



Scale: 5" / 100'
Measured Depth Log

Well Name Kugel 1B-18H-H267

Location Sec. 18 T2N R67W

State Colorado

County Weld

Country USA

Rig Number Ensign 153

API Number 05-123-49480

AFE # 16192088

Geographic Region Rockies

Field Wattenberg

Spud Date 9/10/2019

Drilling Completed 9/16/2019

Surface Coordinates Lat/Long (NAD83): 40.139798/-104.926457

SHL: Sec 18 T2N R67W
Footage: 2128 FNL 680 FEL

Bottom Hole Coordinates Proposed BHL: Sec 7 T2N R67W
Footage: 10 FNL 2550 FEL

Ground Elevation 4,953'

K.B. Elevation 4,976'

Logged Interval 6,850 **To** 15590

Total Depth 15590

Formation Niobrara C Chalk

Type of Drilling Fluid Synthetic Oil Based Mud (Neoflo Based 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: T. Anderson, T. Yull

Services Provided: 2-Man Mudlogging, Geosteering

Equipment: ML-559 & ML-558

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

Service Start Date: 9/10/2019

Service End Date TBD

Job Number 2468RK1909

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
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

 FISH
 FORAMINIFERA

Minerals
 ANHYDRITIC





 FERRUGINOUS PELLET
 FERRUGINOUS

 SILTY
 TUFFACEOUS

 SILTSTONE STRINGER

Other Symbols

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

 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

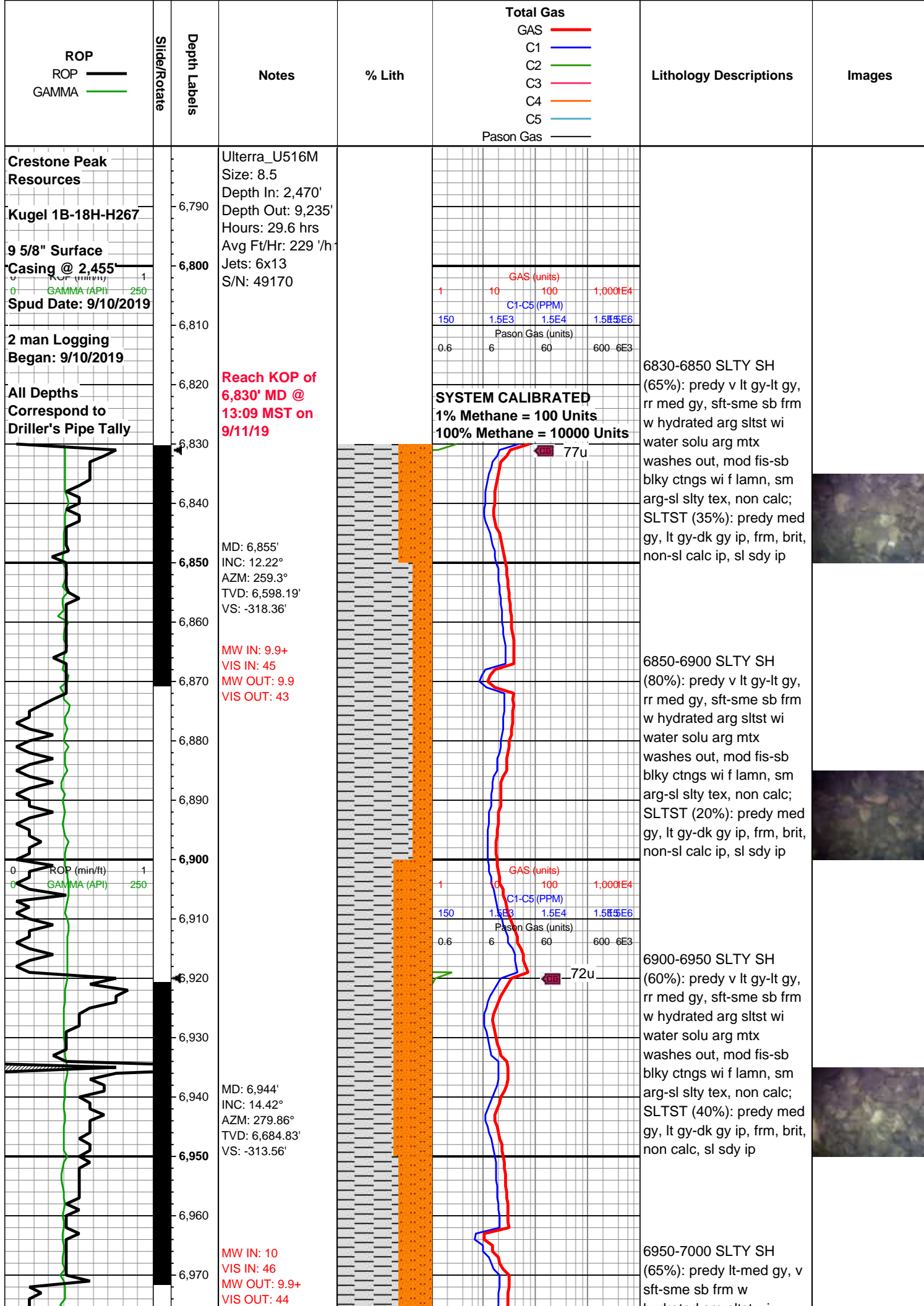
 MUDSTONE

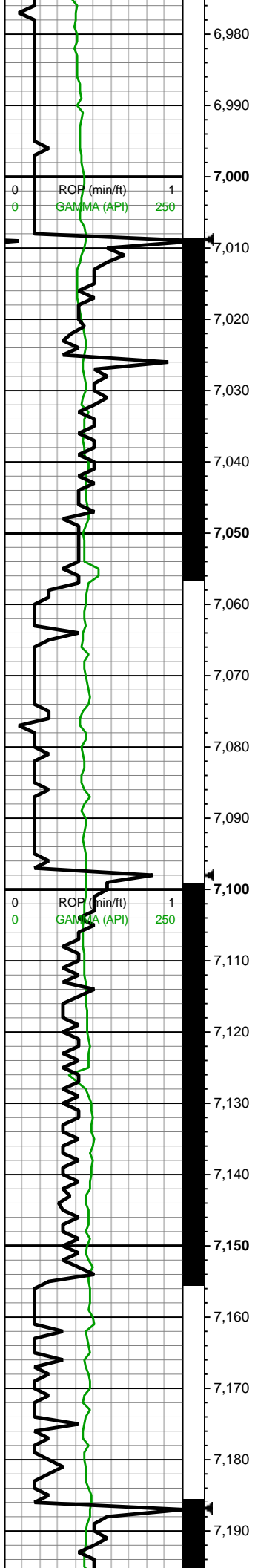
 PACKSTONE

 WACKESTONE

Sorting

-  MODERATE
-  POOR
-  WELL





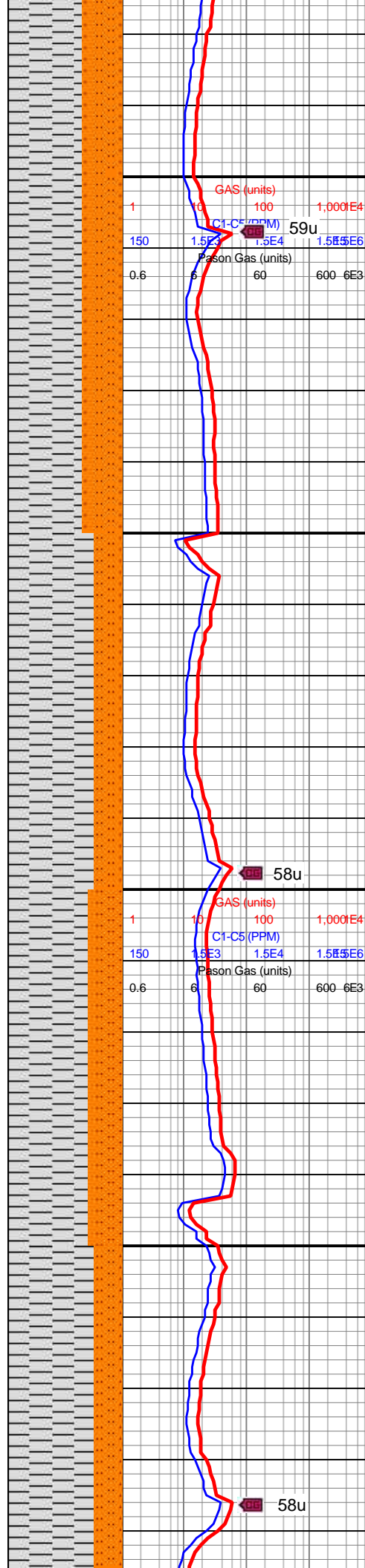
WOB: 31.7klbs
RPM: 29
SPM: 204
SPP: 4,053psi

MD: 7,033'
INC: 18.2°
AZM: 296.03°
TVD: 6,770.28'
VS: -300.37'

MW IN: 10
VIS IN: 46
MW OUT: 10
VIS OUT: 44

MD: 7,122'
INC: 21.46°
AZM: 312.21°
TVD: 6,854.06'
VS: -278.1'

WOB: 31.7klbs



hydrated arg sltst w/
water solu arg mtx
washes out, mod fis-sb
blk ctns wi f lamn, sm
arg-sl slty tex, non calc;
SLTST (35%): predy med
gy, lt gy-dk gy ip, frm, brit,
non calc

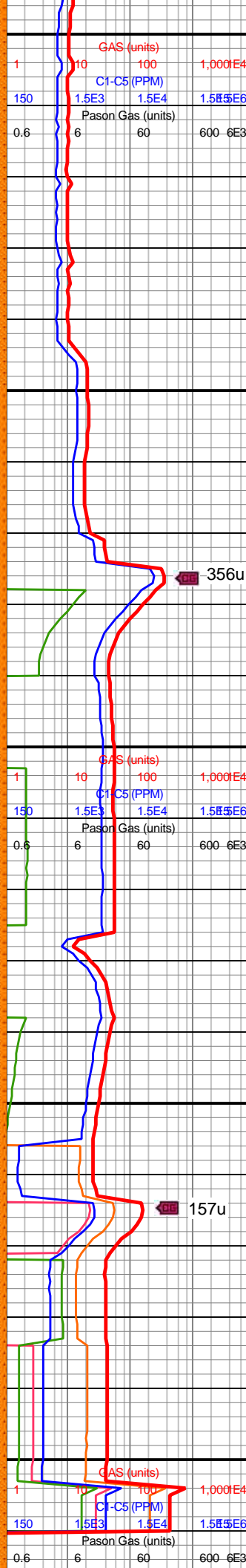
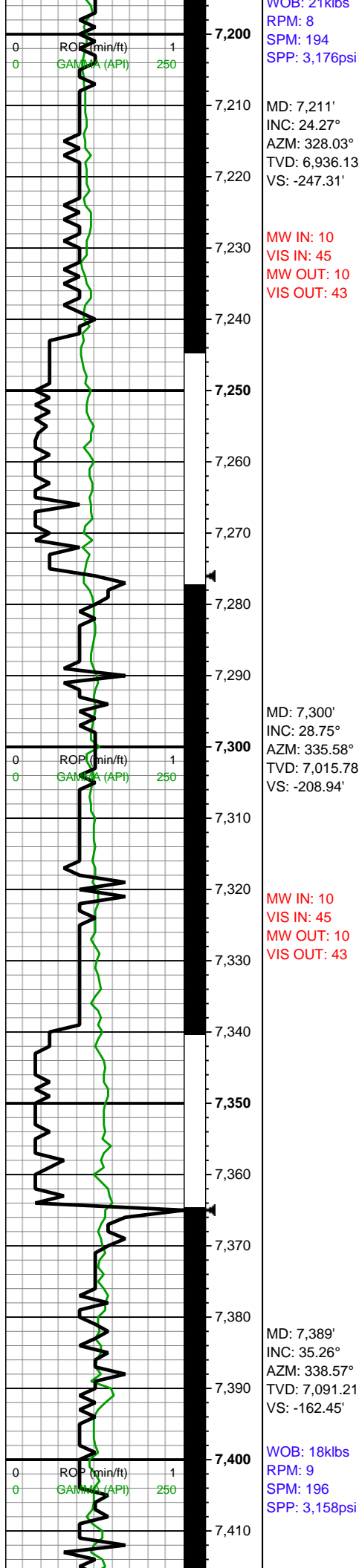
7000-7050 SLTY SH
(65%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb blk-sb ang, rthy-sm
tex,no-sl calc; SLTST
(35%): med gy, dk gy,
frm-brit, sb blk-sb ang,
arg cmt, v w cmt, non
calc

7050-7100 SLTY SH
(75%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb blk-sb ang, rthy-sm
tex,no-sl calc; SLTST
(25%): med gy, dk gy,
frm-brit, sb blk-sb ang,
arg cmt, v w cmt, non
calc

7100-7150 SLTY SH
(70%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb blk-sb ang, rthy-sm
tex,no-sl calc; SLTST
(30%): med gy, dk gy,
frm-brit, sb blk-sb ang,
arg cmt, v w cmt, non
calc

7150-7200 SLTY SH
(75%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb blk-sb ang, rthy-sm
tex,no-sl calc; SLTST
(25%): med gy, dk gy,
frm-brit, sb blk-sb ang,
arg cmt, v w cmt, non





calc

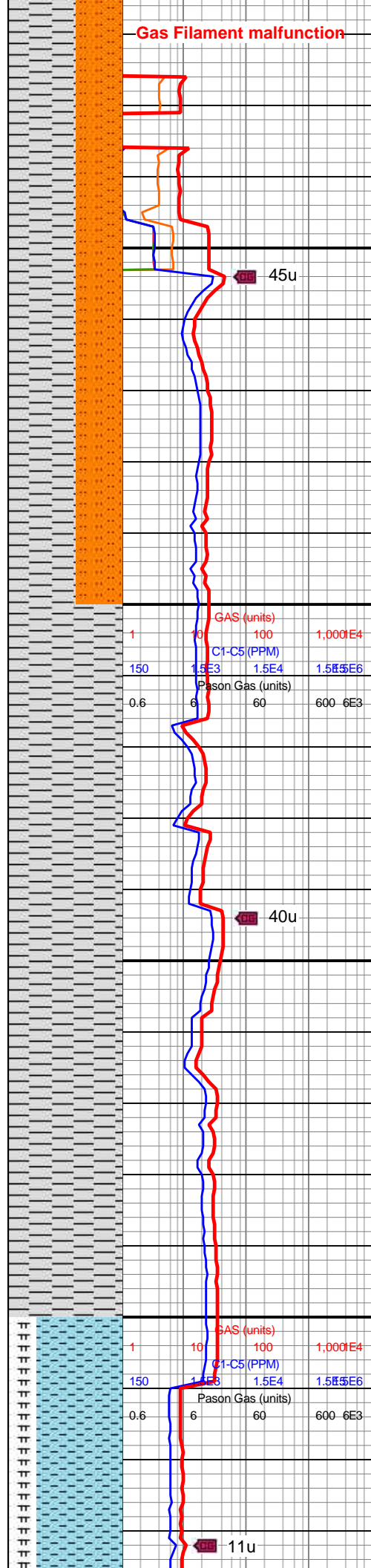
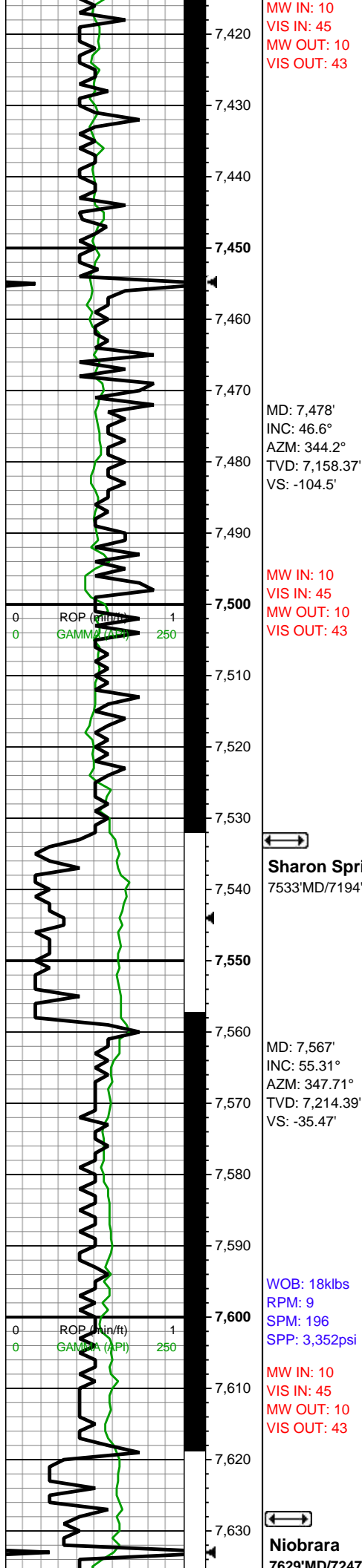
7200-7250 SLTY SH
(80%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb rnd-sb ang, rthy-sm
tex,no-sl calc; SLTST
(20%): med gy, dk gy,
frm-brit, sb blk-y-sb ang,
arg cmt, v w cmt, non
calc

7250-7300 SLTY SH
(85%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb rnd-sb ang, rthy-sm
tex,no-sl calc; SLTST
(15%): med gy, dk gy,
frm-brit, sb blk-y-sb ang,
arg cmt, v w cmt, non
calc

7300-7350 SLTY SH
(65%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb blk-y-sb ang, rthy-sm
tex,no-sl calc; SLTST
(35%): med gy, dk gy,
frm-brit, sb blk-y-sb ang,
arg cmt, v w cmt, non
calc

7350-7400 SLTY SH
(65%): lt gy, med gy, occ
sh lam and incl, sft-frm,
sb blk-y-sb ang, rthy-sm
tex,no-sl calc; SLTST
(35%): med gy, dk gy,
frm-brit, sb blk-y-sb ang,
arg cmt, v w cmt, non
calc





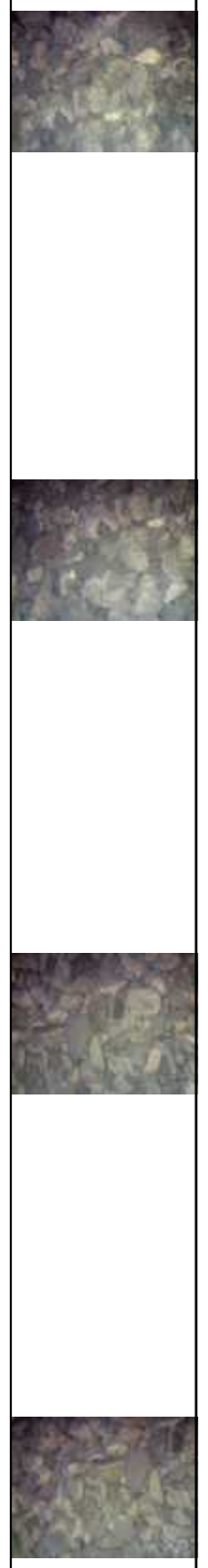
7400-7450 SLTY SH
(60%): lt gy, med gy, occ
sh lam & incl, sft-frm, sb
blky-sb ang, rthy-sm
tex,no-sl calc; SLTST
(40%): med gy, dk gy,
frm-brit, sb blky-sb ang,
arg cmt, v w cmt, non
calc

