



Scale: 5" / 100'  
Measured Depth Log

**Well Name** Herren 1H-33H-H367

**Location** Sec. 33 T3N R67W

**State** Colorado

**County** Weld

**Country** USA

**Rig Number** Ensign 153

**API Number** 05-123-47732

**AFE #** 16191567

**Geographic Region** Rockies

**Field** Wattenberg

**Spud Date** 12/29/2018

**Drilling Completed** 12/31/2018

**Surface Coordinates** Latitude: 40.183282  
Longitude: -104.887065

SHL: Sec: 33 Twp: 3N 67W  
Footage: 2050 FNL 460 FEL

**Bottom Hole Coordinates** Proposed BHL: Sec: 33 Twp: 3N 67W  
Footages: 2050 FNL 460 FWL

**Ground Elevation** 4,847'

**K.B. Elevation** 4,870'

**Logged Interval** 6,500' **To** 12,001'

**Total Depth** 12,001'

**Formation** Codell

**Type of Drilling Fluid** Synthetic Oil Based Mud

## Operator

**Company** Crestone Peak Resources

**Address** 1801 California Street  
Suite 2500  
Denver, CO 80202



**CRESTONE PEAK**  
RESOURCES

## Geologist

**Name** John Ready

**Company** Crestone Peak Resources

**Address** 1801 California Street  
Suite 2500  
Denver, CO 80202



## Zone Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

## Other

**Loggers:** Heather Davis / Shana Swirin-Miles

**Services Provided:** 2-Man Mudlogging / Geosteering

**Equipment:** ML-515

**Contractor:** Reservoir Group  
6360 West Sam Houston Pkwy N  
Houston, Texas, 77041

**Start Date** 12/29/2018

**Release Date:** 01/01/2019

**Job #:** 1827RK1812

## Rock Types

UNKNOWN	DOLOMITE	SHALE GRAY	TILL
ANHYDRITE	CHERT	SHALE COLORED	BENTONITE
GYPSUM	COAL	SILTSTONE	TUFF
SALT	MARLSTONE	SANDSTONE	IGNEOUS
SIDERITE or LIMONITE	CHALK	CONGLOMERATE	METAMORPHIC
LIMESTONE	SHALE	BRECCIA	CEMENT

## Accessories

### Fossils

ALGAE  
 AMPHIPORA  
 BELEMNITE  
 BIOHERM  
 BRACHIOPOD  
 BRYOZOA  
 CEPHALOPOD  
 CORAL  
 CRINOID

### F FOSSIL

GASTROPOD  
 OOLITE  
 OSTRACOD  
 PELECYPOD  
 PELLET  
 PISOLITE  
 PLANT REMAINS  
 PLANT SPORES  
 SCAPHOPOD  
 STROMATOLITE

### ARGILLACEOUS

ARGILLITE GRAIN  
 BENTONITE  
 BITUMENOUS SUBSTANCE  
 BRECCIA FRAGMENTS  
 CALCAREOUS  
 CARBONACEOUS FLAKES  
 CHTDK  
 CHTLT  
 COAL - THIN BEDS  
 DOLOMITE

### GLAUCONITE

GYPSIFEROUS  
 HEAVY MINERAL  
 KAOLIN  
 MARLSTONE  
 MINERAL CRYSTALS  
 NODULES  
 PHOSPHATE PELLETS  
 PYRITE  
 SALT CAST  
 SANDY

### Stringer

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

CRINOID  
ECHINOID  
FISH  
FORAMINIFERA

STROMATOPOROID  
**Minerals**  
ANHYDRITIC

DOLOMITIC  
FELDSPAR  
FERRUGINOUS PELLET  
FERRUGINOUS

SANDY  
SILICEOUS  
SILTY  
TUFFACEOUS

SANDSTONE STRINGER  
SHALE STRINGER  
SILTSTONE STRINGER

## Oil Show

DEAD  
EVEN  
QUESTIONABLE  
SPOTTED STAINING

## Porosity

EARTHY  
FENESTRAL  
FRACTURE  
INTERCRYSTALLINE  
INTEROOLITIC  
MOLDIC

ORGANIC  
PINPOINT  
VUGGY

## Engineering

BIT  
CASING  
CONNECTION (LEFT)  
CONNECTION (RIGHT)  
CONNECTION GAS  
CORE - LOST  
CORE - RECOVERED  
DST INTERVAL  
FAULT

## Other Symbols

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

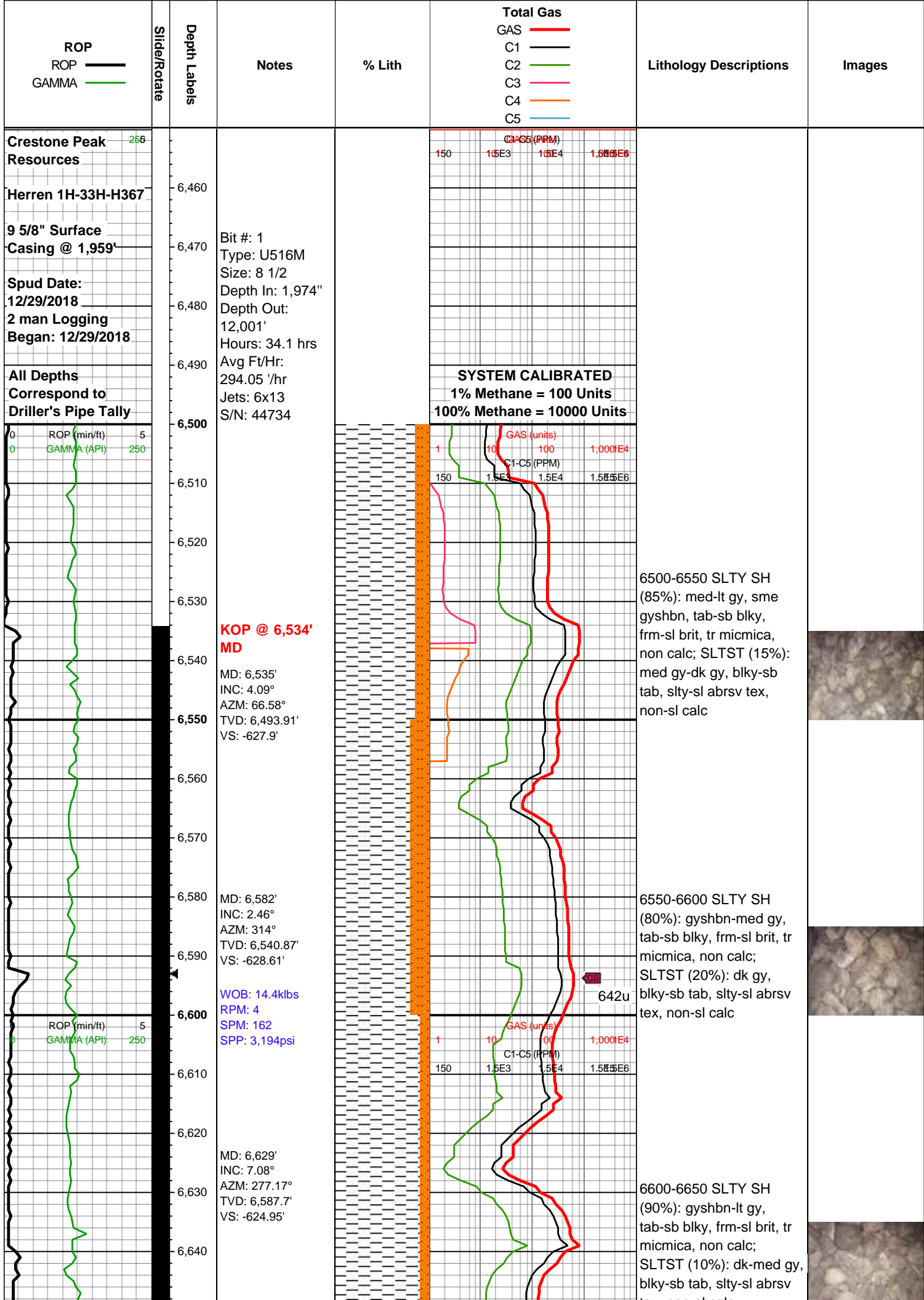
## Textures

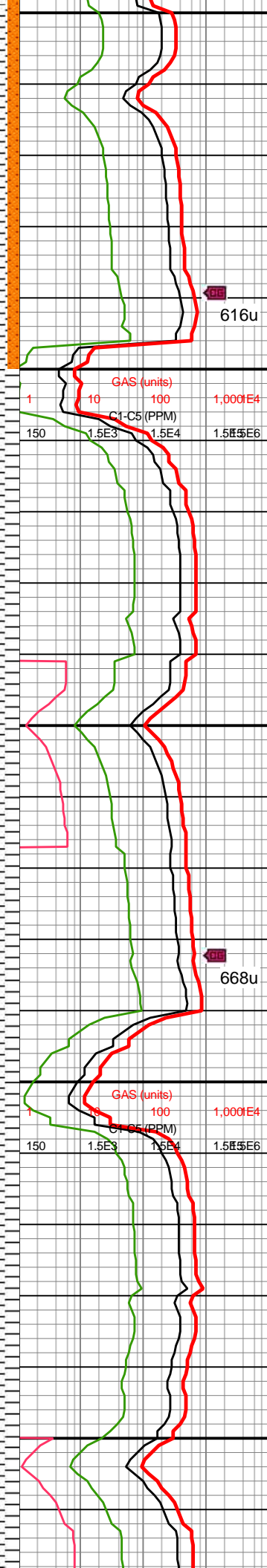
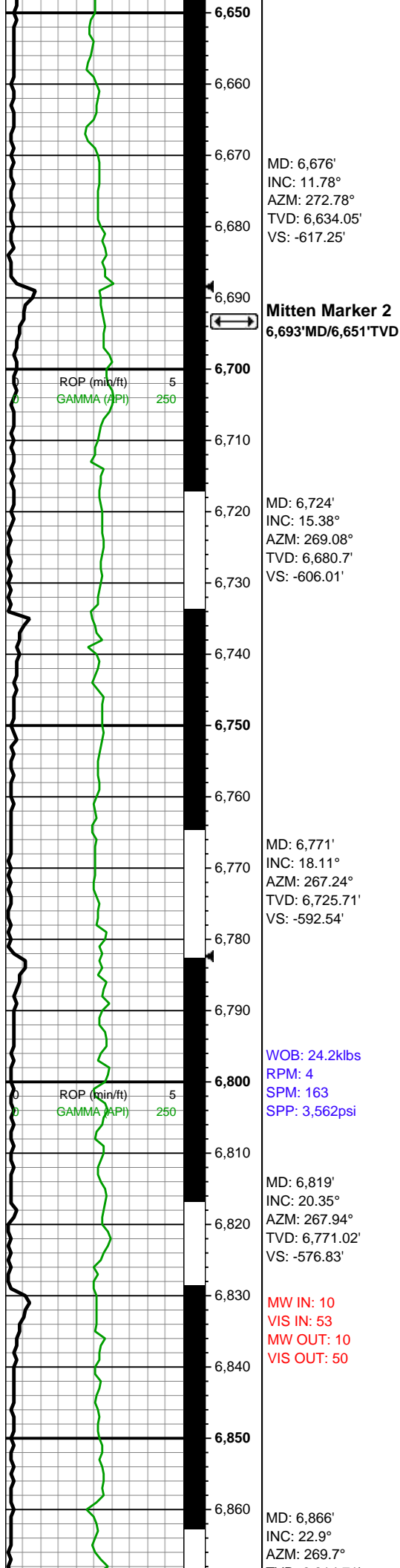
BOUNDSTONE  
CHALKY  
CRYPTOXLN  
EARTHY  
FINELYXLN  
GRAINSTONE

