



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name DT Martinez 2-5-6

Location Sec.5-T05N-R65W

State Colorado

Country USA

API Number 05-123-41037-00

Region DJ Basin

Spud Date 3/22/2015

Surface Coordinates SHL: 430°FNL, 1684°FEL, Sec.05

Lat: 40.435317

Long: 104.68373

County Weld

Rig Number Savanna 802

AFE # N/A

Field Wattenberg

Drilling Completed 3/29/2015

Bottom Hole Coordinates BHL: 2666°FNL, 460°FWL, Sec. 06

Ground Elevation 4,640'

K.B. Elevation 4,655'

Logged Interval 5,000' To 14,634'

Total Depth 14,634'

Formation Niobrara B

Type of Drilling Fluid Water Based

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-461

Comments Start: 3-24-15
Standby: 3-23-15
TD: 3-29-15

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

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHTLT

COAL - THIN BEDS

DOLOMITIC

+ FELDSPAR

● FERRUGINOUS PELLET

> FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

H HEAVY MINERAL

K KAOLIN

M MARLSTONE

* MINERAL CRYSTALS

N NODULES

● PHOSPHATE PELLETS

P PYRITE

S SALT CAST

S SANDY

> SILICEOUS

+ SILTY

> TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

M MARLSTONE (CALC) STRG

M 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

CONNECTION GAS

SLIDE

SURV

X INTERCRYSTALLINE

CORE - RECOVERED

TRIP C

O INTEROOLITIC

DST INTERVAL

WIRELIN

M MOLDIC

FAULT

WIRELIN

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

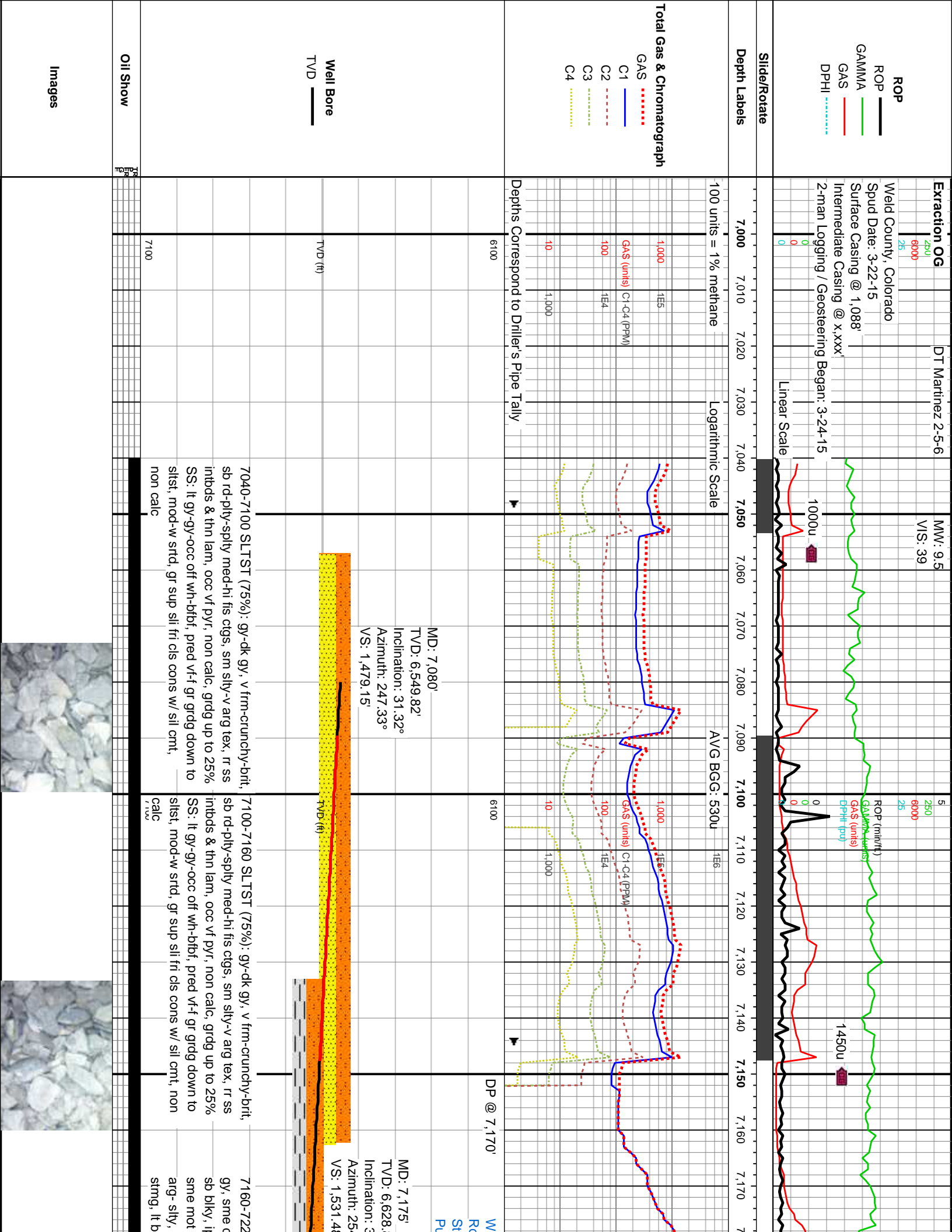
C CHALKY W WELL

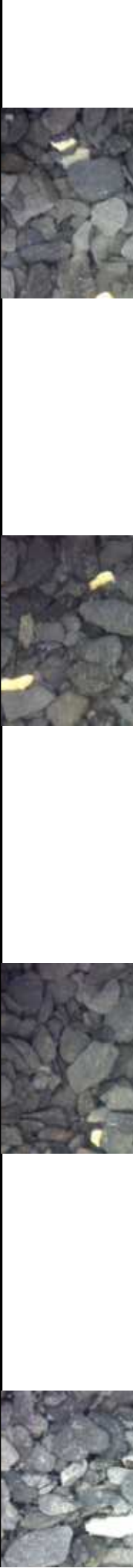
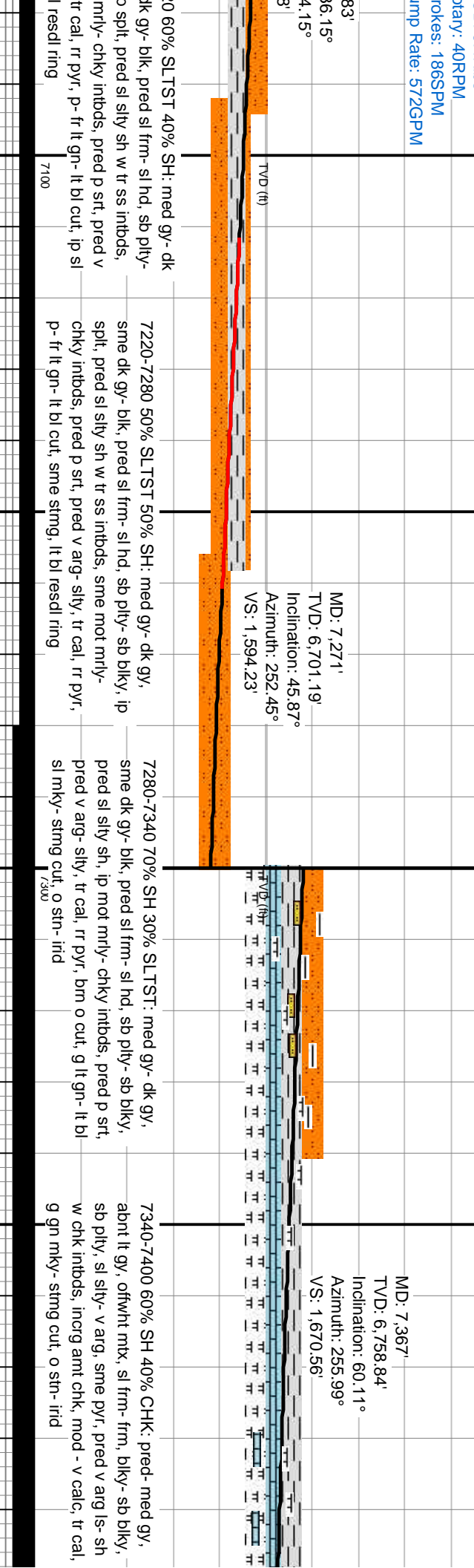
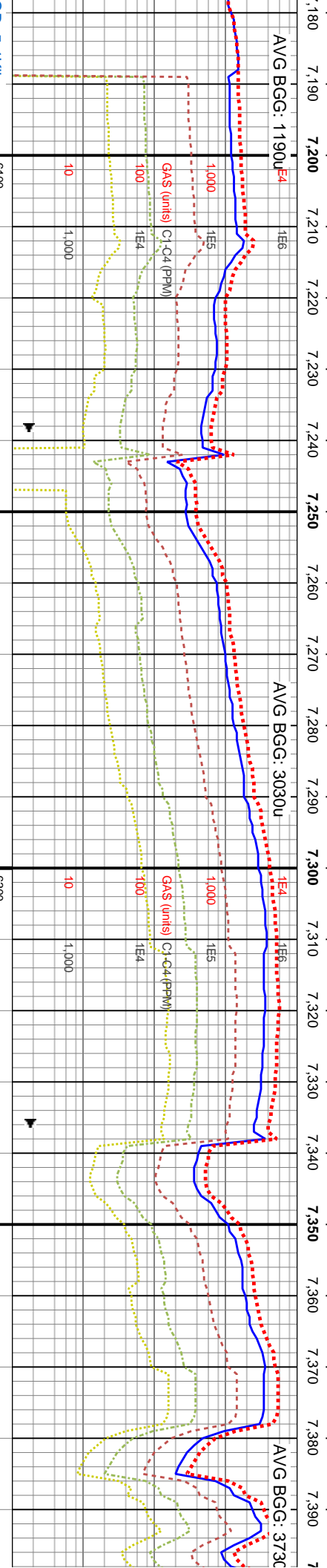
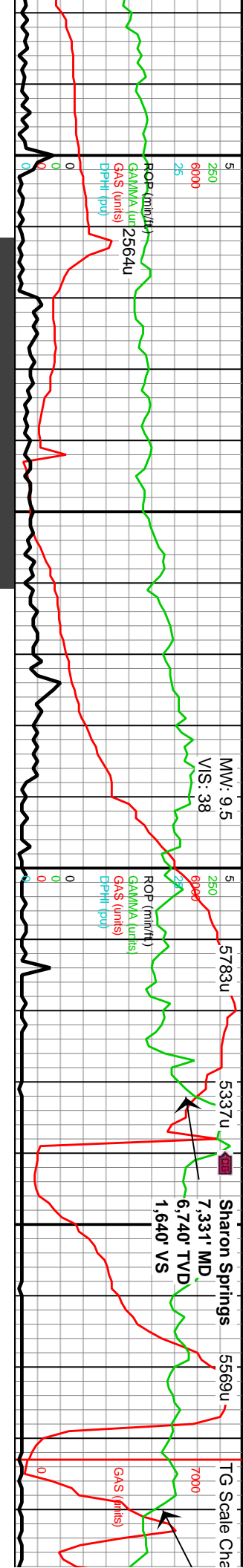
CRY CRYPTOXLN

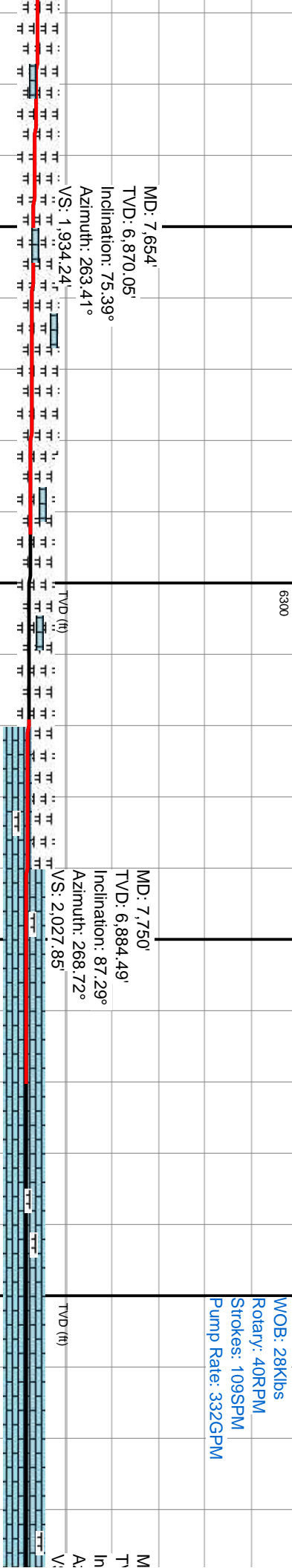
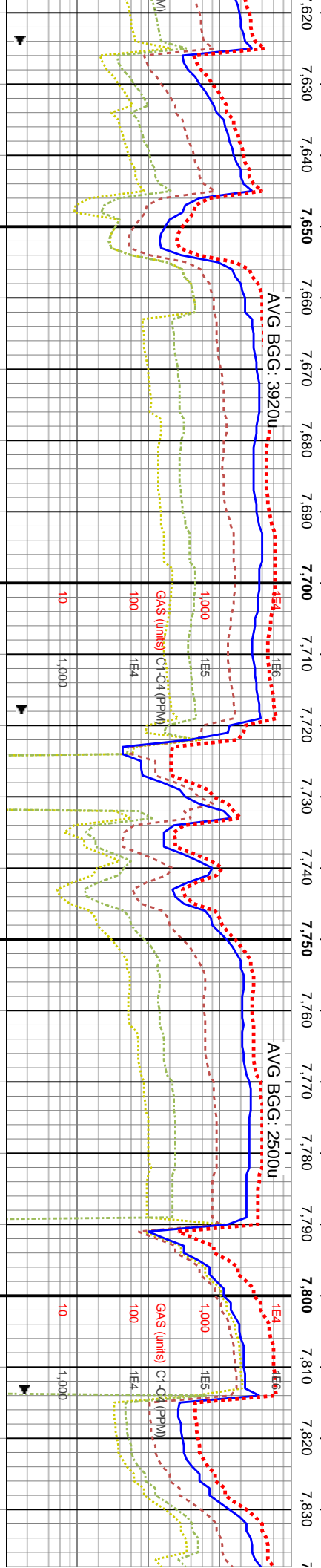
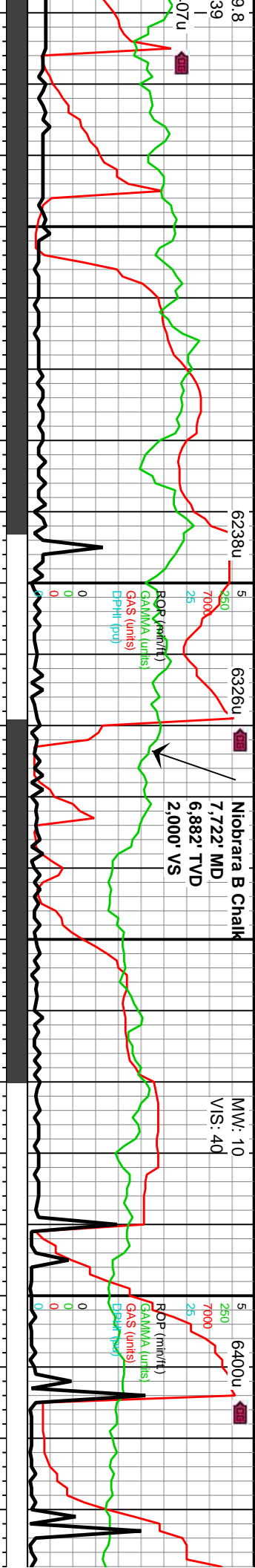
SAS E EARTHY

IE TESTED - LEFT FX FINELYXLN

IE TESTED - RT GS GRAINSTONE







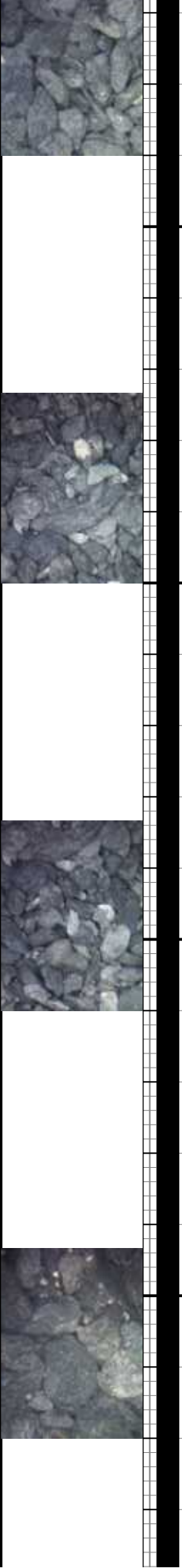
MD: 7,654'
TVD: 6,870.05'
Inclination: 75.39°
Azimuth: 263.41°
VS: 1,934.24'

