



Scale: 5" / 100'
Measured Depth Log

Well Name Herren 1G-33H-H367

Location Sec. 33 T3N R67W

State Colorado

County Weld

Country USA

Rig Number Ensign 153

API Number 05-123-47731

AFE # 16191566

Geographic Region Rockies

Field Wattenberg

Spud Date 12/24/2018

Drilling Completed 11/26/2018

Surface Coordinates Latitude: 40.183203
Longitude: -104.886662

SHL: Sec: 33 Twp: 3N 67W
Footage: 1,721 FNL 460 FEL

Bottom Hole Coordinates Proposed BHL: Sec: 33 Twp: 3N 67W
Footages: 1,721 FNL 460 FWL

Ground Elevation 4,848'

K.B. Elevation 4,871'

Logged Interval 6,500' **To** 11,921'

Total Depth 11,921'

Formation Niobrara C

Type of Drilling Fluid Synthetic Oil Based Mud

Operator

Company Crestone Peak Resources

Address 1801 California Street
Suite 2500
Denver, CO 80202



CRESTONE PEAK
RESOURCES

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: Heather Davis / Shana Swirin-Miles

Services Provided: 2-Man Mudlogging / Geosteering

Equipment: ML-515

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

Start Date 12/24/2018

Job #: 1826RK1812

Release Date: 12/28/2018

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
 BRYOZOA
 CEPHALOPOD
 CORAL
 CRINOID

F FOSSIL

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

ARGILLACEOUS

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

GLAUCONITE

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

Stringer

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

CRINOID
ECHINOID
FISH
FORAMINIFERA

STROMATOPOROID
Minerals
ANHYDRITIC

DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET
FERRUGINOUS

SANDY
SILICEOUS
SILTY
TUFFACEOUS

SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

E EARTHY
F FENESTRAL
F FRACTURE
X INTERCRYSTALLINE
O INTEROOLITIC
M MOLDIC

ORGANIC
PINPOINT
VUGGY

Engineering

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

Other Symbols

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

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

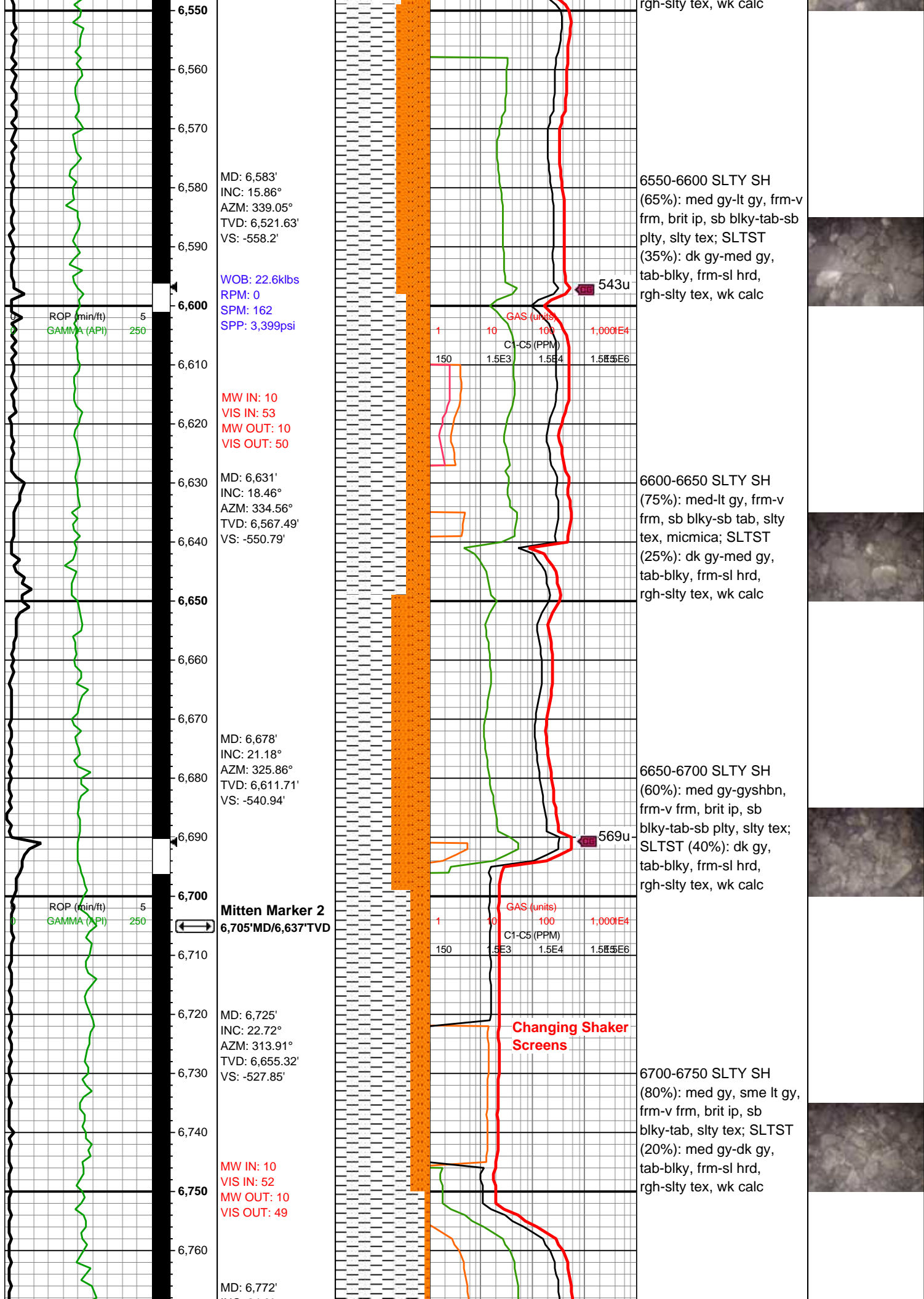
BOUNDSTONE
CHALKY
CRYPTOXLN
E EARTHY
FINELYXLN
GRAINSTONE

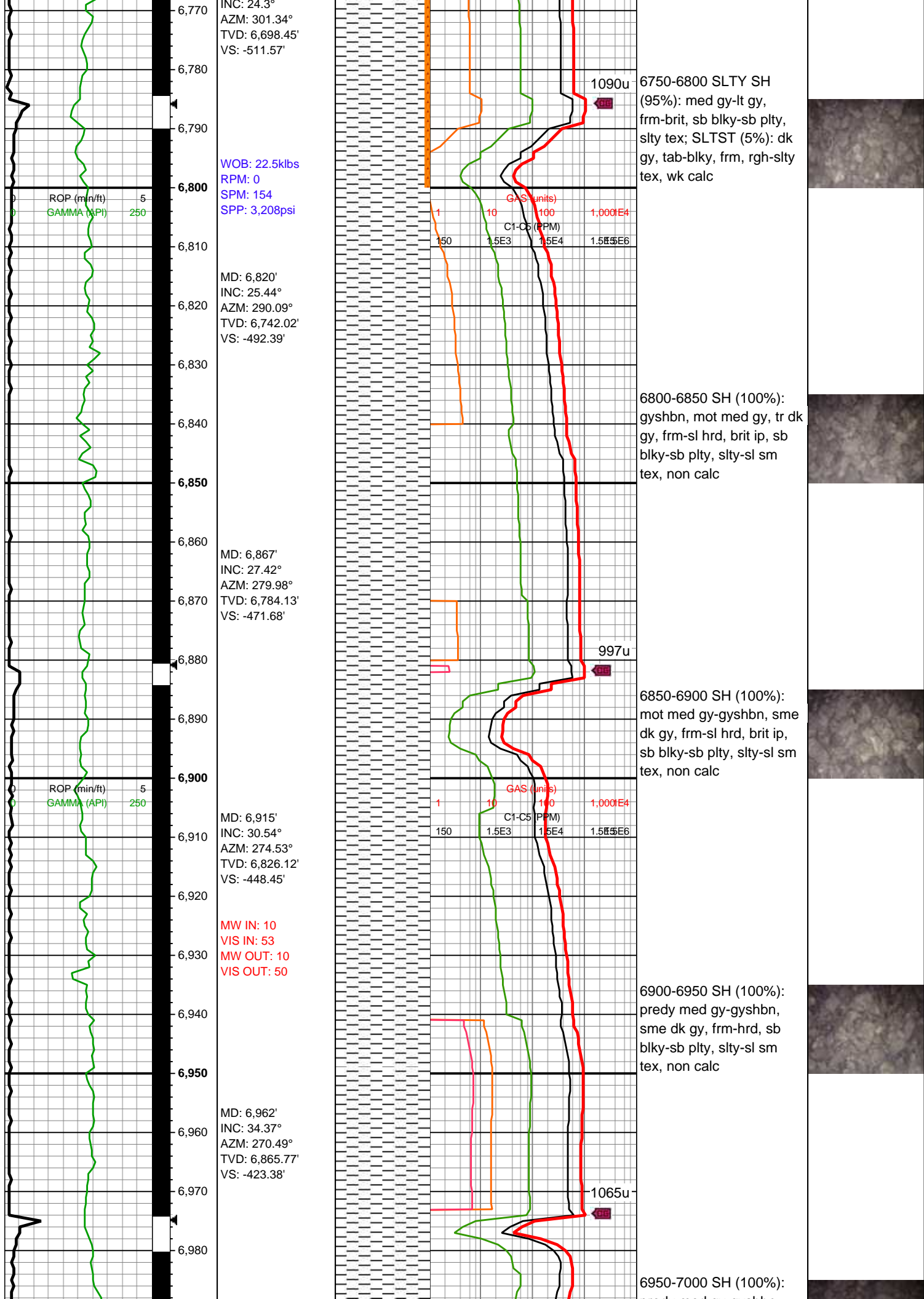
L LITHOGRAPHIC
MX MICROXLN
MS MUDSTONE
PS PACKSTONE
WS WACKESTONE

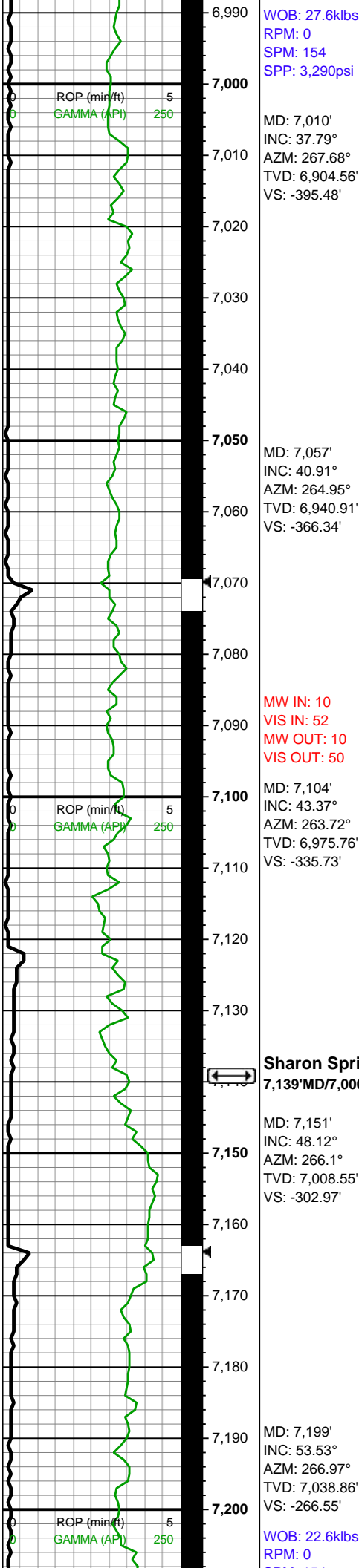
Sorting

M MODERATE
P POOR
W WELL

	Slide/Rotate	Depth Labels	Notes	% Lith	Total Gas GAS — C1 — C2 — C3 — C4 — C5 —	Lithology Descriptions	Images
Crestone Peak Resources	ROP — GAMMA —	100'					
Herren 1E-33H-H367		6,360'	Bit #: 1 Type: U516M Size: 8 1/2"				
9 5/8" Surface Casing @ 1,997'		6,370'	Depth In: 2,012" Depth Out: 11,921'				
Spud Date: 12/24/2018		6,380'	Hours: 29 hrs Avg Ft/Hr: 341.69 '/hr				
2 man Logging Began: 12/24/2018		6,390'	Jets: 6x13 S/N: 43550				
All Depths Correspond to Driller's Pipe Tally		6,400'	WOB: 32.6klbs RPM: 50 SPM: 184 SPP: 4,808psi				
		6,410'	KOP @ 6,416' MD				
		6,420'	MW IN: 10 VIS IN: 53 MW OUT: 10 VIS OUT: 49				
		6,430'				6400-6450 SLTY SH (80%): med-lt gy, frm-v frm, sb blk-y-tab, slty tex, micmica; SLTST (20%): dk gy-med gy, tab-blky, frm-sl hrd, rgh-slty tex, wk calc	
		6,440'					
		6,450'					
		6,460'					
		6,470'					
		6,480'					
		6,490'	MD: 6,489' INC: 10.81° AZM: 352.76° TVD: 6,430.38' VS: -566.31'			6450-6500 SLTY SH (75%): med-lt gy, frm-v frm, sb blk-y-sb tab, slty tex, micmica; SLTST (25%): dk gy-med gy, tab-blky, frm-sl hrd, rgh-slty tex, wk calc	
		6,500'					
		6,510'					
		6,520'					
		6,530'	MD: 6,536' INC: 14.37° AZM: 349.15° TVD: 6,476.24' VS: -563.23'			6500-6550 SLTY SH (70%): med-lt gy, frm-v frm, sb blk-y-sb tab, slty tex, micmica; SLTST (30%): dk gy-med gy, tab-blky, frm-sl hrd,	
		6,540'					





