



Scale: 5" / 100'
Measured Depth Log

Well Name Ruegge 3O-4H-N165

Location Sec. 4 T1N R65W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05-123-46564-0000

AFE # 16190991

Geographic Region Rockies

Field Wattenberg

Spud Date 7/15/2018

Drilling Completed 7/17/2018

Surface Coordinates Lat/Long: 40.075273/-104.670632
SHL: Sec: 4 Twp: 1N 65W
Footage: 712 FSL 2176 FWL

Bottom Hole Coordinates Proposed BHL: Sec: 4 Twp: 1N 65W
Footages: 460 FFNLL 1025 FFELL

Ground Elevation 4,915'

K.B. Elevation 4,938

Logged Interval 6,750' **To** 12,360'

Total Depth 12,360'

Formation Codell

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

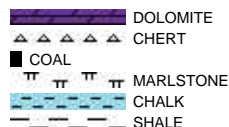
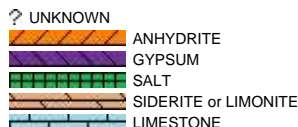
Loggers: Nicholas Watkins / Matthew Cox / Brian Ferwerda

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-533

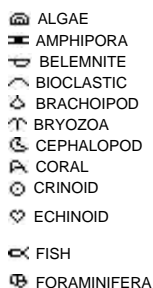
Contractor: Empirica, Reservoir Group
6360 West Sam Houston Pkwy N
Houston, Texas, 77041

Rock Types



Accessories

Fossils



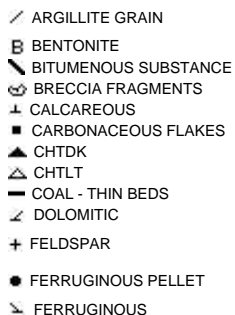
F FOSSIL



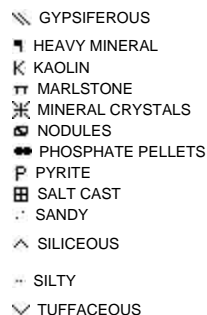
Minerals



A ARGILLACEOUS



G GLAUCONITE



Stringer



Other Symbols

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- X INTERCRYSTALLINE
- Q INTEROOLITIC
- M MOLDIC

- ORGANIC
- P PINPOINT
- V 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

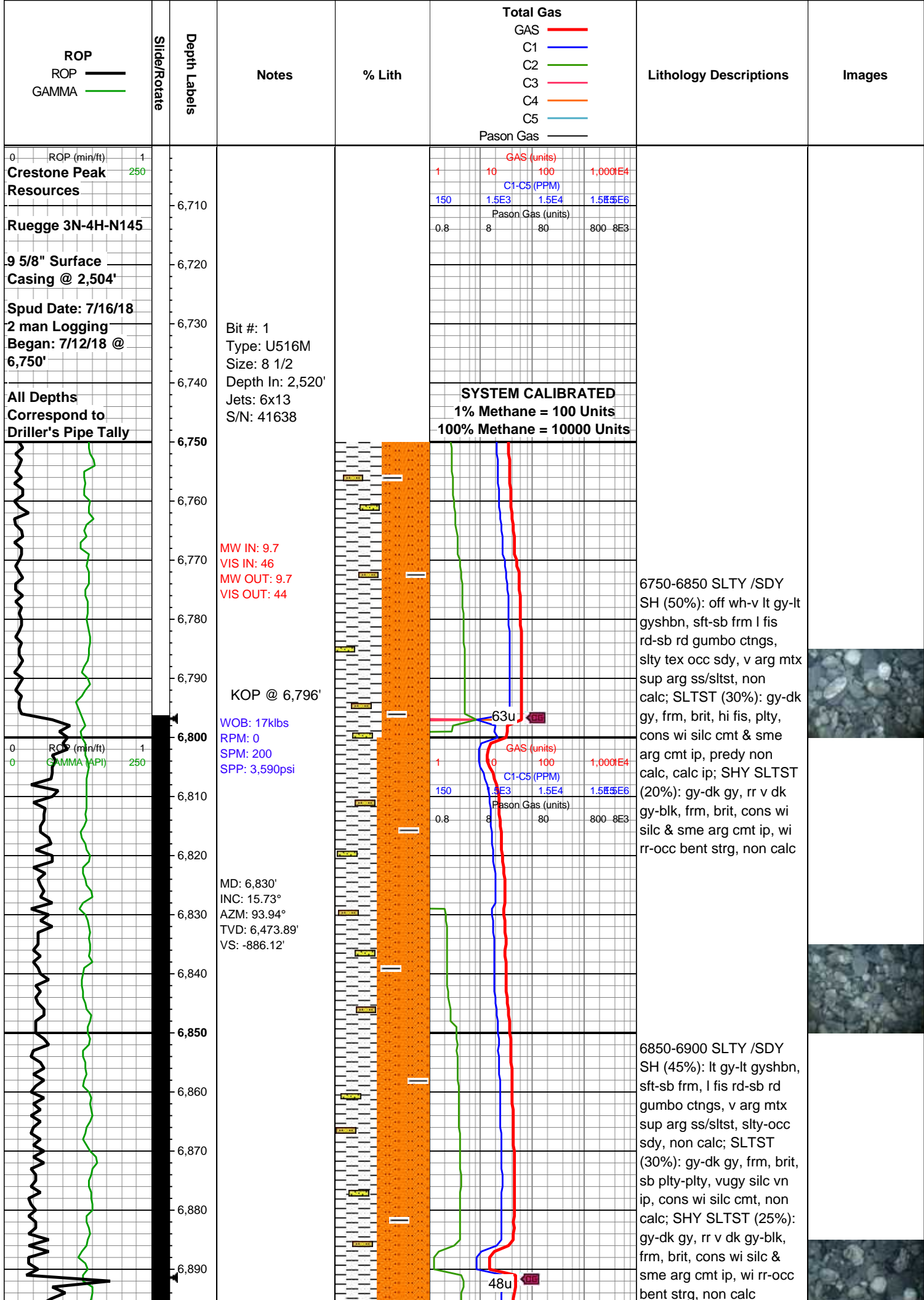
Rounding

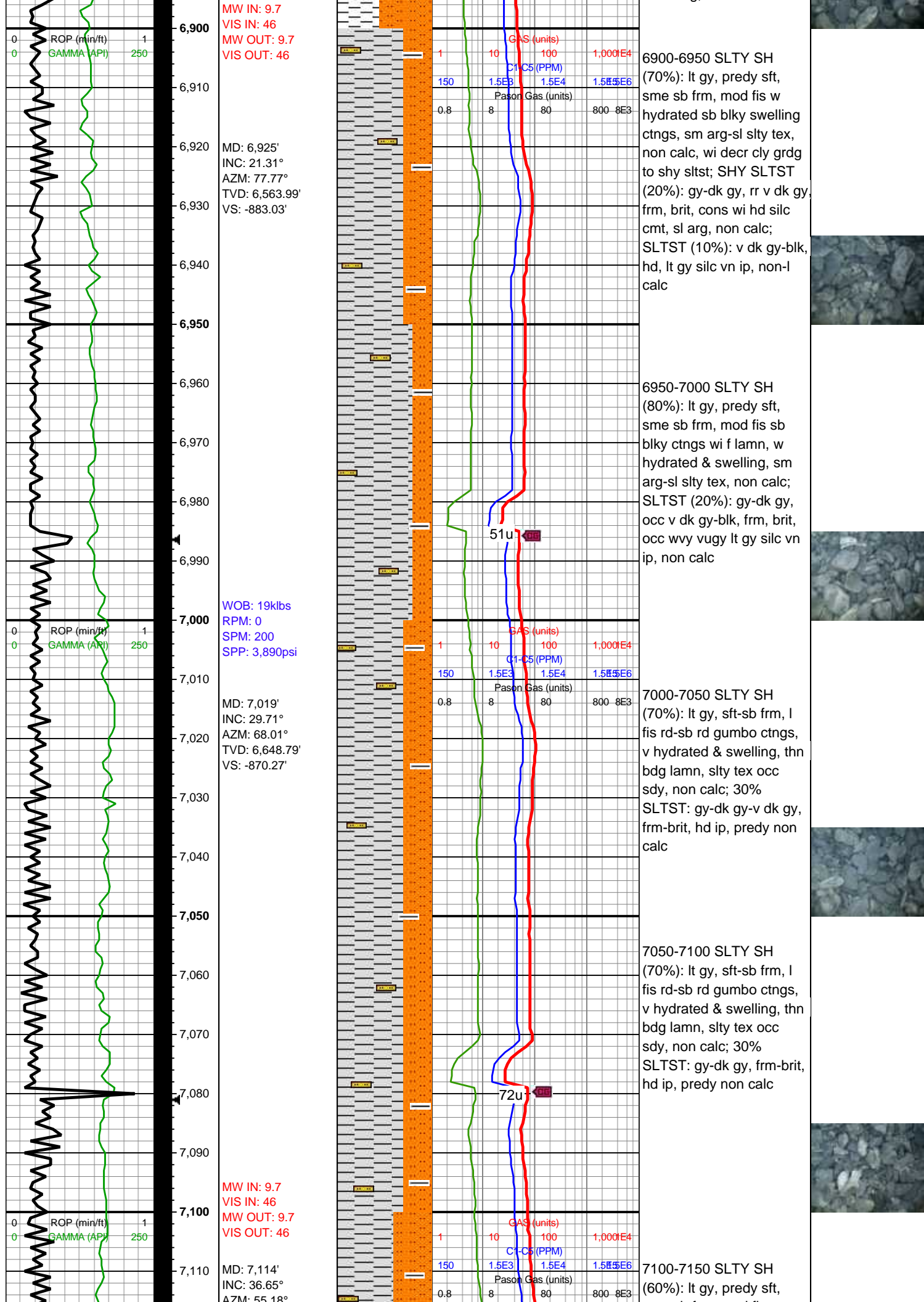
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

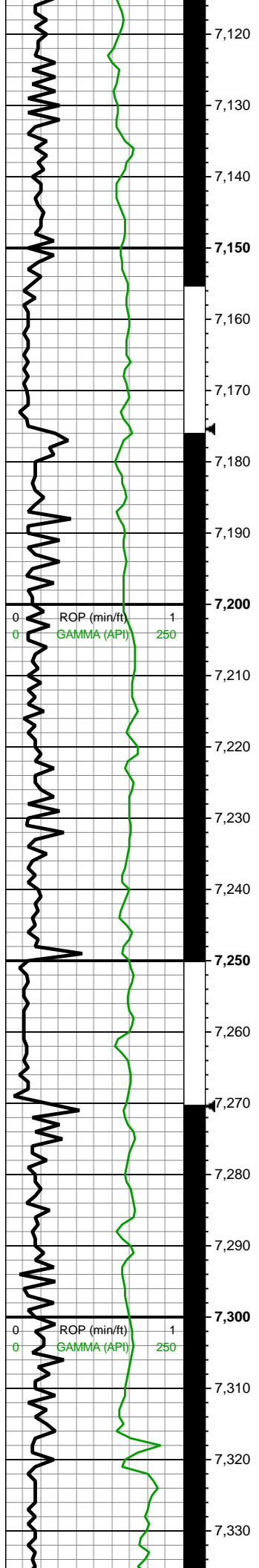
Textures

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

- L LITHOGRAPHIC
 - MX MICROXLN
 - MS MUDSTONE
 - PS PACKSTONE
 - WS WACKESTONE
- ## Sorting
- M MODERATE
 - P POOR
 - W WELL







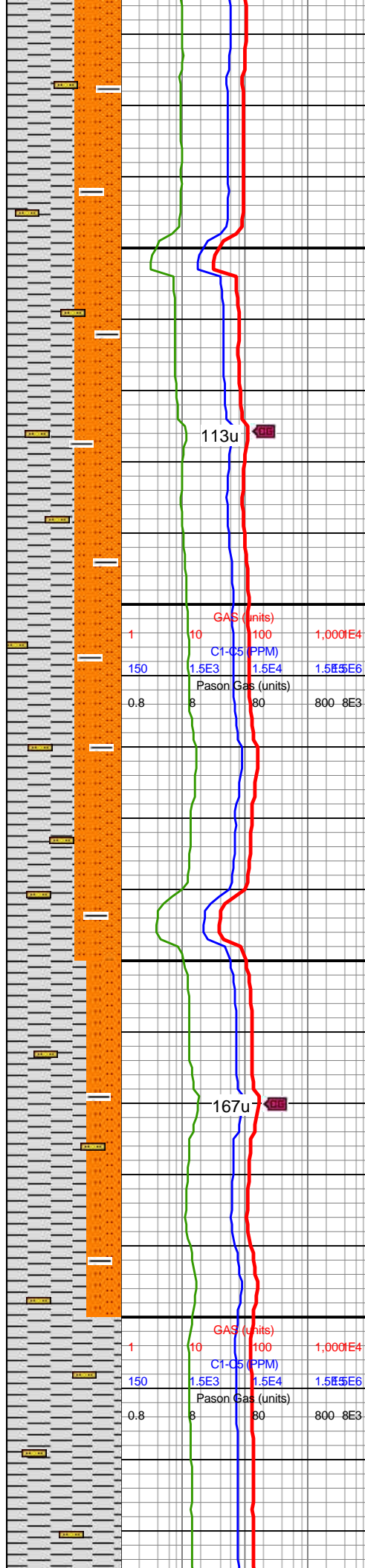
AZM: 55.16°
TVD: 6,728.35'
VS: -844.74'

