



RESERVOIR GROUP

Scale: 5" / 100'
Measured Depth Log

Well Name Cosslett 1J-22H-B168

Location Sec. 22 T1N R68W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05123476720000

AFE # 16191465

Geographic Region Rockies

Field Wattenberg

Spud Date 12/3/2018

Drilling Completed 12/8/2018

Surface Coordinates Lat/Long: 40.04139/-104.987762
SHL: Sec. 22 T1N R68W
Footage: 926 FNL 2160 FEL

Bottom Hole Coordinates Proposed BHL: Sec. 27 T1N R68W
Footages: 460 FFSLL 530 FFELL

Ground Elevation 5,173'

K.B. Elevation 5,196'

Logged Interval 7,000' **To** 17,665'

Total Depth 17,665'

Formation 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

CRESTONE PEAK RESOURCES

Geologist

Name John Ready

Company Crestone Peak Resources

Address 1801 California Street, Suite 2500
Denver, CO 80202



CRESTONE PEAK

RESOURCES

Zone Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

Other

Loggers: Nicholas Watkins / Brian Ferwerda

Services Provided: 2-Man Mudlogging / Geosteering

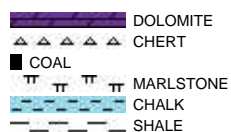
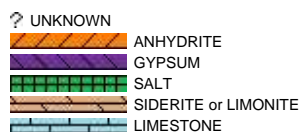
Equipment: ML-522

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

Service Start Date: 12/4/2018

Release Date: 12/10/2018

Rock Types



Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHIOIPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID
- FISH
- FORAMINIFERA

F FOSSIL

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

Minerals

- ANHYDRITIC

ARGILLACEOUS

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

GLAUCONITE

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

Stringer

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

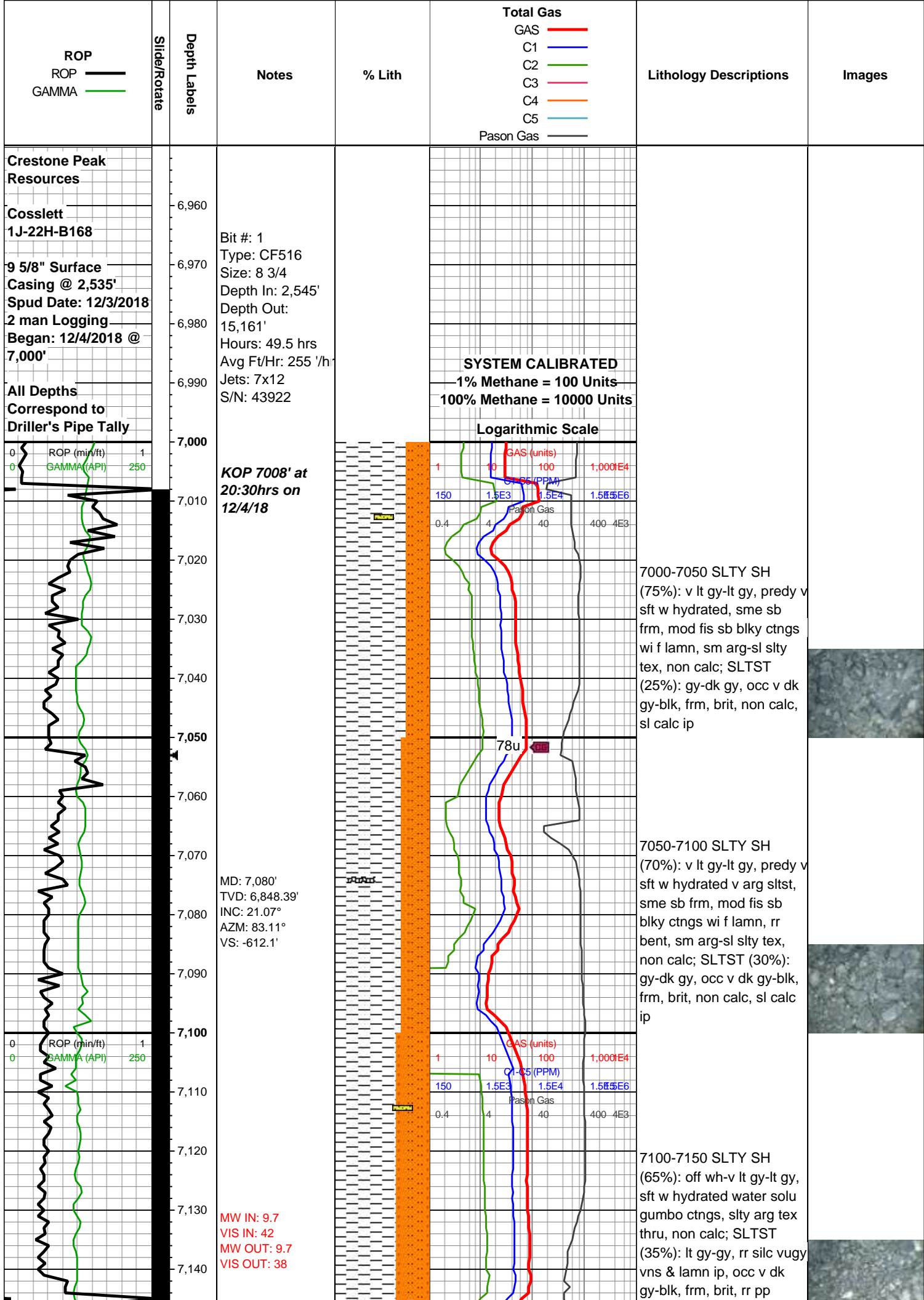
Textures

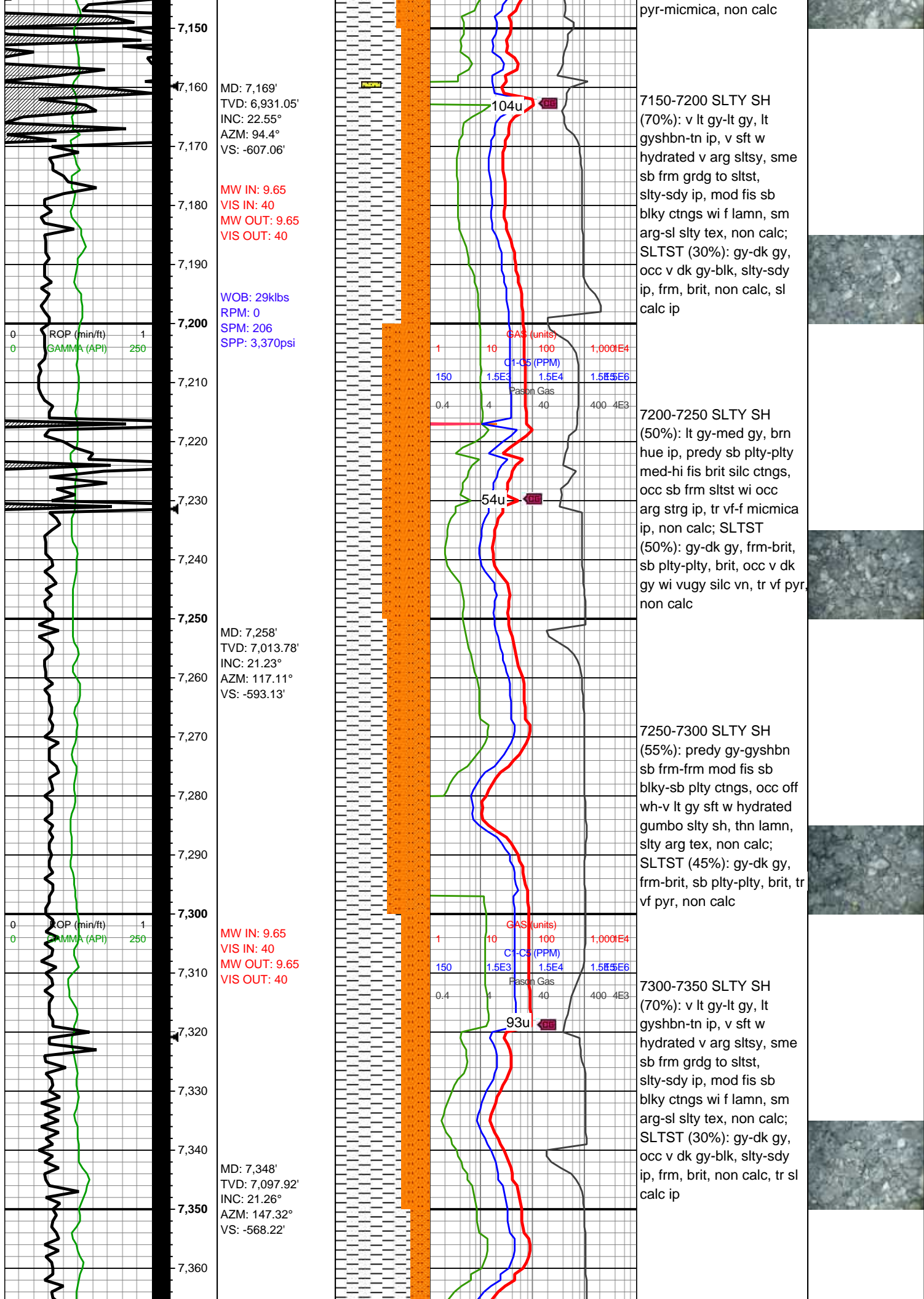
- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE

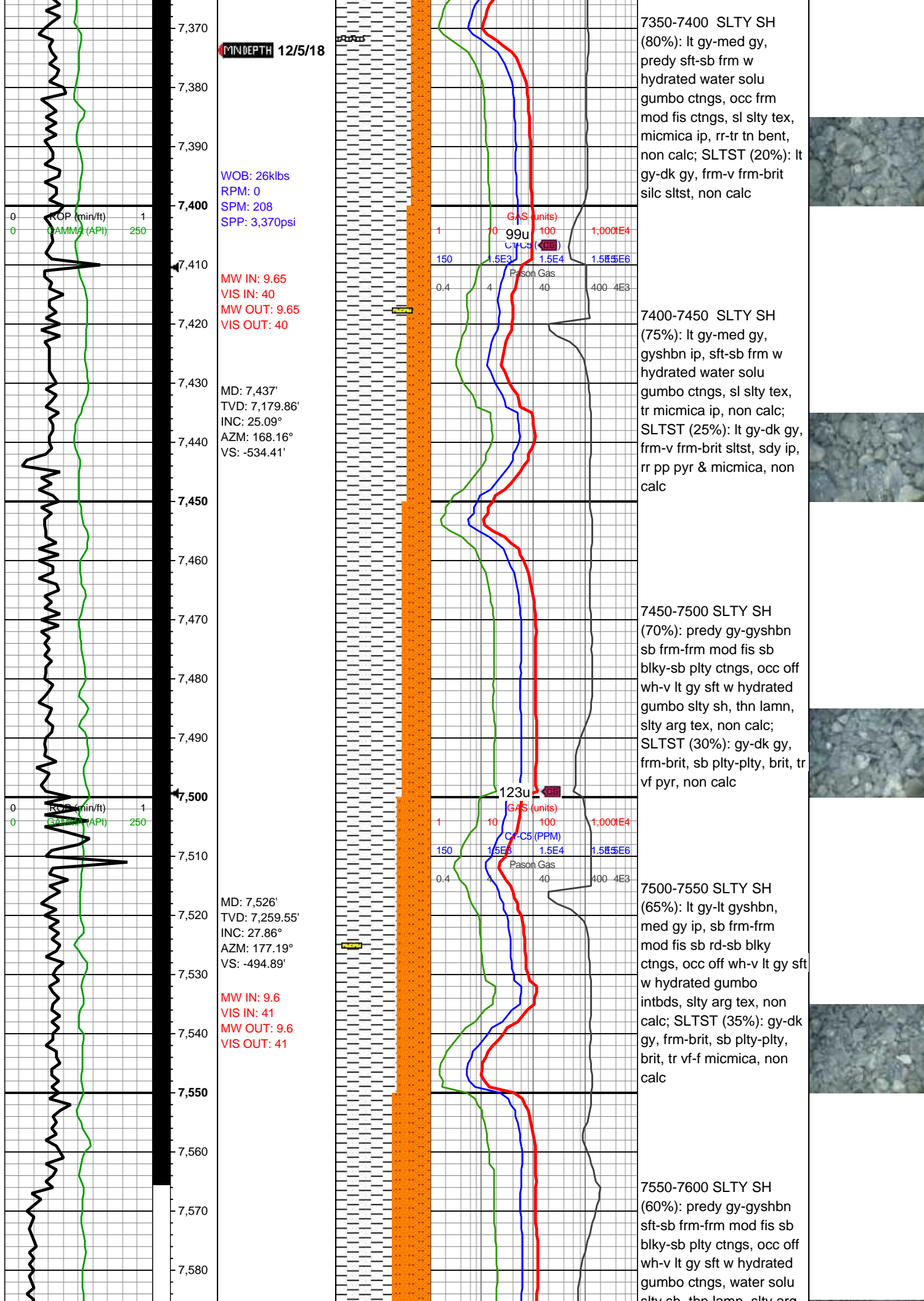
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

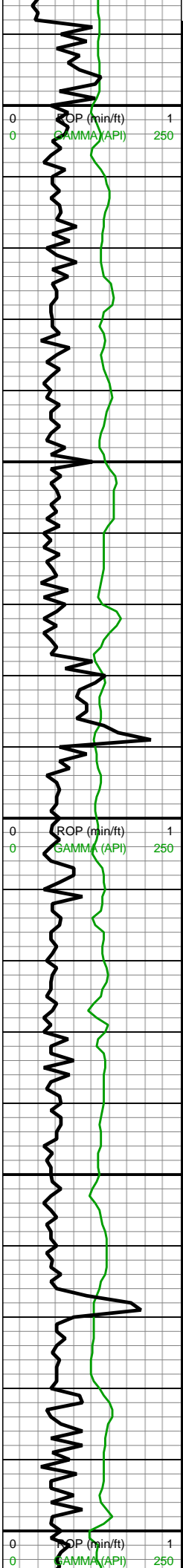
Sorting

- MODERATE
- POOR
- WELL









WOB: 43klbs
RPM: 0
SPM: 206
SPP: 3,280psi

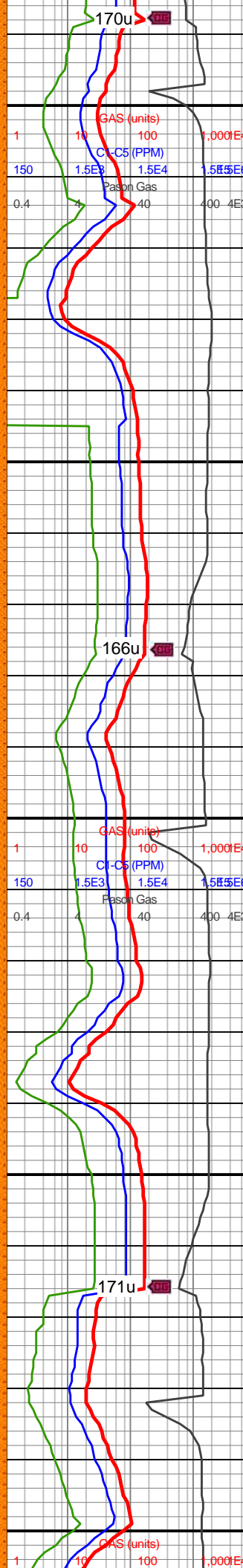
MD: 7,615'
TVD: 7,336.9'
INC: 31.47°
AZM: 169.79°
VS: -451'

MW IN: 9.6
VIS IN: 43
MW OUT: 9.6
VIS OUT: 42

MD: 7,704'
TVD: 7,411.19'
INC: 35.33°
AZM: 170.83°
VS: -402.01'

MD: 7,793'
TVD: 7,480.38'
INC: 42.47°
AZM: 172.42°
VS: -346.15'

WOB: 37klbs
RPM: 0



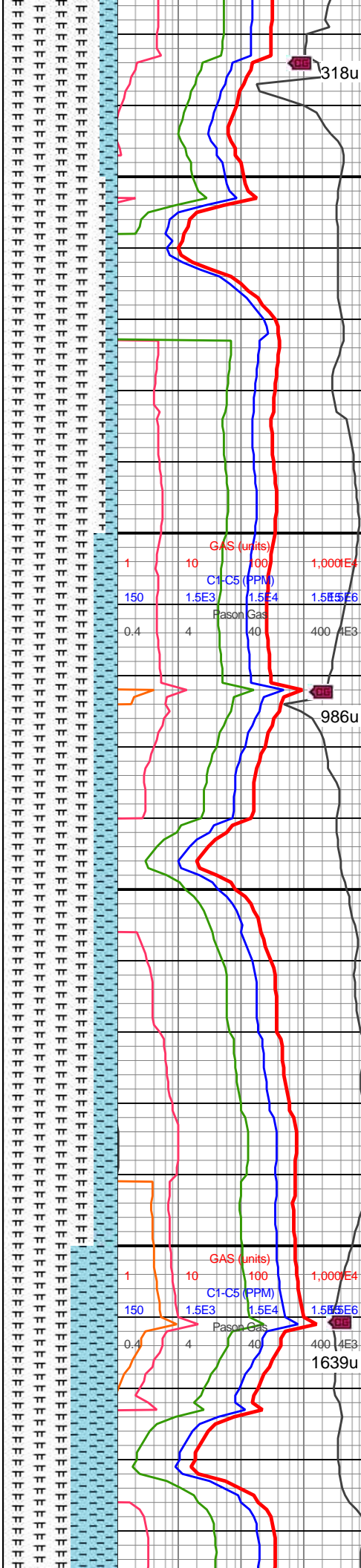
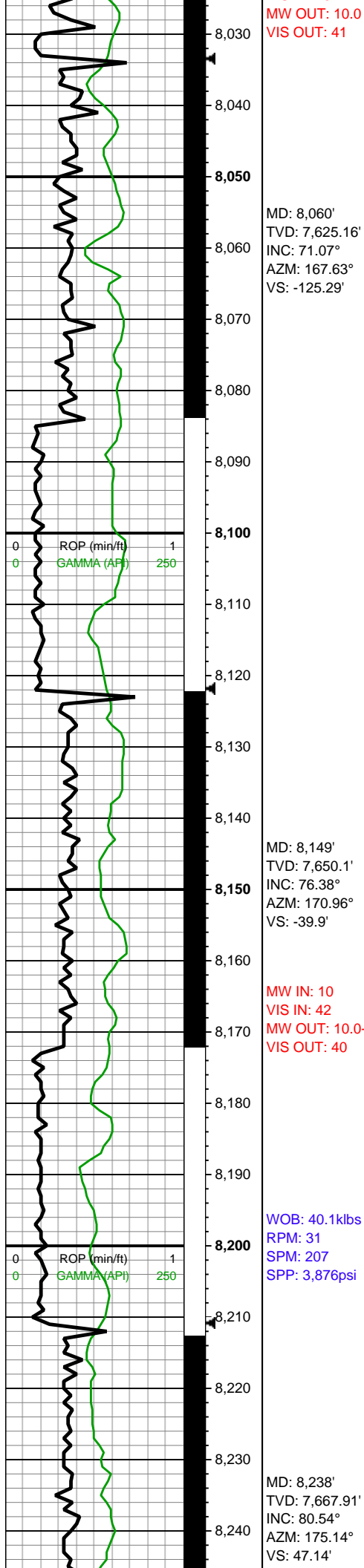
slty sh, thin lamn, slty arg
tex, non calc; SLTST
(40%): gy-dk gy, frm-brit,
sb plty-plty, brit, tr vf pyr,
non calc

7600-7650 SLTY SH
(55%): predy gy-gyshbn
sft-sb frm-frm mod fis sb
blky-sb plty ctngs, occ off
wh-v lt gy sft w hydrated
gumbo ctngs, water solu
slty sh, thn lamn, slty arg
tex, non calc; SLTST
(45%): gy-dk gy, frm-brit,
sb plty-plty, brit, tr vf pyr,
non calc

7650-7700 SLTY SH
(50%): lt gy-med gy, brn
hue ip, predy sb plty-plty
med-hi fis brit silc ctngs,
occ sb frm sltst wi occ
arg strg ip, tr vf-f micmica
ip, non calc; SLTST
(50%): gy-dk gy, frm-brit,
sb plty-plty, brit, occ v dk
gy wi vugy silc vn, tr vf pyr,
non calc

7700-7750 SLTST (60%):
predy gy-gyshbn, rr dk gy,
frm-brit, sb frm arg sltst
ip, sb plty-plty, brit, tr
micmica, non calc; SLTY
SH (40%): predy
gy-gyshbn sb frm-frm
mod fis sb blky-sb plty
ctngs, occ off wh-v lt gy sft
w hydrated gumbo slty
sh, thn lamn, slty arg tex,
non calc

7750-7800 SLTST (65%):
predy gy-gyshbn, rr dk gy,
frm-brit, sb frm arg sltst
ip, sb plty-plty, tr micmica,
non calc; SLTY SH
(35%): predy gy-gyshbn
sb frm-frm mod fis sb
blky-sb plty ctngs, occ off
wh-v lt gy sft w hydrated
gumbo slty sh, thn lamn,
slty arg tex, non calc



(85%): v dk gy-dk gyshbn
ip, frm-v frm, blk, v calc,
rgh tex, mot-stri, sme fy
lam, tr pp pyr; CHK
(15%): dk gy-brn, com lt
gy-mot, blk, sft, fri, chky
tex, occ stri

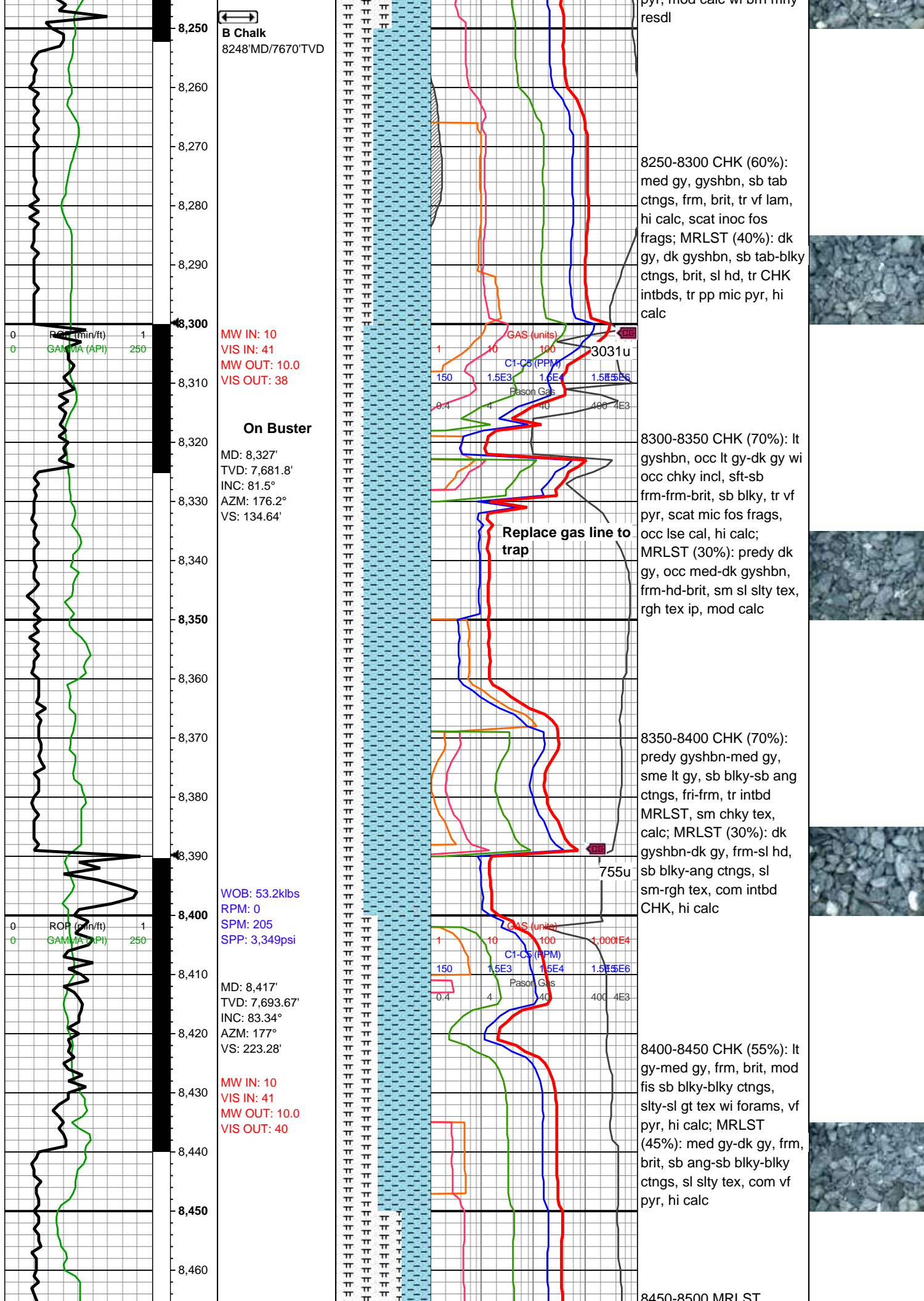
8050-8100 MRLST
(90%): dk gy-dk gyshbn,
sl hd-v frm, mod fis, sb
blk-tab ctngs, sm arg
tex, mod calc, tr pp mic
pyr; CHK (10%): med
brn-gyshbn, frm-sft, mod
fis, tab-sb blk, tr free
CHK, v calc

