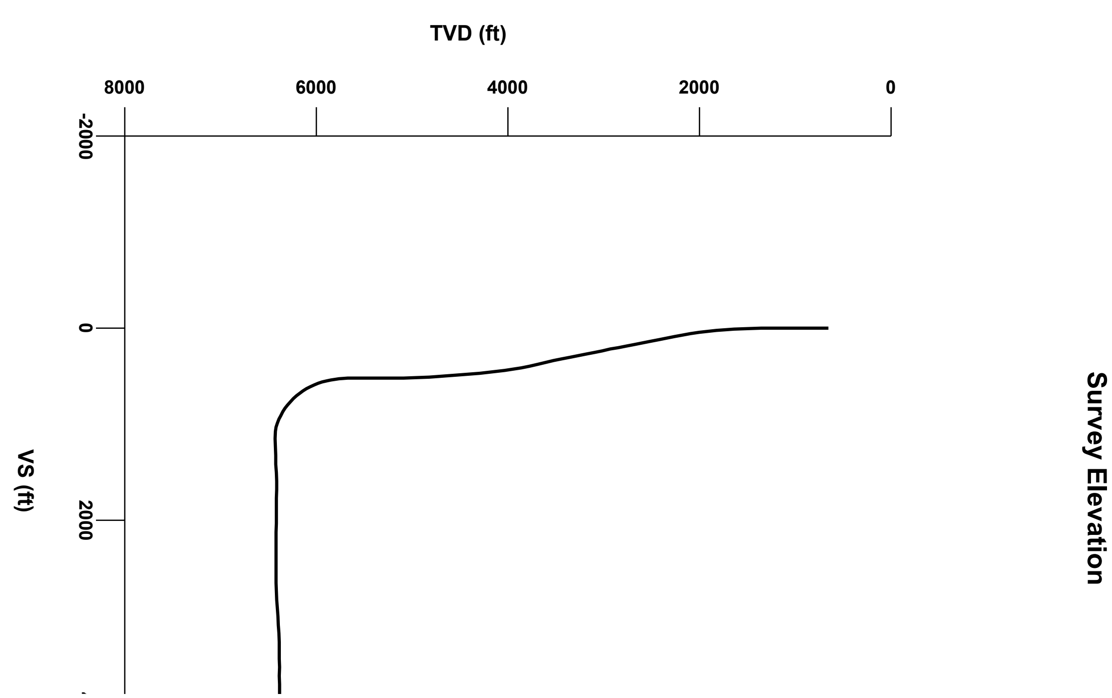
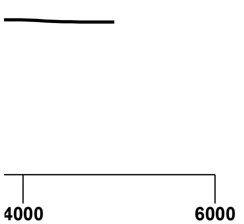
pason

Lplot VH

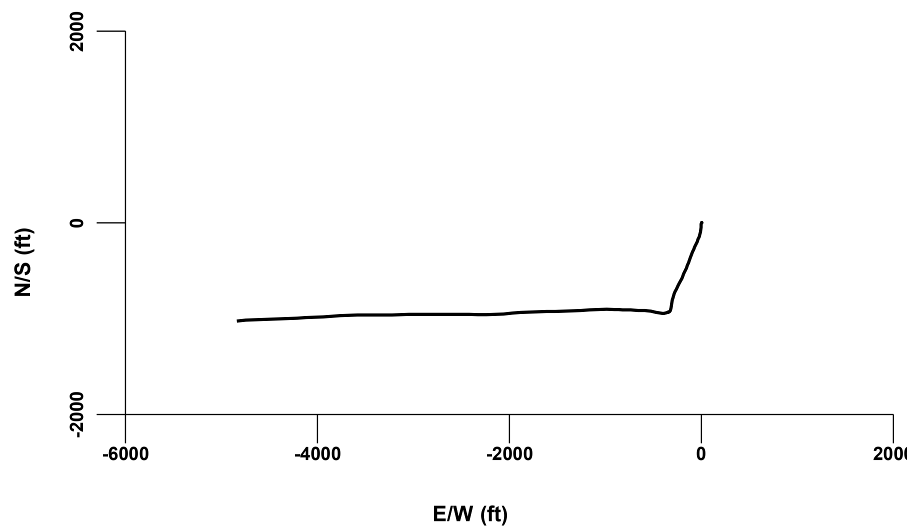
Pason Systems USA Corp.
(720) 880-2000

OPERATOR:	**NOBLE ENERGY INC.**
WELL:	**SHABLE LF07-68HN**
LOCATION:	**SEC 5, T8N, R60W**
COUNTY:	**WELD**
STATE:	**COLORADO**
SPOT:	**250' FSL, 250' FWL**
ELEVATION:	**GL 4921', KB 4937'**
FIELD:	**WILDCAT**
SPUD DATE:	**03/19/2013**
TD DATE:	**04/01/2013**
DATES LOGGED:	**03/21/2013 - 04/01/2013**
DEPTHS LOGGED:	**1,000' - 10,854'**
LOGGERS:	**BRAD WILSON, CHRIS WILLATT**
DRILLING FLUID:	**WBM, LSND**
DRILLING RIG:	**PRECISION DRILLING 829**
API:	**05-123-36272**
LOG TYPE:	**HORIZONTAL**
SCALE:	**1:240 (5 inches per 100 feet)**
REMARKS:	**WELLSITE GEOLOGICAL SERVICES PROVIDED BY COLUMBINE LOGGING INC.**





Survey Plan

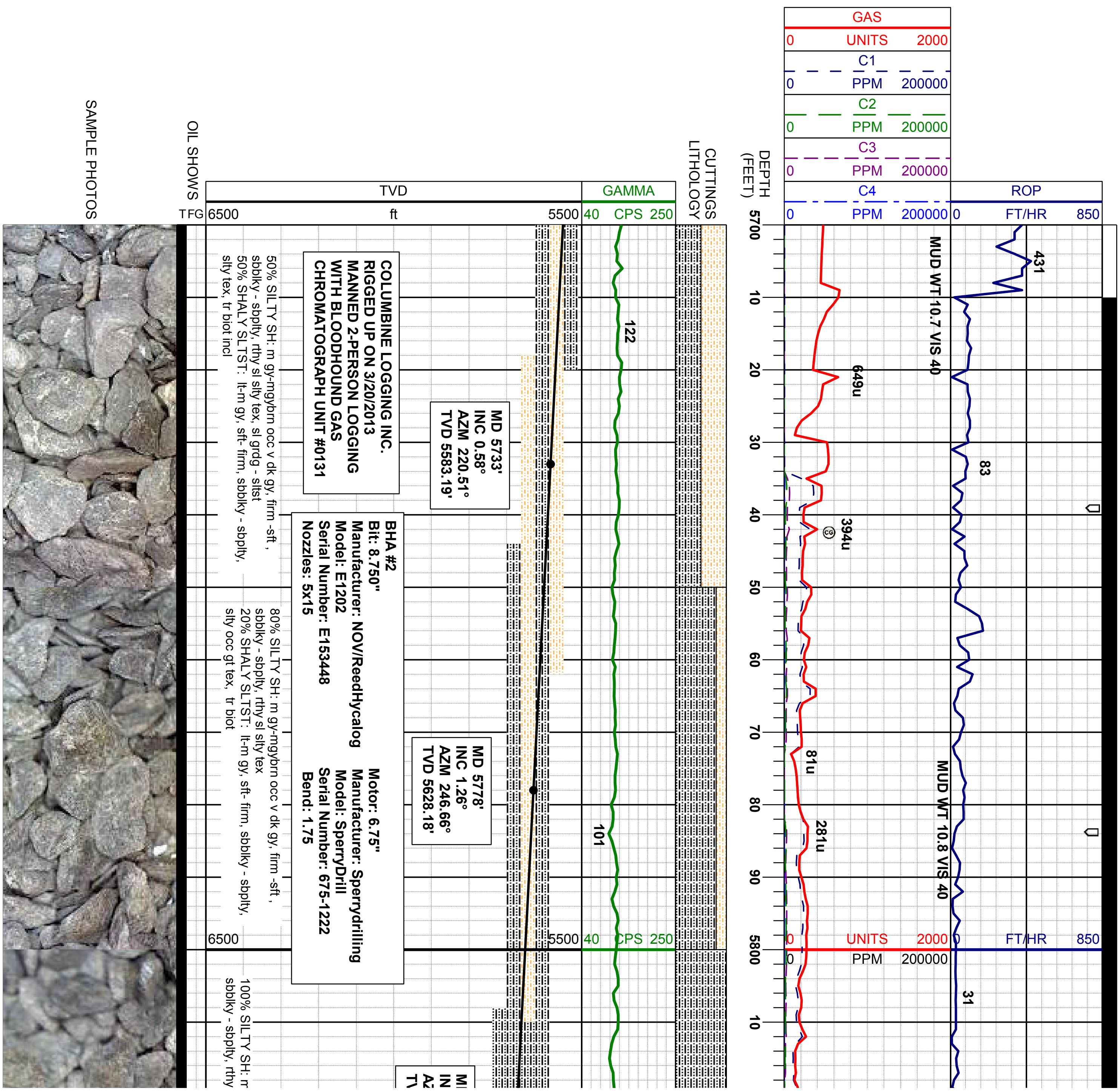


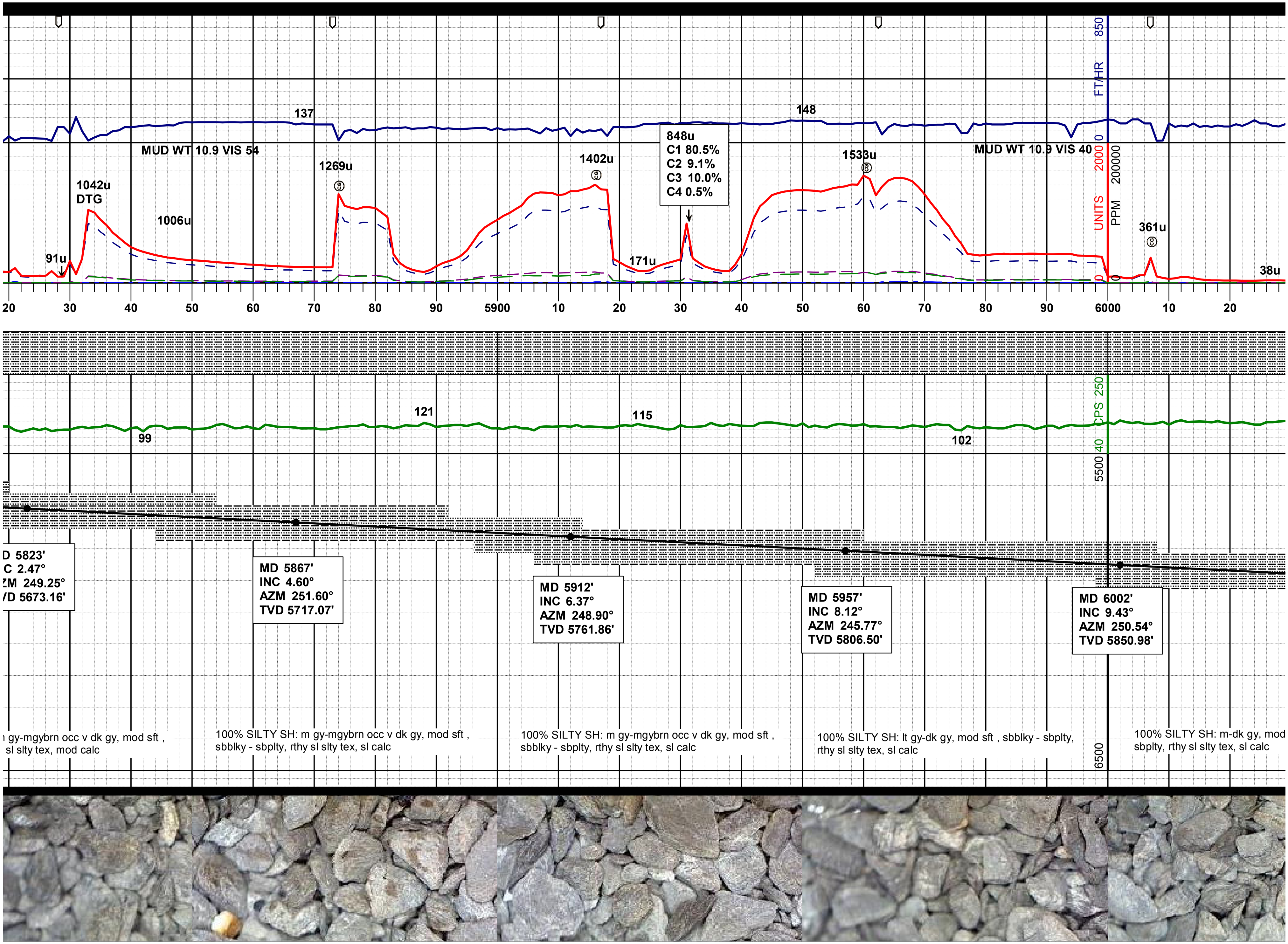
LITHOLOGIES

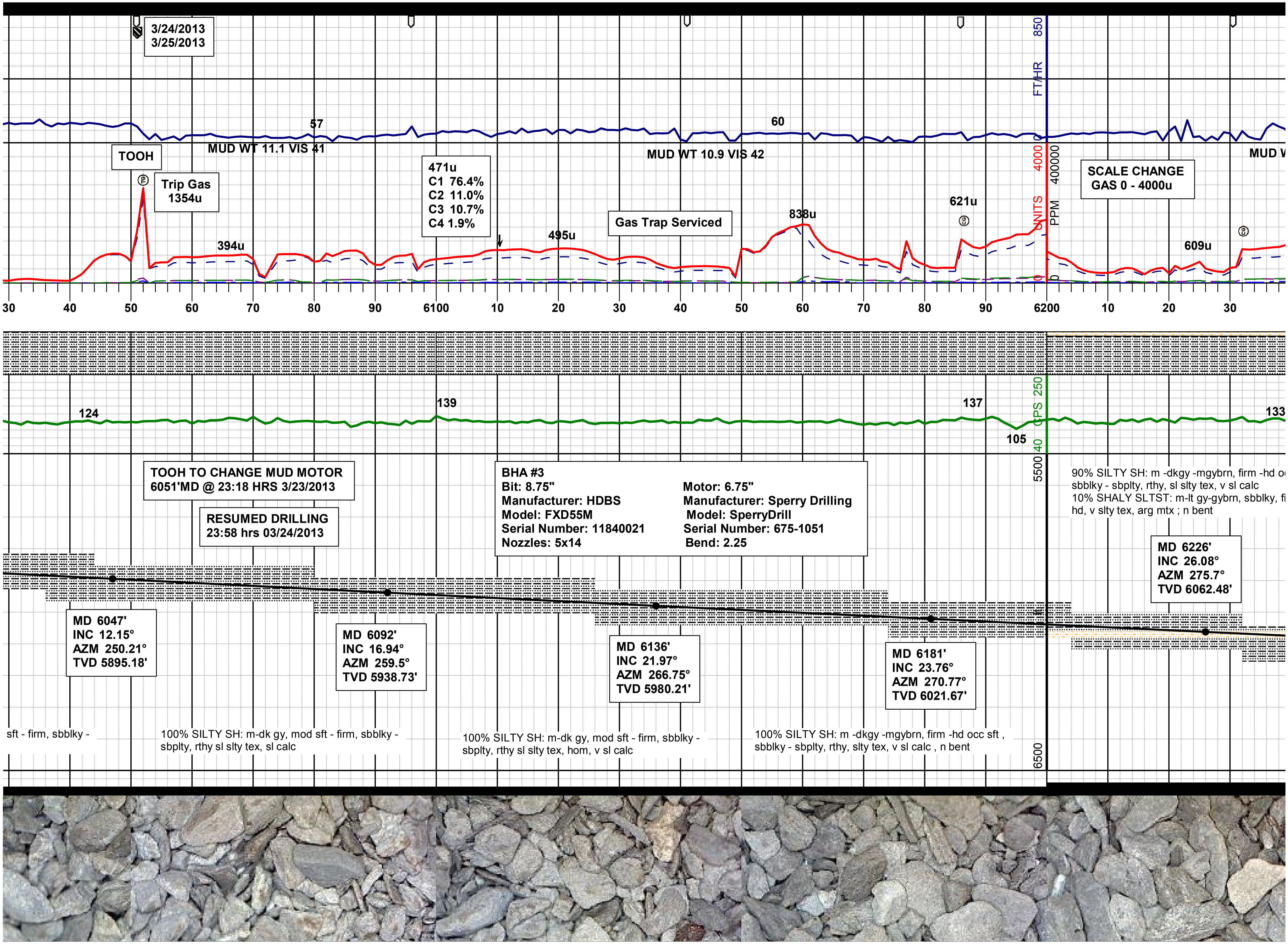
Bentonite	Chalk	Marl
Shaly Siltstone	Silty Shale	

