COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	Trisha LC29-75HNB		
Location	SWSE SEC 29 T9N R59W		
State	COLORADO	**County**	WELD
Country	USA	**Rig Number**	H&P 273
API Number	05-123-38780	**Field**	WILDCAT
Region	DJ BASIN	**Drilling Completed**	6/23/2014
Spud Date	6/18/2014		
Surface Coordinates	340' FSL; 2205' FEL		

Ground Elevation	4873'	**K.B. Elevation**	4897'
Logged Interval	5489' **To** 10255'	**Total Depth**	10255'
Formation	NIOBRARA		
Type of Drilling Fluid	LSND		

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name SARAH COMPTON

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

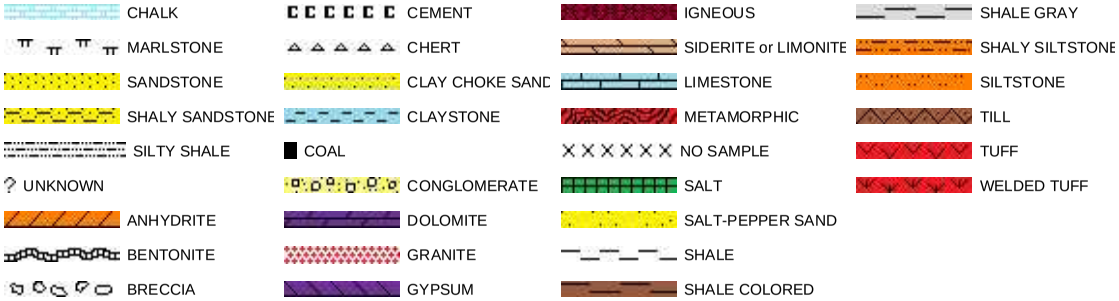
Other

Wellsite Geologist #1	Laura Kellogg
Wellsite Geologist #2	Michael Rooks
Wellsite Geological Services Provided By	Columbine Logging Inc.

Zone Color Coding

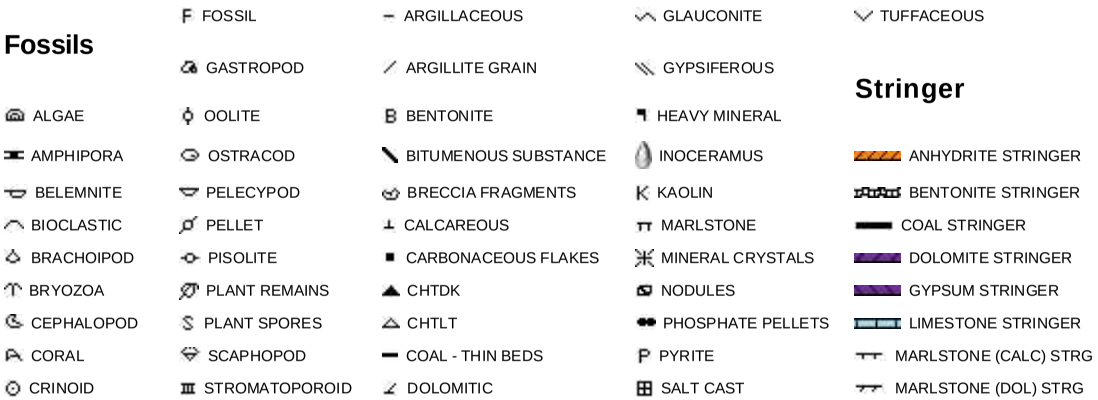
Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

Rock Types

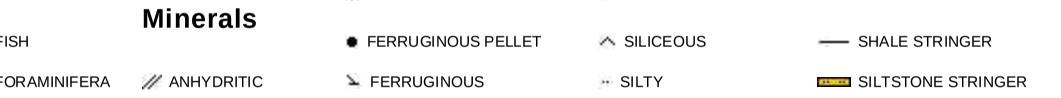


Accessories

Fossils



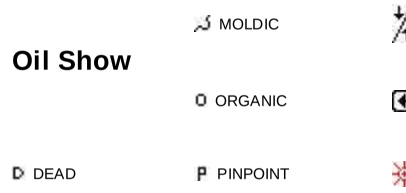
Minerals



Stringer

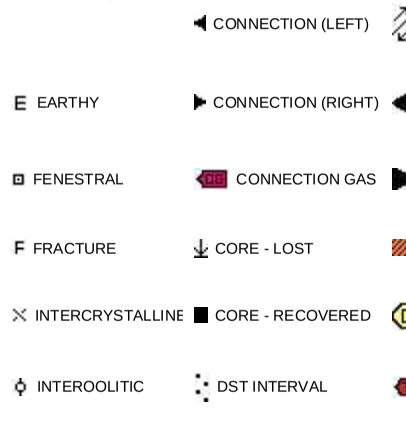
Oth

Oil Show



Engineering

Porosity



er Symbols

ULT

FORMATION TOP

AS SHOW

EPTH MN DEPTH

ORMAL FAULT

L SHOW

VERTURNED STRATA

EVERSE FAULT

DEWALL CORE (LEFT)

DEWALL CORE (RIGHT)

DE

SURVEY

TRIP GAS

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

Rounding

A ANGULAR

R ROUNDED

a SUBANG

r 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

Depth Labels

% Lith

Gamma
GAMMA

Well Bore
TVD

Oil Show

Images

BEGAN DRILLING CURVE
@ 01:21 PM 06/20/2014

MN DEPTH
6/20/2014

550
ROP (ft/hr)
0

7000
700000

50' Sample Interval

BHA BIT:
Security 8.75" MMD55M
Serial #: 12475195
Jets: 5x15

COLUMBINE LOGGING INC.
RIGGED UP ON 6/18/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0680
COLUMBINE BEGAN LOGGING
ON 6/18/2014

214u
C1: 92.1%
C2: 3.2%
C3: 4.7%
C4: 0.0%

AGITATOR
SILTED IN

199u

433u

1670u

GAS (units)
C1-C4 (PPM)

5,460 5,470 5,480 5,490 **5,500** 5,510 5,520 5,530 5,540 **5,550** 5,560 5,570 5,580 5,590 **5,600** 5,610 5,620 5,630

250
GAMMA (API)
0

92

85

5500

MD: 5,526 '
TVD: 5,480 '
Inclination: 2.86 °
Azimuth: 4.79 °
VS: -42.12 '

WT IN 10.00/ OUT 10.00
VIS IN 57/ OUT 57

MD: 5,574 '
TVD: 5,527.66 '
Inclination: 10.14 °
Azimuth: 1.4 °
VS: -36.76 '

MD: 5,621 '
TVD: 5,573.67 '
Inclination: 13.39 °
Azimuth: 356.2 °
VS: -27.22 '

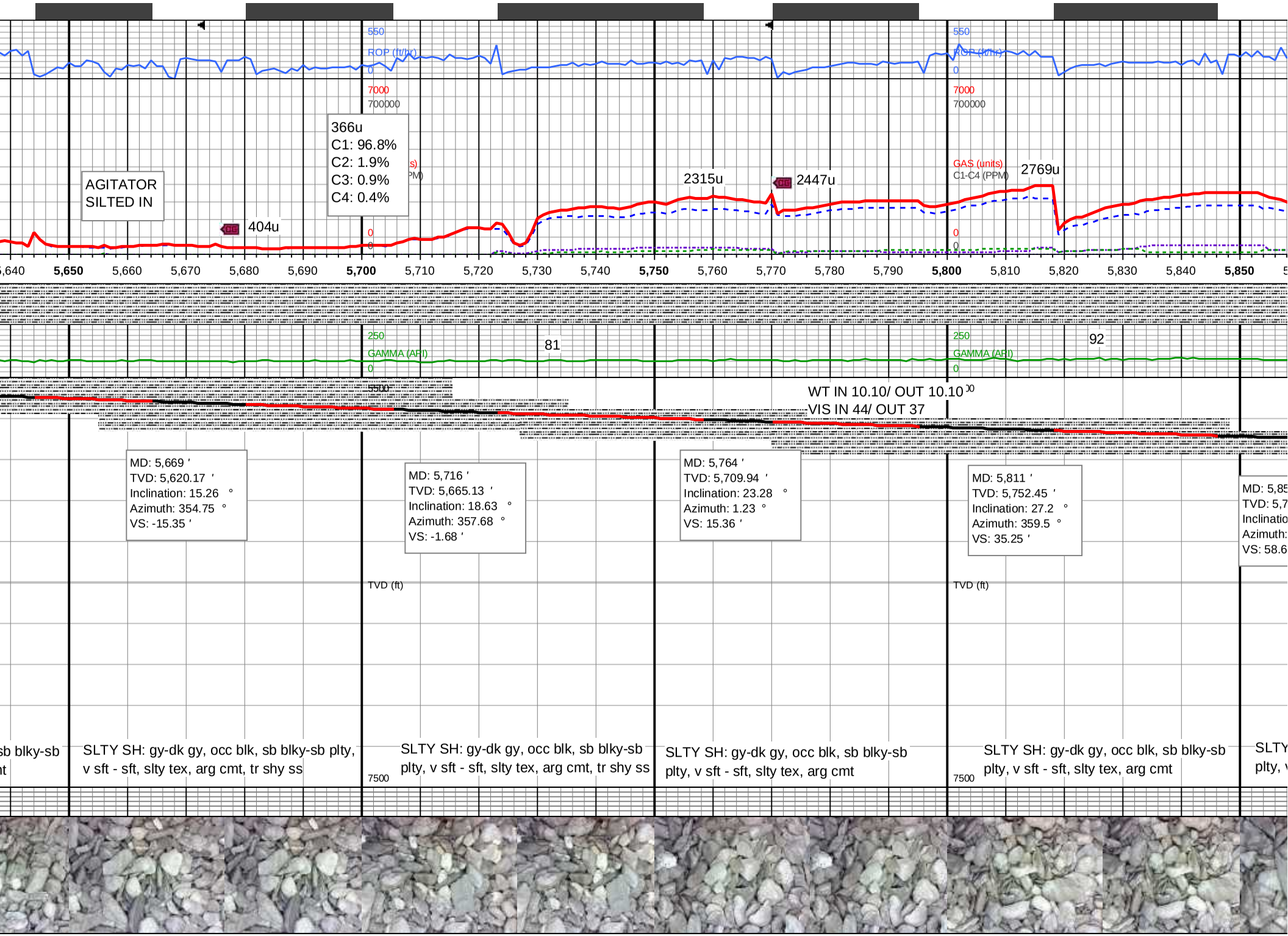
TVD (ft)

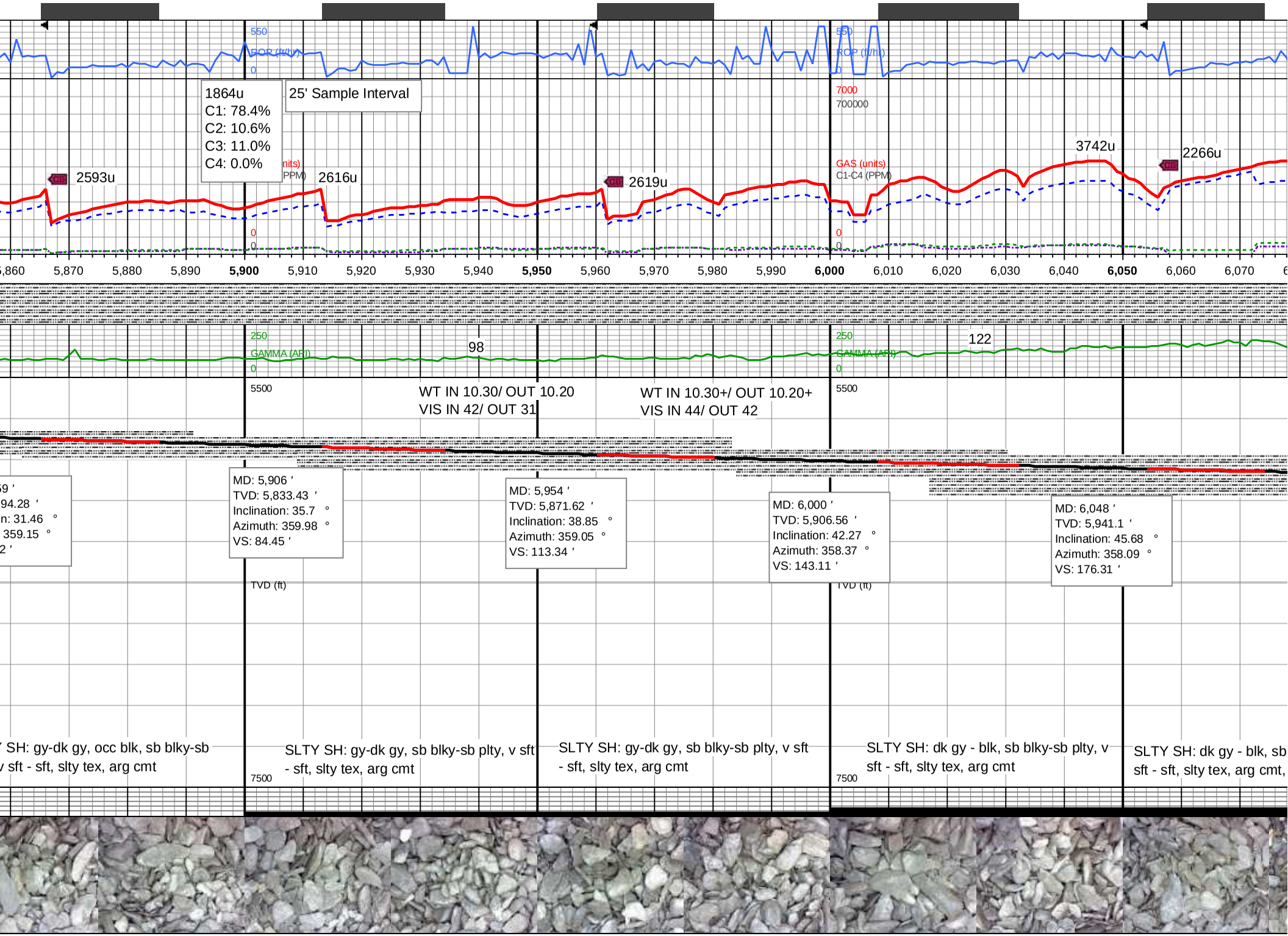
Acetone was used as the cutting agent with the dimple filled to the rim

