

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Gonsoulin State LD11-76HN

Location SESW SEC2, T9N, R58W, 6PM

State COLORADO

County WELD

Country USA

Rig Number H&P 326

API Number 05-123-39836

Field WILDCAT

Region DJ BASIN

Drilling Completed 1/20/2015

Spud Date 1/14/2015

Surface Coordinates 465' FSL, 1604' FWL
40.77456/-103.83521

Bottom Hole Coordinates (PROJ)
330' FFSLL, 1980' FFWLL

Ground Elevation 4739'

K.B. Elevation 4769'

Logged Interval 1226' To 4885'

Total Depth 10,851

Formation NIOBRARA A-CHALK

Type of Drilling Fluid LSND

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- X INTERCRYSTALLINE
- ◇ INTEROOLITIC

MOLDIC

ORGANIC

PINPOINT

VUGGY

Engineering

BIT

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

CORE - LOST

CORE - RECOVERED

DST INTERVAL

FAULT

FORMATION TOP

GAS SHOW

MINDEPTH 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

Zone Color Coding

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

Accessories

Fossils

- ALGAE
- AMPHIPORA

F FOSSIL

GASTROPOD

INOCERAMUS

OOLITE

ANHYDRITIC

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

TUFFACEOUS

Stringer

ANHYDRITE STRINGER

BELEMNITE
BIOCLASTIC
BRACHIOPOD
BRYOZOA
CEPHALPOD
CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA

OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

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

KAOLIN
MARLSTONE
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY

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

Rock Types

UNKNOWN
ANHYDRITE
BENTONITE
BRECCIA
CEMENT
CHALK
CHERT
CLAY CHOKE SAND
CLAYSTONE

COAL
CONGLOMERATE
DOLOMITE
GRANITE
GYPSUM
IGNEOUS
LIMESTONE
SIDERITE or LIMONITE
MARLSTONE

METAMORPHIC
NO SAMPLE
SALT
SALT- PEPPER SAND
SANDSTONE
SHALE
SHALE COLORED
SHALE GRAY
SHALY SANDSTONE

SHALY SILTSTONE
SILTSTONE
SILTY SHALE
TILL
TUFF
WELDED TUFF

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

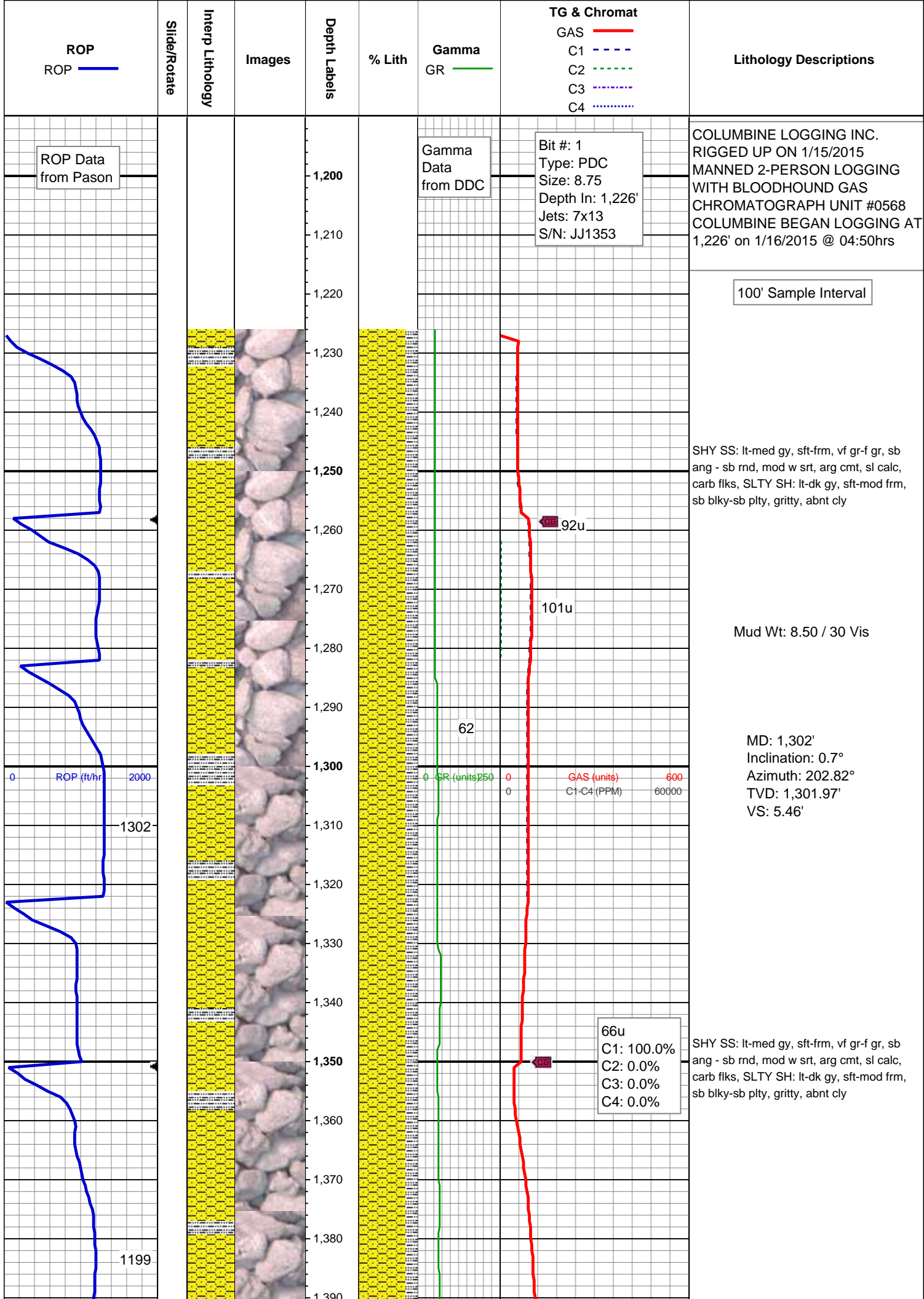
Name RENEE CLACKLER

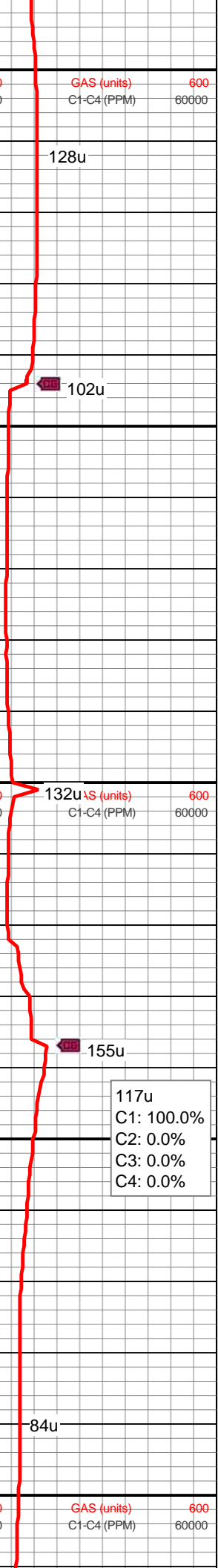
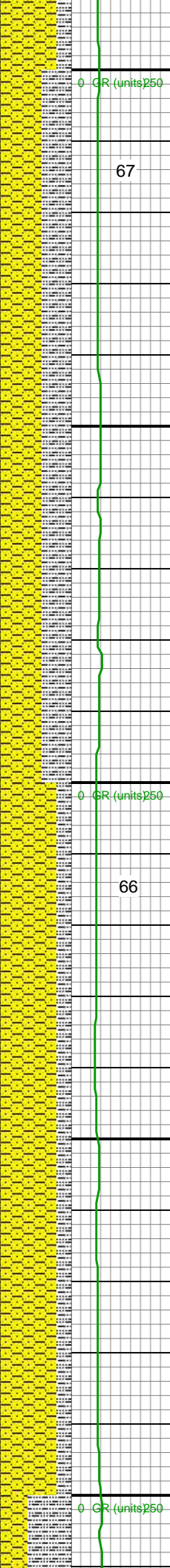
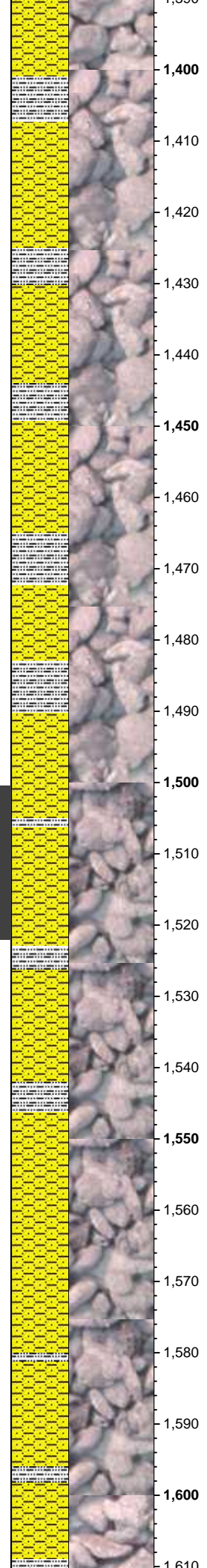
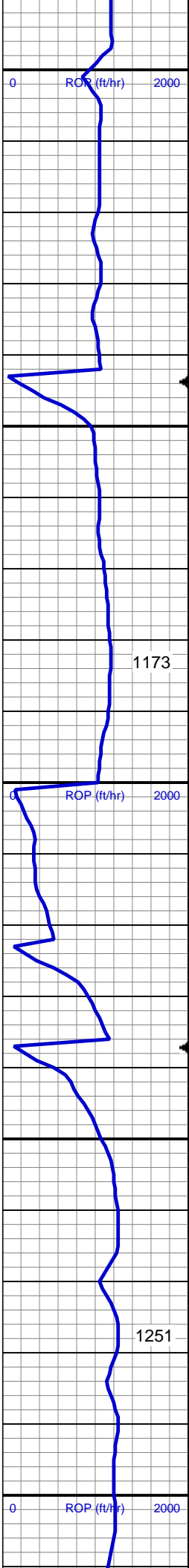
Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