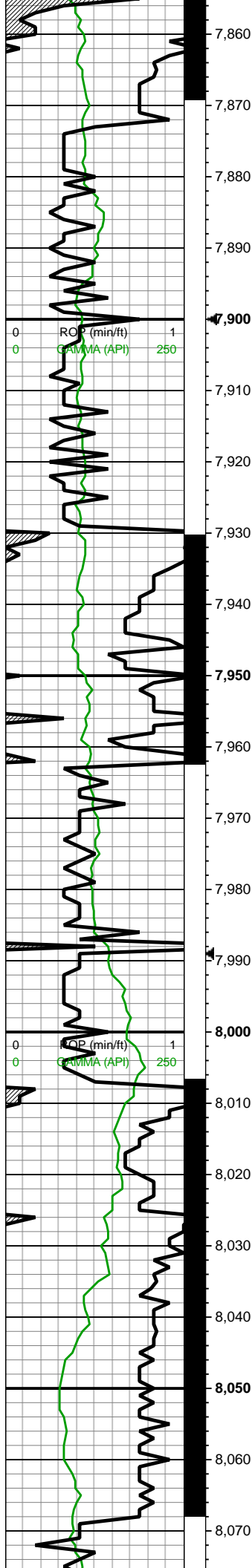
7450-7500 SLTY SH
(60%): lt gy, med gy, occ
sh lam & incl, sft-frm, sb
blky-sb ang, rthy-sm
tex,no-sl calc; SLTST
(40%): med gy, dk gy,
frm-brit, sb blky-sb ang,
arg cmt, v w cmt, non
calc

7500-7550 SLTY SH
(100%): lt gy, med gy, lt
gy-brn, occ sh lam & incl,
sft-frm, sb blky-sb ang,
rthy-sm tex,no-sl calc

7550-7600 SLTY SH
(100%): lt gy, med gy, lt
gy-brn, occ sh lam & incl,
sft-frm, sb blky-sb ang,
rthy-sm tex,no-sl calc

7600-7650 CHK (75%): lt
gy, med gy, occ s&p, f xln,
fri-frm lam, rthv-chkv tex





MW IN: 10
VIS IN: 45
MW OUT: 10
VIS OUT: 43

MD: 7,923'
INC: 77.56°
AZM: 357.38°
TVD: 7,346.8'
VS: 290.61'

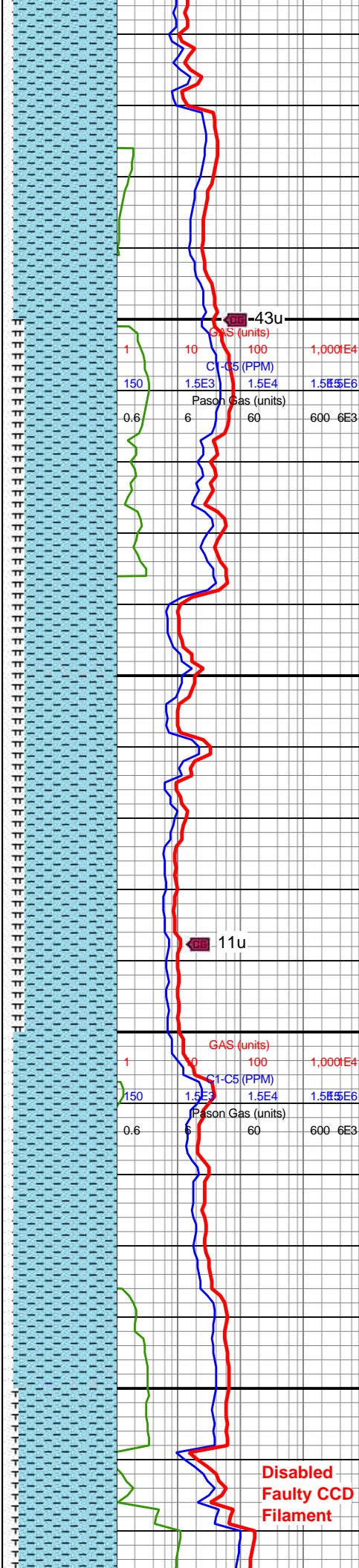
WOB: 30klbs
RPM: 30
SPM: 204
SPP: 4,286psi

MD: 8,013'
INC: 82.75°
AZM: 359.32°
TVD: 7,362.18'
VS: 377.41'

MW IN: 10
VIS IN: 45
MW OUT: 10
VIS OUT: 43

←→
**Niobrara C
Chalk**
8030'MD/7364'TVD

Reached curve
landing of
8,069' MD @
03:54 MST on
9/12/19



43u
GAS (units)
C1-C5 (PPM)
Pason Gas (units)

11u

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

Disabled
Faulty CCD
Filament

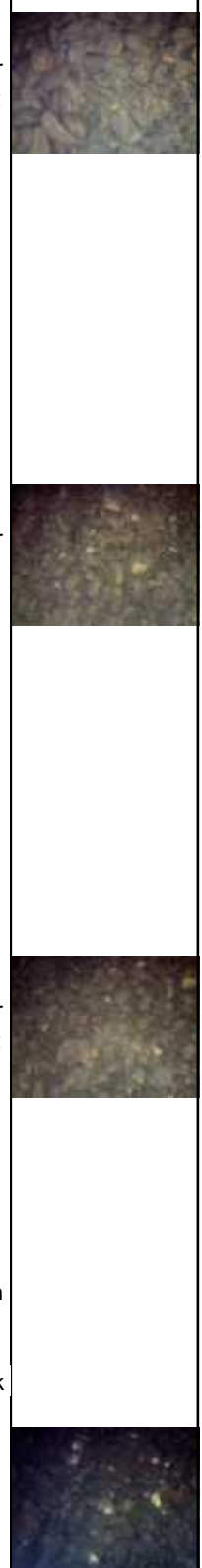
7850-7900 CHK (90%): lt
gy, med gy, f xln, fri-frm,
wh chk lam, wht chk incl,
rthy-chky tex, v calc;
MRLST (10%): med gy,
dk gy, tr chk incl, fri-frm,
sb blkgy-sb ang, silc-arg
cmt, w cmt, tr free chk, tr
foram, tr pp pyr, sl calc wt
brn resdl

7900-7950 CHK (80%): lt
gy, med gy, f xln, fri-frm,
wh chk lam, wht chk incl,
rthy-chky tex, v calc;
MRLST (20%): med gy,
dk gy, tr chk incl, fri-frm,
sb blkgy-sb ang, silc-arg
cmt, w cmt, tr free chk, tr
foram, sl calc wt brn
resdl

7950-8000 CHK (80%): lt
gy, med gy, f xln, fri-frm,
wh chk lam, wht chk incl,
rthy-chky tex, v calc;
MRLST (20%): med gy,
dk gy, tr chk incl, fri-frm,
sb blkgy-sb ang, silc-arg
cmt, w cmt, tr free chk, tr
foram, tr pp pyr, sl calc wt
brn resdl

8000-8050 CHK (90%):
lt-med gy, f xln, fri-frm, wh
chk lam, abnt wht chk
incl, rthy-chky tex, v calc;
MRLST (10%): med gy-dk
gy ip, tr chk incl, fri-frm, v
frm ip, sb blkgy-sb ang,
silc-arg cmt, w cmt, tr
free chk, tr foram, tr pp
pyr, sl calc wt brn resdl

8050-8100 CHK (85%):
lt-med gy, f xln, fri-frm, wh
chk lam, abnt wht chk





MW IN: 10
VIS IN: 45
MW OUT: 10
VIS OUT: 43

MD: 8,102'
INC: 89.69°
AZM: 1.78°
TVD: 7,368.05'
VS: 463.56'

ON BUSTER

MW IN: 10
VIS IN: 45
MW OUT: 10
VIS OUT: 43

MD: 8,191'
INC: 89.69°
AZM: 0.72°
TVD: 7,368.53'
VS: 549.69'

WOB: 25.6klbs
RPM: 60
SPM: 204
SPP: 3,986psi

MW IN: 10.1+
VIS IN: 44
MW OUT: 10.1
VIS OUT: 42

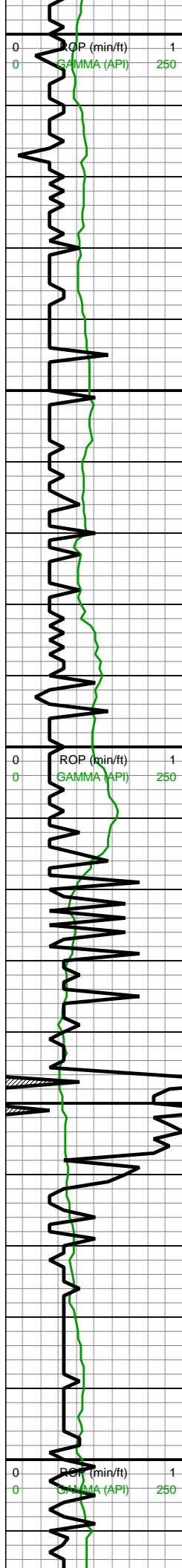
MD: 8,280'
INC: 91.36°
AZM: 359.14°
TVD: 7,367.71'
VS: 636.3'



chk lam, abnt wht chk
incl, rthy-chky tex, v calc, t
fos frags; MRLST (15%):
med gy-dk gy ip, tr chk
incl, fri-frm, v frm ip, sb
blky-sb ang, silc-arg cmt,
w cmt, tr free chk, tr
foram, tr pp pyr, sl calc wt
brn resdl

8100-8200 CHK (70%):
lt-med gy, f xln, fri-frm,
occ wh chk lam, abnt wht
chk incl, rthy-chky tex, v
calc, sme foram incl;
MRLST (30%): med gy-dk
gy ip, tr chk incl, sl frm-v
frm, sl hd ip, sb blky-sb
ang, silc-arg cmt, w cmt,
tr free chk, rr f pp pyr thru,
sl calc wt brn resdl

8200-8300 CHK (75%):
lt-med gy, f xln, fri-frm,
occ wh chk lam, abnt wht
chk incl, rthy-chky tex, v
calc, sme foram incl;
MRLST (25%): med gy-dk
gy ip, tr chk incl, sl frm-v
frm, sl hd ip, sb blky-sb
ang, silc-arg cmt, w cmt,
tr free chk, rr f pp pyr thru.



8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400
8,410
8,420
8,430
8,440
8,450
8,460
8,470
8,480
8,490
8,500
8,510

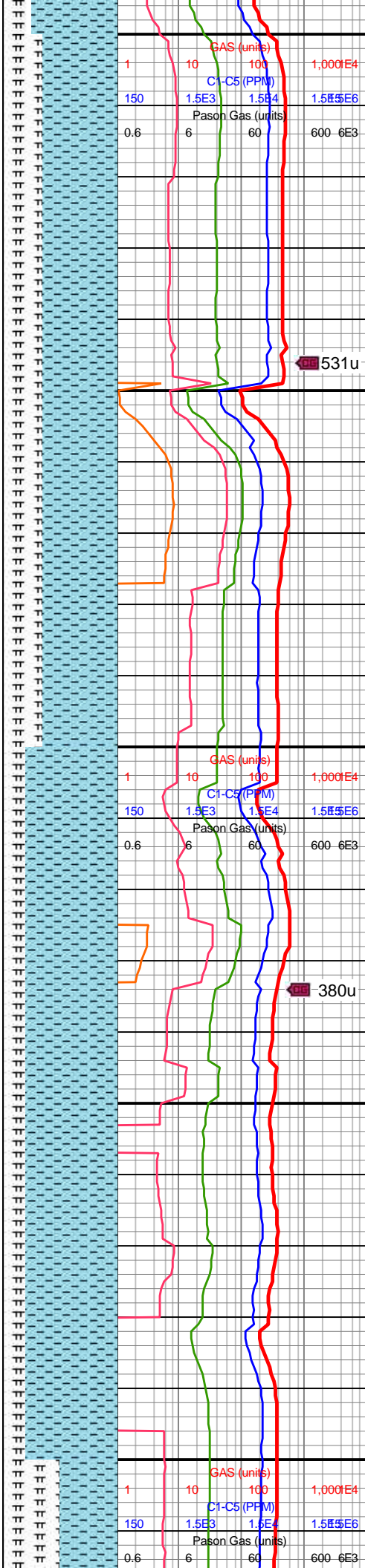
MW IN: 10.1+
VIS IN: 44
MW OUT: 10.1+
VIS OUT: 42

MD: 8,369'
INC: 92.42°
AZM: 359.67°
TVD: 7,364.78'
VS: 723.06'

WOB: 21.8klbs
RPM: 60
SPM: 204
SPP: 4,091psi

MW IN: 10.3
VIS IN: 44
MW OUT: 10.2
VIS OUT: 42

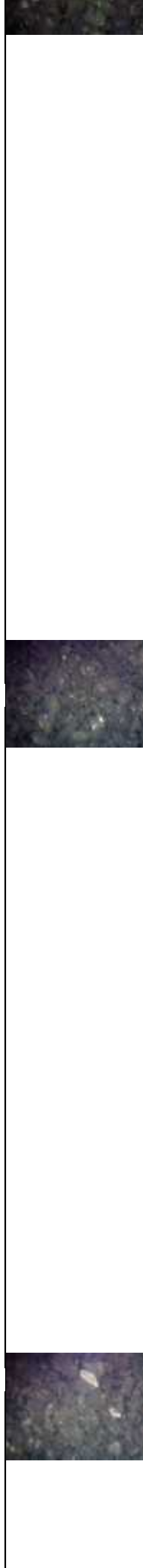
MD: 8,458'
INC: 91.19°
AZM: 358.61°
TVD: 7,361.97'
VS: 809.91'

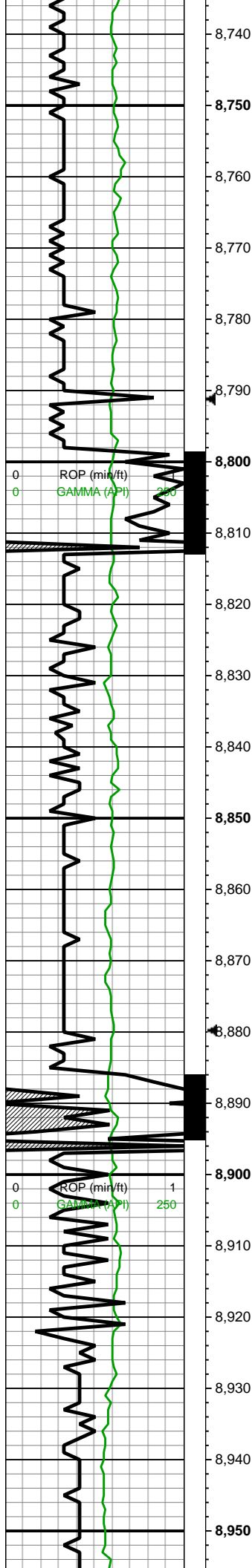


sl calc wt brn resdl

8300-8400 CHK (65%):
lt-med gy, f xln, fri-frm,
occ wh chk lam, abnt wht
chk incl, rthy-chky tex, v
calc, occ foram incl, sme
fos frags; MRLST (35%):
med gy-dk gy ip, tr chk
incl, rr chk lamn, sl frm-v
frm, sl hd ip, sb blk-y-sb
ang, silc-arg cmt, w cmted,
tr free chk, rr f pp pyr thru,
sl calc wt brn resdl

8400-8500 CHK (80%):
lt-med gy, f xln, fri-frm,
occ wh chk lam, abnt wht
chk incl, rthy-chky tex, v
calc, occ foram incl, occ
fos frags; MRLST (20%):
med gy-dk gy ip, tr chk
incl, rr chk lamn, sl frm-v
frm, sl hd ip, sb blk-y-sb
ang, silc-arg cmt, w cmted,
tr free chk, rr f pp pyr thru,
sl calc wt brn resdl, tr
bent





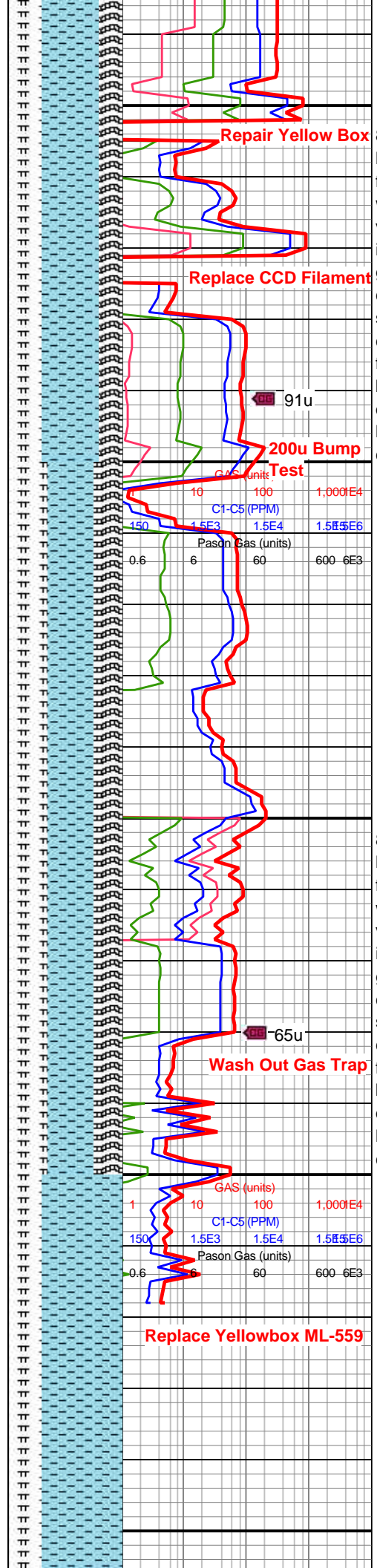
MW IN: 10.5
VIS IN: 45
MW OUT: 10.4
VIS OUT: 43

WOB: 18klbs
RPM: 29
SPM: 204
SPP: 3,443psi

MD: 8,814'
INC: 90.92°
AZM: 359.14°
TVD: 7,356.3'
VS: 1,158.26'

MW IN: 10.6
VIS IN: 45
MW OUT: 10.6
VIS OUT: 43

MD: 8,903'
INC: 89.16°
AZM: 0.19°
TVD: 7,356.23'
VS: 1,244.98'



Repair Yellow Box

Replace CCD Filament

91u

200u Bump

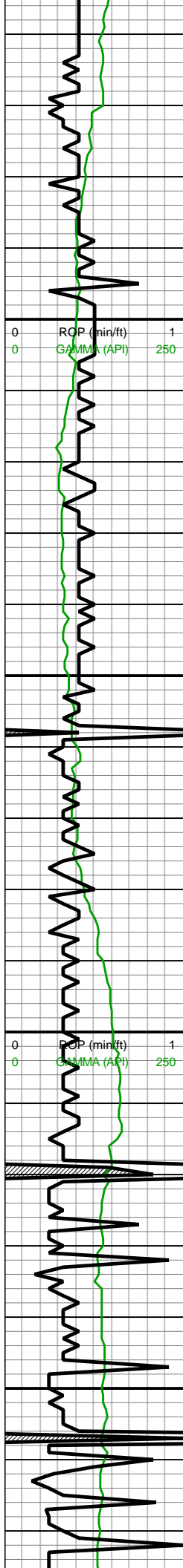
Wash Out Gas Trap

Replace Yellowbox ML-559

8700-8800 CHK (50%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, abnt
wht chk incl, rthy-chky tex,
v calc, com chky foram
incl; MRLST (30%): med
gy-dk gy ip, tr chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmt, tr free chk, rr
f pp pyr thru, sl calc wt
brn resdl; BENT (20%):
off wh-tn, sft-frm-brit,
hydrated-brit, hi flor, non
calc