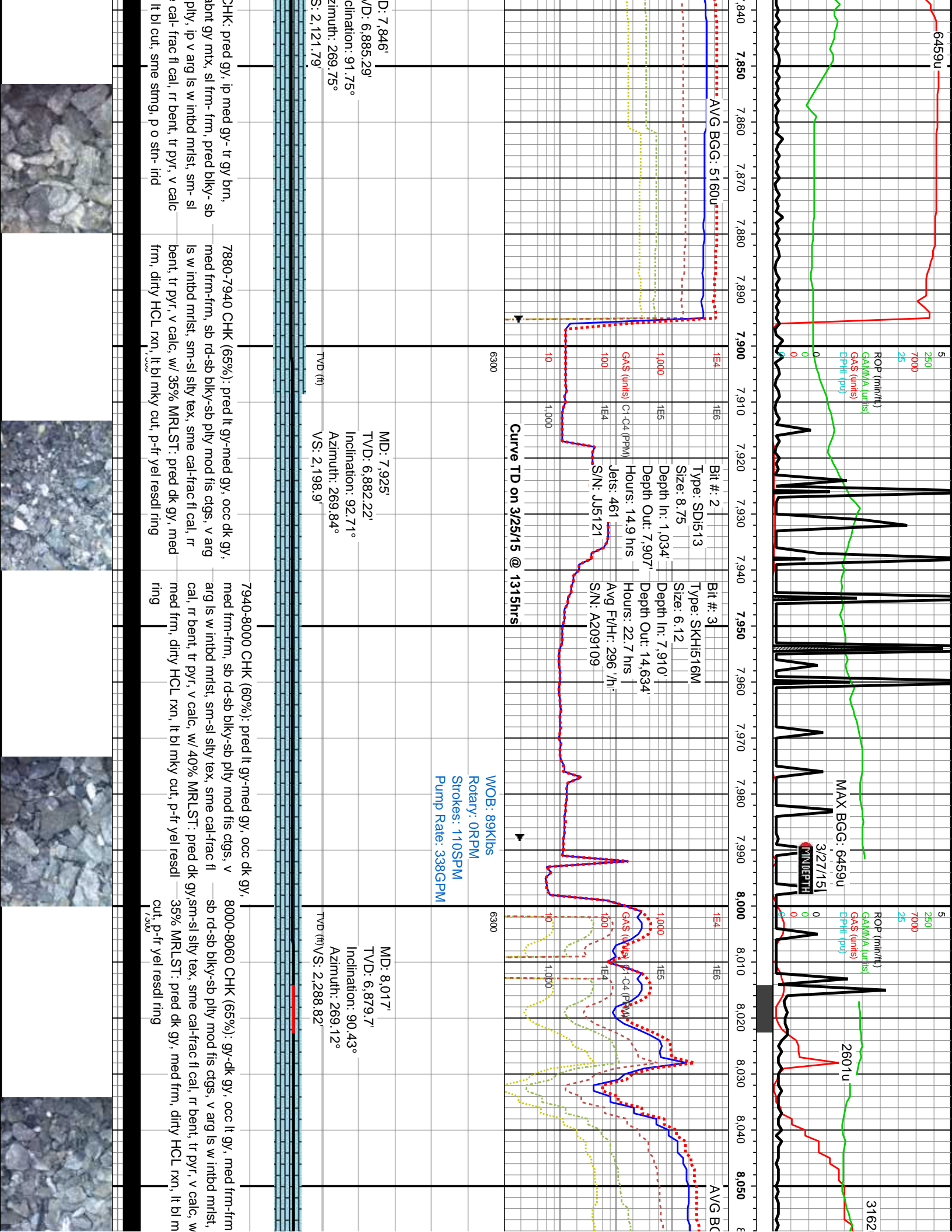
7640-7700 60% CHK 40% MRLST: pred med-dk gy, about lt gy- offwhl mnx, mot, sl frm- frm, occ sl hd, pred sb blk, sme sb ply, occ sl sily, v arg, tr pyr, tr bent, pred v arg ls- w about mrlly intbds, v cal, sme cal, tr frac fl cal, g lt gn- lt bl cut, ip mky- stng, o stn- ird, lt bl resd ring

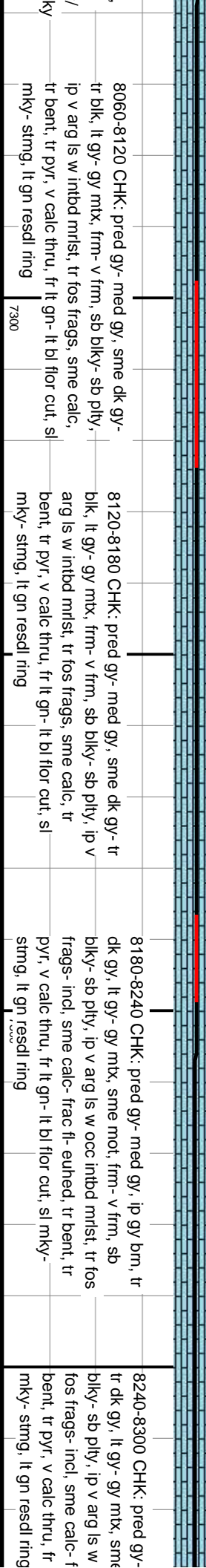
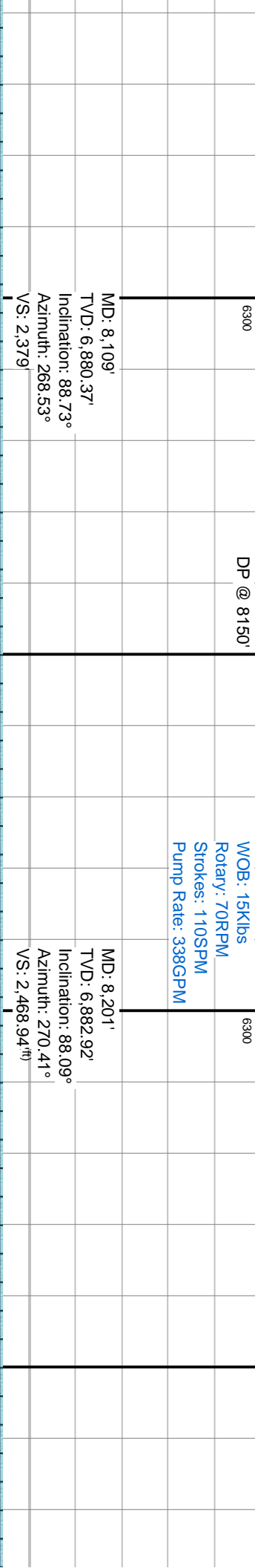
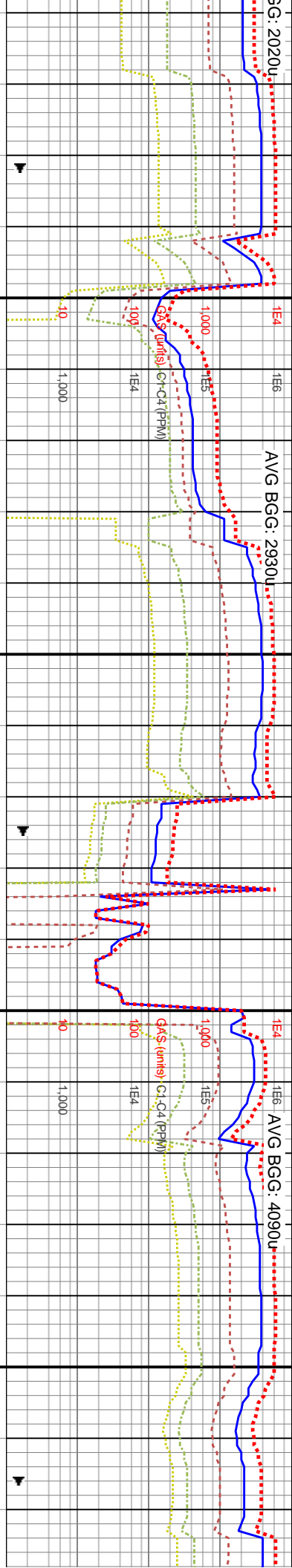
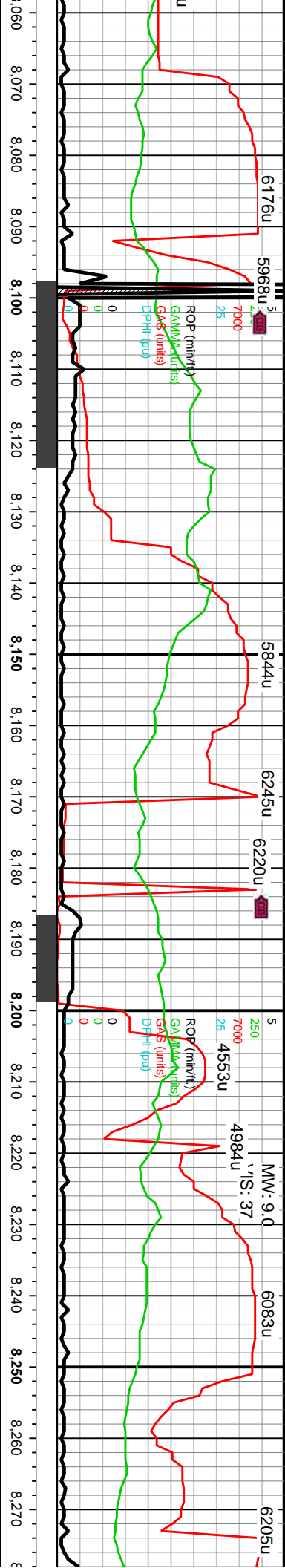
7700-7760 CHK: pred med gy- gy, ip med gy- tr gy brn, sme dk gy, about gy mnx, sl frm- frm, pred blk- sb blk, occ sb ply, ip v arg ls w intbd mrlst, sm- sl sily tex, sme cal- frac fl cal, rr bent, tr pyr, v calc thru, fr lt gn- lt bl cut, sme stng, p o stn- ird

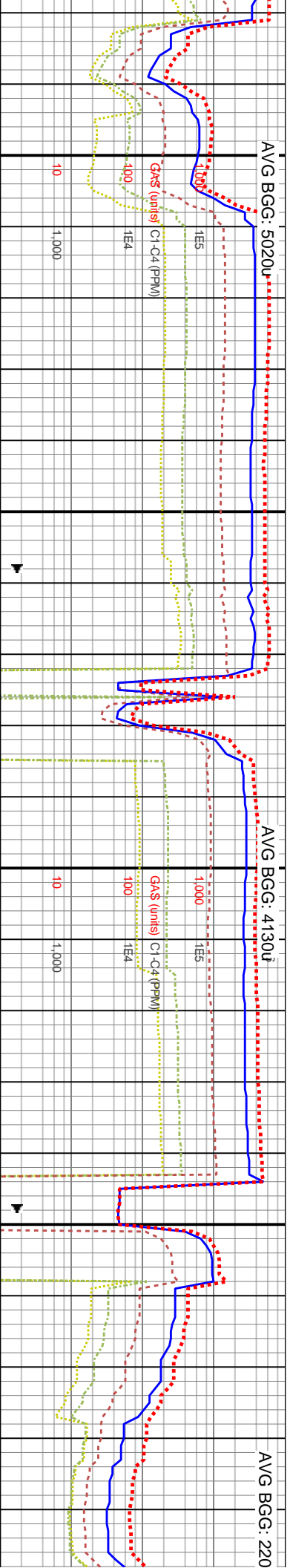
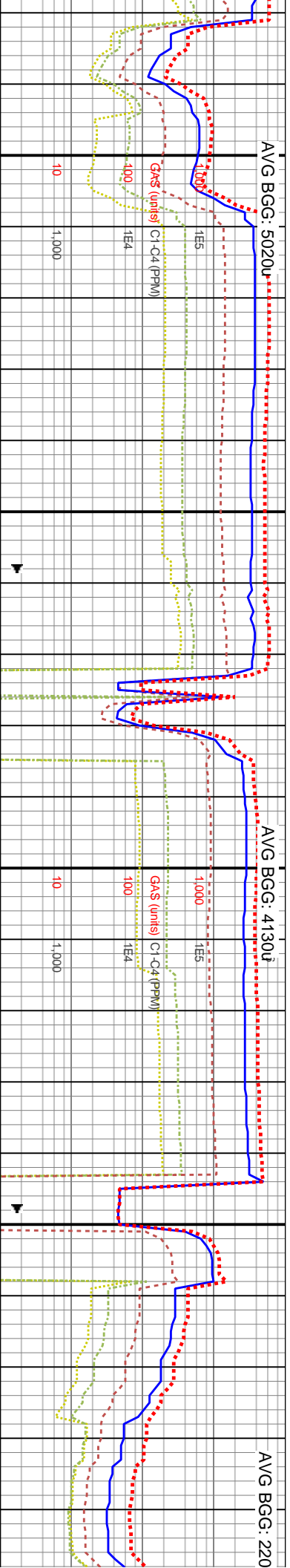
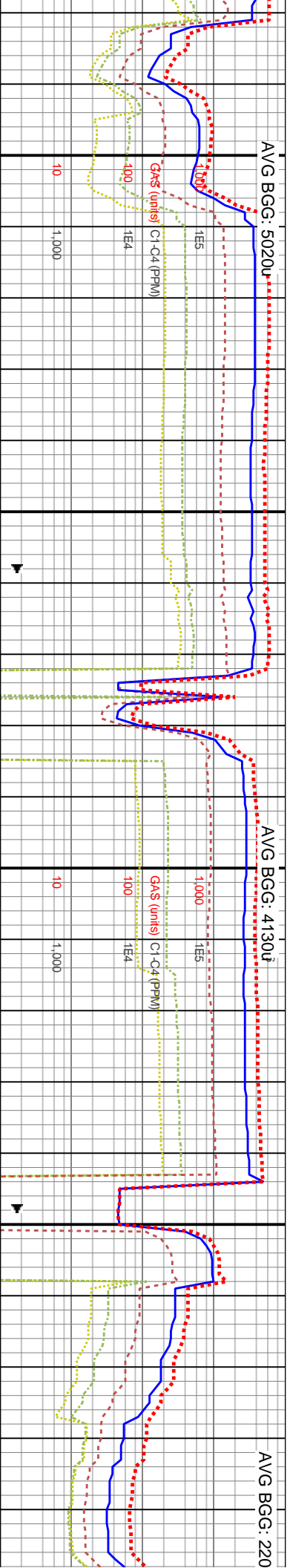
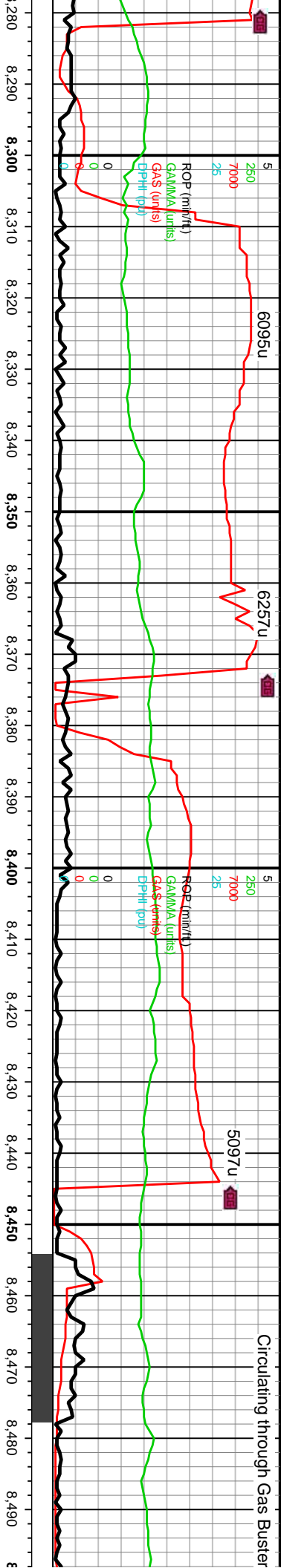
7760-7820 CHK: pred med gy- gy, ip med gy- tr gy brn, sme dk gy, about gy mnx, sl frm- frm, pred blk- sb blk, occ sb ply, ip v arg ls w intbd mrlst, sm- sl sily tex, sme cal- frac fl cal, rr bent, tr pyr, v calc thru, fr lt gn- lt bl cut, sme stng, p o stn- ird

