



Scale: 5" / 100'
Measured Depth Log

Well Name Ruegge 3N-4H-N165

Location Sec. 4 T1N R65W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05123465710000

AFE # 16190990

Geographic Region Rockies

Field Wattenberg

Spud Date 7/11/2018

Drilling Completed 7/13/2018

Surface Coordinates Lat/Long: 40.075269/-104.670668
SHL: Sec: 4 Twp: 1N 65W
Footage: 711 FSL 2166 FWL

Bottom Hole Coordinates Proposed BHL: Sec: 4 Twp: 1N 65W
Footages: 460 FFNL 1375 FFELL

Ground Elevation 4,915'

K.B. Elevation 4,938'

Logged Interval 6,500' **To** 12,160'

Total Depth 12,160'

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

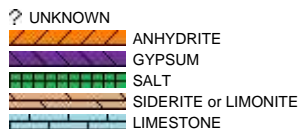
Loggers: Nicholas Watkins / Matthew Cox

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-533

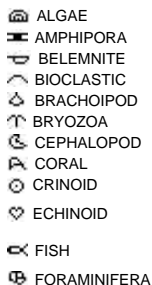
Contractor: Empirica, Reservoir Group
6360 West Sam Houston Pkwy N
Houston, Texas, 77041

Rock Types



Accessories

Fossils



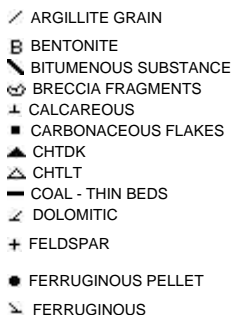
F FOSSIL



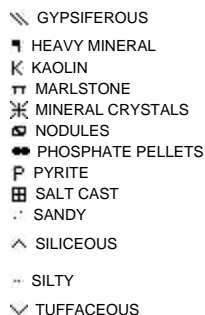
Minerals



— ARGILLACEOUS



— 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

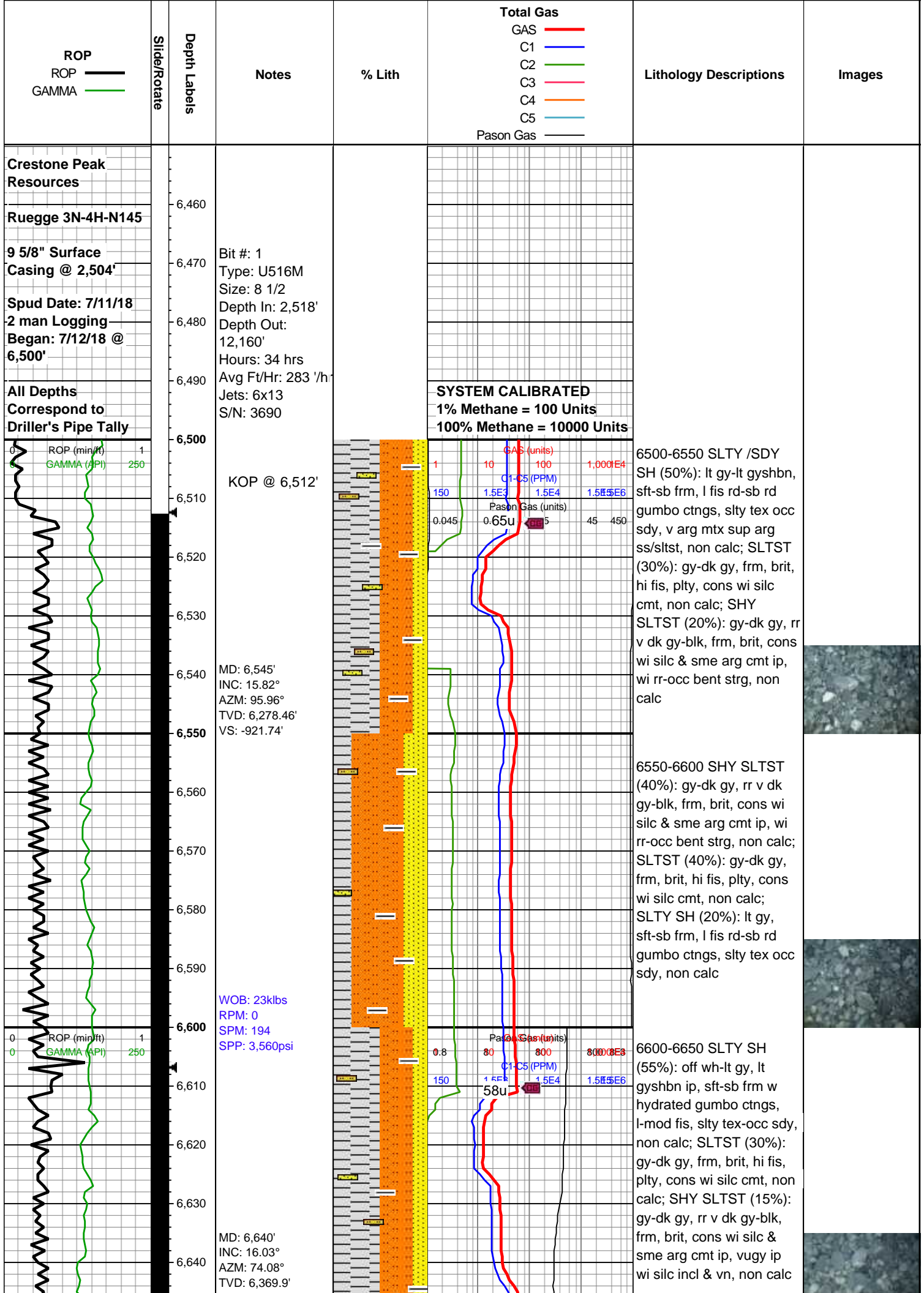
Rounding

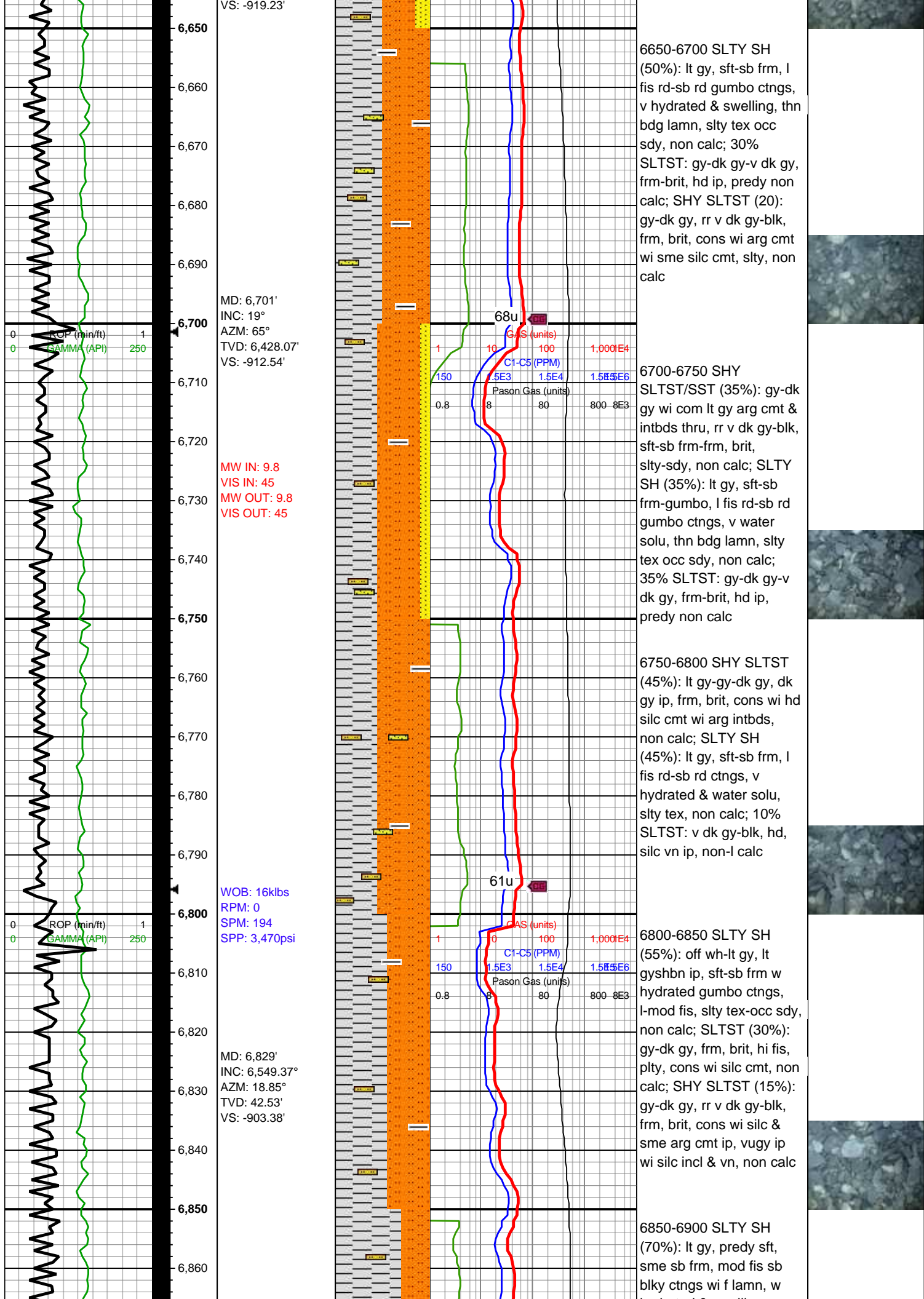
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

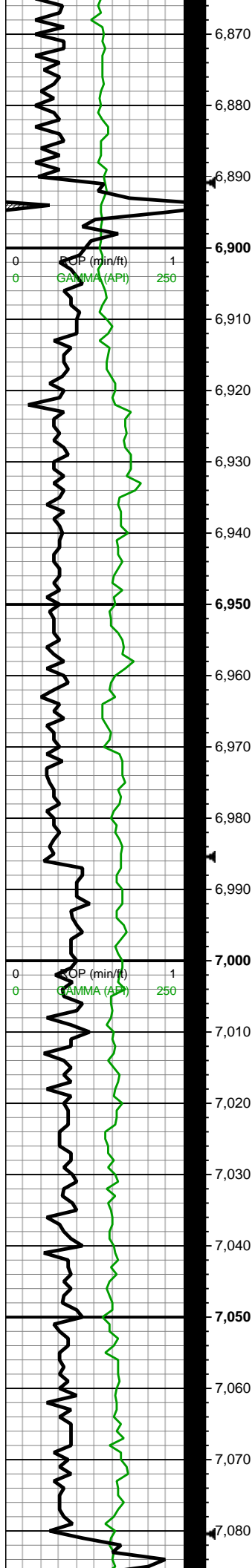
Textures

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

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





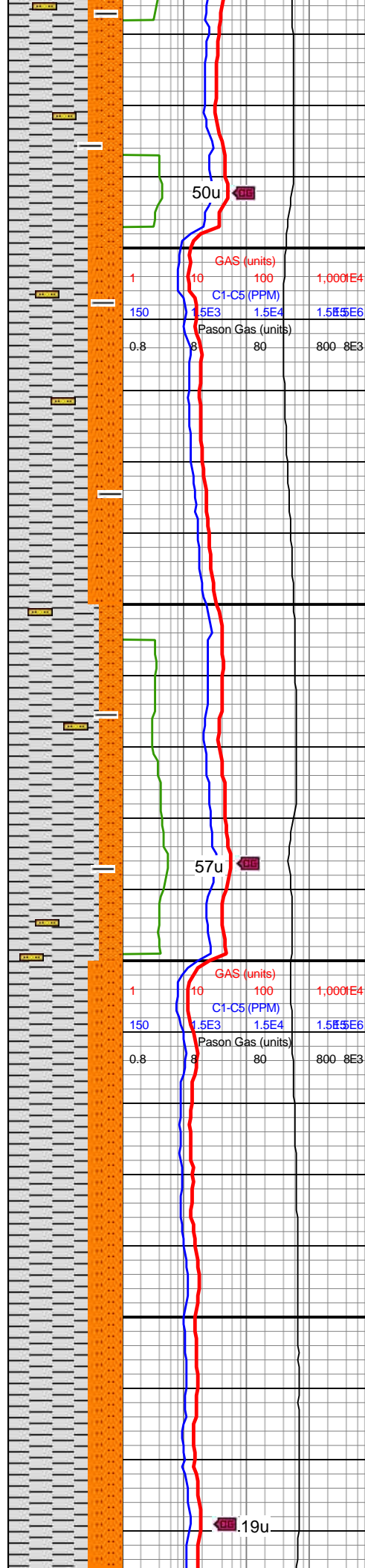


MD: 6,924'
INC: 6,638.6°
AZM: 21.49°
TVD: 26.79'
VS: -876.51'

WOB: 13klbs
RPM: 0
SPM: 170
SPP: 2,830psi

MD: 7,019'
INC: 6,725.41°
AZM: 26.37°
TVD: 22.93'
VS: -841.53'

MW IN: 9.75
VIS IN: 46
MW OUT: 9.8
VIS OUT: 45



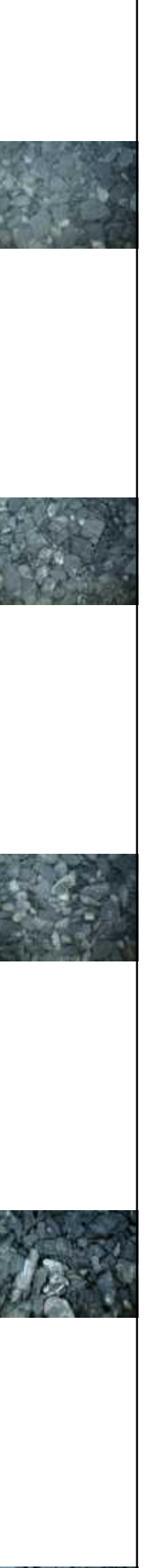
hydrated & swelling, sm arg-sl slty tex, non calc; SLTST (20%): gy-dk gy, occ v dk gy-blk, frm, brit, occ wvy vugy lt gy silc vn ip, non-l calc; SHY SLTST (10%): gy-dk gy, rr v dk gy, frm, brit, cons wi hd silc cmt, sl arg, non calc;

