



Scale: 5" / 100'
Measured Depth Log

Well Name Ruegge 3F-4H-N145

Location Sec. 4 T1N R65W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05-123-46570-00

AFE # 16190982

Geographic Region Rockies

Field Wattenberg

Spud Date 6/7/2018

Drilling Completed 6/9/2018

Surface Coordinates Lat/Long: 40.075237/-104.67095
SHL: Sec: 4 Twp: 1N 65W
Footage: 699 FSL 2087 FWL

Bottom Hole Coordinates Proposed BHL: Sec: 4 Twp: 1N 65W
Footages: 460 FNL 910 FWL

Ground Elevation 4,917'

K.B. Elevation 4,940'

Logged Interval 6,400' **To** 11,884'

Total Depth 11,884'

Formation B 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

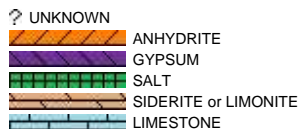
Loggers: Brian Ferwerda / Nick Watkins

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-533

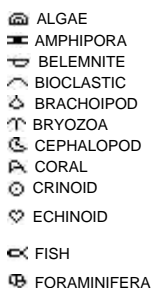
Contractor: Empirica, Reservoir Group
6360 West Sam Houston Pkwy N
Houston, Texas, 77041

Rock Types



Accessories

Fossils



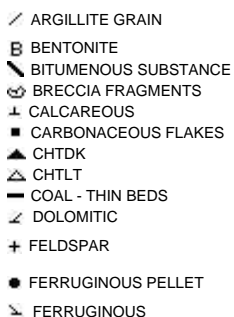
Fossil



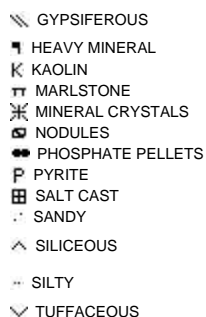
Minerals



Argillaceous



Glauconite



Stringer



Other Symbols

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- EARTHY
- FENESTRAL
- FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC
- MOLDIC

- ORGANIC
- PINPOINT
- VUGGY

Engineering

- BIT
- CASING
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- CORE - LOST
- CORE - RECOVERED
- DST INTERVAL
- FAULT

- FORMATION TOP
- GAS SHOW
- MN DEPTH
- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SIDEWALL CORE (LEFT)
- SIDEWALL CORE (RIGHT)
- SLIDE
- SURVEY
- TRIP GAS
- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT

Rounding

- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

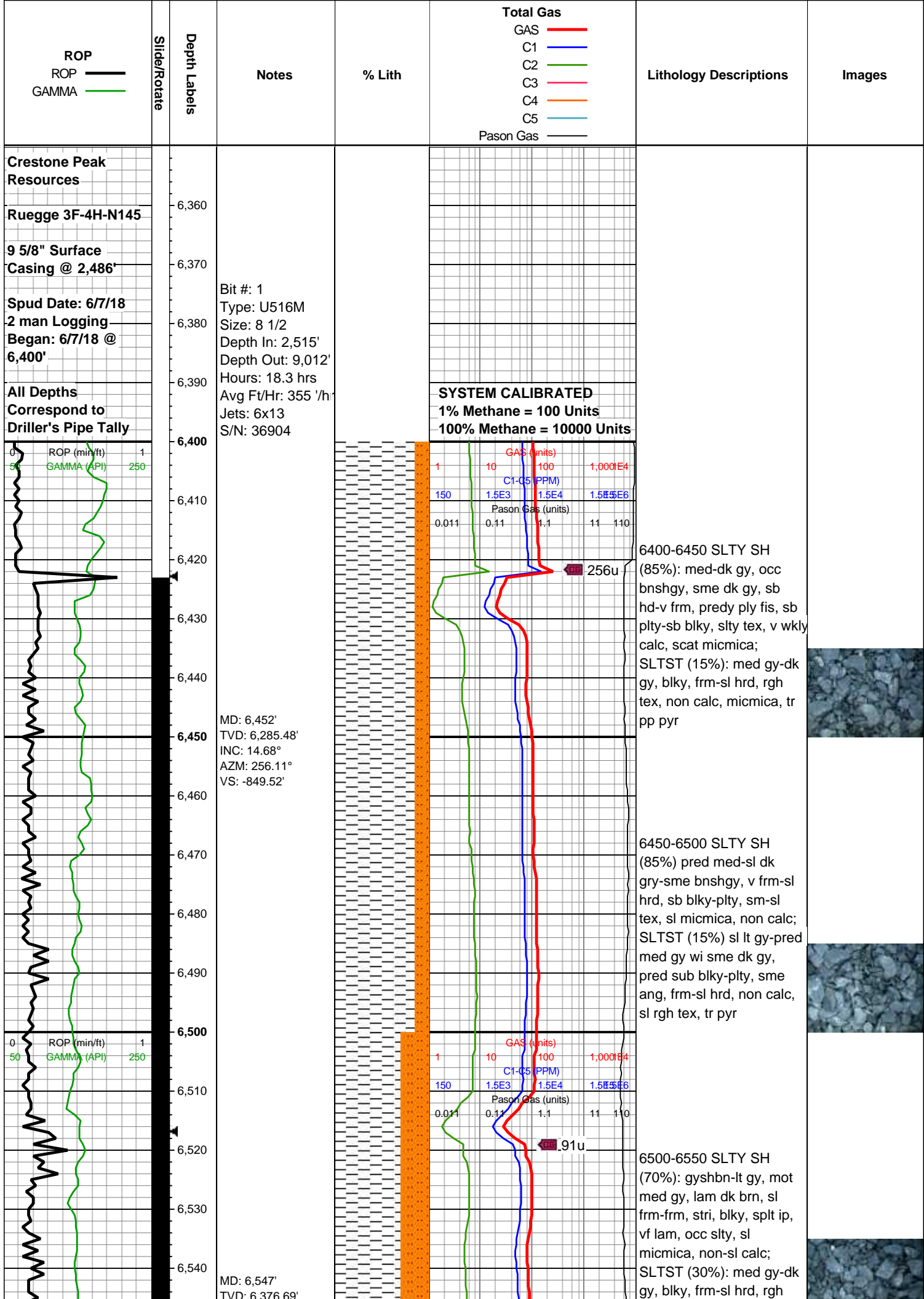
Textures

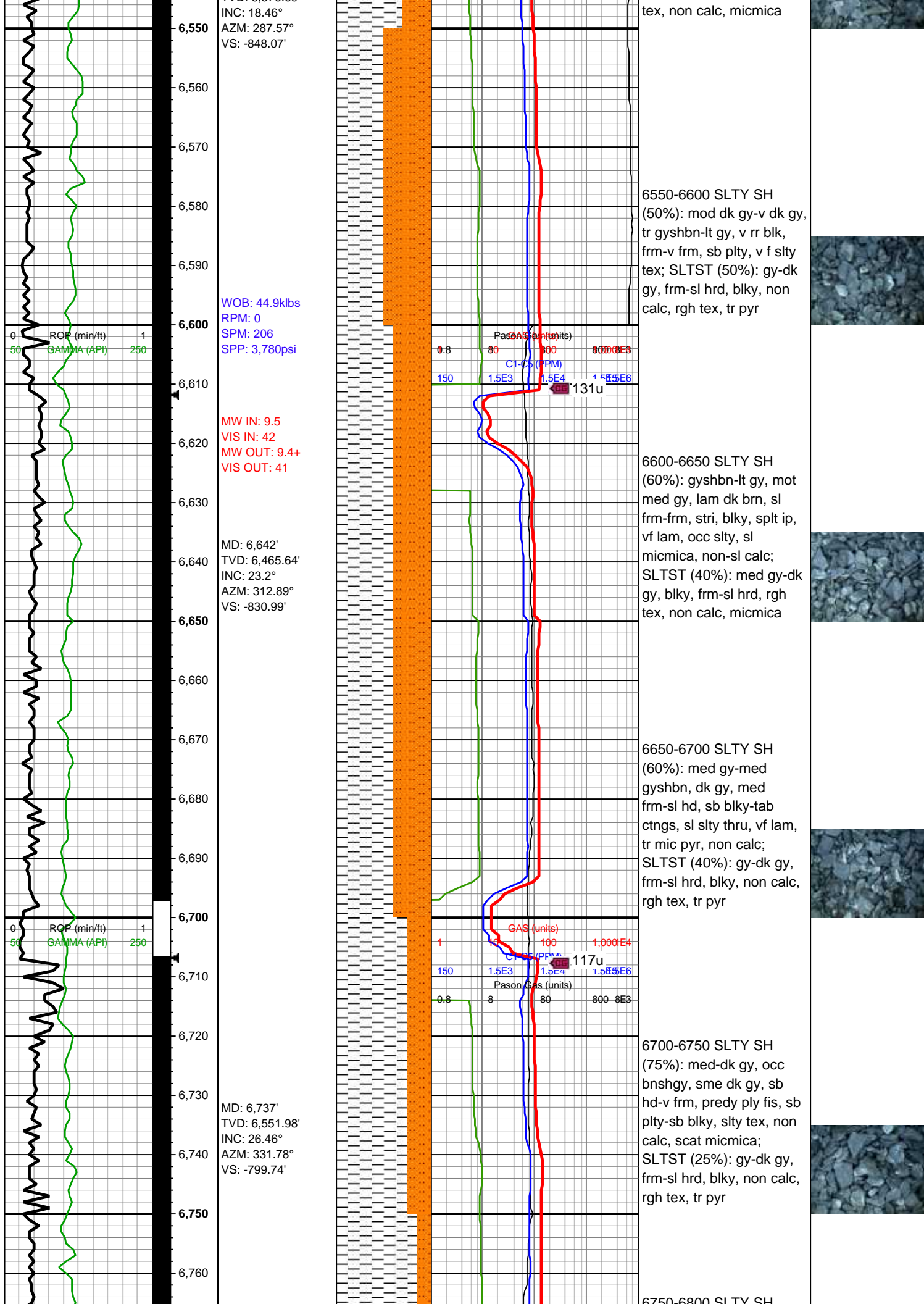
- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE

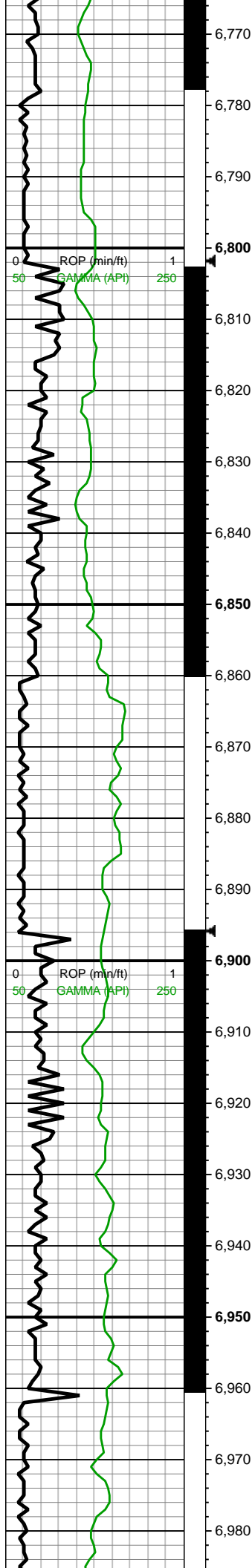
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL





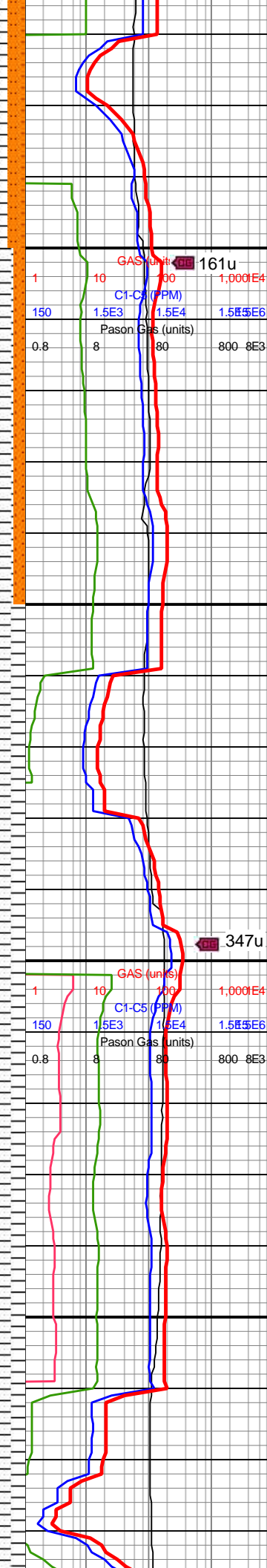


WOB: 35.1klbs
RPM: 31
SPM: 206
SPP: 4,035psi

MW IN: 9.5
VIS IN: 41
MW OUT: 9.5
VIS OUT: 40

MD: 6,831'
TVD: 6,634.58'
INC: 30.63°
AZM: 341.1°
VS: -758.74'

MD: 6,926'
TVD: 6,715.33'
INC: 32.92°
AZM: 341.54°
VS: -711.48'



6750-6800 SLTY SH
(85%) pred med-sl dk
gry-sme bnshgy, frm-sl
hrd wi sme ply fis,
ang-sb blkly wi plty, sm-sl
tex, micmica, non calc;
SLTST (15%) sl lt gy-med
gy wi sme dk gy, pred
sub blkly- sme ang, frm-sl
hrd, non calc, rgh tex, tr
pyr

