (ft)
6500
MD: 7,380′
Inclination: 89.19 °
Azimuth: 89.16°
TVD: 5,665.64′
VS: 2,672.55′
MD: 7,474′
Inclination: 90.35 °
Azimuth: 90.64°
TVD: 5,666.01′
VS: 2,766.54′

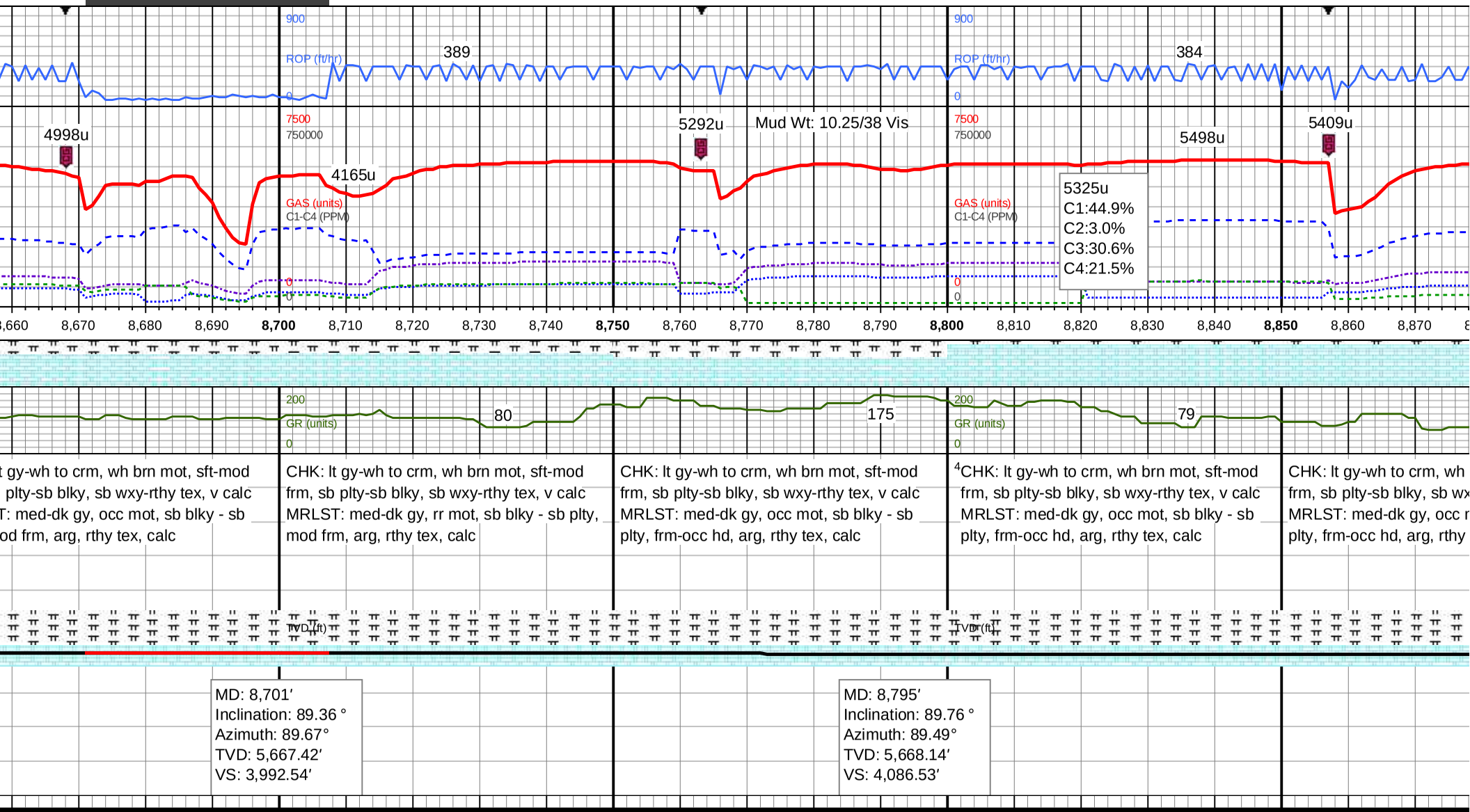

Mud Wt: 10.01/39 Vis
Mud Wt: 10.05/36 Vis
365
ROP (ft/hr)
900
0
72
7500
750000
4661u
4711u
5100u
2427u
GAS (units)
C1-C4 (PPM)
4799u
C1:55.8%
C2:8.4%
C3:22.1%
C4:13.6%
7,560
7,570
7,580
7,590
7,600
7,610
7,620
7,630
7,640
7,650
7,660
7,670
7,680
7,690
7,700
7,710
7,720
7,730
7,740
7,750
7,760
7,770
200
GR (units)
179
183
103
T: med-dk gy, occ mot, sb blky - sb od frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ plty, mod frm, arg, rthy te gy-off wh crm, gy brn mot plty-sb blky, sb wxy-rthy t
TVD (ft)
6500
MD: 7,569′
Inclination: 91.78 °
Azimuth: 88.11°
TVD: 5,664.25′
VS: 2,861.51′
MD: 7,663′
Inclination: 89.29 °
Azimuth: 88.46°
TVD: 5,663.37′
VS: 2,955.46′
MD: 7,757′
Inclination: 89.22 °
Azimuth: 88.37°
TVD: 5,664.59′
VS: 3,049.41′


900
ROP (ft/hr)
0
240
7500
750000
5153u
86u
GAS (units)
C1-C4 (PPM)
4799u
C1:55.8%
C2:8.4%
C3:22.1%
C4:13.6%
0
0
Mud Wt: 10.05/38 Vis
382
5468u
3373u
7,780
7,790
7,800
7,810
7,820
7,830
7,840
7,850
7,860
7,870
7,880
7,890
7,900
7,910
7,920
7,930
7,940
7,950
7,960
7,970
7,980
7,990
200
GR (units)
123
82
80
mot, sb blky - sb
x, calc; CHK: lt
, sft-mod frm, sb
ex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
TVD (ft)
6500
MD: 7,852′
