



Scale: 5" / 100'
Measured Depth Log

Well Name Cosslett 1C-22H-B168

Location Sec. 22 T1N R68W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05123476710000

AFE # 16191458

Geographic Region Rockies

Field Wattenberg

Spud Date 1/31/2019

Drilling Completed 2/4/2019

Surface Coordinates Lat/Long: 40.041391/-104.988012
SHL: Sec. 22 T1N R68W
Footage: 925 FNL 2230 FEL

Bottom Hole Coordinates Proposed BHL: Sec. 27 T1N R68W
Footages: 460 FFSLL 2315 FFELL

Ground Elevation 5,174'

K.B. Elevation 5,197'

Logged Interval 7,050' **To** 17,471'

Total Depth 17,471'

Formation C Chalk

Type of Drilling Fluid Synthetic Oil Based Mud

Operator

Company Crestone Peak Resources

Address 370 17th Street #2170
Denver, CO 80202



CRESTONE PEAK
RESOURCES

Geologist

Zone Color Coding

Name John Ready

Company Crestone Peak Resources

Address 370 17th Street #2170
Denver, CO 80202



Oil



Condensate



Gas



Note



Core



Pressure



Error



Water



Seal

Other

Loggers: Nicholas Watkins / Brian Ferwerda

Services Provided: 2-Man Mudlogging / Geosteering

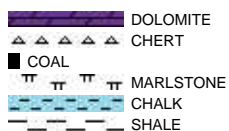
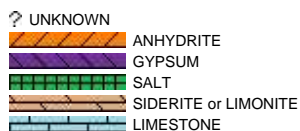
Equipment: ML-522

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

Service Start Date: 1/31/2019

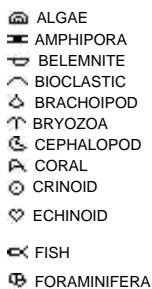
Service End Date: 2/6/2019

Rock Types



Accessories

Fossils



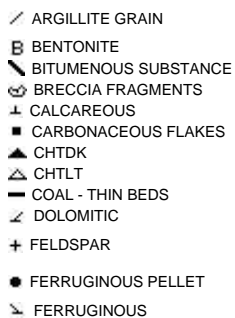
Fossil



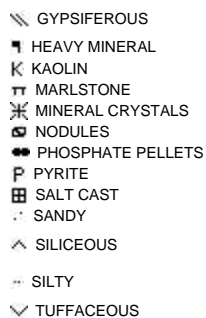
Minerals



Argillaceous



Glauconite



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

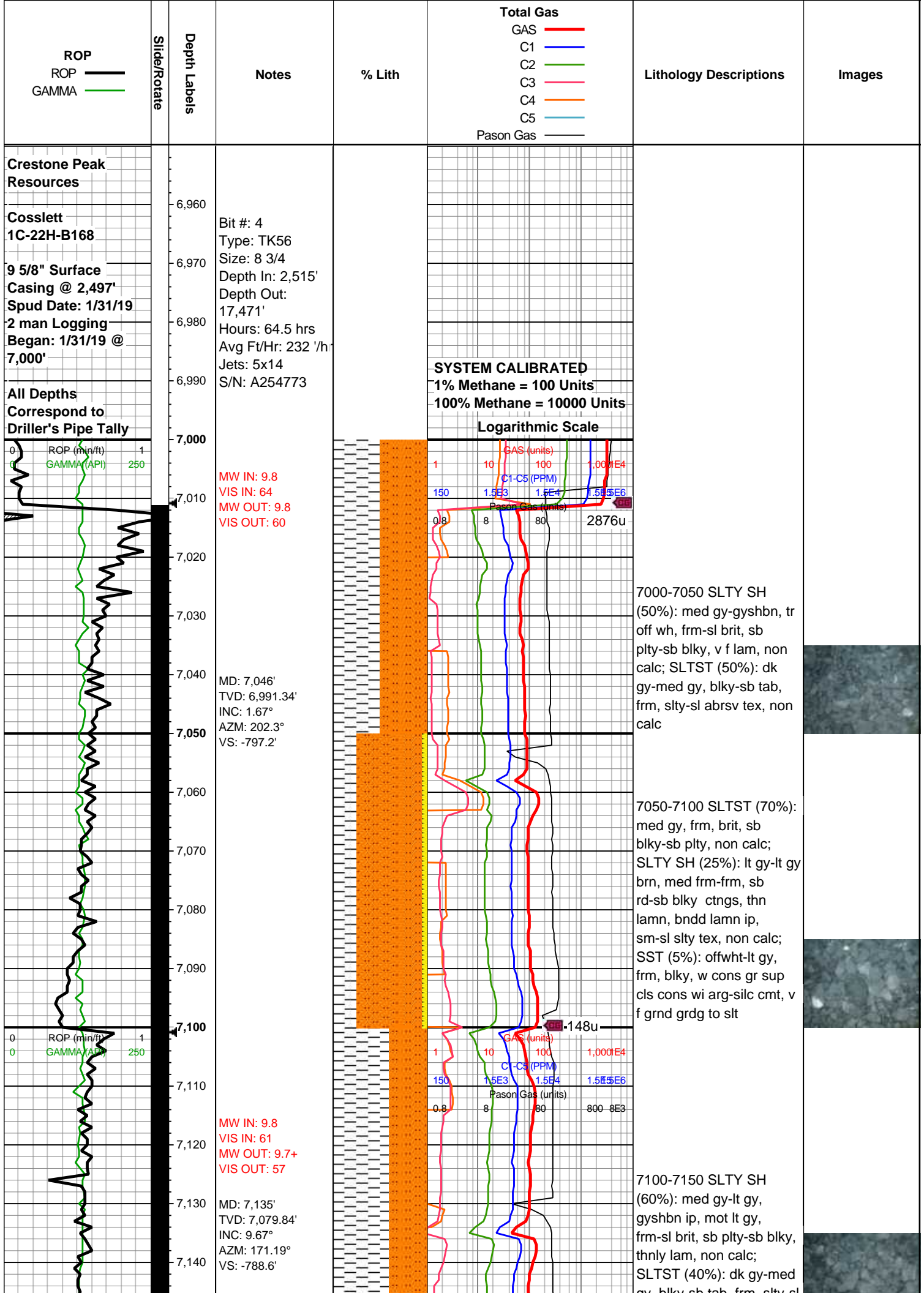
Textures

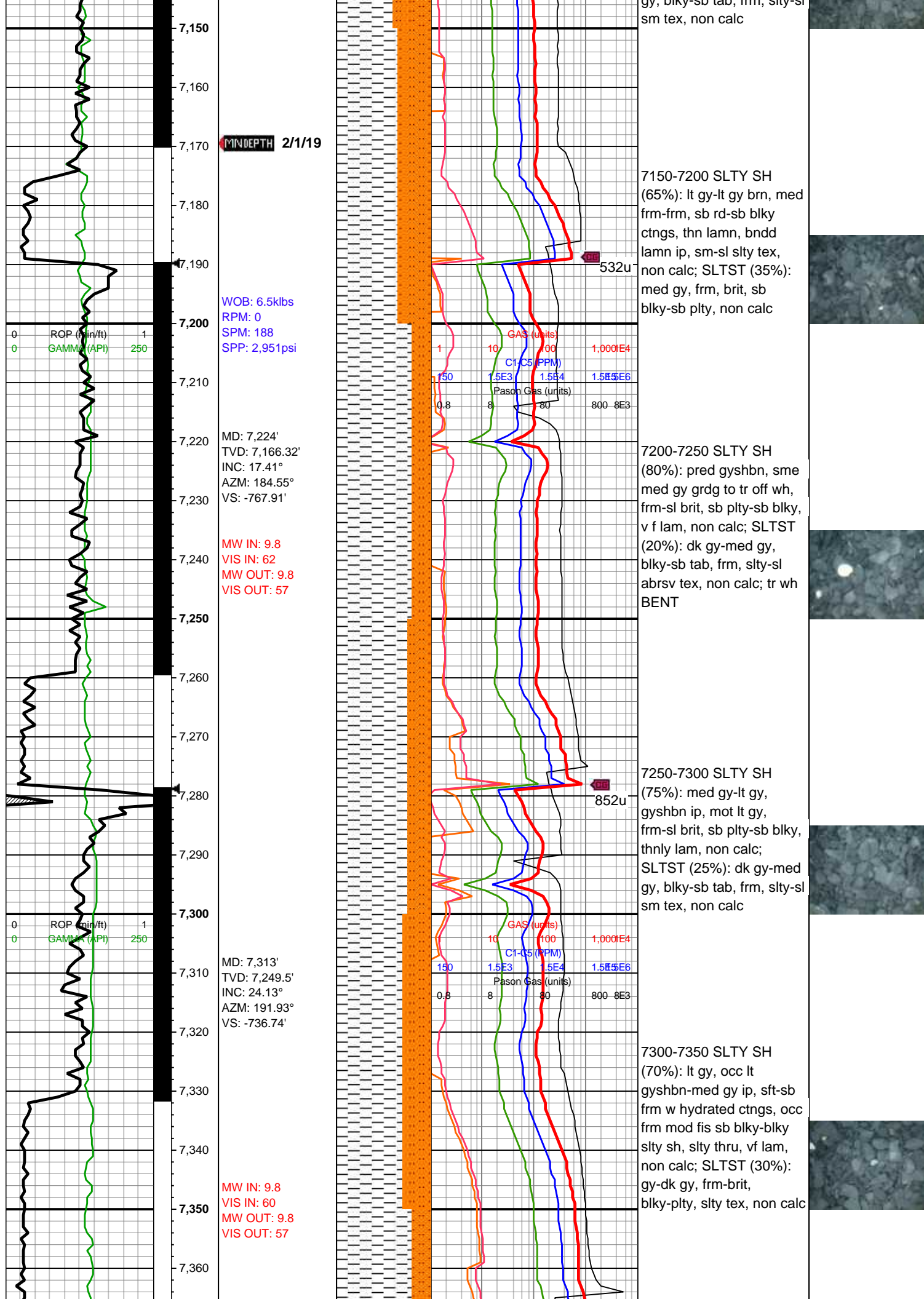
- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE

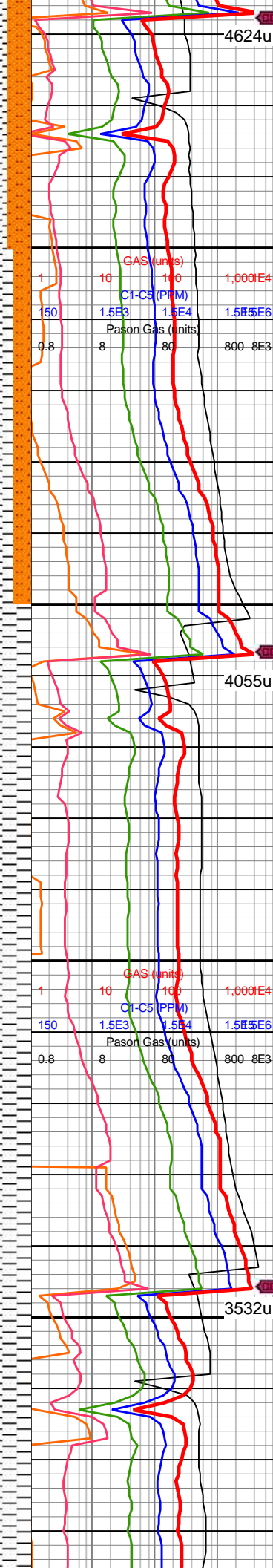
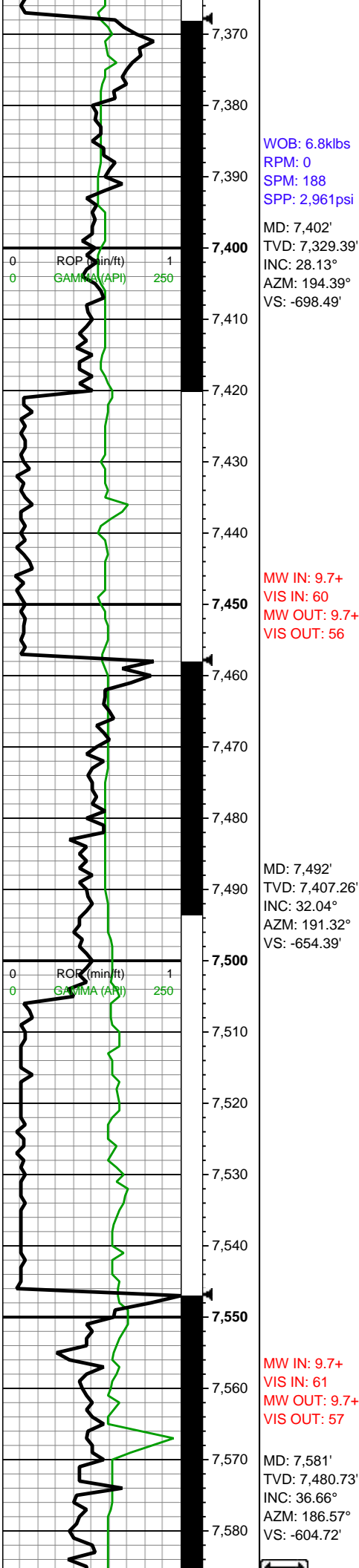
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL







7350-7400 SLTY SH
(80%): med gy-lt gy,
gyshbn ip, mot lt gy,
frm-sl brit, sb plty-sb blk,
thnly lam, non calc;
SLTST (20%): dk gy-med
gy, blk-sb tab, frm, slty-sl
sm tex, non calc

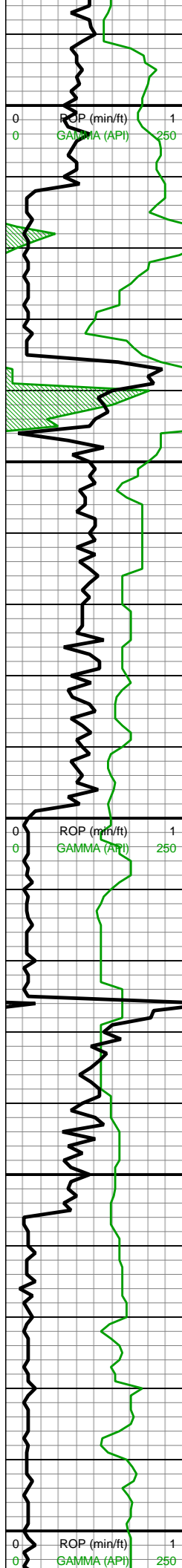
7400-7450 SLTY SH
(85%): pred gyshbn, sme
med gy grd to tr off wh,
frm-sl brit, sb plty-sb blk,
v f lam, non calc; SLTST
(15%): dk gy-med gy,
blk-sb tab, frm, slty-sl
abrsv tex, non calc

7450-7500 SLTY SH
(100%): med gy-gyshbn,
occ lt gy thn lamn, sb
frm-frm, mod fis sb rd-sb
blk-blky-tab ctngs, sm
arg-slty tex, wxy lstr, non
calc

7500-7550 SLTY SH
(100%): gyshbn-med gy,
lam dk brn, blk-sb tab
ctngs, sl frm-frm, stri, vf
lam, sl slty tex, sl
micmica, non calc, mnr
imbd/dissm mic pyr

7550-7600 SLTY SH





Sharon Springs
7585 MD/7484 TVD

WOB: 15.4klbs
RPM: 0
SPM: 188
SPP: 3,035psi

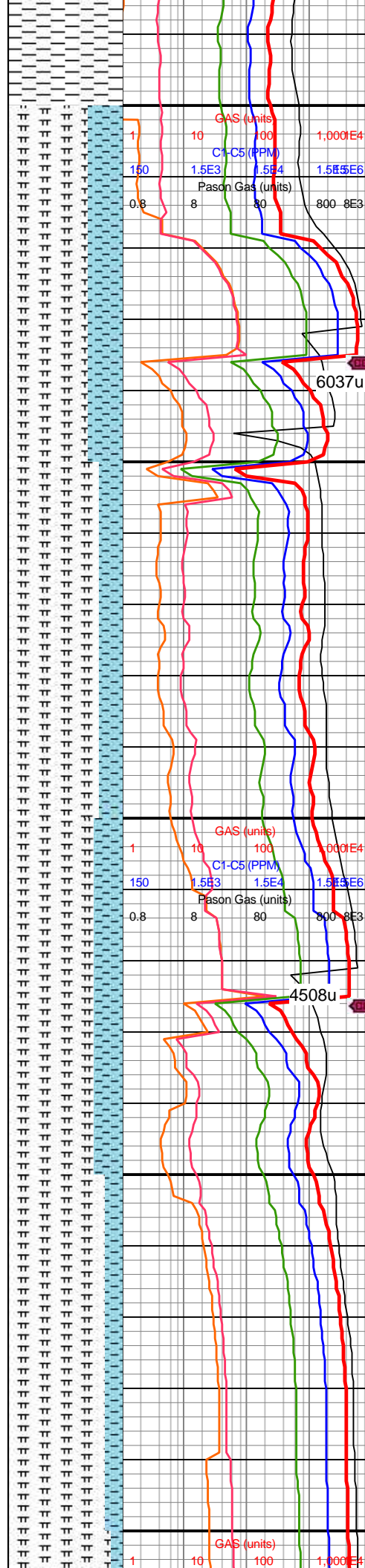
Niobrara
7619 MD/7510 TVD

A Marl
7638 MD/7525 TVD

MD: 7,670'
TVD: 7,547.4'
INC: 46.2°
AZM: 181.12°
VS: -546.02°

MW IN: 9.8
VIS IN: 61
MW OUT: 9.7
VIS OUT: 58

MD: 7,759'
TVD: 7,603.71'
INC: 55.21°
AZM: 180.42°
VS: -477.21°



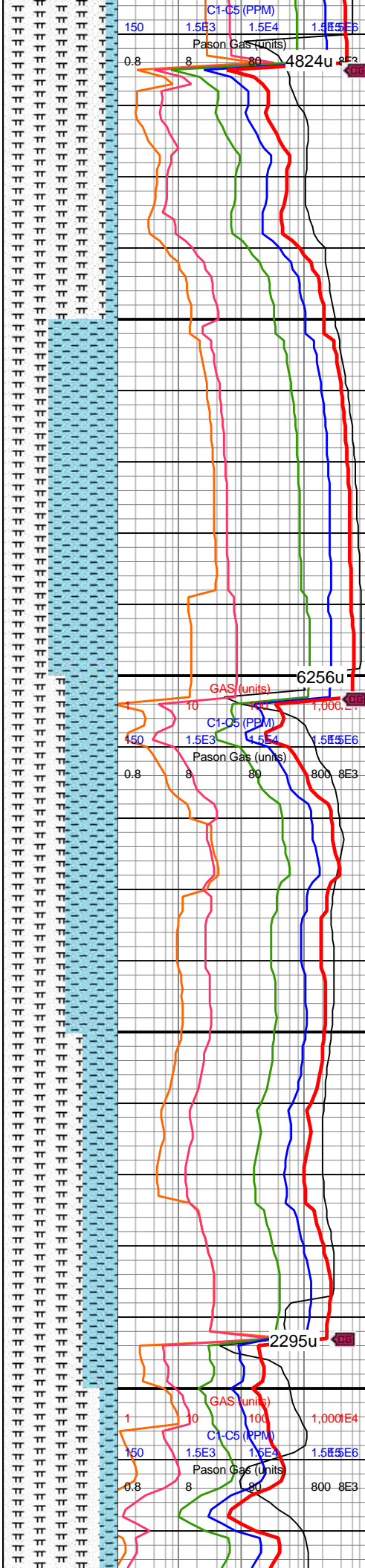
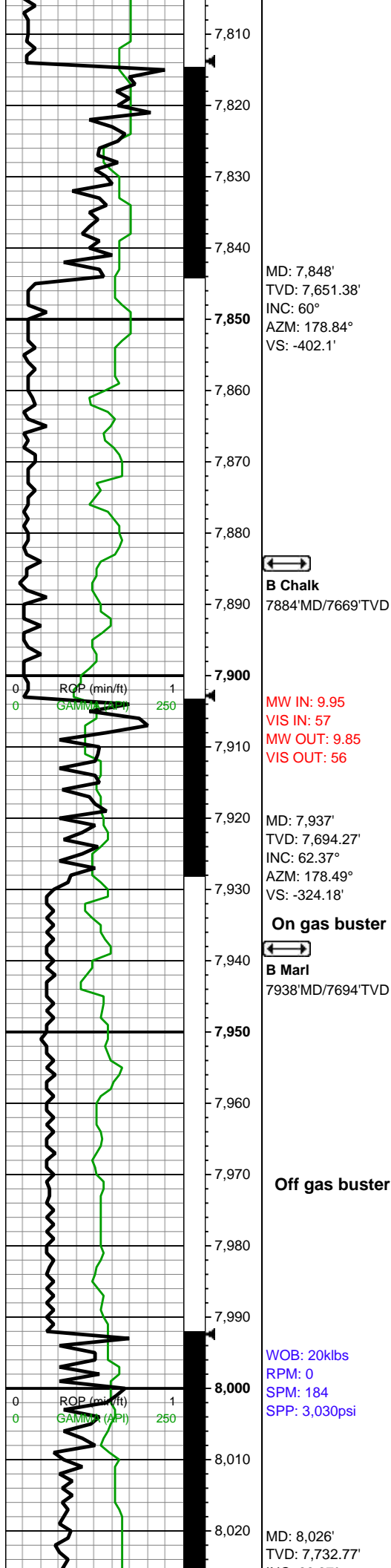
(100%): med-dk gy, com
dk bnshgy, frm-v frm, sb
plty, pred non calc, sm-v f
silty tex, occ diss pyr

7600-7650 MRLST
(70%): gyshbn-dk gy, sb
frm-frm, l-mod fis sb
rd-sb blkly-blky ctngs wi
thn brn marl lamn, sm
arg-sl silty tex, rr f pyr strg,
mod calc; CHK (30%): lt
gy-gy-dk gy, sb frm-frm
l-mod fis sb rd-sb blkly
ctngs wi com mot chky
lamn, sl silty tex, hi calc

7650-7700 MRLST
(80%): gyshbn-dk gy sp
wi brn marl incl, frm-hd
mod fis sb blkly-blky
ctngs, sm arg-sl silty tex,
rr c pyr strg, mod calc;
CHK (20%): gy-dk gy v
arg ls wi com chky lamn
& intbds, l-mod fis sb
rd-sb blkly ctngs, hi calc

7700-7750 MRLST
(75%): gyshbn-dk gy,
predy frm-hd, sb frm ip,
sb blkly-blky-tab mod fis
ctngs, sm arg-sl silty tex,
bmpy mot tex ip, mod
calc; CHK (25%): gy-dk
gy wi com chky lamn &
intbds, l-mod fis sb rd-sb
blkly ctngs, hi calc

7750-7800 MRLST
(85%): gy-gyshbn-dk gy,
sb frm-frm mod, mod fis
sb blkly-blky-tab ctngs,
sm arg tex wi sl silty tex
ip, thn lamn, mod calc wi
brn mrly resdl; CHK
(15%): gy wi w ch chky
lamn & incl ip, sb frm-frm
l-mod fis sb rd-sb blkly
ctngs, tr vf pyr, hi calc



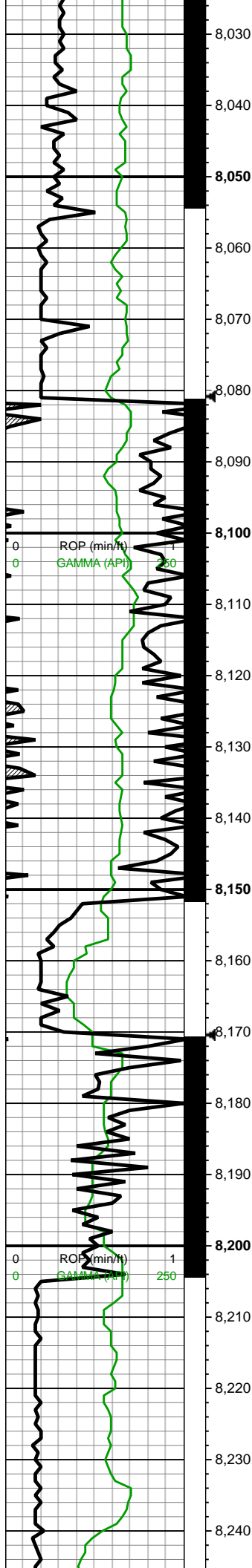
7800-7850 MRLST
(90%): gy-gyshbn-dk gy
wi thn lamns, sb frm-frm,
sb blkyl-blkyl-tab mod fis
ctngs wi sm arg-sl slty
tex, mod calc wi brn mrly
resdl; CHK (10%): gy wi
w ch chky lamn & incl ip,
sb frm-frm l-mod fis sb
rd-sb blkyl ctngs, tr vf pyr,
hi calc

7850-7900 CHK (60%): It
gy-gy, sb frm-frm-brit, sb
rd-sb blkyl-blkyl mod fis
ctngs, rr forams, tr vf pyr,
hi calc; MRLST (40%):
gy-gyshbn-dk gy, sb
frm-frm, sb blkyl-blkyl-tab
mod fis ctngs, sm arg sl
slty tex, rr-tr tn bent, mod
calc wi brn mrly resdl

7900-7950 MRLST
(55%): gy-gyshbn-dk gy,
sb frm-frm, sb
blkyl-blkyl-tab mod fis
ctngs, sm arg-sl slty tex,
mod calc; CHK (45%): It
gy-gy, sb frm-frm-brit,
l-mod fis sb rd-sb ang-sb
blkyl ctngs, rr forams, rr
fos frags, tr tn bent, tr vf
pyr, hi calc

7950-8000 MRLST
(70%): gy-gyshbn-dk gy,
sb frm-frm mod hydrated
water solu ctngs, mod fis
sb blkyl-blkyl-tab ctngs,
sm arg tex wi sl slty tex
ip, mod calc wi brn mrly
resdl; CHK (30%): gy wi
w ch chky lamn & incl ip,
sb frm-frm l-mod fis sb
rd-sb blkyl ctngs, rr fos
frags & forams, tr vf pyr,
hi calc

8000-8050 MRLST
(85%): gy-gyshbn-dk gy,
sb frm-frm-brit, sb



INC: 66.37°
AZM: 179.72°
VS: -243.98'

