

Scale: 5" / 100'  
Measured Depth Log

Well Name THORNTON 12

Location AULT

State COLORADO

Country USA

County WELD

Rig Number HP280

Field WATTENBERG

Ground Elevation 5038'

K.B. Elevation 5062'

Logged Interval 5000' To 17400'

Type of Drilling Fluid GEL

## Operator

Company EXTRACTION OIL AND GAS

## Geologist

Name MICHAEL KOHEL, PATRICK HAMILTON

## Zone Color Coding

Oil  
Note  
Error

Condensate  
Core  
Water

Gas  
Pressure  
Seal

## Rock Types

UNKNOWN  
ANHYDRITE  
GYPSUM  
SALT  
SIDERITE or LIMONITE  
LIMESTONE

DOLOMITE  
CHERT  
COAL  
MARLSTONE  
CLAYSTONE  
SHALE

SHALE GRAY  
SHALE COLORED  
SILTSTONE  
SANDSTONE  
CONGLOMERATE  
BRECCIA

## Accessories

F FOSSIL  
GASTROPOD  
OOLITE  
OSTRACOD  
PELECYPOD  
PELLET  
PISOLITE  
BRYOZOA  
CEPHALOPOD  
CORAL  
CRINOID  
ECHINOID  
FISH  
FORAMINIFERA

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

Other Symbols

ORGANIC

FORMATION TOP

L LITHOGRAPHIC

Oil Show

P PINPOINT

GAS SHOW

Rounding

MX MICROXLN

D DEAD

V VUGGY

MNDEPTH MN DEPTH

A ANGULAR

MS MUDSTONE

EVEN

NORMAL FAULT

R ROUNDED

PS PACKSTONE

QUESTIONABLE

Engineering

OIL SHOW

B SUBBANG

WS WACKSTONE

SPOTTED STAINING BIT

OVERTURNED STRATA

P SUBRND

Sorting

CASING

REVERSE FAULT

Porosity

CONNECTION (LEFT)

SIDEWALL CORE (LEFT)

M MODERATE

E EARTHY

CONNECTION (RIGHT)

SIDEWALL CORE (RIGHT) BS BOUNDSTONE

P POOR

F FENESTRAL

CONNECTION GAS SLIDE

C CHALKY

W WELL

F FRACTURE

CORE - LOST

SURVEY

CX CRYPTOXLN

X INTERCRYSTALLINE

CORE - RECOVERED

E EARTHY

INTEROOLITIC

DST INTERVAL

WIRELINE TESTED - LEFT FX FINELYXLN

MOLDIC

FAULT

WIRELINE TESTED - RT

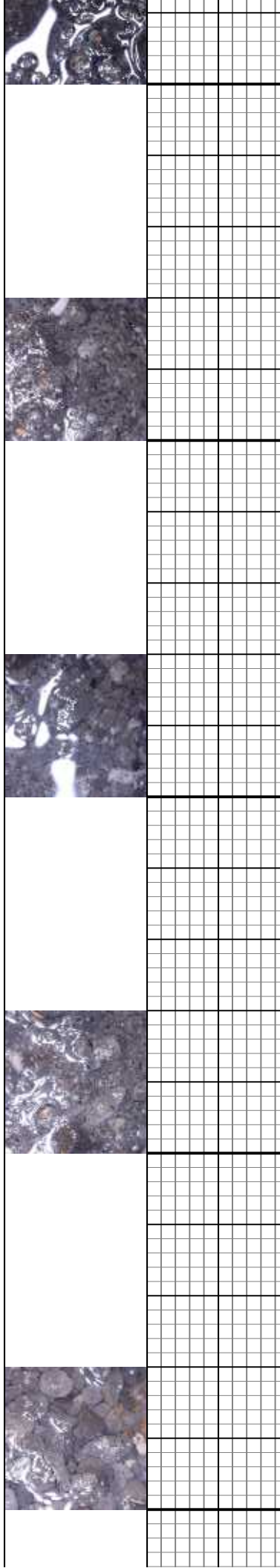
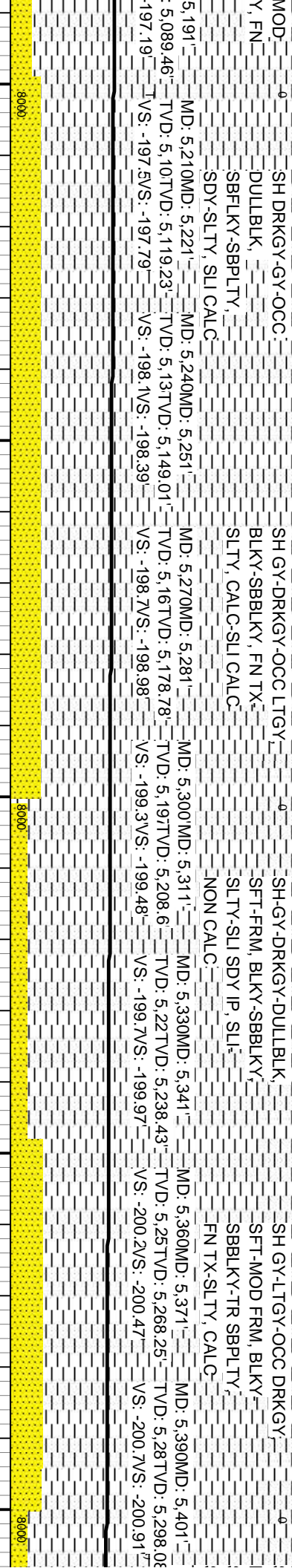
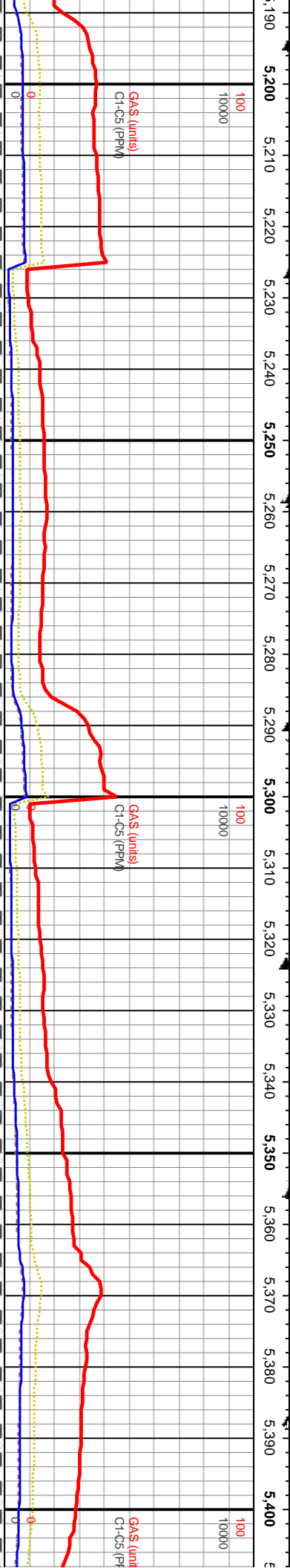
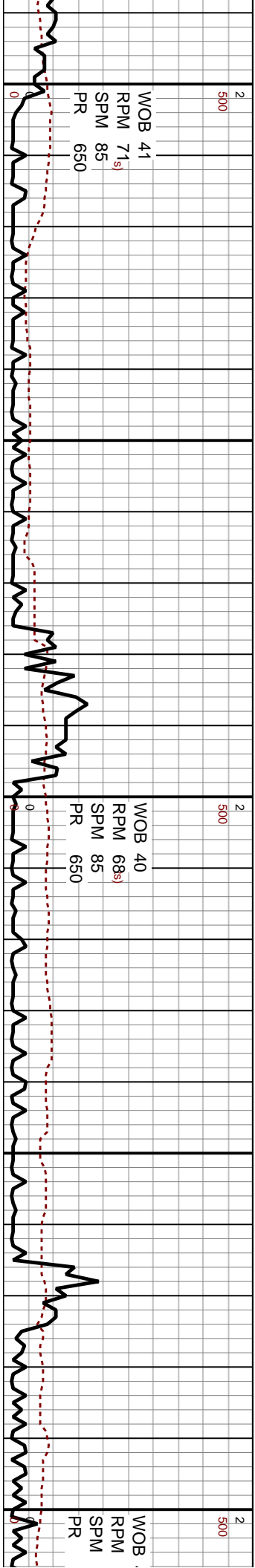
GS GRAINSTONE

- TILL
- BENTONITE
- TUFF
- IGNEOUS
- METAMORPHIC
- CEMENT

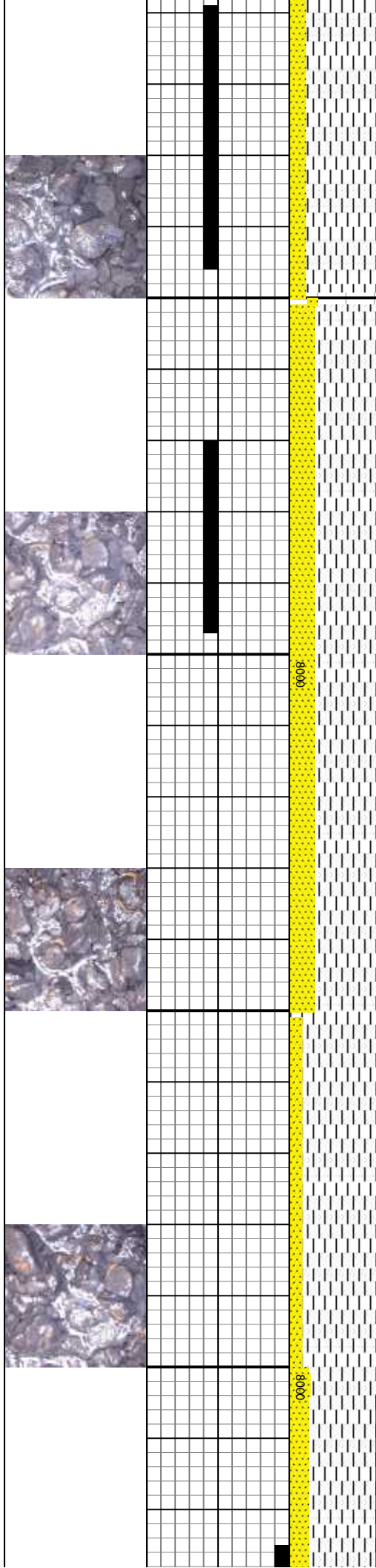
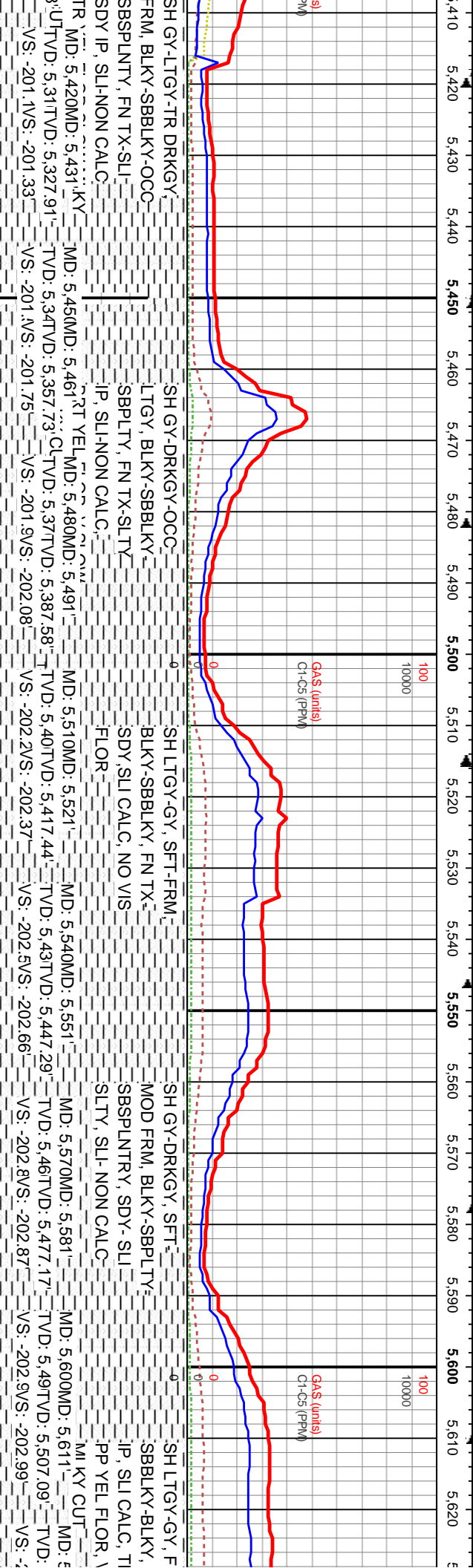
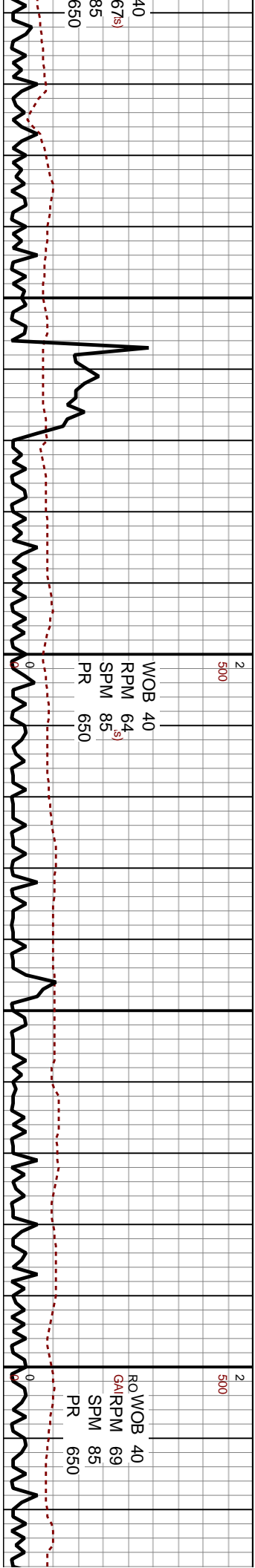
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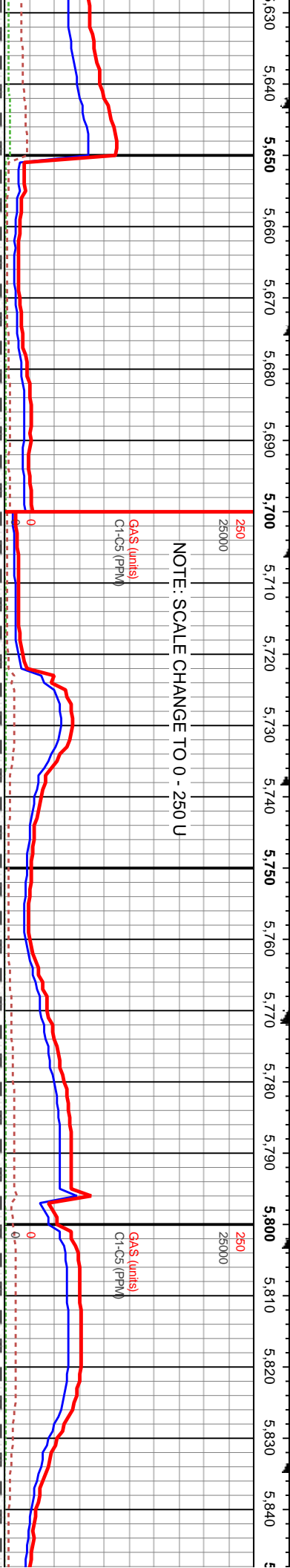
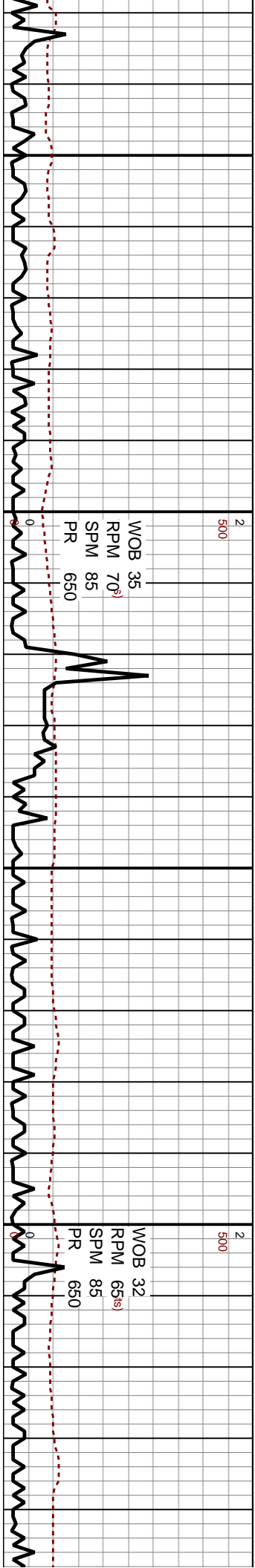
- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER
- GYPSSUM STRINGER
- LIMESTONE STRINGER
- MARLSTONE (CALC) STRG
- MARLSTONE (DOL) STRG
- SANDSTONE STRINGER
- SHALE STRINGER
- SILTSTONE STRINGER



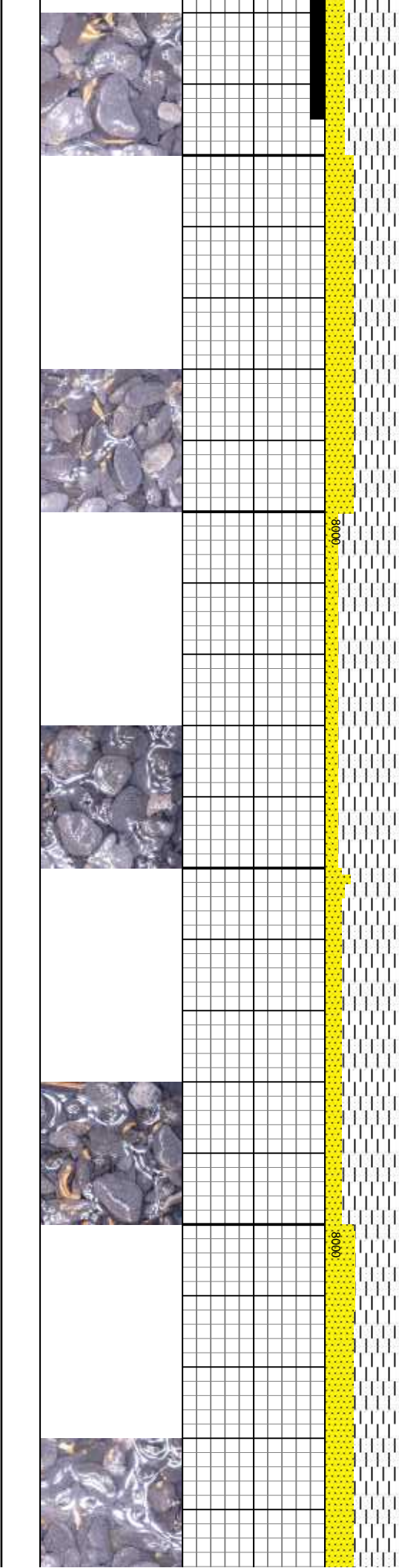


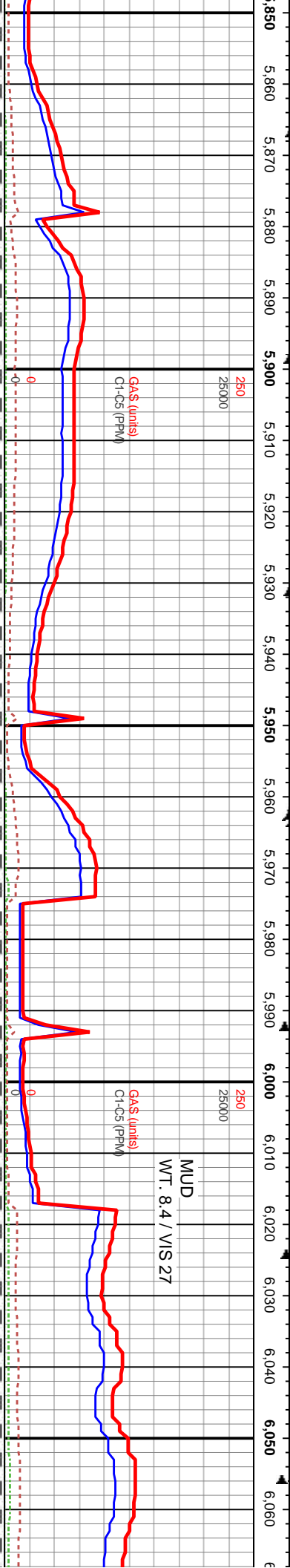
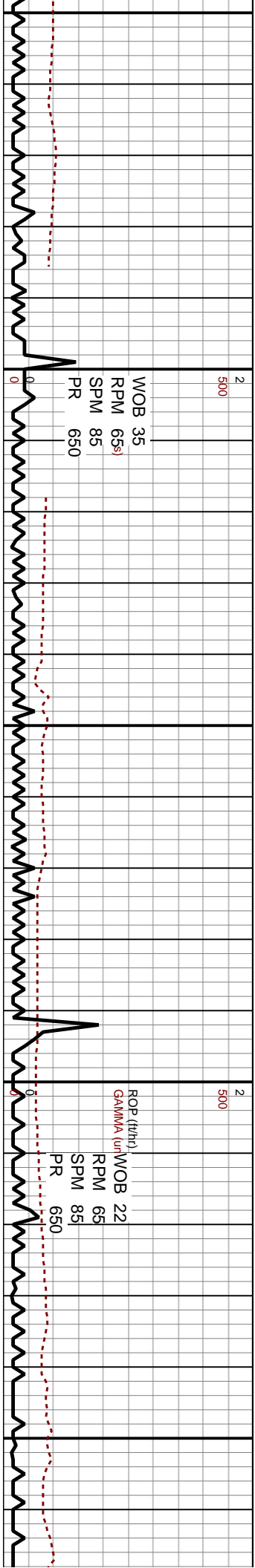




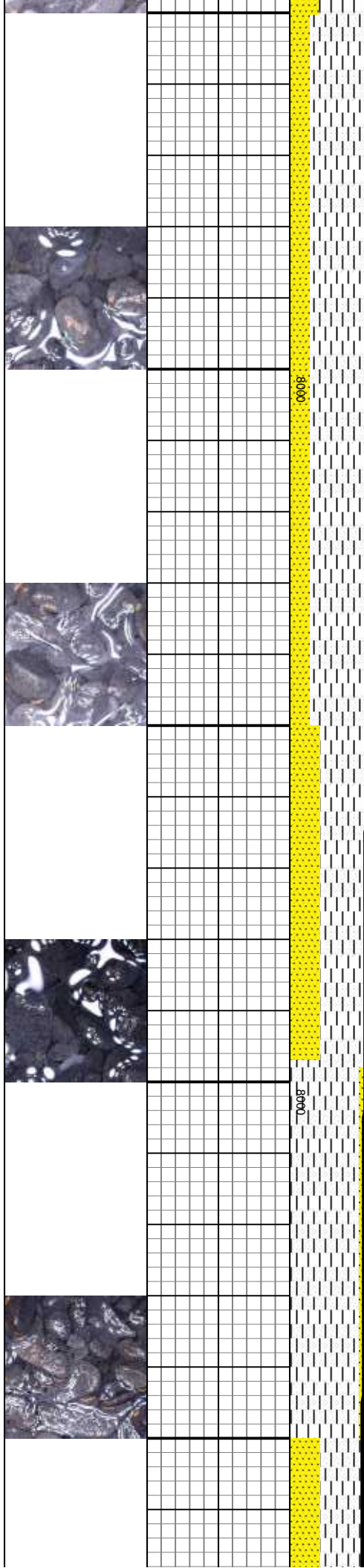


SH DRKGY-GY-TR	SH GY-LTGY, SFT	SH LTGY-GY, FRM	SH DRKGY-LTGY-GY
LTGY, SFT-FRM, BLKY	FRM, BLKY-SBBLKY	BLKY-SBBLKY, SDY	SFT-MOD FRM, SBBLKY
SBBLKY, FN TX-V SLTY	FN TX-SDY, SLI CALC	IP, SLI CALC	FN TX-SLTY IP, SLI
SLI-NON CALC, NFSOC	NFSOC		NON CALC
MD: 5.630MD: 5.641	MD: 5.720MD: 5.731	MD: 5.780MD: 5.791	MD: 5.810MD: 5.821
MD: 5.521TVD: 5.537.01	MD: 5.61TVD: 5.626.81	MD: 5.67TVD: 5.686.72	MD: 5.716.68
TVD: 5.55TVD: 5.566.93	TVD: 5.64TVD: 5.656.76	TVD: 5.73TVD: 5.743.92	TVD: 5.73TVD: 5.73TVD
VS: -203.1VS: -203.23	VS: -203.4VS: -203.49	VS: -203.7VS: -203.78	VS: -203.95
VS: -203.1VS: -203.36	VS: -203.4VS: -203.62	VS: -203.7VS: -203.78	VS: -204.0VS: -204.0VS

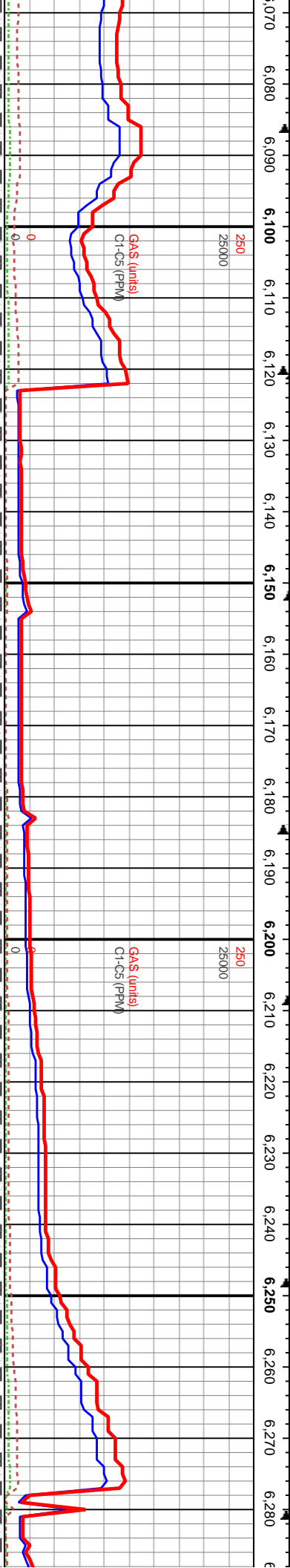
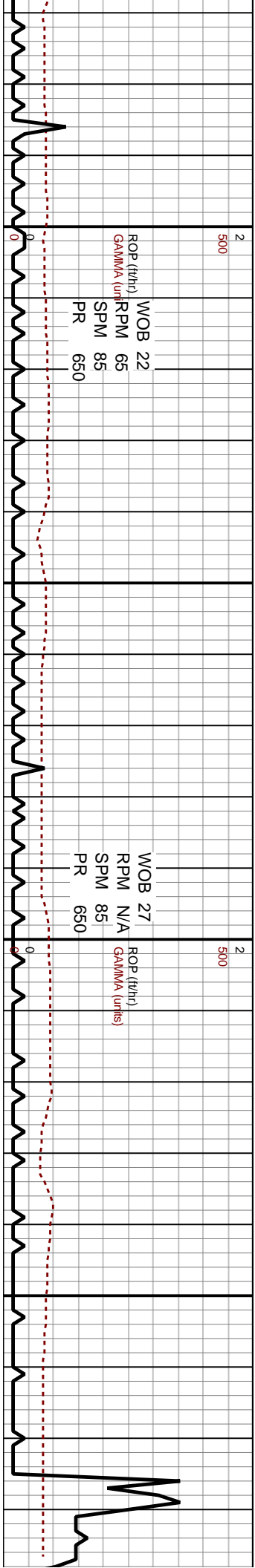




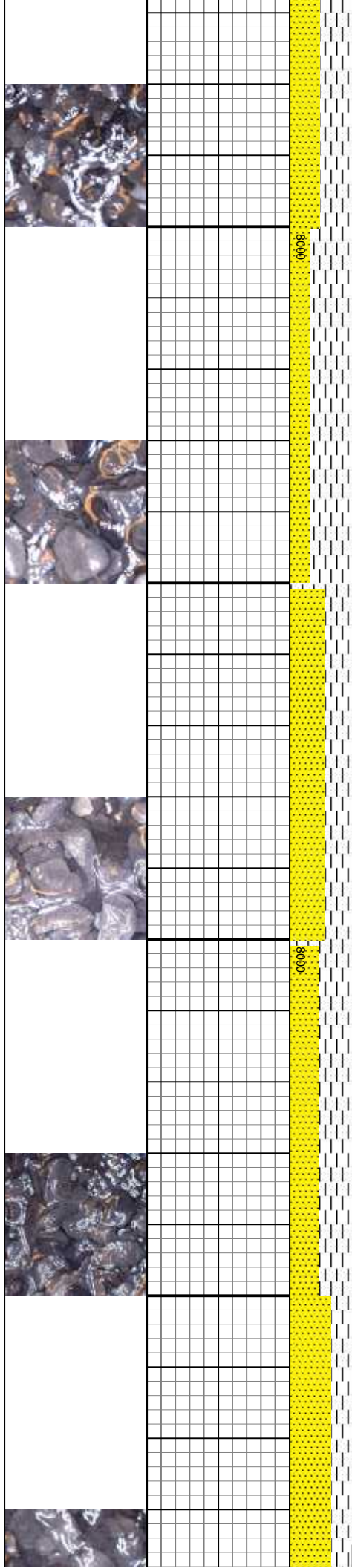
5,851'	MD: 5,870MD: 5,881'	MD: 5,900MD: 5,911'	MD: 5,930MD: 5,941'	MD: 5,960MD: 5,971'	MD: 5,990MD: 6,001'	MD: 6,020MD: 6,031'	MD: 6,050MD: 6,061'
5,746.65'	TVD: 5,76TVD: 5,776.62'	TVD: 5,79TVD: 5,806.6'	TVD: 5,82TVD: 5,836.57'	TVD: 5,85TVD: 5,866.54'	TVD: 5,88TVD: 5,896.51'	TVD: 5,91TVD: 5,926.49'	TVD: 5,94TVD: 5,956.47'
-VS: -204.4VS: -204.6'	-VS: -204.4VS: -205.14'	-VS: -205.4VS: -205.68'	-VS: -206.2VS: -206.52'	-VS: -207.0VS: -207.36'	-VS: -207.4VS: -208.2'	-VS: -208.4VS: -208.54'	-VS: -208.4VS: -208.54'