Inclination: 89.45 °
Azimuth: 88.45°
TVD: 5,665.69′
VS: 3,144.37′
MD: 7,946′
Inclination: 90.08 °
Azimuth: 87.71°
TVD: 5,666.08′
VS: 3,238.32′


900
ROP (ft/hr)
0
237
Mud Wt: 10.10/35 Vis
7500
5375u
5534u
4636u
5250u
GAS (units)
C1-C4 (PPM)
5283u
C1:54.5%
C2:9.1%
C3:22.4%
C4:14.0%
3815u
4288u
C1:27.3%
C2:21.3%
C3:33.3%
C4:18.1%
8,000
8,010
8,020
8,030
8,040
8,050
8,060
8,070
8,080
8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160
8,170
8,180
8,190
8,200
8,210
200
GR (units)
0
81
57
135
4500
CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
TVD (ft)
MD: 8,040′
Inclination: 90.42 °
Azimuth: 86.71°
TVD: 5,665.67′
VS: 3,332.2′
MD: 8,134′
Inclination: 90.91 °
Azimuth: 85.4°
TVD: 5,664.58′
VS: 3,425.97′
6500


Mud Wt: 10.20/36 Vis
143
72
ROP (ft/hr)
900
0
5233u
5400u
2921u
3949u
7500
750000
GAS (units)
C1-C4 (PPM)
0
PASON DOWN
5159u
C1:26.7%
C2:0.0%
C3:40.7%
C4:32.6%
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400
8,410
8,420
8,430
200
GR (units)
62
103
TVD (ft)
6500
gy, occ mot, sb blky - sb
g, rthy tex, calc; CHK: lt
not, sft-mod frm, sb plty-sb
y tex, v calc
CHK: lt gy-wh to crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
MD: 8,229′
Inclination: 89.89 °
Azimuth: 86.42°
TVD: 5,663.91′
VS: 3,520.73′
MD: 8,323′
Inclination: 88.91 °
Azimuth: 89.64°
TVD: 5,664.9′
VS: 3,614.65′
MD: 8,417′
Inclination: 89.2 °
Azimuth: 89.49°
TVD: 5,666.45′
VS: 3,708.64′