LITHOGRAPHIC  
MICROXLN  
MUDSTONE  
PACKSTONE  
WACKESTONE

## Sorting

MODERATE  
POOR  
WELL



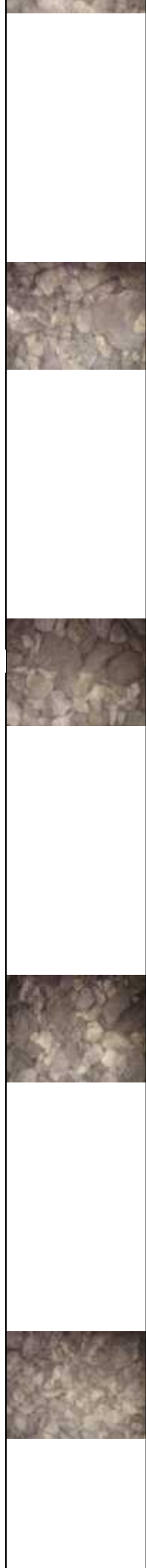


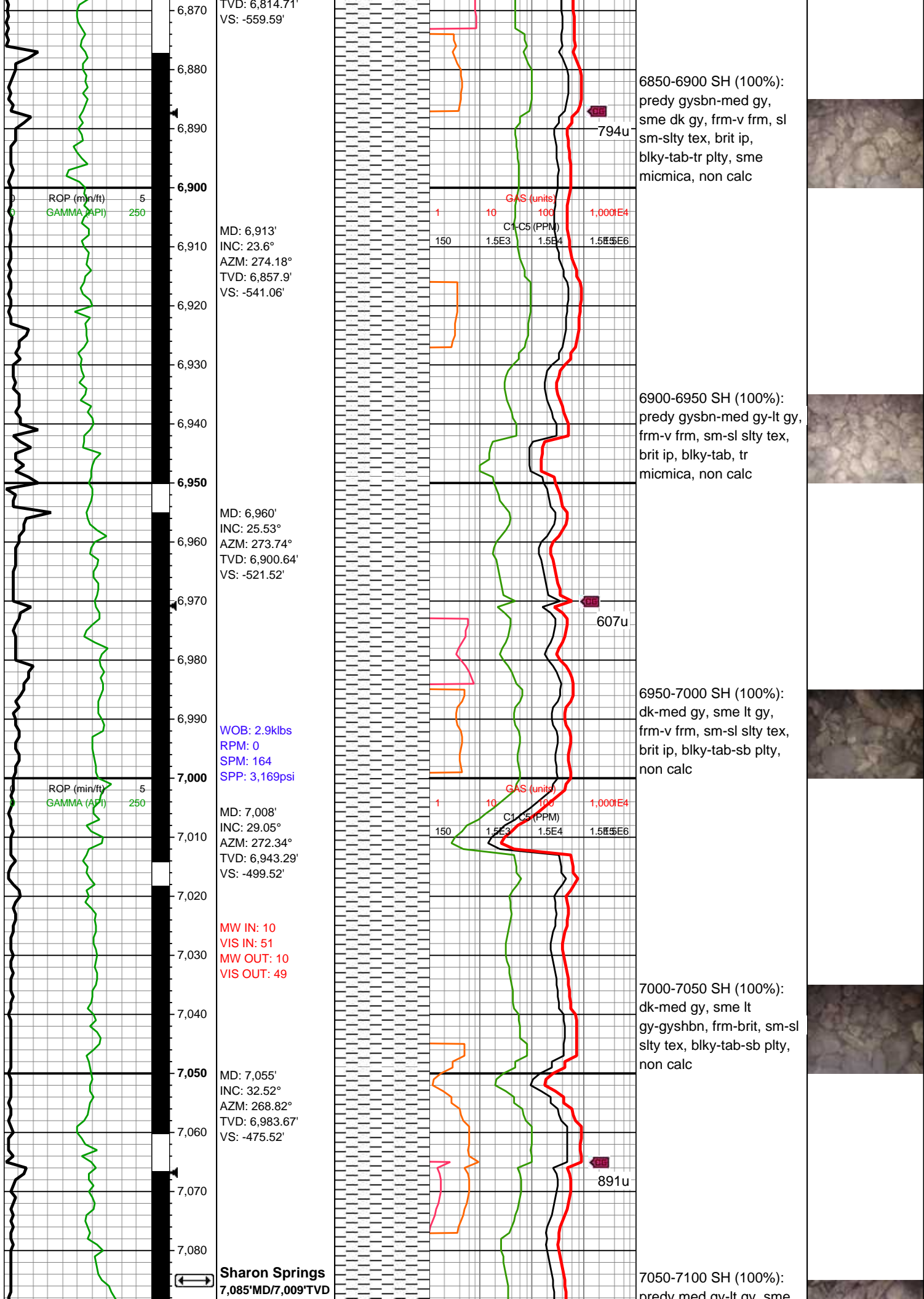
6650-6700 SLTY SH (90%): gyshbn-lt gy, tab-sb blk, frm-sl brit, tr micmica, non calc; SLTST (10%): med gy, sme dk gy, blk-sb tab, slty-sl abrsv tex, non-sl calc

6700-6750 SH (100%): dk-lt gy, frm-hd, sl sm-slty tex, mod brit, blk-tab, sme thnly lam, non calc

6750-6800 SH (100%): gysbn-lt gy, sme dk gy, frm-hd, sl sm-slty tex, brit ip, blk-tab, micmica, tr thnly lam, non calc

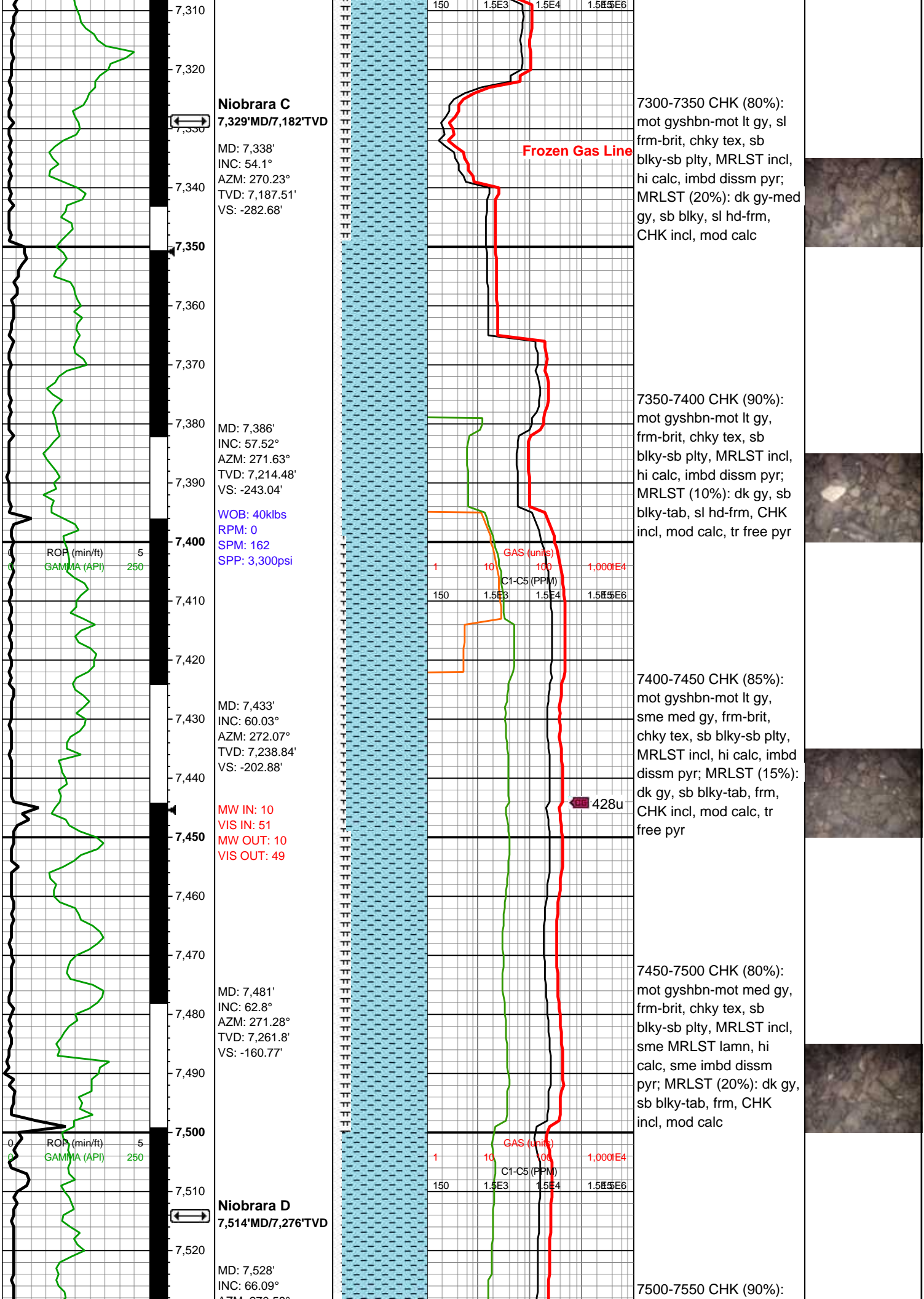
6800-6850 SH (100%): gysbn-med gy, sme dk gy, frm-hd, sl sm-slty tex, brit ip, blk-tab, micmica, non calc



