



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Fairview 4

Location Sec 5, T2N, R68W

State CO

Country USA

API Number 05-123-41523

Geographic Region DJ Basin

Spud Date 12/6/2015

Surface Coordinates Lat: 40° 9' 56.7360" N
Long: 105° 2' 5.8812" W

Bottom Hole Coordinates Lat: 40° 9' 40.8837" N
Long: 105° 0' 35.4622" W

Ground Elevation 4,948'

Logged Interval 6,700' MD To 14,840' MD

Formation Niobrara B

Type of Drilling Fluid Invert

K.B. Elevation 4,963'

Total Depth 14,840' MD

County Weld

Rig Number Savanna 802

Field Wattenberg

Drilling Completed 1/22/2016

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-197

Comments Start: 1-20-16
End: 1-22-16

Services Provided Mark Gross / Her

Logger Names 2-Man Logging

Address Empirica, LLC.
6360 W Sam Houston
Suite 100
Houston, TX 770

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

Fossils

F FOSSIL

GASTROPOD

OOLITE

OSTRACOD

PELECYPOD

PELLET

BRACHIOPOD

BRYOZOA

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

Minerals

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHLT T

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

Stringer

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

PYRITE

SALT CAST

SANDY

SILICEOUS

SILTY

TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALO) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other

Oil Show

O ORGANIC

P PINPOINT

D DEAD

V VUGGY

● EVEN

○ QUESTIONABLE

Engineering

● SPOTTED STAINING BIT

C CASING

Porosity

▲ CONNECTION (LEFT)

E EARTHLY

▶ CONNECTION (RIGHT)

▣ FENESTRAL

◀ CONNECTION GAS

F FRACTURE

↓ CORE - LOST

X INTERCRYSTALLINE

■ CORE - RECOVERED

⊕ INTERROOTLIC

⋮ DST INTERVAL

⌘ MOLDIC

⌘ FAULT

er Symbols

 FORMATION TOP  Downtime Gas  GRAINSTONE

 GAS SHOW L LITHOGRAPHIC

 MIN DEPTH  MICROXLN

Rounding

NORMAL FAULT  ANGULAR  MUDSTONE

 OIL SHOW  ROUNDED  PACKSTONE

OVERTURNED STRATA  SUBANG  WACKSTONE

REVERSE FAULT  SUBRND

Sorting


 SIDEWALL CORE (LEFT)

Textures



 SIDEWALL CORE (RIGHT)  MODERATE

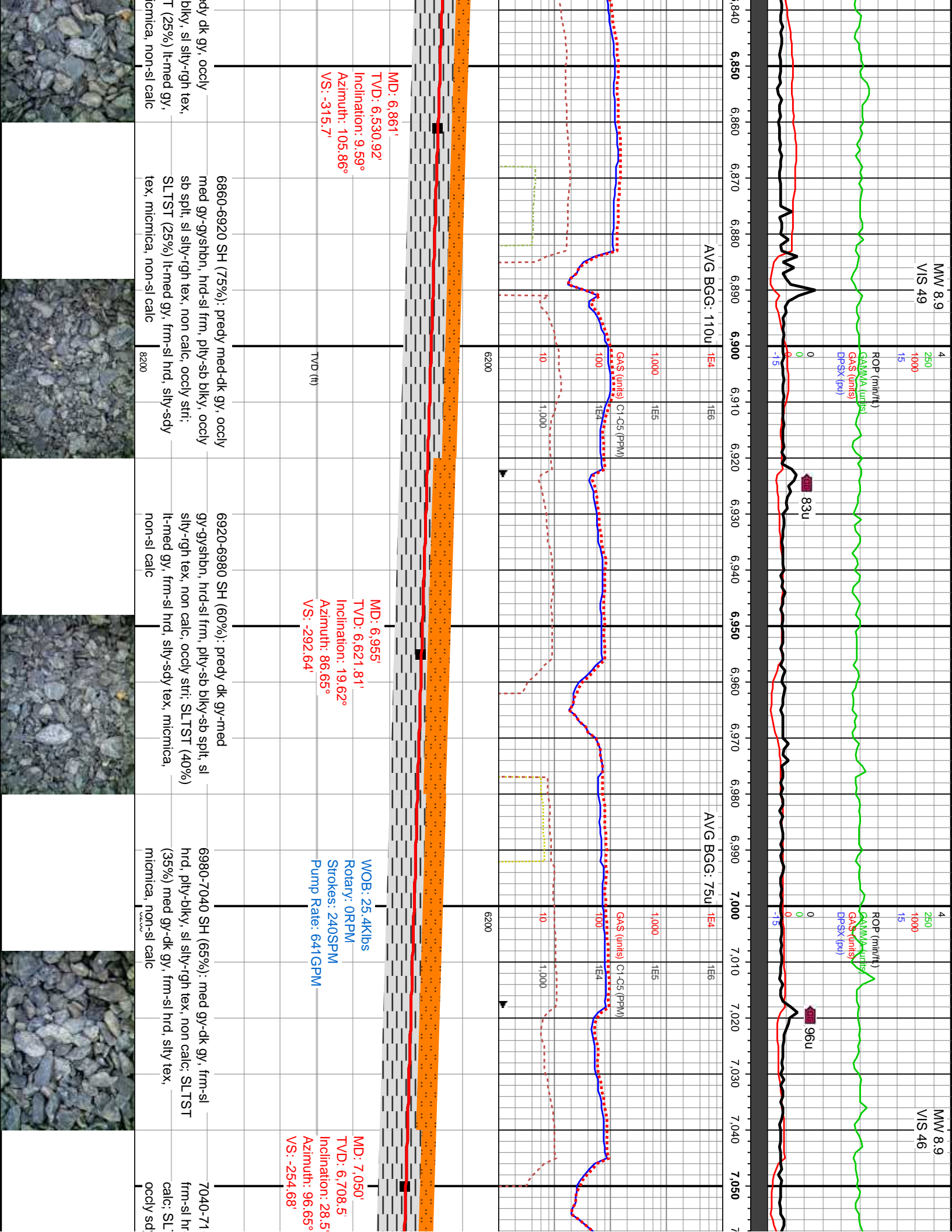
SLIDE  BOUNDSTONE  POOR

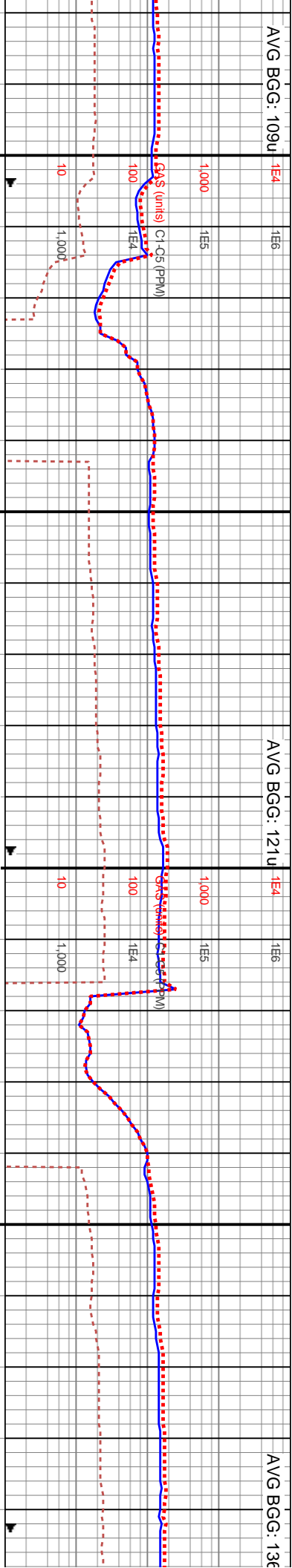
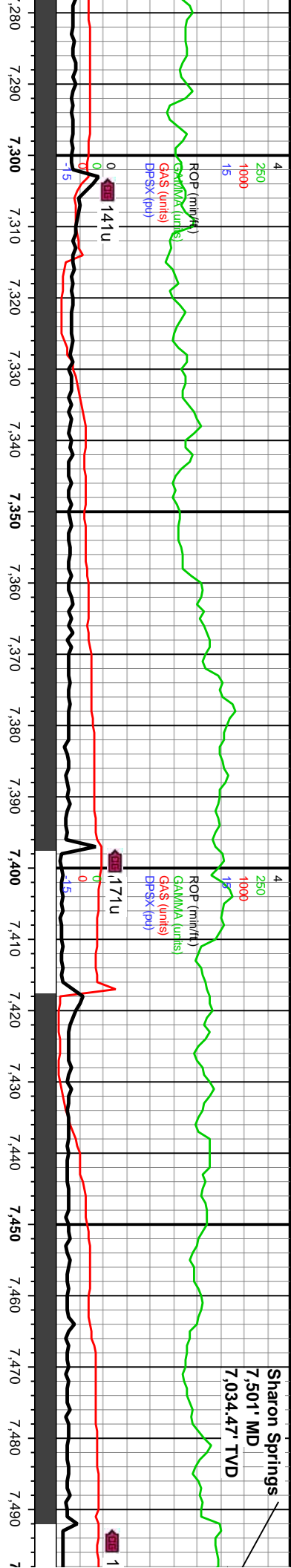
 SURVEY  CHALKY  WELL

 TRIP GAS  CRYPTOXLN

 WIRELINE TESTED - LEFT  EARTHY

 WIRELINE TESTED - RT  FINELYXLN





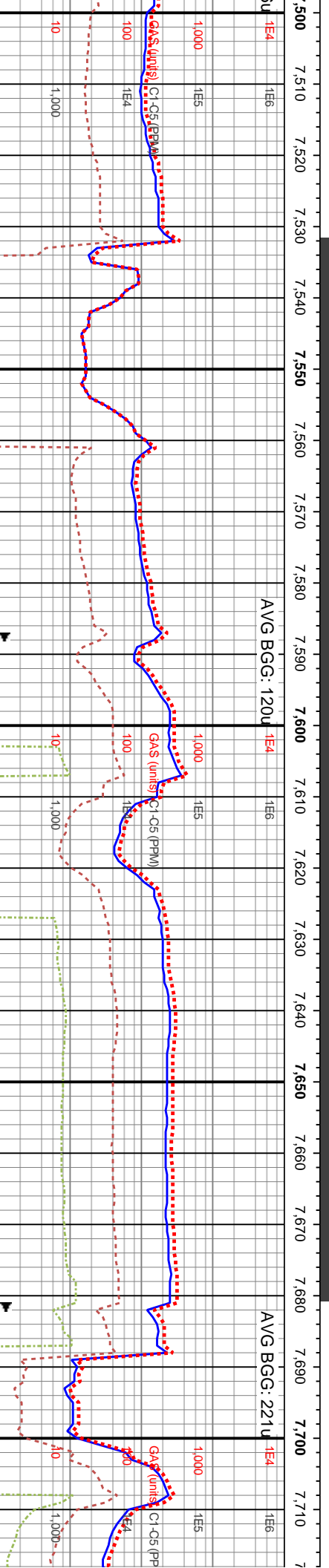
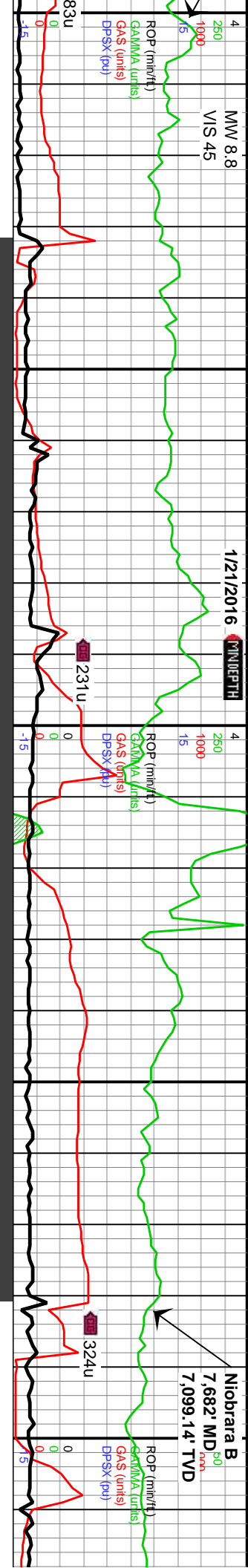
MD: 7,333'
TVD: 6,937.77'
Inclination: 47.28°
Azimuth: 92.55°
VS: -91.68'

WOB: 28.2Klbs
Rotary: 20RPM
Strokes: 240SPM
Pump Rate: 641 GPM

MD: 7,429'
TVD: 6,997.42'
Inclination: 55.81°
Azimuth: 92.86°
VS: -17.71'

7280-7340 SH (70%): predy dk gy, occly mot med gy, frm, sb spl-sb ply, sl silty-rgh tex, non calc; SLTST (30%) med gy, occly lt gy, occly stri, frm-sl hrd, silty tex, non-sl calc	7340-7400 SH (70%): predy dk gy-blk, occly mot med gy, frm, sb spl-sb ply, sl silty tex, non calc; SLTST (30%) med gy, occly lt gy, occly stri, frm-sl hrd, silty tex, non-sl calc	7400-7460 SH (70%): dk gy-med gy, gyshbn, sl frm, sme fis, sb blk-y-ply, sm-sily tex, sme f lamn, mod calc; SLTST (30%): lt gy-med gy, ip sl brn, arg-v arg, sb blk-y-ply, frm-sl hrd, tr micmica, non-sl calc	7460-7520 SH (70%): med sl frm-hrd, sme fis, sb blk-y-sme f lamn, mod calc; SLT gy-med gy, ip sl brn, arg-v micmica, non-sl calc
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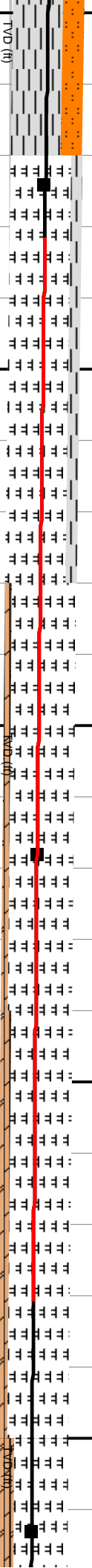


MD: 7,524'
TVD: 7,046.31'
Inclination: 62.22°
Azimuth: 90.04°
VS: 62.1'

WOB: 24.4Klbs
Rotary: 0RPM
Strokes: 240SPM
Pump Rate: 641GPM

MD: 7,618'
TVD: 7,082.9'
Inclination: 71.9
Azimuth: 90.57°
VS: 146.56'

6200
MD: 7,713'
TVD: 7,107'
Inclination: 7
Azimuth: 91.
VS: 236.57'



gy-dk gy, gysbhn,
ply, sm-sl silty tex,
ST (30%): It
arg, ply-tab, frm, tr

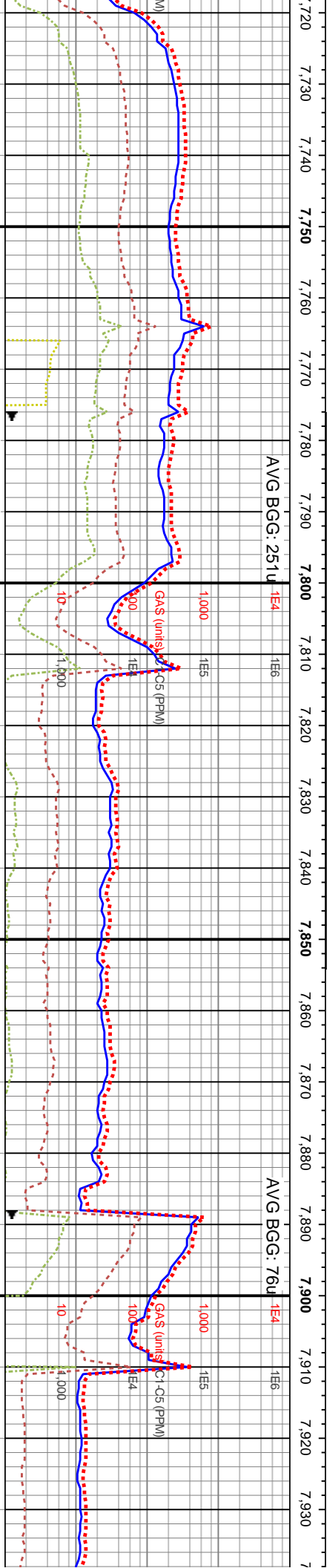
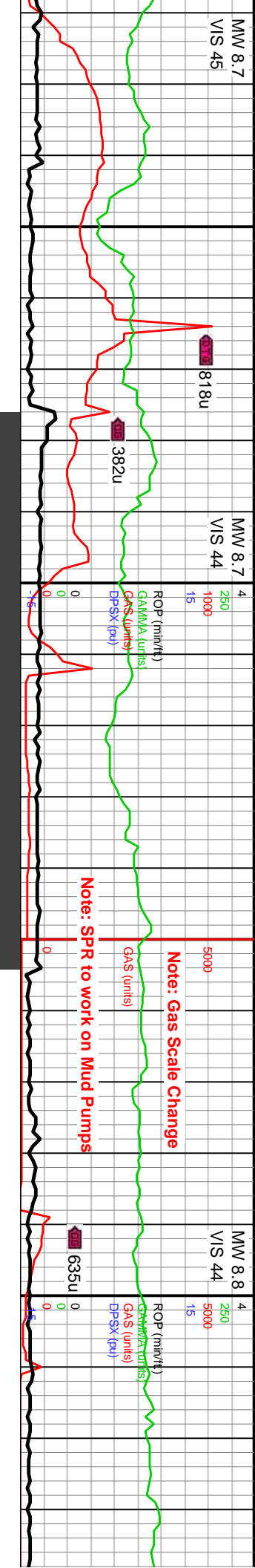
7520-7580 MRLST (85%): predy dk gy, occaly med gy-gy/shbn, frm-hrd, sb biky-elg, sm-sily tex, occ mntr lamm, calc, tr scat mic pyr; SH (20%): dk gy, sily tex, arg, ply-tab-sb split, frm, sl calc

7580-7640 MRLST (90%): dk gy-gyshbn, firm-hrd, sb blk-y-elig, sm-sl sty tex, tr mnr lamn, calc, tr scat mic pyr, CHK (10%): predy ltr gyshbn, occly crm-lt gy, sft, vf lamn, intbdd wi mrlst

7640-7700 MR.LST (85%): dk gy-gyshbn-med
gy, frm-sl hrd, sb blky-eig, sm-sl sily tex, v
calc, tr flann, abnt imbd pyr, occ pyr mod;
CHK (15%): predy tr gysbshn-offtwt, occly
cm-nn, chky tex, calc, bishn-dul yelgn flor,
wk mky cut, dul bishwn resd ring

7700-77	firm, sb t
	about imh
	predy It
	calc, bls
	blishwh
8200	





WOB: 36Klbs
Rotary: 0RPM
Strokes: 240SPM
Pump Rate: 641GPM

MD: 7,808'
TVD: 7,122.44'
Inclination: 82.59°
Azimuth: 90.26°
VS: 328.38'

MD: 7,903'
TVD: 7,130.39'
Inclination: 87.8°
Azimuth: 89.65°
VS: 420.68'

