Décollement Consulting Inc.

Scale: 5" / 100'
Measured Depth Log

Well Name	Milk 36C-28HZ		
Location	SE/SW Section 21, T3N - R65W		
State	Colorado	**County**	Weld
Country	USA	**Rig Number**	Ensign Drilling #145
API Number	05123410060000	**Field**	Wattenberg
Region	DJ Basin	**Drilling Completed**	4/11/2015
Spud Date	4/1/2015		
Surface Coordinates	575' FSL, 1936' FWL LAT/LONG: 40.204994/-104.670965 NAD 83		
Bottom Hole Coordinates	NE/NW Section 28, T3N-R65W 53' FNL, 2538' FWL (proposed)		
Ground Elevation	4,837'	**K.B. Elevation**	4,850'
Logged Interval	6,600' **To** 12,703'	**Total Depth**	12,703'
Formation	Codell Sandstone		
Type of Drilling Fluid	LSND		

Operator

Company Anadarko Petroleum Corporation

Address 1099 18TH Street Suite 1800
Denver, Colorado 80202-1918

Geologist

Name Dick Brunner & Chris Irwin

Company Decollement Consulting, Inc.

Address 13300 Braun Road
Golden, Colorado 80401

Zone Color Coding

Oil	Condensate
Note	Core
Error	Water

Rock Types

UNKNOWN	COAL	MARL
ANHYDRITE	CONGLOMERATE	META
BENTONITE	DOLOMITE	NO SA
BRECCIA	DOLOMITIC LIMESTONE	SALT
CHALK	GRANITE	SAND
CEMENT	GYPSUM	SALT
CHERT	IGNEOUS	SHAL
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHAL
CLAYSTONE	LIMESTONE	SHAL

Gas
Pressure
Seal

LSTONE
AMORPHIC
AMPLE
DSTONE
-PEPPER SANI
E
E COLORED
E GRAY

SHALY SANDSTONE
SHALY SILTSTONE
SILTY SHALE
SILTSTONE
TILL
TUFF
WELDED TUFF

Accessories

Fossils

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

Minerals

ANHYDRITIC
ARGILLACEOUS
ARGILLITE GRAIN
BENTONITE
BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET
FERRUGINOUS
GLAUCONITE
GYPSIFEROUS
HEAVY MINERAL
KAOLIN
MARCASITE
MARLSTONE
MICACEOUS
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SIDERITE
SILICEOUS
SILTY
TUFFACEOUS

Stringer

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

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING
PINPOINT
VUGGY

Porosity

EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC
MOLDIC
ORGANIC

Engineering

BIT
CONNECTION (UP)
CONNECTION (DOWN)
CONNECTION GAS
CONNECTION GAS (LEFT)
TRIP GAS
TRIP GAS (LEFT)
DOWN TIME GAS
DOWN TIME GAS (LEFT)
CORE - LOST
CORE - RECOVERED
DST INTERVAL
FAULT
FORMATION TOP
GAS SHOW
OIL SHOW
MN DEPTH UP
MN DEPTH (DOWN)
NORMAL FAULT
OVERTURNED STRATA
REVERSE FAULT
CASING
SIDEWALL CORE (LEFT)
SIDEWALL CORE (RIGHT)
SLIDE
SURVEY
WIRELINE TESTED - LEFT
WIRELINE TESTED - RT
DRILL STEM TEST
MN DEPTH

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

BOUNDSTONE
CHALKY
CRYPTOXLN
EARTHY
FINELYXLN
GRAINSTONE
LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL

Slide/Rotate

ROP

ROP

GAMMA

Decollemnt Consulting rigged up on 4/5/2015 with a 2-man logging crew.

Began logging at 6,600' MD on 4/6/2015 at 01:00 hours MST.

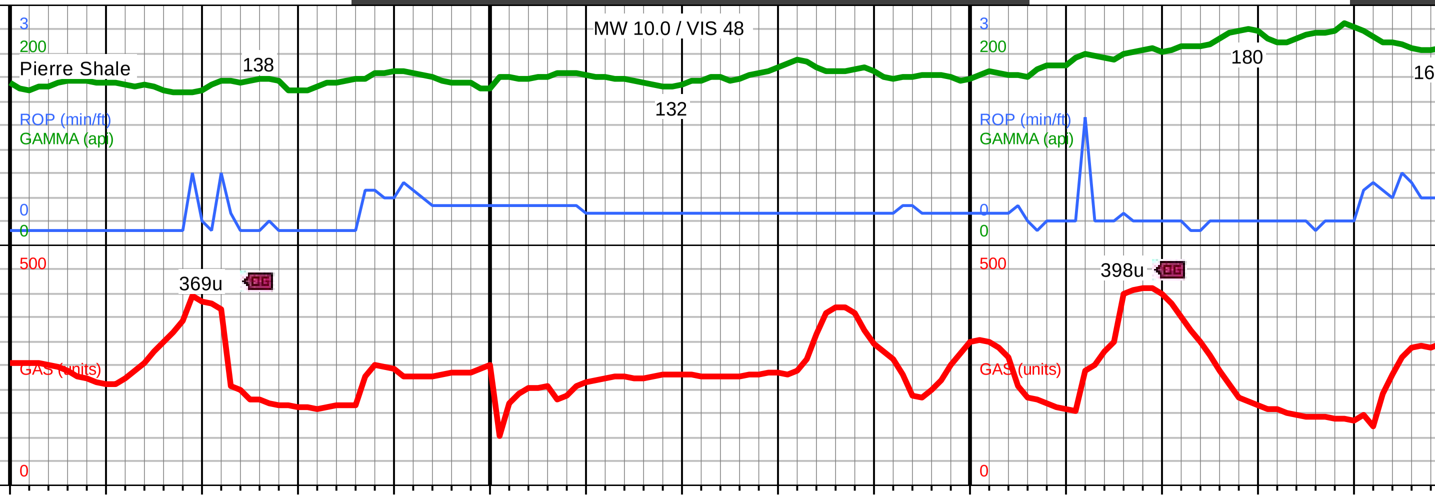
ROP data from the PASON system.
GAMMA data provided by Sperry Drilling.

Total Gas

GAS

GAS data from the PASON system.

Bit Data
Bit #: 1
Type: Smith SDi611
Size: 8 3/4"
Depth In: 1,763'
Depth Out: 7,550'
Hours: 23.4 hrs
Avg Ft/Hr: 270'
Jets: 6 X 18s



Depth Labels

6,560 | 6,570 | 6,580 | 6,590 | 6,600 | 6,610 | 6,620 | 6,630 | 6,640 | 6,650 | 6,660 | 6,670 | 6,680 | 6,690 | 6,700 | 6,710 | 6,720 | 6,730 | 6,740 | 6,7

Well Bore

MD vs TVD

6550

Collected 50' samples from 6,600' to casing point.
Collected 100' samples from casing point to TD.

MD vs TVD (ft)

Survey data provided by Sperry Drilling.

6750

MD: 6,580'
TVD: 6,522.47'
Inclination: 0.74°
Azimuth: 191.72°

100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, tr sd ip, ns

100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, tr sd ip, ns

MD: 6,670'
TVD: 6,612.21'
Inclination: 7.07°
Azimuth: 180.5°

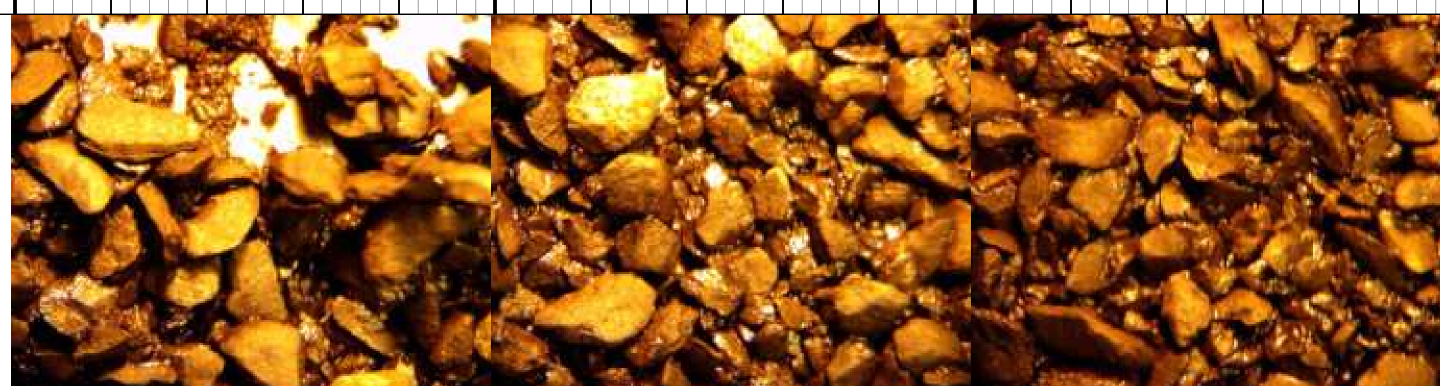
Note Scale Change >

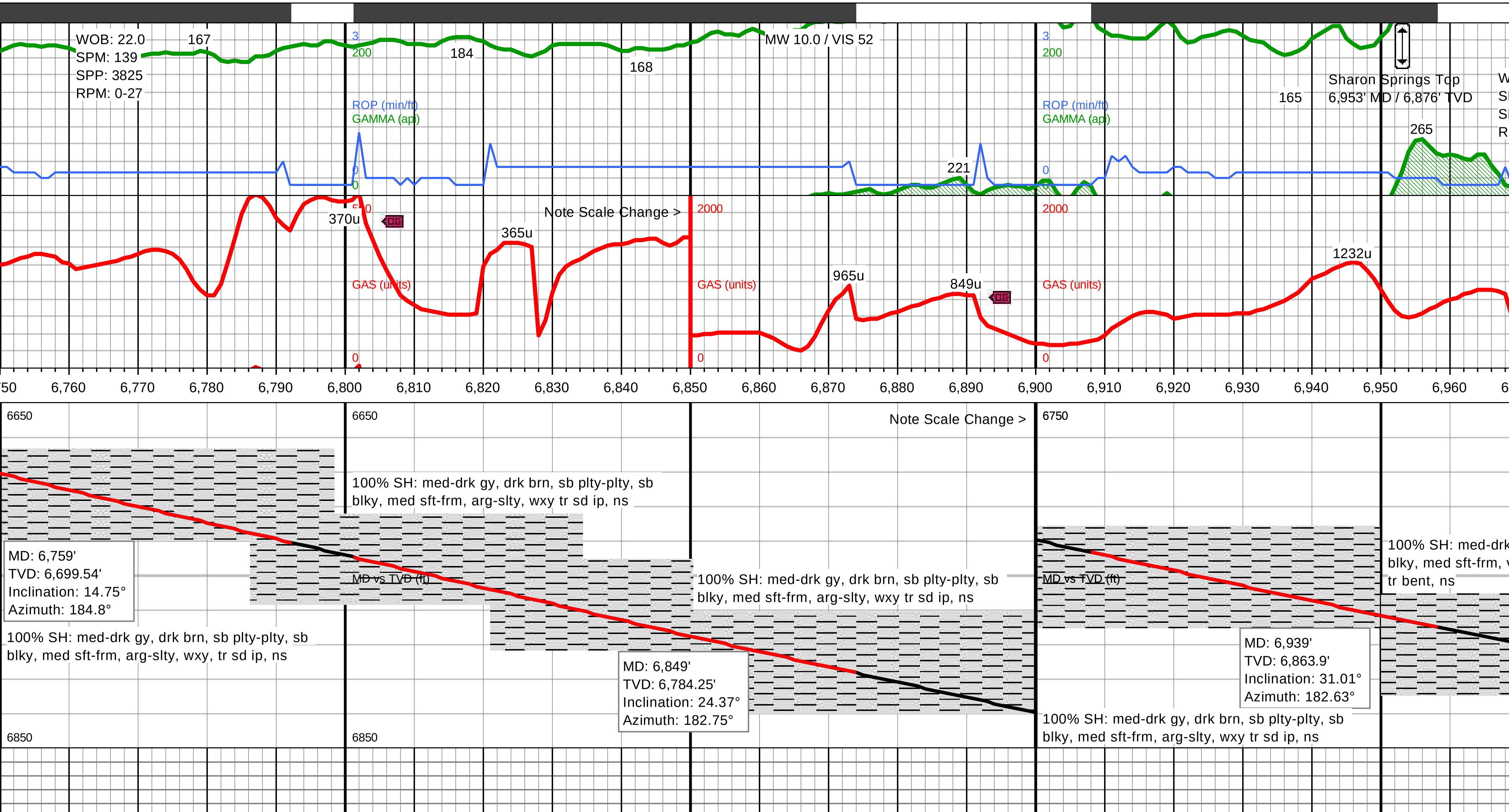
100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, wxy, tr sd ip, ns