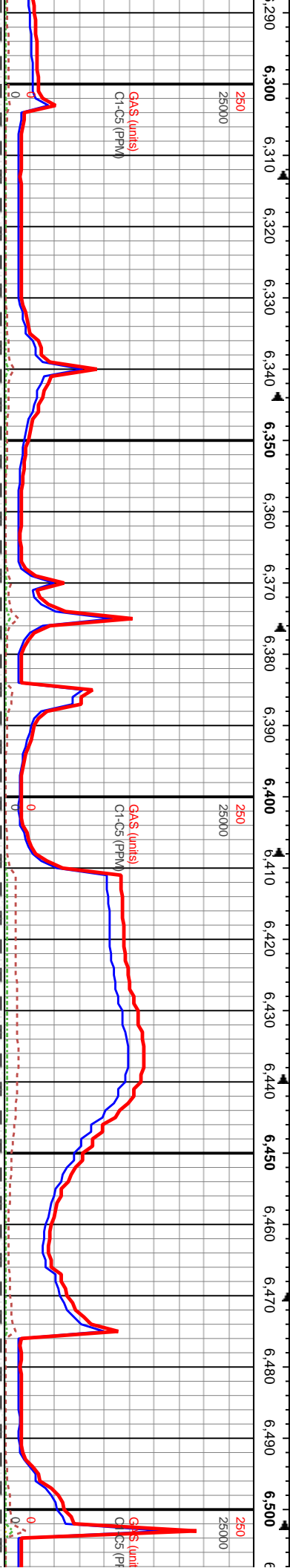
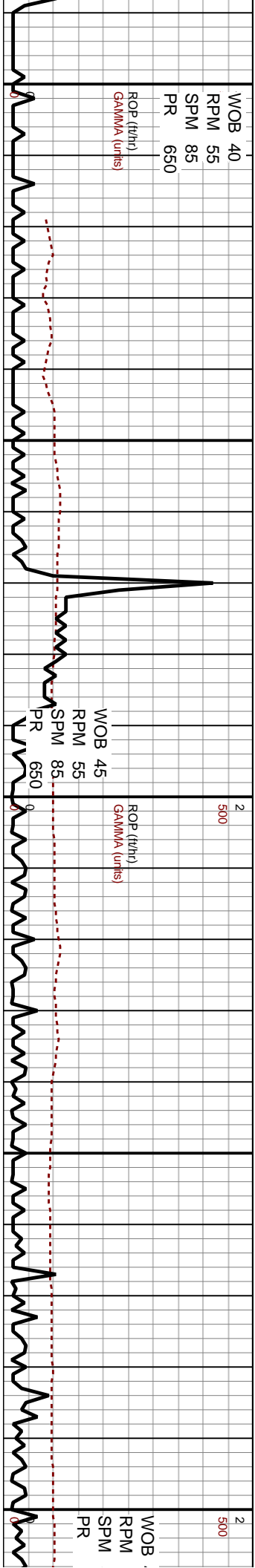




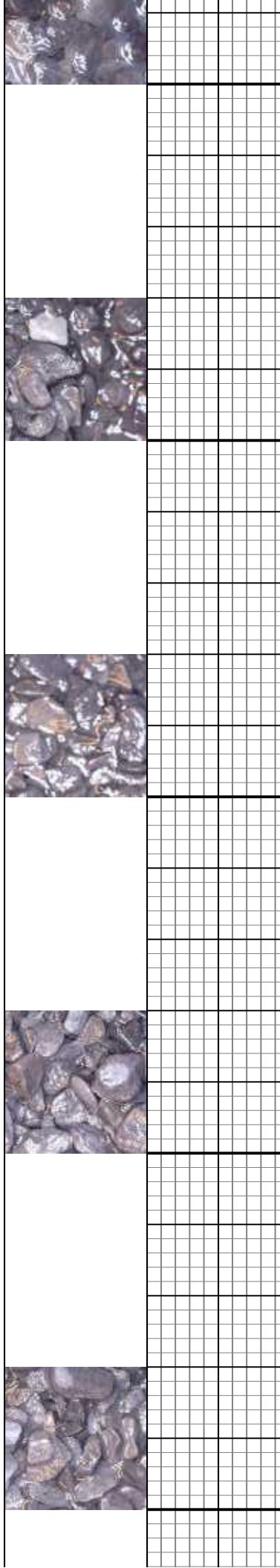
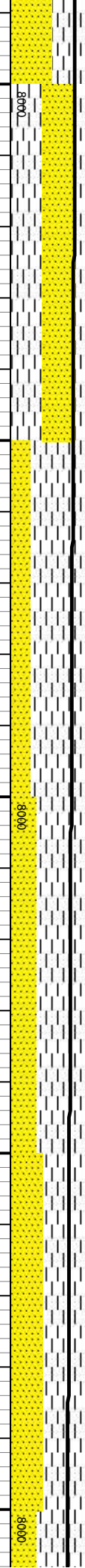


SH LGY-TR	SH LGY-GY, SFT	SH LGY-GY-OCC	SH GY-LTGY-TR	SH LGY-GY-TR
MOD FRM, SBLKY	DULLBLK, SFT-FRM	BLKY-SBLKY-TR	DRKGY-DULLBLK	DRKGY, SFT-FRM
FN TX-SL SLTY	SBSPLNTRY, FN TX	SLTY, SLI NON CALC	SBSPLNTRY SLI SPDY	BLKY-SBLKY-OCC
MD: 6.134	MD: 6.170MD: 6.181	MD: 6.200MD: 6.211	MD: 6.241	MD: 6.260MD: 6.271
TVD: 6.029.72	TVD: 6.03TVD: 6.046.45	TVD: 6.09TVD: 6.106.45	TVD: 6.136.45	TVD: 6.15TVD: 6.166.45
VS: -208.6VS: -208.72	VS: -208.8VS: -208.85	VS: -208.4VS: -208.36	VS: -208.2VS: -208.19	VS: -208.1VS: -208.14





SH GY-DRKGY-LTGY, SFT-FRM, BLKY-SBBLKY, OCC SBPLTY, FN TX, SLI CALC, TR PP YEL FLO, V PI	MD: 6,320MD: 6,331 TVD: 6,21TVD: 6,226.45 VS: -208.0VS: -208.04	SH GY-LTGY, SFT-FRM, BLKY-SBBLKY-SBSPLNTY, FN TX-SLI SLTY, NON- CALC, TR PP YEL FLO, NO VIS CUT	MD: 6,350MD: 6,361 TVD: 6,24TVD: 6,256.45 VS: -208.0VS: -208.02	SH LTGY-GY, SFT- MOD FRM, BLKY- SBBLKY-SBSPLNTY- TR SBPLTY, FN TX- MOD: 6,421N CALC TVD: 6,316.45	MD: 6,410MD: 6,440MD: 6,451 TVD: 6,30AZimuth: 21.4 VS: -207.9VS: -208.01	SH LTGY-GY-TR -DRKGY, BLKY-OCC -SBBLKY-TR SBSPLNTY, -FN TX-SLI SLTY, SLI -NON CALC	MD: 6,470MD: 6,481 TVD: 6,36TVD: 6,376.45 VS: -208.0VS: -208.06
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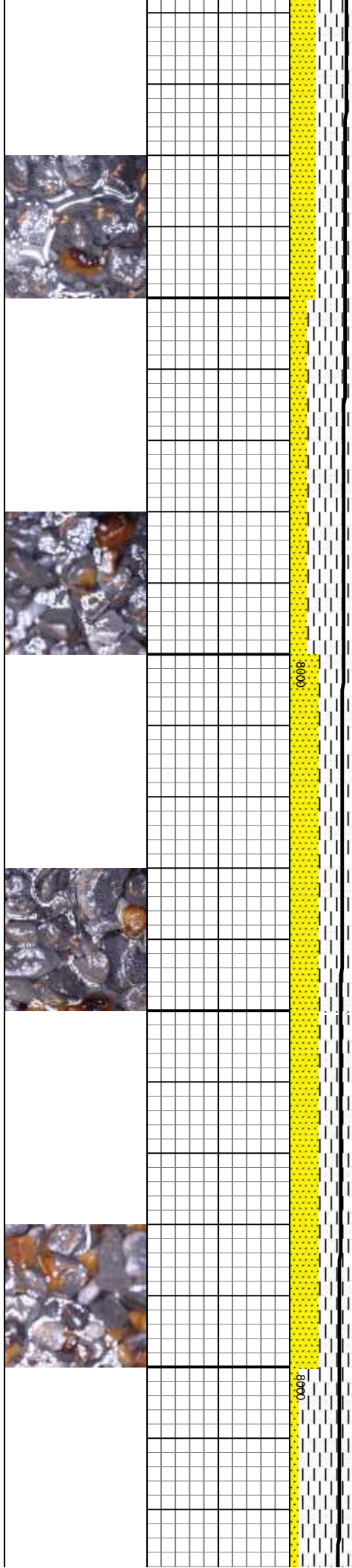


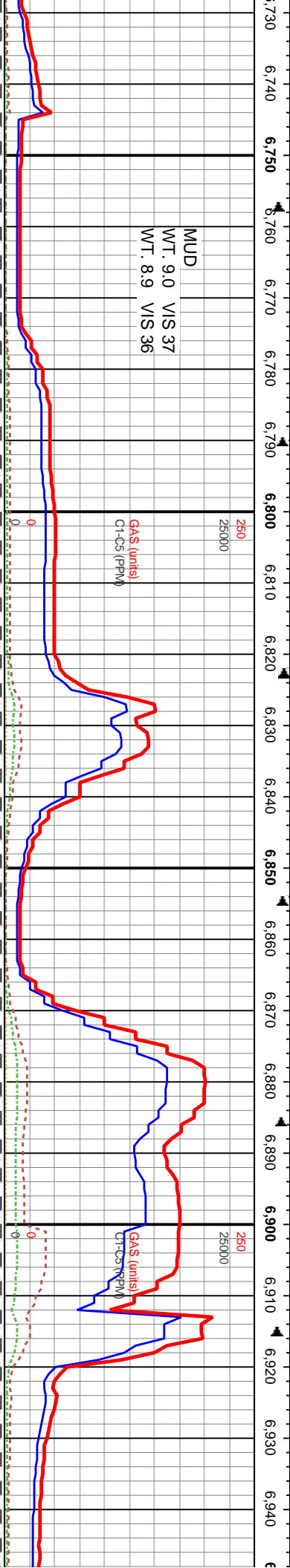
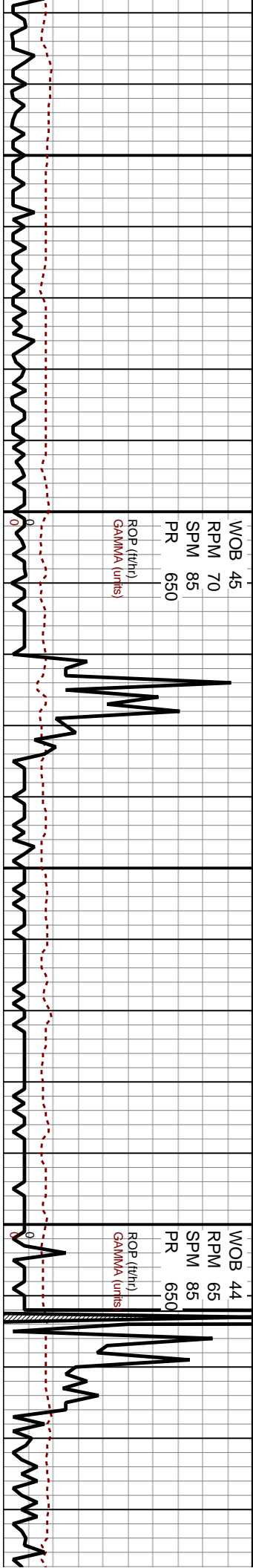
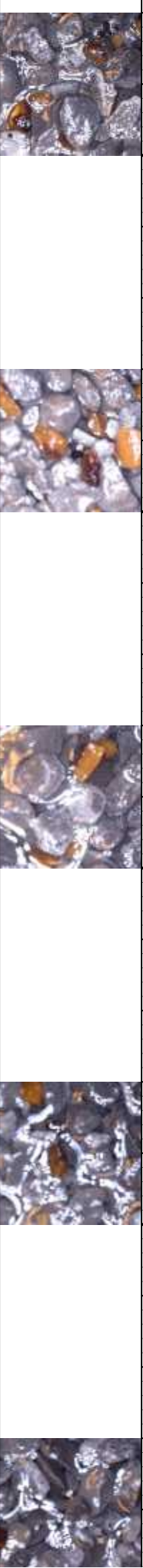


WOB	40	WOB	N/A
RPM	55	RPM	N/A
SPM	85	SPM	N/A
PR	650	PR	N/A
ROP (ft/hr)		ROP (ft/hr)	
GAMMA (units)		GAMMA (units)	



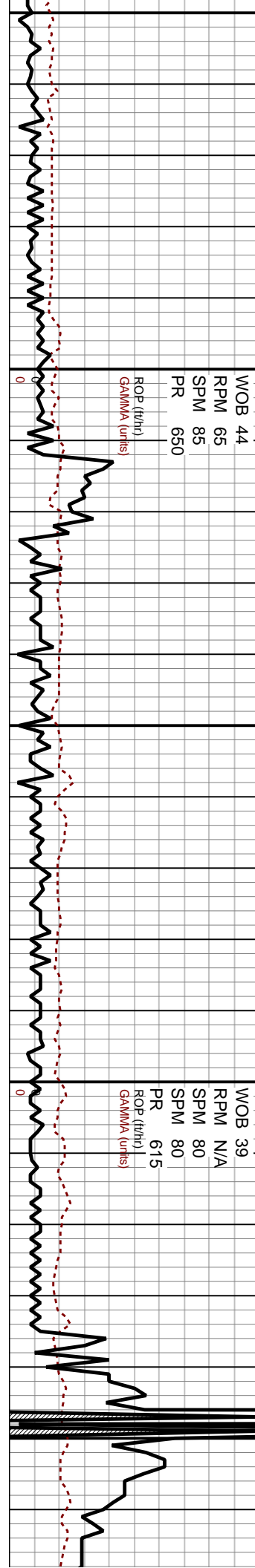
6.510	6.520	6.530	6.540	6.550	6.560	6.570	6.580	6.590	6.600	6.610	6.620	6.630	6.640	6.650	6.660	6.670	6.680	6.690	6.700	6.710	6.720
<div>SH LTGY-GY-DRGY SFT-FRM, BLKY SBBLKY-SBPLTY FN TX, SDY IP MESLI-NON CALC TVD: 6,411.71' MD: 6,530MD: 6,541' 6,406.4574.TVD: 6,421TVD: 6,436.44' -208.177- VS: -208.2VS: -208.33' VS: -208.5VS: -208.6' VS: -208.7VS: -208.86' -208VS: -209.0VS: -209.18' VS: -209.3VS: -209.52' VS: -209.7VS: -209.85' VS VS: -210.0VS: -210.13'</div> <div>SH GY-LTGY-OCC DRGY, SFT-MOD FRM SBBLKY-SBPLTY, FN TX, SLI-NON CALC MD: 6,6.CALC TVD: 6,506.71' MD: 6,590MD: 6,601clinatioMD: 6,620MD: 6,631' 6,488TVD: 6,496.44'in.TVD: 6,51TVD: 6,526.44' MD: 6,650MD: 6,661' 6,54TVD: 6,556.43' TVD: 6,57TVD: 6,586.43zITVD: 6,60TVD: 6,616.43' TVD: 6,602.43' MD: 6,707'.CALC TVD: 6,710MD: 6,721' MD: 6,710MD: 6,721'</div> <div>SH GY-LTGY-D FRM, SBBLKY-C SBSPLNTY-SB FN TX, SLI-NON CALC TVD: 6,707'.CALC TVD: 6,710MD: 6,721'</div>																					



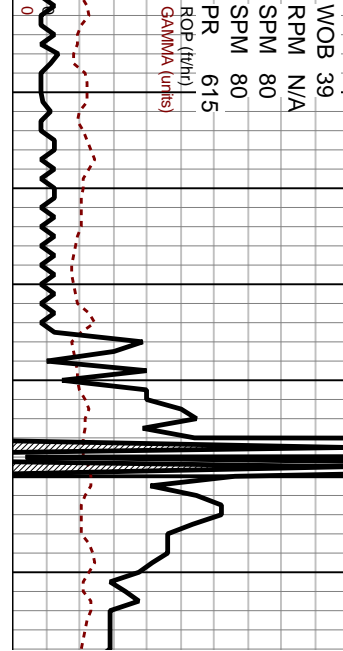
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WOB 44  
RPM 65  
SPM 85  
PR 650

ROP (ft/hr)  
GAMMA (units)



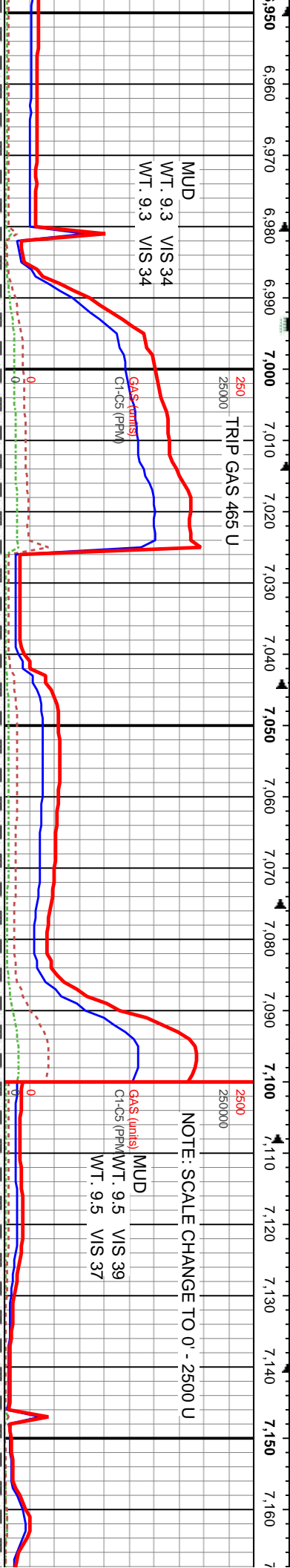
WOB 39  
RPM N/A  
SPM 80  
PR 80  
ROP (ft/hr)  
GAMMA (units)



MUD  
WT. 9.3  
WT. 9.3  
VIS 34  
VIS 34

GAS (units)  
G1-C5 (PPM)

TRIP GAS 465 U



NOTE: SCALE CHANGE TO 0' - 2500 U

MUD  
WT. 9.5  
WT. 9.5  
VIS 39  
VIS 37

GAS (units)  
G1-C5 (PPM)

TRIP FOR MUD MOTOR  
AT 6995' BIT NO. 1

SH GY-DRKGY-OCC  
LTGY, SFT-FRM  
BLKY-SBBLKY  
SBPLNTY, FN TX  
OCC LTBRN CHT  
NON CALC

SH DRKGY-GY, SFR  
MOD FRM, SBBLKY  
SBSPLNTY, SLI SLTY  
SLI CALC

SH DRKGY-GY-TR  
LTGY, FRM, SBBLKY  
BLKY-OCC SBPLNTY  
FN TX-SLI SDY IP  
NON CALC

SH DR  
LTGY  
SBSPL  
FN TX  
CALC

MD: 6.95MD: 6.961  
TVD: 6.84TVD: 6.856.39  
Azimuth: 9  
VS: -208.97  
VS: -208.6VS: -208.43

MD: 6.980MD: 6.991  
TVD: 6.87TVD: 6.886.39  
Azimuth: 9  
VS: -208.3V

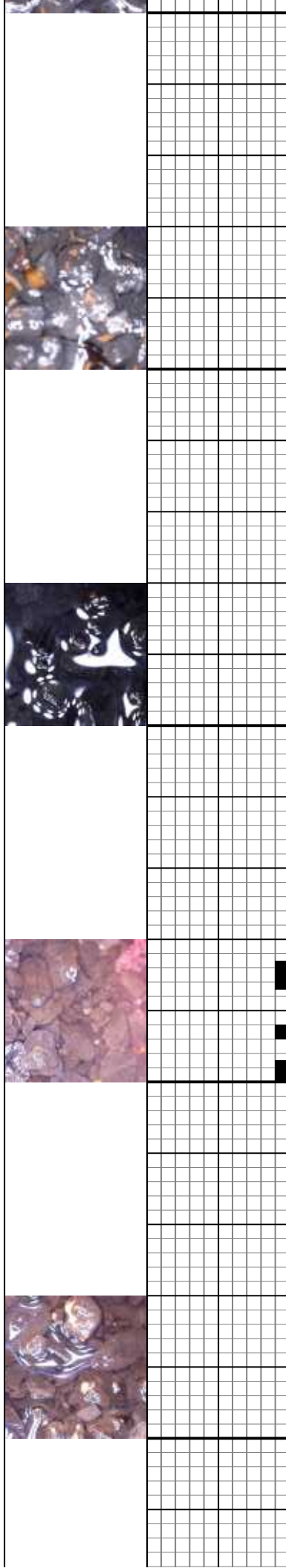
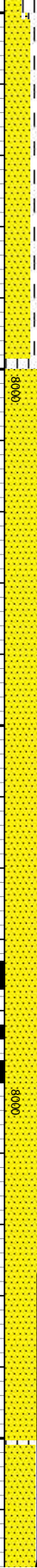
MD: 7.021  
TVD: 6.916.28  
VS: -206.18  
VS: -204.1VS: -203.68

MD: 7.070MD: 7.081  
TVD: 6.96TVD: 6.976.03  
VS: -202.0VS: -201.17

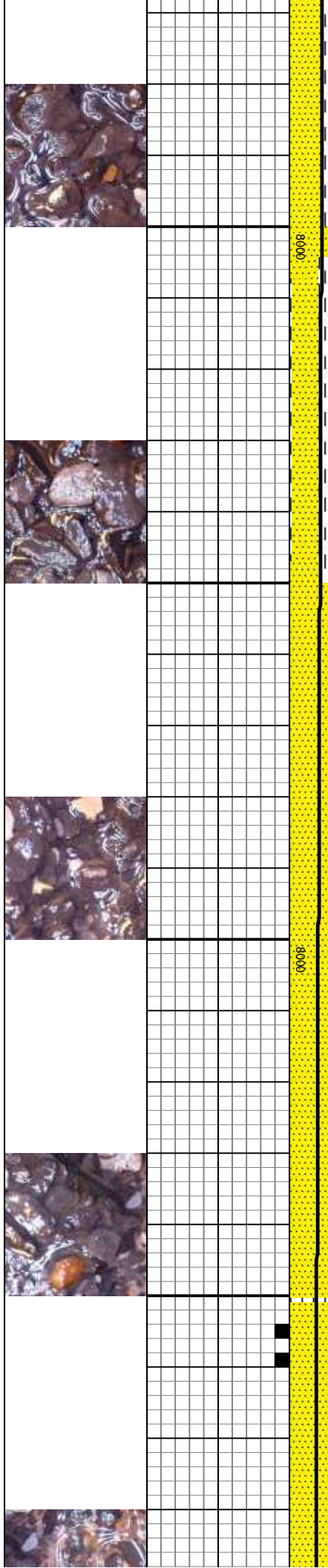
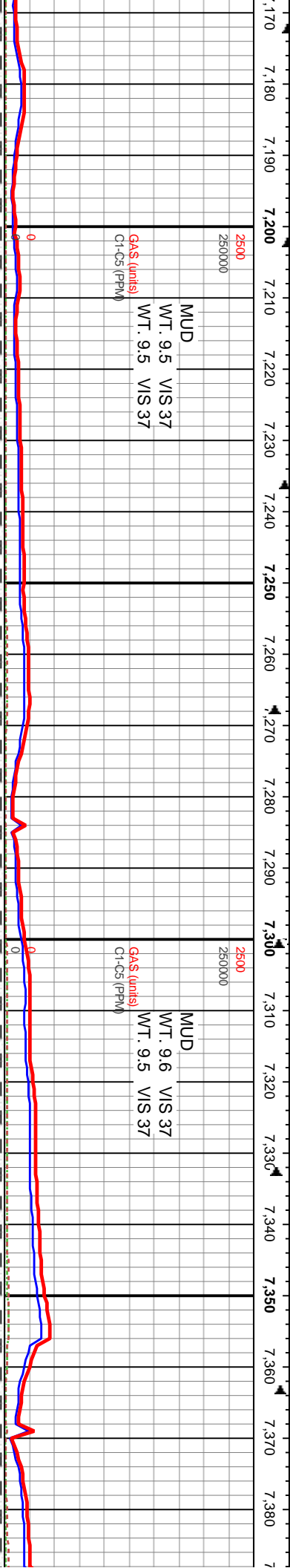
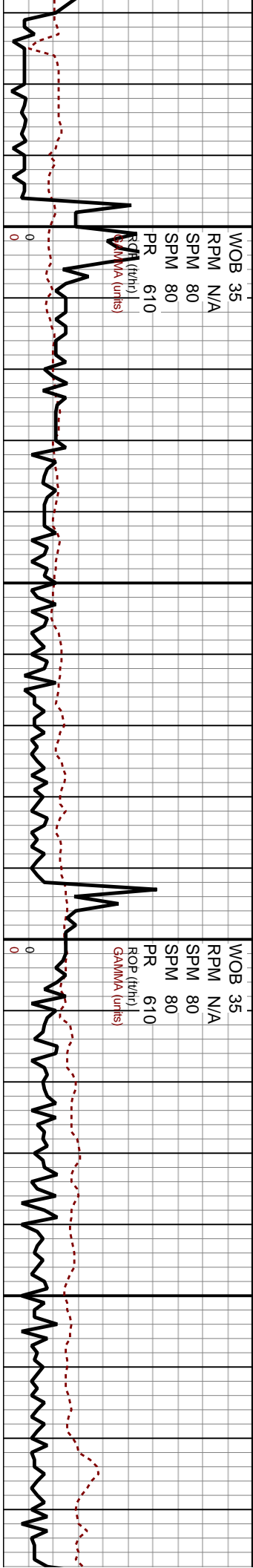
MD: 7.111  
TVD: 7.005.41  
VS: -195.64  
VS: -191.3VS: -188.82

MD: 7.130MD: 7.141  
TVD: 7.02TVD: 7.034.58  
VS: -184.5VS:

MD: 7.160MD:  
TVD: 7.05TVD:

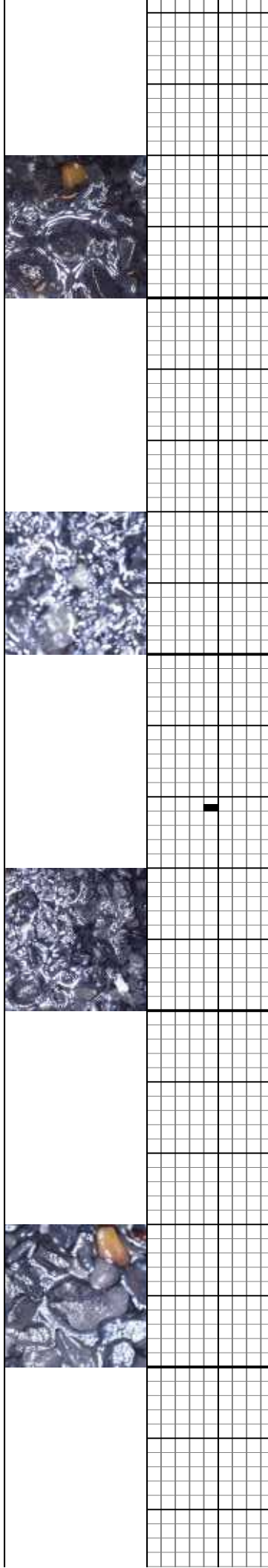
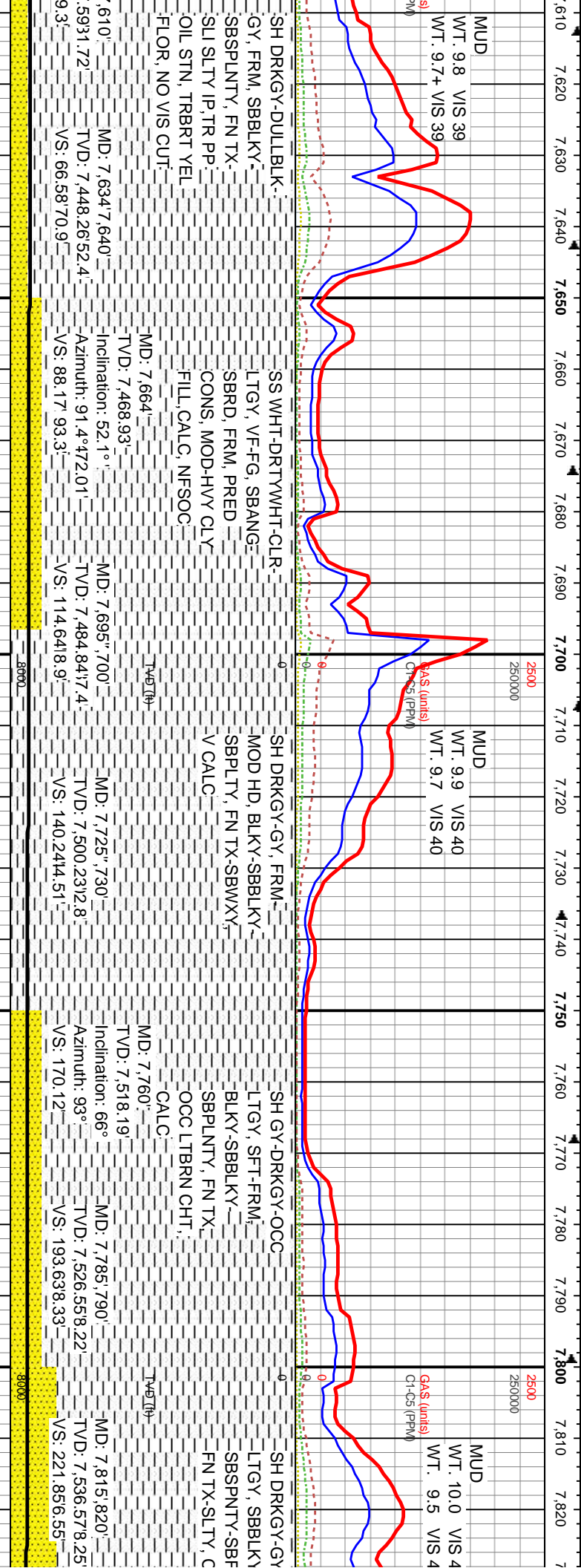
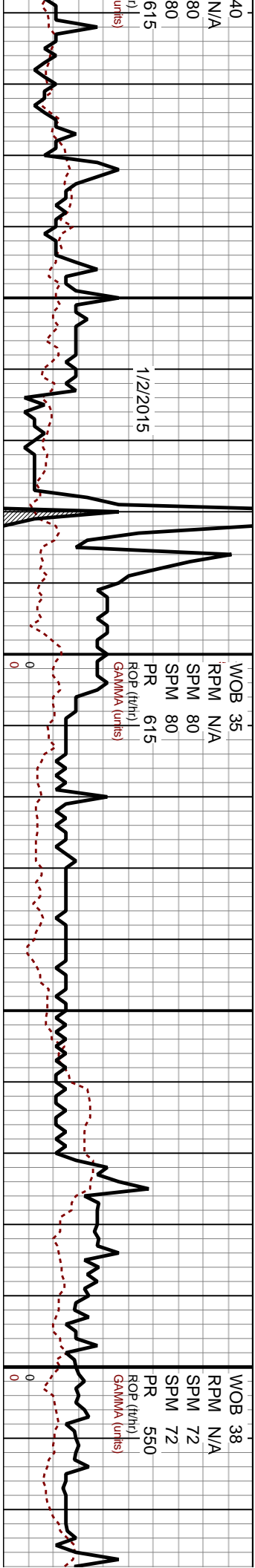