WOB: 36klbs
RPM: 0
SPM: 202
SPP: 3,990psi

MD: 7,209'
INC: 40.25°
AZM: 49.73°
TVD: 6,802.76'
VS: -808.21'

MD: 7,303'
INC: 43.15°
AZM: 46.22°
TVD: 6,872.94'
VS: -765.85'

Sharon Springs
7,318' MD / 6,883'
TVD



sme sb frm, mod fis w
hydrated sb blkly swelling
ctngs, sm arg-sl slty tex,
non calc, wi decr cly grd
to shy sltst; SHY SLTST
(40%): gy-dk gy, rr v dk gy,
frm, brit, cons wi hd silc
cmt, sl arg, non calc

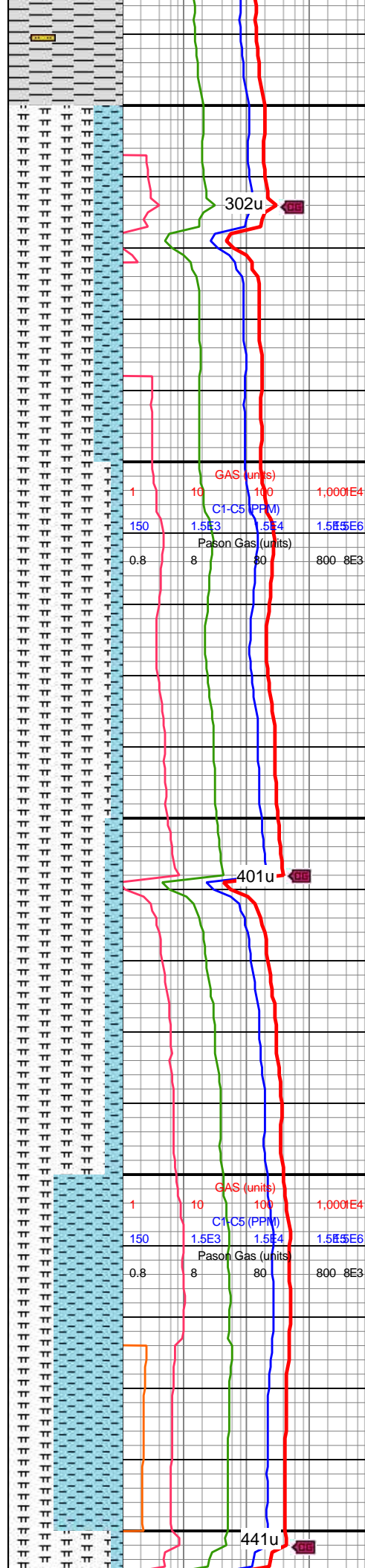
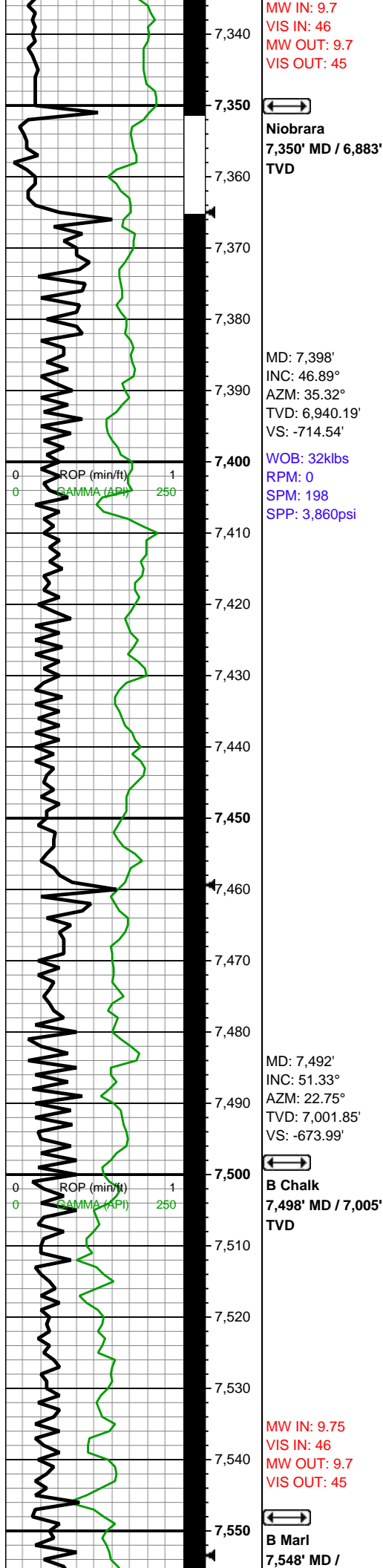
7150-7200 SLTY SH
(60%): lt gy, predy sft,
sme sb frm, mod fis w
hydrated sb blkly swelling
ctngs, sm arg-sl slty tex,
non calc, wi decr cly grd
to shy sltst; SHY SLTST
(40%): gy-dk gy, rr v dk gy,
frm, brit, cons wi hd silc
cmt, sl

7200-7250 SLTY SH
(60%): lt gy, predy sft,
sme sb frm, mod fis w
hydrated sb blkly swelling
ctngs, sm arg-sl slty tex,
non calc, wi decr cly grd
to shy sltst; SHY SLTST
(40%): gy-dk gy, rr v dk gy,
frm, brit, cons wi hd silc
cmt, sl arg, non calc

7250-7300 SLTY SH
(70%): lt gy, sft-sb frm, l
fis rd-sb rd gumbo ctngs,
v hydrated & swelling, thn
bdg lamn, slty tex occ
sdy, non calc; 30%
SLTST: gy-dk gy, frm-brit,
hd ip, predy non calc

7300-7350 SLTY SH
(100%): gy-gyshbn,
frm-brit, med fis sb
blkly-bkly ctngs, slty arg
tex, tr tn bent, mod calc





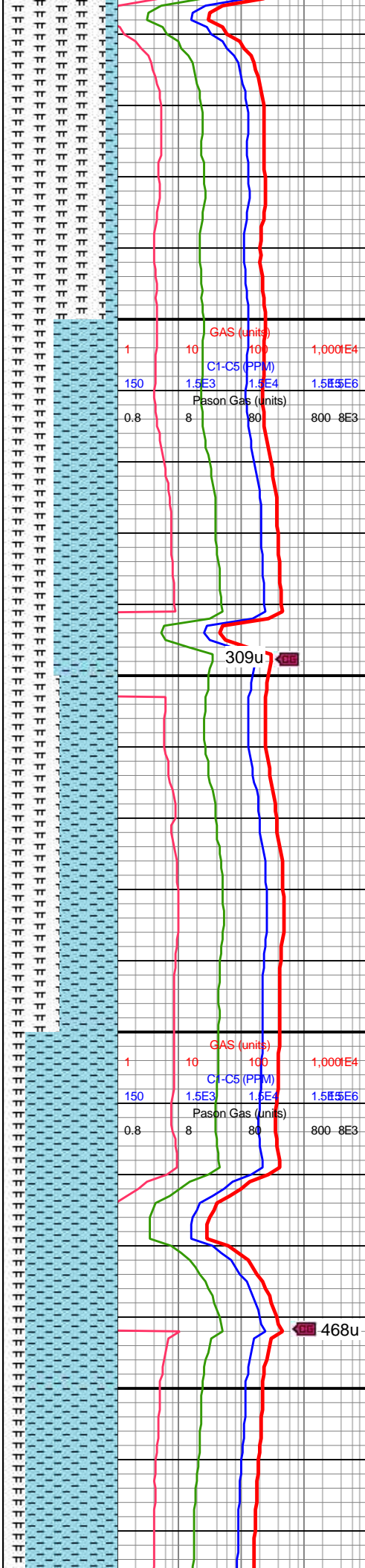
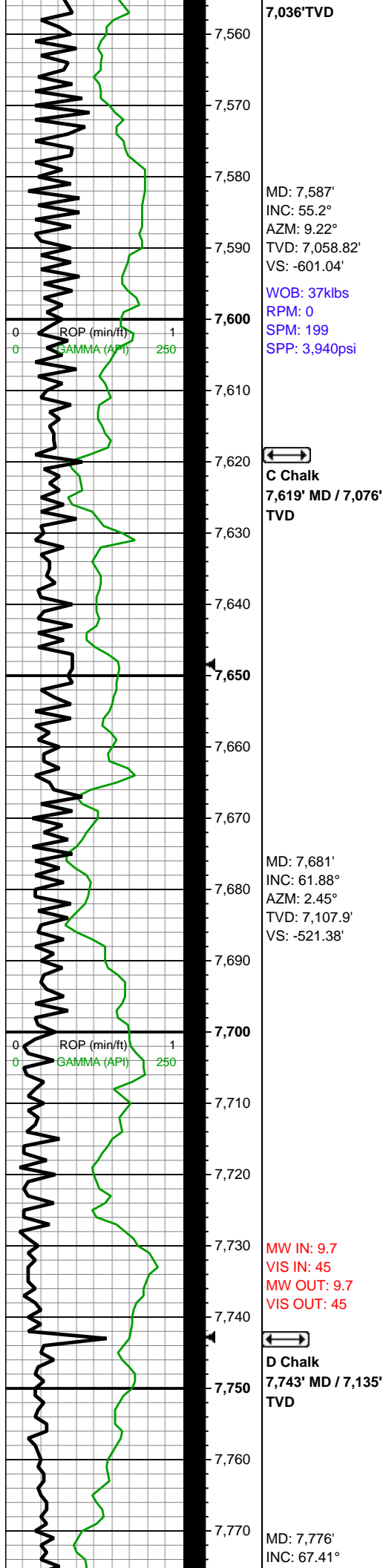
7350-7400 MRLST
(75%): dk gy-dk gyshbn-v
dk gy, frm-brit, mod fis sb
blky ctngs, sm arg-sl slty
tex, occ c ptch pyr strg,
mod calc wi brn mrly
resdl; CHK (25%): gy-dk
gy wi f wh chky incl & thn
wh chky lamn, frm, brit,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, hi calc

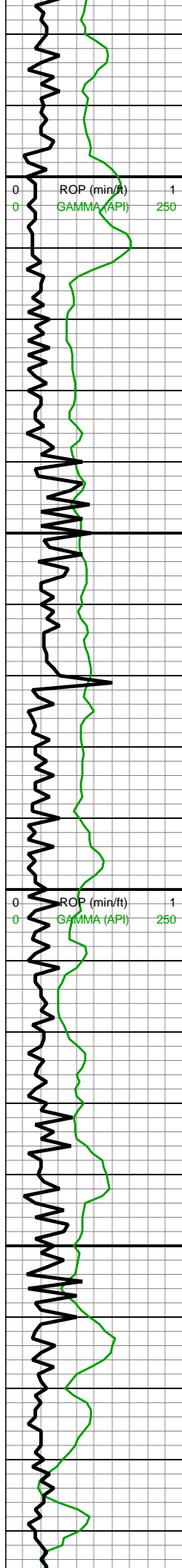
7400-7450 MRLST
(90%): dk gyshbn-v dk gy,
sb frm-frm, mod fis sb
blky ctngs, arg-sl slty-sl
sdy tex, occ c ptch pyr
strg, mod calc wi brn mrly
resdl; CHK (10%): gy-dk
gy wi f wh chky incl & thn
wh chky lamn, frm, brit,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, hi calc

7450-7500 MRLST
(85%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blky-blky ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod calc
wi brn mrly resdl; CHK
(15%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, tr vf pyr, hi calc

7500-7550 CHK (60%): lt
gy-med gy-dk gy wi f wh
chky incl, frm- mod fis, sb
blky-blky ctngs, occ-com
wh-tn bent, sl slty tex,
mod calc wi brn mrly
resdl; MRLST (40%): dk
gy wi, sb frm-fri, com pyr,
hi calc