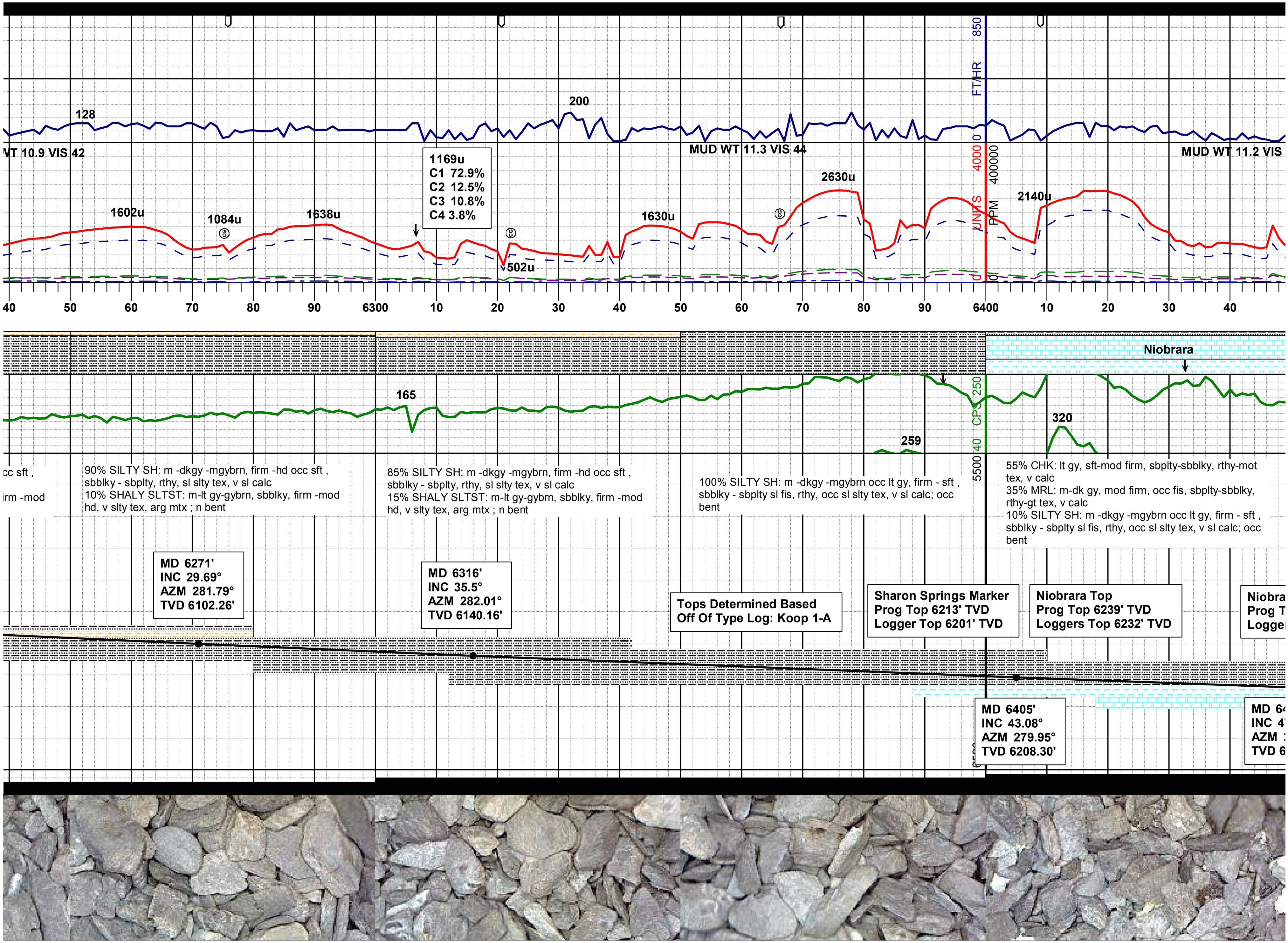
ENGINEERING SYMBOLS

Casing	Casing	Connection	Connection Gas
Arrow	Midnight Depth	Arrow	Trip Gas

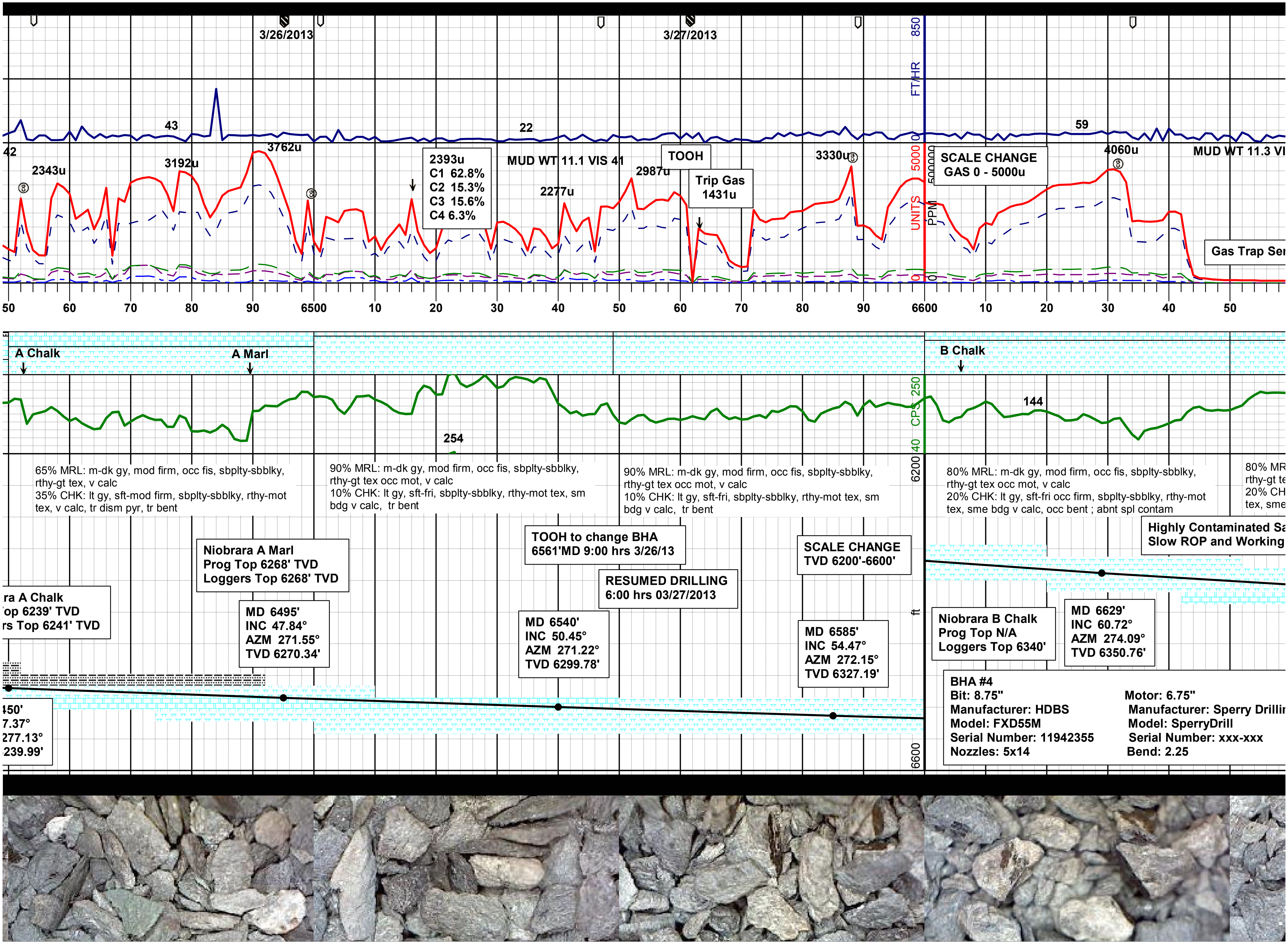


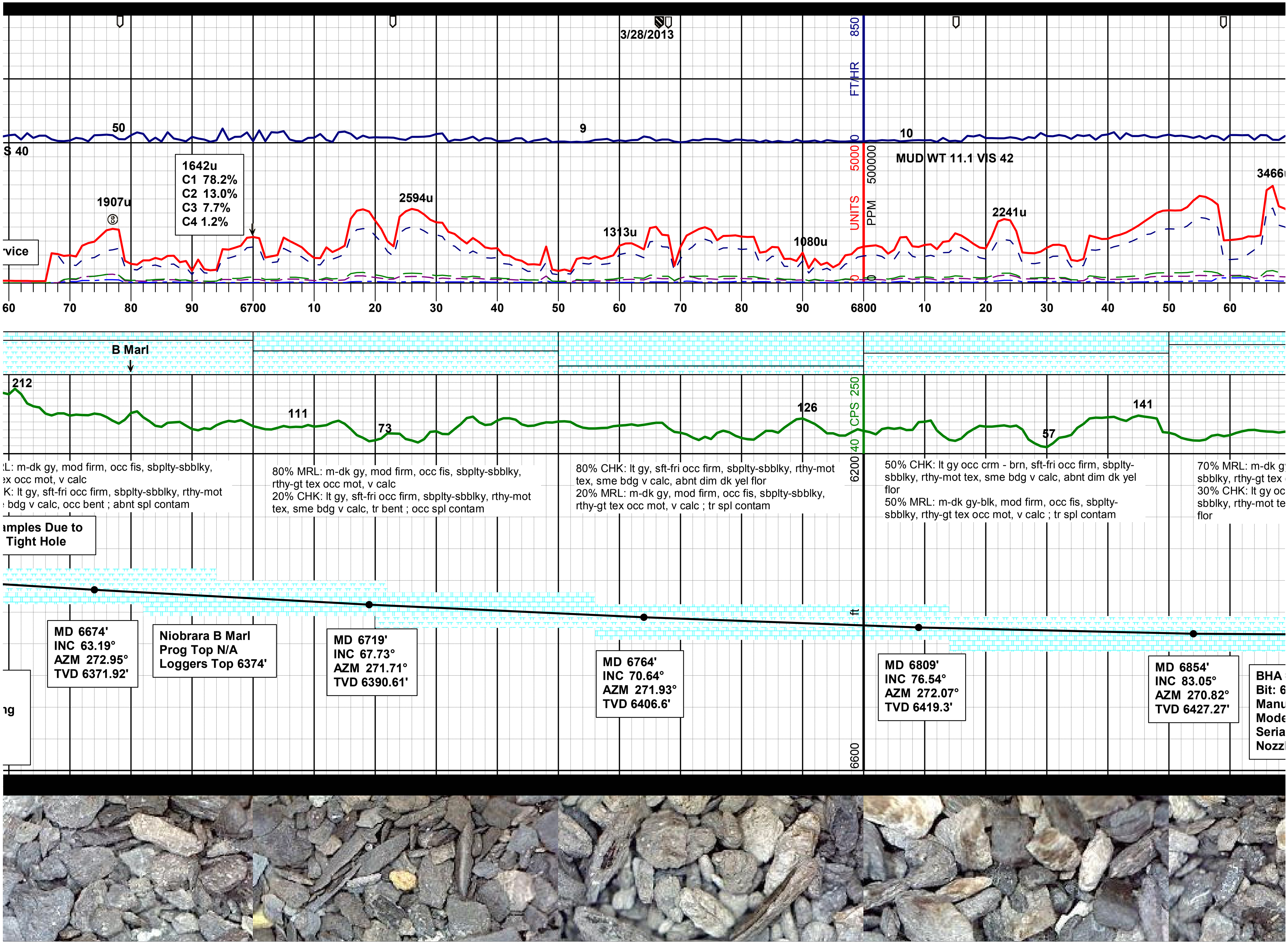

MUD WT 10.9 VIS 54
MUD WT 10.9 VIS 40
137
148
FT/HR
0
850
UNITS
0
2000
PPM
0
200000
91u
1042u
DTG
1006u
1269u
1402u
171u
848u
C1 80.5%
C2 9.1%
C3 10.0%
C4 0.5%
1533u
361u
38u
20
30
40
50
60
70
80
90
5900
10
20
30
40
50
60
70
80
90
6000
10
20
CPS
40
250
121
99
115
102
5500
6500
D 5823'
C 2.47°
ZM 249.25°
/D 5673.16'
MD 5867'
INC 4.60°
AZM 251.60°
TVD 5717.07'
MD 5912'
INC 6.37°
AZM 248.90°
TVD 5761.86'
MD 5957'
INC 8.12°
AZM 245.77°
TVD 5806.50'
MD 6002'
INC 9.43°
AZM 250.54°
TVD 5850.98'
gy-mgybrn occ v dk gy, mod sft , sl slty tex, mod calc
100% SILTY SH: m gy-mgybrn occ v dk gy, mod sft , sbblky - sbplty, rthy sl slty tex, sl calc
100% SILTY SH: m gy-mgybrn occ v dk gy, mod sft , sbblky - sbplty, rthy sl slty tex, sl calc
100% SILTY SH: lt gy-dk gy, mod sft , sbblky - sbplty, rthy sl slty tex, sl calc
100% SILTY SH: m-dk gy, mod sbplty, rthy sl slty tex, sl calc