COLUMBINE LOGGING MATT HOPKINS
IAN CONTRERAS





MD: 1,395'
Inclination: 0.44°
Azimuth: 174.16°
TVD: 1,394.97'
VS: 6.32'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 1,489'
Inclination: 0.79°
Azimuth: 153.07°
TVD: 1,488.96'
VS: 7.28'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

Mud Wt: 8.50 / 30 Vis

MD: 1,582'
Inclination: 3.25°
Azimuth: 139.53°
TVD: 1,581.9'
VS: 10.04'

0 ROP (ft/hr) 2000

0 ROP (ft/hr) 2000

0 ROP (ft/hr) 2000

0 GR (units) 250

0 GAS (units) 600
C1-C4 (PPM) 60000

0 GR (units) 250

0 GAS (units) 600
C1-C4 (PPM) 60000

1173

67

128u

102u

66

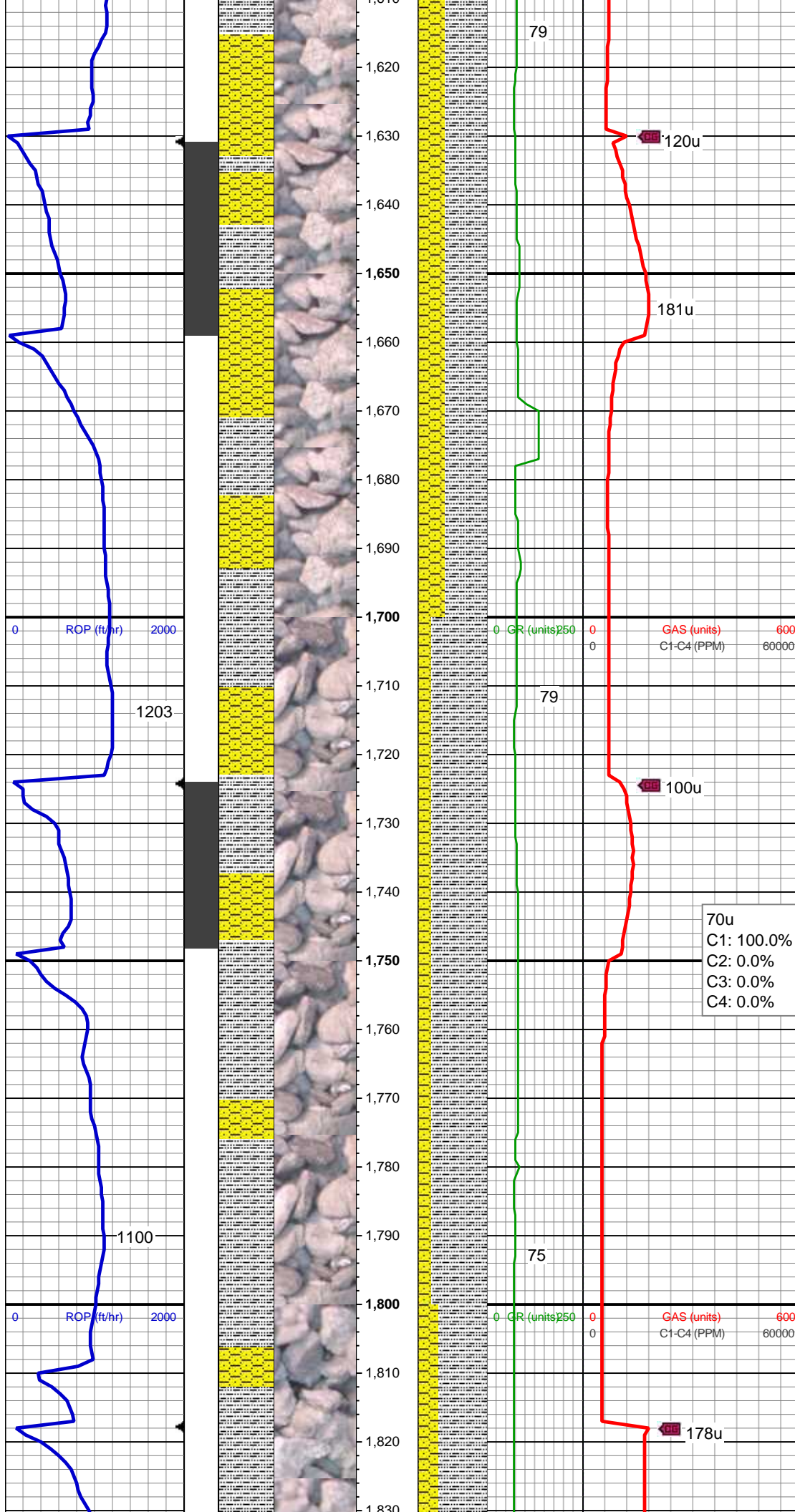
132u

155u

117u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

84u

1251

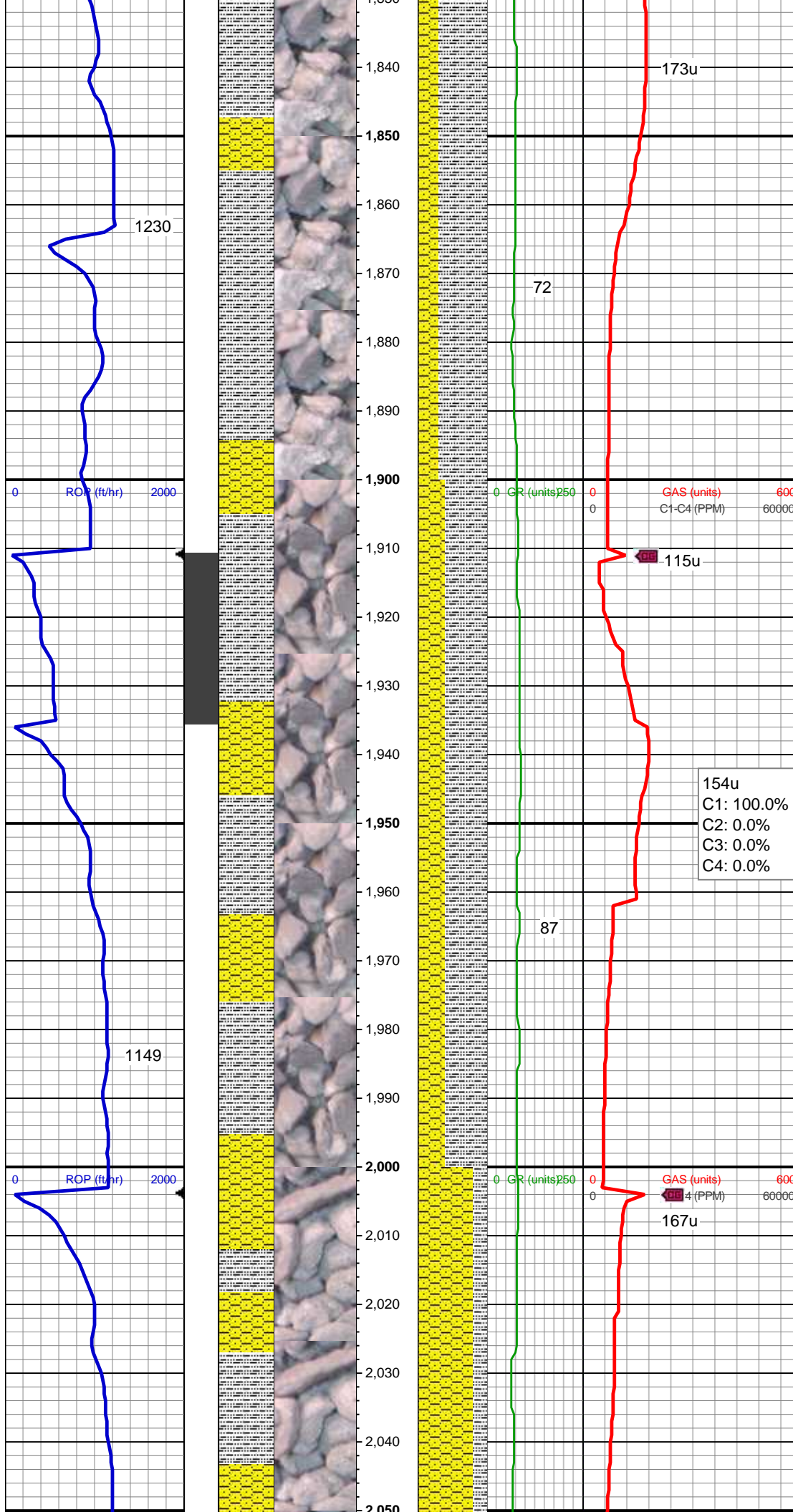


SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, abnt cly, SHY SS: lt-med gy,
sft-frm, vf gr-f gr, sb ang - sb rnd, mod w
srt, arg cmt, sl calc, carb flks

