



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Johnson Trust 8

Location Sec. 13-T2N-R68W

State Colorado

Country USA

API Number 05-123-42315-00

Geographic Region DJ Basin

Spud Date 2/4/2016

County Weld

Rig Number Patterson UTI 346

Field Wattenberg

Drilling Completed 2/6/2016

Surface Coordinates SHL: 2069' FSL, 388' FWL Sec. 13 T2N R68W

Lat: 40° 8' 13.589 N

Long: 104° 57' 34.632 W

Bottom Hole Coordinates PBHL:

Lat: 40° 7' 31.202 N

Long: 104° 57' 31.687 W

Ground Elevation 4,923'

K.B. Elevation 4,947.5'

Logged Interval 6,650' **To** 12,060'

Total Depth 12,060'

Formation Niobrara B Chalk

Type of Drilling Fluid Oil Based - invert

Operator

Company Extraction Oil & Gas

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

Geologist

Name Vivian Spiess / Jared Rouse

Company Extraction Oil & Gas

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



Other

Equipment ML-113

Comments Start: 02-05-16
Standby: TBD
TD: 2-6-16

Services Provided 2-man Logging
On Site Geosteering

Logger Names Dominic Pitre / Nicholas V

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

Zone Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

GYPSUM

SALT

SIDERITE or LIMONITE

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

O OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

CORAL

CEPHALOPOD

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

H HEAVY MINERAL

K KAOLIN

M MARLSTONE

MINERAL CRYSTALS

N NODULES

PHOSPHATE PELLETS

P PYRITE

SALT CAST

S SANDY

S SILICEOUS

TUFFACEOUS

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 Sy

O ORGANIC

P PINPOINT

D DEAD

EVEN

QUESTIONABLE

SPOTTED STAINING

GAS SH

MINDEPTH

V VUGGY

NORMAL

OIL SH

OVERTURN

Engineering

CASING

REVERS

OVERT

CONNECTION (LEFT)

CONNECTION (RIGHT)

SIDEWA

Porosity

E EARTHY

F FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

M MOLDIC

CONNECTION GAS

SLIDE

SURV

CORE - RECOVERED

TRIP C

WIRELIN

FAULT

WIRELIN

Watkins
wy N

Symbols

FORMATION TOP L LITHOGRAPHIC

Rounding

LOW MX MICROXLN

MIN DEPTH AN ANGULAR MS MUDSTONE

FL FAULT R ROUNDED PS PACKSTONE

DW B SUBANG WS WACKESTONE

TURNED STRATA N SUBRND

Sorting

DEFAULT

Textures

LL CORE (LEFT) M MODERATE

LL CORE (RIGHT) BS BOUNDSTONE P POOR

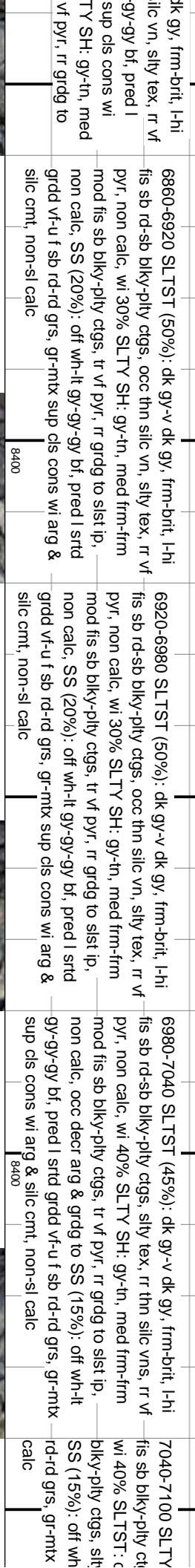
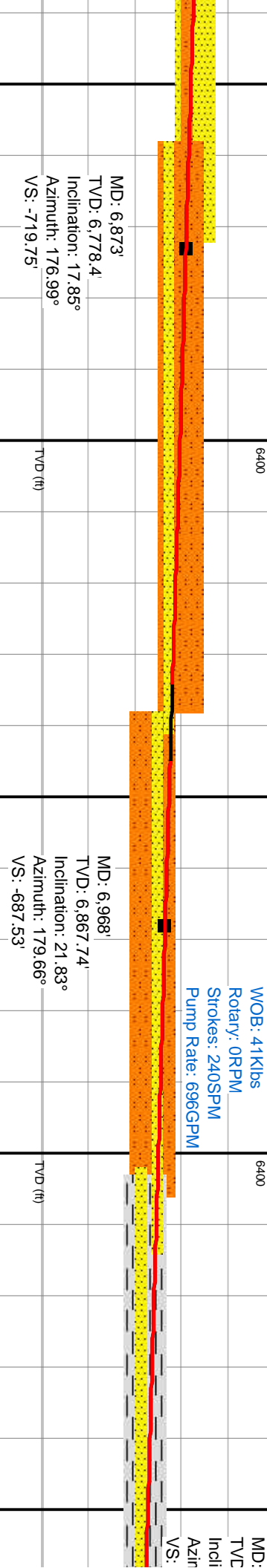
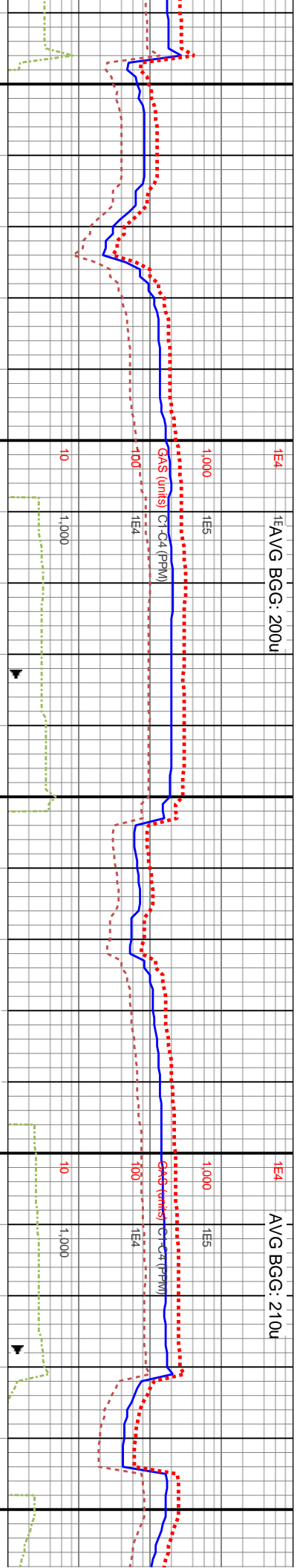
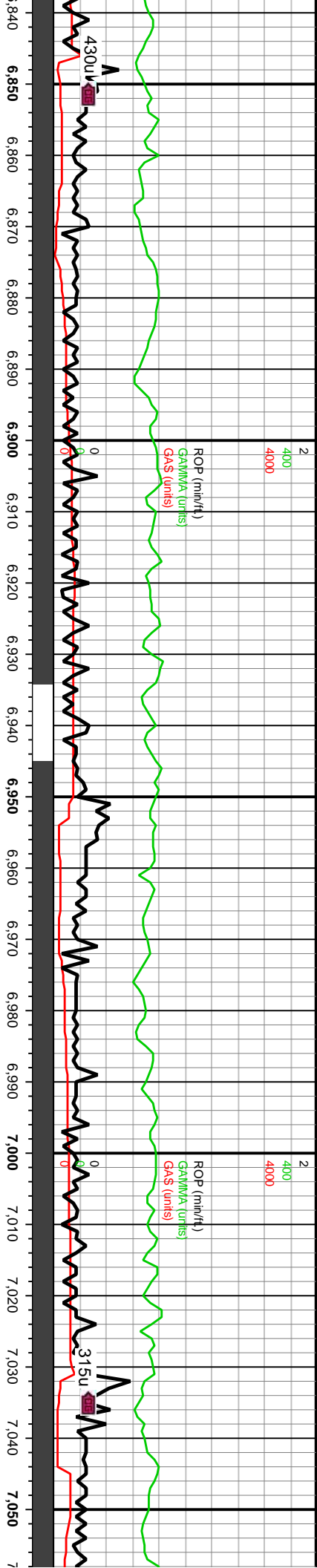
C CHALKY W WELL

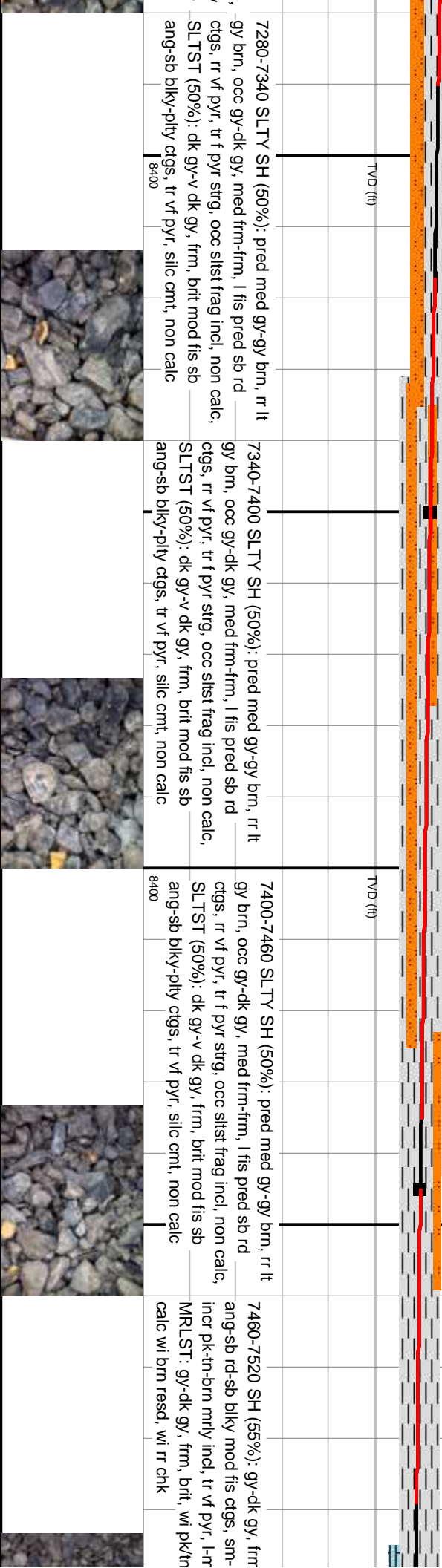
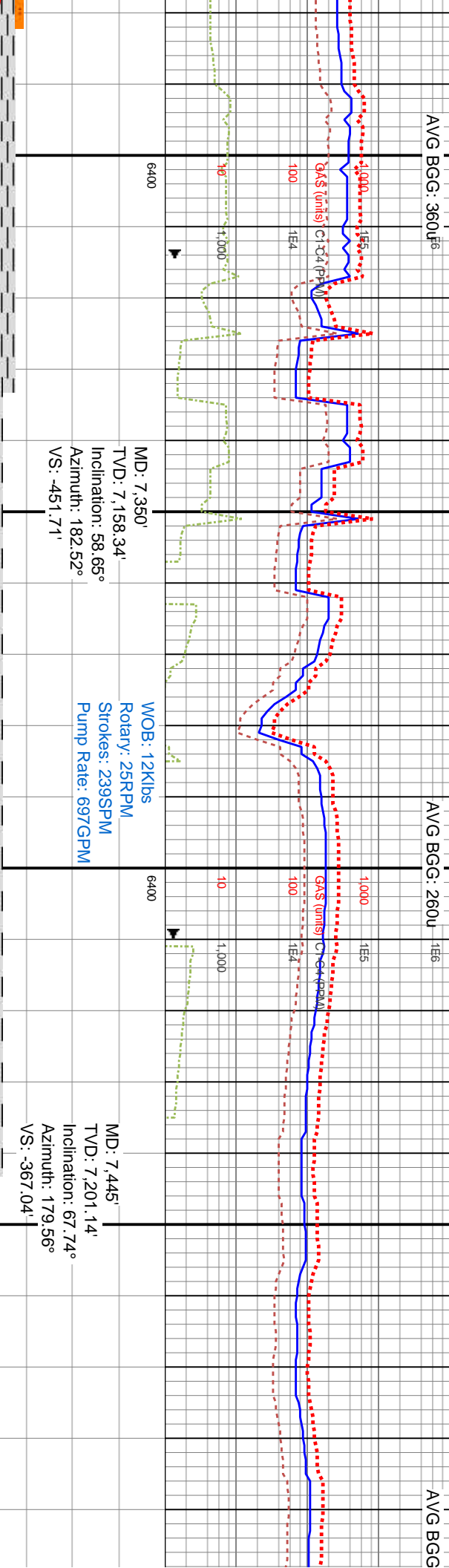
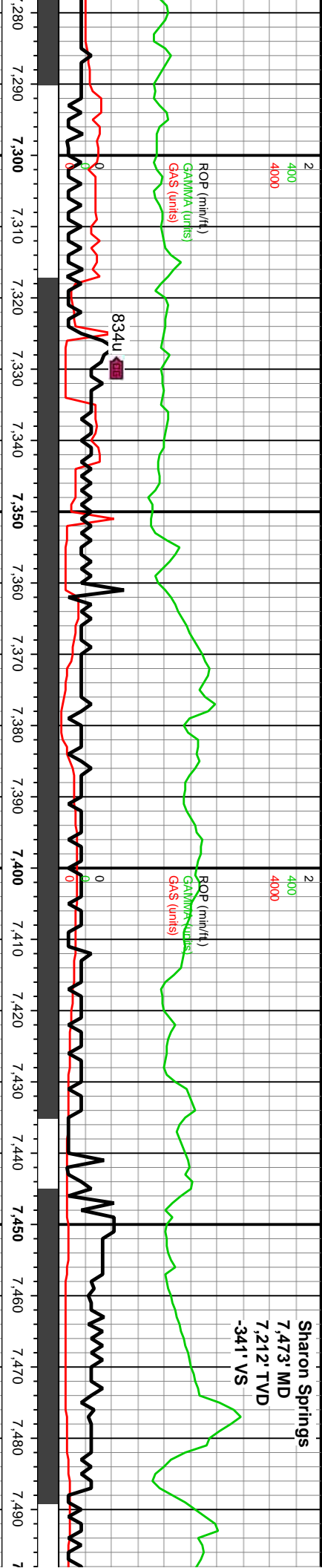
CRY CRYPTOXLN