MW IN: 10
VIS IN: 58
MW OUT: 9.95
VIS OUT: 56

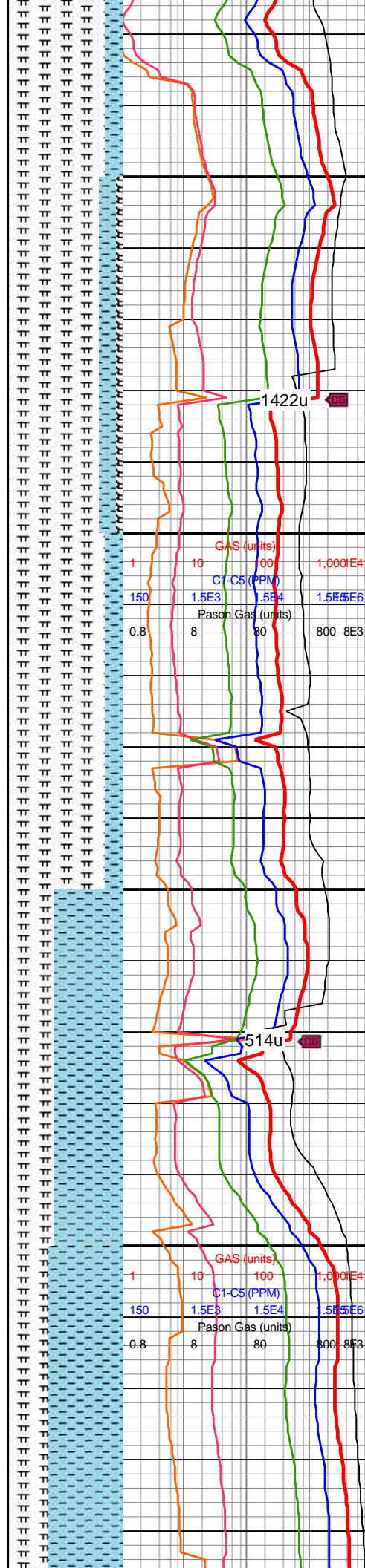
MD: 8,115'
TVD: 7,762.61'
INC: 74.42°
AZM: 175.85°
VS: -160.35'

MW IN: 10
VIS IN: 58
MW OUT: 10.0
VIS OUT: 55

↔
C Chalk
8157' MD/7772' TVD

MD: 8,204'
TVD: 7,781.01'
INC: 81.71°
AZM: 173.12°
VS: -73.86'

WOB: 16klbs
RPM: 30
SPM: 185
SPP: 3,170psi



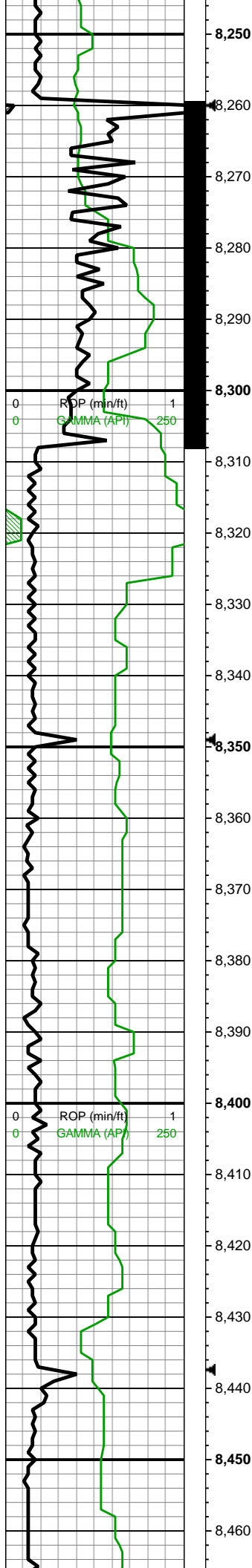
blky-blky mod fis ctngs,
sm arg-sl slty tex, rr c
bent, mod calc; CHK
(15%): lt gy-gy sp wi f
chky & foram incl, sb
frm-frm-brit, l-mod fis sb
rd-sb ang-sb blky ctngs,
tr vf pyr, hi calc

8050-8100 MRLST
(80%): gy-gyshbn-dk gy,
sb frm-frm-brit, sb
blky-blky mod fis ctngs,
sm arg-sl slty tex,
com-abnt c bent, mod
calc; CHK (15%): lt gy-gy
sp wi f chky & foram incl,
sb frm-frm-brit, l-mod fis
sb rd-sb ang-sb blky
ctngs, tr vf pyr, hi calc;
BENT (5%): off wh-tn,
frm-brit, ang-spty c
ctngs, non calc, hi flor

8100-8150 MRLST
(85%): gy-gyshbn-dk gy,
sb frm-frm-brit, sb
blky-blky mod fis ctngs,
sm arg-sl slty tex,
com-abnt c bent, mod
calc; CHK (15%): lt gy-gy
sp wi f chky & foram incl,
sb frm-frm-brit, l-mod fis
sb rd-sb ang-sb blky
ctngs, tr vf pyr, hi calc

8150-8200 CHK (60%): lt
gy-gy sp wi f chky & foram
incl, sb frm-frm-brit,
l-mod fis sb rd-sb ang-sb
blky ctngs, tr vf pyr, hi
calc; MRLST (40%):
gy-gyshbn-dk gy, frm-brit,
sb blky-blky mod fis
ctngs, sm arg-sl slty tex,
occ c bent, rr vf-c pyr strg,
mod calc wi brn mrly
resdl





MD: 8,293'
TVD: 7,789.7'
INC: 87.08°
AZM: 177.26°
VS: 14.26'

MW IN: 10
VIS IN: 57
MW OUT: 10.0
VIS OUT: 54

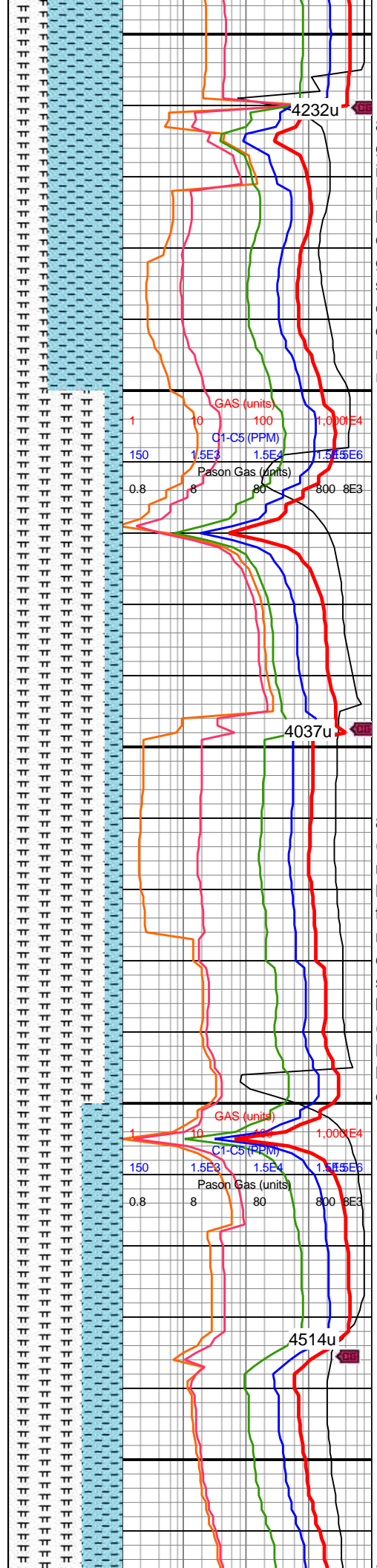
MD: 8,382'
TVD: 7,792.09'
INC: 89.85°
AZM: 177.52°
VS: 103.07'

WOB: 26klbs
RPM: 31
SPM: 186
SPP: 3,730psi

On gas buster

115' DTS

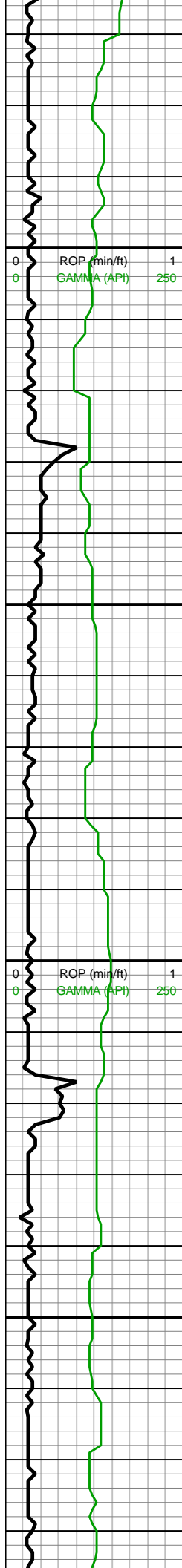
MD: 8,471'



8200-8300 CHK (65%): lt
gy-gy sp wi f chky & foram
incl, sb frm-frm-brit,
l-mod fis sb rd-sb ang-sb
blky ctngs, tr vf pyr, hi
calc; MRLST (35%):
gy-gyshbn-dk gy, frm-brit,
sb blky-blky mod fis
ctngs, sm arg-sl slty tex,
occ c bent, rr vf-c pyr strg,
mod calc wi brn mrly
resdl

8300-8400 MRLST
(85%): gy-gyshbn-dk gy
mot wi brn mrly incl &
lamn ip, predy
frm-brit-hd, sb frm ip,
mod fis sb blky-blky-tab
ctngs, sm arg tex wi sl
slty tex ip, mod calc wi
brn mrly resdl; CHK
(15%): gy wi w ch chky
lamn & incl ip, sb frm-frm
l-mod fis sb rd-sb blky
ctngs, tr vf pyr, hi calc

8400-8500 MRLST



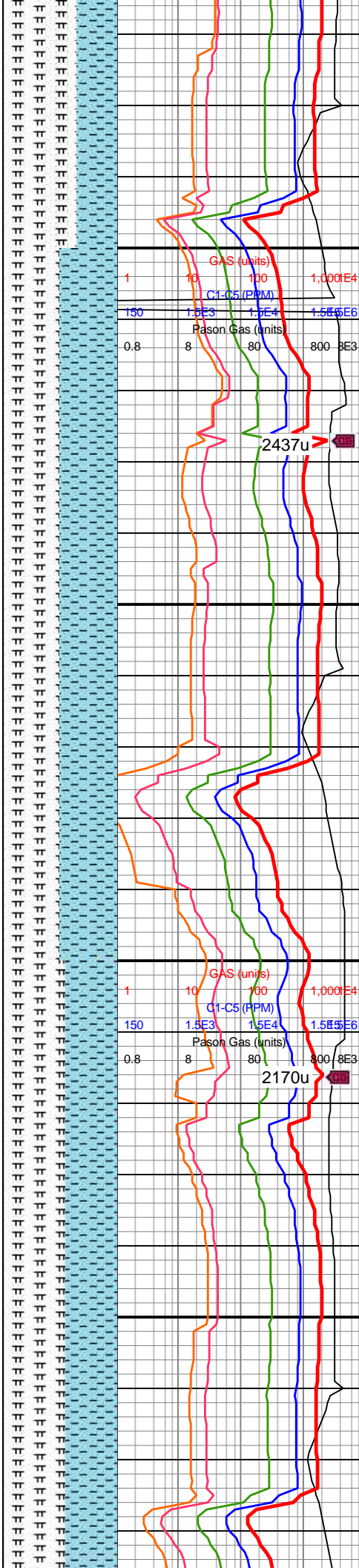
MD: 8,471'
TVD: 7,792.12'
INC: 90.11°
AZM: 177.87°
VS: 191.94'

MW IN: 10
VIS IN: 55
MW OUT: 10.0
VIS OUT: 53

MD: 8,560'
TVD: 7,792.56'
INC: 89.32°
AZM: 178.66°
VS: 280.86'

WOB: 30klbs
RPM: 60
SPM: 186
SPP: 3,890psi

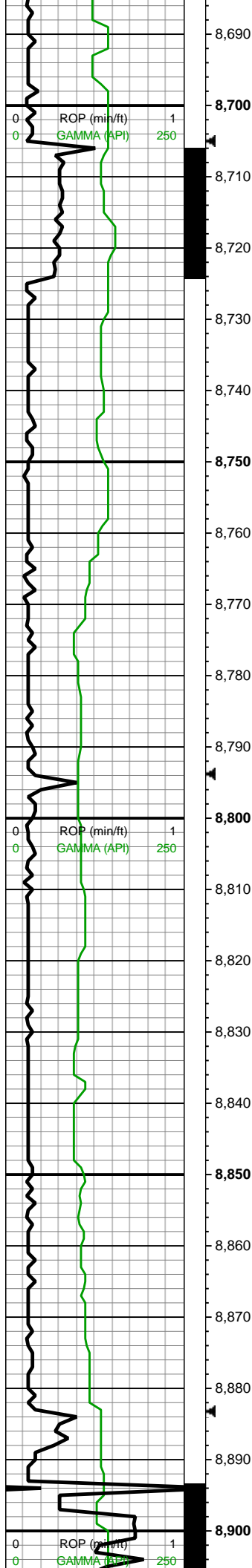
MD: 8,649'
TVD: 7,793.17'
INC: 89.89°
AZM: 179.45°
VS: 369.82'



8400-8500 MRLST
(65%): gy-dk gy mot wi
brn mrly c-elong incl,
predy frm-brit-hd, sb frm
ip, mod fis sb
blky-blky-tab ctngs, sm
arg-sltly tex, mod calc wi
brn mrly resdl; CHK
(35%): lt gy-gy, frm-brit,
sb rd-sb blky l-mod fis
ctngs, tr vf pyr, hi calc

8500-8600 MRLST
(50%): gy-gyshbn-dk gy
mot wi brn mrly incl &
lamn ip, predy
frm-brit-hd, sb frm ip,
mod fis sb blky-blky-tab
ctngs, sm arg tex wi sl
sltly tex ip, mod calc wi
brn mrly resdl; CHK
(50%): gy wi w ch chky
lamn & incl ip, sb frm-frm
l-mod fis sb rd-sb blky
ctngs, tr vf pyr, hi calc

8600-8700 MRLST
(55%): gy-dk gy mot wi
brn marl incl, sb
frm-frm-hd, mod fis sb
blky-blky ctngs, sl sltly tex,
tr bent, tr vf pyr, mod calc;
CHK (45%):
gy-gyshbn-dk gy wi com
vf-f chkv foram incl

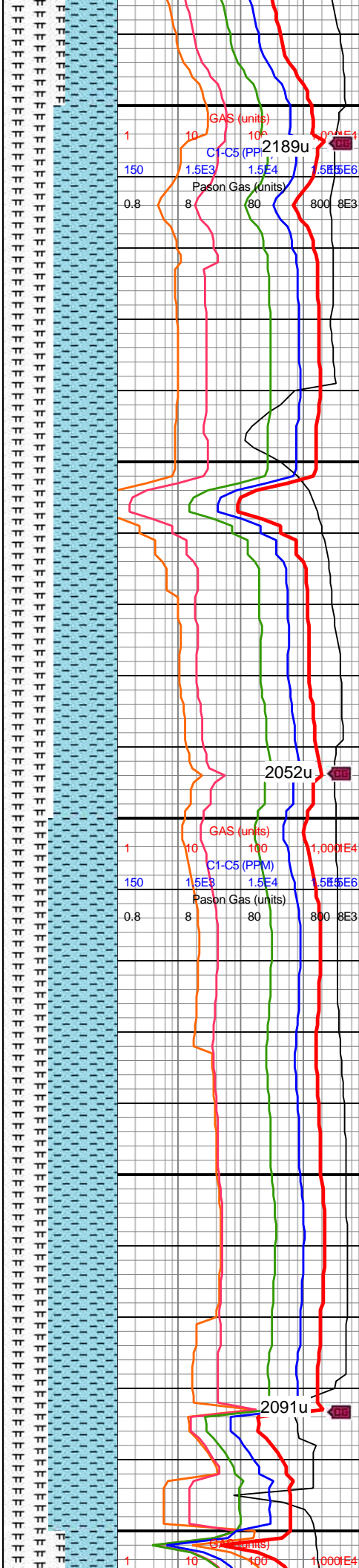


MD: 8,739'
TVD: 7,792.35'
INC: 91.16°
AZM: 179.89°
VS: 459.8'

MW IN: 9.95
VIS IN: 57
MW OUT: 10.0
VIS OUT: 55

WOB: 31klbs
RPM: 61
SPM: 185
SPP: 3,790psi

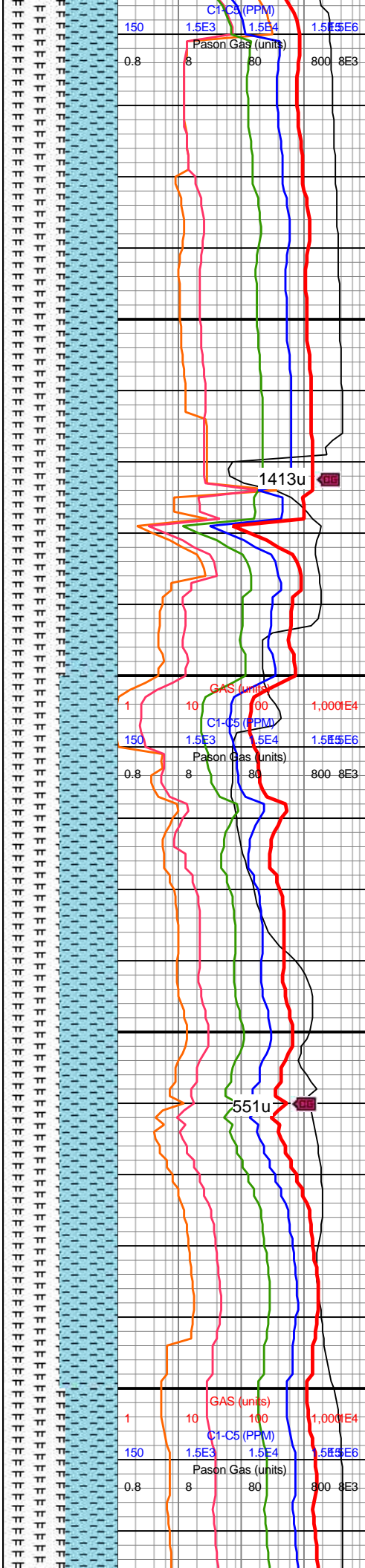
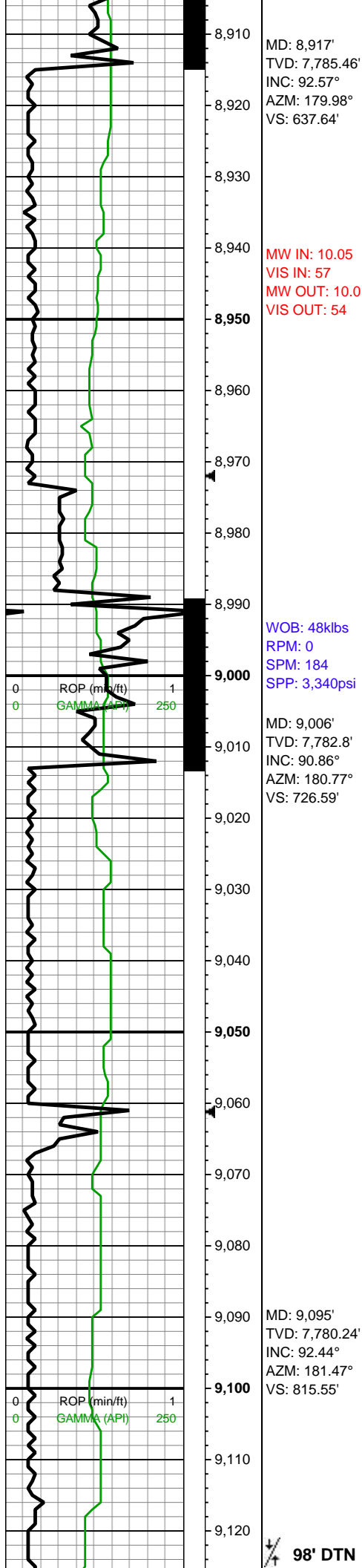
MD: 8,828'
TVD: 7,789.45'
INC: 92.57°
AZM: 179.89°
VS: 548.74'



frm-brit, sb frm ip, l-mod
fis sb rd-sb blkly ctngs,
occ-com forams, rr mict
cal, hi calc

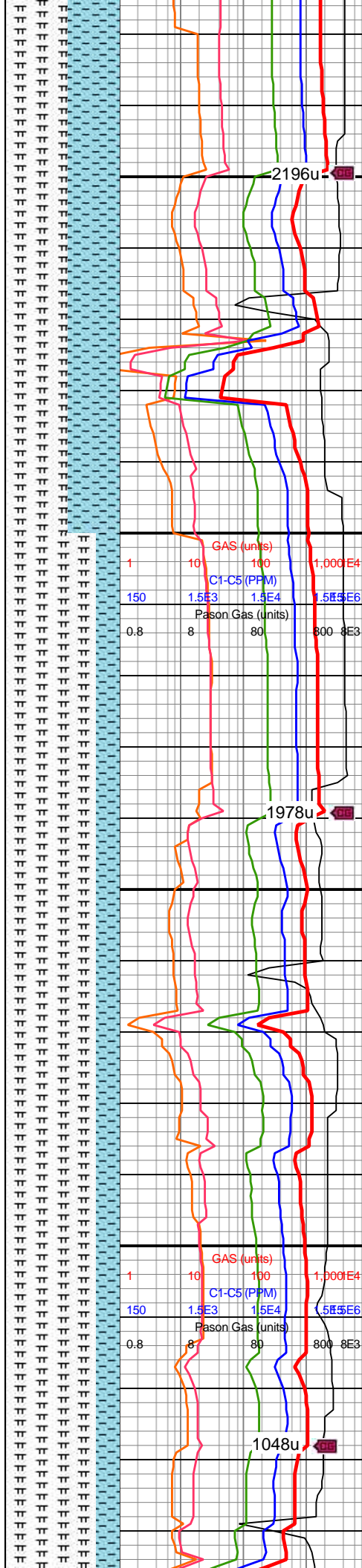
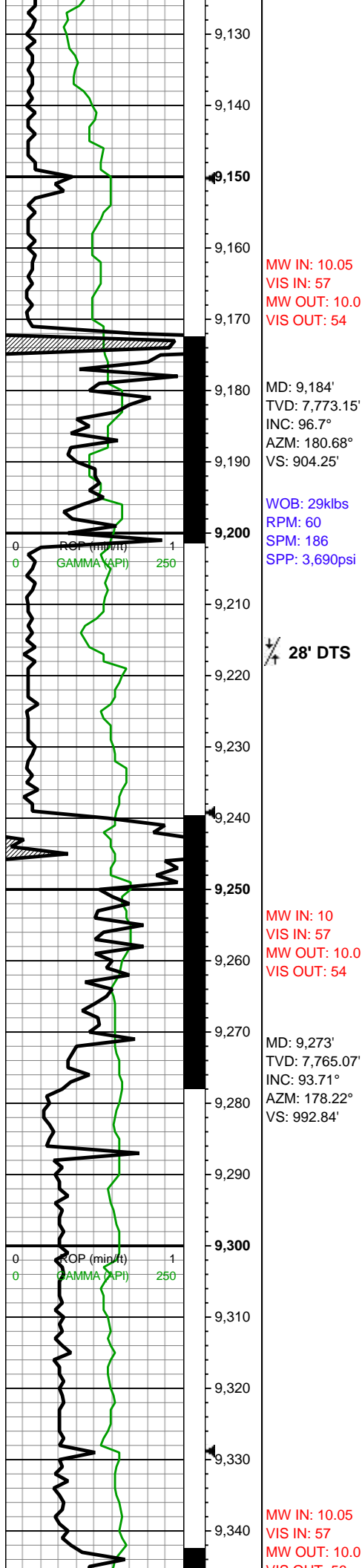
8700-8800 CHK (55%):
gy-gyshbn-dk gy wi com
vf-f chky foram incl,
frm-brit, sb frm ip, l-mod
fis sb rd-sb blkly ctngs,
occ-com forams, rr mict
cal, hi calc; MRLST
(45%): gy-dk gy mot wi
brn marl incl, sb
frm-frm-hd, mod fis sb
blkly-blkly ctngs, sl slty tex,
tr bent, tr vf pyr, mod calc
wi brn mrly resdl

8800-8900 CHK (60%):
gy-dk gy-dk gyshbn gy wi
com vf-f chky foram incl,
frm-brit, sb frm ip, l-mod
fis sb rd-sb blkly ctngs,
sm arg-sl slty tex, rr
forams, hi calc; MRLST
(40%): gy-dk gy, sb
frm-frm-hd, mod fis sb
blkly-blkly ctngs, sl slty tex,
mod calc



8900-9000 MRLST
(55%): gy-dk gy mot wi
brn marl incl, sb
frm-frm-hd, mod fis sb
blky-blky ctngs, sl slty tex,
tr bent, tr vf pyr, mod calc
wi brn mrly resdl; CHK
(45%): gy-gyshbn-dk gy,
frm-brit, sb frm ip, l-mod
fis sb rd-sb blky ctngs, sp
wi rr-occ f-c elong
forams, hi calc

9000-9100 CHK (50%):
gy-dk gy-dk gyshbn ip, gy
wi com vf-f chky foram
incl, frm-brit, sb frm ip,
l-mod fis sb rd-sb blky
ctngs, sm arg-sl slty tex,
rr forams, hi calc; MRLST
(50%): gy-dk gy, sb
frm-frm-hd, mod fis sb
blky-blky ctngs, sl slty tex,
mod calc



9100-9200 MRLST
(55%): dk gy, gyshbn ip,
predy frm-brit, l-mod fis
sb rd- sb blkly-blky ctngs,
sm arg-sl slty tex, dul
rthy-wxy lstr, tr vf-c pyr,
mod calc wi brn mrly
resdl; CHK (45%):
gy-gyshbn-dk gy, frm-brit,
sb frm ip, l-mod fis sb
rd-sb blkly ctngs, sp wi
rr-occ f elong forams
thru, tr mict cal, hi calc

9200-9300 MRLST
(80%): gy-dk gy, thn brn
marly lamn ip, sb
frm-frm-hd-brit, sb
blkly-blky-tab mod fis
ctngs, sm arg-sl slty tex,
mod calc; CHK (20%): lt
gy-gy, l-mod fis sb
frm-frm sb rd-sb blkly
ctngs, sm-sl slty tex, thn
bndd lamn, rr-tr forams, tr
vf pyr, hi calc

VIS OUT: 56

5' DTN

MD: 9,362'
TVD: 7,761.22'
INC: 91.25°
AZM: 178.57°
VS: 1,081.68'