8800-8900 CHK (40%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, abnt
wht chk incl, rthy-chky tex,
v calc, com chky foram
incl; MRLST (35%): med
gy-dk gy ip, tr chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmt, tr free chk, rr
f pp pyr thru, sl calc wt
brn resdl; BENT (25%):
off wh-tn, sft-frm-brit,
hydrated-brit, hi flor, non
calc





OFF BUSTER

MW IN: 10.6
VIS IN: 45
MW OUT: 10.6
VIS OUT: 43

MD: 8,992'
INC: 89.6°
AZM: 0.02°
TVD: 7,357.2'
VS: 1,331.53'

WOB: 42.5klbs
RPM: 50
SPM: 202
SPP: 4,413psi

MW IN: 10.6
VIS IN: 43
MW OUT: 10.6
VIS OUT: 41

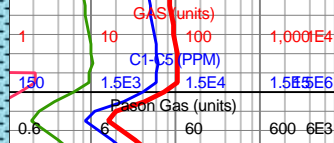
MD: 9,081'
INC: 90.04°
AZM: 0.9°
TVD: 7,357.48'
VS: 1,417.96'

MD: 9,170'
INC: 90.92°
AZM: 1.25°
TVD: 7,356.73'

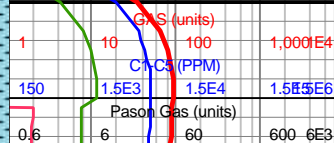
OFF BUSTER

Connect Yellowbox ML-558

370u



118u



137u

8900-9000 CHK (70%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, com
wht chk incl, rthy-chky tex,
v calc, sme chky foram
incl; MRLST (30%): med
gy-dk gy ip, tr chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmt, tr free chk, rr
f pp pyr thru, sl calc wt
brn resdl, tr bent

9000-9100 CHK (75%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, com
wht chk incl, rthy-chky tex,
v calc, sme chky foram
incl; MRLST (25%): med
gy-dk gy ip, tr chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmt, tr free chk, rr
f pp pyr thru, sl calc wt
brn resdl, tr bent

9100-9200 CHK (60%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, com
wht chk incl, rthy-chky tex,
v calc, sme chky foram
incl; MRLST (40%): med



VS: 1,504.16'
WOB: 41klbs
RPM: 61
SPM: 203
SPP: 4,379psi

MW IN: 10.6
VIS IN: 43
MW OUT: 10.6
VIS OUT: 41

TOOH, at 16:12
on 09/12/2019

MINDEPTH
09/13/2019
Resume drilling
@ 05:30MST

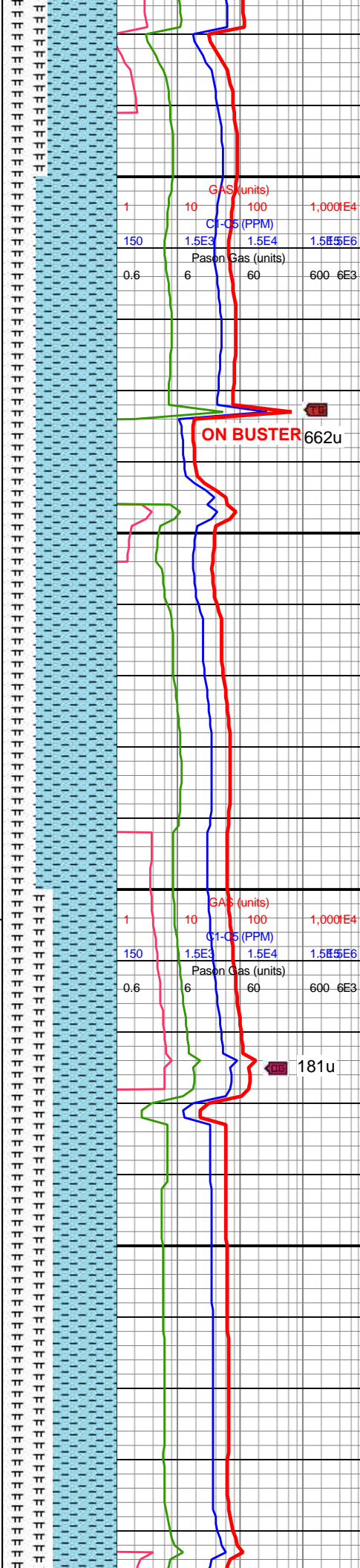
MD: 9,259'
INC: 91.36°
AZM: 1.6°
TVD: 7,354.96'
VS: 1,590.2'

TOOH for BHA
@ 16:13 on
9/12/2019

Bit #: 2
Type: U516M
Size: 8.5
Depth In: 9,235'
Depth Out:
15,422'
Hours: 26.8 hrs
Avg Ft/Hr: 231 ' / hr
Jets: 6X13
S/N: 48190

MW IN: 10.8
VIS IN: 45
MW OUT: 10.7
VIS OUT: 43

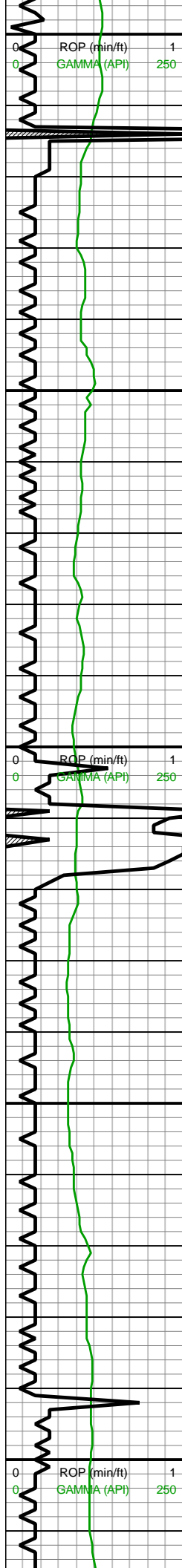
MD: 9,348'
INC: 89.43°
AZM: 1.6°
TVD: 7,354.35'
VS: 1,676.18'



gy-dk gy ip, tr chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmt, tr free chk, rr
f pp pyr thru, sl calc wt
brn resdl, tr bent

9200-9300 CHK (70%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, com
wht chk incl, rthy-chky tex,
v calc, sme chky foram
incl; MRLST (30%): med
gy-dk gy ip, sme wht chk
incl, occ chky lamn, sl
frm-v frm, sb blk-y-sb ang,
silc-arg cmt, w cmt, tr
free chk, occ scat f pp pyr
thru, sl calc wt brn resdl

9300-9400 CHK (55%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, tr chky foram incl;
MRLST (45%): med gy-dk
gy ip, sme wht chk incl,
occ chky lamn, sl frm-v
frm, sb blk-y-sb ang,
silc-arg cmt, w cmt, occ
scat f pp pyr thru, sl calc



WOB: 39.3klbs
RPM: 60
SPM: 202
SPP: 4,604psi

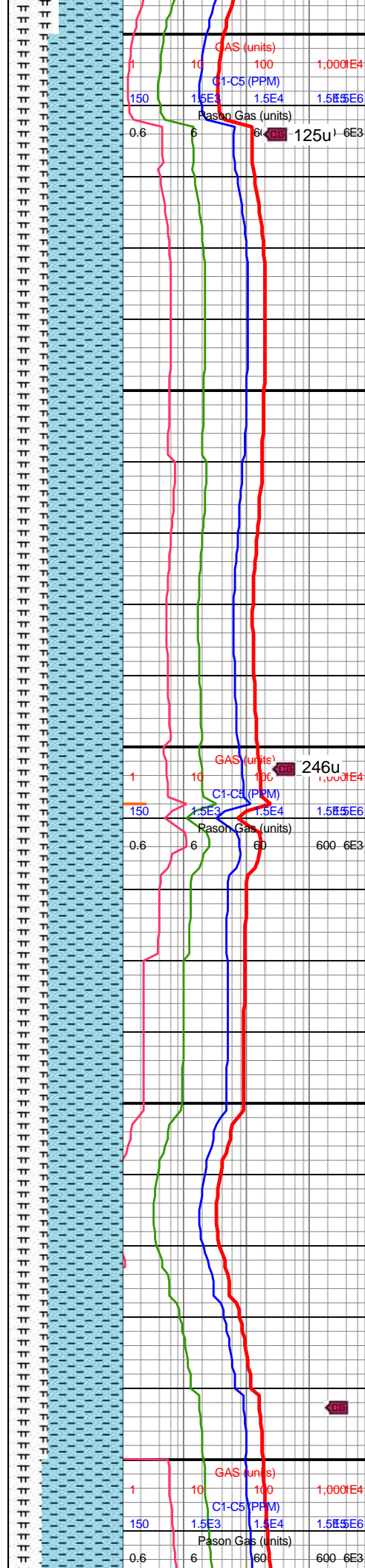
MD: 9,438'
INC: 89.16°
AZM: 1.42°
TVD: 7,355.45'
VS: 1,763.17'

MW IN: 10.7
VIS IN: 46
MW OUT: 10.8
VIS OUT: 43

MD: 9,527'
INC: 89.69°
AZM: 359.49°
TVD: 7,356.35'
VS: 1,849.6'

WOB: 25.4klbs
RPM: 60
SPM: 202
SPP: 4,095psi

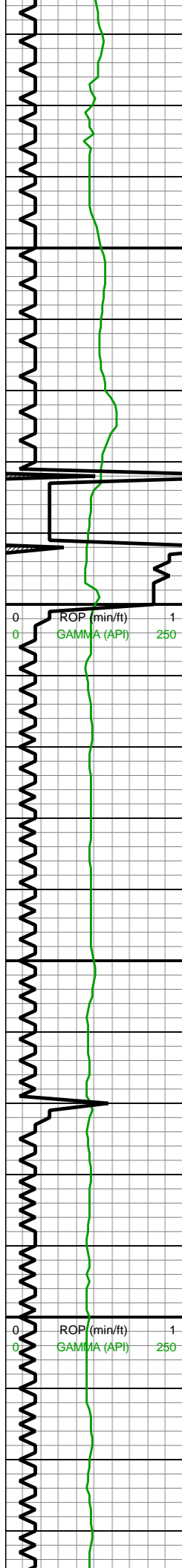
MD: 9,616'
INC: 89.34°
AZM: 1.42°
TVD: 7,357.25'
VS: 1,936.82'



wt brn resdl

9400-9500 CHK (65%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, tr chky foram incl;
MRLST (35%): med gy-dk
gy ip, sme wht chk incl,
occ chky lamn, sl frm-v
frm, sb blk-y-sb ang,
silc-arg cmt, w cmtd, occ
scat f pp pyr thru, sl calc
wt brn resdl, lt tr bent

9500-9600 CHK (65%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, occ fos frags, occ
chky foram incl; MRLST
(35%): med gy-dk gy ip,
sme wht chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmtd, occ scat f pp
pyr thru, sl calc wt brn
resdl, lt tr bent, occ free
chk



AZM: 359.14°
TVD: 7,357.1'
VS: 1,936.43'

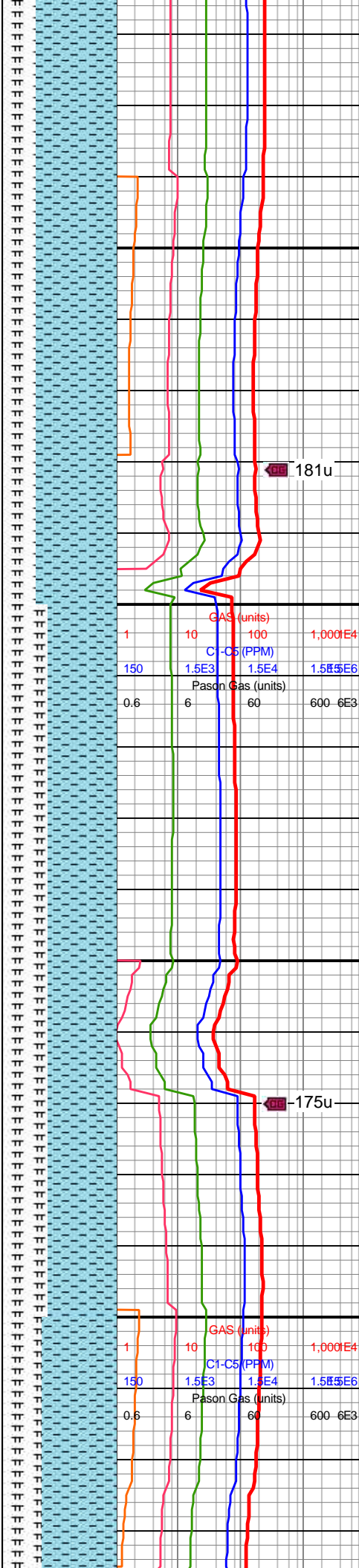
MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 43

MD: 9,705'
INC: 90.75°
AZM: 358.61°
TVD: 7,357.03'
VS: 2,023.41'

MD: 9,794'
INC: 90.66°
AZM: 1.25°
TVD: 7,355.94'
VS: 2,110.02'

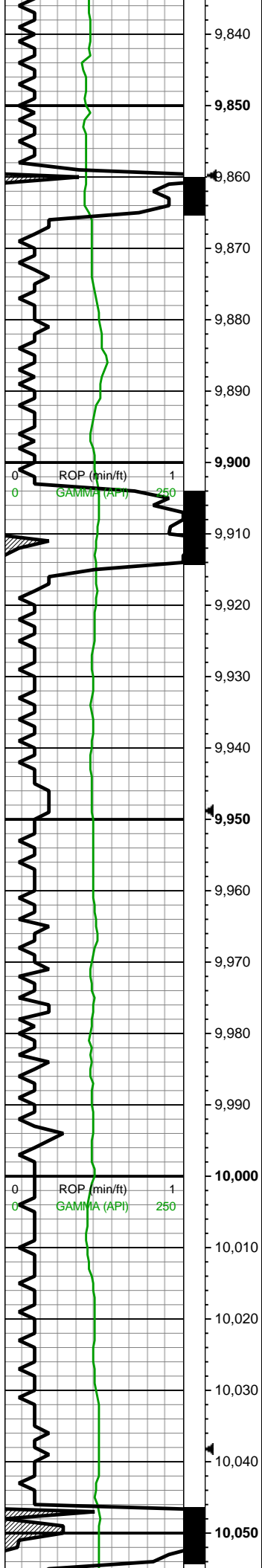
WOB: 37.9klbs
RPM: 60
SPM: 204
SPP: 4,787psi

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44



9600-9700 CHK (70%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, occ fos frags, rr
chky foram incl; MRLST
(30%): med gy-dk gy ip,
sme wht chk incl, occ
chky lamn, sl frm-v frm,
sb blk-y-sb ang, silc-arg
cmt, w cmt, occ scat f pp
pyr thru, sl calc wt brn
resdl, lt tr bent, sme free
chk

9700-9800 CHK (60%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, com scat fos
frags, rr chky foram incl;
MRLST (40%): med gy-dk
gy ip, sme wht chk incl,
occ chky lamn, sl frm-v
frm, sb blk-y-sb ang,
silc-arg cmt, w cmt,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ free
chk

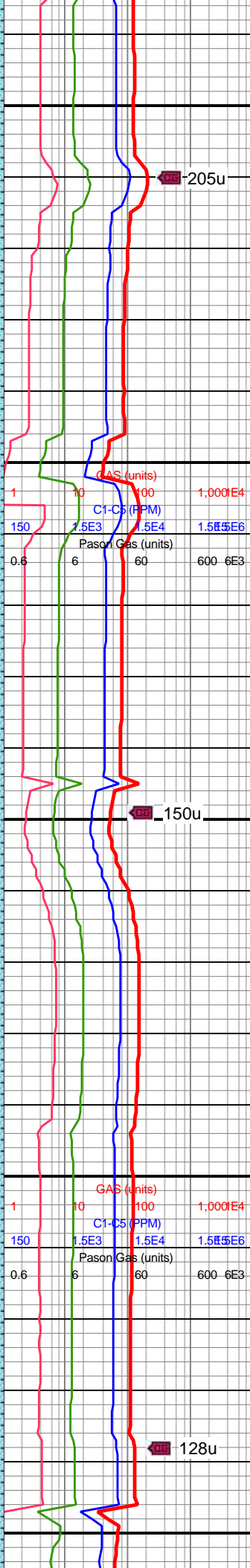


MD: 9,883'
INC: 92.15°
AZM: 2.3°
TVD: 7,353.75'
VS: 2,195.91'

MD: 9,972'
INC: 90.92°
AZM: 0.19°
TVD: 7,351.37'
VS: 2,282.01'

WOB: 26.4klbs
RPM: 60
SPM: 204
SPP: 4,020psi

MW IN: 10.7
VIS IN: 46
MW OUT: 10.6+
VIS OUT: 44

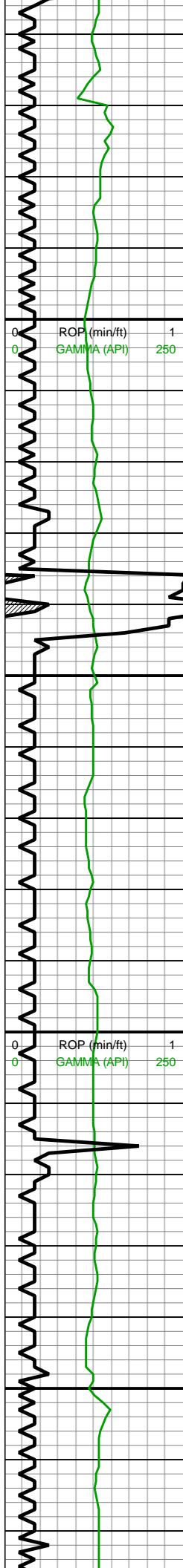


9800-9900 CHK (65%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, com scat fos
frags; MRLST (35%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
sl frm-v frm, sb blkly-sb
ang, silc-arg cmt, w cmted,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ free
chk

9900-10000 CHK (75%):
lt-med gy, f xln, sl frm-v
frm, occ wh chk lam, occ
wht chk incl, rthy-chky tex,
v calc, com scat fos
frags; MRLST (25%):
med gy-dk gy ip, sme wht
chk incl, sme chky lamn,
frm-v frm, occ hd ip, sb
blkly-sb ang, silc-arg cmt,
w cmted, scat f pp pyr thru,
sl calc wt brn resdl, occ
free chk

