



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Winder South 2

Location Sec. 9-T6N-R67W

State Colorado

Country USA

County Weld

Rig Number Patterson 346

API Number 05-123-43404-00

Field Wattenberg

Geographic Region DJ Basin

Drilling Completed 8/26/2016

Spud Date 8/22/2016

Surface Coordinates SHL: 2306'FNL, 508' FEL, Sec. 9

Lat: 40° 30' 9.63"

Long: -104° 53' 26.5158"

Bottom Hole Coordinates BHL: 2530'FFSLL, 460' FFWLL, Sec. 8

Ground Elevation 4,854'

K.B. Elevation 4,878.5'

Logged Interval 6,800' To TBD

Total Depth TBD

Formation Niobrara C Chalk

Type of Drilling Fluid Oil Based Mud

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-574

Comments Start: 8-22-16
TD: 8-26-16

Services Provided 2-man Logging
On Site Geosteering

Logger Names Dominic Pitre/ Dan Scott / N

Address ALS Empirica
6510 Guhn Road
Houston, Texas 77040

ools

ON TOP L LITHOGRAPHIC

Rounding

MX MICROXLN

APTH **A** ANGULAR **MS** MUDSTONE

R ROUNDED **PS** PACKSTONE

B SUBANG **WS** WACKESTONE

STRATA **P** SUBRND

Sorting

.T

Textures

M MODERATE

E (LEFT) **BS** BOUNDSTONE **P** POOR

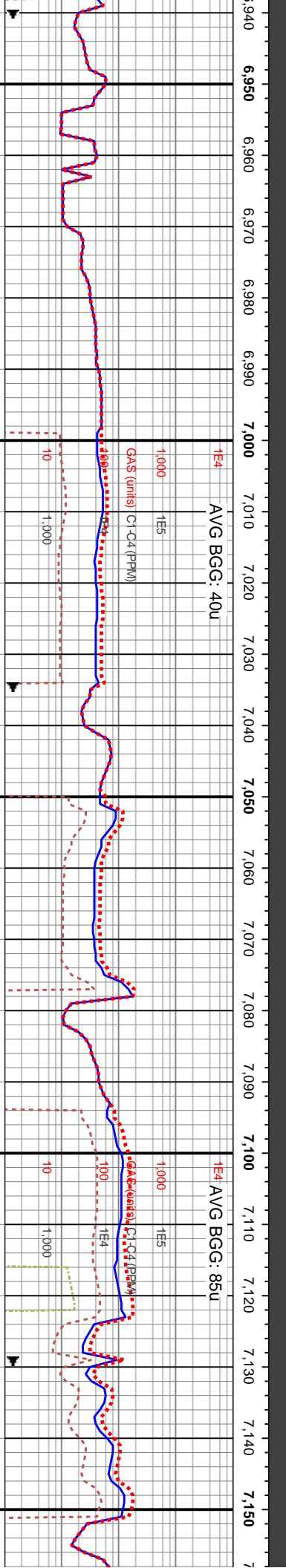
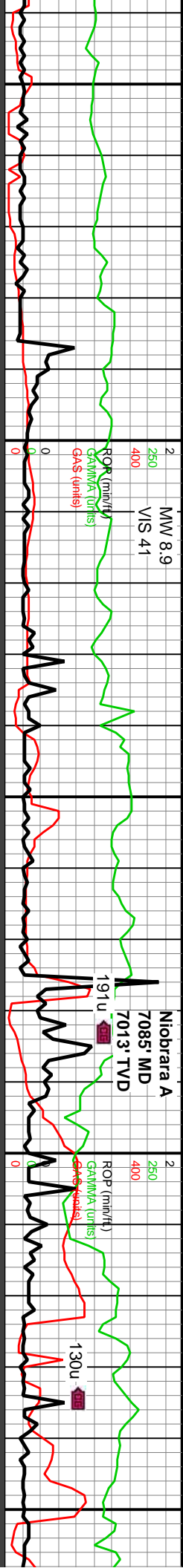
C CHALKY **W** WELL

CX CRYPTOXLN

E EARTHY

ED - LEFT **FX** FINELYXLN

ED - RT **GS** GRAINSTONE

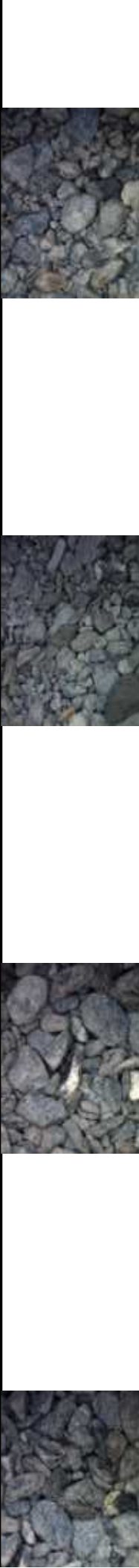


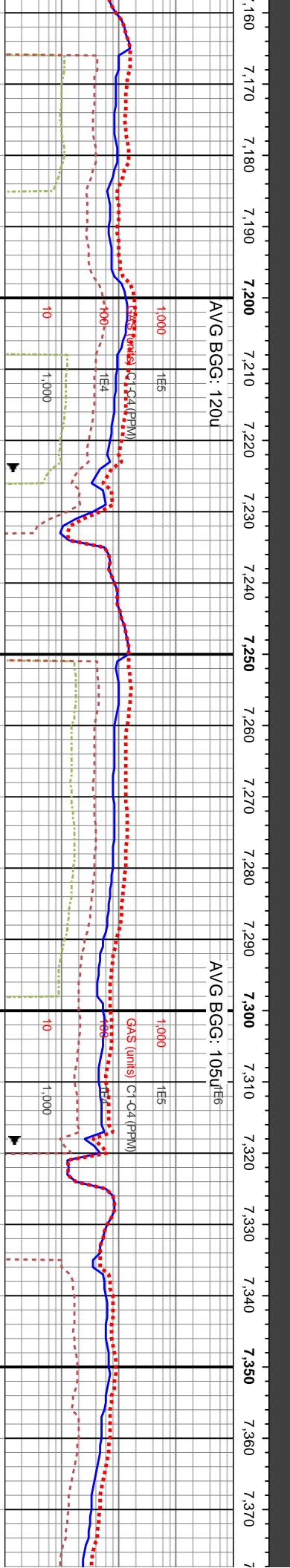
WOB: 21Klbs
Rotary: 0RPM
Strokes: 220SPM
Pump Rate: 641 GPM

