



RESERVOIR GROUP

Scale: 5" / 100'
Measured Depth Log

Well Name Sam 3F-25H-M166

Location Sec. 25 T1N R66W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05123461340000

AFE # 16190872

Geographic Region Rockies

Field Wattenberg

Spud Date 8/20/2018

Drilling Completed 8/23/2018

Surface Coordinates Lat/Long: 40.018757/-104.733854
SHL: Sec: 25 Twp: 1N 66W
Footage: 1363 FSL 310 FWL

Bottom Hole Coordinates Proposed BHL: Sec: 25 Twp: 1N 66W
Footages: 1650 FFSLL 460 FFELL

Ground Elevation 5,086'

K.B. Elevation 5,109'

Logged Interval 6,700' **To** 11,899'

Total Depth 11,899'

Formation C Chalk

Type of Drilling Fluid Synthetic Oil Based Mud

Operator

Company Crestone Peak Resources

Address 1801 California Street, Suite 2500
Denver, CO 80202

Geologist

Name John Ready

Company Crestone Peak Resources

Address 1801 California Street, Suite 2500
Denver, CO 80202

Zone Color Coding

 Oil	 Condensate	 Gas
 Note	 Core	 Pressure
 Error	 Water	 Seal

Other

Loggers: Brian Ferwerda / Nicholas Watkins

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-522

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

Service Start Date: 8/20/2018

Rock Types

UNKNOWN	DOLOMITE	SHALE GRAY	TILL
ANHYDRITE	CHERT	SHALE COLORED	BENTONITE
GYPSUM	COAL	SILTSTONE	TUFF
SALT	MARLSTONE	SANDSTONE	IGNEOUS
SIDERITE or LIMONITE	CHALK	CONGLOMERATE	METAMORPHIC
LIMESTONE	SHALE	BRECCIA	CEMENT

Accessories

Fossils

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHIOPOD
BRYOZOA
CEPHALOPOD
CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA

Fossil

GASTROPOD
OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

ANHYDRITIC

Argillaceous

ARGILLITE GRAIN
BENTONITE
BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET
FERRUGINOUS

Glauconite

GLAUCONITE
GYPSIFEROUS
HEAVY MINERAL
KAOLIN
MARLSTONE
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY
TUFFACEOUS

Stringer

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
GYPSUM STRINGER
LIMESTONE STRINGER
MARLSTONE (CALC) STRG
MARLSTONE (DOL) STRG
SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC
MOLDIC

ORGANIC
PINPOINT
VUGGY

Engineering

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

FORMATION TOP

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

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

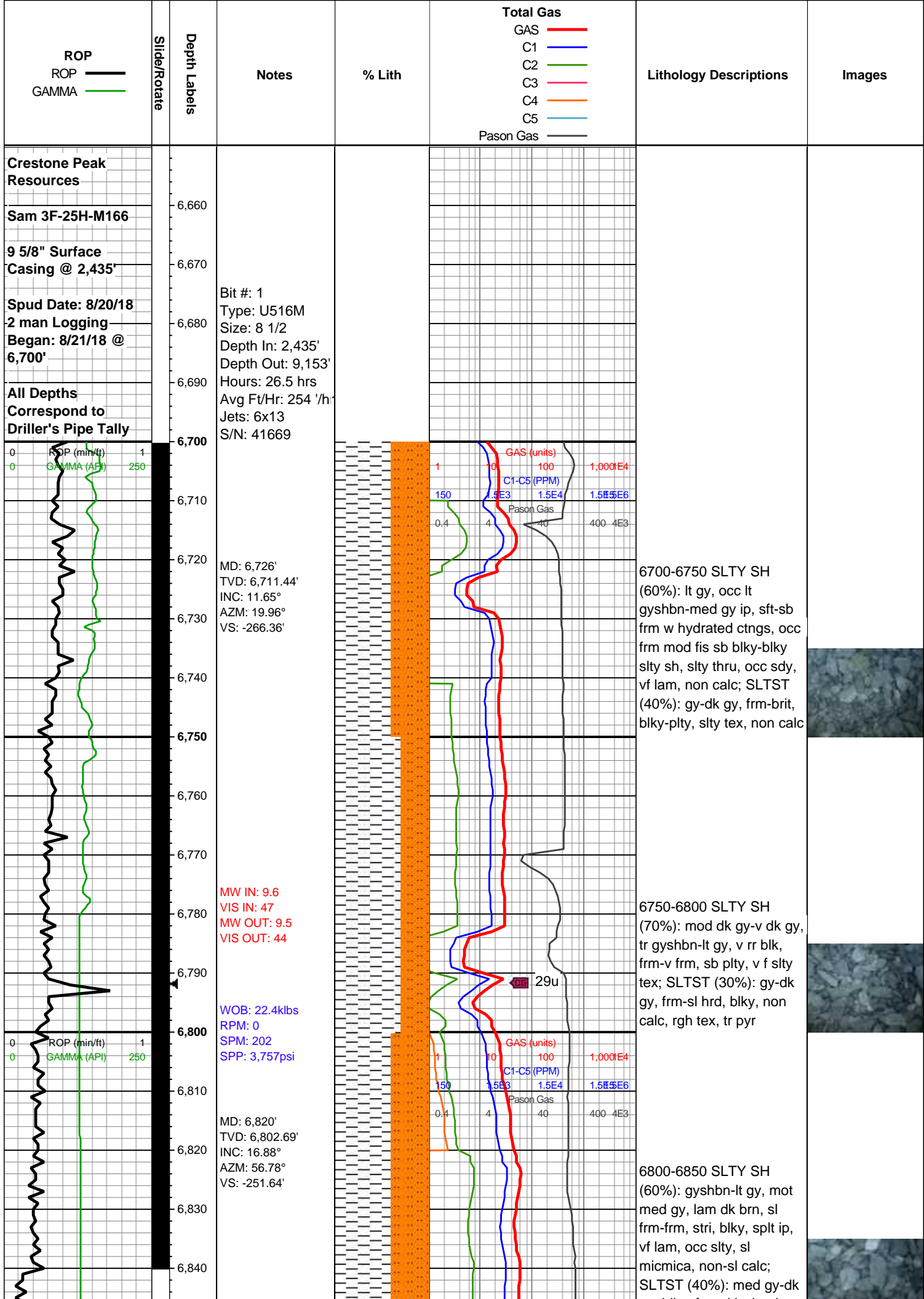
Textures

BOUNDSTONE
CHALKY
CRYPTOXLN
EARTHY
FINELYXLN
GRAINSTONE

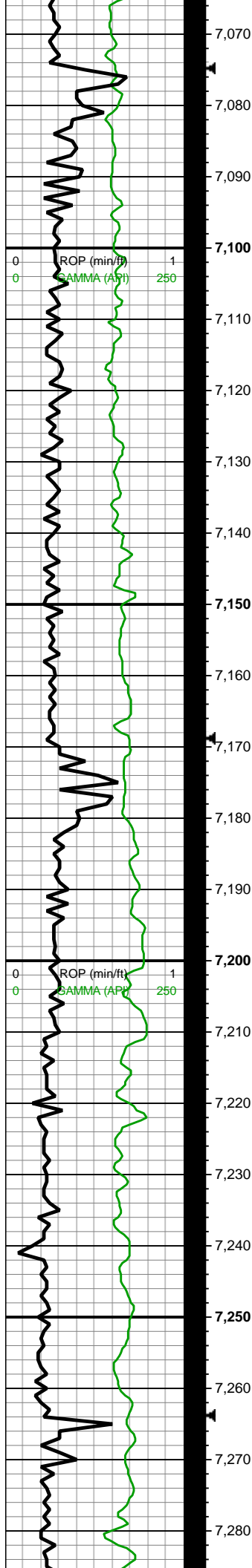
LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL



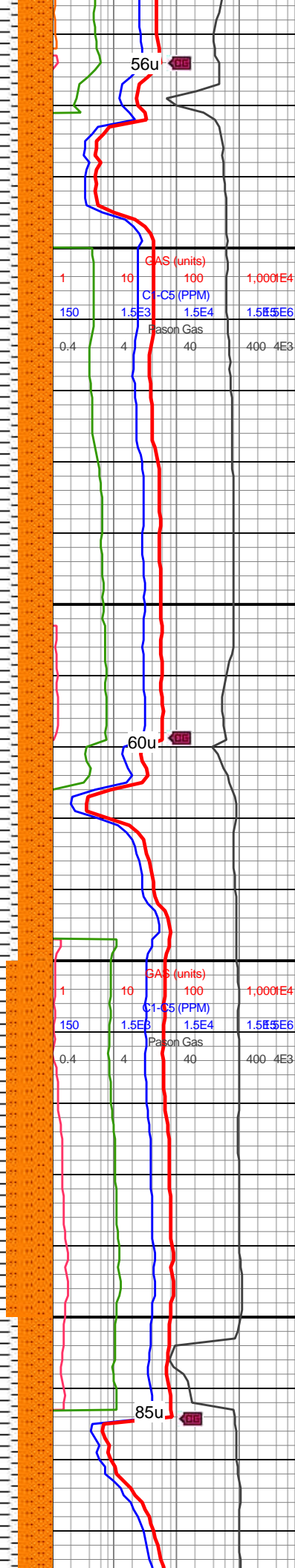




MD: 7,103'
TVD: 7,070.75'
INC: 26.46°
AZM: 78.32°
VS: -165.89'

MD: 7,198'
TVD: 7,151.69'
INC: 36.48°
AZM: 84.21°
VS: -116.92'

WOB: 12klbs
RPM: 0
SPM: 199
SPP: 3,790psi



7050-7100 SLTY SH
(70%): predy gy-gyshbn
sb frm-frm mod fis sb
blky-sb plty ctngs, occ off
wh-v lt gy sft w hydrated
gumbo slty sh, thn lamn,
slty arg tex, non calc;
SLTST (30%): gy-dk gy,
frm-brit, sb plty-plty, brit,
occ v dk gy wi vugy silc
vn, tr vf pyr, non calc

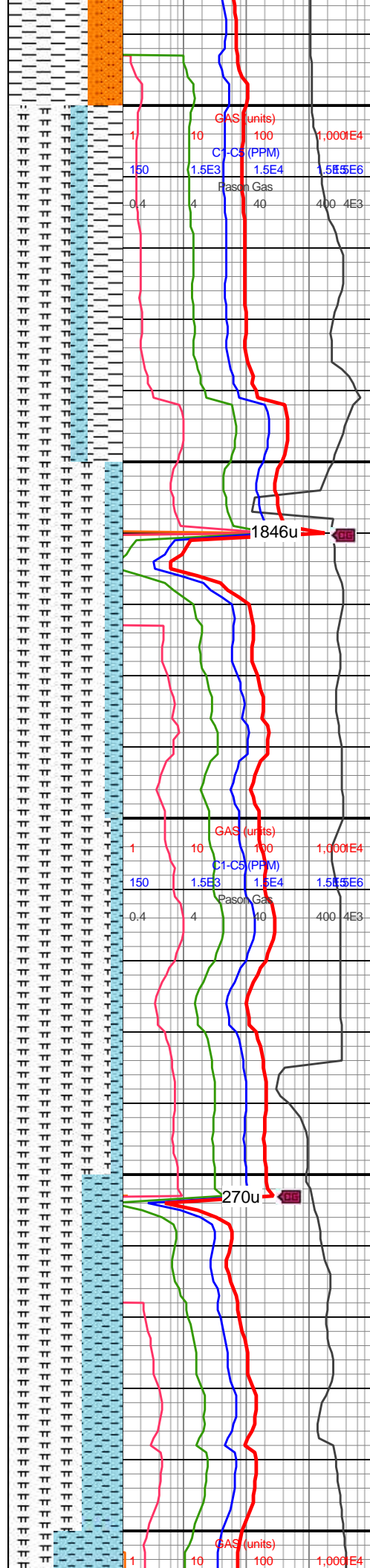
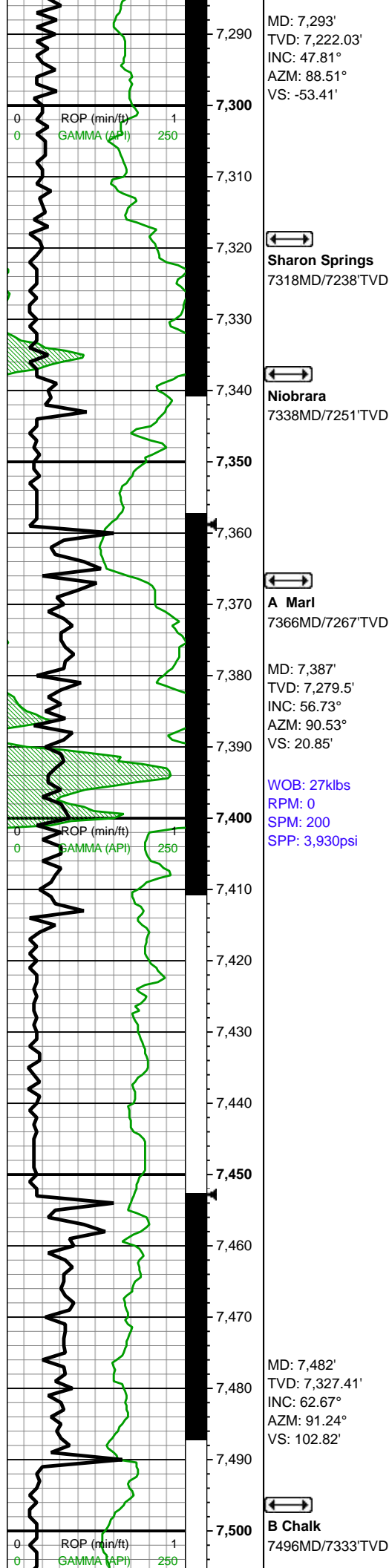
7100-7150 SLTY SH
(70%): predy lt-med gy,
occ gyshbn-off wh-lt gy ip,
sft-sb frm-frm, l-mod fis
rd gumbo-sb blky-blky-sb
plty ctngs, w hydrated arg
sltst, tr sdy, thn lamn, non
calc; SLTST (30%): gy-dk
gy, frm-brit, sb plty-plty,
brit, occ v dk gy wi vugy
silc vn, tr vf pyr, non calc