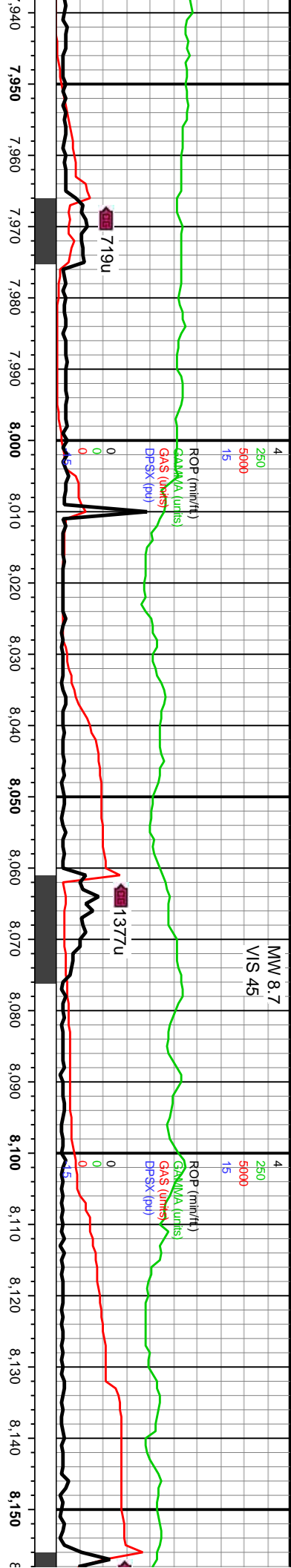
60 MRLST (75%): gysbhn-med gy,
biky-elg, sm-sl silty tex, v calc, tr f lam,
d pyr, occ pyrc nod; CHK (25%):
gysbhn-offwht, occly crm-tn, chky tex,
bshwn-dul yeign flor, wk mky cut, dul
resd ring

7760-7820 MRLST (65%): med-dk gy, frm, sb
biky-elg, sm-sl silty tex, v calc, tr f lam, tr imbd
pyr, tr pyrc nod; CHK (35%): predy gysbhn-tn,
chky tex, calc, bshwn-dul yeign flor, wk mky
cut, dul bshwn resd ring

7820-7880 MRLST (60%): mot med-dk gy,
frm, sb pily-sb biky-elg, sm-sl silty tex, v calc,
abt f lam, tr pyrc nod; CHK (40%): predy
gysbhn-tn, chky tex, calc, bshwn-dul yeign
flor, wk mky cut, dul bshwn resd ring

7880-7940 MRLST (65%): dk gy-med gy,
gysbhn, sl abrsv tex, frm-sl hrd, pily-elg, v calc
tr lamm, pp imbd pyr; CHK (35%): mot lt
gysbhn-offwht, crm, chky tex, calc, sb tab, dul
yeign flor, dul mky cut, mod bshwn resd ring





MD: 7,998'
TVD: 7,135.68'
Inclination: 85.82°
Azimuth: 90.66°
VS: 513.27'

WOB: 38.6Klbs
Rotary: 50RPM
Strokes: 260SPM
Pump Rate: 693GPM

MD: 8,093'
TVD: 7,142.13'
Inclination: 86.39°
Azimuth: 89.87°
VS: 605.83'

7940-8000 MRLST (75%): dk gy-dk gysbhn, med gy, frm-sl hrd, pily-blky, sm-sl silty tex, v calc, tr f lam, scat pp pyr: CHK (25%): lt gysbhn-crm, tn, chky tex, calc, bishwh-dul yeign flor, mky cut, dul bishwh resd ring

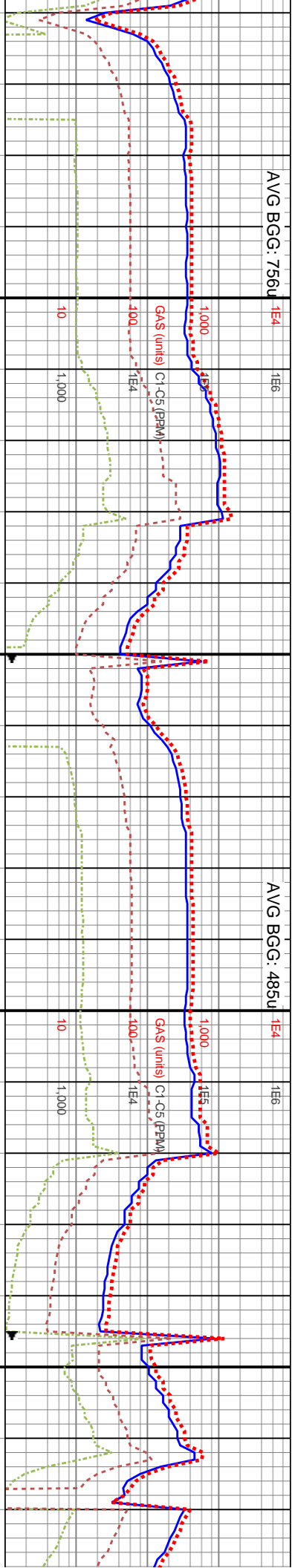
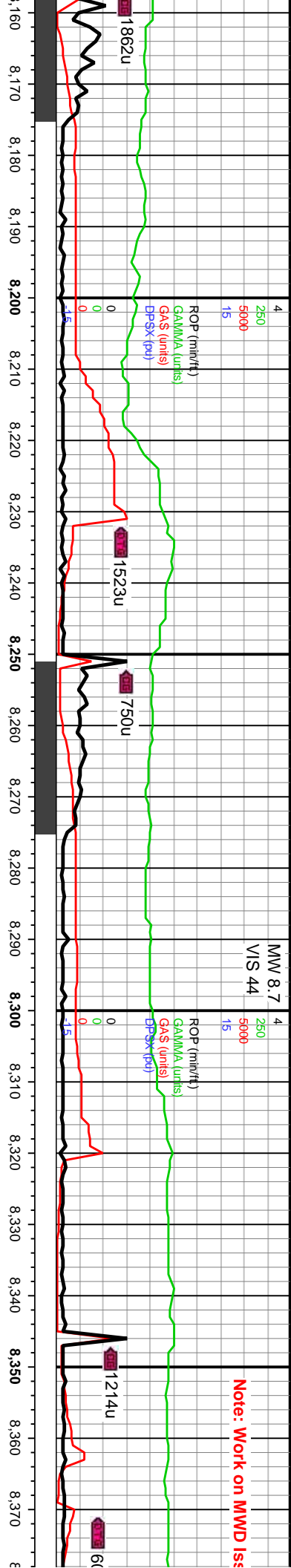
8000-8060 MRLST (65%): dk gy-med gy, v calc, frm-sl hrd, sb pily, tr lamm, scat pyr: CHK (35%): lt gysbhn-oftwht, crm, chky tex, calc, pily-blky, intbdd mrst, dul-mod yeign flor, wk mky cut, mod bishwh resd ring

8060-8120 MRLST (60%): dk gy-med gy, frm-hrd, sb blky, sl absv tex, v calc, intbdd chk lam, scat pyrc nod: CHK (40%): lt gysbhn-crm, chky tex, calc, blky, dul yeign flor, dul mky cut, bishwh resd ring

8120-8180 MRLST (65%): gysbhn, frm-sl hrd, blky-sb calc, intbdd chk, imbd/pp r gysbhn-crm, chky tex, calc, dul mky cut, mod bishwh re

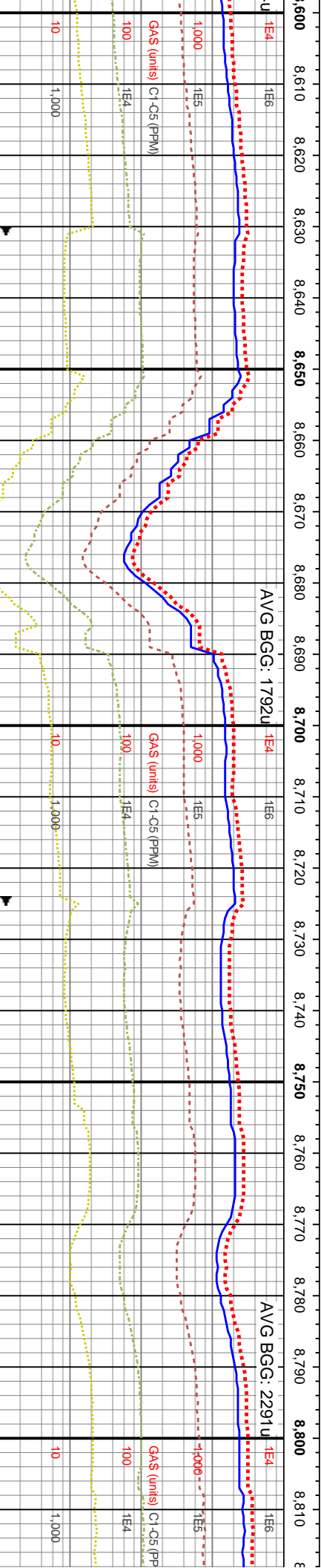
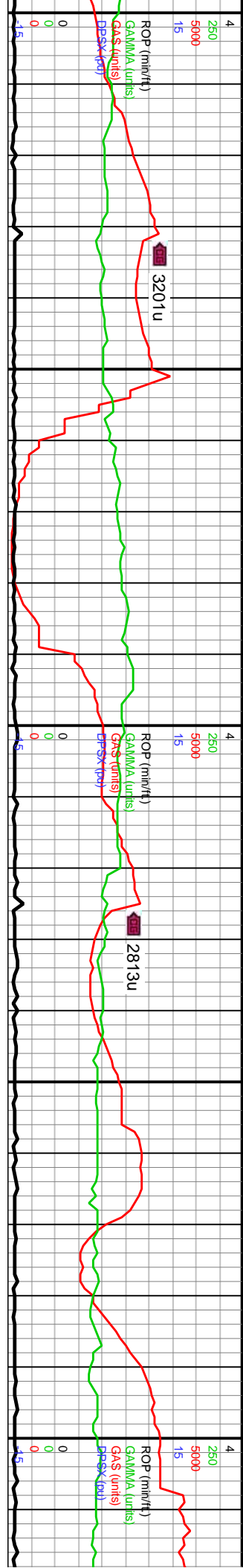


Note: Work on MWD Iss



mot dk gy-med	8180-8240 MRLST (55%): dk gy-med gy, frm-hrd, sb spl, sl abrsv tex, v calc, predy intbd chk, scat pp pyr: CHK (45%): predy lt gysbhn-crm, blk, chky tex, calc, dul yelgn flr, dul mky cut, blshwh resd ring	8240-8300 MRLST (65%): mot dk gy-med gy, mot gysbhn, frm-sl hrd, blk-ply, sl stly tex, v calc: CHK (35%): mot lt gysbhn-lt gy, stri ip, chky tex, calc, ply-blky, dul yelgn flr, dul mky cut, blshwh resd ring	8300-8360 MRLST (75%): mot med gy-dk gy, frm-v frm, blk-ply, sl abrsv tex, v calc, chk lamm, scat pyrc nod: CHK (25%): gysbhn-crm, chky tex, calc, sb blk, intbd mntst, dul yelgn flr, dul mky cut, mod blshwh resd ring	8360-8400 MRLST (85%): frm-sl hrd, blk-ply, sl abrsv tex, v calc, chk lamm, scat pyrc nod: CHK (25%): gysbhn-crm, chky tex, calc, sb blk, intbd mntst, dul yelgn flr, dul mky cut, mod blshwh resd ring
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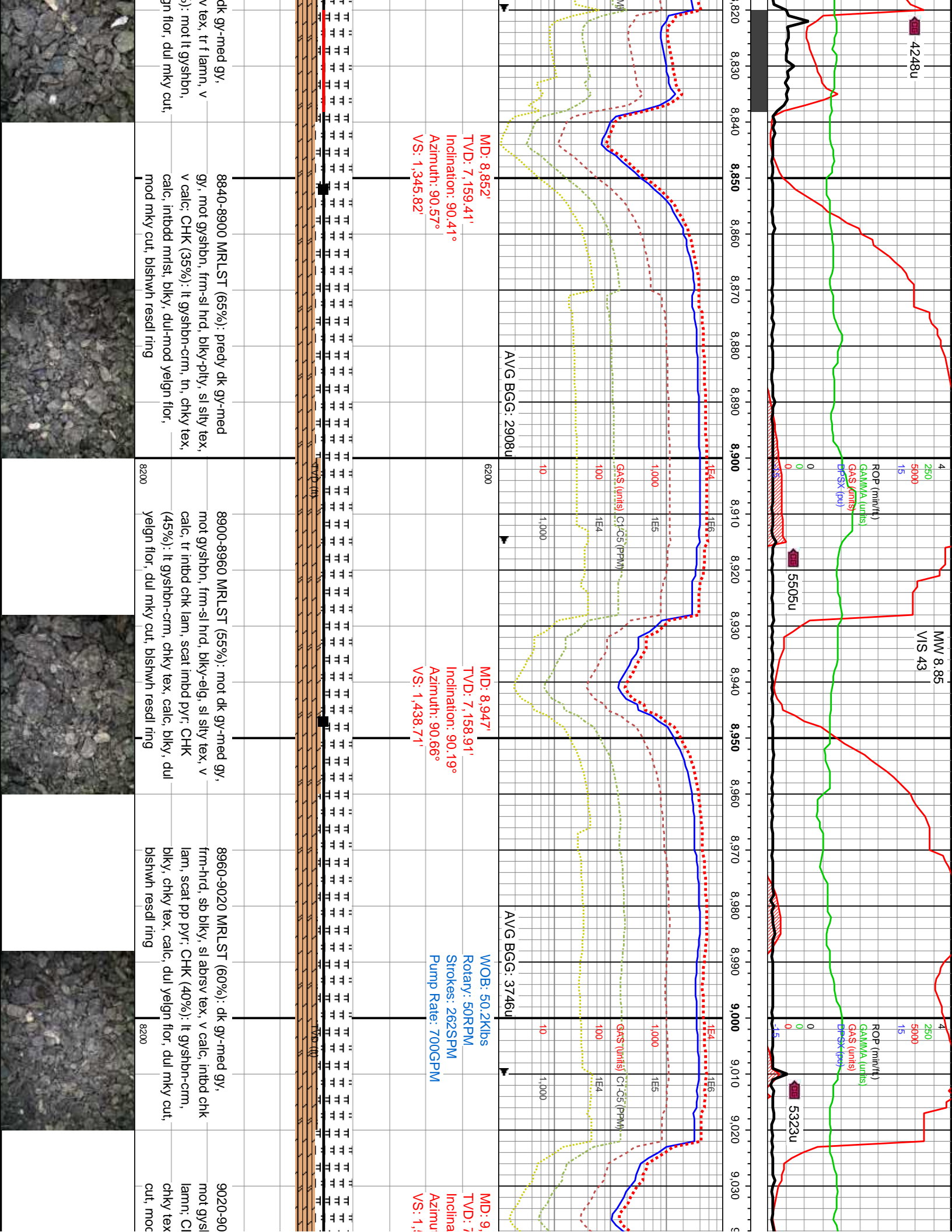


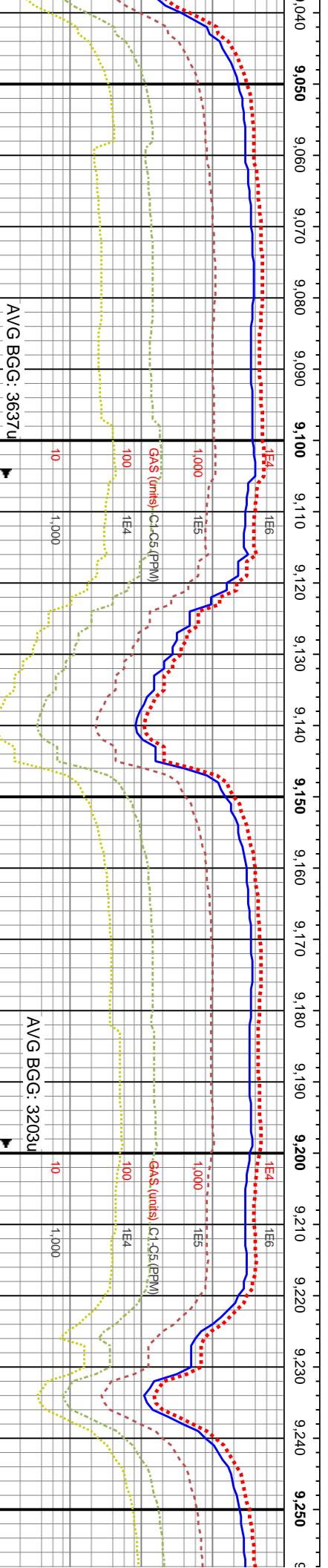
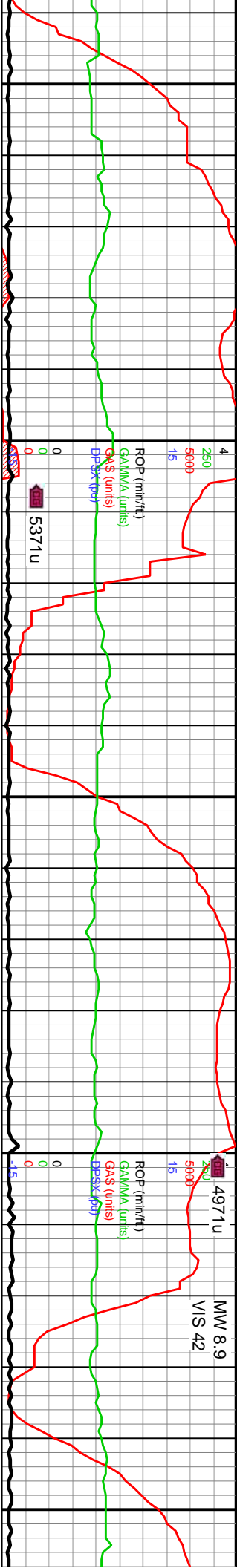


3kbs 0RPM 2262SPM Rate: 695GPM	MD: 8,663' TVD: 7,155.84' Inclination: 88.51° Azimuth: 90.26° VS: 1,161.24'	6200	MD: 8,758' TVD: 7,158.42' Inclination: 88.38° Azimuth: 90.26° VS: 1,253.98'	WOB: 49.3kbs Rotary: 50RPM Strokes: 262SPM Pump Rate: 697GPM
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8600-8660 MRLST (60%): dk gy-med gy, gyshbn, sl stly tex, frm-sl hrd, blkly-pty, v calc, tr f lamm, mic pyr: CHK (40%): gyshbn-crm, chkly tex, mnr mifcos, intbdd mlst, blkly, dul yelgn flor, dul mky cut, mod blshwn resdl ring	8660-8720 MRLST (85%): dk gy-med gyshbn, frm-sl hrd, blkly-pty, sl abrsv tex, v calc, intbdd chk, imbd/pp mic pyr: CHK (15%): predy gyshbn-crm, chkly tex, calc, pty, dul yelgn flor, dul mky cut, mod blshwn resdl ring	8720-8780 MRLST (65%): mot med gy-dk gy, frm-v frm, blkly-pty, sl abrsv tex, v calc, tr f lamm, scat pyrc nod: CHK (35%): gyshbn-crm, chkly tex, calc, tab-bkly, intbdd mlst, dul yelgn flor, dul mky cut, blshwn resdl ring	8780-8840 MRLST (60%): frm-sl hrd, blkly-pty, sl abrs calc, pp mic pyr: CHK (40%) chkly tex, blkly, calc, dul yel blshwn resdl ring
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041'
,158.16'
ation: 90.72°
th: 90.13°
30.56'