MD: 7,068'
Inclination: 28.37°
Azimuth: 253.51°
TVD: 6,998.75'
VS: -425.56'

MD: 6,974'
Inclination: 23.02°
Azimuth: 227.37°
TVD: 6,913.8'
VS: -460.59'

60%): lt gy-gy-gy brn, sft-med frm on calc, SLTST (40%): dk gy-v dk gy, s sb plty-plty ctgs, silty tex, thn silc vn calc	6980-7040 SH (60%): lt gy-gy-gy brn, sft-med frm ctgs, sl silty ip, non-mod calc, SLTST (40%): dk gy-v dk gy, frm-brit med-hi fis sb plty-plty ctgs, silty tex, thn silc vn ip, tr vf pyr, non calc	7040-7100 MRLST (60%): gy-gy brn-dk gy mot wi brn mrlly incl & lmn ip, med fis sb blkly-sb plty ctgs, silty-sl gt tex, mod calc wi brn mrlly resd CHK (40%): lt gy-gy-gy brn-dk gy ip, frm-brit mod fis sb blkly-sb plty ctgs, v arg LS wi occ f-uf-elong chky incl, silty-sl gt tex, tr c free chk, rr vf pyr & pyr strg, med-hi calc wi cin HCL rxn	7100-7160 MRLST (50%): gy-dk gy-gy brn wi f mrlly incl & thn mrlly lmn, med fis sb blkly-sb plty ctgs, silty-sl gt tex, mod calc wi brn mrlly resd CHK (50%): lt gy-gy v arg LS wi occ f chky incl, frm-brit mod fis sb blkly-sb plty ctgs, silty-sl gt tex, tr c free chk, rr vf pyr & pyr strg, med-hi calc wi cin HCL rxn
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GAS (units)

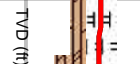
79u

AVG BGG: 105u^{1E6}

650

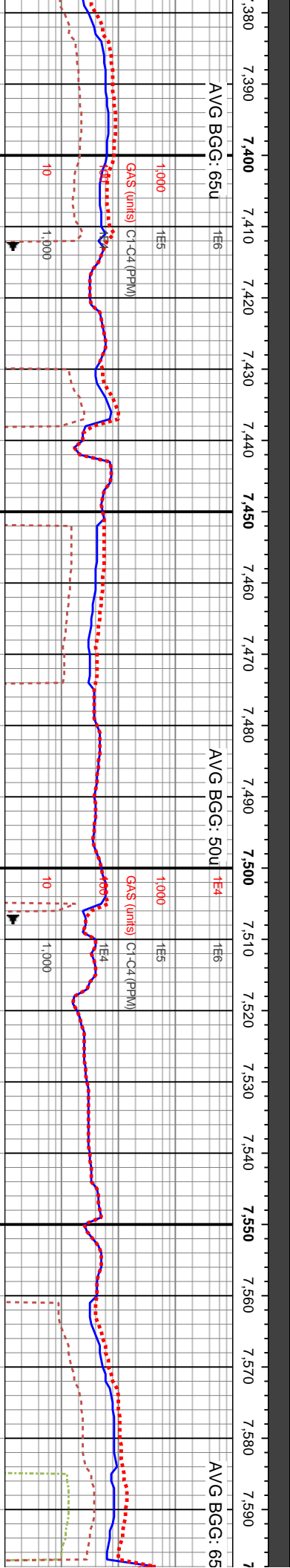
MD: 7,257'
Inclination: 42.93°
Azimuth: 271.46°
TVD: 7,154.39'
VS: -320'

MD: 7,352'
Inclination: 53.67°
Azimuth: 270.83°
TVD: 7,217.49'



7340-7400 CHK (60%); lt gy-gy v e
chky incl, frm-brit mod fis sb bkly-s
sily-si-gt tex, rr vt pyr & c pyr stfg, l
HCL rxn, MRLST (40%); gy-dk gy-
incl & thn mrlly lmn, med fis sb bkly
sily-si-gt tex, mod calc wl brn mrlly





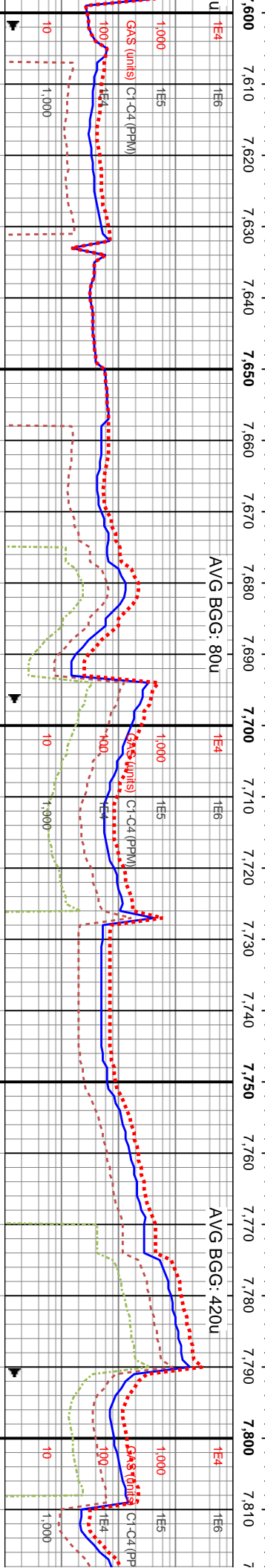
Codell	8/24/16
7535' MD	
7295' TVD	

WOB: 55Klbs
6500
Rotary: 0RPM
Strokes: 200SPM
Pump Rate: 581 GPM

MD: 7,541'
Inclination: 76°
Azimuth: 271°
TVD: 7,297.13
VS: -79.12'