7820-7880 (

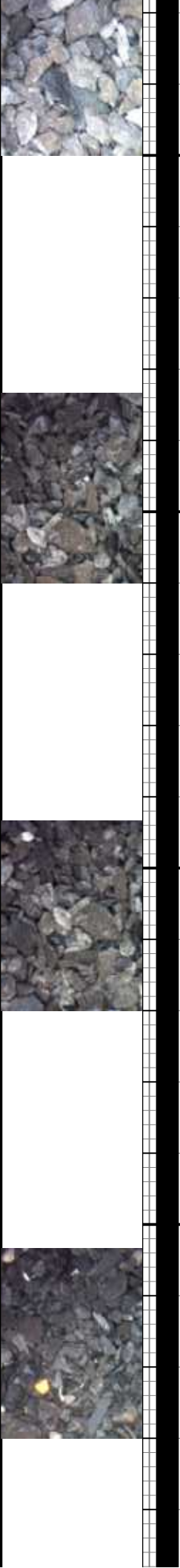


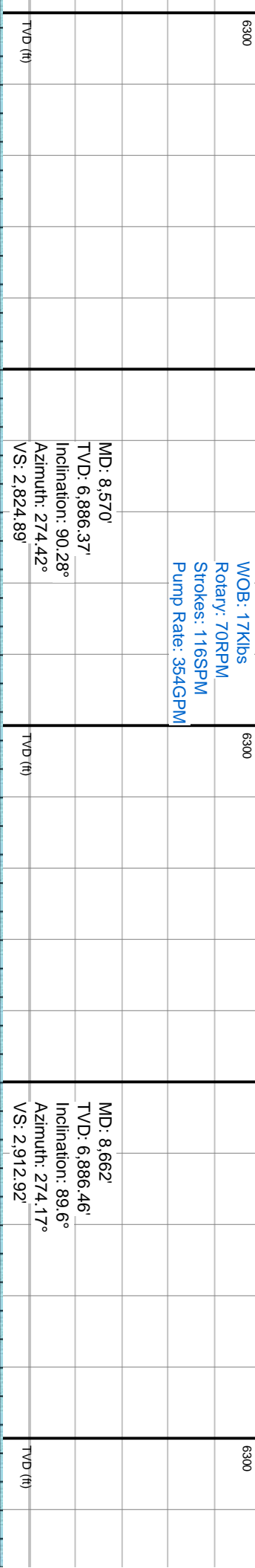
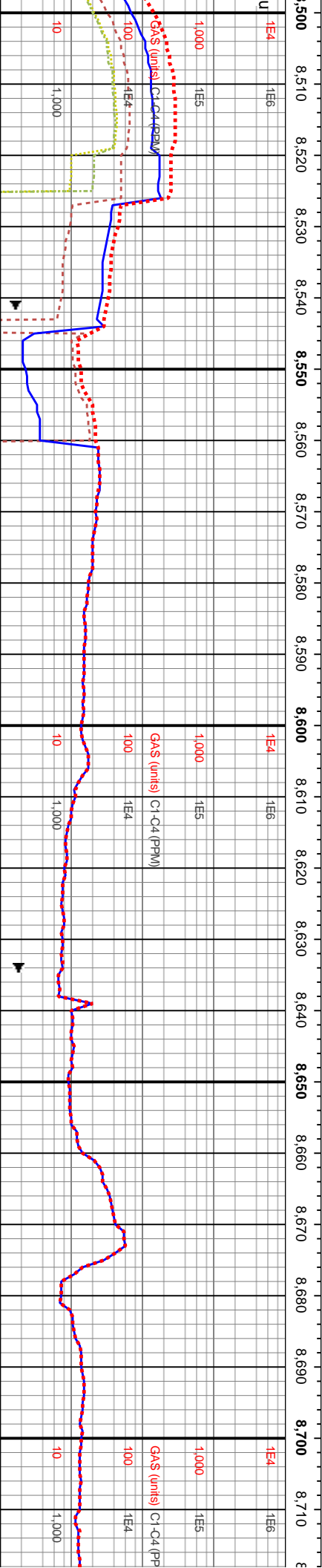
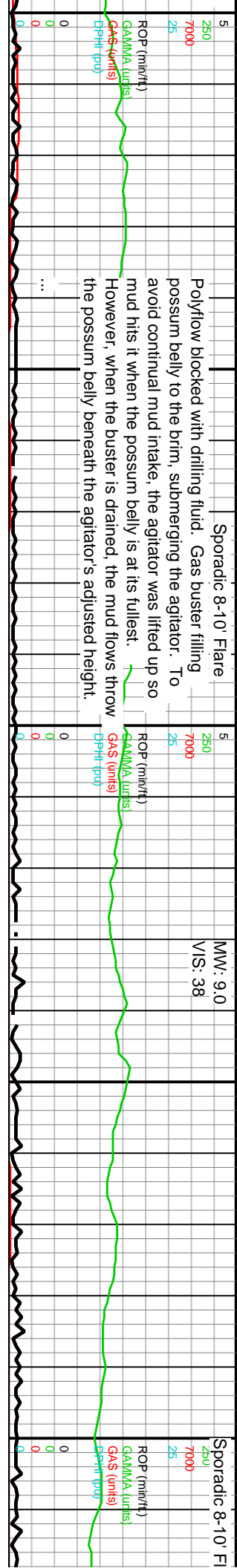




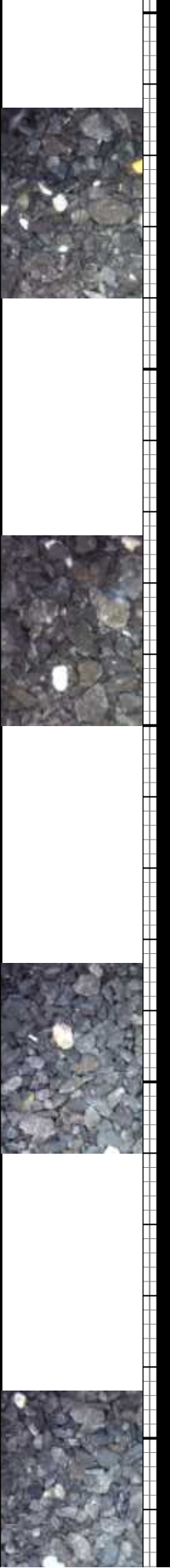


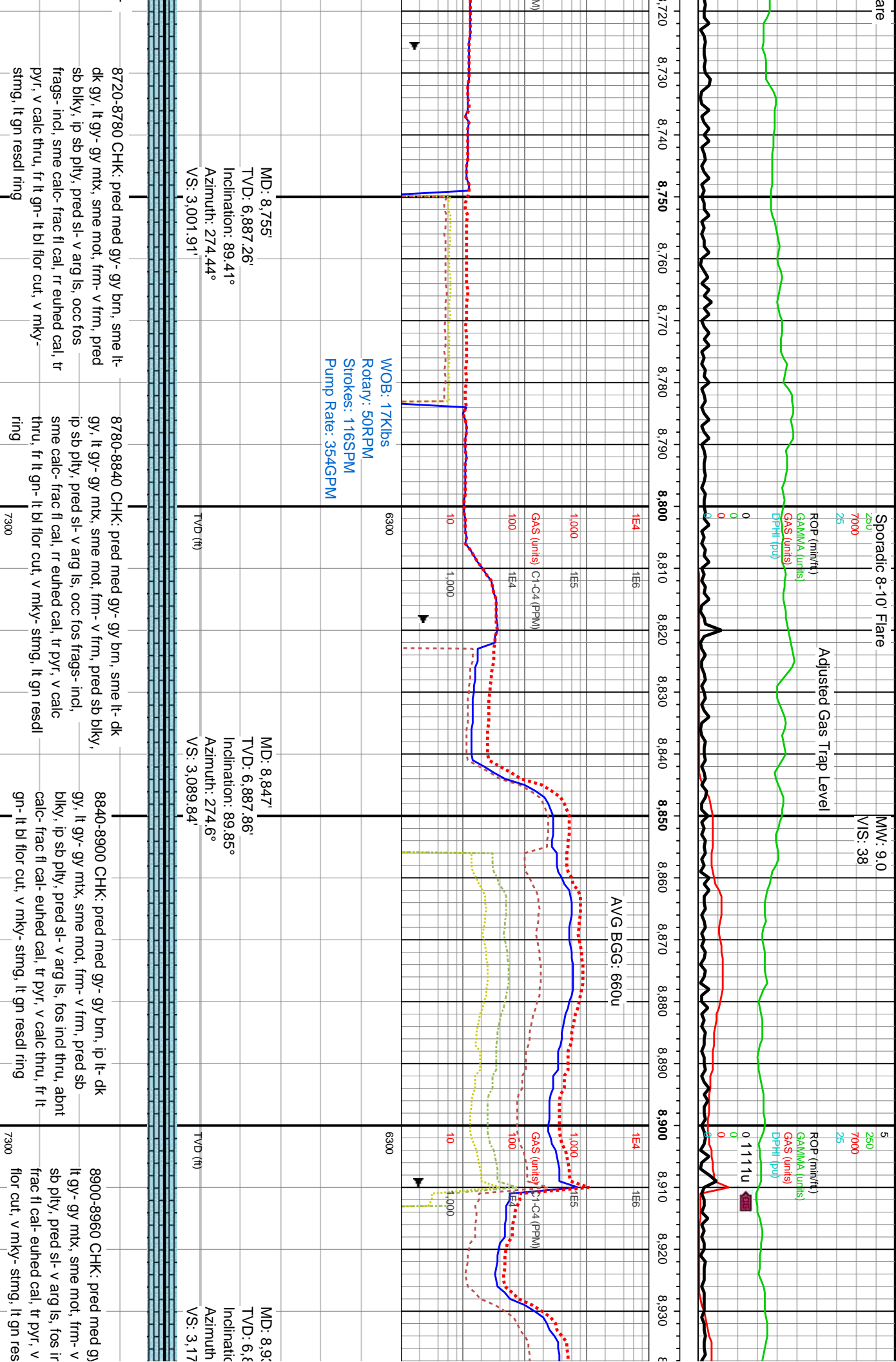
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8540-8600 CHK: pred gy- med gy- gy brn, tr dk gy, lt gy, lt gy- gy mtz, sme mot, frm- v frm, pred sb blk, ip sb ply, pred sl- v arg ls, occ fos frags- incl, sme calc- frac fl cal, tr pyr, v calc thru, fr lt gn- lt bl flor cut, sme mky- string, lt gn resdl ring	8600-8660 CHK: pred med gy- gy brn, tr dk gy, lt gy- gy mtz, sme mot, frm- v frm, pred sb blk, ip sb ply, pred sl- v arg ls, occ fos frags- incl, sme calc- frac fl cal, tr euhed cal, tr pyr, v calc thru, fr lt gn- lt bl flor cut, sme mky- string, lt gn resdl ring	8660-8720 CHK: pred med gy- gy brn, sme lt dk gy, lt gy- gy mtz, sme mot, frm- v frm, pred sb blk, ip sb ply, pred sl- v arg ls, occ fos frags- incl, sme calc- frac fl cal, tr euhed cal, tr pyr, v calc thru, fr lt gn- lt bl flor cut, v mky- string, lt gn resdl ring
7300	7300	7300



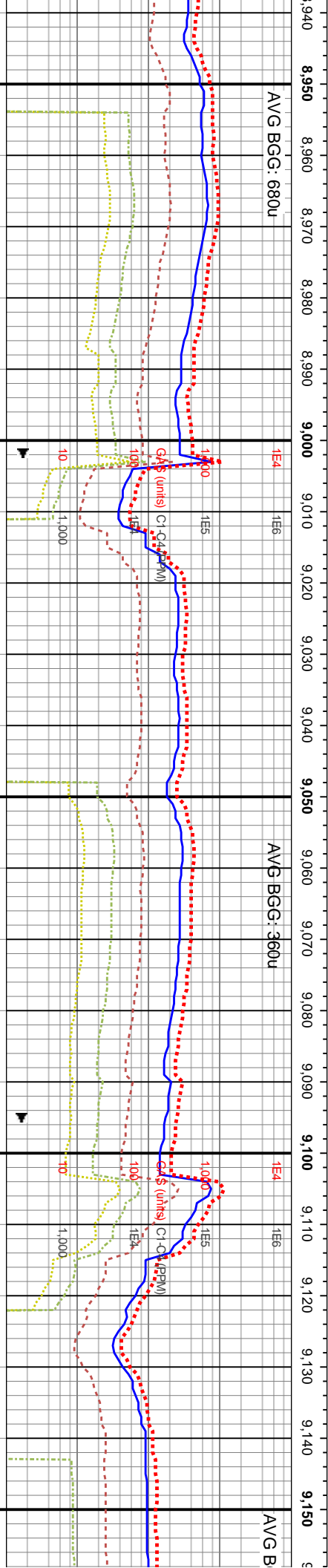


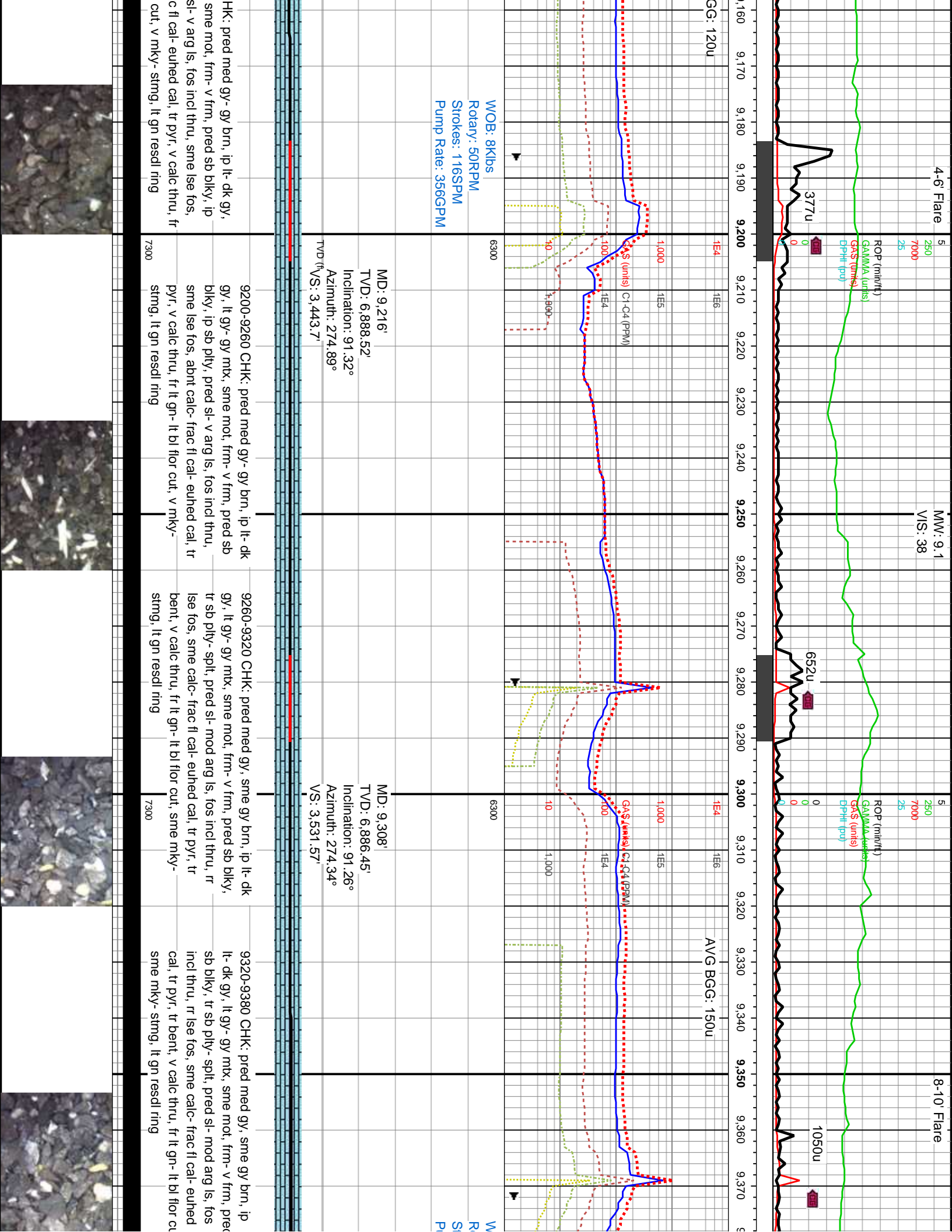
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dk gy, lt gy- gy mxb, sme mot, frm- v frm, pred
sb biky, ip sb pty, pred sl- v arg ls, occ fos
frags- incl, sme calc- frac fl cal, r eured cal, tr
pyr, v calc thru, fr lt gn- lt bl flor cut, v mky-
stmg, lt gn resd ring

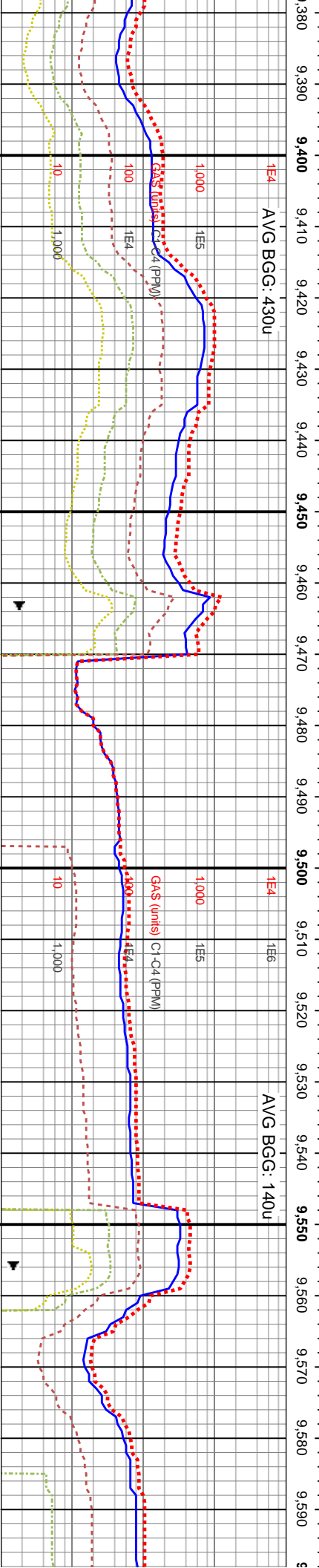
8780-8840 CHK: pred med gy- gy brn, sme lt- dk
gy, lt gy- gy mix, sme mot, frm- v frm, pred sb blk/y,
ip sb ply, pred sl- v arg ls, occ fos frags- incl,
sme calc- frac fl cal, rr ehned cal, tr pyr, v calc
thru, fr lt gn- lt bl floor cut, v mky- sting, lt gn resd