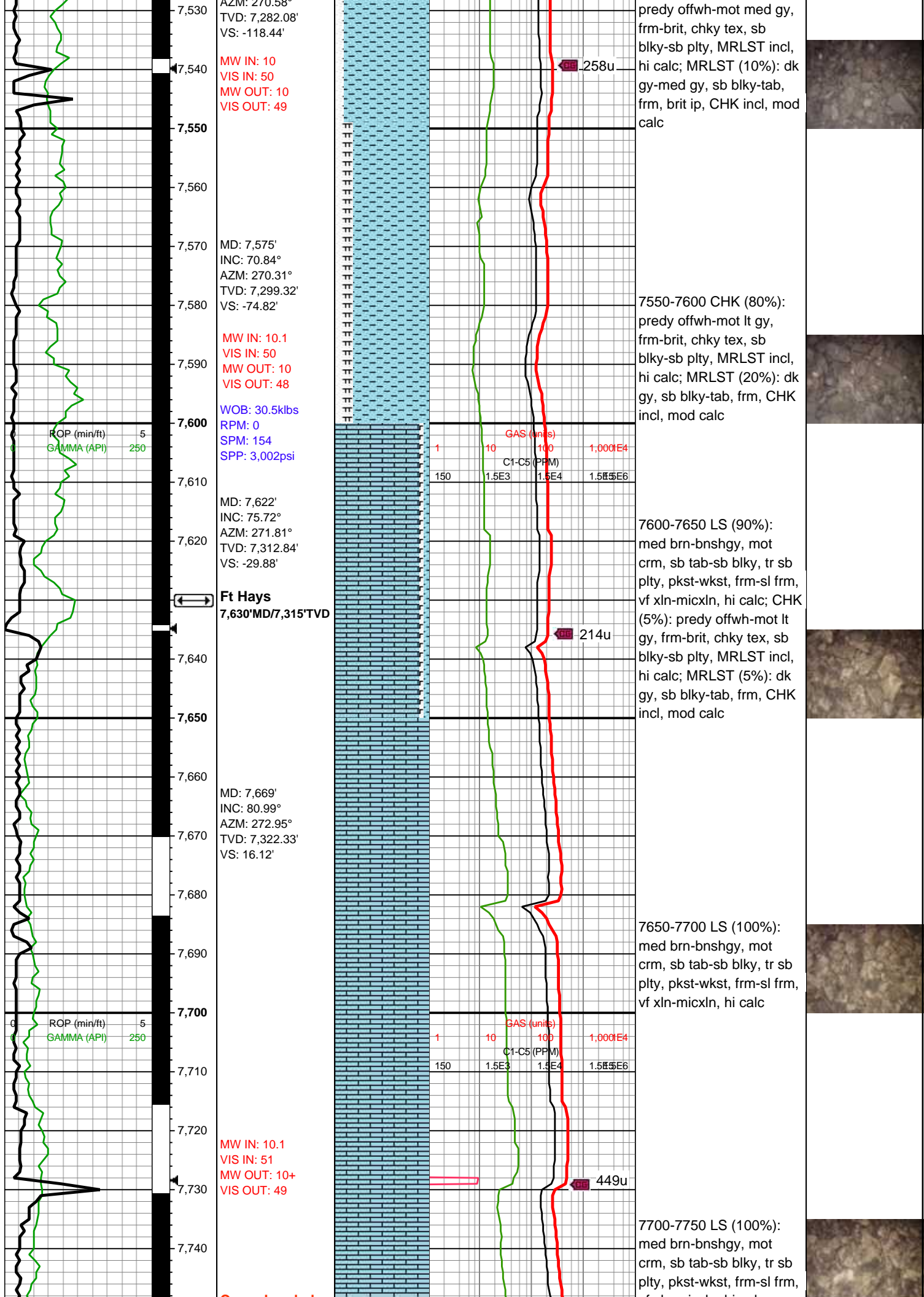


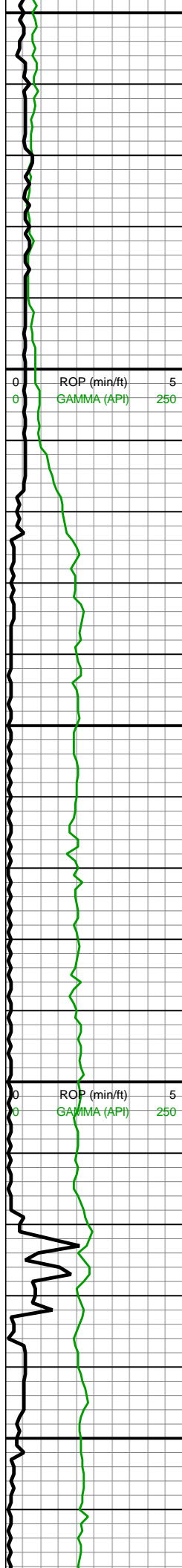












7,750  
7,760  
7,770  
7,780  
7,790  
7,800  
7,820  
7,830  
7,840  
7,850  
7,860  
7,870  
7,880  
7,890  
7,900  
7,910  
7,920  
7,930  
7,940  
7,950  
7,960

**Curve Landed  
@ 7,757'MD**

MD: 7,764'  
INC: 87.32°  
AZM: 273.65°  
TVD: 7,332'  
VS: 110.57'

MW IN: 10.1  
VIS IN: 50  
MW OUT: 10.1  
VIS OUT: 48

WOB: 29.8klbs  
RPM: 25  
SPM: 162  
SPP: 3,328psi

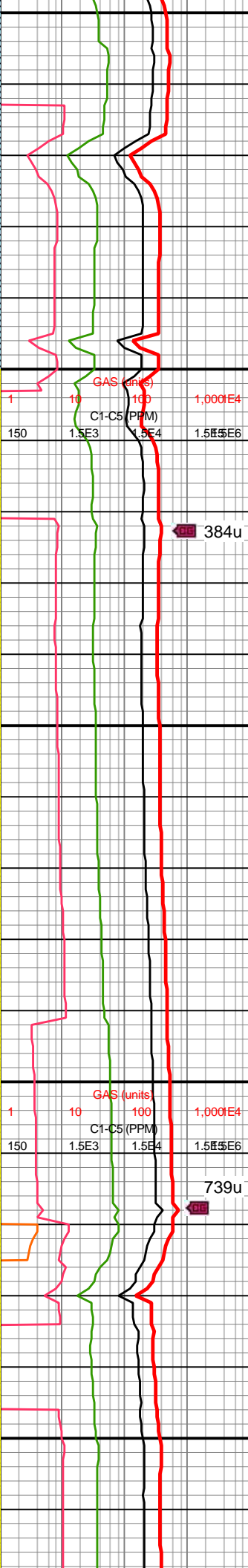
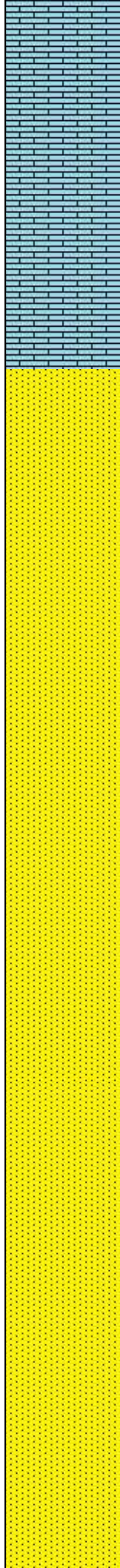


**Codell**  
7,810'MD/7,334'TVD

MD: 7,859'  
INC: 86.57°  
AZM: 272.86°  
TVD: 7,337.06'  
VS: 205.42'

MW IN: 10.1  
VIS IN: 51  
MW OUT: 10.1  
VIS OUT: 49

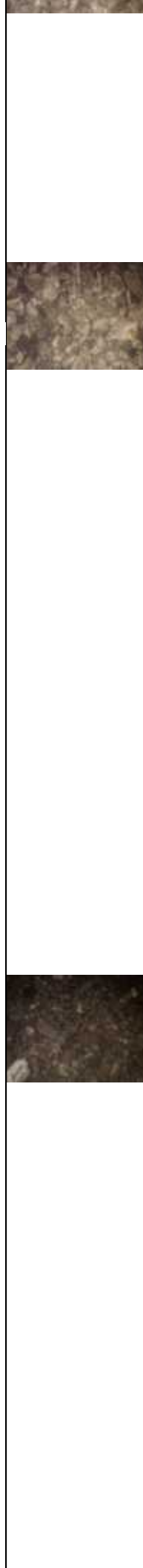
MD: 7,953'  
INC: 87.94°  
AZM: 272.34°  
TVD: 7,341.56'  
VS: 299.29'

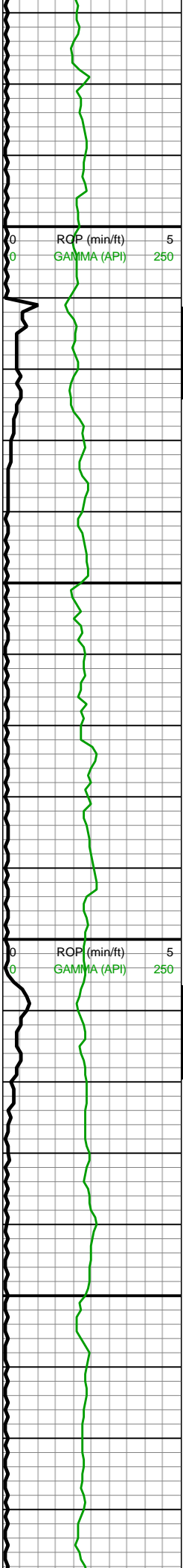


vf xln-micxln, hi calc

7750-7800 LS (100%):  
med brn-bnshgy, mot  
crm, sb tab-sb blkly, tr sb  
plty, pkst-wkst, frm-sl frm,  
vf xln-micxln, hi calc

7800-7900 SST (100%):  
pred med gyshbn-lt brn,  
frm-v frm, blkly, pred  
mod-w cons gr sup cls,  
silc cmt, non calc, vf-f  
grnd, sme sh frags



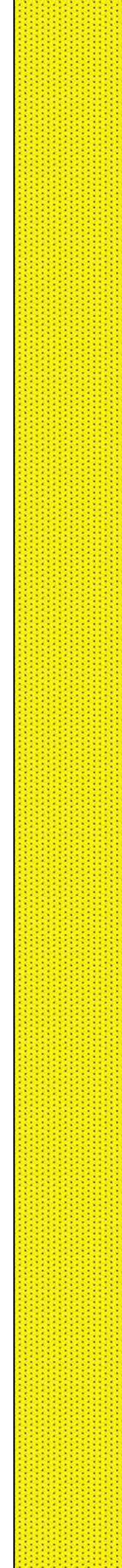


WOB: 36.9klbs  
RPM: 60  
SPM: 193  
SPP: 4,776psi

MD: 8,048'  
INC: 89.91°  
AZM: 271.28°  
TVD: 7,343.34'  
VS: 394.19'

MW IN: 10.1  
VIS IN: 50  
MW OUT: 10.1  
VIS OUT: 48

MD: 8,142'  
INC: 90.92°  
AZM: 269.88°  
TVD: 7,342.66'  
VS: 488.02'

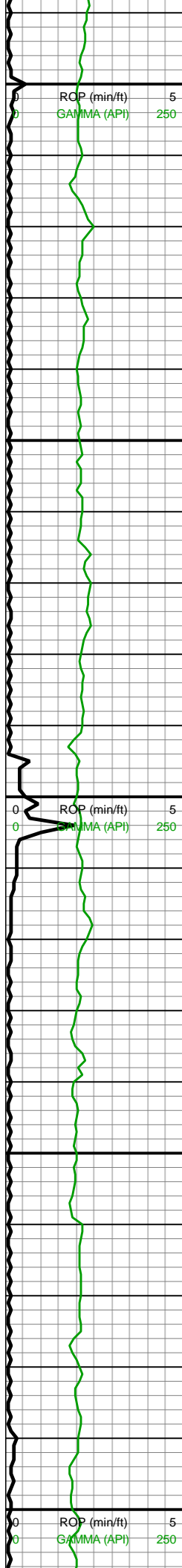


7900-8000 SST (100%):  
pred med gyshbn-lt brn,  
frm-sft, blk, pred mod-w  
cons gr sup cls, silc cmt,  
non calc, vf-f grnd, tr sh  
frags

8000-8100 SST (100%):  
pred med gyshbn-dk  
gyshbn, frm-sft, blk, pred  
mod-w cons gr sup cls,  
silc & arg cmt, non calc,  
vf-f grnd, tr sh frags

8100-8200 SST (100%):  
pred med gyshbn-dk  
gyshbn, sme lt brn-lt  
gyshbn, frm-sft, blk, pred