7150-7200 SLTY SH
(70%): predy gy-gyshbn
sb frm-frm mod fis sb
blky-sb plty ctngs, occ off
wh-v lt gy sft w hydrated
gumbo slty sh, thn lamn,
slty arg tex, non calc;
SLTST (30%): gy-dk gy,
frm-brit, sb plty-plty, brit,
occ v dk gy wi vugy silc
vn, tr vf pyr, non calc

7200-7250 SLTY SH
(60%): predy off wh-lt gy
sft-sb frm w hydrated
water solu ctngs intbdd
wi frm mod fis sb
blky-blky med gy slty sh,
non calc; SLTST (40%):
gy-dk gy, frm-brit,
blky-plty, slty tex, non calc

7250-7300 SLTY SH
(70%): off wh-lt gy sft-sb
frm w hydrated water
solu ctngs, occ frm mod
fis sb blkv-blkv med gv





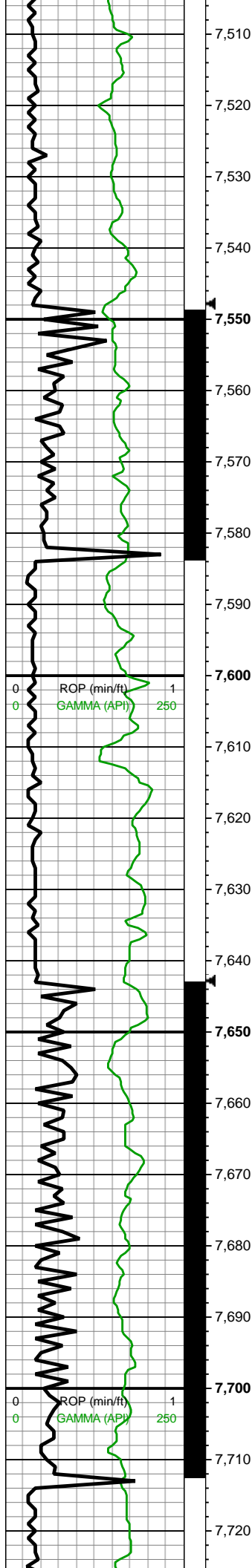
slty sh, slty thru, non calc;
SLTST (30%): gy-dk gy,
frm-brit, blkly-plty, slty tex,
non calc

7300-7350 MRLST
(55%): dk gy-dk gyshbn,
sb blkly-splt ctngs, sl hd,
brit, mntr chk intbds, tr
dissm mic pyr, mod-hi
calc; SH (30%): gy-dk gy,
frm, brit, mod fis, sb
blkly-blky, wh silc vn ip, rr
bent, mod calc; CHK
(15%): med gy-gyshbn,
mot, sb blkly-sb tab ctngs,
sl frm-frm, brit, mntr vf
lam, hi calc

7350-7400 MRLST
(85%): dk gy-dk gyshbn,
sl hd, sb blkly-splt ctngs,
mntr Chk intbds, tr dissm
mic pyr, mod calc; CHK
(15%): lt gy-gyshbn, sb
blkly-sb tab ctngs, sl
frm-brit, tr vf lam, hi calc

7400-7450 MRLST
(90%): dk gy-v dk gy,
med-hi fis sb
blkly-blky-plty ctngs, frm
wi arg tex-hd-brit wi sl slty
tex, tr vf pyr, mod calc;
CHK (10%): predy med
gy, lt gy ip, frm-brit, mod
fis, slty arg tex, sb
blkly-blky, hi calc

7450-7500 MRLST
(65%): dk gy-dk gyshbn,
mod fis sb blkly-blky
ctngs, sl hd, brit, intbdd
wi chk ip, mod calc wi brn
resdl; CHK (35%): med
gy-dk gy wi f wh chky incl,
frm-brit, sb frm ip, mod
fis, sb blkly-sb tab ctngs,
brit, tr vf pyr, hi calc

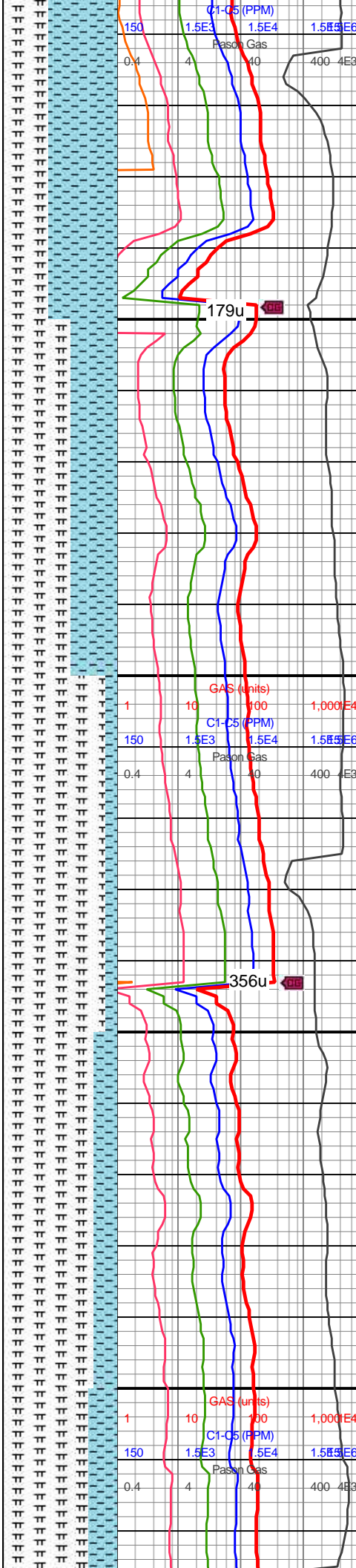


B Marl
7566MD/7364'TVD

MD: 7,577'
TVD: 7,368.68'
INC: 65.83°
AZM: 91.5°
VS: 188.35'

WOB: 35klbs
RPM: 32
SPM: 200
SPP: 4,450psi

MD: 7,672'
TVD: 7,403.6'
INC: 71.02°
AZM: 91.59°
VS: 276.63'



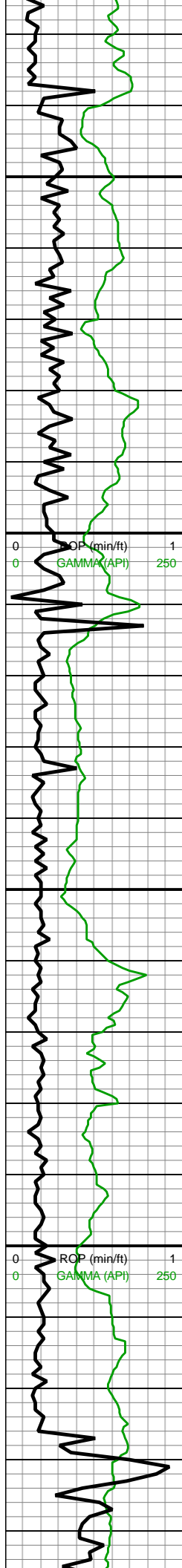
7500-7550 CHK (60%): lt gy-med gy, dk gy ip mot wi wh chky incl & forams, sb frm-frm-brit, l-mod fis sb rd-sb blkly-blky ctngs, sl slty tex, rr forams, tr fos frags, tr vf pyr, hi calc; MRLST (40%): gy-dk gy-dk gyshbn, frm-brit, mod fis sb blkly ctngs, sm-sl slty tex, rr bent, mod calc wi brn mrly resdl

7550-7600 MRLST (60%): gy-dk gy-dk gyshbn, frm-brit, mod fis sb blkly ctngs, sm-sl slty tex, mod calc wi brn mrly resdl; CHK (40%): lt gy-med gy, dk gy ip mot wi wh chky incl & forams, sb frm-frm-brit, l-mod fis sb rd-sb blkly-blky ctngs, sl slty tex, rr forams, tr fos frags, tr vf pyr, hi calc

7600-7650 MRLST (90%): gy-dk gy-v dk gy, com gyshbn, frm-brit mod fis sb blkly-blky ctngs, sm arg-sl slty tex, occ brn marl incl & rr o stn, tr vf pyr, mod calc wi brn mrly resdl; CHK (10%): predy med gy, lt gy ip, frm-brit, mod fis, slty arg tex, sb blkly-blky, hi calc

7650-7700 MRLST (80%): gy-gyshbn-dk gy, mot wi brn marl incl, frm-brit sb rd-sb blkly-blky l-mod fis ctngs, sm arg-sl slty tex, tr vf pyr, mod calc wi brn mrly resdl; CHK (20%): predy med gy, lt gy ip, frm-brit, mod fis, slty arg tex, sb blkly-blky, hi calc

7700-7750 MRLST (75%): gy-dk gy-v dk gy, com gyshbn, frm-brit mod fis sb blkly-blky ctngs, sm arg-sl slty tex, occ brn marl incl & rr o stn, tr vf pyr, mod calc wi brn mrly resdl; CHK (25%): predy med gy, lt gy ip, frm-brit, mod fis, slty arg tex, sb blkly-blky, hi calc



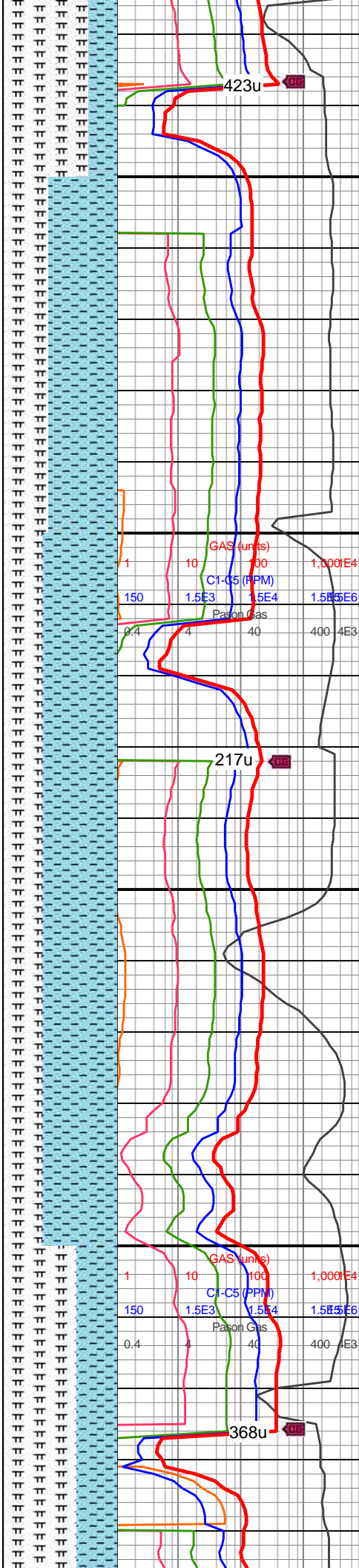
↔
C Chalk
7736MD/7421'TVD

MD: 7,766'
TVD: 7,427.21'
INC: 79.85°
AZM: 90.8°
VS: 367.5'