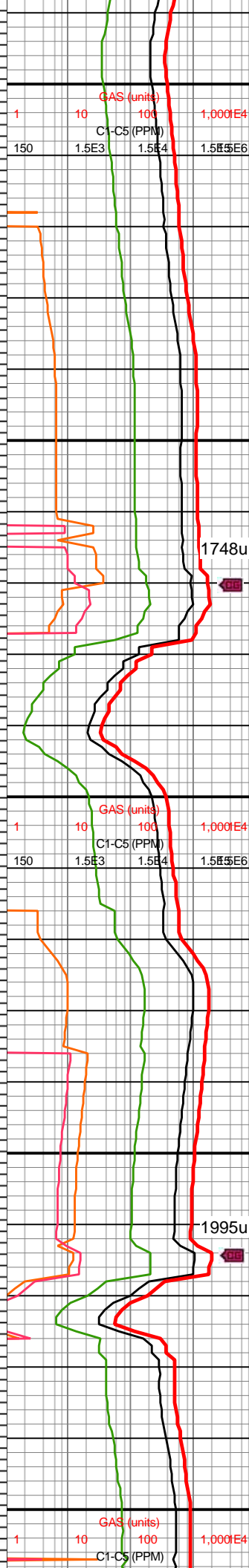


WOB: 27.6klbs
RPM: 0
SPM: 154
SPP: 3,290psi

MW IN: 10
VIS IN: 52
MW OUT: 10
VIS OUT: 50

Sharon Springs
7,139'MD/7,000'TVD

WOB: 22.6klbs
RPM: 0



predy med gy-gyshbn,
sme dk gy, frm-hrd, sb
blky-sb plty, slty-sl sm
tex, non calc

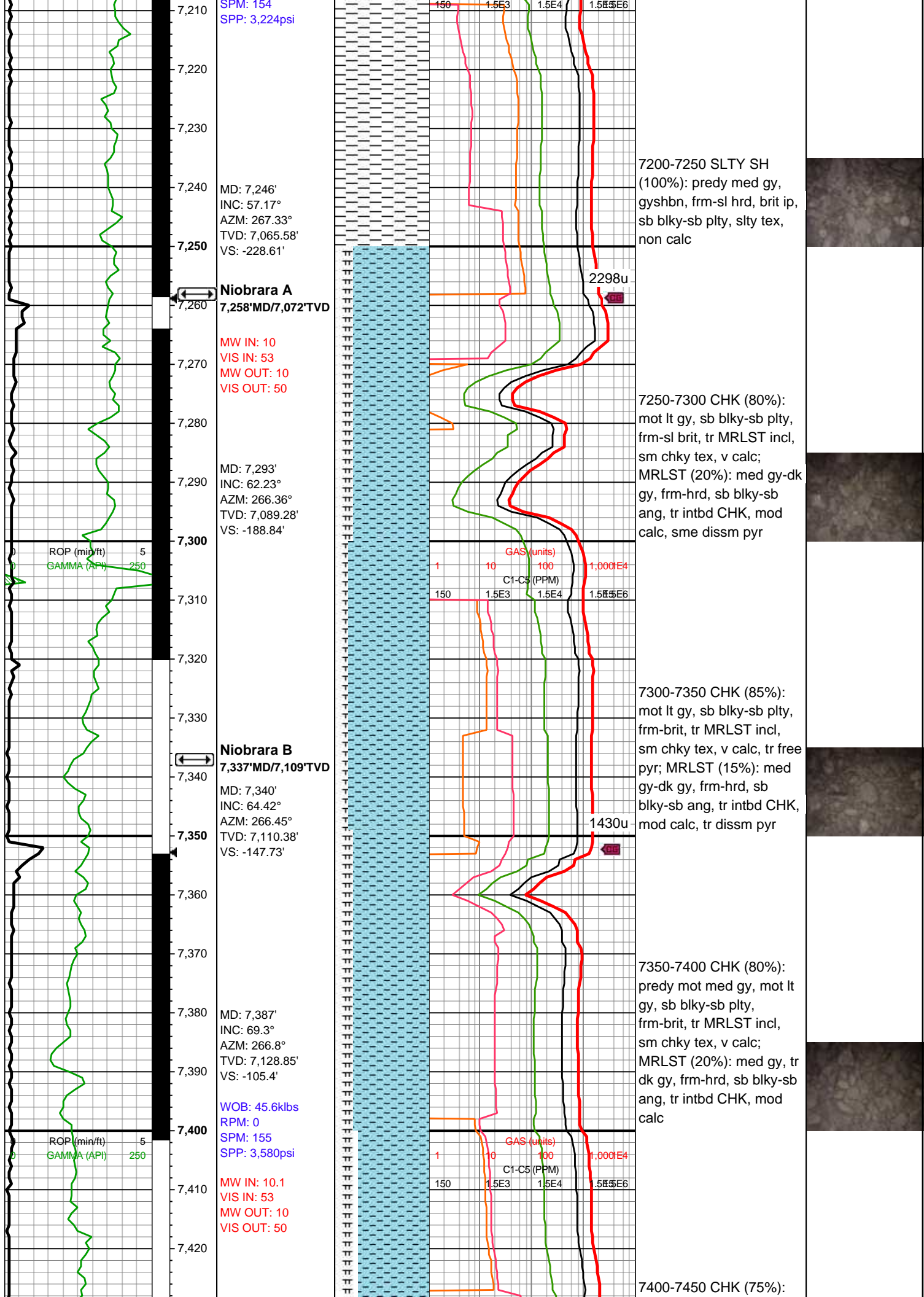
7000-7050 SH (100%):
predy gyshbn-med gy,
frm-hrd, brit ip, sb blky-sb
plty, slty-sl sm tex, non
calc

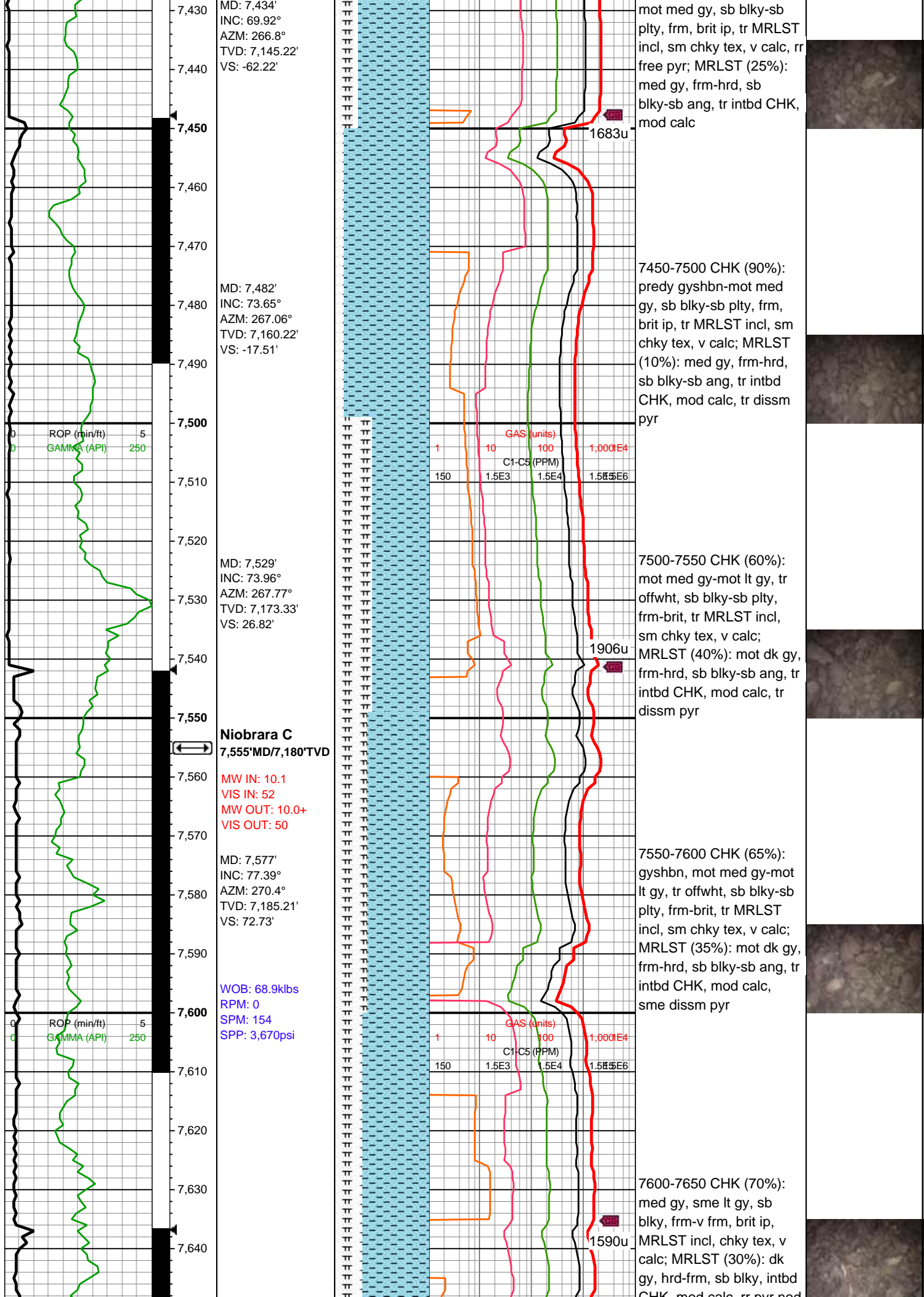
7050-7100 SH (100%):
predy med gy, sme dk gy,
frm-sl hrd, brit ip, sb
blky-sb plty, slty tex, non
calc

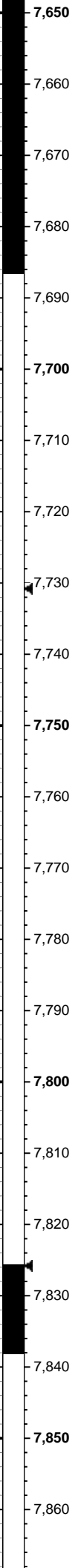
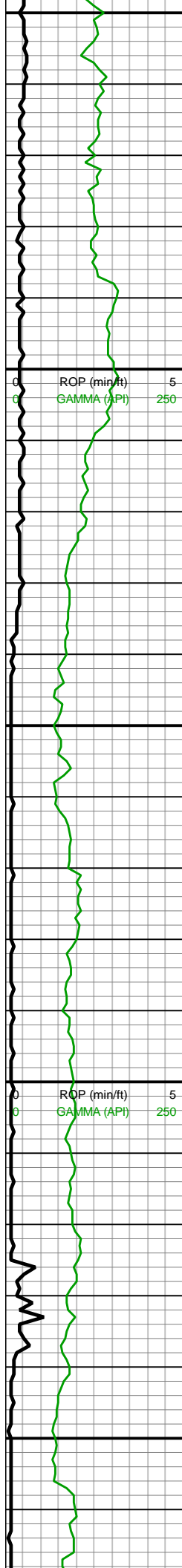
7100-7150 SH (100%):
predy gyshbn-med gy, tr
dk gy, frm-sl hrd, brit ip,
sb blky-sb plty, slty tex,
non calc, rr free pyr