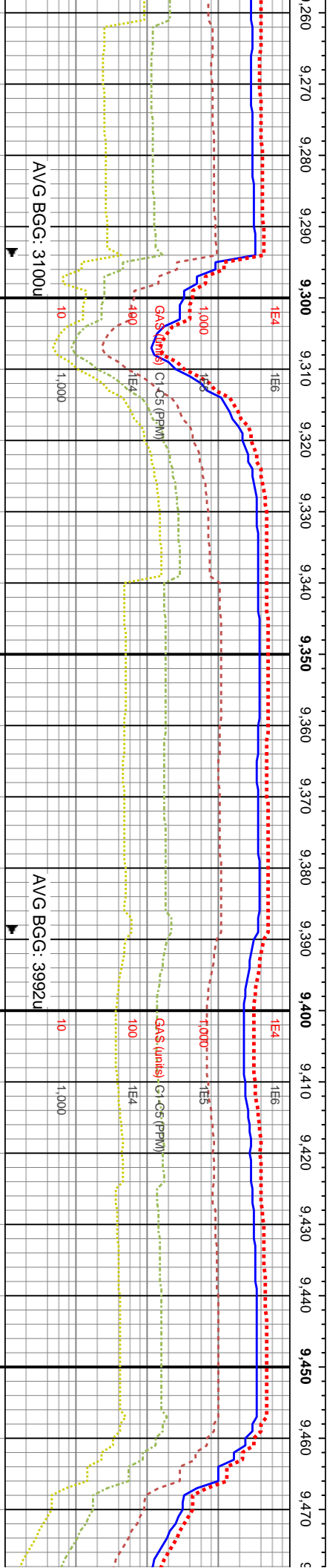
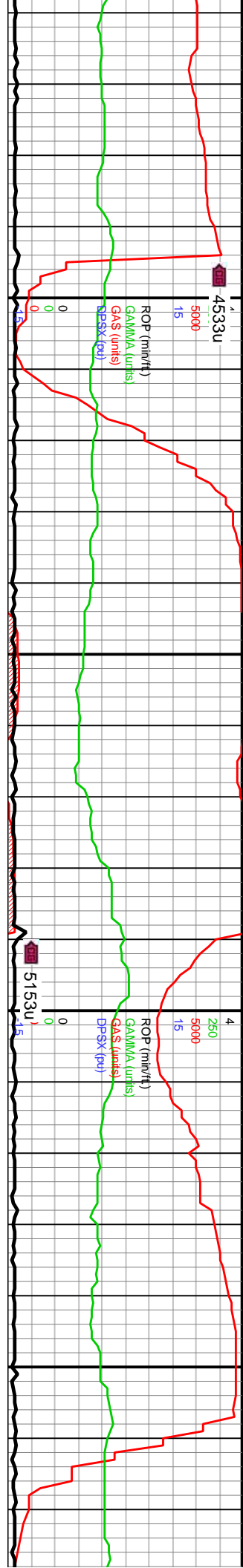
MD: 9.136'
TVD: 7,157.34'
Inclination: 90.28°
Azimuth: 89.73°
VS: 1.623.21'

WOB: 52.6Klbs
Rotary: 55RPM
Strokes: 260SPM
Pump Rate: 693GPM

MD: 9.231'
TVD: 7,157.6'
Inclination: 89.4°
Azimuth: 89.73°
VS: 1.715.78'

9080-9140 MRLST (70%): predy dk gy-med gy, frm-sl hrd, pty-biky, v calc, tr f	9140-9200 MRLST (70%): mot dk gy-gyshbn, pty-tab, frm, v calc, vf imbd pyr: CHK (30%): mot lt gy-offwht, lt gysbhn, sft, chky tex, sb pty-sb biky, dul yelgn flor, dul mky cut, mod blshwn resdl ring	9200-9260 MRLST (65%): pred dk gy-med gy gysbhn, sm tex, occ sl sily, frm-sl hrd, pty-sb biky, v calc, scat imbd pp pyr: CHK (35%): mo gysbhn-offwht, chky tex, sb tab, dul yelgn flor, dul mky cut, mod blshwn resdl ring
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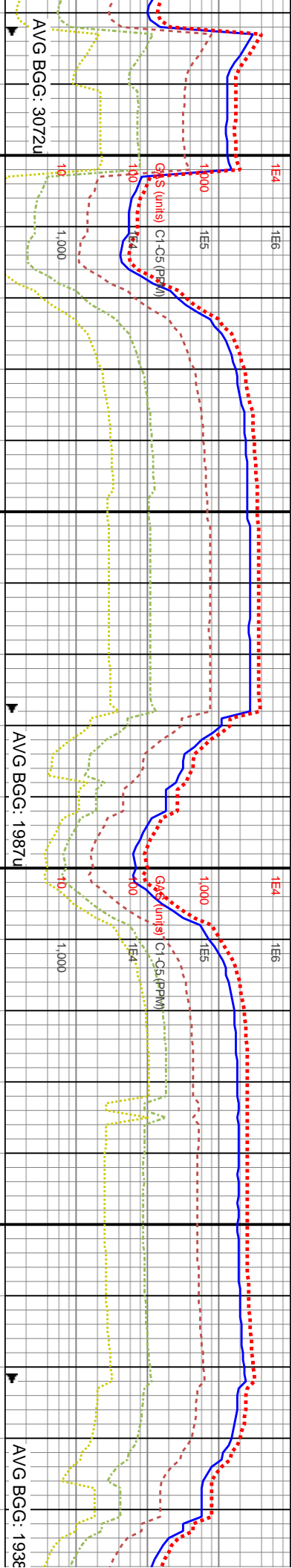
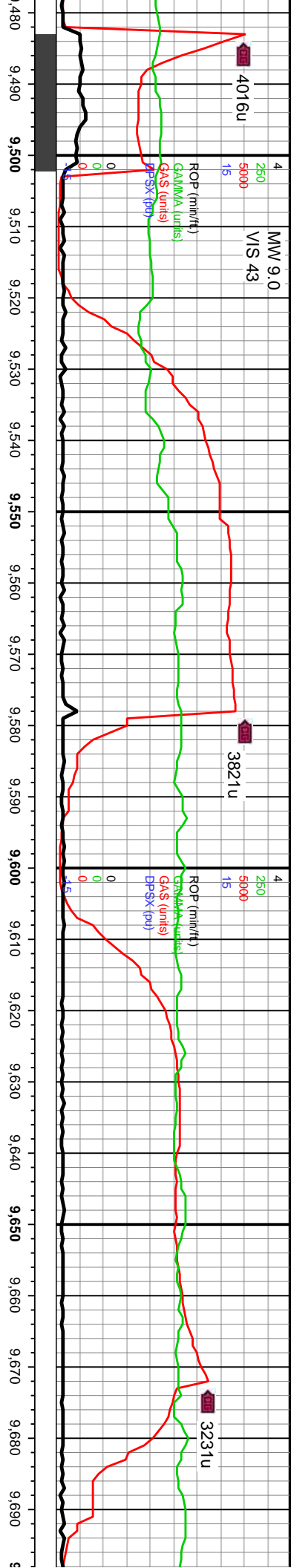


MD: 9,326'
TVD: 7,159.08'
Inclination: 88.82°
Azimuth: 89.87°
VS: 1,808.38'

WOB: 54.7kibs^x
Rotary: 50RPM
Strokes: 260SPM
Pump Rate: 693GPM
MD: 9,420'
TVD: 7,161.45'
Inclination: 88.29°
Azimuth: 90.44°
VS: 1,900.11'

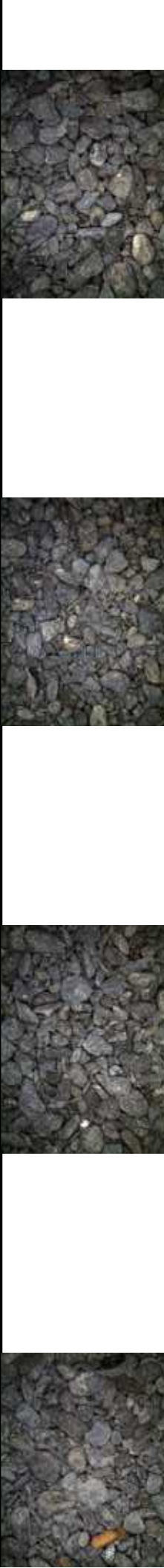
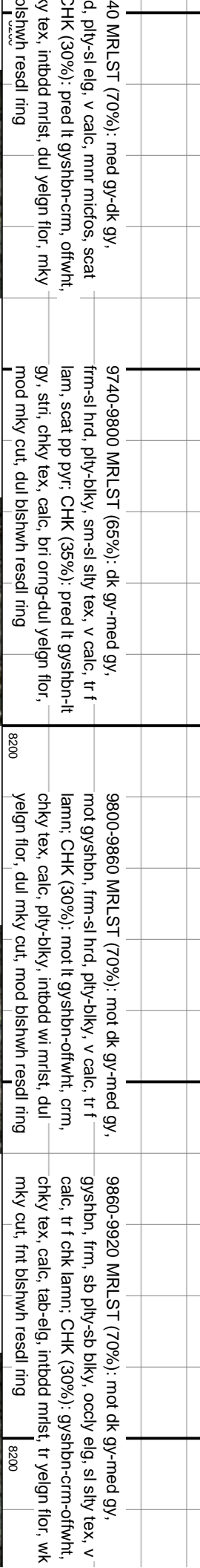
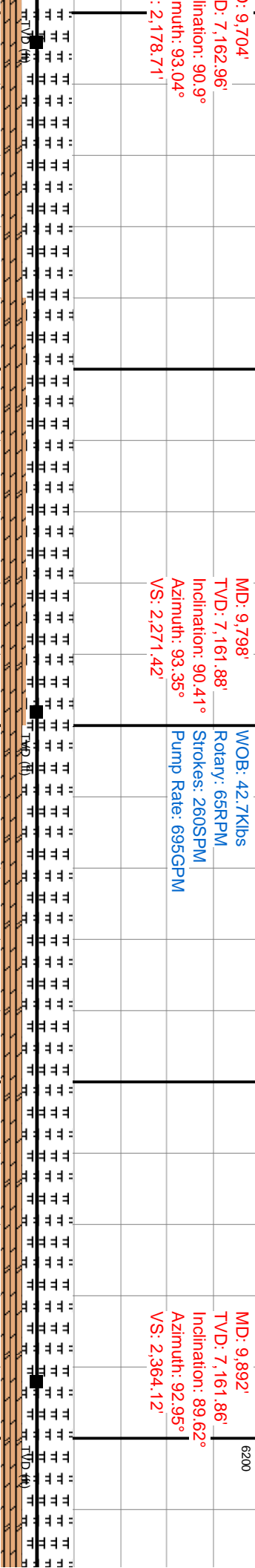
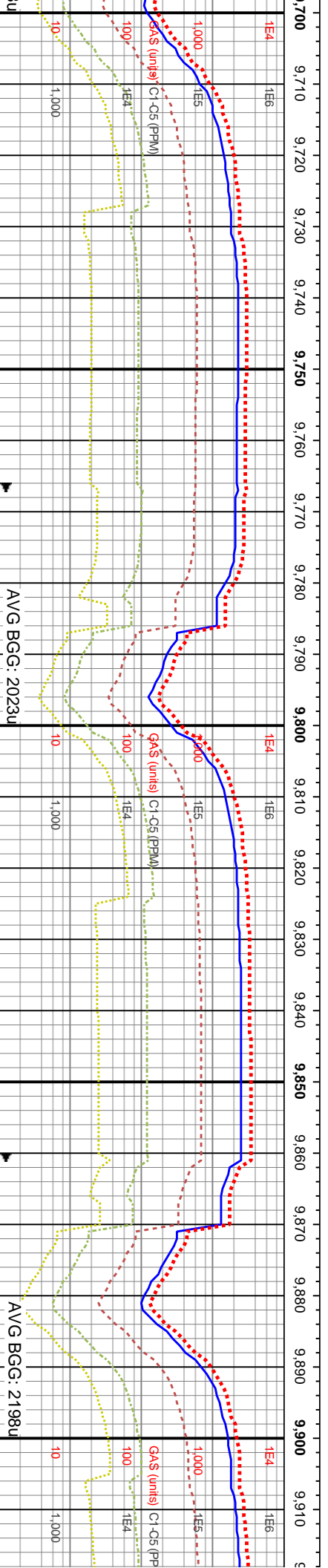
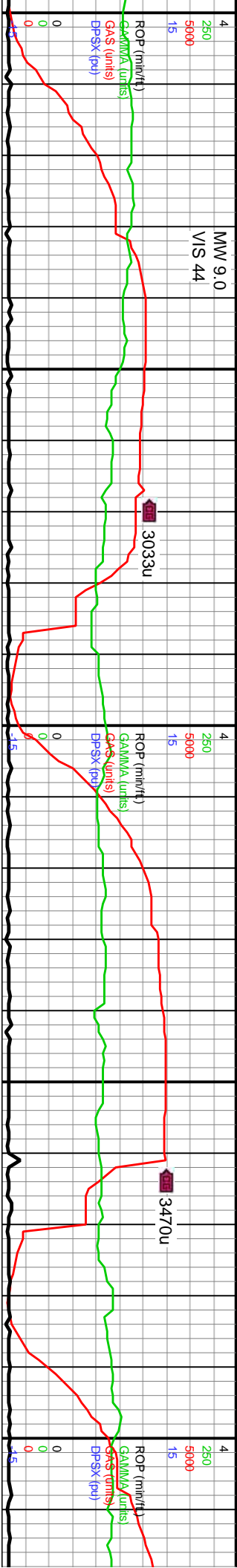
9260-9320 MRLST (60%): dk gy, mot med gy-gyshbn, frm-sl hrd, pily-tab, sm-sily tex, v calc, tr intbd chk lamm, pp imbd pyr: CHK (40%): gysbhn-crm, chky tex, calc, tab-biky, dul yelgn flor, mod mky cut, bishwh resdl ring	9320-9380 MRLST (60%): mot dk gy-med gy, mot gysbhn, frm-sl hrd, pily-tab, sl sily tex, v calc, tr lamm: CHK (40%): mot lt gysbhn-crm, chky tex, calc, pily-tab, intbdd wi mlst, dul yelgn flor, dul mky cut, bishwh resdl ring	9380-9440 MRLST (65%): med gy-dk gysbhn, mot, sm v dk gy, frm, pred pily, v calc, tr f lamm, scat pyrc nod: CHK (35%): lt gysbhn-gysbhn, frm, chky tex, calc, dul yelgn flor, dul mky cut, bishwh resdl ring	9440-9500 MRLST (70%): gysbhn, frm-sl hrd, biky-pily tr chk lamm, pp mic pyr: CHK (40%): gysbhn-crm, chky tex, calc, tab-sl eig, dl cut, bishwh resdl ring
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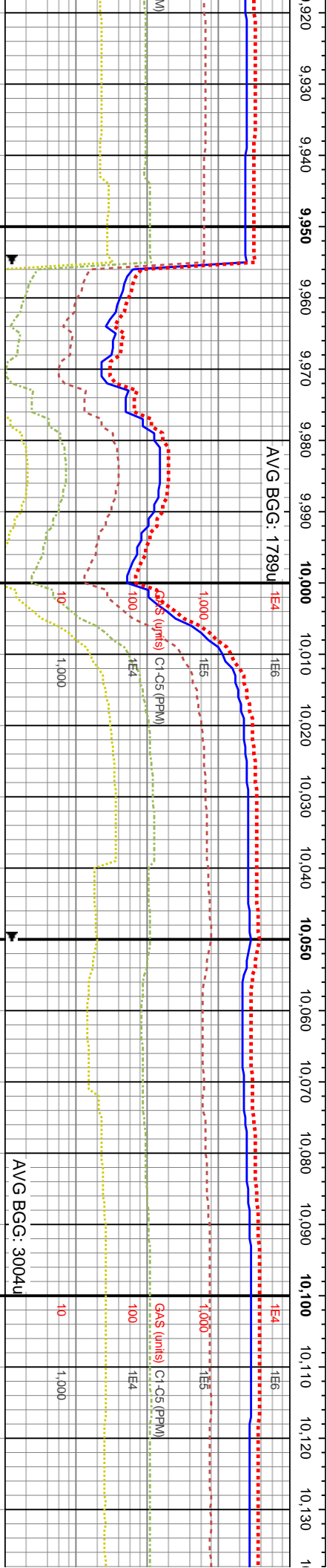
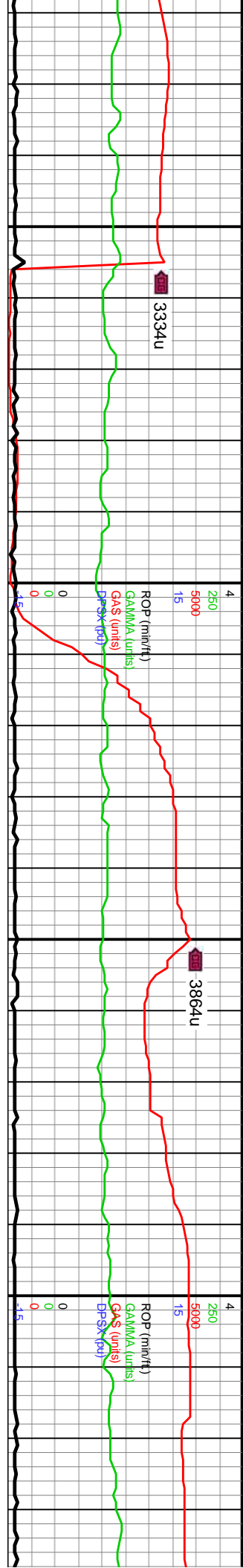




dk gy-med gy, sl silty tex, v calc, K (30%): lt gysbhn, il yelgn flor, dul mky	9500-9560 MRLST (80%): mot dk gy-med gy, mot gysbhn, frm-sl hrd, blk-y-pty, sl silty tex, v calc, tr f lamm, pp mic pyr: CHK (20%): mot lt gysbhn, chky tex, calc, pty-blky, dul yelgn flor, dul mky cut, blshwn resdl ring	9560-9620 MRLST (75%): predy mot med gy-gysbhn, pty-tab, frm, v calc, v f imbd pyr, intbdd chk: CHK (25%): mot lt gy-offwrt, lt gysbhn, sft, chky tex, sb pty-sb blk-y, sme yelgn flor, dul mky cut, mod blshwn resdl ring	9620-9680 MRLST (70%): dk gy-gysbhn, med gy frm-hrd, pty-blky, sm-sl absv tex, v calc, tr chk lamm: CHK (30%): lt gysbhn, stri, chky tex, calc, blk-y, sft, mnr micros, dul yelgn flor, dul mky cut, blshwn resdl ring	9680-97 frm-sl hr pp pyr: C calc, chh cut, dul l
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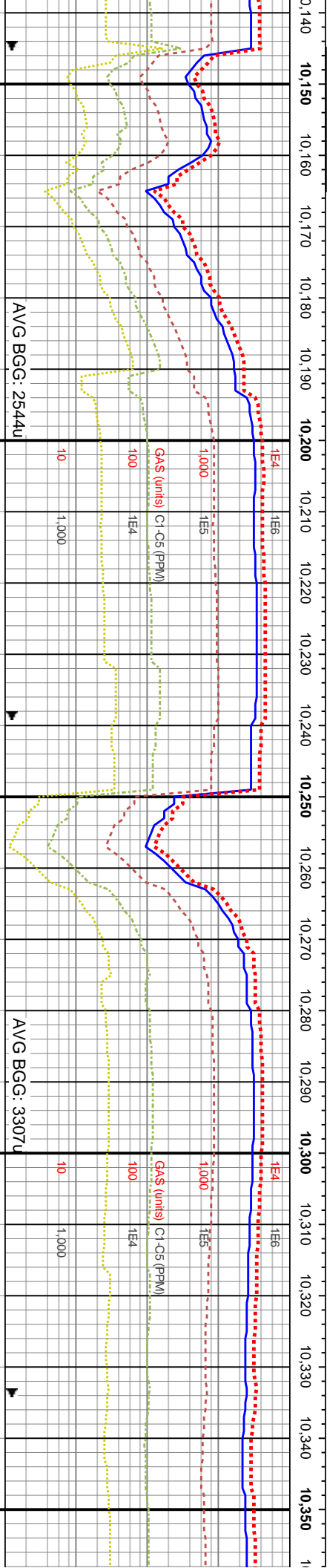
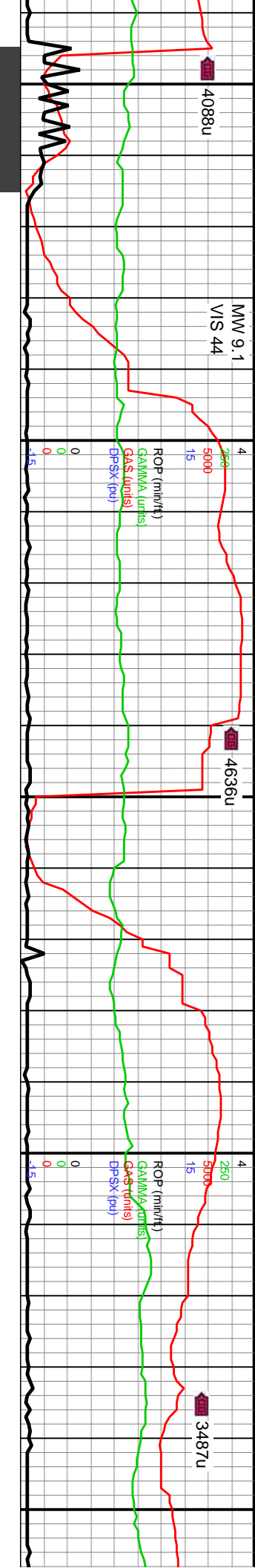