WOB: 48klbs
RPM: 0
SPM: 202
SPP: 4,160psi

MD: 7,861'
TVD: 7,438.98'
INC: 85.91°
AZM: 90.01°
VS: 461.71'

MW IN: 9.75
VIS IN: 48
MW OUT: 9.7
VIS OUT: 46

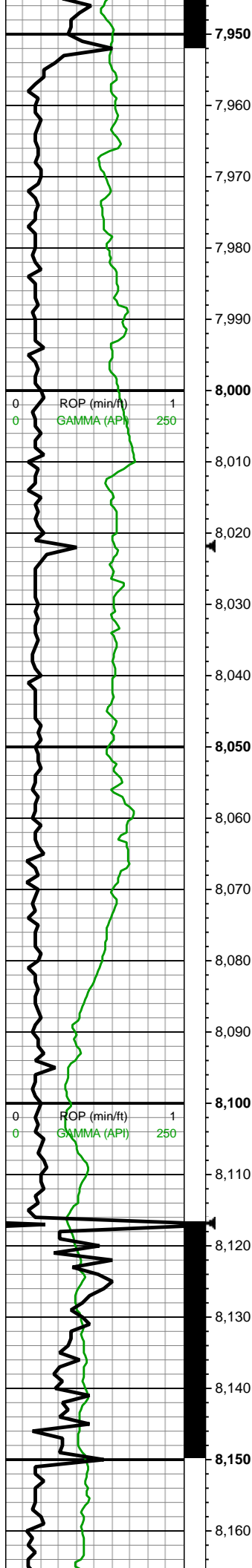


ctngs, sm arg-si slty tex,
occ brn marl incl & rr o
stn, tr vf pyr, occ wh-tn
bent, mod calc wi brn
mrly resdl; CHK (25%):
predy med gy, lt gy ip,
frm-brit, mod fis, slty arg
tex, sb blkly-blky, hi calc

7750-7800 CHK (60%):
gy-dk gy wi f wh chky incl
& lamn, frm-brit, mod fis
sb blkly-hi fis blkly ctngs,
sm sl slty tex, tr vf pyr, hi
calc; MRLST (40%): dk
gy-dk gyshbn, frm-brit,
mod fis sb blkly-blky
ctngs, mot wi brn marl
incl, tr vf pyr, tr tn bent,
mod calc wi brn mrly
resdl

7800-7900 CHK (65%):
gy-dk gy wi f wh chky incl
& vf chky lamn, frm-brit,
mod fis sb blkly-hi fis blkly
ctngs, sm sl slty tex, tr
forams, tr lt gy-tn bent, tr
vf pyr, hi calc; MRLST
(35%): dk gy-dk gyshbn,
frm-brit, mod fis sb
blkly-blky ctngs, mot wi
brn marl incl, tr vf pyr, tr tn
bent, mod calc wi brn
mrly resdl





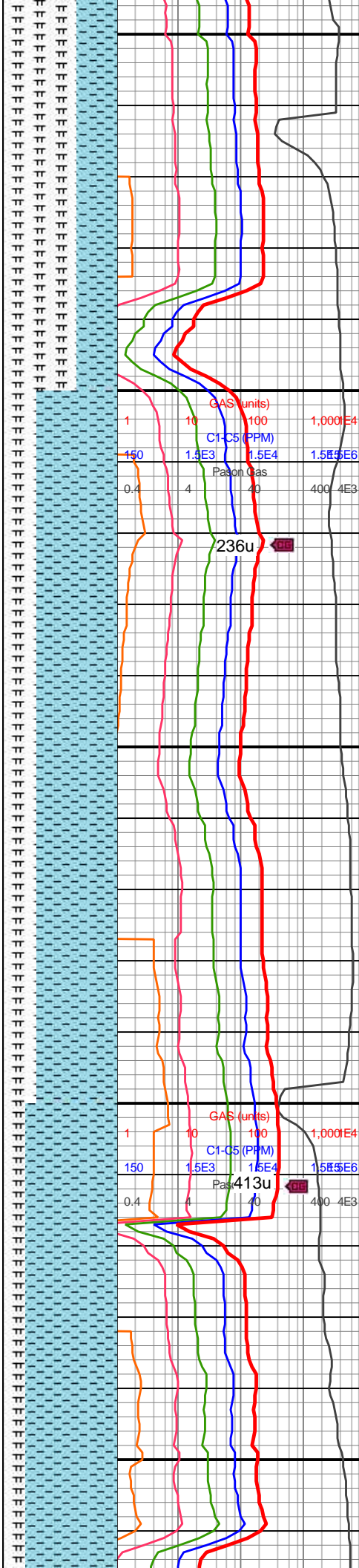
MD: 7,955'
TVD: 7,444.35'
INC: 87.54°
AZM: 89.83°
VS: 555.56'

WOB: 36klbs
RPM: 50
SPM: 204
SPP: 4,300psi

MW IN: 9.75
VIS IN: 47
MW OUT: 9.75
VIS OUT: 45

MD: 8,050'
TVD: 7,449.05'
INC: 86.79°
AZM: 88.95°
VS: 650.44'

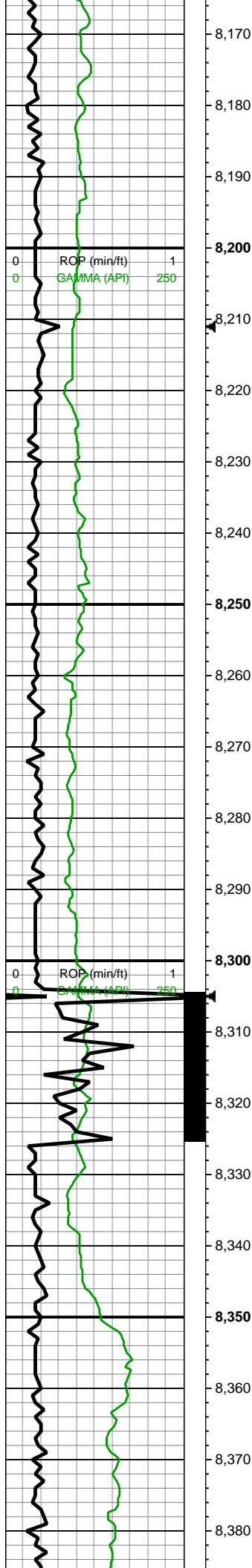
MD: 8,144'
TVD: 7,452.15'
INC: 89.43°
AZM: 89.92°
VS: 744.37'



7900-8000 MRLST
(65%): dk gy-dk gyshbn,
frm-brit, mod fis sb
blky-blky ctngs, mot wi
brn marl incl, tr vf pyr, tr tn
bent, mod calc wi brn
mrly resdl; CHK (35%):
gy-dk gy wi f wh chky incl
& lamn, frm-brit, mod fis
sb blky-blky ctngs, sm sl
silty tex, tr vf pyr, hi calc

8000-8100 CHK (70%): lt
gy-lt gyshbn wi yel brn o
stn, sb frm-frm, brit ip,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, thn chky
lamn, tr vf pyr, hi calc;
MRLST (30%): dk gy,
frm-brit mod fis sb
blky-blky ctngs, sl slty tex,
tr vf pyr, mod calc wi brn
resdl



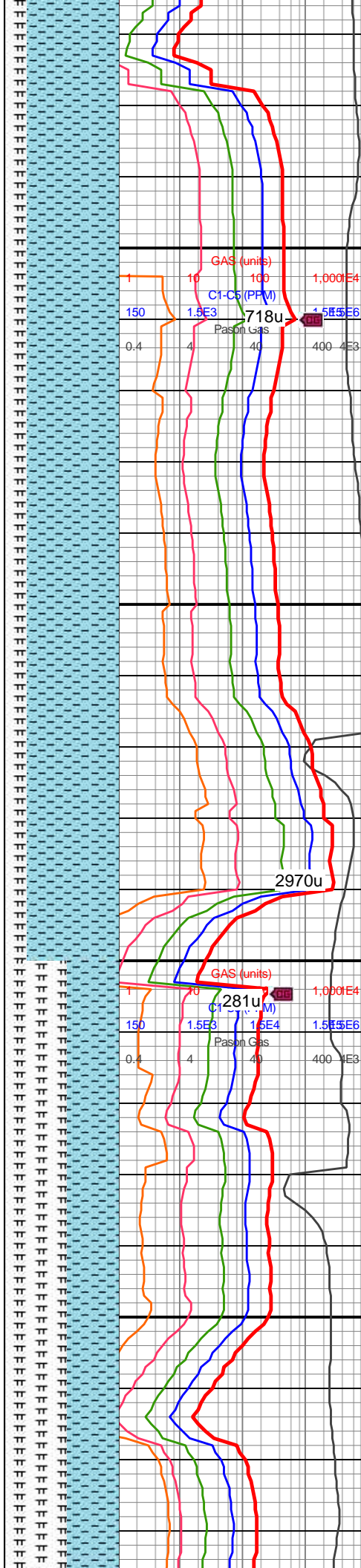


WOB: 37klbs
RPM: 60
SPM: 200
SPP: 4,260psi

MD: 8,239'
TVD: 7,453.06'
INC: 89.47°
AZM: 89.74°
VS: 839.37'

MD: 8,333'
TVD: 7,451.84'
INC: 92.02°
AZM: 90.62°
VS: 933.35'

MW IN: 9.75
VIS IN: 48
MW OUT: 9.75
VIS OUT: 45

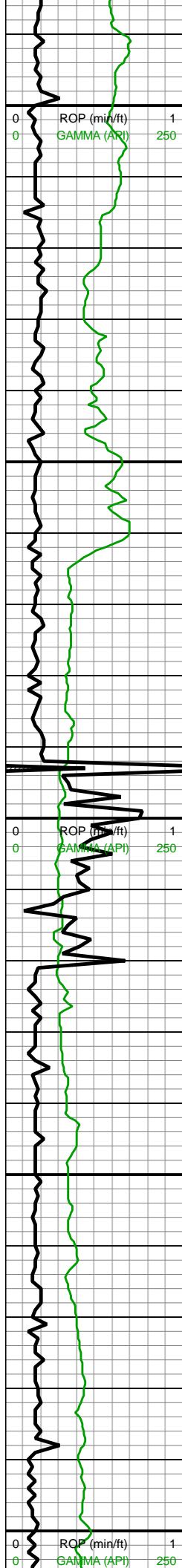


8100-8200 CHK (80%): lt gy-lt gyshbn, sb frm-frm-brit, l fis sb rd ctngs-mod fis sb blkly ctngs, sl slty tex, thn wh chky lamn, occ yel o stn, tr vf pyr, hi calc; MRLST (20%): dk gy, frm-brit mod fis sb blkly-blky ctngs, sl slty tex, tr vf pyr, mod calc wi brn resdl

8200-8300 CHK (80%): lt gy-med gy wi occ thn wh chky lamn & vf chky incl, frm-brit, mod fis sb ang-sb blkly ctngs, sm arg-sl slty tex, occ yel o stn & o drops, tr vf pyr, hi calc; MRLST (20%): dk gy-dk gyshbn wi com yel o stn & o drops, frm-brit mod fis sb blkly-blky ctngs, sl slty tex, tr vf pyr, mod calc wi brn resdl

8300-8400 MRLST (55%): predy dk gy, occ dk gyshbn, occ brn marl incl & yel o stn, frm-brit, mod fis sb blkly-blky ctngs, tr vf pyr, mod calc wi brn mrly resdl; CHK (45%): lt gy-gy-dk gy wi f ub chky incl & lamn