7150-7200 SLTY SH
(100%): predy med gy,
gyshbn, frm-sl hrd, brit ip,
sb blky-sb plty, slty tex,
non calc









MW IN: 10.1
VIS IN: 52
MW OUT: 10.1
VIS OUT: 49

MD: 7,671'
INC: 86.79°
AZM: 271.81°
TVD: 7,198.13'
VS: 165.02'

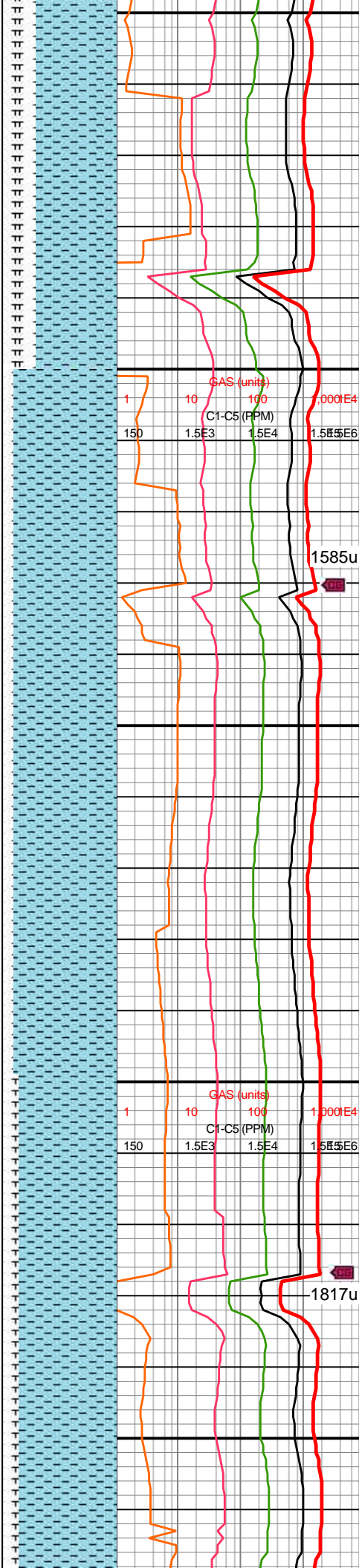
**Curve Landed
@ 7,687'MD**

MD: 7,765'
INC: 87.85°
AZM: 271.72°
TVD: 7,202.52'
VS: 258.32'

WOB: 32.7klbs
RPM: 30
SPM: 186
SPP: 4,912psi

MW IN: 10.1
VIS IN: 52
MW OUT: 10.1
VIS OUT: 49

MD: 7,860'
INC: 86.75°
AZM: 272.25°
TVD: 7,207'
VS: 352.65'



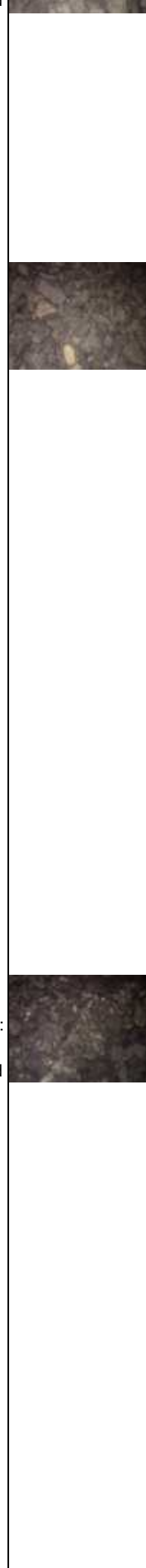
CHK, mod calc, rr pyr nod

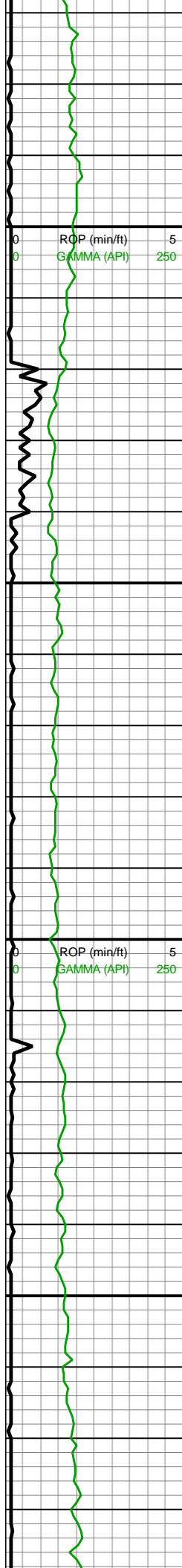
7650-7700 CHK (70%):
med gy, sme lt gy, sb
blky, frm-v frm, brit ip,
MRLST incl, chky tex, v
calc; MRLST (30%): dk
gy, sl hrd-frm, sb blky,
intbd CHK, mod calc, rr
pyr nod

1585u

7700-7800 CHK (90%):
predy lt gy, sme mot med
gy, sb blky, frm-brit,
MRLST incl, sme v thn
MRLST lamn, sme chky
tex, v calc; MRLST (10%):
dk gy, frm, sb blky, intbd
CHK, mod calc, rr pyr nod

1817u





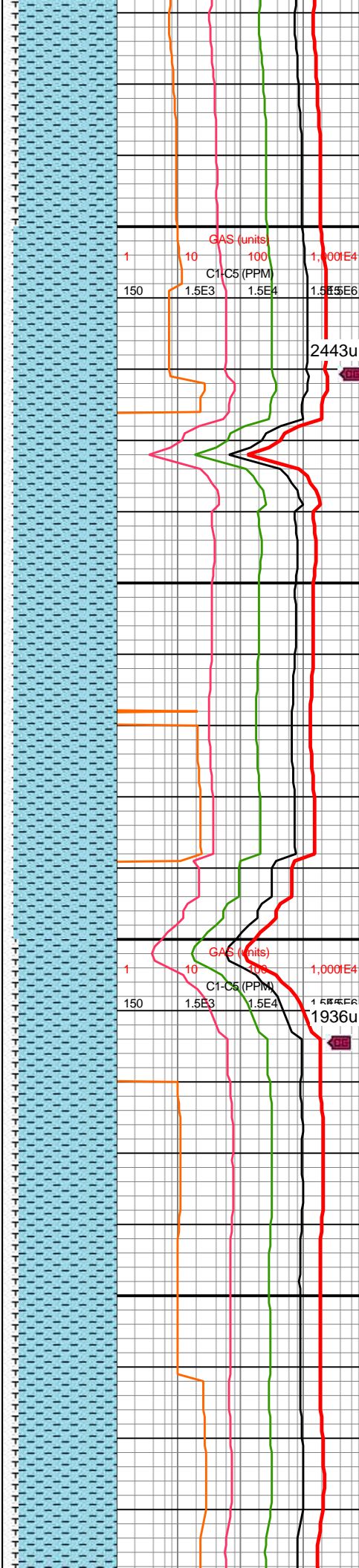
7,870
7,880
7,890
7,900
7,910
7,920
7,930
7,940
7,950
7,960
7,970
7,980
7,990
8,000
8,010
8,020
8,030
8,040
8,050
8,060
8,070
8,080

MD: 7,955'
INC: 89.69°
AZM: 271.9°
TVD: 7,209.95'
VS: 447.05'

WOB: 35.2klbs
RPM: 50
SPM: 186
SPP: 4,720psi

MD: 8,049'
INC: 89.25°
AZM: 270.93°
TVD: 7,210.82'
VS: 540.39'

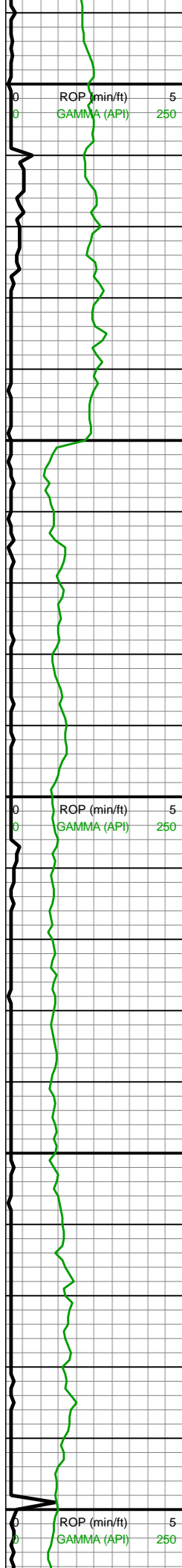
MW IN: 10.1
VIS IN: 51
MW OUT: 10.1
VIS OUT: 49



7800-7900 CHK (85%):
predy lt gy, sme mot med
gy, sb blk, frm-brit,
MRLST incl, sme v thn
MRLST lamn, chky tex, v
calc; MRLST (15%): dk
gy, frm-sl hrd, sb blk,
intbd CHK, mod calc, rr
pyr nod

7900-8000 CHK (90%):
med gy, mot lt gy, sb blk,
frm-brit, MRLST incl, v thn
MRLST lamn, sme chky
tex, v calc; MRLST (10%):
dk gy, frm, sb blk, rr thn
CHK lamn, intbd CHK, hi
calc, rr pyr nod

8000-8100 CHK (85%):
predy lt gy, sme mot med
gy, sb blk, frm-brit,
MRLST incl, sme v thn
MRLST lamn, chky tex, v



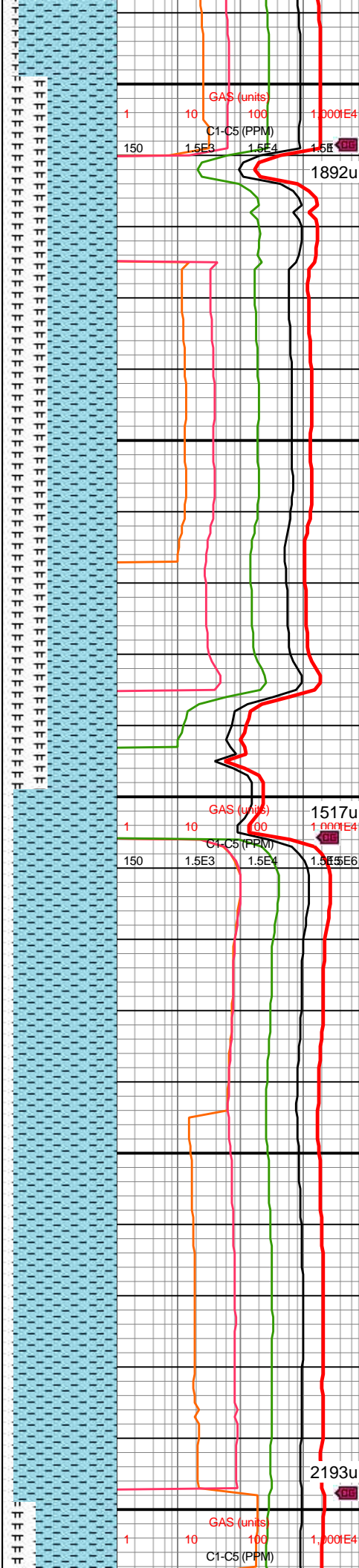
8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160
8,170
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300

MD: 8,143'
INC: 90.66°
AZM: 270.4°
TVD: 7,210.89'
VS: 633.57'

WOB: 35.4klbs
RPM: 50
SPM: 186
SPP: 4,744psi

MD: 8,238'
INC: 91.01°
AZM: 269.96°
TVD: 7,209.51'
VS: 727.63'

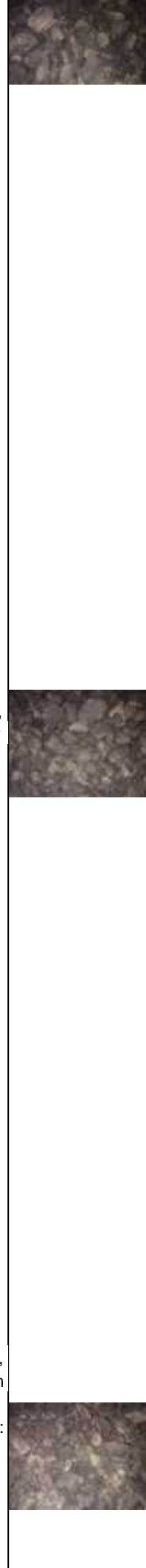
MW IN: 10.2
VIS IN: 51
MW OUT: 10.1
VIS OUT: 49