WOB: 15klbs
RPM: 61
SPM: 186
SPP: 3,190psi

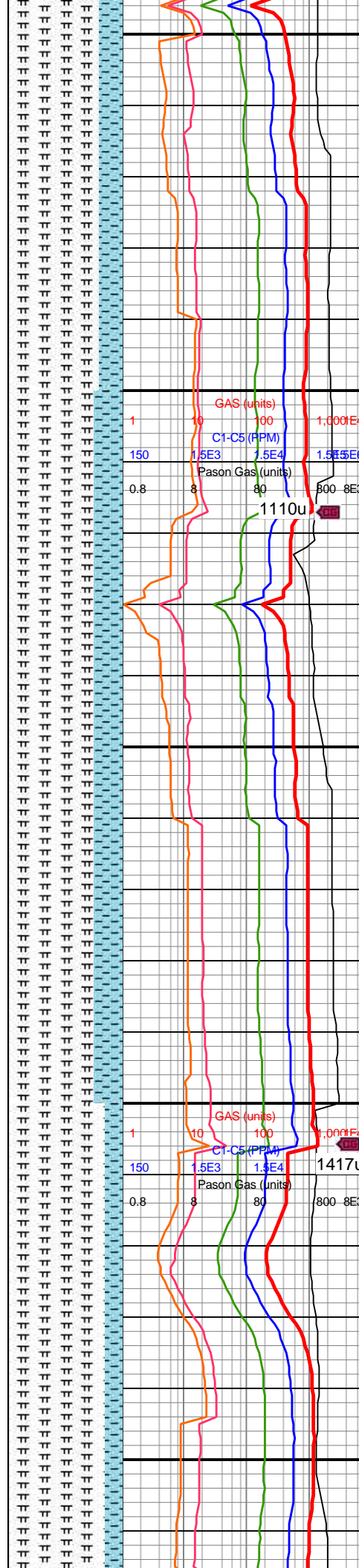
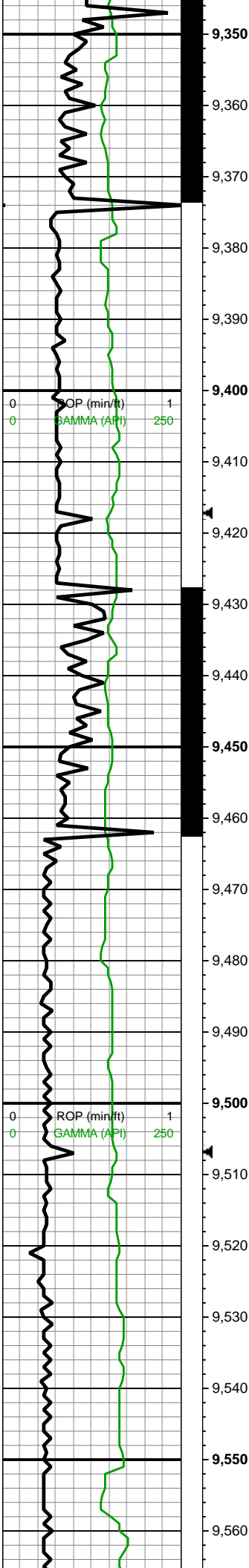
MD: 9,451'
TVD: 7,762.22'
INC: 87.47°
AZM: 180.95°
VS: 1,170.64'

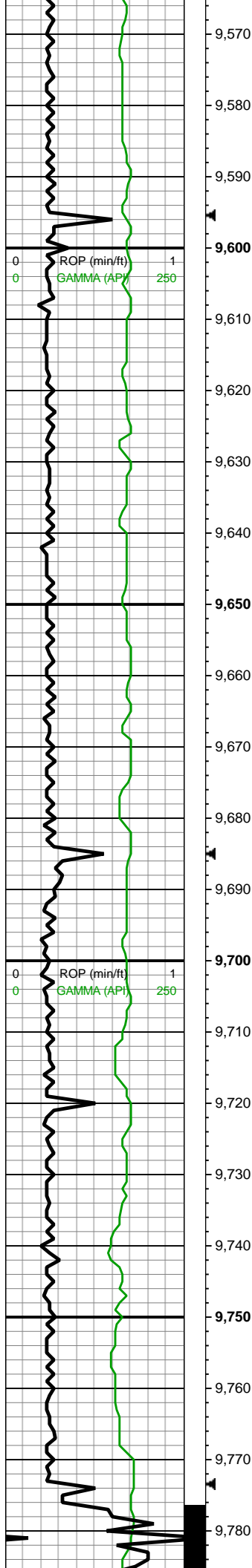
MW IN: 10
VIS IN: 57
MW OUT: 10.0
VIS OUT: 56

MD: 9,540'
TVD: 7,766.42'
INC: 87.12°
AZM: 181.39°
VS: 1,259.53'

9300-9400 MRLST
(80%): gy-dk gy-dk
gyshbn, sb frm-frm, mod
fis sb blkly-blky-tab ctngs,
sm arg-sl slty tex, mod
calc wi brn mrly resdl;
CHK (20%): gy-dk gy wi
thn chky lamn, l-mod fis
sb frm-frm sb rd-sb blkly
ctngs, sm-sl slty tex, rr-tr
forams, tr vf pyr, hi calc

9400-9500 MRLST
(75%): dk gy, frm-hd, brit,
mod fis sb ang-sb blkly
ctngs, sm arg-sl slty tex,
tr vf pyr, tr bent, mod calc;
CHK (25%): med gy, rr
f-elong wh chky incl,
frm-brit, mod fis sb
blkly-blky ctngs, sl slty tex,
tr fos frags, hi calc





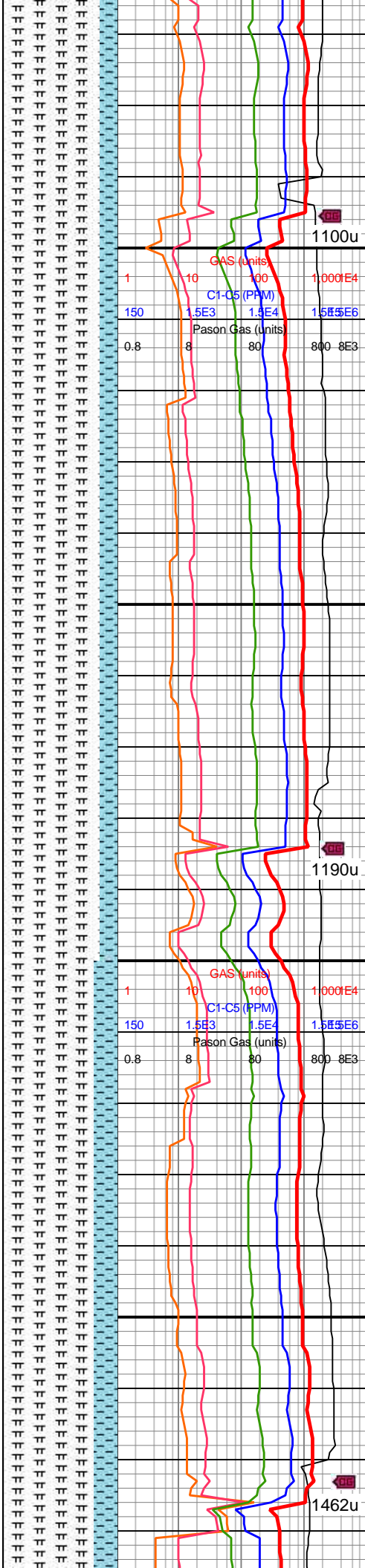
MW IN: 10
VIS IN: 59
MW OUT: 10.0
VIS OUT: 57

WOB: 14.4klbs
RPM: 60
SPM: 186
SPP: 3,256psi

MD: 9,629'
TVD: 7,770'
INC: 88.26°
AZM: 181.47°
VS: 1,348.45'

MD: 9,718'
TVD: 7,771.51'
INC: 89.8°
AZM: 181.39°
VS: 1,437.43'

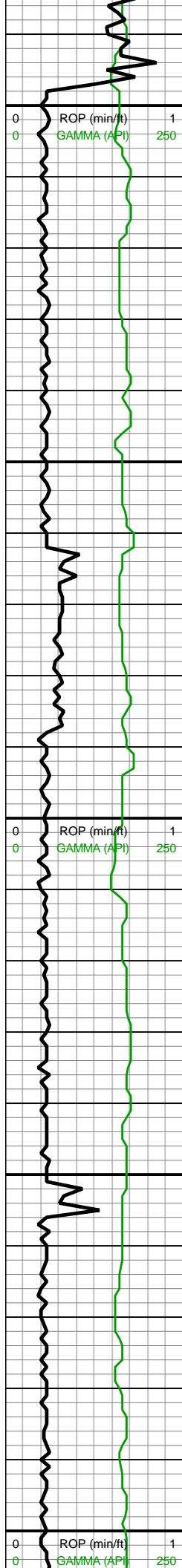
MW IN: 10
VIS IN: 60
MW OUT: 10.0
VIS OUT: 57



9500-9600 MRLST
(85%): med gyshbn-dk
gy, frm-brit, blk-y-sb blk-y,
sm arg-sl slty tex, mod
calc; CHK (15%): lt
gy-gyshbn-med gy wi occ
f wh chky incl thru,
frm-brit sb blk-y-blky
ctngs, chky tex, v calc

9600-9700 MRLST
(85%): gyshbn-dk gy-v dk
gy, brit mod fis ctngs, sb
blk-y-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 blk-y
ctngs, tr mict cal vn, hi
calc

9700-9800 MRLST
(80%): med gy-dk gy wi
sp brn marl, frm-brit, sb
frm ip, l-mod fis sb rd-sb
blk-y ctngs, sm arg-sl slty
tex. tr vf pvr. rr-occ bent.



WOB: 16.1klbs
RPM: 60
SPM: 186
SPP: 3,301psi

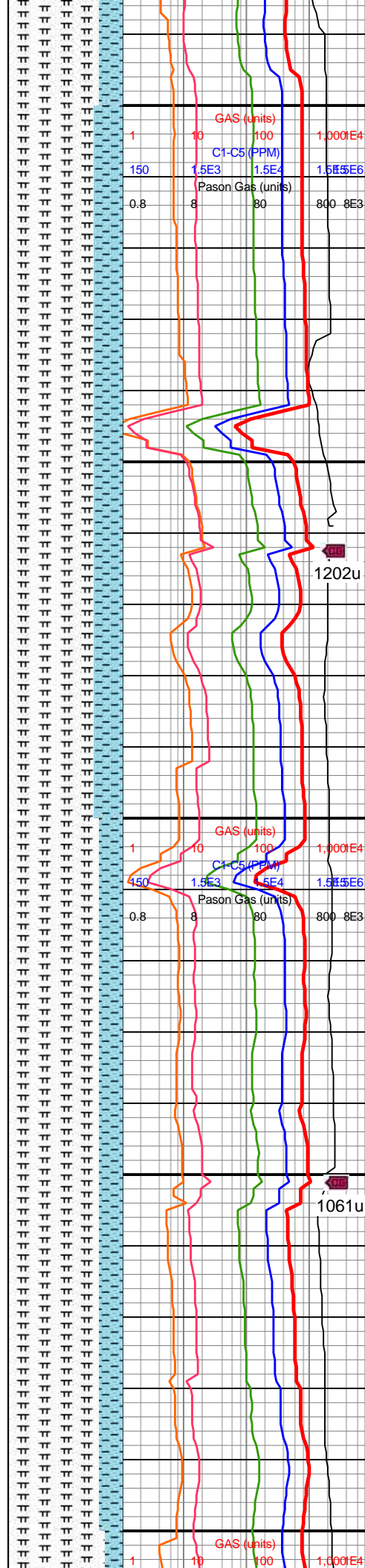
MD: 9,807'
TVD: 7,773.08'
INC: 88.18°
AZM: 180.42°
VS: 1,526.41'

MD: 9,896'
TVD: 7,775.33'
INC: 88.92°
AZM: 180.07°
VS: 1,615.38'

MW IN: 10
VIS IN: 59
MW OUT: 10.0
VIS OUT: 57

MD: 9,985'
TVD: 7,776.01'
INC: 90.2°
AZM: 180.07°
VS: 1,704.37'

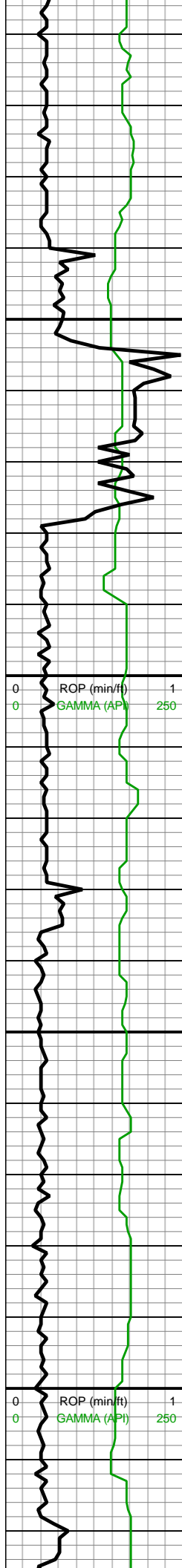
WOB: 18.1klbs
RPM: 60
SPM: 186
SPP: 3,324psi



mod calc; CHK (20%):
med gy, lt gy ip, frm, brit,
l-mod fis sb rd-sb
blky-blky ctngs, hi calc

9800-9900 MRLST
(75%): dk gy-dk gyshbn,
sb frm-frm, med-hi fis sb
blky-blky-tab ctngs, sm
arg-sl slty tex, rr-tr vf pyr,
hi calc; CHK (25%): med
gy-dk gy, sb frm-frm, brit,
l-mod fis sb rd-sb
blky-blky ctngs wi occ
lamn, hi calc

9900-10000 MRLST
(80%): med gy-dk gy, frm,
brit, sb ang-sb blky-blky
ctngs, sl slty tex, com vf
pyr, hi calc; CHK (20%): lt
gy-med gy, frm, brit, mod
fis sb blky-blky ctngs,
slty-sl gt tex, vf pyr, hi calc



10,010
10,020
10,030
10,040
10,050
10,060
10,070
10,080
10,090
10,100
10,110
10,120
10,130
10,140
10,150
10,160
10,170
10,180
10,190
10,200
10,210
10,220

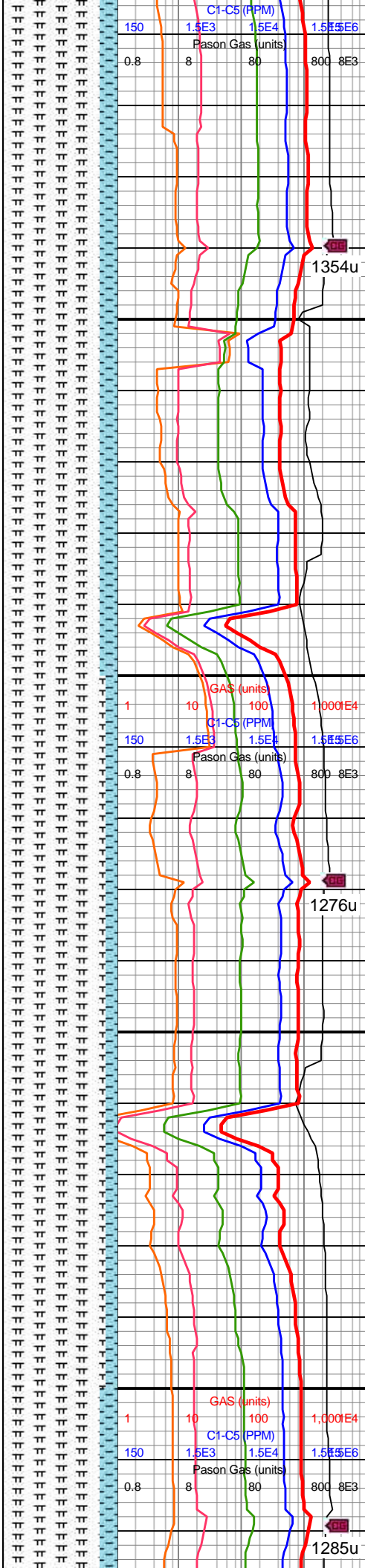
MW IN: 10
VIS IN: 61
MW OUT: 10.0
VIS OUT: 58

MD: 10,075'
TVD: 7,776.84'
INC: 88.75°
AZM: 180.33°
VS: 1,794.36'

MD: 10,164'
TVD: 7,778.82'
INC: 88.7°
AZM: 180.51°
VS: 1,883.34'

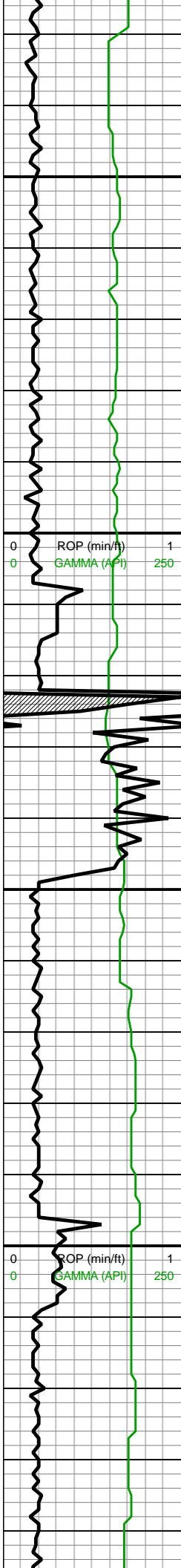
MW IN: 10
VIS IN: 63
MW OUT: 9.9+
VIS OUT: 57

WOB: 22.9klbs
RPM: 60
SPM: 188
SPP: 3,483psi



10000-10100 MRLST
(85%): gyshbn-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

10100-10200 MRLST
(90%): med-v dk gry,
predy blky wi com lamn, v
brit-hrd, micmica, hily
calc; CHK (10%) 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



10,230
10,240
10,250
10,260
10,270
10,280
10,290
10,300
10,310
10,320
10,330
10,340
10,350
10,360
10,370
10,380
10,390
10,400
10,410
10,420
10,430
10,440

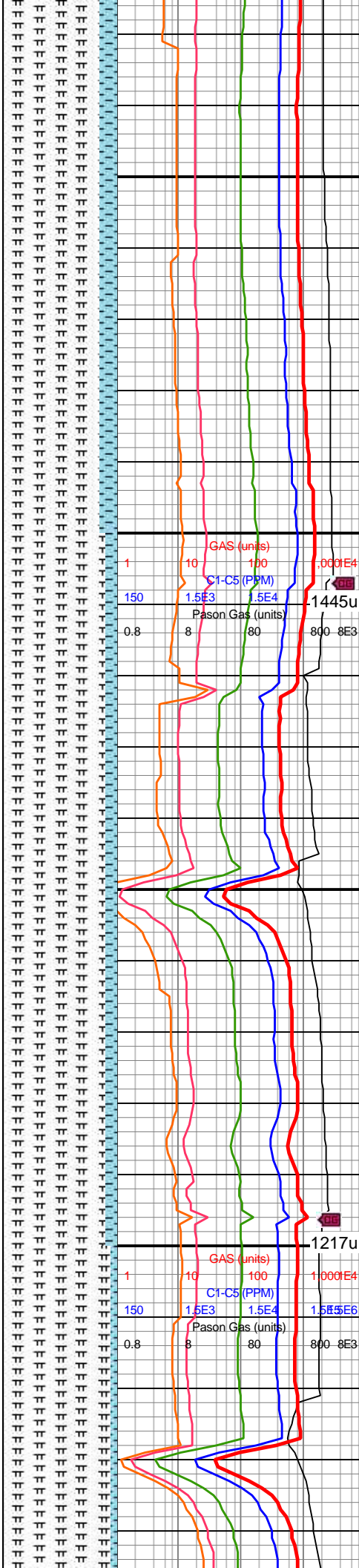
MD: 10,253'
TVD: 7,779.71'
INC: 90.15°
AZM: 180.33°
VS: 1,972.33'

MD: 10,342'
TVD: 7,780.71'
INC: 88.57°
AZM: 180.6°
VS: 2,061.32'

MW IN: 9.9+
VIS IN: 61
MW OUT: 9.9
VIS OUT: 59

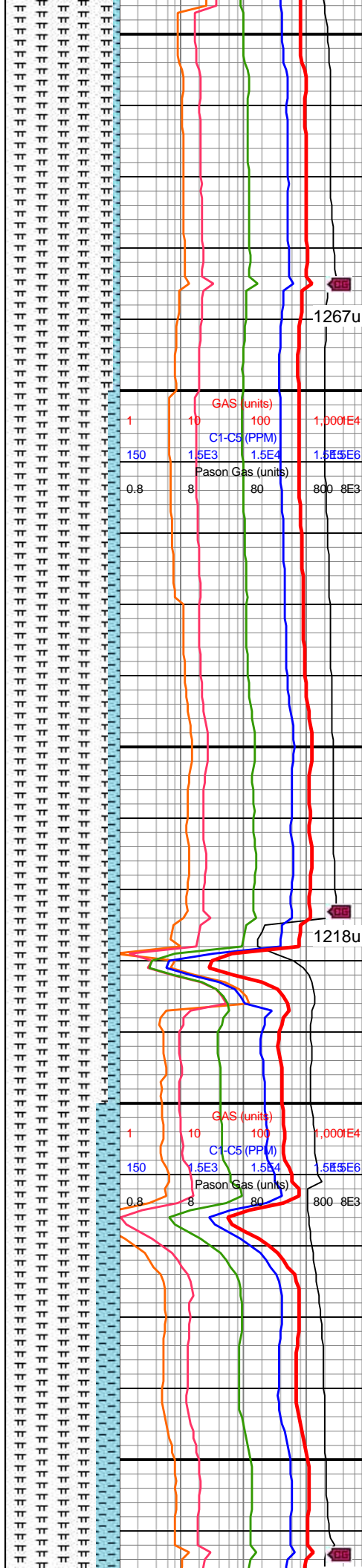
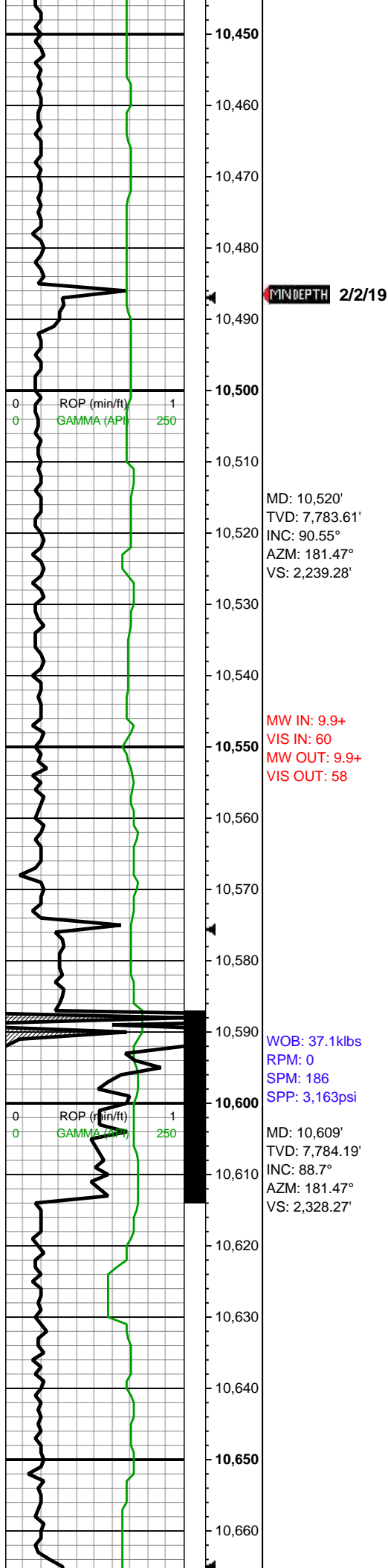
WOB: 17.5klbs
RPM: 60
SPM: 187
SPP: 3,249psi

MD: 10,431'
TVD: 7,782.93'
INC: 88.57°
AZM: 180.86°
VS: 2,150.29'



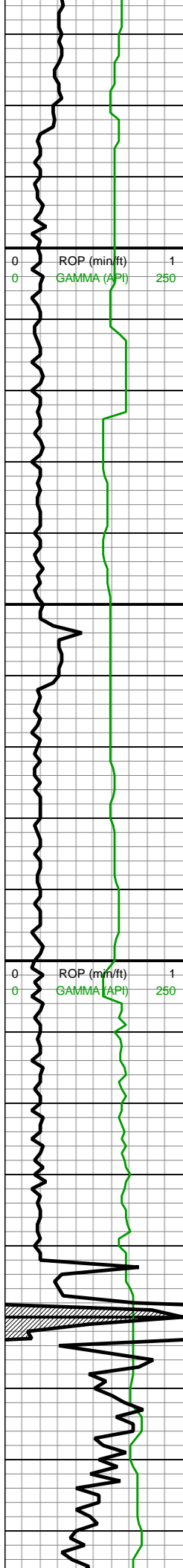
10200-10300 MRLST
(85%): dk gy-dk gyshbn-v
dk gy ip, sb frm-frm-hd,
mod fis sb ang-sb blk
ctngs, sm arg-sl slty tex
tex wi dul rthy lstr, rr-occ
tn bent wi occ pyrc strg ip,
rr-tr vf-f pyr, mod calc;
CHK (15%): med gy-dk
gy wi thn chky lamn ip,
l-mod fis sb rd-sb blk
ctngs, hi calc

10300-10400 MRLST
(90%): gyshbn-dk gy-v dk
gy, brit mod fis ctngs, sb
blk-bkly, 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 blk
ctngs, hi calc



10400-10500 MRLST
(95%): med gy-dk gy, frm,
brit, sb ang-sb blkyl-bkly
ctngs, sl slty tex, com vf
pyr, hi calc; CHK (5%): lt
gy-med gy, frm, brit, mod
fis sb blkyl-bkly ctngs,
slty-sl gt tex, vf pyr, hi calc

10500-10600 MRLST
(90%): med-v dk gry,
predy blkyl wi com lamn, v
brit-hrd, micmica, hily
calc; CHK (10%) pred
ltgy-occ gyshbn wi sme
com lt thn chky lamn, sb
blkyl-bkly, v sft-sl frm, rgh
tex wi rr-pp pyr, hily calc



MW IN: 9.9+
VIS IN: 63
MW OUT: 9.9
VIS OUT: 58

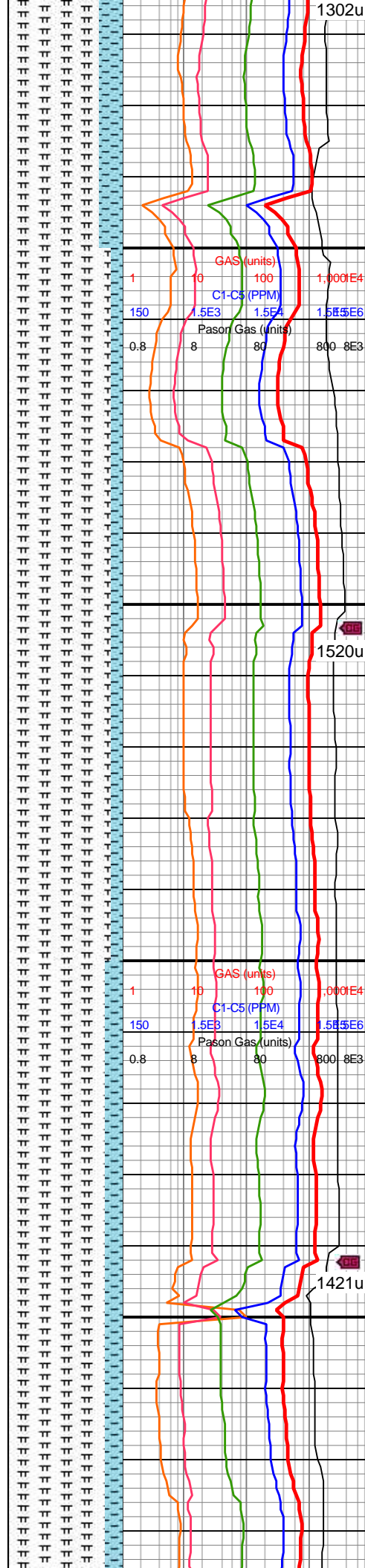
MD: 10,699'
TVD: 7,786.06'
INC: 88.92°
AZM: 181.91°
VS: 2,418.23'

