



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Johnson Trust 6_HZ

Location Sec. 13-T2N-R68W

State Colorado

Country USA

API Number 05-123-42316-00

Geographic Region DJ Basin

Spud Date 1/29/2016

County Weld

Rig Number Patterson UTI 346

Field Wattenberg

Drilling Completed 1/31/2016

Surface Coordinates SHL: 2125' FSL, 388' FWL Sec. 13 T2N R68W

Lat: 40° 8' 14.143 N

Long: 104° 57' 34.632 W

Bottom Hole Coordinates PBHL:

Lat: 40° 7' 31.192 N

Long: 104° 57' 23.832 W

Ground Elevation 4,924'

K.B. Elevation 4,948.5'

Logged Interval 6,220' **To** 12,050'

Total Depth 12,050'

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: 1-30-16
Standby: 1-29-16
TD: 1-31-16

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

PLANT SPORES

SCAPHOPOD

STROMATOPOROID

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

K KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

P PYRITE

SALT CAST

SANDY

SILICEOUS

SILTY

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 SHK

OVERTURN

Engineering

CASING

REVERS

OVERT

CONNECTION (LEFT)

CONNECTION (RIGHT)

SIDEAWA

Porosity

E EARTHY

F FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

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

SE FAULT

Textures

LL CORE (LEFT) M MODERATE

LL CORE (RIGHT) BS BOUNDSTONE P POOR

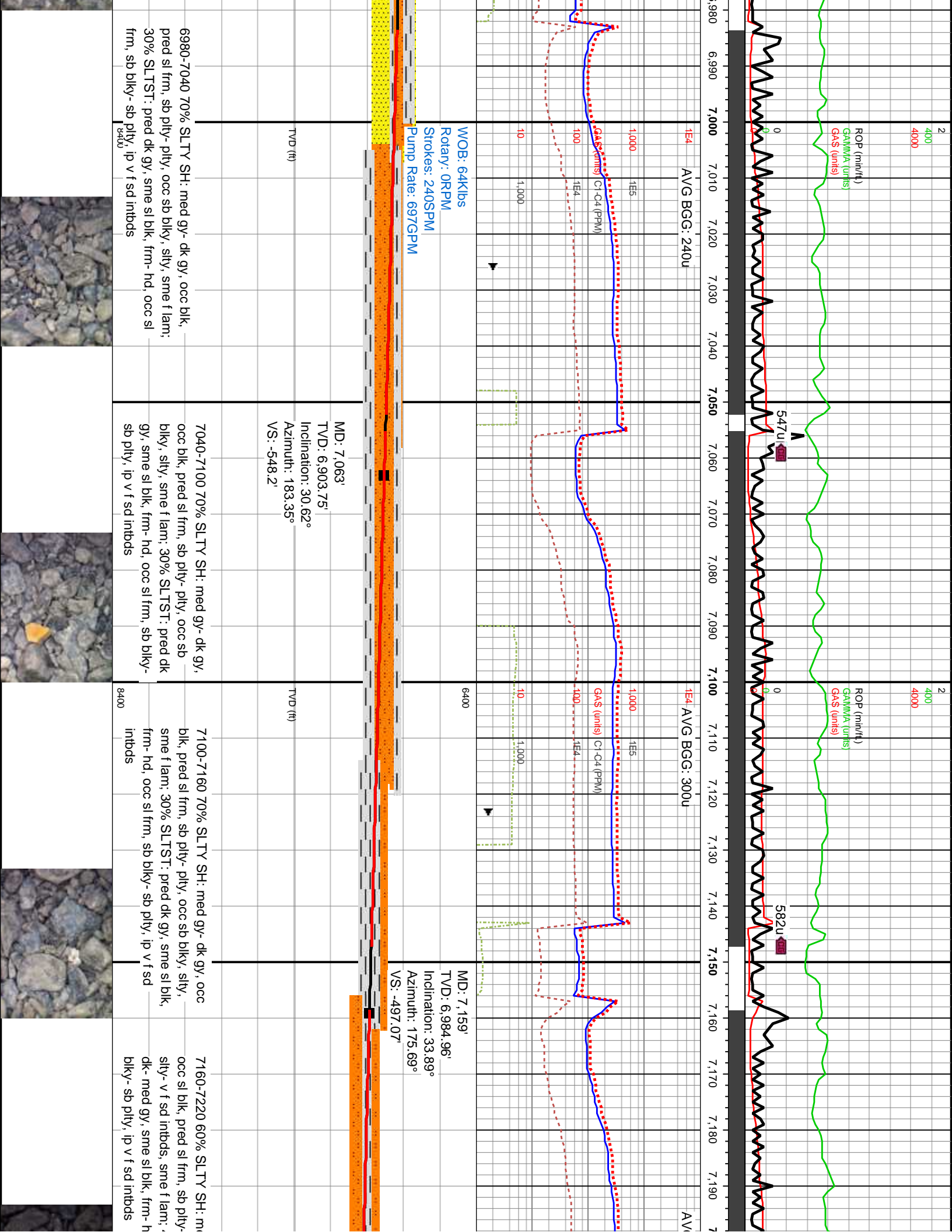
C CHALKY W WELL

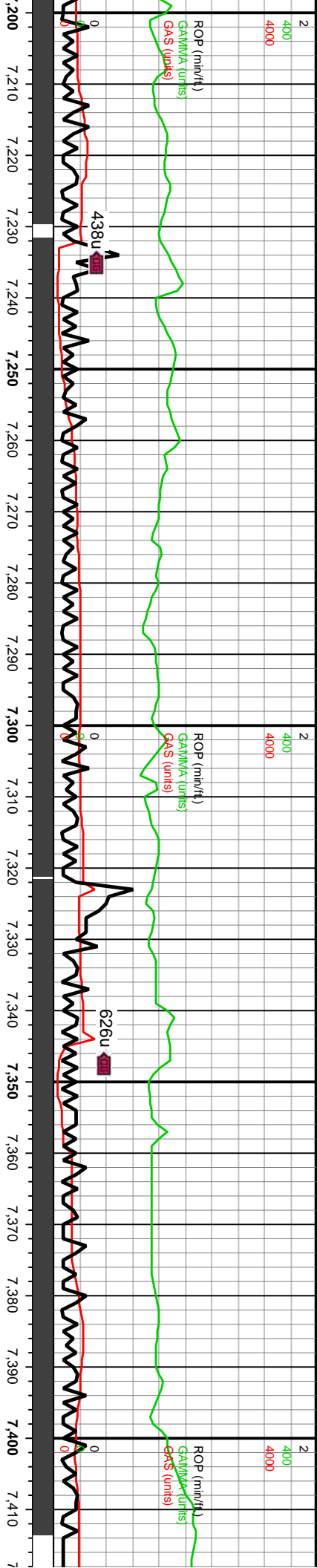
CRY CRYPTOXLN

SAS E EARTHY

IE TESTED - LEFT FX FINELYXLN

IE TESTED - RT GS GRAINSTONE

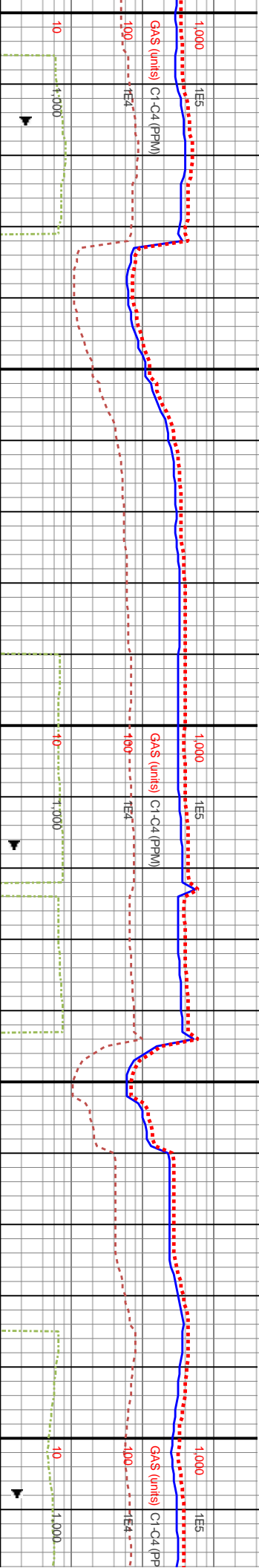




G BGC: 260uf

AVG BGC: 330u

AVG BGC: 340u



WOB: 56klbs
Rotary: 0RPM
Strokes: 240SPM
Pump Rate: 696GPM

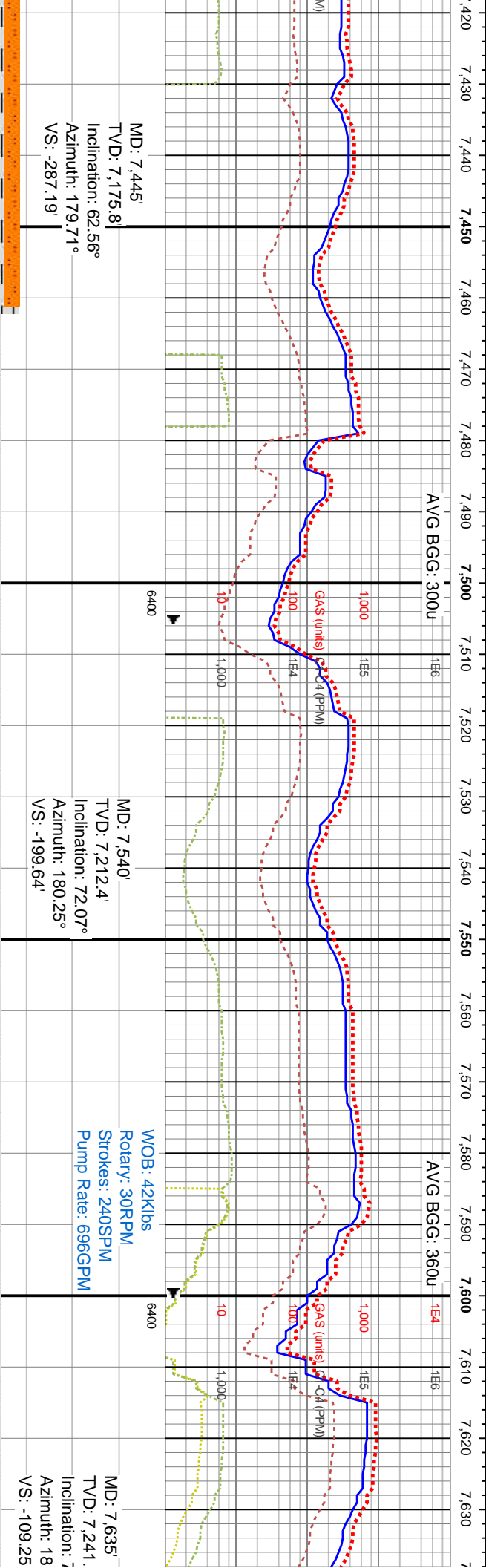
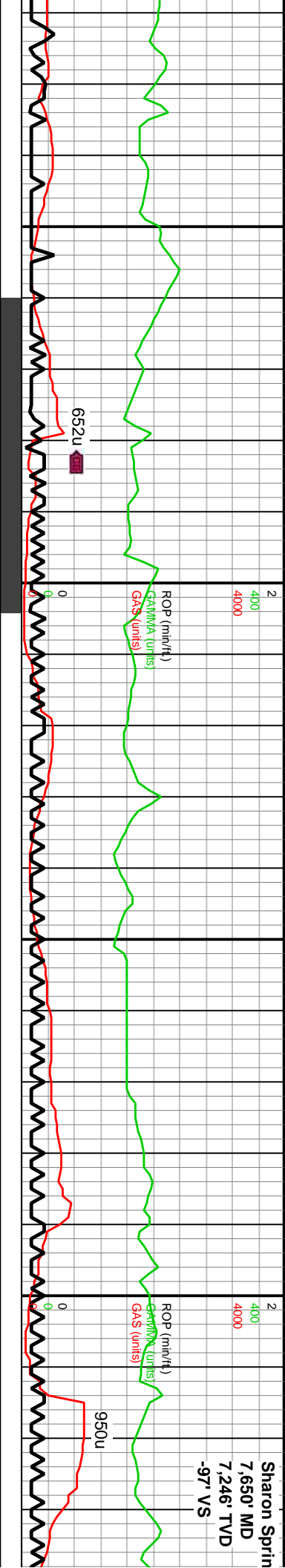
MD: 7,254'
TVD: 7,060.59'
Inclination: 40.5°
Azimuth: 174.53°
VS: -439.88'





