



Scale: 5" / 100'  
Measured Depth Log

**Well Name** Melbon Ranch 4J-17H-M265

**Location** Sec. 17 T2N R65W

**State** Colorado

**County** Weld

**Country** USA

**Rig Number** Ensign 153

**API Number** 05-123-47752

**AFE #** 16191475

**Geographic Region** Rockies

**Field** Wattenberg

**Spud Date** 11/6/2018

**Drilling Completed** 11/9/2018

**Surface Coordinates** Lat/Long: 40.1348423/-104.6961138

SHL: Sec: 17 Twp: 2N 65W  
Footage: 2400 FSL 460 FWL

**Bottom Hole Coordinates** Proposed BHL: Sec: 17 Twp: 2N 65W  
Footages: 2400 FSL 460 FEL

**Ground Elevation** 4,956'

**K.B. Elevation** 4,979'

**Logged Interval** 6,500' **To** 12,010'

**Total Depth** 12,010'

**Formation** Niobrara B Chalk

**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 / Tom Yull

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

**Equipment:** ML-567

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

**Start Date** 11/06/2018

**Release Date:** 11/10/2018

**Job #:** 1699RK1810

## 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  
 BIOCLASTIC  
 BRACHIOPOD  
 BRYOZOA  
 CEPHALOPOD  
 CORAL  
 CRINOID  
 ECHINOID

### F FOSSIL

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

### ARGILLACEOUS

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

### GLAUCONITE

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

### Stringer

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

F FERRUGINOUS

FISH

FORAMINIFERA

## Minerals

ANHYDRITIC

F FERRUGINOUS

FERRUGINOUS PELLET

FERRUGINOUS

F FERRUGINOUS

SILTY

TUFFACEOUS

SILTSTONE STRINGER

## Oil Show

DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

## Porosity

E EARTHY

FENESTRAL

FRACTURE

INTERCRYSTALLINE

INTERCLOTTIC

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 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