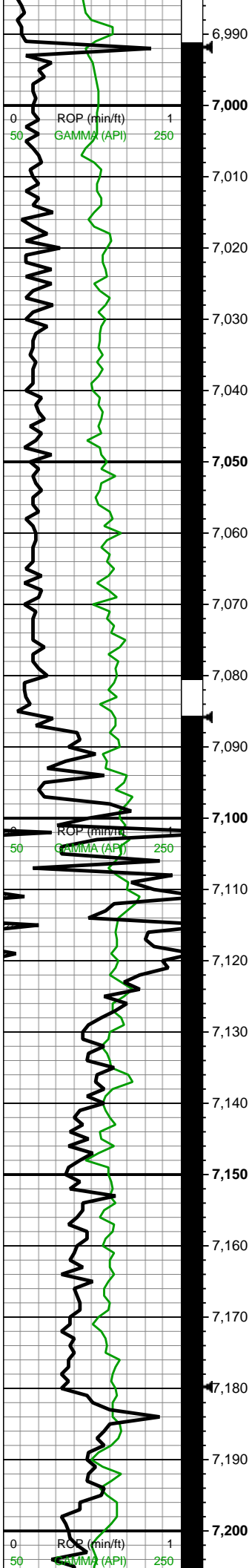
6800-6850 SLTY SH
(90%) pred lt- med gry wi
sl bnshgy, v frm wi sme
fis, v plty-sb blkly, sm tex
wi scat micmica, non-sl
calc; SLTST (10%): gy-dk
gy, frm-sl hrd, blkly, non
calc, rgh tex, tr pyr

6850-6900 SLTY SH
(100%): gyshbn-med gy,
mot lt gy, lam dk brn,
blkly-sb tab ctngs, sl
frm-frm, stri, vf lam, sl slty
tex, sl micmica, non-sl
calc, mnr imbd/dissm
mic pyr

6900-6950 SLTY SH
(100%) v gyshbn wi lt-sl
med gy-occ scat dk gy, v
frm-sl hrd wi sme fis, v
pred plty-blkly wi sl ang,
sm tex wi scat-tr
micmica, non-sl calc

6950-7000 SLTY SH
(100%) pred lt- med gry





WOB: 33.5klbs
RPM: 0
SPM: 206
SPP: 3,804psi

MD: 7,021'
TVD: 6,795.08'
INC: 32.96°
AZM: 347.6°
VS: -661.86'

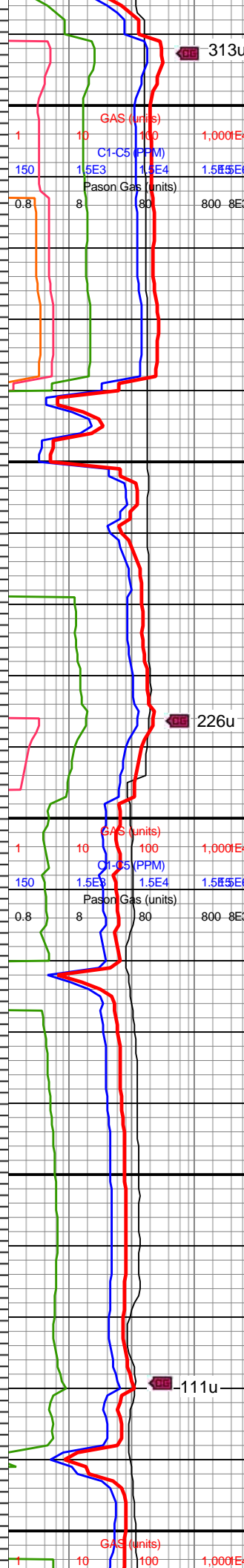
MW IN: 9.6+
VIS IN: 42
MW OUT: 9.5
VIS OUT: 40

MD: 7,115'
TVD: 6,870.96'
INC: 39.33°
AZM: 344.88°
VS: -608.18'

MW IN: 9.7
VIS IN: 41
MW OUT: 9.7
VIS OUT: 40

WOB: 21.5klbs
RPM: 0
SPM: 176
SPP: 2,880psi

MD: 7,209'



313u

226u

111u

(100%) pred dk med gy
wi sl bnshgy, v frm wi
sme fis, v plty-sb blk, sm
tex wi scat micmica,
non-sl calc

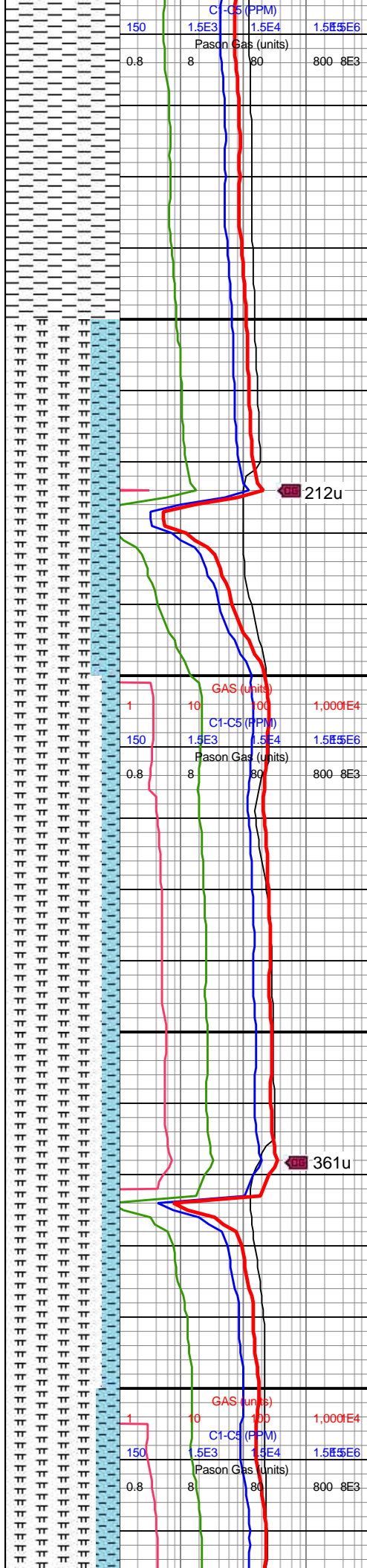
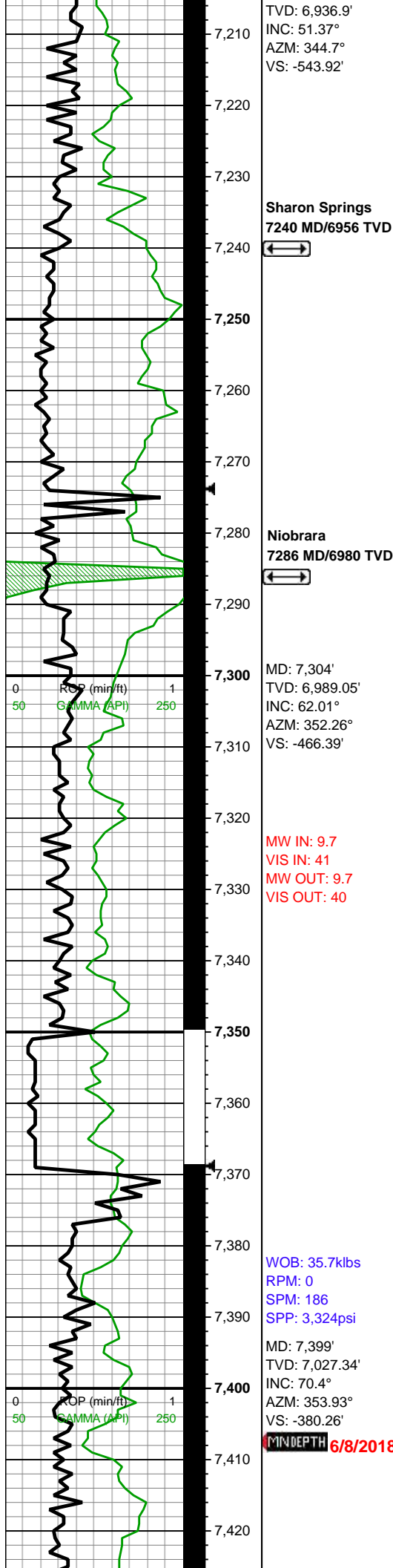
7000-7050 SLTY SH
(100%): med-dk gy, occ lt
gy, dk bnshgy, frm-v frm,
sb plty, pred non calc,
sm-v f slty tex, occ diss
pyr

7050-7100 SLTY SH
(100%): pred dk gy, sme
v dk gy-blk, frm, blk, sme
plty, brit, sme v thnly lam,
tr micmica, sm tex, non
calc

7100-7150 SLTY SH
(100%): lt-med gy, blk,
sme plty, frm, scat-pyrc
pyr, micmica, v wkly calc

7150-7200 SLTY SH
(100%) pred gyshbn wi sl
med gy-occ scat dk gy, v
frm-sl brit wi sme fis,
pred plty-blk wi sl ang,
sm tex wi scat micmica,
non-sl calc





7200-7250 SH (100%):
pred v dk gy, comly blk,
sme med-lt gy, blk, frm,
sme v frm-hrd, non calc,
micmica, scat imbd pyr

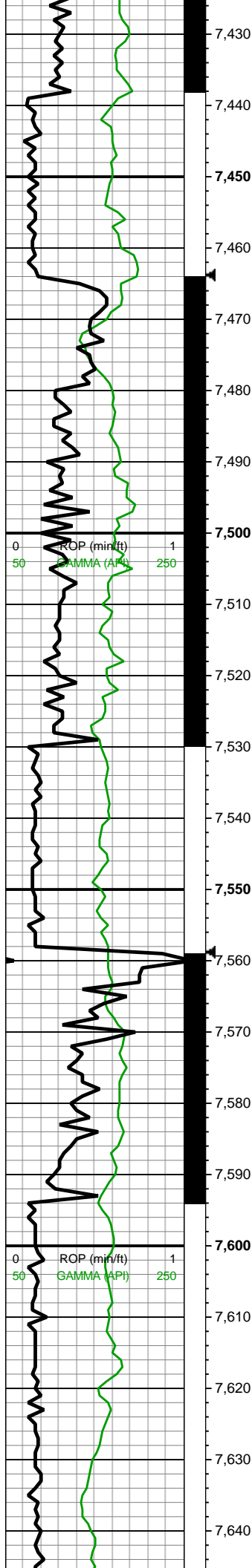
7250-7300 MRLST
(75%): dk gy, dk gyshbn,
mot, frm, sb blk, sb ang
ctngs, mod calc; CHK
(25%): med brn, gyshbn,
mot-sl stri, blk-tab ctngs,
sl frm-brit, tr vf lam,
sm-chky tex, hi calc

7300-7350 MRLST
(85%): pred med gy-dk
gy, frm-v frm, blk, sl
mot-lam, sme sl mot, v
calc, occ-scat pyrc nod,
sme tr micmica; CHK
(15%): pred med gyshbn,
sme lt brn, v blk, sft-sl
frm, v calc, chky tex

7350-7400 MRLST
(85%): dk gy-gyshbn,
mot, sl hd-frm, sb blk-sb
ang ctngs, tr intbd CHK,
calc; CHK (15%): predy
gyshbn, mot-sl stri, sb
blk ctngs, sl frm-brit, tr
MRLST incl, sm chky tex,
v calc

7400-7450 MRLST
(80%): dk gy, dk gyshbn



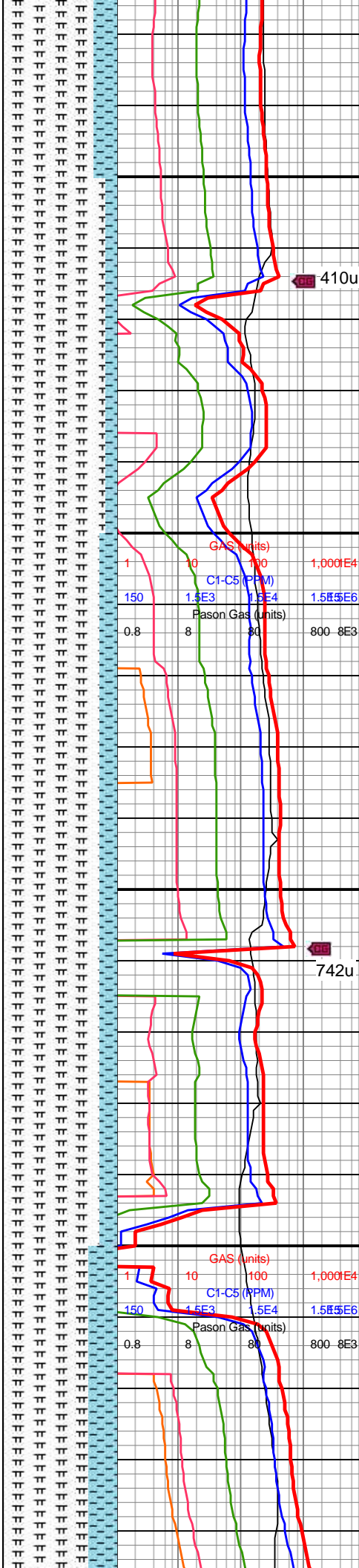


MW IN: 9.8
VIS IN: 42
MW OUT: 9.7
VIS OUT: 40

MD: 7,494'
TVD: 7,052.34'
INC: 79.06°
AZM: 356.22°
VS: -289.11'

MD: 7,589'
TVD: 7,063.78'
INC: 87.1°
AZM: 0.7°
VS: -194.96'