WOB: 64klbs
Rotary: 0RPM
Strokes: 239SPM
Pump Rate: 695GPM

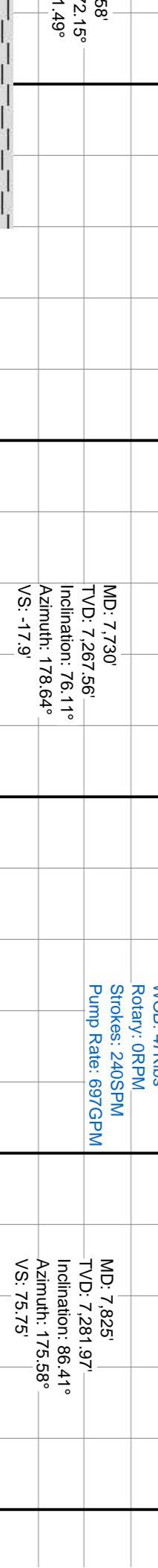
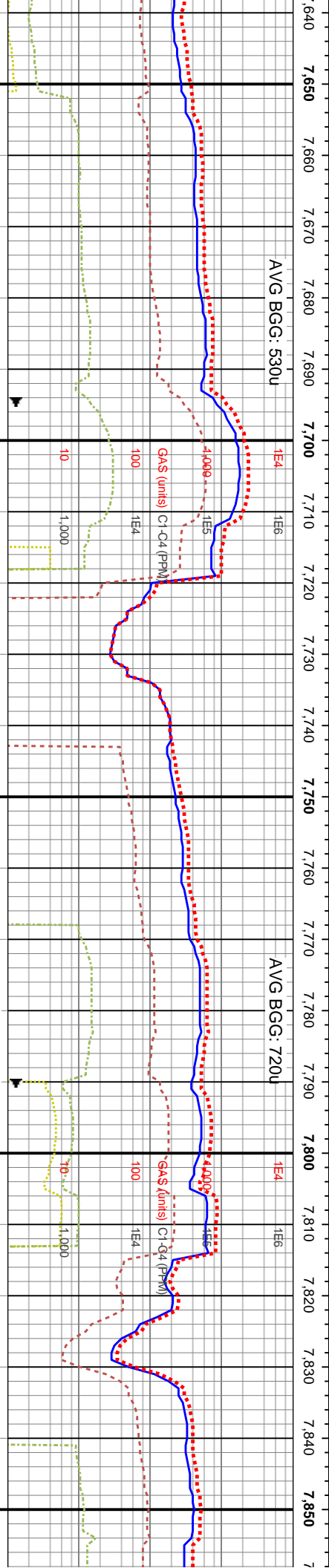
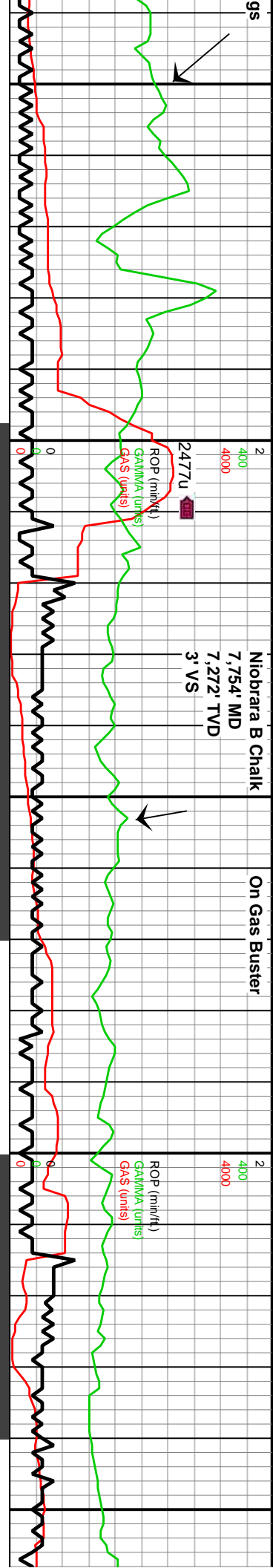
MD: 7,350'
TVD: 7,125.74'
Inclination: 53.79°
Azimuth: 175.11°
VS: -367.73'

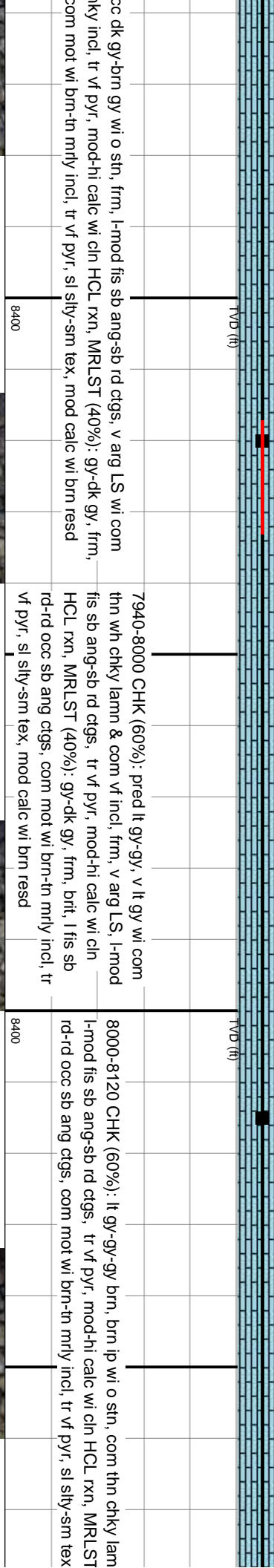
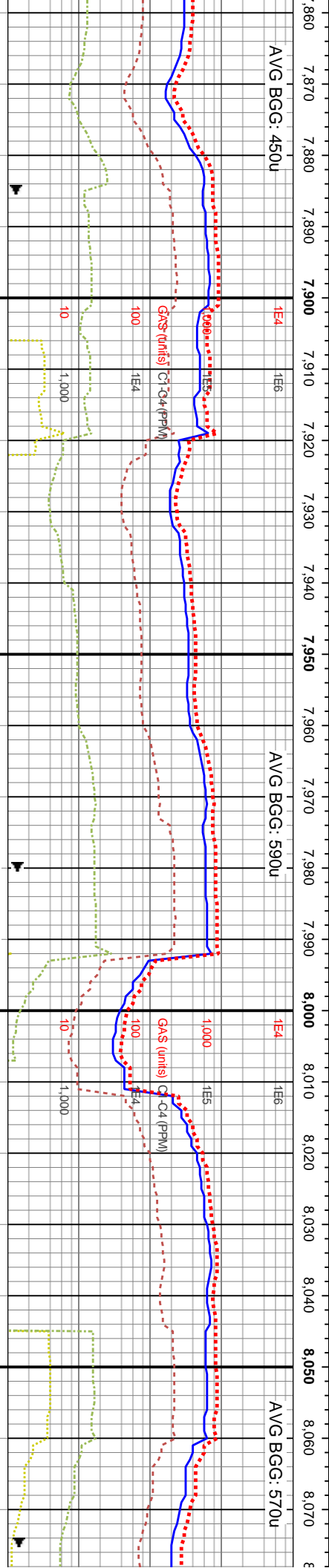
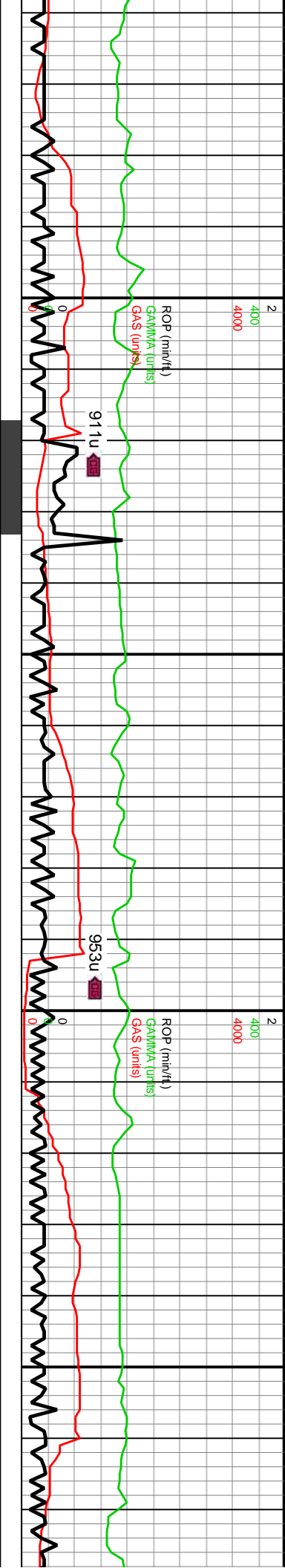
7200-7280 60% SLTY SH: med gy- gy, sme tn, occ sl blk, pred sl frm, sb pty- pty, occ sb blk, sily- v f sd intbds, sme f lam, 40% SLTST: pred dk- med gy, sme sl blk, frm- hd, occ sl frm, sb blk- sb pty, ip v f sd intbds	7280-7340 70% SLTY SH: med gy- dk gy, occ blk, pred sl frm, sb pty- pty, occ sb blk, sily, sme f lam, 30% SLTST: pred dk gy, sme sl blk, frm- hd, occ sl frm, sb blk- sb pty, ip v f sd intbds	7340-7400 50% SLTY SH: gy brn-dk gy, occ blk, pred sl frm, sb pty-pty, occ sb blk cts, 50% SLTST: pred dk gy, sme sl blk, frm- hd, occ sl frm, sb blk- sb pty, ip v f sd intbds	7400-7460 SLTY gy-dk gy, med frm py strg, occ sls (40%); dk gy-v d blk-pty cts, tr
8400	8400	8400	8400

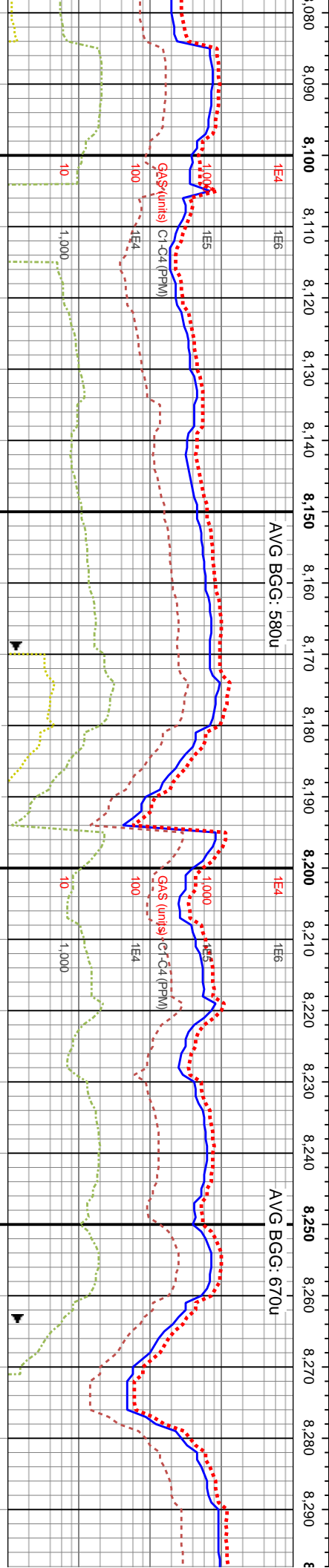
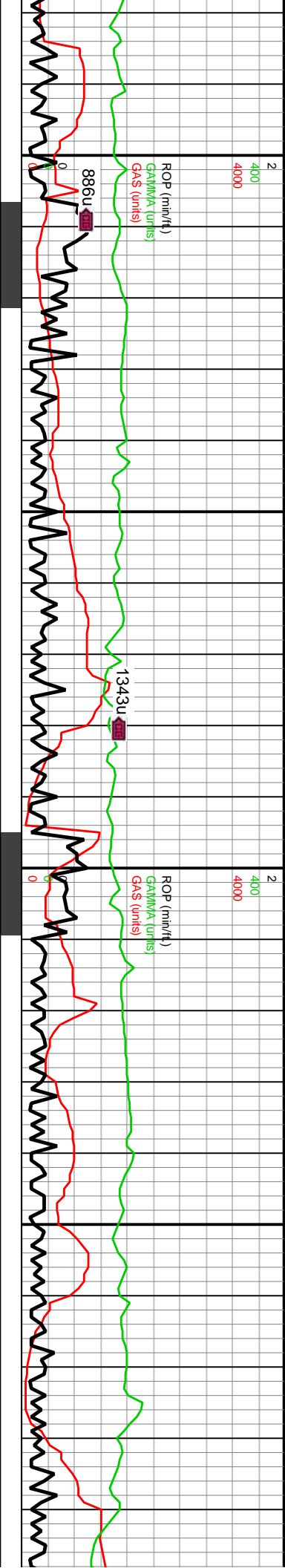