10000-10100 CHK
(75%): lt-med gy, rr lt





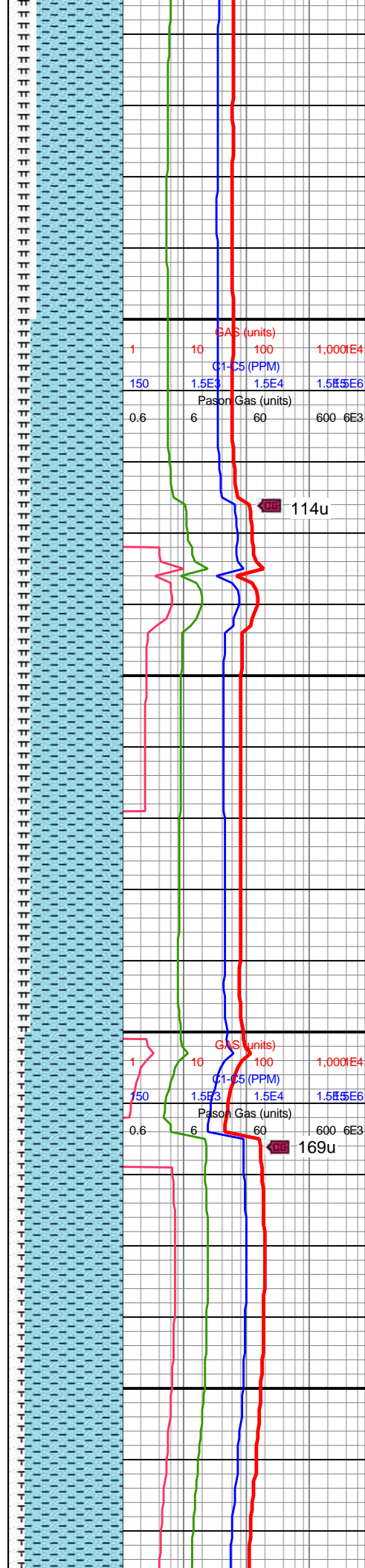
MD: 10,061'
INC: 89.78°
AZM: 359.14°
TVD: 7,350.83'
VS: 2,368.72'

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 10,150'
INC: 90.84°
AZM: 358.44°
TVD: 7,350.34'
VS: 2,455.73'

WOB: 37.1klbs
RPM: 60
SPM: 204
SPP: 4,620psi

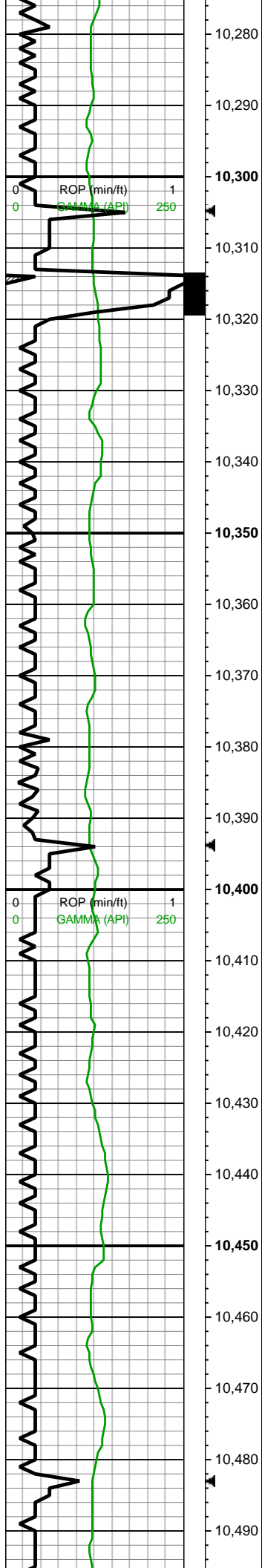
MD: 10,240'
INC: 90.66°
AZM: 359.14°
TVD: 7,349.17'
VS: 2,543.71'



(75%): lt-med gy, n k
gyshbn arg LS wi thn
chky lamn, sb
frm-frm-occ fri ip, sb
blky-blky sme sl fis ctngs
wi sm arg-sl slty tex, hi
calc, occ fos frags;
MRLST (25%): med gy-dk
gy ip, sme wht chk incl,
sme chky lamn, frm-v
frm, occ hd ip, sb blky-sb
ang, silc-arg cmt, w cmtd,
scat f pp pyr thru, sl calc
wt brn resdl, occ free chk

10100-10200 CHK
(80%): predy lt-med gy, lt
gyshbn arg LS wi thn
chky lamn, sb
frm-frm-occ fri ip, sb
blky-blky, occ sl fis ctngs
wi sm arg-sl slty tex, hi
calc, rr fos frags; MRLST
(20%): med gy-dk gy ip,
sme wht chk incl, sme
chky lamn, frm-v frm, occ
hd ip, sb blky-sb ang,
silc-arg cmt, w cmtd,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ free
chk, tr bent

10200-10300 CHK
(85%): lt-med gy, occ lt
gyshbn arg LS wi thn
chky lamn, sb
frm-frm-occ fri ip, sb
blky-blky, occ sl fis ctngs
wi sm arg-sl slty tex, hi
calc, rr fos frags; MRLST
(45%): med gy-dk gy ip,
sme wht chk incl, sme
chky lamn, frm-v frm, occ
hd ip, sb blky-sb ang,
silc-arg cmt, w cmtd,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ free
chk, tr bent

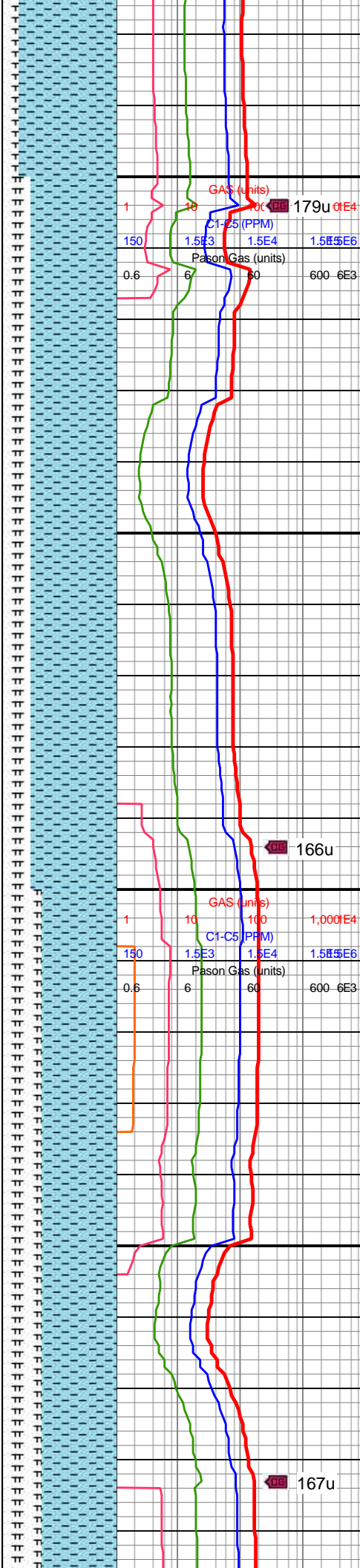


MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 10,329'
INC: 91.19°
AZM: 358.44°
TVD: 7,347.73'
VS: 2,630.72'

WOB: 23.6klbs
RPM: 60
SPM: 205
SPP: 4,242psi

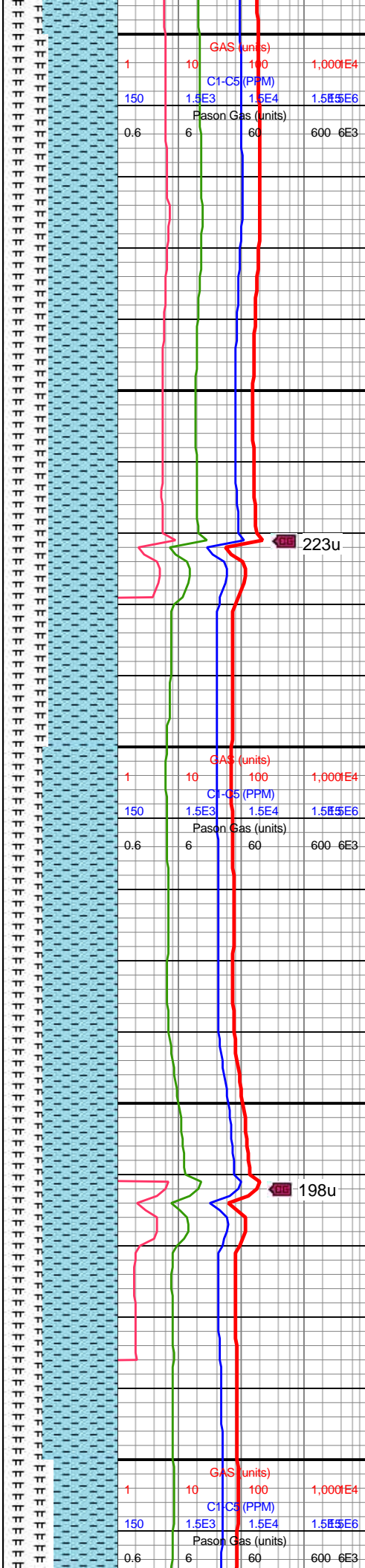
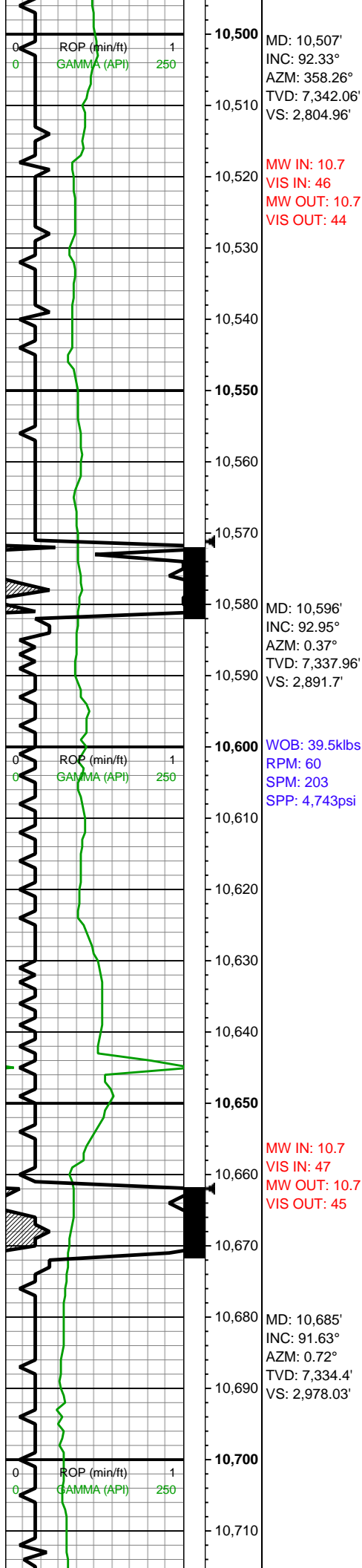
MD: 10,418'
INC: 91.89°
AZM: 358.26°
TVD: 7,345.34'
VS: 2,717.84'



(15%): med gy-dk gy ip,
sme chky lamn, frm-v frm, occ
hd ip, sb blkly-sb ang,
silc-arg cmt, w cmted, scat
f pp pyr thru, sl calc wt
brn resdl, occ free chk, tr
pyrc bent

10300-10400 CHK
(75%): lt-med gy, tr lt
gyshbn arg LS wi thn
chky lamn, sb
frm-frm-occ fri ip, sb
blkly-blky, occ sl fis ctngs
wi sm arg-sl slty tex, hi
calc, occ fos frags;
MRLST (25%): med gy-dk
gy ip, occ wht chk incl,
sme chky lamn ip, frm-v
frm, occ hd ip, sb blkly-sb
ang, silc-arg cmt, w cmted,
scat f pp pyr thru, sl calc
wt brn resdl, occ free chk,
tr bent

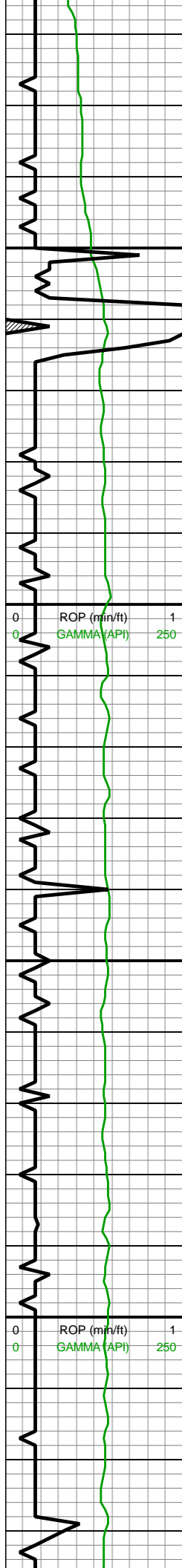
10400-10500 CHK
(65%): predy lt-med gy, tr
lt gyshbn, sb frm-frm-occ
fri ip, sb blkly-blky, occ sl
fis ctngs wi sm arg-sl slty
tex, hi calc, occ fos frags;
MRLST (35%): med gy-dk
gy ip, occ wht chk incl,
sme chky lamn ip, frm-v
frm, occ hd ip, sb blkly-sb
ang, silc-arg cmt, w cmted,
scat f pp pyr thru, sl calc
wt brn resdl, occ free chk,



tr bent

10500-10600 CHK
(60%): predy lt-med gy,
occ lt gyshbn arg LS wi f
wht chk incl, sb frm-frm,
sb blk-blk ctns wi sm
arg-sl slty tex, hi calc;
MRLST (40%): med gy-dk
gy ip, sme wht chk incl,
sme chky lamn, frm-v
frm, occ hd ip, sb blk-sb
ang, silc-arg cmt, w cmt,
scat f pp pyr thru, sl calc
wt brn resdl, occ free chk,
tr bent

10600-10700 CHK
(65%): predy lt-med gy, lt
gyshbn arg LS wi f wht
chk incl, sb frm-frm, sb
blk-blk ctns wi sm
arg-sl slty tex, hi calc;
MRLST (35%): med gy-dk
gy ip, sme wht chk incl,
sme chky lamn, frm-v
frm, occ hd ip, sb blk-sb
ang, silc-arg cmt, w cmt,
scat f pp pyr thru, sl calc
wt brn resdl, tr free chk, tr
bent



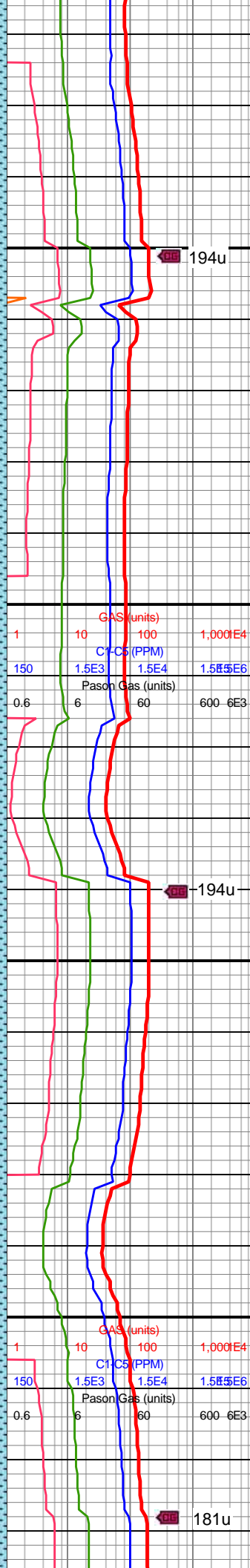
10,720
10,730
10,740
10,750
10,760
10,770
10,780
10,790
10,800
10,810
10,820
10,830
10,840
10,850
10,860
10,870
10,880
10,890
10,900
10,910
10,920
10,930

MW IN: 10.7
VIS IN: 47
MW OUT: 10.7
VIS OUT: 45

MD: 10,774'
INC: 90.66°
AZM: 0.37°
TVD: 7,332.63'
VS: 3,064.41'

WOB: 40.4klbs
RPM: 60
SPM: 202
SPP: 4,670psi

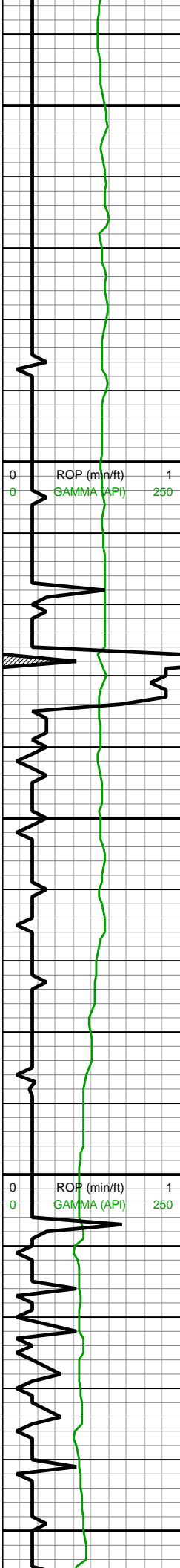
MD: 10,863'
INC: 90.75°
AZM: 1.42°
TVD: 7,331.53'
VS: 3,150.67'



10700-10800 CHK
(55%): lt-med gy, occ wht chk incl, sb frm-frm, sb blk-blk ctngs wi sm arg-sl slty tex, hi calc, tr fos frags; MRLST (45%): med gy-dk gy ip, sme wht chk incl, sme chky lamn, frm-v frm, occ hd ip, sb blk-sb ang, silc-arg cmt, w cmt, scat f pp pyr thru, sl calc wt brn resdl, tr bent

10800-10900 CHK
(85%): lt-med gy, gy-brn. occ wht chk incl, sb frm-frm, blk-ang, rthy-chky tex, hi calc, tr fos frags; MRLST (45%): med gy-dk gy ip, sme wht chk incl, sme chky lamn, fri-frm, sb blk-sb ang, silc-arg cmt, w cmt, sl calc wt brn resdl, tr bent





10,940
10,950
10,960
10,970
10,980
10,990
11,000
11,010
11,020
11,030
11,040
11,050
11,060
11,070
11,080
11,090
11,100
11,110
11,120
11,130
11,140
11,150

MD: 10,953'
INC: 90.57°
AZM: 1.78°
TVD: 7,330.49'
VS: 3,237.62'

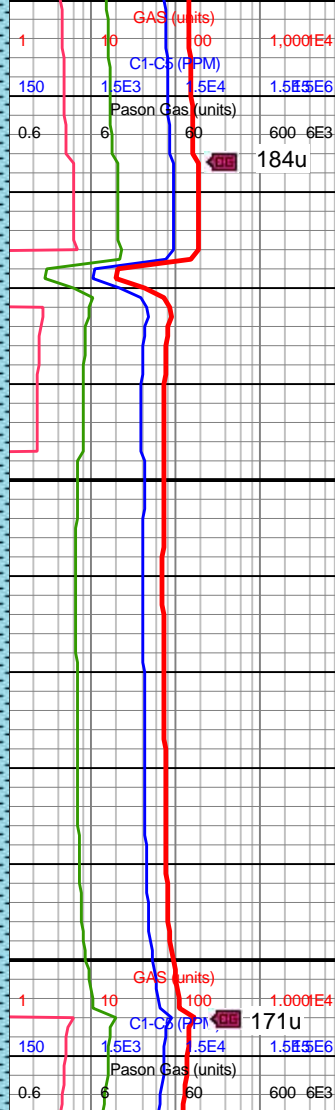
WOB: 39klbs
RPM: 60
SPM: 204
SPP: 4,762psi

MW IN: 10.7
VIS IN: 47
MW OUT: 10.7
VIS OUT: 45

MD: 11,042'
INC: 89.87°
AZM: 359.67°
TVD: 7,330.15'
VS: 3,323.95'

MW IN: 10.7
VIS IN: 48
MW OUT: 10.7
VIS OUT: 46

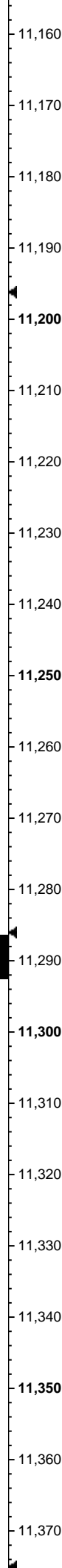
MD: 11,131'
INC: 90.4°
AZM: 359.84°
TVD: 7,329.94'
VS: 3,410.63'



