



# Empirica

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Trout 6

**Location** S 32 T2N R67W

**State** Colorado

**Country** USA

**API Number** 05-123-41436-00

**Region** DJ Basin

**Spud Date** 8/10/2015

**County** Weld

**Rig Number** Savannah 802

**Field** Wattenberg

**Drilling Completed** 8/16/2015

**Surface Coordinates** Lat: 40° 5' 20.64"N

Long: 104° 54' 33.18"W

**Bottom Hole Coordinates**

Lat: 40° 6' 54.54"N  
Long: 104° 54' 38.91"W

**Ground Elevation** 5,079'

**K.B. Elevation** 5,094'

**Logged Interval** 7,000' **To** 17,737' MD

**Total Depth** 17,737' MD

**Formation** Codell

**Type of Drilling Fluid** Invert

## Operator

**Company** Extraction Oil & Gas

**Address** 1888 Sherman St., Suite 200  
Denver, CO 80203

## Geologist

**Name** Jared Rouse

**Company** Extraction Oil & Gas

**Address** 1888 Sherman St., Suite 200  
Denver, CO 80203



## Other

**Equipment** ML 494

**Comments** Start: 8-10-15  
TD: 8-16-15

**Services Provided** 2-man Logging

**Logger Names** Brian Ferwerda / Mar

**Address** Empirica, LLC.  
6360 W Sam Houston  
Suite 100  
Houston, TX 77041

Zone Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

GYPSUM

SALT

CHALK

LIMESTONE

DOLOMITE

CHERT

COAL

MARLSTONE

CLAYSTONE

SHALE

SHALE GRAY

SHALE COLORED

SILTSTONE

SANDSTONE

CONGLOMERATE

BRECCIA

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

CEMENT

Accessories

F FOSSIL

GASTROPOD

OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLUTE

BRACHIOPOD

BRYOZOA

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ARGILLACEOUS

ARGILLITE GRAIN

B 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 S

ORGANIC

PINPOINT

DEAD

VUGGY

EVEN

QUESTIONABLE

SPOTTED STAINING

BIT

CASING

REVE

OVER

OIL 1

NOR

MUD PIE

GAS

Engineering

POROSITY

E EARTHY

F FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLTIC

MOLDIC

CONNECTION (RIGHT)

SIDE

CONNECTION (LEFT)

SIDE

CORE - LOST

SUN

CORE - RECOVERED

WIRE

FAULT

WIRE

k Gross  
n Pkwy N

# Symbols

FORMATION TOP

L LITHOGRAPHIC

SHOW

MX MICROXLN

## Rounding

TH MN DEPTH

A ANGULAR

MS MUDSTONE

WAL FAULT

R ROUNDED

PS PACKSTONE

SHOW

S SUBANG

WS WACKESTONE

RTURNED STRATA

P SUBRND

## Sorting

ERSE FAULT

## Textures

WALL CORE (LEFT)

M MODERATE

WALL CORE (RIGHT) BS BOUNDSTONE P POOR

C CHALKY

W WELL

RYEY

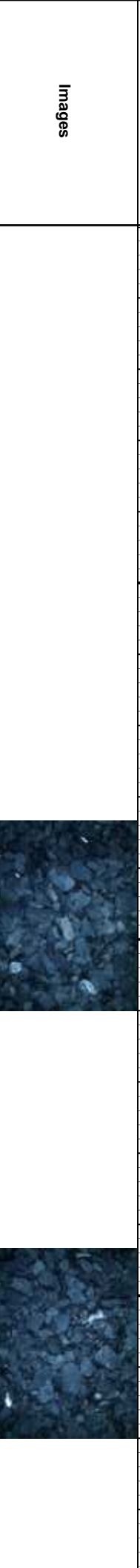
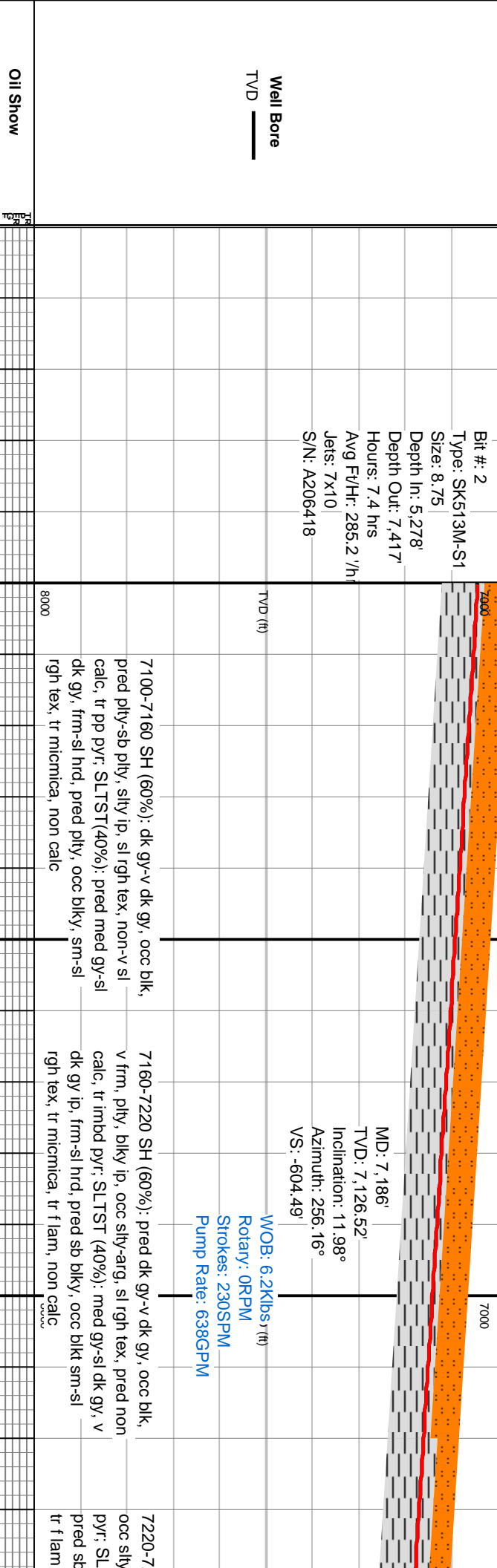
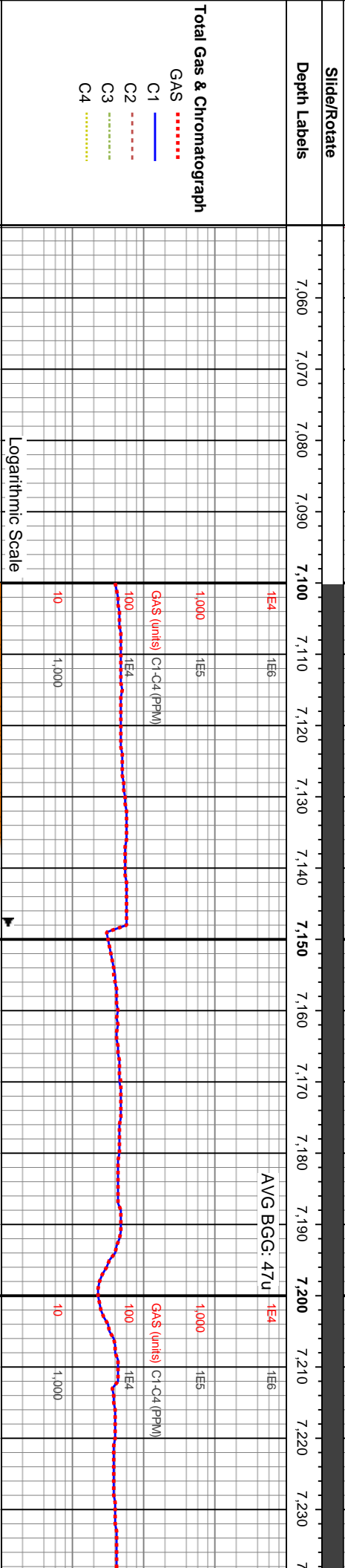
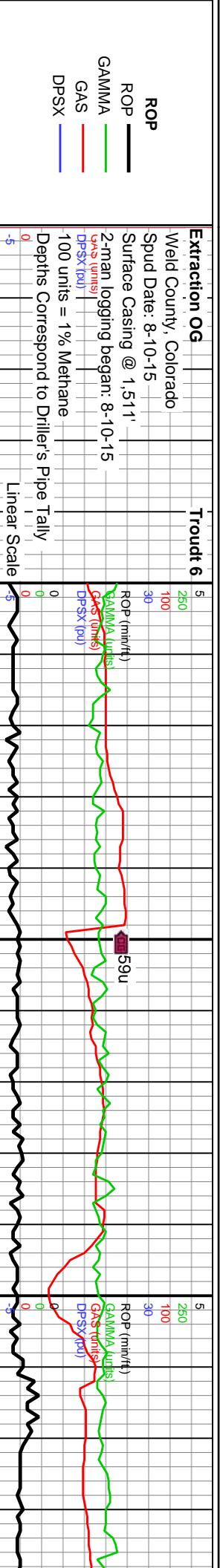
CX CRYPTOXLN

P GAS

E EARTHY

LINE TESTED - LEFT FX FINELYXLN

LINE TESTED - RT GS GRANSTONE

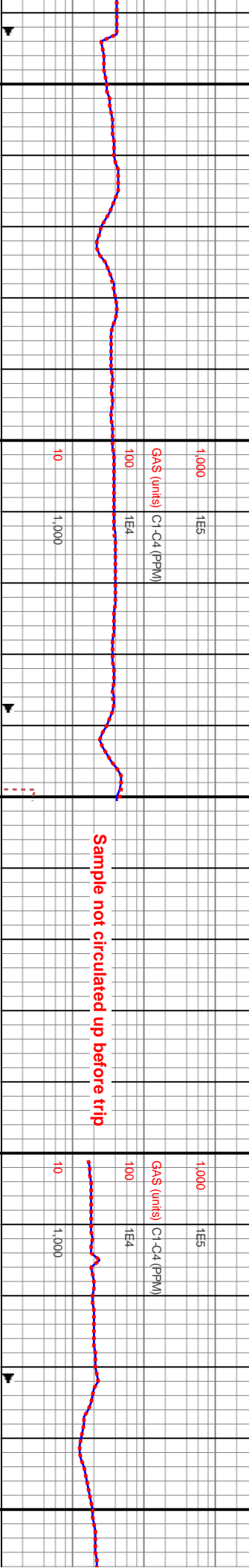


MMV: 8.6  
VIS: 46



AVG BGC: 37u

AVG BGC: 20u



MD: 7,281'  
TVD: 7,218.47'  
Inclination: 17.18°  
Azimuth: 272.46°  
VS: -605.1'

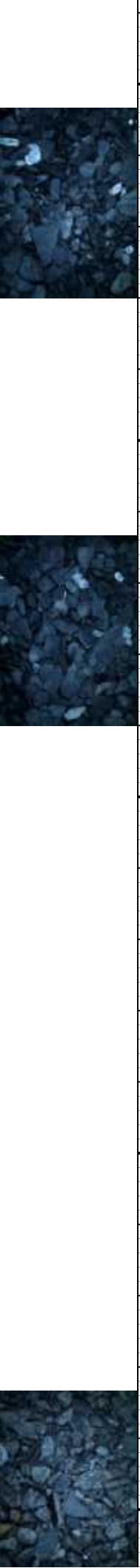
MD: 7,375'  
TVD: 7,307.97'  
Inclination: 18.85°  
Azimuth: 294.92°  
VS: -596.75'

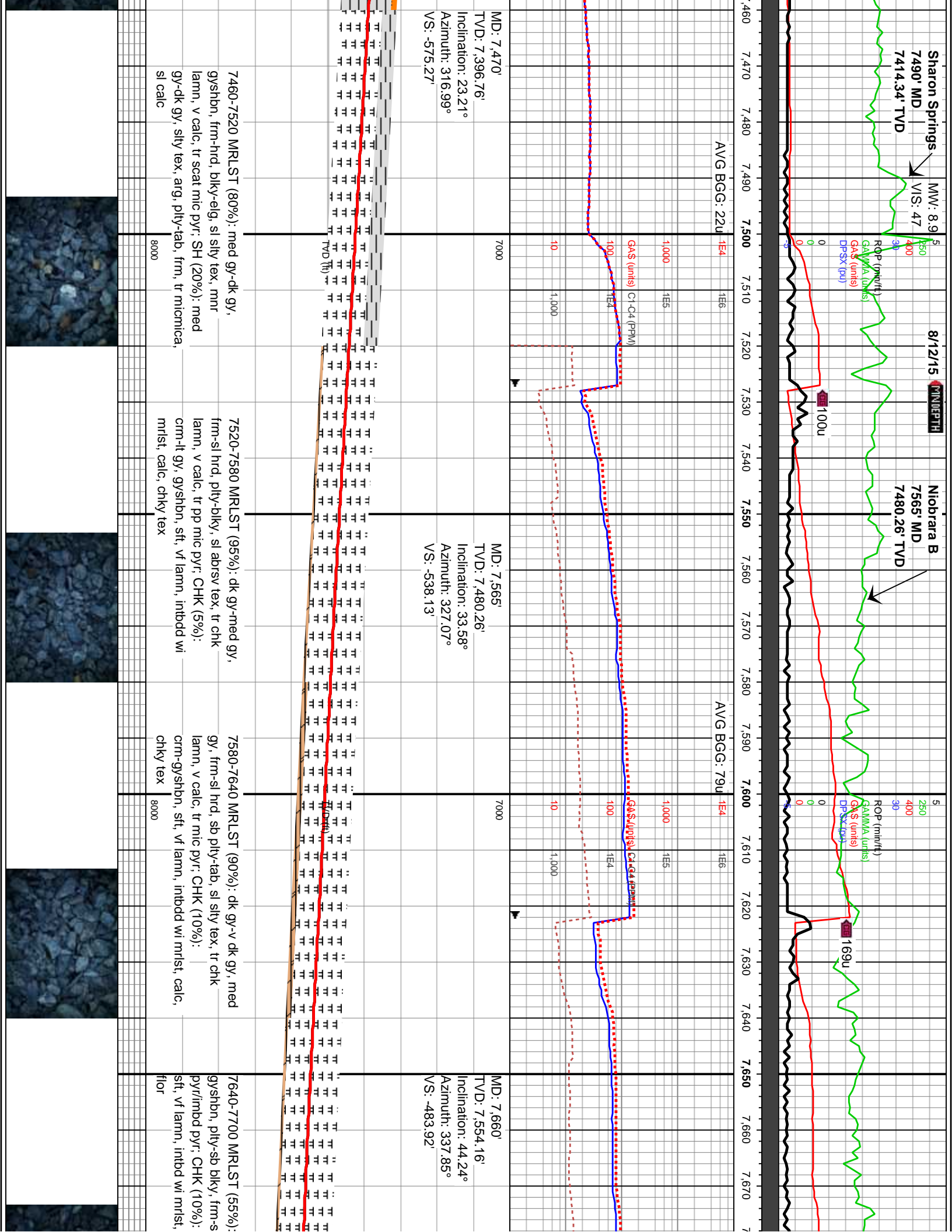
WOB: 6.4Klbs<sup>3</sup>  
Rotary: 0RPM  
Strokes: 188SPM  
Pump Rate: 521GPM

7280 SH (70%): v dk gy-blk, v frm, pily, -arg, sl rgh tex, pired non calc, tr imbd	7280-7340 SH (75%): med gy-vv dk gy, frm-sl hrd, pily-sb blk, occ blk, tr-sl micnica, non-sl calc, tr pp pyr, SLTST (25%): med gy-dk gy, gyshtn ip, frm, sme fis, sb blk, sl rgh tex, tr f lam, sl calc
7400-7460 SH (90%): med gy-dk gy, sme blk gy, frm-sl hrd, pily-sb blk, tr-scat micmica, sm-sl silty tex, tr scat mic pyr, tr-v sl calc, SLTST (10%): med gy-dk gy, frm, blk, silty-grty tex, non calc	

Sample not circulated up before trip

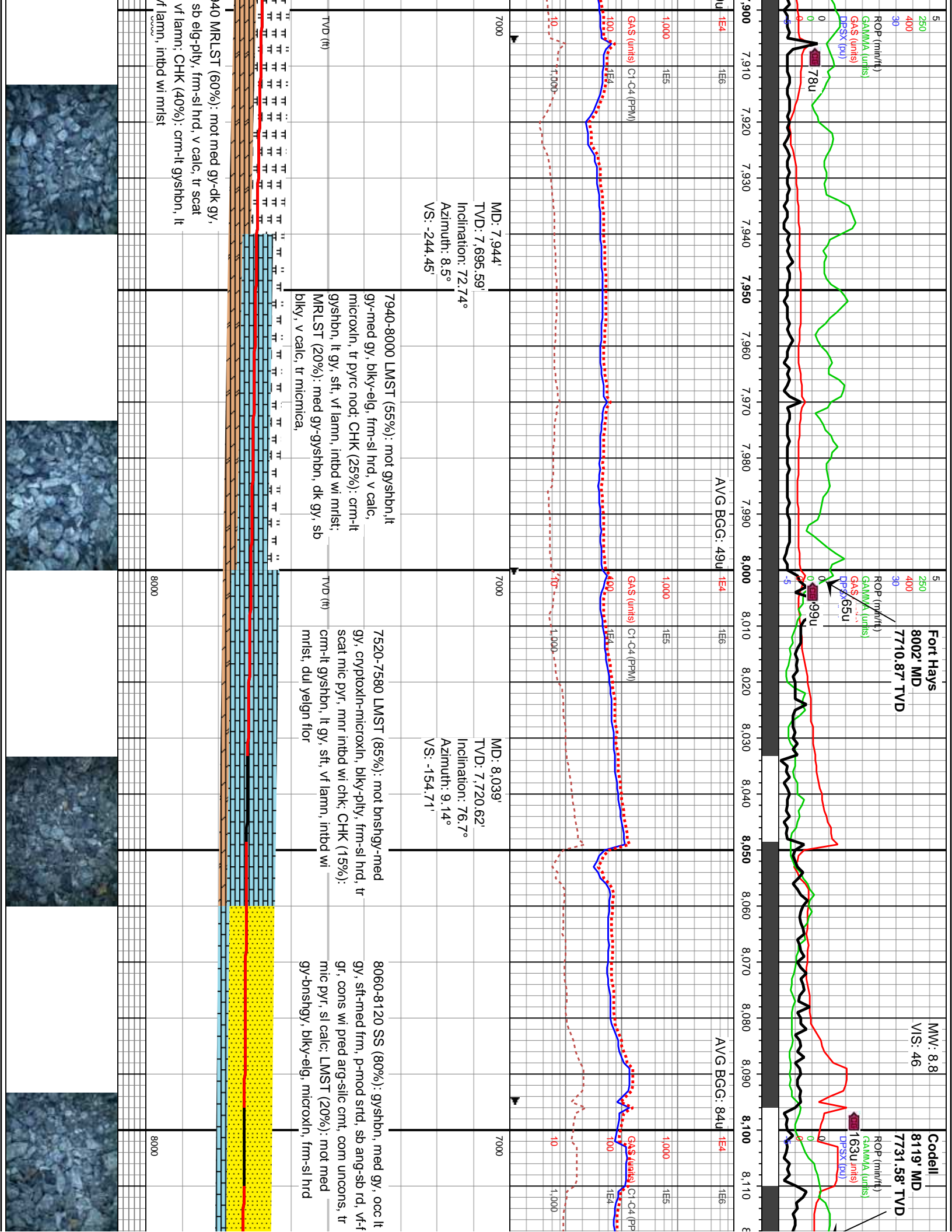
Note: TOOH for motor



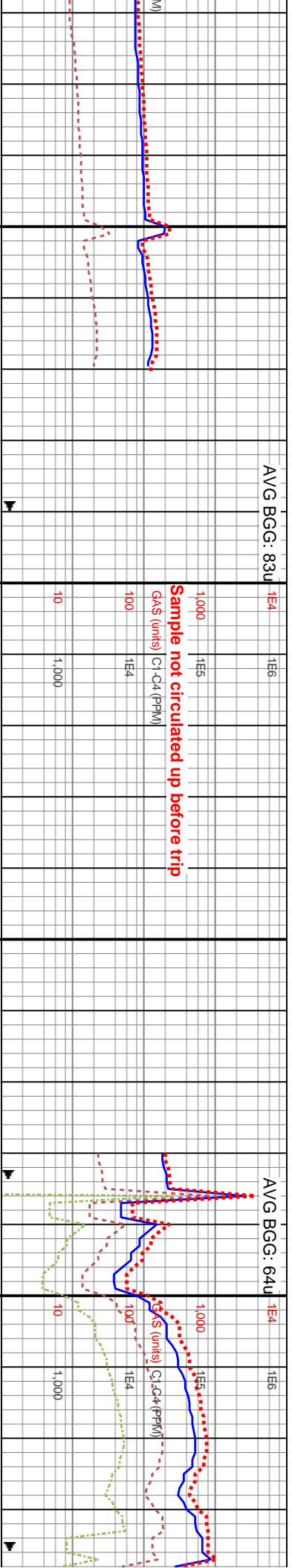
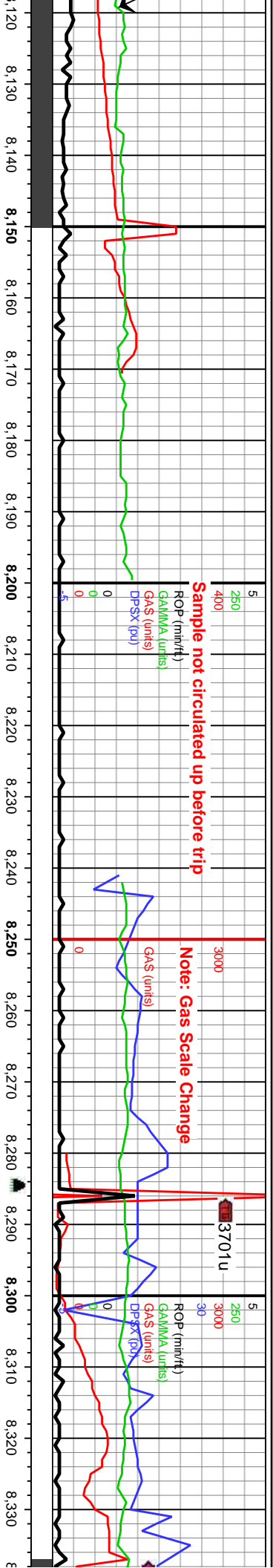




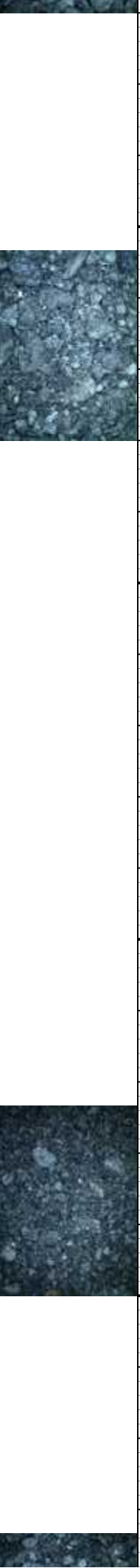
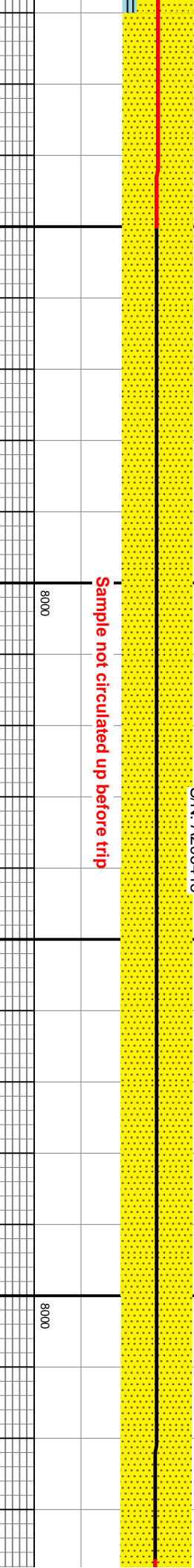




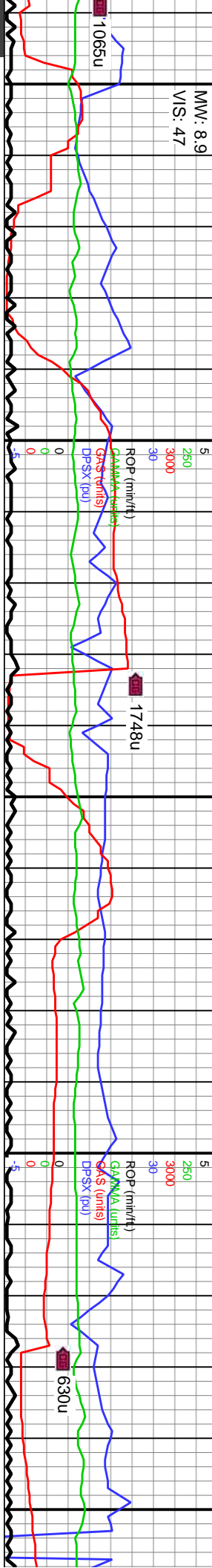




MD: 8,134' TVD: 7,733.64' Inclination: 87.53° Azimuth: 10.01° VS: -62.93'	WOB: 38.4klbs Rotary: 21RPM Strokes: 200SPM Pump Rate: 555GPM	MD: 8,229' TVD: 7,736.02' Inclination: 89.59° Azimuth: 7.74° VS: 30.06'	MD: 8,283' TVD: 7,736.45' Inclination: 89.23° Azimuth: 5.3° VS: 82.94'	7000
8120-8180 SS: dk gy-dk gy brn-off wh-lt tn-lt brn clus, occ clr unconss sd, p-mod srtf, pred sb ang-sb rd vf-f gr SS, sft-med frm-frm sft-sl fri gr sup cls cons wi arg-silic cmt, com unconss, tr pyr, pred non-sl calc, rr-tr onrg flor, trnsf-mky blshwh cut, lt bl resdl ring	TVD (ft)	Bit #: RR 4 Type: SK516M-S1 Size: 8.75 Depth In: 8,284' Depth Out: 10,291' Hours: 7.5 hrs Avg Ft/Hr: 267.6 '/hr Jets: 7x10 S/N: A206415	8240-8300 SS: dk gy-gyshbn, off wh-lt brn clus, occ clr unconss sd, mod srtf, sb ang-sb rd, vf-f gr, frm-sl fri, gr sup cls, cons wi arg-silic cmt, com unconss, pred non-sl calc, dul yeign flor, mod mky cut, mod yeign resdl ring	TVD (ft)

