



RESERVOIR GROUP

Scale: 5" / 100'
Measured Depth Log

Well Name File 3B 32H-K268

Location Sec. 32 T2N R68W

State Colorado

County Weld

Country USA

Rig Number Ensign 140

API Number 05123458320000

AFE # 16190763

Geographic Region Rockies

Field Wattenberg

Spud Date 11/18/2017

Drilling Completed 11/20/2017

Surface Coordinates Lat/Long: 40.092576/-105.031182

SHL: Sec: 32 Twp: 2N 68W
Footage: 1760 FSL 1602 FWL

Bottom Hole Coordinates Proposed BHL: Sec: 5 Twp: 1N 68W
Footages: 460 FSL 407 FWL

Ground Elevation 4,970'

K.B. Elevation 4,993'

Logged Interval 6,700' **To** 14,134'

Total Depth 14,134'

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

Geologist

Name Kurt Rucker

Company Crestone Peak Resources

Address 370 17th Street #2170
Denver, CO 80202



Zone Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

Other

Loggers: Brian Ferwerda / Nick Watkins

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-597

Contractor: Empirica, Reservoir Group
6510 Guhn Road
Houston, TX 77040

Rock Types

UNKNOWN	ANHYDRITE
GYPSUM	SALT
SIDERITE or LIMONITE	LIMESTONE

DOLOMITE	CHERT
COAL	MARLSTONE
CHALK	SHALE

SHALE GRAY	SHALE COLORED
SILTSTONE	SANDSTONE
CONGLOMERATE	BRECCIA

TILL	BENTONITE
TUFF	IGNEOUS
METAMORPHIC	CEMENT

Accessories

Fossils

ALGAE	AMPHIPORA
BELEMNITE	BIOCLASTIC
BRACHIOPOD	BRYOZOA
CEPHALOPOD	CORAL
CRINOID	ECHINOID

Fossil

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

Minerals

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

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

Stringer

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



FISH

Minerals



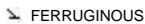
FORAMINIFERA



ANHYDRITIC



FERRUGINOUS PELLET



FERRUGINOUS



SILTY



TUFFACEOUS



SILTSTONE STRINGER

Other Symbols

Oil Show



DEAD



EVEN



QUESTIONABLE

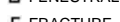


SPOTTED STAINING

Porosity



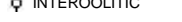
EARTHY



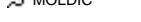
FENESTRAL



FRACTURE



INTERCRYSTALLINE



INTEROOLITIC



MOLDIC



ORGANIC



PINPOINT



VUGGY

Engineering



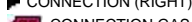
BIT



CASING



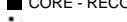
CONNECTION (LEFT)



CONNECTION (RIGHT)



CONNECTION GAS



CORE - LOST



CORE - RECOVERED



DST INTERVAL



FAULT



FORMATION TOP



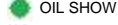
GAS SHOW



MN DEPTH



NORMAL FAULT



OIL SHOW



OVERTURNED STRATA



REVERSE FAULT



SIDEWALL CORE (LEFT)



SIDEWALL CORE (RIGHT)



SLIDE



SURVEY



TRIP GAS



WIRELINE TESTED - LEFT

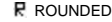


WIRELINE TESTED - RT

Rounding



ANGULAR



ROUNDED



SUBANG



SUBRND

Textures



BOUNDSTONE



CHALKY



CRYPTOXLN



EARTHY



FINELYXLN



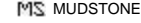
GRAINSTONE



LITHOGRAPHIC



MICROXLN



MUDSTONE



PACKSTONE



WACKESTONE

Sorting



MODERATE

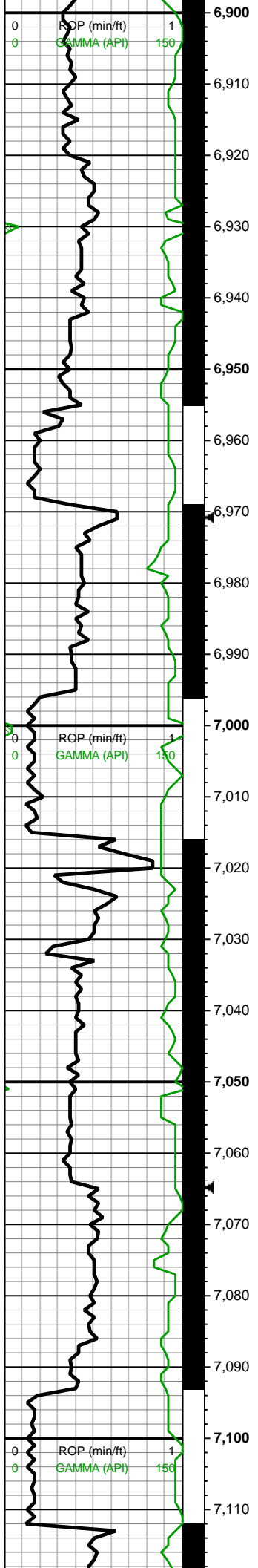


POOR



WELL

ROP ROP GAMMA		Slide/Rotate	Depth Labels	Notes	% Lith	Total Gas GAS C1 C2 C3 C4 C5	Lithology Descriptions	Images
<div>0 ROP (min/ft) 1</div> <div>0 GAMMA (API) 150</div> <div>Crestone Peak Resources</div> <div>File 3B-32H-K268</div> <div>Spud Date: 11/18/17</div> <div>Surface Casing @ 1,930'</div> <div>2 man Logging</div> <div>Began: 11/18/17 @ 6,750'</div> <div>All Depths Correspond to Driller's Pipe Tally</div>			6,710	Bit #: 1 Type: CF516 Size: 8 3/4 Depth In: 1,935' Depth Out: 14,134' Hours: 48.1 hrs Avg Ft/Hr: 254 '/hr Jets: 7x12 S/N: 37679		<div>1 GAS (units) 100 1,000E4</div> <div>150 1.5E3 1.5E4 1.5E5E6</div> <div>SYSTEM CALIBRATED 1% Methane = 100 Units 100% Methane = 10000 Units</div> <div>1 GAS (units) 100 1,000E4</div> <div>150 1.5E3 1.5E4 1.5E5E6</div>		
			6,720					
			6,730					
			6,740					
			6,750	MW IN: 9.5+ VIS IN: 45 MW OUT: 9.4 VIS OUT: 43				
			6,760					
			6,770				6750-6800 SLTY SH (75%): med gy-lt gy, dk gy, sb blk-y-plty, frm-v frm, sme sl sft, slty-sl sm tex, sme SLTST intbds, mnr diss m pyr, non-sl calc; SLTST (25%): med gy-dk gy, blk-y, frm-sl hrd, rgh tex, non calc, micmica, tr pp pyr	
			6,780					
			6,790					
			6,800	WOB: 18.2klbs RPM: 0 SPM: 178 SPP: 3,055psi				
			6,810					
			6,820	MD: 6,821' TVD: 6,720.76' INC: 9.41° AZM: 266.89° VS: -5.39'			6800-6850 SLTY SH (65%): med-dk gy, brn hue ip, sb frm-frm, mod fis sb ang-sb blk-y-blky ctngs, sm arg-slt-y tex, non calc; SLTST (35%): predy med-dk gy, occ lt gy, frm, brit, med-med hi fis sb blk-y-sb plty, silc, non calc	
			6,830					
			6,840					
			6,850					
			6,860					
			6,870	MD: 6,868' TVD: 6,767' INC: 11.52° AZM: 239.2° VS: -1.3'			6850-6900 SLTY SH (85%): med-dk gy, occ bnshgy, sme dk gy, sb hd-v frm, predy ply fis, sb plty-sb blk-y, slty tex, v wkly calc, scat micmica; SLTST (15%): med gy-dk gy, blk-y, frm-sl hrd, rgh tex, non calc, micmica, tr pp pyr	
			6,880	MW IN: 9.5+ VIS IN: 47 MW OUT: 9.4+ VIS OUT: 44				
			6,890					



MD: 6,916'
TVD: 6,813.78'
INC: 14.59°
AZM: 218.46°
VS: 7.28'

MD: 6,963'
TVD: 6,858.91'
INC: 17.8°
AZM: 212.57°
VS: 19.23'

MW IN: 9.5
VIS IN: 45
MW OUT: 9.4
VIS OUT: 43

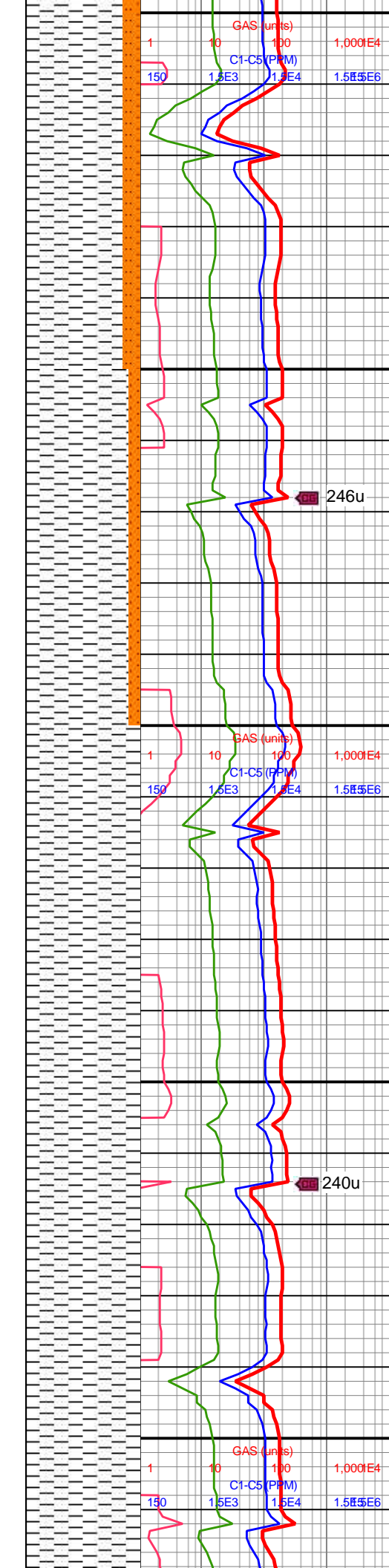
WOB: 16.7klbs
RPM: 31
SPM: 178
SPP: 3,088psi

MD: 7,011'
TVD: 6,904.42'
INC: 19.34°
AZM: 205.01°
VS: 33.78'

MD: 7,058'
TVD: 6,948.35'
INC: 22.33°
AZM: 199.56°
VS: 50.17'

MW IN: 9.5
VIS IN: 44
MW OUT: 9.3+
VIS OUT: 42

MD: 7,107'
TVD: 6,993.25'
INC: 24.88°
AZM: 196.05°
VS: 69.65'



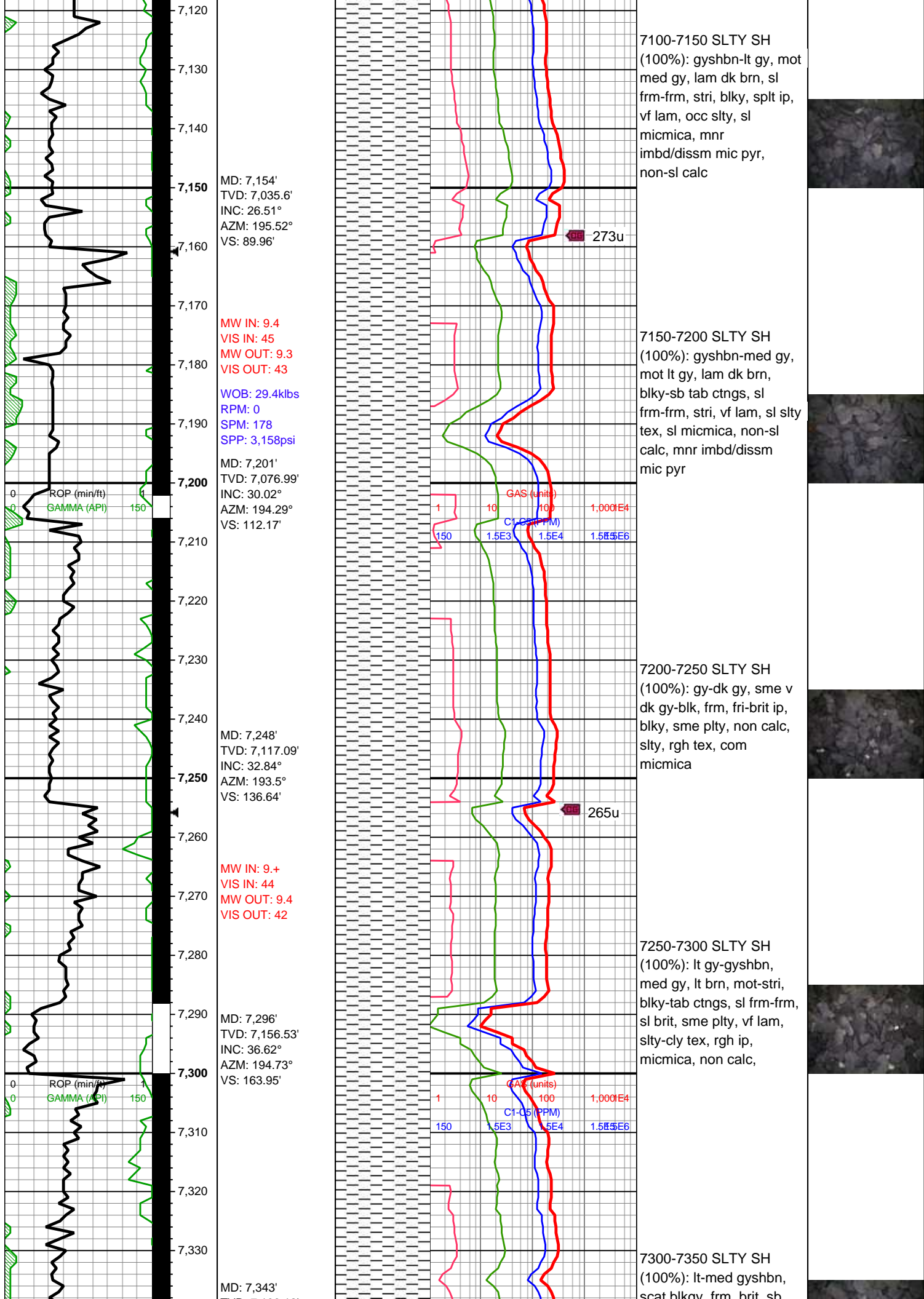
6900-6950 SLTY SH
(85%): gy-dk gy, sme v dk
gy-blk, frm, fri-brit ip, blk,
sme plty, non calc, slty,
rgh tex, com micmica;
SLTST (15%): med gy-dk
gy, blk, frm-sl hrd, rgh
tex, non calc, micmica

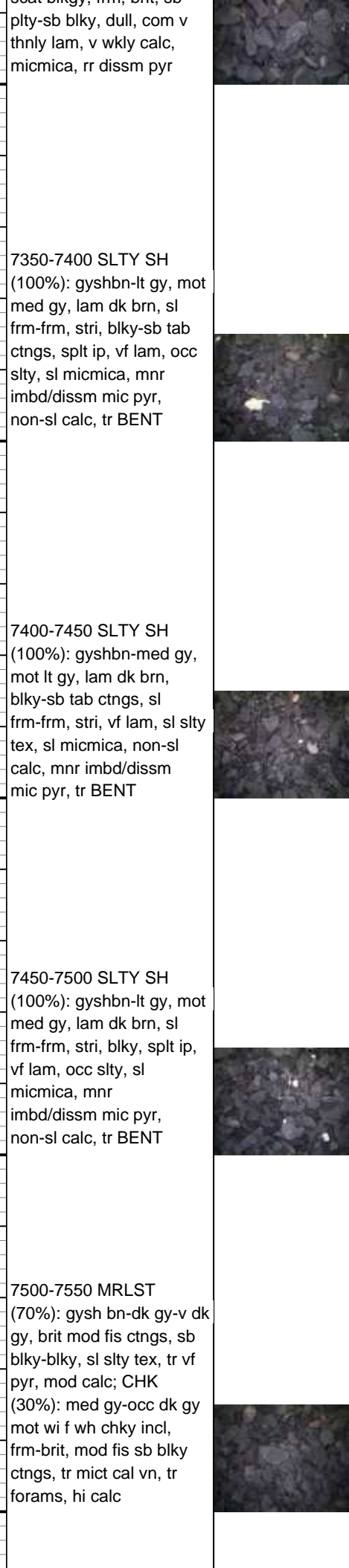
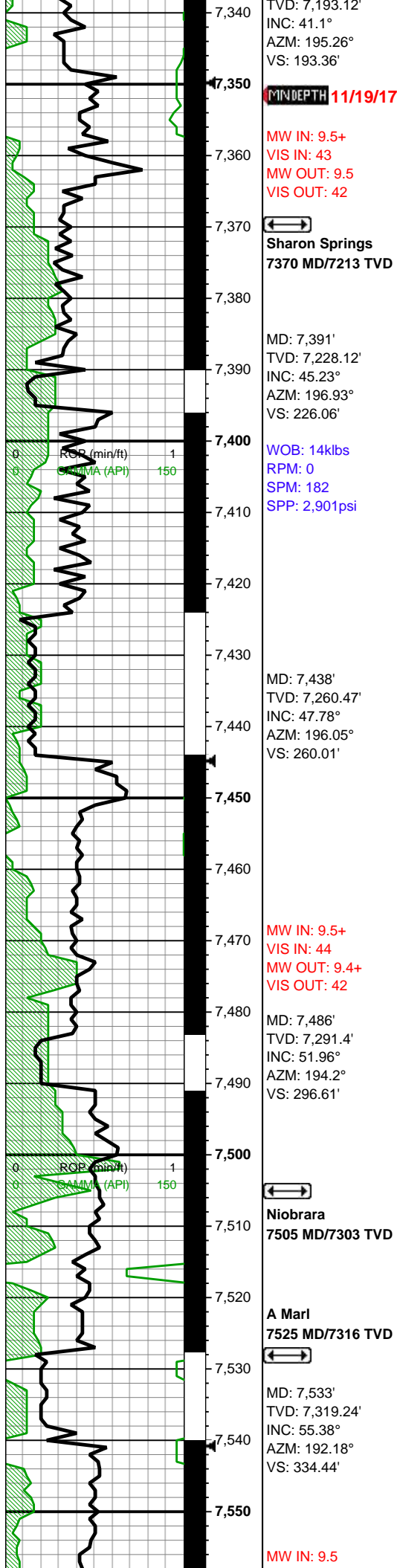
7250-7300 SLTY SH
(90%): med gy-gyshbn dk
gy, rr v dk gy-blk, sft-sb
frm-frm ip, sb blk-blk
ctngs, intbdd wi sltst ip,
non calc; SLTST (10%):
med-dk gy, grdd ip, frm,
brit, sb blk-sb plty, silc,
grdd ip, non calc

