



Scale: 5" / 100'  
Measured Depth Log

**Well Name** Kugel11-18H-H267

**Location** Sec. 18 T2N R67W

**State** Colorado

**County** Weld

**Country** USA

**Rig Number** Ensign 153

**API Number** 05-123-49482

**AFE #** 16192095

**Geographic Region** Rockies

**Field** Wattenberg

**Spud Date** 7/25/2019

**Drilling Completed** 7/28/2019

**Surface Coordinates** Lat/Long (NAD83): 40.139606/-104.926457

SHL: Sec 18 T2N R67W  
Footage: 2198 FNL 681 FEL

**Bottom Hole Coordinates** Proposed BHL: Sec 7 T2N R67W  
Footage: 10 FNL 880 FEL

**Ground Elevation** 4,953'

**K.B. Elevation** 4,976'

**Logged Interval** 6,750' **To** 15,412'

**Total Depth** 15,412'

**Formation** Codell

**Type of Drilling Fluid** Synthetic Oil Based Mud (Neoflo Base Oil)

## Operator

**Company** Crestone Peak Resources

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



**CRESTONE PEAK**  
RESOURCES

Geologist

Color Coding

## Geologist

**Name** John Ready

**Company** Crestone Peak Resources

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



## Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

## Other

**Loggers:** Nicholas Watkins, Thomas Yull

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

**Equipment:** ML-558

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

**Service Start Date:** 7/25/2019

**Service End Date:** 7/30/2019

**Job #** 2361RK1907

**Release Date:** 7/30/2019

## Rock Types

UNKNOWN	CHERT	SILTSTONE	IGNEOUS
ANHYDRITE	COAL	SANDSTONE	METAMORPHIC
GYPSUM	MARLSTONE	CONGLOMERATE	CEMENT
SALT	CHALK	BRECCIA	No Sample
SIDERITE or LIMONITE	SHALE	TILL	
LIMESTONE	SHALE GRAY	BENTONITE	
DOLOMITE	SHALE COLORED	TUFF	

## Accessories

### Fossils

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHIOPOD
BRYOZOA
CEPHALOPOD
CORAL

### Fossil

GASTROPOD
OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD

### ARGILLACEOUS

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

### GLAUCONITE

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

### Stringer

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

⊗ 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  
F FRACTURE  
X INTERCRYSTALLINE  
⊕ INTEROOLITIC  
X MOLDIC

□ ORGANIC  
P PINPOINT  
▽ VUGGY

## Engineering

▲ BIT  
▬ CASING  
◀ CONNECTION (LEFT)  
▶ CONNECTION (RIGHT)  
🔍 CONNECTION GAS  
↓ CORE - LOST  
■ CORE - RECOVERED  
⋮ DST INTERVAL  
⚡ FAULT

## Other Symbols

↔ FORMATION TOP  
✳ GAS SHOW  
MNDPTH MN DEPTH  
↗ NORMAL FAULT  
● OIL SHOW  
⬆ OVERTURNED STRATA  
↘ REVERSE FAULT  
◀ SIDEWALL CORE (LEFT)  
▶ SIDEWALL CORE (RIGHT)  
▮ SLIDE  
DS SURVEY  
TG TRIP GAS  
◀ WIRELINE TESTED - LEFT  
▶ WIRELINE TESTED - RT

## Rounding

△ ANGULAR  
R ROUNDED  
▮ SUBANG  
r SUBRND

## Textures

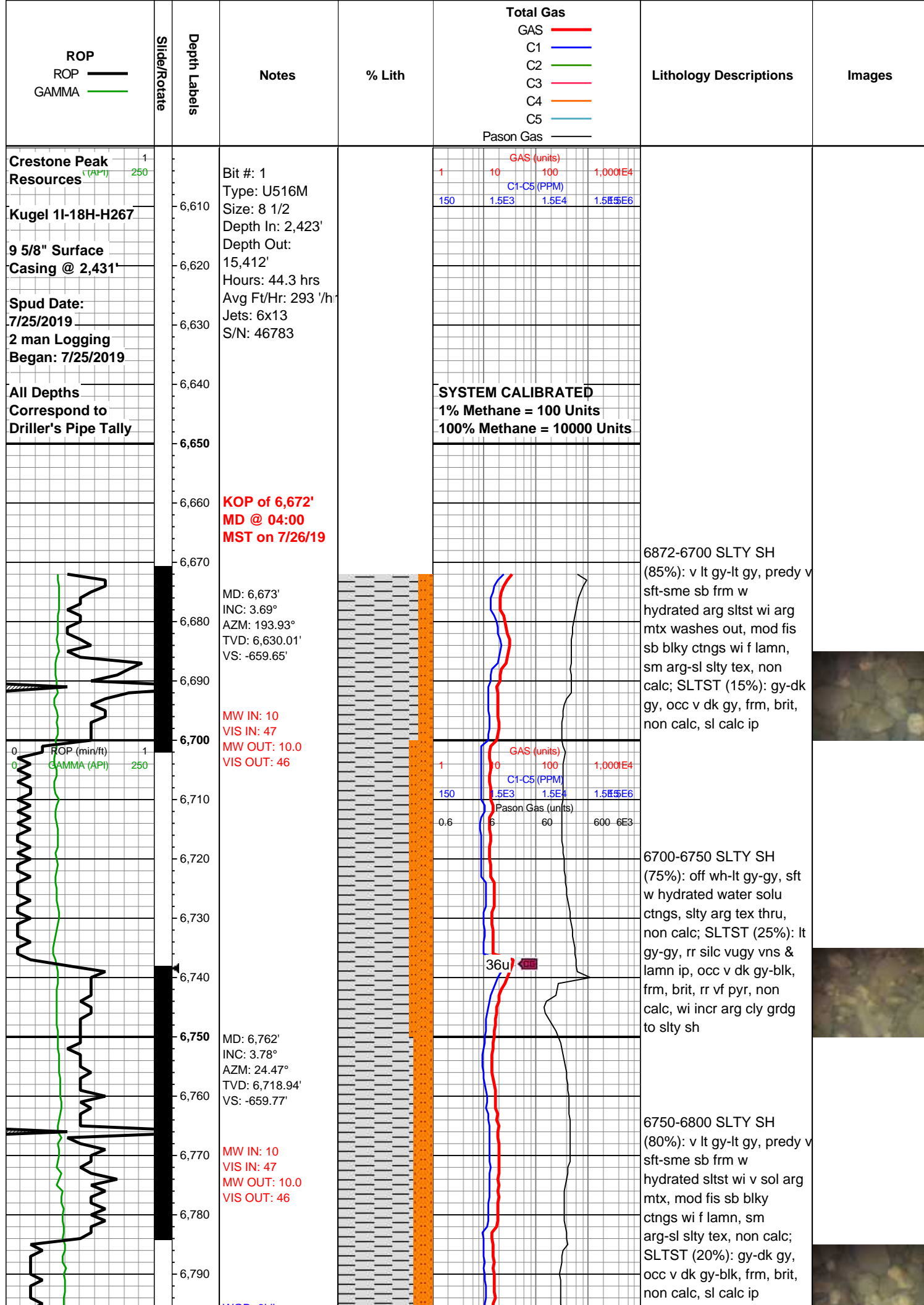
BS BOUNDSTONE  
C CHALKY  
CX CRYPTOXLN  
E EARTHY  
FX FINELYXLN  
GS GRAINSTONE

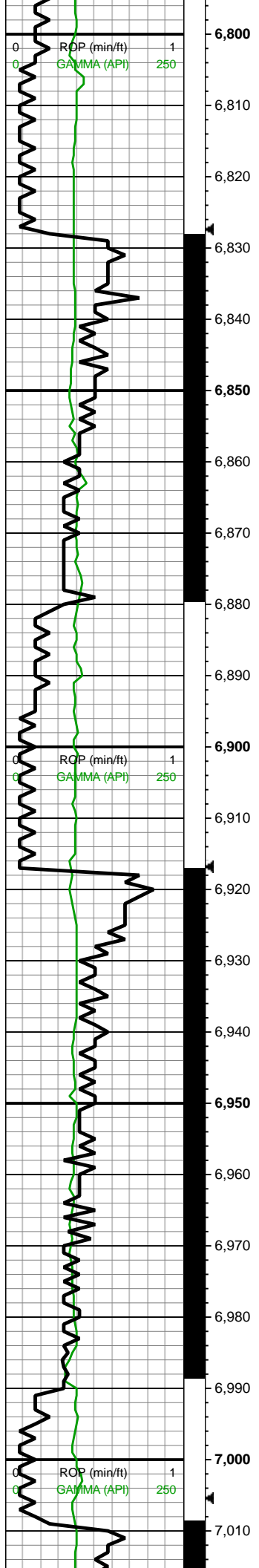
L LITHOGRAPHIC

MX MICROXLN  
MS MUDSTONE  
PS PACKSTONE  
WS WACKESTONE

## Sorting

M MODERATE  
P POOR  
W WELL





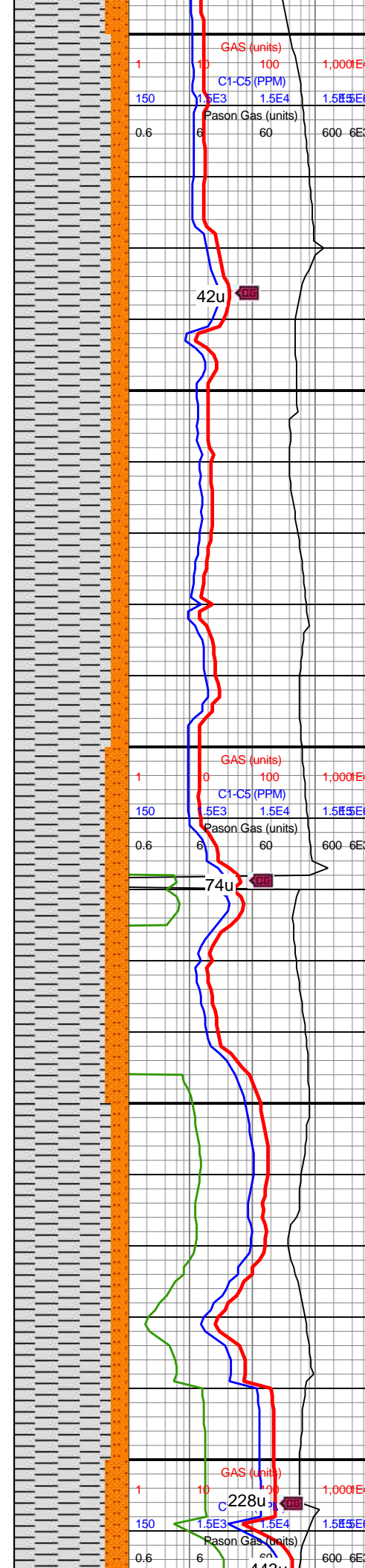
WOB: 6klbs  
RPM: 30  
SPM: 207  
SPP: 3,720psi

MD: 6,851'  
INC: 8.88°  
AZM: 25°  
TVD: 6,807.37'  
VS: -650.93'

MW IN: 10  
VIS IN: 47  
MW OUT: 10.0  
VIS OUT: 46

MD: 6,940'  
INC: 12.93°  
AZM: 13.05°  
TVD: 6,894.76'  
VS: -635.08'

WOB: 29klbs  
RPM: 30  
SPM: 203  
SPP: 4,200psi



6800-6850 SLTY SH:  
(85%) lt gy, gy, sft-sb frm,  
brit ip, sb blk-y-sb ang,  
rthy-chky tex, tr vugy, occ  
sltst lamn, non calc;  
SLTST (15%) dk gy, occ  
blk, fri-hrd, sb blk-y-plty,  
silc-arg cmt, w cmted ip,  
non calc

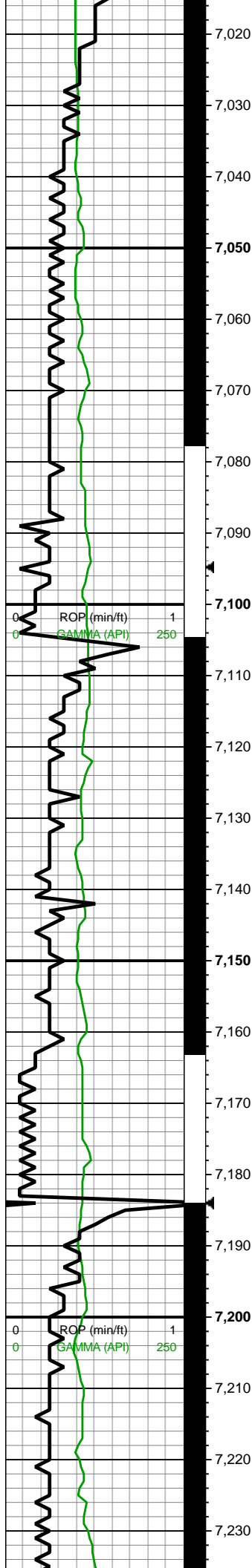
6850-6900 SLTY SH  
(85%): v lt gy-lt gy, predy v  
sft-sme sb frm w  
hydrated arg sltst wi arg  
mtx washes out, mod fis  
sb blk-y-ctngs wi f lamn,  
sm arg-sl slty tex, non  
calc; SLTST (15%): gy-dk  
gy, occ v dk gy, frm, brit,  
non calc, sl calc ip

6900-6950 SLTY SH  
(80%): v lt gy-lt gy, predy v  
sft-sme sb frm w  
hydrated sltst wi v sol arg  
mtx, mod fis sb blk-y  
ctngs wi f lamn, sm  
arg-sl slty tex, non calc;  
SLTST (20%): gy-dk gy,  
occ v dk gy-blk, frm, brit,  
non calc, sl calc ip

6950-7000 SLTY SH:  
(85%) lt gy-lt gyshbn-gy,  
sft-sb frm predy water  
solu v arg mtx washes  
away, brit ip wi predy silc  
cmt grd to sltst, sb  
blk-y-sb ang, rthy-chky tex,  
tr vugy, occ sltst lamn,  
non calc; SLTST (15%)  
dk gy, frm-brit, sb  
blk-y-plty, silc-arg cmt wi  
incr arg cmt grd to slty  
sh, non calc

7000-7050 SLTY SH  
(80%): v lt gy-lt gy, predy v  
sft-sme sb frm w





MD: 7,029'  
INC: 19.96°  
AZM: 355.64°  
TVD: 6,980.11'  
VS: -610.21'

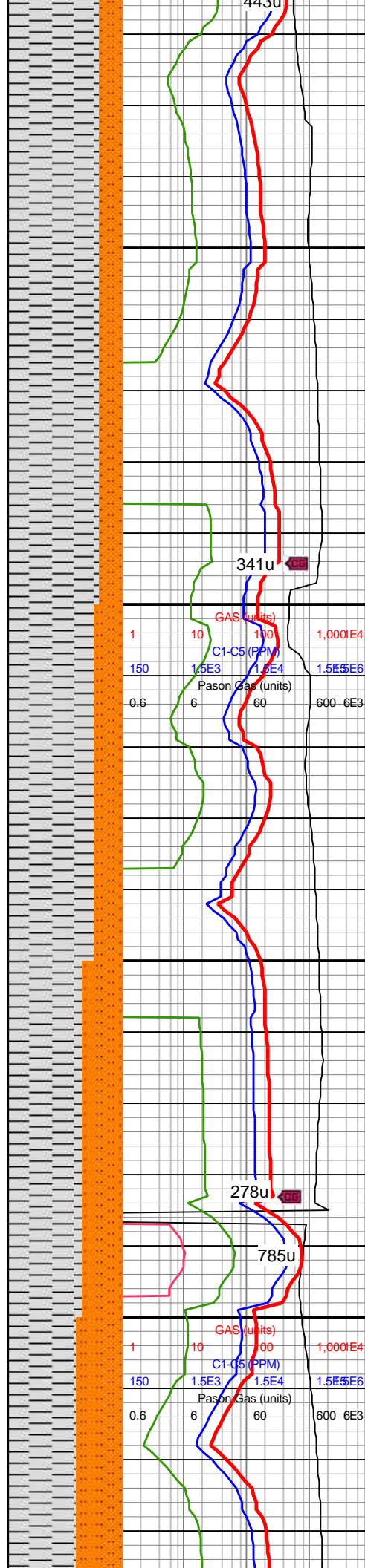
MW IN: 10  
VIS IN: 48  
MW OUT: 10.0  
VIS OUT: 46

MD: 7,119'  
INC: 28.05°  
AZM: 352.13°  
TVD: 7,062.26'  
VS: -573.81'

WOB: 17klbs  
RPM: 0  
SPM: 206  
SPP: 3,470psi

MD: 7,208'  
INC: 34.47°  
AZM: 353.36°  
TVD: 7,138.3'  
VS: -527.93'

MW IN: 10.05  
VIS IN: 48  
MW OUT: 10.0  
VIS OUT: 46



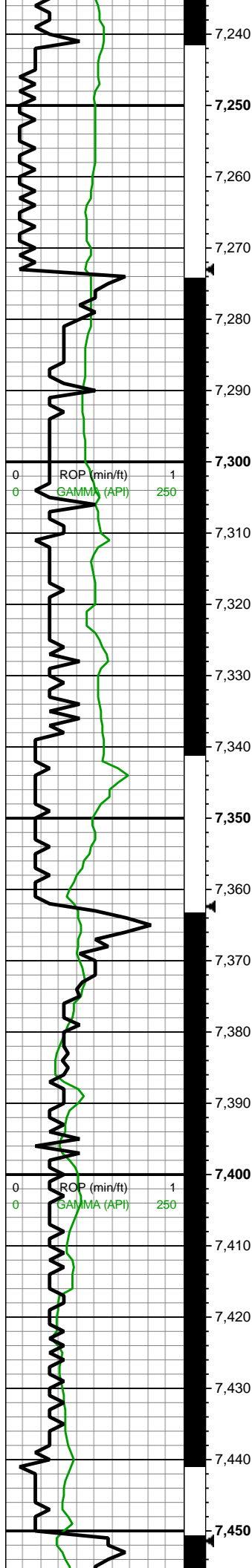
hydrated sltst wi v sol arg  
mtx, mod fis sb blk  
ctngs wi f lamn, sm  
arg-sl slty tex, predy non  
calc, mod-hi calc ip;  
SLTST (20%) dk gy,  
frm-brit, sb blk-pty,  
silc-arg cmt wi incr arg  
cmt grdg to slty sh, non  
calc

7050-7100 SLTY SH:  
(80%) lt gy-lt gyshbn-gy,  
sft-sb frm predy water  
solu v arg mtx washes  
away, mod fis sb blk-pty  
ang ctngs wi sm arg-sl  
slty tex, non calc; SLTST  
(20%) dk gy, frm-brit, sb  
blk-pty, silc-arg cmt wi  
incr arg cmt grdg to slty  
sh, predy non calc,  
mod-hi calc ip

7100-7150 SLTY SH:  
(75%) lt gy-lt gyshbn-gy,  
sft-sb frm predy water  
solu v arg mtx washes  
away, brit ip wi predy silc  
cmt grdg to sltst, sb  
blk-pty ang, rthy-chky tex,  
tr vugy, occ sltst lamn,  
non calc; SLTST (25%)  
dk gy, frm-brit, sb  
blk-pty, silc-arg cmt wi  
incr arg cmt grdg to slty  
sh, non calc

7150-7200 SLTY SH  
(65%): lt gy-lt gyshbn-gy,  
sft-sme sb frm w  
hydrated sltst wi v sol arg  
mtx ip, mod fis sb blk  
ctngs wi f lamn, sm  
arg-sl slty tex, predy non  
calc, mod-hi calc ip, wi  
decr arg cmt grdg to sltst;  
SLTST (35%) dk gy,  
frm-brit, sb blk-pty,  
silc-arg cmt wi incr arg  
cmt grdg to slty sh, non  
calc

7200-7250 SLTY SH  
(65%): lt gy-lt gyshbn-gy,  
sft-sme sb frm w  
hydrated sltst wi v sol arg  
mtx ip, mod fis sb blk  
ctngs wi f lamn, sm  
arg-sl slty tex, predy non  
calc, mod-hi calc ip, wi