WOB: 35.3klbs
RPM: 30
SPM: 188
SPP: 3,793psi



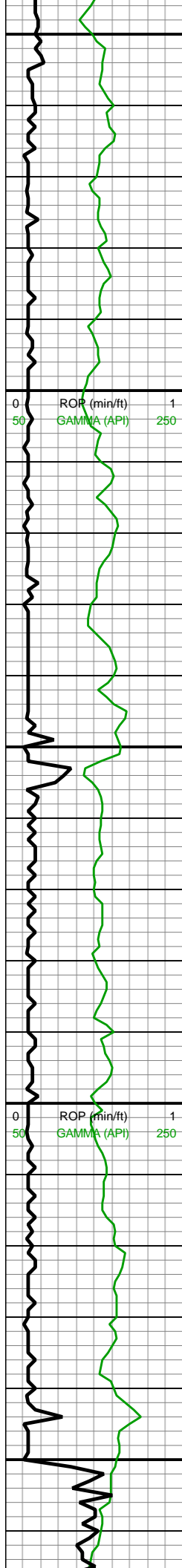
(80%): dk gy, dk gyshbn, mot, frm, sb blk-y-sb ang ctngs, tr intbd CHK, scat pyrc nod, calc; CHK (20%): predy gyshbn, mot-sl stri, sb blk-y ctngs, sl frm-brit, tr vf lam, sm-chky tex, calc

7450-7500 MRLST(90%): med-v dk gry, predy blk-y wi com lamn, v brit-hrd, micmica, hily calc, com pyrc nod; CHK (10%) pred ltgy-occ gyshbn wi sme com lt thn chky lamn, sub blk-y-blky with occ plty, v soft-ltly frm, rgh tex wi rr-pp pyr, hily calc

7500-7550 MRLST (80%): predy dk gy, occ dk gyshbn, sft-sb frm-frm, brit ip, mod fis sb blk-y-blky ctngs, slty arg tex, tr vf pyr & micmica, tr c pyr strg ip, hi calc; CHK (20%): med-dk gy wi occ f wh chky incl, frm, brit, mod fis sb blk-y-blky, hi calc

7550-7600 MRLST (80%): v dk gy-dk gyshbn ip, frm-v frm, blk-y, v calc, rgh tex, mot-stri, sme fy lam, tr pp pyr; CHK (20%): dk gy-brn, com lt gy-mot, blk-y, sft, fri, chky tex, occ stri, rr mic fos



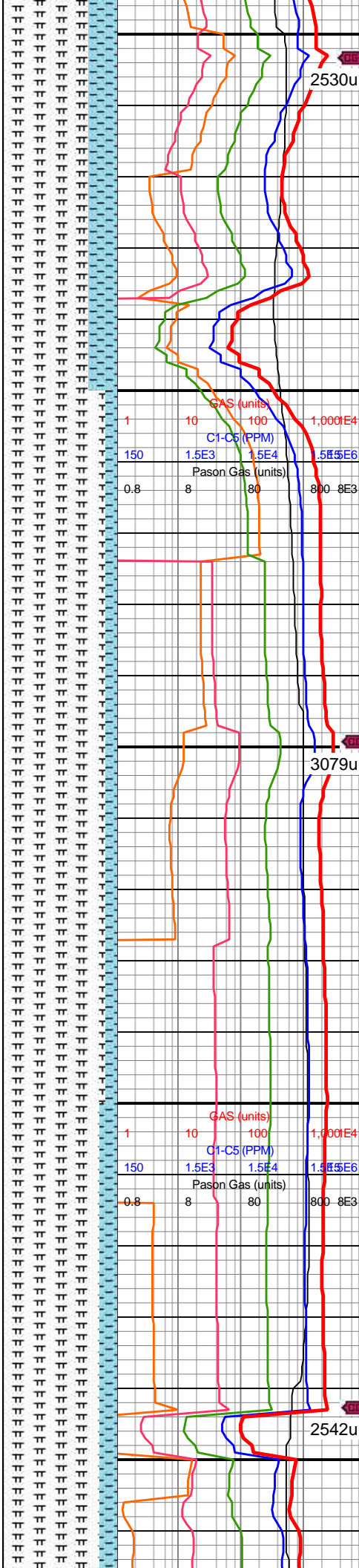


MD: 7,683'
TVD: 7,068.65'
INC: 86.97°
AZM: 1.05°
VS: -101.09'

MW IN: 9.8
VIS IN: 42
MW OUT: 9.7
VIS OUT: 40

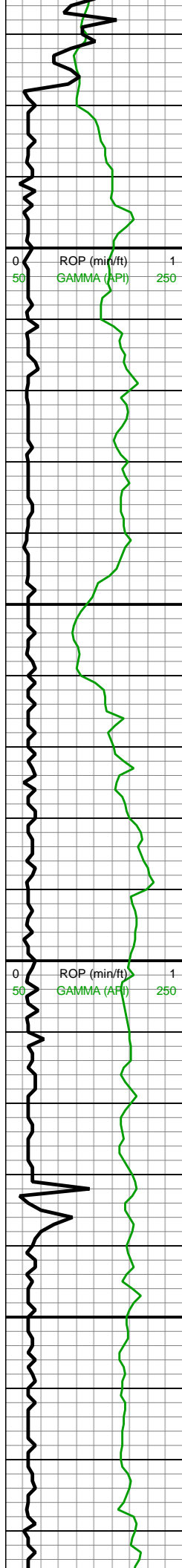
MD: 7,778'
TVD: 7,074.47'
INC: 86°
AZM: 0.7°
VS: -6.27'

WOB: 37.6klbs
RPM: 71
SPM: 208
SPP: 4,312psi



7600-7700 MRLST
(75%): med-v dk gry,
predy blky wi com lamn, v
brit-hrd, micmica, hily
calc; CHK (25%) pred
ltgy-occ gyshbn wi sme
com lt thn chky lamn, sub
blky-blky with occ plty, v
soft-ltly frm, rgh tex wi
rr-pp pyr, hily calc

7700-7800 MRLST
(90%): gyshbn-dk gy,
frm-hd, occ sft, predy brit,
sm-sl slty tex, mod-hi
calc; CHK (10%): lt gy-lt
gyshbn, sft-sb frm-frm,
sb blky, chky tex, tr-rr ptch
pyr strg, med-hi calc



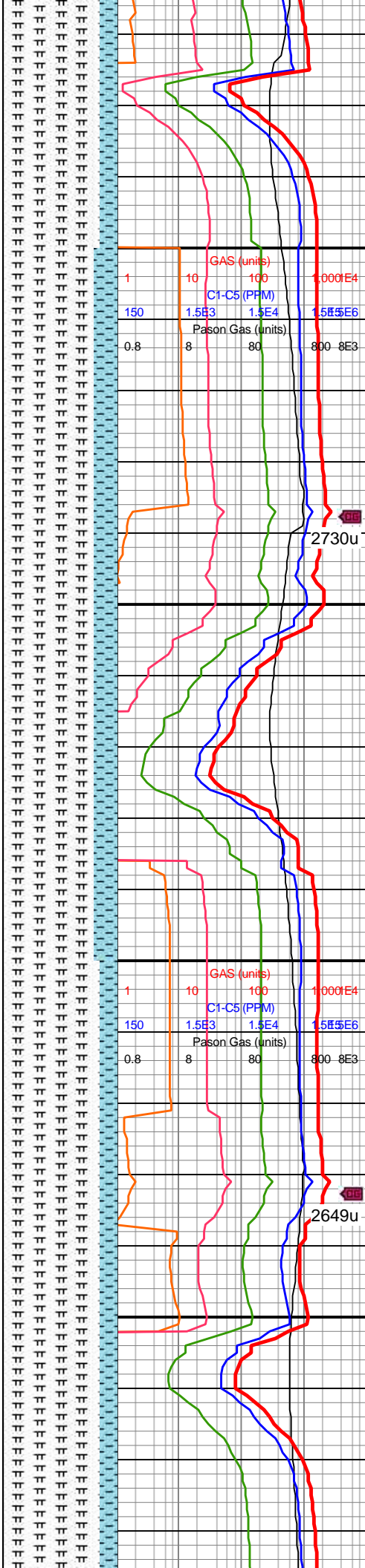
MD: 7,873'
TVD: 7,078.84'
INC: 88.73°
AZM: 1.14°
VS: 88.61'

MW IN: 9.8
VIS IN: 42
MW OUT: 9.7+
VIS OUT: 40

MD: 7,967'
TVD: 7,081.32'
INC: 88.24°
AZM: 1.93°
VS: 182.56'

WOB: 39.4klbs
RPM: 71
SPM: 208
SPP: 4,332psi

MD: 8,062'
TVD: 7,084.82'
INC: 87.54°
AZM: 1.58°
VS: 277.48'

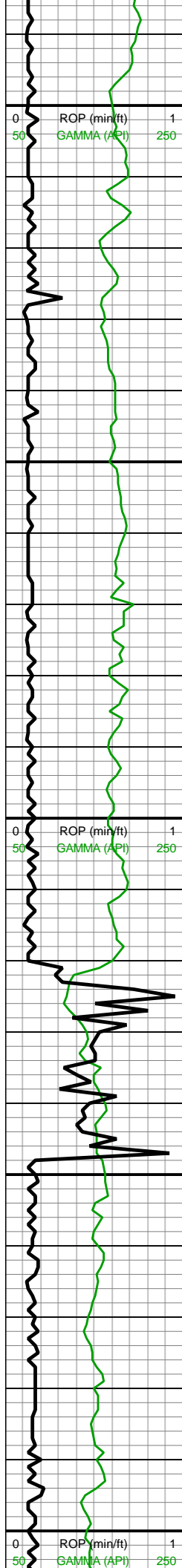


7800-7900 MRLST
(85%): v dk gy-dk gyshbn
ip, frm-v frm, blk, v calc,
rgh tex, mot-stri, sme fy
lam, tr pp pyr; CHK
(15%): dk gy-brn, com lt
gy-mot, blk, sft, fri, chky
tex, occ stri, rr mic fos

7900-8000 MRLST
(80%): dk gy-dk gyshbn,
sl hd-v frm, mod fis, sb
blk-tab ctngs, sm arg
tex, mod calc, tr pp mic
pyr; CHK (20%): med
brn-gyshbn, frm-sft, mod
fis, tab-sb blk, tr free
CHK, v calc

8000-8100 MRLST
(85%): med-v dk gry,
predy blk wi com lamn, v
brit-hrd, micmica, hily





8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160
8,170
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300

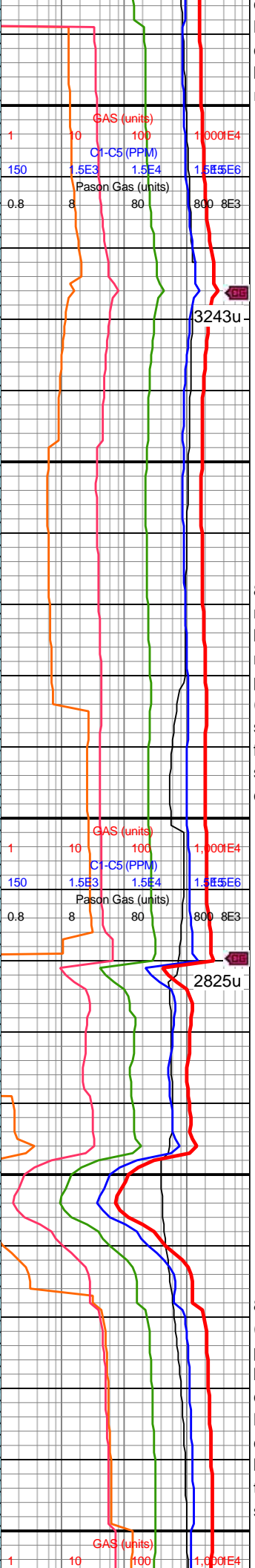
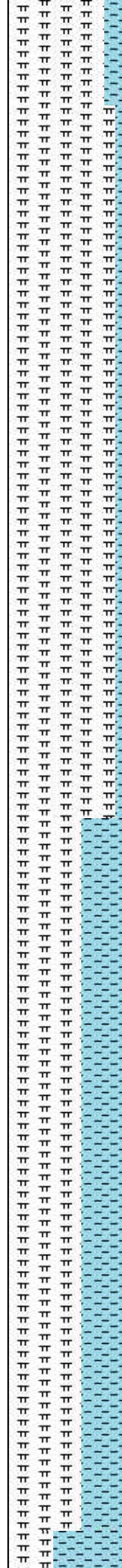
MD: 8,157'
TVD: 7,089.7'
INC: 86.57°
AZM: 1.49°
VS: 372.33'

WOB: 39.9klbs
RPM: 71
SPM: 208
SPP: 4,362psi

MW IN: 9.7+
VIS IN: 43
MW OUT: 9.7
VIS OUT: 40

B Chalk
8251 MD/7093 TVD

MD: 8,251'
TVD: 7,092.55'
INC: 89.96°
AZM: 1.14°
VS: 466.27'

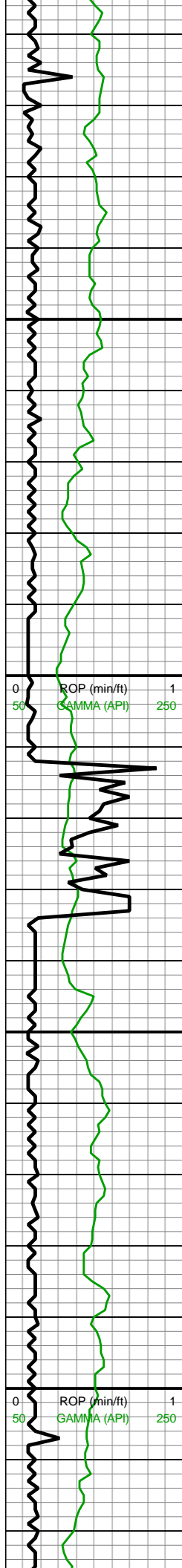


calc; CHK (15%) pred
ltgy-occ gyshbn wi sme
com lt thn chky lamn, sb
blky-blky, frm, rgh tex wi
rr-pp pyr, hily calc

8100-8200 MRLST (95%)
med-pred dk gry,sl
brit-hrd, v plty-plty, occ
micmica wi sme pp-tr
pyr, rr chk lam; CHK
(5%): pred lt gy-lt brn,
sme med gy-brn, rr lam,
frm, sl sft ip,sb blky wi
sme sl sb ang & rr plty, v
calc, tr pp pyr