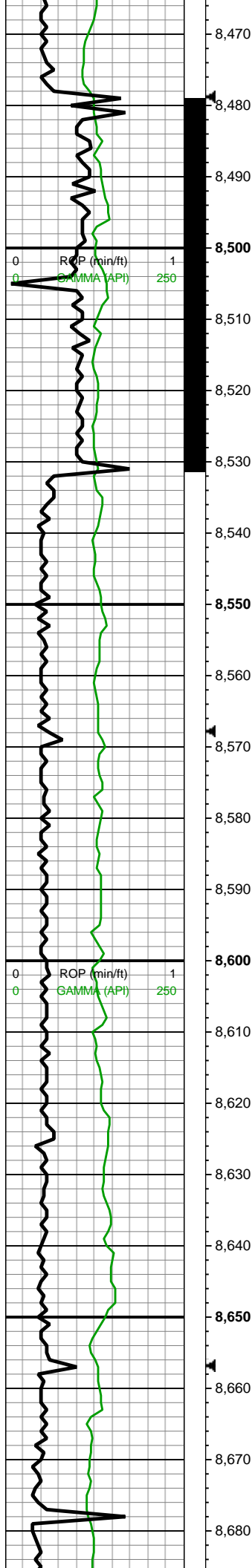
8100-8150 MRLST (80%)
med-pred dk gry,sl
brit-hrd, v plty-plty, occ
micmica wi sme pp-tr
pyr, rr chk lam; CHK
(20%): pred lt gy-lt brn,
sme med gy-brn, rr lam,
frm, sl sft ip, sb blk wi
sme sl sb ang & rr plty, v
calc, tr pp pyr

8150-8200 MRLST
(80%): dk gy, frm-hd, brit,
mod fis sb ang-sb blk
ctngs, sm arg-sl slty tex,
tr vf pyr, tr bent, mod calc;
CHK (20%): med gy, rr
f-elong wh chky incl,
frm-brit, mod fis sb
blk-bkly ctngs, hi calc

8200-8250 CHK (60%): lt
gy-med gy, frm, brit, mod
fis sb blk-bkly ctngs,
slty-sl gt tex wi forams, vf
pyr, hi calc; MRLST
(40%): med gy-dk gy, frm,
brit, sb ang-sb blk-bkly
ctngs, sl slty tex, com vf
pyr, mod calc wi brn mrv







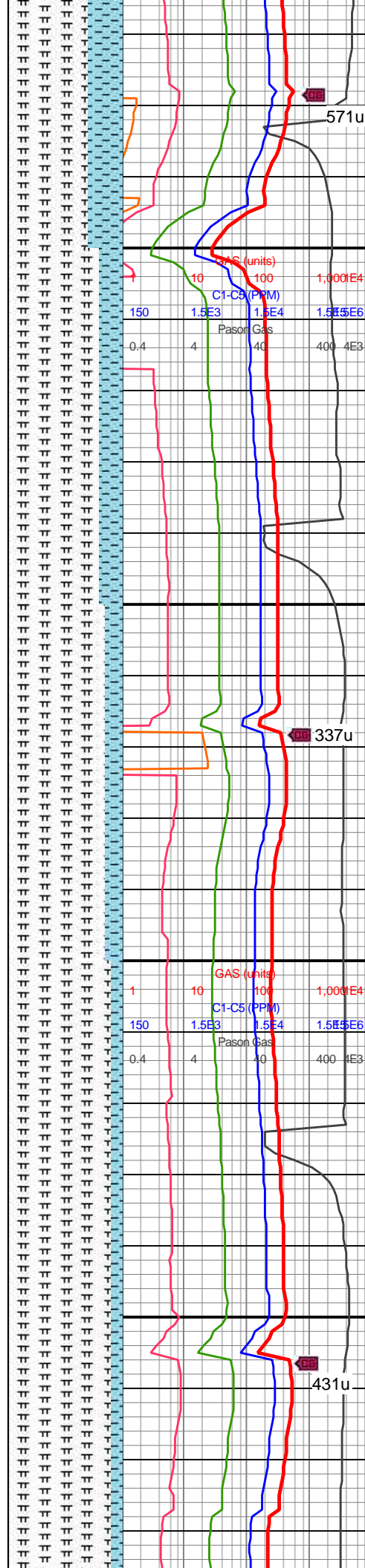
MD: 8,506'
TVD: 7,700.82'
INC: 87.45°
AZM: 181.67°
VS: 310.8'

MW IN: 10.0+
VIS IN: 42
MW OUT: 10.0+
VIS OUT: 39

MD: 8,595'
TVD: 7,703.72'
INC: 88.82°
AZM: 184.29°
VS: 397.52'

WOB: 39.5klbs
RPM: 31
SPM: 204
SPP: 3,828psi

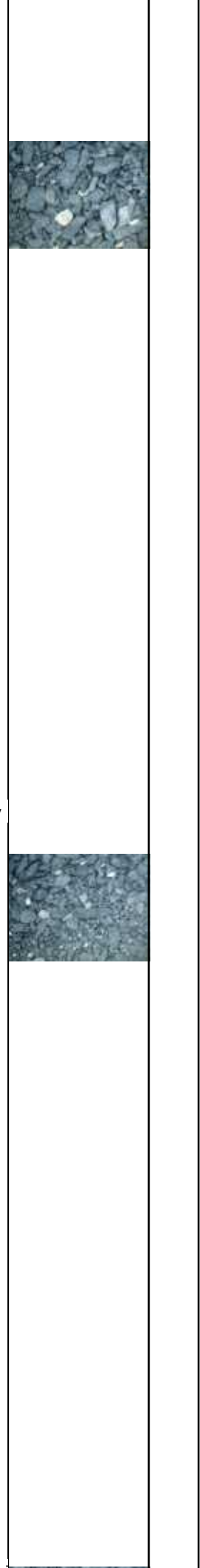
MD: 8,684'
TVD: 7,705.75'
INC: 88.57°

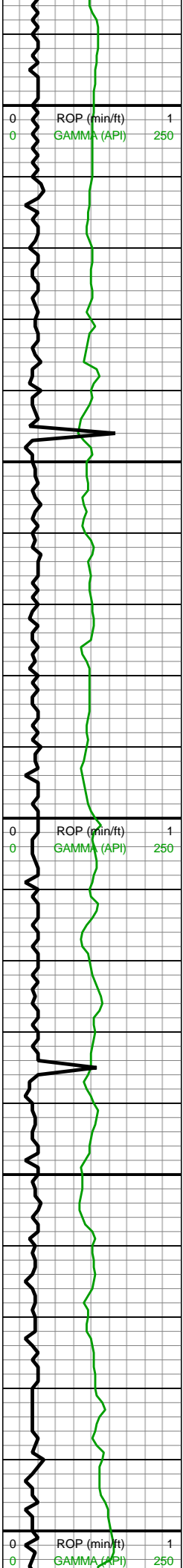


8400-8500 MRLST
(70%): med gy-gyshbn, sme dk gy, sb frm-frm-brit, sb rd-sb blkyl-mod fis ctngs, sm arg-sl slty tex, rr vf pyr, mod calc wi brn mrly resdl; CHK (30%): med gy, lt gy ip, frm, brit, mod fis sb blkyl-blky ctngs, hi calc

8500-8600 MRLST
(85%): med-v dk gry, predy blkyl wi com lamn, v brit-hrd, micmica, hily calc; CHK (15%) pred ltgy-occ gyshbn wi sme com lt thn chky lamn, sb blkyl-blky, v sft-sl frm, rgh tex wi rr-pp pyr, hily calc

8600-8700 MRLST
(90%): med gy-dk gy wi sp brn marl, frm-brit, sb frm ip, l-mod fis sb rd-sb blkyl ctngs, sm arg-sl slty





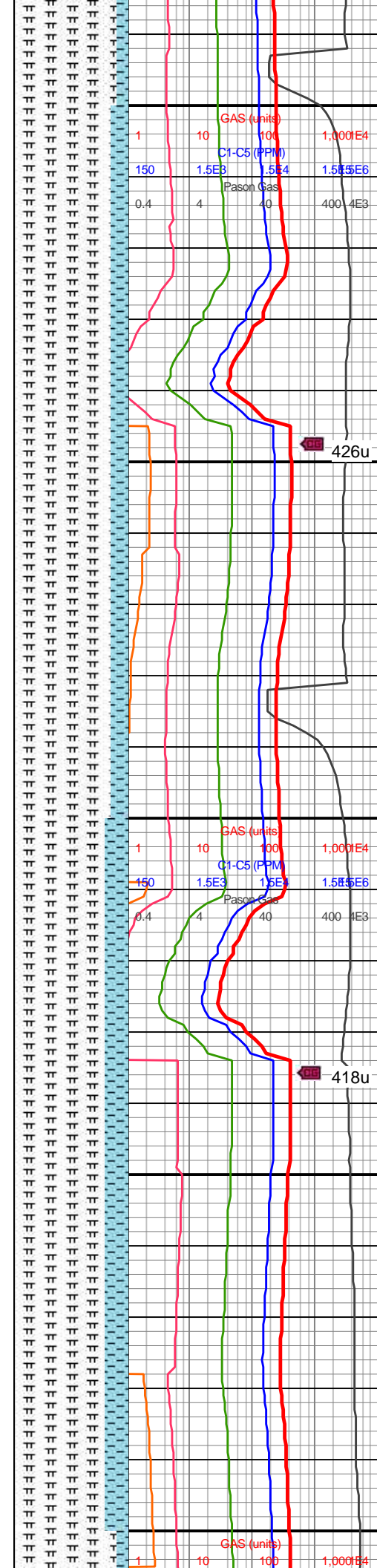
AZM: 183.67°
VS: 483.91'

MW IN: 9.8
VIS IN: 41
MW OUT: 10.0
VIS OUT: 38

MD: 8,773'
TVD: 7,707.94'
INC: 88.6°
AZM: 183.11°
VS: 570.51'

WOB: 42.9klbs
RPM: 60
SPM: 20
SPP: 8psi

MD: 8,862'
TVD: 7,710.35'
INC: 88.3°
AZM: 183°
VS: 657.22'

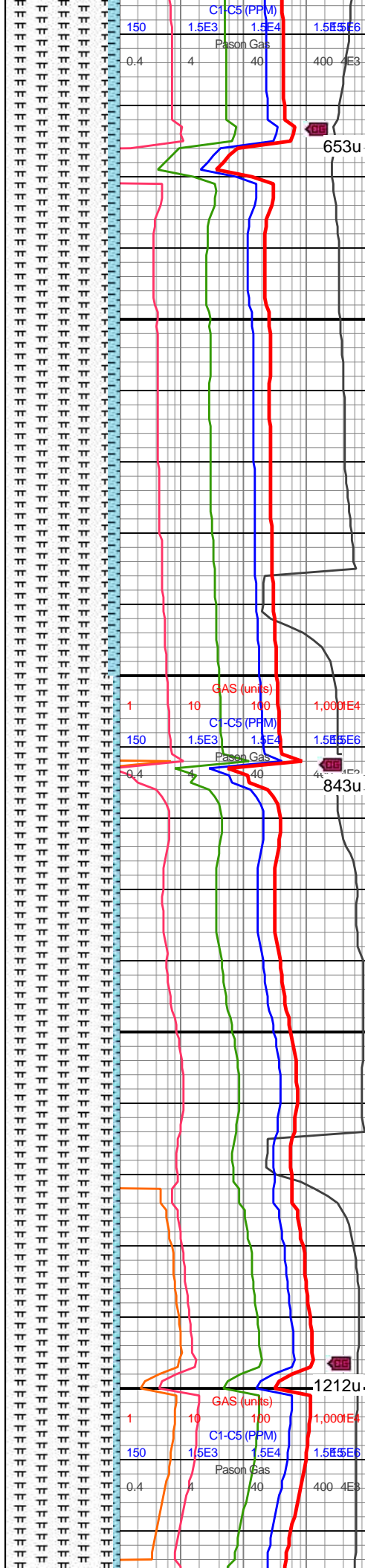
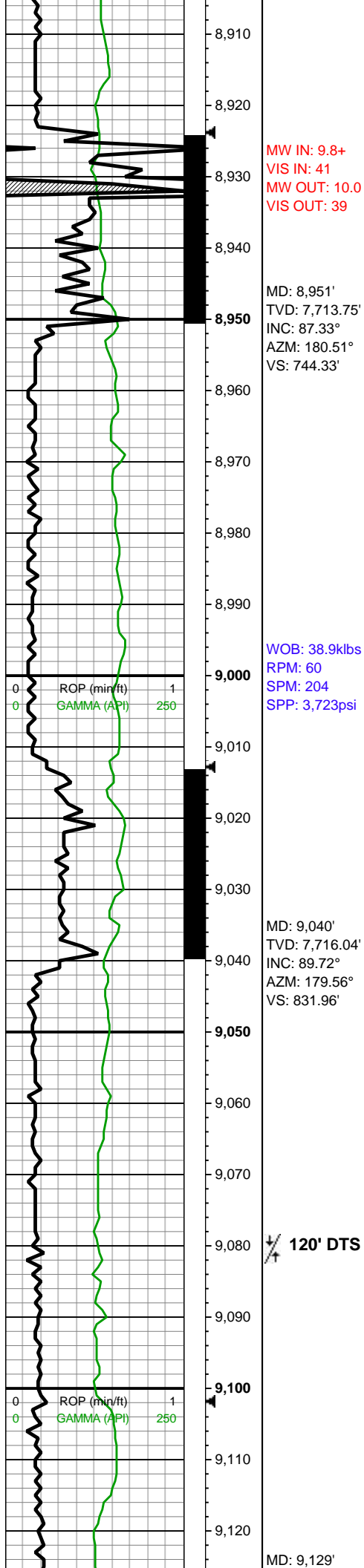


tex, tr vf pyr, rr-occ bent, hi
calc; CHK (10%): med gy,
lt gy ip, frm, brit, l-mod fis
sb rd-sb blkly-blky ctngs,
chky tex, hi calc

8700-8800 MRLST
(85%): dk gy-dk gyshbn,
sb frm-frm, med-hi fis sb
blkly-blky-tab ctngs, sm
arg-sl slty tex, rr-tr vf pyr,
mod calc; CHK (15%): dk
gy mot wi f wh chky incl,
sb frm-frm, brit, mod fis
sb blkly-blky ctngs, hi calc

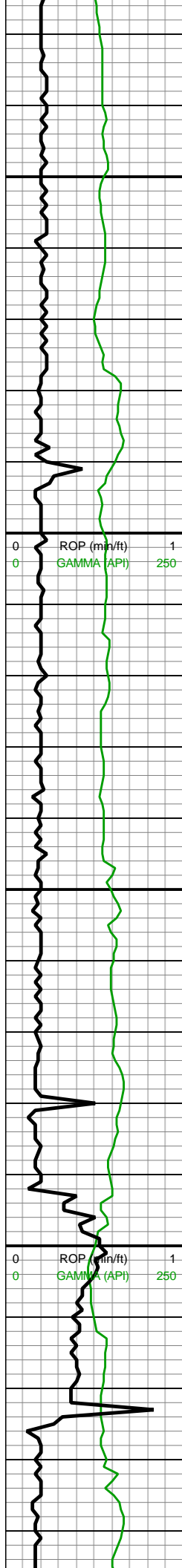
8800-8900 MRLST
(80%): dk gy-dk gyshbn,
sb frm-frm, med-hi fis sb
blkly-blky-tab ctngs, sm
arg-sl slty tex, rr-tr vf pyr,
hi calc; CHK (20%): med
gy-dk gy, sb frm-frm, brit,
l-mod fis sb rd-sb
blkly-blky ctngs wi occ
lamn, hi calc





8900-9000 MRLST
(90%): med gy-dk gy wi
sp brn marl, frm-brit, sb
frm ip, l-mod fis sb rd-sb
blky ctngs, sm arg-sl slty
tex, tr vf pyr, rr-occ bent,
mod calc wi brn mrly
resdl; CHK (10%): med
gy, lt gy ip, frm, brit, l-mod
fis sb rd-sb blky-blky
ctngs, hi calc

9000-9100 MRLST
(80%): med gy-dk gy wi
sp brn marl, frm-brit, sb
frm ip, l-mod fis sb rd-sb
blky ctngs, sm arg-sl slty
tex, tr vf pyr, rr-occ bent,
mod calc wi brn mrly
resdl; CHK (20%): med
gy, lt gy ip, frm, brit, l-mod
fis sb rd-sb blky-blky
ctngs, chky tex, hi calc



TVD: 7,716.54'
INC: 89.63°
AZM: 180.11°
VS: 919.69'

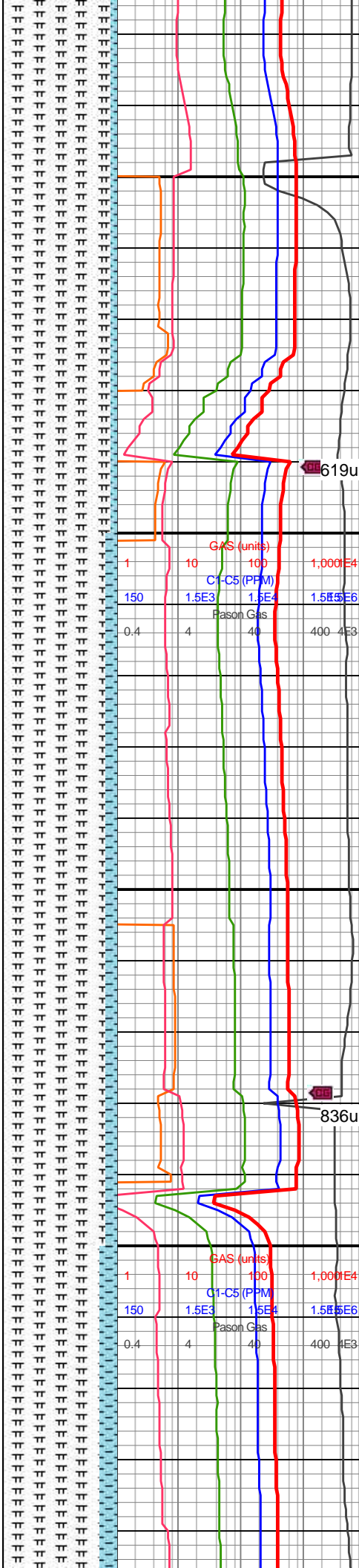
MW IN: 9.9
VIS IN: 41
MW OUT: 10.0
VIS OUT: 40

WOB: 43.4klbs
RPM: 60
SPM: 207
SPP: 3,868psi

MD: 9,218'
TVD: 7,717.34'
INC: 89.34°
AZM: 180.84°
VS: 1,007.24'

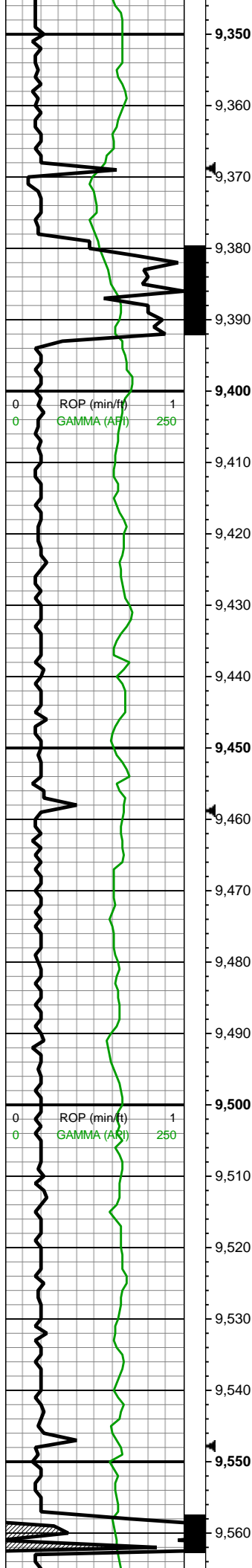
MW IN: 9.9+
VIS IN: 41
MW OUT: 10.0
VIS OUT: 39

MD: 9,307'
TVD: 7,718.68'
INC: 88.93°
AZM: 179.86°
VS: 1,094.81'



9100-9200 MRLST
(95%): med gy-dk gy,
mod fis sb frm-frm sb
blky ctngs, sm arg-sl slty
tex, tr vf pyr, mod calc;
CHK (5%): lt gy-med gy,
frm-brit, mod fis sb
blky-blky ctngs wi thn
chky lamn, hi calc

9200-9300 MRLST
(90%): gyshbn-dk gy-v dk
gy, brit mod fis ctngs, sb
blky-blky, sl slty tex, tr vf
pyr, mod calc; CHK
(10%): med gy-occ dk gy
mot wi f wh chky incl,
frm-brit, mod fis sb blky
ctngs, tr mict cal vn, hi
calc



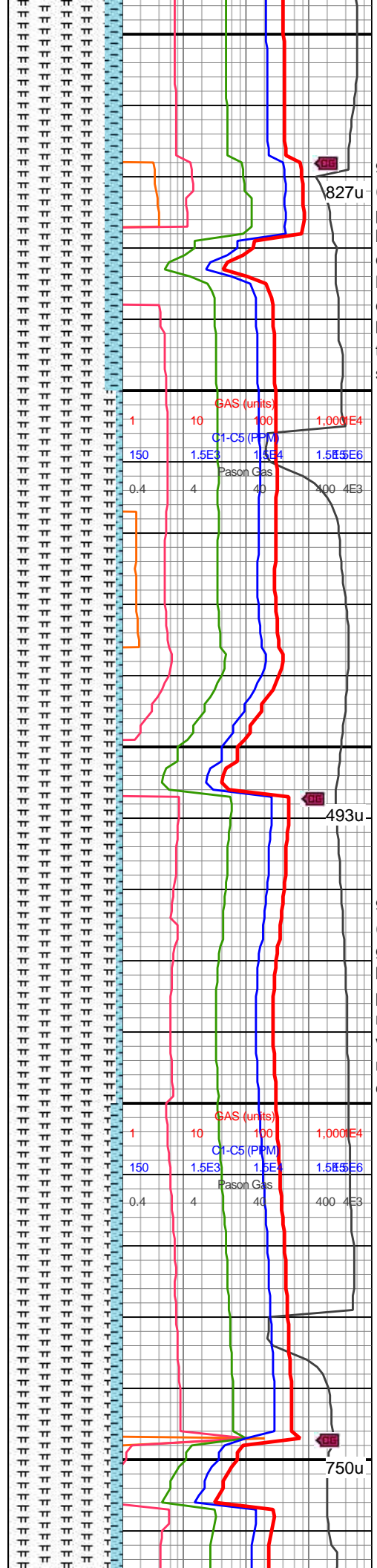
MD: 9,396'
TVD: 7,719.33'
INC: 90.24°
AZM: 178.04°
VS: 1,182.75'

WOB: 40kibs
RPM: 60
SPM: 206
SPP: 3,929psi

MW IN: 10.0+
VIS IN: 42
MW OUT: 10.0+
VIS OUT: 39

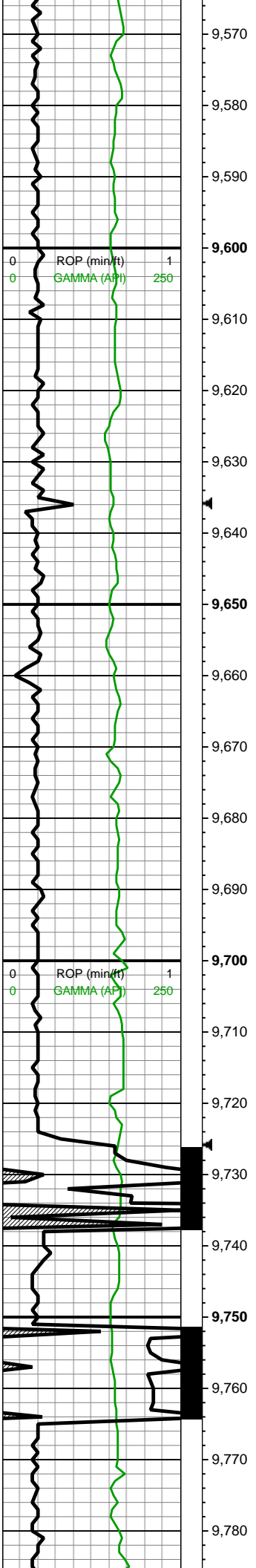
MD: 9,486'
TVD: 7,719.1'
INC: 90.05°
AZM: 178.03°
VS: 1,271.9'

MW IN: 10.0+
VIS IN: 43
MW OUT: 10.0
VIS OUT: 41



9300-9400 MRLST
(85%): med-v dk gry,
predy blky wi com lamn, v
brit-hrd, micmica, hily
calc; CHK (15%) pred
ltgy-occ gyshbn wi sme
com lt thn chky lamn, sb
blky-blky, v sft-sl frm, rgh
tex wi rr-pp pyr, hily calc,
scat cal

9400-9500 MRLST
(95%): gysh bn-dk gy-v dk
gy, brit mod fis ctngs, sb
blky-blky, sl slty tex, tr vf
pyr, mod calc; CHK (5%):
med gy-occ dk gy mot wi f
wh chky incl, frm-brit,
mod fis sb blky ctngs, hi
calc