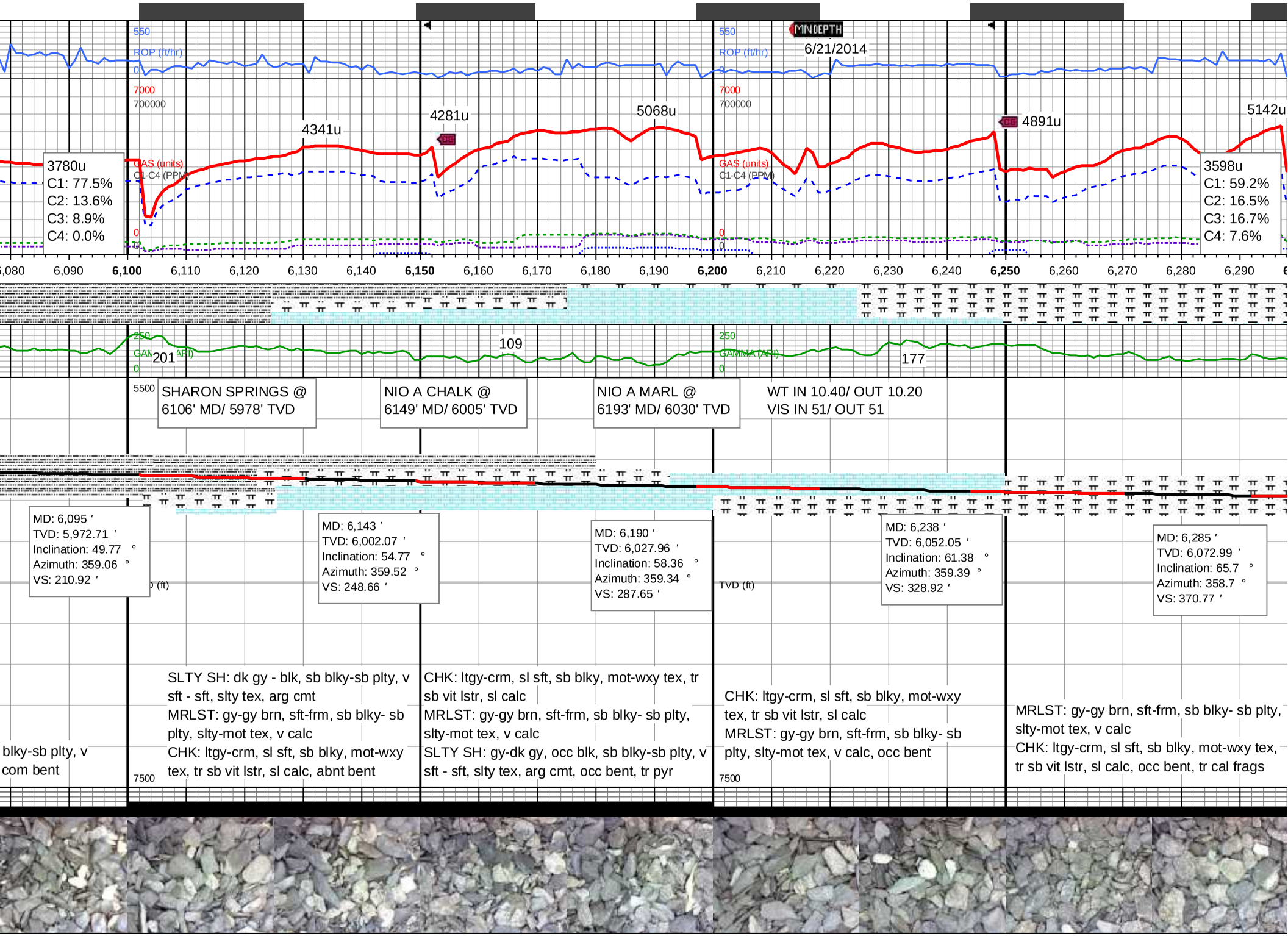
The ratings are based on 7 descriptors: None, Slight trace, Trace,Fair, Moderate, Good, and Excellent.The descriptor used is based on the loggers observations and best judgment of brilliance, color and longevity of the cut.

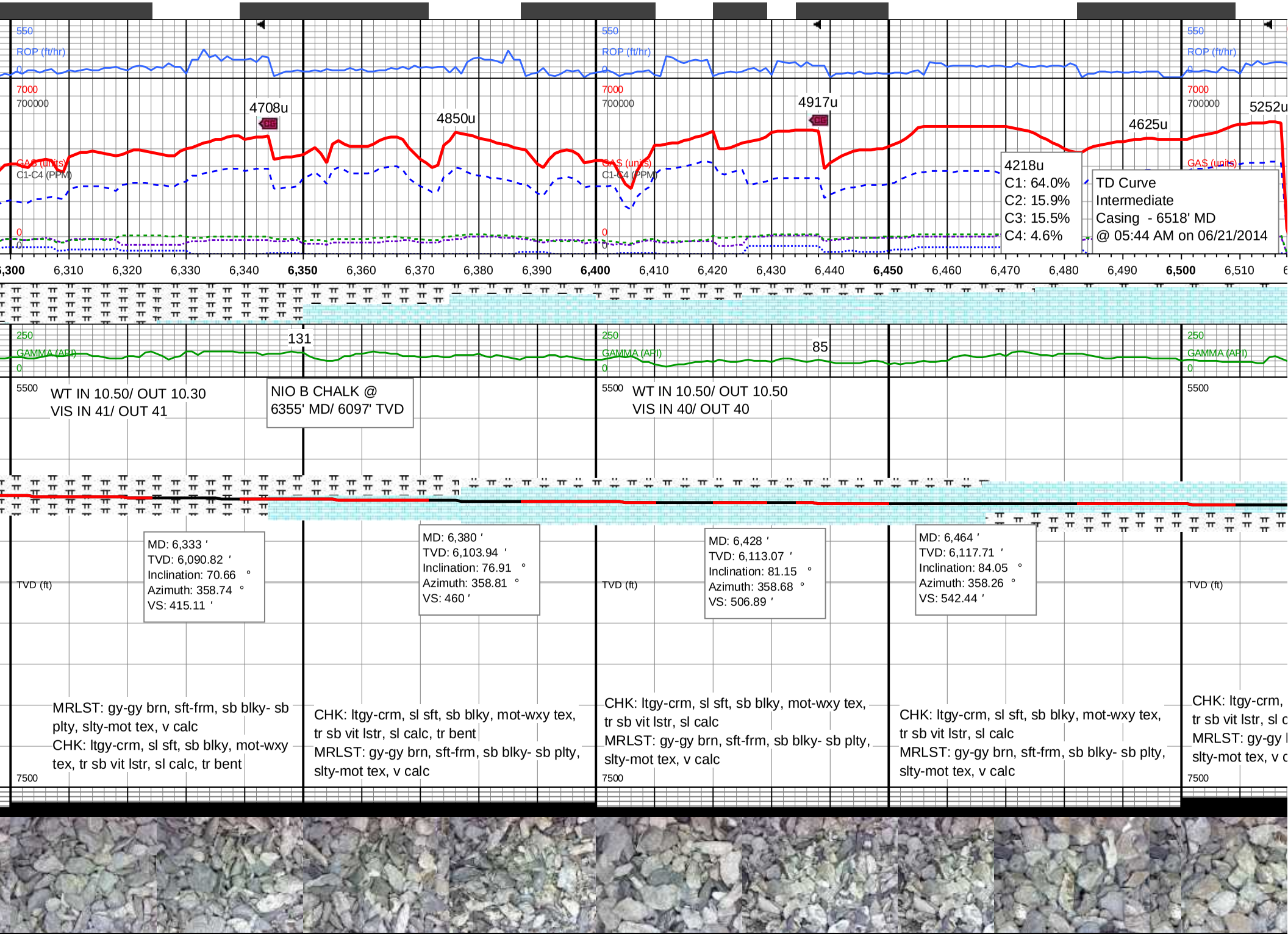
SLTY SH: gy-dk gy, occ blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt, tr shy ss