E EARTHY

FINELYXLN

GRAINSTONE

L LITHOGRAPHIC

MX MICROXLN

MS MUDSTONE

PS PACKSTONE

WS WACKESTONE

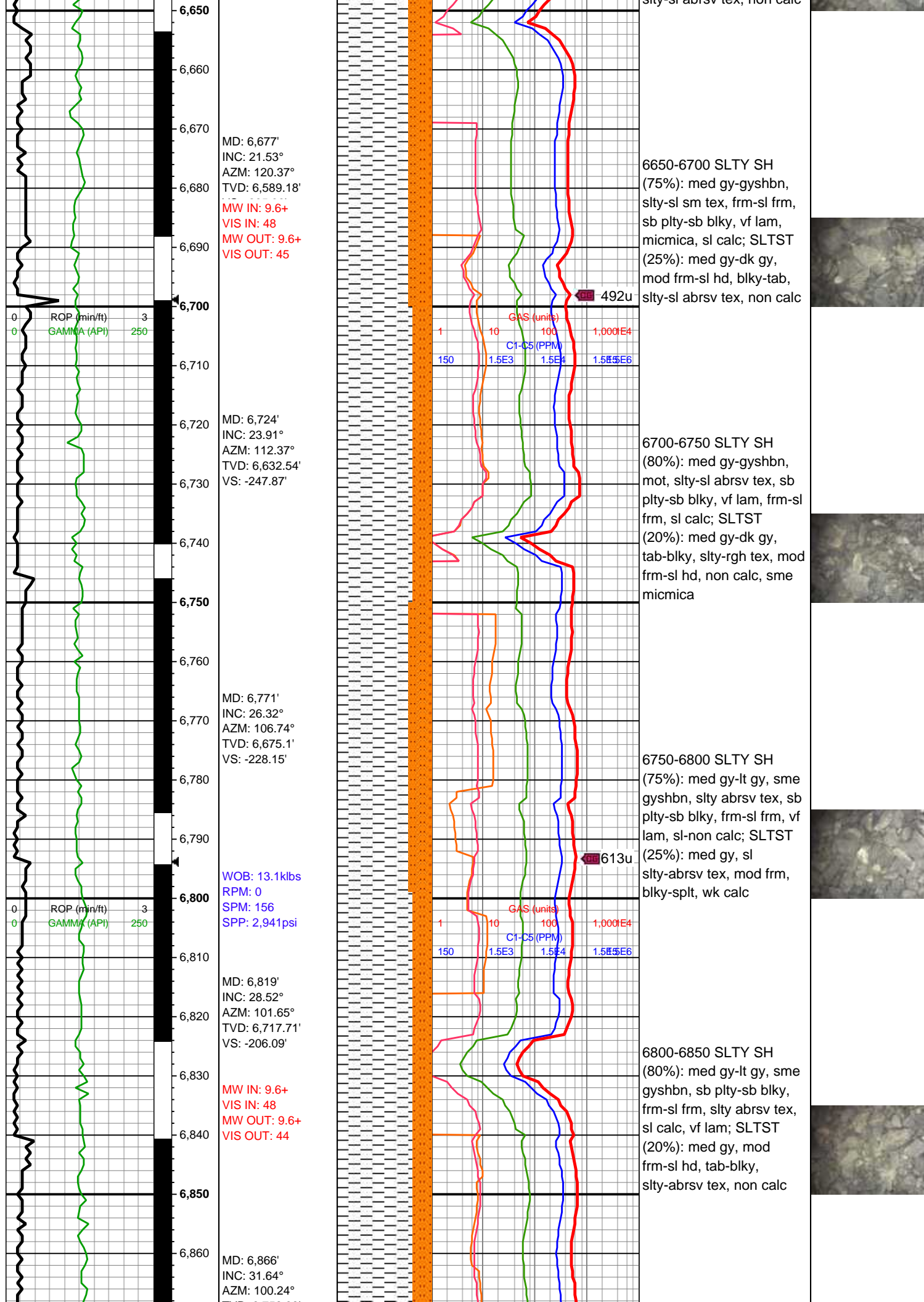
## Sorting

M MODERATE

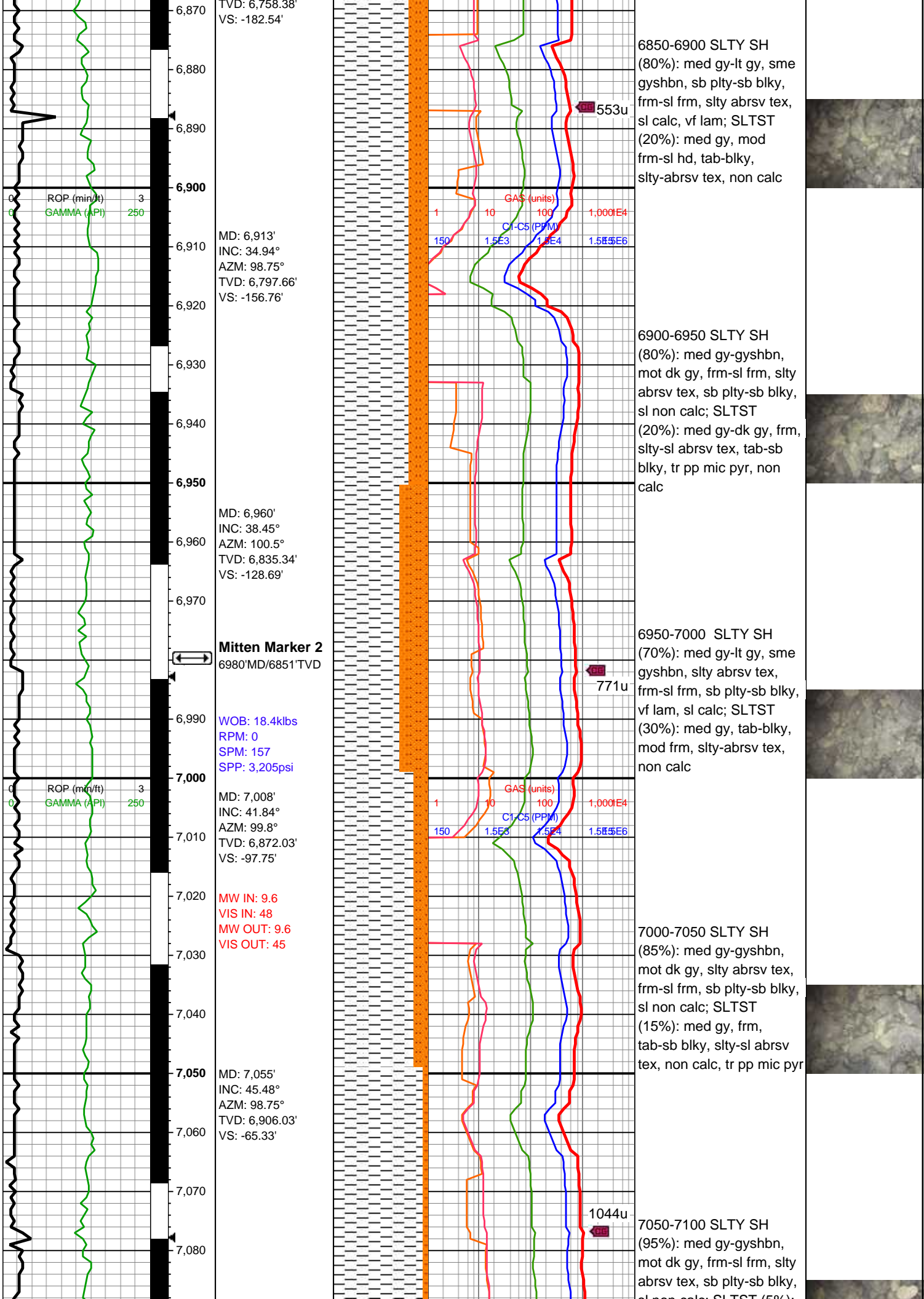
P POOR

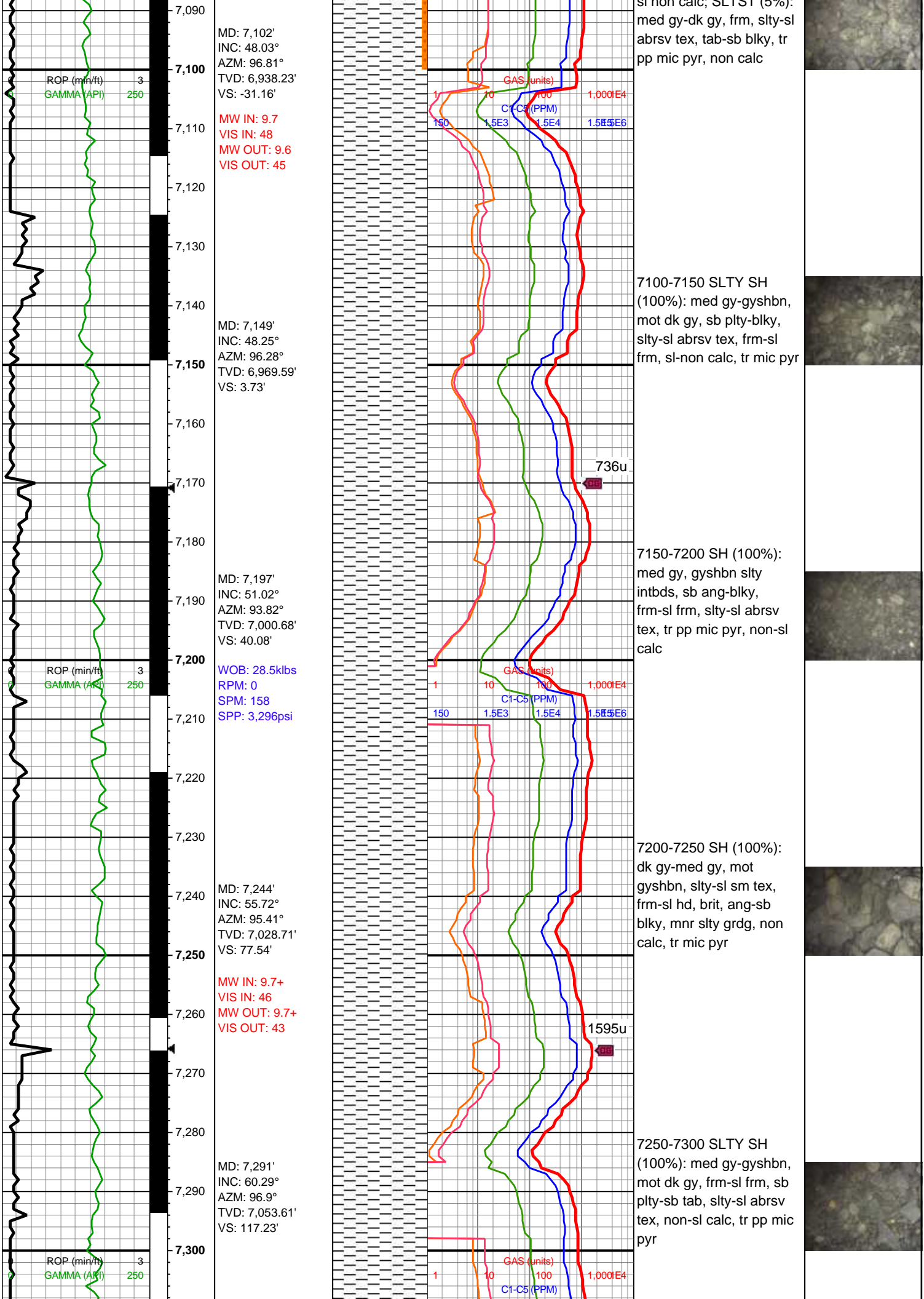
W WELL

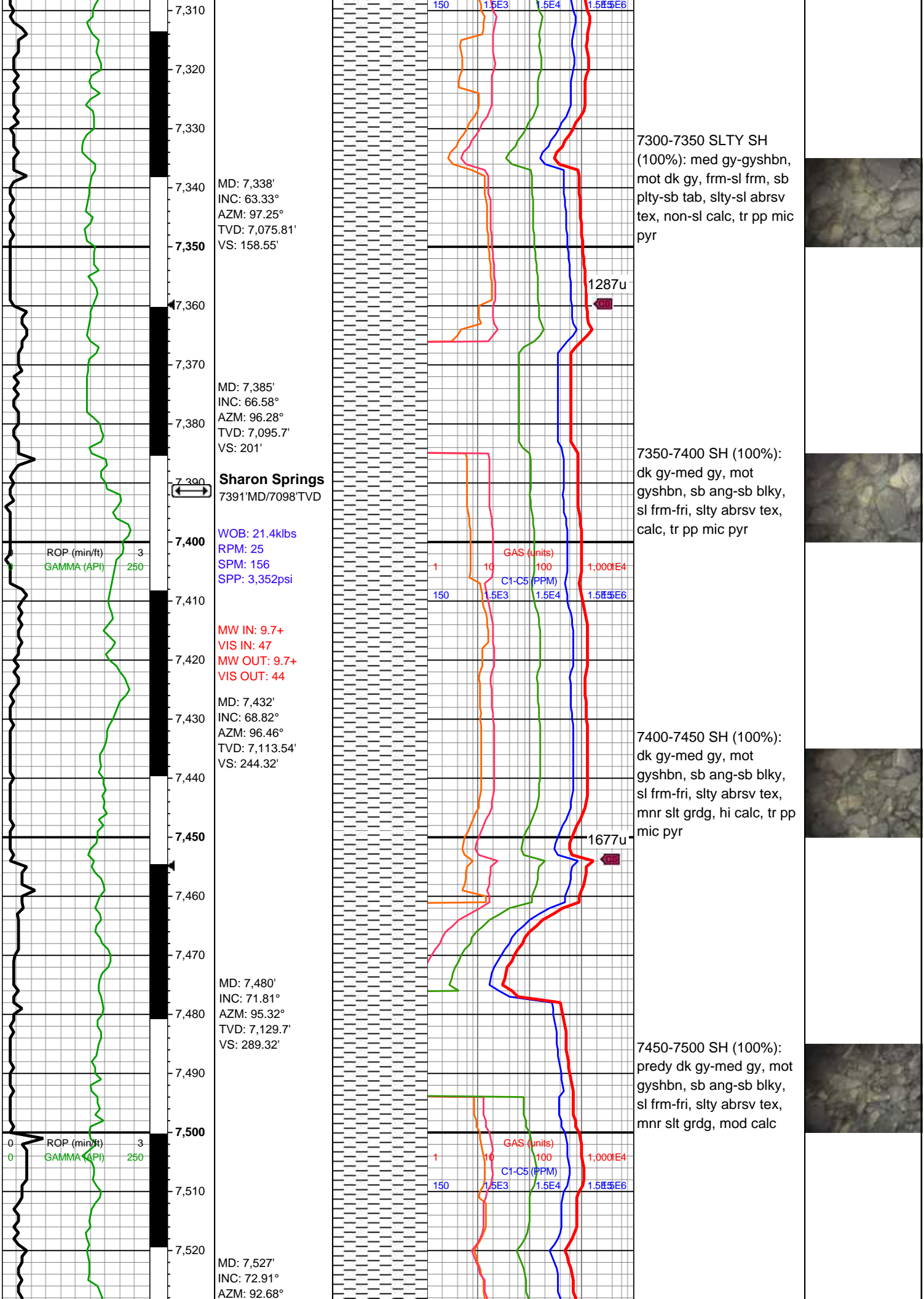
ROP		Slide/Rotate	Depth Labels	Notes	% Lith	Total Gas						Lithology Descriptions	Images
ROP	GAMMA					GAS	C1	C2	C3	C4	C5		
Crestone Peak Resources													
Melbon Ranch													
4J-17H-M265													
9 5/8" Surface Casing @ 2,389'													
Spud Date: 11/06/2018													
2 man Logging Began: 11/06/2018													
All Depths Correspond to Driller's Pipe Tally													
ROP (min/ft)		3	6,460	Bit #: 1 Type: U516M Size: 8 1/2 Depth In: 2,404' Depth Out: 12,010' Hours: 33.3 hrs Avg Ft/Hr: 248.47 '/hr Jets: 6x13 S/N: 44580		SYSTEM CALIBRATED 1% Methane = 100 Units 100% Methane = 10000 Units							
GAMMA (API)		250				KOP 6,438' MD							
ROP (min/ft)		3	6,510	MD: 6,536' INC: 12.92° AZM: 137.33° TVD: 6,455.67' VS: -305.9'		6500-6550 SLTY SH (60%): med gy-gyshbn, frm-sl frm, slty-sl sm tex, sb plty-sb blkly, sl calc, vf lam, micmica; SLTST (40%): med gy-dk gy, mod frm-sl hd, slty-sl abrsv tex, blkly-tab, non calc							
GAMMA (API)		250	6,520										
ROP (min/ft)		3	6,530	MD: 6,583' INC: 17.53° AZM: 129.33° TVD: 6,501.02' VS: -295.41'		6550-6600 SLTY SH (70%): med gy, mot gyshbn, slty-sl abrsv tex, sb plty-sb blkly, frm-sl frm, vf lam, sl calc; SLTST (30%): med gy-dk gy, tab-blky, mod frm-sl hd, slty-rgh tex, non calc							
GAMMA (API)		250	6,540										
ROP (min/ft)		3	6,550	WOB: 33.9klbs RPM: 0 SPM: 157 SPP: 3,264psi		6600-6650 SLTY SH (75%): med gy-gyshbn, slty-sl sm tex, frm-sl frm, sb plty-sb blkly, vf lam, micmica, sl calc; SLTST (25%): med gy-dk gy, mod frm-sl hd, blkly-tab, slty-sl abrsv tex, non calc							
GAMMA (API)		250	6,560										
ROP (min/ft)		3	6,570										
GAMMA (API)		250	6,580										
ROP (min/ft)		3	6,590										
GAMMA (API)		250	6,600										
ROP (min/ft)		3	6,610										
GAMMA (API)		250	6,620										
ROP (min/ft)		3	6,630										
GAMMA (API)		250	6,640										



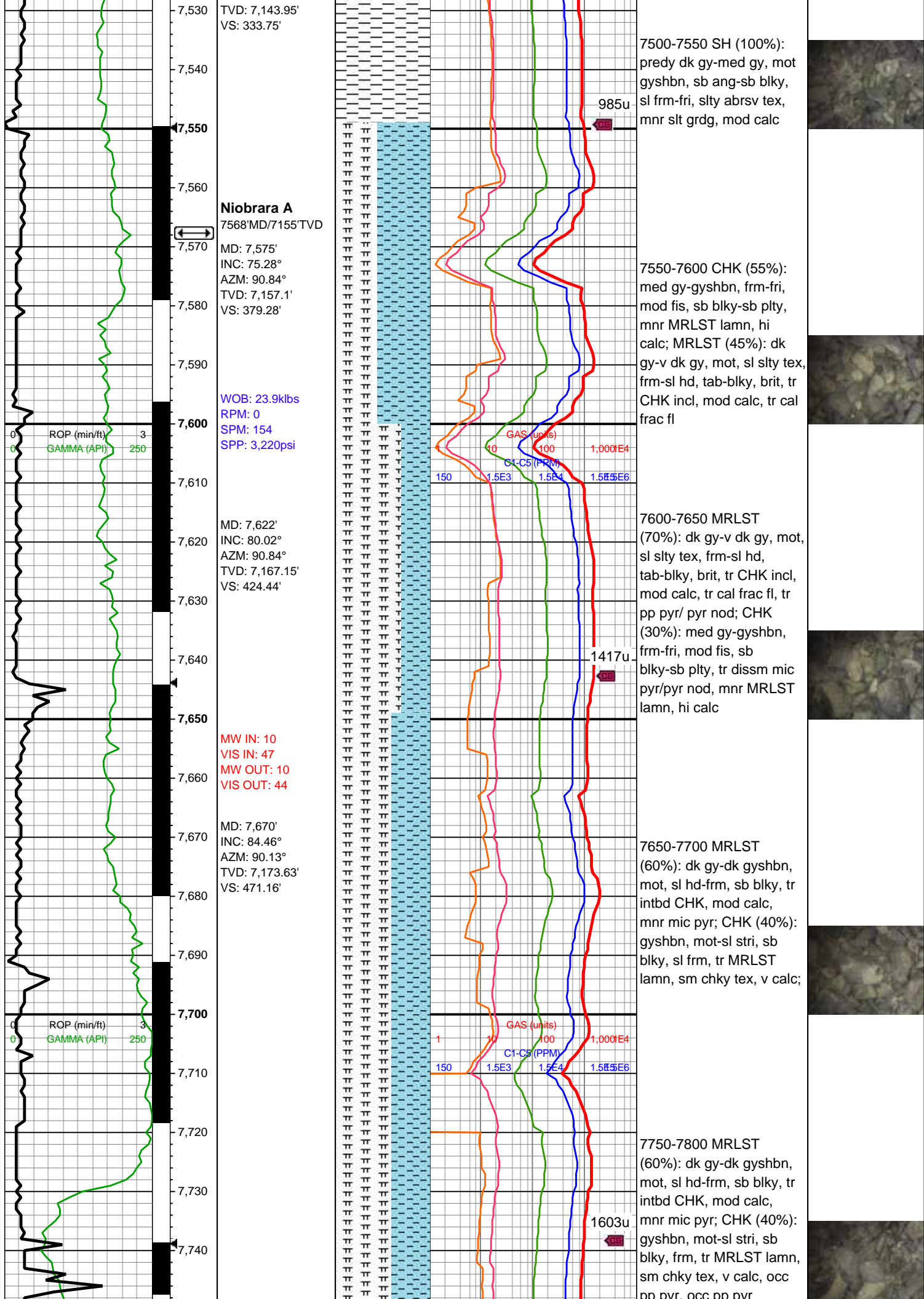


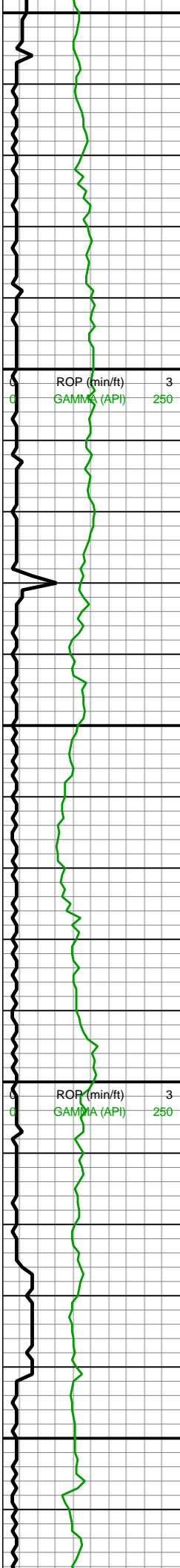












7,750  
7,760  
7,770  
7,780  
7,790  
7,800  
7,810  
7,820  
7,830  
7,840  
7,850  
7,860  
7,870  
7,880  
7,890  
7,900  
7,910  
7,920  
7,930  
7,940  
7,950  
7,960

