



RESERVOIR GROUP

Scale: 5" / 100'
Measured Depth Log

Well Name Buford 33-10-4L

Location SWSW Sec 33-1N-65W

State Colorado

County Weld

Country USA

Rig Number Ensign 160

API Number 05-123-45542-0000

AFE # 102013

Geographic Region Rockies

Field DJ Wattenberg

Spud Date 10/31/2017

Surface Coordinates 14528089.58/1730770.59

Ground Elevation 5,077'

K.B. Elevation 5,101'

Logged Interval

Formation Codell

Type of Drilling Fluid Oil Based Mud

Operator

Company Confluence DJ, LLC

Address 1001 17th Street
Suite 1250
Denver, CO 80202



Geologist

Name Robert Sterling

Company Confluence Resources

Address Confluence Resources LP

Zone Color Coding

■ Oil	■ Condensate	■ Gas
■ Note	■ Core	■ Pressure
■ Error	■ Water	■ Seal

Address Confluence Resources LP
1001 17th St. Suite 1250
Denver, CO 80202



Other

Services Provided 2-Man Logging, Geosteering
Loggers: Michael McAuley / Clinton Atkinson
Equipment: ML-610
Address Reservoir Group
6510 Guhn Road
Houston, Texas 77040
Service Start Date: 11/13/2017
Service End Date: TBD

Rock Types

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

Accessories

Fossils

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

F 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

- 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

- ORGANIC
- PINPOINT
- VUGGY

Engineering

- FORMATION TOP
- GAS SHOW
- MN DEPTH
- NORMAL FAULT
- OIL SHOW

Rounding

- ANGULAR
- ROUNDED
- SUBANG

- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

SPOTTED STAINING

BIT

OVERTURNED STRATA

SUBBRND

Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- X INTERCRYSTALLINE
- φ INTEROOLITIC
- MOLDIC

CASING

- ◀ CONNECTION (LEFT)
- ▶ CONNECTION (RIGHT)
- CONNECTION GAS
- ↓ CORE - LOST
- CORE - RECOVERED
- ⋮ DST INTERVAL
- FAULT

REVERSE FAULT

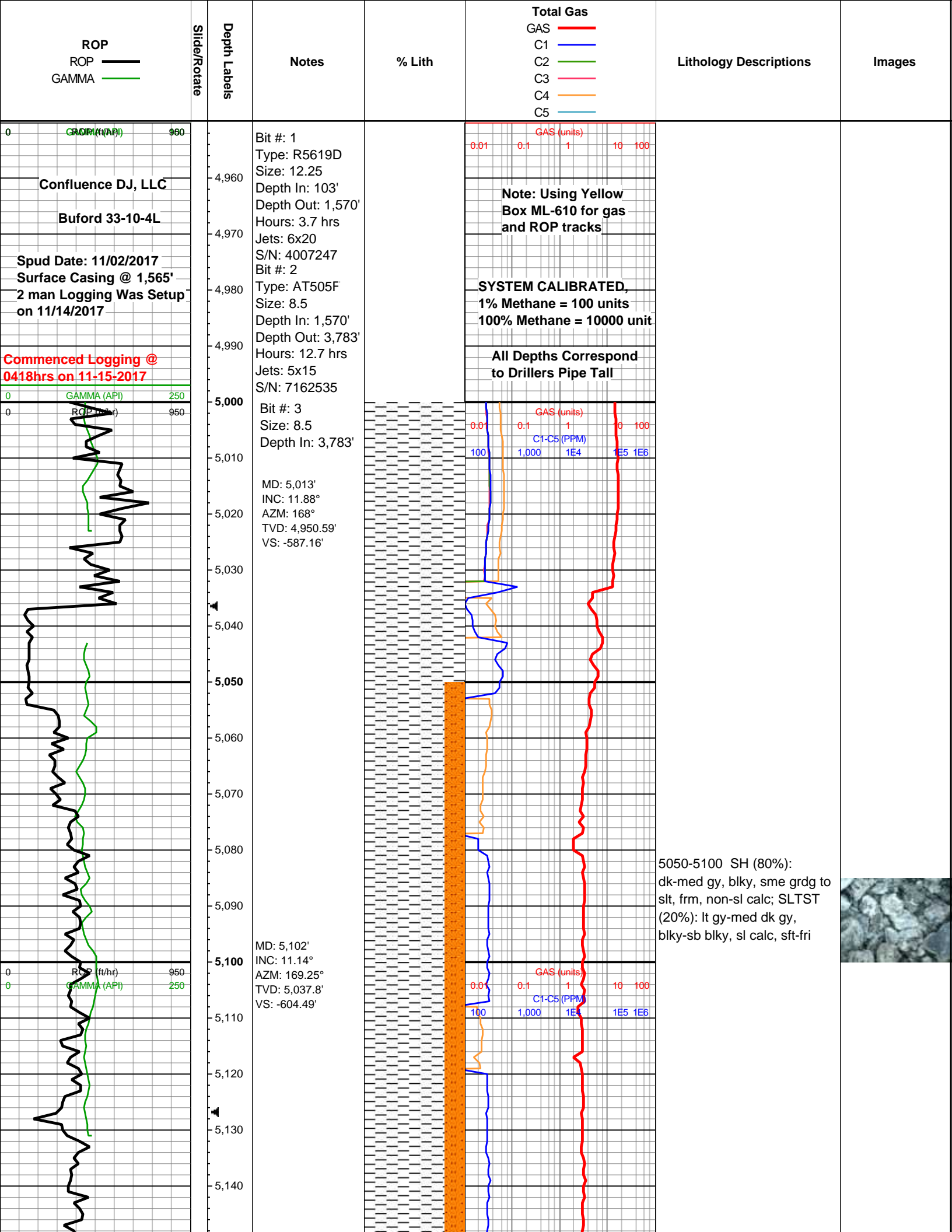
- ◀ SIDEWALL CORE (LEFT)
- ▶ SIDEWALL CORE (RIGHT)
- SLIDE
- SURVEY
- TRIP GAS
- ◀ WIRELINE TESTED - LEFT
- ▶ WIRELINE TESTED - RT

Textures

- BS BOUNDSTONE
- C CHALKY
- XX CRYPTOXLN
- E EARTHY
- FX FINELYXLN
- GS GRAINSTONE

Sorting

- M MODERATE
- P POOR
- W WELL



ROP
 ROP ———
 GAMMA ———

Slide/Rotate

Depth Labels

Notes

% Lith

Total Gas
 GAS ———
 C1 ———
 C2 ———
 C3 ———
 C4 ———
 C5 ———

Lithology Descriptions

Images

0 960
 GAMMA (API) 250

Confluence DJ, LLC

Buford 33-10-4L

Spud Date: 11/02/2017
 Surface Casing @ 1,565'
 2 man Logging Was Setup
 on 11/14/2017