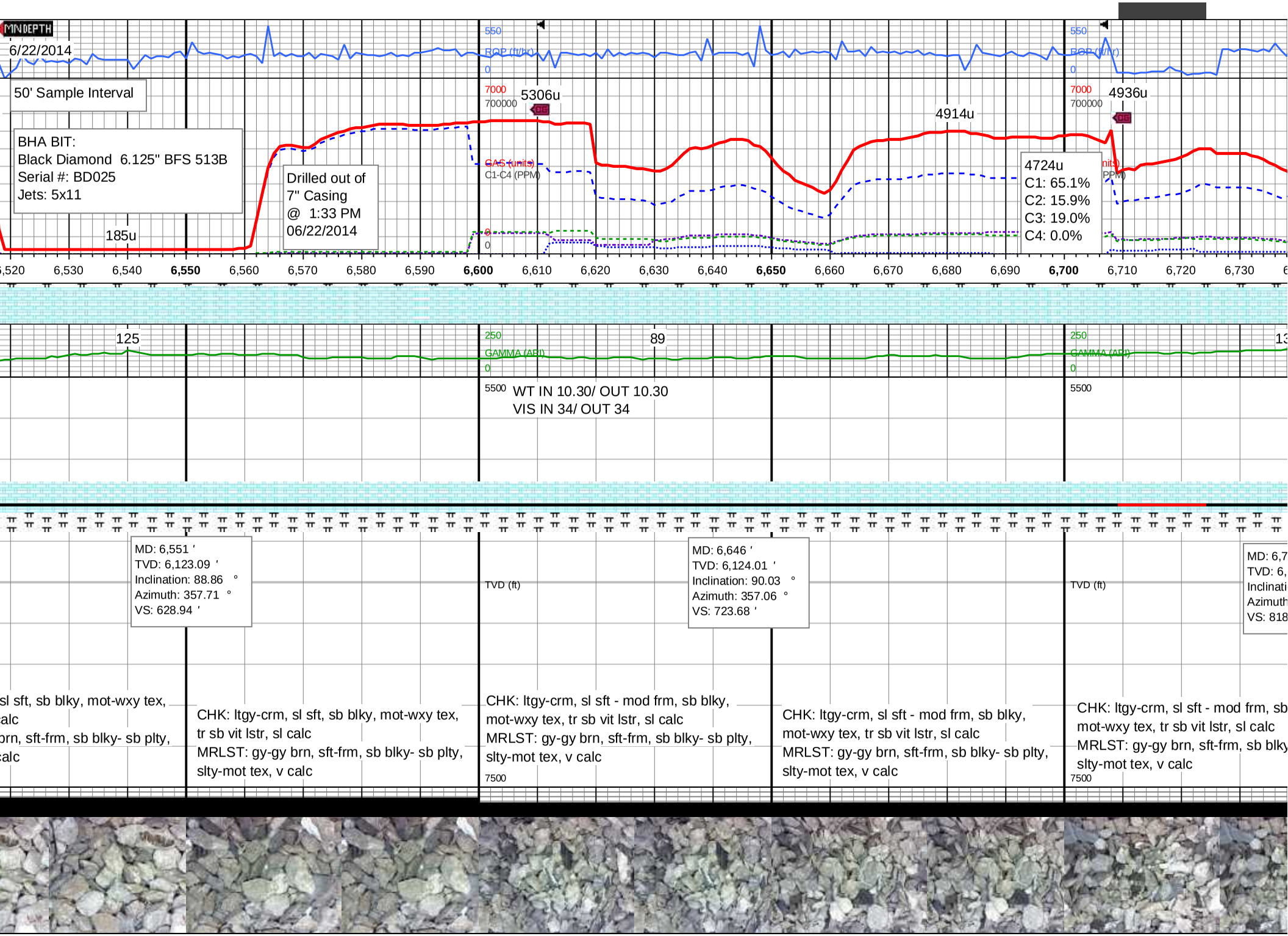
7500

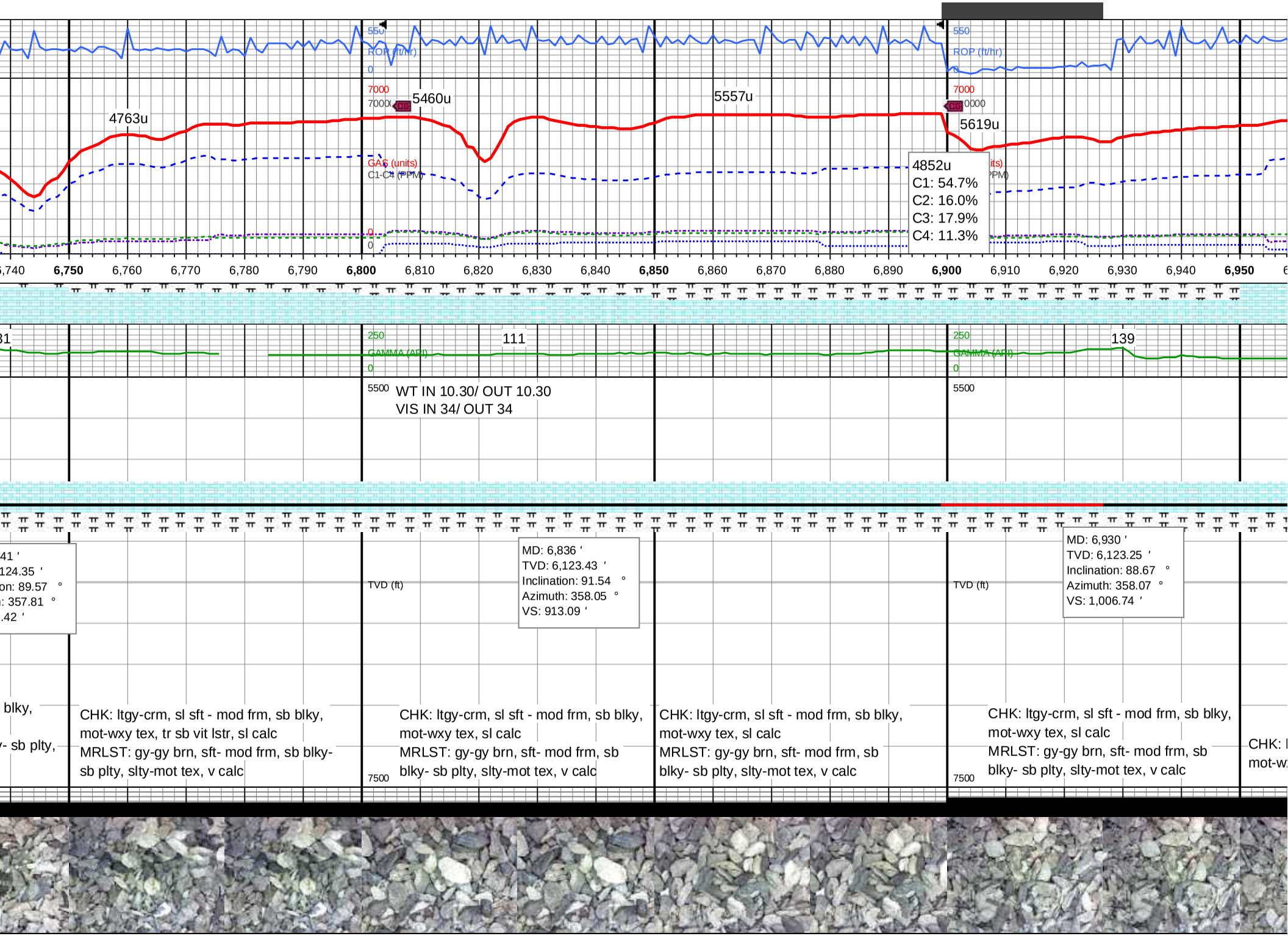

550
ROP (ft/hr)
0
7000
700000
366u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%
AGITATOR
SILTED IN
404u
2315u
2447u
GAS (units)
C1-C4 (PPM)
2769u
0
5,640
5,650
5,660
5,670
5,680
5,690
5,700
5,710
5,720
5,730
5,740
5,750
5,760
5,770
5,780
5,790
5,800
5,810
5,820
5,830
5,840
5,850
250
GAMMA (API)
81
92
5500
WT IN 10.10/ OUT 10.10
VIS IN 44/ OUT 37
MD: 5,669 '
TVD: 5,620.17 '
Inclination: 15.26 °
Azimuth: 354.75 °
VS: -15.35 '
MD: 5,716 '
TVD: 5,665.13 '
Inclination: 18.63 °
Azimuth: 357.68 °
VS: -1.68 '
MD: 5,764 '
TVD: 5,709.94 '
Inclination: 23.28 °
Azimuth: 1.23 °
VS: 15.36 '
MD: 5,811 '
TVD: 5,752.45 '
Inclination: 27.2 °
Azimuth: 359.5 °
VS: 35.25 '
TVD (ft)
SLTY SH: gy-dk gy, occ blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt, tr shy ss
SLTY SH: gy-dk gy, occ blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt, tr shy ss
SLTY SH: gy-dk gy, occ blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt
SLTY SH: gy-dk gy, occ blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt
7500

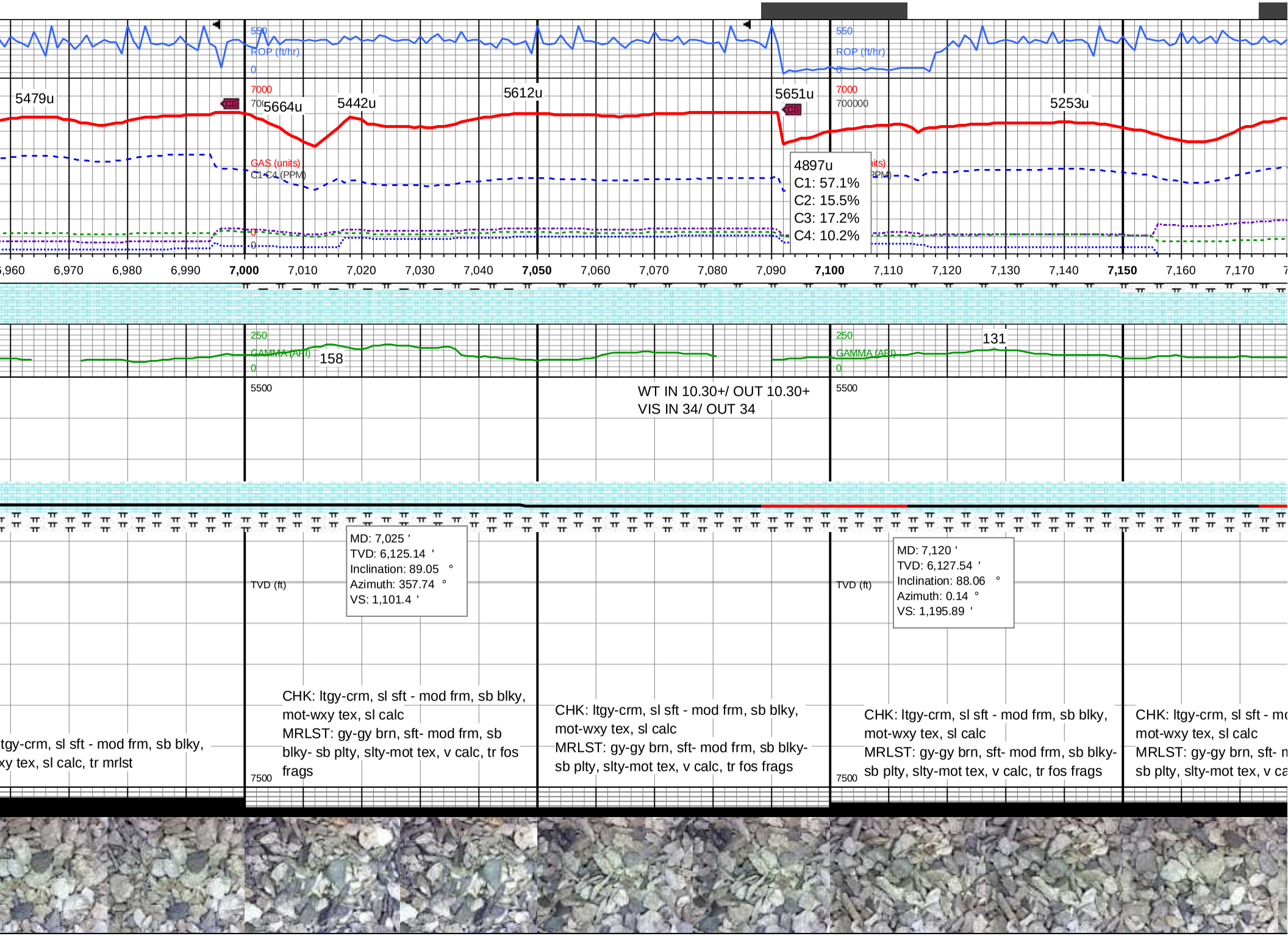

550
ROP (ft/hr)
0
1864u
C1: 78.4%
C2: 10.6%
C3: 11.0%
C4: 0.0%
25' Sample Interval
nits)
PPM)
2593u
2616u
2619u
7000
700000
GAS (units)
C1-C4 (PPM)
3742u
2266u
0
5,860
5,870
5,880
5,890
5,900
5,910
5,920
5,930
5,940
5,950
5,960
5,970
5,980
5,990
6,000
6,010
6,020
6,030
6,040
6,050
6,060
6,070
250
GAMMA (API)
98
122
5500
WT IN 10.30/ OUT 10.20
VIS IN 42/ OUT 31
WT IN 10.30+/ OUT 10.20+
VIS IN 44/ OUT 42
MD: 5,906 '
TVD: 5,833.43 '
Inclination: 35.7 °
Azimuth: 359.98 °
VS: 84.45 '
MD: 5,954 '
TVD: 5,871.62 '
Inclination: 38.85 °
Azimuth: 359.05 °
VS: 113.34 '
MD: 6,000 '
TVD: 5,906.56 '
Inclination: 42.27 °
Azimuth: 358.37 °
VS: 143.11 '
MD: 6,048 '
TVD: 5,941.1 '
Inclination: 45.68 °
Azimuth: 358.09 °
VS: 176.31 '
TVD (ft)
SLTY SH: gy-dk gy, sb blky-sb plty, v sft - sft, slty tex, arg cmt
SLTY SH: dk gy - blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt
7500

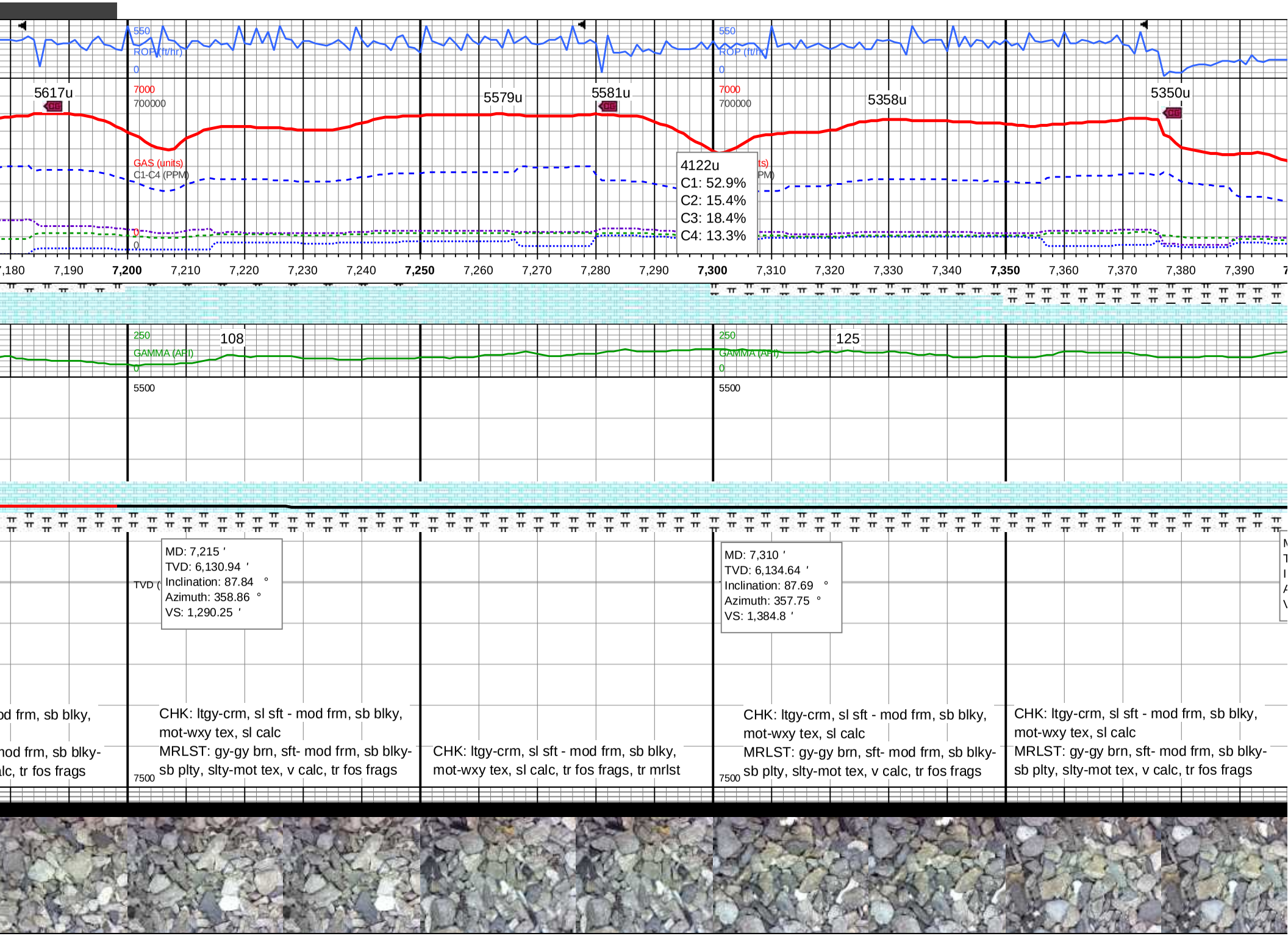

550
ROP (ft/hr)
0
7000
700000
GAS (units)
C1-C4 (PPM)
0
MNDEPTH
6/21/2014
4341u
4281u
5068u
4891u
5142u
3780u
C1: 77.5%
C2: 13.6%
C3: 8.9%
C4: 0.0%
3598u
C1: 59.2%
C2: 16.5%
C3: 16.7%
C4: 7.6%
6,080
6,090
6,100
6,110
6,120
6,130
6,140
6,150
6,160
6,170
6,180
6,190
6,200
6,210
6,220
6,230
6,240
6,250
6,260
6,270
6,280
6,290
250
GAMMA (API)
0
201
109
177
5500
SHARON SPRINGS @
6106' MD/ 5978' TVD
NIO A CHALK @
6149' MD/ 6005' TVD
NIO A MARL @
6193' MD/ 6030' TVD
WT IN 10.40/ OUT 10.20
VIS IN 51/ OUT 51
MD: 6,095 '
TVD: 5,972.71 '
Inclination: 49.77 °
Azimuth: 359.06 °
VS: 210.92 '
MD: 6,143 '
TVD: 6,002.07 '
Inclination: 54.77 °
Azimuth: 359.52 °
VS: 248.66 '
MD: 6,190 '
TVD: 6,027.96 '
Inclination: 58.36 °
Azimuth: 359.34 °
VS: 287.65 '
MD: 6,238 '
TVD: 6,052.05 '
Inclination: 61.38 °
Azimuth: 359.39 °
VS: 328.92 '
MD: 6,285 '
TVD: 6,072.99 '
Inclination: 65.7 °
Azimuth: 358.7 °
VS: 370.77 '
TVD (ft)
blky-sb plty, v
com bent
SLTY SH: dk gy - blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc, abnt bent
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
SLTY SH: gy-dk gy, occ blk, sb blky-sb plty, v sft - sft, slty tex, arg cmt, occ bent, tr pyr
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc, occ bent
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc, occ bent, tr cal frags
7500
7500