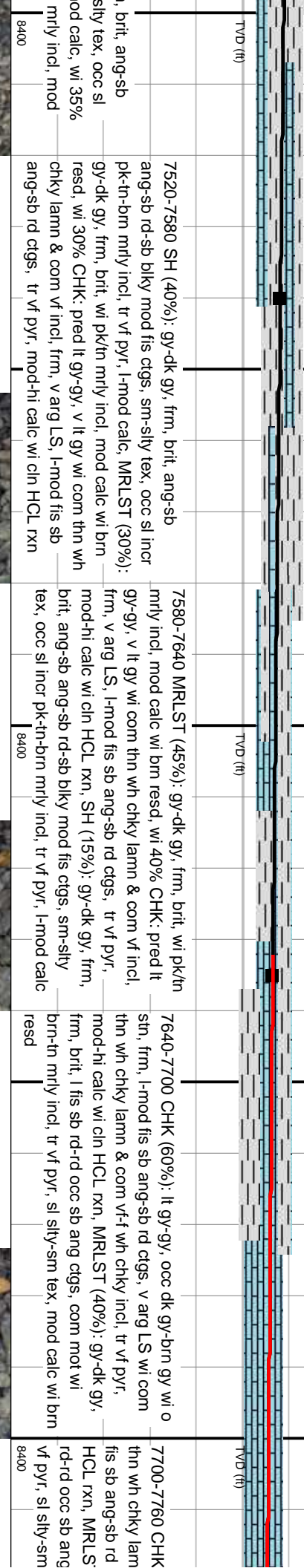
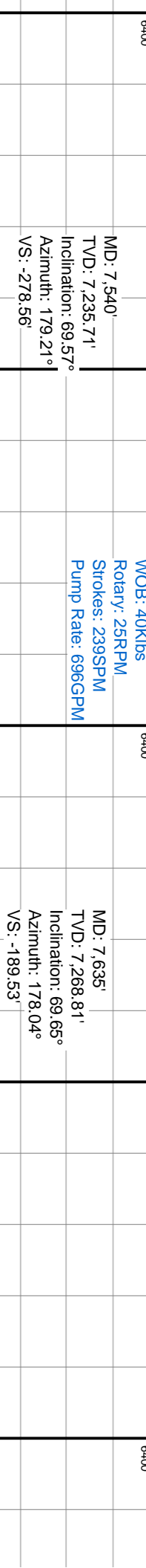
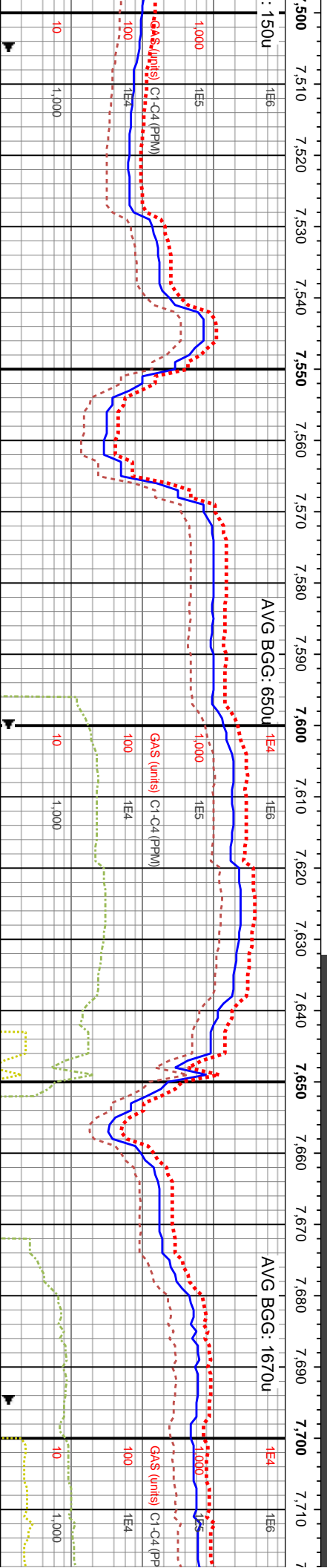
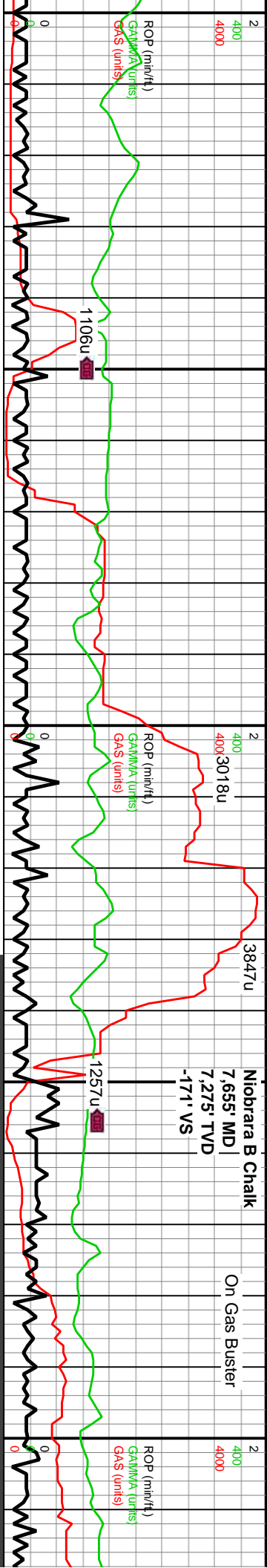
E EARTHY

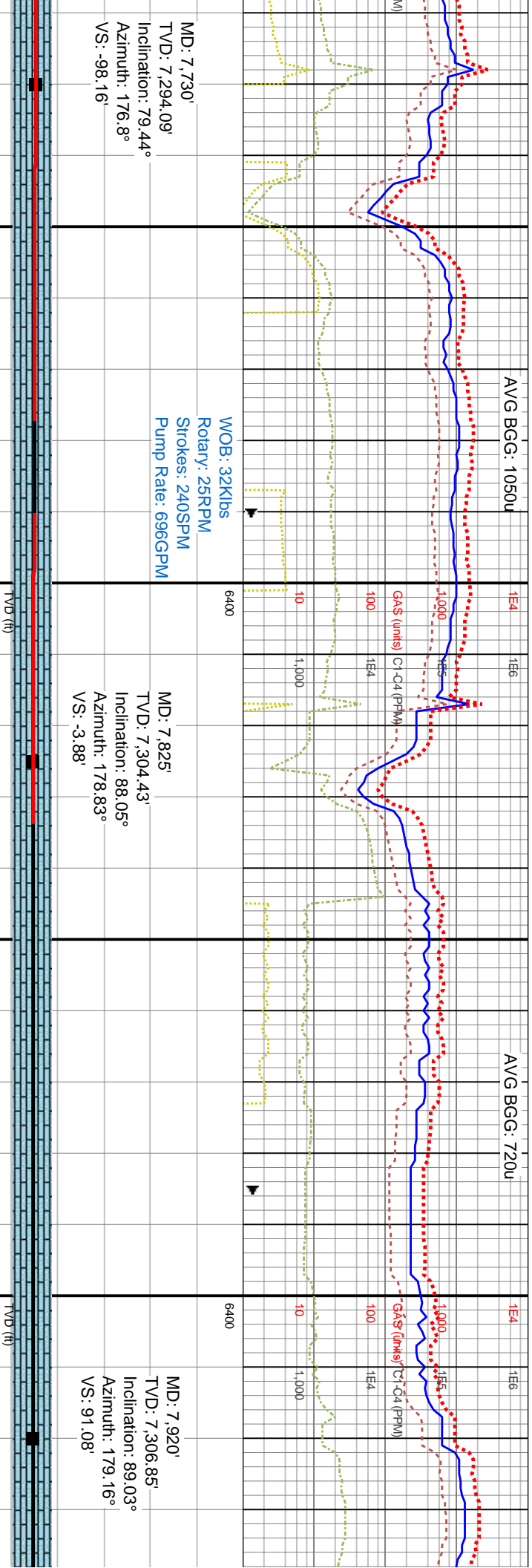
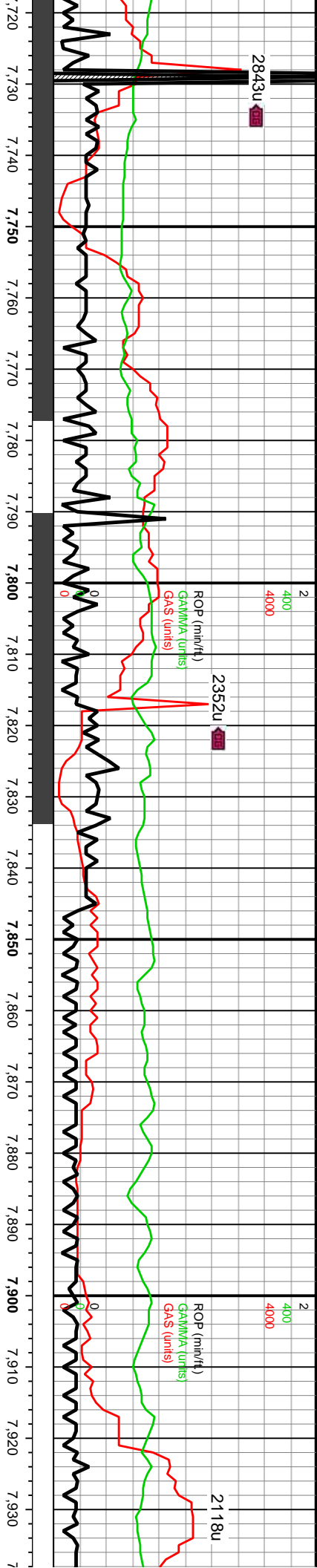
IE TESTED - LEFT FX FINELYXLN

IE TESTED - RT GS GRAINSTONE



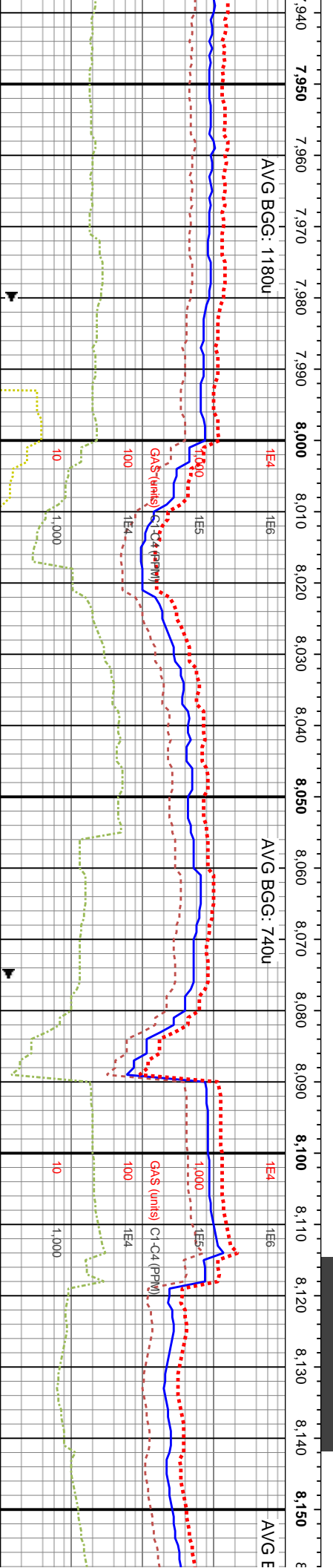
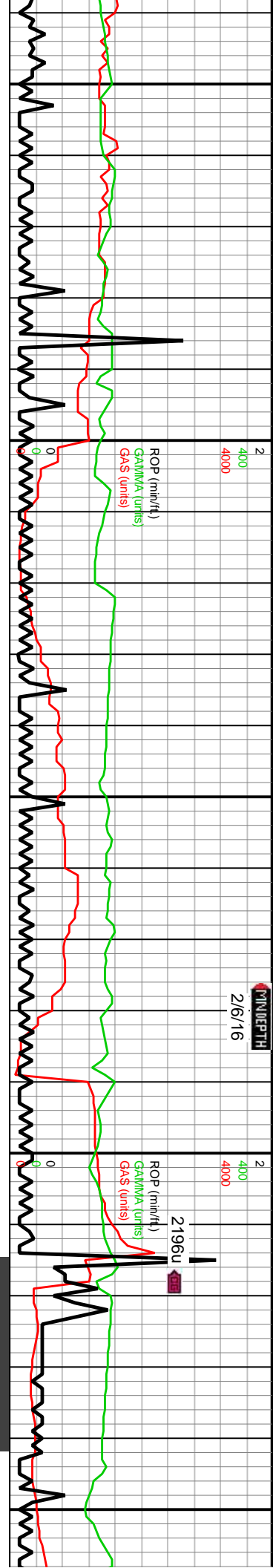