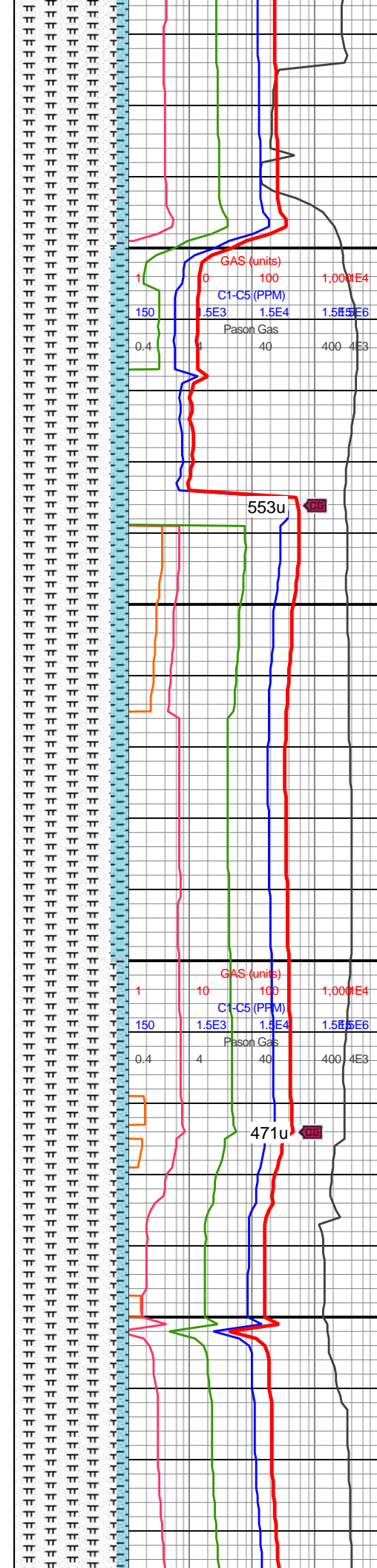


MD: 9,574'
TVD: 7,718.32'
INC: 90.97°
AZM: 177.42°
VS: 1,359.12'

WOB: 42.3klbs
RPM: 61
SPM: 206
SPP: 3,942psi

MD: 9,664'
TVD: 7,716.89'
INC: 90.85°
AZM: 177.12°
VS: 1,448.41'

MD: 9,753'
TVD: 7,715.27'
INC: 91.24°
AZM: 177.16°
VS: 1,536.73'

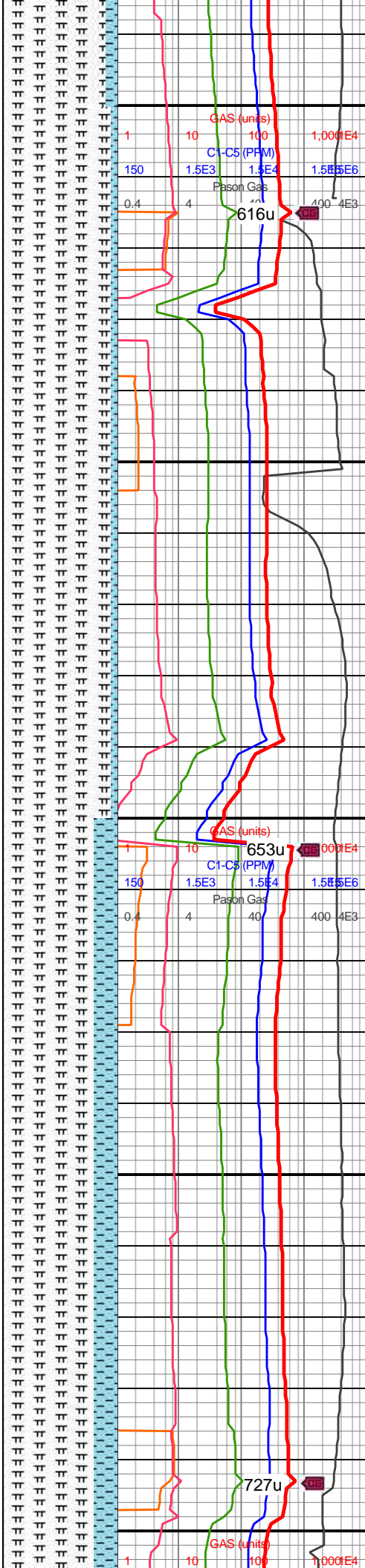
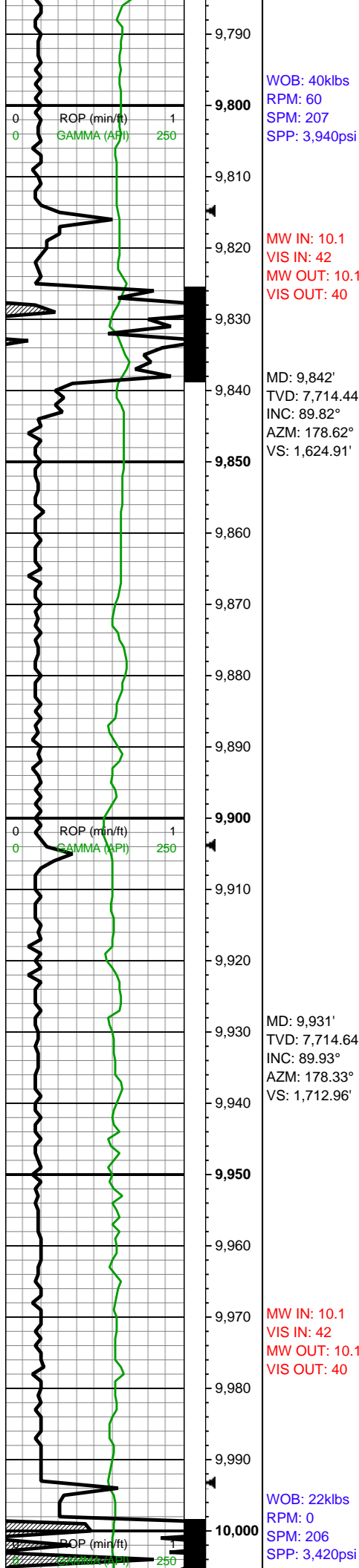


9500-9600 MRLST
(90%): med gy-dk gy, brn hue ip, mod fis sb frm-frm sb blk cyctngs, sm arg-sl slty tex, tr vf pyr, mod calc wi brn mrly resdl; CHK (10%): lt gy-med gy, frm-brit, mod fis sb blk cy-bkly ctngs wi thn chky lamn, hi calc

9600-9700 MRLST
(85%): med gy-med gyshbn-dk gy, mot wi c elong-rd brn marl incl ip, mod fis sb frm-frm sb blk cyctngs, sm arg-sl slty tex, tr vf pyr, mod calc wi brn mrly resdl; CHK (15%): med gy wi occ wh elong chky incl, frm-brit, mod fis sb blk cy-bkly ctngs wi thn chky lamn, hi calc

9700-9800 MRLST
(90%): predy dk gyshbn, rr dk gy, sb frm-frm mod fis sb blk cy-bkly ctngs, tab ip, sm arg-sl slty-mot bmpy tex, tr vf pyr, tr chky

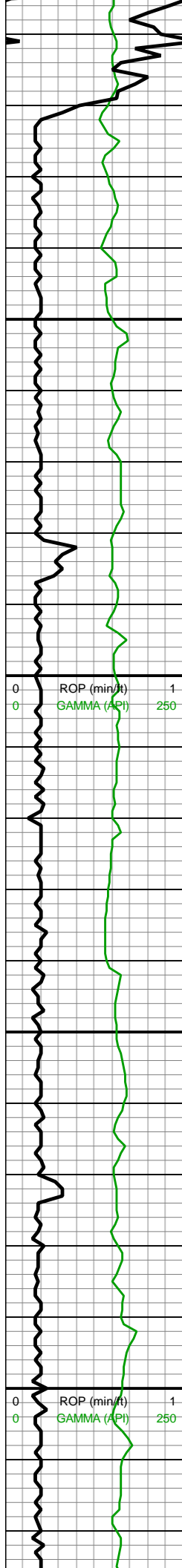




incl grdg to chk, mod
calc; CHK (10%): dk
gy-dk gyshbn, frm, brit, f
wh chky incl & lamn, tr vf
pyr, hi calc

9800-9900 MRLST
(95%): dk gyshbn, rr dk
gy sh wi brn marly lamn
ip, sb frm-frm mod fis sb
blky-blky ctngs, tab ip, sm
arg-sl slty-mot bmpy tex,
tr vf pyr, tr chky incl grdg
to chk, mod calc; CHK
(5%): dk gy-dk gyshbn,
frm, brit, f wh chky incl &
lamn, tr vf pyr, hi calc

9900-10000 MRLST
(80%): predy dk gyshbn,
rr dk gy, sb frm-frm mod
fis sb blky-blky ctngs, tab
ip, sm arg-sl slty-mot
bmpy tex, tr vf pyr, tr chky
incl grdg to chk, mod
calc; CHK (20%): dk
gy-dk gyshbn, frm, brit, f
wh chky incl & lamn, tr vf
pyr, hi calc



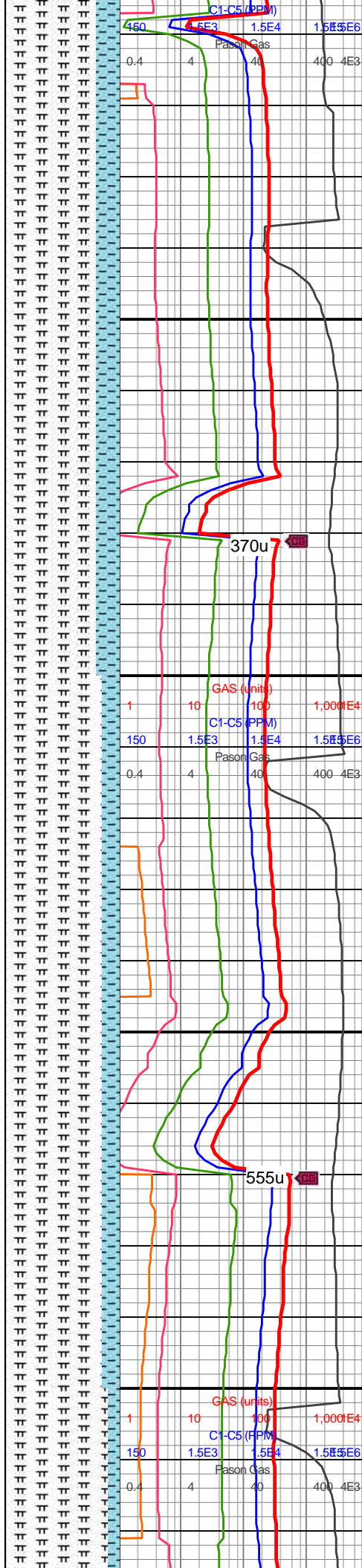
MD: 10,020'
TVD: 7,714.61'
INC: 90.1°
AZM: 181.52°
VS: 1,800.66'

MW IN: 10.1
VIS IN: 42
MW OUT: 10.1
VIS OUT: 40

MD: 10,109'
TVD: 7,714.36'
INC: 90.22°
AZM: 181.55°
VS: 1,887.9'

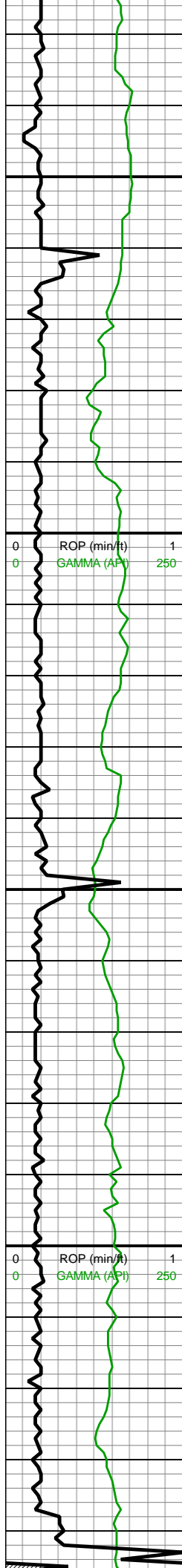
MD: 10,198'
TVD: 7,713.77'
INC: 90.54°
AZM: 181.71°
VS: 1,975.11'

WOB: 38klbs
RPM: 60
SPM: 208
SPP: 4,090psi



10000-10100 MRLST
(80%): dk gyshbn, rr dk
gy sh wi brn marly lamn
ip, sb frm-frm mod fis sb
blky-blky ctngs, tab ip, sm
arg-sl slty-mot bmpy tex,
tr vf pyr, tr chky incl grdg
to chk, mod calc; CHK
(20%): dk gy-dk gyshbn,
frm, brit, f wh chky incl &
lamn, tr vf pyr, hi calc

10100-10200 MRLST
(85%): dk gy-dk gyshbn,
sft-sb frm-frm-brit, mod
fis sb blky-blky ctngs, tab
ip, sm arg-sl slty tex, tr vf
pyr, mod calc wi brn mrlly
resdl; CHK (15%): dk
gy-dk gyshbn, frm, brit, f
wh chky incl & lamn, tr vf
pyr, hi calc



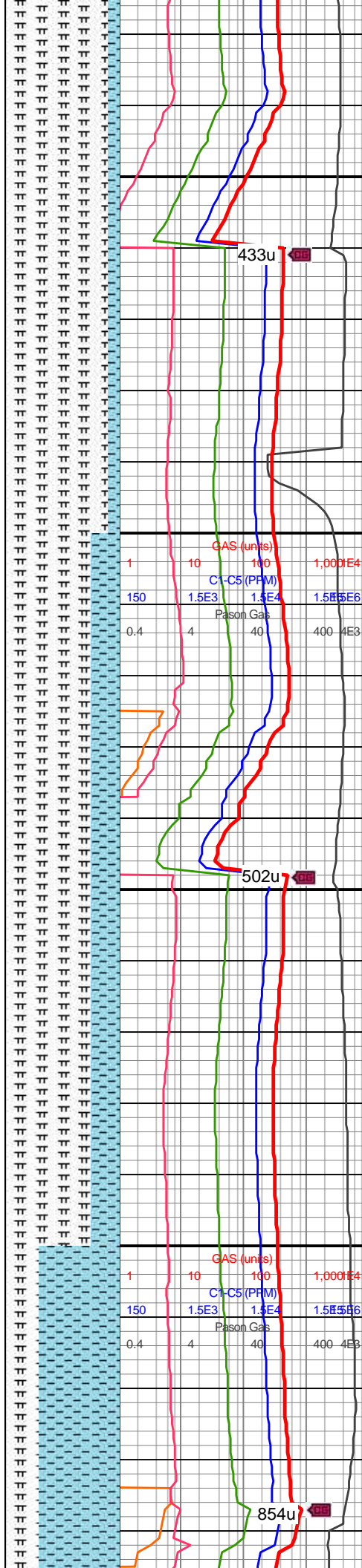
MW IN: 10.1
VIS IN: 45
MW OUT: 10.1
VIS OUT: 44

MD: 10,287'
TVD: 7,712.69'
INC: 90.85°
AZM: 181.41°
VS: 2,062.34'

MD: 10,376'
TVD: 7,711.15'
INC: 91.14°
AZM: 180.73°
VS: 2,149.71'

WOB: 39klbs
RPM: 60
SPM: 208
SPP: 4,060psi

MW IN: 10.1



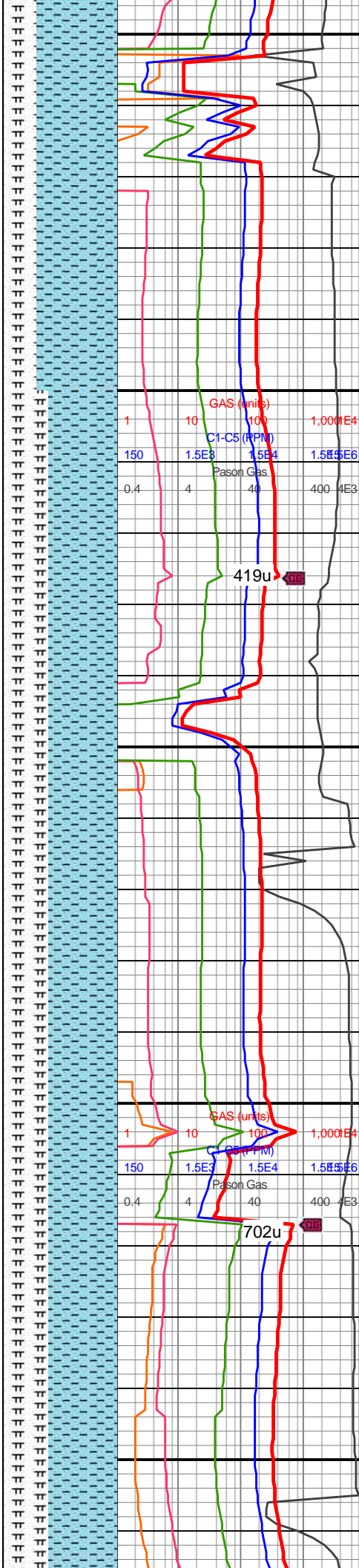
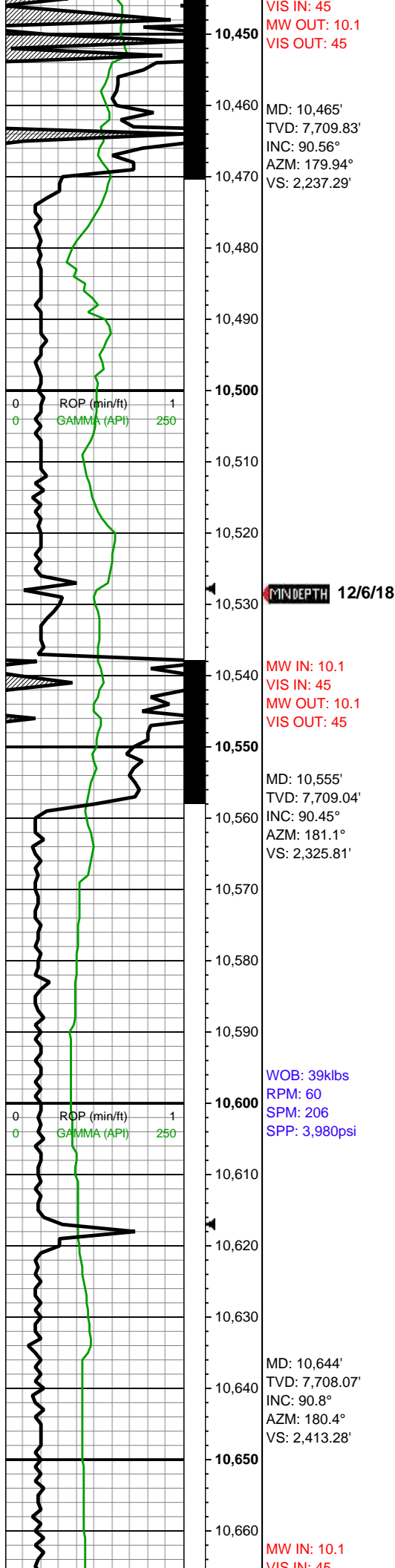
433u

502u

854u

10200-10300 MRLST
(90%): dk gyshbn sft-sb
frm ctngs wi sm arg tex
grdg to dk gy frm-brit
ctngs mot wi marly incl
thru, sb blkyl-blky-sb plty
mod fis ctngs, tab ip, tr vf
pyr, mod calc wi brn mrly
resdl; CHK (10%): dk
gy-dk gyshbn, frm, brit, f
wh chky incl & lamn, tr vf
pyr, hi calc

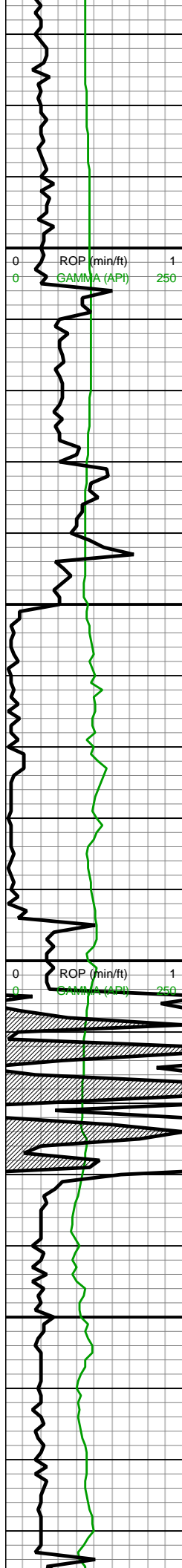
10300-10400 MRLST
(75%): dk gy-dk gyshbn,
sft-sb frm-frm-brit, mod
fis sb blkyl-blky ctngs, tab
ip, sm arg-sl stly tex, tr vf
pyr, mod calc wi brn mrly
resdl; CHK (25%): dk
gy-dk gyshbn, frm, brit, f
wh chky incl & lamn, tr vf
pyr, tr c free chk/forams,
hi calc



10400-10500 CHK
(70%): med gy-dk gy-v dk
gy ip wi f-u f wh chky incl
& forams, frm-brit l-mod
fis sb rd-sb blkly ctngs, sl
silty tex, com forams,
rr-occ mict cal, tr vf-f pyr
strg, hi calc; MRLST
(30%): gyshbn, sb
frm-frm mod fis sb blkly
ctngs, sm arg-sl silty tex,
tr vf pyr, mod calc wi brn
mrly resdl

10500-10600 CHK
(60%): med gy-dk gy-v dk
gy ip wi f-u f wh chky incl
& forams, frm-brit l-mod
fis sb rd-sb blkly ctngs, sl
silty tex, com forams, tr vf-f
pyr strg, hi calc; MRLST
(40%): gyshbn, sb
frm-frm mod fis sb blkly
ctngs, sm arg-sl silty tex,
tr vf pyr, mod calc wi brn
mrly resdl

10600-10700 CHK



VIS IN: 43
MW OUT: 10.1
VIS OUT: 44

Relog

MD: 10,733'
TVD: 7,705.99'
INC: 91.87°
AZM: 179.97°
VS: 2,500.88'

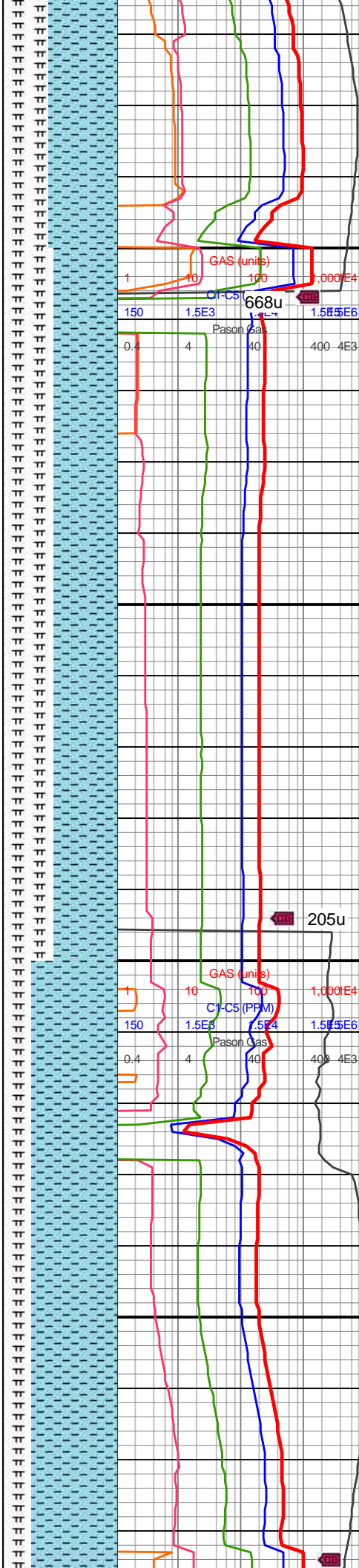
MW IN: 10
VIS IN: 46
MW OUT: 10.0
VIS OUT: 43

End Relog

WOB: 22klbs
RPM: 60
SPM: 206
SPP: 3,660psi

MD: 10,822'
TVD: 7,703.07'
INC: 91.89°
AZM: 180.31°
VS: 2,588.48'

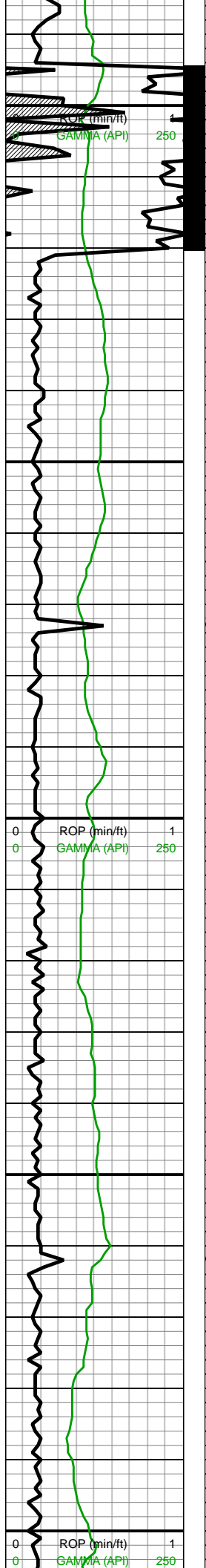
MW IN: 10
VIS IN: 46
MW OUT: 10.0
VIS OUT: 44



(60%): med gy-dk gy-v dk
gy ip wi f-u f wh chky incl
& forams, frm-brit l-mod
fis sb rd-sb blkly ctngs, sl
silty tex, com forams, tr vf-f
pyr strg, hi calc; MRLST
(40%): gyshbn, sb
frm-frm mod fis sb blkly
ctngs, sm arg-sl slty tex,
tr vf pyr, mod calc wi brn
mrly resdl