SH (60%): pred lt-med gy brn, occ n-firm, l fis sb rd ctgs, sl hydrated, r frag incl, non calc, wi intbdd SLTST k gy, frm, brit mod fis sb ang-sb vf pyr, silic cnt, non calc	7460-7520 SLTST (70%): dk gy-v dk gy, frm, brit mod fis sb ang-sb blk-y-pty ctgs, tr vf pyr, silic cnt, non calc, wi intbdd SLTY SH (30%): pred med gy-gy brn, r lt gy brn, occ gy-dk gy, med frm-firm, l fis pred sb rd ctgs, r vf pyr, tr f pyr strg, occ slst frag incl, non calc	7520-7580 SLTY SH (50%): pred med gy-gy brn, r lt gy brn, occ gy-dk gy, med frm-firm, l fis pred sb rd ctgs, r vf pyr, tr f pyr strg, occ slst frag incl, non calc, SLTST (50%): dk gy-v dk gy, frm, brit mod fis sb ang-sb blk-y-pty ctgs, tr vf pyr, silic cnt, non calc	7580-7640 SH (55%): gy-dk gy, frm, brit, ang-sb ang-sb rd-sb blk-y mod fis ctgs, sm-sily tex, occ sl incr pk-tn-brn mrlly incl, tr vf pyr, l-mod calc, wi 35% MRLST: gy-dk gy, frm, brit, wi pk/tn mrlly incl, mod calc wi brn resd, wi tr chk
			







MD: 8,109'
TVD: 7,287.39'
Inclination: 89.6°
Azimuth: 178.54°
VS: 359.36'

WOB: 68Klbs
Rotary: 0RPM
Strokes: 240SPM
Pump Rate: 696GPM

MD: 8,203'
TVD: 7,289.24'
Inclination: 88.15°
Azimuth: 179.03°
VS: 453.32'

AVG BGC: 670u

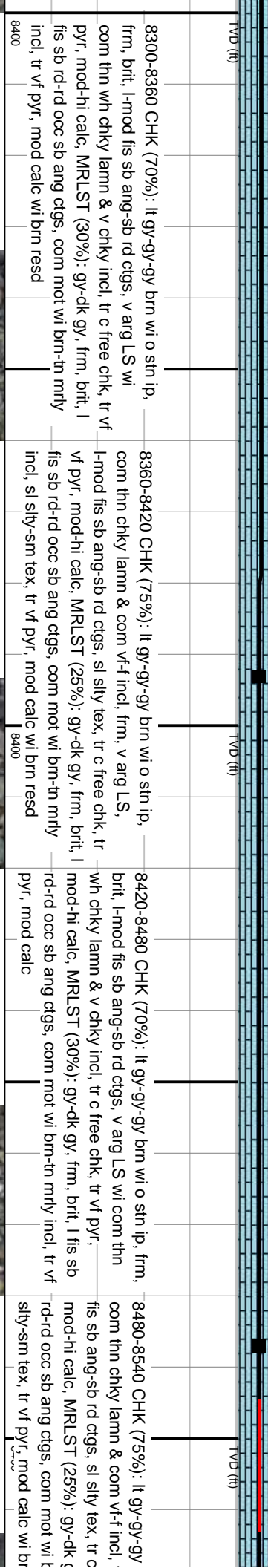
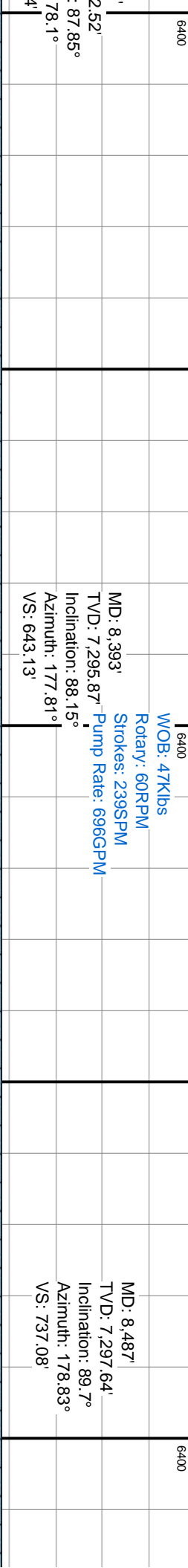
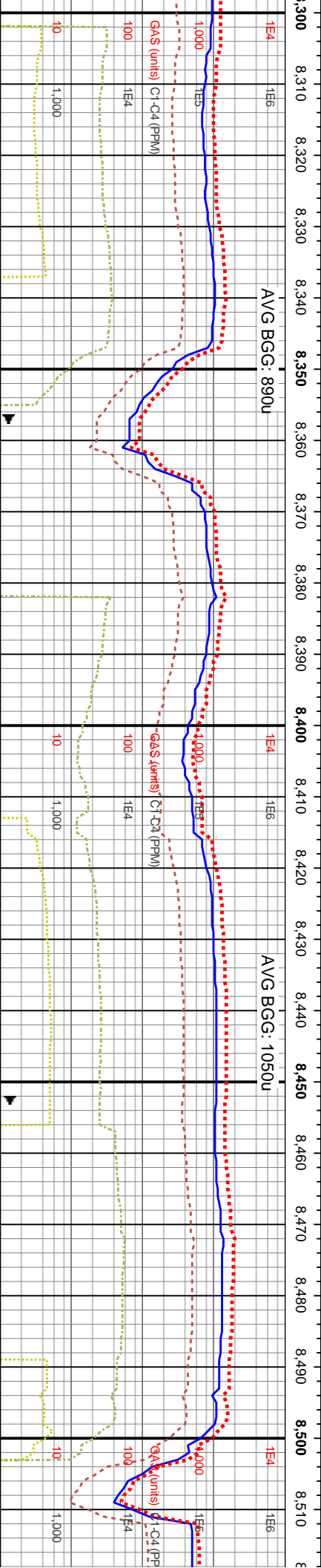
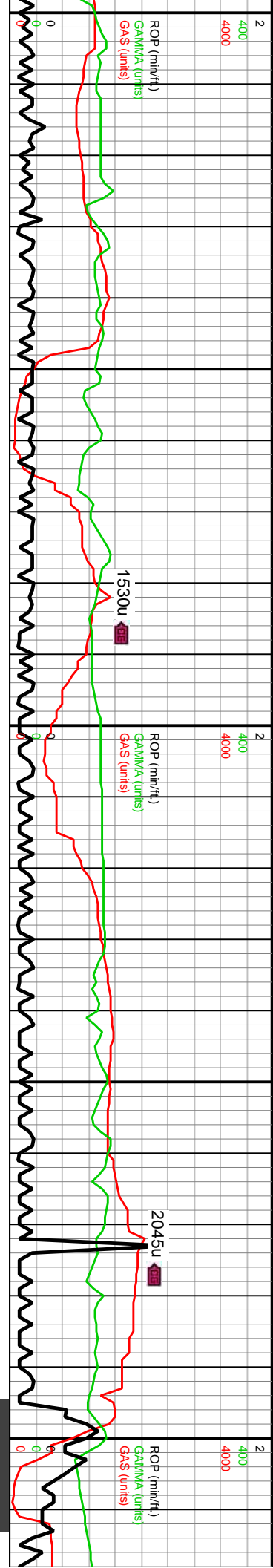


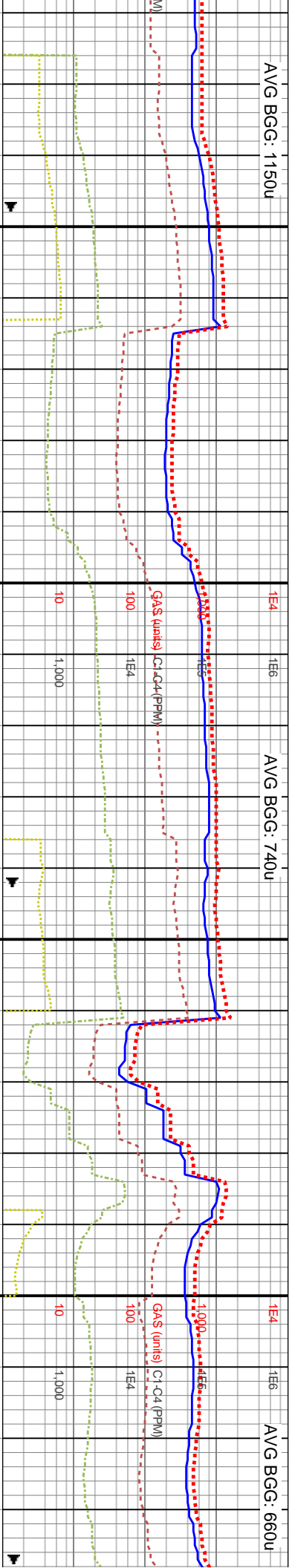
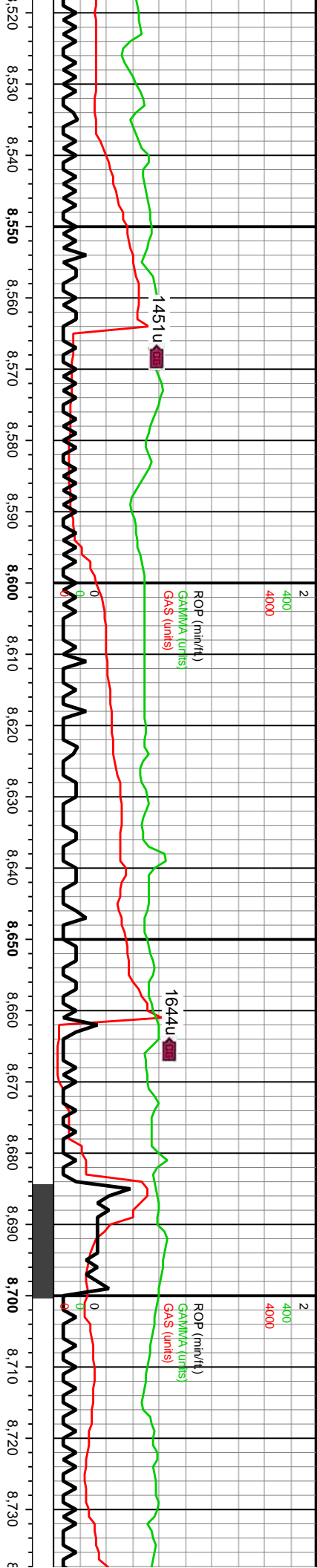
n & com vf-f incl, frm, v arg LS,
(40%): gy-dk gy, frm, brit, l fis sb
mod calc wi brn resd

8120-8240 CHK (60%): lt gy-gy-gy brn wi o str ip, frm, brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn
wh chky lamn & v chky incl, tr vf pyr, mod-hi calc, MRLST (40%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang
ctgs, com mot wi brn-th mrlly incl, tr vf pyr, sl stly-sm tex, mod calc wi brn resd

8240-8300 CHK (70%): lt gy-gy-gy brn wi o str ip, com
thn chky lamn & com vf-f incl, frm, v arg LS, l-mod fis
sb ang-sb rd ctgs, sl stly tex, tr c free chk, tr vf pyr,
mod-hi calc, MRLST (30%): gy-dk gy, frm, brit, l fis sb
rd-rd occ sb ang ctgs, com mot wi brn-th mrlly incl, sl
stly-sm tex, tr vf pyr, mod calc wi brn resd