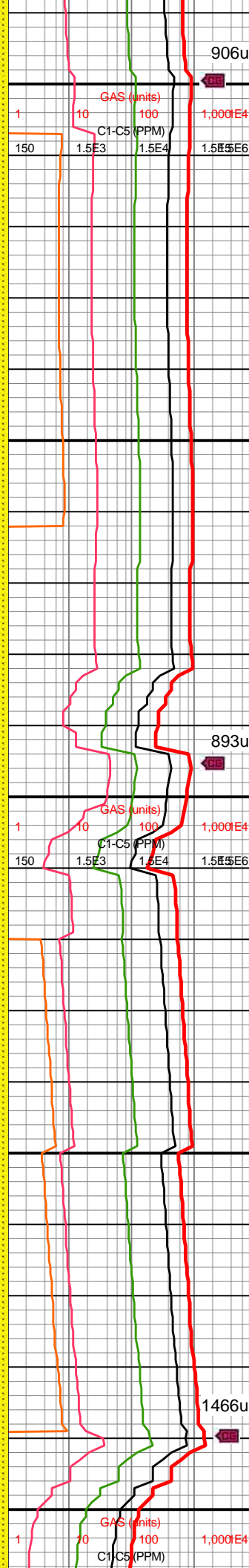
WOB: 40klbs  
RPM: 60  
SPM: 193  
SPP: 5,065psi

MD: 8,237'  
INC: 91.27°  
AZM: 270.14°  
TVD: 7,340.85'  
VS: 582.77'

MW IN: 10.1  
VIS IN: 50  
MW OUT: 10.1  
VIS OUT: 49

MD: 8,331'  
INC: 90.7°  
AZM: 269°  
TVD: 7,339.23'  
VS: 676.47'

WOB: 27.8klbs  
RPM: 60  
SPM: 193  
SPP: 4,654psi

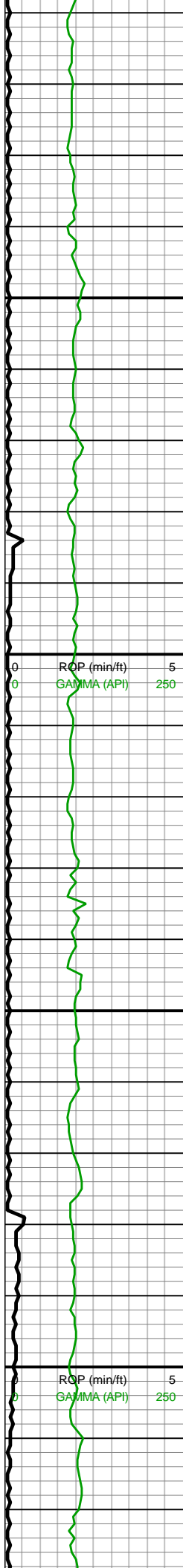


gyshbn, frm-sft, blk, pred  
mod-w cons gr sup cls,  
silc & arg cmt, non calc,  
vf-f grnd, occ sh frags

8200-8300 SST (100%):  
pred lt brn-med gyshbn,  
sme dk gyshbn, frm-sft,  
blk, pred mod-w cons gr  
sup cls, vf-f grnd, silc &  
arg cmt, non calc

8300-8400 SST (100%):  
pred lt brn, sme med-dk  
gyshbn, tr fros-clr free qtz,  
frm-hrd, rnd-sb rnd,  
mod-w cons gr sup cls,  
vf-f grnd, silc & arg cmt,  
non calc





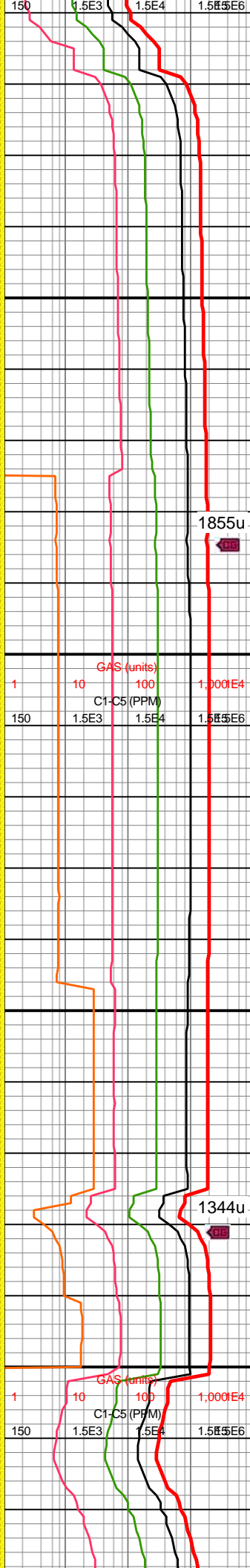
MD: 8,426'  
INC: 90.97°  
AZM: 269.08°  
TVD: 7,337.85'  
VS: 771.1'

MD: 8,520'  
INC: 91.36°  
AZM: 269.44°  
TVD: 7,335.93'  
VS: 864.76'

WOB: 38.7klbs  
RPM: 0  
SPM: 193  
SPP: 4,541psi

MD: 8,614'  
INC: 89.56°  
AZM: 268.82°  
TVD: 7,335.18'  
VS: 958.41'

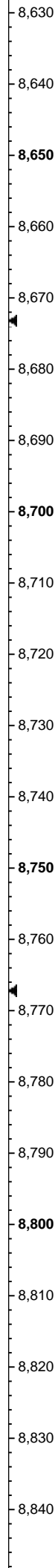
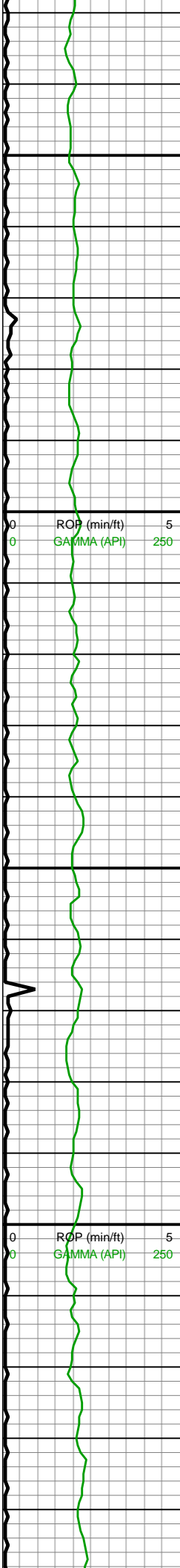
MW IN: 10.1  
VIS IN: 50



8400-8500 SST (100%):  
lt-med gyshbn, rr fros-clr  
free qtz, frm-sl hrd,  
rnd-sb rnd, mod-w cons  
gr sup cls, vf-f grnd, silc &  
arg cmt, non calc

8500-8600 SST (100%):  
pred lt brn-med gyshbn,  
frm-sft, blkly, pred mod-w  
cons gr sup cls, vf-f grnd,  
silc & arg cmt, non calc, tr  
sh frags



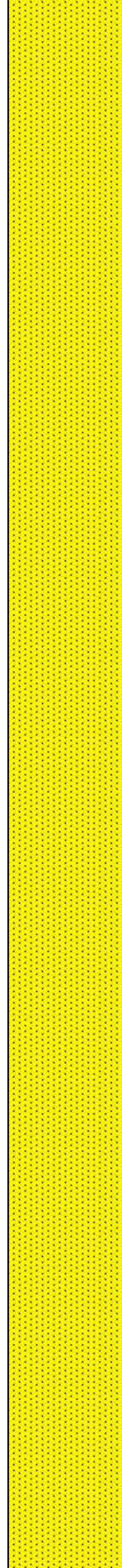


MW OUT: 10.1  
VIS OUT: 48

MD: 8,709'  
INC: 89.43°  
AZM: 268.56°  
TVD: 7,336.02'  
VS: 1,052.99'

WOB: 35.5klbs  
RPM: 60  
SPM: 194  
SPP: 4,971psi

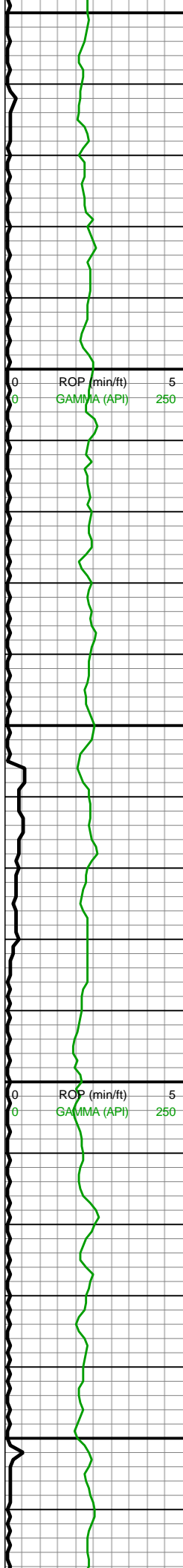
MD: 8,803'  
INC: 89.6°  
AZM: 268.38°  
TVD: 7,336.81'  
VS: 1,146.55'



8600-8700 SST (100%):  
predy lt-med gyshbn,  
sme dk gy, frm-sl hrd,  
rnd-sb rnd, mod-w cons  
gr sup cls, vf-f grnd, silc &  
arg cmt, tr fros-clr free  
qtz, non calc

8700-8800 SST (100%):  
predy lt-med gyshbn,  
sme dk gy, frm-sl hrd,  
rnd-sb rnd, mod-w cons  
gr sup cls, vf-f grnd, silc &  
arg cmt, tr fros-clr free  
qtz, non calc





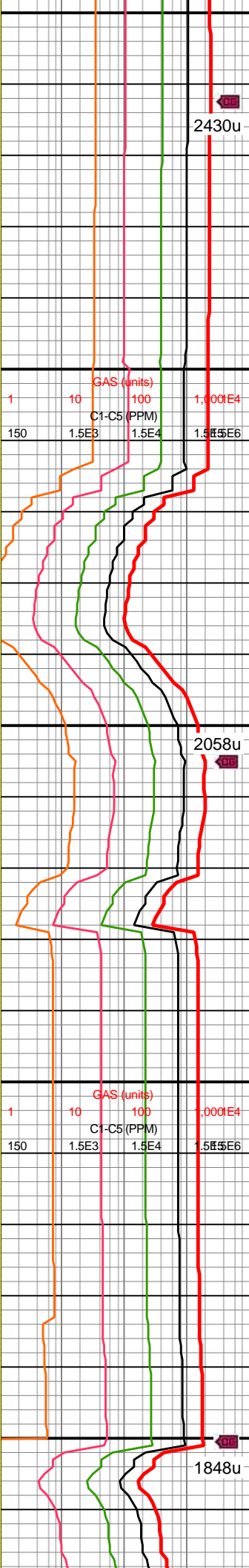
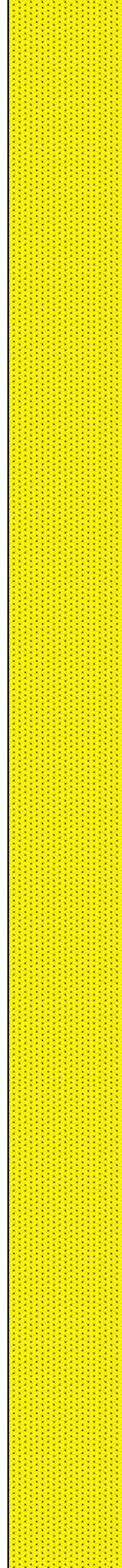
8,850  
8,860  
8,870  
8,880  
8,890  
8,900  
8,910  
8,920  
8,930  
8,940  
8,950  
8,960  
8,970  
8,980  
8,990  
9,000  
9,010  
9,020  
9,030  
9,040  
9,050  
9,060