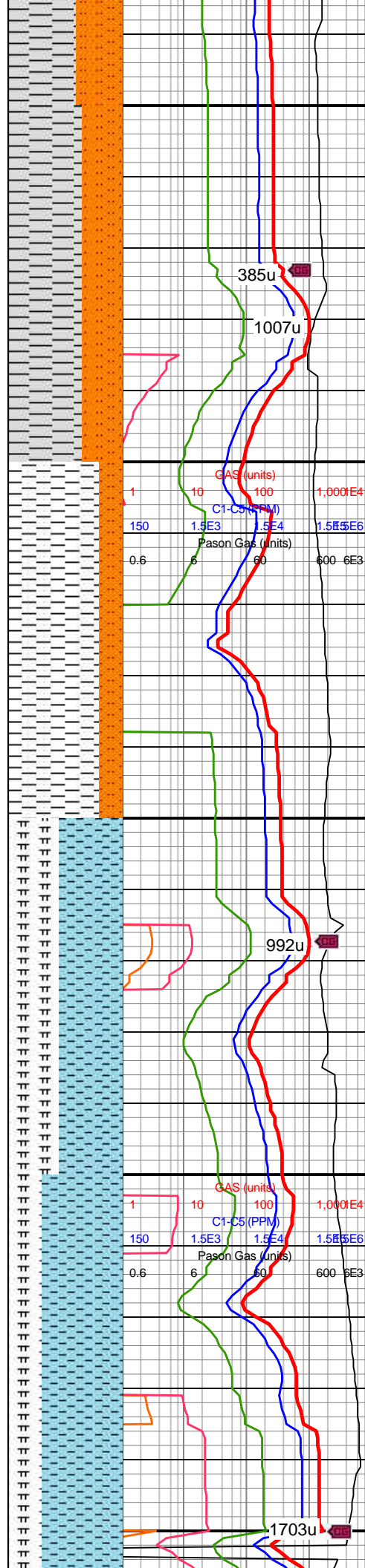


MD: 7,297'  
INC: 39.57°  
AZM: 356.17°  
TVD: 7,209.35'  
VS: -474.52'

MW IN: 10.15  
VIS IN: 48  
MW OUT: 10.1  
VIS OUT: 46

↔  
**Niobrara A Chalk**  
7355'MD/7252'TVD  
↔  
**A Marl**  
7363'MD/7258'TVD  
↔  
**B Chalk**  
7366'MD/7260'TVD  
MD: 7,386'  
INC: 45.46°  
AZM: 355.29°  
TVD: 7,274.92'  
VS: -414.51'  
WOB: 32klbs  
RPM: 0  
SPM: 204  
SPP: 3,640psi

↔  
**B Marl**  
7448'MD/7316'TVD



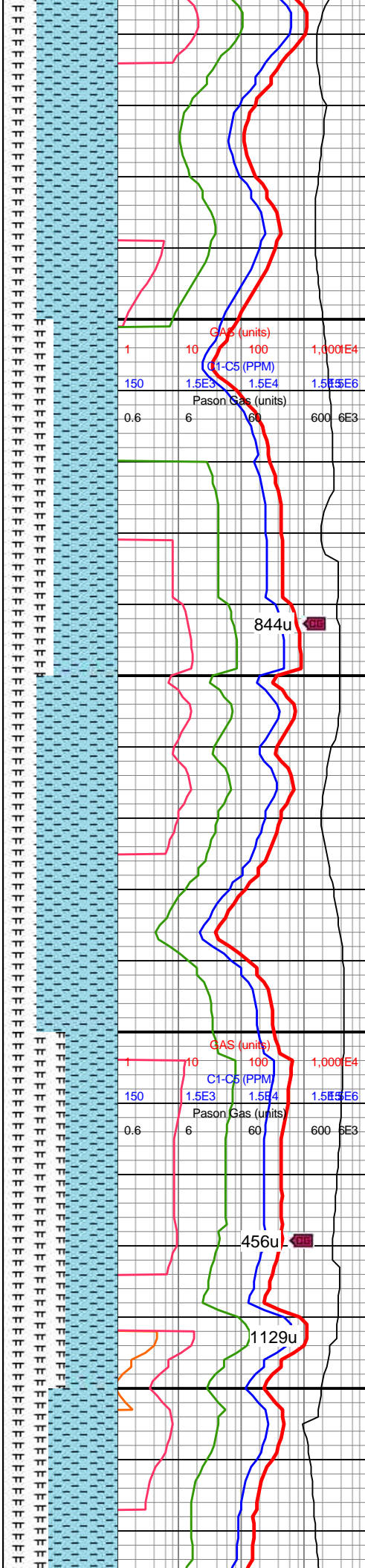
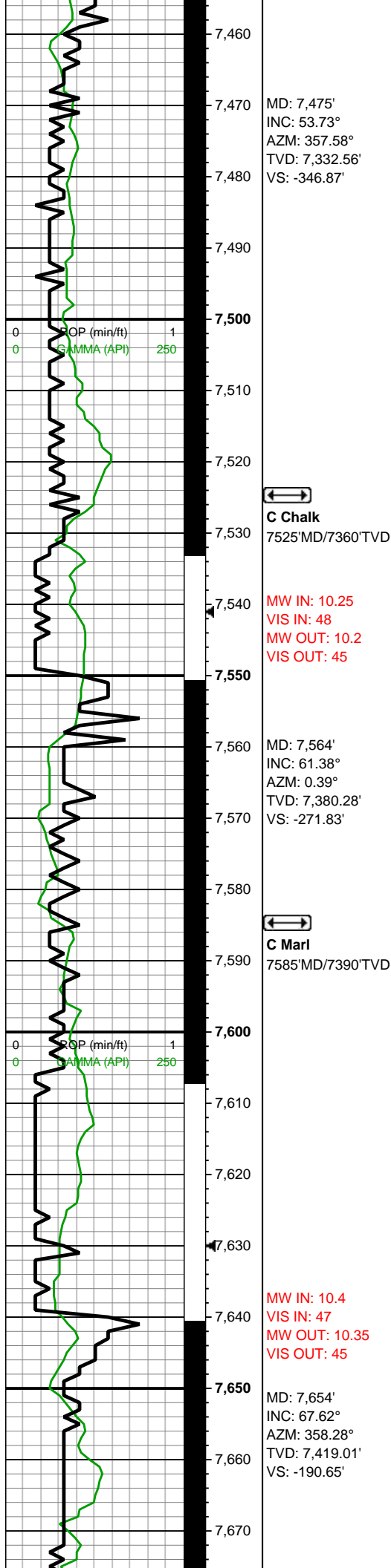
decr arg cmt grd to sltst;  
SLTST (35%): lt gy-gy-dk  
gy, frm, brit, non calc

7250-7300 SLTY SH  
(65%): predy lt gy-gy, v lt  
gy ip grd to slty sh,  
predy v sft-sme sb frm  
sltst wi arg mtx washes  
out, mod fis sb blkly ctngs  
wi f lamn ip, sm arg-sl  
slty tex, predy non calc, rr  
calc ip; SLTST (35%): lt  
gy-gy-dk gy, frm, brit, non  
calc

7300-7350 SLTY SH:  
(80%) gyshbn-gy-dk gy,  
frm-hrd, brit ip, mod-hi fis  
blkly-sb plty ctngs, sm-sl  
slty tex, rr-tr tn bent, predy  
non calc, l calc ip; SLTST:  
(20%) med gy, dk gy,  
fri-frm, sb blkly-sb ang,  
silc-arg cmt wi gy vugy  
silc vn ip, sl calc

7350-7400 CHK (55%):  
med gy-dk gy wi f wh chky  
foram incl, frm-brit, mod  
fis sb blkly ctngs wi sl  
slty-sltly tex, tr vf pyr strg, tr  
bent, hi calc; MRLST  
(45%): dk gy-v dk gy,  
frm-brit mod fis sh wi sl  
slty-sltly tex, mod calc wi  
brn mrly resdl

7400-7450 CHK (55%):  
med gy-dk gy, mod fis  
frm-brit sb blkly ctngs wi  
sl slty-sltly tex, sp wi chky  
incl, hi calc; MRLST  
(45%): dk gy-v dk gy sh  
sp wi occ brn marl incl,  
frm-brit mod fis sh wi sl  
slty-sltly tex, mod calc



7450-7500 CHK (55%):  
med gy-dk gy, frm-brit,  
mod fis sb blk cytns wi  
sl slty-sltly tex, tr vf pyr  
strg, tr f-c forams, hi calc;  
MRLST (45%): dk gy-v dk  
gy, frm-brit mod fis sh wi  
sl slty-sltly tex, mod calc  
wi brn mrly resdl

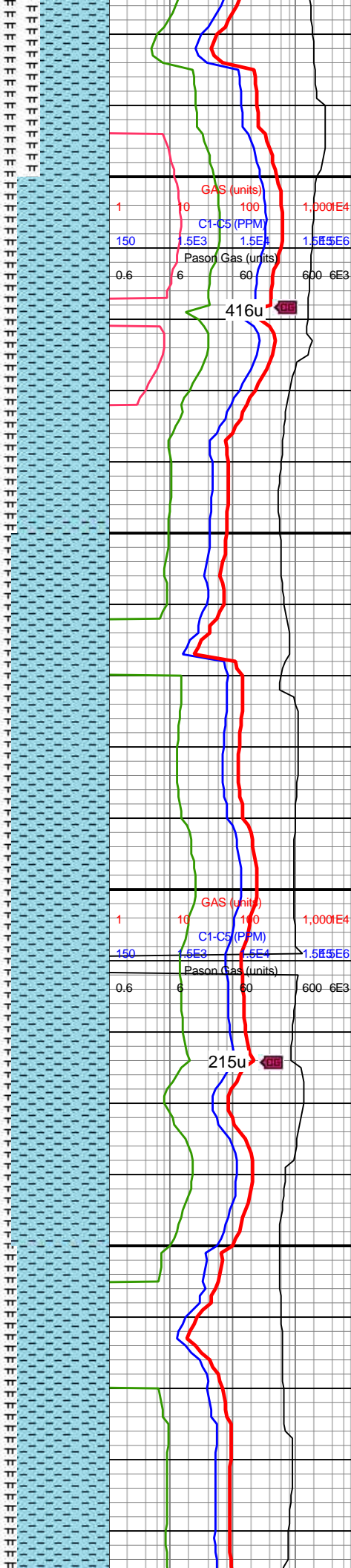
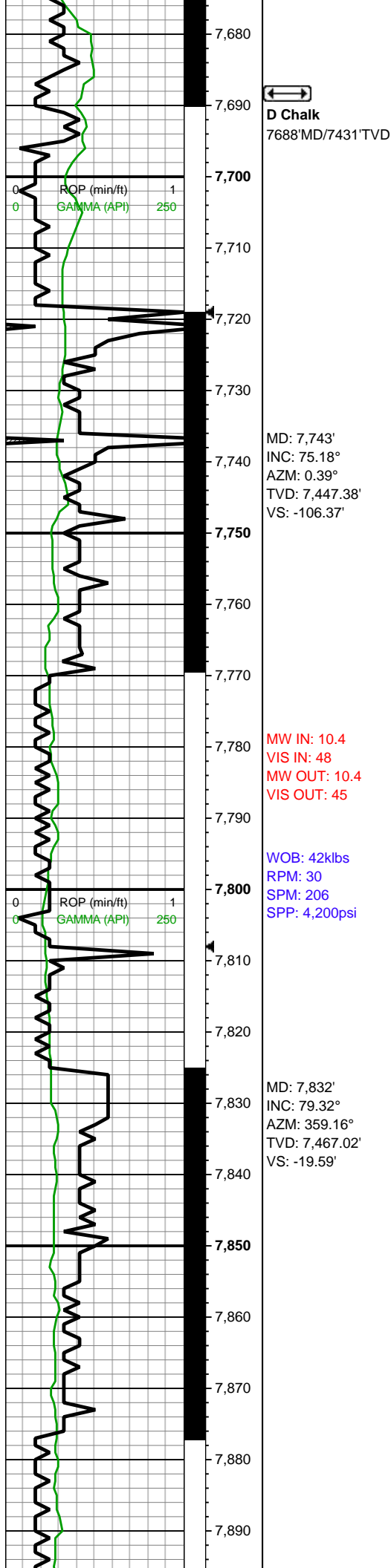
7500-7550 CHK (55%):  
med gy-dk gy, mod fis  
frm-brit sb blk cytns wi  
sl slty-sltly tex, sp wi chky  
incl, hi calc; MRLST  
(45%): dk gy-v dk gy-dk  
gyshbn frm-brit mod fis  
sh wi sl slty-sltly tex, rr sft  
wh bent, mod calc wi brn  
mrly resdl

7550-7600 CHK (70%):  
med gy-dk gy, frm-brit,  
mod fis sb blk cytns wi  
sl slty-sltly tex, rr-occ vf-pp  
pyr, tr f-c forams, hi calc;  
MRLST (30%): dk gy-v dk  
gy, frm-brit mod fis sh wi  
sl slty-sltly tex, rr-occ pp  
pyr, mod calc wi brn mrly  
resdl

7600-7650 MRLST  
(55%): dk gy-v dk gy,  
frm-brit mod fis sh wi sl  
slty-sltly tex, rr-occ pp pyr,  
mod calc wi brn mrly  
resdl; CHK (45%): med  
gy-dk gy, frm-brit, mod fis  
sb blk cytns wi sl  
slty-sltly tex, rr-occ vf-pp  
pyr, tr f-c forams, hi calc

7650-7700 CHK (55%):  
med gy-dk gy, lt gy ip,  
mod fis frm-brit sb blk  
cytns wi sl slty-sltly tex, sb  
frm ip, sp wi chky incl, hi





calc; MRLST (45%): dk gy-v dk gy-dk gyshbn frm-brit mod fis sh wi sl slty-sltly tex, rr sft wh bent, mod calc wi brn mrly resdl

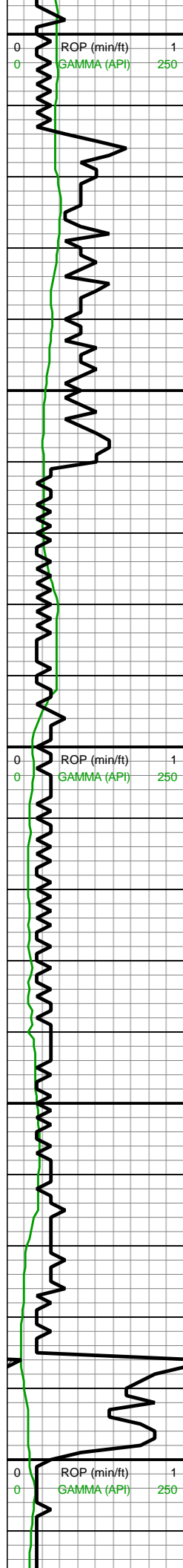
7700-7750 CHK (80%): off wh-v lt gy, gy, gyshbn ip, sb frm-frm, mod fis blkly ctngs wi sm-sl slty-chky text, wxy lstr, hi calc; MRLST (20%): dk gy-v dk gy, frm-brit, mod fis sb blkly-blky ctngs wi sl slty tex, tr vf pyr, mod calc wi brn mrly resdl

7750-7800 CHK (85%): predy lt gy-gy, off wh ip, sb frm-frm, sb blkly-blky-sb plty mod fis ctngs wi sm-sl slty-chky tex, wxy lstr, hi calc; MRLST (15%): dk gy-v dk gy, brn marl incl ip, frm-brit, mod fis sb blkly-blky ctngs wi sl slty tex, tr vf pyr, mod calc

7800-7850 CHK (85%): off wh-v lt gy, gy, gyshbn ip, sb frm-frm, mod fis blkly ctngs wi sm-sl slty-chky text, wxy lstr, hi calc; MRLST (15%): dk gy-v dk gy, frm-brit, mod fis sb blkly-blky ctngs wi sl slty tex, tr vf pyr, mod calc wi brn mrly resdl

7850-7900 CHK (80%): predy lt gy-gy, off wh ip, sb frm-frm, sb blkly-blky-sb plty mod fis ctngs wi sm-sl slty-chky tex, wxy lstr, hi calc; MRLST (20%): dk gy-v dk gy, brn marl incl ip, frm-brit, mod fis sb blkly-blky ctngs wi sl slty tex, tr vf pyr, mod calc





MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 46

MD: 7,921'  
INC: 85.91°  
AZM: 356.87°  
TVD: 7,478.46'  
VS: 68.6'

Curve landing of  
7961 MD @  
14:20 MST on  
7/26/2019

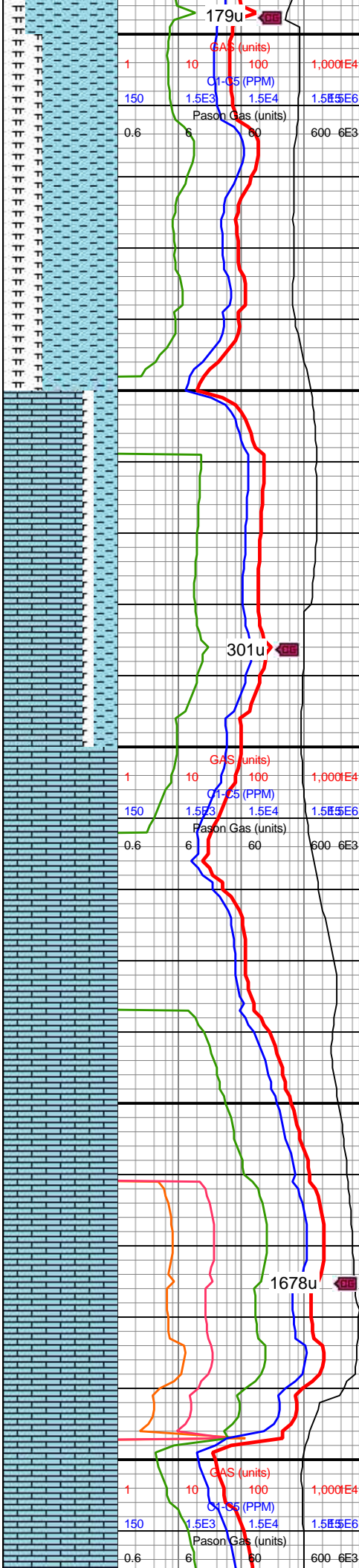
Fort Hays  
7985' MD / 7481' TVD

WOB: 41klbs  
RPM: 30  
SPM: 207  
SPP: 4,093psi

MD: 8,010'  
INC: 90.4°  
AZM: 358.28°  
TVD: 7,481.32'  
VS: 157.5'

MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 46

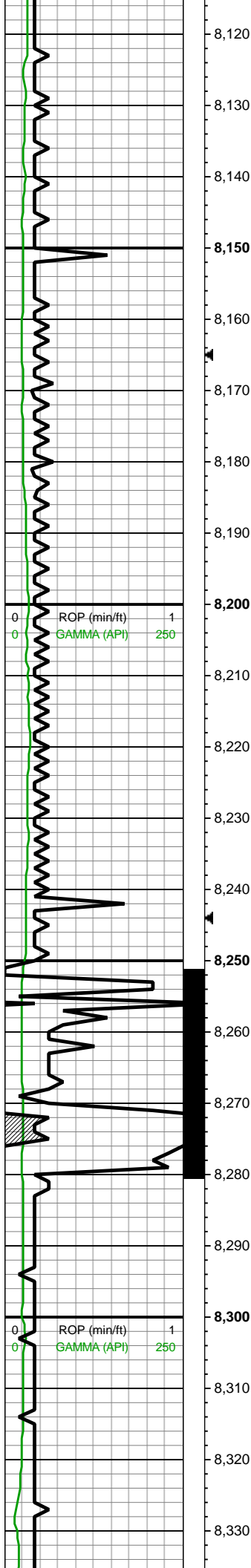
MD: 8,099'  
INC: 91.19°  
AZM: 0.21°  
TVD: 7,480.09'  
VS: 246.49'