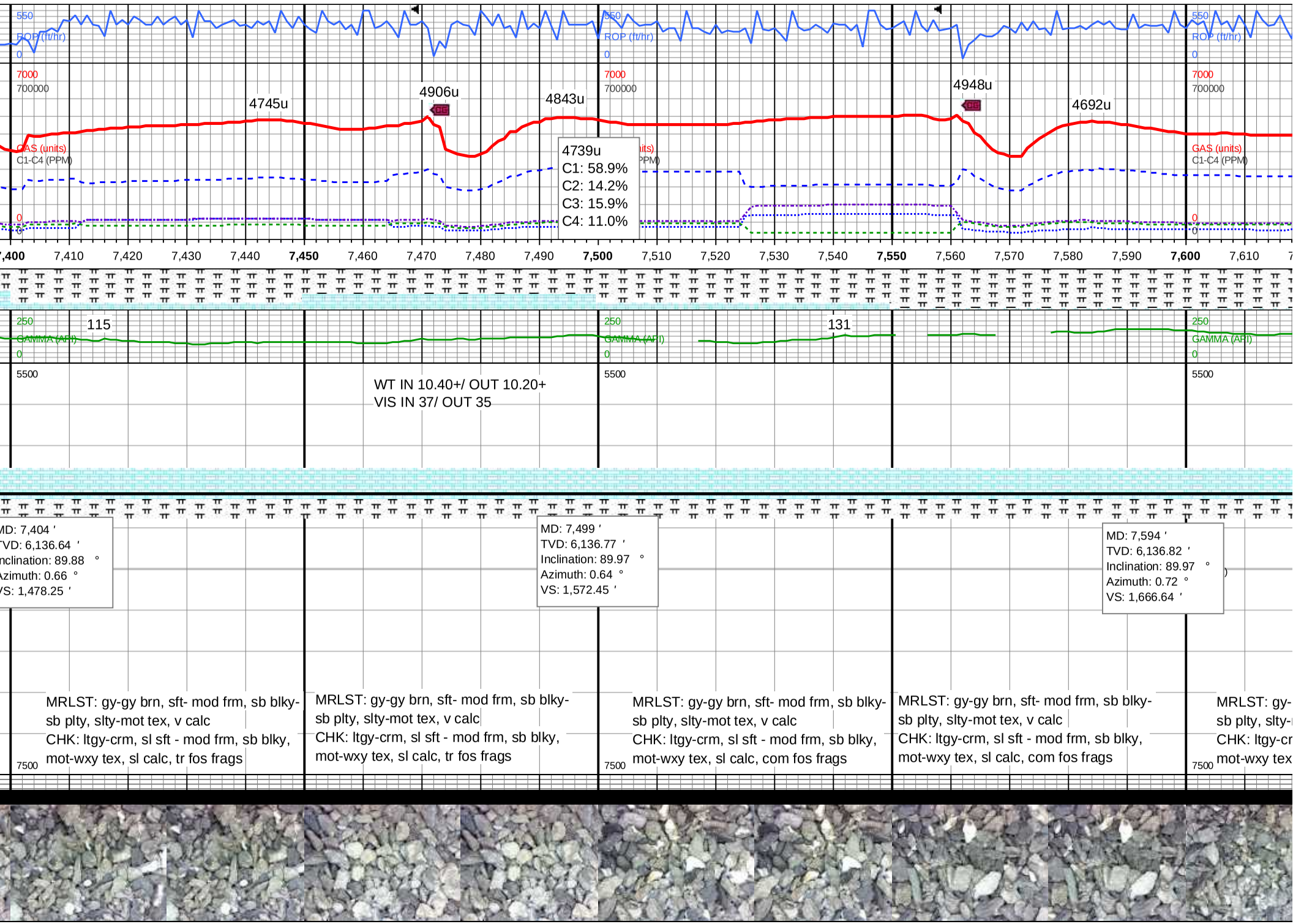

550
ROP (ft/hr)
0
7000
700000
4708u
4850u
4917u
4625u
5252u
GAS (units)
C1-C4 (PPM)
0
4218u
C1: 64.0%
C2: 15.9%
C3: 15.5%
C4: 4.6%
TD Curve
Intermediate
Casing - 6518' MD
@ 05:44 AM on 06/21/2014
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
6,400
6,410
6,420
6,430
6,440
6,450
6,460
6,470
6,480
6,490
6,500
6,510
250
GAMMA (API)
0
131
85
5500
WT IN 10.50/ OUT 10.30
VIS IN 41/ OUT 41
NIO B CHALK @
6355' MD/ 6097' TVD
WT IN 10.50/ OUT 10.50
VIS IN 40/ OUT 40
MD: 6,333 '
TVD: 6,090.82 '
Inclination: 70.66 °
Azimuth: 358.74 °
VS: 415.11 '
MD: 6,380 '
TVD: 6,103.94 '
Inclination: 76.91 °
Azimuth: 358.81 °
VS: 460 '
MD: 6,428 '
TVD: 6,113.07 '
Inclination: 81.15 °
Azimuth: 358.68 °
VS: 506.89 '
MD: 6,464 '
TVD: 6,117.71 '
Inclination: 84.05 °
Azimuth: 358.26 °
VS: 542.44 '
TVD (ft)
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc, tr bent
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc, tr bent
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm,
tr sb vit lstr, sl c
MRLST: gy-gy
slty-mot tex, v c
7500

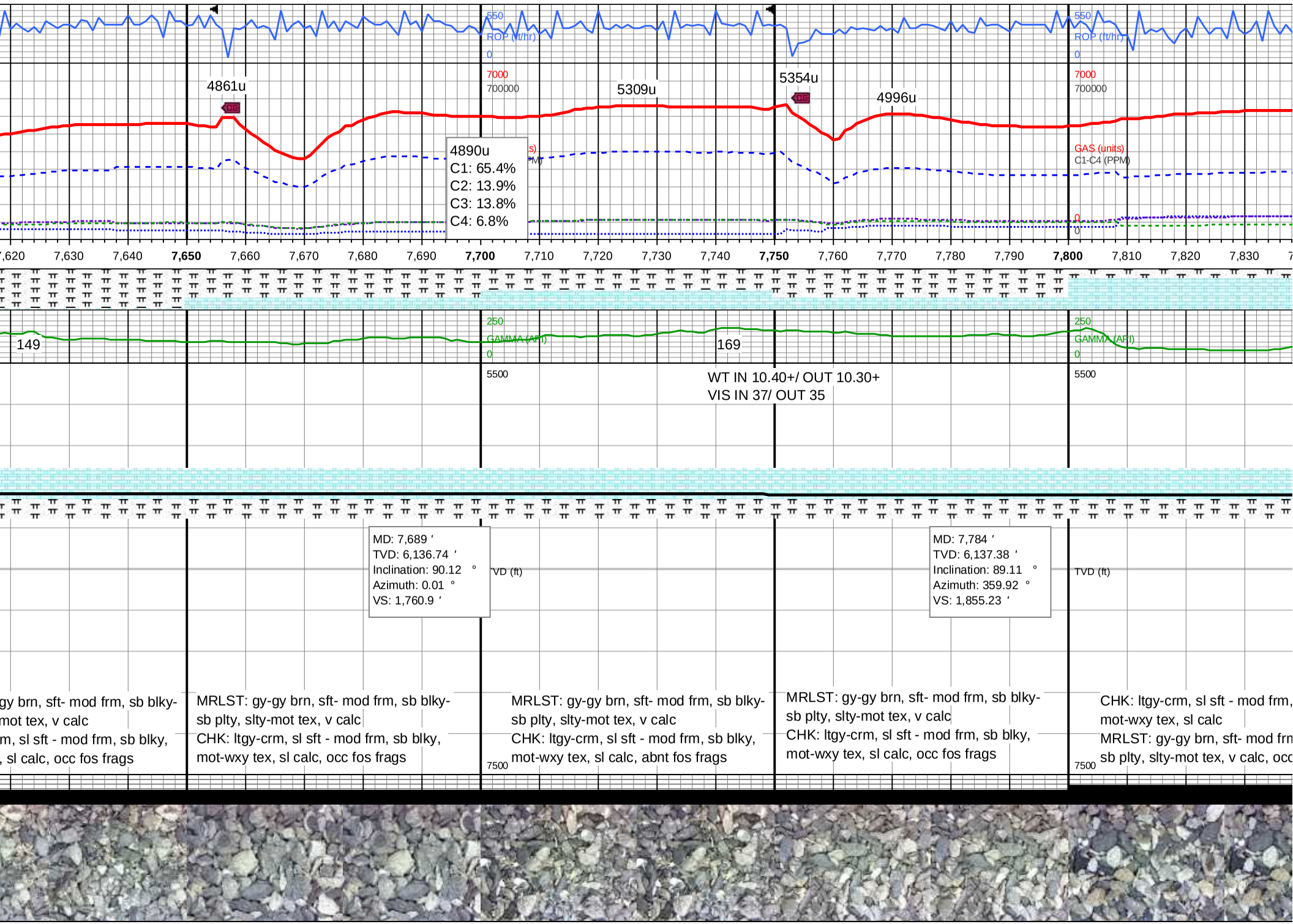

MNDEPTH
6/22/2014
50' Sample Interval
BHA BIT:
Black Diamond 6.125" BFS 513B
Serial #: BD025
Jets: 5x11
185u
Drilled out of
7" Casing
@ 1:33 PM
06/22/2014
5306u
4914u
4936u
4724u
C1: 65.1%
C2: 15.9%
C3: 19.0%
C4: 0.0%
ROP (ft/hr)
CA5 (units)
C1-C4 (PPM)
GAMMA (API)
125
89
WT IN 10.30/ OUT 10.30
VIS IN 34/ OUT 34
MD: 6,551 '
TVD: 6,123.09 '
Inclination: 88.86 °
Azimuth: 357.71 °
VS: 628.94 '
MD: 6,646 '
TVD: 6,124.01 '
Inclination: 90.03 °
Azimuth: 357.06 °
VS: 723.68 '
TVD (ft)
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft-frm, sb blky- sb plty, slty-mot tex, v calc

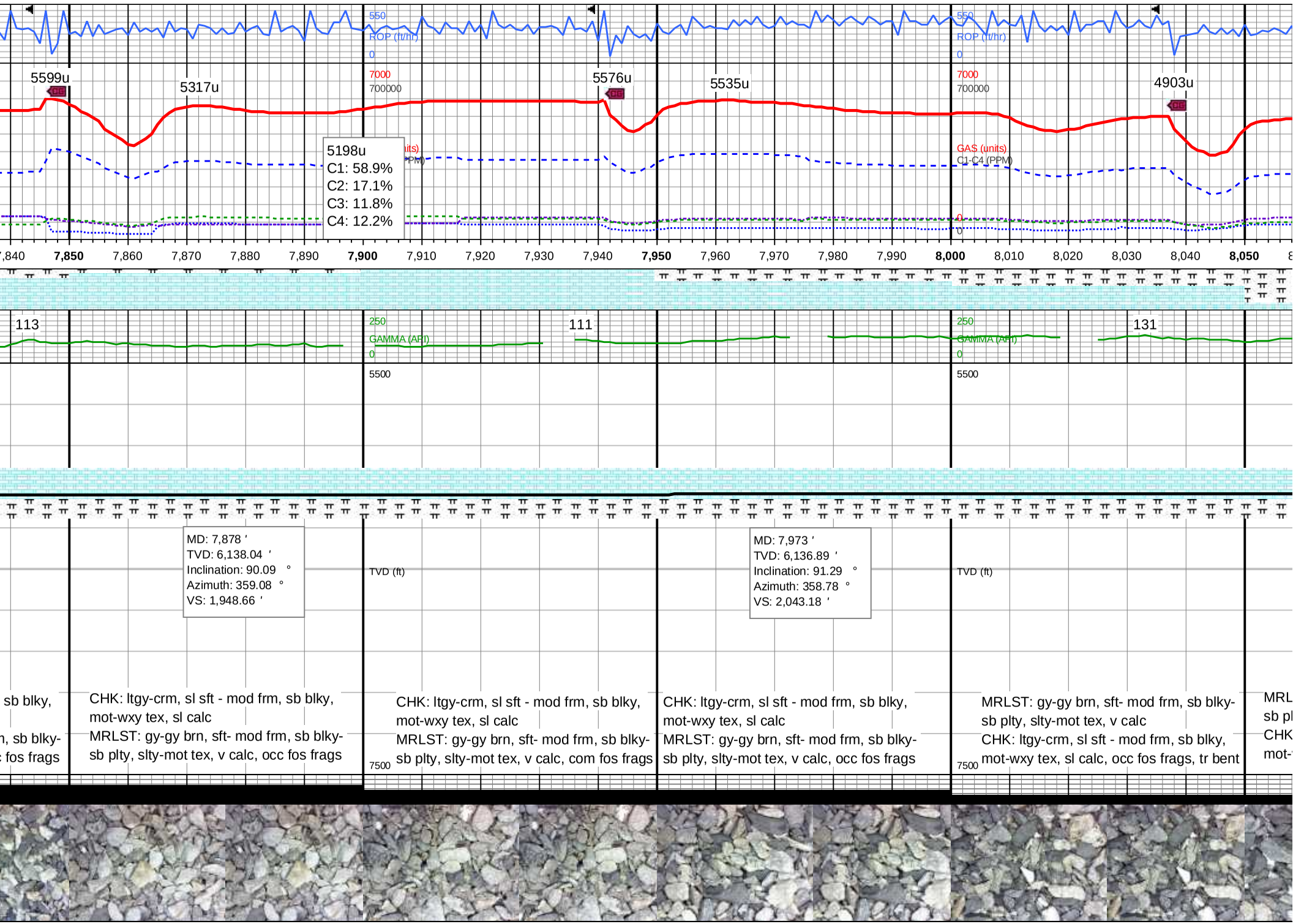

550
ROP (ft/hr)
0
7000
4763u
5460u
5557u
5619u
GAS (units)
C1-C4 (PPM)
4852u
C1: 54.7%
C2: 16.0%
C3: 17.9%
C4: 11.3%
6,740
6,750
6,760
6,770
6,780
6,790
6,800
6,810
6,820
6,830
6,840
6,850
6,860
6,870
6,880
6,890
6,900
6,910
6,920
6,930
6,940
6,950
250
GAMMA (API)
111
139
5500
WT IN 10.30/ OUT 10.30
VIS IN 34/ OUT 34
TVD (ft)
MD: 6,836 '
TVD: 6,123.43 '
Inclination: 91.54 °
Azimuth: 358.05 °
VS: 913.09 '
MD: 6,930 '
TVD: 6,123.25 '
Inclination: 88.67 °
Azimuth: 358.07 °
VS: 1,006.74 '
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, tr sb vit lstr, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc
7500