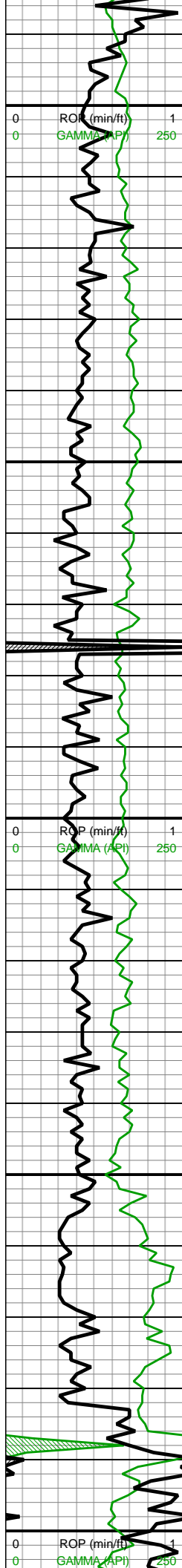
6900-6950 SLTY SH (70%): lt gy, predy sft, sme sb frm, mod fis w hydrated sb blkly swelling ctngs, sm arg-sl slty tex, non calc, wi decr cly grd to shy sltst; SHY SLTST (20%): gy-dk gy, rr v dk gy, frm, brit, cons wi hd silc cmt, sl arg, non calc; SLTST (10%): v dk gy-blk, hd, lt gy silc vn ip, non-l calc

6950-7000 SLTY SH (80%): lt gy, predy sft, sme sb frm, mod fis sb blkly ctngs wi f lamn, w hydrated & swelling, sm arg-sl slty tex, non calc; SLTST (20%): gy-dk gy, occ v dk gy-blk, frm, brit, occ wvy vugy lt gy silc vn ip, non calc

7000-7050 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-v dk gy, frm-brit, hd ip, predy non calc

7050-7100 SLTY SH (70%): lt gy, sft-sb frm, l fis rd-sb rd gumbo ctngs, v hydrated & swelling, thn





MD: 7,113'
INC: 6,807.18°
AZM: 32.65°
TVD: 20.73'
VS: -798.54'

MW IN: 9.8
VIS IN: 47
MW OUT: 9.8
VIS OUT: 45

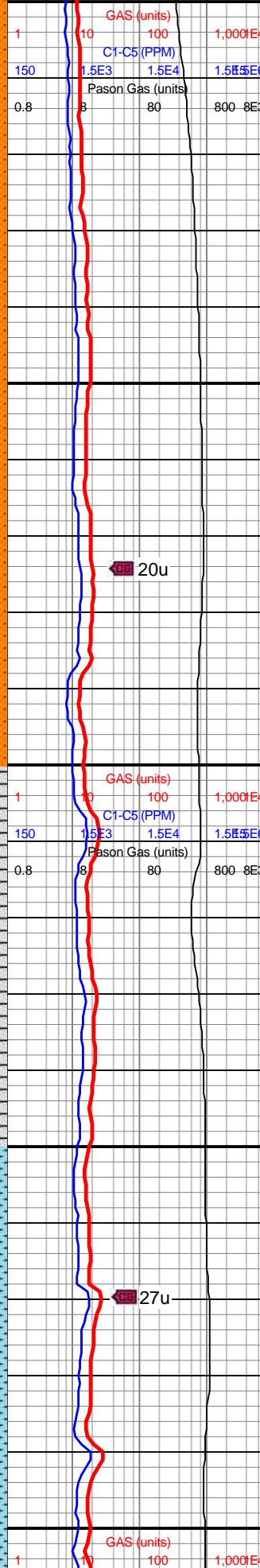
WOB: 10.4klbs
RPM: 0
SPM: 140
SPP: 2,225psi

MD: 7,208'
INC: 6,883.18°
AZM: 40.96°
TVD: 22.49'
VS: -745.71'

Sharon Springs
7,252' MD /
6,915' TVD

Niobrara
7,288' MD /
6,940' TVD

A Marl
7,297' MD /



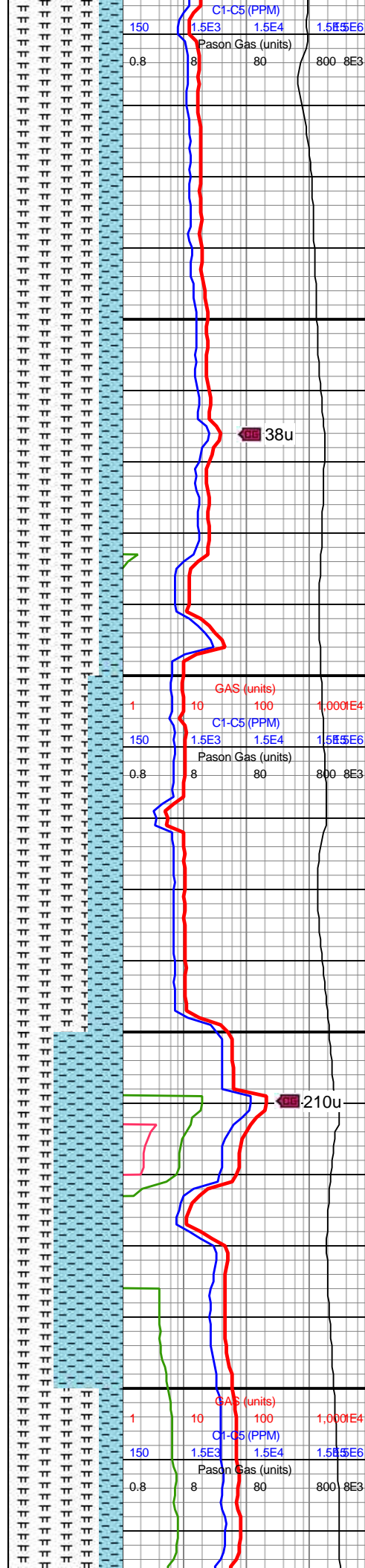
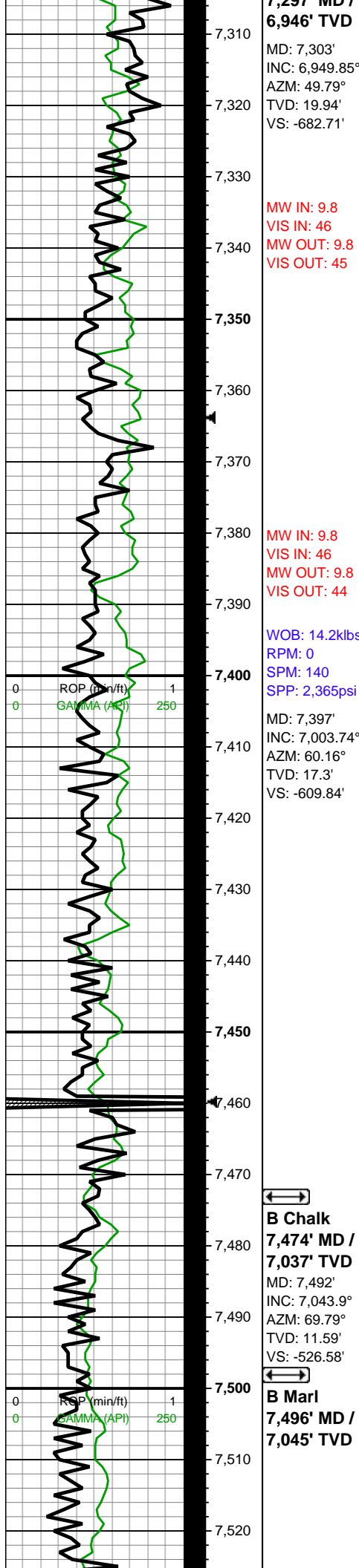
hydrated & swelling, thin
bdg lamn, slty tex occ
sdy, non calc; 30%
SLTST: gy-dk gy, frm-brit,
hd ip, predy non calc

7100-7150 SLTY SH
(60%): lt gy, predy sft,
sme sb frm, mod fis w
hydrated sb blk 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 blk 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

7200-7250 SLTY SH
(100%): gy-gyshbn wi sp
blk lith incl, frm, brit, sb
frm ip, med-hi fis blk-tab
ctngs wi wxy lstr, slty arg
tex, tr tn bent, mod calc

7250-7300 MRLST
(80%): dk gyshbn-v dk gy,
sb frm-frm, mod fis sb
blk ctns, arg-sl slty-sl
sdy tex, occ c ptch pyr
strg, mod calc wi brn mrly
resdl; CHK (20%): gy-dk
gy wi f wh chky incl & thn
wh chky lamn, frm, brit,
l-mod fis sb rd-sb blk
ctngs, sl slty tex, hi calc



7300-7350 MRLST
(80%): 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 (20%): 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

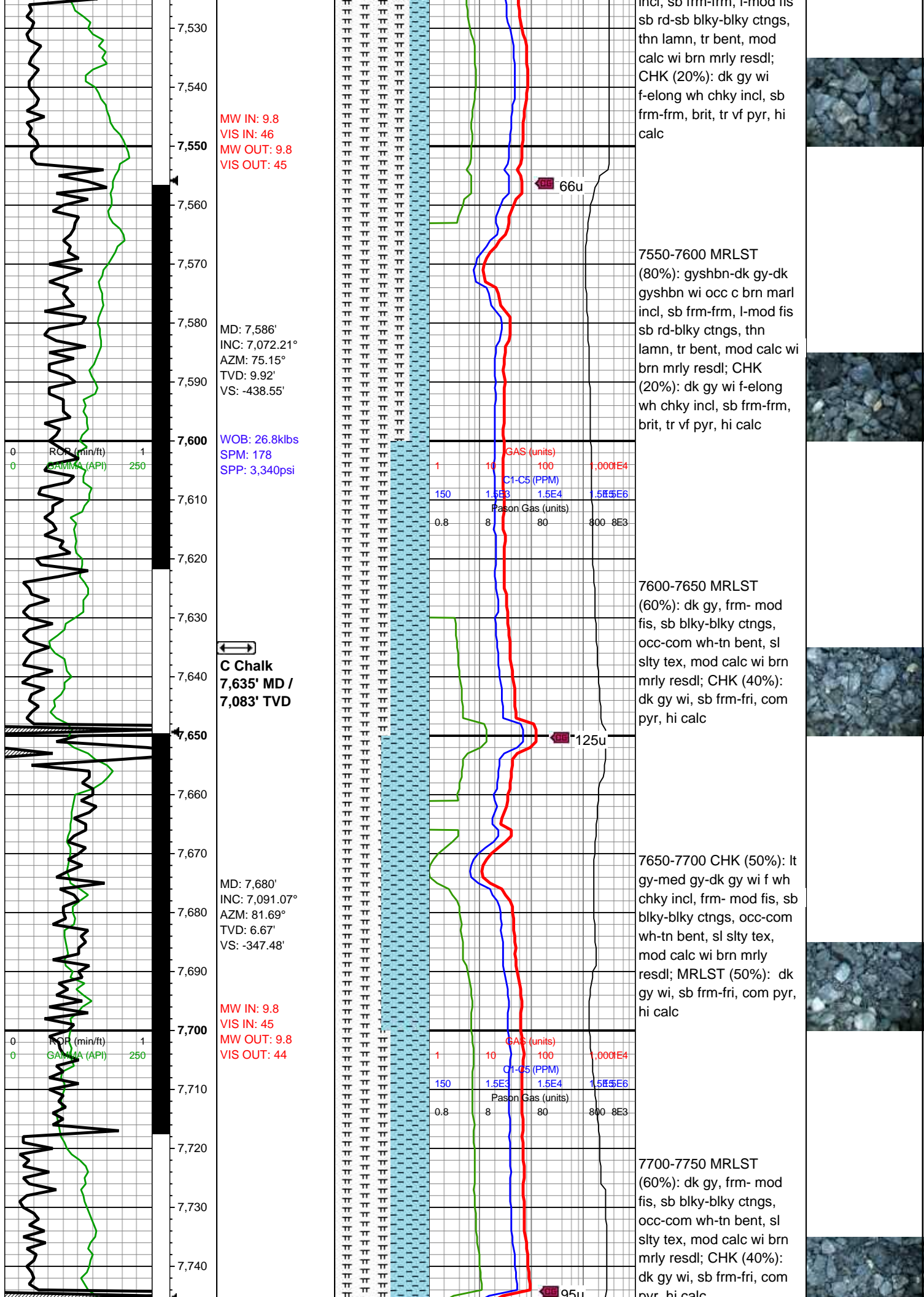
7350-7400 MRLST
(80%): dk gyshbn-v dk gy,
sb frm-frm, mod fis sb
blky ctngs, arg-sl slty-sl
sdy tex, occ c ptch pyr
strg, mod calc wi brn mrly
resdl; CHK (20%): gy-dk
gy wi f wh chky incl & thn
wh chky lamn, frm, brit,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, hi calc

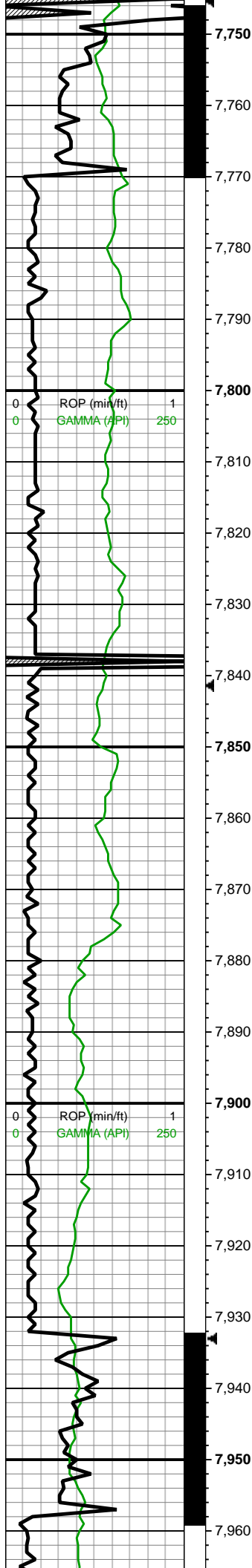
7400-7450 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blky-blky ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod calc
wi brn mrly resdl; CHK
(30%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, tr vf pyr, hi calc