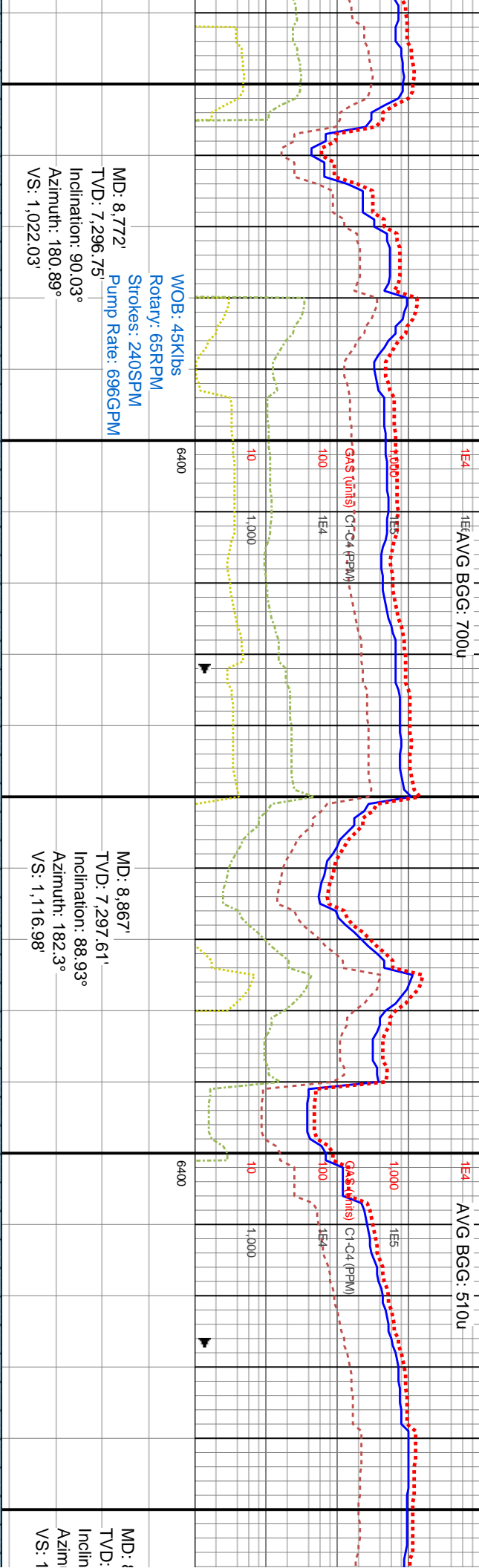
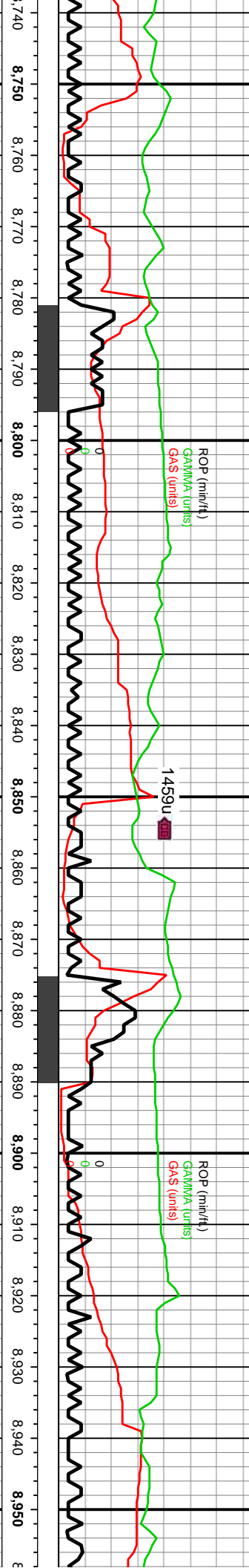




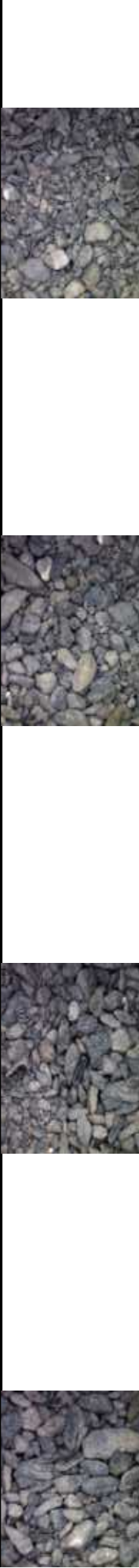
WOB: 39kIbs
Rotary: 65RPM
Strokes: 240SPM
MD: 8,582'
TVD: 7,297.5'
Inclination: 90.47°
Azimuth: 178.45°
VS: 832.05'

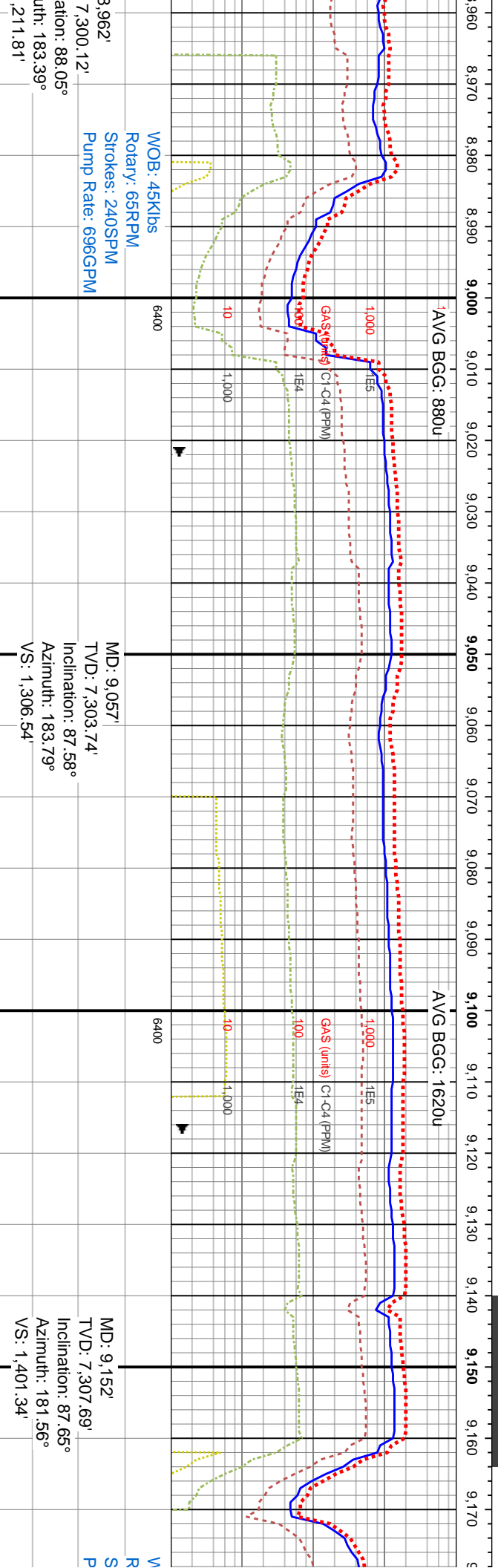
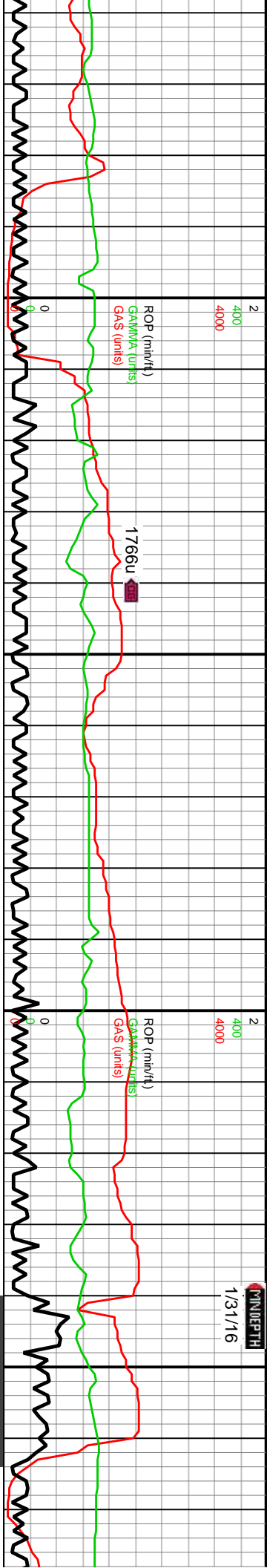
MD: 8,677'
TVD: 7,296.94'
Inclination: 90.2°
Azimuth: 180.67°
VS: 927.04'

8540-8660 CHK (75%): lt gy-gy brn wi o stn ip, frm, brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamm & v chky incl, tr c free chk, tr vf pyr, mod-hi calc wi cin HCL rxn, MRLST (25%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang ctgs, com mot wi brn-th mfly incl, tr vf pyr, mod calc	8400
8660-8720 CHK (70%): lt gy-gy, occ-com gy brn wi o stn ip, frm, brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamm & v chky incl, tr c free chk, tr vf pyr, mod-hi calc, MRLST (30%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang ctgs, com mot wi brn-th mfly incl, tr vf pyr, mod calc	8400
8720-8780 CHK chky lamm & cor ctgs, si silty tex, mod-hi calc, MRLST (30%): rd-rd occ sb ang rd-rd occ sb ang silty-sm tex, tr vf	8400



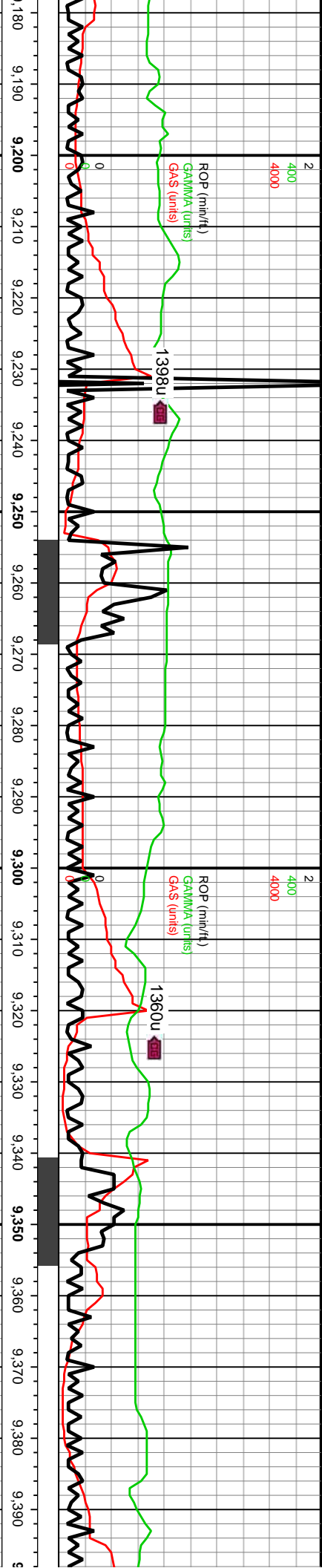
8780-8840 CHK (70%): lt gy-gy, v arg LS wi com thn n vf-f incl, frm, l-mod fis sb ang-sb rd tr c free chk, tr vf pyr, tr u f-c pyr strg, LST (25%): gy-dk gy, frm, brit, l fis sb ctgs, com mot wi brn-tn mrlly incl, sl pyr, mod calc wi brn resd	8400	8400	TVD (ft)	8780-8840 CHK (70%): lt gy-gy, occ-com gy brn wi o stin ip, frm, brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamn & v chky incl, tr c free chk, tr vf pyr, mod-hi calc, MRLST (30%): gy-dk gy mot wi brn-tn mrlly incl, frm-brit l fis sb rd-rd occ sb ang ctgs, tr vf pyr, mod calc wi brn resd	8400	8400	TVD (ft)	8840-8900 CHK (70%): lt gy-gy, v arg LS wi com thn chky lamn & com vf-f incl, frm, l-mod fis sb ang-sb rd ctgs, sl silty tex, tr c free chk, tr vf pyr, tr u f-c pyr strg, mod-hi calc, MRLST (30%): gy-dk gy, frm, brit, l fis sb rd-rd occ sb ang ctgs, com mot wi brn-tn mrlly incl, sl silty-sm tex, tr vf pyr, mod calc wi brn resd	8400	8400	TVD (ft)	8900-8960 CHK (80%): lt gy-gy, occ-com gy brn wi o stin ip, frm, brit, l-mod fis sb ang-sb rd ctgs, v arg LS wi com thn wh chky lamn & v chky incl, tr c free chk, tr vf pyr, mod-hi calc, MRLST (20%): gy-dk gy mot wi brn-tn mrlly incl, frm-brit l fis sb rd-rd occ sb ang ctgs, tr vf pyr, mod calc wi brn resd	8400	8400	TVD (ft)





8960-9020 CHK: pred lt gy-gy, sl brn hue wi o stn, occ gy, frm-brit l-mod fis sb rd-sb blk cy ctgs, v arg LS wi com wh chky thn lamm & incl, tr vf pyr, med-hi calc wi cin HCL rxn	8400
9020-9080 CHK: lt gy-gy, v arg LS wi com wh chky thn lamm & incl, frm-brit l-mod fis sb rd-sb blk cy ctgs, tr vf pyr, med-hi calc wi cin HCL rxn	8400
9080-9140 CHK: pred lt gy-gy, sl brn hue wi o stn, occ gy, frm-brit l-mod fis sb rd-sb blk cy ctgs, v arg LS wi com wh chky thn lamm & incl, tr vf pyr, med-hi calc wi cin HCL rxn	8400
9140-9200 CHK (90%): pred lt gy-gy, sl brn hue wi o stn, occ gy, frm-brit l-mod fis sb rd-sb blk cy ctgs, rr c free chk, tr cal vn, tr v calc wi cin HCL rxn, MRLST (10%) wi brn must incl, frm, brit mod fis sb l-mod calc wi brn resd	8400