(80%): pred lt gy-gy, v lt gy wi com n & com vf incl, frm, v ang LS, l-mod cigs, tr vf pyr, mod-hi calc wi cin T (20%): gy-dk gy, frm, brit, l fis sb cigs, com mot wi brn-tr mrlly incl, tr tex, mod calc wi brn resd	7760-7820 CHK (70%): pred lt gy-gy, v lt gy wi com thn wh chky lamm & com vf incl, frm, v ang LS, l-mod fis sb ang-sb rd cigs, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang cigs, com mot wi brn-tr mrlly incl, tr vf pyr, sl sily-sm tex, mod calc wi brn resd	7820-7880 CHK (70%): lt gy-gy, frm, v ang LS wi com thn wh chky lamm & com vf incl, l-mod fis sb ang-sb rd cigs, rr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang cigs, com mot wi brn-tr mrlly incl, tr vf pyr, sl sily-sm tex, mod calc wi brn resd	7880-7940 CHK (70%): lt gy-gy v ang LS wi com thn wh chky lamm & com vf incl, frm, brit, l-mod fis sb ang-sb rd cigs, sm-sily tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy mot wi brn-tr mrlly incl, frm, brit, l fis sb rd-rd occ sb ang cigs, tr vf pyr, sl sily-sm tex, mod calc wi brn resd





WOB: 32Klbs
Rotary: 65RPM
Strokes: 240SPM
Pump Rate: 696GPM

MD: 8,015'
TVD: 7,308.52'
Inclination: 88.96°
Azimuth: 179.87°
VS: 186.06'

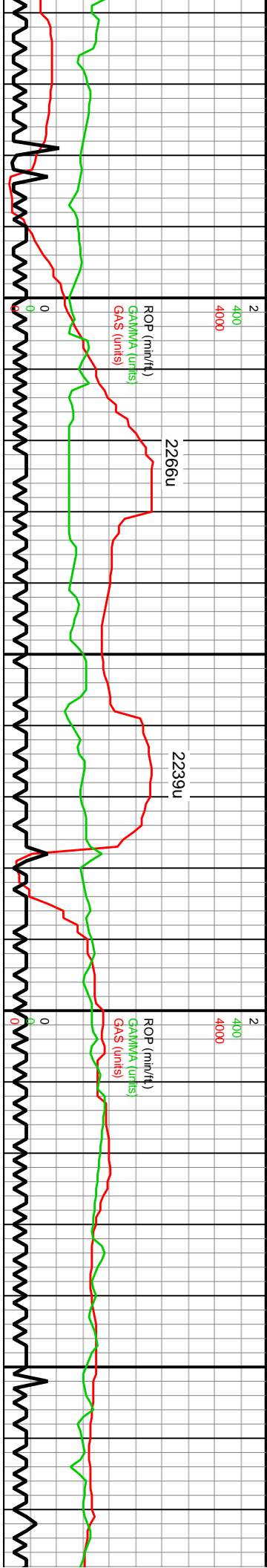
TVD (ft)

7940-8000 CHK (70%): It gy-gy v arg LS wi com thn wh chky lamn & com vf incl, frm, brit, l-mod fis sb ang-sb rd ctgs, sm-sl stly tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang ctgs mot wi brn-th mrlly incl tr vf pyr, sl stly-sm tex, mod calc wi brn resd

8000-8060 CHK (70%): It gy-gy, frm-brit l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamn & com vf incl, sm-sl stly tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy mot wi brn-th mrlly incl, frm, brit, l fis sb rd-rd occ sb ang ctgs, tr vf pyr, sl stly-sm tex, mod calc wi brn resd

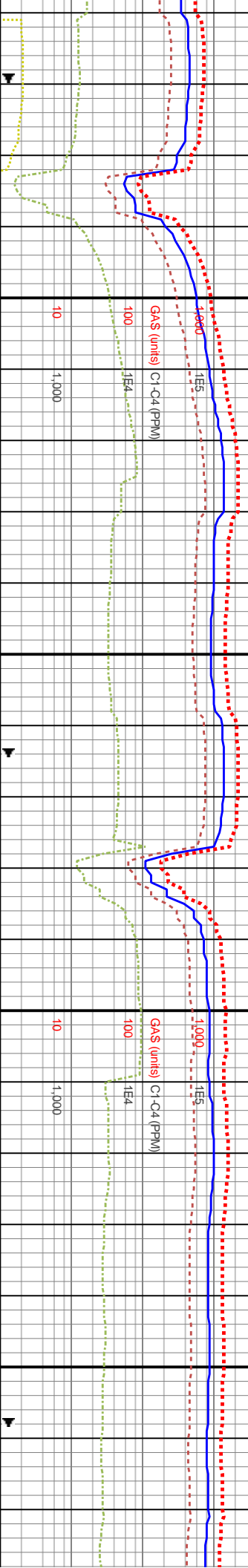
8060-8120 CHK (70%): It gy-gy v arg LS wi com thn wh chky lamn & com vf incl, frm, brit, l-mod fis sb ang-sb rd ctgs, sm-sl stly tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy mot wi brn-th mrlly incl, frm, brit, l fis sb rd-rd occ sb ang ctgs, tr vf pyr, sl stly-sm tex, mod calc wi brn resd

8120-8180 CHK (75%): It gy-gy v arg LS wi com thn wh chky lamn & com vf incl, frm-brit l-mod fis sb ang-sb rd ctgs, sm-sl stly tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy mot wi brn-th mrlly incl, frm, brit, l fis sb rd-rd occ sb ang ctgs, tr vf pyr, sl stly-sm tex, mod calc wi brn resd



8,160 8,170 8,180 8,190 8,200 8,210 8,220 8,230 8,240 8,250 8,260 8,270 8,280 8,290 8,300 8,310 8,320 8,330 8,340 8,350 8,360 8,370

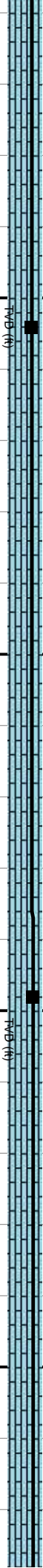
GGC: 740u



WOB: 35Klbs
Rotary: 65RPM
Strokes: 240SPM
Pump Rate: 697GPM

MD: 8,204'
TVD: 7,309.09'
Inclination: 90.81°
Azimuth: 177.91°
VS: 375.02

MD: 8,298'
TVD: 7,307.5'
Inclination: 91.14°
Azimuth: 177.42°
VS: 468.94'



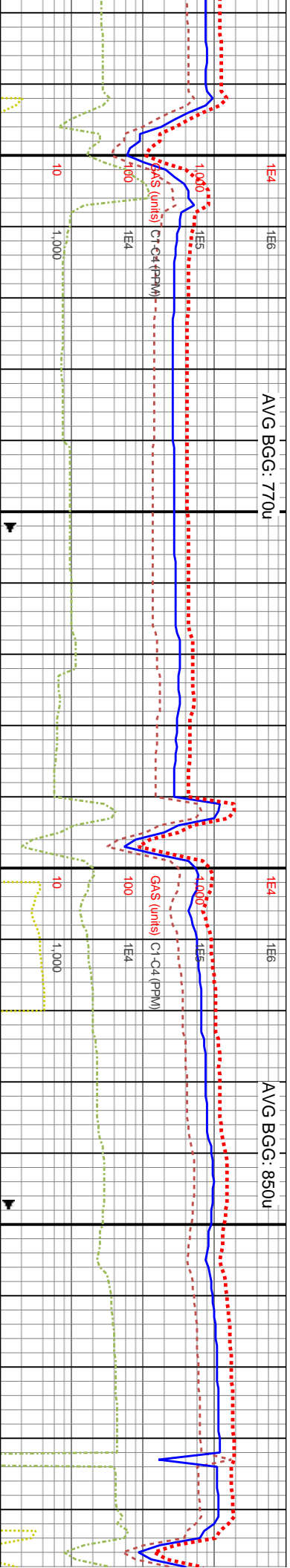
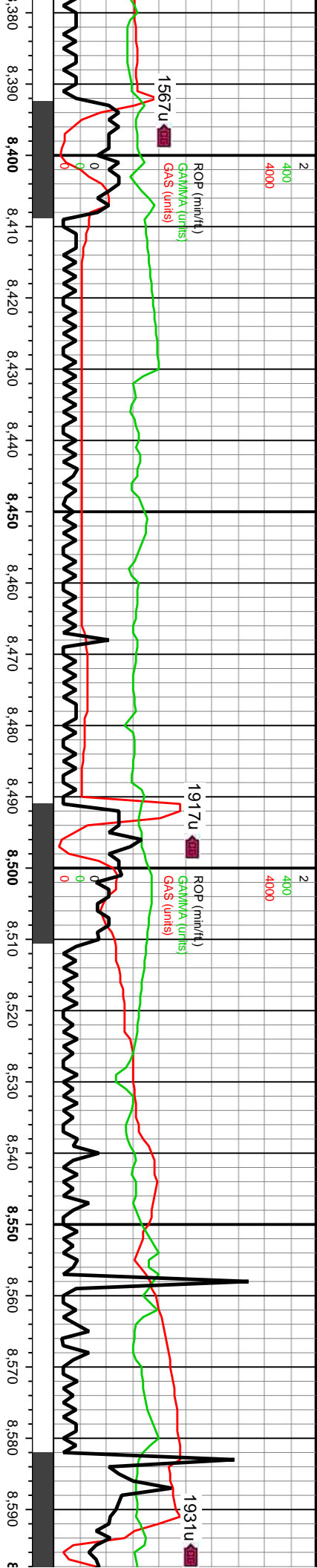
g LS wi com thn
l-mod fis sb
ee chk, tr vf pyr,
(25%): gy-dk gy,
s mot wi brn-tn
d calc wi brn resd

8180-8360 CHK (80%): lt gy-gy, frm-brit l-mod fis sb ang-sb rd cigs, v arg LS wi com thn wh chky lamn & com vf incl, sm-sl silty tex, rr-occ c free chk, rr fos frags, tr vf pyr, mod-hi calc wi chn HCL rxn, MRLST (20%): gy-dk gy mot wi brn-tn mrlly incl, frm, brit, l fis sb rd-rd occ sb ang cigs, tr vf pyr, sl silty-sm tex, mod calc wi brn resd

8300-8360 CHK (75%): lt gy-gy v arg LS wi com thn wh chky lamn & com vf incl, frm-brit, l-mod fis sb ang-sb rd cigs, sm-sl silty tex, rr c free chk, rr fos frags, tr vf pyr, mod-hi calc wi chn HCL rxn, MRLST (25%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang cigs mot wi brn-tn mrlly incl tr vf pyr, sl silty-sm tex, mod calc wi brn resd

8360-8420 CHK





WOB: 33klbs
Rotary: 65RPM
Strokes: 240SPM
MD: 8,393'
TV D: 7,305.13' Pump Rate: 696GPM
Inclination: 91.71°
Azimuth: 178.1°
VS: 563.85'

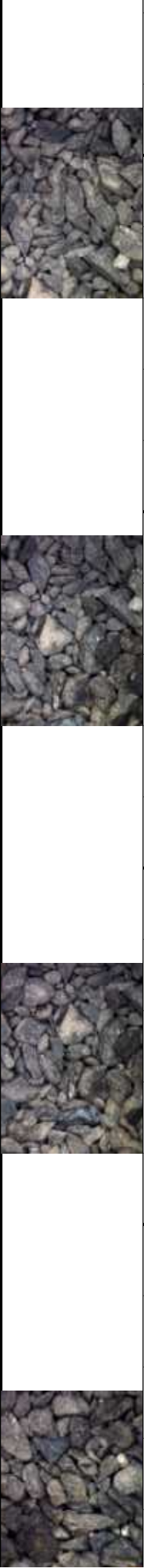
WOB: 31klb
Rotary: 65R
Strokes: 233
MD: 8,582'
TV D: 7,299.55' Pump Rate:
Inclination: 91.04°
Azimuth: 180.07°
VS: 752.74'