MD: 9,987' WOB: 41.2Klbs
TVD: 7,162.67' Rotary: 55RPM
Inclination: 89.4° Strokes: 261SPM
Azimuth: 93.35° Pump Rate: 696GPM
VS: 2,457.8'

MD: 10,081' AV/G BGG: 3004u
TVD: 7,163.01' 6200
Inclination: 90.19°
Azimuth: 92.95°
VS: 2,550.5'

9920-9980 MRLST (75%): med gy-dk gy, frm, sb pily-splt, occly sb blk-y-elg, sl silty tex, v calc, tr imbd pp pyr, tr lse pyrc nod, tr thn chk lam; CHK (25%): mot gysbhn-crm, tn ip, chky tex, dul yelgn-bri ong flor, dul mky cut, mod blshwn resdl ring	9980-10040 MRLST (75%): med gy-dk gy, sl dk gysbhn ip, frm, pily-sb blk-y-elg, priedy sm tex, occly sl silty, v calc, tr imbd pp pyr; CHK (25%): mot gysbhn-gy, offtwht ip, chky tex, tr dul yelgn flor, wk mky cut, wk blshwn resdl ring	10040-10100 MRLST (80%): dk gy-med gysbhn, frm-sl hrd, sb blk-y, sl silty tex, v calc, pyrc nod; CHK (20%): lt gysbhn-crm, calc, chky tex, dul-mod yelgn flor, mod mky cut, mod blshwn resdl ring	10100-10160 MRLST (85%): gysbhn, frm-sl hrd, splt-sb lam, tr imbd pyr; CHK (15%): gysbhn, chky tex, calc, dul wk mky cut, mod blshwn re
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MD: 10,176'
TVD: 7,163.28'
Inclination: 89.48°
Azimuth: 90.35°
VS: 2,643.73'

WOB: 42.4Klbs
Rotary: 50RPM
Strokes: 260SPM
Pump Rate: 695GPM

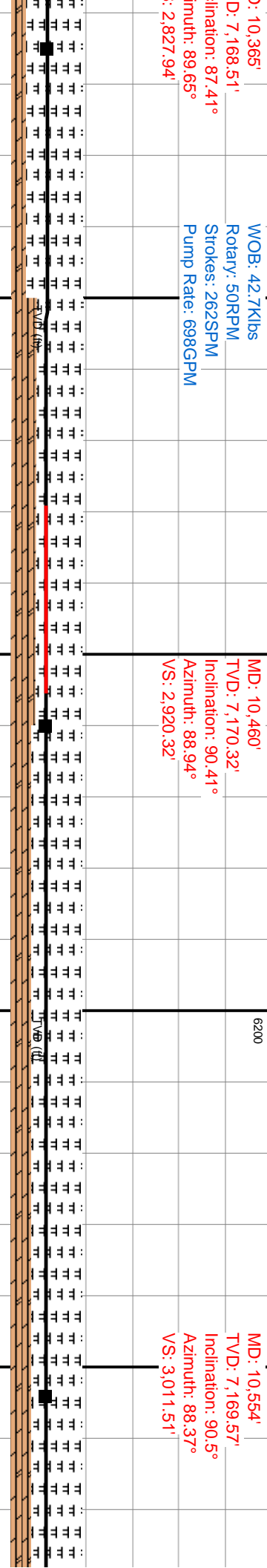
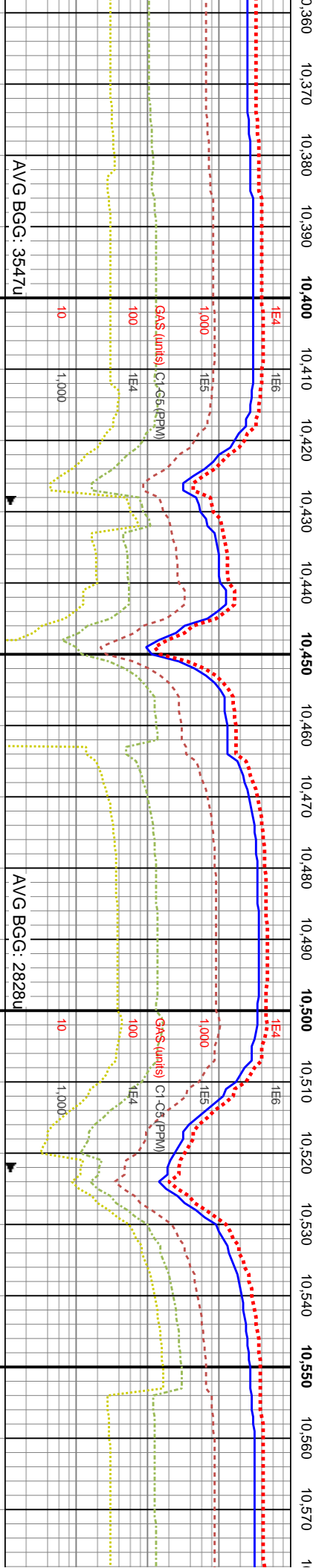
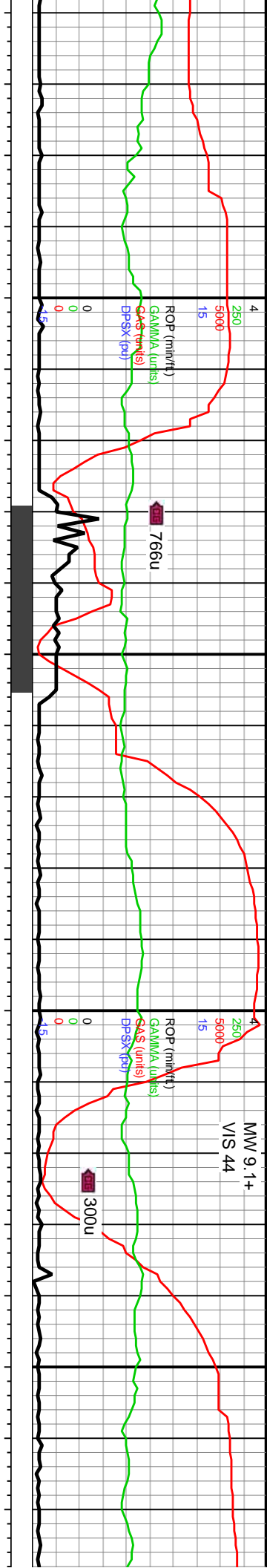
AVG BGG: 2544u

MD: 10,271'
TVD: 7,165.06'
Inclination: 88.38°
Azimuth: 89.73°
VS: 2,736.41'

AVG BGG: 3307u

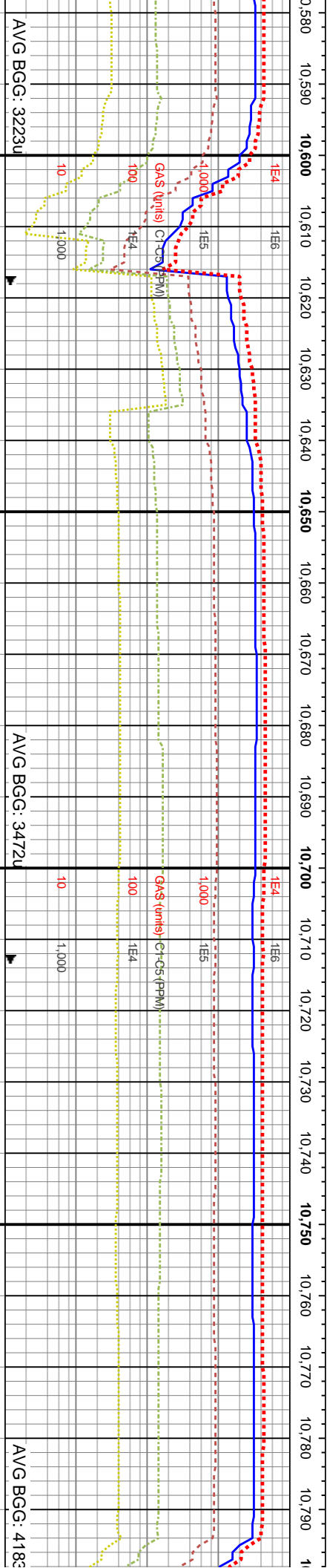
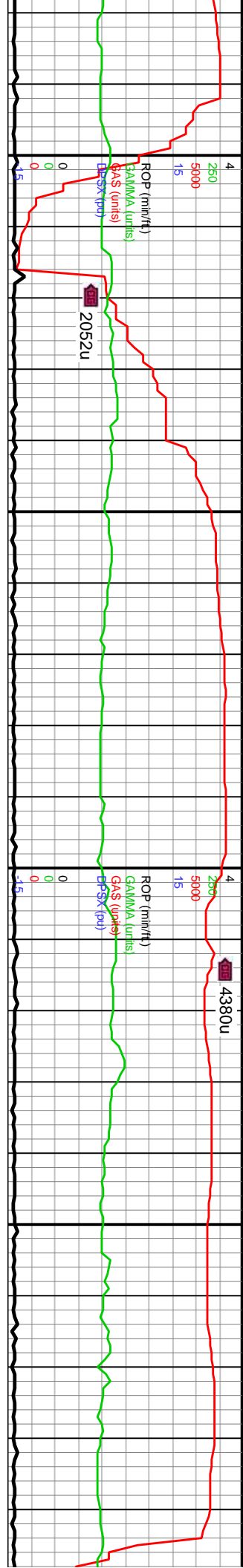
10160-10220 MRLST (85%): mot dk gy-med blk, v calc, tr fch 6): predy crm-lt yelgn-bri orng flr, wk mky cut, fnt blshwh resdl ring	10220-10280 MRLST (75%): dk gy-med gy, occl gyshbn, sb blk-yl elg, frm-sl hrd, tr f lam, v calc, scat pp pyr; CHK (25%): predy lt gyshbn-crm, calc, chky tex, du yelgn flr, wk mky cut, fnt blshwh resdl ring	10280-10340 MRLST (80%): mot dk gy-med gy, tab-sb blk-yl elg, frm, slty tex, v calc, scat imbd pyr; CHK (20%): mot lt gyshbn-crm, calc, pty-blky, dul yelgn flr, wk mky cut, fnt blshwh resdl ring	10340-10360 MRLST (80%): mot dk gy-med gy, occl gyshbn, sb blk-yl elg, frm-sl hrd, tr f lam, v calc, scat pp pyr; CHK (25%): predy lt gyshbn-crm, calc, chky tex, du yelgn flr, wk mky cut, fnt blshwh resdl ring
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0400 MRLST (80%): predy med on, frm-sl hrd, ply-sb blkly, predy sm y sl slty, v calc, scat imbd pp pyr; CHK not gysbhn-gy, chky tex, dul yelgn flor, cut, fnt blshwn resdl ring	10400-10460 MRLST (65%): dk gy-med gy, frm-hrd, sb blkly-sb ply-sl elg, sl abrsv tex, v calc, intbd chk lam, tr pp pyr, tr lse pyrc nod; CHK (35%): lt gysbhn-crm, chky tex, calc, blkly, yelgn flor, wk mky cut, fnt blshwn resdl ring	10460-10520 MRLST (70%): mot dk gy-med gysbhn, ply-sb blkly, occlly sl elg, frm-sl hrd, sl slty tex, v calc; CHK (30%): mot-stri lt gysbhn-gysbhn, sft-sl frm, chky tex, blkly-sl ply, v calc, dul yelgn flor, wk mky cut, fnt-mod blshwn resdl ring	10520-10580 MRLST (70%): dk gy-v dk gy, mot med gy-gysbhn, frm, ply-tab, sm-sl slty tex, v calc, tr f lam CHK (30%): mot lt gysbhn, chky tex, calc, ply-blky, dul yelgn flor, wk mky cut, fnt-mod blshwn resdl ring
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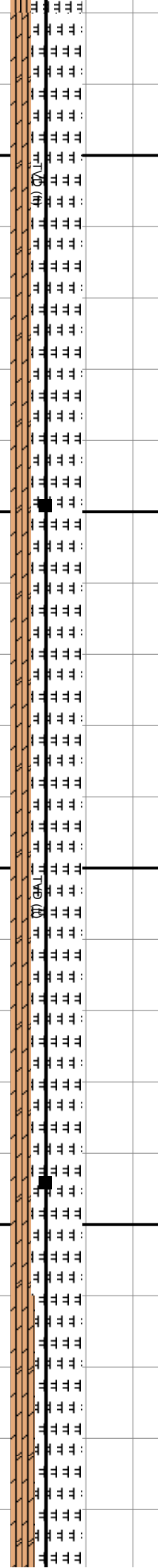




WOB: 42.7Klbs
Rotary: 55RPM
Strokes: 260SPM
Pump Rate: 695GPM

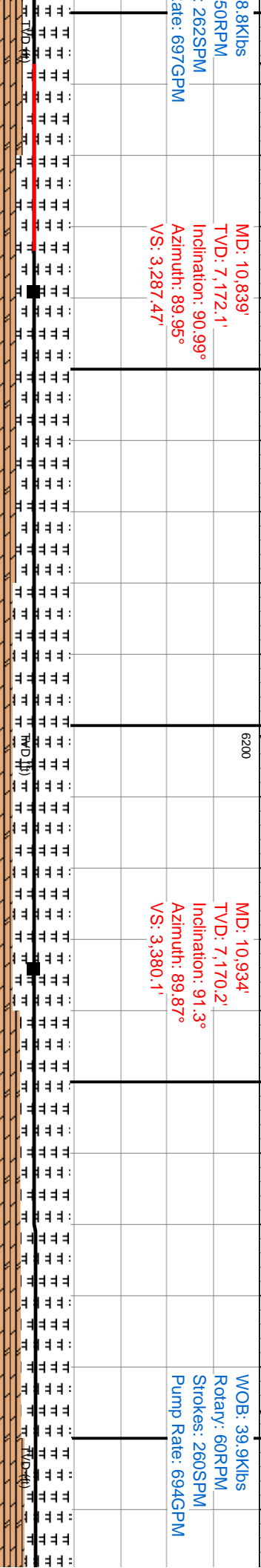
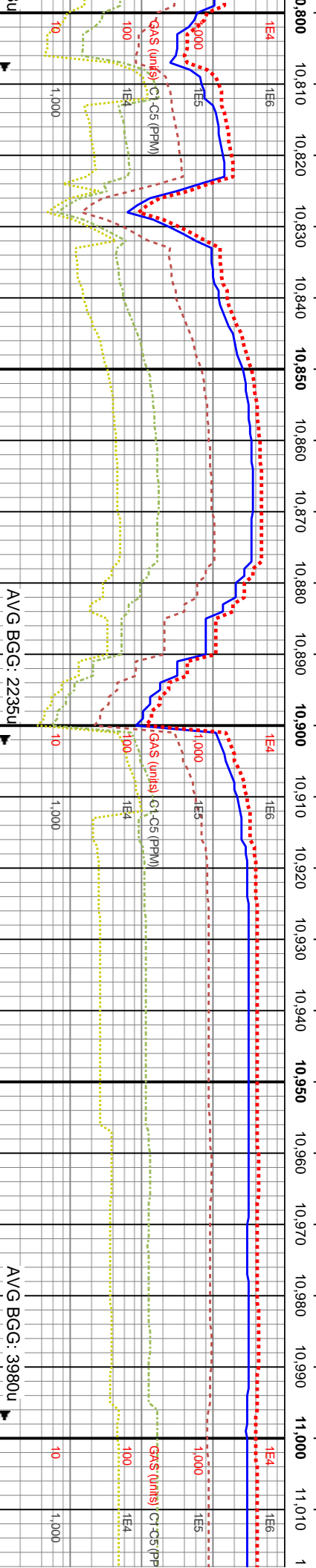
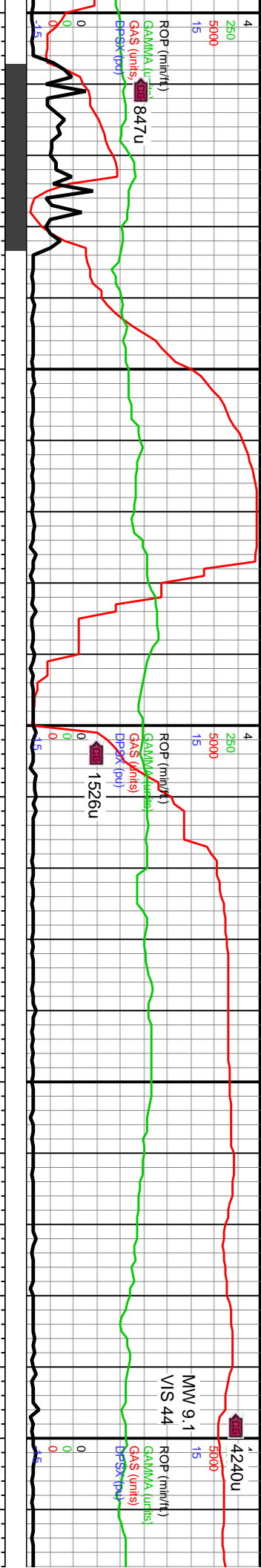
MD: 10,649'
TVD: 7,169.8'
Inclination: 89.22°
Azimuth: 88.15°
VS: 3,103.51'