7450-7500 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

7500-7550 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis







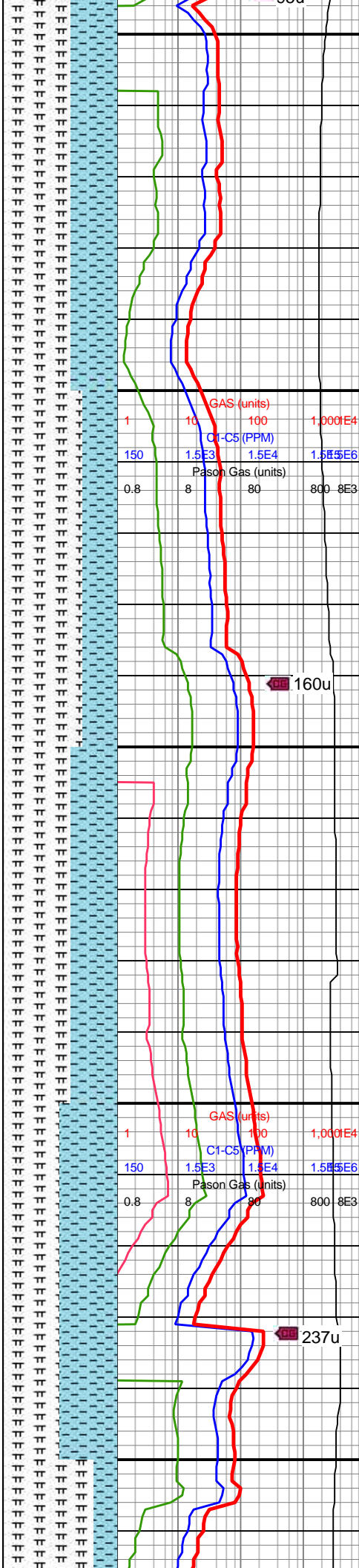
MD: 7,775'
INC: 7,100.53°
AZM: 86.88°
TVD: 2.62'
VS: -253.32'

WOB: 34.7klbs
RPM: 50
SPM: 198
SPP: 4,200psi

MD: 7,870'
INC: 7,106.87°
AZM: 85.47°
TVD: 2.97'
VS: -158.65'

MINDEPTH 7/13/18

MD: 7,965'
INC: 7,112.37°
AZM: 87.88°
TVD: 3.12'
VS: -158.65'



7750-7800 MRLST
(60%): dk gy, frm- mod
fis, sb blkylky ctngs,
occ-com wh-tn bent, slty
tex, mod calc wi brn mrlly
resdl; CHK (40%): dk gy
wi, sb frm-fri, com pyr, hi
calc

7800-7850 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blkylky ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod calc
wi brn mrlly resdl; CHK
(30%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, tr vf pyr, hi calc

7850-7900 MRLST
(60%): dk gy, frm- mod
fis, sb blkylky ctngs,
occ-com wh-tn bent, slty
tex, mod calc wi brn mrlly
resdl; CHK (40%): dk gy
wi, sb frm-fri, com pyr, hi
calc

7900-7950 CHK (50%): lt
gy-med gy-dk gy wi f wh
chky incl, frm- mod fis, sb
blkylky ctngs, occ-com
wh-tn bent, sl slty tex,
mod calc wi brn mrlly
resdl; MRLST (50%): dk
gy wi, sb frm-fri, com pyr,
hi calc



AZIM: 87.89°
TVD: 1.22'
VS: -63.88'

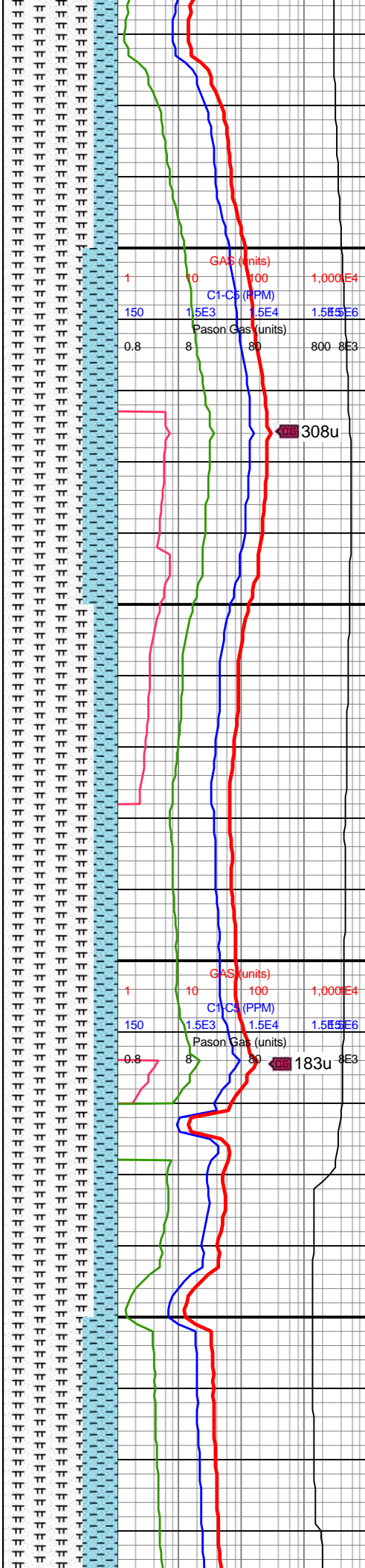
MW IN: 9.8+
VIS IN: 44
MW OUT: 9.8
VIS OUT: 42

WOB: 36.6klbs
RPM: 70
SPM: 200
SPP: 4,325psi

MW IN: 9.8+
VIS IN: 44
MW OUT: 98
VIS OUT: 42

MD: 8,059'
INC: 7,116.19°
AZM: 87.45°
TVD: 1.57'
VS: 30.02'

MD: 8,154'
INC: 7,118.64°
AZM: 89.6°
TVD: 0.34'
VS: 124.96'



7950-8000 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, tr vf pyr, hi calc

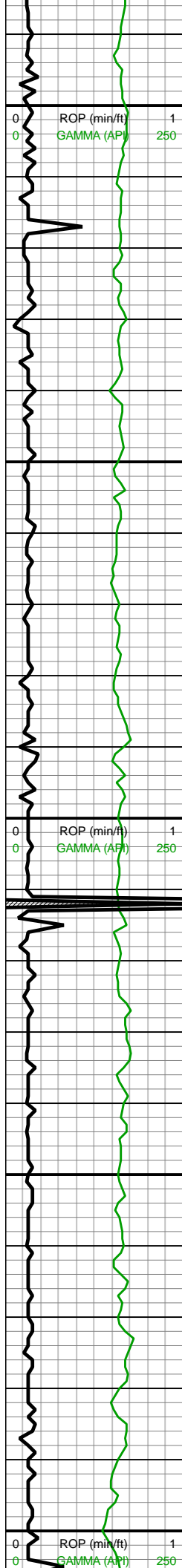
8000-8050 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blky-blky ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod
calc wi brn mrly resdl;
CHK (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

8050-8100 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, tr vf pyr, hi calc

8100-8150 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-sl
frm, brit, tr vf pyr, hi calc

8150-8200 MRLST
(70%): 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





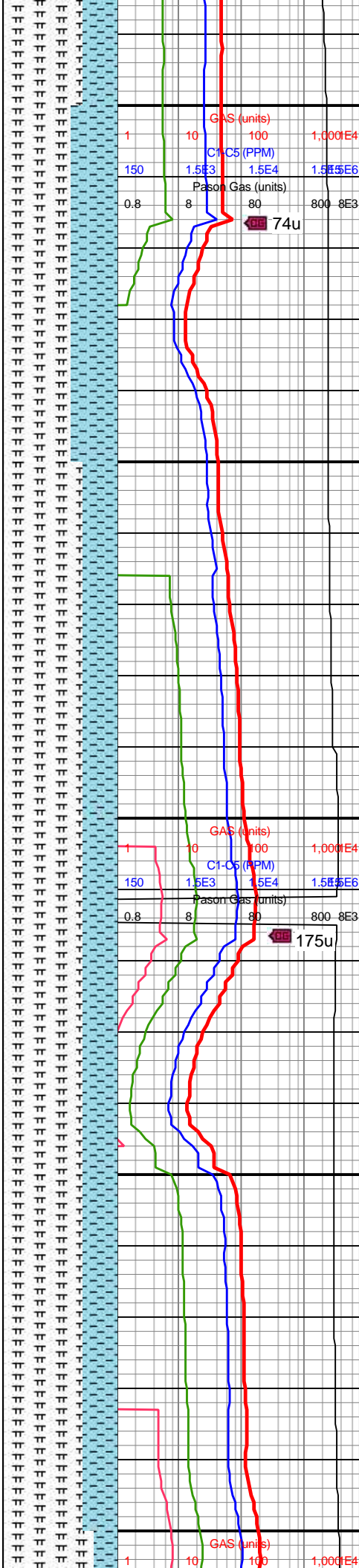
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400

WOB: 37.3klbs
RPM: 70
SPM: 198
SPP: 4,370psi

MD: 8,248'
INC: 7,118.75°
AZM: 90.26°
TVD: 2.18'
VS: 218.94'

MD: 8,343'
INC: 7,118.02°
AZM: 90.62°
TVD: 3.59'
VS: 313.81'

WOB: 37.6klbs
RPM: 70
SPM: 199
SPP: 4,400psi



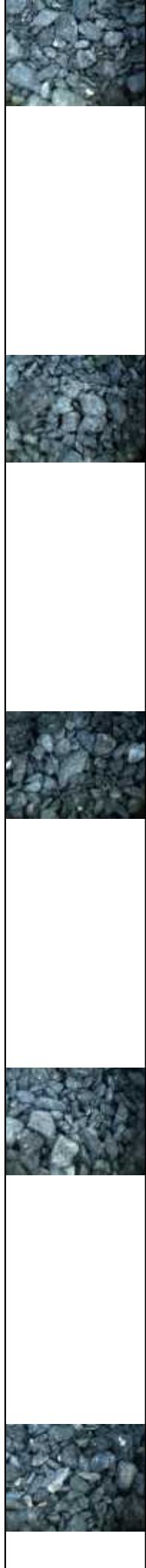
calc wi brn mrly resdl;
CHK (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

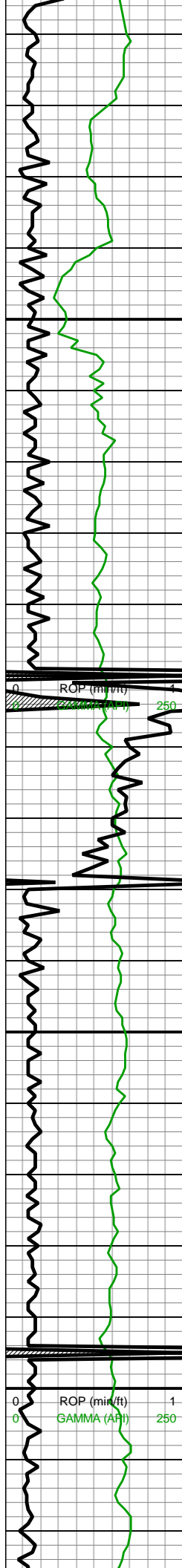
8200-8250 MRLST
(60%): dk gy, frm- mod
fis, sb blkyl-blkyl ctngs,
occ-com wh-tn bent, slty
tex, mod calc wi brn mrly
resdl; CHK (40%): dk gy
wi, sb frm-fri, com pyr, hi
calc

8250-8300 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blkyl-blkyl ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod
calc wi brn mrly resdl;
CHK (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

8300-8350 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blkyl-blkyl ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod
calc wi brn mrly resdl;
CHK (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

8350-8400 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-frm,
l-mod fis sb rd-sb
blkyl-blkyl ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod
calc wi brn mrly resdl;
CHK (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc





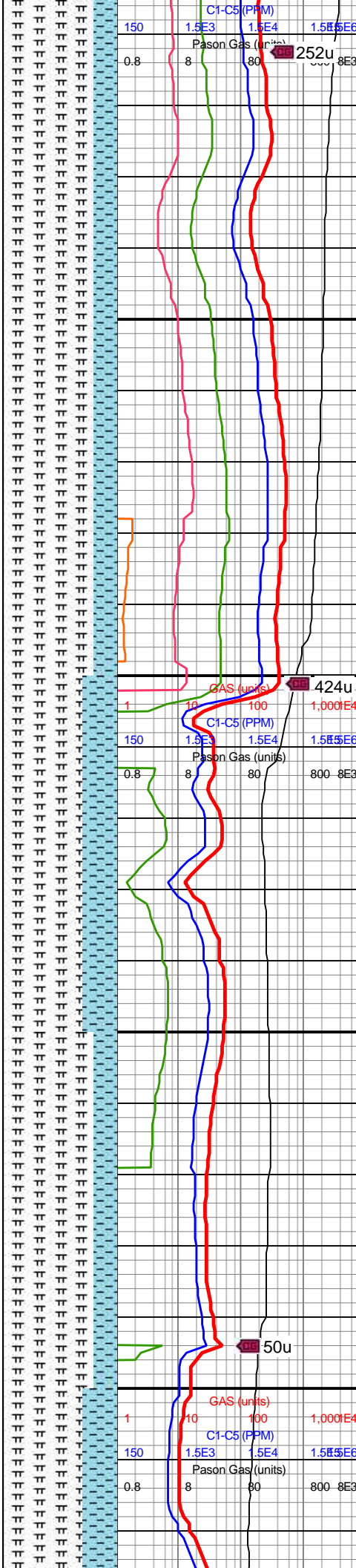
MD: 8,438'
INC: 7,117.11°
AZM: 90.48°
TVD: 4.29'
VS: 408.58'

MW IN: 9.8+
VIS IN: 46
MW OUT: 9.9
VIS OUT: 44

MD: 8,532'
INC: 7,116.57°
AZM: 90.18°
TVD: 359.64'
VS: 502.5'

WOB: 39.5klbs
RPM: 70
SPM: 188
SPP: 4,380psi

MD: 8,627'
INC: 7,116.53°



8400-8450 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-sl
frm, brit, tr vf pyr, hi calc