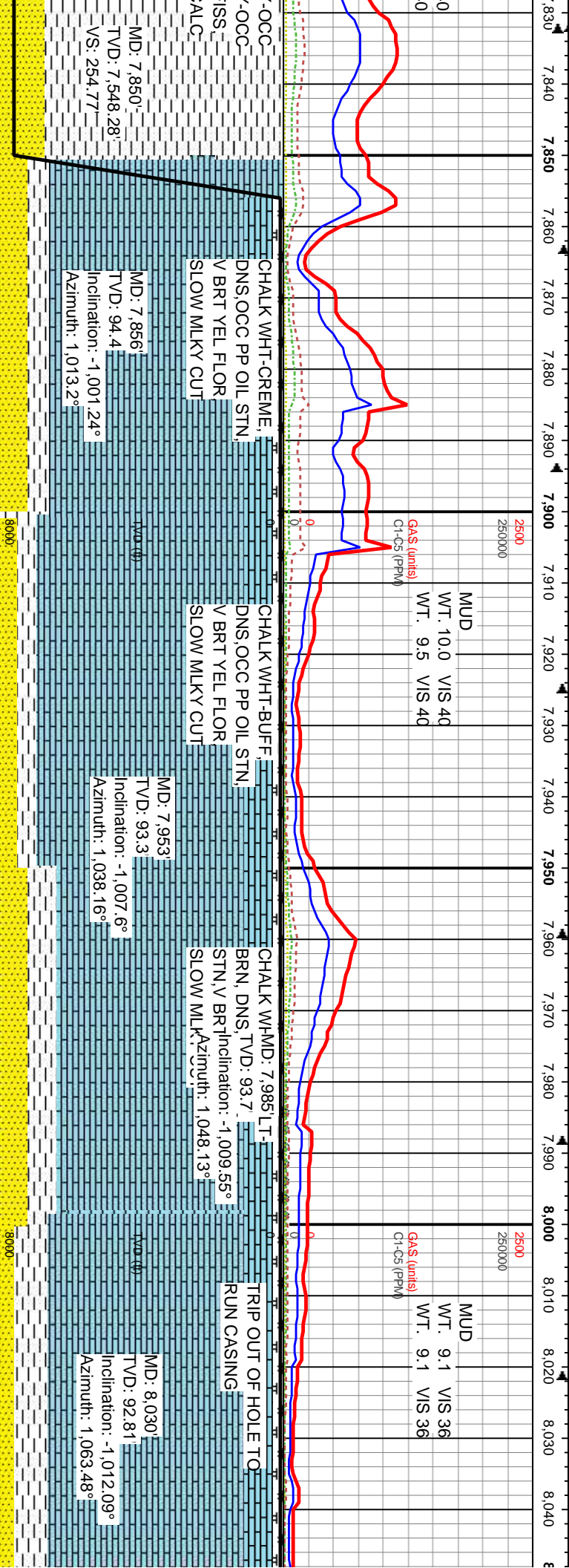
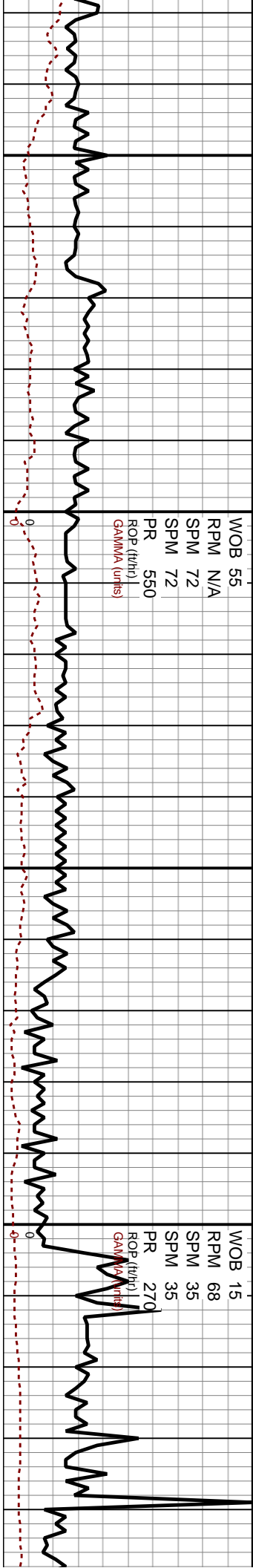




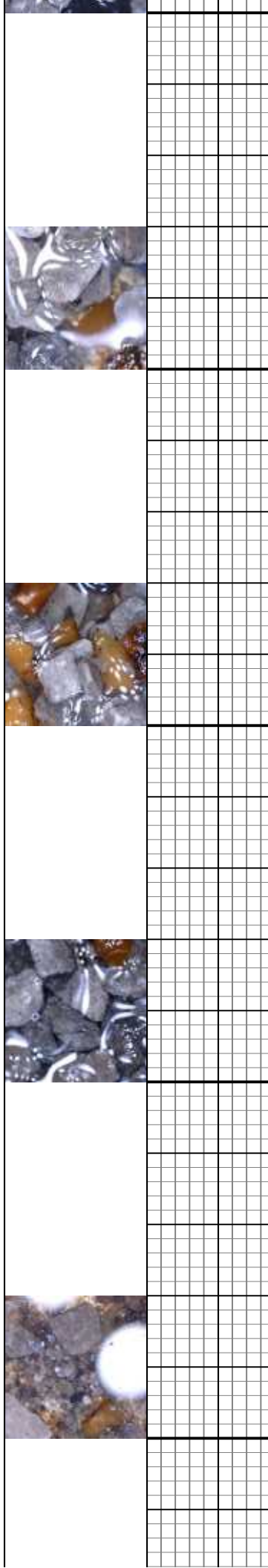
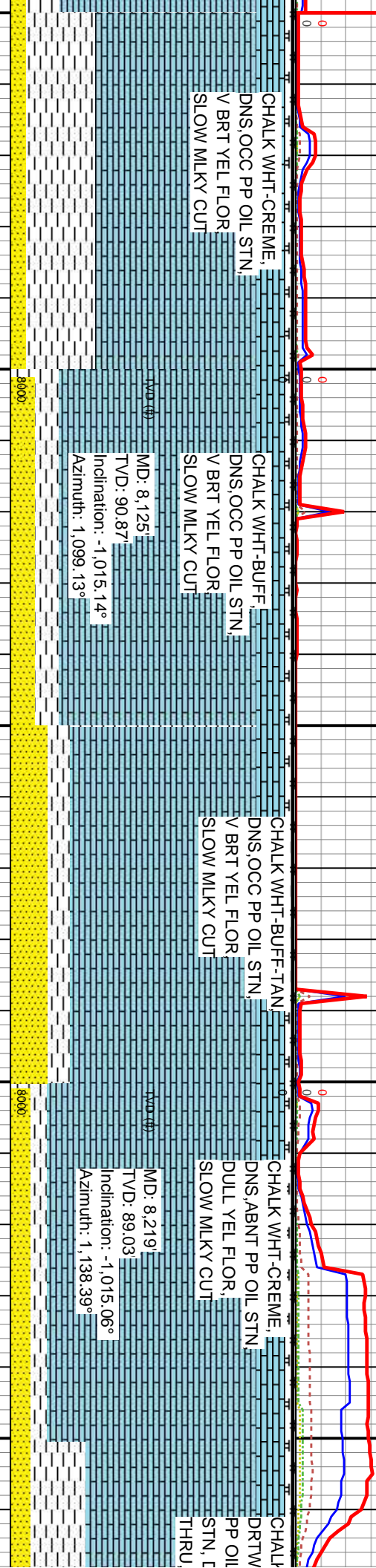
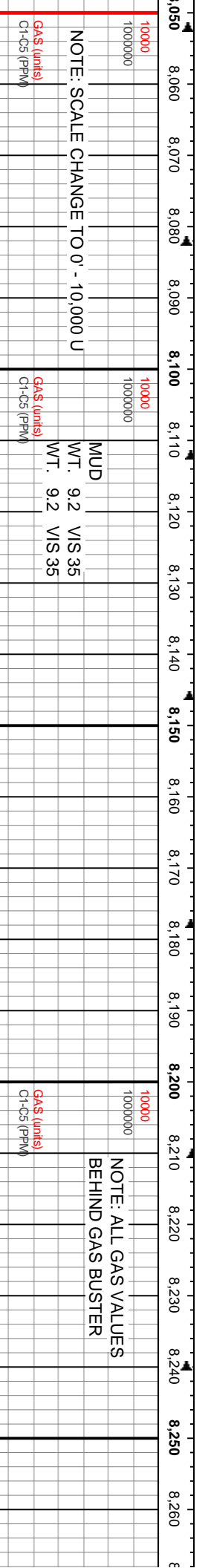
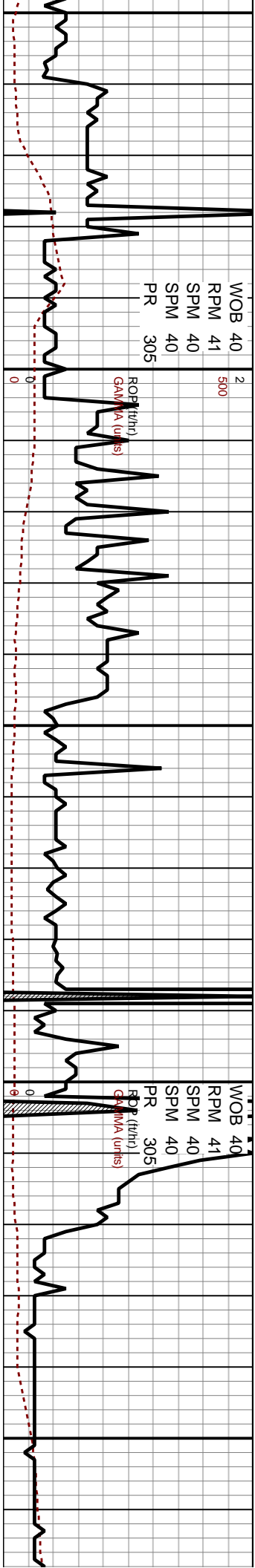












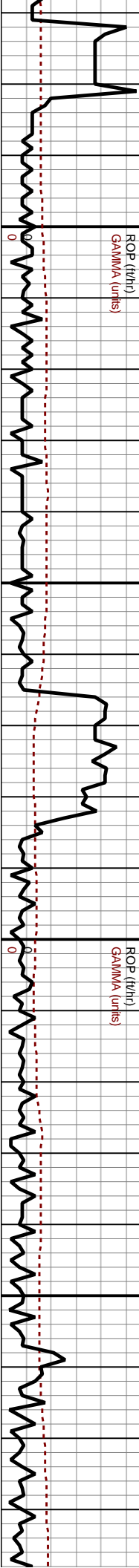
WOB 35  
RPM 41  
SPM 85  
PR 325

ROP (ft/hr)  
GAMMA (units)

2  
500

WOB 35  
RPM 41  
SPM 85  
PR 325

ROP (ft/hr)  
GAMMA (units)



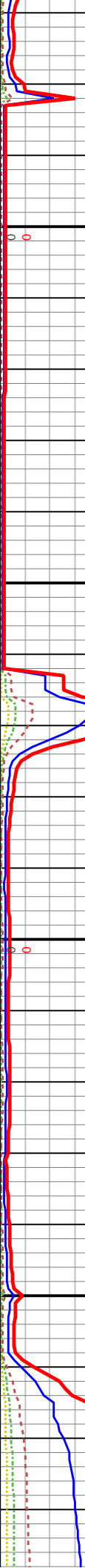
8,270 8,280 8,290 8,300 8,310 8,320 8,330 8,340 8,350 8,360 8,370 8,380 8,390 8,400 8,410 8,420 8,430 8,440 8,450 8,460 8,470 8,480

10000  
1000000

MUD

WT. 9.2 VIS 38  
WT. 9.2 VIS 34

GAS (units)  
C1-C5 (PPM)



CHALK CREME-WHT-  
HY, DNS, ABNT  
DRK BRN OIL  
DULL YEL FLOR  
SLOW MLKY CUT

MD: 8,313'  
TVD: 86.65'  
Inclination: -1,011.51°  
Azimuth: 1,180.83°

8000

SS WHT-FRSTD-CLR-  
LTGY, VF-VFG, SBANG  
SBRD, FRIA-PRED CONS  
-TR UNCONS, MOD-HVY  
CLYFILL-TR CLN, GRDG  
TO ARG SS IP, PP DRK  
STN, NO VIS CUT, ABNT  
DESORBING GAS

MD: 8,408'  
TVD: 88.32'  
Inclination: -1,007.35°  
Azimuth: 1,229.04°

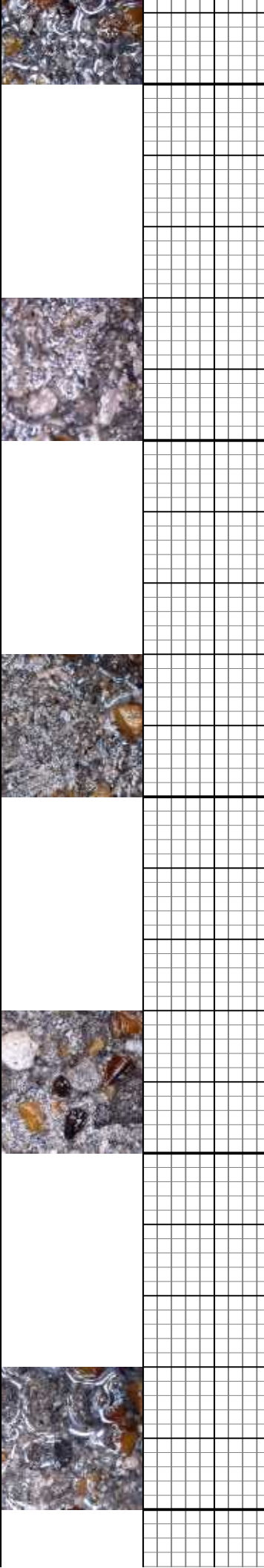
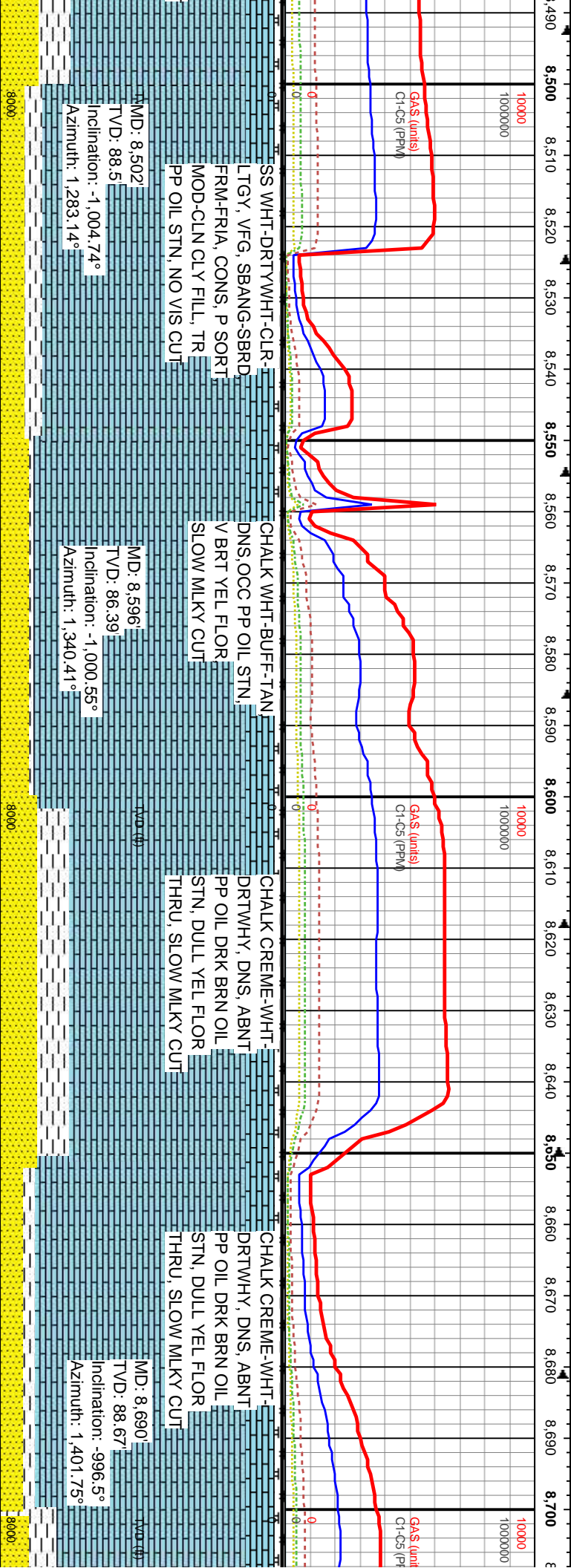
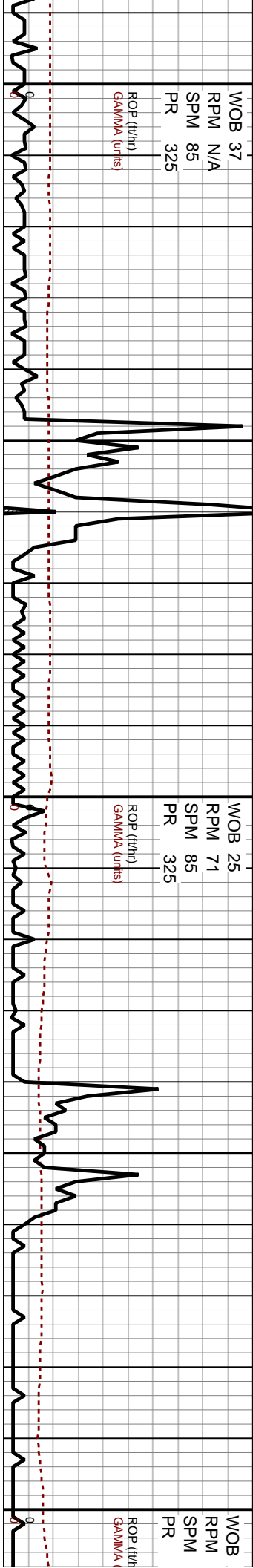
8000

CHALK WHT-CREME,  
DNS, ABNT PP OIL STN,  
DULL YEL FLOR,  
SLOW MLKY CUT

CHALK CREME-WHT-  
DRTWHY, DNS, ABNT  
PP OIL DRK BRN OIL  
STN, DULL YEL FLOR  
THRU, SLOW MLKY CUT









25

70

85

325

WOB 27

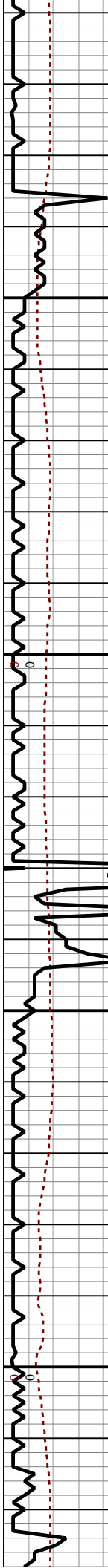
RPM 70

SPM 85

PR 325

ROD (ft/hr)

GAMMA (units)



25

70

85

330

WOB 25

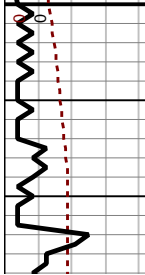
RPM 70

SPM 85

PR 330

ROD (ft/hr)

GAMMA (units)



8,710

8,720

8,730

8,740

8,750

8,760

8,770

8,780

8,790

8,800

8,810

8,820

8,830

8,840

8,850

8,860

8,870

8,880

8,890

8,900

8,910

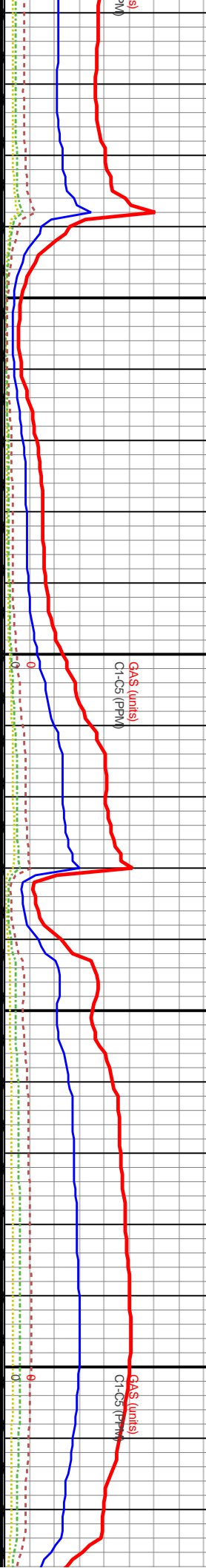
8,920

10000

1000000

GAS (units)

Cl-CO2 (PPM)



SS WHT-DRTY WHT-CLR-

LTGY, VFG, SBANG-SBRD-

FRM-FRIA, CONS, P SORT,

MOD-CLN CLY FILL, TR

PP OIL STN, NO VIS CUT

CHALK WHT-CREME,

DNS,OCC PP OIL STN,

V BRT YEL FLOR,

SLOW MLKY CUT

MD: 8,783

TVD: 89.2

Inclination: -994.77°

Azimuth: 1,467.45°

10000

1000000

GAS (units)

Cl-CO2 (PPM)

CHALK WHT-BUFF-

DNS,OCC PP OIL STN,

V BRT YEL FLOR,

SLOW MLKY CUT

CHALK WHT-CREMELT-

BRN, DNS, TR PP OIL

STN, V BRT YEL FLOR,

SLOW MLKY CUT

MD: 8,877

TVD: 88.5

Inclination: -992.89°

Azimuth: 1,536.63°

10000

1000000

GAS (units)

Cl-CO2 (PPM)

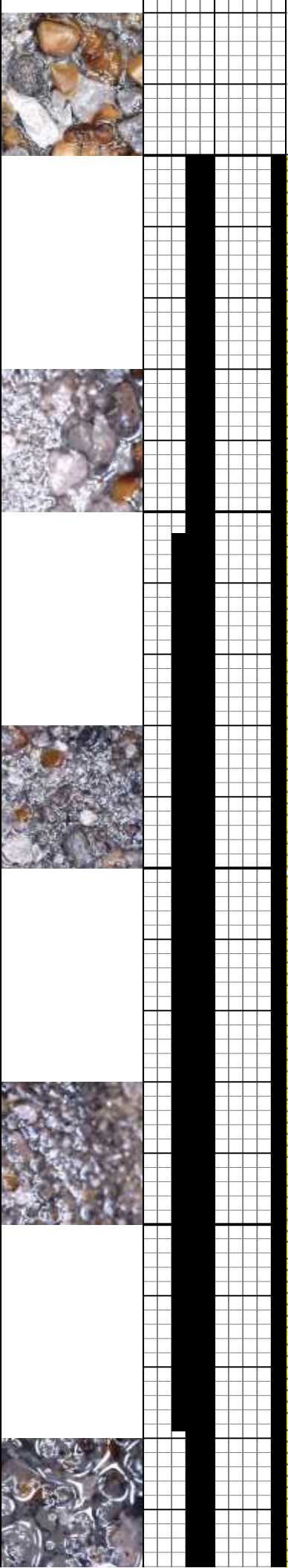
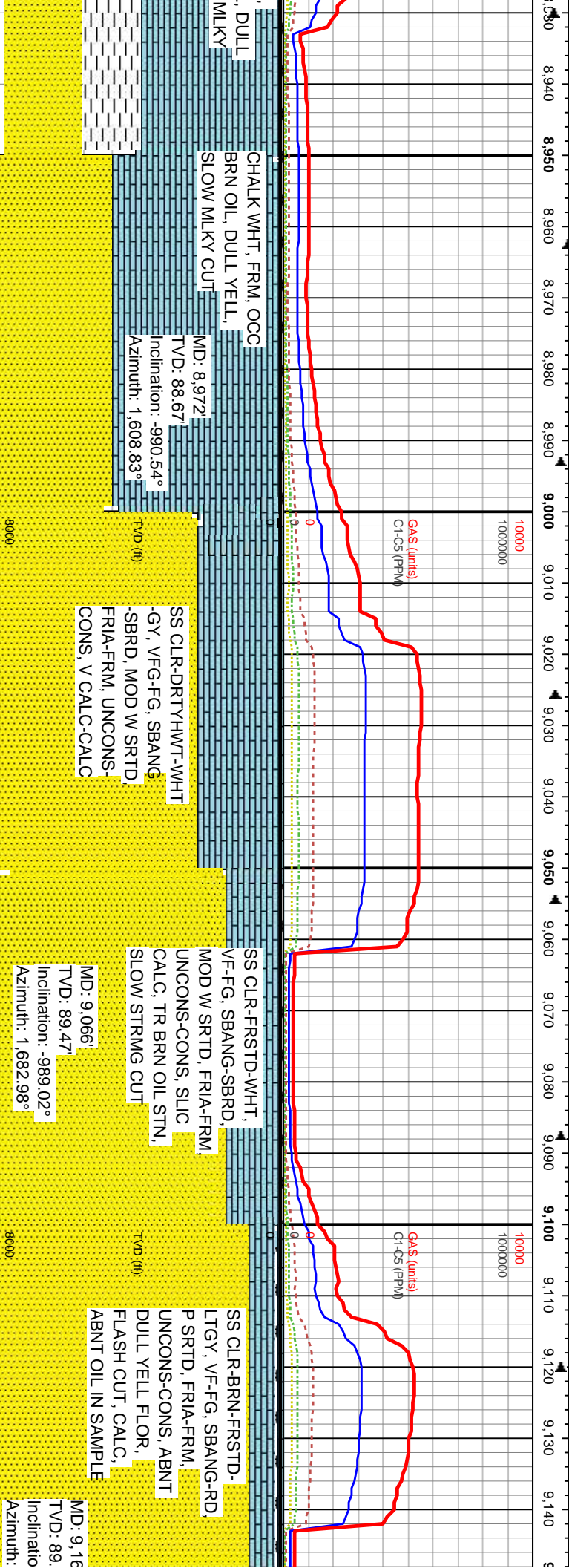
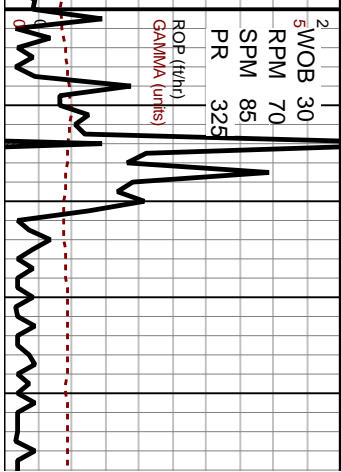
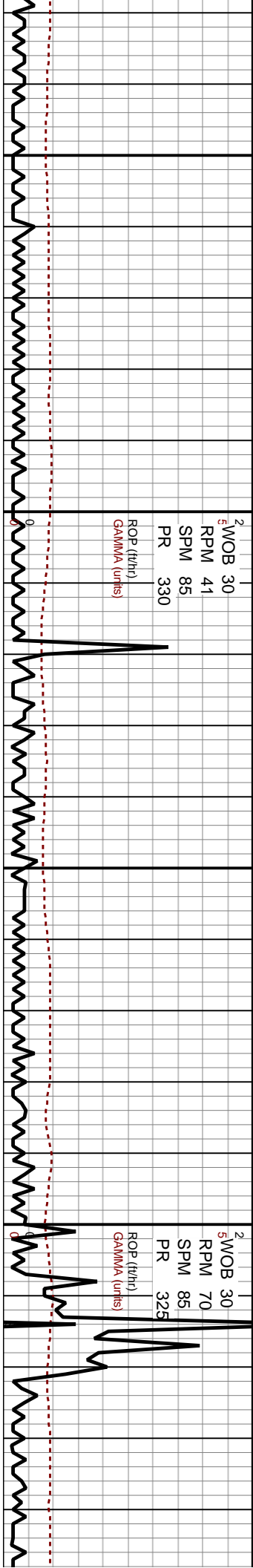
LS WHT-CRM, DNS