MD: 10,788'
TVD: 7,785.83'
INC: 91.38°
AZM: 183.67°
VS: 2,507.17'

WOB: 23.6klbs
RPM: 60
SPM: 187
SPP: 3,590psi

MW IN: 10.1
VIS IN: 61
MW OUT: 9.9+
VIS OUT: 61

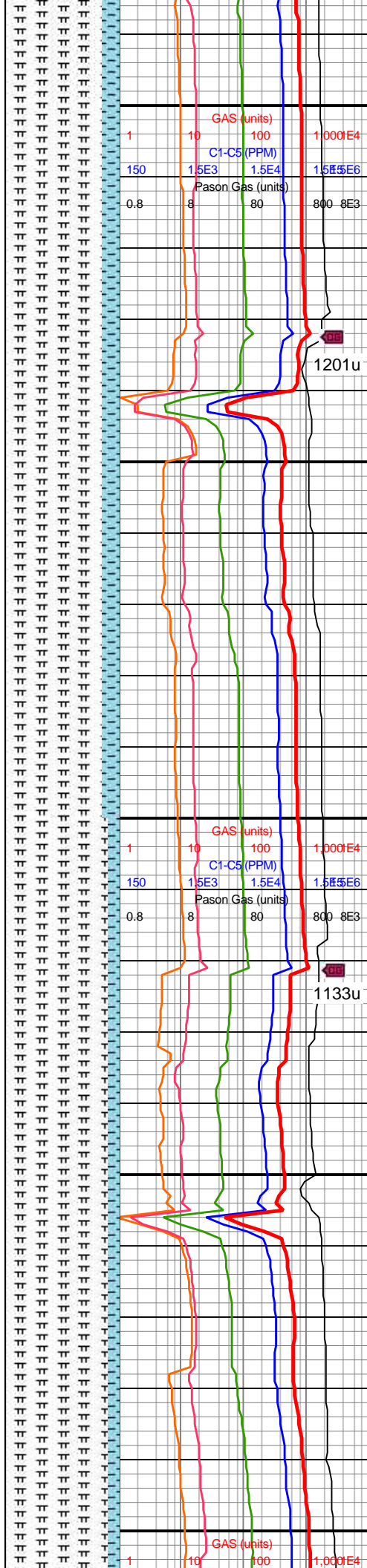
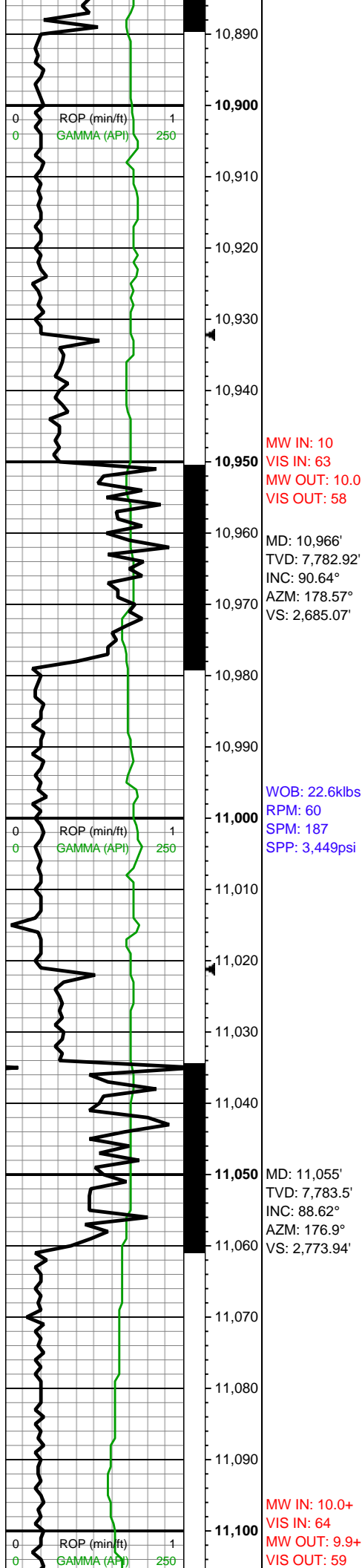
MD: 10,877'
TVD: 7,784.09'
INC: 90.86°
AZM: 181.47°
VS: 2,596.1'



10600-10700 MRLST
(80%): dk gy-dk gyshbn,
sb frm-frm, med-hi fis sb
blky-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
blky-blky ctngs wi occ
lamn, hi calc

10700-10800 MRLST
(90%): gy-dk gy mot wi
brn mrly c-elong incl,
predy frm-brit-hd, sb frm
ip, mod fis sb
blky-blky-tab ctngs, sm
arg-slty tex; CHK (10%): lt
gy-gy, frm-brit, sb rd-sb
blky l-mod fis ctngs, tr vf
pyr, hi calc

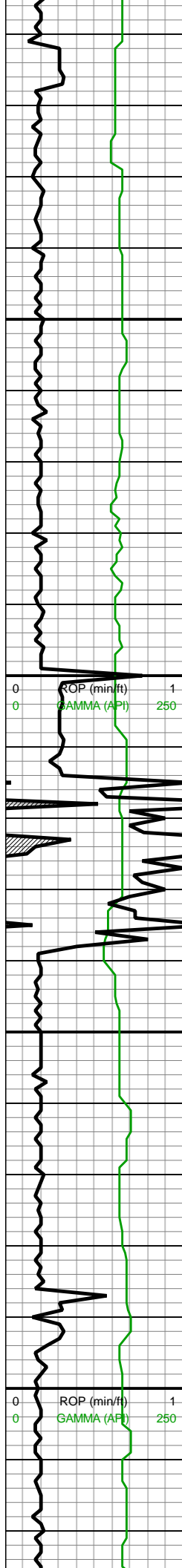
10800-10900 MRLST
(85%): gyshbn-dk gy-v dk
gy, brit mod fis ctngs, sb
blky-blky, sl slty tex, tr vf
pyr, mod calc; CHK



pyl, mod calc, CHK
(15%): med gy-occ dk gy
mot wi f wh chky incl,
frm-brit, mod fis sb blk
ctngs, hi calc

10900-11000 MRLST
(85%): gy-gyshbn-dk gy,
mot ip, sb frm-frm l-mod
fis sb rd-sb blk ctngs, sl
silty tex, tr vf-c pyr, mod
calc wi brn mrly resdl;
CHK (15%): lt gy-med gy,
sb frm-frm sb rd-sb blk
l-mod fis ctngs, chky tex,
hi calc

11000-11100 MRLST
(90%): gyshbn-dk gy-v dk
gy, brit mod fis ctngs, sb
blkly-blky, sl silty tex, tr vf
pyr, mod calc; CHK
(10%): med gy-occ dk gy
mot wi f wh chky incl,
frm-brit, mod fis sb blk
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

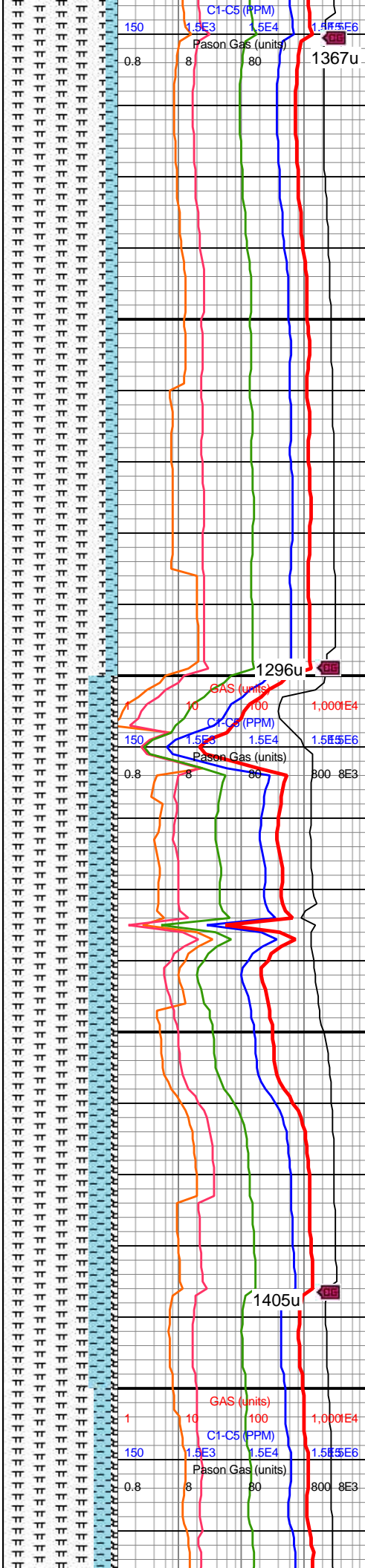
MD: 11,144'
TVD: 7,785.27'
INC: 89.1°
AZM: 176.99°
VS: 2,862.73'

WOB: 26klbs
RPM: 60
SPM: 187
SPP: 3,487psi

MD: 11,233'
TVD: 7,787.01'
INC: 88.66°
AZM: 178.75°
VS: 2,951.6'

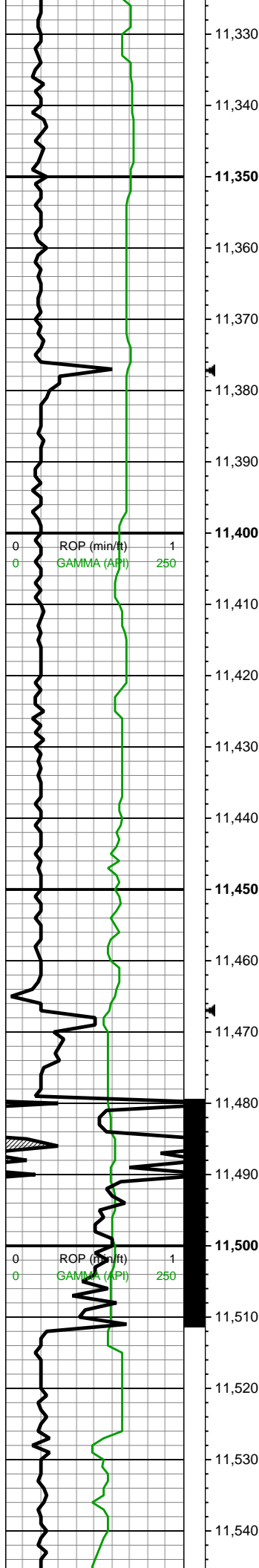
MW IN: 10
VIS IN: 64
MW OUT: 10.0
VIS OUT: 62

MD: 11,322'
TVD: 7,789.29'
INC: 88.4°
AZM: 178.84°



11100-11200 MRLST
(90%): dk gy-dk gyshbn-v
dk gy ip, sb frm-frm-hd,
mod fis sb ang-sb blk
ctngs, sm arg-sl slty tex
tex wi dul rthy lstr, occ
pyrc strg ip, rr-tr vf-f pyr,
mod calc; CHK (10%):
med gy-dk gy wi thn chky
lamn ip, l-mod fis sb
rd-sb blk ctngs, hi calc

11200-11300 MRLST
(75%): gyshbn-dk gy,
predy sb frm-frm, rr
brit-hd, mod fis sb
blk-bkly ctngs, sl slty tex,
sp wi brn marl incl thru,
com intbdd chky foram
incl grd to chk, tr vf pyr,
mod wh-tn bent, mod
calc wi brn mrly resdl;
CHK (20%): gy-dk gy wi
com f wh chky foram incl,
lt gy ip, sb frm-frm ip,
l-mod fis sb rd-sb blk
ctngs, sl slty tex, rr-occ
forams, hi calc; BENT
(5%): off wh-tn, c sb
plty-plty-splt ctngs, sm-sl
rgh tex, sp ip, non calc, hi
flor



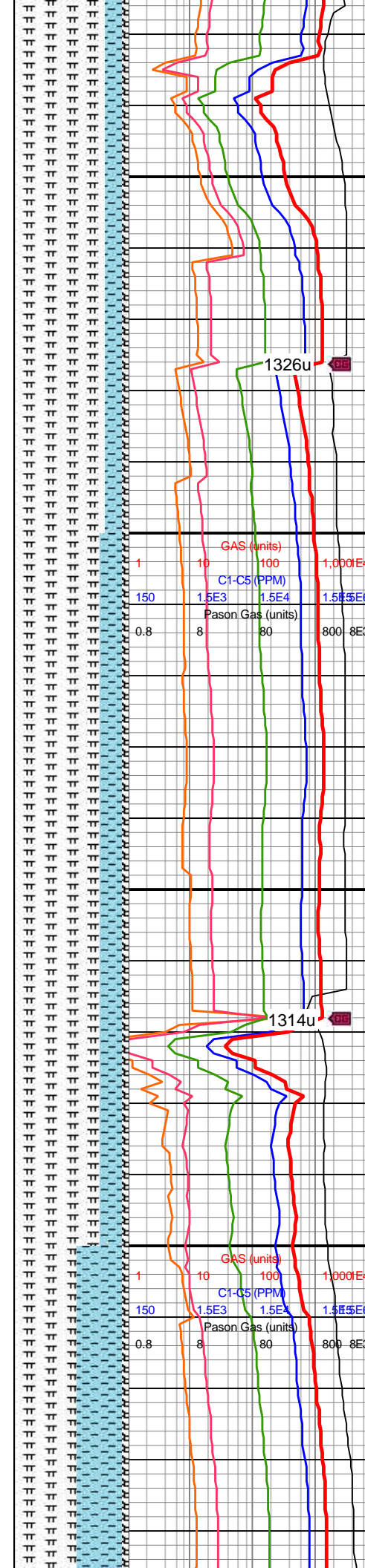
AZM: 178.34°
VS: 3,040.52'

WOB: 18klbs
RPM: 60
SPM: 186
SPP: 3,780psi

MD: 11,411'
TVD: 7,789.84'
INC: 90.9°
AZM: 179.37°
VS: 3,129.48'

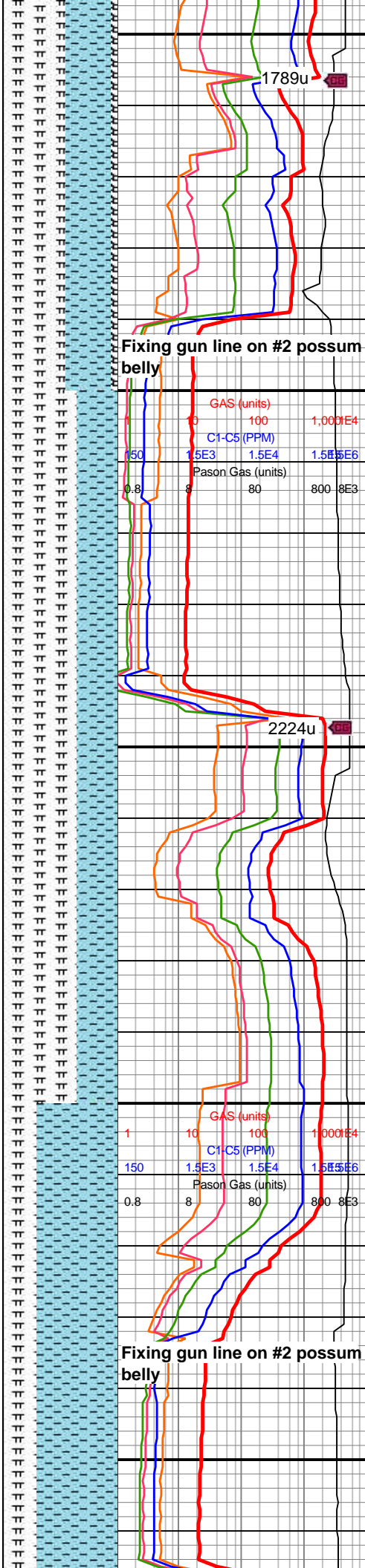
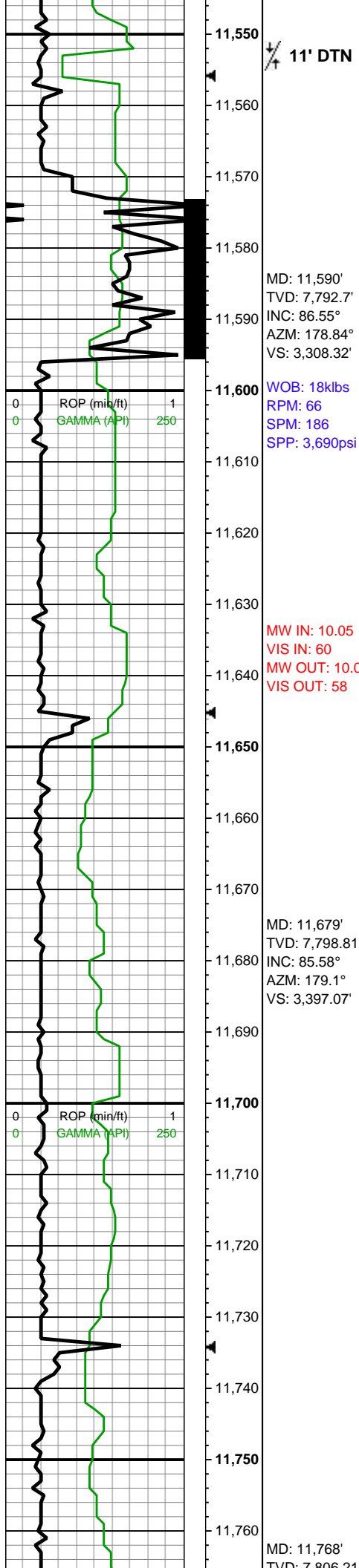
MW IN: 10
VIS IN: 64
MW OUT: 10.0
VIS OUT: 61

MD: 11,500'
TVD: 7,789.56'
INC: 89.45°
AZM: 178.75°
VS: 3,218.44'



11300-11400 MRLST
(80%): gyshbn-dk gy sp
wi brn marl incl thru, sb
frm-frm, sb blkly-blky mod
fis ctngs, sl slty tex, occ
intbdd chky foram incl
grdg to chk, tr vf pyr, mod
wh-tn bent, mod calc wi
brn mrly resdl; CHK
(15%): gy-dk gy wi com f
wh chky foram incl, lt gy
ip, sb frm-frm ip, l-mod
fis sb rd-sb blkly ctngs, sl
slty tex, rr-occ forams, hi
calc; BENT (5%): off
wh-tn, c sb plty-plty-splt
ctngs, sm-sl rgh tex, sp
ip, hi flor, non calc

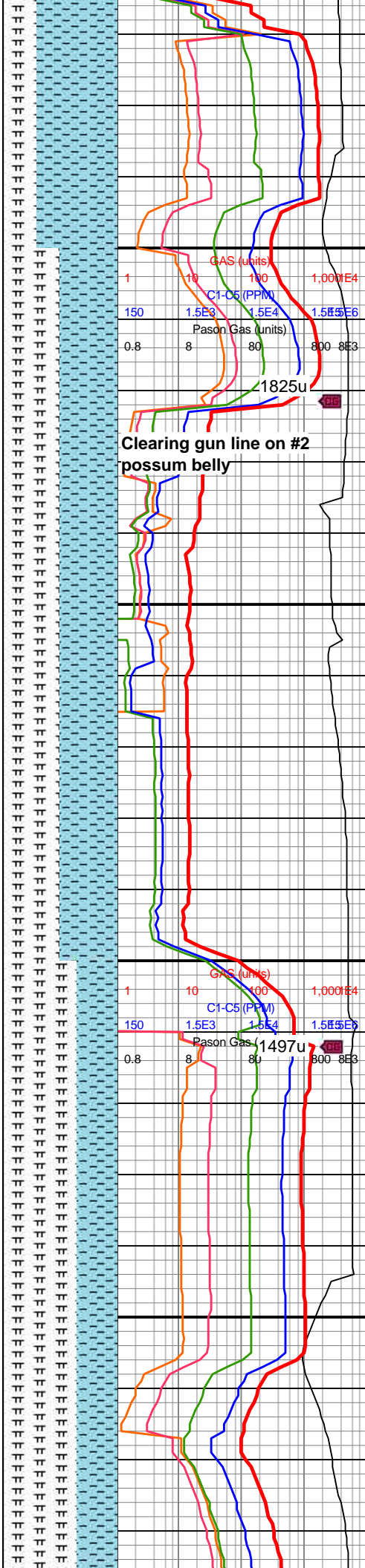
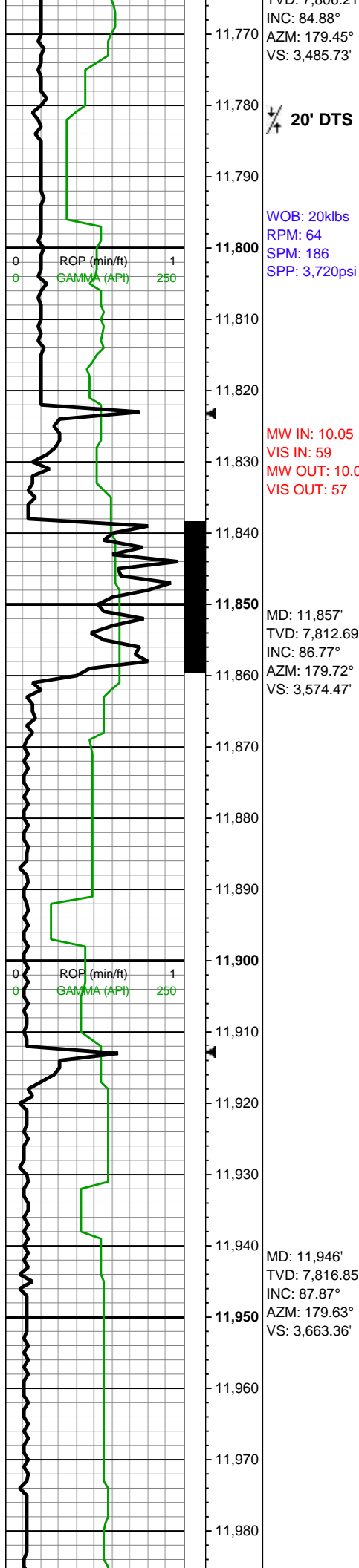
11400-11500 MRLST
(75%): gyshbn-dk gy, sb
frm-frm-brit, mod fis sb
blkly-blky ctngs, sl slty tex,
sp wi brn marl incl thru &
bndd lamn, tr vf pyr, occ
wh-tn bent, mod calc wi
brn mrly resdl; CHK
(20%): gy-dk gy wi com f
wh chky foram incl, lt gy
ip, sb frm-frm ip, l-mod
fis sb rd-sb blkly ctngs, sl
slty tex, rr-occ forams, hi
calc; BENT (5%): off
wh-tn, c sb plty-plty-splt
ctngs, sm-sl rgh tex, sp
ip, non calc, hi flor



11500-11600 MRLST
(55%): gy-dk gy mot wi
brn marl incl, sb
frm-frm-hd, mod fis sb
blky-blky ctngs, sl slty tex,
tr bent, tr vf pyr, mod calc;
CHK (40%):
gy-gyshbn-dk gy wi com
vf-f chky foram incl,
frm-brit, sb frm ip, l-mod
fis sb rd-sb blky ctngs,
occ-com forams, rr mict
cal, hi calc; BENT (5%):
off wh-tn, c sb
plty-plty-splt ctngs, sm-sl
rgh tex, sp ip, hi

11600-11700 MRLST
(65%): gy-gyshbn-dk gy,
predy frm-brit, l-mod fis
sb rd- sb blky-blky ctngs,
sm arg-sl slty tex, dul
rthy-wxy lstr, tr vf pyr, mod
calc wi brn mrly resdl;
CHK (35%):
gy-gyshbn-dk gy, frm-brit,
sb frm ip, l-mod fis sb
rd-sb blky ctngs, sp wi
rr-occ f elong forams
thru, hi calc

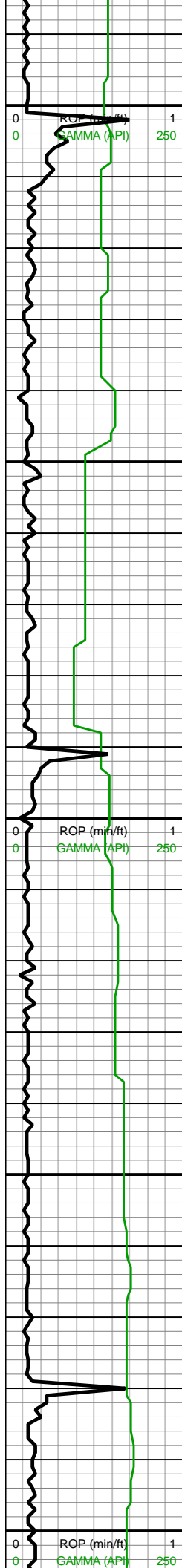
11700-11800 CHK
(70%): gy-gyshbn-dk gy



incl, frm-brit, sb frm ip,
l-mod fis sb rd-sb blk
ctngs, occ-com forams, rr
mict cal, hi calc; MRLST
(30%): gy-dk gy mot wi
brn marl incl, sb
frm-frm-hd, mod fis sb
blk-blky ctngs, sl slty tex,
tr bent, tr vf pyr, mod calc
wi brn mrly resdl

11800-11900 CHK
(50%): gy-gyshbn wi vf-f
wh chky & foram incl, frm,
brit, l-mod fis sb rd-sb
blk ctngs, sl slty tex, rr-tr
forams, tr fos frags, hi
calc; MRLST (50%): gy-dk
gy, mot wi brn mrly incl
thru, frm, brit, mod fis sb
blk-sb ply ctngs, sl slty
tex, rr tn bent, mod calc
wi brn mrly resdl

11900-12000 MRLST
(65%): gy-dk gy, mot wi
brn mrly incl thru, frm,
brit, mod fis sb blk-sb
ply ctngs, sl slty tex, rr tn
bent, mod calc; CHK
(35%): gy-gyshbn,
frm-brit, l-mod fis sb



