



Scale: 5" / 100'
Measured Depth Log

Well Name Ruegge 3G-4H-N165

Location Sec. 4 T1N R65W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05123465660000

AFE # 16190983

Geographic Region Rockies

Field Wattenberg

Spud Date 6/11/2018

Drilling Completed 6/13/2018

Surface Coordinates Lat/Long: 40.075241/-104.670915

SHL: Sec: 4 Twp: 1N 65W
Footage: 700 FSL 2097 FWL

Bottom Hole Coordinates Proposed BHL: Sec: 4 Twp: 1N 65W
Footages: 460 FNL 1160 FWL

Ground Elevation 4,917'

K.B. Elevation 4,940'

Logged Interval 6,600' **To** 12,070'

Total Depth 12,070'

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

Geologist

Name John Ready

Company Crestone Peak Resources

Address 370 17th Street #2170
Denver, CO 80202



CRESTONE PEAK
RESOURCES

Zone Color Coding



Oil



Condensate



Gas



Note



Core



Pressure



Error



Water



Seal

Other

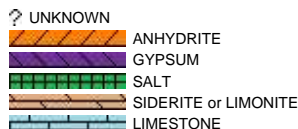
Loggers: Brian Ferwerda / Nick Watkins

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-533

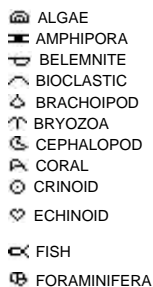
Contractor: Empirica, Reservoir Group
6360 West Sam Houston Pkwy N
Houston, Texas, 77041

Rock Types



Accessories

Fossils



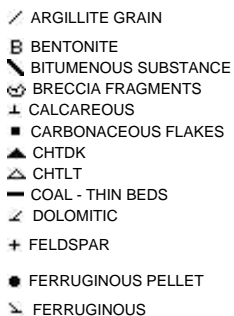
Fossil



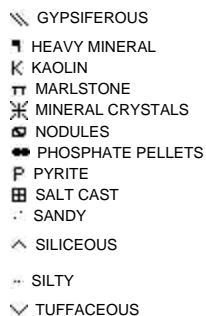
Minerals



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

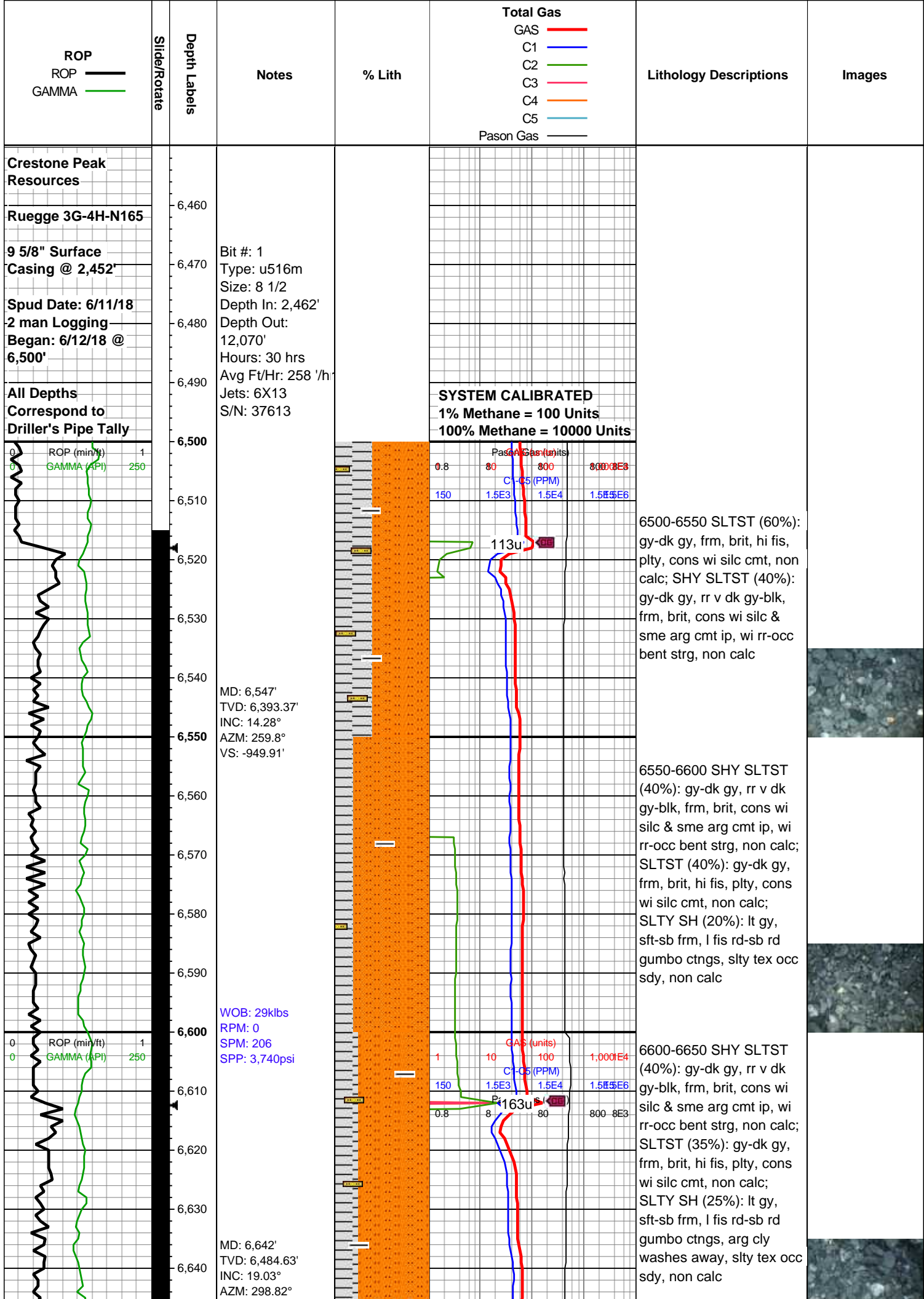
Textures

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

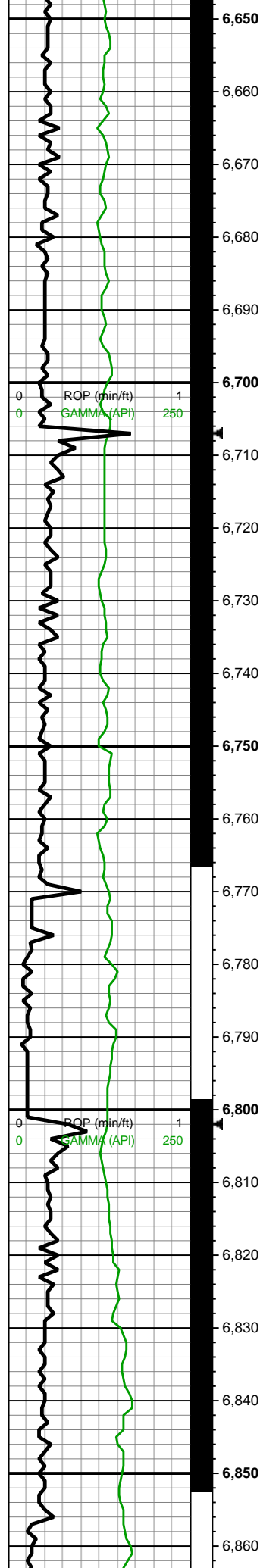
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL



VS: -944.71'

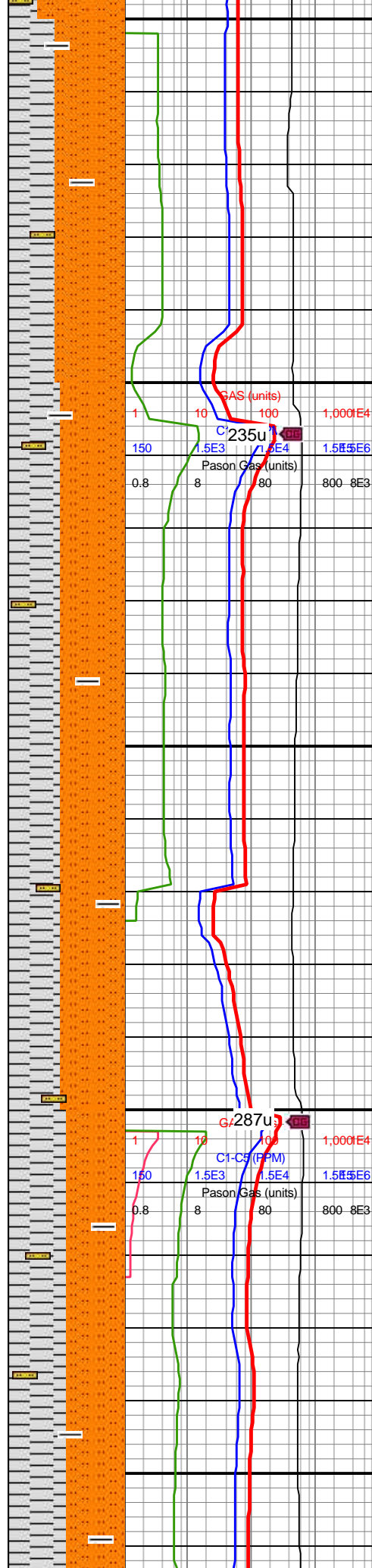


MW IN: 9.6
VIS IN: 45
MW OUT: 9.65
VIS OUT: 43

MD: 6,737'
TVD: 6,575.08'
INC: 17.93°
AZM: 338.11°
VS: -923.75'

WOB: 15klbs
RPM: 0
SPM: 206
SPP: 3,500psi

MD: 6,831'
TVD: 6,664.24'
INC: 19.25°
AZM: 355.16°
VS: -894.92'



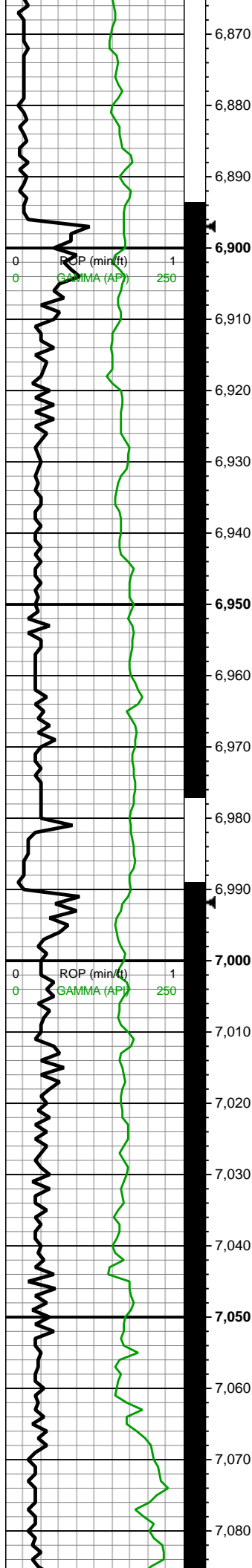
6650-6700 SHY SLTST
(50%): gy-dk gy, rr v dk
gy-blk, frm, brit, cons wi
arg cmt wi sme silc cmt,
slty, non calc; SLTY SH
(40%): lt gy, sft-sb frm, l
fis rd-sb rd gumbo ctngs,
v hydrated, swelling, slty
tex occ sdy, non calc;
10% SLTST: gy-dk gy-v
dk gy, frm-brit, hd ip,
predy non calc

6700-6750 SHY SLTST
(45%): gy-dk gy, rr v dk gy,
frm, brit, cons wi hd silc
cmt, sl arg, non calc;
SLTY SH (45%): lt gy,
sft-sb frm, l fis rd-sb rd
ctngs, v hydrated,
swelling, slty tex, non
calc; 10% SLTST: v dk
gy-blk, hd, silc vn ip, non-l
calc

6750-6800 SHY SLTST
(45%): gy-dk gy, rr v dk gy,
frm, brit, cons wi hd silc
cmt, sl arg, non calc;
SLTY SH (45%): lt gy,
sft-sb frm, l fis rd-sb rd
ctngs, v hydrated,
swelling, slty tex, non
calc; 10% SLTST: v dk
gy-blk, hd, silc vn ip, non-l
calc

6800-6850 SLTY SH
(50%): lt gy, sft-sb frm, l
fis rd-sb rd ctngs, v
hydrated, swelling, slty
tex, non calc, wi decr cly
grdg to shy sltst; SHY
SLTST (40%): gy-dk gy, rr
v dk gy, frm, brit, cons wi
hd silc cmt, sl arg, non
calc; SLTST (10%): v dk
gy-blk, hd, lt gy silc vn ip,
non-l calc

6850-6900 SLTY SH
(50%): lt gy, sft-sb frm, l
fis rd-sb rd ctngs, v
hydrated, swelling, slty

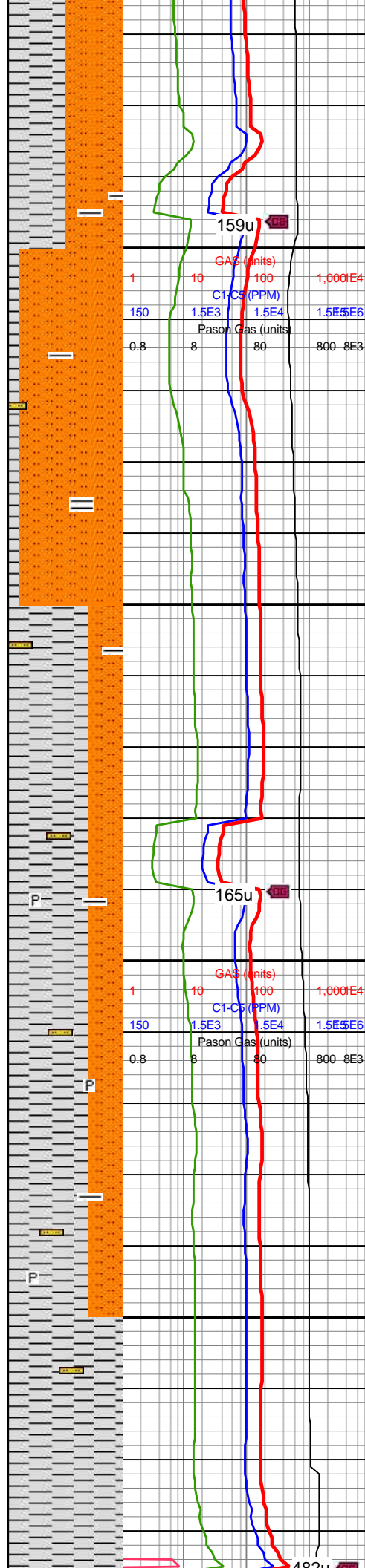


MD: 6,926'
TVD: 6,753.36'
INC: 21.27°
AZM: 357.36°
VS: -862.11'