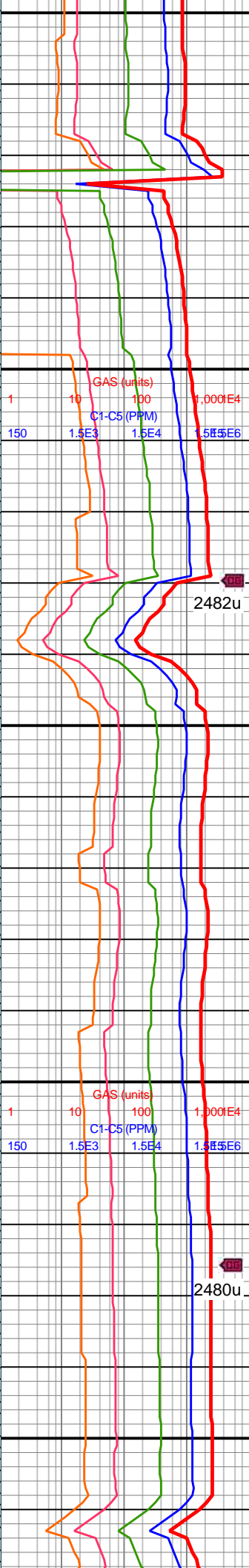
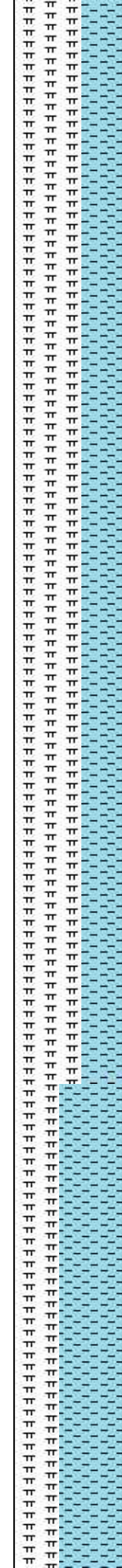
MD: 7,764'  
INC: 89.74°  
AZM: 90.04°  
TVD: 7,178.39'  
VS: 563.25'

WOB: 23.7klbs  
RPM: 25  
SPM: 156  
SPP: 3,577psi

MD: 7,858'  
INC: 90.88°  
AZM: 90.04°  
TVD: 7,177.88'  
VS: 655.47'

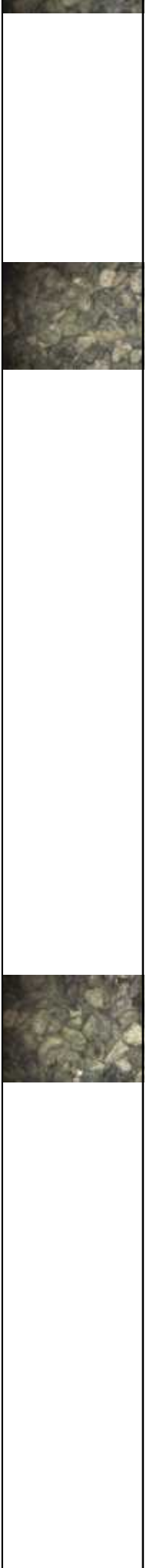
MD: 7,953'  
INC: 91.19°  
AZM: 87.37°  
TVD: 7,176.16'  
VS: 748.2'

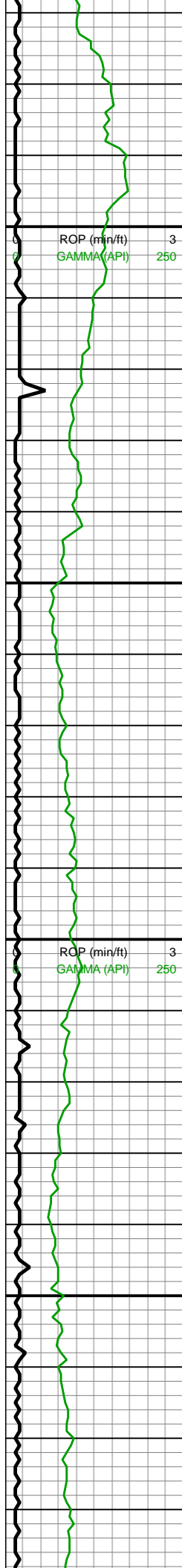
MW IN: 10+  
VIS IN: 46  
MW OUT: 10+  
VIS OUT: 45



7750-7800 MRLST  
(60%): dk gy-dk gyshbn,  
mot, sl hd-frm, sb blk, tr  
intbd CHK, mod calc,  
mnr mic pyr; CHK (25%):  
gyshbn, mot-sl stri, sb  
blk, frm, tr MRLST lamn,  
sm chky tex, v calc, tr pp  
pyr

7800-7900 MRLST  
(60%): dk gy-dk gyshbn,  
mot, sl hd-frm, sb blk, tr  
intbd CHK, mod calc,  
mnr mic pyr; CHK (25%):  
gyshbn, mot-sl stri, sb  
blk, frm, tr MRLST lamn,  
sm chky tex, v calc, tr pp  
pyr





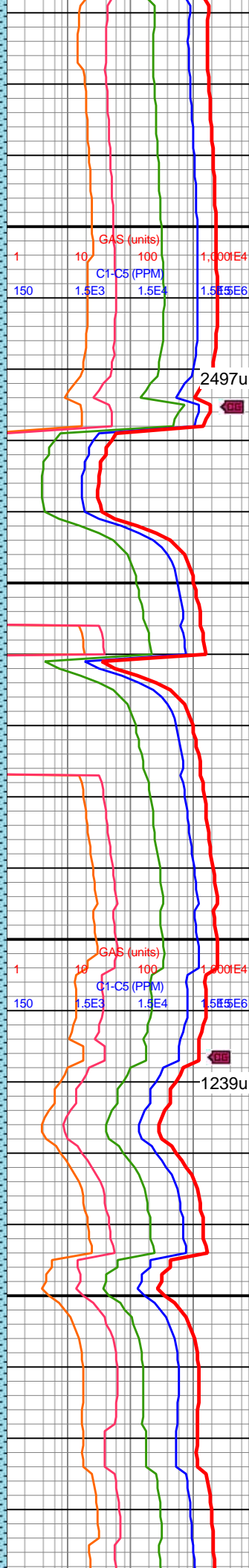
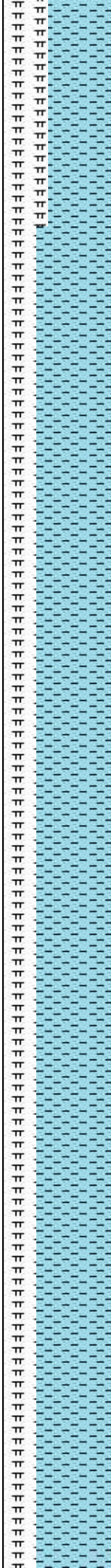
7,970  
7,980  
7,990  
8,000  
8,010  
8,020  
8,030  
8,040  
8,050  
8,060  
8,070  
8,080  
8,090  
8,100  
8,110  
8,120  
8,130  
8,140  
8,150  
8,160  
8,170  
8,180

WOB: 33klbs  
RPM: 61  
SPM: 184  
SPP: 4,596psi

MD: 8,079'  
INC: 91.41°  
AZM: 86.79°  
TVD: 7,173.3'  
VS: 870.36'

MW IN: 10+  
VIS IN: 46  
MW OUT: 10+  
VIS OUT: 45

MD: 8,142'  
INC: 91.45°  
AZM: 85.83°  
TVD: 7,171.73'  
VS: 931.23'



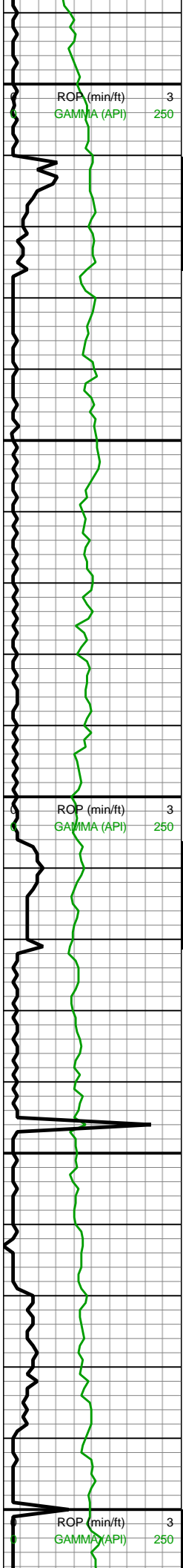
7900-8000 CHK (60%):  
gyshbn, mot-sl stri, sb  
blky, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (40%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blky, tr intbd CHK,  
mod calc, tr pyr

8000-8100 CHK (70%):  
gyshbn, mot-sl stri, sb  
blky, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (30%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blky, tr intbd CHK,  
mod calc, tr pyr

8100-8200 CHK (70%):  
gyshbn, mot-sl stri, sb  
blky, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (30%): dk gy-dk







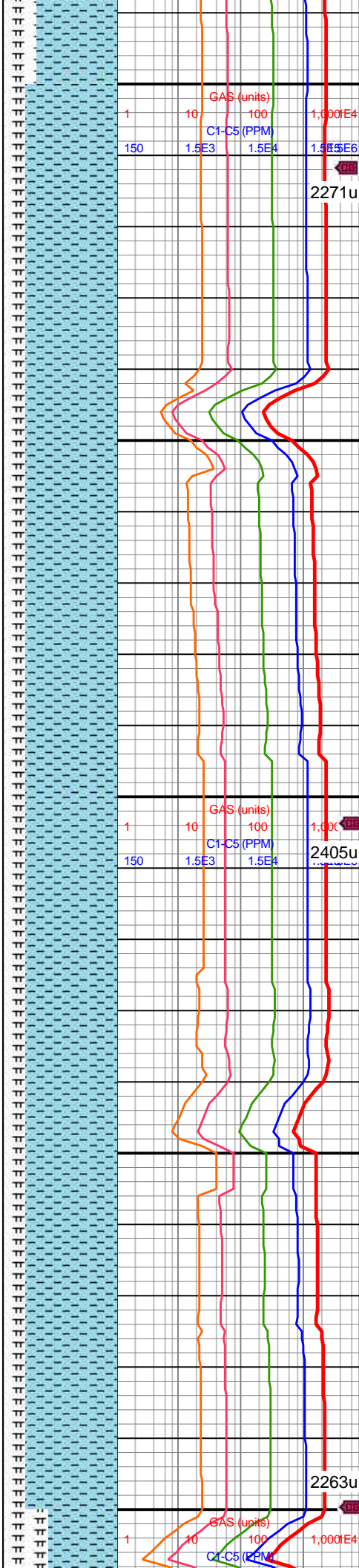
WOB: 32klbs  
RPM: 61  
SPM: 186  
SPP: 4,670psi

MW IN: 10.1+  
VIS IN: 47  
MW OUT: 10.2  
VIS OUT: 45

MD: 8,236'  
INC: 92.46°  
AZM: 88.02°  
TVD: 7,168.52'  
VS: 1,022.27'

MD: 8,331'  
INC: 90.53°  
AZM: 86.7°  
TVD: 7,166.05'  
VS: 1,114.48'

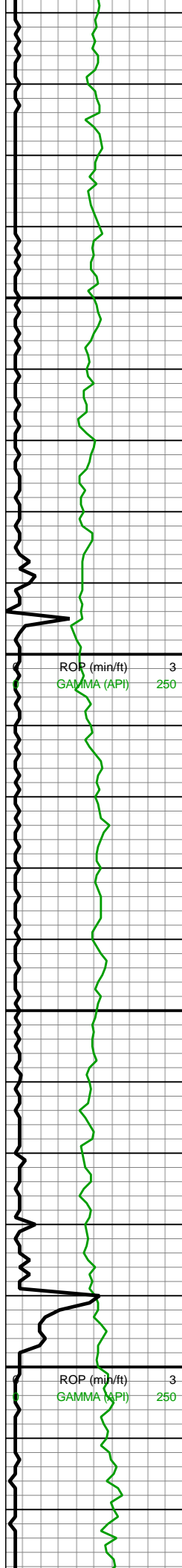
MW IN: 10.2  
VIS IN: 48  
MW OUT: 10.2  
VIS OUT: 46  
WOB: 20klbs  
RPM: 0  
SPM: 186  
SPP: 4,055psi



MRLST (80%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blk, tr intbd CHK,  
mod calc, tr pyr

8300-8400 CHK (80%):  
gyshbn, mot-sl stri, sb  
blk, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (20%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blk, tr intbd CHK,  
mod calc

8300-8400 CHK (80%):  
gyshbn, mot-sl stri, sb  
blk, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (20%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blk, tr intbd CHK,  
mod calc