8200-8300 MRLST
(65%): med-v dk gry,
predy blky wi com lamn, v
brit-hrd, micmica, hily
calc; CHK (35%) pred
ltgy-occ gyshbn wi sme
com lt thn chky lamn, sb
blky-blky, v sft-sl frm, rgh
tex wi rr-pp pyr, hily calc,
scat cal





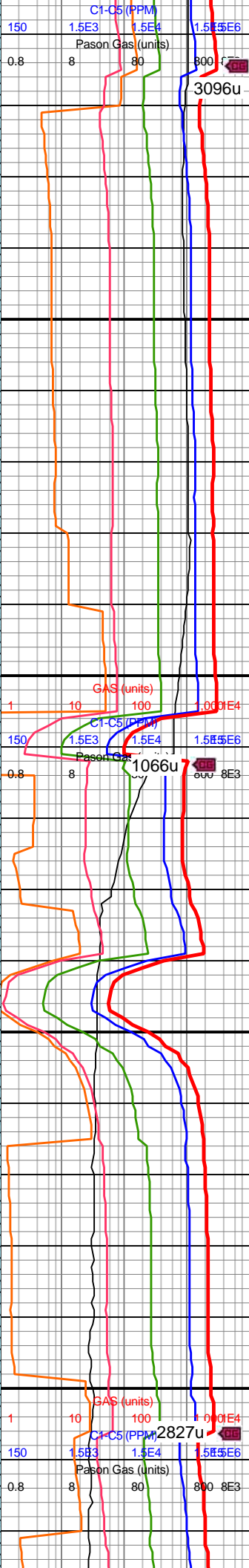
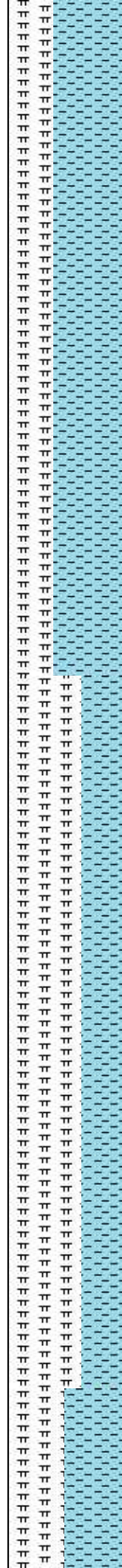
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400
8,410
8,420
8,430
8,440
8,450
8,460
8,470
8,480
8,490
8,500
8,510
8,520

MD: 8,346'
TVD: 7,093.34'
INC: 89.08°
AZM: 0.88°
VS: 561.26'

WOB: 39.7klbs
RPM: 73
SPM: 205
SPP: 4,272psi

MW IN: 9.8
VIS IN: 42
MW OUT: 9.7
VIS OUT: 40

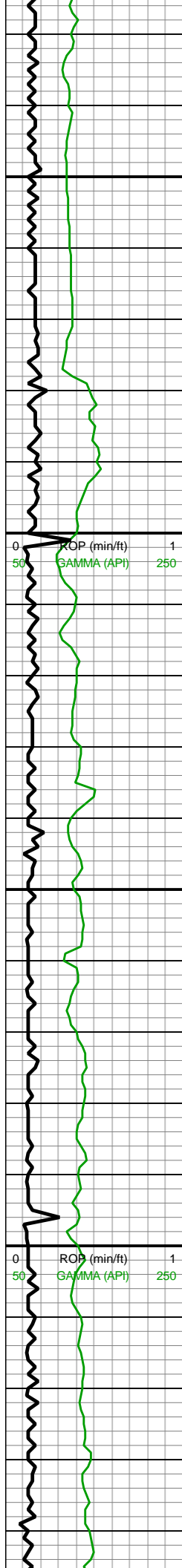
MD: 8,441'
TVD: 7,092.28'
INC: 92.2°
AZM: 1.23°
VS: 656.23'



8300-8400 CHK (60%):
med gy, gyshbn, sb tab
ctngs, frm, brit, tr vf lam,
hi calc, scat inoc fos
frags; MRLST (40%): dk
gy, dk gyshbn, sb tab-blky
ctngs, brit, sl hd, tr CHK
intbds, tr pp mic pyr, hi
calc

8400-8500 MRLST
(65%): dk gy-dk gyshbn-v
dk gy, intbdd wi com f wh
chky incl, occ brn marl
incl, frm-hd, mod fis blkky
ctngs, sl slty tex, rr bent,
rr forams-sft chk, rr-occ vf
pyr, mod calc wi brn mrly
resdl; CHK (35%): med
gy, rr lt gy, sb frm-frm,
l-mod fis sb rd-sb blkky, hi
calc





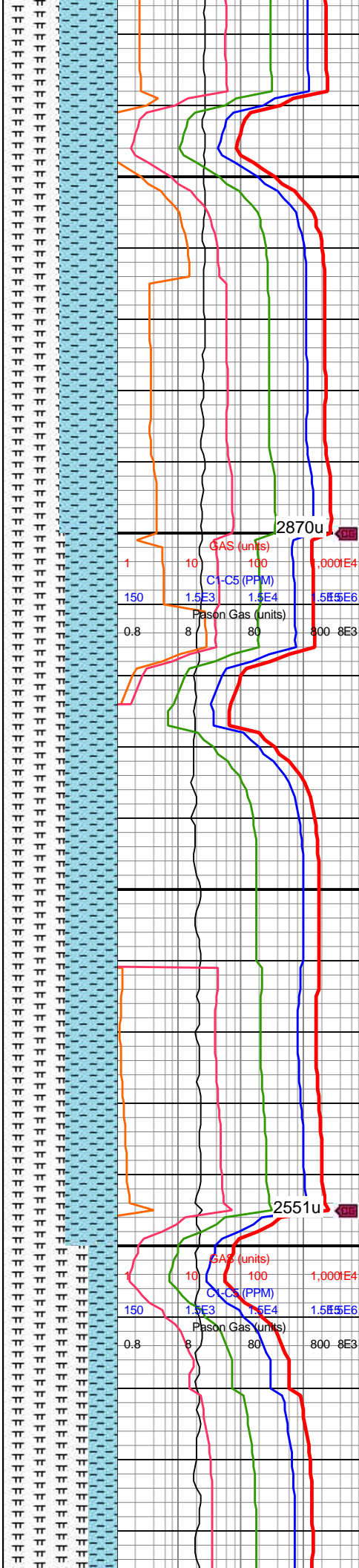
MD: 8,536'
TVD: 7,088.71'
INC: 92.11°
AZM: 1.75°
VS: 751.15'

WOB: 6klbs
RPM: 71
SPM: 206
SPP: 3,560psi

MW IN: 9.85
VIS IN: 42
MW OUT: 9.8
VIS OUT: 40

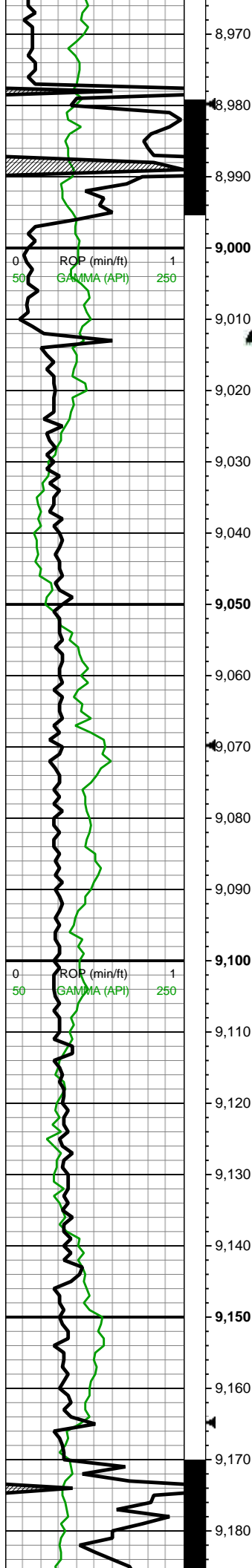
MD: 8,631'
TVD: 7,085.65'
INC: 91.58°
AZM: 1.32°
VS: 846.09'

MD: 8,725'
TVD: 7,083.38'
INC: 91.19°
AZM: 1.23°
VS: 940.05'



8500-8600 CHK (50%): lt gy-med gy, occ dk gy wi abnt f wh chky incl grdg to chky mrlst, sb frm-frm, l-mod fis sb rd-sb blkly ctngs, rr bent, rr forams & hydrated chk, hi calc MRLST (50%): dk gy-dk gyshbn-v dk gy, intbdd wi com f wh chky incl, occ brn marl incl, frm-hd, mod fis blkly ctngs, sl slty tex, rr-occ vf pp pyr, mod calc wi brn mrlly resdl

8600-8700 MRLST (55%): dk gy-dk gyshbn-v dk gy, intbdd wi com f wh chky incl, occ brn marl incl, frm-hd, mod fis blkly ctngs, sl slty tex, occ bent bent, bent wi com pyr nod, rr forams, rr-occ f-u f pyr, mod calc wi brn mrlly resdl; CHK (45%): med gy, rr lt gy, sb frm-frm, l-mod fis sb rd-sb blkly, hi calc



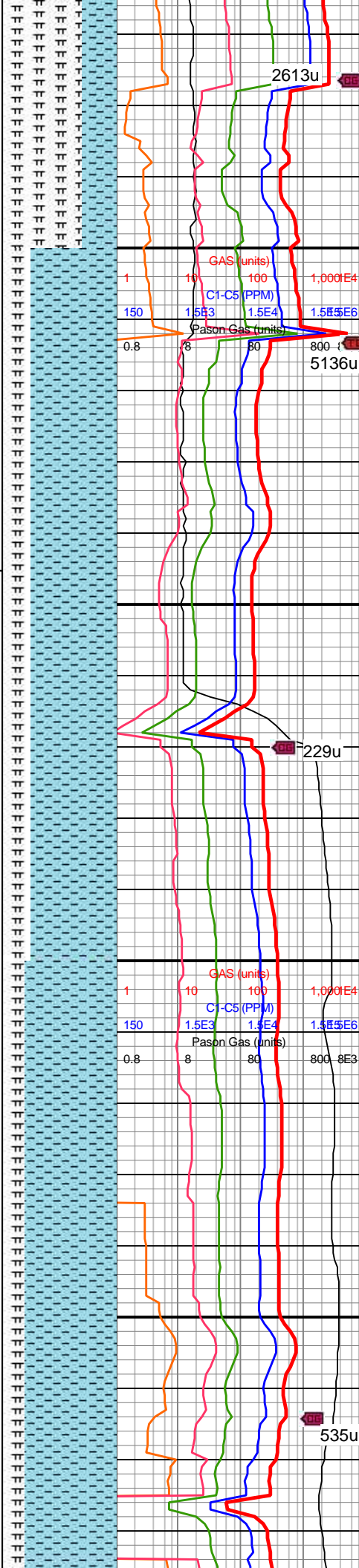
**TOOH for motor
failure 08:00hrs
6/8/2018
Resumed
drilling 20:00hrs
6/8/18**

MD: 9,010'
TVD: 7,078.59'
INC: 92.37°
AZM: 359.82°
VS: 1,224.99'

Bit #: 2
Type: U516S
Size: 8 1/2
Depth In: 9,012'
Depth Out:
11,884'
Hours: 17.5 hrs
Avg Ft/Hr: 164 'h
Jets: 6x13
S/N: 37645

MW IN: 10
VIS IN: 47
MW OUT: 9.8
VIS OUT: 45

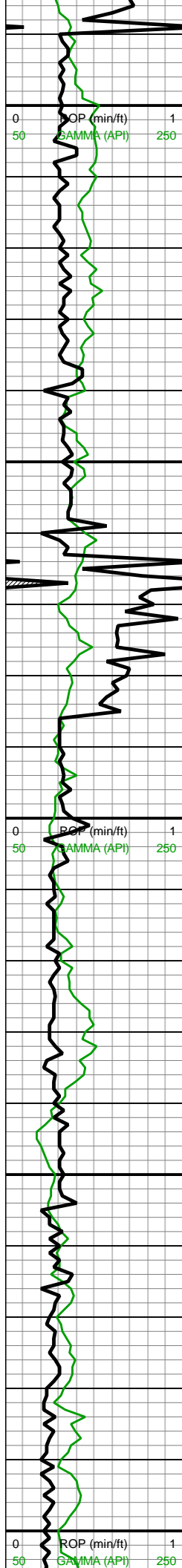
MD: 9,105'
TVD: 7,074.51'
INC: 92.55°
AZM: 358.24°
VS: 1,319.87'



frm-hd, mod fis blk
ctngs, sl slty-slty tex, occ
vf-u f pyr, rr-occ bent &
forams, mod calc wi brn
mrly resdl; CHK (30%):
med gy-dk gy wi occ f
chky incl, occ dk gy wi
abt f wh chky incl grdg to
chky mrlst, sb frm-frm,
l-mod fis sb rd-sb blk
ctngs, hi calc

9000-9100 CHK (75%):
med gy-sl gyshbn, sub
blk-sub plty med fis
ctngs, frm, occ-com fos
frags, rr forams, tr vf-uf
pyr, hi calc; MRLST
(25%): dk gyshbn-dk gy,
frm-sl hd-brit, mod calc, tr
CHK incl

9100-9200 CHK (80%): lt
gyshbn, occ lt gy-dk gy wi
occ chky incl, sft-sb
frm-frm-brit, sb blk, tr vf
pyr, hi calc; MRLST



MD: 9,199'
TVD: 7,069.72'
INC: 93.3°
AZM: 0.52°
VS: 1,413.72'