7900-7950 CHK (65%):  
off wh-v lt gy, gy, gyshbn  
ip, sb frm-frm, mod fis  
blky ctngs wi sm-sl  
slty-chky text, wxy lstr, hi  
calc; MRLST (35%): dk  
gy-v dk gy, frm-brit, mod  
fis sb blky-blky ctngs wi  
sl slty tex, tr vf pyr, mod  
calc wi brn mrly resdl

7950-8000 LS (70%):  
gy-gyshbn, tn ip, frm-brit,  
blky, crpxln-micxln  
mudst-crpxln, rr-tr vf-f pyr,  
hi calc; CHK (20%): predy  
lt gy-gy, off wh ip, sb  
frm-frm, sb blky-blky-sb  
plty mod fis ctngs wi  
sm-sl slty-chky tex, wxy  
lstr, hi calc; MRLST  
(10%): dk gy-v dk gy, brn  
marl incl ip, frm-brit, mod  
fis sb blky-blky ctngs wi  
sl slty tex, tr vf pyr, mod  
calc

8000-8100 LS (100%):  
gy-gyshbn, tn ip, frm-brit,  
blky, crpxln-micxln  
mudst-crpxln, rr-tr vf-f pyr,  
hi calc

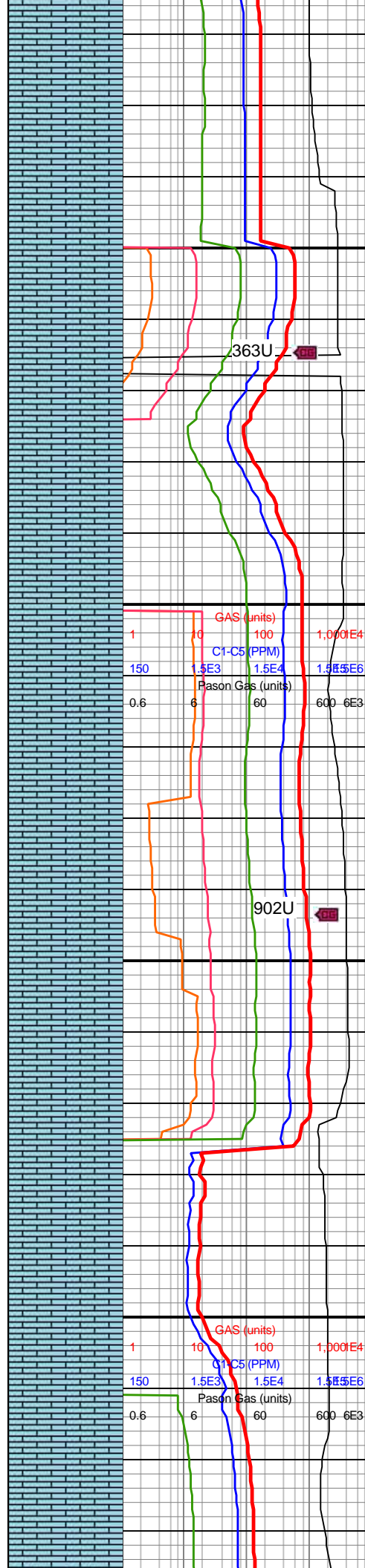


MD: 8,188'  
INC: 91.98°  
AZM: 359.86°  
TVD: 7,477.62'  
VS: 335.44'

WOB: 41klbs  
RPM: 60  
SPM: 208  
SPP: 4,170psi

MD: 8,278'  
INC: 91.1°  
AZM: 1.27°  
TVD: 7,475.2'  
VS: 425.38'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45



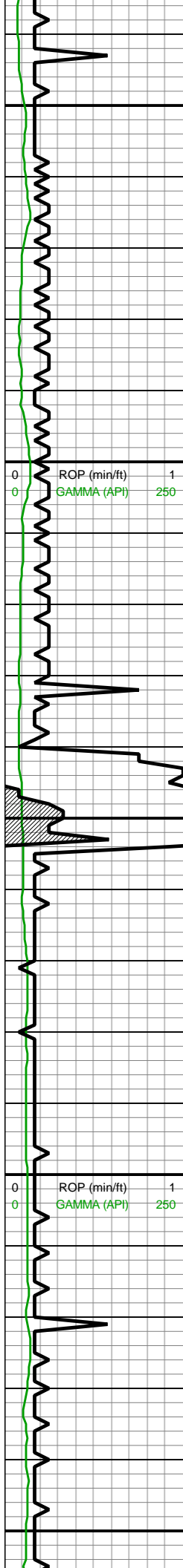
363U

902U

8100-8200 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex  
hi calc

8200-8300 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex  
hi calc





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  
8,490  
8,500  
8,510  
8,520  
8,530  
8,540  
8,550

MD: 8,367'  
INC: 91.45°  
AZM: 1.09°  
TVD: 7,473.22'  
VS: 514.3'

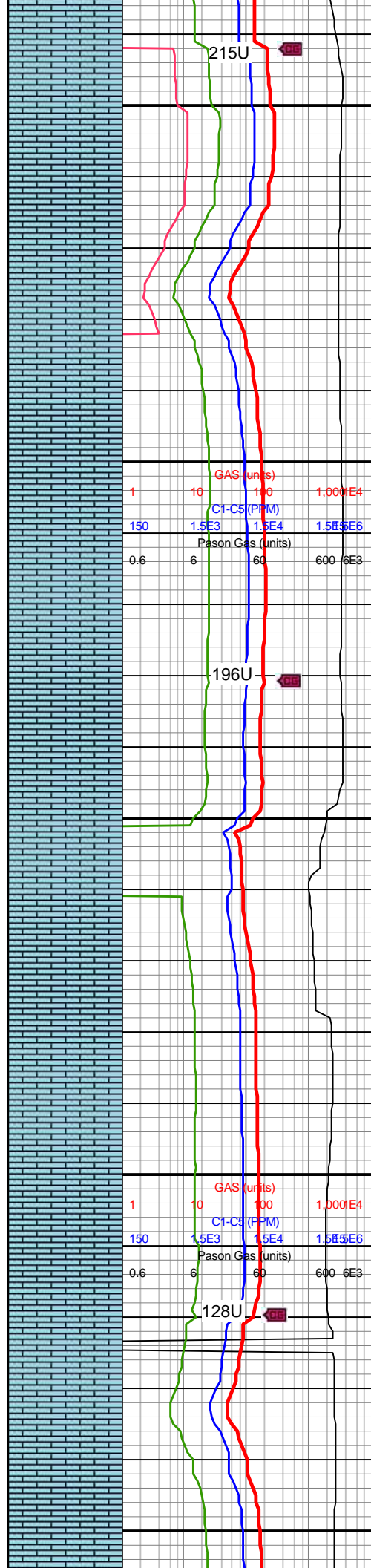
WOB: 42klbs  
RPM: 60  
SPM: 209  
SPP: 4,206psi

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 8,456'  
INC: 89.25°  
AZM: 0.92°  
TVD: 7,472.68'  
VS: 603.24'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 8,545'  
INC: 88.46°  
AZM: 359.51°  
TVD: 7,474.46'  
VS: 692.2'



215U

196U

128U

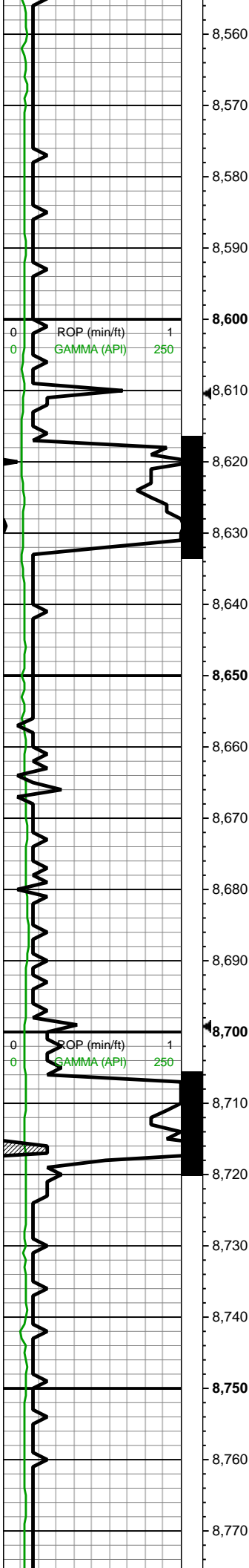
8300-8400 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex,  
hi calc



8400-8500 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex,  
hi calc





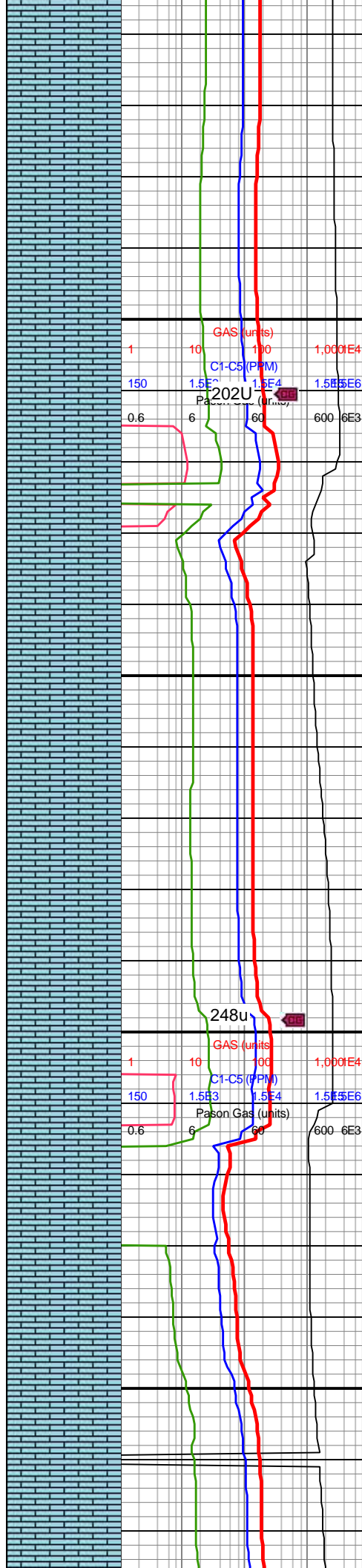


WOB: 42klbs  
RPM: 60  
SPM: 208  
SPP: 4,371psi

MD: 8,634'  
INC: 90.48°  
AZM: 0.21°  
TVD: 7,475.28'  
VS: 781.19'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 8,723'  
INC: 90.66°  
AZM: 0.21°  
TVD: 7,474.4'  
VS: 870.17'

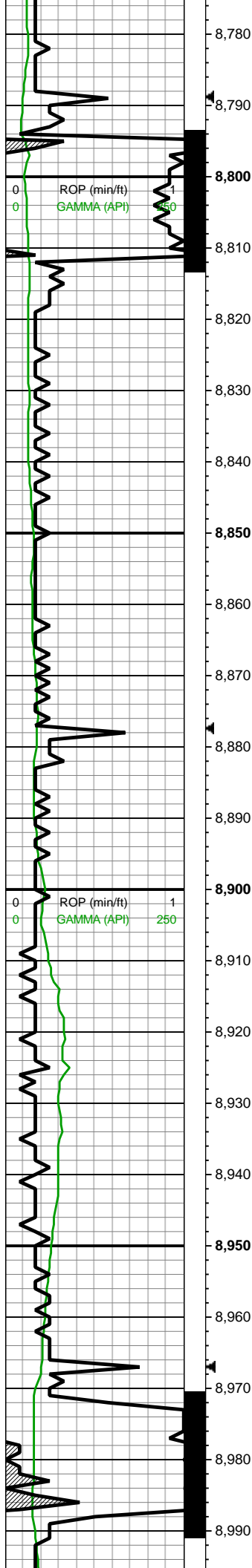


8500-8600 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex,  
hi calc



8600-8700 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex,  
hi calc





WOB: 47klbs  
RPM: 39  
SPM: 205  
SPP: 3,483psi

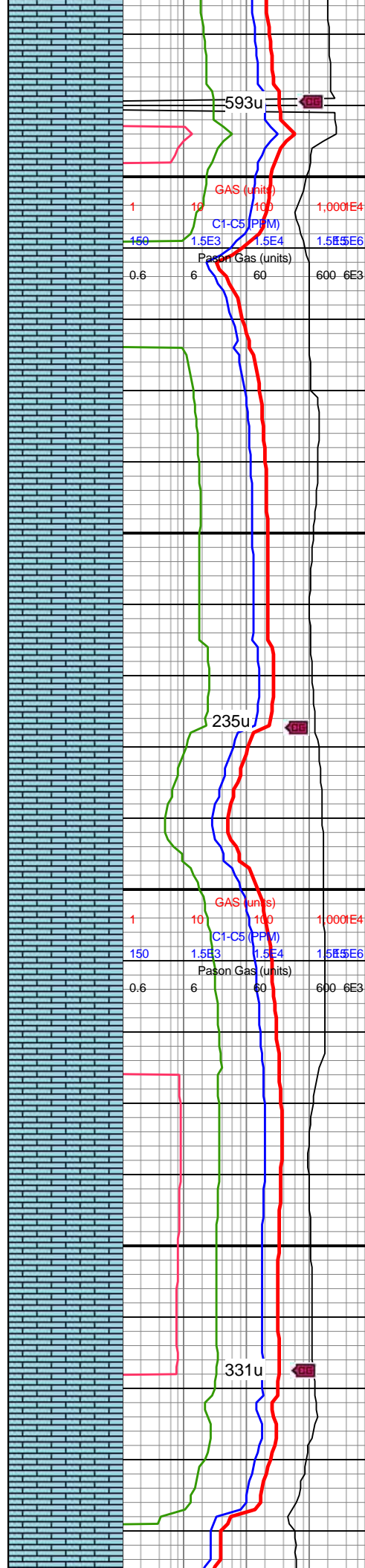
MD: 8,812'  
INC: 92.33°  
AZM: 359.16°  
TVD: 7,472.08'  
VS: 959.13'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 8,901'  
INC: 93.03°  
AZM: 359.86°  
TVD: 7,467.91'  
VS: 1,048.03'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

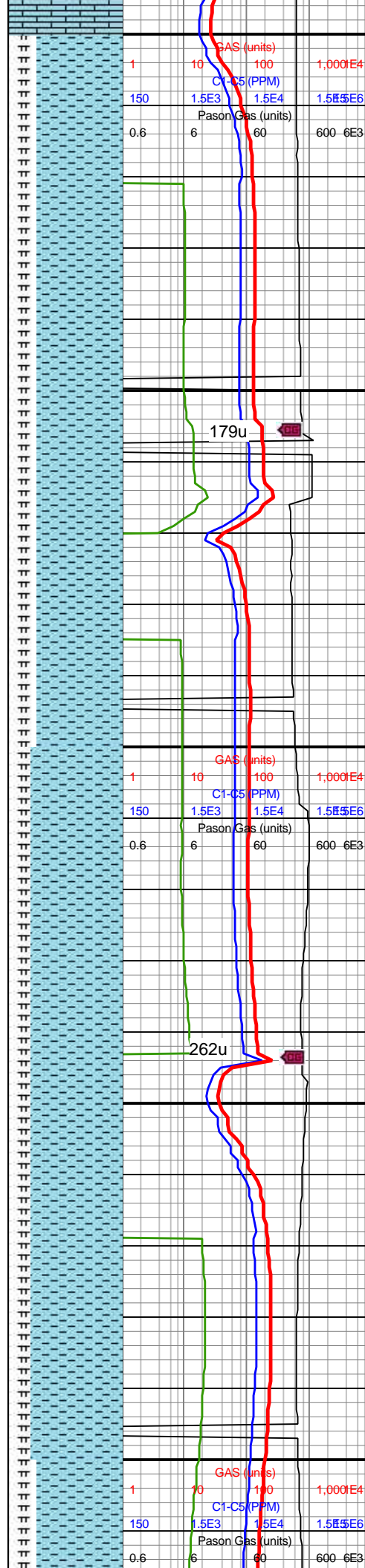
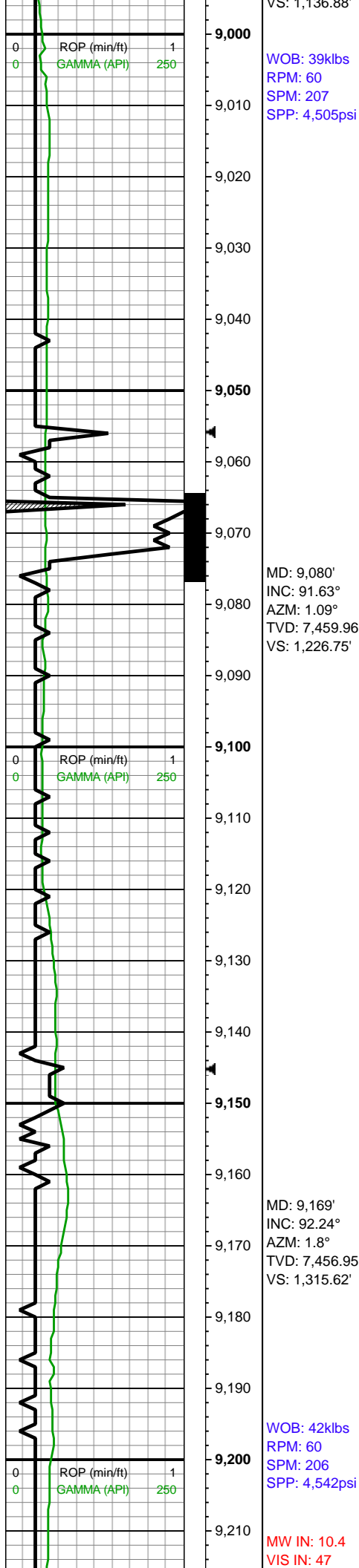
MD: 8,990'  
INC: 92.77°  
AZM: 1.44°  
TVD: 7,463.41'  
VS: 1,163.23'



8700-8800 LS (100%):  
mot lt brn, lt-med gy, tn ip,  
f-vf xln, fri-hrd, rthy-arg tex,  
hi calc

8800-8900 LS (100%):  
mot lt brn, mot lt gy, med  
gy, tn ip, f-vf xln, fri-hrd,  
rthy-arg tex, hi calc

8900-9000 LS (100%):  
mot lt brn, mot lt gy, med  
av. tn ip, f-vf xln, fri-hrd.