10700-10800 CHK
(55%): predy med gy-dk
gy, rr lt gy, frm-brit, sb
blkly-blkly mod fis ctngs, sl
silty tex, rr f chky incl &
occ-com sp foram, hi
calc; MRLST (45%):
med-dk gy-gyshbn, sb
frm-frm, mod fis, sb
blkly-blkly ctngs wi sm arg
sl slty tex, rr vf pyr, mod
calc

10800-10900 CHK
(75%): predy
gyshbn-med gy, sme lt
gy, sb blkly-sb ang ctngs,
fri-frm, tr intbd MRLST,
sm chky tex, calc, scat
imbd pyr, com frac fl cal;
MRLST (25%): dk

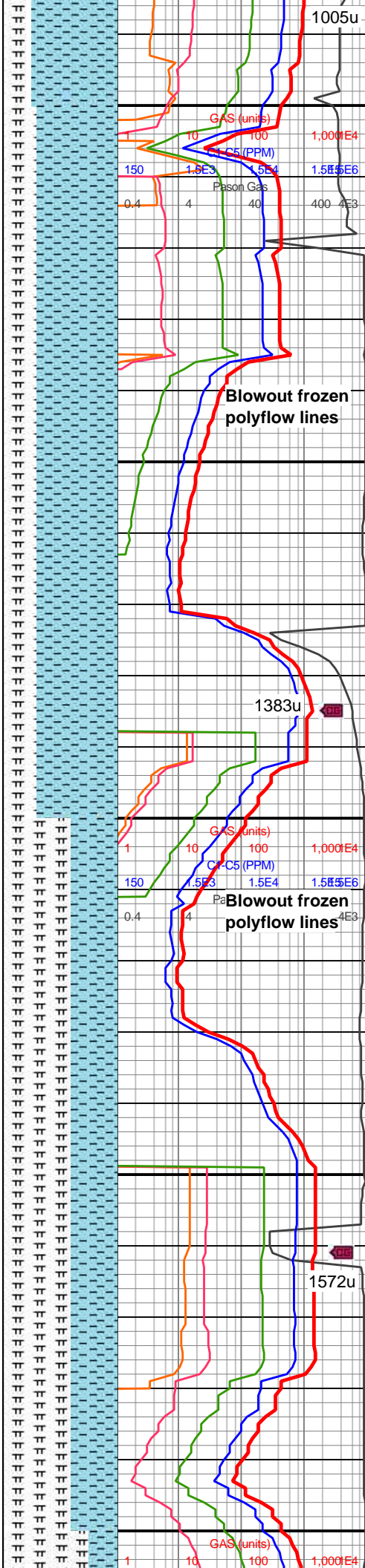


MW IN: 10
VIS IN: 46
MW OUT: 10.0
VIS OUT: 45

MD: 10,911'
TVD: 7,702.17'
INC: 89.27°
AZM: 181.55°
VS: 2,675.89'

MD: 11,000'
TVD: 7,703.93'
INC: 88.47°
AZM: 182.11°
VS: 2,763.02'

MD: 11,089'
TVD: 7,706.74'
INC: 87.9°
AZM: 181.72°
VS: 2,850.1'



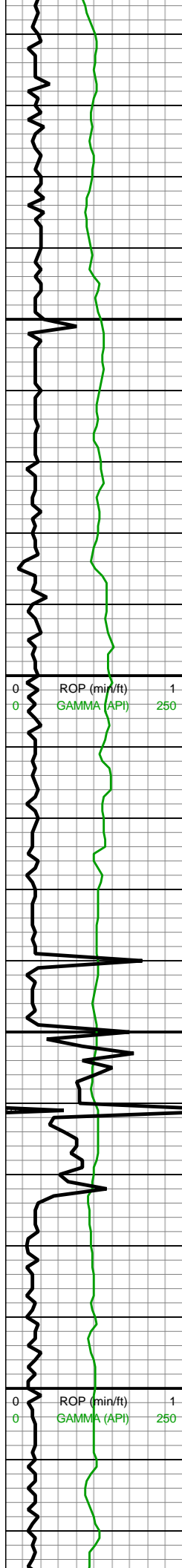
Blowout frozen
polyflow lines

Blowout frozen
polyflow lines

gyshbn-dk gy, frm-sl hd,
sb blk-ang ctngs, sl
sm-rgh tex, com intbd
CHK, hi calc

10900-11000 CHK
(70%): med gy, gyshbn,
sb tab ctngs, frm, brit, tr vf
lam, hi calc, scat inoc fos
frags; MRLST (30%): dk
gy, dk gyshbn, sb tab-blky
ctngs, brit, sl hd, tr CHK
intbds, tr pp mic pyr, hi
calc

11000-11100 MRLST
(60%): dk gy-dk gyshbn,
frm-hd, predy brit, med-hi
fis sb blk-blky-tab ctngs,
sm arg-sl slty-sl gt tex,
rr-tr vf pyr, mod calc; CHK
(40%): dk gy mot wi f wh
chky & foram incl, sb
frm-frm, brit, mod fis sb
blk-blky ctngs, hi calc



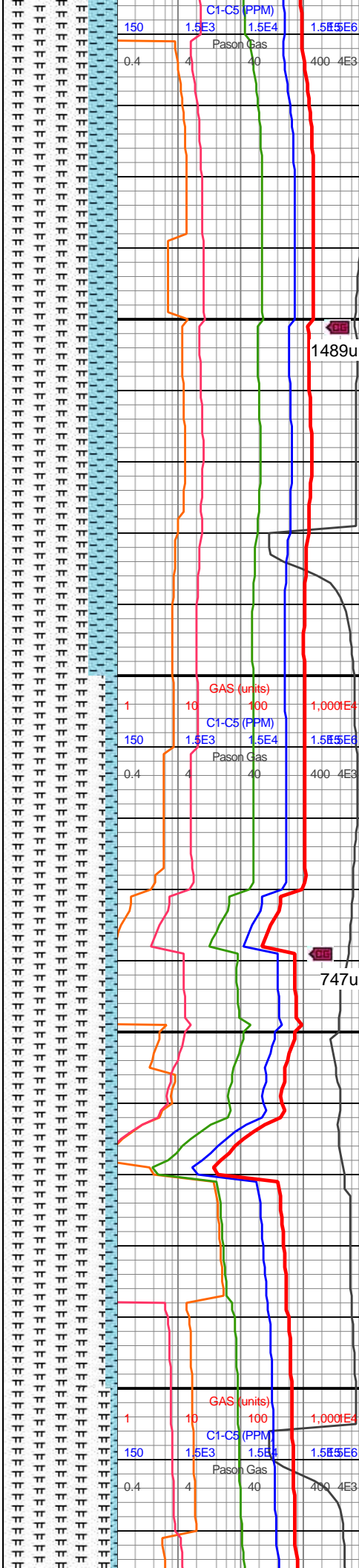
11,110
11,120
11,130
11,140
11,150
11,160
11,170
11,180
11,190
11,200
11,210
11,220
11,230
11,240
11,250
11,260
11,270
11,280
11,290
11,300
11,310
11,320

MW IN: 10
VIS IN: 47
MW OUT: 10.0
VIS OUT: 45

MD: 11,178'
TVD: 7,710.27'
INC: 87.56°
AZM: 181.66°
VS: 2,937.23'

WOB: 39.9klbs
RPM: 60
SPM: 206
SPP: 4,103psi

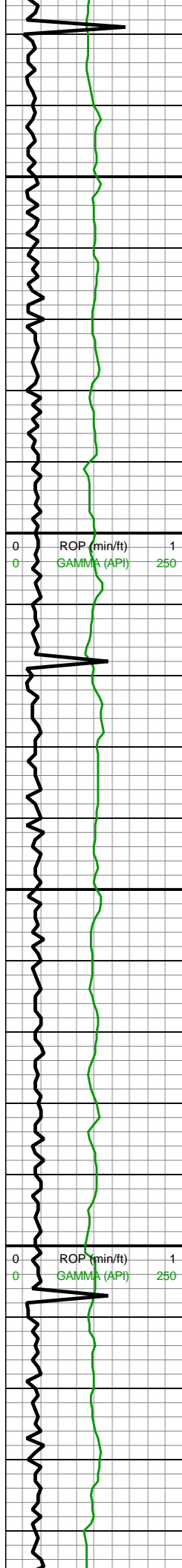
MD: 11,267'
TVD: 7,713.27'
INC: 88.58°
AZM: 179.58°
VS: 3,024.69'



11100-11200 MRLST
(75%): dk gy, frm-hd, brit,
mod fis sb ang-sb blkly
ctngs, sm arg-sl slty tex,
tr vf pyr, mod calc; CHK
(25%): med gy, rr f-elong
wh chky incl, frm-brit,
mod fis sb blkly-blky
ctngs, tr fos frags, hi calc

11200-11300 MRLST
(90%): med gy-gyshbn,
dk gy ip, sb frm-frm-brit,
sb rd-sb blkly l-mod fis
ctngs, sm arg-sl slty tex,
rr vf pyr, mod calc wi brn
mrly resdl; CHK (10%):
med gy, lt gy ip, frm, brit,
mod fis sb blkly-blky
ctngs, hi calc





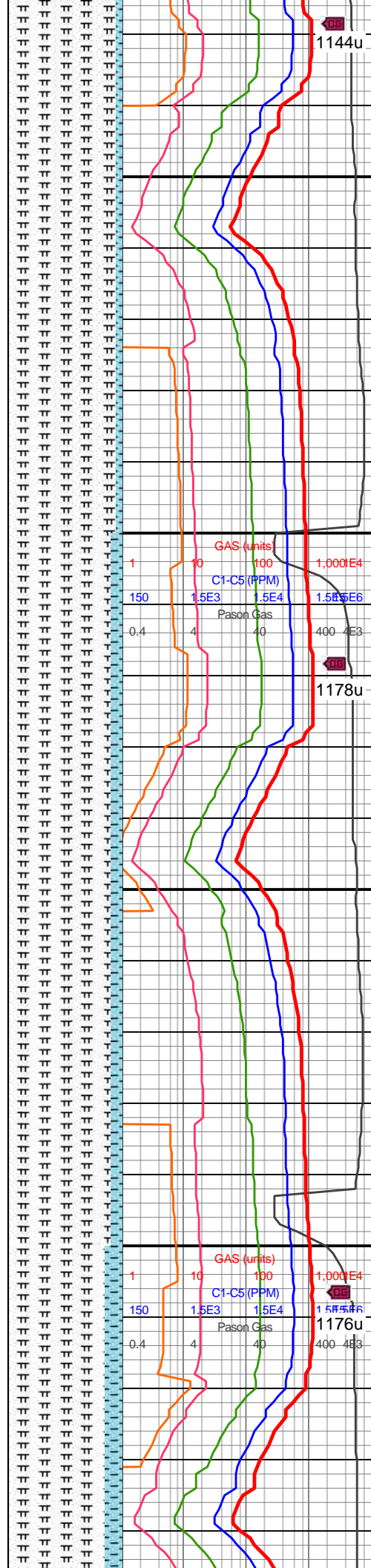
MD: 11,357'
TVD: 7,715.23'
INC: 88.92°
AZM: 179.59°
VS: 3,113.44'

WOB: 41.9klbs
RPM: 60
SPM: 206
SPP: 4,121psi

MD: 11,446'
TVD: 7,716.69'
INC: 89.2°
AZM: 179.77°
VS: 3,201.2'

MW IN: 10.1+
VIS IN: 46
MW OUT: 10.1
VIS OUT: 44

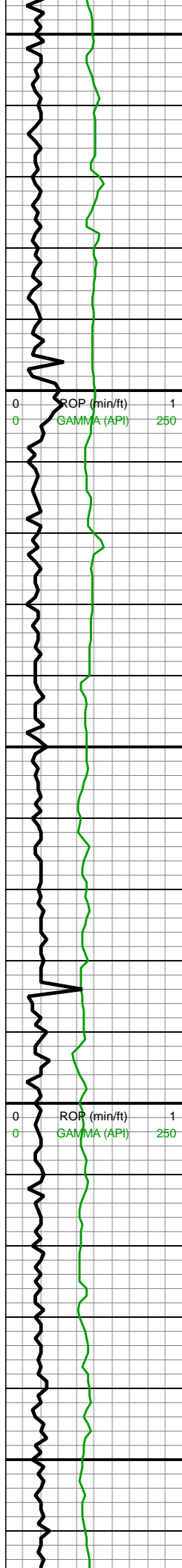
MD: 11,535'
TVD: 7,717.84'
INC: 89.32°
AZM: 179.64°
VS: 3,288.95'



11300-11400 MRLST
(95%): med gy-dk gy,
mod fis sb frm-frm sb
blky ctngs, sm arg-sl slty
tex, tr vf pyr, mod calc;
CHK (5%): lt gy-med gy,
frm-brit, mod fis sb
blky-blky ctngs wi thn
chky lamn, sl slty tex, v rr
fos frags, hi calc

11400-11500 MRLST
(90%): med gy-dk gy wi
sp brn marl, frm-brit, sb
frm ip, l-mod fis sb rd-sb
blky ctngs, sm arg-sl slty
tex, tr vf pyr, rr-occ bent,
mod calc wi brn mrlly
resdl; CHK (10%): med
gy, lt gy ip, frm, brit, l-mod
fis sb rd-sb blky-blky
ctngs, chky tex, hi calc





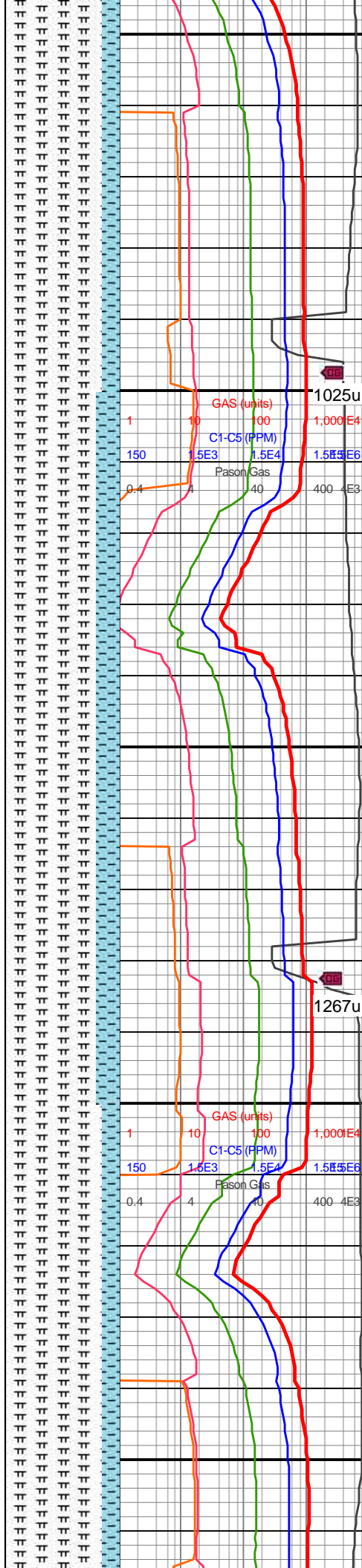
11,550
11,560
11,570
11,580
11,590
11,600
11,610
11,620
11,630
11,640
11,650
11,660
11,670
11,680
11,690
11,700
11,710
11,720
11,730
11,740
11,750
11,760

WOB: 40.9klbs
RPM: 60
SPM: 206
SPP: 4,191psi

MD: 11,624'
TVD: 7,718.71'
INC: 89.56°
AZM: 179.57°
VS: 3,376.73'

MW IN: 10.2+
VIS IN: 46
MW OUT: 10.2
VIS OUT: 44

MD: 11,713'
TVD: 7,719.03'
INC: 90.03°
AZM: 179.98°
VS: 3,464.47'

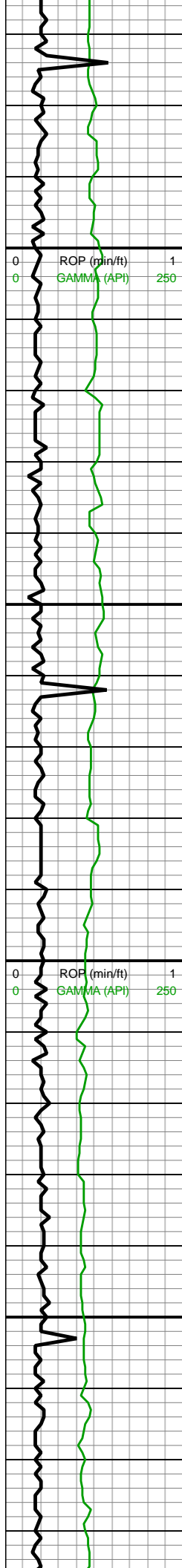


11500-11600 MRLST
(85%): gysh bn-dk gy-v dk
gy, brit mod fis ctngs, sb
blky-blky, sl slty tex, tr vf
pyr, mod calc; CHK
(15%): med gy-occ dk gy
mot wi f wh chky incl,
frm-brit, mod fis sb blky
ctngs, hi calc



11600-11700 MRLST
(80%): dk gy, frm-hd, brit,
mod fis sb ang-sb blky
ctngs, sm arg-sl slty tex,
tr vf pyr, tr bent, mod calc;
CHK (20%): med gy, rr
f-elong wh chky incl,
frm-brit, mod fis sb
blky-blky ctngs, sl slty tex,
hi calc





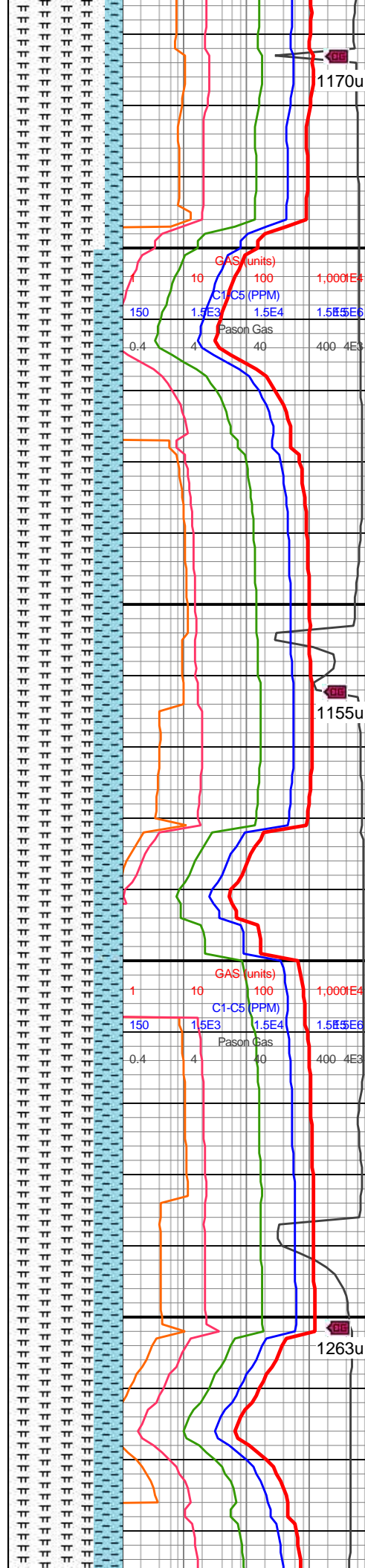
WOB: 39.8klbs
RPM: 60
SPM: 206
SPP: 4,281psi

MD: 11,802'
TVD: 7,718.81'
INC: 90.25°
AZM: 180.54°
VS: 3,552.09'

MD: 11,891'
TVD: 7,718.21'
INC: 90.53°
AZM: 179.77°
VS: 3,639.72'

MW IN: 10.2
VIS IN: 47
MW OUT: 10.2
VIS OUT: 43

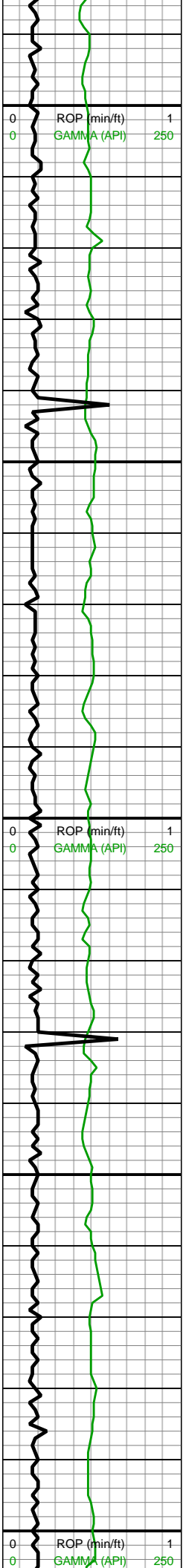
MD: 11,980'
TVD: 7,717.09'
INC: 90.91°
AZM: 180.04°
VS: 3,787.12'



11700-11800 MRLST
(45%): med gy-dk gy, frm, brit, sb ang-sb blkly-blky ctngs, sl slty tex, com vf pyr, mod calc wi brn mrlv resdl; CHK (15%): lt gy-med gy, frm, brit, mod fis sb blkly-blky ctngs, chky tex, vf pyr, hi calc

11800-11900 MRLST
(75%): dk gy, frm-hd, brit, mod fis sb ang-sb blkly ctngs, sm arg-sl slty tex, tr vf pyr, mod calc; CHK (25%): med gy, rr f-elong wh chky incl, frm-brit, mod fis sb blkly-blky ctngs, sl slty tex, v rr fos frags, hi calc

11900-12000 MRLST
(75%): dk gy-dk gyshbn, sft-sb frm-frm-brit, mod fis sb blkly-blky ctngs, tab ip, sm arg-sl slty tex, tr vf pyr, mod calc wi brn mrlv



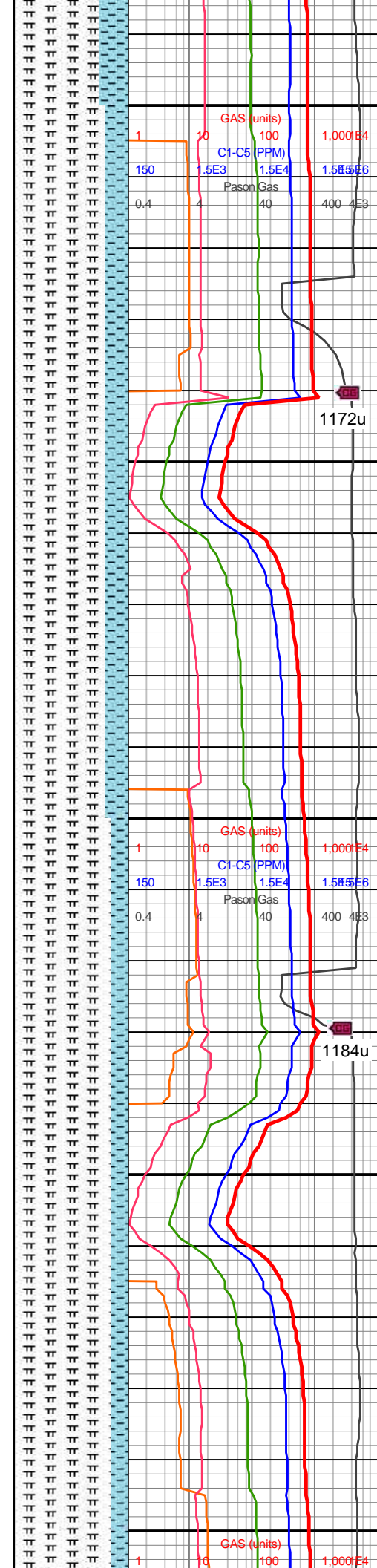
VS: 3,727.42'

WOB: 40.8klbs
RPM: 60
SPM: 206
SPP: 4,241psi

MD: 12,069'
TVD: 7,715.57'
INC: 91.04°
AZM: 180.18°
VS: 3,815.06'

MD: 12,158'
TVD: 7,713.95'
INC: 91.05°
AZM: 179.53°
VS: 3,902.77'

WOB: 40.8klbs
RPM: 60
SPM: 206
SPP: 4,058psi

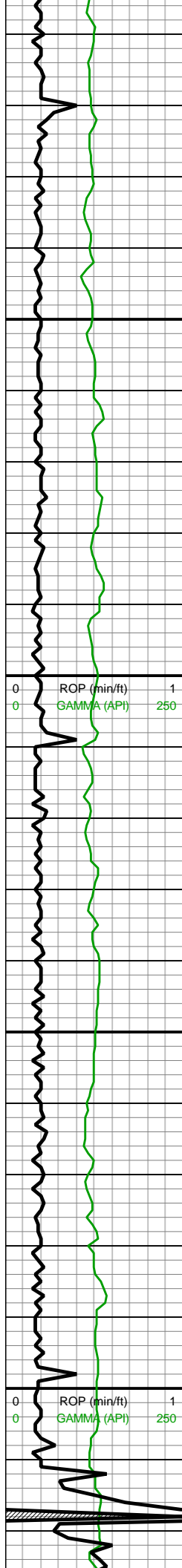


gy-dk gyshbn, frm, brit, f
wh chky incl & lamn, tr vf
pyr, hi calc

12000-12100 MRLST
(80%): pred dk gy-v dk gy,
occ blk, calc, blk, frm-v
frm, occ slty, rgh tex; CHK
(20%): pred med brn-dk
brn, occ mot lt gy, frm-sft,
blk, rr fos frags, tr frac fl
cal, sme lam