MD: 8,897'  
INC: 90.18°  
AZM: 270.31°  
TVD: 7,336.99'  
VS: 1,240.23'

MW IN: 10.2  
VIS IN: 50  
MW OUT: 10.1+  
VIS OUT: 49

MD: 8,992'  
INC: 88.24°  
AZM: 268.56°  
TVD: 7,338.3'  
VS: 1,334.91'

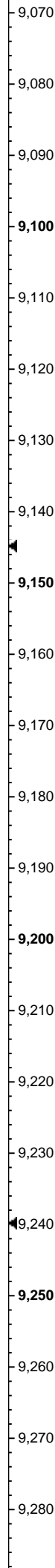
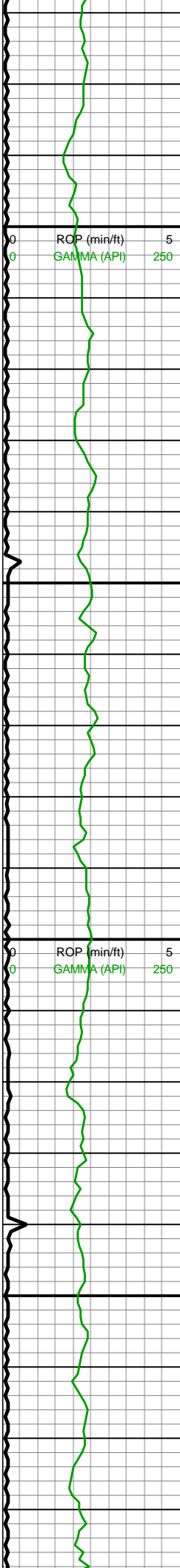
WOB: 39.9klbs  
RPM: 61  
SPM: 192  
SPP: 5,183psi



8800-8900 SST (100%):  
pred med-dk gyshbn, occ  
lt brn, frm-v frm, blk, pred  
mod-w cons gr sup cls,  
silc cmt, non calc, vf-f  
grnd, occ micmica, tr  
imbd pyr, rr sh frags

8900-9000 SST (100%):  
pred med-dk gyshbn, occ  
lt brn, frm-v frm, blk, pred  
mod-w cons gr sup cls,  
silc cmt, non calc, vf-f  
grnd, occ micmica, tr  
imbd pyr, rr sh frags



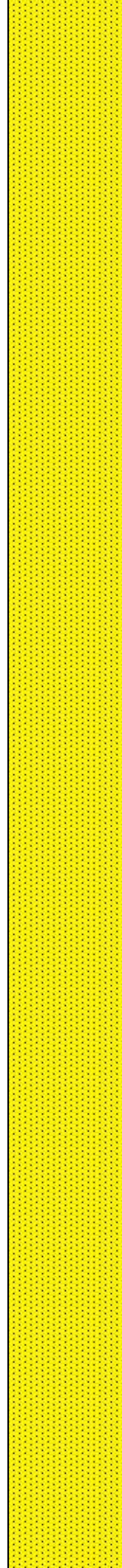


MD: 9,087'  
INC: 88.24°  
AZM: 267.68°  
TVD: 7,341.22'  
VS: 1,429.36'

WOB: 37.5klbs  
RPM: 60  
SPM: 193  
SPP: 5,185psi

MW IN: 10.2+  
VIS IN: 50  
MW OUT: 10.2+  
VIS OUT: 49

MD: 9,276'  
INC: 88.15°  
AZM: 267.33°  
TVD: 7,346.95'  
VS: 1,617.07'

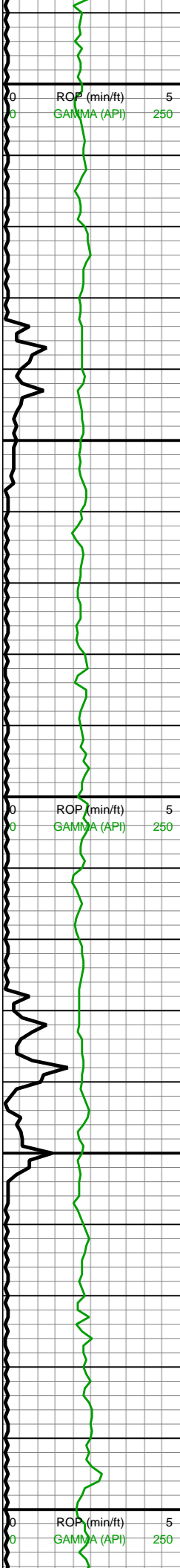


9000-9100 SST (100%):  
pred med gyshbn-dk  
gyshbn, frm-sft, blk, pred  
mod-w cons gr sup cls,  
silc & arg cmt, non calc,  
vf-f grnd, tr sh frags

9100-9200 SST (100%):  
pred med-dk gyshbn,  
frm-v frm, rnd-sb rnd,  
pred mod-w cons gr sup  
cls, silc cmt, non calc,  
vf-f, occ micmica, tr imbd  
pyr, tr sh frags, rr free qtz

9200-9300 SST (100%):  
pred med-dk gyshbn,  
frm-v frm, rnd-sb rnd,





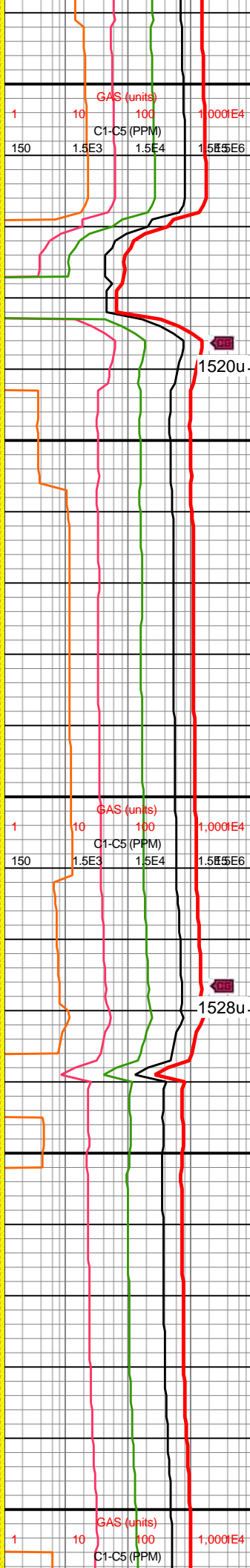
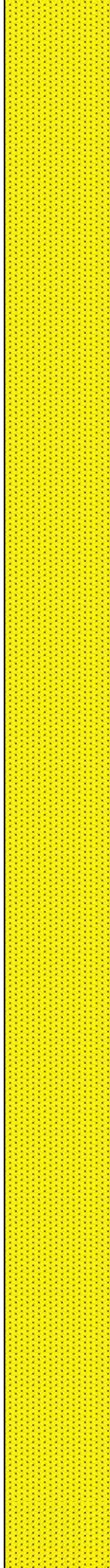
9,290  
9,300  
9,310  
9,320  
9,330  
9,340  
9,350  
9,360  
9,370  
9,380  
9,390  
9,400  
9,410  
9,420  
9,430  
9,440  
9,450  
9,460  
9,470  
9,480  
9,490  
9,500

MD: 9,370'  
INC: 90.31°  
AZM: 268.56°  
TVD: 7,348.22'  
VS: 1,710.52'

WOB: 38klbs  
RPM: 60  
SPM: 192  
SPP: 5,264psi

MW IN: 10.2+  
VIS IN: 49  
MW OUT: 10.2+  
VIS OUT: 48

MD: 9,464'  
INC: 90.48°  
AZM: 269.08°  
TVD: 7,347.57'  
VS: 1,804.13'



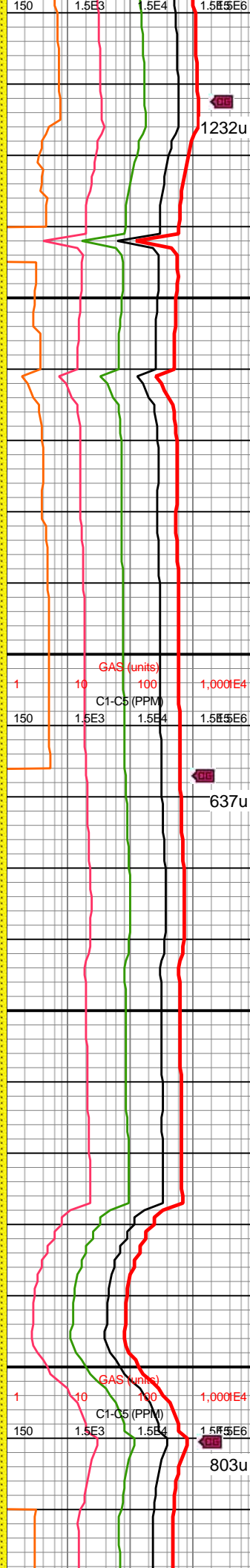
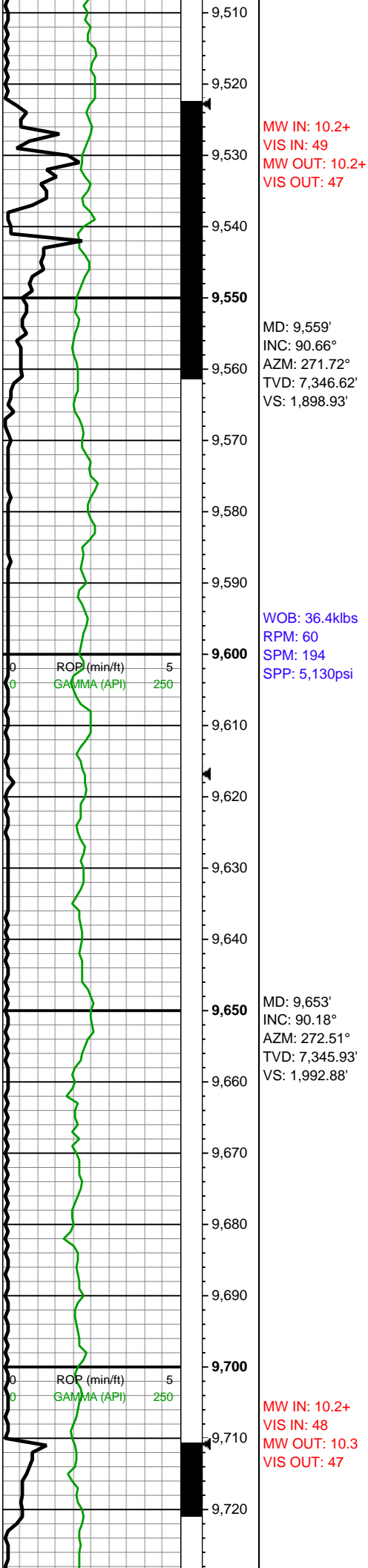
pred mod-w cons gr sup  
cls, silc cmt, non calc,  
vf-f, micmica, tr imbd pyr,  
tr sh frags