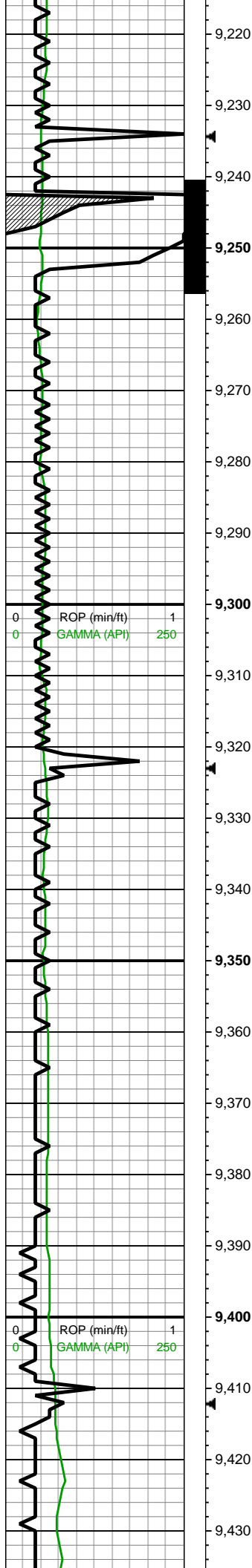


rthy-arg tex, hi calc

9000-9100 CHK (75%):  
mot lt gy, med gy, tn ip,  
f-vf xln, fri-hrd, rthy-chk  
tex, hi calc; MRLST (25%)  
dk gy, tr blk, fri-frm, sb  
blky-plty, sm ip, mod-ply  
srted, silc-arg cmt, v w  
cmted, mod calc

9100-9200 CHK (80%):  
mot lt gy, med gy, tn ip,  
f-vf xln, fri-hrd, rthy-chk  
tex, hi calc; MRLST (20%)  
dk gy, tr blk, fri-frm, sb  
blky-plty, sm ip, mod-ply  
srted, silc-arg cmt, v w  
cmted, mod calc





MW OUT: 10.4  
VIS OUT: 45

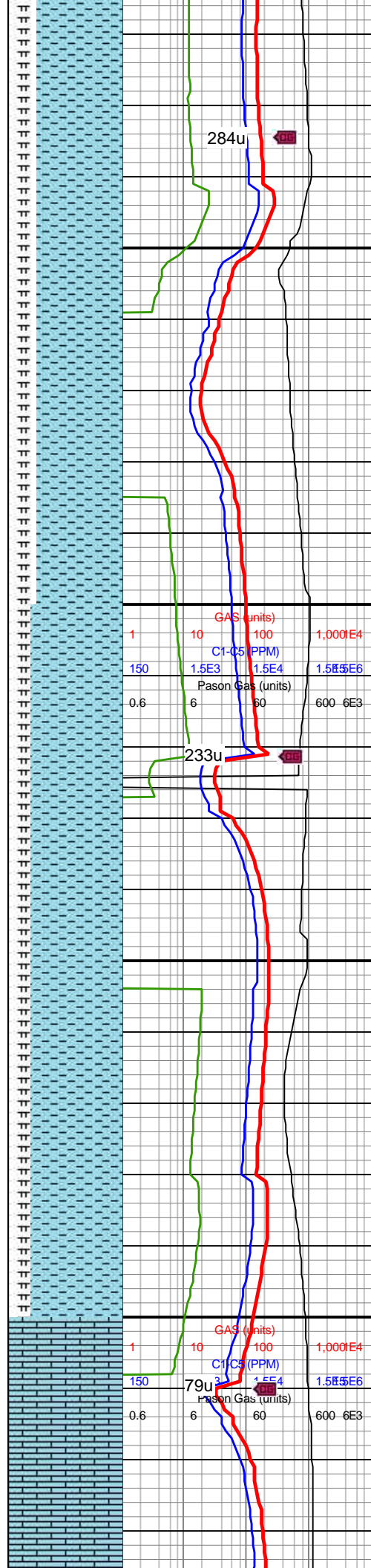
MD: 9,258'  
INC: 90.31°  
AZM: 1.8°  
TVD: 7,454.97'  
VS: 1,404.5'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 9,347'  
INC: 90.31°  
AZM: 1.62°  
TVD: 7,454.49'  
VS: 1,493.4'

WOB: 42klbs  
RPM: 60  
SPM: 207  
SPP: 4,535psi

MD: 9,436'  
INC: 89.96°



284u

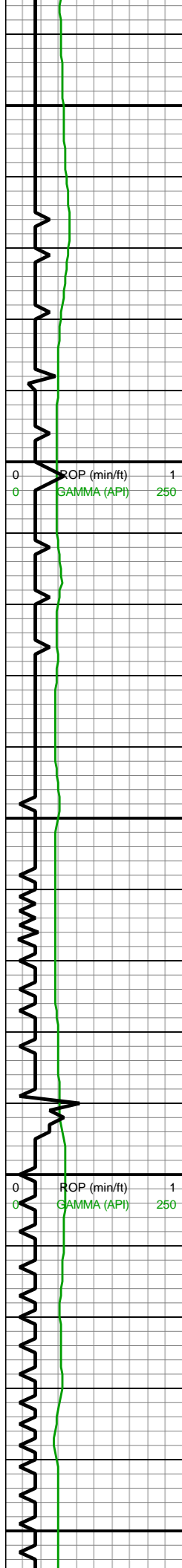
233u

79u

9200-9300 CHK (75%):  
mot lt gy, med gy, tn ip,  
f-vf xln, fri-hrd, rthy-chk  
tex, hi calc; MRLST (25%)  
dk gy, tr blk, fri-frn, sb  
blky-plty, sm ip, mod-ply  
srtd, silc-arg cmt, v w  
cmt, mod calc

9300-9400 CHK (80%):  
mot lt gy, med gy, tn ip,  
f-vf xln, fri-hrd, rthy-chk  
tex, hi calc; MRLST (20%)  
dk gy, tr blk, fri-frn, sb  
blky-plty, sm ip, mod-ply  
srtd, silc-arg cmt, v w  
cmt, mod calc





AZM: 1.09°  
TVD: 7,454.28'  
VS: 1,582.33'

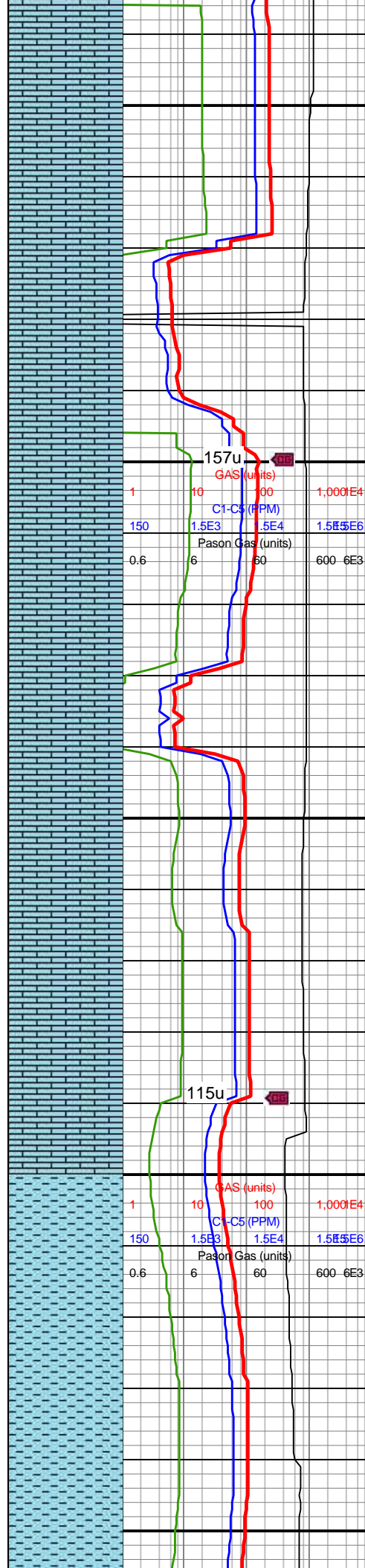
MINDEPTH 7/27/19

MD: 9,525'  
INC: 90.84°  
AZM: 3.55°  
TVD: 7,453.66'  
VS: 1,671.18'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

WOB: 30klbs  
RPM: 60  
SPM: 208  
SPP: 4,099psi

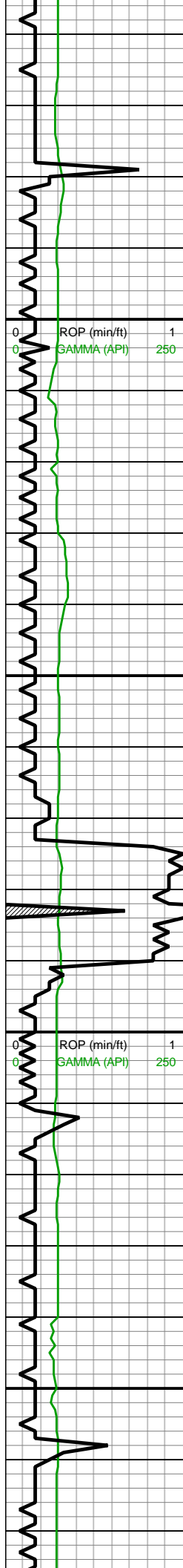
MD: 9,614'  
INC: 90.31°  
AZM: 359.34°  
TVD: 7,452.76'  
VS: 1,760.09'



9400-9500 LS (100%):  
mot lt brn, mot lt gy, med  
gy, tn ip, f-vf xln, fri-hrd,  
rthy-arg tex, hi calc

9500-9600 LS (100%):  
mot lt brn, mot lt gy, med  
gy, tn ip, f-vf xln, fri-hrd,  
rthy-arg tex, hi calc





9,660  
9,670  
9,680  
9,690  
9,700  
9,710  
9,720  
9,730  
9,740  
9,750  
9,760  
9,770  
9,780  
9,790  
9,800  
9,810  
9,820  
9,830  
9,840  
9,850  
9,860  
9,870

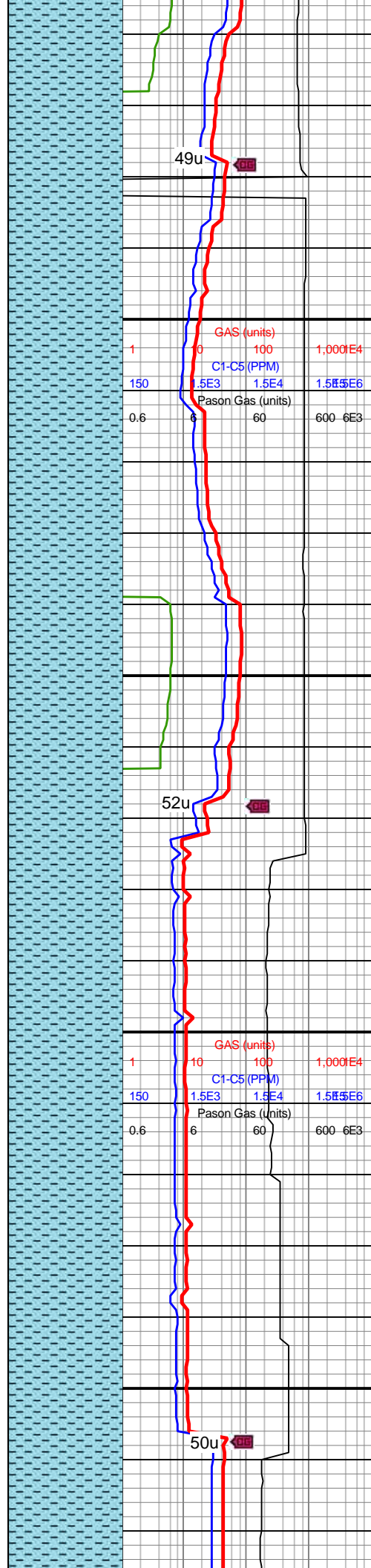
MD: 9,703'  
INC: 91.01°  
AZM: 7.25°  
TVD: 7,451.74'  
VS: 1,848.77'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 9,792'  
INC: 90.22°  
AZM: 358.1°  
TVD: 7,450.78'  
VS: 1,937.5'

WOB: 25klbs  
RPM: 60  
SPM: 207  
SPP: 4,251psi

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45



49u

GAS (units)  
C1-C5 (PPM)  
Pason Gas (units)

52u

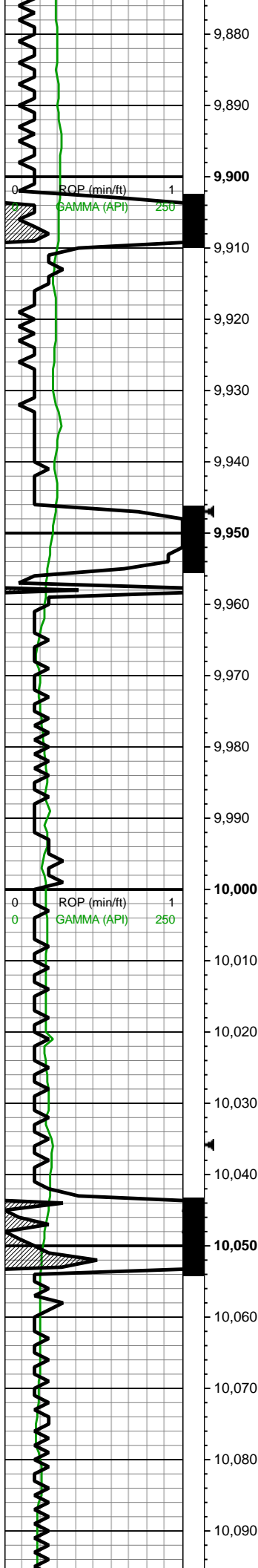
GAS (units)  
C1-C5 (PPM)  
Pason Gas (units)

50u

9600-9700 CHK (100%):  
predy gy-sl gyshbn sb  
frm-frm blk mod fis mod  
arg LS, crpxln-mudst ip  
grdg to LS, com off wh  
water solu chk, grnl ip, hi  
calc

9700-9800 CHK (100%):  
off wh-v lt gy-gy-sl  
gyshbn, predy sb frm-frm  
blk mod fis mod arg LS,  
com off wh water solu  
chk, grnl ip, hi calc





MD: 9,881'  
INC: 91.36°  
AZM: 2.32°  
TVD: 7,449.55'  
VS: 2,026.45'

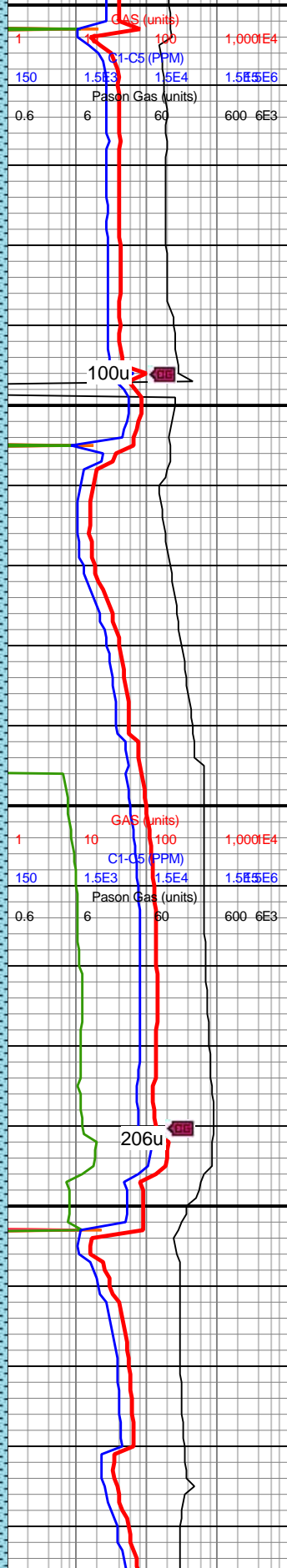
MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 9,970'  
INC: 88.55°  
AZM: 2.32°  
TVD: 7,449.62'  
VS: 2,115.3'

WOB: 22klbs  
RPM: 60  
SPM: 206  
SPP: 4,020psi

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 10,059'  
INC: 89.6°  
AZM: 1.09°  
TVD: 7,451.06'  
VS: 2,204.2'

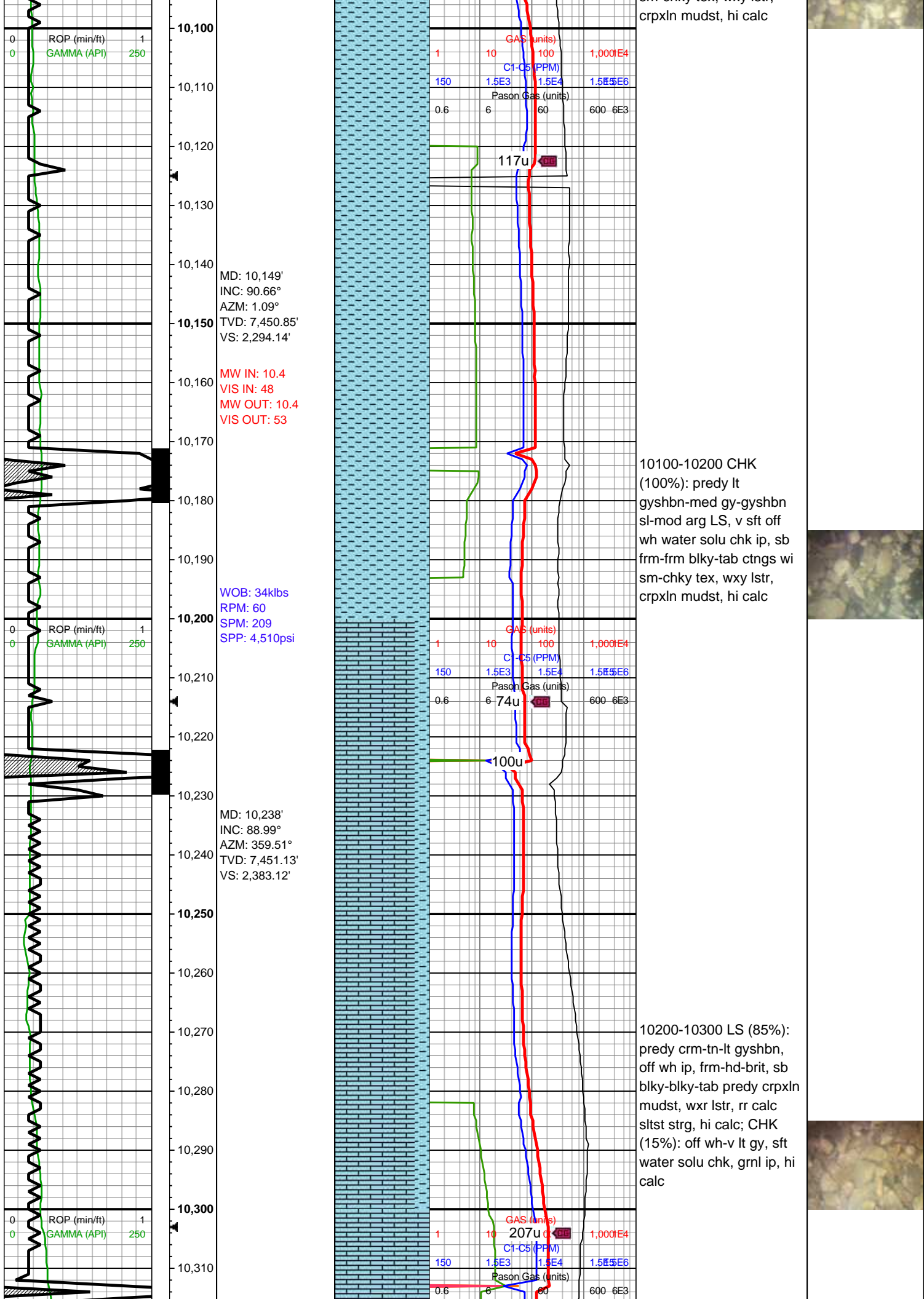


9800-9900 CHK (100%):  
predy gy-sl gyshbn sb  
frm-frm blk mod fis mod  
arg LS, crpxln-mudst ip  
grdg to LS, com off wh  
water solu chk, grnl ip, hi  
calc

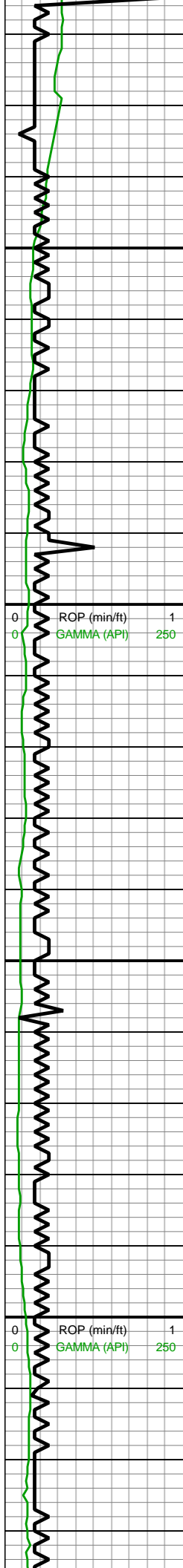
9900-1000 CHK (100%):  
off wh-v lt gy-gy-sl  
gyshbn, predy sb frm-frm  
blk mod fis mod arg LS,  
com off wh-v lt gy water  
solu chk, grnl ip, hi calc

10000-10100 CHK  
(100%): predy lt  
gyshbn-med gy-gyshbn  
sl-mod arg LS, v sft off  
wh water solu chk ip, sb  
frm-frm blk-tab ctngs wi  
sm-chkv tex. wxv lstr.