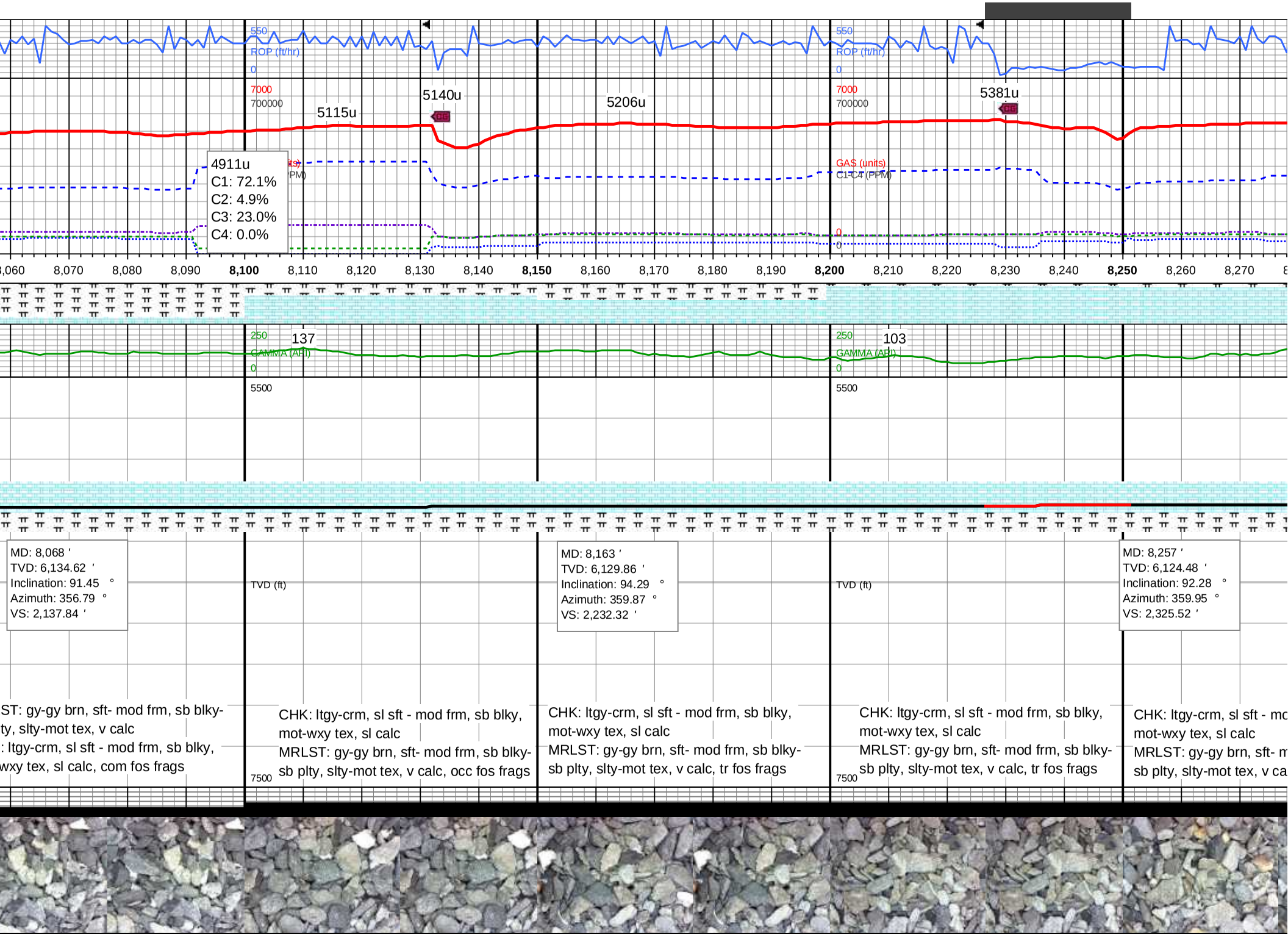

550
ROP (ft/hr)
0
7000
GAS (units)
C1-C4 (PPM)
5479u
5664u
5442u
5612u
5651u
5253u
4897u
C1: 57.1%
C2: 15.5%
C3: 17.2%
C4: 10.2%
6,960
6,970
6,980
6,990
7,000
7,010
7,020
7,030
7,040
7,050
7,060
7,070
7,080
7,090
7,100
7,110
7,120
7,130
7,140
7,150
7,160
7,170
250
GAMMA (API)
0
158
131
5500
WT IN 10.30+/ OUT 10.30+
VIS IN 34/ OUT 34
TVD (ft)
MD: 7,025 '
TVD: 6,125.14 '
Inclination: 89.05 °
Azimuth: 357.74 °
VS: 1,101.4 '
MD: 7,120 '
TVD: 6,127.54 '
Inclination: 88.06 °
Azimuth: 0.14 °
VS: 1,195.89 '
7500
tgy-crm, sl sft - mod frm, sb blky,
xy tex, sl calc, tr mrlst
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mo
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- m
sb plty, slty-mot tex, v ca

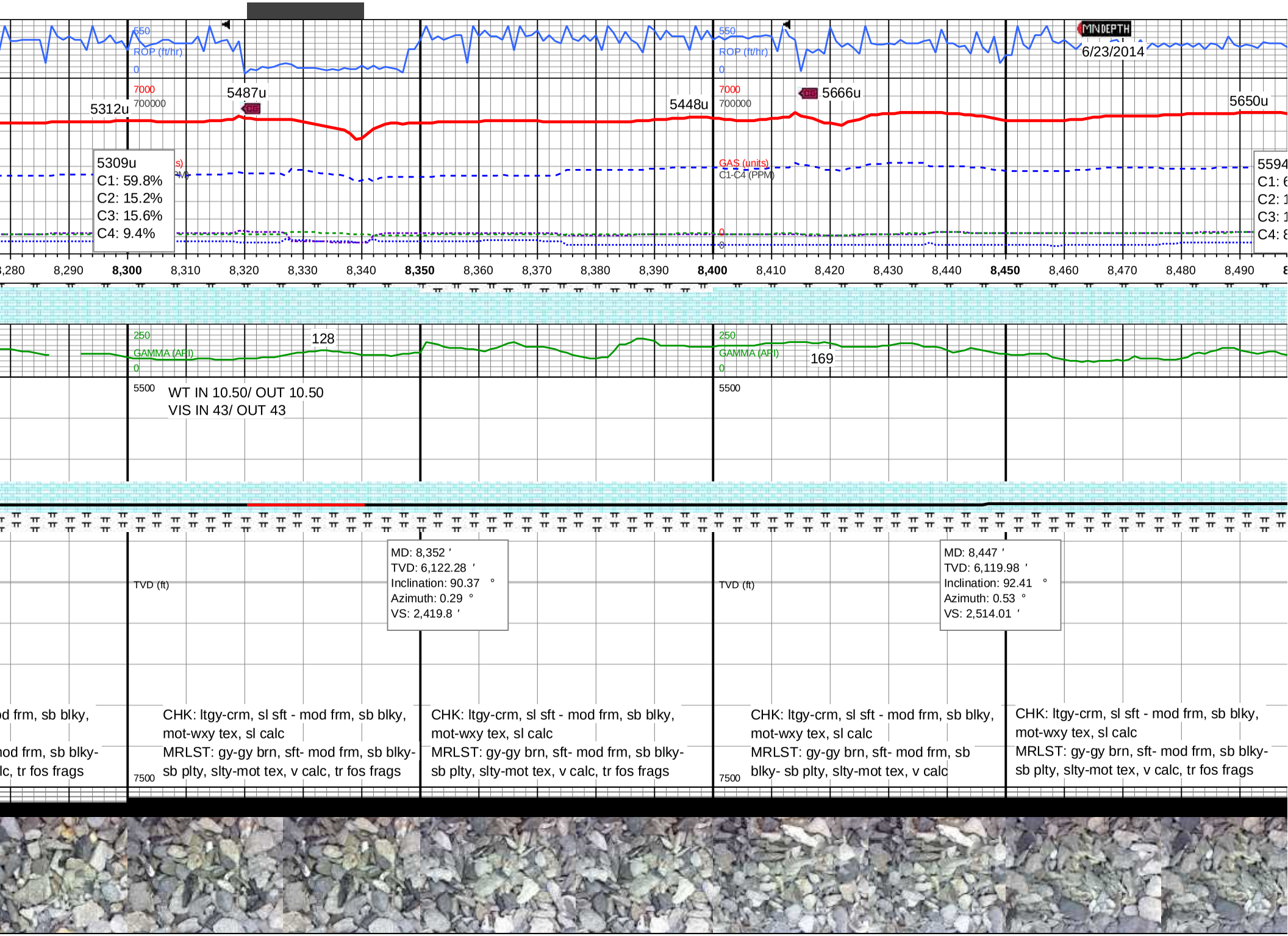

550
ROP (ft/hr)
0
5617u
7000
700000
GAS (units)
C1-C4 (PPM)
0
0
5579u
5581u
4122u
C1: 52.9%
C2: 15.4%
C3: 18.4%
C4: 13.3%
550
ROP (ft/hr)
0
7000
700000
5358u
5350u
7,180
7,190
7,200
7,210
7,220
7,230
7,240
7,250
7,260
7,270
7,280
7,290
7,300
7,310
7,320
7,330
7,340
7,350
7,360
7,370
7,380
7,390
250
GAMMA (API)
0
108
5500
250
GAMMA (API)
0
125
5500
MD: 7,215 '
TVD: 6,130.94 '
Inclination: 87.84 °
Azimuth: 358.86 °
VS: 1,290.25 '
MD: 7,310 '
TVD: 6,134.64 '
Inclination: 87.69 °
Azimuth: 357.75 °
VS: 1,384.8 '
od frm, sb blky,
nod frm, sb blky-
lc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
7500
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc, tr fos frags, tr mrlst
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
7500
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags

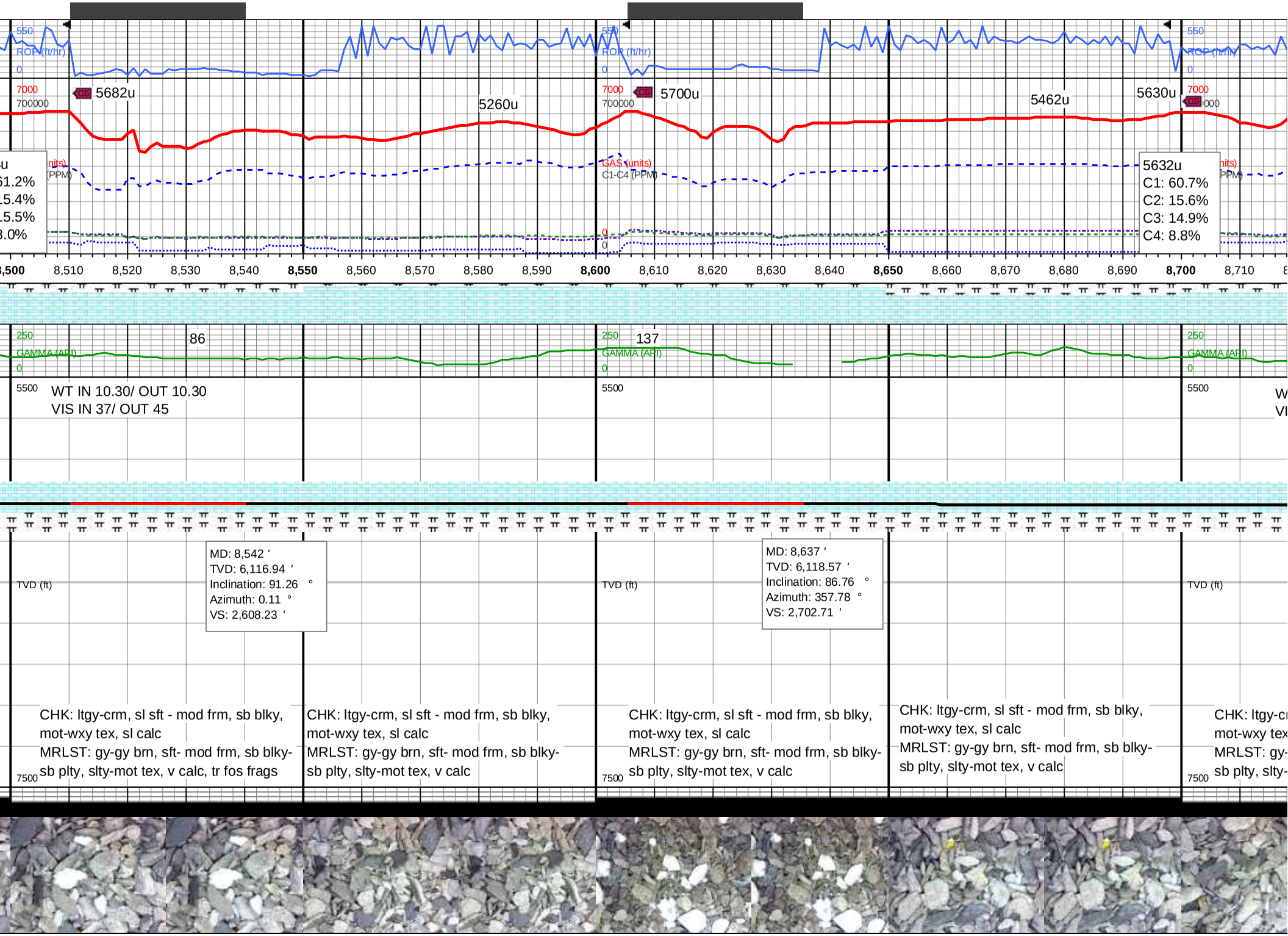

550
ROP (ft/hr)
0
7000
700000
4745u
4906u
4843u
4948u
4692u
GAS (units)
C1-C4 (PPM)
4739u
C1: 58.9%
C2: 14.2%
C3: 15.9%
C4: 11.0%
7,400
7,410
7,420
7,430
7,440
7,450
7,460
7,470
7,480
7,490
7,500
7,510
7,520
7,530
7,540
7,550
7,560
7,570
7,580
7,590
7,600
7,610
250
GAMMA (API)
115
131
5500
WT IN 10.40+/ OUT 10.20+
VIS IN 37/ OUT 35
MD: 7,404 '
TVD: 6,136.64 '
Inclination: 89.88 °
Azimuth: 0.66 °
VS: 1,478.25 '
MD: 7,499 '
TVD: 6,136.77 '
Inclination: 89.97 °
Azimuth: 0.64 °
VS: 1,572.45 '
MD: 7,594 '
TVD: 6,136.82 '
Inclination: 89.97 °
Azimuth: 0.72 °
VS: 1,666.64 '
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc, tr fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc, tr fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc, com fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc, com fos frags
7500