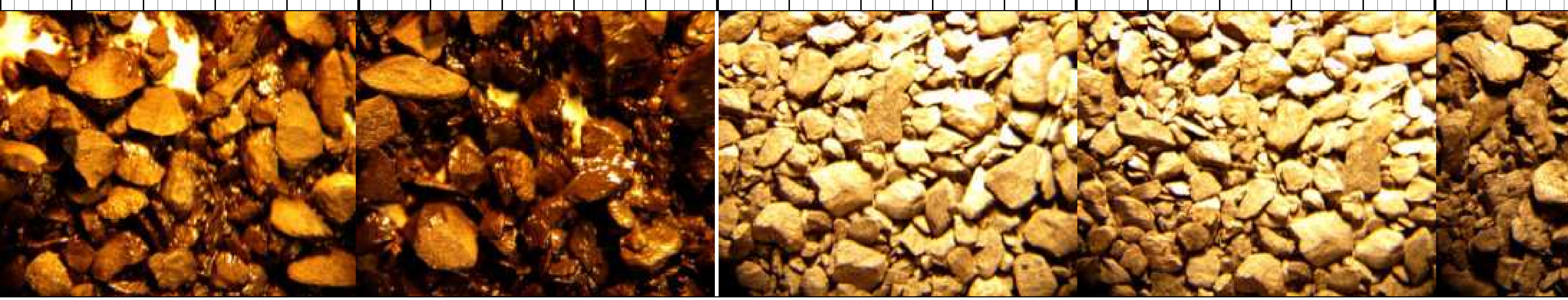
Oil Show

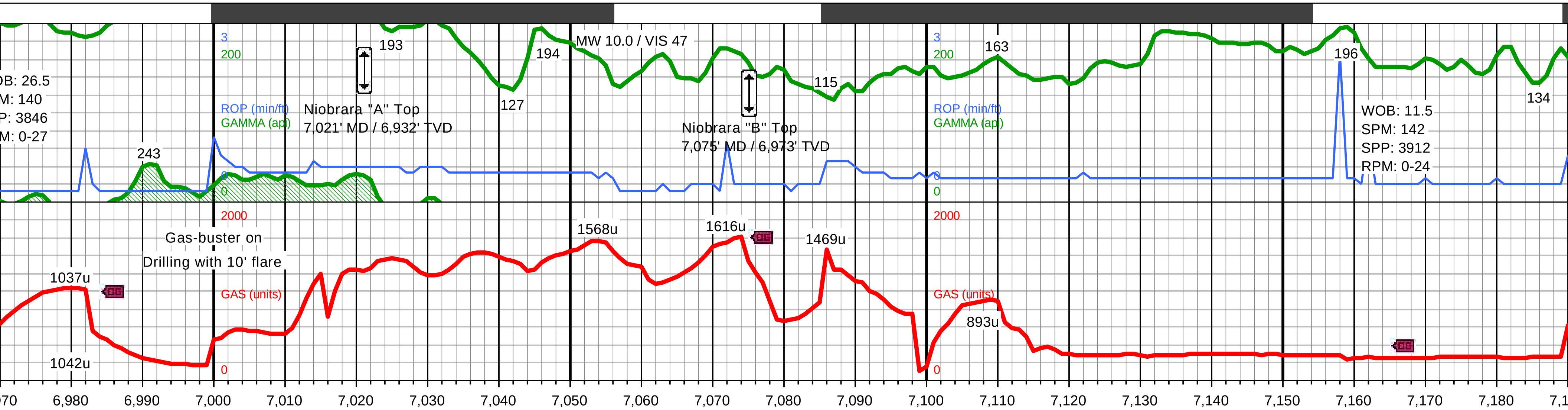
Excellent
Good
Medium
Fair
Trace

Images




WOB: 22.0
SPM: 139
SPP: 3825
RPM: 0-27
167
184
168
MW 10.0 / VIS 52
165
Sharon Springs Top
6,953' MD / 6,876' TVD
265
221
ROP (min/ft)
GAMMA (api)
3
200
0
GAS (units)
370u
365u
Note Scale Change >
2000
965u
849u
1232u
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
6,960
6650
6850
6750
MD vs TVD (ft)
MD: 6,759'
TVD: 6,699.54'
Inclination: 14.75°
Azimuth: 184.8°
100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, wxy, tr sd ip, ns
100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, wxy tr sd ip, ns
100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, wxy tr sd ip, ns
MD: 6,849'
TVD: 6,784.25'
Inclination: 24.37°
Azimuth: 182.75°
100% SH: med-drk gy, drk brn, sb plty-plty, sb blky, med sft-frm, arg-slty, wxy tr sd ip, ns
MD: 6,939'
TVD: 6,863.9'
Inclination: 31.01°
Azimuth: 182.63°
tr bent, ns





Note Scale Change >

gy, drk brn, sb plty-plty, sb calc, arg-slty, wxy tr sd ip,

70% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

30% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring, tr f degassing micro-bubbles

MD vs TVD (ft)

MD: 7,029'
TVD: 6,937.91'
Inclination: 38.25°
Azimuth: 179.43°

7050

80% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

20% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

6850

Note Scale Change >

100% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

MD vs TVD

MD: 7,119'
TVD: 7,003.74'
Inclination: 47.62°
Azimuth: 176.22°

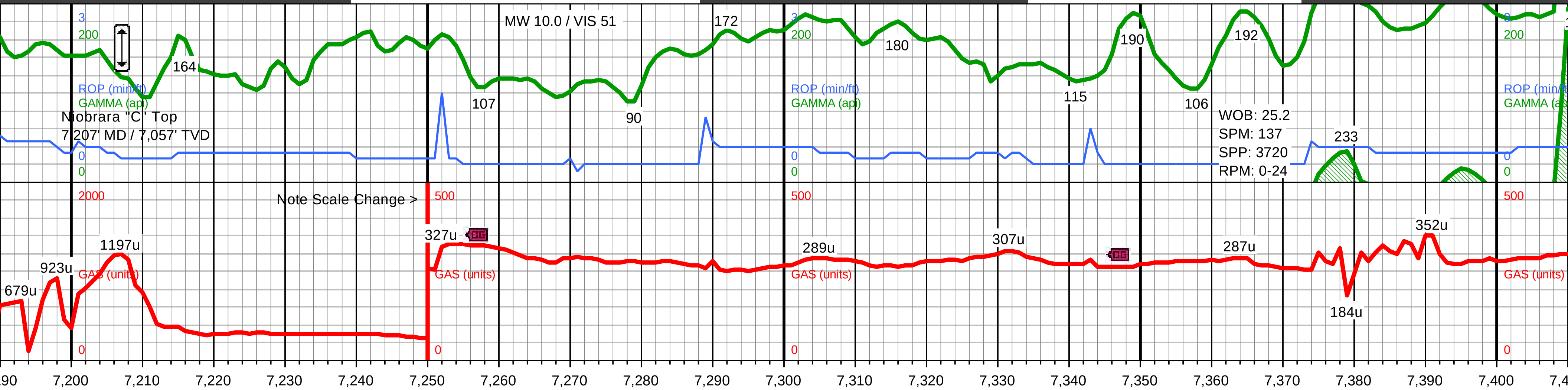
7050

80% MRLST: med-drk gry, blky, frm-mod h... mot, v calc, tr foss frag, no flor, diffuse wh...

20% CHALK: lt-m gy,sft-mod frm, blky-sb... calc, wxy ip, no flor, slw wh cut, grn-wht... ring, tr f degassing micro-bubbles

MD vs TVD (ft)

7150



...hrd, ...t cut ...blky, ...res

6950

85% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

15% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

70% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

30% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

6950

95% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

5% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

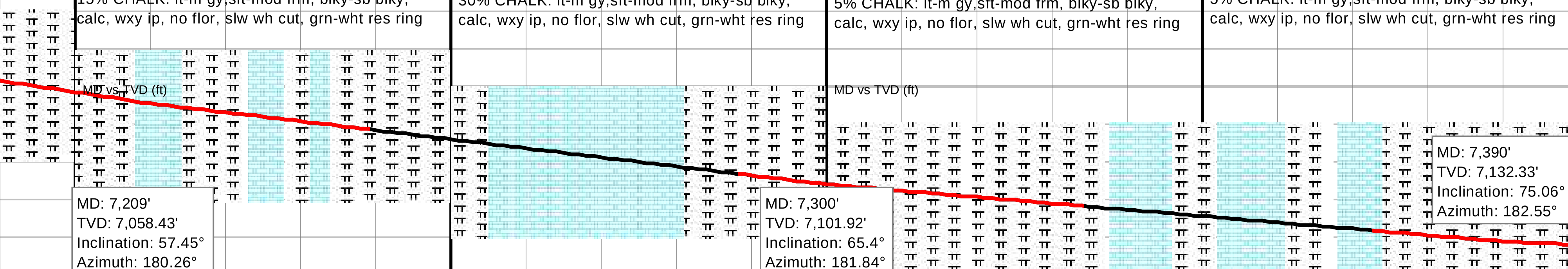
Note Scale Change >

95% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

5% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

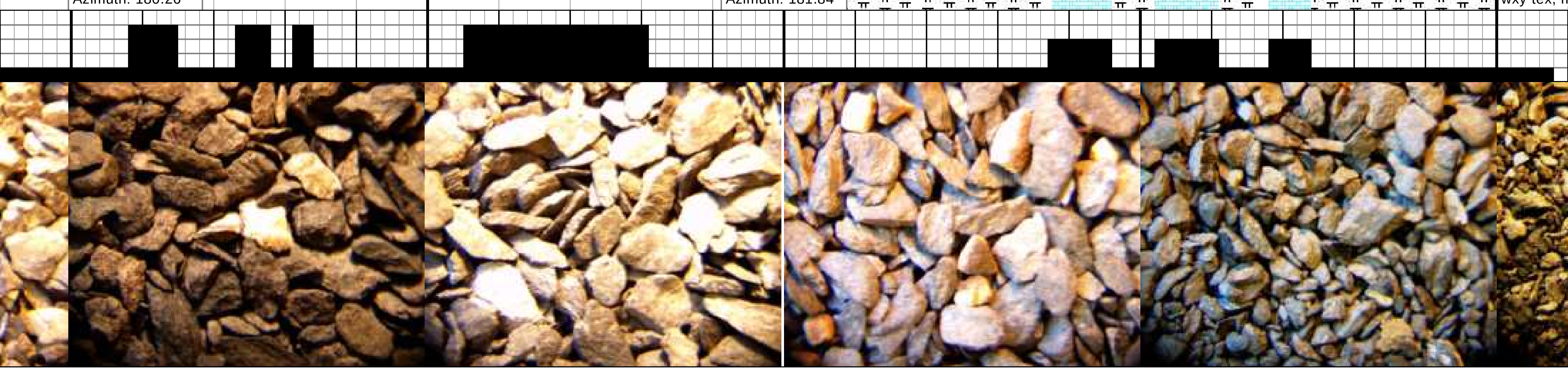
7050

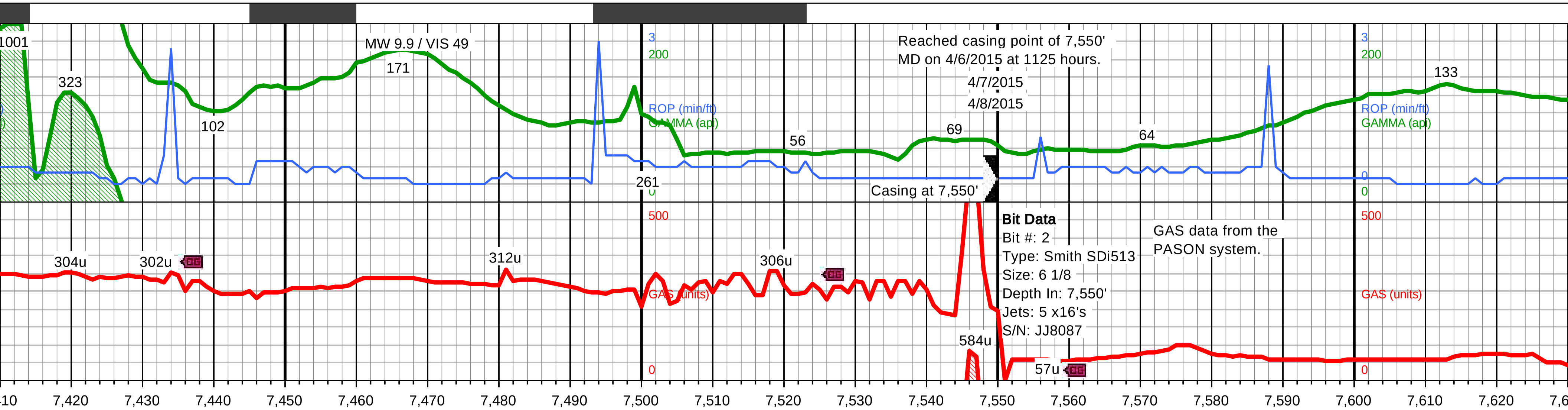
60% MRLS... mot, v calc...



30% SH: ... blky, med... tr bent, ns...

10% LS: lt... wxy tex, n...





Bit Data
Bit #: 2
Type: Smith SDi513
Size: 6 1/8
Depth In: 7,550'
Jets: 5 x16's
S/N: JJ8087

ST: med-drk gry, blky, frm-mod hrd,
c, tr foss frag, no flor, diffuse wht cut

med-drk gy, drk brn, sb plty-plty, sb
sft-frm, v calc, arg-slty, wxy tr sd ip,
s

t tan-tan/brn, occ crm, frm-brit, sub blky,
mcxln, v calc, ns

100% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

TR LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, ns

MD: 7,480'
TVD: 7,148.61'
Inclination: 84.07°
Azimuth: 182.1°

7050

100% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

TR LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, ns

MD vs TVD (ft)

MD: 7,505'
TVD: 7,150.43'
Inclination: 87.59°
Azimuth: 181.62°

7250

MD: 7,550'
TVD: 7,151.5'
Inclination: 89.68°
Azimuth: 181.62°

80% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

15% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

5% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, ns, tr-sd, tr-sh

7050

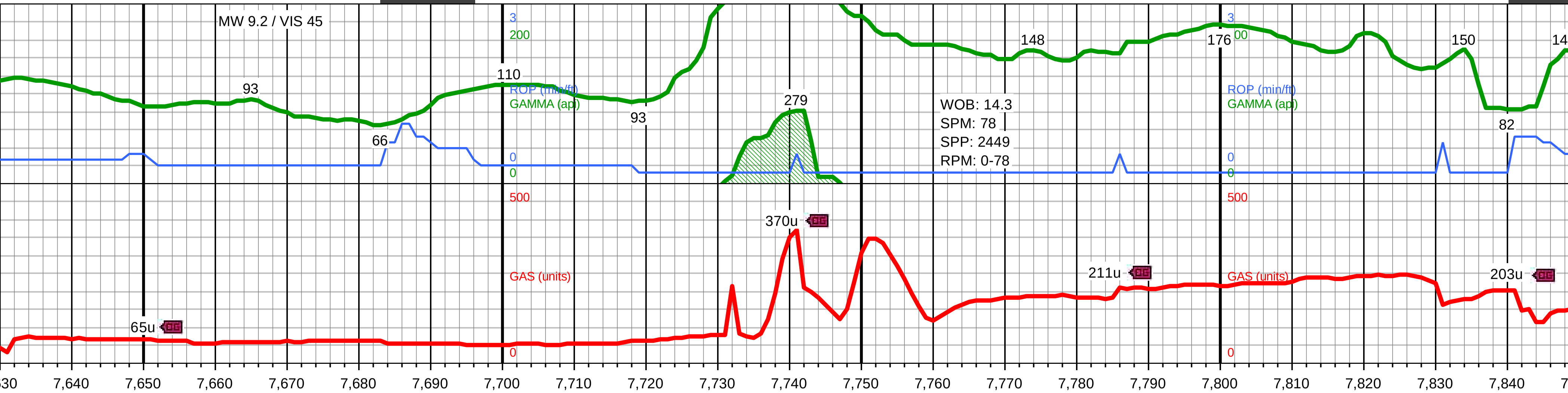
70% MRLST: med-drk gry, blky
mot, v calc, tr foss frag, no flor

30% CHALK: lt-m gy,sft-mod f
calc, wxy ip, no flor, slw wh cu

MD vs TVD (ft)