12100-12200 MRLST
(85%): pred v dk gy-dk gy
brn, sme med gy, frm-v
frm, mod fis sb blk-bkly
ctngs, mod calc; CHK
(15%): med gy-med gy
brn, occ med wh-lt gy
chky incl, frm, mod fis
blk ctngs, tr vf pyr & c pyr
strg, tr mict cal, tr forams,
v calc;





12,210
12,220
12,230
12,240
12,250
12,260
12,270
12,280
12,290
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

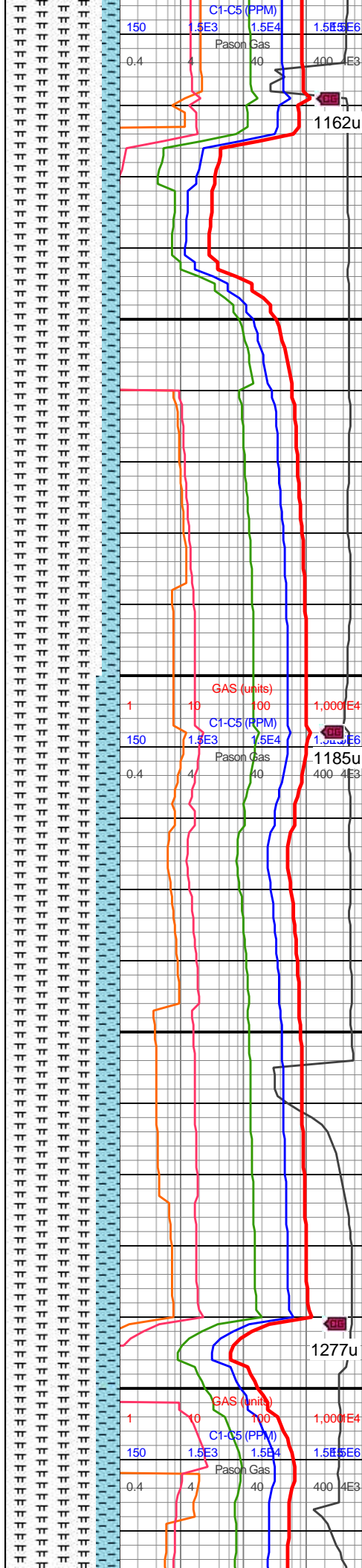
MD: 12,247'
TVD: 7,712.3'
INC: 91.08°
AZM: 179.48°
VS: 3,990.57'

MW IN: 10.2
VIS IN: 48
MW OUT: 10.3
VIS OUT: 45

MD: 12,337'
TVD: 7,710.18'
INC: 91.62°
AZM: 179.67°
VS: 4,079.32'

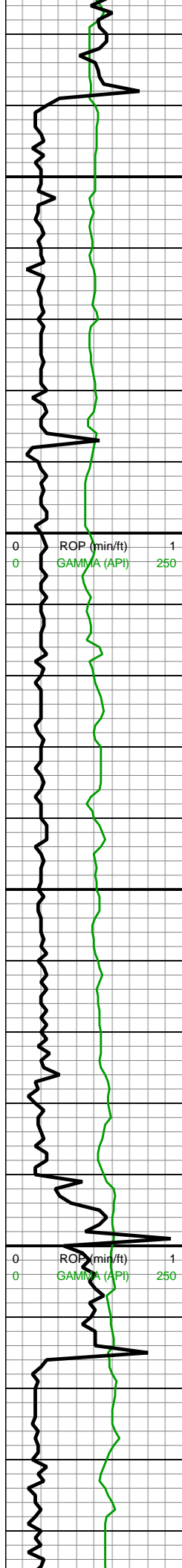
WOB: 40.4klbs
RPM: 60
SPM: 208
SPP: 4,048psi

MD: 12,426'
TVD: 7,708.09'



12200-12300 MRLST
(85%): v dk gy-dk gy brn,
sme med gy, frm-v frm,
mod fis sb blk-y-blky
ctngs, mod calc wi brn
mrly resd; CHK (15%): lt
gy-med gy, frm, l-mod fis
sb rd-sb blk-y ctngs, tr fos
frags, v calc

12300-12400 MRLST
(80%): v dk gy-dk gy
brn-blk, frm-v frm, mod fis
sb blk-y-blky ctngs, mod
calc wi brn mrly resd;
CHK (20%): med gy-med
gy brn mot wi occ vf-u f
wh-lt gy chky incl, frm,
mod fis sb blk-y-blky
ctngs, v calc



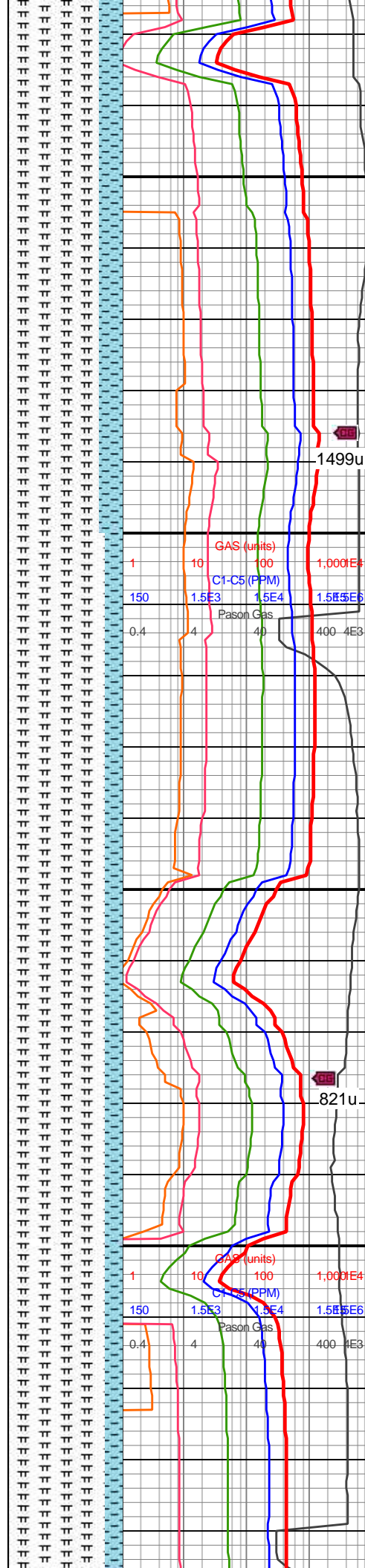
INC: 91.07°
AZM: 180.93°
VS: 4,166.9'

MD: 12,515'
TVD: 7,706.91'
INC: 90.45°
AZM: 181.45°
VS: 4,254.24'

MW IN: 10.2
VIS IN: 47
MW OUT: 10.3
VIS OUT: 45

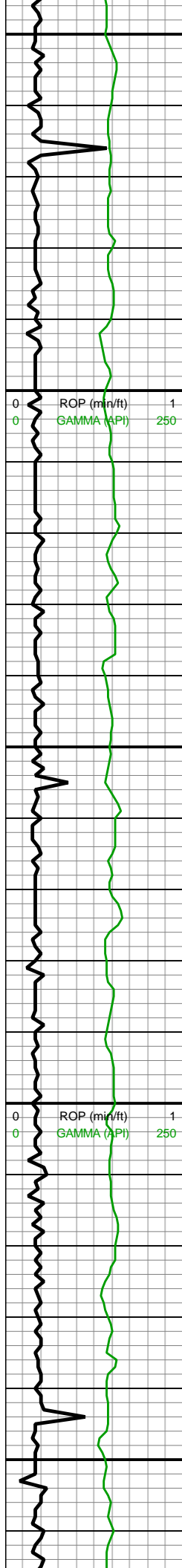
WOB: 70.4klbs
RPM: 0
SPM: 206
SPP: 3,770psi

MD: 12,604'
TVD: 7,707.36'
INC: 88.96°
AZM: 181.07°
VS: 4,341.56'



12400-12500 MRLST
(80%): pred v dk gy-dk gy
brn, sme med gy, frm-v
frm, mod fis sb blkylkly
ctngs, mod calc; CHK
(20%): med gy-med gy
brn, occ lt gy, thn lt gy
lamn thru, frm, mod fis
blkylkly ctngs, tr vf pyr, v calc

12500-12600 MRLST
(85%): med gy-dk gy wi
sp brn marl, frm-brit, sb
frm ip, l-mod fis sb rd-sb
blkylkly ctngs, sm arg-sl slty
tex, tr vf pyr, mod calc;
CHK (15%): med gy, lt gy
ip, frm, brit, l-mod fis sb
rd-sb blkylkly ctngs,
chky tex, hi calc

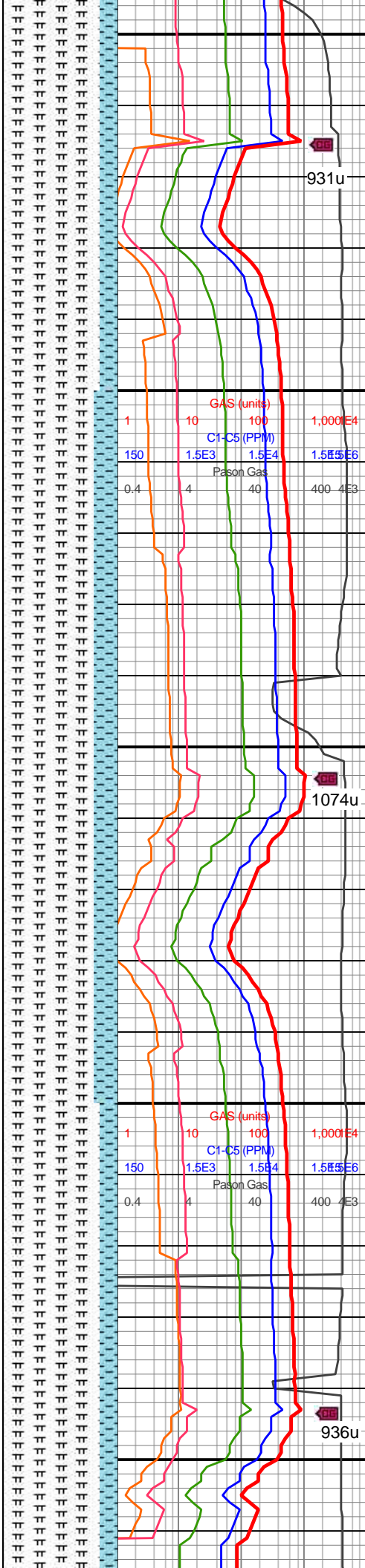


12,650
12,660
12,670
12,680
12,690
12,700
12,710
12,720
12,730
12,740
12,750
12,760
12,770
12,780
12,790
12,800
12,810
12,820
12,830
12,840
12,850
12,860

MD: 12,693'
TVD: 7,708.58'
INC: 89.47°
AZM: 180.16°
VS: 4,429.06'

MD: 12,782'
TVD: 7,709.31'
INC: 89.6°
AZM: 180.69°
VS: 4,516.63'

WOB: 40.7klbs
RPM: 60
SPM: 208
SPP: 4,210psi



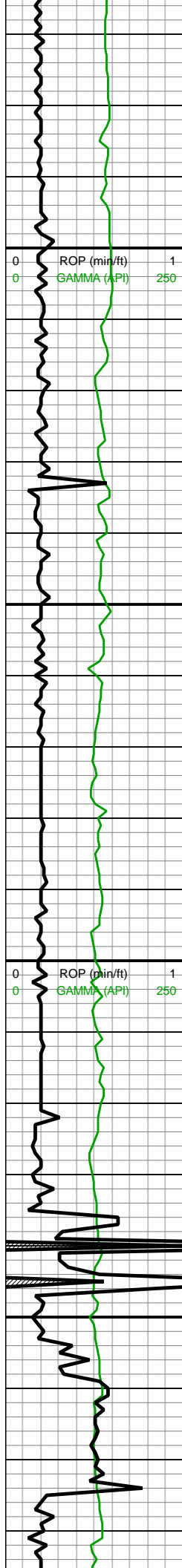
931u

12600-12700 MRLST
(85%): pred v dk gy-dk gy
brn, frm-v frm, mod fis sb
blky-blky ctngs, mod calc;
CHK (15%): med gy-med
gy brn mot wi occ vf-u f
wh-lt gy chky incl, frm,
mod fis sb blky-blky
ctngs, v calc

1074u

12700-12800 MRLST
(80%): dk gy-v dk gy, sme
gyshbn, frm-hd, brit, mod
fis sb ang-sb blky ctngs,
sm arg-sl slty tex, tr vf pyr,
tr bent, mod calc; CHK
(20%): med gy, rr f-elong
wh chky incl, frm-brit,
mod fis sb blky-blky
ctngs, chky tex, tr fos
frags, hi calc

936u



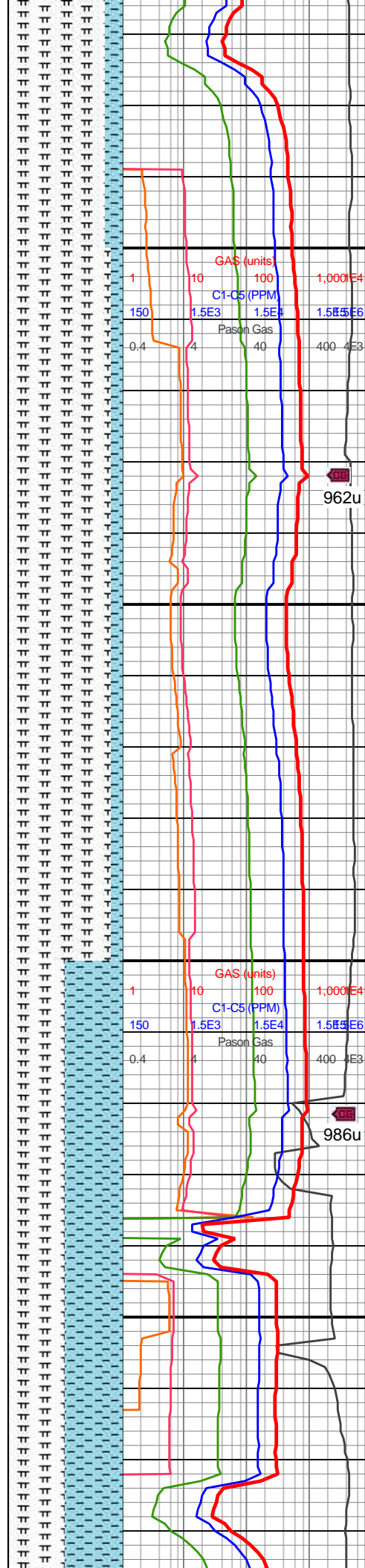
MD: 12,871'
TVD: 7,709.9'
INC: 89.63°
AZM: 178.71°
VS: 4,604.38'

MW IN: 10.2+
VIS IN: 45
MW OUT: 10.3
VIS OUT: 43

MD: 12,960'
TVD: 7,710.43'
INC: 89.69°
AZM: 177.77°
VS: 4,692.49'

WOB: 41.1klbs
RPM: 60
SPM: 208
SPP: 4,184psi

MD: 13,049'
TVD: 7,710.59'
INC: 90.11°
AZM: 179.07°
VS: 4,780.56'

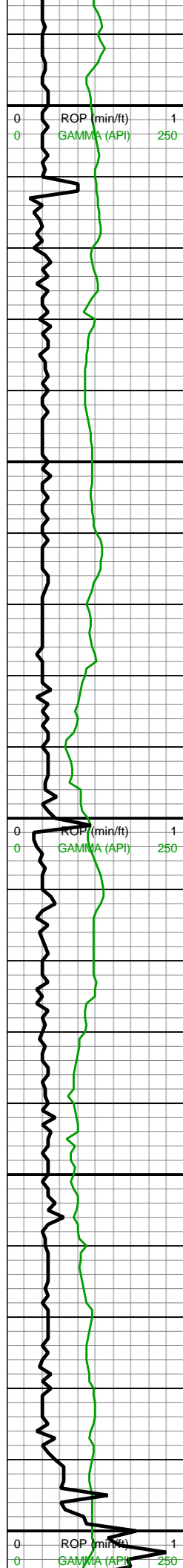


12800-12900 MRLST
(85%): pred v dk gy-dk gy
brn, sme med gy, frm-v
frm, mod fis sb blkly-blky
ctngs, mod calc; CHK
(15%): med gy-med gy
brn, occ lt gy, thn lt gy
lamn thru, frm, mod fis
blkly ctngs, tr vf pyr, v calc

12900-13000 MRLST
(90%): dk gy, frm-hd, brit,
mod fis sb ang-sb blkly
ctngs, sm arg-sl slty tex,
tr vf pyr, mod calc; CHK
(10%): med gy, rr f-elong
wh chky incl, frm-brit,
mod fis sb blkly-blky
ctngs, sl slty tex, v rr fos
frags, hi calc

13000-13100 MRLST
(50%): dk gy sh wi c brn
marl incl, sb frm-frm,
mod fis sb blkly-blky
ctngs, sm arg-sl slty tex,
tr vf pyr, mod calc wi brn
mrly resdl; CHK (50%):
gy-dk gy wi f wh chky incl
& forams, frm, brit in





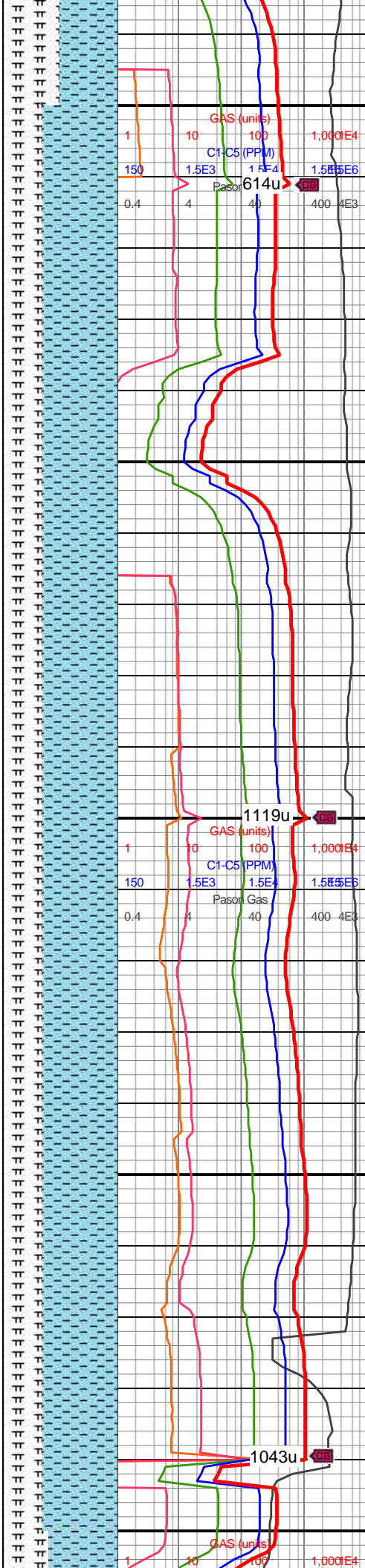
13,090
13,100
13,110
13,120
13,130
13,140
13,150
13,160
13,170
13,180
13,190
13,200
13,210
13,220
13,230
13,240
13,250
13,260
13,270
13,280
13,290
13,300

MW IN: 10.25
VIS IN: 46
MW OUT: 10.3
VIS OUT: 43

MD: 13,139'
TVD: 7,710.56'
INC: 89.93°
AZM: 179.98°
VS: 4,869.35'

WOB: 38klbs
RPM: 60
SPM: 204
SPP: 3,670psi

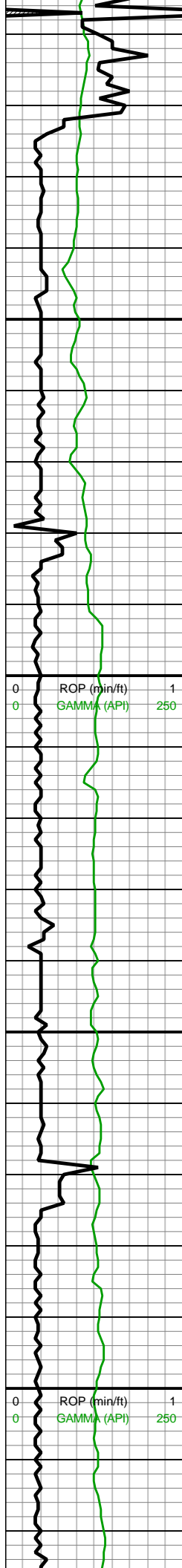
MD: 13,228'
TVD: 7,710.43'
INC: 90.23°
AZM: 179.27°
VS: 4,957.13'



& forams, frm, brit ip,
l-mod fis sb rd-sb blk
ctngs, sl slty tex, rr-occ
forams, rr-occ fos frags,
tr vf pyr, hi calc

13100-13200 CHK
(65%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blkly ctngs, sl slty tex,
rr-occ forams, rr-occ fos
frags, tr vf pyr, hi calc;
MRLST (35%): dk gy, c
brn marl incl & thn lamn
thru, sb frm-frm, mod fis
sb blkly-blky ctngs, sm
arg-sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl

13200-13300 CHK
(65%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blkly ctngs, sl slty tex,
rr-occ forams, rr-occ fos
frags, tr vf pyr, hi calc;
MRLST (35%): dk gy, c
brn marl incl & thn lamn
thru, sb frm-frm, mod fis
sb blkly-blky ctngs, sm
arg-sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl



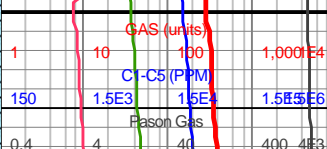
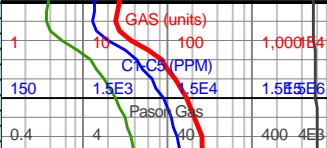
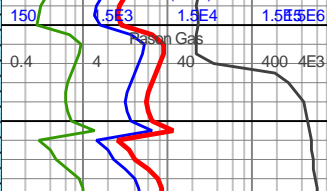
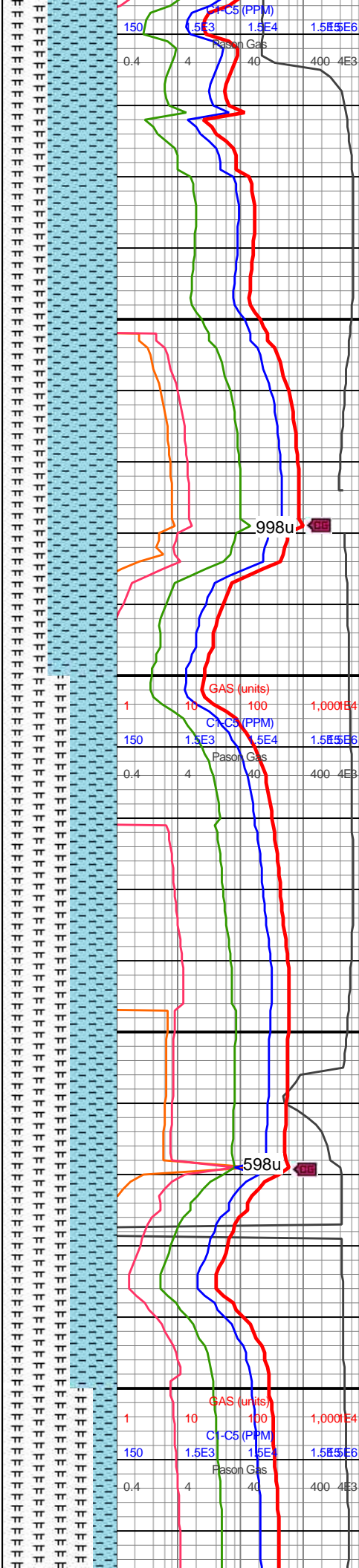
MD: 13,317'
TVD: 7,711.51'
INC: 88.38°
AZM: 180.85°
VS: 5,044.78'

MW IN: 10.25
VIS IN: 45
MW OUT: 10.25
VIS OUT: 43

WOB: 39klbs
RPM: 60
SPM: 206
SPP: 4,190psi

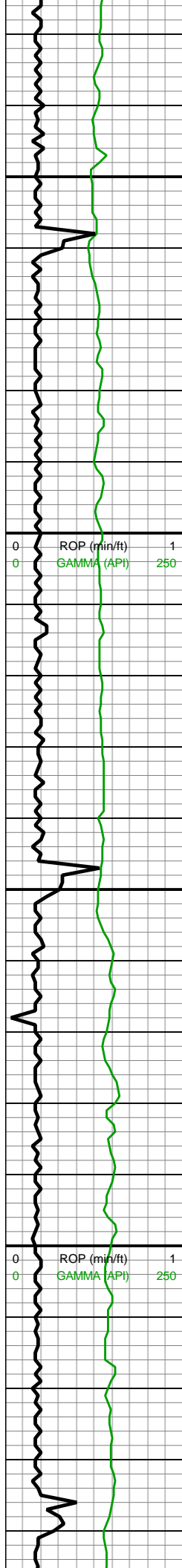
MD: 13,406'
TVD: 7,714.24'
INC: 88.1°
AZM: 180.84°
VS: 5,132.19'

MD: 13,495'
TVD: 7,717.09'
INC: 88.23°
AZM: 180.6°
VS: 5,219.63'



13300-13400 CHK
(60%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blky ctngs, sl slty tex, rr
forams, tr fos frags, tr vf
pyr, hi calc; MRLST
(40%): dk gy sh wi c brn
marl incl, sb frm-frm,
mod fis sb blky-blky
ctngs, sm arg-sl slty tex,
tr vf pyr, mod calc wi brn
mrly resdl