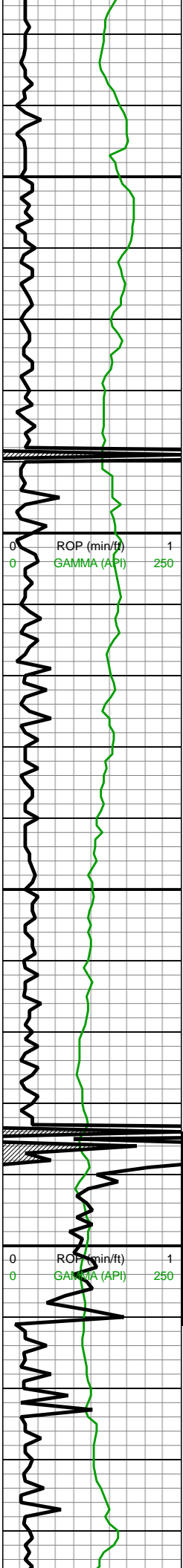
8450-8500 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-sl
frm, brit, vf pyr, hi calc

8500-8550 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-sl 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 (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

8550-8600 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-sl
frm, brit, vf pyr, hi calc

8600-8650 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-sl frm,
l-mod fis sb rd-sb



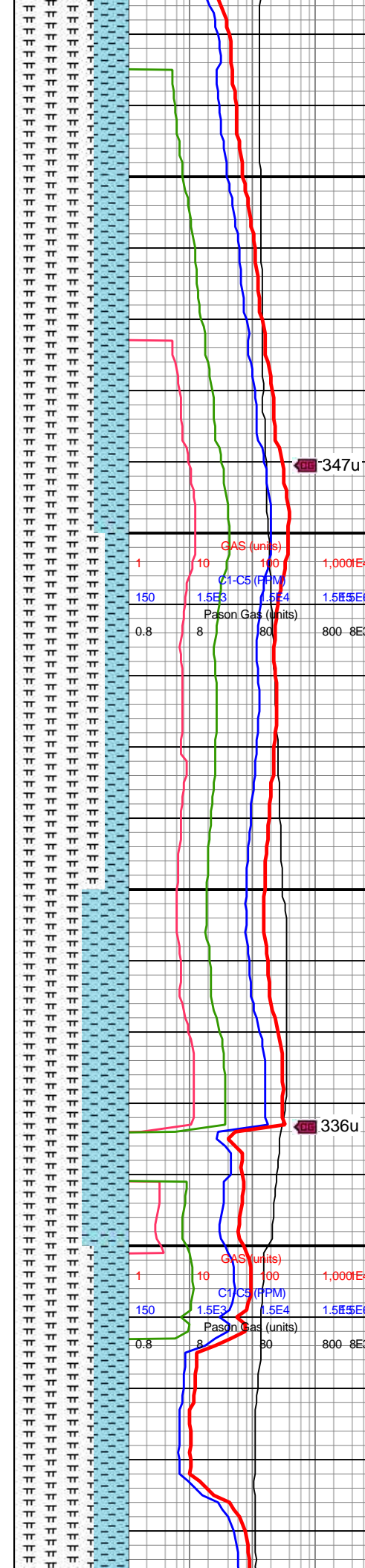


AZM: 89.87°
TVD: 359.81'
VS: 597.5'

MD: 8,722'
INC: 7,117.4°
AZM: 89.08°
TVD: 359.9'
VS: 692.49'

WOB: 39.1klbs
RPM: 70
SPM: 199
SPP: 4,510psi

MD: 8,816'
INC: 7,116.86°
AZM: 91.58°
TVD: 359.55'
VS: 786.48'



blky-blky ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod
calc wi brn mrly resdl;
CHK (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

8650-8700 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-sl 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 (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc

8700-8750 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, vf pyr, hi calc

8750-8800 MRLST
(60%): dk gy, frm- mod
fis, sb blky-blky ctngs,
occ-com wh-tn bent, slty
tex, mod calc wi brn mrly
resdl; CHK (40%): dk gy
wi, sb frm-fri, com pyr, hi
calc

8800-8850 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-sl 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 (30%): dk gy wi
f-elong wh chky incl, sb
frm-frm, brit, tr vf pyr, hi
calc



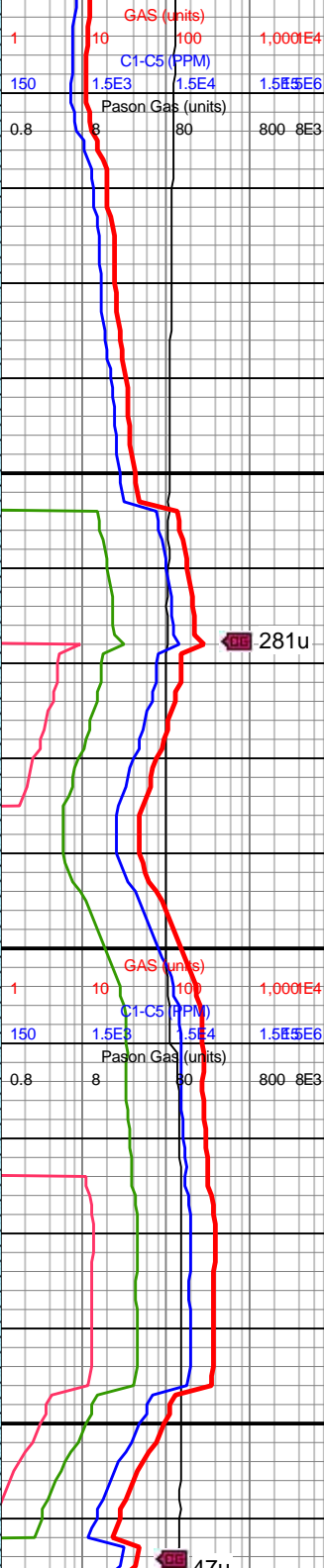
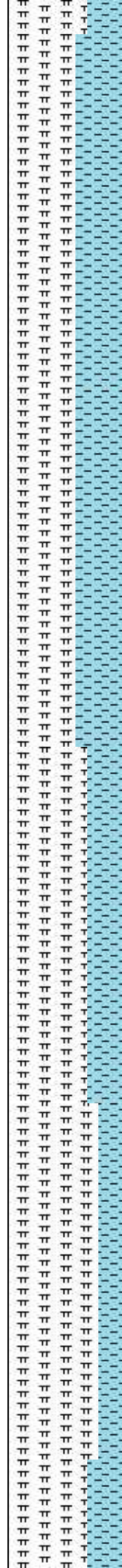


8,850
8,860
8,870
8,880
8,890
8,900
8,910
8,920
8,930
8,940
8,950
8,960
8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
9,050
9,060

MD: 8,911'
INC: 7,114.67°
AZM: 91.06°
TVD: 0.07'
VS: 881.45'

WOB: 39.7klbs
RPM: 70
SPM: 198
SPP: 4,545psi

MD: 9,006'
INC: 7,113.87°
AZM: 89.91°
TVD: 359.28'
VS: 976.45'



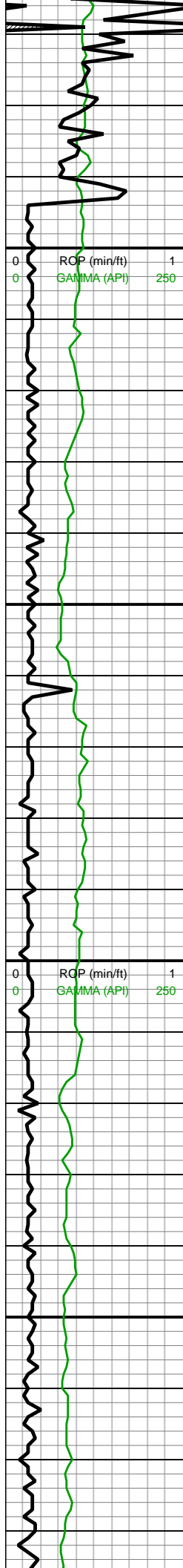
8850-8900 MRLST
(60%): dk gy, frm- mod
fis, sb blk- blk- ctngs,
occ-com wh-tn bent, slty
tex, mod calc wi brn mrlly
resdl; CHK (40%): dk gy
wi, sl frm-sl fri, com pyr,
hi calc

8900-8950 MRLST
(60%): dk gy, frm- mod
fis, sb blk- blk- ctngs,
occ-com wh-tn bent, slty
tex, mod calc wi brn mrlly
resdl; CHK (40%): dk gy
wi, sb frm-fri, com pyr, hi
calc

8950-9000 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-sl frm,
l-mod fis sb rd-sb
blk- blk- ctngs, occ brn
sp marl incl & thn chky
lamn ip, tr bent, mod
calc wi brn mrlly resdl;
CHK (30%): med gy-dk
gy wi f-elong wh chky
incl, sb frm-frm, brit, tr vf
pyr, hi calc

9000-9050 MRLST
(80%): gyshbn-dk gy-dk
gyshbn wi occ c brn marl
incl, sb frm-frm, l-mod fis
sb rd-blky ctngs, thn
lamn, tr bent, mod calc
wi brn mrlly resdl; CHK
(20%): dk gy wi f-elong
wh chky incl, sb frm-frm,
brit, vf pyr, hi calc



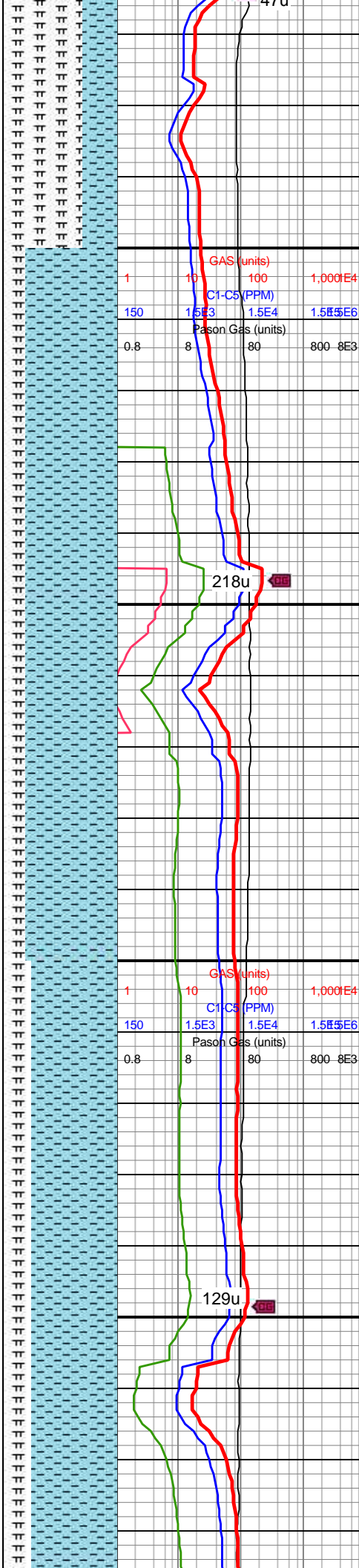


MD: 9,100'
INC: 7,113.11°
AZM: 91.01°
TVD: 359.28'
VS: 1,070.44'

MD: 9,195'
INC: 7,111.07°
AZM: 91.45°
TVD: 359.64'
VS: 1,165.41'

WOB: 38.4klbs
RPM: 70
SPM: 198
SPP: 4,575psi

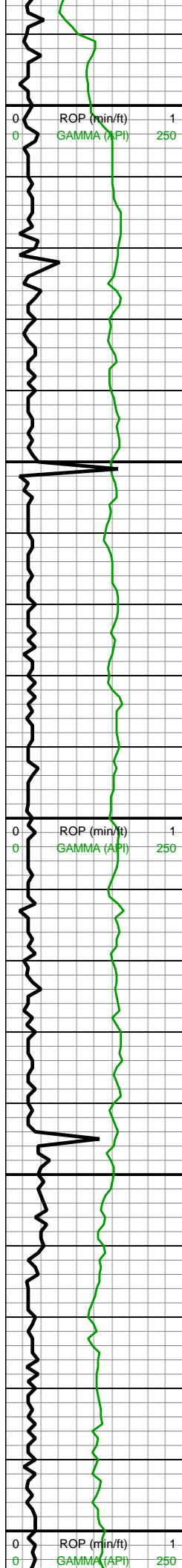
MD: 9,289'



9050-9100 MRLST
(70%): gyshbn-dk gy-dk
gyshbn, sb frm-sl 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 (30%): med gy-dk
gy wi f-elong wh chky
incl, sb frm-frm, brit, tr vf
pyr, hi calc

9100-9200 CHK (80%):
med gy-dk gy wi com f wh
chky lamn, frm, brit, l fis
sb rd-sb blky ctngs, sm
sl slty tex, tr vf pyr, hi calc;
MRLST (20%): gy-dk gy
wi occ c brn marl sp incl,
frm-hd-brit, mod fis sb
blky ctngs, rr-tr pyr strg,
mod calc wi brn mrly
resdl

9200-9300 CHK (75%):
med gy-dk gy wi wh chky
incl, occ lt gyshbn, frm,
brit, l fis sb rd-sb blky
ctngs, sm sl slty tex, rr-tr
forams, tr vf pyr, hi calc;
MRLST (25%): gy-dk gy
wi occ c brn marl sp incl,
frm-hd-brit, mod fis sb
blky ctngs, rr-tr pyr strg,
mod calc wi brn mrly
resdl



INC: 91.27°
AZM: 359.81°
TVD: 7,108.45'
VS: 1,278.03'

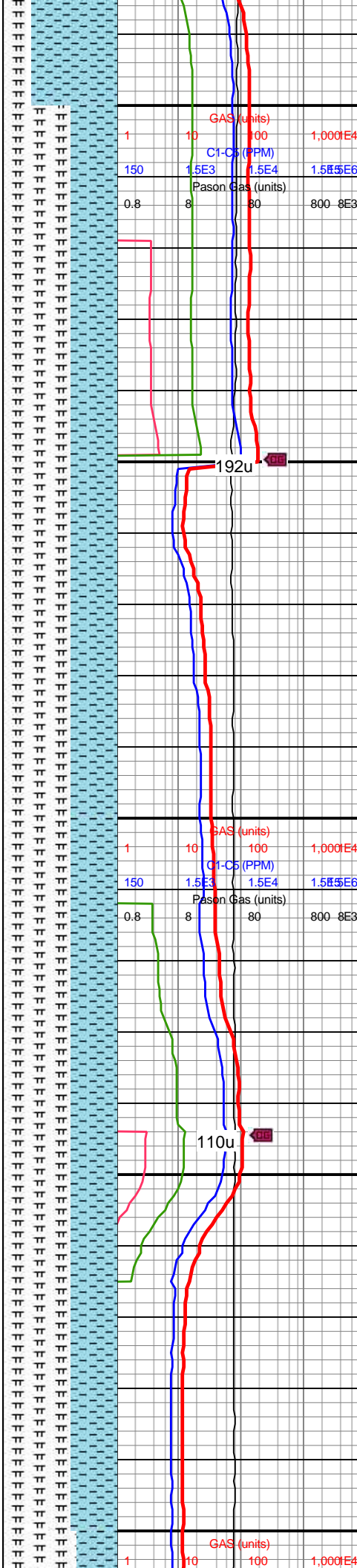
MW IN: 9.9
VIS IN: 45
MW OUT: 9.9
VIS OUT: 42