WOB: 27klbs
RPM: 0
SPM: 208
SPP: 3,750psi

MD: 7,021'
TVD: 6,840.05'
INC: 26.9°
AZM: 357.54°
VS: -823.42'

Sharon Springs
7067 MD/6880 TVD



hydrated, swelling, clay
tex, non calc, wi decr cly
grdg to shy sltst; SHY
SLTST (40%): gy-dk gy, rr
v dk gy, frm, brit, cons wi
hd silc cmt, sl arg, non
calc; SLTST (10%): v dk
gy-blk, hd, lt gy silc vn ip,
non-l calc

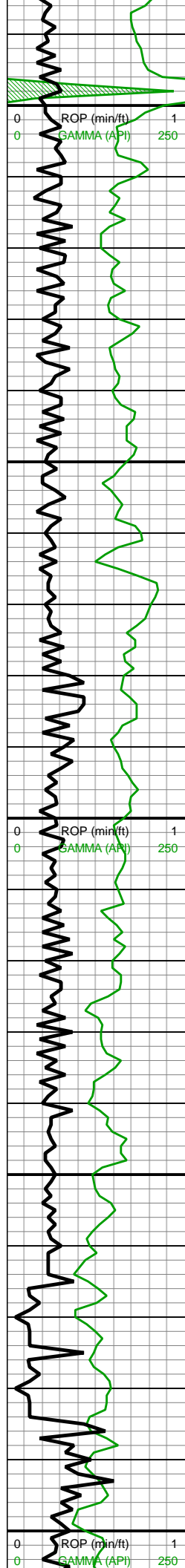
6900-6950 SHY SLTST
(60%): gy-gyshbn-dk gy,
mod fis sb blkly-blky
ctngs, sb frm-frm, sm
arg-sl slty tex, non calc;
SLTST (30%): dk gy-v dk
gy, frm-hd, sb plty-plty hi
fis silc ctngs, tr vf pyr,
non-l calc; SLTY SH
(10%): lt gy, sft-sb frm, l
fis rd-sb rd ctngs, slty tex,
non calc

6950-7000 SLTY SH
(70%): gyshbn-dk
gyshbn, mod fis sb
blkly-blky ctngs, sb
frm-frm, sm arg-sl slty
tex, mod calc; SLTST
(30%): dk gy-v dk gy,
frm-hd, sb plty-plty hi fis
silc ctngs, tr vf pyr, non-l
calc

7000-7050 SLTY SH
(75%): gy-gyshbn-dk gy,
mod fis sb blkly-blky
ctngs, sb frm-frm, sm
arg-sl slty tex, tr-rr vf-pp
pyr, mod calc; SLTST
(25%): dk gy-v dk gy,
frm-hd, sb plty-plty hi fis
silc ctngs, tr vf pyr, non-sl
calc

7050-7100 SH (70%): dk
gy-dk gyshbn, frm, brit,
mod-hi fis blkly ctngs, sm
sl slty tex, tr vf pyr, occ
bent, non-sl calc; SLTY
SH (30%): gy-gyshbn-dk
gy, mod fis sb blkly-blky
ctngs, sb frm-frm, sm





Niobrara
7098 MD/6905 TVD

MD: 7,115'
TVD: 6,919.71'
INC: 37°
AZM: 357.27°
VS: -773.81'

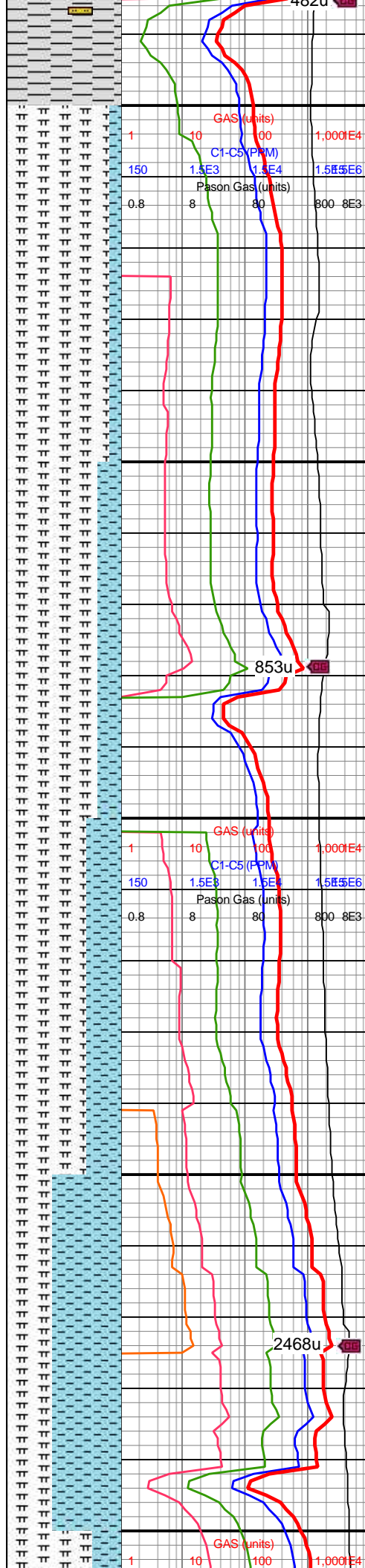
MW IN: 9.7
VIS IN: 44
MW OUT: 9.65
VIS OUT: 42

WOB: 23klbs
RPM: 0
SPM: 206
SPP: 3,840psi

MD: 7,210'
TVD: 6,990.51'
INC: 46.49°
AZM: 357.01°
VS: -710.74'

B Chalk
7249 MD/7016 TVD

B Marl



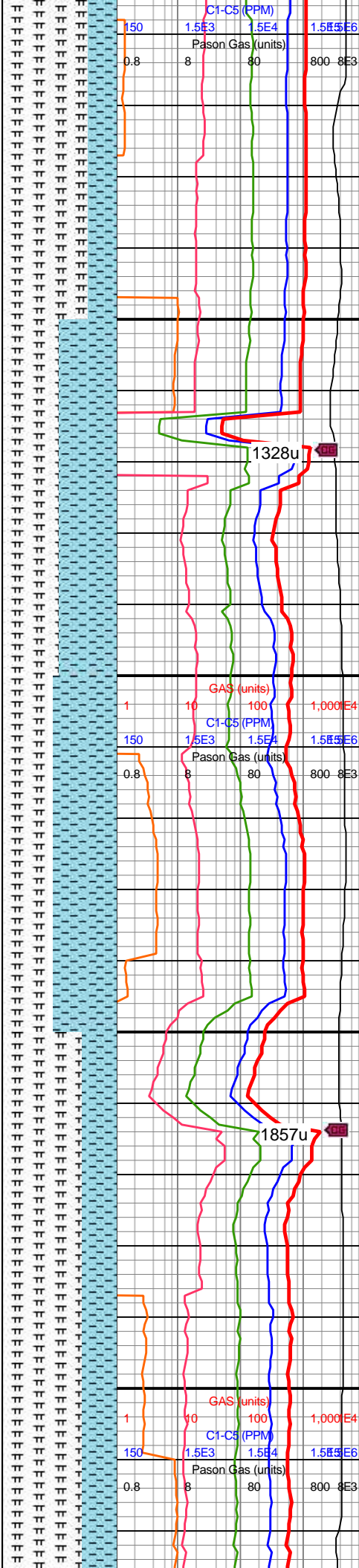
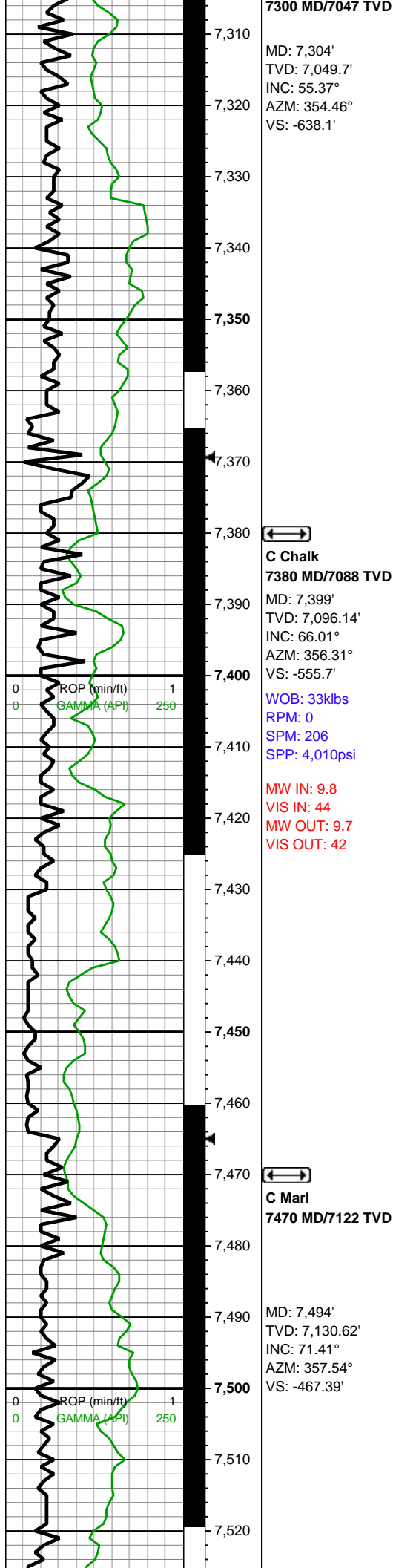
arg-sl slty tex, tr-rr vf-pp
pyr, mod calc;

7100-7150 MRLST
(90%): dk gy-dk gyshbn,
frm, brit, med-hi fis blk
ctngs wi thn lamn, dk
gy-dk gyshbn sh wi occ u
f brn marl incl, rr vf pyr,
mod calc wi brn mrly
resdl; CHK (10%): gy-dk
gy, frm, brit, mod fis sb
blk-bkly ctngs, f wh chky
incl, rr vf pyr, hi calc

7150-7200 MRLST
(80%): dk gy-dk gyshbn,
frm, brit, blk-tab med-hi
fis ctngs, occ u f brn marl
incl, rr vf pyr, mod calc wi
brn mrly resdl; CHK
(20%): gy-dk gy, frm, brit,
mod fis sb blk-bkly
ctngs, f wh chky incl, rr vf
pyr, hi calc

7200-7250 MRLST
(70%): dk gy-dk gyshbn,
frm, brit, med-hi fis blk
ctngs wi thn lamn, dk
gy-dk gyshbn sh wi occ u
f brn marl incl, rr vf pyr,
mod calc wi brn mrly
resdl; CHK (30%): gy-dk
gy, frm, brit, mod fis sb
blk-bkly ctngs, f wh chky
incl, rr vf pyr, hi calc

7250-7300 CHK (60%): lt
gy-med gy wi com f wh
chky incl & thn wh chky
lamn, occ dk gy wi f chky
incl, frm-sb frm, brit,
l-mod fis sb rd-sb blk
ctngs, rr vf pyr, rr
foramsn, hi calc; MRLST
(40%): dk gy-dk gyshbn,
frm, brit, med-hi fis blk
ctngs wi thn lamn, dk
gy-dk gyshbn sh wi occ u
f brn marl incl, rr vf pyr, rr
bent, mod calc wi brn
mrly resdl



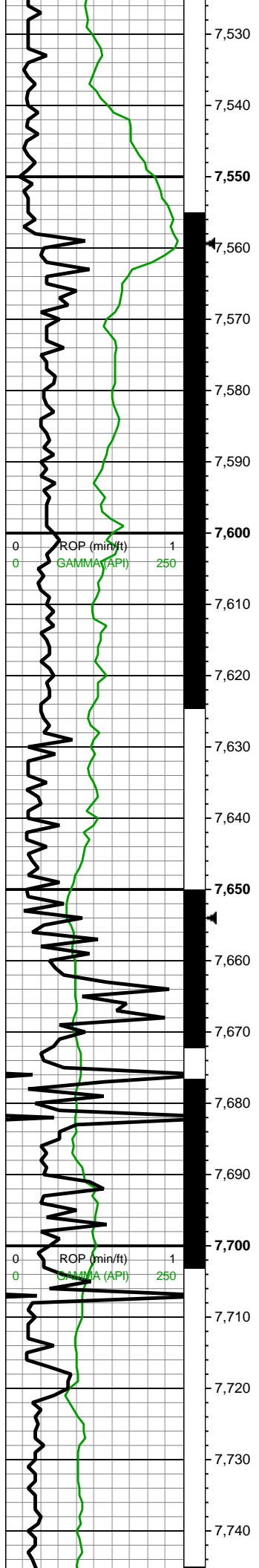
7300-7350 MRLST
(75%): dk gy-dk gyshbn,
frm, brit, med-hi fis blk
ctngs wi thn lamn, dk
gy-dk gyshbn sh wi occ u
f brn marl incl, rr vf pyr,
mod calc wi brn mrly
resdl; CHK (25%): gy-dk
gy, frm, brit, mod fis sb
blk-bkly ctngs, f wh chky
incl, rr vf pyr, rr forams &
fos frags, hi calc

7350-7400 MRLST
(50%): dk gy-dk gyshbn,
frm, brit, med-hi fis,
blk-tab ctngs, occ u f brn
marl incl, rr vf pyr, rr tn
bent, mod calc wi brn
mrly resdl; CHK (50%): lt
gy-med gy, sb frm-frm,
brit ip, l-mod fis sb
blk-bkly ctngs, f wh chky
incl, rr vf pyr, hi calc

7400-7450 CHK (55%): lt
gy-med gy, sb frm-frm,
brit ip, l-mod fis sb
blk-bkly ctngs, f wh chky
incl, rr vf pyr, hi calc;
MRLST (45%): dk gy-dk
gyshbn, frm, brit, med-hi
fis, blk-tab ctngs, occ u f
brn marl incl, rr vf pyr, rr tn
bent, mod calc wi brn
mrly resdl

7450-7500 MRLST
(70%): dk gy-dk gyshbn,
frm, brit, med-hi fis blk
ctngs wi thn lamn, dk
gy-dk gyshbn sh wi occ u
f brn marl incl, rr vf pyr,
mod calc wi brn mrly
resdl; CHK (30%): gy-dk
gy, frm, brit, mod fis sb
blk-bkly ctngs, f wh chky
incl, rr vf pyr, hi calc