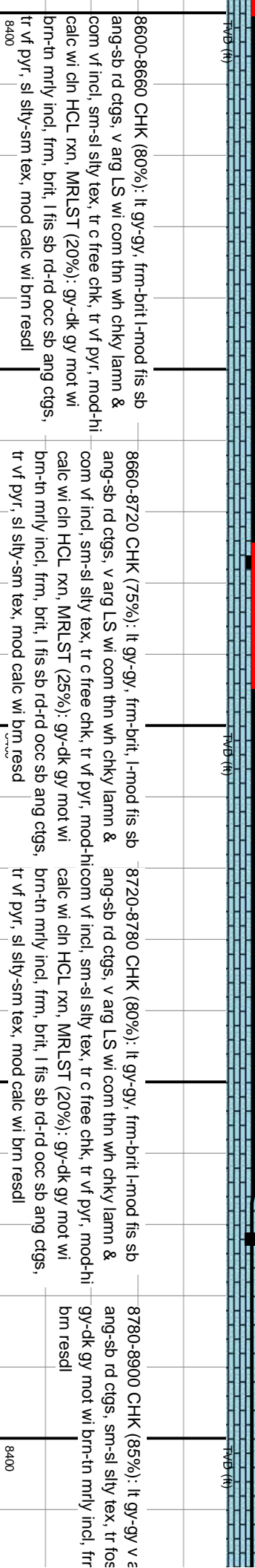
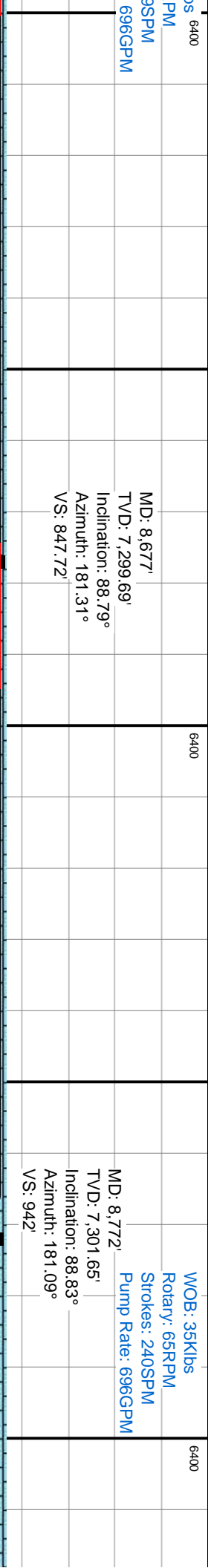
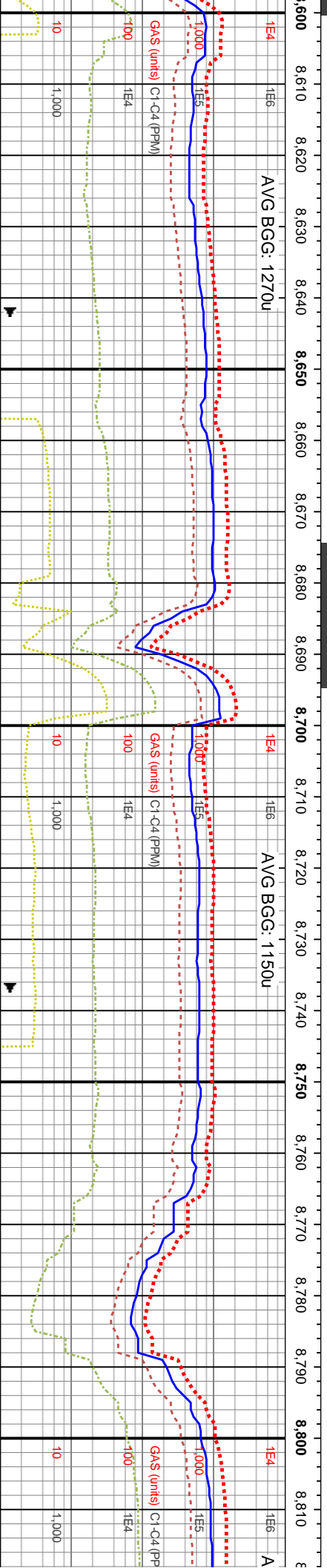
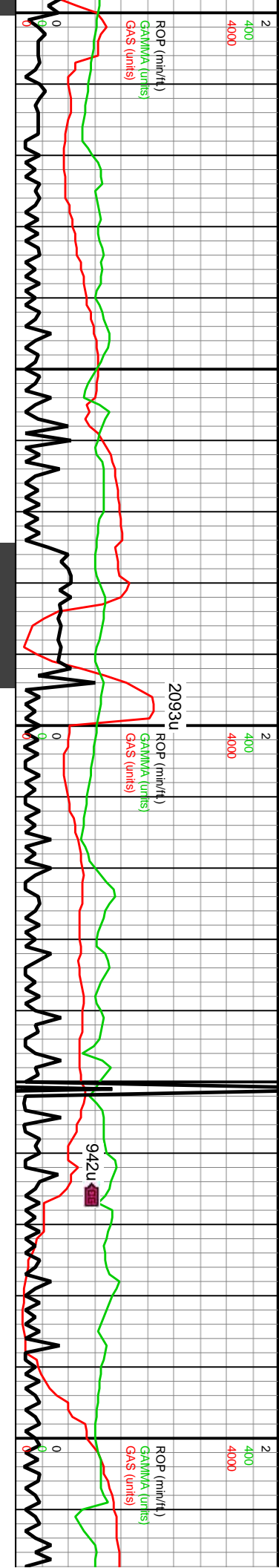
(75%): lt gy-gy v arg LS, frm-brit, ang-sb rd ctgs, sm-sil sily tex, com thn com vf incl tr c free chk, tr fos frags, calc wi cin HCL rxn, MRLST (25%): mod-hi calc wi cin HCL rxn, MRLST (25%): gy-dk gy, frm, brit, l fts sb rd-rd occ sb ang ctgs mot tr vf pyr, sl sily-sm tex, mod calc wi

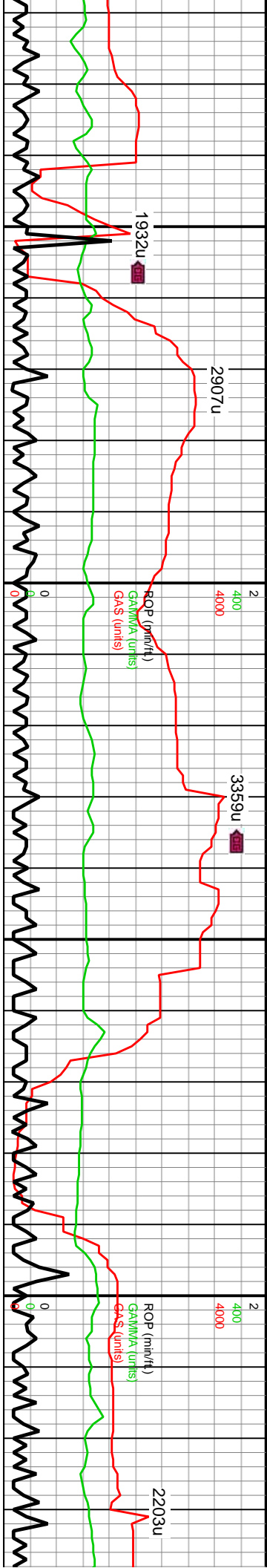
8420-8480 CHK (75%): lt gy-gy v arg LS wi com thn wh chky lamn & com vf incl, frm-brit, l-mod fis sb ang-sb rd ctgs, sm-sil sily tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (25%): gy-dk gy, frm, brit, l fts sb rd-rd occ sb ang ctgs mot wi brn-tn mrlly incl tr vf pyr, sl sily-sm tex, mod calc wi brn resd

8480-8540 CHK (75%): lt gy-gy, frm-brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamn & com vf incl, sm-sil sily tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (25%): gy-dk gy mot wi brn-tn mrlly incl, frm, brit, l fts sb rd-rd occ sb ang ctgs, tr vf pyr, sl sily-sm tex, mod calc wi brn resd

8540-8600 CHK (70%): lt gy-gy v arg LS wi com thn wh chky lamn & com vf incl, frm, brit, l-mod fis sb ang-sb rd ctgs, sm-sil sily tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (30%): gy-dk gy mot wi brn-tn mrlly incl, frm, brit, l fts sb rd-rd occ sb ang ctgs, tr vf pyr, sl sily-sm tex, mod calc wi brn resd





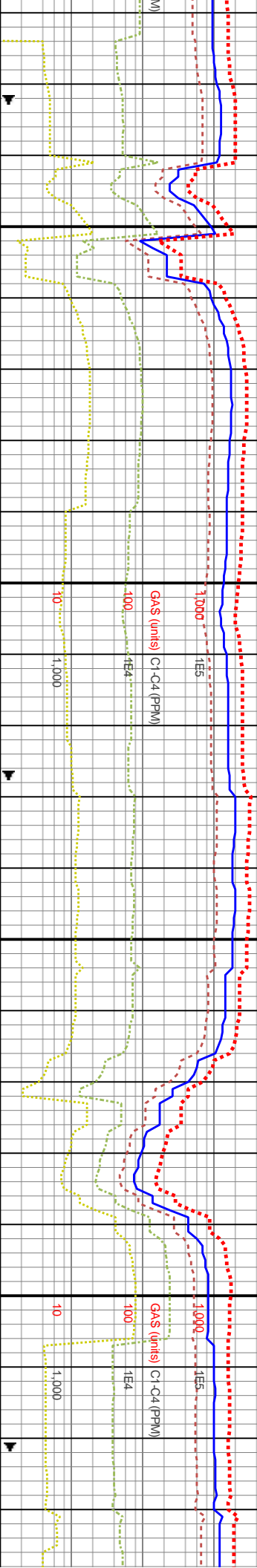


8,820 8,830 8,840 8,850 8,860 8,870 8,880 8,890 8,900 8,910 8,920 8,930 8,940 8,950 8,960 8,970 8,980 8,990 9,000 9,010 9,020 9,030

VG BGC: 950u

1E4 AVG BGC: 2130u

AVG BGC: 1820u



MD: 8,867'
TVD: 7,302.87'
Inclination: 89.7°
Azimuth: 180.55°
VS: 1,036.99'

MD: 8,962'
TVD: 7,302.46'
Inclination: 90.8°
Azimuth: 179.37°
VS: 1,131.98'

WOB: 45Klbs
Rotary: 65RPM
Strokes: 240SPM
Pump Rate: 696GPM

TVD (ft)

TVD (ft)

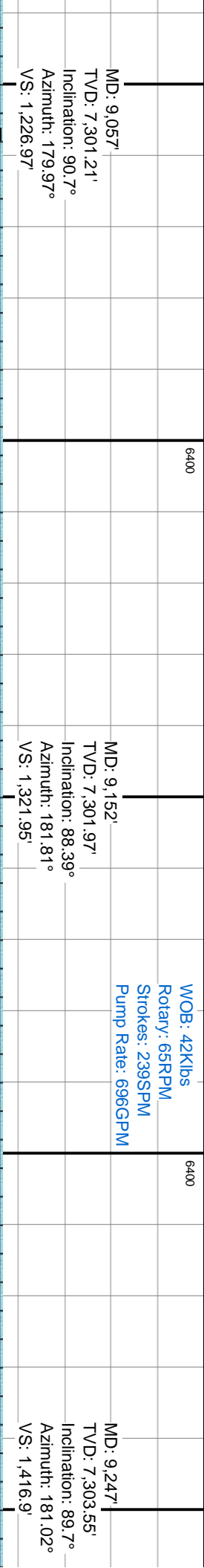
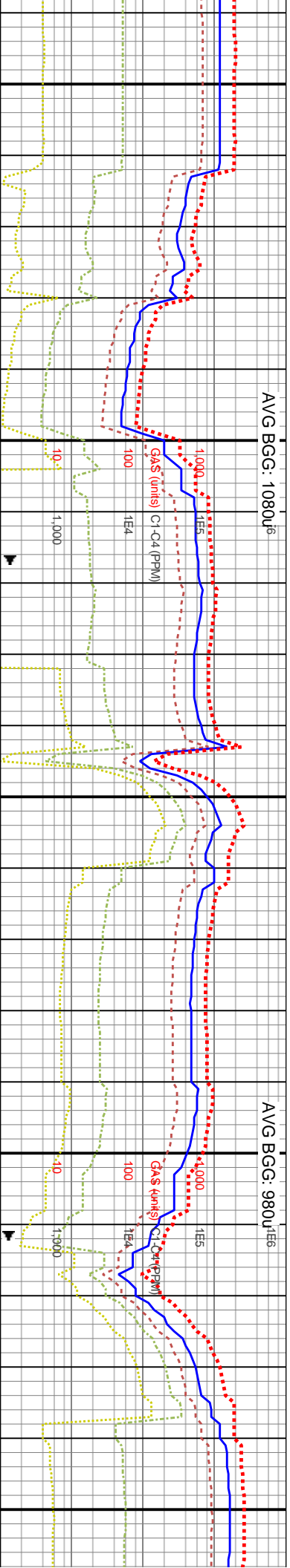
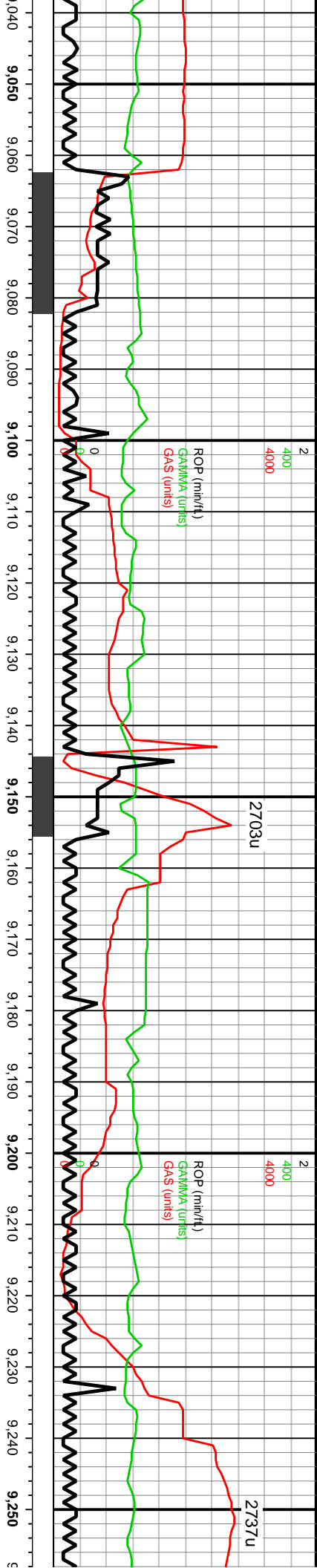
8900-9020 CHK (85%): lt gy-gy v arg LS, frm-brit l-mod fis sb ang-sb rd ctgs, com thn wh chky lamn & com vfi inclm-si silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (15%): gy-dk gy mot wi brn-tn mly incl, frm, brit, l fis sb rd-rd occ sb ang ctgs, tr vf pyr, sl silty-sm tex, mod calc wi btm resd