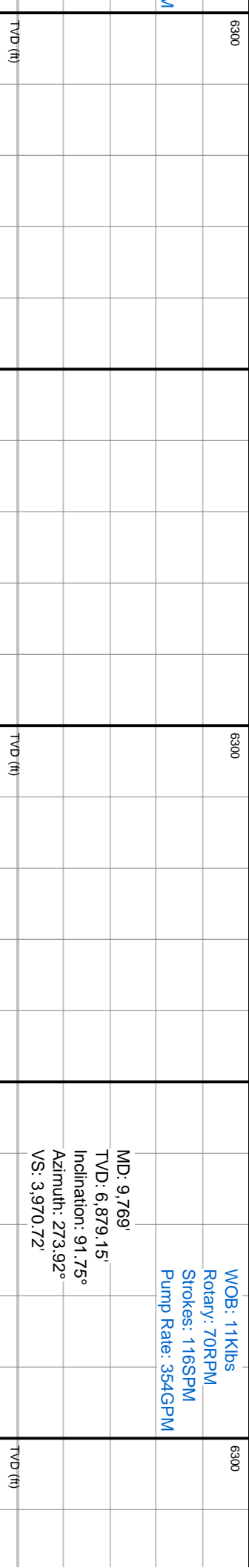
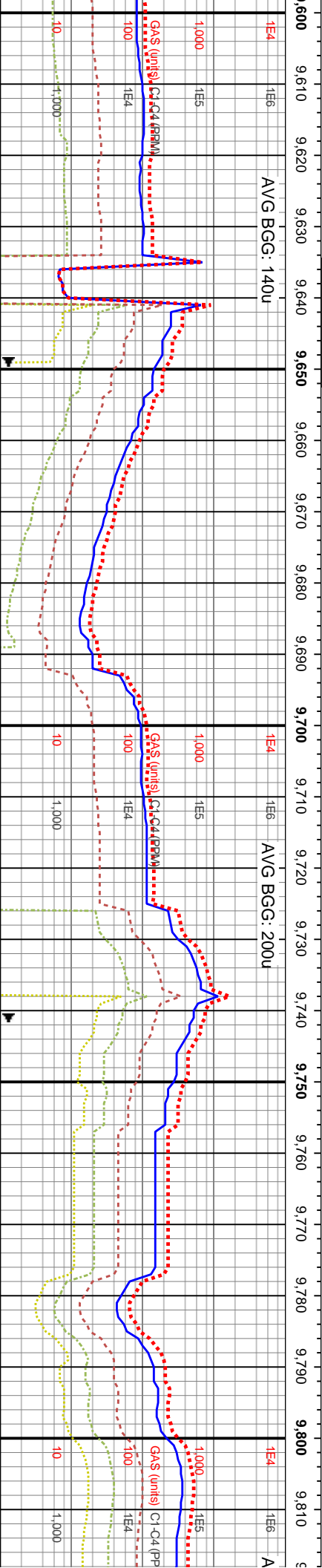
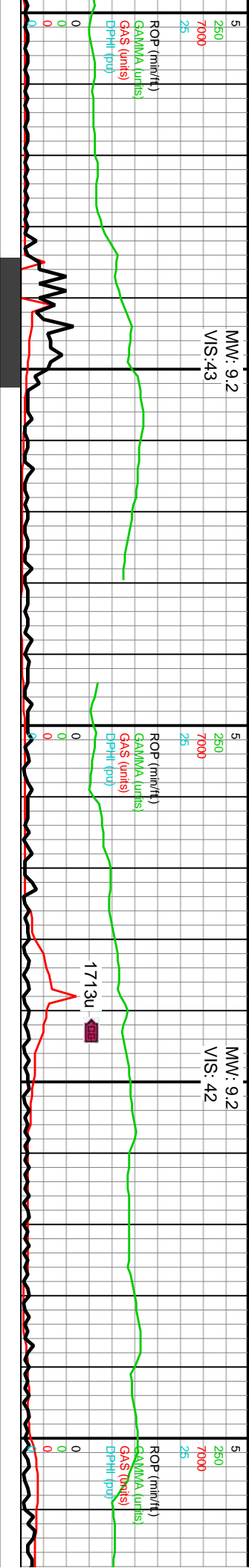
8840-8900 CHK: pred med gy- gy bm, ip lt- dk
gy, it gy- gy mtx, sme mot, frm- v frm, pred sb
biky, ip sb pity, pred sl- v aig is, fos incl thru, abnt
calc- frac fl cal- euhed cal, tr pyr, v calc thru, fr lt-
gn- lt bl flor cut, v mky- stmg, lt gn resdl ring

8900-8960 CHK: pred med gy
it gy- gy mtx, sme mot, firm- v
sb ply, pred sl- v arg ls, fos ir
frac fi cal- euhed cal, tr pyr, v
flor cut, v mky- sting, lt gn res

[illegible]



[illegible]



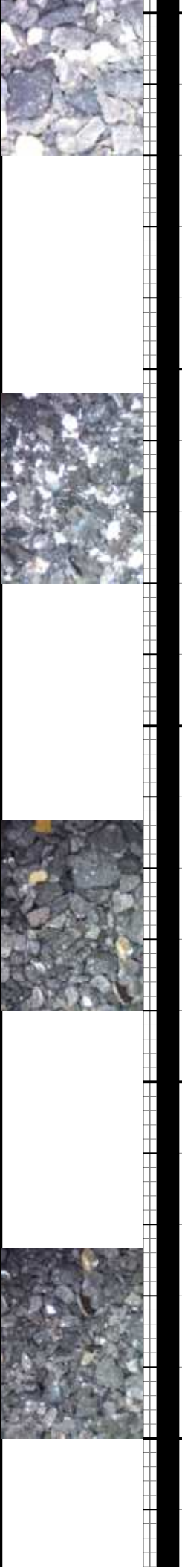
occ gy, tr lt gy, frm-frn, sb rd-sb e chk, sm-sl silty-sl (a)lc, w/ 15% MRLST: arg frm, dirty HCL flr cut, p-f yel gn resd ring

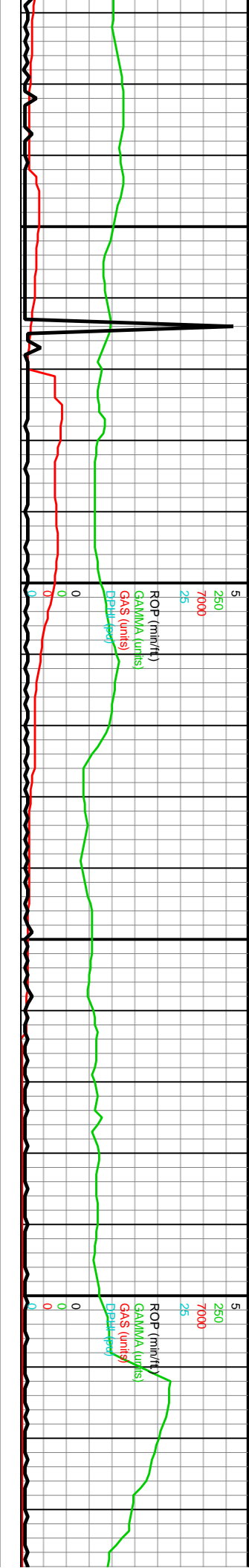
9620-9680 CHK (85%): gy-dk gy, occ lt gy, med frm-frn, sb rd-sb blk-y-sb ply mod fis cigs, v arg ls w com wh chk incl & 10% c free chk, sm-sl silty tex, occ acic fos frags, tr pyr, v calc, w/ 15% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, dirty HCL rxn, tr bl mky flr cut, p-f yel gn resd ring

9680-9740 CHK (75%): gy-dk gy, occ lt gy, med frm-frn, sb rd-sb blk-y-sb ply mod fis cigs, v arg ls w com wh chk incl & 5% c free chk, sm-sl silty tex, tr-occ acic fos frags, tr pyr, v calc, w/ 25% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, dirty HCL rxn, tr bl mky flr cut, p-f yel gn resd ring

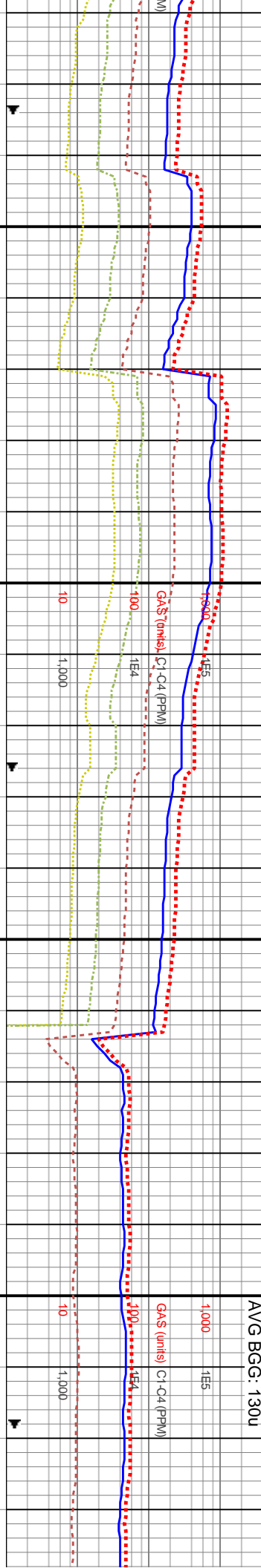
9740-9800 CHK (70%): gy-dk gy-lt gy, med frm-frn, sb rd-sb blk-y-sb ply mod fis cigs, v arg ls w com wh chk incl & 5% c free chk, sm-sl silty tex, tr-occ acic fos frags, tr pyr, v calc, w/ 30% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, dirty HCL rxn, tr bl mky flr cut, p-f yel gn resd ring

9800-9860 CHK frm-frn, sb rd-sb com wh chk incl acic fos frags, tr gy arg LS w/ tn r mky flr cut, p-f y





VG BGG: 320u



MD: 9,861'
TVD: 6,876.14'
Inclination: 92°
Azimuth: 273.78°
VS: 4,058.92'

TVD (ft)

(80%): pred lt gy-gy, occ dk gy, med blk/sb ply mod fis ctgs, v arg ls w & tr c free chk, sm-sl sily tex, rr-occ pyr, v calc, w/ 20% MRLST: pred dk mly incl, med frm, dirty HCL rxn, fr bl

9860-9920 CHK (95%): pred lt gy, com gy, occ dk gy, med frm-frm, sb rd-sb blk/sb ply mod fis ctgs, v arg ls w com wh chk incl & tr c free chk, sm-sl sily tex, rr-occ acic fos frags, tr pyr, v calc, w/ 5% MRLST: pred dk gy arg LS w/ tn mly incl, med frm, dirty HCL rxn, fr bl mky flor cut, p-f yel gn resdl ring

9920-9980 CHK (90%): pred lt gy, occ gy-dk gy, med frm-frm, sb rd-sb blk/sb ply mod fis ctgs, v arg ls w com wh chk incl & tr c free chk, sm-sl sily tex, tr vf pyr, v fast clean calc rxn, w/ 10% MRLST: pred dk gy arg LS w/ tn mly incl, med frm, dirty HCL rxn, fr bl mky flor cut, p-f yel gn resdl ring

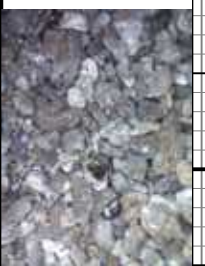
9980-10040 CHK (85%): pred lt gy, com gy-dk gy, med frm-frm, sb rd-sb blk/sb ply mod fis ctgs, v arg ls w com wh chk incl & tr c free chk, sm-sl sily tex, tr v pyr, v calc, w/ 15% MRLST: pred dk gy arg LS w/ tn mly incl, med frm, mod calc dirty HCL rxn, fr bl mky flor cut, p-f yel gn resdl ring

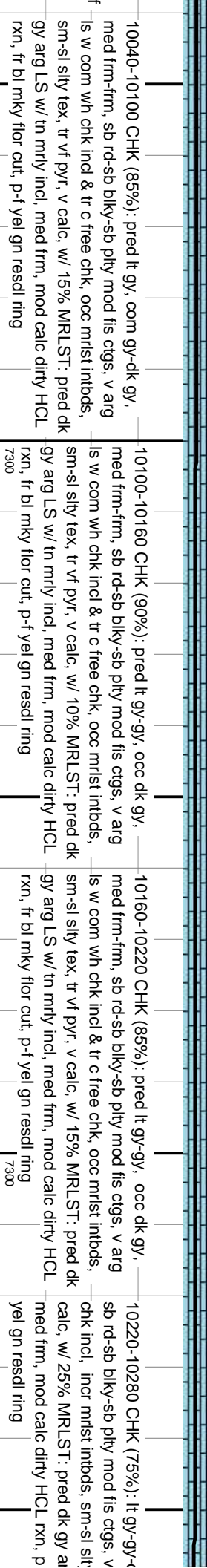
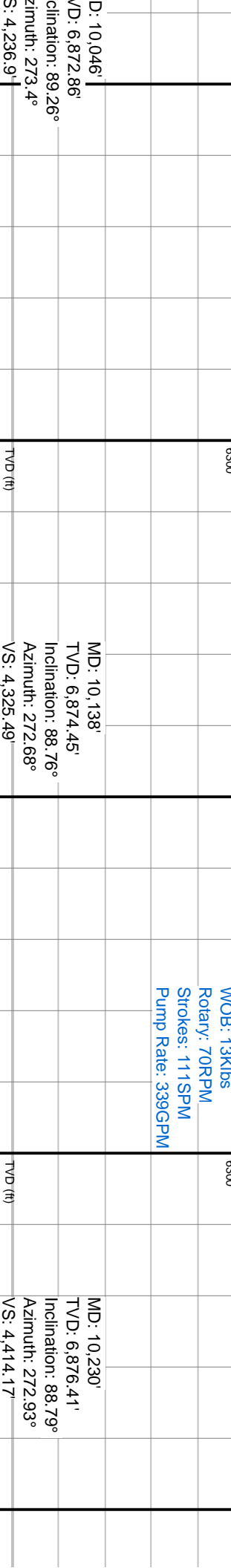
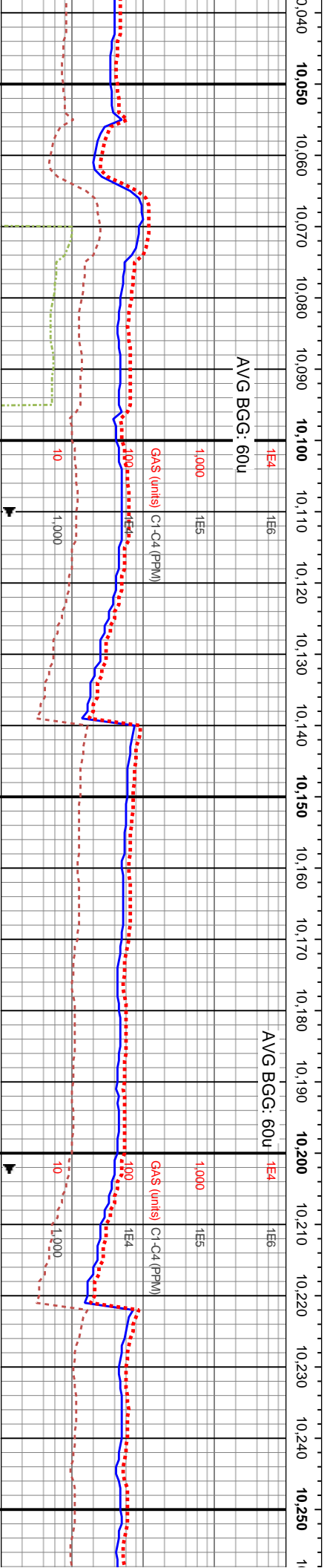
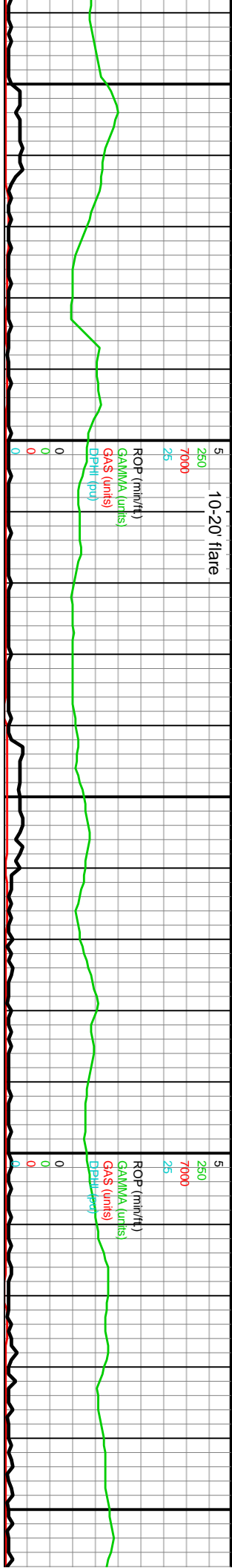
7300