WOB: 31.8klbs
RPM: 70
SPM: 186
SPP: 3,747psi

MW IN: 9.9
VIS IN: 46
MW OUT: 9.9
VIS OUT: 42

On Buster

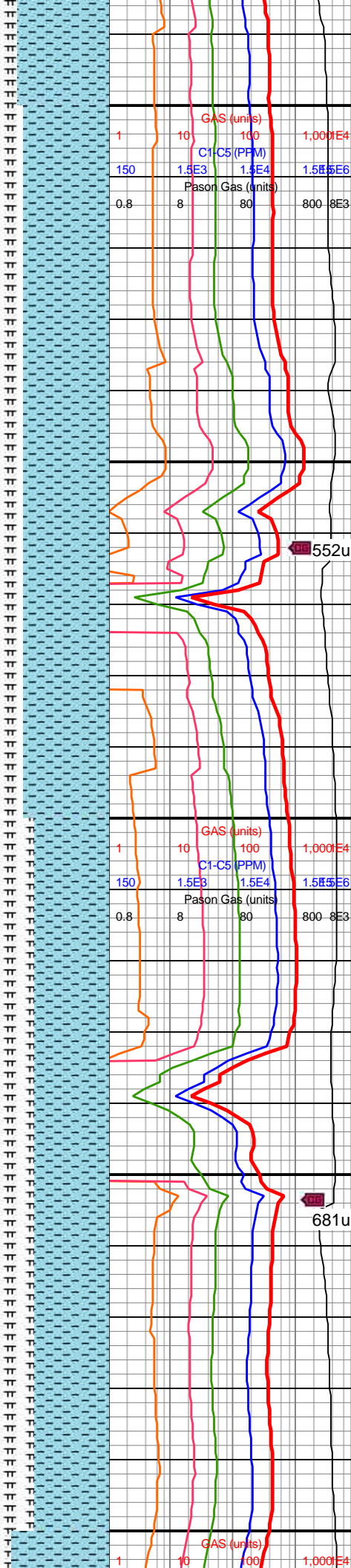
Caught Bulk Sample

MD: 9,294'
TVD: 7,065.75'
INC: 91.49°
AZM: 1.23°
VS: 1,508.63'

MINDEPTH 6/9/2018

MD: 9,388'
TVD: 7,062.61'
INC: 92.33°
AZM: 0.88°
VS: 1,602.57'

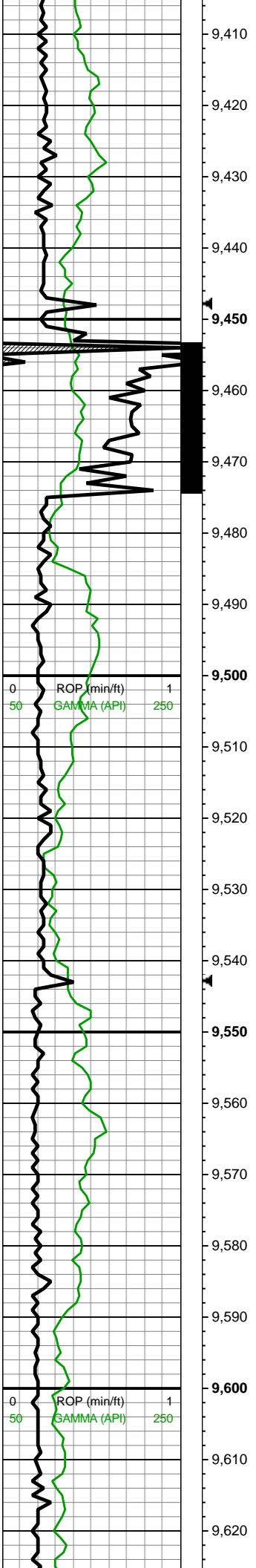
WOB: 37.6klbs
RPM: 72
SPM: 188
SPP: 3,956psi



pyr, hi calc, MRLST (20%): predy dk gy, occ med-dk gyshbn, frm-hd-brit, sm sl slty tex, rgh tex ip, mod calc

9200-9300 CHK (75%): predy med gyshbn-med brn, sme dk brn, mot ip, occ stri, pred sft-sl frm, blk, hi calc, chky tex, tr-rr mic fos, scat frac fl cal; MRLST (25%): pred v dk gy, occ blk, frm-hrd, occ v hrd, blk, sme plty, calc-v calc, occ slty, tr pp pyr

9300-9400 CHK (65%): lt-med gy, sl brn hue ip, sb frm-frm, sb rd-sb blk, sm-sl slty tex, occ rgh tex wi rr-tr fos frags & forams, tr vf pyr, hi calc; MRLST (35%): med gy-dk gy, frm, brit, med-hi fis sb blk-sb plty ctngs, mod calc



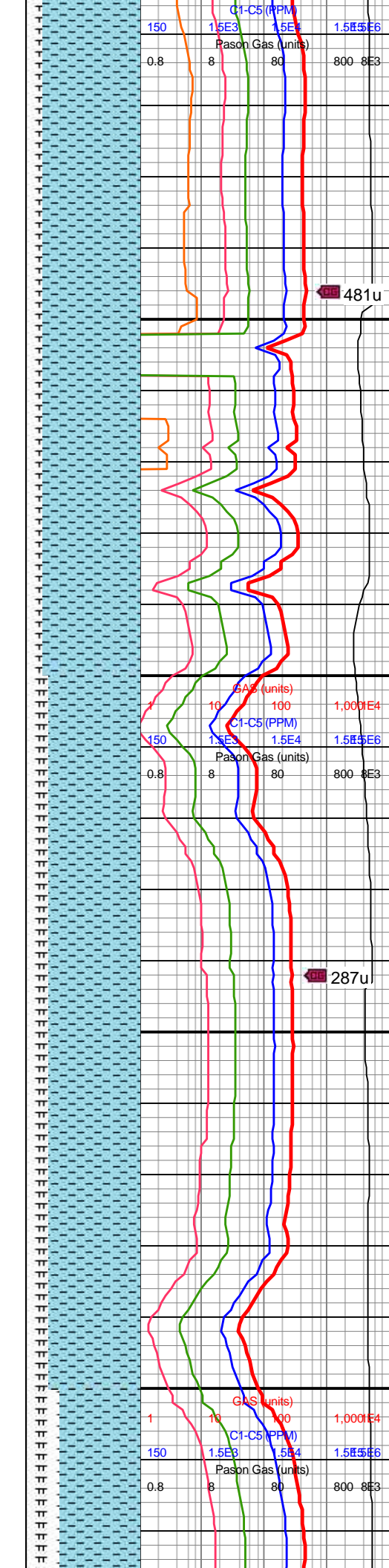
SPP: 3,950psi

MD: 9,483'
TVD: 7,060.83'
INC: 89.82°
AZM: 1.58°
VS: 1,697.54'

MW IN: 9.8+
VIS IN: 44
MW OUT: 9.9
VIS OUT: 42

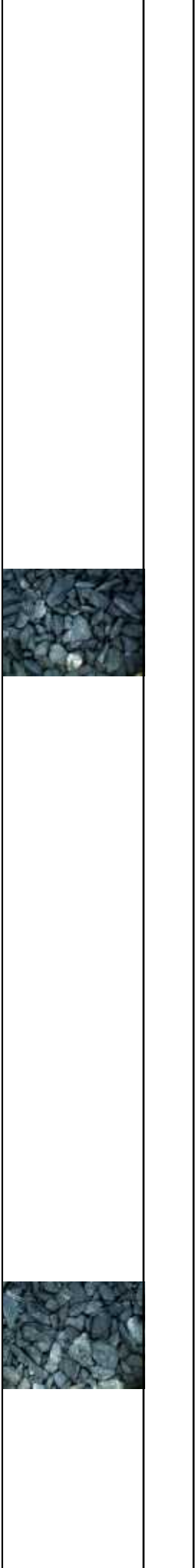
MD: 9,578'
TVD: 7,060.98'
INC: 90°
AZM: 1.4°
VS: 1,792.53'

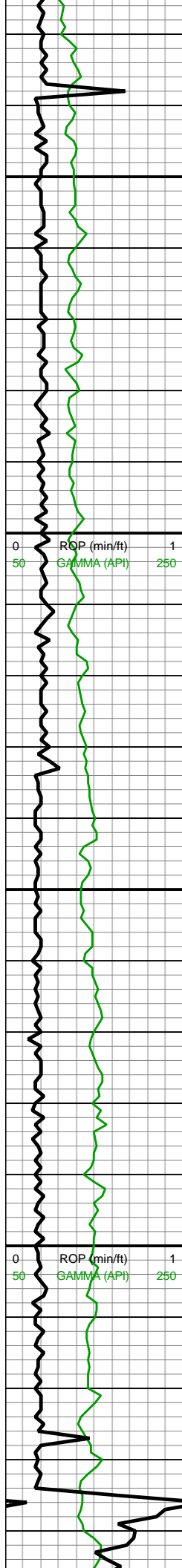
WOB: 39.8klbs
RPM: 70
SPM: 186
SPP: 4,029psi



9400-9500 CHK (85%):
predy gyshbn-med gy,
sme lt gy, sb blkgy-sb ang
ctngs, fri-frm, tr intbd
MRLST, sm chky tex,
calc; MRLST (15%): dk
gyshbn-dk gy, frm-sl hd,
sb blkgy-ang ctngs, sl
sm-rgh tex, com intbd
CHK, hi calc

9500-9600 CHK (80%):
pred lt-med gry wi lt brn,
sme sl med gy-brn,
frm-sl brit, sb blkgy, sl sft
ip, v calc, rr fos incl, tr pyr,
scat cal vns; MRLST
(20%): v dk gy-blk, occ
gyshbn, frm-v frm, blkgy,
calc, sl rgh tex wi tr
micmica



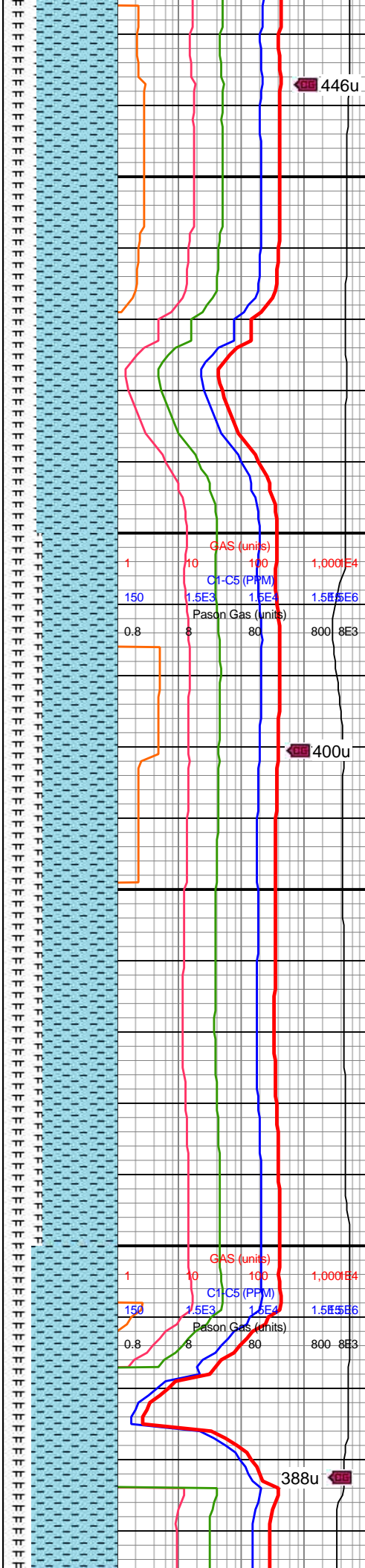


MD: 9,672'
TVD: 7,060.51'
INC: 90.57°
AZM: 0.52°
VS: 1,886.52'

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

MD: 9,768'
TVD: 7,059.08'
INC: 91.14°
AZM: 0.52°
VS: 1,982.51'

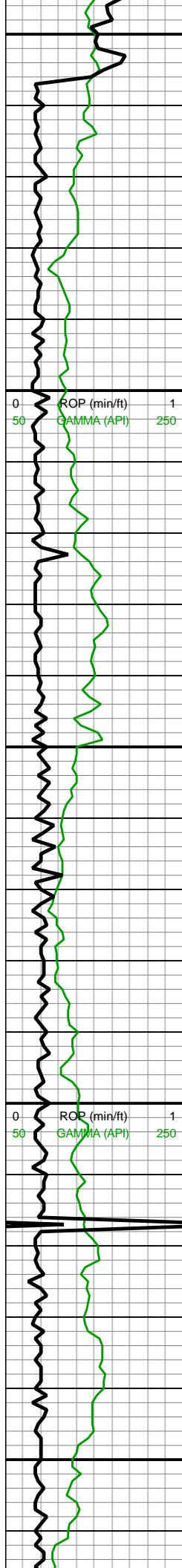
WOB: 38.4klbs
RPM: 72
SPM: 184
SPP: 4,053psi



9600-9700 CHK (70%):
pred lt-med gry wi lt brn,
sme sl med gy-brn,
frm-sl brit, sb blkyl-sl plty,
sl sft ip, v calc, tr pyr, scat
cal vns & frac fl cal;
MRLST (30%): v dk
gy-blk, occ gyshbn, frm-v
frm, blkyl, calc, sl rgh tex
wi com micmica

9700-9800 CHK (65%):
med gy wi sl brn hue,
ang-sb plty ctngs, frm-hd
wi sl rgh tex, scat-com
calc fos frags & chky
forams, rr-occ pyr,;
MRLST (35%) med
gy-gyshbn, blkyl-sub plty,
frm-sl brit, tr-rr vf-f pyr