9300-9400 SST (100%):  
pred med-dk gyshbn,  
frm-v frm, rnd-sb rnd,  
pred mod-w cons gr sup  
cls, silc-arg cmt, non  
calc, vf-f, occ micmica, tr  
imbd pyr, tr sh frags, rr  
free qtz

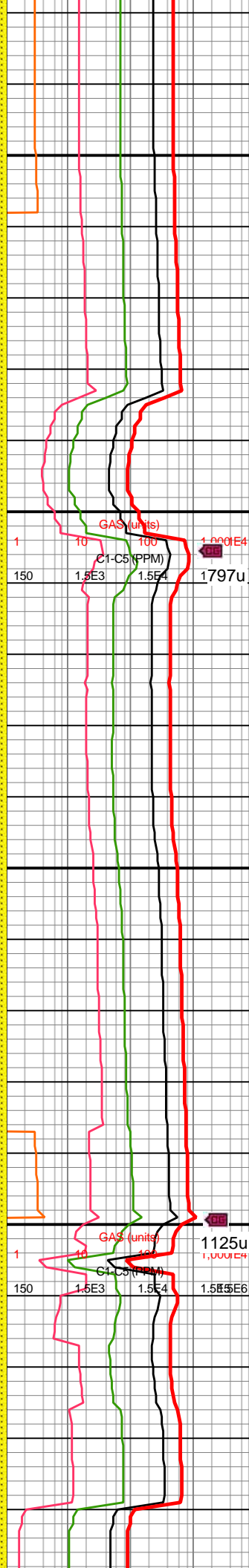
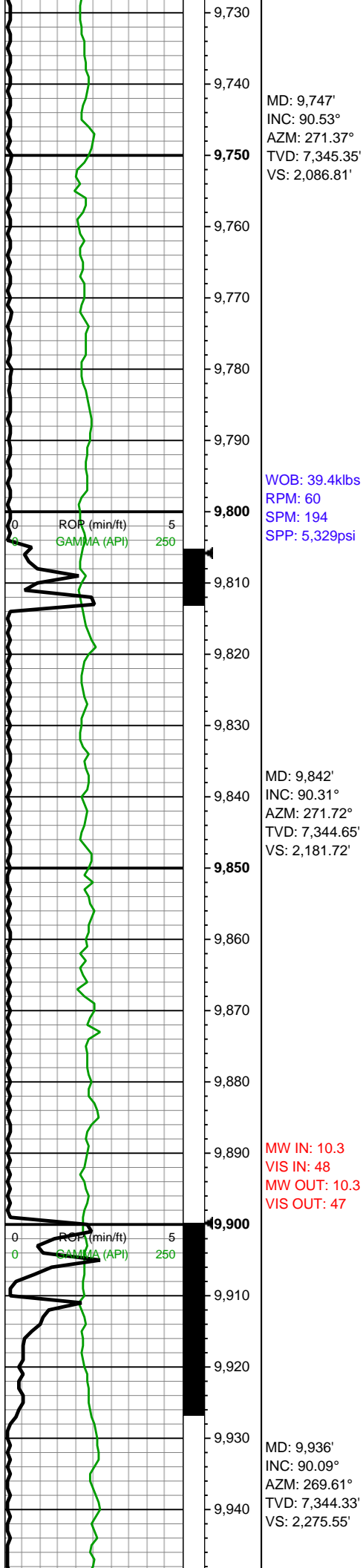
9400-9500 SST (100%):  
pred med-dk gyshbn,  
frm-v frm, rnd-sb rnd,  
pred mod-w cons gr sup  
cls, silc-arg cmt, non  
calc, med-f, micmica, occ  
imbd pyr, occ sh frags, tr  
free qtz

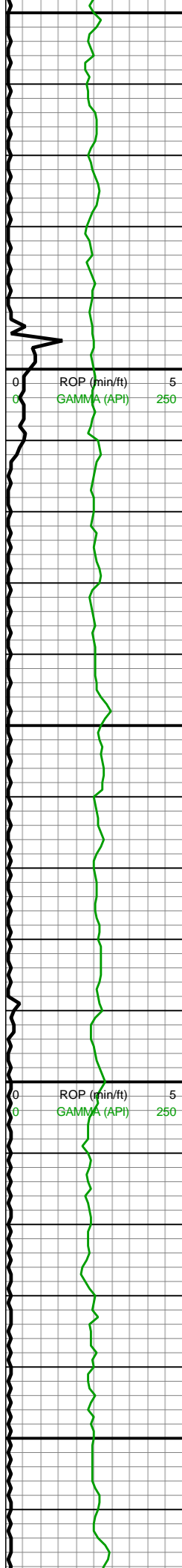












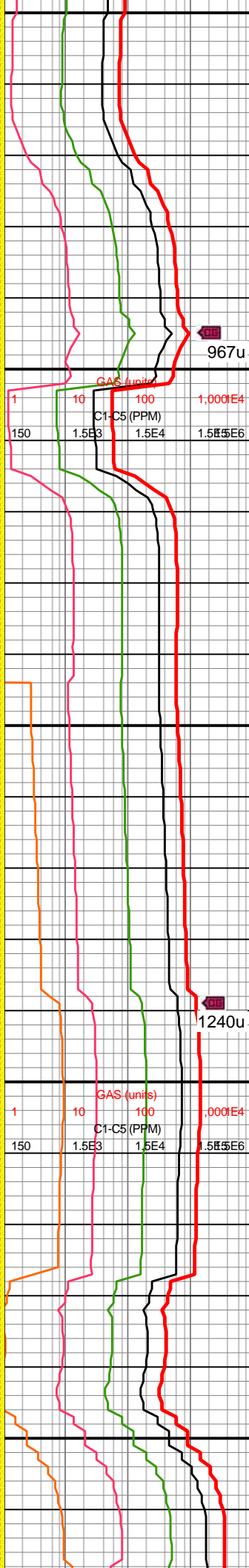
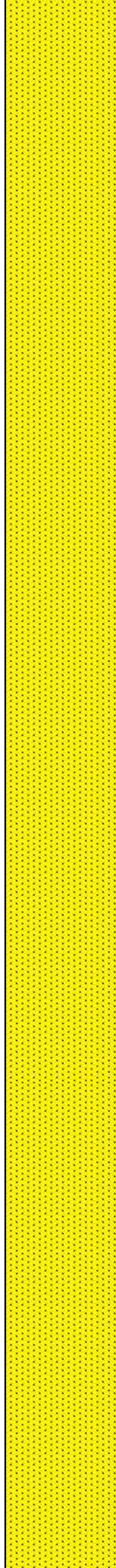
9,950  
9,960  
9,970  
9,980  
9,990  
10,000  
10,010  
10,020  
10,030  
10,040  
10,050  
10,060  
10,070  
10,080  
10,090  
10,100  
10,110  
10,120  
10,130  
10,140  
10,150  
10,160

MW IN: 10.3  
VIS IN: 50  
MW OUT: 10.3  
VIS OUT: 48

WOB: 38.8klbs  
RPM: 0  
SPM: 194  
SPP: 4,763psi

MD: 10,030'  
INC: 91.06°  
AZM: 267.59°  
TVD: 7,343.38'  
VS: 2,369.12'

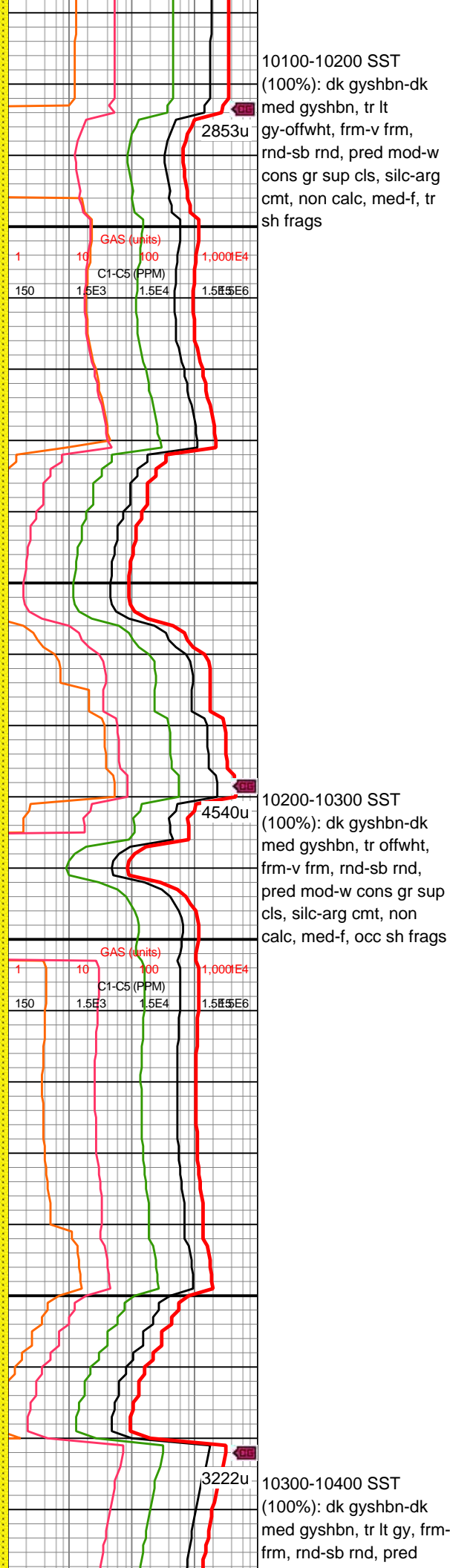
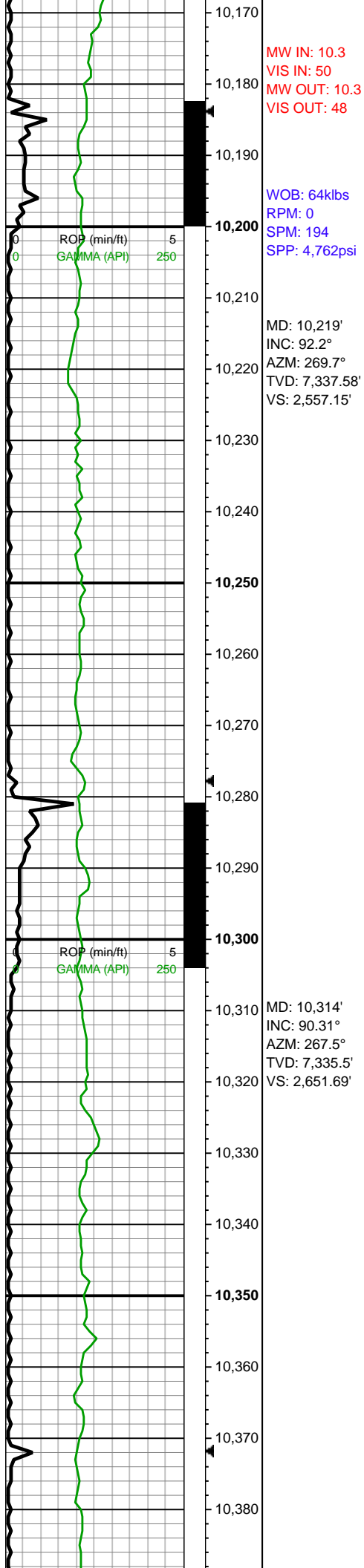
MD: 10,125'  
INC: 91.89°  
AZM: 268.38°  
TVD: 7,340.94'  
VS: 2,463.56'