MD: 7,610'
TVD: 7,151.51'
Inclination: 90.62°
Azimuth: 182.84°

7250



...y, frm-mod hrd, ...r, diffuse wht cut

...rm, blky-sb blky, ...t, grn-wht res ring

70% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

30% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

7050

100% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

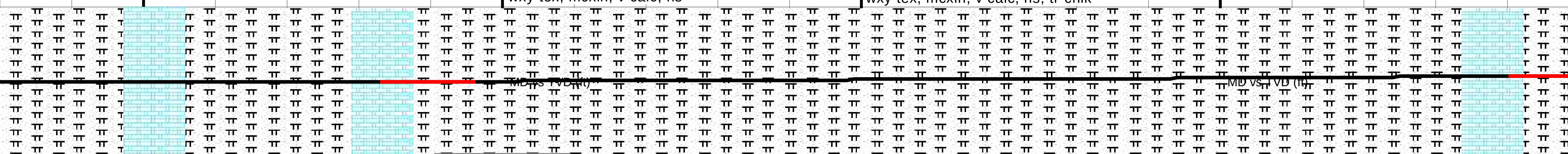
TR LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, ns

100% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut

TR LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, ns, tr-chlk

80% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut, tr-sd-tr-ls

20% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring

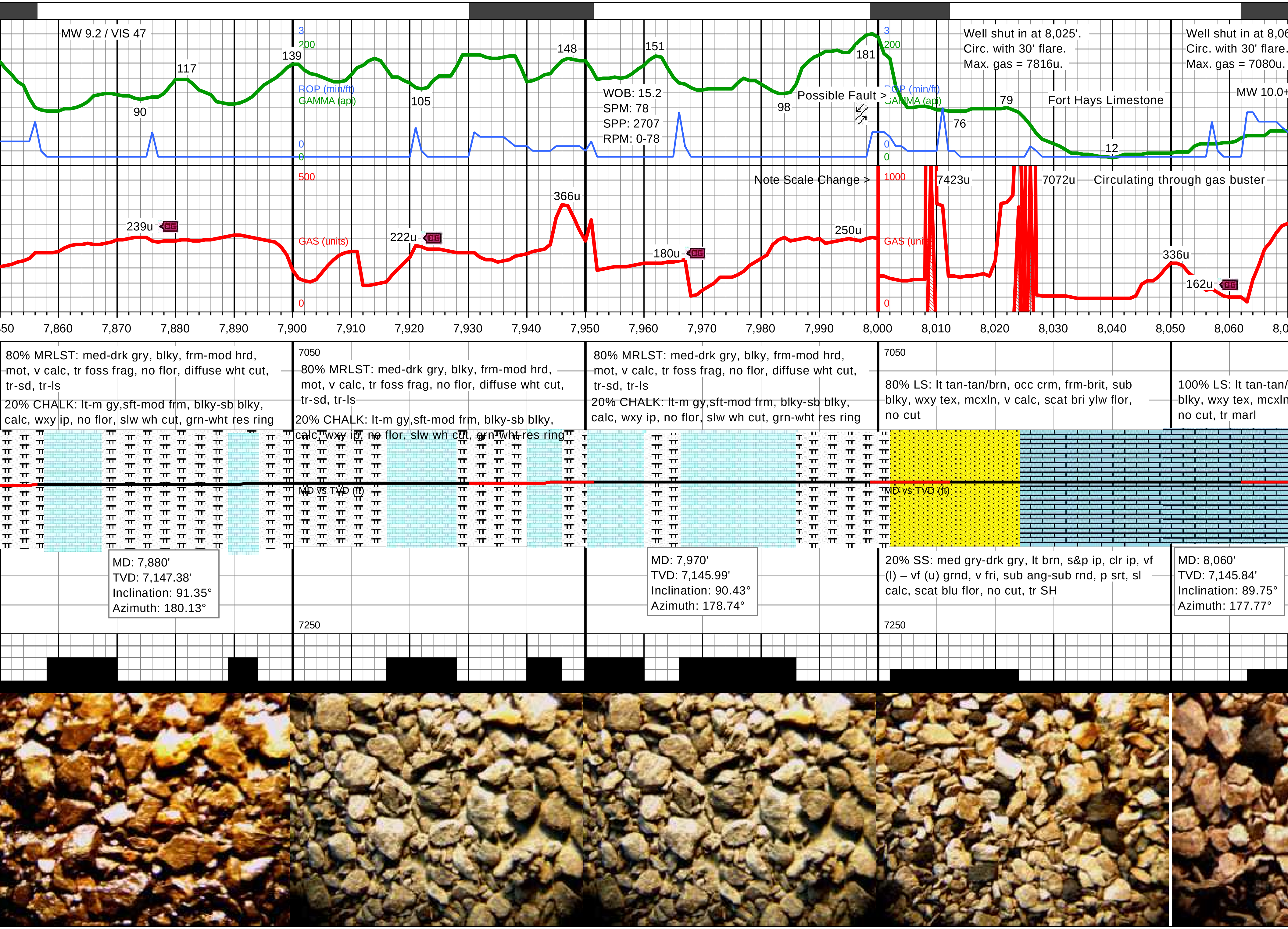


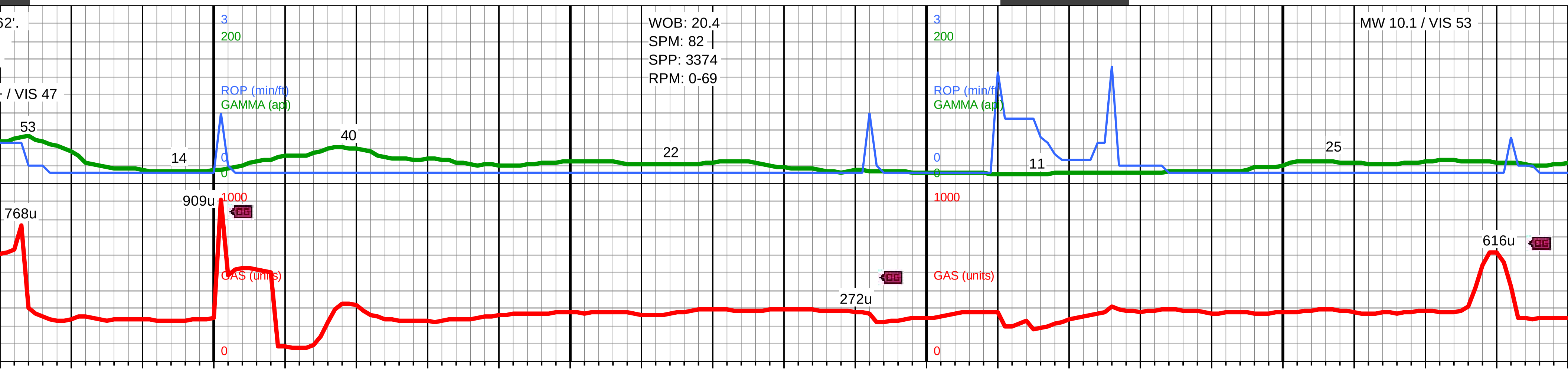
MD: 7,700'
TVD: 7,151.25'
Inclination: 90.43°
Azimuth: 181.29°

7250

MD: 7,790'
TVD: 7,149.68'
Inclination: 91.57°
Azimuth: 181.22°

7250


MW 9.2 / VIS 47
139
117
90
148
151
105
98
181
Possible Fault >
WOB: 15.2
SPM: 78
SPP: 2707
RPM: 0-78
Well shut in at 8,025'.
Circ. with 30' flare.
Max. gas = 7816u.
Well shut in at 8,06
Circ. with 30' flare.
Max. gas = 7080u.
MW 10.0+
Fort Hays Limestone
79
76
12
ROP (min/ft)
GAMMA (api)
3
200
0
GAS (units)
500
1000
0
Note Scale Change >
Circulating through gas buster
239u
222u
366u
180u
250u
7423u
7072u
336u
162u
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
8,060
80% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut, tr-sd, tr-ls
20% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring
7050
80% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut, tr-sd, tr-ls
20% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring
80% MRLST: med-drk gry, blky, frm-mod hrd, mot, v calc, tr foss frag, no flor, diffuse wht cut, tr-sd, tr-ls
20% CHALK: lt-m gy,sft-mod frm, blky-sb blky, calc, wxy ip, no flor, slw wh cut, grn-wht res ring
7050
80% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, scat bri ylw flor, no cut
100% LS: lt tan-tan/ blky, wxy tex, mcxln no cut, tr marl
MD vs TVD (ft)
MD vs TVD (ft)
MD: 7,880'
TVD: 7,147.38'
Inclination: 91.35°
Azimuth: 180.13°
MD: 7,970'
TVD: 7,145.99'
Inclination: 90.43°
Azimuth: 178.74°
20% SS: med gry-drk gry, lt brn, s&p ip, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, scat blu flor, no cut, tr SH
MD: 8,060'
TVD: 7,145.84'
Inclination: 89.75°
Azimuth: 177.77°
7250
7250



70 | 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 | 8,280 | 8,2

brn, occ crm, frm-brit, sub
, v calc, scat bri ylw flor,

7050

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, sm tr-scat bri ylw flor, no cut, sm tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, sm tr-scat bri ylw flor, no cut, sm tr marl

7050

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, sm tr-scat bri ylw flor, no cut, sm tr sh, tr marl

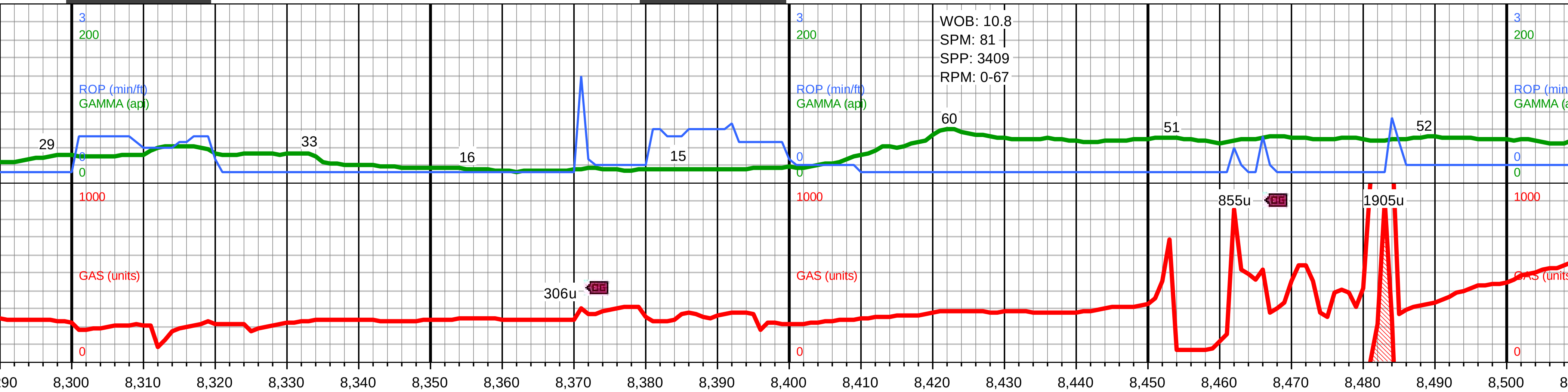
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, sm tr-scat bri ylw flor, no cut, sm tr sh, tr marl

MD: 8,150'
TVD: 7,145.75'
Inclination: 90.37°
Azimuth: 177.7°

7250

MD: 8,240'
TVD: 7,145.55'
Inclination: 89.88°
Azimuth: 177.89°

7250



, sub
ri ylw

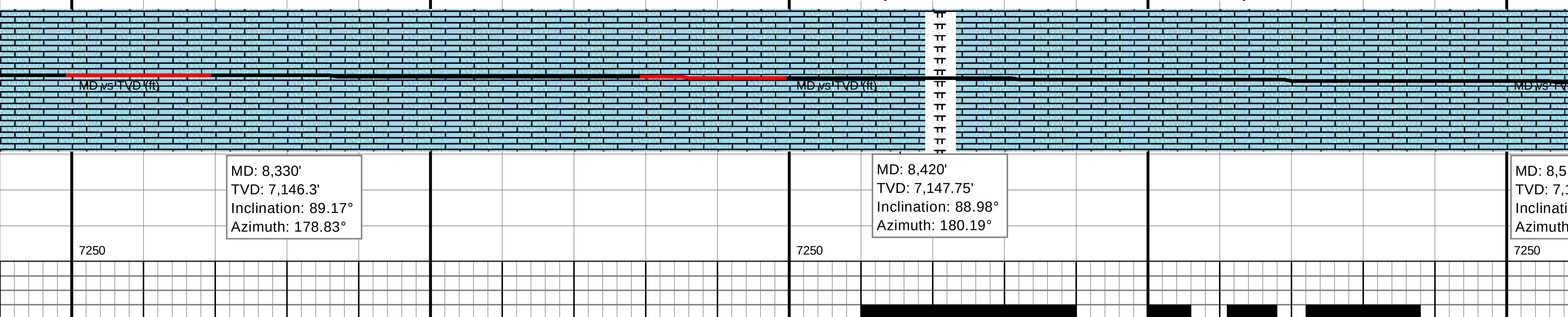
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sm tr marl

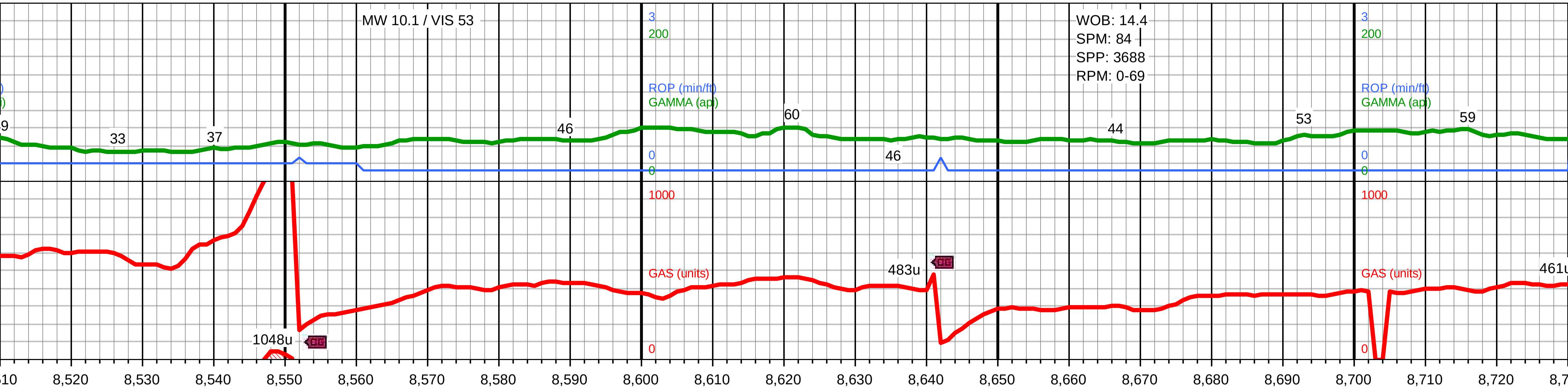
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sm tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, scat pl ylw flor, no cut, tr sh, hvy tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, scat pl ylw flor, no cut, tr sh, hvy tr marl