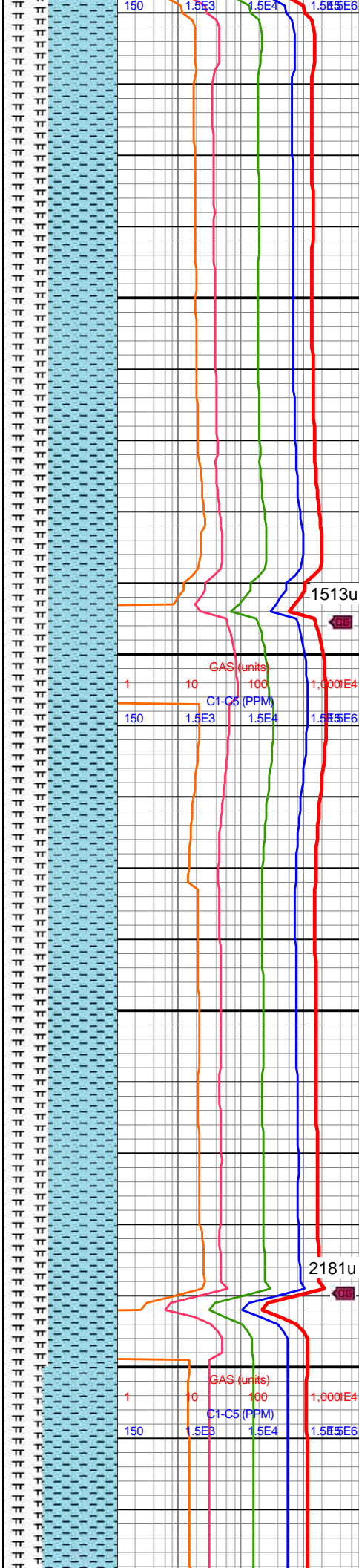
MD: 8,426'  
INC: 91.58°  
AZM: 89.52°  
TVD: 7,164.3'  
VS: 1,206.99'

MD: 8,520'  
INC: 91.36°  
AZM: 89.34°  
TVD: 7,161.88'  
VS: 1,298.99'

MW IN: 10.2  
VIS IN: 47  
MW OUT: 10.2  
VIS OUT: 46

WOB: 29klbs  
RPM: 61  
SPM: 186  
SPP: 4,600psi

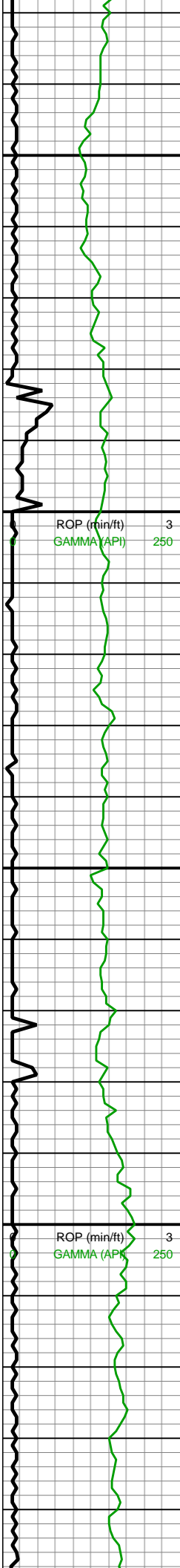
MD: 8,615'  
INC: 91.63°  
AZM: 90.31°  
TVD: 7,159.41'  
VS: 1,392.09'



8400-8500 CHK (60%):  
gyshbn, mot-sl stri, sb  
blky, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (40%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blky, tr intbd CHK,  
mod calc, rr pyr

8500-8600 CHK (60%):  
gyshbn, mot-sl stri, sb  
blky, sl frm, tr MRLST  
lamn, chky tex, v calc;  
MRLST (40%): dk gy-dk  
gyshbn, mot, sl hd-frm,  
sb blky, tr intbd CHK,  
mod calc, rr pyr





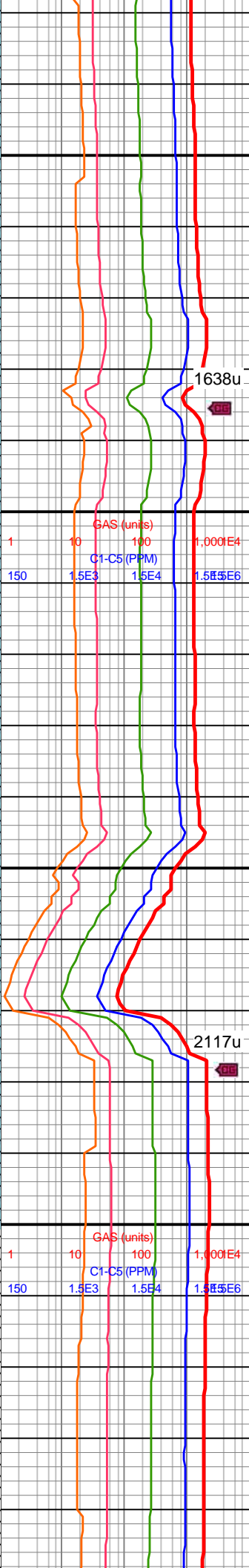
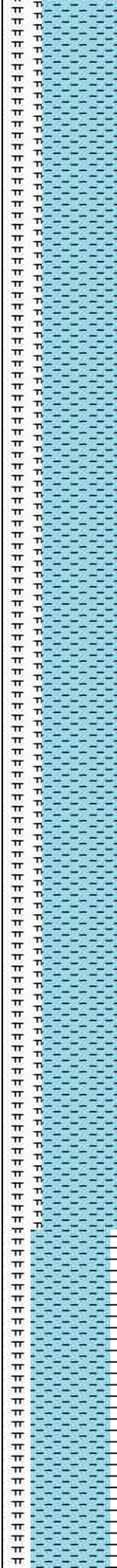
8,630  
8,640  
8,650  
8,660  
8,670  
8,680  
8,690  
8,700  
8,710  
8,720  
8,730  
8,740  
8,750  
8,760  
8,770  
8,780  
8,790  
8,800  
8,810  
8,820  
8,830  
8,840

MD: 8,709'  
INC: 93.38°  
AZM: 90.92°  
TVD: 7,155.3'  
VS: 1,484.4'

MW IN: 10.2  
VIS IN: 48  
MW OUT: 10.2  
VIS OUT: 46

MD: 8,803'  
INC: 93.6°  
AZM: 90.57°  
TVD: 7,149.58'  
VS: 1,576.67'

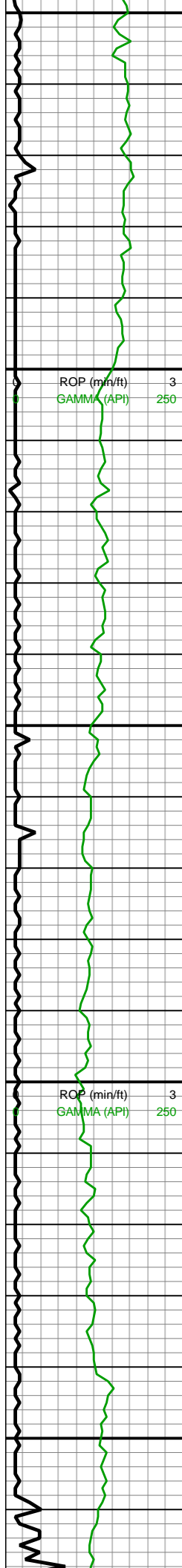
WOB: 34klbs  
RPM: 61  
SPM: 184  
SPP: 4,750psi



8600-8700 CHK (65%):  
predy gyshbn, mot-sl stri,  
sb blk, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc; MRLST (35%): dk  
gy-gyshbn, mot, sb  
blk-sb ang, sl hd-frm, tr  
intbd CHK, mod calc

8700-8800 CHK (65%):  
predy gyshbn, mot-sl stri,  
sb blk, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc; MRLST (35%): dk  
gy-gyshbn, mot, sb  
blk-sb ang, sl hd-frm, tr  
intbd CHK, mod calc



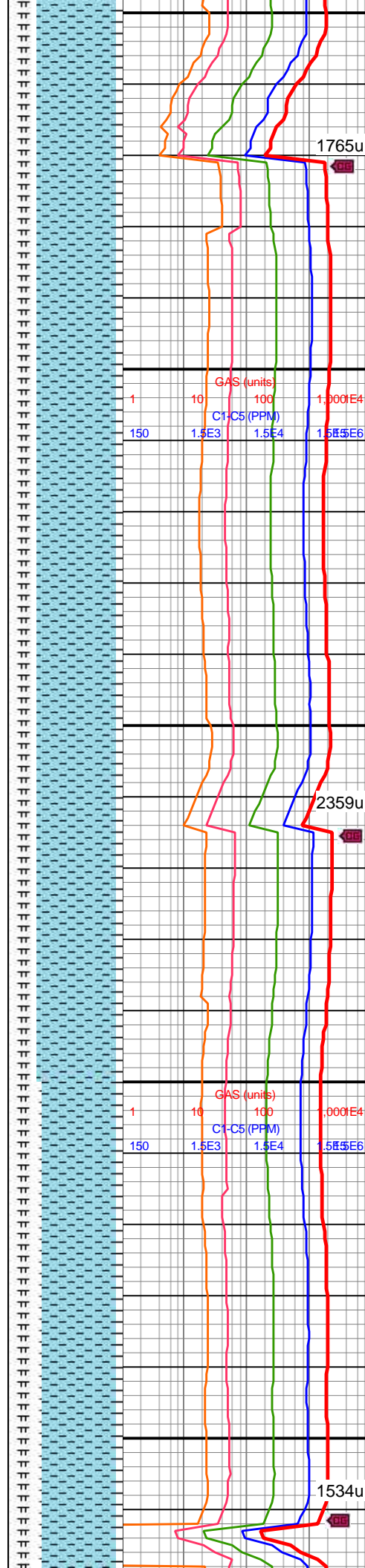


8,850  
8,860  
8,870  
8,880  
8,890  
8,900  
8,910  
8,920  
8,930  
8,940  
8,950  
8,960  
8,970  
8,980  
8,990  
9,000  
9,010  
9,020  
9,030  
9,040  
9,050  
9,060

MD: 8,897'  
INC: 93.34°  
AZM: 90.22°  
TVD: 7,143.89'  
VS: 1,668.84'

MINDEPTH 11/08/2018

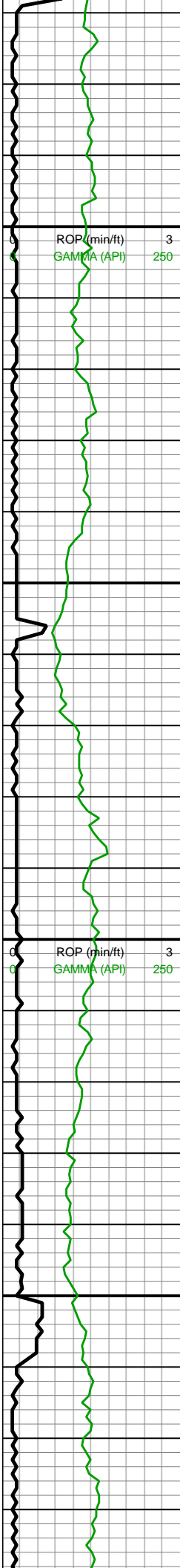
MW IN: 10.2  
VIS IN: 47  
MW OUT: 10.2  
VIS OUT: 46  
MD: 8,992'  
INC: 93.56°  
AZM: 89.87°  
TVD: 7,138.17'  
VS: 1,761.88'  
WOB: 34klbs  
RPM: 61  
SPM: 183  
SPP: 4,750psi



8800-8900 CHK (70%):  
predy gyshbn, mot-sl stri,  
sb blk, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc; MRLST (25%): dk  
gy-gyshbn, mot, sb  
blk-sb ang, sl hd-frm, tr  
intbd CHK, mod calc; SH  
(5%): dk gy-med gy, mot  
gyshbn, sl slty -sm tex,  
blk-sb plty, frm-v frm, brit  
ip, non calc

8900-9000 CHK (70%):  
predy gyshbn, mot-sl stri,  
sb blk, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc; MRLST (25%): dk  
gy-gyshbn, mot, sb  
blk-sb ang, sl hd-frm, tr  
intbd CHK, mod calc; SH  
(5%): dk gy-med gy, mot  
gyshbn, sl slty -sm tex,  
blk-sb plty, frm-v frm, brit  
ip, non calc

9000-9100 CHK (65%):  
predy gyshbn, mot-sl stri,  
sb blk, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc; MRLST (25%): dk  
gy-gyshbn, mot, sb  
blk-sb ang, sl hd-frm, tr  
intbd CHK, mod calc; SH  
(5%): dk gy-med gy, mot  
gyshbn, sl slty -sm tex,  
blk-sb plty, frm-v frm, brit  
ip, non calc