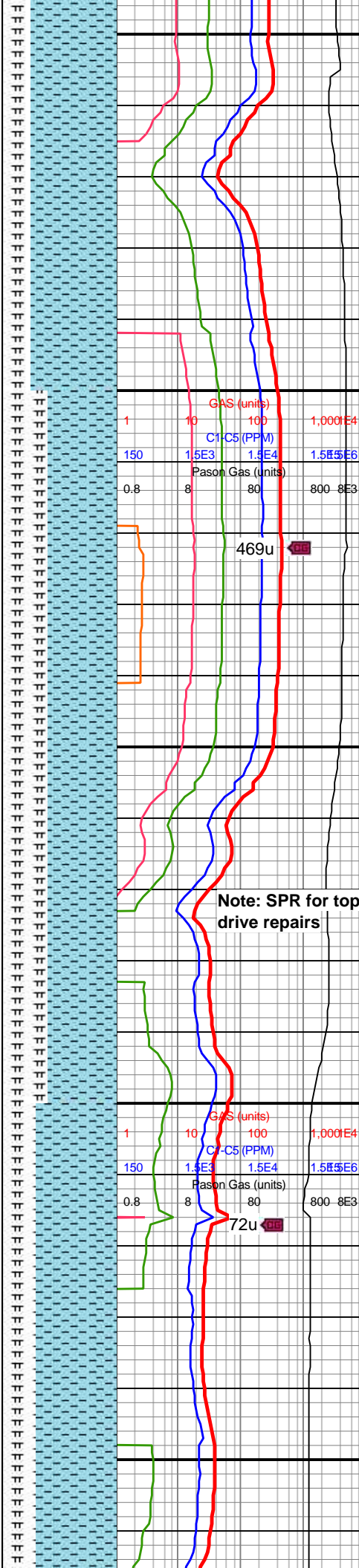
MD: 9,862'
TVD: 7,059.12'
INC: 88.81°
AZM: 0.79°
VS: 2,076.5'

MW IN: 9.9
VIS IN: 44
MW OUT: 9.8+
VIS OUT: 42

MD: 9,957'
TVD: 7,061.24'
INC: 88.64°
AZM: 0.26°
VS: 2,171.48'

WOB: 39klbs
RPM: 71
SPM: 186
SPP: 4,128psi

MD: 10,051'
TVD: 7,063.83'
INC: 88.2°
AZM: 359.91°
VS: 2,265.44'

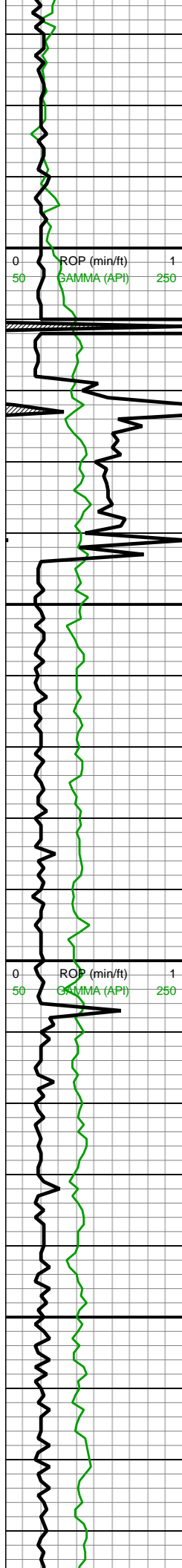


9800-9900 CHK (75%):
med gy-gyshbn, sb blk
ctngs, fri frm, tr MRLST
intbd, sm chky tex, v calc;
MRLST (25%): dk
gyshbn-dk gy, frm-sl hd,
sb blk-ang ctngs, sl sm
tex-rgh ip, com CHK
intbd, hi calc, tr diss
mic pyr

Note: SPR for top
drive repairs

9900-10000 CHK (60%):
med gy, gyshbn, sb tab
ctngs, frm, brit, tr vf lam,
hi calc, scat inoc fos
frags; MRLST (40%): dk
gy, dk gyshbn, sb tab-blk
ctngs, brit, sl hd, tr CHK
intbds, tr pp mic pyr, mod
calc

10000-10100 CHK
(70%): med gy-dk gy-dk
gyshbn wi com f-u f wh
chky incl, occ lt gy, ch



10,070
10,080
10,090
10,100
10,110
10,120
10,130
10,140
10,150
10,160
10,170
10,180
10,190
10,200
10,210
10,220
10,230
10,240
10,250
10,260
10,270
10,280

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

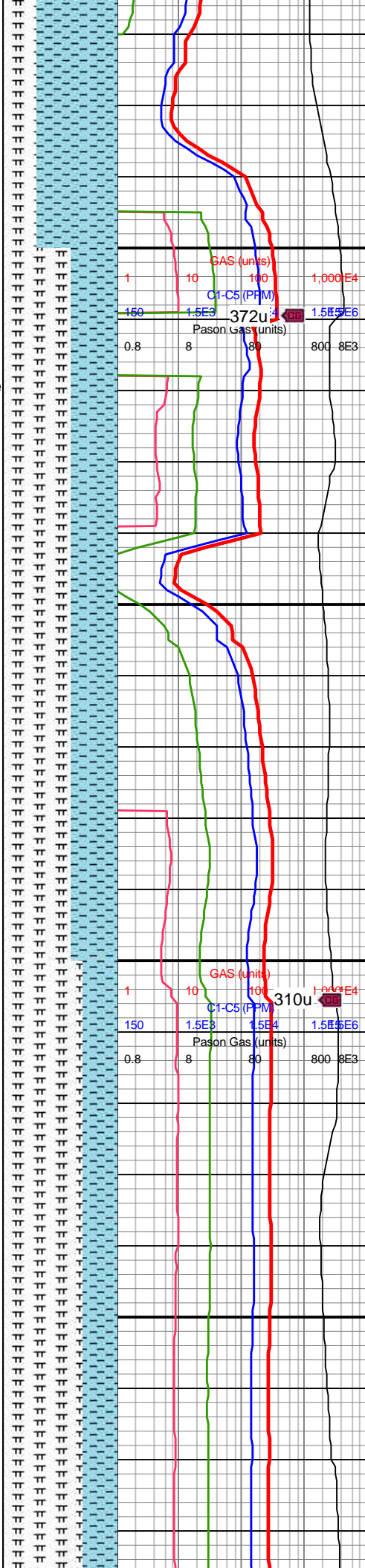
Repair Top Drive

MD: 10,146'
TVD: 7,065.06'
INC: 90.31°
AZM: 1.75°
VS: 2,360.42'

WOB: 39klbs
RPM: 70
SPM: 186
SPP: 4,130psi

MD: 10,241'
TVD: 7,065.28'
INC: 89.43°
AZM: 0.96°
VS: 2,455.41'

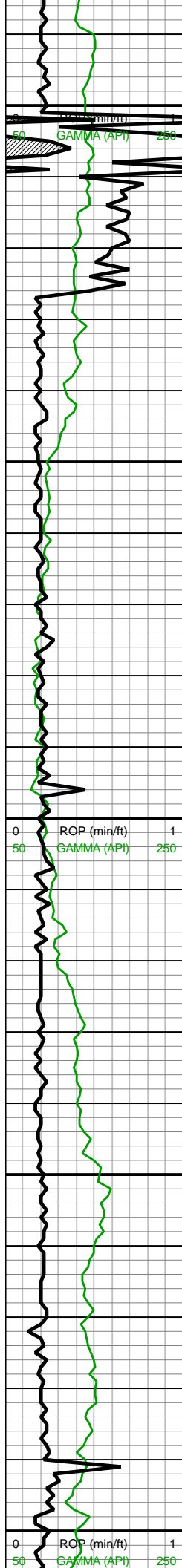
MW IN: 9.8
VIS IN: 43
MW OUT: 9.8
VIS OUT: 42



chky incl, occ lt gy, sb
frm-frm sb rd-sb blk
mod fis ctngs, sm arg-sl
silty tex, rr bent, rr forams,
tr fos frags & mict cal, tr
vf-c pyr strg, hi calc;
MRLST (30%): dk gy-v dk
gy, frm-brit, mod fis sb
blk-blk ctngs, sl silty tex,
tr vf pyr, mod calc

10100-10200 MRLST
(60%): dk gy-v dk gy,
frm-brit, mod fis sb
blk-blk ctngs, sl silty tex,
rr bent, tr fos frags, tr vf
pyr, mod calc wi brn mrl
resd; CHK (40%): med
gy-dk gy-dk gyshbn wi
com f-u f wh chky incl,
occ lt gy, sb frm-frm sb
rd-sb blk mod fis ctngs,
sm arg-sl silty tex, rr bent,
tr vf-c pyr strg, hi calc

10200-10300 MRLST
(70%): dk gy-v dk gy,
frm-brit, mod fis sb
blk-blk ctngs, sl silty tex,
tr bent, tr vf pyr, mod calc
wi brn mrl resd; CHK
(30%): med gy-dk gy-dk
gyshbn wi com f-u f wh
chky incl, occ lt gy, sb

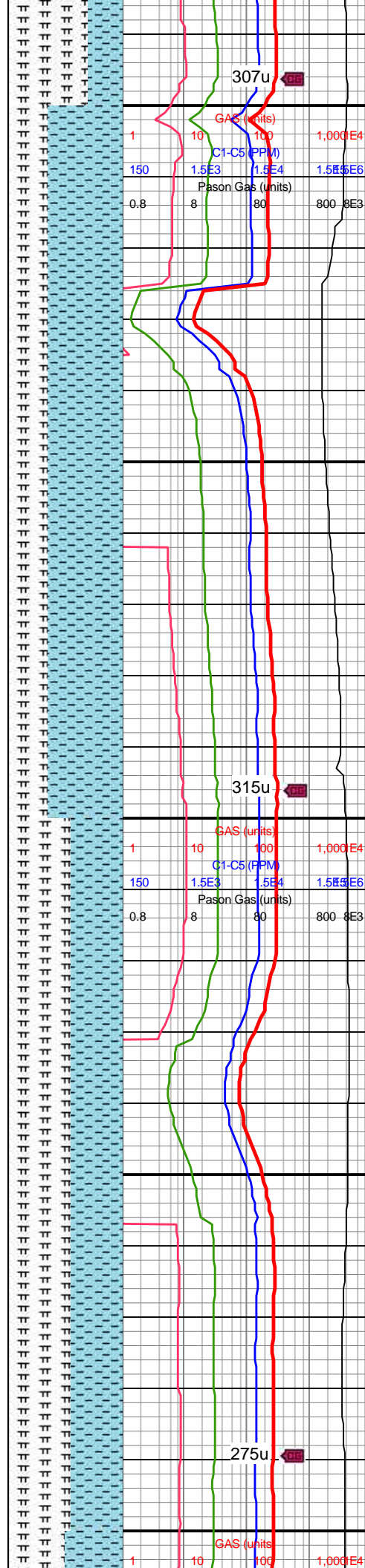


MD: 10,336'
TVD: 7,064.76'
INC: 91.19°
AZM: 4.13°
VS: 2,550.33'

WOB: 39klbs
RPM: 70
SPM: 188
SPP: 4,110psi

MW IN: 9.8
VIS IN: 43
MW OUT: 9.8
VIS OUT: 42

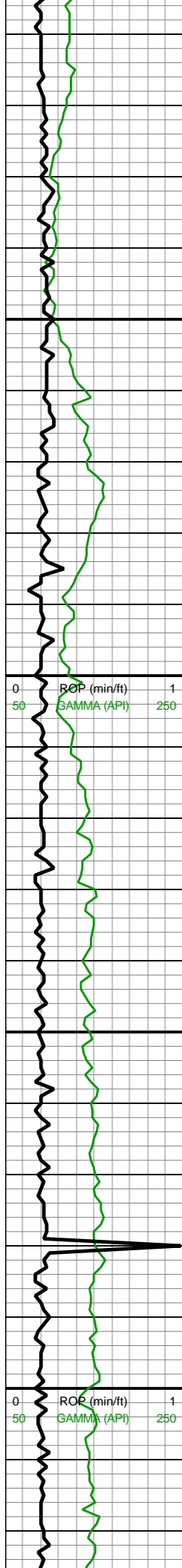
MD: 10,430'
TVD: 7,062.85'
INC: 91.14°
AZM: 3.69°
VS: 2,644.14'



chky incl, occ lt gy, sb
frm-frm sb rd-sb blk
mod fis ctngs, sm arg-sl
silty tex, tr vf-c pyr strg, hi
calc

10300-10400 CHK
(65%): med gy-dk gy-dk
gyshbn wi com f-u f wh
chky incl, occ lt gy, sb
frm-frm sb rd-sb blk
mod fis ctngs, sm arg-sl
silty tex, tr vf-c pyr strg, hi
calc; MRLST (35%): dk
gy-dk gyshbn-v dk gy,
frm-brit, mod fis sb
blky-blky ctngs, sl silty tex,
tr bent, tr vf pyr, mod calc
wi brn mrly resdl

10400-10500 MRLST
(55%): dk gy-dk gyshbn,
frm-brit, mod fis sb
blky-blky ctngs, sl silty tex,
mot wi brn mrly incl ip, rr
bent & bent wi diss pyr ip,
tr vf pyr, mod calc; CHK
(45%): med gy-dk gy wi
com f-u f wh chky incl,
frm-brit mod fis sb blk
ctngs, sm arg-sl silty tex,
rr inoc fos frags & mict
cal, rr forams, tr vf-c pyr
strg, hi calc