SUCR, SDY, TR OIL

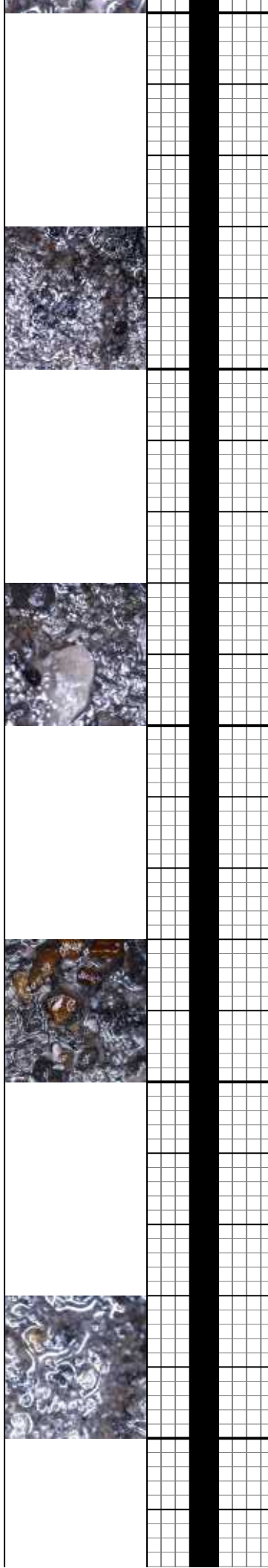
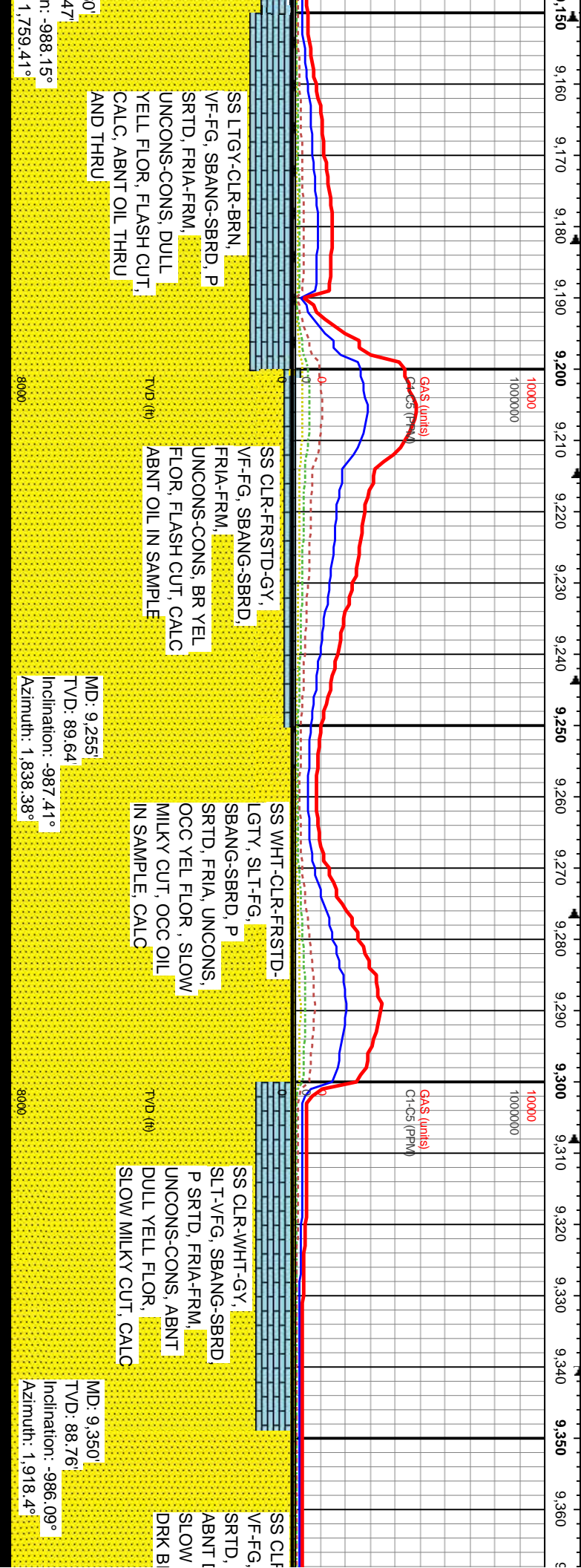
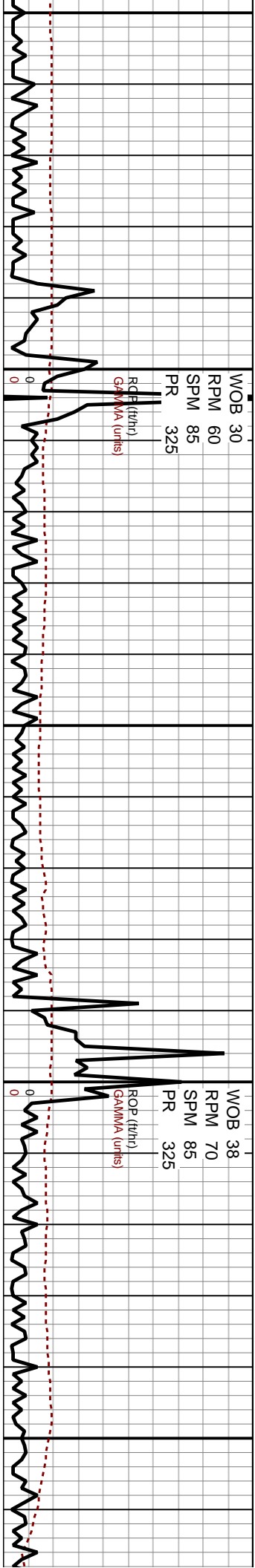
YELL FLOR, SLOW

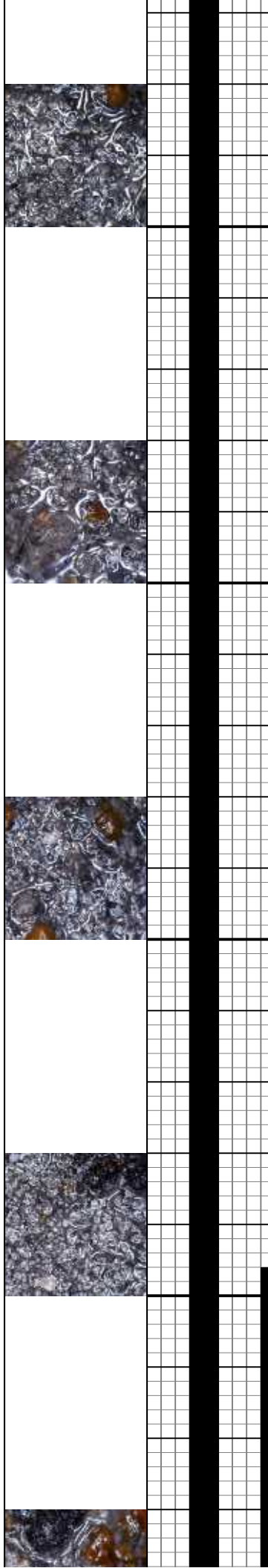
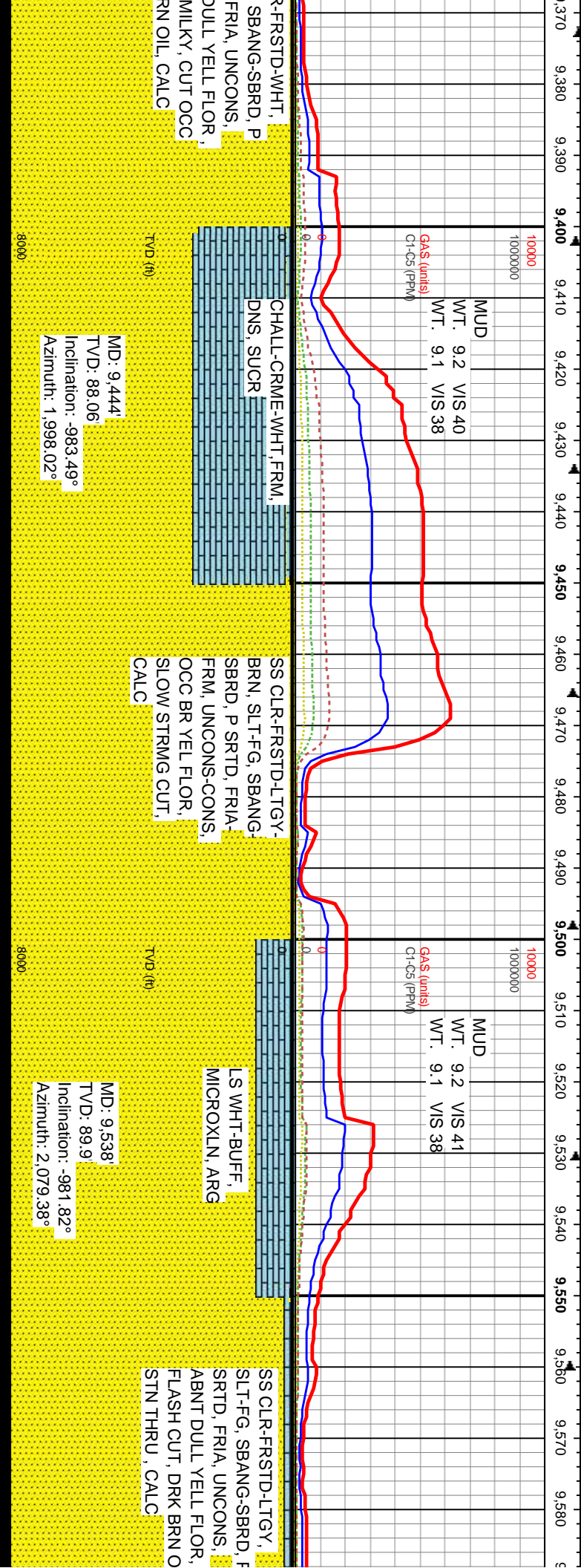
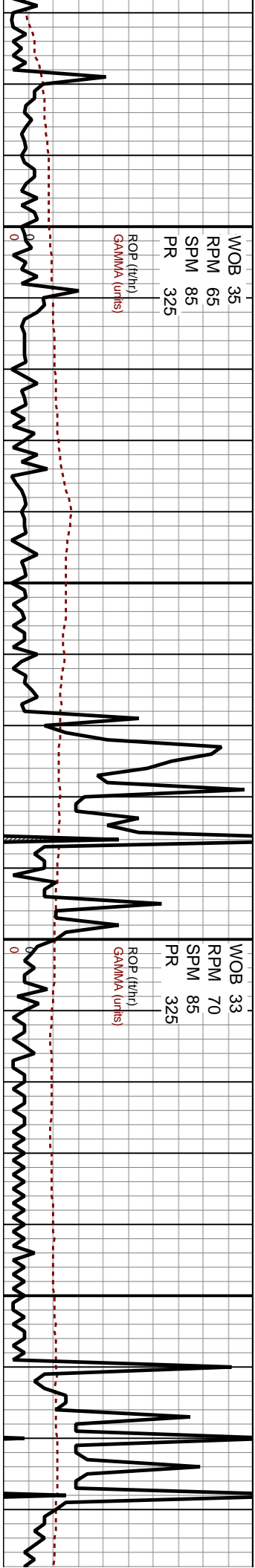
CUT



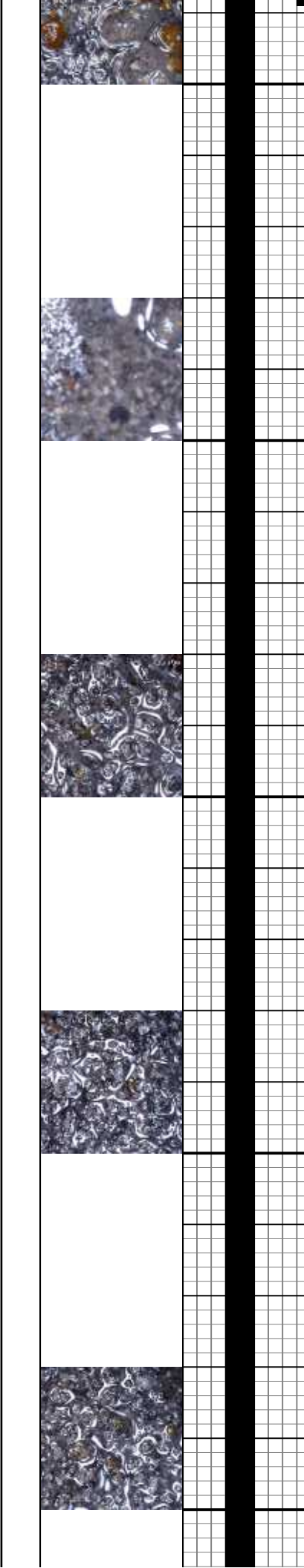
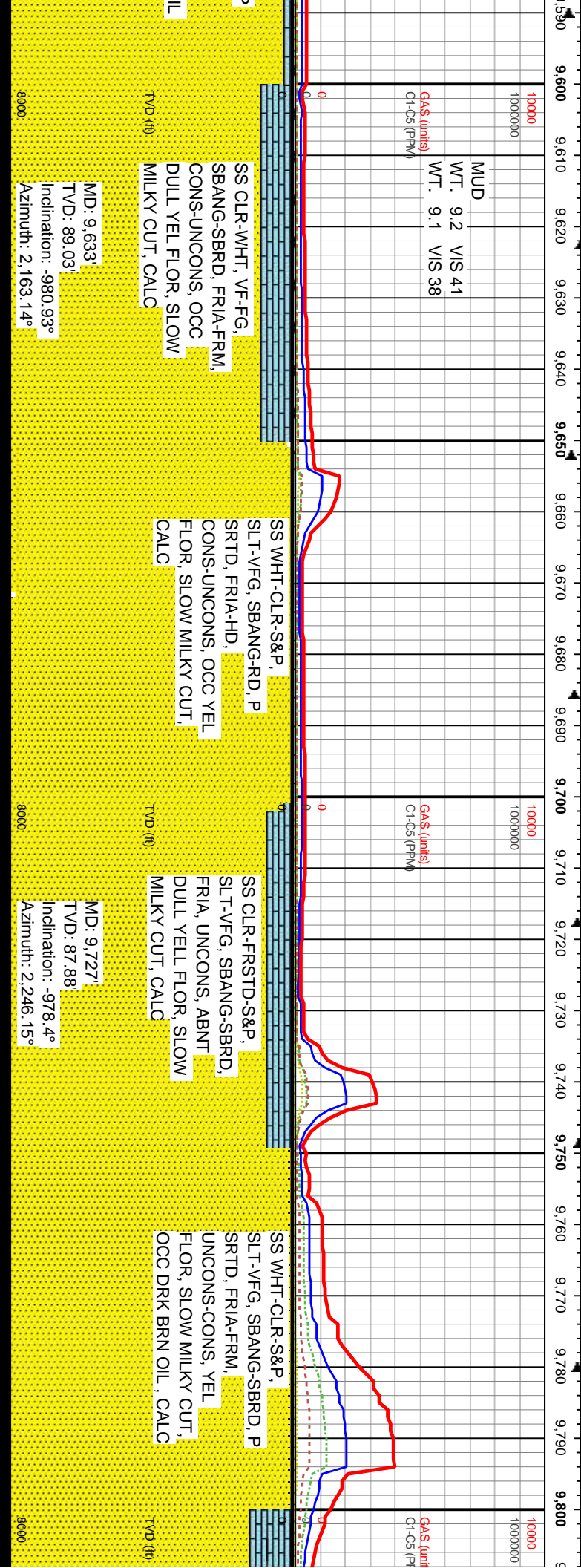
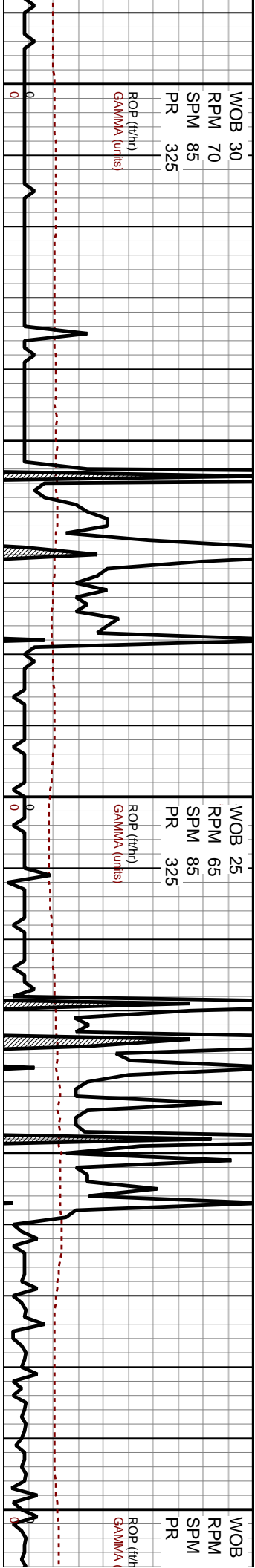






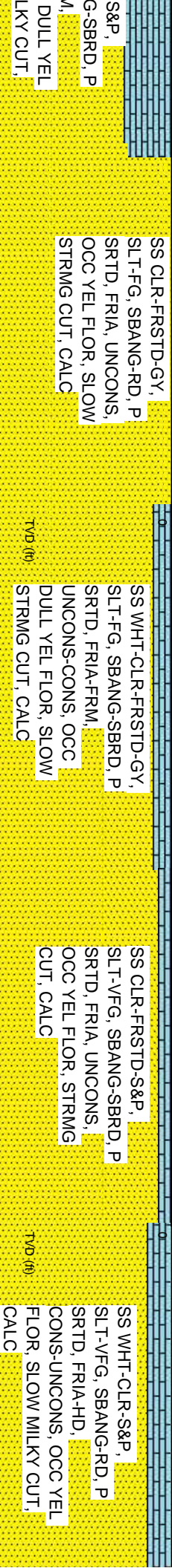
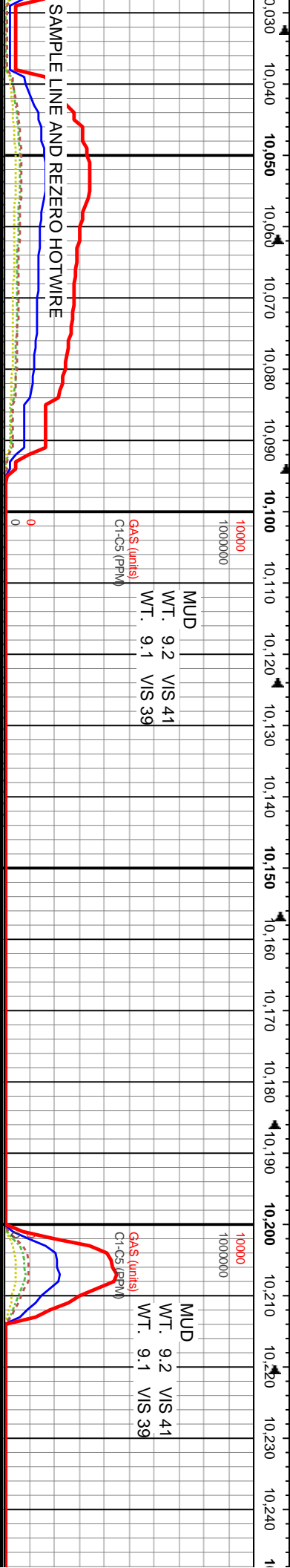
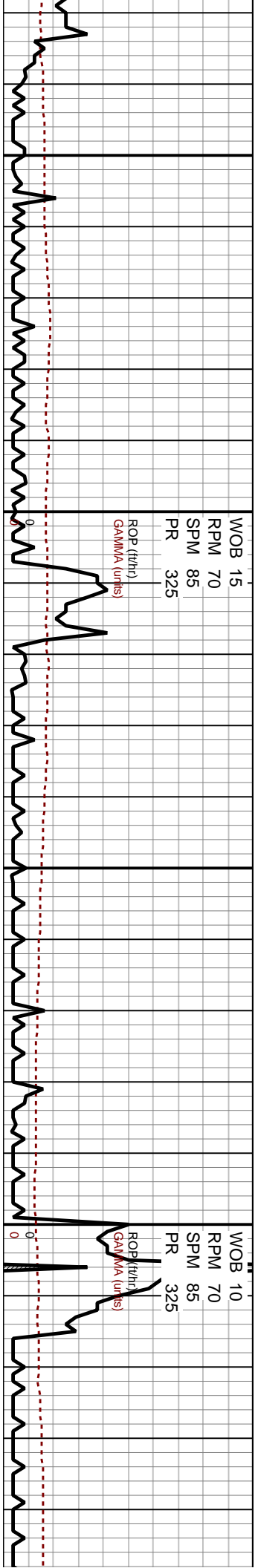












MD: 10,103'  
TVD: 90.87'  
Inclination: -975.63°  
Azimuth: 2,588.5°

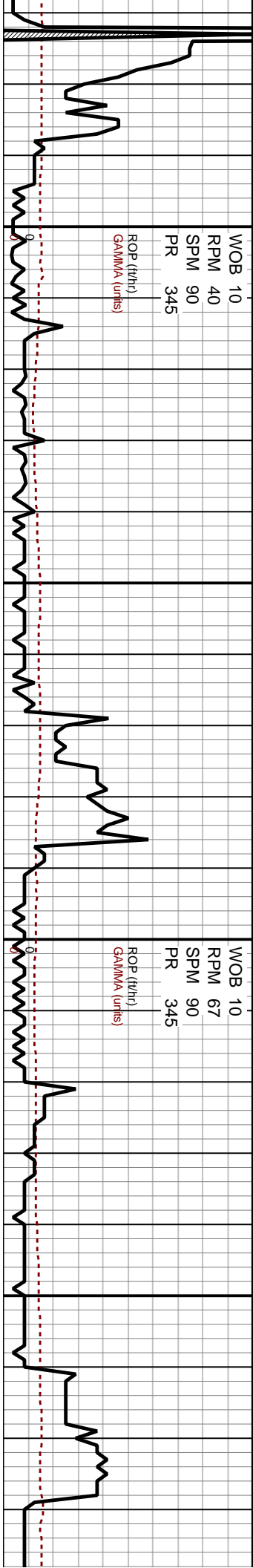
MD: 10,197'  
TVD: 91.4'  
Inclination: -977.49°  
Azimuth: 2,676.45°





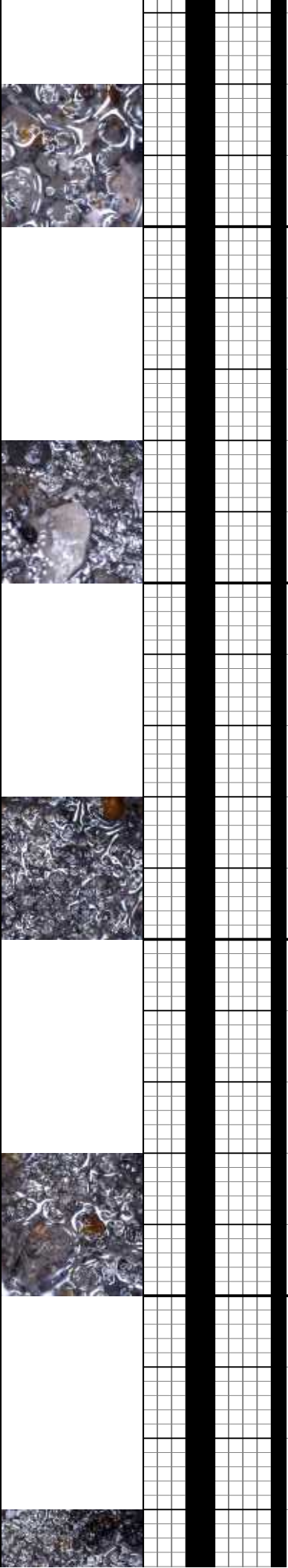
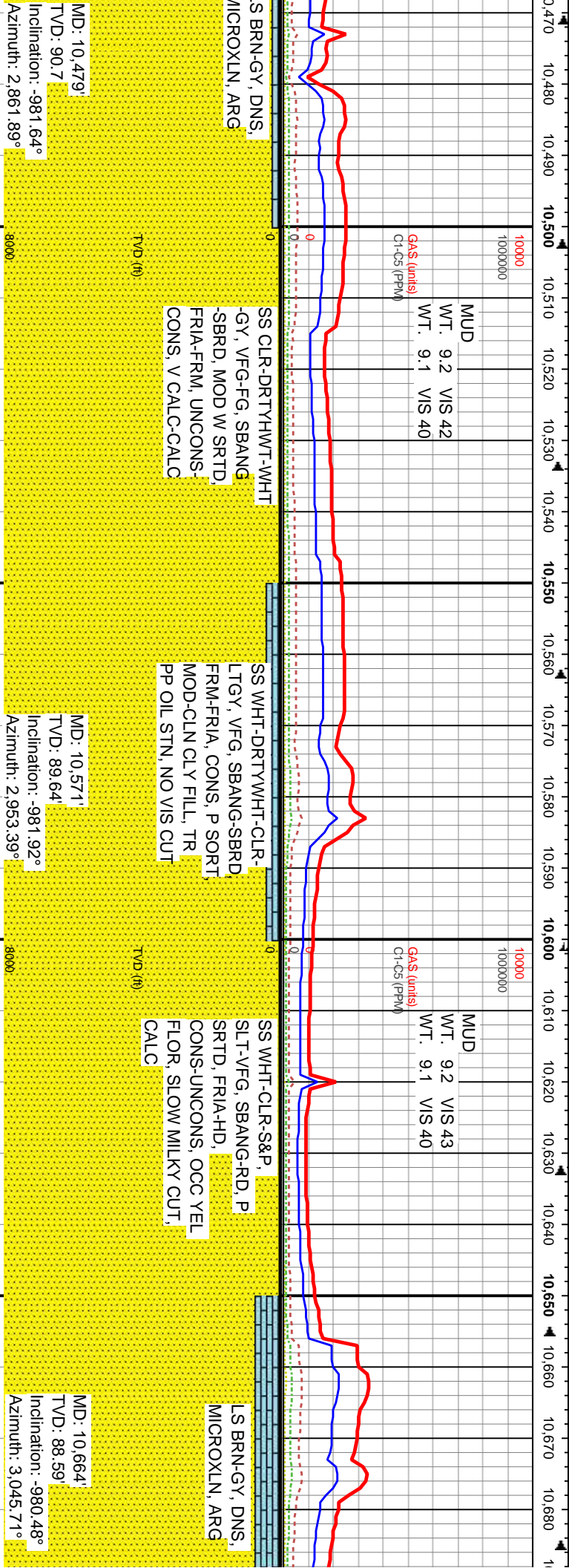


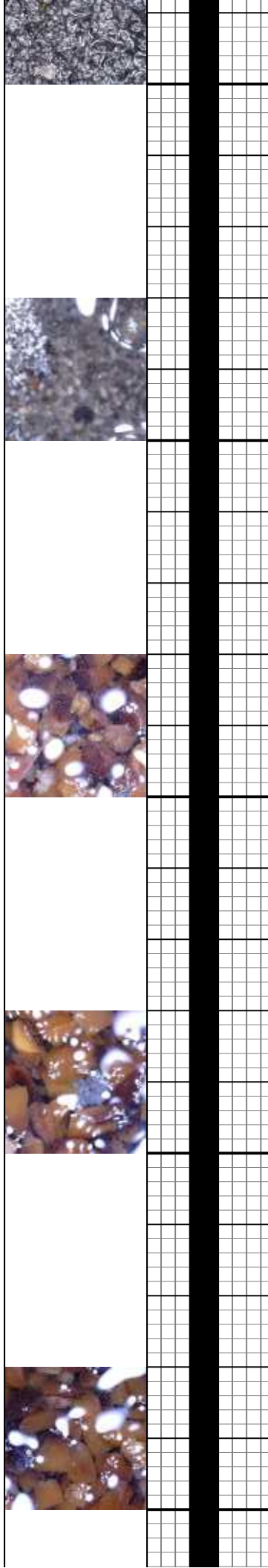
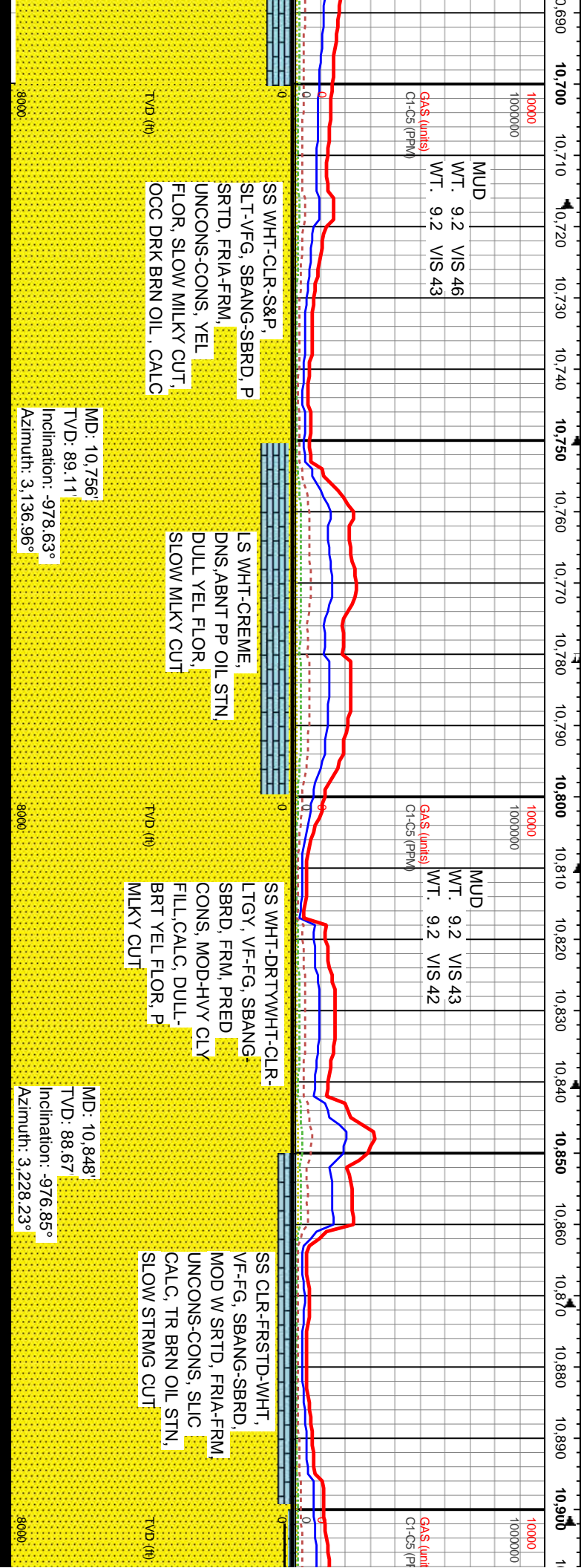
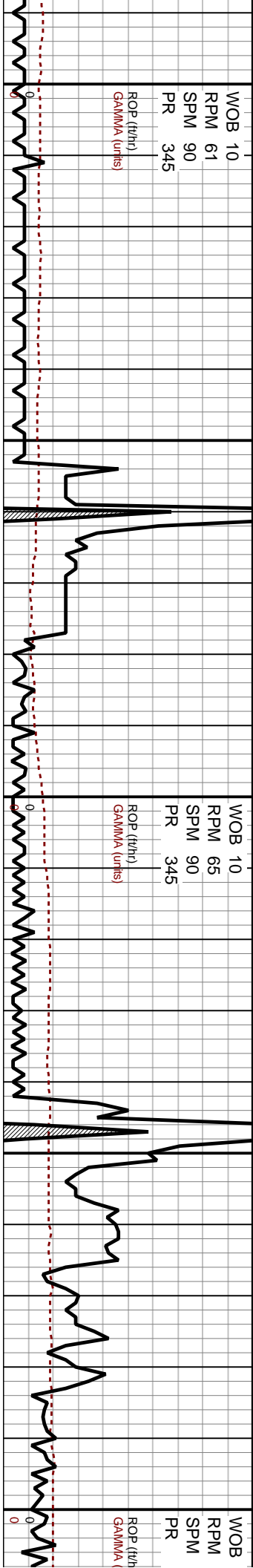