WOB: 3
Rotary:
Strokes:
Pump R



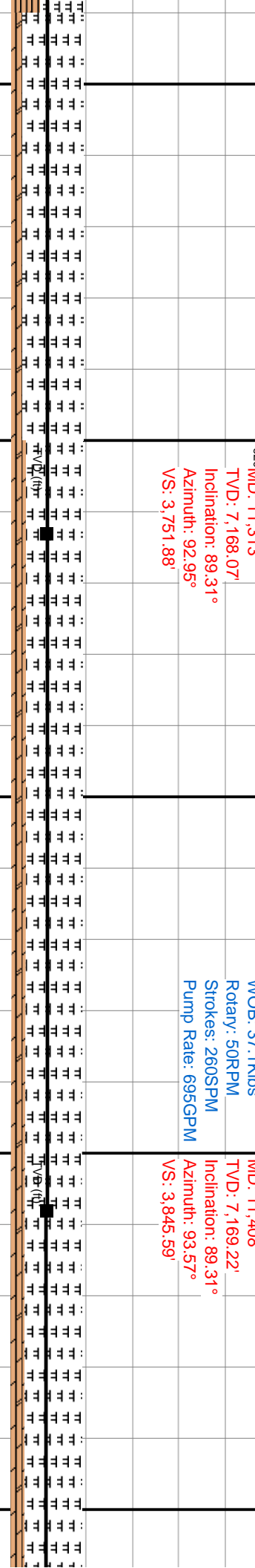
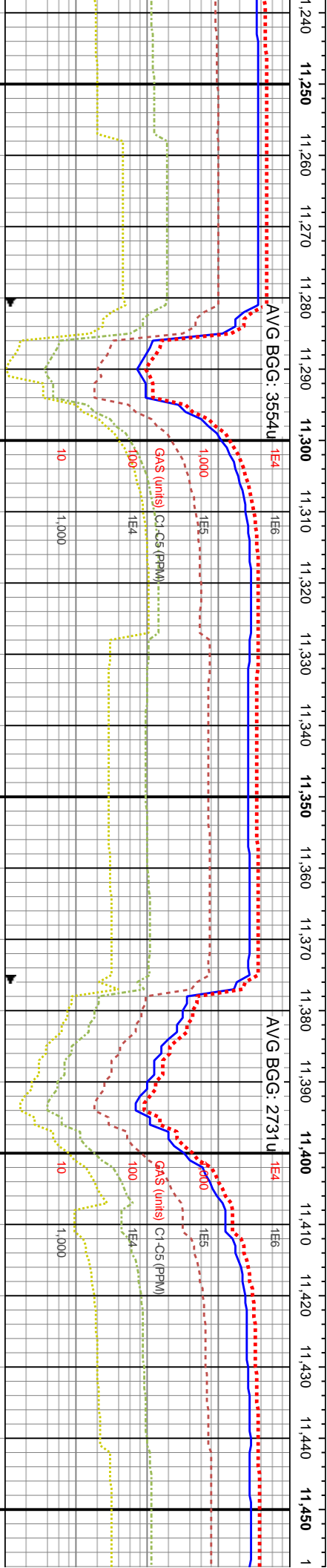
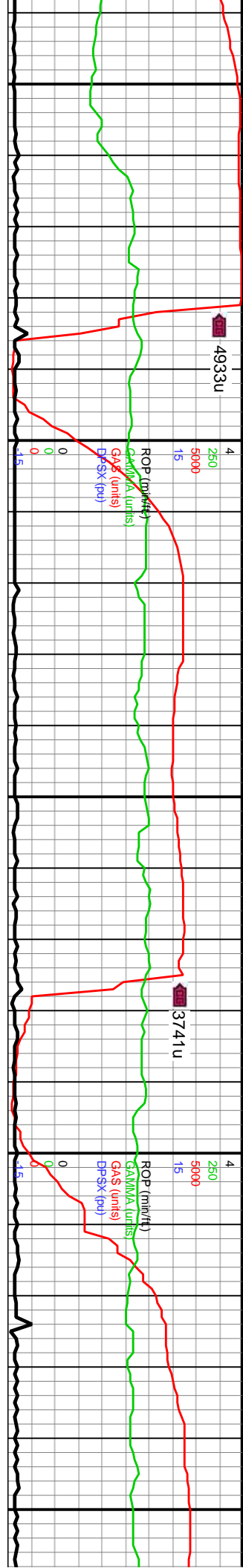
10580-10640 MRLST (70%): mot dk gy-med gy, mot gysbhn, frm-sl hrd, blk-y-elg, sl slty tex, v calc, tr intbd chk lamm, scat imbd pyr; CHK (30%): lt gysbhn-crm, chky tex, calc, blk-y, scat yeign flor, wk mky cut, fnt blshwh resd ring	10640-10700 MRLST (70%): mot dk gy-med gy, mot gysbhn, frm-sl hrd, sb blk-y-pty, occly elg, sl slty tex, v calc, tr f chk lamm; CHK (30%): gysbhn-lt tn, chky tex, calc, blk-y, dul yeign flor, wk mky cut, mod blshwh resd ring	10700-10760 MRLST (70%): dk gy-med gy, frm-sl hrd, sb blk-y, sl slty tex, v calc, intbd chk lamm, pp imbd pyr; CHK (30%): lt gysbhn-crm, calc, chky tex, dul yeign flor, wk mky cut, fnt blshwh resd ring	10760-10820 MRLST (65%): gysbhn, frm-sl hrd, pty-blky, sl slty tex, v calc, intbd chk lamm, pp imbd pyr; CHK (30%): gysbhn-offwht, crm, chky tex, yeign flor, dul mky cut, mod blshwh resd ring
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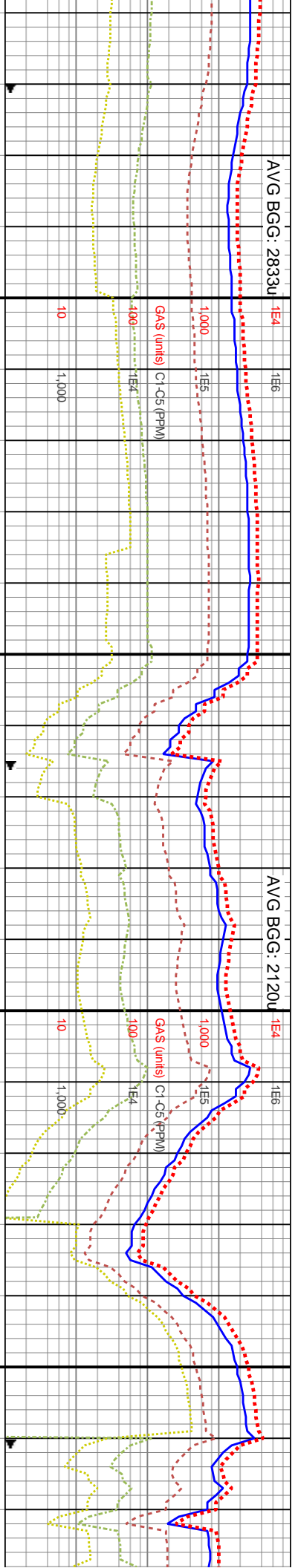
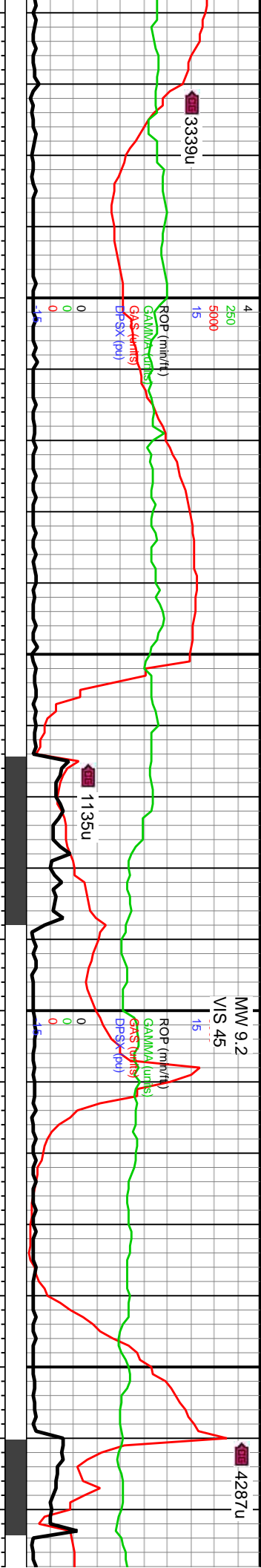


med gy-dk gy, mot sn-sily tex, v calc, tr CHK (35%): lt calc, pily-biky, dul ishwh resdl ring	10820-10880 MRLST (75%): mot dk gy-med gysbhn, pily-biky, frm-sl hrd, tr micmica, sl sily tex, v calc; CHK (25%): mot-stri lt gysbhn, sl frm, biky-sl pily, tr mic fos, v calc, tr frac fil cal, dul yelgn flor, wk mky cut, fnt blshwh resdl ring	10880-10940 MRLST (80%): mot dk gy-med gy, mot gysbhn, frm-sl hrd, pily-tab, sl sily tex, v calc, tr lamm; CHK (20%): mot lt gysbhn-crm, chky tex, pily-tab, inbadd wi mrlst, dul yelgn flor, wk mky cut, fnt blshwh resdl ring	10940-11000 MRLST 70%: dk gy-gysbhn, med gy, frm-v frm, biky-pily, sl sily tex, v calc, pp imbd pyr; CHK (30%): lt gysbhn-offwht, pily-tab, dul yelgn flor, wk mky cut, fnt blshwh resdl ring	11000-11000 MRLST 70%: dk gy-gysbhn, med gy, frm-v frm, biky-pily, sl sily tex, v calc, pp imbd pyr; CHK (30%): lt gysbhn-offwht, pily-tab, dul yelgn flor, wk mky cut, fnt blshwh resdl ring
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11240-11300 MRLST (85%): mot dk gy-med gysbhn, plty-biky, frm-sl hrd, sl silty tex, v calc; CHK (15%): mot it gysbhn-gysbhn, sft-sl frm, chky tex, biky-sl plty, dul yeign flor, wk mky cut, fnt bishwh resdl ring	11300-11360 MRLST (80%): mot dk gy-blk gy, mot gysbhn, frm-hrd, biky, sl abrsv tex, v calc, tr inbtbd chk lam, scat pp mic pyr; CHK (20%): it gysbhn-crm, chky tex, calc, biky, dul yeign flor, wk mky cut, fnt bishwh resdl ring	11360-11420 MRLST (80%): dk gy-gysbhn, frm-sl hrd, biky-sl elg, sm-sl silty tex, v calc, tr f lam; CHK (20%): it gysbhn-crm, chky tex, calc, biky, dul yeign flor, wk mky cut, fnt bishwh resdl ring	11420-11480 MRLST (80%): occlgy gysbhn, frm-sl hrd, b calc, tr chk lamm, pp mic p gysbhn, chky tex, calc, tab flor, wk mky cut, fnt bishwh
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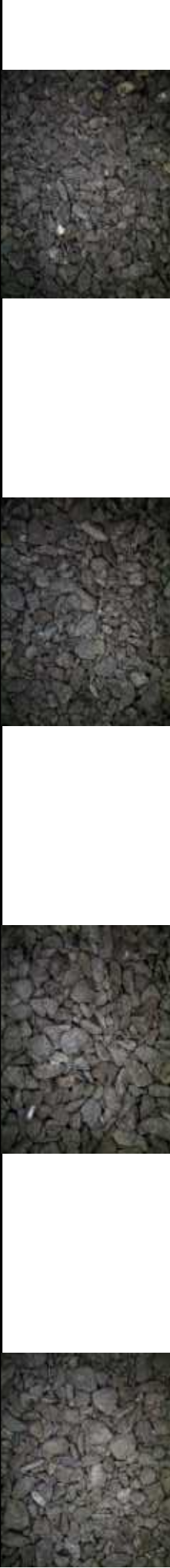
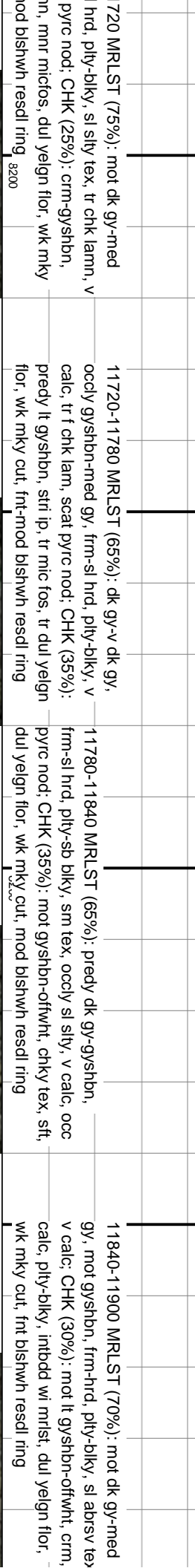
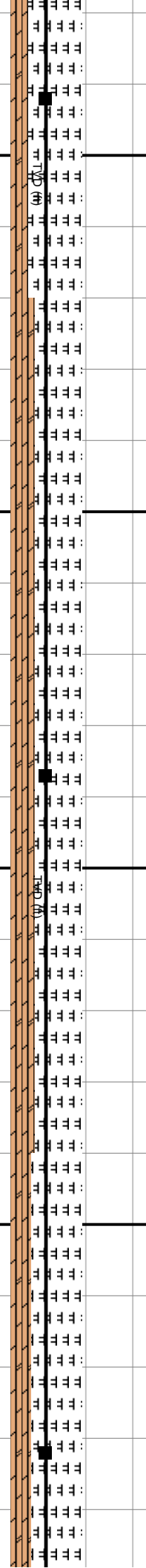
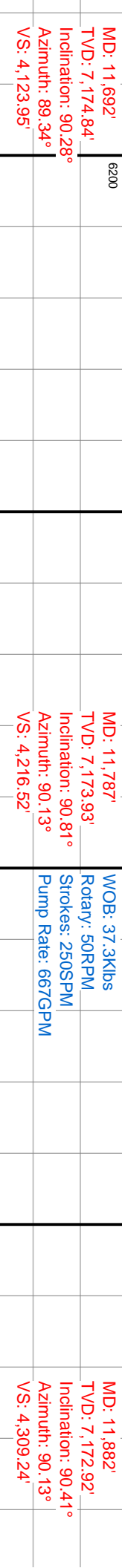
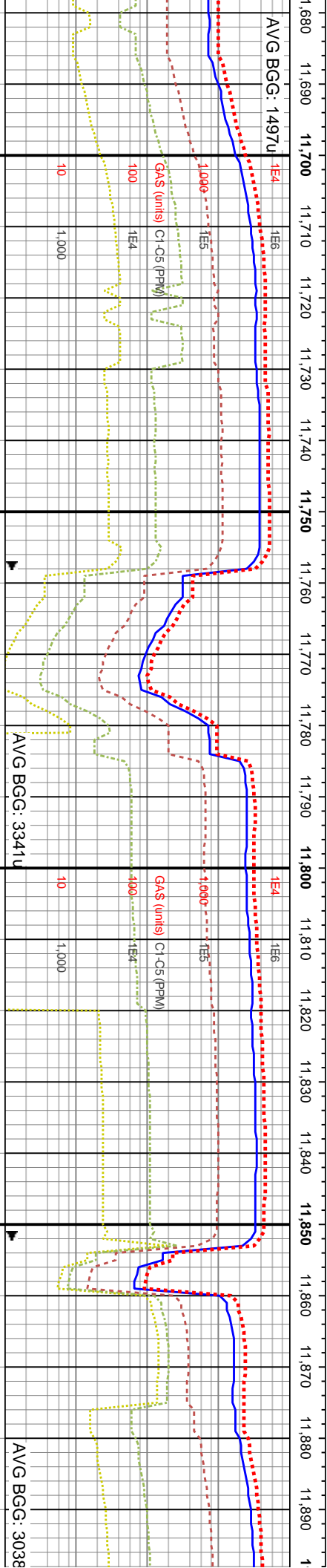
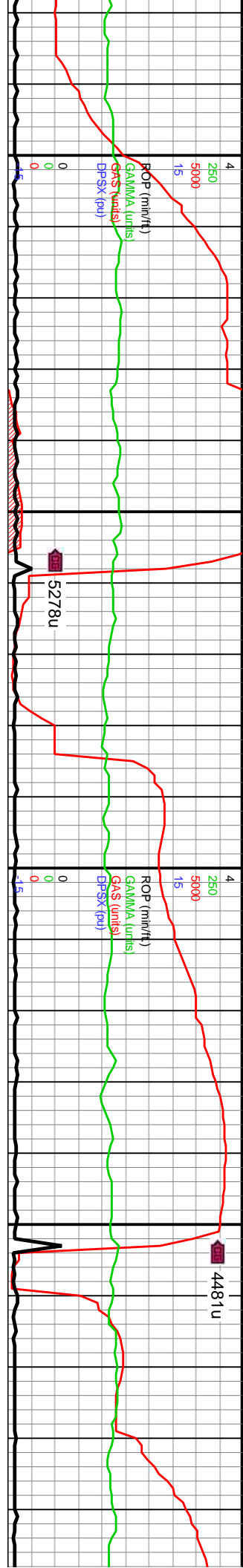


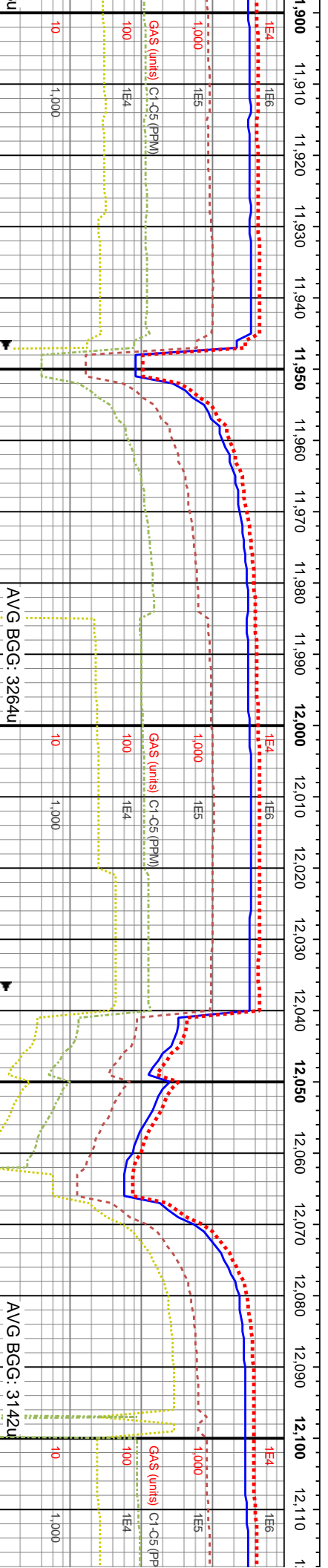
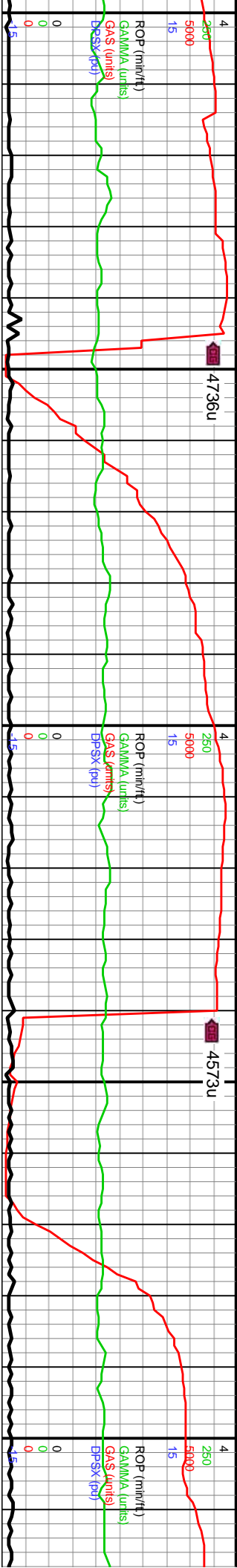
MD: 11,503'
TVD: 7,171.54'
Inclination: 87.89°
Azimuth: 92.86°
VS: 3,939.27'