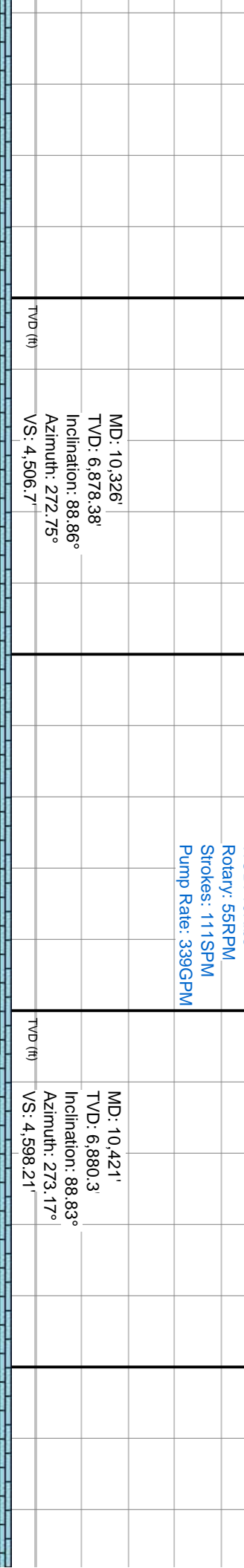
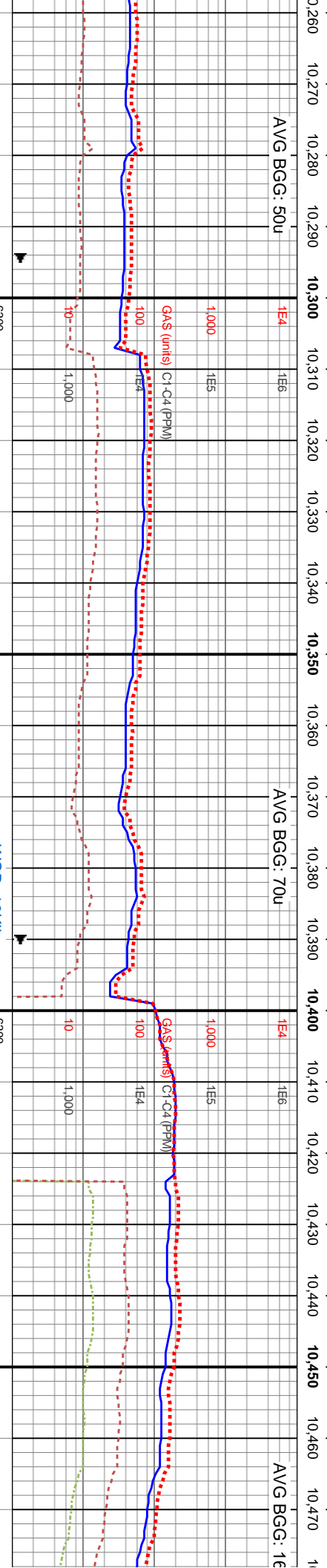
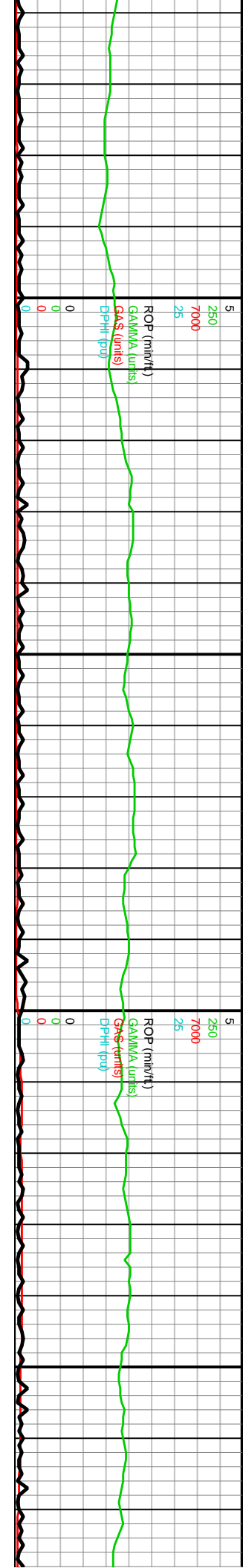
7300

WOB: 16Klbs
Rotary: 70RPM
Strokes: 111SPM
Pump Rate: 339GPM

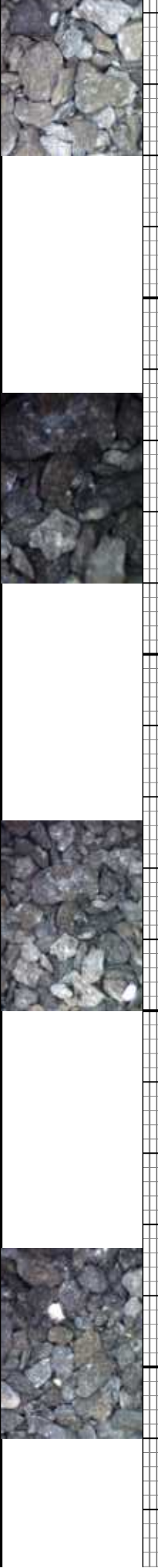
TVD (ft)

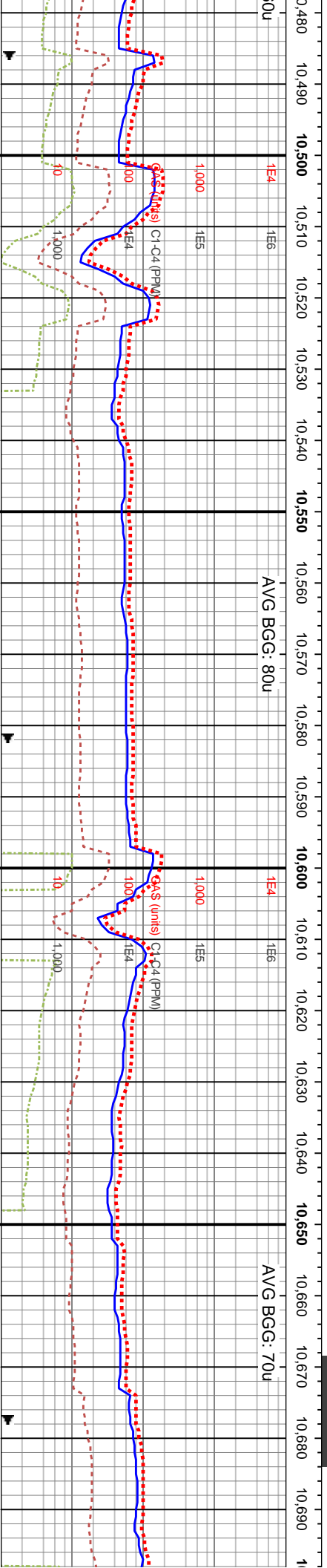


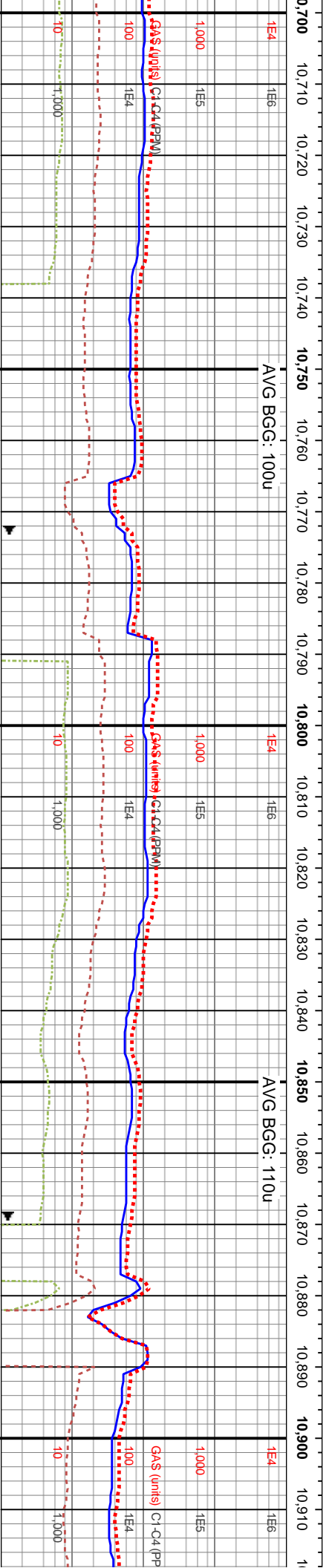
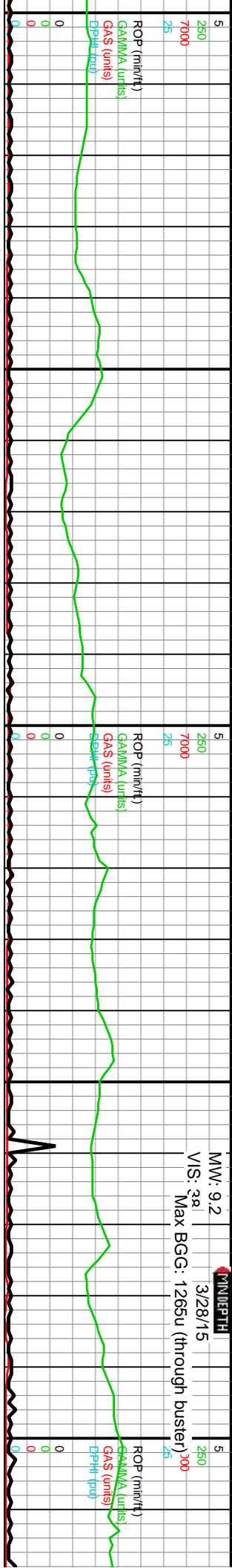




10280-10340 CHK (75%): lt gy-gy-dk gy, med frm-frm, sb rd-sb blk-y-sb ply mod fis ctgs, v arg ls w com wh chk incl, incr mrlst inbds, sm-sl silty tex, tr vf pyr, v calc, w/ 25% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, mod calc dirty HCL rxn, p bl mky flor cut, p-f yel gn resdl ring	10340-10400 CHK (75%): lt gy-gy-dk gy, med frm-frm, sb rd-sb blk-y-sb ply mod fis ctgs, v arg ls w com wh chk incl, incr mrlst inbds, sm-sl silty tex, tr vf pyr, v calc, w/ 25% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, mod calc dirty HCL rxn, p bl mky flor cut, p-f yel gn resdl ring	10400-10460 CHK (75%): lt gy-gy-dk gy, med frm-frm, sb rd-sb blk-y-sb ply mod fis ctgs, v arg ls w com wh chk incl, incr mrlst inbds, sm-sl silty tex, tr vf pyr, v calc, w/ 25% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, mod calc dirty HCL rxn, p bl mky flor cut, p-f yel gn resdl ring	10460-10520 CHK (75%): lt gy-gy-dk gy, med frm-frm, sb rd-sb blk-y-sb ply mod fis ctgs, v arg ls w com wh chk incl, incr mrlst inbds, sm-sl silty tex, tr vf pyr, v calc, w/ 25% MRLST: pred dk gy arg LS w/ tn mrlly incl, med frm, mod calc dirty HCL rxn, p bl mky flor cut, p-f yel gn resdl ring
7300	7300	7300	7300



[illegible]



WOB: 4Klbs
Rotary: 55RPM
Strokes: 111SPM
Pump Rate: 339GPM

MD: 10,709'
TVD: 6,880.84'
Inclination: 90.24°
Azimuth: 273.3°
VS: 4,875.94'

MD: 10,804'
TVD: 6,880.68'
Inclination: 89.96°
Azimuth: 273.05°
VS: 4,967.37'

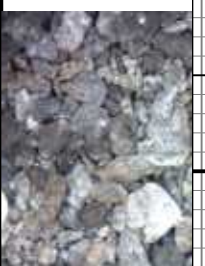
MD: 10,900'
TVD: 6,880.79'
Inclination: 89.9°
Azimuth: 271.56°
VS: 5,060.15^(ft)

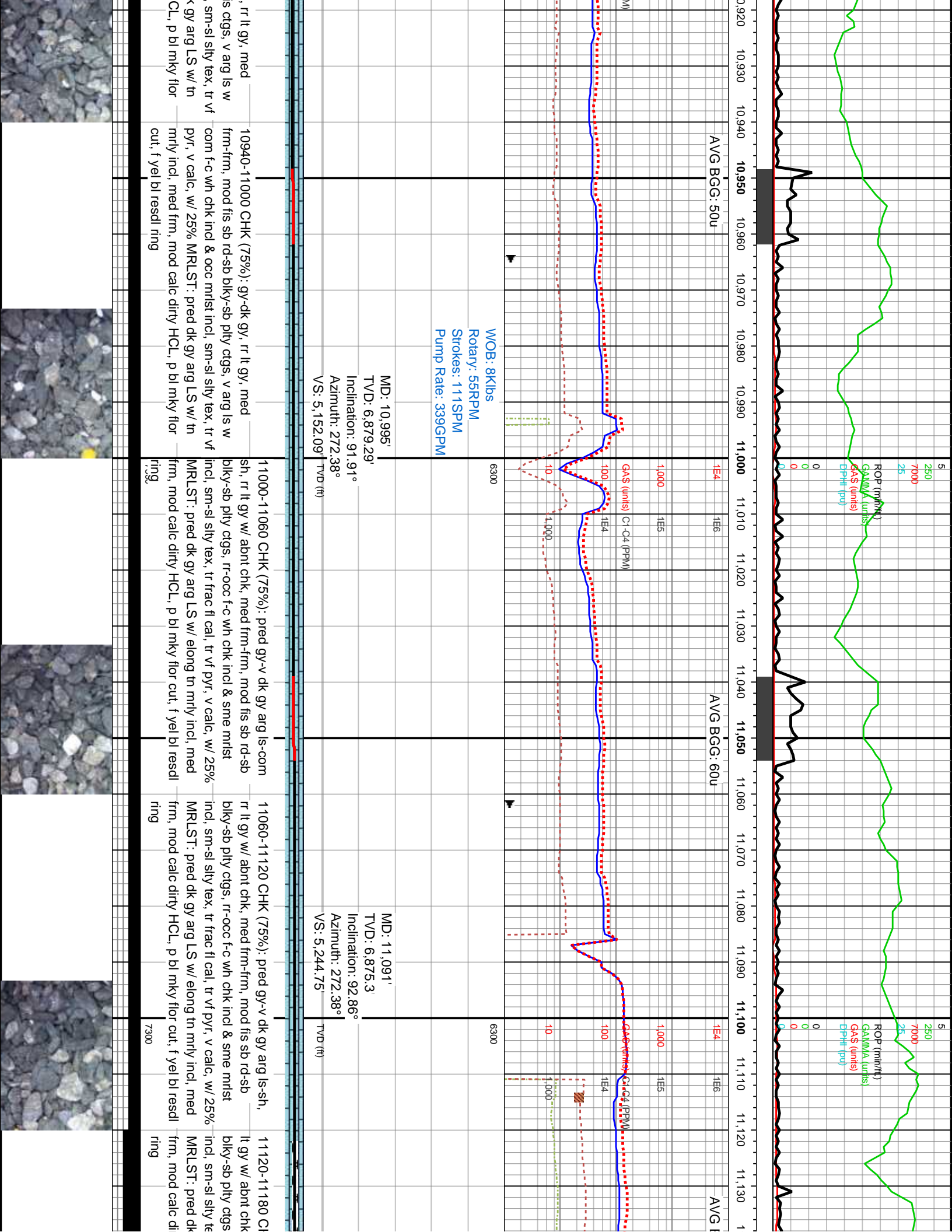
10700-10760 CHK (80%); lt gy-gy, occ dk gy, mod f
med frm-frm sb rd-sb blyk-sb pty cigs, v arg ls w com
wh chk incl & occ mrlst incl, sm-sl sily tex, tr v'l pyr, v
calc, w/ 20% MRLST: ped dk gy arg LS w/tn mrlly incl
med frm, mod calc dirty HCL, p bl mky flor cut, f yet bl
resld ring

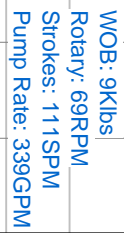
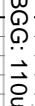
10760-10820 CHK (75%): pred gy-dk gy, occ t gy, med frm-frm, mod fs sb rd-sb bkly-sb ply cigs, v arg ls w/ com wh chk incl, sm-si stly tex, tr v pyr, v calc, occ inbddd MRLST (25%): pred dk gy arg LS w/ in mly incl, med frm, mod calc dirty HCL, p bl mky flor cut, f yel bl resd ring

10820-10880 CHK (75%): gy-dk gy, occ it gy, med
firm-firm, sb rd-sb bly-sb ply mod fis cigs, v arg ls w
com wh chk incl & 5% c free chk, sm-sl sily tex, v calc
w/25% MRLST: pred dk gy arg LS w/tn mrlly incl, me
firm, dirty HCL rxn, p bl mky flor cut, f yel bl resdl ring

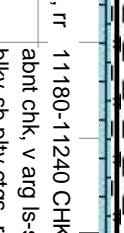
10880-10940 CHK (75%): gy-dk gy
firm-firm, sb rd-sb blk-sb ply mod f
com f-c wh chk incl & occ mrlst incl
pyr, v calc, w/ 25% MRLST: pred d
mrlly incl, med frm, mod calc dirty H
cut, f yel bl resdl ring³⁰





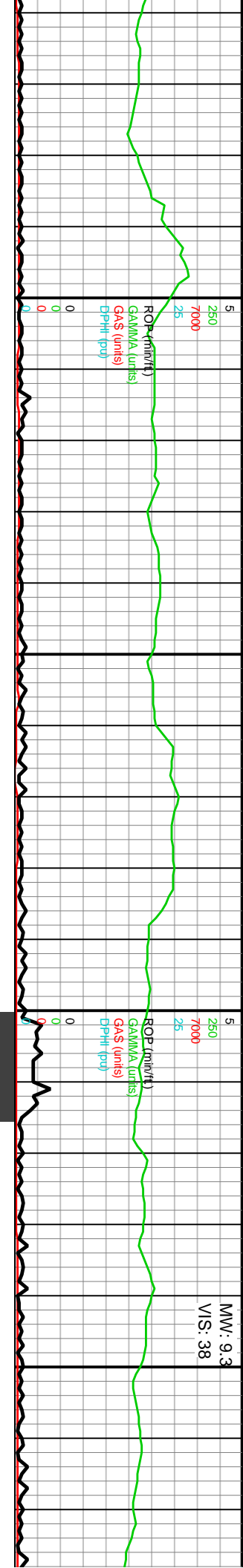


MD: 11,187'
TVD: 6,872.49'
Inclination: 90.49°
Azimuth: 272.29°
VS: 5,337.47'