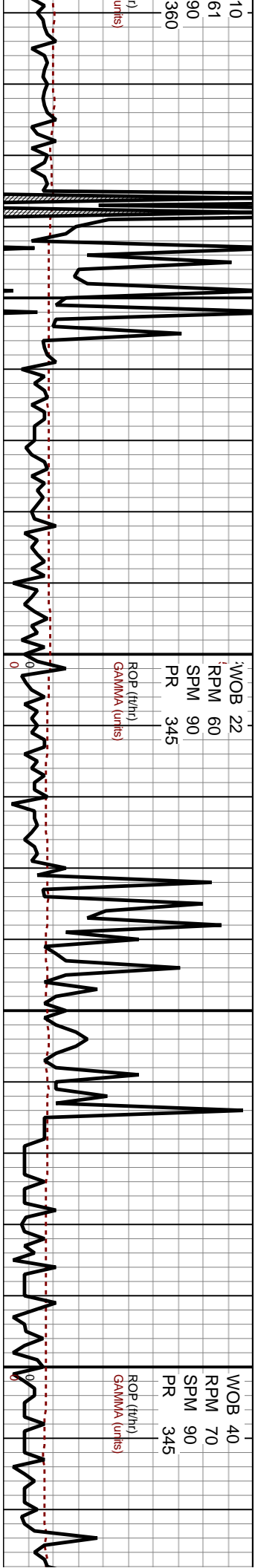
WOB 10  
RPM 67  
SPM 90  
PR 345

ROP (ft/hr)  
GAMMA (units)









10  
61  
90  
360

ROP (ft/hr)  
GAMMA (units)

WOB 22  
RPM 60  
SPM 90  
PR 345

ROP (ft/hr)  
GAMMA (units)

WOB 40  
RPM 70  
SPM 90  
PR 345

ROP (ft/hr)  
GAMMA (units)

10,910 10,920 10,930 10,940 10,950 10,960 10,970 10,980 10,990 11,000 11,010 11,020 11,030 11,040 11,050 11,060 11,070 11,080 11,090 11,100 11,110 11,120

MUD  
WT. 9.2 VIS 41  
WT. 9.2 VIS 41

GAS (units)  
Cl-C5 (PPM)

GAS (units)  
Cl-C5 (PPM)

SS CLR-DRYHWT-WHT  
-GY, VFG-FG, SBANG  
-SBRD, MOD W SRTD  
FRIA-FRM, UNCONS-  
CONS, V CALC-CALC

SS CLR-FRSTD-LTGY,  
SLT-FG, SBANG-SBRD, P  
SRTD, FRIA, UNCONS,  
ABNT DULL YELL FLOR,  
FLASH CUT, DRK BRN OIL  
STN THRU, CALC

SS WHT-DRYHWT-CLR-  
LTGY, VFG, SBANG-SBRD  
FRM-FRIA, CONS, P SORT  
MOD-CLN CLY FILL, TR  
PP OIL STN, NO VIS CUT

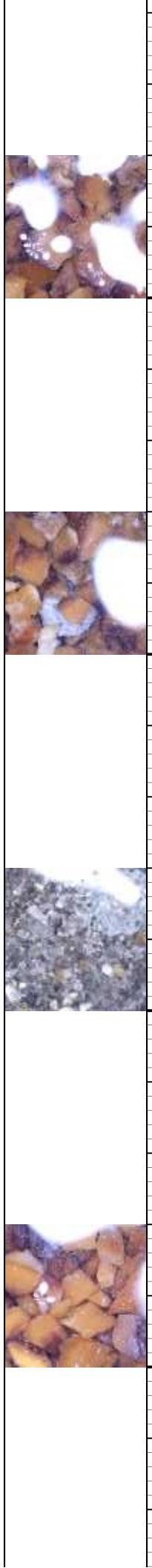
SS CLR-FRSTD-S&P,  
SLT-VFG, SBANG-SBRD, P  
SRTD, FRIA, UNCONS,  
OCC YEL FLOR, STRMG  
CUT, CALC

SS CLR-FRSTD  
VF-FG, SBANG  
MOD W SRTD,  
UNCONS-CONK  
CALC, TR BRN  
SLOW STRMG

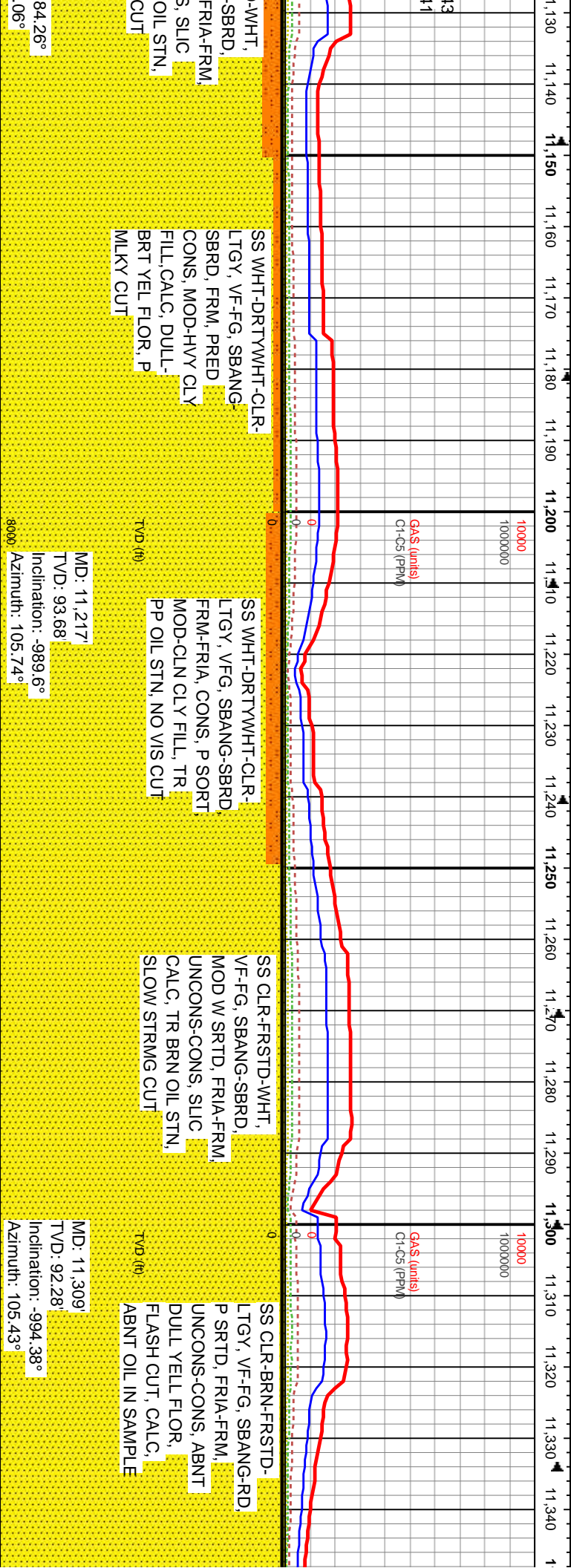
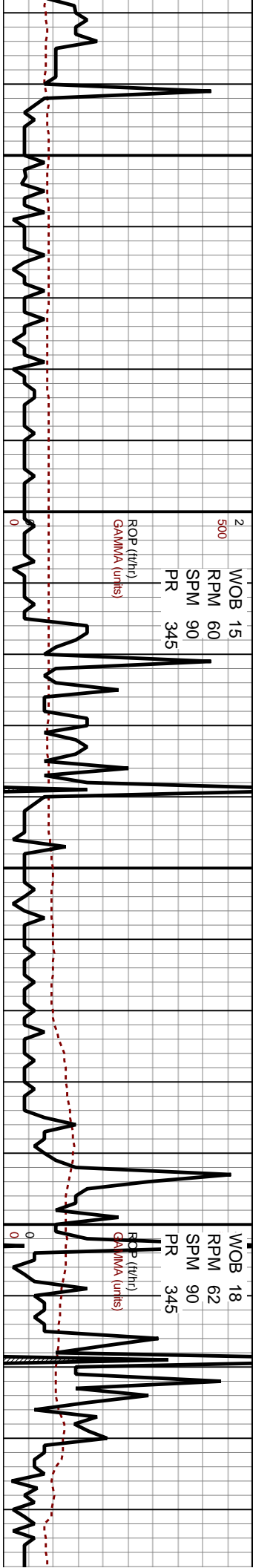
MD: 10,940'  
TVD: 91.31'  
Inclination: -976.84°  
Azimuth: 106.8°

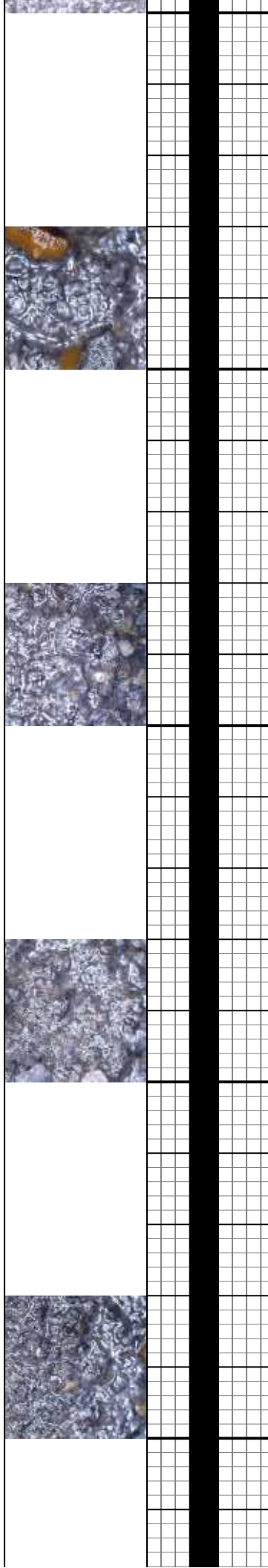
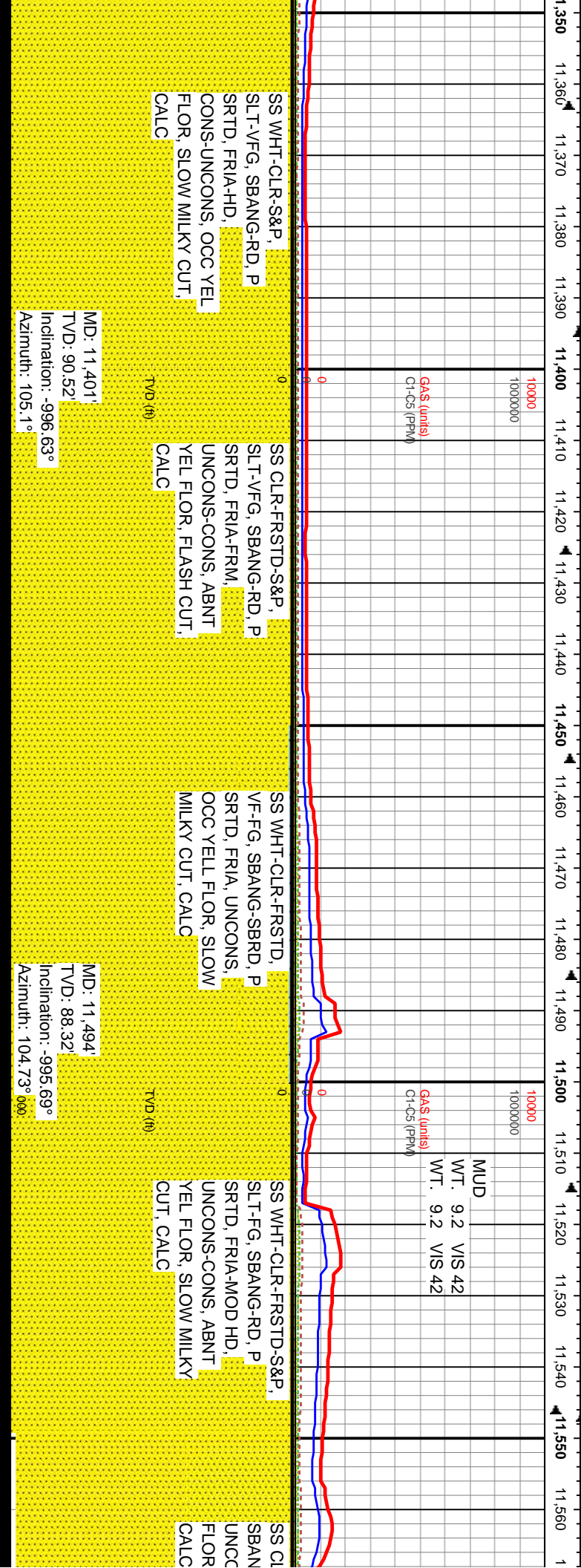
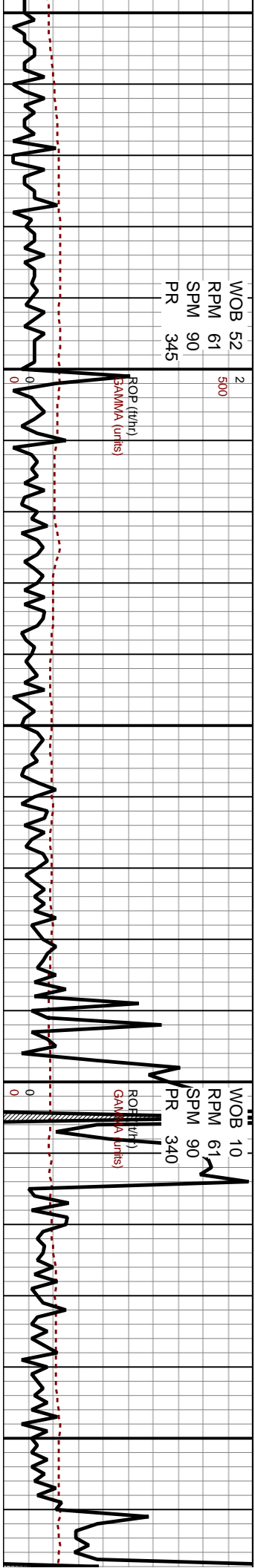
MD: 11,032'  
TVD: 92.45'  
Inclination: -979.85°  
Azimuth: 106.41°

MD: 11,125'  
TVD: 92.98'  
Inclination: -9  
Azimuth: 106

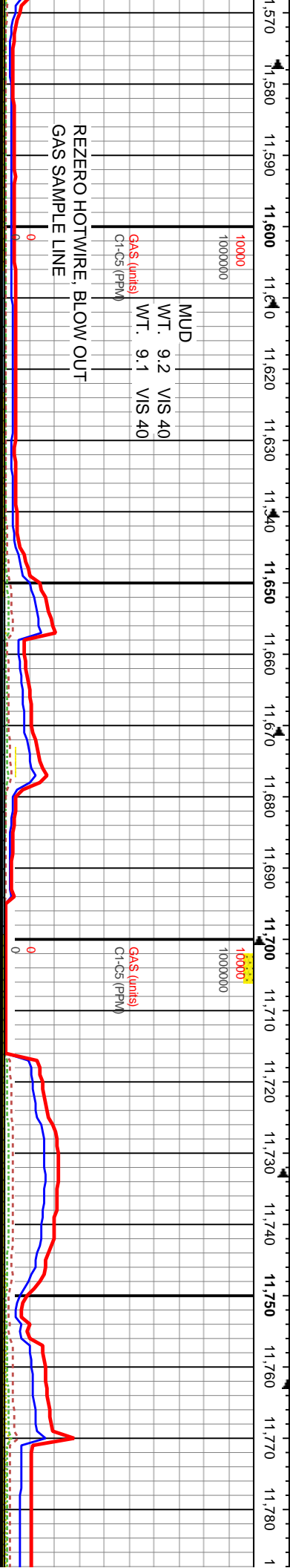
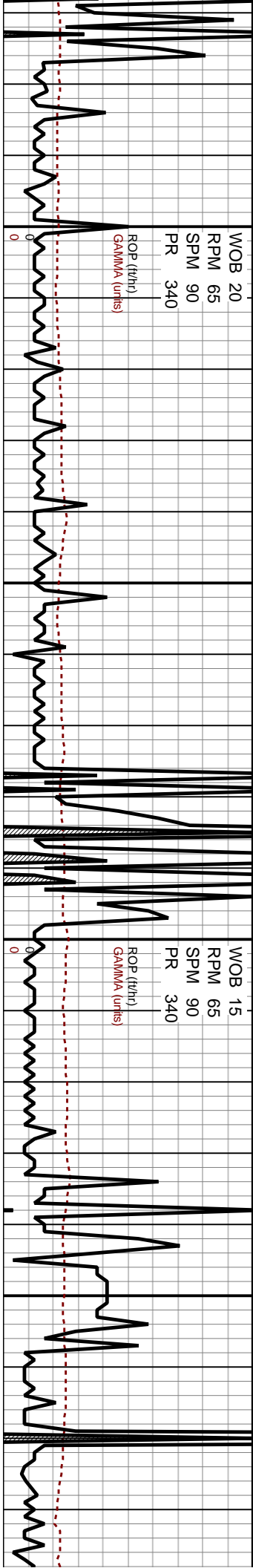








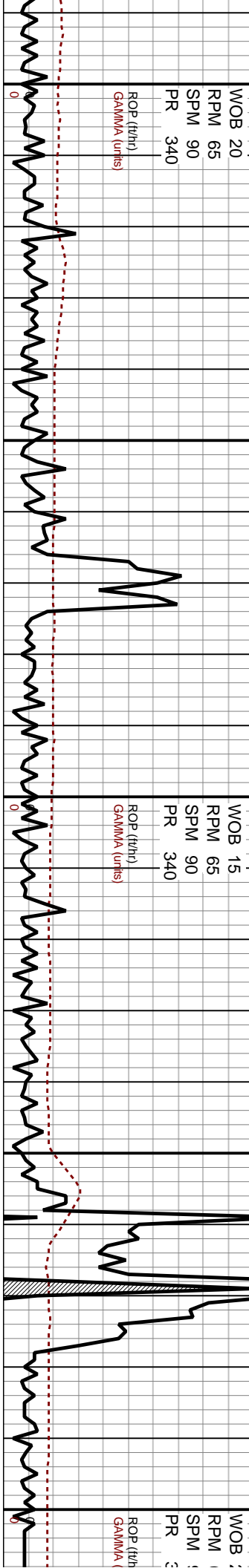






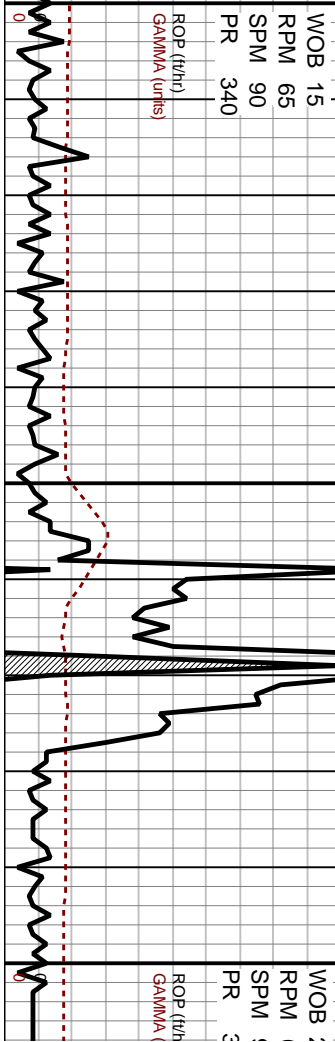
WOB 20  
RPM 65  
SPM 90  
PR 340

ROP (ft/hr)  
GAMMA (units)



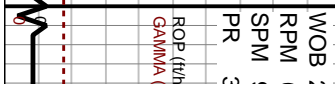
WOB 15  
RPM 65  
SPM 90  
PR 340

ROP (ft/hr)  
GAMMA (units)



WOB :  
RPM :  
SPM :  
PR 3

ROP (ft/hr)  
GAMMA (units)



11,800 11,810 11,820 11,830 11,840 11,850 11,860 11,870 11,880 11,890 11,900 11,910 11,920 11,930 11,940 11,950 11,960 11,970 11,980 11,990 12,000

MUD  
WT. 9.2 VIS 43  
WT. 9.1 VIS 42  
GAS (units)  
C1-C5 (PPM)

SS FRSTD-CLR, VF-FG,  
SBANG-WRDD, P SRTD,  
FRIA, UNCONS, YEL  
FLOR, SLOW MILKY CUT,  
CALC

TVD (ft)

MD: 11,863  
TVD: 93.33  
Inclination: -99.27°  
Azimuth: 103.52°

SS FRSTD-CLR, VF-FG,  
SBANG-RD, P SRTD, ABNT  
YEL FLOR, SLOW MILKY  
CUT, OCC LS STRGRS,  
CALC

TVD (ft)

SS CLR-FRSTD, VF-FG,  
SBANG-SBRD, P SRTD,  
YEL FLOR, SLOW MILKY  
CUT, DRK BRN OIL STN  
THRU, CALC-LMY

TVD (ft)

LS WHT, DNS, MICROXLN,  
SDY

TVD (ft)

GAS (units)  
C1-C5 (PPM)

8000

8000

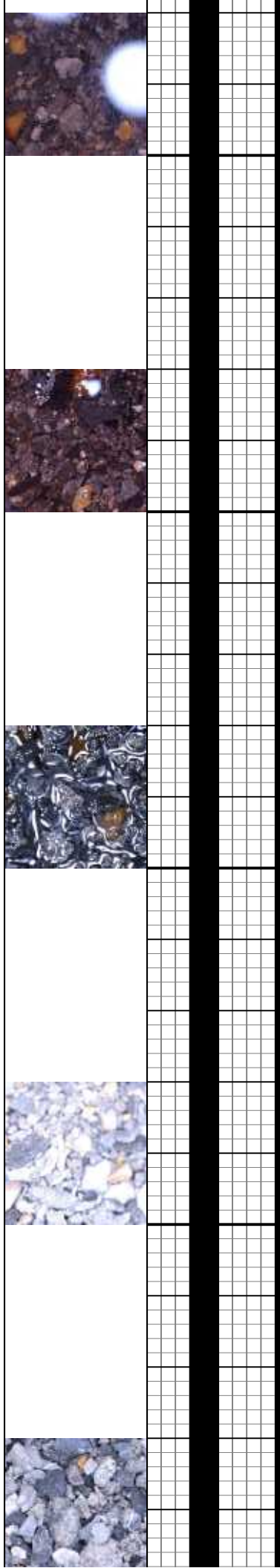
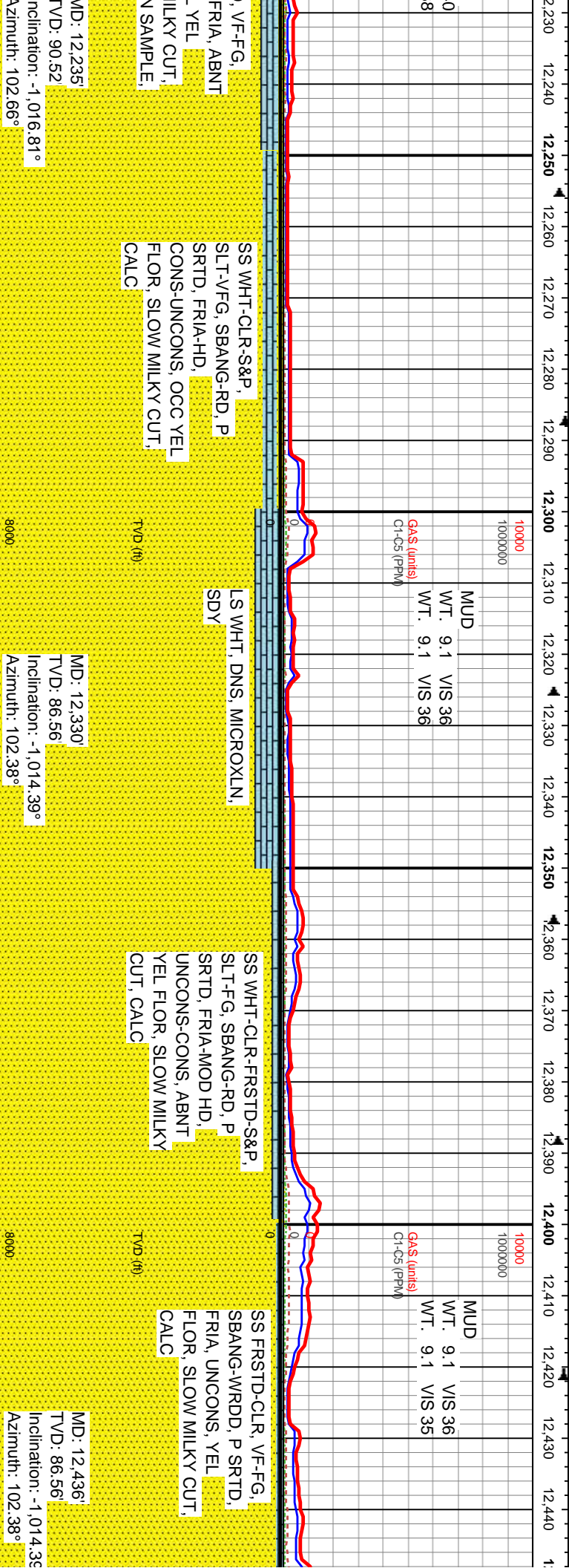
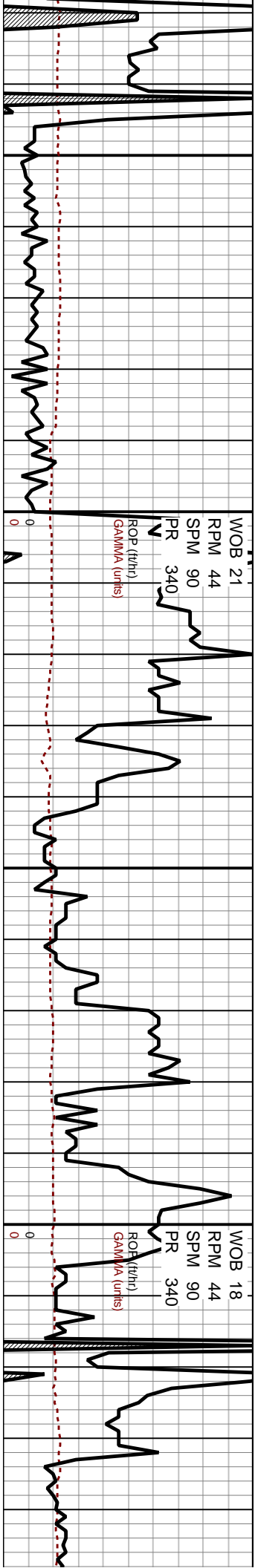
8000

8000

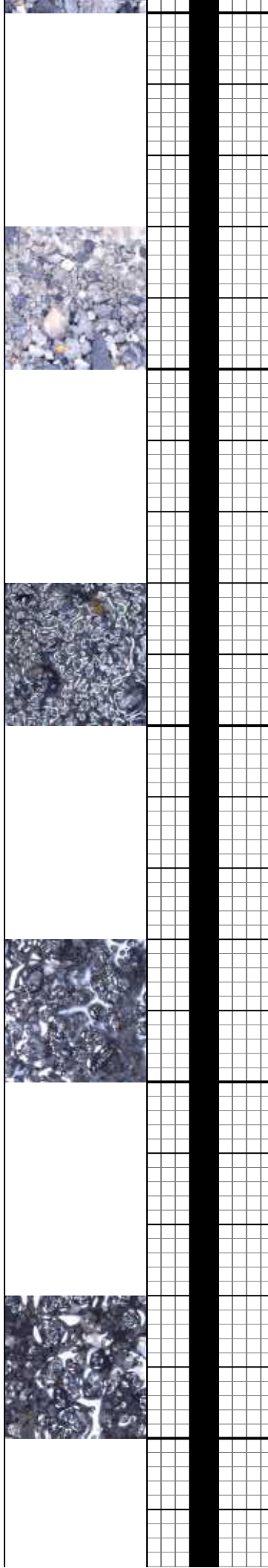
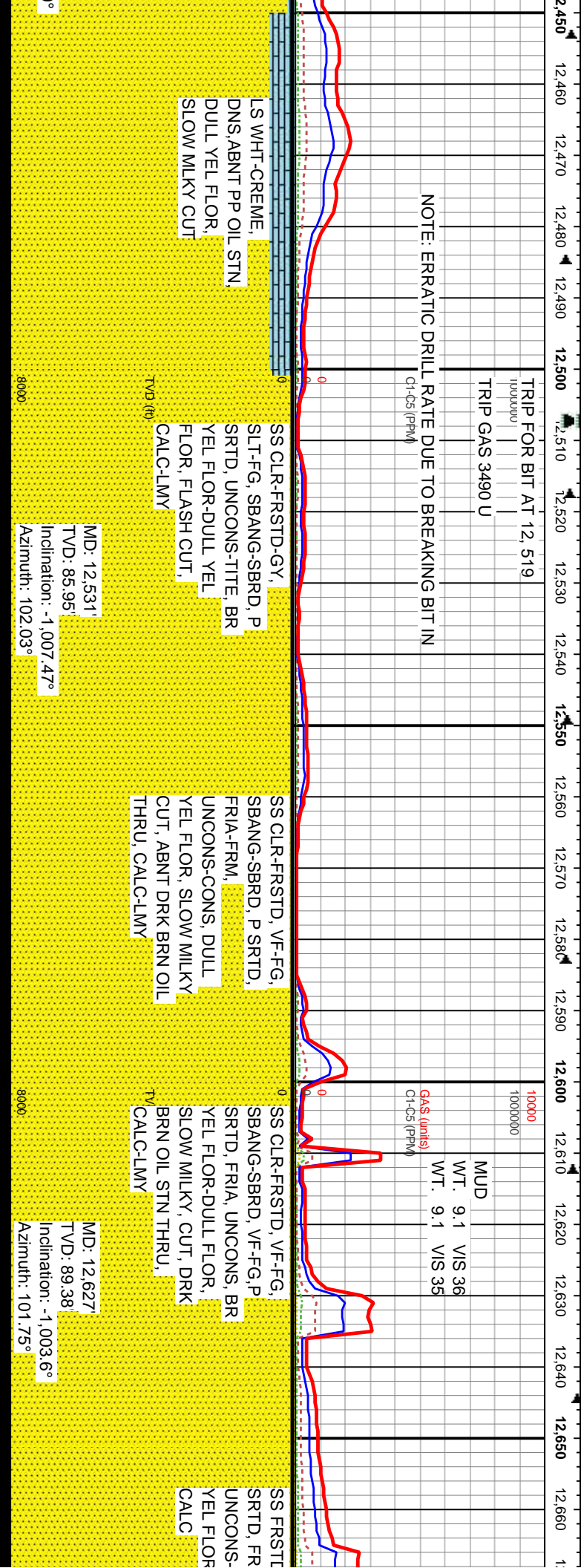
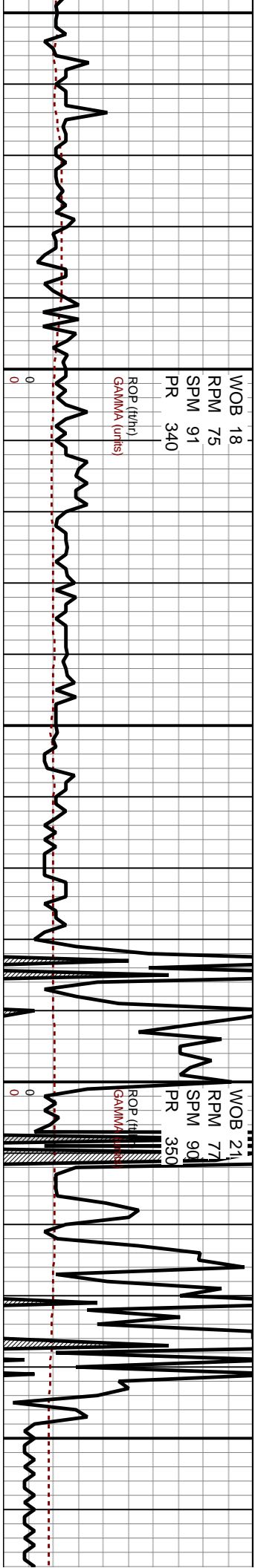