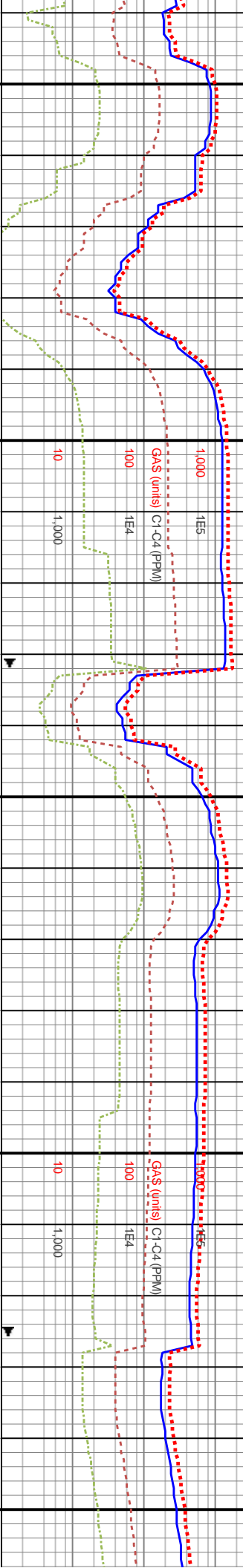


MW: 8.9  
VIS: 47



AVG BGG: 574u

AVG BGG: 1045u



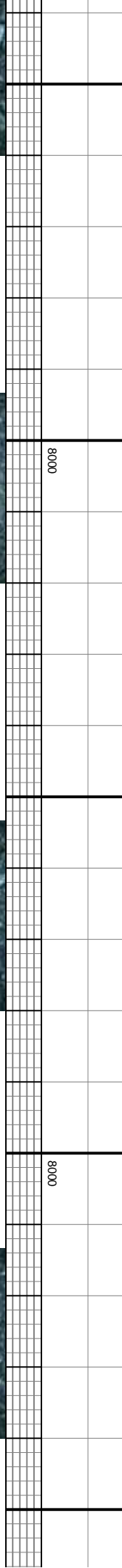
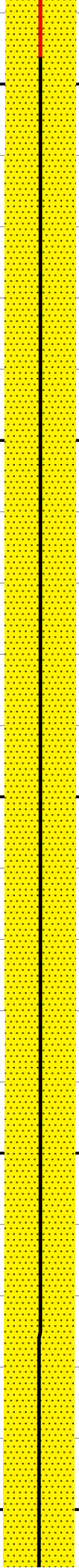
MD: 8,378'  
TVD: 7,737.63'  
Inclination: 89.35°  
Azimuth: 4.09°  
VS: 177.11'

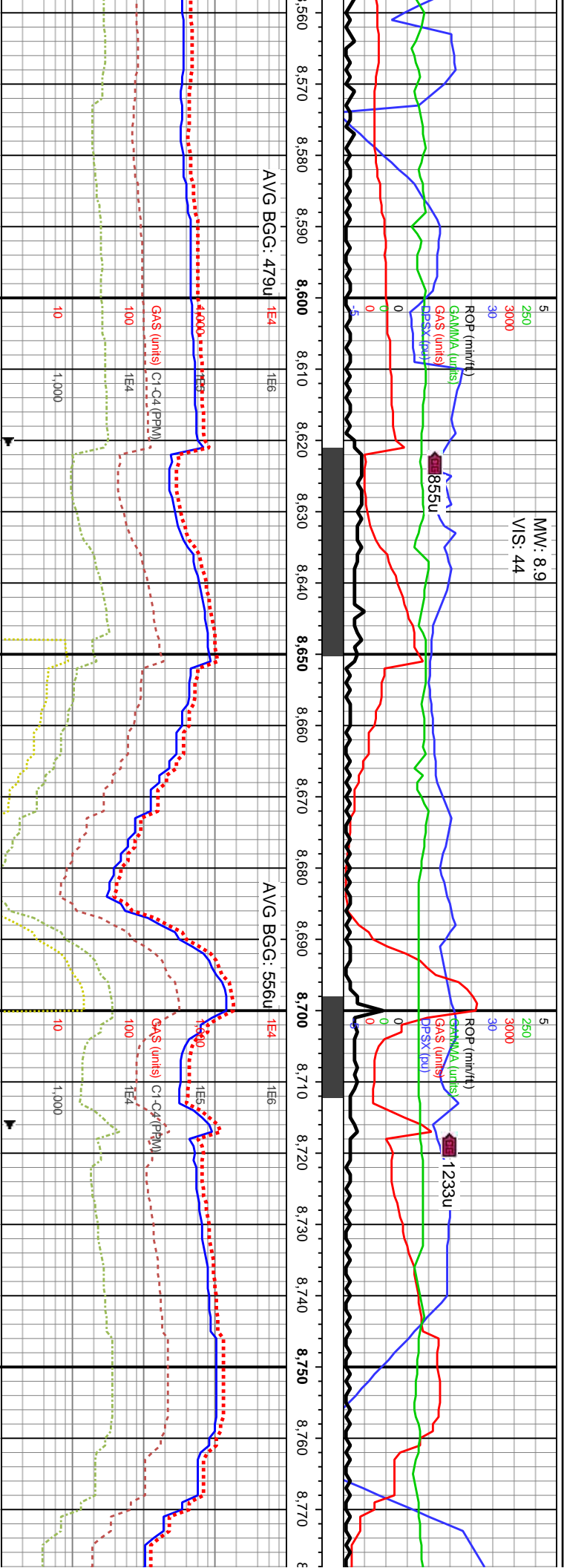
WOB: 34.6kIbs  
Rotary: 50RPM  
Strokes: 230SPM  
Pump Rate: 636GPM

MD: 8,472'  
TVD: 7,739'  
Inclination: 88.98°  
Azimuth: 3.23°  
VS: 270.51'

8420-8480 SS: med gy-gyshbn, lt brn c/s, occ clr unconcs sd, mod srt, pred sb ang-sb rd, v-f gr SS, med frm-sl fri gr sup c/s, cons wi arg-silic cmt, pred non-sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring

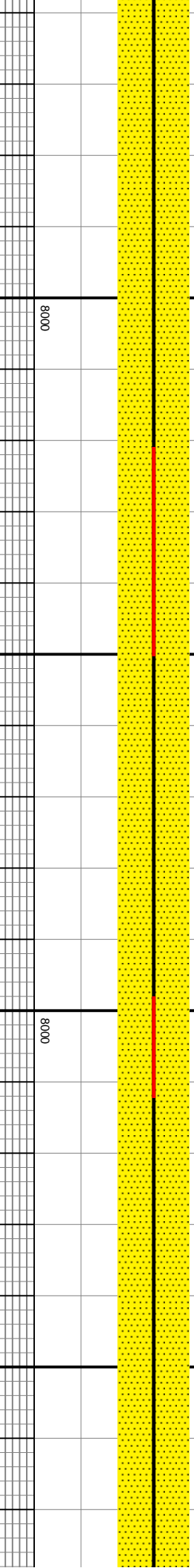
8480-8540 SS: dk gy-gyshbn, med gy-offwht c/s, sb ang-sb rd, v-f gr, occ clr unconcs sd, mod srt, frm-sl fri, pred non-sl calc, gr sup c/s, cons wi arg-silic cmt, com unconcs, dul yelgn flr, mod mky cut, mod yelgn resdl ring

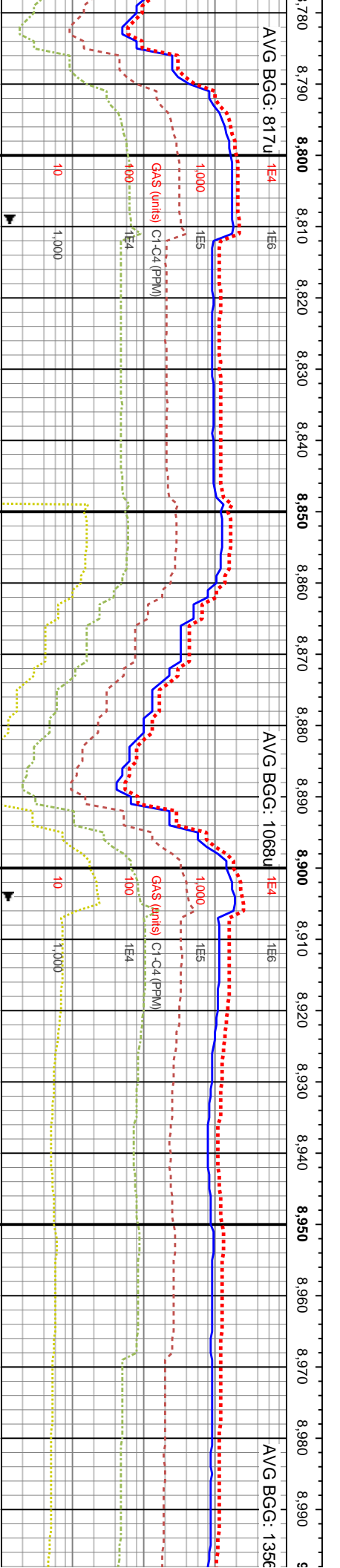
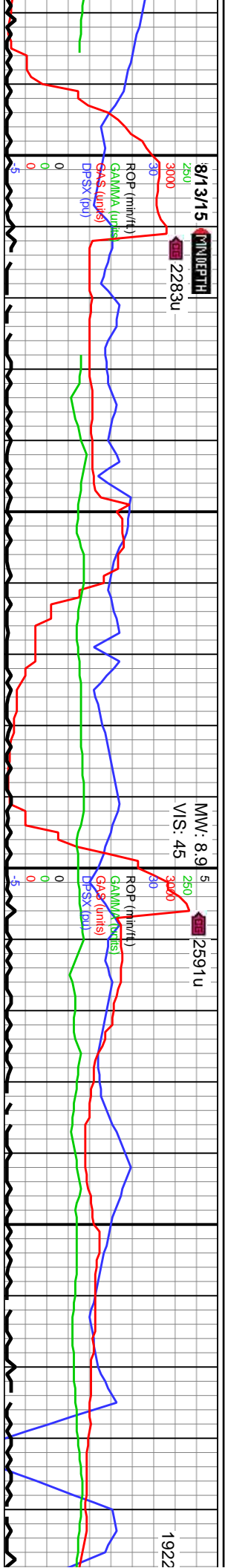




MD: 8,567' VD: 7,740.79' Inclination: 88.86° Azimuth: 3.65° S: 364.93'	WOB: 34.8Klbs Rotary: 50RPM Strokes: 230SPM Pump Rate: 637GPM	MD: 8,662' TVD: 7,741.61' Inclination: 90.15° Azimuth: 5.86° VS: 459.09'	MD: 8,757' TVD: 7,741.08' Inclination: 90.49° Azimuth: 5.8° VS: 553.01'
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8500 SS: pred med gy-gyshbn, lt gy, si grs, mod w strd, sb ang-sb rd, vf-f ang-sb rnd qtz grs thru, mod w cmt, p cls, cons wi arg-silic cmt, dul yelgn d mky cut, mod yelgn resdl ring	8600-8660 SS: pred gyshbn-med gy, sme dk gy brn, trnsi grs thru, mod strd, pred sb ang-sb rd, vf-f gr, sb ang-sb rnd qtz grs, fri gr sup cls, cons wi arg/silic cmt, dul yelgn flor, mod mky cut, mod yelgn resdl ring	8660-8720 SS: pred med gy-dk gy, gyshbn-lt gy, occ trnsi grs, vf-f gr, sb ang-sb rd, mod w strd, sb ang-sb rnd qtz grs thru, mod w cmt, fri gr sup cls, cons wi arg-silic cmt, dul yelgn flor, mod mky cut, mod yelgn resdl ring	8720-8780 SS: pred med gy, sme dk gy brn-lt brn, trnsi grs thru, mod strd, pred sb ang-sb rd vf-uf grs, sme med-l med ang-sb ang grs, fri gr sup cls cons wi arg/silic cmt, dul yelgn flor, mod mky cut, mod yelgn resdl ring
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WOB: 37.5klbs  
Rotary: 71RPM  
Strokes: 230SPM  
Pump Rate: 638GPM

MD: 8,946'  
TVD: 7,740.22'  
Inclination: 90.03°  
Azimuth: 5.45°  
VS: 739.97'

WOB: 24  
Rotary: 7  
Strokes:  
Pump Re

8780-8840 SS: pred gy-med gy, sme dk gy  
brn, op grs thru, mod strd, pred sb ang-sb rd  
vf-uf grs, sb ang-sb rd grs, uncongs grs-fri gr  
sup cls cons wi arg/silic cnt, sl calc, dul yeign  
flor, mod mky cut, mod yeign resdl ring

8840-8900 SS: pred med gy-gyshbn, lt gy,  
tnsl grs thru, mod strd, pred sb ang-sb rd,  
vf-f grs, fri gr sup cls, cons wi arg-silic cnt,  
uncongs grs, sme sl calc, dul yeign flor, mod  
mky cut, mod yeign resdl ring

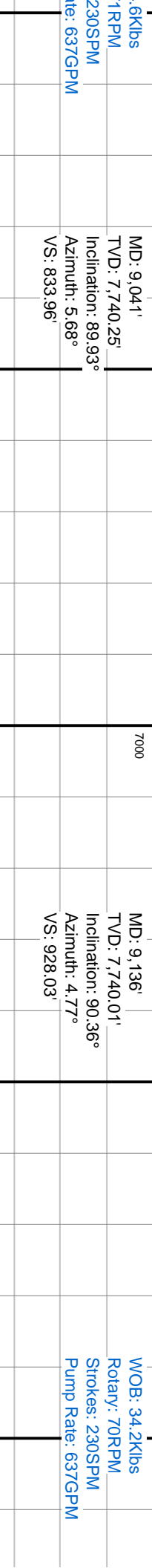
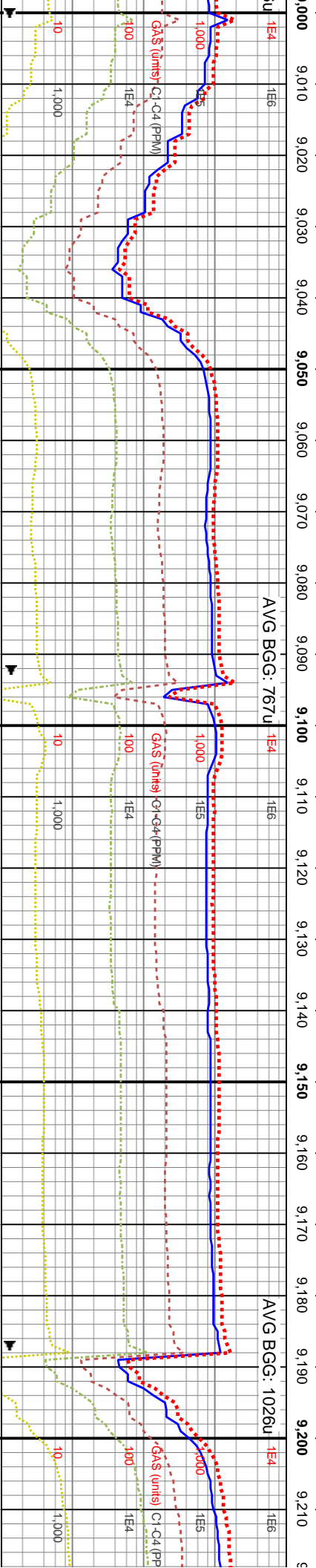
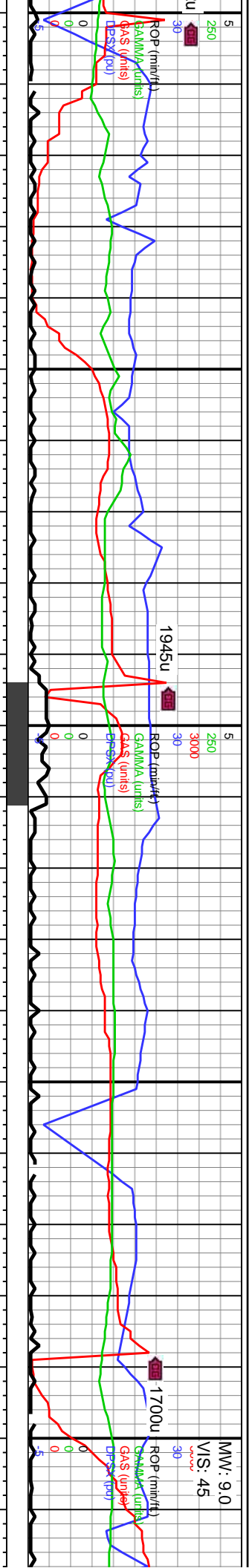
8900-8960 SS: dk gy-dk gy brn, lt gy-lt brn cls,  
clr uncongs sd, mod strd, pred sb ang-sb rd,  
vf-f grs, sl fri-fri, gr sup cls cons wi arg-silic  
cnt, com uncongs, tr pyr, pred non-sl calc, dul  
yeign flor, mod mky cut, mod yeign resdl ring

8960-9020 SS: dk gy-dk gy  
uncongs sd, mod strd, pred:  
grs, frm-sl fri, pred gr sup c  
cnt, abnt uncongs, non-sl ce  
mod mky cut, mod yeign re

8000

8000





6kbs  
1RPM  
2230SPM  
Rate: 637GPM

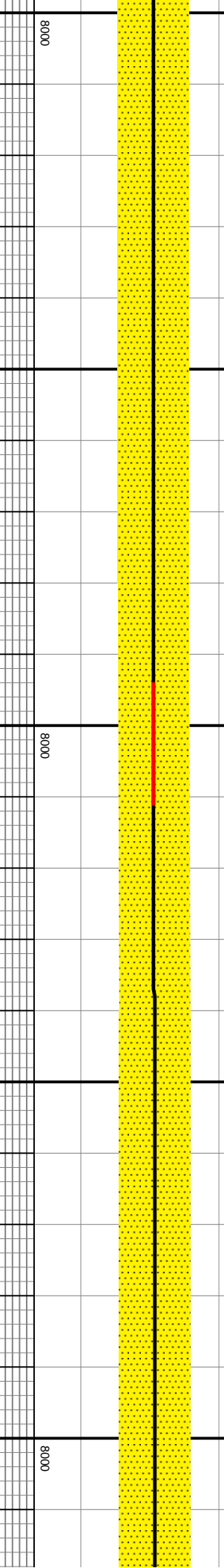
MD: 9,041'  
TVD: 7,740.25'  
Inclination: 89.93°  
Azimuth: 5.68°  
VS: 833.96'

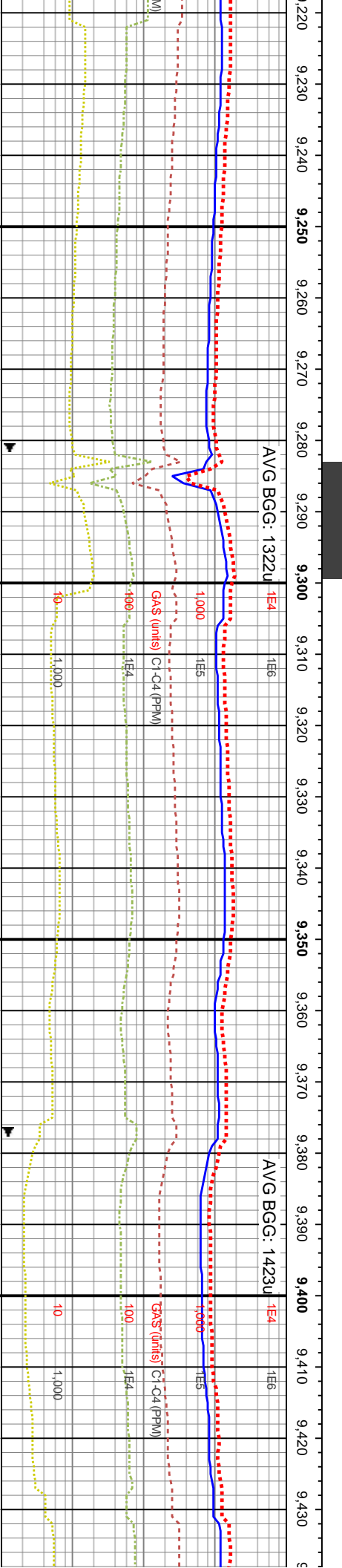
9020-9080 SS: pred med gy-gyshbn, lt brn,  
clr grs thru, mod strd, pred sb ang-sb rd, v-f  
grs, ang-sb rd qtz grs, uncongs qtz grs, fri gr  
sup cls, cons wi arg/silic cnt, dul yelgn flr,  
mod mky cut, mod yelgn resdl ring

9080-9140 SS: pred med gy, occly gyshbn,  
trnsl grs thru, v-f-uf grs, sb ang-sb rd, mod w  
strd, sb ang-sb rd grs, fri gr sup cls, cons wi  
arg-silic cnt, sl calc, du yelgn flr, mod mky  
cut, mod yelgn resdl ring

9140-9200 SS: pred med gy-dk gy brn, sl op,  
v-f grs, mod strd, pred sb ang-sb rd, uncongs  
grs, fri gr sup cls, cons wi arg/silic cnt, dul  
yelgn flr, mod mky cut, mod yelgn resdl ring

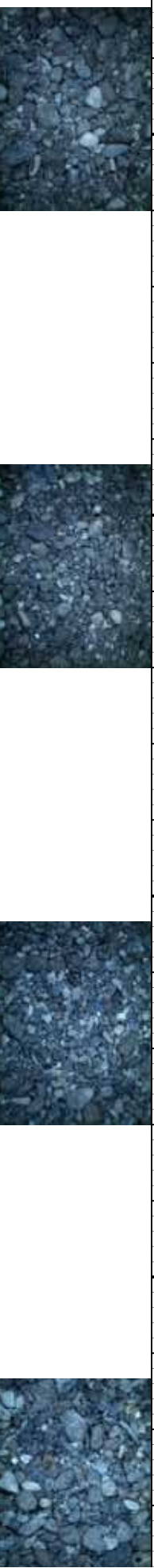
9200-92  
gyshbn-l  
ang-sb r  
sup cls,  
yelgn flo



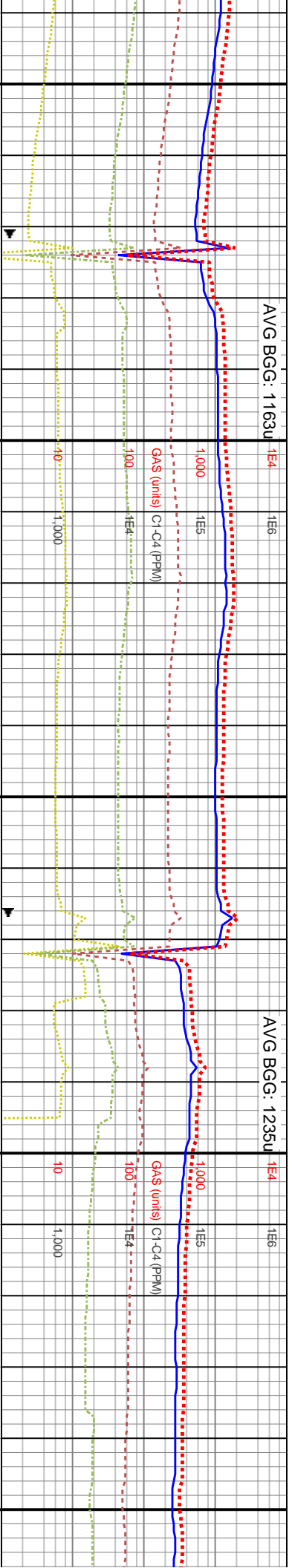
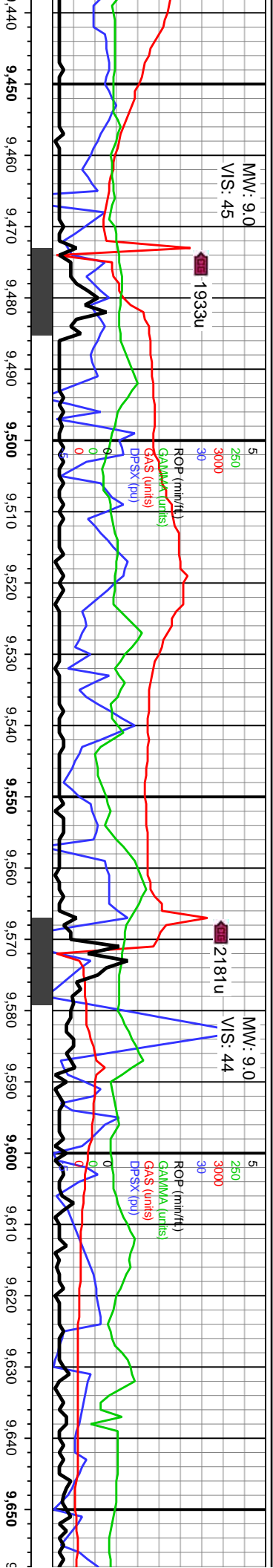


WOB: 36.7Klbs	7000	MD: 9,418'
Rotary: 70RPM		TVD: 7,736.82'
Strokes: 230SPM		Inclination: 91.17°
Pump Rate: 638GPM		Azimuth: 3.6°
		VS: 1,207.88'

9380-9440 SS: dk gy-med gyshbn, offwht-lt  
bm, clr abnt unconsd, vf-f grs, mod strd,  
pred sb ang-sb rd, sl fr-hrd, gr sup cls, cons  
wi arg/slic cmt, dul yelgn flwr, mod mky cut,  
mod yelgn resdl ring







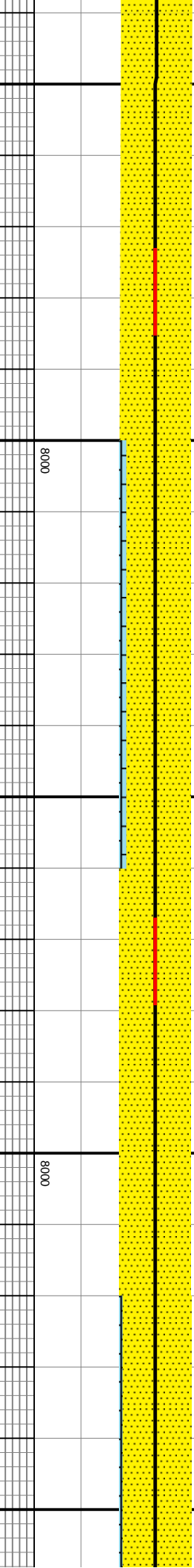
9440-9500 SS: pred med gy-gyshbn, lt  
gy-offwht, op abnt unconss sd, p-mod strd,  
pred sb ang-sb rd, vf-f grs, sl hrd-frn, sl fri, gr  
sup cls, cons wi arg/silic cnt, dul yelgn flor,  
mod mky cut, mod yelgn resd ring

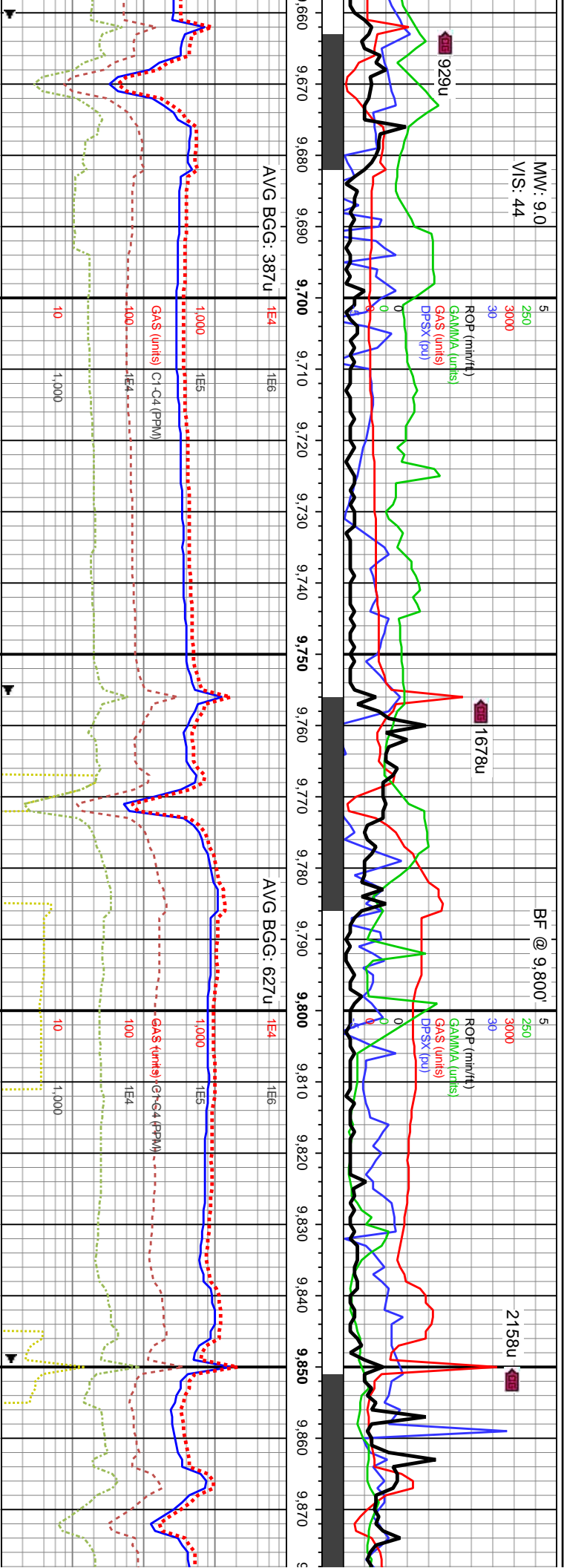
9500-9560 SS (90%): med gy-gyshbn, oftwt  
clus, sb ang-sb rd, vf-f gr, frm-sl fri, hrd, gr  
sup cls, arg-silic cnt, sl calc, dul yelgn flor,  
mod mky cut, mod yelgn resd ring, LMST  
(10%): lt brn-gyshbn, miclin, sft-sl hrd