MD: 9,384'
INC: 90.66°
AZM: 359.64°
TVD: 7,106.85'
VS: 1,373'

WOB: 36klbs
RPM: 70
SPM: 198
SPP: 4,570psi

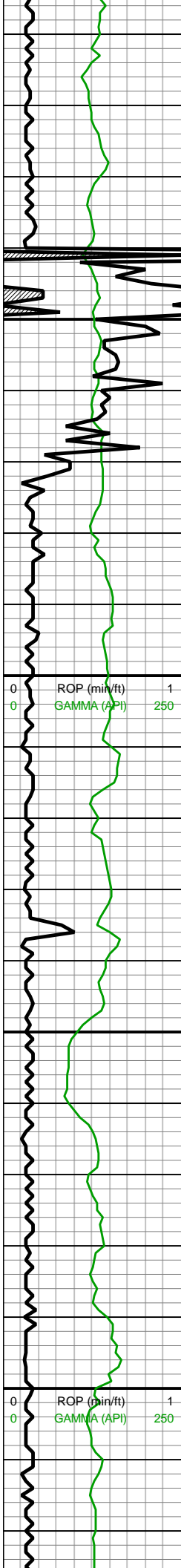
MD: 9,479'
INC: 90.92°
AZM: 358.76°
TVD: 7,105.54'
VS: 1,467.96'

MW IN: 9.9
VIS IN: 45
MW OUT: 9.9
VIS OUT: 43



9300-9400 MRLST
(60%): gy-dk gy wi occ c
brn marl sp incl,
frm-hd-brit, mod fis sb
blky ctngs, rr-tr pyr strg,
mod calc wi brn mrly
resdl; CHK (40%): med
gy-dk gy wi wh chky incl,
occ lt gyshbn, frm, brit, l
fis sb rd-sb blky ctngs,
sm sl slty tex, rr-tr
forams, tr vf pyr, hi calc

9400-9500 MRLST
(60%): dk gyshbn-dk gy-v
dk gy, frm-hd-brit, mod fis
sb blky-blky-sb tab ctngs,
sm arg-sl slty tex, wxy lstr
ip, sp wi brn marl incl ip,
tr tn bent, mod calc wi brn
mrly resdl; CHK (40%):
med gy-dk gy wi wh chky
incl, occ lt gyshbn, frm,
brit, l fis sb rd-sb blky
ctngs, sm sl slty tex, rr-tr
forams, tr vf pyr, tr fos
frags, tr forams, hi calc



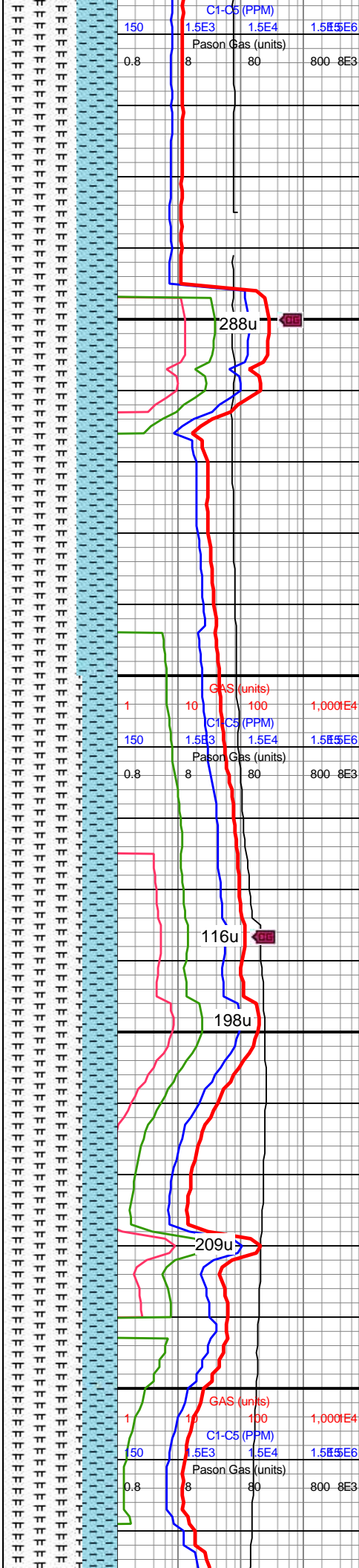
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,700
9,710
9,720

MD: 9,574'
INC: 90.44°
AZM: 0.69°
TVD: 7,104.41'
VS: 1,562.94'

WOB: 31klbs
RPM: 70
SPM: 198
SPP: 4,430psi

MD: 9,668'
INC: 88.64°
AZM: 359.81°
TVD: 7,105.17'
VS: 1,656.93'

MW IN: 9.9
VIS IN: 44
MW OUT: 9.9
VIS OUT: 42

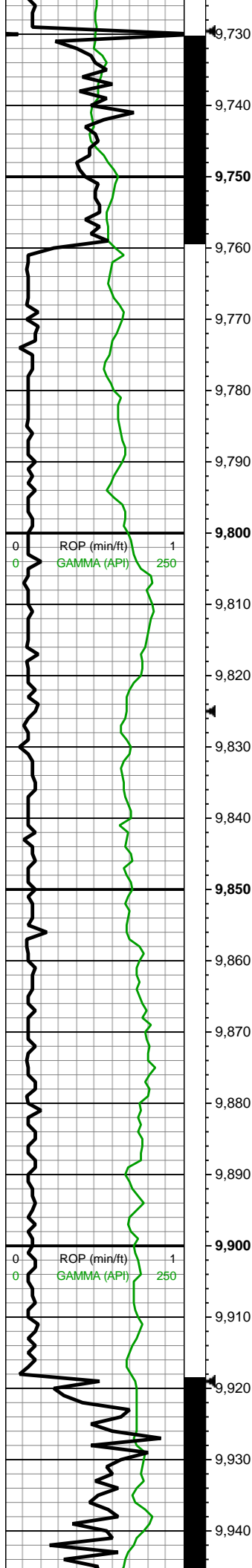


9500-9600 MRLST
(65%): gy-dk gyshbn wi
occ c brn marl sp incl,
frm-hd-brit, mod fis sb
blky ctngs, rr-tr tn bent,
tr-rr vf pyr, mod calc wi
brn mrly resdl; CHK
(35%): med gy-dk gy wi
wh chky incl, occ lt
gyshbn, frm, brit, l fis sb
rd-sb blky ctngs, sm sl
silty tex, rr-tr forams & fos
frags, tr vf pyr, hi calc

9600-9700 MRLST
(70%): dk gyshbn-dk gy-v
dk gy, frm-hd-brit, mod fis
sb blky-blky-sb tab ctngs,
sm arg-sl silty tex, wxy lstr
ip, sp wi brn marl incl ip,
rr-tr fos frags & forams, rr
off wh bent wi com pyr
strg, mod calc wi brn mrly
resdl; CHK (30%): med
gy-dk gy wi wh chky incl,
occ lt gyshbn, frm, brit, l
fis sb rd-sb blky ctngs,
sm sl silty tex, rr-tr
forams, tr vf pyr, tr fos
frags, tr forams, hi calc



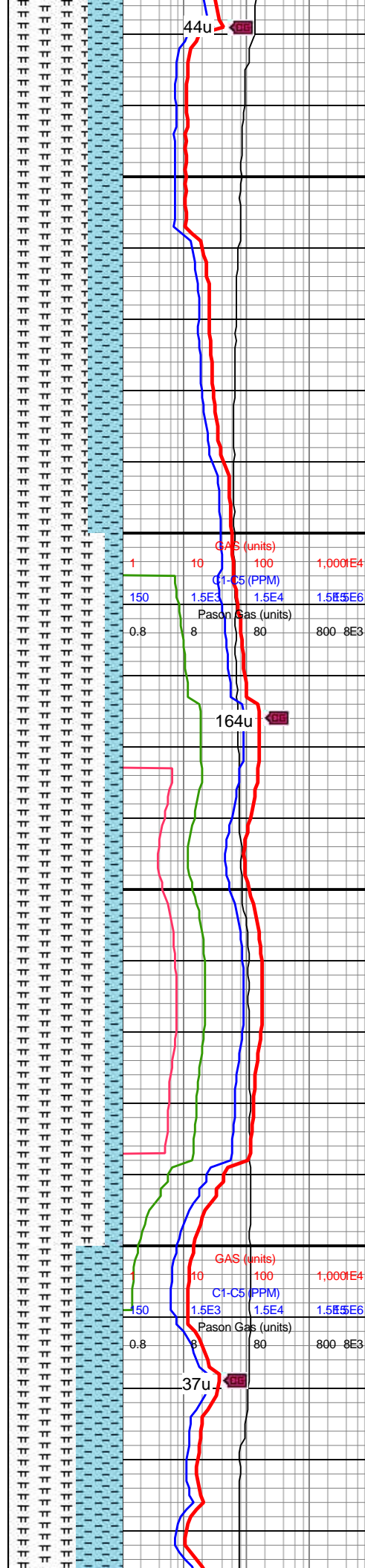
9700-9800 MRLST



MD: 9,763'
INC: 88.86°
AZM: 2.36°
TVD: 7,107.24'
VS: 1,751.9'

WOB: 36klbs
RPM: 70
SPM: 196
SPP: 4,560psi

MD: 9,857'
INC: 88.73°
AZM: 2.36°
TVD: 7,109.22'
VS: 1,845.83'

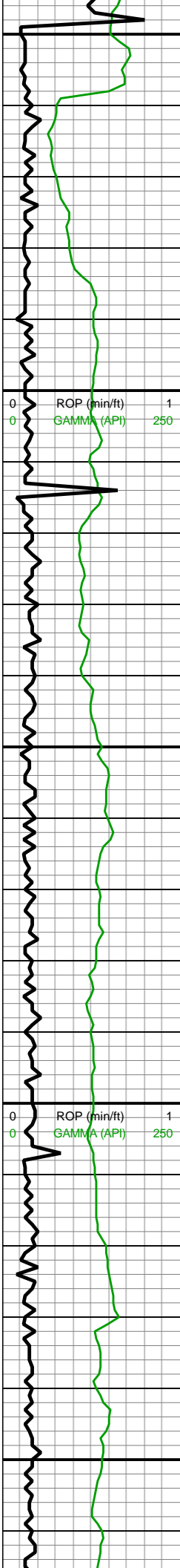


9700-9800 MRLST
(70%): gy-dk gyshbn wi
occ c brn marl sp incl,
frm-hd-brit, mod fis sb
blky ctngs, tr-rr vf pyr, rr-tr
fos frags & forams, rr off
wh bent wi com pyr strg,
mod calc wi brn mrly
resdl; CHK (30%): med
gy-dk gy wi wh chky incl,
occ lt gyshbn, frm, brit, l
fis sb rd-sb blky ctngs,
sm sl slty tex, rr-tr forams
& fos frags, tr vf pyr, hi
calc

9800-9900 MRLST
(85%): dk gyshbn-dk gy-v
dk gy, frm-hd-brit, mod fis
sb blky-blky-sb tab ctngs,
sm arg-sl slty tex, wxy lstr
ip, sp wi brn marl incl ip,
rr off wh bent wi com pyr
strg, mod calc wi brn mrly
resdl; CHK (15%): med
gy-dk gy wi wh chky incl,
occ lt gyshbn, frm, brit, l
fis sb rd-sb blky ctngs,
sm sl slty tex, rr-tr
forams, tr vf pyr, tr fos
frags, tr forams, hi calc

9900-10000 MRLST
(60%): predy gyshbn-dk
gyshbn, occ dk gy, sb
frm-frm-brit ip, mod fis sb
rd-sb blky ctngs, sm
arg-sl slty tex, sp wi brn
marl incl & pyr strg ip,
mod calc wi brn mrly
resdl; CHK (40%): med





MD: 9,952'
INC: 91.19°
AZM: 2.1°
TVD: 7,109.28'
VS: 1,940.79'

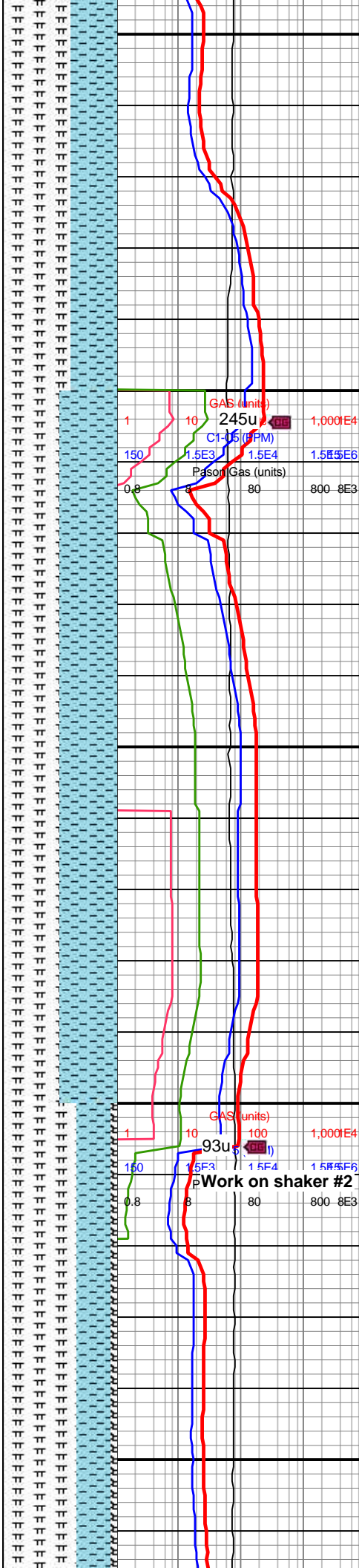
WOB: 38klbs
RPM: 70
SPM: 198
SPP: 4,610psi