MD: 10,327'  
INC: 88.2°  
AZM: 358.63°  
TVD: 7,453.31'  
VS: 2,472.09'

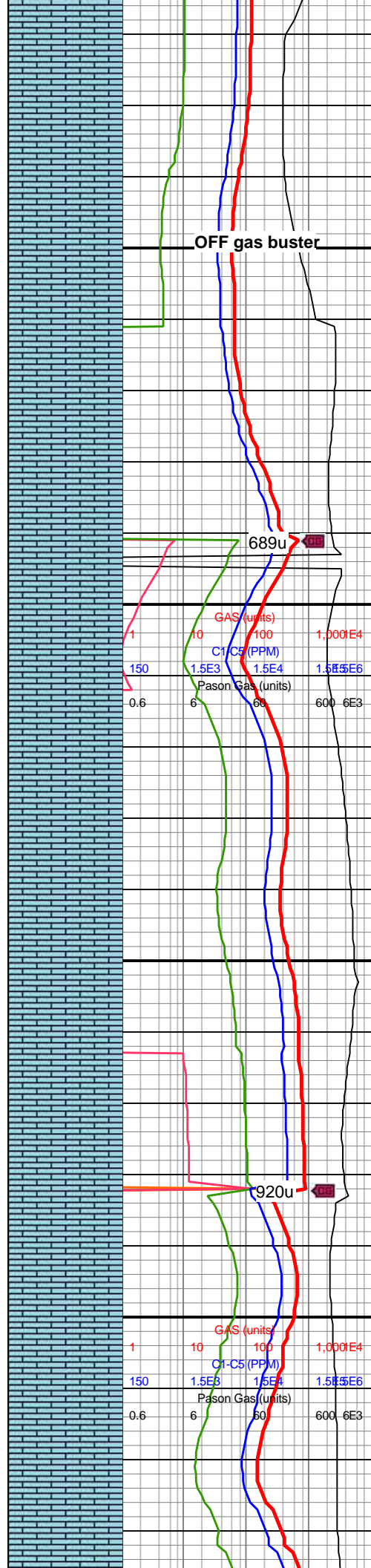
MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 45

WOB: 38klbs  
RPM: 60  
SPM: 209  
SPP: 4,410psi

MD: 10,416'  
INC: 88.2°  
AZM: 358.28°  
TVD: 7,456.1'  
VS: 2,561.04'

MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 46

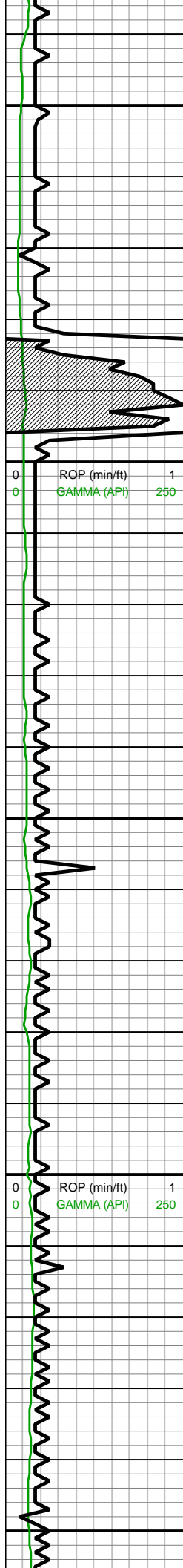
MD: 10,505'  
INC: 88.37°  
AZM: 357.93°  
TVD: 7,458.77'  
VS: 2,649.99'



10300-10400 LS (100%):  
predy crm-tn-lt gyshbn,  
off wh ip, frm-hd-brit, sb  
blky-blky-tab predy crpxln  
mudst, wxr lstr, rr calc  
sltst strg, hi calc

10400-10500 LS (100%):  
crm-tn-lt gyshbn crpxln  
mudst, off wh carb ip, rr  
wkst, frm-hd-brit, sb  
blky-blky-tab predy crpxln  
mudst, wxr lstr, rr calc  
sltst strg, hi calc





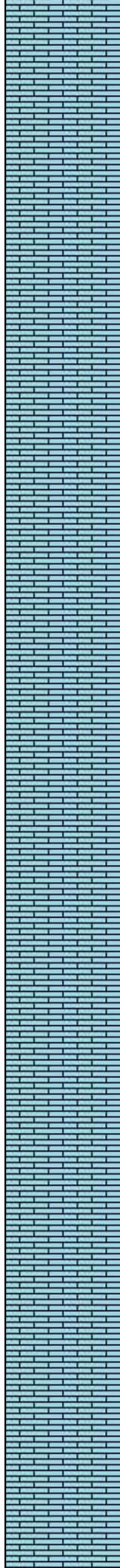
10,540  
10,550  
10,560  
10,570  
10,580  
10,590  
10,600  
10,610  
10,620  
10,630  
10,640  
10,650  
10,660  
10,670  
10,680  
10,690  
10,700  
10,710  
10,720  
10,730  
10,740  
10,750

MD: 10,594'  
INC: 88.9°  
AZM: 359.51°  
TVD: 7,460.89'  
VS: 2,738.95'

WOB: 19klbs  
RPM: 60  
SPM: 209  
SPP: 3,960psi

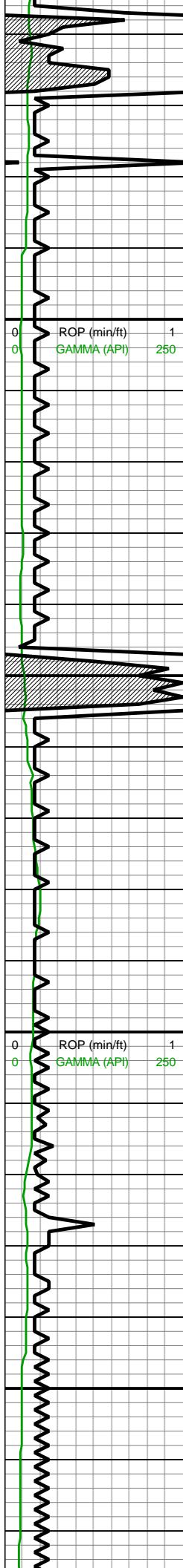
MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 46

MD: 10,683'  
INC: 89.69°  
AZM: 359.69°  
TVD: 7,461.98'  
VS: 2,827.94'



10500-10600 LS (100%):  
predy crm-tn-lt gyshbn,  
off wh ip, frm-hd-brit, sb  
blky-blky-tab predy crpxln  
mudst, wxr lstr, rr calc  
sltst strg, hi calc

10600-10700 LS (100%):  
off wh-lt gyshbn-gyshbn,  
rr brn, frm-hd-brit, sb  
blky-blky-tab predy crpxln  
mudst, wxr lstr, rr calc  
sltst strg, hi calc



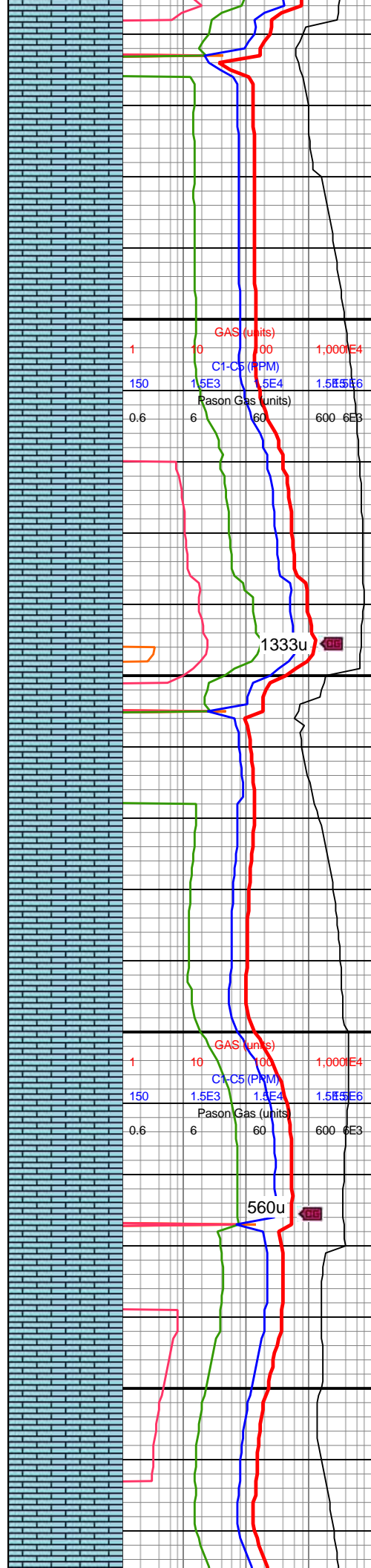
MD: 10,773'  
INC: 88.99°  
AZM: 0.21°  
TVD: 7,463.02'  
VS: 2,917.93'

WOB: 37klbs  
RPM: 60  
SPM: 210  
SPP: 4,490psi

MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 45

MD: 10,862'  
INC: 87.76°  
AZM: 0.74°  
TVD: 7,465.54'  
VS: 3,006.86'

MD: 10,951'  
INC: 88.37°  
AZM: 0.39°  
TVD: 7,468.55'  
VS: 3,095.78'

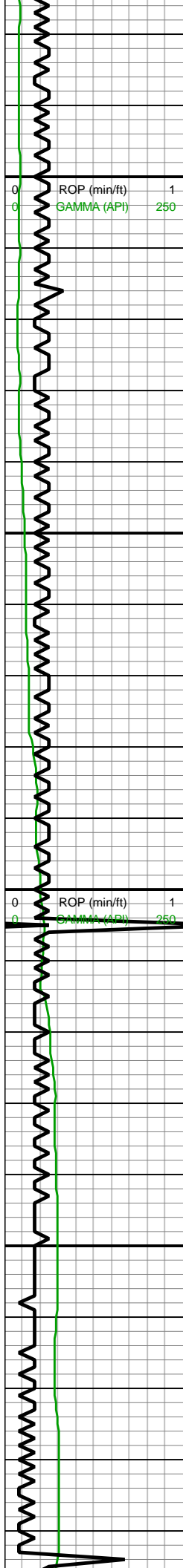


10700-10800 LS (100%):  
v lt gyshbn-gyshbn, off  
wh-brn ip, predy frm-hd  
blky crpxln mudst wi wxy  
lstr, occ micxln-mudst, rr  
calc sltst strg, hi calc

10800-10900 LS (100%):  
crm-tn-lt gyshbn crpxln  
mudst, off wh carb ip, brn  
ip, rr micxln-wkst,  
frm-hd-brit sb  
blky-blky-tab ctngs, wxr  
lstr, rr calc sltst strg, hi  
calc







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  
11,130  
11,140  
11,150  
11,160  
11,170  
11,180  
11,190

WOB: 39klbs  
RPM: 60  
SPM: 208  
SPP: 4,310psi

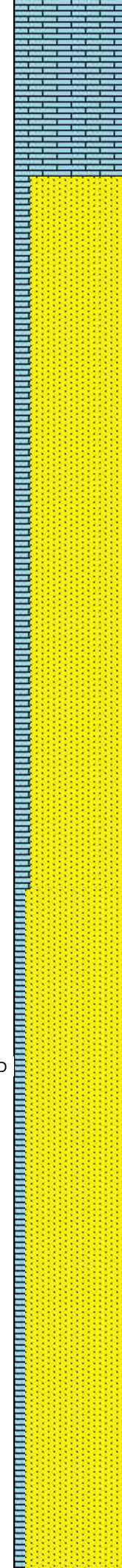
MD: 11,040'  
INC: 88.64°  
AZM: 0.21°  
TVD: 7,470.87'  
VS: 3,184.73'

MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 45

Code11  
11119'MD/7472'TVD

MD: 11,129'  
INC: 88.29°  
AZM: 0.04°  
TVD: 7,473.26'  
VS: 3,273.69'

WOB: 71klbs

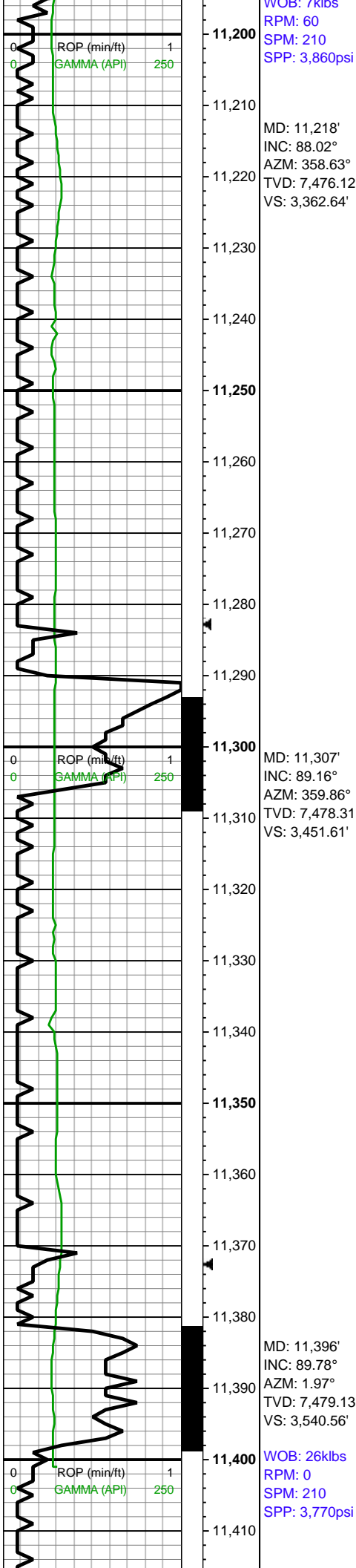


10900-11000 LS (100%):  
v lt gyshbn-gyshbn, off  
wh-brn ip, predy frm-hd  
blky crpxln mudst wi wxy  
lstr, occ micxln-mudst, rr  
calc sltst strg, hi calc

11000-11100 SST (85%):  
predy gy-brn frm-sli fri vf-f  
gr mtx sup sst clus cons  
wi silc cmt, com uncon  
sd, p-mod srted, mod por,  
mod-hi calc; LS (15%): lt  
gyshbn-gyshbn-brn  
crpxln mudst, micxln-pkst  
ip, wxy lstr, hi calc

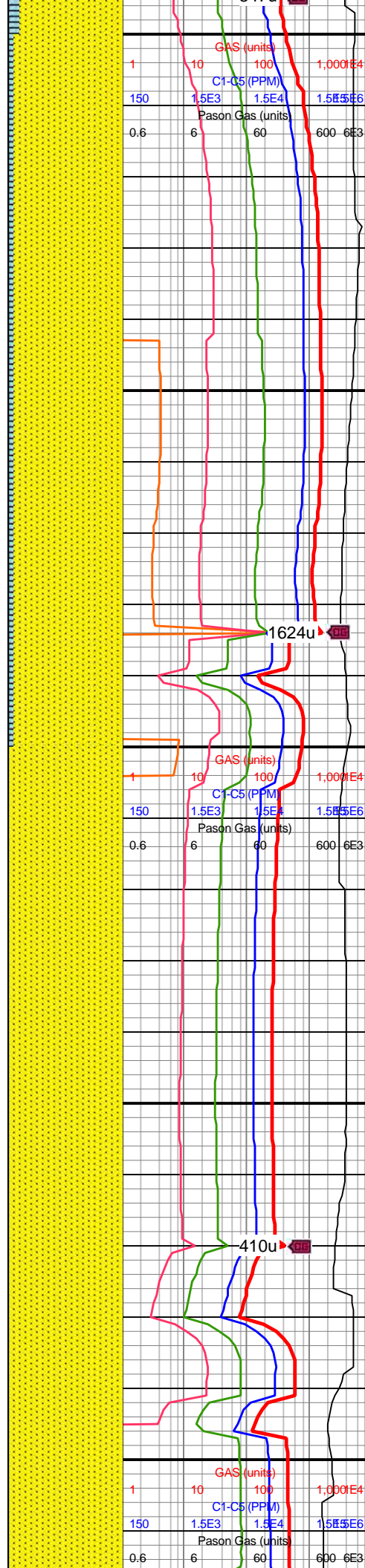
11100-11200 SST (90%):  
gy-gyshbn, p-mod srted  
vf-f sd grs grd to com  
slt, frm-sli fri vf-f gr mtx  
sup sst clus cons wi silc  
cmt, com uncon sd,  
mod por, non-mod calc;  
LS (10%): crm-tn-lt  
gyshbn crpxln mudst, off  
wh carb ip, brn ip, rr  
micxln-wkst, frm-hd-brit  
sb blky-blky-tab ctngs,  
wxr lstr, rr calc sltst strg,  
hi calc





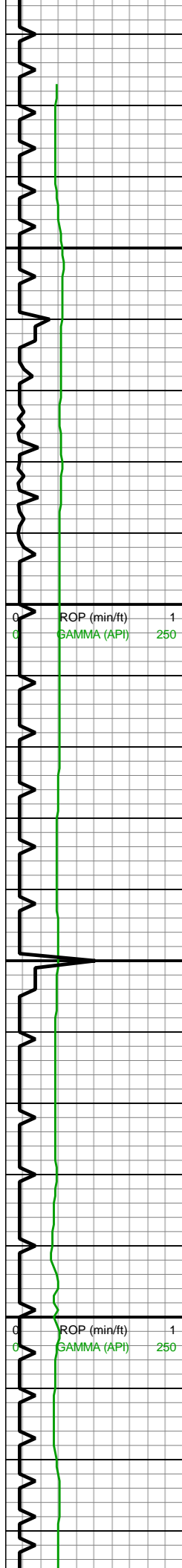
WOB: 7klbs  
RPM: 60  
SPM: 210  
SPP: 3,860psi

WOB: 26klbs  
RPM: 0  
SPM: 210  
SPP: 3,770psi



11200-11300 SST  
(100%): predy gy-brn  
frm-sli fri vf-f gr mtx sup  
sst clus cons wi silc cmt,  
com uncons sd, p-mod  
srted, mod por, non calc,  
mod calc ip, wi rr LS

11300-11400 SST  
(100%): clr vf-f gr sb rd-rd  
sd grs-gy-dk gy vf-f gr  
frm-mod fri gr sup sst  
clus cons wi silc cmt,  
mod srted, rr mtx sup arg  
sst clus, predy non calc,  
mod calc dolc strg ip

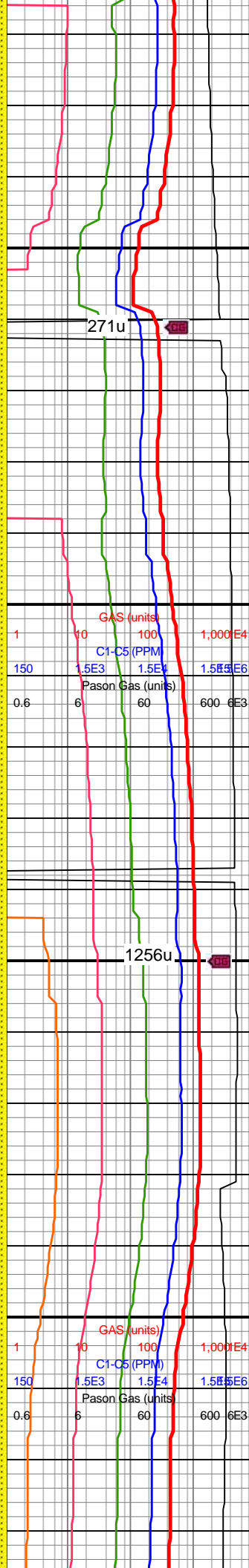
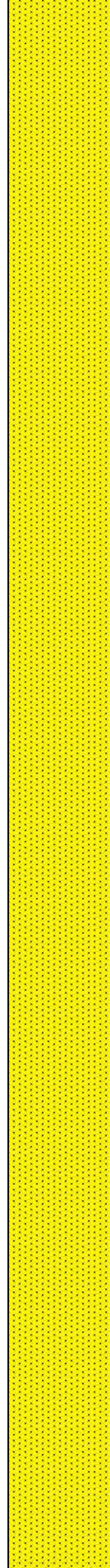


MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MD: 11,485'  
INC: 90.4°  
AZM: 2.15°  
TVD: 7,478.99'  
VS: 3,629.44'

MD: 11,575'  
INC: 90.48°  
AZM: 0.39°  
TVD: 7,478.3'  
VS: 3,719.37'

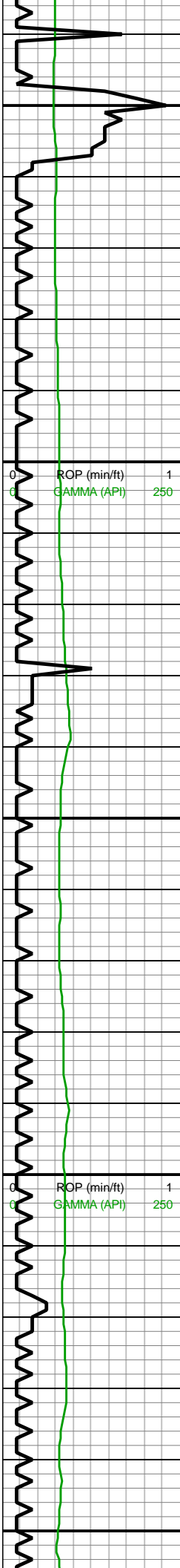
WOB: 42klbs  
RPM: 60  
SPM: 207  
SPP: 4,780psi



11400-11500 SST  
(100%): clr-gy-gyshbn-dk  
gy, frm sli fri-mod fri gr  
sup gy-dk gyshbn gr sup  
p-mod srted sst clus cons  
wi silc cmt, com mod-w  
srted vf-f sb rd-rd clr  
uncons sd thru, predy  
non calc

11500-11600 SST  
(100%): clr-gy-gyshbn-dk  
gy, p-mod srted vf-f grs,  
frm-mod fri gr sup sst  
clus cons wi silc cmt,  
com mod w srted f sb  
rd-rd uncons sd, rr mtx  
sup arg sst clus, predy  
non calc, mod calc dolc  
strg ip





11,640  
11,650  
11,660  
11,670  
11,680  
11,690  
11,700  
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

MD: 11,664'  
INC: 88.9°  
AZM: 1.8°  
TVD: 7,478.78'  
VS: 3,808.31'

MD: 11,753'  
INC: 89.08°  
AZM: 1.62°  
TVD: 7,480.35'  
VS: 3,897.2'

WOB: 39klbs  
RPM: 60  
SPM: 207  
SPP: 4,750psi

MD: 11,842'  
INC: 88.55°  
AZM: 1.27°  
TVD: 7,482.19'  
VS: 3,986.11'

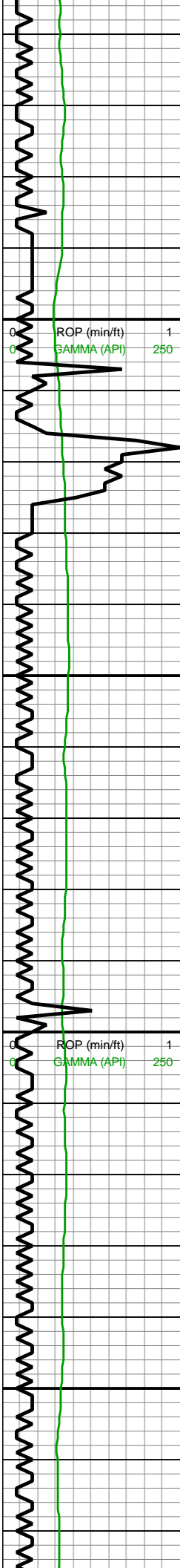
MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45



11600-11700 SST  
(100%): predy gy-brn  
frm-sli fri-mod fri ip vf-f gr  
p sup gr sup sst clus  
cons wi silc cmt, com f  
sb rd-rd mod w srted  
uncons sd, mod por, non  
calc

11700-11800 SST  
(100%): clr-gy-gyshbn-dk  
gy, frm sli fri-mod fri gr  
sup gy-dk gyshbn gr sup  
p-mod srted sst clus cons  
wi silc cmt, com mod-w  
srted vf-f sb rd-rd clr  
uncons sd thru, predy  
non calc



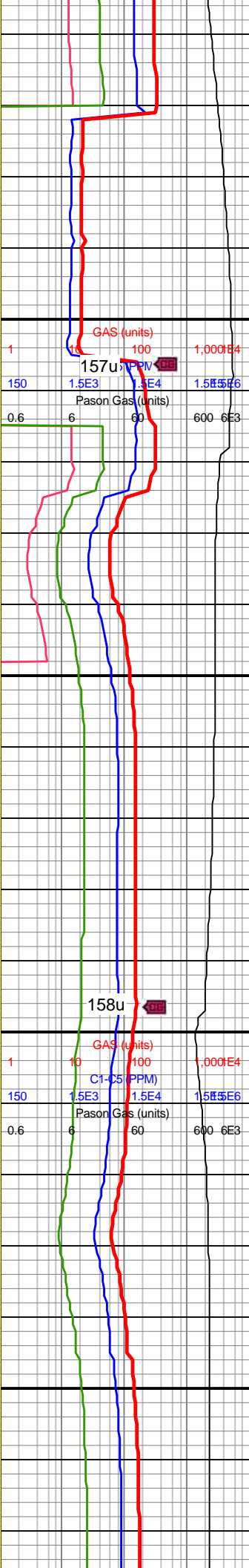
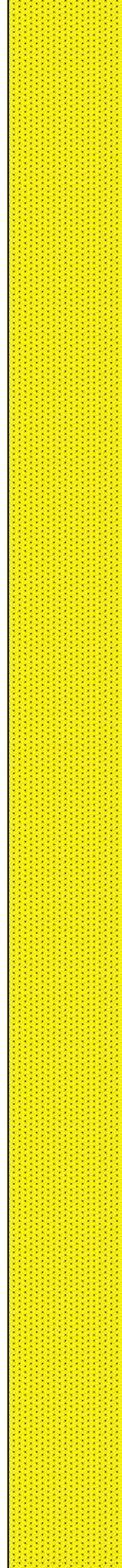
11,860  
11,870  
11,880  
11,890  
11,900  
11,910  
11,920  
11,930  
11,940  
11,950  
11,960  
11,970  
11,980  
11,990  
12,000  
12,010  
12,020  
12,030  
12,040  
12,050  
12,060  
12,070

MD: 11,931'  
INC: 90.04°  
AZM: 2.68°  
TVD: 7,483.29'  
VS: 4,074.99'

MW IN: 10.4  
VIS IN: 47  
MW OUT: 10.4  
VIS OUT: 45

WOB: 14klbs  
RPM: 60  
SPM: 211  
SPP: 4,075psi

MD: 12,020'  
INC: 89.87°  
AZM: 1.8°  
TVD: 7,483.36'  
VS: 4,163.85'

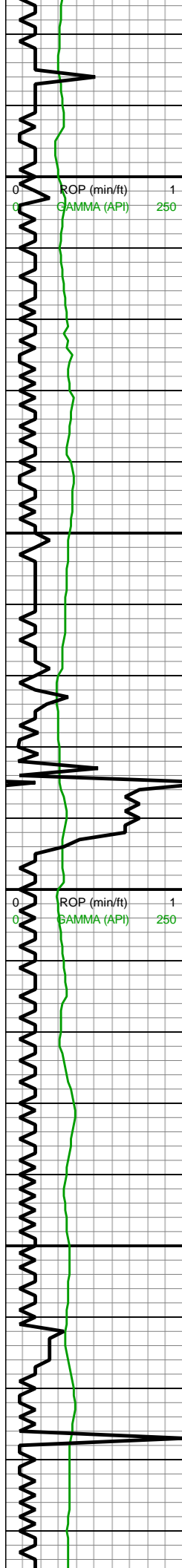


11800-11900 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd, non  
calc

11900-12000 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd, non  
calc







12,080  
12,090  
12,100  
12,110  
12,120  
12,130  
12,140  
12,150  
12,160  
12,170  
12,180  
12,190  
12,200  
12,210  
12,220  
12,230  
12,240  
12,250  
12,260  
12,270  
12,280  
12,290

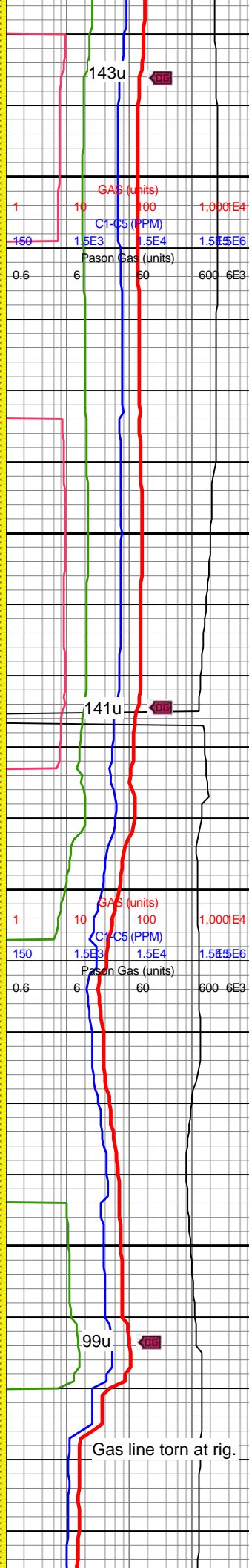
MD: 12,109'  
INC: 89.16°  
AZM: 0.92°  
TVD: 7,484.11'  
VS: 4,252.78'

MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4  
VIS OUT: 46

MD: 12,198'  
INC: 90.66°  
AZM: 1.44°  
TVD: 7,484.25'  
VS: 4,341.72'

WOB: 20klbs  
RPM: 60  
SPM: 209  
SPP: 4,399psi

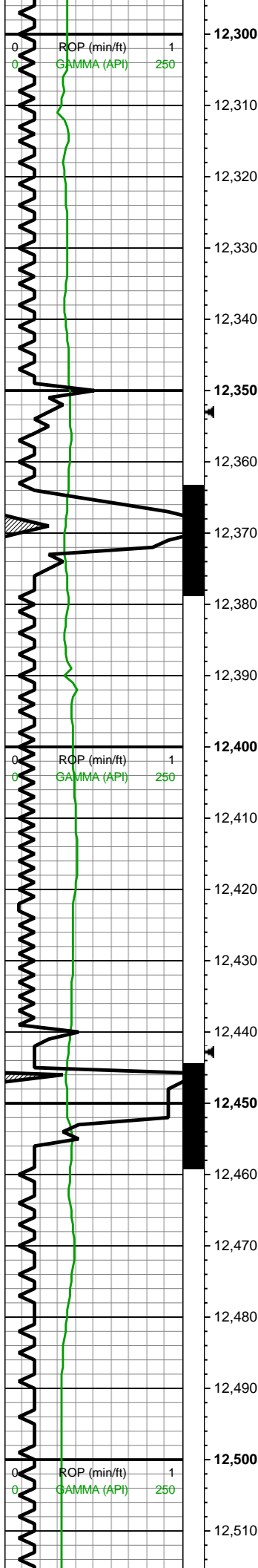
MD: 12,288'  
INC: 90.92°  
AZM: 1.62°  
TVD: 7,483.01'  
VS: 4,431.63'



12000-12100 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmttd, non  
calc

12100-12200 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmttd, non  
calc

12200-12300 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmttd,  
tr-occ foram, non calc



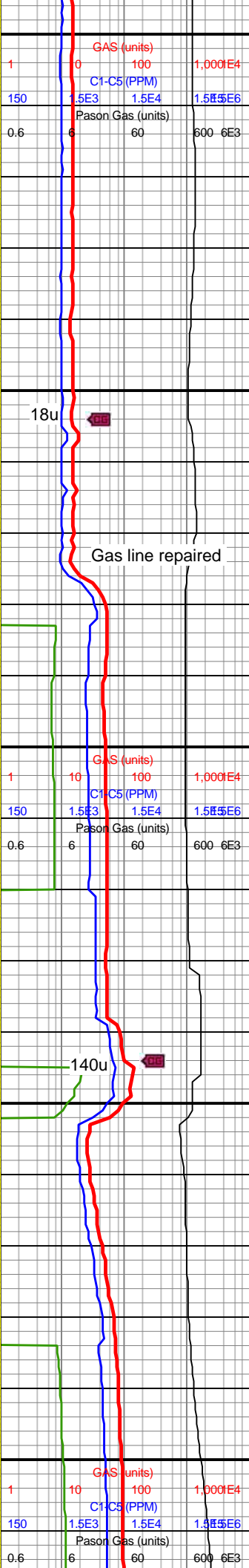
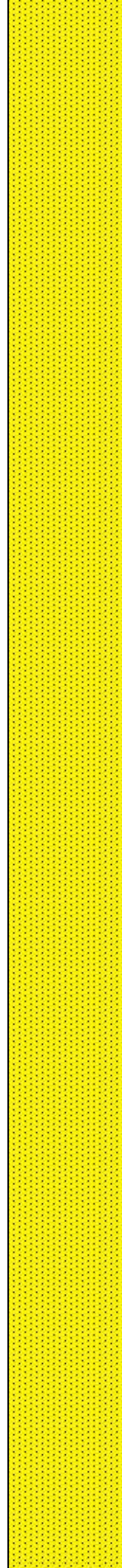
12,300  
12,310  
12,320  
12,330  
12,340  
12,350  
12,360  
12,370  
12,380  
12,390  
12,400  
12,410  
12,420  
12,430  
12,440  
12,450  
12,460  
12,470  
12,480  
12,490  
12,500  
12,510

MW IN: 10.4  
VIS IN: 48  
MW OUT: 10.4+  
VIS OUT: 46

MD: 12,377'  
INC: 90.13°  
AZM: 1.27°  
TVD: 7,482.2'  
VS: 4,520.55'

WOB: 31klbs  
RPM: 60  
SPM: 210  
SPP: 4,816psi

MD: 12,466'  
INC: 90.57°  
AZM: 0.57°  
TVD: 7,481.65'  
VS: 4,609.5'

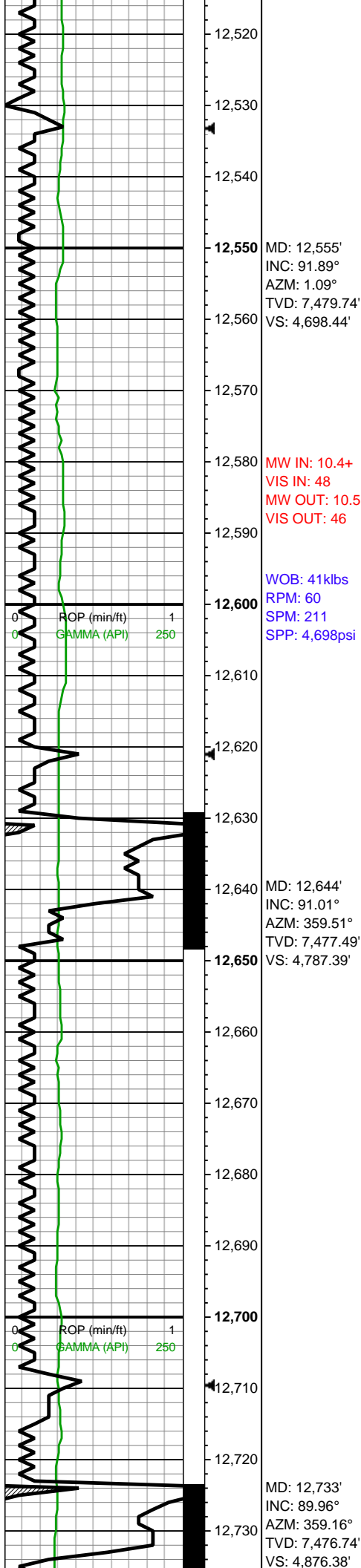


Gas line repaired

12300-12400 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd,  
tr-occ foram, non calc

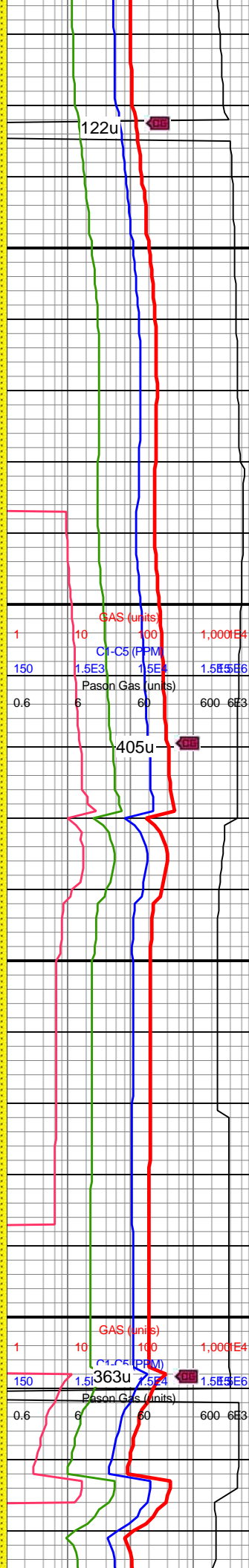
12400-12500 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd,  
tr-occ foram, non calc





MW IN: 10.4+  
VIS IN: 48  
MW OUT: 10.5  
VIS OUT: 46

WOB: 41klbs  
RPM: 60  
SPM: 211  
SPP: 4,698psi



12500-12600 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd,  
tr-occ foram, non calc

12600-12700 SST  
(100%): med-dk gy,  
lt-med brn, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd, non  
calc



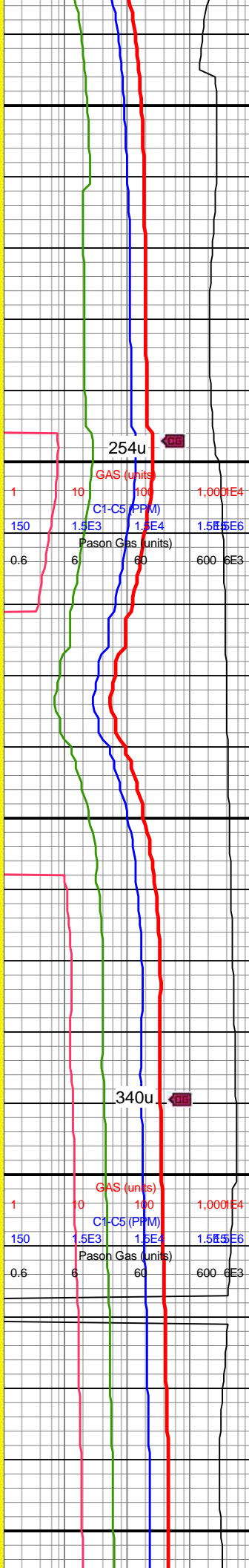
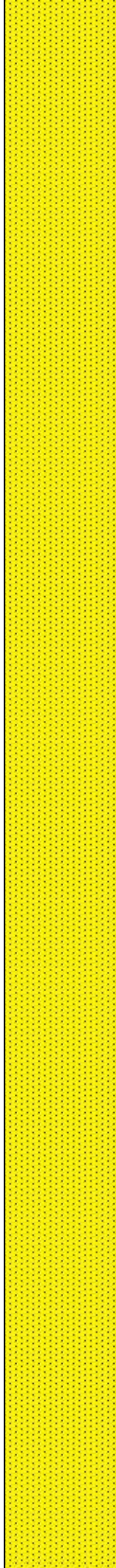
12,740  
12,750  
12,760  
12,770  
12,780  
12,790  
12,800  
12,810  
12,820  
12,830  
12,840  
12,850  
12,860  
12,870  
12,880  
12,890  
12,900  
12,910  
12,920  
12,930  
12,940  
12,950

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

WOB: 7klbs  
RPM: 60  
SPM: 2,121  
SPP: 3,250psi

MD: 12,822'  
INC: 90.04°  
AZM: 358.98°  
TVD: 7,476.74'  
VS: 4,965.38'