9560-9620 SS: pred med gy-dk gy, dk gy brn,  
tmnl, p strd, sb ang-sb rd, vf-uf grs, sb ang qtz  
grs, hrd-sl fri, gr sup cls, cons wi arg/silic cnt,  
sl calc, dul yelgn flor, mod mky cut, mod yelgn  
resd ring

9620-9680 SS (95%): prec  
occlly dk gy, sb ang-sb rd, 'r  
fri gr sup cls, arg-silic cnt, 'r  
mky cut, mod yelgn resd r  
cm-gyshbn, sft-sl frm, mic

WOB: 41.6kIbs  
Rotary: 71RPM  
Strokes: 230SPM  
Pump Rate: 637GPM  
MD: 9.608'  
TVD: 7,737.45'  
Inclination: 88.45°  
Azimuth: 2.02°  
VS: 1,396.94'





MD: 9,702°  
TVD: 7,740.32'  
Inclination: 88.05°  
Azimuth: 1.29°  
VS: 1,490.61'

9680-9740 MRLST (50%): med gy-gyshbn, dk gy, sb blk, v calc, tr micmica; LMST (40%): mot gyshbn, lt gy-med gy, blk-elig, frm-sl hrd, v calc, microxln, tr pyrc nod; CHK (10%): crm-lt gyshbn, lt gy, sft, vt lamn, intbd wi mlst

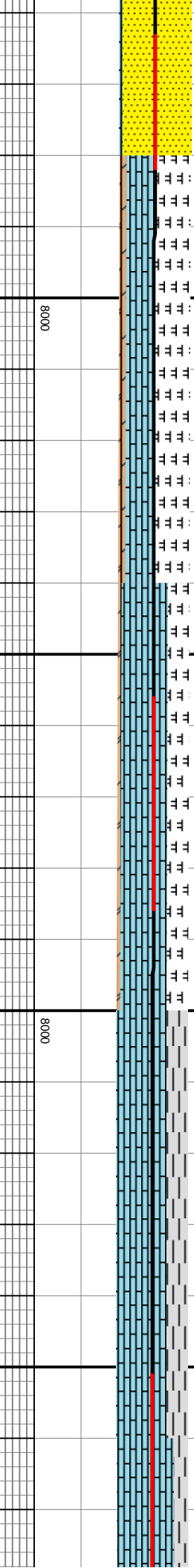
MD: 9,797°  
TVD: 7,743.16'  
Inclination: 88.52°  
Azimuth: 358.57°  
VS: 1,585.49'

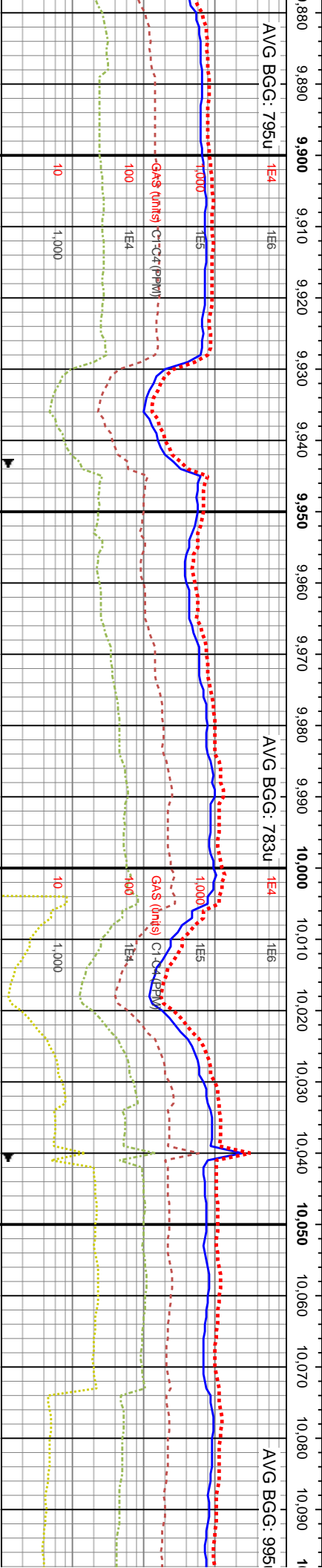
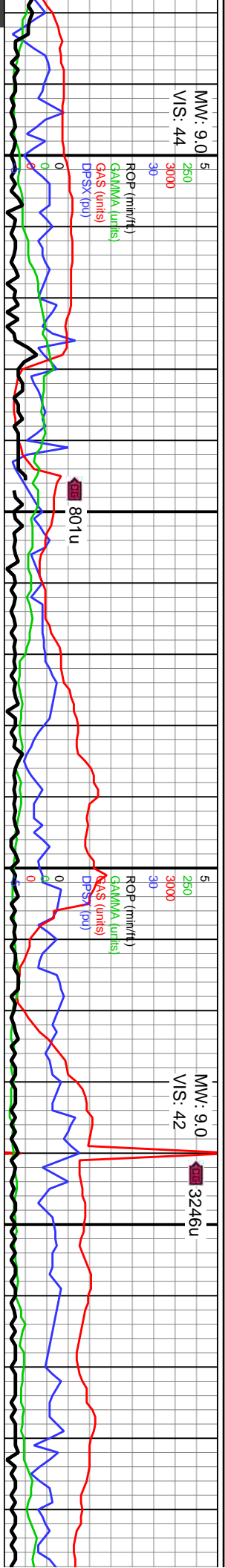
WOB: 39.5Klbs  
Rotary: 71RPM  
Strokes: 230SPM  
Pump Rate: 638GPM

9740-9800 LMST (65%): mot bshgy-med gy, cryptoxln-microxln, blk-ply, frm-sl hrd, tr scat mic pyr, mnr intbd wi chk; MRLST (30%): med gy-dk gy, v dk gy ip, sb blk-ply, mot, v calc, tr micmica, sl rgh tex; CHK (5%): mnr crm, pred lt gyshbn, sft, chk tex, v calc, tr pp pyr

9800-9860 LMST (70%): mot gyshbn-crm-tr, occ gy, frm-sl hrd, cryptoxln-microxln, wkst-mudst; SH (30%): dk gy-v dk gym occ blk, intbd wi ls, micmica, calc, rgh tex, tr pp pyr

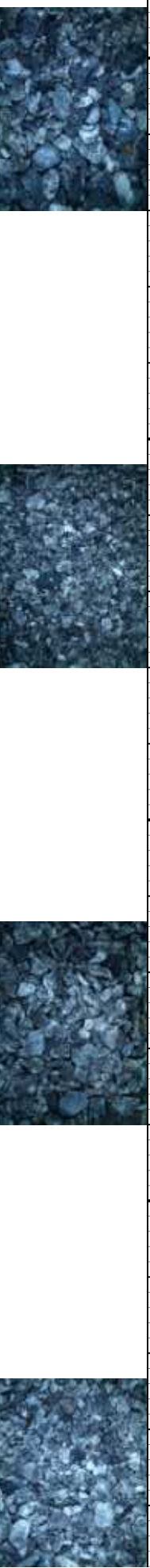
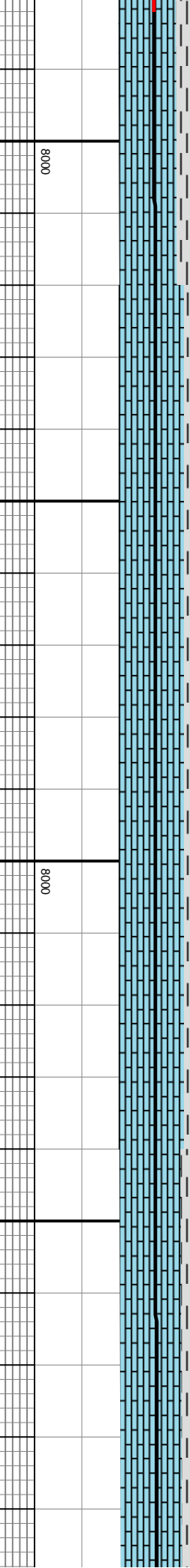
9860-9920 LMST (70%): mot gyshbn-crm-tr, occ gyshbn, wkst-mudst; SH (30%): dk gy-v dk gym occ blk, intbd wi ls, micmica, calc, rgh tex, tr pp pyr

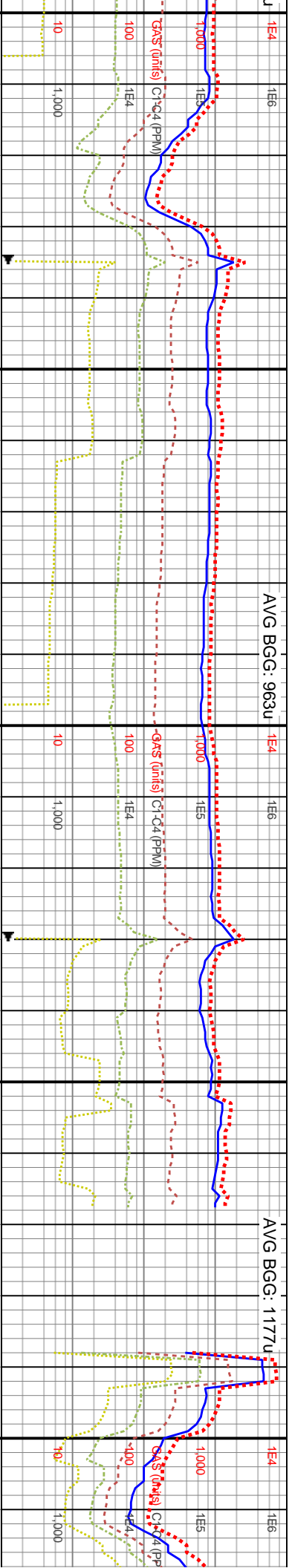
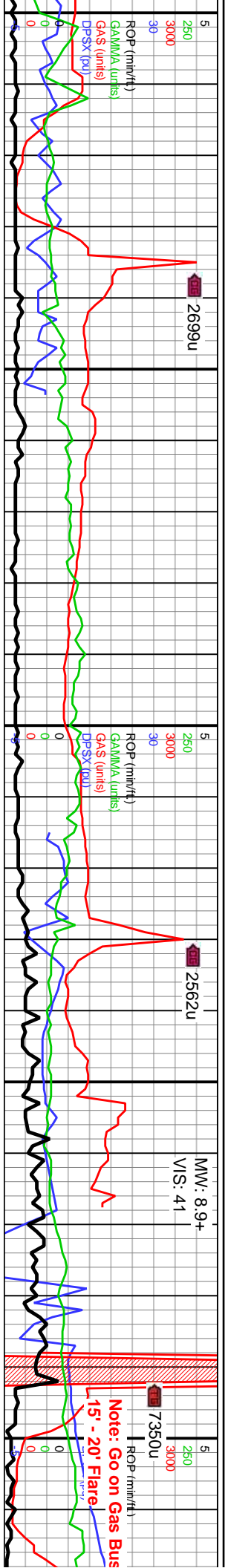




MD: 9,892' TVD: 7,743.42' Inclination: 91.17° Azimuth: 357.04° VS: 1,680.48'	MD: 9,986' TVD: 7,741.52' Inclination: 91.14° Azimuth: 357.17° VS: 1,774.46'	MD: 10,087' TVD: 7,739.54' Inclination: 91.11° Azimuth: 357.6° VS: 1,875.44'
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9920-9980 LMST (85%): mot med gy-it gy, crm-in ip, occ gysbhn, frm-sl hrd, cryptoxln-microxln, wkst-mudst, blk-y-pily, SH (15%): med gy-dk gy, occ blk, frm-v frm, pily-blky, micmica, calc-v calc, intbd wl is, tr p pyr	9980-10040 LMST (90%): med gy-it gysbhn, crm-in ip, frm-sl hrd, cryptoxln-microxln, wkst-mudst, blk-y-pily, SH (10%): med gy-dk gy, frm-v frm, pily-blky, micmica, calc-v calc, intbd wl is	10040-10100 LMST (85%): mot bnshgy-med gy, cryptoxln-microxln, blk-y-pily, mudst-wkst, frm-sl hrd, tr scat mic pyr, mnr intbd wl chk, SH (15%): dk gy-v dk gy, occ blk, intbd wl is micmica, calc, rgh tex, tr pp pyr
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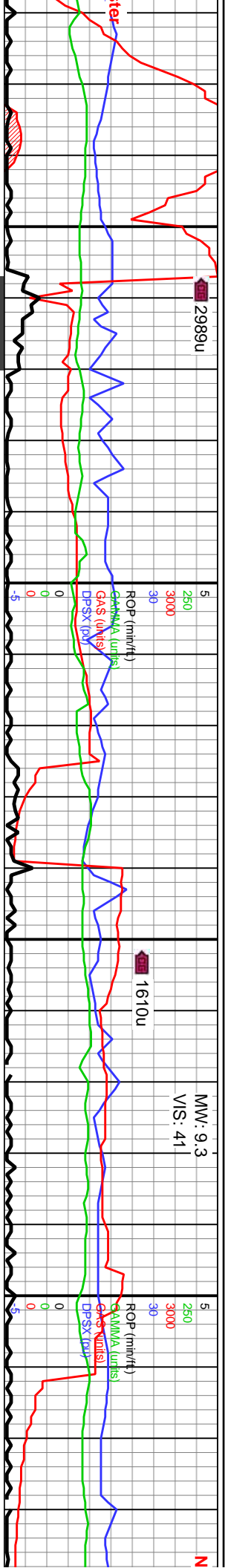


10100-10160 LMST (90%): mot med gy, bshgy, blk-y-elg, cryptoxln-microxln, frm-sl hrd, tr scat pyr/intbd pyr; SH (10%): med gy-dk gy, frm-v frm, plty-blky, micmica, calc-v calc, intbd wi ls	10160-10220 LMST (95%): mot med gy, bshgy, blk-y-elg, microxln-cryptoxln, frm-sl hrd, wkst, blk-y ip, tr pp pyr, SH (5%): mot med gy-bshgy, dk gy, elg-plty, frm, v calc, tr micmica, rgh tex, intbd wi ls	10220-10280 LMST (95%): pred mot gysbhn-tr, occ gysbhn-crm, frm-sl hrd, cryptoxln-microxln, wkst-mudst, blk-y ip, pred plty; SH (5%): dk gy-v dk gy, occ blk, intbd wi ls, micmica, calc, rgh tex, tr pp pyr	10280-10340 LMST(45%) brn, micxln, mudst, plty-bl (40%): med gy-gysbhn, op strd, sb ang-sb rd, v-f grs wi arg-slic cmt; MRLST (1 sb blk-y, arg, tr micmica, c
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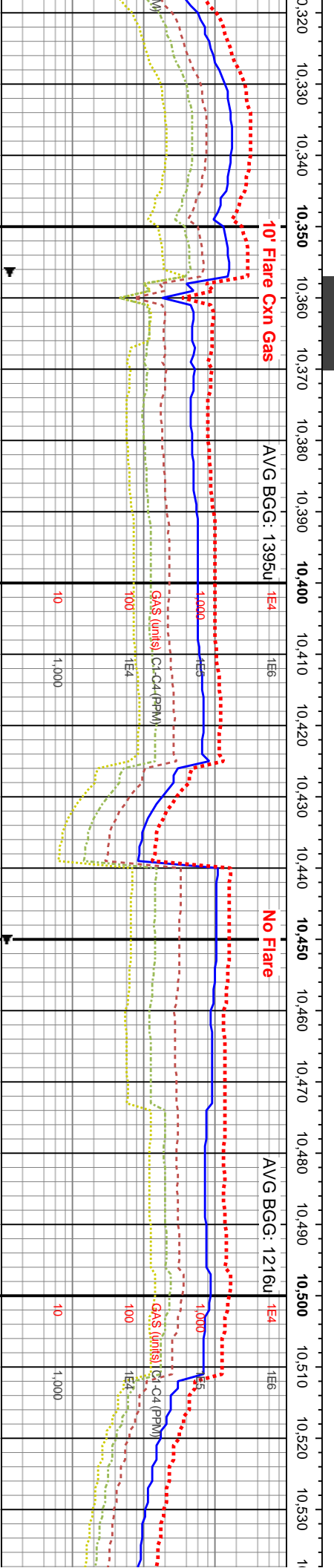
8000	8000	8000	8000
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MW: 9.3  
VIS: 41



10' Flare Cxn Gas

AVG BGG: 1395u

No Flare

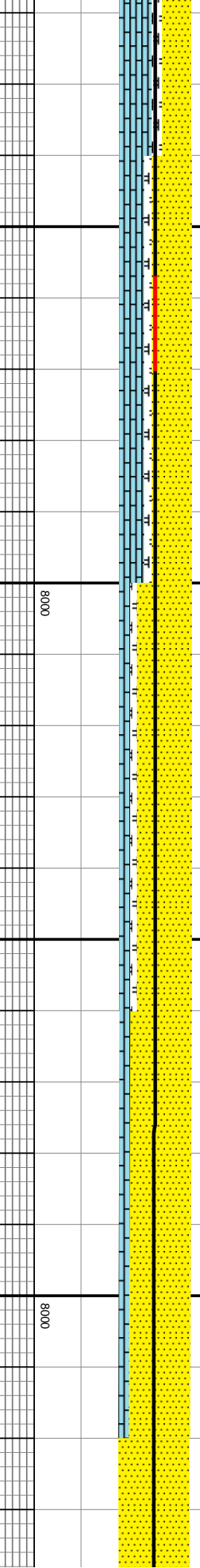
AVG BGG: 1216u

TOOH for bit/motor

WOB: 24.2Klbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

MD: 10,491'  
TVD: 7,740.06'  
Inclination: 90.12°  
Azimuth: 358.24°  
VS: 2,279.37'

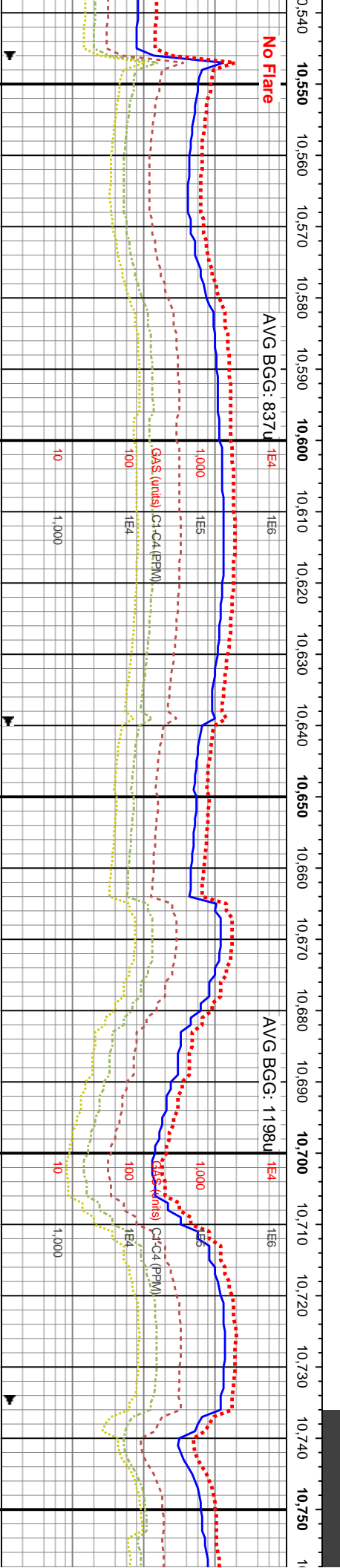
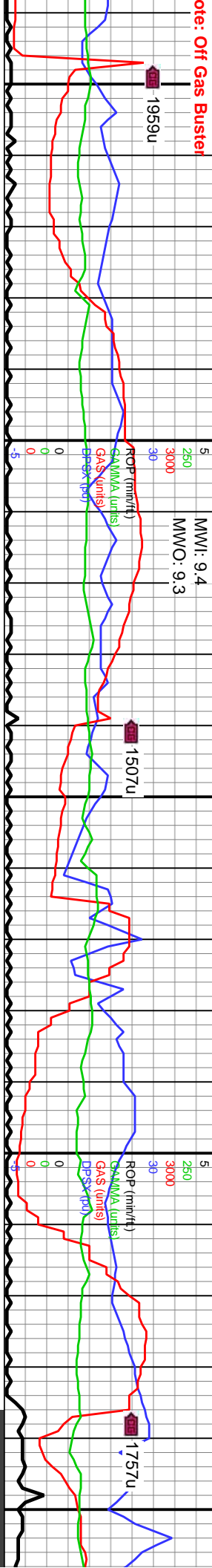
10340-10400 SS (55%): med gy-gyshbn, op grs thru, mod strd, sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cnt; LMST(35%): gyshbn-lt gy, lt brn, micxln, pily-blky, sl hrd; MRLST (10%): dk gy-med gy, pily, arg, tr micnica, calc	10400-10460 SS (75%): gyshbn-med gy, op grs thru, vf-f grs, mod strd, sb ang-sb rd, gr sup cls, cons wi arg-silic cnt; LMST(15%): gyshbn-lt gy, lt brn, pily-blky, micxln, sl hrd; MRLST (10%): dk gy-med gy, pily, arg, calc, tr chk lamn, tr micnica,	10460-10520 SS (80%): gyshbn-med gy, lt gy, vf-f gr, sft-med frm, mod strd, sb ang-sb rd, cons wi pred arg-silic cnt, com lse grs, tr mic pyr, sl calc; LMST (20%): mot med gy-bnshgy, pily-tab, microxln, frm-sl hrd	10520-10580 SS (85%): gyshbn-med gy, lt op grs, vf-f gr, sft-med frm, mod strd, sb ang-sb rd, cons wi pred arg-silic cnt, com lse grs, tr mic pyr, sl calc; LMST (15%): mot med gy-bnshgy, pily-tab, microxln, frm-sl hrd
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8000

8000





MD: 10,586'  
TVD: 7,739.94'  
Inclination: 90.03°  
Azimuth: 358.3°  
VS: 2,374.35'

WOB: 25.2Klbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

10580-10640 SS: med gy-gyshbn, dk gy brn, thru, vf-uf grs, mod strd, pred sb ang qtz grs thru, p-mod cntd, fri gr sup cls, cons wi arg/silic cnt, mod mky cut, mod yelgn resd ring

10640-10700 SS: dk gy-med gysbhn, lt brn, clr uncongs sd, mod strd, pred sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg/silic cnt, abnt lse grs, tr pyr, non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resd ring

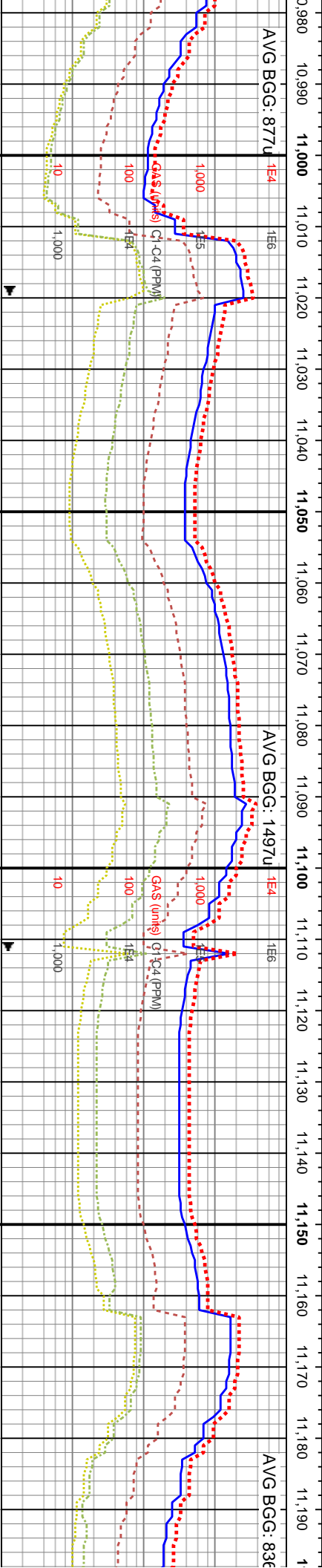
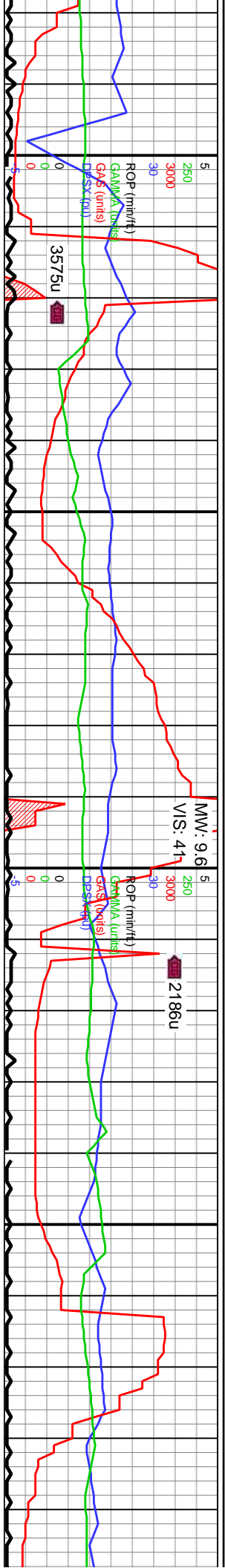
10700-10760 SS: pred med gy-gyshbn, dk brn, op grs thru, vf-uf grs, pred sb ang-sb rd, mod strd, gr sup cls, cons wi arg/silic cnt, sme sl calc, dul yelgn flor, mod mky cut, mod yelgn resd ring

8000	8000
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WOB: 23.3kbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