13400-13500 MRLST
(60%): dk gy-v dk gy, sb
frm-frm-brit, sb blky-blky
mod fis ctngs, sl slty tex,
occ vf pyr thru, rr bent, rr-tr
fos frags, mod calc wi
brn mrly resdl; CHK
(40%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blky ctngs, sl slty tex, rr
forams, tr vf pyr, hi calc;
BENT (tr): trns l v lt gn
frm-brit bent wi occ pyr
strg-off wh-tn sft bent,
orng flr, non calc

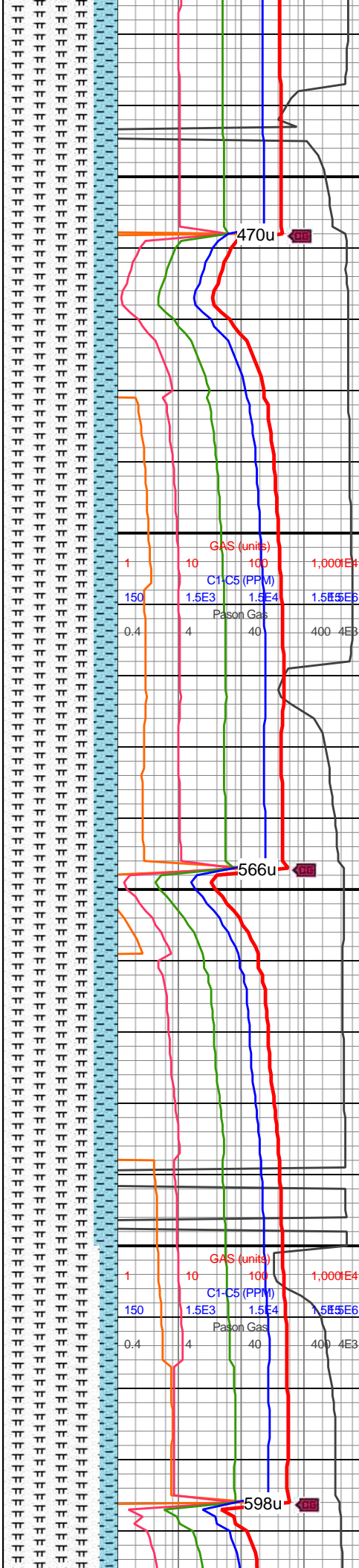


13,530
13,540
13,550
13,560
13,570
13,580
13,590
13,600
13,610
13,620
13,630
13,640
13,650
13,660
13,670
13,680
13,690
13,700
13,710
13,720
13,730
13,740

MD: 13,584'
TVD: 7,719.56'
INC: 88.6°
AZM: 180.45°
VS: 5,307.13'

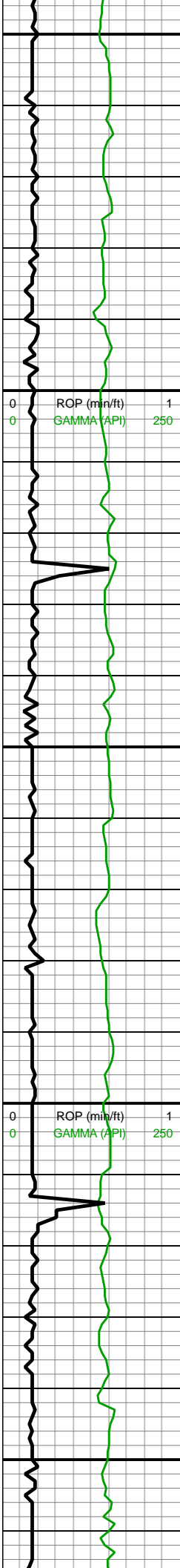
WOB: 40klbs
RPM: 60
SPM: 207
SPP: 4,260psi

MD: 13,673'
TVD: 7,721.78'
INC: 88.54°
AZM: 179.55°
VS: 5,394.79'



13500-13600 MRLST
(80%): dk gy-v dk gy, sb
frm-frm-brit, sb blkyl-bkyl
mod fis ctngs, sl slty tex,
occ vf pyr thru, rr bent, rr-tr
fos frags, mod calc wi
brn mrly resdl; CHK
(20%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blkyl ctngs, sl slty tex, rr
forams, tr vf pyr, hi calc;
BENT (tr): trns l v lt gn
frm-brit bent wi occ pyr
strg-off wh-tn sft bent,
orng flr, non calc

13600-13700 MRLST
(80%): dk gy-v dk gy, sb
frm-frm-brit, mod fis sb
blkyl-bkyl-sb plty ctngs, sl
slty tex, occ vf pyr thru, rr c
pyr strg, rr bent, tr fos
frags, mod calc wi brn
mrly resdl; CHK (20%):
gy-dk gy wi f wh chky incl
& forams, frm, brit ip,
l-mod fis sb rd-sb blkyl
ctngs, sl slty tex, rr
forams, tr vf pyr, hi calc



13,750
13,760
13,770
13,780
13,790
13,800
13,810
13,820
13,830
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

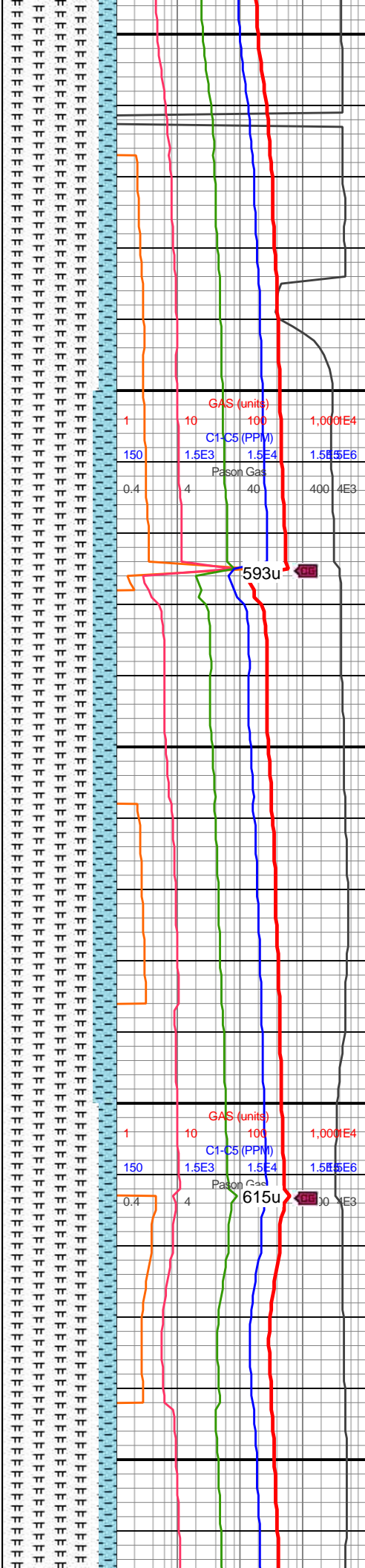
MD: 13,762'
TVD: 7,724.06'
INC: 88.52°
AZM: 178.88°
VS: 5,482.64'

WOB: 38klbs
RPM: 60
SPM: 207
SPP: 4,220psi

MD: 13,851'
TVD: 7,726.04'
INC: 88.93°
AZM: 178.71°
VS: 5,570.6'

MW IN: 10.25
VIS IN: 46
MW OUT: 10.2
VIS OUT: 45

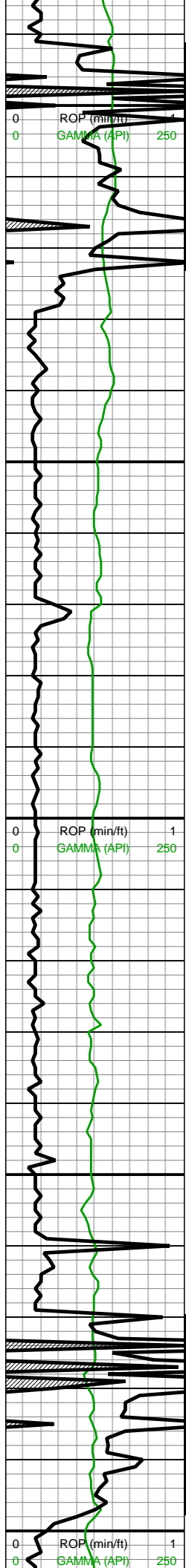
MD: 13,940'
TVD: 7,727.43'
INC: 89.28°
AZM: 178.42°
VS: 5,658.63'



13700-13800 MRLST
(85%): dk gy-v dk gy, sb
frm-frm-brit, mod fis sb
blky-blky-sb plty ctngs, sl
silty tex, occ vf pyr thru, rr c
pyr strg, rr bent, tr fos
frags, mod calc wi brn
mrly resdl; CHK (15%):
gy-dk gy wi f wh chky incl
& forams, frm, brit ip,
l-mod fis sb rd-sb blky
ctngs, sl silty tex, rr
forams, tr vf pyr, hi calc

13800-13900 MRLST
(80%): dk gy-v dk gy, sb
frm-frm-brit, mod fis sb
blky-blky-sb plty ctngs, sl
silty tex, occ vf pyr thru, rr c
pyr strg, rr bent, tr fos
frags, mod calc wi brn
mrly resdl; CHK (20%):
gy-dk gy wi f wh chky incl
& forams, frm, brit ip,
l-mod fis sb rd-sb blky
ctngs, sl silty tex, rr
forams, tr vf pyr, hi calc

13900-14000 MRLST



WOB: 33klbs
RPM: 0
SPM: 207
SPP: 3,800psi

MINDEPTH 12/7/18

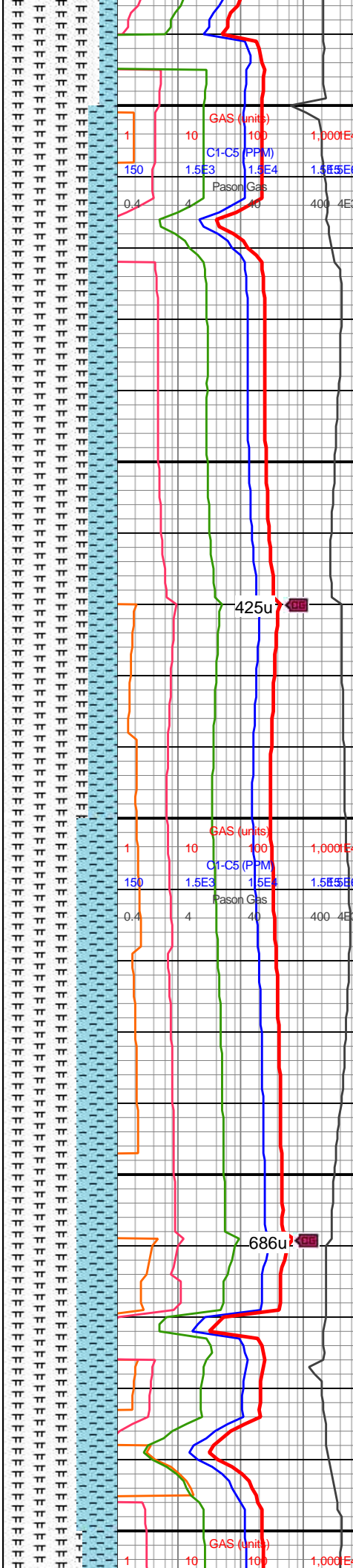
MD: 14,208'
TVD: 7,730.1'
INC: 89.56°
AZM: 179.09°
VS: 5,923.27'

MD: 14,297'
TVD: 7,730.67'
INC: 89.7°
AZM: 179.93°
VS: 6,011.07'

MW IN: 10.2
VIS IN: 45
MW OUT: 10.2
VIS OUT: 44

MD: 14,386'
TVD: 7,730.83'
INC: 90.1°
AZM: 181.93°
VS: 6,098.49'

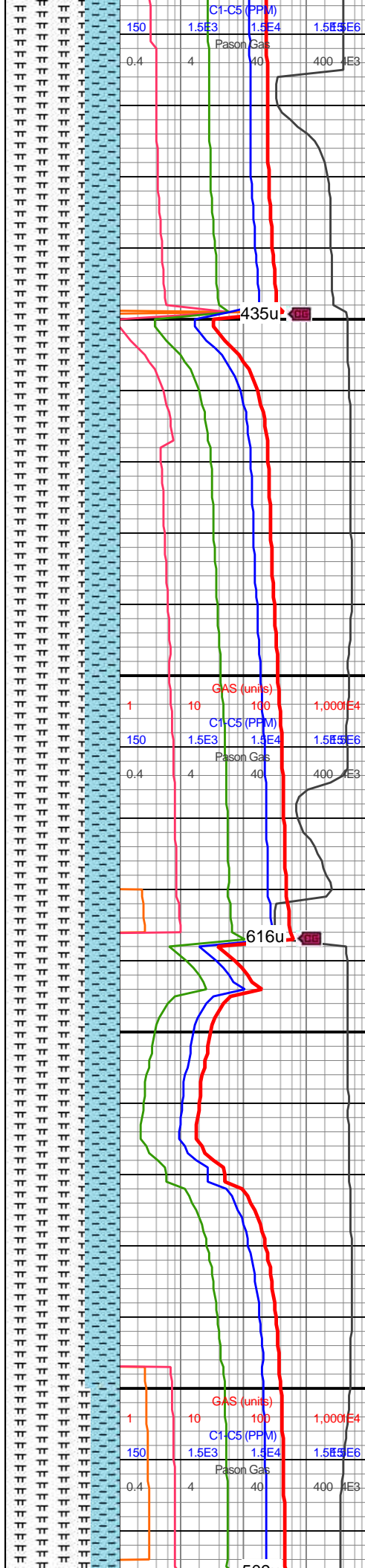
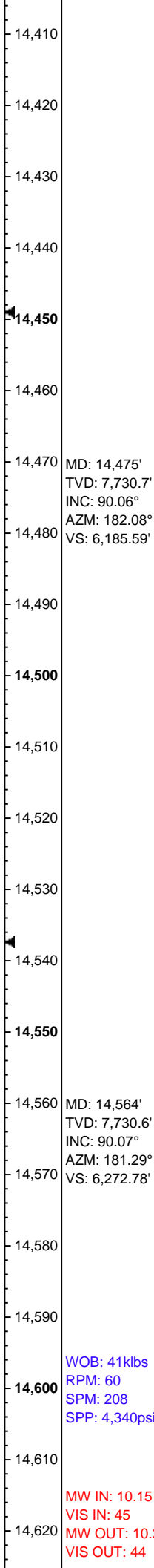
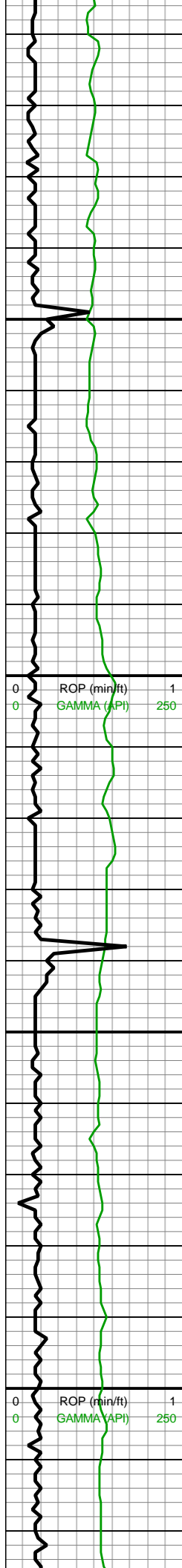
WOB: 19klbs
RPM: 60
SPM: 208
SPP: 3,930psi



calc w/ brn mry resdl;
CHK (15%): dk gy,
frm-brit l-mod fis sb rd-sb
blky ctngs, sl slty tex, tr
forams, hi calc

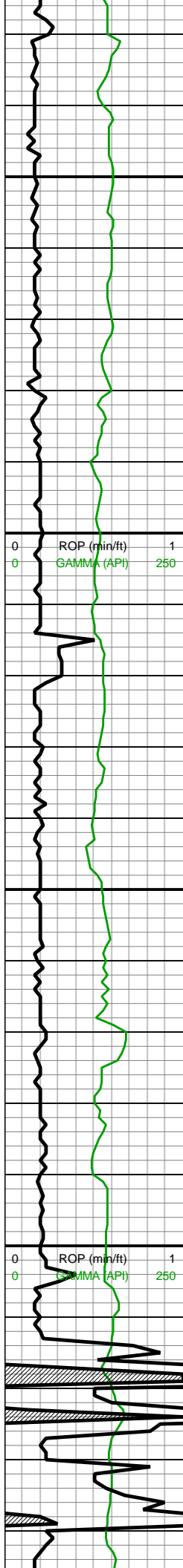
14200-14300 MRLST
(75%): dk gy-v dk gy, sb
frm-frm-brit, sb blky-blky
mod fis ctngs, sl slty tex,
occ vf pyr thru, rr bent, rr-tr
fos frags, mod calc wi
brn mry resdl; CHK
(25%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blky ctngs, sl slty tex, rr
forams, tr vf pyr, hi calc;
BENT (tr): trns l v lt gn
frm-brit bent wi occ pyr
strg-off wh-tn sft bent,
orgn flr, non calc

14300-14400 MRLST
(65%): dk gy-v dk gy wi f-u
f sp marl incl & thn brn
marl lamn, sb
frm-frm-brit, sb blky-blky
mod fis ctngs, sl slty arg
tex, occ vf pyr thru, rr bent,
mod calc wi brn mry
resdl; CHK (35%): med
gy-dk gy wi f wh chky incl
& thn lamn, sft-sb
frm-frm, l-mod fis sb
rd-sb blky ctngs, sl slty
tex, rr forams, tr vf pyr, hi
calc; BENT (tr): trns l v lt
gn frm-brit bent wi occ pyr
strg-off wh-tn sft bent,
orgn flr, non calc



14400-14500 MRLST
(70%): dk gyshbn-dk gy
wi f brn marly lamn, sb
frm-frm mod fis sb
blky-blky-tab ctngs, sl slty
arg tex, rr-occ vf pyr, rr-tr
off wh-tn-v lt gn bent, mod
calc wi brn mrly resdl;
CHK (30%): med gy-dk
gy, sf-sb frm-frm-brit,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, tr
forams, hi calc

14500-14600 MRLST
(70%): dk gy-v dk gy, sb
frm-frm-brit, sb blky-blky
mod fis ctngs, sl slty tex,
occ vf pyr thru, rr bent, rr-tr
fos frags, mod calc wi
brn mrly resdl; CHK
(30%): gy-dk gy wi f wh
chky incl & forams, frm,
brit ip, l-mod fis sb rd-sb
blky ctngs, sl slty tex, rr
forams, tr vf pyr, hi calc;
BENT (tr): trns l v lt gn
frm-brit bent wi occ pyr
strg-off wh-tn sft bent,
orng flr, non calc



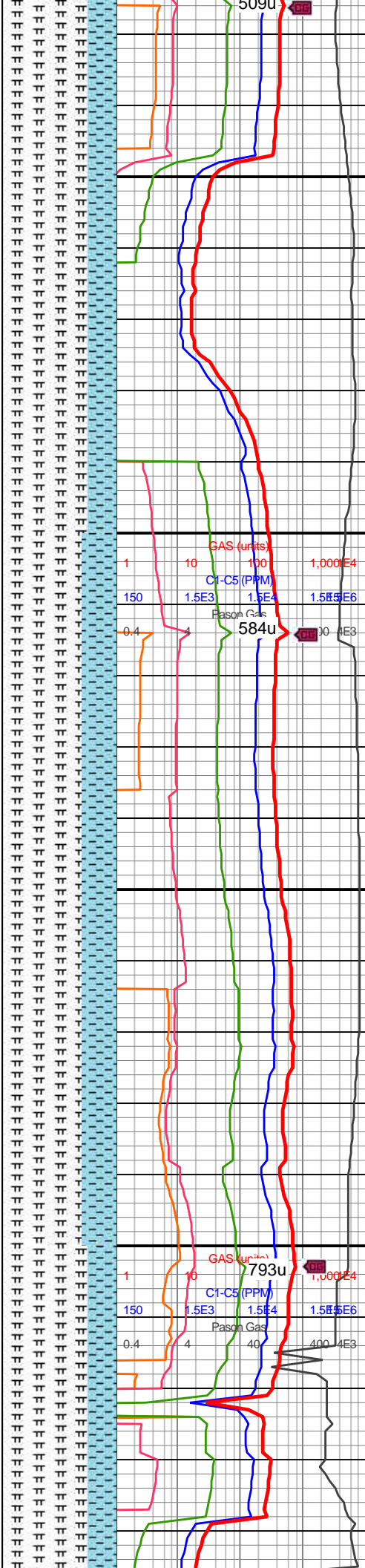
14,630
14,640
14,650
14,660
14,670
14,680
14,690
14,700
14,710
14,720
14,730
14,740
14,750
14,760
14,770
14,780
14,790
14,800
14,810
14,820
14,830
14,840

MD: 14,653'
TVD: 7,730.56'
INC: 89.99°
AZM: 180.44°
VS: 6,360.23'

MD: 14,742'
TVD: 7,730.39'
INC: 90.22°
AZM: 180.18°
VS: 6,447.82'

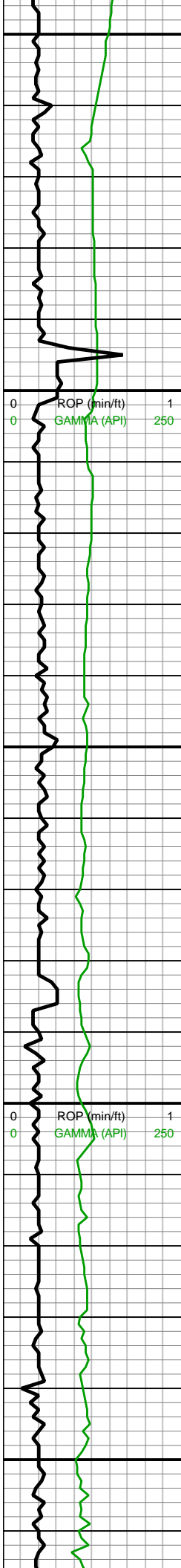
WOB: 40klbs
RPM: 60
SPM: 207
SPP: 4,450psi

MD: 14,832'
TVD: 7,730.16'
INC: 90.08°
AZM: 179.88°
VS: 6,536.48'



14600-14700 MRLST
(75%): dk gy-dk gyshbn,
sb frm-frm mod fis sb
blky-blky-tab ctngs wi occ
brn marl lamn thru, sl slty
arg tex, rr vf pyr, rr-tr off
wh-tn-v lt gn bent, mod
calc; CHK (25%): dk gy wi
vf thn wh-lt gy lamn thru,
frm-brit l-mod fis sb rd-sb
blky ctngs, sl slty tex, rr
forams, tr fos frags &
mict cal, hi calc

14700-14800 MRLST
(70%): dk gyshbn-dk gy,
sb frm-frm mod fis sb
blky-blky-tab ctngs wi f
brn marly lamn, sl slty
arg tex, rr-occ vf pyr, rr-tr
off wh-tn-v lt gn bent, mod
calc wi brn mrly resdl;
CHK (30%): med gy-dk
gy, sf-sb frm-frm-brit,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, tr
forams, hi calc



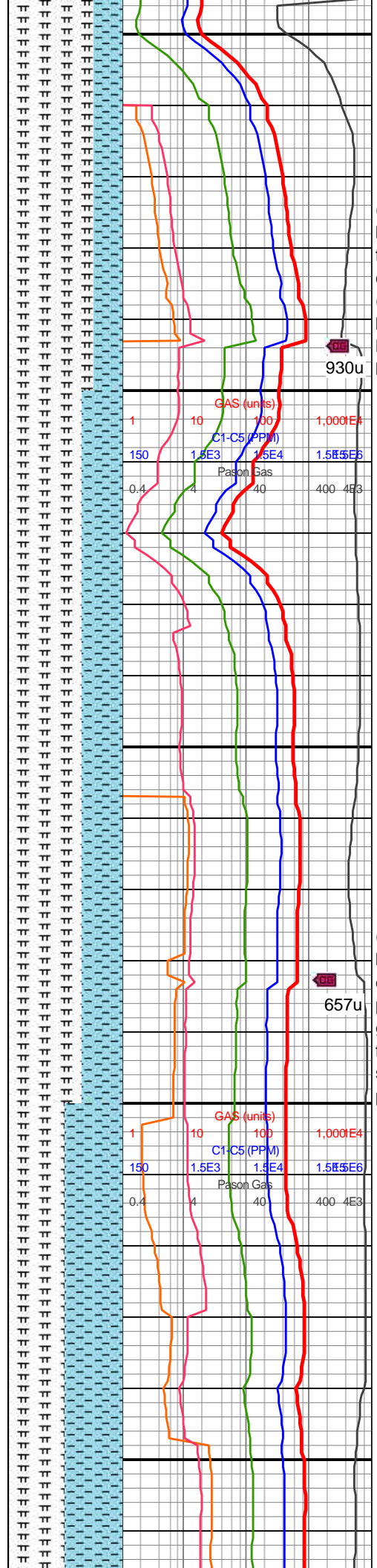
14,850
14,860
14,870
14,880
14,890
14,900
14,910
14,920
14,930
14,940
14,950
14,960
14,970
14,980
14,990
15,000
15,010
15,020
15,030
15,040
15,050
15,060

MD: 14,921'
TVD: 7,729.74'
INC: 90.46°
AZM: 179.25°
VS: 6,624.28'