Mud Wt: 10.20/38 Vis
9/22/14
9/23/14
MIN DEPTH
Mud Wt: 10.25/37 Vis
ROP (ft/hr)
900
0
363
7500
750000
5402u
5332u
5235u
5230u
GAS (units)
C1-C4 (PPM)
5182u
C1:33.5%
C2:2.8%
C3:19.1%
C4:44.7%
8,440
8,450
8,460
8,470
8,480
8,490
8,500
8,510
8,520
8,530
8,540
8,550
8,560
8,570
8,580
8,590
8,600
8,610
8,620
8,630
8,640
8,650
200
GR (units)
96
122
CHK: lt gy-wh to crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc
TVD (ft)
MD: 8,511′
Inclination: 89.51 °
Azimuth: 88.34°
TVD: 5,667.51′
VS: 3,802.61′
MD: 8,606′
Inclination: 90.62 °
Azimuth: 88.02°
TVD: 5,667.4′
VS: 3,897.56′



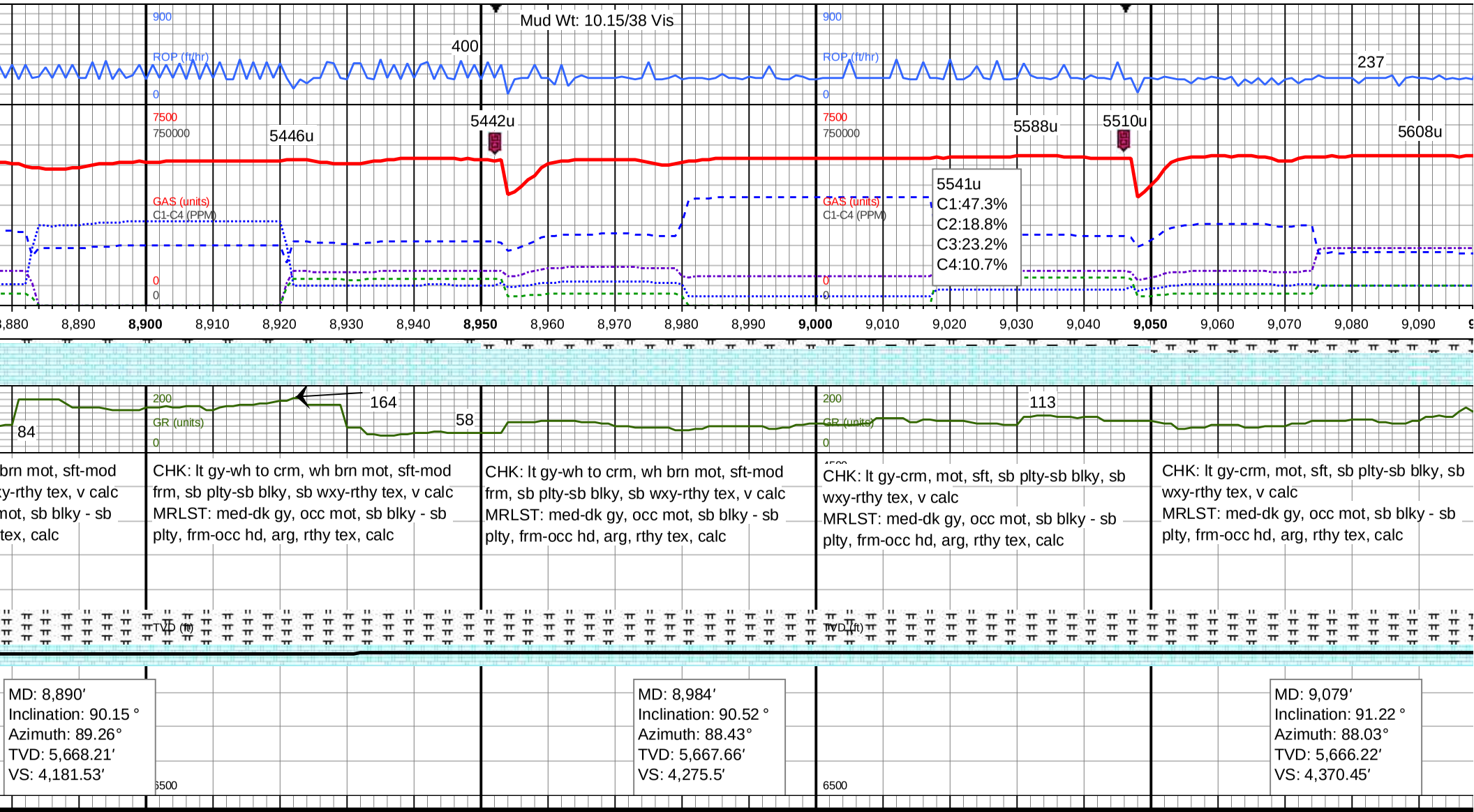
t gy-wh to crm, wh brn mot, sft-mod plty-sb blky, sb wxy-rthy tex, v calc T: med-dk gy, occ mot, sb blky - sb od frm, arg, rthy tex, calc

