COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	Trebor B11-69-1HN		
Location	SEC 11 T5N R64W		
State	COLORADO	**County**	WELD
Country	UNITED STATES	**Rig Number**	H&P 330
API Number	05-123-37164	**AFE #**	136853
Spud Date	8/5/2013	**Drilling Completed**	8/11/2013
Surface Coordinates	247 FNL 673 FWL LAT/LONG 40.4204/-104.52462		

Ground Elevation	4606			**K.B. Elevation**	4636
Logged Interval	6005	**To**	11136	**Total Depth**	5131
Formation	NIOBRARA				

Company Noble Energy Inc

Operator

Rock Types

- CONGLOMERATE
- DOLOMITE
- GRANITE
- GYPSUM
- IGNEOUS
- SIDERITE or LIMONITE
- LIMESTONE
- MARLSTONE
- METAMORPHIC
- NO SAMPLE
- SALT
- SANDSTONE
- SALT-PEPPER SAND
- SHALE
- SHALE COLORED
- SHALE GRAY
- SHALY SANDSTONE
- SHALY SILTSTONE
- SILTY SHALE
- SILTSTONE
- TILL
- TUFF
- WELDED TUFF

Accessories

- 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
- INOCERAMUS
- KAOLIN
- MARLSTONE
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- PYRITE
- SALT CAST
- SANDY
- SILICEOUS
- SILTY
- TUFFACEOUS

Stringer

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

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- EARTHY
- FENESTRAL
- FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC
- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY

Engineering

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

Rounding

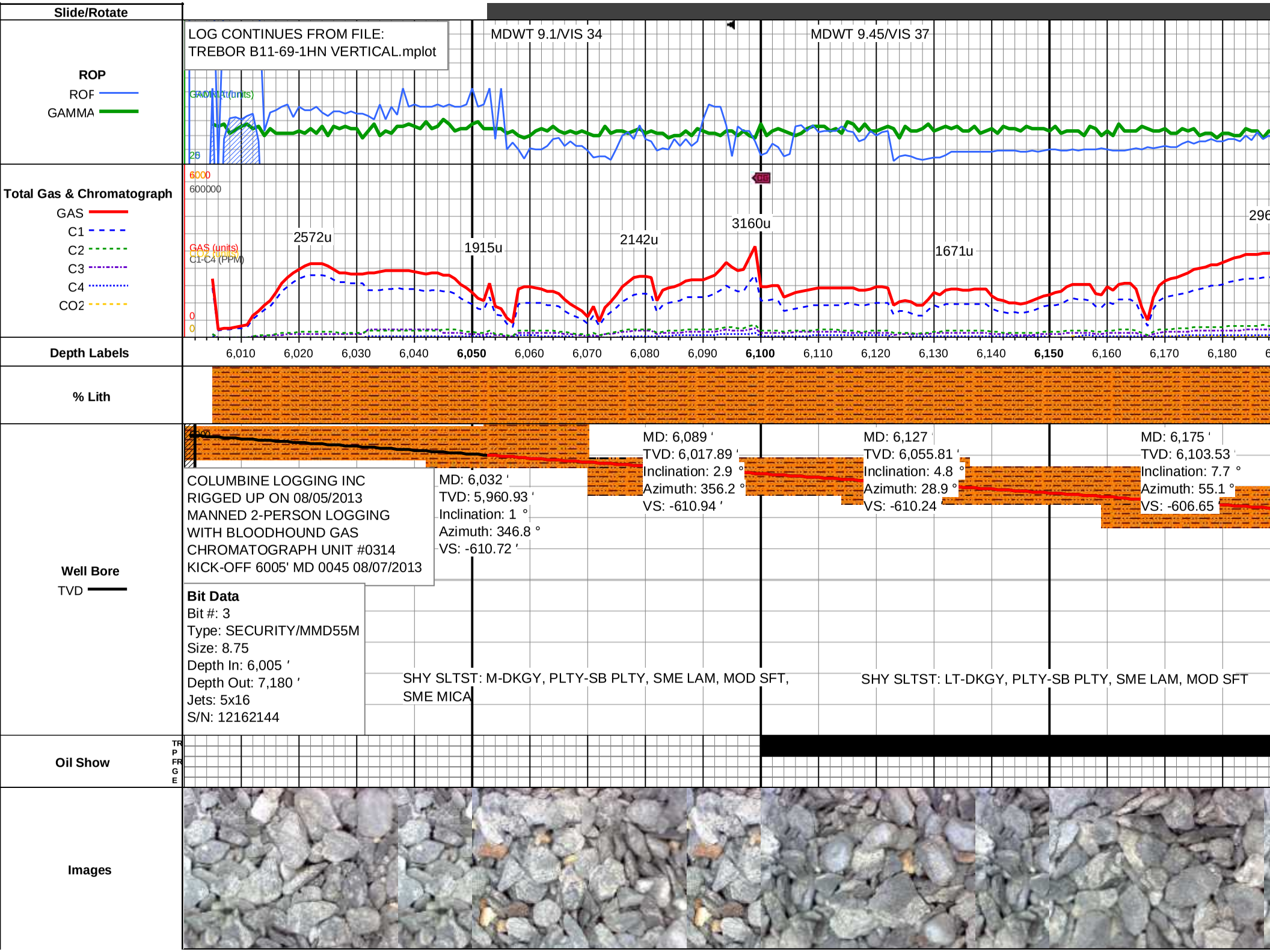
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

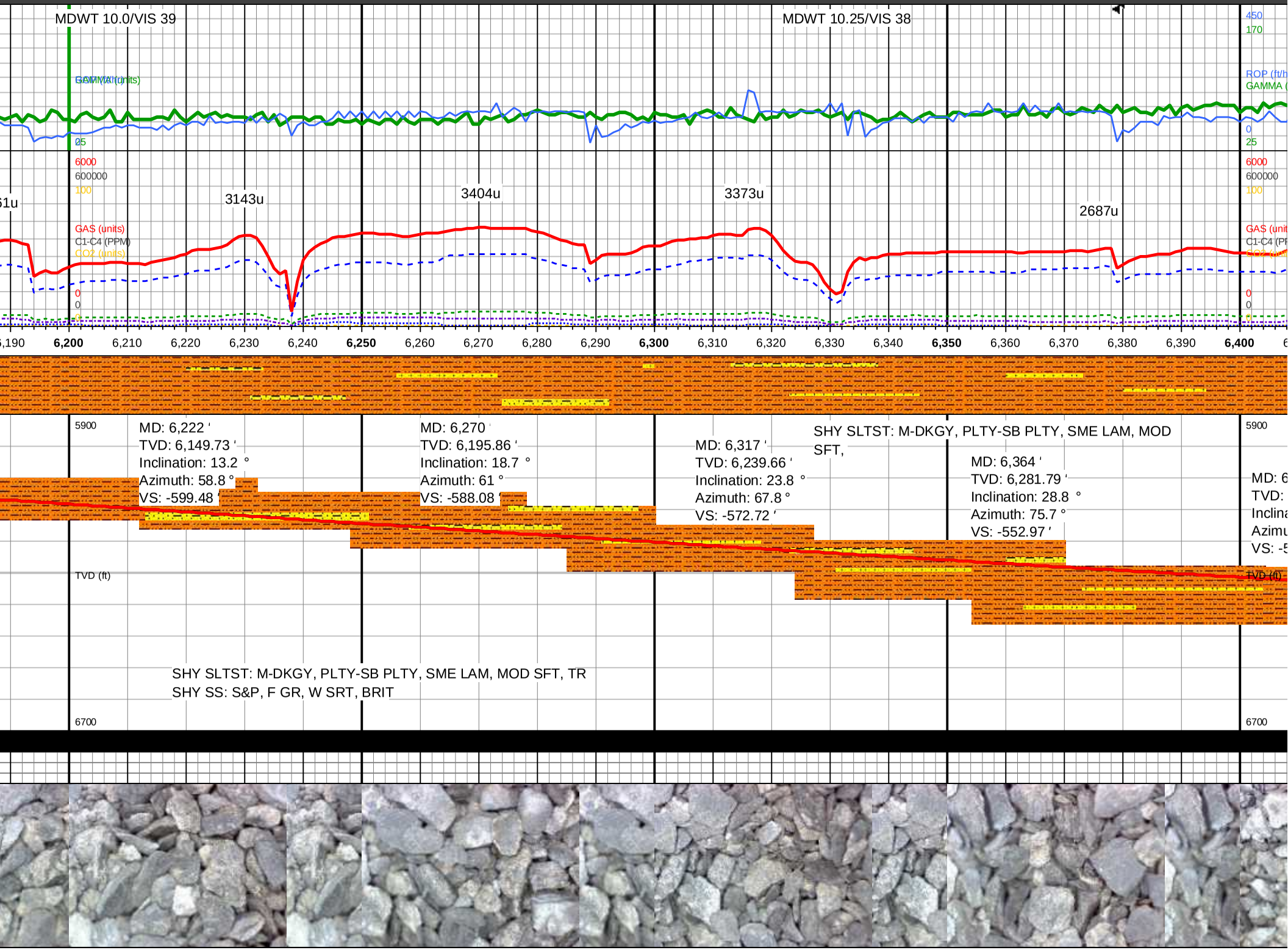
Textures

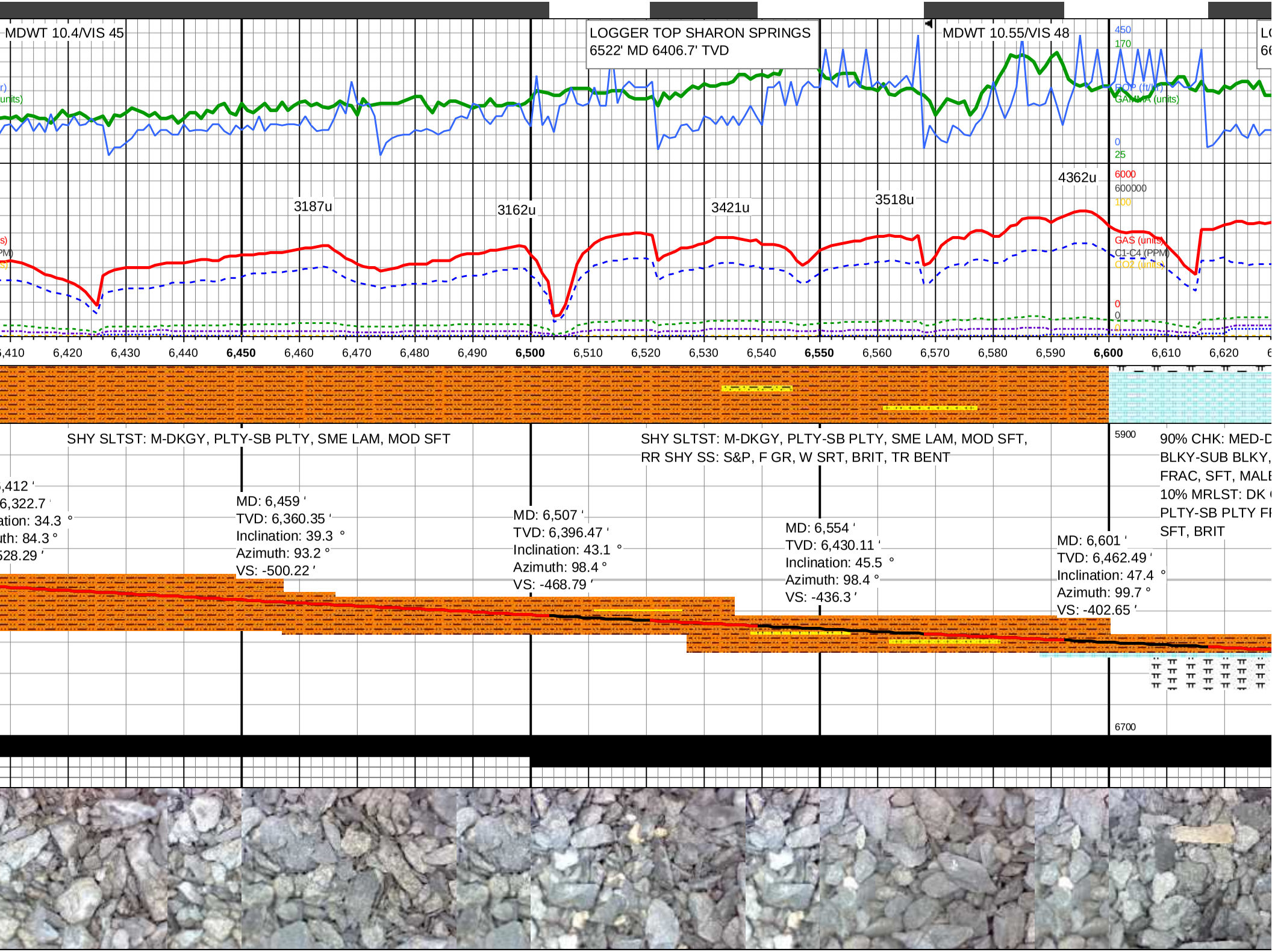
- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