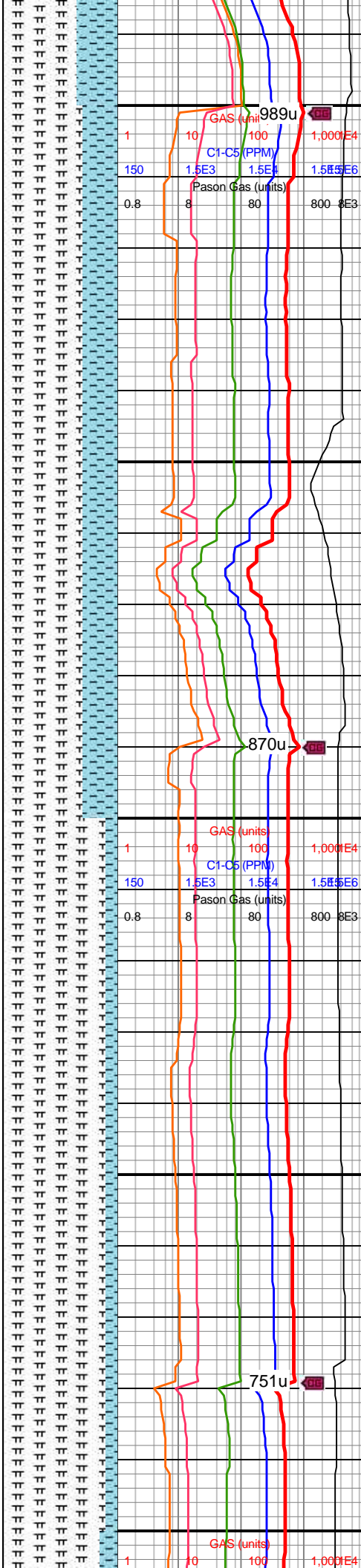
WOB: 13klbs
RPM: 61
SPM: 184
SPP: 3,320psi

MD: 12,035'
TVD: 7,819.11'
INC: 89.23°
AZM: 179.19°
VS: 3,752.31'

MW IN: 10.05
VIS IN: 57
MW OUT: 10.0
VIS OUT: 55

MD: 12,124'
TVD: 7,819.35'
INC: 90.46°
AZM: 179.01°
VS: 3,841.27'

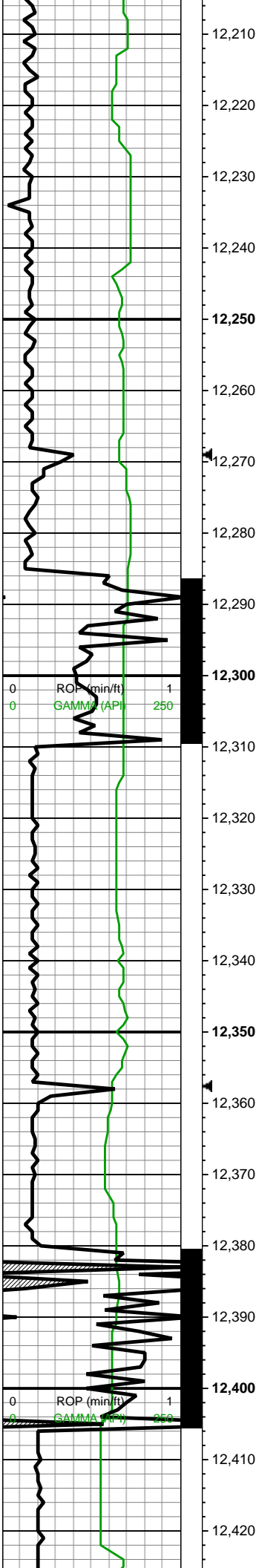
WOB: 22klbs
RPM: 65
SPM: 184
SPP: 3,860psi



rd-sb blkly ctngs, sl slty
tex, sp wi vf-f wh chky &
foram incl, tr c forams &
acic fos frags, hi calc

12000-12100 MRLST
(70%): gyshbn-dk gy,
predy sb frm-frm, rr
brit-hd, mod fis sb
blkly-blky ctngs, sl slty tex,
sp wi brn marl incl thru,
com intbdd chky foram
incl grd to chk, tr vf pyr,
mod wh-tn bent, mod
calc wi brn mrly resdl;
CHK (30%): gy-dk gy wi
com f wh chky foram incl,
lt gy ip, sb frm-frm ip,
l-mod fis sb rd-sb blkly
ctngs, sl slty tex, rr-occ
forams, hi calc

12100-12200 MRLST
(90%): gy-dk gy mot wi
brn mrly incl & lamn,
predy frm-brit-hd, sb frm
ip, mod fis sb
blkly-blky-tab ctngs, sm
arg-slty tex; CHK (10%): lt
gy-gy, frm-brit, sb rd-sb
blkly l-mod fis ctngs, tr vf
pyr, hi calc



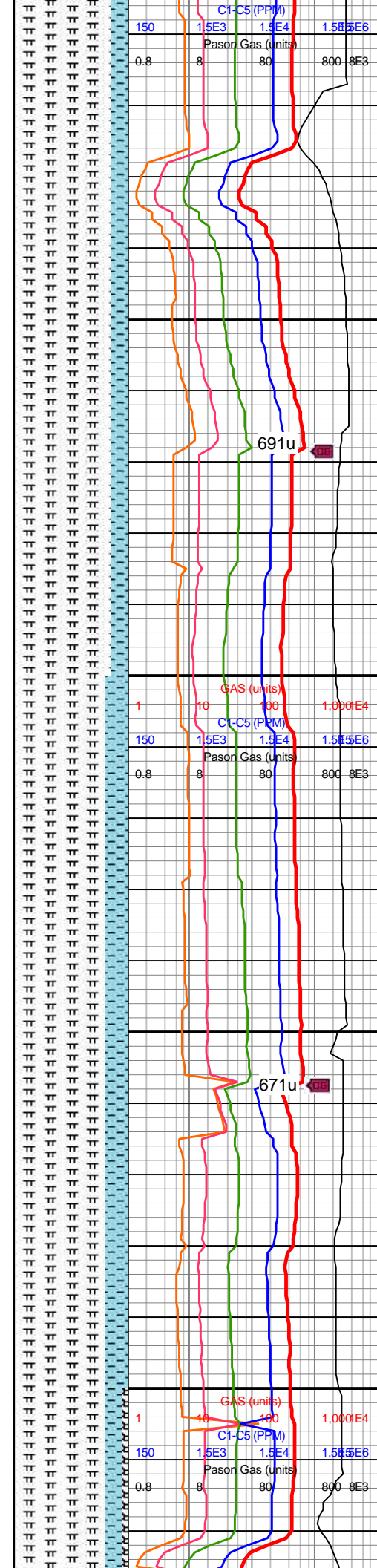
MD: 12,213'
TVD: 7,817.2'
INC: 92.31°
AZM: 178.84°
VS: 3,930.2'

MD: 12,302'
TVD: 7,813.17'
INC: 92.88°
AZM: 180.95°
VS: 4,019.09'

MW IN: 10
VIS IN: 60
MW OUT: 10.05
VIS OUT: 58

MD: 12,391'
TVD: 7,809.38'
INC: 92°
AZM: 180.33°
VS: 4,108.01'

WOB: 37klbs
RPM: 0
SPM: 184
SPP: 3,380psi



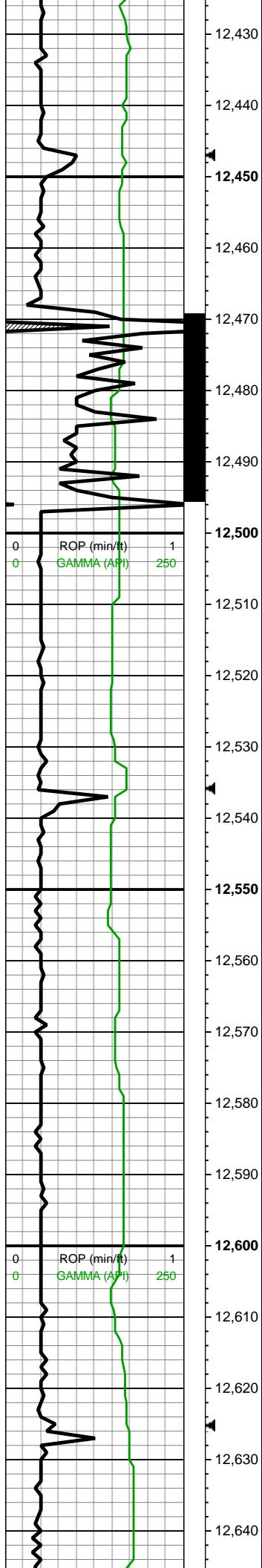
150 1.5E3 1.5E4 1.5E5E6
Pason Gas (units) 8 80 800 8E3

1 10 100 1,000E4
GAS (units) 10 100 1,000E4
C1-C5 (PPM) 1.5E3 1.5E4 1.5E5E6
Pason Gas (units) 8 80 800 8E3

1 10 100 1,000E4
GAS (units) 10 100 1,000E4
C1-C5 (PPM) 1.5E3 1.5E4 1.5E5E6
Pason Gas (units) 8 80 800 8E3

12200-12300 MRLST
(85%): dk gy wi brn marl
incl ip, frm-brit, l-mod fis
sb rd-sb blkly ctngs, sl
silty tex, mod calc wi brn
mrly resdl; CHK (15%): lt
gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blkly ctngs, sm sl
silty tex, hi calc

12300-12400 MRLST
(80%): dk gy, frm-brit sb
rd-sb blkly l-mod fis
ctngs, sl silty tex, sp wi
brn mrly incl, mod calc;
CHK (20%): lt gy-med gy,
sb frm-frm-brit, l-mod fis
sb rd-sb blkly ctngs, sm
sl silty tex, hi calc

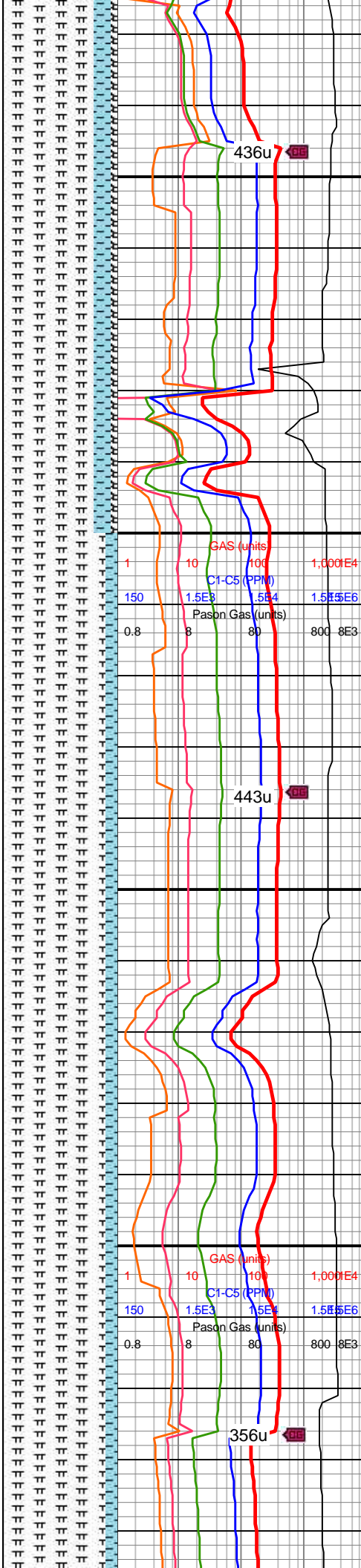


MW IN: 10
VIS IN: 59
MW OUT: 10.0
VIS OUT: 57

MD: 12,480'
TVD: 7,807.74'
INC: 90.11°
AZM: 180.86°
VS: 4,196.99'

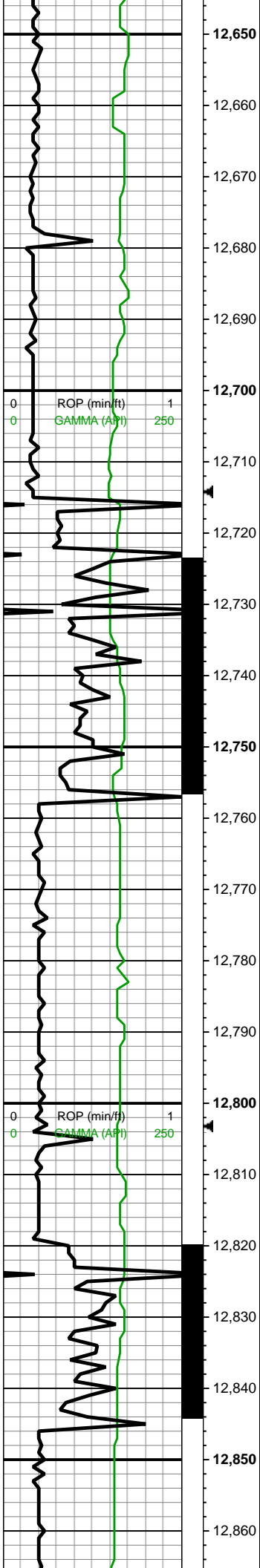
MD: 12,570'
TVD: 7,807.88'
INC: 89.71°
AZM: 179.98°
VS: 4,286.99'

WOB: 22klbs
RPM: 65
SPM: 186
SPP: 3,800psi



12400-12500 MRLST
(80%): gyshbn-dk gy,
predy sb frm-frm, rr
brit-hd, mod fis sb
blky-blky ctngs, sl slty tex,
sp wi brn marl incl thru,
com intbdd chky foram
incl grd to chk, tr vf pyr,
mod wh-tn bent, mod
calc wi brn mrly resdl;
CHK (15%): gy-dk gy wi
com f wh chky foram incl,
lt gy ip, sb frm-frm ip,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, rr-occ
forams, hi calc; BENT
(5%): off wh-tn, c sb
plty-plty-splt ctngs, sm-sl
rgh tex, sp ip, non calc, hi
flor

12500-12600 MRLST
(90%): gy-dk gy mot wi
brn mrly incl & lamn,
predy frm-brit-hd, sb frm
ip, mod fis sb
blky-blky-tab ctngs, sm
arg-slty tex; CHK (10%): lt
gy-gy, frm-brit, sb rd-sb
blky l-mod fis ctngs, tr vf
pyr, hi calc



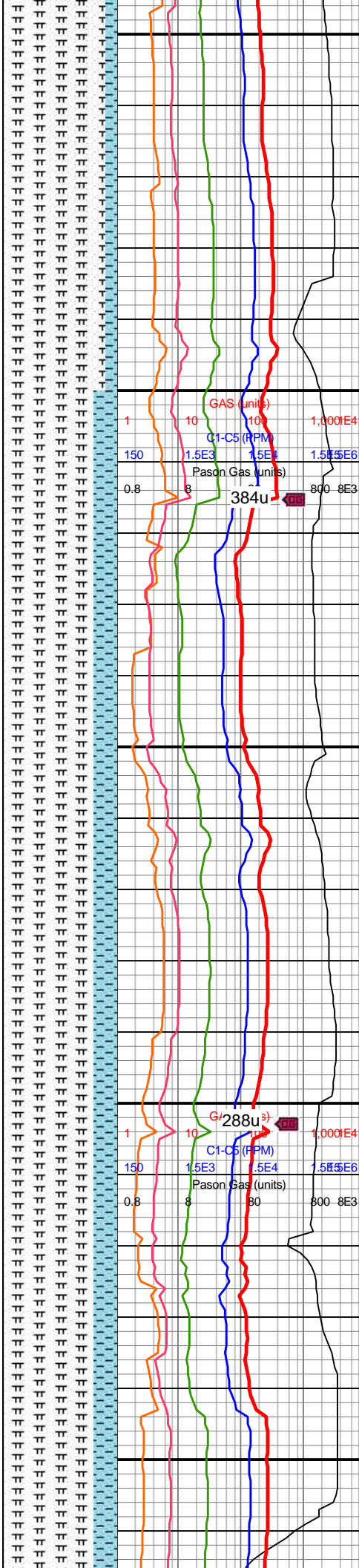
MD: 12,659'
TVD: 7,806.55'
INC: 92°
AZM: 179.54°
VS: 4,375.96'

MW IN: 10
VIS IN: 60
MW OUT: 10.0
VIS OUT: 58

MD: 12,748'
TVD: 7,804.91'
INC: 90.11°
AZM: 179.8°
VS: 4,464.92'

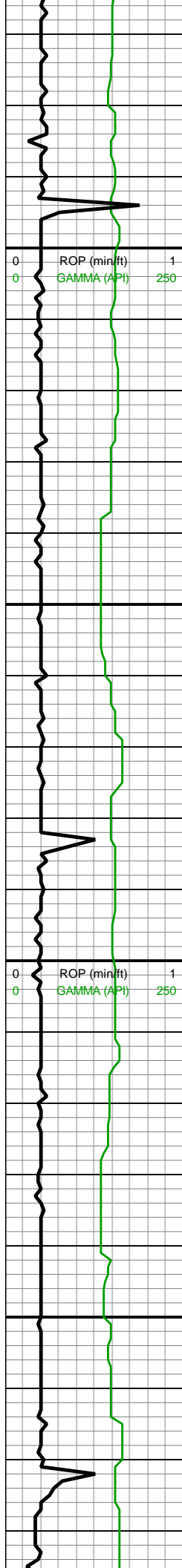
WOB: 15klbs
RPM: 65
SPM: 184
SPP: 3,250psi

MD: 12,837'
TVD: 7,806.04'
INC: 88.44°
AZM: 182.18°
VS: 4,553.9'



12600-12700 MRLST
(90%): gy-dk gy, sb
frm-frm, mod fis sb
blky-blky-tab ctngs, sm
arg-sltly tex, mod calc;
CHK (10%): lt gy-gy, sb
frm-frm-brit, sb rd-sb blky
l-mod fis ctngs, tr vf pyr,
hi calc; BENT (rr): off
wh-tn, sm-gt tex, non
calc, hi flor

12700-12800 MRLST
(80%): gy-dk gy sp wi brn
marl incl & thn bnnd
lamn ip, sb frm-frm-brit,
mod fis sb blky-blky
ctngs, sl slty tex, rr tn
bent, mod calc; CHK
(20%): lt gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blky ctngs, sm sl
slty tex, hi calc



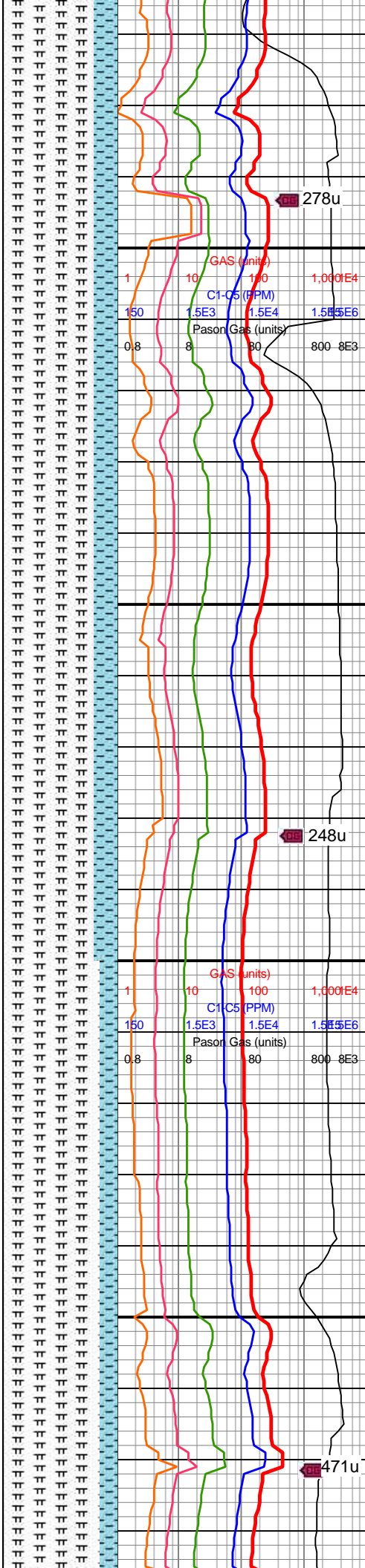
12,870
12,880
12,890
12,900
12,910
12,920
12,930
12,940
12,950
12,960
12,970
12,980
12,990
13,000
13,010
13,020
13,030
13,040
13,050
13,060
13,070
13,080

MD: 12,926'
TVD: 7,808.36'
INC: 88.57°
AZM: 182.44°
VS: 4,642.84'

MW IN: 9.95
VIS IN: 60
MW OUT: 9.9
VIS OUT: 60

WOB: 23.3klbs
RPM: 65
SPM: 185
SPP: 3,814psi

MD: 13,015'
TVD: 7,809.66'
INC: 89.76°
AZM: 183.14°
VS: 4,731.77'

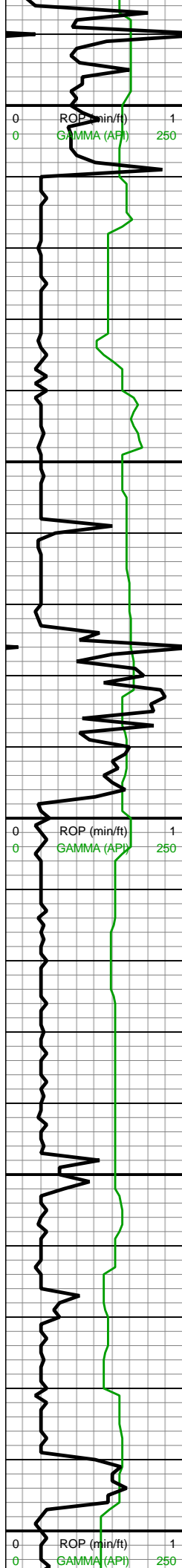


12800-12900 MRLST
(80%): gy-dk gy, sb
frm-frm, mod fis sb
blky-blky-tab ctngs, sm
arg-sltly tex, mod calc;
CHK (20%): lt gy-gy, sb
frm-frm-brit, sb rd-sb blky
l-mod fis ctngs, tr vf pyr,
hi calc; BENT (rr): off
wh-tn, sm-gt tex, non
calc, hi flor

12900-13000 MRLST
(80%): gy-dk gy sp wi brn
marl incl & thn bnnd
lamn ip, sb frm-frm-brit,
mod fis sb blky-blky
ctngs, sl slty tex, rr tn
bent, mod calc; CHK
(20%): lt gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blky ctngs, sm sl
slty tex, hi calc

13000-13100 MRLST
(85%): gy-dk gy sp wi brn
marl incl & thn bnnd
lamn ip, sb frm-frm-brit,
mod fis sb blky-blky
ctngs, sl slty tex, rr tn
bent, mod calc; CHK





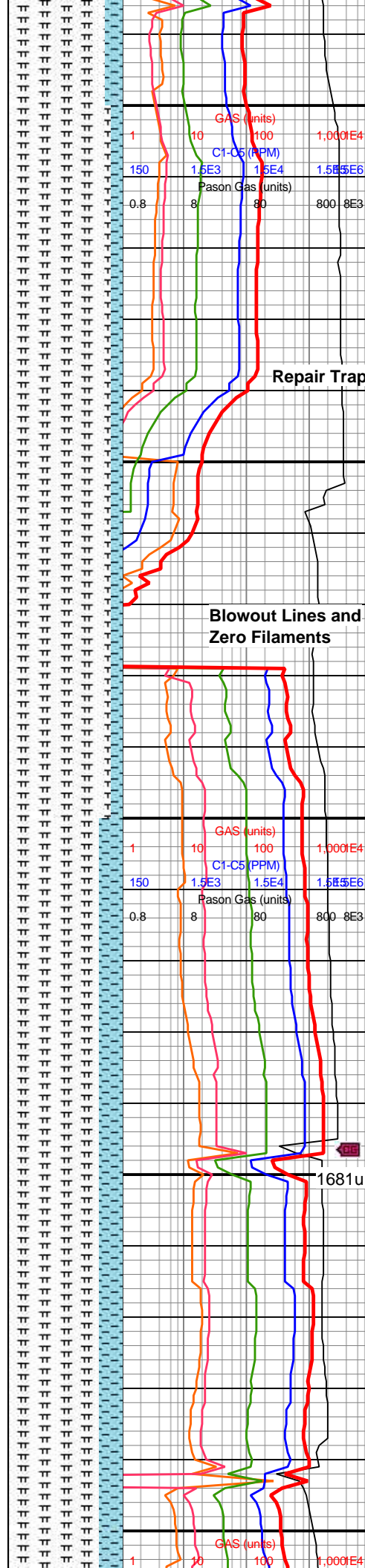
MD: 13,104'
TVD: 7,810.24'
INC: 89.49°
AZM: 180.95°
VS: 4,820.74'

MD: 13,193'
TVD: 7,811.41'
INC: 89.01°
AZM: 180.6°
VS: 4,909.73'

WOB: 17.4klbs
RPM: 65
SPM: 185
SPP: 3,750psi

MW IN: 10
VIS IN: 61
MW OUT: 10.0+
VIS OUT: 59

MD: 13,283'
TVD: 7,812.58'
INC: 89.49°
AZM: 180.77°
VS: 4,999.72'

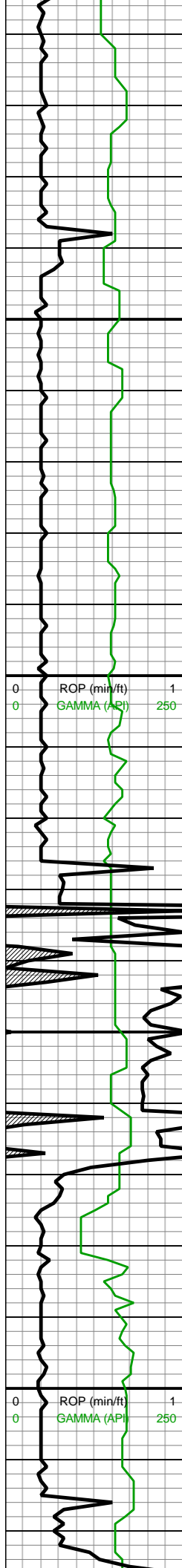


(15%): lt gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blk cy ctngs, sm sl
silty tex, hi calc

13100-13200 MRLST
(90%): dk gy wi brn marl
incl ip, frm-brit, l-mod fis
sb rd-sb blk cy ctngs, sl
silty tex, mod calc wi brn
mrly resld; CHK (10%): lt
gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blk cy ctngs, chky tex,
hi calc

13200-13300 MRLST
(80%): gy-dk gy, sb
frm-frm, mod fis sb
blk cy blk cy-tab ctngs, sm
arg-silty tex, mod calc,
scat wh-tn bent; CHK
(20%): lt gy-gy, sb
frm-frm-brit, sb rd-sb blk cy
l-mod fis ctngs, tr vf pyr,
hi calc





13,310
13,320
13,330
13,340
13,350
13,360
13,370
13,380
13,390
13,400
13,410
13,420
13,430
13,440
13,450
13,460
13,470
13,480
13,490
13,500
13,510
13,520