MD: 11,597.6200
TVD: 7,174.16'
Inclination: 88.91°
Azimuth: 89.95°
VS: 4,031.4'

WOB: 40.9Klbs
Rotary: 50RPM
Strokes: 250SPM
Pump Rate: 667GPM

o): dk gy-med gy, lky-pty, sl silty tex, v yr: CHK (20%): lt -sl elg, dul yelgn n resdl ring	11480-11540 MRLST (75%): dk gy, occly med gy, frm-sl hrd, pty-sl elg, v calc, tr f chk lam, scat pyrc nod: CHK (25%): pedy lt gysbhn-crm, dul yelgn flor, wk mky cut, fnt bishwn resdl ring	11540-11600 MRLST (70%): dk gy-gysbhn, med gy, frm-v frm, blk-ty-tab, sl silty tex, v calc, scat pyrc nod: CHK (30%): lt gysbhn-tn, pty-tab, dul yelgn flor, wk mky cut, fnt bishwn resdl ring	11600-11660 MRLST (75%): mot med gy-dk gy, gysbhn, frm-sl hrd, blk-ty-sl elg, sm-sl silty tex, v calc: CHK (25%): mot lt gysbhn-gy, blk-ty-sb pty, dul yelgn flor, wk mky cut, fnt bishwn resdl ring	11660-11720 MRLST (75%): dk gy, frm-sl hrd, blk-ty-sl elg, sm-sl silty tex, v calc: CHK (25%): mot lt gysbhn-gy, blk-ty-sb pty, dul yelgn flor, wk mky cut, fnt bishwn resdl ring
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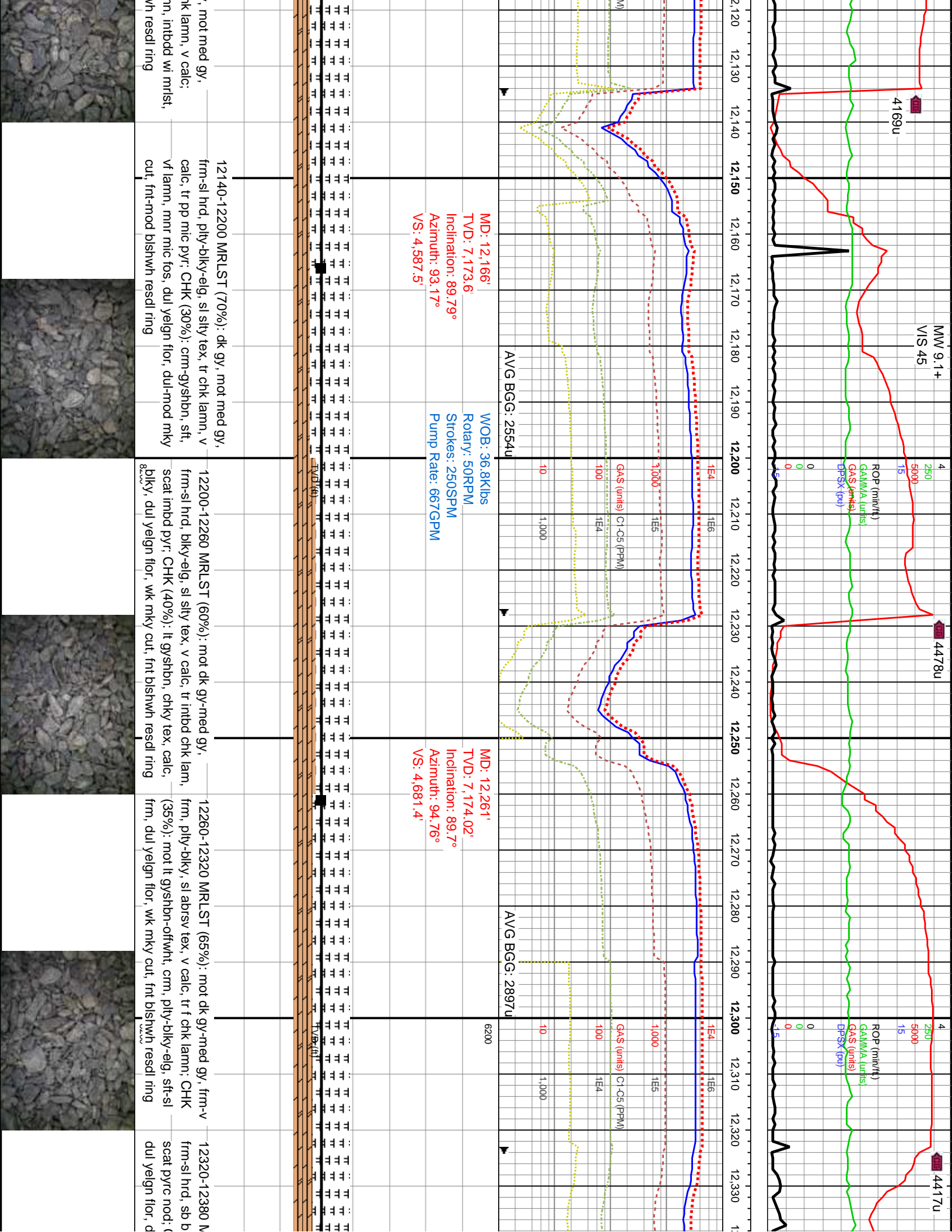
MD: 11,976'
TVD: 7,172.76'
Inclination: 89.79°
Azimuth: 90.75°
VS: 4,401.1'

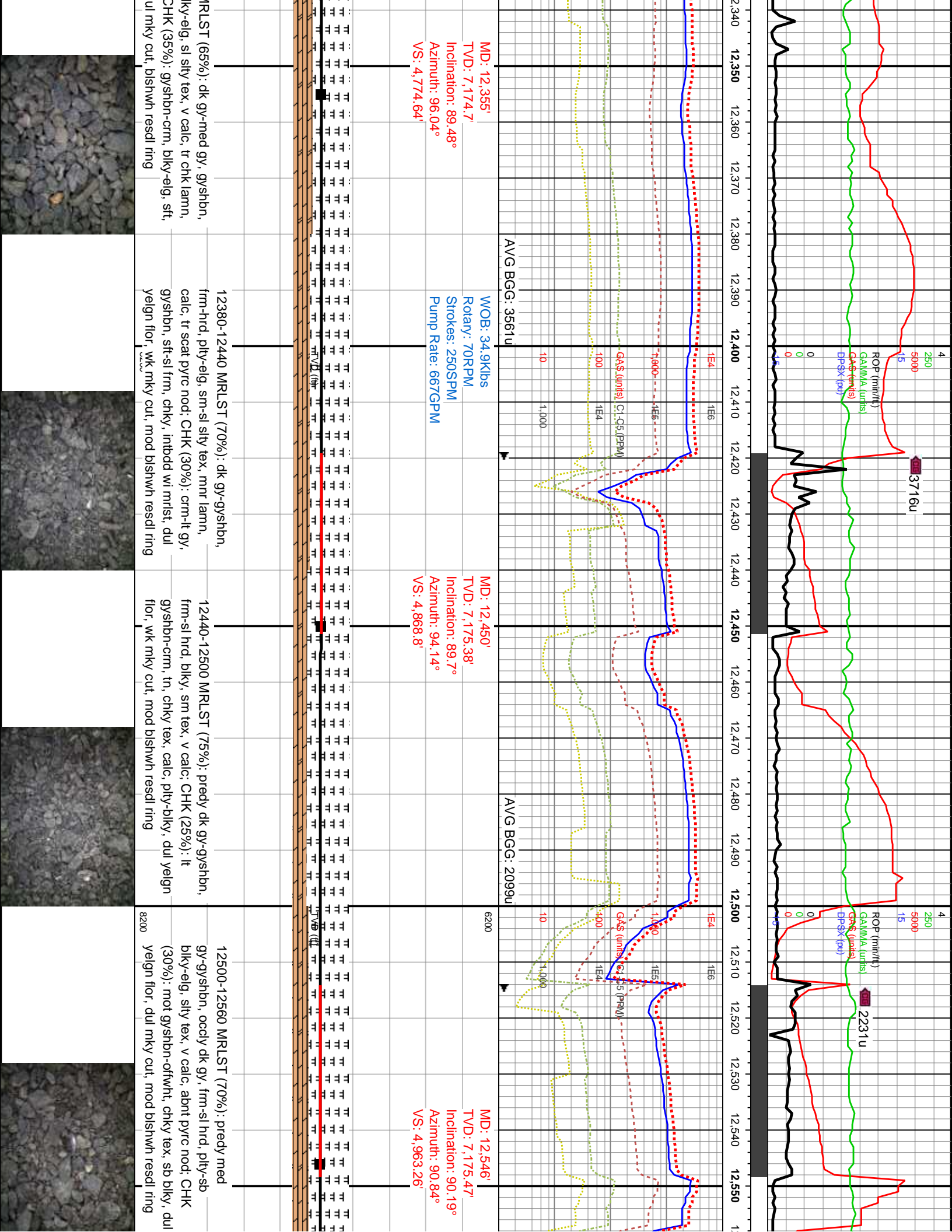
WOB: 36.8Klbs
Rotary: 60RPM
Strokes: 250SPM
Pump Rate: 668GPM

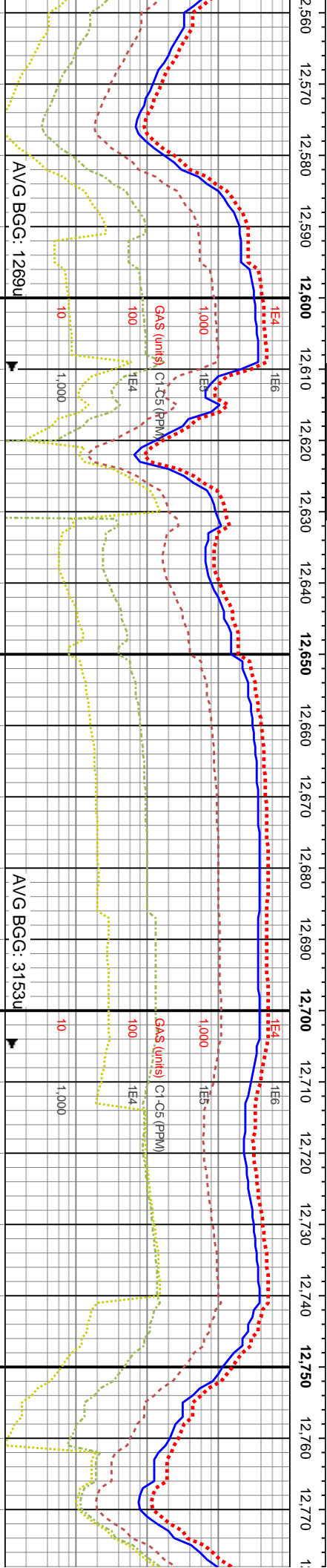
MD: 12,071'
TVD: 7,173.18'
Inclination: 89.7°
Azimuth: 91.14°
VS: 4,494.1'

11900-11960 MRLST (65%): mot dk gy-med gy, gysbhn, blk, frm-sl hrd, sm-sl slty tex, v calc, occ pyrc nod; CHK (35%): mot it gysbhn-crm, calc, pily, chky tex, dul yeign flor, wk mky cut, mod blshwh resd ring	11960-12020 MRLST (60%): mot med gy-dk gy, gysbhn, frm-sl hrd, blk, sl elg, sm-sl slty tex, v calc; CHK (40%): mot it gysbhn-gy, pily-sb elg, dul yeign flor, wk mky cut, frt blshwh resd ring	12020-12080 MRLST (60%): predy dk gy, occly med gy, frm-sl hrd, pily-sl elg, v calc, tr f lam, tr pyrc nod; CHK (40%): predy it gysbhn-crm, occly offwht, dul yeign flor, wk mky cut, frt blshwh resd ring	12080-12140 MRLST (70%): dk gy frm-sl hrd, pily-blky, sl slty tex, tr cl CHK (30%): crm-gysbhn, sft, vf lan dul yeign flor, wk mky cut, frt blshwh resd ring
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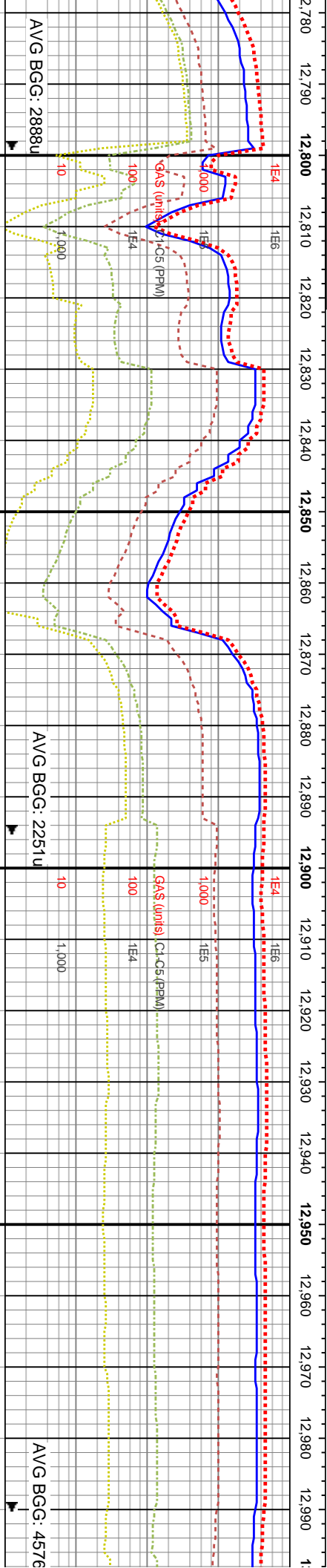
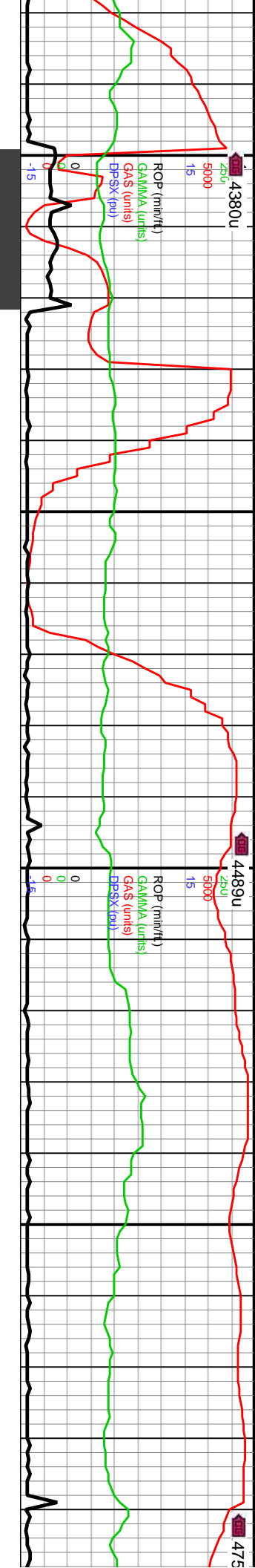
WOB: 38.8Klbs
Rotary: 60RPM
Strokes: 240SPM
Pump Rate: 640GPM

MD: 12,640'
TVD: 7,177.18'
Inclination: 87.72°
Azimuth: 88.46°
VS: 5,054.81'

MD: 12,735'
TVD: 7,181.48'
Inclination: 87.1°
Azimuth: 88.76°
VS: 5,146.86'

12560-12620 MRLST (65%): mot dk gy-med gy, frm-sl hrd, elg-sb pty, sl sm tex, v calc, scat cal, scat pyrc nod; CHK (35%): lt gysbhn-offwht, crm, pty-biky, intbdd wi mrlst, dul yelgn flor, wk mky cut, fnt bishwh resdl ring	12620-12680 MRLST (75%): dk gy-med gy, frm-sl hrd, pty-elg, sl sily tex, v calc, tr chk lamm, scat pyrc nod; CHK (25%): gysbhn-crm, occly offwht, biky-sb elg, sft, dul yelgn flor, wk mky cut, fnt bishwh resdl ring	12680-12740 MRLST (80%): mot dk gy-dk gysbhn, frm-hrd, biky, sl abrv tex, v calc, tr intbd chk lamm, scat pp mic pyr; CHK (20%): lt gysbhn-crm, chky tex, calc, biky, dul yelgn flor, wk mky cut, mod bishwh resdl ring	12740-12800 MRLST (60%): frm-v frm, sb biky, sl sily tex, lamm, scat imbd pyr; CHK (40%): dul yelgn flor, wk mky cut, fnt
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WOB: 72Klbs
Rotary: 0RPM
Strokes: 240SPM
Pump Rate: 641GPM

MD: 12,830'
TVD: 7,184.53'
Inclination: 89.22°
Azimuth: 88.63°
VS: 5,238.99'

AVG BGG: 2251u

6200

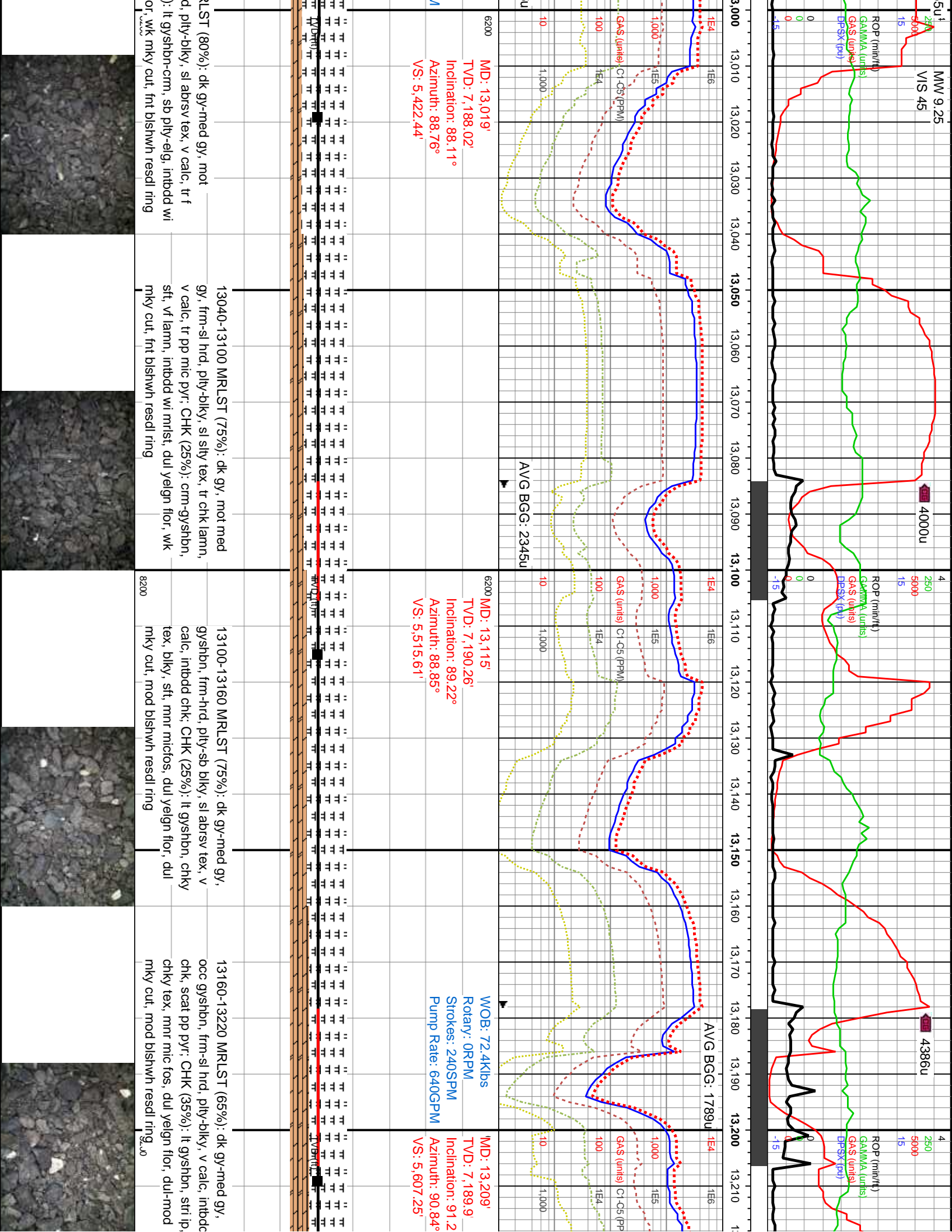
MD: 12,924'
TVD: 7,185.81'
Inclination: 89.22°
Azimuth: 88.94°
VS: 5,330.23'