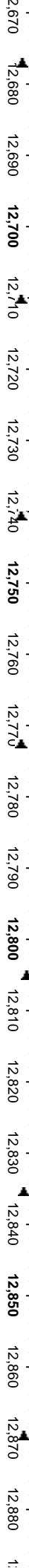
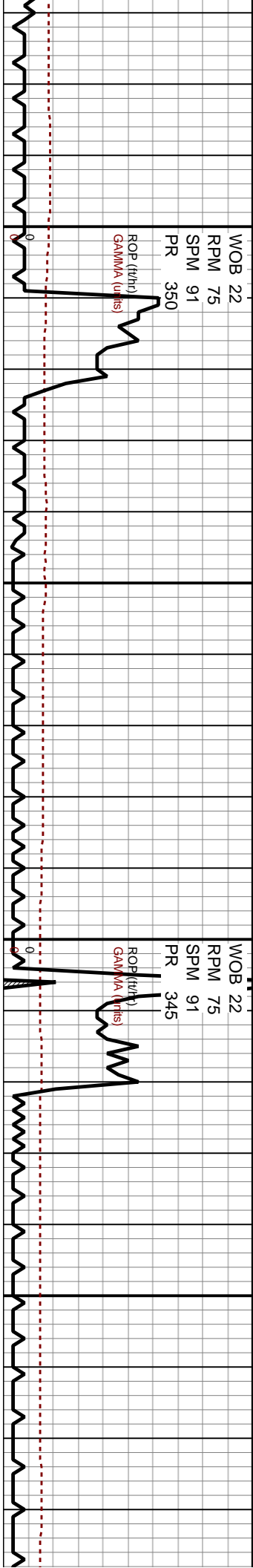












10000  
1000000  
GAS (units)  
C1-C5 (PPM)

10000  
1000000  
MUD  
WT. 9.1 VIS 36  
WT. 9.0 VIS 36  
GAS (units)  
C1-C5 (PPM)

0  
TVD: (ft)  
SS CLR-FRSTD, VF-FG,  
SBANG-WRDD, FRIA-OCC  
HD, UNCONS-TITE, BR  
YEL FLOR-DULL YELL  
FLOR, ABNT DRK BRN OIL  
STN THRU, CALC- V LMY

0  
SS FRSTD-CLR, VF-FG,  
SBANG-SBRD, FRIA-MOD  
HD, UNCONS-CONS, YEL  
FLOR-DULL YEL FLOR,  
LMY-CALC

0  
TVD: (ft)  
SS CLR-FRSTD-OCC GY,  
SLT-FG, SBANG-SBRD, P  
SRTD, FRIA-HS,  
UNCONS-TITE, BR YEL  
FLOR-DULL FLOR, FLASH  
CUR-SLOW MILKY CUT,  
CALC-SLI LMY

SS FRSTD-CLR, VF-FG,  
SBANG-SBRD, FRIA-MOD  
FRM,  
UNCONS-CONS, ABNT  
DULL YEL FLOR-OCC BR  
YEL FLOR, SLOW MILKY  
CUT-FLASH CUT, ABNT  
DRK BRN OIL STN, CALC

MD: 12,723'  
TVD: 87.36'  
Inclination: -1,000.87°  
Azimuth: 101.5°

MD: 12,819'  
TVD: 88.67'  
Inclination: -997.55°  
Azimuth: 101.25°

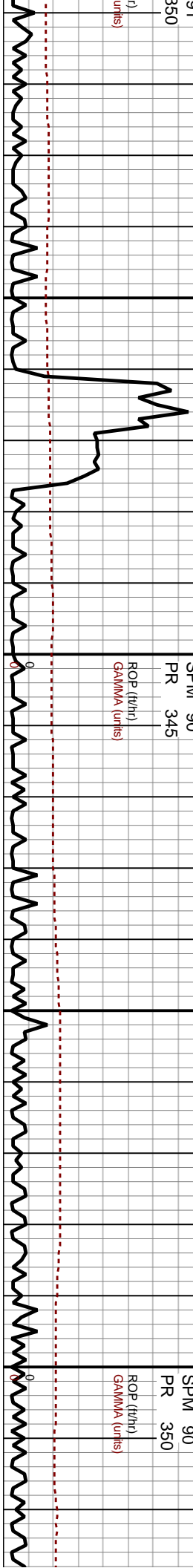






21	WOB	22	33
75	RPM	75	75
91	SPM	90	90
350	PR	345	350

ROP (ft/hr)  
GAMMA (units)



13,110 13,120 13,130 13,140 13,150 13,160 13,170 13,180 13,190 13,200 13,210 13,220 13,230 13,240 13,250 13,260 13,270 13,280 13,290 13,300 13,310 13,320

MUD  
WT. 9.1 VIS 38  
WT. 9.0 VIS 37

10000  
1000000  
GAS (units)  
C1-C5 (PPM)

MUD  
WT. 9.1 VIS 36  
WT. 9.0 VIS 36

GAS (units)  
C1-C5 (PPM)

SS FRSTD-CLR, VF-FG, P  
SRTD, FRIA-FRM, UNCONS-CONS, DULL  
YEL FLOR, FLASH CUT, CALC

SS CLR-FRSTD, VF-FG,  
SBANG-OCC RD, P SRTD,  
FRIA-MOD FRM, UNCONS-CONS, DULL  
YEL FLOR-OCC BR YEL  
FLOR, FLASH CUT-SLOW  
MILKY CUT, CALC

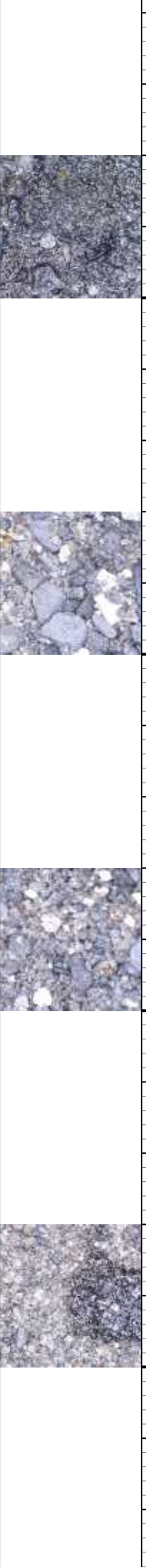
SS CLR-FRSTD, VF-FG,  
SBANG-WRDD, FRIA-OCC  
HD, UNCONS-TITE, BR  
YEL FLOR-DULL YELL  
FLOR, ABNT DRK BRN OIL  
STN THRU, CALC- V LMY

SS GY-FRSTD-CLR,  
VF-FG, SBANG-SBRD,  
FRIA-MOD HD, UNCONS-  
CONS, YEL FLOR-DULL  
YEL FLOR, LMY-CALC

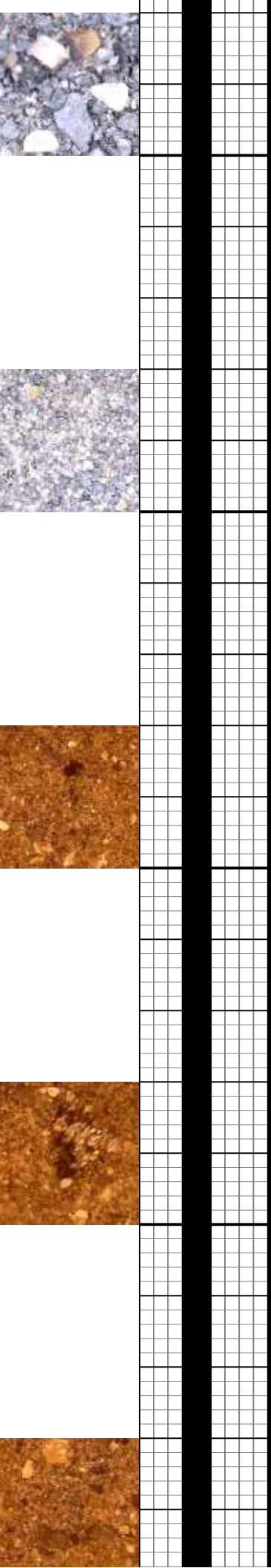
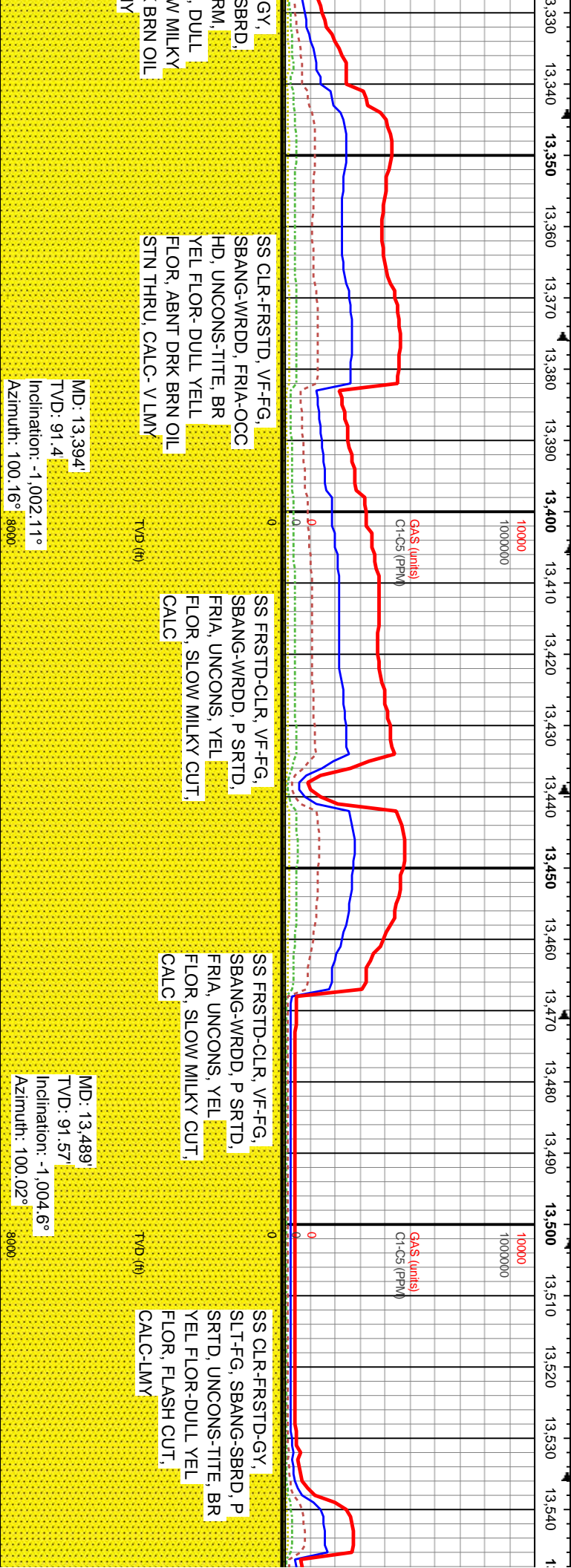
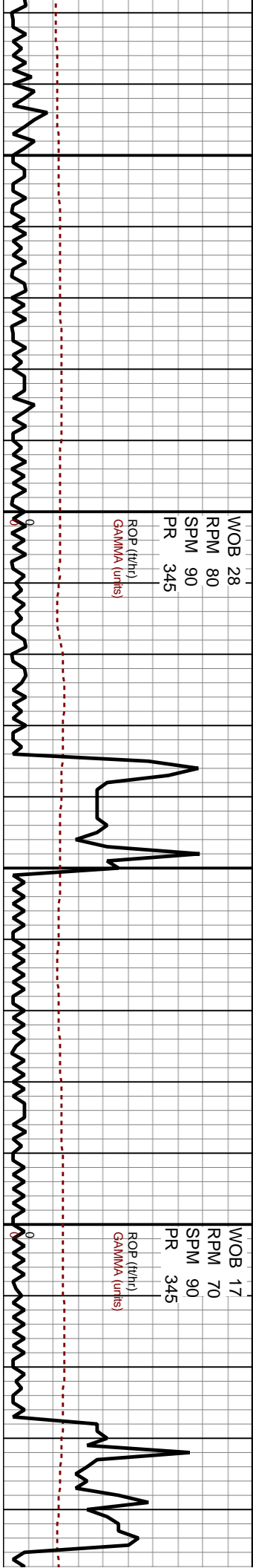
SS CLR-FRSTD-  
VF-FG, SBANG-  
P SRTD, FRIA-F  
UNCONS-CONS  
YEL FLOR, SLO  
CUT, ABNT DRK  
THRU, CALC-LM

MD: 13,202'  
TVD: 90.17'  
Inclination: -999.34°  
Azimuth: 100.67°

MD: 13,298'  
TVD: 90.87'  
Inclination: -1,000.21°  
Azimuth: 100.32°





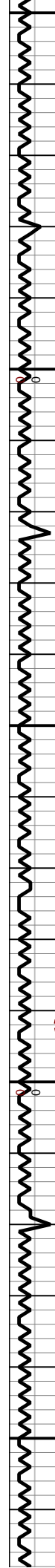


WOB 25  
RPM 65  
SPM 90  
PR 345

ROP (ft/hr)  
GAMMA (units)

WOB 29  
RPM 64  
SPM 90  
PR 350

ROP (ft/hr)  
GAMMA (units)



10000  
Ct-C5 (PPM)

GAS (units)  
Ct-C5 (PPM)

10000  
Ct-C5 (PPM)

GAS (units)  
Ct-C5 (PPM)

MUD  
WT. 9.2 VIS 36  
WT. 9.2 VIS 38

SS CLR-FRSTD, VF-FG,  
SBANG-WRDD, FRIA-OCC  
HD, UNCONS-TITE, BR  
YEL FLOR-DULL YELL  
FLOR, ABNT DRK BRN OIL  
STN THRU, CALC-V LMY

SS FRSTD-CLR, VF-FG,  
SBANG-SBRD, FRIA-MOD  
HD, UNCONS-CONS, YEL  
FLOR-DULL YEL FLOR,  
LMY-CALC

SS FRSTD-CLR, VF-FG,  
SBANG-SBRD, FRIA-FRM  
UNCONS-TITE, DULL  
YEL-OCC BR YEL FLOR,  
SLOW MILEKY CUT, DRK  
BRN OIL STN THRU,  
CALC-LMY

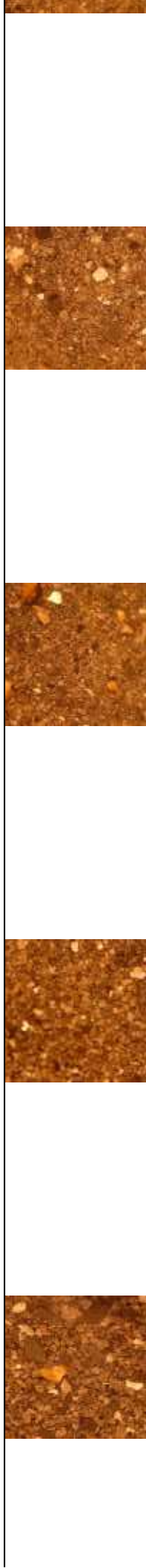
SS CLR-FRSTD, VF-FG,  
SBANG-OCC RD,P SRTD,  
FRIA-MOD FRM  
UNCONS-CONS, DULL  
YEL FLOR-OCC BR YEL  
FLOR, FLASH CUT-SLOW  
MILKY CUT,CALC

SS FT  
LTGY  
SRTL  
UNCC  
-CON  
FLAS

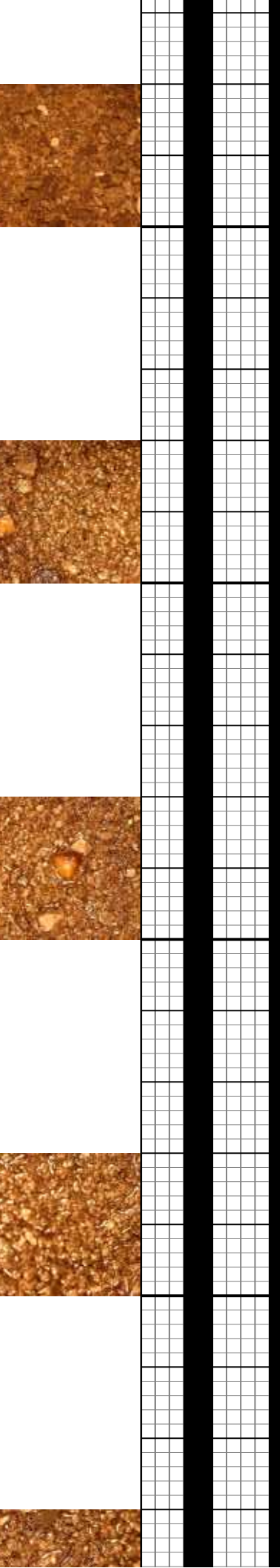
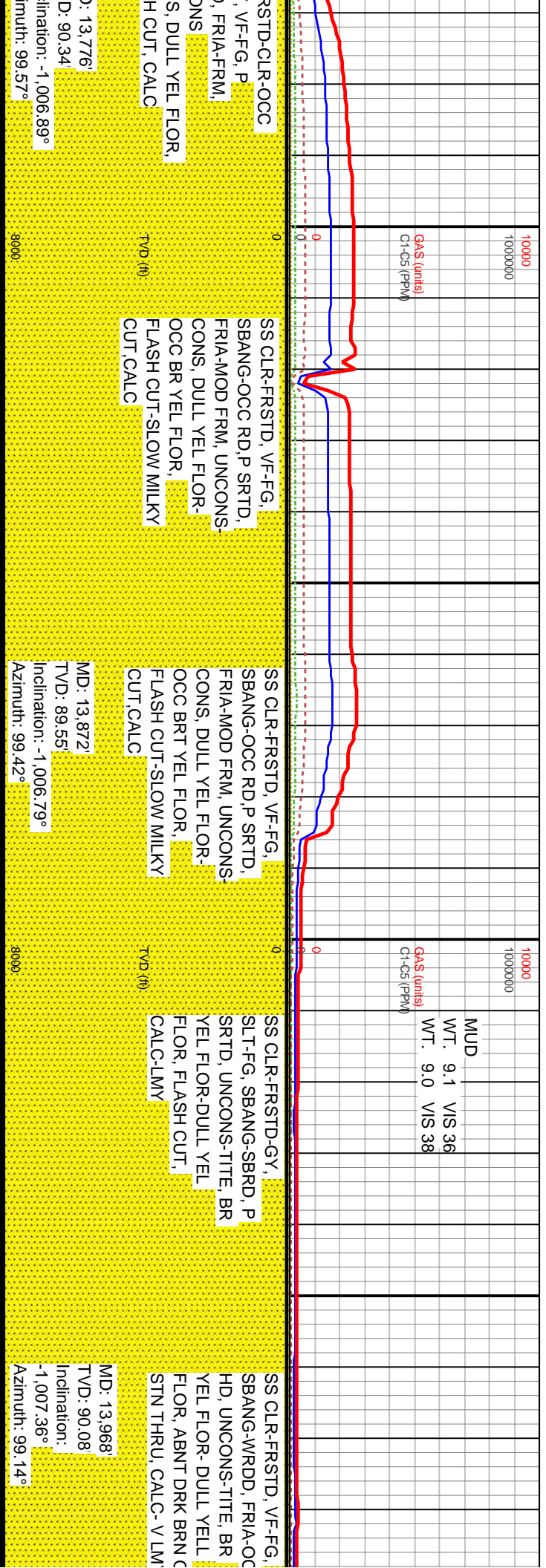
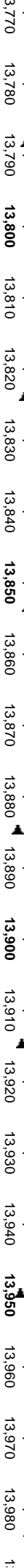
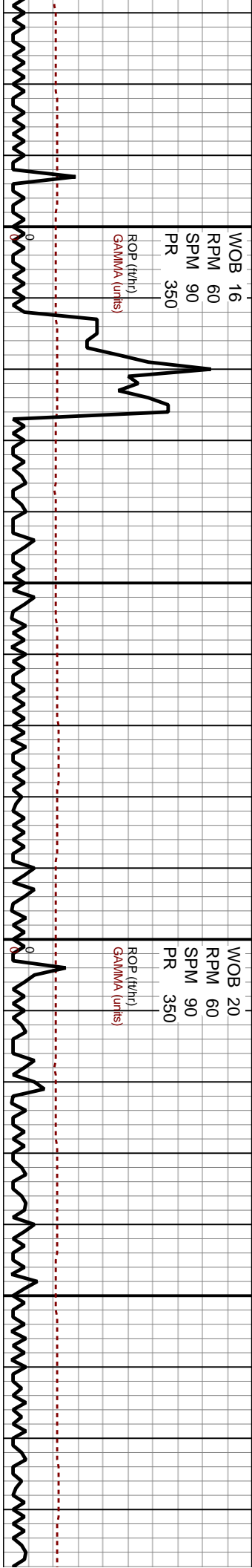
MD: 13,585'  
TVD: 89.99'  
Inclination: -1,005.89°  
Azimuth: 99.87°

MD: 13,681'  
TVD: 90.43'  
Inclination: -1,006.24°  
Azimuth: 99.72°

ME  
TV  
Inc  
Az

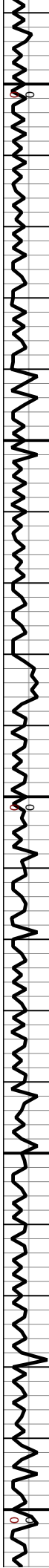






WOB 26  
RPM 75  
SPM 90  
PR 345

ROP (ft/hr)  
GAMMA (units)



WOB 14  
RPM 63  
SPM 90  
PR 345

ROP (ft/hr)  
GAMMA (units)



WOB  
RPM  
SPM  
PR

ROP (ft/hr)  
GAMMA (units)



10000  
1000000

MUD

WT. 9.2 VIS 36  
WT. 9.4 VIS 38

GAS (units)  
C1-C5 (PPM)

0  
0

SS FRSTD-CLR, VF-FG, P  
SRTD, FRIA-FRM,  
UNCONS-CONS, DULL  
YEL FLOR, FLASH CUT,  
CALC

TV D (ft)

8000

SS GY-FRSTD-CLR,  
VF-FG, SBANG-SBRD,  
FRIA-MOD HD, UNCONS-  
CONS, YEL FLOR-DULL  
YEL FLOR, LMY-CALC

TV D (ft)

8000

SS FRSTD-CLR-LTGY,  
VF-FG, SBANG-SBRD,  
FRIA-FRM, UNCONS-TITE,  
DULL YEL-OCC BR YEL  
FLOR, SLOW MILEKY CUT,  
DRK BRN OIL STN THRU,  
CALC-LMY

TV D (ft)

8000

SS CLR-FRSTD, VF-FG,  
SBANG-WRDD, FRIA-OCC  
HD, UNCONS-TITE, BR  
YEL FLOR- DULL YELL  
FLOR, ABNT DRK BRN OIL  
STN THRU, CALC- V LMY

MD: 14,064'  
TV D: 90.17'  
Inclination: -1,007.56°  
Azimuth: 99.01°

MD: 14,160'  
TV D: 90.34'  
Inclination: -1,007.99°  
Azimuth: 98.88°

10000  
1000000

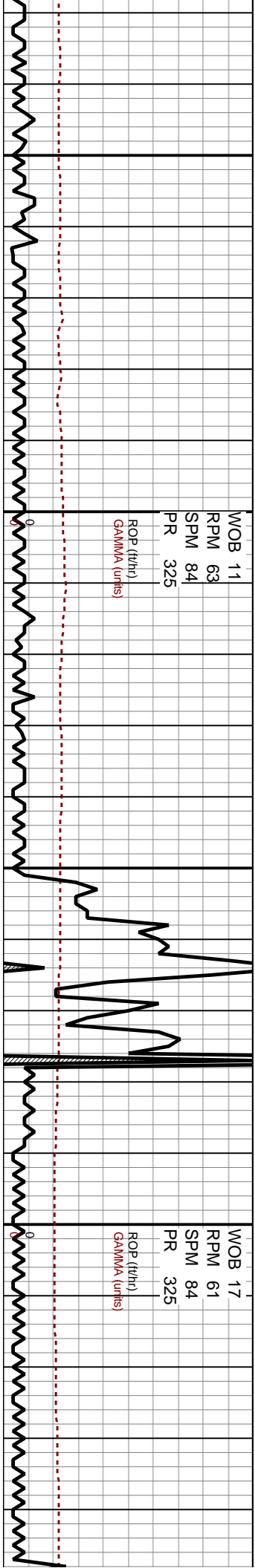
GAS (unit)  
C1-C5 (PPM)

0  
0







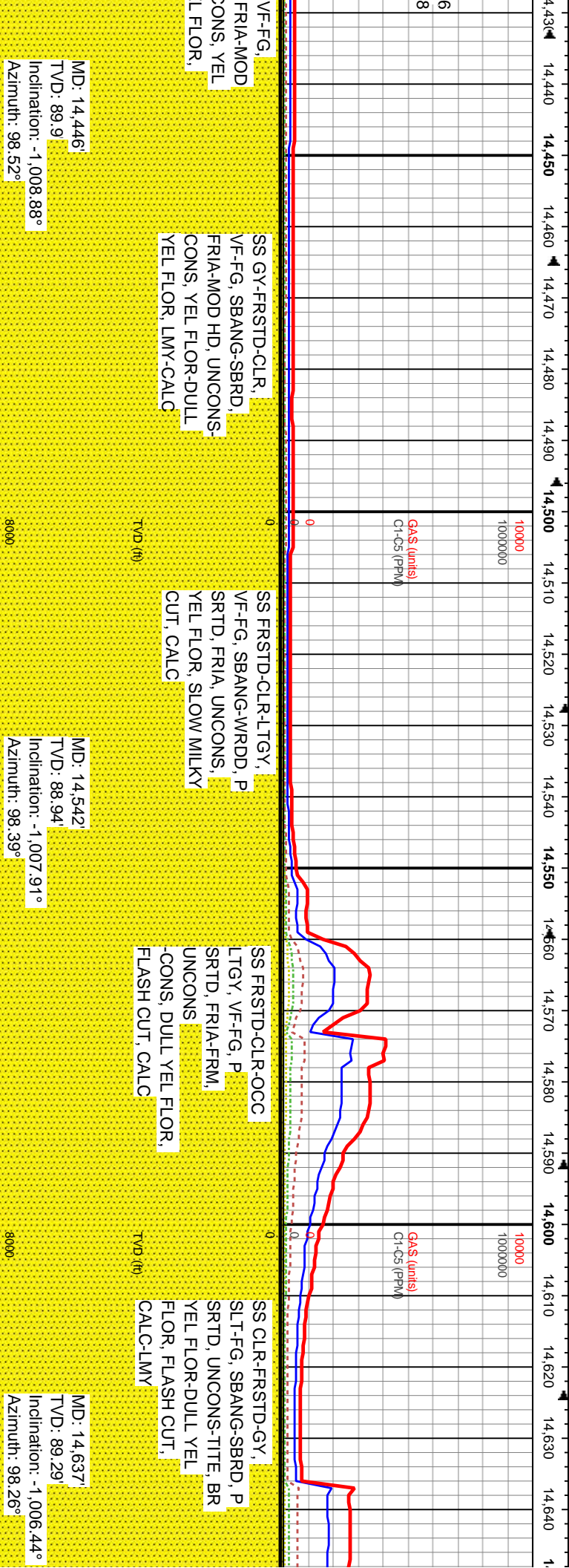


WOB 11  
RPM 63  
SPM 84  
PR 325

ROP (ft/hr)  
GAMMA (units)

WOB 17  
RPM 61  
SPM 84  
PR 325

ROP (ft/hr)  
GAMMA (units)



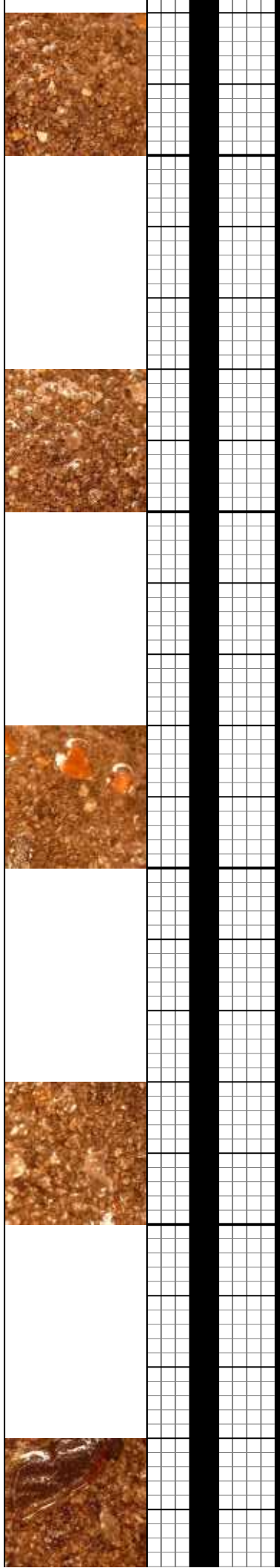
GRS (units)  
C1-C5 (PPM)

GRS (units)  
C1-C5 (PPM)