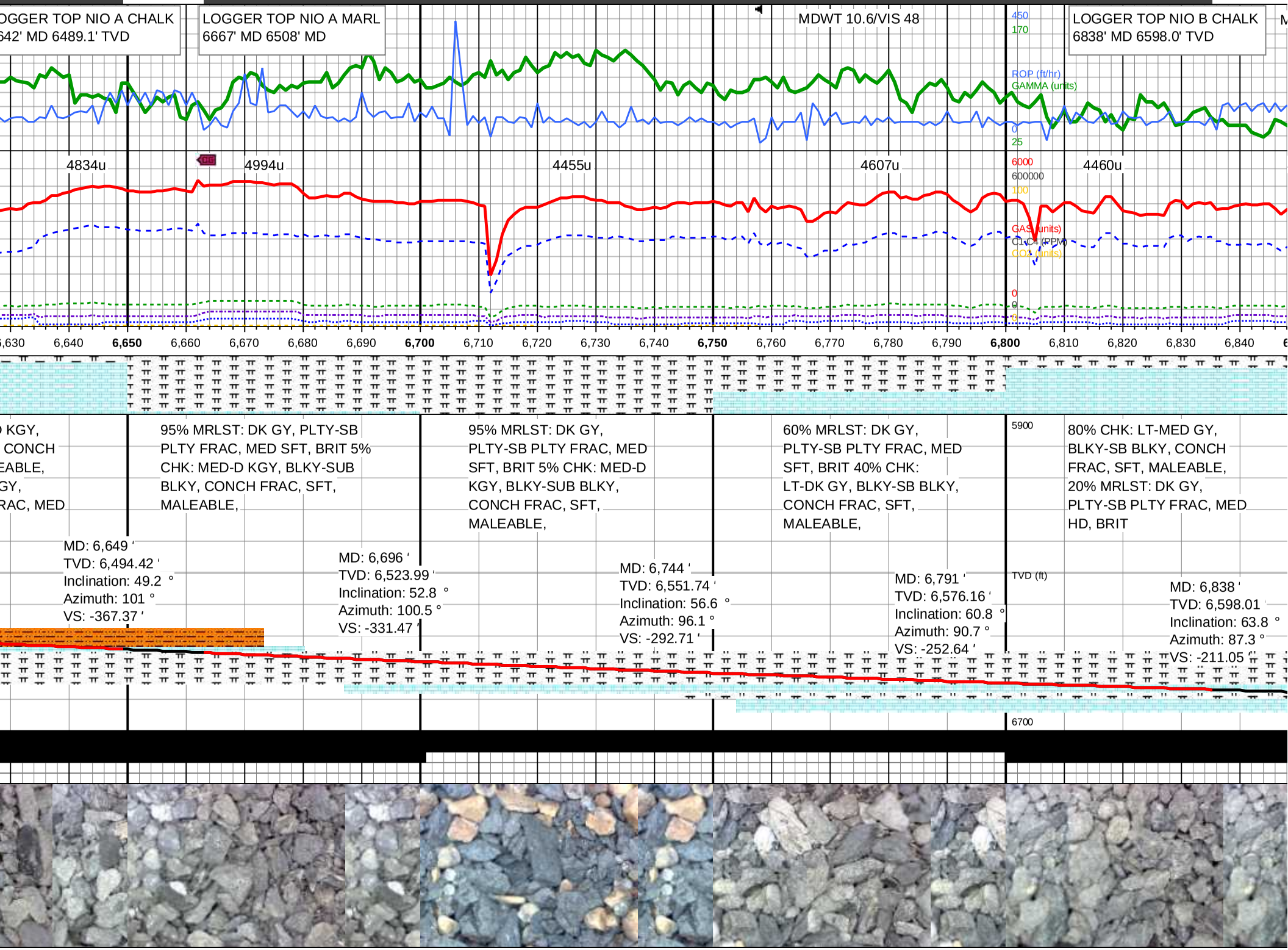
Sorting

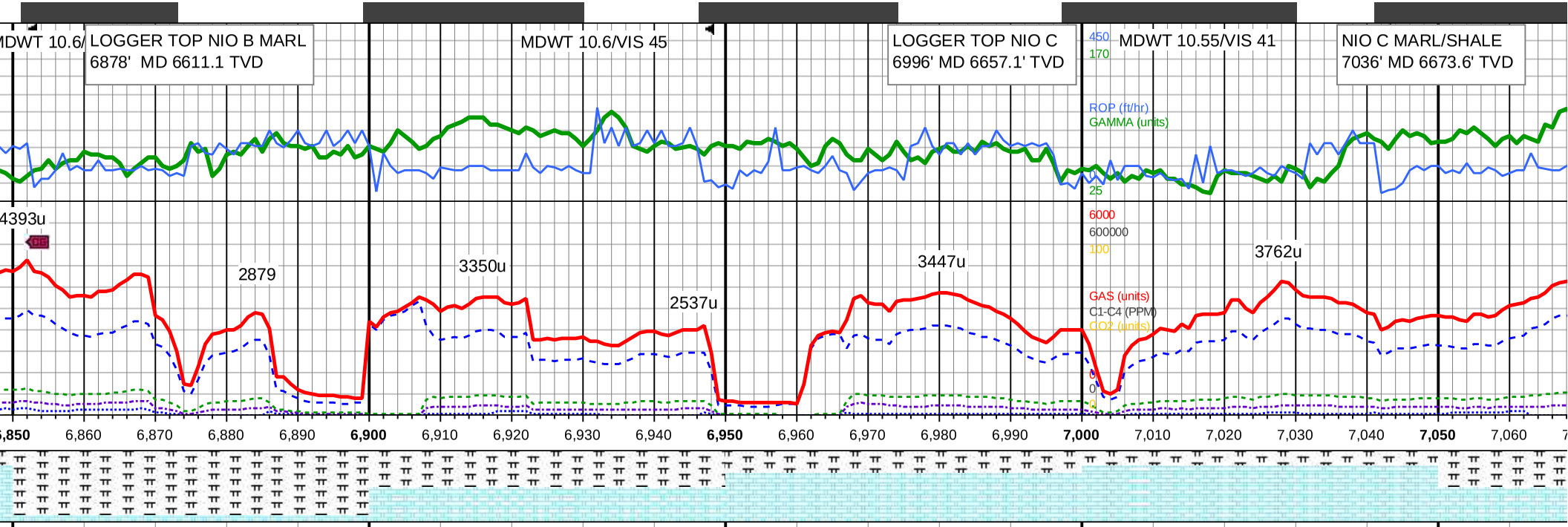
- MODERATE
- POOR
- WELL


Slide/Rotate
LOG CONTINUES FROM FILE:
TREBOR B11-69-1HN VERTICAL.mplot
MDWT 9.1/VIS 34
MDWT 9.45/VIS 37
ROP
ROF
GAMMA
GAMMA(units)
0
200
Total Gas & Chromatograph
GAS
C1
C2
C3
C4
CO2
6000
600000
GAS (units)
C1-C4 (PPM)
2572u
1915u
2142u
3160u
1671u
296
0
0
Depth Labels
6,010
6,020
6,030
6,040
6,050
6,060
6,070
6,080
6,090
6,100
6,110
6,120
6,130
6,140
6,150
6,160
6,170
6,180
% Lith
Well Bore
TVD
COLUMBINE LOGGING INC
RIGGED UP ON 08/05/2013
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0314
KICK-OFF 6005' MD 0045 08/07/2013
MD: 6,032 '
TVD: 5,960.93 '
Inclination: 1 °
Azimuth: 346.8 °
VS: -610.72 '
MD: 6,089 '
TVD: 6,017.89 '
Inclination: 2.9 °
Azimuth: 356.2 °
VS: -610.94 '
MD: 6,127 '
TVD: 6,055.81 '
Inclination: 4.8 °
Azimuth: 28.9 °
VS: -610.24 '
MD: 6,175 '
TVD: 6,103.53 '
Inclination: 7.7 °
Azimuth: 55.1 °
VS: -606.65 '
Bit Data
Bit #: 3
Type: SECURITY/MMD55M
Size: 8.75
Depth In: 6,005 '
Depth Out: 7,180 '
Jets: 5x16
S/N: 12162144
SHY SLTST: M-DKGY, PLTY-SB PLTY, SME LAM, MOD SFT, SME MICA
SHY SLTST: LT-DKGY, PLTY-SB PLTY, SME LAM, MOD SFT
Oil Show
TR
P
FR
G
E
Images


MDWT 10.0/VIS 39
MDWT 10.25/VIS 38
GAMMA (units)
ROP (ft/h
GAMMA (
450
170
0
25
6000
600000
100
GAS (units)
C1-C4 (PPM)
CO2 (units)
3143u
3404u
3373u
2687u
6,190
6,200
6,210
6,220
6,230
6,240
6,250
6,260
6,270
6,280
6,290
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
6,400
5900
6700
TVD (ft)
MD: 6,222 '
TVD: 6,149.73 '
Inclination: 13.2 °
Azimuth: 58.8 °
VS: -599.48 '
MD: 6,270 '
TVD: 6,195.86 '
Inclination: 18.7 °
Azimuth: 61 °
VS: -588.08 '
MD: 6,317 '
TVD: 6,239.66 '
Inclination: 23.8 °
Azimuth: 67.8 °
VS: -572.72 '
SHY SLTST: M-DKGY, PLTY-SB PLTY, SME LAM, MOD SFT,
MD: 6,364 '
TVD: 6,281.79 '
Inclination: 28.8 °
Azimuth: 75.7 °
VS: -552.97 '
SHY SLTST: M-DKGY, PLTY-SB PLTY, SME LAM, MOD SFT, TR
SHY SS: S&P, F GR, W SRT, BRIT


MDWT 10.4/VIS 45
LOGGER TOP SHARON SPRINGS
6522' MD 6406.7' TVD
MDWT 10.55/VIS 48
3187u
3162u
3421u
3518u
4362u
6,410
6,420
6,430
6,440
6,450
6,460
6,470
6,480
6,490
6,500
6,510
6,520
6,530
6,540
6,550
6,560
6,570
6,580
6,590
6,600
6,610
6,620
SHY SLTST: M-DKGY, PLTY-SB PLTY, SME LAM, MOD SFT
SHY SLTST: M-DKGY, PLTY-SB PLTY, SME LAM, MOD SFT,
RR SHY SS: S&P, F GR, W SRT, BRIT, TR BENT
MD: 6,459 '
TVD: 6,360.35 '
Inclination: 39.3 °
Azimuth: 93.2 °
VS: -500.22 '
MD: 6,507 '
TVD: 6,396.47 '
Inclination: 43.1 °
Azimuth: 98.4 °
VS: -468.79 '
MD: 6,554 '
TVD: 6,430.11 '
Inclination: 45.5 °
Azimuth: 98.4 °
VS: -436.3 '
MD: 6,601 '
TVD: 6,462.49 '
Inclination: 47.4 °
Azimuth: 99.7 °
VS: -402.65 '
5900
6700


OGGER TOP NIO A CHALK
642' MD 6489.1' TVD
LOGGER TOP NIO A MARL
6667' MD 6508' MD
MDWT 10.6/VIS 48
LOGGER TOP NIO B CHALK
6838' MD 6598.0' TVD
450
170
ROP (ft/hr)
GAMMA (units)
0
25
4834u
4994u
4455u
4607u
4460u
6000
600000
100
GAS (units)
C1xC4 (PPM)
CO2 (units)
0
0
0
6,630
6,640
6,650
6,660
6,670
6,680
6,690
6,700
6,710
6,720
6,730
6,740
6,750
6,760
6,770
6,780
6,790
6,800
6,810
6,820
6,830
6,840
KGY,
CONCH
EABLE,
GY,
RAC, MED
95% MRLST: DK GY, PLTY-SB PLTY FRAC, MED SFT, BRIT 5% CHK: MED-D KGY, BLKY-SUB BLKY, CONCH FRAC, SFT, MALEABLE,
95% MRLST: DK GY, PLTY-SB PLTY FRAC, MED SFT, BRIT 5% CHK: MED-D KGY, BLKY-SUB BLKY, CONCH FRAC, SFT, MALEABLE,
60% MRLST: DK GY, PLTY-SB PLTY FRAC, MED SFT, BRIT 40% CHK: LT-DK GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE,
5900
80% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE, 20% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT
MD: 6,649 '
TVD: 6,494.42 '
Inclination: 49.2 °
Azimuth: 101 °
VS: -367.37 '
MD: 6,696 '
TVD: 6,523.99 '
Inclination: 52.8 °
Azimuth: 100.5 °
VS: -331.47 '
MD: 6,744 '
TVD: 6,551.74 '
Inclination: 56.6 °
Azimuth: 96.1 °
VS: -292.71 '
MD: 6,791 '
TVD: 6,576.16 '
Inclination: 60.8 °
Azimuth: 90.7 °
VS: -252.64 '
TVD (ft)
MD: 6,838 '
TVD: 6,598.01 '
Inclination: 63.8 °
Azimuth: 87.3 °
VS: -211.05 '
6700



90% MRLST: DK GY, PLTY FRAC, HD, BRIT, 10% CHK: LT-DK GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE

50% MRLST: DK GY, PLTY FRAC, HD, BRIT, 50% CHK: LT-DK GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE, COM INOC, TR PYR

70% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE, 30% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT ; TR INOC FOS

80% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE, 20% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT , TR INOC FOS ; RR BENT

50% CHK: BLKY-SB FRAC, SF 50% MRLS PLTY-SB HD, BRIT , RR BENT

5900

TVD (ft)