100% LS: blky, wxy tr marl





7050

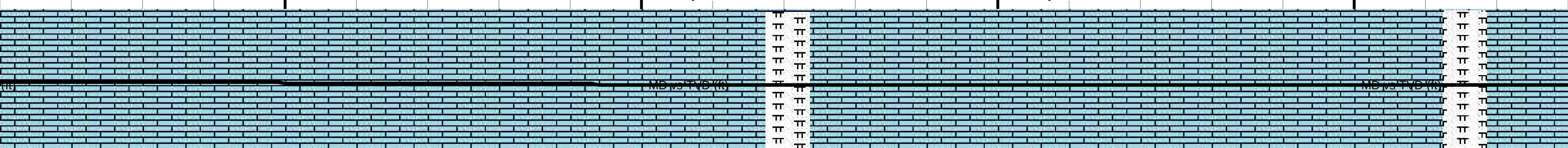
: lt tan-tan/brn, occ crm, frm-brit, sub … tex, mcxln, v calc, no flor, no cut, sm

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sm tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr sh, hvy tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr sh, hvy tr marl

100% LS: lt tan-tan/brn, occ cr… blky, wxy tex, mcxln, v calc, no… marl

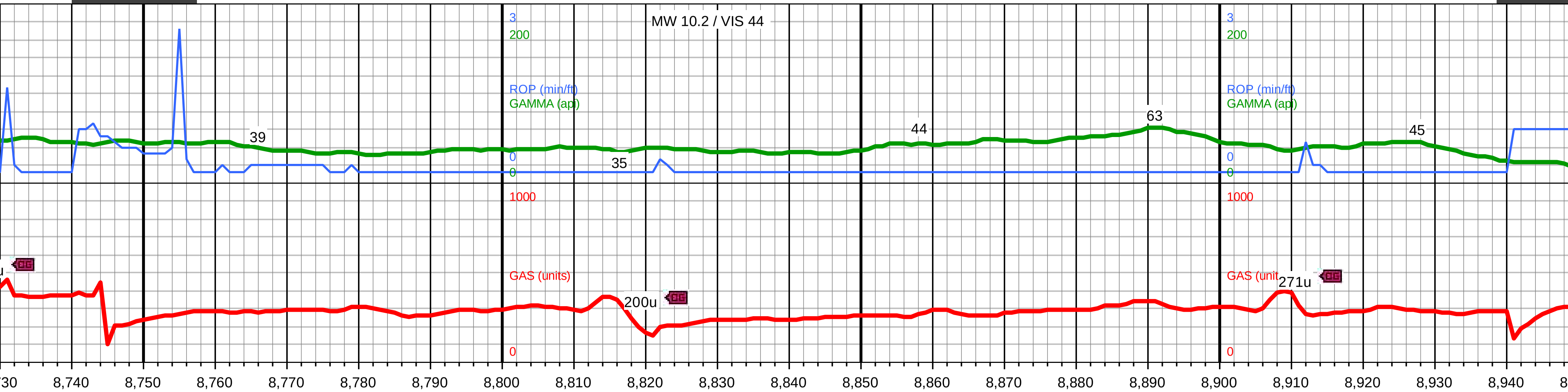


…0'
…9.67'
…n: 88.58°
…179.88°

MD: 8,600'
TVD: 7,151.32'
Inclination: 89.32°
Azimuth: 179.77°

MD: 8,690'
TVD: 7,151.47'
Inclination: 90.49°
Azimuth: 180.16°

7250



7050

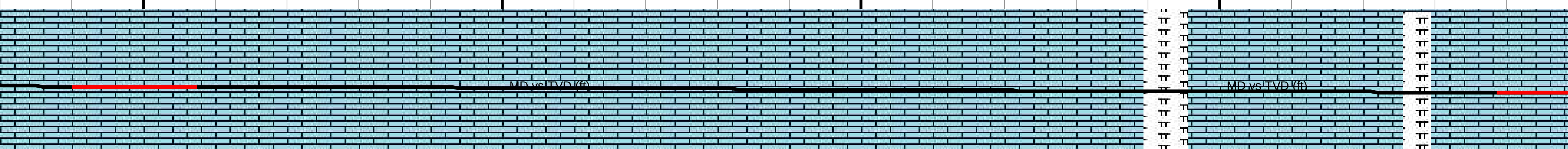
m, frm-brit, sub
o flor, no cut, tr

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, hvy tr marl

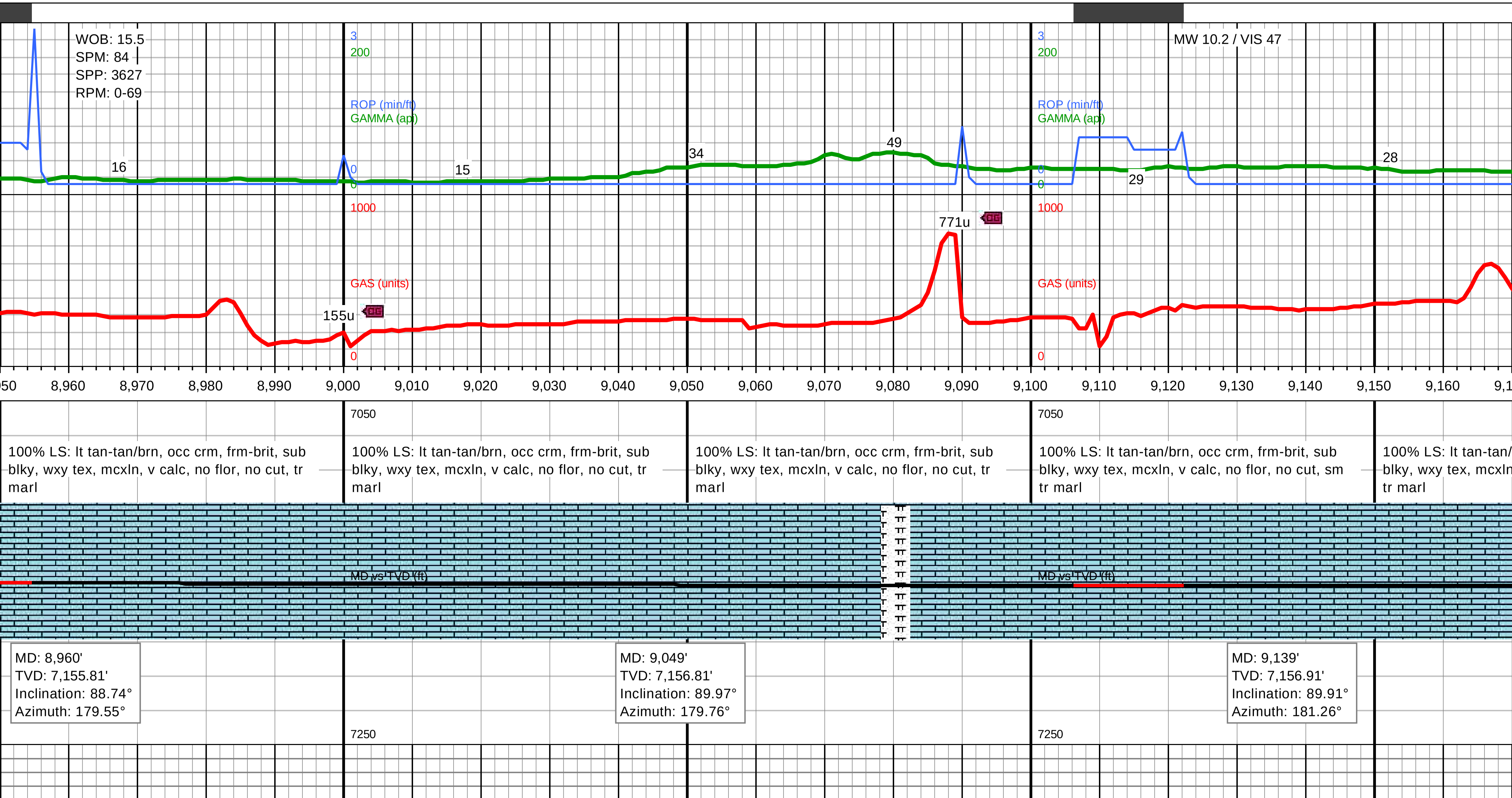
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl

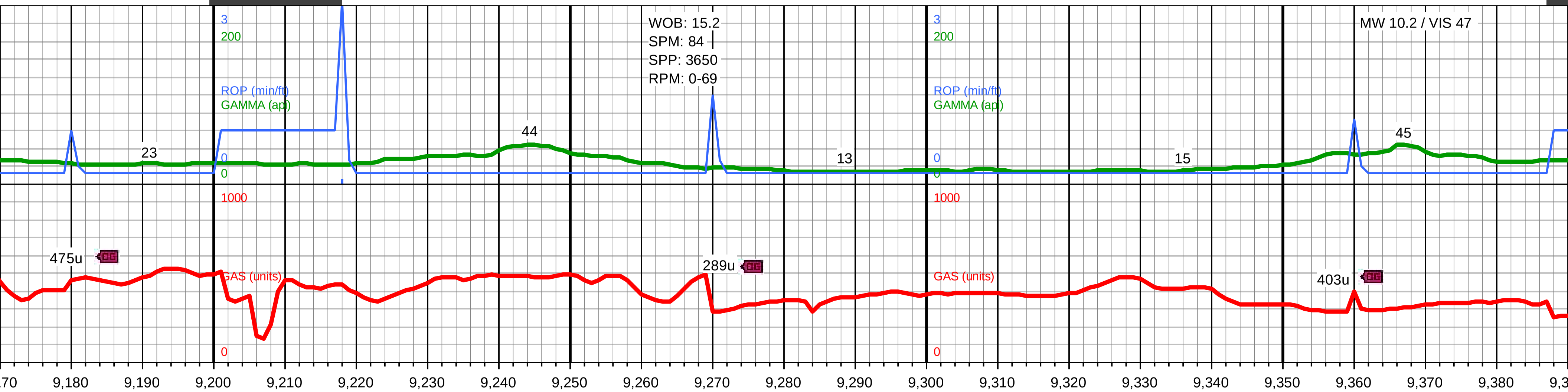


MD: 8,780'
TVD: 7,152.51'
Inclination: 88.18°
Azimuth: 179.82°

MD: 8,870'
TVD: 7,154.38'
Inclination: 89.44°
Azimuth: 179.45°

7250


WOB: 15.5
SPM: 84
SPP: 3627
RPM: 0-69
MW 10.2 / VIS 47
ROP (min/ft)
GAMMA (api)
GAS (units)
3
200
0
1000
16
15
34
49
29
28
155u
771u
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
9,160
7050
7250
MD vs TVD (ft)
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sm tr marl
100% LS: lt tan-tan/ blky, wxy tex, mcxln tr marl
MD: 8,960'
TVD: 7,155.81'
Inclination: 88.74°
Azimuth: 179.55°
MD: 9,049'
TVD: 7,156.81'
Inclination: 89.97°
Azimuth: 179.76°
MD: 9,139'
TVD: 7,156.91'
Inclination: 89.91°
Azimuth: 181.26°



7050

...brn, occ crm, frm-brit, sub ..., v calc, no flor, no cut, sm

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl

100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, tr marl

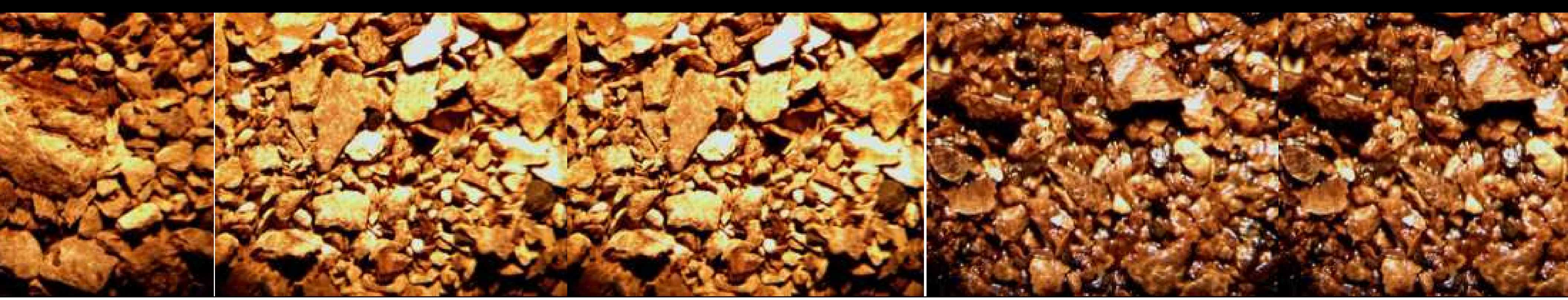
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no c... marl