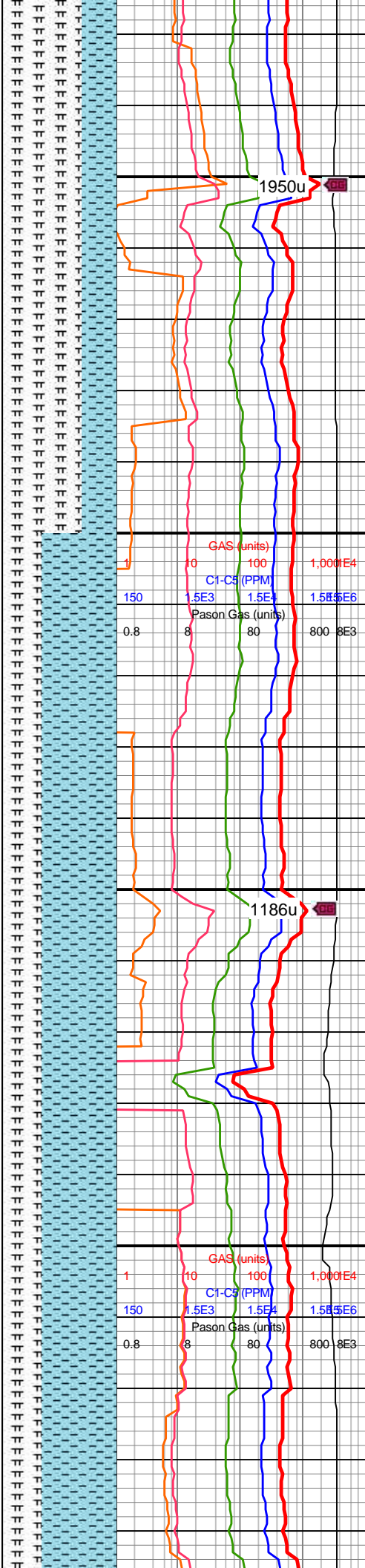
D Chalk
7579 MD/7153 TVD

MD: 7,589'
TVD: 7,155.56'
INC: 78.14°
AZM: 0.35°
VS: -375.82'

WOB: 40klbs
RPM: 0
SPM: 204
SPP: 4,000psi

MW IN: 9.85
VIS IN: 42
MW OUT: 9.8
VIS OUT: 41

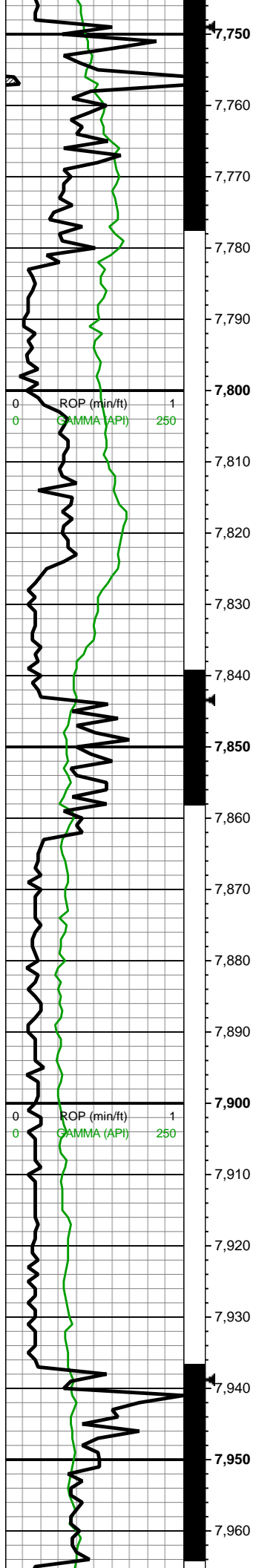
MD: 7,683'
TVD: 7,169.81'
INC: 84.42°
AZM: 3.51°
VS: -282.99'



7500-7600 MRLST
(70%): dk gy-v dk gy,
frm-brit, med-hi fis blk
ctngs, rr vf pyr, mod calc
wi brn mrly resdl; CHK
(30%): lt gy-gy, sb
frm-frm, rd-sb rd-sb blk
l-mod fis ctngs, f wh chky
incl, rr vf pyr, hi calc

7600-7700 CHK (65%):
off wh-lt gy, predy sft-sb
frm, occ frm, l-mod fis
rd-sb rd-sb blk ctngs, rr
vf pyr, v hi calc; MRLST
(35%): dk gy-v dk gy,
frm-brit, med-hi fis blk
ctngs, rr vf pyr, mod calc





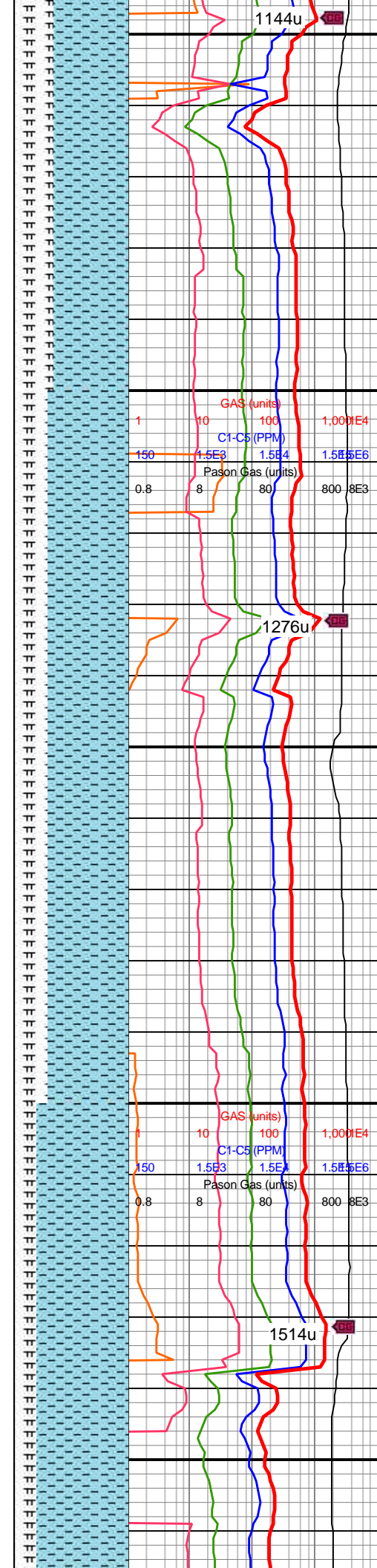
MW IN: 9.85
VIS IN: 42
MW OUT: 9.85
VIS OUT: 41

MD: 7,778'
TVD: 7,177.88'
INC: 85.83°
AZM: 0.61°
VS: -188.39'

WOB: 42klbs
RPM: 50
SPM: 204
SPP: 4,340psi

MD: 7,873'
TVD: 7,183.49'
INC: 87.41°
AZM: 359.12°
VS: -93.56'

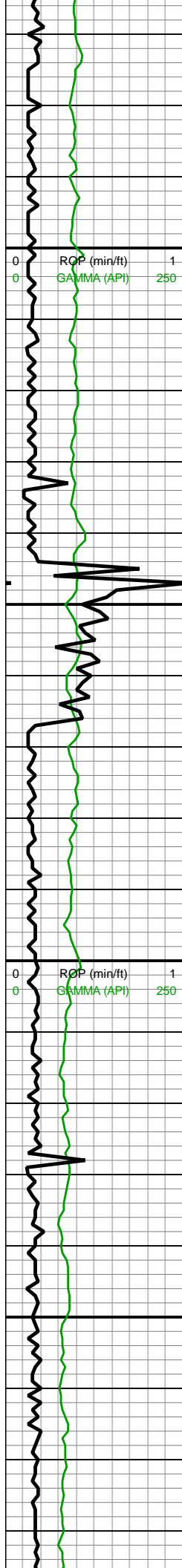
MD: 7,967'
TVD: 7,186.29'



7700-7800 CHK (65%):
off wh-lt gy, predy sft-sb
frm, occ frm, l-mod fis
rd-sb rd-sb blkly ctngs, rr
vf pyr, v hi calc; MRLST
(35%): dk gy-v dk gy,
frm-brit, med-hi fis blkly
ctngs, rr vf pyr, mod calc

7800-7900 CHK (70%):
off wh-lt gy, predy sft, occ
sb frm w hydrated ctngs,
l-mod fis rd-sb rd-sb blkly
ctngs, rr vf pyr, v hi calc;
MRLST (30%): dk gy-v dk
gy, occ brn marl incl,
frm-brit, med-hi fis blkly
ctngs, rr vf pyr strg, mod
calc





INC: 89.17°
AZM: 356.74°
VS: 0.29'

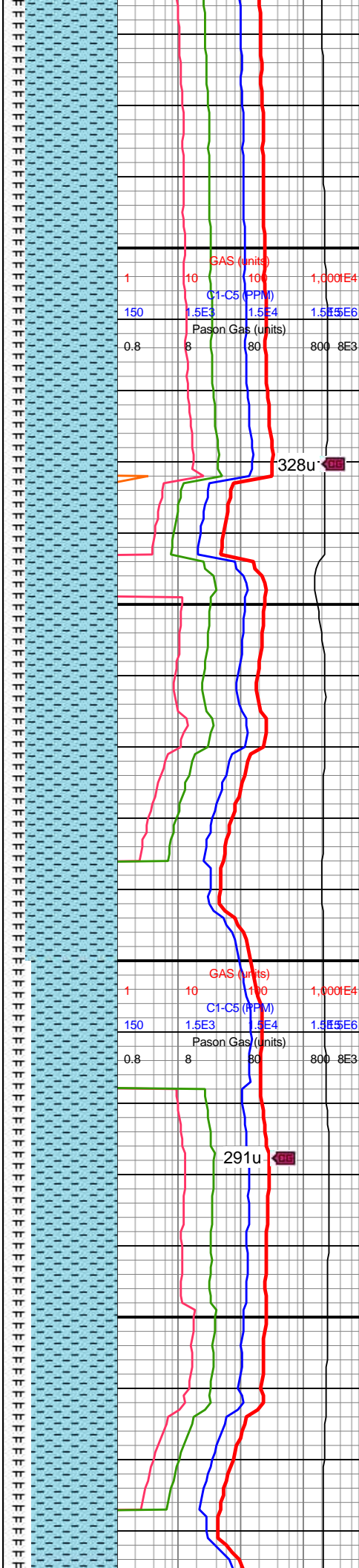
WOB: 39klbs
RPM: 70
SPM: 205
SPP: 4,590psi

On Buster

MD: 8,062'
TVD: 7,185.45'
INC: 91.85°
AZM: 357.8°
VS: 95.13'

MW IN: 9.85
VIS IN: 42
MW OUT: 9.9
VIS OUT: 39

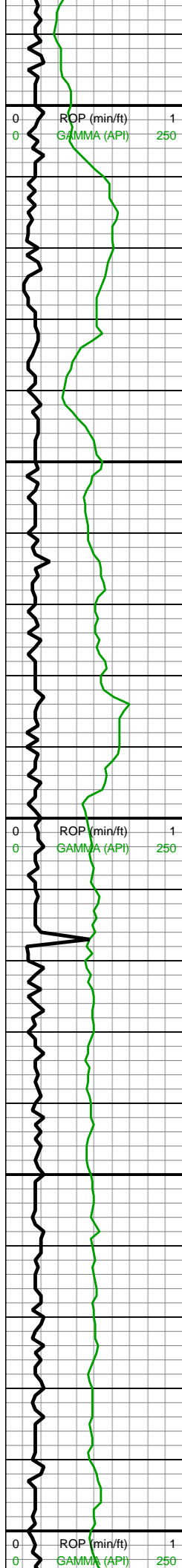
MD: 8,157'
TVD: 7,181.65'
INC: 92.73°
AZM: 357.8°
VS: 189.95'



7900-8000 CHK (80%):
off wh-lt gy, predy sft-sb
frm, occ frm, l-mod fis
rd-sb rd-sb blkly ctngs, rr
vf pyr, v hi calc; MRLST
(20%): dk gy-v dk gy,
frm-brit, med-hi fis blkly
ctngs, rr vf pyr, mod calc

8000-8100 CHK (80%):
off wh-lt gy, predy sft, occ
sb frm, l-mod fis rd-sb
rd-sb blkly w hydrated
ctngs, rr vf pyr, v hi calc;
MRLST (20%): dk gy-v dk
gy, occ brn marl incl,
frm-brit, med-hi fis blkly
ctngs, rr vf pyr strg, mod
calc wi brn resdl

8100-8200 CHK (75%):
gy-lt gy, sme gyshbn,
frm-brit, sb blkly-blky, mod
fis, mot wi occ f wh chky



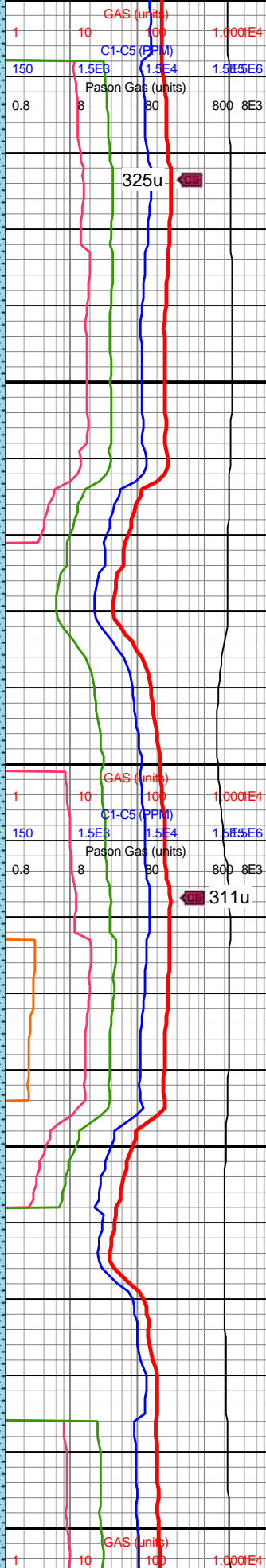
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400

WOB: 37klbs
RPM: 71
SPM: 206
SPP: 4,400psi

MD: 8,251'
TVD: 7,177.32'
INC: 92.55°
AZM: 357.45°
VS: 283.73'

MD: 8,346'
TVD: 7,173.75'
INC: 91.76°
AZM: 357.54°
VS: 378.54'

WOB: 38klbs
RPM: 71
SPM: 206
SPP: 4,410psi

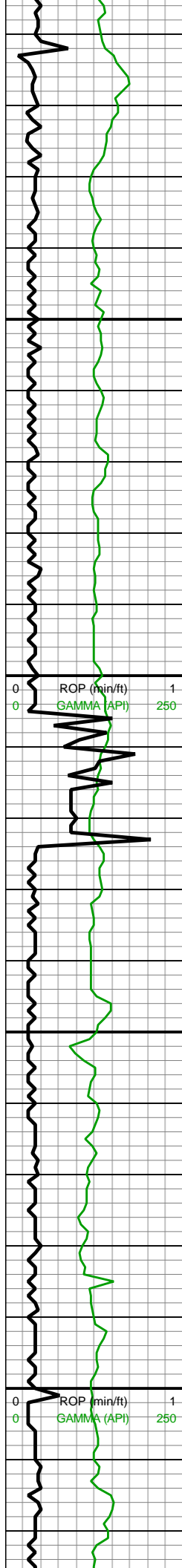


incl, chky rthy tex, hi calc;
MRLST (25%): dk gy-med
gy, frm-brit, sb blkyl-bkly,
pred sm-sl slty tex, com
intbd chk, mod calc