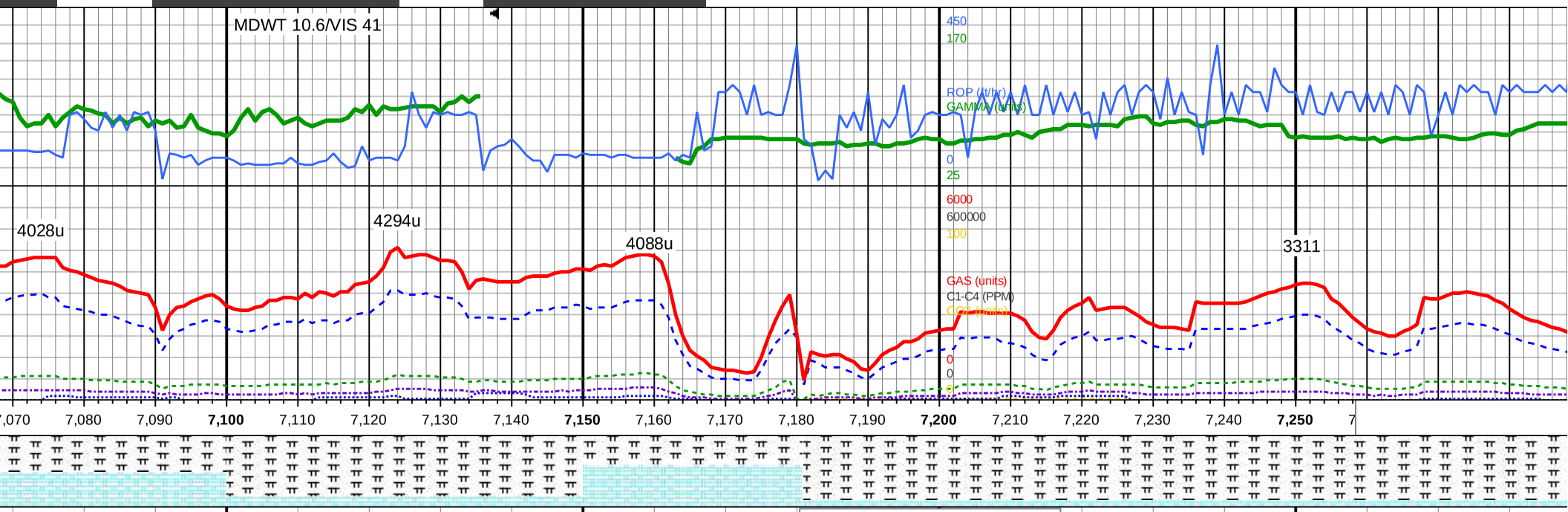
6700

MD: 6,886 '
TVD: 6,618.37 '
Inclination: 66 °
Azimuth: 87.1 °
VS: -167.64 '

MD: 6,933 '
TVD: 6,636.39 '
Inclination: 68.9 °
Azimuth: 88.7 °
VS: -124.28 '

MD: 6,981 '
TVD: 6,652.53 '
Inclination: 71.8 °
Azimuth: 89.1 °
VS: -79.09 '

MD: 7,028 '
TVD: 6,665.88 '
Inclination: 75.2 °
Azimuth: 89.8 °
VS: -34.03 '



LT-MED GY,
BLKY, CONCH
T, MALEABLE,
ST: DK GY,
PLTY FRAC, MED
TR INOC FOS ;

D: 7,076 '
VD: 6,676.39 '
clination: 79.5 °
zimuth: 90.6 °
S: 12.79 '

85% MRLST: DK GY,
PLTY-SB PLTY FRAC, MED
HD, BRIT
15% CHK: LT-MED GY,
BLKY-SB BLKY, CONCH
FRAC, SFT, MALEABLE TR
INOC FOS ; RR BENT

60% CHK: LT-MED GY,
BLKY-SB BLKY, CONCH
FRAC, SFT, MALEABLE,
40% MRLST: DK GY,
PLTY-SB PLTY FRAC, MED
HD, BRIT ; RR BENT

MD: 7,200 '
TVD: 6,688.79 '
Inclination: 89 °
Azimuth: 88.5 °
VS: 136.21 '

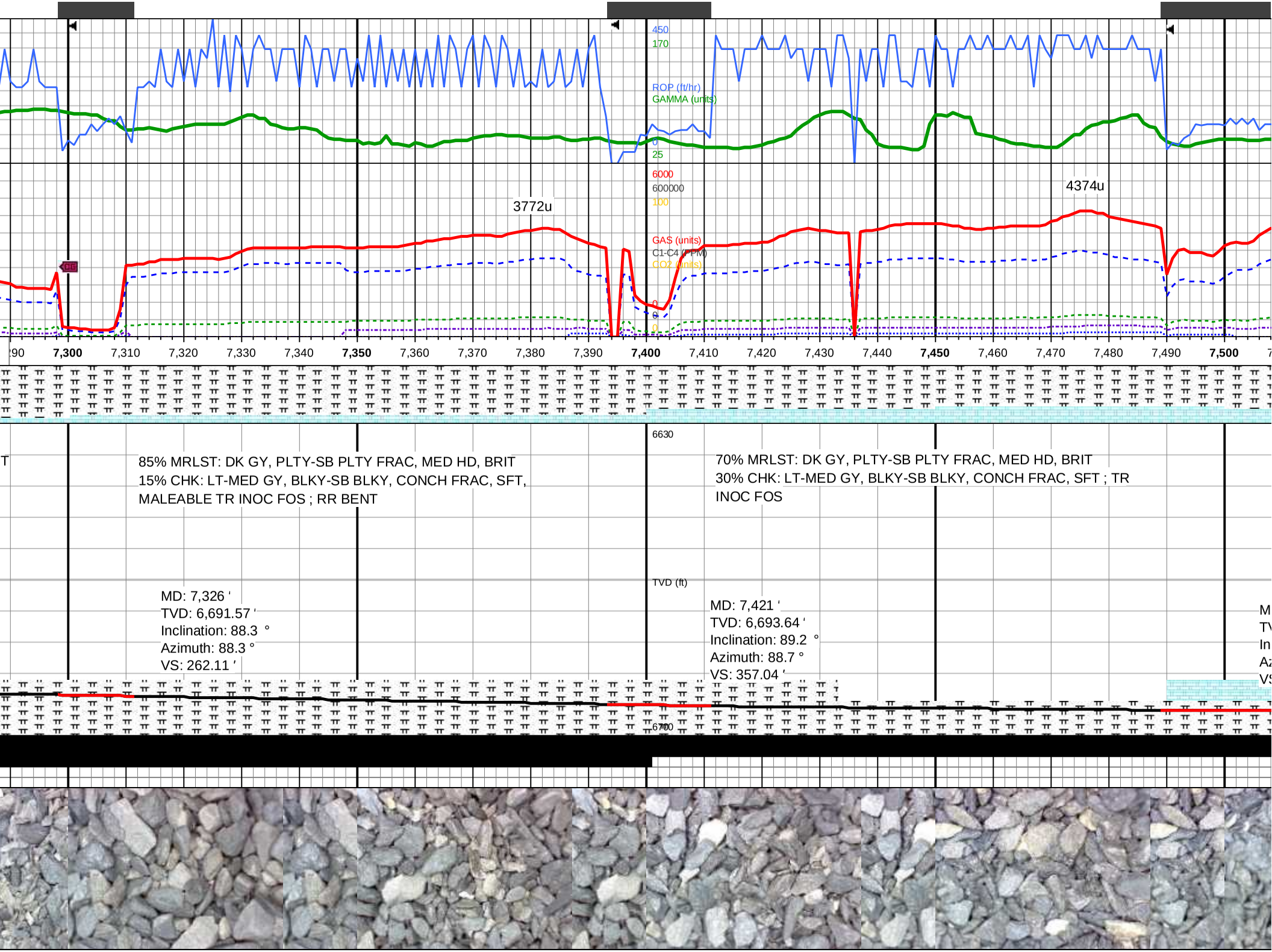
TD CURVE SECTION 7180' MD
19:30 HRS 08/07/2013
CASING SET @ 7175' MD
00:40 HRS 08/09/2013
DRILLED OUT
15:15 HRS 08/09/2013

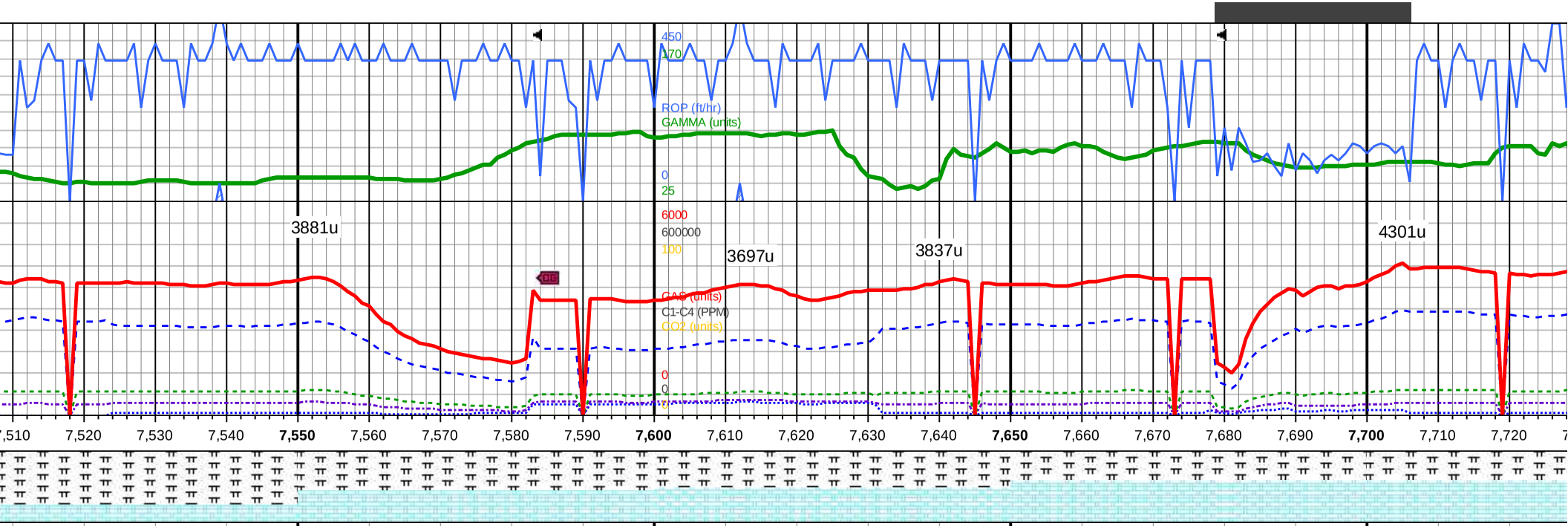
Bit Data
Bit #: 4
Type: SECURITY/FXD54
Size: 6.12
Depth In: 7,180 '
Depth Out: 11,136 '
Jets: 5X11
S/N: 12096101

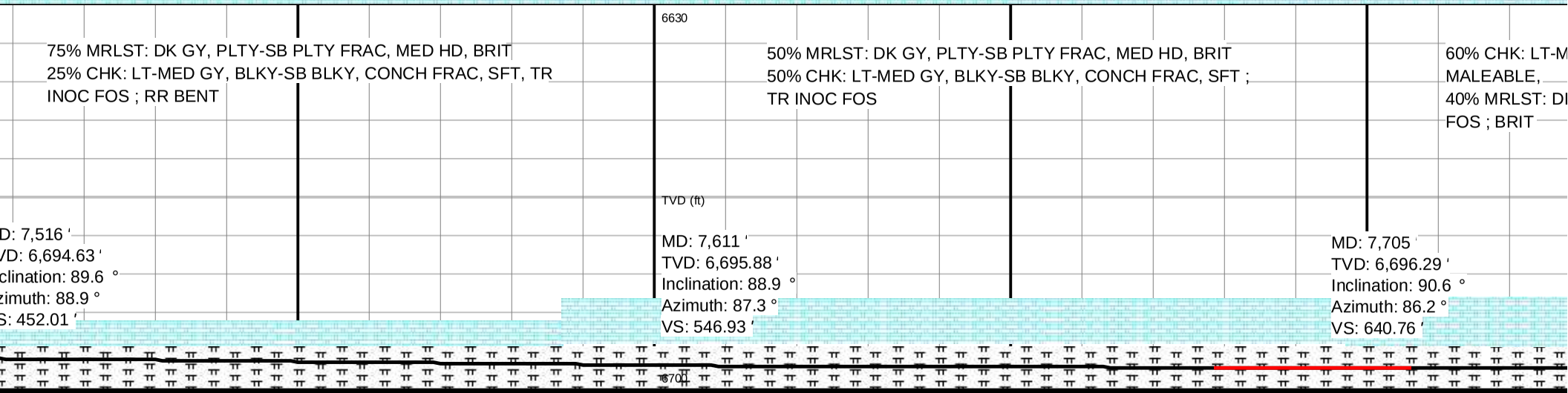
90% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRI
10% CHK: MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
MALEABLE TR INOC FOS ; RR BENT