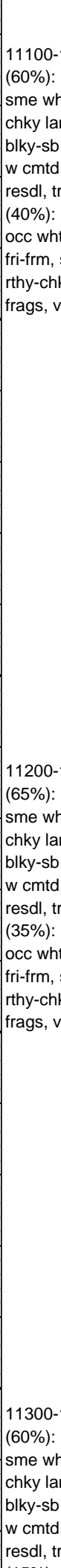
10900-11000 CHK
(85%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blk-ylky
rthy-chky tex, hi calc, tr fos
frags; MRLST (15%):
med gy-dk gy ip, sme wht
chk incl, sme chky lamn,
frm-hrd, sb blk-ylky ang,
silc-arg cmt, w cmt, r
thru, sl calc brn resdl, tr
bent sl calc

11000-11100 CHK
(80%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blk-ylky
rthy-chky tex, hi calc, tr fos
frags; MRLST (20%):
med gy-dk gy ip, sme wht
chk incl, sme chky lamn,
frm-hrd, sb blk-ylky ang,
silc-arg cmt, w cmt, r
thru, sl calc brn resdl, tr
bent sl calc





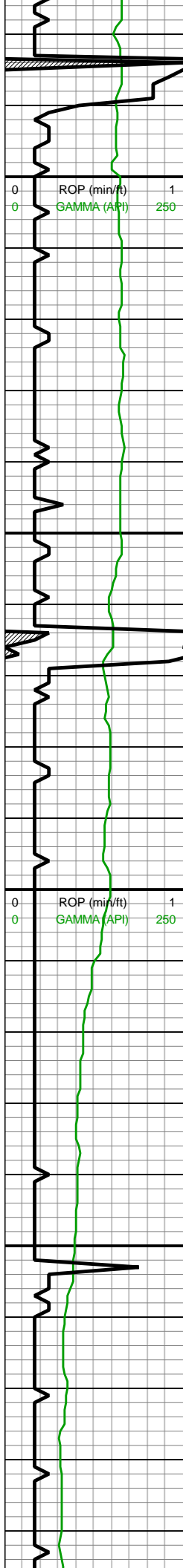
MD: 11,220'
INC: 91.19°
AZM: 0.37°
TVD: 7,328.71'
VS: 3.497.18'



11200-11300 MRLST
(65%): med gy-dk gy ip,
sme wht chk incl, sme
chky lamn, frm-hrd, sb
blky-sb ang, silc-arg cmt,
w cmted, r thru, sl calc brn
resdl, tr bent sl calc; CHK
(35%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frm, sb blky-blky
rthy-chky tex, hi calc, tr fos
frags. v rr pp pyr

MD: 11,309'
INC: 90.84°
AZM: 0.72°
TVD: 7,327.13'
VS: 3.583.57'

11300-11400 MRLST
(60%): med gy-dk gy ip,
sme wht chk incl, sme
chky lamn, frm-hrd, sb
blky-sb ang, silc-arg cmt,
w cmted, r thru, sl calc brn
resdl, tr bent sl calc; CHK



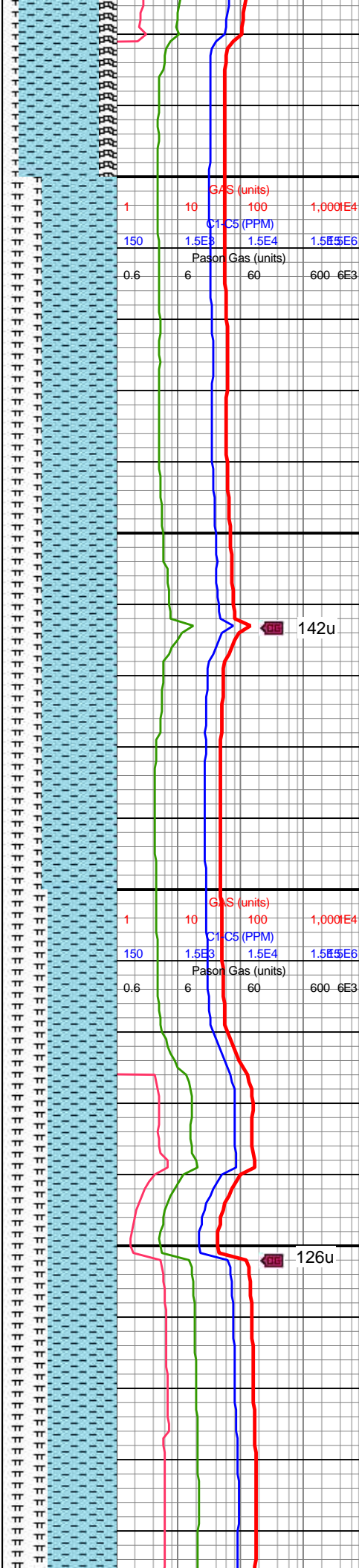
MD: 11,398'
INC: 89.52°
AZM: 1.25°
TVD: 7,326.85'
VS: 3,669.8'

WOB: 29klbs
RPM: 60
SPM: 204
SPP: 4,585psi

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 11,488'
INC: 89.25°
AZM: 0.37°
TVD: 7,327.82'
VS: 3,757.06'

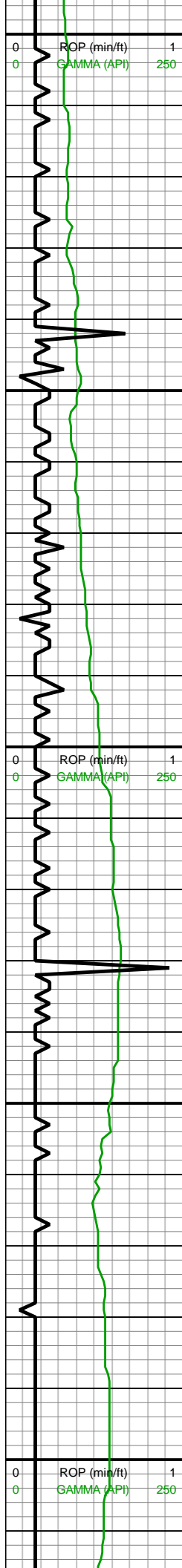
MD: 11,577'
INC: 89.78°
AZM: 0.19°
TVD: 7,328.57'
VS: 3,843.56'



(15%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-blky
rthy-chky tex, hi calc, tr fos
frags, v rr pp pyr; BENT
(15%): off wh-tn,
sft-frn-brit, hydrated-brit,
hi flor, non calc

11400-11500 CHK
(65%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-blky
rthy-chky tex, hi calc, tr fos
frags; MRLST (35%):
med gy-dk gy ip, sme wht
chk incl, sme chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmt, r
thru, sl calc brn resdl, occ
bent, sl calc

11500-11600 CHK
(60%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-blky
rthy-chky tex, hi calc, tr fos
frags; MRLST (40%):
med gy-dk gy ip, sme wht
chk incl, sme chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmt, r
thru, sl calc brn resdl, occ



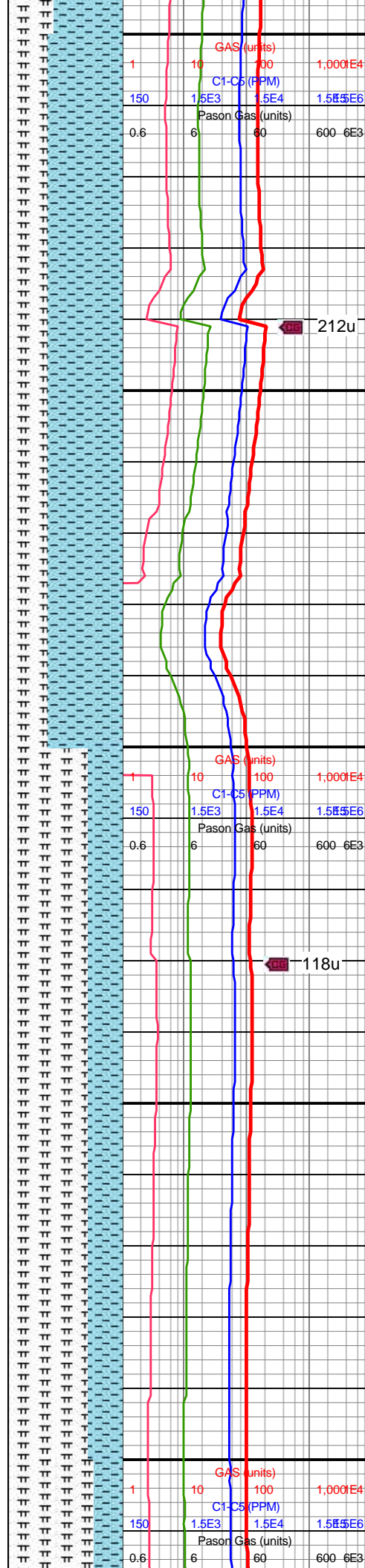
WOB: 38klbs
RPM: 60
SPM: 204
SPP: 4,812psi

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 11,666'
INC: 90.22°
AZM: 359.67°
TVD: 7,328.57'
VS: 3,930.18'

MD: 11,755'
INC: 89.87°
AZM: 358.44°
TVD: 7,328.5'
VS: 4,017.1'

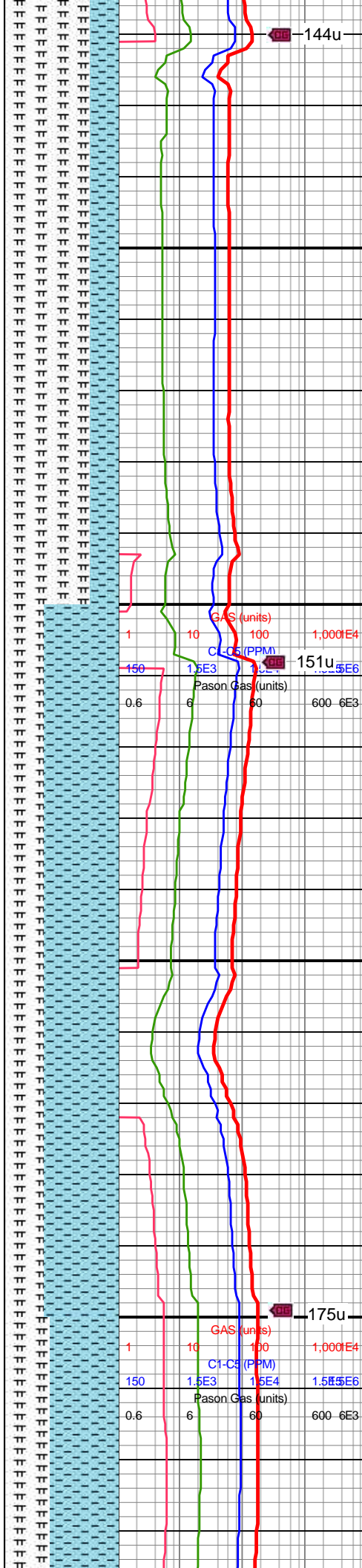
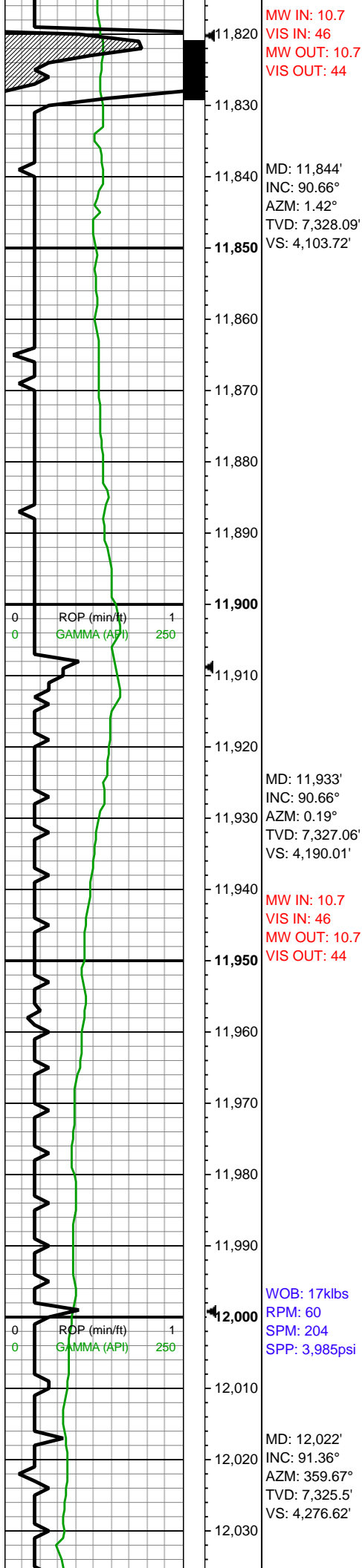
WOB: 35klbs
RPM: 60
SPM: 204
SPP: 4,798psi



thru, sl calc brn resdl, occ bent, sl calc

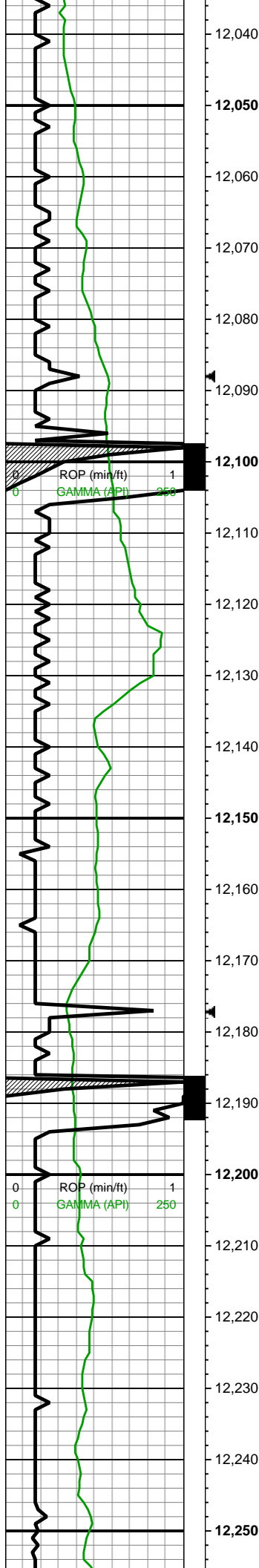
11600-11700 CHK (65%): lt-med gy, gy-brn, occ wht chk incl, vf-f xln, fri-frm, sb blkyl-blky rthy-chky tex, hi calc, tr fos frags; MRLST (35%): med gy-dk gy ip, sme wht chk incl, sme chky lamn, frm-hrd, sb blkyl-sb ang, silc-arg cmt, w cmt, r thru, sl calc brn resdl, occ bent, sl calc

11700-11800 MRLST (70%): med gy-dk gy ip, occ wht chk incl, rr chky lamn, frm-hrd, sb blkyl-sb ang, silc-arg cmt, w cmt, sl calc wt brn resdl, tr bent, sl calc; CHK (30%): lt-med gy, gy-brn, occ wht chk incl, vf-f xln, fri-frm, sb blkyl-blky rthy-chky tex, hi calc, tr fos frags



11800-11900 MRLST
(75%): med gy-dk gy ip,
occ wht chk incl, rr chky
lamn, frm-hrd, sb blk-y-sb
ang, silc-arg cmt, w cmted,
sl calc wt brn resdl, tr
bent, sl calc; CHK (25%):
lt-med gy, gy-brn, occ wht
chk incl, vf-f xln, fri-frm, sb
blk-y-blky rthy-chky tex, hi
calc, tr fos frags

11900-11200 CHK
(65%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frm, sb blk-y-blky
rthy-chky tex, hi calc, tr fos
frags; MRLST (35%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blk-y-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl, occ
bent, sl calc

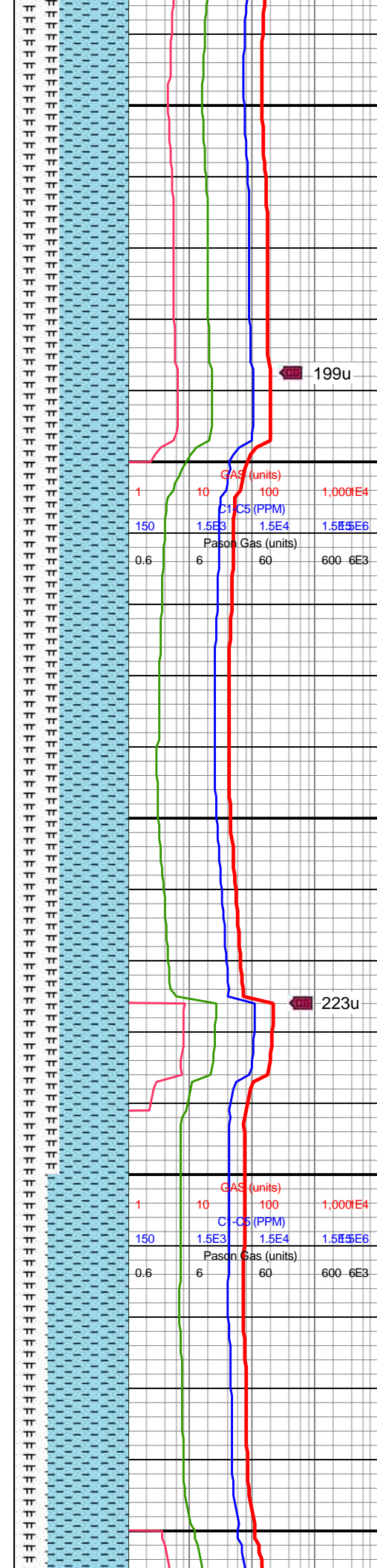


MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 12,111'
INC: 91.8°
AZM: 0.19°
TVD: 7,323.04'
VS: 4,363.21'

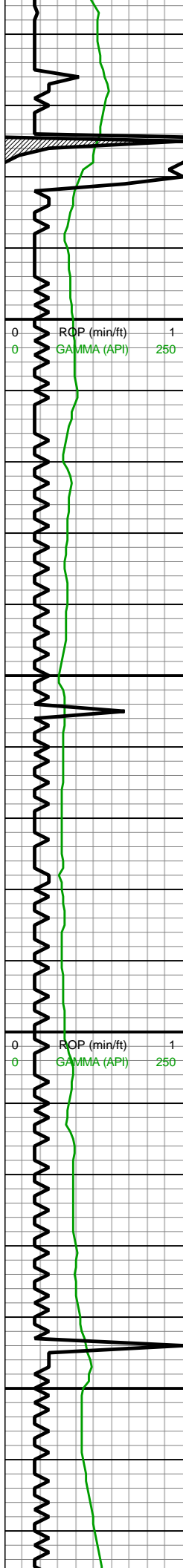
MINDEPTH
09/14/2019

MD: 12,200'
INC: 90.92°
AZM: 1.42°
TVD: 7,320.93'
VS: 4,449.48'



11900-11200 CHK
(60%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-bkly
rthy-chky tex, hi calc, tr fos
frags; MRLST (40%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl, occ
bent, sl calc

12100-12200 CHK
(60%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-bkly
rthy-chky tex, hi calc, tr fos
frags; MRLST (40%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl, occ
bent, sl calc