8200-8300 CHK (60%):
gy-lt gy, sme gyshbn,
frm-brit, sb blkyl-bkly, mod
fis, mot wi occ f wh chky
incl, chky rthy tex, hi calc;
MRLST (40%): dk gy-med
gy, frm-brit, sb blkyl-bkly,
pred sm-sl slty tex, com
intbd chk, tr intbd mic pyr,
mod calc

8300-8400 CHK (80%): lt
gy-med gy-gyshbn wi f
wh chky incl ip, sme free
offwht, frm-brit, sb rd-sb
blkyl cntgs, slty-rgh tex ip,
tr thn chky lamn, calc;
MRLST (20%): med gy-dk
gy, mot wi brn mrly incl ip,
frm, brit, calc



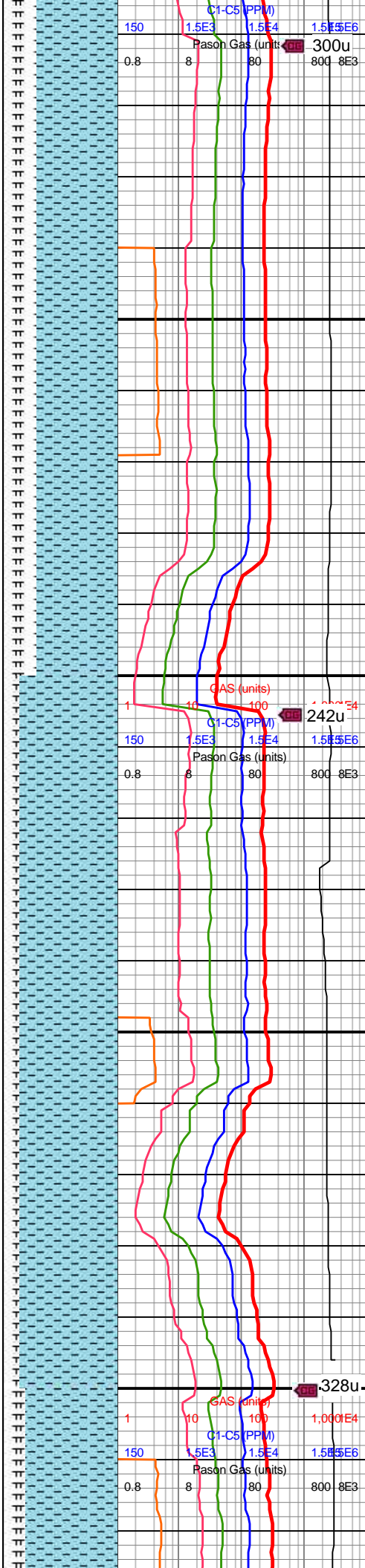


MD: 8,441'
TVD: 7,170.1'
INC: 92.64°
AZM: 357.45°
VS: 473.34'

MW IN: 9.8
VIS IN: 41
MW OUT: 9.9
VIS OUT: 39

MD: 8,536'
TVD: 7,165.29'
INC: 93.16°
AZM: 359.47°
VS: 568.15'

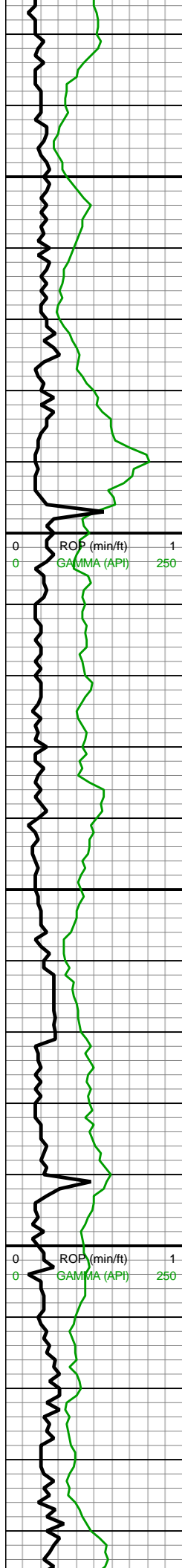
WOB: 40.5klbs
RPM: 70
SPM: 207
SPP: 4,410psi



8400-8500 CHK (70%):
pred lt-med gry wi lt brn,
sme sl med gy-brn,
frm-sl brit, sub blkyl-sl
ply, sl sft ip, v calc, tr pyr,
scat lse cal; MRLST
(30%): v dk gy-blk, occ
gyshbn, frm-v frm, blkyl,
calc, sl rgh tex wi com
micmica

8500-8600 CHK (85%):
med-lt gy, thn bri wh chky
incl thru, brit-mod fis, sb
blkyl-blkyl, sb ang, sm
arg-sl slty tex ip, hi calc;
MRLST (15%): med gy-dk
gy, mot wi brn mrly incl ip,
frm, brit, l-mod fis, com
chky lamn, mod calc





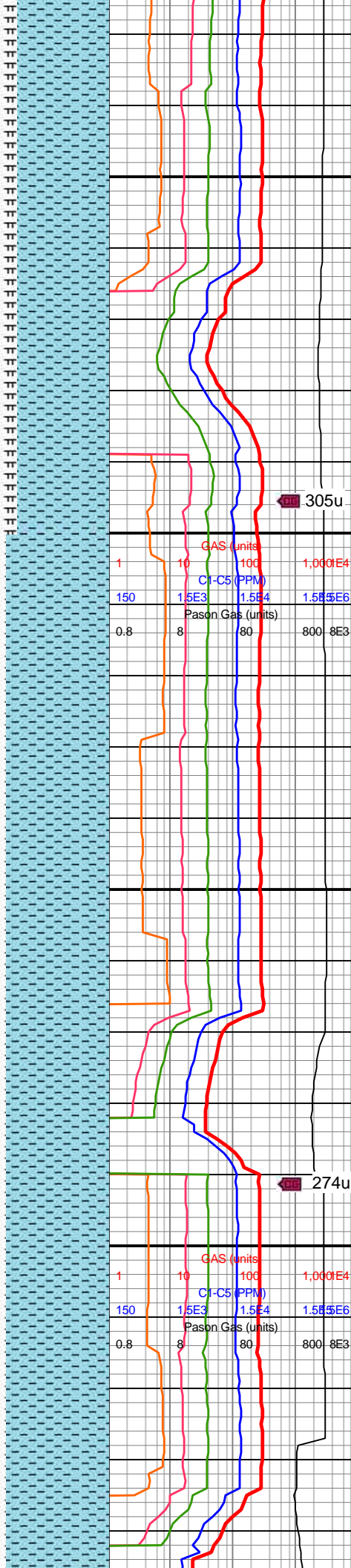
MD: 8,631'
TVD: 7,160.27'
INC: 92.9°
AZM: 359.29°
VS: 663'

MD: 8,725'
TVD: 7,156.42'
INC: 91.8°
AZM: 359.12°
VS: 756.9'

MW IN: 9.8
VIS IN: 42
MW OUT: 9.9
VIS OUT: 39

WOB: 42.4klbs
RPM: 71
SPM: 206
SPP: 4,319psi

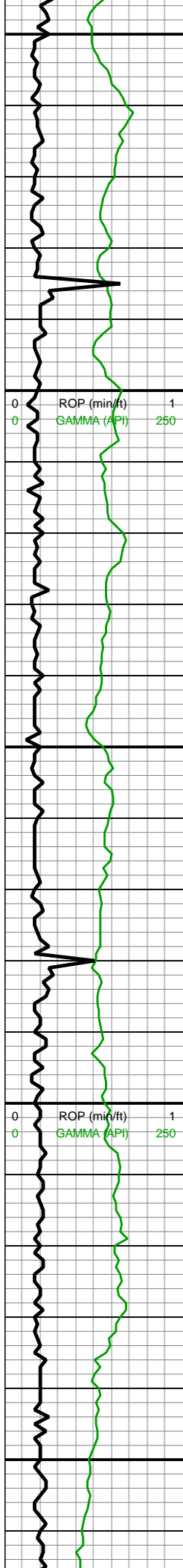
MD: 8,820'
TVD: 7,153.58'
INC: 91.63°
AZM: 359.38°
VS: 851.84'



8600-8700 CHK (80%);
pred lt gy-gyshbn wi occ
med brn, sub blkyl-blky wi
rr plty, v frm-frm, rr lam,
scatt pp-occ pyr; MRLST
(20%) pred med-dk gy wi
sme v dk gry, occ
plty-blky, v hrd, sme pp
pyr, com micmica

8700-8800 CHK (90%):
med brn-lt gyshbn, com lt
gy-offwht, tr free crm chk,
mot, frm-sl sft, blkyl-sb rd,
chky tex, com mic fos
frags, mod calc; MRLST
(10%): predy dk gy-dk
gyshbn, sm tex, frm-sl
hrd, blkyl-sb rd, tr imbd pp
pyr, tr lam CHK, calc





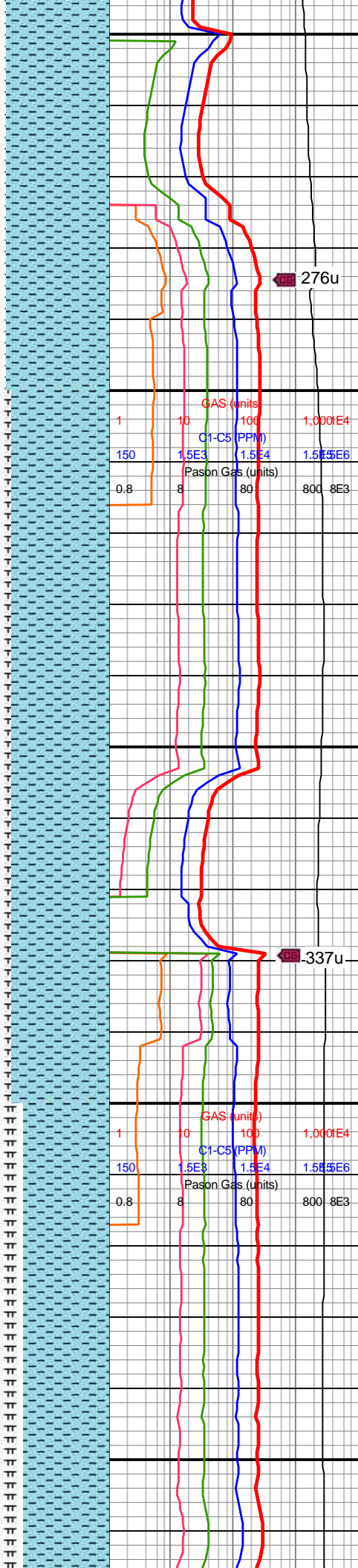
8,850
8,860
8,870
8,880
8,890
8,900
8,910
8,920
8,930
8,940
8,950
8,960
8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
9,050
9,060

MD: 8,914'
TVD: 7,151.88'
INC: 90.44°
AZM: 359.29°
VS: 945.8'

WOB: 40.1klbs
RPM: 71
SPM: 207
SPP: 4,428psi

MD: 9,009'
TVD: 7,151.59'
INC: 89.91°
AZM: 359.29°
VS: 1,040.78'

MW IN: 9.8
VIS IN: 42
MW OUT: 9.9



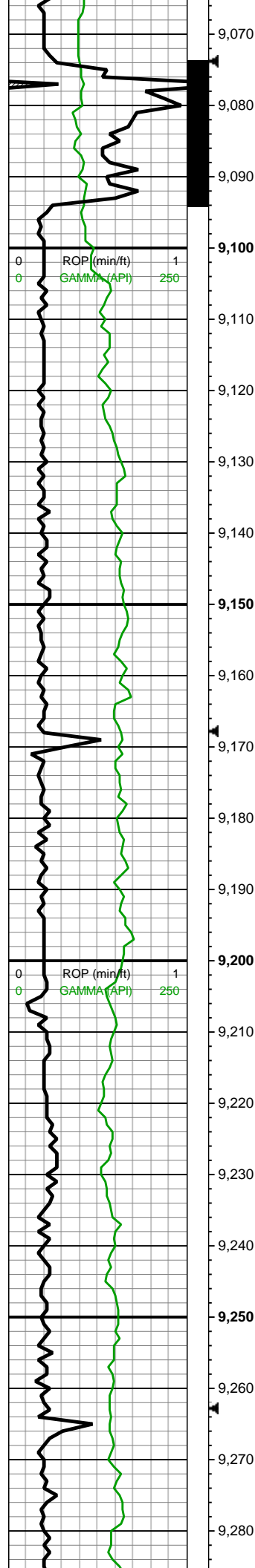
8800-8900 CHK (90%):
med gy-lt gy, dk gy ip, tr lt
gyshbn, frm-brit, sb
blky-blky ctngs, occ
foram, tr vf pyr, scat lse
cal, hi calc; MRLST
(10%): dk gy-gyshbn ip,
sb frm-frm, brit ip, blky,
sm-sl slty arg tex, mot wi
brn mrly incl ip, v calc



8900-9000 CHK (85%): lt
gy-gyshbn-med gy wi occ
f wh chky incl thru,
frm-brit l-mod fis sb rd-sb
blky-blky ctngs, scat
foram, tr fos frags, v calc;
MRLST (15%): med
gyshbn-dk gy, frm-brit,
blky-sb blky, sm arg-sl
slty tex, mod calc



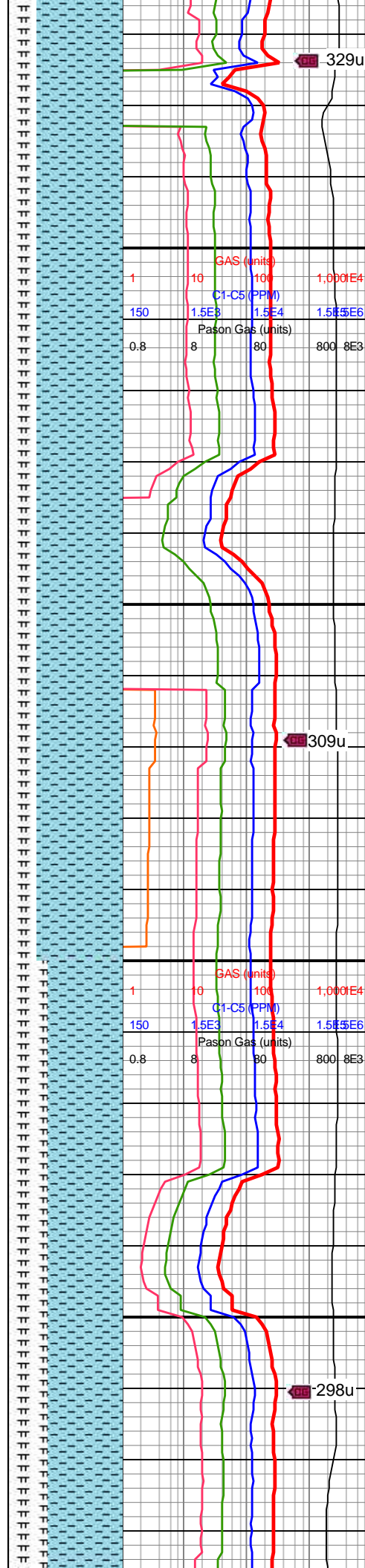
VIS OUT: 40



MD: 9,103'
TVD: 7,149.6'
INC: 92.51°
AZM: 1.49°
VS: 1,134.75'