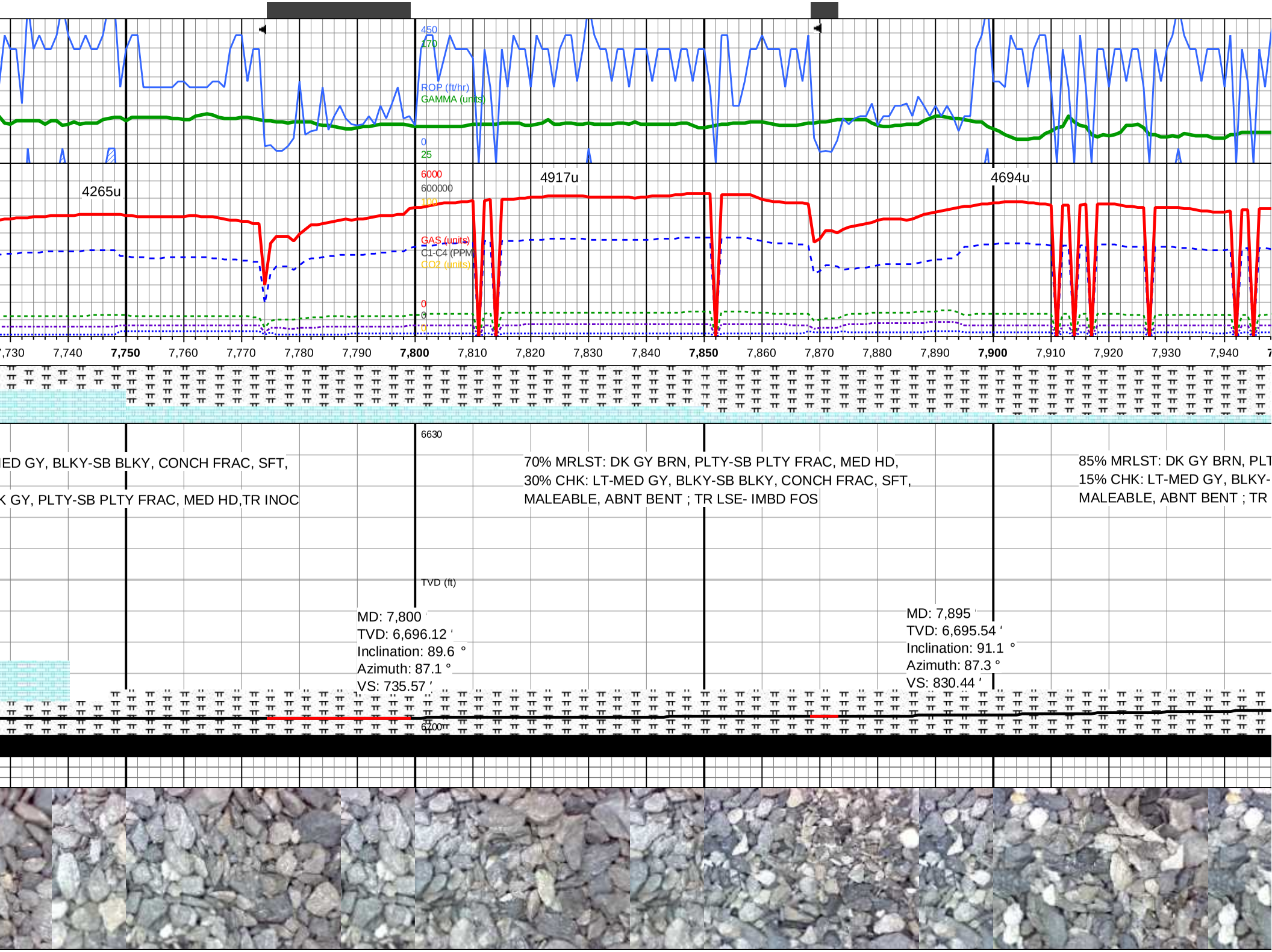
MD: 7,231 '
TVD: 6,689.33 '
Inclination: 89 °
Azimuth: 88.2 °
VS: 167.19 '

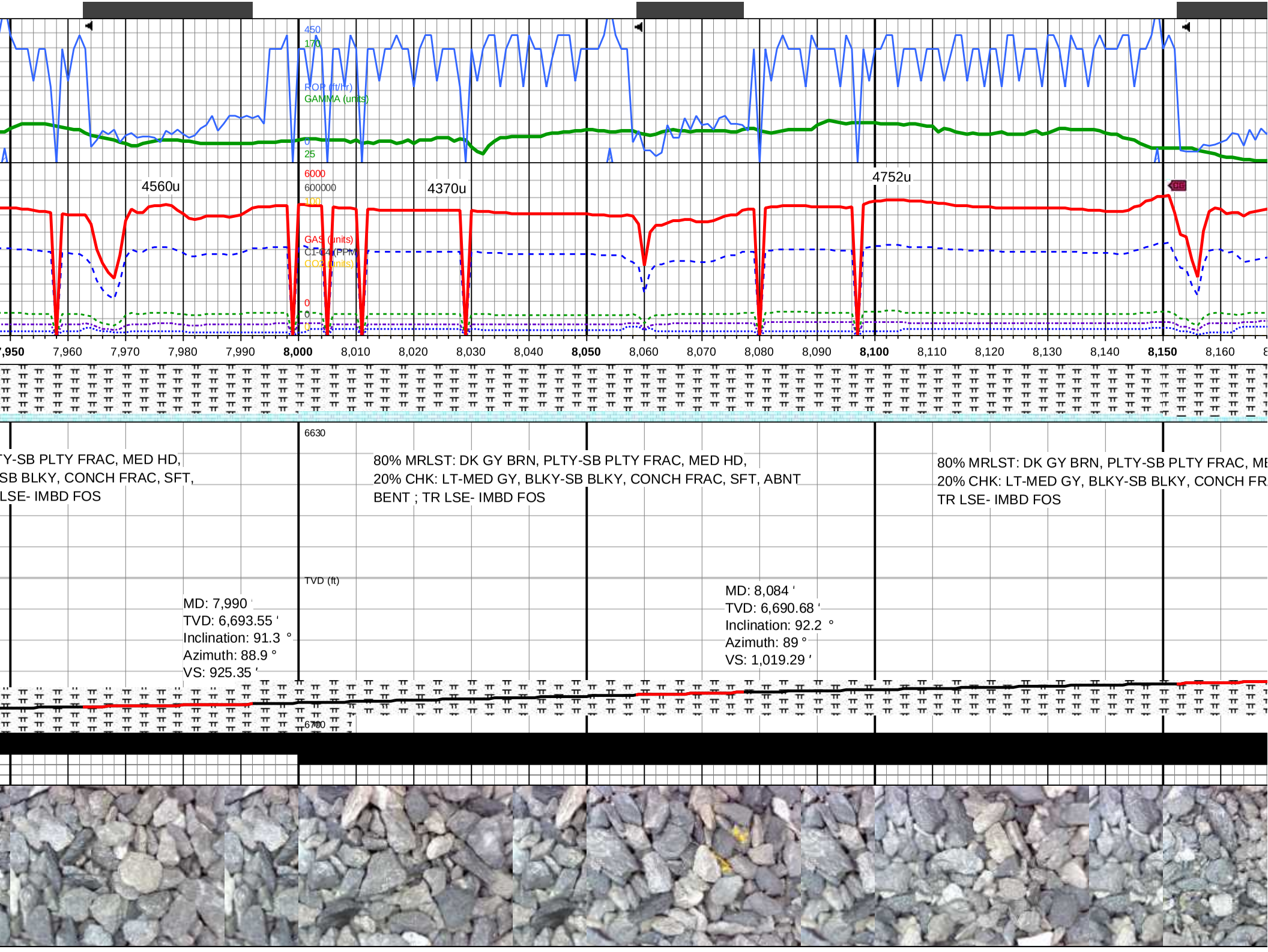
6700

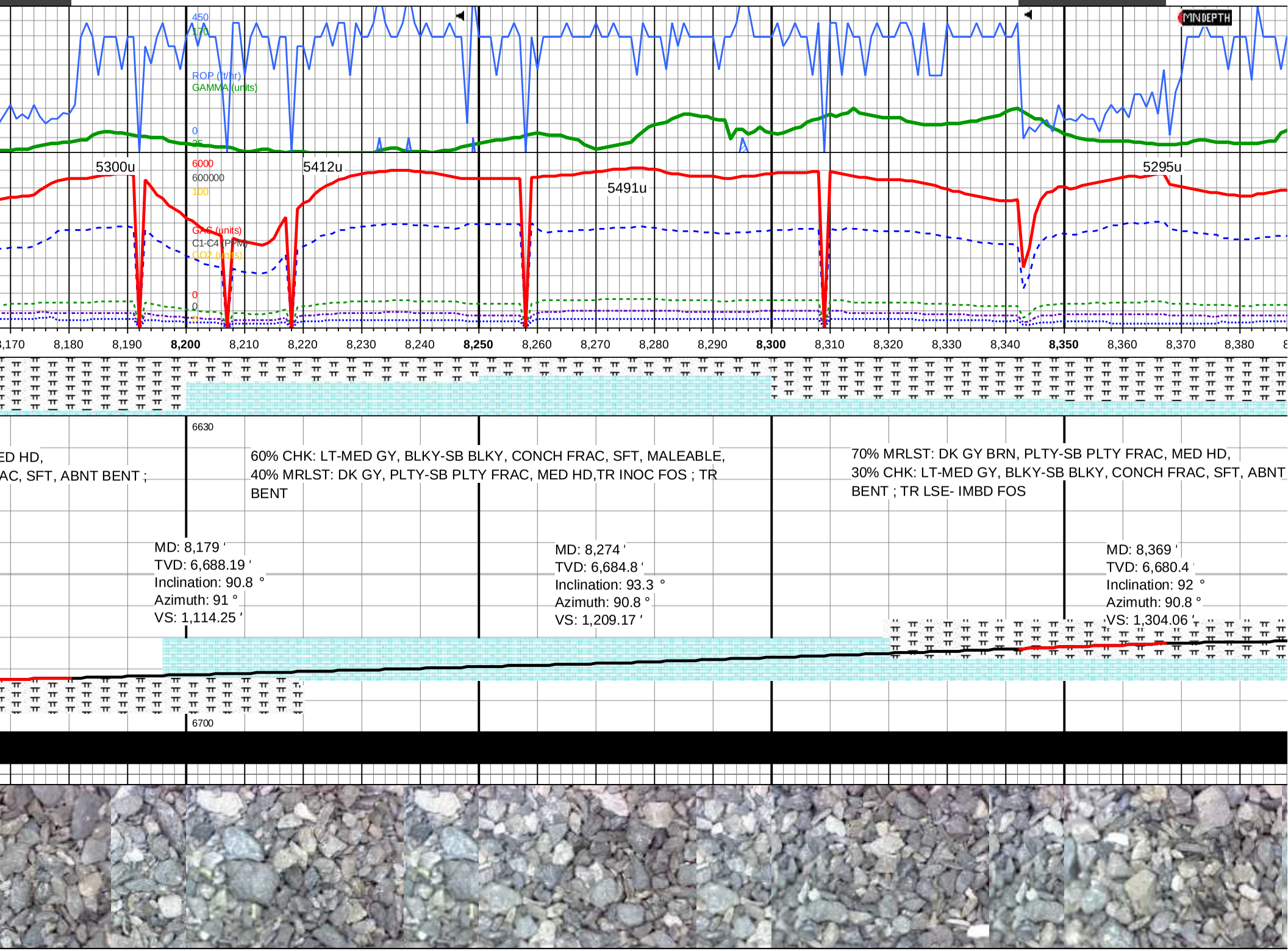

450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
100
3772u
4374u
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
0
7,300
7,310
7,320
7,330
7,340
7,350
7,360
7,370
7,380
7,390
7,400
7,410
7,420
7,430
7,440
7,450
7,460
7,470
7,480
7,490
7,500
6630
85% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT
15% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
MALEABLE TR INOC FOS ; RR BENT
70% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT
30% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT ; TR
INOC FOS
TVD (ft)
MD: 7,326 '
TVD: 6,691.57 '
Inclination: 88.3 °
Azimuth: 88.3 °
VS: 262.11 '
MD: 7,421 '
TVD: 6,693.64 '
Inclination: 89.2 °
Azimuth: 88.7 °
VS: 357.04 '
6700