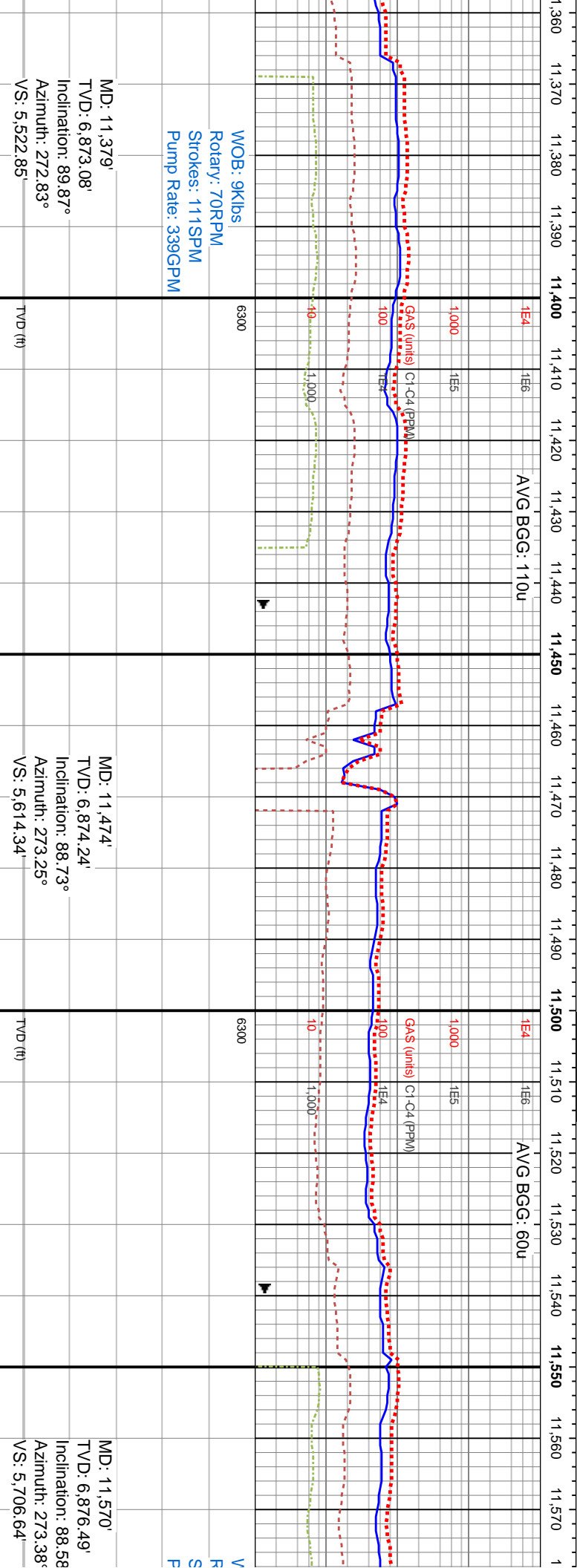


darky-sd pity cigs,
5% incl, sm-sl stly tex
d calc, w/ 30% MRL
sd mrlly incl, med frm
cut, f'yel bl resdl r





MW: 9.3
V/S: 38



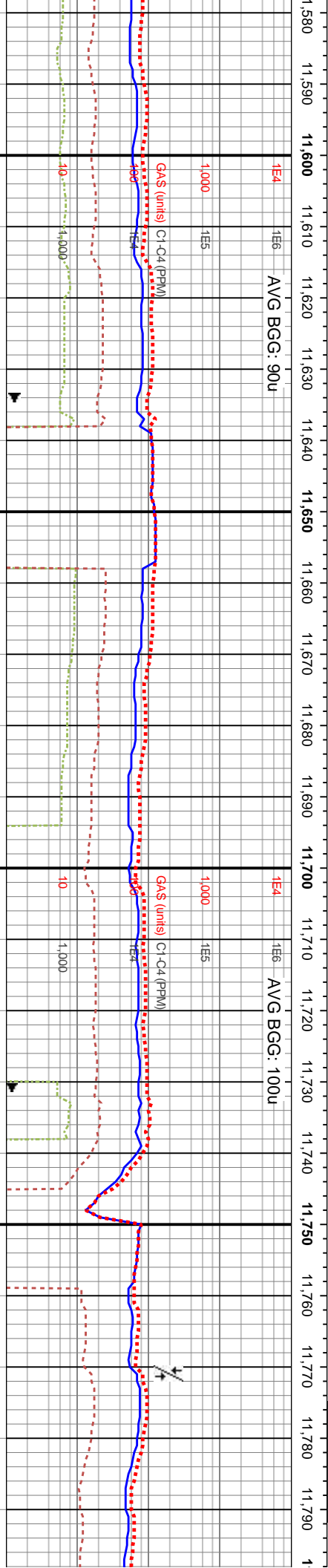
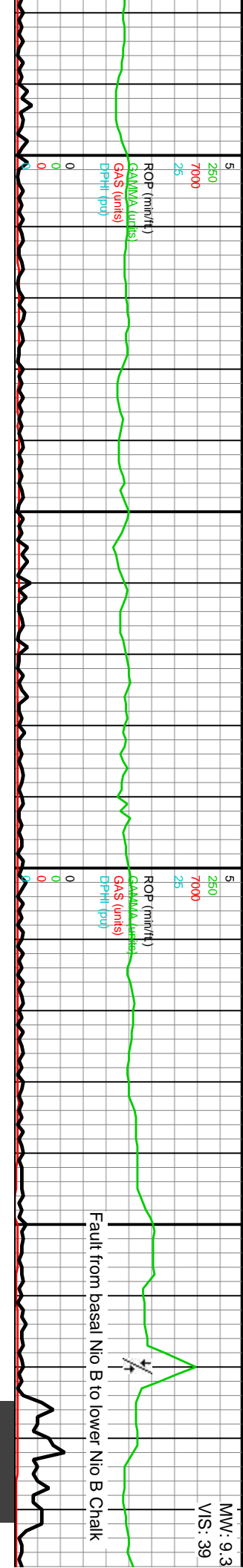
WOB: 9Klbs
Rotary: 70RPM
Strokes: 111SPM
Pump Rate: 339GPM

MD: 11,379'
TVD: 6,873.08'
Inclination: 89.87°
Azimuth: 272.83°
V/S: 5,522.85'

MD: 11,474'
TVD: 6,874.24'
Inclination: 88.73°
Azimuth: 273.25°
V/S: 5,614.34'

MD: 11,570'
TVD: 6,876.49'
Inclination: 88.58°
Azimuth: 273.38°
V/S: 5,706.64'

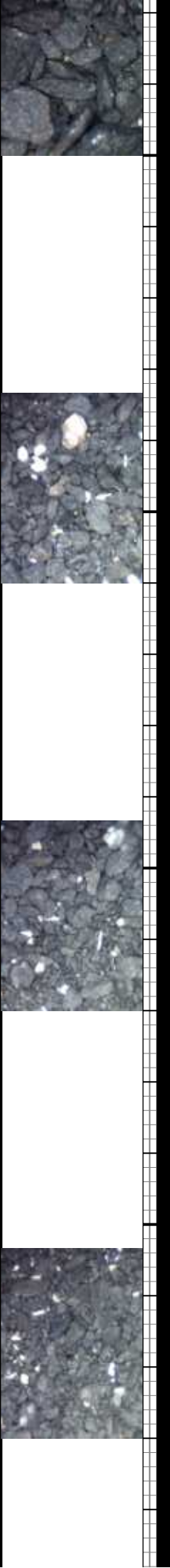
11360-11420 60% CHK 40% MRLST: gy-dk gy, tr lt gy, mot arg LS, med frm-frm, pred sb blk-y-sb pily, occ sl sily, tr pyr, tr bent, tr acic fos frags, v calc, sme cal, tr frac fl cal, p bl mky fl or cut, f yel bl resdl ring	11420-11540 CHK (60%): pred gy-v dk gy, rr lt gy w/ mot chk, v arg ls-sh ip, med frm-frm, mod fls sb rd-sb blk-y-sb pily ctgs, rr-occ f-c wh chk incl & sme mlst incl, sm-sl sily tex, tr frac fl cal, tr acic foss, tr vf pyr, v calc, w/ 30% MRLST: pred dk gy arg LS w/ elong tn mrly incl, med frm, mod calc dirty HCL, p bl mky fl or cut, f yel bl resdl ring	11540-11600 CHK (60%): pred gy-mot chk, v arg ls-sh ip, med frm-frm blk-y-sb pily ctgs, rr-occ f-c wh chk i incl, sm-sl sily tex, occ frac fl cal, tr calc, w/ 30% MRLST: pred dk gy arg mrly incl, med frm, mod calc dirty H cut, f yel bl resdl ring
7300	7300	

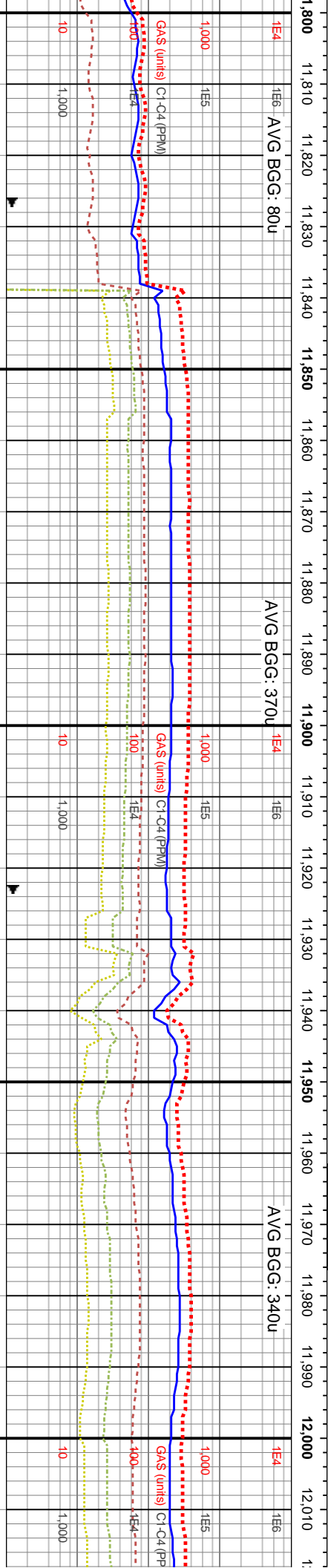


WOB: 11Klbs
Rotary: 69RPM
Strokes: 111SPM
Pump Rate: 339GPM

MD: 11,666'
TVD: 6,878.96'
Inclination: 88.48°
Azimuth: 273.54°
VS: 5,798.87'

11600-11720 CHK (80%): pred gy-v dk gy, tr lt gy w/ mot chk, v arg ls-sh ip, med frm-frm, mod fis sb rd-sb blk-ly-sb pty cigs, tr-occ f-c wh chk incl & sme mlst incl, sm-sl sily tex, tr frac fl cal, tr acic foss, tr vf pyr, v w/ 20% MRLST: pred dk gy arg LS w/ elong tn mly incl, med frm, mod calc dirty HCL, w/ com v dk gy-blk calc sh, p bl mky flor cut, f yel bl resd ring

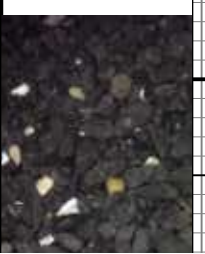


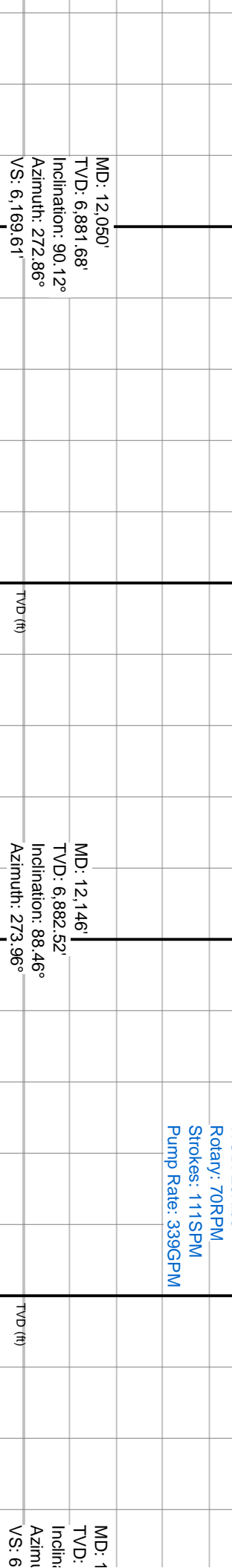
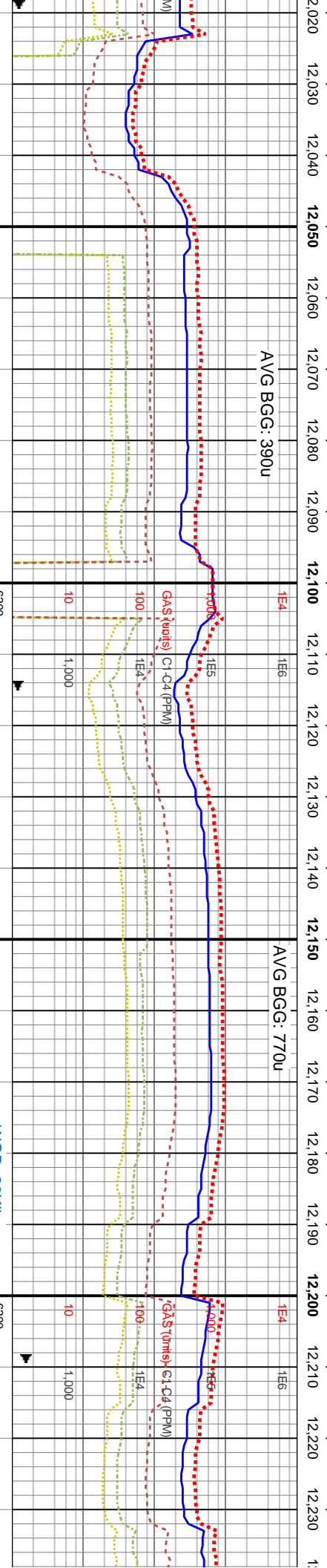
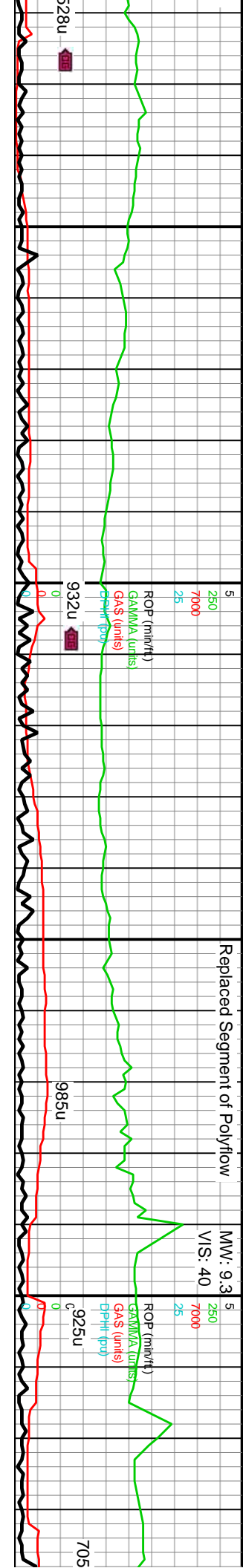


Flare Stack was not igniting throughout the night. 4-12 plumes of unignited gas noted throughout night four.	250
Agitator level adjusted in accordance to varying level of mud flow in possum belly.	7000
Increased gas readings noted.	25

[illegible]