7000-7050 SH (100%):
med gy-gyshbn, mot lt gy,
mod fis, sl hd-frm, sft, sl
slty thru, sb blk-tab
ctngs, tr pp mic pyr, vf
lamn, non-sl calc

7050-7100 SLTY SH
(100%): med-dk gy, occ
bnshgy, sme dk gy, sb
hd-v frm, predy ply fis, sb
ply-sb blk, slty tex, v
wkly-non calc, scat
micmica







7,560
7,570
7,580
7,590
7,600
7,610
7,620
7,630
7,640
7,650
7,660
7,670
7,680
7,690
7,700
7,710
7,720
7,730
7,740
7,750
7,760
7,770

ROP (min/ft)
GAMMA (API)

MD: 7,581'
TVD: 7,345.72'
INC: 57.67°
AZM: 190.69°
VS: 374.47'

WOB: 18.1klbs
RPM: 0-18
SPM: 180
SPP: 3,079psi

MW IN: 9.5
VIS IN: 44
MW OUT: 9.4
VIS OUT: 42

MD: 7,675'
TVD: 7,391.83'
INC: 63.52°
AZM: 187.52°
VS: 456.28'

MD: 7,722'
TVD: 7,411.13'
INC: 68°
AZM: 185.15°
VS: 498.97'

MW IN: 9.5
VIS IN: 43
MW OUT: 9.4
VIS OUT: 42

MD: 7,770'
TVD: 7,427.89'
INC: 71.12°
AZM: 182.78°
VS: 543.58'

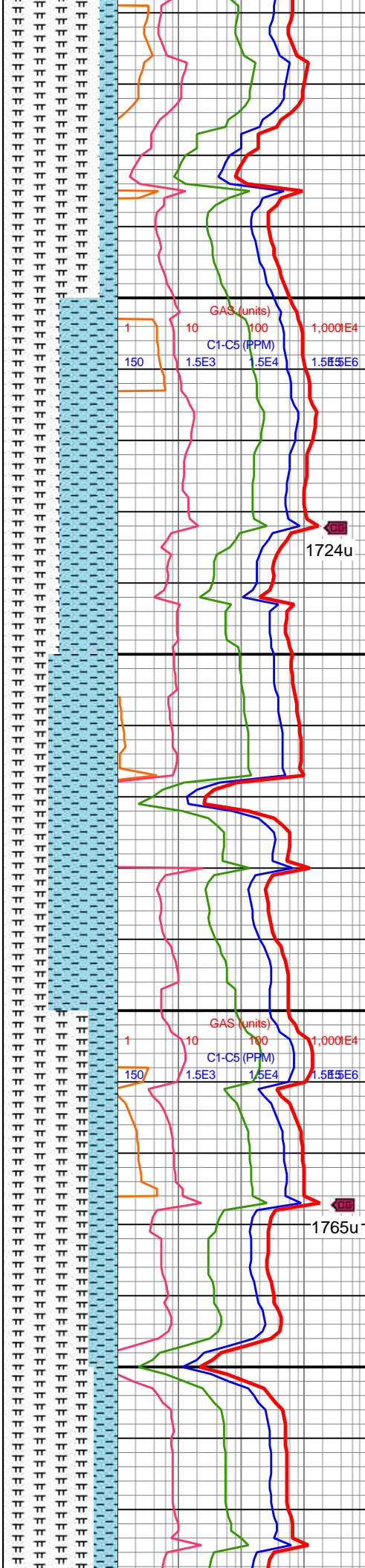
B Chalk
7620 MD/7366 TVD

MD: 7,628'
TVD: 7,369.82'
INC: 60.62°
AZM: 189.19°
VS: 414.81'

B Marl
7681 MD/7394 TVD

MD: 7,722'
TVD: 7,411.13'
INC: 68°
AZM: 185.15°
VS: 498.97'

MD: 7,770'
TVD: 7,427.89'
INC: 71.12°
AZM: 182.78°
VS: 543.58'



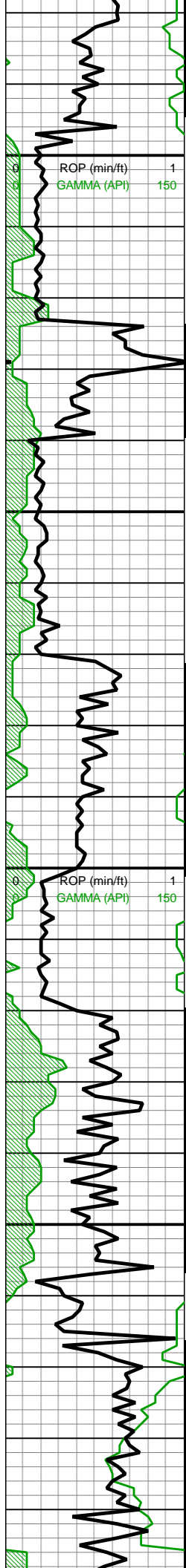
7550-7600 MRLST
(85%): dk gy-v dk gy, sme
blk, occ gyshbn, frm-v
frm, blk, v calc, rgh tex, tr
cal vns; CHK (15%): med
gy-lt gy-lt brn, blk, chky
tex, frm-sft, rr mot, rr lam,
tr pp pyr

7600-7650 CHK (50%):
med gy-occ dk gy mot wi f
wh chky incl, frm-brit,
mod fis sb blk ctngs, tr
mict cal vn, tr forams, hi
calc; MRLST (50%):
gyshbn-dk gy-v dk gy, brit
mod fis ctngs, sb
blk-blky, sl slty tex, tr vf
pyr, mod calc

7650-7700 CHK (60%): lt
gy-med gy, rr lt gyshbn,
med frm-frm-brit, fis, sb
rd-sb blk-blky, scat fos
frags, tr vf pyr-tr c pyr strg,
rr cal vn, hi calc; MRLST
(40%): pred dk gy, occ
med gy, frm, mod fis sb
blk-blky ctngs, pred
sm-sl slty tex, mod calc

7700-7750 MRLST
(75%): dk gy-v dk gy, sme
blk, occ gyshbn, frm-v
frm, blk, v calc, rgh tex;
CHK (25%): med gy-lt
gy-lt brn, blk, chky tex,
frm-sft, rr mot, rr lam, tr
pp pyr

7700-7750 MRLST
(80%): gysh bn-dk gy-v dk
gy, brit mod fis ctngs, sb
blk-blky, sl slty tex, tr vf
pyr, mod calc



WOB: 31.2klbs
RPM: 31
SPM: 178
SPP: 3,379psi

MD: 7,817'
TVD: 7,442.54'
INC: 72.57°
AZM: 180.76°
VS: 587.64'

MW IN: 9.6+
VIS IN: 43
MW OUT: 9.4
VIS OUT: 41

MD: 7,865'
TVD: 7,456.42'
INC: 73.8°
AZM: 181.72°
VS: 632.9'

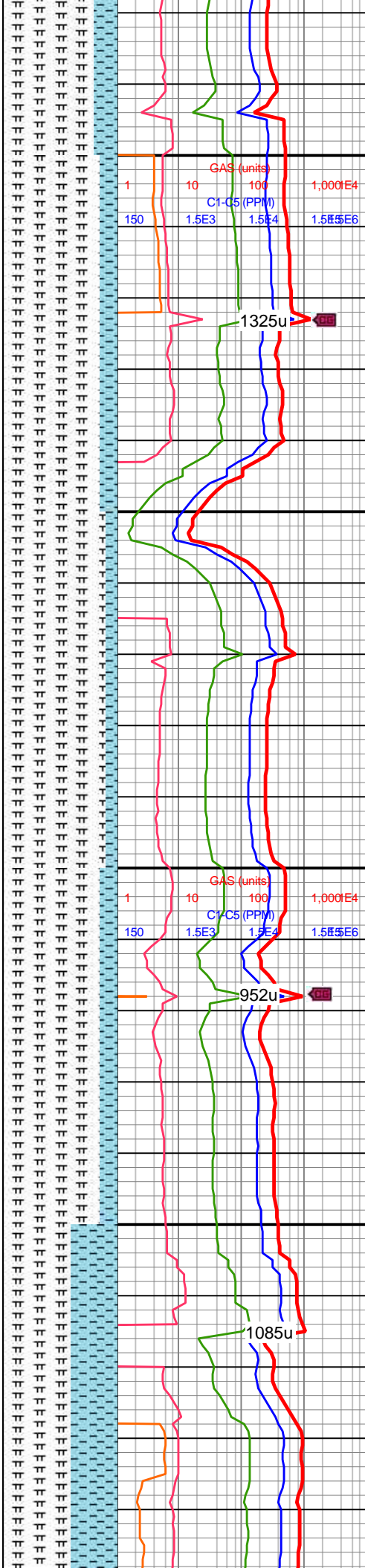
MD: 7,912'
TVD: 7,468.02'
INC: 77.63°
AZM: 181.55°
VS: 677.82'

↔
C Chalk
7948 MD/7474 TVD

MD: 7,960'
TVD: 7,476.69'
INC: 81.54°
AZM: 179.35°
VS: 724.19'

MW IN: 9.7
VIS IN: 45
MW OUT: 9.65
VIS OUT: 43

WOB: 29klbs
RPM: 31
SPM: 178
SPP: 3,379psi



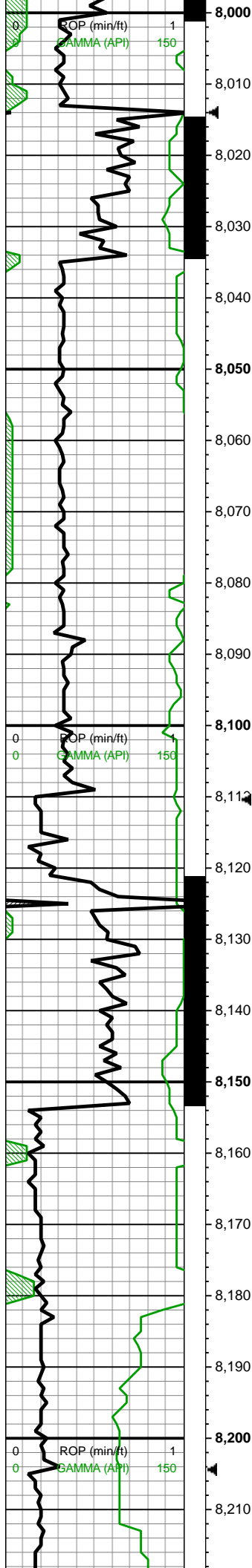
dky-dky, sl slty tex, tr vf
pyr, mod calc; CHK
(20%): med gy-occ dk gy
mot wi f wh chky incl,
frm-brit, mod fis sb blk
ctngs, tr mict cal vn, tr
forams, hi calc

7800-7850 MRLST
(85%): med gysbn-dk
gy, med frm-frm, l mod-hi
fis sb rd-plty ctngs, sm
slty arg tex-slty tex, rr vf-f
pyr strg, mod calc wi brn
resdl; CHK (15%): dk gy
wi vf-f wh chky incl, frm,
brit, mod fis sb rd-sb plty
ctngs, tr vf pyr, hi calc

7850-7900 MRLST
(90%): med gysbn sb
frm-frm l-mod fis sb rd-rd
ctngs, com dk gy frm hi
fis sb plty-plty ctngs, sm
slty arg tex-slty tex, rr vf-f
pyr strg, mod calc wi brn
resdl; CHK (10%): dk gy
wi vf-f wh chky incl, frm,
brit, mod fis sb rd-sb plty
ctngs, tr vf pyr, hi calc

7900-7950 MRLST
(85%): med gysbn-dk
gy, med frm-frm, l mod-hi
fis sb rd-plty ctngs, sm
slty arg tex-slty tex, occ
bent, rr vf-f pyr strg, mod
calc wi brn resdl; CHK
(15%): dk gy wi vf-f wh
chky incl, frm, brit, mod
fis sb rd-sb plty ctngs, tr
vf pyr, hi calc

8000-8050 MRLST
(60%): dk gy, med
frm-frm, brit ip, mod fis
sb blk-sb plty ctngs, sp
brn mrly incl ip, slty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl; 40% CHK:
lt-med gy, frm, brit, l-mod
fis, sb rd-sb blk, slty tex,
rr forams, hi calc



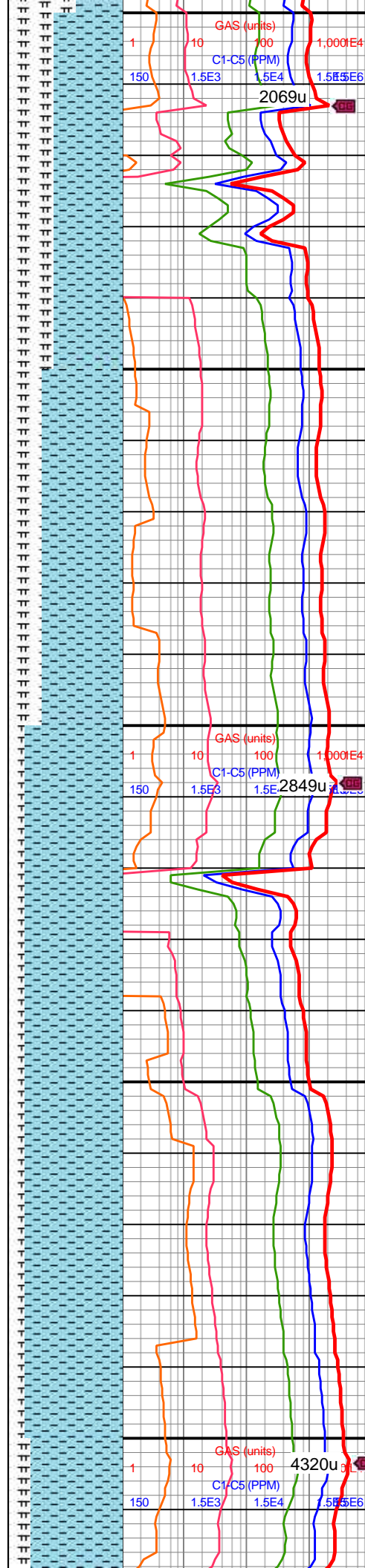
RPM: 0
SPM: 188
SPP: 3,380psi

MD: 8,055'
TVD: 7,484.55'
INC: 88.97°
AZM: 176.71°
VS: 816.32'

MD: 8,150'
TVD: 7,484.26'
INC: 91.38°
AZM: 177.86°
VS: 908.55'

WOB: 33klbs
RPM: 75
SPM: 186
SPP: 3,620psi

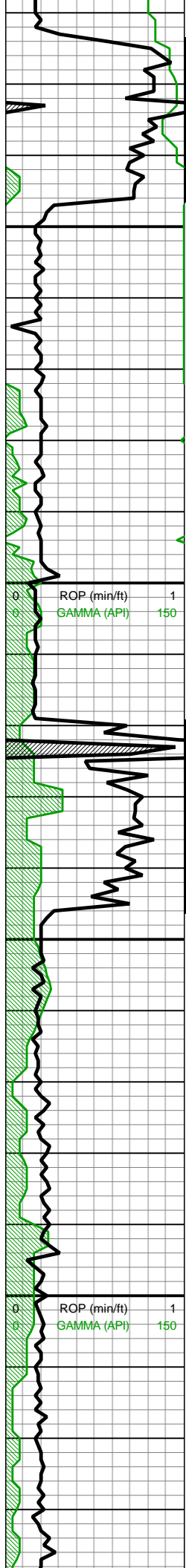
MW IN: 9.65
VIS IN: 45
MW OUT: 9.7



8000-8050 CHK (60%):
lt-med gy, rr gyshbn ip, wi
f wh chky incl ip & rr
forams, frm, brit, l-mod
fis, sb rd-sb blkly, slty tex,
rr bent, hi calc; MRLST
(40%): dk gy, med
frm-frm, brit ip, mod fis
sb blkly-sb plty ctngs, sp
brn mrly incl ip, slty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl

8050-8100 CHK (30%):
lt-med gy, rr gyshbn ip, wi
f wh chky incl ip & rr
forams, frm, brit, l-mod
fis, sb rd-sb blkly, slty tex,
rr bent, hi calc; MRLST
(30%): dk gy, med
frm-frm, brit ip, mod fis
sb blkly-sb plty ctngs, sp
brn mrly incl ip, slty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl

8100-8200 CHK (85%):
lt-med gy, rr lt gyshbn-dk
gy ip wi f wh chky incl,
frm, brit, mod fis sb
blkly-blky-sb plty ctngs,
slty tex, tr bent, tr forams,
tr vf pyr, hi calc; MRLST
(15%): dk gy, med
frm-frm, brit ip, mod fis
sb blkly-sb plty ctngs, sp
brn mrly incl ip, slty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl



MD: 8,245'
TVD: 7,482.44'
INC: 90.81°
AZM: 180.49°
VS: 1,001.46'

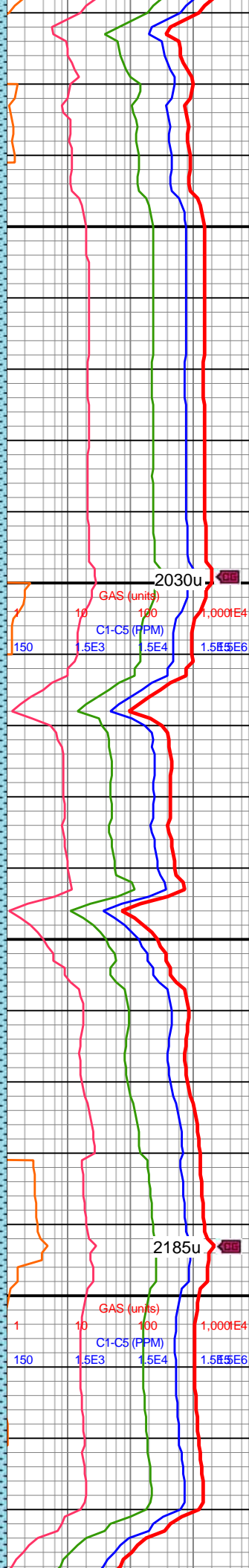
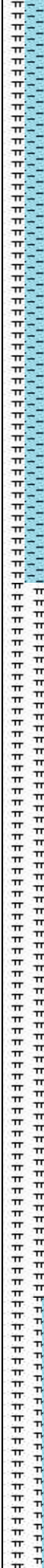
MW IN: 9.65
VIS IN: 44
MW OUT: 9.65
VIS OUT: 42

MD: 8,339'
TVD: 7,482.59'
INC: 89.01°
AZM: 181.81°
VS: 1,094.03'

WOB: 30klbs
RPM: 75
SPM: 187
SPP: 3,740psi

MD: 8,434'
TVD: 7,484.63'
INC: 88.53°
AZM: 182.34°

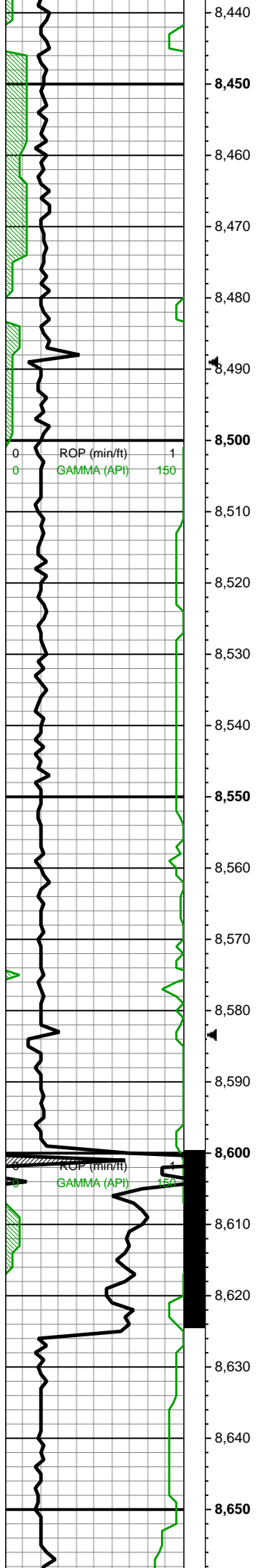
VIS OUT: 43



8200-8300 CHK (80%):
med gy-gyshbn wi f wh
chky incl & forams, occ lt
gy, frm-brit, mod fis sb
blky-blky-sb plty ctngs,
silty-gt tex ip, rr bent, occ
forams, rr vf-u f pyr, hi
calc; MRLST (20%): dk
gy, med frm-frm, brit ip,
mod fis sb blky-sb plty
ctngs, sp brn mrly incl ip,
silty tex, rr bent, tr vf pyr,
mod calc wi brn mrly
resd

8300-8400 CHK (55%):
lt-med gy-gyshbn wi f wh
chky incl ip, frm, brit,
l-mod fis, sb rd-sb blky,
silty-gt tex wi mod forams,
rr bent, hi calc; MRLST
(45%): dk gy, med
frm-frm, brit ip, mod fis
sb blky-sb plty ctngs, sp
brn mrly incl ip, silty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl





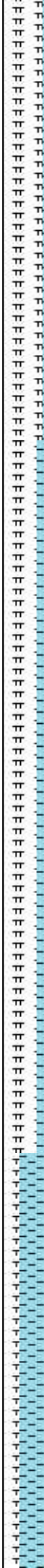
VS: 1,187.82'

MD: 8,529'
TVD: 7,486.41'
INC: 89.32°
AZM: 181.72°
VS: 1,281.61'

MW IN: 9.75
VIS IN: 45
MW OUT: 9.65
VIS OUT: 42

WOB: 17klbs
RPM: 0
SPM: 188
SPP: 3,230psi

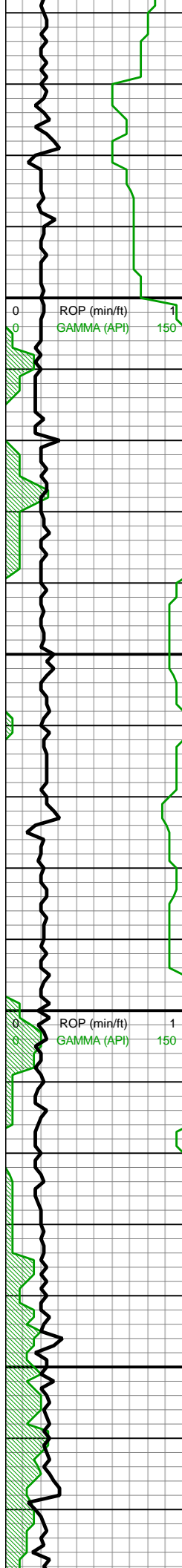
MD: 8,624'
TVD: 7,488.92'
INC: 87.65°
AZM: 182.87°
VS: 1,375.44'



8400-8500 CHK (60%):
lt-med gy-gyshbn wi f wh
chky incl ip, frm, brit,
l-mod fis, sb rd-sb blkly,
silty-gt tex wi mod forams,
occ-com bent, hi calc;
MRLST (40%): dk gy,
med frm-frm, brit ip, mod
fis sb blkly-sb plty ctngs,
sp brn mrly incl ip, silty
tex, rr bent, tr vf pyr, mod
calc wi brn mrly resdl

8500-8600 CHK (65%):
med gy-gyshbn wi f-c wh
chky incl & forams, occ lt
gy, frm-brit, mod fis sb
blkly-blky-sb plty ctngs,
silty-gt tex ip, com bent,
occ forams, rr vf-u f pyr, hi
calc; MRLST (35%): dk
gy, med frm-frm, brit ip,
mod fis sb blkly-sb plty
ctngs, sp brn mrly incl ip,
silty tex, rr bent, tr vf pyr,
mod calc wi brn mrly
resdl





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

MD: 8,718'
TVD: 7,492.85'
INC: 87.56°
AZM: 182.78°
VS: 1,468.37'

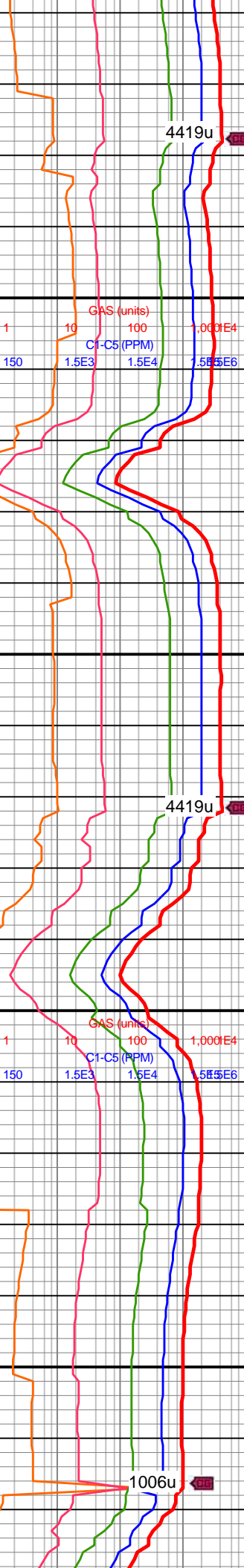
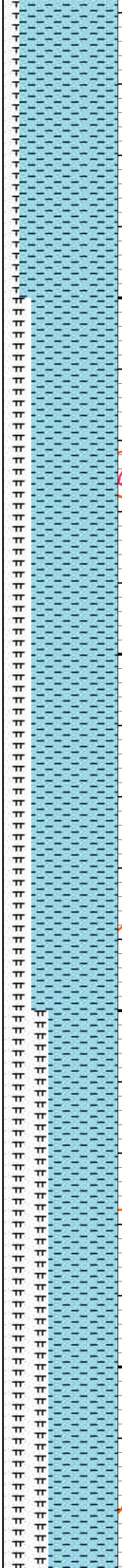
MW IN: 9.85
VIS IN: 45
MW OUT: 9.7
VIS OUT: 42

On gas buster

WOB: 33klbs
RPM: 75
SPM: 187
SPP: 3,830psi

MD: 8,813'
TVD: 7,496.42'
INC: 88.13°
AZM: 182.78°
VS: 1,562.29'

MW IN: 9.85
VIS IN: 43
MW OUT: 9.85
VIS OUT: 42

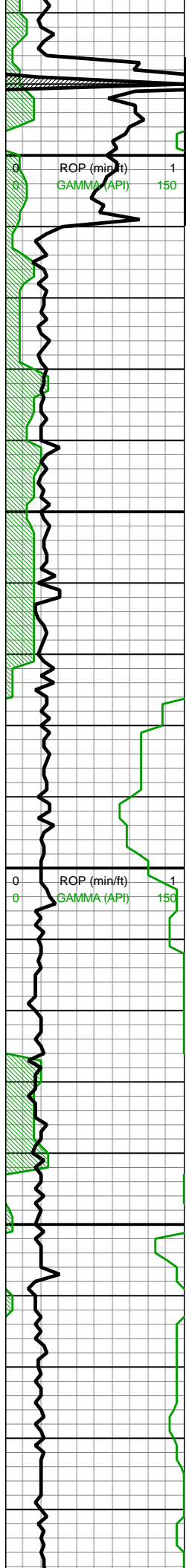


8600-8700 CHK (85%):
lt-med gy, rr lt gyshbn-dk
gy ip wi f wh chky incl,
frm, brit, mod fis sb
blky-blky-sb plty ctngs,
silty tex, tr bent, tr forams,
tr vf pyr, hi calc; MRLST
(15%): dk gy, med
frm-frm, brit ip, mod fis
sb blky-sb plty ctngs, sp
brn mrly incl ip, silty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl

8700-8800 CHK (75%):
lt-med gy, occ dk gy wi f
wh chky incl & rr thn chky
lamn, frm-brit mod fis sb
blky-blky-sb plty ctngs,
silty tex, rr fos frags &
forams, tr bent, tr vf pyr, hi
calc; MRLST (25%): dk gy
wi sp brn mrly incl ip,
med frm-frm, brit ip, mod
fis sb blky-sb plty ctngs,
sp brn mrly incl ip, silty
tex, rr bent, tr vf pyr, mod
calc wi brn mrly resdl

8800-8900 CHK (60%):
lt-med gy-gyshbn wi f wh
chky incl ip, frm, brit,
l-mod fis, sb rd-sb blky,
silty-gt tex wi occ forams,
rr bent, tr fos frags, hi
calc; MRLST (10%): dk





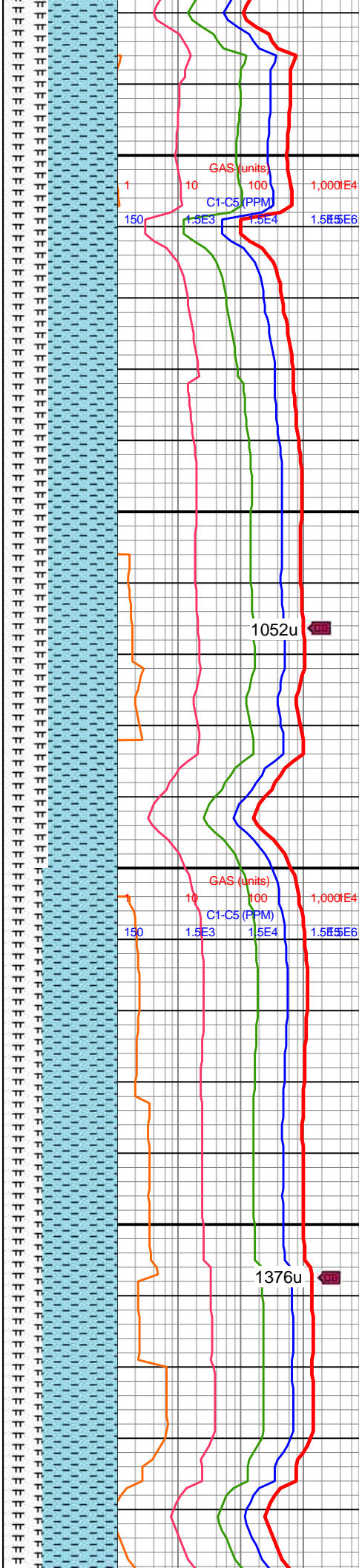
MD: 8,907'
TVD: 7,499.99'
INC: 87.52°
AZM: 180.67°
VS: 1,654.95'

WOB: 32klbs
RPM: 75
SPM: 188
SPP: 3,900psi

MD: 9,003'
TVD: 7,503.89'
INC: 87.82°
AZM: 179.26°
VS: 1,749.05'

MW IN: 9.85
VIS IN: 43
MW OUT: 9.85
VIS OUT: 41

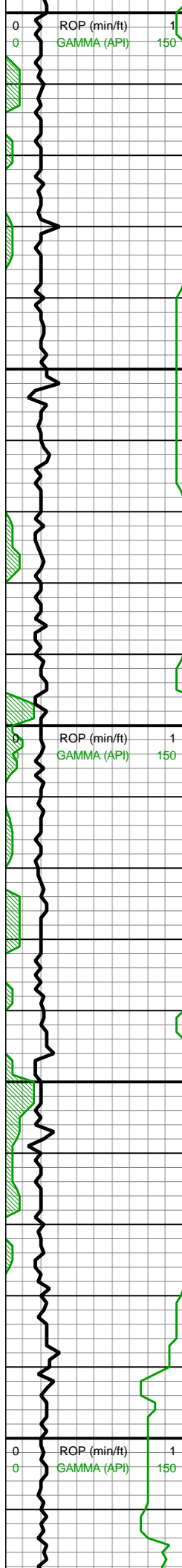
MD: 9,097'
TVD: 7,506.96'
INC: 88.44°



calc, MRLST (40%): dk
gy, med frm-frm, brit ip,
mod fis sb blk-y-sb plty
ctngs, sp brn mrly incl ip,
silty tex, rr bent, tr vf pyr,
mod calc wi brn mrly
resdl

8900-9000 CHK (60%):
med gy-dk gy, frm-brit,
l-mod fis sb rd-sb blk-y
ctngs, slty tex, rr forams,
rr bent, tr fos frags, hi
calc; MRLST (40%): dk
gy, med frm-frm, brit ip,
mod fis sb blk-y-sb plty
ctngs, sp brn mrly incl ip,
sm arg-sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl

9000-9100 CHK (65%):
predy med gy, occ lt
gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blk-y-blky ctngs, slty-gt tex
ip, rr bent, rr forams, tr vf
pyr, hi calc; MRLST
(35%): dk gy, med
frm-frm, brit ip, mod fis
sb blk-y-sb plty ctngs, sp
brn mrly incl ip, slty tex,
occ sm arg tex, tr vf pyr,
mod calc wi brn mrly
resdl



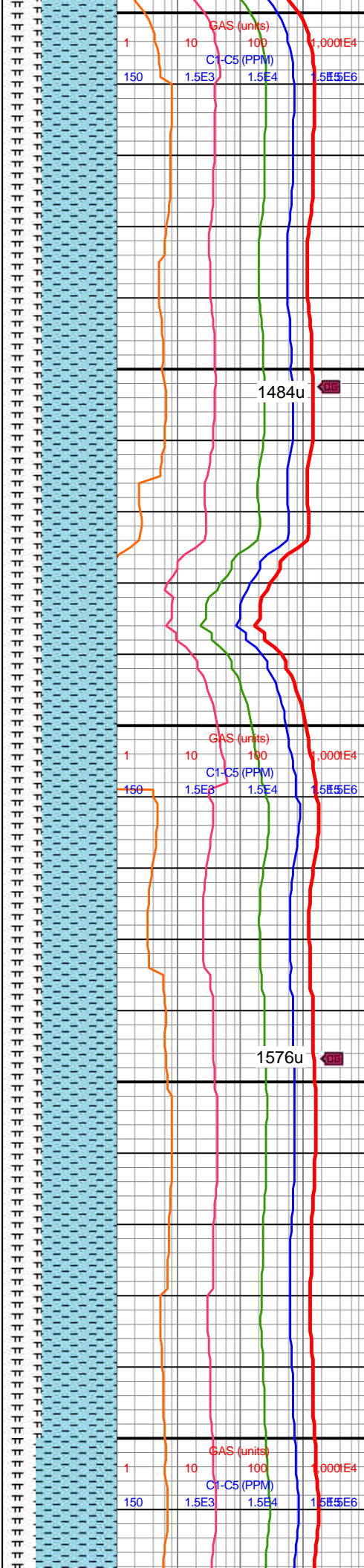
9,100
9,110
9,120
9,130
9,140
9,150
9,160
9,170
9,180
9,190
9,200
9,210
9,220
9,230
9,240
9,250
9,260
9,270
9,280
9,290
9,300
9,310

