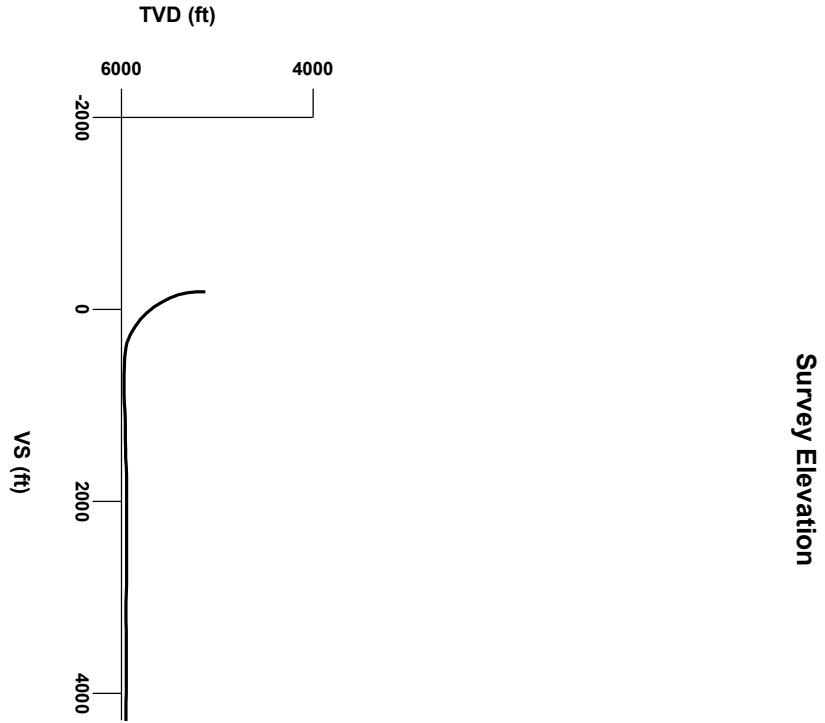
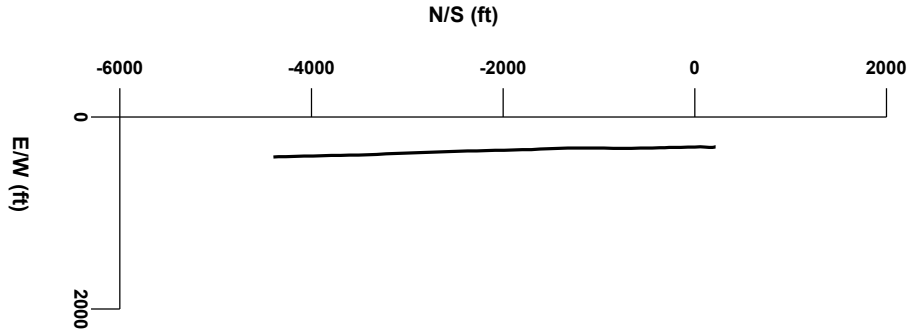
LOG created using LPLOT VH Version 3.0, July 01, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR:	**NOBLE ENERGY INC.**
WELL:	**TIMBRO FEDERAL LD07-78HN**
LOCATION:	**SEC 7, T9N, R58W**
COUNTY:	**WELD**
STATE:	**COLORADO**
SPOT:	**255' FNL, 360' FWL**
ELEVATION:	**GR 4854', KB 4884'**
FIELD:	**WILDCAT**
SPUD DATE:	**06/25/2013**
TD DATE:	**06/30/2013**
DATES LOGGED:	**06/27/13 - 06/30/2013**
DEPTHS LOGGED:	**5210' MD - 10293' MD**
LOGGERS:	**ANDREA ZUIDEMA, MATTHEW HOPKINS**
DRILLING FLUID:	**LSND**
DRILLING RIG:	**H&P 326**
API:	**05-123-37002**
LOG TYPE:	**HORIZONTAL**
SCALE:	**1:240 (5 inches per 100 feet)**
REMARKS:	**WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.**