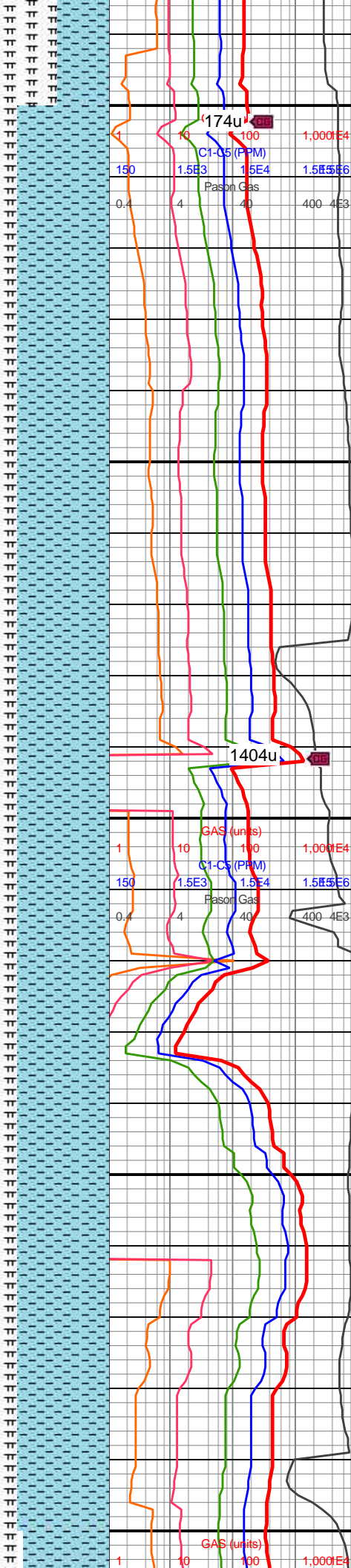
WOB: 30klbs
RPM: 60
SPM: 200
SPP: 3,820psi

MD: 8,428'
TVD: 7,447.8'
INC: 92.86°
AZM: 90.18°
VS: 1,028.26'

MD: 8,522'
TVD: 7,444.98'
INC: 90.57°
AZM: 90.89°
VS: 1,122.2'

MW IN: 9.8
VIS IN: 50
MW OUT: 9.75
VIS OUT: 46

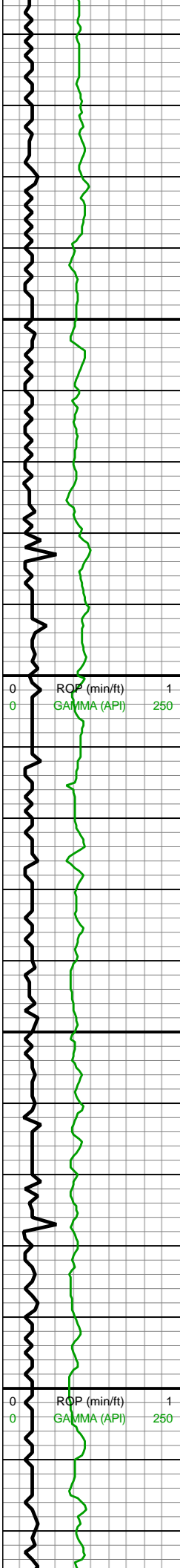
WOB: 35klbs
RPM: 61
SPM: 202
SPP: 4,420psi



wh chky incl & lamin,
frm-brit, mod fis sb
blky-blky ctngs, sm sl slty
tex, com o stn & drops, tr
vf pyr, hi calc

8400-8500 CHK (80%): lt
gy-med gy wi occ thn wh
chky lamn & vf chky incl,
frm-brit, mod fis sb
arg-sb blky ctngs, sm
arg-sl slty tex, occ yel o
stn & o drops, tr vf pyr, hi
calc; MRLST (20%): dk
gy-dk gyshbn wi com yel
o stn & o drops, frm-brit
mod fis sb blky-blky
ctngs, sl slty tex, tr vf pyr,
mod calc wi brn resdl

8500-8600 CHK (80%): lt
gy-lt gyshbn, sb
frm-frm-brit, l fis sb rd
ctngs-mod fis sb blky
ctngs, sl slty tex, thn wh
chky lamn, occ yel o stn,
tr vf pyr, hi calc; MRLST
(20%): dk gy, frm-brit
mod fis sb blky-blky
ctngs, sl slty tex, tr vf pyr,
mod calc wi brn resdl



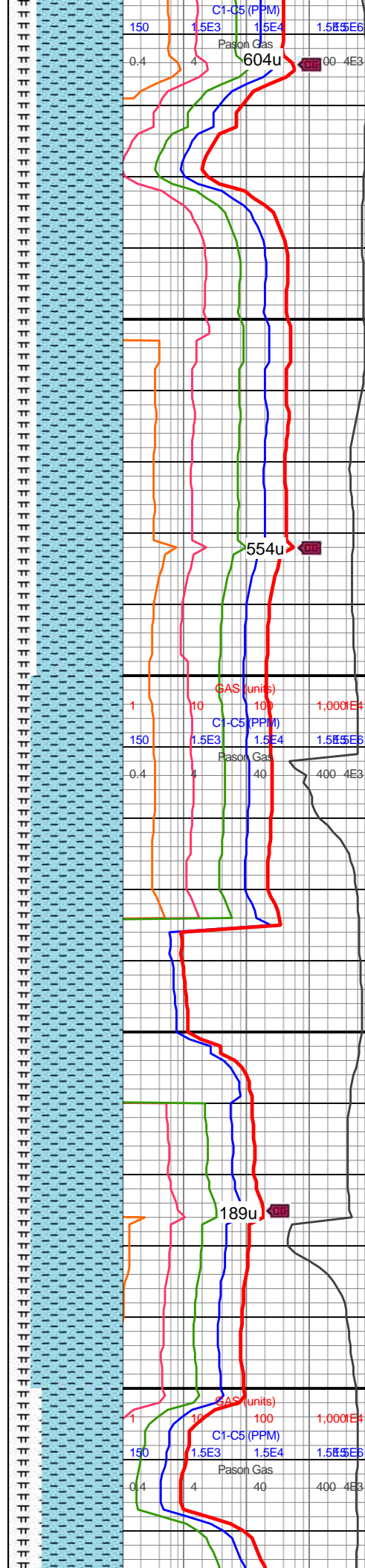
MD: 8,616'
TVD: 7,444.16'
INC: 90.44°
AZM: 90.36°
VS: 1,216.19'

MD: 8,711'
TVD: 7,443.17'
INC: 90.75°
AZM: 90.01°
VS: 1,311.19'

MW IN: 9.8
VIS IN: 47
MW OUT: 9.85
VIS OUT: 45

WOB: 37klbs
RPM: 60
SPM: 200
SPP: 4,430psi

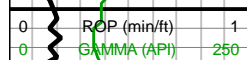
MD: 8,805'
TVD: 7,443.2'
INC: 89.21°
AZM: 87.81°
VS: 1,405.16'



8600-8700 CHK (75%): lt
gy-lt gysbhn, sb
frm-frm-brit, l fis sb rd
ctngs-mod fis sb blk
ctngs, sl slty tex, thn wh
chky lamn, occ yel o stn,
tr vf pyr, hi calc; MRLST
(25%): dk gy, frm-brit
mod fis sb blk-bkly
ctngs, sl slty tex, tr vf pyr,
mod calc wi brn resdl

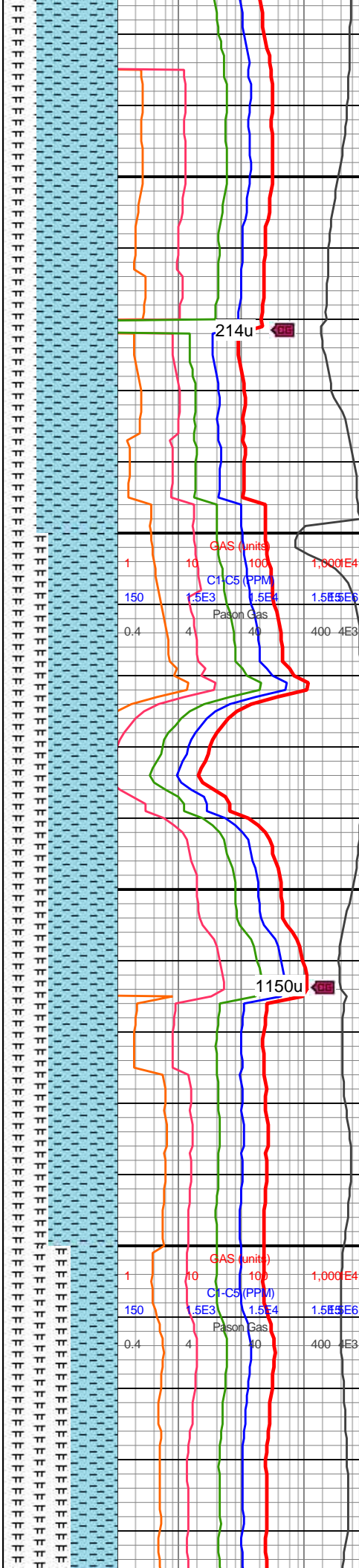
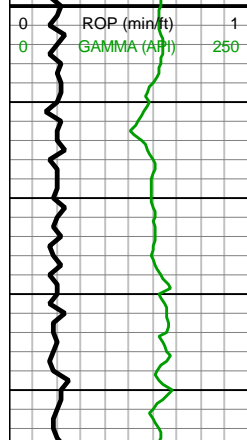
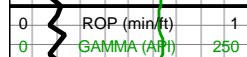
8700-8800 CHK (80%): lt
gy-lt gysbhn-med gy wi f
wh chky incl ip, sb
frm-frm-brit, l-mod fis sb
rd-sb blk-bkly ctngs, sm
arg-sl slty tex, thn wh
chky lamn, occ yel o stn,
tr vf pyr, hi calc; MRLST
(20%): dk gy, frm-hd,
mod fis sb blk-bkly
ctngs, sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl





MD: 8,995'
TVD: 7,442.54'
INC: 90.79°
AZM: 91.41°
VS: 1,595.1'

MW IN: 9.8
VIS IN: 48
MW OUT: 9.75
VIS OUT: 45



VIS 001.43

9,050
9,060
9,070
9,080
9,090
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

MD: 9,090'
TVD: 7,440.86'
INC: 91.23°
AZM: 90.8°
VS: 1,690.06'

TOOH for motor
16:30hrs
8/22/2018

MINDEPTH 8/23/188

Resumed
drilling 0500hrs
8/23/18

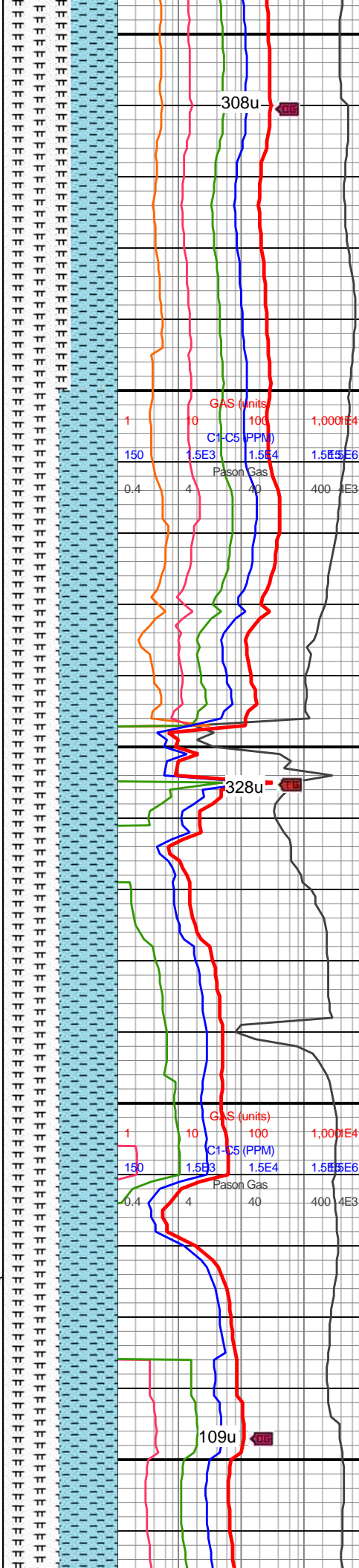
MD: 9,185'
TVD: 7,439.99'
INC: 89.82°
AZM: 92.03°
VS: 1,785.02'

WOB: 32klbs
RPM: 60
SPM: 202
SPP: 4,470psi

Bit #: 2
Type: U516M
Size: 8 1/2
Depth In: 9,153'
Depth Out:
11,899'
Hours: 10 hrs
Avg Ft/Hr: 275 ' /hr
Jets: 6x13
S/N: 41854