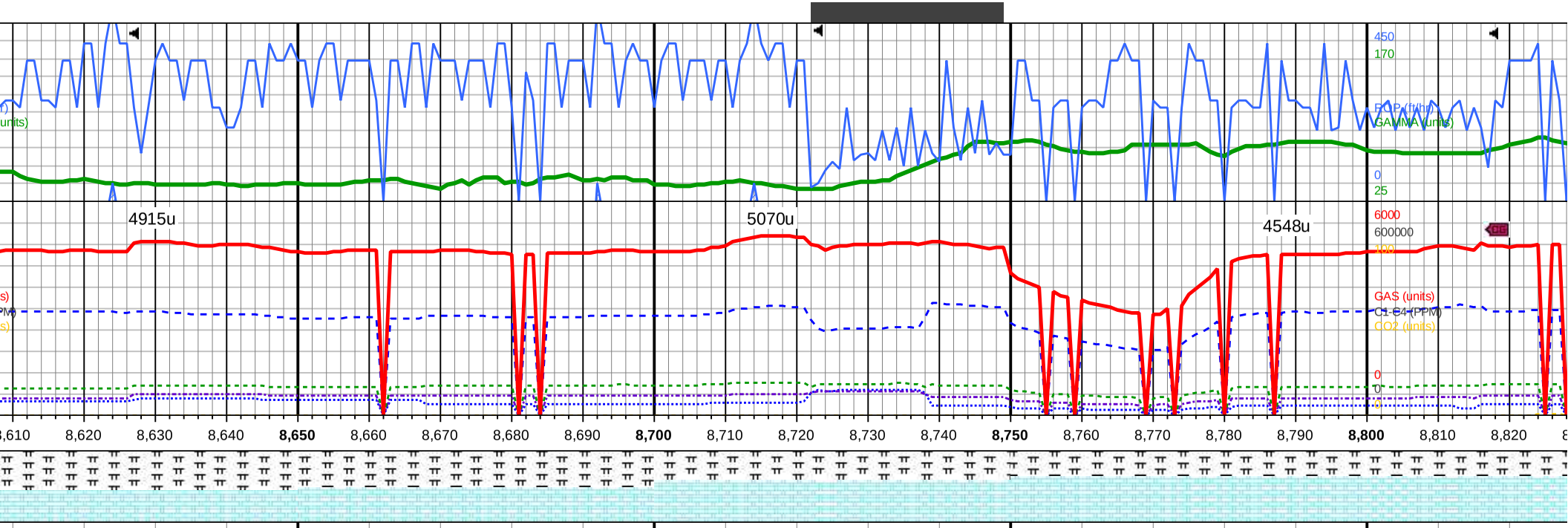

450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
100
3881u
3697u
3837u
4301u
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
0
7,510
7,520
7,530
7,540
7,550
7,560
7,570
7,580
7,590
7,600
7,610
7,620
7,630
7,640
7,650
7,660
7,670
7,680
7,690
7,700
7,710
7,720


6630
75% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT
25% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, TR
INOC FOS ; RR BENT
50% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD, BRIT
50% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT ;
TR INOC FOS
60% CHK: LT-M
MALEABLE,
40% MRLST: DI
FOS ; BRIT
TVD (ft)
D: 7,516 '
VD: 6,694.63 '
clination: 89.6 °
zimuth: 88.9 °
S: 452.01 '
MD: 7,611 '
TVD: 6,695.88 '
Inclination: 88.9 °
Azimuth: 87.3 °
VS: 546.93 '
MD: 7,705 '
TVD: 6,696.29 '
Inclination: 90.6 °
Azimuth: 86.2 °
VS: 640.76 '
6700


450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
100
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
0
4265u
4917u
4694u
7,730
7,740
7,750
7,760
7,770
7,780
7,790
7,800
7,810
7,820
7,830
7,840
7,850
7,860
7,870
7,880
7,890
7,900
7,910
7,920
7,930
7,940
6630
ED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
K GY, PLTY-SB PLTY FRAC, MED HD,TR INOC
70% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
30% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
MALEABLE, ABNT BENT ; TR LSE- IMBD FOS
85% MRLST: DK GY BRN, PLT
15% CHK: LT-MED GY, BLKY-
MALEABLE, ABNT BENT ; TR
TVD (ft)
MD: 7,800 '
TVD: 6,696.12 '
Inclination: 89.6 °
Azimuth: 87.1 °
VS: 735.57 '
MD: 7,895 '
TVD: 6,695.54 '
Inclination: 91.1 °
Azimuth: 87.3 °
VS: 830.44 '
6200


450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
1000
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
0
4560u
4370u
4752u
BIT
7,950
7,960
7,970
7,980
7,990
8,000
8,010
8,020
8,030
8,040
8,050
8,060
8,070
8,080
8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160
6630
TY-SB PLTY FRAC, MED HD,
SB BLKY, CONCH FRAC, SFT,
LSE- IMBD FOS
80% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
20% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, ABNT
BENT ; TR LSE- IMBD FOS
80% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, ME
20% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FR
TR LSE- IMBD FOS
TVD (ft)
MD: 7,990 '
TVD: 6,693.55 '
Inclination: 91.3 °
Azimuth: 88.9 °
VS: 925.35 '
MD: 8,084 '
TVD: 6,690.68 '
Inclination: 92.2 °
Azimuth: 89 °
VS: 1,019.29 '
6700


450
170
ROP (ft/hr)
GAMMA (units)
0
MINDEPTH
5300u
5412u
5491u
5295u
6000
600000
100
G-6 (units)
C1-C4 (PPM)
CO2 (units)
0
0
8,170
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
6630
ED HD,
AC, SFT, ABNT BENT ;
60% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE,
40% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD,TR INOC FOS ; TR
BENT
70% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
30% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, ABNT
BENT ; TR LSE- IMBD FOS
MD: 8,179 '
TVD: 6,688.19 '
Inclination: 90.8 °
Azimuth: 91 °
VS: 1,114.25 '
MD: 8,274 '
TVD: 6,684.8 '
Inclination: 93.3 °
Azimuth: 90.8 °
VS: 1,209.17 '
MD: 8,369 '
TVD: 6,680.4 '
Inclination: 92 °
Azimuth: 90.8 °
VS: 1,304.06 '
6700

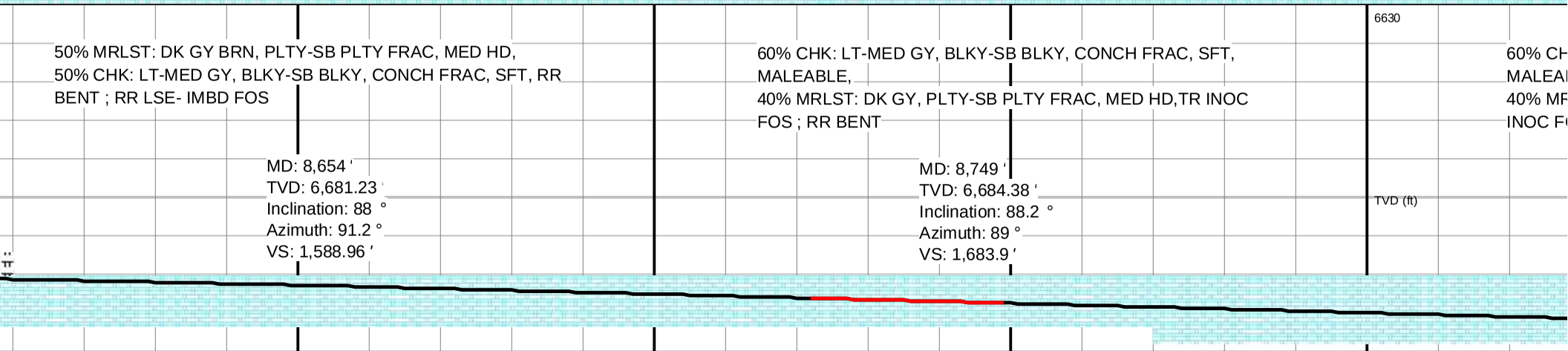


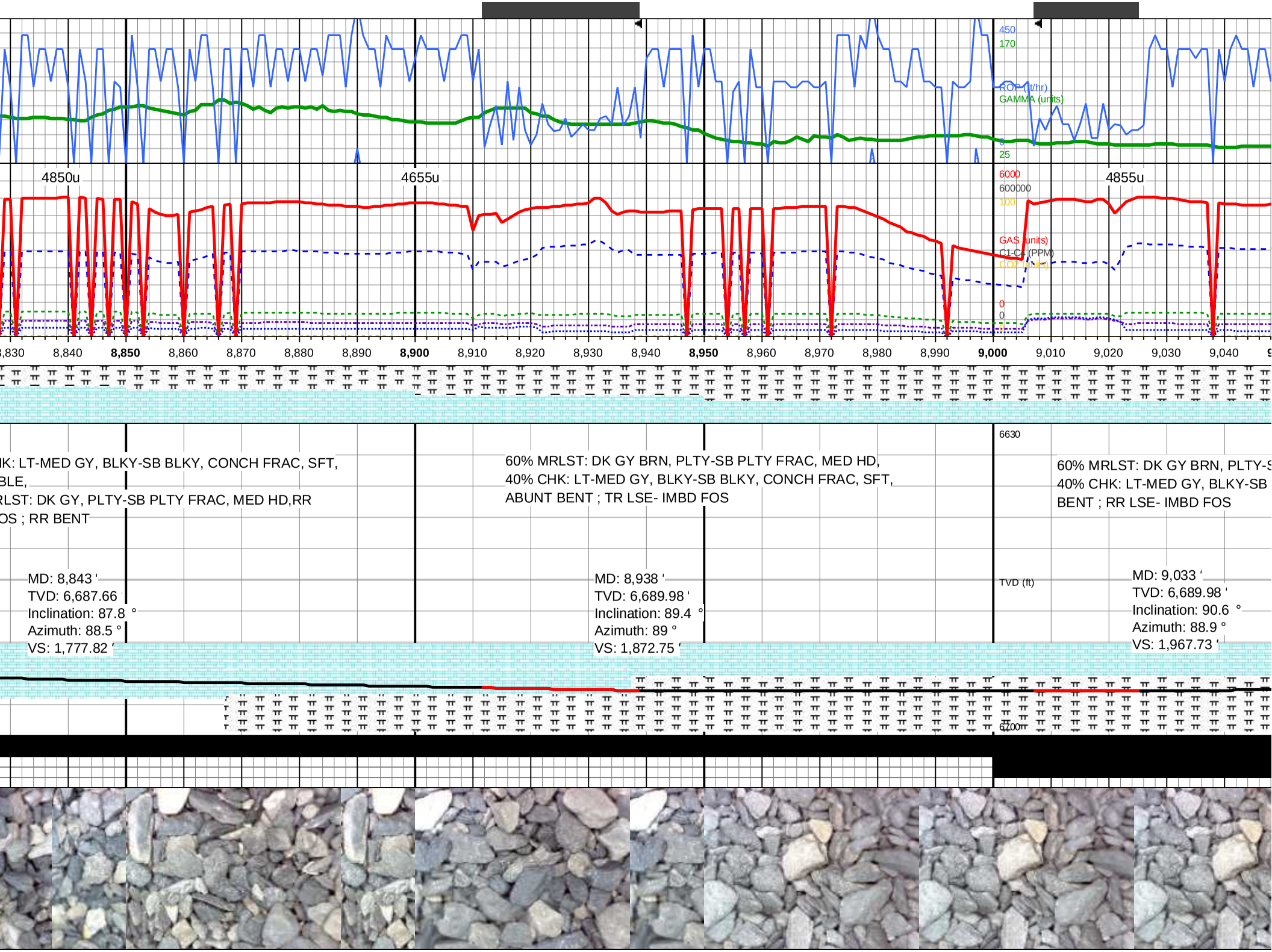
50% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
50% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, RR BENT ; RR LSE- IMBD FOS

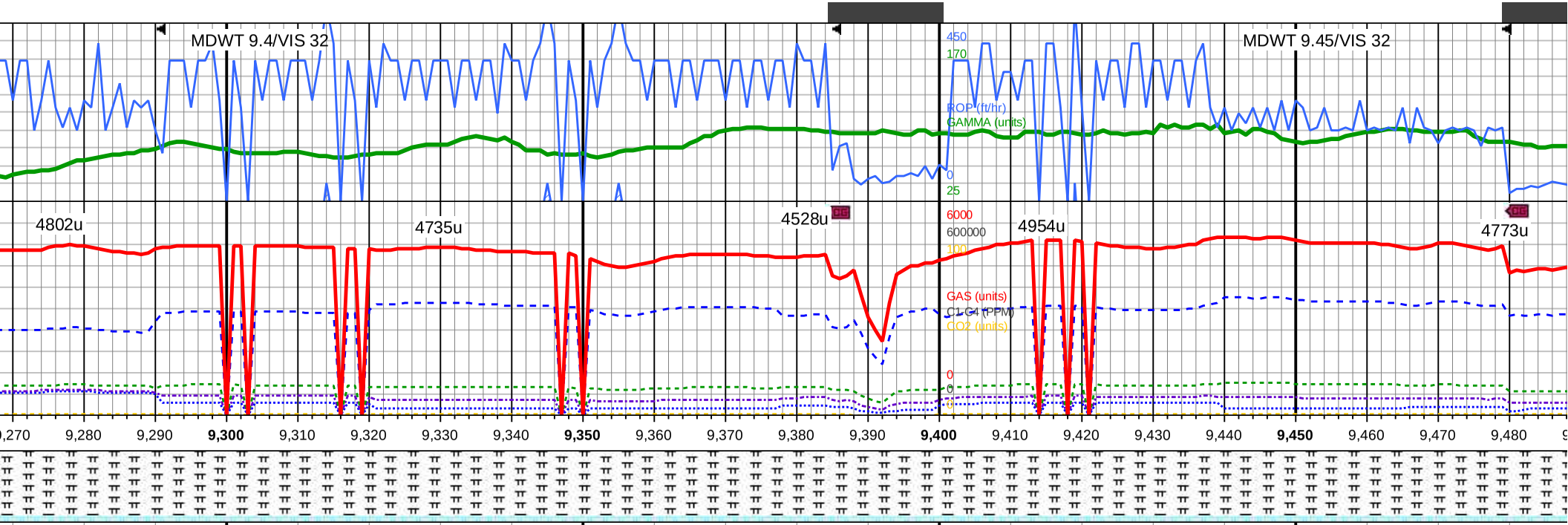
MD: 8,654 '
TVD: 6,681.23 '
Inclination: 88 °
Azimuth: 91.2 °
VS: 1,588.96 '