3/24/2013
3/25/2013
TOOH
Trip Gas
1354u
MUD WT 11.1 VIS 41
57
394u
471u
C1 76.4%
C2 11.0%
C3 10.7%
C4 1.9%
495u
Gas Trap Serviced
MUD WT 10.9 VIS 42
60
838u
621u
SCALE CHANGE
GAS 0 - 4000u
609u
MUD W
0 UNITS 4000
0 PPM 400000
0 FT/HR 850
30 40 50 60 70 80 90 6100 10 20 30 40 50 60 70 80 90 6200 10 20 30
40 CPS 250
124
139
137
105
133
5500
6500
TOOH TO CHANGE MUD MOTOR
6051'MD @ 23:18 HRS 3/23/2013
RESUMED DRILLING
23:58 hrs 03/24/2013
BHA #3
Bit: 8.75"
Manufacturer: HDBS
Model: FXD55M
Serial Number: 11840021
Nozzles: 5x14
Motor: 6.75"
Manufacturer: Sperry Drilling
Model: SperryDrill
Serial Number: 675-1051
Bend: 2.25
90% SILTY SH: m -dkgy -mgybrn, firm -hd o
sbblky - sbplty, rthy, sl slty tex, v sl calc
10% SHALY SLTST: m-lt gy-gybrn, sbblky, f
hd, v slty tex, arg mtx ; n bent
MD 6047'
INC 12.15°
AZM 250.21°
TVD 5895.18'
MD 6092'
INC 16.94°
AZM 259.5°
TVD 5938.73'
MD 6136'
INC 21.97°
AZM 266.75°
TVD 5980.21'
MD 6181'
INC 23.76°
AZM 270.77°
TVD 6021.67'
MD 6226'
INC 26.08°
AZM 275.7°
TVD 6062.48'
sft - firm, sbblky -
100% SILTY SH: m-dk gy, mod sft - firm, sbblky -
sbplty, rthy sl slty tex, sl calc
100% SILTY SH: m-dk gy, mod sft - firm, sbblky -
sbplty, rthy sl slty tex, hom, v sl calc
100% SILTY SH: m -dkgy -mgybrn, firm -hd occ sft ,
sbblky - sbplty, rthy, slty tex, v sl calc , n bent

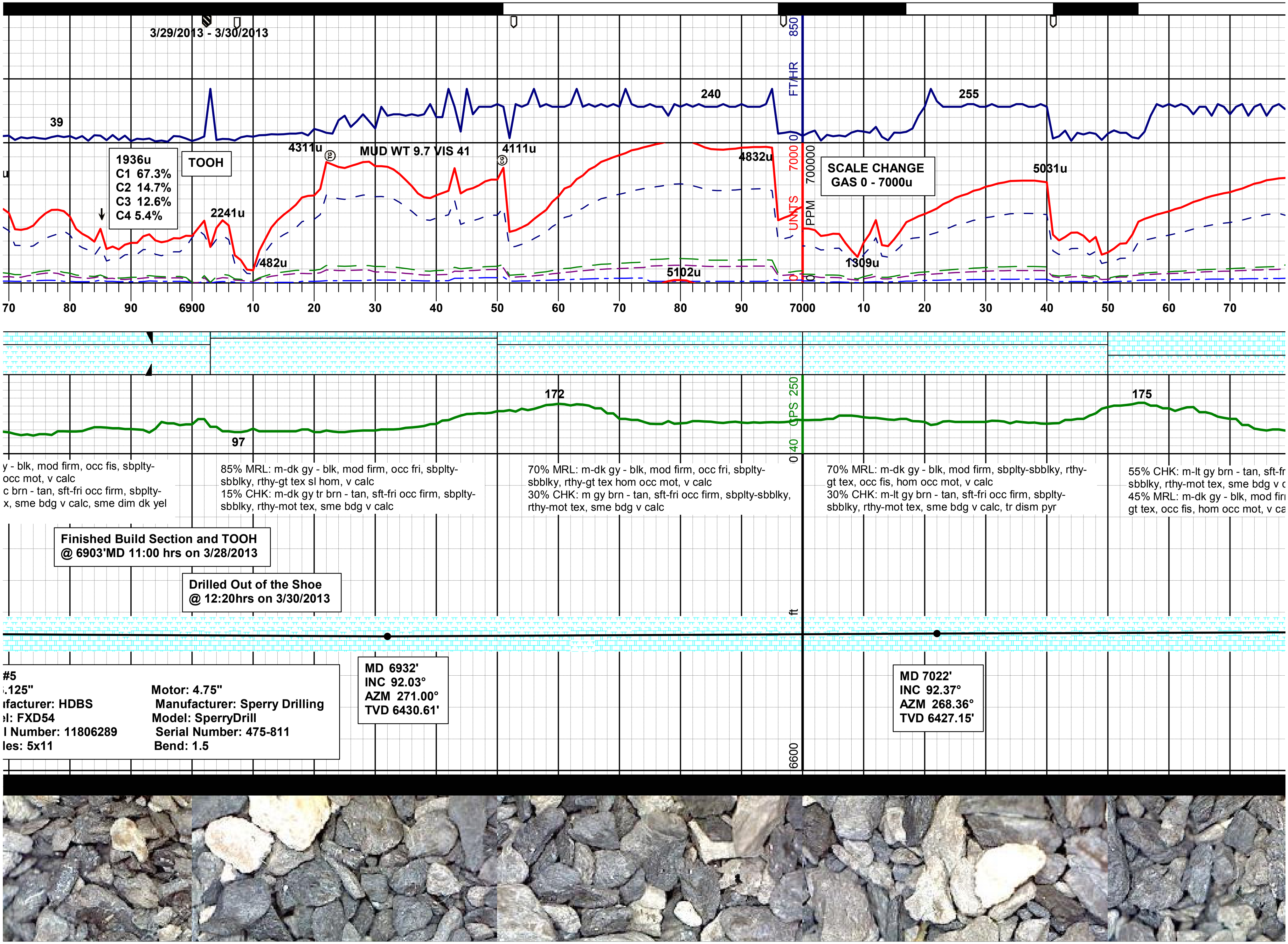


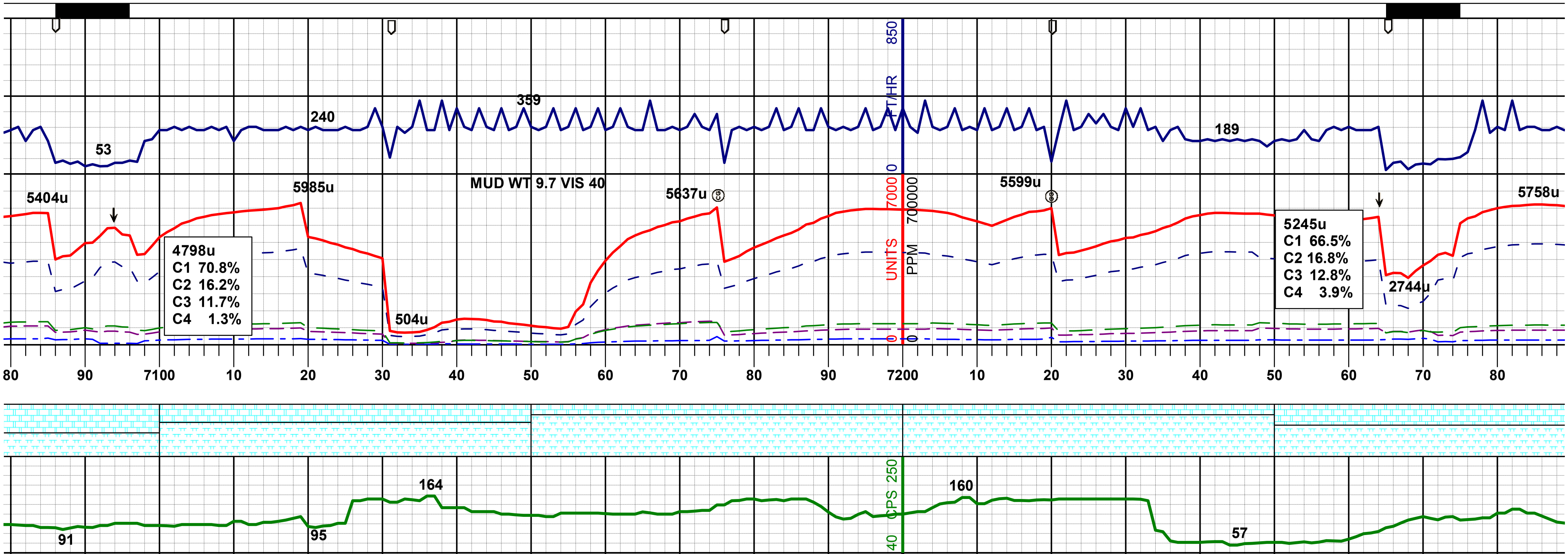
WT 10.9 VIS 42
MUD WT 11.3 VIS 44
MUD WT 11.2 VIS
128
200
0 FT/HR 850
0 UNITS 4000
0 PPM 400000
1602u
1084u
1638u
1169u
C1 72.9%
C2 12.5%
C3 10.8%
C4 3.8%
502u
1630u
2630u
2140u
40 50 60 70 80 90 6300 10 20 30 40 50 60 70 80 90 6400 10 20 30 40
Niobrara
165
259
320
40 CPS 250
5500
occ sft ,
firm -mod
90% SILTY SH: m -dkgy -mgybrn, firm -hd occ sft , sbblky - sbplty, rthy, sl slty tex, v sl calc
10% SHALY SLTST: m-lt gy-gybrn, sbblky, firm -mod hd, v slty tex, arg mtx ; n bent
85% SILTY SH: m -dkgy -mgybrn, firm -hd occ sft , sbblky - sbplty, rthy, sl slty tex, v sl calc
15% SHALY SLTST: m-lt gy-gybrn, sbblky, firm -mod hd, v slty tex, arg mtx ; n bent
100% SILTY SH: m -dkgy -mgybrn occ lt gy, firm - sft , sbblky - sbplty sl fis, rthy, occ sl slty tex, v sl calc; occ bent
55% CHK: lt gy, sft-mod firm, sbplty-sbblky, rthy-mot tex, v calc
35% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex, v calc
10% SILTY SH: m -dkgy -mgybrn occ lt gy, firm - sft , sbblky - sbplty sl fis, rthy, occ sl slty tex, v sl calc; occ bent
MD 6271'
INC 29.69°
AZM 281.79°
TVD 6102.26'
MD 6316'
INC 35.5°
AZM 282.01°
TVD 6140.16'
Tops Determined Based Off Of Type Log: Koop 1-A
Sharon Springs Marker
Prog Top 6213' TVD
Logger Top 6201' TVD
Niobrara Top
Prog Top 6239' TVD
Loggers Top 6232' TVD
MD 6405'
INC 43.08°
AZM 279.95°
TVD 6208.30'


3/26/2013
3/27/2013
FT/HR 850
0
43
22
59
42
2343u
3192u
3762u
2393u
C1 62.8%
C2 15.3%
C3 15.6%
C4 6.3%
MUD WT 11.1 VIS 41
2277u
2987u
TOOH
Trip Gas
1431u
3330u
0 UNITS 5000
0 PPM 500000
SCALE CHANGE
GAS 0 - 5000u
4060u
MUD WT 11.3 VI
Gas Trap Se
50
60
70
80
90
6500
10
20
30
40
50
60
70
80
90
6600
10
20
30
40
50
A Chalk
A Marl
B Chalk
40 CPS 250
254
144
6200
65% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex, v calc
35% CHK: lt gy, sft-mod firm, sbplty-sbblky, rthy-mot tex, v calc, tr dism pyr, tr bent
90% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex occ mot, v calc
10% CHK: lt gy, sft-fri, sbplty-sbblky, rthy-mot tex, sm bdg v calc, tr bent
90% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex occ mot, v calc
10% CHK: lt gy, sft-fri, sbplty-sbblky, rthy-mot tex, sm bdg v calc, tr bent
80% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex occ mot, v calc
20% CHK: lt gy, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, occ bent ; abnt spl contam
80% MR
rthy-gt te
20% CH
tex, sme
Highly Contaminated Sa
Slow ROP and Working
TOOH to change BHA
6561'MD 9:00 hrs 3/26/13
RESUMED DRILLING
6:00 hrs 03/27/2013
SCALE CHANGE
TVD 6200'-6600'
Niobrara A Marl
Prog Top 6268' TVD
Loggers Top 6268' TVD
ra A Chalk
op 6239' TVD
rs Top 6241' TVD
MD 6495'
INC 47.84°
AZM 271.55°
TVD 6270.34'
MD 6540'
INC 50.45°
AZM 271.22°
TVD 6299.78'
MD 6585'
INC 54.47°
AZM 272.15°
TVD 6327.19'
Niobrara B Chalk
Prog Top N/A
Loggers Top 6340'
MD 6629'
INC 60.72°
AZM 274.09°
TVD 6350.76'
450'
7.37°
277.13°
239.99'
ft
6600
BHA #4
Bit: 8.75"
Manufacturer: HDBS
Model: FXD55M
Serial Number: 11942355
Nozzles: 5x14
Motor: 6.75"
Manufacturer: Sperry Drillir
Model: SperryDrill
Serial Number: xxx-xxx
Bend: 2.25



3/28/2013
FT/HR 0 850
50
9
10
S 40
1642u
C1 78.2%
C2 13.0%
C3 7.7%
C4 1.2%
1907u
2594u
1313u
1080u
2241u
3466u
rvice
UNITS 0 5000
PPM 0 500000
MUD WT 11.1 VIS 42
60 70 80 90 6700 10 20 30 40 50 60 70 80 90 6800 10 20 30 40 50 60
B Marl
CPS 40 250
212
111
73
126
57
141
L: m-dk gy, mod firm, occ fis, sbplty-sbblky,
ex occ mot, v calc
K: lt gy, sft-fri occ firm, sbplty-sbblky, rthy-mot
bdg v calc, occ bent ; abnt spl contam
80% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex occ mot, v calc
20% CHK: lt gy, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr bent ; occ spl contam
80% CHK: lt gy, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, abnt dim dk yel flor
20% MRL: m-dk gy, mod firm, occ fis, sbplty-sbblky, rthy-gt tex occ mot, v calc ; tr spl contam
50% CHK: lt gy occ crm - brn, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, abnt dim dk yel flor
50% MRL: m-dk gy-blk, mod firm, occ fis, sbplty-sbblky, rthy-gt tex occ mot, v calc ; tr spl contam
70% MRL: m-dk g
sbblky, rthy-gt tex
30% CHK: lt gy oc
sbblky, rthy-mot te
flor
amples Due to
Tight Hole
6200
ft
6600
MD 6674'
INC 63.19°
AZM 272.95°
TVD 6371.92'
Niobrara B Marl
Prog Top N/A
Loggers Top 6374'
MD 6719'
INC 67.73°
AZM 271.71°
TVD 6390.61'
MD 6764'
INC 70.64°
AZM 271.93°
TVD 6406.6'
MD 6809'
INC 76.54°
AZM 272.07°
TVD 6419.3'
MD 6854'
INC 83.05°
AZM 270.82°
TVD 6427.27'
ng
BHA
Bit: 6
Manu
Mode
Seria
Nozz