Survey Plan

LITHOLOGIES

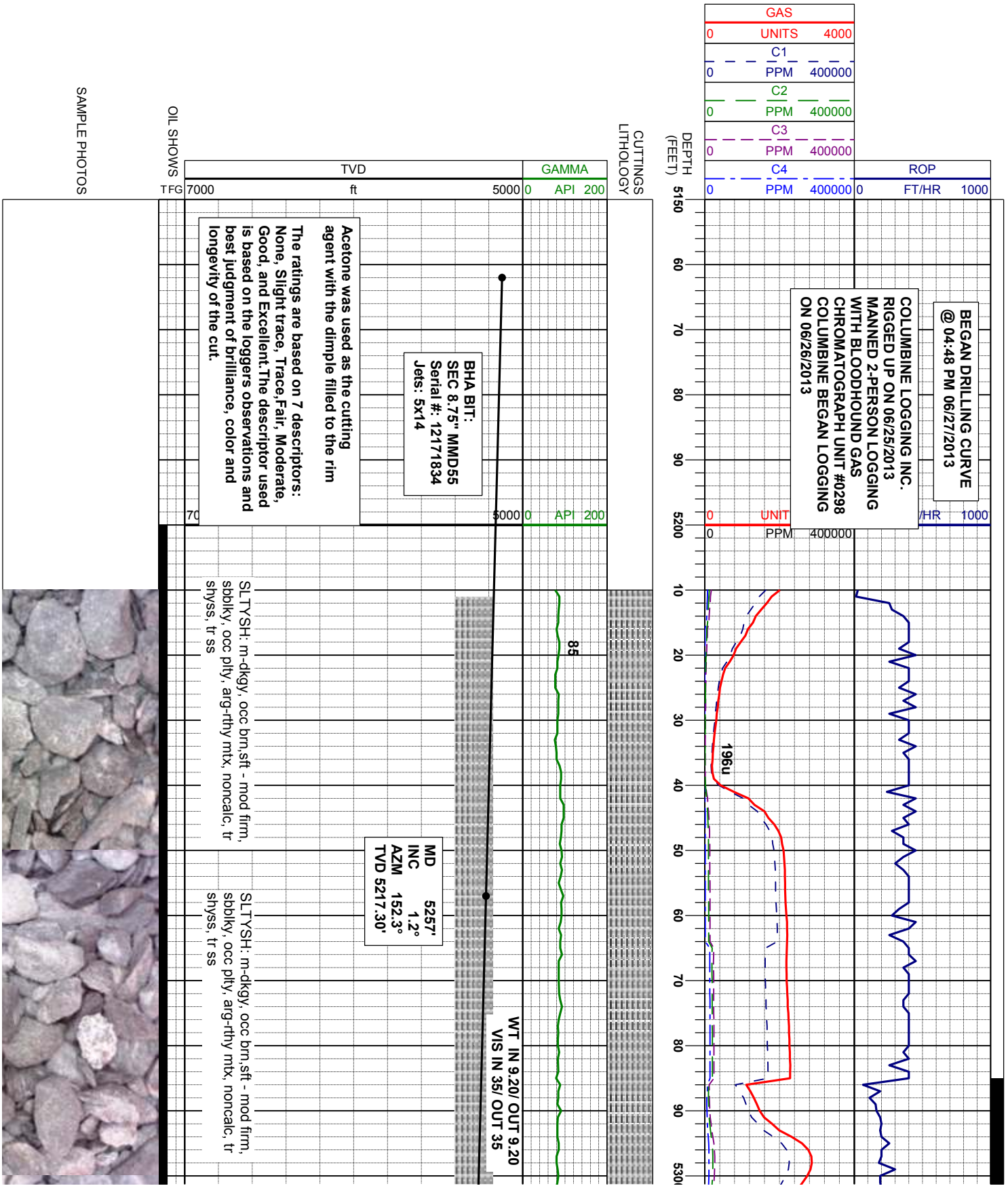
LITHOLOGIES

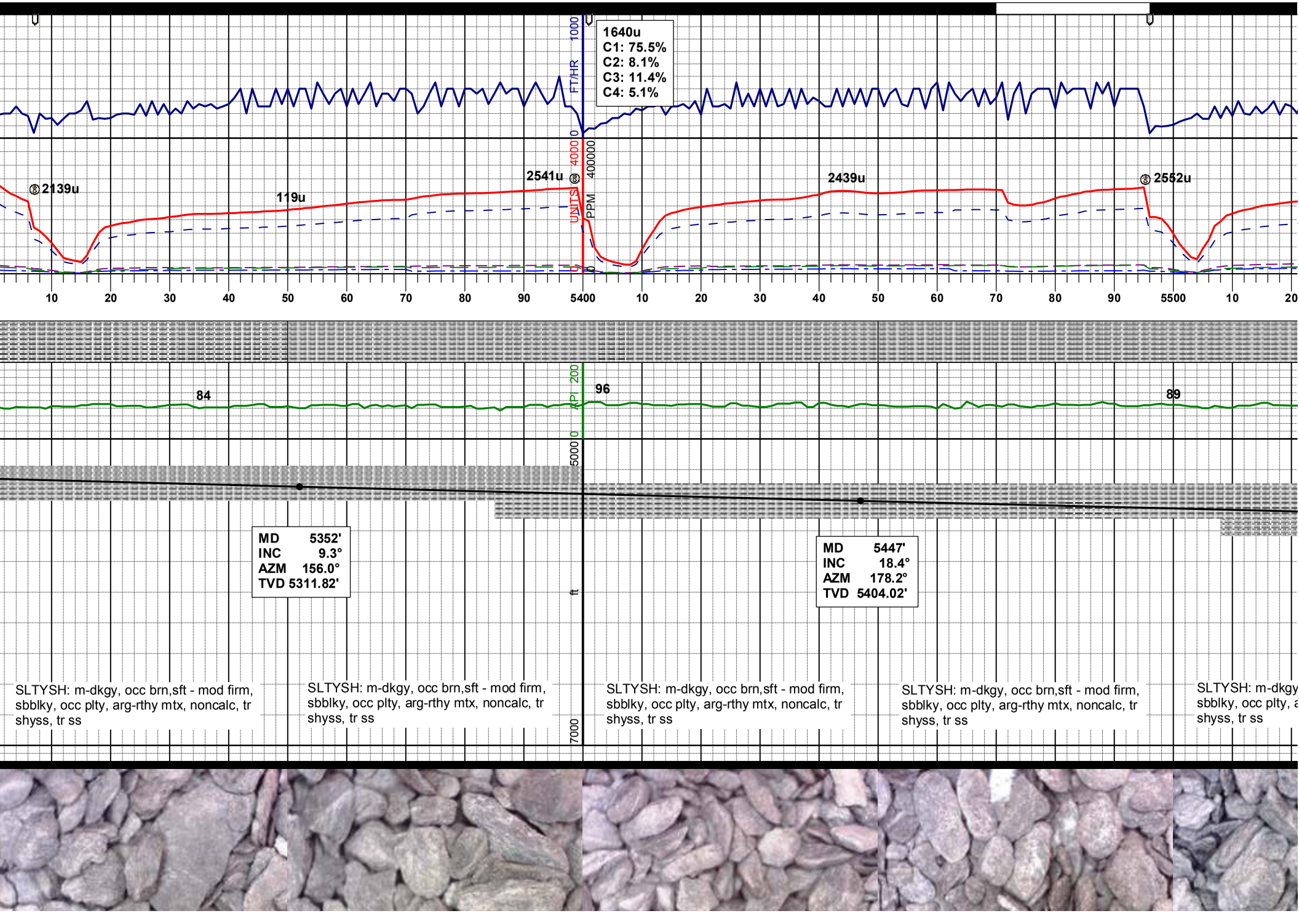
Chalk | Marl | Silty Shale

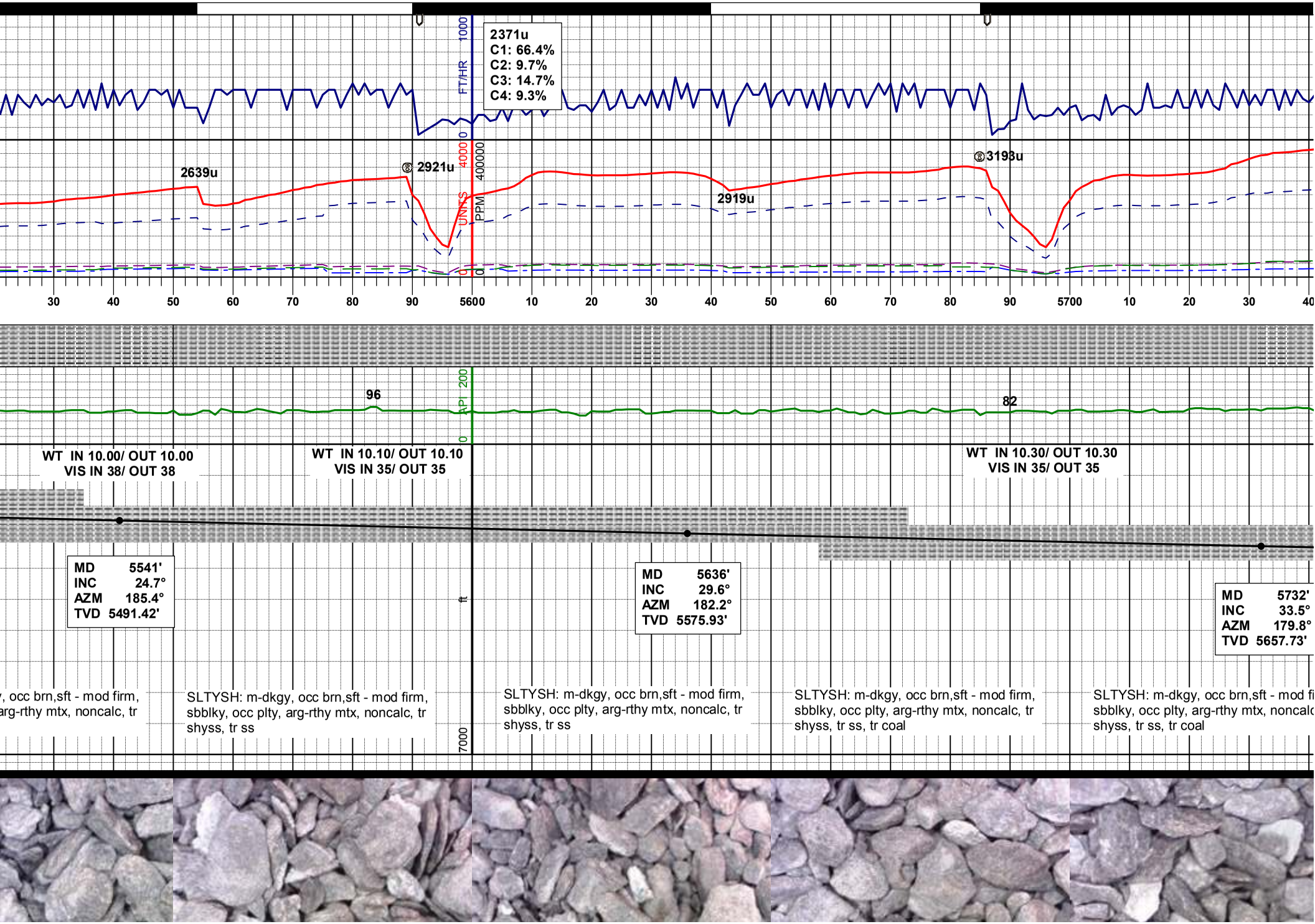
ENGINEERING SYMBOLS

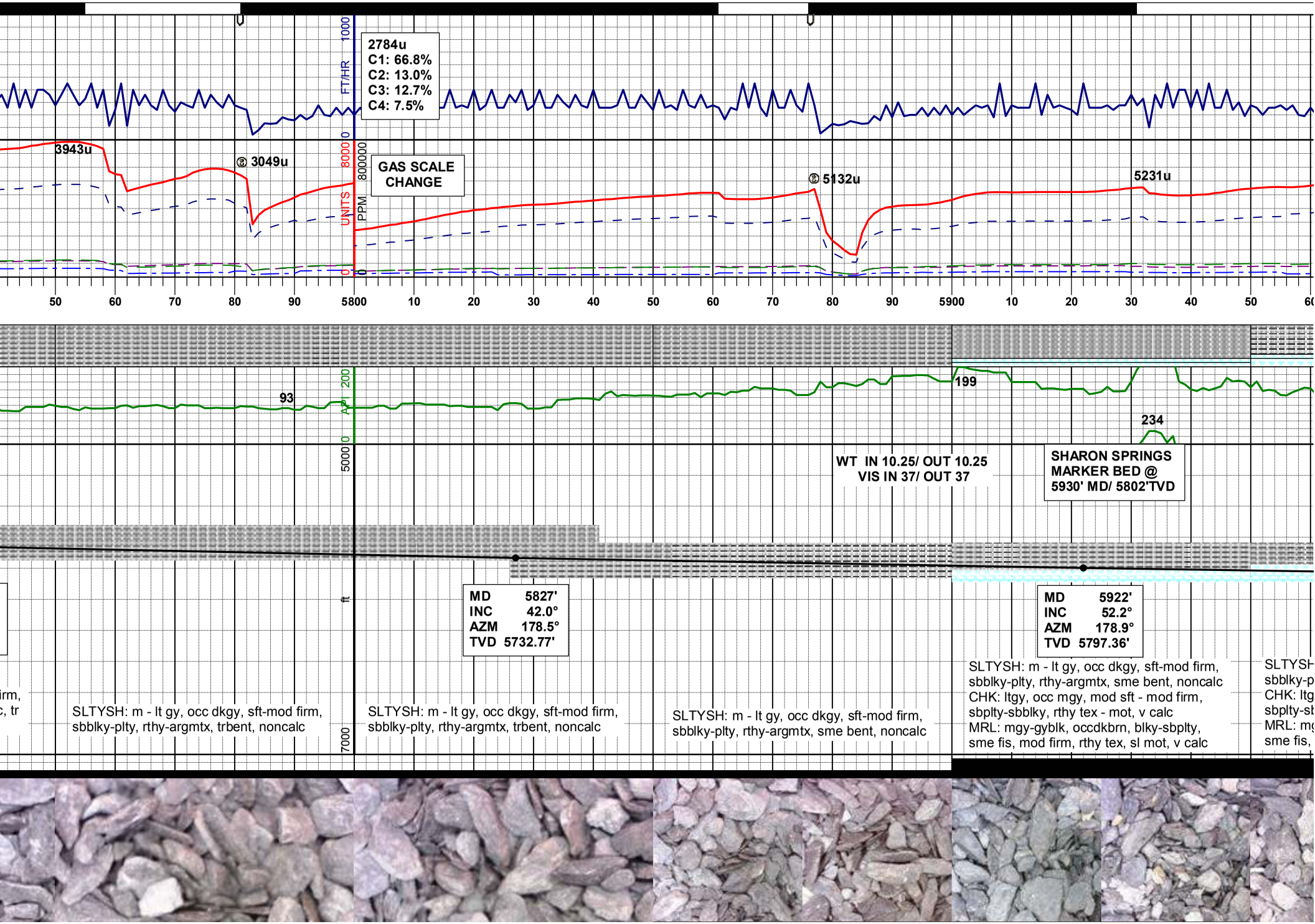
Casing | Casing | Connection | Connection Gas

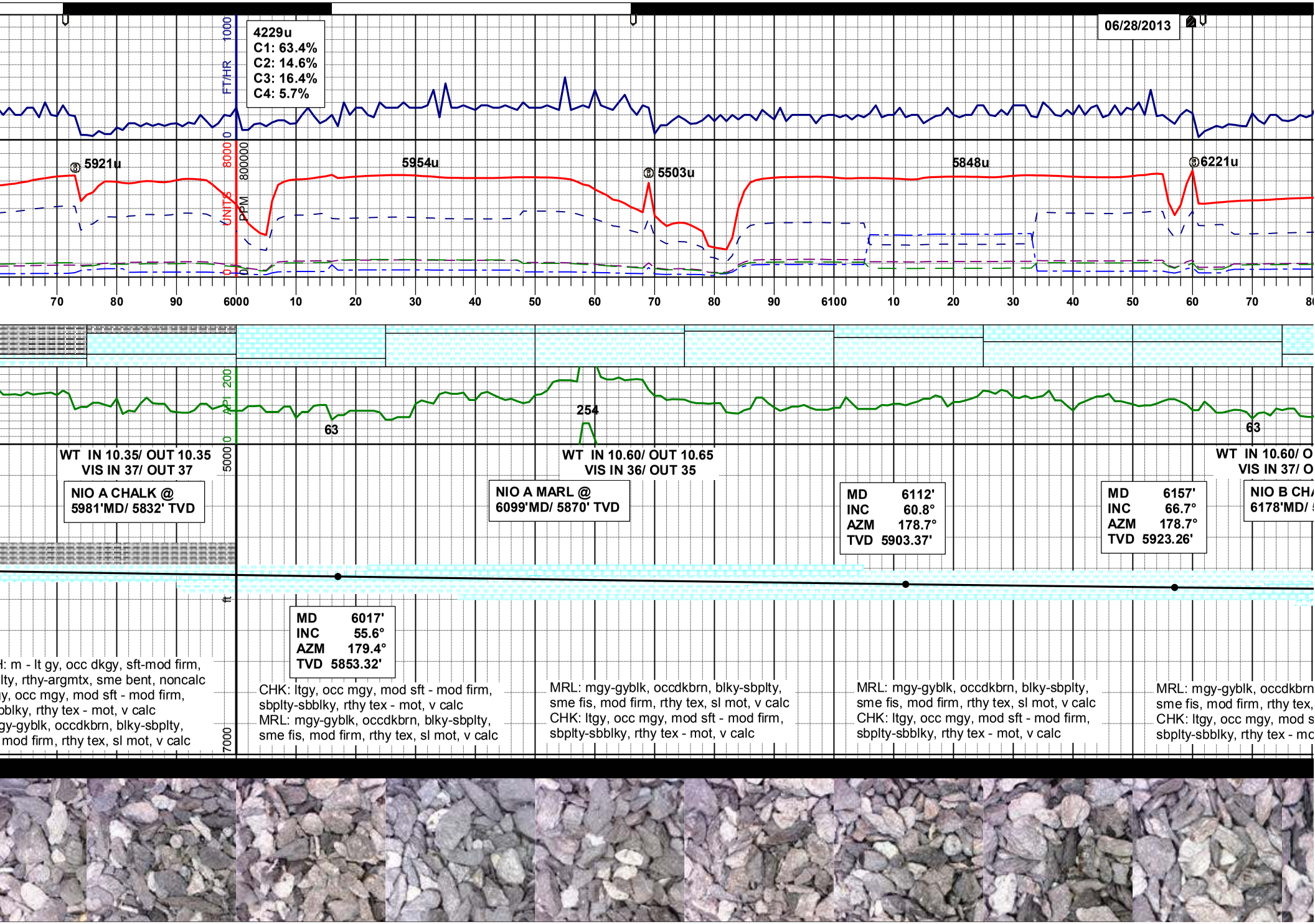
Midnight Depth | Normal Fault | Reverse Fault

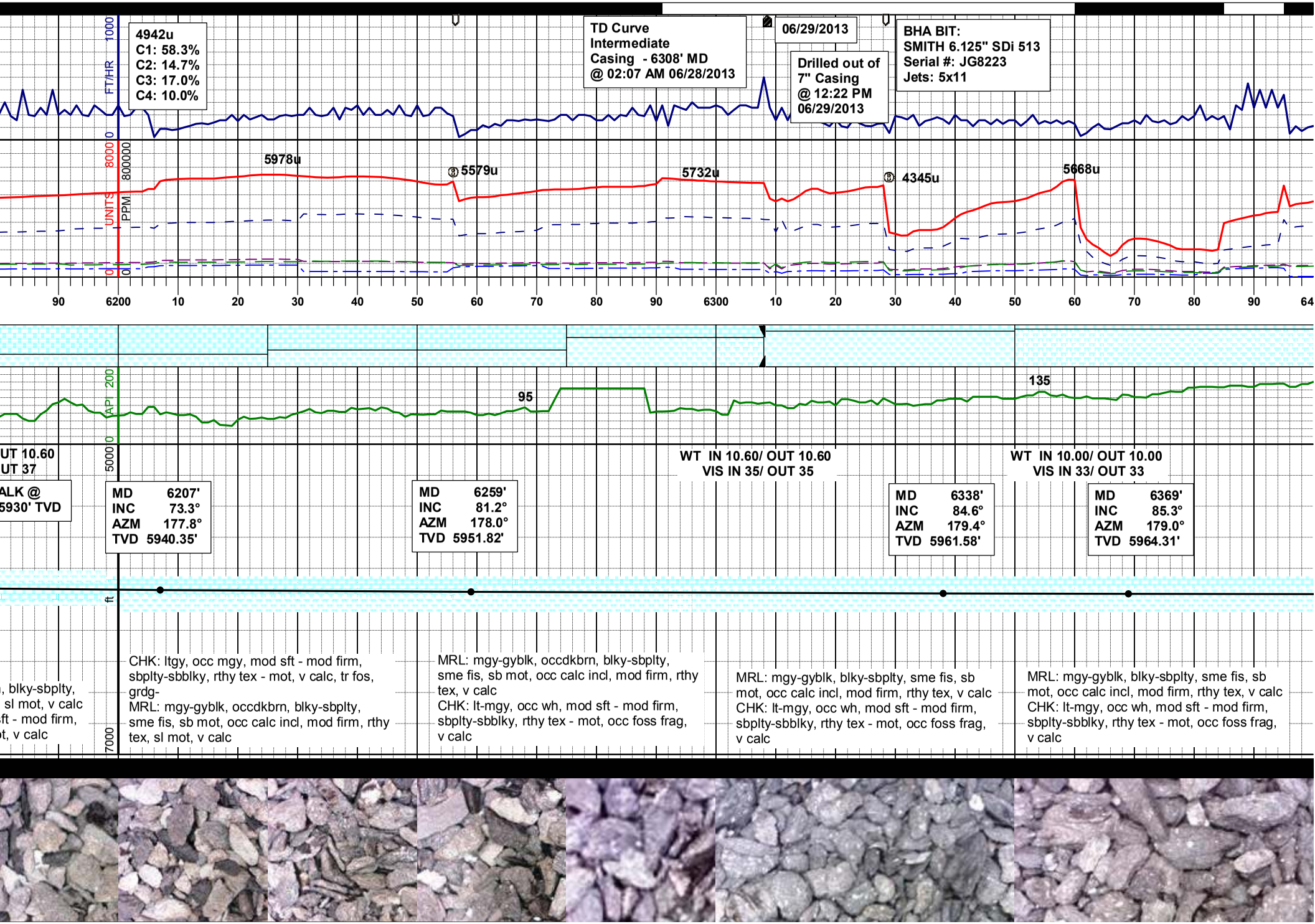


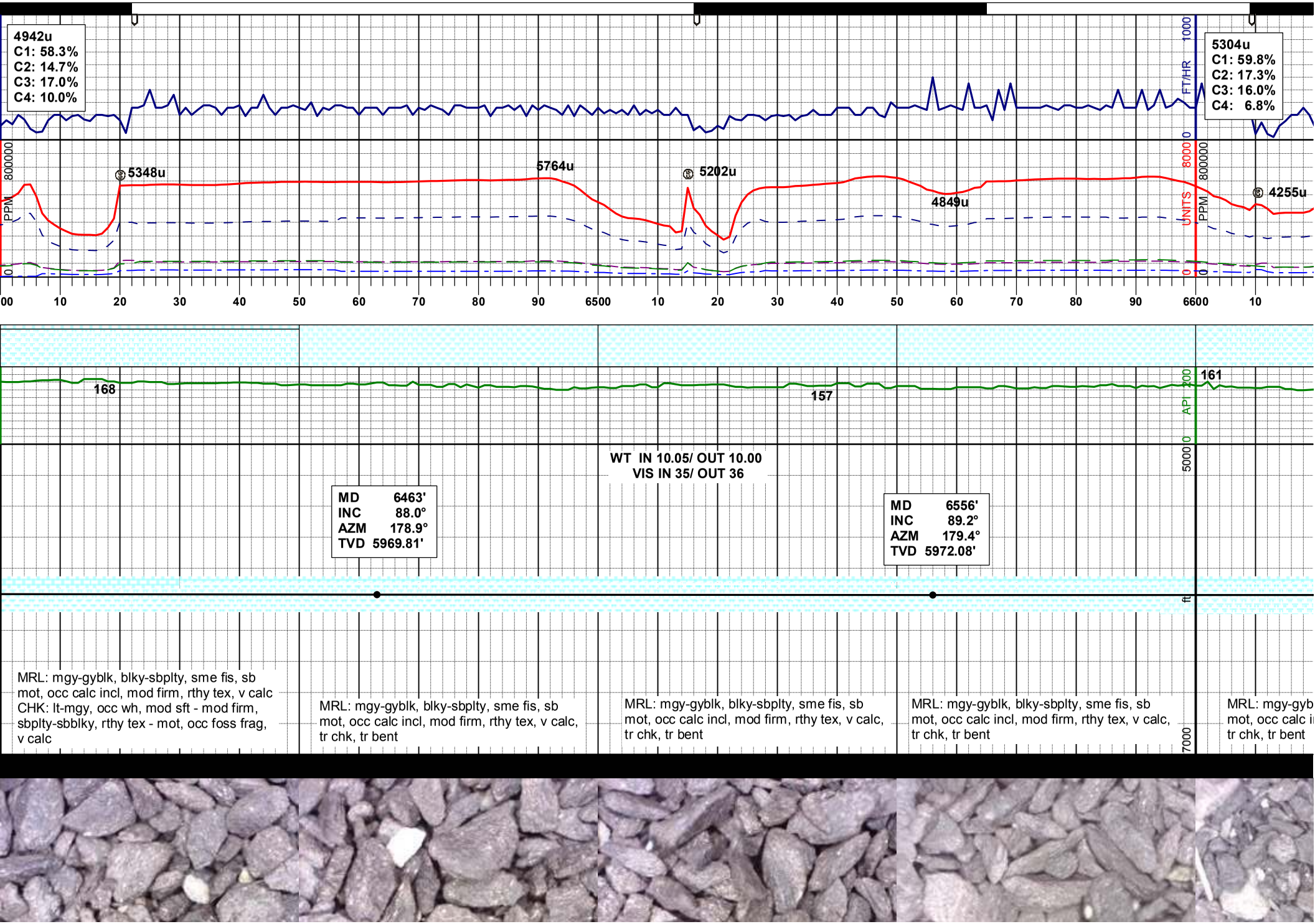

1640u
C1: 75.5%
C2: 8.1%
C3: 11.4%
C4: 5.1%
1000
FT/HR
0
4000
UNITS
0
400000
PPM
0
2139u
119u
2541u
2439u
2552u
10
20
30
40
50
60
70
80
90
5400
10
20
30
40
50
60
70
80
90
5500
10
20
84
96
89
200
API
0
5000
ft
7000
MD 5352'
INC 9.3°
AZM 156.0°
TVD 5311.82'
MD 5447'
INC 18.4°
AZM 178.2°
TVD 5404.02'
SLTYSH: m-dkgy, occ brn,sft - mod firm, sbblky, occ plty, arg-rthy mtx, noncalc, tr shyss, tr ss
SLTYSH: m-dkgy, occ brn,sft - mod firm, sbblky, occ plty, arg-rthy mtx, noncalc, tr shyss, tr ss
SLTYSH: m-dkgy, occ brn,sft - mod firm, sbblky, occ plty, arg-rthy mtx, noncalc, tr shyss, tr ss
SLTYSH: m-dkgy, occ brn,sft - mod firm, sbblky, occ plty, arg-rthy mtx, noncalc, tr shyss, tr ss
SLTYSH: m-dkgy
sbblky, occ plty,
shyss, tr ss