Commenced Logging @
 0418hrs on 11-15-2017

0 950
 ROP (ft/hr) 950

Bit #: 1
 Type: R5619D
 Size: 12.25
 Depth In: 103'
 Depth Out: 1,570'
 Hours: 3.7 hrs
 Jets: 6x20
 S/N: 4007247
 Bit #: 2
 Type: AT505F
 Size: 8.5
 Depth In: 1,570'
 Depth Out: 3,783'
 Hours: 12.7 hrs
 Jets: 5x15
 S/N: 7162535

Bit #: 3
 Size: 8.5
 Depth In: 3,783'

MD: 5,013'
 INC: 11.88°
 AZM: 168°
 TVD: 4,950.59'
 VS: -587.16'

MD: 5,102'
 INC: 11.14°
 AZM: 169.25°
 TVD: 5,037.8'
 VS: -604.49'

GAS (units)
 0.01 0.1 1 10 100

Note: Using Yellow
 Box ML-610 for gas
 and ROP tracks

SYSTEM CALIBRATED,
 1% Methane = 100 units
 100% Methane = 10000 unit

All Depths Correspond
 to Drillers Pipe Tail

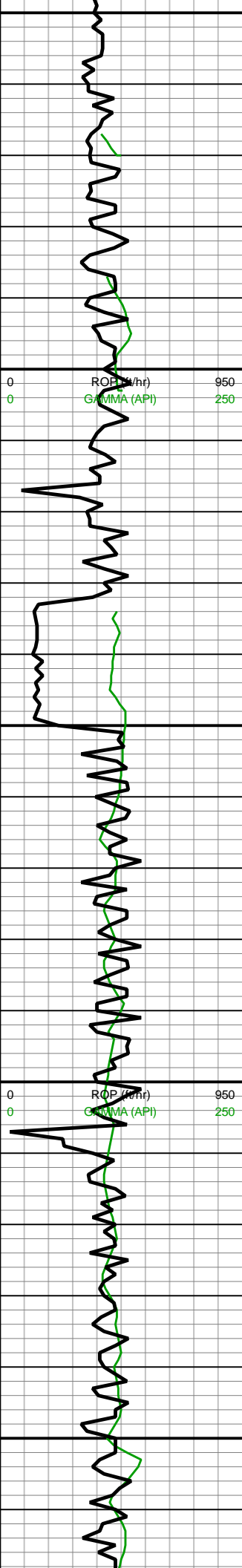
GAS (units)
 0.01 0.1 1 10 100
 C1-C5 (PPM)
 100 1,000 1E4 1E5 1E6

5050-5100 SH (80%):
 dk-med gy, blk, sme grd to
 slit, frm, non-sl calc; SLTST
 (20%): lt gy-med dk gy,
 blk-sb blk, sl calc, sft-fri



0 950
 ROP (ft/hr) 950
 0 250
 GAMMA (API) 250

GAS (units)
 0.01 0.1 1 10 100
 C1-C5 (PPM)
 100 1,000 1E4 1E5 1E6



5,150
5,160
5,170
5,180
5,190
5,200
5,210
5,220
5,230
5,240
5,250
5,260
5,270
5,280
5,290
5,300
5,310
5,320
5,330
5,340
5,350
5,360

MW IN: 9.5
VIS IN: 58
MW OUT: 9.5+
VIS OUT: 57

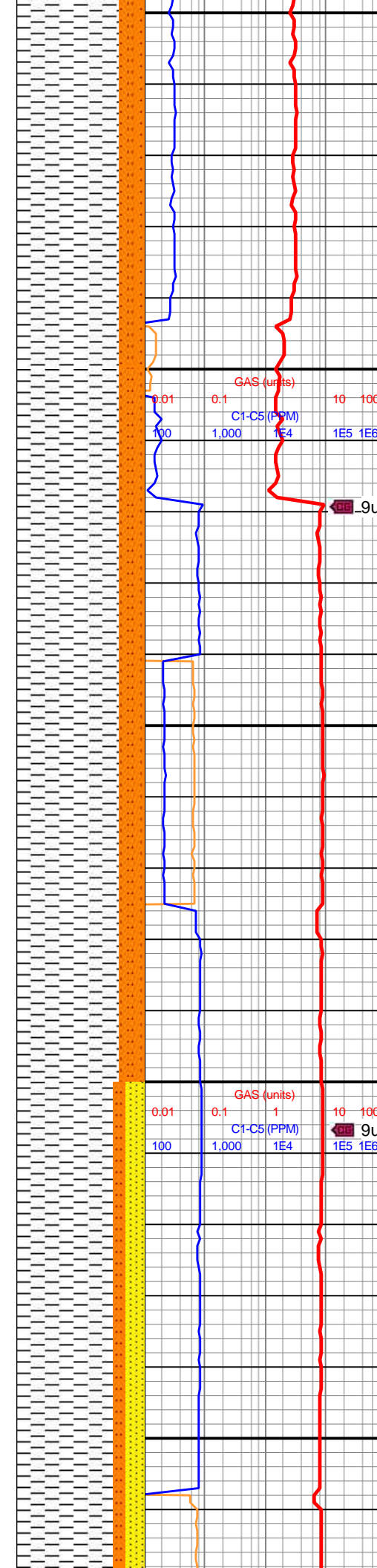
MD: 5,193'
INC: 10.93°
AZM: 176.45°
TVD: 5,127.12'
VS: -621.69'

WOB: 14klbs
RPM: 81
SPM: 190
SPP: 3,240psi

MD: 5,283'
INC: 10.95°
AZM: 182.27°
TVD: 5,215.49'
VS: -638.74'

MW IN: 9.5
VIS IN: 58
MW OUT: 9.5
VIS OUT: 58

MD: 5,373'



5150-5200 SH (80%):
dk-med gy, blk, sme grdg to
slt, frm, non-sl calc; SLTST
(20%): lt gy-med dk gy,
blk-sb blk, sl calc, sft

5200-5300 SH: (100%) med-
lt gry, blk, sme grdg to slty
sh, slty i.p. med hd, tr pp
PYR, non calc

5300-5400 SH (75%):