8400

8400

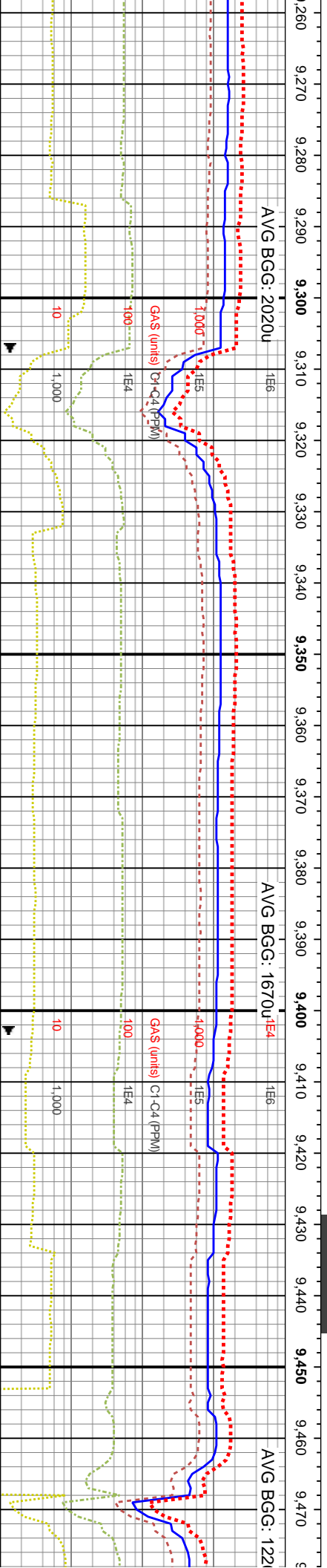
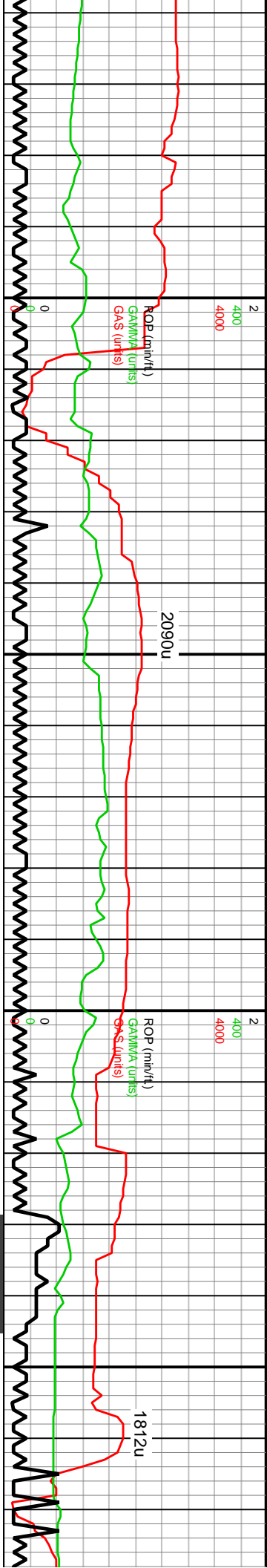
9020-9080 CHK ang-sb rd ctgs, com vfi incl, sm-mod-hi calc wi c mot wi brn-tn m ang ctgs, tr vf p resd



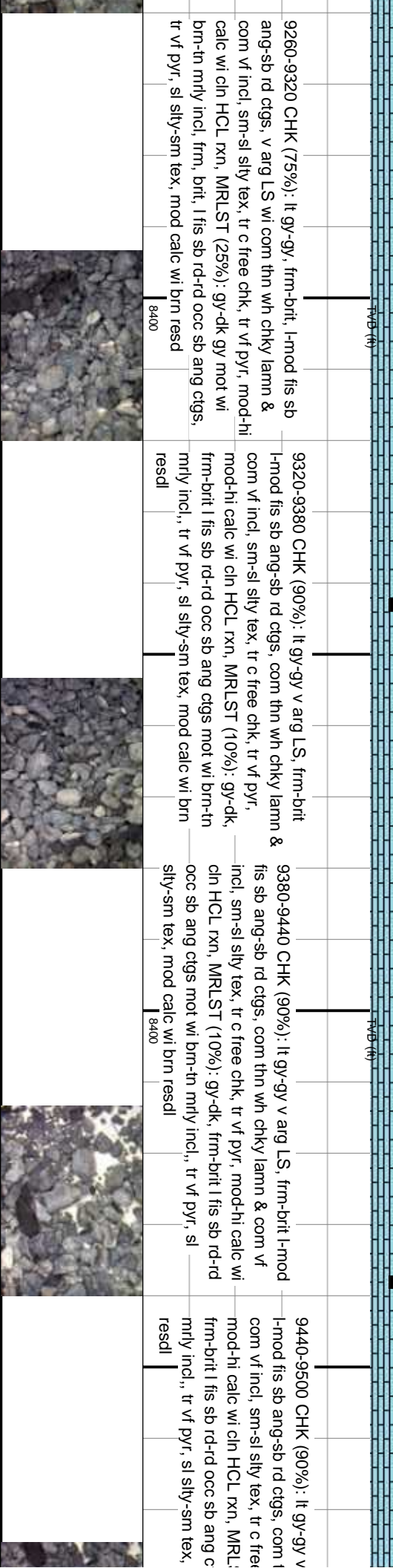


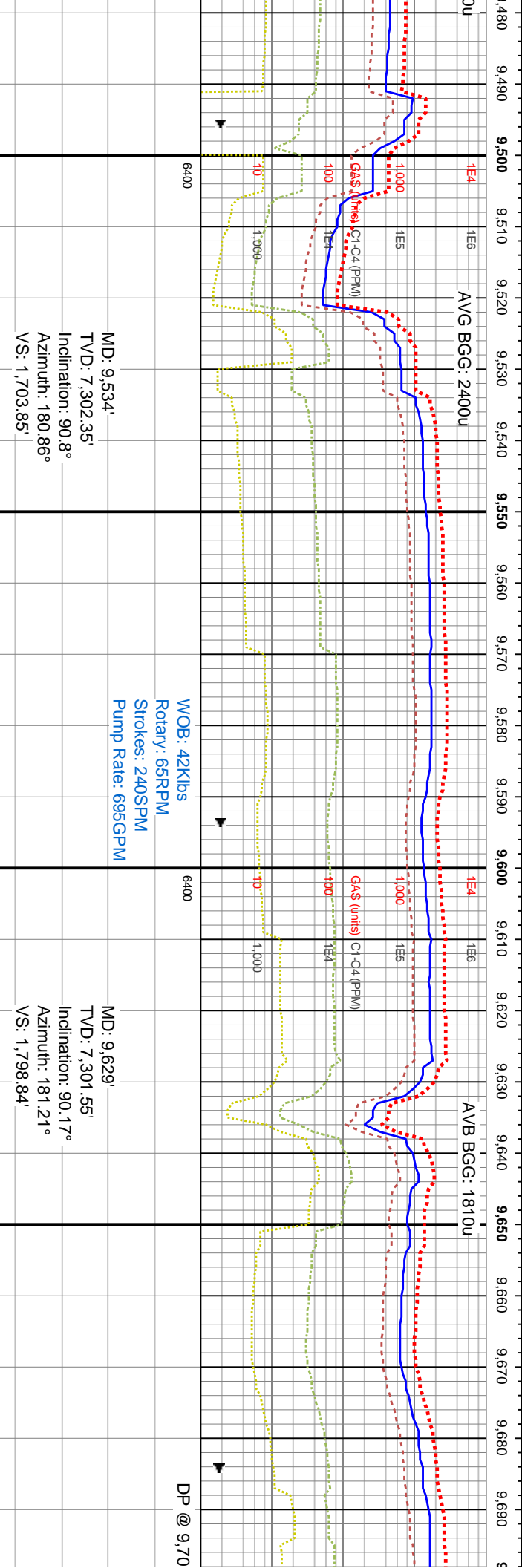
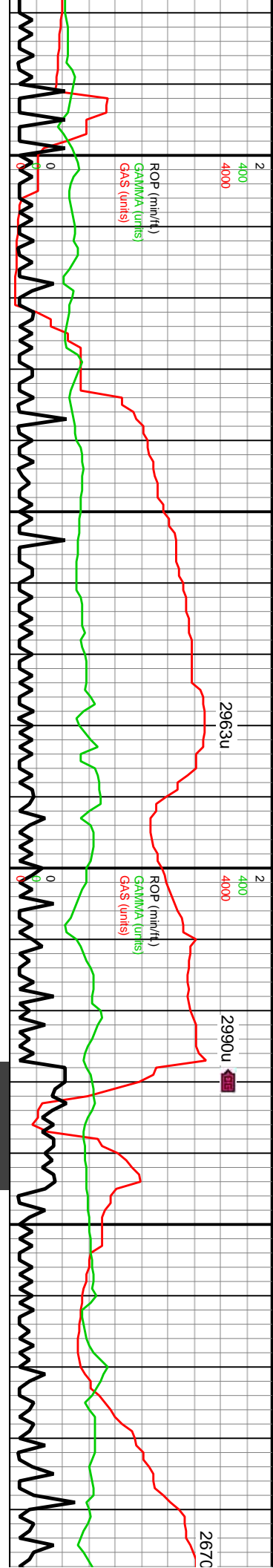
MD: 9,057' TVD: 7,301.21' Inclination: 90.7° Azimuth: 179.97° VS: 1,226.97'		MD: 9,152' TVD: 7,301.97' Inclination: 88.39° Azimuth: 181.81° VS: 1,321.95'		MD: 9,247' TVD: 7,303.55' Inclination: 89.7° Azimuth: 181.02° VS: 1,416.9'	
9080-9140 CHK (80%): lt gy-gy, frm-brit l-mod fis sb ang-sb rd cigs, v arg LS wi com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (20%): gy-dk gy mot wi brn-th mrlly incl, frm, brit, l fis sb rd-rd occ sb ang cigs, tr vf pyr, sl silty-sm tex, mod calc wi brn resd		9140-9260 CHK (75%): lt gy-gy, frm-brit, l-mod fis sb ang-sb rd cigs, v arg LS wi com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (25%): gy-dk gy mot wi brn-th mrlly incl, frm, brit, l fis sb rd-rd occ sb ang cigs, tr vf pyr, sl silty-sm tex, mod calc wi brn resd			
8400		8400			