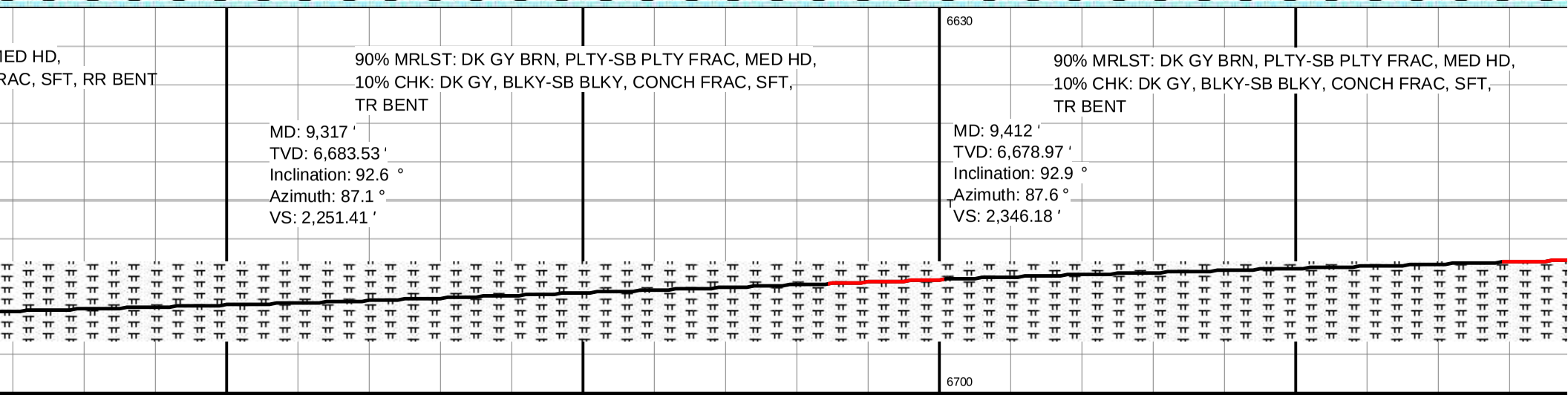
60% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT, MALEABLE,
40% MRLST: DK GY, PLTY-SB PLTY FRAC, MED HD,TR INOC FOS ; RR BENT

MD: 8,749 '
TVD: 6,684.38 '
Inclination: 88.2 °
Azimuth: 89 °
VS: 1,683.9 '




450
170
ROP (ft/hr)
GAMMA (units)
0
25
4850u
4655u
4855u
6000
600000
100
GAS (units)
C1-C5 (PPM)
CO2 (units)
0
0
8,830
8,840
8,850
8,860
8,870
8,880
8,890
8,900
8,910
8,920
8,930
8,940
8,950
8,960
8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
6630
IK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
BLE,
RLST: DK GY, PLTY-SB PLTY FRAC, MED HD,RR
OS ; RR BENT
MD: 8,843 '
TVD: 6,687.66 '
Inclination: 87.8 °
Azimuth: 88.5 °
VS: 1,777.82 '
60% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
40% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
ABUNT BENT ; TR LSE- IMBD FOS
MD: 8,938 '
TVD: 6,689.98 '
Inclination: 89.4 °
Azimuth: 89 °
VS: 1,872.75 '
60% MRLST: DK GY BRN, PLTY-S
40% CHK: LT-MED GY, BLKY-SB
BENT ; RR LSE- IMBD FOS
TVD (ft)
MD: 9,033 '
TVD: 6,689.98 '
Inclination: 90.6 °
Azimuth: 88.9 °
VS: 1,967.73 '
6700





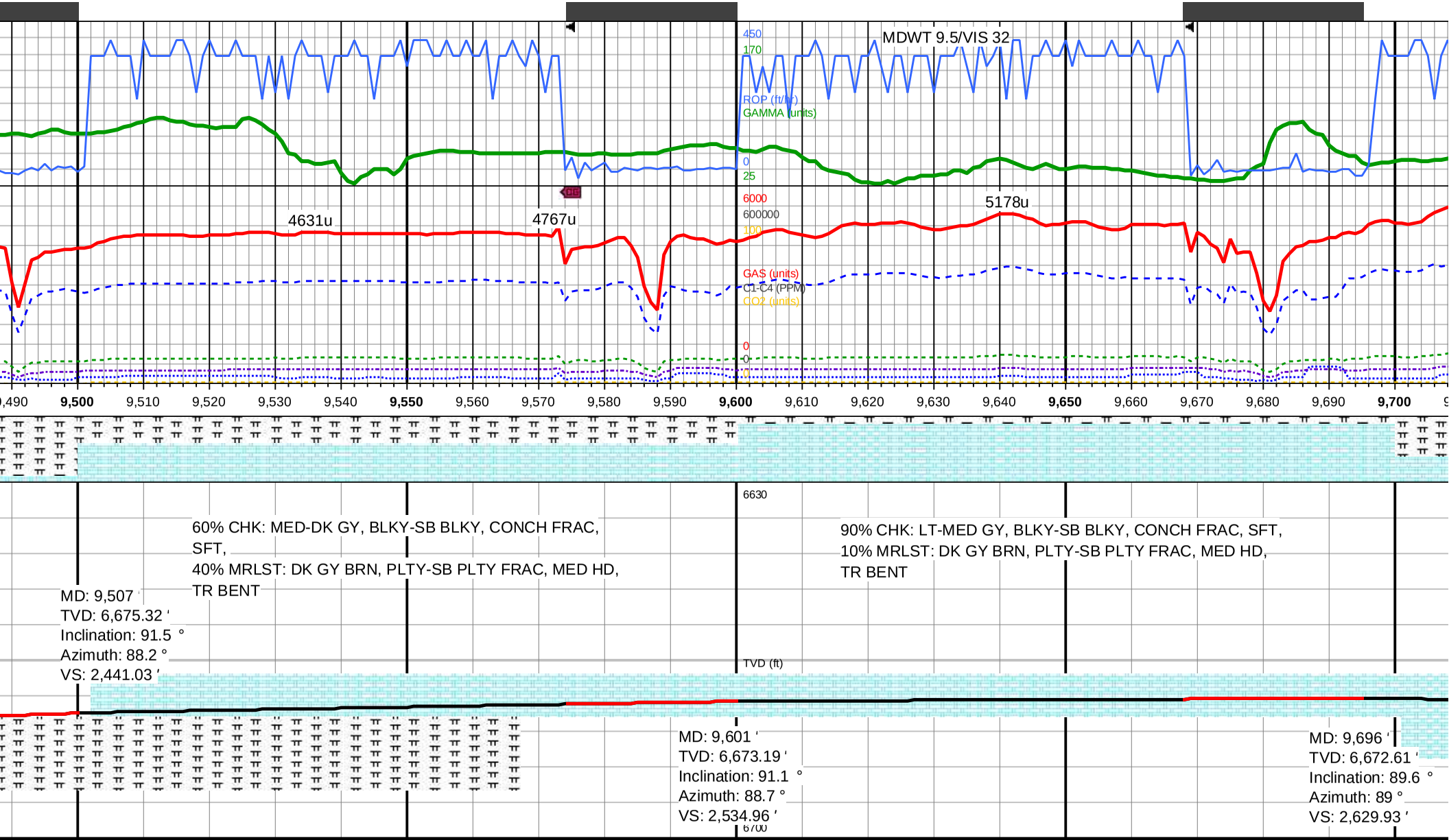
IED HD,
RAC, SFT, RR BENT

90% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
10% CHK: DK GY, BLKY-SB BLKY, CONCH FRAC, SFT,
TR BENT

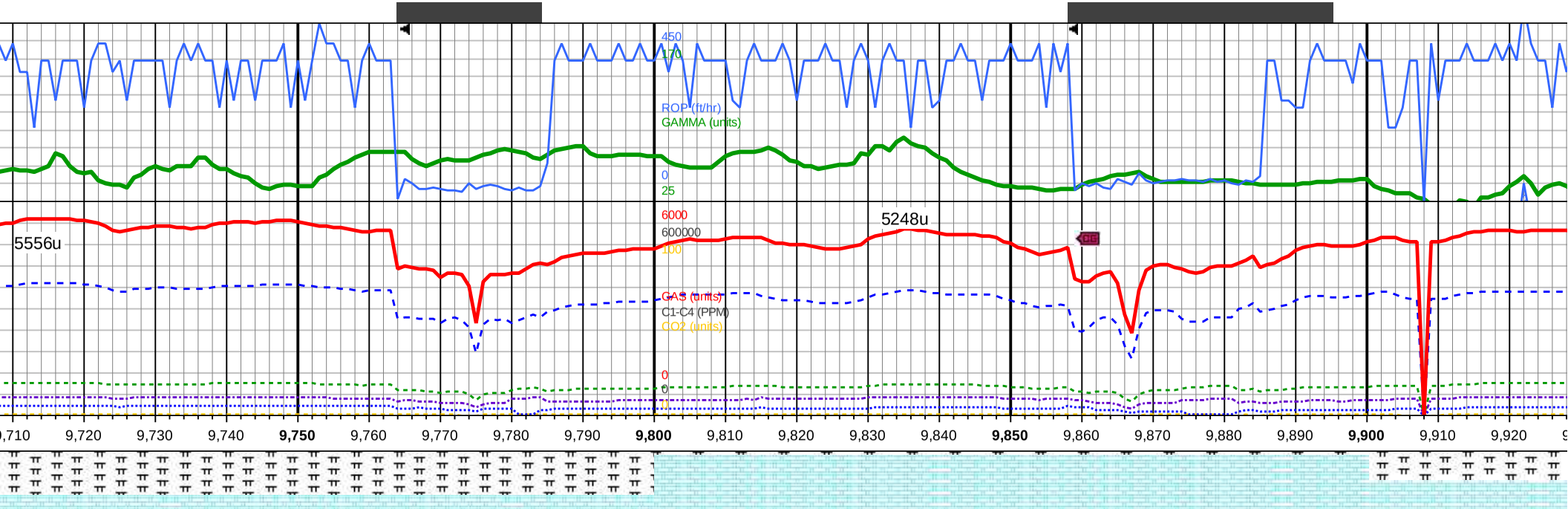
MD: 9,317 '
TVD: 6,683.53 '
Inclination: 92.6 °
Azimuth: 87.1 °
VS: 2,251.41 '

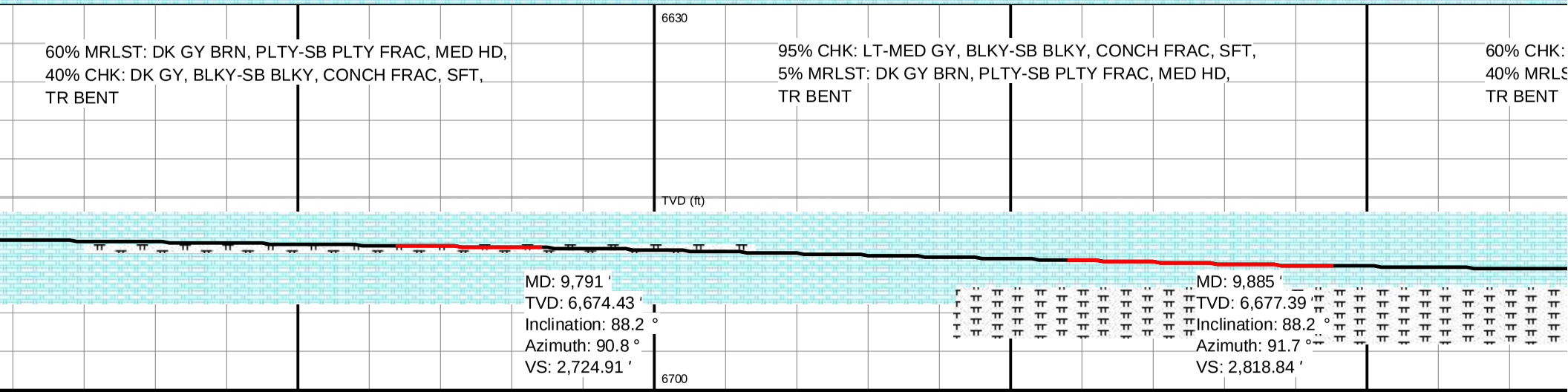
90% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
10% CHK: DK GY, BLKY-SB BLKY, CONCH FRAC, SFT,
TR BENT