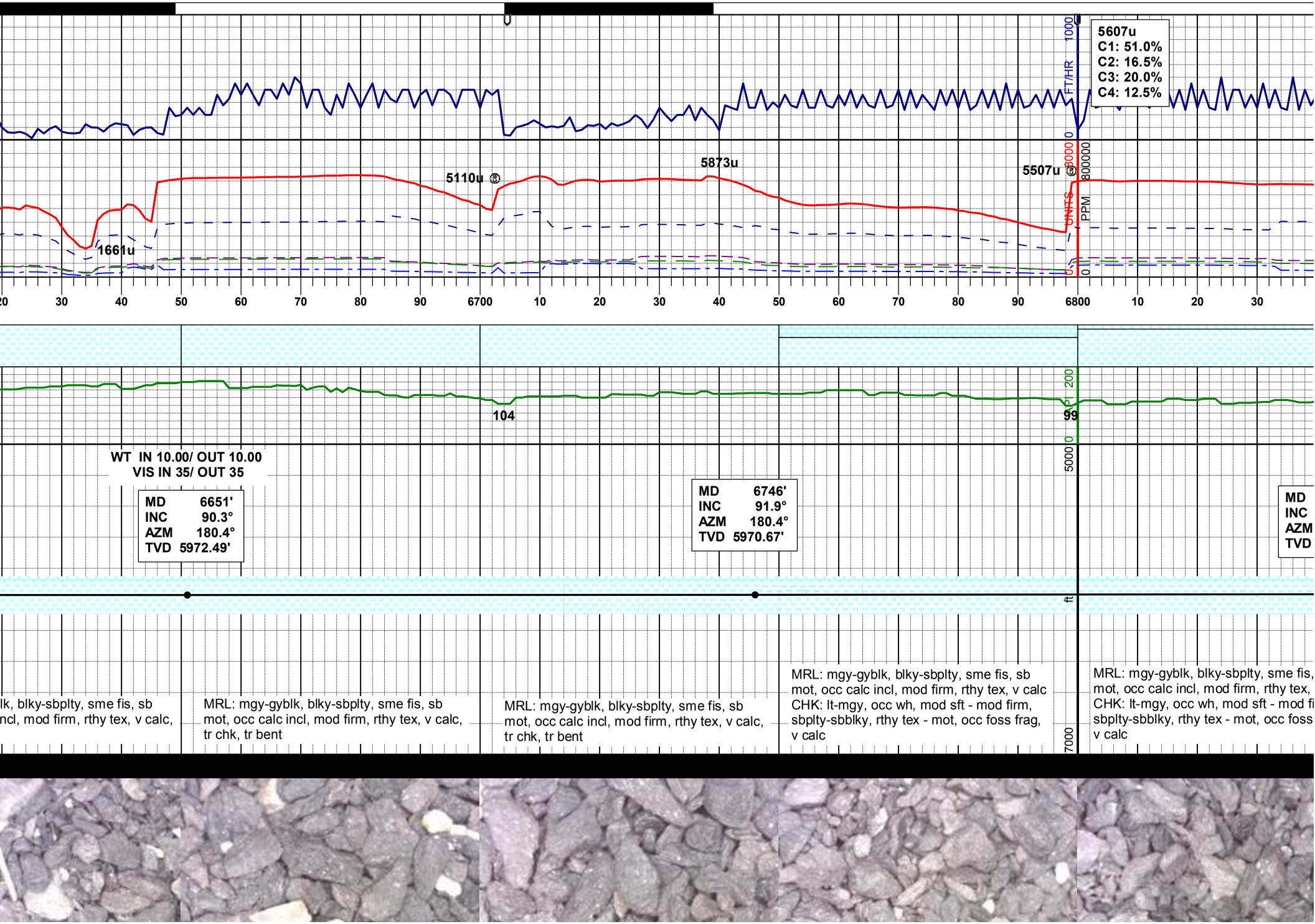

2371u
C1: 66.4%
C2: 9.7%
C3: 14.7%
C4: 9.3%
FT/HR
1000
0
2639u
2921u
2919u
3198u
UNITS
PPM
4000
0
400000
0
30
40
50
60
70
80
90
5600
10
20
30
40
50
60
70
80
90
5700
10
20
30
40
96
82
API
200
0
WT IN 10.00/ OUT 10.00
VIS IN 38/ OUT 38
WT IN 10.10/ OUT 10.10
VIS IN 35/ OUT 35
WT IN 10.30/ OUT 10.30
VIS IN 35/ OUT 35
MD 5541'
INC 24.7°
AZM 185.4°
TVD 5491.42'
MD 5636'
INC 29.6°
AZM 182.2°
TVD 5575.93'
MD 5732'
INC 33.5°
AZM 179.8°
TVD 5657.73'
ft
7000
, occ brn,sft - mod firm,
arg-rthy mtx, noncalc, tr
SLTYSH: m-dkgy, occ brn,sft - mod firm,
sbblky, occ plty, arg-rthy mtx, noncalc, tr
shyss, tr ss
SLTYSH: m-dkgy, occ brn,sft - mod firm,
sbblky, occ plty, arg-rthy mtx, noncalc, tr
shyss, tr ss
SLTYSH: m-dkgy, occ brn,sft - mod firm,
sbblky, occ plty, arg-rthy mtx, noncalc, tr
shyss, tr ss, tr coal
SLTYSH: m-dkgy, occ brn,sft - mod fi
sbblky, occ plty, arg-rthy mtx, noncalc
shyss, tr ss, tr coal

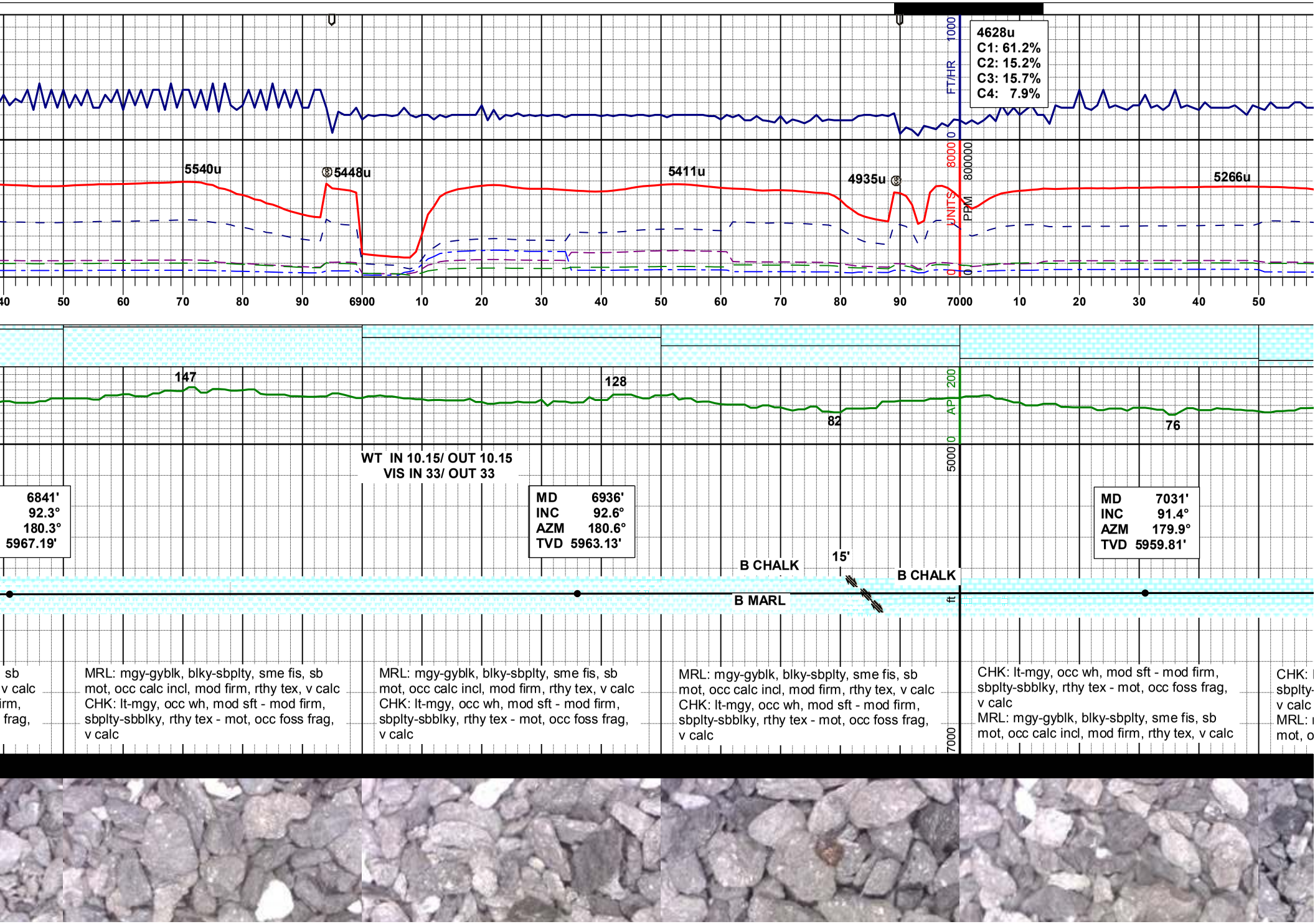

2784u
C1: 66.8%
C2: 13.0%
C3: 12.7%
C4: 7.5%
FT/HR
1000
0
3943u
@ 3049u
GAS SCALE CHANGE
UNITS
8000
0
PPM
800000
0
@ 5132u
5231u
50
60
70
80
90
5800
10
20
30
40
50
60
70
80
90
5900
10
20
30
40
50
93
API
200
0
199
234
5000
0
WT IN 10.25/ OUT 10.25
VIS IN 37/ OUT 37
SHARON SPRINGS
MARKER BED @
5930' MD/ 5802'TVD
ft
MD 5827'
INC 42.0°
AZM 178.5°
TVD 5732.77'
MD 5922'
INC 52.2°
AZM 178.9°
TVD 5797.36'
7000
SLTYSH: m - lt gy, occ dkgy, sft-mod firm,
sbblky-plty, rthy-argmtx, trbent, noncalc
SLTYSH: m - lt gy, occ dkgy, sft-mod firm,
sbblky-plty, rthy-argmtx, trbent, noncalc
SLTYSH: m - lt gy, occ dkgy, sft-mod firm,
sbblky-plty, rthy-argmtx, sme bent, noncalc
SLTYSH: m - lt gy, occ dkgy, sft-mod firm,
sbblky-plty, rthy-argmtx, sme bent, noncalc
CHK: ltgy, occ mgy, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, v calc
MRL: mgy-gyblk, occdkbrn, blky-sbplty,
sme fis, mod firm, rthy tex, sl mot, v calc