ROP (min/ft) 1
GAMMA (API) 250

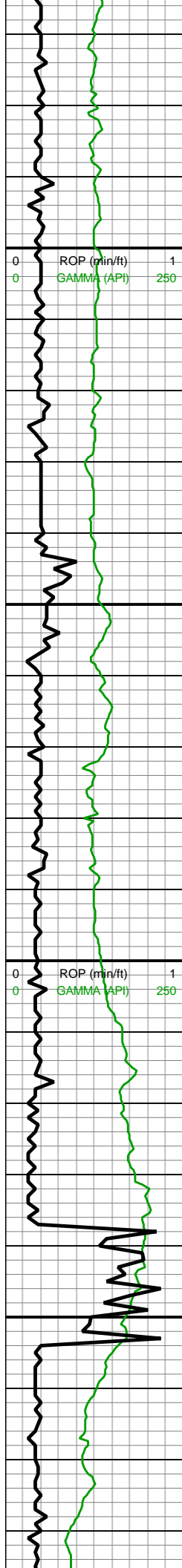
ROP (min/ft) 1
GAMMA (API) 250



9000-9100 MRLST
(60%): dk gy-v dk gy,
gyshbn ip, frm-hd,
med-hi fis sb
blky-blky-tab ctngs, sm
arg-sl slty tex, rr-tr ptch
pyr strg, occ intbdd wi
chky-foram incl, silc vn ip,
mod calc wi brn mrly
resdl; CHK (40%): predgy
gy-dk gy wi com f wh chky
incl & forams, frm, brit,
mod fis sb blky-blky
ctngs, sl slty tex, tr vf pyr,
hi calc

9100-9200 CHK (50%): lt
gyshbn-dk gy wi f wh chky
incl, frm-brit, l-mod fis sb
rd-sb blky ctngs, sm
arg-sl slty tex, rr forams,
tr vf pyr, hi calc; MRLST
(50%): dk gy mot wi occ
brn marl incl ip, frm-brit
mod fis sb blky-blky
ctngs, sm-sl slty tex, tr vf
pyr, tr tn bent, mod calc
wi brn resdl

9200-9300 MRLST
(50%): dk gy mot wi occ



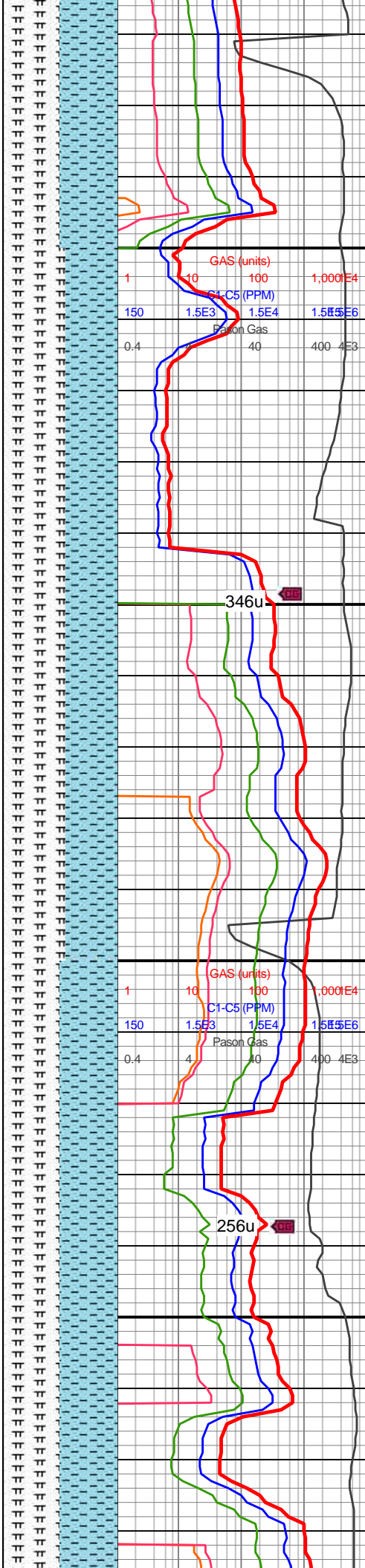
MD: 9,279'
TVD: 7,440.72'
INC: 89.3°
AZM: 91.06°
VS: 1,878.98'

MW IN: 9.85
VIS IN: 55
MW OUT: 9.9
VIS OUT: 50

MD: 9,374'
TVD: 7,441.3'
INC: 90°
AZM: 89.66°
VS: 1,973.97'

WOB: 38klbs
RPM: 70
SPM: 201
SPP: 4,630psi

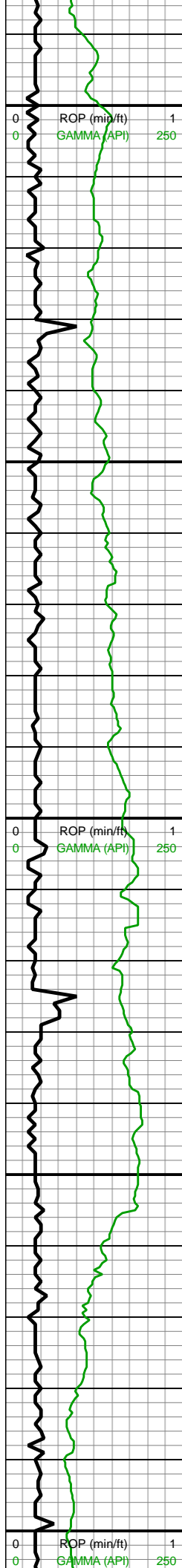
MD: 9,469'
TVD: 7,442.03'
INC: 89.12°
AZM: 90.71°
VS: 2,068.97'



(50%): dk gy mot wi occ
brn marl incl ip, frm-brit
mod fis sb blkyl-blky
ctngs, sm-sl slty tex, tr vf
pyr, tr tn bent, mod calc
wi brn resdl; CHK (50%):
lt gyshbn-dk gy wi f wh
chky incl, frm-brit, l-mod
fis sb rd-sb blkyl ctngs,
sm arg-sl slty tex, rr
forams, tr vf pyr, hi calc

9300-9400 MRLST
(55%): dk gy-v dk gy,
frm-hd, brit, sb blkyl-blky
mod fis ctngs, sl slty tex,
tr vf pyr, mod calc wi brn
mrly resdl; CHK (45%):
predy lt gy, med gy ip wi f
wh chky incl, frm-brit,
l-mod fis sb rd-sb blkyl
ctngs, sm arg-sl slty tex,
tr forams, tr vf-c lse pyr, hi
calc

9400-9500 CHK (50%): lt
gy-med gy wi occ f wh
chky incl, frm-brit, l-mod
fis sb rd-sb blkyl ctngs,
sm arg-sl slty tex, tr vf-c
lse pyr, hi calc; MRLST
(50%): dk gy mot wi occ
brn marl incl ip, frm-brit



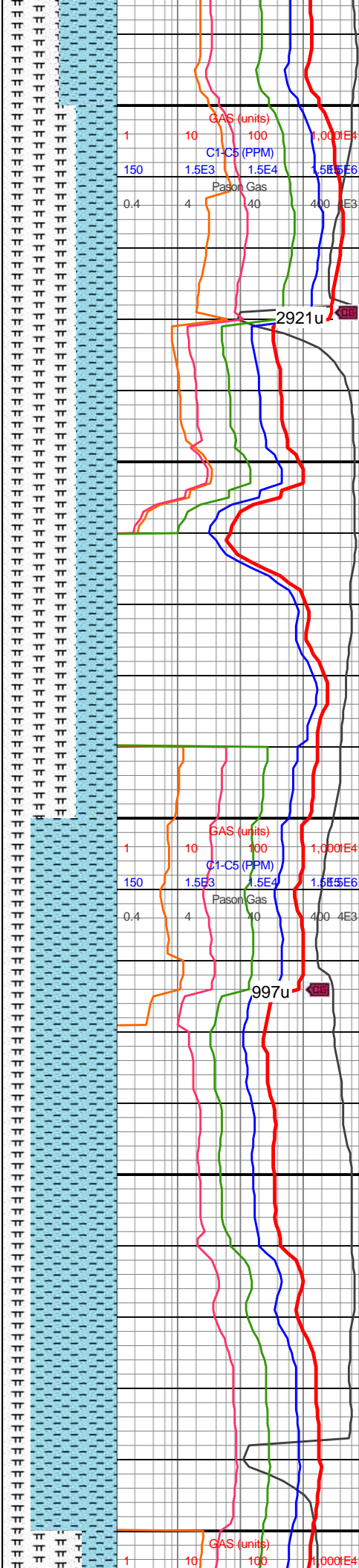
9,490
9,500
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,700

MD: 9,563'
TVD: 7,443.4'
INC: 89.21°
AZM: 89.13°
VS: 2,162.95'

MW IN: 9.85
VIS IN: 53
MW OUT: 9.8
VIS OUT: 49

WOB: 39klbs
RPM: 70
SPM: 203
SPP: 4,680psi

MD: 9,657'
TVD: 7,444.01'
INC: 90.04°
AZM: 88.69°
VS: 2,256.94'

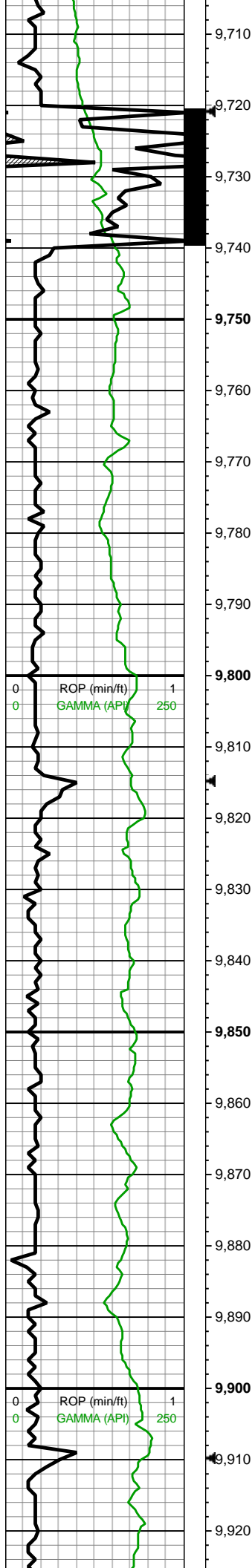


dm thin incip, mm-bnt
ctngs, sm-sl slty tex, tr vf
pyr, tr tn bent, mod calc
wi brn resdl

9500-9600 MRLST
(65%): dk gy-v dk gy,
frm-hd-brit, sb blkyl-blky
mod fis ctngs, sm-sl slty
tex, tr tn bent, tr vf pyr,
mod calc wi brn mrlly
resdl; CHK (35%): predy
lt gy, med gy-v dk gy ip wi
f wh chky incl, frm-brit,
l-mod fis sb rd-sb blkyl
ctngs, sm arg-sl slty tex,
dul wxy-rthy lstr, tr vf pyr,
hi calc

9600-9700 CHK (75%): lt
gy, med gy-v dk gy ip wi f
wh chky incl, frm-brit,
l-mod fis sb rd-sb blkyl
ctngs, sm arg-sl slty tex,
dul wxy-rthy lstr, tr vf pyr,
hi calc; MRLST (25%): dk
gy-v dk gy, frm-hd-brit, sb
blkyl-blky mod fis ctngs,
sm-sl slty tex, tr vf pyr,
mod calc wi brn mrlly
resdl



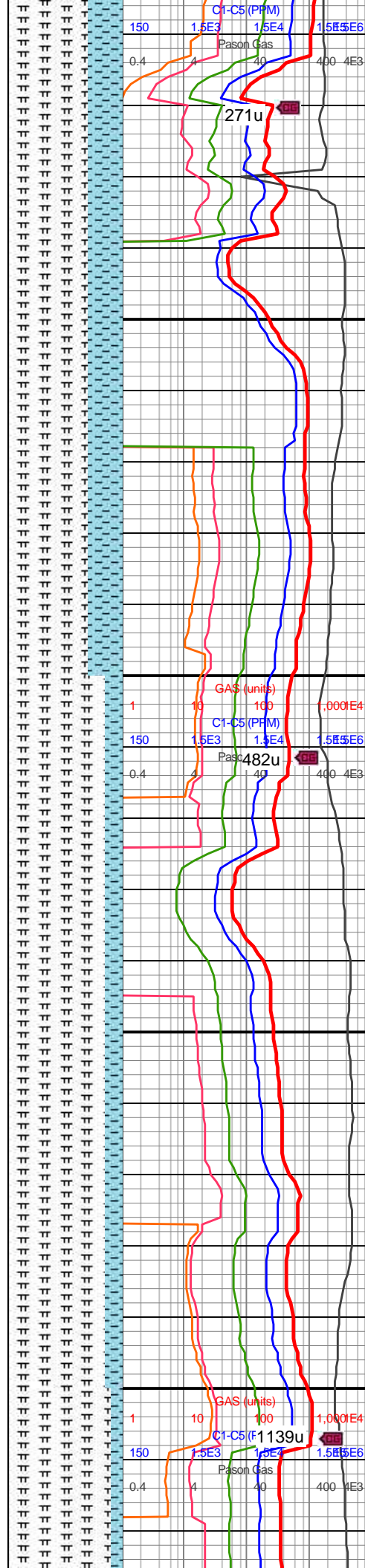


MD: 9,752'
TVD: 7,444.42'
INC: 89.47°
AZM: 89.66°
VS: 2,351.93'