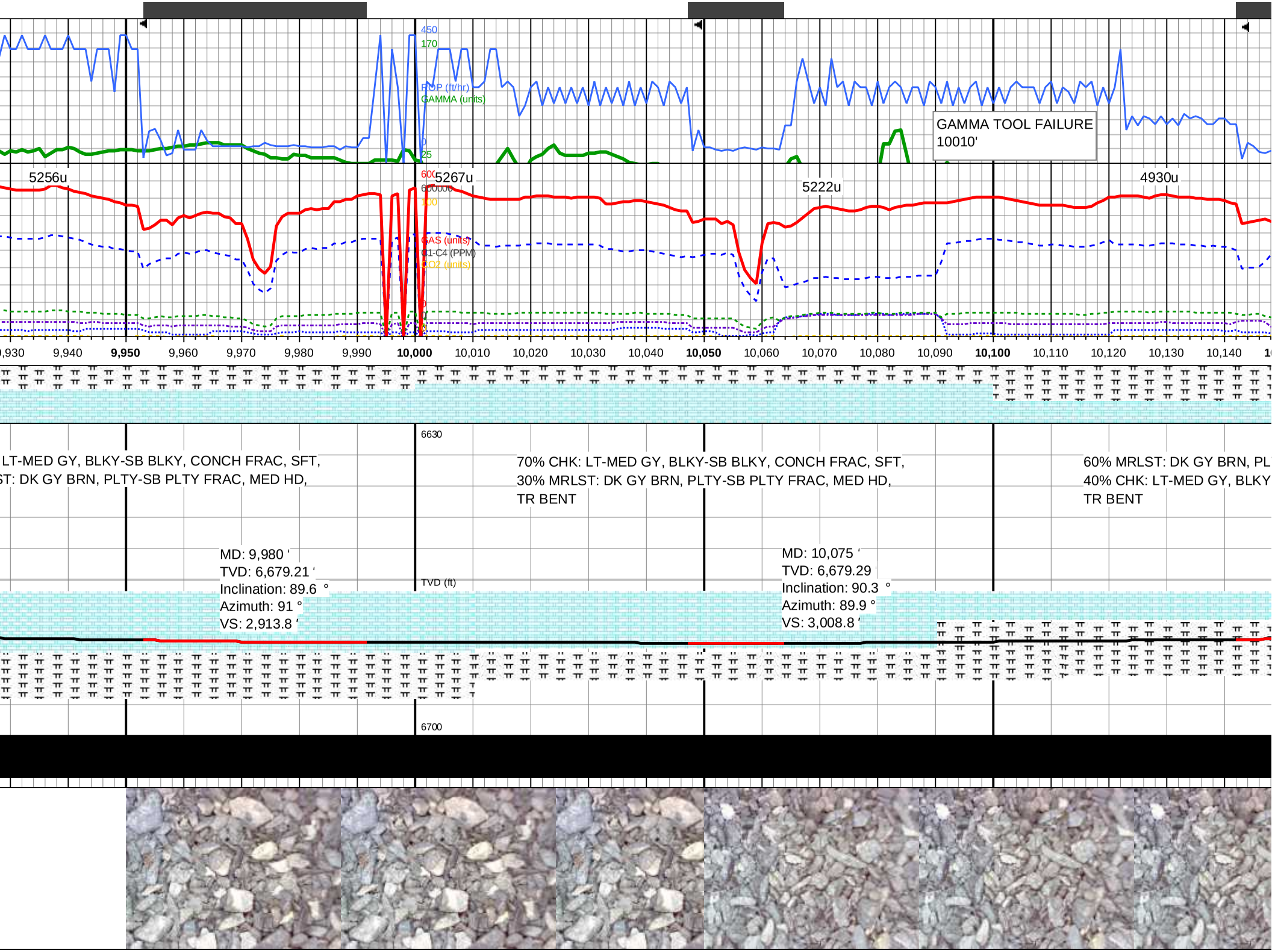
MD: 9,412 '
TVD: 6,678.97 '
Inclination: 92.9 °
Azimuth: 87.6 °
VS: 2,346.18 '

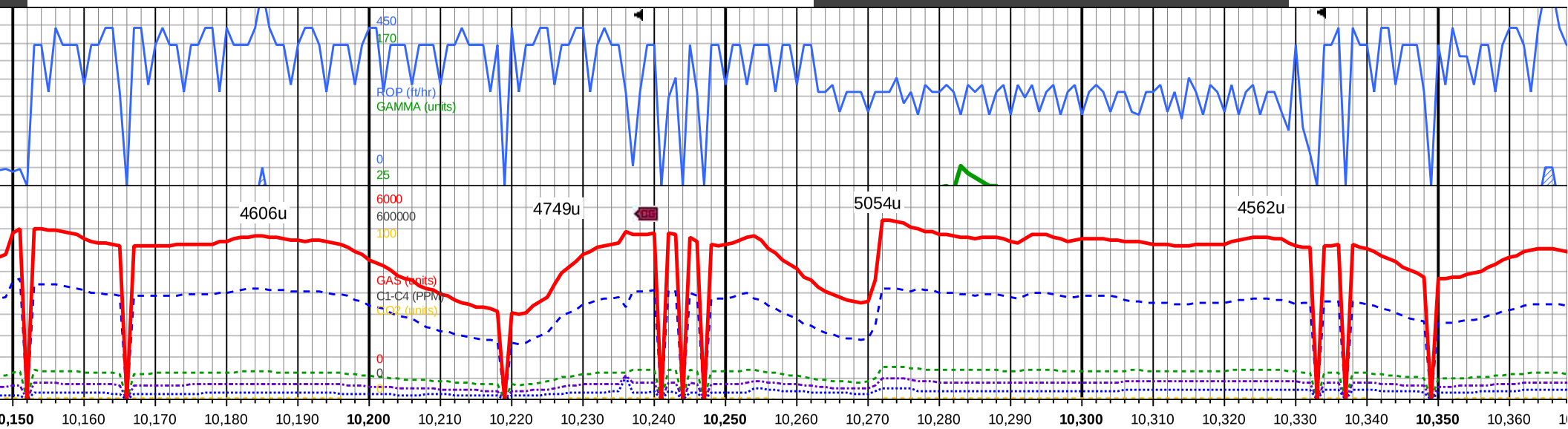

MDWT 9.5/VIS 32
450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
100
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
0
4631u
4767u
5178u
9,490
9,500
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,700

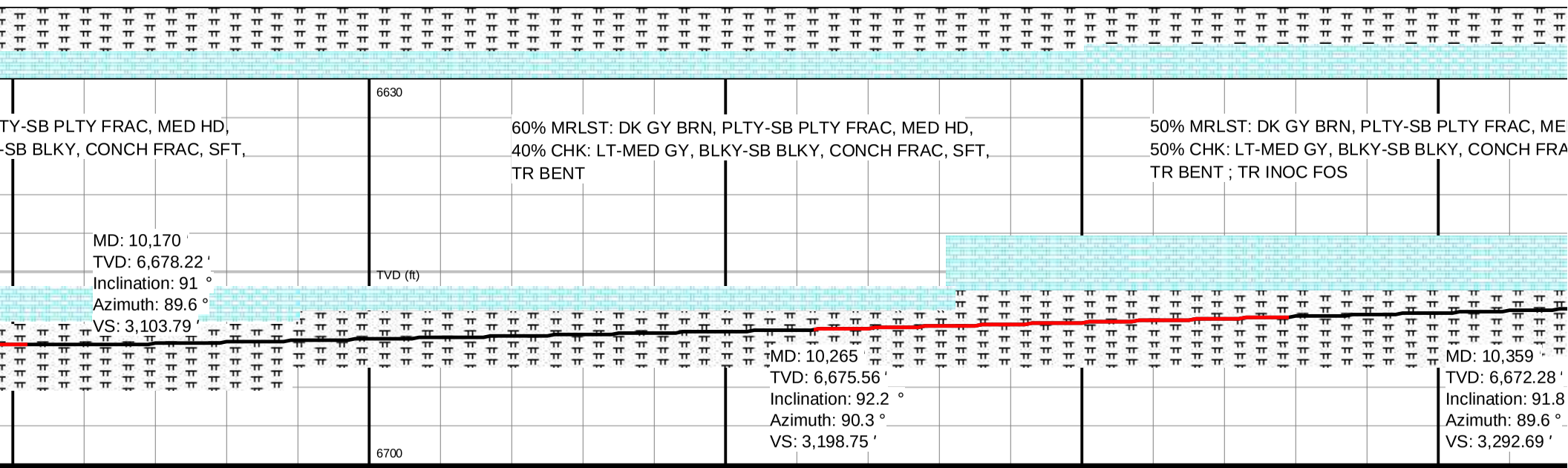
6630
60% CHK: MED-DK GY, BLKY-SB BLKY, CONCH FRAC, SFT,
40% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD, TR BENT
90% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
10% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD, TR BENT
MD: 9,507 '
TVD: 6,675.32 '
Inclination: 91.5 °
Azimuth: 88.2 °
VS: 2,441.03 '
TVD (ft)
MD: 9,601 '
TVD: 6,673.19 '
Inclination: 91.1 °
Azimuth: 88.7 °
VS: 2,534.96 '
MD: 9,696 '
TVD: 6,672.61 '
Inclination: 89.6 °
Azimuth: 89 °
VS: 2,629.93 '
6700

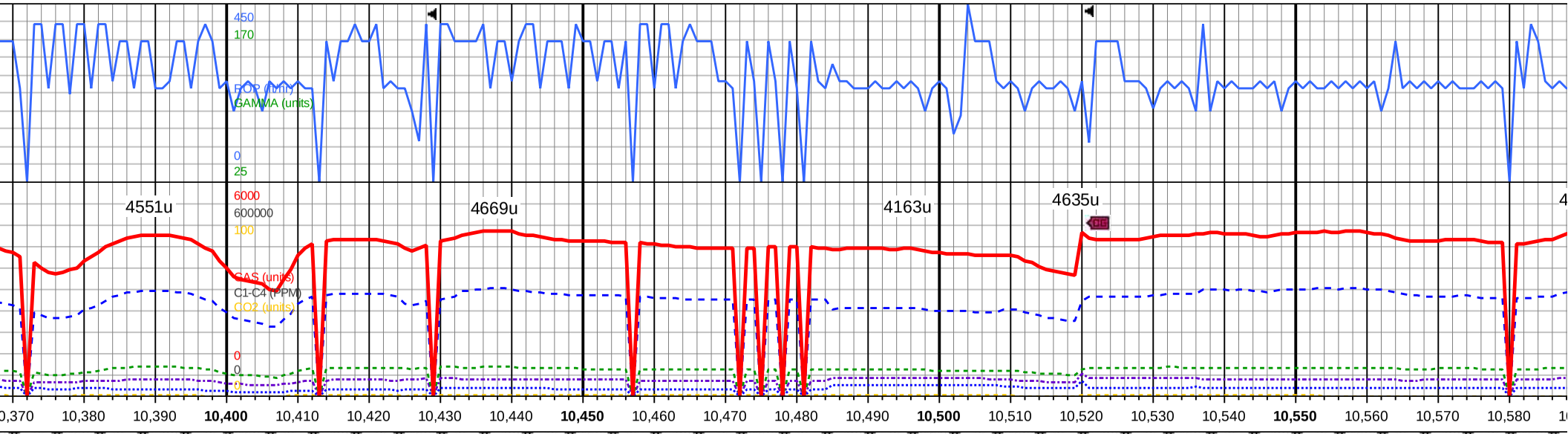

450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
100
5556u
5248u
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
9,710
9,720
9,730
9,740
9,750
9,760
9,770
9,780
9,790
9,800
9,810
9,820
9,830
9,840
9,850
9,860
9,870
9,880
9,890
9,900
9,910
9,920


6630
60% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
40% CHK: DK GY, BLKY-SB BLKY, CONCH FRAC, SFT,
TR BENT
95% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
5% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
TR BENT
60% CHK:
40% MRLS
TR BENT
TVD (ft)
MD: 9,791 '
TVD: 6,674.43 '
Inclination: 88.2 °
Azimuth: 90.8 °
VS: 2,724.91 '
MD: 9,885 '
TVD: 6,677.39 '
Inclination: 88.2 °
Azimuth: 91.7 °
VS: 2,818.84 '
6700


450
170
ROP (ft/hr)
GAMMA (units)
0
25
GAMMA TOOL FAILURE
10010'
5256u
5267u
5222u
4930u
600
300
GAS (units)
C1-C4 (PPM)
CO2 (units)
9,930
9,940
9,950
9,960
9,970
9,980
9,990
10,000
10,010
10,020
10,030
10,040
10,050
10,060
10,070
10,080
10,090
10,100
10,110
10,120
10,130
10,140
6630
LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
ST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
70% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
30% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
TR BENT
60% MRLST: DK GY BRN, PL
40% CHK: LT-MED GY, BLKY
TR BENT
MD: 9,980 '
TVD: 6,679.21 '
Inclination: 89.6 °
Azimuth: 91 °
VS: 2,913.8 '
TVD (ft)
MD: 10,075 '
TVD: 6,679.29 '
Inclination: 90.3 °
Azimuth: 89.9 °
VS: 3,008.8 '
6700


450
170
ROP (ft/hr)
GAMMA (units)
0
25
6000
600000
100
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
4606u
4749u
5054u
4562u
0,150
10,160
10,170
10,180
10,190
10,200
10,210
10,220
10,230
10,240
10,250
10,260
10,270
10,280
10,290
10,300
10,310
10,320
10,330
10,340
10,350
10,360


6630
TY-SB PLTY FRAC, MED HD,
-SB BLKY, CONCH FRAC, SFT,
60% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
40% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
TR BENT
50% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, ME
50% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRA
TR BENT ; TR INOC FOS
MD: 10,170 '
TVD: 6,678.22 '
Inclination: 91 °
Azimuth: 89.6 °
VS: 3,103.79 '
TVD (ft)
MD: 10,265 '
TVD: 6,675.56 '
Inclination: 92.2 °
Azimuth: 90.3 °
VS: 3,198.75 '
MD: 10,359 '
TVD: 6,672.28 '
Inclination: 91.8
Azimuth: 89.6 °
VS: 3,292.69 '
6700



6630

D HD,
AC, SFT,

60% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
40% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
TR BENT

70% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
30% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
TR BENT