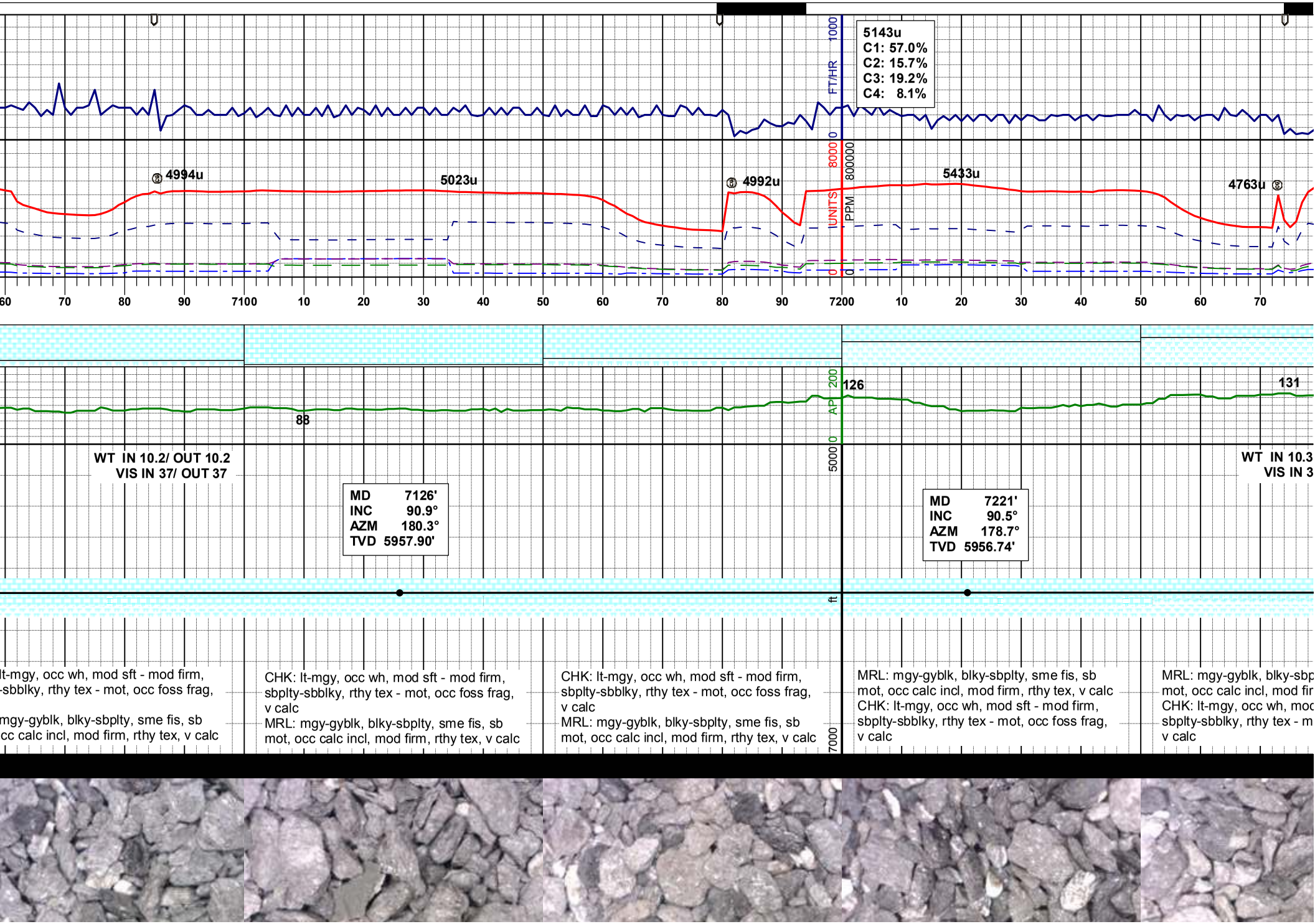

4229u
C1: 63.4%
C2: 14.6%
C3: 16.4%
C4: 5.7%
06/28/2013
FT/HR
UNITS
PPM
5921u
5954u
5503u
5848u
6221u
API
63
254
63
WT IN 10.35/ OUT 10.35
VIS IN 37/ OUT 37
NIO A CHALK @
5981'MD/ 5832' TVD
WT IN 10.60/ OUT 10.65
VIS IN 36/ OUT 35
NIO A MARL @
6099'MD/ 5870' TVD
MD 6112'
INC 60.8°
AZM 178.7°
TVD 5903.37'
MD 6157'
INC 66.7°
AZM 178.7°
TVD 5923.26'
NIO B CHA
6178'MD/
MD 6017'
INC 55.6°
AZM 179.4°
TVD 5853.32'
ft
H: m - lt gy, occ dkgy, sft-mod firm,
lty, rthy-argmtx, sme bent, noncalc
y, occ mgy, mod sft - mod firm,
bblky, rthy tex - mot, v calc
gy-gyblk, occdkbrn, blky-sbplty,
mod firm, rthy tex, sl mot, v calc
CHK: ltgy, occ mgy, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, v calc
MRL: mgy-gyblk, occdkbrn, blky-sbplty,
sme fis, mod firm, rthy tex, sl mot, v calc
MRL: mgy-gyblk, occdkbrn, blky-sbplty,
sme fis, mod firm, rthy tex, sl mot, v calc
CHK: ltgy, occ mgy, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, v calc
MRL: mgy-gyblk, occdkbrn, blky-sbplty,
sme fis, mod firm, rthy tex, sl mot, v calc
CHK: ltgy, occ mgy, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, v calc
MRL: mgy-gyblk, occdkbrn
sme fis, mod firm, rthy tex,
CHK: ltgy, occ mgy, mod s
sbplty-sbblky, rthy tex - mo

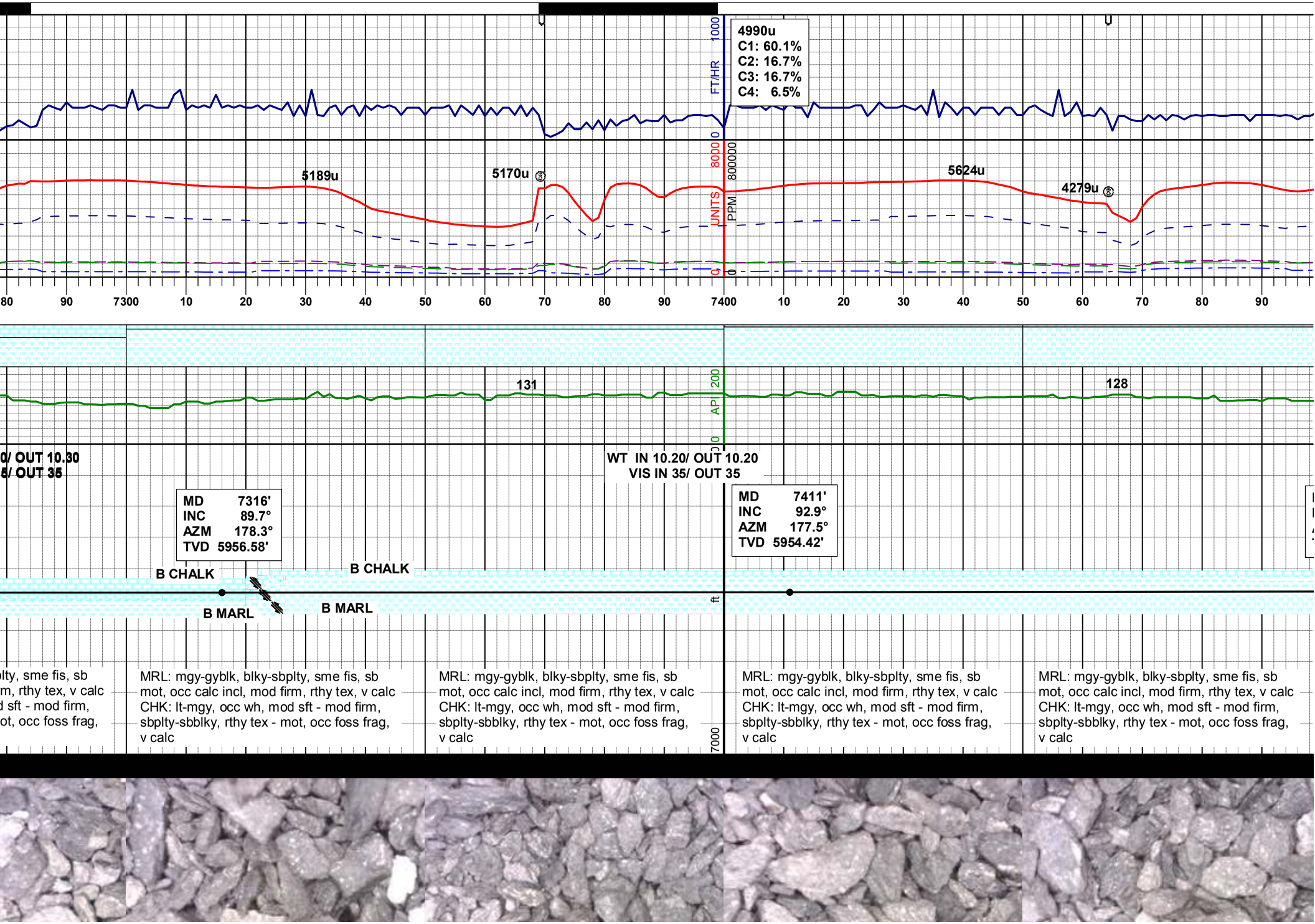

4942u
C1: 58.3%
C2: 14.7%
C3: 17.0%
C4: 10.0%
TD Curve
Intermediate
Casing - 6308' MD
@ 02:07 AM 06/28/2013
06/29/2013
Drilled out of
7" Casing
@ 12:22 PM
06/29/2013
BHA BIT:
SMITH 6.125" SDi 513
Serial #: JG8223
Jets: 5x11
FT/HR
1000
0
8000
0
UNITS
PPM
800000
0
5978u
5579u
5732u
4345u
5668u
90
6200
10
20
30
40
50
60
70
80
90
6300
10
20
30
40
50
60
70
80
90
64
API
200
0
95
135
5000
UT 10.60
UT 37
ALK @
5930' TVD
MD 6207'
INC 73.3°
AZM 177.8°
TVD 5940.35'
MD 6259'
INC 81.2°
AZM 178.0°
TVD 5951.82'
WT IN 10.60/ OUT 10.60
VIS IN 35/ OUT 35
MD 6338'
INC 84.6°
AZM 179.4°
TVD 5961.58'
WT IN 10.00/ OUT 10.00
VIS IN 33/ OUT 33
MD 6369'
INC 85.3°
AZM 179.0°
TVD 5964.31'
ft
7000
, blky-sbplty,
sl mot, v calc
ft - mod firm,
t, v calc
CHK: ltgy, occ mgy, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, v calc, tr fos, grdg-
MRL: mgy-gyblk, occdkbrn, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, sl mot, v calc
MRL: mgy-gyblk, occdkbrn, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc

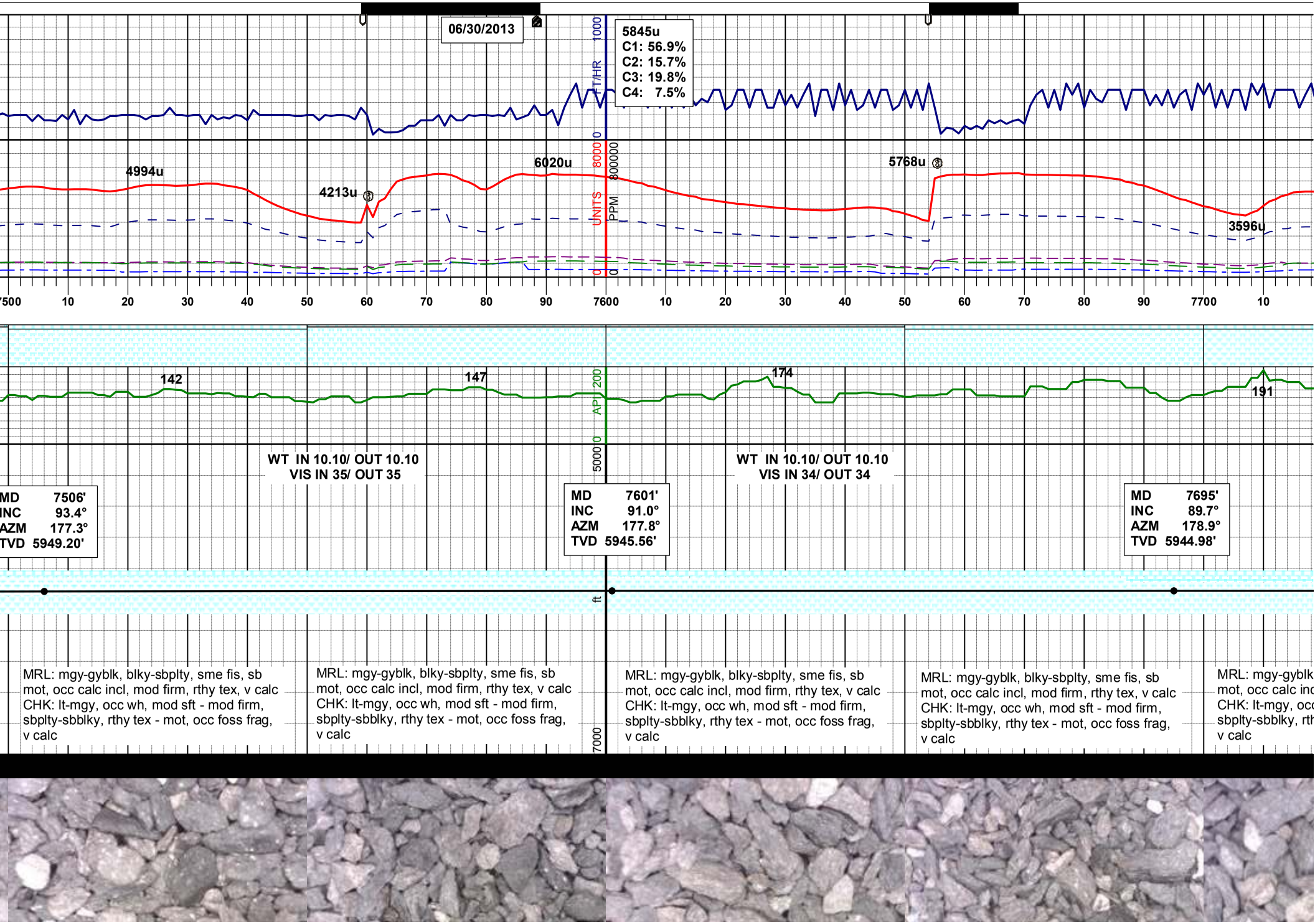

4942u
C1: 58.3%
C2: 14.7%
C3: 17.0%
C4: 10.0%
5304u
C1: 59.8%
C2: 17.3%
C3: 16.0%
C4: 6.8%
FT/HR
1000
0
800000
PPM
0
5348u
5764u
5202u
4849u
4255u
UNITS
8000
0
00
10
20
30
40
50
60
70
80
90
6500
6600
168
157
161
API
200
0
5000
WT IN 10.05/ OUT 10.00
VIS IN 35/ OUT 36
MD 6463'
INC 88.0°
AZM 178.9°
TVD 5969.81'
MD 6556'
INC 89.2°
AZM 179.4°
TVD 5972.08'
ft
7000
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc, tr chk, tr bent
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc, tr chk, tr bent
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc, tr chk, tr bent
MRL: mgy-gyb
mot, occ calc i
tr chk, tr bent


5607u
C1: 51.0%
C2: 16.5%
C3: 20.0%
C4: 12.5%
FT/HR
1000
0
UNITS
30000
0
PPM
800000
0
5110u
5873u
5507u
1661u
20
30
40
50
60
70
80
90
6700
10
20
30
40
50
60
70
80
90
6800
10
20
30
104
99
200
0
5000
0
ft
7000
WT IN 10.00/ OUT 10.00
VIS IN 35/ OUT 35
MD 6651'
INC 90.3°
AZM 180.4°
TVD 5972.49'
MD 6746'
INC 91.9°
AZM 180.4°
TVD 5970.67'
MD
INC
AZM
TVD
lk, blky-sbplty, sme fis, sb
ncl, mod firm, rthy tex, v calc,
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc, tr chk, tr bent
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc, tr chk, tr bent
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, mot, occ calc incl, mod firm, rthy tex,
CHK: lt-mgy, occ wh, mod sft - mod fi
sbplty-sbblky, rthy tex - mot, occ foss
v calc


4628u
C1: 61.2%
C2: 15.2%
C3: 15.7%
C4: 7.9%
FT/HR
1000
0
UNITS
8000
0
PPM
800000
0
5540u
5448u
5411u
4935u
5266u
40
50
60
70
80
90
6900
10
20
30
40
50
60
70
80
90
7000
10
20
30
40
50
147
128
82
76
AP
200
0
5000
WT IN 10.15/ OUT 10.15
VIS IN 33/ OUT 33
6841'
92.3°
180.3°
5967.19'
MD 6936'
INC 92.6°
AZM 180.6°
TVD 5963.13'
MD 7031'
INC 91.4°
AZM 179.9°
TVD 5959.81'
B CHALK
15'
B CHALK
B MARL
ft
7000
sb
v calc
irm,
frag,
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK:
sbplty-
v calc
MRL:
mot, o