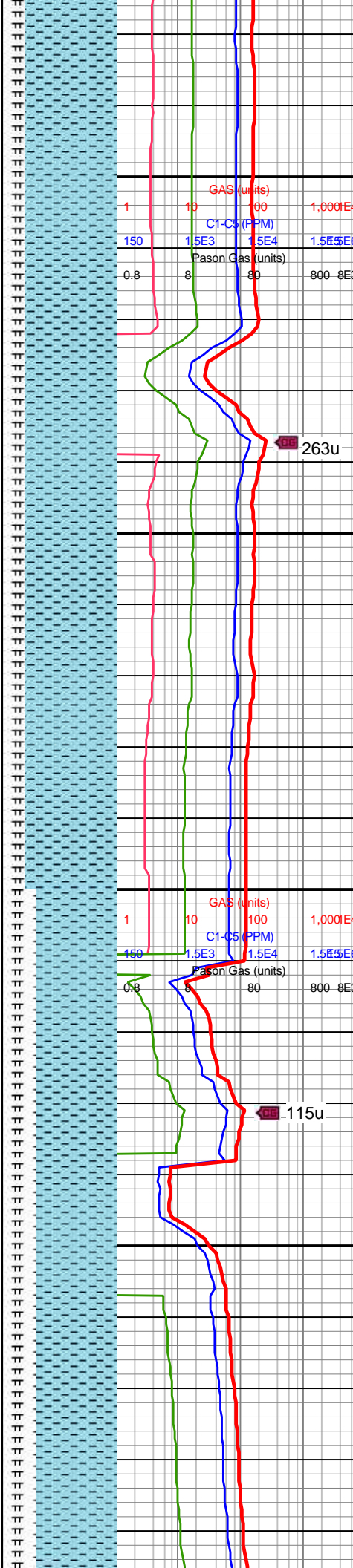
AZM: 3.06°
TVD: 7,148.56'
VS: -435.66'

WOB: 30klbs
RPM: 31
SPM: 200
SPP: 4,320psi

MD: 7,870'
INC: 71.24°
AZM: 1.83°
TVD: 7,181.75'
VS: -347.81'

MD: 7,966'
INC: 74°
AZM: 0.43°
TVD: 7,210.42'
VS: -256.23'

Fort Hayes
7,990' MD / 7,217'



gy wh f wh chky incl, sm
chky-sl slty-sl gt tex, f
lamn, tr vf pyr, hi calc;
MRLST (20%): dk gy, frm,
brit, l-mod fis sb ang-sb
blky ctngs, sl slty tex, occ
brn marly incl, rr vf pyr,
mod calc

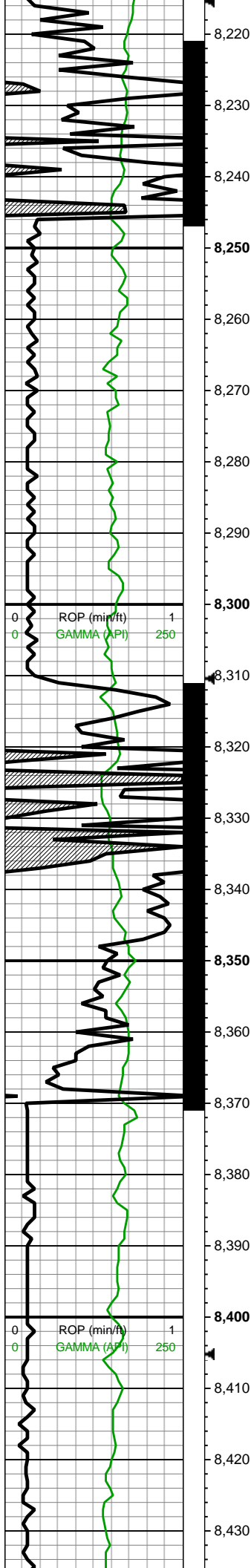
7800-7850 CHK (80%):
predy off wh-lt gy sft-sb
frm mod fis sb blky-blky
ctngs, occ frm-crunchy lt
gy wi f wh chky incl, sm
chky-sl slty-sl gt tex, f
lamn, tr vf pyr, hi calc;
MRLST (20%): dk gy, frm,
brit, l-mod fis sb ang-sb
blky ctngs, sl slty tex, rr vf
pyr, mod calc

7850-7900 CHK (80%):
predy off wh-lt gy sft-sb
frm mod fis sb blky-blky
ctngs, occ frm-crunchy lt
gy wi f wh chky incl, sm
chky-sl slty-sl gt tex, f
lamn, tr vf pyr, hi calc;
MRLST (20%): dk gy, frm,
brit, l-mod fis sb ang-sb
blky ctngs, sl slty tex, occ
brn marly incl, rr vf pyr,
mod calc

7900-7950 CHK (70%):
predy off wh-lt gy sft-sb
frm mod fis sb blky-blky
ctngs, frm lt gy wi f wh
chky incl, sm chky-sl
slty-sl gt tex, f lamn, tr vf
pyr, hi calc; MRLST
(30%): dk gy, frm, brit,
l-mod fis sb ang-sb blky
ctngs, sl slty tex, occ brn
marly incl, rr vf pyr, mod
calc

7950-8000 CHK (70%):
predy off wh-lt gy sft-sb
frm mod fis sb blky-blky
ctngs, occ frm-crunchy lt
gy wi f wh chky incl, sm
chky-sl slty-sl gt tex, f
lamn, tr vf pyr, hi calc;
MRLST (30%): dk gy, frm,
brit, l-mod fis sb ang-sb
blky ctngs, sl slty tex, occ
brn marly incl, rr vf pyr,





MW IN: 9.8
VIS IN: 46
MW OUT: 9.8
VIS OUT: 44

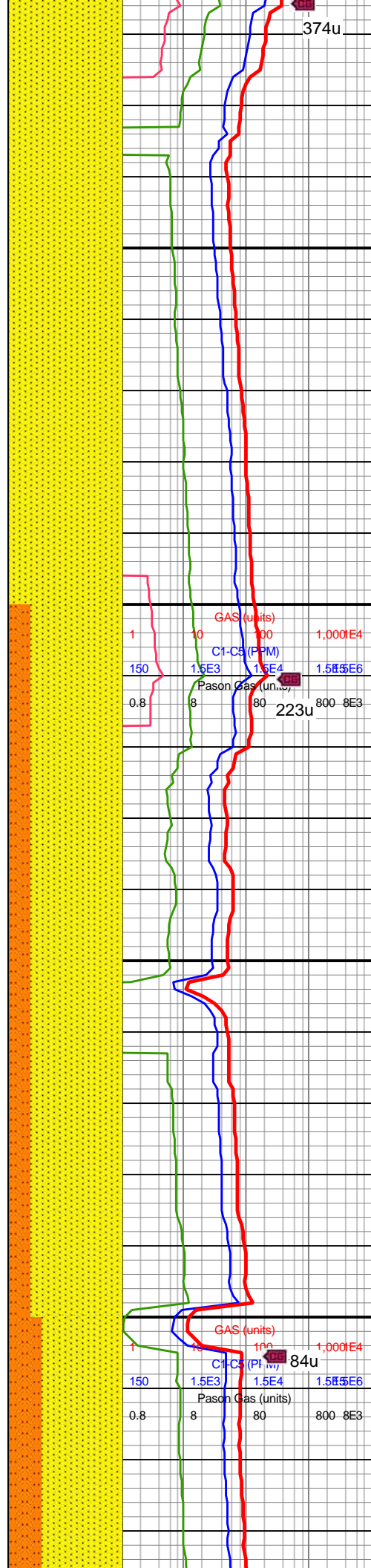
MD: 8,249'
INC: 85.34°
AZM: 1.66°
TVD: 7,260.03'
VS: 21.34'

MW IN: 9.8
VIS IN: 46
MW OUT: 9.8
VIS OUT: 44

MD: 8,344'
INC: 87.89°
AZM: 358.84°
TVD: 7,265.64'
VS: 116.16'

WOB: 27.8klbs
RPM: 50
SPM: 202
SPP: 4,290psi

MW IN: 9.8
VIS IN: 46
MW OUT: 9.8
VIS OUT: 44



374u

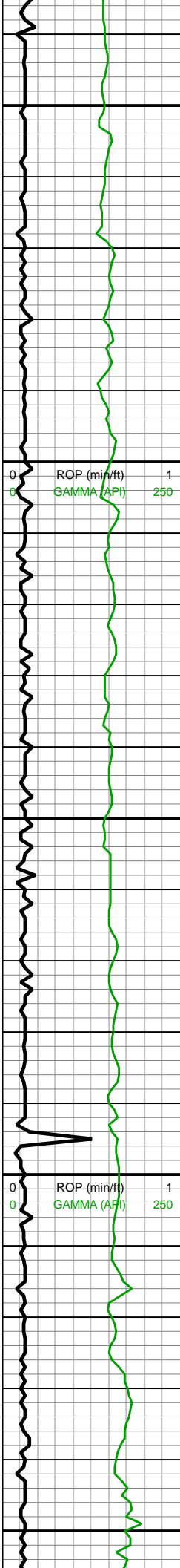
223u

84u

8200-8300 SST (100%):
off wh-lt gy sft-sb frm mtx
sup sst cons wi silc cmt,
occ gy-dk gy gr sup silc
sst, mod srtd vf-f sd grs,
silty ip, non calc-sl calc ip

8300-8400 SS (80%): lt
gy-med gy, occ dk gy,
p-mod srtd vf sd grdg to
slt ip, sb frm-frm predy
mtx sup arg ss, occ gr
sup silc cmt wi predy f sd
grs, non-l calc; SLTST
(20%): lt gy-med gy sb
frm-frm silc-arg sltst, occ
frm-brit silc sltst, non
calc-sl-l calc



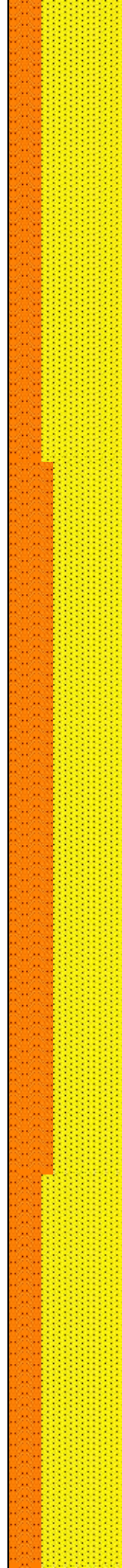


MD: 8,438'
INC: 91.19°
AZM: 357.7°
TVD: 7,266.39'
VS: 210.1'

MD: 8,533'
INC: 92.11°
AZM: 358.67°
TVD: 7,263.66'
VS: 305.01'

WOB: 36klbs
RPM: 61
SPM: 199
SPP: 4,390psi

MD: 8,627'
INC: 92.59°
AZM: 358.84°
TVD: 7,259.8'
VS: 398.91'

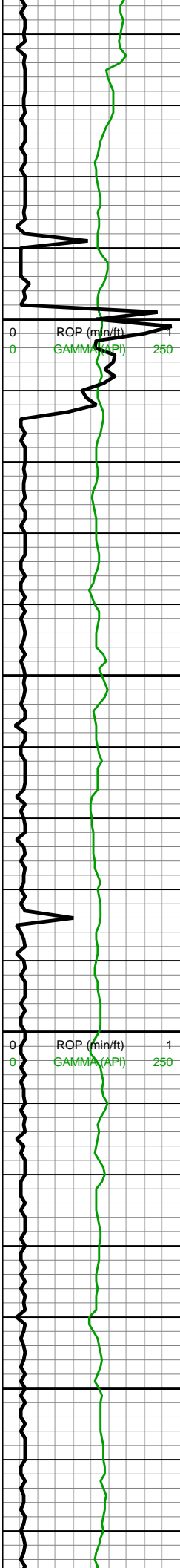


8400-8500 SST (70%):
off wh-lt gy sft-sb frm mtx
sup sst cons wi silc cmt,
occ gy-dk gy gr sup silc
sst, mod srted vf-f sd grs,
silty ip, non calc-sl calc ip;
SLTST (30%): gy-dk gy-v
dk gy, frm-brit, mod fis sb
ang-sb plty ctngs, sft-sb
frm arg sltst ip, non calc-l
calc



8500-8600 SLTST (40%):
dk gy, frm, blk, slty calc
txt, v calc; SS (60%) gy-lt
gy, frm-brit, rnd, mod srt,
calc cmt, sdy arg mtx sup
tex, lt calc