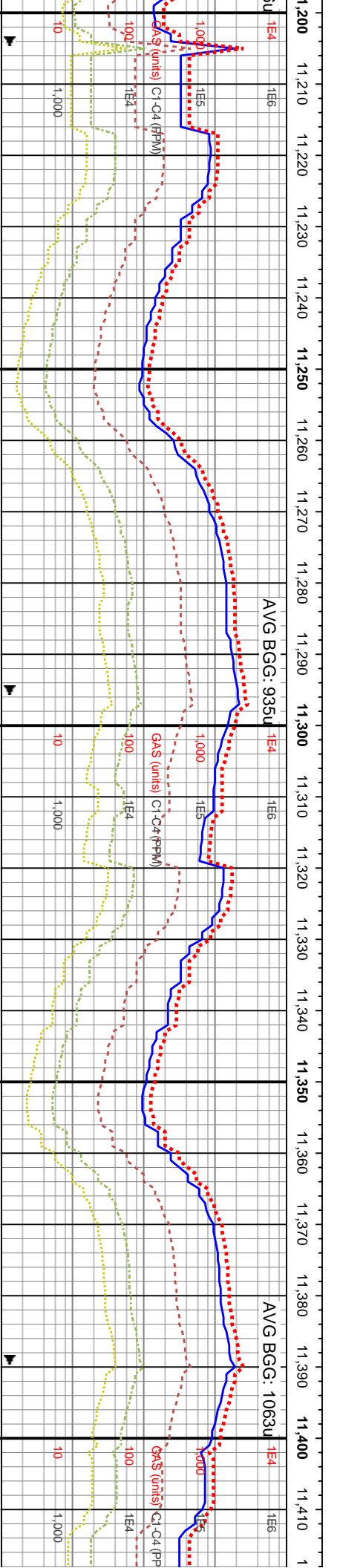
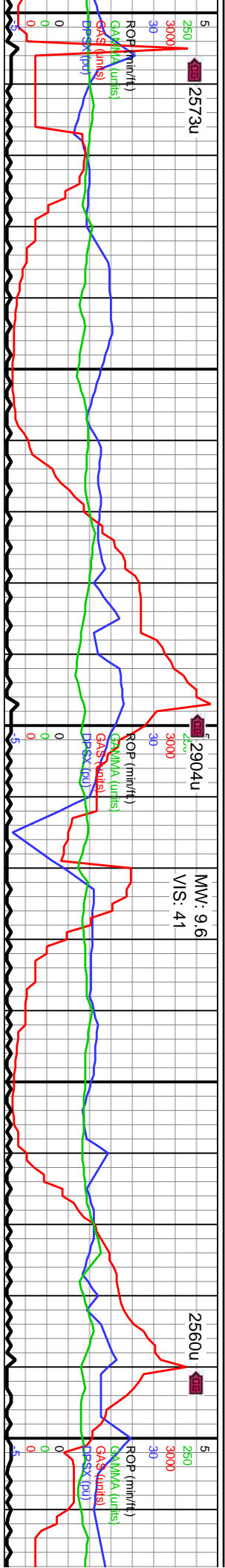
MD: 11,149'  
TVD: 7,737.58'  
Inclination: 90.77°  
Azimuth: 1.53°  
VS: 2,936.24'

WOB: 26  
Rotary: 7  
Strokes:  
Pump Ra

11000-11060 SS: med gy-dk gysbhn, lt brn, abnt clr-op lse grs, mod strd, pred sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg/silic cnt, tr pyf, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resd ring	11060-11120 SS: dk gysbhn-med gy, lt brn cls, occ clr unconss sd, mod strd, pred sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cnt, com lse grs, tr pyf, dul yelgn flor, mod mky cut, mod yelgn resd ring	11120-11180 SS: dk gy-dk gysbhn, med gy-lt brn cls, mod strd, pred sb ang-sb rd, vf-f grs, gr sup cls cons wi arg/silic cnt, abnt lse grs, tr pyf, dul yelgn flor, mod mky cut, mod yelgn resd ring	11180- trnsi gr grs, fti calc ip, yelgn r
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8000



11240-11300 SS: med gy-dk gysbhn, lt brn, dk gy, mod strd, pred sb ang-sb rd, v-f-grs, gr sup cls, cons wi arg/silic cnt, abnt lse grs, tr pyr, pred sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring

11300-11360 SS: dk gy-gysbhn clus, occ clr unconcs sd, v-f-grs, mod strd, sb ang-sb rd, sl hrd-frn, cons wi arg/silic cnt, com unconcs, tr pyr, non-sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring

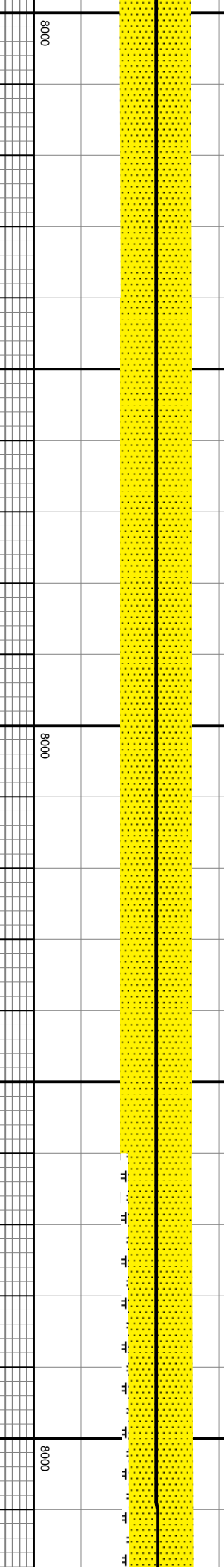
11360-11420 SS (90%): med gy-gysbhn, dk gysbhn, clr-op, mod strd, pred sb ang-sb rd, v-f-grs, fri gr sup cls, cons wi arg/silic cnt, sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring: MRLST (10%): dk gy-med gy, pty-sl elg, sl silty tex, tr micnica, v calc

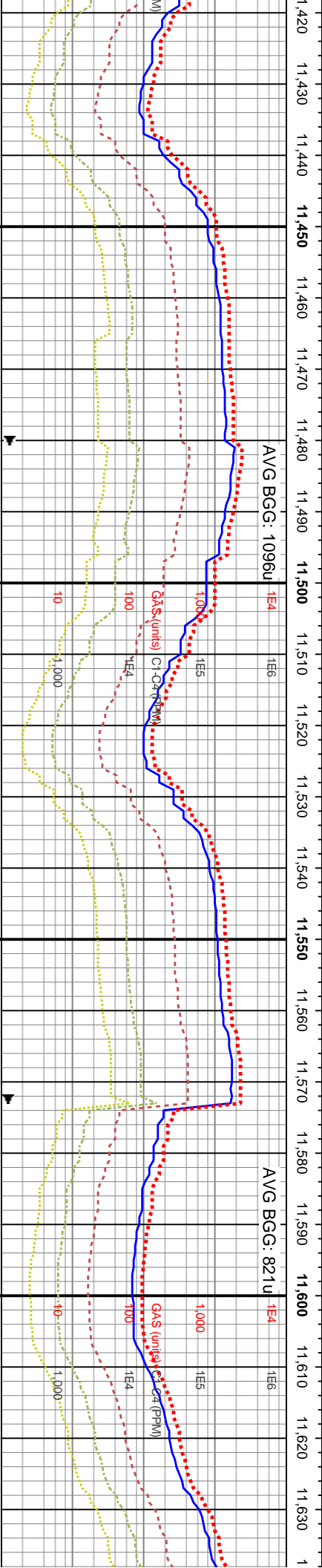
11240 SS: pred med gy-gysbhn-lt gy, s thru, mod strd, sb ang-sb rd, v-f-uf gr sup cls, cons wi arg-silic cnt, sl tr pyr, pred sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring

11240-11300 SS: med gy-dk gysbhn, lt brn, dk gy, mod strd, pred sb ang-sb rd, v-f-grs, gr sup cls, cons wi arg/silic cnt, abnt lse grs, tr pyr, pred sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring

11300-11360 SS: dk gy-gysbhn clus, occ clr unconcs sd, v-f-grs, mod strd, sb ang-sb rd, sl hrd-frn, cons wi arg/silic cnt, com unconcs, tr pyr, non-sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring

11360-11420 SS (90%): med gy-gysbhn, dk gysbhn, clr-op, mod strd, pred sb ang-sb rd, v-f-grs, fri gr sup cls, cons wi arg/silic cnt, sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring: MRLST (10%): dk gy-med gy, pty-sl elg, sl silty tex, tr micnica, v calc



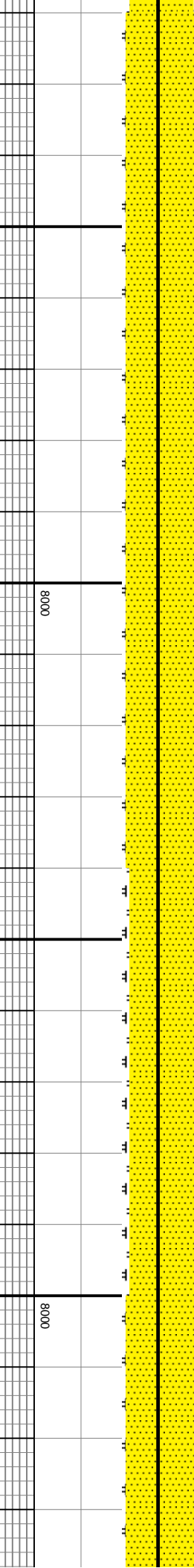


D: 11,426'  
VD: 7,733.64'  
Inclination: 90.49°  
Azimuth: 1.15°  
S: 3,212.44'

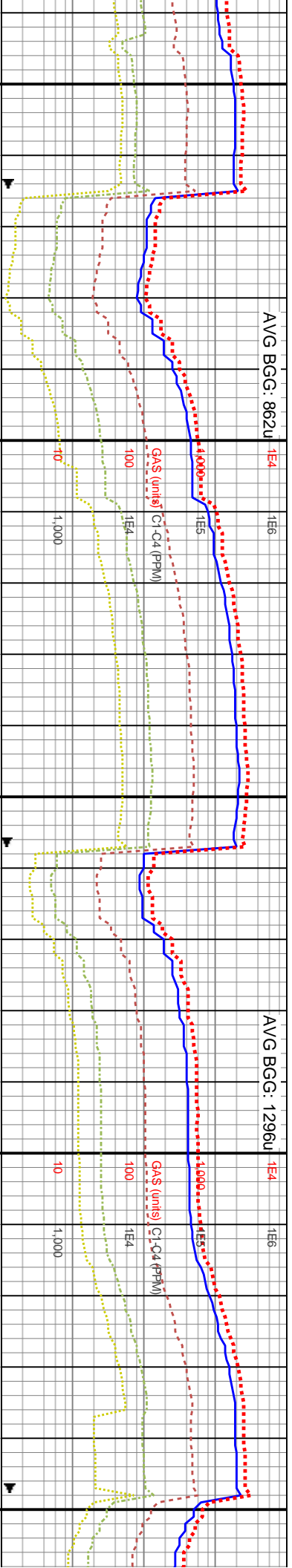
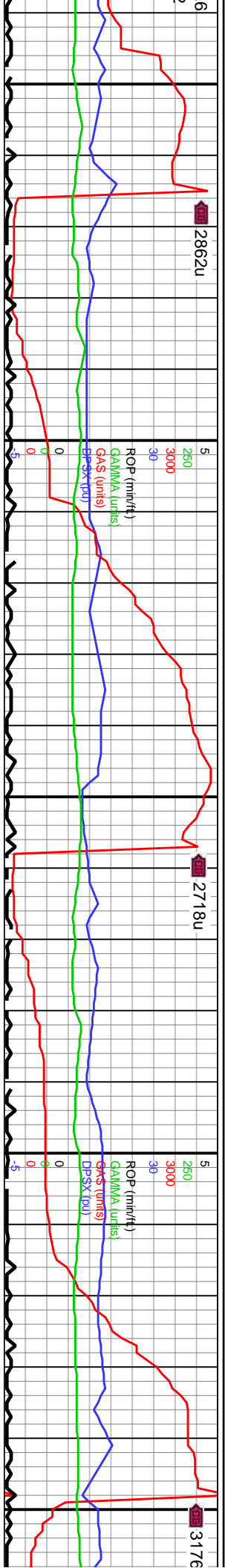
MD: 11,517'  
TVD: 7,732.77'  
Inclination: 90.61°  
Azimuth: 0.48°  
VS: 3,303.25'

WOB: 28.6kbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 636GPM

11420-11480 SS (95%): dk gy-gyshn, offwht-lt gy, clr unconcs sd, sb ang-sb rd, vf-f grs, mod strd, cons wi arg/silic cnt, abnt lse grs, pred non calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring; MRLST (5%): dk gy-med gy, tab-sb ply, sl abrsv tex, v calc	11480-11540 SS (95%): gyshn-med gy, dk gyshn, vf-f grs, mod strd, pred sb ang-sb rd, cons wi arg/silic cnt, fri gr sup ds, sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring; MRLST (5%): med gy-dk gy, ply-tab, sl abrsv tex, tr micnica, v calc	11540-11600 SS (90%): dk gy-gyshn, lt gy-offwht, sb ang-sb rd, vf-f grs, mod strd, cons wi arg/silic cnt, abnt lse grs, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring; MRLST (10%): med gy-gyshn, dk gy, sb blk, v calc, tr micnica	11600-11660 SS (95%): d sme lt brn, vf-f grs, mod sr rd, com lse grs, cons wi ar calc, dul yelgn flor, mod m resdl ring; MRLST (5%): d elg, sl stly tex, tr micnica,
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MD: 11,701'  
TVD: 7,731.55'  
Inclination: 90.15°  
Azimuth: 0.2°  
VS: 3,486.97'

11660-11720 SS: gysbhn-med gy, lt brn clus, mod strd, sb ang-sb rd, vf-f gr, frm-sl fri, gr sup cls, cons wi arg-silic cnt, com uncons, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring

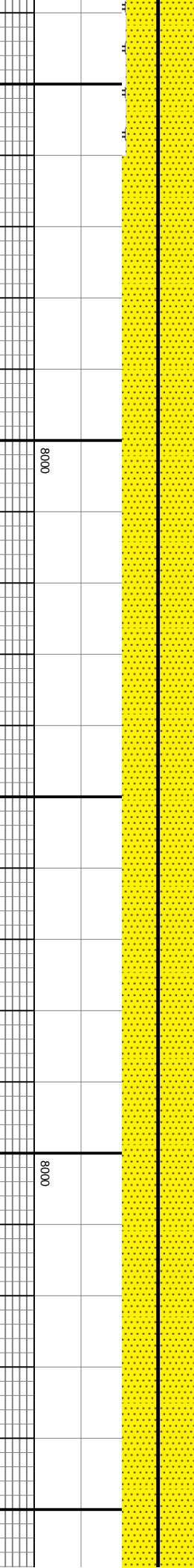
11720-11780 SS: dk gy-med gysbhn, offwht-lt brn, vf-f grs, clr abnt uncons sd, sl fri-hrd, mod strd, pred sb ang-sb rd, gr sup cls, cons wi arg/silic cnt, dul yelgn flor, mod mky cut, mod yelgn resdl ring

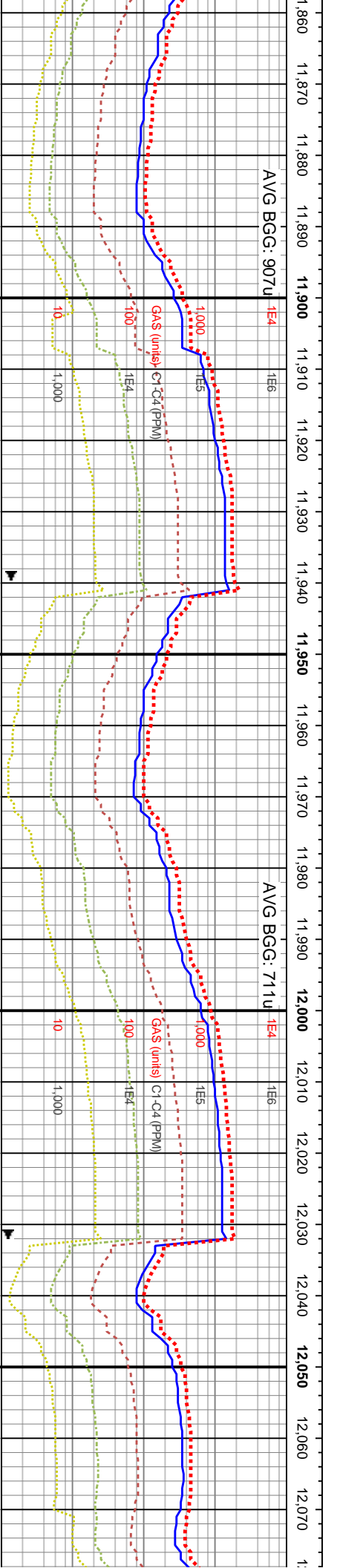
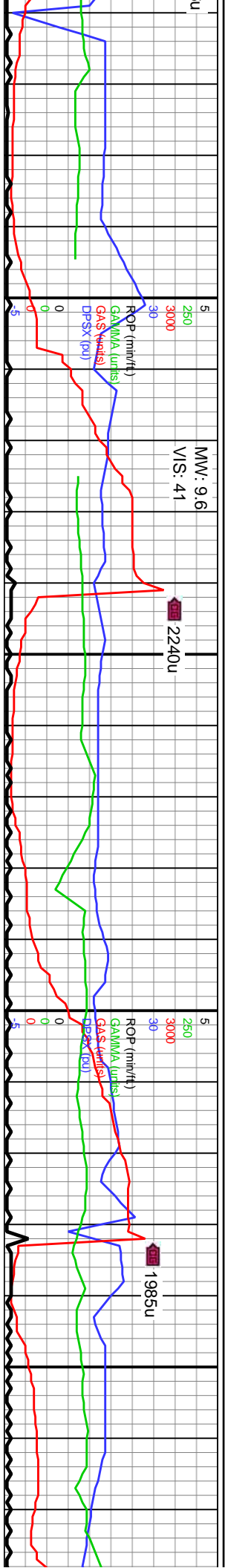
11780-11840 SS: predy med gy-gysbhn, lt gy, vf-uf grs, sb ang-sb rd, op grs thru, mod strd, fri gr sup cls, cons wi arg/silic cnt, com lse grs, sl calc lp, dul yelgn flor, mod mky cut, mod yelgn resdl ring

11840- offwht-lt grs, coi sl calc, yelgn r

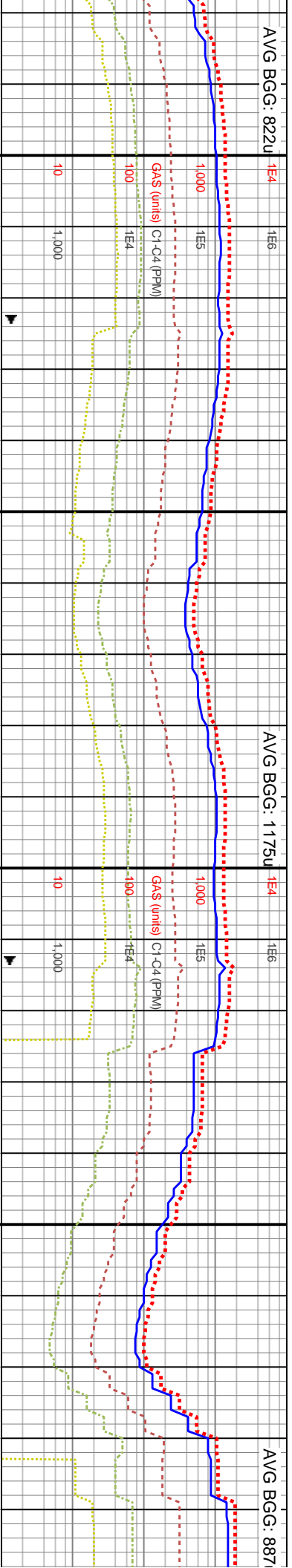
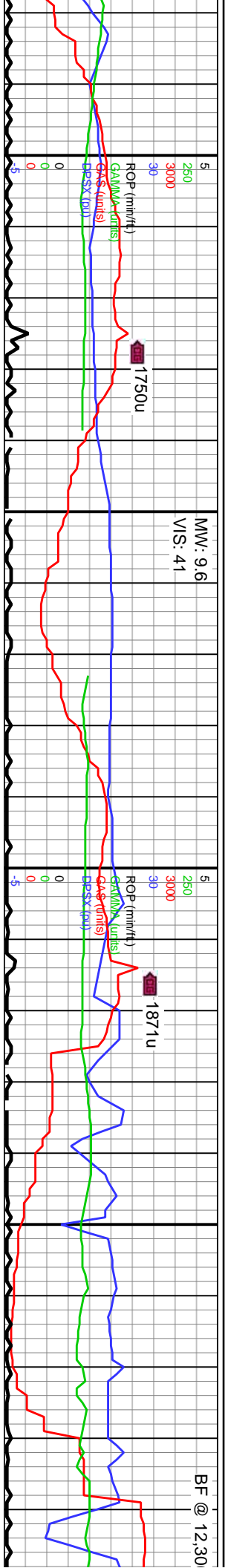
MD: 11,793'  
TVD: 7,731.56'  
Inclination: 89.84°  
Azimuth: 359.63°  
VS: 3,578.87'

WOB: 34.4Klbs  
Rotary: 70RPM  
Strokes: 228SPM  
Pump Rate: 631GPM

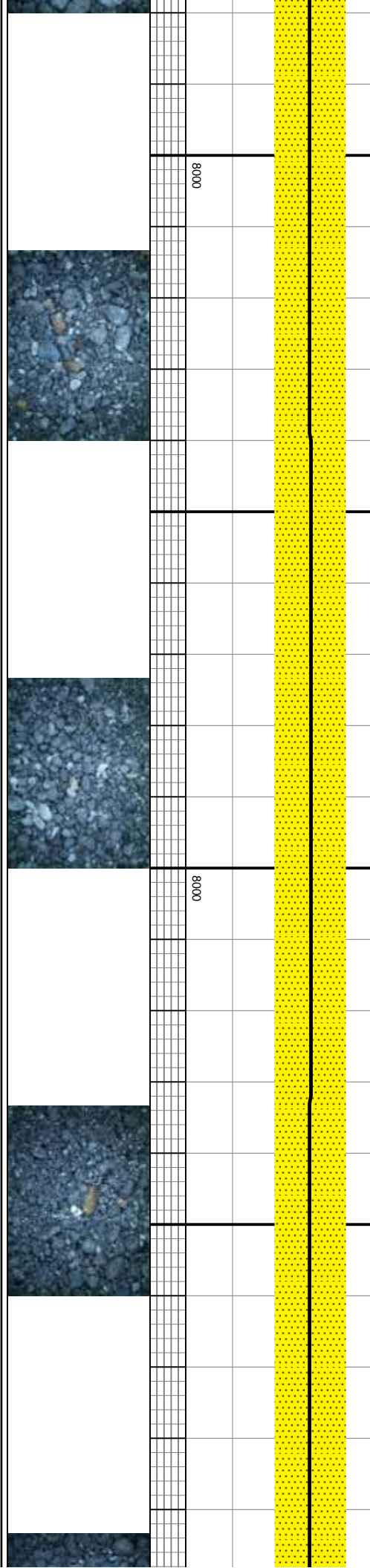


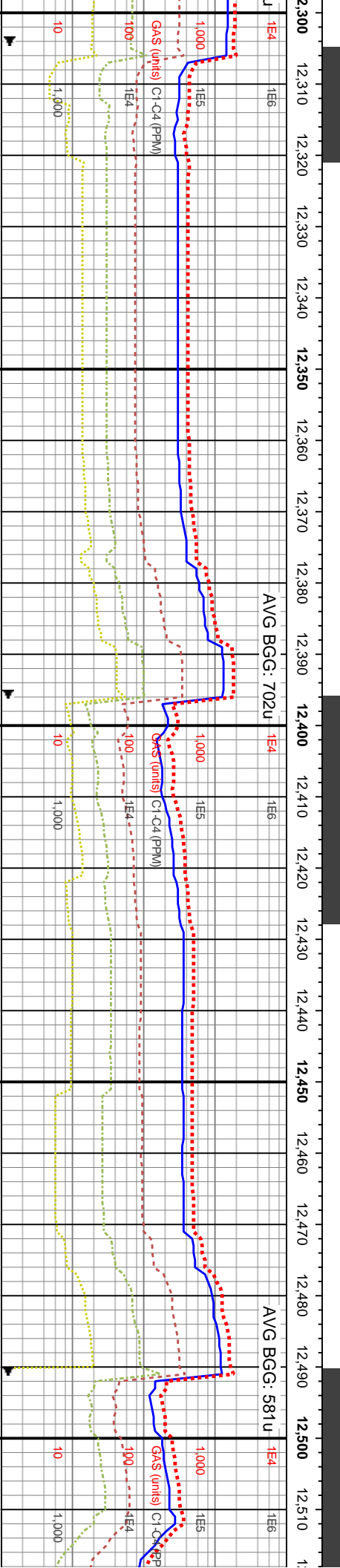
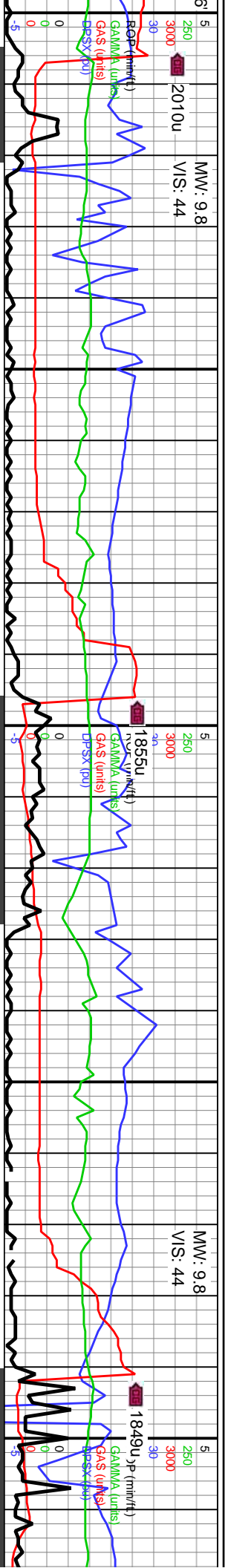






7000	MD: 12,158' TVD: 7,730.64' Inclination: 90.12° Azimuth: 0.31° VS: 3,943.58'	WOB: 39Klbs <sup>α</sup> Rotary: 71RPM Strokes: 224SPM Pump Rate: 617GPM	MD: 12,250' TVD: 7,730.8 Inclination: 89.75° Azimuth: 357.97° VS: 4,035.52'
12080-12140 SS: dk gy-dk gy brn-off wh-lt tn-lt brn-clr unconcs sd, p-mod strd, pred sb ang-sb rd v-f-f gr SS, sft-med frm-frm sft-sl fri gr sup cls cons wi arg-silic cnt, com-abnt unconcs, tr pyr, pred non-sl calc	12140-12200 SS: med gy-gyshn, dk gyshn, clr-op, mod strd, pred sb ang-sb rd, v-f-f grs, fri gr sup cls, cons wi arg/silic cnt, sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring		12200-12260 SS: predy med gy-gyshn, lt gy, sb ang-sb rd, v-f-uf grs, op grs thru, mod strd, com lse grs, fri gr sup cls, cons wi arg/silic cnt, sl calc ip, dul yelgn flor, mod mky cut, mod yelgn resdl ring
12260-12320 SS: dk gy-g			