MD: 14,446'  
TVD: 89.9'  
Inclination: -1,008.88°  
Azimuth: 98.52°

MD: 14,542'  
TVD: 88.94'  
Inclination: -1,007.91°  
Azimuth: 98.39°

MD: 14,637'  
TVD: 89.29'  
Inclination: -1,006.44°  
Azimuth: 98.26°



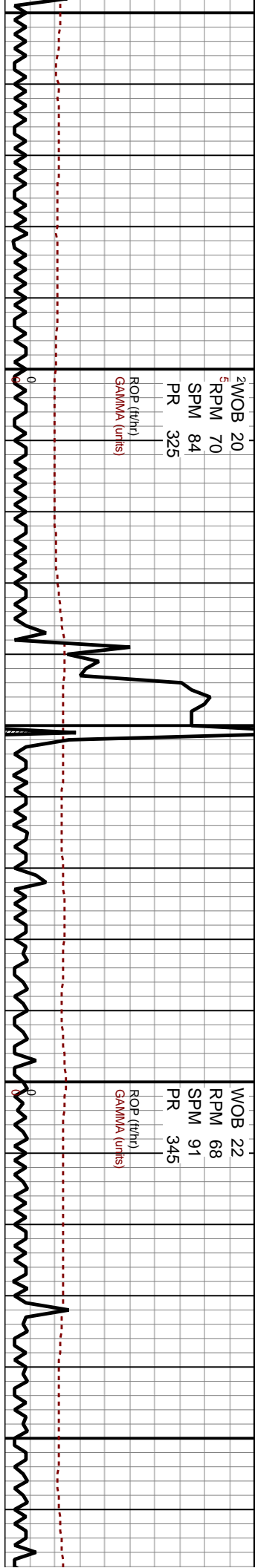


2WOB 20  
RPM 70  
SPM 84  
PR 325

ROP (ft/hr)  
GAMMA (units)

WOB 22  
RPM 68  
SPM 91  
PR 345

ROP (ft/hr)  
GAMMA (units)



10000  
1000000

MUD  
WT. 9.2 VIS 37  
WT. 9.1 VIS 37

GAS (units)  
Cl-C5 (PPM)

10000  
1000000

MUD  
WT. 9.1 VIS 37  
WT. 9.1 VIS 37

GAS (units)  
Cl-C5 (PPM)

SS CLR-FRSTD, VF-FG,  
SBANG-OCC RD, P SRTD,  
FRIA-MOD FRM,  
UNCONS-CONS, DULL  
YEL FLOR-OCC BR YEL  
FLOR, FLASH CUT-SLOW  
MILKY CUT, CALC

TVD (ft)

SS LTGY-CLR, VF-FG,  
SBANG-SBRD, FRIA-MOD  
HD, UNCONS-CONS, YEL  
FLOR-DULL YEL FLOR,  
LMY-CALC

SS LTGY-GY-CLR, VF-FG,  
SBANG-SBRD, FRIA-MOD  
HD, UNCONS-CONS, YEL  
FLOR-DULL YEL FLOR,  
LMY-CALC

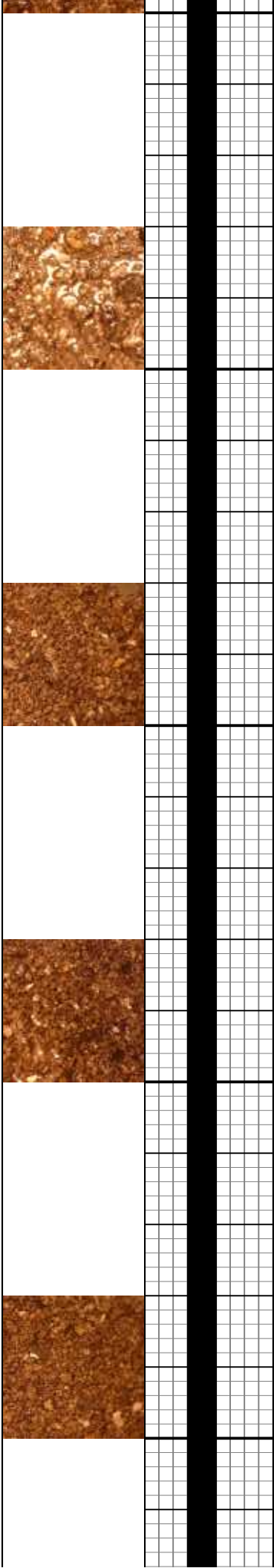
TVD (ft)

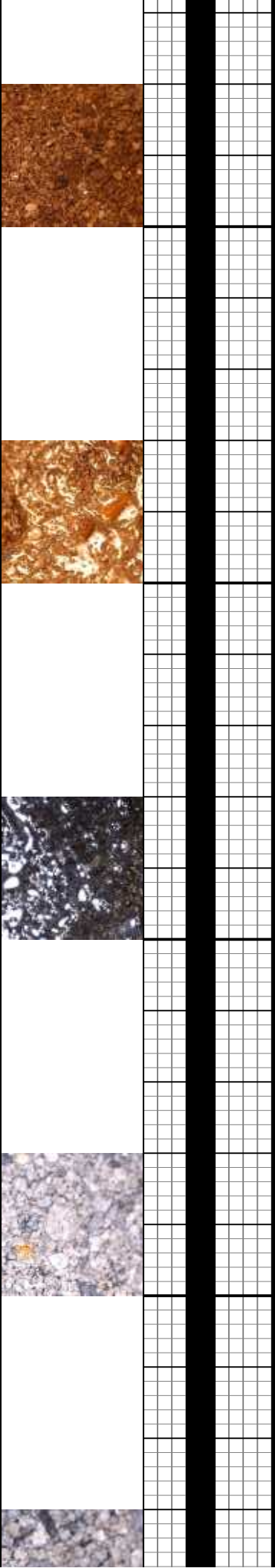
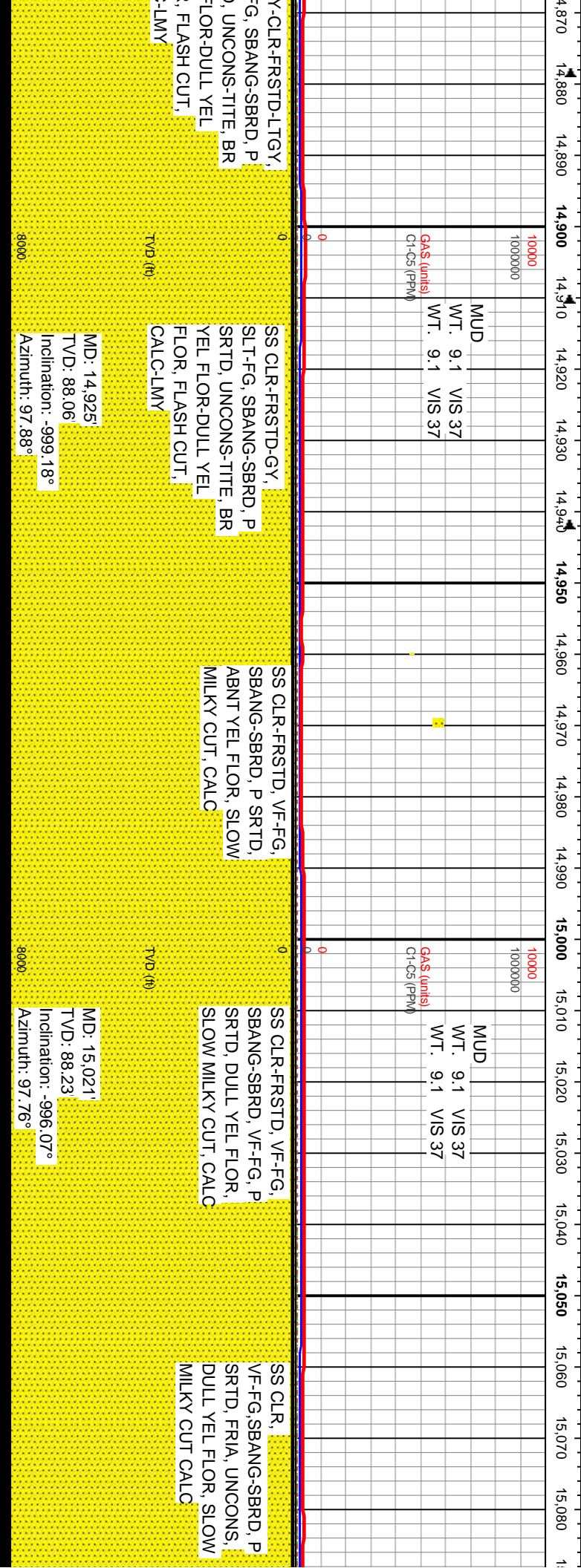
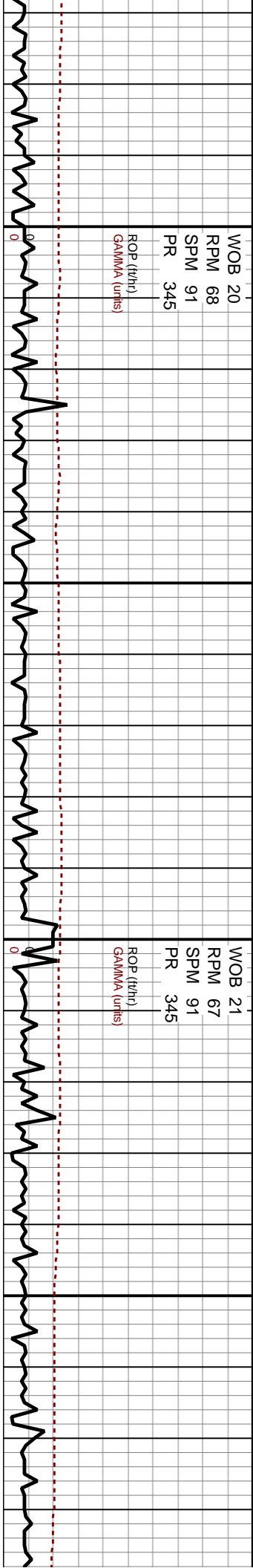
SS CLR-FRSTD-GY,  
SLT-FG, SBANG-SBRD, P  
SRTD, UNCONS-TITE, BR  
YEL FLOR-DULL YEL  
FLOR, FLASH CUT,  
CALC-LMY

SS G CLR-FRSTD-GY,  
SLT-FG, SBANG-SBRD, P  
SRTD, UNCONS-TITE, BR  
YEL FLOR-DULL YEL  
FLOR, FLASH CUT,  
CALC-LMY

MD: 14,733'  
TVD: 89.11'  
Inclination: -1,005.1°  
Azimuth: 98.14°

MD: 14,829'  
TVD: 87.88'  
Inclination: -1,002.58°  
Azimuth: 98.01°



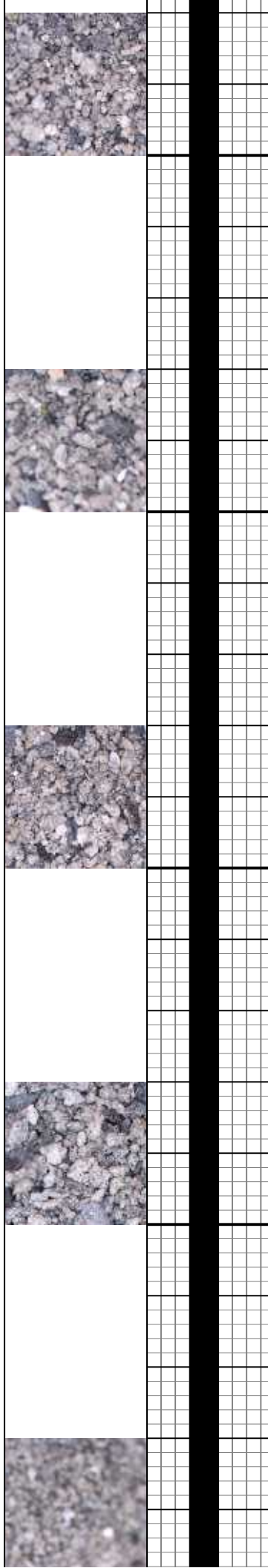
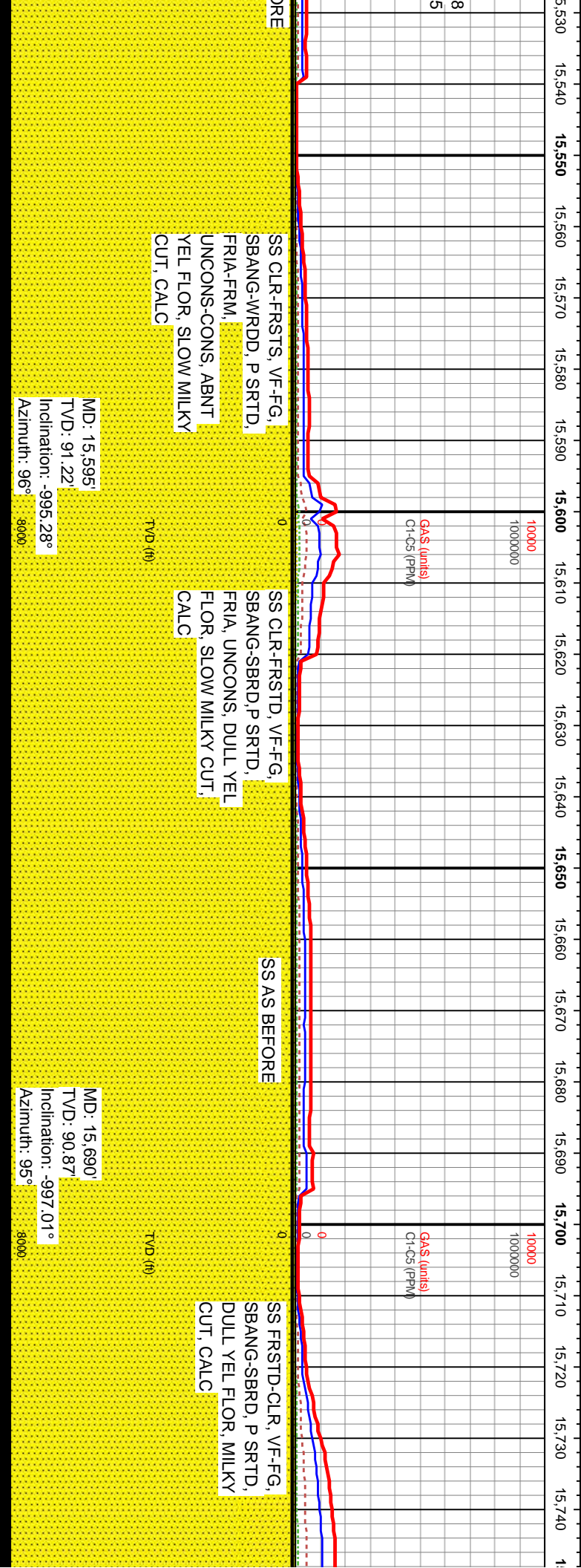
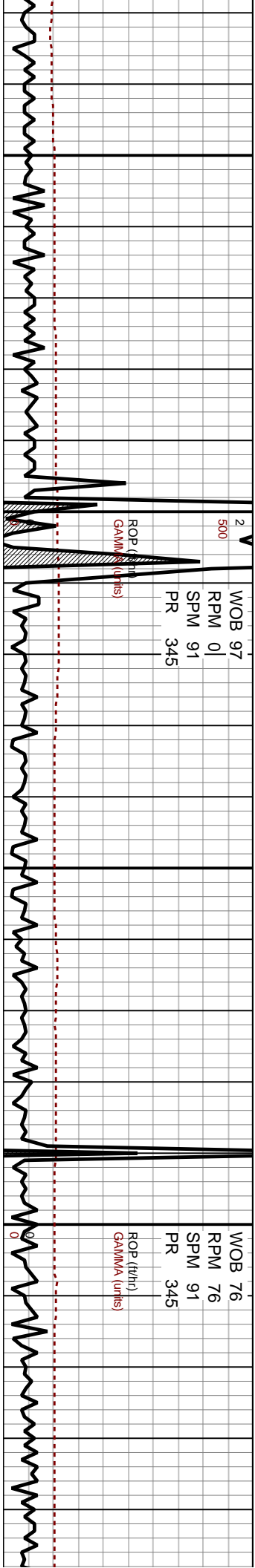


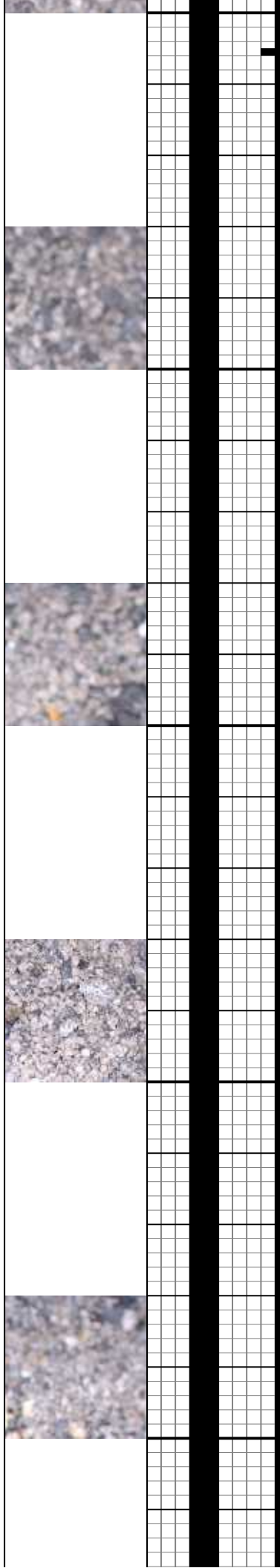
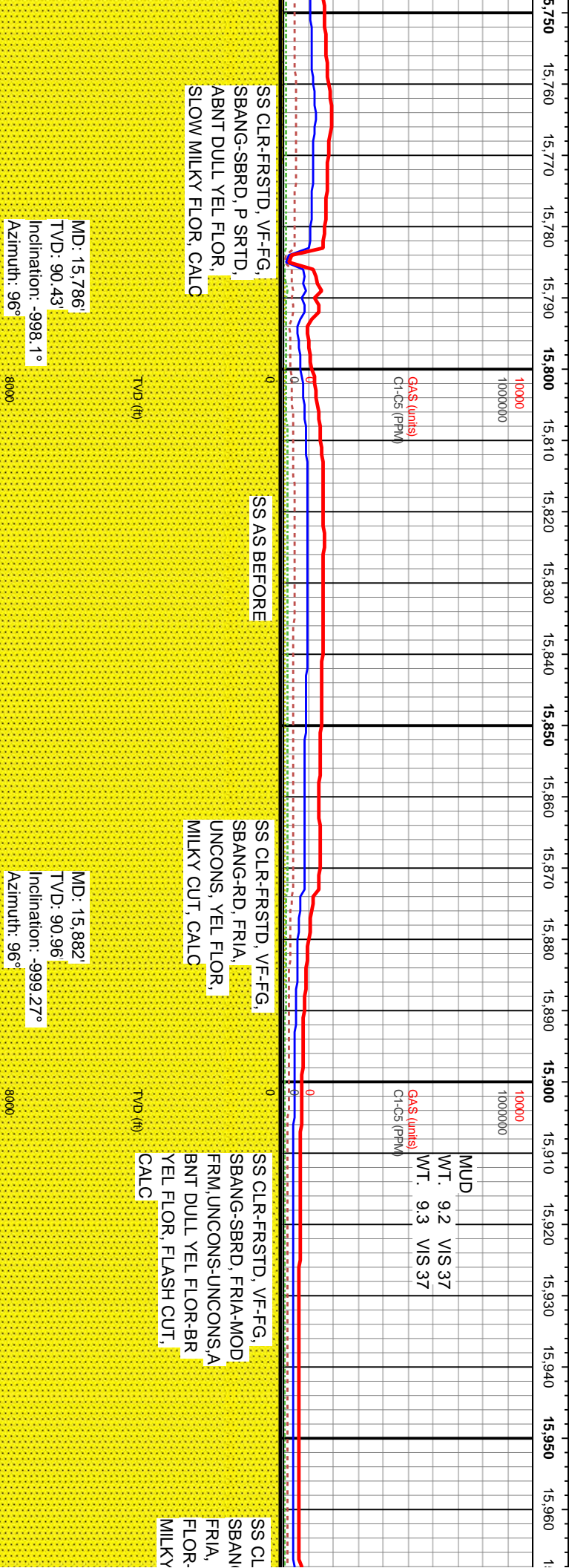
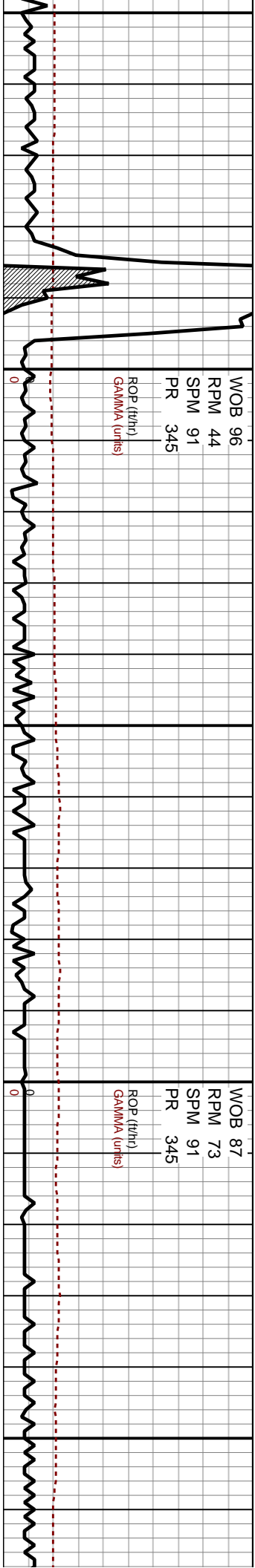




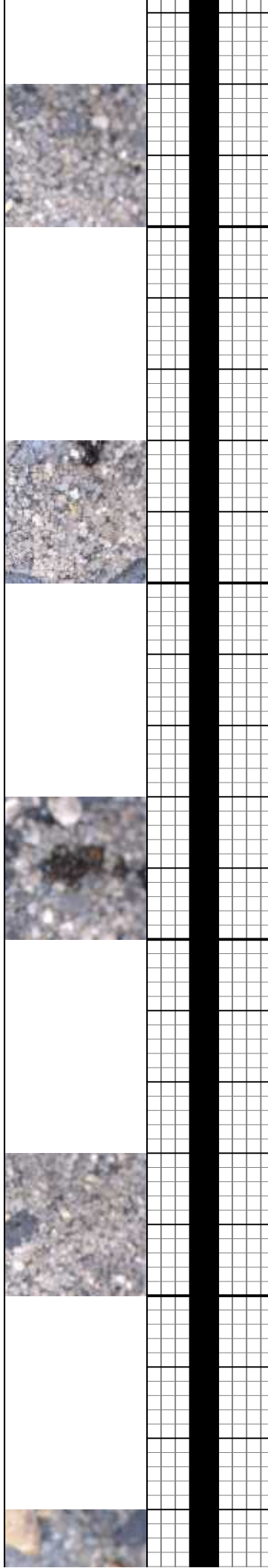
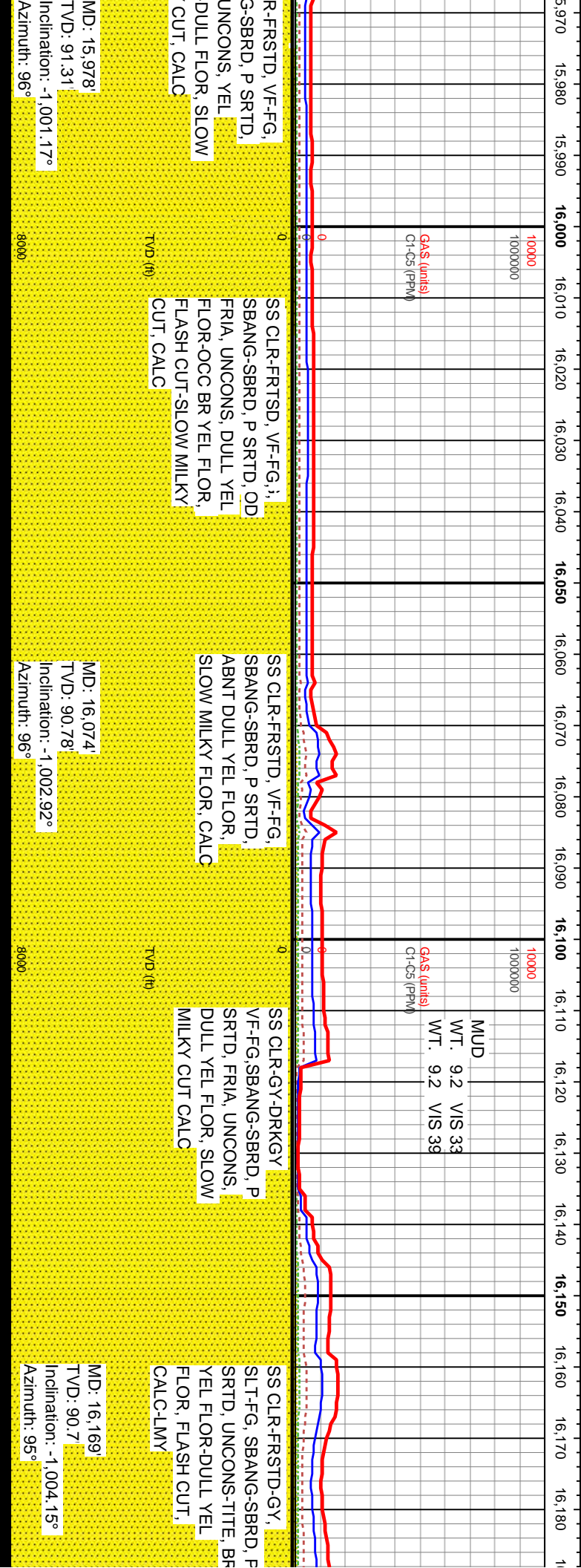
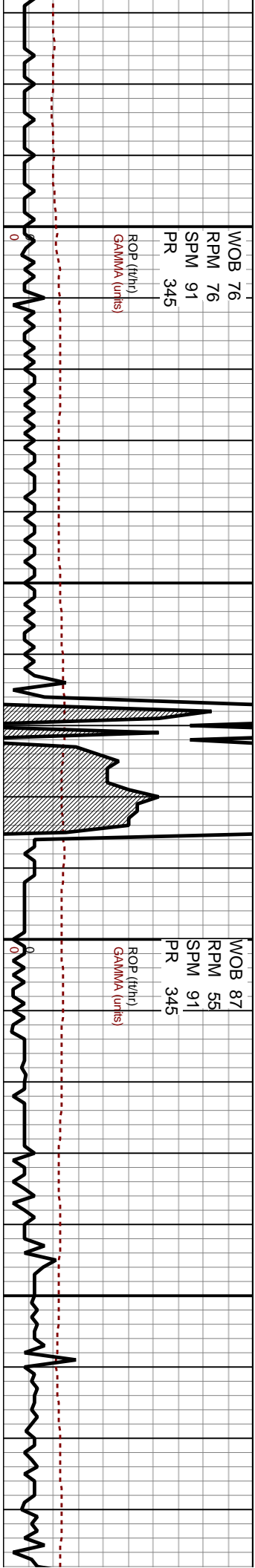


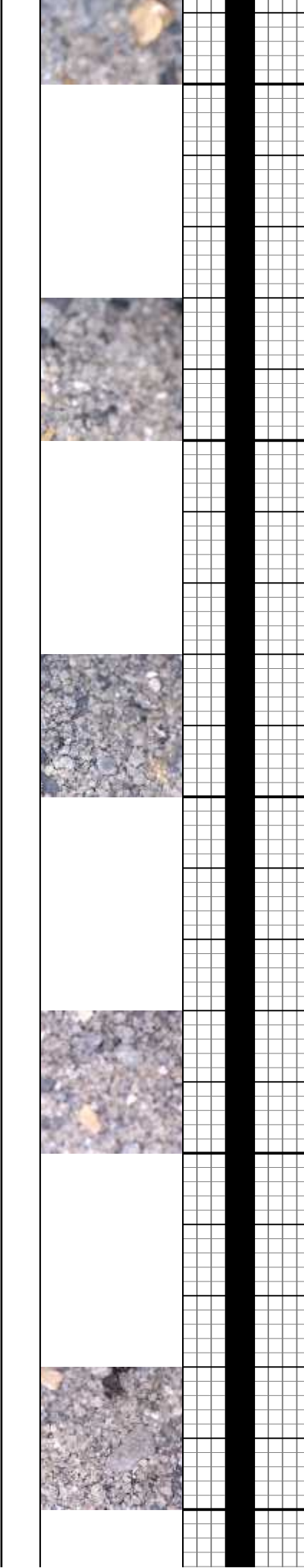
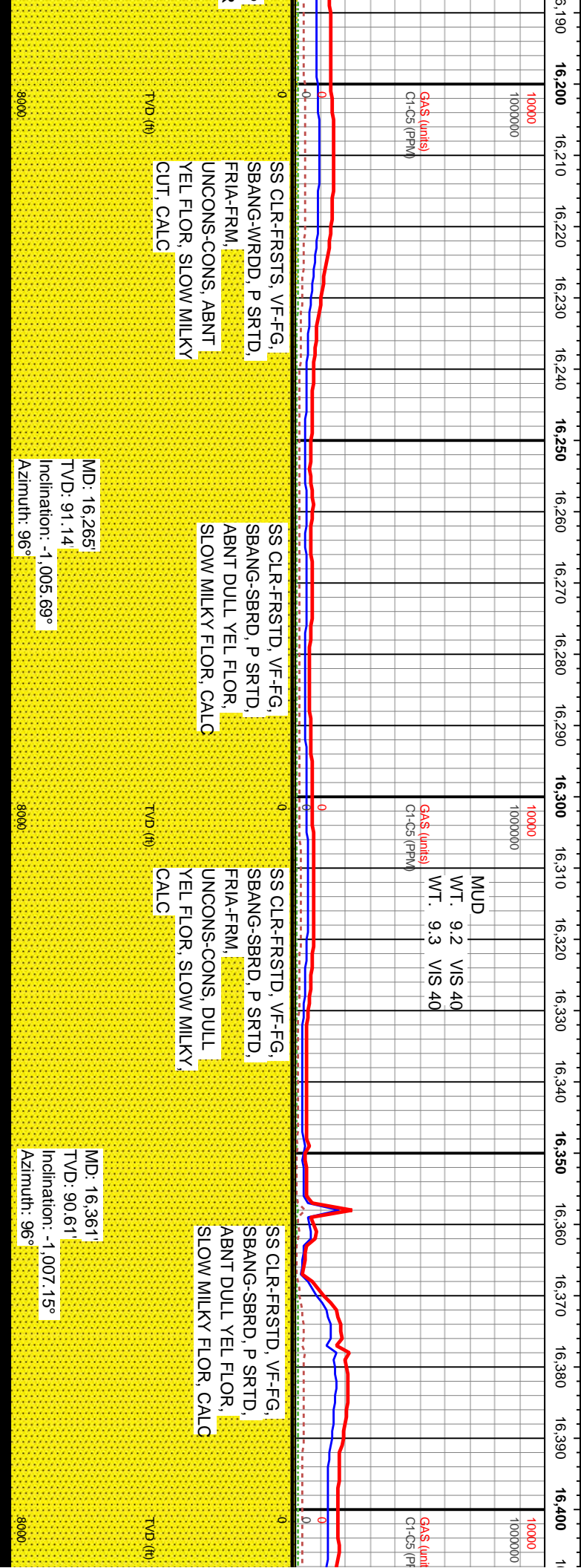
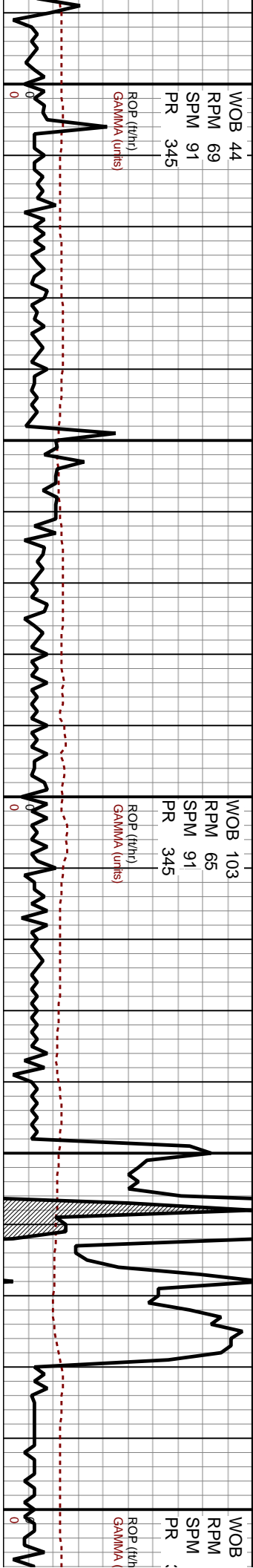