7520-7560 SS (70%): off wh-tl gy, occ gy brn wi OBM
stin ip, mod strd vf-f sb rd grs cons wi dolc & silc cmt,
arg ip, occ u f-med dk llt frags thru, l-mod calc, wi
(15%) LS: off wh-v tl gy-bf, tr brn, crpxln-microxn
mudst-occ pkst, tr vf pyr, hi calc, wi occ SLTST: dk gy,
frim-pty hi fis ctgs, non calc





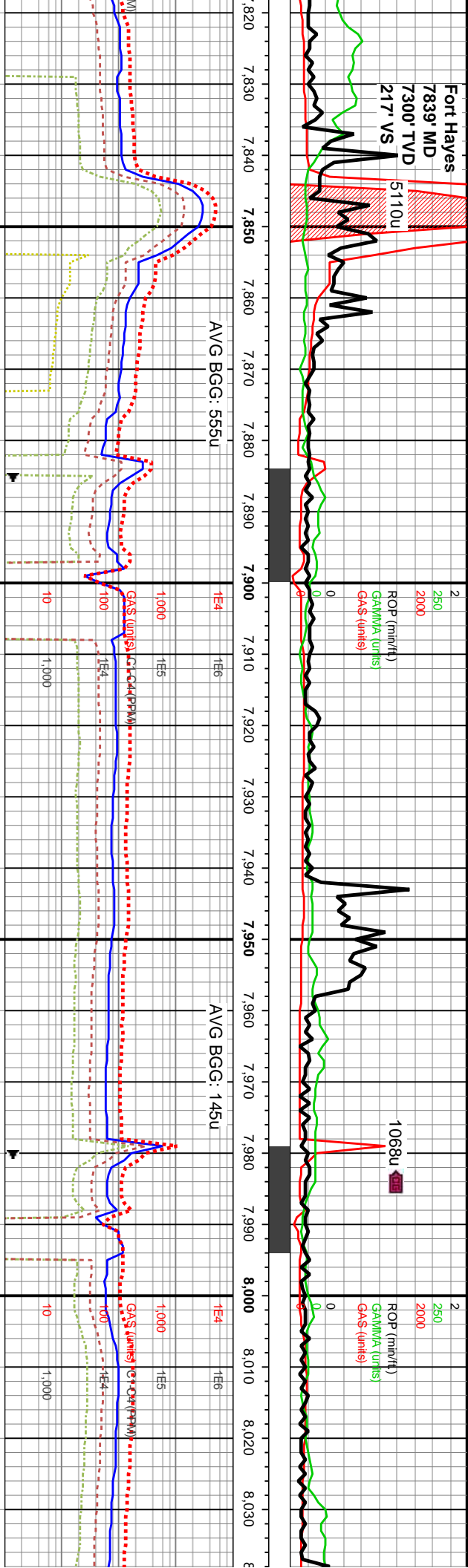
Fort Hayes
7839' MD
7300' TVD
217' VS

5110u

ROP (min/ft)
250
2000
GAMMA (units)
GAS (units)

1068u

ROP (min/ft)
250
2000
GAMMA (units)
GAS (units)



AVG BGG: 555u

AVG BGG: 145u

WOB: 28Klbs
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 640GPM

MD: 7,825'
Inclination: 91.31°
Azimuth: 267.11°
TVD: 7,300.63'
VS: 203.53'

MD: 7,919'
Inclination: 90.34°
Azimuth: 268.62°
TVD: 7,299.28'
VS: 297.44'

MD: 8,014'
Inclination: 89.6°
Azimuth: 271.16°
TVD: 7,299.33'
VS: 392.43'

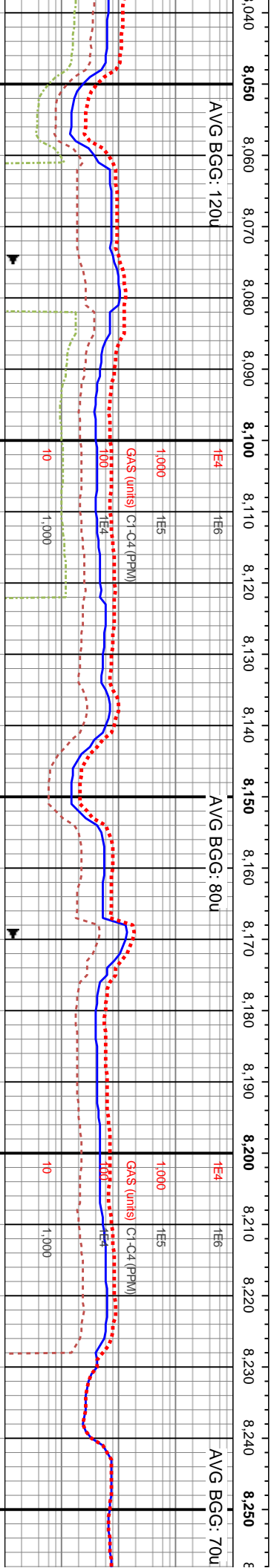
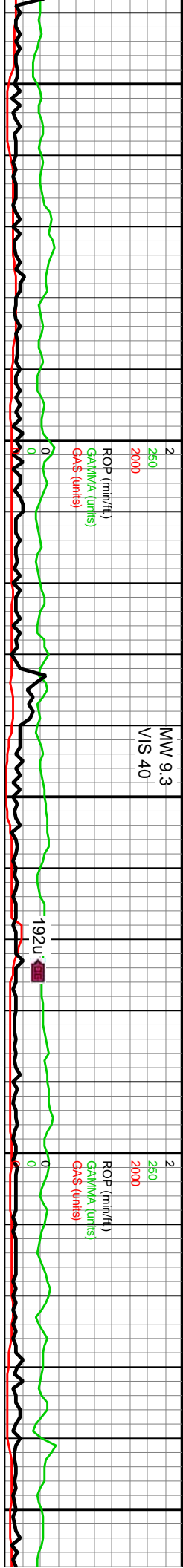
7820-7880 LS: off wh-v lt gy-bf, occ brn wi
OBM stn, crpxln-microxin mudst-occ pkst, wxy
lstr ip, tr vf pyr, hi calc