MW IN: 9.8
VIS IN: 52
MW OUT: 9.85
VIS OUT: 47

WOB: 37klbs
RPM: 71
SPM: 202
SPP: 4,710psi

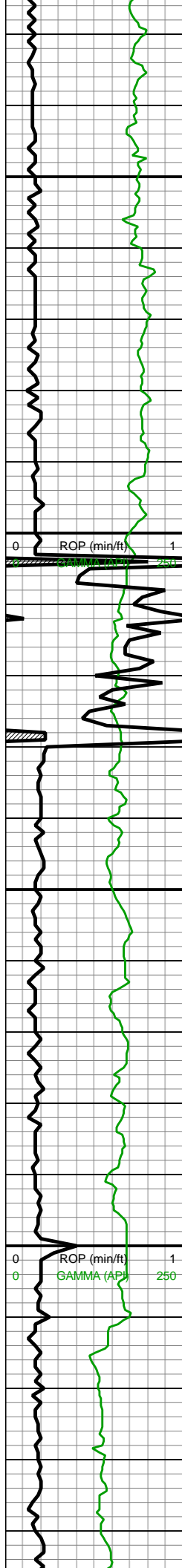
MD: 9,846'
TVD: 7,444.93'
INC: 89.91°
AZM: 88.69°
VS: 2,445.92'



9700-9800 MRLST
(70%): dk gy-v dk gy, occ
forams, frm-hd-brit, sb
blky-blky mod fis ctngs,
sm-sl slty tex, occ wh
bent, tr vf pyr, mod calc wi
brn mrly resdl; CHK
(30%): lt gy wi abnt thn
wh chky lamn, med gy ip,
frm-brit, l-mod fis sb
rd-sb blky ctngs, sm
arg-sl slty tex, tr vf pyr, hi
calc

9800-9900 MRLST
(85%): dk gy-v dk gy, occ
yel o stn & o drops
frm-hd-brit, sb blky-blky
mod fis ctngs, sm-sl slty
tex, occ wh-v lt yel bent, rr
forams, tr vf pyr-pyr strg,
mod calc wi brn mrly
resdl; CHK (15%): lt gy wi
abnt thn wh chky lamn,
med gy ip, frm-brit, l-mod
fis sb rd-sb blky ctngs,
sm arg-sl slty tex, tr vf pyr,
hi calc





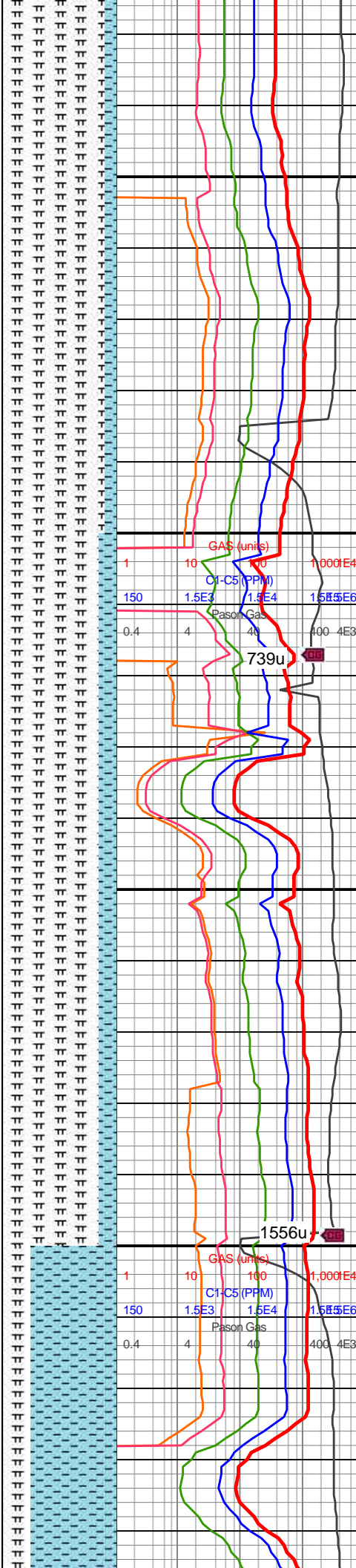
MD: 9,941'
TVD: 7,444.49'
INC: 90.62°
AZM: 87.99°
VS: 2,540.88'

WOB: 33klbs
RPM: 0
SPM: 202
SPP: 3,980psi

MW IN: 9.8
VIS IN: 51
MW OUT: 9.85
VIS OUT: 48

MD: 10,035'
TVD: 7,444.91'
INC: 88.86°
AZM: 89.22°
VS: 2,634.85'

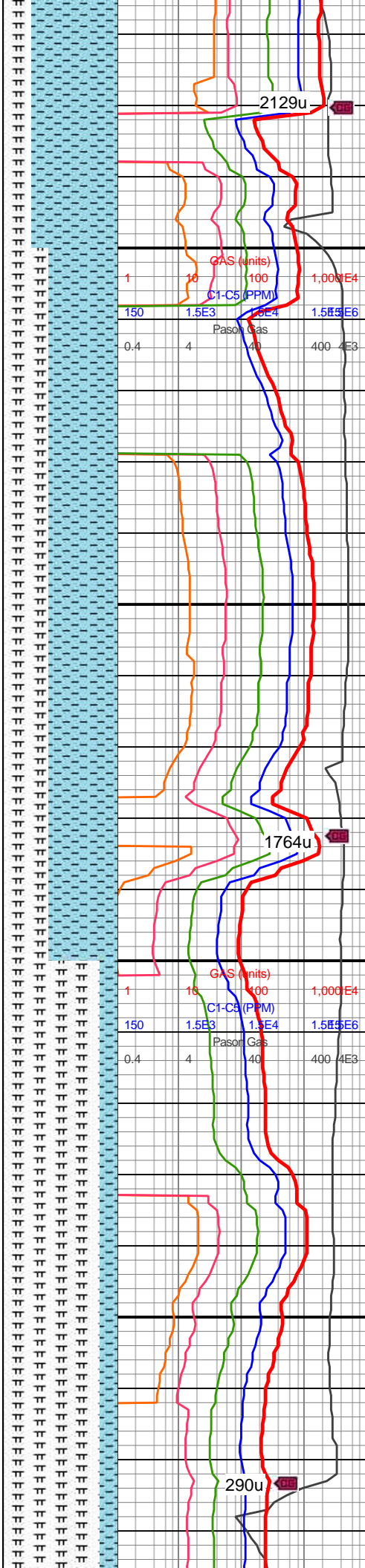
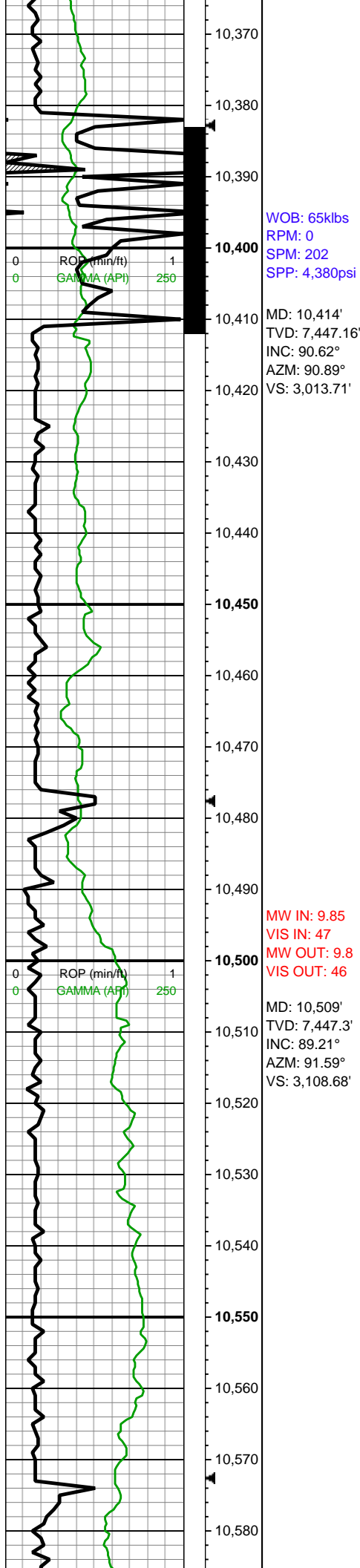
MD: 10,130'
TVD: 7,446.36'
INC: 89.39°
AZM: 88.78°
VS: 2,729.82'



9900-10000 MRLST
(90%): dk gy-v dk gy,
frm-hd-brit, sb blkyl-bkly
mod fis ctngs, sm-sl slty
tex, occ wh-v lt yel bent, rr
forams, rr-occ-com vf pyr
thru, mod calc wi brn mrly
resdl; CHK (10%): lt gy wi
abnt thn wh chky lamn,
med gy ip, frm-brit, l-mod
fis sb rd-sb blkyl ctngs,
sm arg-sl slty tex, tr vf pyr,
hi calc

10000-10100 MRLST
(85%): dk gy-v dk gy, occ
yel o drop, frm-hd-brit, sb
blkyl-bkly mod fis ctngs,
sm-sl slty tex, occ wh-v lt
yel bent, pyrc bent ip,
rr-occ-com vf pyr thru,
mod calc wi brn mrly
resdl; CHK (15%): lt gy wi
abnt thn wh chky lamn,
med gy ip, frm-brit, l-mod
fis sb rd-sb blkyl ctngs,
sm arg-sl slty tex, tr vf pyr,
hi calc

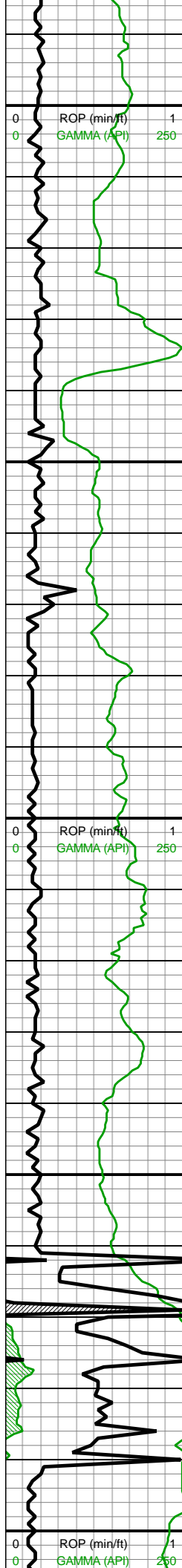




(75%): lt gyshbn-lt-med
gy, frm-hd, mod fis sb
blky ctngs, sm arg-sl slty
tex, thn wh chky lamn & f
wg chky incl, occ yel o
stn, rr vf pyr, hi calc;
MRLST (25%): dk gy-v dk
gy, frm-hd-brit mod fis sb
blky-blky ctngs, sl slty tex,
rr-occ vf pyr, mod calc wi
brn mrly resdl

10400-10500 CHK
(60%): lt gy-lt
gyshbn-med gy wi rr f wh
chky incl & lamn, frm-hd,
sb rd-sb blky-blky l-mod
fis ctngs, sm arg-sl slty
tex, dul rthy-wxy lstr, occ
yel o stn, rr vf pyr, hi calc;
MRLST (40%): dk gy-v dk
gy, frm-hd-brit mod fis sb
blky-blky ctngs, sl slty tex,
rr-occ vf pyr, mod calc wi
brn mrly resdl

10500-10600 MRLST
(85%): v dk gy-blk,
frm-hd-brit, sb blky-blky
mod fis ctngs, sm-sl slty
tex, tr forams, rr vf pyr
thru, mod calc wi brn mrly
resdl; CHK (15%): med
gy-occ dk gy-wi fwh chky