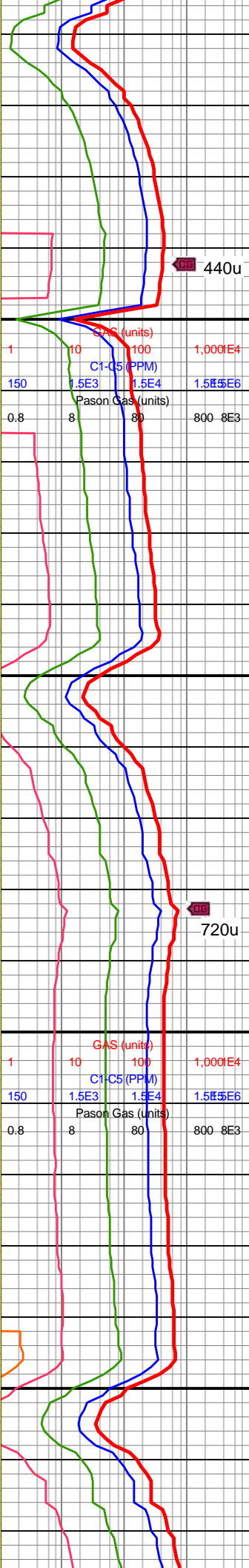
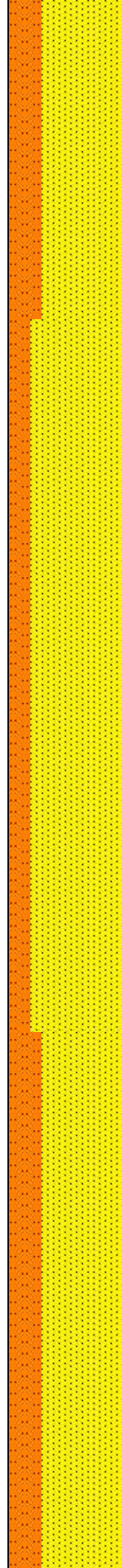


8,660
8,670
8,680
8,690
8,700
8,710
8,720
8,730
8,740
8,750
8,760
8,770
8,780
8,790
8,800
8,810
8,820
8,830
8,840
8,850
8,860
8,870

MD: 8,722'
INC: 90.79°
AZM: 358.49°
TVD: 7,257'
VS: 493.84'

WOB: 35.2klbs
RPM: 61
SPM: 200
SPP: 4,510psi

MD: 8,817'
INC: 90.53°
AZM: 357.7°
TVD: 7,255.91'
VS: 588.78'

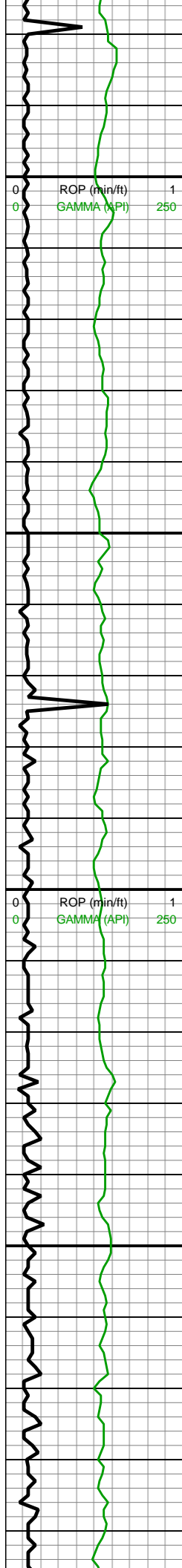


8600-8700 SS (70%):
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(30%) dk gy, frm, blk, slty
calc txt, v calc



8700-8800 SS (80%): lt
gy-med gy, occ dk gy,
p-mod srted vf sd grd to
slt ip, sb frm-frm predy
mtx sup arg ss, occ gr
sup silc cmt wi predy f sd
grs, non-l calc; SLTST
(20%): lt gy-med gy sb
frm-frm silc-arg sltst, occ
frm-brit silc sltst, non
calc-sl-l calc





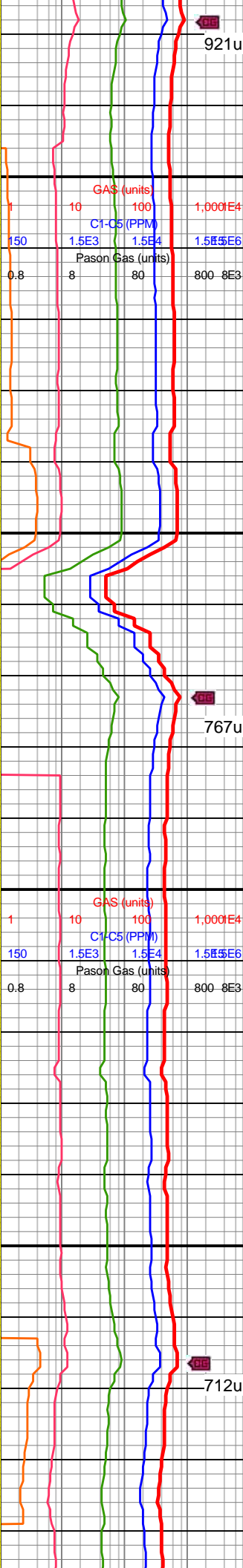
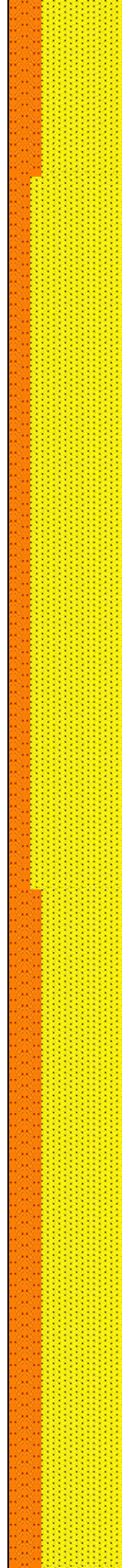
8,880
8,890
8,900
8,910
8,920
8,930
8,940
8,950
8,960
8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
9,050
9,060
9,070
9,080
9,090

MD: 8,911'
INC: 90.35°
AZM: 357°
TVD: 7,255.18'
VS: 682.67'

MW IN: 9.8
VIS IN: 46
MW OUT: 9.8+
VIS OUT: 44

WOB: 34klbs
RPM: 61
SPM: 202
SPP: 4,565psi

MD: 9,006'
INC: 90.13°
AZM: 357.17°
TVD: 7,254.79'
VS: 777.55'

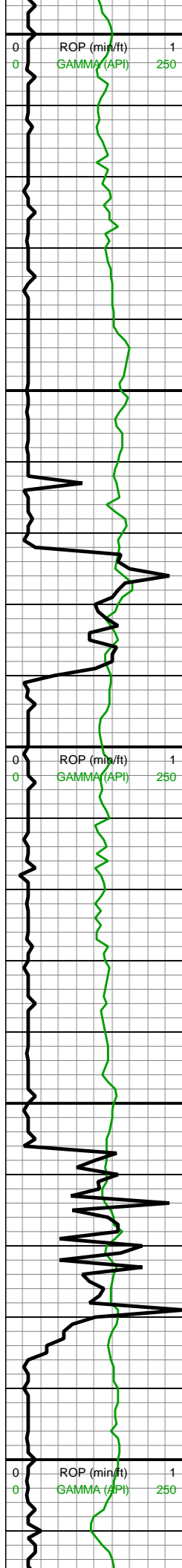


8800-8900 SS (70%):
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(30%) dk gy, frm, blk, slty
calc txt, v calc

8900-9000 SS (80%): lt
gy-med gy, occ dk gy,
p-mod srted vf sd grdg to
slt ip, sb frm-frm predy
mtx sup arg ss, occ gr
sup silc cmt wi predy f sd
grs, non-l calc; SLTST
(20%): lt gy-med gy sb
frm-frm silc-arg sltst, occ
frm-brit silc sltst, non
calc-sl-l calc

9000-9100 SS (70%):
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(20%): lt gy-med gy sb
frm-frm silc-arg sltst, occ
frm-brit silc sltst, non
calc-sl-l calc





9,100
9,110
9,120
9,130
9,140
9,150
9,160
9,170
9,180
9,190
9,200
9,210
9,220
9,230
9,240
9,250
9,260
9,270
9,280
9,290
9,300
9,310

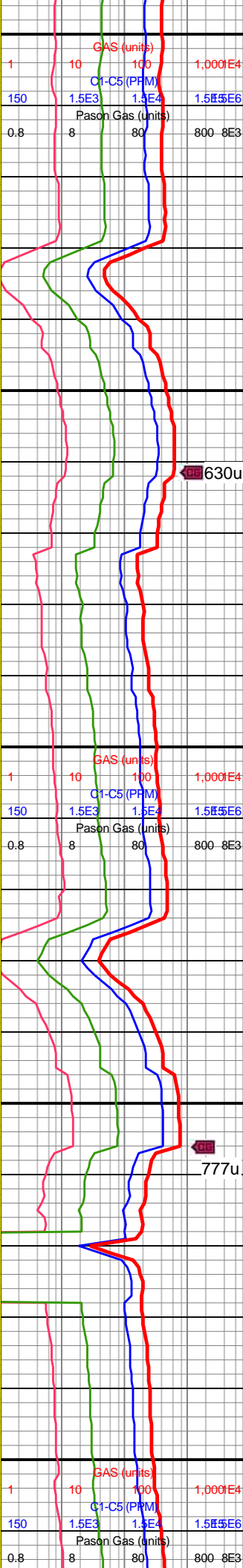
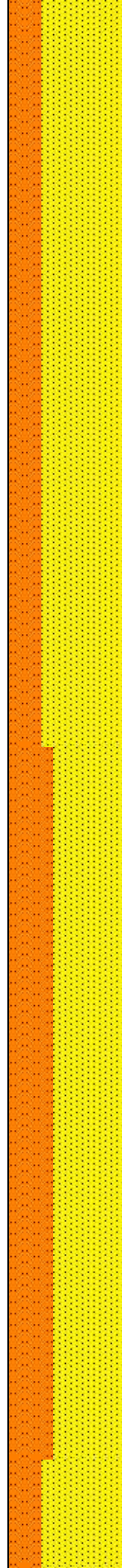
MD: 9,101'
INC: 89.78°
AZM: 356.82°
TVD: 7,254.86'
VS: 872.42'

MD: 9,196'
INC: 91.63°
AZM: 358.84°
TVD: 7,253.69'
VS: 967.33'

WOB: 29.2klbs
RPM: 61
SPM: 202
SPP: 4,480psi

MW IN: 9.8
VIS IN: 47
MW OUT: 9.8+
VIS OUT: 44

MD: 9,290'
INC: 91.23°
AZM: 2.1°
TVD: 7,251.35'
VS: 1,061.29'

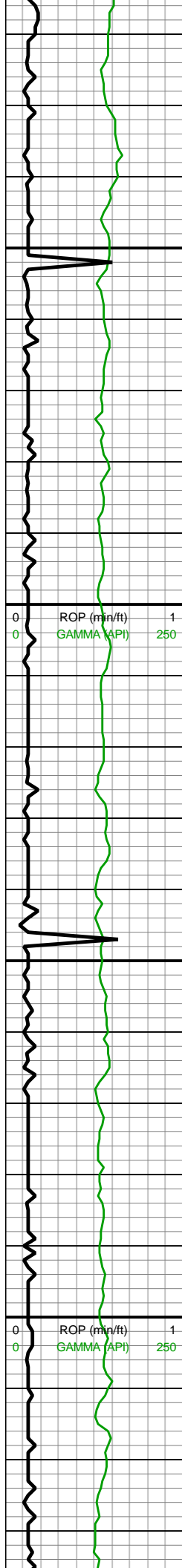


(30%) dk gy, frm, blkly, slty
calc txt, v calc

9100-9200 SS (70%):
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(30%) dk gy, frm, blkly, slty
calc txt, v calc

9200-9300 SS (60%)
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(40%): dk gy, frm, blkly,
slty calc txt, v calc



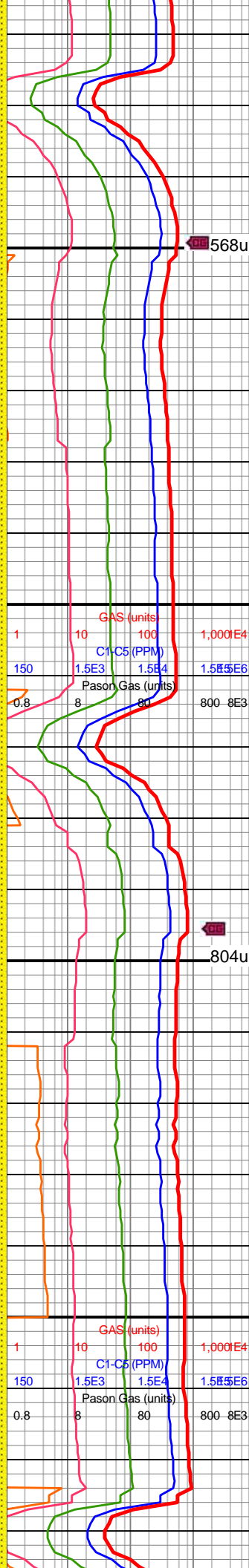
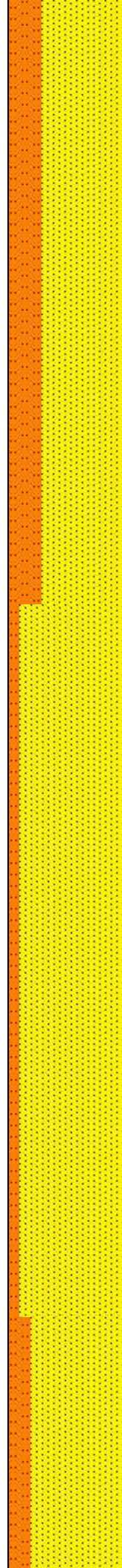