MD: 1,676'
Inclination: 7.47°
Azimuth: 99.81°
TVD: 1,675.49'
VS: 13.84'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, abnt cly, SHY SS: lt-med gy,
sft-frm, vf gr-f gr, sb ang - sb rnd, mod w
srt, arg cmt, sl calc, carb flks

MD: 1,768'
Inclination: 9.67°
Azimuth: 77.66°
TVD: 1,766.48'
VS: 14.5'



SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, abnt cly, SHY SS: lt-med gy,
sft-frm, vf gr-f gr, sb ang - sb rnd, mod w
srt, arg cmt, sl calc, carb flks

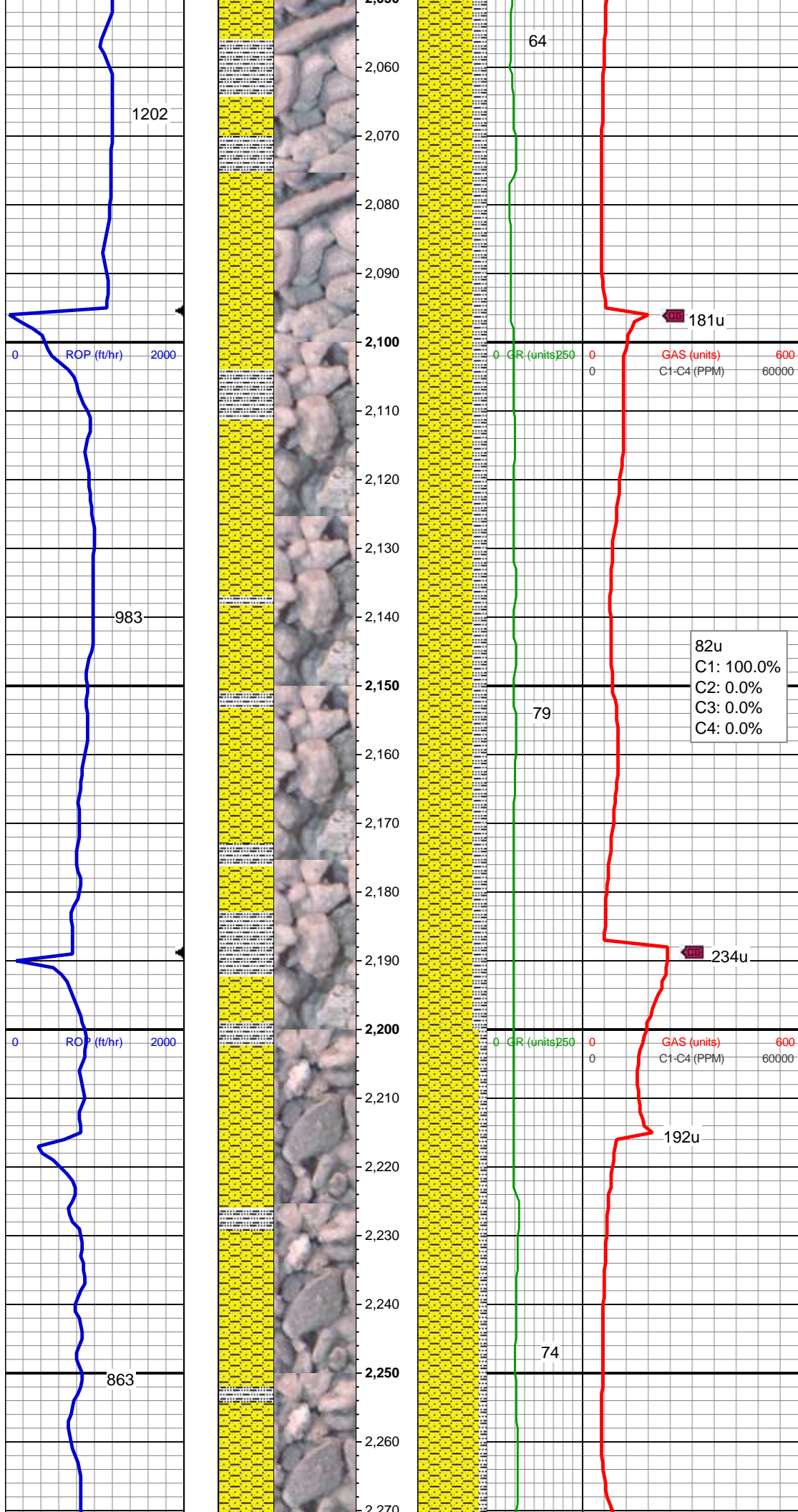
MD: 1,862'
Inclination: 7.56°
Azimuth: 76.78°
TVD: 1,859.42'
VS: 12.73'

Mud Wt: 8.60 / 29 Vis

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, abnt cly, SHY SS: lt-med gy,
sft-frm, vf gr-f gr, sb ang - sb rnd, mod w
srt, arg cmt, sl calc, carb flks

MD: 1,954'
Inclination: 11.78°
Azimuth: 91.19°
TVD: 1,950.1'
VS: 13.02'

MD: 2,046'
Inclination: 11.61°
Azimuth: 78.54°
TVD: 2,040.21'



VS: 13.15'
SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb
ang - sb rnd, mod w srt, arg cmt, sl calc,
carb flks, SLTY SH: lt-dk gy, sft-mod frm,
sb blk-y-sb plty, gritty, abnt cly

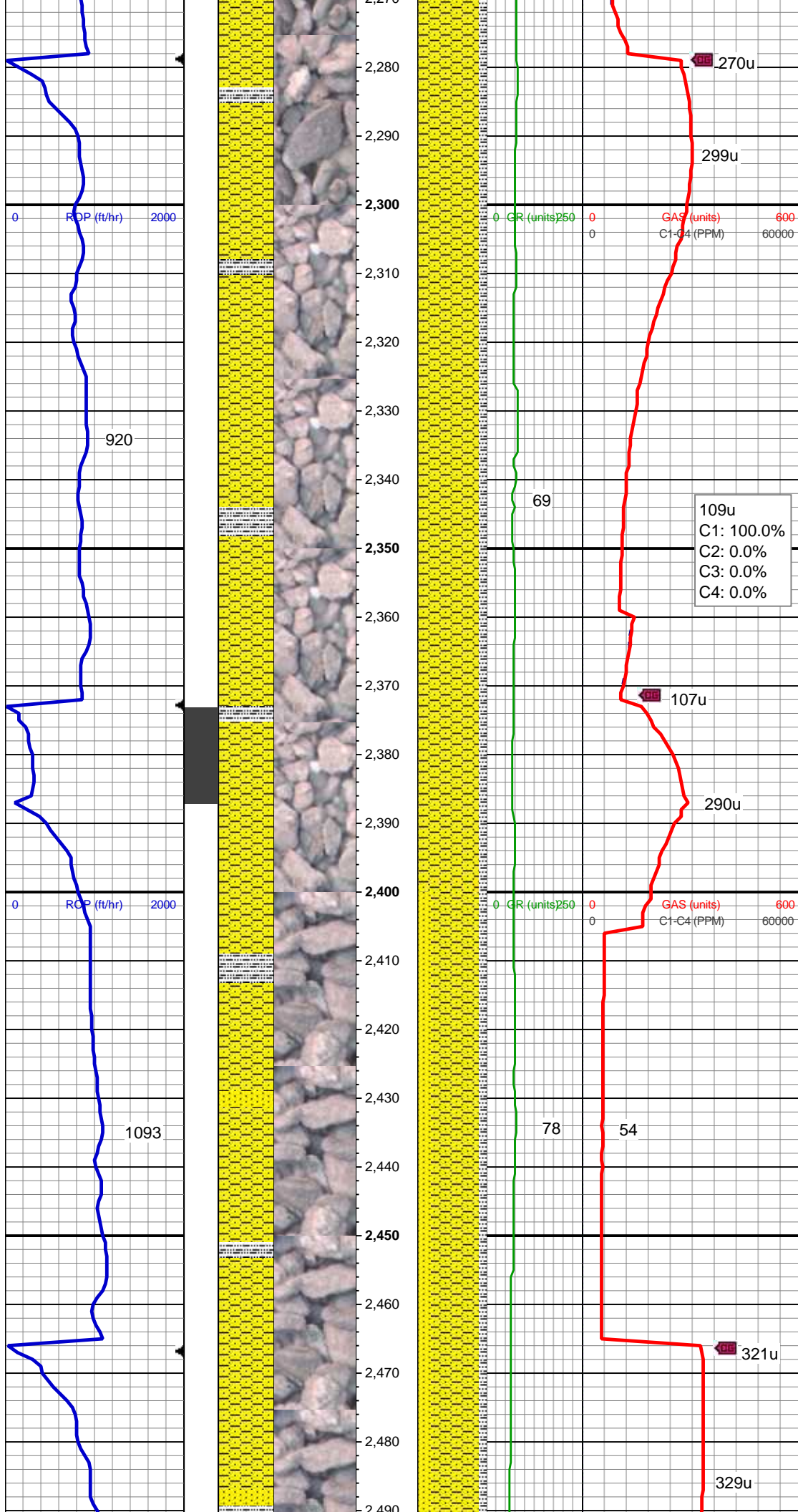
MD: 2,139'
Inclination: 10.82°
Azimuth: 78.54°
TVD: 2,131.43'
VS: 11.28'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb
ang - sb rnd, mod w srt, arg cmt, sl calc,
carb flks, SLTY SH: lt-dk gy, sft-mod frm,
sb blk-y-sb plty, gritty, abnt cly