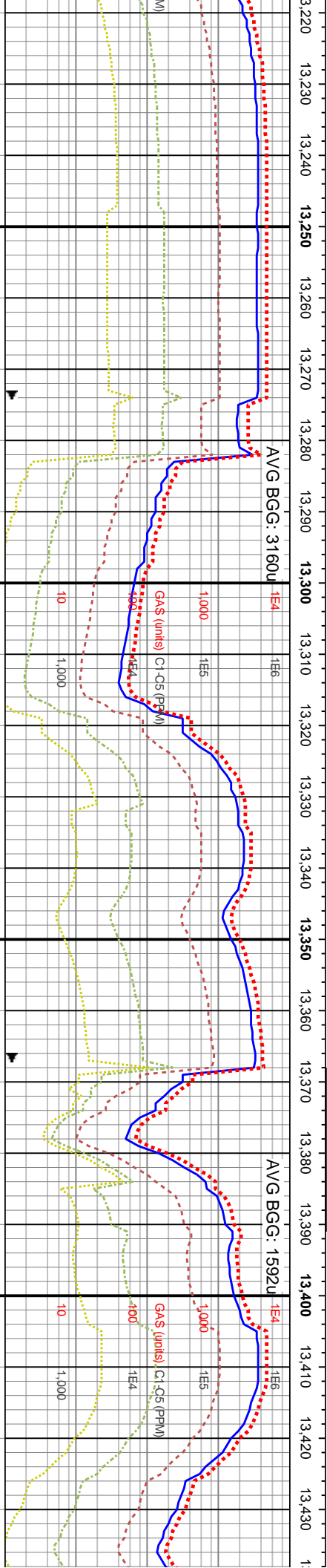
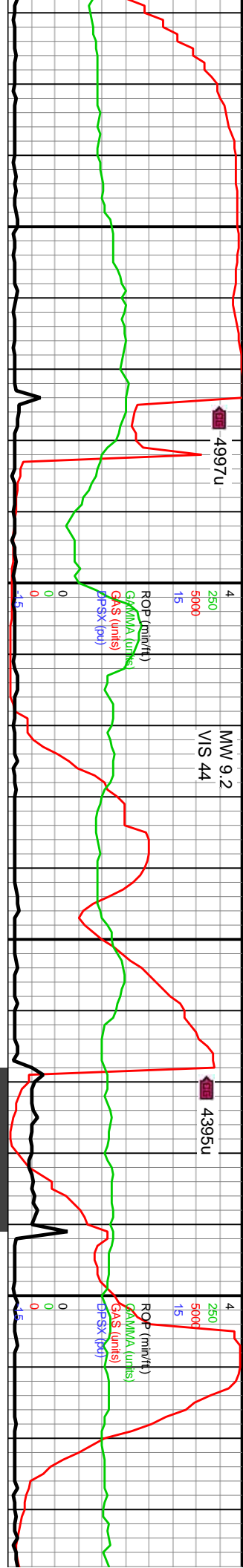
AVG BGG: 4576

WOB: 41.2Klbs
Rotary: 50RPM
Strokes: 240SPM
Pump Rate: 640GPM

dk gy-med gy, v calc, intbd chk	12800-12860 MRLST (60%): mot med gy-gyshbn, dk gy, frm-sl hrd, blk, sm tex, v calc, scat pp pyr;	12860-12920 MRLST (70%): predy dk gy-gyshbn, frm-sl hrd, pily-sb blk, sm tex, occ sl sily, v calc, scat imbd pp pyr; CHK (30%): mot gysbhn-offwht, sft, dul yelgn flor, wk mky cut, mod bishwn resdl ring	12920-12980 MRLST (65%): mot dk gy-med gy, frm-sl hrd, pily-blky, sl sily tex, tr chk lamm, v calc, tr pp mic pyr; CHK (35%): crm-gyshbn, sft, vf lamm, mmr micos, dul yelgn flor, wk mky cut, fnt bishwn resdl ring	12980-13040 MF gysbhn, frm-sl hr lamm; CHK (20%) lmst, dul yelgn fl
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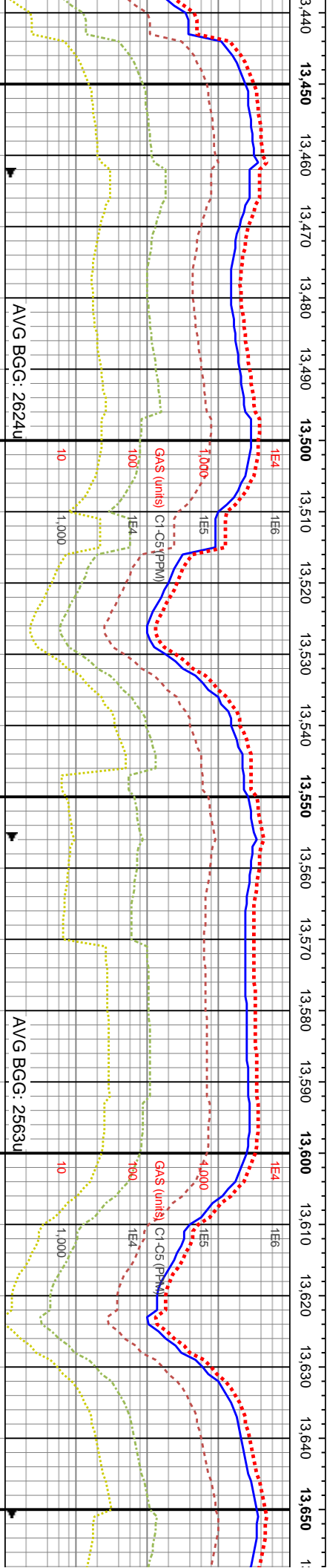
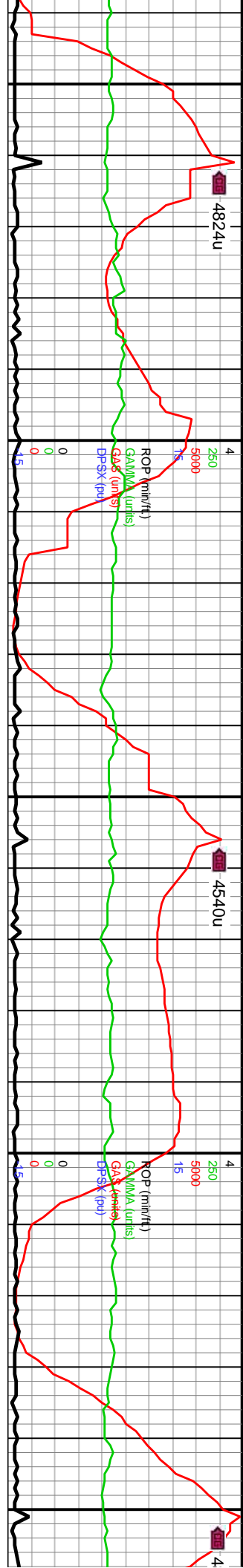
MD: 13,303'
TVD: 7,187.66'
Inclination: 91.52°
Azimuth: 91.06°
VS: 5,699.26'

WOB: 40.9klbs
Rotary: 50RPM
Strokes: 240SPM
Pump Rate: 640GPM

MD: 13,399'
TVD: 7,185.56'
Inclination: 90.99°
Azimuth: 87.53°
VS: 5,792.61'

13220-13280 MRLST (80%): mot dk gy, med gy, frm-hrd, tab-blky, sl sm abrsv tex, v calc, scat imbd pyr, CHK (20%): mot crm-lt gyshbn, chky tex, calc, mnr micfos, dul yelgn flor, dul mky cut, mod blshwh resd ring	13280-13340 MRLST (70%): mot med gy-dk gyshbn, frm-sl hrd, blky, sm tex, v calc, scat pp pyr, CHK (30%): lt gyshbn-ofwht, crm, chky tex, ply-blky, dul yelgn flor, dul mky cut, mod blshwh resd ring	13340-13400 MRLST (70%): mot dk gy-med gy, frm-sl hrd, blky-elg, sl slty tex, v calc, tr intbd chk lam, scat imbd pyr, CHK (30%): lt gyshbn-crm, chky tex, mnr micfos, blky, dul yelgn flor, dul mky cut, blshwh resd ring	13400-13460 MRLST (65%): frm-sl hrd, blky, sm tex, v c mnr micfos, CHK (35%): lt chky tex, calc, ply-blky, du cut, mod blshwh resd ring
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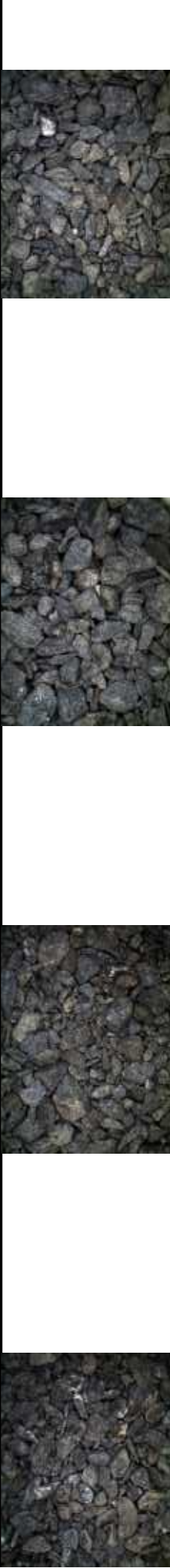
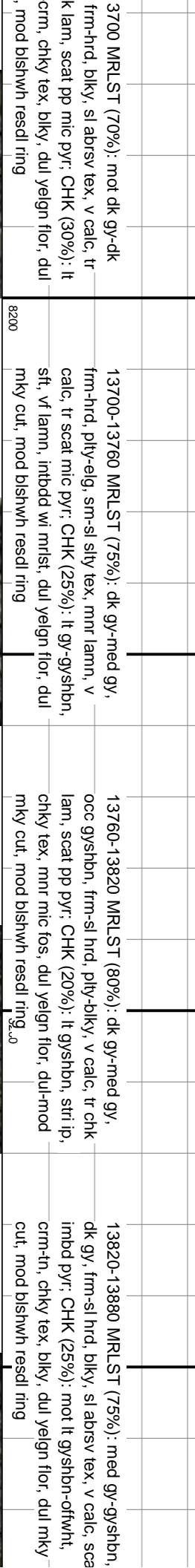
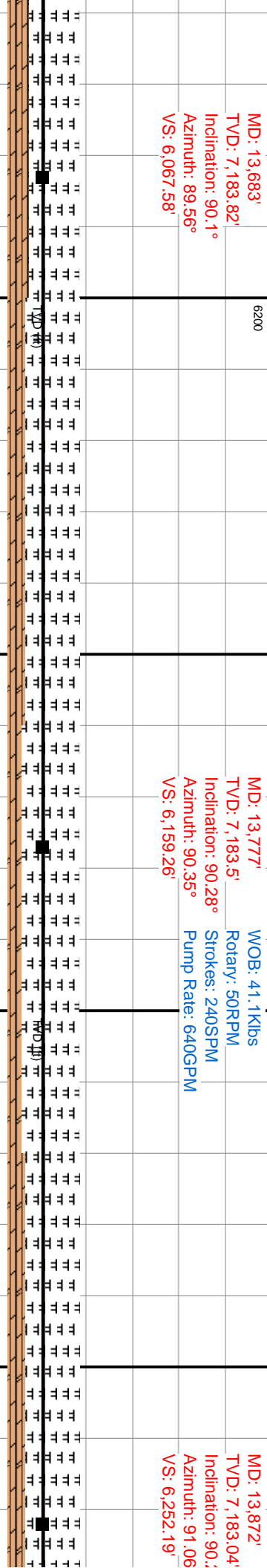
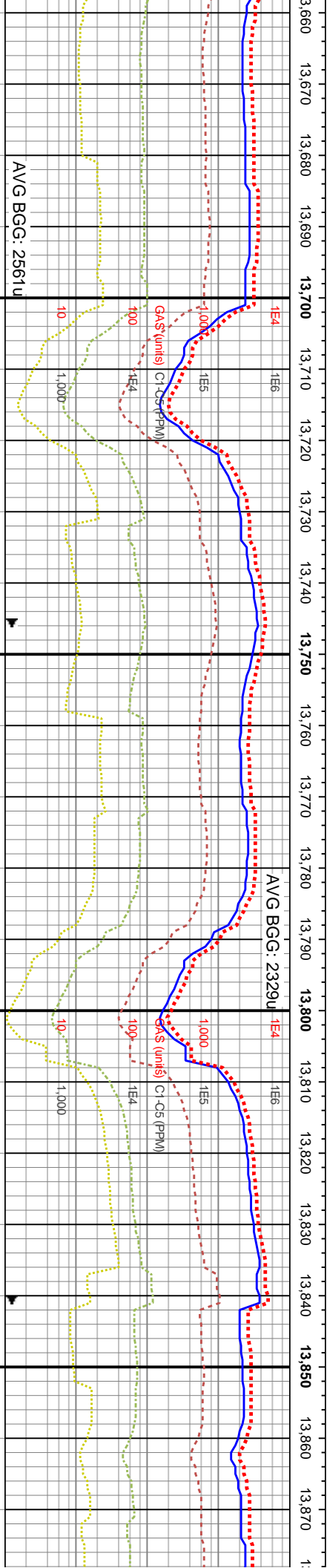
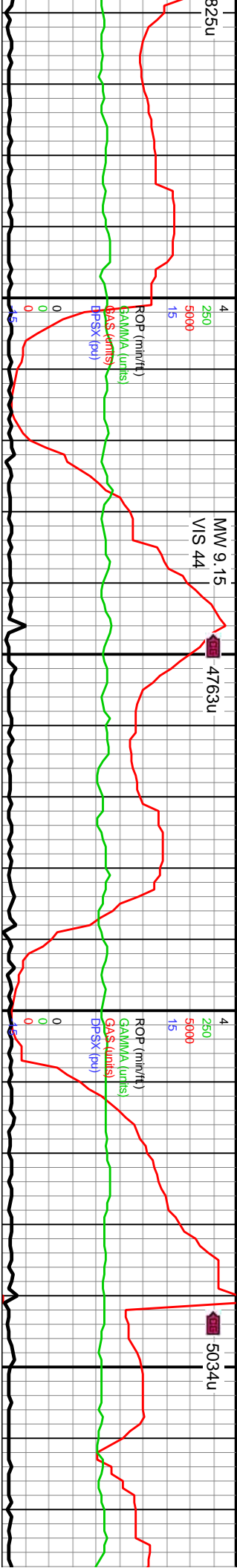
MD: 13,494'
TVD: 7,184.14'
Inclination: 90.72°
Azimuth: 88.06°
VS: 5.884.4'

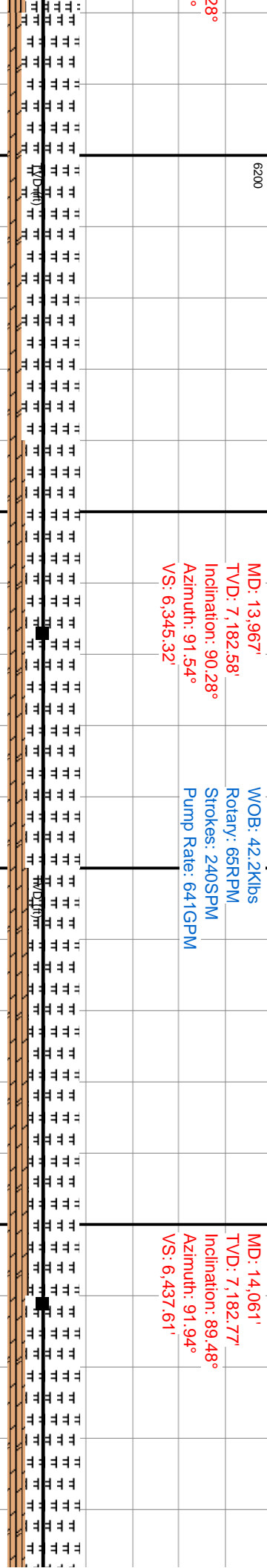
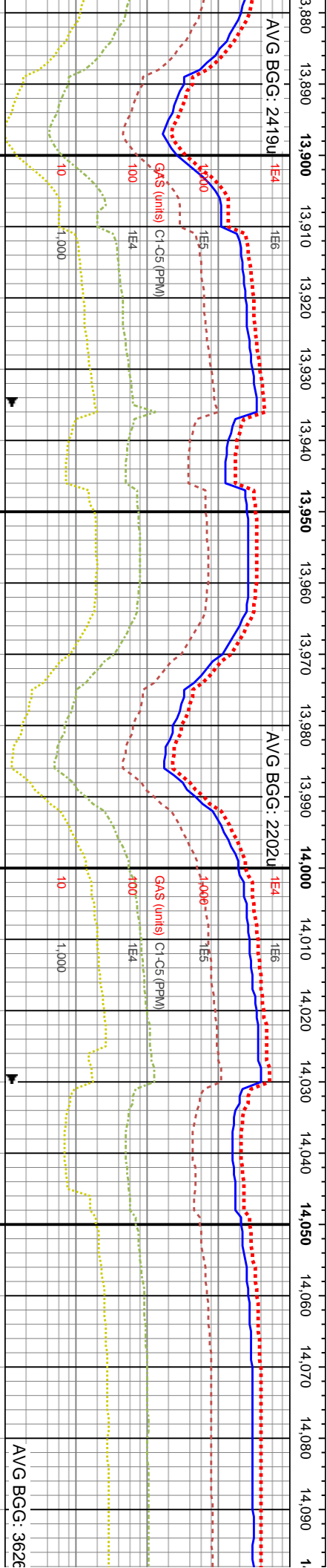
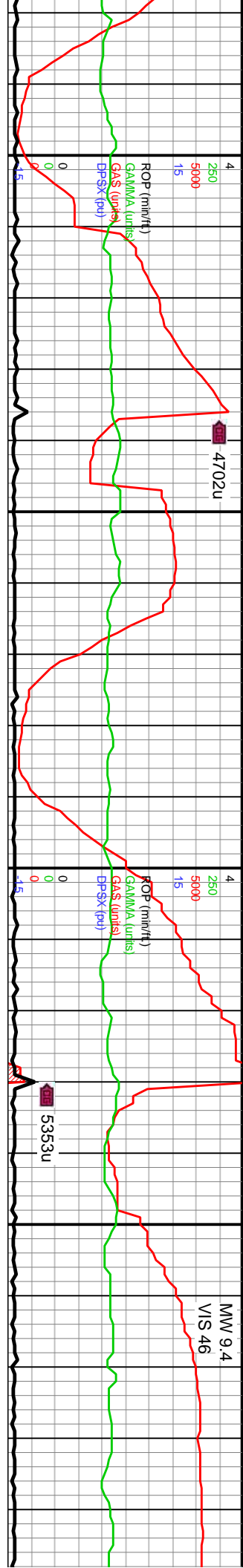
MD: 13,588'
TVD: 7,183.73'
Inclination: 89.79°
Azimuth: 88.06°
VS: 5.975.35'