WOB: 38klbs
RPM: 71
SPM: 201
SPP: 4,930psi

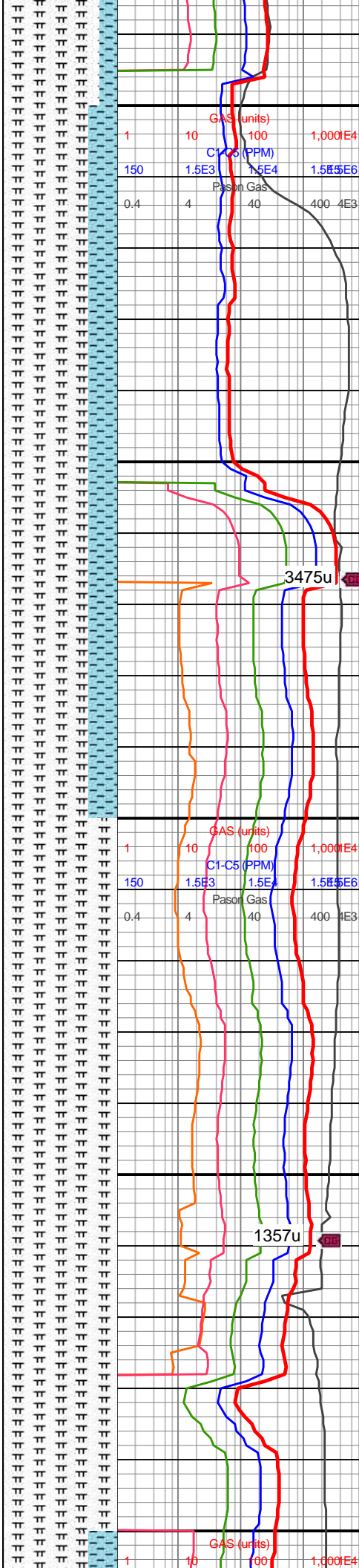
MD: 10,604'
TVD: 7,449.05'
INC: 88.68°
AZM: 91.33°
VS: 3,203.63'

MD: 10,699'
TVD: 7,452.29'
INC: 87.41°
AZM: 90.89°
VS: 3,298.56'

MW IN: 9.8
VIS IN: 47
MW OUT: 9.85
VIS OUT: 45

MD: 10,793'
TVD: 7,454.31'
INC: 90.13°
AZM: 91.59°
VS: 3,392.5'

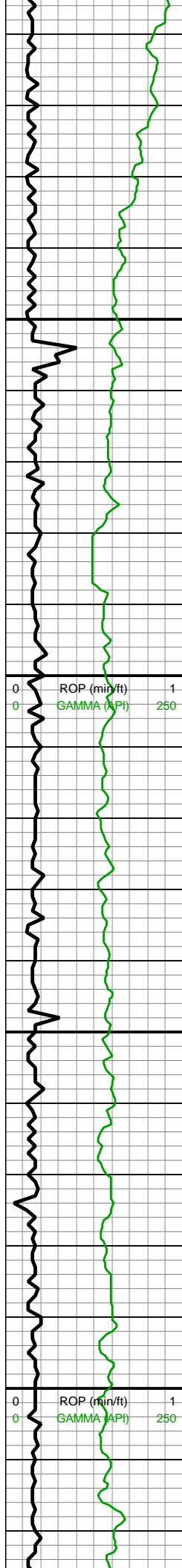
WOB: 33klbs
RPM: 70
SPM: 201



gy-occ dk gy w/ f wh chky
incl & forams, frm-brit,
l-mod fis sb rd-sb blk
ctngs, sm arg-sl slty tex,
tr vf pyr, hi calc

10600-10700 MRLST
(75%): v dk gy-blk,
frm-hd-brit, sb blk-ly-blk
mod fis ctngs, sm-sl slty
tex, tr forams, rr vf pyr
thru, mod calc wi brn mrl
resdl; CHK (25%): med
gy-occ dk gy w/ f wh chky
incl & forams, frm-brit,
l-mod fis sb rd-sb blk
ctngs, sm arg-sl slty tex,
tr vf pyr, hi calc

10700-10800 MRLST
(100%): v dk gy-blk,
frm-hd-brit, sb blk-ly-blk
mod fis ctngs, sm-sl slty
tex, tr forams, rr vf pyr
thru, mod calc wi brn mrl
resdl

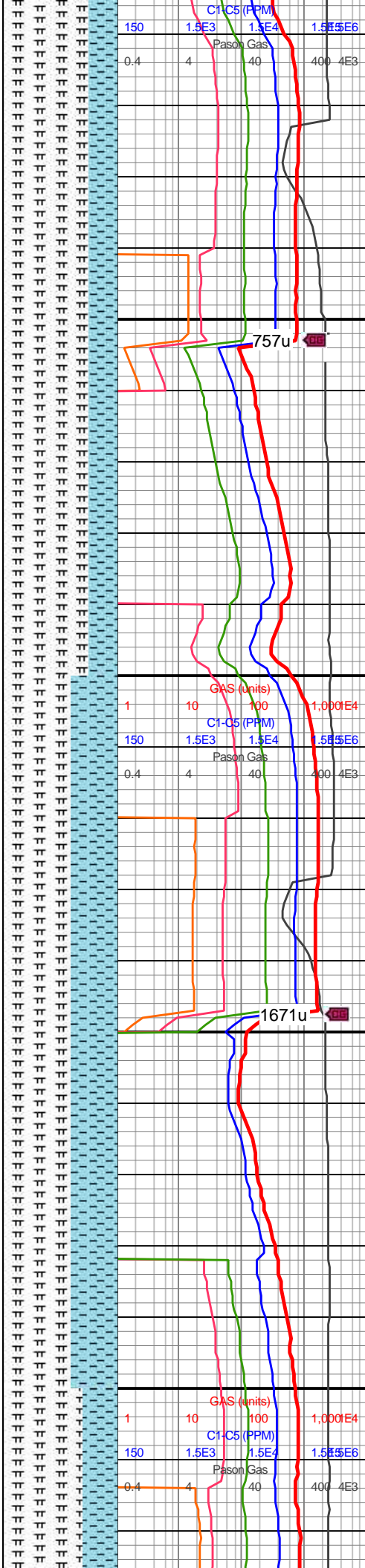


OP M: 201
SPP: 4,650psi

MW IN: 9.8
VIS IN: 48
MW OUT: 9.8
VIS OUT: 45

MD: 10,888'
TVD: 7,453.03'
INC: 91.41°
AZM: 92.82°
VS: 3,487.41'

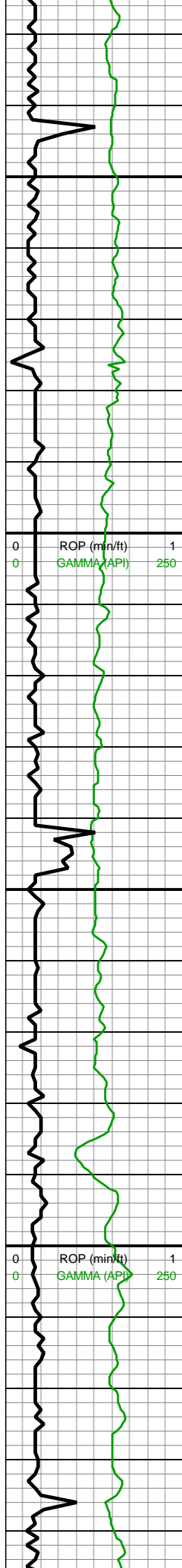
WOB: 37klbs
RPM: 70
SPM: 201
SPP: 4,830psi



10800-10900 MRLST
(75%): gy-dk gy-v dk gy
sp wi occ ptchy brn marl
incl & yel o stn,
frm-hd-brit, sb blkyl-bkly
mod fis ctngs, sm-sl slty
tex, tr forams, rr vf pyr
thru, mod calc wi brn mrlly
resdl; CHK (25%): med
gy-occ dk gy wi f wh chky
incl & forams, rr lt gy,
frm-brit, l-mod fis sb
rd-sb blkyl ctngs, sm
arg-sl slty tex, rr-tr bent, tr
vf pyr, hi calc

10900-11000 MRLST
(60%): gy-dk gy-v dk gy,
frm-hd-brit, sb blkyl-bkly
mod fis ctngs, sm-sl slty
tex, rr vf pyr, mod calc wi
brn mrlly resdl; CHK
(40%): predy lt gy, med gy
ip, sb frm-frm l fis sb
rd-mod fis sb blkyl ctngs,
sm arg-sl slty-chky tex, tr
vf pyr, hi calc





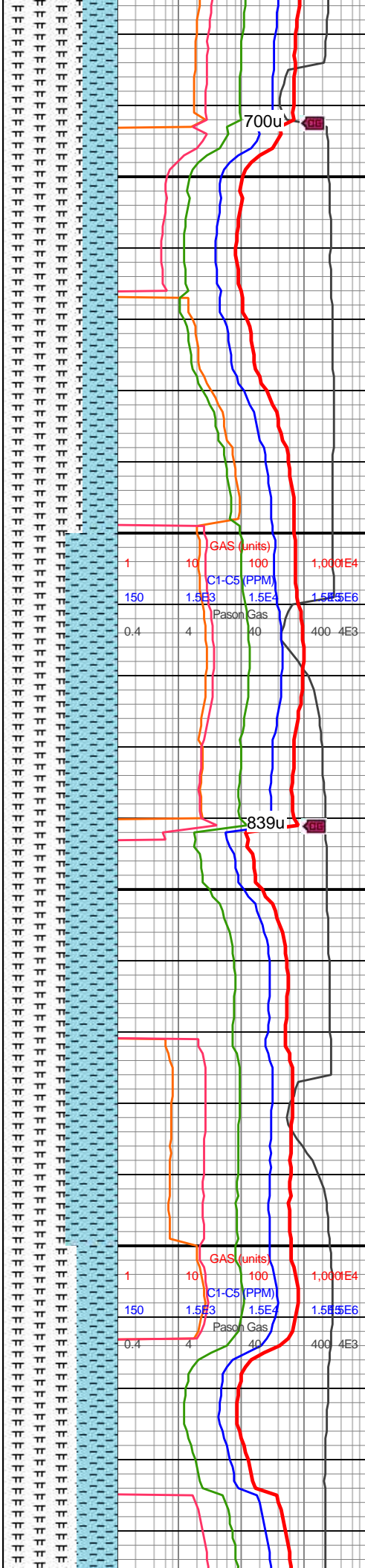
11,030
11,040
11,050
11,060
11,070
11,080
11,090
11,100
11,110
11,120
11,130
11,140
11,150
11,160
11,170
11,180
11,190
11,200
11,210
11,220
11,230
11,240

MD: 11,077'
TVD: 7,451.89'
INC: 89.6°
AZM: 88.51°
VS: 3,676.35'

MW IN: 9.75
VIS IN: 48
MW OUT: 9.8
VIS OUT: 47

MD: 11,172'
TVD: 7,451.75'
INC: 90.57°
AZM: 90.62°
VS: 3,771.34'

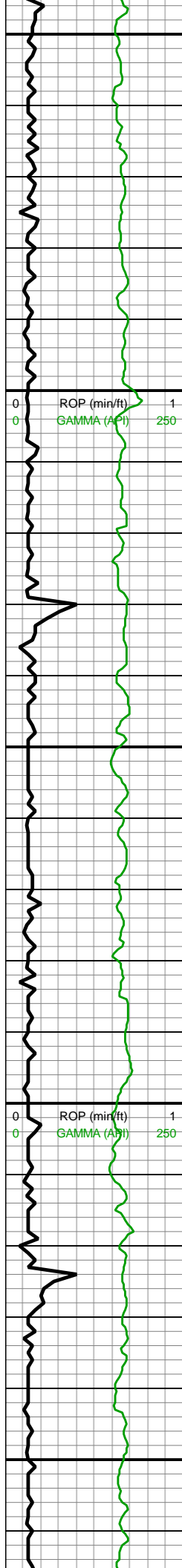
WOB: 37klbs
RPM: 20
SPM: 202
SPP: 4,800psi



11000-11100 MRLST
(70%): gy-dk gy-v dk gy,
frm-hd-brit, sb blkyl-blky
mod fis ctngs, sm-sl slty
tex, rr vf pyr, mod calc wi
brn mrly resdl; CHK
(30%): lt gy-med gy, sb
frm-frm, l-mod fis sb
rd-sb blkyl ctngs, sm
arg-sl slty-chky tex, tr vf
pyr, hi calc

11100-11200 MRLST
(55%): med gy-dk gy,
frm-hd-brit, l-mod fis
rd-sb rd-sb blkyl-blky
ctngs, sm-sl slty tex, rr vf
pyr-ptch pyr strg thru,
mod calc wi brn mrly
resdl; CHK (45%): predy
lt gy, lt gyshbn ip, rr med
gy wi wh f wh chky incl &
forams, frm-brit, l-mod fis
sb rd-sb blkyl ctngs, sm
arg-sl slty tex, tr vf pyr, hi
calc





11,250
11,260
11,270
11,280
11,290
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