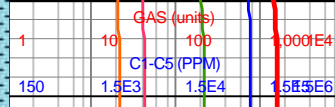
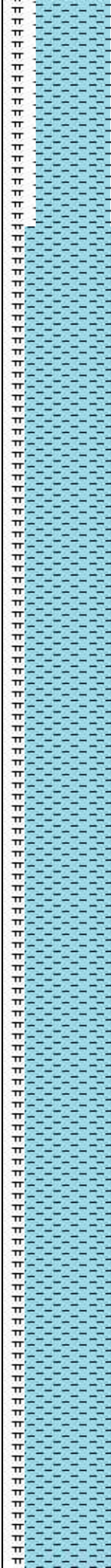
MD: 9,087'  
INC: 92.59°  
AZM: 89.34°  
TVD: 7,133.07'  
VS: 1,854.81'

MW IN: 10.3  
VIS IN: 49  
MW OUT: 10.3  
VIS OUT: 45

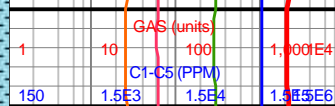
MD: 9,181'  
INC: 92.94°  
AZM: 89.52°  
TVD: 7,128.54'  
VS: 1,946.73'

WOB: 34klbs  
RPM: 61  
SPM: 182  
SPP: 4,665psi

MD: 9,276'  
INC: 92.15°  
AZM: 88.81°  
TVD: 7,124.32'  
VS: 2,039.55'



1570u



2025u

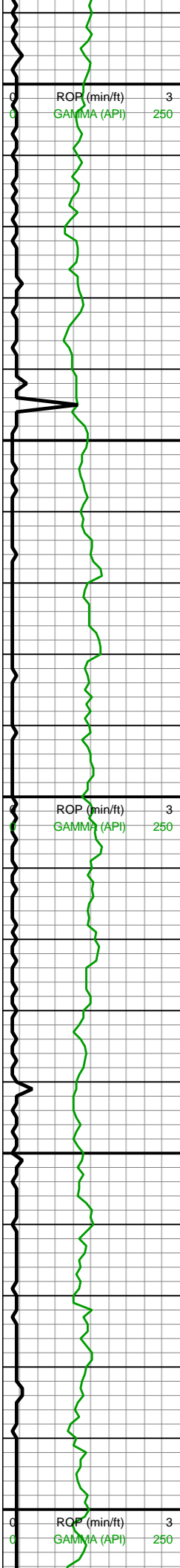
crky tex, tr MRLST incl, v  
calc; MRLST (35%): dk  
gy-gyshbn, mot, sb  
blky-sb ang, sl hd-frm, tr  
intbd CHK, mod calc; SH  
(5%): dk gy-med gy, mot  
gyshbn, sl slty -sm tex,  
blky-sb plty, frm-v frm, brit  
ip, non calc

9100-9200 CHK (80%):  
predy gyshbn, mot-sl stri,  
sb blky, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc, tr py nod; MRLST  
(20%): dk gy-gyshbn,  
mot, sb blky-sb ang, sl  
hd-frm, tr intbd CHK, mod  
calc

9200-9300 CHK (80%):  
predy gyshbn, mot-sl stri,  
sb blky, sl frm-brit, sm  
chky tex, tr MRLST incl, v  
calc, tr py nod; MRLST  
(20%): dk gy-gyshbn







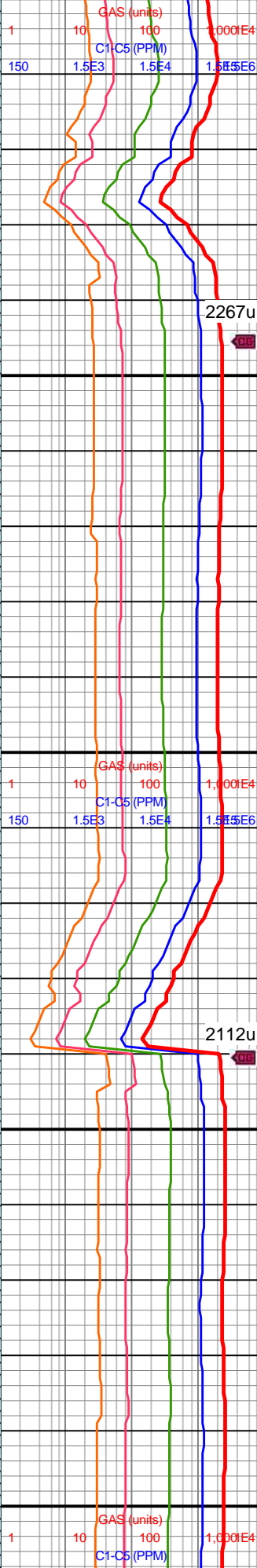
9,290  
9,300  
9,310  
9,320  
9,330  
9,340  
9,350  
9,360  
9,370  
9,380  
9,390  
9,400  
9,410  
9,420  
9,430  
9,440  
9,450  
9,460  
9,470  
9,480  
9,490  
9,500

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

MD: 9,371'  
INC: 92.46°  
AZM: 88.9°  
TVD: 7,120.5'  
VS: 2,132.28'

WOB: 37klbs  
RPM: 61  
SPM: 182  
SPP: 4,905psi

MD: 9,465'  
INC: 93.21°  
AZM: 88.55°  
TVD: 7,115.85'  
VS: 2,223.95'

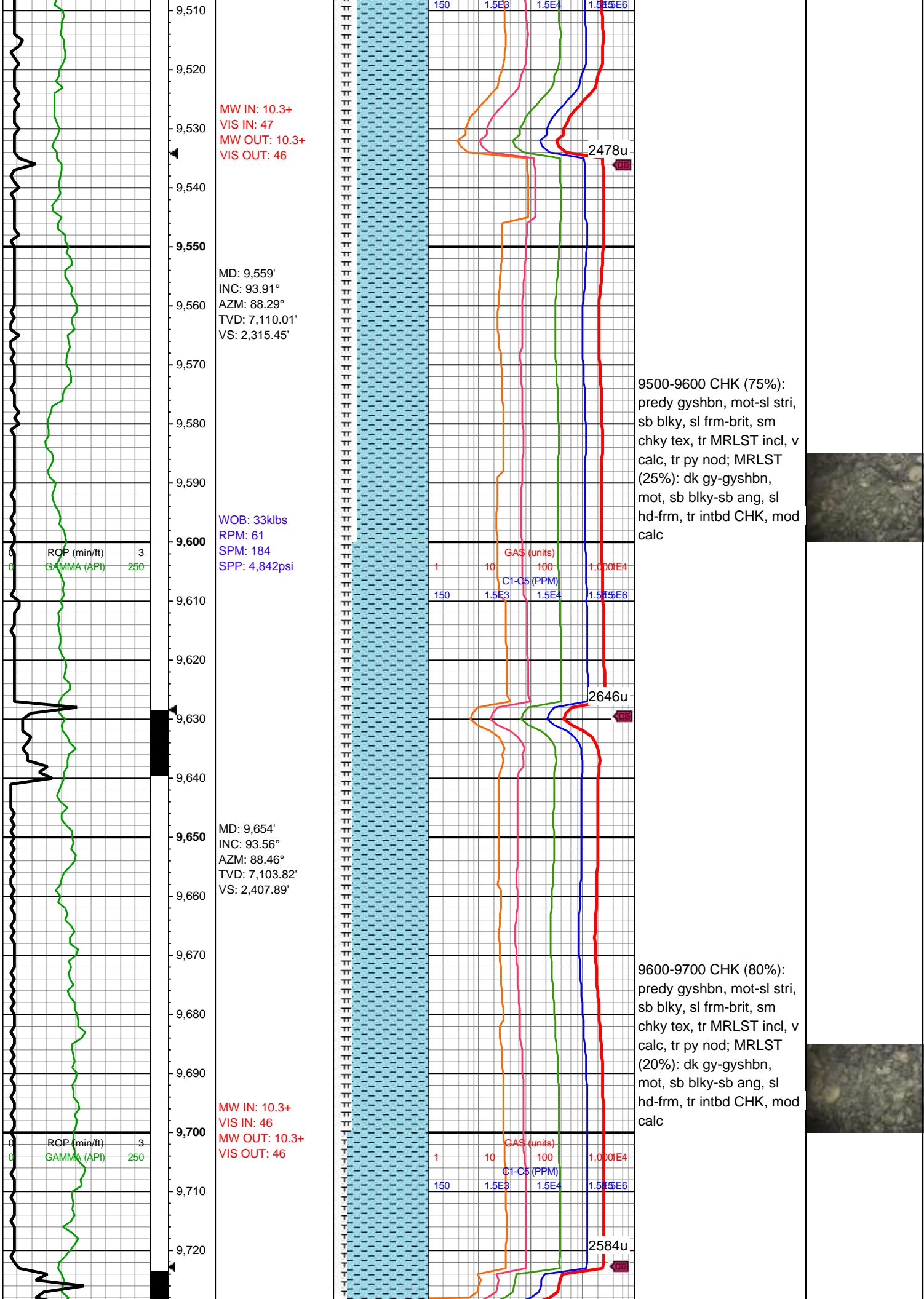


(20%): dk gy-gyshbn, mot, sb blk-y-sb ang, sl hd-frm, tr intbd CHK, mod calc

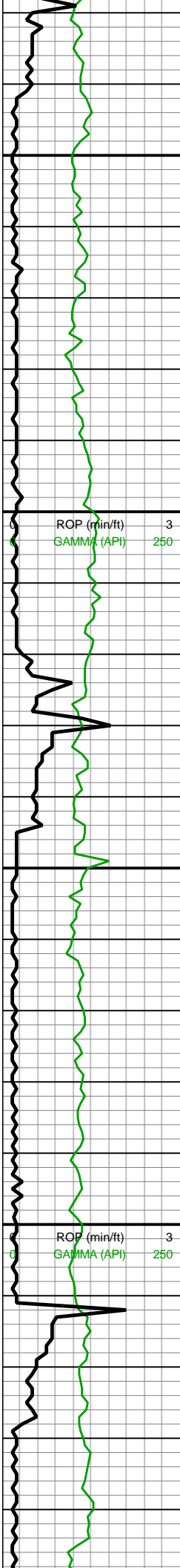
9300-9400 CHK (65%): predy gyshbn, mot-sl stri, sb blk-y, sl frm-brit, sm chky tex, tr MRLST incl, v calc; MRLST (35%): dk gy-gyshbn, mot, sb blk-y-sb ang, sl hd-frm, tr intbd CHK, mod calc

9400-9500 CHK (70%): predy gyshbn, mot-sl stri, sb blk-y, sl frm-brit, sm chky tex, tr MRLST incl, v calc, tr py nod; MRLST (30%): dk gy-gyshbn, mot, sb blk-y-sb ang, sl hd-frm, tr intbd CHK, mod calc









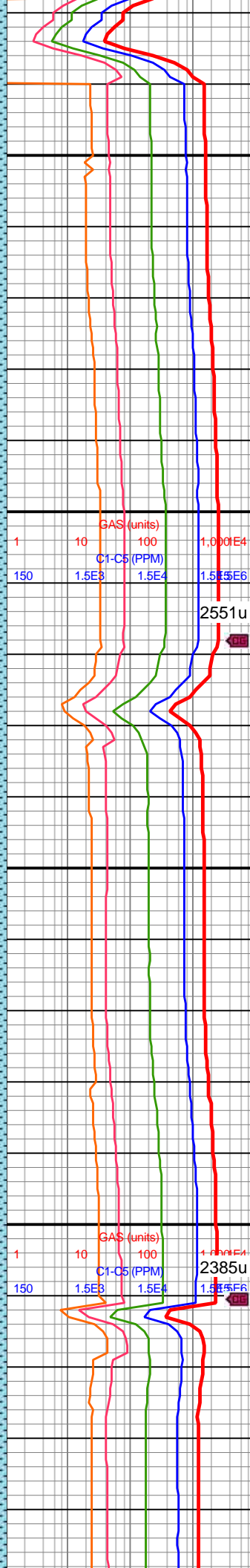
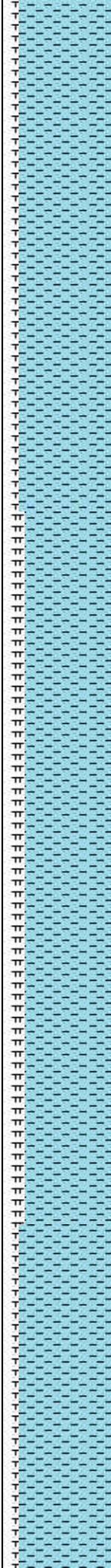
MD: 9,748'  
INC: 92.64°  
AZM: 88.55°  
TVD: 7,098.74'  
VS: 2,499.46'

WOB: 30klbs  
RPM: 61  
SPM: 180  
SPP: 4,642psi

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

MD: 9,843'  
INC: 90.97°  
AZM: 88.73°  
TVD: 7,095.75'  
VS: 2,592.14'