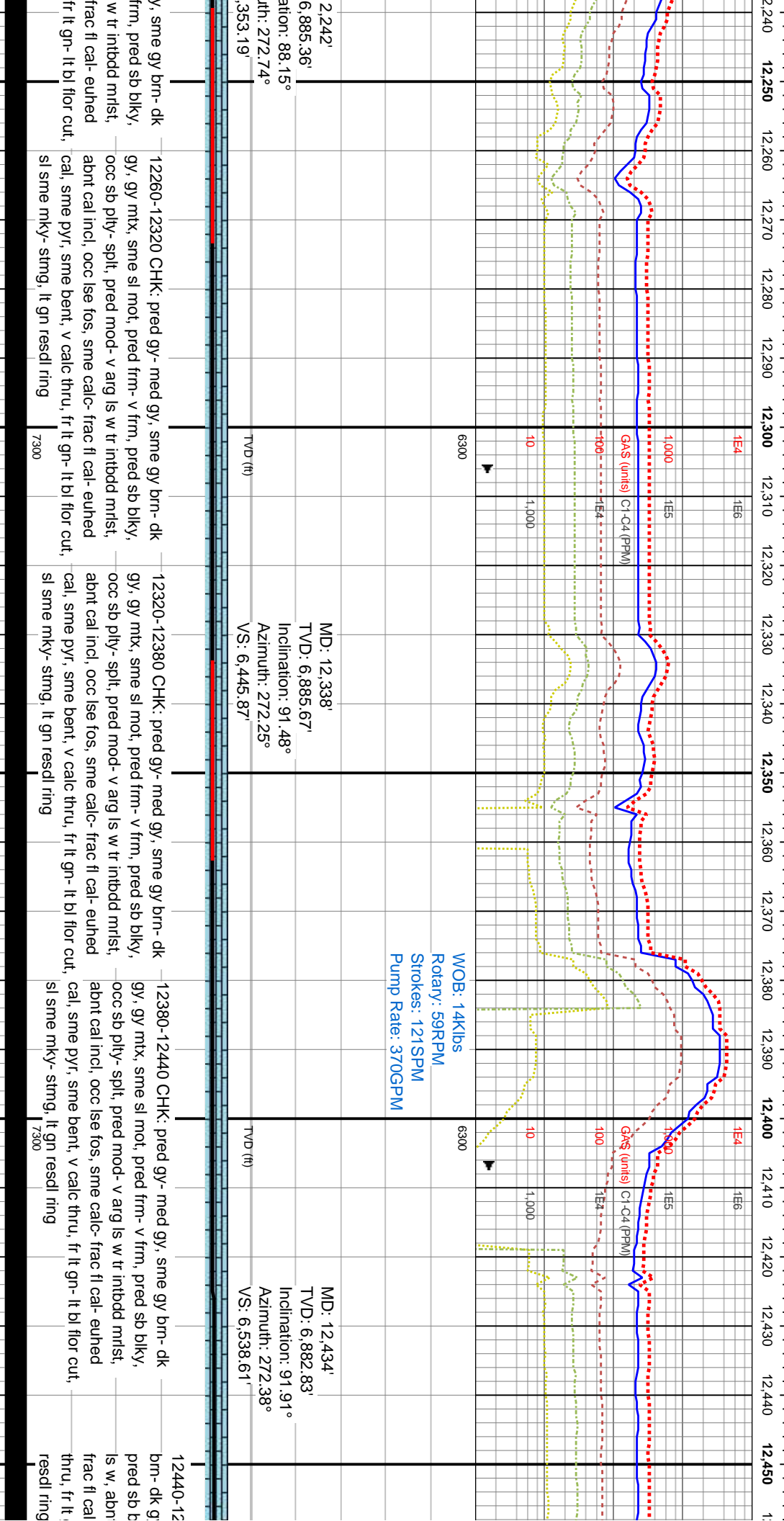
11960-12020 CHK: pred med gy-dk gy, sme gy brn
ip lt-dk gy, sme gy mtb, sme sl mot, frm-v frm, pred
sb blkly, occ sb ply-splt, pred mod-v arg is w sme
intbnd mrtst, sme cal lnci, abnt lse fos, sme calc-
frac fl cal-euhed cal, sme pyr, sme bent, v calc thru,
fr lt gn- lt bl fl or cut, sl sme mky-stmg, lt gn resd
ring





MD: 12,050' TVD: 6,881.68' Inclination: 90.12° Azimuth: 272.86° VS: 6,169.61'	12020-12080 CHK: pred med gy- dk gy, sme gy brn, ip lt- dk gy, sme gy mt, sme sl mot, frm- v frm, pred sb blk, occ sb ply- split, pred mod- v arg ls w sl inbodd mntst, sme cal incl, abnt lse fos, sme calc- frac fl cal- euhed cal, sme pyr, sme bent, v calc thru, fr lt gn- lt bl fl or cut, sl sme mky- stmg, lt gn resdl ring	12080-12140 CHK: pred med gy- dk gy, sme gy brn, sme gy mt, sme sl mot, frm- v frm, pred sb blk, occ sb ply- split, pred mod- v arg ls w occ inbodd mntst, abnt cal incl, abnt lse fos, sme calc- frac fl cal- euhed cal, sme pyr, sme bent, v calc thru, fr lt gn- lt bl fl or cut, sl sme mky- stmg, lt gn resdl ring	7300
MD: 12,146' TVD: 6,882.52' Inclination: 88.46° Azimuth: 273.96°	12140-12200 CHK: pred med gy- dk gy, sme gy brn, sme gy mt, sme sl mot, frm- v frm, pred sb blk, occ sb ply- split, pred mod- v arg ls w occ inbodd mntst, abnt cal incl, abnt lse fos, sme calc- frac fl cal- euhed cal, sme pyr, sme bent, v calc thru, fr lt gn- lt bl fl or cut, sl sme mky- stmg, lt gn resdl ring		
MD: 12,260' TVD: 6,882.52' Inclination: 88.46° Azimuth: 273.96° VS: 6,169.61'	12200-12260 CHK: pred med gy- dk gy, sme gy brn, sme gy mt, sme sl mot, frm- v frm, pred sb blk, occ sb ply- split, pred mod- v arg ls w occ inbodd mntst, abnt cal incl, abnt lse fos, sme calc- frac fl cal- euhed cal, sme pyr, sme bent, v calc thru, fr lt gn- lt bl fl or cut, sl sme mky- stmg, lt gn resdl ring		





out. No blockage detected.

Test Gas: 58.44u

MW: 9.4
VIS: 35

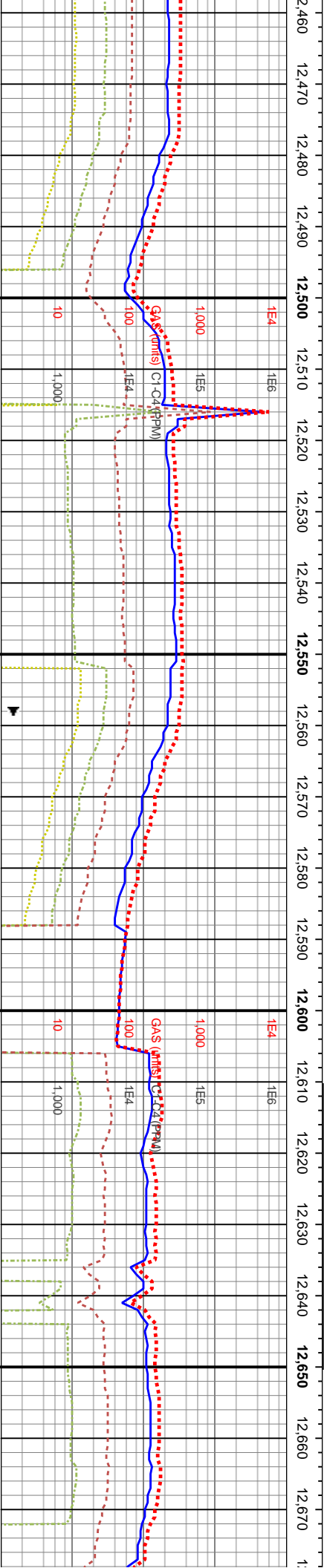
12- 15' Flare

10- 12' Flare

ROP (min/hr/ft)
GAMMA (units)
GAS (units)
Depth (ft)

ROP (min/hr/ft)
GAMMA (units)
GAS (units)
Depth (ft)

ROP (min/hr/ft)
GAMMA (units)
GAS (units)
Depth (ft)



MD: 12,530'
TVD: 6,879.27'
Inclination: 92.34°
Azimuth: 272.5°
VS: 6,631.26'

WOB: 67Klbs
Rotary: 0-20RPM
Strokes: 111SPM
Pump Rate: 339GPM

MD: 12,626'
TVD: 6,876.74'
Inclination: 90.68°
Azimuth: 272.97°
VS: 6,723.82'

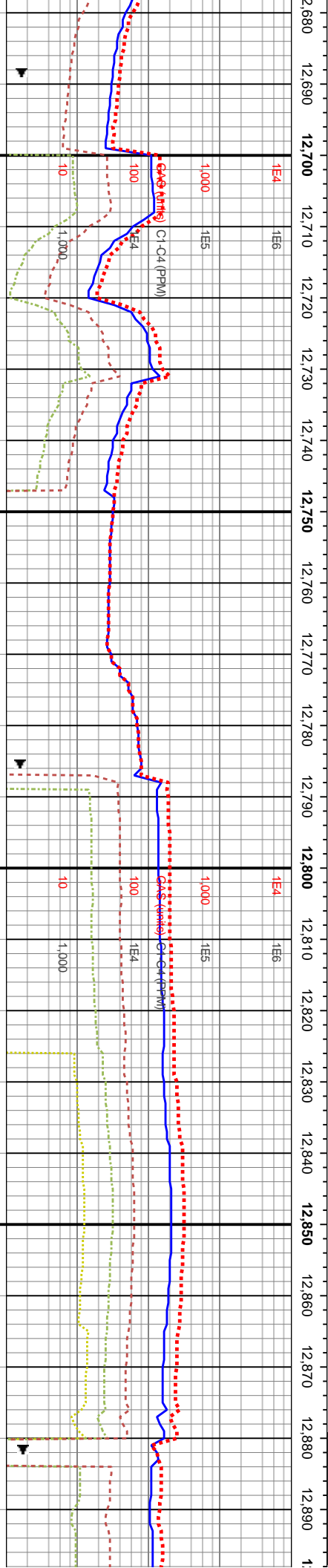
12500-12560 CHK: pred gy- med gy, sme gy
dk gy, gy mtx, sme sl mot, pred v frm- hd,
biky, sme sb ply- spl, pred mod- v arg
mod cal incl, occ lse fos, sme calc-
euhed cal, sme pyr, tr bent, v calc
flor cut, sl sme mky- stmg, lt bl

12560-12620 CHK: pred gy- med gy, sme gy bm-
dk gy, gy mtx, sme sl mot, pred v frm- hd, pred sb
biky, sme sb ply- spl, pred mod- v arg ls w, abnt-
mod cal incl, occ lse fos, sme calc- frac fl cal-
euhed cal, sme pyr, tr bent, v calc thru, fr lt gn- lt bl
flor cut, sl sme mky- stmg, lt bl resdl ring

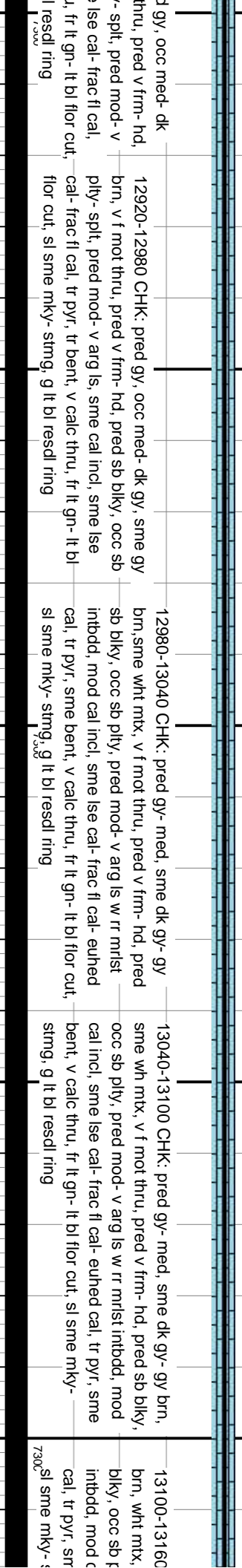
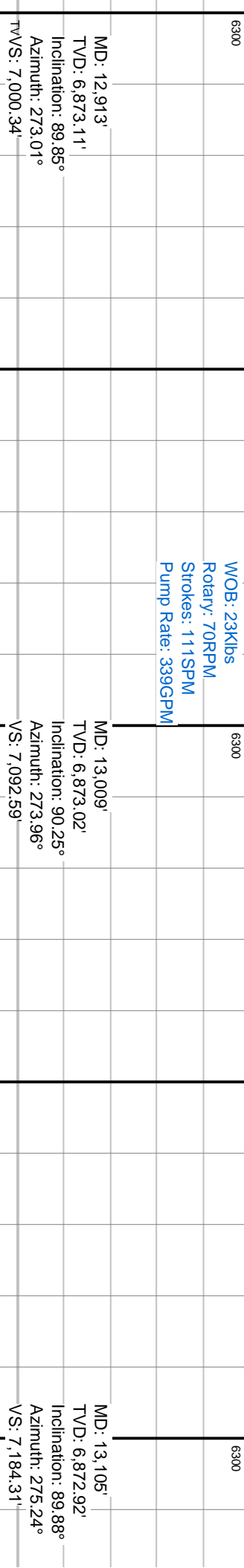
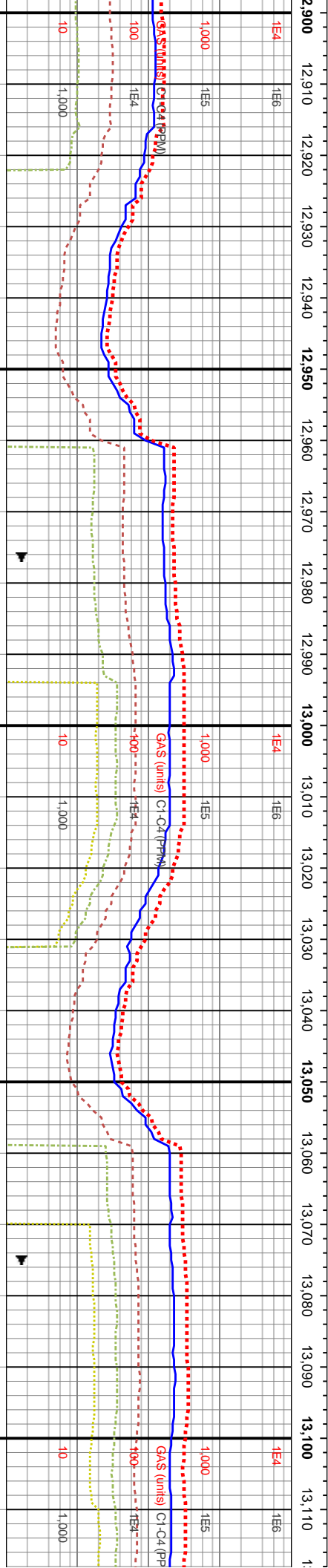
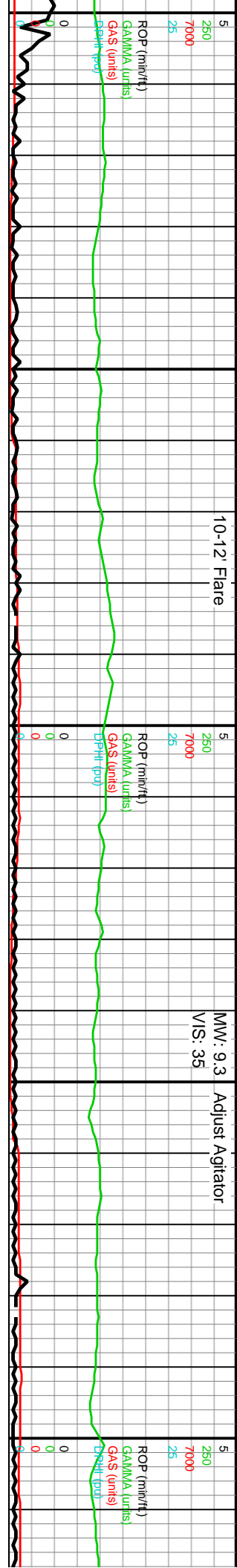
12620-12680 CHK: pred gy, ip med gy, sme gy
bm- occ dk gy, sme lt gy mtx, v f mot, pred v frm- t
pred sb biky, occ sb ply- spl, pred mod- v arg ls w
mod cal incl, sme lse cal- euhed cal, sme pyr, tr
bent, v calc thru, fr lt gn- lt bl flor cut, sl sme mky-
stmg, lt bl resdl ring

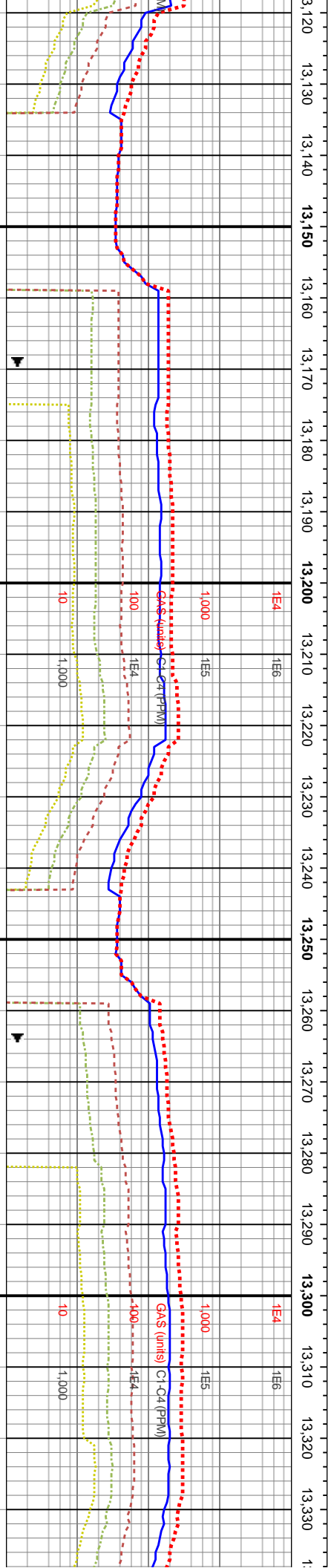
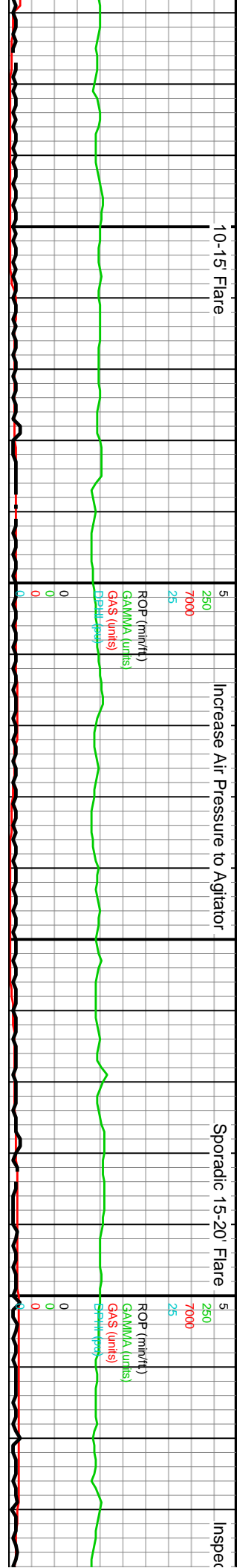
12680-12740 CHK: pred gy, ip med gy, sme gy
bm- occ dk gy, sme lt gy mtx, v f mot, pred v frm- t
pred sb biky, occ sb ply- spl, pred mod- v arg ls w
mod cal incl, sme lse cal- euhed cal, sme pyr, tr
bent, v calc thru, fr lt gn- lt bl flor cut, sl sme mky-
stmg, lt bl resdl ring