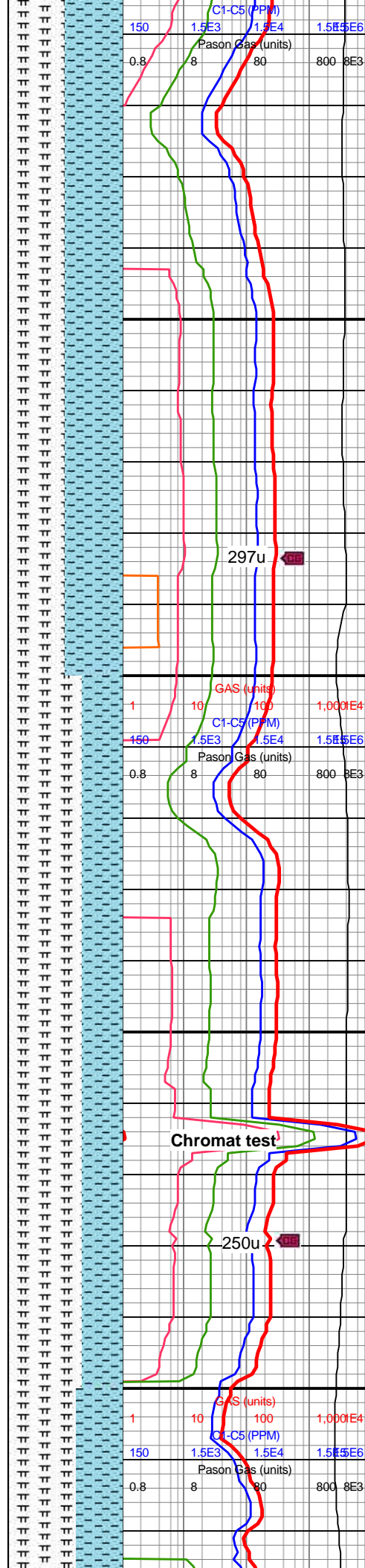
MD: 10,525'
TVD: 7,061'
INC: 91.1°
AZM: 2.98°
VS: 2,739'

WOB: 40klbs
RPM: 70
SPM: 186
SPP: 4,210psi

MD: 10,619'
TVD: 7,058.94'
INC: 91.41°
AZM: 2.72°
VS: 2,832.9'

MW IN: 9.8
VIS IN: 44
MW OUT: 9.9
VIS OUT: 43

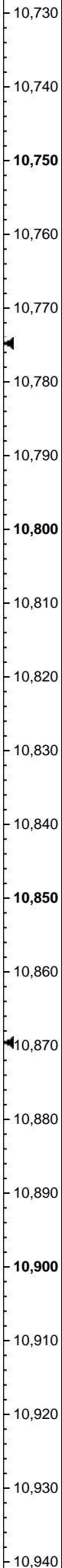
MD: 10,714'
TVD: 7,056.72'
INC: 91.27°
AZM: 2.28°
VS: 2,927.81'



10500-10600 CHK
(50%): med gy-gyshbn,
occ dk gy, com f-u f wh
chky incl & forams, sb
frm-frm, mod fis sb rd-sb
blky, sm arg-sl slty tex,
rr-occ tn bent, rr forams,
tr-rr fos frags & mict cal,
hi calc; MRLST (50%): dk
gy-dk gyshbn-v dk gy,
frm-brit, mod fis sb
blky-blky ctngs, sl slty tex,
tr vf pyr, mod calc wi brn
mrly resdl

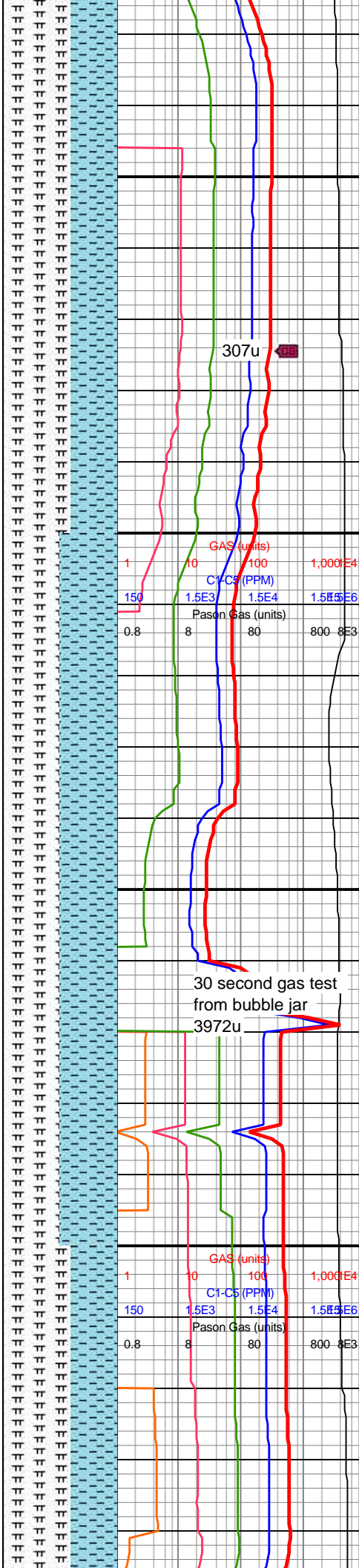
10600-10700 MRLST
(65%): predy dk gy, v dk
gy-dk gyshbn ip, occ sp
brn marl incl, frm-brit,
mod fis sb blky-blky
ctngs, sl slty tex, rr bent &
bent wi diss pyr ip, tr-rr vf
pyr, occ wi f wh chky incl
grdg to chk mod calc wi
brn mrly resdl; CHK
(35%): med gy-dk gy wi
com f-u f wh chky incl,
occ lt gy, frm-brit mod fis
sb blky ctngs, sm arg-sl
slty tex, rr inoc fos frags &
forams, tr vf pyr, hi calc





WOB: 42klbs
RPM: 70
SPM: 186
SPP: 4,240psi

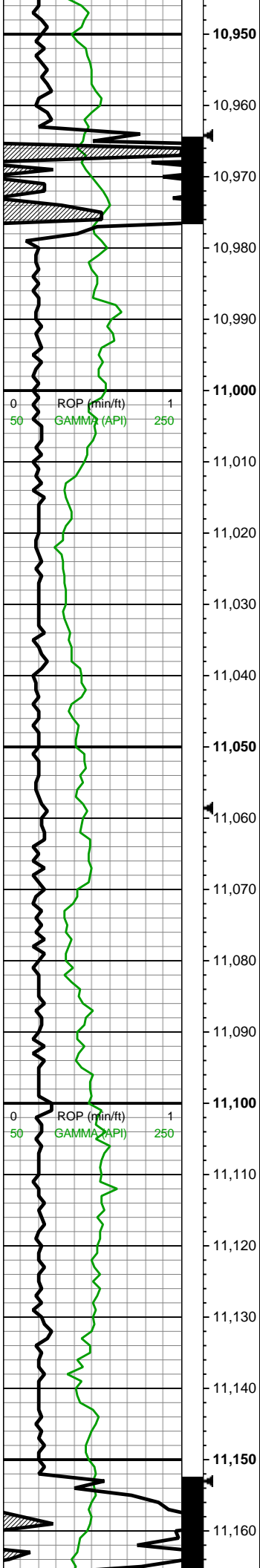
MD: 10,809'
TVD: 7,054.02'
INC: 91.98°
AZM: 1.58°
VS: 3.022.74'



10700-10800 MRLST
(60%): predy dk gy, v dk
gy-dk gyshbn ip, occ sp
brn marl incl, frm-brit,
mod fis sb blkly-blky
ctngs, sl slty tex, rr bent &
bent wi diss pyr ip, tr-rr vf
pyr, mod calc, occ wi f wh
chky incl grdg to chk;
CHK (40%): med gy-dk
gy wi com f-u f wh chky
incl, occ lt gy, frm-brit
mod fis sb blkly ctngs, sm
arg-sl slty tex, rr inoc fos
frags & forams, tr vf pyr,
hi calc

10800-10900 CHK
(50%): med gy-gyshbn,
occ dk gy, com f-u f wh
chky incl & forams, sb
frm-frm, mod fis sb rd-sb
blky, sm arg-sl slty tex,
rr-occ tn bent, tr-rr fos
frags & mict cal, hi calc;
MRLST (50%): dk gy-dk
gyshbn-v dk gy, frm-brit,
mod fis sb blky-blky
ctngs, sm arg wi wxy
lstr-sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl

10900-11000 MRI ST

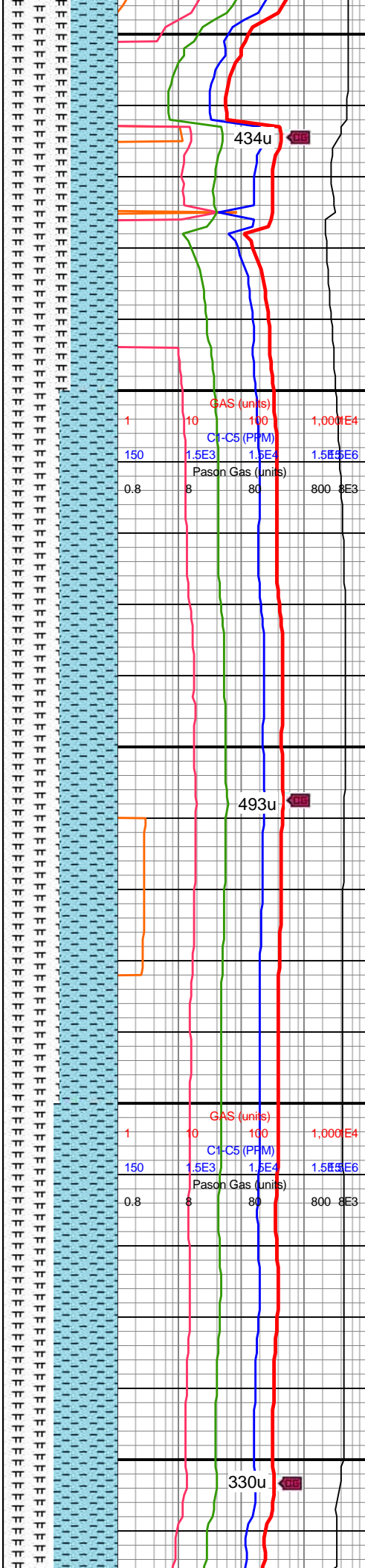


MD: 10,998'
TVD: 7,047.49'
INC: 90.84°
AZM: 1.05°
VS: 3,211.61'

WOB: 42klbs
RPM: 70
SPM: 188
SPP: 4,300psi

MW IN: 9.8
VIS IN: 44
MW OUT: 9.9
VIS OUT: 43

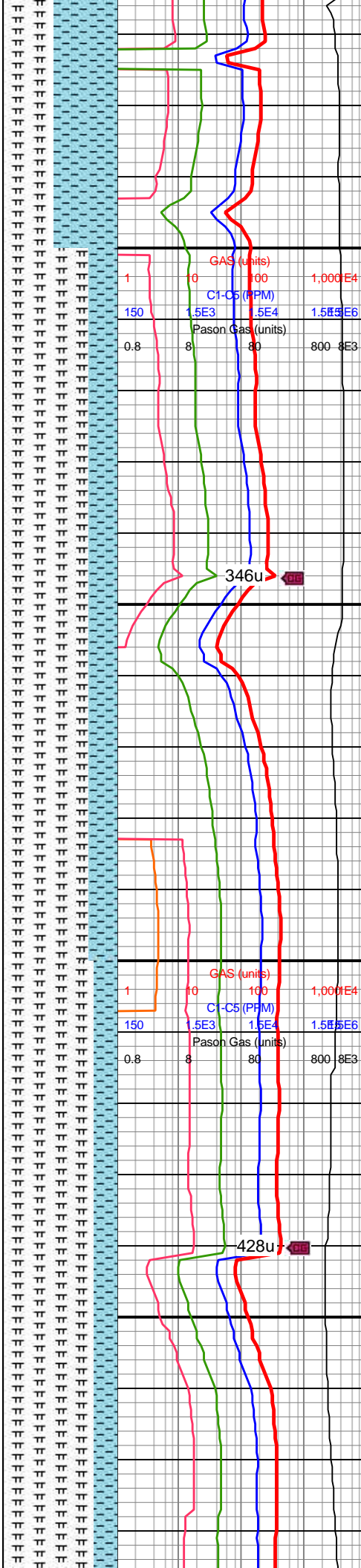
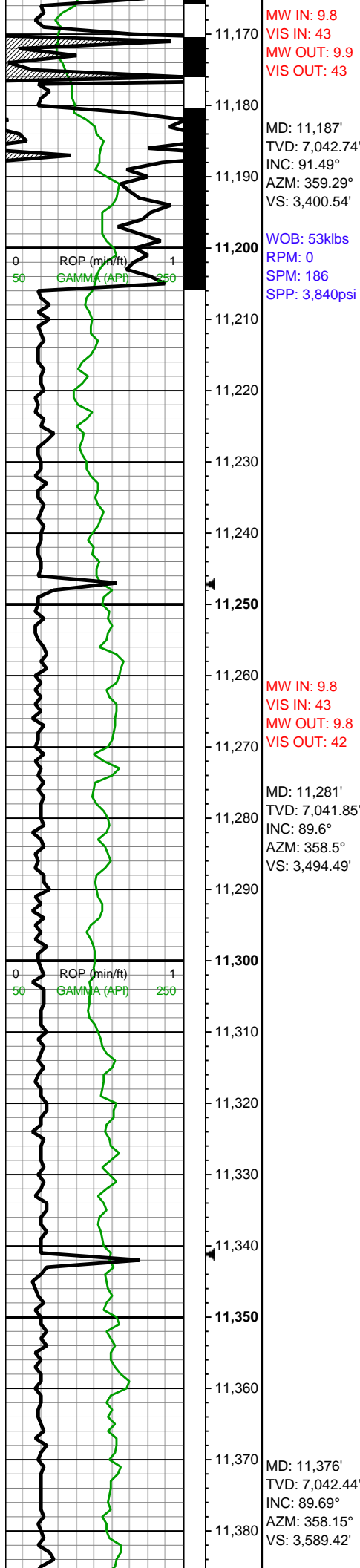
MD: 11,092'
TVD: 7,045.39'
INC: 91.71°
AZM: 0.52°
VS: 3,305.58'