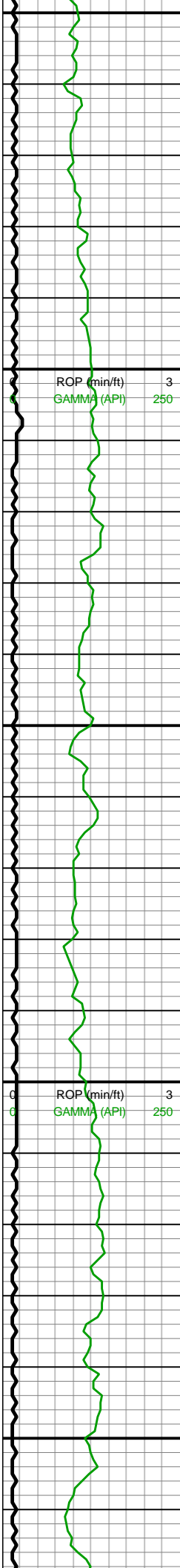
MD: 9,937'  
INC: 89.69°  
AZM: 90.04°  
TVD: 7,095.21'  
VS: 2,684.15'



9700-9800 CHK (85%):  
gyshbn-med gy, sme mot  
lt gy, sl sm-chky tex, sl  
frm, sb blkyl-blky, tr free  
CHK, hi calc, tr imbd mic  
pyr; MRLST (15%): med  
gy-dk gy, frm-sl hd, mod  
brit, sb blkyl-tab, mod fis,  
vf lamn, mod calc

9800-9900 CHK (80%):  
gyshbn-med gy, sme mot  
lt gy, sl sm-chky tex, sl  
frm, sb blkyl-blky, tr free  
CHK, hi calc, tr imbd mic  
pyr; MRLST (20%): med  
gy-dk gy, frm-sl hd, mod  
brit, sb blkyl-tab, mod fis,  
vf lamn, mod calc





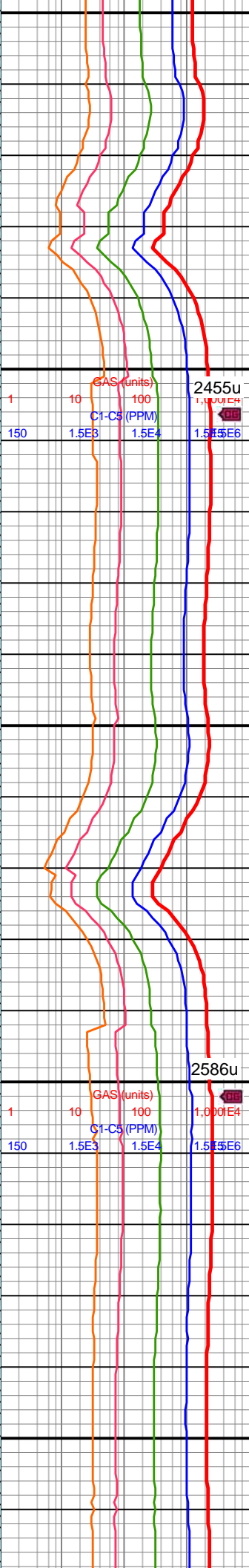
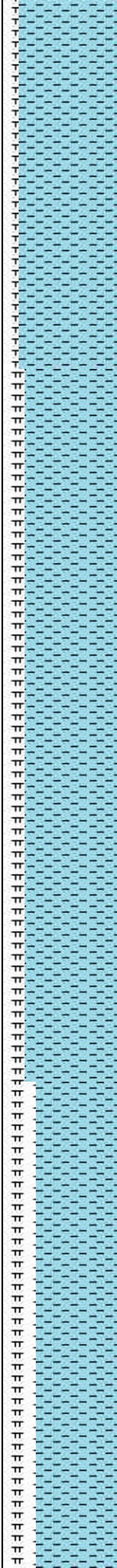
9,950  
9,960  
9,970  
9,980  
9,990  
10,000  
10,010  
10,020  
10,030  
10,040  
10,050  
10,060  
10,070  
10,080  
10,090  
10,100  
10,110  
10,120  
10,130  
10,140  
10,150  
10,160

WOB: 33.5klbs  
RPM: 61  
SPM: 184  
SPP: 4,921psi

MD: 10,031'  
INC: 89.25°  
AZM: 89.87°  
TVD: 7,096.08'  
VS: 2,776.34'

MW IN: 10.3  
VIS IN: 47  
MW OUT: 10.3  
VIS OUT: 46

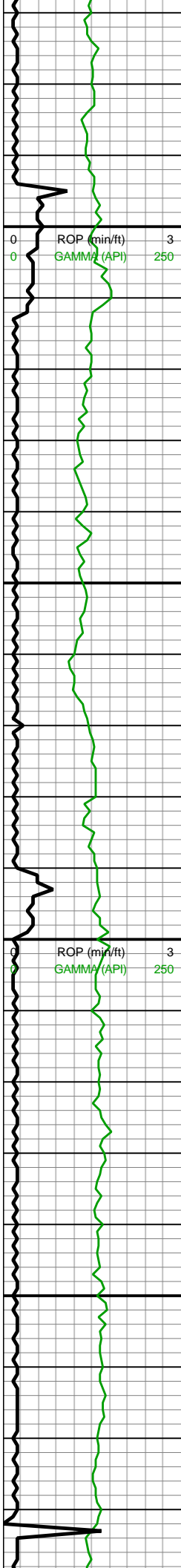
MD: 10,126'  
INC: 88.86°  
AZM: 89.43°  
TVD: 7,097.64'  
VS: 2,869.41'



9900-10000 CHK (85%):  
gyshbn-med gy, sme mot  
lt gy, sl sm-chky tex, sl  
frm, sb blkyl-blky, tr free  
CHK, hi calc, tr imbd mic  
pyr; MRLST (15%): med  
gy-dk gy, frm-sl hd, mod  
brit, sb blkyl-tab, mod fis,  
vf lamn, mod calc

10000-10100 CHK  
(80%): gyshbn-med gy,  
sme mot lt gy, sl sm-chky  
tex, sl frm, sb blkyl-blky, tr  
free CHK, hi calc, tr imbd  
mic pyr, tr mrlst intbd;  
MRLST (20%): med gy-dk  
gy, frm-sl hd, mod brit, sb  
blkyl, mod fis, occ chk  
intbd, mod calc, tr vf lamn



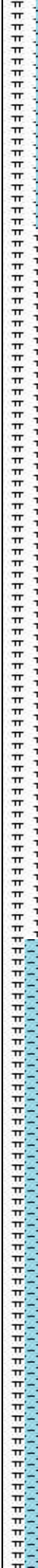


WOB: 48.7klbs  
RPM: 18  
SPM: 186  
SPP: 4,749psi

MD: 10,220'  
INC: 90.13°  
AZM: 88.81°  
TVD: 7,098.47'  
VS: 2,961.32'

MD: 10,314'  
INC: 90.62°  
AZM: 88.99°  
TVD: 7,097.86'  
VS: 3,053.17'

MW IN: 10.2+  
VIS IN: 47  
MW OUT: 10.2+  
VIS OUT: 46



GAS (units)  
C1-C5 (PPM)

1 10 100 1,000E4  
150 1.5E3 1.5E4 1.5E5E6

10100-10200 CHK  
(70%): gyshbn-med gy,  
sme mot lt gy, sl sm-chky  
tex, sl frm, sb blkyl-blky, tr  
free CHK, hi calc, tr imbd  
mic pyr, tr mrlst intbd;  
MRLST (30%): med gy-dk  
gy, frm-sl hd, mod brit, sb  
blkyl, mod fis, occ chk  
intbd, mod calc, tr vf lamn



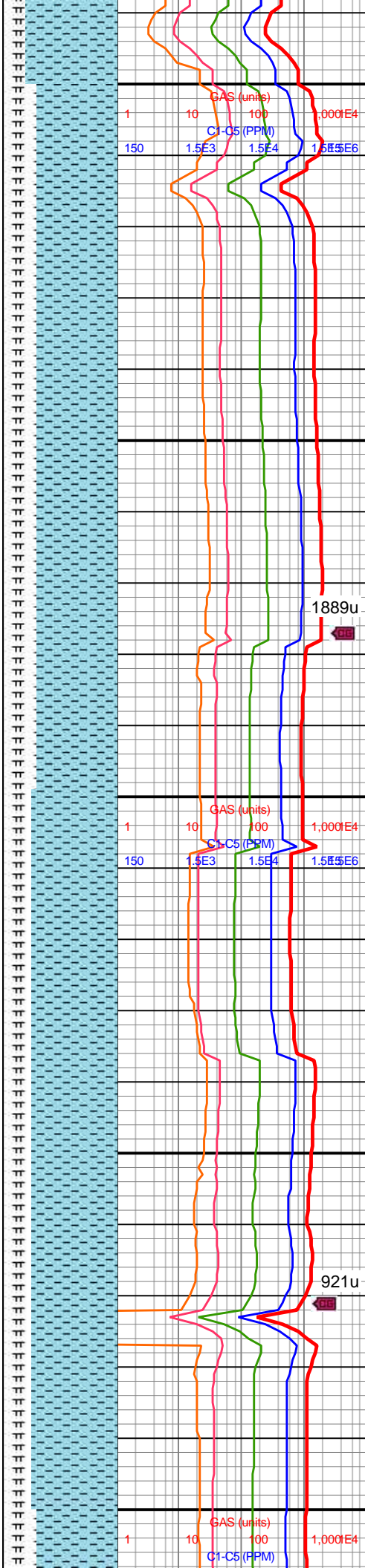
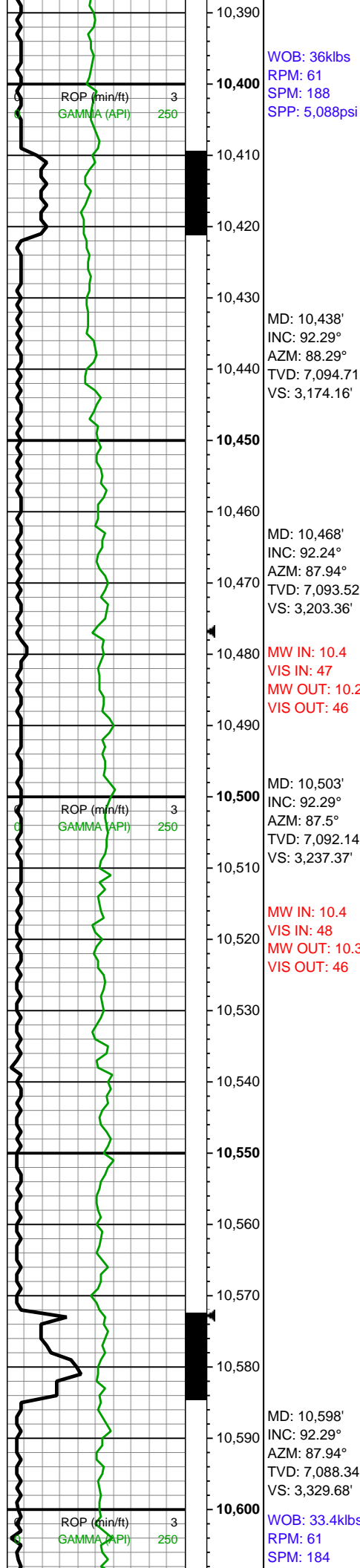
10200-10300 CHK  
(65%): gyshbn-med gy,  
sme mot lt gy, sl sm-chky  
tex, sl frm, sb blkyl-blky, tr  
free CHK, hi calc, tr imbd  
mic pyr, tr mrlst intbd;  
MRLST (35%): med gy-dk  
gy, frm-sl hd, mod brit, sb  
blkyl, mod fis, occ chk  
intbd, mod calc, tr vf lamn



10300-10400 CHK  
(80%): gyshbn-med gy,  
sme mot lt gy, sl sm-chky  
tex, sl frm, sb blkyl-blky, tr  
free CHK, hi calc, tr imbd  
mic pyr, tr mrlst intbd;  
MRLST (20%): med gy-dk