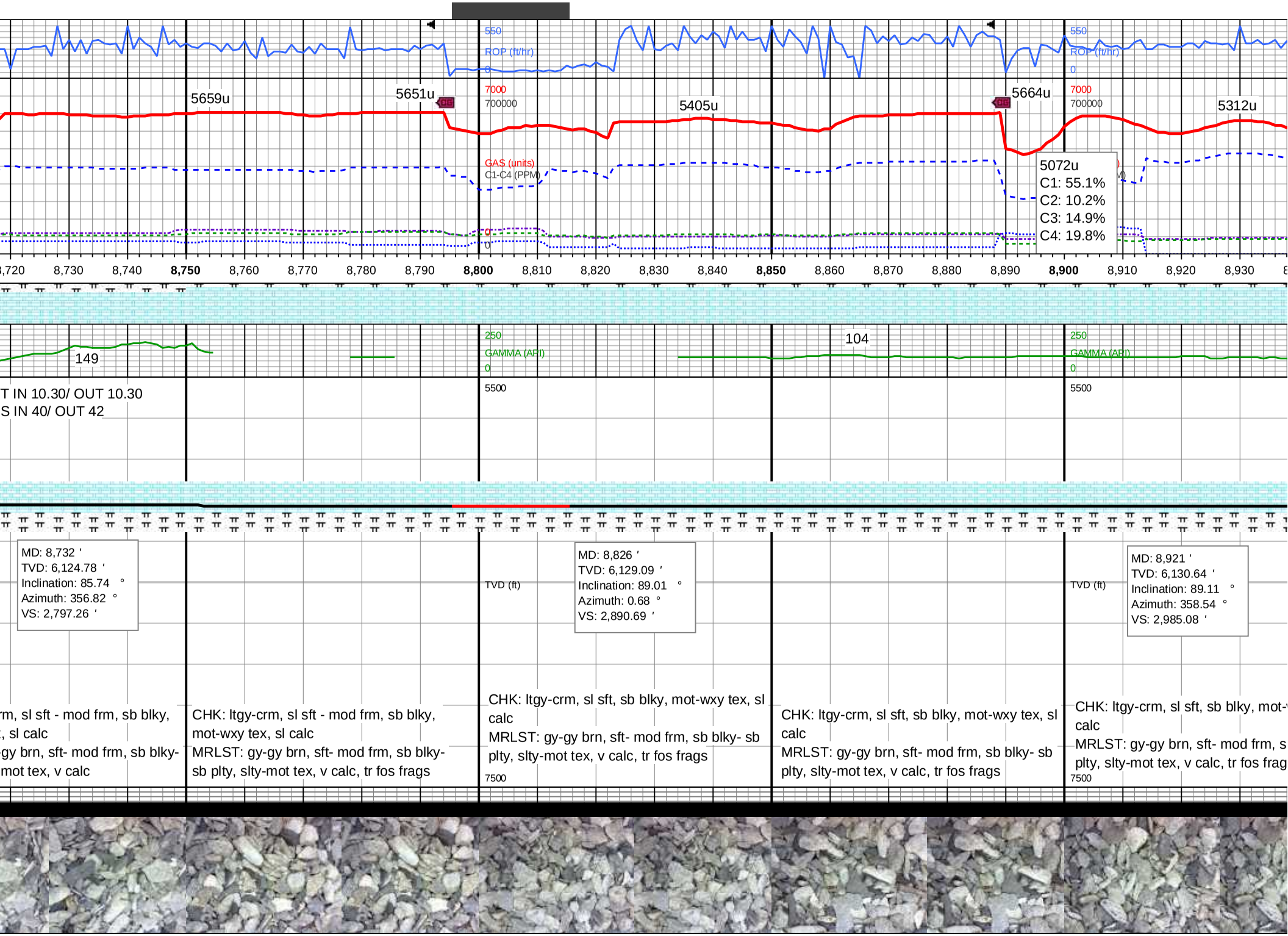

550
ROP (ft/hr)
0
7000
700000
4861u
5309u
5354u
4996u
4890u
C1: 65.4%
C2: 13.9%
C3: 13.8%
C4: 6.8%
GAS (units)
C1-C4 (PPM)
7,620
7,630
7,640
7,650
7,660
7,670
7,680
7,690
7,700
7,710
7,720
7,730
7,740
7,750
7,760
7,770
7,780
7,790
7,800
7,810
7,820
7,830
250
GAMMA (API)
149
169
5500
WT IN 10.40+/ OUT 10.30+
VIS IN 37/ OUT 35
MD: 7,689 '
TVD: 6,136.74 '
Inclination: 90.12 °
Azimuth: 0.01 °
VS: 1,760.9 '
MD: 7,784 '
TVD: 6,137.38 '
Inclination: 89.11 °
Azimuth: 359.92 °
VS: 1,855.23 '
TVD (ft)
7500
gy brn, sft- mod frm, sb blky-
mot tex, v calc
m, sl sft - mod frm, sb blky,
, sl calc, occ fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky-
sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky,
mot-wxy tex, sl calc, occ fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky-
sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky,
mot-wxy tex, sl calc, abnt fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky-
sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky,
mot-wxy tex, sl calc, occ fos frags
CHK: ltgy-crm, sl sft - mod frm,
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm
sb plty, slty-mot tex, v calc, occ

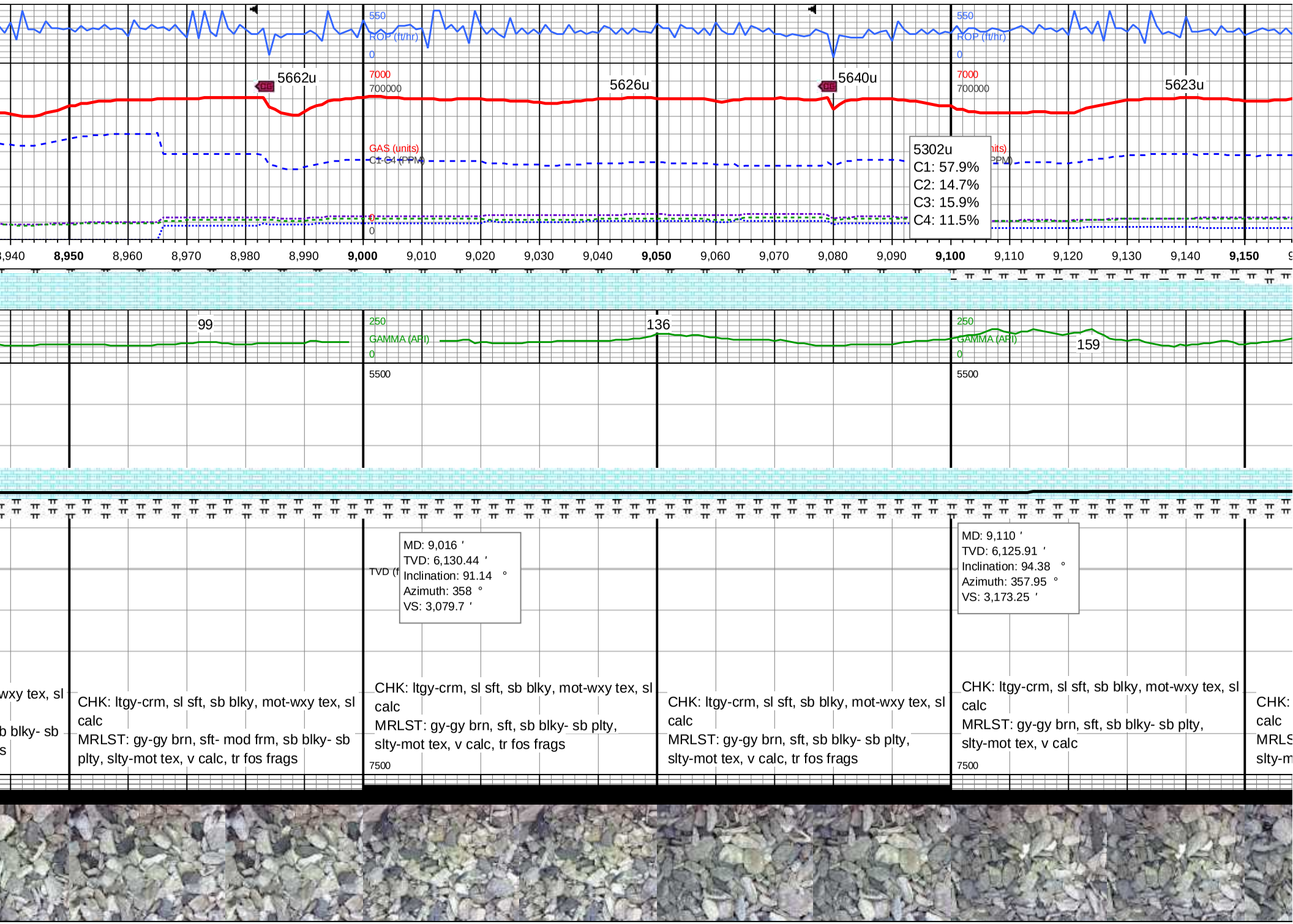

550
ROP (ft/hr)
0
7000
700000
5599u
5317u
5576u
5535u
4903u
DG
5198u
C1: 58.9%
C2: 17.1%
C3: 11.8%
C4: 12.2%
GAS (units)
C1-C4 (PPM)
7,840
7,850
7,860
7,870
7,880
7,890
7,900
7,910
7,920
7,930
7,940
7,950
7,960
7,970
7,980
7,990
8,000
8,010
8,020
8,030
8,040
8,050
113
111
131
250
GAMMA (API)
0
5500
MD: 7,878 '
TVD: 6,138.04 '
Inclination: 90.09 °
Azimuth: 359.08 °
VS: 1,948.66 '
MD: 7,973 '
TVD: 6,136.89 '
Inclination: 91.29 °
Azimuth: 358.78 °
VS: 2,043.18 '
TVD (ft)
7500
sb blky,
n, sb blky-
fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, occ fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, com fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, occ fos frags
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc, occ fos frags, tr bent
MRL
sb pl
CHK
mot-

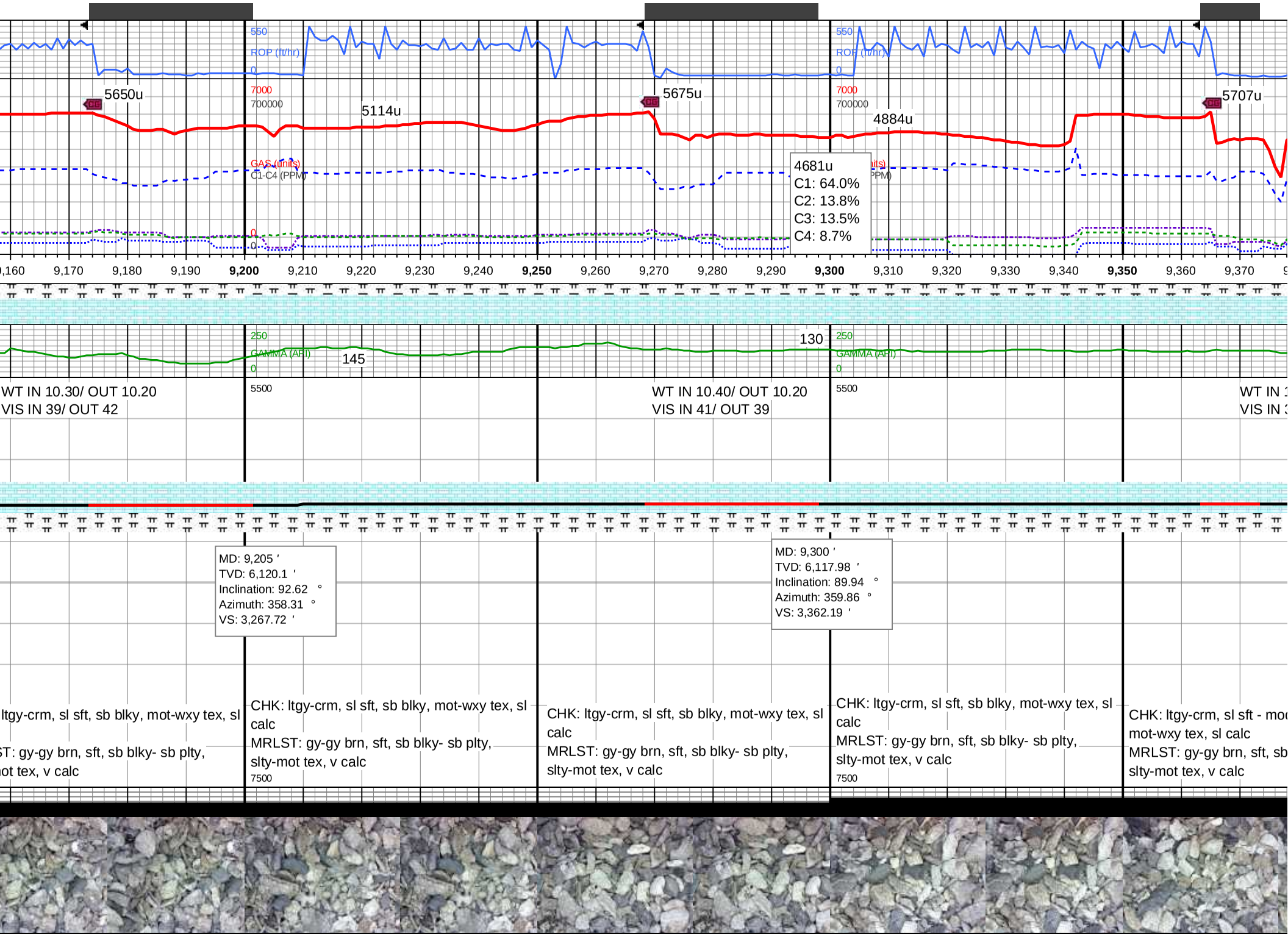

550
ROP (ft/hr)
0
7000
700000
5115u
5140u
5206u
5381u
4911u
C1: 72.1%
C2: 4.9%
C3: 23.0%
C4: 0.0%
GAS (units)
C1-C4 (PPM)
8,060
8,070
8,080
8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160
8,170
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
250
GAMMA (API)
137
103
5500
MD: 8,068 '
TVD: 6,134.62 '
Inclination: 91.45 °
Azimuth: 356.79 °
VS: 2,137.84 '
MD: 8,163 '
TVD: 6,129.86 '
Inclination: 94.29 °
Azimuth: 359.87 °
VS: 2,232.32 '
MD: 8,257 '
TVD: 6,124.48 '
Inclination: 92.28 °
Azimuth: 359.95 °
TVD (ft)
7500
ST: gy-gy brn, sft- mod frm, sb blky-
ty, slty-mot tex, v calc
: ltgy-crm, sl sft - mod frm, sb blky,
wxy tex, sl calc, com fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky,
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-
sb plty, slty-mot tex, v calc, occ fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky,
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-
sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky,
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-
sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mo
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft-
sb plty, slty-mot tex, v ca