MD: 12,911'  
INC: 90.4°  
AZM: 358.63°  
TVD: 7,476.39'  
VS: 5,054.38'



12700-12800 SST  
(100%): med-dk gy, occ  
mot tn, rr s&p, med-c grn,  
fri-hrd, sb blk-y-sb ang,  
mod srtd, mod cmtd,  
tr-occ foram, non calc

12800-12900 SST  
(100%): mot lt gy, med  
gy, occ mot tn, rr s&p,  
med-c grn, fri-hrd, sb  
blk-y-sb ang, mod srtd,  
mod cmtd, non calc







12,960  
12,970  
12,980  
12,990  
13,000  
13,010  
13,020  
13,030  
13,040  
13,050  
13,060  
13,070  
13,080  
13,090  
13,100  
13,110  
13,120  
13,130  
13,140  
13,150  
13,160  
13,170

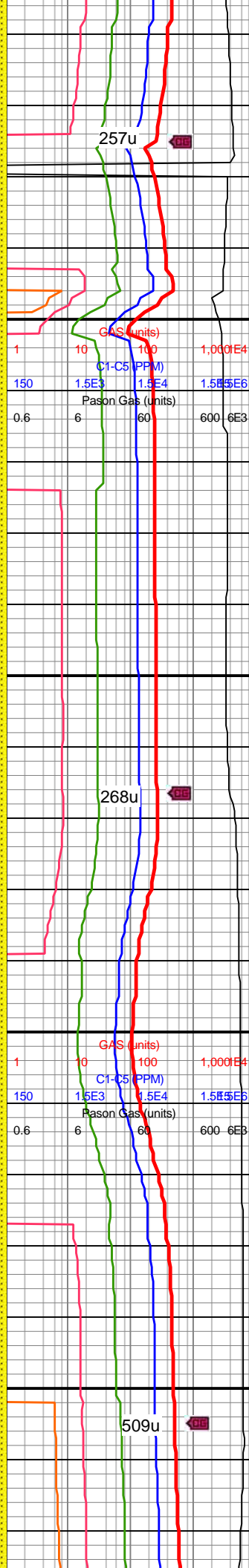
MW IN: 10.5  
VIS IN: 48  
MW OUT: 10.6  
VIS OUT: 46

MD: 13,001'  
INC: 90.04°  
AZM: 359.69°  
TVD: 7,476.05'  
VS: 5,144.38'

WOB: 42klbs  
RPM: 24  
SPM: 210  
SPP: 3,998psi

MD: 13,090'  
INC: 90.31°  
AZM: 359.51°  
TVD: 7,475.78'  
VS: 5,233.38'

MD: 13,179'



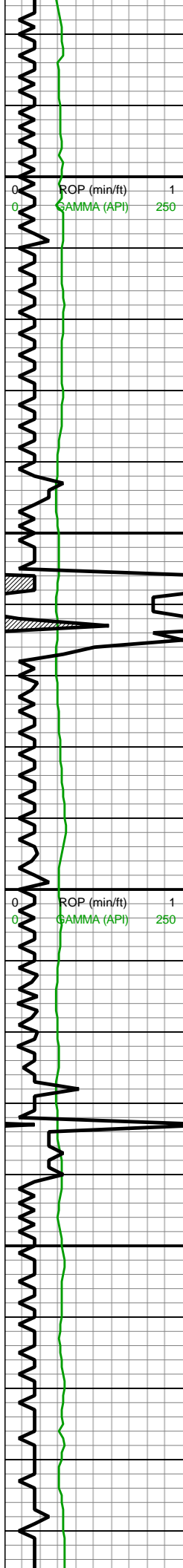
257u

268u

509u

12900-13000 SST  
(100%): mot lt gy, med  
gy, occ mot tn, rr s&p,  
med-c grn, fri-hrd, sb  
blky-sb ang, mod srtd,  
mod cmtd, non calc

13000-13100 SST  
(100%): med gy, mot lt  
gy, med-c grn, fri-hrd, sb  
blky-sb ang, mod srtd,  
mod cmtd, non calc



INC: 90.4°  
AZM: 359.16°  
TVD: 7,475.23'  
VS: 5,322.37'

WOB: 13klbs  
RPM: 60  
SPM: 210  
SPP: 4,795psi

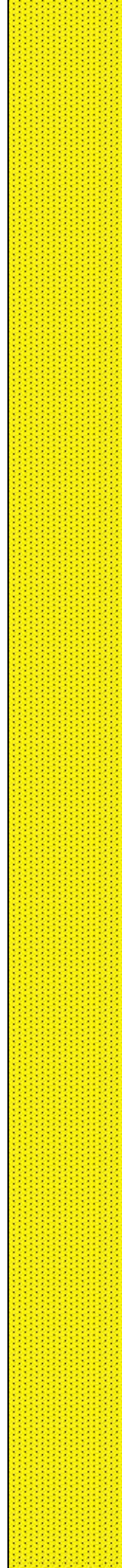
MW IN: 10.5  
VIS IN: 48  
MW OUT: 10.5+  
VIS OUT: 46

MD: 13,268'  
INC: 90.04°  
AZM: 0.04°  
TVD: 7,474.88'  
VS: 5,411.37'

MIN DEPTH 7/28/19

MD: 13,357'  
INC: 89.96°  
AZM: 359.34°  
TVD: 7,474.88'  
VS: 5,500.36'

WOB: 14klbs



489u

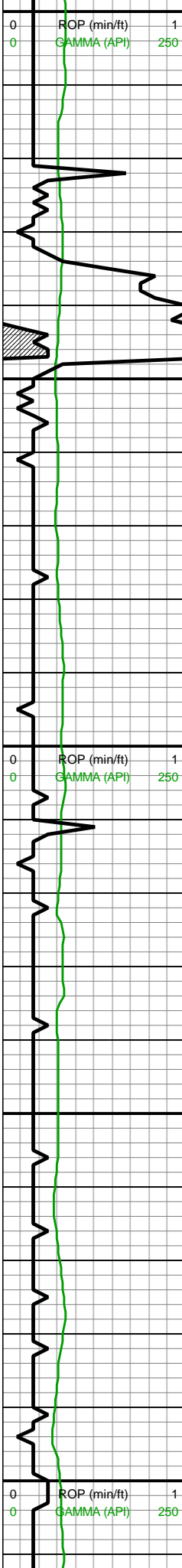
264u

13100-13200 SST  
(100%): med gy, mot lt  
gy, med-c grn, fri-hrd, sb  
blky-sb ang, mod srtd,  
mod cmtd, non calc

13200-13300 SST  
(100%): dk gy, med-c grn,  
sft, sb blky-sb ang, w  
srtd, ply cmtd, non calc

13300-13400 SST  
(100%): dk gy, med-c grn,  
sft, sb blky-sb ang, w  
srtd, ply cmtd, non calc





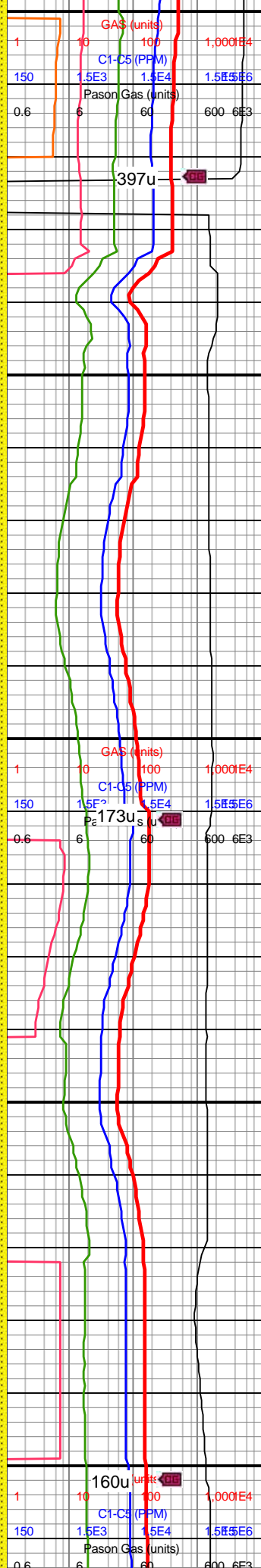
WOB: 41klbs  
RPM: 60  
SPM: 210  
SPP: 4,820psi

MD: 13,446'  
INC: 90.04°  
AZM: 0.57°  
TVD: 7,474.88'  
VS: 5,589.35'

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

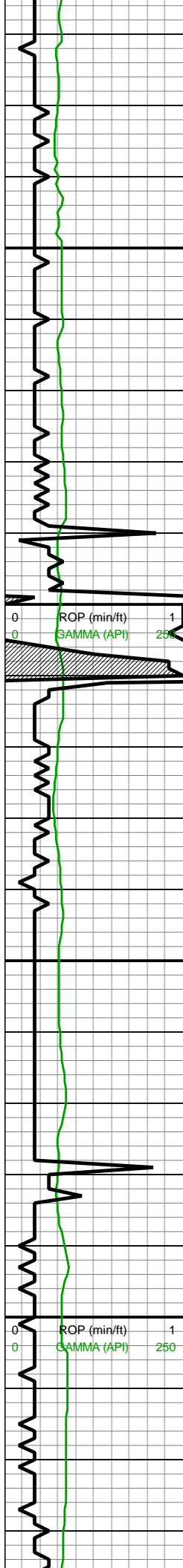
MD: 13,535'  
INC: 90.04°  
AZM: 0.39°  
TVD: 7,474.82'  
VS: 5,678.33'

WOB: 43klbs  
RPM: 60  
SPM: 209  
SPP: 4,835psi



13400-13500 SST  
(100%): dk gy, med-c grn,  
sft, sb blk-y-sb ang, w  
srtd, ply cmtd, non calc

13500-13600 SST  
(100%): dk gy, med-c grn,  
sft, sb blk-y-sb ang, w  
srtd, ply cmtd, non calc



MD: 13,624'  
INC: 90.57°  
AZM: 0.04°  
TVD: 7,474.35'  
VS: 5,767.31'

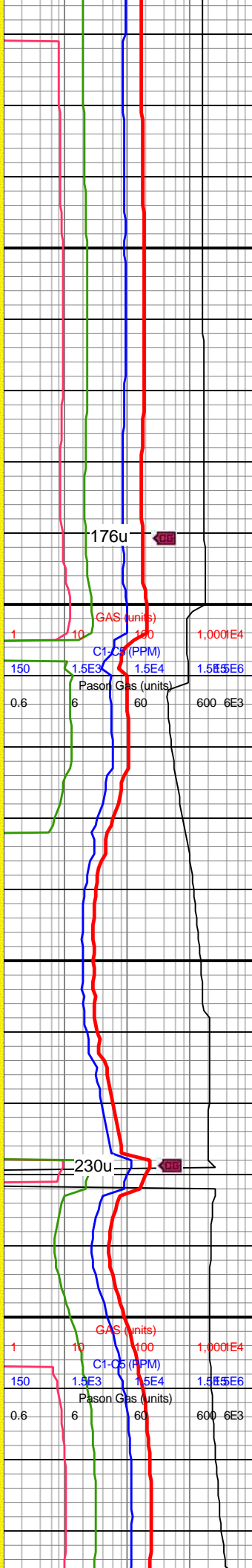
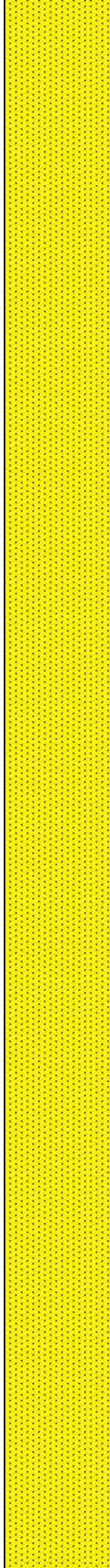
MW IN: 10.5  
VIS IN: 50  
MW OUT: 10.6  
VIS OUT: 47

MD: 13,713'  
INC: 89.87°  
AZM: 1.8°  
TVD: 7,474.01'  
VS: 5,856.26'

WOB: 42klbs  
RPM: 60  
SPM: 209  
SPP: 4,770psi

MD: 13,802'  
INC: 89.78°  
AZM: 0.92°  
TVD: 7,474.28'  
VS: 5,945.19'

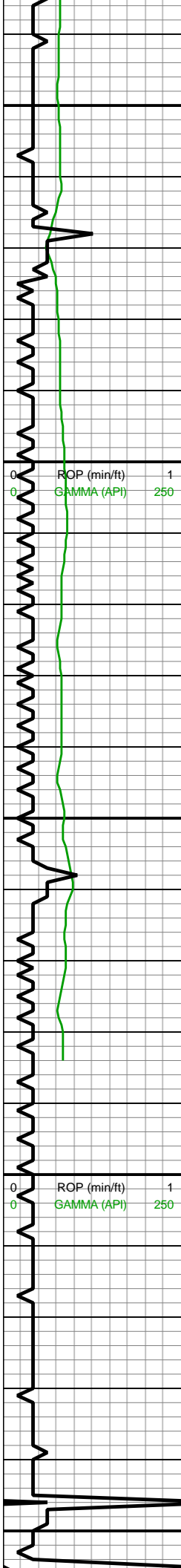
MW IN: 10.5  
VIS IN: 50  
MW OUT: 10.6  
VIS OUT: 47



13600-13700 SST  
(100%): dk gy, tr mot tn,  
med-c grn, sft, sb blk-y-sb  
ang, mod srtd, ply cmtd,  
non calc

13700-13800 SST  
(100%): dk gy, tr mot tn,  
med-c grn, sft, sb blk-y-sb  
ang, mod srtd, ply cmtd,  
non calc





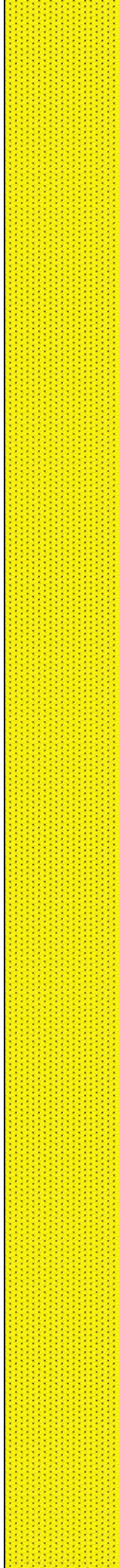
13,840  
13,850  
13,860  
13,870  
13,880  
13,890  
13,900  
13,910  
13,920  
13,930  
13,940  
13,950  
13,960  
13,970  
13,980  
13,990  
14,000  
14,010  
14,020  
14,030  
14,040  
14,050

MD: 13,891'  
INC: 90.04°  
AZM: 0.04°  
TVD: 7,474.42'  
VS: 6,034.16'

MD: 13,981'  
INC: 90.48°  
AZM: 359.51°  
TVD: 7,474.01'  
VS: 6,124.15'

WOB: 42klbs  
RPM: 60  
SPM: 211  
SPP: 4,865psi

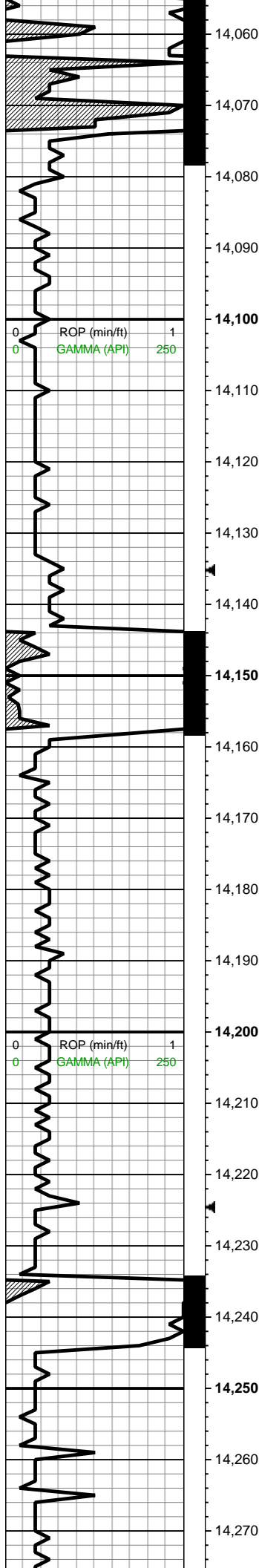
MW IN: 10.5  
VIS IN: 50  
MW OUT: 10.6



13800-13900 SST  
(100%): dk gy, occ lt gy, tr  
mot tn, med-c grn, sft, sb  
blky-sb ang, mod srtd,  
mod cmtd, non calc

13900-14000 SST  
(100%): dk gy, occ lt gy, tr  
mot tn, med-c grn, sft, sb  
blky-sb ang, mod srtd,  
mod cmtd, non calc





VIS OUT: 47

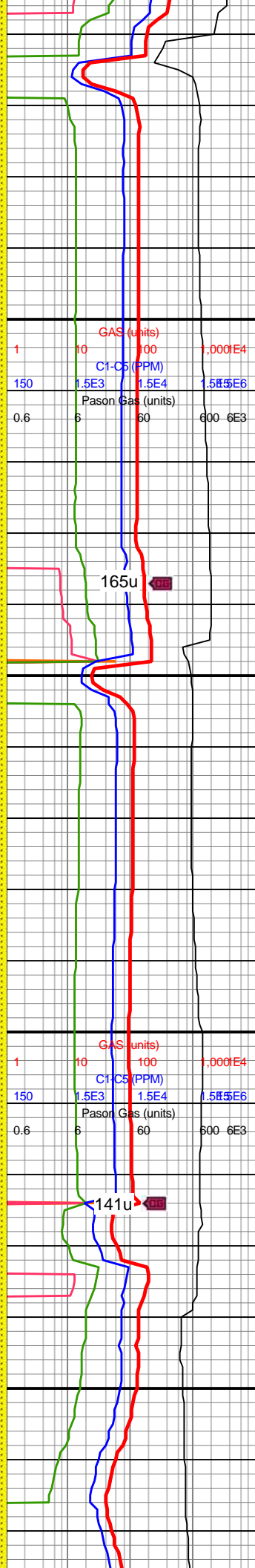
MD: 14,070'  
INC: 90.22°  
AZM: 0.21°  
TVD: 7,473.47'  
VS: 6,213.15'

MD: 14,159'  
INC: 90.75°  
AZM: 1.62°  
TVD: 7,472.71'  
VS: 6,302.1'

WOB: 43klbs  
RPM: 60  
SPM: 210  
SPP: 4,850psi

MW IN: 10.5  
VIS IN: 50  
MW OUT: 10.6  
VIS OUT: 47

MD: 14,248'  
INC: 88.81°  
AZM: 0.57°  
TVD: 7,473.05'  
VS: 6,391.04'

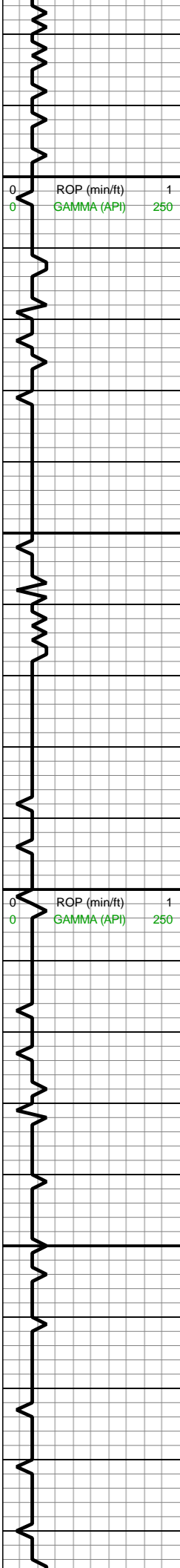


14000-14100 SST  
(100%): dk gy-dk gyshbn,  
frm-sli fri gr sup sst clus  
cons wi silc cmt & sl arg  
thru, mod w srtd vf-f sb rd  
sd grs, mod por, predy  
non calc, sl calc ip, wi  
rr-tr calc sltst strg ip