AZM: 179.09°
VS: 1,840.96'

MD: 9,191'
TVD: 7,508.66'
INC: 89.49°
AZM: 179.35°
VS: 1,932.92'

WOB: 33klbs
RPM: 75
SPM: 188
SPP: 3,920psi

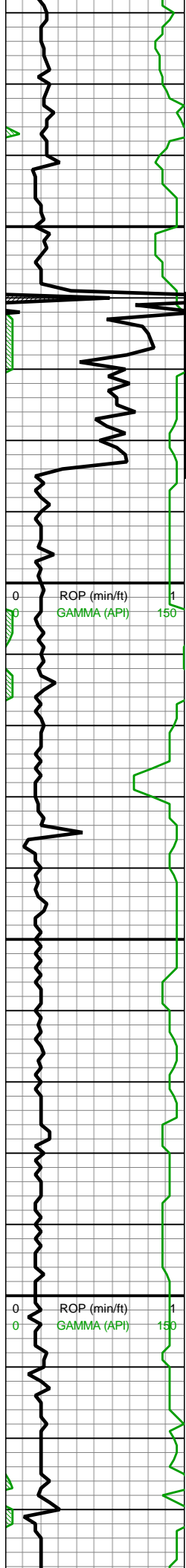
MD: 9,286'
TVD: 7,508.84'
INC: 90.29°
AZM: 178.82°
VS: 2,025.82'



9100-9200 CHK (65%):
predy med gy, occ lt
gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blky-blky ctngs, slty-gt tex
ip, rr bent, rr forams, tr vf
pyr, hi calc; (35%)
MRLST: dk gy, med
frm-frm, brit ip, mod fis
sb blky-sb plty ctngs, sp
brn mrly incl ip, slty tex,
occ sm arg tex, tr vf pyr,
mod calc wi brn mrly
resdl

9200-9300 CHK (65%):
predy med gy, occ lt
gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blky-blky ctngs, slty-gt tex
ip, rr bent, rr forams, rr
fos frags, tr vf pyr-u f-c pyr
strg, hi calc; MRLST
(35%): dk gy, med
frm-frm, brit ip, mod fis
sb blky-sb plty ctngs, sp
brn mrly incl ip, slty tex,
occ sm arg tex, tr vf pyr,
mod calc wi brn mrly
resdl



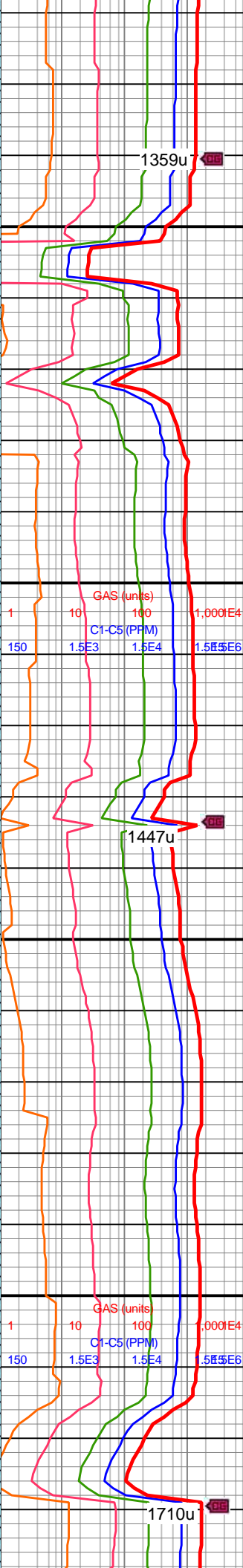
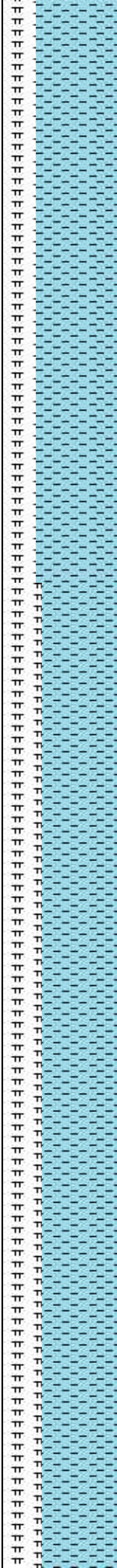


MW IN: 9.85
VIS IN: 45
MW OUT: 9.8
VIS OUT: 43

MD: 9,381'
TVD: 7,509.35'
INC: 89.1°
AZM: 179.79°
VS: 2,118.8'

WOB: 33klbs
RPM: 75
SPM: 188
SPP: 3,930psi

MD: 9,475'
TVD: 7,510.64'
INC: 89.32°
AZM: 180.32°
VS: 2,211.04'



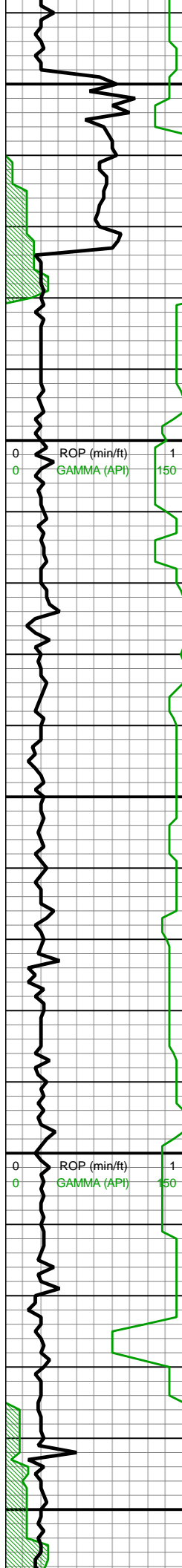
1359u

9300-9400 CHK (70%):
lt-med gy, brnsh hue ip,
frm-brit, mod fis sb
blky-blky ctngs, sm-sl slty
tex, rr bent, rr forams, tr vf
pyr strg, hi calc; MRLST
(30%): dk gy, med
frm-frm, brit ip, mod fis
sb blky-sb plty ctngs, sp
brn mrly incl ip, slty tex,
occ sm arg tex, tr vf pyr,
mod calc wi brn mrly
resdl

1447u

9400-9500 CHK (65%):
predy med gy, occ lt
gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blky-blky ctngs, slty-gt tex
ip, tr forams, tr vf pyr, hi
calc; MRLST (35%): dk
gy, med frm-frm, brit ip,
mod fis sb blky-sb plty
ctngs, sp brn mrly incl ip,
slty tex, occ sm arg tex, tr
vf pyr, mod calc wi brn
mrly resdl

1710u



MW IN: 9.85
VIS IN: 43
MW OUT: 9.85
VIS OUT: 42

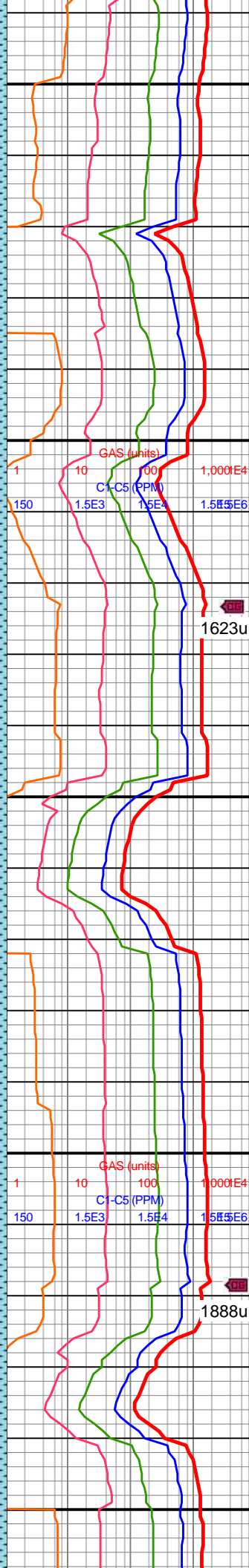
MD: 9,570'
TVD: 7,512.9'
INC: 87.96°
AZM: 179.88°
VS: 2,304.25'

WOB: 33klbs
RPM: 75
SPM: 178
SPP: 3,740psi

MD: 9,664'
TVD: 7,516.47'
INC: 87.69°
AZM: 179.53°
VS: 2,396.32'

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

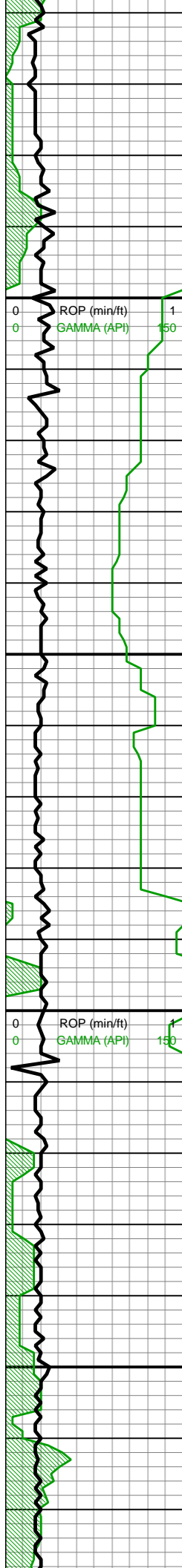
MD: 9,759'
TVD: 7,519.52'



9500-9600 CHK (65%):
predy med gy, occ lt
gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blky-blky ctngs, slty-gt tex
ip, tr vf pyr-u f-c pyr strg, hi
calc; MRLST (35%): dk
gy, med frm-frm, brit ip,
mod fis sb blky-sb plty
ctngs, sp brn mrly incl ip,
slty tex, occ sm arg tex, tr
vf pyr, mod calc wi brn
mrly resdl

9600-9700 CHK (70%):
med brn-gyshbn, mot, sl
frm-frm, sb blky-sb tab
ctngs, brit, tr free CHK,
mnr vf lam, hi calc;
MRLST (30%): dk gy-dk
gyshbn, brit, sb blky-splt
ctngs, sl hd-frm, mnr
CHK intbds/incl, tr diss
mic pyr, mod calc





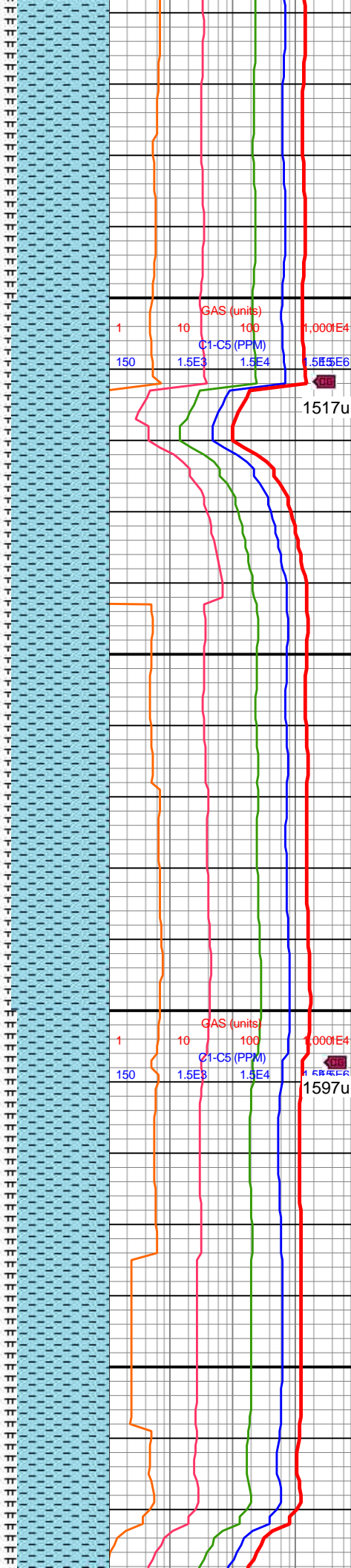
INC: 88.62°
AZM: 179°
VS: 2,489.23'

WOB: 33.6klbs
RPM: 75
SPM: 185
SPP: 4,475psi

MW IN: 9.8
VIS IN: 42
MW OUT: 9.7+
VIS OUT: 41

MD: 9,854'
TVD: 7,521.23'
INC: 89.32°
AZM: 178.82°
VS: 2,582.06'

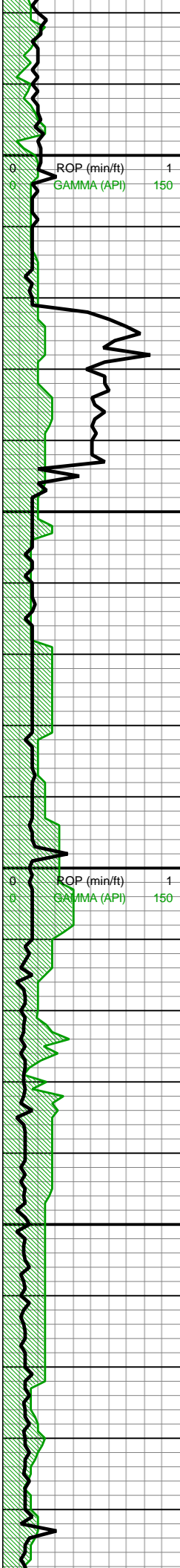
MD: 9,949'
TVD: 7,521.89'
INC: 89.89°
AZM: 178.21°
VS: 2,674.76'



9700-9800 CHK (80%):
med brn-gyshbn, frm-brit,
mod fis, tab-sb blk
ctngs, tr free CHK, v calc;
MRLST (20%): dk gy-dk
gyshbn, sl hd-v frm, mod
fis, sb blk-tab ctngs, sm
arg-sl slty tex, mod calc,
tr mic pyr

9800-9900 CHK (85%):
predy med brn-gyshbn,
frm-sft, mod fis, tab-sb
blk, tr free CHK, hi-mod
calc; MRLST (15%): dk
gy-dk gyshbn, sl hd-v frm,
mod fis, sb blk-tab
ctngs, rgh-sm arg tex, hi
calc

9900-10000 CHK (80%):
med gy, med gyshbn-occ
dk gy, mot, frm-brit, sb
blkv-blkv, tr free CHK



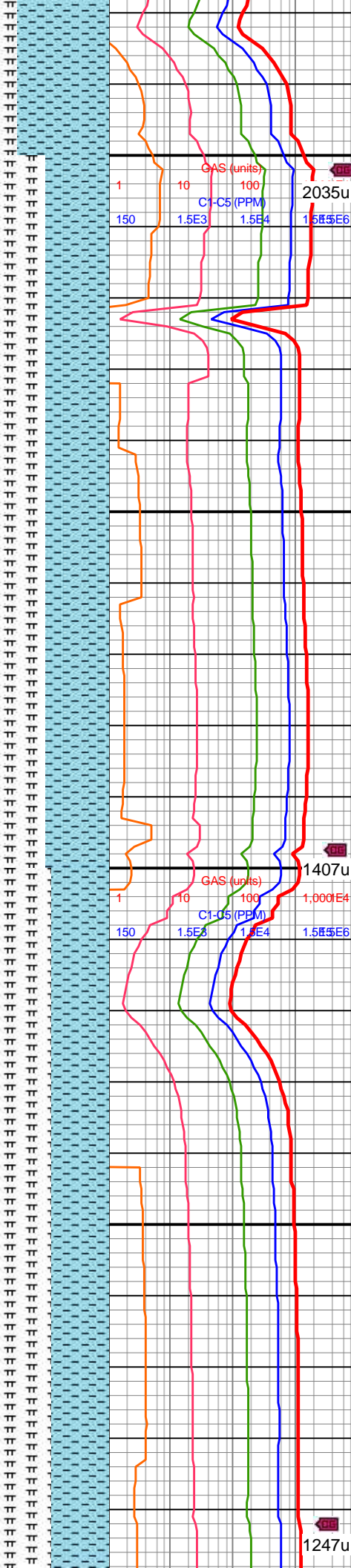
WOB: 34.5klbs
RPM: 75
SPM: 184
SPP: 4,274psi

MD: 10,043'
TVD: 7,523.26'
INC: 88.44°
AZM: 179.79°
VS: 2,766.64'

MW IN: 9.8
VIS IN: 43
MW OUT: 9.7+
VIS OUT: 41

MD: 10,138'
TVD: 7,525.63'
INC: 88.7°
AZM: 180.32°
VS: 2,859.84'