MD: 9,198'
TVD: 7,145.81'
INC: 92.07°
AZM: 1.58°
VS: 1,229.65'

WOB: 38.9klbs
RPM: 70
SPM: 208
SPP: 4,438psi

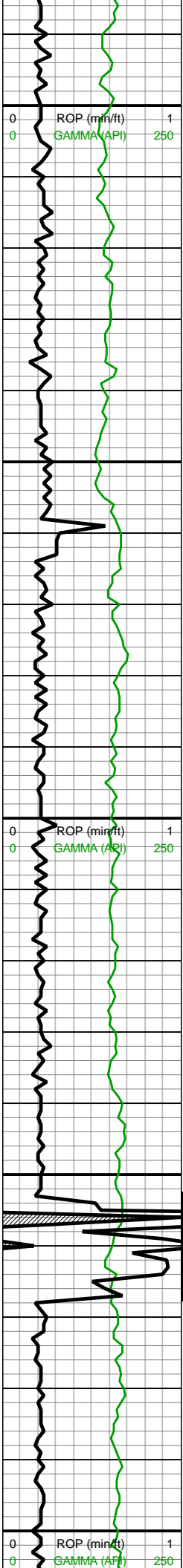


9000-9100 CHK (75%):
pred lt-med gry wi lt brn,
sme sl med gy-brn,
frm-sl brit, sub blkyl-s
plty, sl sft ip, v calc, tr pyr,
scat lse cal; MRLST
(25%): v dk gy-blk, occ
gyshbn, frm-v frm, blkyl,
calc, sl rgh tex wi com
micmica

9100-9200 CHK (75%);
pred lt gy-gyshbn wi occ
med brn, sb blkyl-blkyl wi
rr plty, v frm-frm, rr lam,
scatt pp-occ pyr; MRLST
(25%) pred med-dk gy wi
sme v dk gry, occ
plty-blkyl, v hrd, sme pp
pyr, com micmica

9200-9300 CHK (65%):
lt-med gy wi occ f wh chky
incl, frm-brit, sb blkyl-blkyl
ctngs, tr foram, v tr fos
frag, tr vf pyr, hi calc;
MRI ST (35%): dk av. rr





MD: 9,292'
TVD: 7,141.76'
INC: 92.86°
AZM: 2.55°
VS: 1,323.53'

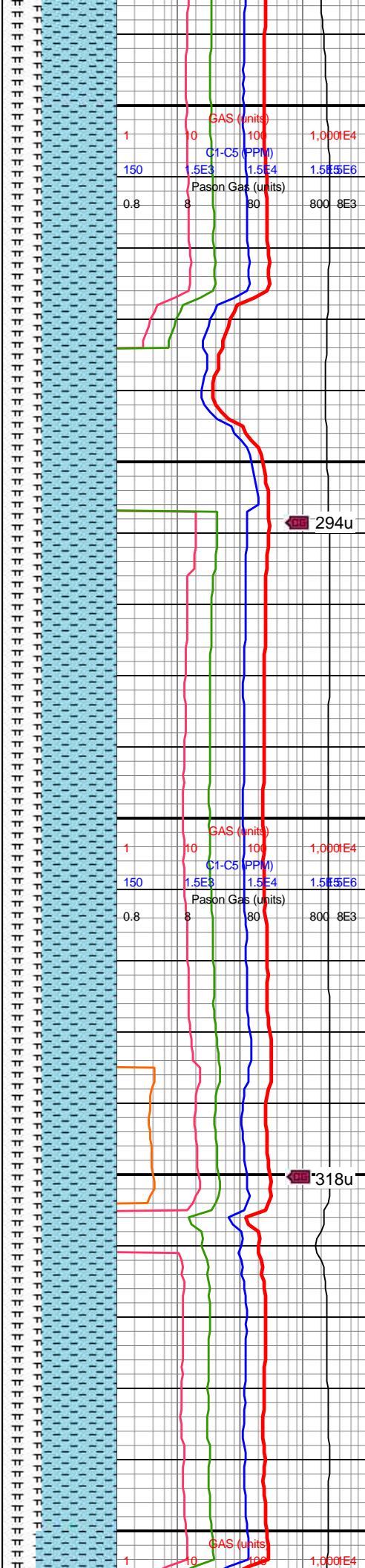
MW IN: 9.8
VIS IN: 42
MW OUT: 9.9
VIS OUT: 41

MD: 9,387'
TVD: 7,137.61'
INC: 92.15°
AZM: 2.46°
VS: 1,418.38'

WOB: 40.6klbs
RPM: 71
SPM: 207
SPP: 4,412psi

MW IN: 9.8
VIS IN: 42
MW OUT: 9.9
VIS OUT: 41

MD: 9,482'
TVD: 7,134.74'
INC: 91.32°
AZM: 1.58°
VS: 1,513.3'

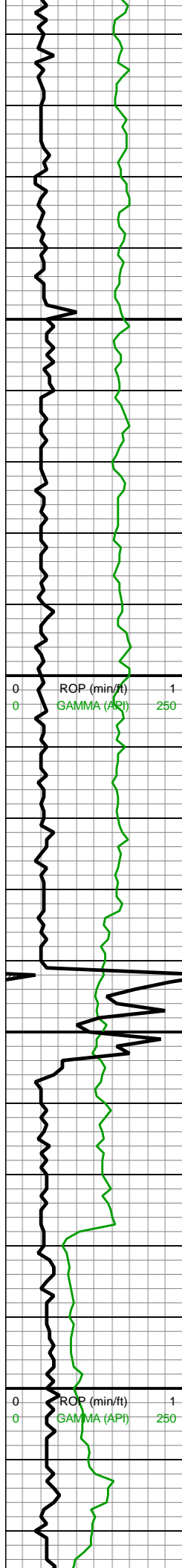


blk, frm-brit, blk-sb blk
ctngs, predy sm arg tex,
sl slty ip, tr vf pyr, mod
calc

9300-9400 CHK (65%): lt
gy-gyshbn-med gy wi occ
f wh chky incl thru,
frm-brit sb blk-sb blk
ctngs, chky tex, occ
cryptoxln, rr-tr foram, tr
fos frags, v calc; MRLST
(35%): med gyshbn-dk
gy, frm-brit, blk-sb blk,
sm arg-sl slty tex, mod
calc

9400-9500 CHK (65%):
med gy, med gyshbn-occ
dk gy, mot, frm-brit, sb
blk-sb blk, tr free CHK,
chky tex, com intbd
MRLST, com foram fos
frags, v calc; MRLST
(35%): med gyshbn-dk
gy, frm-brit, blk-sb blk,
sm-sl slty tex, calc





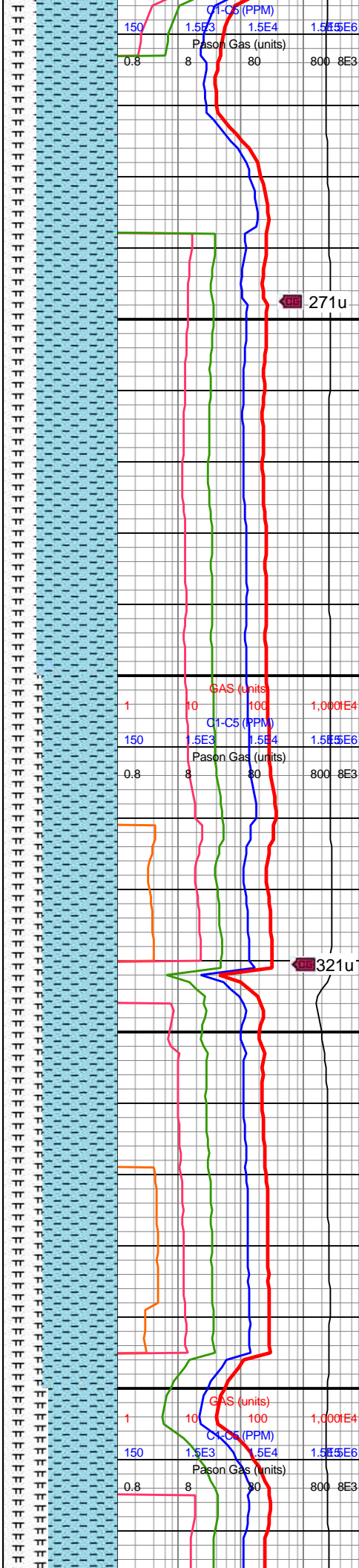
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,700
9,710
9,720

MINDEPTH 6/13/18

MD: 9,577'
TVD: 7,132.55'
INC: 91.32°
AZM: 1.49°
VS: 1,608.25'

WOB: 39.5klbs
RPM: 70
SPM: 208
SPP: 4,466psi

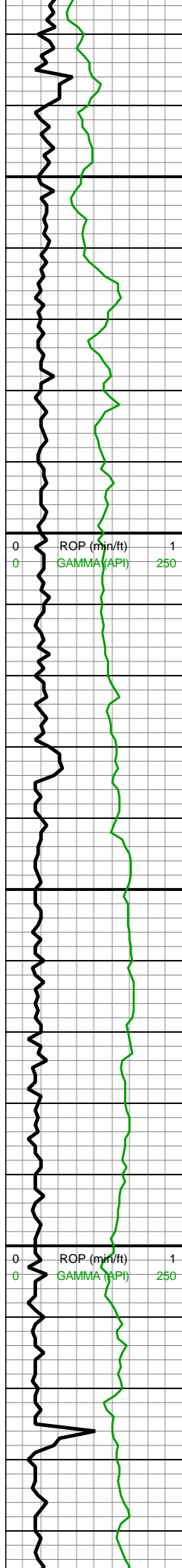
MD: 9,671'
TVD: 7,131.68'
INC: 89.74°
AZM: 0.35°
VS: 1,702.24'



9500-9600 CHK (70%):
med brn-dk gyshbn, tr
free chk, mot, frm-sl sft,
blky-sb rd, chky tex,
scat-com mic fos frags, v
calc; MRLST (30%):
predy dk gy-dk gyshbn,
sm tex, frm-sl hrd,
blky-sb rd, tr imbd pp pyr,
tr lam CHK, calc

9600-9700 CHK (65%): lt
gy-gyshbn-med gy wi occ
f wh chky incl thru, frm, sb
blky-blky ctngs, chky tex,
rr-tr foram, tr fos frags, v
calc; MRLST (35%): med
gyshbn-dk gy, frm-brit,
blky-sb blky, sm arg-sl
silty tex, mod calc





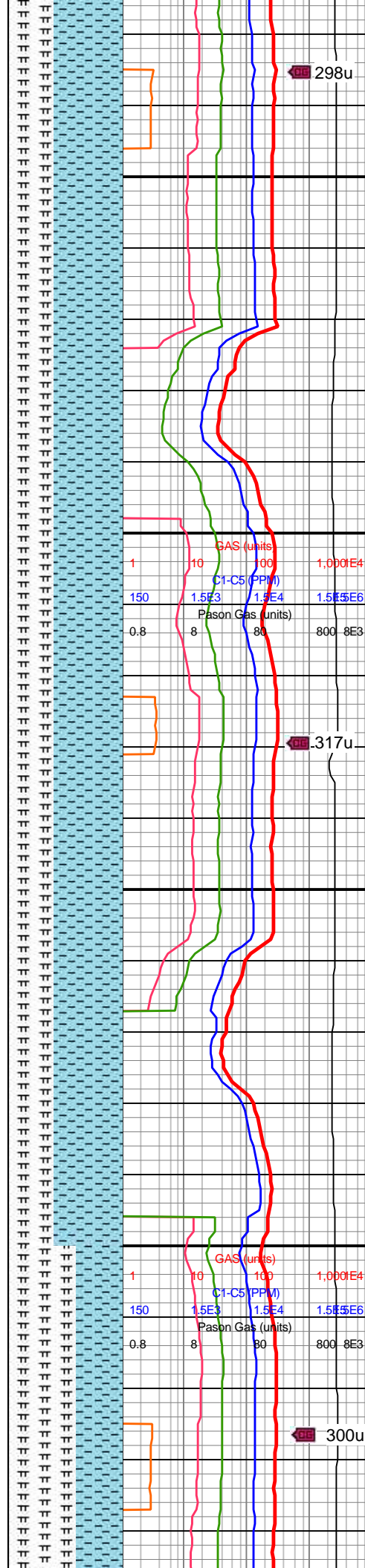
9,730
9,740
9,750
9,760
9,770
9,780
9,790
9,800
9,810
9,820
9,830
9,840
9,850
9,860
9,870
9,880
9,890
9,900
9,910
9,920
9,930
9,940

MD: 9,766'
TVD: 7,131.78'
INC: 90.13°
AZM: 0.17°
VS: 1,797.24'

WOB: 39.1klbs
RPM: 70
SPM: 206
SPP: 4,471psi

MW IN: 9.8
VIS IN: 42
MW OUT: 9.8
VIS OUT: 41

MD: 9,861'
TVD: 7,132.12'
INC: 89.47°
AZM: 0.35°
VS: 1,892.24'

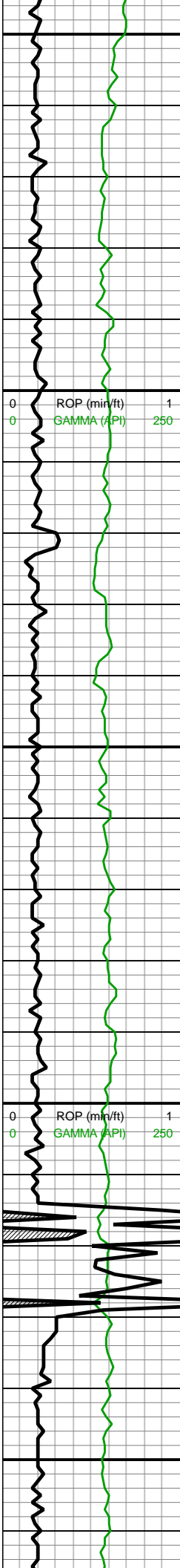


9700-9800 CHK (60%):
med gy-lt gy, sme offwht,
dk gy ip, tr lt gyshbn,
frm-brit, sb blkyl-bkly
ctngs, occ foram, tr vf pyr,
hi calc; MRLST (40%): dk
gy-gyshbn ip, sb frm-frm,
brit ip, blkyl, sm-sl slty arg
tex, mot, v calc