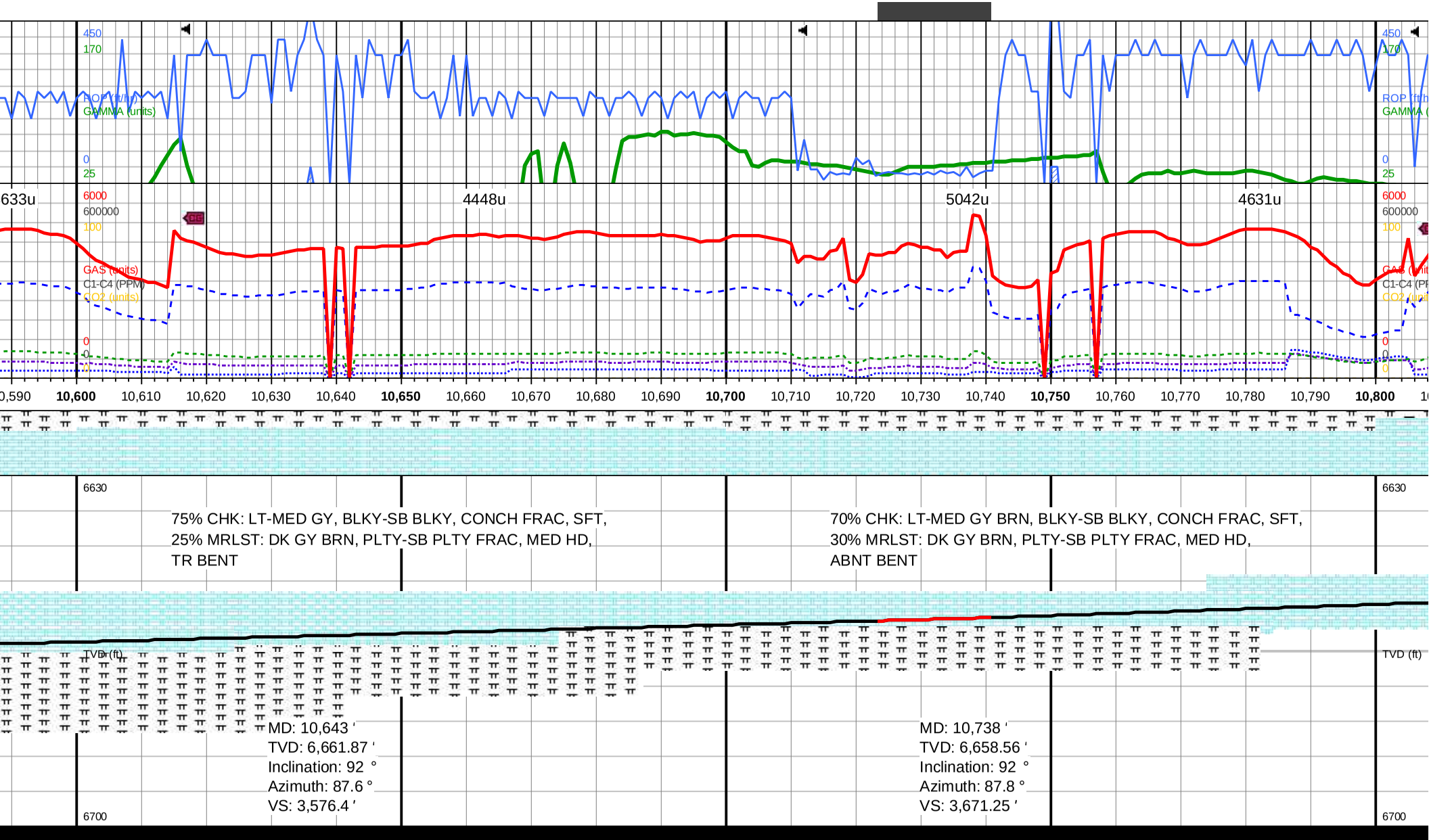
TVD (ft)

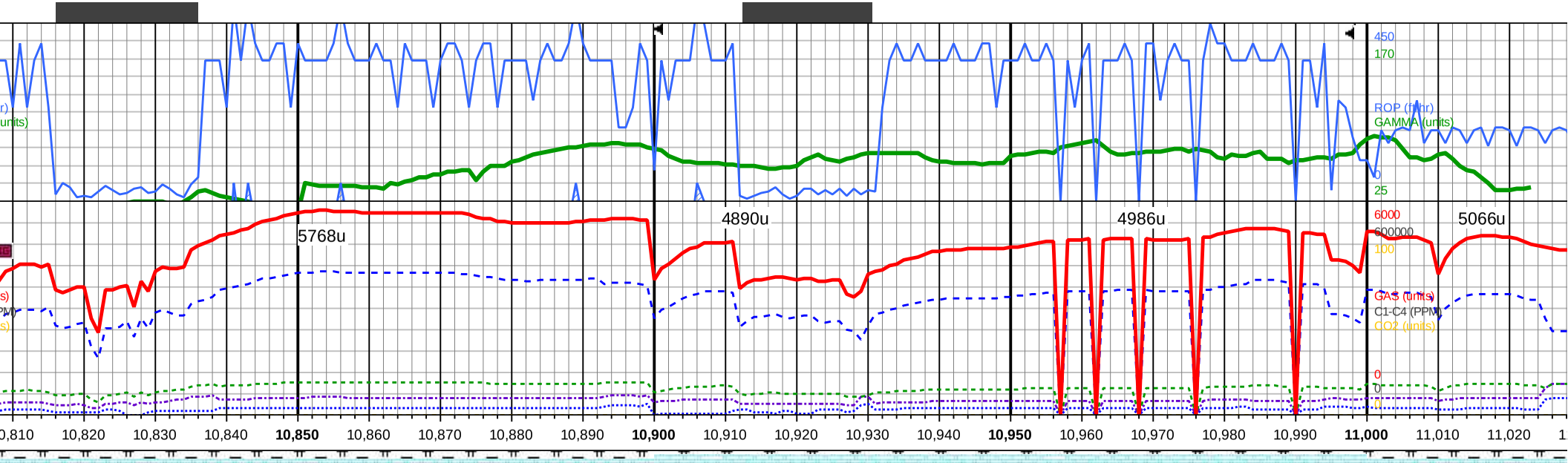
°

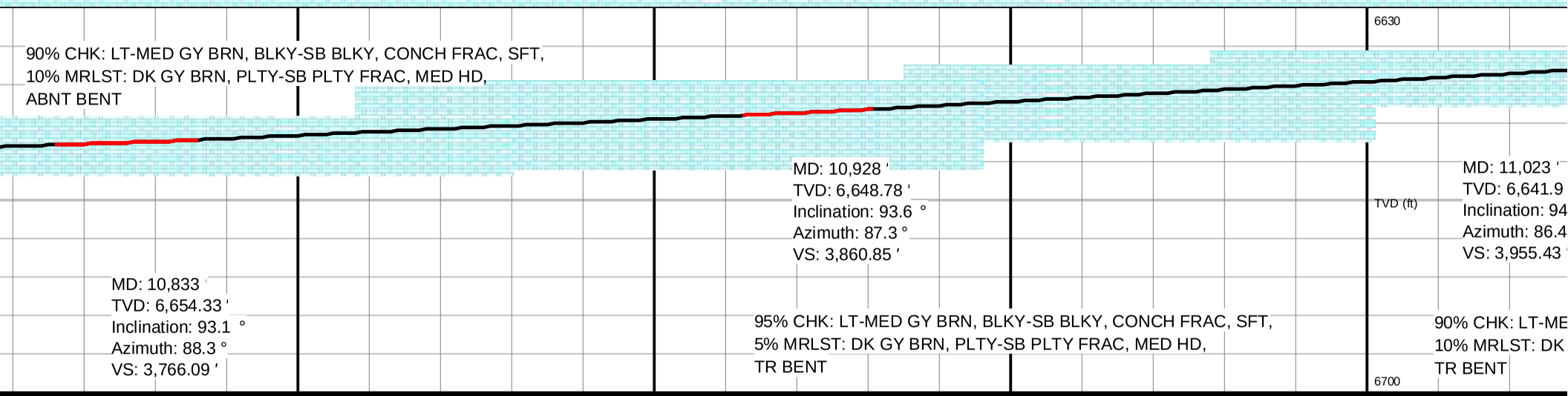
MD: 10,454 '
TVD: 6,668.64 '
Inclination: 92.6 °
Azimuth: 90.1 °
VS: 3,387.62 '

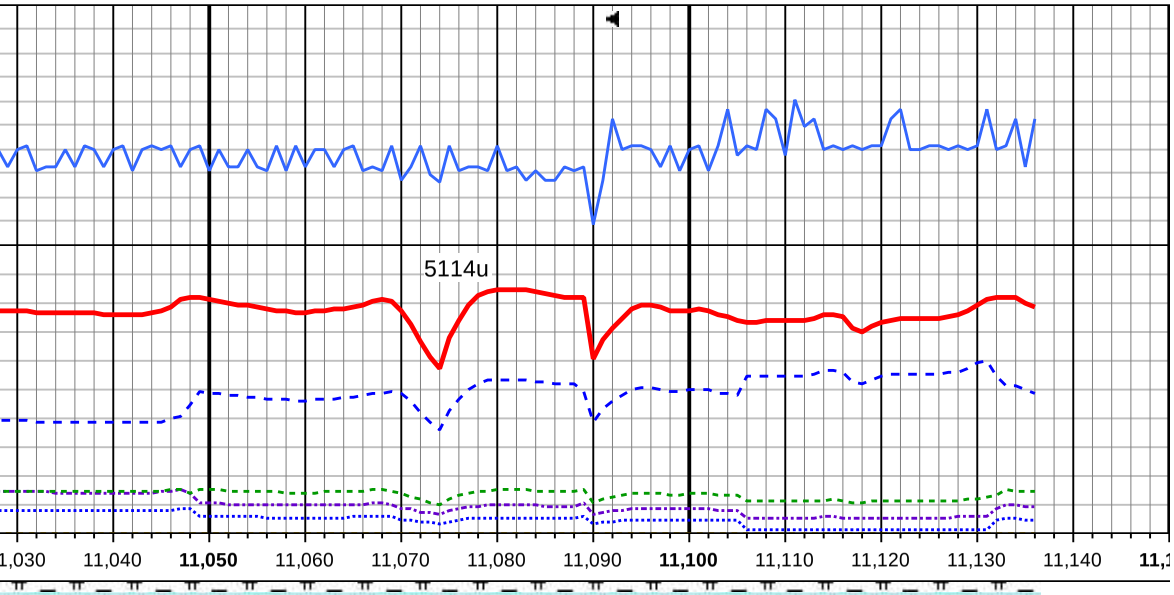
MD: 10,549 '
TVD: 6,664.99 '
Inclination: 91.8 °
Azimuth: 88.2 °
VS: 3,482.53 '

6700


450
170
ROP (min/ft)
GAMMA (units)
0
25
633u
4448u
5042u
4631u
6000
600000
100
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
10,590
10,600
10,610
10,620
10,630
10,640
10,650
10,660
10,670
10,680
10,690
10,700
10,710
10,720
10,730
10,740
10,750
10,760
10,770
10,780
10,790
10,800
6630
75% CHK: LT-MED GY, BLKY-SB BLKY, CONCH FRAC, SFT,
25% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
TR BENT
70% CHK: LT-MED GY BRN, BLKY-SB BLKY, CONCH FRAC, SFT,
30% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
ABNT BENT
TVD (ft)
MD: 10,643 '
TVD: 6,661.87 '
Inclination: 92 °
Azimuth: 87.6 °
VS: 3,576.4 '
MD: 10,738 '
TVD: 6,658.56 '
Inclination: 92 °
Azimuth: 87.8 °
VS: 3,671.25 '
6700


450
170
ROP (ft/hr)
GAMMA (units)
25
6000
500000
100
GAS (units)
C1-C4 (PPM)
CO2 (units)
0
0
0
5768u
4890u
4986u
5066u
10,810
10,820
10,830
10,840
10,850
10,860
10,870
10,880
10,890
10,900
10,910
10,920
10,930
10,940
10,950
10,960
10,970
10,980
10,990
11,000
11,010
11,020


6630
90% CHK: LT-MED GY BRN, BLKY-SB BLKY, CONCH FRAC, SFT,
10% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
ABNT BENT
MD: 10,928 '
TVD: 6,648.78 '
Inclination: 93.6 °
Azimuth: 87.3 °
VS: 3,860.85 '
TVD (ft)
MD: 11,023 '
TVD: 6,641.9
Inclination: 94
Azimuth: 86.4
VS: 3,955.43
MD: 10,833 '
TVD: 6,654.33 '
Inclination: 93.1 °
Azimuth: 88.3 °
VS: 3,766.09 '
95% CHK: LT-MED GY BRN, BLKY-SB BLKY, CONCH FRAC, SFT,
5% MRLST: DK GY BRN, PLTY-SB PLTY FRAC, MED HD,
TR BENT
90% CHK: LT-ME
10% MRLST: DK
TR BENT
6700



TD: 11136' MD
@ 03:15 HRS 08/11/13

THANK YOU FOR USING
COLUMBINE LOGGING INC.

MD: 11,070 '
TVD: 6,637.77 '
Inclination: 95.4 °
Azimuth: 86.2 °
VS: 4,002.14 '

.7 °
°

ED GY BRN, BLKY-SB BLKY, CONCH FRAC, SFT,
GY BRN, PLTY-SB PLTY FRAC, MED HD,