7880-7940 LS: off wh-v lt gy-bf, rr brn,
crpxln-microxin mudst-occ pkst, tr vf pyr, hi
calc

7940-8000 LS: off wh-v lt gy-bf, occ brn wi
OBM stn, crpxln-microxin mudst-occ pkst, wxy
lstr ip, tr vf pyr, hi calc

8000-8060 LS: off wh-v lt gy-bf,
OBM stn, crpxln-microxin mudst-
lstr ip, tr vf pyr, hi calc





MD: 8,108'
Inclination: 89.06°
Azimuth: 269.85°
TVD: 7,300.44'
VS: 486.42'



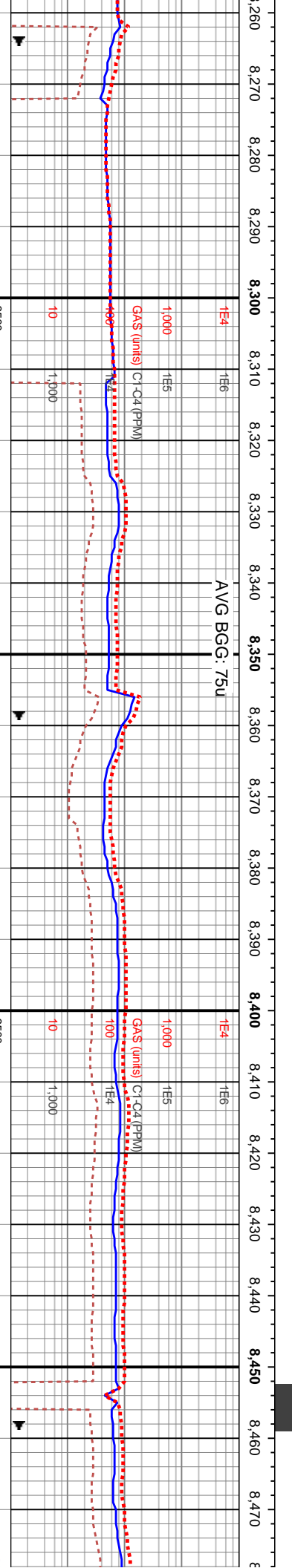
8060-8120 LS: off wh-v lt gy-bf, rr bm, crpxln-microxln mudst-occ pkst, tr vf pyr, hi calc

8120-8180 LS (80%): off wh-v lt gy-bf, rr bm wi OBM stn, crpxln-microxln, mudst-occ pkst, tr vf pyr & pyr strg, hi calc, SLTST (20%): dk gy, frm-ply hi fis ctgs, non calc

8180-8240 LS (80%): off wh-v lt gy-bf, rr bm, crpxln-microxln, mudst-occ pkst, tr vf pyr & pyr strg, hi calc, SLTST (20%): dk gy, frm-ply hi fis ctgs, non calc

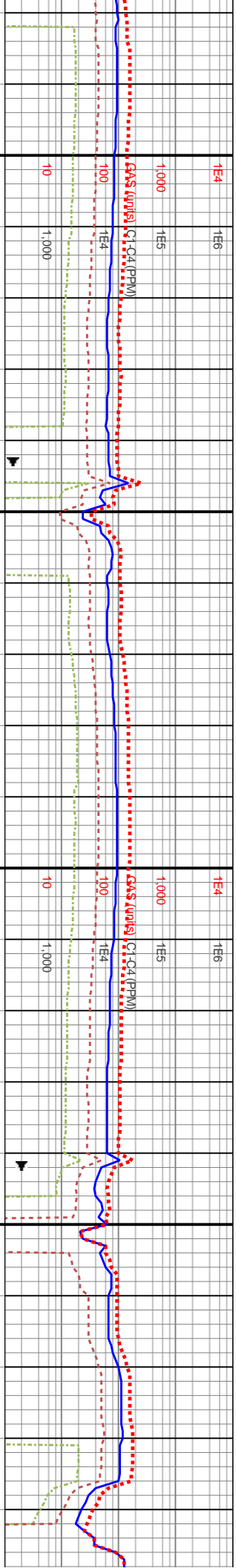
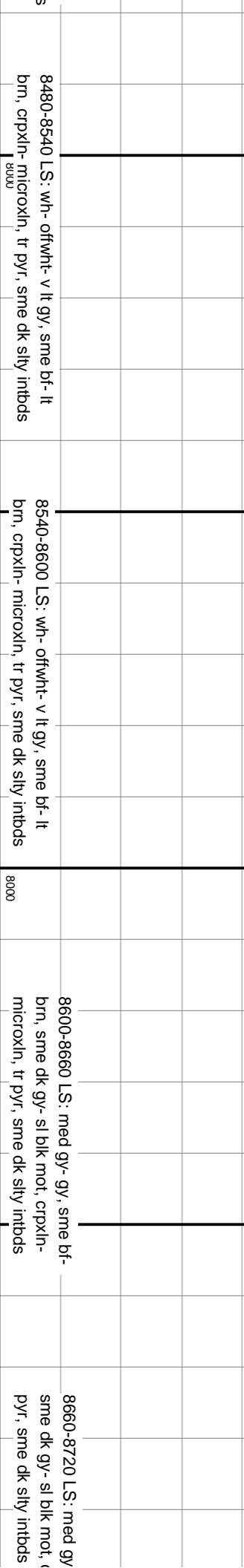
8240-8300 LS: crpxln-microx calc, wi occ S ctgs, mot wi r