9,320
9,330
9,340
9,350
9,360
9,370
9,380
9,390
9,400
9,410
9,420
9,430
9,440
9,450
9,460
9,470
9,480
9,490
9,500
9,510
9,520
9,530

MD: 9,384'
INC: 91.01°
AZM: 2.62°
TVD: 7,249.51'
VS: 1,155.19'

WOB: 32.5klbs
RPM: 61
SPM: 202
SPP: 4,517psi

MD: 9,480'
INC: 90.75°
AZM: 2.62°
TVD: 7,248.03'
VS: 1,251.08'



9300-9400 SS (70%):
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(30%) dk gy, frm, blk, slty
calc txt, v calc

9400-9500 SS (90%):
gy-lt gy, frm-brit, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(10%) med gy-dk gy, frm,
blk, slty calc txt, v calc



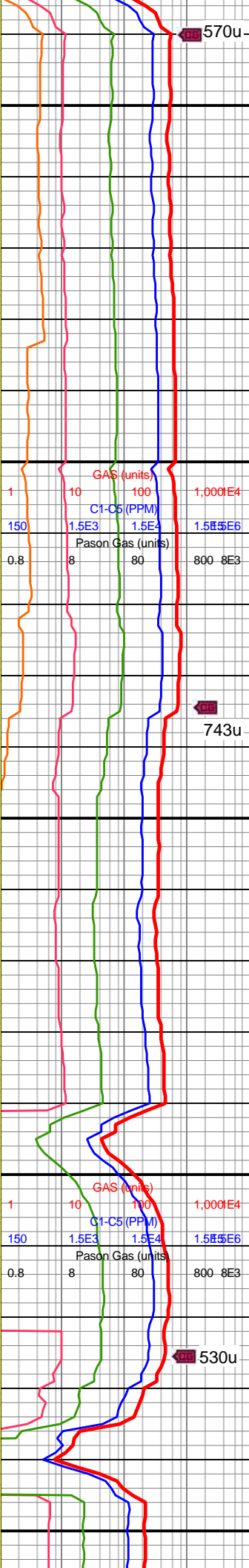
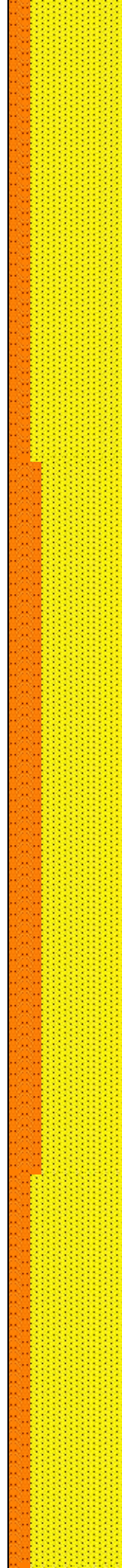


MD: 9,574'
INC: 90.7°
AZM: 2.54°
TVD: 7,246.84'
VS: 1,344.98'

WOB: 30.8klbs
RPM: 61
SPM: 199
SPP: 4,540psi

MD: 9,669'
INC: 90.4°
AZM: 2.89°
TVD: 7,245.93'
VS: 1,439.87'

MW IN: 9.8+
VIS IN: 47
MW OUT: 9.9
VIS OUT: 44



9500-9600 SS (80%):
gy-lt gy, sl frm-brit, rnd,
mod srt, calc cmt, sdy arg
mtx sup tex, lt calc;
SLTST (20%) med gy-dk
gy, frm, blk, slty calc txt, v
calc



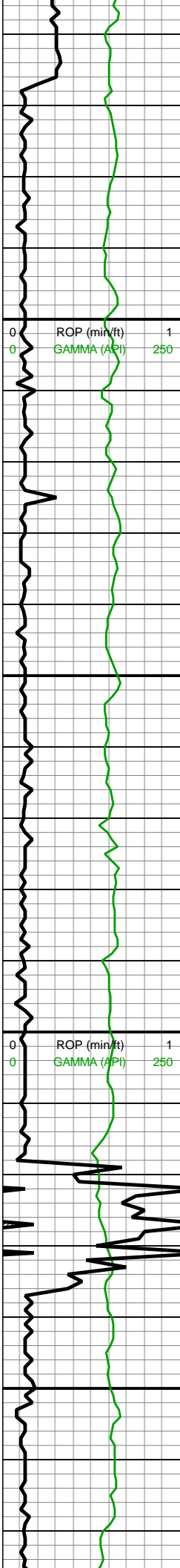
9600-9700 SS (80%):
med gy-lt gy, sl frm-brit,
rnd, mod srt, calc cmt,
sdy arg mtx sup tex, lt
calc; SLTST (20%) med
gy-dk gy, frm, blk, slty
calc txt, v calc



570u

743u

530u

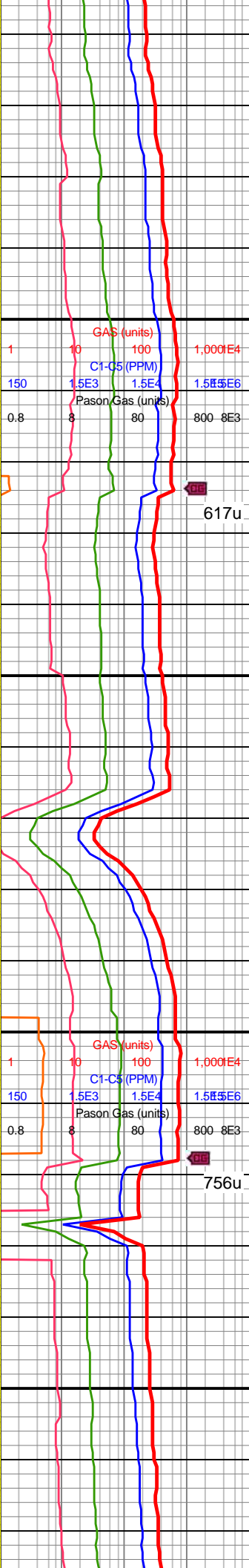
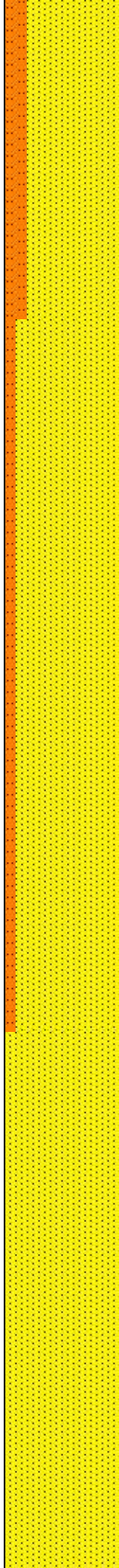


MD: 9,764'
INC: 89.03°
AZM: 0.69°
TVD: 7,246.4'
VS: 1,534.81'

WOB: 32.4klbs
RPM: 61
SPM: 200
SPP: 4,595psi

MD: 9,858'
INC: 90.13°
AZM: 1.48°
TVD: 7,247.09'
VS: 1,628.79'

MD: 9,952'
INC: 90.48°
AZM: 359.37°
TVD: 7,246.59'
VS: 1,722.78'

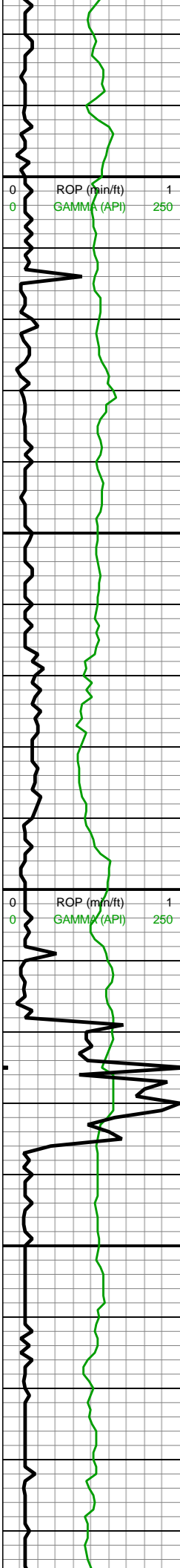


9700-9800 SS (80%):
gy-lt gy, sl frm-brit, rnd,
mod srt, calc cmt, sdy arg
mtx sup tex, lt calc;
SLTST (20%) med gy-dk
gy, frm, blk, slty calc txt, v
calc



9800-9900 SS (90%):
gy-lt gy, sl frm-brit, v f
grn-sl med grn, rnd, mod
srt, calc cmt, sdy arg mtx
sup tex, lt calc; SLTST
(10%) med gy-dk gy, frm,
blk, slty calc txt, v calc



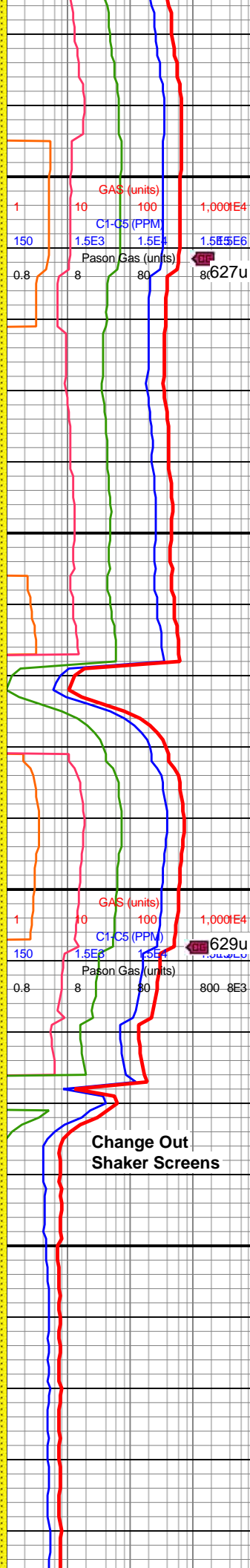


WOB: 36.4klbs
RPM: 61
SPM: 200
SPP: 4,660psi

MD: 10,047'
INC: 89.25°
AZM: 356.91°
TVD: 7,246.82'
VS: 1,817.72'

MW IN: 9.9+
VIS IN: 46
MW OUT: 9.9+
VIS OUT: 43

MD: 10,142'
INC: 90.4°
AZM: 358.58°
TVD: 7,247.11'
VS: 1,934.6'



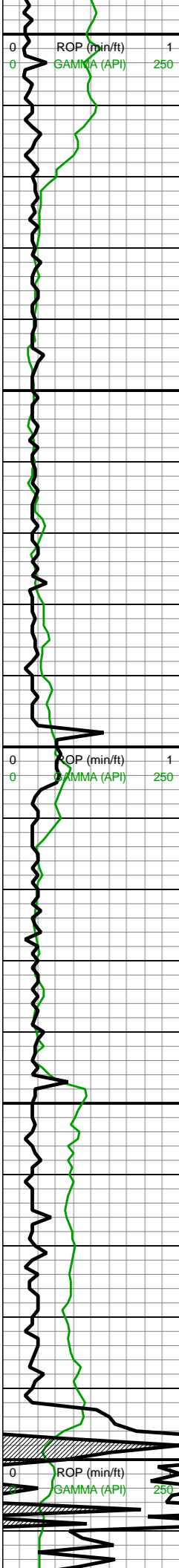
9900-10000 SST (100%):
off wh-lt gy-gy, mod srtd
vf-f sd grs, predy sft-sb
frm mtx sup sst clus
cons wi arg cmt, occ
frm-sl fri gr sup clus cons
wi silc cmt, non calc

10000-10100 SST
(100%): off wh-lt gy-gy,
mod srtd vf-f sd grs,
predy sft-sb frm mtx sup
sst clus cons wi arg cmt,
occ frm-sl fri gr sup clus
cons wi silc cmt, non calc