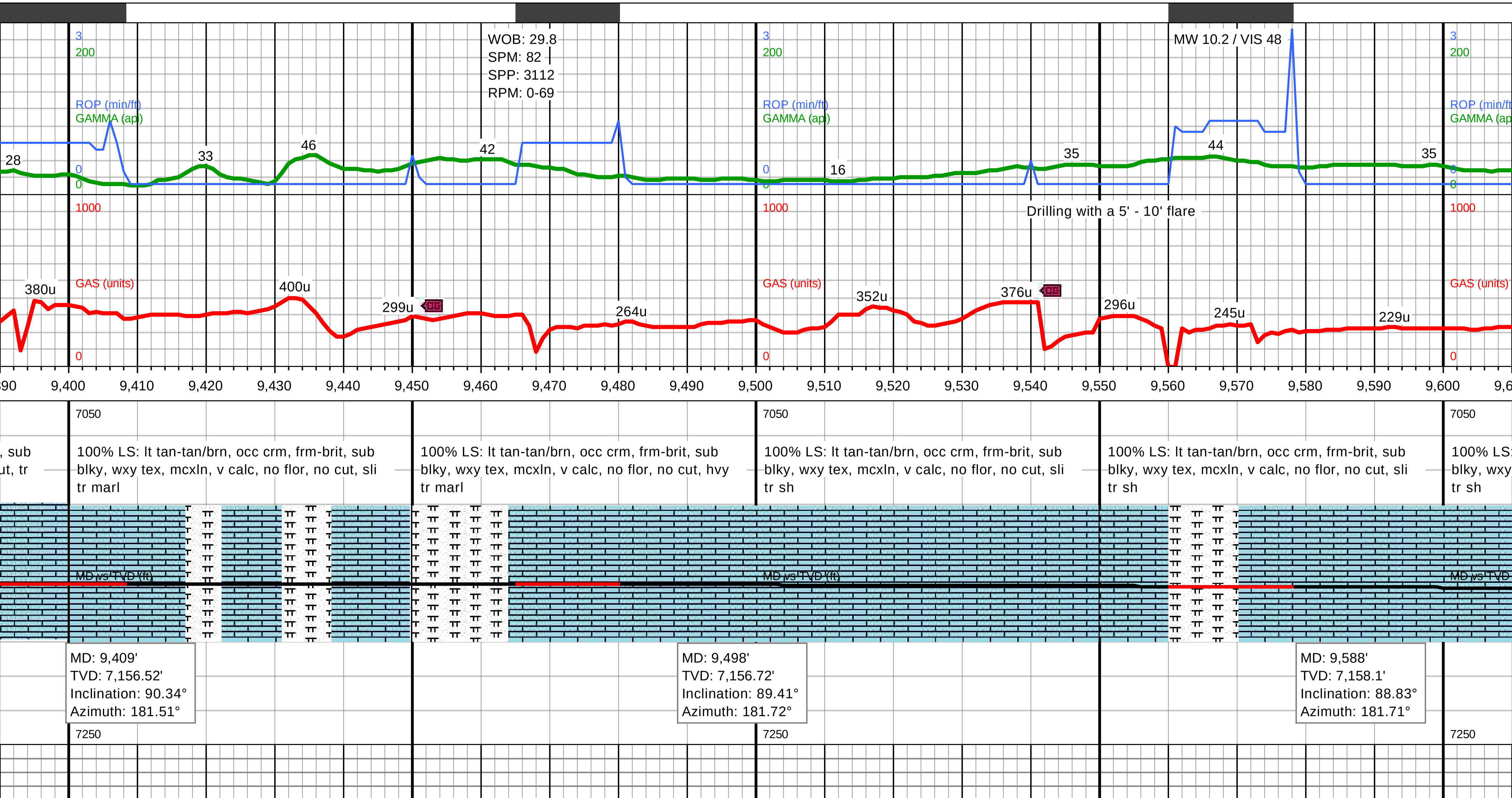
MD vs TVD (ft)

MD: 9,229'
TVD: 7,157.46'
Inclination: 89.38°
Azimuth: 181.92°

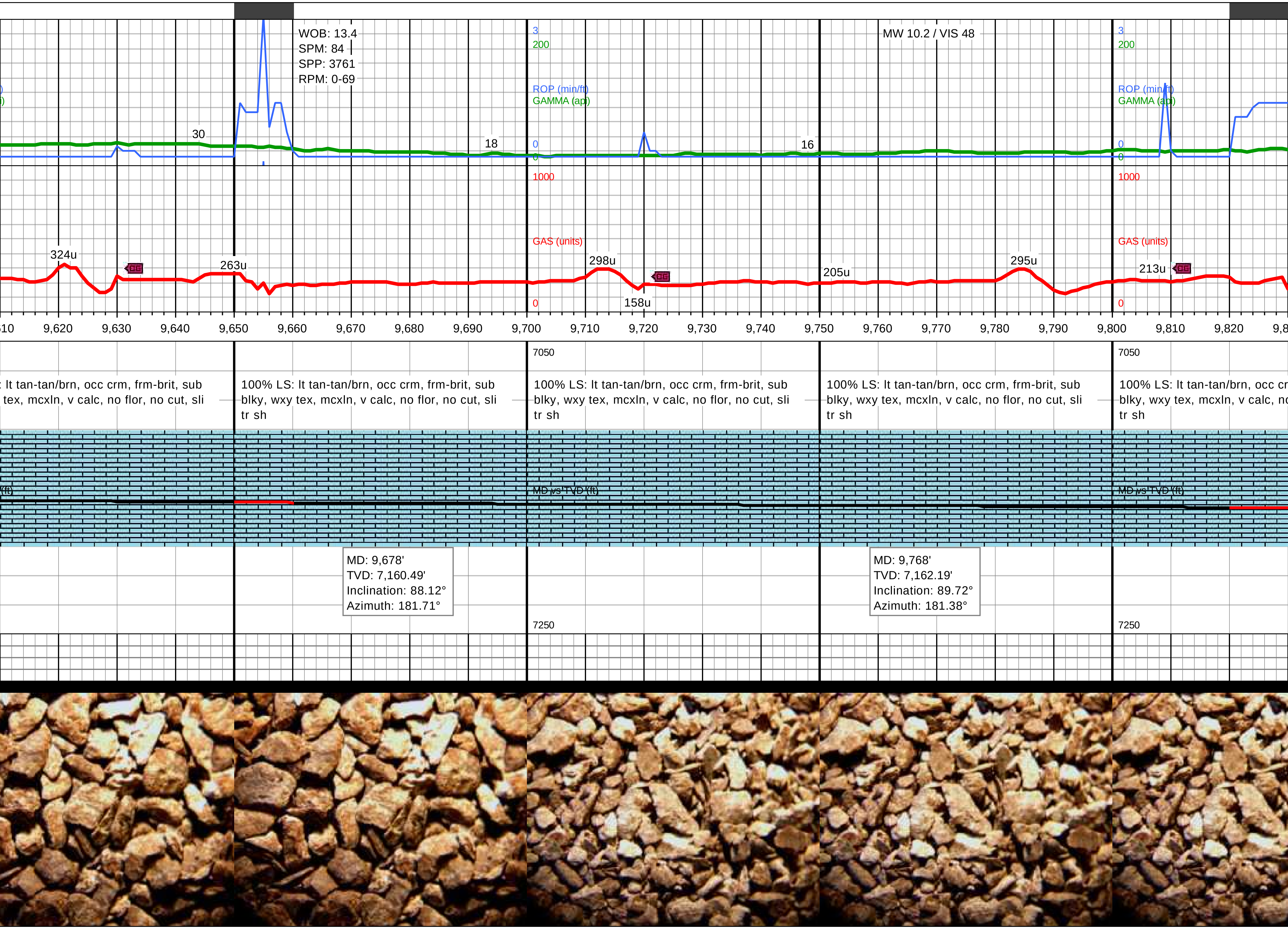
MD: 9,319'
TVD: 7,157.37'
Inclination: 90.74°
Azimuth: 180.9°

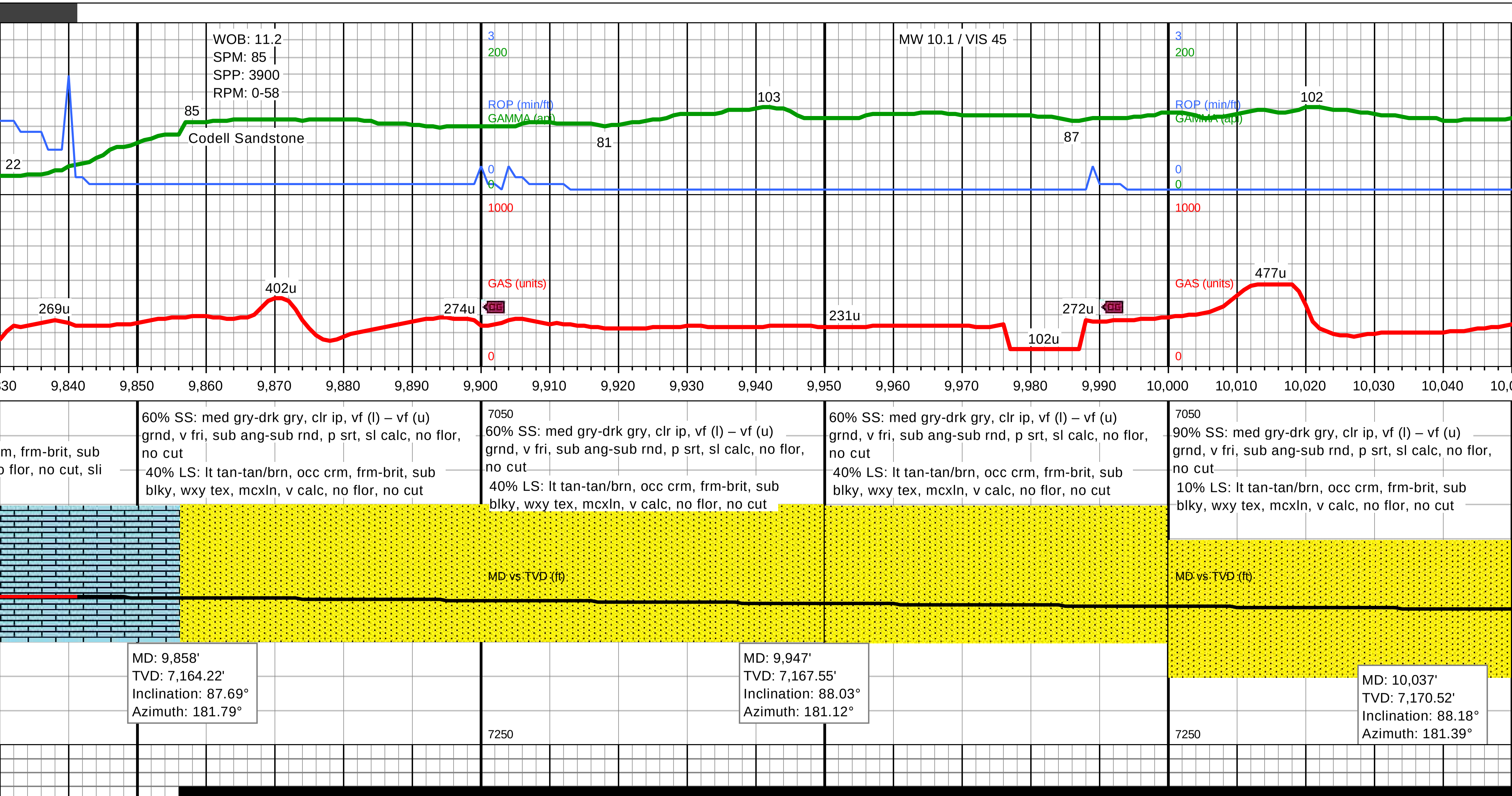
7250



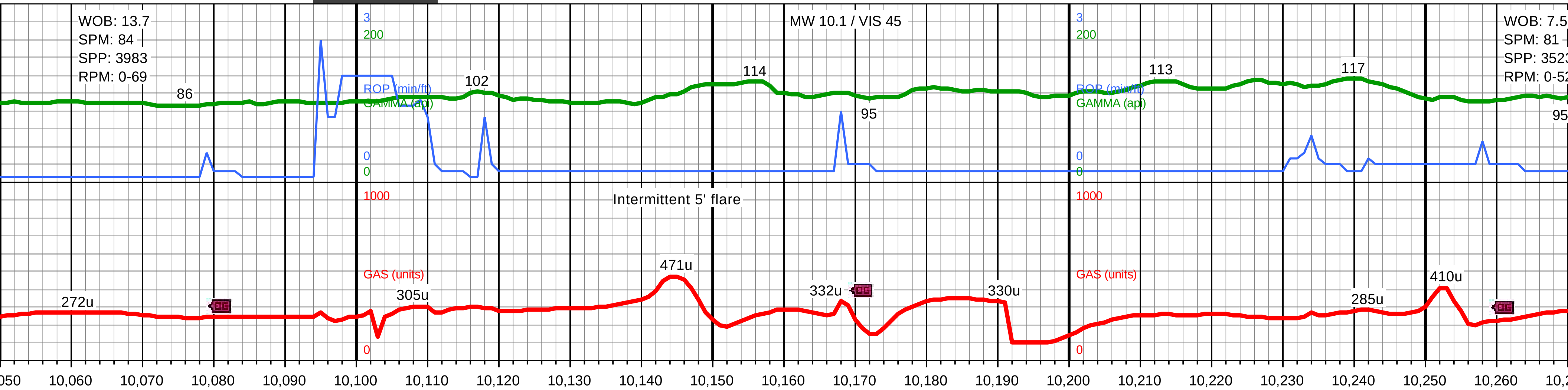


WOB: 29.8
SPM: 82
SPP: 3112
RPM: 0-69
MW 10.2 / VIS 48
Drilling with a 5' - 10' flare
ROP (min/ft)
GAMMA (api)
GAS (units)
3
200
0
0
1000
0
28
33
46
42
16
35
44
35
380u
400u
299u
264u
352u
376u
296u
245u
229u
9,400
9,410
9,420
9,430
9,440
9,450
9,460
9,470
9,480
9,490
9,500
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
7050
7250
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sli tr marl
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, hvy tr marl
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sli tr sh
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sli tr sh
MD vs TVD (ft)
MD: 9,409'
TVD: 7,156.52'
Inclination: 90.34°
Azimuth: 181.51°
MD: 9,498'
TVD: 7,156.72'
Inclination: 89.41°
Azimuth: 181.72°
MD: 9,588'
TVD: 7,158.1'
Inclination: 88.83°
Azimuth: 181.71°


WOB: 13.4
SPM: 84
SPP: 3761
RPM: 0-69
MW 10.2 / VIS 48
3
200
ROP (min/ft)
GAMMA (api)
0
0
1000
GAS (units)
0
30
18
16
324u
263u
298u
158u
205u
295u
213u
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
9,820
7050
7250
MD vs TVD (ft)
lt tan-tan/brn, occ crm, frm-brit, sub tex, mcxln, v calc, no flor, no cut, sli
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sli tr sh
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sli tr sh
100% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut, sli tr sh
100% LS: lt tan-tan/brn, occ cr blky, wxy tex, mcxln, v calc, no tr sh
MD: 9,678'
TVD: 7,160.49'
Inclination: 88.12°
Azimuth: 181.71°
MD: 9,768'
TVD: 7,162.19'
Inclination: 89.72°
Azimuth: 181.38°



WOB: 11.2
SPM: 85
SPP: 3900
RPM: 0-58
MW 10.1 / VIS 45
Codell Sandstone
22
85
81
103
87
102
3
200
ROP (min/ft)
GAMMA (api)
0
0
1000
GAS (units)
0
269u
402u
274u
231u
102u
272u
477u
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
10,040
m, frm-brit, sub
flor, no cut, sli
60% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut
40% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut
7050
60% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut
40% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut
60% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut
40% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut
7050
90% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut
10% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut
MD vs TVD (ft)
MD vs TVD (ft)
MD: 9,858'
TVD: 7,164.22'
Inclination: 87.69°
Azimuth: 181.79°
MD: 9,947'
TVD: 7,167.55'
Inclination: 88.03°
Azimuth: 181.12°
MD: 10,037'
TVD: 7,170.52'
Inclination: 88.18°
Azimuth: 181.39°
7250
7250



90% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut

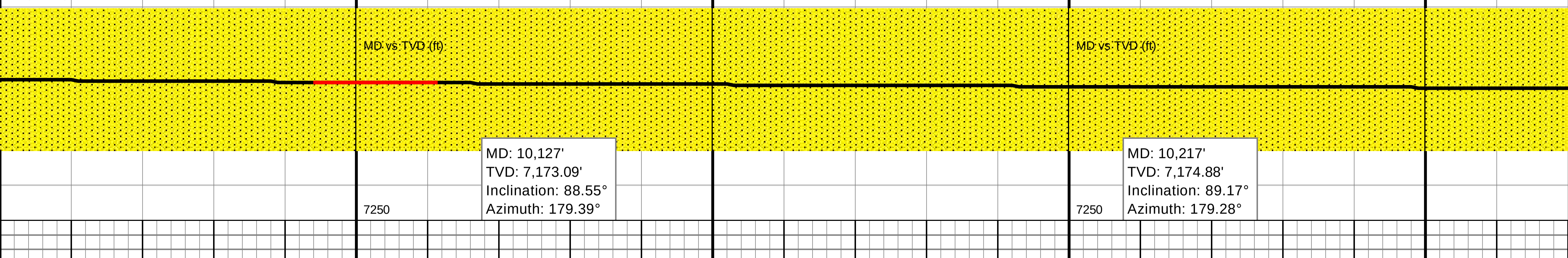
10% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut

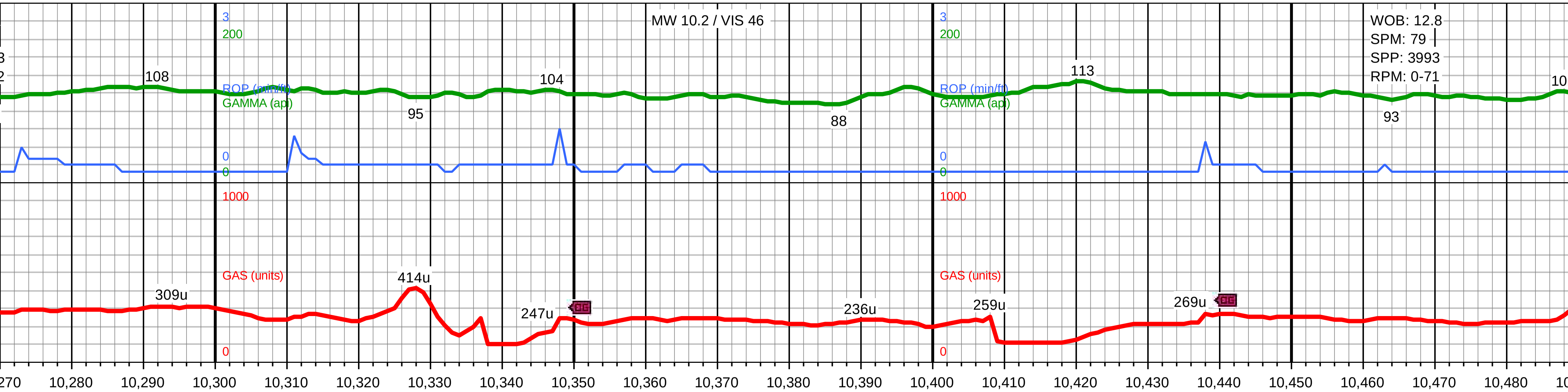
100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

100% SS: med gry-d grnd, v fri, sub ang-s no cut, tr sh





7050

rk gry, clr ip, vf (l) – vf (u) sub rnd, p srt, sl calc, no flor,

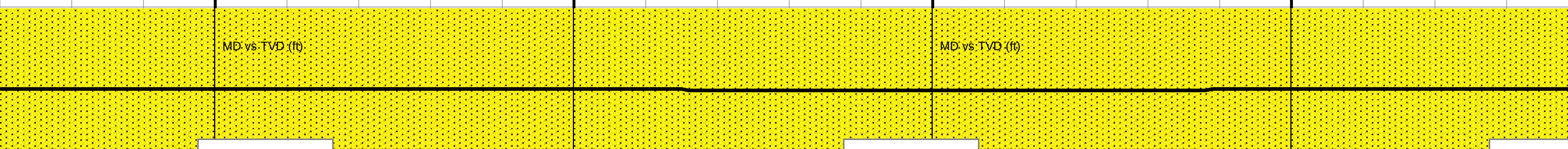
100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

7050

95% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh
5% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut

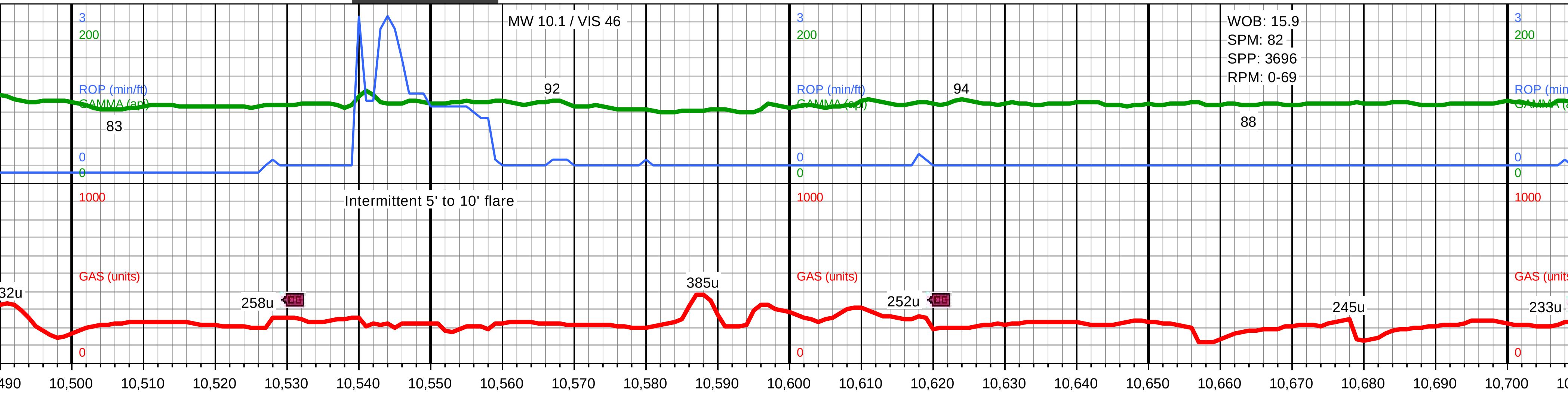
95% SS: med gry-drk gry, clr ip, vf (l) – vf grnd, v fri, sub ang-sub rnd, p srt, sl calc, no cut, sli tr sh
5% LS: lt tan-tan/brn, occ crm, frm-brit, s wxy tex, mcxln, v calc, no flor, no cut



MD: 10,307'
TVD: 7,175.8'
Inclination: 89.66°
Azimuth: 178.68°

MD: 10,397'
TVD: 7,176.11'
Inclination: 89.94°
Azimuth: 178.28°

MD: 10,487'
TVD: 7,175.8
Inclination: 9
Azimuth: 178



(u)
no flor,
ub blky,

7050

80% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

20% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut

80% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

20% LS: lt tan-tan/brn, occ crm, frm-brit, sub blky, wxy tex, mcxln, v calc, no flor, no cut

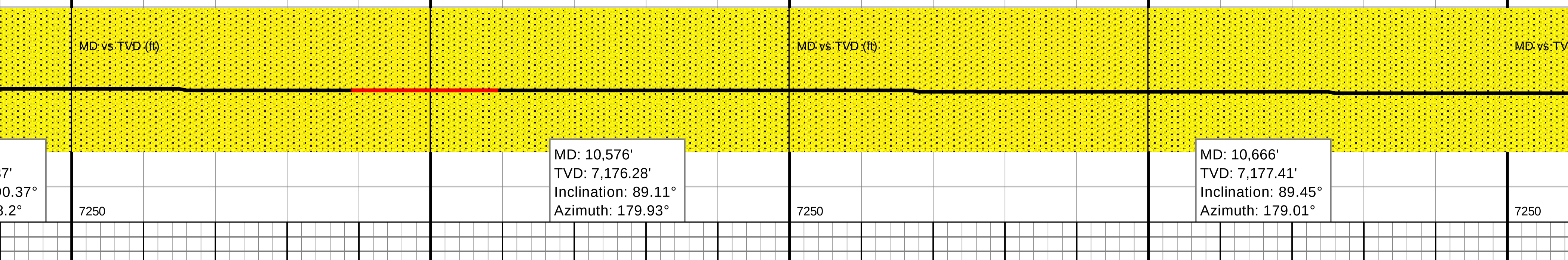
7050

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr ls, sli tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr ls, sli tr sh

7050

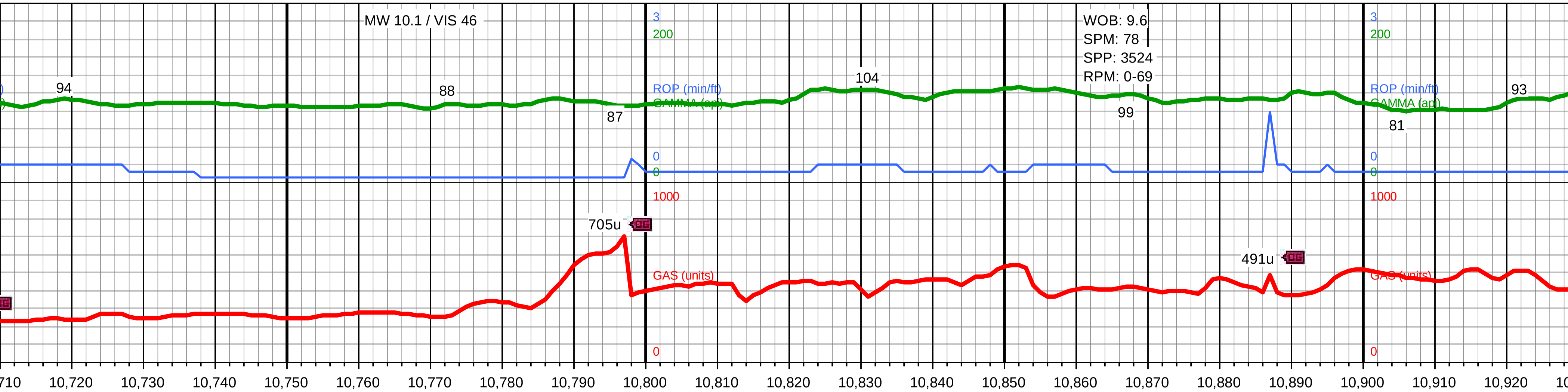
100% SS: grnd, v fri, no cut, sli



7'
0.37°
3.2°

MD: 10,576'
TVD: 7,176.28'
Inclination: 89.11°
Azimuth: 179.93°

MD: 10,666'
TVD: 7,177.41'
Inclination: 89.45°
Azimuth: 179.01°



7050

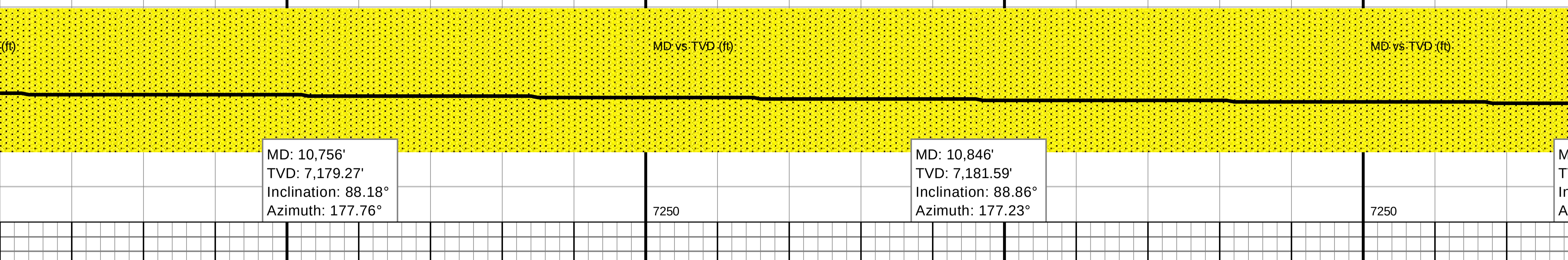
med gry-drk gry, clr ip, vf (l) – vf (u)
, sub ang-sub rnd, p srt, sl calc, no flor,
tr sh

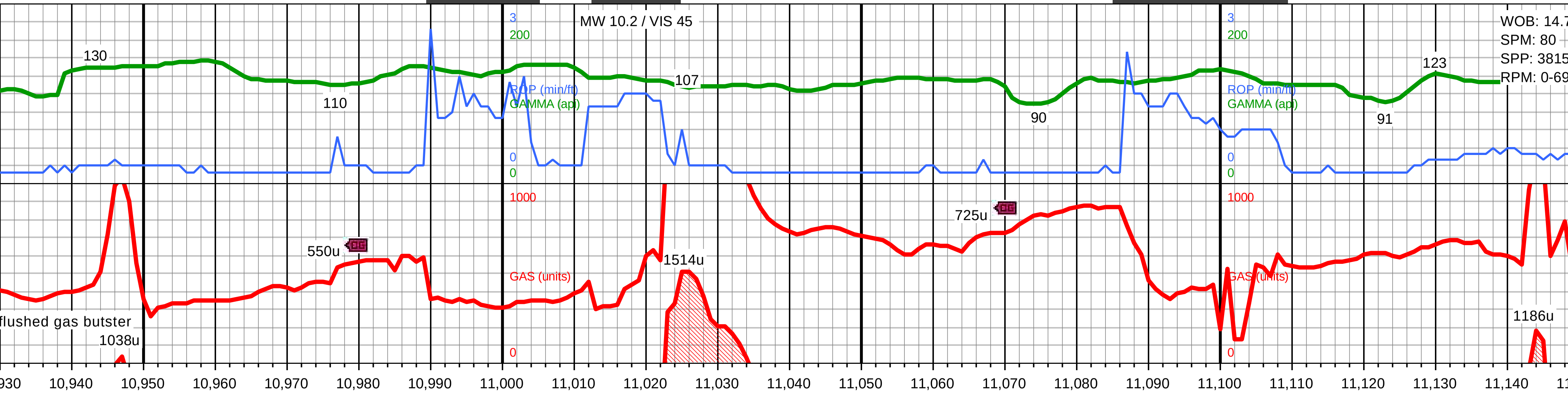
100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, sli tr sh