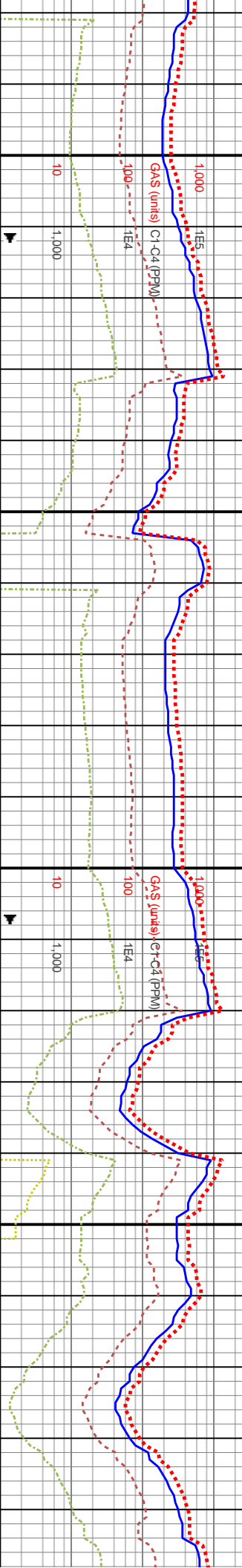




AVG BGG: 1050u 11E6

AVG BGG: 490u 11E6

AVG BGG: 48u 11E6



MD: 9.247'
TVD: 7,311.69'
Inclination: 87.52°
Azimuth: 180.44°
VS: 1,496.23'

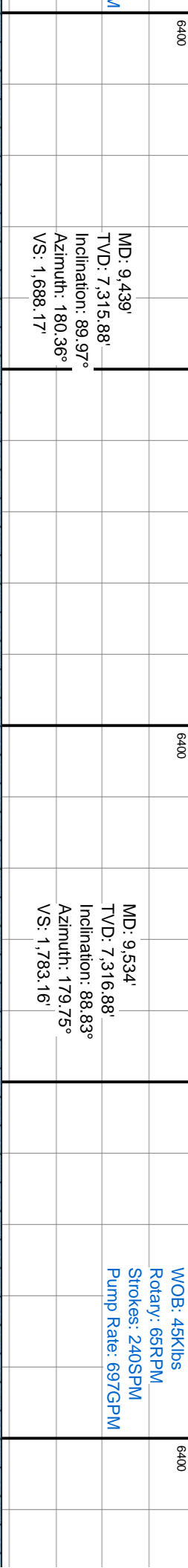
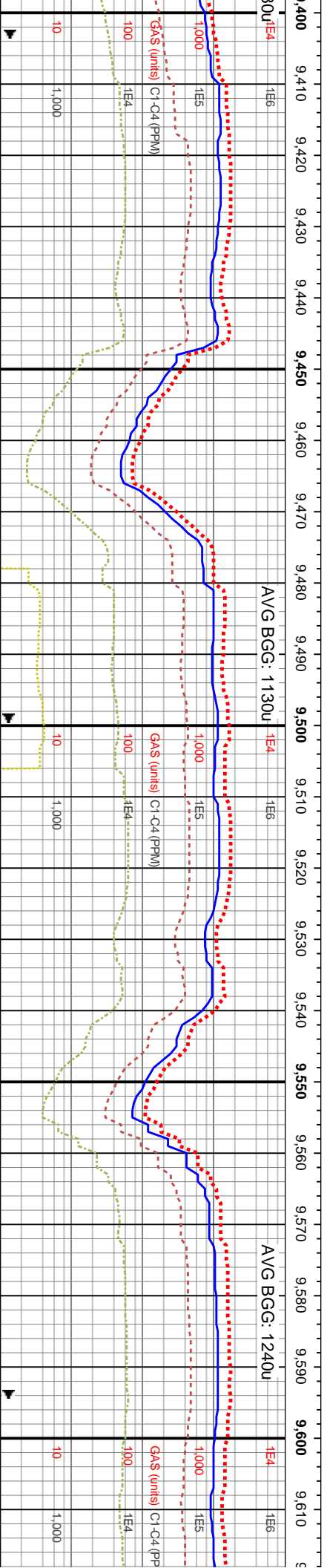
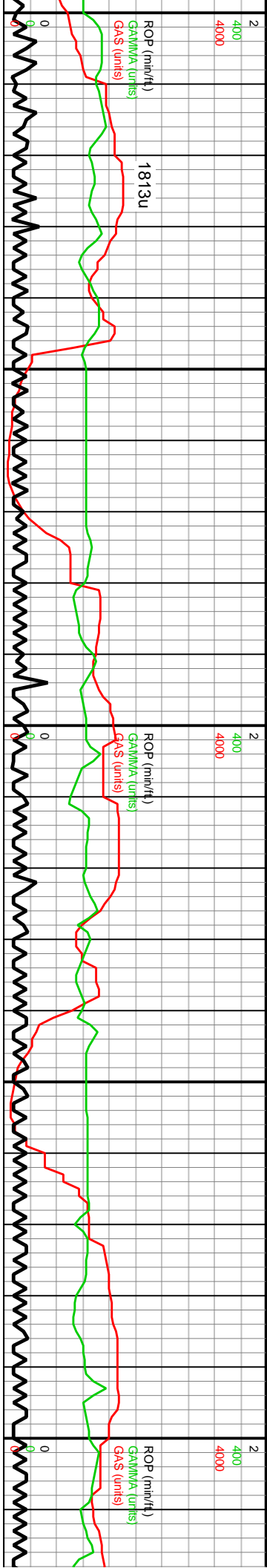
MD: 9.343'
TVD: 7,314.81'
Inclination: 88.76°
Azimuth: 179.75°
VS: 1,592.18'

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

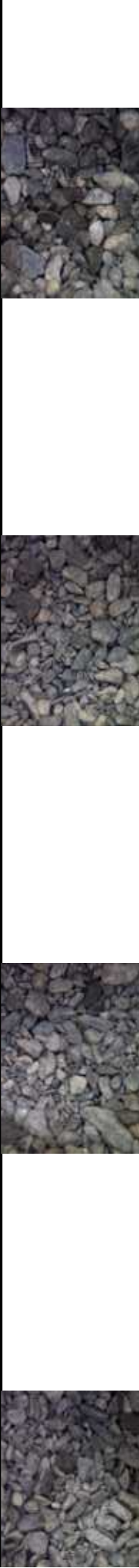
OIB: 46Klbs
Rotary: 65RPM
Strokes: 239SPM
Pump Rate: 695GPM

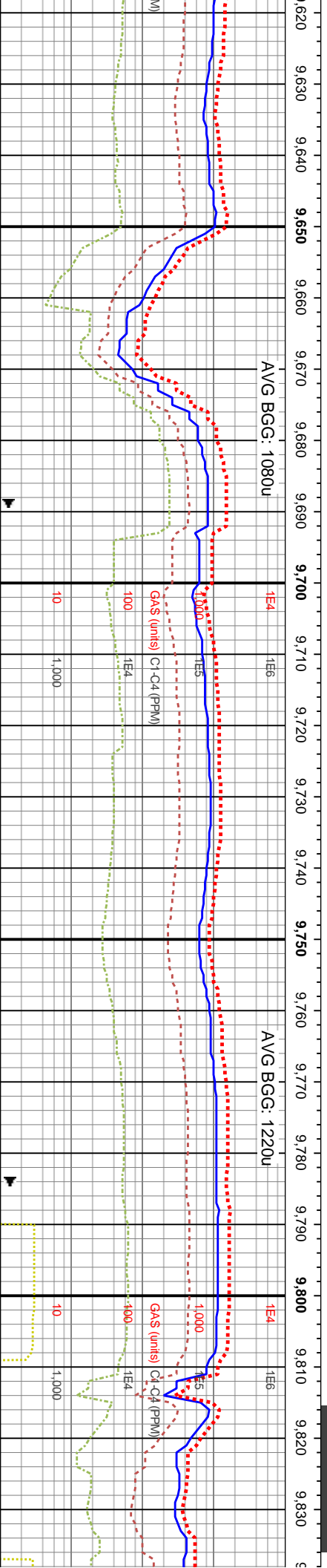
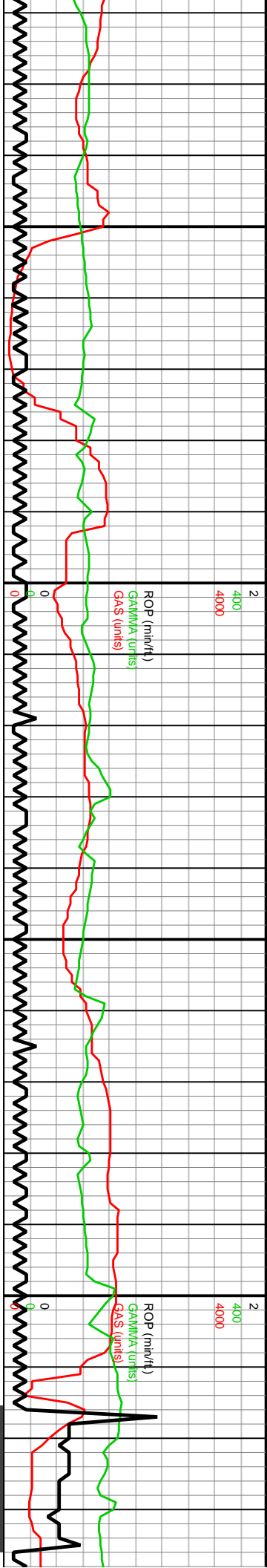
9200-9260 CHK (85%): pred lt gy-gy, sl brn hue ip wi o stn, frm-brit l-mod fis sb rd-sb blkly cigs, v arg LS wi com wh chky thn lamn & incl, tr vf pyr, med-hi calc wi cin HCL rxn, MRLST (15%): gy-dk gy mot wi brn mlst incl, frm, brit mod fis sb blkly-sb ply cigs, l-mod calc	9260-9320 CHK (90%): pred lt gy-gy v arg LS wi com wh-it gy chky lamn & incl, frm-brit l-mod fis sb rd-sb blkly cigs, tr c free chk, tr vf pyr, med-hi calc wi cin HCL rxn, MRLST (10%): gy-dk gy, mot sh wi brn mlst incl, frm, brit mod fis sb blkly-sb ply cigs, l-mod calc wi brn resd	9320-9380 CHK: pred lt gy-gy, sl brn hue wi o stn, ooc gy, frm-brit l-mod fis sb rd-sb blkly cigs, v arg LS wi com wh chky thn lamn & incl, tr vf pyr, med-hi calc	9380-9440 CHK wh-it gy chky lan blkly cigs, tr c free rxn, MRLST (10%): frm, brit mod fis resd
8400	8400		





MD: 9,439' TVD: 7,315.88' Inclination: 89.97° Azimuth: 180.36° VS: 1,688.17'		MD: 9,534' TVD: 7,316.88' Inclination: 88.83° Azimuth: 179.75° VS: 1,783.16'		WOB: 45Klbs Rotary: 65RPM Strokes: 240SPM Pump Rate: 697GPM	
(90%): pred lt gy-gy v arg LS wi com n & incl, frm-brit l-mod fis sb rd-sb e chk, tr vf pyr, med-hi calc wi chn HCL f along incl, tr vf pyr, med-hi calc, MRLST (10%): gy-dk gy, mot sh wi brn mlst incl, sb biky-sb ply ctgs, l-mod calc wi brn		9440-9500 CHK (90%): lt gy-gy, frm-brit l-mod fis sb rd-sb biky ctgs, v arg LS wi com wh-lt gy chky lamn & f along incl, tr vf pyr, med-hi calc, MRLST (10%): gy-dk gy, mot sh wi brn mlst incl, frm, brit mod fis sb biky-sb ply ctgs, l-mod calc wi brn resd		9500-9560 CHK (90%): pred lt gy-gy v arg LS wi com wh-lt gy chky lamn & incl, frm-brit l-mod fis sb rd-sb biky ctgs, tr c free chk, tr vf pyr, med-hi calc wi chn HCL rxn, MRLST (10%): gy-dk gy, mot sh wi brn mlst incl, frm, brit mod fis sb biky-sb ply ctgs, l-mod calc wi brn resd	
8400		8400		8400	

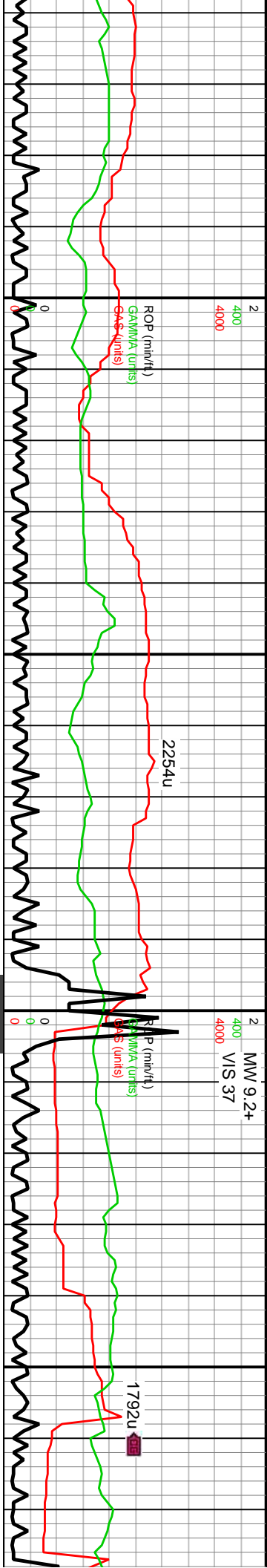




MD: 9,629' TVD: 7,318.88' Inclination: 88.76° Azimuth: 180.21° VS: 1,878.14'	MD: 9,724' TVD: 7,321.22' Inclination: 88.42° Azimuth: 182.28° VS: 1,973.08'	MD: 9,819' TVD: 7,323.47' Inclination: 88.86° Azimuth: 180.62° VS: 2,068.01'
--	--	--