Mud Wt: 8.55 / 29 Vis

MD: 2,232'
Inclination: 10.99°
Azimuth: 79.24°
TVD: 2,222.75'
VS: 9.56'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb
ang - sb rnd, mod w srt, arg cmt, sl calc,
carb flks, SLTY SH: lt-dk gy, sft-mod frm,
sb blk-y-sb plty, gritty, abnt cly

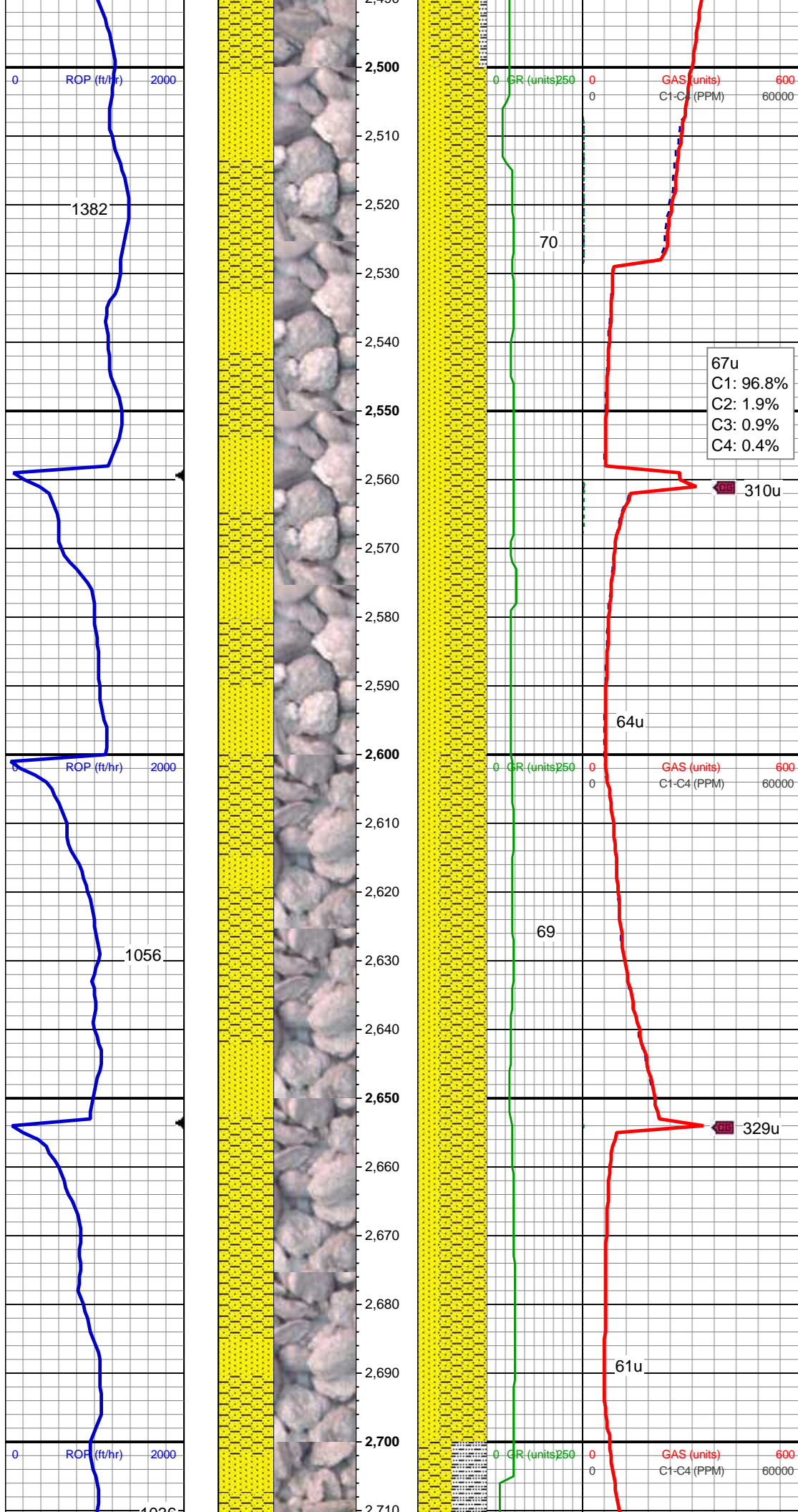


MD: 2,325'
Inclination: 10.73°
Azimuth: 79.07°
TVD: 2,314.08'
VS: 7.93'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly

MD: 2,417'
Inclination: 10.11°
Azimuth: 93.83°
TVD: 2,404.58'
VS: 8.44'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, scat glauc grns, carb flks, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty, abnt cly, SS: med - lt gy, s&P ip, uncons, speckl wi glau, f gr, hd brit clus, sb rnd - sb ang, calc cmt



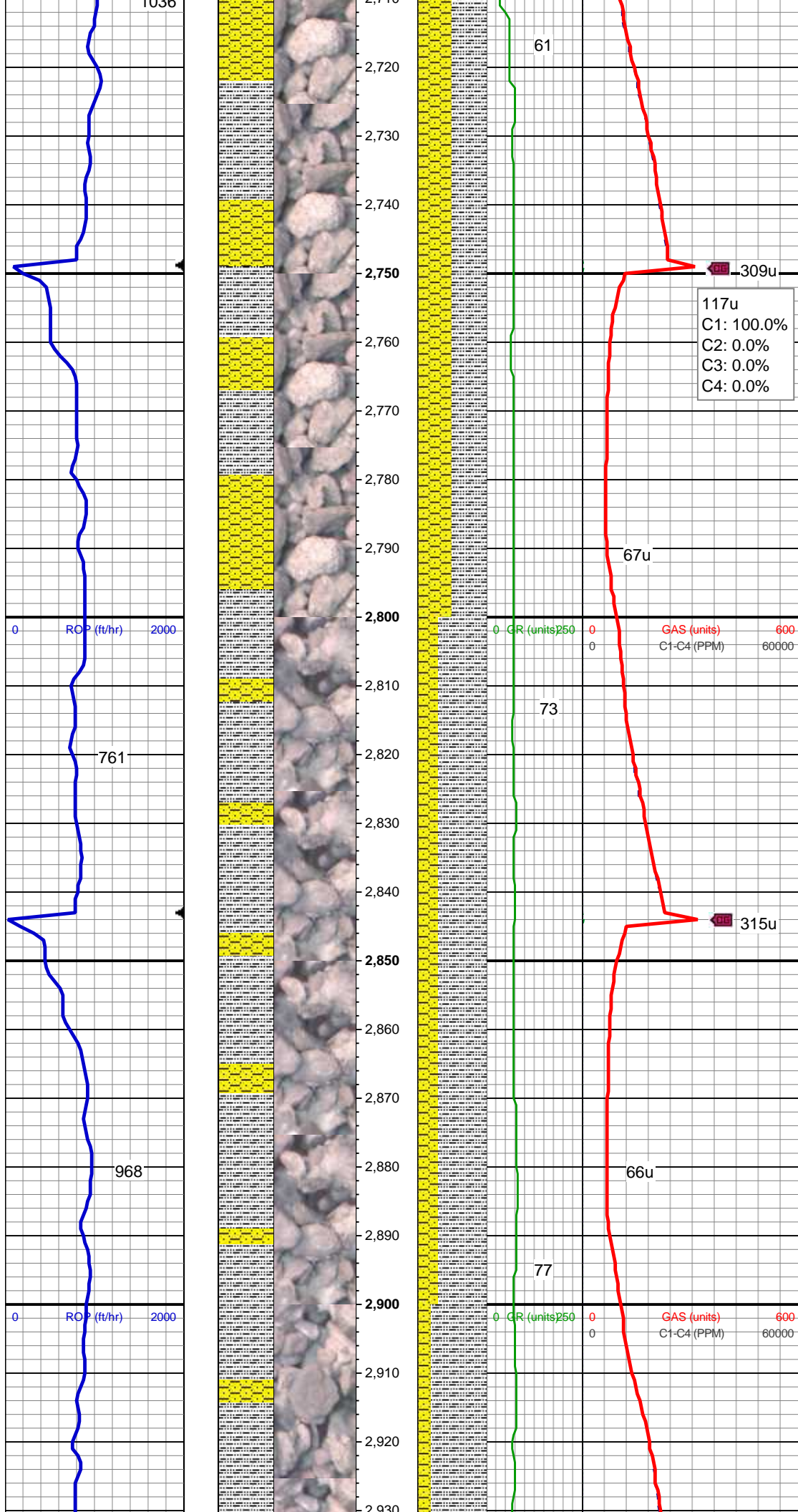
MD: 2,509'
Inclination: 10.64°
Azimuth: 91.19°
TVD: 2,495.08'
VS: 10.74'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, scat glauc grns, carb flks, SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, sb rnd - sb ang, calc cmt, tr slty sh