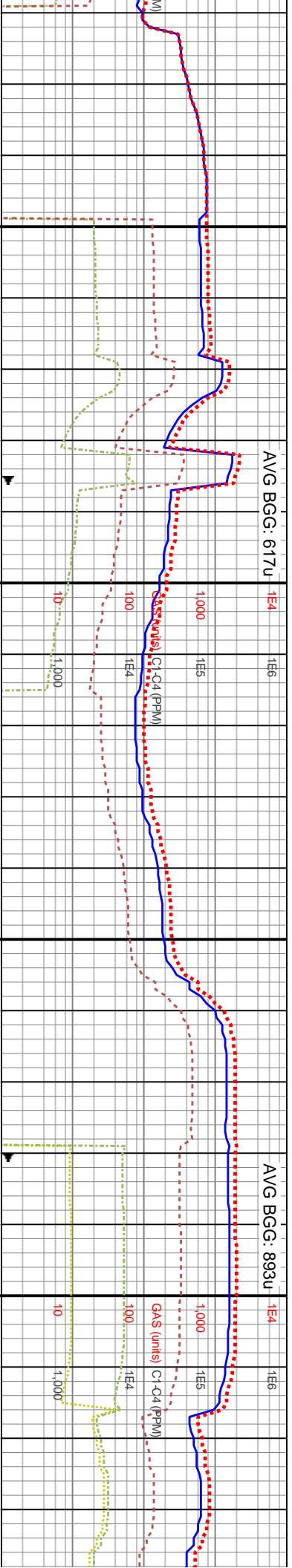
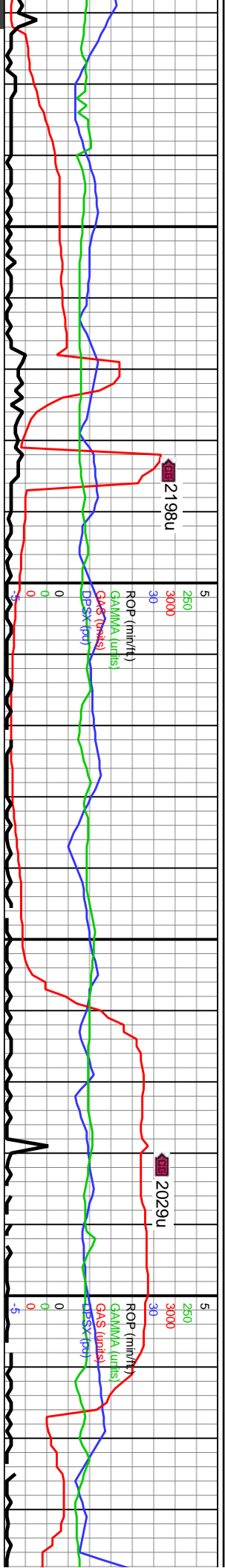


7000	MD: 12,341' TVD: 7,731.44' Inclination: 89.45° Azimuth: 357.56° VS: 4,126.51'	WOB: 59.2Klbs Rotary: 0RPM Strokes: 230SPM Pump Rate: 636GPM	MD: 12,435' TVD: 7,732.82' Inclination: 88.86° Azimuth: 0.17° VS: 4,220.45'	7000
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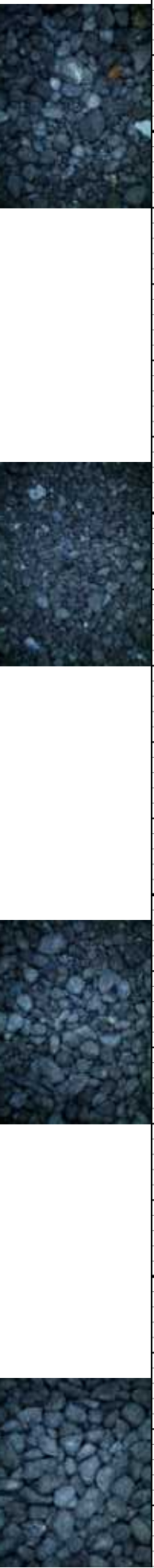
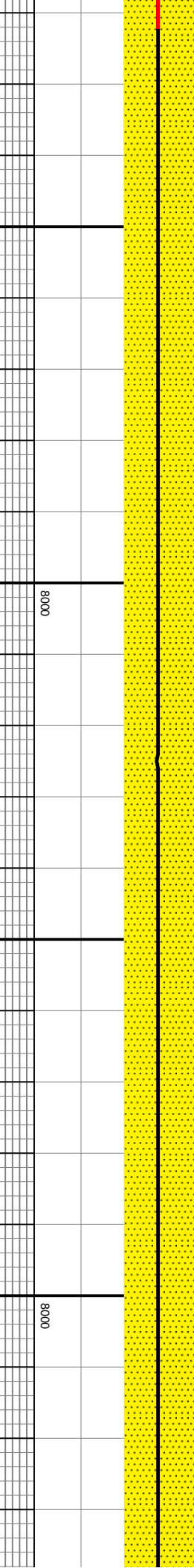
12320-12380 SS: pred gysbhn-med gy, occ clr grs, mod srtld, sb ang-sb rd, vf-uf grs, sb ang qtz grs thru, p-mod cmtld, fti gr sup cls, cons wi arg-silic cmt, sl calc ip, dul yeign fltor, mod mky cut, mod yeign resdrl ring	12380-12440 SS: predy med gy-gysbhn, lt gy, vf-uf grs, sb ang-sb rd, op grs thru, mod srtld, fti gr sup cls, cons wi arg/silic cmt, com lse grs, sl calc ip, dul yeign fltor, mod mky cut, mod yeign resdrl ring	12440-12500 SS: pred med gy-gysbhn, lt gy, clr-op grs thru, mod srtld, sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cmt, sl calc, com lse grs, dul yeign fltor, mod mky cut, mod yeign resdrl ring	12500-12510 SS: pred med gy-gysbhn, lt gy, clr-op grs thru, mod srtld, sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cmt, sl calc, com lse grs, dul yeign fltor, mod mky cut, mod yeign resdrl ring
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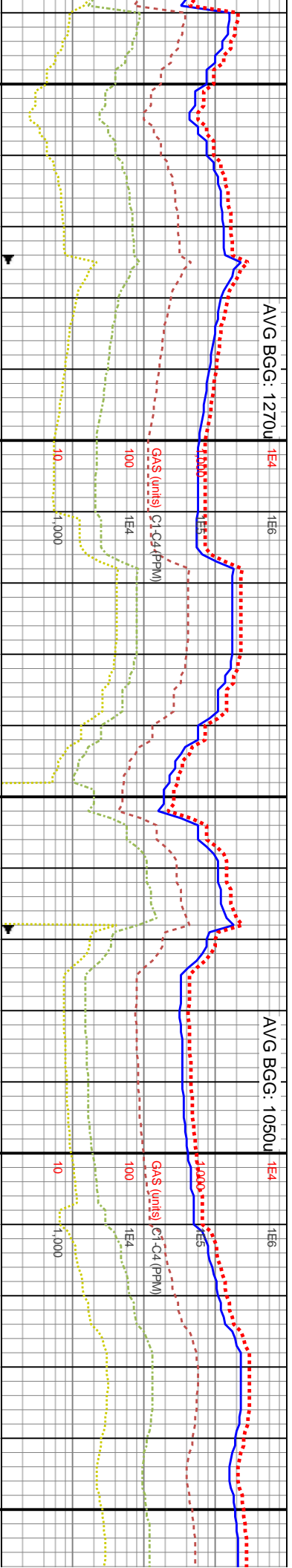
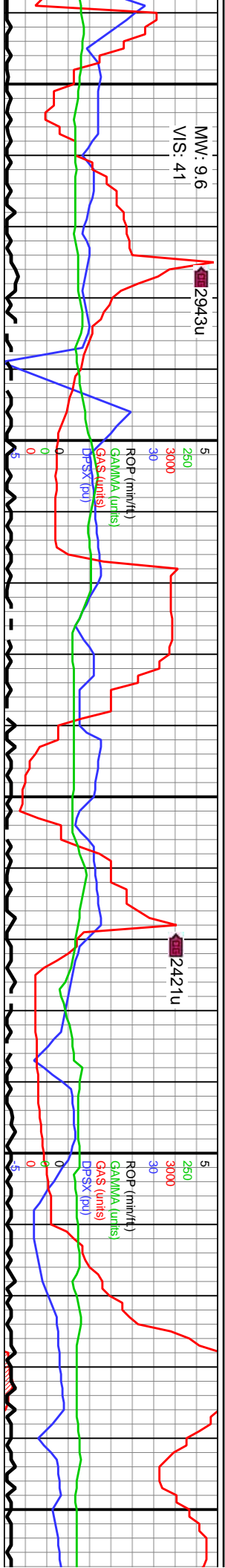
8000	8000	8000	8000
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[illegible]

12560 SS: dk gyshbn-med gy, lt bnm	12560-12620 SS: dk gy-dk gy bnm-off wh-it	12620-12680 SS: dk gyshbn-v dk gysbhn,	12680-12740 SS: pred dk gy-dk gy bnm-dk
clr uncons sd, mod strfd, pred sb	tr-it bnm clus, occ clr uncons sd, p-mod strfd,	occ lt gy, firm-v firm, pred gr sup cls cons wi	amb, sme tr-it bnm, sme oftwht-trnsj, p strfd,
rd, v-f grs, gr sup cls, cons wi	pred sb ang-sb rd v-f gr SS, str-med frm-firm	arg/slic cmt, mod str, sb ang-ang grms, v-f	pred sb ang-sb rd f-u f gr sd, sme med
cmt, com lse grs, tr pyr, dul yelgn flor,	str-sl frt gr sup cls cons wi arg-slic cmt, com	grnd, pred non-sl calc, tr pp pyr, occ uncons	ang-sb ang qtz grs, uncons grs-frt gr sup cls
ky cut, mod yelgn resdl ring	uncons, tr pyr, pred non-sl calc, dul yelgn flor,	qtz sd grms, sb ang-ang, p-mod str, dul yelgn	cons wi arg/slic cmt, dul yelgn flor, mod mky
	mod mky cut, mod yelgn resdl ring	flor, mod mky cut, mod yelgn resdl ring	cut, mod yelgn resdl ring





WOB: 28.9Klbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 637GPM  
VS: 4,597.59'

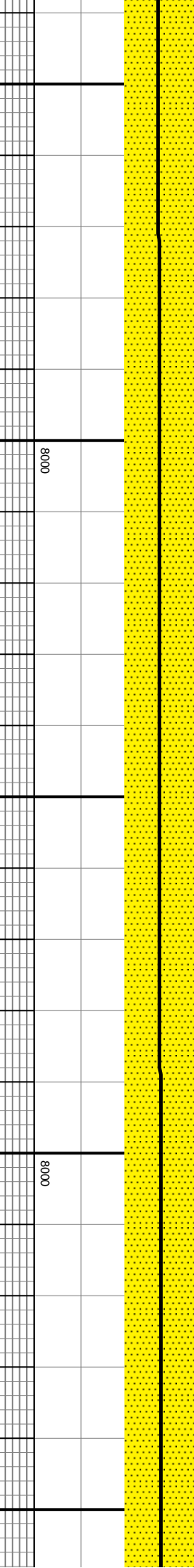
MD: 12,908'  
TVD: 7,727.2  
Inclination: 91.02°  
Azimuth: 0.83°  
VS: 4,692.27'

12740-12800 SS: pred dk gy-dk gy brn-off wh-it in-it brn gr sup cls cons wi arg/silic cnt, p-mod strd, pred sb ang-sb rd vf-f gr SS, sme uncons sd grns, med ang-sb ang qtz grs, mod str, sb ang-ang, dul yelgn flor, mod mky cut, mod yelgn resdl ring

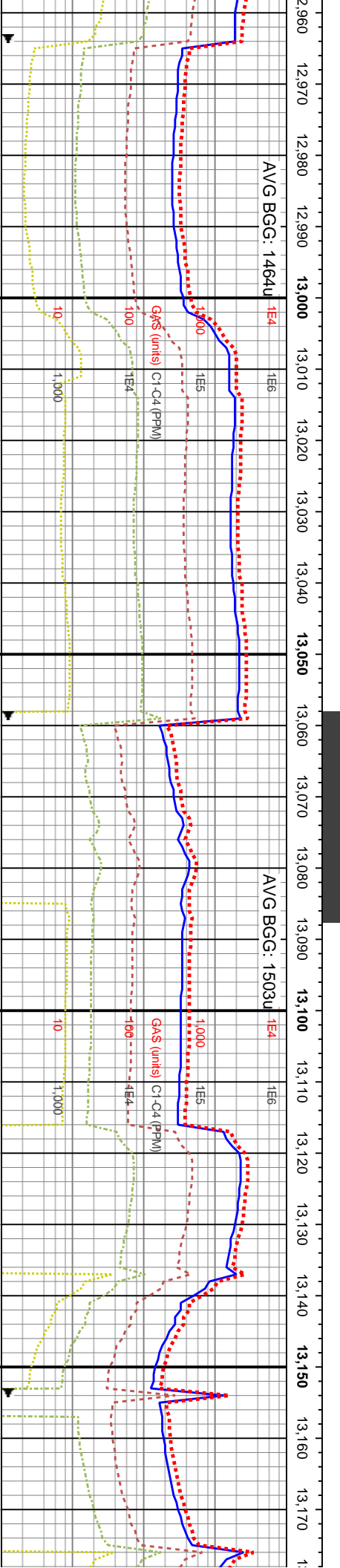
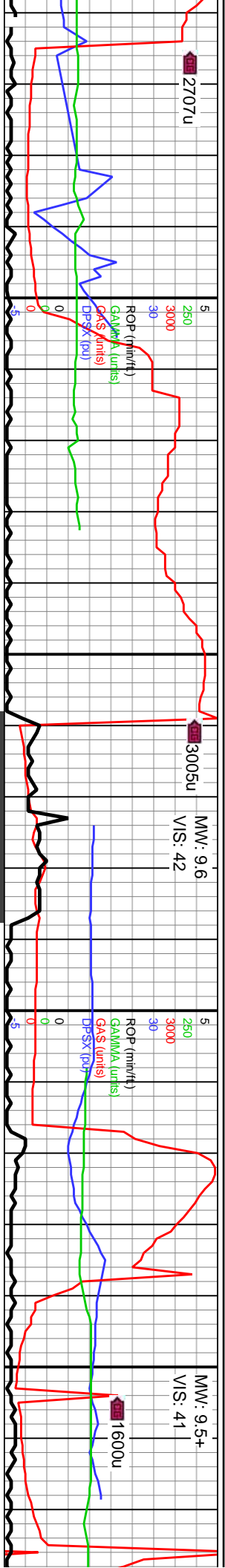
12800-12860 SS: pred med gy, occly gysbhn, tmsl grs thru, vf-uf grs, sb ang-sb rd, mod w strd, sb ang-sb rd grs, fri gr sup cls, cons wi arg-silic cnt, sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring

12860-12920 SS: dk gy-gysbhn, offwh-it gy, clr uncons sd, sb ang-sb rd, vf-f grs, mod strd, cons wi arg/silic cnt, abnt lse grs, pred non calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring

12920-12980 SS: dk gy brn cls, occ clr uncons sb ang-sb rd, vf-f grs, arg-silic cnt, com lse g flor, mod mky cut, mod





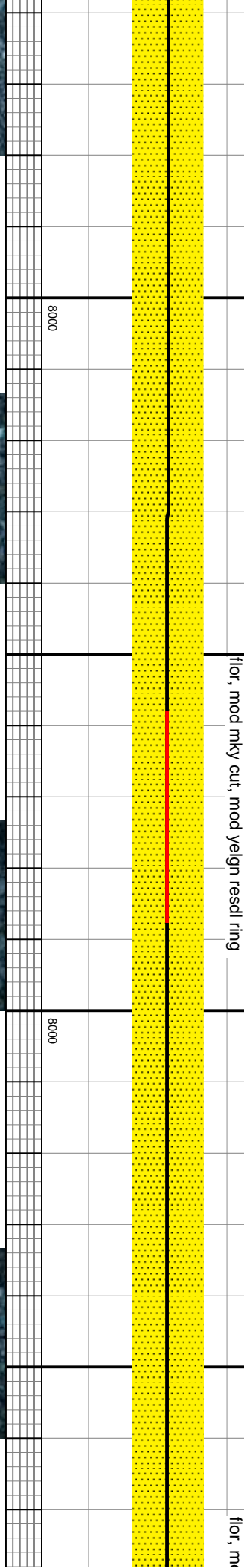


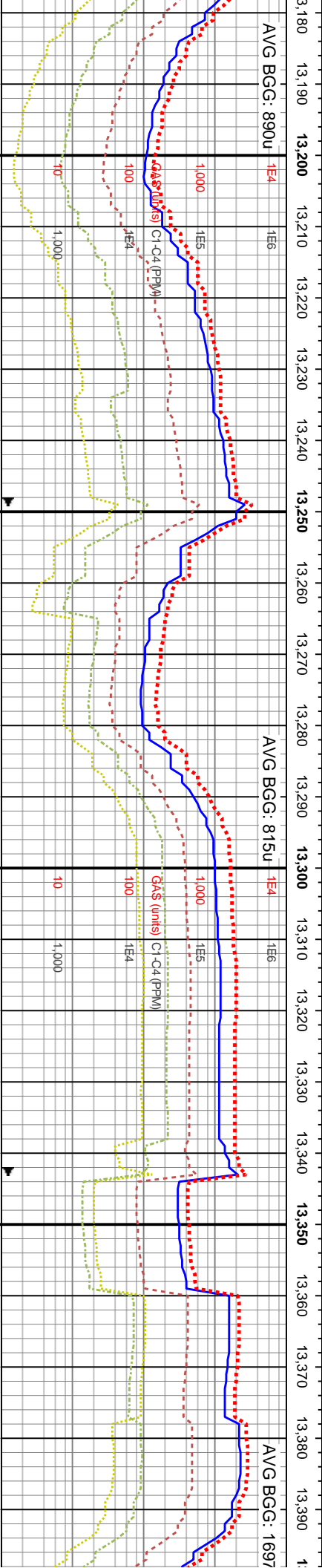
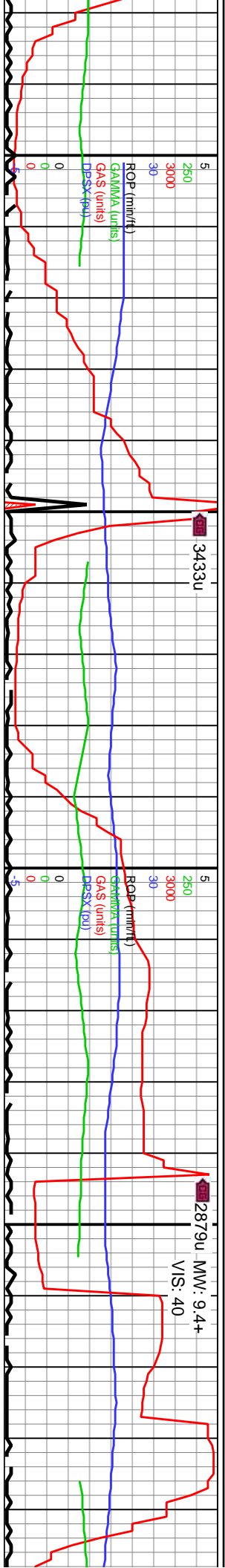
WOB: 28.2Klbs  
Rotary: 71RPM  
Strokes: 230SPM  
Pump Rate: 637GPM  
VS: 4,787.17'

MD: 13,003'  
TVD: 7,727.32'  
Inclination: 88.83°  
Azimuth: 358.42°

MD: 13,098.000'  
TVD: 7,728.62'  
Inclination: 89.6°  
Azimuth: 359.18°

12980-13040 SS: pred med gy-gyshbn, lt gy, clr grs, mod w srt, sb ang-sb rd, vf-uf grs, ang-sb rd grs, uncon grs, fri gr sup cls, cons wi arg-silic cnt, sl calc ip, dul yelgn flr, mod mky cut, mod yelgn resdl ring	13040-13100 SS: dk gyshbn-v dk gyshbn, occ lt gy, frm-v frm, pred gr sup cls cons wi arg/silic cnt, mod srt, sb ang-ang grs, vf-f grnd, pred non-sl calc, tr pp pyr, occ uncon qtz sd grs, sb ang-ang, p-mod srt, dul yelgn flr, mod mky cut, mod yelgn resdl ring	13100-13160 SS: pred med gy-gyshbn, offwht-lt gy, pred sb ang-sb rd, mod srt, vf-f grs, cons wi arg-silic cnt, com lse grs, sme sl calc, dul yelgn flr, mod mky cut, mod yelgn resdl ring	13160-13170 SS: pred med gy-gyshbn, occ lt gy, frm-v frm, pred gr sup cls cons wi arg/silic cnt, mod srt, sb ang-ang grs, vf-f grnd, pred non-sl calc, tr pp pyr, occ uncon qtz sd grs, sb ang-ang, p-mod srt, dul yelgn flr, mod mky cut, mod yelgn resdl ring
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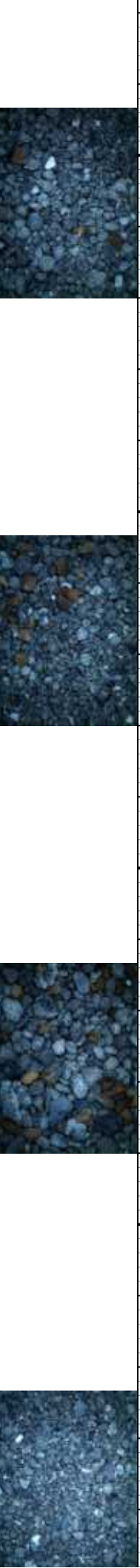
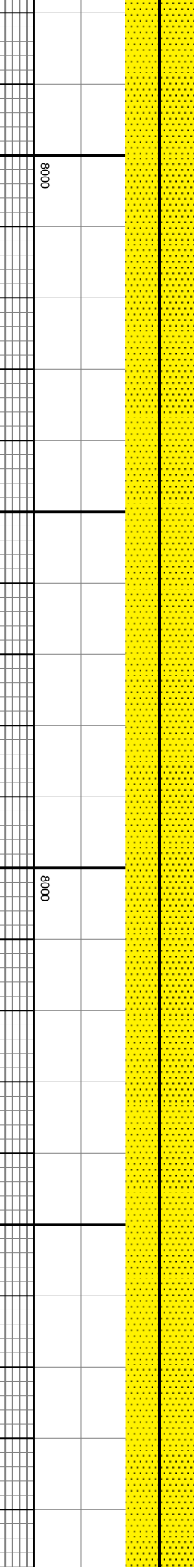


WOB: 26.9Klbs  
Rotary: 51RPM  
Strokes: 230SPM  
Pump Rate: 638GPM

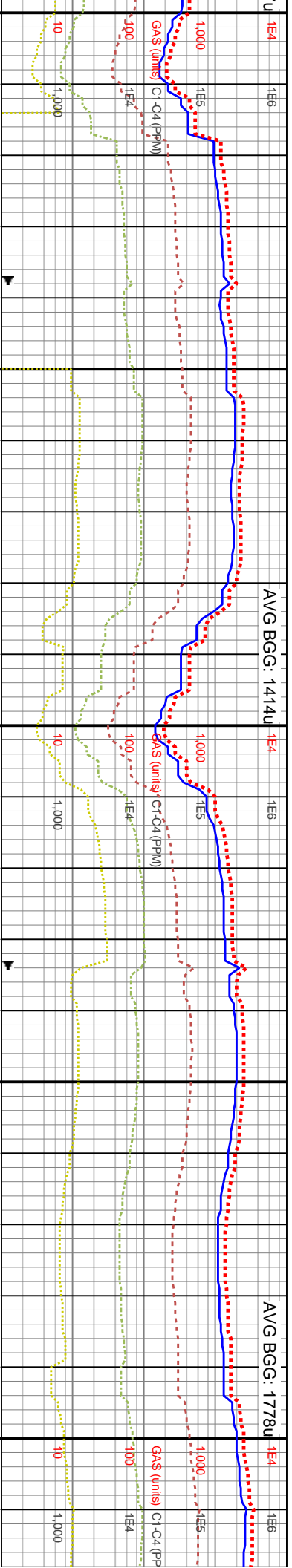
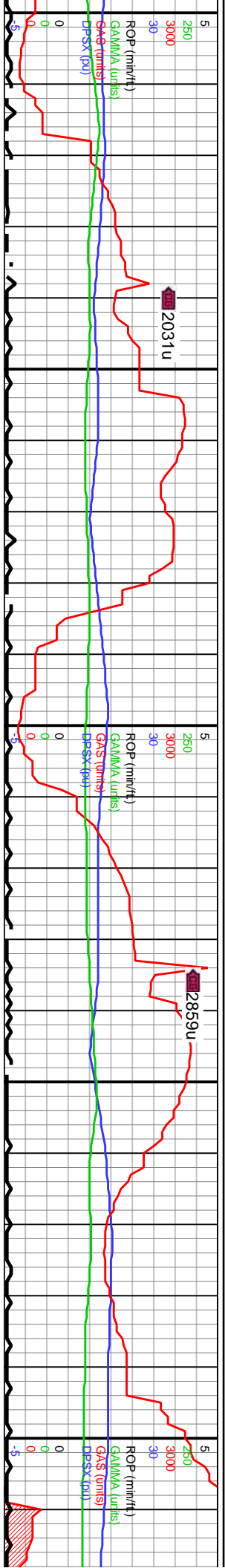
MD: 13,287'  
TVD: 7,728.57'  
Inclination: 90.43°  
Azimuth: 0.71°  
VS: 5,070.9'

WOB: 13,382'  
TVD: 7,727.94'  
Inclination: 90.34°  
Azimuth: 0.13°  
Pump

13220 SS: predy med gy-lt gy-gyshbn, tn, offwht-trnsi grs thru, p-mod w srtid, ang-sb rd f-u f gr sd, med ang-sb ang qtz, uncons grs-fri gr sup cls cons wi c cmt, sl calc ip, tr pyrc spec, dul yelgn mod mky cut, mod yelgn resdl ring	13220-13280 SS: dk gy-dk gy brn-off wh-lt tn-lt brn-clr uncons sd, p-mod srtid, pred sb ang-sb rd vf-f gr SS, sft-med frm-frm sft-sl fri gr sup cls cons wi arg/silic cmt, com-abnt uncons, tr pyr, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	13280-13340 SS: pred dk gy-dk gy brn-dk amb, sme tn-lt brn, sme offwht-trnsi, p srtid, pred sb ang-sb rd f-u f gr sd, sme med ang-sb ang qtz grs, uncons grs-fri gr sup cls cons wi arg/silic cmt, sme sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	13340-13400 SS: predy med gy-gyshbn, lt gy, vf-uf grs, sb ang-sb rd, op grs thru, mod srtid, fri gr sup cls, cons wi arg/silic cmt, com lse grs, sl calc ip, dul yelgn flor, mod mky cut mod yelgn resdl ring
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WOB: 32.2Klbs  
Rotary: 55RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

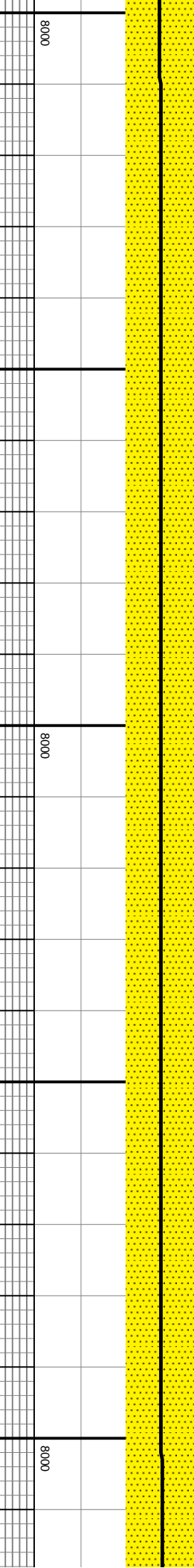
MD: 13,478'  
TVD: 7,727.08'  
Inclination: 90.68°  
Azimuth: 359.75°  
VS: 5,261.63'