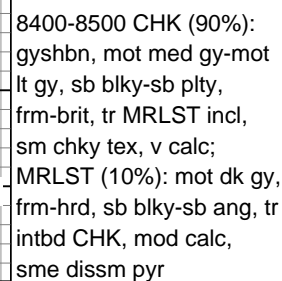
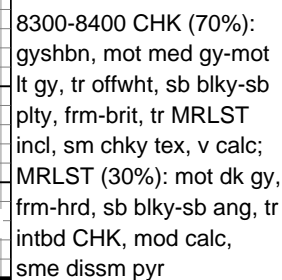
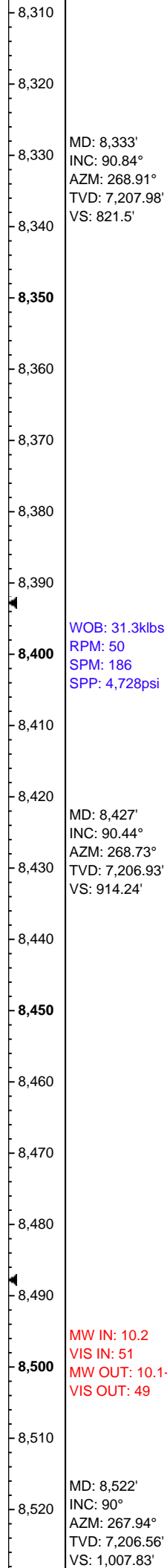


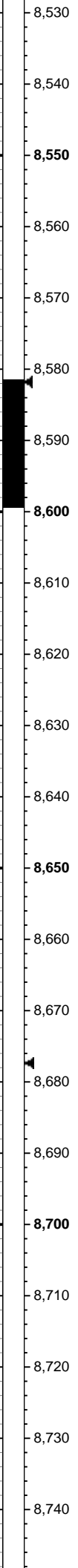
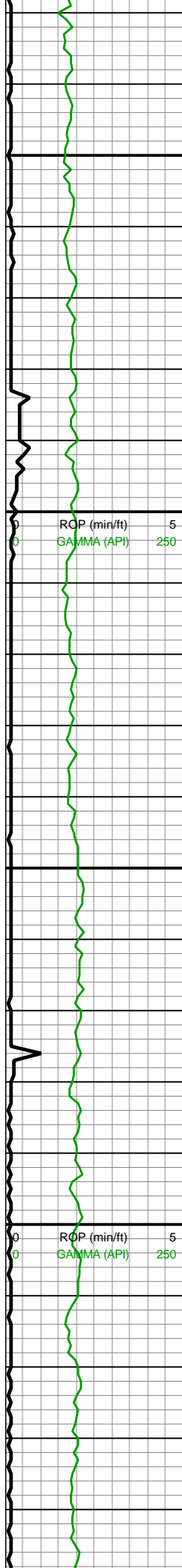
calc; MRLST (15%): dk gy, frm-sl hrd, sb blk, intbd CHK, mod calc, rr pyr nod

8100-8200 CHK (60%):
gyshbn, mot med gy-mot lt gy, tr offwht, sb blk-sb plty, frm-brit, tr MRLST incl, sm chky tex, v calc; MRLST (40%): mot dk gy, frm-hrd, sb blk-sb ang, tr intbd CHK, mod calc, sme diss pyr

8200-8300 CHK (90%):
med gy, mot lt gy, sb blk, frm-brit, MRLST incl, v thn MRLST lamn, sme chky tex, v calc; MRLST (10%): dk gy, frm, sb blk, rr thn CHK lamn, intbd CHK, hi calc, rr pyr nod





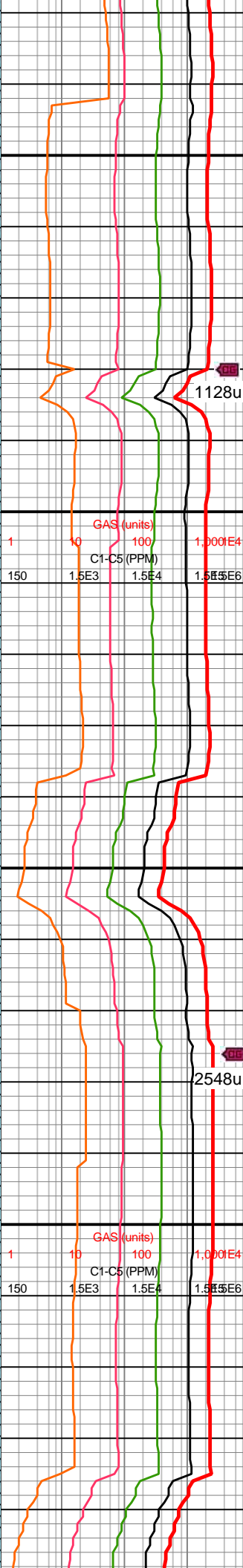
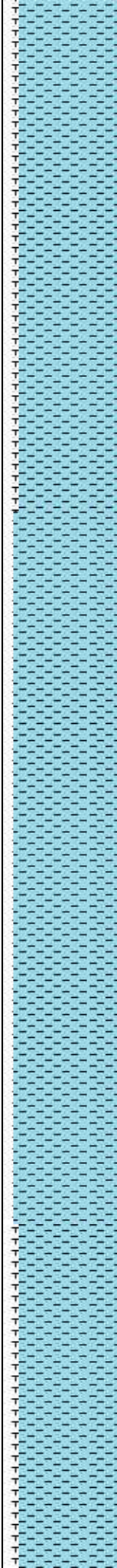


WOB: 3.2klbs
RPM: 0
SPM: 186
SPP: 4,543psi

MD: 8,616'
INC: 90.66°
AZM: 269.96°
TVD: 7,206.02'
VS: 1,100.6'

MD: 8,710'
INC: 90.53°
AZM: 270.05°
TVD: 7,205.04'
VS: 1,193.63'

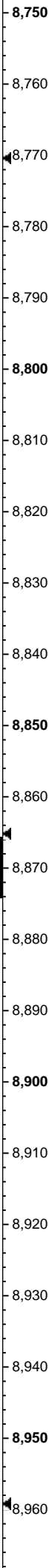
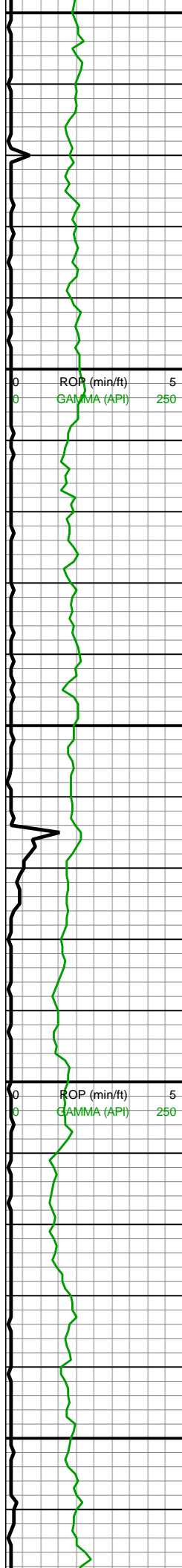
MW IN: 10.2
VIS IN: 50
MW OUT: 10.2
VIS OUT: 49



8500-8600 CHK (85%):
mot med gy-mot lt gy,
sme offwht, sb blkyl-sb
plty, frm-brit, tr MRLST
incl, sm chky tex, v calc;
MRLST (15%): mot dk gy,
frm-hrd, sb blkyl-sb ang, tr
intbd CHK, mod calc

8600-8700 CHK (90%):
mot med gy-mot lt gy, tr
offwht, sb blkyl-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (10%): mot dk gy,
frm-hrd, sb blkyl-sb ang, tr
intbd CHK, mod calc

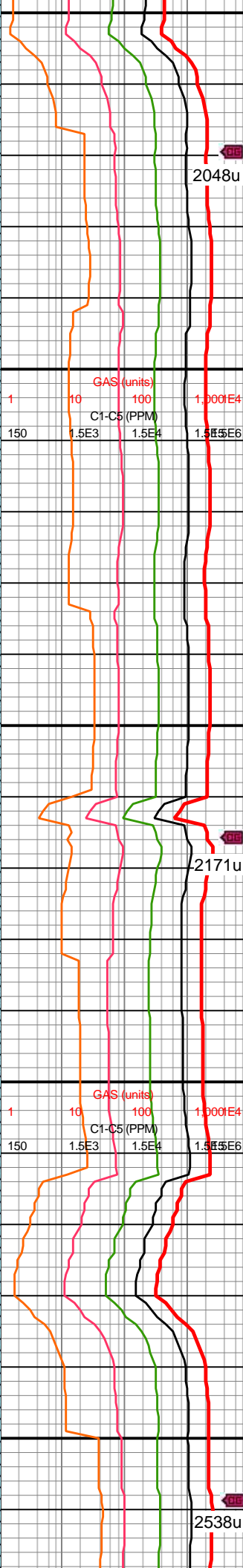
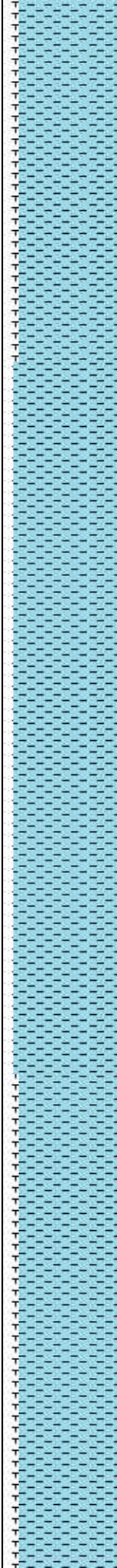




WOB: 35.1klbs
RPM: 50
SPM: 185
SPP: 4,917psi

MD: 8,805'
INC: 90.88°
AZM: 270.84°
TVD: 7,203.87'
VS: 1,287.75'

MD: 8,899'
INC: 89.12°
AZM: 270.67°
TVD: 7,203.87'
VS: 1,380.95'

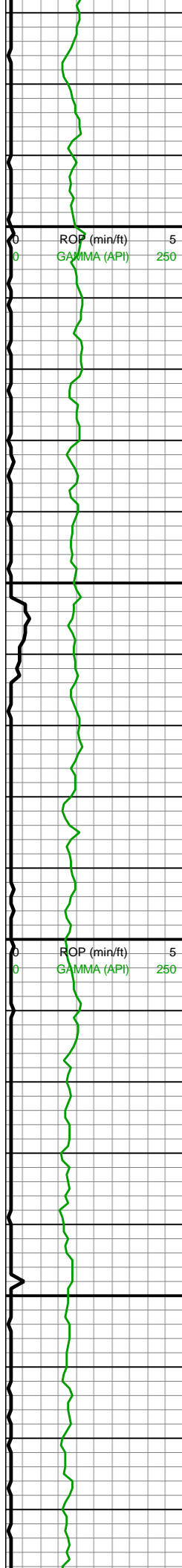


2048u
8700-8800 CHK (85%):
mot med gy, sme mot lt
gy, sb blkgy-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (15%): mot dk gy,
frm-hrd, sb blkgy-sb ang, tr
intbd CHK, mod calc, tr
dissm pyr

2171u
8800-8900 CHK (90%):
mot med gy, sme mot lt
gy-offwht, sb blkgy-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (10%): mot dk gy,
frm-hrd, sb blkgy-sb ang, tr
intbd CHK, mod calc

2538u





8,970
8,980
8,990
9,000
9,010
9,020
9,030
9,040
9,050
9,060
9,070
9,080
9,090
9,100
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9,150
9,160
9,170
9,180

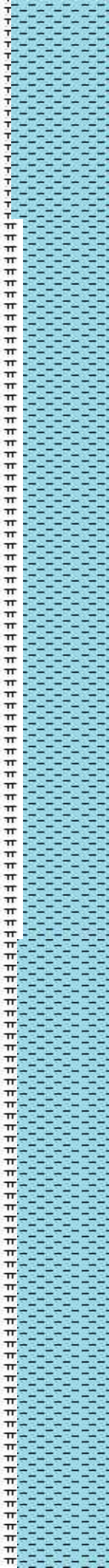
MD: 8,993'
INC: 88.95°
AZM: 270.58°
TVD: 7,205.46'
VS: 1,474.12'