MD: 2,603'
Inclination: 10.55°
Azimuth: 91.02°
TVD: 2,587.48'
VS: 12.73'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, scat glauc grns, carb flks, SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, sb rnd - sb ang, calc cmt, tr slty sh

MD: 2,698'
Inclination: 10.38°
Azimuth: 88.91°
TVD: 2,680.9'
VS: 14.38'



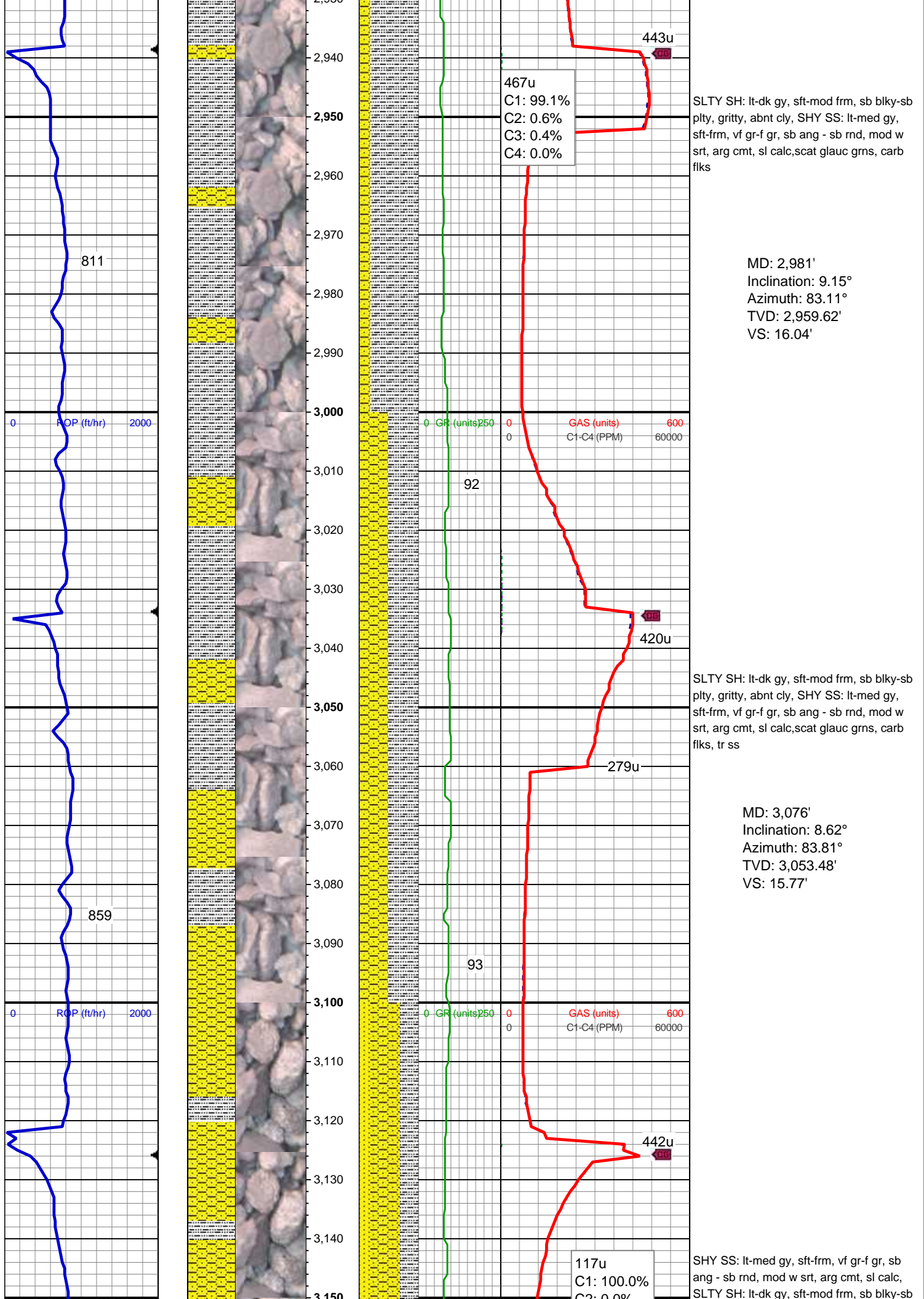
SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, abnt cly, SHY SS: lt-med gy,
sft-frm, vf gr-f gr, sb ang - sb rnd, mod w
srt, arg cmt, sl calc, scat glauc grns, carb
flks, tr ss

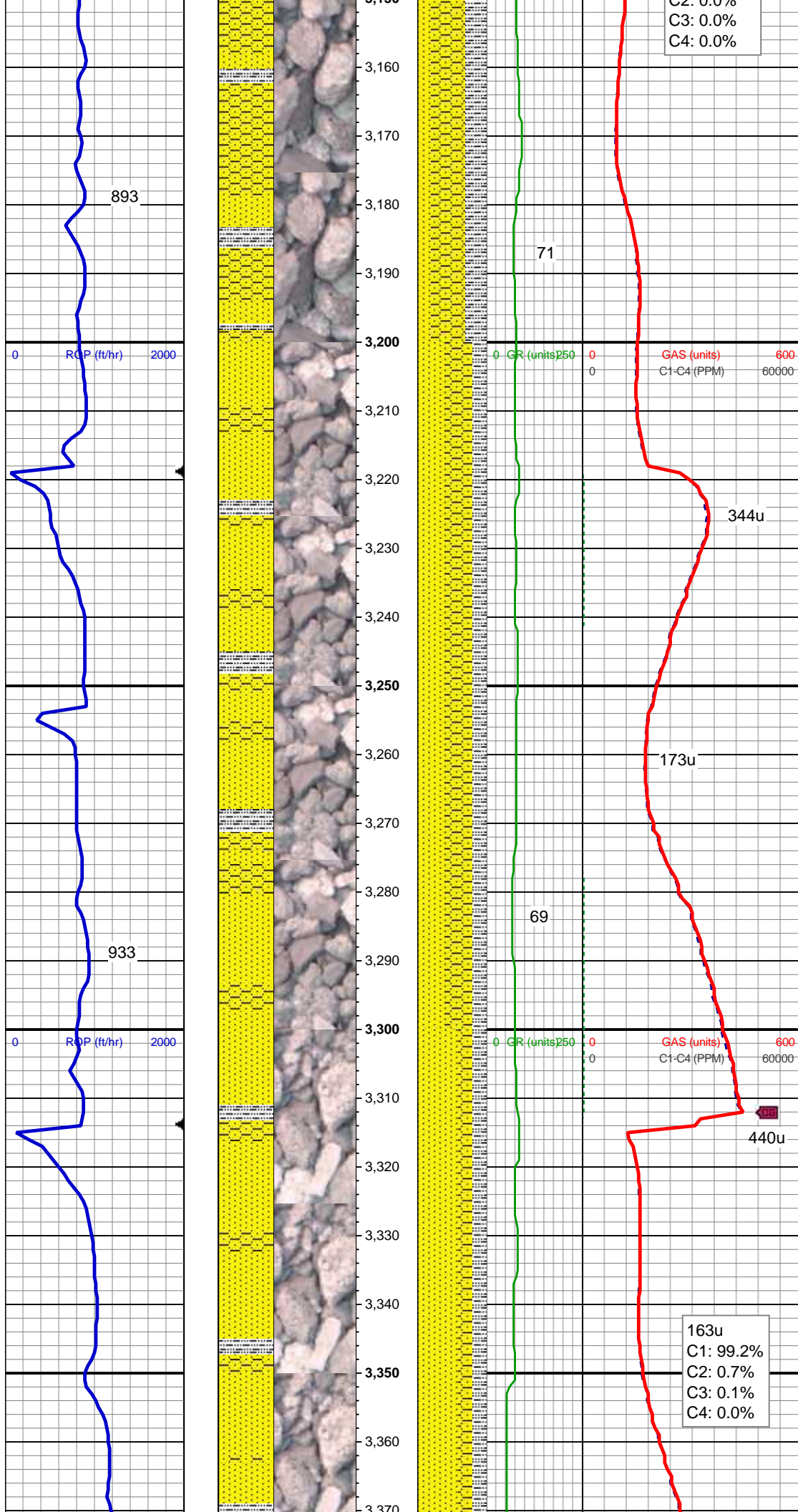
MD: 2,792'
Inclination: 10.29°
Azimuth: 86.98°
TVD: 2,773.37'
VS: 15.39'

Mud Wt: 8.60 / 27 Vis

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, abnt cly, SHY SS: lt-med gy,
sft-frm, vf gr-f gr, sb ang - sb rnd, mod w
srt, arg cmt, sl calc, scat glauc grns, carb
flks