100% SS: med gry-drk gry, clr i
grnd, v fri, v-arg ip, sub ang-su
calc, no flor, no cut, hvy tr sh





p, vf (l) – vf (u) b rnd, p srt, sl

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut, hvy tr sh

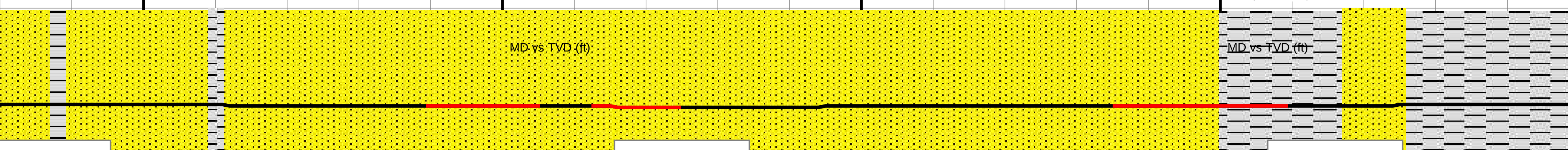
7050

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut, hvy tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut, hvy tr sh

7050

70% SH: med-drk gy, drk brn, sb blky-blkyh, sb plty ip, sft-m frm, v-sndy, wxy ip, rf txt, tr-ls
30% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut



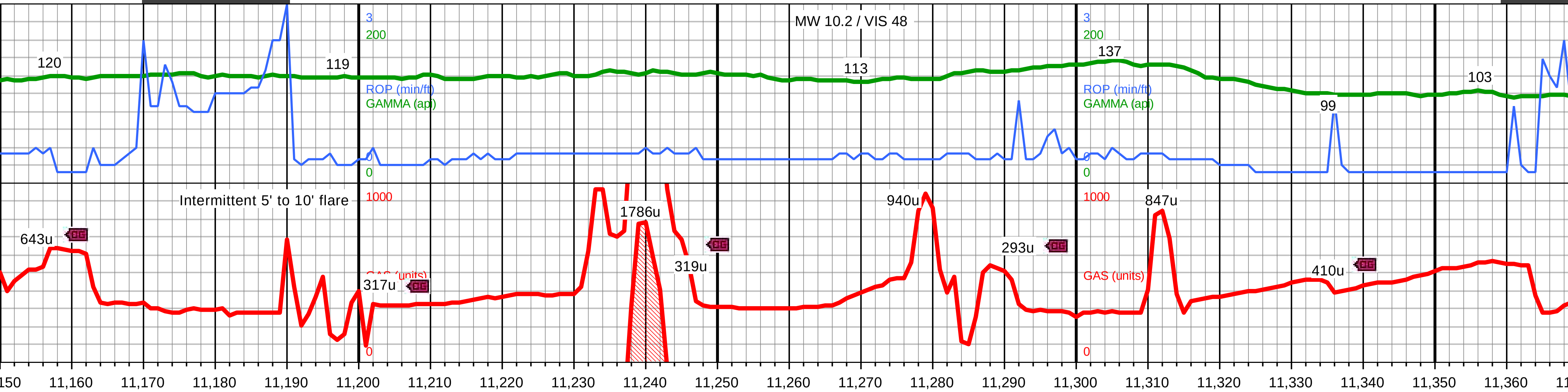
D: 10,936'
D: 7,183.63'
lination: 88.55°
muth: 176.68°

7250

MD: 11,026'
TVD: 7,184.96'
Inclination: 89.75°
Azimuth: 177.13°

7250

MD: 11,116'
TVD: 7,184.19'
Inclination: 91.23°
Azimuth: 179.03°



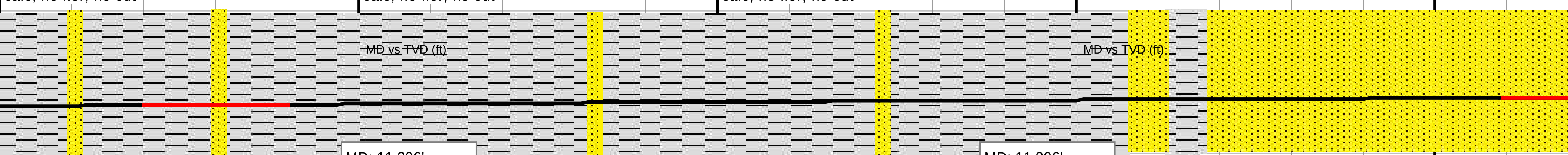
70% SH: med-drk gy, drk brn, sb blky-blkyh, sb plty ip, sft-m frm, v-sndy, wxy ip, rf txt, tr-ls
30% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut

75% SH: med-drk gy, drk brn, sb blky-blkyh, sb plty ip, sft-m frm, v-sndy, wxy ip, rf txt, tr-ls
25% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut

75% SH: med-drk gy, drk brn, sb blky-blkyh, sb plty ip, sft-m frm, v-sndy, wxy ip, rf txt, tr-ls
25% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut

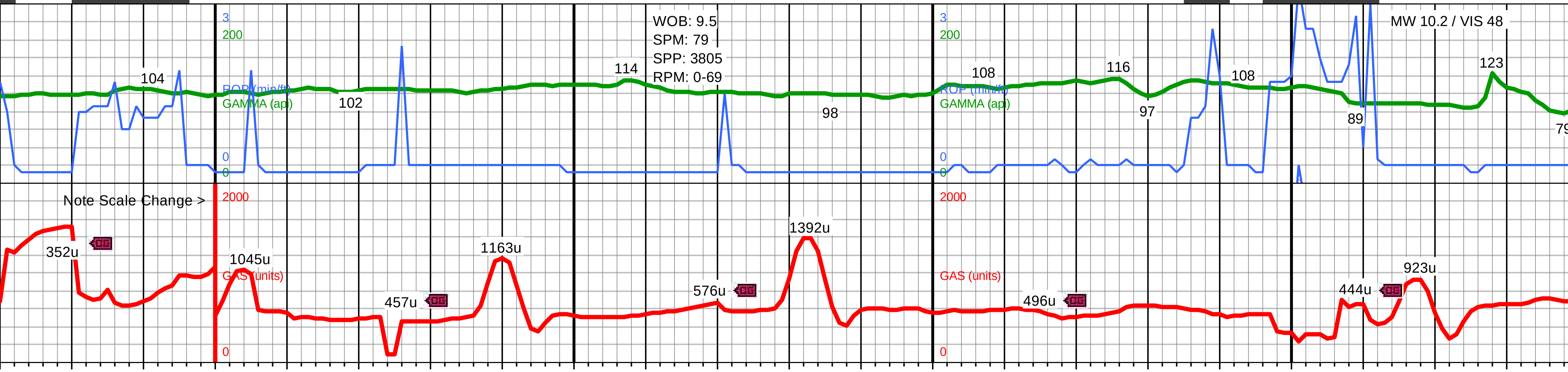
100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, v-arg ip, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, hvy tr sh

100% SS: med gry-d
grnd, v fri, v-arg ip, s
calc, no flor, no cut,



MD: 11,206'
TVD: 7,182.21'
Inclination: 91.29°
Azimuth: 181.62°

MD: 11,296'
TVD: 7,180.08'
Inclination: 91.42°
Azimuth: 181.6°



370 | 11,380 | 11,390 | 11,400 | 11,410 | 11,420 | 11,430 | 11,440 | 11,450 | 11,460 | 11,470 | 11,480 | 11,490 | 11,500 | 11,510 | 11,520 | 11,530 | 11,540 | 11,550 | 11,560 | 11,570 | 11,580 | 11,5

7050

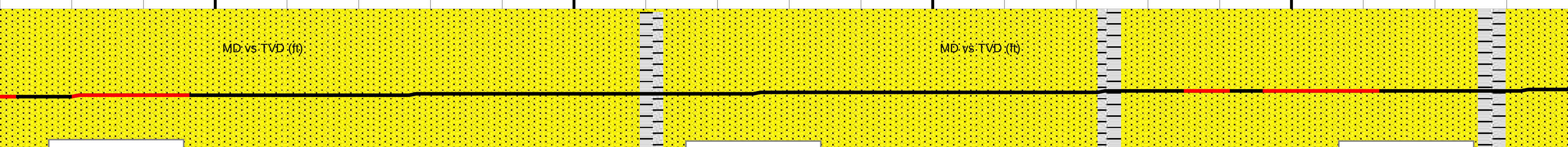
rk gry, clr ip, vf (l) – vf (u) sub ang-sub rnd, p srt, sl tr ls, hvy tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, hvy tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, hvy tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, hvy tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – v grnd, v fri, sub ang-sub rnd, p srt, sl calc, no cut, tr ls, tr sh

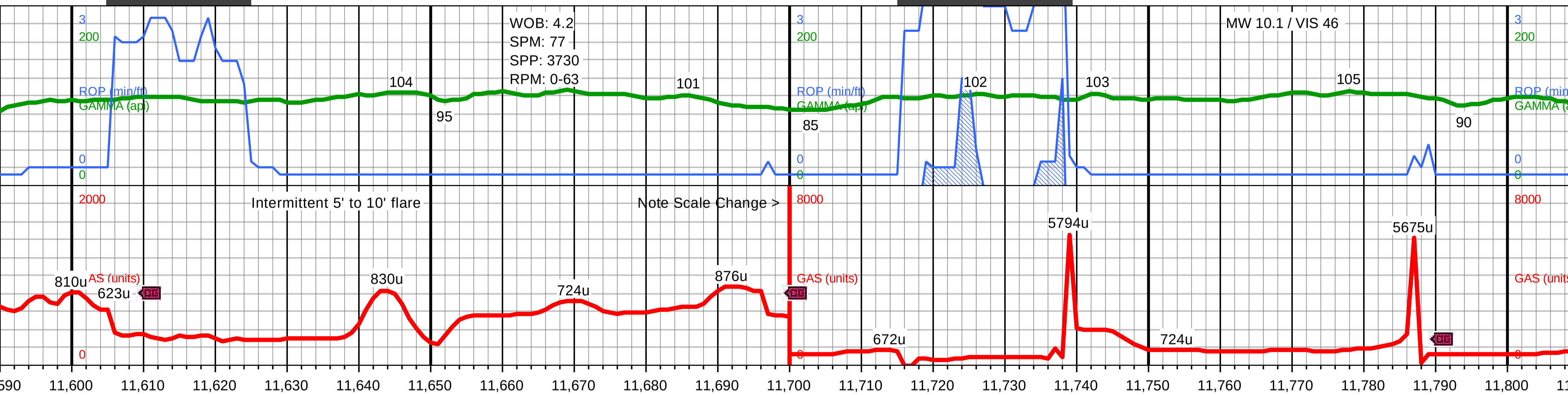


MD: 11,386'
TVD: 7,178.29'
Inclination: 90.86°
Azimuth: 181.09°

MD: 11,476'
TVD: 7,176.79'
Inclination: 91.05°
Azimuth: 181.38°

MD: 11,566'
TVD: 7,175.29'
Inclination: 90.86°
Azimuth: 182.77°

7250



7050

f (u) no flor,

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, sli tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, sli tr sh

95% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls
5% SH: med-drk gy, sb blky-blky, sb plty ip, sft-m frm, v-sndy, wxy ip, rf txt

95% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls
5% SH: med-drk gy, sb blky-blky, sb plty ip, sft-m frm, v-sndy, wxy ip, rf txt

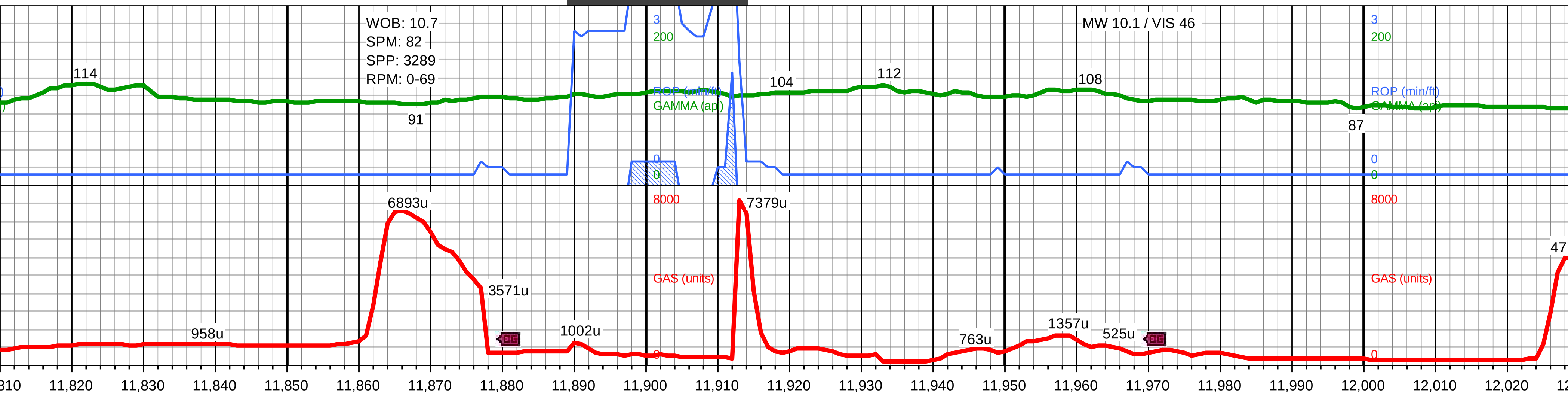
100% SS: grnd, v fri, no cut, tr l

MD vs TVD (ft)

MD: 11,656'
TVD: 7,174.81'
Inclination: 89.75°
Azimuth: 183.08°

MD: 11,746'
TVD: 7,175.57'
Inclination: 89.29°
Azimuth: 181.57°

7250



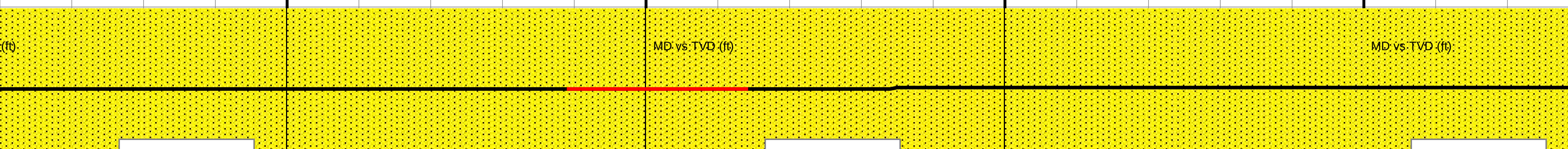
med gry-drk gry, clr ip, vf (l) – vf (u) , sub ang-sub rnd, p srt, sl calc, no flor, ls, tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr ls, tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