WOB: 34.6klbs
RPM: 50
SPM: 186
SPP: 4,966psi

MW IN: 10.2
VIS IN: 51
MW OUT: 10.2
VIS OUT: 49

MD: 9,088'
INC: 90.4°
AZM: 270.93°
TVD: 7,206'
VS: 1,568.31'

MD: 9,183'
INC: 90.13°
AZM: 271.22°
TVD: 7,205.56'
VS: 1,662.57'



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

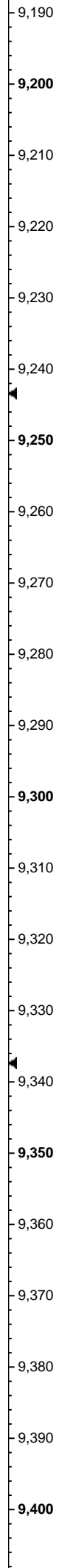
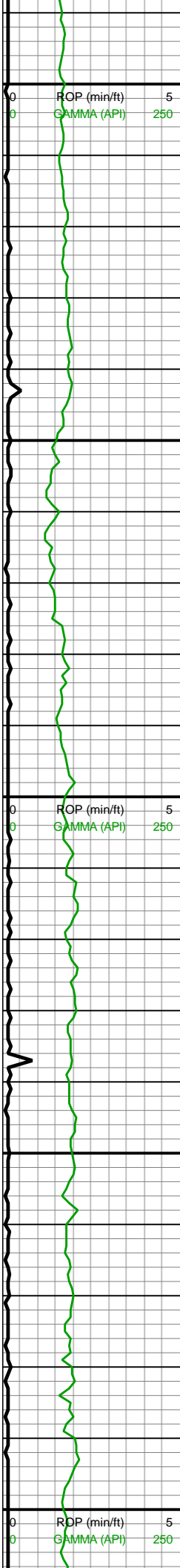
GAS (units)
C1-C5 (PPM)
1 10 100 1,000E4
150 1.5E3 1.5E4 1.5E6

8900-9000 CHK (85%):
offwht-mot med gy, sme
mot lt gy, sb blkgy-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (15%): mot dk gy,
frm-hrd, sb blkgy-sb ang, tr
intbd CHK, mod calc, rr
free pyr, tr diss pyr

9000-9100 CHK (75%):
mot med gy-mot dk gy, tr
mot lt gy, sb blkgy-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (25%): mot v dk
gy, frm-hrd, sb blkgy-sb
ang, tr intbd CHK, mod
calc

9100-9200 CHK (80%):
gysbhn-mot med gy, tr
mot lt gy, sb blkgy-sb plty,
frm-brit, tr MRLST incl,





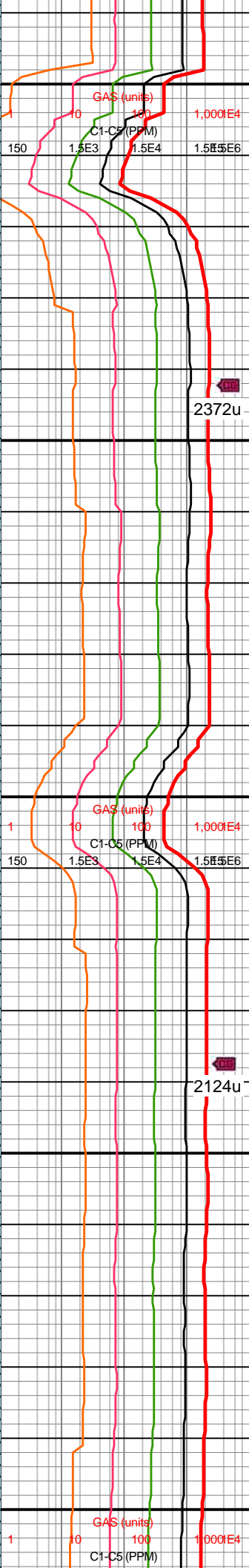
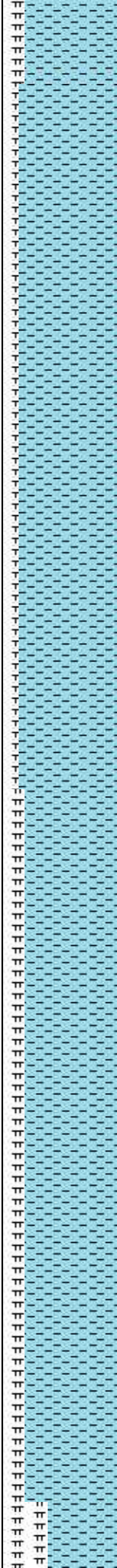
WOB: 35klbs
RPM: 50
SPM: 186
SPP: 4,981psi

MD: 9,277'
INC: 89.69°
AZM: 270.84°
TVD: 7,205.7'
VS: 1,755.83'

MW IN: 10.2
VIS IN: 52
MW OUT: 10.2
VIS OUT: 48

MD: 9,371'
INC: 90°
AZM: 270.4°
TVD: 7,205.96'
VS: 1,849.01'

WOB: 35.2klbs
RPM: 50
SPM: 185
SPP: 5,210psi

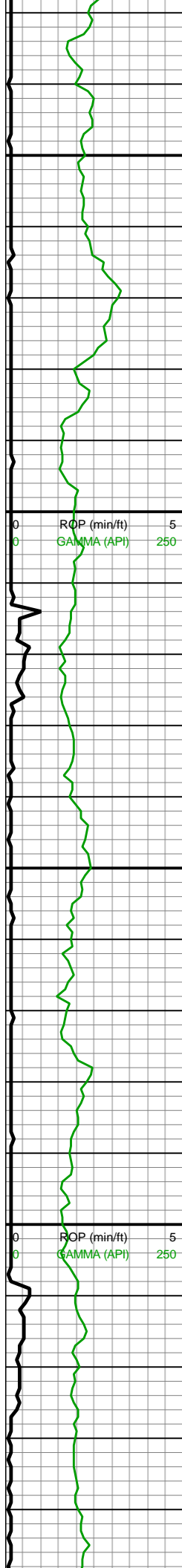


sm chky tex, v calc;
MRLST (20%): v dk gy,
frm-hrd, sb blkgy-sb ang, tr
intbd CHK, mod calc

9200-9300 CHK (85%):
gyshbn-mot med gy, sme
mot lt gy, sb blkgy-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (15%): v dk gy,
frm-hrd, sb blkgy-sb ang, tr
intbd CHK, mod calc

9300-9400 CHK (80%):
gyshbn-mot med gy, sb
blkgy-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (20%): v dk
gy, frm-hrd, sb blkgy-sb
ang, tr intbd CHK, mod
calc





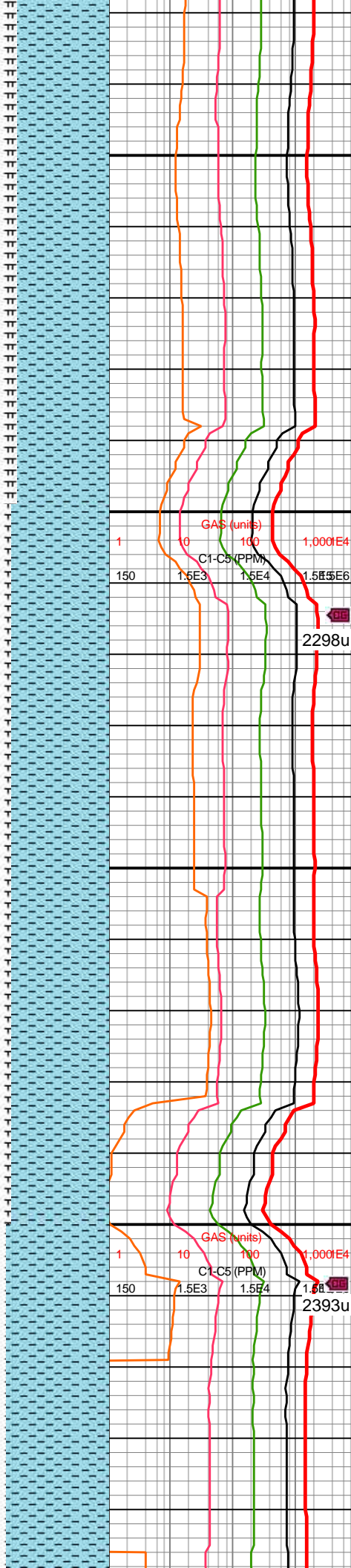
MD: 9,654'
INC: 91.32°
AZM: 270.58°
TVD: 7,203.28'
VS: 2,129.6'

MD: 9,749'
INC: 91.1°
AZM: 271.02°
TVD: 7,201.27'
VS: 2,223.78'

WOB: 34.5klbs
RPM: 50
SPM: 186
SPP: 5,199psi

MW IN: 10.2
VIS IN: 49
MW OUT: 10.2
VIS OUT: 47

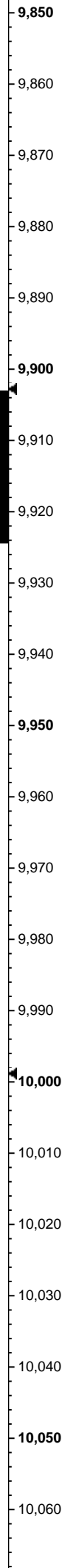
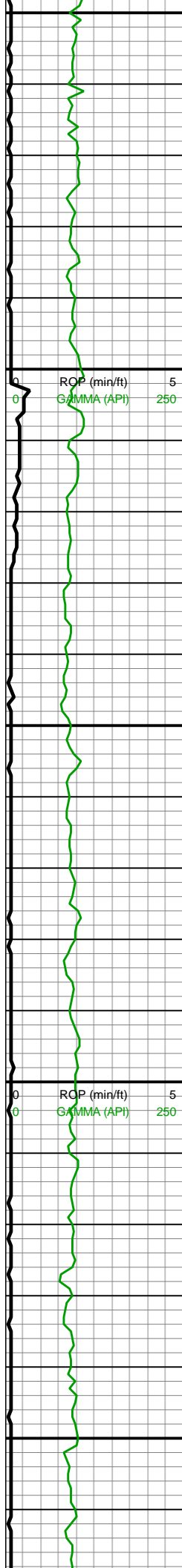
MD: 9,843'
INC: 90.04°
AZM: 271.98°
TVD: 7,200.34'



9600-9700 CHK (80%):
gyshbn-mot med gy, sb
blky-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (20%): mot
dk gy, frm-hrd, sb blky-sb
ang, tr intbd CHK, mod
calc, diss m pyr

9700-9800 CHK (85%):
gyshbn-mot med gy, sme
mot lt gy, sb blky-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (15%): mot dk gy,
frm-hrd, sb blky-sb ang, tr
intbd CHK, mod calc,
diss m pyr



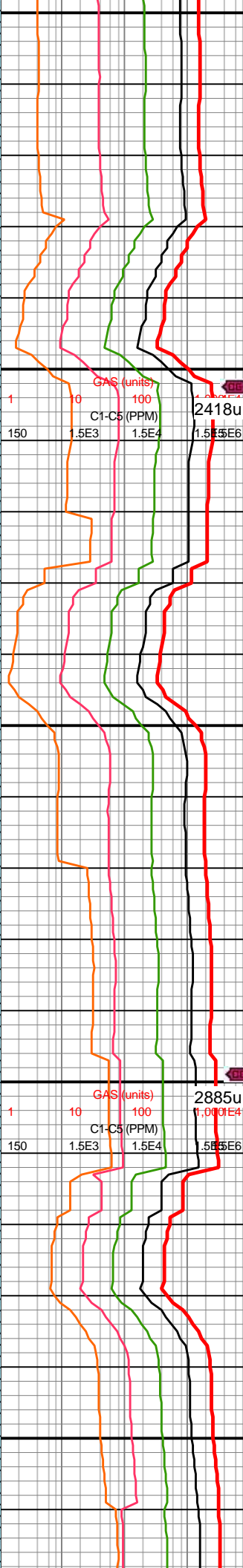
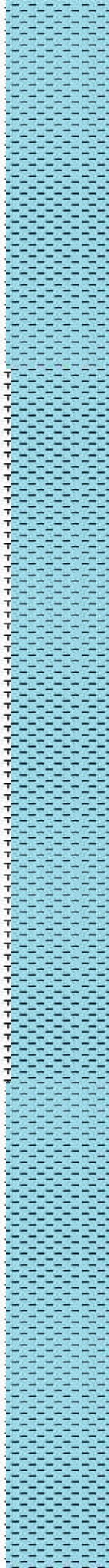