3/29/2013 - 3/30/2013
39
240
255
FT/HR 0 850
1936u
C1 67.3%
C2 14.7%
C3 12.6%
C4 5.4%
TOOH
2241u
482u
4311u
MUD WT 9.7 VIS 41
4111u
5102u
4832u
UNITS 0 7000
PPM 0 700000
SCALE CHANGE
GAS 0 - 7000u
1309u
5031u
70 80 90 6900 10 20 30 40 50 60 70 80 90 7000 10 20 30 40 50 60 70
97
172
175
CPS 40 250
y - blk, mod firm, occ fis, sbplty-
occ mot, v calc
c brn - tan, sft-fri occ firm, sbplty-
x, sme bdg v calc, sme dim dk yel
85% MRL: m-dk gy - blk, mod firm, occ fri, sbplty-sbblky, rthy-gt tex sl hom, v calc
15% CHK: m-dk gy tr brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
70% MRL: m-dk gy - blk, mod firm, occ fri, sbplty-sbblky, rthy-gt tex hom occ mot, v calc
30% CHK: m gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
70% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom occ mot, v calc
30% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr dism pyr
55% CHK: m-lt gy brn - tan, sft-fr
sbblky, rthy-mot tex, sme bdg v c
45% MRL: m-dk gy - blk, mod fir
gt tex, occ fis, hom occ mot, v ca
Finished Build Section and TOOH
@ 6903'MD 11:00 hrs on 3/28/2013
Drilled Out of the Shoe
@ 12:20hrs on 3/30/2013
ft
6600
#5
.125"
ıfacturer: HDBS
el: FXD54
l Number: 11806289
les: 5x11
Motor: 4.75"
Manufacturer: Sperry Drilling
Model: SperryDrill
Serial Number: 475-811
Bend: 1.5
MD 6932'
INC 92.03°
AZM 271.00°
TVD 6430.61'
MD 7022'
INC 92.37°
AZM 268.36°
TVD 6427.15'



...i occ firm, sbplty-
...calc, tr dism pyr
...m, sbplty-sbblky, rthy-
...alc

65% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom occ mot, v calc
35% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr dism pyr

80% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom occ mot, v calc
20% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc

80% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom occ mot, v calc
20% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc

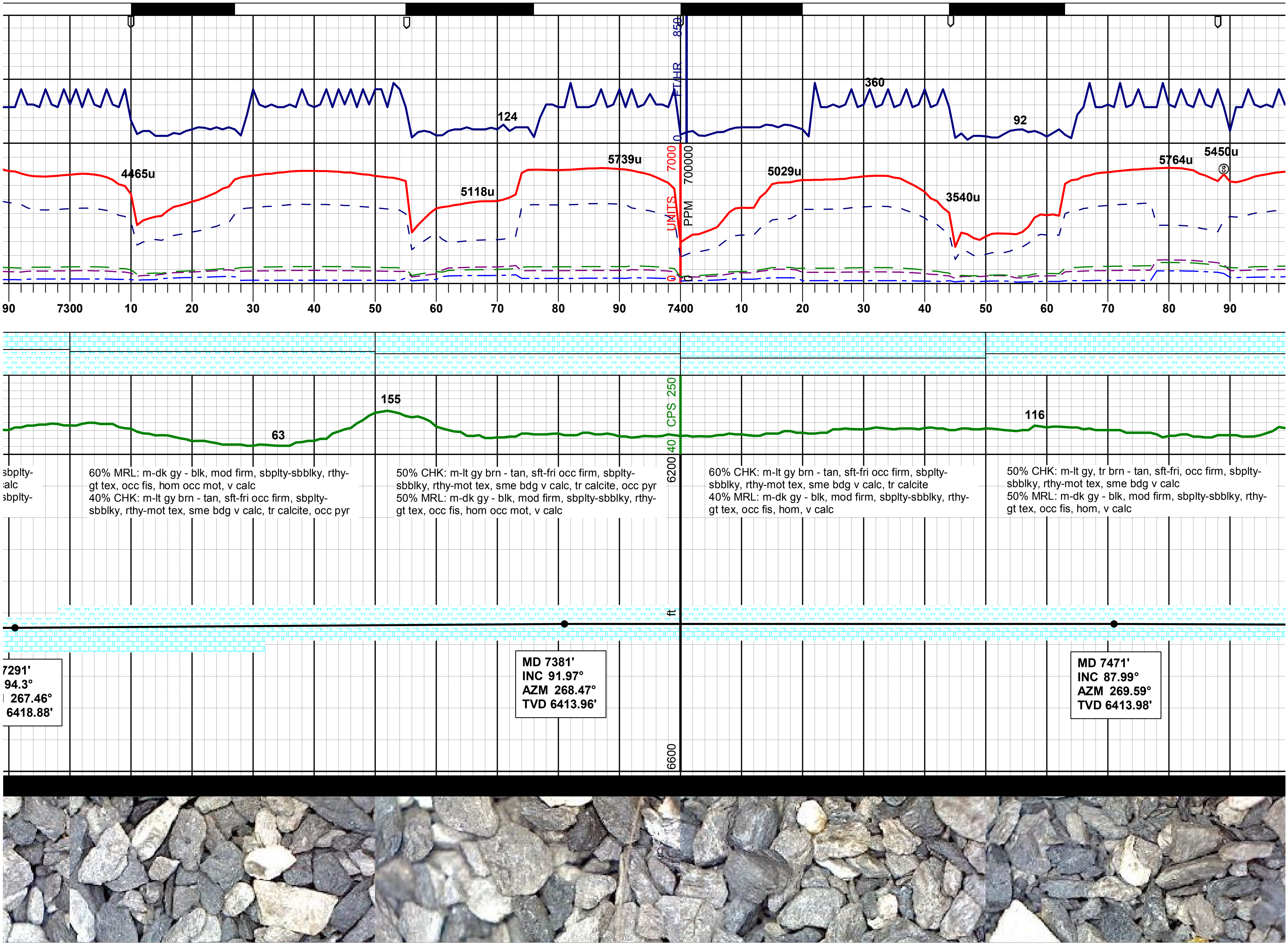
60% MRL: m-dk gy - blk, mod firm, occ fis, s...
sbblky, rthy-gt tex, occ fis, hom occ mot, v c...
40% CHK: m-lt gy brn - tan, sft-fri occ firm, s...
sbblky, rthy-mot tex, sme bdg v calc

ft 6600

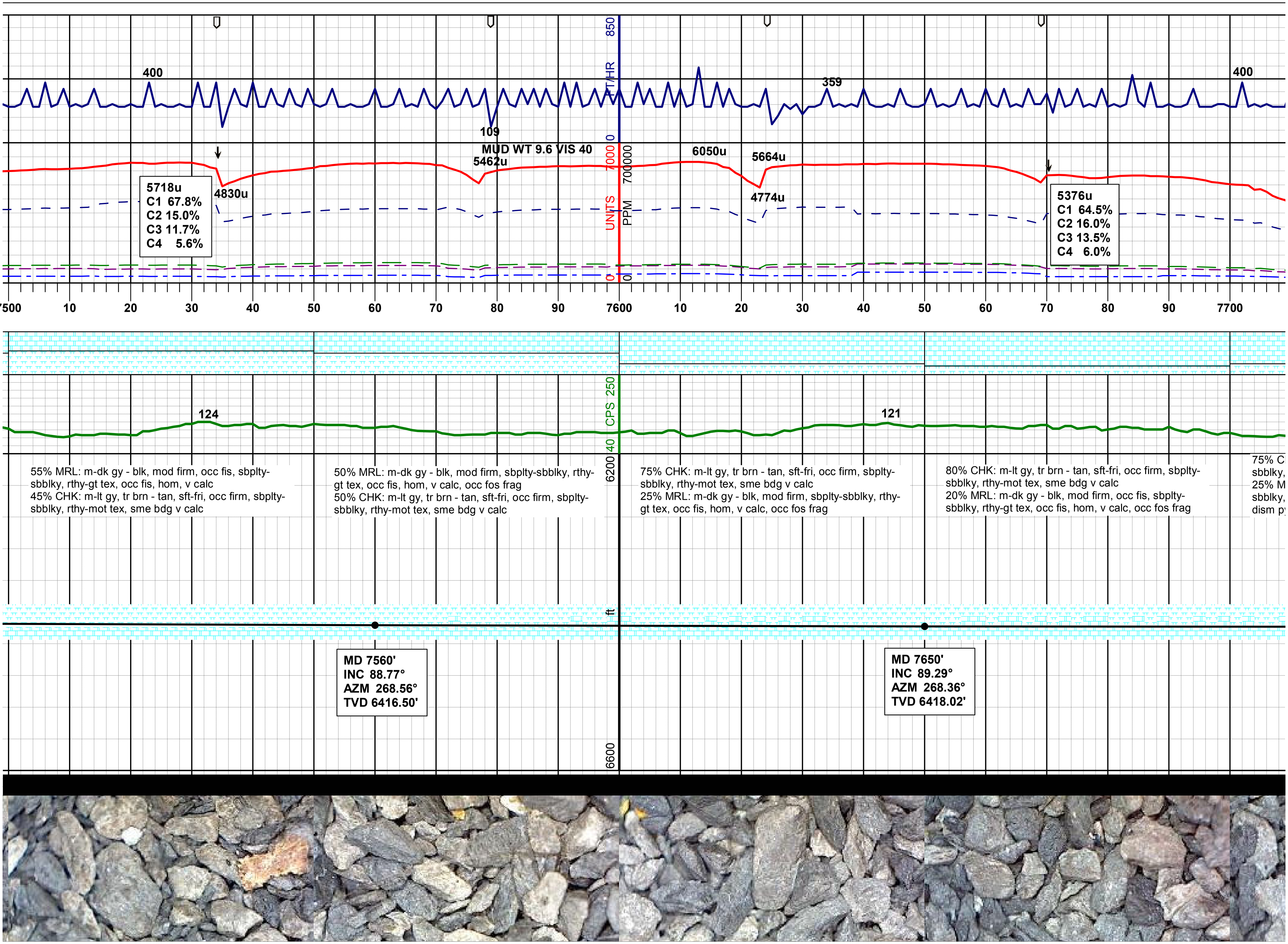
MD 7112'
INC 90.55°
AZM 266.0°
TVD 6424.85'

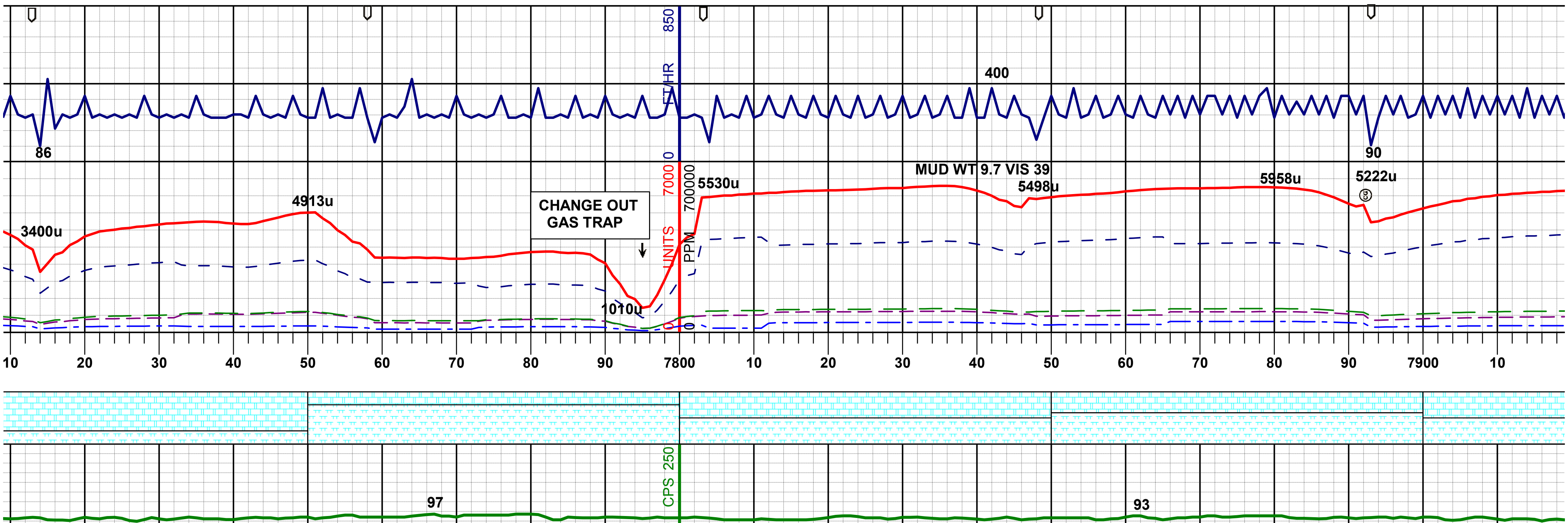
MD 7201'
INC 91.39°
AZM 265.57°
TVD 6423.34'

MD 7...
INC
AZM
TVD



0 FT/HR 850
360
124
92
0 UNITS 7000
0 PPM 700000
4465u
5118u
5739u
5029u
3540u
5764u
5450u
90
7300
10
20
30
40
50
60
70
80
90
7400
10
20
30
40
50
60
70
80
90
40 CPS 250
155
63
116
6200 ft 6600
sbplty-
calc
sbplty-
60% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom occ mot, v calc
40% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr calcite, occ pyr
50% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr calcite, occ pyr
50% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom occ mot, v calc
60% CHK: m-lt gy brn - tan, sft-fri occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr calcite
40% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc
50% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
50% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc
7291'
94.3°
267.46°
6418.88'
MD 7381'
INC 91.97°
AZM 268.47°
TVD 6413.96'
MD 7471'
INC 87.99°
AZM 269.59°
TVD 6413.98'


400
5718u
C1 67.8%
C2 15.0%
C3 11.7%
C4 5.6%
4830u
109
MUD WT 9.6 VIS 40
5462u
850
FT/HR
0
7000
UNITS
0
700000
PPM
0
6050u
5664u
4774u
359
5376u
C1 64.5%
C2 16.0%
C3 13.5%
C4 6.0%
400
7500
10
20
30
40
50
60
70
80
90
7600
10
20
30
40
50
60
70
80
90
7700
124
121
40 CPS 250
6200
55% MRL: m-dk gy - blk, mod firm, occ fis, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc
45% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
50% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag
50% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
75% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
25% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag
80% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc
20% MRL: m-dk gy - blk, mod firm, occ fis, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag
75% C
sbblky,
25% M
sbblky,
dism p
ft
MD 7560'
INC 88.77°
AZM 268.56°
TVD 6416.50'
MD 7650'
INC 89.29°
AZM 268.36°
TVD 6418.02'
6600



6200

HK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-rthy-mot tex, sme bdg v calc
RL: m-dk gy - blk, mod firm, occ fis, sbplty-rthy-gt tex, occ fis, hom, v calc, occ fos frag, tr yr

75% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag, tr dism pyr
25% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc

50% MRL: m-dk gy - blk, mod firm, occ fis, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag, tr dism pyr
50% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc

60% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag, tr dism pyr
40% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc

50% MRL: m-dk gy
gt tex, occ fis, hom,
50% CHK: m-lt gy, t
sbblky, rthy-mot tex,

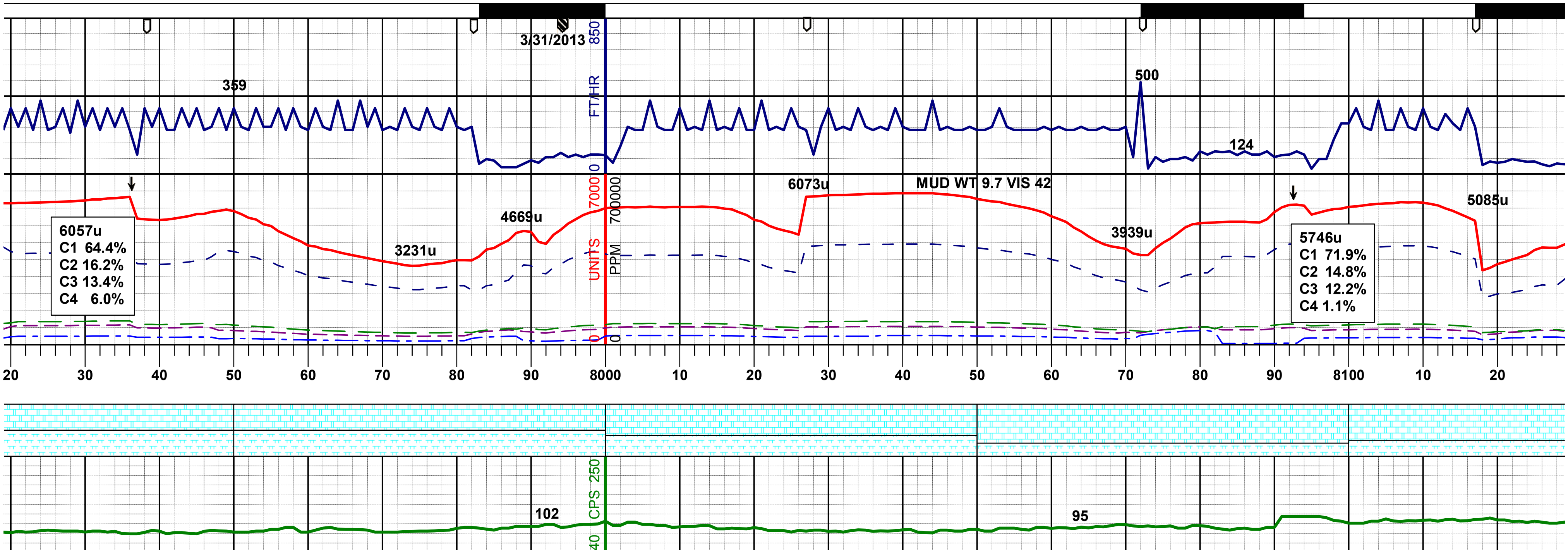
ft

MD 7739'
INC 89.85°
AZM 267.39°
TVD 6418.69'

MD 7829'
INC 89.72°
AZM 266.26°
TVD 6419.03'

MD 79
INC 89
AZM 2
TVD 64

6600



6200

- blk, mod firm, sbplty-sbblky, rthy-
v calc, occ fos frag
r brn - tan, sft-fri, occ firm, sbplty-
, sme bdg v calc, tr pale yel flor

50% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag
50% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy-mot tex, sme bdg v calc, tr pale yel flor

60% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy tex, sme bdg v calc, tr pale yel flor
40% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag

75% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy tex, sme bdg v calc, tr pale yel flor
25% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, occ fos frag

70% CHK: m-lt gy, tr brn - tan, sf
sbblky, rthy tex, sme bdg v calc,
30% MRL: m-dk gy - blk, mod fir
gt tex, occ fis, hom, v calc, tr fos

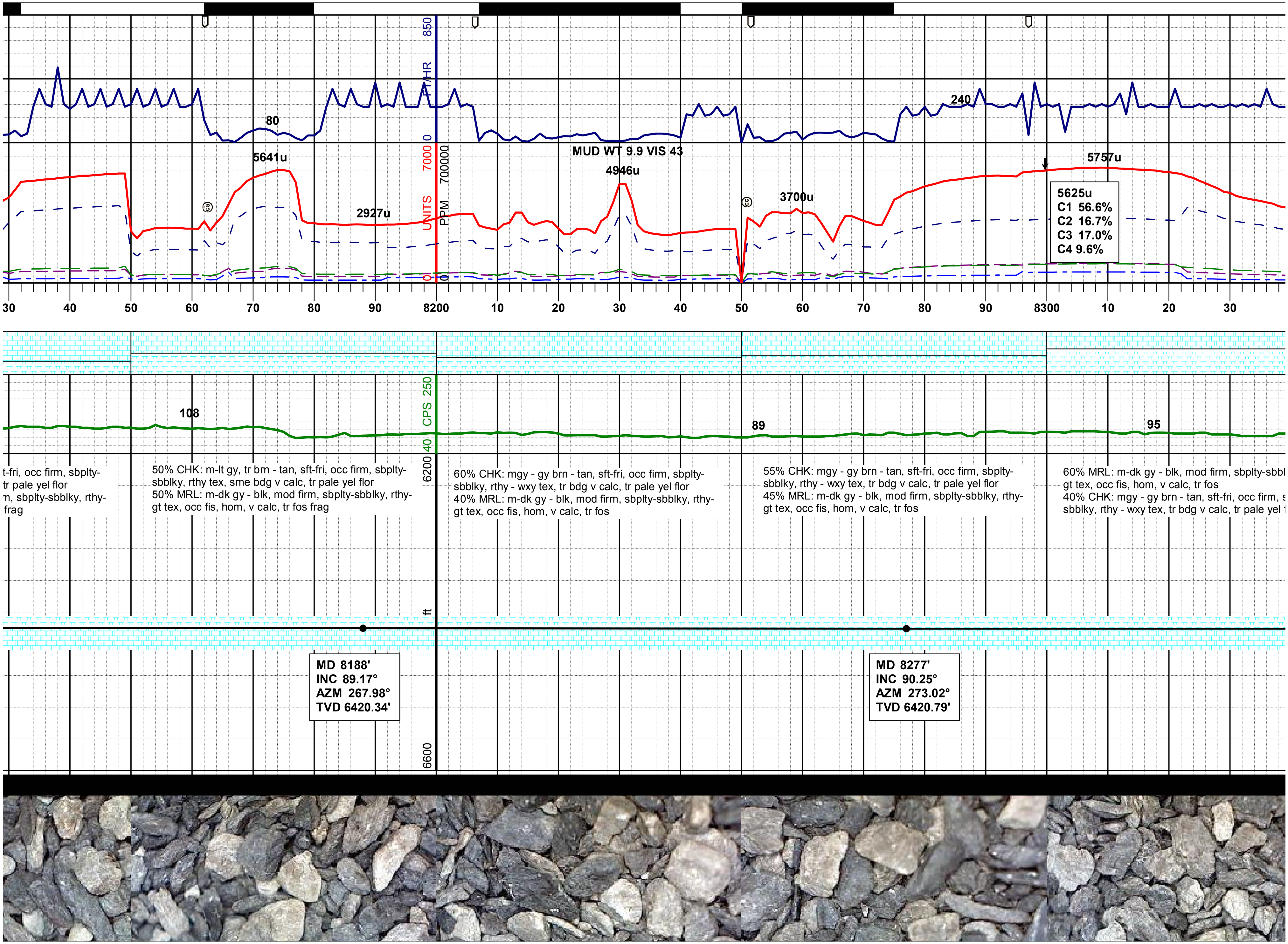
ft

19'
).66°
265.28°
419.52'

MD 8009'
INC 89.40°
AZM 265.94°
TVD 6420.24'

MD 8098'
INC 90.65°
AZM 267.28°
TVD 6420.19'

6600



FT/HR
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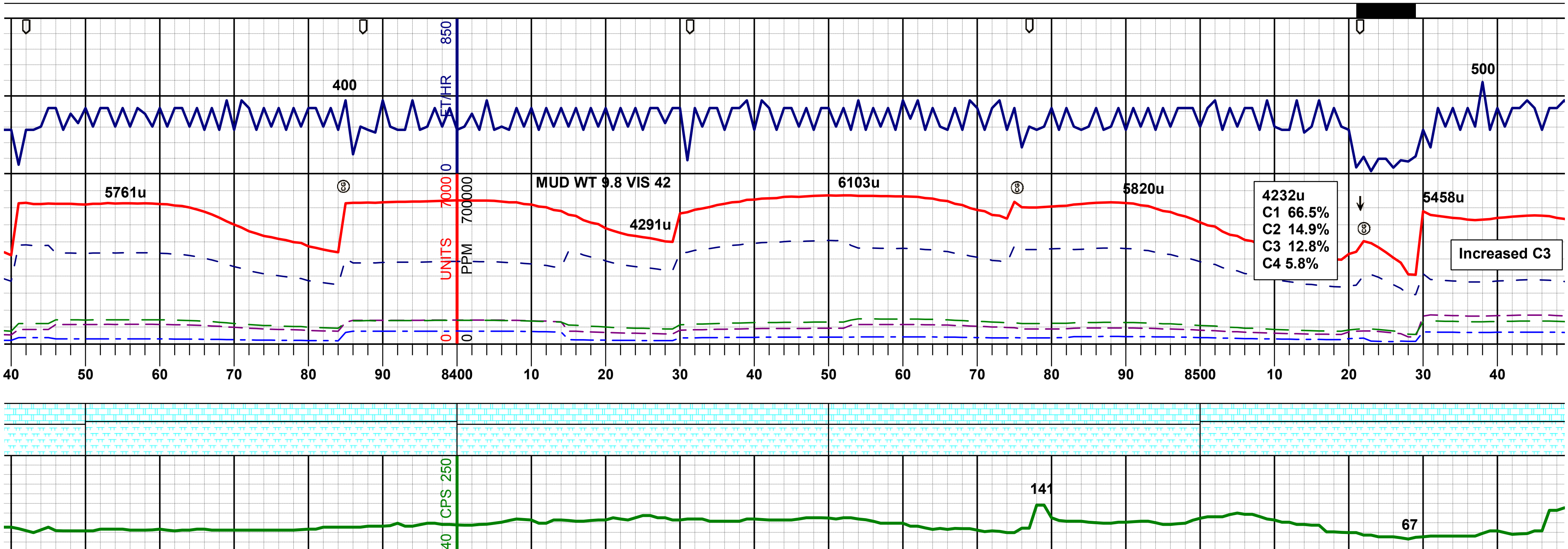
850
UNITS
0
7000
PPM
0
700000
CPS
40
250
6200
ft
6600
80
240
5641u
2927u
MUD WT 9.9 VIS 43
4946u
3700u
5757u
5625u
C1 56.6%
C2 16.7%
C3 17.0%
C4 9.6%
30
40
50
60
70
80
90
8200
10
20
30
40
50
60
70
80
90
8300
10
20
30
108
89
95
t-fri, occ firm, sbplty-
tr pale yel flor
n, sbplty-sbblky, rthy-
frag
50% CHK: m-lt gy, tr brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy tex, sme bdg v calc, tr pale yel flor
50% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr fos frag
60% CHK: mgy - gy brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy - wxy tex, tr bdg v calc, tr pale yel flor
40% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr fos
55% CHK: mgy - gy brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy - wxy tex, tr bdg v calc, tr pale yel flor
45% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr fos
60% MRL: m-dk gy - blk, mod firm, sbplty-sbbl
gt tex, occ fis, hom, v calc, tr fos
40% CHK: mgy - gy brn - tan, sft-fri, occ firm, s
sbblky, rthy - wxy tex, tr bdg v calc, tr pale yel f
MD 8188'
INC 89.17°
AZM 267.98°
TVD 6420.34'
MD 8277'
INC 90.25°
AZM 273.02°
TVD 6420.79'



6200

...ky, rthy-
...sbplty-
...flor

65% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr fos
45% CHK: mgy - gy brn - tan, sft-fri, occ firm, sbplty-sbblky, rthy - wxy tex, tr bdg v calc, tr pale yel flor

60% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr fos
40% CHK: mgy - gy brn - tan, sft-fri, occ firm, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc, grdg - mrl

60% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, tr fos
40% CHK: mgy - gy brn - tan, sft-fri, occ firm, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc, grdg - mrl

65% MRL: m-dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr fos incl
35% CHK: mgy - gy brn incr tan, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc, grdg - mrl

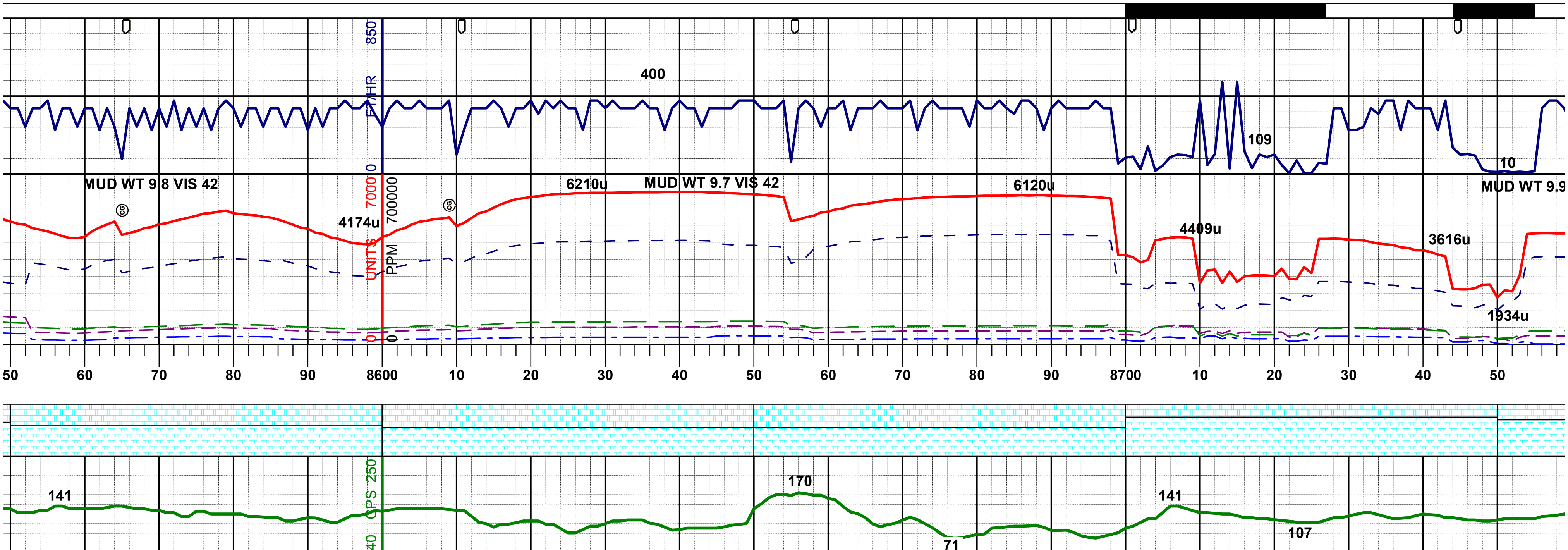
ft

MD 8367'
INC 89.69°
AZM 271.59°
TVd 6420.84'