9800-9900 CHK (60%): lt
gy-gyshbn-med gy wi occ
f wh chky incl thru,
frm-brit sb blkyl-bkly
ctngs, chky tex, occ
cryptoxln, rr-tr foram, tr
fos frags, v calc; MRLST
(40%): med gyshbn-dk
gy, frm-brit, blkyl-sb blkyl,
sm arg-sl slty tex, mod
calc





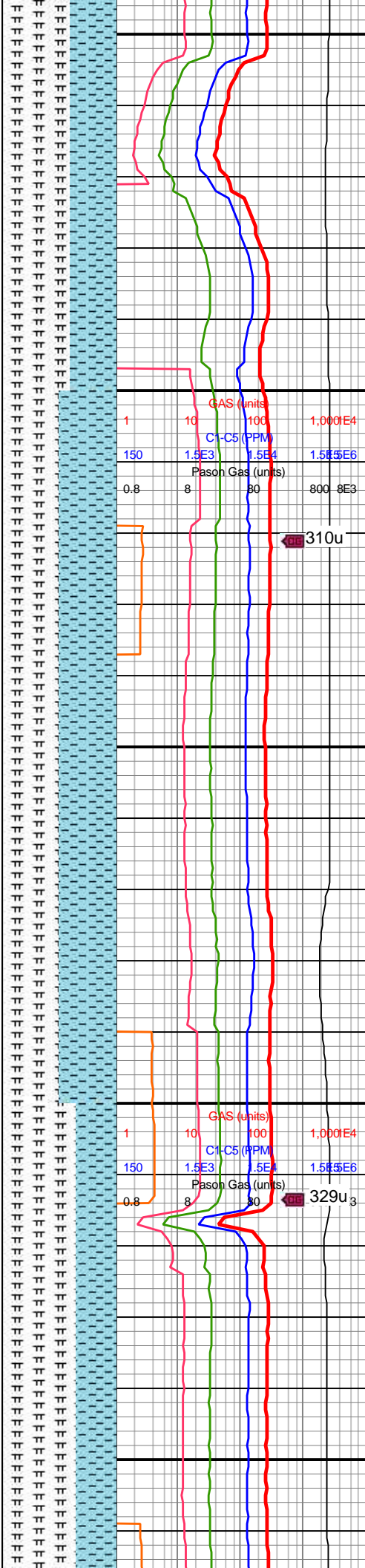
MD: 9,955'
TVD: 7,133.56'
INC: 88.77°
AZM: 0.26°
VS: 1,986.23'

WOB: 39.9klbs
RPM: 60
SPM: 204
SPP: 4,598psi

MD: 10,050'
TVD: 7,135.6'
INC: 88.77°
AZM: 359.65°
VS: 2,081.2'

MW IN: 9.8
VIS IN: 42
MW OUT: 9.8
VIS OUT: 40

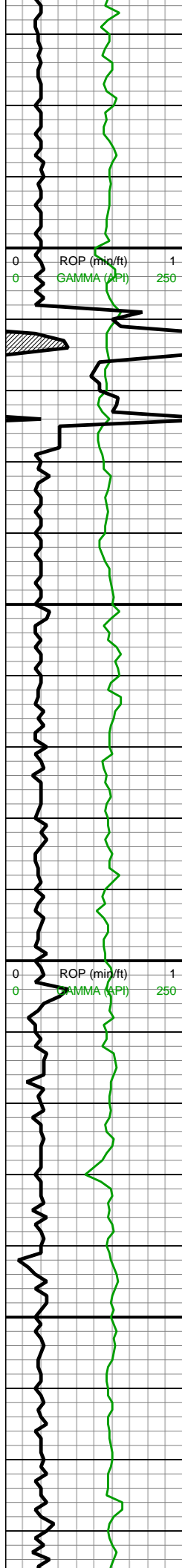
MD: 10,144'
TVD: 7,136.97'
INC: 89.56°
AZM: 359.29°
VS: 2,175.18'



9900-10000 MRLST
(60%): dk gy-dk gyshbn,
sl hd-v frm, mod fis, sb
blky-tab ctngs, sm arg
tex, mod calc, tr pp mic
pyr; CHK (40%): med
brn-gyshbn, frm-sft, mod
fis, tab-sb blky, tr free
CHK, v calc

10000-10100 MRLST
(50%) pred med gry wi
sme dk gry, v hrd, sme sl
lt gy chky lam, occ
micmica; CHK (50%)
lt-med gyshbn wi sme
med brn, sub blky-plty,
frm-sl brit, occ-rr lam





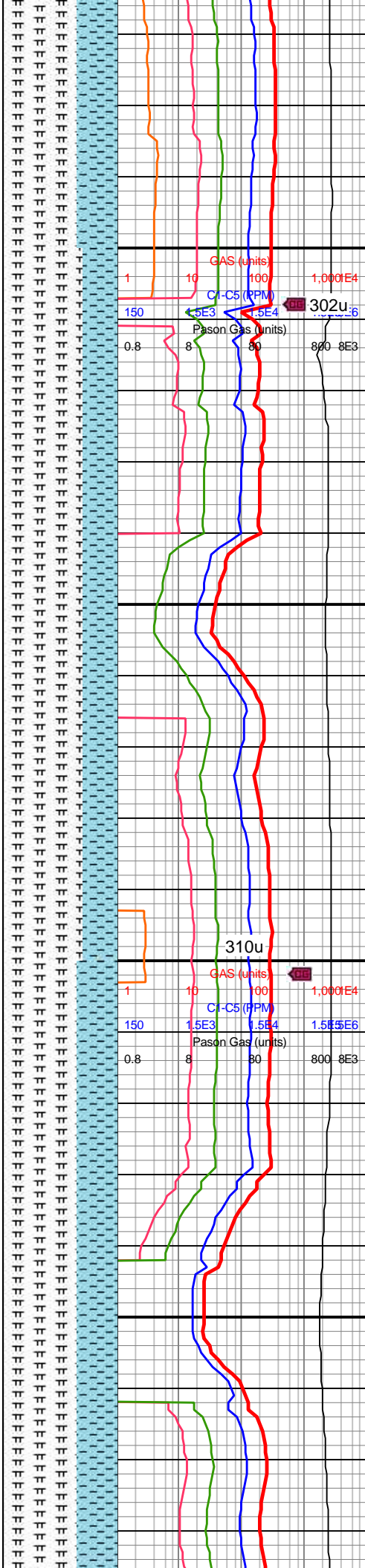
10,170
10,180
10,190
10,200
10,210
10,220
10,230
10,240
10,250
10,260
10,270
10,280
10,290
10,300
10,310
10,320
10,330
10,340
10,350
10,360
10,370
10,380

WOB: 37klbs
RPM: 70
SPM: 206
SPP: 4,803psi

MW IN: 9.8
VIS IN: 42
MW OUT: 9.8
VIS OUT: 40

MD: 10,239'
TVD: 7,137.23'
INC: 90.13°
AZM: 0.35°
VS: 2,270.17'

MD: 10,334'
TVD: 7,137.38'
INC: 89.69°
AZM: 0.26°
VS: 2,365.17'

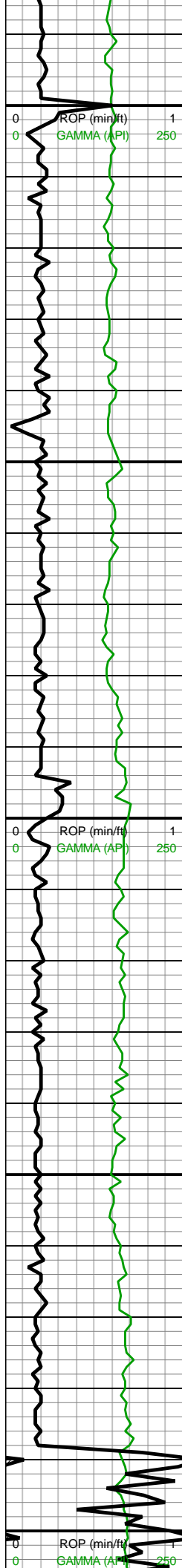


10100-10200 MRLST
(65%): dk gy-gyshbn ip,
sb frm-frm, brit ip, blk,
sm-sl slty arg tex, occ
mot brn mrly incl ip, occ
calc frac fill; CHK (35%):
med gy, dk gy ip, tr lt gy,
frm-brit, sb blk-bkly
ctngs, chky tex, occ
foram, tr vf pyr, hi calc

10200-10300 MRLST
(70%): med
gy-gyshbn-dk gy, frm-brit,
sb blk-bkly, occ hi fis
ply, sm-sl slty tex, rr-occ
vf pyr, mod calc; CHK
(30%): med gy-med
gyshbn-occ dk gy,
frm-brit, mod fis, sb
blk-bkly, chky tex, rr pyr,
hi calc

10300-10400 MRLST
(65%) pred med gry wi
sme dk gry, v hrd, sme sl
lt gy chky lam, occ





10,390
10,400
10,410
10,420
10,430
10,440
10,450
10,460
10,470
10,480
10,490
10,500
10,510
10,520
10,530
10,540
10,550
10,560
10,570
10,580
10,590
10,600

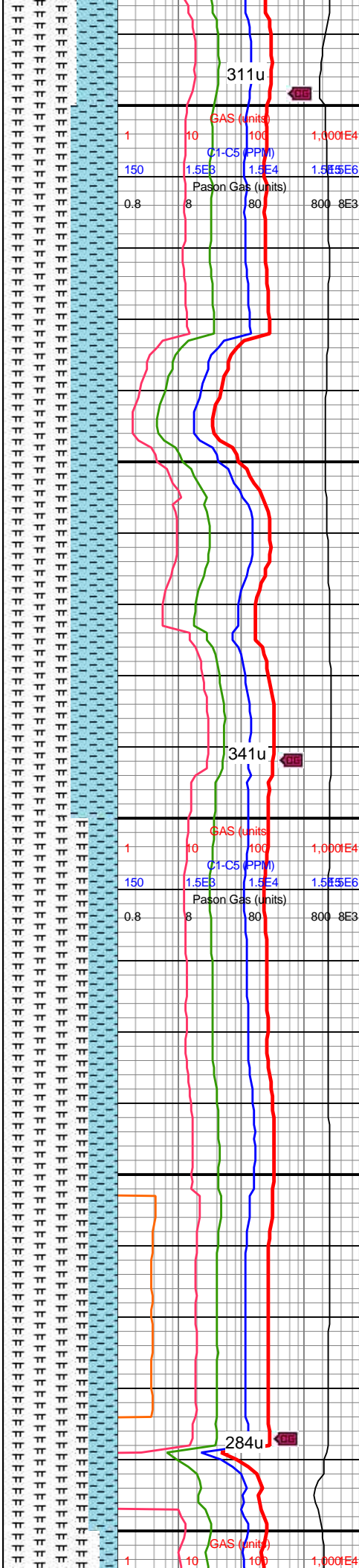
WOB: 39.6klbs
RPM: 71
SPM: 208
SPP: 4,622psi

MD: 10,428'
TVD: 7,137.99'
INC: 89.56°
AZM: 0.08°
VS: 2,459.16'

MD: 10,524'
TVD: 7,139.24'
INC: 88.95°
AZM: 360°
VS: 2,555.15'

MW IN: 9.8
VIS IN: 42
MW OUT: 9.8
VIS OUT: 41

WOB: 48.8klbs
RPM: 0
SPM: 205
SPP: 4,240psi

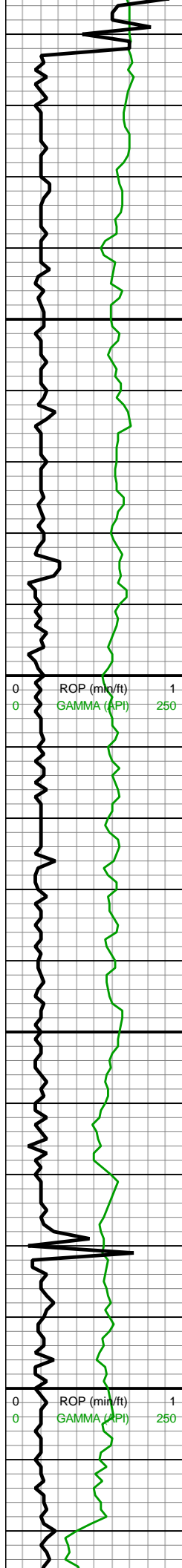


micmica; CHK (35%)
lt-med gyshbn wi sme
med brn, sub blkly-plty,
frm-sl brit, occ-rr lam

10400-10500 MRLST
(60%): pred v dk gy-blk,
occ gyshbn, frm-v frm,
blkly, calc, rgh tex; CHK
(40%): pred lt gy-lt brn,
sme med gy-brn, rr lam,
frm, sl sft ip, blkly, v calc,
rr fos incl, tr pp pyr, tr lse
cal

10500-10600 MRLST
(75%): dk gy-dk gyshbn,
mod fis wi wxy lstr ip, sb
blkly-blkly 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%): gy wi rr
f wh chky incl, rr off wh-v lt
gy, sft-sb frm, occ frm, l
fis sb rd ctngs, sl slty tex,
rr-occ forams, hi calc





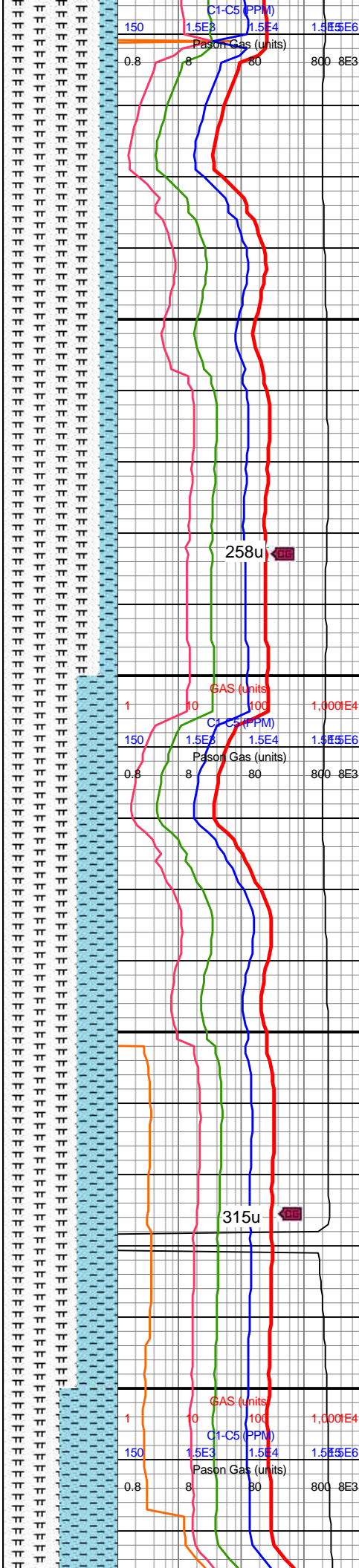
MD: 10,618'
TVD: 7,138.94'
INC: 91.41°
AZM: 1.67°
VS: 2,649.14'