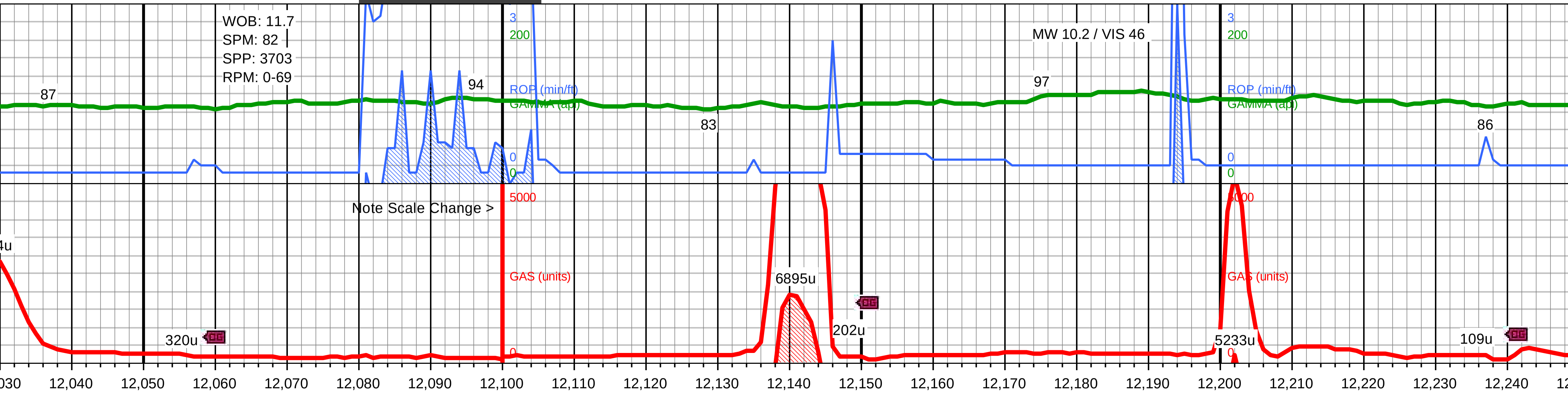
100% SS: med gry-drk gry, clr i grnd, v fri, sub ang-sub rnd, p s no cut, tr sh



MD: 11,836'
TVD: 7,175.64'
Inclination: 90.62°
Azimuth: 181.56°

MD: 11,926'
TVD: 7,175.27'
Inclination: 89.85°
Azimuth: 181.14°

MD: 12,016'
TVD: 7,174.49'
Inclination: 91.14°
Azimuth: 181.11°



7050

p, vf (l) – vf (u) srt, sl calc, no flor,

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

7050

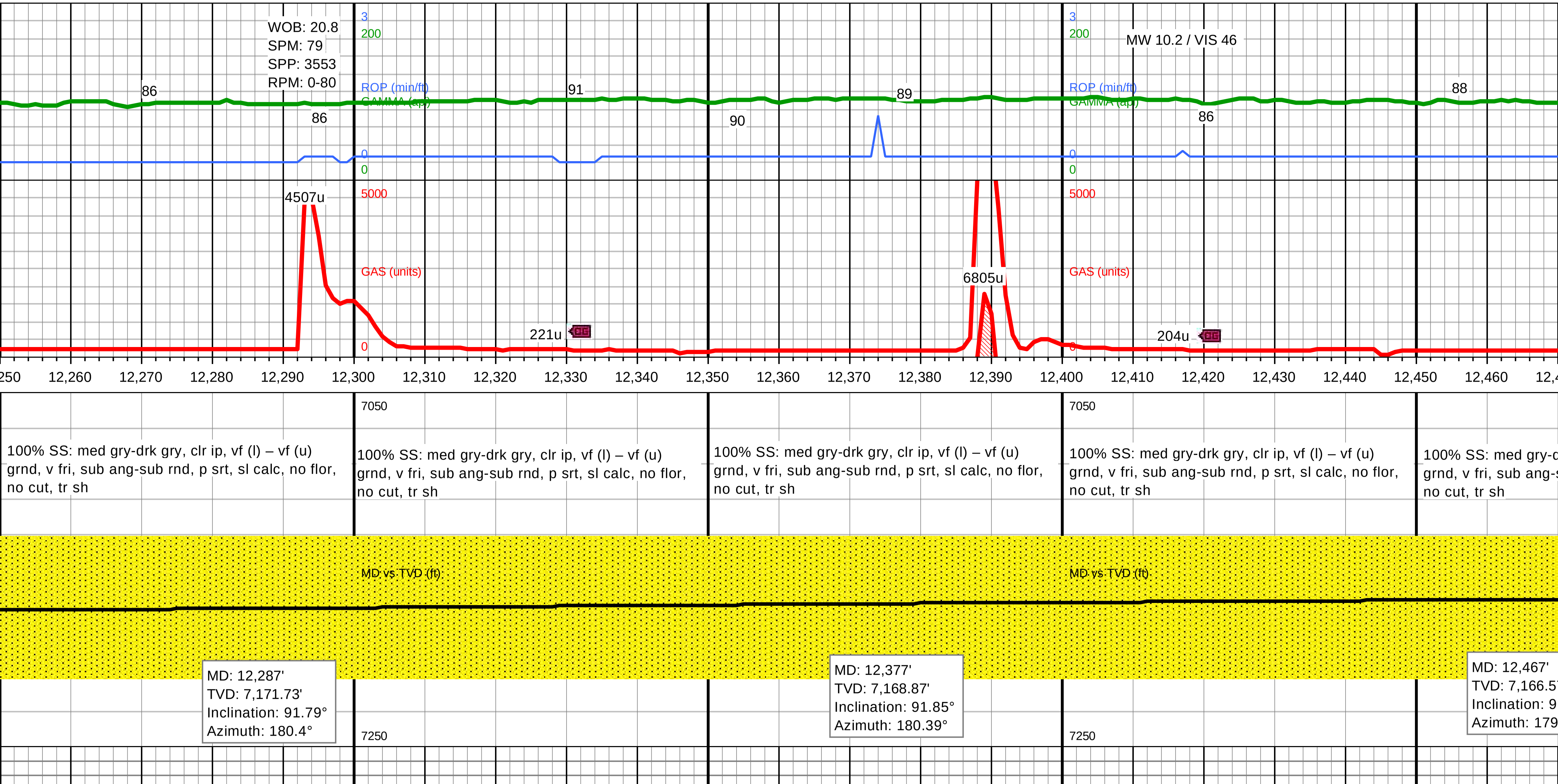
100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

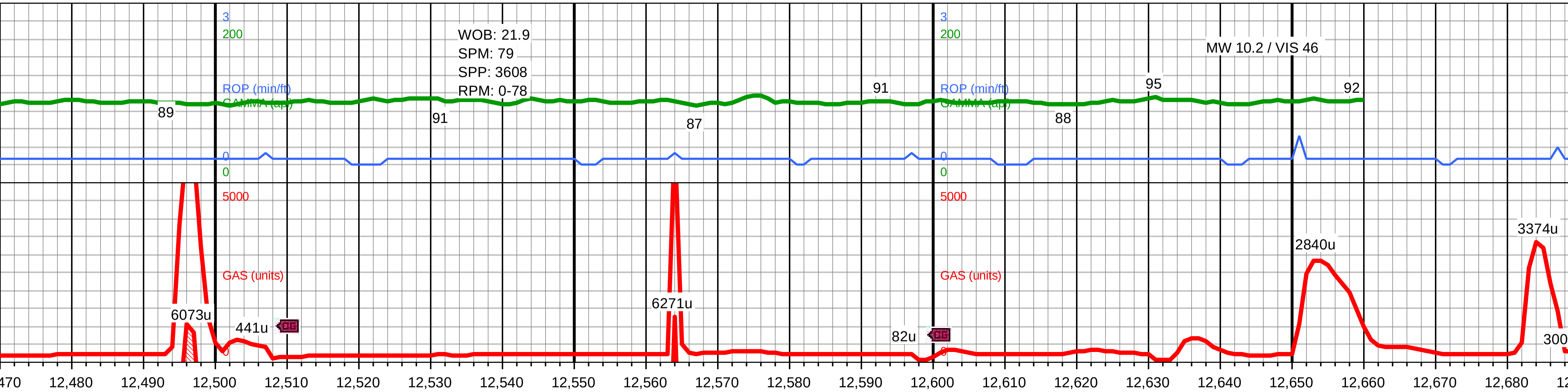
MD vs TVD (ft)

MD vs TVD (ft)

MD: 12,106'
TVD: 7,173.91'
Inclination: 89.6°
Azimuth: 180.64°

MD: 12,196'
TVD: 7,173.69'
Inclination: 90.68°
Azimuth: 180.57°


WOB: 20.8
SPM: 79
SPP: 3553
RPM: 0-80
MW 10.2 / VIS 46
3
200
ROP (min/ft)
GAMMA (api)
0
0
5000
GAS (units)
0
86
86
91
90
89
86
88
4507u
221u
6805u
204u
12,260
12,270
12,280
12,290
12,300
12,310
12,320
12,330
12,340
12,350
12,360
12,370
12,380
12,390
12,400
12,410
12,420
12,430
12,440
12,450
12,460
7050
7250
MD vs TVD (ft)
100% SS: med gry-drk gry, clr ip, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh
MD: 12,287'
TVD: 7,171.73'
Inclination: 91.79°
Azimuth: 180.4°
MD: 12,377'
TVD: 7,168.87'
Inclination: 91.85°
Azimuth: 180.39°
MD: 12,467'



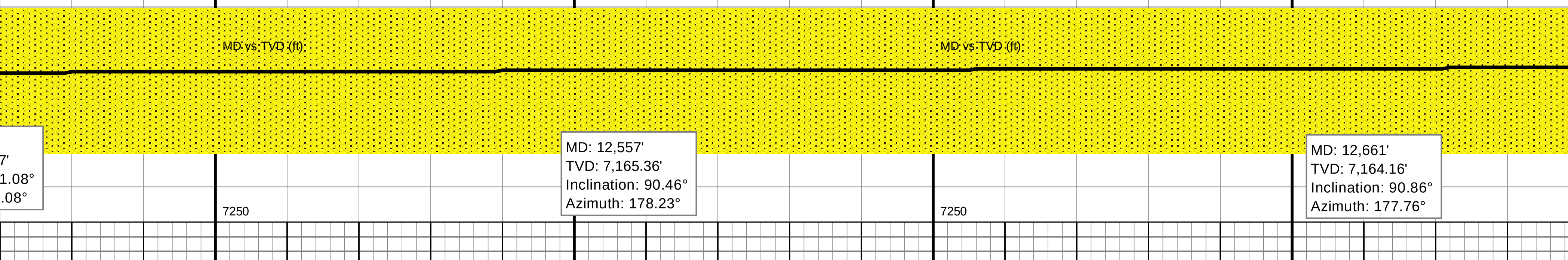
drk gry, clr ip, vf (l) – vf (u) sub rnd, p srt, sl calc, no flor,

100% SS: med gry-drk gry, clr, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

100% SS: med gry-drk gry, clr, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

100% SS: med gry-drk gry, clr, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh

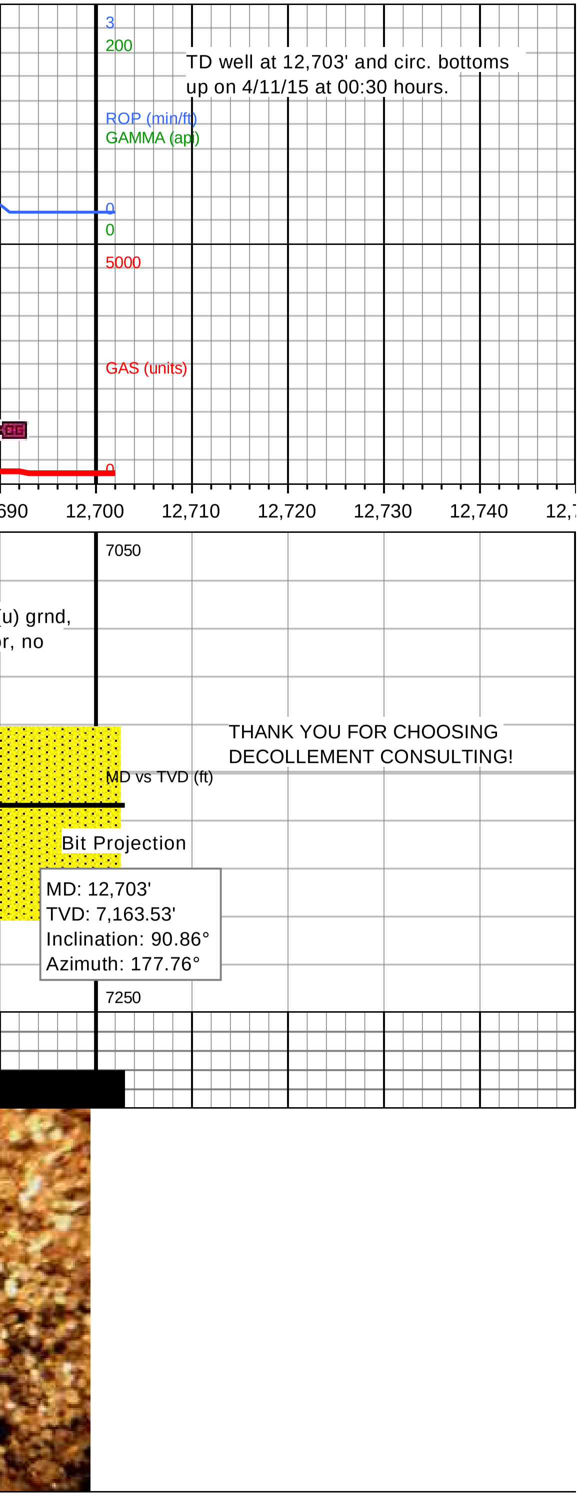
100% SS: med gry-drk gry, clr, vf (l) – vf (u) grnd, v fri, sub ang-sub rnd, p srt, sl calc, no flor, no cut, tr sh



7'
1.08°
.08°

MD: 12,557'
TVD: 7,165.36'
Inclination: 90.46°
Azimuth: 178.23°

MD: 12,661'
TVD: 7,164.16'
Inclination: 90.86°
Azimuth: 177.76°


3
200
TD well at 12,703' and circ. bottoms up on 4/11/15 at 00:30 hours.
ROP (min/ft)
GAMMA (api)
0
0
5000
GAS (units)
0
12,700
12,710
12,720
12,730
12,740
7050
(u) grnd,
r, no
THANK YOU FOR CHOOSING DECOLLEMENT CONSULTING!
MD vs TVD (ft)
Bit Projection
MD: 12,703'
TVD: 7,163.53'
Inclination: 90.86°
Azimuth: 177.76°
7250