MD: 10,046'
INC: 92.11°
AZM: 1.57°
TVD: 7,106.58'
VS: 2,034.72'

Work on shaker
#2

MD: 10,141'
INC: 91.32°
AZM: 0.87°
TVD: 7,103.73'
VS: 2,129.67'

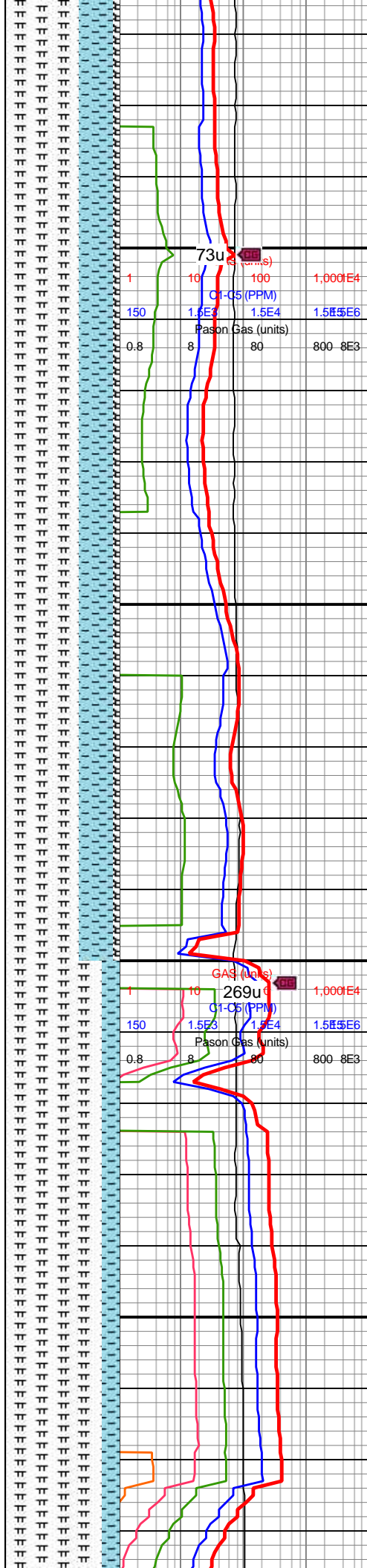
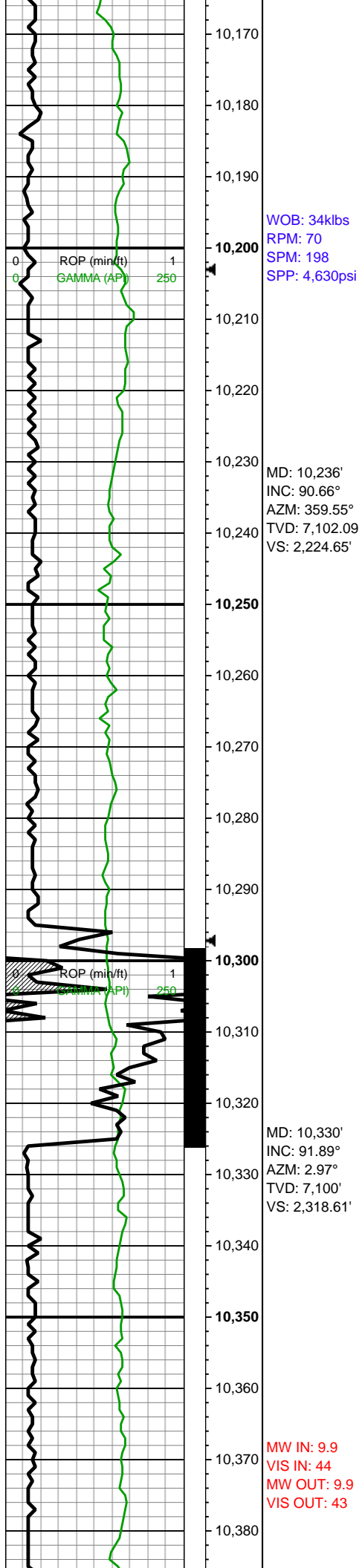
MW IN: 9.9
VIS IN: 44
MW OUT: 9.9
VIS OUT: 43



gy-dk gy wi wh chky incl,
occ lt gyshbn, frm, brit, l
fis sb rd-sb blk cytns,
sm sl slty tex, rr-tr
forams, tr vf pyr, hi calc

10000-10100 MRLST
(60%): gyshbn-dk
gyshbn, occ dk gy, sb
frm-frm-brit ip, sb rd-sb
blk cytns, sm
arg-sl slty tex, sp wi brn
marl incl & pyr strg ip, rr-tr
predy off wh-occ tn bent,
mod calc; CHK (40%):
med gy-dk gy wi wh chky
incl, occ lt gyshbn, frm,
brit, l fis sb rd-sb blk cy
tns, sm sl slty tex, rr-tr
forams, tr vf pyr, hi calc

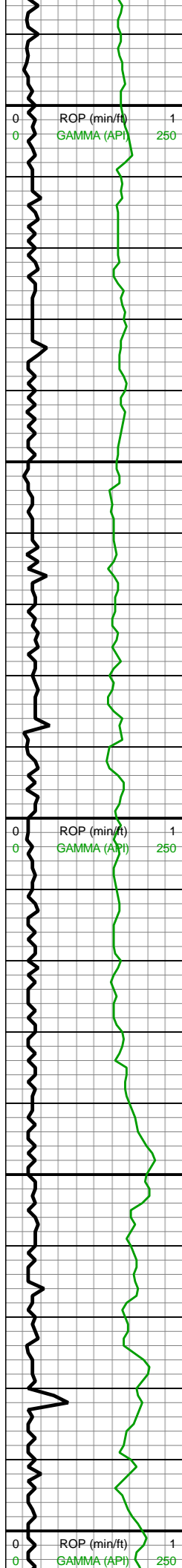
10100-10200 MRLST
(70%): dk gyshbn-dk gy-v
dk gy, frm-hd-brit, mod fis
sb blk cytns, sm arg-sl
slty tex, wxy lstr ip, sp
wi brn marl incl ip, tr vf
pyr, mod calc wi brn
mrly resdl; CHK (30%):
med gy-dk gy wi wh chky
incl, occ lt gyshbn, frm,
brit, l fis sb rd-sb blk cy
tns, sm sl slty tex, rr-tr
forams, tr vf pyr, hi calc



10200-10300 MRLST
(65%): dk gyshbn-dk gy-v
dk gy, occ f wh chky
intbdd incl ip, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip, com wh
forams & off wh-lt yel
bent, rr off wh bent wi
com pyr strg, mod calc wi
brn mrly resdl; CHK
(30%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sl slty-gt
tex, rr-occ forams, tr vf
pyr, hi calc; bent (rr-occ):
wh-v lt gy, sft (wh)-sb
frm-brit yel bent, hi flor,
non calc

10300-10400 MRLST
(85%): dk gyshbn-dk gy-v
dk gy, occ f wh chky
intbdd incl ip, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip, com wh
forams & wh-lt yel bent,
mod calc wi brn mrly
resdl; CHK (15%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sl slty-gt
tex, rr-occ forams, tr vf
pyr, hi calc



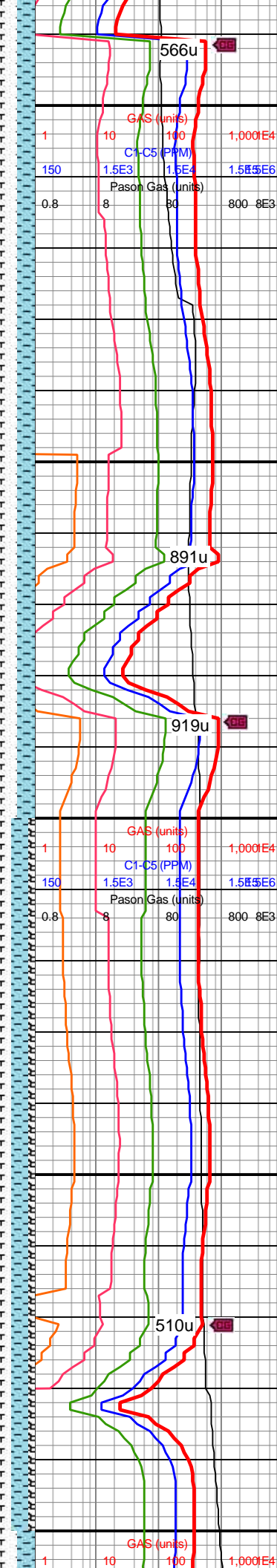


WOB: 36klbs
RPM: 70
SPM: 197
SPP: 420psi

MD: 10,425'
INC: 91.14°
AZM: 1.48°
TVD: 7,097.49'
VS: 2,413.53'

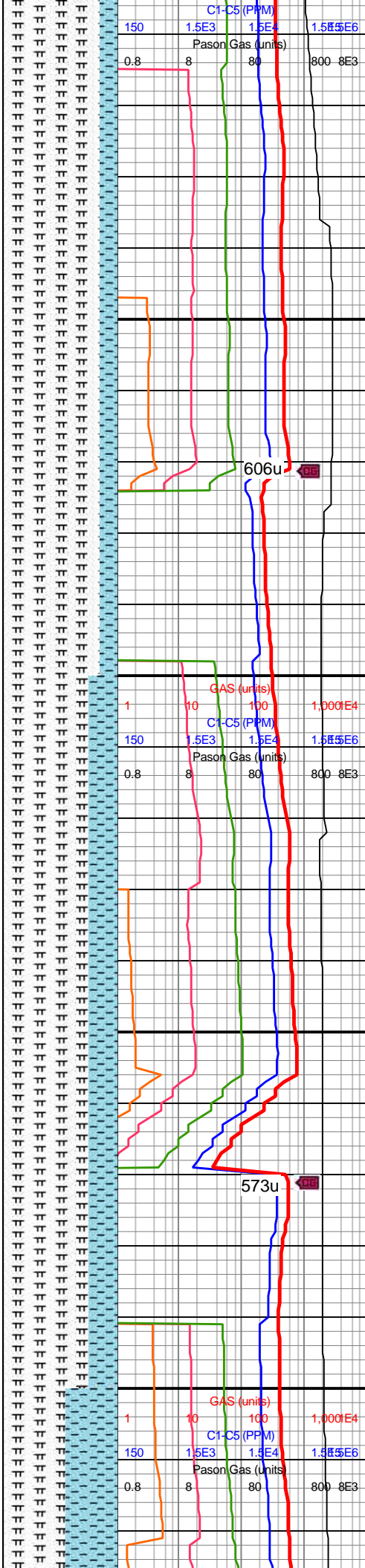
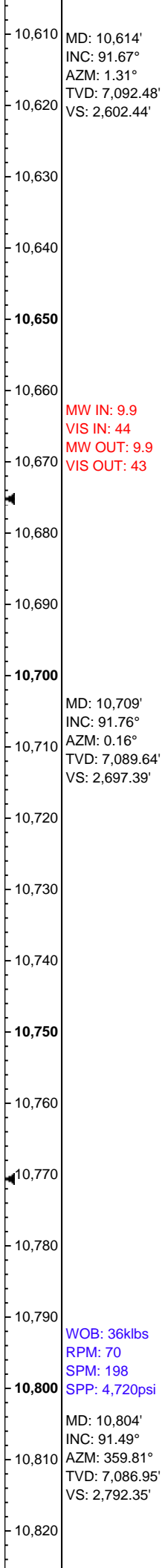
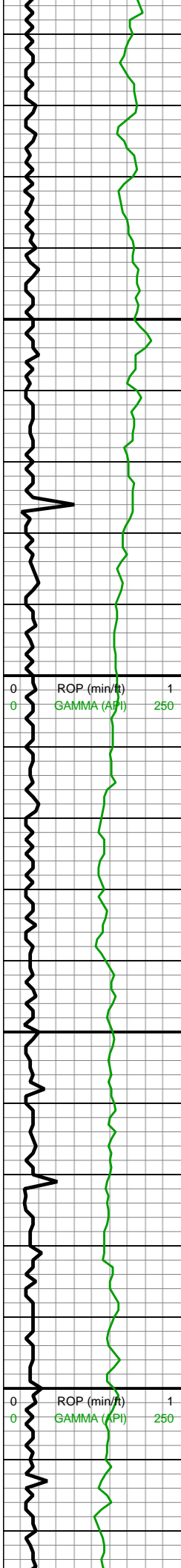
MD: 10,520'
INC: 91.63°
AZM: 1.83°
TVD: 7,095.19'
VS: 2,508.49'

WOB: 36klbs
RPM: 70
SPM: 196
SPP: 4,670psi



10400-10500 MRLST
(85%): dk gyshbn-dk gy-v
dk gy, frm-hd-brit, mod fis
sb blkyl-blky ctngs, sm
arg-sl slty tex, wxy lstr ip,
sp wi brn marl incl ip,
com wh forams & wh-lt
yel-v lt gn bent, mod calc
wi brn mrly resdl; CHK
(15%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sl slty-gt
tex, rr-occ foramsn, tr vf
pyr, hi calc

10500-10600 MRLST
(80%): dk gyshbn-dk gy-v
dk gy, occ f wh chky
intbddd incl ip, frm-hd-brit,
mod fis sb blkyl-blky-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip, com wh
forams & off wh-lt yel
bent, rr off wh bent wi
com pyr strg, mod calc wi
brn mrly resdl; CHK
(15%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sl slty-gt
tex, rr-occ forams, tr vf
pyr, hi calc; bent (rr-occ):
sft wh bent-forams-frm
yel bent-hd v lt gn bent, hi
flor, non calc