10100-10200 SST
(100%): off wh-lt
gy-gy-gy-gyshbn-dk gy,
p-mod srtd vf-f sd grs,
predy frm-hd sli fri gr sup
sst clus cons wi silc cmt
wi com wh sd grs, com
off wh-lt gy-gy sft-sb frm v
arg sst. predv non calc. sl



Change Out
Shaker Screens



WOB: 27klbs
RPM: 61
SPM: 203
SPP: 4,721psi

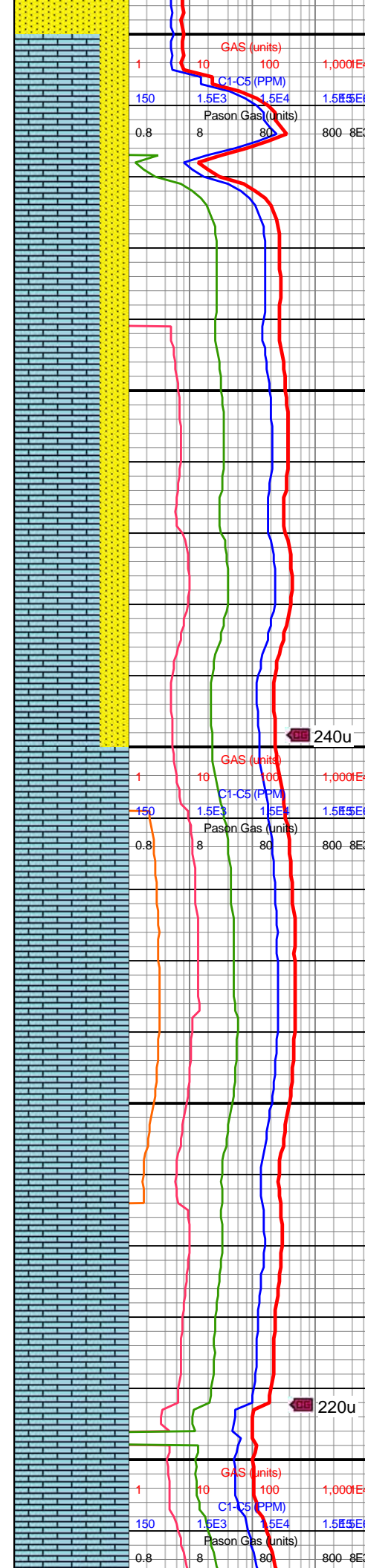
MD: 10,236'
INC: 90.53°
AZM: 358.76°
TVD: 7,246.34'
VS: 2,028.55'

MW IN: 9.9
VIS IN: 46
MW OUT: 9.9
VIS OUT: 44

MD: 10,331'
INC: 91.06°
AZM: 357.88°
TVD: 7,245.03'
VS: 2,123.46'

MW IN: 9.9
VIS IN: 46
MW OUT: 9.9
VIS OUT: 44

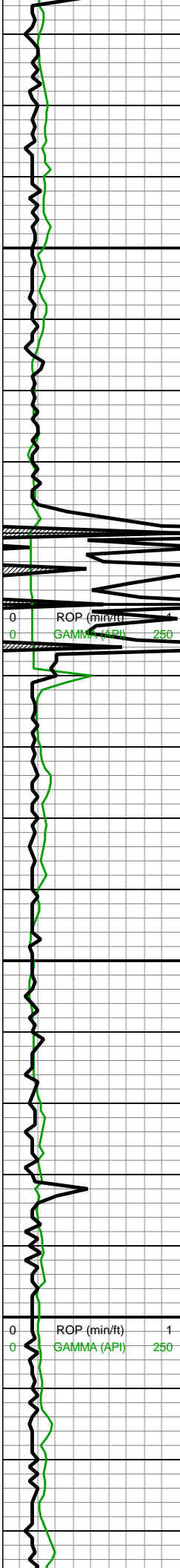
WOB: 47.4klbs
RPM: 0
SPM: 201
SPP: 4,211psi



calc ip

10200-10300 LS (75%):
med gry-tn wht ip, hd-brit,
v ang-blky, cryptoxln tex,
hi calc vugy ip; SS (25%):
dk gy, ply srt w cons vf-f
gr, brit-fri, blky-sub rd,
sandy tex, arg-silc cmt

10300-10400 LS (100%):
tn, lt brn, mot crm, mntr dk
brn, plty-sb blky ctngs,
crpxln-sl micxln, frm-v
frm, mudst, rthy-wxy lstr,
mntr dk gy SH, hi calc, tr
pp mic pyr



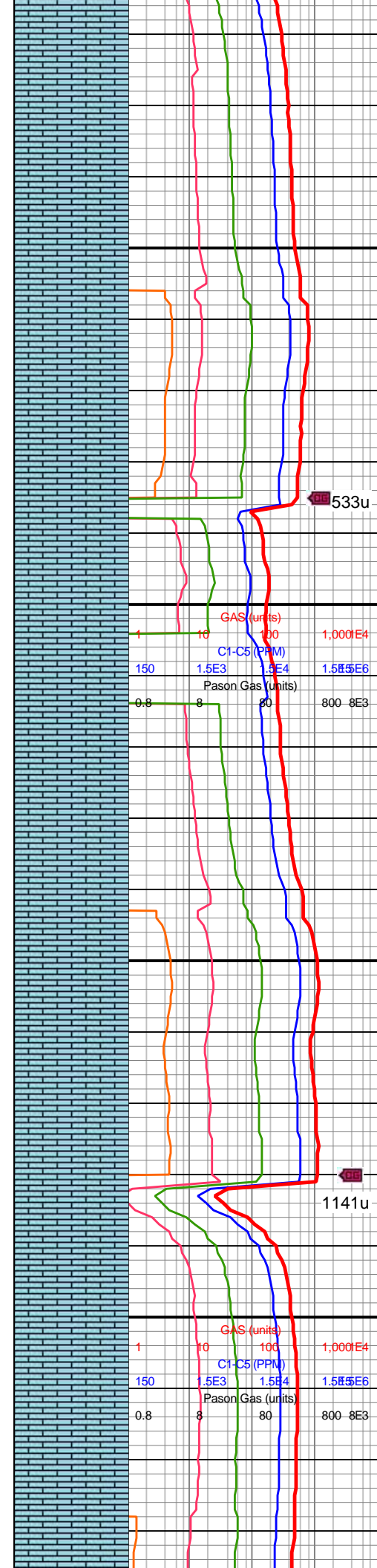
MD: 10,425'
INC: 90.97°
AZM: 0.43°
TVD: 7,243.36'
VS: 2,217.41'

MD: 10,520'
INC: 88.11°
AZM: 0.51°
TVD: 7,244.12'
VS: 2,312.4'

MW IN: 9.9
VIS IN: 46
MW OUT: 9.9
VIS OUT: 44

WOB: 39klbs
RPM: 61
SPM: 200
SPP: 4,850psi

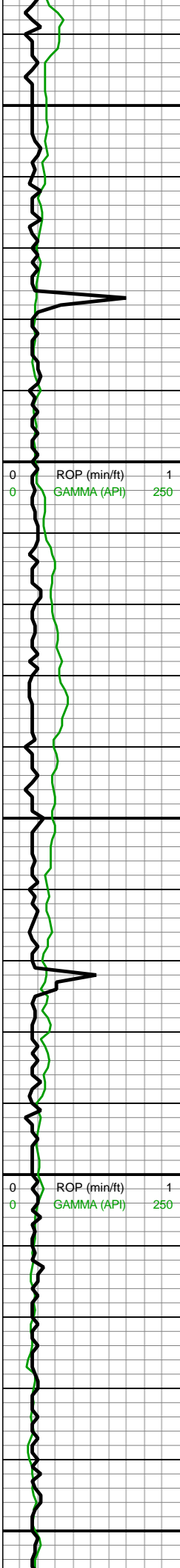
MD: 10,615'
INC: 87.85°
AZM: 0.25°
TVD: 7,247.47'
VS: 2,407.34'



10400-10500 LS (100%):
off wh-crm-lt tn- lt
gyshbn-gyshbn-brn, tr dk
gy, frm-hd, crpxln mudst,
wxy lstr wi rr dk gy ctngs
wi rthy lstr, tr-rr vf pyr, hi
calc, tr SLTST

10500-10600 LS (100%):
tn, lt brn, mot crm, mnr dk
brn, plty-sb blkx ctngs,
crpxln-sl micxln, frm-v
frm, mudst, rthy-wxy lstr,
rr dk gy SH, hi calc, tr pp
mic pyr





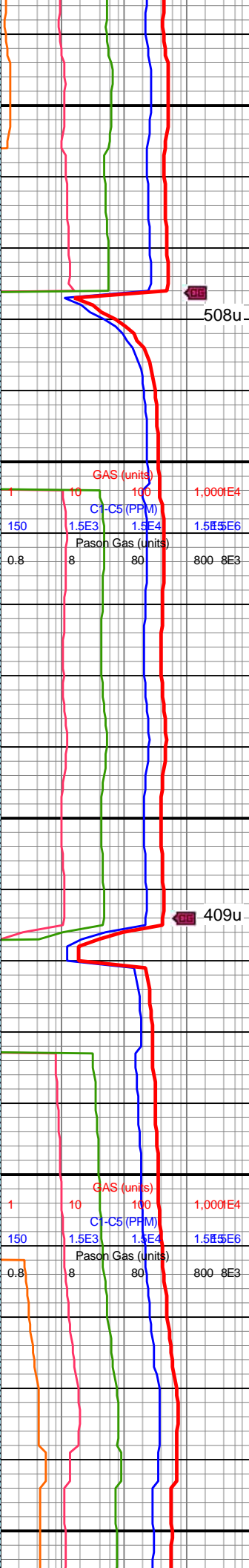
10,640
10,650
10,660
10,670
10,680
10,690
10,700
10,710
10,720
10,730
10,740
10,750
10,760
10,770
10,780
10,790
10,800
10,810
10,820
10,830
10,840
10,850

MD: 10,709'
INC: 88.07°
AZM: 0.78°
TVD: 7,250.82'
VS: 2,501.28'

MW IN: 10
VIS IN: 45
MW OUT: 10.0
VIS OUT: 44

WOB: 39.4klbs
RPM: 61
SPM: 200
SPP: 4,929psi

MD: 10,805'
INC: 87.63°
AZM: 1.04°
TVD: 7,254.42'
VS: 2,597.21'

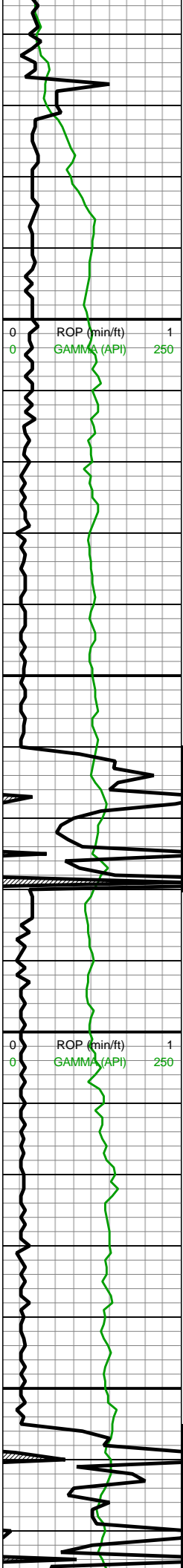


10600-10700 LS (100%):
lt gy-med gy-tn, rr v dk gy,
frm-hd, crpxln mudst, wxy
lstr wi rr dk gy ctngs wi
rthy lstr, tr-rr vf pyr, hi calc



10700-10800 LS (100%):
off wh-lt tn-crm-lt gy, occ
brn, crpxln-micxln
mudst-wkst ip, frm-hrd,
sb blkyl-blky, plty ip, v calc,
rr vf pyr, hi calc