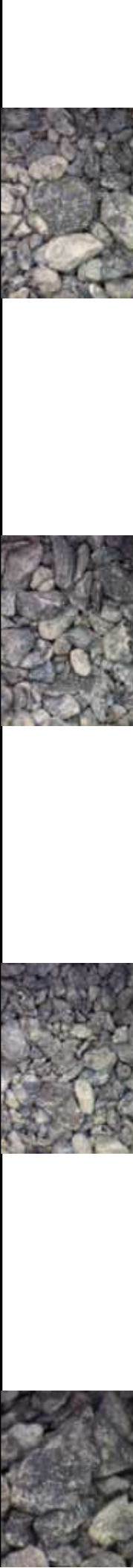
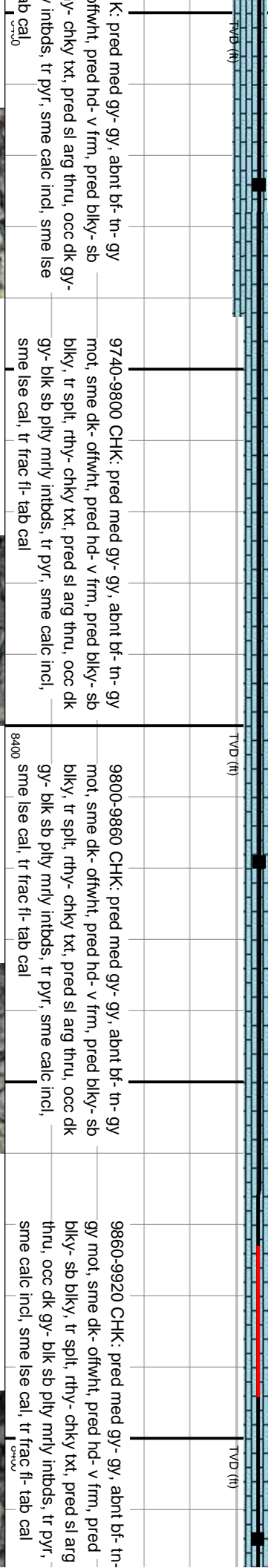
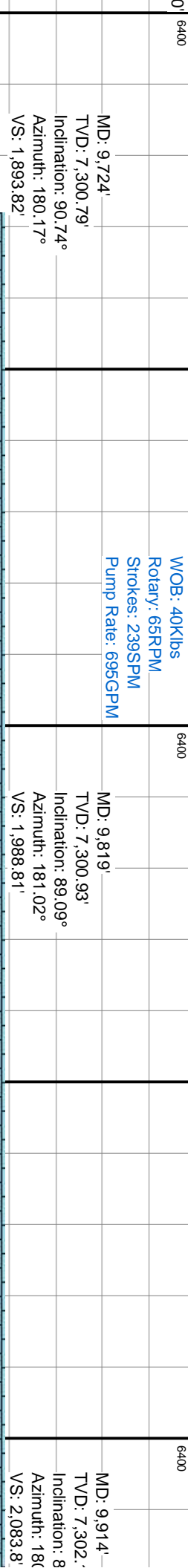
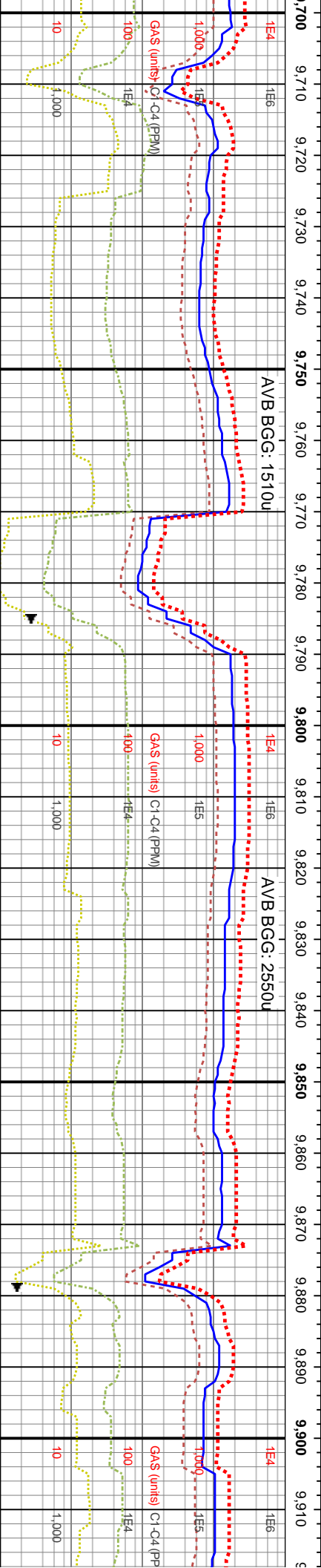
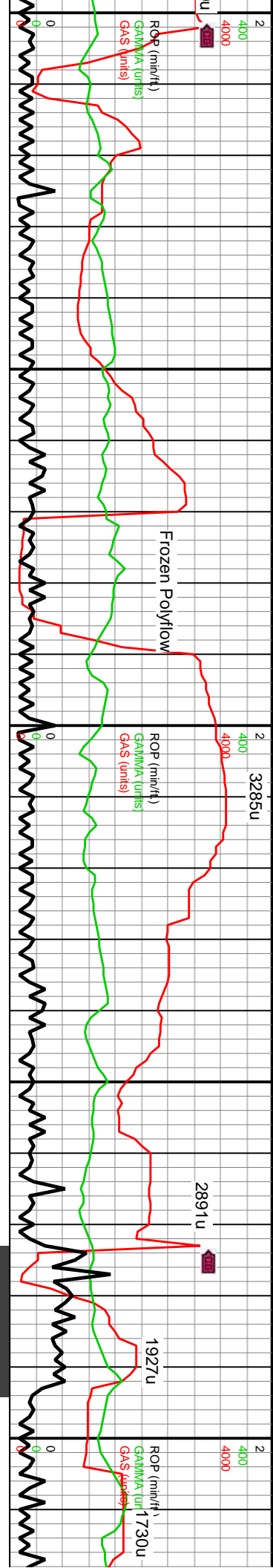
9260-9320 CHK (75%): lt gy-gy, frm-brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (25%): gy-dk gy mot wi brn-tn mrlly incl, frm, brit, l fis sb rd-rd occ sb ang ctgs, tr vf pyr, sl silty-sm tex, mod calc wi brn resd	9320-9380 CHK (90%): lt gy-gy v arg LS, frm-brit l-mod fis sb ang-sb rd ctgs, com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (10%): gy-dk, frm-brit l fis sb rd-rd occ sb ang ctgs mot wi brn-tn mrlly incl,, tr vf pyr, sl silty-sm tex, mod calc wi brn resd	9380-9440 CHK (90%): lt gy-gy v arg LS, frm-brit l-mod fis sb ang-sb rd ctgs, com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (10%): gy-dk, frm-brit l fis sb rd-rd occ sb ang ctgs mot wi brn-tn mrlly incl,, tr vf pyr, sl silty-sm tex, mod calc wi brn resd	9440-9500 CHK (90%): lt gy-gy v arg LS, frm-brit l-mod fis sb ang-sb rd ctgs, com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (10%): gy-dk, frm-brit l fis sb rd-rd occ sb ang ctgs mot wi brn-tn mrlly incl,, tr vf pyr, sl silty-sm tex, mod calc wi brn resd
MD: 9,343' TVD: 7,303.16' Inclination: 90.77° Azimuth: 180.36° VS: 1,512.89'	MD: 9,438' TVD: 7,302.77' Inclination: 89.7° Azimuth: 181.44° VS: 1,607.88'		



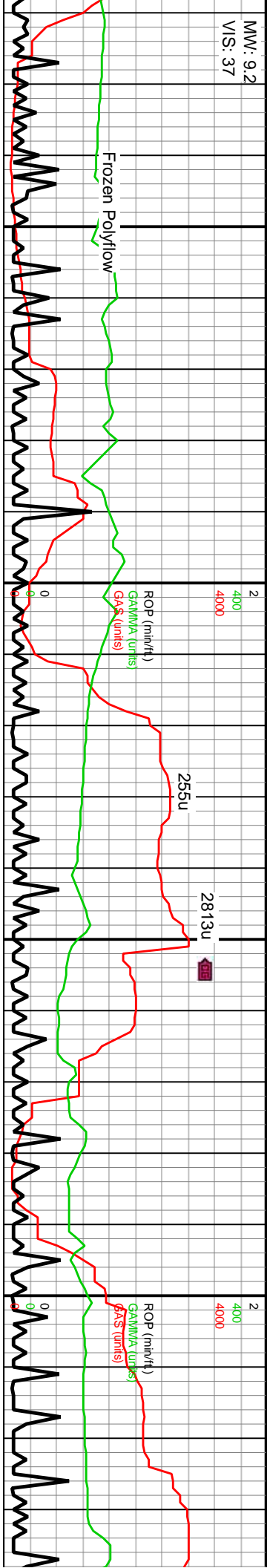


arg LS, frm-brit hln wh chky lamn & e chk, tr vf pyr, ST (10%): gy-dk, mod mot wi brn-tn mod calc wi brn	9560-9500 CHK (90%): It gy-gy v arg LS, frm-brit l-mod fis sb ang-sb rd ctgs, com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cln HCL rxn, MRLST (10%): gy-dk, frm-brit l fis sb rd-rd occ sb ang ctgs mot wi brn-tn mrlly incl., tr vf pyr, sl silty-sm tex, mod calc wi brn resdl	9560-9620 CHK (90%): It gy-gy v arg LS, frm-brit l-mod fis sb ang-sb rd ctgs, com thn wh chky lamn & com vf incl, sm-sl silty tex, tr c free chk, tr vf pyr, mod-hi calc wi cln HCL rxn, MRLST (10%): gy-dk, frm-brit l fis sb rd-rd occ sb ang ctgs mot wi brn-tn mrlly incl., tr vf pyr, sl silty-sm tex, mod calc wi brn resdl	9620-9680 CHK: pred med gy- gy, abnt bf- tn- gy mot, sme dk- ofwht, pred hc- v frm, pred biky- sb biky, tr split, rthy- chky txt, pred sl arg thru, occ dk gy- blk sb pily mrlly intbds, tr pyr, sme calc incl, sme lse cal, tr frac fl- tab cal	9680-9740 CH mot, sme dk- c biky, tr split, rth blk sb pily mrlly cal, tr frac fl- te
8400	8400	8400		





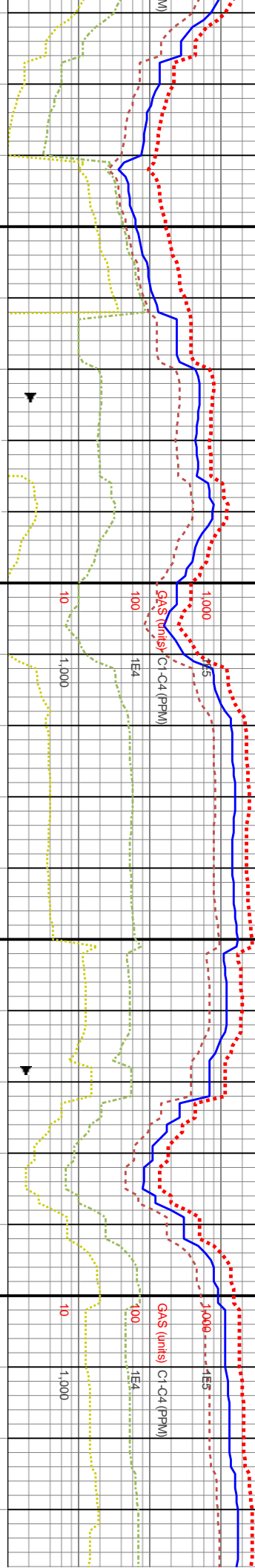
MW: 9.2
VIS: 37



AVB BGG: 680u

AVB BGG: 2050u

AVB BGG: 2050u



WOB: 71Klbs
Rotary: 0RPM
Strokes: 239SPM
Pump Rate: 695GPM

MD: 10,009'
TVD: 7,303.01'
Inclination: 89.6°
Azimuth: 179.83°
VS: 2,178.79'

MD: 10,103'
TVD: 7,302.55'
Inclination: 90.97°
Azimuth: 178.78°
VS: 2,272.78'

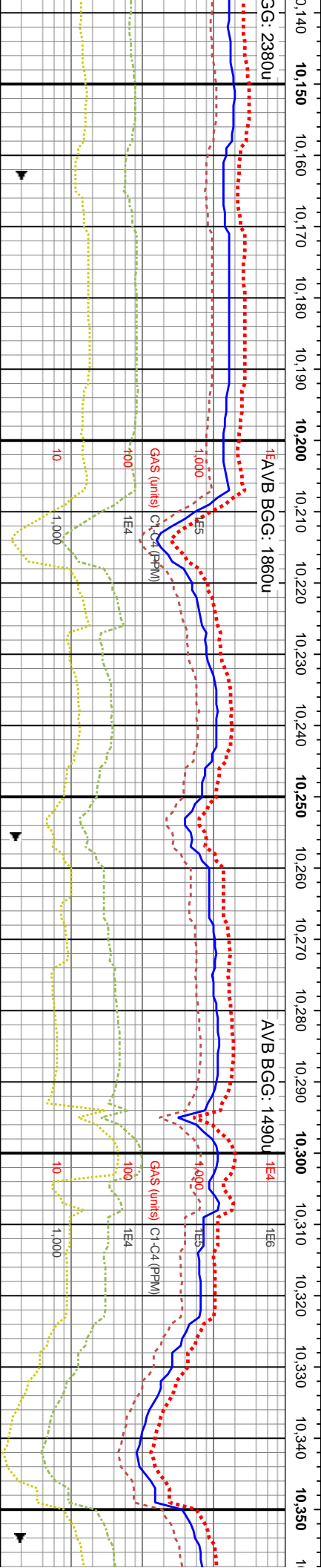
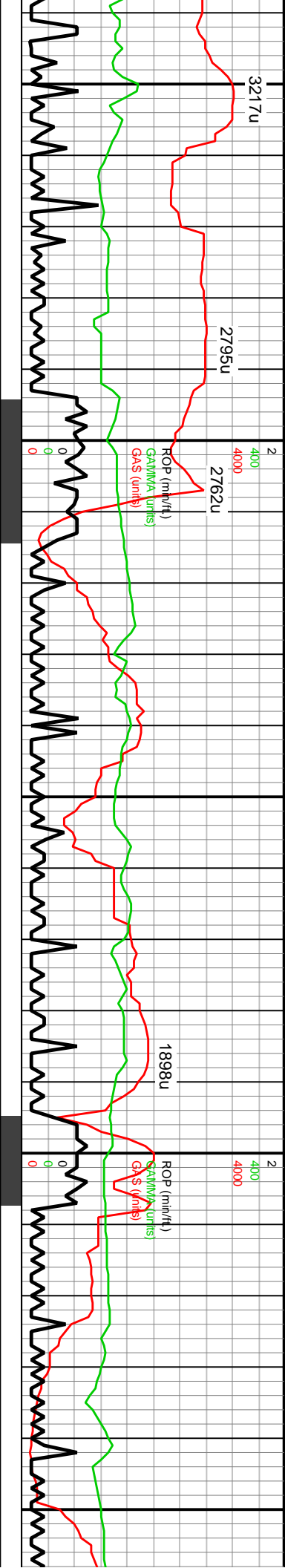
9920-9980 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk- offwht, pred hd- v frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, tr dk gy- blk sb plty mrly intbds, tr pyr, sme calc incl, sme lse cal

9980-10040 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk- offwht, pred hd- v frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, tr dk gy- blk sb plty mrly intbds, tr pyr, sme calc incl, sme lse cal

10040-10100 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk- offwht, pred hd- v frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, tr dk gy- blk sb plty mrly intbds, tr pyr, sme calc incl, sme lse cal

10100-10160 CHK: pred med gy mot, sme dk- offwht, pred hd- v frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, tr dk gy- blk sb plty mrly intbds, tr pyr, sme calc incl, sme lse cal