MW IN: 10.2
VIS IN: 47
MW OUT: 10.1+
VIS OUT: 44

WOB: 40.8klbs
RPM: 60
SPM: 206
SPP: 4,252psi

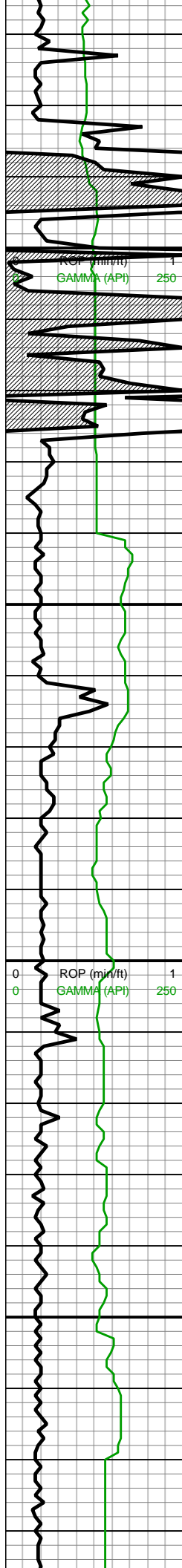
MD: 15,010'
TVD: 7,729.25'
INC: 90.17°
AZM: 178.51°
VS: 6,712.24'



14800-14900 MRLST
(75%): pred v dk gy-dk gy
brn, sme med gy, frm-v
frm, mod fis sb blkly-blky
ctngs, mod calc; CHK
(25%): med gy-med gy
brn, occ lt gy, thn lt gy
lamn thru, frm, mod fis
blkly ctngs, tr vf pyr, v calc

14900-15000 MRLST
(65%): med gy-dk gy, frm,
brit, sb ang-sb blkly-blky
ctngs, sl slty tex, com vf
pyr, hi calc; CHK (35%): lt
gy-med gy, frm, brit, mod
fis sb blkly-blky ctngs,
slty-sl gt tex wi forams, vf
pyr, hi calc;





MW IN: 10.2
VIS IN: 48
MW OUT: 10.1+
VIS OUT: 45

MW IN: 10.2
VIS IN: 46
MW OUT: 10.1+
VIS OUT: 43

Bit #: 2
Type: U516M
Size: 8 1/2
Depth In: 15,161'
Depth Out:
17,665'
Hours: 9.6 hrs
Avg Ft/Hr: 365 ' /hr
Jets: 6x14
S/N: 44580

TOOH for RSS
BHA @ 08:00
12/7/18

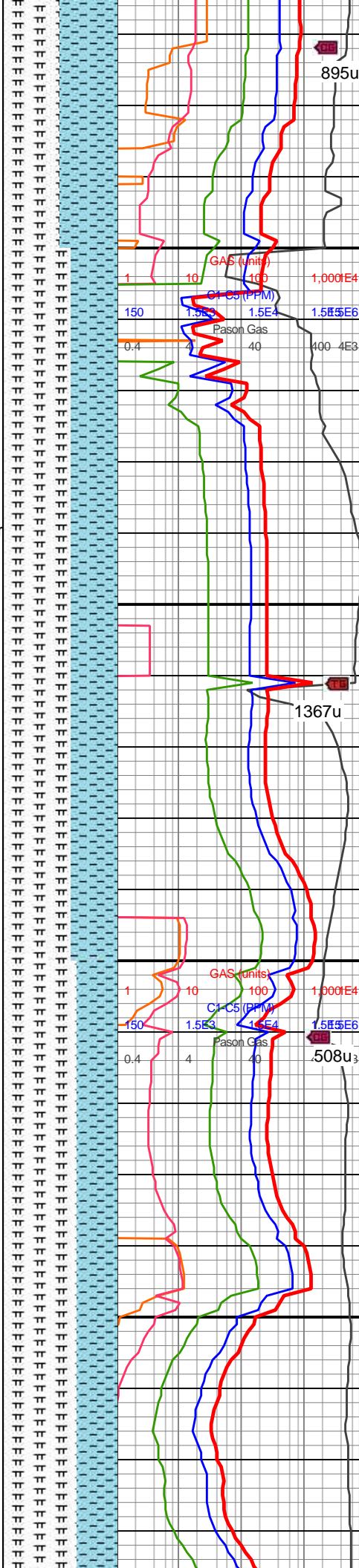
MINDEPTH 12/8/18

Resumed
Drilling 08:15
12/8/18

MD: 15,163'
TVD: 7,728.33'
INC: 90.52°
AZM: 180.62°
VS: 6,863.16'

WOB: 30.8klbs
RPM: 60
SPM: 188
SPP: 3,734psi

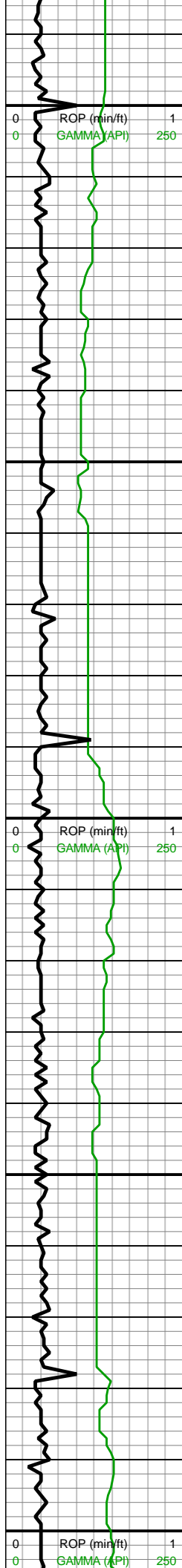
MD: 15,252'
TVD: 7,728.85'
INC: 88.8°
AZM: 179.21°
VS: 6,950.86'



15000-15100 CHK
(50%): predy gyshbn,
sme med gy-lt gy, sb
blky-sb ang ctngs, fri-frm,
tr intbd MRLST, sm chky
tex, calc, scat imbd pyr;
MRLST (50%): dk
gyshbn-dk gy, frm-sl hd,
sb blky-ang ctngs, sl
sm-rgh tex, com intbd
CHK, hi calc

15100-15200 MRLST
(60%): dk gy-v dk gy, sb
frm-frm-brit, mod fis sb
blky-blky-sb plty ctngs, sl
silty tex, occ vf pyr thru,
mod calc; CHK (40%):
gy-dk gy wi f wh chky incl
& forams, frm, brit ip,
l-mod fis sb rd-sb blky
ctngs, rr forams, tr vf pyr,
hi calc

15200-15300 MRLST
(65%): dk gy-dk gyshbn,
frm, mod fis sb blky
ctngs, mot, rr vf pyr, mod
calc wi brn mrly resdl;
CHK (35%): dk gy mot wi



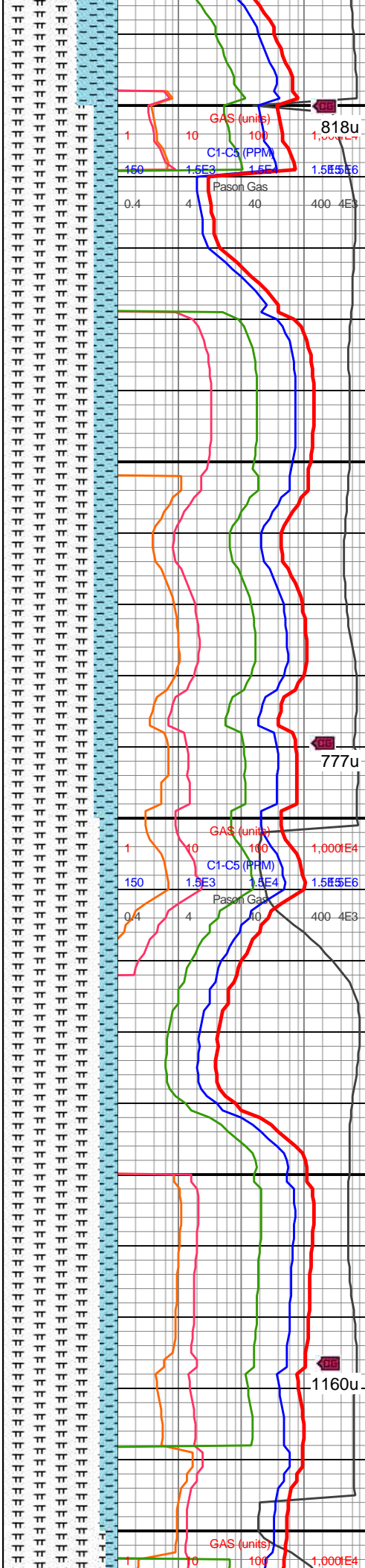
15,290
15,300
15,310
15,320
15,330
15,340
15,350
15,360
15,370
15,380
15,390
15,400
15,410
15,420
15,430
15,440
15,450
15,460
15,470
15,480
15,490
15,500

MD: 15,341'
TVD: 7,730.74'
INC: 88.77°
AZM: 178.48°
VS: 7,038.81'

WOB: 34.6klbs
RPM: 60
SPM: 190
SPP: 3,854psi

MD: 15,430'
TVD: 7,732.61'
INC: 88.82°
AZM: 178.62°
VS: 7,126.83'

MW IN: 10.1+
VIS IN: 49
MW OUT: 10.1
VIS OUT: 47

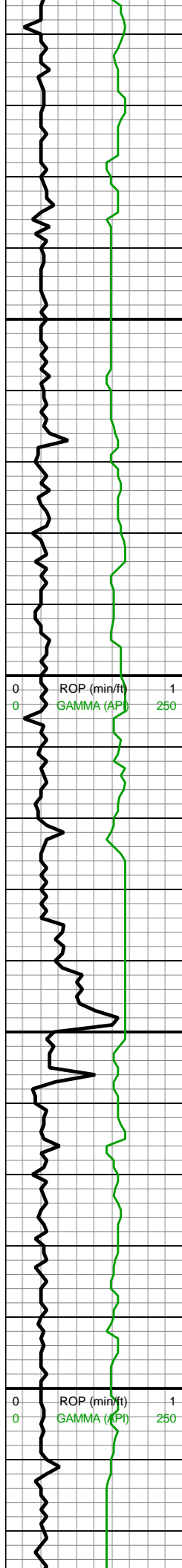


f wh chky incl, scat-occ
vf-f forams & fos frags,
frm-brit mod fis ctngs, tr
vf pyr, hi calc

15300-15400 MRLST
(80%): dk gy-dk gyshbn,
frm, mod fis sb blk
ctngs, mot, rr vf pyr, mod
calc wi brn mrly resdl;
CHK (20%): dk gy mot wi
f wh chky incl & vf-f
forams, frm-brit mod fis
ctngs, tr vf pyr, hi calc

15400-15500 MRLST
(85%): pred v dk gy-dk gy
brn, sme med gy, frm-v
frm, mod fis, sb blk,
mod calc; CHK (15%):
med gy-med gy brn, sme
dk gy, mot wi wh-lt gy
chky incl, frm, blk, sm
arg tex, rr-occ forams, v
calc





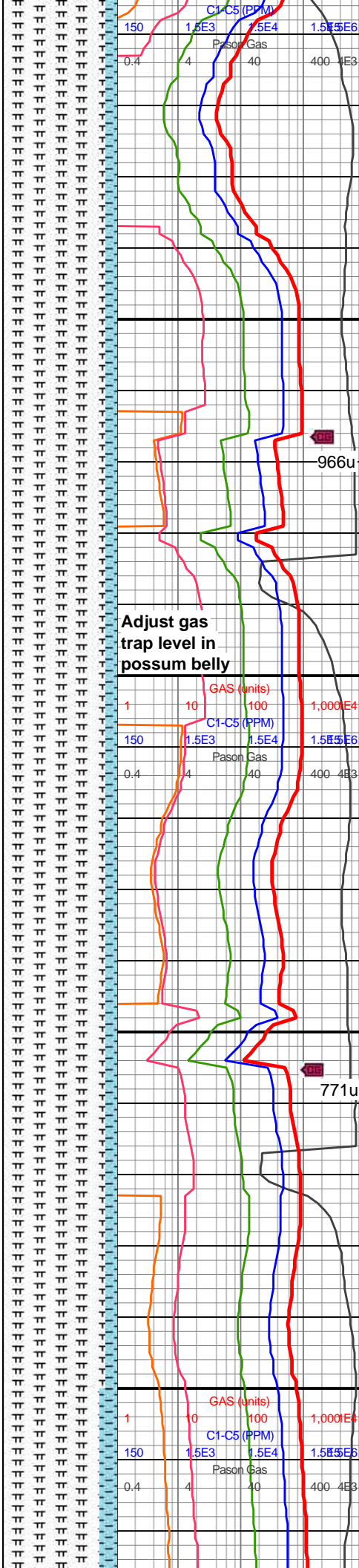
MD: 15,519'
TVD: 7,734.37'
INC: 88.92°
AZM: 178.66°
VS: 7,214.83'

WOB: 34.3klbs
RPM: 60
SPM: 186
SPP: 3,753psi

MD: 15,608'
TVD: 7,736.15'
INC: 88.79°
AZM: 178.44°
VS: 7,302.86'

MW IN: 10.2
VIS IN: 46
MW OUT: 10.2
VIS OUT: 44

MD: 15,697'
TVD: 7,738'
INC: 88.82°
AZM: 179.13°
VS: 7,390.82'



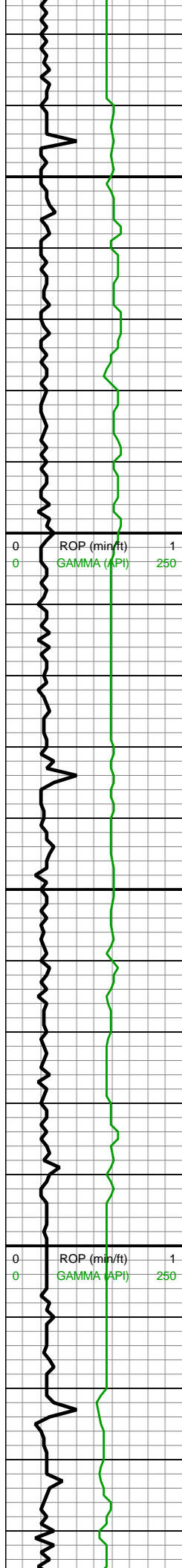
Adjust gas
trap level in
possum belly

966u

15500-15600 CHK
(90%): pred gyshbn, med
gy, mot-stri, frm, blkysb
tab ctngs, sm-chky tex, hi
calc; MRLST (10%): dk
gy-dk gyshbn, sb blkysb
tab, frm-sl hd, intbdd
CHK, sm arg tex, tr mic
pyr, mod-hi calc

771u

15600-15700 MRLST
(90%): predy dk gy, med
gy, mot, sl hrd-frm,
blkysb tab, tr imbd/pp
pyr, v calc; CHK (10%):
med brn-dk gyshbn, mot,
frm-sl sft, blkysb splt,
chky tex, tr imbd mic pyr, v
calc



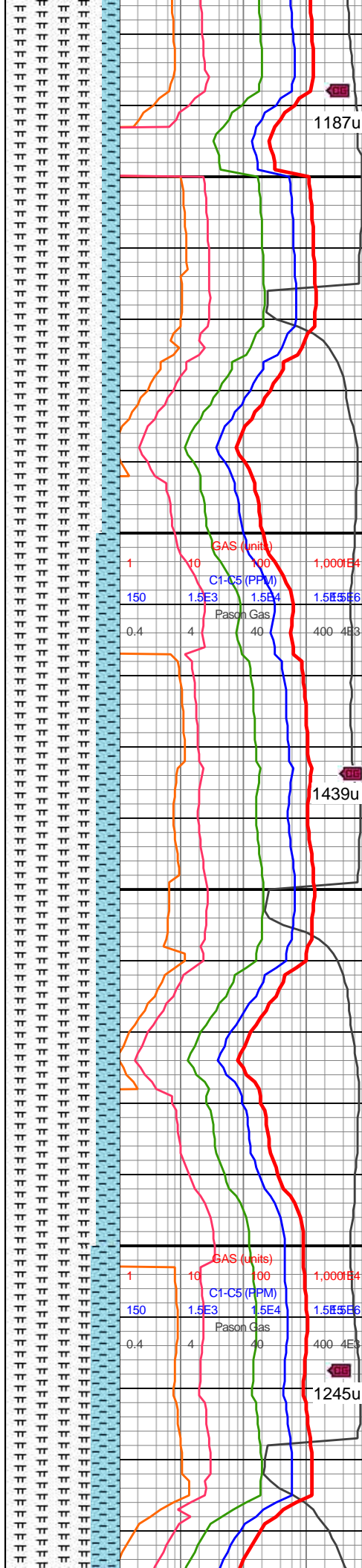
15,730
15,740
15,750
15,760
15,770
15,780
15,790
15,800
15,810
15,820
15,830
15,840
15,850
15,860
15,870
15,880
15,890
15,900
15,910
15,920
15,930
15,940

MD: 15,786'
TVD: 7,739.84'
INC: 88.82°
AZM: 179.95°
VS: 7,478.61'

WOB: 33.9klbs
RPM: 60
SPM: 492
SPP: 3,862psi

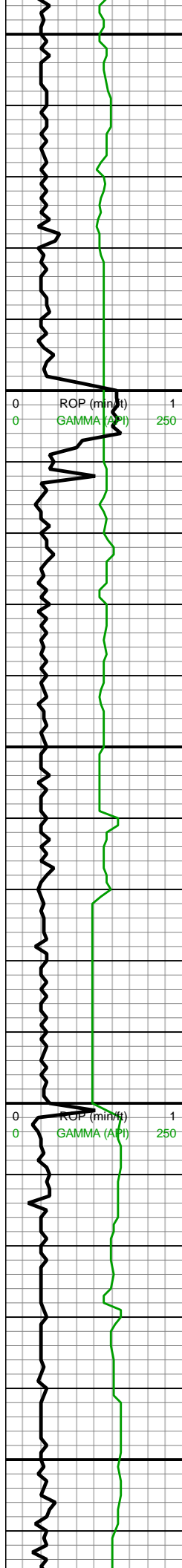
MW IN: 10.2
VIS IN: 45
MW OUT: 10.1+
VIS OUT: 43

MD: 15,875'
TVD: 7,741.59'
INC: 88.92°
AZM: 181.22°
VS: 7,566.11'



15700-15800 MRLST
(85%): med-dk gy, frm-v
frm, mod fis sb blkylkly
ctngs, rr-occ vf-u f pyr,
mod calc; CHK (15%):
med gy-med gy brn, frm
l-mod fis sb rd-sb blkylkly
ctngs mot wi wh-lt gy
elong wh chky incl, chky
tex, tr vf pyr, v calc

15800-15900 MRLST
(80%): pred dk gy-dk gy
brn, frm-v frm, mod fis sb
blkylkly ctngs, mod calc
wi brn mrly resdl; CHK
(20%): med gy-med gy
brn, sme lt gy, frm, l-mod
fis sb blkylkly ctngs, tr
forams, tr f-vf pyr, tr fos
frags, v cal



15,950
15,960
15,970
15,980
15,990
16,000
16,010
16,020
16,030
16,040
16,050
16,060
16,070
16,080
16,090
16,100
16,110
16,120
16,130
16,140
16,150
16,160

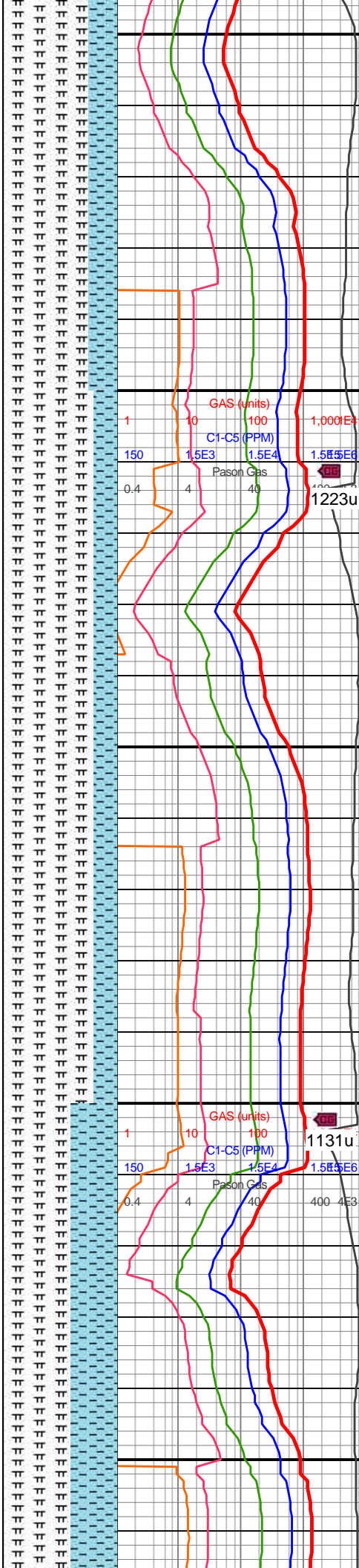
MD: 15,964'
TVD: 7,743.28'
INC: 88.9°
AZM: 182.72°
VS: 7,653.2'

MW IN: 10.1+
VIS IN: 46
MW OUT: 10.1+
VIS OUT: 44

WOB: 35.3klbs
RPM: 60
SPM: 188
SPP: 3,796psi

MD: 16,053'
TVD: 7,744.57'
INC: 89.45°
AZM: 181.81°
VS: 7,740.2'

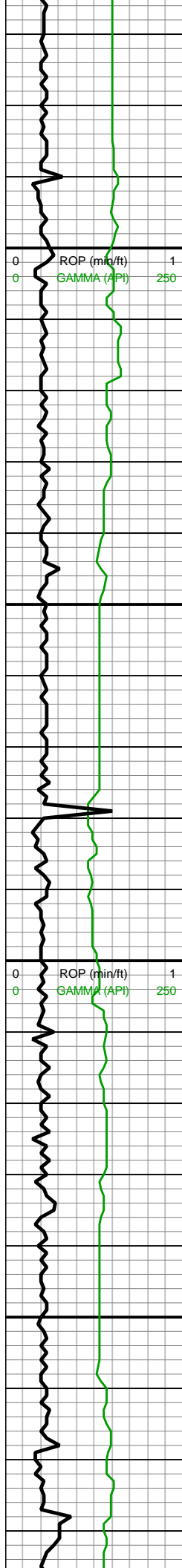
MD: 16,143'
TVD: 7,745.16'
INC: 89.79°
AZM: 181.17°
VS: 7,828.43'



15900-16000 MRLST
(75%): dk gy-dk gyshbn,
mod fis wi wxy lstr ip, sb
blky-blky ctngs, rr plty hi
fis ctngs, sb frm-frm, occ
hd-brit, sl slty tex, thn
lamn ip, v tr vf pyr, mod
calc; CHK (25%): lt gy,
occ dk gy, sft-sb frm-frm,
sb blky, chky tex, rr foram,
tr vf pyr, hi calc

16000-16100 MRLST
(80%): v dk gy-blk,
frm-hd-brit, sm arg-sl slty
tex, mod calc; CHK
(20%): lt gy-med gy, sb
frm-frm l-mod fis sb
rd-sb blky ctngs wi sm
arg-sl slty tex, occ f-u f wh
chky incl, tr-rr vf pyr strg
ip, hi calc





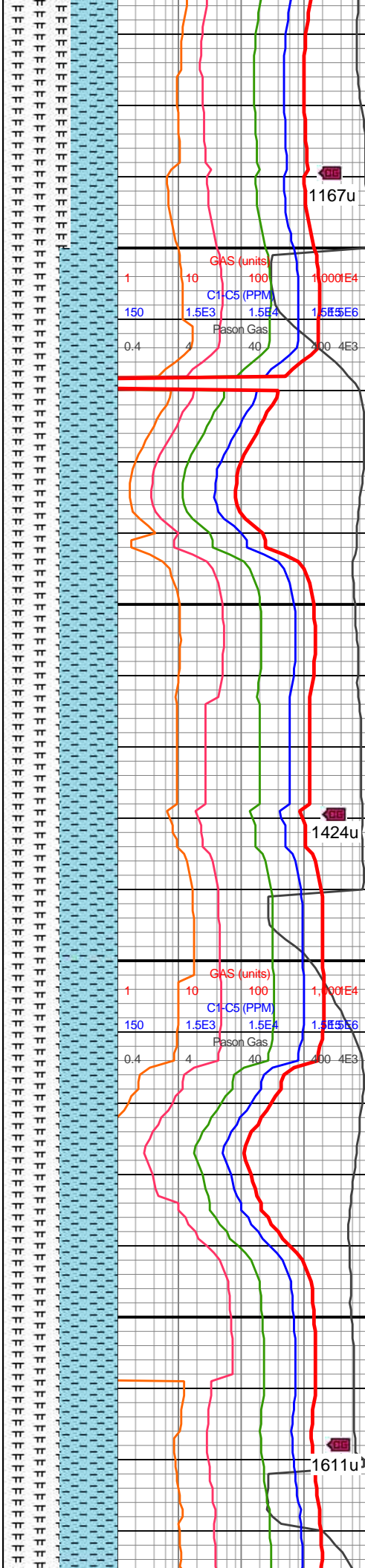
MW IN: 10.1+
VIS IN: 47
MW OUT: 10.1
VIS OUT: 45

WOB: 36.8klbs
RPM: 61
SPM: 194
SPP: 3,941psi

MD: 16,232'
TVD: 7,745.59'
INC: 89.66°
AZM: 180.15°
VS: 7,915.93'

MD: 16,321'
TVD: 7,745.95'
INC: 89.88°
AZM: 180.27°
VS: 8,003.56'