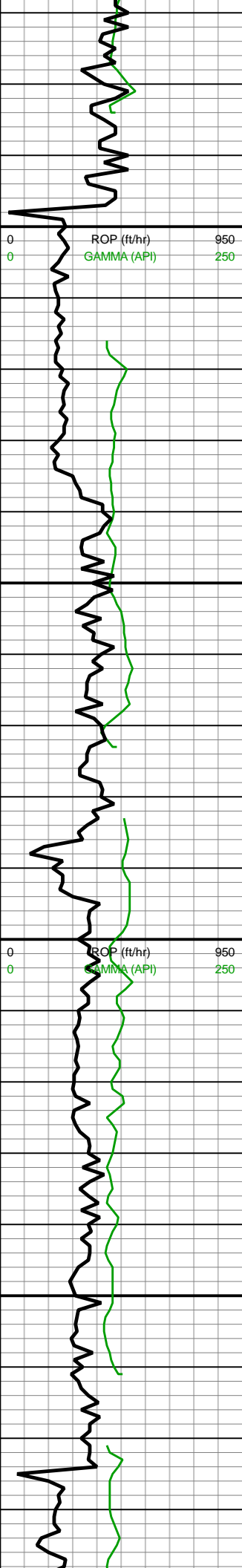


GAS (units)
0.01 0.1 1 10 100
C1-C5 (PPM)
100 1,000 1E4 1E5 1E6

9u

GAS (units)
0.01 0.1 1 10 100
C1-C5 (PPM)
100 1,000 1E4 1E5 1E6

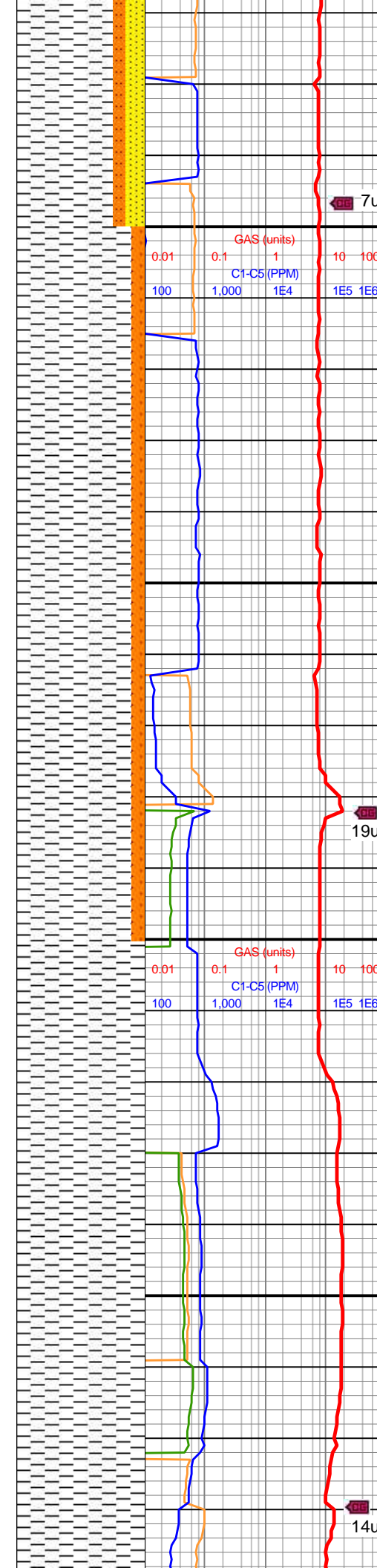
9u



INC: 11.01°
 AZM: 184.65°
 TVD: 5,303.84'
 VS: -655.86'
 MD: 5,462'
 INC: 11.01°
 AZM: 187.86°
 TVD: 5,391.2'
 VS: -672.79'
 MD: 5,552'
 INC: 11.13°
 AZM: 187.81°
 TVD: 5,479.53'
 VS: -689.96'

WOB: 11klbs
 RPM: 62
 SPM: 190
 SPP: 3,150psi

MW OUT: 9.7
 VIS OUT: 60



dk-med gy, blk, sme grd to sltst, sm-sl grty tex, clyey, frm-sl frm, non-sl calc; SS: (15%): predy lt gry brn, occ lt gy, silc cmt, mtx sup, sb ang-sb rnd cls, f-med gr, non-sl calc; SLTST (10%): lt gy-med gy, blk, non calc, sl frm

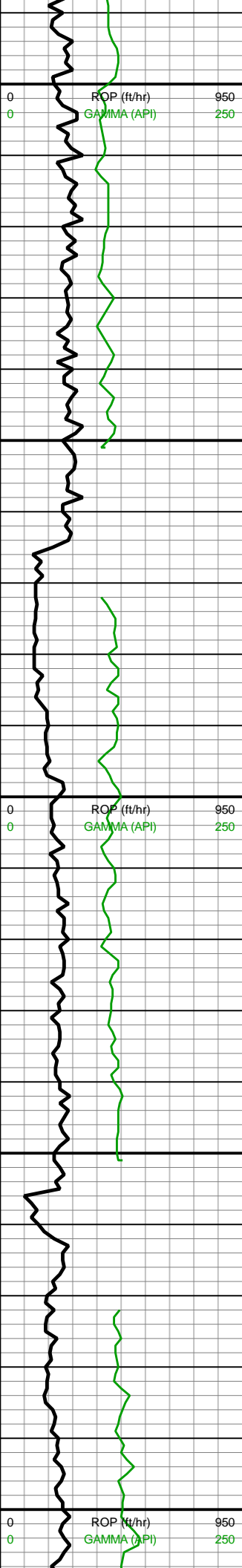
5400-5500 SH (100%): med-dk gy, sme gry brn, blk, v clyey, sft-med hd, slty tex, wxy ip, non-sl calc; sme SLTST



7u

19u

14u



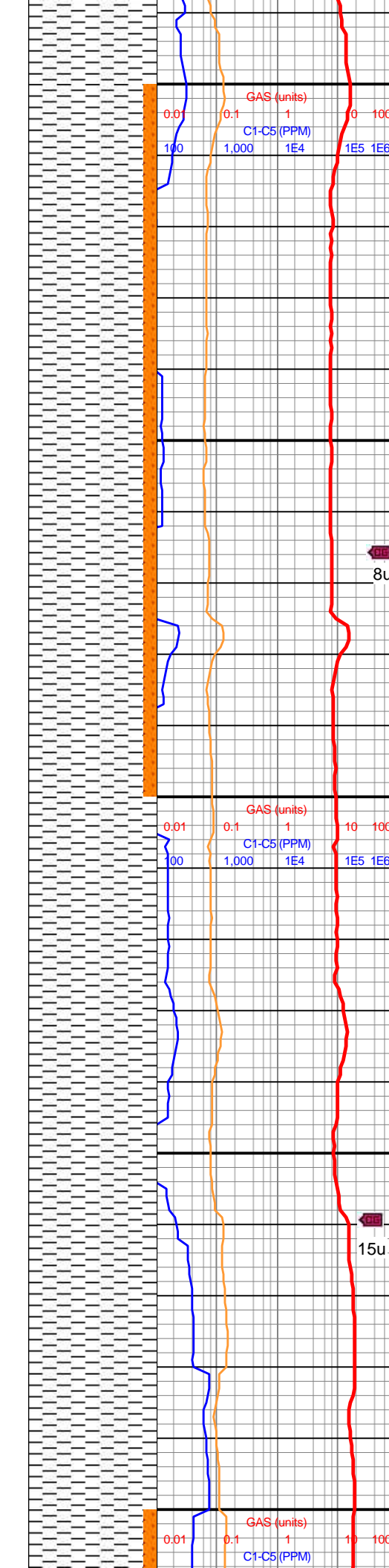
5,590
5,600
5,610
5,620
5,630
5,640
5,650
5,660
5,670
5,680
5,690
5,700
5,710
5,720
5,730
5,740
5,750
5,760
5,770
5,780
5,790
5,800