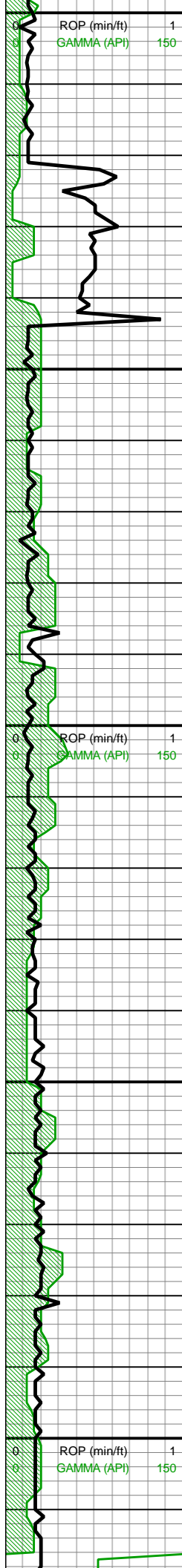
WOB: 27.9klbs



chky tex, com intbd
MRLST, wk-mod calc;
MRLST (20%): med
gyshbn-dk gy, frm-brit,
blky-sb blky, sm-sl slty
tex, calc

10000-10100 CHK
(55%): predy med gy,
med gyshbn-occ dk gy,
mot, frm-brit, sb blky-blky,
tr free CHK, chky tex, mod
calc; MRLST (45%): med
gy-gyshbn-dk gy, frm-brit,
sb blky-blky, sm-sl slty
tex, mod calc, tr pp pyr

10100-10200 MRLST
(50%): pred dk gy-v dk gy,
occ blk, calc, blky, frm-v
frm, occ slty, rgh tex; CHK
(50%): pred med brn-dk
brn, occ mot lt gy, frm-sft,
blky, rr inoc fos frags, rr



10,200
10,210
10,220
10,230
10,240
10,250
10,260
10,270
10,280
10,290
10,300
10,310
10,320
10,330
10,340
10,350
10,360
10,370
10,380
10,390
10,400
10,410

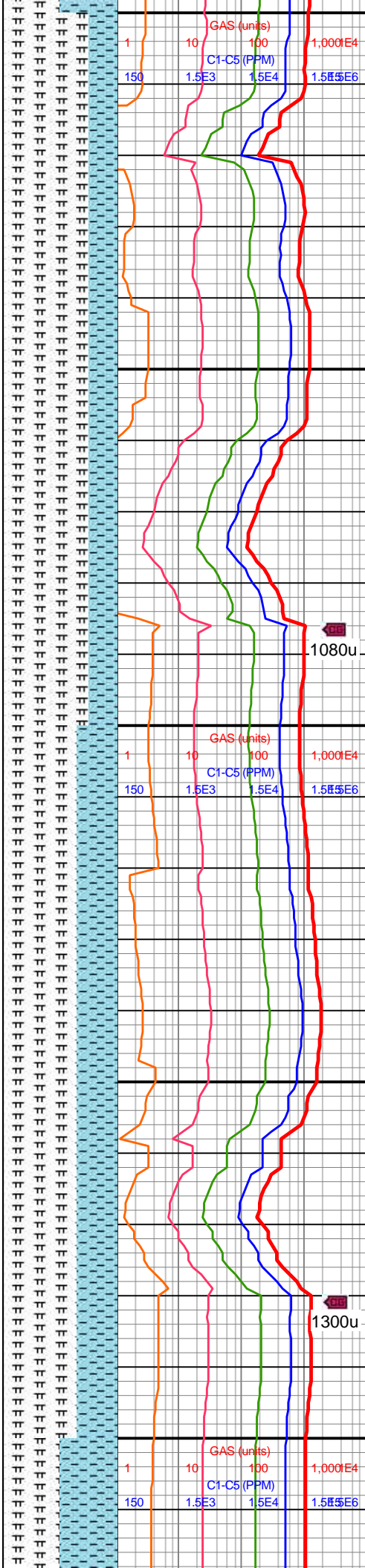
RPM: 75
SPM: 182
SPP: 4,256psi

MD: 10,233'
TVD: 7,529.17'
INC: 87.03°
AZM: 179.79°
VS: 2,953'

MD: 10,327'
TVD: 7,534.9'
INC: 85.98°
AZM: 180.23°
VS: 3,045.06'

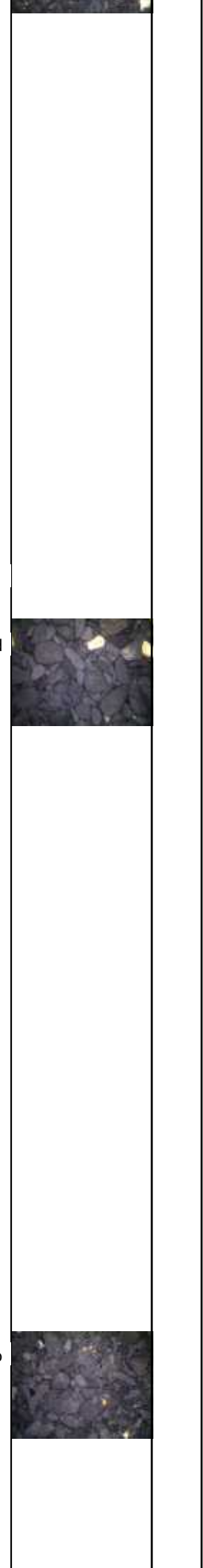
MW IN: 9.8
VIS IN: 43
MW OUT: 9.7+
VIS OUT: 41

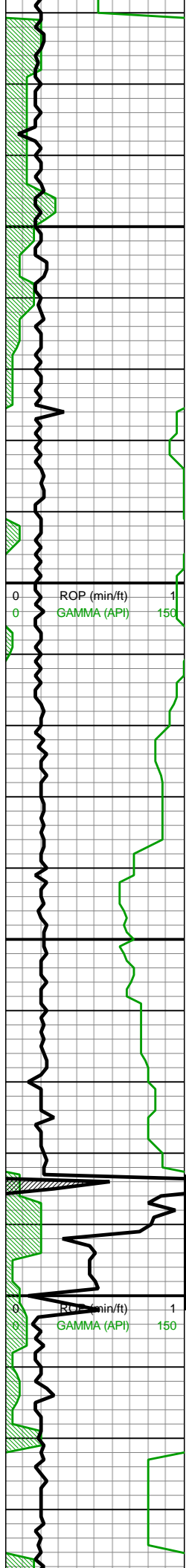
MD: 10,422'
TVD: 7,544.48'



10200-10300 MRLST
(75%): dk gy, dk gyshbn,
mot, sl hd frm, sb blk-y-sb
spl't, tr CHK intbds, tr
dissm mic pyr, mod calc;
CHK (25%): gyshbn, med
brn, mot, sl frm-brit, sb
blk-y-tab ctngs, sm-chky
tex, tr vf lam, hi calc

10300-10400 MRLST
(65%): dk gy-dk gyshbn,
sl hd, sb blk-y-spl't ctngs,
brit, tr dissd mic-vf pyr,
mnr chky intbds, mod
calc; CHK (35%): med
gy-gyshbn, sb blk-y-sb tab
ctngs, mnr vf lam, sl
frm-frm, mnr free CHK,
brit, hi calc





10,420
10,430
10,440
10,450
10,460
10,470
10,480
10,490
10,500
10,510
10,520
10,530
10,540
10,550
10,560
10,570
10,580
10,590
10,600
10,610
10,620
10,630

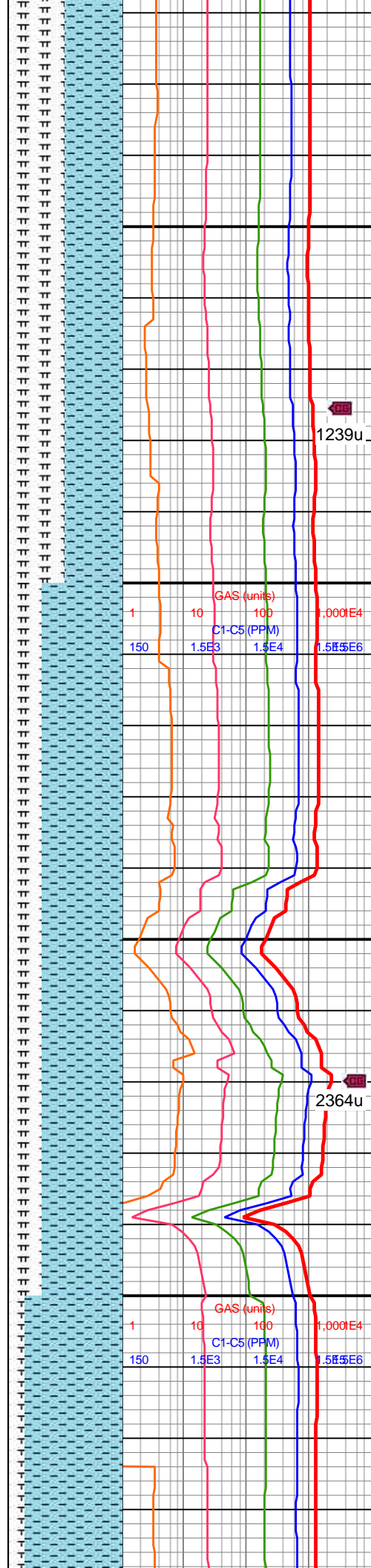
VD: 7,541.42'
INC: 86.15°
AZM: 180.49°
VS: 3,138.16'

MD: 10,516'
TVD: 7,547.73'
INC: 86.15°
AZM: 180.4°
VS: 3,230.32'

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

WOB: 39.7klbs
RPM: 0
SPM: 182
SPP: 4,133psi

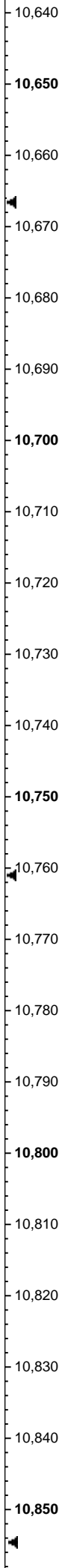
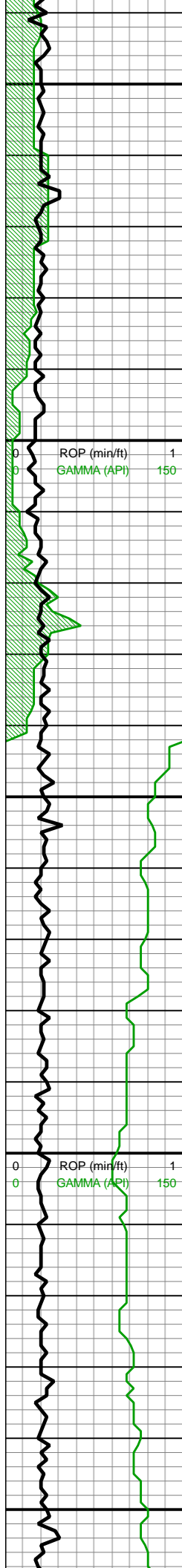
MD: 10,612'
TVD: 7,553.29'
INC: 87.21°
AZM: 180.93°
VS: 3,324.56'



10400-10500 CHK
(50%): med gy, gyshbn,
sb tab ctngs, frm, brit, tr vf
lam, hi calc, scat inoc fos
frags; MRLST (50%): dk
gy, dk gyshbn, sb tab-blky
ctngs, brit, sl hd, tr CHK
intbds, tr pp mic pyr, mod
calc

10500-10600 CHK
(70%): dk gy-med brn,
frm, mod fis, blk, tr free
CHK, tr pp mic pyr, v calc;
MRLST (30%): predy dk
gy-dk gy brn, sme med
gy, mot, frm-v frm, mod
fis, sb blk-blky, mod
calc, tr imbd mic pyr

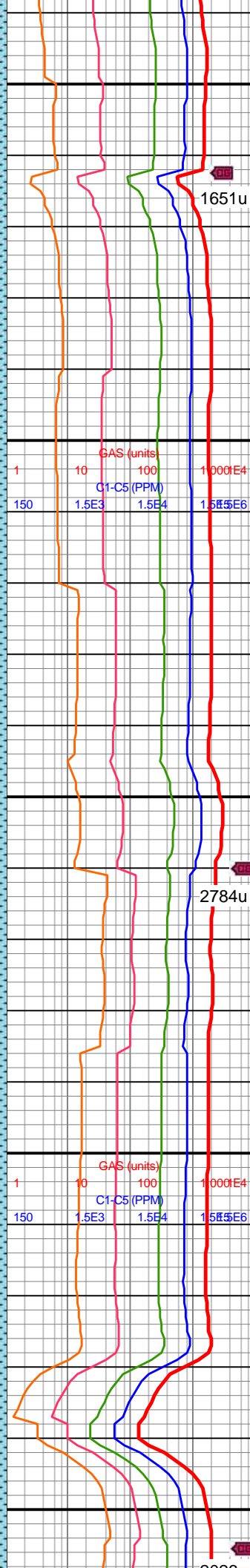
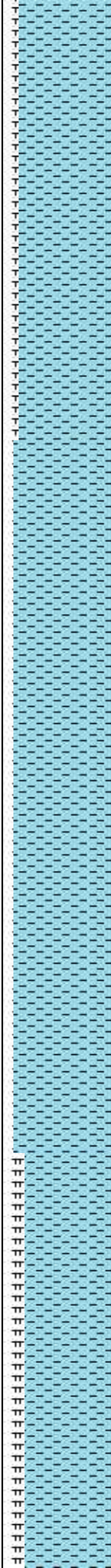




MW IN: 9.8
VIS IN: 43
MW OUT: 9.8+
VIS OUT: 41

MD: 10,706'
TVD: 7,556.46'
INC: 88.92°
AZM: 181.55°
VS: 3,417.11'

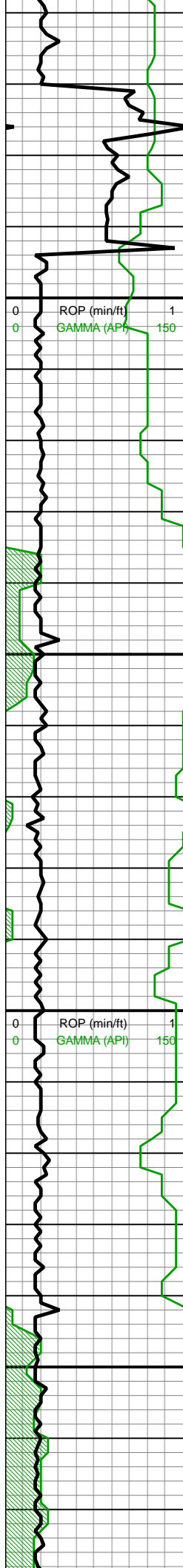
MD: 10,800'
TVD: 7,557.65'
INC: 89.63°
AZM: 180.76°
VS: 3,509.67'



10600-10700 CHK
(85%): med brn-dk
gyshbn, tr free crm chk,
mot, frm-sl sft, blkyl-sb rd,
chky tex, mod calc;
MRLST (15%): predy dk
gy-dk gyshbn, sm tex,
frm-sl hrd, blkyl-sb rd, tr
imbd pp pyr, tr lam CHK,
calc

10800-10900 CHK
(90%): lt brn-crm, sme dk
gyshbn, mot, frm-sl sft,
rd-sb ang, chky tex, mod
calc; MRLST (10%):
predy gy-dk gyshbn, sm
tex-sl slty, frm-sl hrd,
blkyl-sb rd, tr vf CHK lam,
calc





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

MW IN: 9.8
VIS IN: 43
MW OUT: 8.8
VIS OUT: 41

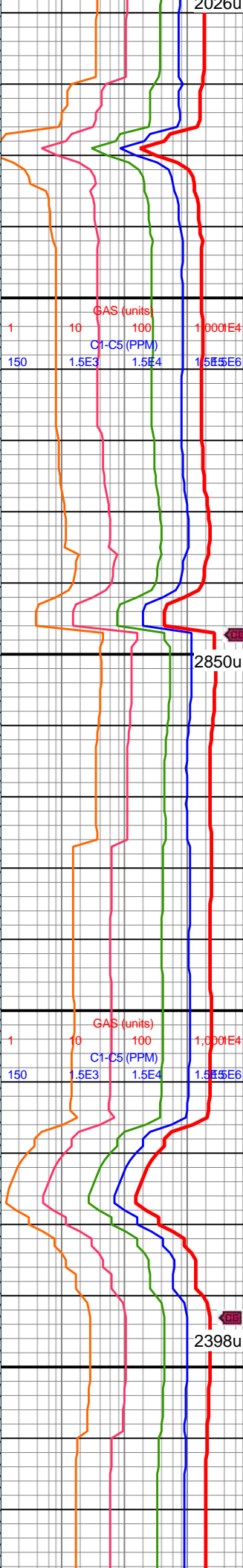
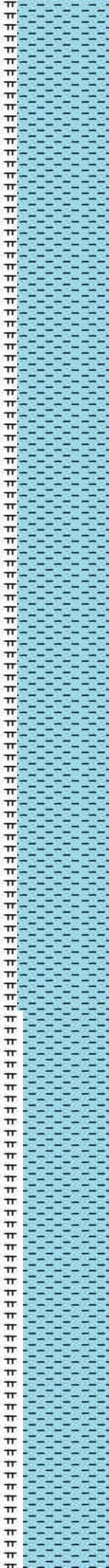
MD: 10,894'
TVD: 7,559.74'
INC: 87.82°
AZM: 180.58°
VS: 3,602.08'

MD: 10,989'
TVD: 7,563.6'
INC: 87.52°
AZM: 180.4°
VS: 3,695.37'

MINDEPTH 11/20/17

WOB: 33.6klbs
RPM: 75
SPM: 184
SPP: 4,487psi

MD: 11,083'
TVD: 7,567.2'