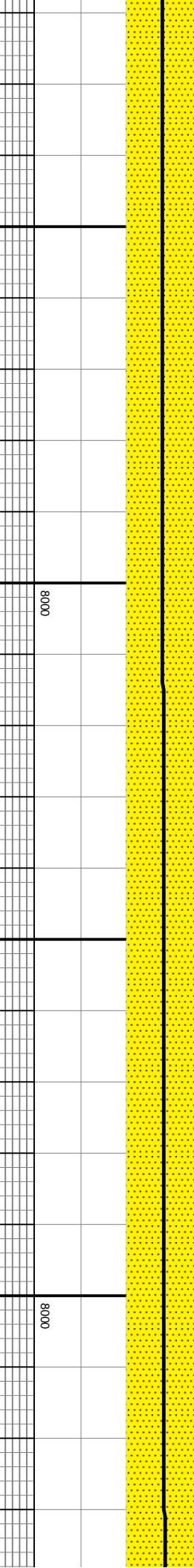
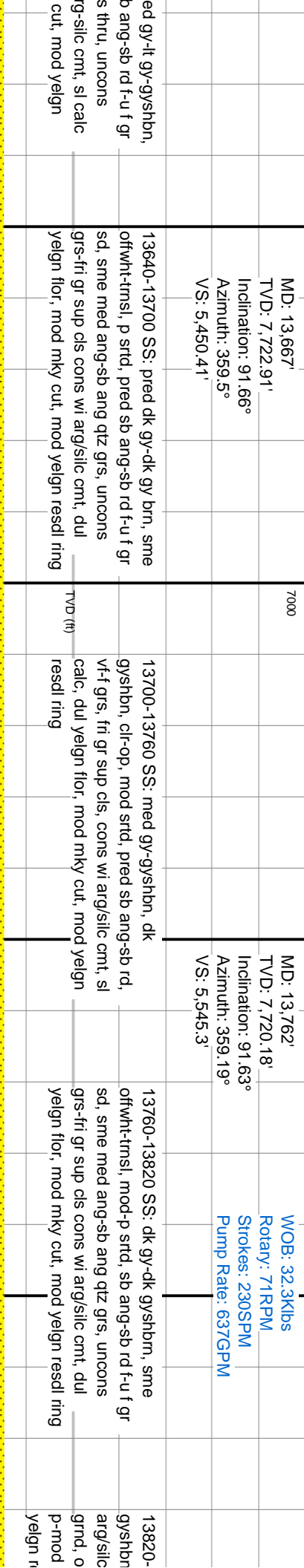
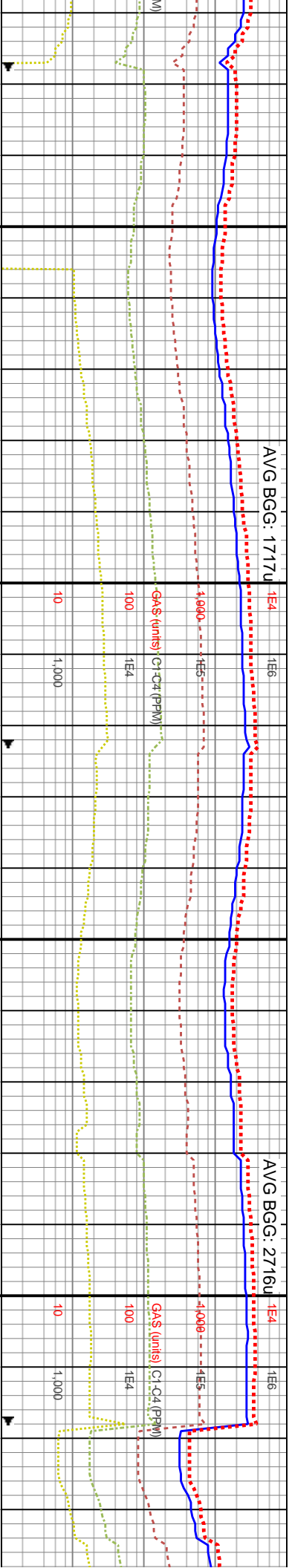
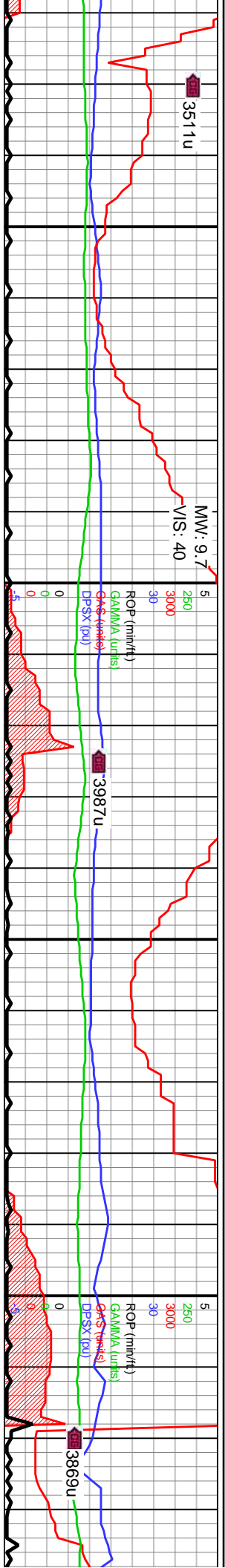
13400-13460 SS: med gy-gyshbn, lt gy, clr-op grs thru, mod strd, sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cnt, sl calc, com lse grs, dul yelgn flor, mod mky cut, mod yelgn resdl ring

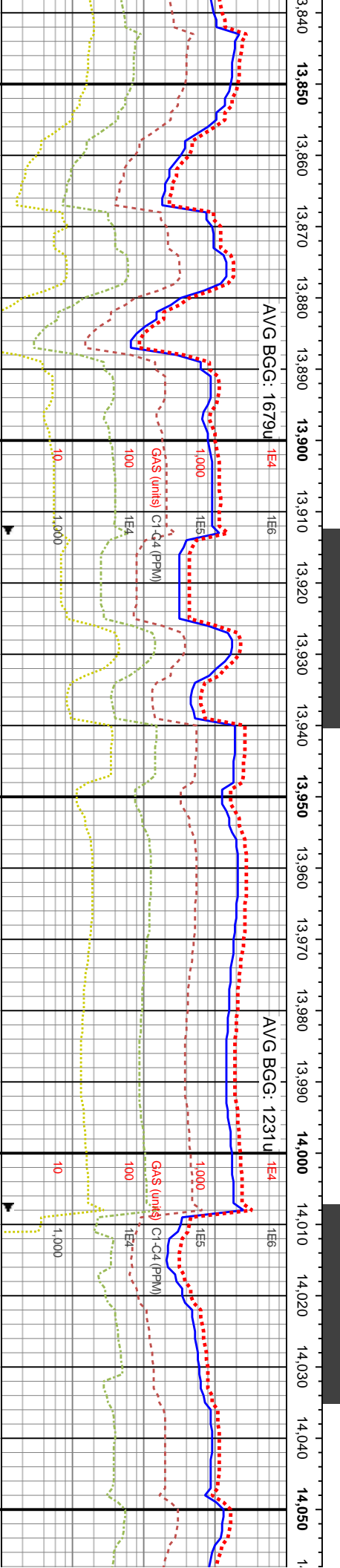
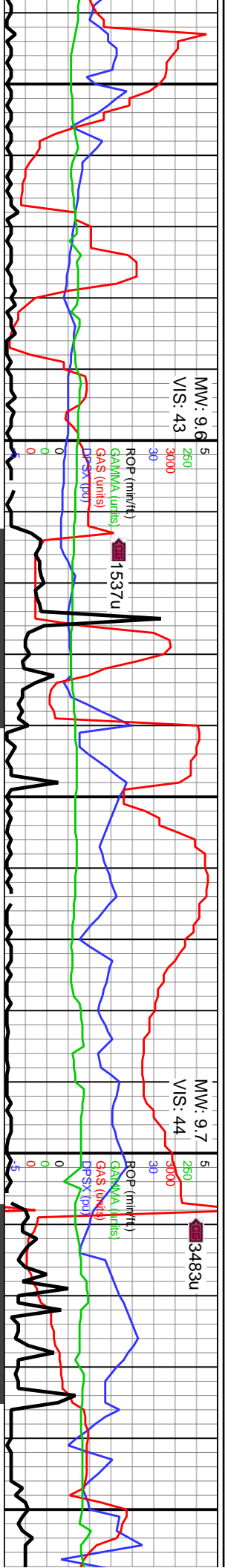
13460-13520 SS: dk gy-dk gy brn-off wh-lt tn-lt brn cls, occ clr uncons sd, p-mod strd, pred sb ang-sb rd vf-f gr SS, sft-med frm-frm sft-sl fri gr sup cls cons wi arg-silic cnt, com uncons, tr pyr, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring

13520-13560 SS: pred med gy-gyshbn, lt gy-offwht, op abnt uncons sd, p-mod strd, pred sb ang-sb rd, vf-f grs, sl hrd-frm, sl fri, gr sup cls, cons wi arg/silic cnt, dul yelgn flor, mod mky cut, mod yelgn resdl ring

13560-13640 SS: predy m occlly lt tn, p-mod w strd, s sd, med ang-sb ang qtz gr grs-fri gr sup cls cons wi a ip, dul yelgn flor, mod mky resdl ring







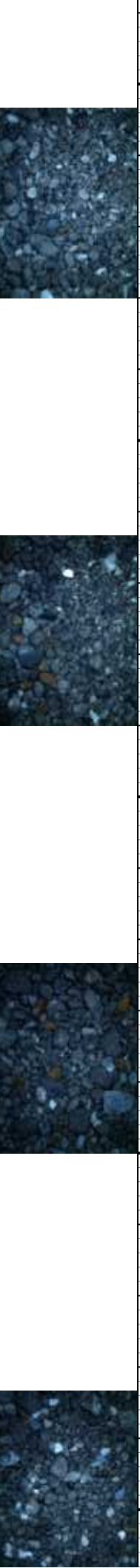
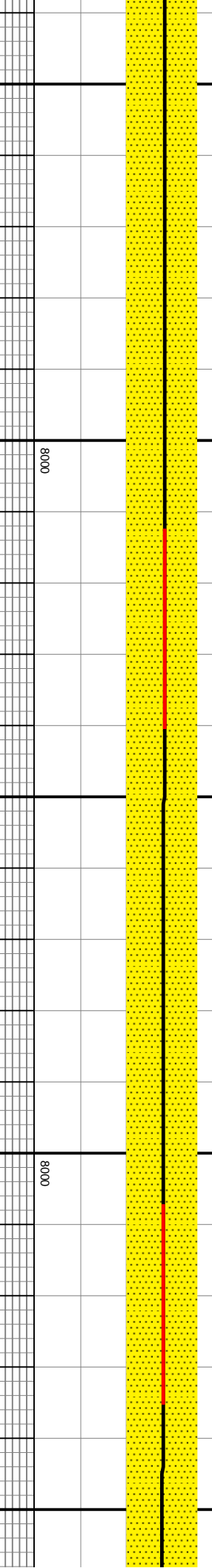
MD: 13,857'  
TVD: 7,717.81'  
Inclination: 91.23°  
Azimuth: 358.68°  
VS: 5,640.23'

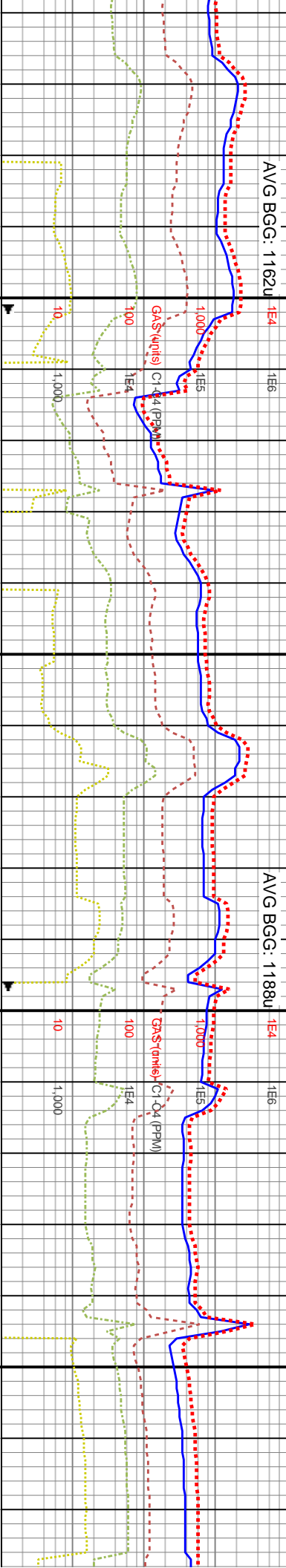
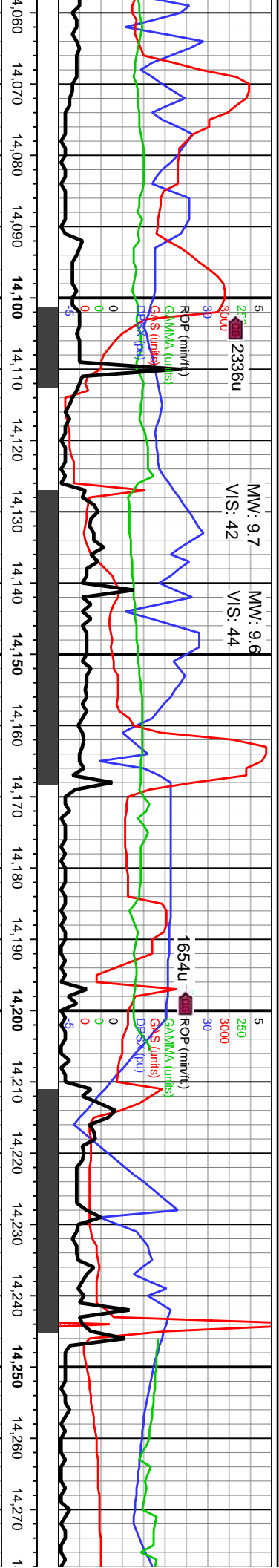
MD: 13,952'  
TVD: 7,718.47'  
Inclination: 87.97°  
Azimuth: 358.05°  
VS: 5,735.19'

WOB: 27.6kbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

MD: 14,046'  
TVD: 7,721.58'  
Inclination: 88.24°  
Azimuth: 357.34°  
VS: 5,829.13'

13880-13940 SS: pred dk gysbhn-v dk , frm-v frm, pred gr sup cls cons wi cmt, mod srt, sb ang-ang grns, vf-f cc uncons qtz sd grns, sb ang-ang, srt, dul yelgn flor, mod mky cut, mod ssdl ring	13940-14000 SS: pred dk gysbhn-med gy, lt brn cls, occ clr uncons sd, mod strd, pred sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cmt, com lse grs, tr pyr, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14000-14060 SS: predy med gy-gysbhn, lt gy, vf-uf grs, sb ang-sb rd, op grs thru, mod strd, fti gr sup cls, cons wi arg/silic cmt, com lse grs, sl calc ip, dul yelgn flor, mod mky cut mod yelgn resdl ring
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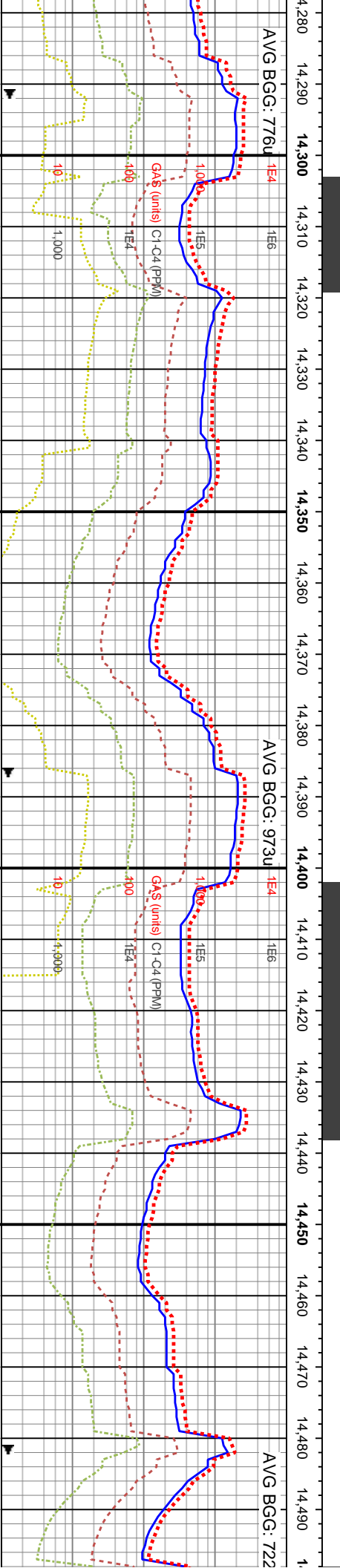
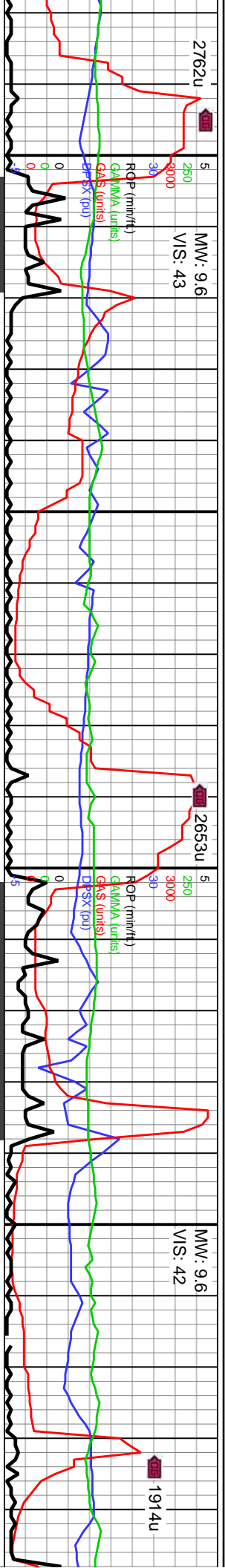


14060-14120 SS: dk gy-dk gyshbn, lt brn-clr uncons sd, mod strd, sb ang-sb rd, vf-f grs, cons wi arg/silic cnt, abnt lse grs, tr pyr, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	MD: 14,141' TVD: 7,725.42' Inclination: 87.13° Azimuth: 358.45° VS: 5.924.05'	WOB: 24.2Klbs Rotary: 50RPM Strokes: 230SPM Pump Rate: 637GPM	MD: 14,236' TVD: 7,729.36' Inclination: 88.11° Azimuth: 1.41° VS: 6.018.85'
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14120-14180 SS: dk gy-dk gyshbn, lt brn, vf-f grs, sb ang-sb rd, mod strd, pred com lse grs, cons wi arg/silic cnt, gr sup cls, sme sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14180-14240 SS: med gy-dk gyshbn, lt brn-dk gy, vf-f grs, pred sb ang-sb rd, mod strd, gr sup cls, cons wi arg/silic cnt, abnt lse grs, tr pyr, pred sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14240-14300 SS: dk gysh sb ang-sb rd, vf-f grs, abn mod strd, gr sup cls, cons pred non-sl calc, tr pyr, dl mky cut, mod yelgn resdl
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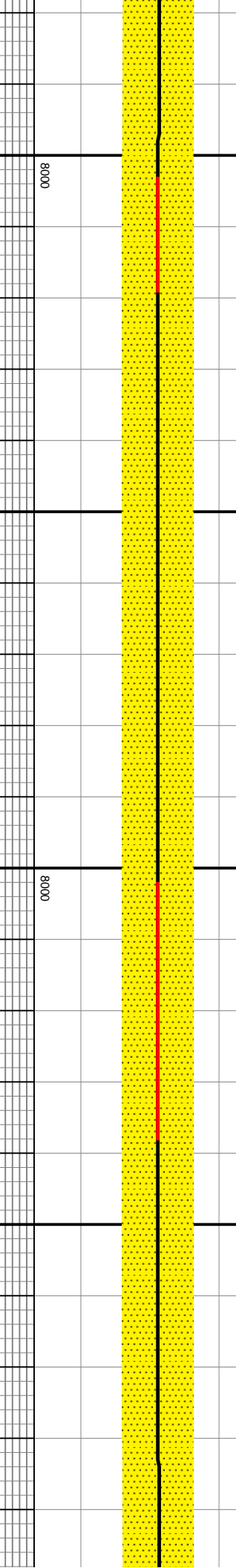




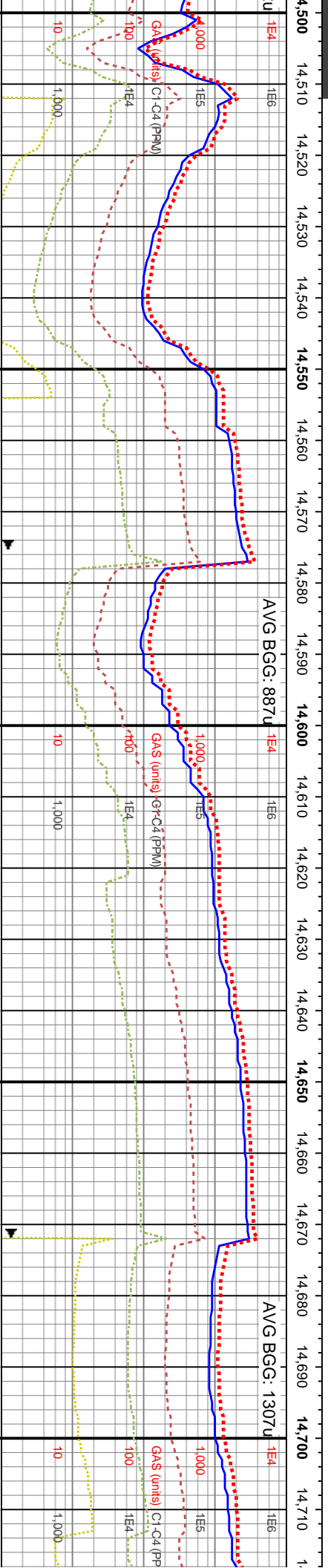
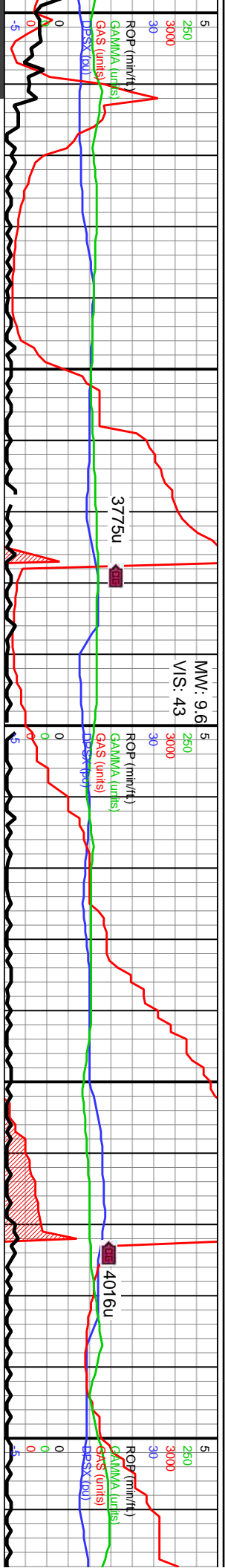


7000	MD: 14,331' TVD: 7,731.54' Inclination: 89.26° Azimuth: 1.27° VS: 6,113.57'	WOB: 21.6kbs Rotary: 50RPM Strokes: 230SPM Pump Rate: 637GPM	MD: 14,426' TVD: 7,731.63' Inclination: 90.64° Azimuth: 1.88° VS: 6,208.29'
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bn-med gy, lt brn, t clt-op lse grs, wi arg/silic cmt, il yelgn flor, mod ring	14300-14360 SS: pred dk gysbhn-med gy, lt brn trnsi grs thru, mod srtf, pred sb ang-sb rd, vf-uf grs, abnt lse qtz grs, gr sup cls, cons wi arg/silic cmt, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14360-14420 SS: dk gy-dk gy brn, offwht-lt brn, abnt clt lse sd, mod srtf, pred sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg/silic cmt, tr pyr, pred non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14420-14480 SS: predy med gy-gysbhn, lt gy-offwht, sb ang-sb rd, vf-f grs, op grs thru, mod srtf, com lse grs, sl hrd gr sup cls, cons wi arg/silic cmt, sl calc ip, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14480- gy-offw pred st cls, cor mky cu
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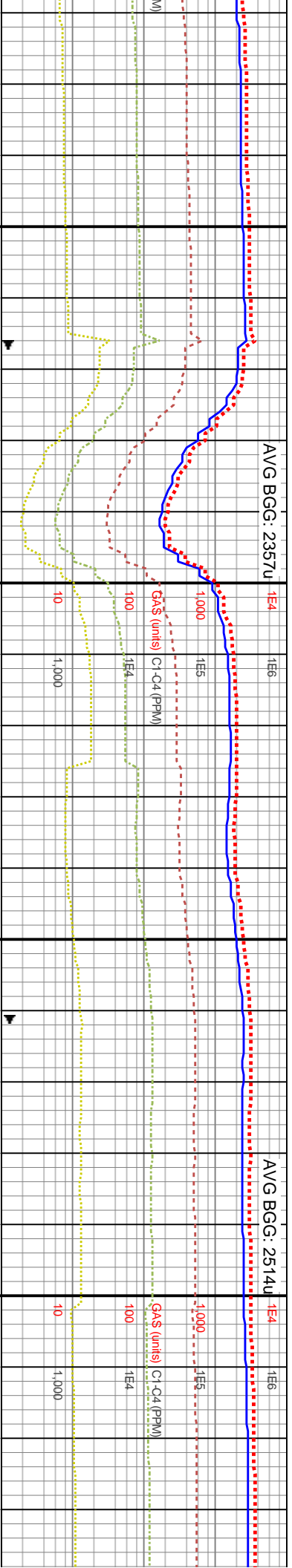
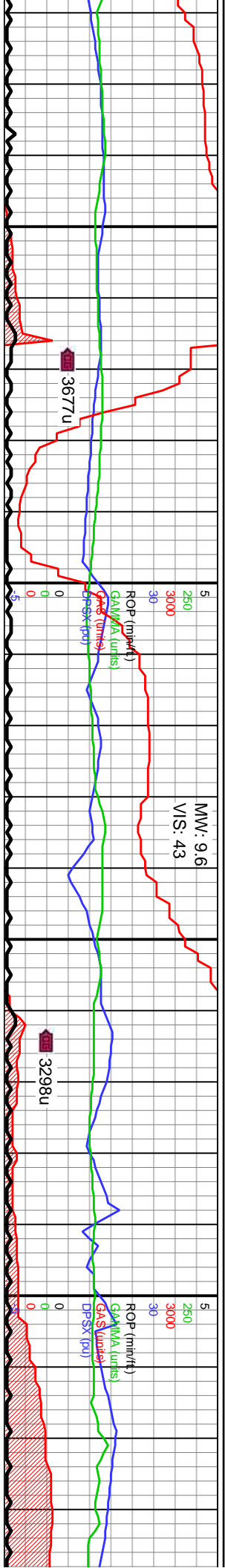




7000	MD: 14,521' TVD: 7,730.21' Inclination: 91.07° Azimuth: 2.84° VS: 6,302.89'	14540-14600 SS: dk gy-gyshbn clus, occ clr uncons sd, vf-f grs, sb ang-sb rd, mod strd, sl hrd-fm, com uncons, cons wi arg/silic cmt, tr pyr, non-sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring	7000	MD: 14,616' TVD: 7,728.04' Inclination: 91.54° Azimuth: 2.34° VS: 6,397.45'	14600-14660 SS: dk gy-med gysbhn, offwht-lt brn, vf-f grs, pred sb ang-sb rd, clr abnt uncons sd, sl fri-hrd, mod strd, gr sup cls, cons wi arg/silic cmt, dul yelgn flor, mod mky cut, mod yelgn resdl ring	14660-14720 SS: pred med gy-lt gy, gysbhn-dk gy, sb ang-sb rd, vf-f grs, ang-sb rd grs, clr grs, mod strd, com lse grs, fri gr sup cls, cons wi arg-silic cmt, sl calc ip, dul yelgn flor, mod mky cut, mod yelgn resdl ring
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8000			8000			8000
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WOB: 31.4Klbs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 636GPM