5143u
C1: 57.0%
C2: 15.7%
C3: 19.2%
C4: 8.1%
FT/HR
1000
0
8000
0
800000
UNITS
PPM
0
4994u
5023u
4992u
5433u
4763u
60
70
80
90
7100
10
20
30
40
50
60
70
80
90
7200
10
20
30
40
50
60
70
AP
200
0
5000
0
126
131
88
WT IN 10.2/ OUT 10.2
VIS IN 37/ OUT 37
MD 7126'
INC 90.9°
AZM 180.3°
TVD 5957.90'
MD 7221'
INC 90.5°
AZM 178.7°
TVD 5956.74'
WT IN 10.3
VIS IN 3
ft
7000
lt-mgy, occ wh, mod sft - mod firm,
-sbblky, rthy tex - mot, occ foss frag,
mgy-gyblk, blky-sbplty, sme fis, sb
cc calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbp
mot, occ calc incl, mod fir
CHK: lt-mgy, occ wh, mod
sbplty-sbblky, rthy tex - m
v calc


4990u
C1: 60.1%
C2: 16.7%
C3: 16.7%
C4: 6.5%
FT/HR
1000
0
8000
0
800000
UNITS
PPM
5189u
5170u
5624u
4279u
80
90
7300
10
20
30
40
50
60
70
80
90
7400
10
20
30
40
50
60
70
80
90
131
128
API
200
0
0/ OUT 10.30
5/ OUT 35
WT IN 10.20/ OUT 10.20
VIS IN 35/ OUT 35
MD 7316'
INC 89.7°
AZM 178.3°
TVD 5956.58'
MD 7411'
INC 92.9°
AZM 177.5°
TVD 5954.42'
B CHALK
B MARL
B CHALK
B MARL
ft
7000
lty, sme fis, sb
m, rthy tex, v calc
d sft - mod firm,
ot, occ foss frag,
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc


06/30/2013
5845u
C1: 56.9%
C2: 15.7%
C3: 19.8%
C4: 7.5%
FT/HR
1000
0
UNITS
8000
0
PPM
800000
0
4994u
4213u
6020u
5768u
3596u
7500
10
20
30
40
50
60
70
80
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7600
10
20
30
40
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60
70
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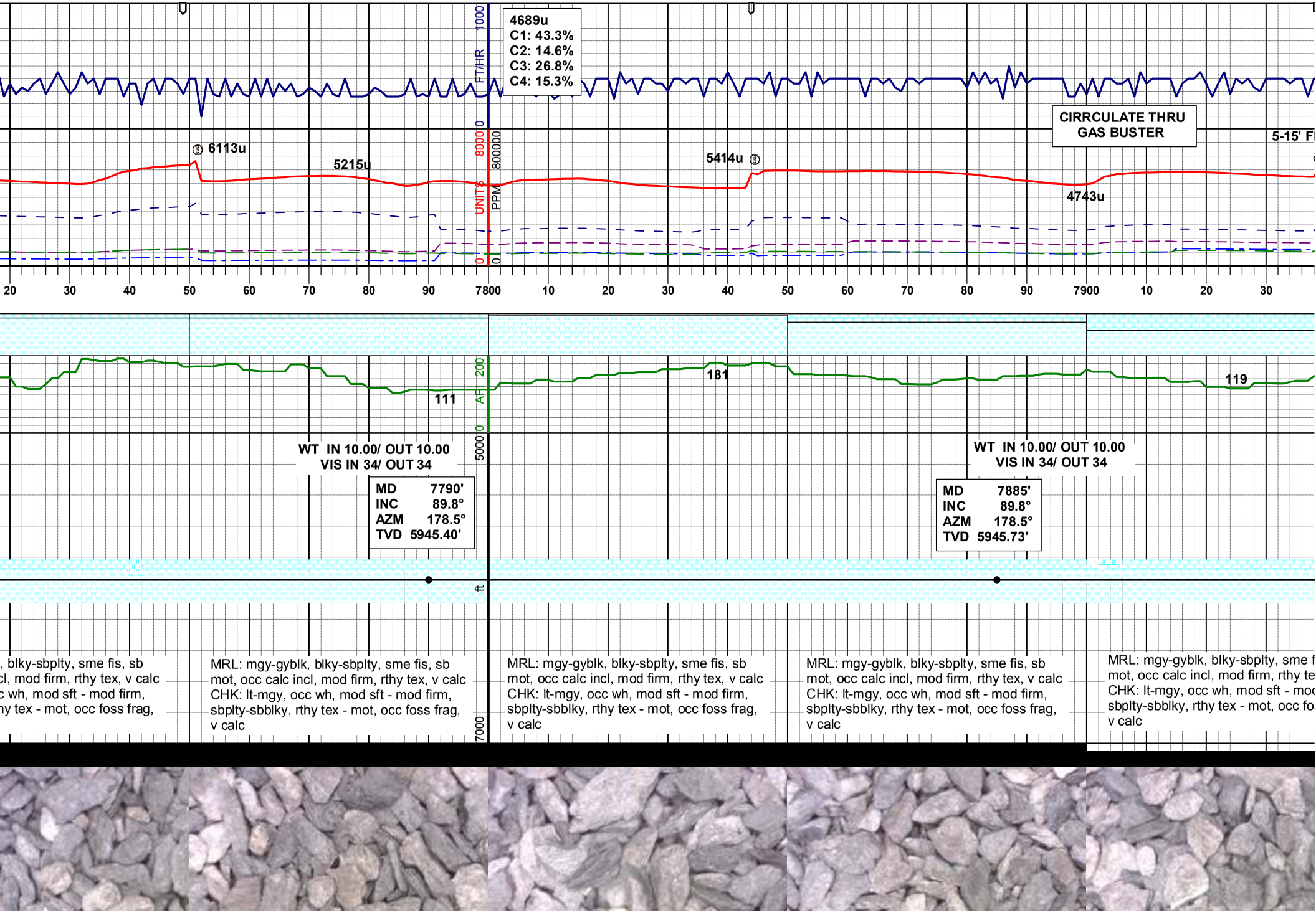
90
7700
10
142
147
174
191
API
200
0
5000
0
WT IN 10.10/ OUT 10.10
VIS IN 35/ OUT 35
WT IN 10.10/ OUT 10.10
VIS IN 34/ OUT 34
MD 7506'
INC 93.4°
AZM 177.3°
TVD 5949.20'
MD 7601'
INC 91.0°
AZM 177.8°
TVD 5945.56'
MD 7695'
INC 89.7°
AZM 178.9°
TVD 5944.98'
ft
7000
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk
mot, occ calc inc
CHK: lt-mgy, occ
sbplty-sbblky, rth
v calc