MD: 10,712'
TVD: 7,136.81'
INC: 91.19°
AZM: 1.84°
VS: 2,743.09'

MW IN: 9.8
VIS IN: 41
MW OUT: 9.8
VIS OUT: 40

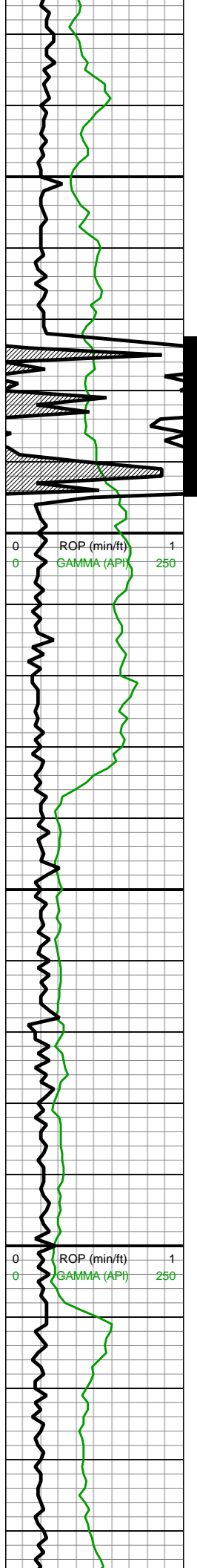
WOB: 40klbs
RPM: 70
SPM: 206
SPP: 4,680psi

MD: 10,808'
TVD: 7,134.6'
INC: 91.45°
AZM: 2.19°
VS: 2,839.03'



10600-10700 MRLST
(85%): 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 (15%): lt gy,
occ dk gy wi vf-f wh chky
incl, sft-sb frm-frm, l fis
sb rd-sb blky ctngs, sl
slty tex, rr forams, tr vf pyr,
hi calc

10700-10800 MRLST
(65%): dk gy-v dk gy,
frm-hd-brit, mod fis sb
ang-sb blky-blky ctngs, sl
slty-slty tex, rr gy-tn bent
intbds wi dk lith incl, rr-tr
vf pyr, mod calc; CHK
(35%): med gy, occ dk gy,
f wh chky incl thru, sb
frm-frm, l-mod fis sb
rd-sb blky ctngs, sl slty
tex, tr vf pyr, hi calc



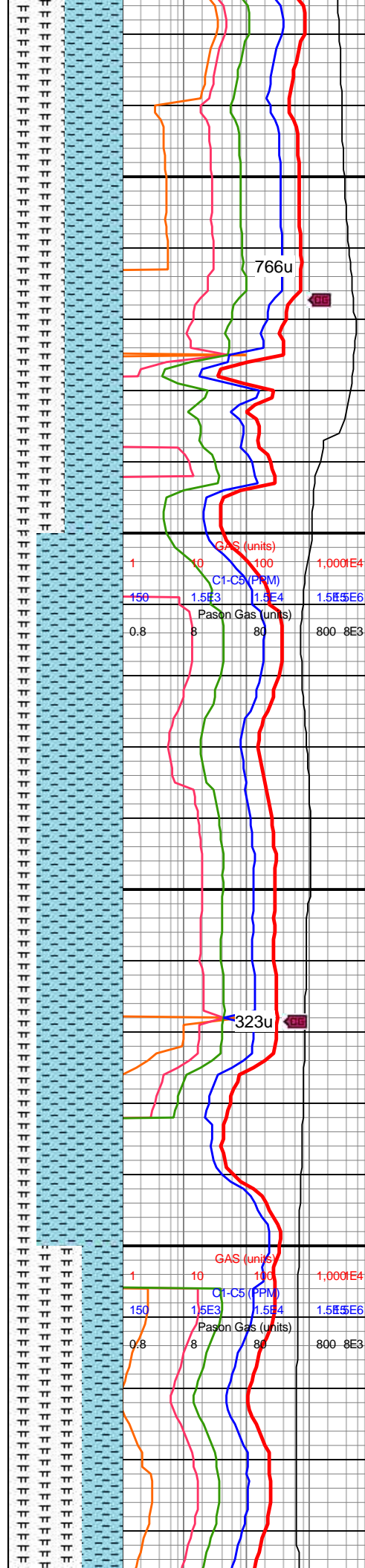
10,830
10,840
10,850
10,860
10,870
10,880
10,890
10,900
10,910
10,920
10,930
10,940
10,950
10,960
10,970
10,980
10,990
11,000
11,010
11,020
11,030
11,040

MD: 10,902'
TVD: 7,131.97'
INC: 91.76°
AZM: 360°
VS: 2,932.98'

MD: 10,996'
TVD: 7,128.87'
INC: 92.02°
AZM: 359.82°
VS: 3,026.93'

WOB: 40klbs
RPM: 70
SPM: 206
SPP: 4,740psi

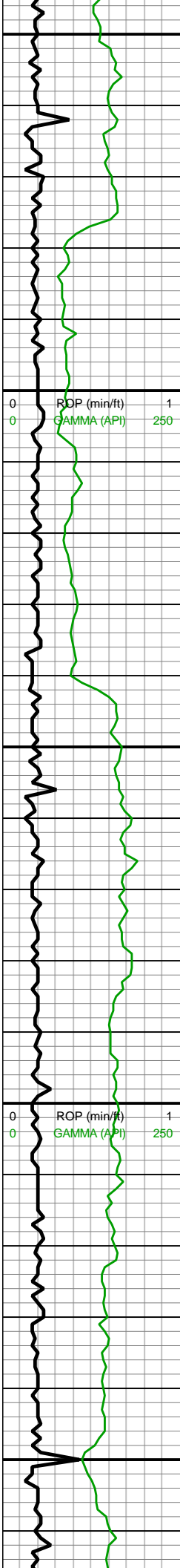
MW IN: 9.8
VIS IN: 41
MW OUT: 9.8
VIS OUT: 41



10800-10900 CHK
(50%): med gy, occ dk gy,
f wh chky incl thru, sb
frm-frm, l-mod fis sb
rd-sb blkly ctngs, sl slty
tex, tr vf pyr, hi calc;
MRLST (50%): dk gy-v dk
gy, frm-hd-brit, mod fis sb
ang-sb blkly-blky ctngs, sl
slty-slty tex, rr gy-tn bent
intbds wi dk lith incl, rr-tr
vf pyr, mod calc

10900-11000 CHK
(75%): lt gy-med gy-med
gyshbn, occ dk gy wi f wh
chky incl, sb frm-frm-brit
ip, mod fis ang-sb
blkly-blky ctngs, sm-sl slty
tex, hi calc; MRLST
(25%): dk gy-v dk gy sh wi
sp brn marl incl ip,
frm-hd-brit, mod fis sb
ang-sb blkly-blky ctngs, sl
slty-slty tex, rr-tr vf pyr,
mod calc wi brn mrly
resdl



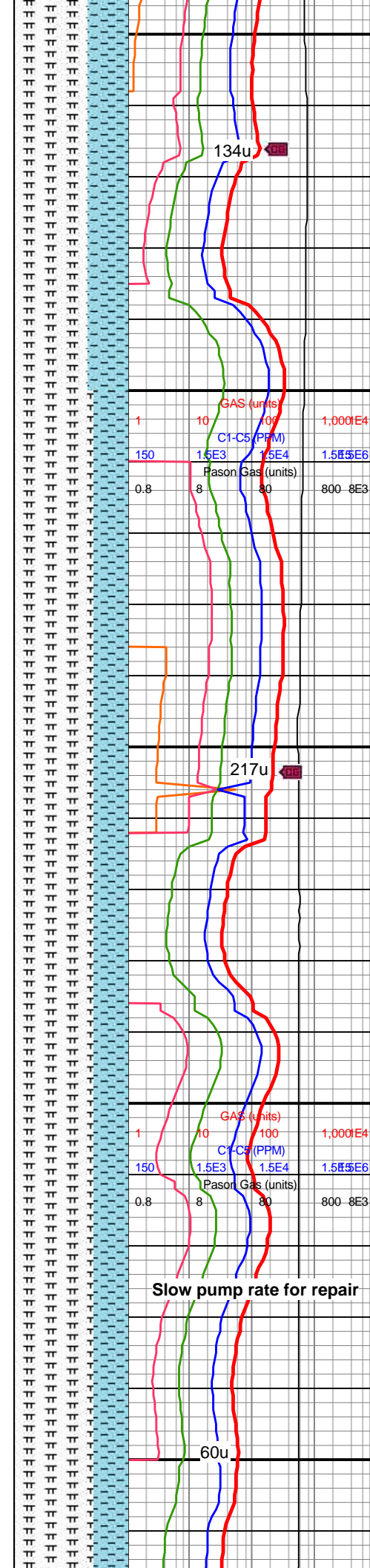


11,050
11,060
11,070
11,080
11,090
11,100
11,110
11,120
11,130
11,140
11,150
11,160
11,170
11,180
11,190
11,200
11,210
11,220
11,230
11,240
11,250
11,260

MD: 11,091'
TVD: 7,125.55'
INC: 91.98°
AZM: 0.35°
VS: 3,121.87'

MD: 11,185'
TVD: 7,122.52'
INC: 91.71°
AZM: 0.44°
VS: 3,215.82'

WOB: 42klbs
RPM: 71
SPM: 206
SPP: 4,800psi

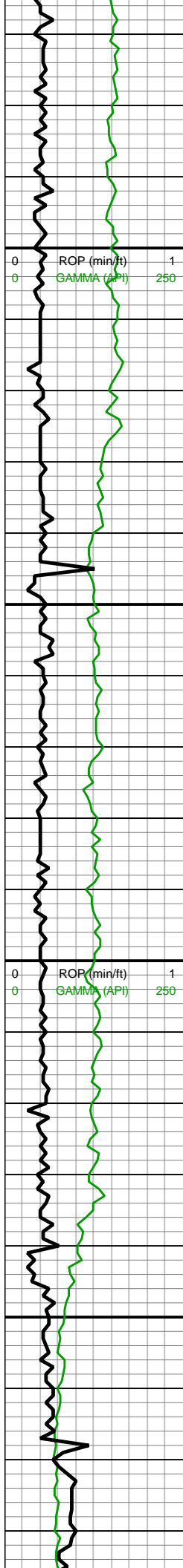


11000-11100 MRLST
(65%): dk gy-v dk gy, brn
mrly lamn & incl thru,
frm-brit, hd ip, mod fis sb
ang-sb blkyl-blky ctngs, sl
slty-slty tex, occ bent, rr-tr
vf pyr, mod calc; CHK
(35%): med gy, occ dk gy,
f wh chky incl thru, sb
frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sl slty
tex, tr vf pyr, hi calc

11100-11200 MRLST
(70%): dk gy-v dk gy, sb
ang-sb blkyl-blky mod fis
frm-brit-hd ctngs, sl
slty-slty tex, com off
wh-orng bent, tr vf pyr,
mod calc wi brn mrly
resdl; CHK (30%): med
gy-dk gy, sb frm-frm,
l-mod fis sb rd-sb blkyl
ctngs wi occ f wh chky
incl, sl slty tex, tr forams,
tr vf pyr, hi calc

Slow pump rate for repair

11200-11300 MRLST
(72%): dk gy-v dk gy, sb

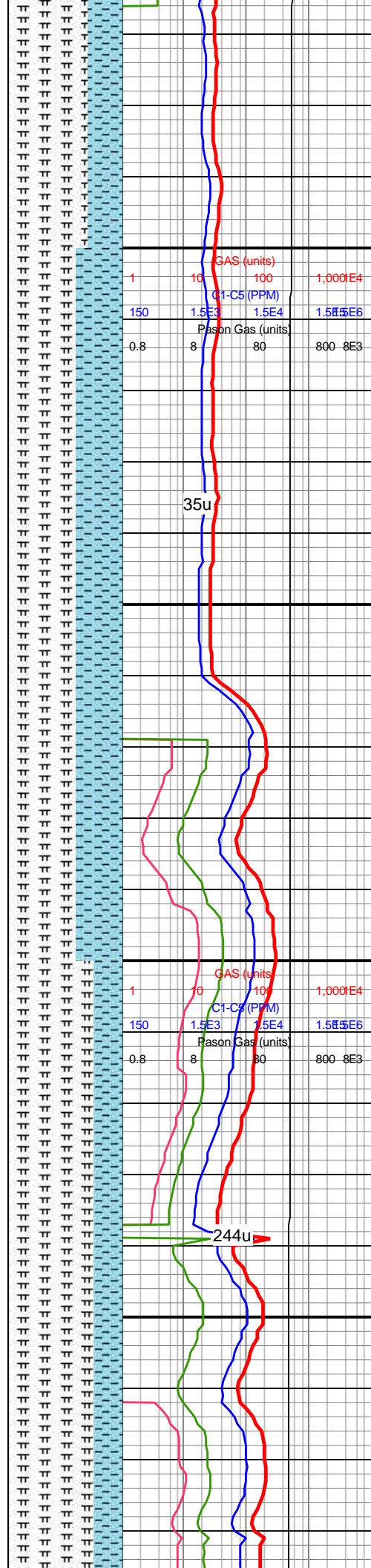


MD: 11,279'
TVD: 7,120.11'
INC: 91.23°
AZM: 360°
VS: 3,309.79'

MW IN: 9.85
VIS IN: 41
MW OUT: 9.9
VIS OUT: 40

MD: 11,374'
TVD: 7,118.18'
INC: 91.1°
AZM: 0.26°
VS: 3,404.77'

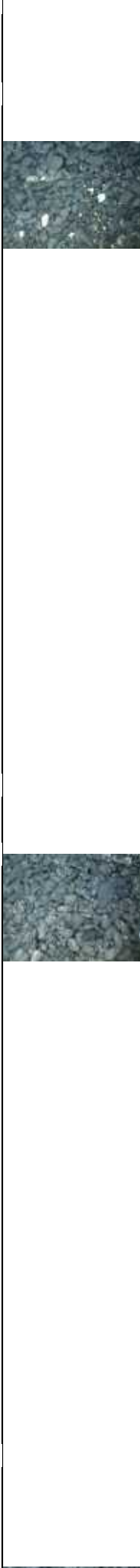
MD: 11,469'
TVD: 7,116.65'
INC: 90.75°
AZM: 359.82°
VS: 3,499.75'