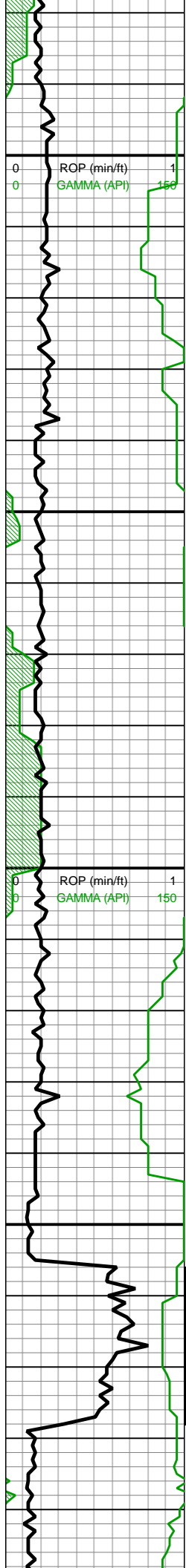


10800-10900 CHK
(80%): lt brn-gyshbn,
crm, frm-fis, blk-y-sb rd,
chky tex, tr free CHK, mod
calc; MRLST (20%):
predy gy-dk gyshbn, sm
tex-sl slty, frm-v frm,
blk-y-sb rd, tr lam CHK, hi
calc

10900-11000 CHK
(80%): predy med gy,
med gyshbn-occ dk gy,
mot, frm-brit, sb blk-y-blky,
sme free CHK, chky tex,
com intbd MRLST,
wk-mod calc; MRLST
(20%): med gyshbn-dk
gy, frm-brit, blk-y-sb blk-y,
sm-sl slty tex, v calc

11000-11100 CHK
(75%): predy med gy,





VD: 7,307.2'
INC: 88.09°
AZM: 181.02°
VS: 3,787.75'

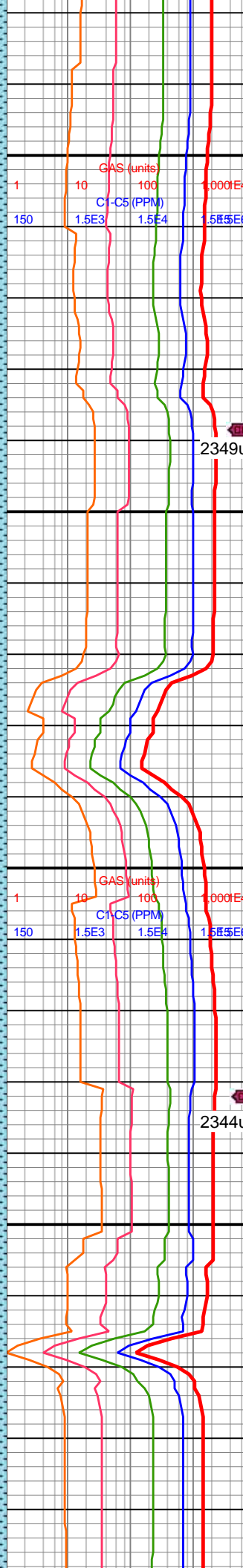
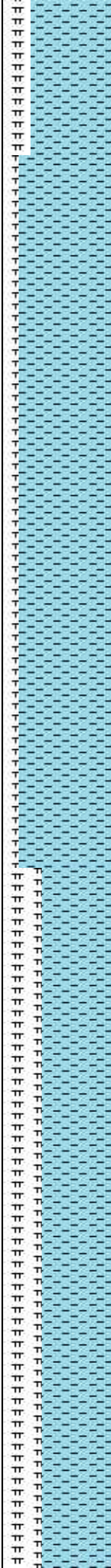
MW IN: 9.8
VIS IN: 42
MW OUT: 9.7
VIS OUT: 41

MD: 11,178'
TVD: 7,569.43'
INC: 89.23°
AZM: 180.93°
VS: 3,881.23'

WOB: 29.4klbs
RPM: 75
SPM: 184
SPP: 4,463psi

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

MD: 11,273'
TVD: 7,572.3'
INC: 87.3°
AZM: 181.55°
VS: 3,974.77'

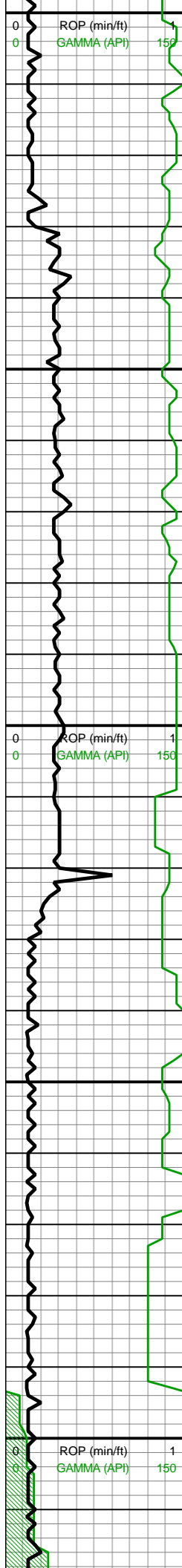


med gyshbn-occ dk gy,
mot, frm-brit, sb blkly-blky,
tr free CHK, chky tex, mod
calc; MRLST (25%): med
gy-gyshbn-dk gy, frm-brit,
sb blkly-blky, sm-sl slty
tex, mod calc, tr pp pyr

11100-11200 CHK
(90%): lt brn-gyshbn,
sme crm, frm-fis, blkly-sb
rd, chky tex, tr free CHK,
mod calc; MRLST (10%):
predy gy-dk gyshbn, sm
tex-sl slty, frm-v frm,
blkly-sb ang, tr lam CHK,
hi calc

11100-11200 CHK
(65%): predy med gy,
med gyshbn-occ dk gy,
mot, frm-brit, sb blkly-blky,
tr free CHK, chky tex, mod
calc; MRLST (35%): med
gy-gyshbn-dk gy, frm-brit,
sb blkly-blky, sm-sl slty
tex, mod calc, tr pp pyr





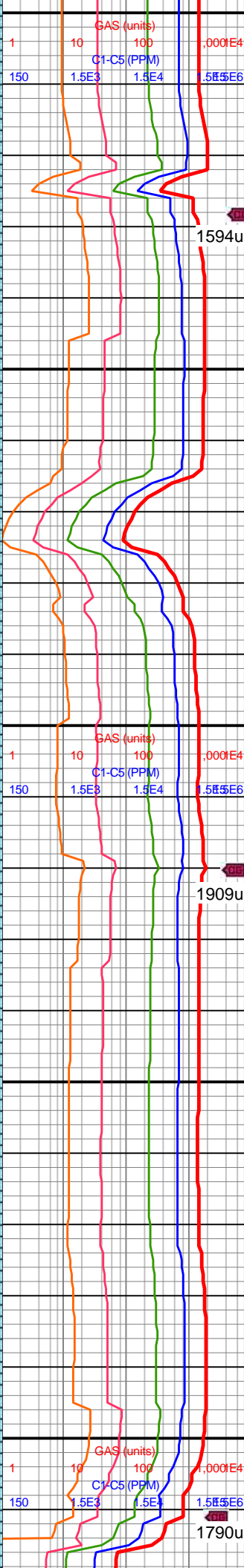
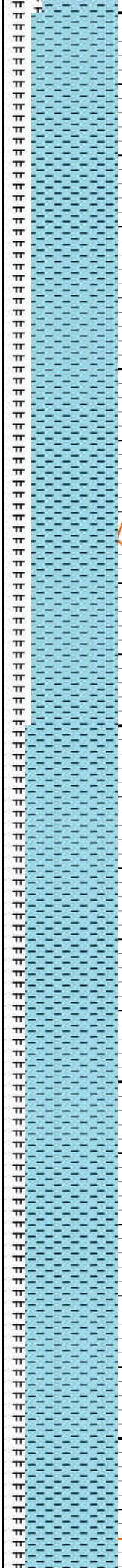
11,300
11,310
11,320
11,330
11,340
11,350
11,360
11,370
11,380
11,390
11,400
11,410
11,420
11,430
11,440
11,450
11,460
11,470
11,480
11,490
11,500
11,510

MD: 11,368'
TVD: 7,576.89'
INC: 87.16°
AZM: 181.02°
VS: 4,068.25'

WOB: 37.9klbs
RPM: 75
SPM: 184
SPP: 4,657psi

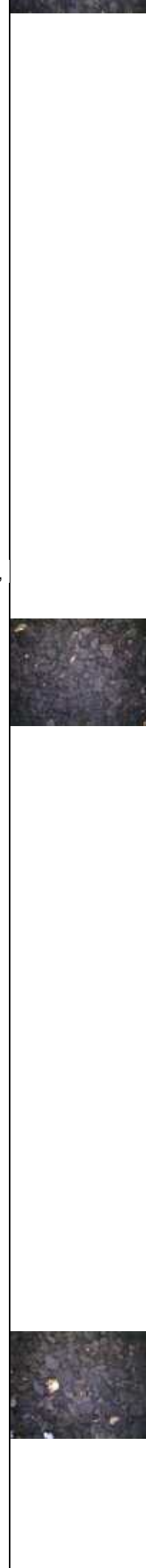
MD: 11,463'
TVD: 7,581.56'
INC: 87.21°
AZM: 181.2°
VS: 4,161.69'

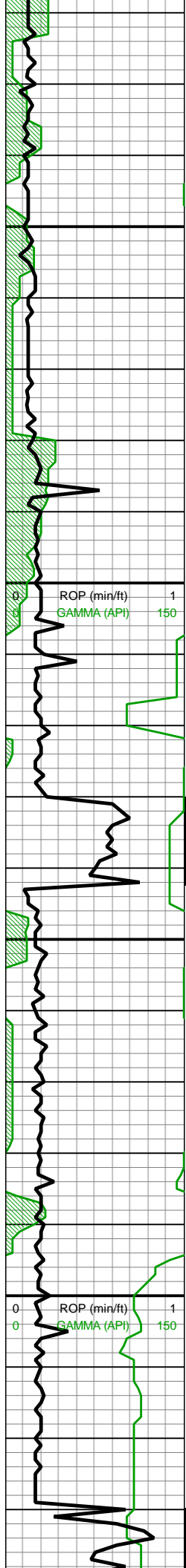
MW IN: 9.8
VIS IN: 43
MW OUT: 9.8
VIS OUT: 41



11300-11400 CHK
(75%): predy med gy,
med gyshbn-occ dk gy,
mot, frm-brit, sb blkyl-blky,
tr free CHK, scat fps
frags, chky tex, mod calc;
MRLST (25%): med
gy-gyshbn-dk gy, frm-brit,
sb blkyl-blky, sm-sl slty
tex, mod calc, tr pp pyr

11400-11500 CHK
(80%): lt brn-gyshbn,
sme crm, frm-fis, blkyl-sb
rd, chky tex, tr free offwht
CHK, mod calc; MRLST
(20%): predy gy-dk
gyshbn, sm tex-sl slty,
frm-v frm, blkyl-sb ang,
com lam CHK incl, hi
calc





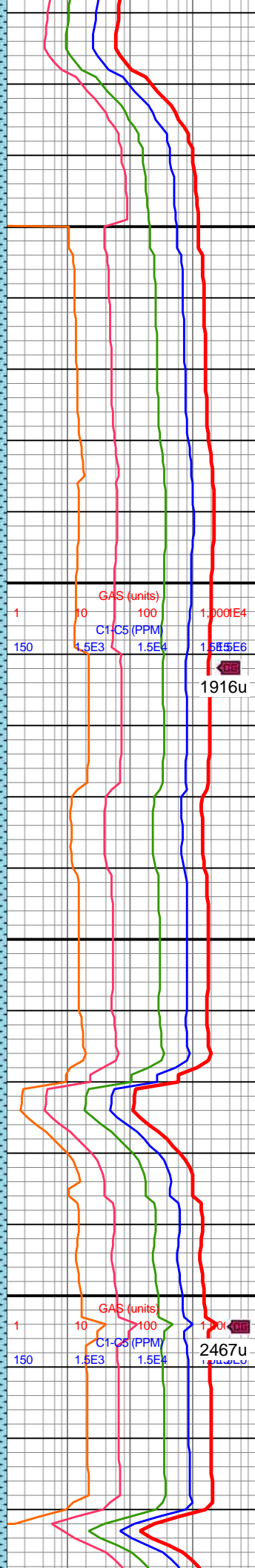
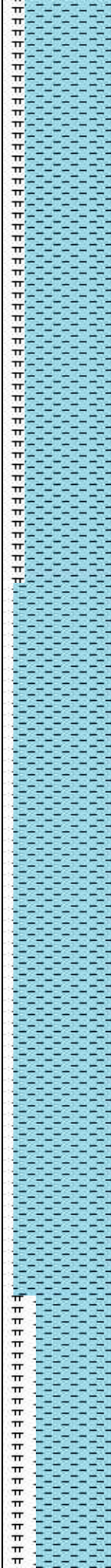
11,520
11,530
11,540
11,550
11,560
11,570
11,580
11,590
11,600
11,610
11,620
11,630
11,640
11,650
11,660
11,670
11,680
11,690
11,700
11,710
11,720
11,730

MD: 11,558'
TVD: 7,586.44'
INC: 86.9°
AZM: 181.46°
VS: 4,255.18'

WOB: 34.4klbs
RPM: 75
SPM: 182
SPP: 4,441psi

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

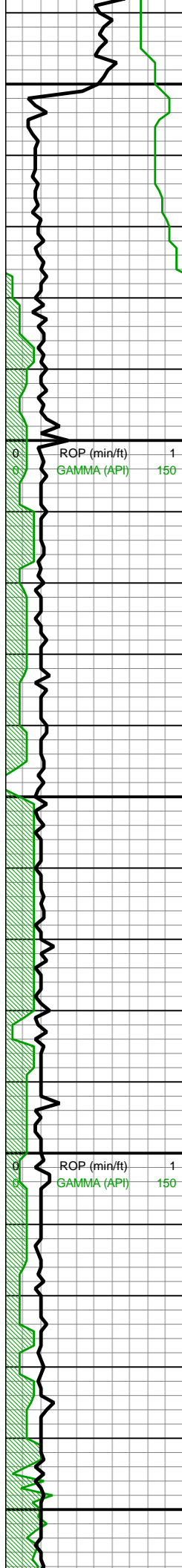
MD: 11,652'
TVD: 7,591.6'
INC: 86.81°
AZM: 180.93°
VS: 4,347.62'



11500-11600 CHK
(80%): med gy, med
gyshbn-occ dk gy, mot,
frm-brit, sb blkyl-blky, tr
free CHK, chky tex, com
intbd MRLST, wk-mod
calc; MRLST (20%): med
gyshbn-dk gy, frm-brit,
blkyl-sb blkyl, sm-sl slty
tex, calc

11600-11700 CHK
(90%): predy med gy,
med gyshbn-occ dk gy,
mot, frm-brit, sb blkyl-blky,
tr free CHK, chky tex, mod
calc; MRLST (10%): med
gy-gyshbn-dk gy, frm-brit,
sb blkyl-blky, sm-sl slty
tex, mod calc, tr pp pyr





11,740
11,750
11,760
11,770
11,780
11,790
11,800
11,810
11,820
11,830
11,840
11,850
11,860
11,870
11,880
11,890
11,900
11,910
11,920
11,930
11,940
11,950

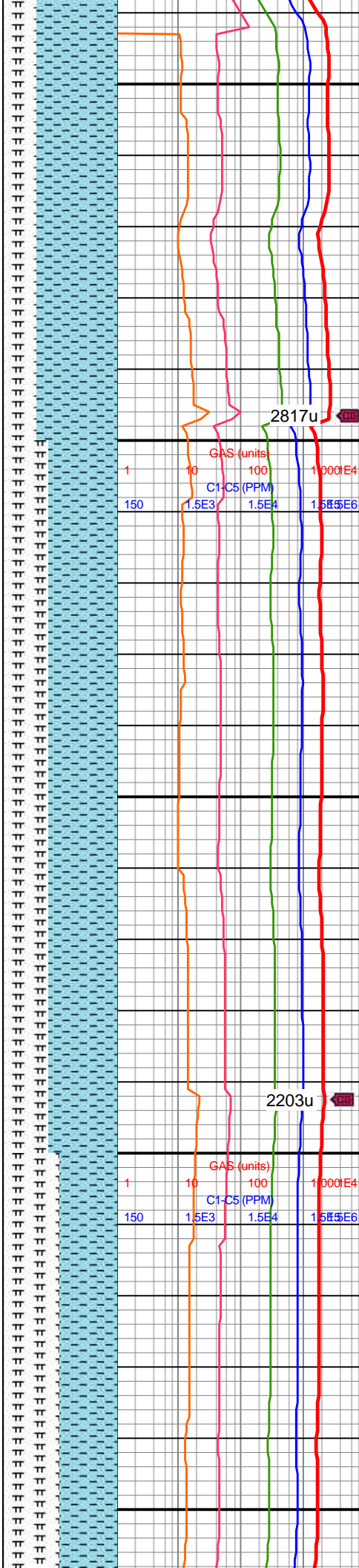
MD: 11,746'
TVD: 7,594.84'
INC: 89.23°
AZM: 180.05°
VS: 4,439.94'

WOB: 33.6klbs
RPM: 75
SPM: 182
SPP: 4,526psi

MW IN: 9.8+
VIS IN: 43
MW OUT: 9.9
VIS OUT: 42

MD: 11,840'
TVD: 7,595.28'
INC: 90.24°
AZM: 179°
VS: 4,532.01'