WOB: 12klbs
RPM: 82
SPM: 188
SPP: 3,210psi

MD: 5,642'
INC: 11.14°
AZM: 180.03°
TVD: 5,567.84'
VS: -707.28'

MW OUT: 9.7
VIS OUT: 61

WOB: 7.4klbs
RPM: 61
SPM: 190
SPP: 3,210psi



5500-5600 SH (100%):
med-dk gy, sme gy brn,
blky-sb blky, med hd frm, slty
tex, wxy ip, v clyey, non-sl cal

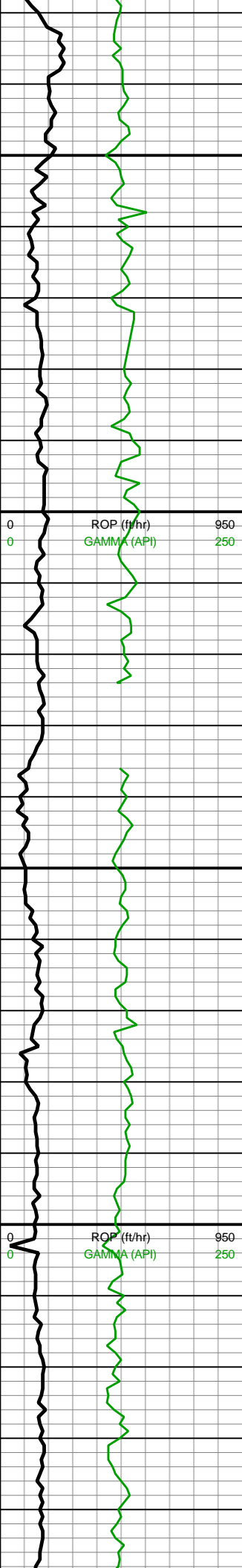
5600-5700 SH (90%):
dk-med gy, blky, sme grd g
sltst, sm-sl grty, frm, non-sl
calc; Sltst (10%): lt-med gry,
sme dk gry, med hd, blky,
non calc; tr SS: predy lt brn
gy, occ lt gy, w cons cls, silc
cmt, mtx sup, sb ang-sb rnd
cls, f-med gr, non-sl calc,

5750-5800 SH (100%):
med-dk gy, sme gy brn,
blky-sb blky, med hd frm, slty
tex, wxy ip, non-sl cal



8u

15u



6,030
6,040
6,050
6,060
6,070
6,080
6,090
6,100
6,110
6,120
6,130
6,140
6,150
6,160
6,170
6,180
6,190
6,200
6,210
6,220
6,230
6,240

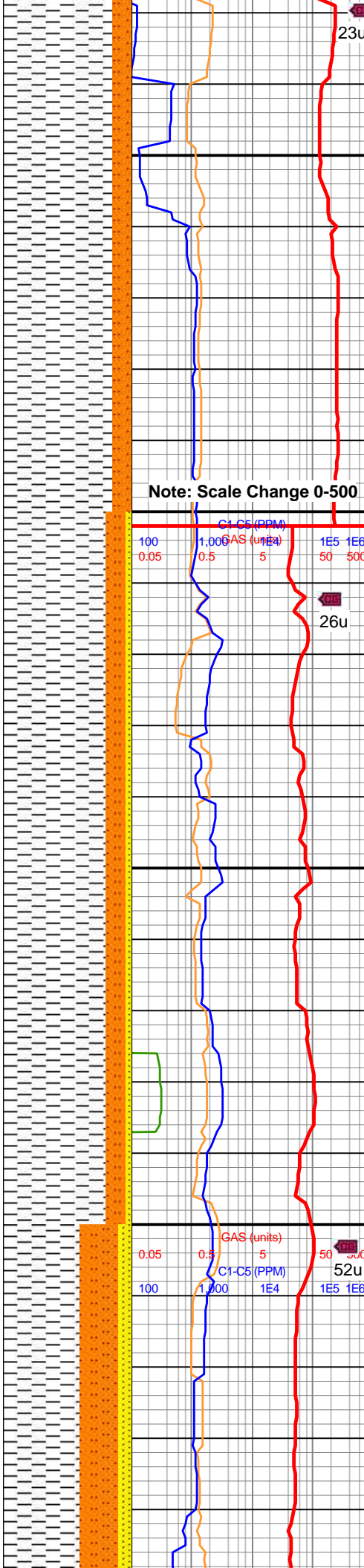
MW IN: 9.65
VIS IN: 57

MD: 6,090'
INC: 10.08°
AZM: 164.27°
TVD: 6,008.75'
VS: -783.64'

MW IN: 9.7
VIS IN: 60

MD: 6,178'
INC: 10.01°
AZM: 162.98°
TVD: 6,095.41'
VS: -798.27'

WOB: 9.4klbs
RPM: 81
SPM: 200
SPP: 3,437psi



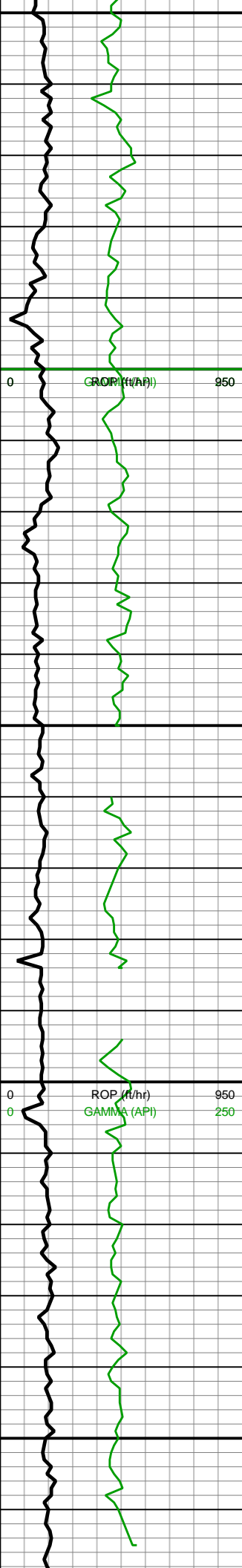
Note: Scale Change 0-500

C1-C5 (PPM) 100 1,000 1E4 1E5 1E6
GAS (units) 0.05 0.5 5 50 500

6200-6300 SH (85%): predy dk-med gy, sb plty-sb blkly, frm-fri,sm-rthy tex, non-sl calc; tr SLTST (15%)

6100-6200 SH (85%): dk-med gy, blkly, sme grdgd to sltst, sm-sl grty tex, frm-sl frm, non-sl calc; SST (15%): predy lt bnshgy, occ lt gy, w cons cls, silc cmt, mtx sup, sb ang-sb rnd cls, f-med gr, non-sl calc, tr free qtz; w/ sme Slstst





6,250
6,260
6,270
6,280
6,290
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
6,400
6,410
6,420
6,430
6,440
6,450
6,460