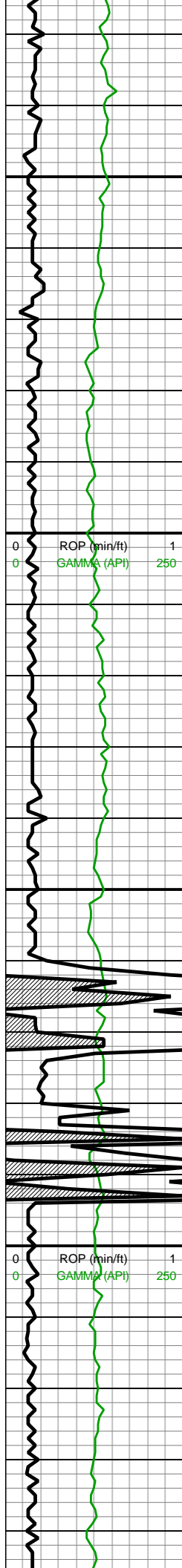


10600-10700 MRLST
(85%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkly-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; 15% CHK:
med gy-dk gy wi f wh chky
incl, frm-brit l-mod fis sb
rd-sb blkyl ctngs, occ sp
forams scat thru, sl
slty-gt tex, tr vf pyr, hi calc

10700-10800 MRLST
(75%): dk gyshbn-dk gy-v
dk gy spec wi f wh fos
frags & forams thru,
frm-hd-brit, mod fis sb
blkyl-bkly ctngs, sm arg-sl
slty tex, sp wi brn marl
incl, mod calc; CHK
(25%): med gy-dk gy wi f
wh chky incl, frm-brit
l-mod fis sb rd-sb blkyl
ctngs, occ sp forams
scat thru, sl slty-gt tex, tr
vf pyr, hi calc

10800-10900 MRLST
(55%): dk gyshbn-dk gy-v





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

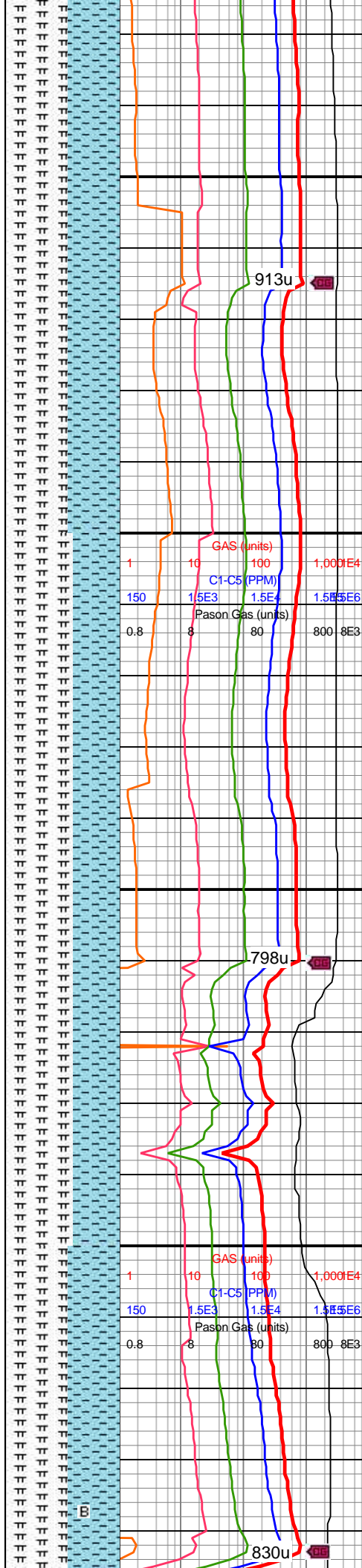
MD: 10,899'
INC: 92.11°
AZM: 0.16°
TVD: 7,083.96'
VS: 2,887.29'

MW IN: 9.9
VIS IN: 44
MW OUT: 9.9
VIS OUT: 43

MD: 10,993'
INC: 90.26°
AZM: 359.9°
TVD: 7,082.02'
VS: 2,981.27'

WOB: 34klbs
RPM: 70
SPM: 198
SPP: 4,730psi

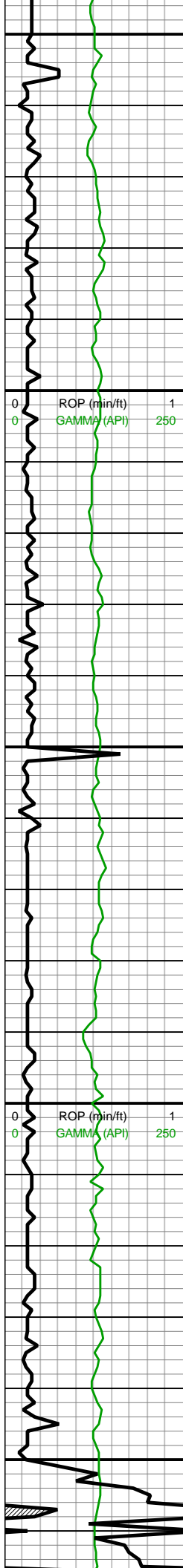
MW IN: 9.9
VIS IN: 44
MW OUT: 9.9
VIS OUT: 43



dk gy ip, frm-hd-brit, mod
fis sb blkly-blky ctngs, sm
arg-sl slty tex, rr-tr tn-v lt
gn bent wi occ pyr strg ip,
mod calc, wi incr wh chky
incl grdg to 45% CHK:
med gy-dk gy wi f wh chky
incl, frm-brit l-mod fis sb
rd-sb blkly ctngs, rr sp
forams scat thru, sl
slty-gt tex, tr vf pyr, hi calc

10900-11000 MRLST
(60%): dk gyshbn-dk gy-v
dk gy ip, frm-hd-brit, mod
fis sb blkly-blky ctngs, sm
arg-sl slty tex, rr-tr tn-v lt
gn bent wi occ pyr strg ip,
mod calc, CHK (40%):
med gy-dk gy wi f wh chky
incl, frm-brit l-mod fis sb
rd-sb blkly ctngs, sl slty-gt
tex, rr-occ wh sp forams,
tr vf pyr, hi calc

11000-11100 MRLST
(55%): dk gyshbn-dk gy-v
dk gy, frm-hd-brit, mod fis
sb blkly-blky-sb tab ctngs,
sm arg-sl slty tex, wvy ltr



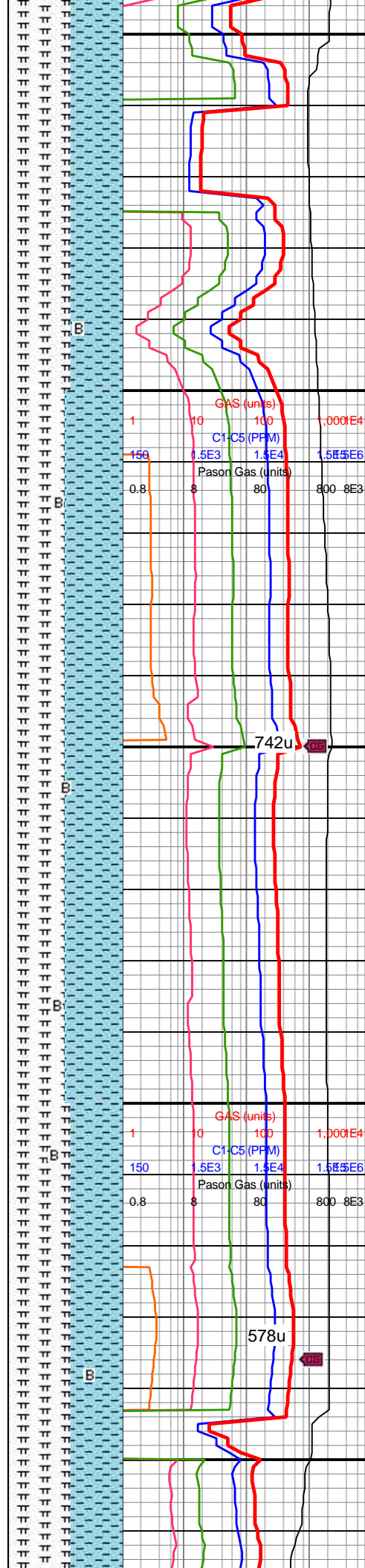
11,050
11,060
11,070
11,080
11,090
11,100
11,110
11,120
11,130
11,140
11,150
11,160
11,170
11,180
11,190
11,200
11,210
11,220
11,230
11,240
11,250
11,260

MD: 11,088'
INC: 90.35°
AZM: 0.51°
TVD: 7,081.51'
VS: 3,076.26'

MD: 11,182'
INC: 89.39°
AZM: 355.5°
TVD: 7,081.73'
VS: 3,170.14'

WOB: 36klbs
RPM: 70
SPM: 198
SPP: 4,850psi

MW IN: 9.9
VIS IN: 44
MW OUT: 9.9
VIS OUT: 43

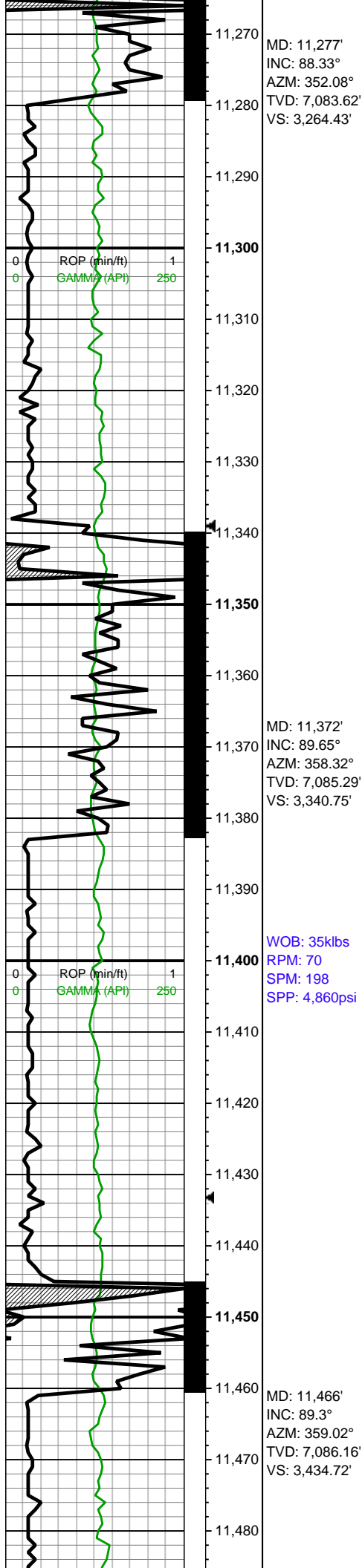


ip, sp wi brn marl incl ip,
tr vf pyr, mod calc wi brn
mrly resdl; CHK (45%):
med gy-dk gy wi wh chky
incl, occ lt gyshbn, frm,
brit, l fis sb rd-sb blkly
ctngs, sm sl slty tex, rr-tr
forams, tr vf pyr, hi calc

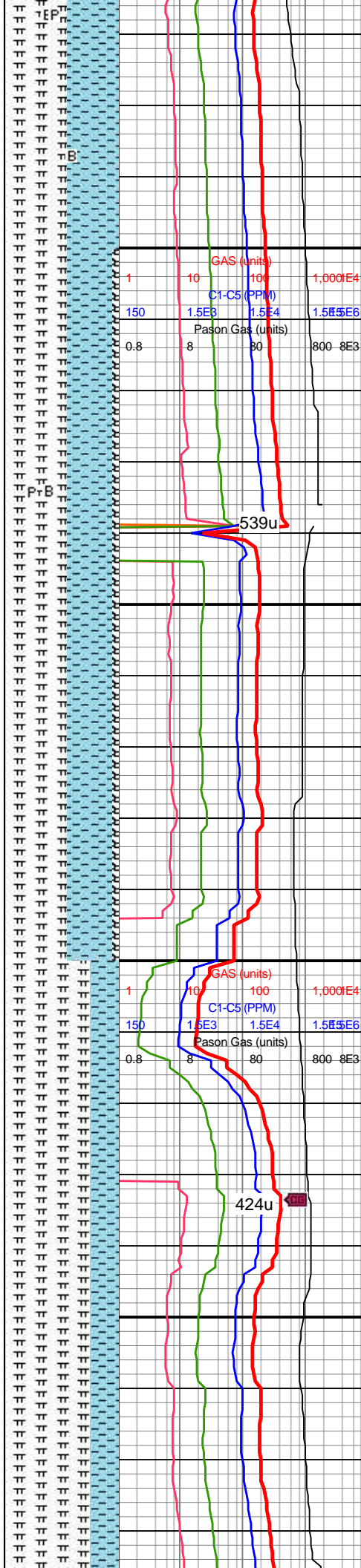
11100-11200 MRLST
(50%): dk gyshbn-dk gy-v
dk gy, occ f wh chky
intbdd incl ip, frm-hd-brit,
mod fis sb blkly-blky-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip, com wh
forams & off wh-lt yel
bent, rr off wh bent wi
com pyr strg, mod calc wi
brn mrly resdl; CHK
(50%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkly ctngs, sl slty-gt
tex, rr-occ forams, tr vf
pyr, hi calc; bent (tr): wh-v
lt gy, sft (wh)-sb frm-brit
yel bent, hi flor, non calc

11200-11300 MRLST
(55%): dk gyshbn-dk gy-v
dk gy, frm, brit, mod fis sb
blkly-blky ctngs, sm arg-sl
slty tex, rr wh-lt yel-lt gn
pyrc bent, mod calc wi
brn mrly resdl; CHK
(45%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkly ctngs, sl slty-gt
tex, rr wh forams, tr vf pyr,
hi calc