MW IN: 10
VIS IN: 62
MW OUT: 10.0
VIS OUT: 60

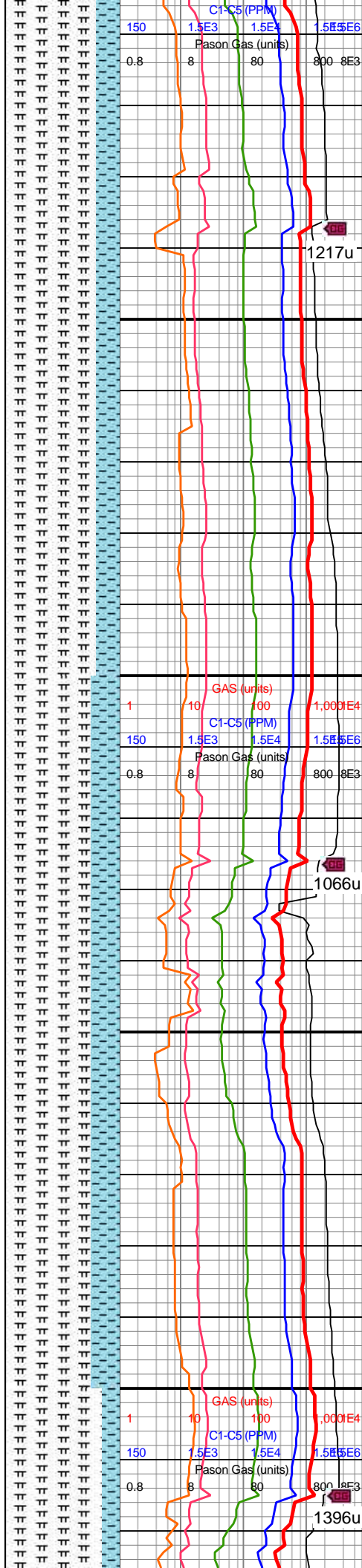
MD: 13,372'
TVD: 7,812.75'
INC: 90.29°
AZM: 180.33°
VS: 5,088.72'

WOB: 24.9klbs
RPM: 65
SPM: 188
SPP: 3,850psi

MW IN: 10
VIS IN: 61
MW OUT: 10.0
VIS OUT: 58

MD: 13,461'
TVD: 7,814.97'
INC: 86.86°
AZM: 175.76°
VS: 5,177.56'

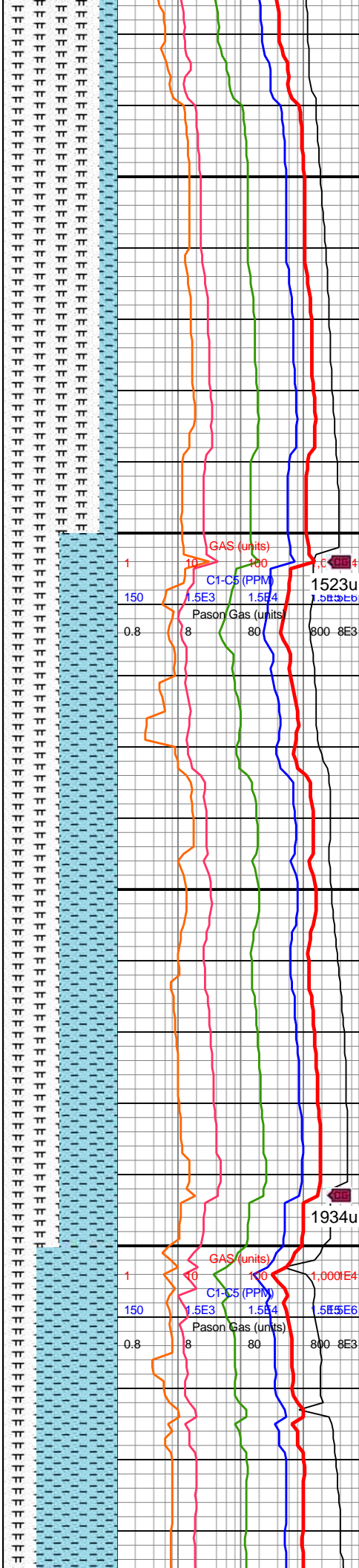
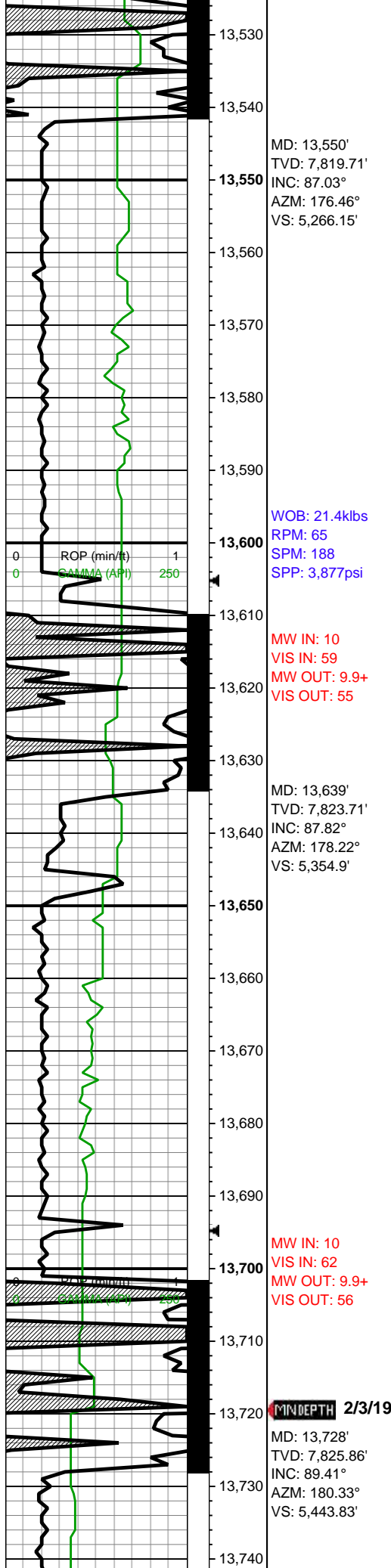
MW IN: 10
VIS IN: 60
MW OUT: 10.0
VIS OUT: 56



1217u
1066u
1396u

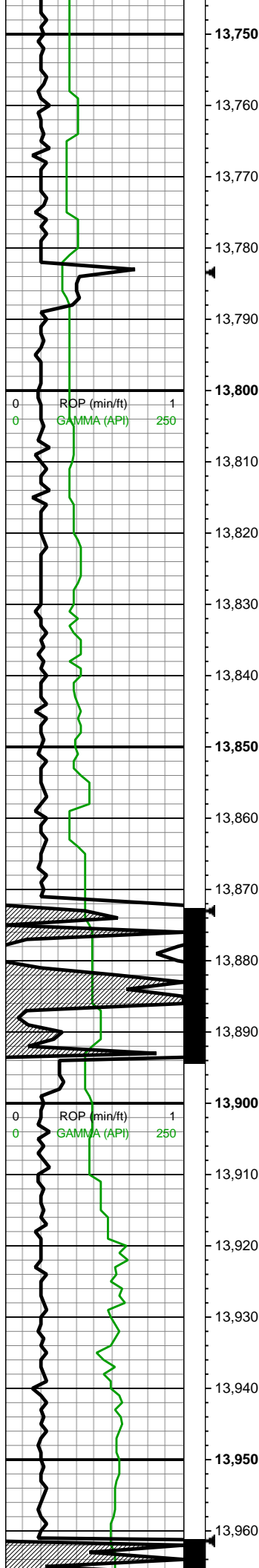
13300-13400 MRLST
(80%): dk gy-gyshbn, sb
frm-frm, brit ip, blkly,
sm-sl slty arg tex, occ
mot brn mrlly incl ip, scat
lt tn bent; CHK (20%):
med gy, dk gy ip, sme lt
gy, frm-brit, sb blkly-blky,
chky tex, sme vf pyr, hi
calc

13400-13500 MRLST
(75%): med gyshbn-dk
gy, sb frm-frm-brit, rd-sb
rd-sb blkly-sb plty l-mod
fis ctngs, sm arg-sl slty
tex, tr vf pyr, mod calc;
CHK (25%): lt-med gy, vf
wh chky lamn ip, l-mod
fis sb rd-sb blkly ctngs,
chky tex, hi calc



13500-13600 MRLST (85%): med gyshbn-dk gy, occ sp brn marl incl, frm-brit, mod fis, sb blk-y-sb plty ctngs, sl slty tex, tr-rr vf-u f pyr, mod calc; CHK (15%): lt-med gy, com dk gy wi f wh chky incl ip grdg to mrlst, l-mod fis sb rd-sb blk-y ctngs, hi calc

13600-13700 CHK (50%) med gyshbn-lt gy, mot, sb blk-y wi occ plty, v chky tex, v sft-sl frm, scat-com inoc fos frags, tr-rr pyr, v calc; MRLST (50%) med-dk gry wi sme lt gy, sb-blky, sl lam-v micmica, v calc, sme scat cal



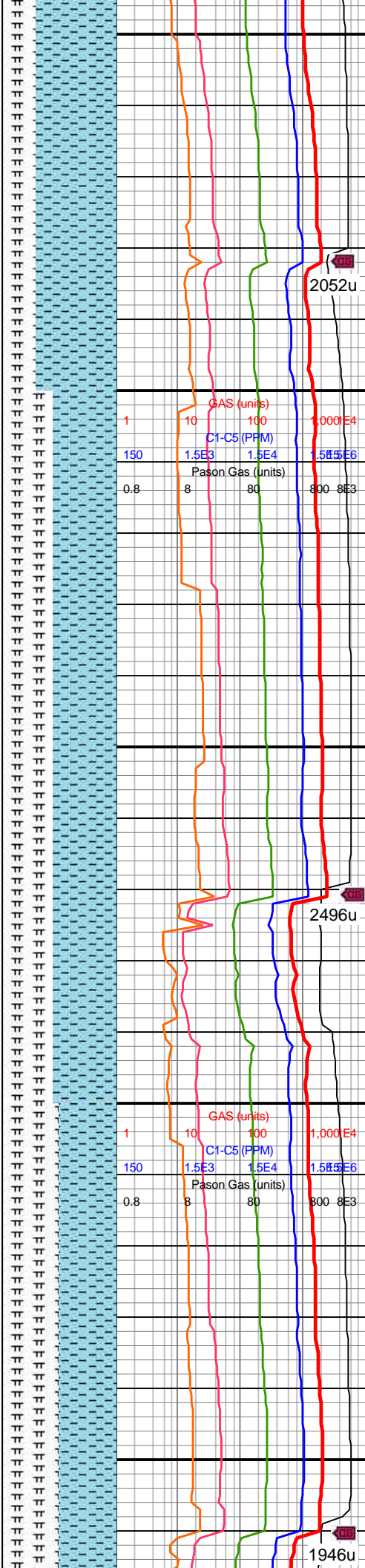
MW IN: 10
VIS IN: 62
MW OUT: 9.9+
VIS OUT: 56

WOB: 29.1klbs
RPM: 60
SPM: 188
SPP: 3,880psi

MD: 13,817'
TVD: 7,826.03'
INC: 90.37°
AZM: 180.6°
VS: 5,532.83'

MW IN: 9.9+
VIS IN: 60
MW OUT: 10.0
VIS OUT: 56

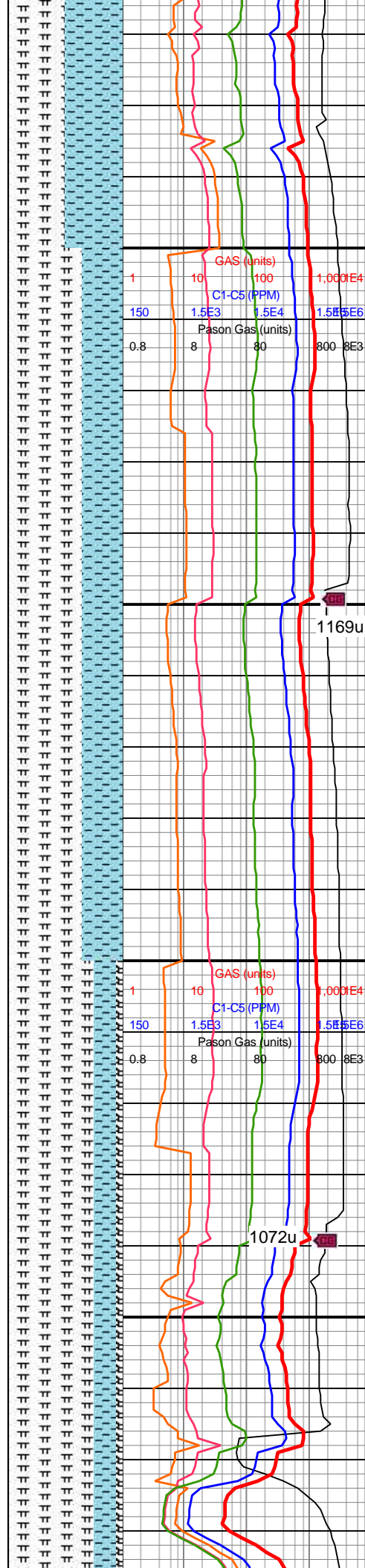
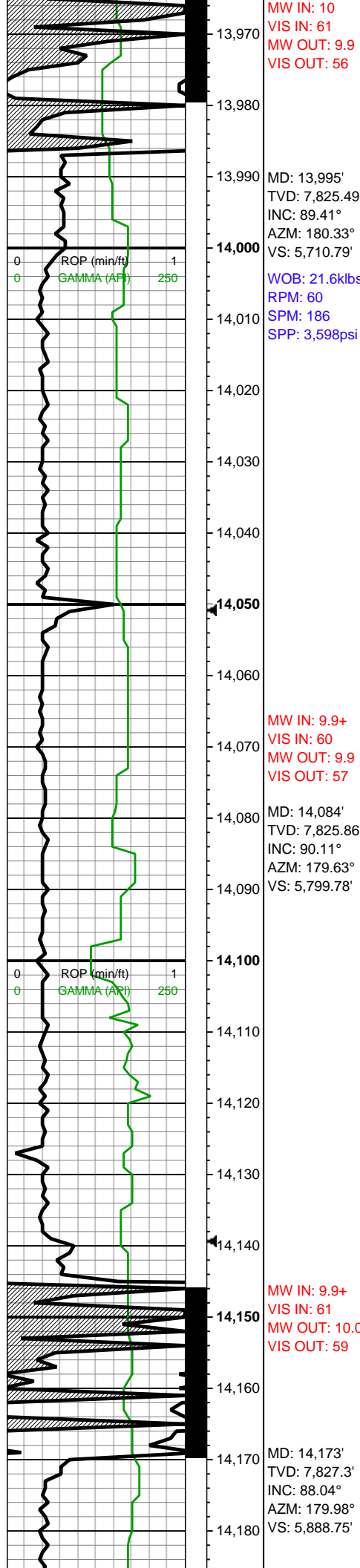
MD: 13,906'
TVD: 7,825.39'
INC: 90.46°
AZM: 178.66°
VS: 5,621.81'



13700-13800 CHK
(70%): lt gy-gyshbn, med
gy-dk gy, wh chky incl
thru, sb rd-sb blkly, com
fos frags, sl frm-frm, brit,
tr vf pyr, v calc; MRLST
(30%): dk gy-med gy,
frm-hd, brit, sm sl slty tex,
occ mrly incl, mod calc

13800-13900 CHK
(55%): predy med gy,
sme lt gy, tr dk gy,
frm-brit, sb blkly-blky, scat
fos frags, com wh chky
frags, chky tex, sme vf
pyr, hi calc; MRLST
(45%): v dk gy, gyshbn ip,
sb frm-frm, brit ip, blkly,
sm-sl slty arg tex, occ
mot brn mrly incl ip

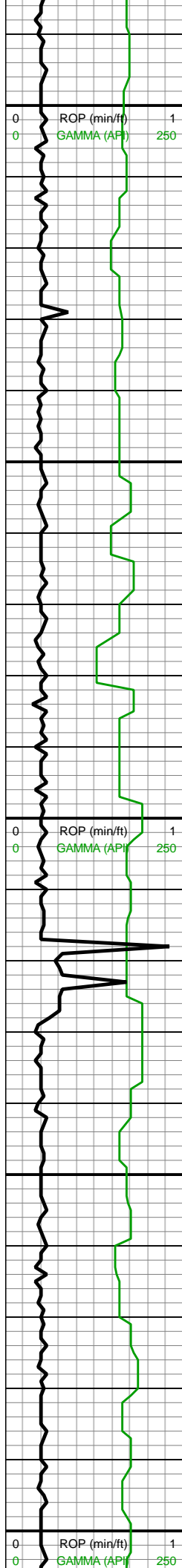




13900-14000 CHK
(50%): pred med gy-lt gy,
sem offwht-v lt gy,
frm-brit, sb blkyl-bkly, chky
tex, sme vf pyr, hi calc;
MRLST (50%): dk gy,
gyshbn ip, sb frm-frm, brit
ip, blkyl, sm-sl slty arg tex,
occ mot brn mrly incl ip,
occ calc frac fill

14000-14100 MRLST
(65%): gyshbn-dk gy mot
wi occ brn marl incl,
predy frm-brit-hd, rr sb
frm, mod fis sb blkyl-bkly
ctngs, sl slty tex, occ c tn
bent, intbdd wi incr chky
foram incl ip grdg to chk,
mod calc; CHK (35%):
gy-dk gy-gyshbn wi com
vf-f chky foram incl, lt gy
ip, sb frm-frm-brit l-mod
fis sb rd-sb blkyl ctngs,
sm arg-sl slty tex, occ sp
wh forams, hi calc

14100-14200 MRLST
(75%): gyshbn-dk gy mot
wi occ brn marl incl,
predy frm-brit-hd, rr sb
frm, mod fis sb blkyl-bkly
ctngs, sl slty tex, occ c tn
bent, intbdd wi incr chky
foram incl ip grdg to chk,
mod calc; CHK (20%):
gy-dk gy-gyshbn wi com
vf-f chky foram incl, lt gy
ip, sb frm-frm-brit l-mod
fis sb rd-sb blkyl ctngs,



14,190
14,200
14,210
14,220
14,230
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

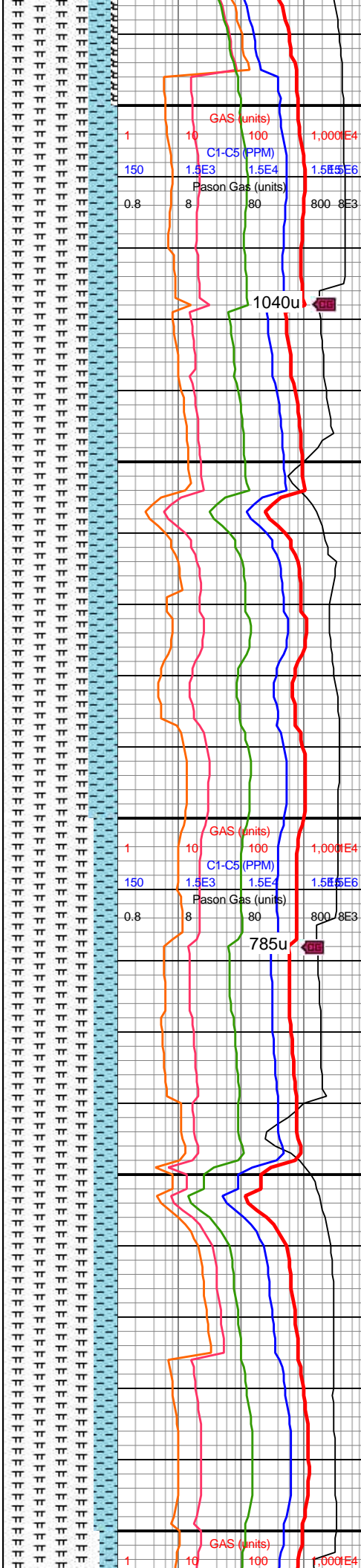
WOB: 26klbs
RPM: 61
SPM: 187
SPP: 3,840psi

MW IN: 9.95
VIS IN: 64
MW OUT: 9.9
VIS OUT: 58

MD: 14,263'
TVD: 7,828.82'
INC: 90.02°
AZM: 181.91°
VS: 5,978.73'

MD: 14,352'
TVD: 7,828.38'
INC: 90.55°
AZM: 179.89°
VS: 6,067.72'

WOB: 14klbs
RPM: 60
SPM: 186
SPP: 3,720psi

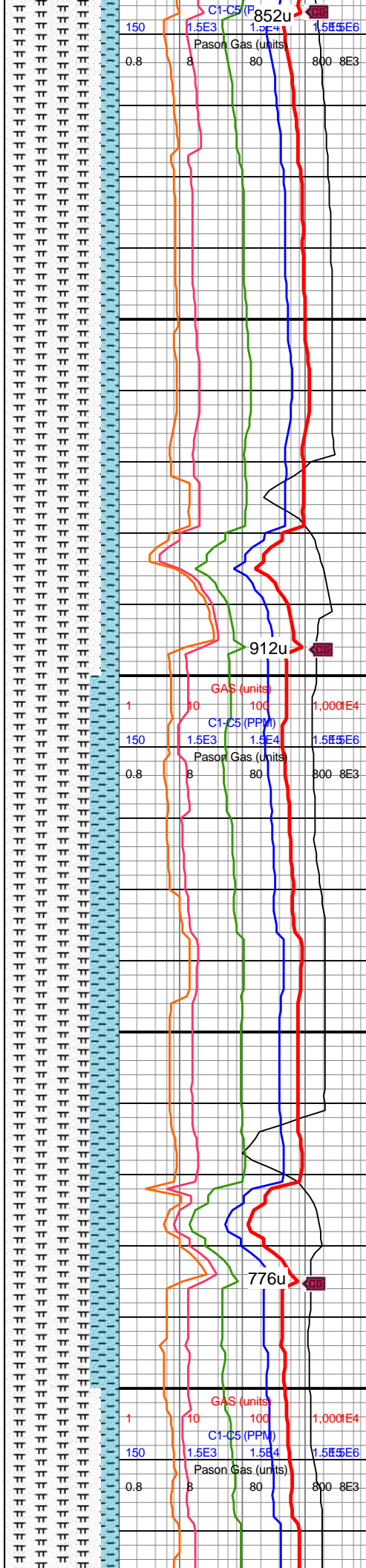
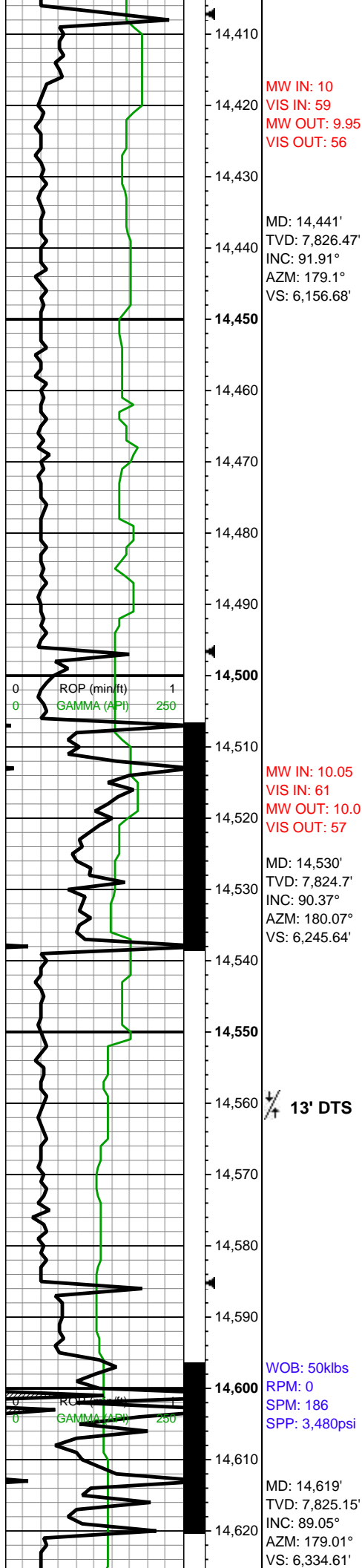


sm arg-sl slty tex, occ sp
wh forams, hi calc; BENT
(5%): off wh-tn, frm-brit,
sb plty-splty, sp ip, non
calc, hi flor

14200-14300 MRLST
(75%): gyshbn-dk gy mot
wi occ brn marl incl,
predy frm-brit-hd, rr sb
frm, mod fis sb blkly-blky
ctngs, sl slty tex, occ c tn
bent, intbdd wi incr chky
foram incl ip grdg to chk,
mod calc; CHK (25%):
gy-dk gy-gyshbn wi com
vf-f chky foram incl, lt gy
ip, sb frm-frm-brit l-mod
fis sb rd-sb blkly ctngs,
sm arg-sl slty tex, occ sp
wh forams, hi calc

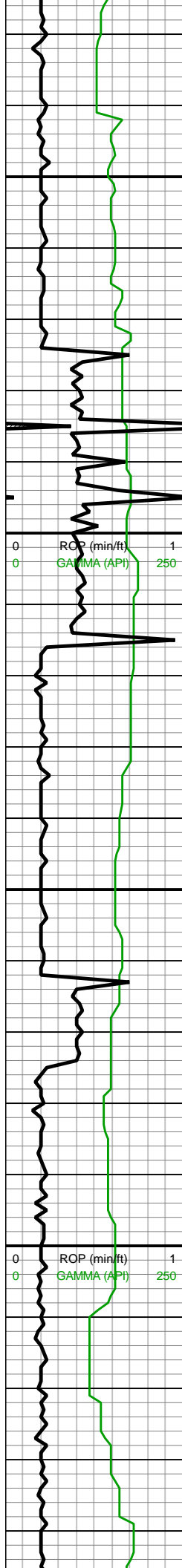
14300-14400 MRLST
(80%): predy dk gy,
gyshbn ip, frm-brit-hd, sb
blkly-blky mod fis ctngs, sl
slty-slty tex, rr c tn bent,
spec wi brn marl incl &
lamn, intbdd wi incr chky
foram incl ip grdg to chk,
mod calc; CHK (20%):
gy-dk gy-gyshbn wi com
vf-f chky foram incl, lt gy
ip, sb frm-frm-brit l-mod
fis sb rd-sb blkly ctngs,
sm arg-sl slty tex, occ sp
wh forams, hi calc





14400-14500 MRLST
(85%): dk gyshbn-v dk gy,
frm-hd, brit ip, mod fis sb
blky-blky ctngs, predy sm
tex-sl slty tex, rr-tr pyr strg,
rr c tn bent; CHK (15%): lt
gy-gyshbn, occ wh-lt gy
chky foram incl, frm-brit,
l-mod fis sb rd-sb blky
ctngs, along chky lamn
ip, tr c forams, hi calc

14500-14600 MRLST
(75%): predy dk gy,
gyshbn ip, frm-brit-hd, sb
blky-blky mod fis ctngs, sl
slty-slty tex, rr c tn bent,
spec wi brn marl incl &
lamn, intbdd wi incr chky
foram incl ip grdg to chk,
mod calc; CHK (25%):
gy-dk gy-gyshbn wi com
vf-f chky foram incl, lt gy
ip, sb frm-frm-brit l-mod
fis sb rd-sb blky ctngs,
sm arg-sl slty tex, occ sp
wh forams, hi calc