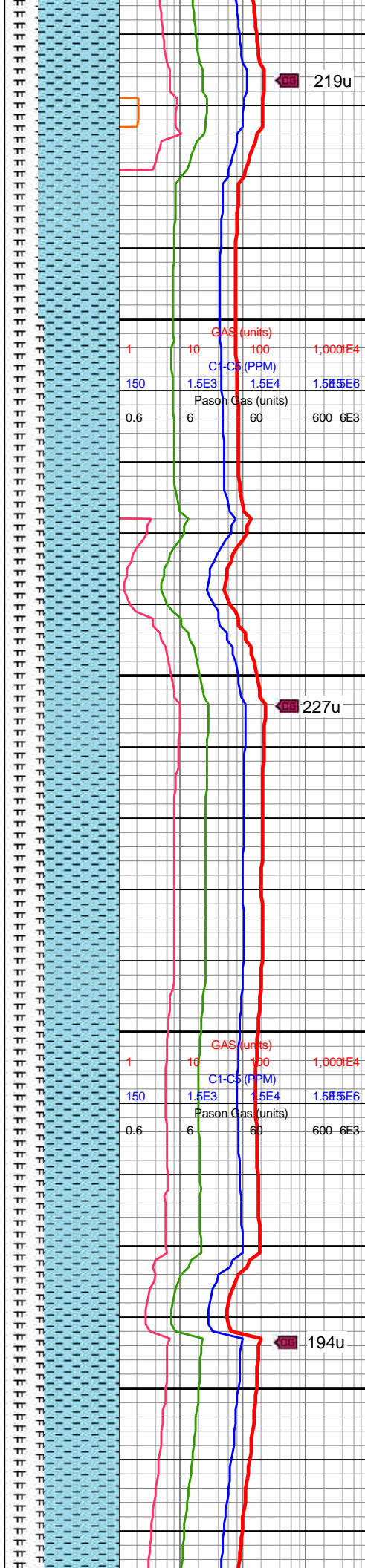
MD: 12,289'
INC: 89.52°
AZM: 1.42°
TVD: 7,320.59'
VS: 4,535.54'

MD: 12,379'
INC: 90.31°
AZM: 1.25°
TVD: 7,320.72'
VS: 4,622.61'

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

WOB: 35klbs
RPM: 60
SPM: 205
SPP: 4,750psi

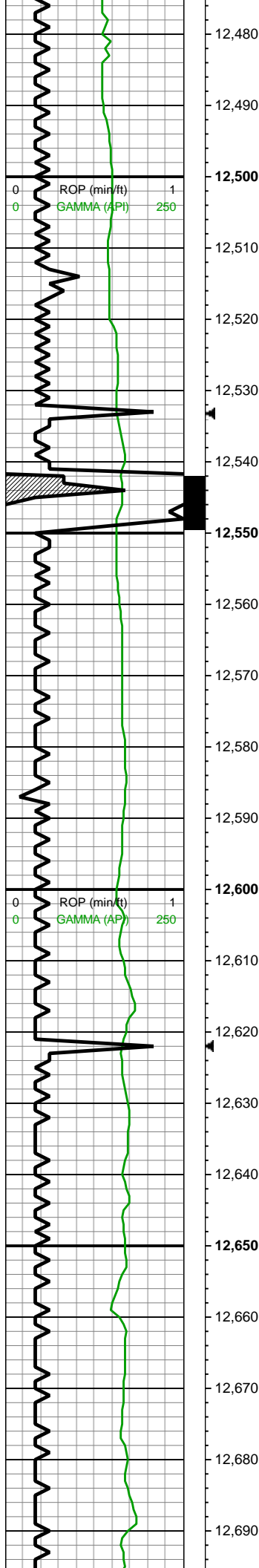
MD: 12,468'
INC: 91.01°
AZM: 1.42°
TVD: 7,319.7'
VS: 4,708.7'



12200-12300 CHK
(70%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-blky
rthy-chky tex, hi calc, tr
wht foram; MRLST (30%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl, tr bent,
sl calc

12300-12400 CHK
(70%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-blky
rthy-chky tex, hi calc, tr
wht foram; MRLST (30%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl, tr bent,
sl calc

12400-12500 CHK
(65%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blkyl-blky
rthy-chky tex, hi calc, tr
wht foram; MRLST (35%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blkyl-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl, tr bent,
sl calc



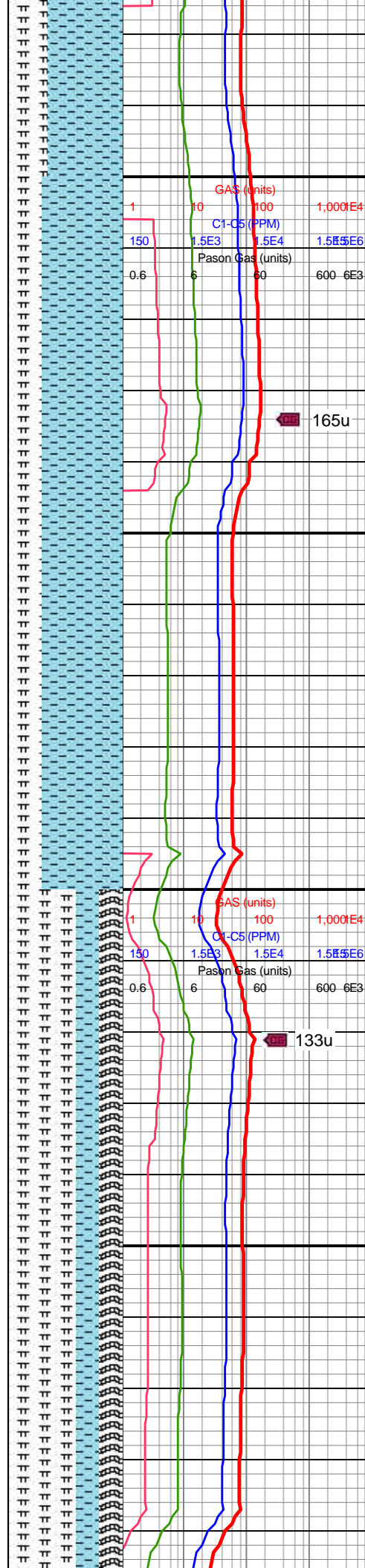
12,480
12,490
12,500
12,510
12,520
12,530
12,540
12,550
12,560
12,570
12,580
12,590
12,600
12,610
12,620
12,630
12,640
12,650
12,660
12,670
12,680
12,690

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 12,557'
INC: 89.78°
AZM: 0.19°
TVD: 7,319.08'
VS: 4,794.99'

WOB: 32klbs
RPM: 60
SPM: 203
SPP: 4,760psi

MD: 12,646'
INC: 90.13°
AZM: 1.25°
TVD: 7,319.15'
VS: 4,881.33'



1
150
0.6
1
150
0.6
1
150
0.6

GAS (units)
C1-C5 (PPM)
Pason Gas (units)
10
100
1,000E4
1.5E3
1.5E4
1.5E5E6
6
60
600 6E3

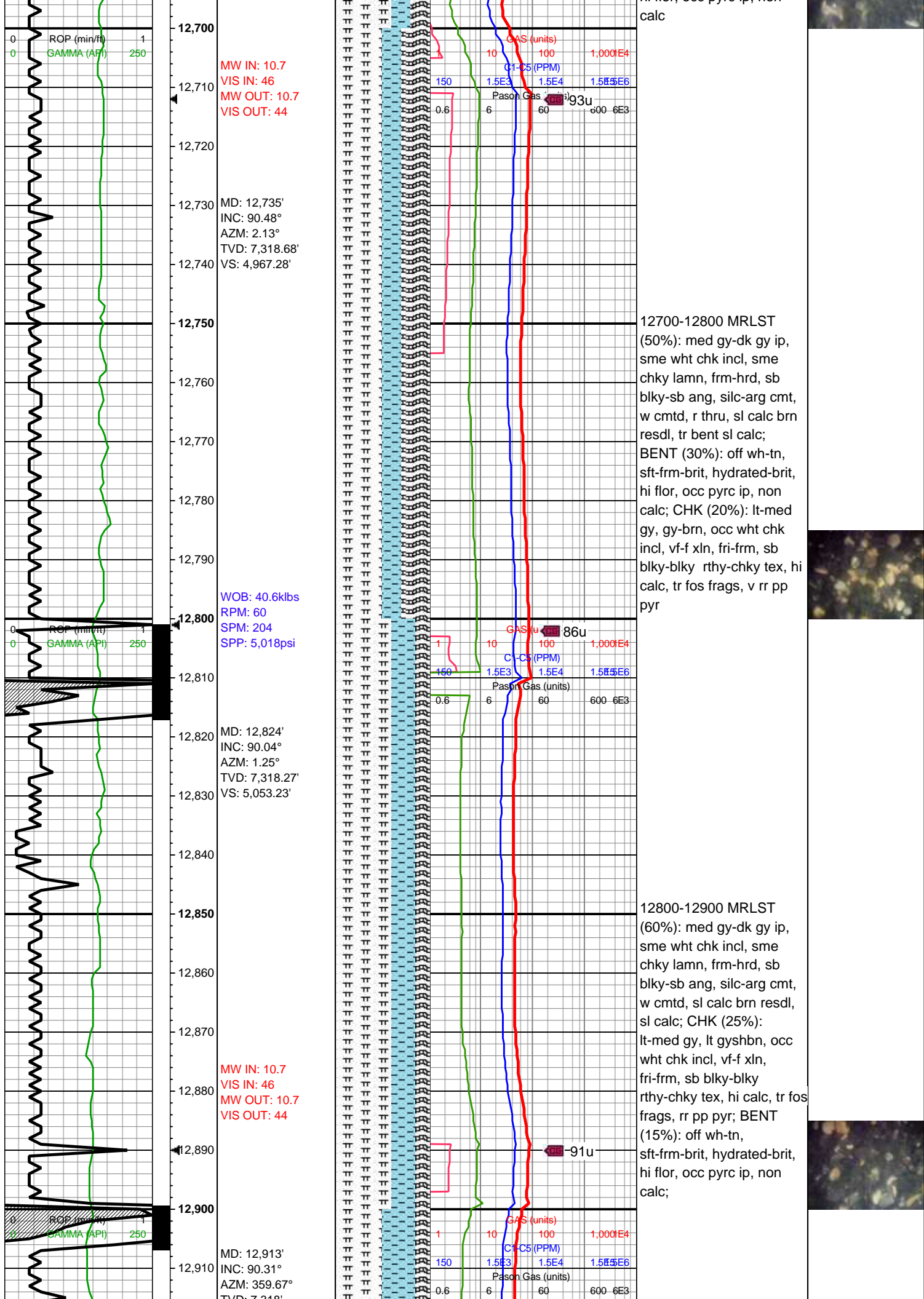
165u

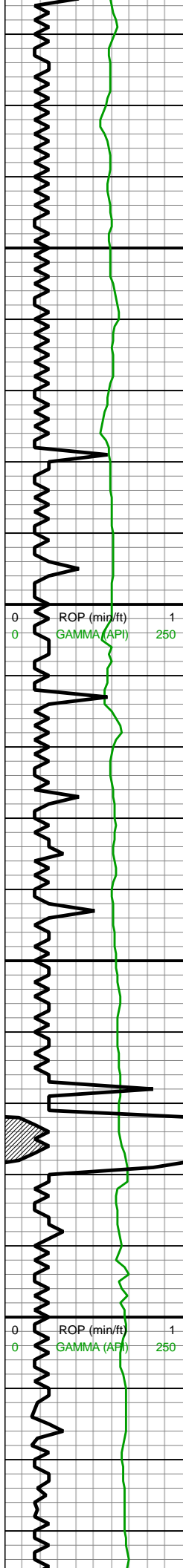
133u

12500-12600 CHK
(70%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blk-ylk
rthy-chky tex, hi calc, tr
wht foram; MRLST (30%):
med gy-dk gy ip, sme wht
chk incl, occ chky lamn,
frm-hrd, sb blk-ylk ang,
silc-arg cmt, w cmt, sl
calc wt brn resdl, tr bent,
sl calc, com bent

12600-12700 MRLST
(60%): med gy-dk gy ip,
sme wht chk incl, sme
chky lamn, frm-hrd, sb
blk-ylk ang, silc-arg cmt,
w cmt, r thru, sl calc brn
resdl, tr bent sl calc; CHK
(20%): lt-med gy, gy-brn,
occ wht chk incl, vf-f xln,
fri-frn, sb blk-ylk
rthy-chky tex, hi calc, tr fos
frags, v rr pp pyr; BENT
(20%): off wh-tn,
sft-frn-brit, hydrated-brit,
hi flor. occ pvr in. non







VD: 7,318'
VS: 5,139.66'

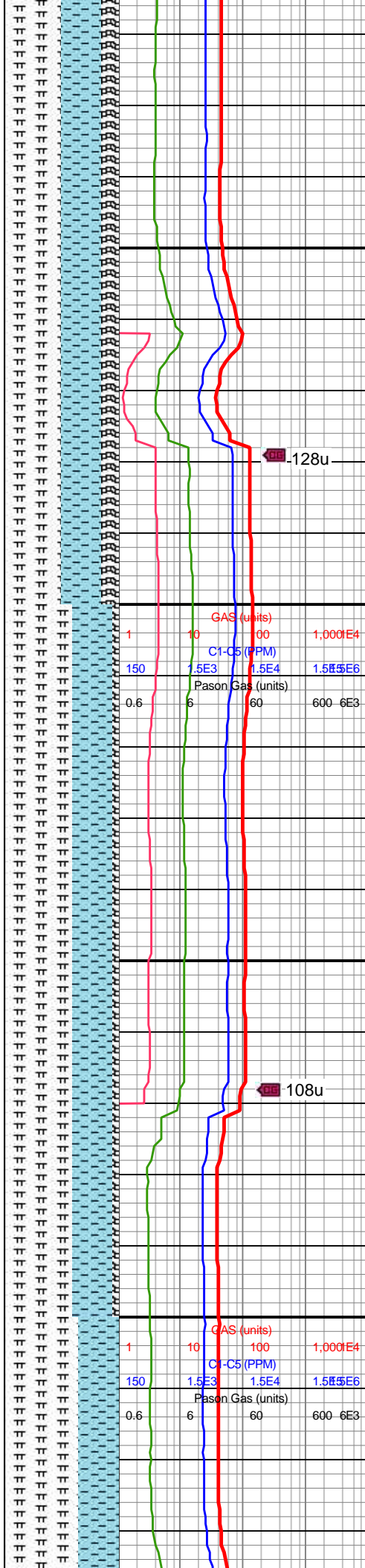
MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

WOB: 33.8klbs
RPM: 60
SPM: 203
SPP: 4,849psi

MD: 13,002'
INC: 91.01°
AZM: 357.38°
TVD: 7,316.98'
VS: 5,226.75'

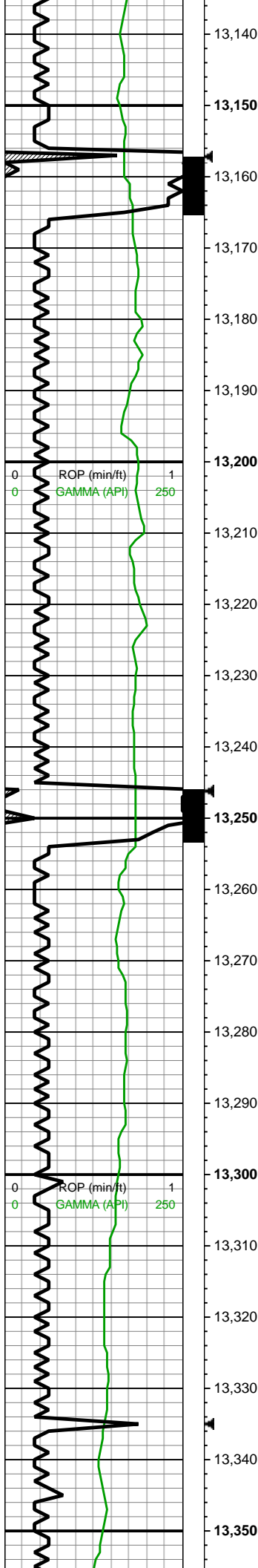
MW IN: 10.7
VIS IN: 47
MW OUT: 10.7
VIS OUT: 45

MD: 13,092'
INC: 91.1°
AZM: 358.61°
TVD: 7,315.32'
VS: 5,314.97'



12900-13000 MRLST
(50%): med gy-dk gy ip, sme wht chk incl, sme chky lamn, frm-hrd, sb blk-y-sb ang, silc-arg cmt, w cmt, sl calc brn resdl, sl calc; CHK (35%): lt-med gy, lt gyshbn, occ wht chk incl, vf-f xln, fri-frm, sb blk-y-blky rthy-chky tex, hi calc, tr fos frags, rr pp pyr; BENT (15%): off wh-tn, sft-frm-brit, hydrated-brit, hi flor, occ pyrc ip, non calc

13000-13100 MRLST
(60%): med gy-dk gy ip, occ wht chk incl, tr chky lamn, occ shy ip, frm-hrd, sb blk-y-sb ang, silc-arg cmt, w cmt, sl calc wi brn resdl; CHK (35%): lt gy, lt gyshbn, occ wht chk incl, vf-f xln, fri-frm, sb blk-y-blky rthy-chky tex, hi calc, tr fos frags, rr pp pyr; BENT (5%): off wh-tn, sft-frm-brit, hydrated-brit, hi flor, occ pyrc ip, non calc



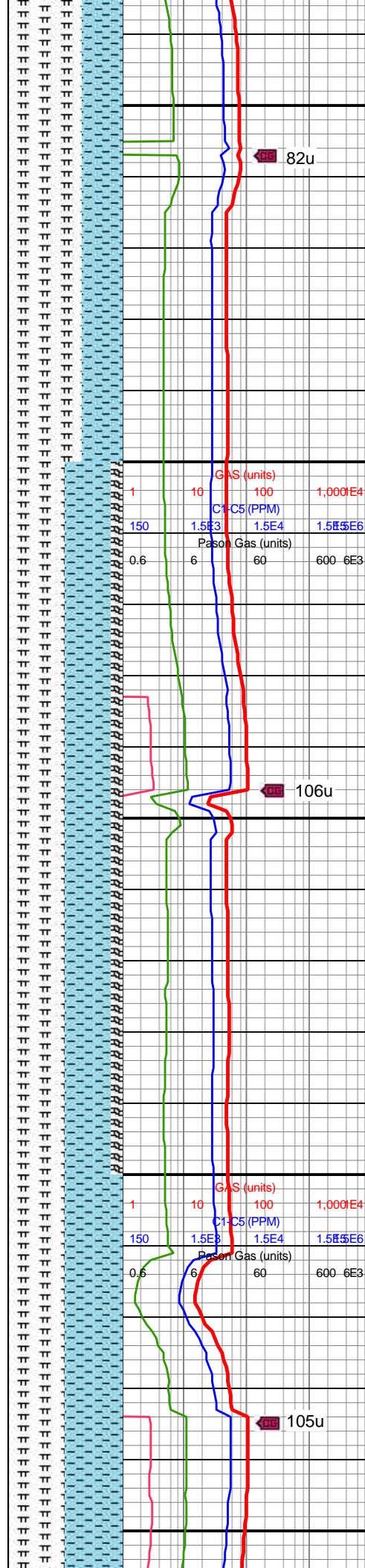
MD: 13,181'
INC: 90.66°
AZM: 0.72°
TVD: 7,313.95'
VS: 5,401.68'