MD: 2,887'
Inclination: 9.85°
Azimuth: 86.1°
TVD: 2,866.91'
VS: 15.99'





plty, gritty, SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt

MD: 3,171'
Inclination: 8.09°
Azimuth: 81.88°
TVD: 3,147.47'
VS: 15.38'

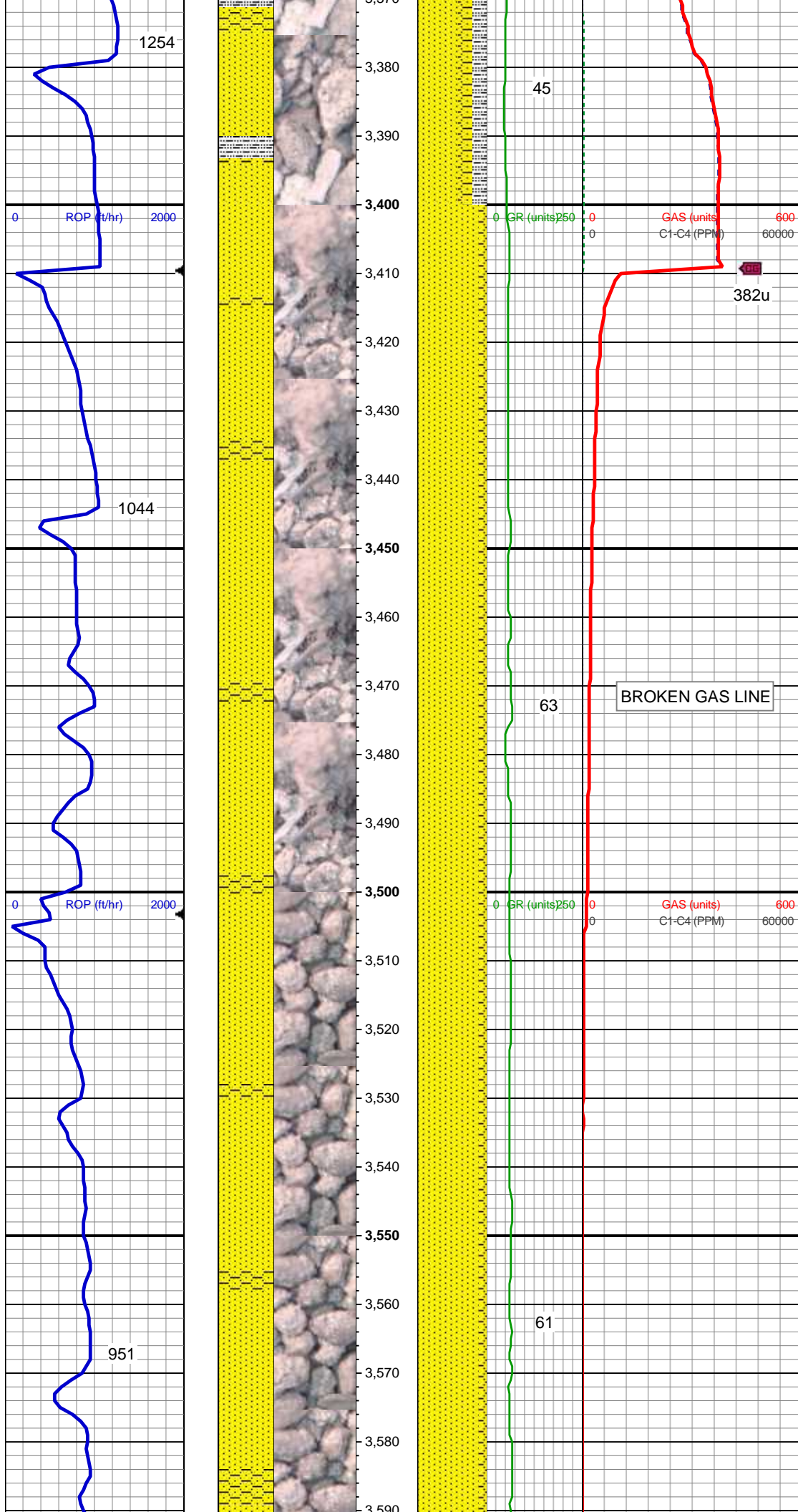
Mud Wt: 8.50 / 30 Vis

SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt, SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty

MD: 3,265'
Inclination: 8.09°
Azimuth: 82.58°
TVD: 3,240.53'
VS: 14.86'

SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt, SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb plty, gritty

MD: 3,360'
Inclination: 8.27°
Azimuth: 85.04°
TVD: 3,334.57'
VS: 14.7'

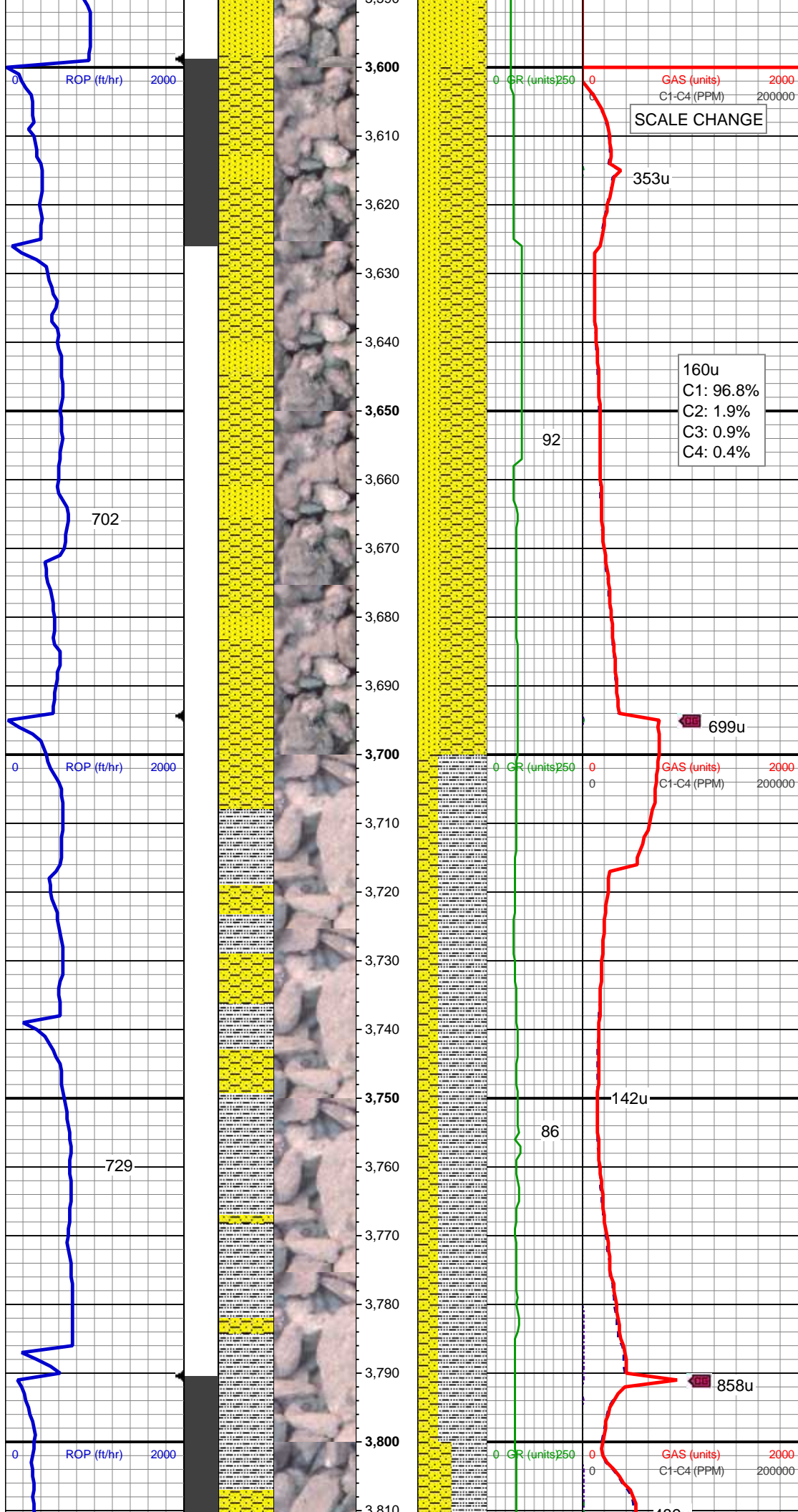


SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt, SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, tr slty sh

MD: 3,455'
Inclination: 8.27°
Azimuth: 84.52°
TVD: 3,428.58'
VS: 14.77'

MD: 3,550'
Inclination: 8.62°
Azimuth: 82.23°
TVD: 3,522.55'
VS: 14.49'

SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt, SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, tr slty sh