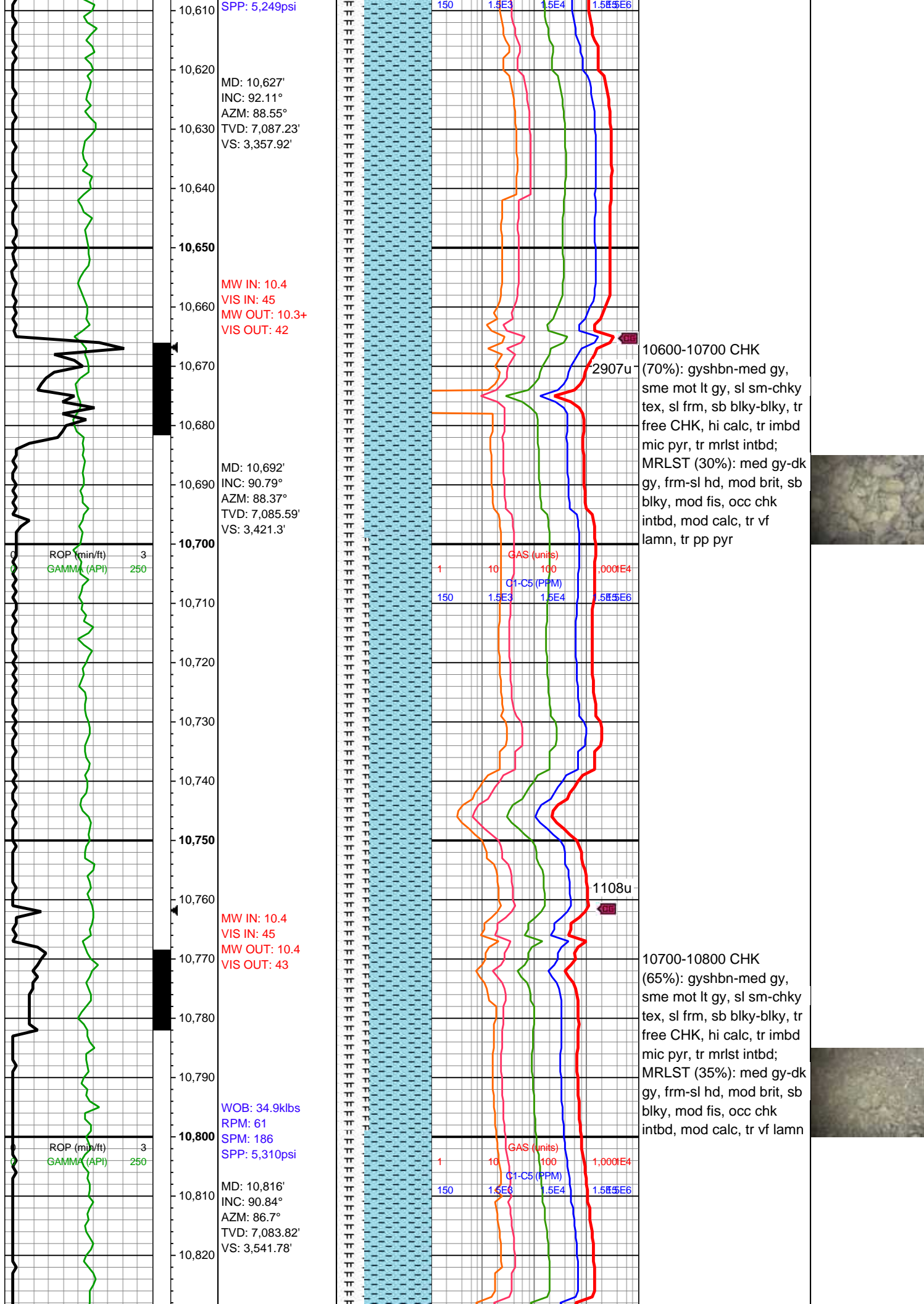




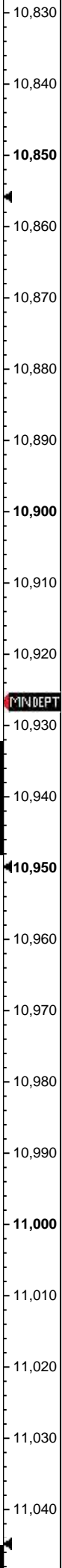
gy, frm-sl hd, mod brit, sb  
blky, mod fis, occ chk  
intbd, mod calc, tr vf  
lamn, occ pyr nod

10400-10500 CHK  
(70%): gyshbn-med gy,  
sme mot lt gy, sl sm-chky  
tex, sl frm, sb blkyy-blky, tr  
free CHK, hi calc, tr imbd  
mic pyr, tr mrlst intbd;  
MRLST (30%): med gy-dk  
gy, frm-sl hd, mod brit, sb  
blkyy, mod fis, occ chk  
intbd, mod calc, tr vf  
lamn, tr pyr nod

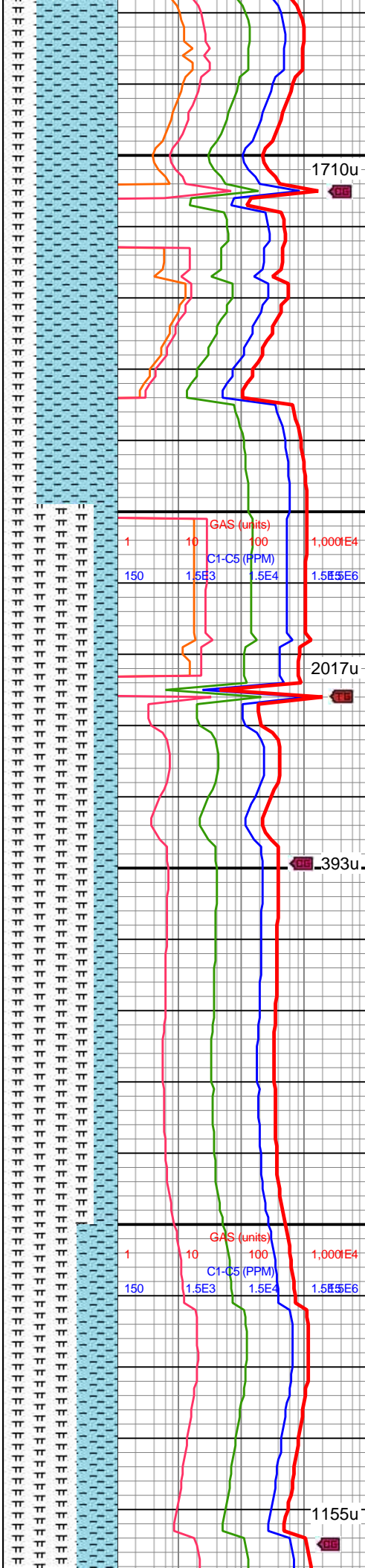
10500-10600 CHK  
(75%): gyshbn-med gy,  
sme mot lt gy, sl sm-chky  
tex, sl frm, sb blkyy-blky, tr  
free CHK, hi calc, tr imbd  
mic pyr, occ mrlst intbd;  
MRLST (25%): med gy-dk  
gy, frm-sl hd, mod brit, sb  
blkyy, mod fis, occ chk  
intbd, mod calc, tr vf  
lamn, tr pyr nod





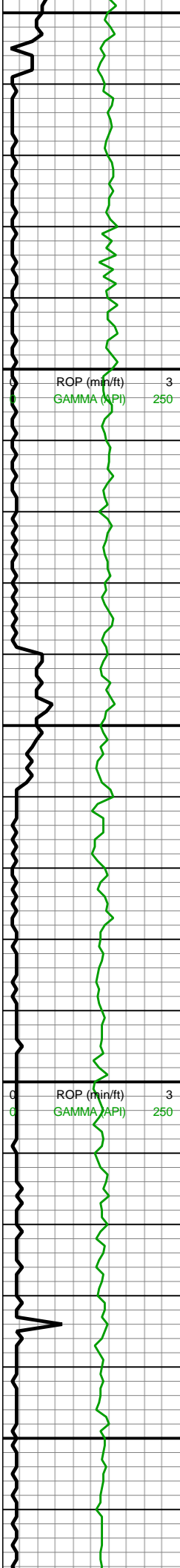


WOB: 36.1klbs  
RPM: 64  
SPM: 186  
SPP: 5,293psi



10900-11000 MRLST  
(80%): dk gy, mot med  
gy, frm-sl hd, tab-sb blk,  
brit, tr pp mic pyr, tr CHK  
incl, mod calc; CHK  
(20%): gyshbn-med gy,  
mot crm, sb blk-sb tab,  
frm-sl sft, sme MRLST  
lamm, hi calc





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  
11,200  
11,210  
11,220  
11,230  
11,240  
11,250  
11,260

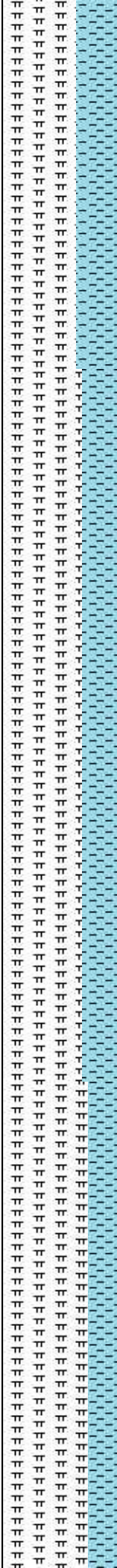
MD: 11,064'  
INC: 90.26°  
AZM: 88.64°  
TVD: 7,081.02'  
VS: 3,783.21'

MD: 11,158'  
INC: 90.31°  
AZM: 91.54°  
TVD: 7,080.55'  
VS: 3,875.44'

MW IN: 10.3+  
VIS IN: 54  
MW OUT: 10.3+  
VIS OUT: 49

WOB: 33.1klbs  
RPM: 64  
SPM: 187  
SPP: 5,316psi

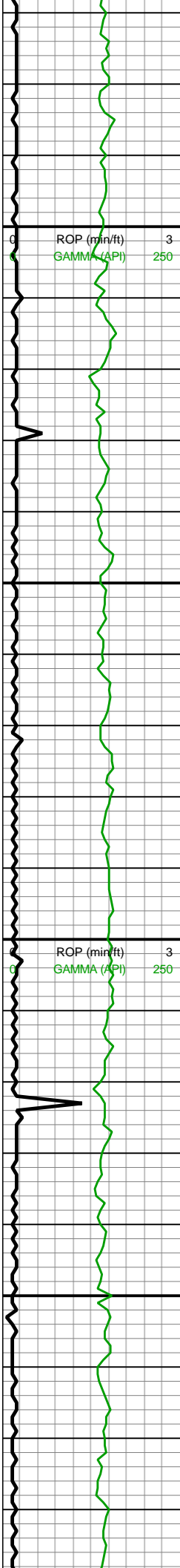
MD: 11,253'  
INC: 90.75°  
AZM: 91.71°  
TVD: 7,079.67'  
VS: 3,969.11'



11000-11100 MRLST  
(65%): dk gyshbn-dk gy,  
frm-sl hd, brit, tab-sb  
blky, mnr CHK incl/lamn,  
mod calc; CHK (35%):  
med gy-gyshbn, chky-sm  
tex, sb blky-sb plty, frm-fri,  
mnr MRLST lamn, tr  
dissm mic pyr, hi calc

11100-11200 MRLST  
(70%): dk gyshbn-dk gy,  
frm-sl hd, brit, tab-sb  
blky, mnr CHK incl/lamn,  
mod calc; CHK (30%):  
med gy-gyshbn, chky-sm  
tex, sb blky-sb plty, frm-fri,  
mnr MRLST lamn, tr  
dissm mic pyr, hi calc





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

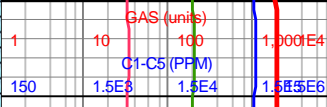
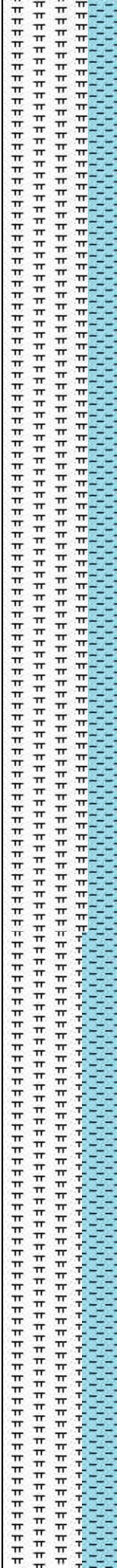
MW IN: 10.4  
VIS IN: 54  
MW OUT: 10.3+  
VIS OUT: 48

MD: 11,348'  
INC: 91.14°  
AZM: 91.71°  
TVD: 7,078.1'  
VS: 4,062.8'

WOB: 33.5klbs  
RPM: 65  
SPM: 186  
SPP: 5,394psi

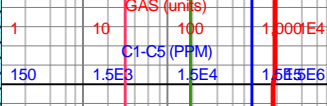
MD: 11,442'  
INC: 91.23°  
AZM: 91.89°  
TVD: 7,076.16'  
VS: 4,155.52'

MW IN: 10.4  
VIS IN: 53  
MW OUT: 10.4  
VIS OUT: 48



11200-11300 MRLST  
(75%): dk gyshbn-dk gy,  
frn-sl hd, brit, tab-sb  
blkly, mnr CHK incl/lamn,  
mod calc; CHK (25%):  
med gy-gyshbn, chky-sm  
tex, sb blkly-sb plty, frm-fri,  
mnr MRLST lamn, tr  
dissm mic pyr, hi calc