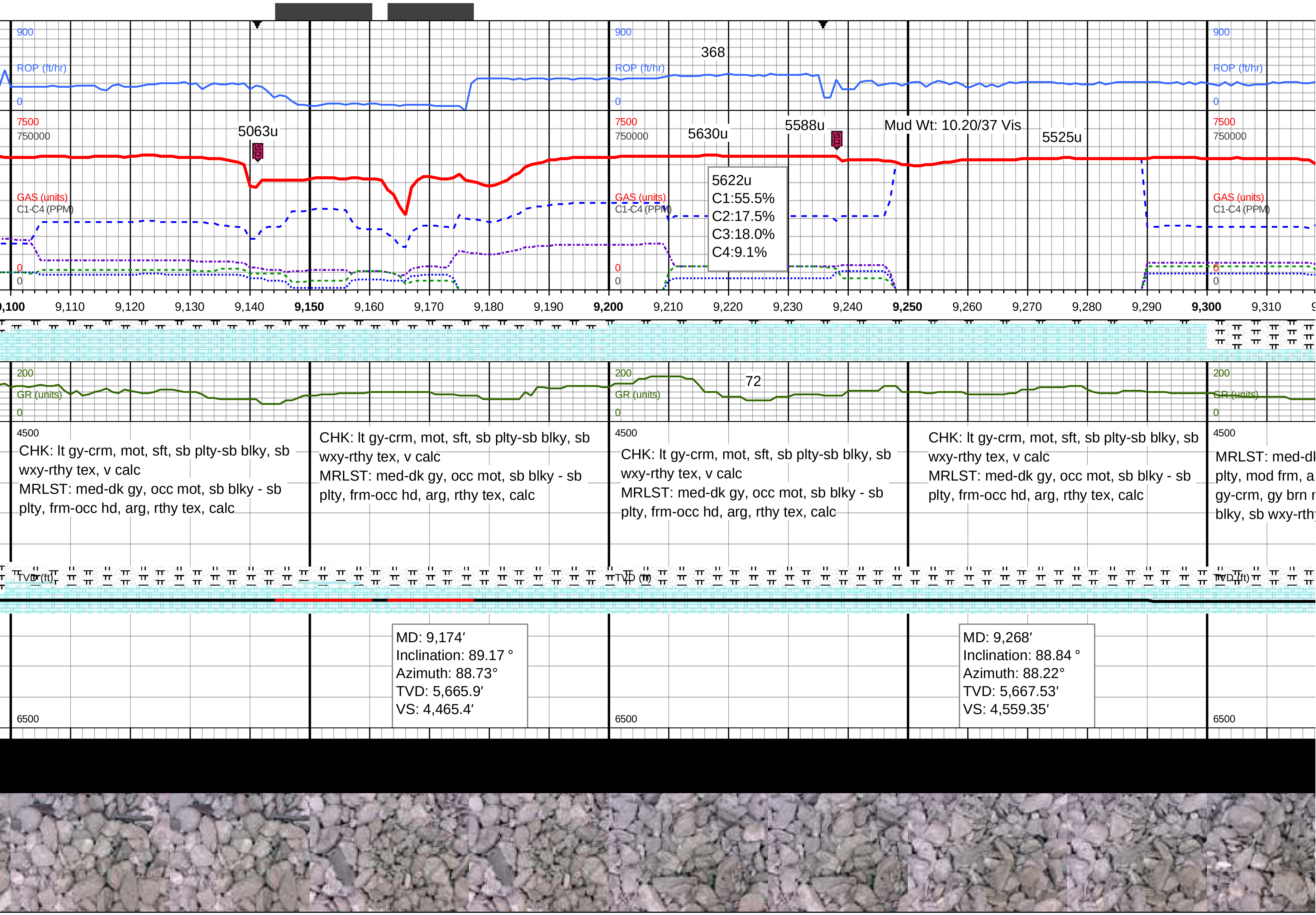
CHK: lt gy-wh to crm, wh brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc MRLST: med-dk gy, rr mot, sb blky - sb plty, mod frm, arg, rthy tex, calc