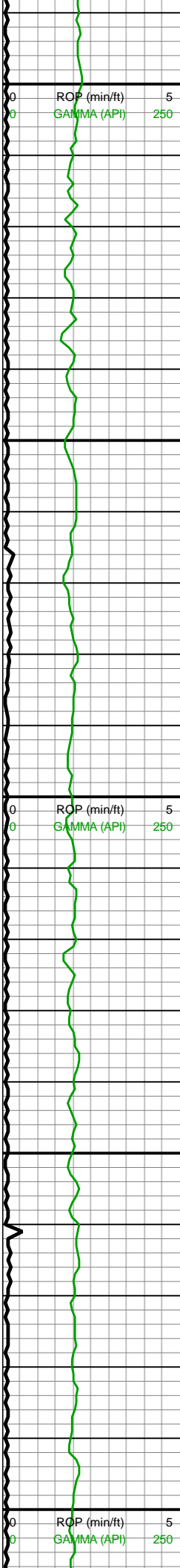


9900-10000 SST (100%):  
dk gyshbn-dk med  
gyshbn, tr lt gy, frm-v frm,  
rnd-sb rnd, pred mod-w  
cons gr sup cls, silc-arg  
cmt, non calc, med-f,  
sme sh frags

10000-10100 SST  
(100%): dk gyshbn-dk  
med gyshbn, sme lt gy,  
frm-v frm, rnd-sb rnd,  
pred mod-w cons gr sup  
cls, silc-arg cmt, non  
calc, med-f, occ sh frags





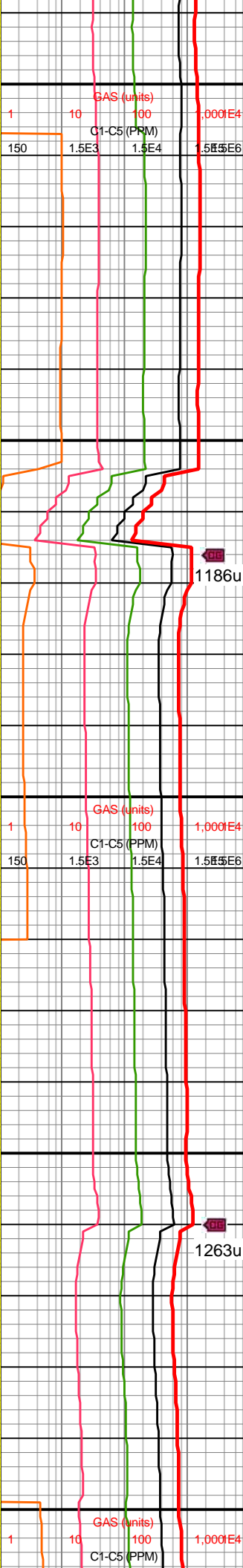
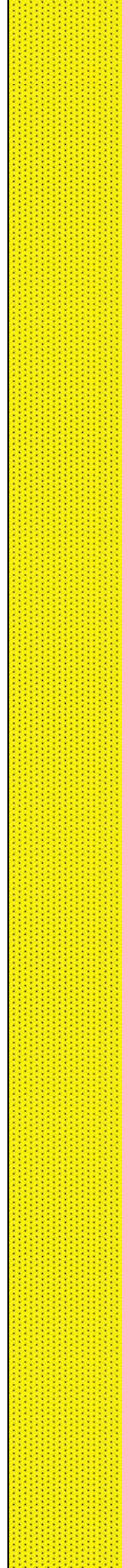


WOB: 43klbs  
RPM: 59  
SPM: 194  
SPP: 5,581psi

MD: 10,408'  
INC: 90.53°  
AZM: 267.94°  
TVD: 7,334.81'  
VS: 2,745.12'

MD: 10,503'  
INC: 90.4°  
AZM: 268.12°  
TVD: 7,334.04'  
VS: 2,839.6'

WOB: 42.1klbs  
RPM: 61  
SPM: 189  
SPP: 5,637psi



mod-w cons gr sup cls,  
silc-arg cmt, non calc,  
med-f, sme sh frags, tr  
free qtz

10400-10500 SST  
(100%): v dk gy-dk med  
gyshbn, frm-v frm, rnd-sb  
rnd, pred mod-w cons gr  
sup cls, sme unconcs,  
silc-arg cmt, non calc,  
med-f, rr sh frags, sme  
free qtz

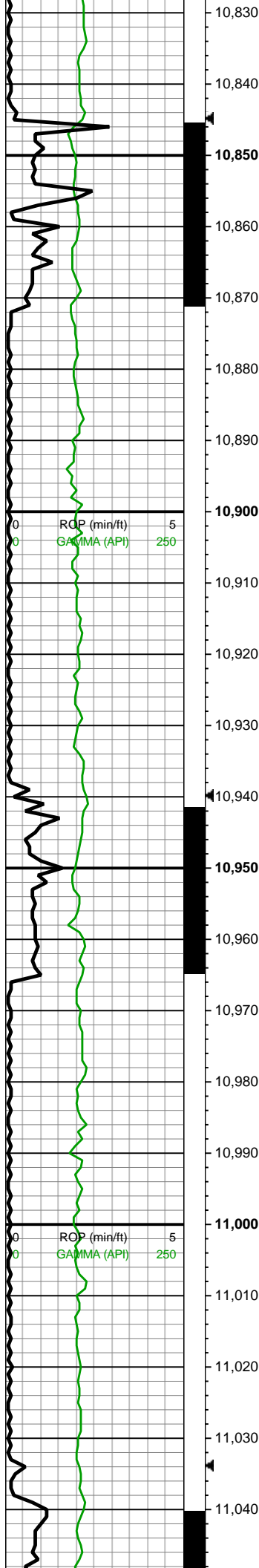
10500-10600 SST  
(100%): v dk gy-dk med  
gyshbn-med gyshbn,  
frm-v frm, rnd-sb rnd,  
pred mod-w cons gr sup  
cls, sme unconcs, silc-arg  
cmt, non calc, med-f, rr  
sh frags, sme free qtz











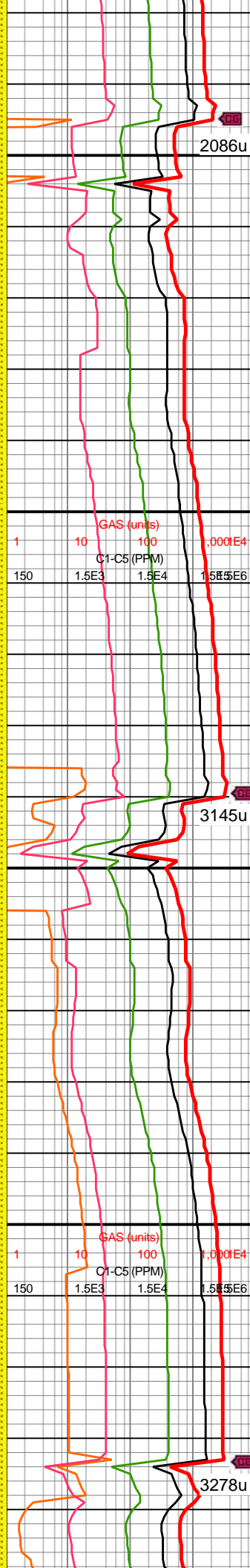
MD: 10,881'  
INC: 89.65°  
AZM: 269.52°  
TVD: 7,342.4'  
VS: 3,215.21'

MW IN: 10.3+  
VIS IN: 47  
MW OUT: 10.3+  
VIS OUT: 45

MD: 10,976'  
INC: 90.26°  
AZM: 271.55°  
TVD: 7,342.47'  
VS: 3,310.03'

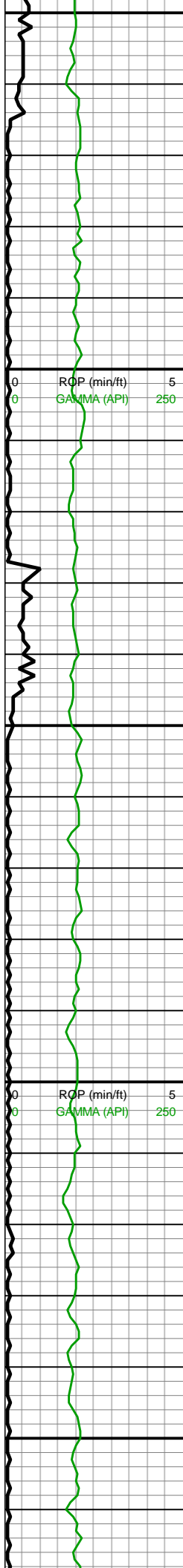
WOB: 40.4klbs  
RPM: 60  
SPM: 188  
SPP: 5,386psi

MW IN: 10.3+



10800-10900 SST  
(100%): v dk gy-dk med  
gyshbn, sme lt gy, frm-v  
frm, rnd-sb rnd, pred  
mod-w cons gr sup cls,  
sme uncons, silc-arg  
cmt, non calc, med-f,  
sme sh frags

10900-11000 SST  
(100%): predy med  
gyshbn-lt gy, frm-v frm,  
rnd-sb rnd, pred mod-w  
cons gr sup cls, silc-arg  
cmt, non calc, med-f, rr  
sh frags



VIS IN: 48  
MW OUT: 10.3+  
VIS OUT: 45

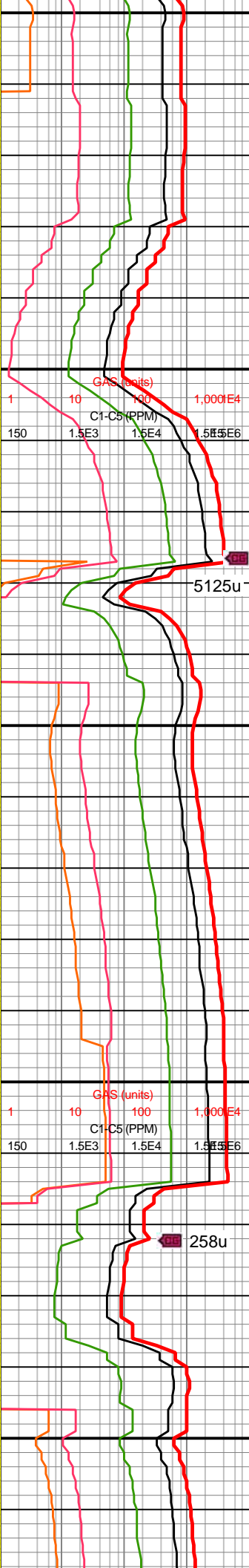
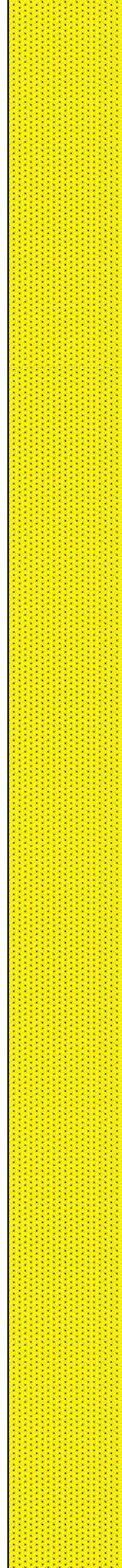
MD: 11,070'  
INC: 91.45°  
AZM: 274.27°  
TVD: 7,341.07'  
VS: 3,403.99'