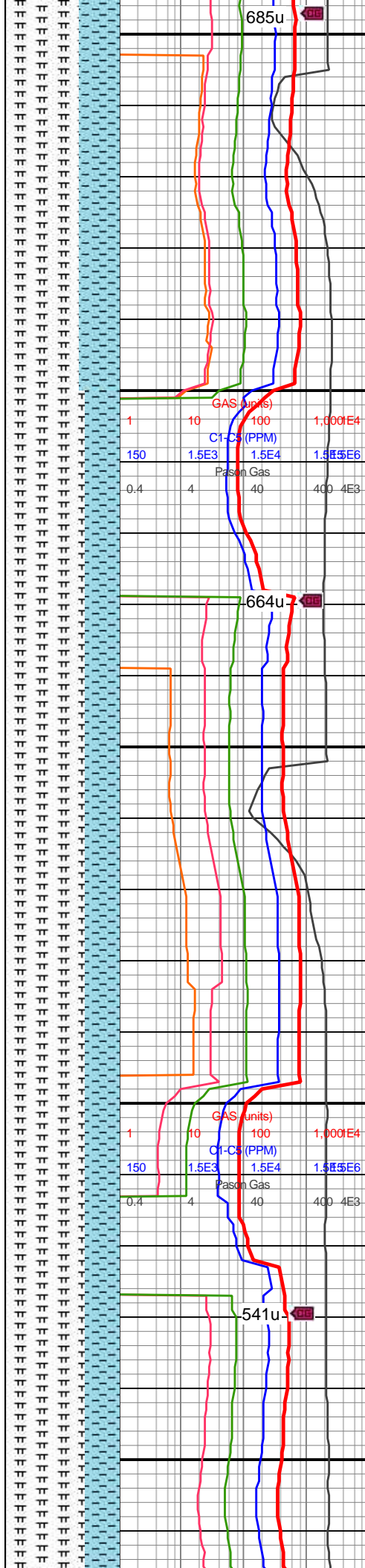
MD: 11,266'
TVD: 7,452.11'
INC: 88.99°
AZM: 87.55°
VS: 3,865.32'

MD: 11,361'
TVD: 7,452.44'
INC: 90.62°
AZM: 90.09°
VS: 3,960.29'

WOB: 36klbs
RPM: 71
SPM: 200
SPP: 4,730psi

MW IN: 9.8
VIS IN: 48
MW OUT: 9.75
VIS OUT: 46

MD: 11,455'
TVD: 7,451.6'
INC: 90.4°
AZM: 91.68°
VS: 4,054.27'

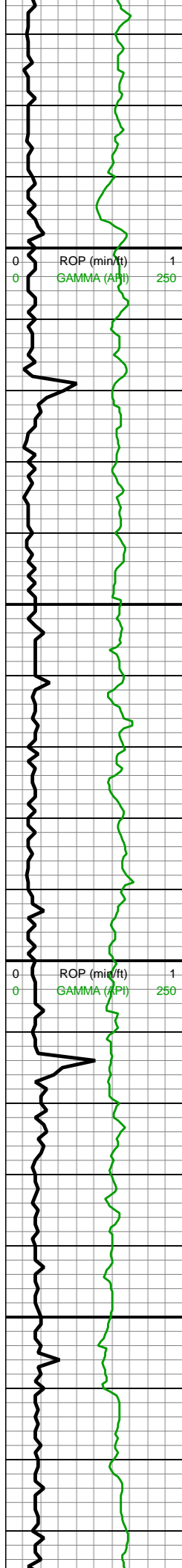


11200-11300 MRLST
(65%): med gy-dk gy,
frm-hd-brit, rd-sb rd-sb
blky-blky l-mod fis ctngs,
silty tex, rr vf pyr-ptch pyr
strg thru, mod calc wi brn
mrly resdl; CHK (35%): lt
gy-lt gyshbn ip, rr med gy
wi wh f wh chky incl &
forams, frm-brit, l-mod fis
sb rd-sb blky ctngs, sl
silty tex, occ o stn, tr vf pyr,
hi calc

11300-11400 MRLST
(70%): med gy-dk gy,
frm-hd-brit, l-mod fis
rd-sb rd-sb blky-blky
ctngs, sm-sl silty tex, rr vf
pyr-ptch pyr strg thru,
mod calc wi brn mrly
resdl; CHK (30%): predy
lt gy, lt gyshbn ip, rr med
gy wi wh f wh chky incl &
forams, frm-brit, l-mod fis
sb rd-sb blky ctngs, sm
arg-sl silty tex, tr vf pyr, hi
calc

11400-11500 MRLST
(65%): med gy-dk gy,





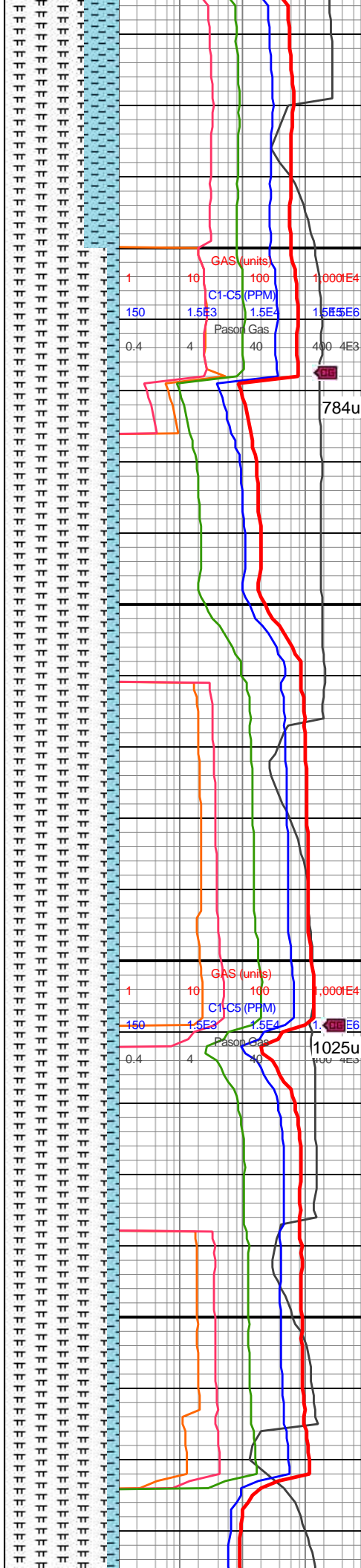
11,470
11,480
11,490
11,500
11,510
11,520
11,530
11,540
11,550
11,560
11,570
11,580
11,590
11,600
11,610
11,620
11,630
11,640
11,650
11,660
11,670
11,680

MD: 11,551'
TVD: 7,450.71'
INC: 90.66°
AZM: 92.2°
VS: 4,150.2'

WOB: 37klbs
RPM: 20
SPM: 200
SPP: 4,830psi

MD: 11,645'
TVD: 7,449.92'
INC: 90.31°
AZM: 91.68°
VS: 4,244.14'

MW IN: 9.75
VIS IN: 48
MW OUT: 9.8
VIS OUT: 46

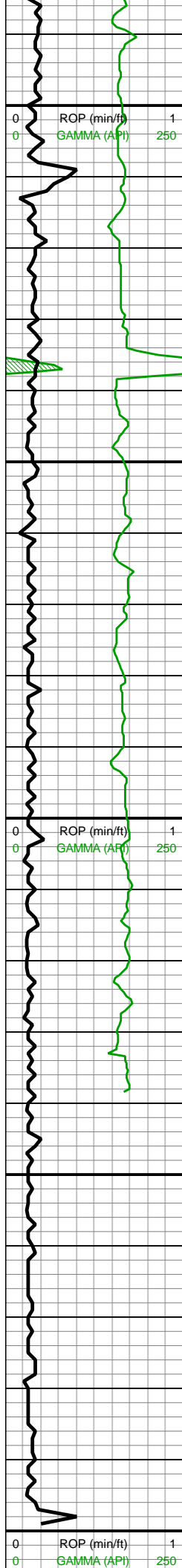


frm-hd-brit, rd-sb rd-sb
blky-blky l-mod fis ctngs,
silty tex, rr vf pyr-ptch pyr
strg thru, mod calc wi brn
mrly resdl; CHK (35%): lt
gy-lt gyshbn ip, rr med gy
wi wh f wh chky incl &
forams, frm-brit, l-mod fis
sb rd-sb blky ctngs, sl
silty tex, occ o stn, tr vf pyr,
hi calc

11500-11600 MRLST
(90%): dk gy-blk,
frm-hd-brit, med fis sb
blky-blky, sm-sl slty tex,
mod calc; CHK (10%): lt
gy-dk gy, tn hue thru, wxy
lmst lstr, sb frm-frm-brit,
hi fis, blky-sb plty-plty, sm
tex, hi calc

11600-11700 MRLST
(90%): v dk gy-blk,
frm-hd-brit, sm arg-sl slty
tex, mod calc; CHK
(10%): lt gy-med gy, sb
frm frm l mod fis sb





11,690
11,700
11,710
11,720
11,730
11,740
11,750
11,760
11,770
11,780
11,790

MD: 11,739'
TVD: 7,450.56'
INC: 88.9°
AZM: 88.6°
VS: 4,338.12'

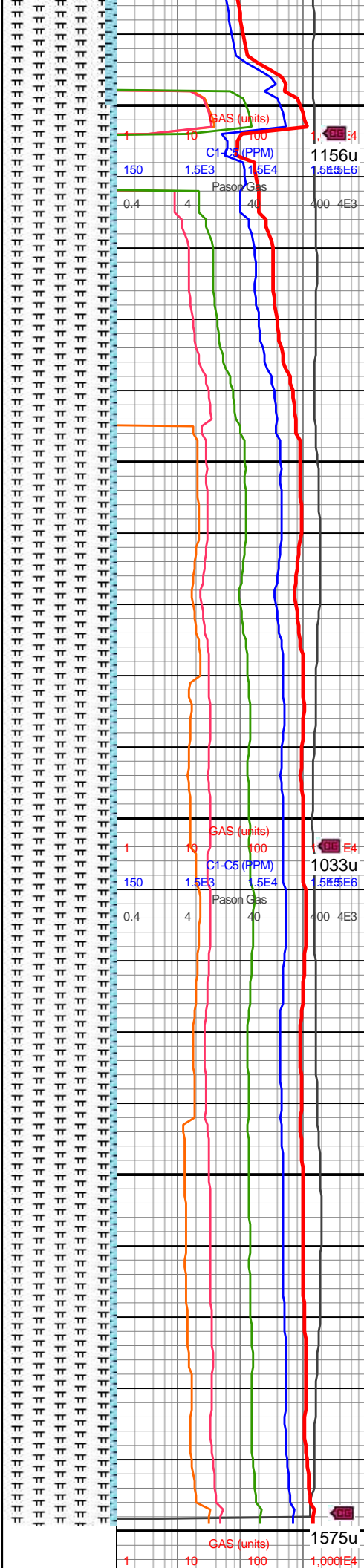
11,800
11,810
11,820
11,830
11,840
11,850
11,860
11,870
11,880
11,890

WOB: 37.7klbs
RPM: 70
SPM: 201
SPP: 4,802psi

MD: 11,836'
TVD: 7,452.05'
INC: 89.34°
AZM: 89.3°
VS: 4,435.1'

MW IN: 9.8
VIS IN: 47
MW OUT: 9.9
VIS OUT: 50

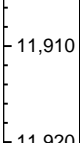
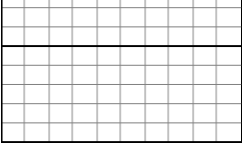
Bit Projection
MD: 11,899'
TVD: 7,452.78'
INC: 89.34°
AZM: 89.3°
VS: 4,498.09'



rd-sb blkly ctngs wi sm
arg-sl slty tex, occ f-u f wh
chky incl, tr-rr vf pyr strg
ip, hi calc

11700-11800 MRLST
(95%): v dk gy-blk,
frm-hd-brit, med fis sb
blkly-blky, sm-sl slty tex,
mod calc; CHK (5%): v lt
gy-dk gy, tn hue thru, wxy
lmst lstr, sb frm-frm-brit,
hi fis, blkly-sb plty-plty,
chky tex, hi calc

11800-1899 MRLST
(95%): med gy-dk gy,
frm-brit mod fis sb
blkly-blky ctngs, sm arg-sl
slty tex & brn mrly sp incl
thru, tr vf pyr, mod calc;
CHK (5%) lt-med gy-dk
gy wi f wh chky incl, sb
frm-frm-brit, mod fis sb
blkly ctngs, chky tex, rr-occ
vf pyr, hi calc



TD Well @
1830hrs 8/23/18