4689u
C1: 43.3%
C2: 14.6%
C3: 26.8%
C4: 15.3%
FT/HR
1000
0
UNITS
8000
0
PPM
800000
0
6113u
5215u
5414u
4743u
CIRRCULATE THRU
GAS BUSTER
5-15' F
20
30
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7800
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7900
10
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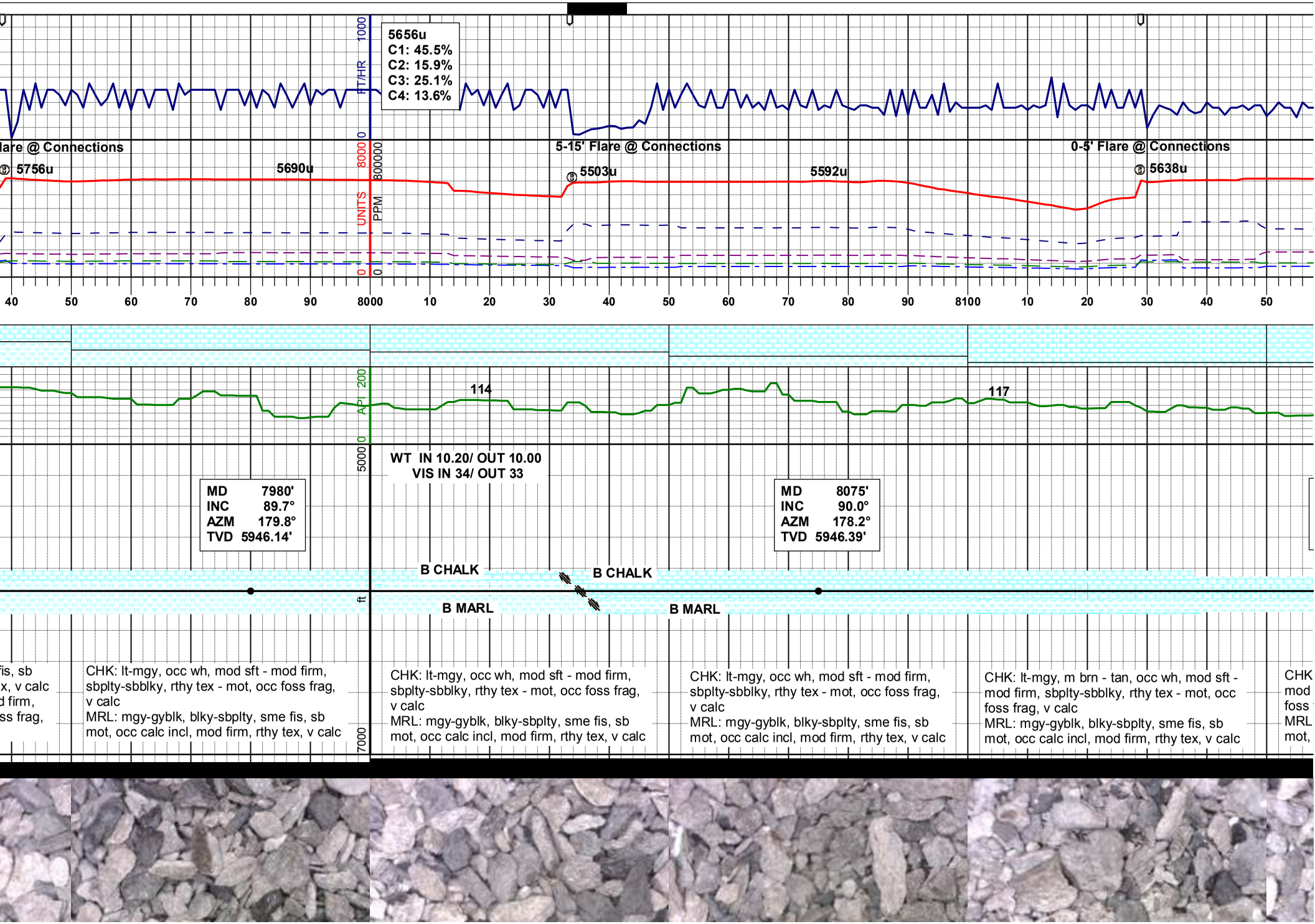
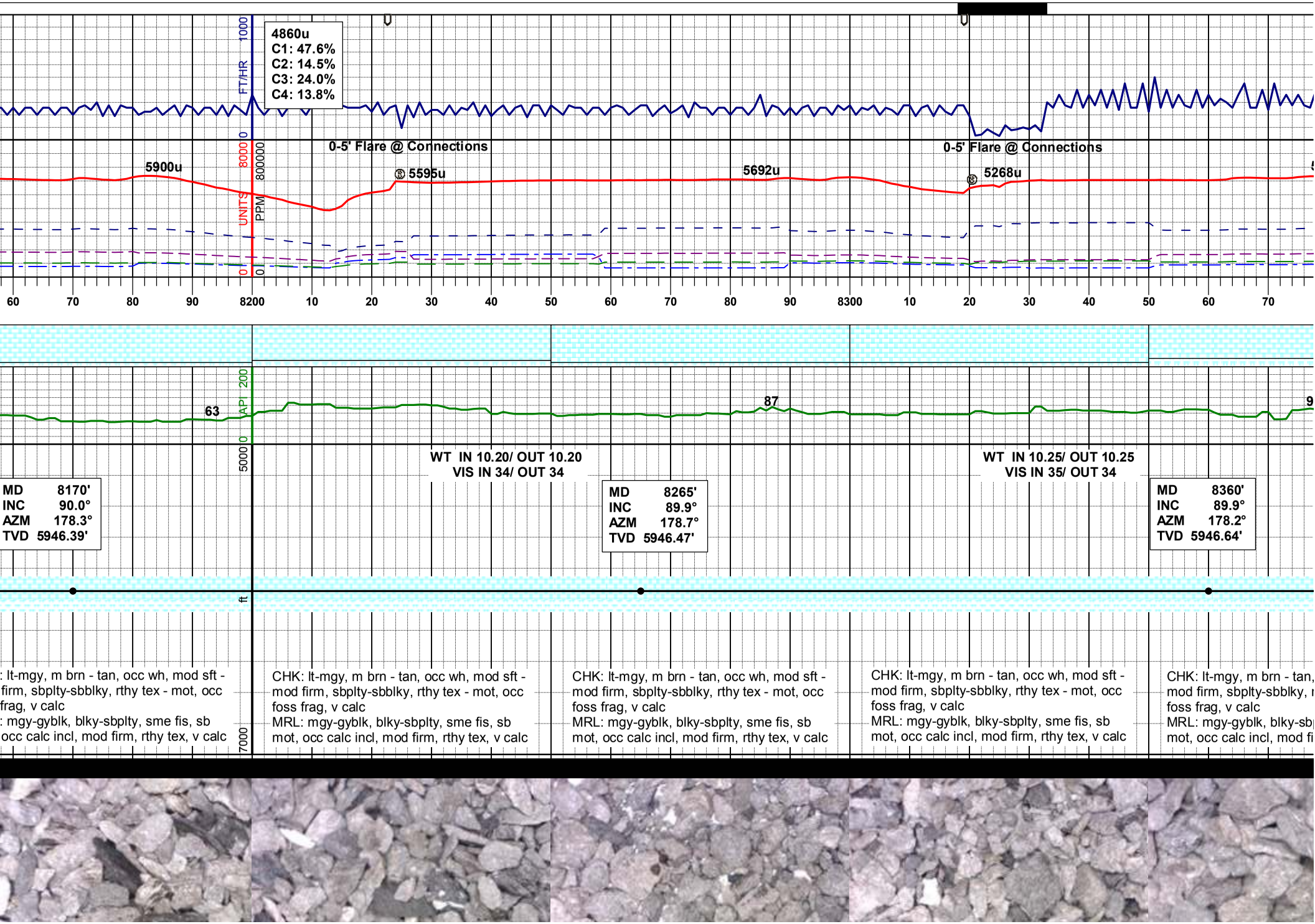
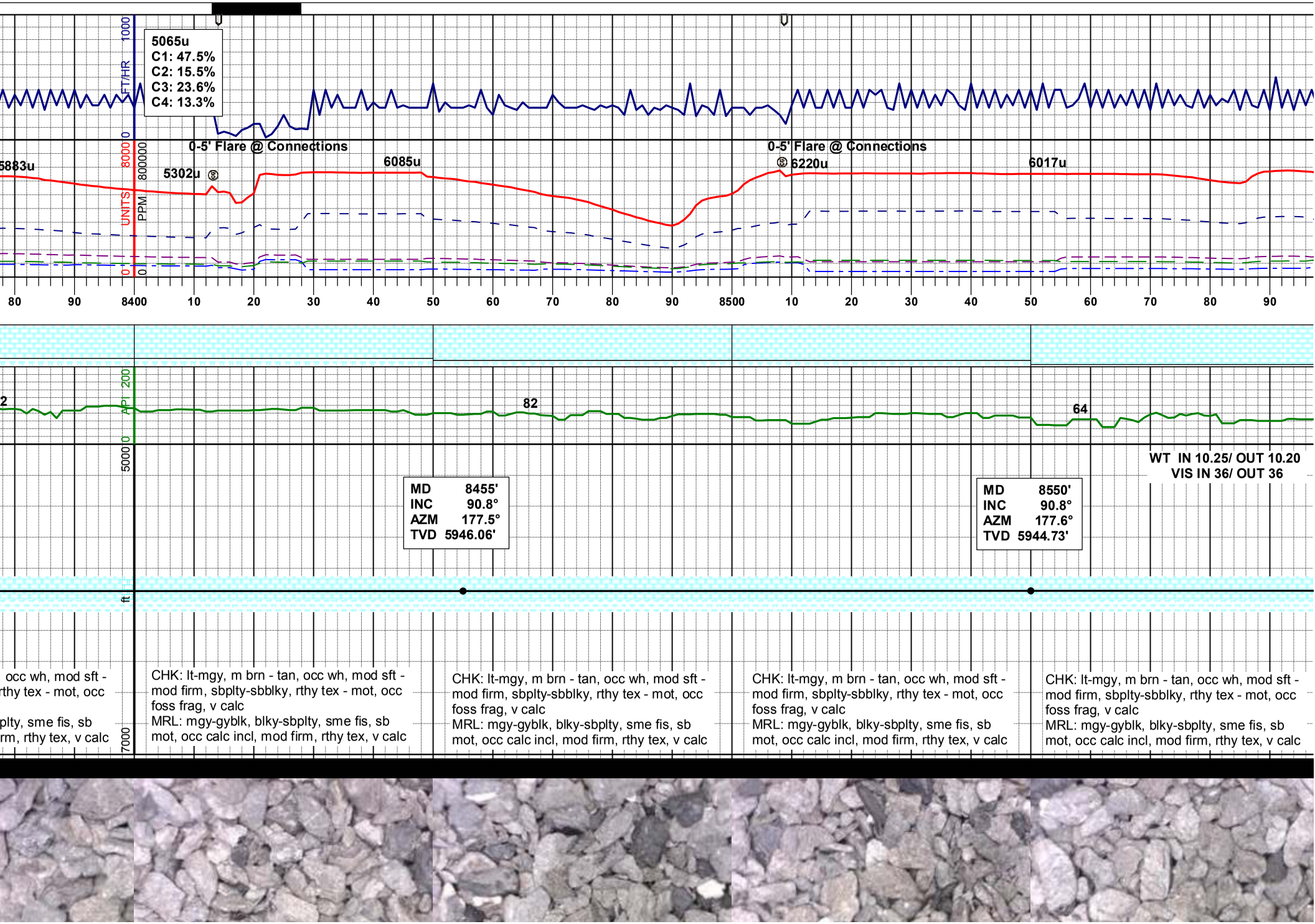
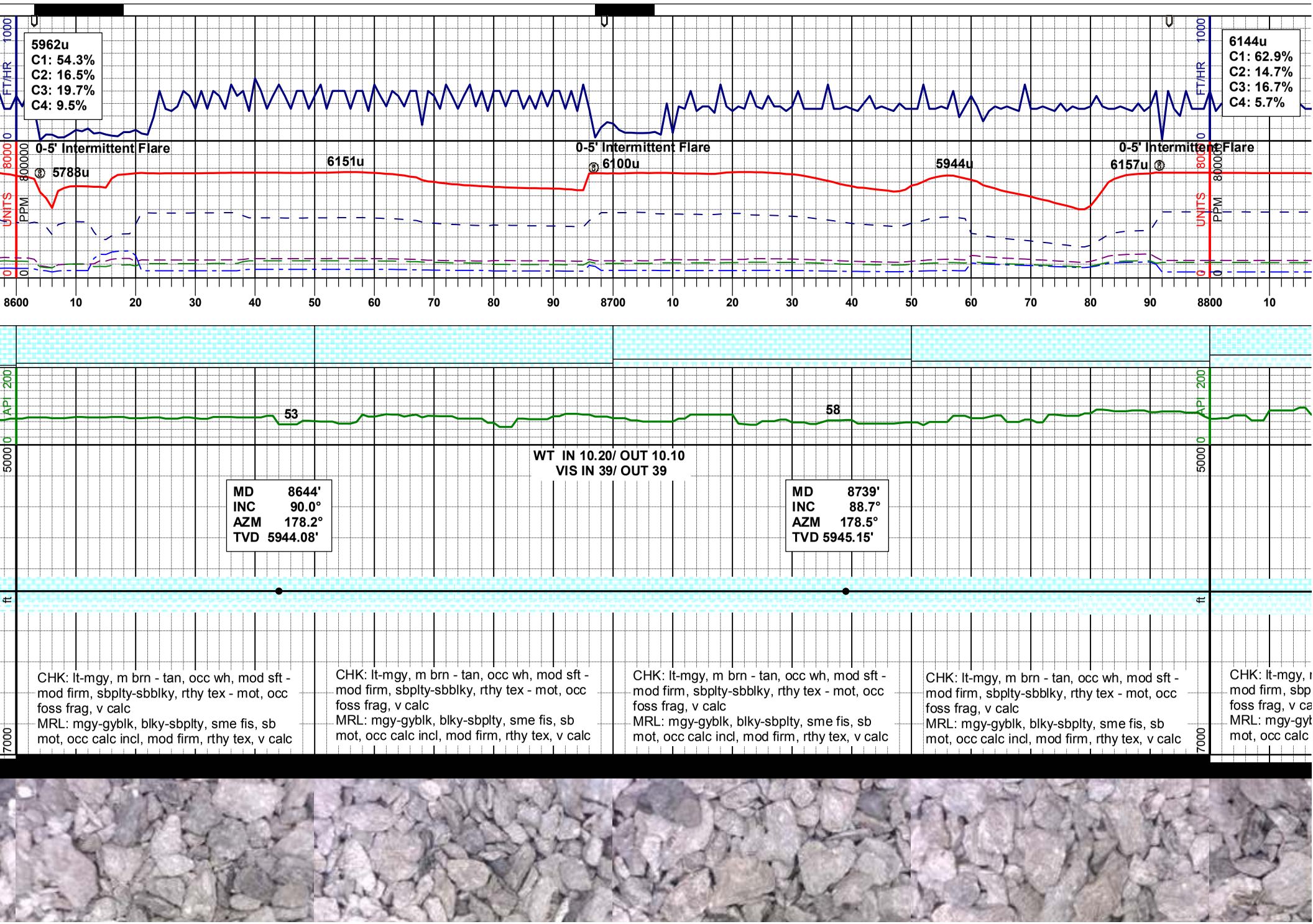
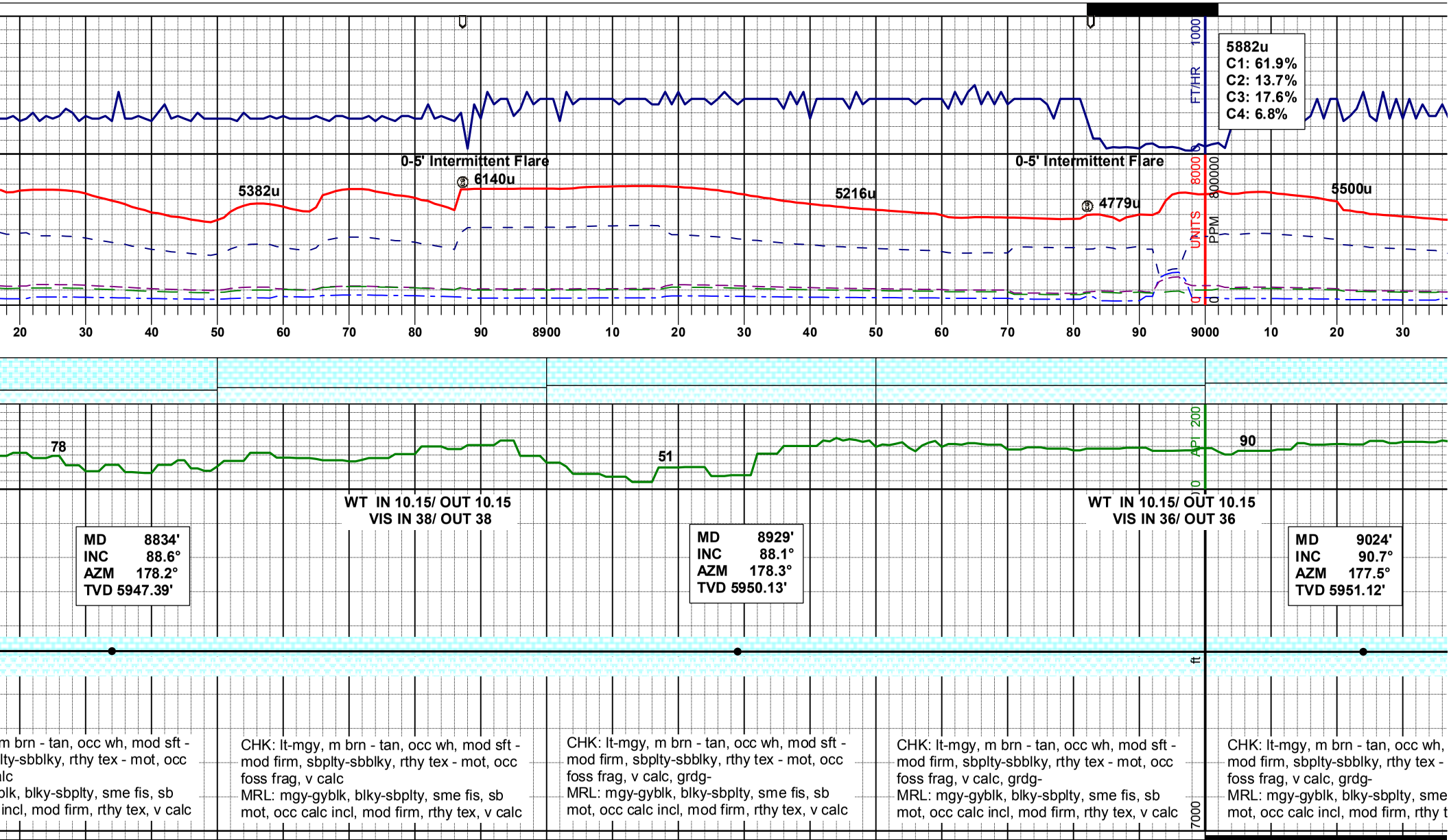
30
AFI
200
0
111
181
119
5000
0
WT IN 10.00/ OUT 10.00
VIS IN 34/ OUT 34
MD 7790'
INC 89.8°
AZM 178.5°
TVD 5945.40'
WT IN 10.00/ OUT 10.00
VIS IN 34/ OUT 34
MD 7885'
INC 89.8°
AZM 178.5°
TVD 5945.73'
ft
7000
, blky-sbplty, sme fis, sb
cl, mod firm, rthy tex, v calc
c wh, mod sft - mod firm,
hy tex - mot, occ foss frag,
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, occ foss frag,
v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, occ foss frag,
v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm,
sbplty-sbblky, rthy tex - mot, occ foss frag,
v calc
MRL: mgy-gyblk, blky-sbplty, sme f
mot, occ calc incl, mod firm, rthy te
CHK: lt-mgy, occ wh, mod sft - mod
sbplty-sbblky, rthy tex - mot, occ fo
v calc

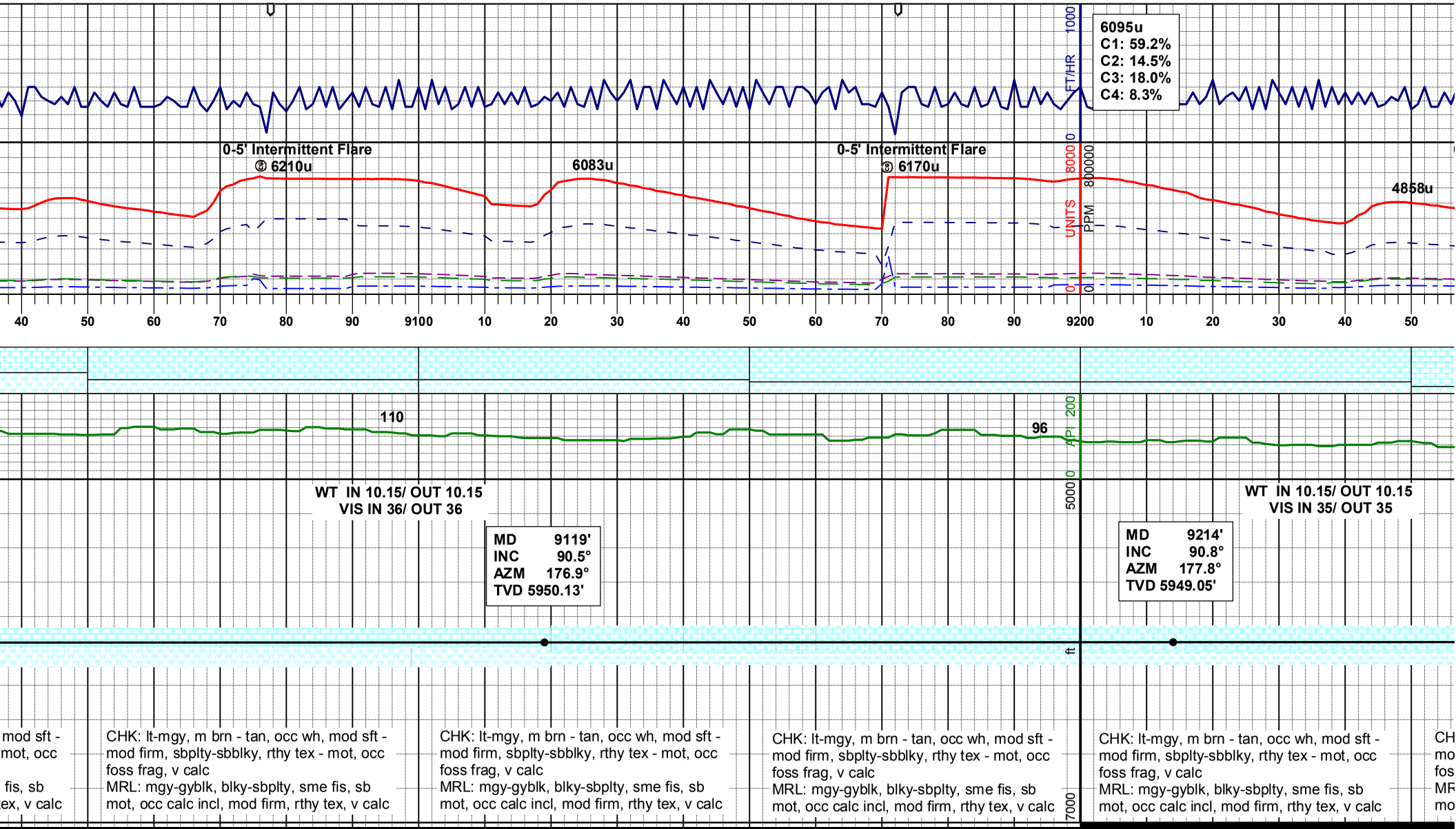

5656u
C1: 45.5%
C2: 15.9%
C3: 25.1%
C4: 13.6%
RT/HR
1000
0
lare @ Connections
5756u
5690u
8000
UNITS
0
5-15' Flare @ Connections
5503u
5592u
800000
PPM
0
0-5' Flare @ Connections
5638u
40
50
60
70
80
90
8000
10
20
30
40
50
60
70
80
90
8100
10
20
30
40
50
API
200
0
114
117
5000
WT IN 10.20/ OUT 10.00
VIS IN 34/ OUT 33
MD 7980'
INC 89.7°
AZM 179.8°
TVD 5946.14'
MD 8075'
INC 90.0°
AZM 178.2°
TVD 5946.39'
B CHALK
B CHALK
B MARL
B MARL
ft
7000
fis, sb
x, v calc
d firm,
ss frag,
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK
mod
foss
MRL
mot,