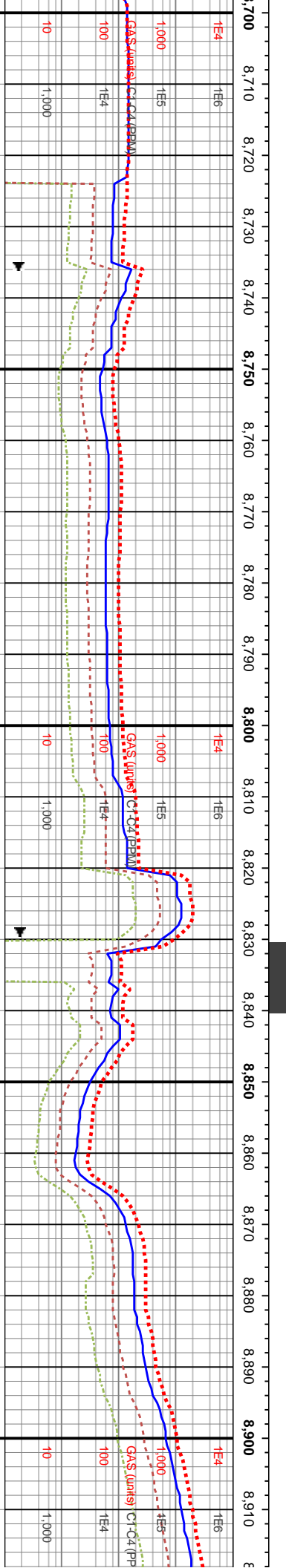




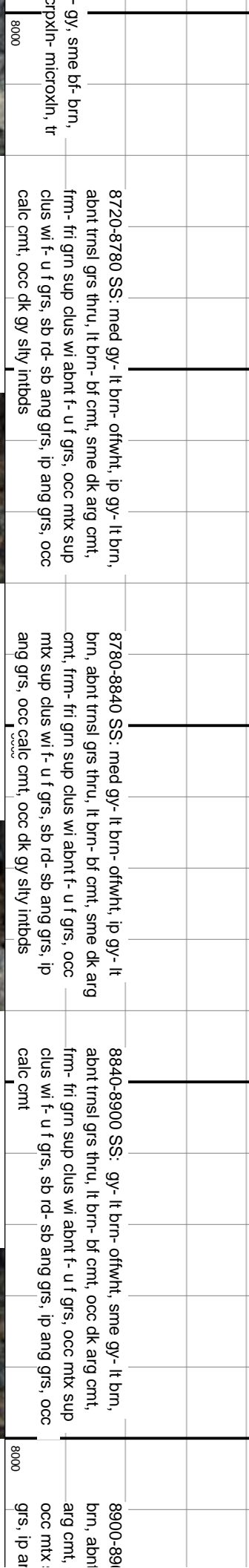
MD: 8,392'
Inclination: 90.64°
Azimuth: 270.31°
TVD: 7,300.7'
VS: 770.4'

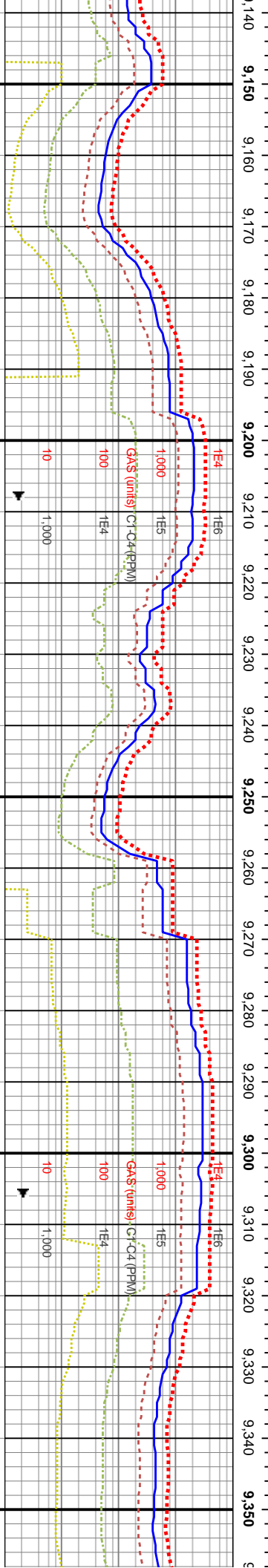
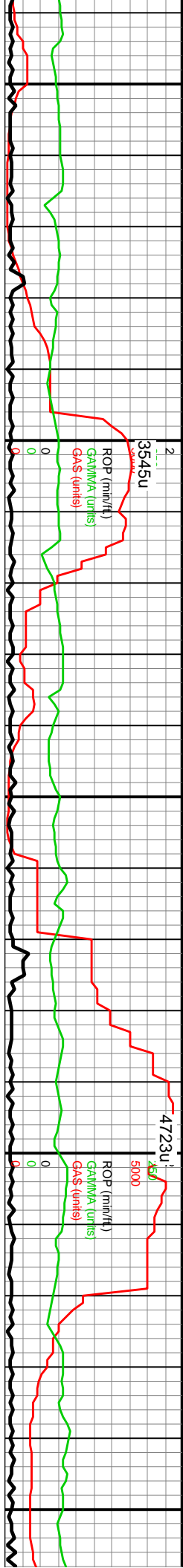


[illegible]



MD: 8,864'	
Inclination: 88.93°	
Azimuth: 269.17°	
TVD: 7,308.3'	
VS: 1,242.15'	

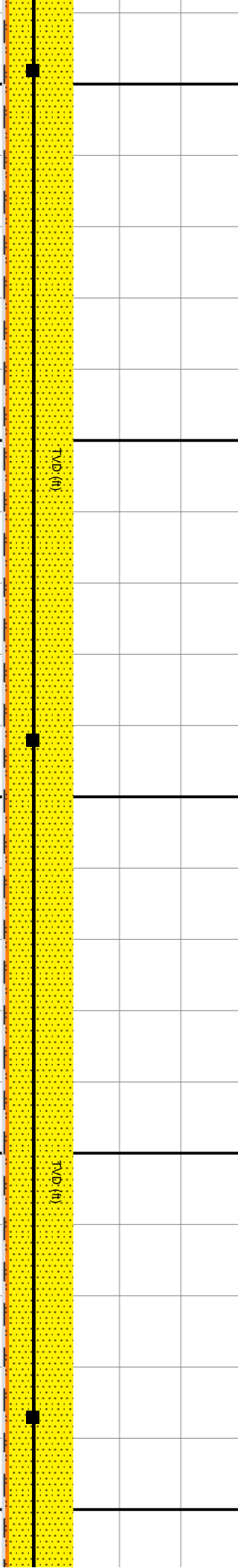




MD: 9,148'
Inclination: 89.97°
Azimuth: 270.76°
TVD: 7,311.49'
VS: 1,526.1'