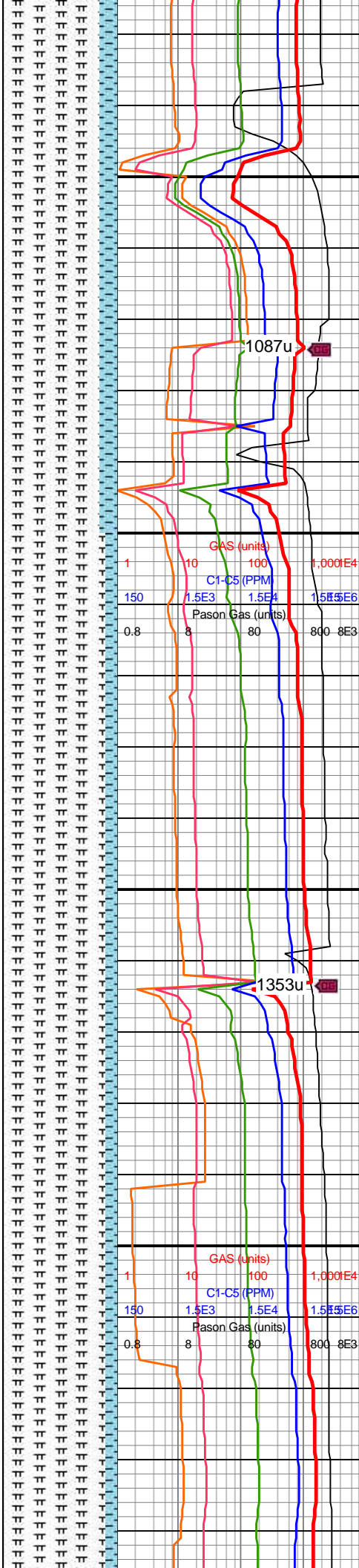
MW IN: 10
VIS IN: 58
MW OUT: 10.05
VIS OUT: 57

MD: 14,708'
TVD: 7,827.07'
INC: 88.48°
AZM: 180.24°
VS: 6,423.57'

MD: 14,797'
TVD: 7,828.95'
INC: 89.1°
AZM: 180.86°
VS: 6,512.55'

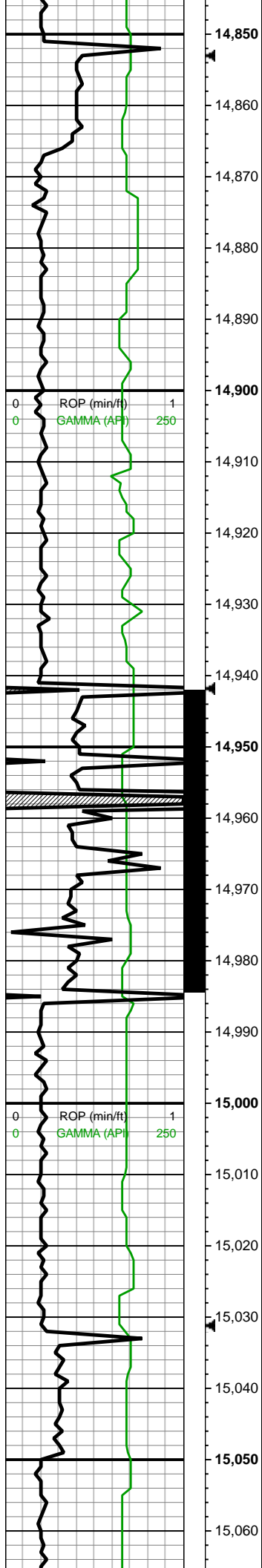
WOB: 20klbs
RPM: 60
SPM: 184
SPP: 3,770psi

MW IN: 10.05
VIS IN: 58
MW OUT: 10.0
VIS OUT: 55



14600-14700 MRLST
(85%): dk gy-dk
gyshbn-occ v dk gy wi brn
marl incl, frm-brit, l-mod
fis sb rd-sb blkyl-blkyl-tab
ctngs, sm-sl slty tex, rr tn
bent, mod calc wi brn
mrly resdl; CHK (15%):
med gy spec wi wh chky
foram incl & thn chky
lamn, sb frm-frm-brit,
l-mod fis sb rd-sb blkyl
ctngs, sl slty tex, hi calc

14700-14800 MRLST
(90%): dk gy-dk gyshbn, v
dk gy ip, frm-brit, sb rd-sb
blkyl-blkyl l-mod fis ctngs,
sm-sl slty tex, rr-tr tn bent,
mod calc; CHK (10%):
med gy, thn chky lamn,
sb frm-frm-brit, l-mod fis
sb rd-sb blkyl ctngs, sl
slty tex, tr chky foram incl,
hi calc

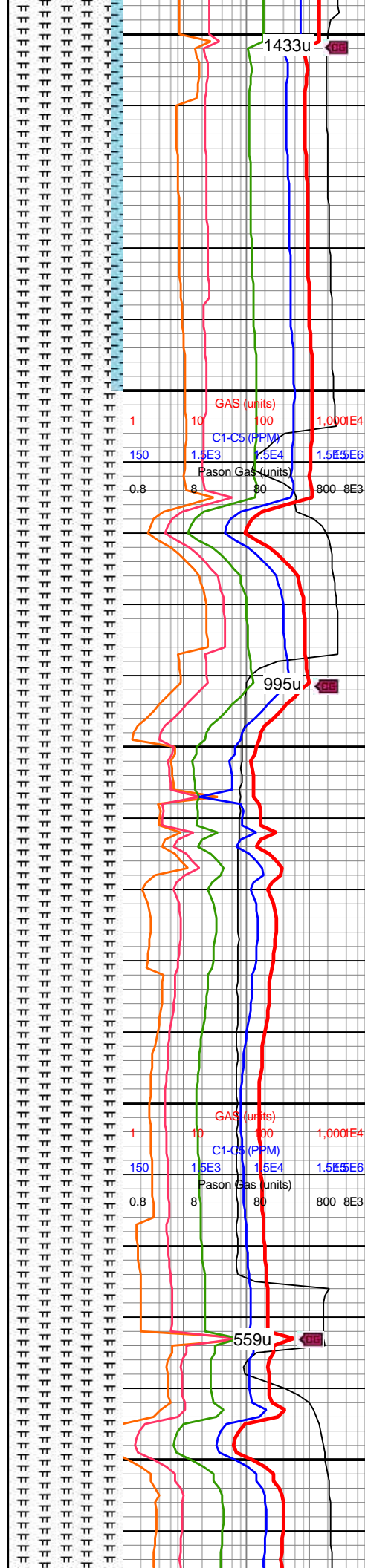


MD: 14,886'
TVD: 7,829.05'
INC: 90.77°
AZM: 180.68°
VS: 6,601.55'

MD: 14,976'
TVD: 7,828.84'
INC: 89.49°
AZM: 181.74°
VS: 6,691.54'

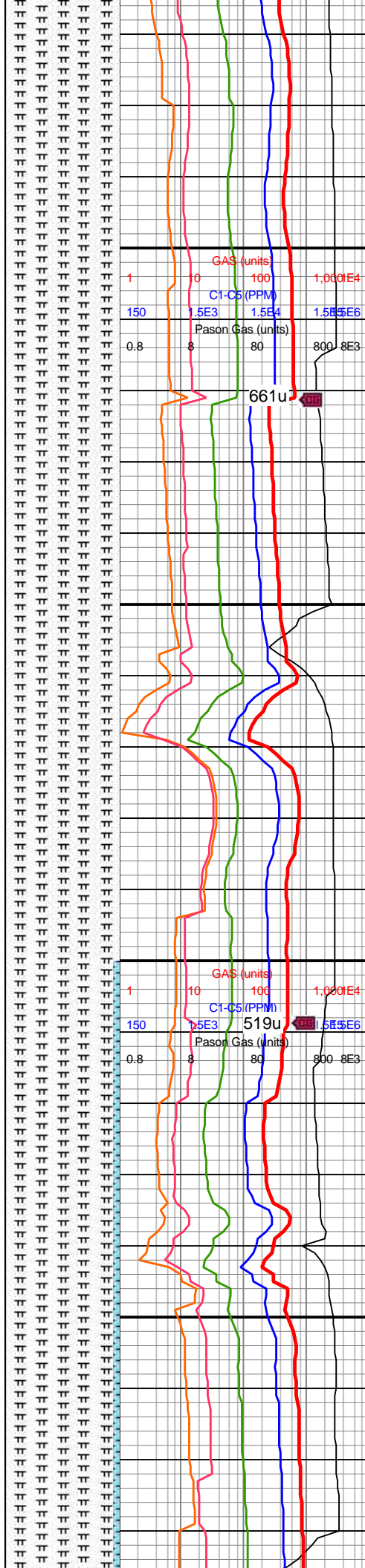
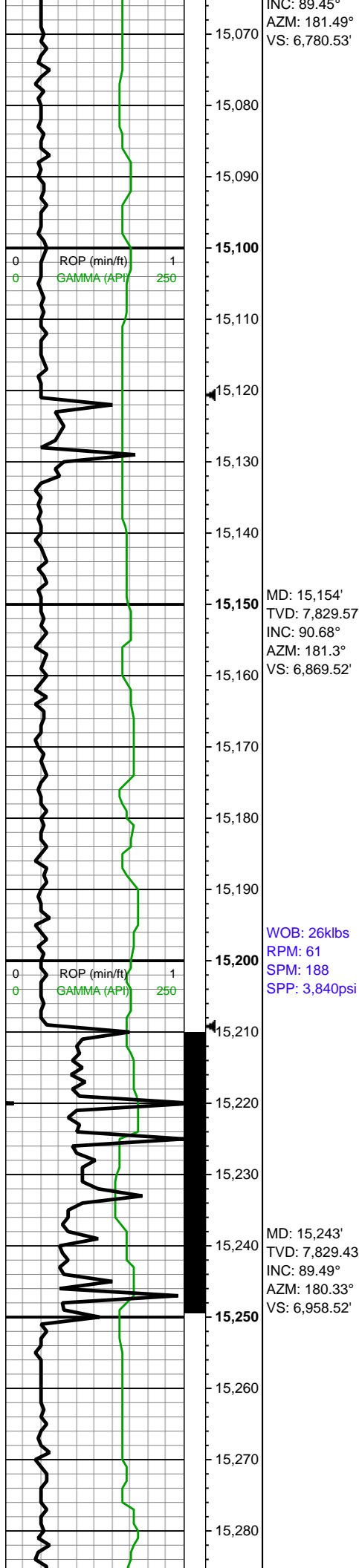
WOB: 22klbs
RPM: 65
SPM: 187
SPP: 3,810psi

MD: 15,065'
TVD: 7,829.67'



14800-14900 MRLST
(90%): dk gy-dk gyshbn-v
dk gy, frm-brit, sb frm ip,
sb rd-sb blkly-blky l-mod
fis ctngs, sm-sl slty tex,
sp wi brn marl incl ip,
mod calc; CHK (10%):
med gy, thn chky lamn,
sb frm-frm-brit, l-mod fis
sb rd-sb blkly ctngs, sl
slty tex, tr chky foram incl,
hi calc

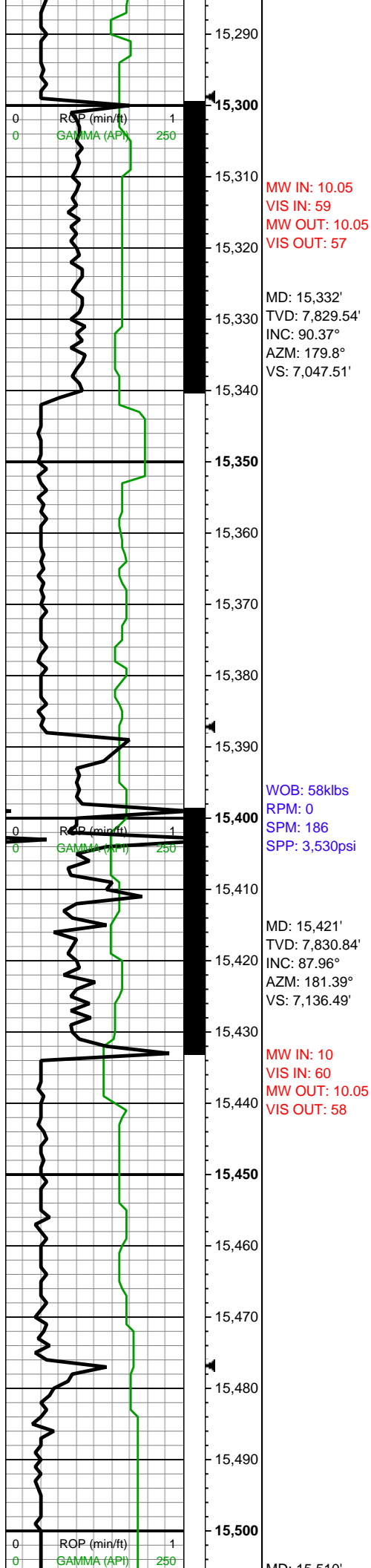
14900-15000 MRLST
(100%): gyshbn-dk
gyshbn-v dk gy calc sh sp
wi marl incl, predy
frm-brit-hd, sb frm ip,
l-mod fis sb rd-sb blkly
ctngs, sm arg-sl slty tex,
tr vf pyr ip, mod calc wi
brn mrly resdl



15000-15100 MRLST
(100%): gyshbn-dk gy-dk
gyshbn wi sp brn marl
incl, sb frm-frm l-mod fis
sb rd-sb blkly ctngs, sm
arg-sl slty tex, tr vf pyr ip,
mod calc

15100-15200 MRLST
(100%): gyshbn-dk
gyshbn-v dk gy calc sh sp
wi marl incl, predy
frm-brit-hd, sb frm ip,
l-mod fis sb rd-sb blkly
ctngs, sm arg-sl slty tex,
tr vf pyr ip, mod calc wi
brn mrlly resdl

15200-15300 MRLST
(95%): dk gy-dk gyshbn-v
dk gy, frm-brit, sb frm ip,
sb rd-sb blkly-blky l-mod
fis ctngs, sm-sl slty tex,
sp wi brn marl incl ip,
mod calc; CHK (5%):



MW IN: 10.05
VIS IN: 59
MW OUT: 10.05
VIS OUT: 57

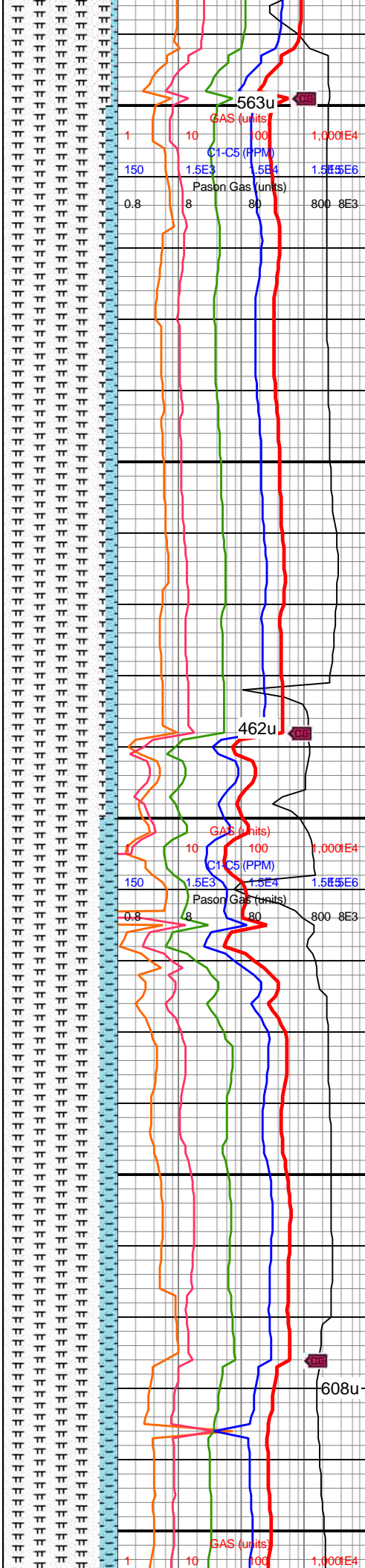
MD: 15,332'
TVD: 7,829.54'
INC: 90.37°
AZM: 179.8°
VS: 7,047.51'

WOB: 58klbs
RPM: 0
SPM: 186
SPP: 3,530psi

MD: 15,421'
TVD: 7,830.84'
INC: 87.96°
AZM: 181.39°
VS: 7,136.49'

MW IN: 10
VIS IN: 60
MW OUT: 10.05
VIS OUT: 58

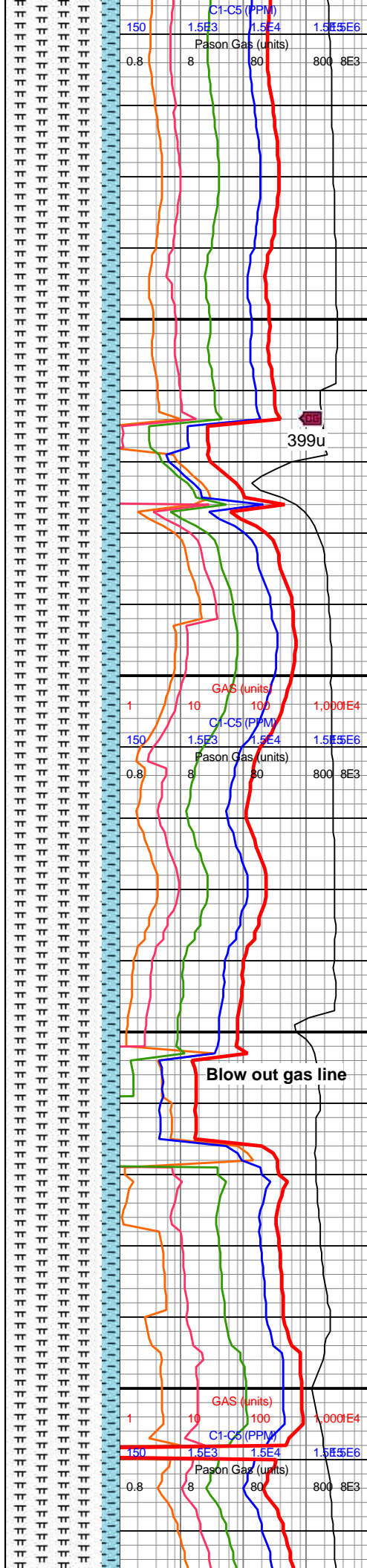
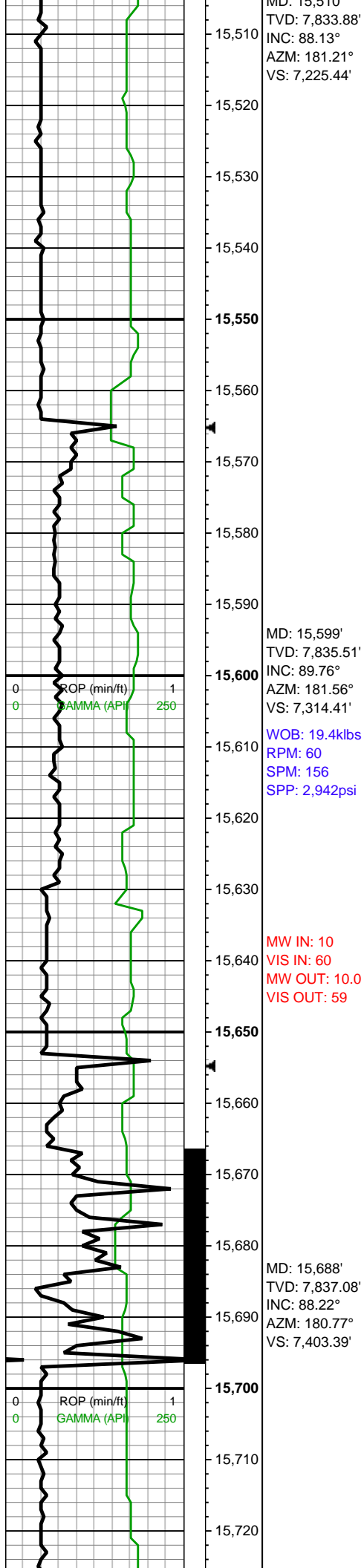
MD: 15,510'



med gy, thn chky lamn,
sb frm-frm-brit, l-mod fis
sb rd-sb blkly ctngs, sl
silty tex, tr chky foram incl,
hi calc

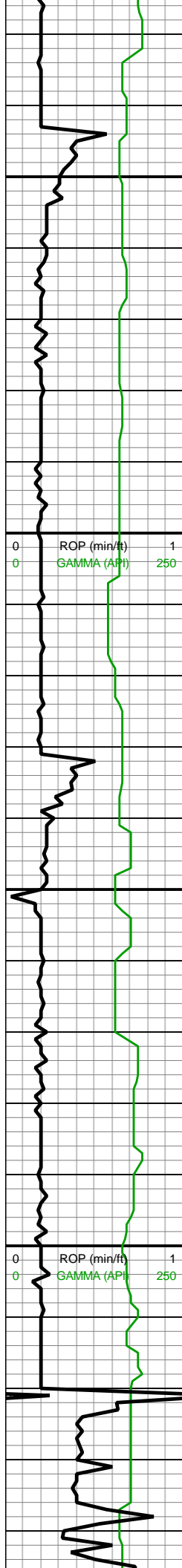
15300-15400 MRLST
(90%): gy-gyshbn-dk gy,
sb frm-frm, brit ip, predy
sb blkly-blky mod fis
ctngs, sb rd ip, sm arg-sl
silty tex, thn brn mrly lamn
& spec marl incl, tr vf pyr
ip, mod calc; CHK (10%):
med gy, thn chky lamn,
sb frm-frm-brit, l-mod fis
sb rd-sb blkly ctngs, sl
silty tex, tr chky foram incl,
hi calc

15400-15500 MRLST
(85%): dk gyshbn-v dk gy,
frm-hd, brit ip, mod fis sb
blkly-blky ctngs, predy sm
tex-sl silty tex, rr-tr pyr strg,
rr c tn bent; CHK (15%): lt
gy-gyshbn, occ wh-lt gy
chky foram incl, frm-brit,
l-mod fis sb rd-sb blkly
ctngs, along chky lamn
ip, tr c forams, hi calc



15500-15600 MRLST
(85%): predy dk gy,
gyshbn ip, frm-brit-hd, sb
blky-blky mod fis ctngs, sl
silty-silty tex, rr c tn bent,
spec wi brn marl incl &
lamn, intbdd wi incr chky
foram incl ip grdg to chk,
mod calc; CHK (15%):
gy-dk gy-gyshbn wi com
vf-f chky foram incl, lt gy
ip, sb frm-frm-brit l-mod
fis sb rd-sb blky ctngs,
sm arg-sl slty tex, occ sp
wh forams, hi calc

15600-15700 MRLST
(85%): dk gyshbn-v dk gy,
frm-hd, brit ip, mod fis sb
blky-blky ctngs, predy sm
tex-sl silty tex, rr-tr pyr strg,
rr c tn bent; CHK (15%): lt
gy-gyshbn sp wi f chky
foram incl, frm-brit, l-mod
fis sb rd-sb blky ctngs, hi
calc



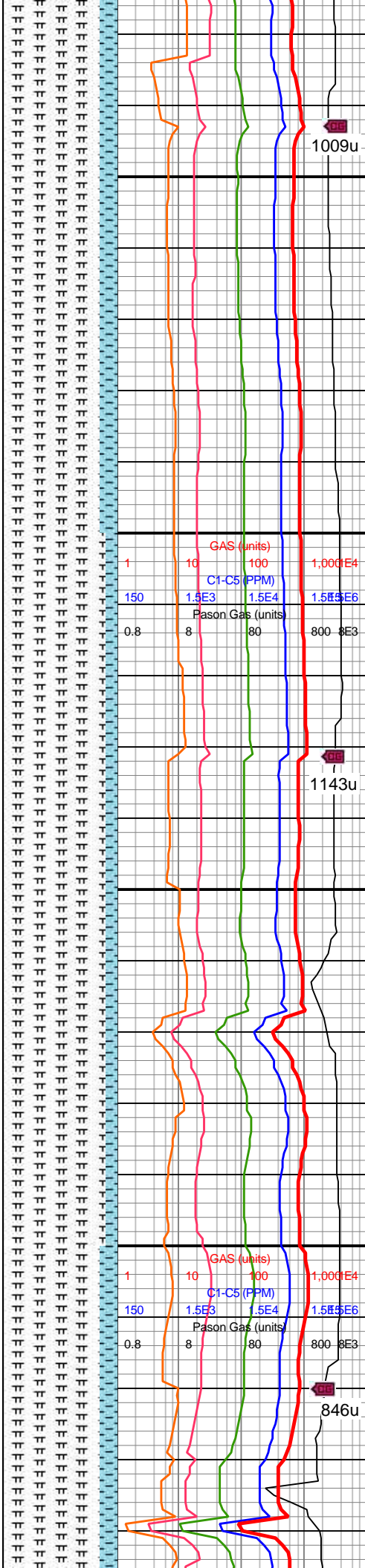
15,730
15,740
15,750
15,760
15,770
15,780
15,790
15,800
15,810
15,820
15,830
15,840
15,850
15,860
15,870
15,880
15,890
15,900
15,910
15,920
15,930
15,940

MD: 15,777'
TVD: 7,839.47'
INC: 88.7°
AZM: 180.95°
VS: 7,492.36'

WOB: 31.5klbs
RPM: 60
SPM: 184
SPP: 3,876psi

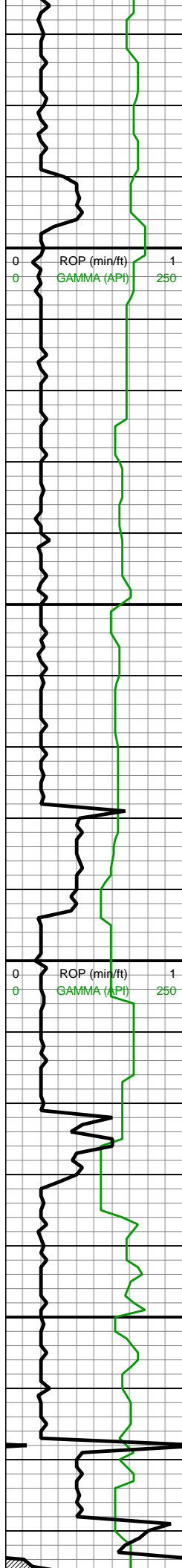
MD: 15,866'
TVD: 7,839.92'
INC: 90.73°
AZM: 181.83°
VS: 7,581.35'

MW IN: 10
VIS IN: 61
MW OUT: 10.0
VIS OUT: 59



12700-12800 MRLST
(85%): gy-dk gy sp wi brn
marl incl & thn bnnd
lamn ip, sb frm-frm-brit,
mod fis sb blkly-blky
ctngs, sl slty tex, rr tn
bent, mod calc; CHK
(15%): lt gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blkly ctngs, hi calc

15800-15900 MRLST
(90%): med gyshbn-dk
gy, occ sp brn marl incl,
frm-brit, mod fis, sb
blkly-sb plty ctngs, sl slty
tex, tr-rr vf-u f pyr, mod
calc; CHK (10%): lt-med
gy, com dk gy wi f wh
chky incl ip grdg to mrlst,
l-mod fis sb rd-sb blkly
ctngs, hi calc