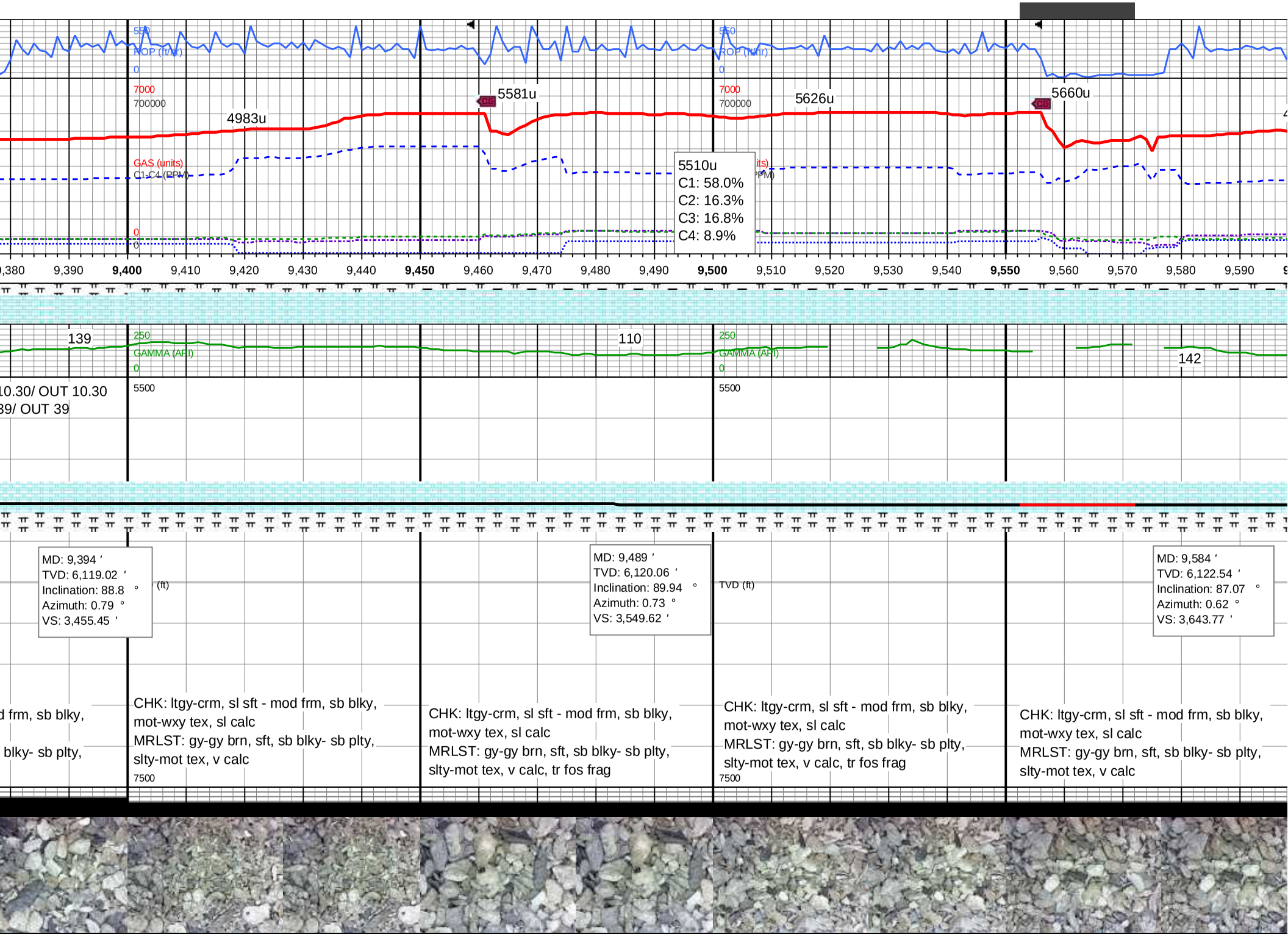

550
ROP (ft/hr)
0
7000
700000
5312u
5487u
5448u
5666u
5650u
MN DEPTH
6/23/2014
5309u
C1: 59.8%
C2: 15.2%
C3: 15.6%
C4: 9.4%
GAS (units)
C1-C4 (PPM)
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400
8,410
8,420
8,430
8,440
8,450
8,460
8,470
8,480
8,490
250
GAMMA (API)
0
128
169
5500
WT IN 10.50/ OUT 10.50
VIS IN 43/ OUT 43
TVD (ft)
MD: 8,352 '
TVD: 6,122.28 '
Inclination: 90.37 °
Azimuth: 0.29 °
VS: 2,419.8 '
MD: 8,447 '
TVD: 6,119.98 '
Inclination: 92.41 °
Azimuth: 0.53 °
VS: 2,514.01 '
7500
od frm, sb blky,
od frm, sb blky-
lc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags

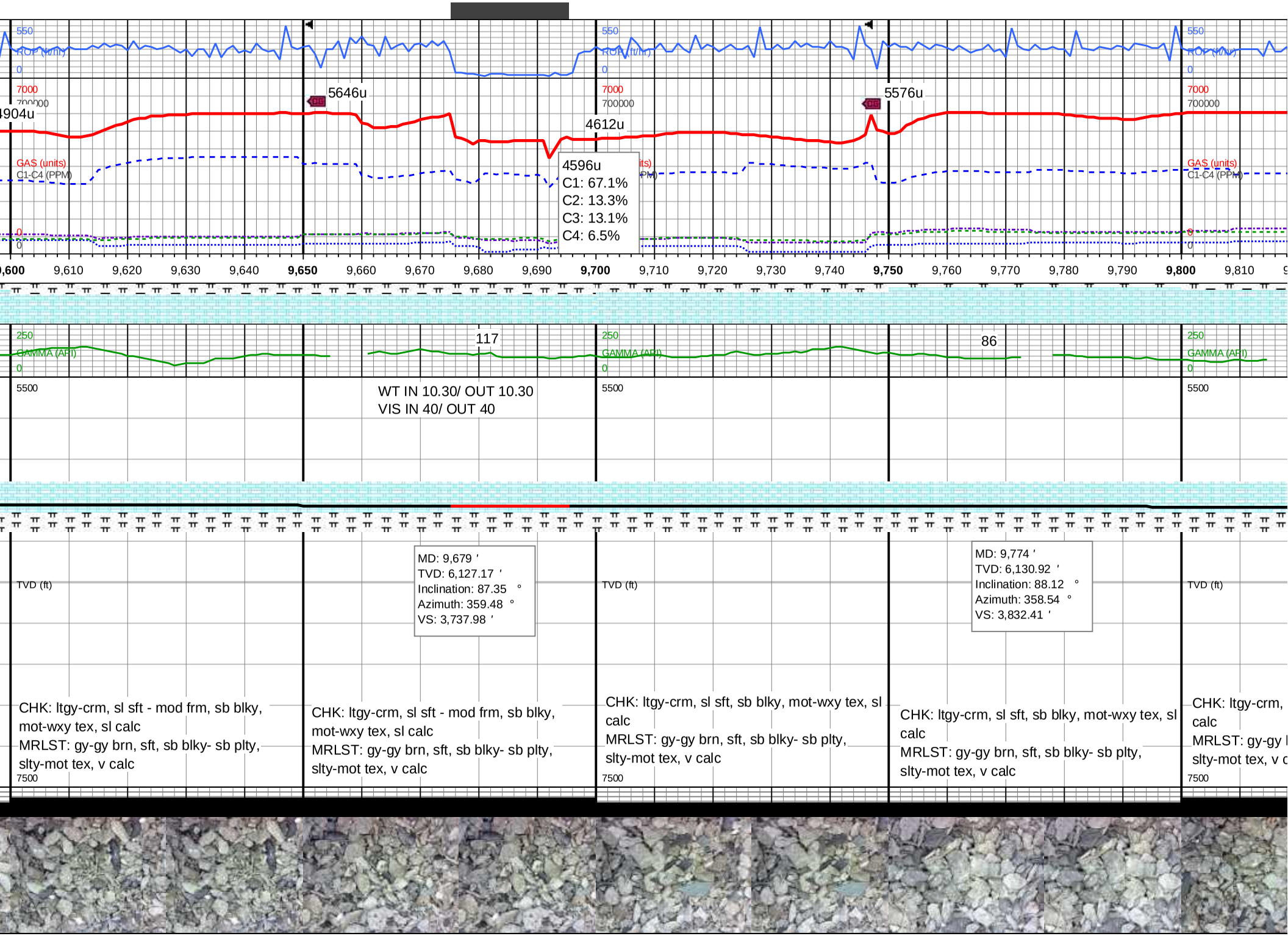

550
ROP (ft/hr)
0
7000
700000
5682u
5260u
5700u
5462u
5630u
5632u
C1: 60.7%
C2: 15.4%
C3: 14.9%
C4: 8.8%
GAS (units)
C1-C4 (PPM)
8,500
8,510
8,520
8,530
8,540
8,550
8,560
8,570
8,580
8,590
8,600
8,610
8,620
8,630
8,640
8,650
8,660
8,670
8,680
8,690
8,700
8,710
250
GAMMA (API)
86
137
5500
WT IN 10.30/ OUT 10.30
VIS IN 37/ OUT 45
TVD (ft)
MD: 8,542 '
TVD: 6,116.94 '
Inclination: 91.26 °
Azimuth: 0.11 °
VS: 2,608.23 '
MD: 8,637 '
TVD: 6,118.57 '
Inclination: 86.76 °
Azimuth: 357.78 °
VS: 2,702.71 '
7500
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky-sb plty, slty-mot tex, v calc

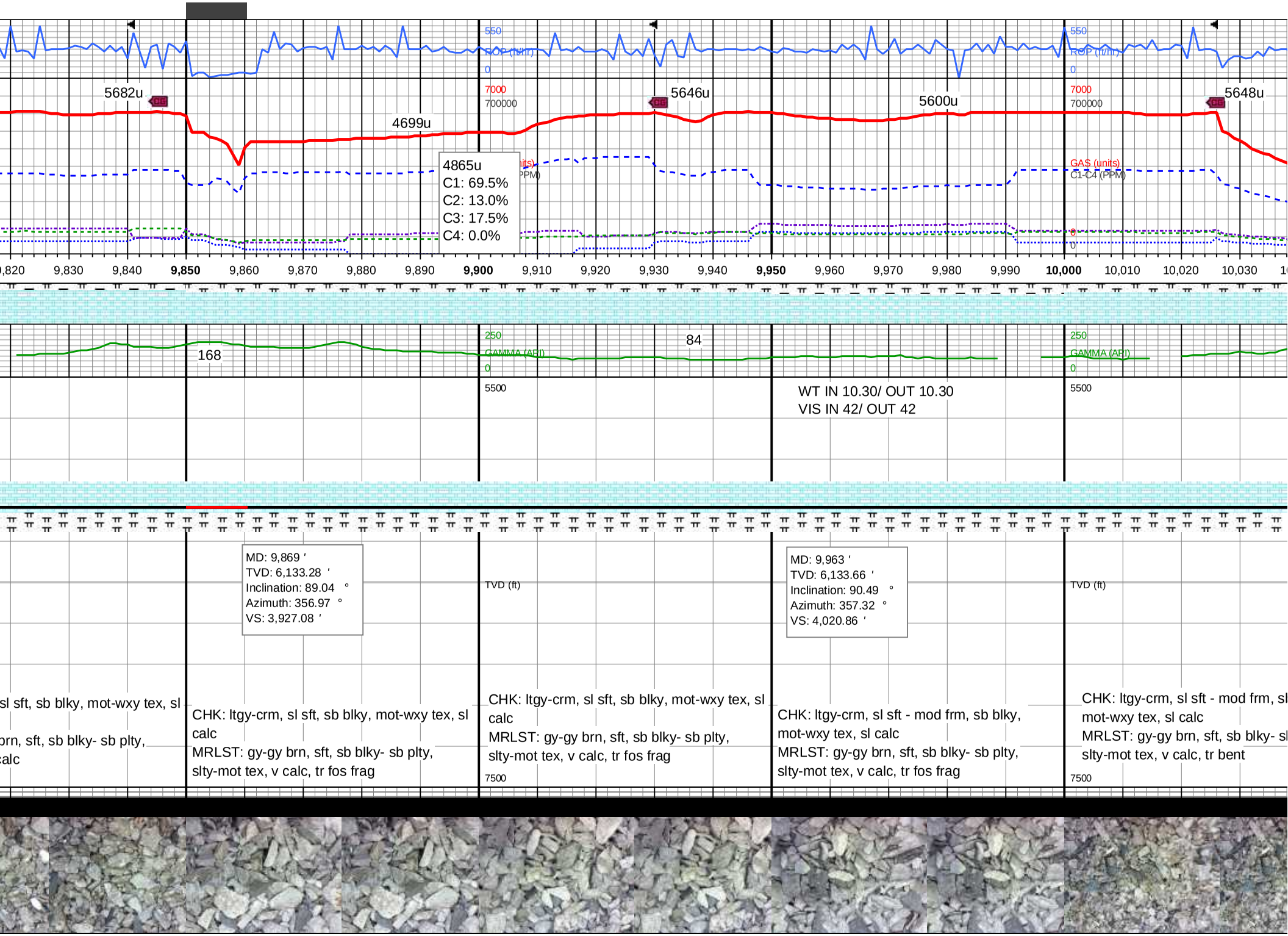

550
ROP (ft/hr)
0
7000
700000
5659u
5651u
5405u
5664u
5312u
GAS (units)
C1-C4 (PPM)
5072u
C1: 55.1%
C2: 10.2%
C3: 14.9%
C4: 19.8%
8,720
8,730
8,740
8,750
8,760
8,770
8,780
8,790
8,800
8,810
8,820
8,830
8,840
8,850
8,860
8,870
8,880
8,890
8,900
8,910
8,920
8,930
149
250
GAMMA (API)
0
5500
104
T IN 10.30/ OUT 10.30
S IN 40/ OUT 42
MD: 8,732 '
TVD: 6,124.78 '
Inclination: 85.74 °
Azimuth: 356.82 °
VS: 2,797.26 '
TVD (ft)
MD: 8,826 '
TVD: 6,129.09 '
Inclination: 89.01 °
Azimuth: 0.68 °
VS: 2,890.69 '
MD: 8,921 '
TVD: 6,130.64 '
Inclination: 89.11 °
Azimuth: 358.54 °
VS: 2,985.08 '
rm, sl sft - mod frm, sb blky,
, sl calc
gy brn, sft- mod frm, sb blky-
mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
7500