MD: 11,165'  
INC: 91.19°  
AZM: 276.73°  
TVD: 7,338.88'  
VS: 3,498.93'

WOB: 39.8klbs  
RPM: 60  
SPM: 191  
SPP: 5,516psi

MW IN: 10.5  
VIS IN: 48  
MW OUT: 10.3+  
VIS OUT: 46

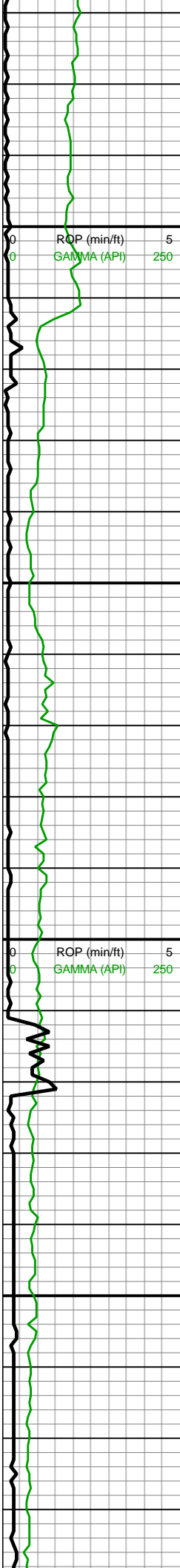
MD: 11,260'  
INC: 91.19°  
AZM: 276.55°  
TVD: 7,336.91'  
VS: 3,593.81'



11000-11100 SST  
(100%): predy med  
gyshbn-lt gyshbn, frm-v  
frm, rnd-sb rnd, pred  
mod-w cons gr sup cls,  
silc-arg cmt, non calc,  
med-f, rr sh frags

11100-11200 SST  
(100%): med gyshbn,  
frm-v frm, rnd-sb rnd,  
pred mod-w cons gr sup  
cls, silc-arg cmt, non  
calc, med-f, tr sh frags



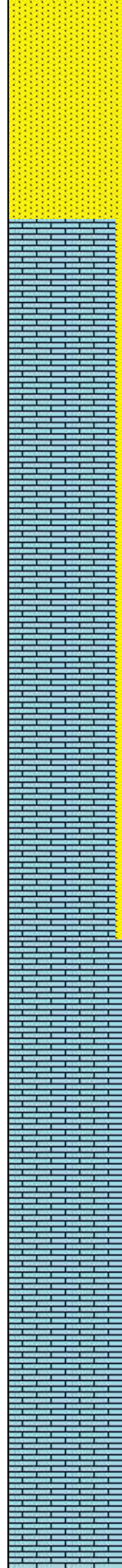


11,270  
11,280  
11,290  
11,300  
11,310  
11,320  
11,330  
11,340  
11,350  
11,360  
11,370  
11,380  
11,390  
11,400  
11,410  
11,420  
11,430  
11,440  
11,450  
11,460  
11,470  
11,480

MD: 11,354'  
INC: 91.41°  
AZM: 276.73°  
TVD: 7,334.78'  
VS: 3,687.69'

WOB: 40.8klbs  
RPM: 59  
SPM: 188  
SPP: 5,606psi

MD: 11,449'  
INC: 91.27°  
AZM: 276.55°  
TVD: 7,332.55'  
VS: 3,782.56'



11200-11300 SST (100%): med gyshbn, tr dk gyshbn, frm-v frm, rnd-sb rnd, pred mod-w cons gr sup cls, sme uncon, silc-arg cmt, non calc, med-f, tr sh frags, tr free qtz

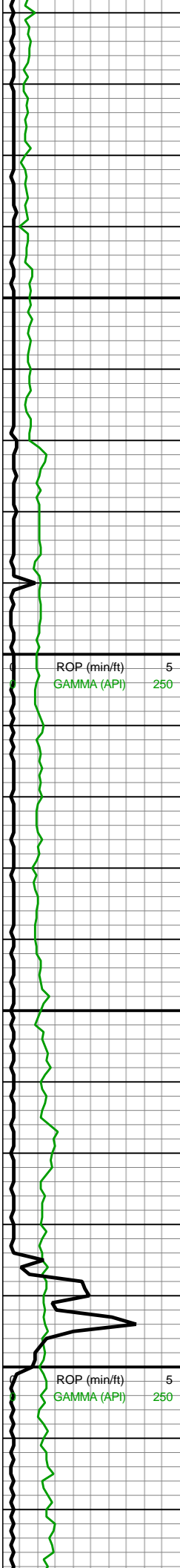
11300-11400 LS (95%): med brn-bnshgy, dk crm, sb tab-sb blk, tr sb plty, pkst-wkst, frm-sl frm, vf xln-micxln, hi calc; SST (5%): dk gyshbn, frm-v frm, rnd-sb rnd, pred uncon-mod-w cons gr sup cls, silc-arg cmt, non calc, med-f, tr sh frags, occ free qtz

11400-11500 LS (100%): med brn-bnshgy, dk crm









11,710  
11,720  
11,730  
11,740  
11,750  
11,760  
11,770  
11,780  
11,790  
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

MD: 11,732'  
INC: 89.96°  
AZM: 275.94°  
TVD: 7,332.93'  
VS: 4,065.41'

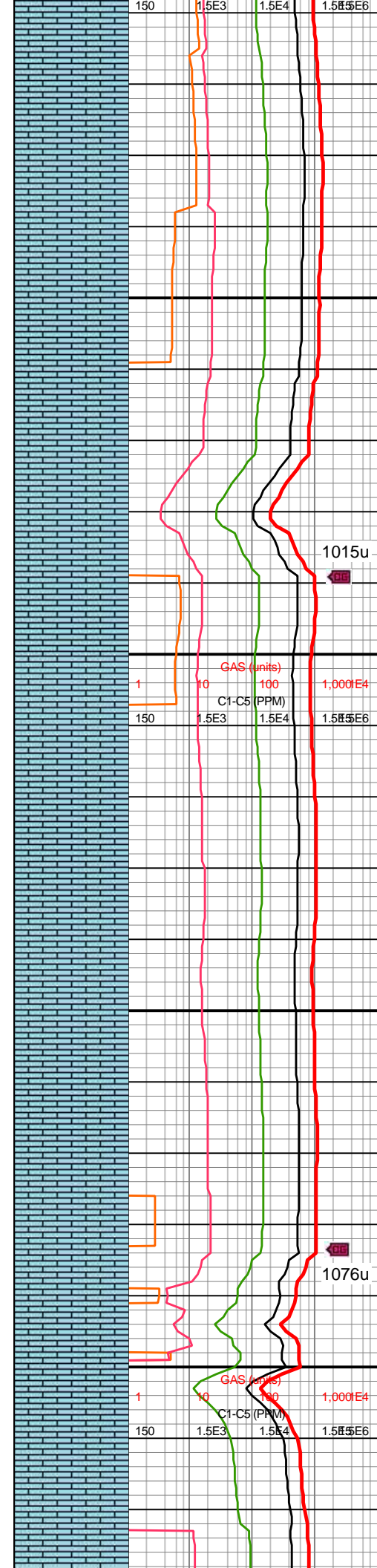
MW IN: 10.5  
VIS IN: 49  
MW OUT: 10.5  
VIS OUT: 47

WOB: 39.3klbs  
RPM: 60  
SPM: 188  
SPP: 5,433psi

MD: 11,827'  
INC: 90.62°  
AZM: 275.59°  
TVD: 7,332.45'  
VS: 4,160.37'

MW IN: 10.5  
VIS IN: 50  
MW OUT: 10.5  
VIS OUT: 49

MD: 11,921'  
INC: 88.64°  
AZM: 274.8°  
TVD: 7,333.06'  
VS: 4,254.34'

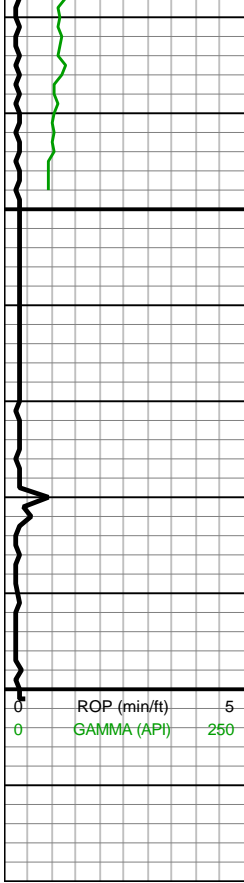


111700-11800 LS  
(100%): predy med brn,  
mot crm-offwht, sb tab-sb  
blky, tr sb plty, pkst-wkst,  
frm-sl frm, vf xln-micxln,  
hi calc

11800-11900 LS (100%):  
predy med brn, mot  
crm-offwht, sb tab-sb  
blky, tr sb plty, pkst-wkst,  
frm-sl frm, vf xln-micxln,  
hi calc







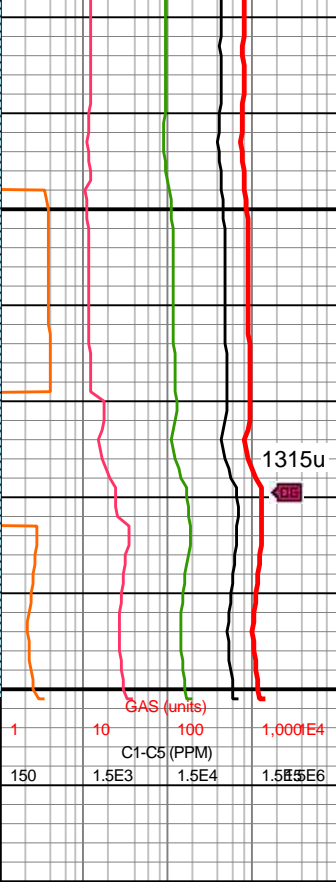
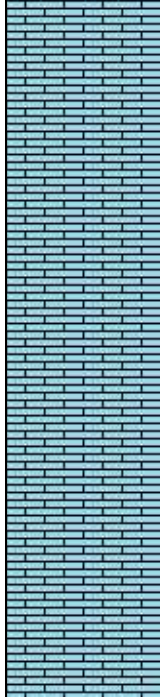
11,930  
11,940  
11,950  
11,960  
11,970  
11,980  
11,990  
12,000  
12,010  
12,020

MD: 11,943'  
INC: 88.73°  
AZM: 274.71°  
TVD: 7,333.56'  
VS: 4,276.33'

WOB: 40.4klbs  
RPM: 60  
SPM: 188  
SPP: 5,511psi

MD: 12,001'  
INC: 88.73°  
AZM: 274.71°  
TVD: 7,334.85'  
VS: 4,334.32'

**Total Depth of  
12,001' MD  
Reached on  
12/31/2018 @  
10:00MST**



1315u

11900-12000 LS (100%):  
predy med brn, mot  
crm-offwht, sb tab-sb  
blky, tr sb plty, pkst, frm-sl  
frm, vf xln-micxln, hi calc