WOB: 40.1klbs
RPM: 61
SPM: 203
SPP: 5,022psi

MW IN: 10.7
VIS IN: 47
MW OUT: 10.7
VIS OUT: 45

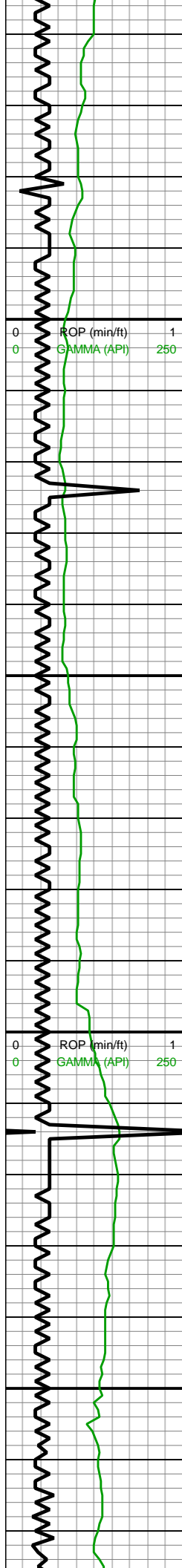
MD: 13,270'
INC: 88.55°
AZM: 1.07°
TVD: 7,314.57'
VS: 5,487.94'

MW IN: 10.7
VIS IN: 48
MW OUT: 10.7
VIS OUT: 46



13100-13200 MRLST
(65%): med gy-dk gy ip,
occ wht chk incl, tr chky
lamn, occ shy ip, frm-hrd,
sb blk-y-sb ang, silc-arg
cmt, w cmt-d, sl calc wi
brn resdl; CHK (35%): lt
gy, lt gyshbn, occ wht chk
incl, vf-f xln, fri-frm, sb
blk-y-blky rthy-chky tex, hi
calc, sme scat bent

13200-13300 MRLST
(50%): med gy-dk gy ip,
occ wht chk incl, sme
chky lamn, occ shy ip,
frm-hrd, sb blk-y-sb ang,
silc-arg cmt, w cmt-d, sl
calc wi brn resdl; CHK
(40%): v lt-lt gy, lt gyshbn,
com wht chk incl, vf-f xln,
fri-frm, sb blk-y-blky
rthy-chky tex, hi calc, sme
pp pyr; BENT (10%): off
wh-tn, sft-frm-brit,
hydrated-brit, hi flor, occ
pyrc ip, non calc



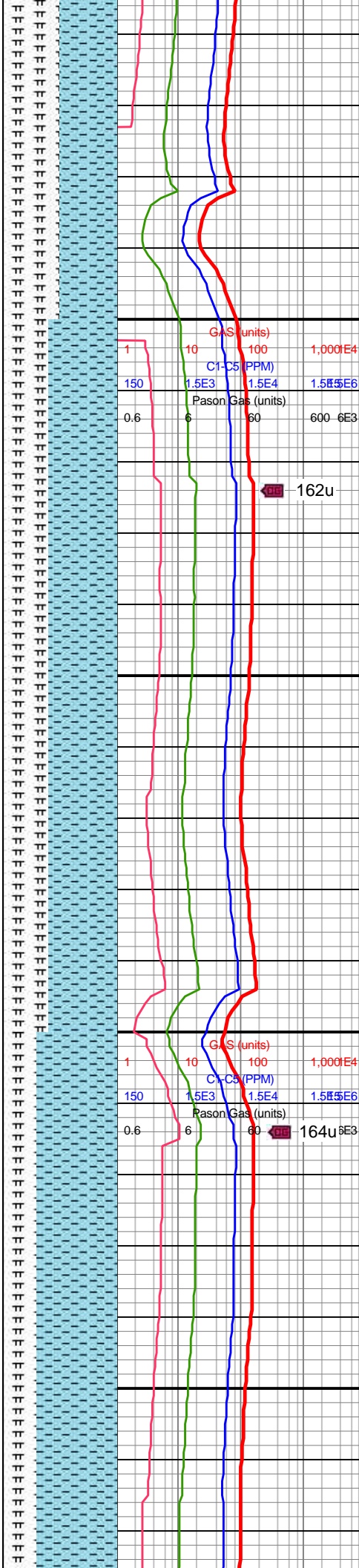
MD: 13,359'
INC: 88.9°
AZM: 0.72°
TVD: 7,316.55'
VS: 5,574.18'

WOB: 40.1klbs
RPM: 60
SPM: 204
SPP: 4,949psi

MD: 13,448'
INC: 89.43°
AZM: 0.72°
TVD: 7,317.84'
VS: 5,660.51'

MW IN: 10.7
VIS IN: 49
MW OUT: 10.7
VIS OUT: 47

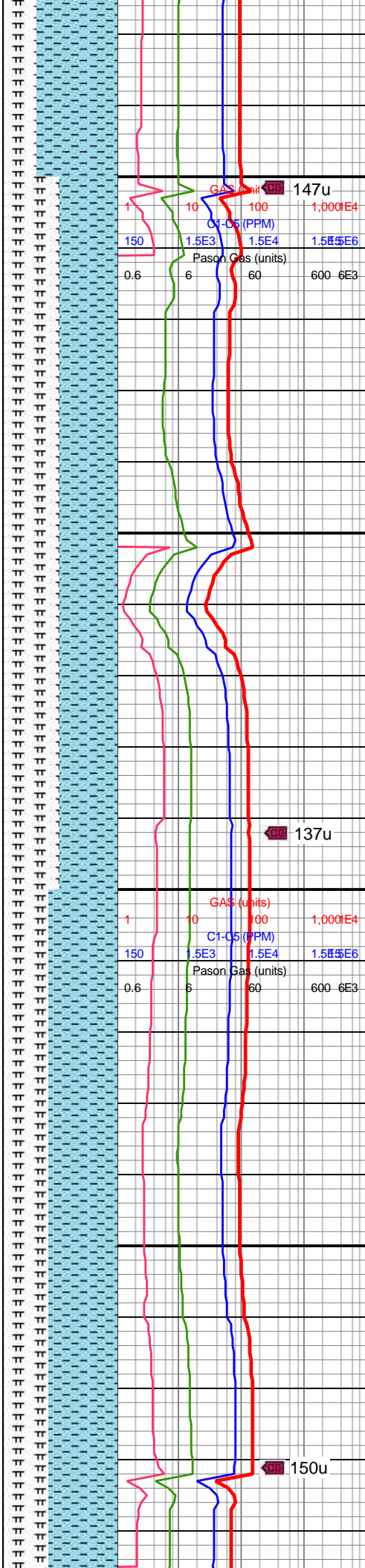
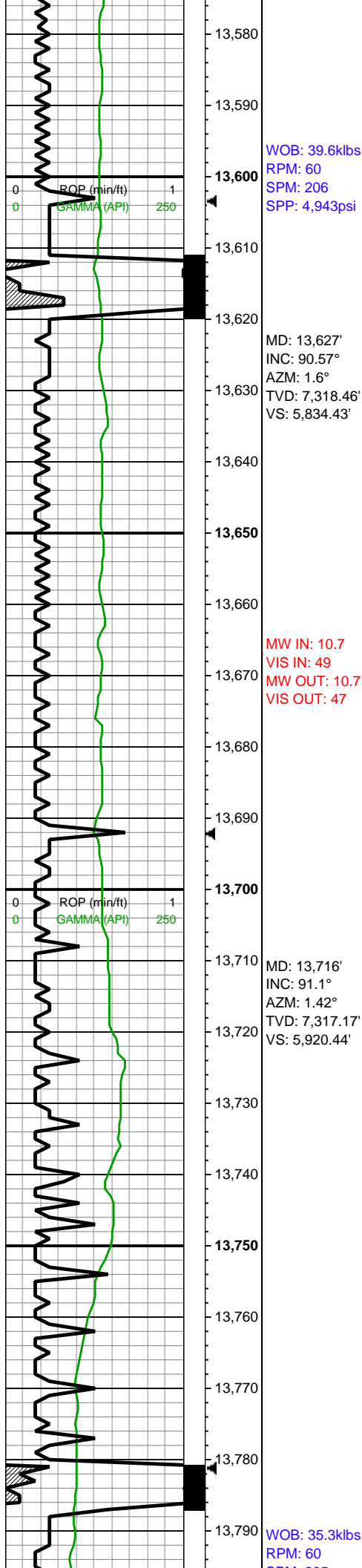
MD: 13,537'
INC: 89.6°
AZM: 359.49°
TVD: 7,318.6'
VS: 5,747.06'



13300-13400 MRLST
(50%): med gy-dk gy ip,
occ wht chk incl, sme
chky lamn, frm-hrd, sb
blky-sb ang, silc-arg cmt,
w cmted, sl calc wi brn
resdl; CHK (50%): predy
lt-med gy, lt gyshbn, com
wht chk incl, vf-f xln,
fri-frm, sb blky-blky
rthy-chky tex, hi calc, sme
pp pyr; rr bent

13400-13500 CHK
(60%): predy lt-med gy, lt
gyshbn, com wht chk incl,
vf-f xln, fri-frm, sb
blky-blky rthy-chky tex, hi
calc, sme pp pyr; MRLST
(40%): med gy-dk gy ip,
occ wht chk incl, sme
chky lamn, frm-hrd, sb
blky-sb ang, silc-arg cmt,
w cmted, sl calc wi brn
resdl, rr bent

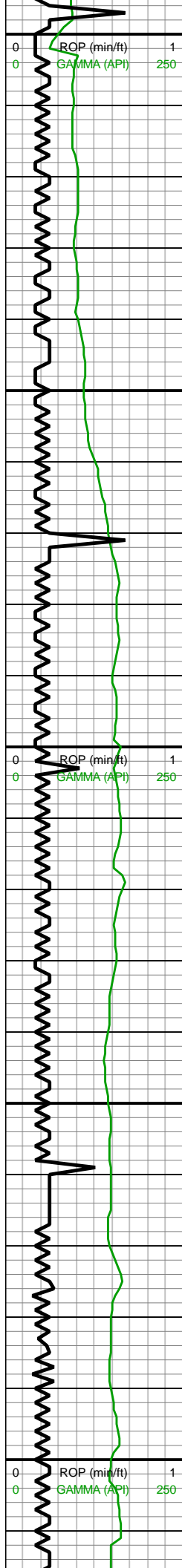
13500-13600 CHK
(70%): predy lt-med gy, lt
gyshbn, sb frm-frm-occ fri
ip, sb blky-blky, sl fis
ctngs wi sm arg-sl slty
tex, hi calc, occ fos frags;



MRLST (30%): med gy-dk
gy ip, occ wht chk incl, tr
chky lamn, frm-v frm, occ
hd ip, sb blkly-sb ang,
silc-arg cmt, w cmted,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ free
chk

13600-13700 CHK
(50%): predy lt-med gy, lt
gyshbn, sb frm-frm, sb
blkly-blky, sl fis ctngs wi
sm arg-sl slty tex, hi calc,
occ fos frags; MRLST
(50%): med gy-dk gy ip,
occ wht chk incl, tr chky
lamn, frm-v frm, occ hd
ip, sb blkly-sb ang,
silc-arg cmt, w cmted,
sme scat f pp pyr thru, sl
calc wt brn resdl, tr free
chk, rr f-c free pyr

13700-13800 CHK
(60%): predy lt-med gy, lt
gyshbn arg LS wi thn
chky lamn, sb frm-frm, sb
blkly-blky, sl fis ctngs wi
sm arg-sl slty tex, hi calc,
occ fos frags; MRLST
(40%): med gy-dk gy ip,
occ wht chk incl, tr chky
lamn, frm-v frm, occ hd
ip, sb blkly-sb ang,
silc-arg cmt, w cmted,
sme scat f pp pyr thru, sl
calc wt brn resdl, tr free



SPM: 205
SPP: 4,823psi

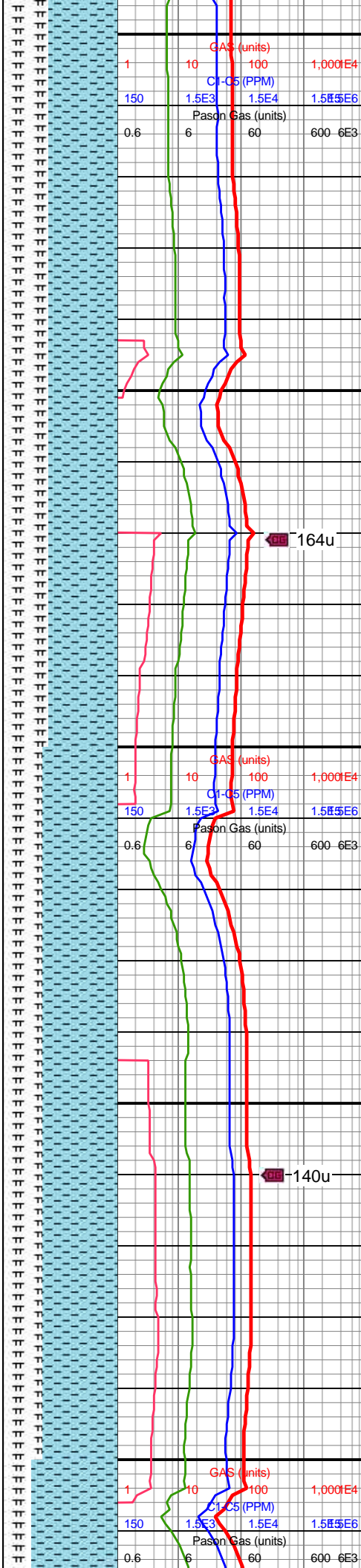
MD: 13,805'
INC: 89.87°
AZM: 1.42°
TVD: 7,316.41'
VS: 6,006.5'

MD: 13,894'
INC: 90.04°
AZM: 1.25°
TVD: 7,316.48'
VS: 6,092.6'

MW IN: 10.7
VIS IN: 49
MW OUT: 10.7
VIS OUT: 47

MD: 13,983'
INC: 90.13°
AZM: 0.72°
TVD: 7,316.35'
VS: 6,178.83'

WOB: 41.6klbs
RPM: 61
SPM: 204
SPP: 4,974psi

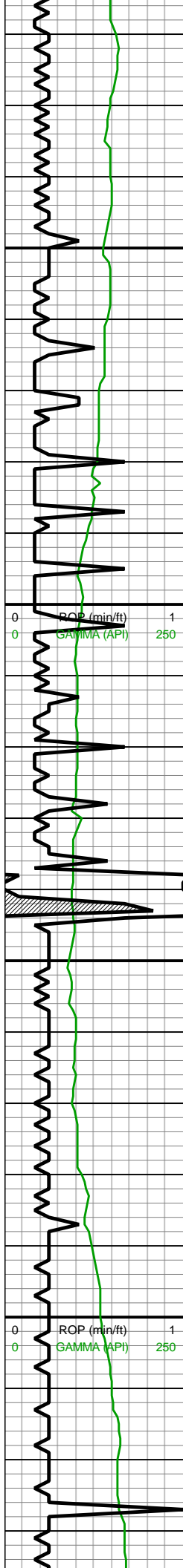


calc wt brn resdl, tr free
chk, rr f free pyr

13800-13900 CHK
(60%): predy lt-med gy, lt
gyshbn arg LS wi thn
chky lamn, sb frm-frm, sb
blky-blky, sl fis ctngs wi
sm arg-sl slty tex, hi calc,
sme scat wht chky foram,
occ fos frags; MRLST
(40%): med gy-dk gy ip,
occ wht chk incl, tr chky
lamn, frm-v frm, occ hd
ip, sb blky-sb ang,
silc-arg cmt, w cmtld,
sme scat f pp pyr thru, sl
calc wt brn resdl, tr free
chk, tr tn bent

13900-14000 CHK
(65%): predy lt-med gy,
sb frm-frm, sb blky-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram, tr
fos frags; MRLST (35%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
frm-v frm, occ hd ip, sb
blky-sb ang, silc-arg cmt,
w cmtld, sme scat f pp pyr
thru, sl calc wt brn resdl,
tr free chk, tr tn bent





14,020
14,030
14,040
14,050
14,060
14,070
14,080
14,090
14,100
14,110
14,120
14,130
14,140
14,150
14,160
14,170
14,180
14,190
14,200
14,210
14,220
14,230

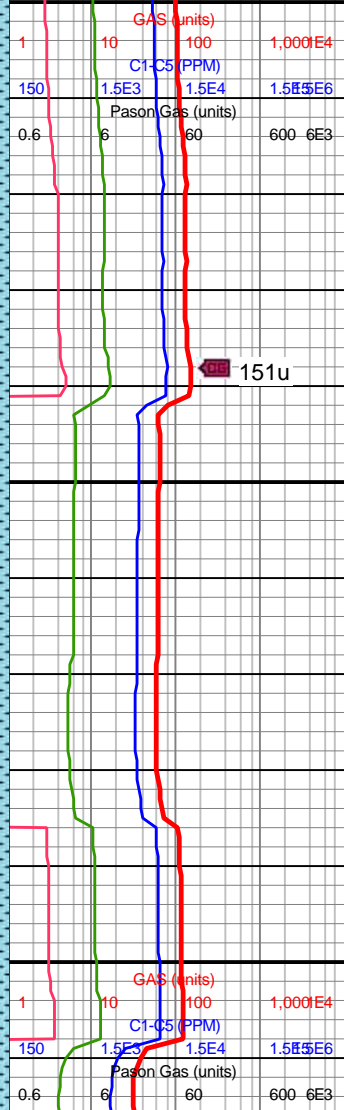
MD: 14,073'
INC: 90.75°
AZM: 0.72°
TVD: 7,315.66'
VS: 6,266.13'

MW IN: 10.7
VIS IN: 49
MW OUT: 10.7
VIS OUT: 47

MD: 14,162'
INC: 89.52°
AZM: 1.42°
TVD: 7,315.45'
VS: 6,352.33'

WOB: 26.4klbs
RPM: 60
SPM: 204
SPP: 4,531psi

MW IN: 10.7
VIS IN: 49
MW OUT: 10.7
VIS OUT: 47



14000-14100 CHK
(75%): predy lt-med gy,
sb frm-frm, sb blkyl-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram, occ
fos frags; MRLST (25%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
frm-v frm, occ hd ip, sb
blkyl-sb ang, silc-arg cmt,
w cmt, sme scat f pp pyr
thru, sl calc wt brn resdl,
tr free chk, tr tn bent

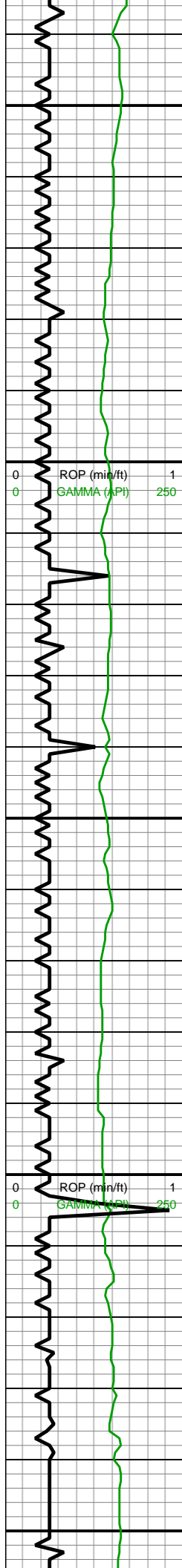
14100-14200 CHK
(60%): predy lt-med gy,
sb frm-frm, sb blkyl-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram;
MRLST (40%): med gy-dk
gy ip, occ wht chk incl, tr
chky lamn, frm-v frm, occ
hd ip, sb blkyl-sb ang,
silc-arg cmt, w cmt,
sme scat f pp pyr thru, sl
calc wt brn resdl, rr free
chk, occ f-c free pyr