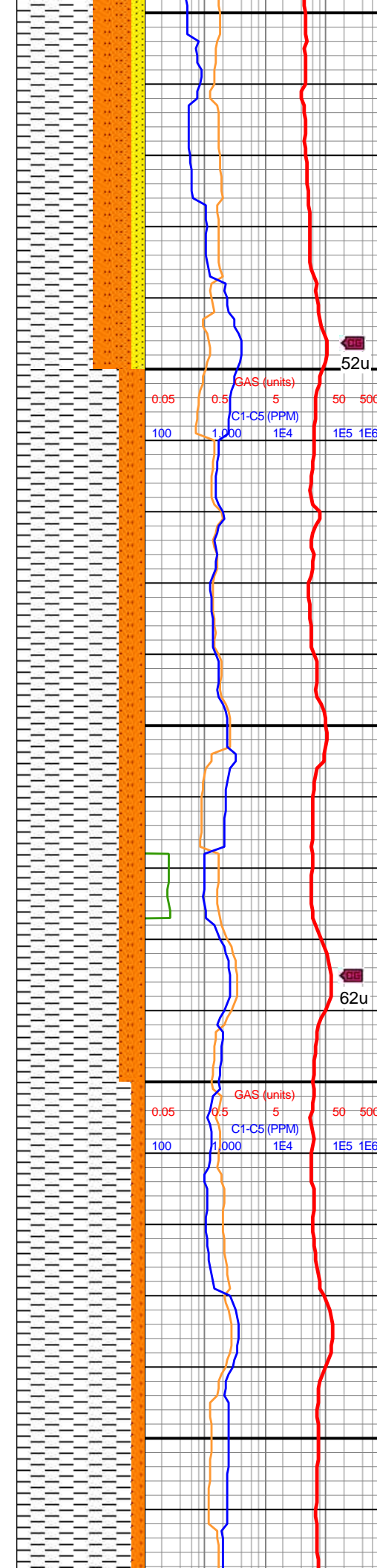
MW IN: 9.75
VIS IN: 56

MD: 6,357'
INC: 10.1°
AZM: 156.32°
TVD: 6,271.66'
VS: -827.4'

MW IN: 9.85
VIS IN: 57
MW OUT: 9.75
VIS OUT: 52

WOB: 16.5klbs
RPM: 81
SPM: 199
SPP: 3,619psi

MD: 6,447'
INC: 10.04°
AZM: 154.05°
TVD: 6,360.27'
VS: -841.54'

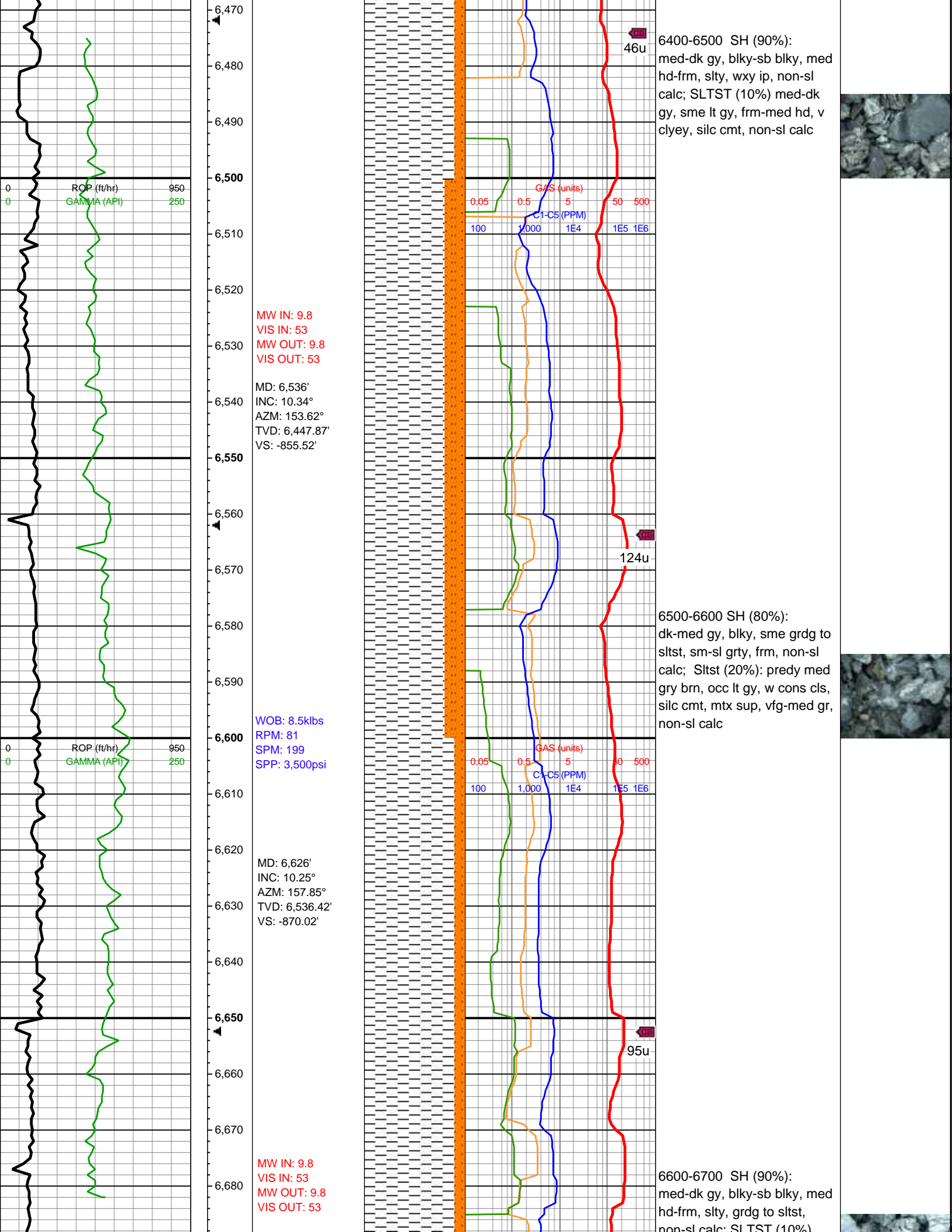


6200-6300 SH (60%):
dk-med gy, blk, sme grd to
sltst, sm-sl grty tex, frm-sl
frm, non-sl calc; SLTST
(30%): predy med gy, occ lt
gy, blk-sb blk, non calc, sl
frm, sme grd to ss (10%)



6300-6400 SH (80%):
med-dk gy, blk-sb blk, med
hd-frm, silty, wxy ip, non-sl
calc; SLTST (20%) med-dk
gy, sme lt gy, frm-med hd, sb
ang-sb rnd, silc cmt, non-sl
calc





6,470
6,480
6,490
6,500
6,510
6,520
6,530
6,540
6,550
6,560
6,570
6,580
6,590
6,600
6,610
6,620
6,630
6,640
6,650
6,660
6,670
6,680