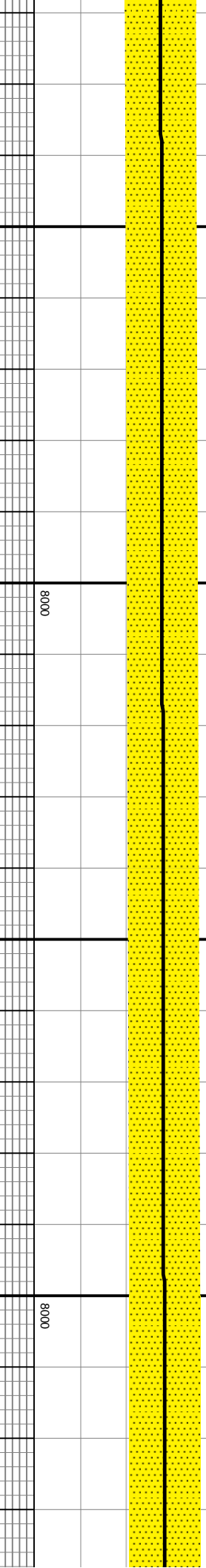
MD: 14,901'  
TVD: 7,718.31'  
Inclination: 93.08°  
Azimuth: 1.46°  
VS: 6.681.44'

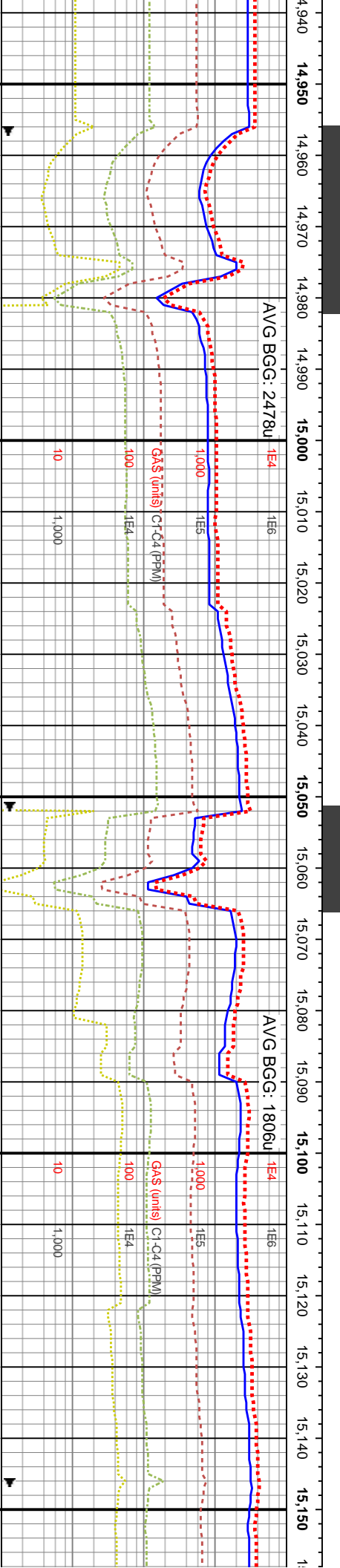
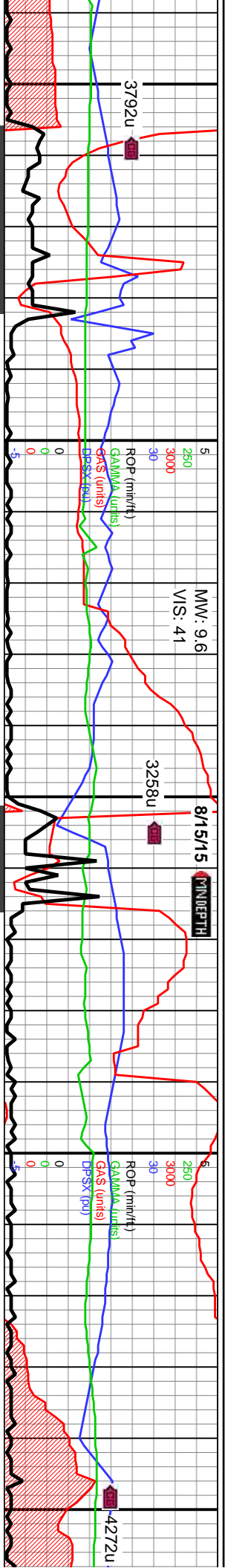
14720-14780 SS: pred med gy, occly  
gysbn-it gy, vf-f grs, sb ang-sb rd, trnsi grs  
thru, sb ang-sb rd grs, mod w srt, fri gr sup  
cls, cons wi arg-silic cmt, sl calc, dul yelgn  
flor, mod mky cut, mod yelgn resdl ring

14780-14840 SS: dk gy-med gy, lt gysbn,  
pred sb ang-sb rd, vf-f grs, clr unconcs sd,  
mod srt, gr sup cls, cons wi arg/silic cmt,  
abt lse grs, non-sl calc, tr pyr, dul yelgn flor,  
mod mky cut, mod yelgn resdl ring

14840-14900 SS: dk gy-med gy, gysbn, vf-f  
grs, pred sb ang-sb rd, clr unconcs sd, mod  
srt, gr sup cls, abnt lse grs, cons wi arg/silic  
cmt, tr pyr, non-sl calc, dul yelgn flor, mod  
mky cut, mod yelgn resdl ring

14900-14960 SS: dk gy-r  
vf-f grs, sl fri-hrd, clr abnt  
srt, pred sb ang-sb rd, gr  
arg/silic cmt, non-sl calc, d  
mky cut, mod yelgn resdl





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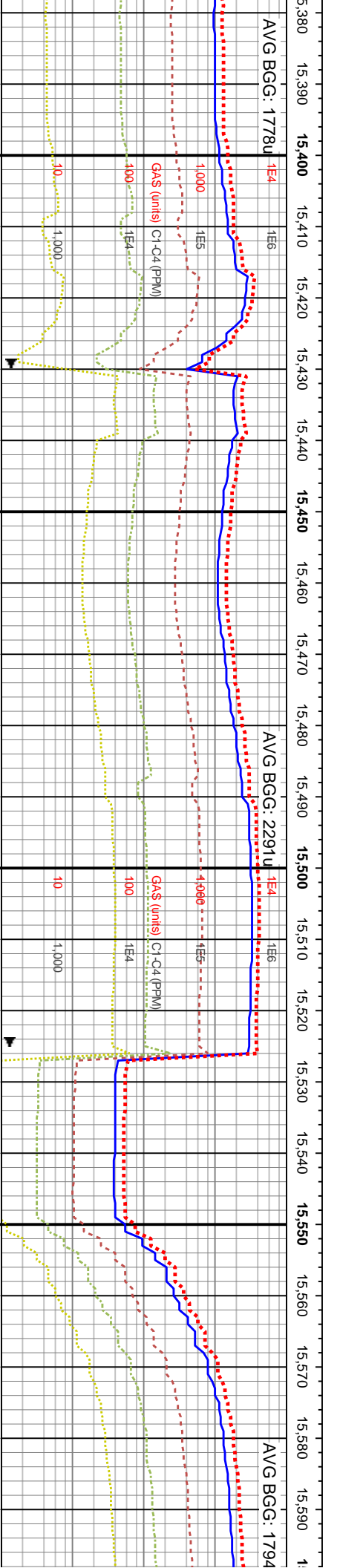
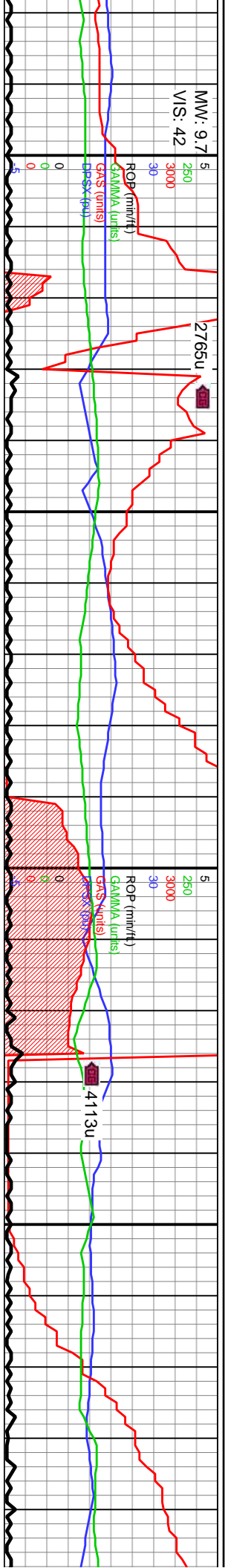
15080-15140 SS: pred med gy-dk gy, dk gy brn, trnsi, vf-f grs, sb ang-sb rd, mod strt, sb ang qtz grs, hrd-sl fr, gr sup cls, cons wi arg/silic cnt, sl calc, du yelgn flor, mod mky cut, mod yelgn resdl ring	15080-15140 SS: pred med gy-gyshbn, dk gy, vf-f grs, sb ang-sb rd, mod strt, occ op-clr grs, mod w cntd, gr sup cls, cons wi arg-silic cnt, sl calc, du yelgn flor, mod mky cut, mod yelgn resdl ring	14960-15020 SS: pred med gy-gyshbn, lt gy-offwht, vf-f grs, abnt unconcs sd, pred sb ang-sb rd, mod strt, sl hrd-frn, sl fri, gr sup cls, cons wi arg/silic cnt, du yelgn flor, mod mky cut, mod yelgn resdl ring	15140-15140 gy, vf-f grs, gr cntd, s mod ye

8000			
8000			









WOB: 31.6kibs  
Rotary: 70RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

MD: 15,470'  
TVD: 7,715.64'  
Inclination: 89.44°  
Azimuth: 359.37°  
VS: 7,249.49'

WOB: 32  
Rotary: 7  
Strokes: 7  
Pump Rate: 637GPM

15380-15440 SS: med gy-dk gy, gyshbn, vf-f  
grs, mod srtf, pred sb ang-sb rd, gr sup cls,  
cons wi arg/silic cmt, abnt lse f sb ang qtz grs,  
pred non-si calc, dul yelgn flor, mod mky cut,  
mod yelgn resdl ring

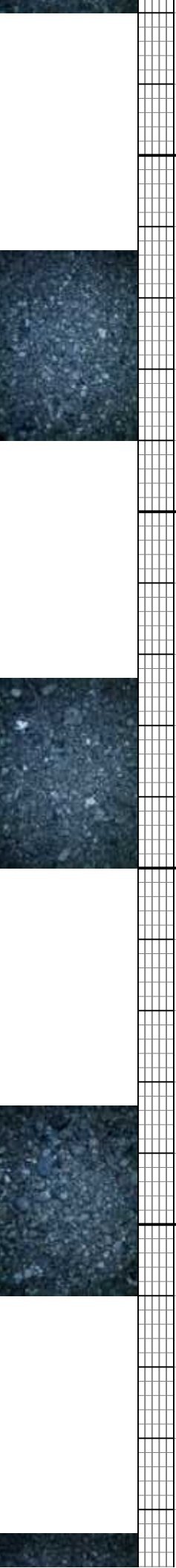
15440-15500 SS: pred dk gy-med gy,  
gyshbn, offwht-tmsl, vf-f grs, pred sb ang-sb  
rd, mod srtf, abnt lse grs, gr sup cls, cons wi  
arg/silic cmt, dul yelgn flor, mod mky cut, mod  
yelgn resdl ring

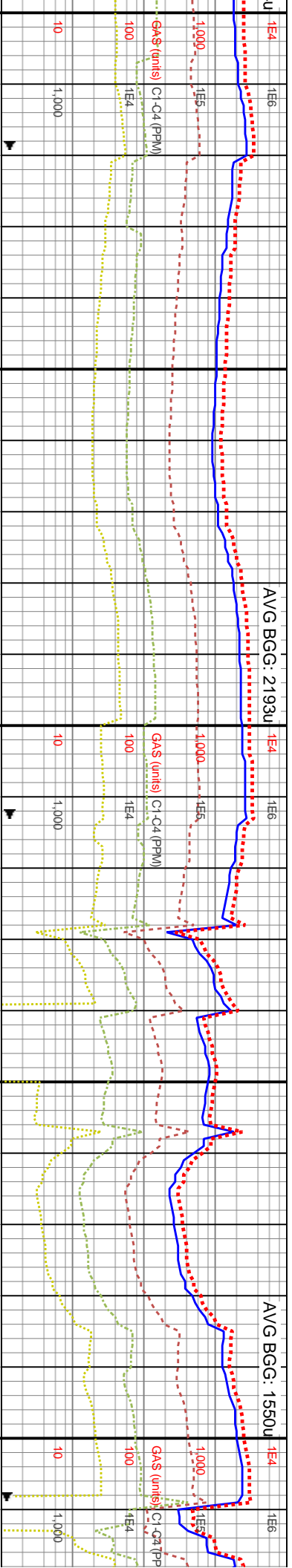
15500-15560 SS: pred med gy-dk gy, lt  
gy-gyshbn, sb ang-sb rd, vf-f grs, clr grs thru,  
mod srtf, gr sup cls, cons wi arg-silic cmt, sl  
calc, com lse grs, dul yelgn flor, mod mky  
cut, mod yelgn resdl ring

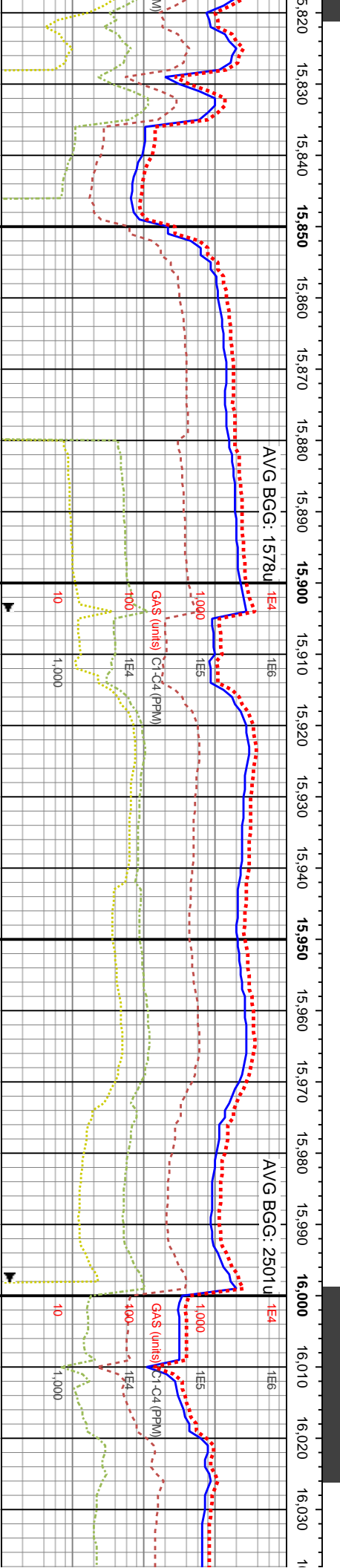
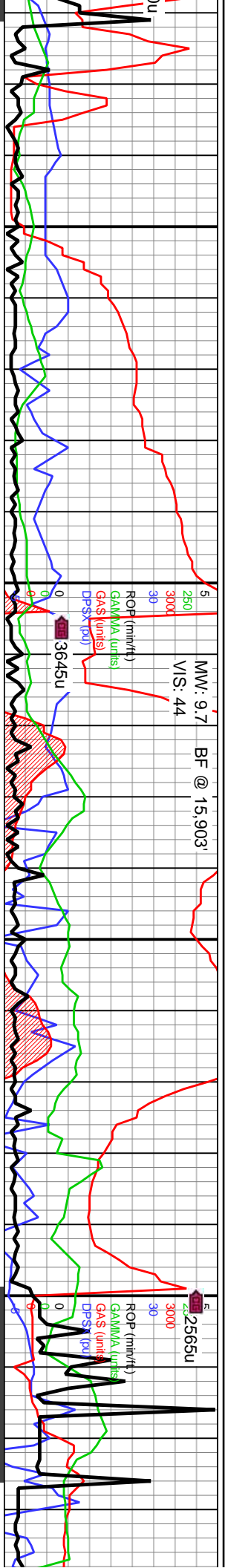
15560-15620 SS: pred gy  
brn, mod srtf, pred sb ang  
sup cls, cons wi arg/silic cr  
yelgn flor, mod mky cut, r

8000

8000



[illegible]



MD: 15,848'  
TVD: 7,709.34'  
Inclination: 89.78°  
Azimuth: 1.53°  
VS: 7,626.68'

MD: 15,944'  
TVD: 7,709.09'  
Inclination: 90.52°  
Azimuth: 0.03°  
VS: 7,722.49'

WOB: 61.7Klbs  
Rotary: 0RPM  
Strokes: 230SPM  
Pump Rate: 638GPM

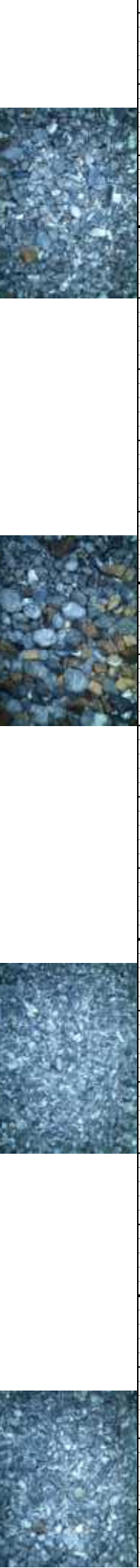
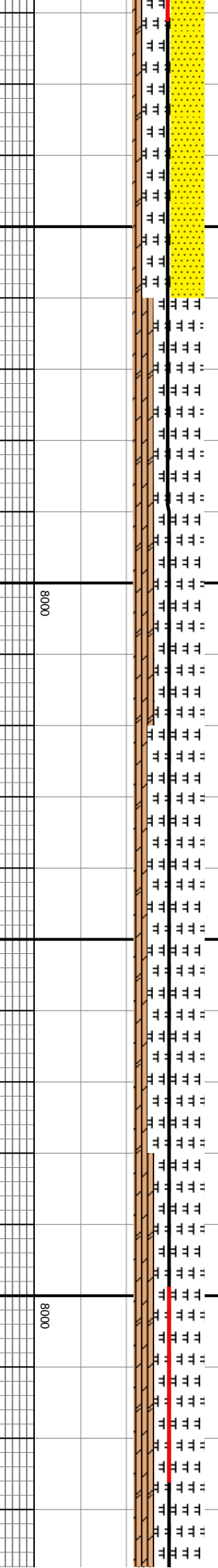
MD: 16,0  
TVD: 7,7  
Inclination:  
Azimuth:  
VS: 7,816'

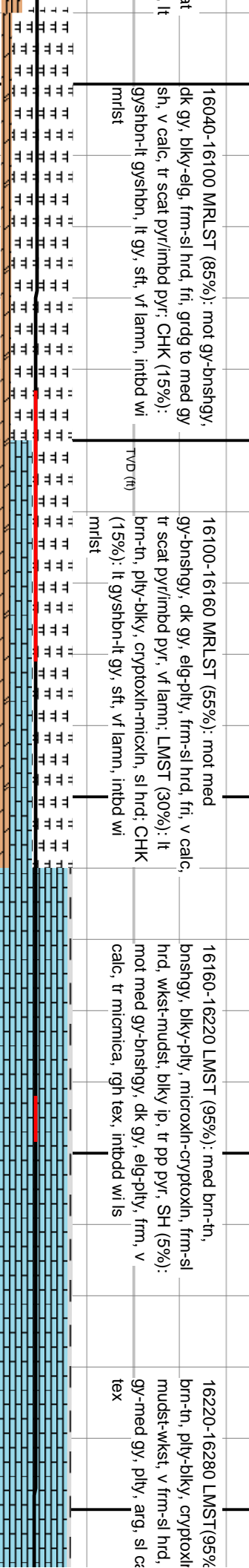
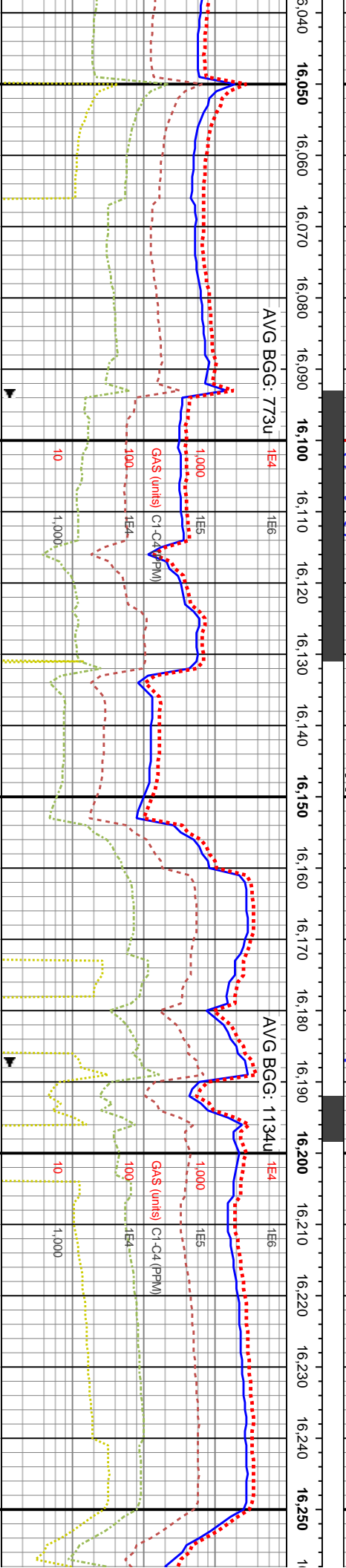
20 SS (45%): gysbhn-med gy, vf-f gys,  
b ang-sb rd, gr sup cls, cons wi  
t: MRLST (40%): mot med gy-brnshgy,  
pty, frm-sl hrd, fri, v calc, tr scat  
gy, vf lamm; CHK (15%): lt gysbhn-lt gy,  
intbd wi mrlst

15860-15920 MRLST (70%): mot med  
gy-brnshgy, dk gy, elg-pty, frm-sl hrd, fri, v  
calc, tr scat pyr/imbd pyr, vf lamm; CHK  
(30%): lt gysbhn-lt gy, sft, vf lamm, intbd wi  
mrlst

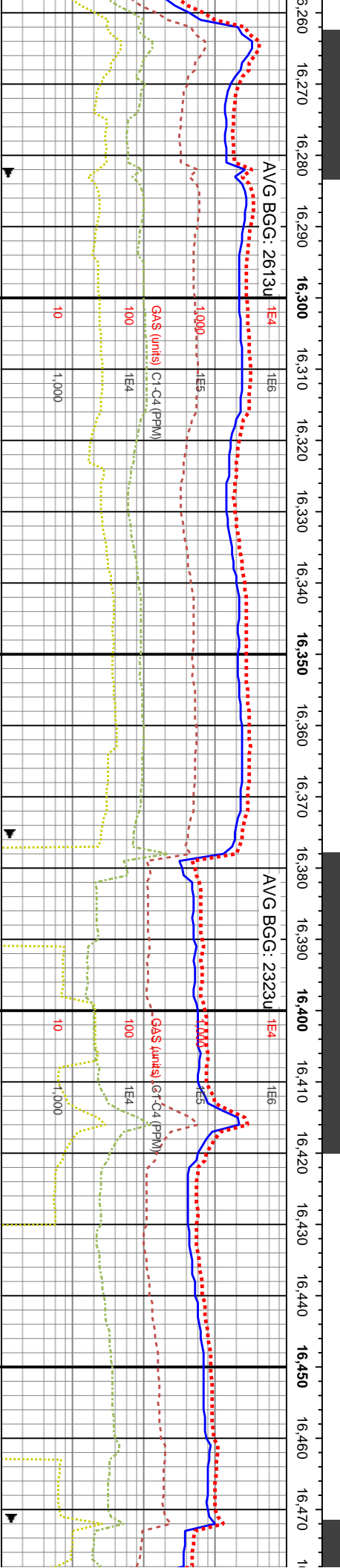
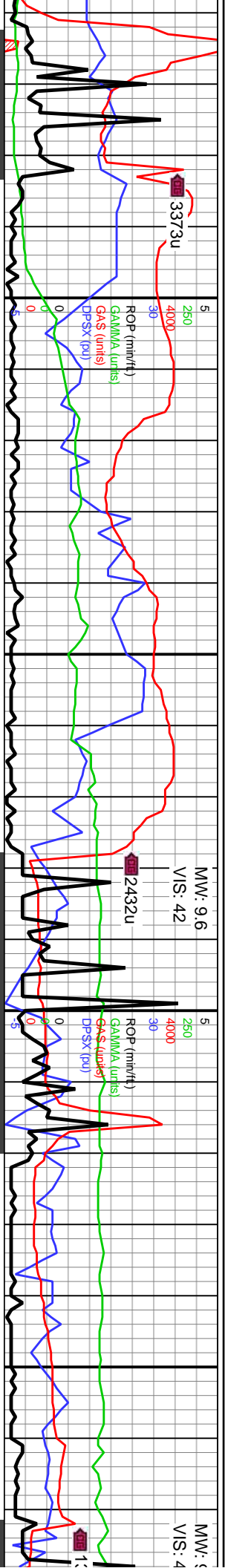
15920-15980 MRLST (80%): mot med  
gy-brnshgy, dk gy, blk-y-sl pty, frm-sl hrd, v  
calc, tr mic fos, tr scat pyr; CHK (20%): crm-lt  
gysbhn, lt gy, sft, vf lamm, intbd wi mrlst

15980-16040 MRLST (70%): dk gy-med gy,  
gysbhn, pty-sb blk-y, frm-sl hrd, v calc, tr scat  
pyr/imbd pyr; CHK (30%): gysbhn-lt gysbhn,  
gy, sft, vf lamm, intbd wi mrlst, v calc









MD: 16,323'  
TVD: 7,714.12'  
Inclination: 88.65°  
Azimuth: 0.22°  
VS: 8,100.92'

WOB: 82.1Klbs  
Rotary: 0RPM  
Strokes: 230SPM  
Pump Rate: 637GPM  
Azimuth: 0.85°  
VS: 8,194.74'

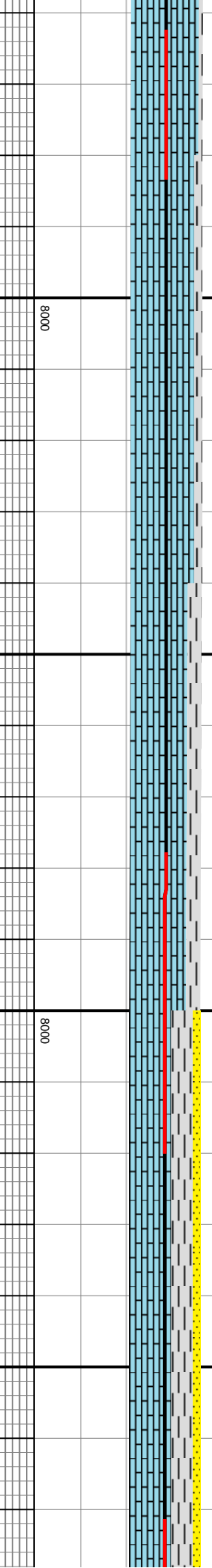
16280-16340 LMST (90%): pred mot  
gyshbn-tn, occ gyshbn-crm, frm-sl hrd,  
cryptoxln-microxln, wkst-mudst, blkly ip, pred  
ply; SH (10%): dk gy-v dk gy, occ blk, intbdd  
wls, micnica, calc, rgh tex, tr pp pyr