4860u
C1: 47.6%
C2: 14.5%
C3: 24.0%
C4: 13.8%
FT/HR
1000
0
UNITS
8000
0
PPM
800000
0
0-5' Flare @ Connections
5900u
5595u
5692u
0-5' Flare @ Connections
5268u
60 70 80 90 8200 10 20 30 40 50 60 70 80 90 8300 10 20 30 40 50 60 70
API
200
0
5000
63
87
WT IN 10.20/ OUT 10.20
VIS IN 34/ OUT 34
WT IN 10.25/ OUT 10.25
VIS IN 35/ OUT 34
MD 8170'
INC 90.0°
AZM 178.3°
TVD 5946.39'
MD 8265'
INC 89.9°
AZM 178.7°
TVD 5946.47'
MD 8360'
INC 89.9°
AZM 178.2°
TVD 5946.64'
ft
7000
: lt-mgy, m brn - tan, occ wh, mod sft - firm, sbplty-sbblky, rthy tex - mot, occ frag, v calc
: mgy-gyblk, blky-sbplty, sme fis, sb occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, mod firm, sbplty-sbblky, r
foss frag, v calc
MRL: mgy-gyblk, blky-sb
mot, occ calc incl, mod fi


5065u
C1: 47.5%
C2: 15.5%
C3: 23.6%
C4: 13.3%
FT/HR
1000
0-5' Flare @ Connections
5883u
5302u
6085u
0-5' Flare @ Connections
6220u
6017u
UNITS
PPM
8000
800000
0
0
80
90
8400
10
20
30
40
50
60
70
80
90
8500
10
20
30
40
50
60
70
80
90
API
200
0
5000
82
64
MD 8455'
INC 90.8°
AZM 177.5°
TVD 5946.06'
MD 8550'
INC 90.8°
AZM 177.6°
TVD 5944.73'
WT IN 10.25/ OUT 10.20
VIS IN 36/ OUT 36
ft
7000
occ wh, mod sft -
rthy tex - mot, occ
plty, sme fis, sb
rm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc


5962u
C1: 54.3%
C2: 16.5%
C3: 19.7%
C4: 9.5%
6144u
C1: 62.9%
C2: 14.7%
C3: 16.7%
C4: 5.7%
FT/HR
UNITS
PPM
0-5' Intermittent Flare
5788u
6151u
0-5' Intermittent Flare
6100u
5944u
0-5' Intermittent Flare
6157u
8600
10
20
30
40
50
60
70
80
90
8700
10
20
30
40
50
60
70
80
90
8800
10
API
53
58
WT IN 10.20/ OUT 10.10
VIS IN 39/ OUT 39
MD 8644'
INC 90.0°
AZM 178.2°
TVD 5944.08'
MD 8739'
INC 88.7°
AZM 178.5°
TVD 5945.15'
ft
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy,
mod firm, sbp
foss frag, v ca
MRL: mgy-gyb
mot, occ calc


5882u
C1: 61.9%
C2: 13.7%
C3: 17.6%
C4: 6.8%
FT/HR
1000
0
0-5' Intermittent Flare
6140u
5382u
5216u
0-5' Intermittent Flare
4779u
5500u
8000
UNITS
800000
PPM
0
20
30
40
50
60
70
80
90
8900
10
20
30
40
50
60
70
80
90
9000
10
20
30
78
51
90
API
200
0
WT IN 10.15/ OUT 10.15
VIS IN 38/ OUT 38
WT IN 10.15/ OUT 10.15
VIS IN 36/ OUT 36
MD 8834'
INC 88.6°
AZM 178.2°
TVD 5947.39'
MD 8929'
INC 88.1°
AZM 178.3°
TVD 5950.13'
MD 9024'
INC 90.7°
AZM 177.5°
TVD 5951.12'
ft
7000
m brn - tan, occ wh, mod sft -
lty-sbblky, rthy tex - mot, occ
alc
blk, blky-sbplty, sme fis, sb
incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft -
mod firm, sbplty-sbblky, rthy tex - mot, occ
foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft -
mod firm, sbplty-sbblky, rthy tex - mot, occ
foss frag, v calc, grdg-
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh, mod sft -
mod firm, sbplty-sbblky, rthy tex - mot, occ
foss frag, v calc, grdg-
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, m brn - tan, occ wh,
mod firm, sbplty-sbblky, rthy tex -
foss frag, v calc, grdg-
MRL: mgy-gyblk, blky-sbplty, sme
mot, occ calc incl, mod firm, rthy t