VS: 2,317.13'

MD: 9,937'
INC: 88.24°
AZM: 272.25°
TVD: 7,201.75'
VS: 2,410.59'

WOB: 27.5klbs
RPM: 50
SPM: 186
SPP: 4,872psi

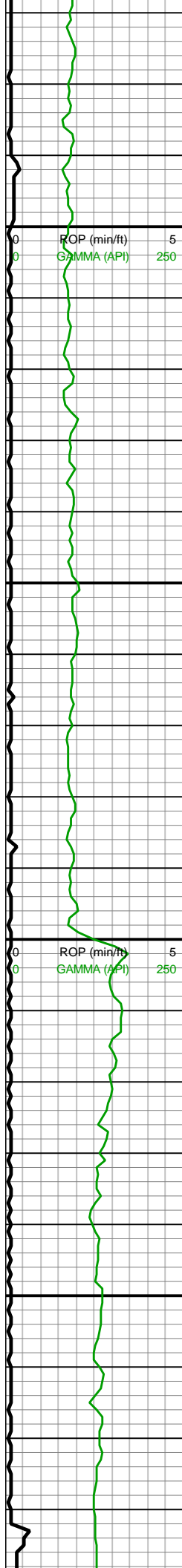
MD: 10,032'
INC: 88.46°
AZM: 272.34°
TVD: 7,204.49'
VS: 2,505.04'



9800-9900 CHK (90%):
mot lt gy-mot med gy, sb
blky-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (10%): mot
dk gy, frm-hrd, sb blky-sb
ang, tr intbd CHK, mod
calc, sme dissm pyr

9900-10000 CHK (85%):
mot lt gy-mot med gy, tr
offwht, sb blky-sb plty,
frm-brit, tr MRLST incl,
sm chky tex, v calc;
MRLST (15%): mot dk gy,
frm-hrd, sb blky-sb ang, tr
intbd CHK, mod calc,
sme dissm pyr





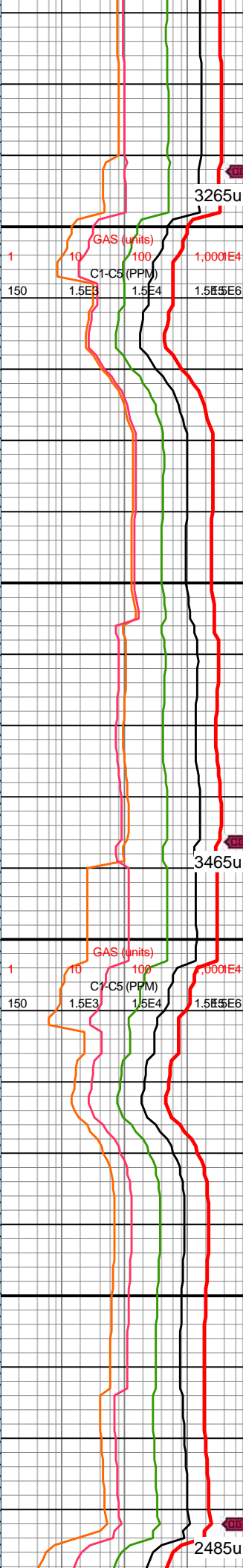
10,070
10,080
10,090
10,100
10,110
10,120
10,130
10,140
10,150
10,160
10,170
10,180
10,190
10,200
10,210
10,220
10,230
10,240
10,250
10,260
10,270
10,280

MW IN: 10.2
VIS IN: 51
MW OUT: 10.2
VIS OUT: 48

MD: 10,126'
INC: 88.55°
AZM: 272.16°
TVD: 7,206.94'
VS: 2,598.5'

WOB: 31.2klbs
RPM: 50
SPM: 184
SPP: 5,187psi

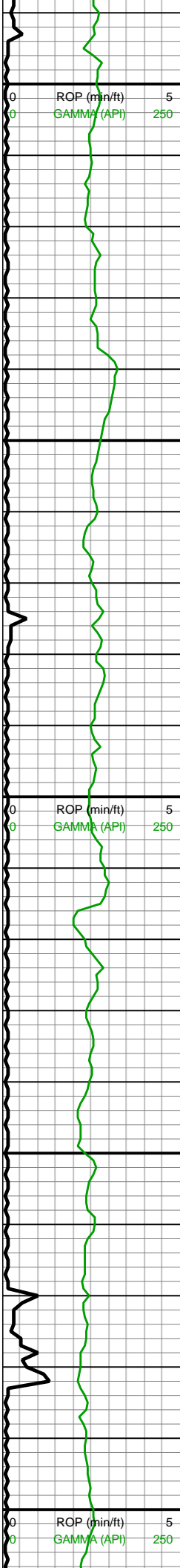
MD: 10,221'
INC: 88.46°
AZM: 272.07°
TVD: 7,209.42'
VS: 2,692.93'



10000-10100 CHK
(90%): mot lt gy-mot med
gy, tr gyshbn, sb blk-y-sb
plty, frm-brit, tr MRLST
incl, sm chky tex, v calc;
MRLST (10%): mot dk gy,
frm-hrd, sb blk-y-sb ang, tr
intbd CHK, mod calc

10100-10200 CHK
(90%): predy mot med
gy-mot lt gy, tr gyshbn, sb
blk-y-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (10%): mot
v dk gy, frm-hrd, sb
blk-y-sb ang, tr intbd CHK,
mod calc

10200-10300 CHK
(75%): predy mot med
gy-mot lt gy, sb blk-y-sb
plty, frm-brit, tr MRLST
incl, sm chky tex, v calc;



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
10,420
10,430
10,440
10,450
10,460
10,470
10,480
10,490
10,500

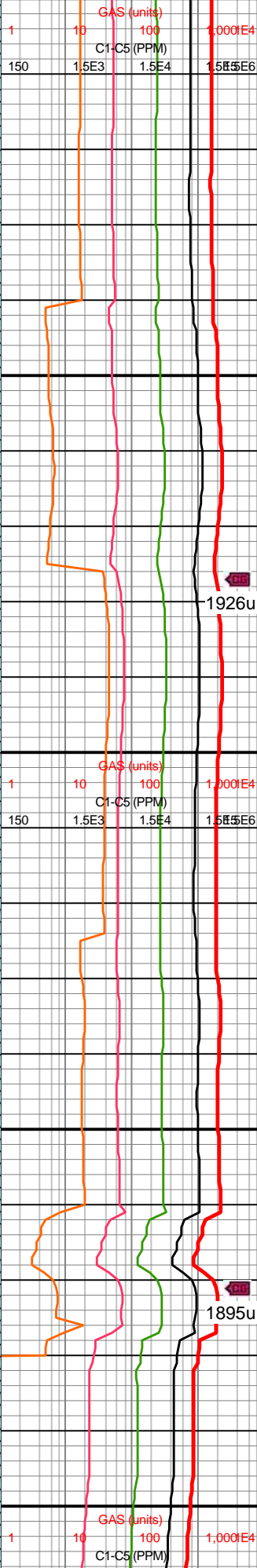
MD: 10,315'
INC: 89.08°
AZM: 271.81°
TVD: 7,211.43'
VS: 2,786.35'

MW IN: 10.2
VIS IN: 51
MW OUT: 10.2
VIS OUT: 49

WOB: 35.8klbs
RPM: 50
SPM: 186
SPP: 5,394psi

MD: 10,410'
INC: 88.24°
AZM: 271.9°
TVD: 7,213.66'
VS: 2,880.74'

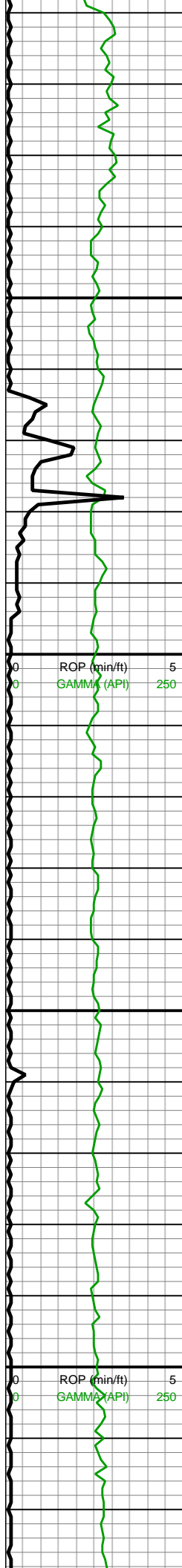
MD: 10,504'
INC: 87.58°
AZM: 272.16°
TVD: 7,217.08'



MRLST (25%): mot v dk
gy, frm-hrd, sb blkly-sb
ang, tr intbd CHK, mod
calc, sme dissim pyr

10300-10400 CHK
(70%): predy mot med
gy-mot lt gy, sb blkly-sb
plty, frm-brit, tr MRLST
incl, sm chky tex, v calc;
MRLST (30%): mot dk gy,
frm-hrd, sb blkly-sb ang, tr
intbd CHK, mod calc, tr
dissim pyr

10400-10500 CHK
(65%): predy mot med
gy-mot lt gy, tr gyshbn, sb
blkly-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (35%): mot
dk gy, frm-hrd, sb blkly-sb
ang, tr intbd CHK, mod
calc, sme dissim pyr



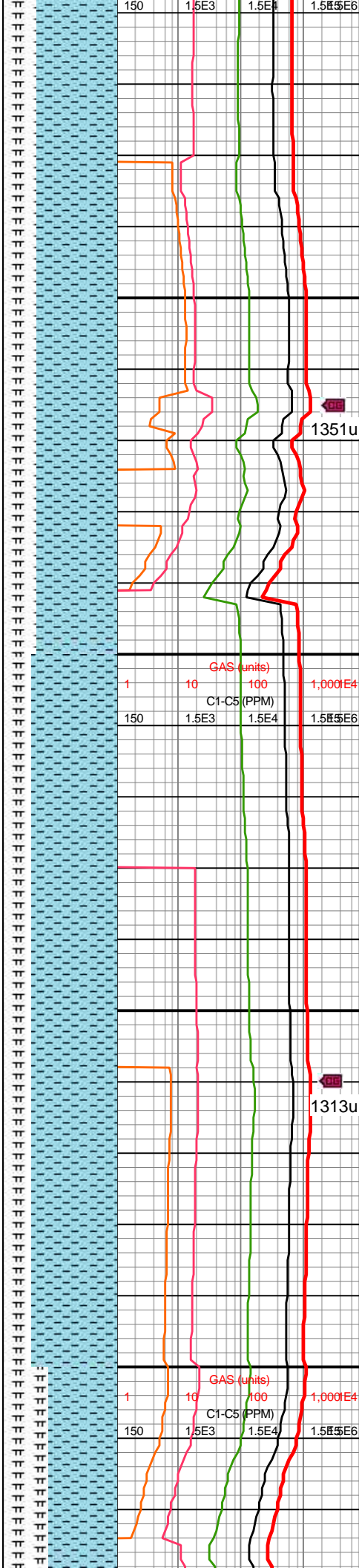
VS: 2,974.13'

MD: 10,599'
INC: 89.39°
AZM: 271.81°
TVD: 7,219.6'
VS: 3,068.53'

WOB: 34.3klbs
RPM: 51
SPM: 186
SPP: 5,322psi

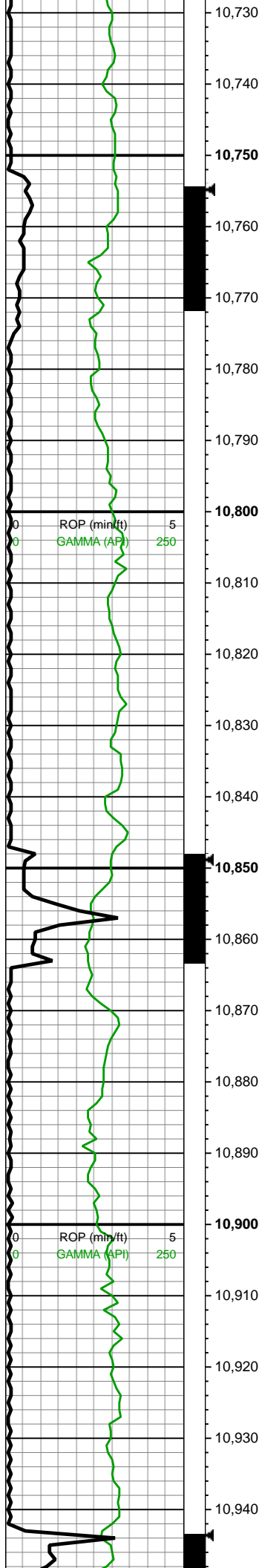
MD: 10,693'
INC: 88.15°
AZM: 272.42°
TVD: 7,221.61'
VS: 3,161.98'