6400-6500 SH (90%):
med-dk gy, blk-y-sb blk-y, med
hd frm, slty, wxy ip, non-sl
calc; SLTST (10%) med-dk
gy, sme lt gy, frm-med hd, v
clyey, silc cmt, non-sl calc

MW IN: 9.8
VIS IN: 53
MW OUT: 9.8
VIS OUT: 53

MD: 6,536'
INC: 10.34°
AZM: 153.62°
TVD: 6,447.87'
VS: -855.52'

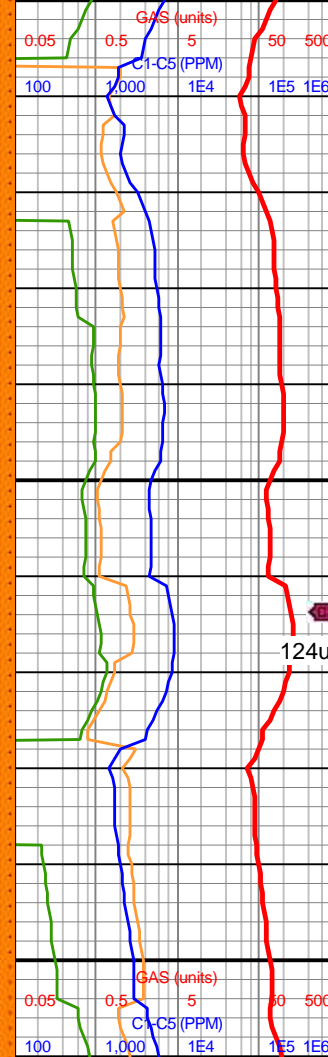
6500-6600 SH (80%):
dk-med gy, blk-y, sme grdg to
sltst, sm-sl grty, frm, non-sl
calc; Sltst (20%): predy med
gry brn, occ lt gy, w cons cls,
silc cmt, mtx sup, vfg-med gr,
non-sl calc

WOB: 8.5klbs
RPM: 81
SPM: 199
SPP: 3,500psi

MD: 6,626'
INC: 10.25°
AZM: 157.85°
TVD: 6,536.42'
VS: -870.02'

6600-6700 SH (90%):
med-dk gy, blk-y-sb blk-y, med
hd frm, slty, grdg to sltst,
non-sl calc; SLTST (10%)

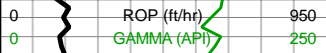
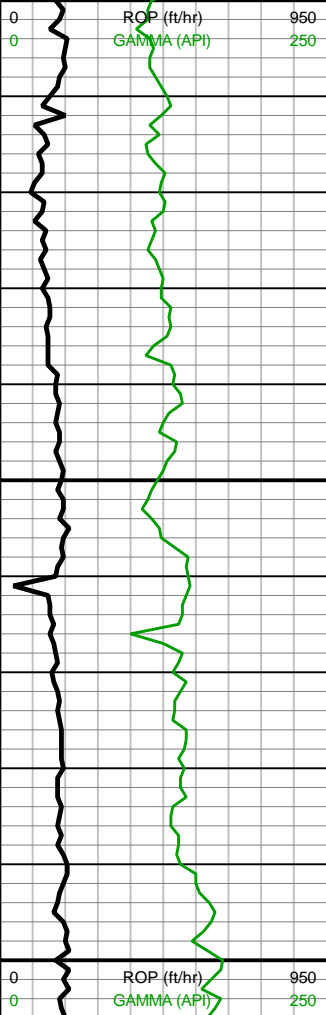
MW IN: 9.8
VIS IN: 53
MW OUT: 9.8
VIS OUT: 53

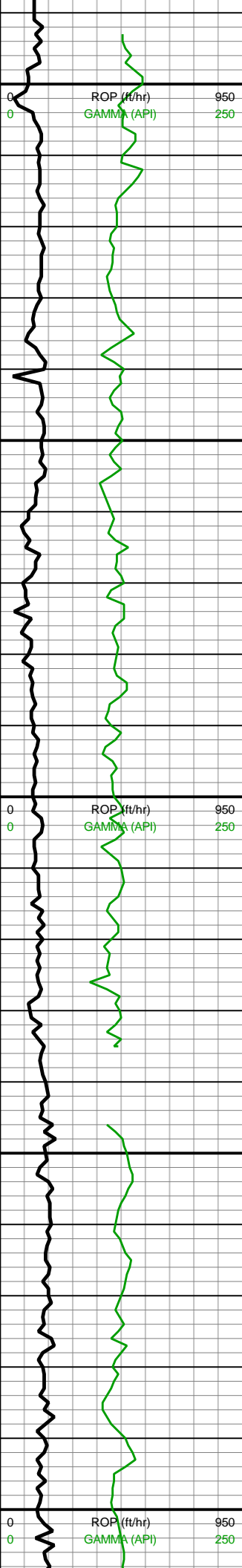


46u

124u

95u





6,690

6,700

6,710

6,720

6,730

6,740

6,750

6,760

6,770

6,780

6,790

6,800

6,810

6,820

6,830

6,840

6,850

6,860

6,870

6,880

6,890

6,900

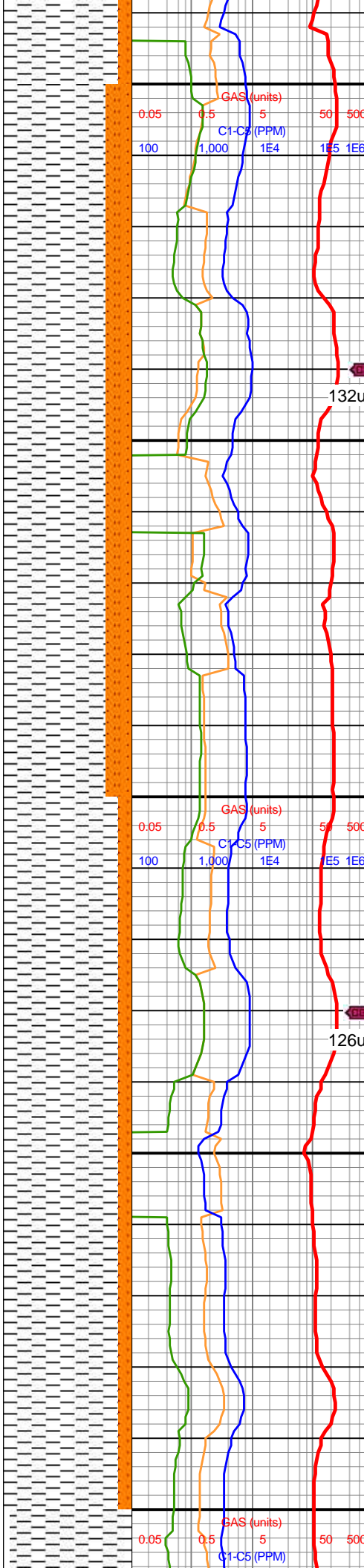
MD: 6,715'
INC: 10.29°
AZM: 162.12°
TVD: 6,624'
VS: -884.8'