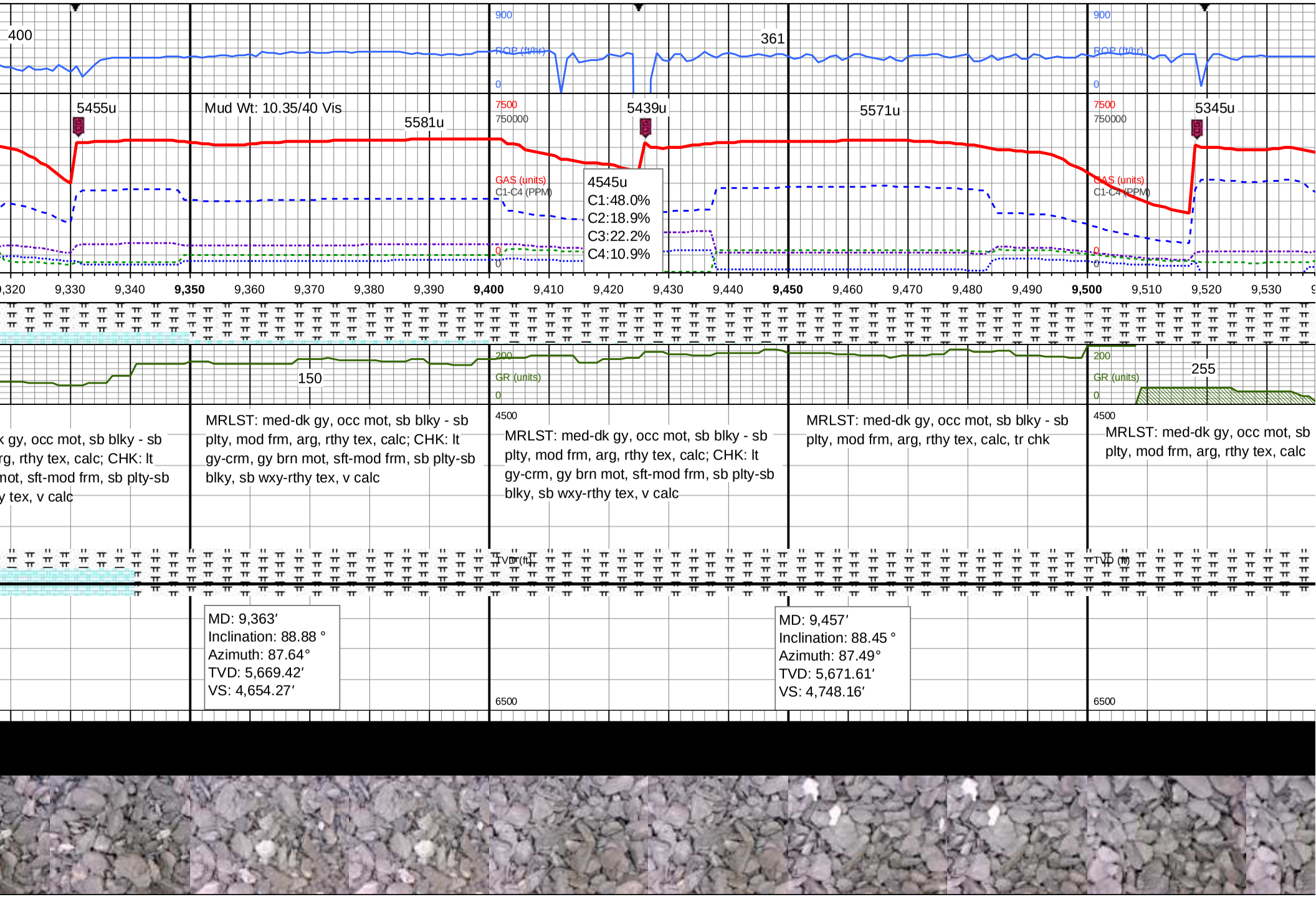
CHK: lt gy-wh to crm, wh brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc

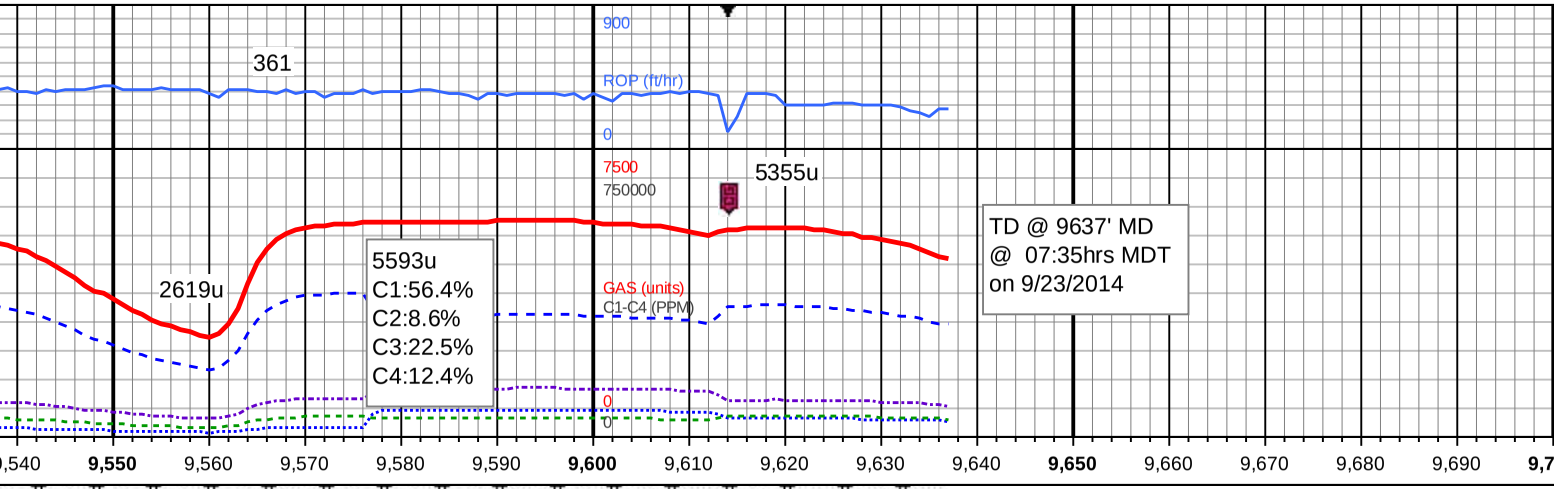
CHK: lt gy-wh to crm, wh brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc

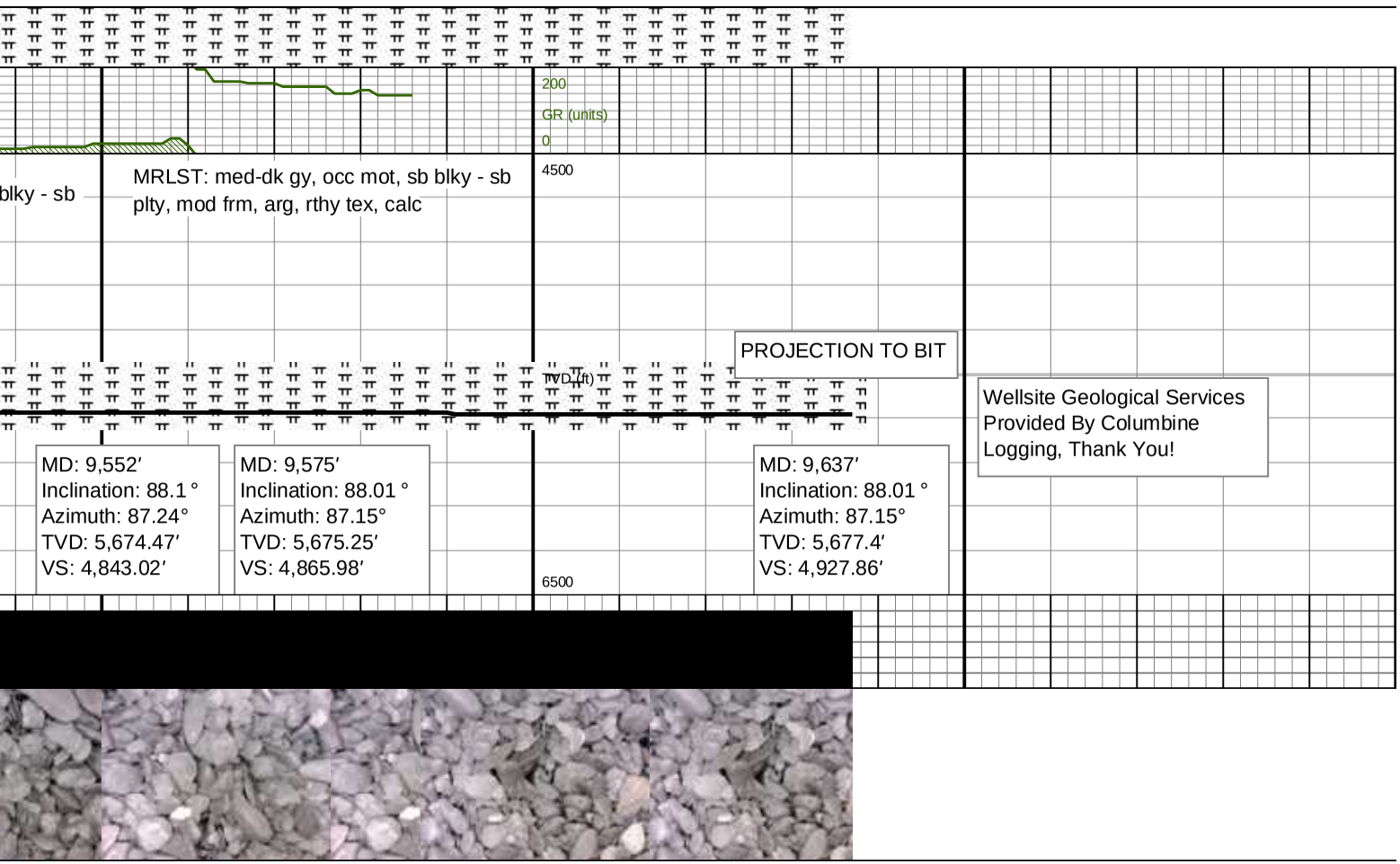
CHK: lt gy-wh to crm, wh frm, sb plty-sb blky, sb wx MRLST: med-dk gy, occ r plty, frm-occ hd, arg, rthy


Mud Wt: 10.15/38 Vis
900
ROP (ft/hr)
0
400
237
7500
750000
GAS (units)
C1-C4 (PPM)
0
0
5446u
5442u
5588u
5510u
5608u
5541u
C1:47.3%
C2:18.8%
C3:23.2%
C4:10.7%
8,880
8,890
8,900
8,910
8,920
8,930
8,940
8,950
8,960
8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
9,050
9,060
9,070
9,080
9,090
200
GR (units)
0
84
164
58
113
TVD (ft)
6500
brn mot, sft-mod
y-rthy tex, v calc
mot, sb blky - sb
tex, calc
CHK: lt gy-wh to crm, wh brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
CHK: lt gy-wh to crm, wh brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
CHK: lt gy-crm, mot, sft, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
CHK: lt gy-crm, mot, sft, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
MD: 8,890′
Inclination: 90.15 °
Azimuth: 89.26°
TVD: 5,668.21′
VS: 4,181.53′
MD: 8,984′
Inclination: 90.52 °
Azimuth: 88.43°
TVD: 5,667.66′
VS: 4,275.5′
MD: 9,079′
Inclination: 91.22 °
Azimuth: 88.03°
TVD: 5,666.22′
VS: 4,370.45′