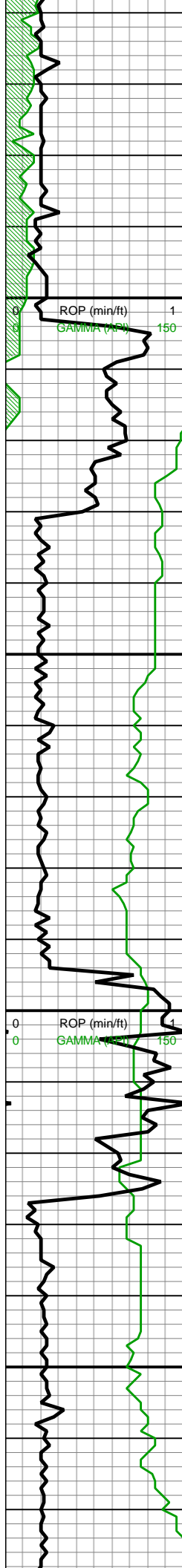
MD: 11,934'
TVD: 7,595.17'
INC: 89.89°
AZM: 174.78°
VS: 4,623.1'



11700-11800 CHK
(70%): lt brn-crm, sme dk
gyshbn, mot, frm-sl sft,
rd-sb ang, chky tex, mod
calc; MRLST (30%):
predy gy-dk gyshbn, sm
tex-sl slty, frm-sl hrd,
blky-sb rd, tr vf CHK lam,
calc

11800-11900 CHK
(60%): lt brn-crm, sme dk
gyshbn, mot, frm-sl sft,
rd-sb ang, chky tex, tr free
CHK, mod calc; MRLST
(40%): predy gy-dk
gyshbn, sm tex-sl slty,
frm-sl hrd, blky-sb rd, tr vf
CHK lam, calc

11900-12000 CHK
(50%): predy med gy, occ



11,960
11,970
11,980
11,990
12,000
12,010
12,020
12,030
12,040
12,050
12,060
12,070
12,080
12,090
12,100
12,110
12,120
12,130
12,140
12,150
12,160
12,170

WOB: 34.1kbs
RPM: 75
SPM: 183
SPP: 4,488psi

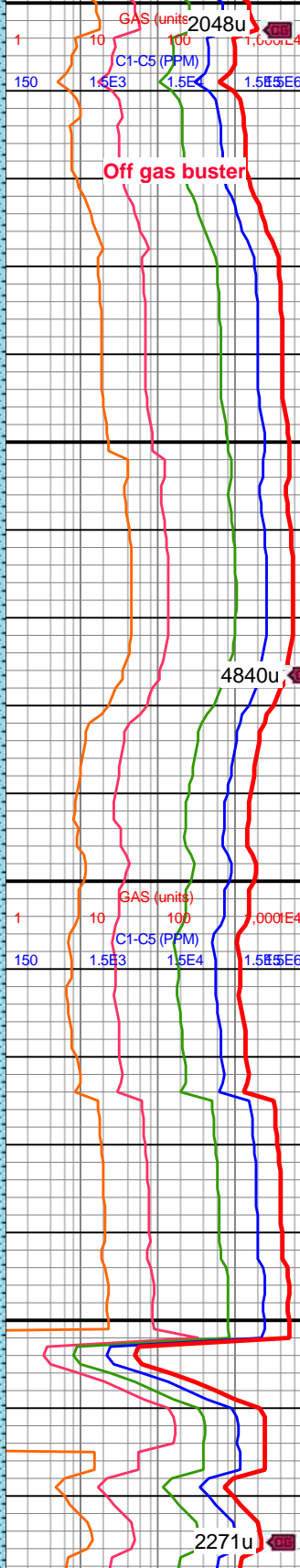
MW IN: 9.85
VIS IN: 43
MW OUT: 9.85
VIS OUT: 41

Off gas buster

MD: 12,029'
TVD: 7,593.9'
INC: 91.65°
AZM: 174.95°
VS: 4,714.28'

MW IN: 9.85
VIS IN: 44
MW OUT: 9.85
VIS OUT: 42

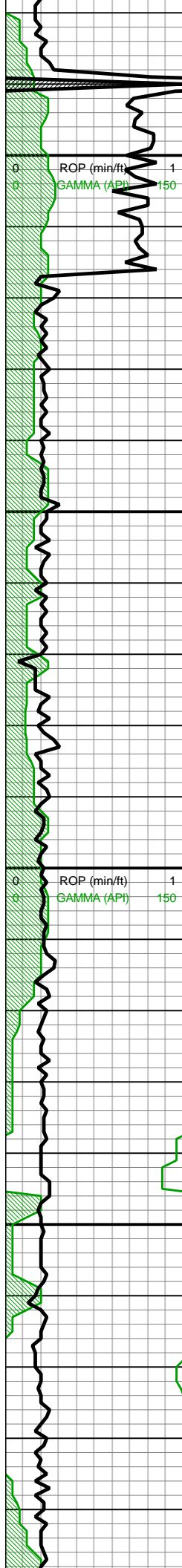
MD: 12,123'
TVD: 7,591.76'
INC: 90.95°
AZM: 178.12°
VS: 4,805.21'



lt gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blky-blky-sb plty ctngs,
silty-gt tex ip, rr bent, rr-tr
forams, tr vf pyr-u f-c pyr
strg, hi calc; MRLST
(50%): dk gy-dk gyshbn,
med frm-frm, brit ip, mod
fis sb blky-sb plty ctngs,
sp brn mrly incl ip, slty
tex, occ sm arg tex, tr vf
pyr, mod calc wi brn mrly
resdl

12000-12100 CHK
(60%): lt-med gy, occ dk
gy, f wh incl ip, frm-brit,
mod fis sb blky-blky-sb
plty ctngs, slty tex, rr bent,
rr-tr forams, tr vf pyr-u f-c
pyr strg, hi calc; MRLST
(40%): dk gy-dk gyshbn,
med frm-frm, brit ip, mod
fis sb blky-sb plty ctngs,
sp brn mrly incl ip, slty
tex, occ sm arg tex, tr vf
pyr, mod calc wi brn mrly
resdl

12100-12200 CHK
(85%): med gy, rr lt
gy-gyshbn-dk gy ip wi
f-elong wh chky incl, frm,
brit, mod fis sb
blky-blky-sb plty ctngs,
silty tex, rr bent, rr forams,



12,180
12,190
12,200
12,210
12,220
12,230
12,240
12,250
12,260
12,270
12,280
12,290
12,300
12,310
12,320
12,330
12,340
12,350
12,360
12,370
12,380
12,390

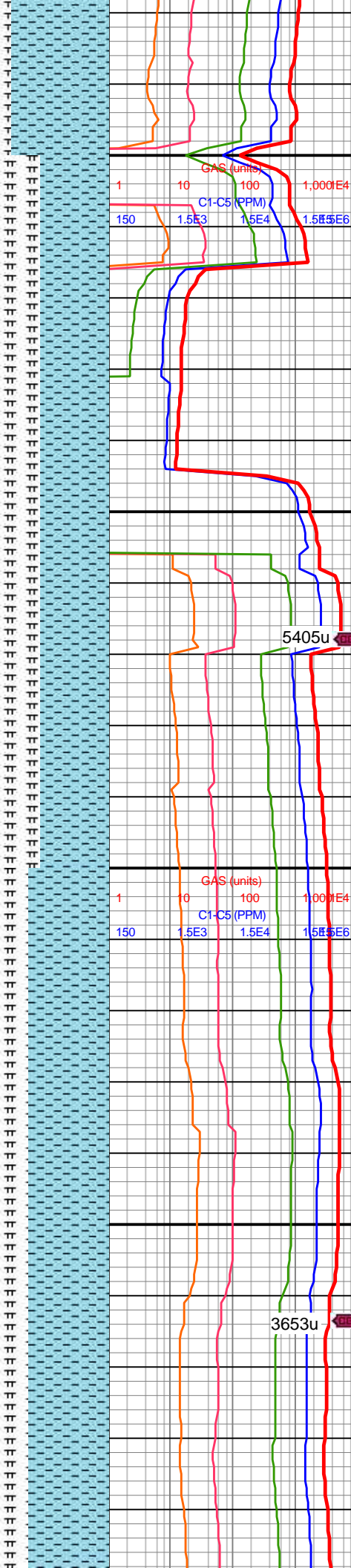
WOB: 38klbs
RPM: 0
SPM: 184
SPP: 3,880psi

MD: 12,218'
TVD: 7,591.87'
INC: 88.92°
AZM: 180.14°
VS: 4,898.12'

MW IN: 9.95
VIS IN: 44
MW OUT: 9.85
VIS OUT: 42

MD: 12,312'
TVD: 7,593.24'
INC: 89.41°
AZM: 180.32°
VS: 4,990.41'

WOB: 34klbs
RPM: 75
SPM: 180

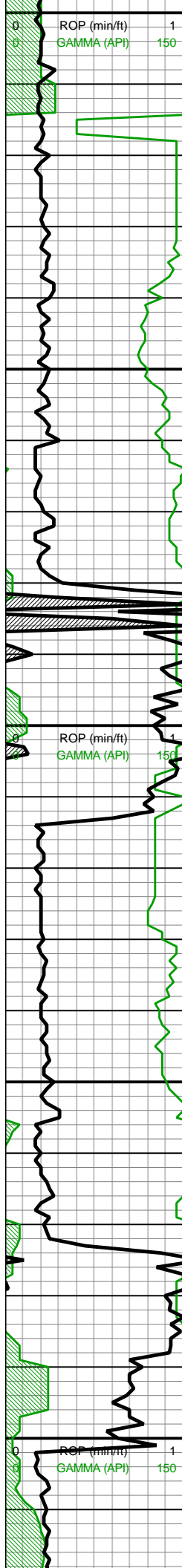


tr vf pyr, hi calc; MRLST (15%): dk gy, med frm-frm, brit ip, mod fis sb blkyl-sb plty ctngs, sp brn mrly incl ip, slty tex, rr bent, tr vf pyr, mod calc wi brn mrly resdl

12200-12300 CHK (60%): lt-med gy-gyshbn ip, occ dk gy, occ f-elong wh chky incl ip, frm-brit, mod fis sb blkyl-blky-sb plty ctngs, slty tex, rr bent, rr forams, tr vf pyr, hi calc; MRLST (40%): dk gy-dk gyshbn, med frm-frm, brit ip, mod fis sb blkyl-sb plty ctngs, sp brn mrly incl ip, slty tex, occ sm arg tex, tr vf pyr, mod calc wi brn mrly resdl

12300-12400 CHK (70%): predy med gy, occ lt gy-gyshbn wi f wh chky incl, frm-brit, mod fis sb blkyl-blky ctngs, slty tex, rr fos frags, rr forams, tr vf pyr, hi calc; MRLST (30%): dk gy, med frm-frm, brit ip, mod fis sb blkyl-sb plty ctngs, sp brn mrly incl ip, slty tex, occ sm arg tex, tr vf pyr, mod calc wi brn mrly resdl





SPM: 180
SPP: 4,590psi

MD: 12,406'
TVD: 7,593.53'
INC: 90.24°
AZM: 179.79°
VS: 5,082.66'

MW IN: 10
VIS IN: 44
MW OUT: 9.85
VIS OUT: 41

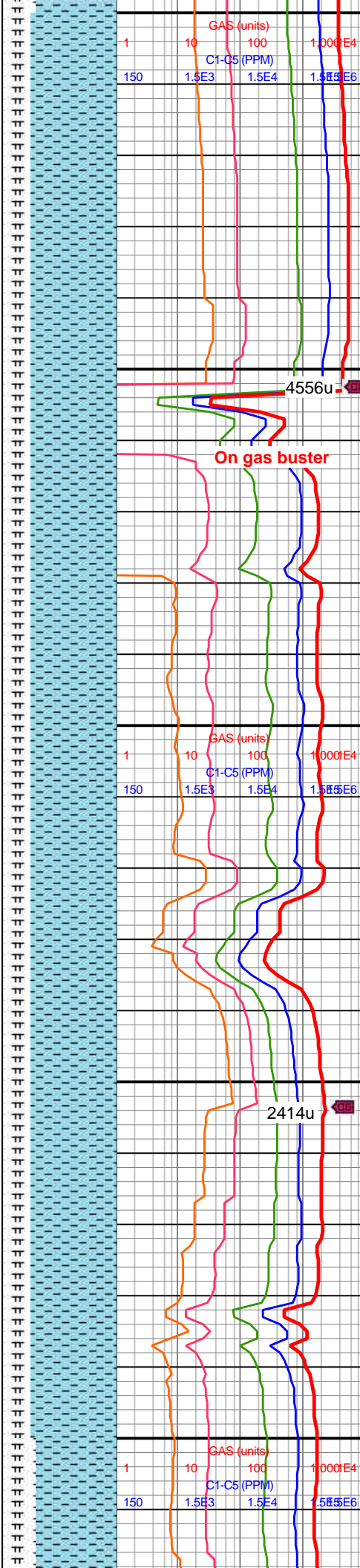
On gas buster

MD: 12,501'
TVD: 7,592.84'
INC: 90.59°
AZM: 181.63°
VS: 5,176.08'

MW IN: 10
VIS IN: 43
MW OUT: 10.0
VIS OUT: 41

MD: 12,596'
TVD: 7,592.29'
INC: 90.07°
AZM: 184.62°
VS: 5,270.14'

WOB: 43klbs
RPM: 0
SPM: 182
SPP: 4,290psi



GAS (units)
C1-C5 (PPM)
C1-C5 (PPM)

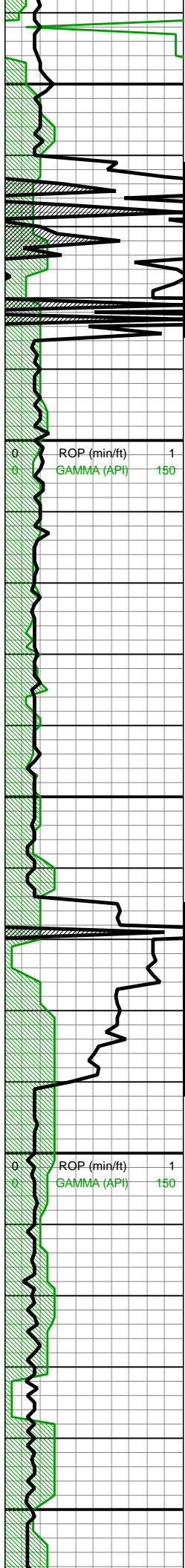
4556u

On gas buster

2414u

12400-12500 CHK
(75%): med gy, occ lt
gy-gyshbn, frm, brit, mod
fis sb blkly-blky ctngs, slty
tex, occ f wh chky incl, rr
fos frags, rr forams, tr vf
pyr, hi calc; MRLST
(25%): dk gy, med
frm-frm, brit ip, mod fis
sb blkly-sb plty ctngs, sp
brn mrly incl ip, slty tex,
occ sm arg tex, tr vf pyr,
mod calc wi brn mrly
resdl

12500-12600 CHK
(75%): predy med gy, occ
lt gy-gyshbn wi f wh chky
incl, frm-brit, mod fis sb
blkly-blky ctngs, slty tex, rr
fos frags, rr forams, tr vf
pyr, hi calc; MRLST
(25%): dk gy, med
frm-frm, brit ip, mod fis
sb blkly-sb plty ctngs, sp
brn mrly incl ip, slty tex,
occ sm arg tex, tr vf pyr,
mod calc wi brn mrly
resdl

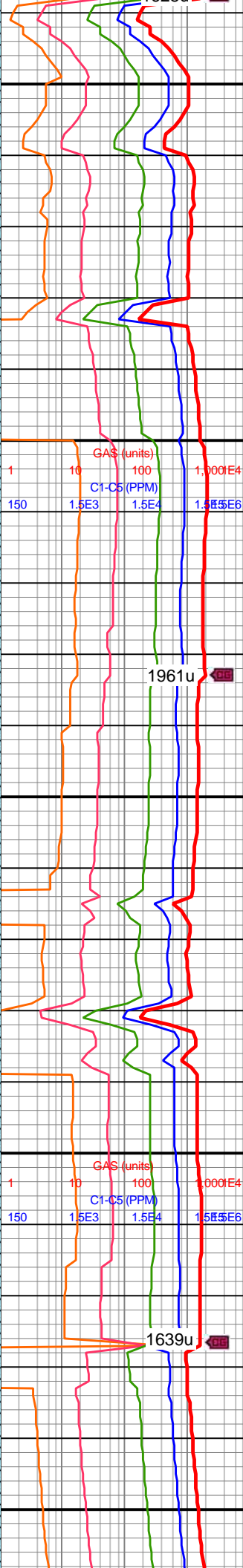
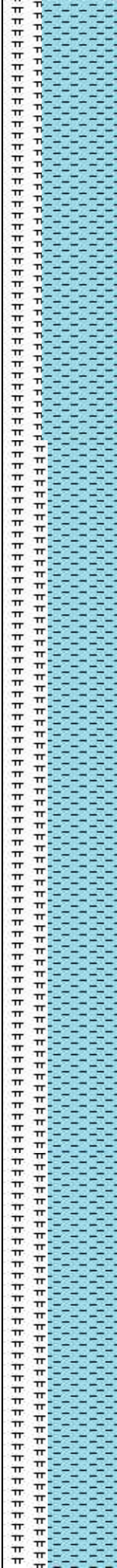


MD: 12,879'
TVD: 7,587.94'
INC: 91.25°
AZM: 183.3°
VS: 5,551.07'

MW IN: 10
VIS IN: 43
MW OUT: 10.0
VIS OUT: 41

MD: 12,974'
TVD: 7,586.34'
INC: 90.68°
AZM: 183.92°
VS: 5,645.23'