WOB: 6.3klbs
RPM: 81
SPM: 200
SPP: 3,486psi

MD: 6,804'
INC: 10.27°
AZM: 167.57°
TVD: 6,711.57'
VS: -900.02'

MW IN: 9.8
VIS IN: 55
MW OUT: 9.8
VIS OUT: 51

MD: 6,893'
INC: 10.22°
AZM: 174.15°
TVD: 6,799.15'
VS: -915.57'



non-sl calc; SLTST (10%)
med-dk gy, sme lt gy,
frm-med hd, silc cmt, non-sl
calc

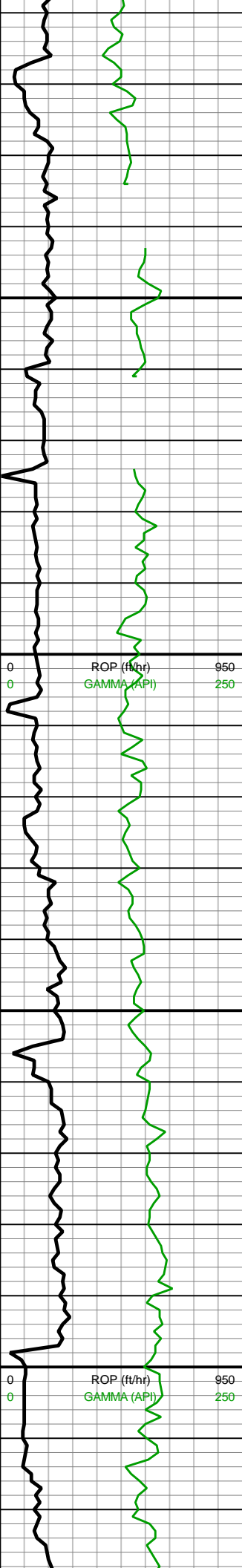
132u

6700-6800 SH (80%):
med-dk gy, blkly-sb blkly, med
hd-frm, slty, grdg to sltst,
non-sl calc; SLTST (20%)
med-dk gy, sme lt gy,
frm-med hd, sb wxy, non-sl
calc, sl clyey

126u

6700-6800 SH (90%):
med-dk gy, sb blkly-sb plty,
med hd-frm, slty, grdg to
sltst, non-sl calc; SLTST
(10%) med-dk gy, sme lt gy,
frm-med hd, sb wxy, non-sl
calc, sl clyey;





MW IN: 9.8
VIS IN: 55
MW OUT: 9.8
VIS OUT: 51

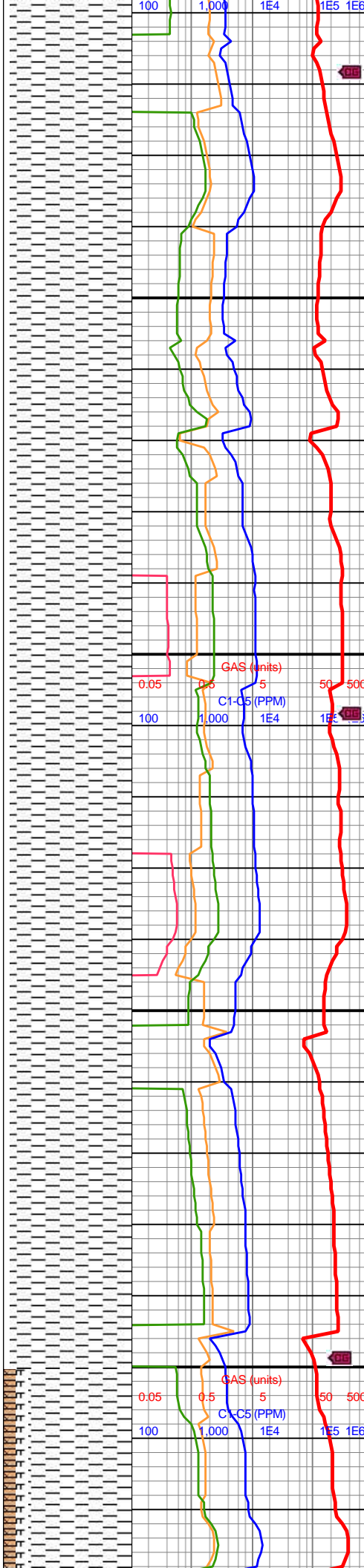
CA

MD: 6,983'
INC: 3.42°
AZM: 148.77°
TVD: 6,888.48'
VS: -925.77'

MW IN: 9.8
VIS IN: 52
MW OUT: 9.8
VIS OUT: 50

MD: 7,073'
INC: 6.83°
AZM: 37.06°
TVD: 6,978.25'
VS: -923.69'

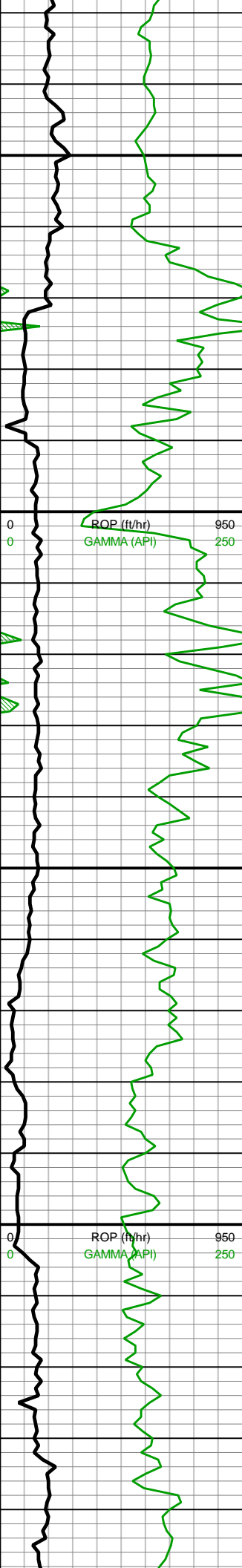
**Sharon Springs
7089'MD /
6994'TVD**



6900-7000 SH (100%):
med-dk gy, sme gyshbn, sb
blky-sb plty, sb blky ip, frm -
brit, slty tex, wxy ip, non-sl
calc; tr Slstst

7000-7100 SH (100%):
med-dk gy, sme gyshbn, sb
plty-plty, sb blky ip, frm - sl
hd, slty tex, wxy ip, non-sl
calc; tr mlrst





MW IN: 9.8
 VIS IN: 50
 MW OUT: 9.8
 VIS OUT: 48

MD: 7,163'
 INC: 14.14°
 AZM: 27.88°
 TVD: 7,066.7'
 VS: -909.51'