12860-12920 CHK: pre
gy, sme gy brn, v f mot
pred sb biky, occ sb ply
arg ls, sme cal incl, sme
tr pyr, tr bent, v calc thr
sl sme mky- stmg, g lt b





WOB: 24Klbs
Rotary: 50RPM
Strokes: 111SPM
Pump Rate: 339GPM

MD: 13,201'
TVD: 6,872.81'
Inclination: 90.25°
Azimuth: 276.1°
VS: 7,275.48 (ft)

MD: 13,297'
TVD: 6,872.39'
Inclination: 90.25°
Azimuth: 276.1°
VS: 7,366.42 (ft)

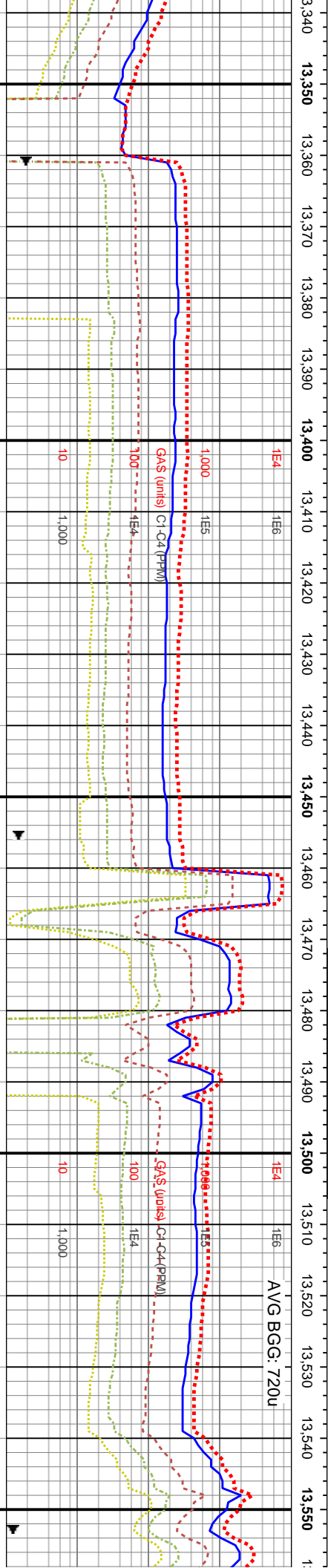
CHK: pred gy- med, sme dk gy- gy
v f mot thru, pred v frm- hd, pred sb
lty, pred mod- v arg ls w rr mlst
incl, sme lse cal- frac fl cal- euhed
bent, v calc thru, fr lt gn- lt bl flor cut,
stmg, g lt bl resdl ring

13160-13220 CHK: pred gy- med, sme dk gy- gy brn,
wht mtx v f mot thru, pred v frm- hd, pred sb blk, occ
sb ply, pred mod- v arg ls w rr mlst inbd, mod cal
incl, sme lse cal- frac fl cal- euhed cal, tr pyr, sme
bent, v calc thru, fr lt gn- lt bl flor cut, sl sme mky-
stmg, g lt bl resdl ring

13220-13280 CHK: pred gy- med, sme dk gy- gy brn,
wht mtx, v f mot thru, pred v frm- hd, pred sb blk, occ sb
ply, pred mod- v arg ls, mod- sme cal incl, occ lse cal-
rr frac fl cal, tr pyr, tr bent, v calc thru, fr lt gn- lt bl flor cut,
stmg, g lt bl resdl ring

13280-13340 CHK: pred gy- med, sme dk gy- gy
brn, wht mtx, v f mot thru, pred v frm- hd, pred sb
blk, occ sb ply, pred mod- v arg ls, mod- sme
cal incl, occ lse cal- rr frac fl cal, tr pyr, tr bent, v
calc thru, fr lt gn- lt bl flor cut, sl sme mky- stmg,
g lt bl resdl ring





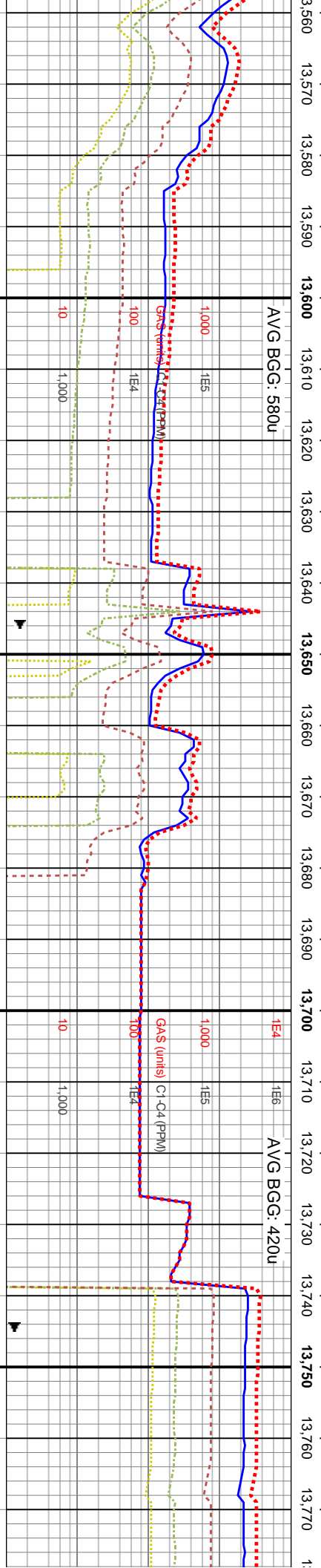
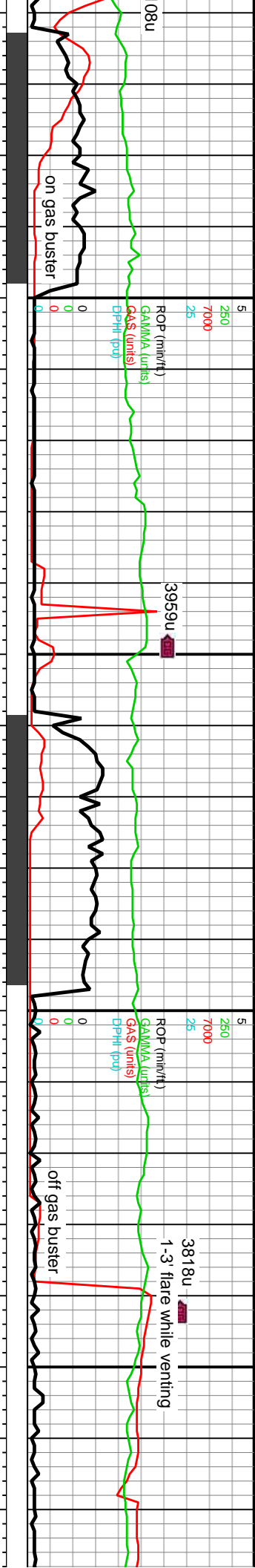
MD: 13,393'	
TVD: 6,872.44'	
Inclination: 89.69°	
Azimuth: 278.51°	
VS: 7,456.69'	TVD (ft)

13400-13460 CHK-, pred gy- med, sme dk gy- gy
brn, wht mtx, v f mot thru, pred v frm- hd, pred sb
blyk, occ sb pty, pred mod- v argls, mod- sme
cal incl, occ lse cal- rr frac fl cal, tr pyr, tr bent, v
calc thru, fr lt gn- lt bl flor cut, sl sme mky- stmg,
g lt bl resdl ring

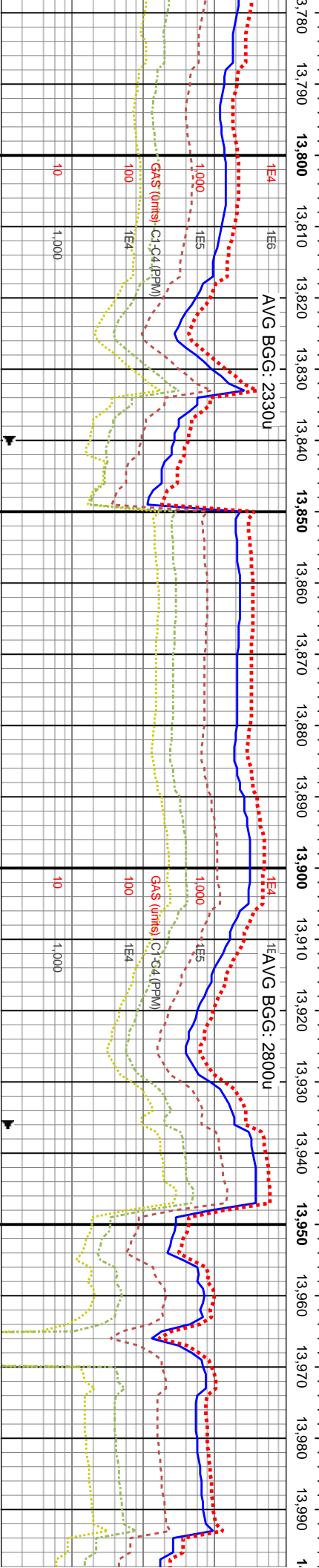
MD: 13,489'	
TVD: 6,873.13'	
Inclination: 89.48°	
Azimuth: 276.58°	
VS: 7,546.82'	TV

13460-13520 CHK: pred gy- dk gy, sme gy
brn, abnt wht mix, v f mot thru, pred v frm-
hd, pred sb bky, occ sb ply, pred mod- v aig ls,
mod- sme cal incl, occ ise cal, rr frac fl cal, rr
pyr, rr bent, v calic thru, fr it gn- lt bl flur cut, sl
sme mky- stimg, g lt bl resdl ring

13520-13580 CHK: pred gy-
about wht mtx, v f mot thru, pi-
sb blkly, occ sb ply, pred mo-
some cal incl, occ lse cal, r fr
bent, v calc thru, fr it gn- it bl
mky- stmg, g it bl resd ring



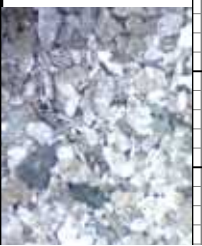
WOB: 21Klbs Rotary: 50RPM Strokes: 111SPM Pump Rate: 339GPM		6300	NW @ 13,640'		6300	V R S P
MD: 13,584' TVD: 6,873.83' Inclination: 90.12° Azimuth: 273.8° VS: 7,636.73'		TVD (ft)			TVD (ft)	MD: 13,771' TVD: 6,874.08' Inclination: 89.59° Azimuth: 270.99° VS: 7,729.46'

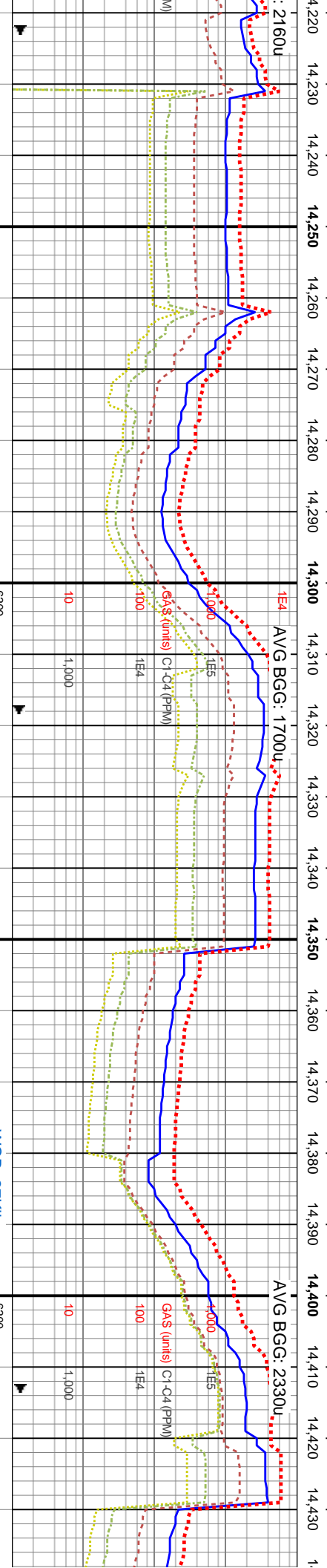
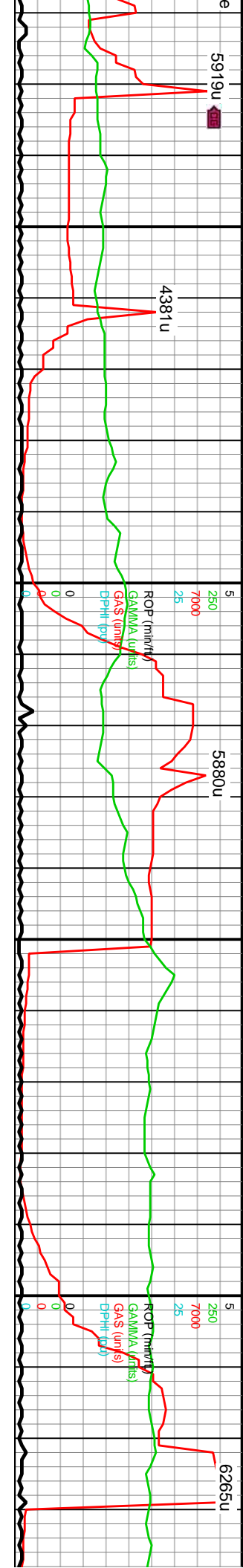


WOB: 20Klbs
Rotary: 70RPM
Strokes: 111SPM
Pump Rate: 339GPM

MD: 13,967'
TVD: 6,875.42'
Inclination: 89.26°
Azimuth: 271.71°
VS: 8,009.28'

13940-14000 CHK (85%): pred lt gy-gy, occ dk gy, med frm-frm, sb rd-sb blyky-sb ply-ply ctgs, v arg ls w/about wh chk incl & r r free chk, tr acic fos frags, r cal frac fil, sm-sl sily tex, v clin calc, w/ 15% MRLST: pred dk gy arg LS w/ tn elong-rd mrlly incl & lam, med frm, dirty HCL rxn, vf pyr, p bl stmg-mky cut, p-fr yel gn resd flr ring





MD: 14,253' TVD: 6,877.03' Inclination: 90.73° Azimuth: 272.71° VS: 8,286.15'	14240-14300 CHK (85%): pred it gy-gy, occ dk gy, med frm-frm, sb rd-sb blkly-sb pily-pily ctgs, v arg ls w/ abnt wh chk incl & rr c free chk & thn lamn, tr acic fos frags, rr cal frac fil, sm-sl silty tex, v cln calc, w/ 15% MRLST: pred dk gy arg LS w/ tn elong-rd mrlly incl & lam, tr vf-f pyr, mod calc, dirty HCL rxn, fr bl stmg-mky cut, fr yel gn resdl flr ring
MD: 14,348' TVD: 6,875.59' Inclination: 91.01° Azimuth: 272.4° VS: 8,377.85'	14300-14360 CHK (85%): pred gy, com it gy, occ dk gy, med frm-frm, sb rd-sb blkly-sb pily-pily ctgs, v arg ls w/ com-abnt wh chk incl & rr c free chk & thn lamn, tr acic fos frags, tr cal frac fil, sm-sl silty tex, v cln calc, w/ 15% MRLST: pred dk gy arg LS w/ tn elong-rd mrlly incl & lam, tr vf-f pyr, mod calc, dirty HCL rxn, fr bl stmg-mky cut, fr yel gn resdl flr ring
MD: 14,348' TVD: 6,875.59' Inclination: 91.01° Azimuth: 272.4° VS: 8,377.85'	14360-14420 CHK (85%): pred gy, com it gy, occ dk gy, med frm-frm, sb rd-sb blkly-sb pily-pily ctgs, v arg ls w/ com-abnt wh chk incl & lamn, rr c free chk, v tr acic fos frag, sm-sl silty tex, v cln calc, w/ 15% MRLST: pred dk gy arg LS w/ tn elong-rd mrlly incl & lam, tr vf-f pyr, mod calc, dirty HCL rxn, fr bl stmg-mky cut, fr yel gn resdl flr ring
MD: 14,348' TVD: 6,875.59' Inclination: 91.01° Azimuth: 272.4° VS: 8,377.85'	14420-14480 CHK (85%): pred gy, com it gy, occ dk gy, med frm-frm, sb rd-sb blkly-sb pily-pily ctgs, v arg ls w/ com-abnt wh chk incl & lamn, rr c free chk, v tr acic fos frag, sm-sl silty tex, v cln calc, w/ 15% MRLST: pred dk gy arg LS w/ tn elong-rd mrlly incl & lam, tr vf-f pyr, mod calc, dirty HCL rxn, fr bl stmg-mky cut, fr yel gn resdl flr ring