MD 8457'
INC 90°
AZM 269.96°
TVD 6421.08'

MD 854
INC 92.
AZM 27
TVD 64

6600



6200

60% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, tr fos incl
40% CHK: mgy - gy brn incr tan- ltbrn, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc

55% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, tr fos incl
45% CHK: mgy - gy brn incr tan- ltbrn, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc

55% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, tr fos incl
45% CHK: mgy - gy brn incr tan- ltbrn, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc

75% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, tr fos incl
25% CHK: mgy - gy brn incr tan- ltbrn, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc

70% MR
tex, hom
30% CH
sl wxy- v

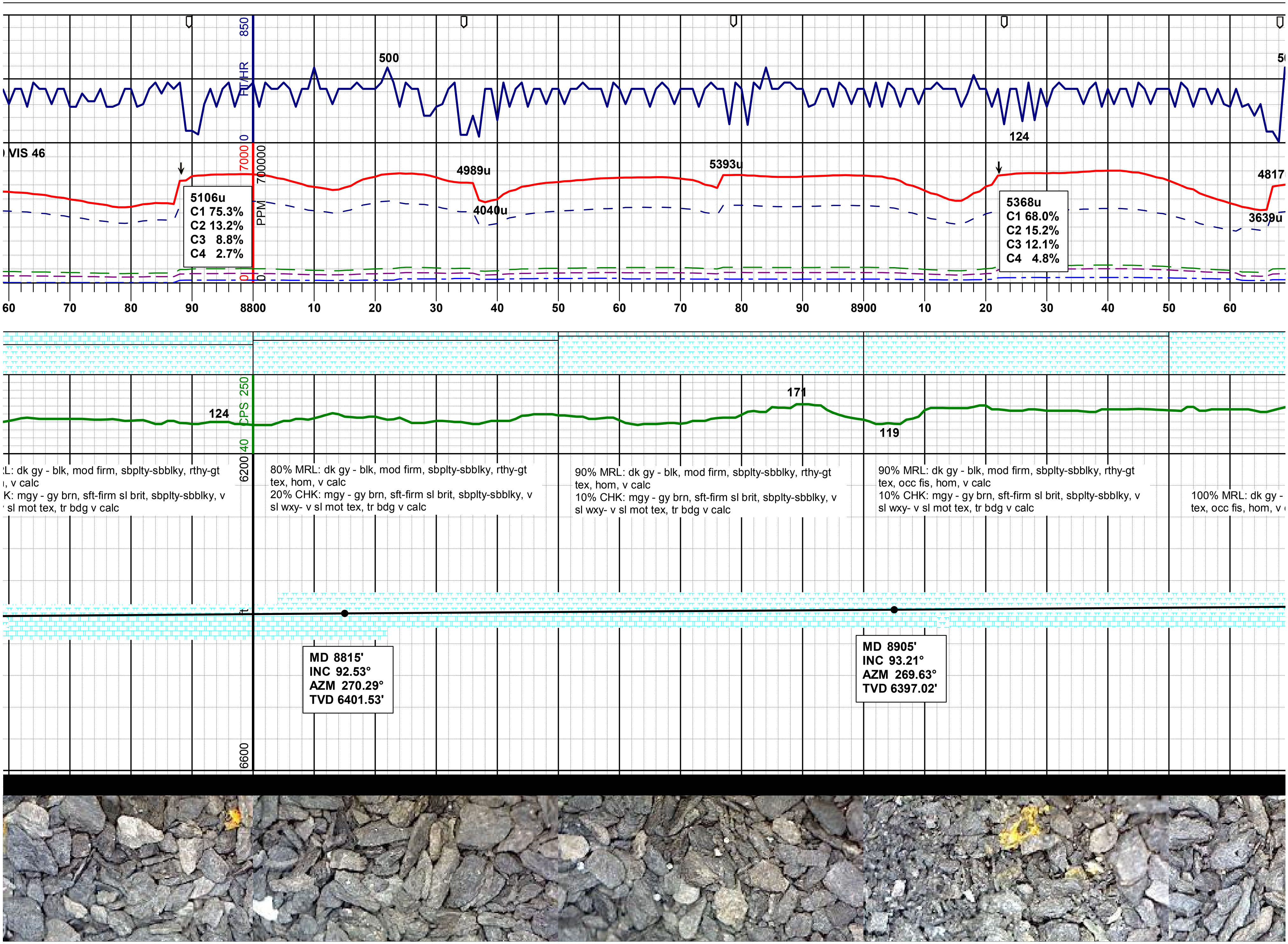
ft

.6'
52
'0.18
19.12'

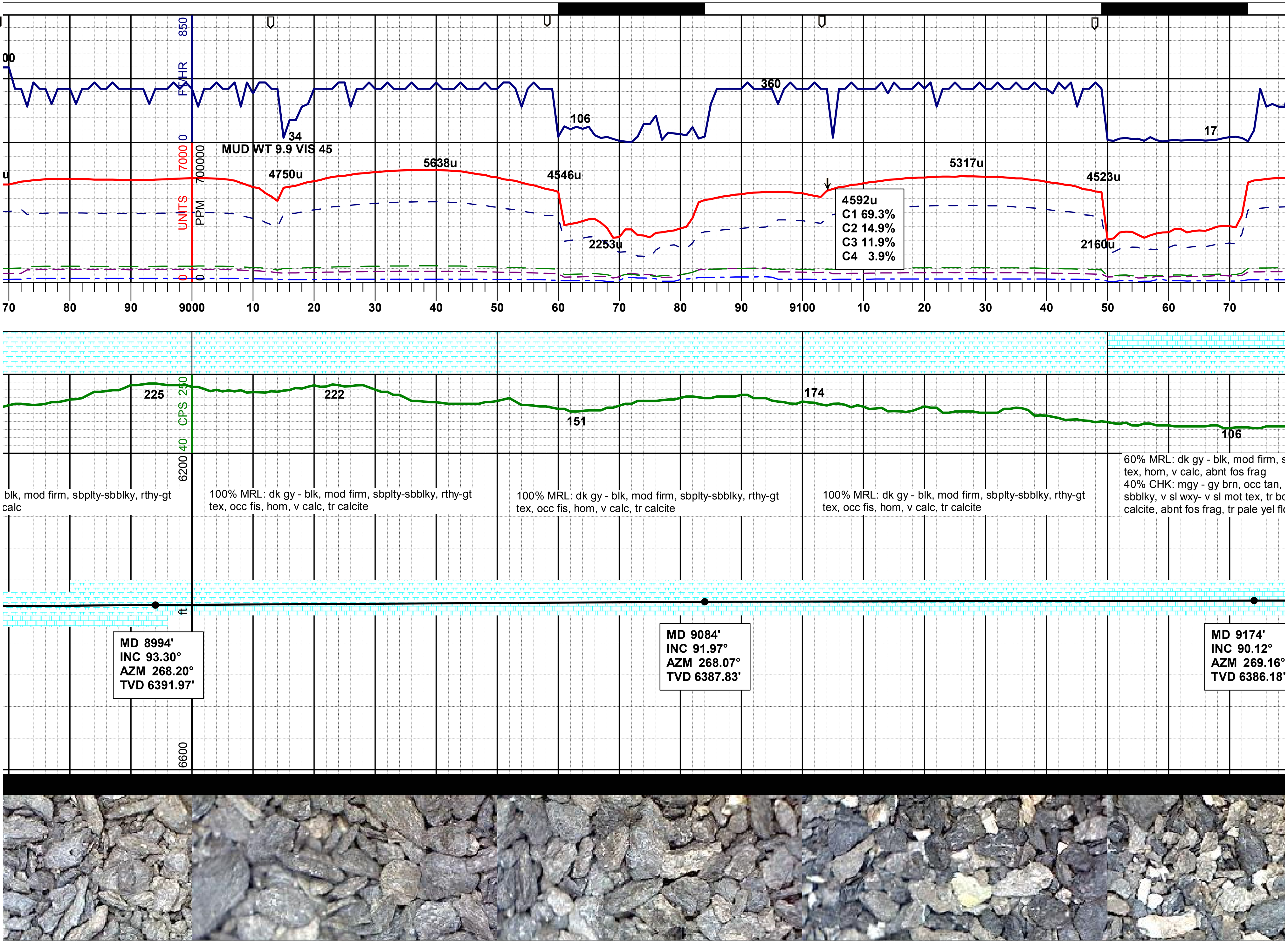
MD 8636'
INC 94.38°
AZM 269.39°
TVD 6413.71'

MD 8725'
INC 94.35°
AZM 270.01°
TVD 6406.93'

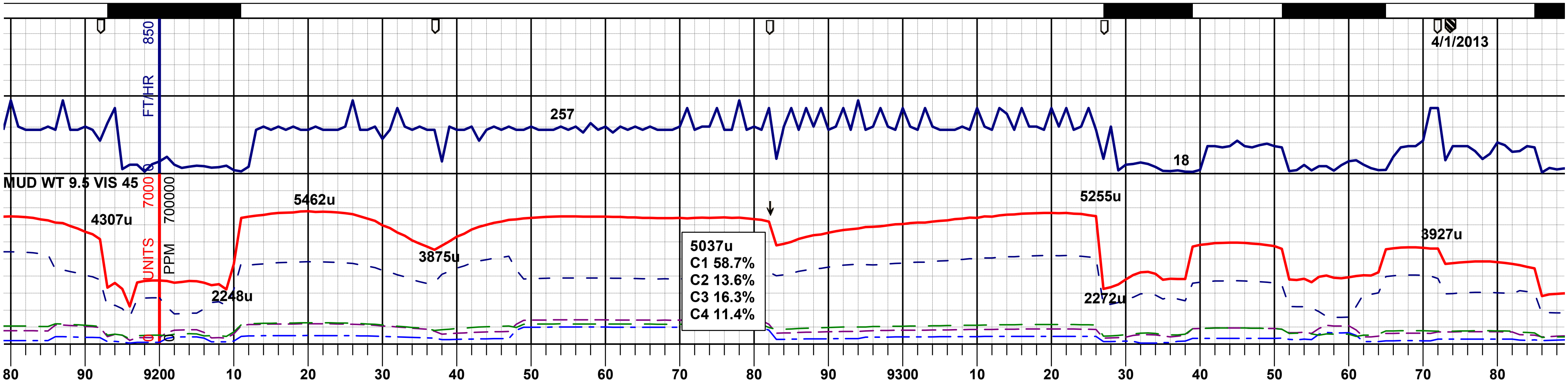
6600

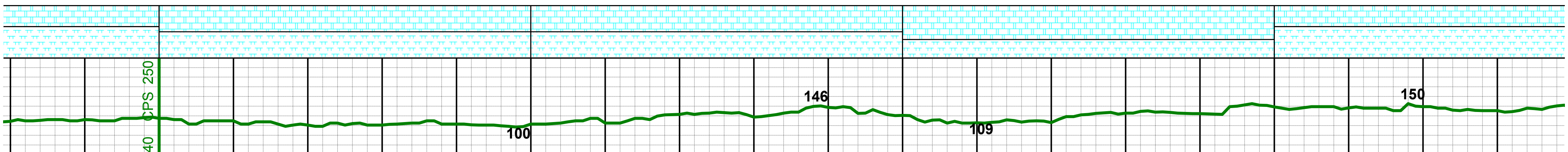


VIS 46
0 FT/HR 850
0 7000
0 PPM 700000
500
5106u
C1 75.3%
C2 13.2%
C3 8.8%
C4 2.7%
4989u
4040u
5393u
5368u
C1 68.0%
C2 15.2%
C3 12.1%
C4 4.8%
124
4817
3639u
60 70 80 90 8800 10 20 30 40 50 60 70 80 90 8900 10 20 30 40 50 60
40 CPS 250
124
171
119
6200
6600
ft
L: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt
, v calc
K: mgy - gy brn, sft-firm sl brit, sbplty-sbblky, v
sl mot tex, tr bdg v calc
80% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt
tex, hom, v calc
20% CHK: mgy - gy brn, sft-firm sl brit, sbplty-sbblky, v
sl wxy- v sl mot tex, tr bdg v calc
90% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt
tex, hom, v calc
10% CHK: mgy - gy brn, sft-firm sl brit, sbplty-sbblky, v
sl wxy- v sl mot tex, tr bdg v calc
90% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt
tex, occ fis, hom, v calc
10% CHK: mgy - gy brn, sft-firm sl brit, sbplty-sbblky, v
sl wxy- v sl mot tex, tr bdg v calc
100% MRL: dk gy -
tex, occ fis, hom, v
MD 8815'
INC 92.53°
AZM 270.29°
TVD 6401.53'
MD 8905'
INC 93.21°
AZM 269.63°
TVD 6397.02'



FT/HR 0 850
UNITS 0 7000
PPM 0 700000
CPS 40 250
6200
6600
ft
MUD WT 9.9 VIS 45
34
106
360
17
4750u
5638u
4546u
2253u
4592u
C1 69.3%
C2 14.9%
C3 11.9%
C4 3.9%
5317u
4523u
2160u
225
222
151
174
106
70
80
90
9000
10
20
30
40
50
60
70
80
90
9100
10
20
30
40
50
60
70
blk, mod firm, sbplty-sbblky, rthy-gt calc
100% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr calcite
100% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr calcite
100% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, occ fis, hom, v calc, tr calcite
60% MRL: dk gy - blk, mod firm, s
tex, hom, v calc, abnt fos frag
40% CHK: mgy - gy brn, occ tan,
sbblky, v sl wxy- v sl mot tex, tr bc
calcite, abnt fos frag, tr pale yel fl
MD 8994'
INC 93.30°
AZM 268.20°
TVD 6391.97'
MD 9084'
INC 91.97°
AZM 268.07°
TVD 6387.83'
MD 9174'
INC 90.12°
AZM 269.16°
TVD 6386.18'





6200

sbplty-sbblky, rthy-gt
sft-firm sl brit, sbplty-
dg v calc, abnt
or

50% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag
50% CHK: mgy - gy brn, occ tan, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc, abnt calcite, abnt fos frag, tr pale yel flor

50% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag
50% CHK: mgy - gy brn, occ tan, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc, abnt calcite, abnt fos frag, tr pale yel flor

65% CHK: mgy - gy brn, occ tan, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, tr bdg v calc, abnt calcite, abnt fos frag, tr pale yel flor
35% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag

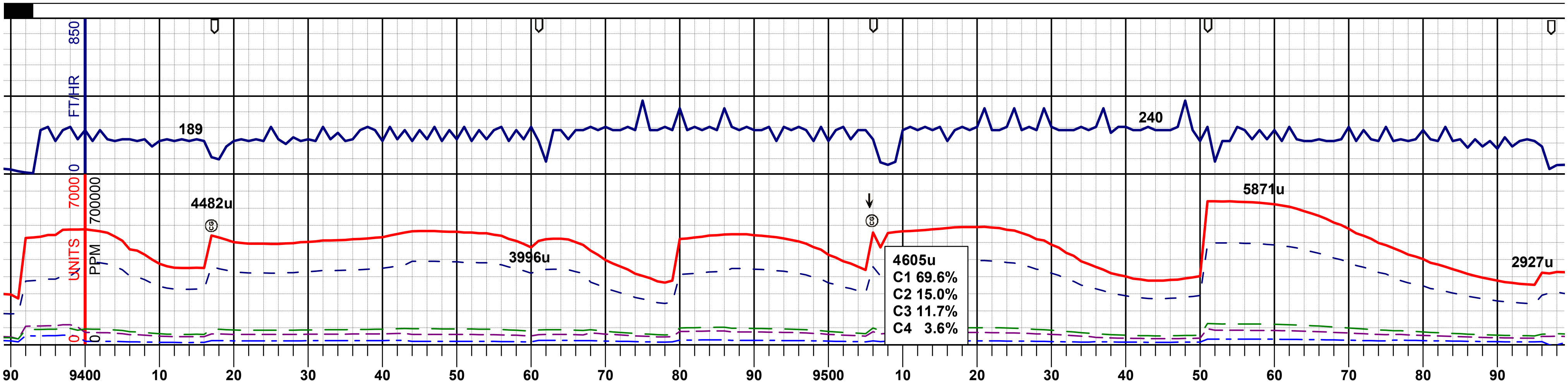
60% MRL: dk gy - blk, mod firm, sbplty-sbblky tex, hom, v calc, abnt fos frag, occ calcite
40% CHK: mgy - gy brn, occ tan, sft-firm sl bri sbblky, v sl wxy- v sl mot tex, v calc, abnt fos f pale yel flor

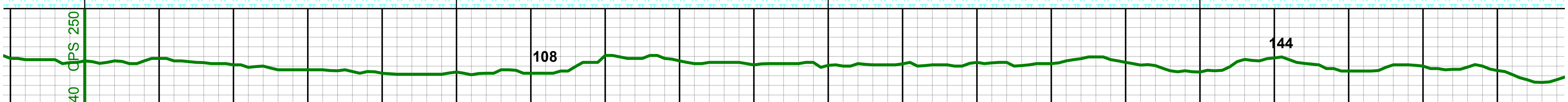
ft

MD 9263'
INC 90.40°
AZM 270.55°
TVD 6385.77'

MD 9353'
INC 89.97°
AZM 269.93°
TVD 6385.48'

6600





6200

, rthy-gt

t, sbplty-
frag, tr

50% CHK: mgy - gy brn, occ tan, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, v calc, abnt fos frag, tr pale yel flor
50% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag, occ calcite

60% CHK: mgy - gy brn, occ tan, sft-firm sl brit, sbplty-sbblky, v sl wxy- v sl mot tex, v calc, abnt fos frag, tr pale yel flor
40% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag, occ calcite, tr pyr

50% CHK: lt gy occ mgy, sft-fri occ firm, sbplty-sbblky, mot - v mot occ sl wxy tex, v calc, abnt imbd fos frag, tr pale yel flor
50% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag, occ calcite, tr pyr ; abnt lse Inoc fos, occ bent

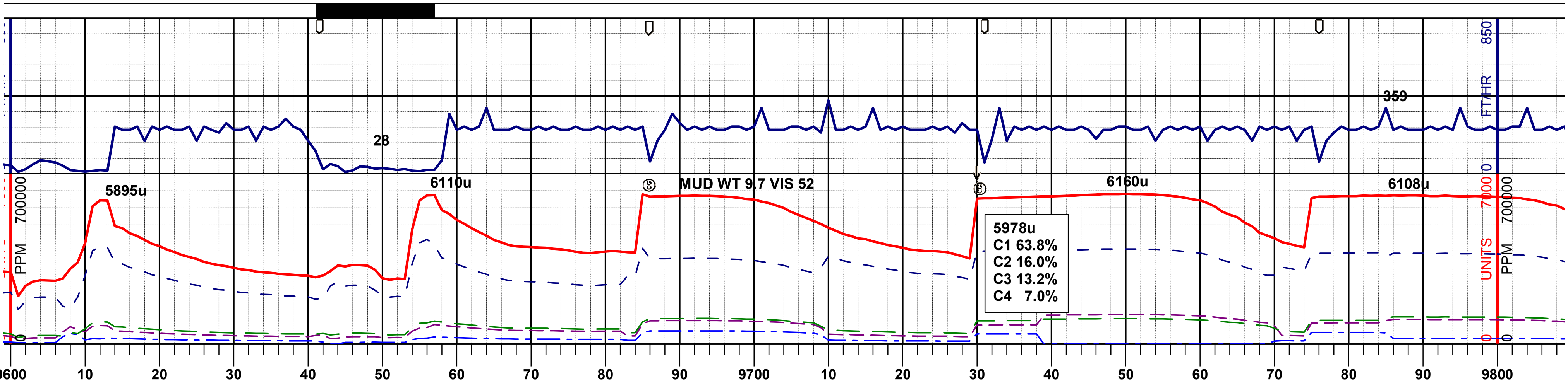
50% CHK: lt gy occ mgy, sft-fri occ firm, sbplty-sbblky, mot - v mot occ sl wxy tex, v calc, abnt imbd fos frag, tr pale yel flor
50% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc, abnt fos frag, occ calcite, tr pyr ; abnt lse Inoc fos, occ bent

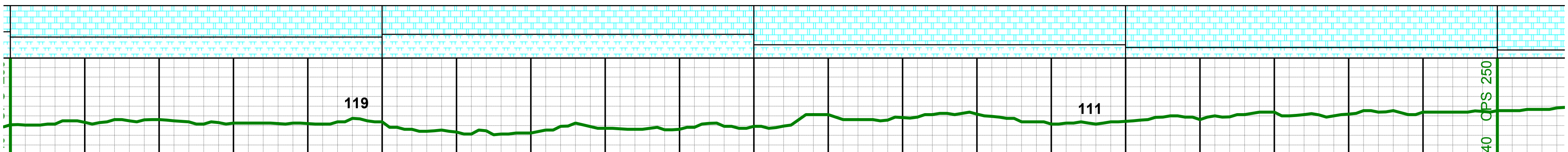
ft

MD 9443'
INC 89.01°
AZM 268.97°
TVD 6386.28'

MD 9532'
INC 91.94°
AZM 269.67°
TVD 6385.54'

6600





60% CHK: lt - mgy, firm-sft, sbplty-sbblky, mot , sl wxy, v calc, tr imbd fos
40% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc ; sme lse Inoc fos, tr bent

55% CHK: lt - mgy, firm-sft, sbplty-sbblky, mot , sl wxy, v calc, tr imbd fos
45% MRL: dk gy - blk, mod firm, sbplty-sbblky, rthy-gt tex, hom, v calc ; sme lse Inoc fos, tr bent

75% CHK: mgy- mgybrn, firm occ hd, sbplty-sbblky, sl mot, sl wxy, v calc, grdg - mrl
25% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, hom, v calc

80% CHK: mgy- mgybrn, firm occ hd, sbplty-sbblky, sl mot, sl wxy, v calc, grdg - mrl
20% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, hom, v calc

85% CH
mot, sl w
15% MR
hom, v c

6200

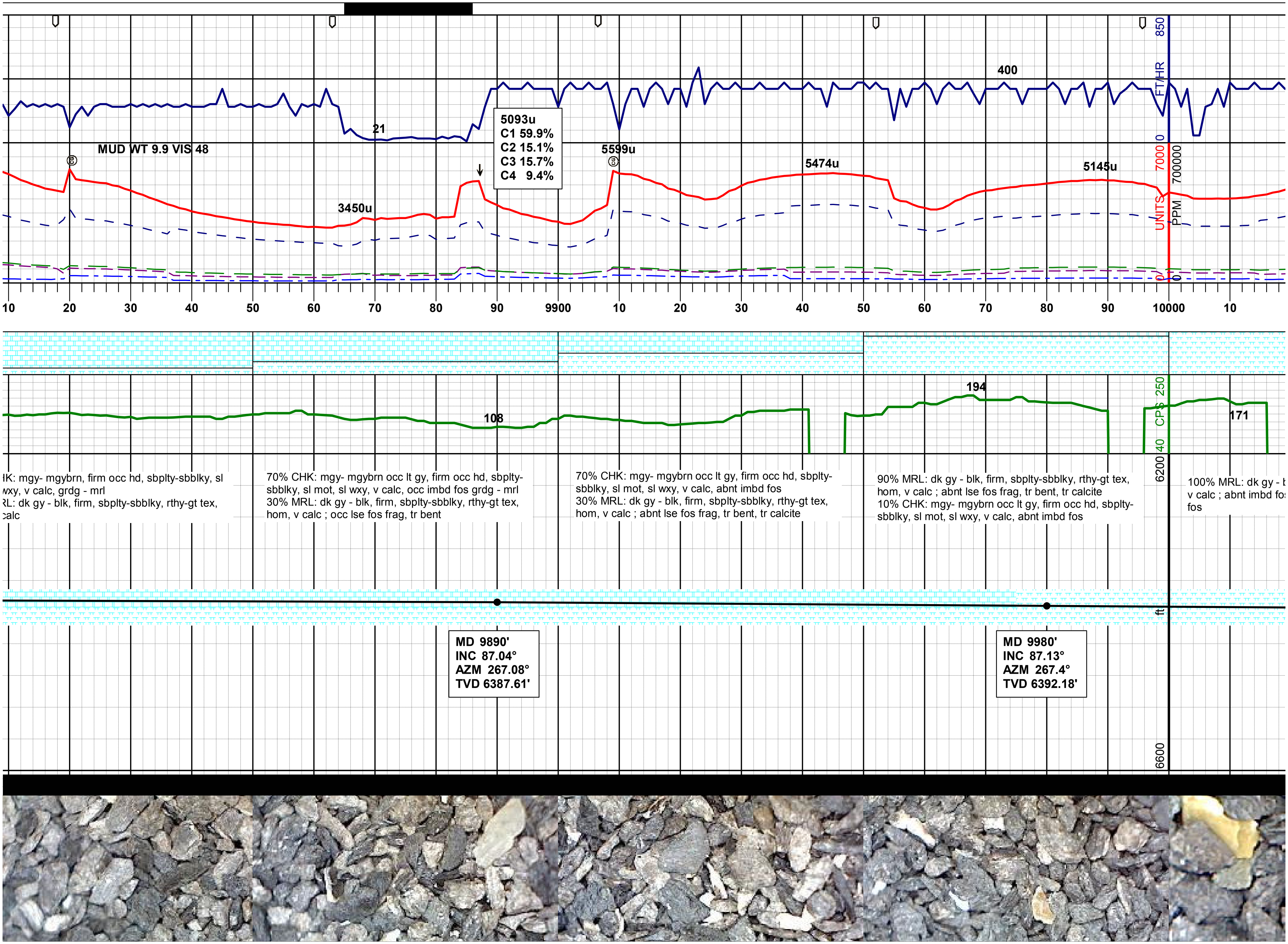
MD 9622'
INC 90.46°
AZM 267.73°
TVD 6383.66'

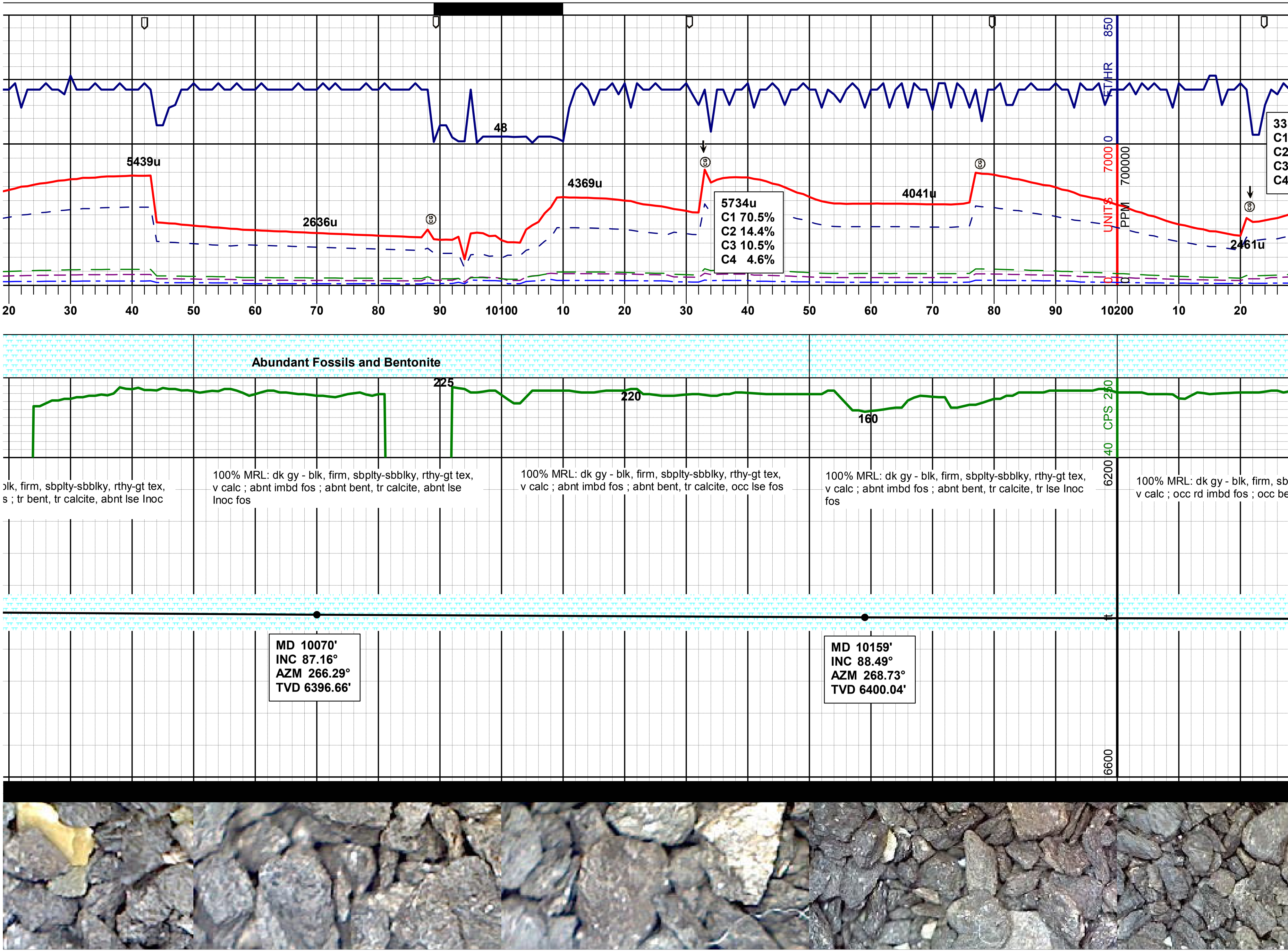
MD 9712'
INC 88.89°
AZM 266.81°
TVD 6384.16'