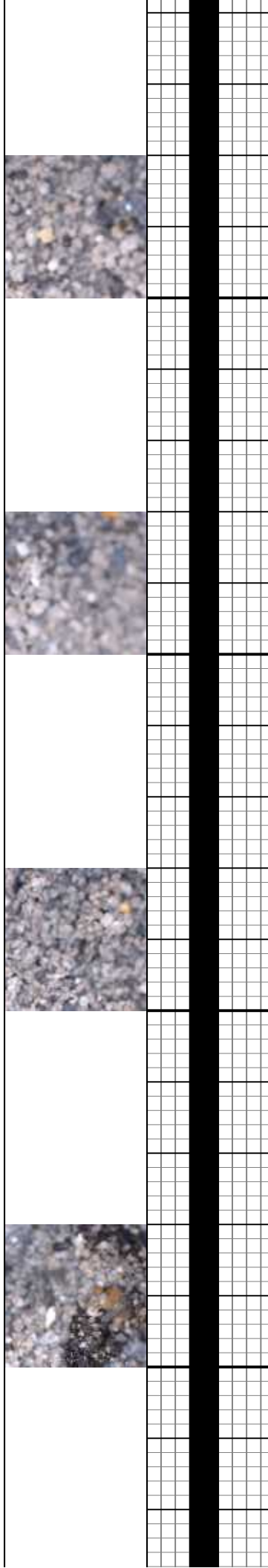
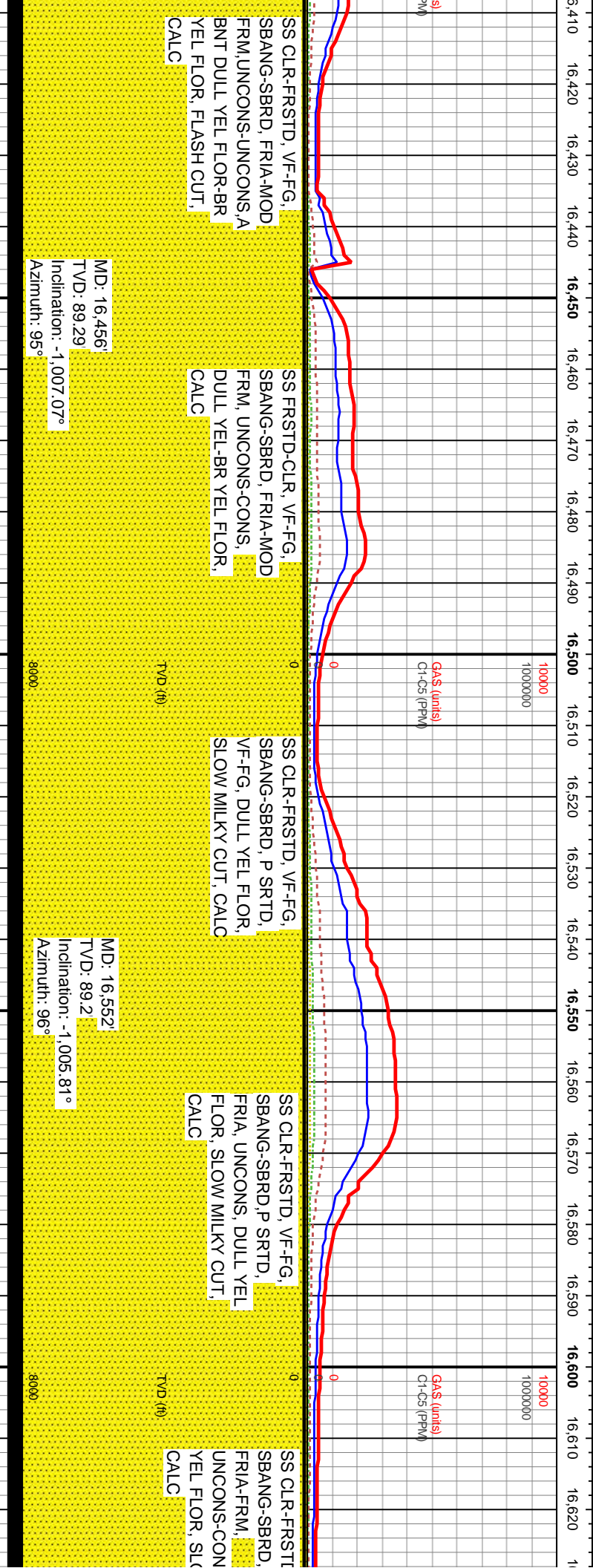
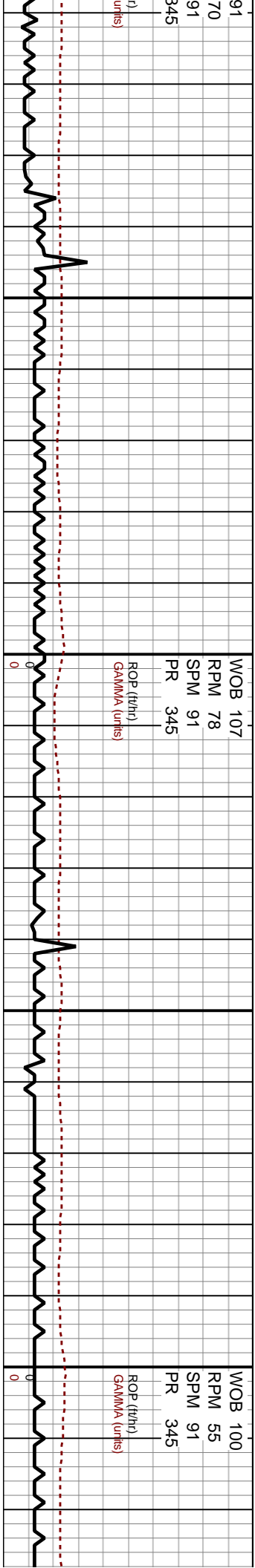


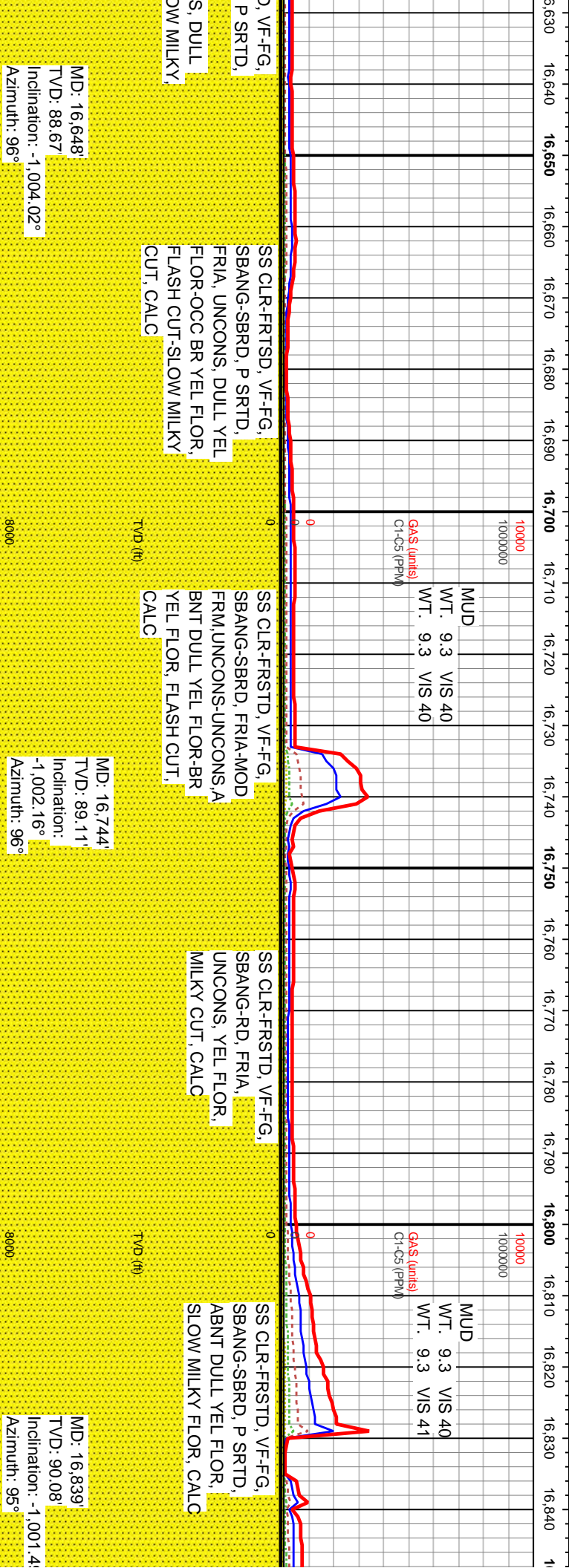
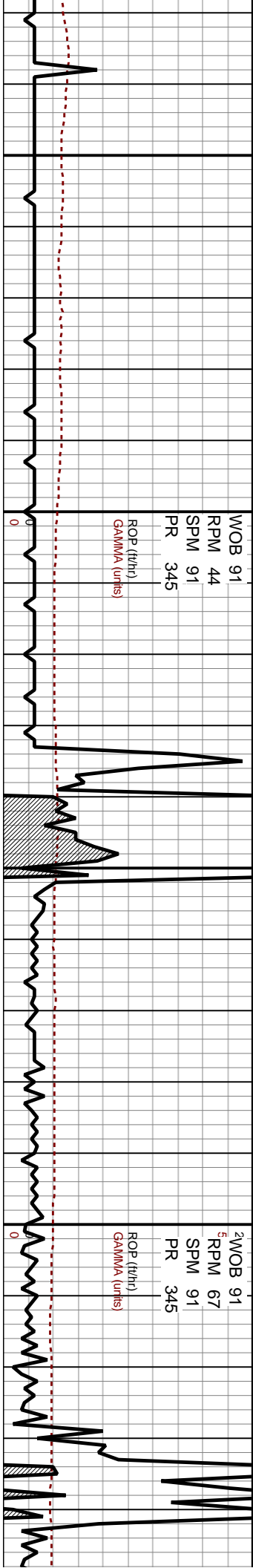




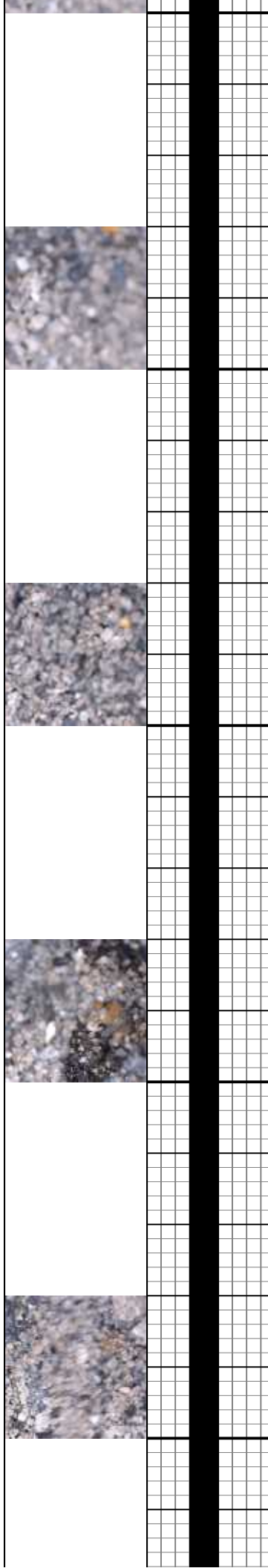
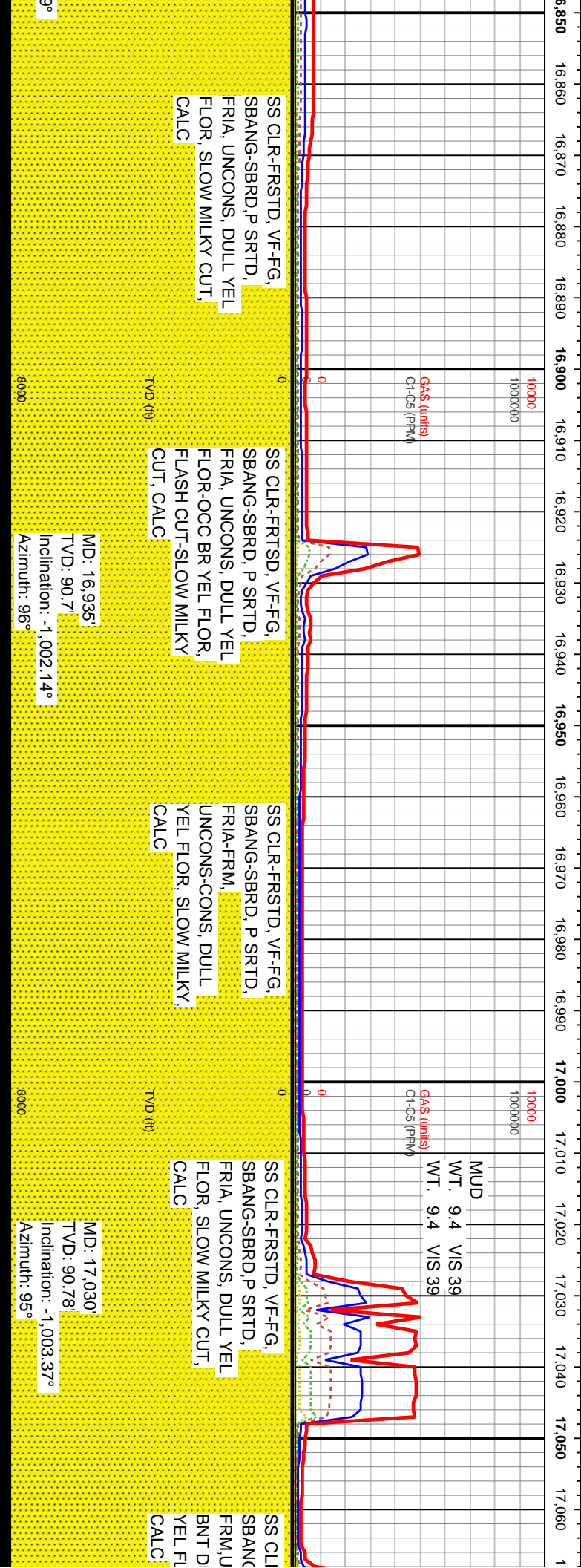
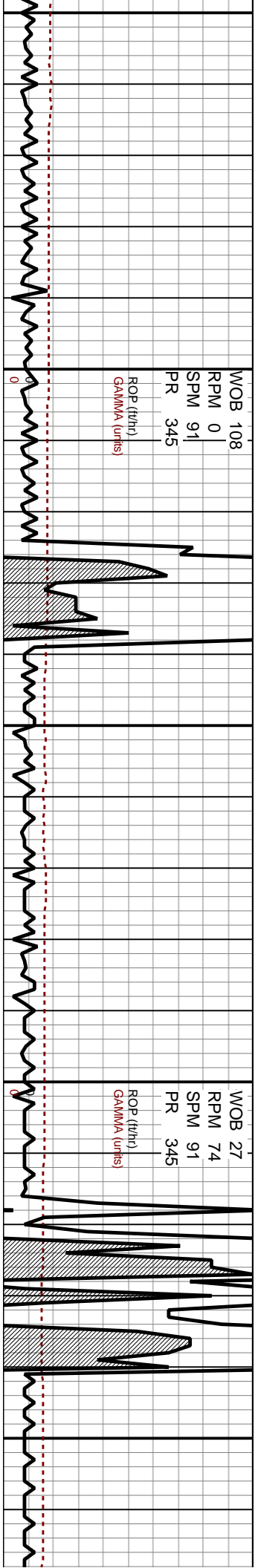


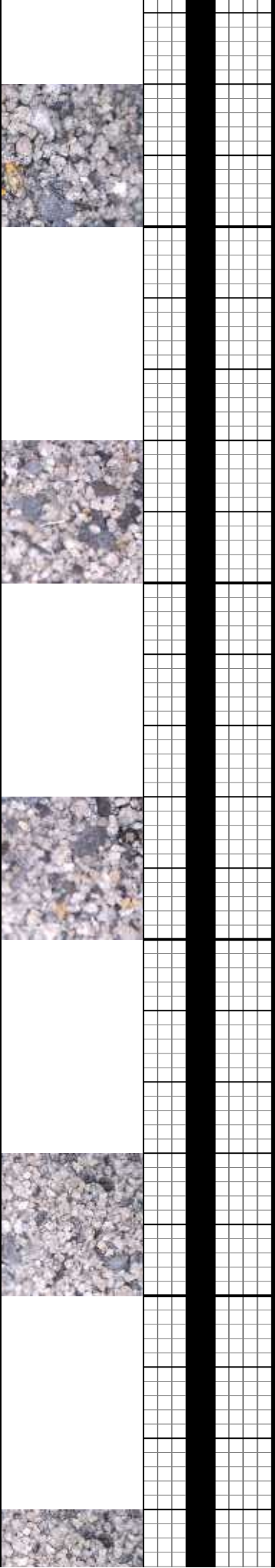
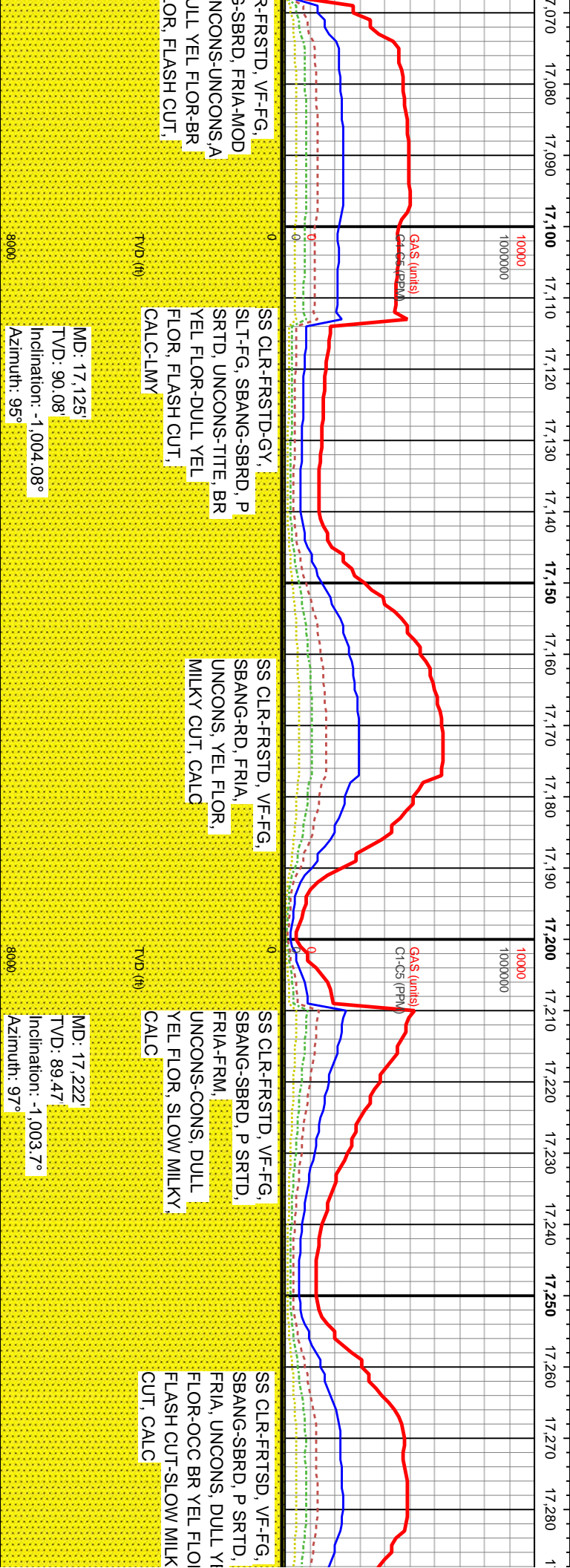
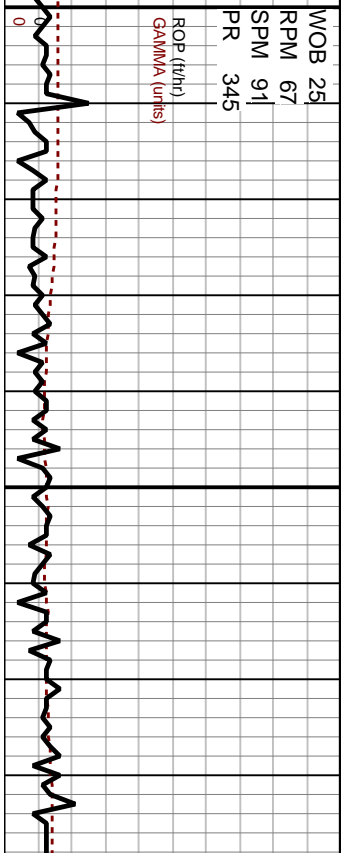
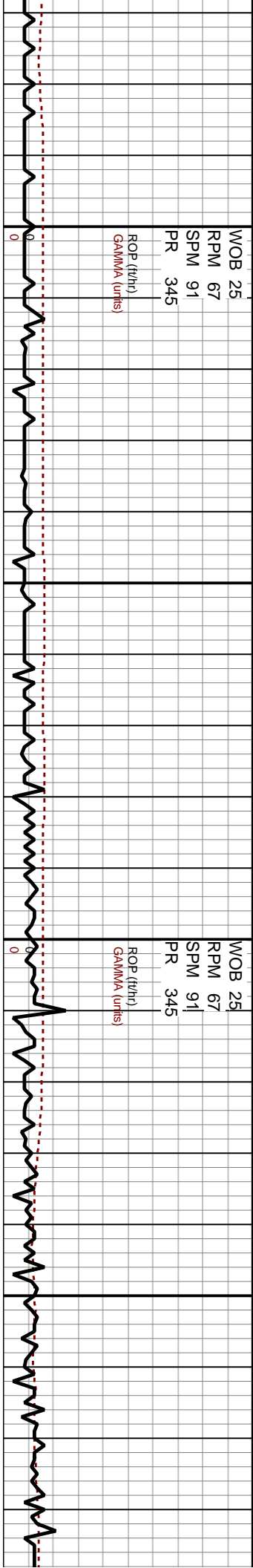








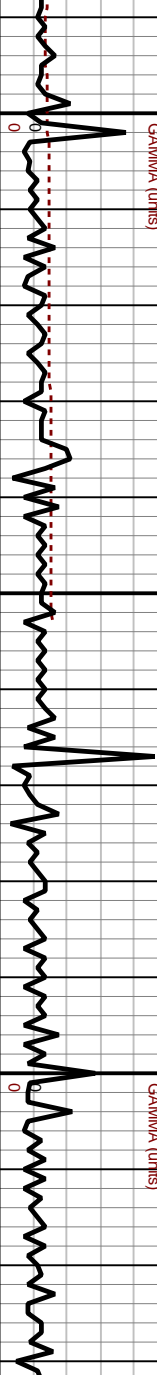






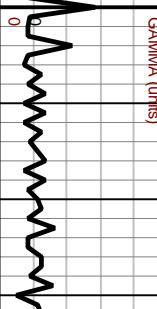
WOB	25
RPM	67
SPM	91
PR	345

ROP (ft/hr)	GAMMA (units)
10	10
20	20
30	30
40	40
50	50
60	60
70	70
80	80
90	90
100	100
110	110
120	120
130	130
140	140
150	150
160	160
170	170
180	180
190	190
200	200
210	210
220	220
230	230
240	240
250	250
260	260
270	270
280	280
290	290
300	300
310	310
320	320
330	330
340	340
350	350
360	360
370	370
380	380
390	390
400	400
410	410
420	420
430	430
440	440
450	450
460	460
470	470
480	480
490	490
500	500
510	510
520	520
530	530
540	540
550	550
560	560
570	570
580	580
590	590
600	600
610	610
620	620
630	630
640	640
650	650
660	660
670	670
680	680
690	690
700	700
710	710
720	720
730	730
740	740
750	750
760	760
770	770
780	780
790	790
800	800
810	810
820	820
830	830
840	840
850	850
860	860
870	870
880	880
890	890
900	900
910	910
920	920
930	930
940	940
950	950
960	960
970	970
980	980
990	990
1000	1000

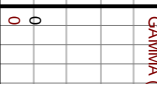


2	500
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ROP (ft/hr)	GAMMA (units)
10	0.000000
20	0.000000
30	0.000000
40	0.000000
50	0.000000
60	0.000000
70	0.000000
80	0.000000
90	0.000000
100	0.000000
110	0.000000
120	0.000000
130	0.000000
140	0.000000
150	0.000000
160	0.000000
170	0.000000
180	0.000000
190	0.000000
200	0.000000
210	0.000000
220	0.000000
230	0.000000
240	0.000000
250	0.000000
260	0.000000
270	0.000000
280	0.000000
290	0.000000
300	0.000000
310	0.000000
320	0.000000
330	0.000000
340	0.000000
350	0.000000
360	0.000000
370	0.000000
380	0.000000
390	0.000000
400	0.000000
410	0.000000
420	0.000000
430	0.000000
440	0.000000
450	0.000000
460	0.000000
470	0.000000
480	0.000000
490	0.000000
500	0.000000
510	0.000000
520	0.000000
530	0.000000
540	0.000000
550	0.000000
560	0.000000
570	0.000000
580	0.000000
590	0.000000
600	0.000000
610	0.000000
620	0.000000
630	0.000000
640	0.000000
650	0.000000
660	0.000000
670	0.000000
680	0.000000
690	0.000000
700	0.000000
710	0.000000
720	0.000000
730	0.000000
740	0.000000
750	0.000000
760	0.000000
770	0.000000
780	0.000000
790	0.000000
800	0.000000
810	0.000000
820	0.000000
830	0.000000
840	0.000000
850	0.000000
860	0.000000
870	0.000000
880	0.000000
890	0.000000
900	0.000000
910	0.000000
920	0.000000
930	0.000000
940	0.000000
950	0.000000
960	0.000000
970	0.000000
980	0.000000
990	0.000000
1000	0.000000



2	500
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ROP (ft/h)  
GAMMA (

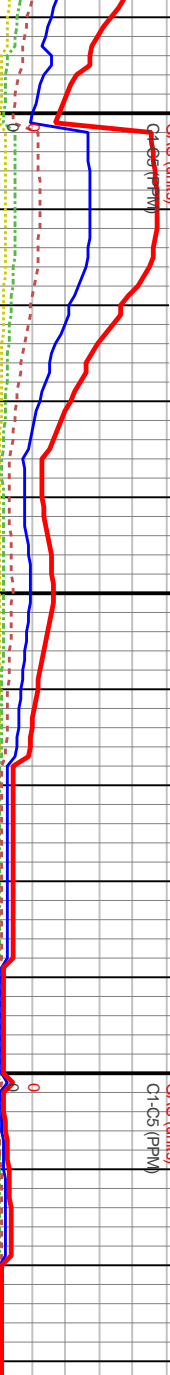
17,290	17,310	17,320	17,330	17,340	17,350	17,360	17,370	17,380	17,390	17,400	17,410	17,420	17,430	17,440	17,450	17,460	17,470	17,480	17,490	17,500
17,300	17,310	17,320	17,330	17,340	17,350	17,360	17,370	17,380	17,390	17,400	17,410	17,420	17,430	17,440	17,450	17,460	17,470	17,480	17,490	17,500

10000	
1000000	

MUD

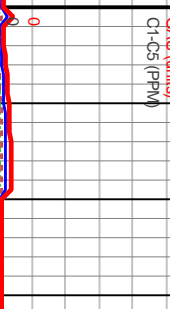
WT.	9.4	VIS 40
WT.	9.3	VIS 39

~~C1-C5 (PPM)~~

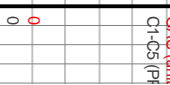


10000  
1000000

**GAS (units)**  
**C1-C5 (PPM)**



1000000	1000000
1000000	1000000

GAS (unit  
C1-C5 (PF

SS CLR-FRSTD, VF-FG,  
SBANG-SBRD,P SRD,  
FRIA, UNCONS, DULL YEL  
FLOR, SLOW MILKY CUT,  
CALC

TVD (ft)

MD: 17,318  
TVD: 87  
Inclination: -1,000.75°  
Azimuth: 96°

SS CLR-FRTSD, VF-FG,  
SBANG-SBRD, P SRTD,  
FRIA, UNCONS, DULL YEL  
FLOR-OCC BR YEL FLOR,  
FLASH CUT-SLOW MILKY  
CUT, CALC

MD: 17,350'  
TVD: 87  
Inclination: -999.07°  
Azimuth: 32°

DRILLERS T.D. AT 17,431'

MD: 17,431'  
TVD: 87  
Inclination: -994.83°  
Azimuth: 81°

TV/D (ft)

8000