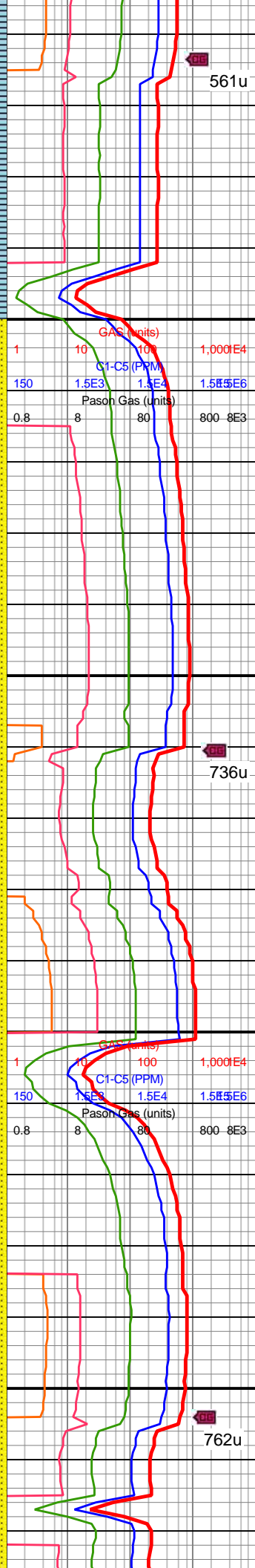
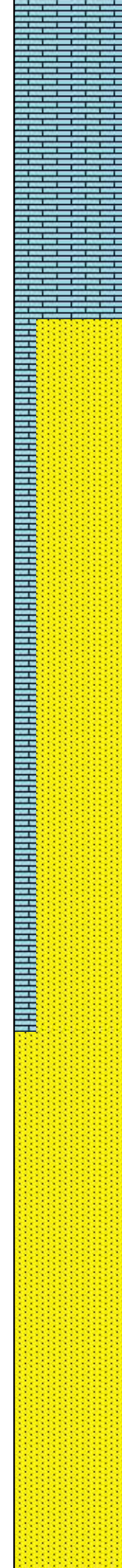
10,860
10,870
10,880
10,890
10,900
10,910
10,920
10,930
10,940
10,950
10,960
10,970
10,980
10,990
11,000
11,010
11,020
11,030
11,040
11,050
11,060
11,070

MD: 10,899'
INC: 86.4°
AZM: 0.51°
TVD: 7,259.31'
VS: 2,691.08'

MD: 10,994'
INC: 88.15°
AZM: 0.25°
TVD: 7,263.83'
VS: 2,785.97'

WOB: 31.4klbs
RPM: 61
SPM: 202
SPP: 5.031psi

MW IN: 10
VIS IN: 45
MW OUT: 10.0
VIS OUT: 44

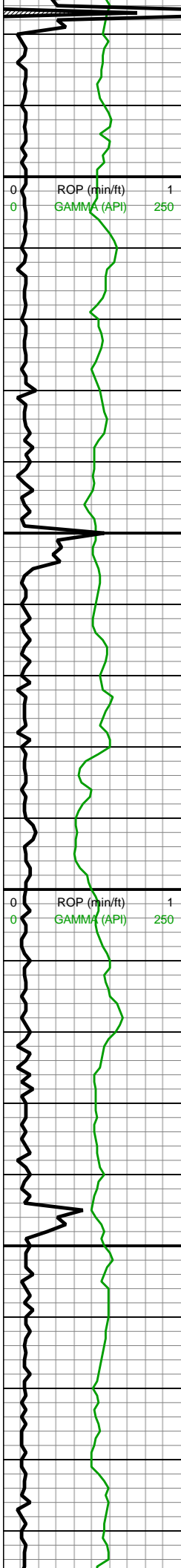


10800-10900 LS (100%):
lt gy-tn-lt brn, frm, brit,
ang ctngs, crpxln
mudst-mict, occ wkst, tr vf
pyr, hi calc

10900-11000 SST
(80%)dk gy-lt gy, ply srt, w
cons vf-f gr, frm-fri,
blky-sub rnd, sdy tex, silc
cmt, com intgr yel o; LS
(20%) offwht-med gry-tn,
hd, v ang, cryptoxln &
wackest tex, hi calc

11000-11100 SST





MD: 11,088'
INC: 90.79°
AZM: 1.39°
TVD: 7,264.7'
VS: 2,879.95'

MW IN: 10
VIS IN: 45
MW OUT: 10.0
VIS OUT: 43

MD: 11,183'
INC: 91.45°
AZM: 1.92°
TVD: 7,262.84'
VS: 2,974.92'

WOB: 36.2klbs
RPM: 61
SPM: 202
SPP: 5,173psi

MD: 11,278'
INC: 91.27°
AZM: 1.74°
TVD: 7,260.59'
VS: 3,069.87'

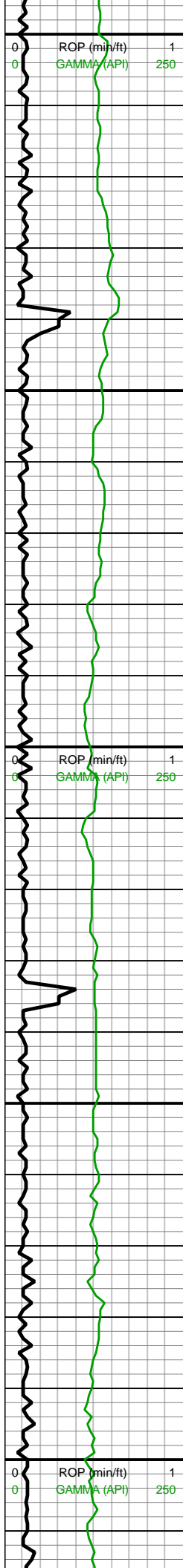


(100%): lt gy-gy p-mod
srtd mtx sup arg ss clus
wi vf-f sd grs, com mod
srtd f gr frm-hd-sli fri
gy-gyshbn-dk gy gr sup
ss clus cons wi silc cmt,
non calc-sl calc ip

11100-11200 SST
(100%): off wh-lt gy-gy,
sft-sb frm-frm-sli fri, mod
srtd vf-f sd grs, predy mtx
sup sst clus cons wi arg
cmt, occ frm gr sup clus
cons wi silc cmt, non calc

11200-11300 SST
(100%): pred dk gy wi f
sb rd qtz sd gr incl, sme lt
gy-lt gy brn, p srtd vf-f sd
grs, pred sb rd-rd sli fri gr
sup ss clus cons wi silc
& arg cmt, rr c pyr, non
calc, sl calc ip, tr-scat sh



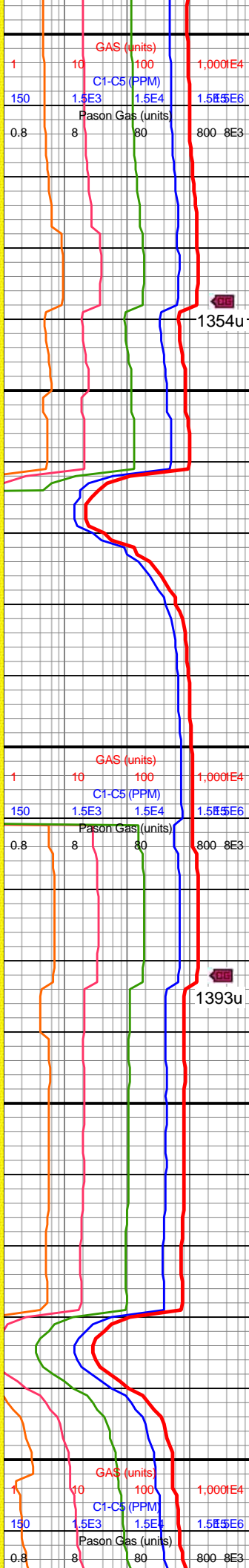
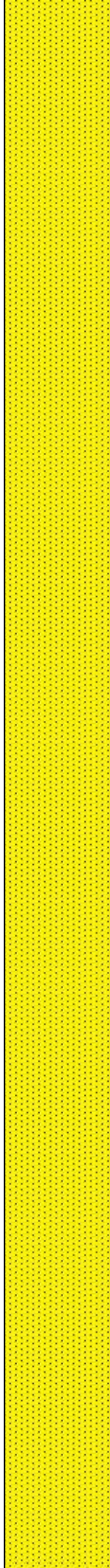


11,300
11,310
11,320
11,330
11,340
11,350
11,360
11,370
11,380
11,390
11,400
11,410
11,420
11,430
11,440
11,450
11,460
11,470
11,480
11,490
11,500
11,510

MD: 11,373'
INC: 91.54°
AZM: 1.83°
TVD: 7,258.26'
VS: 3,164.82'

WOB: 36.5klbs
RPM: 61
SPM: 200
SPP: 5,085psi

MD: 11,467'
INC: 91.8°
AZM: 1.66°
TVD: 7,255.52'
VS: 3,258.76'



1354u

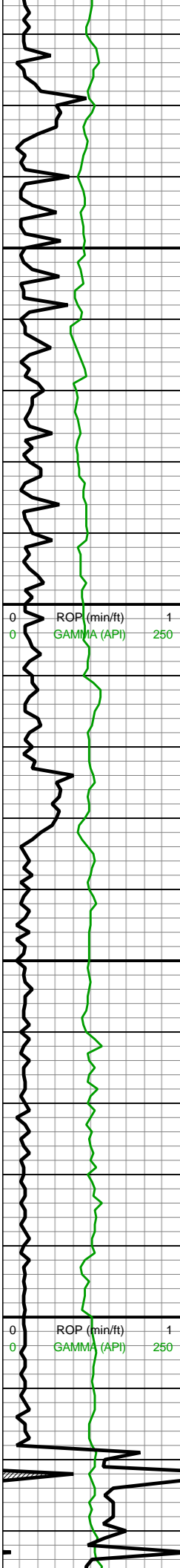
1393u

frags

11300-11400 SST
(100%): dk gy-dk gy brn
gr-mtx sup clus, occ lt
gy-gy mtx sup shy ss,
pred dk gy wi f sb rd qtz
sd gr incl, p srtd vf-f sd
grs, pred sb rd-rd sli fri gr
sup ss clus cons wi silc
& arg cmt, uncons ip, non
calc

11400-11500 SST
(100%): off wh-lt gy-gy,
mod srtd vf-f sd grs,
predy sft-sb frm mtx sup
sst clus cons wi arg cmt,
occ frm-sl fri gr sup clus
cons wi silc cmt, non calc





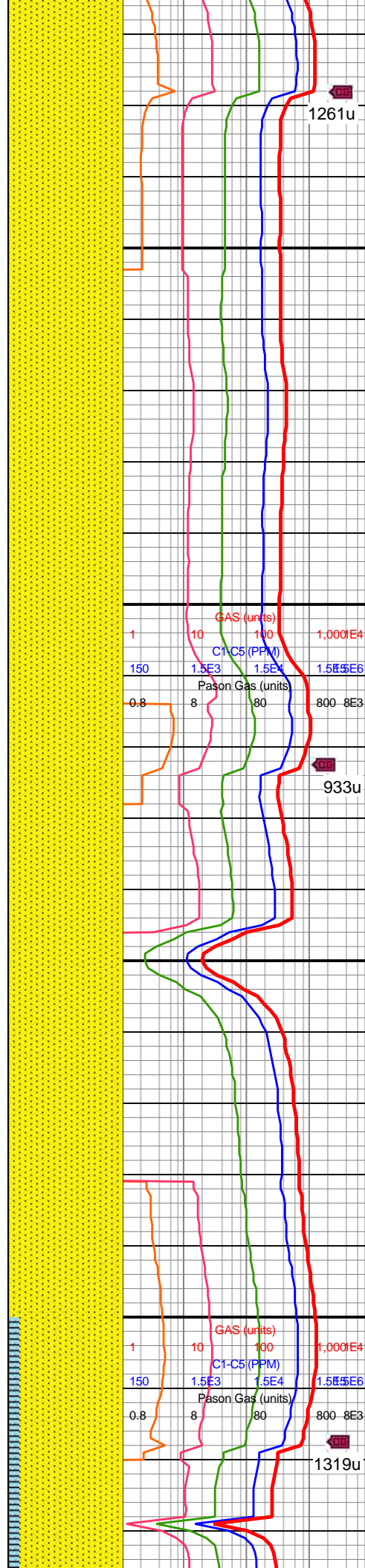
MW IN: 10
VIS IN: 45
MW OUT: 10.0
VIS OUT: 43

MD: 11,562'
INC: 90.26°
AZM: 0.95°
TVD: 7,253.81'
VS: 3,353.73'

WOB: 33.4klbs
RPM: 61
SPM: 202
SPP: 5,210psi

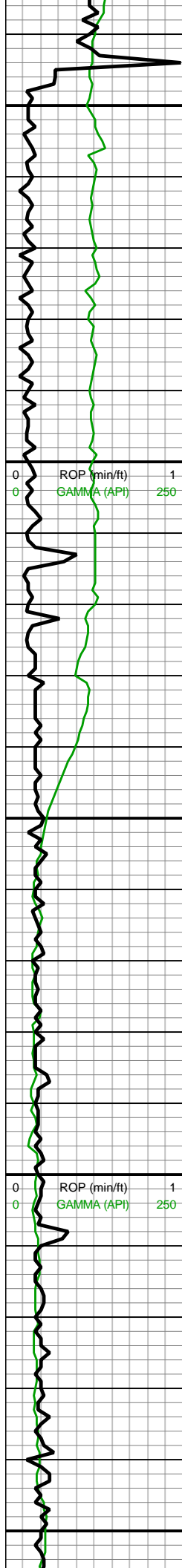
MD: 11,657'
INC: 88.24°
AZM: 359.72°
TVD: 7,255.06'
VS: 3,448.72'