MW IN: 10.2
VIS IN: 52
MW OUT: 10.2
VIS OUT: 49



10500-10600 CHK
(70%): predy mot med
gy-mot lt gy, sme
gyshbn-offwht, sb blky-sb
plty, frm-brit, tr MRLST
incl, sm chky tex, v calc;
MRLST (30%): mot v dk
gy, frm-hrd, sb blky-sb
ang, tr intbd CHK, mod
calc

10600-10700 CHK
(75%): mot lt gy-mot med
gy, tr gyshbn-offwht, sb
blky-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (25%): mot
v dk gy, frm-hrd, sb
blky-sb ang, tr intbd CHK,
mod calc, sme dissd pyr

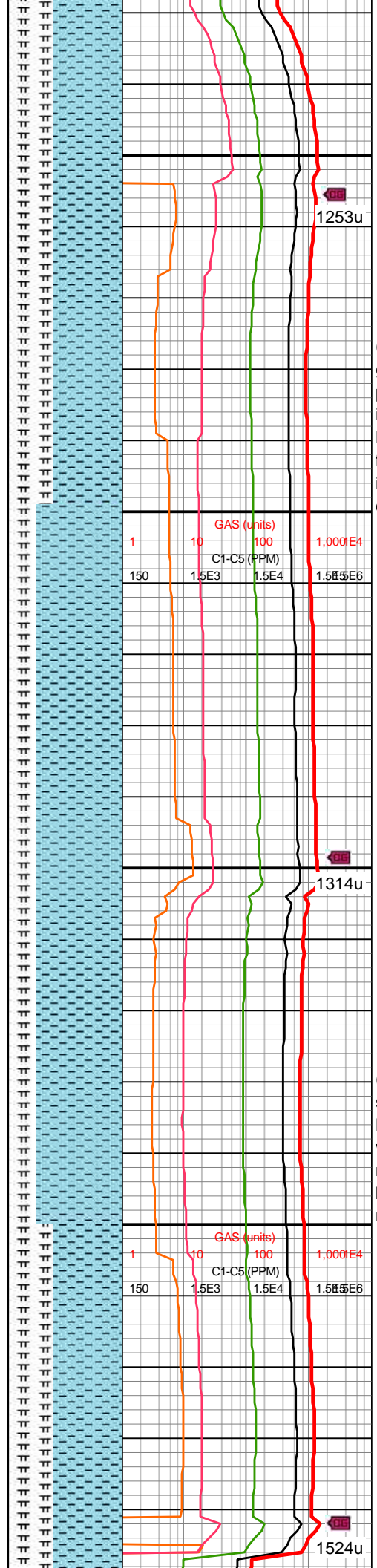


MD: 10,788'
INC: 89.25°
AZM: 270.42°
TVD: 7,223.77'
VS: 3,256.28'

WOB: 36.3klbs
RPM: 50
SPM: 182
SPP: 5,289psi

MD: 10,882'
INC: 88.77°
AZM: 270.93°
TVD: 7,225.39'
VS: 3,349.45'

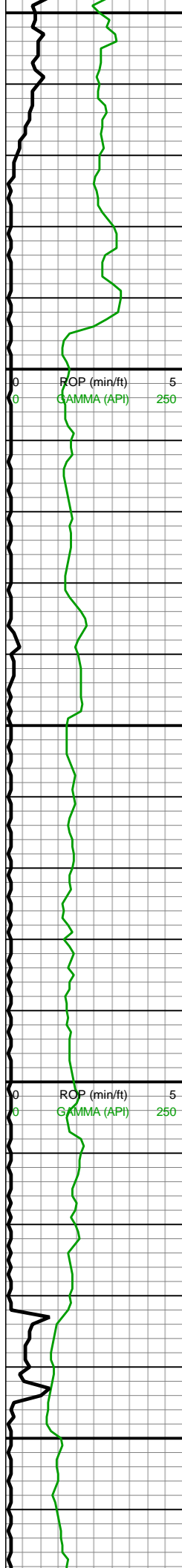
MW IN: 10.2



10700-10800 CHK
(60%): mot lt gy-mot med
gy, tr offwht, sb blk-y-sb
plty, frm-brit, tr MRLST
incl, sm chky tex, v calc;
MRLST (40%): mot dk gy,
frm-hrd, sb blk-y-sb ang, tr
intbd CHK, mod calc,
dissm pyr

10800-10900 CHK
(70%): gyshbn-mot lt gy,
sb blk-y-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (30%): mot
med-dk gy, frm-hrd, sb
blk-y-sb ang, tr intbd CHK,
mod calc, sme dissd pyr





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
11,080
11,090
11,100
11,110
11,120
11,130
11,140
11,150
11,160

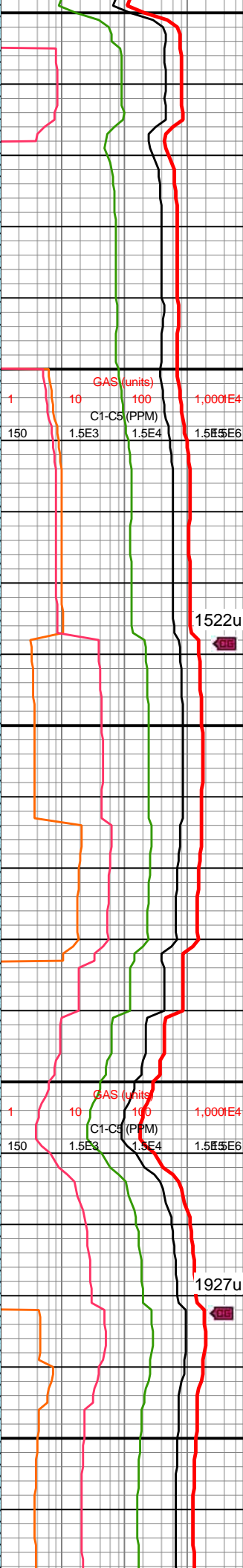
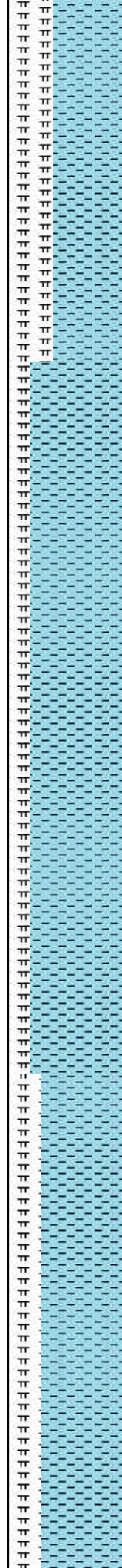
VIS IN: 52
MW OUT: 10.2
VIS OUT: 50

MD: 10,977'
INC: 91.67°
AZM: 268.21°
TVD: 7,225.03'
VS: 3,443.36'

WOB: 38klbs
RPM: 50
SPM: 186
SPP: 5,361psi

MD: 11,072'
INC: 90.62°
AZM: 267.5°
TVD: 7,223.13'
VS: 3,536.79'

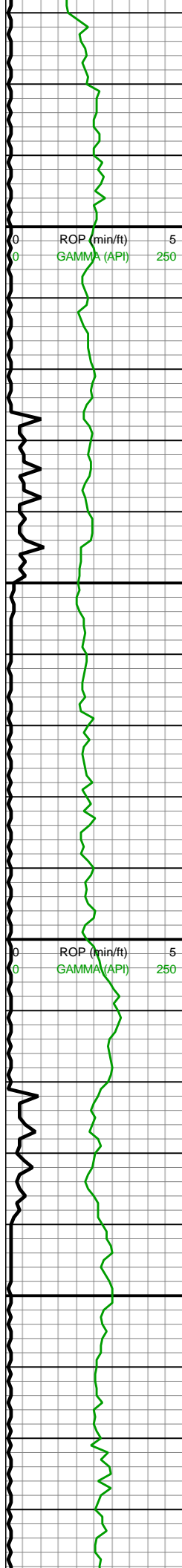
MD: 11,166'
INC: 90.09°
AZM: 266.89°



10900-11000 CHK
(60%): gyshbn-mot lt gy,
sb blkgy-sb plty, frm-brit, tr
MRLST incl, sm chky tex,
v calc; MRLST (40%): mot
med-dk gy, frm-hrd, sb
blkgy-sb ang, tr intbd CHK,
mod calc, sme diss pyr

11000-11100 CHK
(80%): med gy, mot lt gy,
sb blkgy, frm-brit, MRLST
incl, v thn MRLST lamn,
sme chky tex, v calc;
MRLST (20%): dk gy, frm,
sb blkgy, tr thn CHK lamn,
intbd CHK, hi calc, tr pyr
nod





TVD: 7,222.55'
VS: 3,629.05'

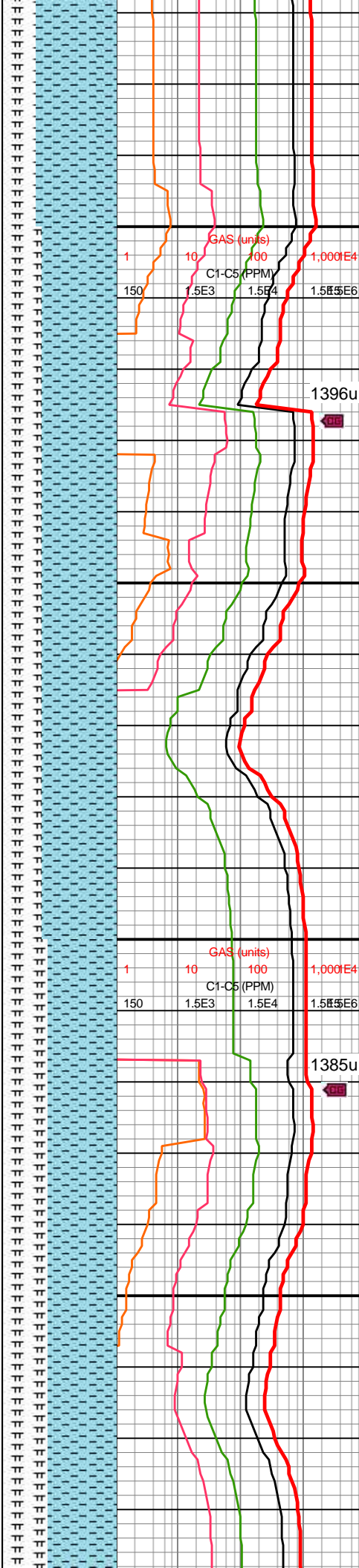
WOB: 33.4klbs
RPM: 50
SPM: 186
SPP: 5,551psi

MW IN: 10.2
VIS IN: 52
MW OUT: 10.2
VIS OUT: 49

MD: 11,261'
INC: 91.32°
AZM: 268.29°
TVD: 7,221.38'
VS: 3,722.42'

MW IN: 10.2
VIS IN: 51
MW OUT: 10.2
VIS OUT: 49

MD: 11,355'
INC: 90°
AZM: 269.7°
TVD: 7,220.3'
VS: 3,815.19'

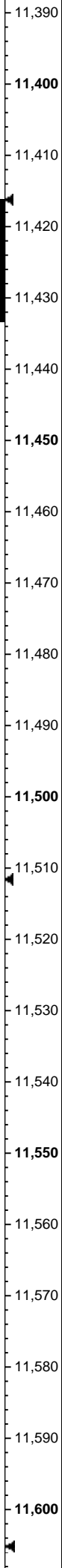
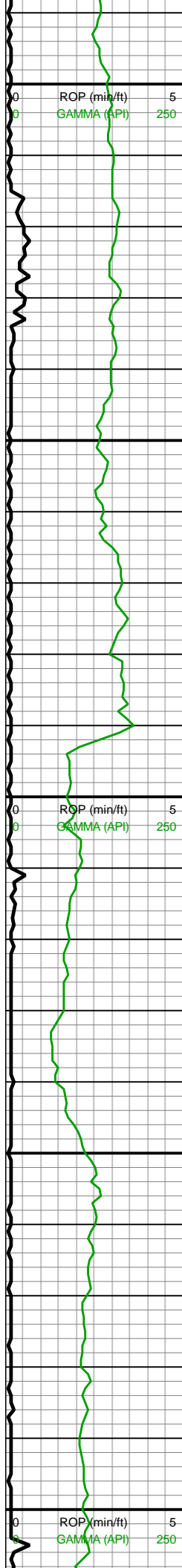