144u

151u

127u



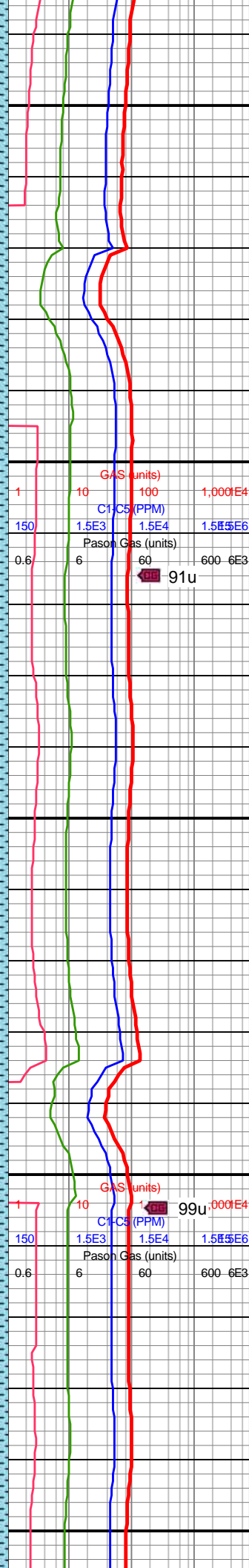
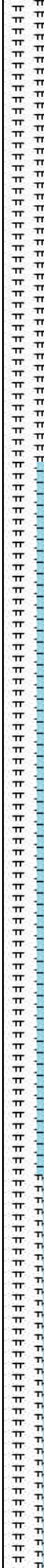
14,240
14,250
14,260
14,270
14,280
14,290
14,300
14,310
14,320
14,330
14,340
14,350
14,360
14,370
14,380
14,390
14,400
14,410
14,420
14,430
14,440
14,450

MD: 14,340'
INC: 90.22°
AZM: 1.6°
TVD: 7,316.27'
VS: 6,524.82'

WOB: 38.8klbs
RPM: 60
SPM: 204
SPP: 4,121psi

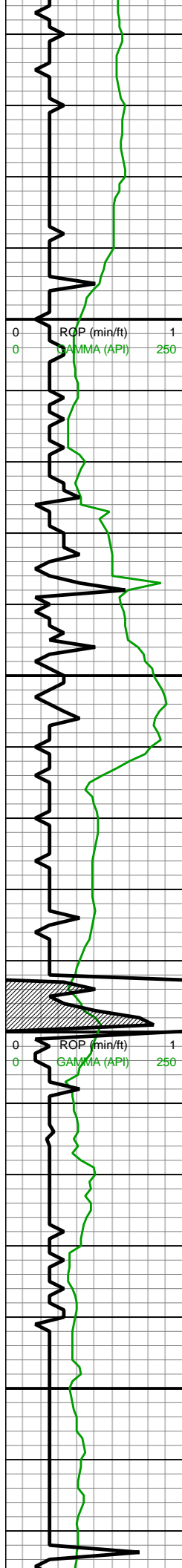
MW IN: 10.7
VIS IN: 48
MW OUT: 10.7
VIS OUT: 47

MD: 14,429'
INC: 90.13°
AZM: 0.9°
TVD: 7,316'
VS: 6,610.95'



14200-14300 CHK
(55%): predy lt-med gy,
sb frm-frm, sb blkyl-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram;
MRLST (45%): med gy-dk
gy ip, occ wht chk incl, tr
chky lamn, frm-v frm, occ
hd ip, sb blkyl-sb ang,
silc-arg cmt, w cmt, d,
sme scat f pp pyr thru, sl
calc wt brn resdl, rr free
chk, occ f-c free pyr

14300-14400 CHK
(70%): predy lt-med gy,
sb frm-frm, sb blkyl-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram;
MRLST (30%): med gy-dk
gy ip, occ wht chk incl, tr
chky lamn, frm-v frm, occ
hd ip, sb blkyl-sb ang,
silc-arg cmt, w cmt, d,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ f-c
free pyr, tr bent



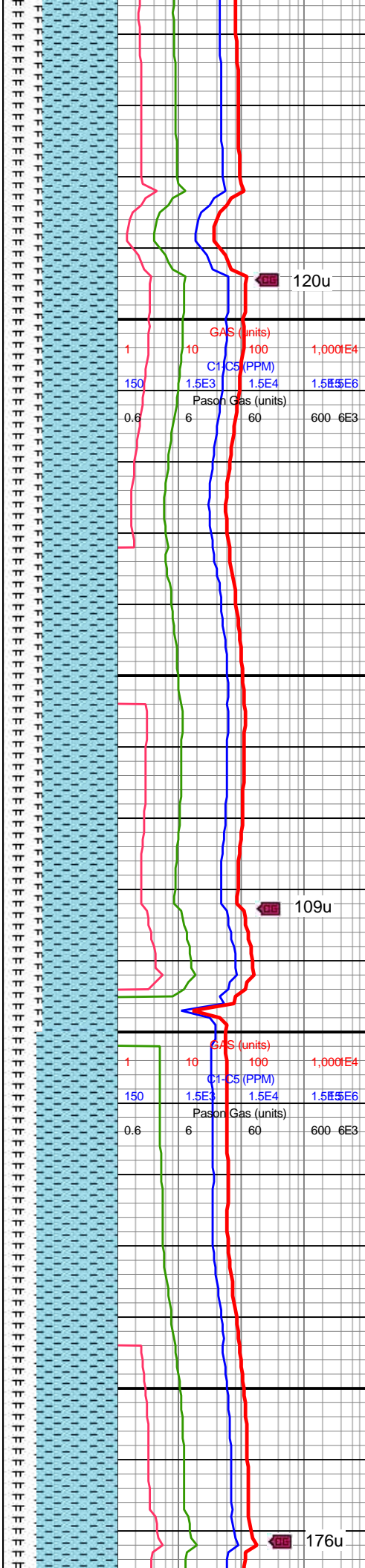
14,460
14,470
14,480
14,490
14,500
14,510
14,520
14,530
14,540
14,550
14,560
14,570
14,580
14,590
14,600
14,610
14,620
14,630
14,640
14,650
14,660
14,670

MD: 14,518'
INC: 90.66°
AZM: 359.67°
TVD: 7,315.39'
VS: 6,697.44'

WOB: 40klbs
RPM: 34
SPM: 204
SPP: 3,980psi

MD: 14,607'
INC: 91.19°
AZM: 0.37°
TVD: 7,313.95'
VS: 6,784.02'

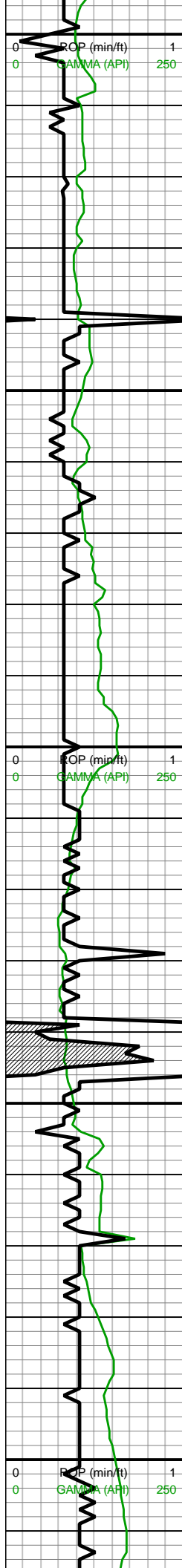
MW IN: 10.7
VIS IN: 48



14400-14500 CHK
(65%): predy lt-med gy,
sb frm-frm, sb blkly-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram;
MRLST (35%): med gy-dk
gy ip, occ wht chk incl, tr
chky lamn, frm-v frm, occ
hd ip, sb blkly-sb ang,
silc-arg cmt, w cmtld,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ f-c
free pyr, tr bent

14500-14600 CHK
(65%): predy lt-med gy,
sb frm-frm, sb blkly-blky,
mod fis ctngs wi sm
arg-sl slty tex, hi calc, tr
scat wht chky foram;
MRLST (35%): med gy-dk
gy ip, occ wht chk incl, tr
chky lamn, frm-v frm, occ
hd ip, sb blkly-sb ang,
silc-arg cmt, w cmtld,
sme scat f pp pyr thru, sl
calc wt brn resdl, occ f-c
free pyr, tr bent

14600-14700 CHK
(70%): predy lt-med gy wt
chk incl, sb frm-frm, sb



14,900
14,910
14,920
14,930
14,940
14,950
14,960
14,970
14,980
14,990
15,000
15,010
15,020
15,030
15,040
15,050
15,060
15,070
15,080
15,090
15,100
15,110

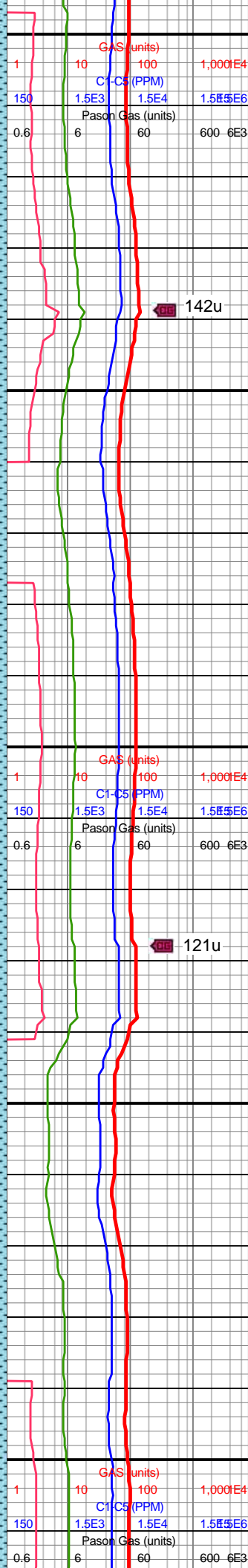
MD: 14,964'
INC: 90.66°
AZM: 1.42°
TVD: 7,308.88'
VS: 7,129.33'

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

WOB: 34klbs
RPM: 60
SPM: 204
SPP: 4,815psi

MW IN: 10.4
VIS IN: 46
MW OUT: 10.4
VIS OUT: 44

MD: 15,053'
INC: 89.69°
AZM: 0.02°
TVD: 7,308.61'
VS: 7,215.66'

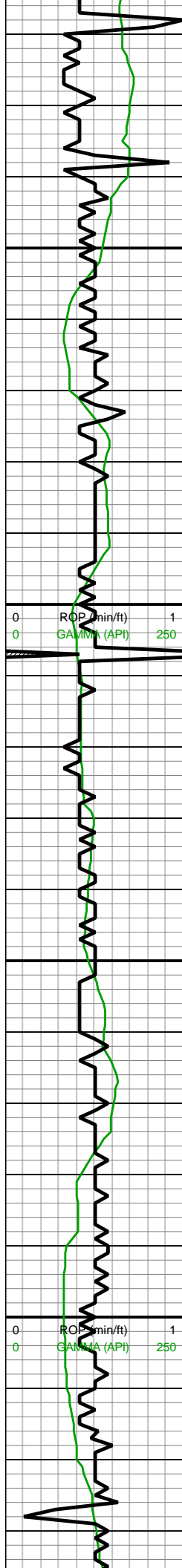


silc-arg cmt, w cmta, sl
calc wt brn resdl, tr bent

14900-15000 CHK
(70%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, v tr scat wht chky
foram; MRLST (30%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmta, sl
calc wt brn resdl

15000-15100 CHK
(80%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, v tr scat wht chky
foram; MRLST (20%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmta, sl
calc wt brn resdl





MD: 15,142'
INC: 90.31°
AZM: 0.02°
TVD: 7,308.61'
VS: 7,302.25'

WOB: 33klbs
RPM: 60
SPM: 203
SPP: 5,080psi

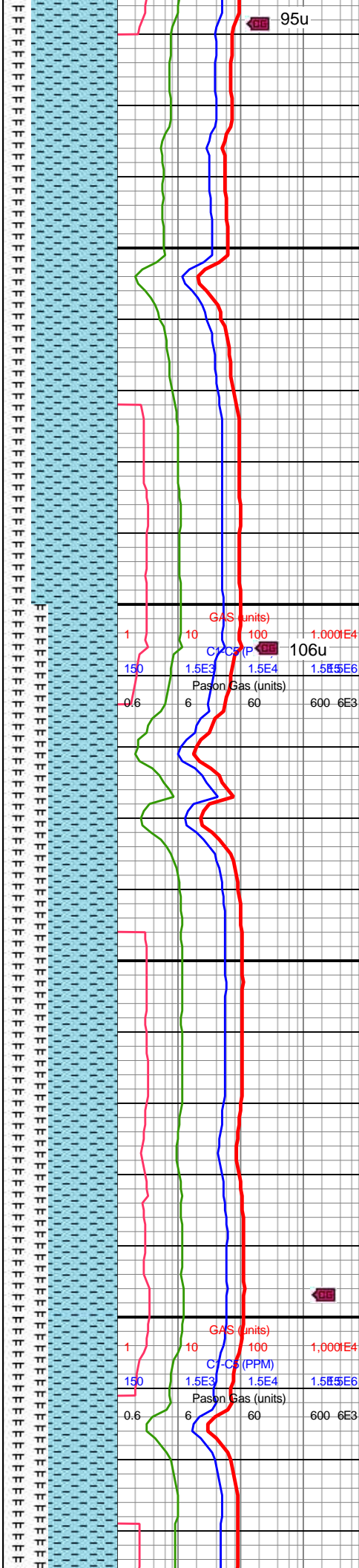
MD: 15,231'
INC: 91.28°
AZM: 359.84°
TVD: 7,307.37'
VS: 7,388.86'

MW IN: 10.7
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

MD: 15,320'
INC: 92.07°
AZM: 359.84°
TVD: 7,304.77'
VS: 7,475.48'

MINDEPTH

09/15/2019
09/16/2019

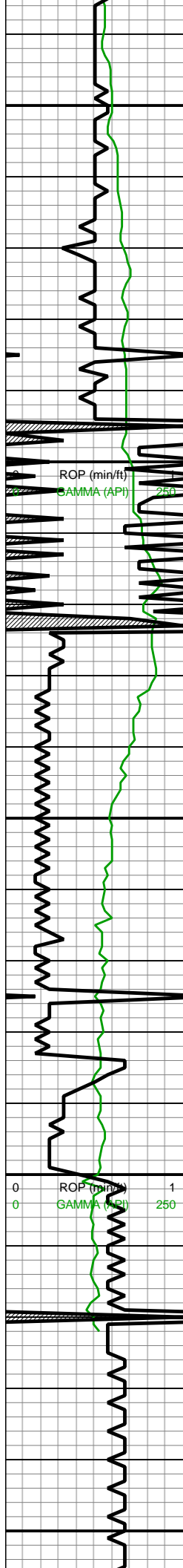


95u

106u

15100-15200 CHK
(75%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, v tr scat wht chky
foram; MRLST (25%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl

15200-15300 CHK
(60%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, tr scat wht chky
foram; MRLST (40%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl



MW IN: 10.4
VIS IN: 46
MW OUT: 10.7
VIS OUT: 44

WOB: 13klbs
RPM: 61
SPM: 203
SPP: 4,817psi

MD: 15,409'
INC: 92.42°
AZM: 0.37°
TVD: 7,301.28'
VS: 7,561.98'

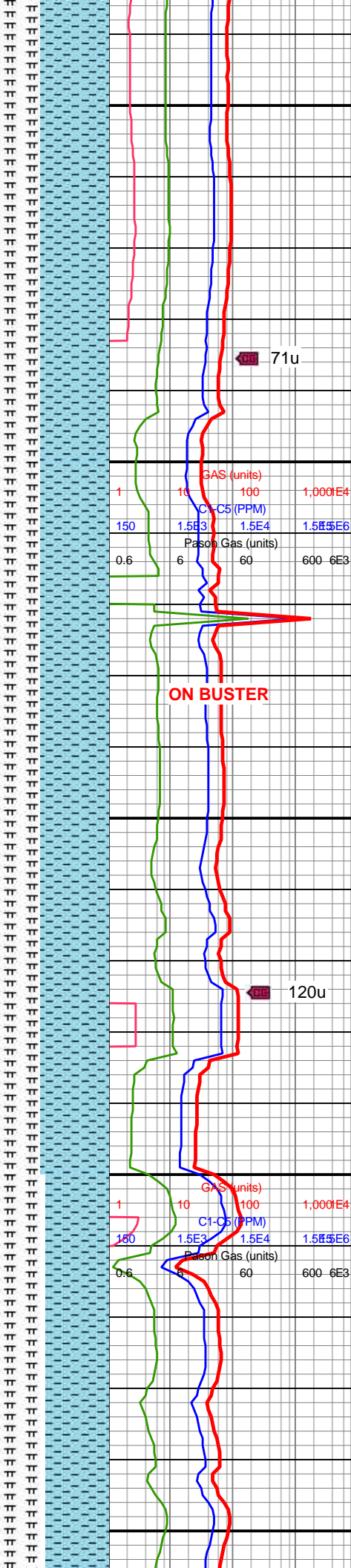
TOOH @ 02:17
on 09/15/2017
for BHA

ON BUSTER

Bit #: 3
Type: U516M
Size: 8.5
Depth In: 15,422'
Depth Out: 15,590'
Hours: 1.4 hrs
Avg Ft/Hr: 120 'h
Jets: 6X13
S/N: 49617

MD: 15,498'
INC: 92.07°
AZM: 359.84°
TVD: 7,297.8'
VS: 7,648.47'

MW IN: 10.7
VIS IN: 47
MW OUT: 10.7
VIS OUT: 46



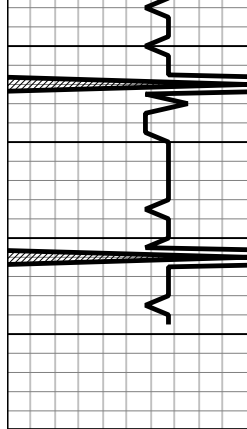
71u

ON BUSTER

120u

15300-15400 CHK
(60%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, tr scat wht chky
foram; MRLST (40%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl

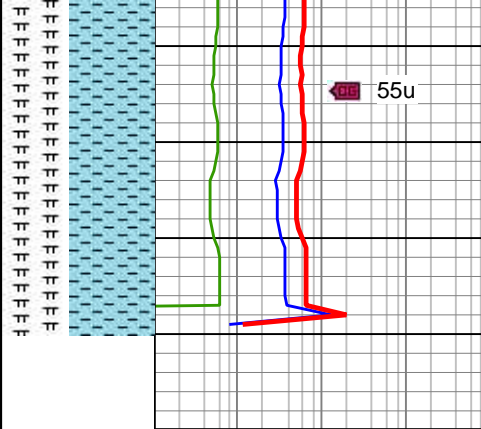
15400-15500 CHK
(60%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, tr scat wht chky
foram; MRLST (40%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmted, sl
calc wt brn resdl



***Bit projection"**

MD: 15,590'
INC: 91.71°
AZM: 359.84°
TVD: 7,294.97'
VS: 7,738'

**TD of 15590'MD
@ 04:20
on 09/16/2019**



15500-15590 CHK
(55%): predy lt-med gy wt
chk incl, sb frm-frm, sb
blky-blky, rthy-chky tex, hi
calc, tr scat wht chky
foram; MRLST (45%):
med gy-dk gy ip, occ wht
chk incl, tr chky lamn,
fri-frm, sb blky-sb ang,
silc-arg cmt, w cmted, tr pp
pyr, sl calc wt brn resdl