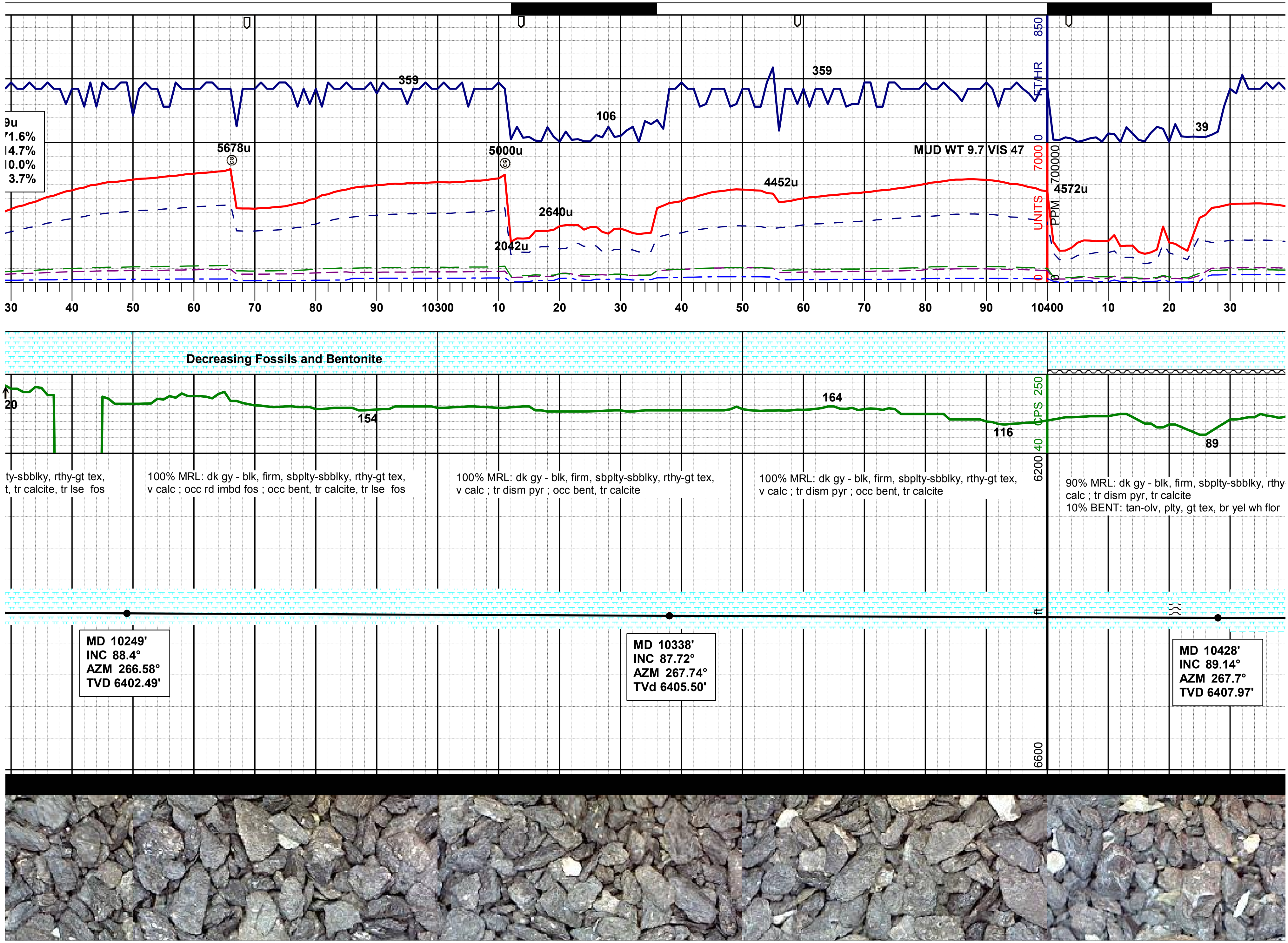
MD 9801'
INC 89.81°
AZM 265.67°
TVD 6385.17'

ft

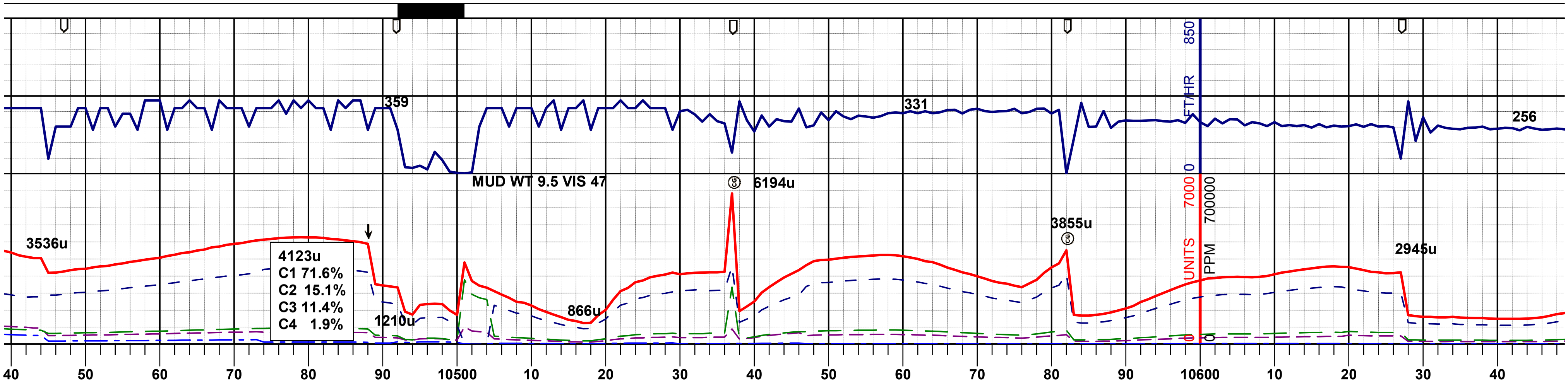
6600

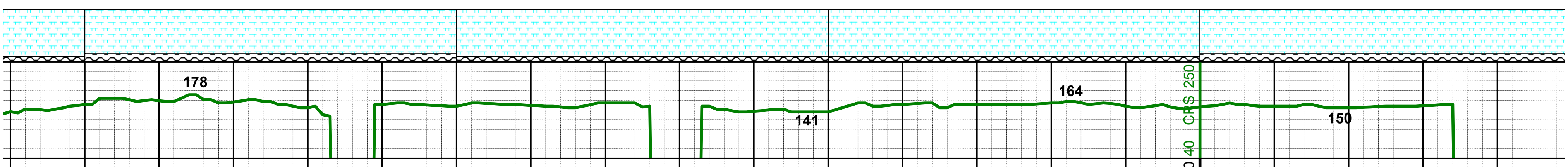

MUD WT 9.9 VIS 48
21
3450u
5093u
C1 59.9%
C2 15.1%
C3 15.7%
C4 9.4%
5599u
5474u
5145u
400
0 FT/HR 850
0 UNITS 7000
0 PPM 700000
10 20 30 40 50 60 70 80 90 9900 10 20 30 40 50 60 70 80 90 10000 10
40 CPS 250
108
194
171
6200
ft
6600
IK: mgy- mgybrn, firm occ hd, sbplty-sbblky, sl wxy, v calc, grdg - mrl
RL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, calc
70% CHK: mgy- mgybrn occ lt gy, firm occ hd, sbplty-sbblky, sl mot, sl wxy, v calc, occ imbd fos grdg - mrl
30% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, hom, v calc ; occ lse fos frag, tr bent
70% CHK: mgy- mgybrn occ lt gy, firm occ hd, sbplty-sbblky, sl mot, sl wxy, v calc, abnt imbd fos
30% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, hom, v calc ; abnt lse fos frag, tr bent, tr calcite
90% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, hom, v calc ; abnt lse fos frag, tr bent, tr calcite
10% CHK: mgy- mgybrn occ lt gy, firm occ hd, sbplty-sbblky, sl mot, sl wxy, v calc, abnt imbd fos
100% MRL: dk gy - b
v calc ; abnt imbd fo
fos
MD 9890'
INC 87.04°
AZM 267.08°
TVD 6387.61'
MD 9980'
INC 87.13°
AZM 267.4°
TVD 6392.18'


5439u
2636u
48
4369u
5734u
C1 70.5%
C2 14.4%
C3 10.5%
C4 4.6%
4041u
2461u
0 FT/HR 850
0 UNITS 7000
0 PPM 700000
20 30 40 50 60 70 80 90 10100 10 20 30 40 50 60 70 80 90 10200 10 20
Abundant Fossils and Bentonite
225
220
160
40 CPS 250
6200
6600
ft
blk, firm, sbplty-sbblky, rthy-gt tex,
s ; tr bent, tr calcite, abnt lse Inoc
100% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; abnt imbd fos ; abnt bent, tr calcite, abnt lse Inoc fos
100% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; abnt imbd fos ; abnt bent, tr calcite, occ lse fos
100% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; abnt imbd fos ; abnt bent, tr calcite, tr lse Inoc fos
100% MRL: dk gy - blk, firm, sbpl
v calc ; occ rd imbd fos ; occ ben
MD 10070'
INC 87.16°
AZM 266.29°
TVD 6396.66'
MD 10159'
INC 88.49°
AZM 268.73°
TVD 6400.04'



9u
71.6%
14.7%
10.0%
3.7%
5678u
5000u
2042u
2640u
4452u
4572u
359
106
359
39
MUD WT 9.7 VIS 47
0 FT/HR 850
0 UNITS 7000
0 PPM 700000
30 40 50 60 70 80 90 10300 10 20 30 40 50 60 70 80 90 10400 10 20 30
Decreasing Fossils and Bentonite
20
154
164
116
89
40 CPS 250
ty-sbblky, rthy-gt tex, t, tr calcite, tr lse fos
100% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; occ rd imbd fos ; occ bent, tr calcite, tr lse fos
100% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; tr dism pyr ; occ bent, tr calcite
100% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; tr dism pyr ; occ bent, tr calcite
90% MRL: dk gy - blk, firm, sbplty-sbblky, rthy calc ; tr dism pyr, tr calcite
10% BENT: tan-olv, plty, gt tex, br yel wh flor
6200
6600
ft
MD 10249'
INC 88.4°
AZM 266.58°
TVD 6402.49'
MD 10338'
INC 87.72°
AZM 267.74°
TVd 6405.50'
MD 10428'
INC 89.14°
AZM 267.7°
TVD 6407.97'





-gt tex, v

85% MRL: dk gy - blk, firm, sbplty-sbblky, rthy-gt tex, v calc ; tr dism pyr, tr calcite
15% BENT: tan-olv, plty, gt tex, bri yel wh flor

90% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
10% BENT: tan-olv, plty, gt tex, bri yel wh flor

90% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
10% BENT: tan-olv, plty, gt tex, bri yel wh flor

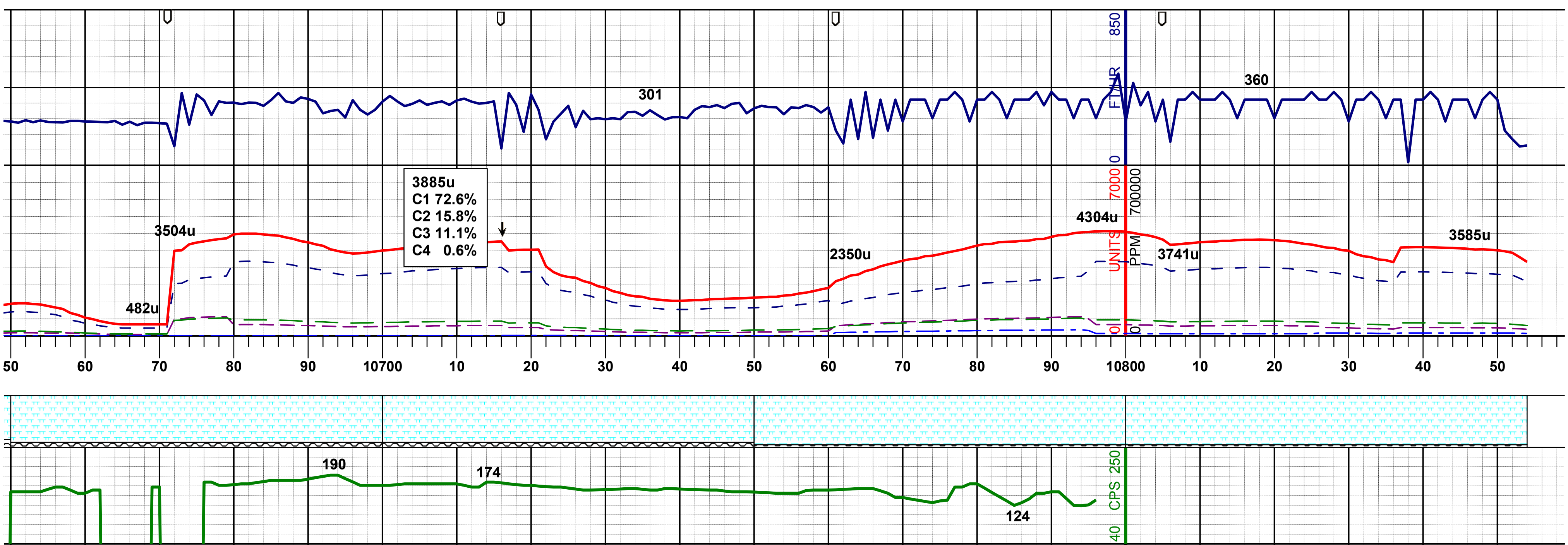
85% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
15% BENT: tan-olv, plty, gt tex, bri yel wh flor

ft

MD 10518'
INC 90.40°
AZM 268.36°
TVD 6408.33'

MD 10608'
INC 90.18°
AZM 268.27°
TVD 6407.87'

6600



90% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
10% BENT: tan-olv, plty, gt tex, bri yel wh flor

90% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
10% BENT: tan-olv, plty, gt tex, bri yel wh flor

95% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
5% BENT: tan-olv, plty, gt tex, bri yel wh flor

95% MRL: dk gy - blk, occ m gy firm, sbplty-sbblky, rthy-gt tex, v calc, tr dism pyr, tr calcite
5% BENT: tan-olv, plty, gt tex, bri yel wh flor

TD 10,854'MD
22:00hrs on 4/1/2013

6200 ft 6600

MD 10697'
INC 89.48°
AZM 264.8°
TVD 6408.13'

MD 10790'
INC 89.48°
AZM 265.04°
TVD 6408.98'

THANK YOU FOR CHOOSING
COLUMBINE LOGGING INC

60

70

80

90

10900