16,170
16,180
16,190
16,200
16,210
16,220
16,230
16,240
16,250
16,260
16,270
16,280
16,290
16,300
16,310
16,320
16,330
16,340
16,350
16,360
16,370
16,380

WOB: 32.6klbs
RPM: 65
SPM: 188
SPP: 3,938psi

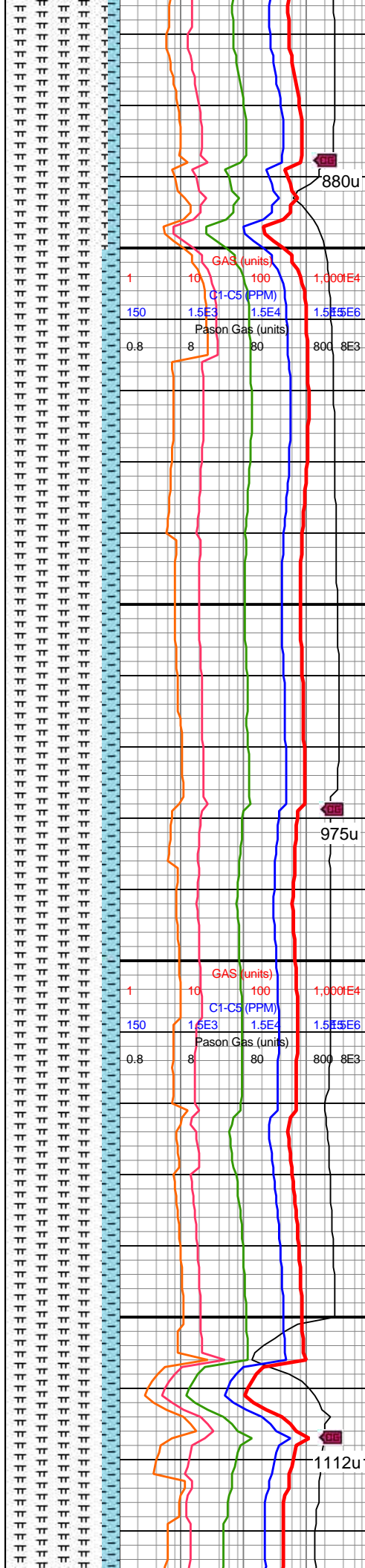
MD: 16,223'
TVD: 7,846.14'
INC: 88.35°
AZM: 180.33°
VS: 7,938.19'

MW IN: 10
VIS IN: 67
MW OUT: 9.9+
VIS OUT: 59

MD: 16,312'
TVD: 7,847.2'
INC: 90.29°
AZM: 180.95°
VS: 8,027.18'

MW IN: 10.0+
VIS IN: 66
MW OUT: 10.0
VIS OUT: 63

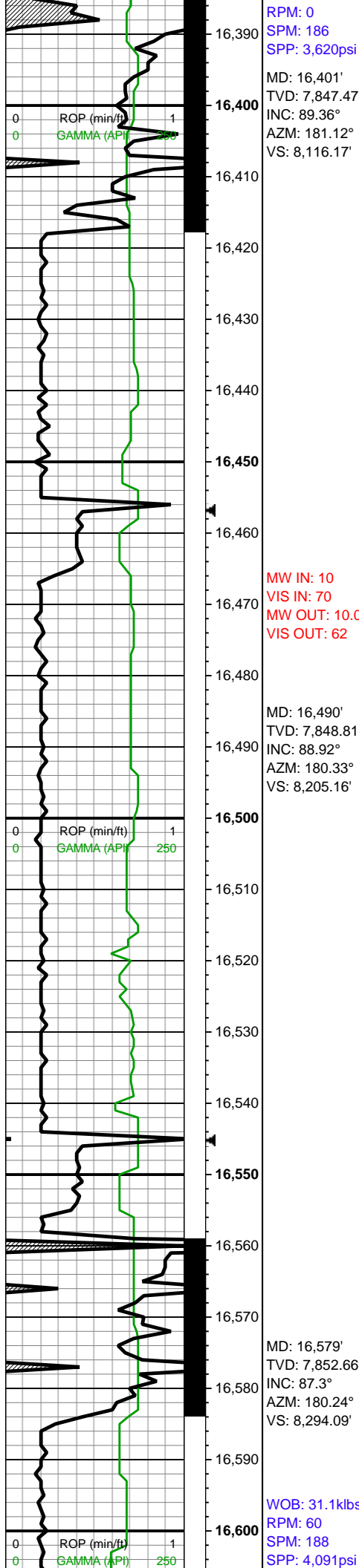
WOB: 45.5klbs



16100-16200 MRLST
(90%): dk gy-dk gyshbn,
sb frm-frm, med-hi fis sb
blky-blky-tab ctngs, sm
arg-sl slty tex, rr-tr vf pyr,
hi calc; CHK (10%): med
gy-dk gy, sb frm-frm, brit,
l-mod fis sb rd-sb
blky-blky ctngs wi occ
lamn, hi calc

16200-16300 MRLST
(85%): dk gy-v dk gy, sb
frm-frm-brit, mod fis sb
blky-blky-sb plty ctngs, sl
slty tex, occ vf pyr thru,
mod calc; CHK (15%):
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

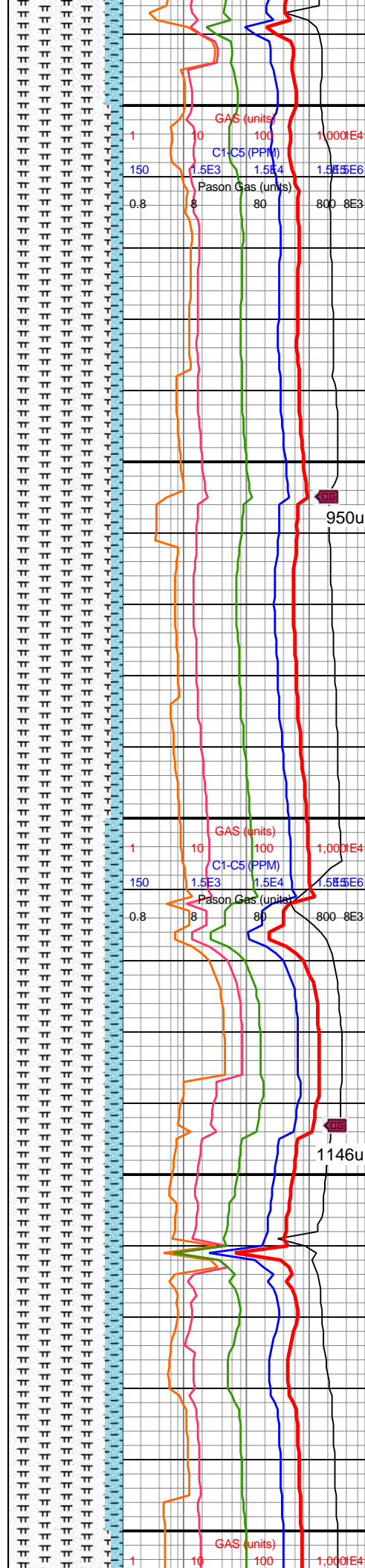
16300-16400 MRLST
(85%): med gyshbn-dk
gy, occ sp brn marl incl
ip, frm-brit, mod fis sb
rd-sb blky-sb plty ctngs,
sl slty tex, tr bent, tr-rr pp
pvr. mod calc: CHK



RPM: 0
SPM: 186
SPP: 3,620psi

MW IN: 10
VIS IN: 70
MW OUT: 10.0
VIS OUT: 62

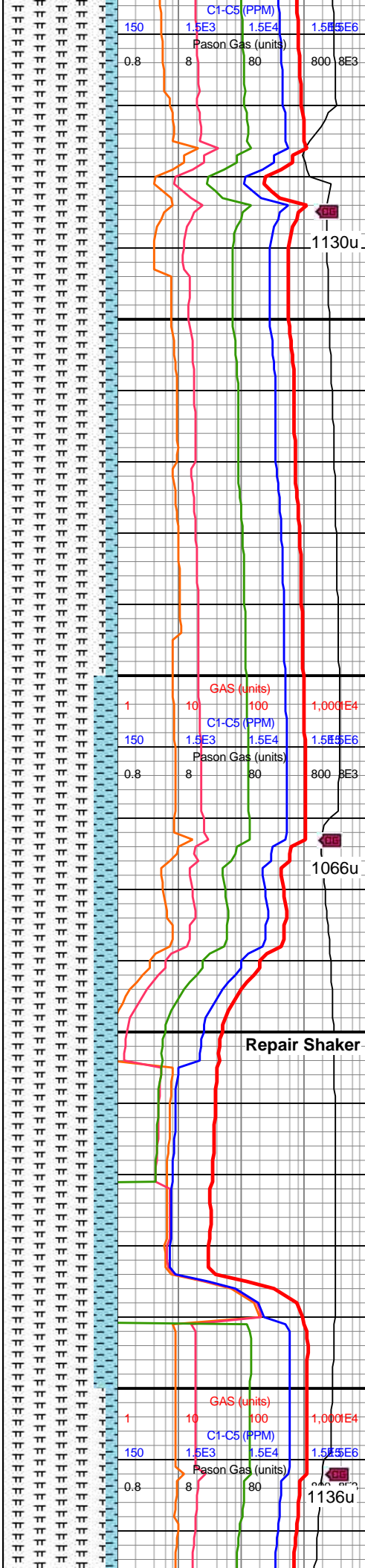
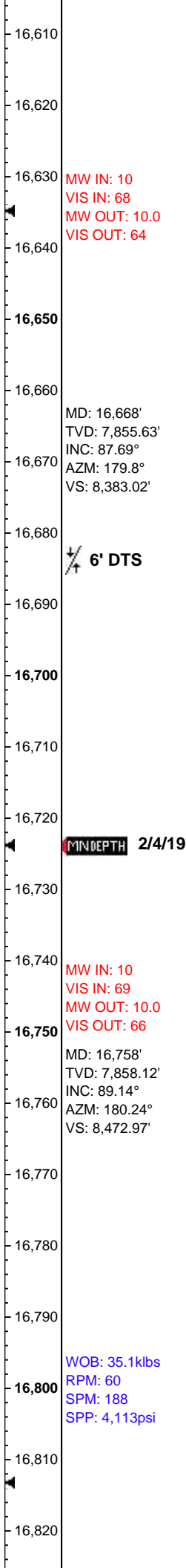
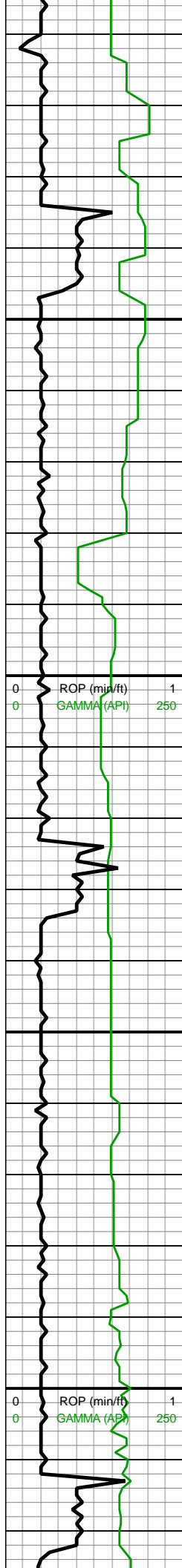
WOB: 31.1klbs
RPM: 60
SPM: 188
SPP: 4,091psi



(15%): lt-med gy, com dk
gy wi f wh chky incl ip
grdg to mrlst, l-mod fis
sb rd-sb blk cytns, hi
calc

16400-16500 MRLST
(90%): gy-dk gy, sb
frm-frm, mod fis sb
blk cytns, sm
arg slty tex, mod calc,
scat wh-tn bent; CHK
(10%): lt gy-gy, sb
frm-frm-brit, sb rd-sb blk
l-mod fis cytns, tr vf pyr,
hi calc

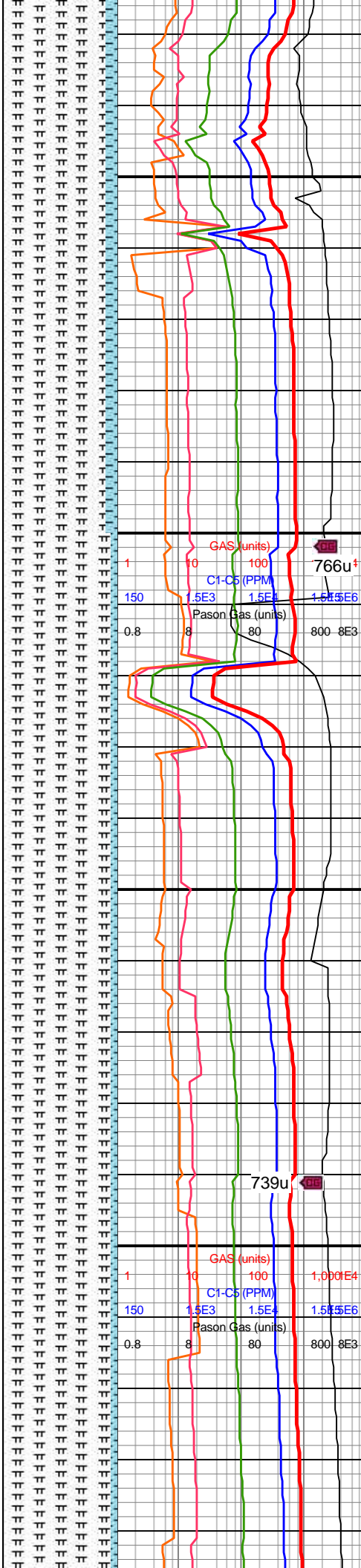
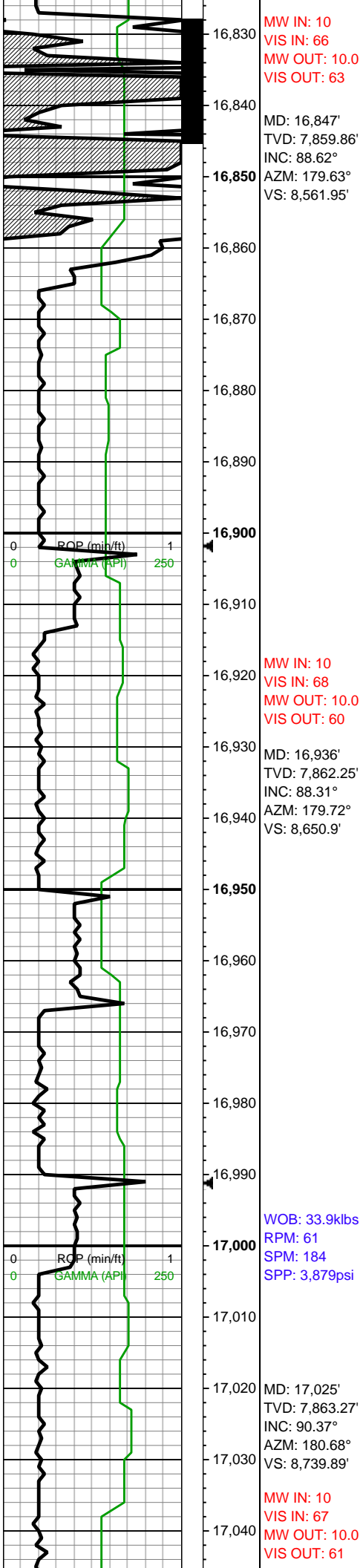
16500-16600 MRLST
(85%): dk gy-gyshbn, sb
frm-frm, brit ip, blk cytns,
sm sl slty arg tex, occ
mot brn mrlly incl ip; CHK
(15%): med gy, dk gy ip,
sme lt gy, frm-brit, sb
blk cytns, chky tex, sme vf
pyr, hi calc



16600-16700 MRLST
(90%): dk gy-v dk gy, sb
frm-frm-brit, mod fis sb
blky-blky-sb plty ctngs, sl
sly tex, occ vf pyr thru,
mod calc; CHK (10%):
gy-dk gy wi f wh chky incl
& forams, frm, brit ip,
l-mod fis sb rd-sb blky
ctngs, tr vf pyr, hi calc

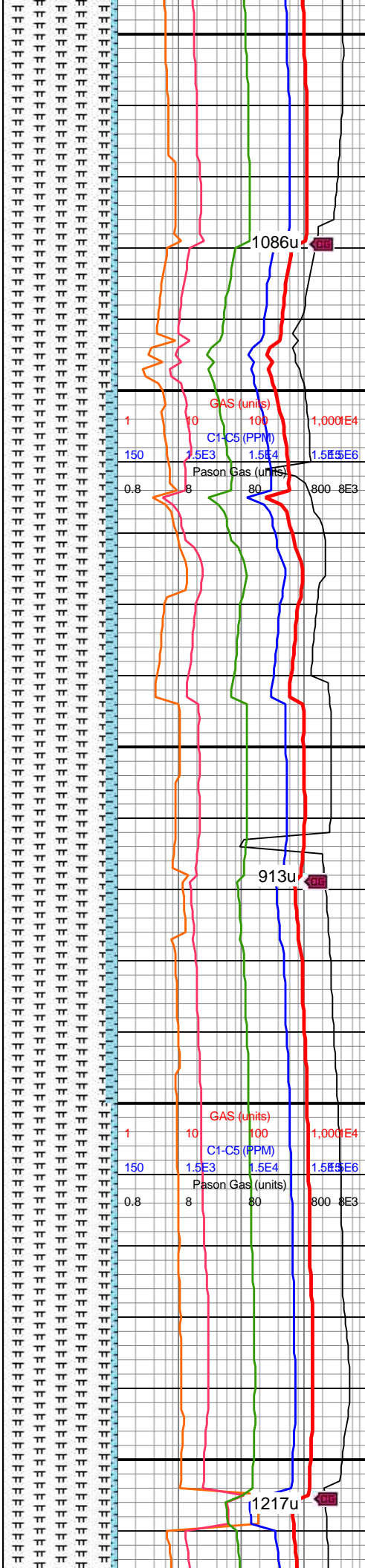
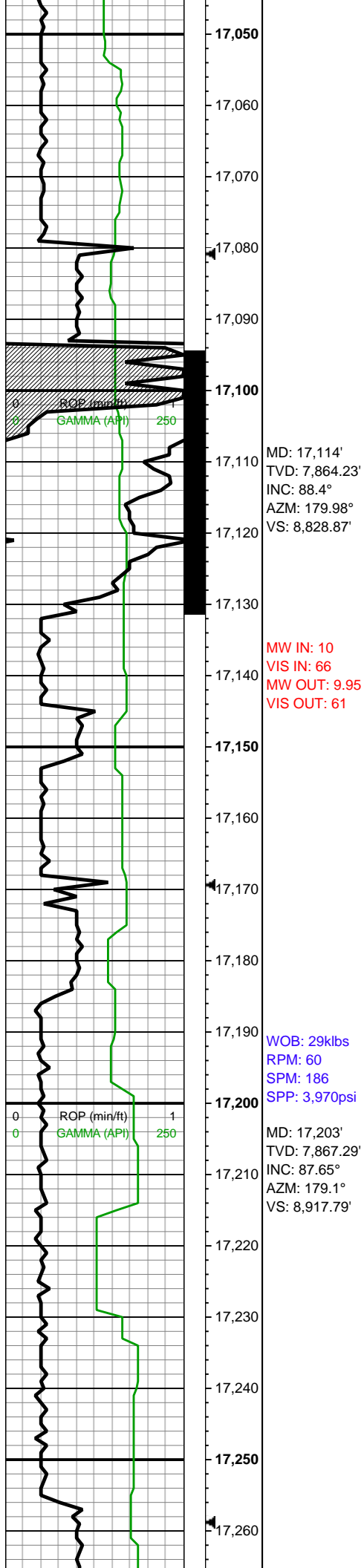
16700-16800 MRLST
(80%): gy-dk gy sp wi brn
marl incl & thn bnnd
lamn ip, sb frm-frm-brit,
mod fis sb blky-blky
ctngs, sl sly tex, rr tn
bent, mod calc; CHK
(20%): lt gy-med gy, sb
frm-frm-brit, l-mod fis sb
rd-sb blky ctngs, hi calc





16800-16900 MRLST
(90%): gy-dk gy, sb
frm-frm, mod fis sb
blky-blky-tab ctngs, sm
arg-sltly tex, mod calc,
scat wh-tn bent; CHK
(10%): lt gy-gy, sb
frm-frm-brit, sb rd-sb blky
l-mod fis ctngs, tr vf pyr,
hi calc

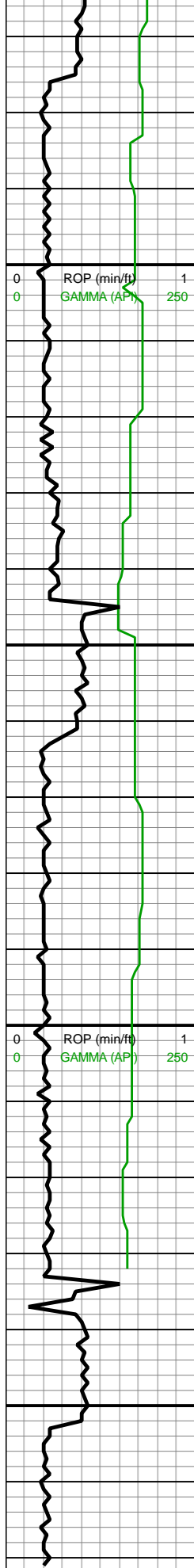
16900-17000 MRLST
(95%): dk gy-dk gyshbn,
sb frm-frm, med-hi fis sb
blky-blky-tab ctngs, sm
arg-sl slty tex, rr-tr vf pyr,
hi calc; CHK (5%): med
gy-dk gy, sb frm-frm, brit,
l-mod fis sb rd-sb
blky-blky ctngs wi occ
lamn, hi calc



17000-17100 MRLST
(95%): med gyshbn-dk
gy, occ sp brn marl incl
ip, frm-brit, mod fis sb
rd-sb blkly-sb plty ctngs,
sl slty tex, tr bent, tr-rr pp
pyr, mod calc; CHK (5%):
lt-med gy, com dk gy wi f
wh chky incl ip grdgd to
mrlst, l-mod fis sb rd-sb
blkly ctngs, hi calc

17100-17200 MRLST
(90%): gy-gyshbn-dk
gy-dk gyshbn, sb frm-frm,
sl water solu ctngs, sb
blkly-blky mod fis ctngs,
predy sm arg tex, sl slty
ip, tr vf pyr, mod calc wi
brn mrlly resdl; CHK
(10%): lt gy-gy wi thn lt gy
chky lamn, l-mod fis sb
rd-sb blkly ctngs, sm-sl
slty tex, tr vf pyr, hi calc

17200-17300 MRLST



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: 17,292'
TVD: 7,869.62'
INC: 89.36°
AZM: 179.28°
VS: 9,006.73'

MW IN: 9.9
VIS IN: 62
MW OUT: 9.9
VIS OUT: 60

MD: 17,381'
TVD: 7,869.34'
INC: 90.99°
AZM: 179.45°
VS: 9,095.7'

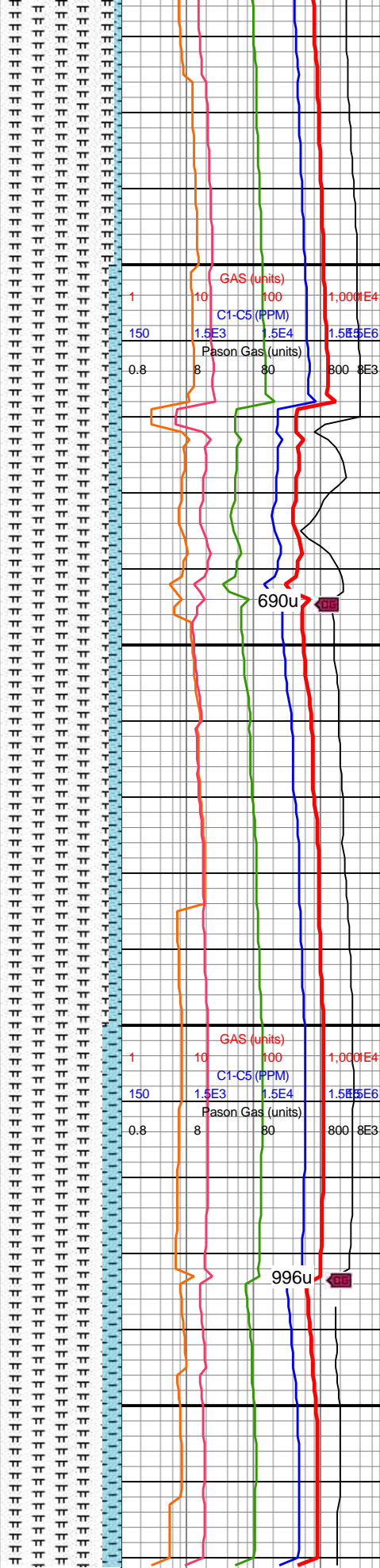
WOB: 29klbs
RPM: 61
SPM: 184
SPP: 3,910psi

MD: 17,416'
TVD: 7,868.6'
INC: 91.43°
AZM: 179.1°
VS: 9,130.68'

Reach TD at
07:30hrs on
2/4/19

Bit projection

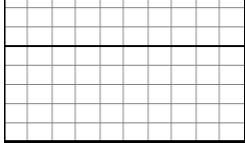
MD: 17,471'
TVD: 7,867.23'
INC: 91.43°
AZM: 179.1°
VS: 9,185.64'



(95%): gy-gyshbn-dk gy
wi brn marl incl & lamn
ip, sb frm-frm, brit ip,
mod fis sb blkly-blky
ctngs wi dul rthy-wxy lstr
ip, sm arg-sl slty ip, tr vf
pyr, mod calc; CHK (5%):
lt gy-gy, l-mod fis sb
rd-sb blkly ctngs wi thn lt
gy chky lamn, sm-sl slty
tex, tr vf pyr, hi calc

17300-17400 MRLST
(90%): gy-gyshbn sb
frm-frm ctngs-dk gy brit
ctngs sp wi brn marl incl
ip, l-mod fis sb rd-sb
blkly-blky ctngs, sm arg-sl
slty-slty tex, tr vf pyr, hi
calc; CHK (10%): med
gy-dk gy, lt gy ip, sb
frm-frm, brit, l-mod fis sb
rd-sb blkly-blky ctngs wi
occ chky lamn, hi calc

17400-17471 MRLST
(85%): gy-gyshbn-dk gy
sp wi brn marl incl &
lamn, sb frm-frm l-mod
fis sb rd-sb blkly ctngs wi
sm-sl slty tex, dk gy brit
ctngs wi slty tex, v tr pyr &
tn bent, mod calc; CHK
(15%): lt gy-gy-dk gy,
l-mod fis sb rd-sb blkly
ctngs wi predy sm-sl slty
tex, bmpy mot tex ip wi
thn wh chky lamn thru, rr
f-elong chky incl, hi calc



17,490
17,500