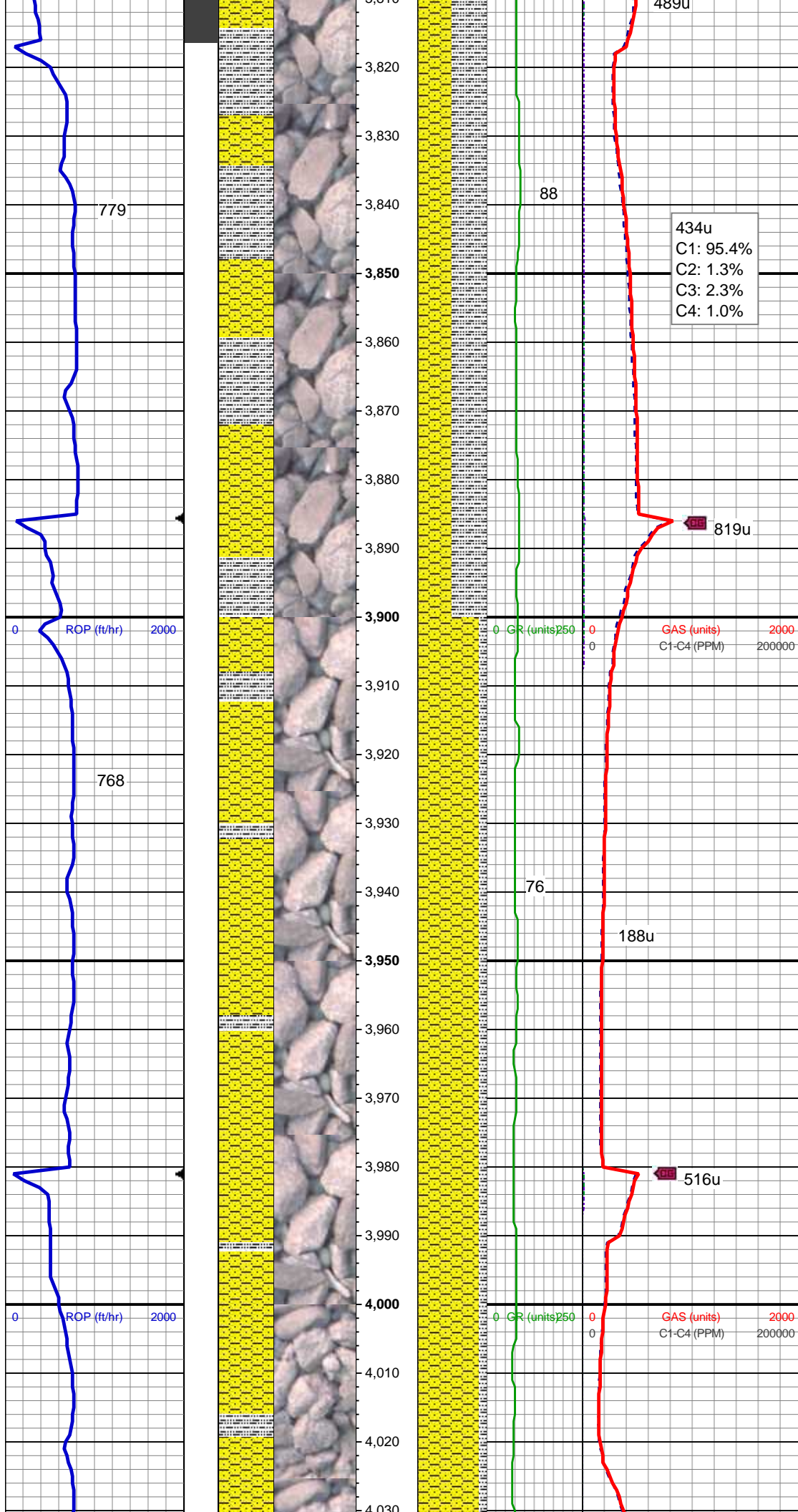
Mud Wt: 8.55 / 29 Vis

MD: 3,645'
Inclination: 6.07°
Azimuth: 61.84°
TVD: 3,616.78'
VS: 12.28'

SHY SS: lt-med gy, sft-frn, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, SS: med - lt gy, s&P ip, uncon, speckl wi glau, f gr, hd brit clus, ang - sb ang, calc cmt

MD: 3,739'
Inclination: 5.98°
Azimuth: 67.46°
TVD: 3,710.26'
VS: 8.93'

SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb pty, gritty, SHY SS: lt-med gy, sft-frn, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc



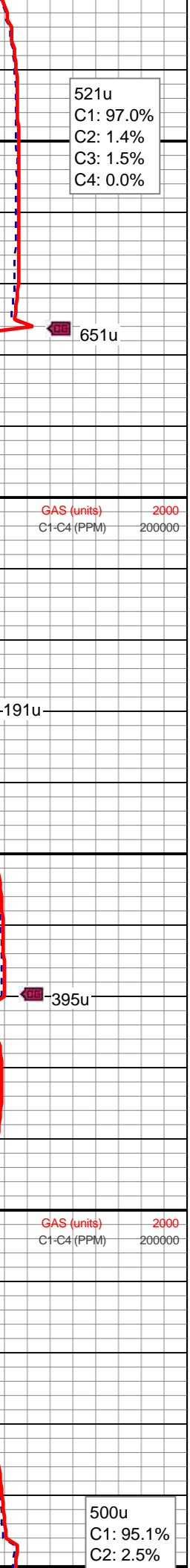
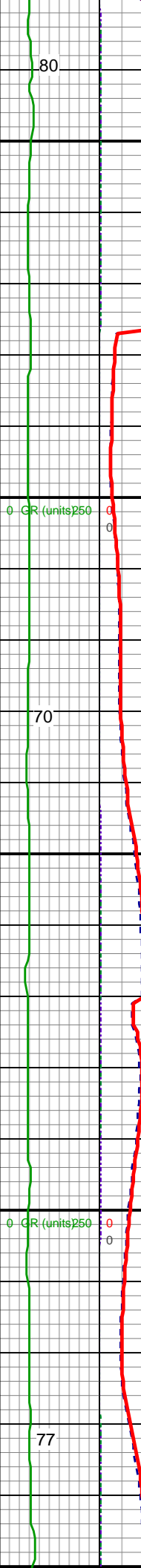
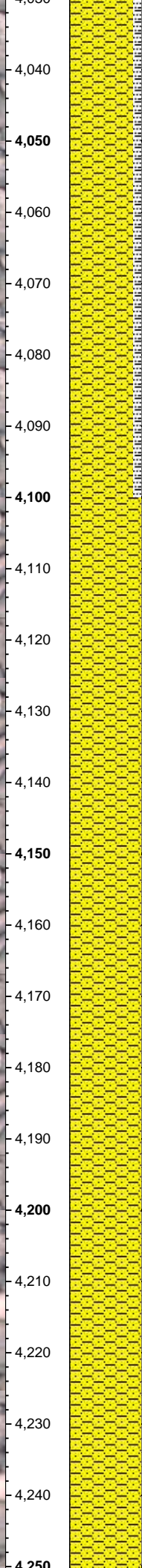
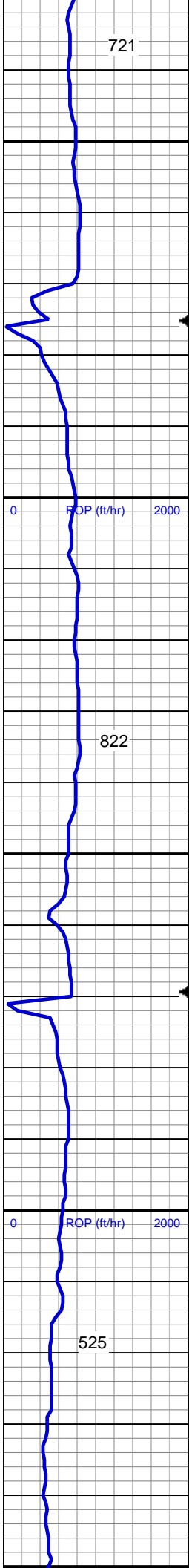
MD: 3,834'
Inclination: 2.9°
Azimuth: 78.89°
TVD: 3,804.97'
VS: 7.25'

SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty, SHY SS: lt-med gy, sft-frm, vf
gr-f gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc

MD: 3,928'
Inclination: 3.34°
Azimuth: 85.39°
TVD: 3,898.83'
VS: 7.06'

SHY SS: lt-med gy, sft-frm, vf gr-f gr, sb
ang - sb rnd, mod w srt, arg cmt, sl calc,
SLTY SH: lt-dk gy, sft-mod frm, sb blkly-sb
plty, gritty

MD: 4,022'
Inclination: 3.34°
Azimuth: 84.16°
TVD: 3,992.67'
VS: 7.08'