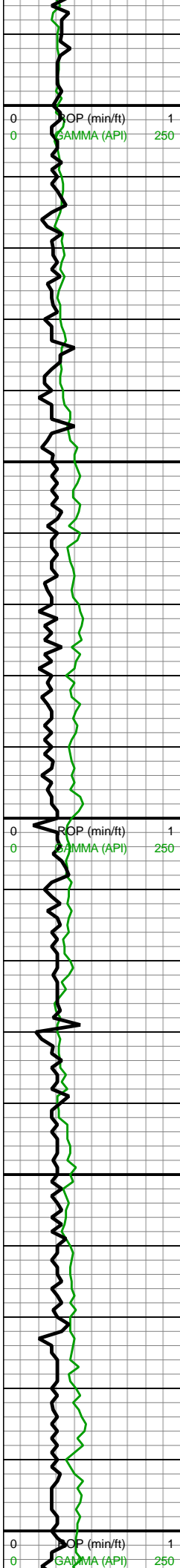


(70%): dk gy-v dk gy, mod
fis sb ang-sb blkyl-blky,
frm-brit-hd, sl slty-slty tex,
occ-com off wh-orng
bent, tr vf pyr, mod calc wi
brn mrly resdl; CHK
(30%): med gy-dk gy, sb
frm-frm, l-mod fis sb
rd-sb blkyl ctngs wi occ f
wh chky incl, sl slty tex, tr
forams, tr vf pyr, hi calc

11300-11400 MRLST
(60%): dk gy, occ v dk gy
ip, frm-brit, hd ip, mod fis
sb blkyl-blky ctngs, sl
slty-slty tex, occ wh-orng
bent, tr vf pyr, mod calc wi
brn mrly resdl; CHK
(40%): med gy wi com f
wh chky lamn, frm, sb frm
ip, l-mod fis sb rd-sb blkyl
ctngs wi occ f wh chky
incl, sl slty tex, tr forams,
tr vf pyr, hi calc

11400-11500 MRLST
(70%): dk gy-v dk gy, mod
fis sb ang-sb blkyl-blky,
frm-brit-hd, sl slty-slty tex,
tr vf pyr, mod calc wi brn
mrly resdl; CHK (30%):
med gy-dk gy, sb
frm-frm, l-mod fis sb
rd-sb blkyl ctngs wi occ f
wh chky incl, sl slty tex, tr
forams, tr vf pyr, hi calc





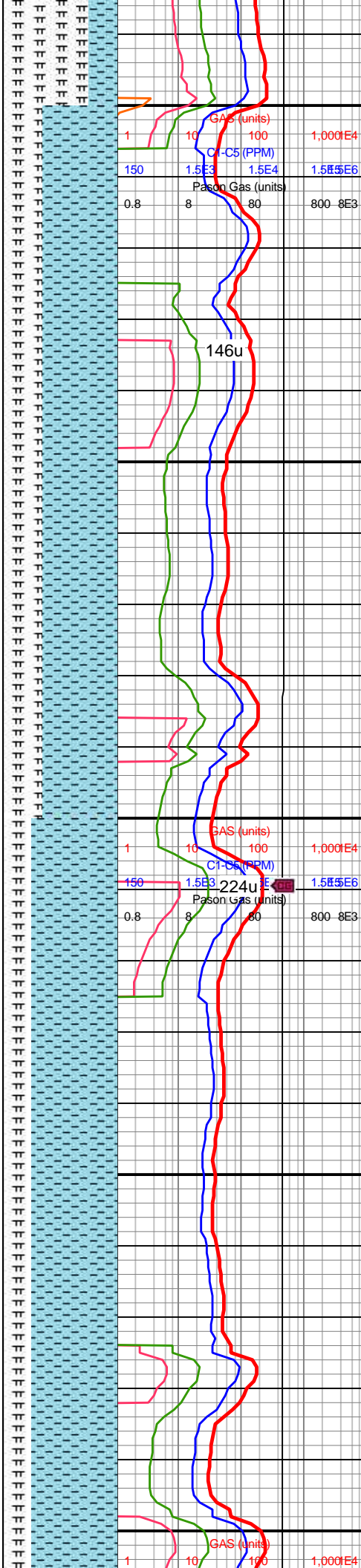
MW IN: 9.9
VIS IN: 41
MW OUT: 9.9
VIS OUT: 39

MD: 11,564'
TVD: 7,115.11'
INC: 91.1°
AZM: 0.44°
VS: 3,594.73'

WOB: 41klbs
RPM: 70
SPM: 205
SPP: 4,720psi

MD: 11,658'
TVD: 7,113.56'
INC: 90.79°
AZM: 0.08°
VS: 3,688.72'

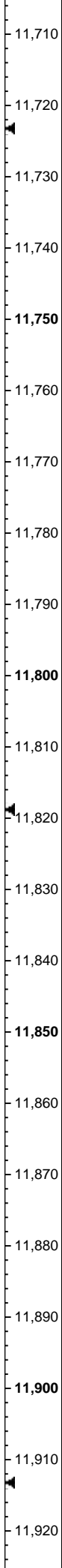
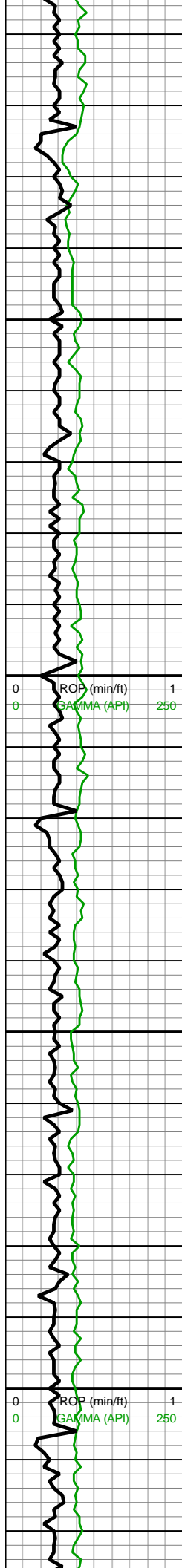
MW IN: 9.9
VIS IN: 41
MW OUT: 9.9
VIS OUT: 40



med gy-dk gy, occ lt gy,
sb frm-frm, l-mod fis sb
rd-sb blkly ctngs wi occ f
wh chky incl, sl slty tex, tr
vf pyr, hi calc

11500-11600 CHK
(65%): med
gy-gyshbn-occ dk gy,
com wh chky lamn & incl,
predy frm-brit, sb frm ip,
mod fis sb blkly ctngs, sl
slty tex, tr vf pyr, tr forams,
hi calc; MRLST (35%): dk
gy-v dk gy, frm-hd-brit,
mod fis sb ang-sb
blkly-bkly ctngs, sl slty-slty
tex, rr gy-tn bent intbds wi
dk lith incl, rr-tr vf pyr,
mod calc

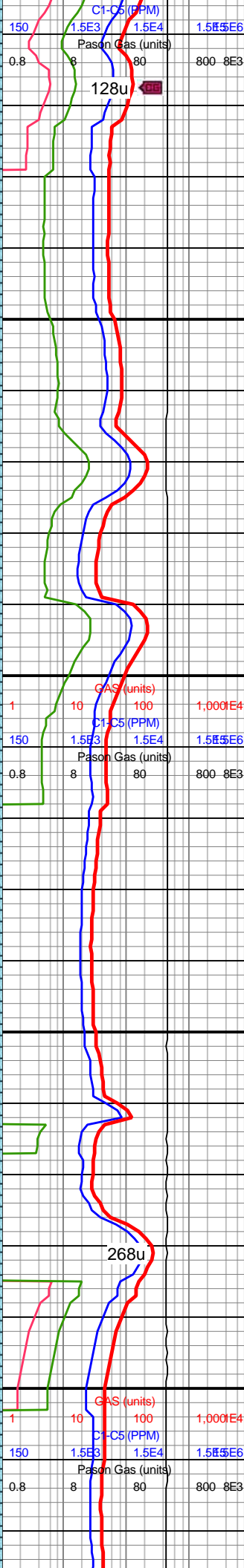
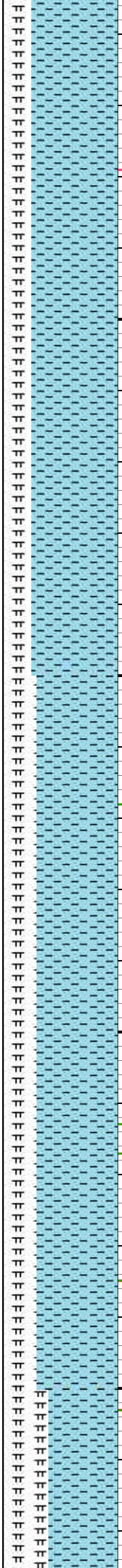
11600-11700 CHK
(75%): med
gy-gyshbn-occ dk gy, occ
wh chky lamn & incl,
predy frm-brit, sb frm ip,
mod fis sb blkly ctngs, sl
slty tex, tr vf pyr, tr forams,
hi calc; MRLST (25%): dk
gy-dk gyshbn, v dk gy ip,
frm-hd-brit, mod fis sb
ang-sb blkly-bkly ctngs, sl
slty-slty tex, tr vf pyr, mod
calc wi brn mrly resdl



MD: 11,753'
TVD: 7,112.47'
INC: 90.53°
AZM: 0.17°
VS: 3,783.71'

WOB: 42klbs
RPM: 70
SPM: 206
SPP: 4,750psi

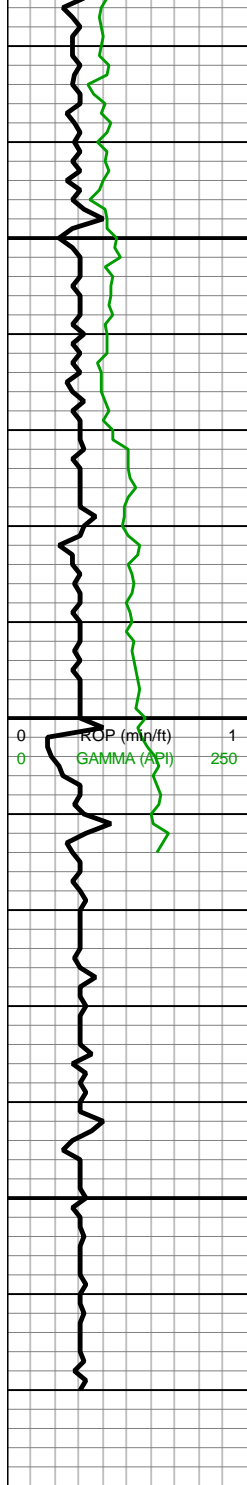
MD: 11,848'
TVD: 7,111.67'
INC: 90.44°
AZM: 0.44°
VS: 3,878.71'



11700-11800 CHK
(75%): med
gy-gyshbn-occ dk gy,
frm-brit, sb frm ip, mod
fis sb blkly ctngs, occ wh
chky lamn & incl, sl slty
tex, tr vf pyr, hi calc;
MRLST (25%): dk gy-dk
gyshbn, frm-hd-brit, mod
fis sb ang-sb blkly-blky
ctngs, sl slty-slty tex, tr vf
pyr, mod calc wi brn mrly
resdl

11800-11900 CHK
(70%): gy-dk gy wi f wh
chky incl, lt gyshbn ip,
frm-brit mod fis sb blkly
ctngs, sl slty tex, tr vf pyr,
hi calc; MRLST (30%): dk
gy-dk gyshbn, frm, hd-brit
ip, mod fis sb ang-sb
blkly-blky ctngs, sm-sl
slty, tr vf pyr, mod calc wi
brn mrly resdl





MD: 11,943'
TVD: 7,111.81'
INC: 89.39°
AZM: 359.21°
VS: 3,973.7'

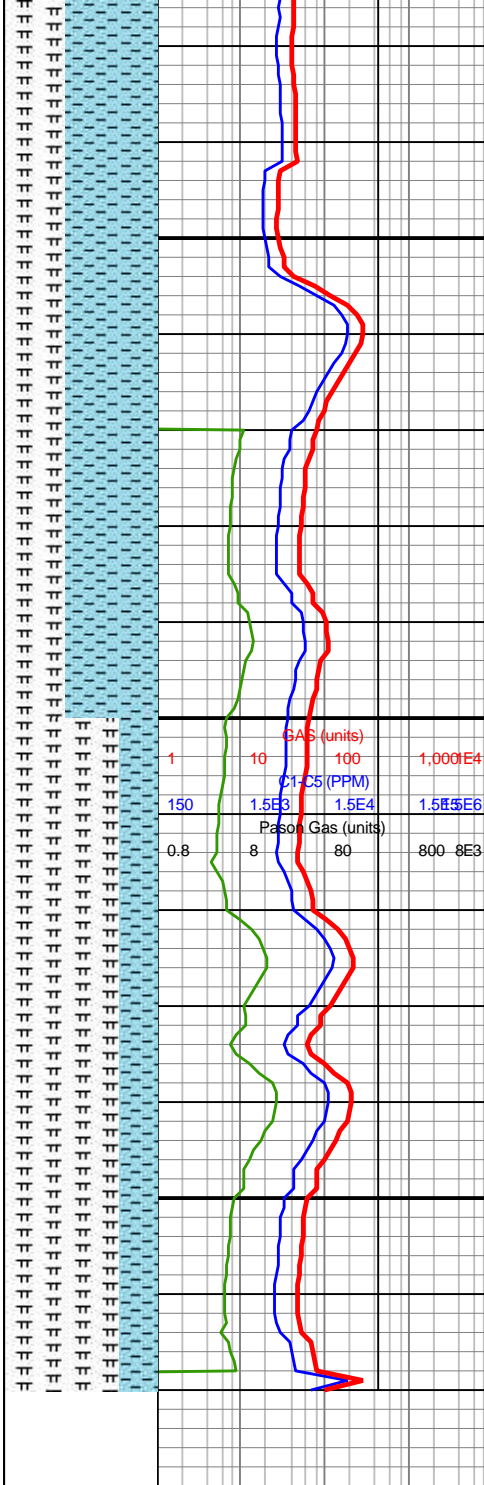
WOB: 41klbs
RPM: 71
SPM: 204
SPP: 4,680psi

MD: 12,005'
TVD: 7,112.63'
INC: 89.08°
AZM: 359.29°
VS: 4,035.68'

Reach TD @
13:55hrs on
6/13/18

Bit projection

MD: 12,070'
TVD: 7,113.68'
INC: 89.08°
AZM: 359.29°
VS: 4,100.66'



11900-12000 CHK
(60%): lt gy-med gy wi
sme f-u f-elong wh chky
incl thru, rr dk gy, sb
frm-frm, l-mod fis sb
rd-sb blkly ctngs, sl slty
tex, tr vf pyr, hi calc;
MRLST (40%): dk gy-dk
gyshbn, frm-hd-brit, mod
fis sb ang-sb blkly-blky
ctngs, sl slty-slty tex, tr vf
pyr, mod calc

12000-12070 MRLST
(75%): dk gy-dk gyshbn,
sb frm-frm l fis sb rd-occ
mod fis sb blkly ctngs, sl
slty tex, tr vf pyr, mod calc;
CHK (25%): dk gy wi rr f
wh chky incl, frm-brit,
l-mod fis sb rd-sb blkly
ctngs, sl slty tex, hi calc