MD: 9,242'
Inclination: 90.2°
Azimuth: 269.96°
TVD: 7,311.35'
VS: 1,620.1'

MD: 9,337'
Inclination: 90.07°
Azimuth: 269.02°
TVD: 7,311.12'
VS: 1,715.09'



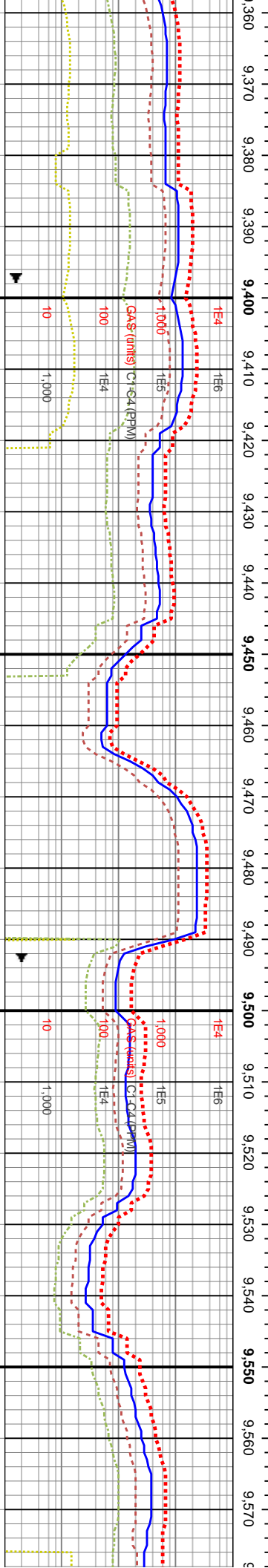
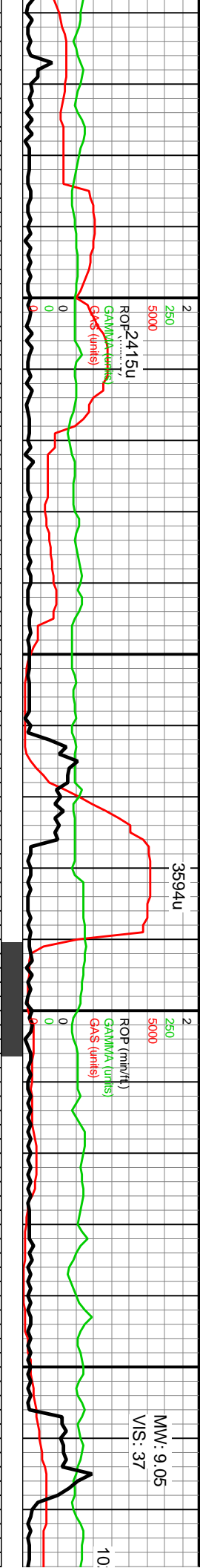
9140-9200 SS: gy- med gy, ip lt brn- offwht- dk gy, sme gy, abnt trnsi grs thru, lt brn- bf cnt, mod dk arg cnt, frm- fri grn sup clus wi f- u f grs, occ mtz sup clus wi f- u f grs, mod u f- med uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cnt, tr pyr

9200-9260 SS: gy- med gy, ip lt brn- offwht- dk gy, sme gy, abnt trnsi grs thru, lt brn- bf cnt, mod dk arg cnt, frm- fri grn sup clus wi f- u f grs, occ mtz sup clus wi f- u f grs, mod u f- med uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cnt, tr pyr

9260-9320 SS: pred gy- med gy, mod lt brn- offwht, sme dk gy, abnt trnsi grs thru, lt brn- bf cnt, sme dk arg cnt, frm- fri grn sup clus wi f- u f grs, sme mtz sup clus wi f- u f grs, mod u f- med uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cnt, tr pyr

9320-9380 SS: pred gy- brn- offwht, sme dk gy, : brn- bf cnt, sme dk arg sup clus wi f- u f grs, sr f- u f grs, mod u f- med l sb ang grs, ip ang grs, c





MD: 9,431'
Inclination: 90.74°
Azimuth: 268.35°
TVD: 7,310.46'
VS: 1,809.05'

WOB: 53Klbs
Rotary: 18RPM
Strokes: 220SPM
Pump Rate: 639GPM

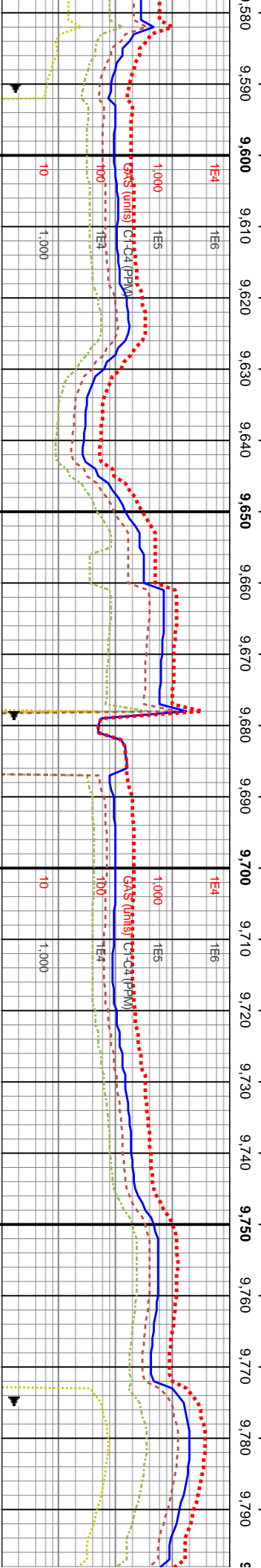
MD: 9,526'
Inclination: 91.62°
Azimuth: 269.81°
TVD: 7,308.5'
VS: 1,904.01'