(60%): predy dk gy-dk
gyshbn, occ sp brn marl
incl & occ chky lamn,
mod hi fis sb blkyl-blky-sb
plty ctngs, frm ctngs wi
sm arg tex wi wxy
lstr-frm-brit ctngs wi sl
silty tex, rr tn-yel bent wi
occ u f euhed pyr ip, mod
calc wi brn mrly resdl;
CHK (40%): med gy-dk
gy, occ lt gy, occ-com f-u f
wh chky incl, frm-brit mod
fis sb blkyl ctngs, sm
arg-sl silty tex, rr inoc fos
frags & forams & mict
cal, tr vf pyr, hi calc

11000-11100 CHK
(50%): lt gy-med gy, f
chky lamn, sb frm-frm,
mod fis sb blkyl-blky
ctngs, sm sl silty tex, hi
calc; MRLST (50%): dk
gy, dk gyshbn ip, frm-brit,
mod fis sb blkyl-blky
ctngs, sl silty tex, tr vf pyr,
mod calc wi brn mrly
resdl

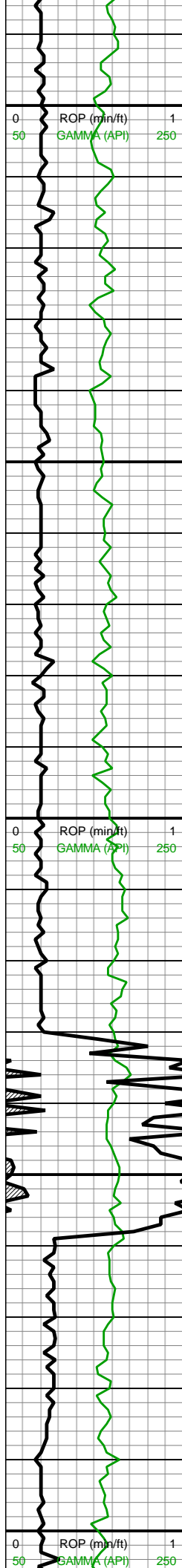
11100-11200 CHK
(55%): dk gy, dk



(55%): lt gy-med gy,
frm-brit l-mod fis sb rd-sb
blky ctngs, sm arg-sl slty
tex, tr vf pyr, rr c wh
forams, hi calc; MRLST
(45%): dk gy, occ sp brn
marl incl, frm-hd-brit mod
hi fis sb blky-blky-sb plty
ctngs, thn lamn, sl
slty-slty tex, mod calc wi
brn mrly resdl

11200-11300 MRLST
(75%): dk gy-dk gyshbn,
occ sp brn marl incl,
frm-brit, mod-hi fis blky
ctngs, sm-sl slty tex, rr u f
euhed pyr, mod calc wi
brn mrly resdl; CHK
(25%): dk gy wi f-u f wh
chky incl, frm-brit l-mod
fis sb rd-sb blky ctngs,
sm arg-sl slty tex, bmpy
ip, tr vf pyr, hi calc

11300-11400 MRLST
(80%): dk gy-dk gyshbn,
occ sp brn marl incl,
frm-brit, mod-hi fis blky
ctngs, sm-sl slty tex, rr u f
euhed pyr, mod calc wi
brn mrly resdl; CHK
(20%): dk gy wi f-u f wh



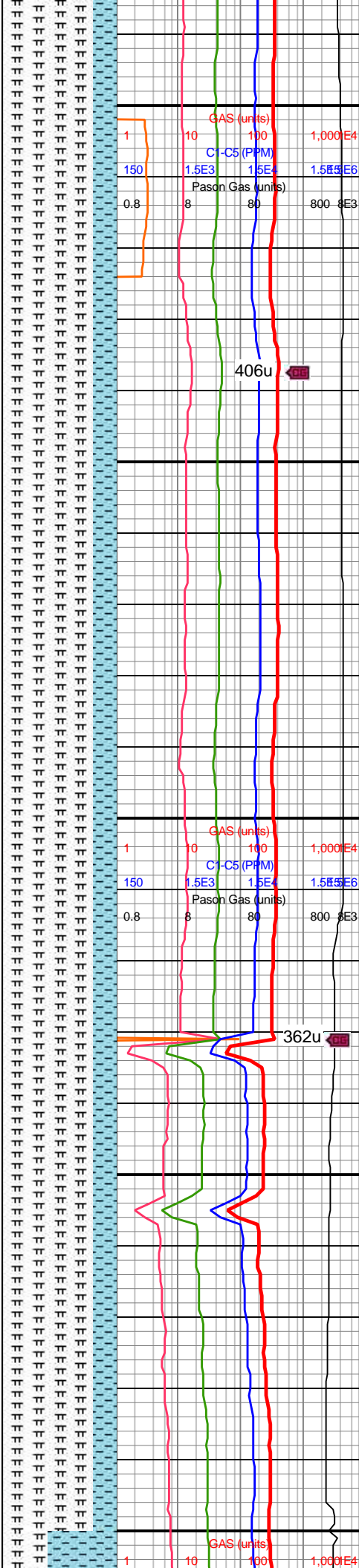
WOB: 41klbs
RPM: 70
SPM: 186
SPP: 4,340psi

MD: 11,471'
TVD: 7,042.77'
INC: 89.91°
AZM: 357.45°
VS: 3,684.32'

MW IN: 9.8
VIS IN: 43
MW OUT: 9.8
VIS OUT: 41

MD: 11,565'
TVD: 7,044.14'
INC: 88.42°
AZM: 359.91°
VS: 3,778.25'

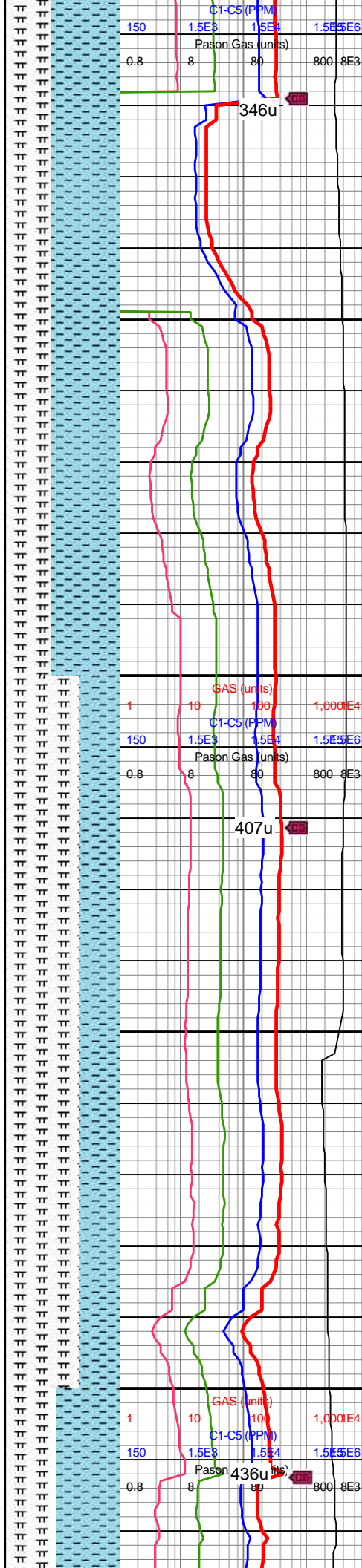
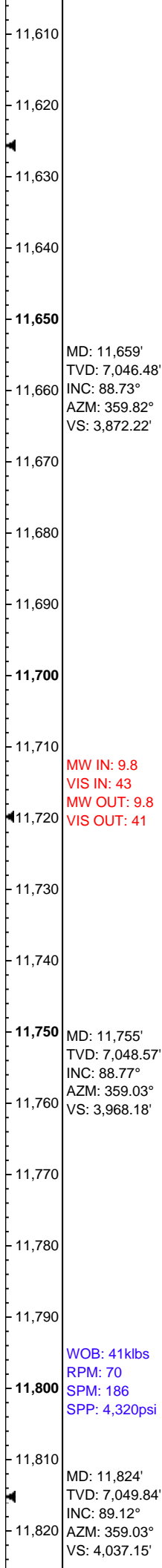
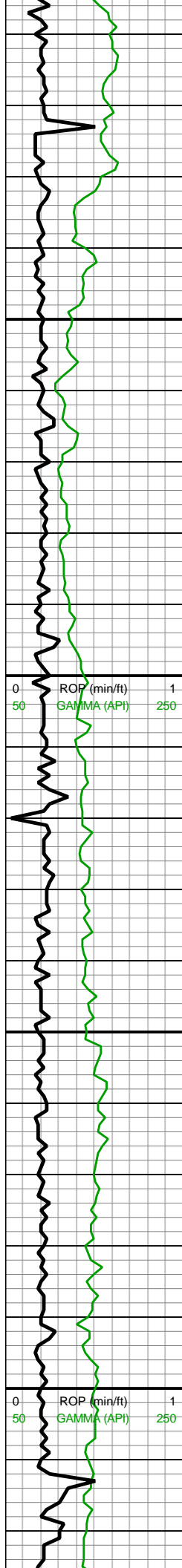
WOB: 41klbs
RPM: 70
SPM: 188
SPP: 4,320psi



(20%): dk gy wi f-u f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkly ctngs,
sm arg-sl slty tex, bmpy
ip, tr vf pyr, hi calc

11400-11500 MRLST
(80%): dk gy-v dk gy, occ
dk gyshbn, frm-brit, mod
fis sb rd-sb blkly-blky
ctngs, sm-sl slty tex, mod
calc wi brn mrly resdl;
CHK (20%): dk gy wi f-u f
chky lamn, frm-brit l-mod
fis sb rd-sb blkly ctngs,
bmpy tex wi chky lamn, tr
vf pyr, hi calc

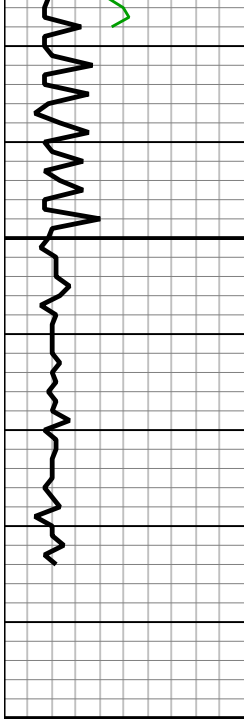
11500-11600 MRLST
(80%): dk gy-dk gyshbn,
occ sp brn marl incl,
frm-brit, mod-hi fis blkly
ctngs, sm-sl slty tex, rr u f
euhed pyr, mod calc wi
brn mrly resdl; CHK
(20%): dk gy wi f-u f wh
chky incl, frm-brit l-mod
fis sb rd-sb blkly ctngs,
sm arg-sl slty tex, bmpy
ip, tr vf pyr, hi calc



11600-11700 MRLST
(60%): predy dk gy-dk
gyshbn, occ sp brn marl
incl & occ chky lamn, sb
rd-sb blkly l-mod fis
ctngs, frm ctngs wi sl slty
tex, rr tn-yel bent wi com
pyr strg, mod calc wi brn
mrly resdl; CHK (40%):
med gy-dk gy, frm-brit
mod fis sb blkly ctngs, sm
arg-sl slty tex, tr inoc fos
frags & forams & mict
cal, tr vf pyr, hi calc

11700-11800 MRLST
(65%): predy dk gy-dk
gyshbn, occ sp brn marl
incl & occ chky lamn, sb
rd-sb blkly l-mod fis
ctngs, frm ctngs wi sl slty
tex, rr tn-yel bent wi com
pyr strg, tr vf pyr thru-rr c
free pyr, mod calc wi brn
mrly resdl; CHK (35%):
med gy-dk gy, frm-brit
mod fis sb blkly ctngs, sm
arg-sl slty tex, tr inoc fos
frags & forams & mict
cal, tr vf pyr, hi calc

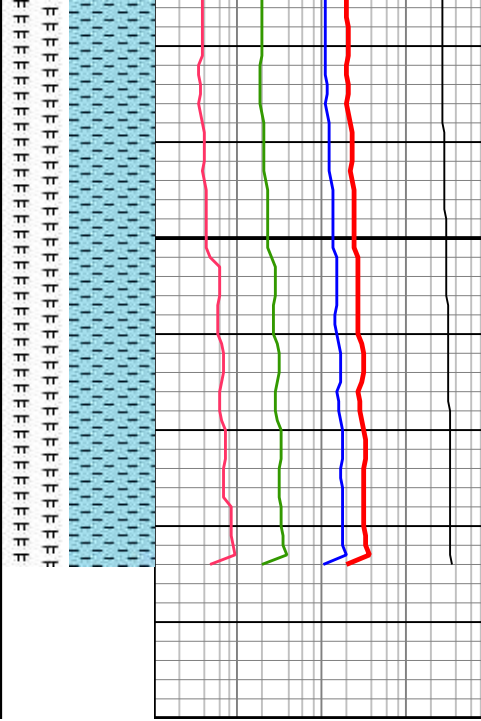




11,830
11,840
11,850
11,860
11,870
11,880
11,890
11,900

Reach TD @
16:00hrs on
6/9/18

Bit projection
MD: 11,884'
TVD: 7,050.76'
INC: 89.12°
AZM: 359.03°
VS: 4,097.12'



11800-11884 CHK
(55%): med gy-dk gy wi f
wh lamn, sl gyshbn ip, sb
frm-frm, l-mod fis sb
rd-sb blk cy ctngs, sl
silty-bmpy tex wi f wh chky
lamn, rr-occ tn bent, rr-tr
forams & fos frags & mict
cal, hi calc; MRLST
(45%): dk gy-dk gyshbn-v
dk gy, frm-brit, mod fis sb
blk cy-blk cy ctngs, sm-sl silty
tex, tr vf pyr, mod calc wi
brn mrly resdl