9620-9680 CHK (90%): It gy-gy, frm-brit l-mod fis sb rd-sb blkly ctgs, v arg LS wi com wh-it gy chky lamn & f elong incl, tr vf pyr, med-hi calc, MRLST (10%): gy-dk gy, mot sh wi brn mlst incl, frm, brit mod fis sb blkly-sb ply ctgs, l-mod calc wi brn resd	9680-9740 CHK (90%): pred It gy-gy v arg LS wi com wh-it gy chky lamn & incl, frm-brit l-mod fis sb rd-sb blkly ctgs, tr vf pyr, med-hi calc wi chn HCL rxn, MRLST (10%): gy-dk gy, mot wi brn mlst incl, frm, brit mod fis sb blkly-sb ply ctgs, l-mod calc wi brn resd	9740-9800 CHK (85%): pred It gy-gy v arg LS wi com wh-it gy chky lamn & incl, frm-brit l-mod fis sb rd-sb blkly ctgs, rr c pyr strg, tr vf pyr, med-hi calc wi chn HCL rxn, MRLST (15%): gy-dk gy, mot wi brn mlst incl, frm, brit mod fis sb blkly-sb ply ctgs, l-mod calc wi brn resd	9800-9920 CHK (80%): It gy chky lamn & f elong incl, rr c gy-dk gy, mot sh wi brn mlst
--	--	---	--





0.060 10.070 10.080 10.090 10.100 10.110 10.120 10.130 10.140 10.150 10.160 10.170 10.180 10.190 10.200 10.210 10.220 10.230 10.240 10.250 10.260 10.270 10.280

G: 1360u

1E4 1E6

AVG BGC: 1770u

1E4 1E6

1,000 1E5 1E4

1,000 1E5 1E4

GAS (units) C1-C4 (ppm)

GAS (units) C1-C4 (ppm)

10 1,000

10 1,000

6400

6400

MD: 10,103'
 TVD: 7,322.3'

WOB: 68Klbs
 Rotary: 0RPM
 Strokes: 240SPM
 Pump Rate: 697GPM

MD: 10,198'
 TVD: 7,320.11'

Inclination: 90.94°
 Azimuth: 176.74°
 VS: 2,351.83'

Inclination: 91.71°
 Azimuth: 176.79°
 VS: 2,446.66'

TVD (ft)

TVD (ft)

10100-10160 CHK (90%): pred lt gy-gy v arg LS wi com wh-lt gy chky lamn & incl, frm-brit l-mod fis sb rd-sb blkly ctgs, tr vf pyr, med-hi calc wi cin HCL rxn, MRLST (10%): gy-dk gy, mot wi brn mlst incl, frm, brit mod fis sb blkly-sb ply ctgs, l-mod calc wi brn resd

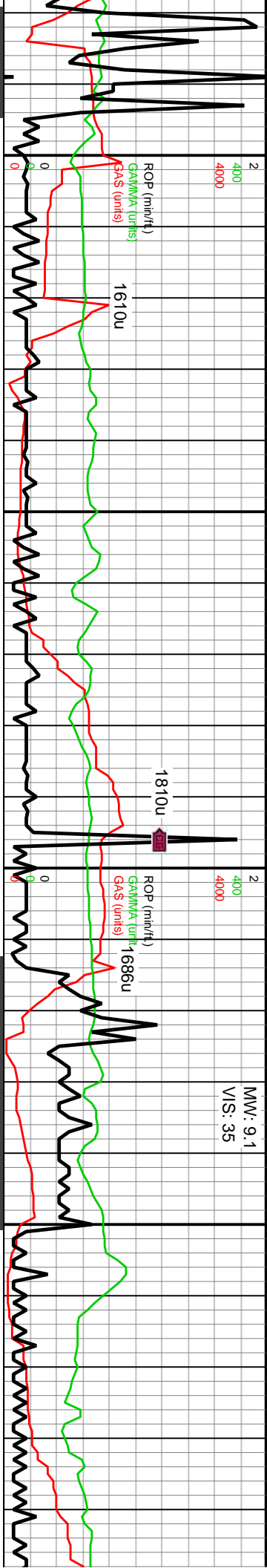
10160-10220 CHK (85%): pred lt gy-gy v arg LS wi com wh-lt gy chky lamn & incl, frm-brit l-mod fis sb rd-sb blkly ctgs, tr vf pyr, med-hi calc wi cin HCL rxn, MRLST (15%): gy-dk gy, mot wi brn mlst incl, frm, brit mod fis sb blkly-sb ply ctgs, l-mod calc wi brn resd

10220-10280 CHK (85%): lt gy-gy, frm-brit l-mod fis sb rd-sb blkly ctgs, v arg LS wi com wh-lt gy chky lamn & f elong incl, tr vf pyr incl, med-hi calc wi cin HCL rxn, MRLST (15%): gy-dk gy, mot sh wi brn mlst incl, frm, brit mod fis sb blkly-sb ply ctgs, l-mod calc wi brn resd

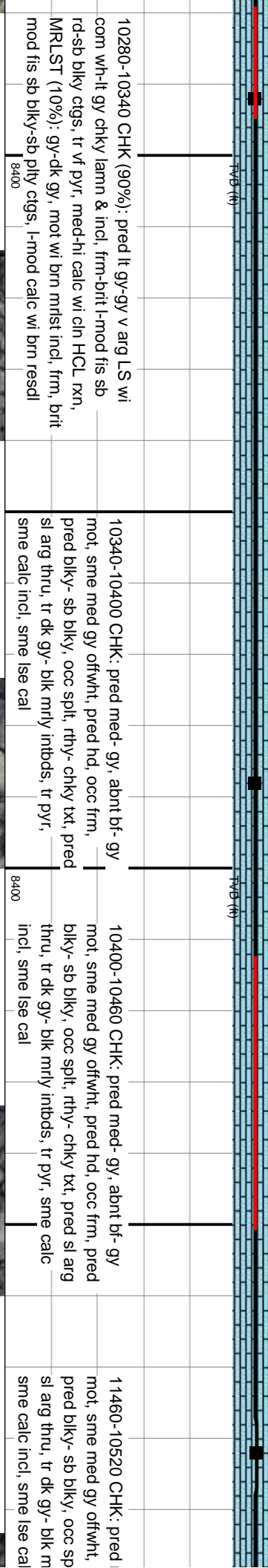
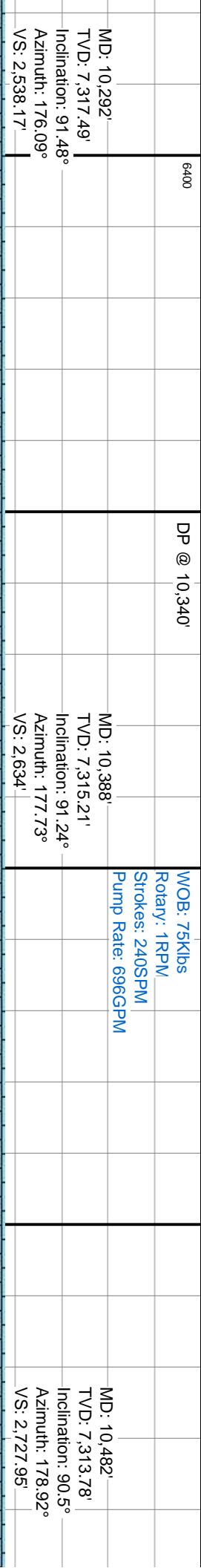
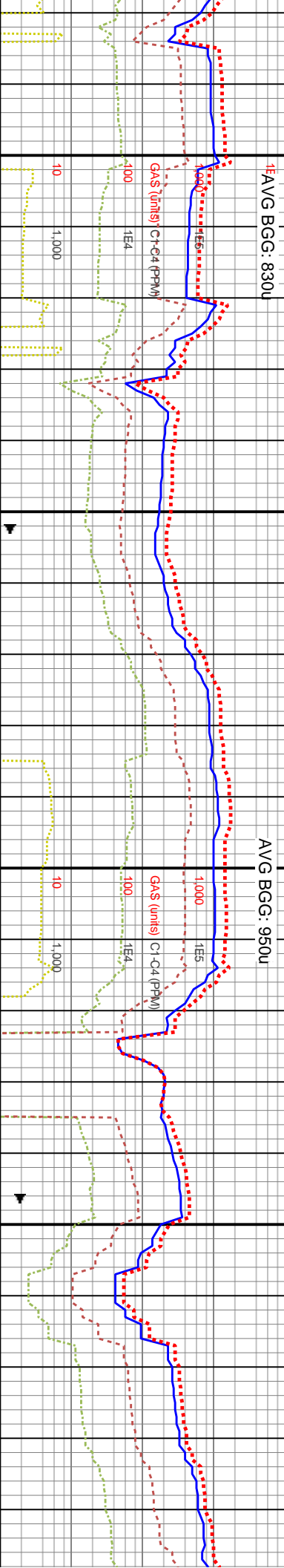
8400

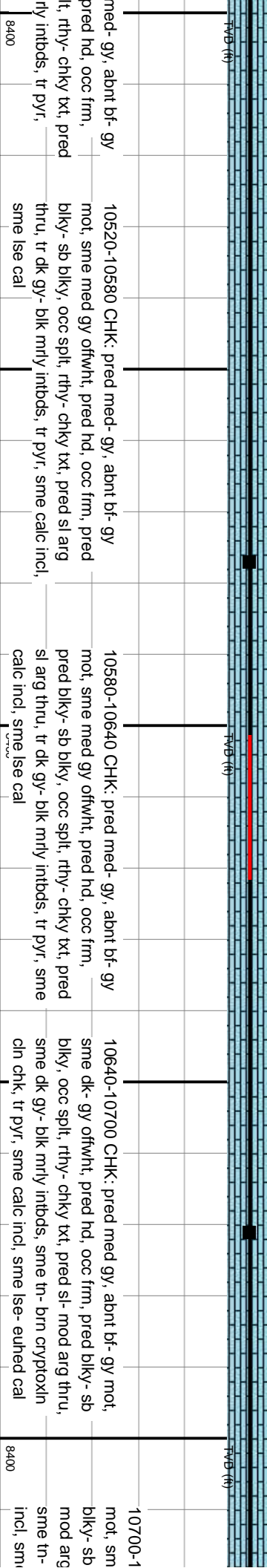
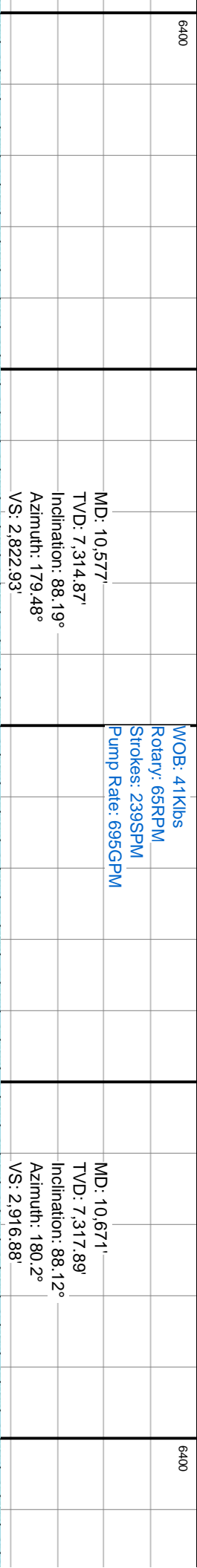
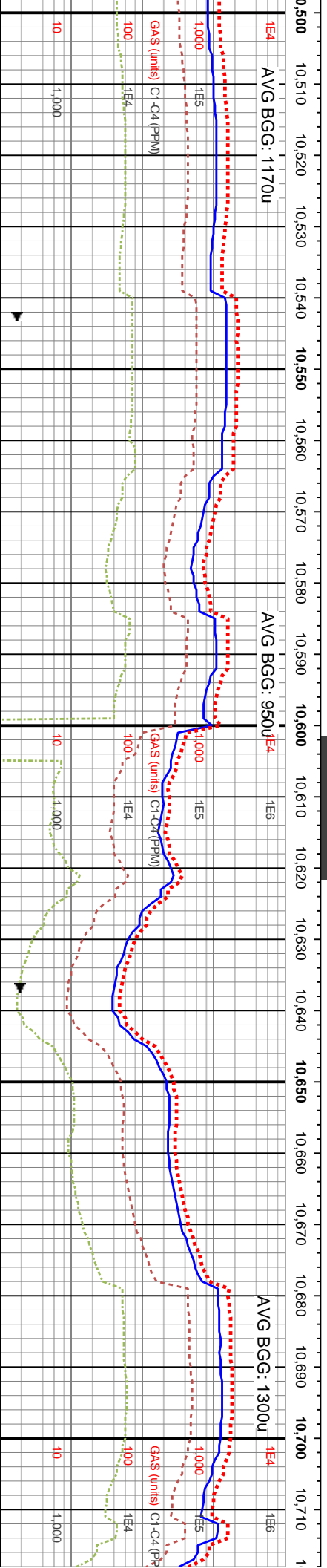
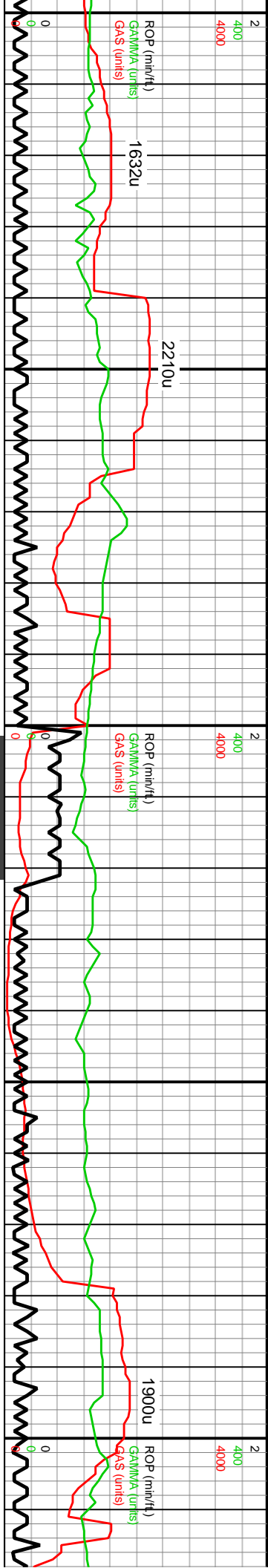
8400