TVD (ft)

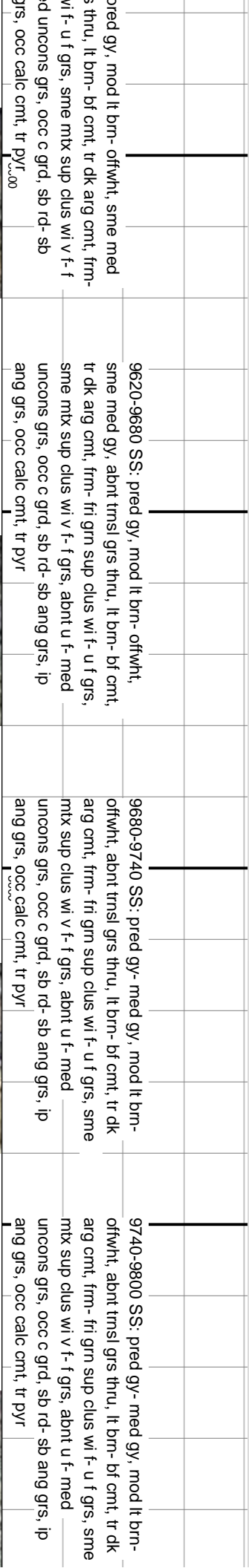
TVD (ft)

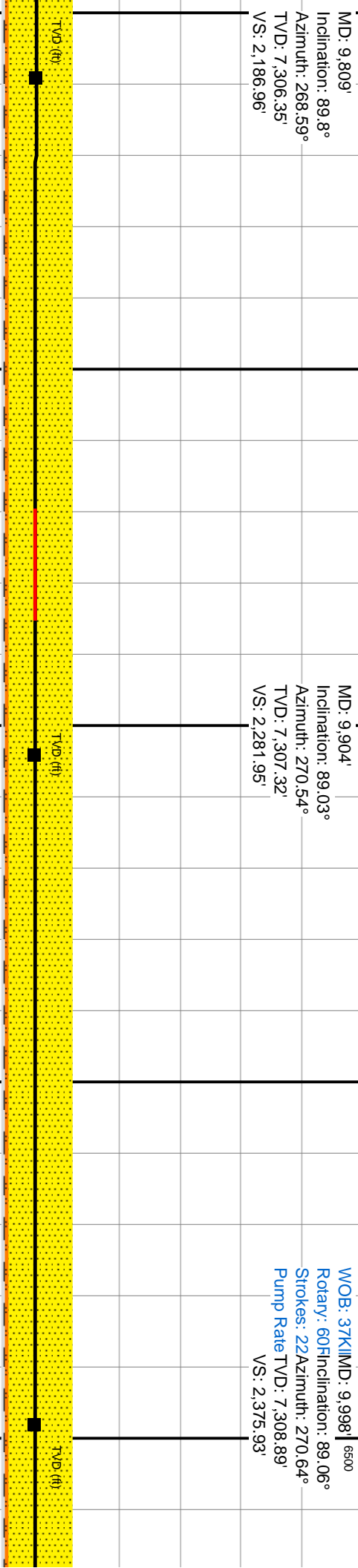
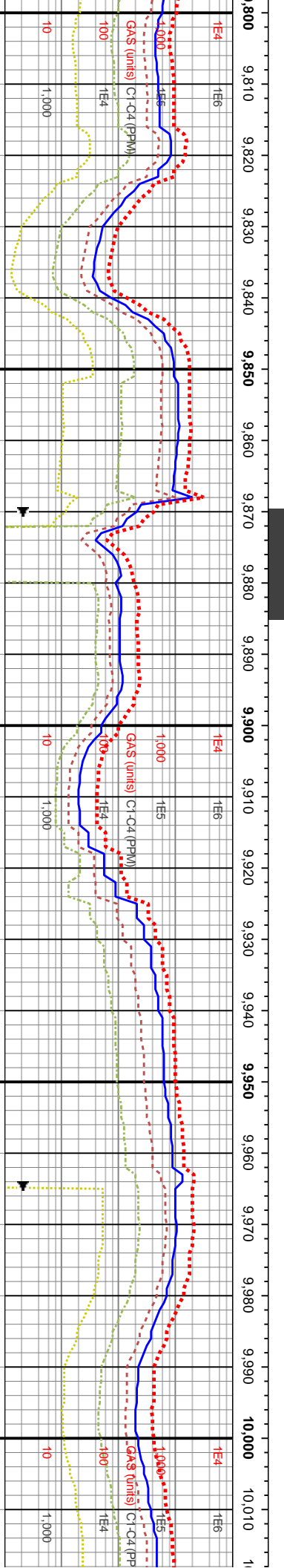
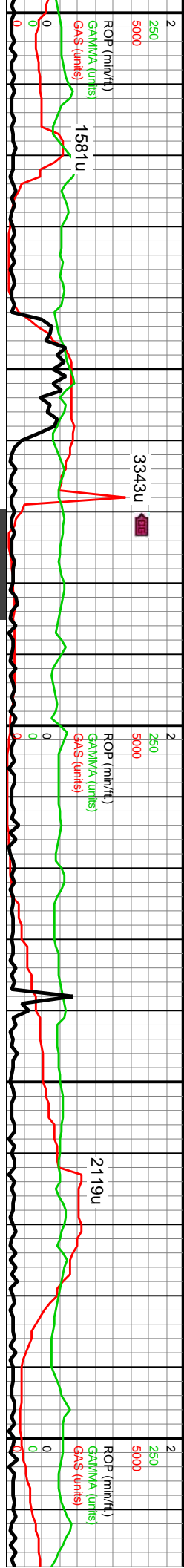
med gy, mod lt abnt trnsi grs thru, lt cmt, frm- fri grn e mtx sup clus wi uncons grs, sb rd- occ calc cmt, tr pyr	9380-9440 SS: pred gy- med gy, mod lt brn- ofwht, sme dk gy, abnt trnsi grs thru, lt brn- bf cmt, sme dk arg cmt, frm- fri grn sup clus wi f- u f grs, sme mtx sup clus wi f- u f grs, mod u f- med uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cmt, tr pyr	9440-9500 SS: pred gy- med gy, mod lt brn- ofwht, sme dk gy, abnt trnsi grs thru, lt brn- bf cmt, sme dk arg cmt, frm- fri grn sup clus wi f- u f grs, sme mtx sup clus wi f- u f grs, mod u f- med uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cmt, tr pyr	9500-9560 SS: pred gy, mod lt brn- ofwht, sme med gy, abnt trnsi grs thru, lt brn- bf cmt, tr dk arg cmt, frm- fri grn sup clus wi f- u f grs, sme mtx sup clus wi v f- f grs, mod u f- med uncons grs, occ c grd, sb rd- sb ang grs, ip ang grs, occ calc cmt, tr pyr	9560-9620 SS: f- gy, abnt trnsi grs fri grn sup clus v grs, mod u f- me ang grs, ip ang g
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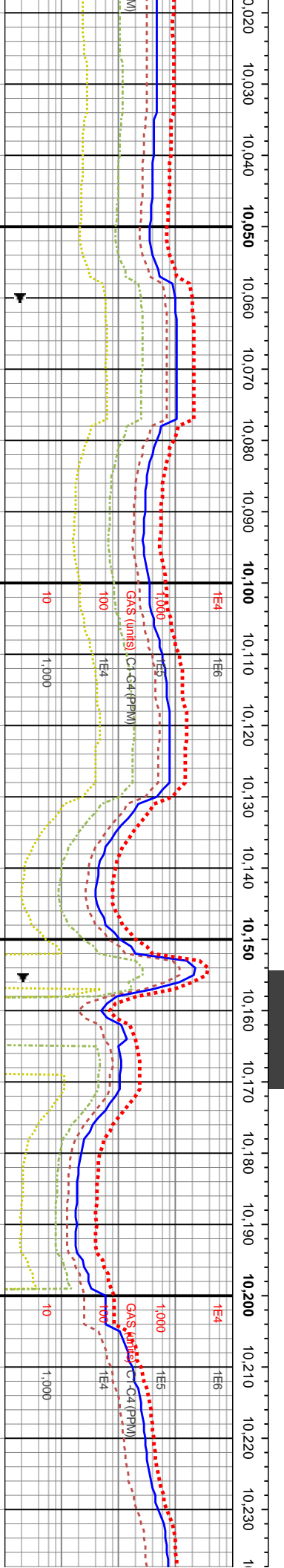
MD: 9,715'
Inclination: 90.2°
Azimuth: 270.37°
TVD: 7,306.35'
VS: 2,092.98'