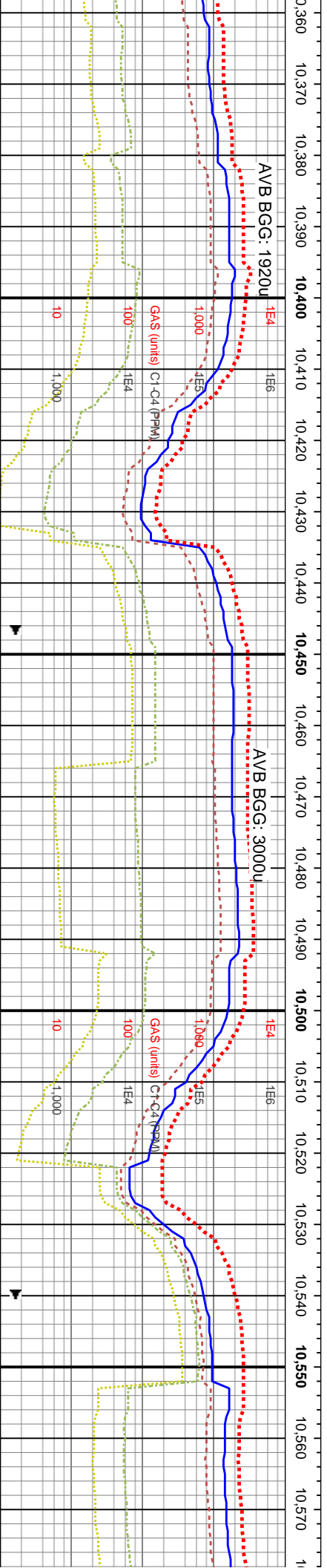
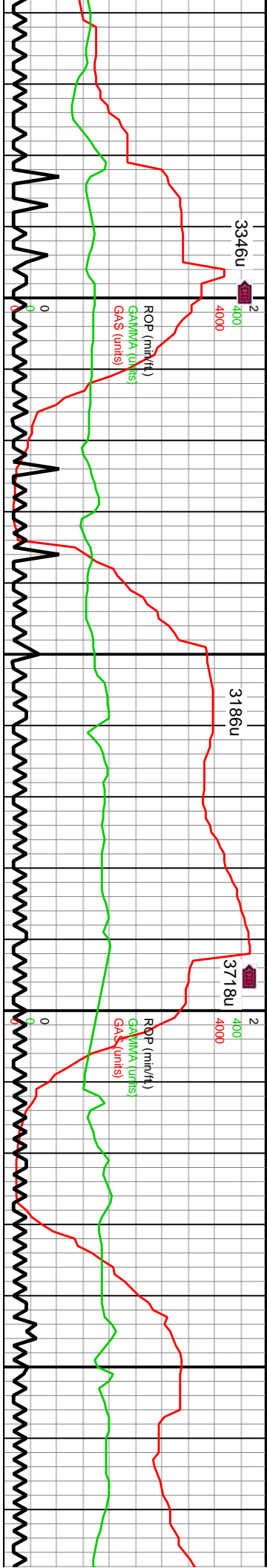


WOB: 44Klbs
Rotary: 75RPM
Strokes: 239SPM
Pump Rate: 6000BPM
MD: 10,198'
TVD: 7,302.05'
Inclination: 89.63°
Azimuth: 179°
VS: 2,367.76'

MD: 10,293'
TVD: 7,303.41'
Inclination: 88.73°
Azimuth: 180.5°
VS: 2,462.74'

gy- gy, abnt bf- lt d- v frm, pred blk- red sl arg thru, tr dk r/, sme calc incl,	10160-10220 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk- offwht, pred hd- v frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, tr dk gy- blk sb pily mrlly intbds, tr pyr, sme calc incl, sme lse cal	10220-10280 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb pily mrlly intbds, occ cln microxln chk, tr pyr, sme calc incl, sme lse cal	10280-10340 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb pily mrlly intbds, occ cln microxln chk, tr pyr, sme calc incl, sme lse cal	10340-10400 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb pily mrlly intbds, occ cln microxln chk, tr pyr, sme calc incl, sme lse cal
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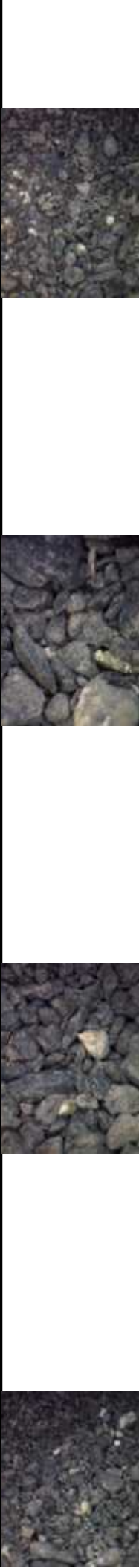
MD: 10,387'
TVD: 7,305.16'
Inclination: 89.13°
Azimuth: 180.12°
VS: 2,556.73'

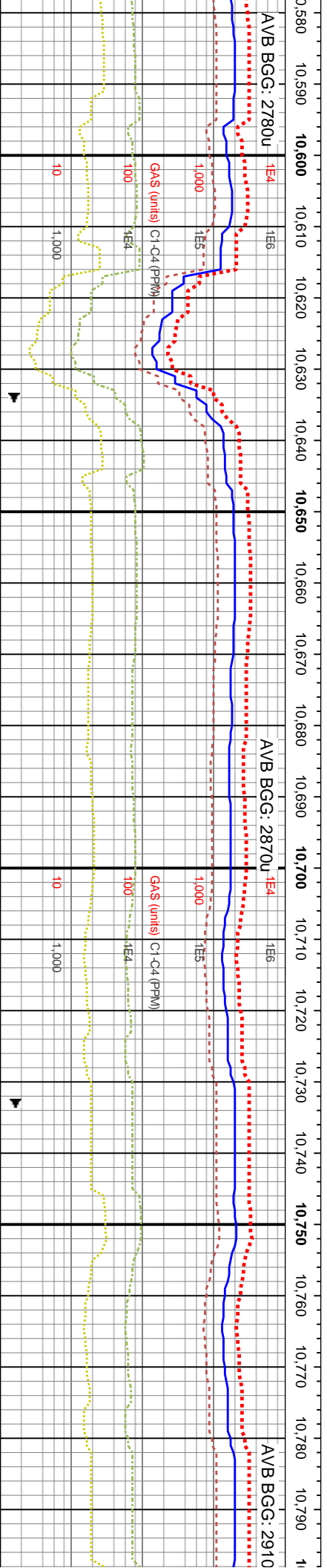
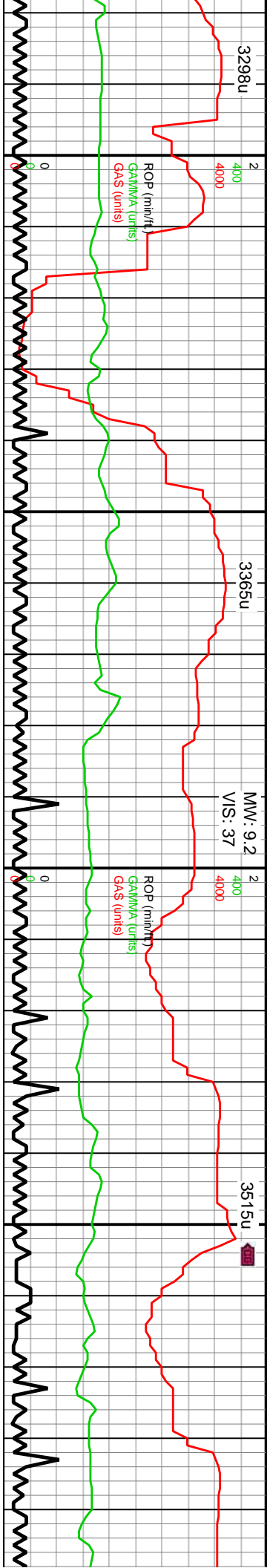
WOB: 44Klbs
Rotary: 76RPM
Strokes: 239SPM
Pump Rate: 695GPM

MD: 10,482'
TVD: 7,306.46'
Inclination: 89.3°
Azimuth: 180.18°
VS: 2,651.72'

MD: 10,57'
TVD: 7.30
Inclination
Azimuth: 1
VS: 2,746

00 CHK: pred med gy- gy, abnt bf- lt e dk gy- offwht, pred hd- v frm, sme sl ky- sb blk, tr spl, rthy- chky txt, pred ip mod arg, tr dk gy- blk sb ply mrlly ch microxin chk, tr pyr, sme calc incl,	10400-10460 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb ply mrlly intbds, tr pyr, sme calc incl, sme lse cal	10460-10520 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb ply mrlly intbds, tr pyr, sme calc incl, sme lse cal	10520-10580 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb ply mrlly intbds, tr pyr, sme calc incl, sme lse- euhed cal
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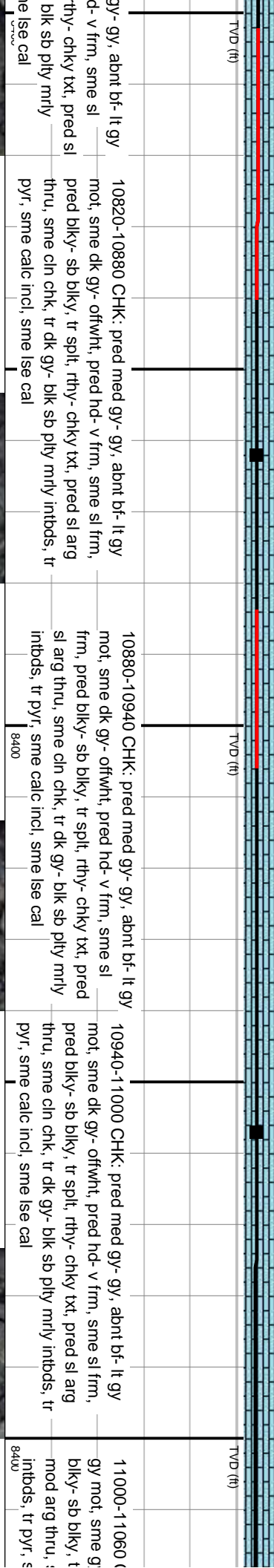
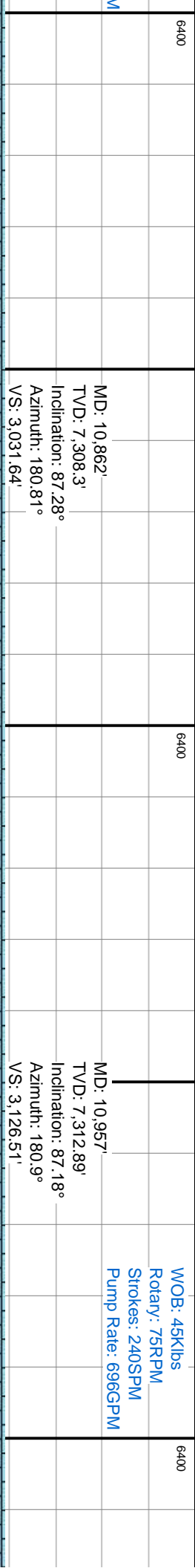
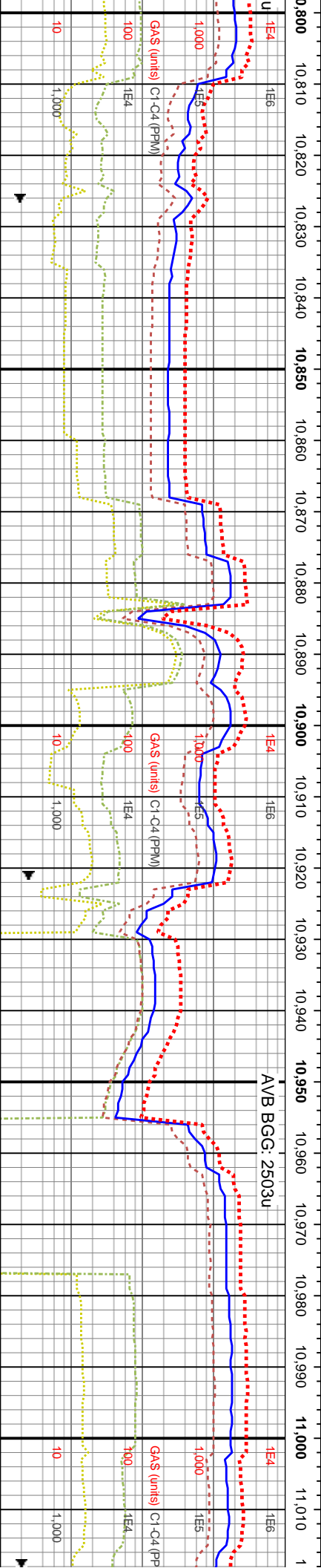
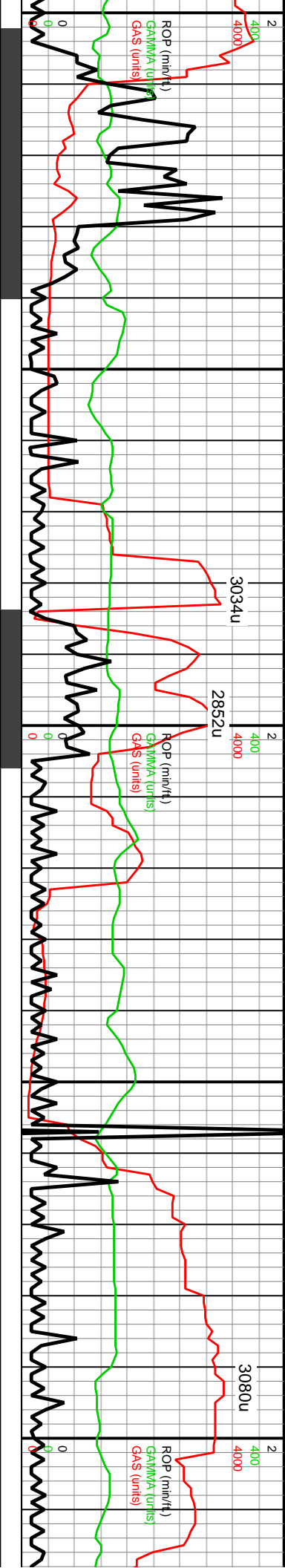