2178u  
GIB

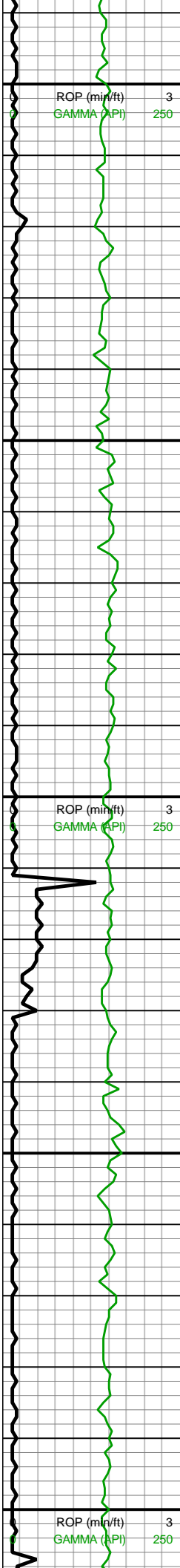


11300-11400 MRLST  
(75%): dk gyshbn-dk gy,  
frn-sl hd, brit, tab-sb  
blkly, tr CHK incl/lamn,  
mod calc; CHK (25%):  
med gy-gyshbn, chky-sm  
tex, sb blkly-sb plty, frm-fri,  
tr MRLST lamn, occ  
dissm mic pyr, hi calc

1817u  
GIB

11400-11500 MRLST  
(70%): dk gyshbn-dk gy,  
frn-sl hd, brit, tab-sb  
blkly, tr CHK incl/lamn,  
mod calc; CHK (30%):  
med gy-gyshbn, chky-sm  
tex, sb blkly-sb plty, frm-fri,  
mnr MRLST lamn, tr  
dissm mic pyr, hi calc





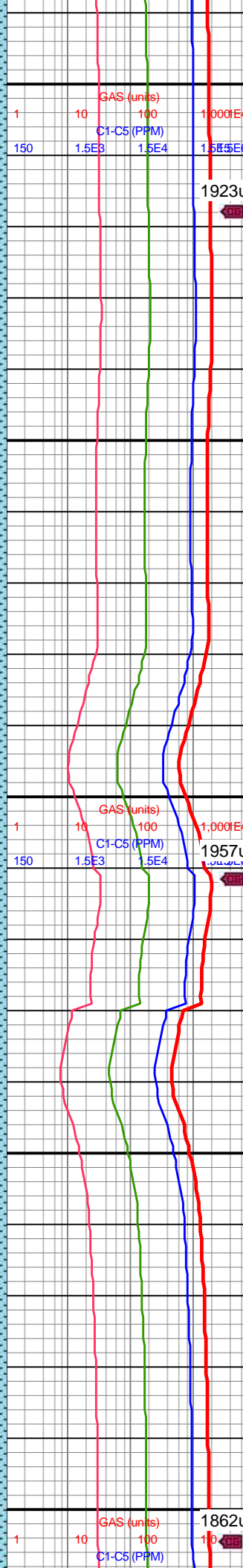
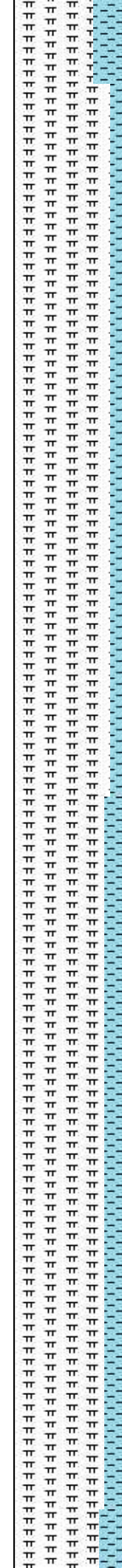
11,490  
11,500  
11,510  
11,520  
11,530  
11,540  
11,550  
11,560  
11,570  
11,580  
11,590  
11,600  
11,610  
11,620  
11,630  
11,640  
11,650  
11,660  
11,670  
11,680  
11,690  
11,700

MD: 11,537'  
INC: 90.4°  
AZM: 90.31°  
TVD: 7,074.81'  
VS: 4,249.04'

WOB: 37.3klbs  
RPM: 64  
SPM: 186  
SPP: 5,512psi

MD: 11,631'  
INC: 90.53°  
AZM: 93.12°  
TVD: 7,074.04'  
VS: 4,341.74'

MW IN: 10.4+  
VIS IN: 52  
MW OUT: 10.4  
VIS OUT: 49

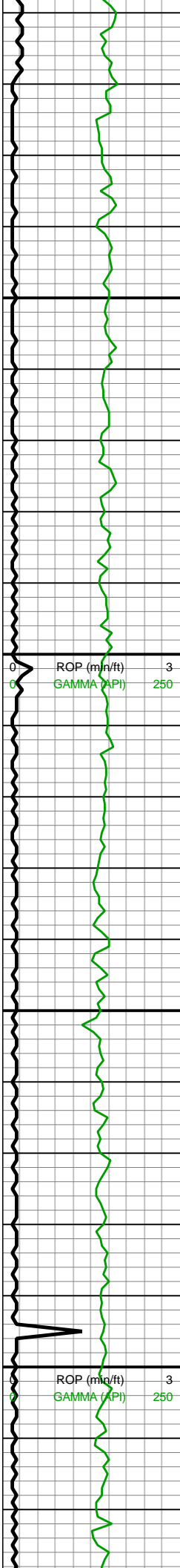


med gy-gyshbn, chky-sm  
tex, sb blk-sb plty, frm-fri,  
tr MRLST lamn, occ  
dissm mic pyr, hi calc

11500-11600 MRLST  
(85%): dk gyshbn-dk gy,  
frm-sl hd, brit, tab-sb  
blk, tr CHK incl/lamn,  
mod calc; CHK (15%):  
med gy-gyshbn, chky-sm  
tex, sb blk-sb plty, frm-fri,  
tr MRLST lamn, occ  
dissm mic pyr, hi calc

11600-11700 MRLST  
(80%): dk gy, mot med  
gy, frm-sl hd, brit, tab-sb  
blk, mod calc, tr CHK  
incl; CHK (20%): gyshbn,  
med gy, mot crm, sb  
blk-sb tab, frm-sl sft,  
mod fis, sme MRLST  
lamn, tr dissm mic pyr, hi  
calc



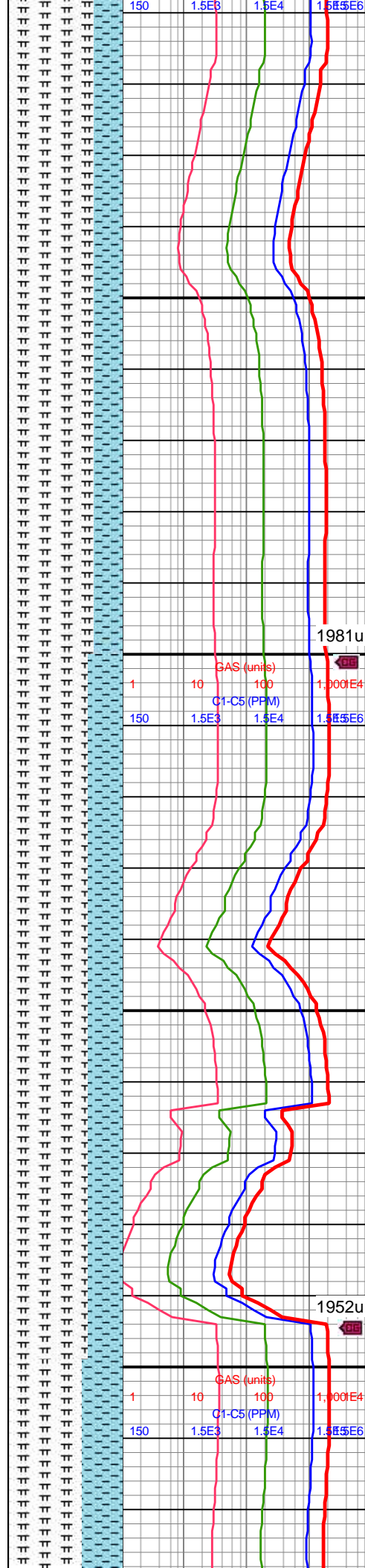


MD: 11,725'  
INC: 90.13°  
AZM: 93.38°  
TVD: 7,073.5'  
VS: 4,434.84'

WOB: 4.5klbs  
RPM: 64  
SPM: 186  
SPP: 4,876psi

MD: 11,819'  
INC: 90.18°  
AZM: 94.44°  
TVD: 7,073.25'  
VS: 4,528.08'

MD: 11,913'  
INC: 90.22°  
AZM: 95.05°  
TVD: 7,072.92'  
VS: 4,621.49'

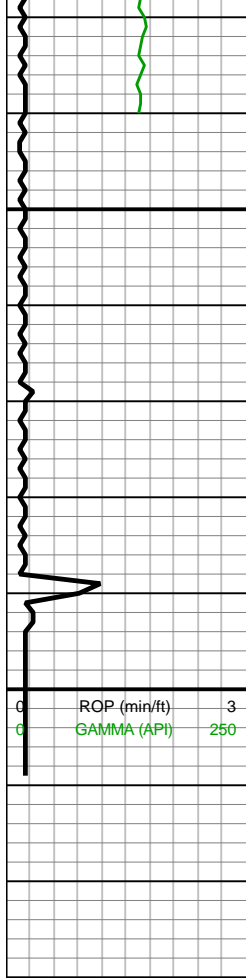


11700-11800 MRLST  
(75%): dk gy, mot med  
gy, frm-sl hd, brit, tab-sb  
blky, mod calc, tr CHK  
incl; CHK (25%): gyshbn,  
med gy, mot crm, sb  
blky-sb tab, frm-sl sft,  
mod fis, sme MRLST  
lamn, tr diss mic pyr, hi  
calc

11800-11900 MRLST  
(80%): dk gy, mot med  
gy, frm-sl hd, brit, tab-sb  
blky, mod calc, tr CHK  
incl; CHK (20%): gyshbn,  
med gy, mot crm, sb  
blky-sb tab, frm-sl sft,  
mod fis, sme MRLST  
lamn, tr diss mic pyr, hi  
calc





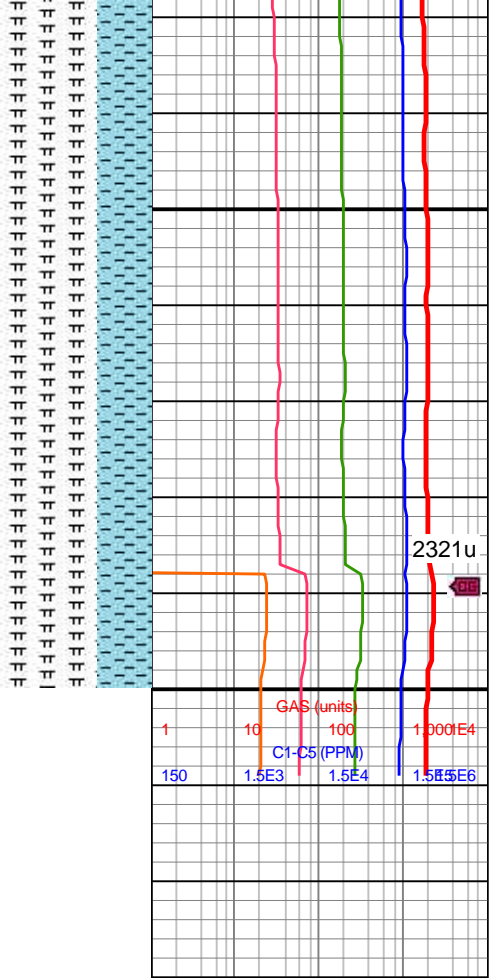


MD: 11,935'  
INC: 90°  
AZM: 95.49°  
TVD: 7,072.88'  
VS: 4,643.37'

WOB: 41.1klbs  
RPM: 64  
SPM: 186  
SPP: 5,454psi

**Projection to Bit:**  
MD: 12,010'  
INC: 90°  
AZM: 95.49°  
TVD: 7,072.88'  
VS: 4,718'

**Total Depth of  
12,010'  
Reached on  
11/09/2018 @  
14:35 MST**



11900-12000 MRLST  
(65%): dk gy, mot med  
gy, frm-sl hd, brit, tab-sb  
blky, mod calc, tr CHK  
incl; CHK (35%): gyshbn,  
med gy, mot crm, sb  
blky-sb tab, frm-sl sft,  
mod fis, sme MRLST  
lamn, tr diss mic pyr, hi  
calc