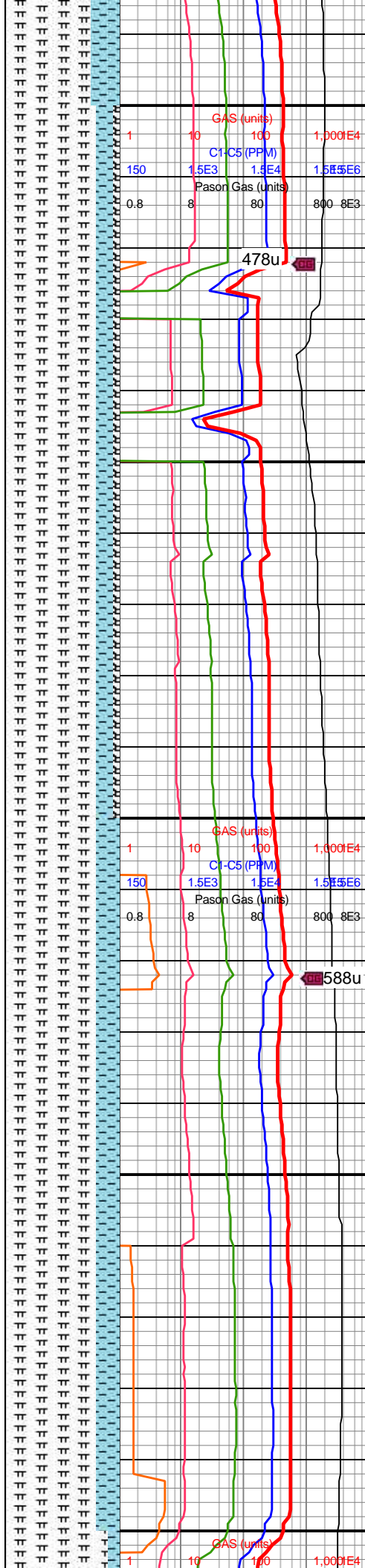
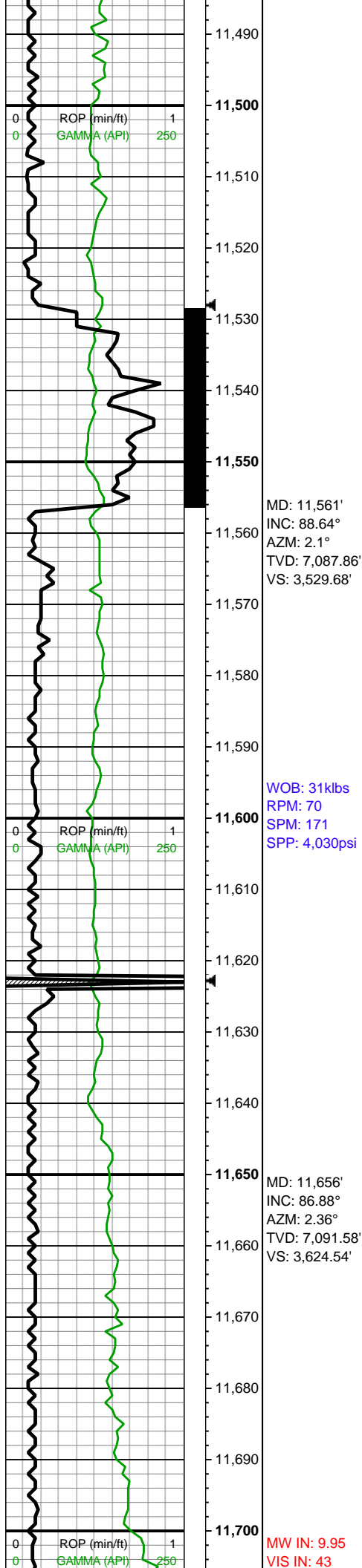
WOB: 35klbs
RPM: 70
SPM: 198
SPP: 4,860psi



11300-11400 MRLST
(55%): dk gyshbn-dk gy-v
dk gy, occ f wh chky
intbdd incl ip, frm-hd-brit,
mod fis sb blkly-blky-sb
tab ctngs, sm arg-sl slty
tex, com wh forams, mod
calc wi brn mrly resdl;
CHK (40%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkly ctngs, sl slty-gt
tex, rr-occ forams, tr vf
pyr, hi calc; bent (rr-occ):
wh-lt yel-v lt gn, sft
(wh)-sb frm-brit yel-gn
bent, gn pyrc bent, hi flor,
non calc

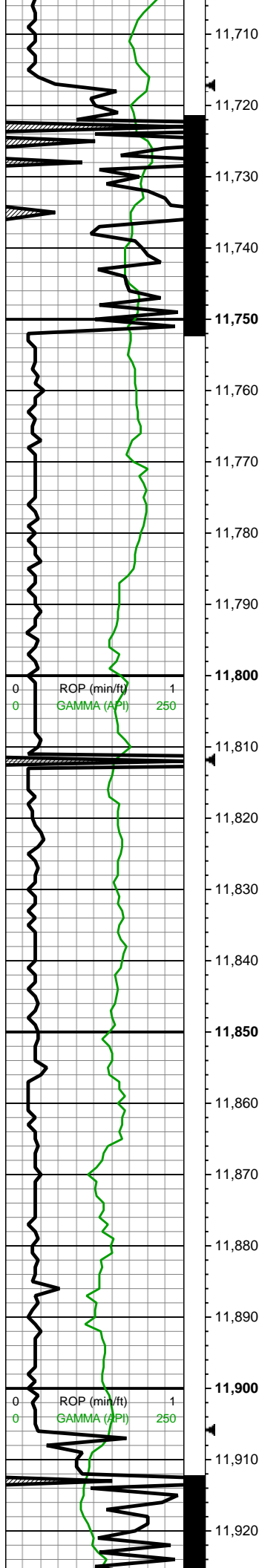
11400-11500 MRLST
(75%): dk gyshbn-dk gy-v
dk gy, frm, brit, mod fis sb
blkly-blky ctngs, sm arg-sl
slty tex, rr wh-lt yel-lt gn
pyrc bent, mod calc wi
brn mrly resdl; CHK
(25%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkly ctngs, sl slty-gt
tex, rr wh forams, tr vf pyr,
hi calc





11500-11600 MRLST
(80%): dk gyshbn-dk gy-v
dk gy, occ f wh chky
intbdd incl ip, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, com wh forams, mod
calc wi brn mrly resdl;
CHK (15%): med
gy-gyshbn-dk gy wi
com-abnt f wh chky incl,
sb frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sl slty-gt
tex, rr-occ forams, tr vf
pyr, hi calc; bent (rr-occ):
wh sft bent-yel gn pyrc
bent, occ lt yel, hi flor, non
calc

11600-11700 MRLST
(80%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; CHK (20%):
med gy-dk gy wi f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkyl ctngs,
occ sp forams scat thru,
sl slty-gt tex, tr vf pyr, hi
calc



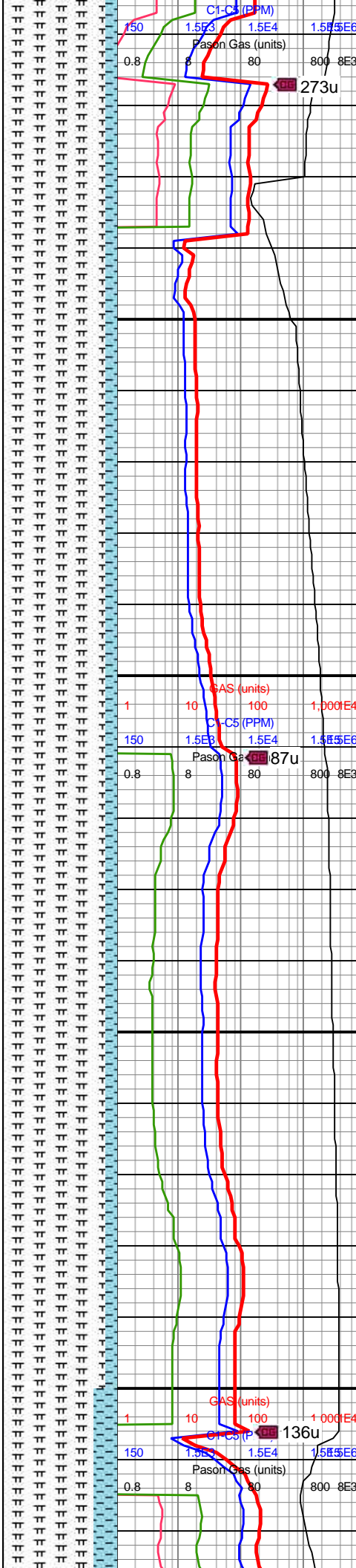
MW OUT: 10.0
VIS OUT: 43

MD: 11,750'
INC: 88.02°
AZM: 3.77°
TVD: 7,095.76'
VS: 3,718.3'

WOB: 33.5klbs
RPM: 70
SPM: 170
SPP: 3,975psi

MD: 11,844'
INC: 86.27°
AZM: 3.68°
TVD: 7,100.44'
VS: 3,811.99'

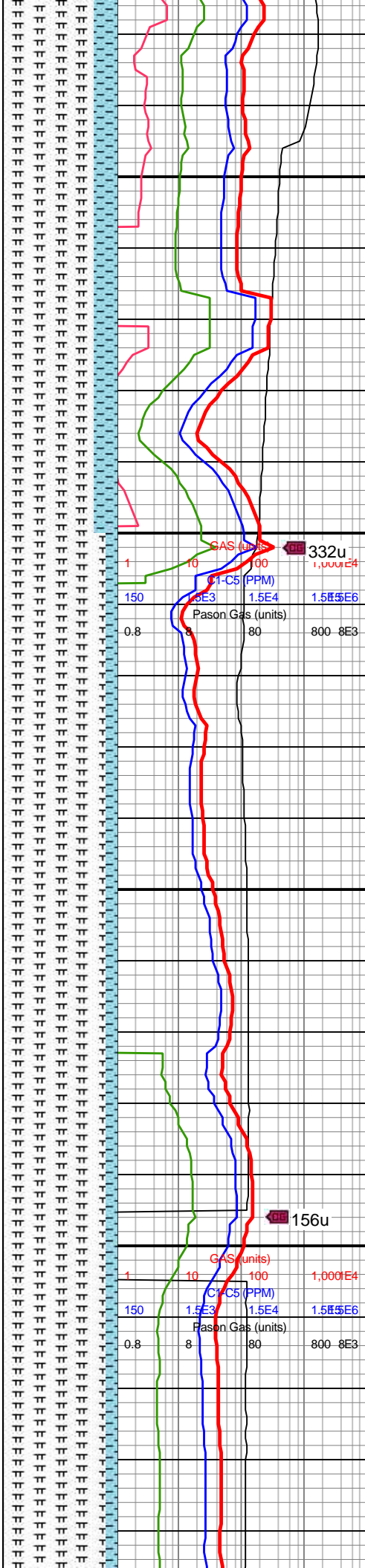
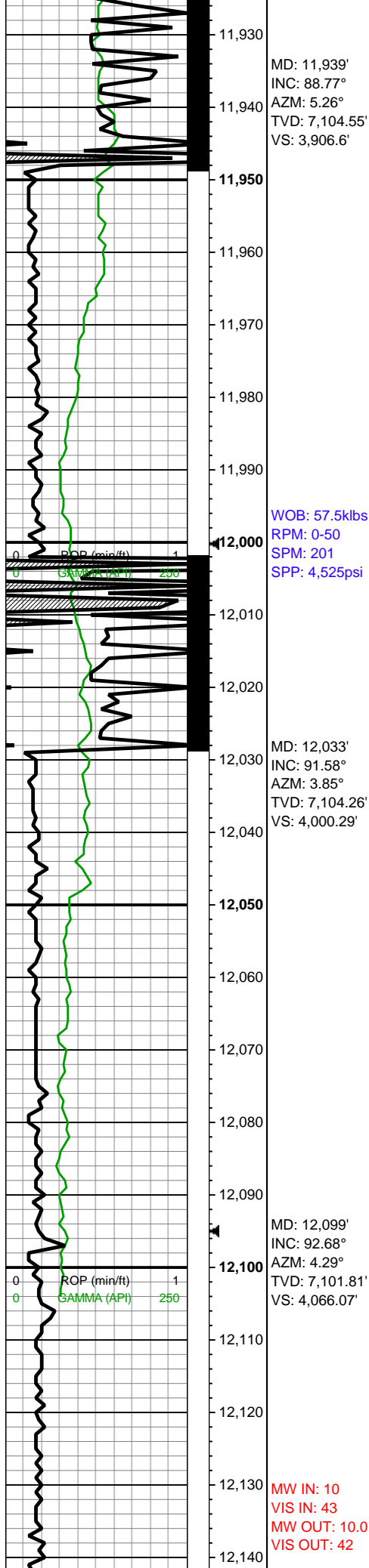
MW IN: 10
VIS IN: 43
MW OUT: 10.0
VIS OUT: 42



11700-11800 MRLST
(90%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; CHK (10%):
med gy-dk gy wi f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkyl ctngs,
occ sp forams scat thru,
sl slty-gt tex, tr vf pyr, hi
calc

11800-11900 MRLST
(90%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; CHK (10%):
med gy-dk gy wi f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkyl ctngs,
occ sp forams scat thru,
slty-gt tex, tr vf pyr, hi
calc

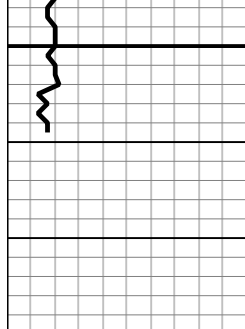




11900-12000 MRLST
(80%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; CHK (20%):
med gy-dk gy wi f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkyl ctngs,
occ sp forams scat thru,
sl slty-gt tex, tr vf pyr, hi
calc

12000-12100 MRLST
(90%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; CHK (10%):
med gy-dk gy wi f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkyl ctngs,
occ sp forams scat thru,
sl slty-gt tex, tr vf pyr, hi
calc

12100-12160 MRLST
(90%): dk gyshbn-dk gy-v
dk gy, f fos frags &
forams thru, frm-hd-brit,
mod fis sb blkyl-bkyl-sb
tab ctngs, sm arg-sl slty
tex, wxy lstr ip, sp wi brn
marl incl ip; CHK (10%):



12,150

12,160

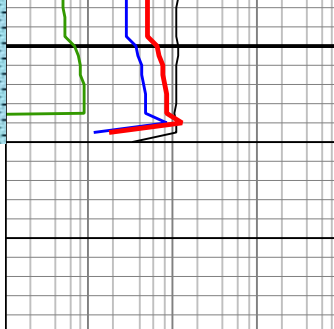
12,170

L 12 120

Bit Projection

MD: 12,160'
INC: 92.68°
AZM: 4.29°
TVD: 7,098.96'
VS: 4,145.39'

**TD Reached @
12,160' MD @
21:00hrs on
7/13/18**



med gy-dk gy wi f wh
chky incl, frm-brit l-mod
fis sb rd-sb blk cytns,
occ sp forams scat thru,
slty-gt tex, tr vf pyr, hi calc