14100-14200 SST  
(100%): dk gy-dk gyshbn,  
mod w srtd vf-f sd grs,  
frm-sli fri gr sup sst clus  
cons wi silc cmt, sl arg  
thru, mod por, predy non  
calc, sl calc ip

14200-14300 SST  
(100%): predy dk gy-dk  
gyshbn-occ lt gyshbn  
frm sli fri gr sup sst clus





14,280  
14,290  
14,300  
14,310  
14,320  
14,330  
14,340  
14,350  
14,360  
14,370  
14,380  
14,390  
14,400  
14,410  
14,420  
14,430  
14,440  
14,450  
14,460  
14,470  
14,480  
14,490

MD: 14,337'  
INC: 89.08°  
AZM: 1.09°  
TVD: 7,474.69'  
VS: 6,479.98'

WOB: 40klbs  
RPM: 60  
SPM: 208  
SPP: 4,940psi

MW IN: 10.5  
VIS IN: 51  
MW OUT: 10.6  
VIS OUT: 49

MD: 14,427'  
INC: 89.08°  
AZM: 0.92°  
TVD: 7,476.14'  
VS: 6,569.92'

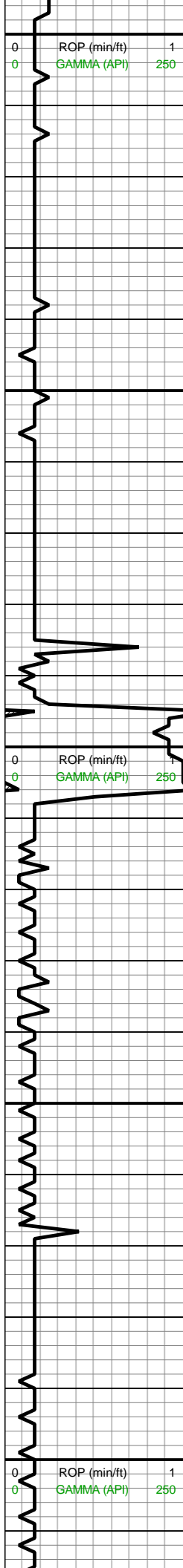


frm-sli fr gr sup sst clus  
cons wi silc cmt, occ sb  
frm rd mtx sup arg sst  
clus, mod srtd vf-f sd grs,  
vf sb rd-rd uncons sd ip,  
predy non calc, sl calc ip

14300-14400 SST  
(100%): gy-dk gy, gyshbn  
ip wi sl arg cmt, frm-sli fri  
vf-f gr sup sst clus cons  
wi silc cmt, com f sb rd-rd  
mod w srtd uncons sd,  
mod por, non calc

14400-14500 SST  
(100%): predy dk gy-dk  
gyshbn-occ lt gyshbn  
frm-sli fri gr sup sst clus  
cons wi silc cmt, occ sb  
frm rd mtx sup arg sst  
clus, mod srtd vf-f sd grs,  
vf sb rd-rd uncons sd ip,  
predy non calc, sl calc ip





14,500  
14,510  
14,520  
14,530  
14,540  
14,550  
14,560  
14,570  
14,580  
14,590  
14,600  
14,610  
14,620  
14,630  
14,640  
14,650  
14,660  
14,670  
14,680  
14,690  
14,700  
14,710

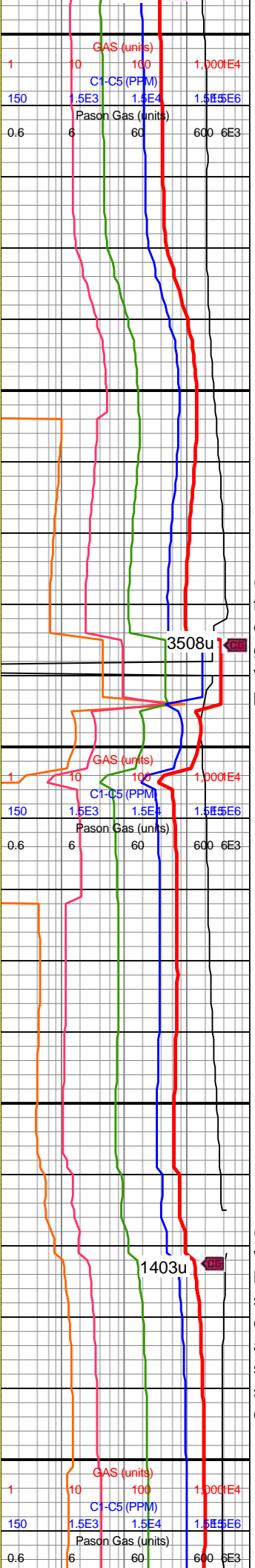
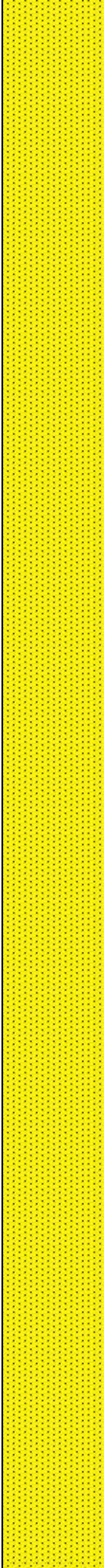
MD: 14,516'  
INC: 89.25°  
AZM: 359.86°  
TVD: 7,477.43'  
VS: 6,658.89'

WOB: 41klbs  
RPM: 0  
SPM: 209  
SPP: 4,100psi

MD: 14,605'  
INC: 89.69°  
AZM: 0.74°  
TVD: 7,478.26'  
VS: 6,747.86'

MW IN: 10.5  
VIS IN: 50  
MW OUT: 10.6  
VIS OUT: 48

MD: 14,694'  
INC: 90.75°  
AZM: 1.44°  
TVD: 7,477.92'  
VS: 6,836.81'

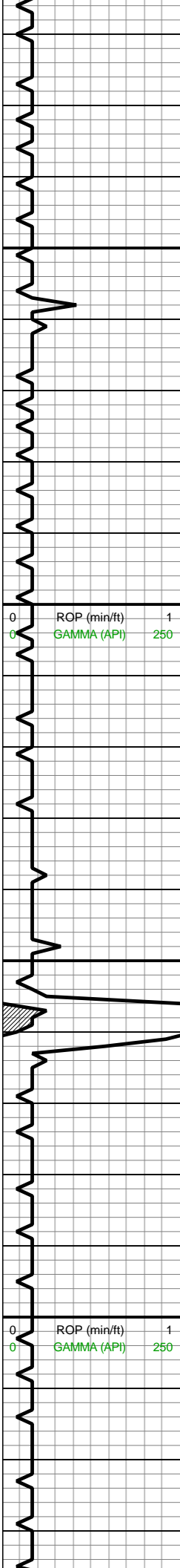


14500-14600 SST  
(100%): predy gy-dk gy  
frm sli fri gr sup sst clus  
cons wi silc cmt, occ lt gy  
gr-mtx sup arg sst, mod  
w srted vf-f sd grs, mod  
por, non calc, sl calc ip

14600-14700 SST  
(100%): dk gy-dk gyshbn  
wi s&p wh lit grs thru-occ  
lt gyshbn, frm-sli fri gr  
sup sst clus cons wi silc  
cmt, rr sb frm rd mtx sup  
arg sst clus, mod srted vf-f  
sd grs, vf sb rd-rd uncon  
sd ip, mod por, predy non  
calc, sl calc ip





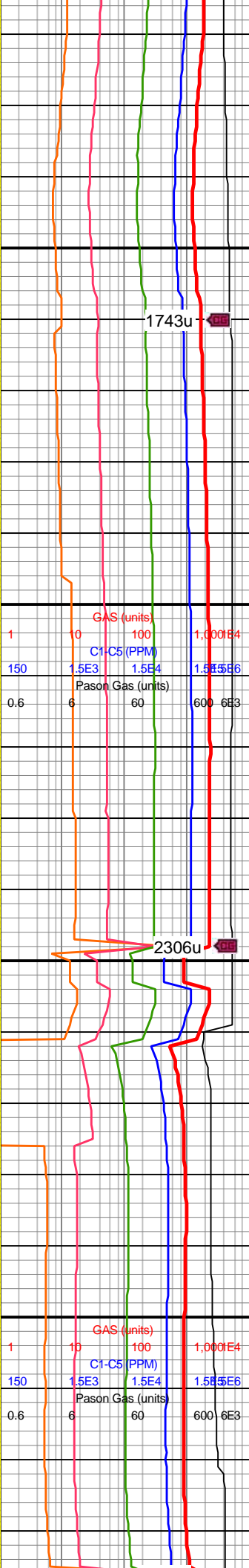
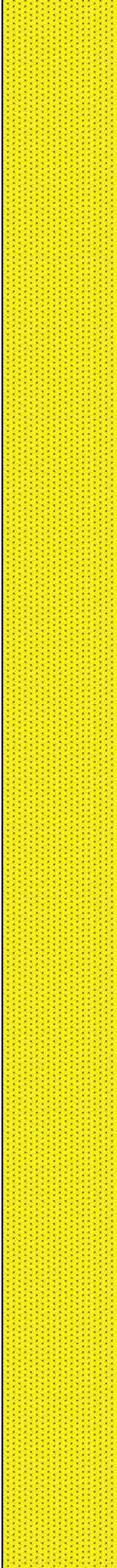


14,720  
14,730  
14,740  
14,750  
14,760  
14,770  
14,780  
14,790  
14,800  
14,810  
14,820  
14,830  
14,840  
14,850  
14,860  
14,870  
14,880  
14,890  
14,900  
14,910  
14,920  
14,930

MD: 14,783'  
INC: 91.45°  
AZM: 1.62°  
TVD: 7,476.21'  
VS: 6,925.71'

WOB: 39klbs  
RPM: 60  
SPM: 210  
SPP: 4,920psi

MD: 14,872'  
INC: 89.87°  
AZM: 1.09°  
TVD: 7,475.18'  
VS: 7,014.63'



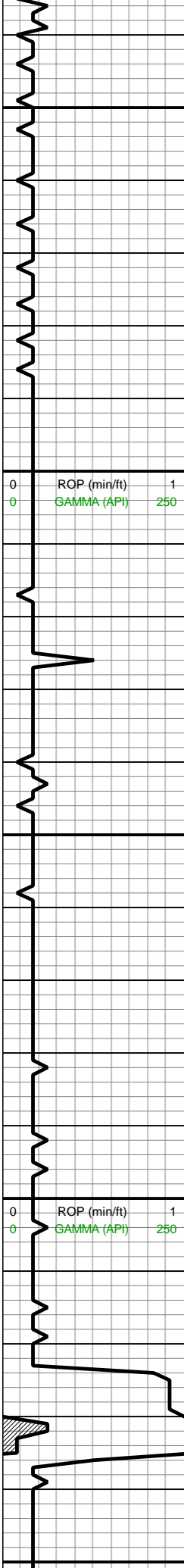
1743u

2306u

14700-14800 SST  
(100%): predy gy-dk gy  
frm sli fri gr sup sst clus  
cons wi silc cmt, occ lt gy  
gr-mtx sup arg sst, mod  
w srted vf-f sd grs, mod  
por, non calc, sl calc ip

14800-14900 SST  
(100%): gy-dk gy-dk  
gyshbn frm-sli fri gr sup  
s&p sst clus cons wi silc  
cmt, occ lt gyshbn grdgd to  
mtx sup arg sst cmt,  
mod-w srted vf-f sd grs, vf  
sb rd-rd unconcs sd ip,  
mod por, predy non calc,  
sl calc ip





MW IN: 10.5  
VIS IN: 51  
MW OUT: 10.6  
VIS OUT: 49

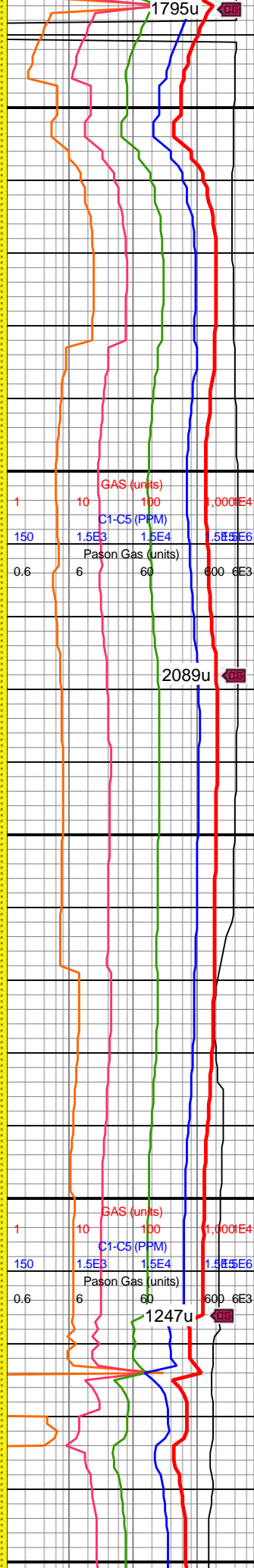
MD: 14,961'  
INC: 89.87°  
AZM: 0.04°  
TVD: 7,475.38'  
VS: 7,103.6'

WOB: 43klbs  
RPM: 60  
SPM: 209  
SPP: 5,020psi

MD: 15,050'  
INC: 90.13°  
AZM: 359.69°  
TVD: 7,475.38'  
VS: 7,192.59'

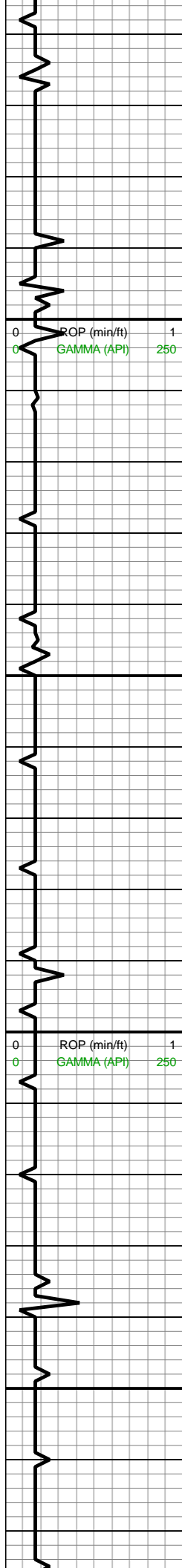
MD: 15,139'  
INC: 89.78°  
AZM: 0.74°  
TVD: 7,475.45'  
VS: 7,281.58'

MW IN: 10.5  
VIS IN: 51  
MW OUT: 10.6



14900-15000 SST  
(100%): predy gy-dk gy  
frm sli fri gr sup sst clus  
cons wi silc cmt, occ lt gy  
gr-mtx sup arg sst, mod  
w srtd vf-f sd grs, mod  
por, non calc, sl calc ip

15000-15100 SST  
(100%): dk gy-dk gyshbn  
wi s&p wh lit grs thru-occ  
lt gyshbn, frm-sli fri gr  
sup sst clus cons wi silc  
cmt, rr sb frm rd mtx sup  
arg sst clus, mod srtd vf-f  
sd grs, vf sb rd-rd uncon  
sd ip, mod por, predy non  
calc, sl calc ip



VIS OUT: 49

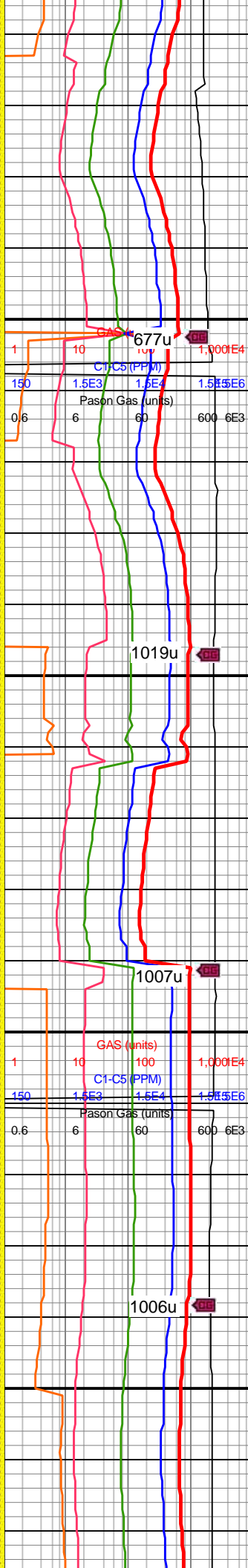
WOB: 39klbs  
RPM: 60  
SPM: 208  
SPP: 4,930psi

MD: 15,228'  
INC: 89.87°  
AZM: 0.39°  
TVD: 7,475.73'  
VS: 7,370.55'

MD: 15,318'  
INC: 89.96°  
AZM: 0.57°  
TVD: 7,475.86'  
VS: 7,460.52'

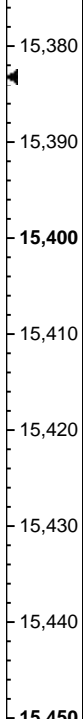
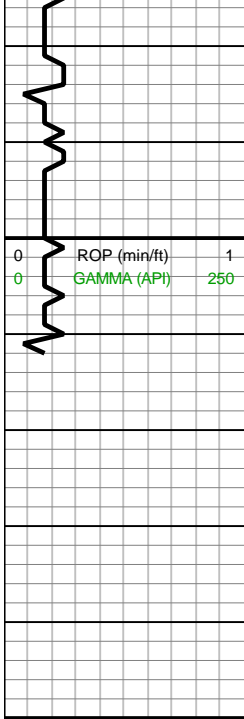
MW IN: 10.55  
VIS IN: 51  
MW OUT: 10.6  
VIS OUT: 48

MD: 15,347'  
INC: 90.22°  
AZM: 0.92°  
TVD: 7,475.81'  
VS: 7,489.51'



15100-15200 SST  
(100%): gy-dk gy-dk  
gyshbn frm-sli fri gr sup  
s&p sst clus cons wi silc  
cmt, occ lt gyshbn grdg to  
mtx sup arg sst cmt,  
mod-w srted vf-f sd grs, vf  
sb rd-rd uncons sd ip,  
mod por, predy non calc,  
sl calc ip

15200-15300 SST  
(100%): predy dk gy-dk  
gyshbn-occ lt gyshbn  
frm-sli fri gr sup sst clus  
cons wi silc cmt, occ sb  
frm rd mtx sup arg sst  
clus, mod srted vf-f sd grs,  
vf sb rd-rd uncons sd ip,  
predy non calc, sl calc ip

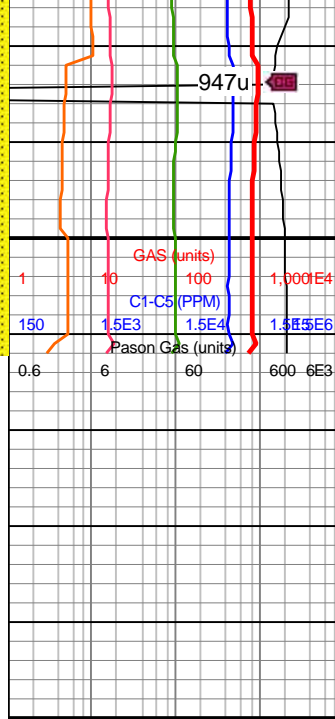
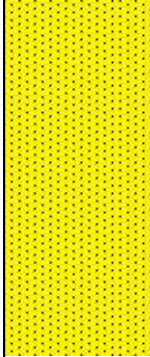


WOB: 42klbs  
RPM: 60  
SPM: 208  
SPP: 5,050psi

Reach TD of  
15,412' MD @  
12:37 MST on  
7/28/19

**\*Bit Projection\***

MD: 15,412'  
INC: 90.22°  
AZM: 0.92°  
TVD: 7,475.56'  
VS: 7,554.48'



15300-15412 SST  
(100%): gy-dk gyshbn-dk  
gy, mod w srtd vf-f sb  
ang-sb rd sd grs, mod  
por frm-sli fri gr sup sst  
clus cons wi silc cmt-tt  
por sb frm mtx sup sst wi  
arg cmt, predy non calc,  
rr-occ sl-l calc ip