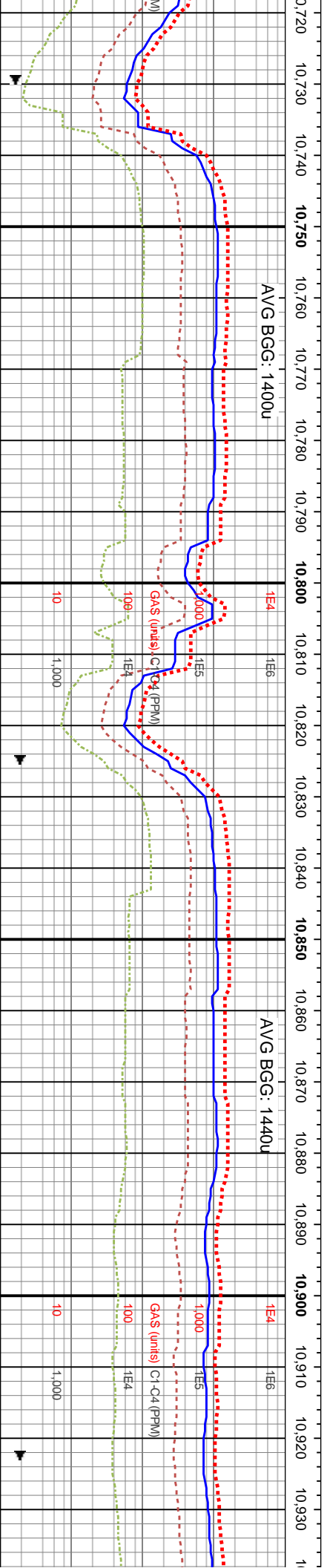
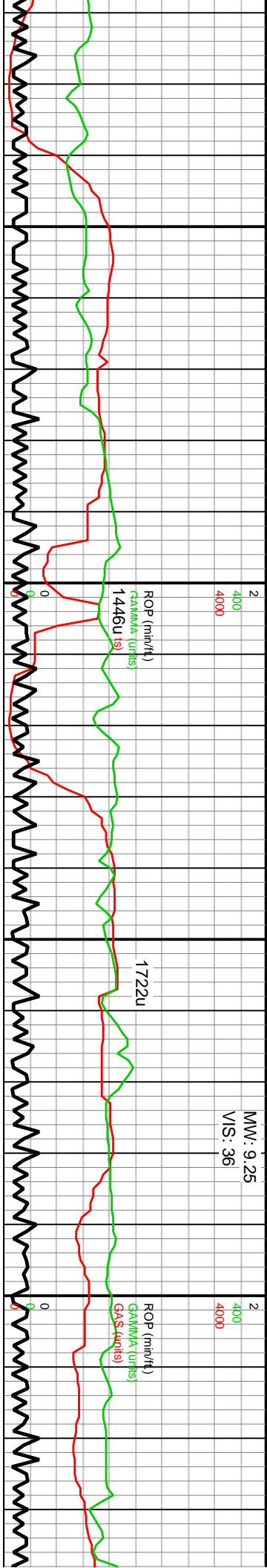




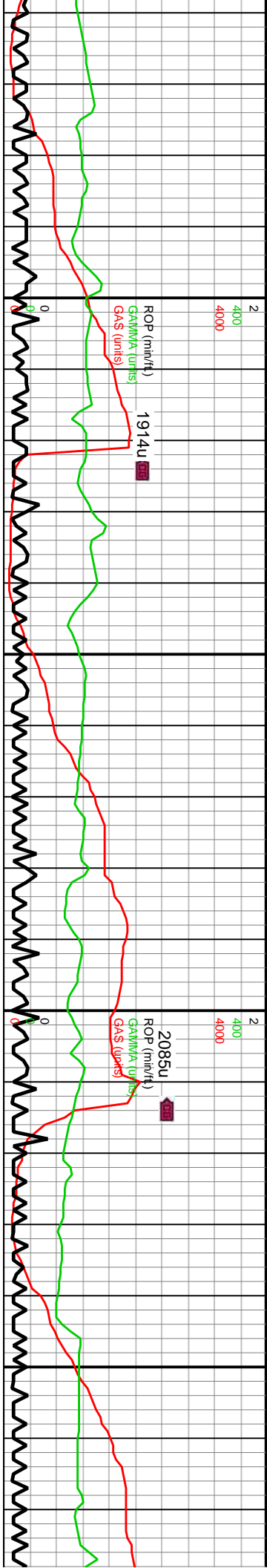
10,280 10,290 10,300 10,310 10,320 10,330 10,340 10,350 10,360 10,370 10,380 10,390 10,400 10,410 10,420 10,430 10,440 10,450 10,460 10,470 10,480 10,490 10,500



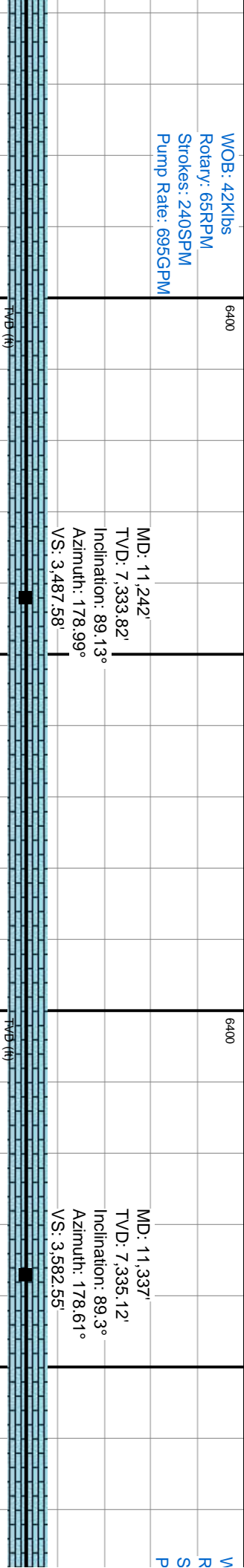




WOB: 42Klbs Rotary: 65RPM Strokes: 239SPM Pump Rate: 695GPM		6400			6400
MD: 10,767'					
TVD: 7,321.1'					
Inclination: 88.05°					
Azimuth: 179.3°					
VS: 3,012.82'					

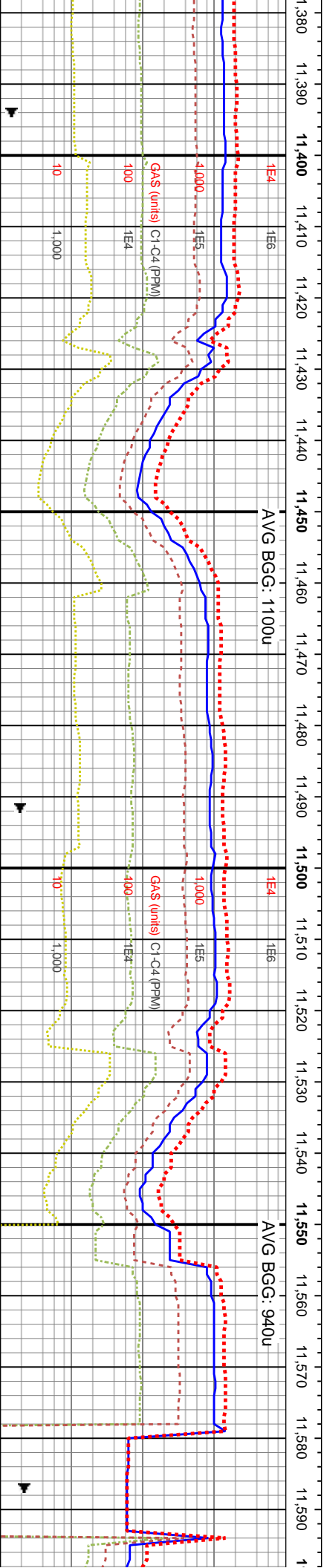
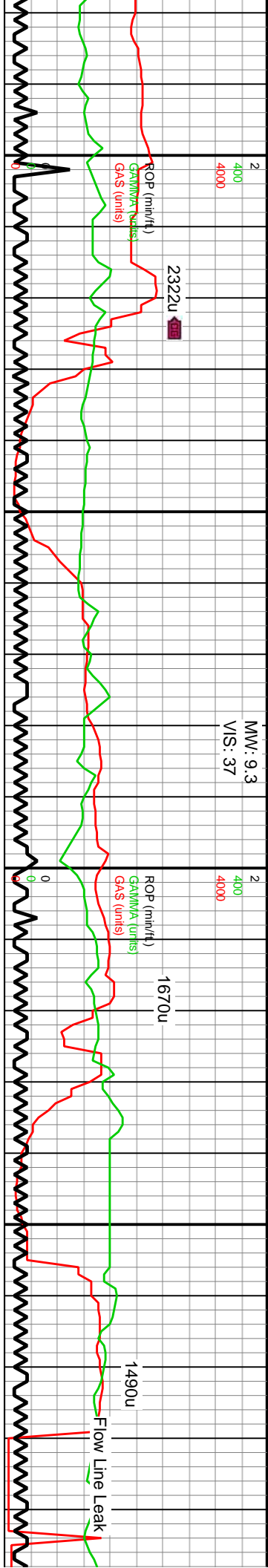


11,160 11,170 11,180 11,190 11,200 11,210 11,220 11,230 11,240 11,250 11,260 11,270 11,280 11,290 11,300 11,310 11,320 11,330 11,340 11,350 11,360 11,370



11180-11240 CHK: pred med gy, about bf- tn- gy mot, sme dk- gy offwht, pred hd, occ frm, pred blk- sb blk, tr split, rthy- chky txt, pred sl arg thru, occ dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, tr frac- tab cal	11240-11300 CHK: pred med gy, about bf- tn- gy mot, sme dk- gy offwht, pred hd, occ frm, pred blk- sb blk, tr split, rthy- chky txt, pred sl arg thru, occ dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, tr frac- tab cal	11300-11360 CHK: pred med gy, about bf- tn- gy mot, sme dk gy- gy- offwht, occ blk, pred hd, occ frm, pred blk- sb blk, tr split, rthy- chky txt, occ sm txt, pred sl arg thru, occ dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, tr frac- tab cal	11360-11420 CHK: pred med gy, about bf- tn- gy mot, sme dk- gy offwht, pred hd, occ frm, pred blk- sb blk, tr split, rthy- chky txt, pred sl arg thru, occ dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, tr frac- tab cal
--	--	---	--