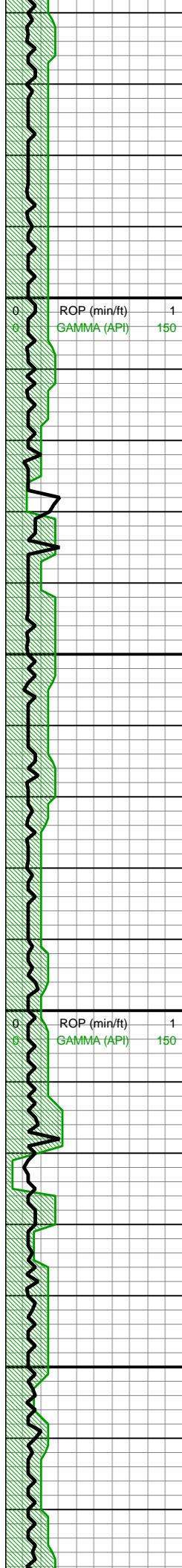
WOB: 27klbs
RPM: 75
SPM: 181
SPP: 4,570psi



12800-12900 CHK
(65%): lt-med gy-gyshbn
wi f wh chky incl ip, frm,
brit, l-mod fis, sb rd-sb
blky, slty-gt tex wi mod
forams, occ-com bent, hi
calc; MRLST (35%): dk
gy, med frm-frm, brit ip,
mod fis sb blky-sb plty
ctngs, sp brn mrly incl ip,
slty tex, rr bent, tr vf pyr,
mod calc wi brn mrly
resdl

12900-13000 CHK
(60%): predy med gy-dk
gy wi occ f wh chky incl &
thn chky lamn, frm-brit,
l-mod fis sb rd-sb blky
ctngs, sl slty tex, occ-com
bent, rr forams & c free
chk, hi calc; MRLST
(40%): dk gy, occ sp brn
mrly incl ip, med frm-frm,
brit ip, mod fis sb blky-sb
plty ctngs, sm arg-sl slty
tex, tr vf pyr, mod calc wi
brn mrly resdl





13,060
13,070
13,080
13,090
13,100
13,110
13,120
13,130
13,140
13,150
13,160
13,170
13,180
13,190
13,200
13,210
13,220
13,230
13,240
13,250
13,260
13,270

MD: 13,068'
TVD: 7,586.49'
INC: 89.14°
AZM: 182.69°
VS: 5,738.35'

MD: 13,163'
TVD: 7,587.77'
INC: 89.32°
AZM: 181.9°
VS: 5,832.21'

WOB: 34klbs
RPM: 75
SPM: 178
SPP: 4,680psi

MW IN: 10.05
VIS IN: 53
MW OUT: 10.05
VIS OUT: 52

MD: 13,258'
TVD: 7,588.82'
INC: 89.41°
AZM: 182.34°
VS: 5,926.03'



GAS (units)
C1-C5 (PPM)
1 10 100 1,000E4
150 1.5E3 1.5E4 1.5E6

1035u

GAS (units)
C1-C5 (PPM)
1 10 100 1,000E4
150 1.5E3 1.5E4 1.5E6

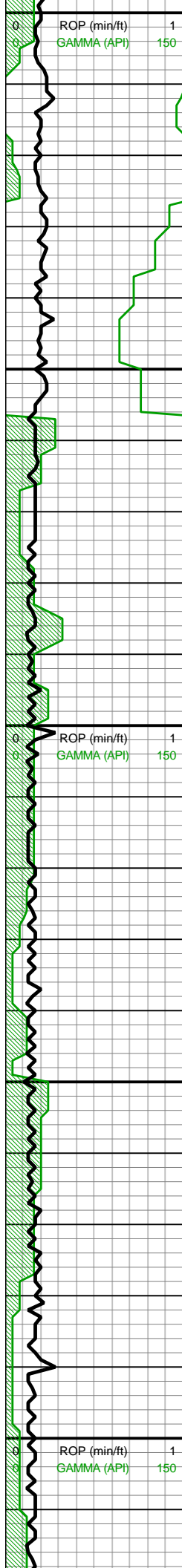
1787u

13000-13100 CHK
(60%): med gy-dk gy,
frm-brit, l-mod fis sb
rd-sb blkly ctngs, slty tex,
rr forams, occ bent, hi
calc; MRLST (40%): dk
gy, med frm-frm, brit ip,
mod fis sb blkly-sb plty
ctngs, sp brn mrly incl ip,
sm arg-sl slty tex, tr vf pyr,
mod calc wi brn mrly
resdl

13100-13200 CHK
(65%): lt-med gy-gyshbn
wi f wh chky incl ip, frm,
brit, l-mod fis, sb rd-sb
blkly, slty tex wi rr forams,
occ bent, hi calc; MRLST
(35%): dk gy, med
frm-frm, brit ip, mod fis
sb blkly-sb plty ctngs, sp
brn mrly incl ip, slty tex, rr
bent, tr vf pyr, mod calc wi
brn mrly resdl

13200-13300 CHK
(60%): predy med gy-dk
gy, frm-brit, l-mod fis sb
rd-sb blkly ctngs, sl slty
tex, rr-occ bent, rr forams,





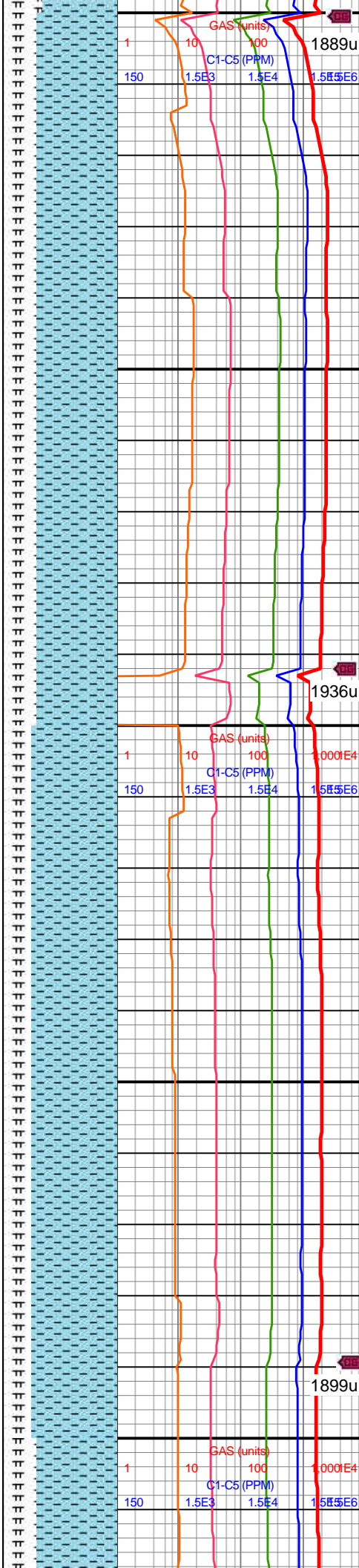
13,500
13,510
13,520
13,530
13,540
13,550
13,560
13,570
13,580
13,590
13,600
13,610
13,620
13,630
13,640
13,650
13,660
13,670
13,680
13,690
13,700
13,710

MD: 13,541'
TVD: 7,590.58'
INC: 88.44°
AZM: 182.51°
VS: 6,206.21'

MW IN: 10.05
VIS IN: 43
MW OUT: 10.0
VIS OUT: 42

WOB: 23klbs
RPM: 75
SPM: 172
SPP: 4,290psi

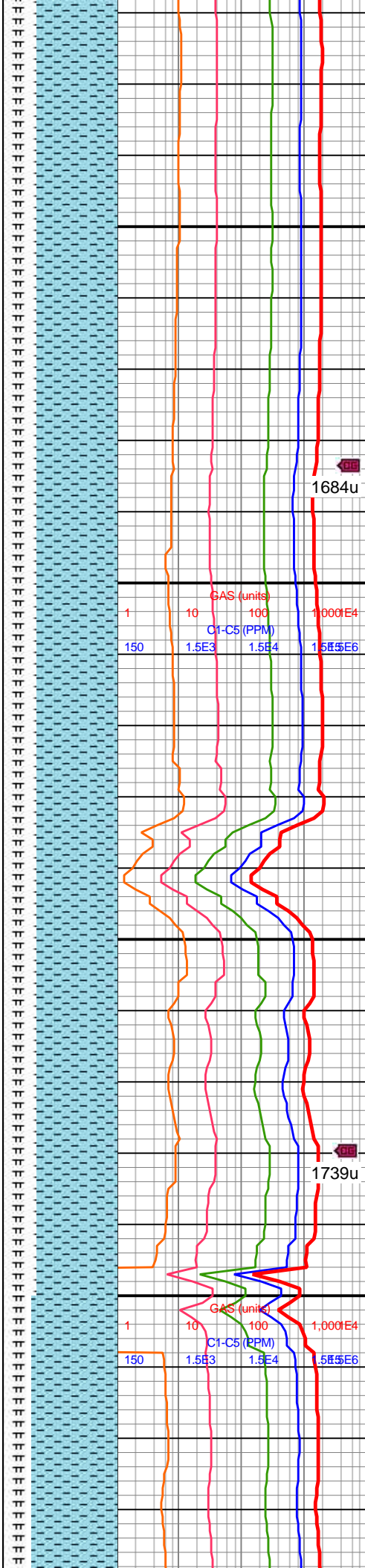
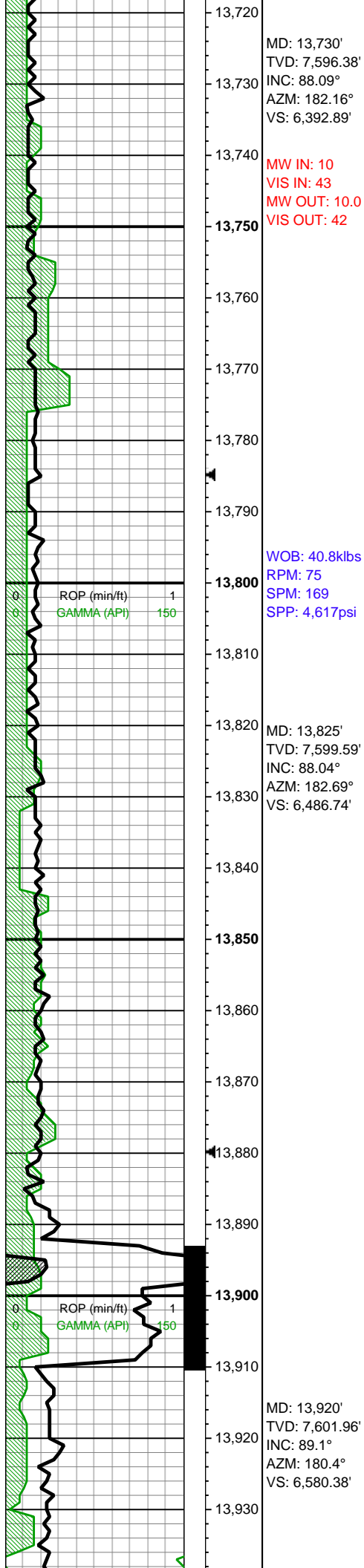
MD: 13,636'
TVD: 7,593.35'
INC: 88.22°
AZM: 182.34°
VS: 6,300.07'



13500-13600 CHK
(70%): med brn-gyshbn,
frm-sft, mod fis, tab-sb
blky, tr free CHK, v calc;
MRLST (30%): dk gy-dk
gyshbn, sl hd-v frm, mod
fis, sb blky-tab ctngs, sm
arg tex, mod calc, tr pp
mic pyr

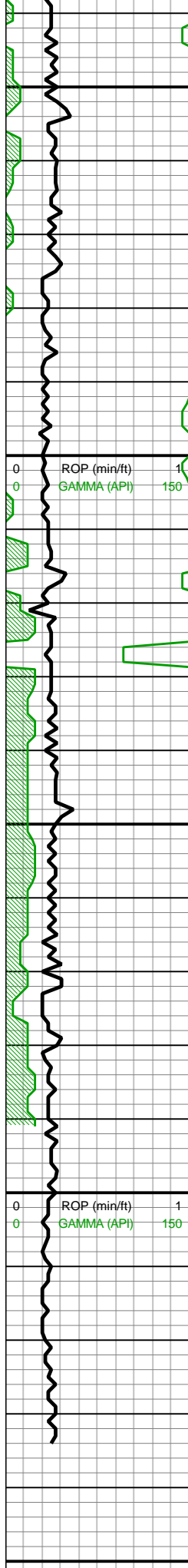
13600-13700 CHK
(40%): med gy-occ dk gy
mot wi f wh chky incl,
frm-brit, mod fis sb blky
ctngs, tr mict cal vn, hi
calc; MRLST (25%):
gyshbn-dk gy-v dk gy, brit
mod fis ctngs, sb
blky-blky, scat inoc fos
frags, tr vf pyr, mod calc





13700-13800 CHK
(70%): lt-med gy, frm-brit,
mod fis sb blk-y-blky
ctngs, sl slty tex, occ vf-f
wh chky incl & lamn ip, rr
vf pyr, hi calc; MRLST
(30%): dk gy-gyshbn ip,
frm, brit ip, mod fis, tr vf
pyr-micmica, mod calc

13800-13900 CHK
(70%): med brn-gyshbn,
frm-sft, mod fis, tab-sb
blky, tr free CHK, v calc;
MRLST (30%): dk gy-dk
gyshbn, sl hd-v frm, mod
fis, sb blky-tab ctngs, sm
arg tex, mod calc, tr pp
mic pyr



13,940
13,950
13,960
13,970
13,980
13,990
14,000
14,010
14,020
14,030
14,040
14,050
14,060
14,070
14,080
14,090
14,100
14,110
14,120
14,130
14,140
14,150

WOB: 33.2klbs
RPM: 75
SPM: 170
SPP: 4,559psi

MD: 14,015'
TVD: 7,602.43'
INC: 90.33°
AZM: 181.02°
VS: 6,673.8'

MW IN: 10
VIS IN: 43
MW OUT: 9.9+
VIS OUT: 42

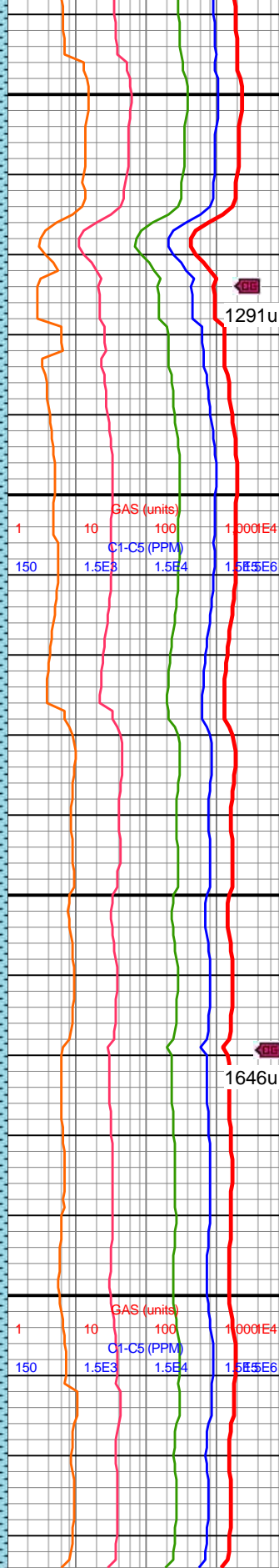
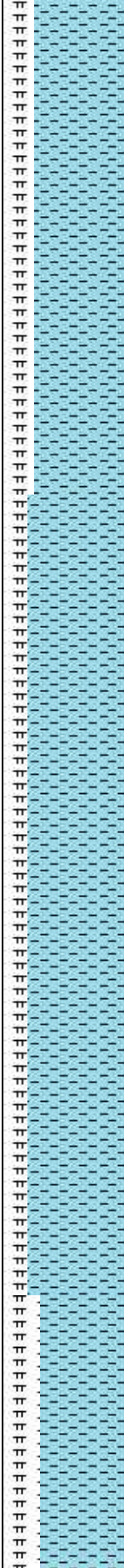
MD: 14,080'
TVD: 7,601.83'
INC: 90.73°
AZM: 180.49°
VS: 6,737.74'

MW IN: 9.9+
VIS IN: 44
MW OUT: 10.0
VIS OUT: 43

Bit Projection

MD: 14,134'
TVD: 7,601.14'
INC: 90.73°
AZM: 180.49°
VS: 6,790.8'

TD well @ 20:10
hrs 11/20/17



13900-14000 CHK
(75%): predy med gy,
med gyshbn-occ dk gy,
mot, frm-brit, sb blkyl-blky,
tr free CHK, scat fps
frags, chky tex, mod calc;
MRLST (25%): med
gy-gyshbn-dk gy, frm-brit,
sb blkyl-blky, sm-sl slty
tex, mod calc, tr pp pyr

1291u

1646u

14000-14100 CHK
(80%): lt-med gy, frm-brit,
mod fis sb blkyl-blky
ctngs, sl slty tex, lamn ip,
rr vf pyr, hi calc; MRLST
(20%): dk gy-gyshbn ip,
frm, brit ip, mod fis, tr vf
pyr-micmica, mod calc

14100-14134 CHK
(70%): med gy, dk gy ip, tr
lt gy, frm-brit, sb blkyl-blky
ctngs, slty tex, occ
forams, tr vf pyr, hi calc;
MRLST (30%): dk
gy-gyshbn ip, sb frm-frm,
brit ip, blkyl, sm-sl slty arg
tex, mot wi brn mrly incl
ip, mod calc



[illegible]

L 11 160

[illegible]