900
ROP (ft/hr)
0
7500
750000
GAS (units)
C1-C4 (PPM)
0
0
5063u
368
5630u
5588u
Mud Wt: 10.20/37 Vis
5525u
5622u
C1:55.5%
C2:17.5%
C3:18.0%
C4:9.1%
9,100
9,110
9,120
9,130
9,140
9,150
9,160
9,170
9,180
9,190
9,200
9,210
9,220
9,230
9,240
9,250
9,260
9,270
9,280
9,290
9,300
9,310
200
GR (units)
0
72
4500
CHK: lt gy-crm, mot, sft, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
CHK: lt gy-crm, mot, sft, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
CHK: lt gy-crm, mot, sft, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
CHK: lt gy-crm, mot, sft, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, frm-occ hd, arg, rthy tex, calc
MRLST: med-dk
plty, mod frm, a
gy-crm, gy brn r
blky, sb wxy-rthy
TVD (ft)
MD: 9,174′
Inclination: 89.17 °
Azimuth: 88.73°
TVD: 5,665.9′
VS: 4,465.4′
MD: 9,268′
Inclination: 88.84 °
Azimuth: 88.22°
TVD: 5,667.53′
VS: 4,559.35′
6500


400
900
ROP (ft/hr)
0
361
5455u
Mud Wt: 10.35/40 Vis
5581u
7500
750000
5439u
5571u
5345u
GAS (units)
C1-C4 (PPM)
4545u
C1:48.0%
C2:18.9%
C3:22.2%
C4:10.9%
9,320
9,330
9,340
9,350
9,360
9,370
9,380
9,390
9,400
9,410
9,420
9,430
9,440
9,450
9,460
9,470
9,480
9,490
9,500
9,510
9,520
9,530
150
200
GR (units)
4500
255
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc; CHK: lt gy-crm, gy brn mot, sft-mod frm, sb plty-sb blky, sb wxy-rthy tex, v calc
MRLST: med-dk gy, occ mot, sb blky - sb plty, mod frm, arg, rthy tex, calc, tr chk
MRLST: med-dk gy, occ mot, sb plty, mod frm, arg, rthy tex, calc
TVD (ft)
6500
MD: 9,363′
Inclination: 88.88 °
Azimuth: 87.64°
TVD: 5,669.42′
VS: 4,654.27′
MD: 9,457′
Inclination: 88.45 °
Azimuth: 87.49°
TVD: 5,671.61′
VS: 4,748.16′


361
900
ROP (ft/hr)
0
7500
750000
5355u
2619u
5593u
C1:56.4%
C2:8.6%
C3:22.5%
C4:12.4%
GAS (units)
C1-C4 (PPM)
0
0
TD @ 9637' MD
@ 07:35hrs MDT
on 9/23/2014
9,540
9,550
9,560
9,570
9,580
9,590
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,7


200
GR (units)
0
4500
blky - sb
MRLST: med-dk gy, occ mot, sb blky - sb
plty, mod frm, arg, rthy tex, calc
PROJECTION TO BIT
TVD (ft)
MD: 9,552′
Inclination: 88.1 °
Azimuth: 87.24°
TVD: 5,674.47′
VS: 4,843.02′
MD: 9,575′
Inclination: 88.01 °
Azimuth: 87.15°
TVD: 5,675.25′
VS: 4,865.98′
MD: 9,637′
Inclination: 88.01 °
Azimuth: 87.15°
TVD: 5,677.4′
VS: 4,927.86′
6500
Wellsite Geological Services
Provided By Columbine
Logging, Thank You!