MW IN: 10
VIS IN: 45
MW OUT: 10.0
VIS OUT: 43



11500-11600 SST
(100%): predy brn, sme
bnshgy-mot med gy-lt gy,
pred shy ss cons wi p
srted sd grs, vf-f grs, frm-sl
fri, gr sup ss clus cons wi
pred arg cmt, silc ip, no
calc, tr scat sh

11600-11700 SST
(100%): pred dk gy-dk gy
brn wi f sb rd qtz sd gr
incl, fri-sli fri gr sup shy
ss clus cons wi arg & silc
cmt, occ lt gy-gy mtx sup
shy ss cons wi arg cmt, p
srted vf-f sd grs, com
uncons sd, non calc

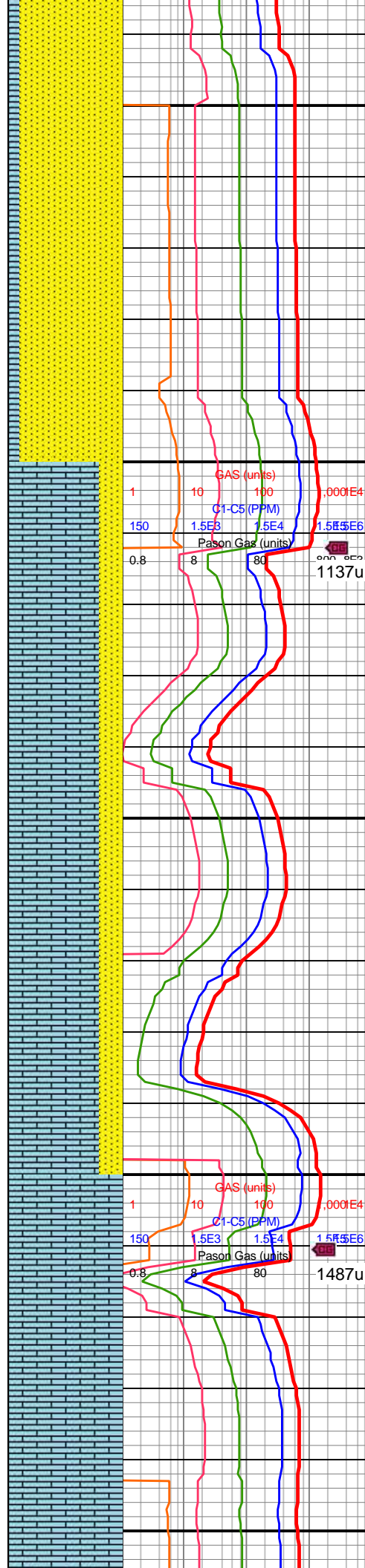


MD: 11,751'
INC: 91.8°
AZM: 0.95°
TVD: 7,255.02'
VS: 3,542.7'

WOB: 31.2klbs
RPM: 61
SPM: 202
SPP: 5,163psi

MD: 11,845'
INC: 91.32°
AZM: 0.34°
TVD: 7,252.46'
VS: 3,636.66'

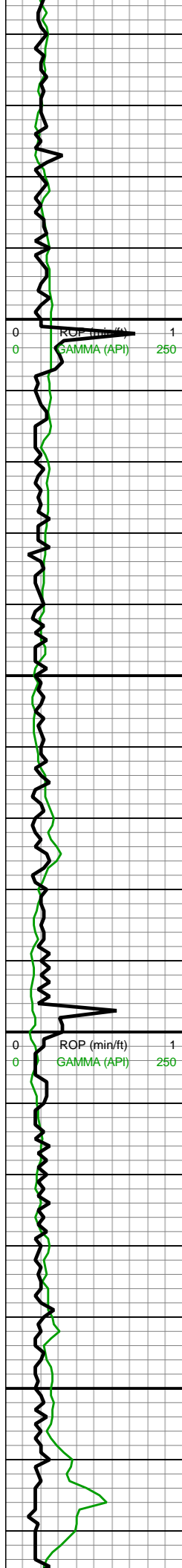
MD: 11,939'
INC: 91.41°
AZM: 0.25°
TVD: 7,250.22'
VS: 3,730.64'



11700-11800 SST (90%):
pred brn-dk brn, com wht
specs, hrd, brit, occ fri, sb
blky, ang-sb ang mod-w
srtd vf sd grs, occ qtz cls,
silc cmt, pred gr sup,
sme mtx sup, non calc,
occ sltst frags; LS (10%):
pred tn-med brn, occ gy, v
frm-hrd, blky, sme plty,
micxln- cryptoxln, wkst, tr
arg, sacc tex

11800-11900 LS (80%):
tan-lt gy brn-gy brn, crpxln
mudst, tr vf pyr, hi calc;
SST (20%): pred dk gy wi
f sb rd qtz sd gr incl, sme
lt gy-lt gy brn, p srtd vf-f sd
grs, pred sb rd-rd sli fri gr
sup ss clus cons wi silc
& arg cmt, rr c pyr, non
calc, sl calc ip



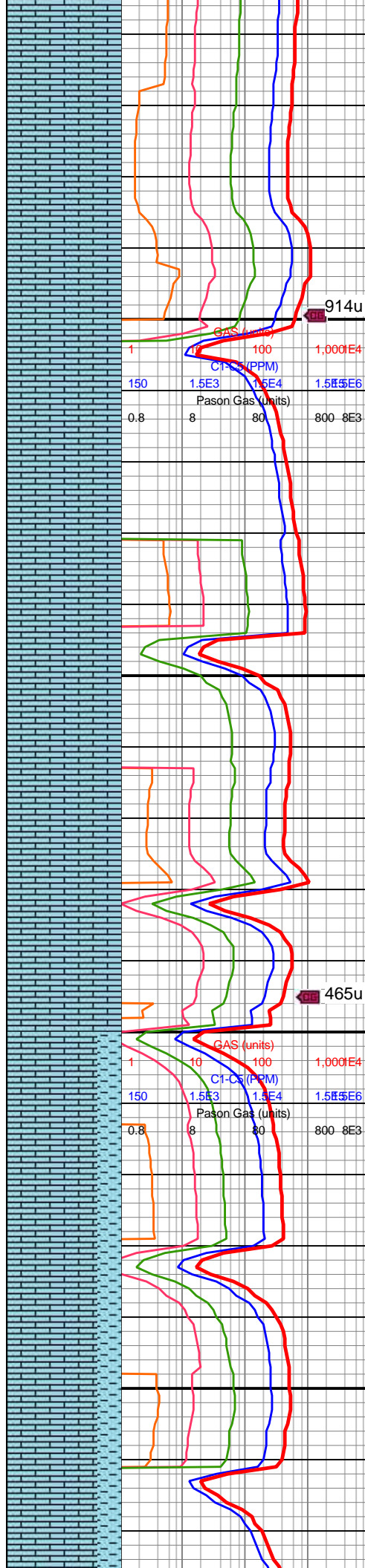


MW IN: 10
VIS IN: 43
MW OUT: 10.0
VIS OUT: 42

WOB: 40.1klbs
RPM: 61
SPM: 202
SPP: 5,190psi

MD: 12,034'
INC: 92.42°
AZM: 0.51°
TVD: 7,247.05'
VS: 3,825.58'

MD: 12,129'
INC: 93.12°
AZM: 0.25°
TVD: 7,242.46'
VS: 3,920.47'

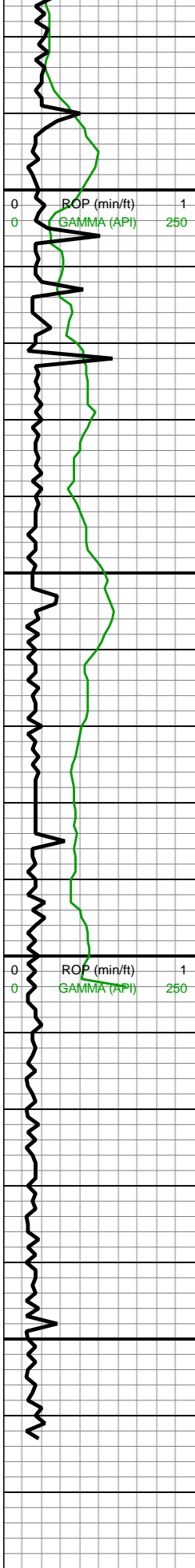


11900-12000 LS (100%):
lt gyshbn-med
gy-gyshbn, rr v dk gy,
frm-hd, crpxln mudst, wxy
lstr wi rr dk gy ctngs wi
rthy lstr, tr-rr vf pyr, hi calc

12000-12100 LS (100%):
off wh-tn-lt gyshbn, rr dk
gy calc intbds, frm-hd,
crpxln mudst, wxy lstr, tr
vf-u f pyr, hi calc

12100-12200 LS (80%):
tn-lt brn, frm, brit, ang





12,180
12,190
12,200
12,210
12,220
12,230
12,240
12,250
12,260
12,270
12,280
12,290
12,300
12,310
12,320
12,330
12,340
12,350
12,360
12,370
12,380

WOB: 28.4klbs
RPM: 61
SPM: 204
SPP: 5,120psi

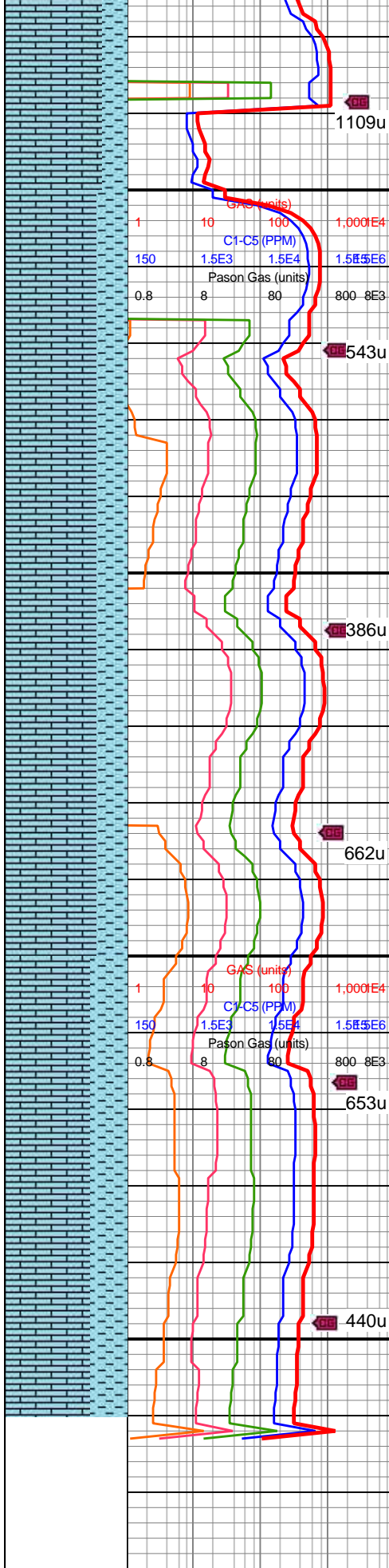
MD: 12,224'
INC: 94°
AZM: 0.43°
TVD: 7,236.56'
VS: 4,015.28'

MW IN: 10.1
VIS IN: 43
MW OUT: 10.1
VIS OUT: 42

MD: 12,299'
INC: 94.31°
AZM: 0.6°
TVD: 7,231.13'
VS: 4,090.09'

Bit Projection
MD: 12,360'
INC: 94.31°
AZM: 0.6°
TVD: 7,226.54'
VS: 4,150.91'

TD @ 12,360'
16:15hrs
7/17/18



ctngs, crpxln mudst, occ
wkst, tr vf pyr, hi calc;
CHK (20%): lt gy, sft-sb
frm-frm-brit mod fis sb
blky-blky ctngs, occ-com
wh chky incl, sm chky-sl
silty-sl gt tex, tr vf pyr, hi
calc

12200-12300 LS (75%):
off wh-tn-lt gyshbn, lt gy-rr
dk gy calc intbds ip,
frm-hd, crpxln mudst, wxy
lstr, tr vf-u f pyr, hi calc;
CHK (25%): v lt gy-lt gy,
med gy ip, sft-sb frm-frm
mod fis sb blky-blky
ctngs, sm chky-sl silty arg
tex, tr c pyr strg, hi calc

12300-12360 LS (70%):
offwht-crm-tn, rr v dk gy,
frm-hd, crpxln mudst, wxy
lstr wi rr dk gy ctngs wi
rthy lstr, tr-rr vf pyr, hi calc;
CHK (30%): lt gy, gyshbn,
mot lt brn-wht, sme
offwht, frm-sl sft, blky-tab,
chky tex, tr imbd/pp mic
pyr, v calc