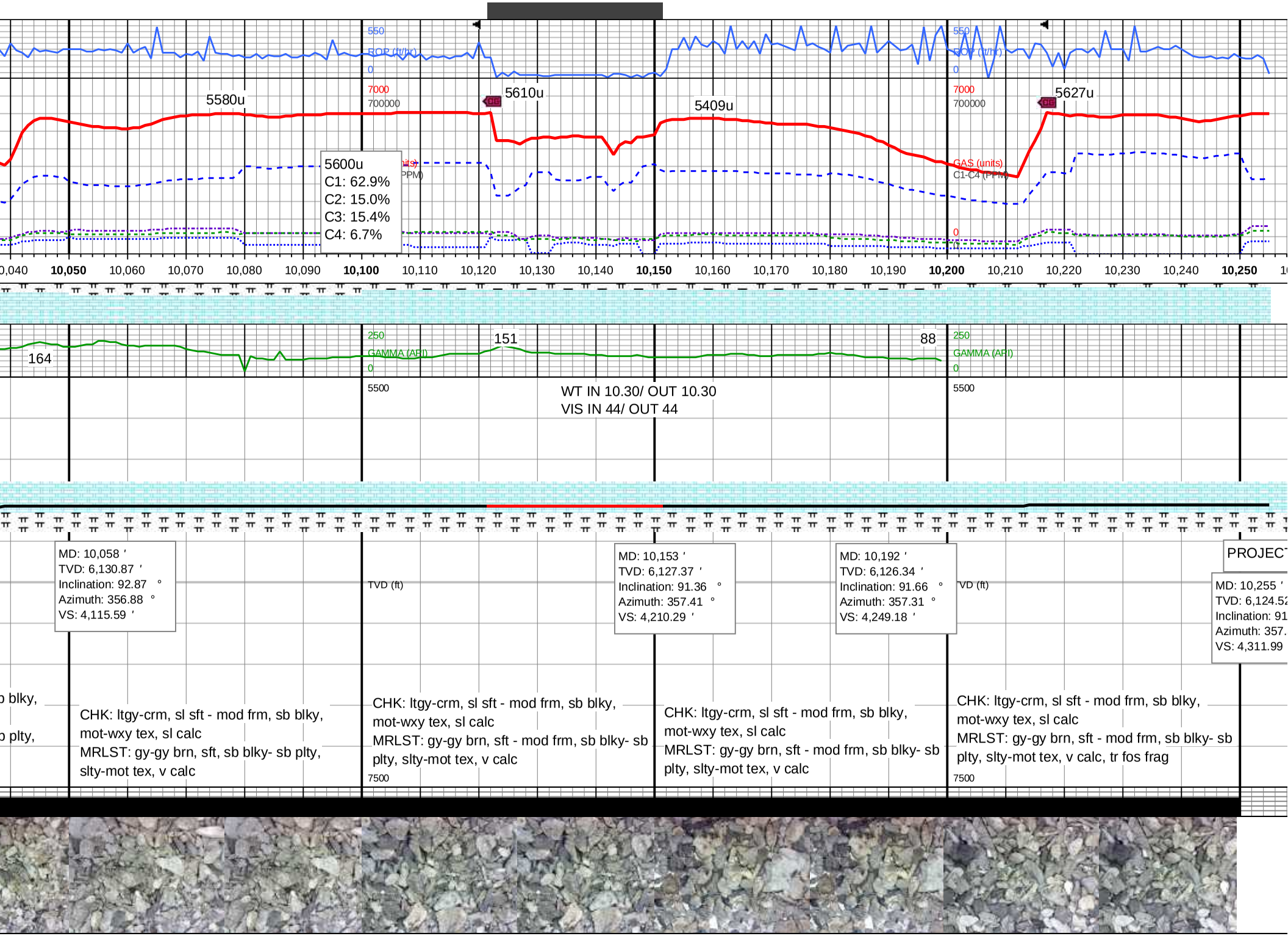

550
ROP (ft/hr)
0
7000
700000
5662u
5626u
5640u
5623u
GAS (units)
C1-C4 (PPM)
5302u
C1: 57.9%
C2: 14.7%
C3: 15.9%
C4: 11.5%
8,940
8,950
8,960
8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
9,050
9,060
9,070
9,080
9,090
9,100
9,110
9,120
9,130
9,140
9,150
99
136
159
250
GAMMA (API)
0
5500
MD: 9,016 '
TVD: 6,130.44 '
Inclination: 91.14 °
Azimuth: 358 °
VS: 3,079.7 '
MD: 9,110 '
TVD: 6,125.91 '
Inclination: 94.38 °
Azimuth: 357.95 °
VS: 3,173.25 '
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft- mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc, tr fos frags
7500

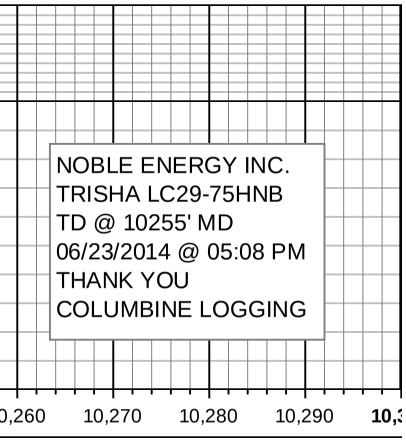

550
ROP (ft/hr)
0
7000
700000
GAS (units)
C1-C4 (PPM)
0
0
5650u
5114u
5675u
4884u
5707u
4681u
C1: 64.0%
C2: 13.8%
C3: 13.5%
C4: 8.7%
9,160
9,170
9,180
9,190
9,200
9,210
9,220
9,230
9,240
9,250
9,260
9,270
9,280
9,290
9,300
9,310
9,320
9,330
9,340
9,350
9,360
9,370
250
GAMMA (API)
0
145
130
5500
WT IN 10.30/ OUT 10.20
VIS IN 39/ OUT 42
WT IN 10.40/ OUT 10.20
VIS IN 41/ OUT 39
WT IN 1
VIS IN 3
MD: 9,205 '
TVD: 6,120.1 '
Inclination: 92.62 °
Azimuth: 358.31 °
VS: 3,267.72 '
MD: 9,300 '
TVD: 6,117.98 '
Inclination: 89.94 °
Azimuth: 359.86 °
VS: 3,362.19 '
ltgy-crm, sl sft, sb blky, mot-wxy tex, sl
T: gy-gy brn, sft, sb blky- sb plty,
ot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
7500
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
7500
CHK: ltgy-crm, sl sft - mod
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb
slty-mot tex, v calc

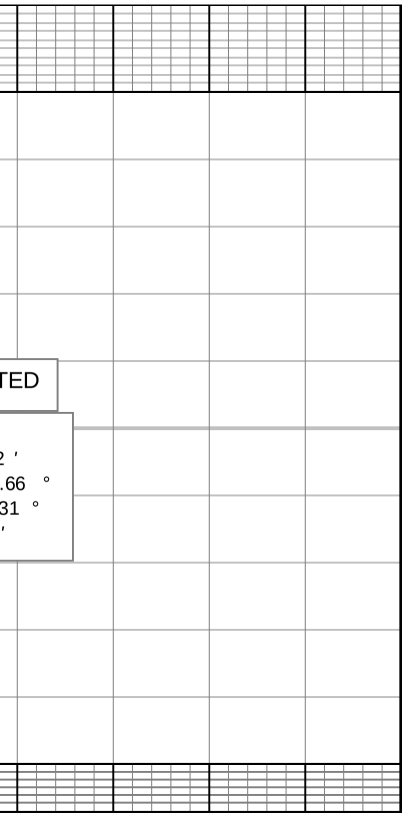

ROP (ft/hr)
550
0
7000
700000
4983u
5581u
5626u
5660u
GAS (units)
C1-C4 (PPM)
5510u
C1: 58.0%
C2: 16.3%
C3: 16.8%
C4: 8.9%
9,380
9,390
9,400
9,410
9,420
9,430
9,440
9,450
9,460
9,470
9,480
9,490
9,500
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
139
110
142
GAMMA (API)
250
0
5500
10.30/ OUT 10.30
39/ OUT 39
MD: 9,394 '
TVD: 6,119.02 '
Inclination: 88.8 °
Azimuth: 0.79 °
VS: 3,455.45 '
MD: 9,489 '
TVD: 6,120.06 '
Inclination: 89.94 °
Azimuth: 0.73 °
VS: 3,549.62 '
MD: 9,584 '
TVD: 6,122.54 '
Inclination: 87.07 °
Azimuth: 0.62 °
VS: 3,643.77 '
TVD (ft)
d frm, sb blky,
blky- sb plty,
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
7500
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc, tr fos frag
7500
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc, tr fos frag
7500
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc


550
ROP (min/ft)
0
7000
700000
4904u
5646u
4612u
5576u
GAS (units)
C1-C4 (PPM)
4596u
C1: 67.1%
C2: 13.3%
C3: 13.1%
C4: 6.5%
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,700
9,710
9,720
9,730
9,740
9,750
9,760
9,770
9,780
9,790
9,800
9,810
250
GAMMA (API)
117
86
5500
WT IN 10.30/ OUT 10.30
VIS IN 40/ OUT 40
TVD (ft)
MD: 9,679 '
TVD: 6,127.17 '
Inclination: 87.35 °
Azimuth: 359.48 °
VS: 3,737.98 '
MD: 9,774 '
TVD: 6,130.92 '
Inclination: 88.12 °
Azimuth: 358.54 °
VS: 3,832.41 '
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm,
calc
MRLST: gy-gy
slty-mot tex, v c
7500


5682u
4699u
5646u
5600u
5648u
4865u
C1: 69.5%
C2: 13.0%
C3: 17.5%
C4: 0.0%
ROP (u/m)
GAS (units)
C1-C4 (PPM)
9,820
9,830
9,840
9,850
9,860
9,870
9,880
9,890
9,900
9,910
9,920
9,930
9,940
9,950
9,960
9,970
9,980
9,990
10,000
10,010
10,020
10,030
168
84
GAMMA (API)
WT IN 10.30/ OUT 10.30
VIS IN 42/ OUT 42
MD: 9,869 '
TVD: 6,133.28 '
Inclination: 89.04 °
Azimuth: 356.97 °
VS: 3,927.08 '
MD: 9,963 '
TVD: 6,133.66 '
Inclination: 90.49 °
Azimuth: 357.32 °
VS: 4,020.86 '
TVD (ft)
sl sft, sb blky, mot-wxy tex, sl
brn, sft, sb blky- sb plty,
calc
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc, tr fos frag
CHK: ltgy-crm, sl sft, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc, tr fos frag
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc, tr fos frag
CHK: ltgy-crm, sl sft - mod frm, sl
mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sl
slty-mot tex, v calc, tr bent


550
ROP (ft/hr)
0
7000
700000
5580u
5610u
5409u
5627u
5600u
C1: 62.9%
C2: 15.0%
C3: 15.4%
C4: 6.7%
GAS (units)
C1-C4 (PPM)
0
10,040
10,050
10,060
10,070
10,080
10,090
10,100
10,110
10,120
10,130
10,140
10,150
10,160
10,170
10,180
10,190
10,200
10,210
10,220
10,230
10,240
10,250
164
250
GAMMA (API)
0
5500
151
88
WT IN 10.30/ OUT 10.30
VIS IN 44/ OUT 44
MD: 10,058 '
TVD: 6,130.87 '
Inclination: 92.87 °
Azimuth: 356.88 °
VS: 4,115.59 '
TVD (ft)
MD: 10,153 '
TVD: 6,127.37 '
Inclination: 91.36 °
Azimuth: 357.41 °
VS: 4,210.29 '
MD: 10,192 '
TVD: 6,126.34 '
Inclination: 91.66 °
Azimuth: 357.31 °
VS: 4,249.18 '
PROJECT
MD: 10,255 '
TVD: 6,124.52
Inclination: 91
Azimuth: 357.
VS: 4,311.99
b blky,
b plty,
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft - mod frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft - mod frm, sb blky- sb plty, slty-mot tex, v calc
CHK: ltgy-crm, sl sft - mod frm, sb blky, mot-wxy tex, sl calc
MRLST: gy-gy brn, sft - mod frm, sb blky- sb plty, slty-mot tex, v calc, tr fos frag
7500


NOBLE ENERGY INC.
TRISHA LC29-75HNB
TD @ 10255' MD
06/23/2014 @ 05:08 PM
THANK YOU
COLUMBINE LOGGING
0,260
10,270
10,280
10,290
10,3


TED
2 '
.66 °
31 °
'