OJB: 44Klbs
Rotary: 65RPM
Strokes: 240SPM
Pump Rate: 695GPM

WOB: 45Klbs
Rotary: 65RPM
Strokes: 239SPM
Pump Rate: 695GPM

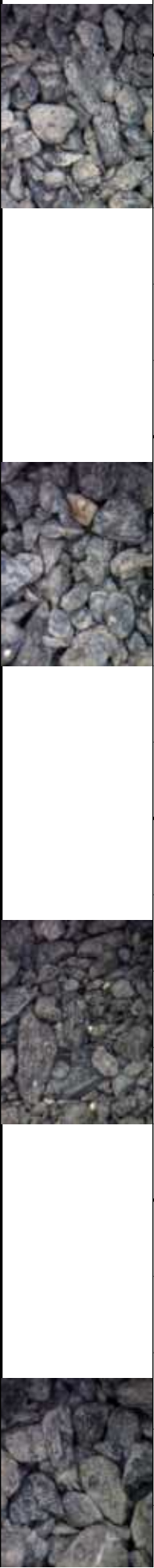
MD: 11,432'
TVD: 7,336.39'
Inclination: 89.16°
Azimuth: 178.73°
VS: 3,677.51'

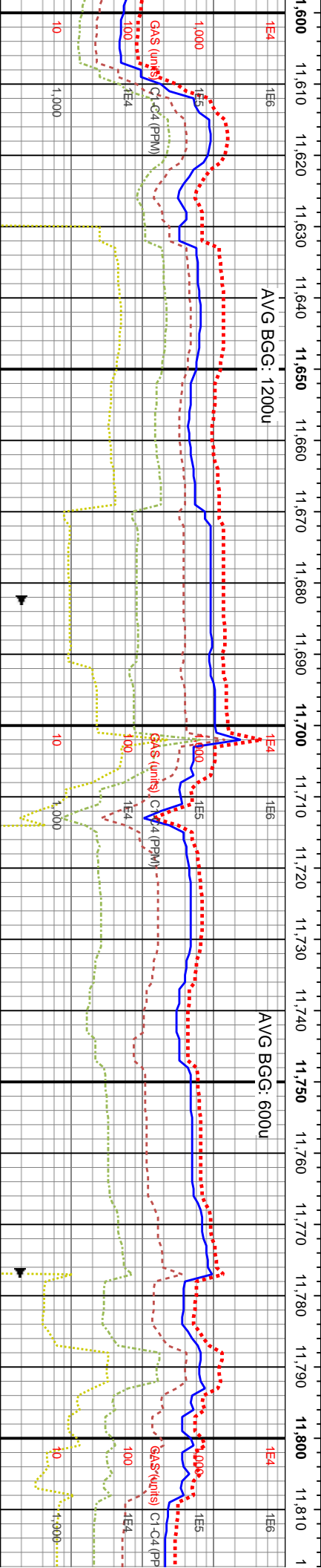
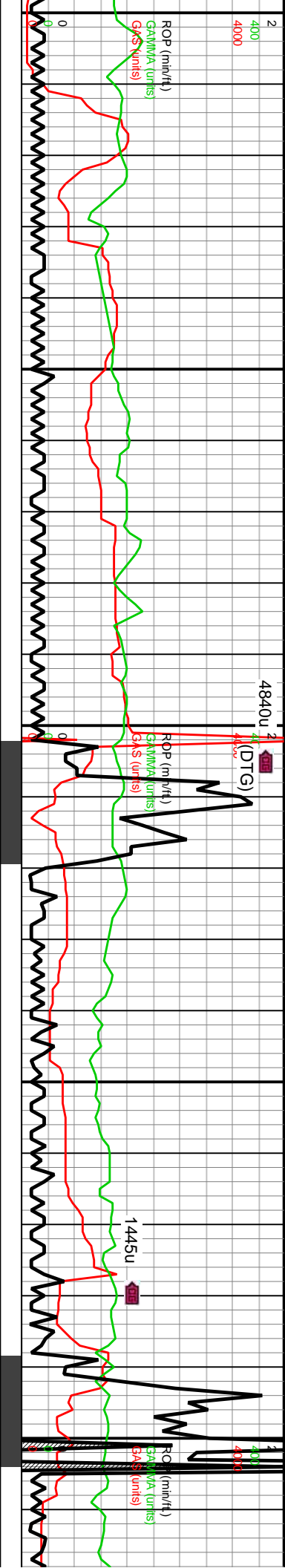
MD: 11,527'
TVD: 7,337.26'
Inclination: 89.8°
Azimuth: 178.74°
VS: 3,772.48'

11420-11480 CHK: pred med- dk gy, abnt bf- tn- gy mot, sme dk gy- offwht, occ blk, pred hd- sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred mod arg thru, sme dk gy- blk mrlly intbds, tr pyr, sme calc incl, occ f lam

11480-11540 CHK: pred med- dk gy, abnt bf- tn- gy mot, sme dk gy- offwht, occ blk, pred hd- sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred mod arg thru, sme dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, occ f lam

11540-11600 CHK: pred med- dk gy, abnt bf- tn- gy mot, sme dk gy- offwht, occ blk, pred hd- sl frm, pred blk- sb blk, tr spl, rthy- chky txt, pred mod arg thru, sme dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, occ f lam



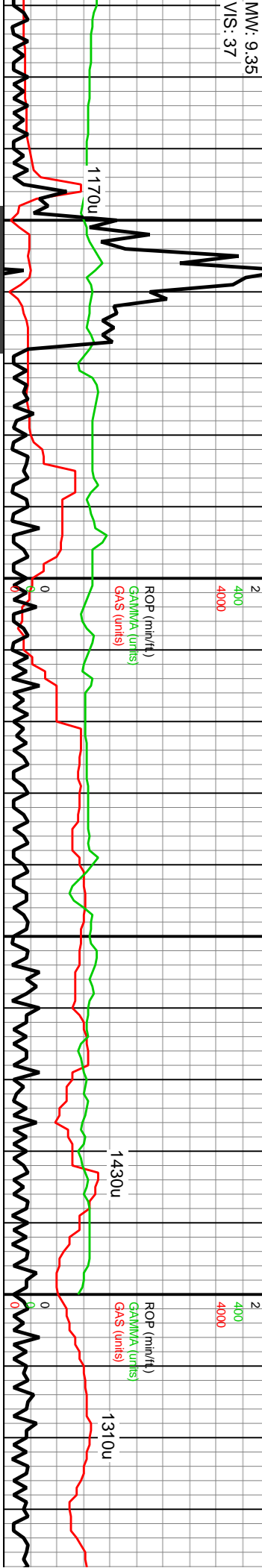


6400	MD: 11,622' TVD: 7,336.92' Inclination: 90.6° Azimuth: 177.61° VS: 3,867.43'	6400	MD: 11,717' TVD: 7,334.67' Inclination: 92.12° Azimuth: 179.25° VS: 3,962.36'	6400	MD: 11,811' TVD: 7,331.45' Inclination: 91.8° Azimuth: 178.96° VS: 4,056.3'
------	--	------	---	------	---

11600-11660 CHK: pred med- dk gy, abnt bf- tn- gy mot, sme dk gy- offwht, occ blk, pred hd- sl frm, pred blk- sb blk, tr split, rthy- chky txt, pred mod arg thru, sme dk gy- blk mrlly intbds, tr pyr, sme calc incl, sme lse cal, occ f lam	11660-11720 CHK: pred med gy, abnt bf- tn- gy mot, sme dk gy- gy- offwht, tr blk, pred hd- sl frm, pred blk- sb blk, rthy- chky txt, pred sl arg thru, rr dk gy- blk mrlly intbds, tr pyr, mod- abnt calc incl, sme lse cal, occ f lam	11720-11780 CHK: pred med gy, abnt bf- tn- gy mot, sme dk gy- gy- offwht, tr blk, pred hd- sl frm, pred blk- sb blk, rthy- chky txt, pred sl arg thru, rr dk gy- blk mrlly intbds, tr pyr, mod- abnt calc incl, sme lse cal, occ f lam	11780-11840 CHK: pred med mot, sme dk gy- gy- offwht, tr blk, pred blk- sb blk, rthy- chky rr dk gy- blk mrlly intbds, tr pyr incl, sme lse cal, occ f lam
---	--	--	--



MW: 9.35
VIS: 37

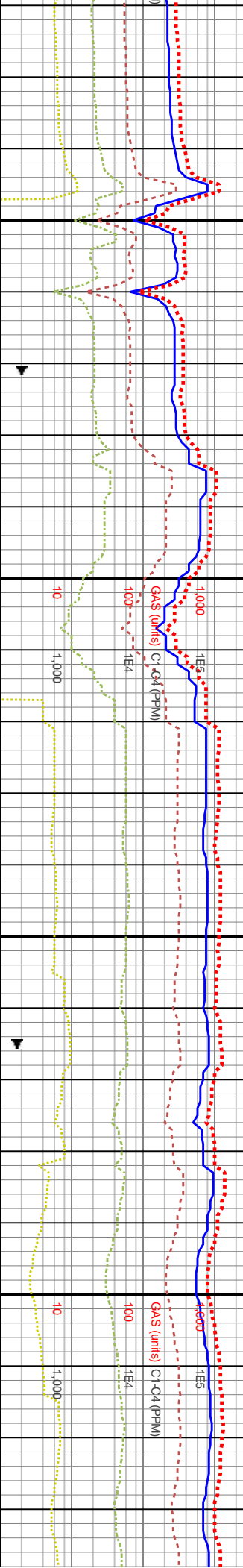


AVG BGC: 420u

1E4

AVG BGC: 920u

AVG BGC: 900u



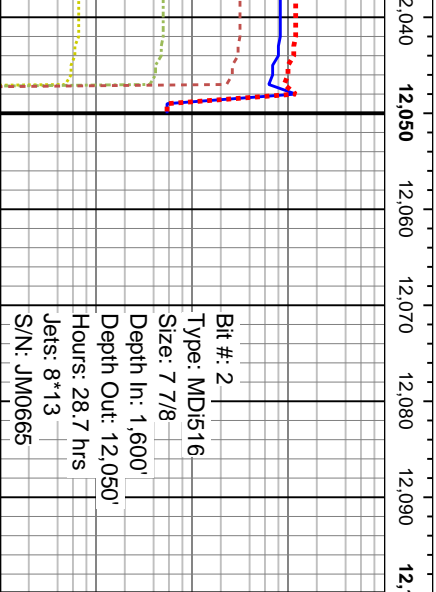
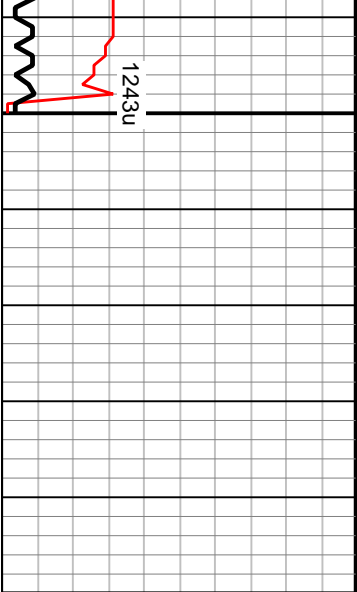
MD: 11,907'
TVD: 7,329.39'
Inclination: 90.64°
Azimuth: 181.59°
VS: 4,152.26'

MD: 11,990'
TVD: 7,328.52'
Inclination: 90.57°
Azimuth: 181.47°
VS: 4,235.23'

WOB: 44Klbs
Rotary: 65RPM
Strokes: 240SPM
Pump Rate: 697GPM

gy, abnt bf- tn- gy blk, pred hd- sl frm, txt, pred sl arg thru, , mod- abnt calc	11840-11900 CHK: pred med gy, abnt bf- tn- gy mot, sme dk gy- offwht, tr blk, pred hd- sl frm, pred blk- sb blk, rthy- chky txt, pred sl arg thru, tr dk gy- blk mly intbds, tr pyr, mod- abnt calc incl, sme lse cal, occ f lam	11900-11960 CHK: pred med- dk gy, abnt bf- tn- gy mot, sme gy- offwht, tr sl blk, pred hd- sl frm, pred blk- sb blk, rthy- chky txt, pred sl- mod arg thru, occ dk gy- blk mly intbds, tr pyr, mod calc incl, sme lse cal	11960-12050 CHK: pred med- dk gy, abnt bf- mot, sme gy- offwht, tr sl blk, pred hd- sl frm, f sb blk, rthy- chky txt, pred sl- mod arg thru, o blk mly intbds, tr pyr, mod calc incl, sme lse c





Bit #: 2
Type: MDi516
Size: 7 7/8
Depth In: 1,600'
Depth Out: 12,050'
Hours: 28.7 hrs
Jets: 8*13
S/N: JMO665

Projected
MD: 12,050'
TVD: 7,327.92'
Inclination: 90.57°
Azimuth: 181.47°
VS: 4,295.21'

TD Reached on 1-31-16

in- gy
ered biky-
cc dk gy-
al