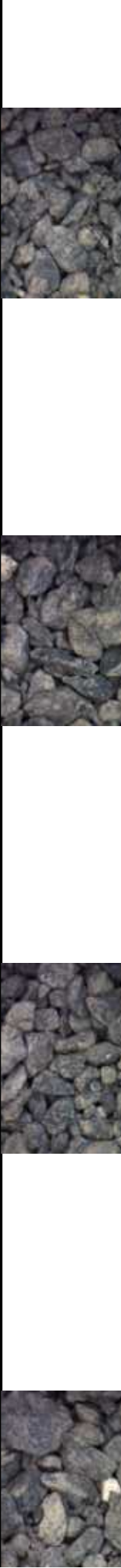
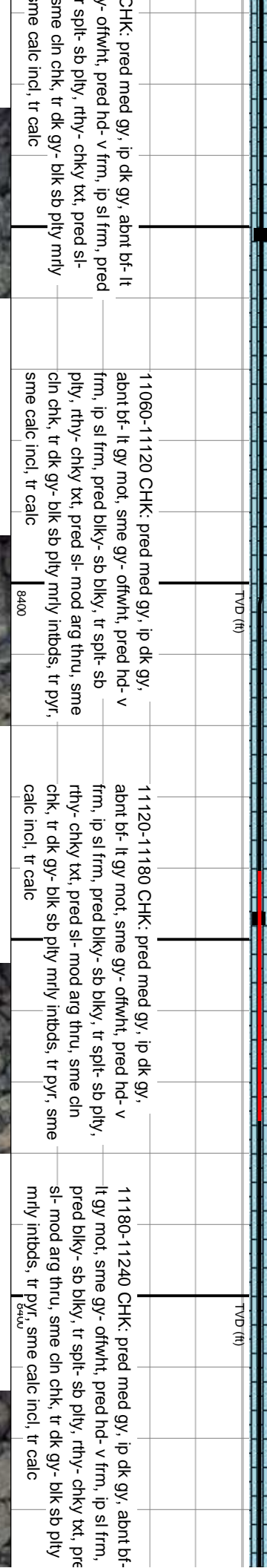
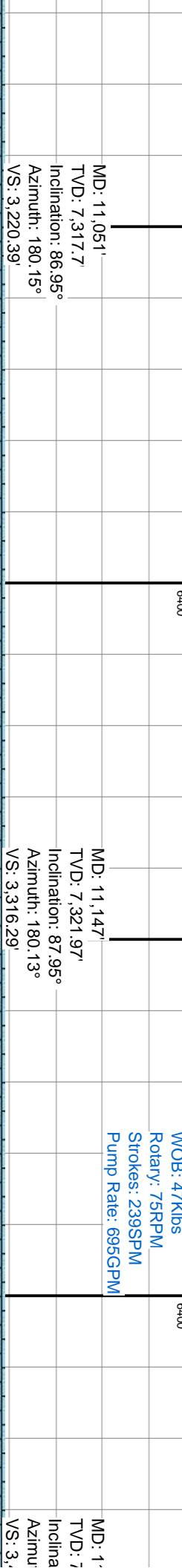
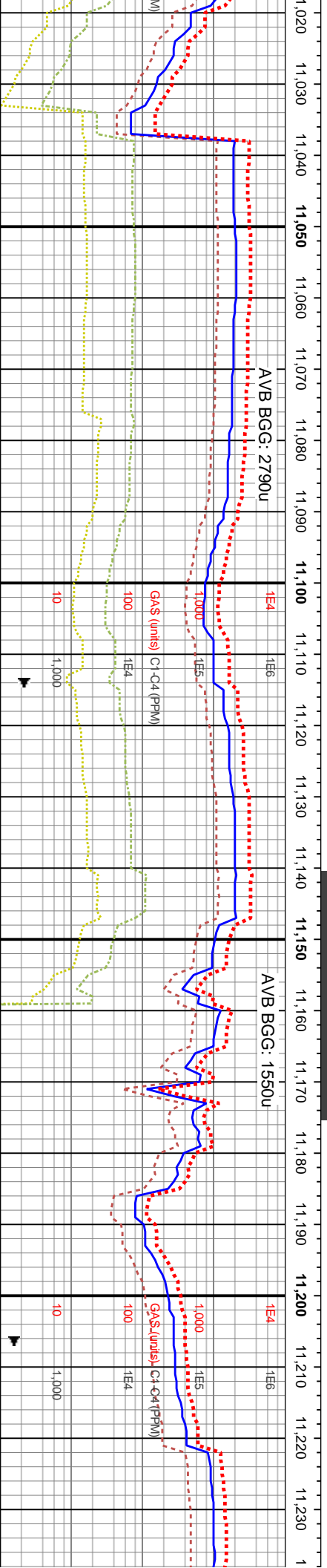
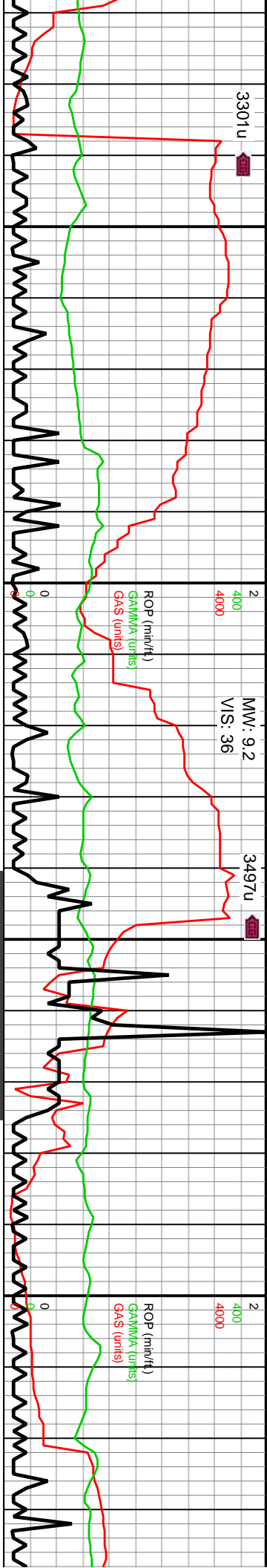


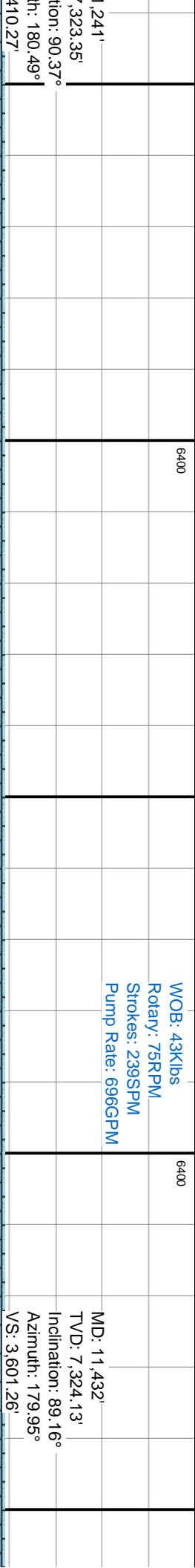
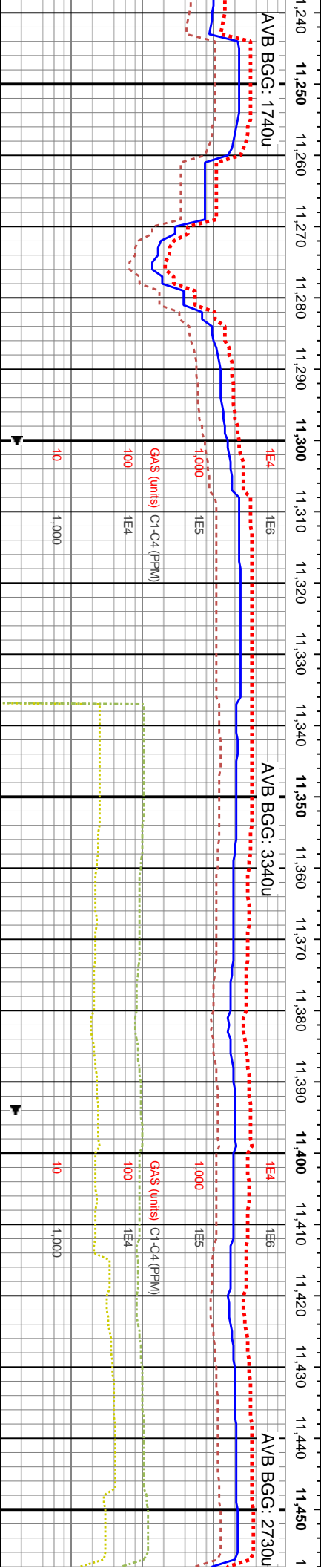
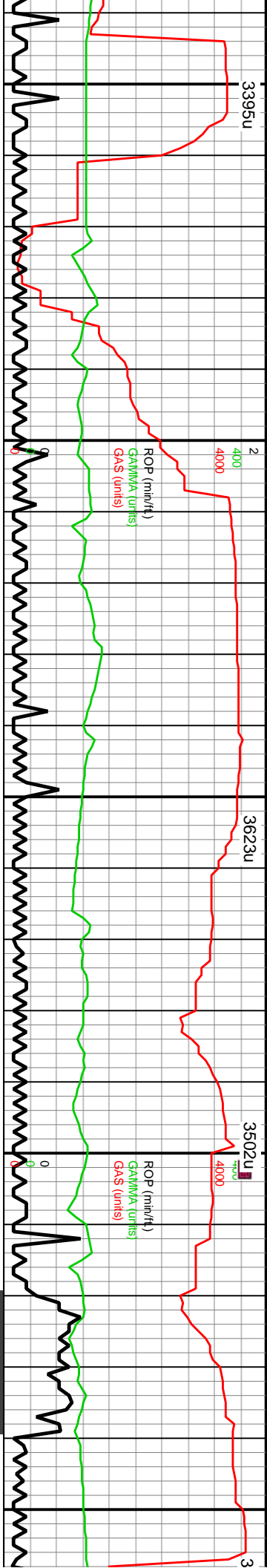
WOB: 43Klbs		WOB: 48Klbs	
Rotary: 75RPM		Rotary: 75RPM	
Strokes: 239SPM		Strokes: 239SPM	
Pump Rate: 695GPM		Pump Rate: 695GPM	
MD: 10,671'		MD: 10,767'	
TVD: 7,307.27'		TVD: 7,306.54'	
Inclination: 90.27°		Inclination: 90.6°	
Azimuth: 178.6°		Azimuth: 179.31°	
VS: 2,840.69'		VS: 2,936.67'	

10580-10640 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blyk- sb blyk, tr spl, rthy- chky txt, pred sl arg thru, ip mod arg, tr dk gy- blk sb ply mrlly intbds, tr pyr, sme calc incl, sme lse eured cal		10640-10700 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blyk- sb blyk, tr spl, rthy- chky txt, pred sl arg thru, sme cin chk, tr dk gy- blk sb ply mrlly intbds, tr pyr, sme calc incl, sme lse cal		10700-10760 CHK: pred med gy- gy, abnt bf- lt gy mot, sme dk gy- offwht, pred hd- v frm, sme sl frm, pred blyk- sb blyk, tr spl, rthy- chky txt, pred sl arg thru, sme cin chk, tr dk gy- blk sb ply mrlly intbds, tr pyr, sme calc incl, sme lse cal		10760-10820 CHK: pred med i mot, sme dk gy- offwht, pred h frm, pred blyk- sb blyk, tr spl, l arg thru, sme cin chk, tr dk gy- intbds, tr pyr, sme calc incl, sr	
TVD (ft)		TVD (ft)		TVD (ft)		TVD (ft)	



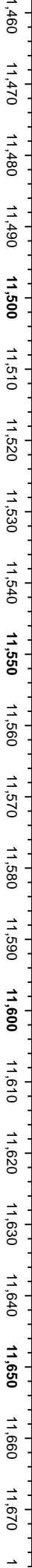






11,240-11,300 CHK: pred med gy, ip dk gy, about bf- lt gy mot, sme gy- offwht, pred hd- v frm, ip sl frm, pred blk- sb blk, tr spl- sb ply, rthy- chky txt, pred sl- mod arg thru, sme cin chk, tr dk gy- blk sb ply mrly intbds, tr pyr, sme calc incl, tr calc	11,300-11,360 CHK: pred med gy- gy, ip dk gy, about bf- lt gy mot, sme offwht, pred hd- v frm, ip sl frm, pred blk- sb blk, tr spl- sb ply, rthy- chky txt, pred sl- mod arg thru, sme cin chk, occ dk gy- blk sb ply mrly intbds, tr pyr, sme calc incl, tr euhed cal	11,360-11,420 CHK: pred med gy- gy, ip dk gy, about bf- lt gy mot, sme offwht, pred hd- v frm, ip sl frm, pred blk- sb blk, tr spl- sb ply, rthy- chky txt, pred sl- mod arg thru, sme cin chk, occ dk gy- blk sb ply mrly intbds, tr pyr, sme calc incl, tr euhed cal	11,420-11,480 CHK: pred med gy, about bf- lt gy mot, sme offwht, frm, pred blk- sb blk, tr spl- pred sl- mod arg thru, sme cin sb ply mrly intbds, tr pyr, sme cal
8400	8400	8400	





WOB: 46Klbs			
Rotary: 75RPM			
Strokes: 238SPM			
Pump Rate: 695GPM			

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