mod sft -
mot, occ
fis, sb
ex, v calc

CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc

CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc

CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc

CHK: lt-mgy, m brn - tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc

CH
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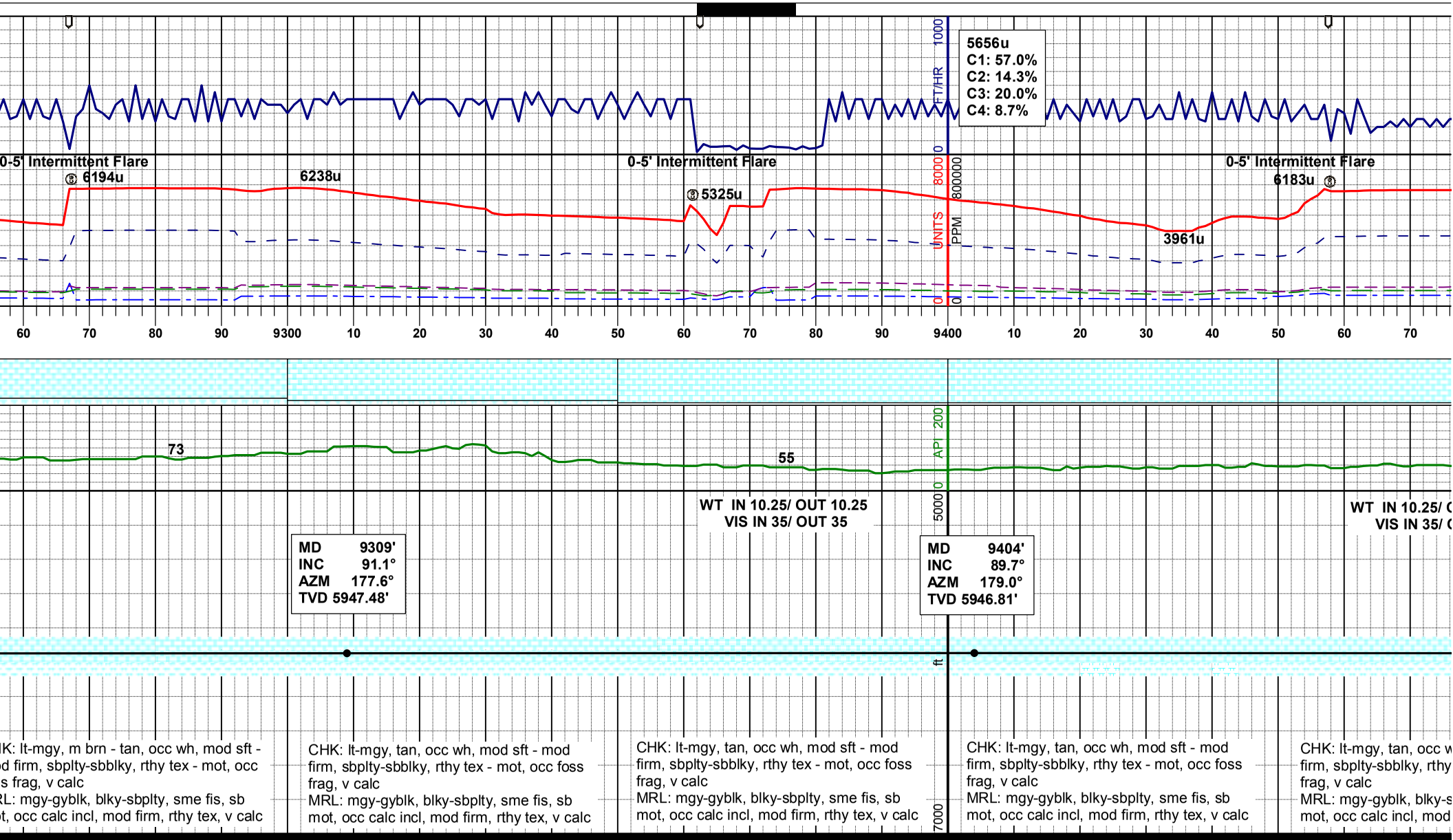
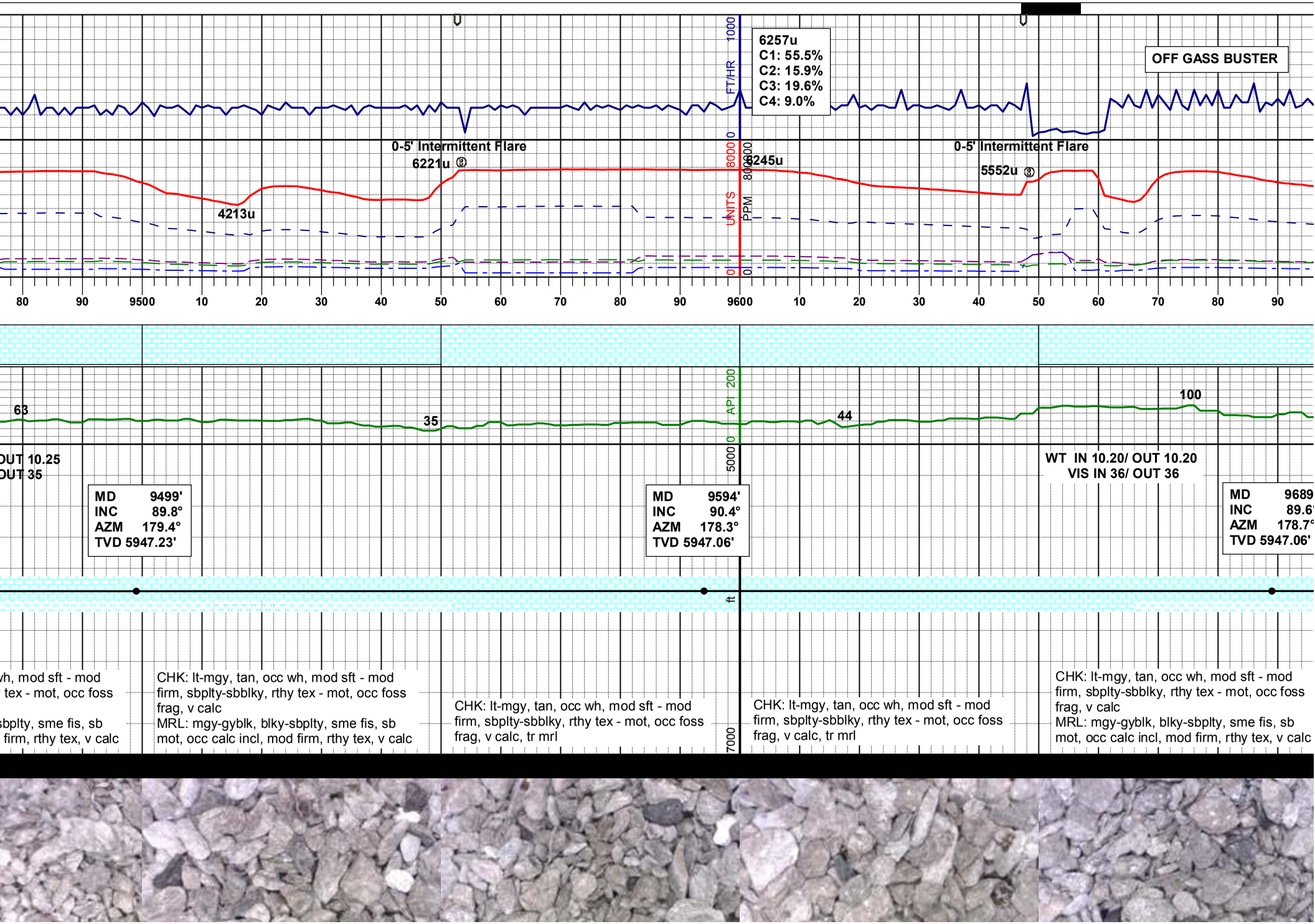
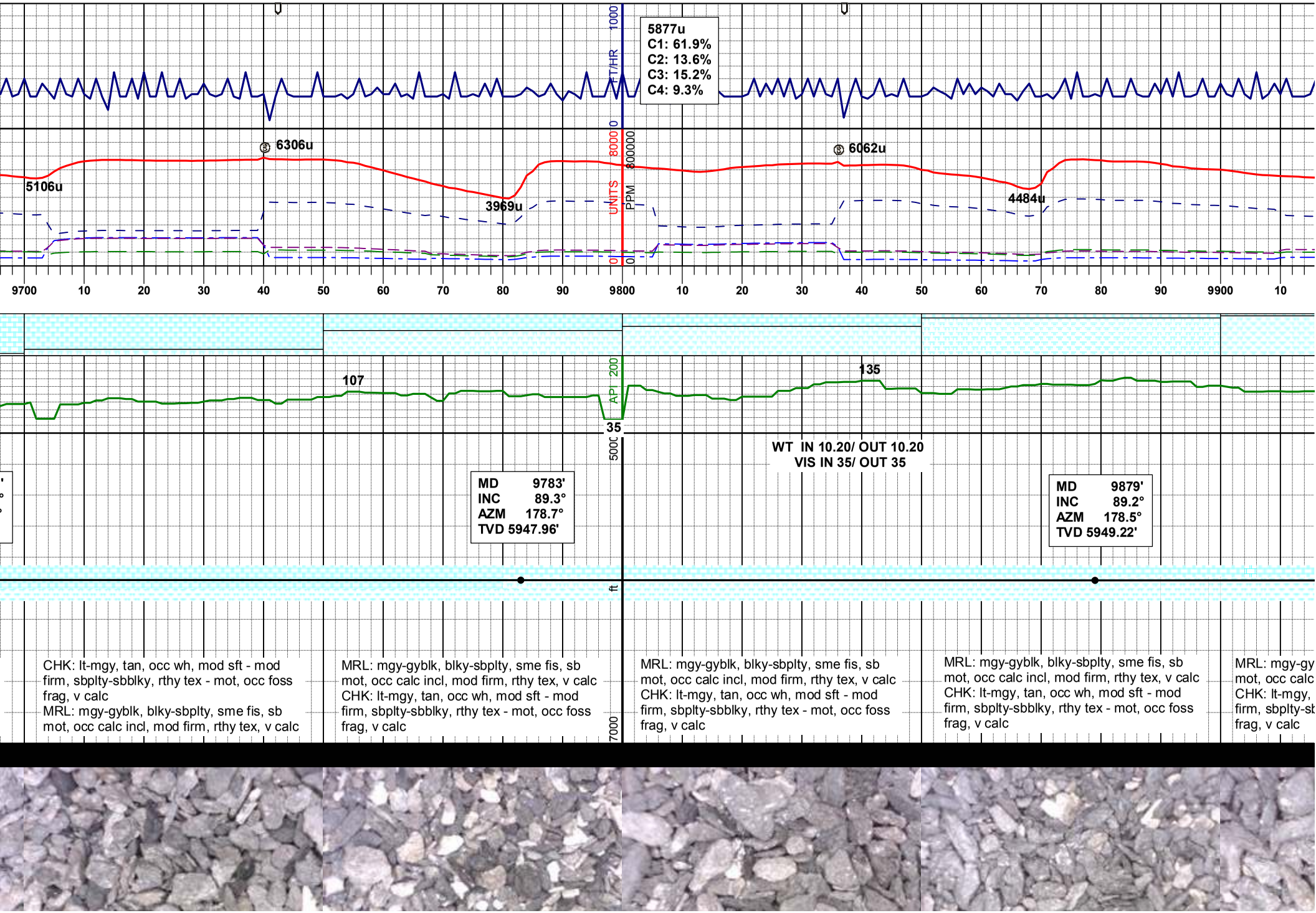
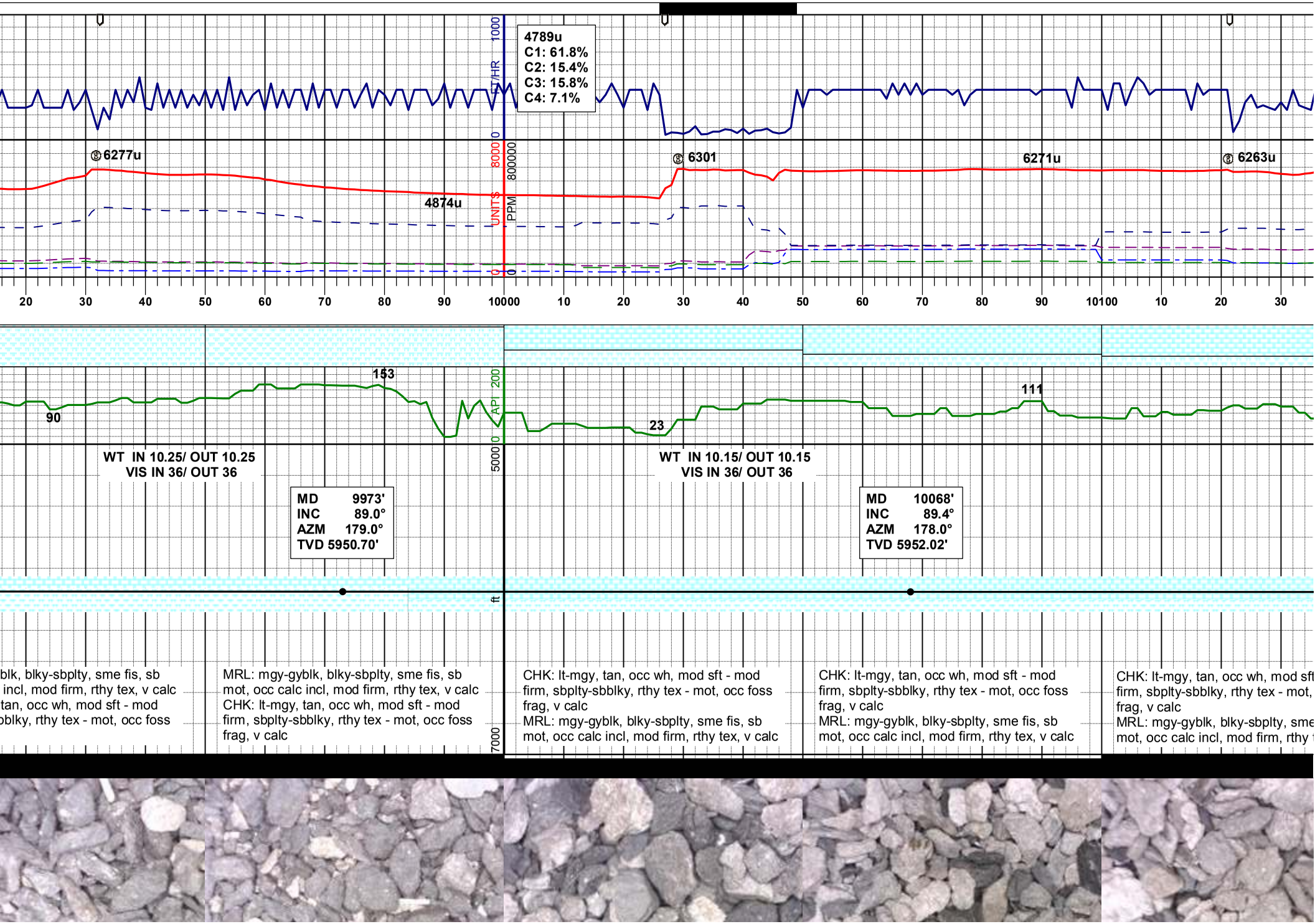
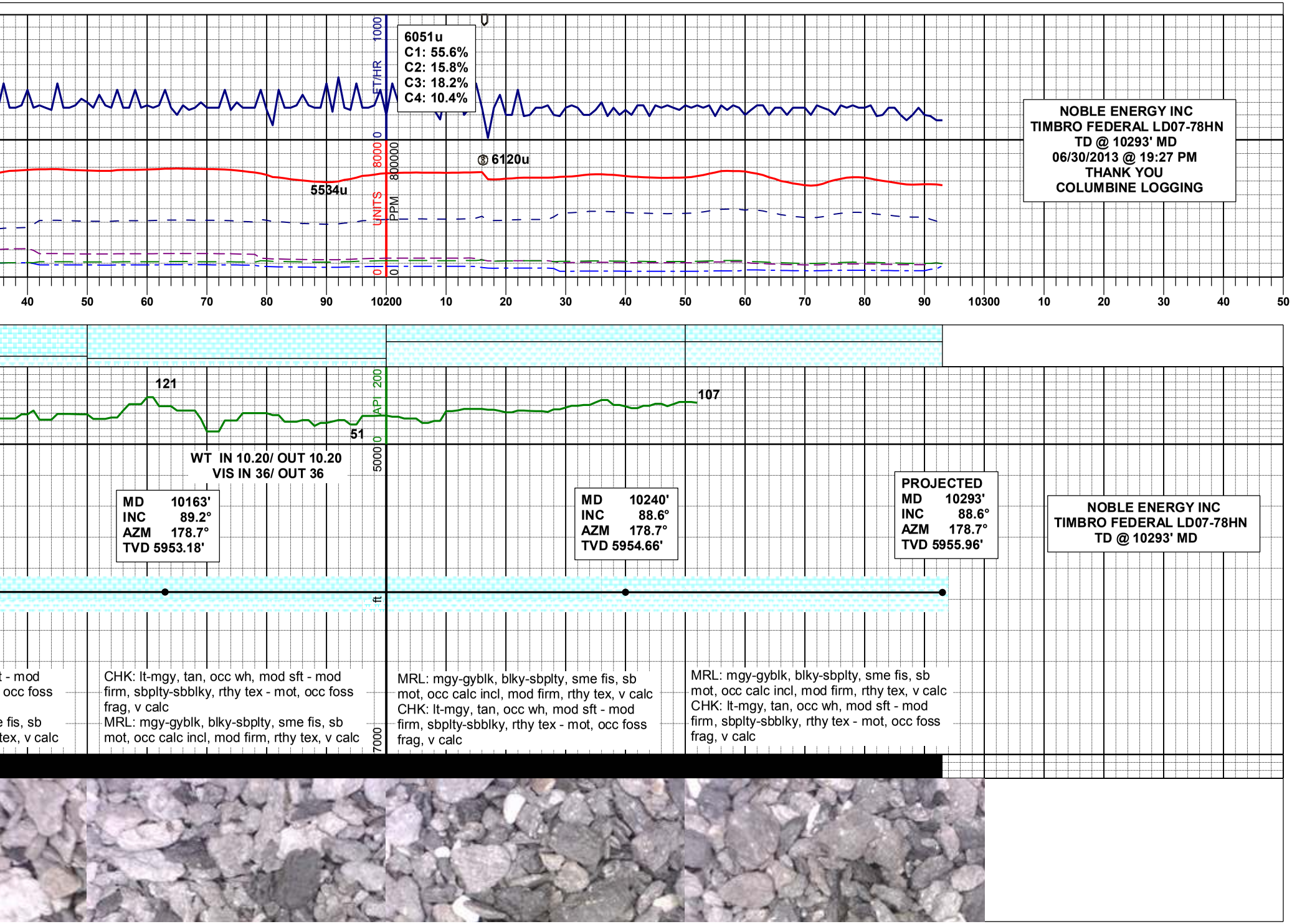
fos
MR
mo


5656u
C1: 57.0%
C2: 14.3%
C3: 20.0%
C4: 8.7%
FT/HR
1000
0-5' Intermittent Flare
6194u
6238u
0-5' Intermittent Flare
5325u
0-5' Intermittent Flare
6183u
3961u
UNITS
PPM
8000
0
800000
0
60
70
80
90
9300
10
20
30
40
50
60
70
80
90
9400
10
20
30
40
50
60
70
73
55
API
200
0
5000
WT IN 10.25/ OUT 10.25
VIS IN 35/ OUT 35
MD 9309'
INC 91.1°
AZM 177.6°
TVD 5947.48'
MD 9404'
INC 89.7°
AZM 179.0°
TVD 5946.81'
WT IN 10.25/ O
VIS IN 35/ O
ft
7000
K: lt-mgy, m brn - tan, occ wh, mod sft -
d firm, sbplty-sbblky, rthy tex - mot, occ
s frag, v calc
L: mgy-gyblk, blky-sbplty, sme fis, sb
t, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod
firm, sbplty-sbblky, rthy tex - mot, occ foss
frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod
firm, sbplty-sbblky, rthy tex - mot, occ foss
frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod
firm, sbplty-sbblky, rthy tex - mot, occ foss
frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb
mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ w
firm, sbplty-sbblky, rthy
frag, v calc
MRL: mgy-gyblk, blky-s
mot, occ calc incl, mod


6257u
C1: 55.5%
C2: 15.9%
C3: 19.6%
C4: 9.0%
OFF GASS BUSTER
0-5' Intermittent Flare
6221u
4213u
6245u
0-5' Intermittent Flare
5552u
FT/HR
UNITS
PPM
1000
0
8000
0
8000
0
80 90 9500 10 20 30 40 50 60 70 80 90 9600 10 20 30 40 50 60 70 80 90
63
35
44
100
API
200
0
5000
0
OUT 10.25
OUT 35
MD 9499'
INC 89.8°
AZM 179.4°
TVD 5947.23'
MD 9594'
INC 90.4°
AZM 178.3°
TVD 5947.06'
WT IN 10.20/ OUT 10.20
VIS IN 36/ OUT 36
MD 9689
INC 89.6
AZM 178.7°
TVD 5947.06'
ft
7000
wh, mod sft - mod
tex - mot, occ foss
sbplty, sme fis, sb
firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc, tr mrl
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc, tr mrl
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc


5877u
C1: 61.9%
C2: 13.6%
C3: 15.2%
C4: 9.3%
FT/HR
1000
0
UNITS
PPM
800000
0
6306u
5106u
3969u
6062u
4484u
9700
10
20
30
40
50
60
70
80
90
9800
10
20
30
40
50
60
70
80
90
9900
10
API
200
35
500C
107
135
WT IN 10.20/ OUT 10.20
VIS IN 35/ OUT 35
MD 9783'
INC 89.3°
AZM 178.7°
TVD 5947.96'
MD 9879'
INC 89.2°
AZM 178.5°
TVD 5949.22'
ft
7000
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gy
mot, occ calc
CHK: lt-mgy,
firm, sbplty-sb
frag, v calc


4789u
C1: 61.8%
C2: 15.4%
C3: 15.8%
C4: 7.1%
FT/HR
1000
0
UNITS
8000
0
PPM
800000
0
6277u
4874u
6301
6271u
6263u
20
30
40
50
60
70
80
90
10000
10
20
30
40
50
60
70
80
90
10100
10
20
30
API
200
0
5000
7000
ft
90
153
23
111
WT IN 10.25/ OUT 10.25
VIS IN 36/ OUT 36
MD 9973'
INC 89.0°
AZM 179.0°
TVD 5950.70'
WT IN 10.15/ OUT 10.15
VIS IN 36/ OUT 36
MD 10068'
INC 89.4°
AZM 178.0°
TVD 5952.02'
blk, blky-sbplty, sme fis, sb
incl, mod firm, rthy tex, v calc
tan, occ wh, mod sft - mod
bblky, rthy tex - mot, occ foss
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft
firm, sbplty-sbblky, rthy tex - mot,
frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme
mot, occ calc incl, mod firm, rthy


6051u
C1: 55.6%
C2: 15.8%
C3: 18.2%
C4: 10.4%
6120u
5534u
NOBLE ENERGY INC
TIMBRO FEDERAL LD07-78HN
TD @ 10293' MD
06/30/2013 @ 19:27 PM
THANK YOU
COLUMBINE LOGGING
121
107
51
WT IN 10.20/ OUT 10.20
VIS IN 36/ OUT 36
MD 10163'
INC 89.2°
AZM 178.7°
TVD 5953.18'
MD 10240'
INC 88.6°
AZM 178.7°
TVD 5954.66'
PROJECTED
MD 10293'
INC 88.6°
AZM 178.7°
TVD 5955.96'
NOBLE ENERGY INC
TIMBRO FEDERAL LD07-78HN
TD @ 10293' MD
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc
MRL: mgy-gyblk, blky-sbplty, sme fis, sb mot, occ calc incl, mod firm, rthy tex, v calc
CHK: lt-mgy, tan, occ wh, mod sft - mod firm, sbplty-sbblky, rthy tex - mot, occ foss frag, v calc