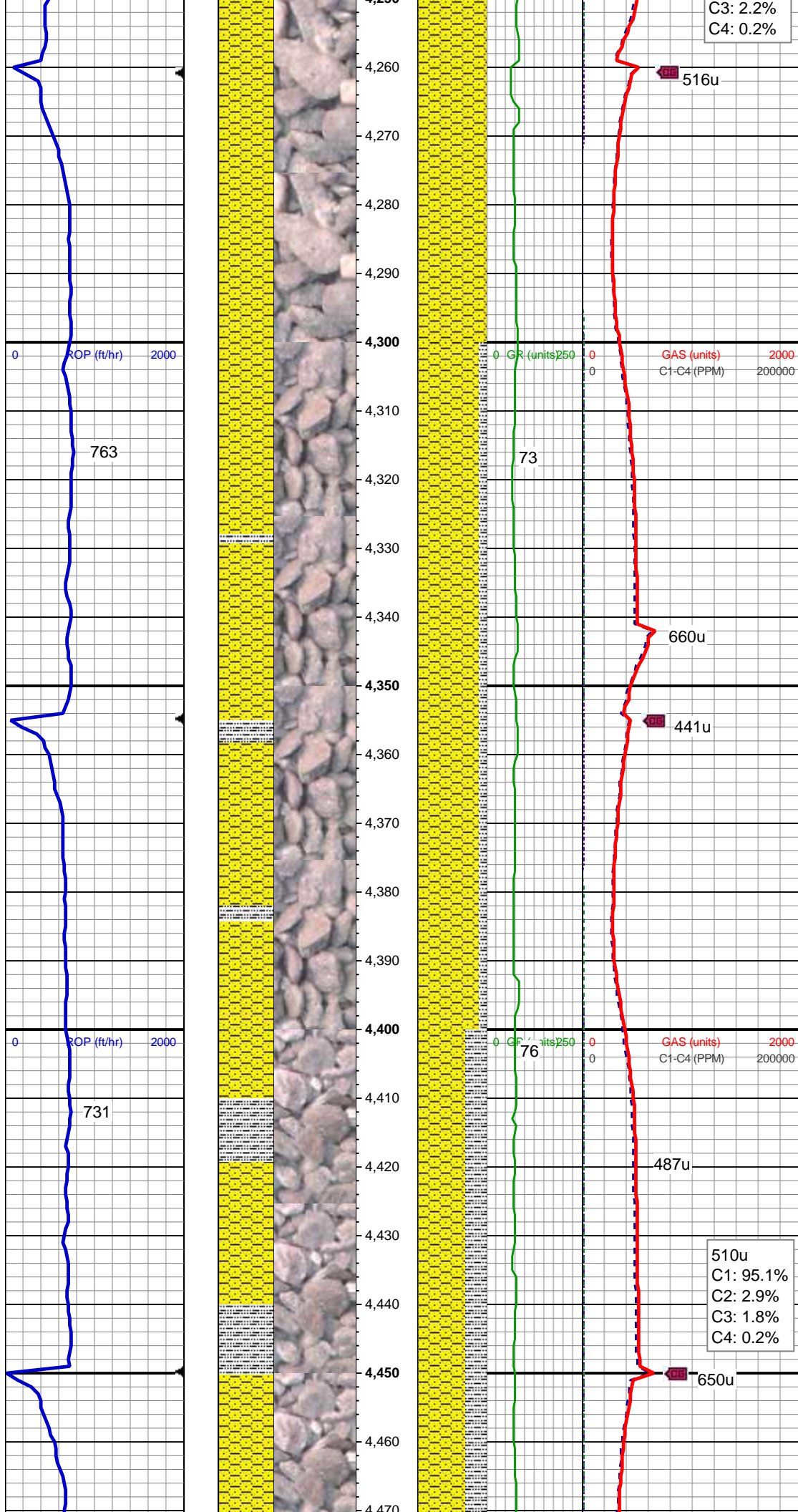
SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb pty, gritty

MD: 4,117'
Inclination: 2.9°
Azimuth: 80.65°
TVD: 4,087.53'
VS: 6.91'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, tr slty sh

MD: 4,212'
Inclination: 2.64°
Azimuth: 89.61°
TVD: 4,182.42'
VS: 6.94'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb



ang - sb rnd, mod w srt, arg cmt, sl calc,
tr slty sh

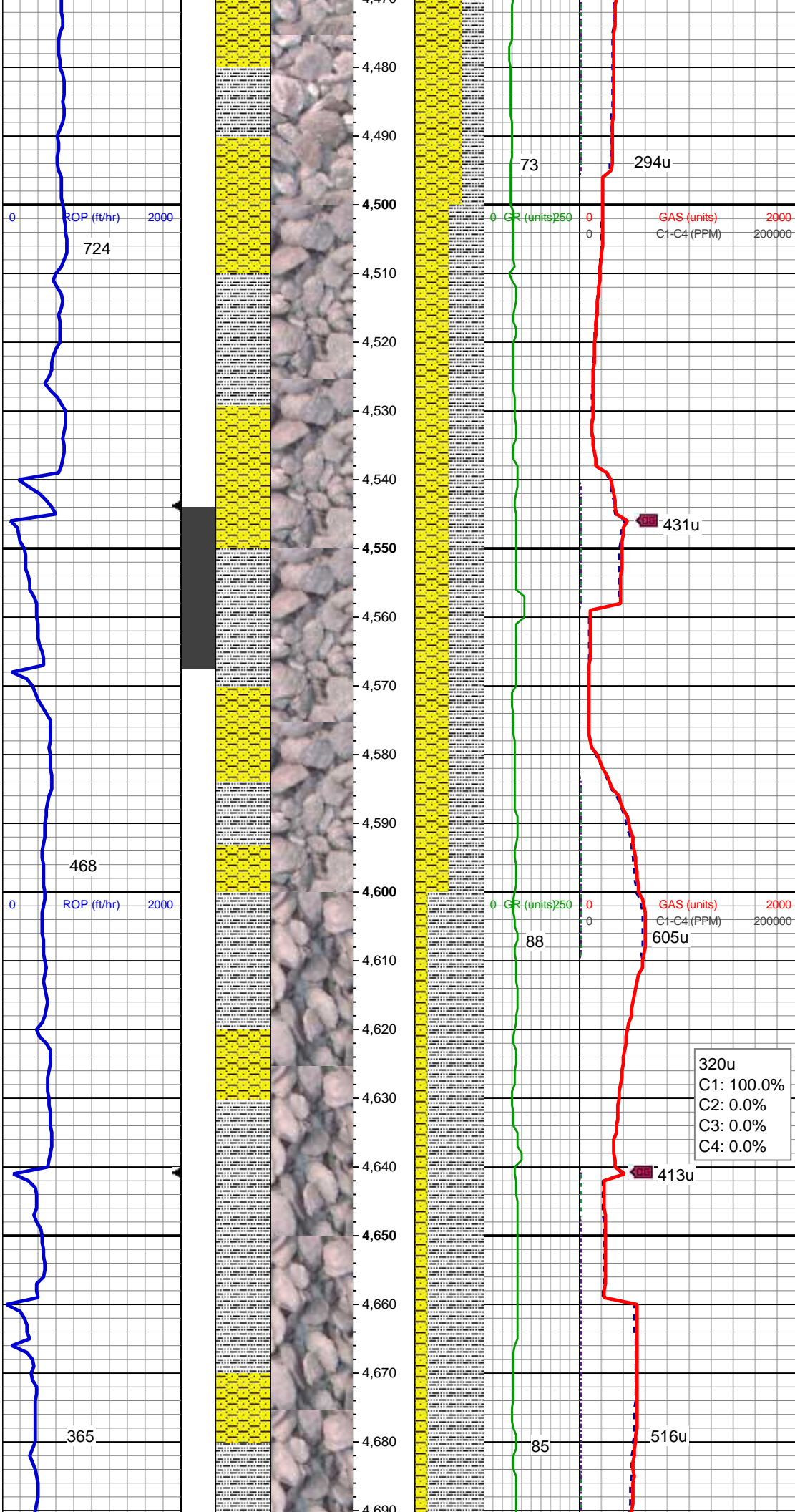
MD: 4,307'
Inclination: 2.02°
Azimuth: 107.72°
TVD: 4,277.34'
VS: 7.8'

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb
ang - sb rnd, mod w srt, arg cmt, sl calc,
SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb
plty, gritty

MD: 4,401'
Inclination: 1.58°
Azimuth: 107.19°
TVD: 4,371.29'
VS: 8.95'

Mud Wt: 9.6 / 33 Vis

SHY SS: lt-med gy, sft frm, vf gr-f gr, sb
ang - sb rnd, mod w srt, arg cmt, sl calc,
SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb
plty, gritty



MD: 4,496'
Inclination: 1.67°
Azimuth: 147.8°
TVD: 4,466.26'
VS: 10.69'

SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb
pity, gritty SHY SS: lt-med gy, sft-frm, vf
gr-f gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc

MD: 4,591'
Inclination: 1.76°
Azimuth: 49.71°
TVD: 4,561.23'
VS: 11.1'

SLTY SH: lt-dk gy, sft-mod frm, sb blk-y-sb
pity, gritty SHY SS: lt-med gy, sft-frm, vf
gr-f gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc

MD: 4,685'
Inclination: 1.06°
Azimuth: 54.63°
TVD: 4,655.2'

ROP (ft/hr) 2000

GR (units) 250

GAS (units) 2000

C1-C4 (PPM) 200000

480u

700u

846u

257u
C1: 90.9%
C2: 4.1%
C3: 3.6%
C4: 1.3%

TD Vertical @ 4885' MD
on 1/16/2015 @ 18:05 hrs
MDT

Wellsite Geological
Services
Provided by Columbine

MD: 4,780'
Inclination: 1.14°
Azimuth: 23.52°
TVD: 4,750.18'
VS: 8.58'

MD: 4,874'
Inclination: 0.97°
Azimuth: 6.29°
TVD: 4,844.17'
VS: 6.98'

See Corresponding Horizontal Log
Gonsoulin State
LD11-76HN(HORZ)

Wellsite Geological
Services
Provided by Columbine

[illegible]

4,510
1,020

	Logging