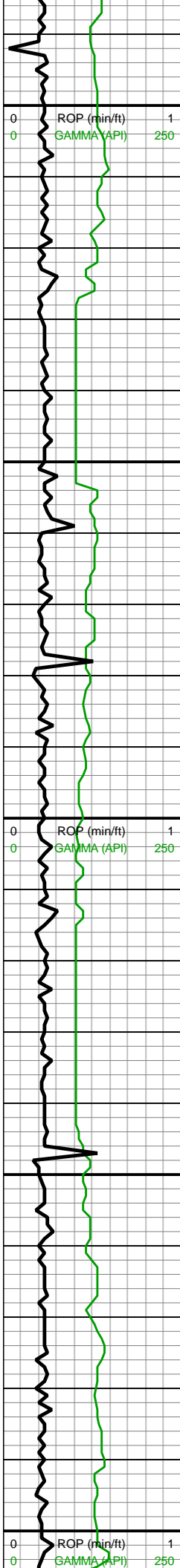
MW IN: 10.2
VIS IN: 46
MW OUT: 10.1+
VIS OUT: 44



16100-16200 MRLST
(60%): med-v dk gry,
predy blkly wi com lamn, v
brit-hrd, micmica, hily
calc; CHK (40%) pred
ltgy-occ gyshbn wi sme
com lt thn chky lamn, sub
blkly-blky with occ plty, v
soft-ltly frm, rgh tex wi
rr-pp pyr, hily calc

16200-16300 MRLST
(50%): dk gy-gyshbn, sb
frm-frm, brit ip, blkly,
sm-sl slty arg tex, occ
mot brn mrly incl ip; CHK
(50%): med gy, dk gy ip,
sme lt gy, frm-brit, sb
blkly-blky, chky tex, sme vf
pyr, hi calc

16300-16400 CHK
(50%): pred med gy-lt gy,
sem offwht-v lt gy,
frm-brit, sb blkly-blky, chky
tex, sme vf pyr, hi calc;



WOB: 34.1klbs
RPM: 60
SPM: 194
SPP: 3,987psi

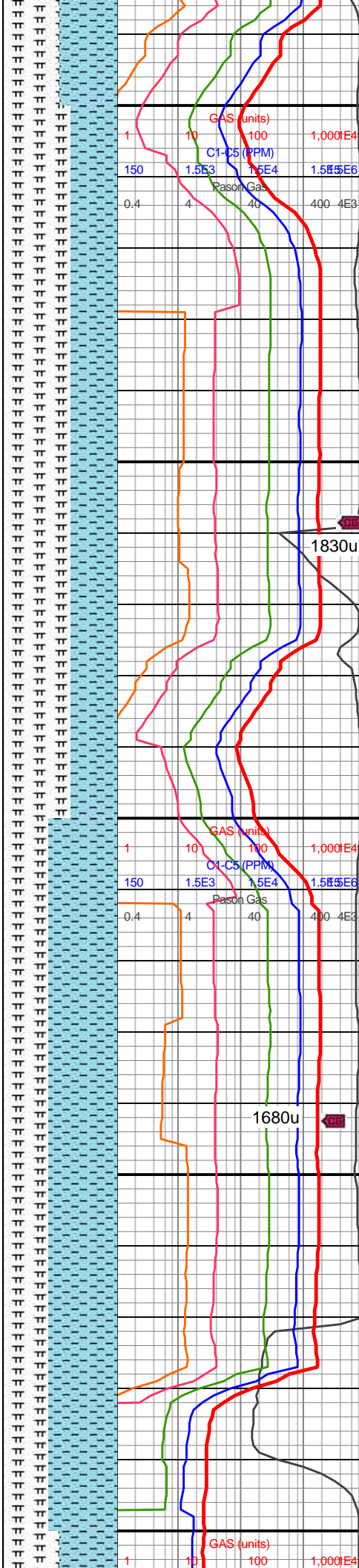
MD: 16,410'
TVD: 7,746.2'
INC: 89.8°
AZM: 180.68°
VS: 8,091.11'

MD: 16,499'
TVD: 7,746.46'
INC: 89.86°
AZM: 180.45°
VS: 8,178.64'

MW IN: 10.1
VIS IN: 46
MW OUT: 10.1+
VIS OUT: 44

MD: 16,588'
TVD: 7,746.58'
INC: 89.98°
AZM: 180.53°
VS: 8,266.19'

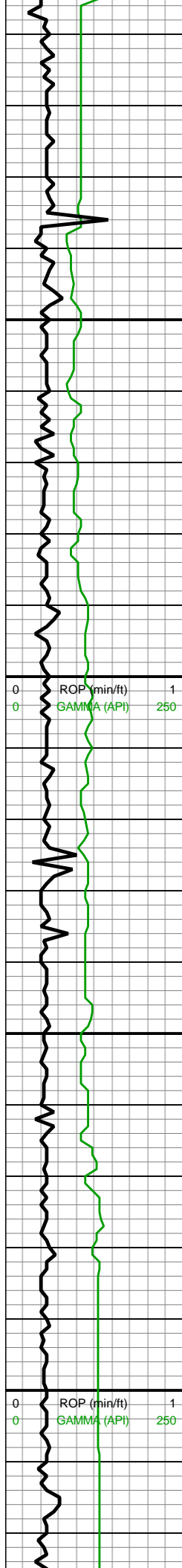
WOB: 34.9klbs
RPM: 61
SPM: 194
SPP: 3,987psi



MRLST (50%): dk gy,
gyshbn ip, sb frm-frm, brit
ip, blkly, sm-sl slty arg tex,
occ mot brn mrly incl ip,
occ calc frac fill

16400-16500 MRLST
(60%): dk gy-gyshbn, sb
frm-frm, brit ip, blkly,
sm-sl slty arg tex, occ
mot brn mrly incl ip, occ
calc frac fill; CHK (40%):
med-lt gy, dk gy, frm-brit,
sb blkly-blkly, chky tex,
sme vf pyr, hi calc

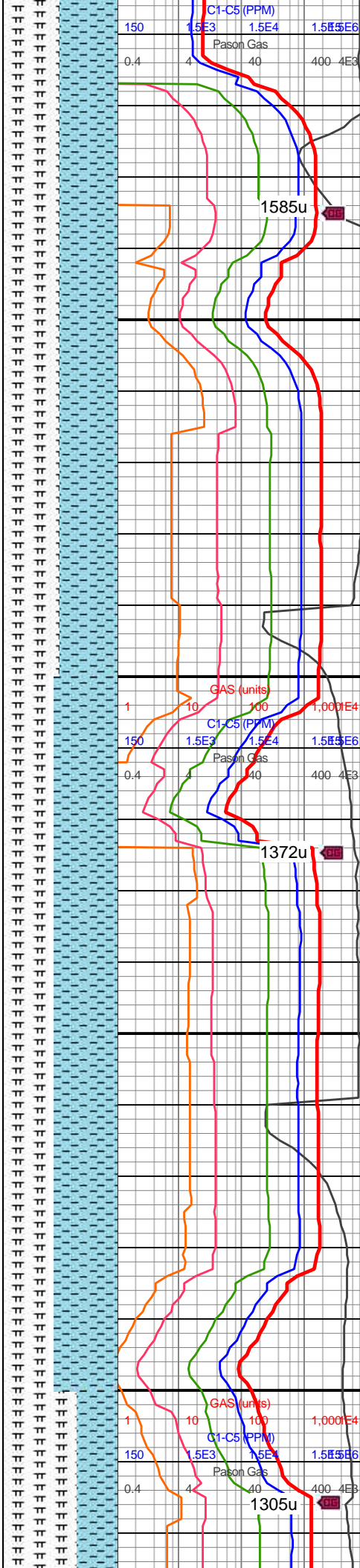
16500-16600 CHK
(60%): gyshbn-lt gy, mot
med gy, chky rthy tex,
frm-brit, sb blkly-blkly, mod
fis, mot wh chky incl, v
calc; MRLST (40%): dk
gy-med gy, sb blkly-blkly,
frm-brit, sm-sl slty tex,
com intbd chk, mod calc,
tr intbd mic pyr



SPM: 191
SPP: 3,954psi

MD: 16,677'
TVD: 7,746.75'
INC: 89.8°
AZM: 180.25°
VS: 8,353.89'

WOB: 34klbs
RPM: 60
SPM: 192
SPP: 3,950psi



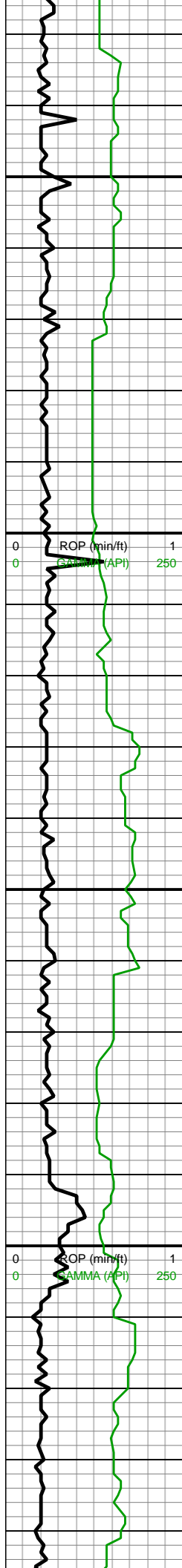
1585u

1372u

1305u

16600-16700 CHK
(50%): lt gy-gyshbn, med
gy-dk gy, wh chky incl
thru, sb rd-sb blkly, sm
arg-sl slty tex, sl frm-frm,
brit, mod fis, tr vf pyr, v
calc; MRLST (50%): dk
gy-med gy, frm-hd, brit,
sm sl slty tex, sme intbdd
wi chky incl, occ mrly incl,
mod calc

16700-16800 CHK
(35%): lt gy-med gy,
frm-brit, sb frm ip, l-mod
fis sb ang-sb rd-sb blkly
ctngs, thn wh chky lamn,
occ wh foram, hi calc;
MRLST (55%): gy-dk gy,
frm-brit sb blkly mod fis
ireg ctngs, sl slty tex, tr vf
pyr, mod calc wi brn mrly
resdl



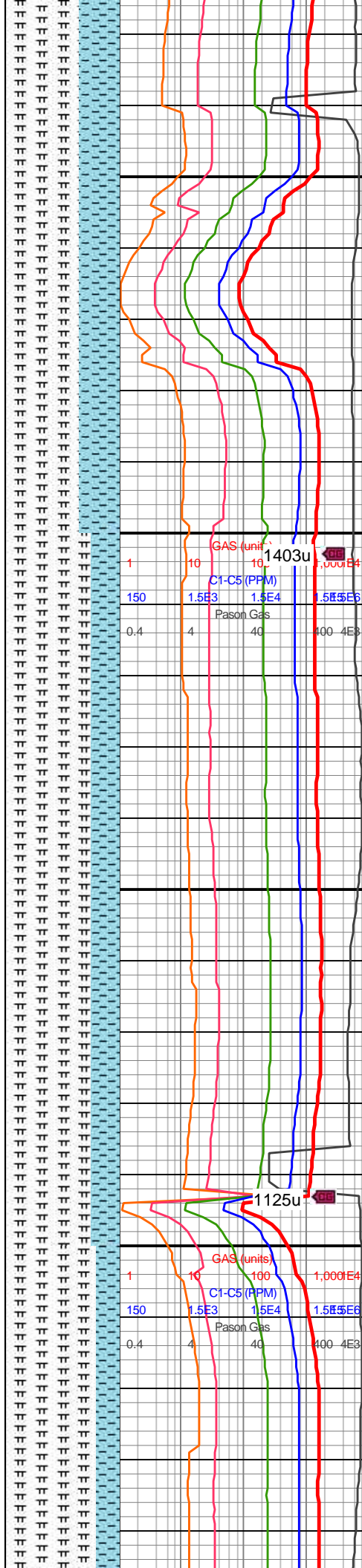
MW IN: 10.3
VIS IN: 46
MW OUT: 10.1
VIS OUT: 44

MD: 16,856'
TVD: 7,747.31'
INC: 89.83°
AZM: 180.53°
VS: 8,530.09'

MD: 16,945'
TVD: 7,747.47'
INC: 89.96°
AZM: 180.56°
VS: 8,617.62'

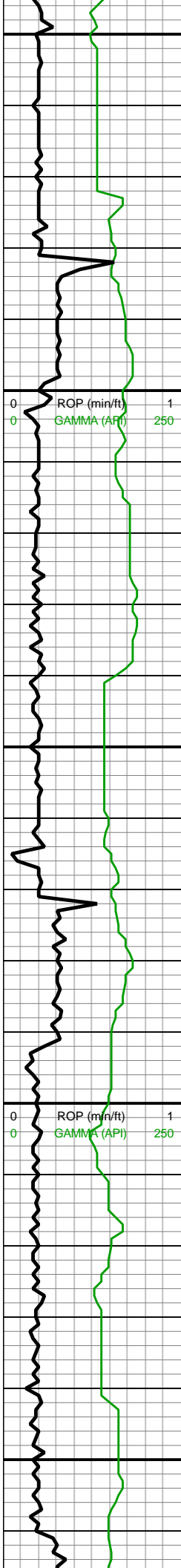
WOB: 18klbs
RPM: 61
SPM: 188
SPP: 3,750psi

MD: 17,034'
TVD: 7,747.33'
INC: 90.23°
AZM: 180.57°
VS: 8,705.15'



16800-16900 MRLST
(65%): gy-dk gy, frm-brit
sb blkly mod fis ireg
ctngs, sl slty tex, tr vf pyr,
tr tn bent, mod calc wi brn
mrly resdl; CHK (35%): lt
gy-med gy, frm-brit, sb
frm ip, l-mod fis sb
ang-sb rd-sb blkly ctngs,
thn wh chky lamn, occ wh
foram, hi calc

16900-17000 MRLST
(75%): dk gy-dk gyshbn-v
dk gy, frm-brit, mod fis sb
ang-sb blkly ctngs, sl slty
tex, tr vf pyr, tr tn bent,
mod calc wi brn mrly
resdl; CHK (25%): med
gy-dk gy, sb frm-frm-brit,
l-mod fis sb ang-sb rd-sb
blkly ctngs, thn wh chky
lamn, rr-tr wh foram, tr vf
pyr, hi calc



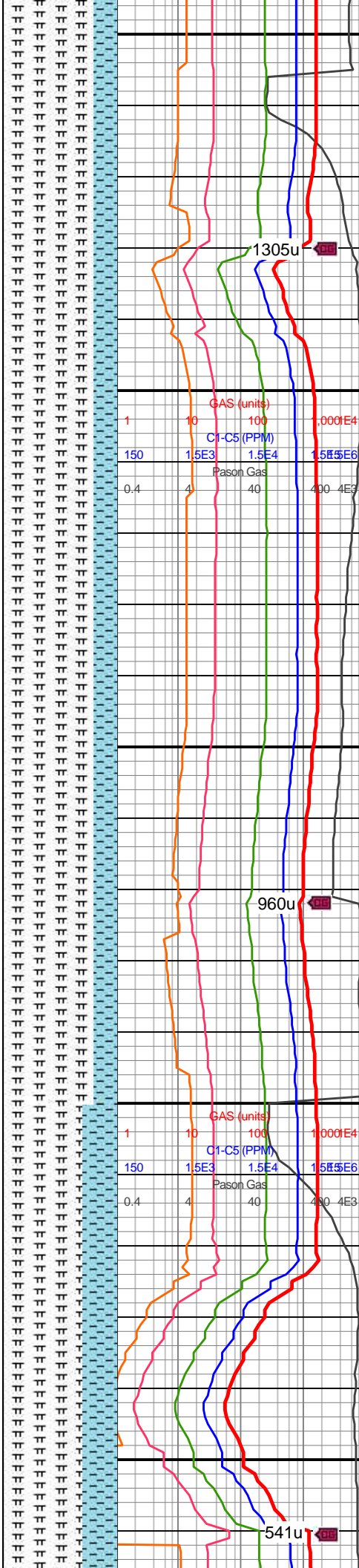
17,050
17,060
17,070
17,080
17,090
17,100
17,110
17,120
17,130
17,140
17,150
17,160
17,170
17,180
17,190
17,200
17,210
17,220
17,230
17,240
17,250
17,260

MD: 17,123'
TVD: 7,746.79'
INC: 90.46°
AZM: 180.53°
VS: 8,792.68'

MW IN: 10.2
VIS IN: 46
MW OUT: 10.3
VIS OUT: 45

WOB: 35klbs
RPM: 60
SPM: 188
SPP: 3,930psi

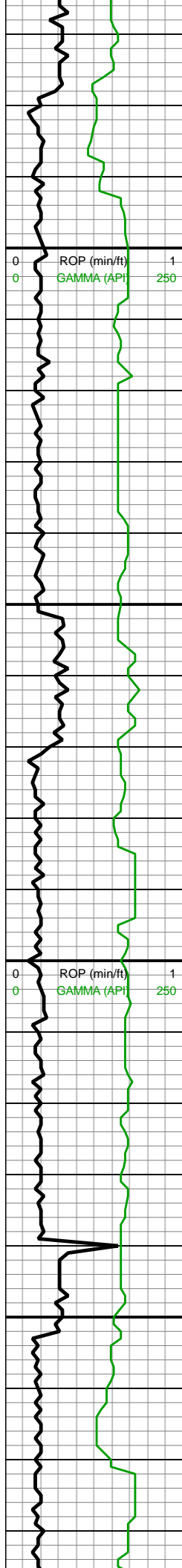
MD: 17,212'
TVD: 7,745.76'
INC: 90.87°
AZM: 180.58°
VS: 8,880.2'



17000-17100 MRLST
(80%): dk gy-dk gyshbn-v
dk gy, frm-brit sb ang-sb
blky-blky mod fis ctngs,
sm arg-sl slty tex, tr vf pyr,
tr tn bent, mod calc; CHK
(20%): med gy-dk gy wi rr
vf wh chky lamn, sb
frm-frm-brit, l-mod fis sb
ang-sb rd-sb blky ctngs,
sl slty-mot bmpy tex, rr-tr
wh foram, tr vf pyr, hi calc

17100-17200 MRLST
(80%): dk gy-v dk gy, dk
gyshbn ip, frm-brit mod
fis sb ang-sb blky ctngs,
sl slty tex, tr vf pyr, mod
calc wi brn mrly resdl;
CHK (20%): lt-med gy-dk
gy wi wh chky lamn thru,
predy frm-brit, sb frm ip,
l-mod fis sb ang-sb rd-sb
blky ctngs, rr-tr wh foram,
tr vf pyr, hi calc

17200-17300 MRLST
(70%): dk gy-v dk gy, dk
gyshbn ip, frm-brit mod
fis sb ang-sb blky ctngs,
sl slty-mot bmpy tex, rr-tr
wh foram, tr vf pyr, hi calc



17,270
17,280
17,290
17,300
17,310
17,320
17,330
17,340
17,350
17,360
17,370
17,380
17,390
17,400
17,410
17,420
17,430
17,440
17,450
17,460
17,470
17,480

MD: 17,301'
TVD: 7,744.26'
INC: 91.06°
AZM: 180.17°
VS: 8,967.77'

MD: 17,390'
TVD: 7,743.33'
INC: 90.13°
AZM: 181.32°
VS: 9,055.24'

WOB: 35klbs
RPM: 60
SPM: 188
SPP: 4,030psi

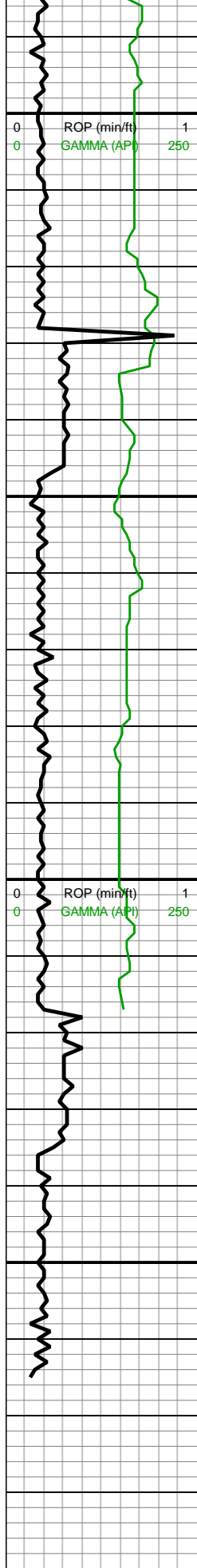
MD: 17,479'
TVD: 7,743.29'
INC: 89.92°
AZM: 180.66°
VS: 9,142.65'



ris sb ang-sb blkly ctngs,
sl slty tex, tr vf pyr, mod
calc wi brn mrly resdl;
CHK (30%): predy lt
gy-med gy, occ dk gy, mot
wi com vf thn chky lamn &
rr chky foram incl,
frm-brit, sb frm ip, l-mod
fis sb ang-sb rd-sb blkly
ctngs, rr-tr wh foram, tr vf
pyr, hi calc

17300-17400 MRLST
(80%): dk gy-dk gyshbn,
sb frm-frm-brit mod fis sb
ang-sb blkly-blky ctngs,
sm arg-sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl; CHK (20%): med
gy-dk gy wi wh chky lamn
& f-u f wh incl, predy
frm-brit, sb frm ip, l-mod
fis sb ang-sb rd-sb blkly
ctngs, rr-tr wh foram, tr
mict cal, tr vf pyr, hi calc

17400-17500 MRLST
(85%): dk gy-dk gyshbn,
sb frm wi sm arg tex- frm
brit wi sl slty tex, mod fis
sb ang-sb blkly-blky
ctngs, tr vf pyr, thn lamn,
mod calc wi brn mrly
resdl; CHK (15%): med
gy-dk gy, frm-brit l-mod



17,490
17,500
17,510
17,520
17,530
17,540
17,550
17,560
17,570
17,580
17,590
17,600
17,610
17,620
17,630
17,640
17,650
17,660
17,670
17,680
17,690

MD: 17,568'
TVD: 7,743.51'
INC: 89.8°
AZM: 181.15°
VS: 9,230.08'

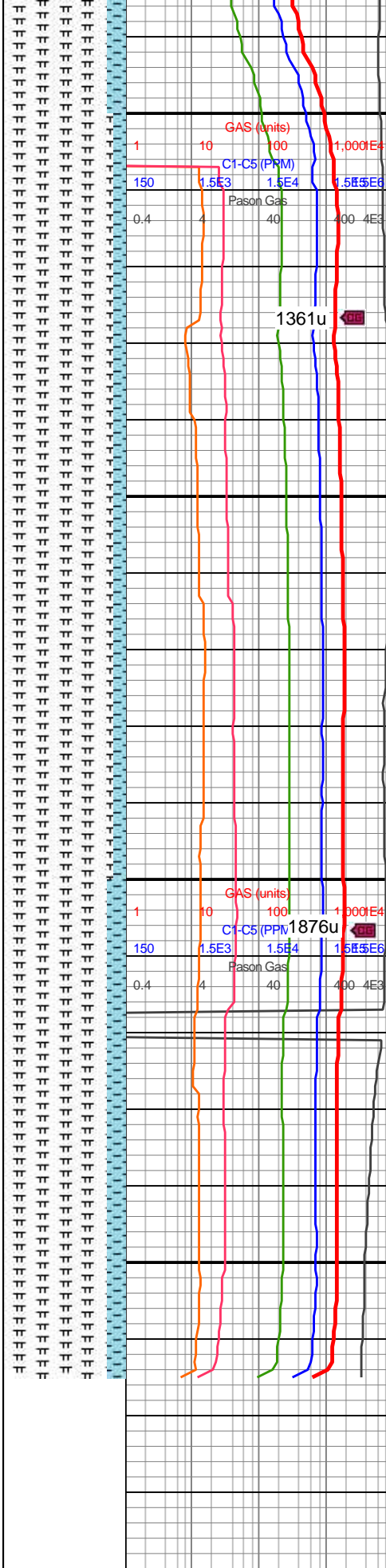
WOB: 34klbs
RPM: 60
SPM: 188
SPP: 4,030psi

MD: 17,617'
TVD: 7,743.64'
INC: 89.91°
AZM: 181.14°
VS: 9,278.17'

Bit Projection

MD: 17,665'
TVD: 7,743.71'
INC: 89.91°
AZM: 181.14°
VS: 9,325.29'

Reach TD at
22:15hrs on
12/8/18



17,490
17,500
17,510
17,520
17,530
17,540
17,550
17,560
17,570
17,580
17,590
17,600
17,610
17,620
17,630
17,640
17,650
17,660
17,670
17,680
17,690

17500-17600 MRLST
(90%): dk gy-dk gyshbn,
mot, sb frm-frm-brit mod
fis sb ang-sb blkly-blky
ctngs, sm arg-sl slty-mot
tex, tr vf pyr & tr c lse pyr
strg, mod calc wi brn mrly
resdl; CHK (10%): med
gy-dk gy wi wh chky lamn
& f-u f wh incl, sb
frm-frm-brit l-mod fis sb
ang-sb rd-sb blkly ctngs,
tr sp wh foram, tr vf pyr, hi
calc

17600-17665 MRLST
(85%): dk gy-dk gyshbn,
sb frm-frm-brit, f lamn, sb
ang-sb blkly-blky ctngs,
sm arg-sl slty-mot tex, tr
vf pyr, mod calc wi brn
mrly resdl; CHK (15%):
med gy-dk gy, frm-brit
l-mod fis sb ang-sb rd-sb
blkly ctngs, sl slty tex, tr
wh foram, thn wh chky
lamn ip, tr vf pyr, hi calc