WOB: 40.3Klbs
Rotary: 50RPM
Strokes: 240SPM
Pump Rate: 640GPM

13460-13520 MRLST (70%): dk gy-med gy, frm-hrd, ply-elg, sm-sl sily tex, mnr lamm, v calc, tr scat mic pyr; CHK (30%): lt gy-gyshbn, sft, v f lamm, intbdd mrlst, dul yelgn flor, dul mky cut, mod blshwn resd ring	13520-13580 MRLST (65%): mot dk gy-blk gy, med gy, frm-hrd, blk-4ab, sl sily tex, v calc, intbd chk, scat pp mic pyr; CHK (35%): lt gyshbn-crm, chky tex, calc, blk, dul yelgn flor, dul mky cut, blshwn resd ring	13580-13640 MRLST (65%): dk gy-med gy, frm-v frm, blk-y-sb ply, sl sily tex, v calc, intbdd chk, mnr imbd pyr; CHK (35%): lt gyshbn-crm, chky tex, sft, dul yelgn flor, dul mky cut, mod blshwn resd ring	13640-13650 MRLST (65%): dk gy-med gy, frm-hrd, blk-4ab, sl sily tex, v calc, intbdd chk, mnr imbd pyr; CHK (35%): lt gyshbn-crm, chky tex, sft, dul yelgn flor, dul mky cut, mod blshwn resd ring
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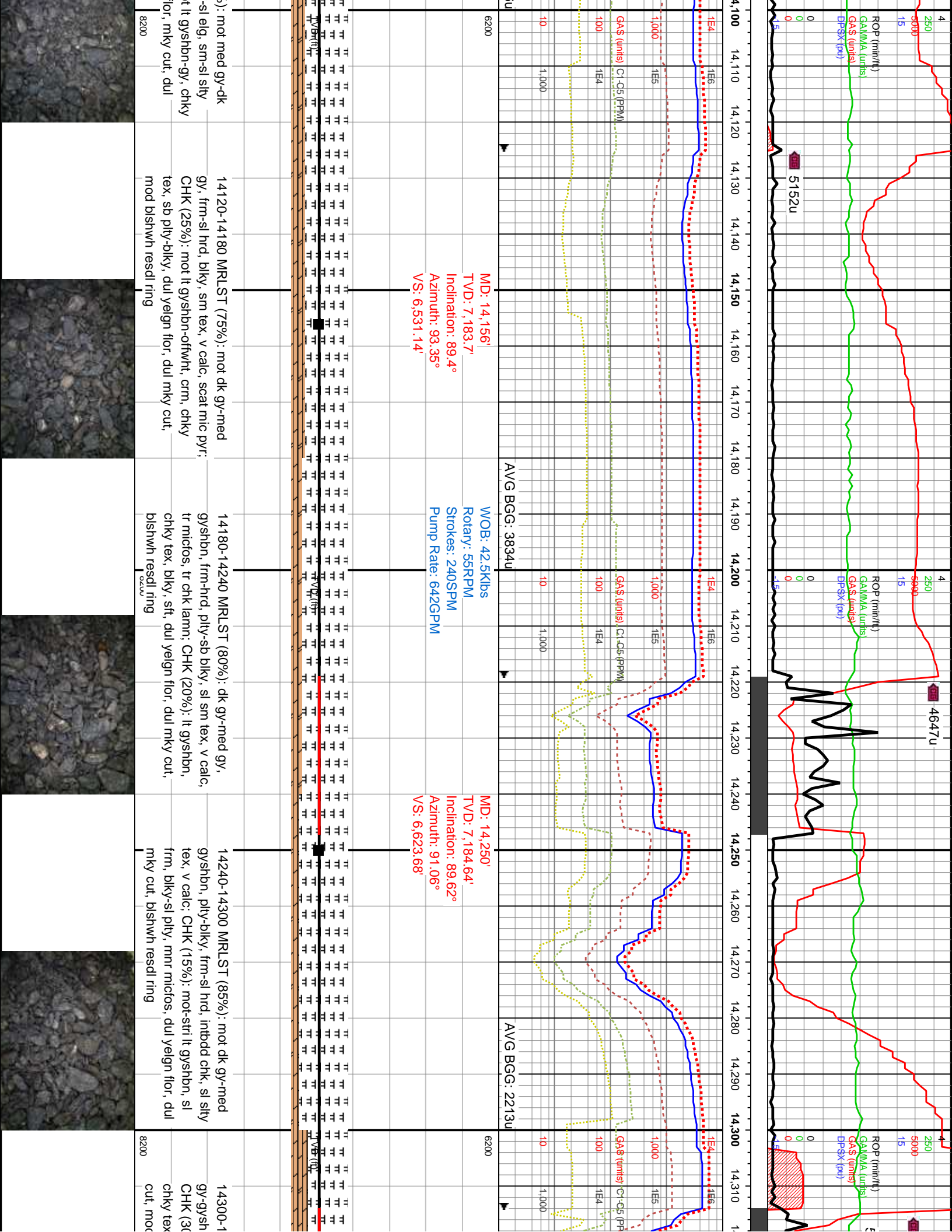




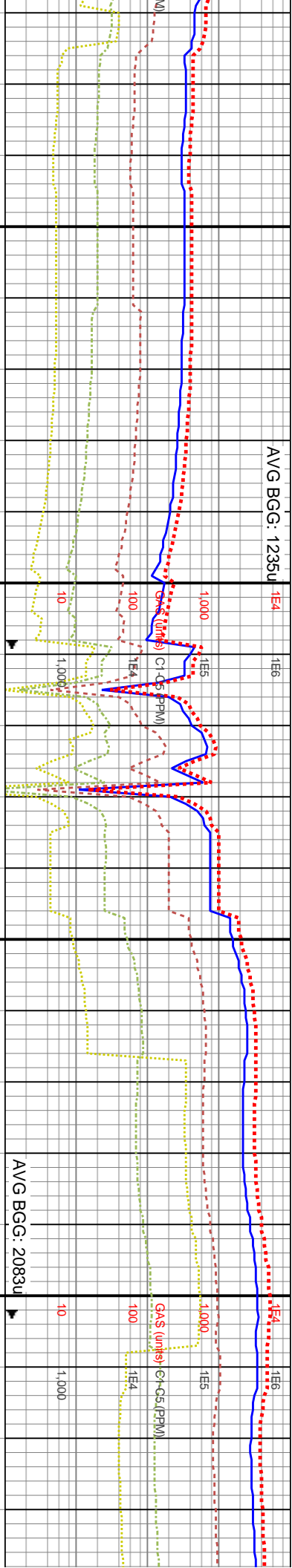
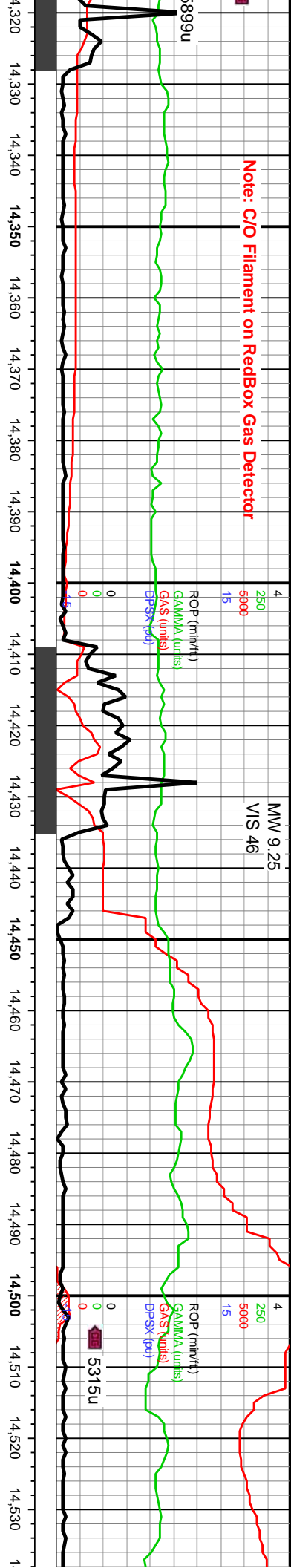


13880-13940 MRLST (80%): mot dk gy-med gy, gyshbn, blkly, frm-sl hrd, sm-sl silty tex, v calc, scat imbd pyr: CHK (20%): mot lt gyshbn-crm, pily, chky tex, dul yelgn flor, dul mky cut, mod blshwn resd ring	13940-14000 MRLST (75%): dk gy-med gy, frm-v frm, sb blkly, sl silty tex, v calc, imbd chk lam, scat imbd pyr: CHK (25%): crm-lt gyshbn, tr mic fos, chky tex, dul yelgn-bri orgm flor, dul mky cut, blshwn resd ring	14000-14060 MRLST (70%): med gy-dk gy, gyshbn, frm-sl hrd, pily, sl abrsv tex, tr f chk lam, v calc, scat pyrc nod: CHK (30%): mot gyshbn, crm-offwht, chky tex, dul yelgn flor, dul mky cut, mod blshwn resd ring	14060-14120 MRLST (75%): gy, gyshbn, frm-sl hrd, blkly tex, v calc: CHK (25%): mc tex, pily, blshwn-dul yelgn blshwn resd ring
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Note: C/O Filament on RedBox Gas Detector



MD: 14,345'
TVD: 7,184.8'
Inclination: 90.19°
Azimuth: 91.14°
VS: 6,716.74'

WOB: 42.4Klbs
Rotary: 50RPM
Strokes: 240SPM
Pump Rate: 640GPM

MD: 14,440'
TVD: 7,187.12'
Inclination: 87.01°
Azimuth: 89.73°
VS: 6,809.54'

AVG BGG: 2083u

6200

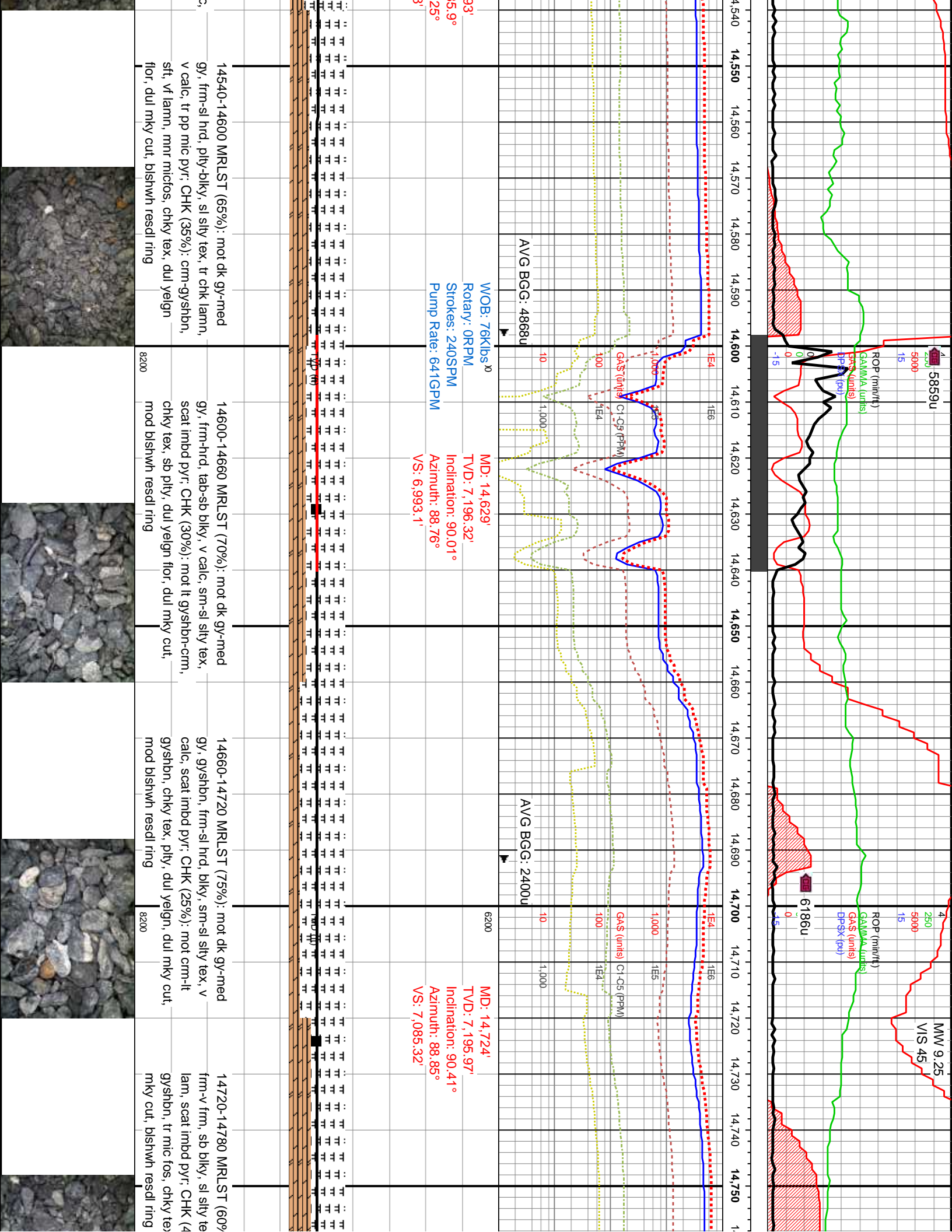
MD: 14,534'
TVD: 7,192.1'
Inclination: 89.73°
Azimuth: 89.73°
VS: 6,900.88'

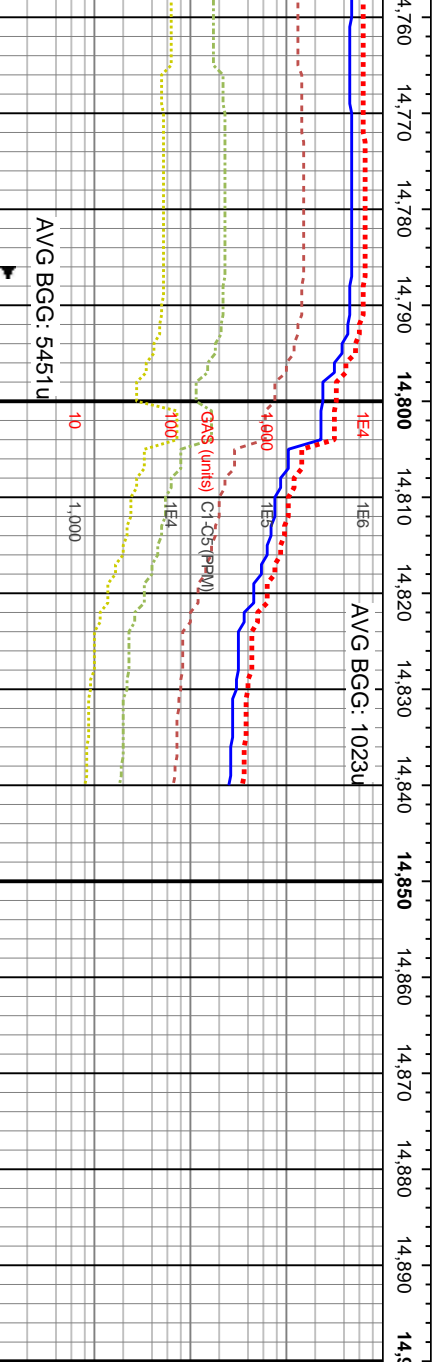
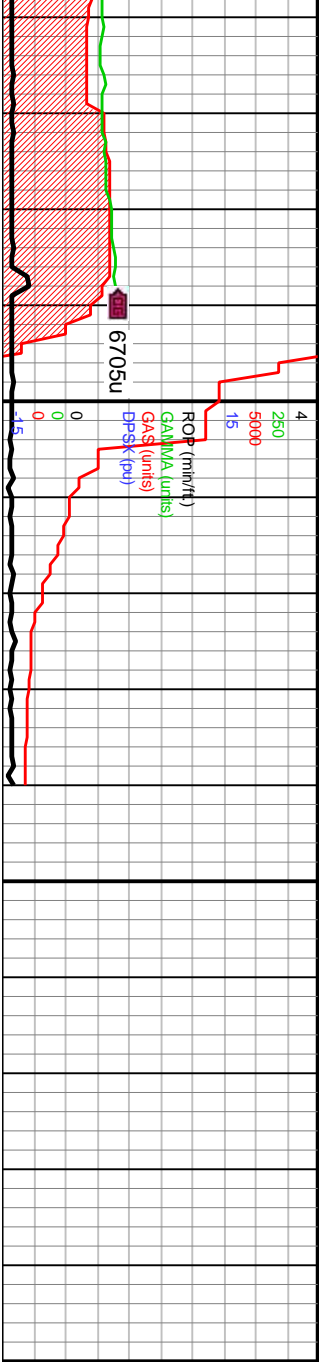
14360 MRLST (70%): predy mot med
bn, ply-tab, frm, v calc, vf imbd pyr;
(%): mot lt gy-ofwht, lt gysbn, sft,
, sb ply-sb blk, dul yelgn flor, dul mky
d bishwn resdl ring

14360-14420 MRLST (70%): mot med gy-dk
gy, gysbn, frm-sl hrd, blk-si slty
tex, v calc, scat frac fil cal; CHK (30%): mot lt
gysbn-gy, chky tex, ply, du yelgn flor, dul
mky cut, dul bishwn resdl ring

14420-14480 MRLST (85%): mot dk gy-med
gy, frm-sl hrd, ply-blky, sm-sl slty tex, v calc, tr
mic fos, scat pp pyr; CHK (15%): pred lt
gysbn-lt gy, sft, chky tex, dul yelgn flor, mod
mky cut, dul bishwn resdl ring

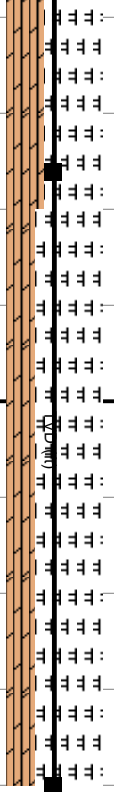
14480-14540 MRLST (75%): dk gy-med gy,
gysbn, frm-sl hrd, ply-tab, sl abrv tex, v cal
scat pyrc nod; CHK (25%): gysbn-crm, chky
tex, blk, inbdd mrst, dul yelgn flor, dul mky
cut, bishwn resdl ring





MD: 14,776' WOB: 37Klbs^x MD: 14,840'
TVD: 7,195.46' Rotary: 60RPM TVD: 7,194.65'
Inclination: 90.72° Strokes: 240SPM Inclination: 90.72°
Azimuth: 88.76° Pump Rate: 640GPM Azimuth: 88.76°
VS: 7,135.8' VS: 7,197.91'

** Projection to Bit **



14780-14840 MRLST (70%): mot dk gy-med
gy, frm-sl hrd, blk-y-ely, sl silty tex, v calc, tr
intbd chk lam, scat imbd pyr; CHK (30%): lt
gysbhn-crm, chky tex, blk-y, dul yelgn flor, dul
mky cut, blshwh resd ring