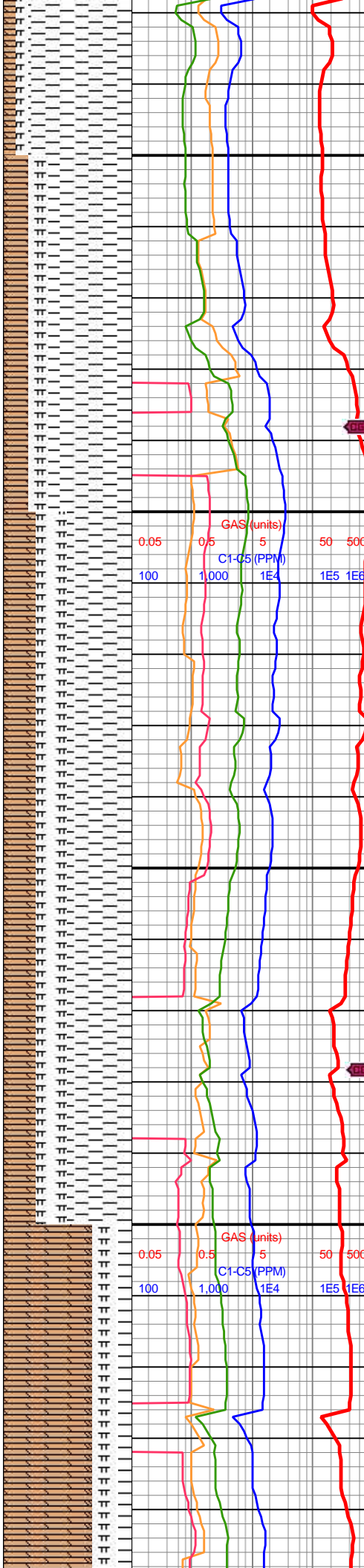
**rhs N100
 Niobrara
 7174'MD /
 7077'TVD**

MD: 7,253'
 INC: 23.08°
 AZM: 11.39°
 TVD: 7,151.96'
 VS: -882.25'

MW IN: 9.7+
 VIS IN: 51
 MW OUT: 9.8
 VIS OUT: 49

**rhs N300
 Niobrara
 7289'MD /
 7185'TVD**

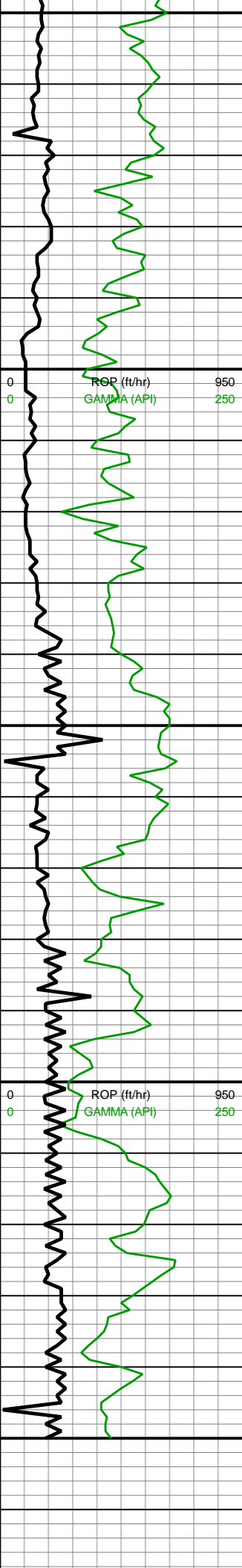
MD: 7,343'
 INC: 32.44°
 AZM: 0.39°
 TVD: 7,231.56'
 VS: -810.01'



7100-7200 SH (70%): gy-dk gy, sme gyshbn, sb plty-sb blkly, plty ip, med hd frm, slty tex, wxy ip, non-sl calc; CHK (20%): med gy, rr offwht, sb plty - sb blkly, chky tex, frm-fri, mod calc; MRLST (10%) med-dk gy, frm-hd, sb blkly-plty, rthy tex, sm ip, occ intbdd chk, mod calc

7200-7300 SH (50%): med-dk gy, sme gyshbn, sb plty-sb blkly, plty ip, med hd frm, slty tex, wxy ip, non-sl calc; CHK (25%): med gy, rr offwht, sb blkly-sb tab, chky tex, frm-fri, mod calc; MRLST (25%) med-dk gy, frm-hd, sb blkly-plty, rthy tex, sm ip, occ intbdd chk, mod calc





VS: -840.63

MW IN: 9.8
VIS IN: 50
MW OUT: 9.75
VIS OUT: 49

↔

rhs N500
Niobrara
7369'MD /
7253'TVD

MD: 7,432'
INC: 40.9°
AZM: 4.82°
TVD: 7302.90'
VS: -787.57'

↔

rhs N600
Niobrara
7452'MD /
7318'TVD

↔

rhs N700
Niobrara C
Bench
7460'MD /
7324'TVD

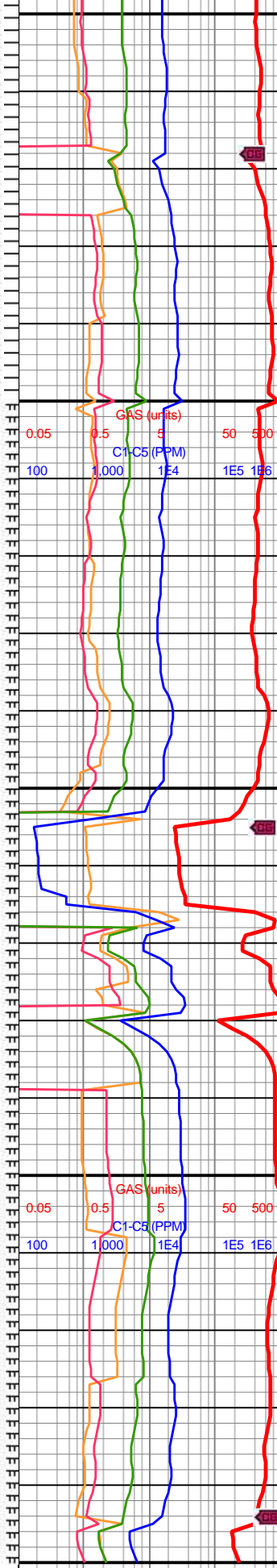
MW IN: 9.8
VIS IN: 50
MW OUT: 9.8
VIS OUT: 49

MD: 7,521'
INC: 49.26°
AZM: 3.76°
TVD: 7365.69'
VS: -724.70'

↔

rhs N750
7541'MD /
7378'TVD

Continued on
Horizontal @
7500' MD



7300-7400 CHK (70%): med gy, rr offwht, sb blk- sb tab, chky tex, frm-fri, mod calc; MRLST (20%) med-dk gy, frm-hd, sb blk-pty, rthy tex, sm ip, occ intbdd chk, mod calc; SH (10%): med-dk gy, sme gyshbn, sb pty-sb blk, pty ip, med hd-frm, slty tex, wxy ip, non-sl calc;

7400-7500 CHK (65%): med gy-occ dk gy, rr offwht incl, frm - brit, mod fis, sb pty - pty, sm arg-sl grty tex, rr bent; MRLST (35%): dk gy mot wi brn mrlly incl ip, sb pty - sb blk, tr pty, frm- sl brit, mod fis, sm arg tex





L7570