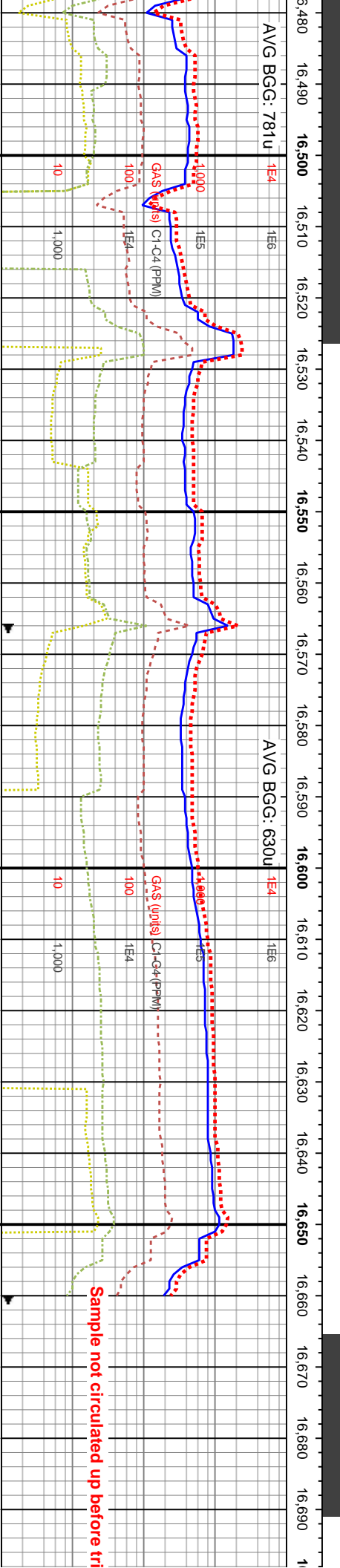
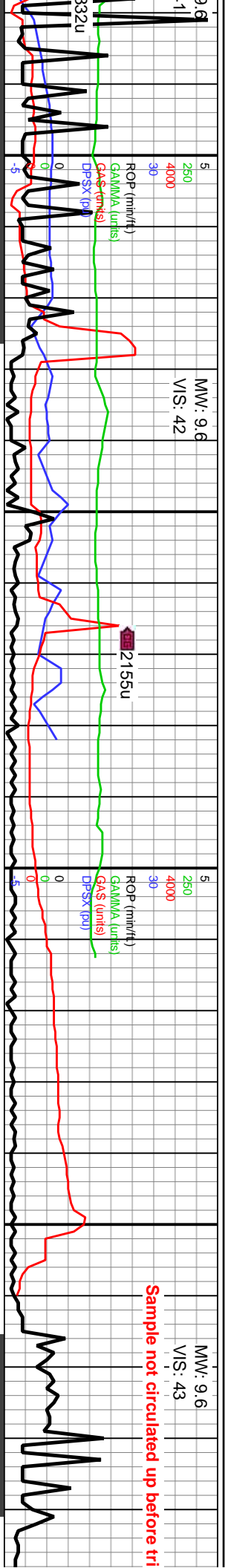
16340-16400 LMST (80%): mot  
gyshbn-crm-tn, occ gy, frm-sl hrd,  
cryptoxln-microxln, wkst-mudst; SH (20%): dk  
gy-v dk gym occ blk, intbdd wls, micnica,  
calc, rgh tex, tr pp pyr

16400-16460 LMST(60%): gyshbn-lt gy, lt brn-tn,  
ply-blky, cryptoxln-micxln, mudst-wkst, v frm-sl  
hrd, hrd ip; SH (30%): dk gy-med gy, ply, arg, sl  
calc, tr micnica, rgh tex; SS (10%): dk gy-dk gy  
brn, sft-med frm pred gr sup cls, com fri, tr-sl  
calc, p-mod strd, pred sb ang-sb rd vf-f grd

gyshbn-lt gy, lt  
-micxln,  
hrd ip; SH (5%): dk  
alc, tr micnica, rgh

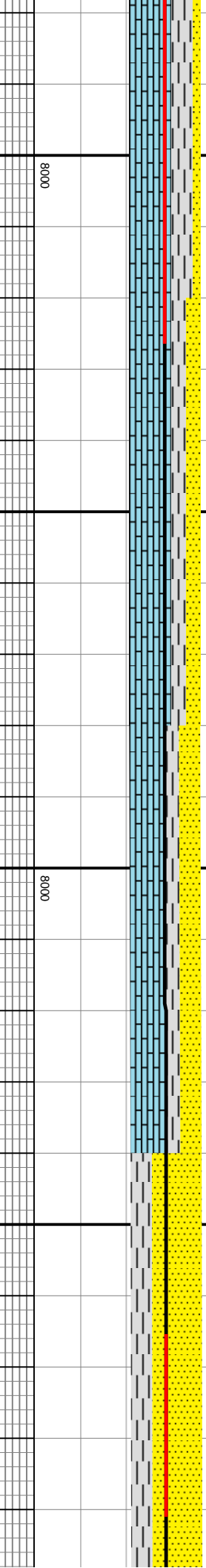
16460  
blkly-p  
(30%)  
(10%)  
ang-st  
arg/sil

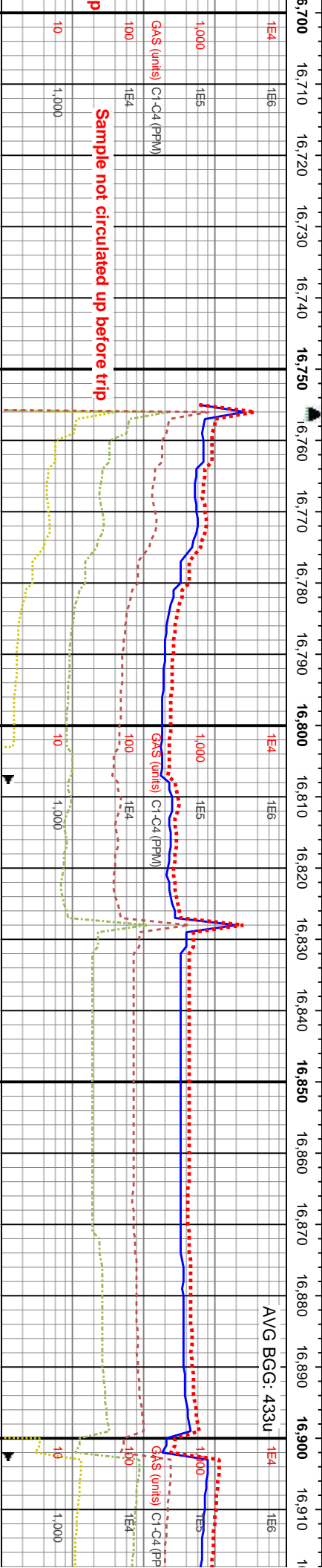
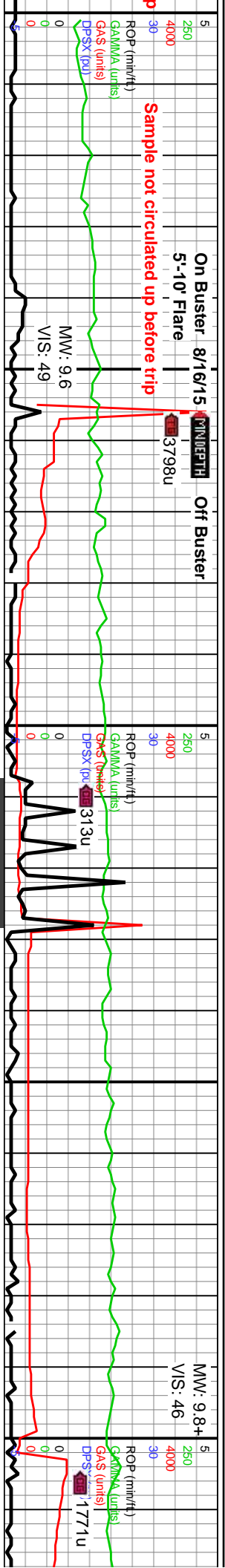




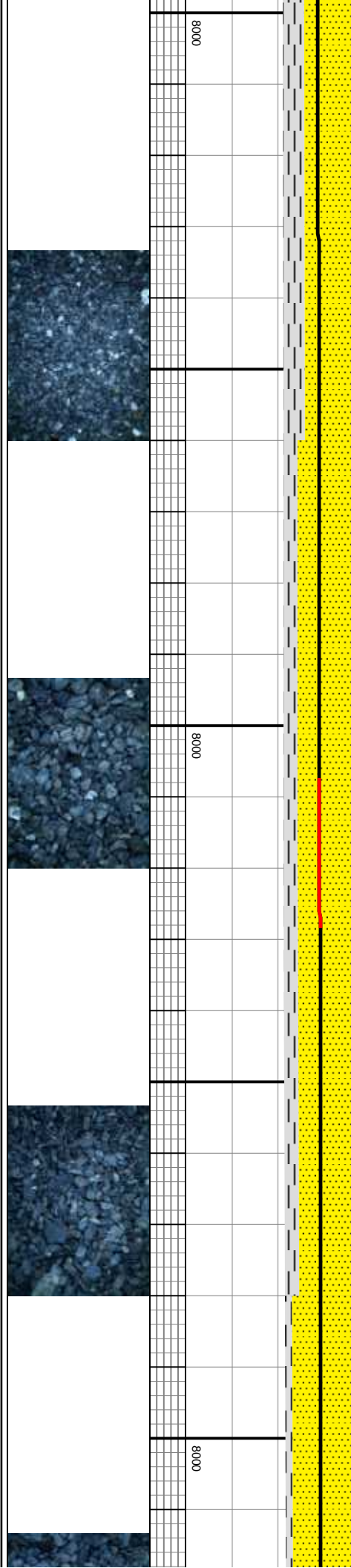
16520 LMST (60%): lt brn-tn, gy ip, blk-y, microxn-cryptoxln, frm-sl hrd, SH	16520-16580 LMST (60%): lt brn-tn, gy ip, blk-y-pty, microxn, frm-sl hrd, SH (20%): mot med gy-bnshgy, dk gy, elg-pty, frm, SS (20%): med gy-gyshbn, occ lt gy, sft-med frm, p-mod srtld, sb ang-sb rd, vf-f gr, cons wi	16580-16640 LMST (50%): med brn-tn, bnshgy, blk-y-pty, microxn-cryptoxln, frm-sl hrd, wkst-mudst, SS (30%) SH (20%): mot med gy-bnshgy, dk gy, pty, frm, v calc, tr micrnica, rgh tex: SS: dk gy-dk gy brn cls, occ clr unconcs sd, p-mod srtld, pred sb ang-sb rd vf-f gr
7MD: 16,512' TVD: 7,716.5' Inclination: 90.55° Azimuth: 1.2° VS: 8,289.52'	WOB: 32Klbs Rotary: 55RPM Strokes: 230SPM Pump Rate: 637GPM Azimuth: 0.01° VS: 8,383.35'	MD: 16,606' TVD: 7,715.75' Inclination: 90.37° Azimuth: 0.01° VS: 8,383.35'

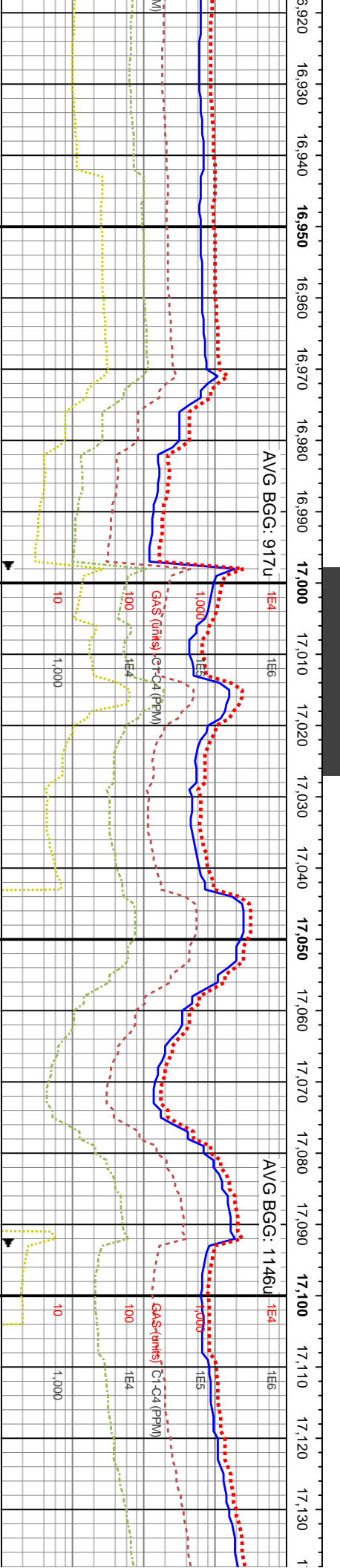
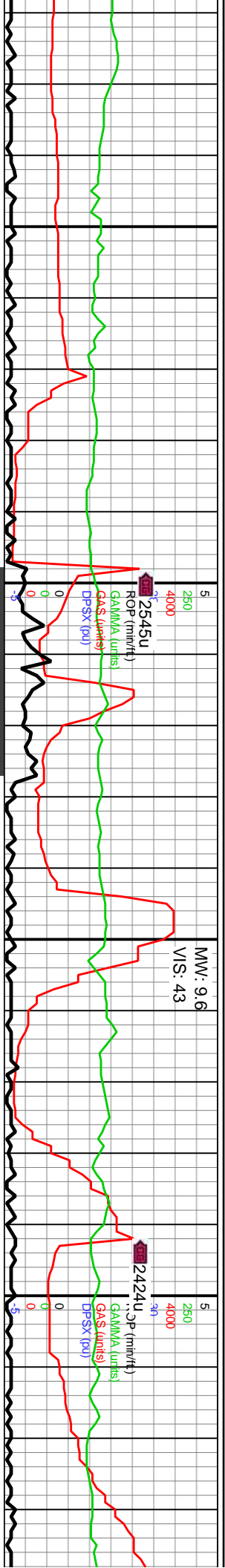
16520-16580 LMST (60%): lt brn-tn, gy ip, blk-y-pty, microxn, frm-sl hrd, SH (20%): mot med gy-bnshgy, dk gy, elg-pty, frm, SS (20%): med gy-gyshbn, occ lt gy, sft-med frm, p-mod srtld, sb ang-sb rd, vf-f gr, cons wi	16580-16640 LMST (50%): med brn-tn, bnshgy, blk-y-pty, microxn-cryptoxln, frm-sl hrd, wkst-mudst, SS (30%) SH (20%): mot med gy-bnshgy, dk gy, pty, frm, v calc, tr micrnica, rgh tex: SS: dk gy-dk gy brn cls, occ clr unconcs sd, p-mod srtld, pred sb ang-sb rd vf-f gr
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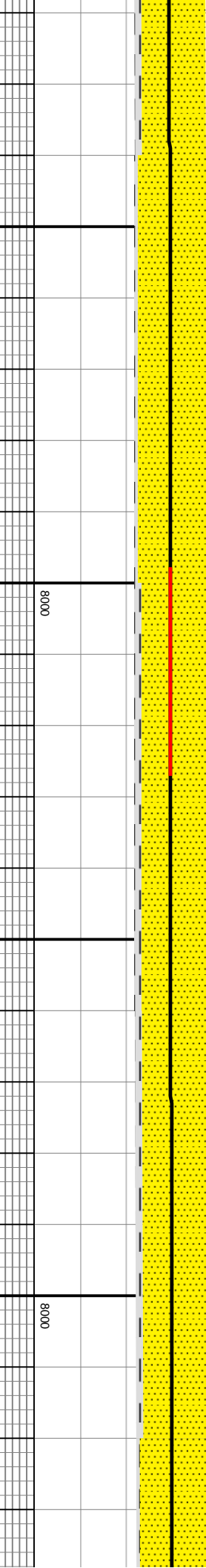
7000	MD: 16,748'	WOB: 32.9Klbs	MD: 16,843'	7000
1513	TVD: 7,711.86'	Rotary: 72RPM	TVD: 7,708.67'	
	Inclination: 92.77°	Strokes: 230SPM	Inclination: 91.08°	
	Azimuth: 3.88°	Pump Rate: 637GPM	Azimuth: 3.37°	
16,756'	VS: 8,524.78'		VS: 8,619.12'	
16,737'				
272.5' /h				
16700-16760 SS (70%): dk gy-dk gysbhn, med gy, vf-f grs, pred sb ang-sb rd, mod strd, gr sup cls, cons wi arg/silic cmt, sme sl calc, com lse grs; SH (30%): dk bnshgy-dk gy, plty, sme blkly, frm-sl hrd, calc-v calc, occ micnica, rgh tex			16820-16880 SS (80%): med gy-dk gy, gysbhn, offwht-tnsl, vf-f grs, pred sb ang-sb rd, mod strd, abnt lse grs, gr sup cls, cons wi arg/silic cmt; SH (20%): dk brn-bnshgy, dk gy, plty-blkly, frm-sl hrd, calc-v calc, occ micnica, scat-com pyrc nod, rgh tex	
TVD (ft)				
8000				
8000				
8000				





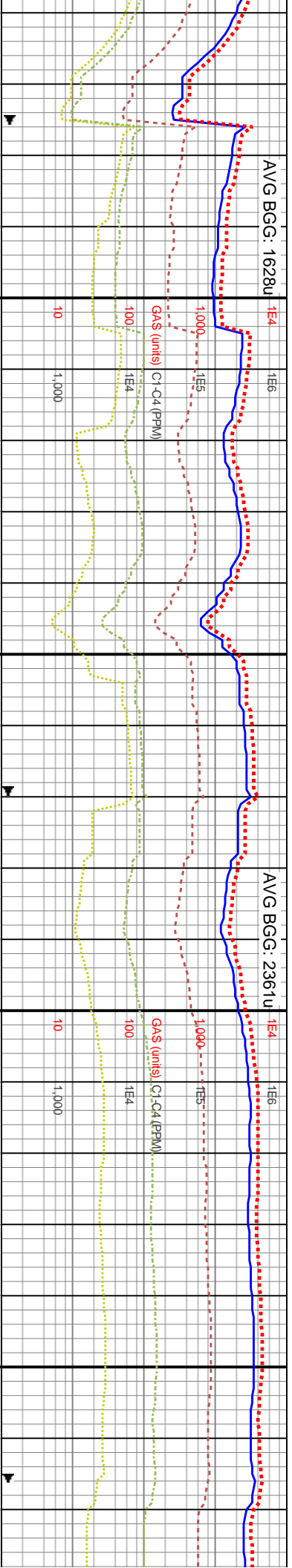
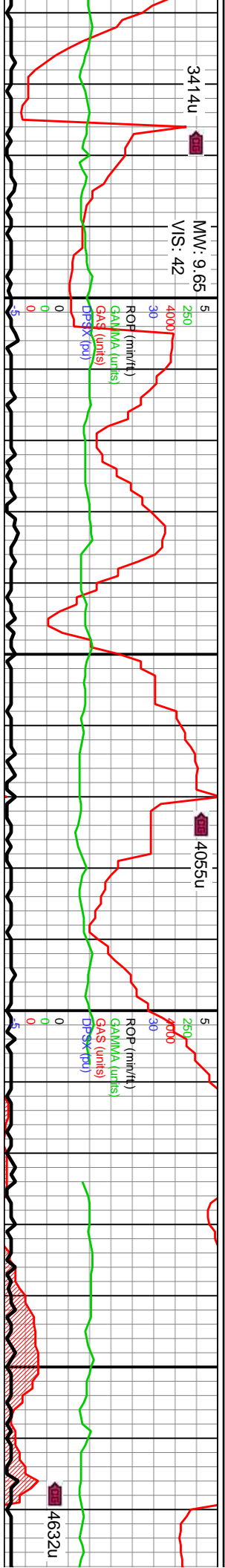
MD: 16,938' TVD: 7,706.16' Inclination: 91.94° Azimuth: 3.24° VS: 8,713.55'	WOB: 85.1Klbs Rotary: 0RPM Strokes: 230SPM Pump Rate: 637GPM	MD: 17,033' TVD: 7,703.94' Inclination: 90.74° Azimuth: 5.07° VS: 8,807.82'	MD: 17,128' TVD: 7,701.87' Inclination: 91.76° Azimuth: 5.41° VS: 8,901.86'
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d med gy-gyshbn, d, mod strd, vf-f grs, grs, sme sl calc; pity, sme blkly, micnica, rgh tex	16940-17000 SS (95%): dk gy-dk gysbhn, med gy, vf-f grs, pred sb ang-sb rd, mod strd, gr sup cls, cons wi arg/silic cnt, sme sl calc, com lse grs; SH (5%): dk gy, pity, frm, calc, occ pp pyr, rgh tex	17000-17060 SS (90%): med gy-dk gysbhn, dk gy, vf-f grs, sb ang-sb rd, mod strd, pred gr sup cls, abnt lse grs, cons wi arg/silic cnt, tr pyr; SH (10%): dk bshgy-dk gy, pity-blky, sl hrd, calc, scat-com pyrc nod, rgh tex	17060-17120 SS (90%): med gy-dk gy, gysbhn, vf-f grs, mod strd, pred sb ang-sb rd, gr sup cls, cons wi arg/silic cnt, abnt lse f sb ang qtz grs; SH (10%): dk brn-dk gy, blkly, v frm, calc, occ micnica, rgh tex	17120 med g gr sup SH (5%) hrd, c
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WOB: 39.5Klbs  
Rotary: 50RPM  
Strokes: 230SPM  
Pump Rate: 637GPM

MD: 17,411'  
TVD: 7,701.59'  
Inclination: 88.52°  
Azimuth: 1.26°  
VS: 9,183.34'

MD: 17,506'  
TVD: 7,703.02'  
Inclination: 89.75°  
Azimuth: 0.72°  
VS: 9,278.12'

17360-17420 SS (95%): med gy-dk gy, gysbhn, vf-f grs, pred sb ang-sb rd, mod strd, gr sup cls, cons wi arg/silic cnt, abnt lse f sb ang qtz grs, dul yelgn flor, mod mky cut, mod yelgn resdl ring; SH (5%): dk brn-dk gy, v frm, calc, blkly, occ micmica, rgh tex

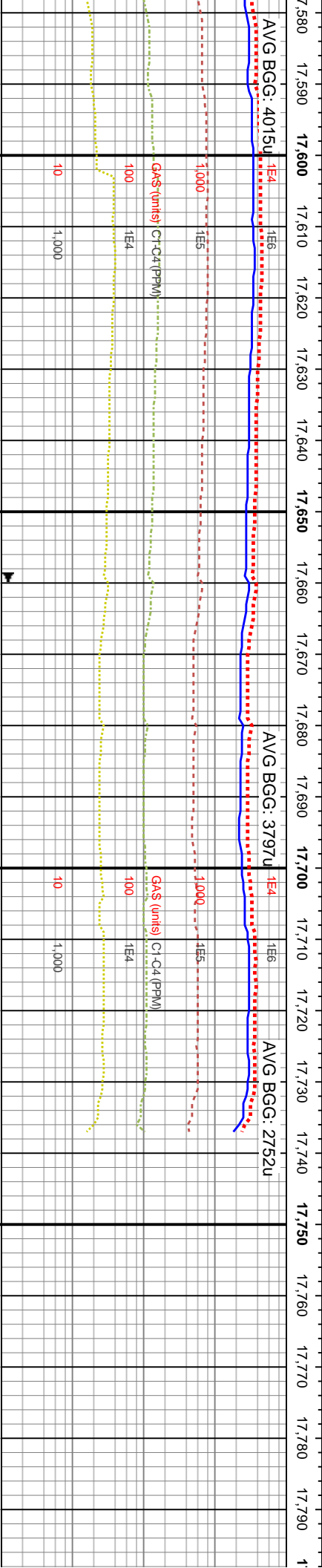
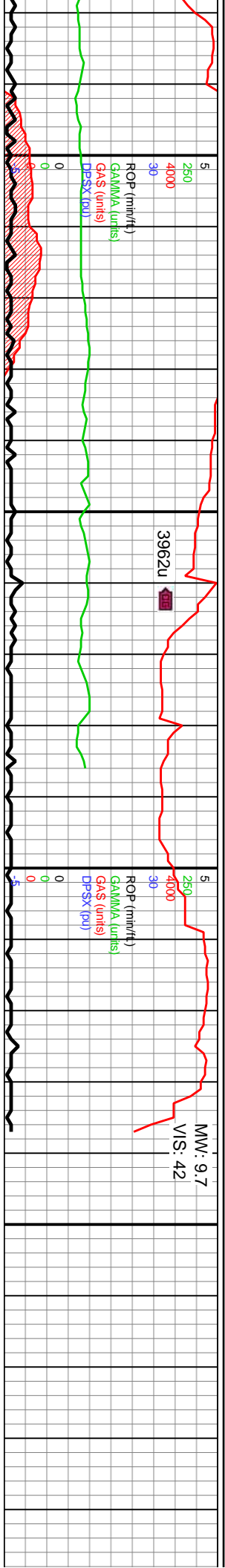
17420-17480 SS (95%): med gy-dk gy, gysbhn-it gy, vf-f grs, pred sb ang-sb rd, mod strd, cons wi arg-silic cnt, com lse grs, sme sl calc, dul yelgn flor, mod mky cut, mod yelgn resdl ring; SH (5%): dk brnshgy-dk gy, frm-sl hrd, plty, sme blkly, calc-v calc, occ micmica, rgh tex

17480-17540 SS (95%): dk gy-gysbhn, med gy, mod strd, vf-f grs, gr sup cls, pred sb ang-sb rd, cons wi arg/silic cnt, sme sl calc, com lse grs, dul yelgn flor, mod mky cut, mod yelgn resdl ring; SH (5%): dk gy, plty, frm, calc, occ pp pyr, rgh tex

17540-17600 SS (95%): n gysbhn, mod strd, vf-f grs, gr sup cls, abnt lse f sb ar arg/silic cnt, dul yelgn flor, yelgn resdl ring; SH (5%): v frm, occ micmica, calc, r

8000

8000



OB: 27.4klbs  
etary: 70RPM  
rokes: 230SPM  
mp Rate: 637GPM

MD: 17,601'  
TVD: 7,701.96'  
Inclination: 91.53°  
Azimuth: 0.84°  
VS: 9,372.92'

MD: 17,676'  
TVD: 7,699.13'  
Inclination: 92.8°  
Azimuth: 0.85°  
VS: 9,447.72'

MD: 17,737'  
TVD: 7,696.15'  
Inclination: 92.8°  
Azimuth: 0.85°  
VS: 9,508.52'

med gy-dk gy,  
pred sb ang-sb rd,  
g qtz grs, cons wi  
mod mky cut, mod  
dk brn-dk gy, blk,  
gh tex

17600-17660 SS (95%): med gy-dk gy,  
gysbn, mod strd, vf-f grs, pred sb ang-sb rd,  
cons wi arg/silic cnt, gr sup cls, abnt lse f sb  
ang qtz grs, dul yelgn flor, mod mky cut, mod  
yelgn resd ring: SH (5%): dk brn-dk gy, blk,  
v frm, calc, occ micnica, rgh tex

17660-17737 SS (95%): med gy-gysbn, lt gy-dk  
gy, vf-f grs, pred sb ang-sb rd, mod strd, gr sup  
cls, abnt lse f sb ang qtz grs, cons wi arg/silic cnt,  
pred non-sl calc, dul yelgn flor, mod mky cut, mod  
yelgn resd ring: SH (5%): dk bushgy, rgh tex,  
ply-tab, frm-sl hrd, calc-v calc, occ micnica.