11200-11300 CHK
(70%): predy lt gy-mot
med gy, blk-y-sb blk-y,
frm-brit, sme v thn
MRLST lamn, chky tex, v
calc; MRLST (30%):
predy dk gy, hd-frm, sb
blk-y, com CHK intbds,
mod-hi cal, tr pp mic pyr

11200-11300 CHK
(65%): mot med gy-mot
dk med gy, tr lt gy, sb
blk-y, frm-brit, MRLST incl,
v thn MRLST lamn, sme
chky tex, v calc; MRLST
(35%): v dk gy, frm-sl hrd,
sb blk-y, v thn CHK lamn,
intbd CHK, hi calc, rr free
pyr

11300-11400 CHK
(60%): mot dk med gy,
sme lt gy, sb blk-y,
frm-brit, MRLST incl, v thn
MRLST lamn, sme chky
tex, v calc; MRLST (40%):





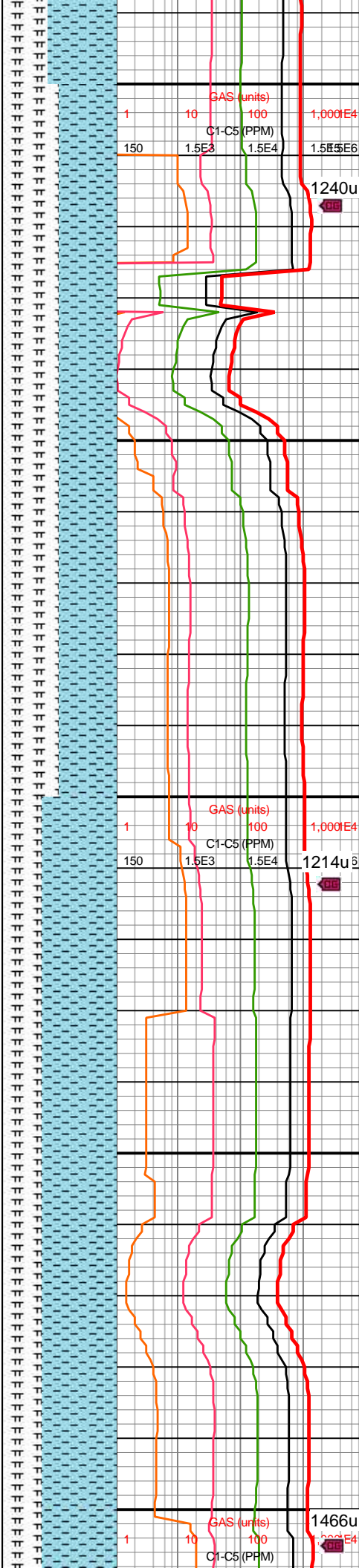
WOB: 36.9klbs
RPM: 50
SPM: 183
SPP: 5,544psi

MD: 11,450'
INC: 90.13°
AZM: 270.93°
TVD: 7,220.19'
VS: 3,909.29'

MD: 11,515'
INC: 89.69°
AZM: 270.58°
TVD: 7,220.29'
VS: 3,973.74'

WOB: 37.6klbs
RPM: 50
SPM: 186
SPP: 5,531psi

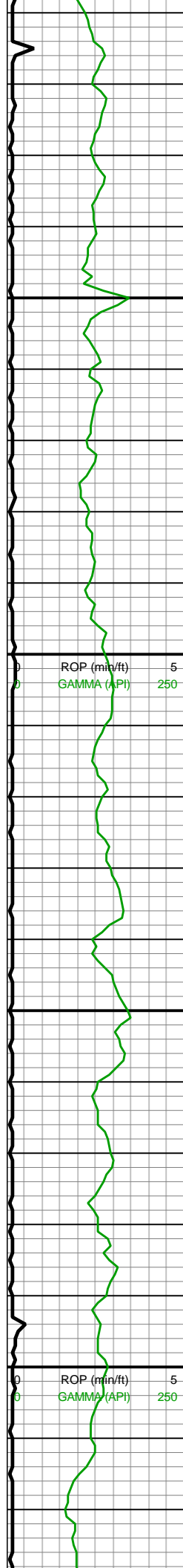
MD: 11,610'
INC: 89.30°



v dk gy-dk gy, frm-sl hrd,
sb blk, v thn CHK lamn,
intbd CHK, hi calc, tr free
pyr

11400-11500 MRLST
(50%): dk gy, frm, sb blk,
tr thn CHK lamn, intbd
CHK, hi calc; CHK (50%):
mot lt gy, sme gyshbn, sb
blk, frm-brit, MRLST incl,
v thn MRLST lamn, sme
chky tex, v calc

11500-11600 CHK
(65%): mot med gy-mot
dk med gy, tr lt gy, sb
blk, frm-brit, MRLST incl,
v thn MRLST lamn, sme
chky tex, v calc; MRLST
(35%): v dk gy, frm-sl hrd,
sb blk, v thn CHK lamn,
intbd CHK, hi calc, rr free
pyr



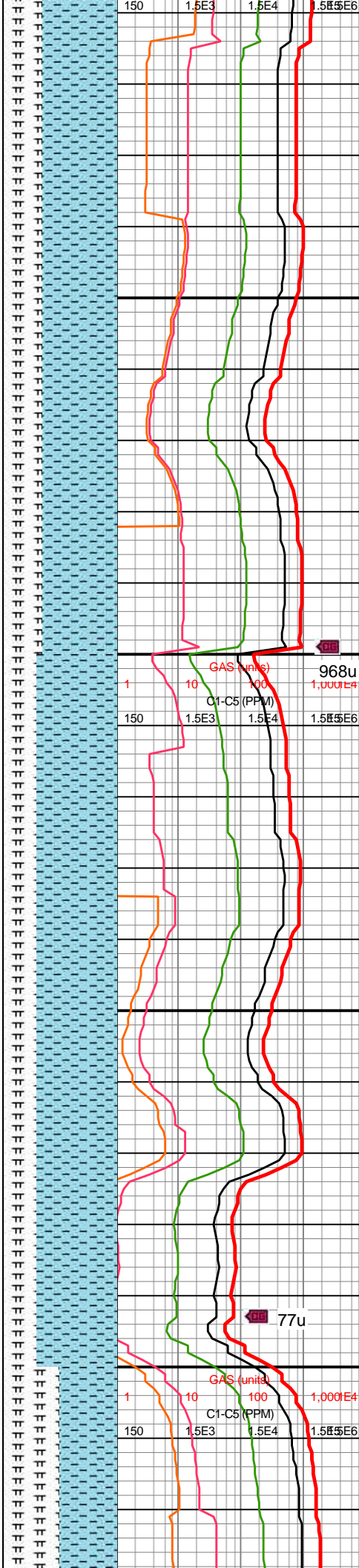
AZM: 270.58°
TVD: 7,221.05'
VS: 4,067.9'

MW IN: 10.3
VIS IN: 51
MW OUT: 10.2
VIS OUT: 48

MD: 11,704'
INC: 88.9°
AZM: 271.11°
TVD: 7,222.46'
VS: 4,161.11'

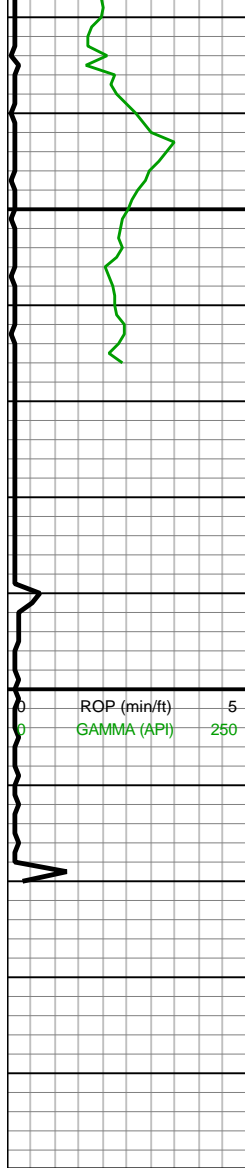
MD: 11,799'
INC: 88.07°
AZM: 270.84°
TVD: 7,224.97'
VS: 4,255.32'

WOB: 27.8klbs
RPM: 50
SPM: 185
SPP: 5,376psi



11600-11700 CHK
(65%): mot med gy-mot
dk med gy, tr lt gy, sb
blky, frm-brit, MRLST incl,
v thn MRLST lamn, sme
chky tex, v calc; MRLST
(35%): v dk gy, frm-sl hrd,
sb blky, v thn CHK lamn,
intbd CHK, hi calc, tr free
pyr

11700-11800 CHK
(70%): predy lt gy-mot
med gy, blk-y-sb blk-y,
frm-brit, sme v thn
MRLST lamn, chky tex, v
calc; MRLST (30%):
predy dk gy, hd-frm, sb
blk-y, com CHK intbds,
mod-hi cal, tr pp mic pyr



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

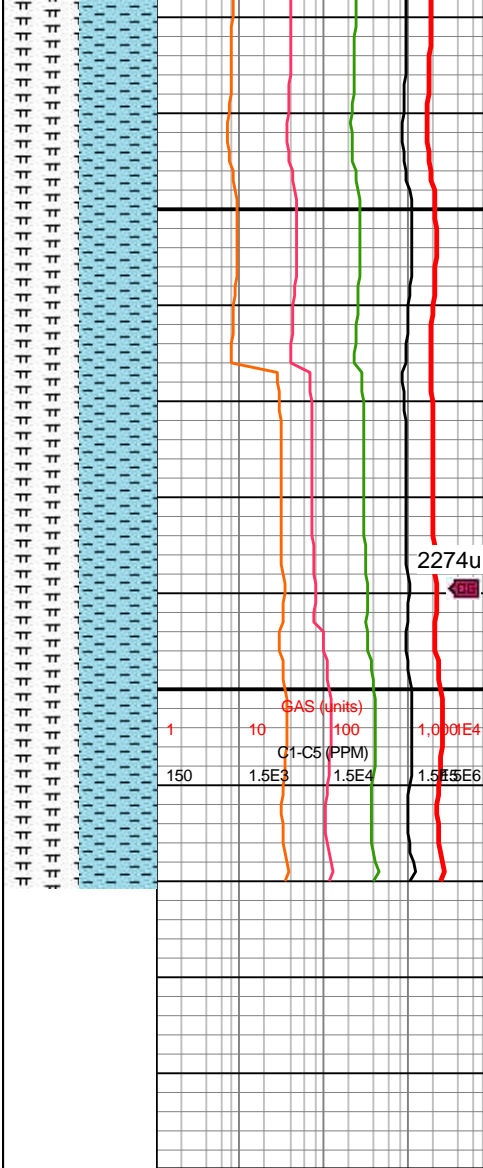
MD: 11,855'
INC: 86.97°
AZM: 270.4°
TVD: 7,227.39'
VS: 4,310.78'

MW IN: 10.3
VIS IN: 52
MW OUT: 10.3
VIS OUT: 50

Projection to Bit

MD: 11,921'
INC: 86.97°
AZM: 270.4°
TVD: 7,230.88'
VS: 4,376.07'

**Total Depth of
11,921 MD
Reached on
12/26/2018 @
10:23 MST**



11800-11900 MRLST
(50%): dk gy, frm, sb blkly,
tr thn CHK lamn, intbd
CHK, hi calc; CHK (50%):
mot lt gy, sme gyshbn, sb
blkly, frm-brit, MRLST incl,
v thn MRLST lamn, sme
chky tex, v calc

11900-11921 MRLST
(50%): dk gy, frm, sb blkly,
tr thn CHK lamn, intbd
CHK, hi calc; CHK (50%):
mot lt gy, sme gyshbn, sb
blkly, frm-brit, MRLST incl,
v thn MRLST lamn, sme
chky tex, v calc