Interval (ft)	Description
9800-9860 SS	pred gy- med gy- bf, mod lt brn- offwht, abnt trnsl grs thru, lt brn- bf cmt, occ dk arg cmt, frm- fri grn sup clus w/ f- u f grs, sme mtz sup clus w/ v f- f grs, mod u f- med uncons grs, occ u med- c grs, sb rd- sb ang grs, ip ang grs, occ calc cmt, tr pyr
9860-9920 SS	pred gy- med gy- bf, mod lt brn- offwht, abnt trnsl grs thru, lt brn- bf cmt, occ dk arg cmt, frm- fri grn sup clus w/ f- u f grs, sme mtz sup clus w/ v f- f grs, mod u f- med uncons grs, occ u med- c grs, sb rd- sb ang grs, ip ang grs, occ calc cmt, tr pyr
9920-9980 SS	pred gy- med gy- bf, mod lt brn- offwht, abnt trnsl grs thru, lt brn- bf cmt, occ dk arg cmt, frm- fri grn sup clus w/ f- u f grs, sme mtz sup clus w/ v f- f grs, mod u f- med uncons grs, occ u med- c grs, sb rd- sb ang grs, ip ang grs, occ calc cmt, tr pyr
9980-10040 SS	pred gy- r brn- offwht, abnt trnsl grs th occ dk arg cmt, frm- fri grn : grs, sme mtz sup clus w/ v f f med uncons grs, occ u mec ang grs, ip ang grs, occ calc inbds, tr pyr

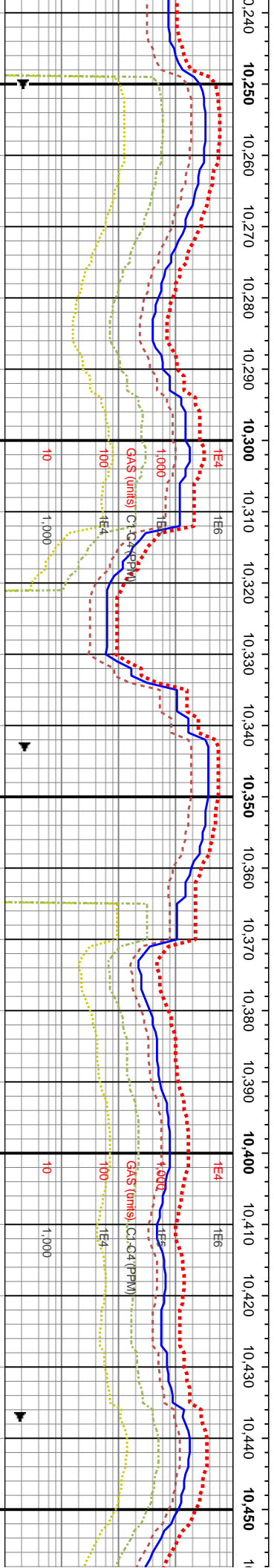
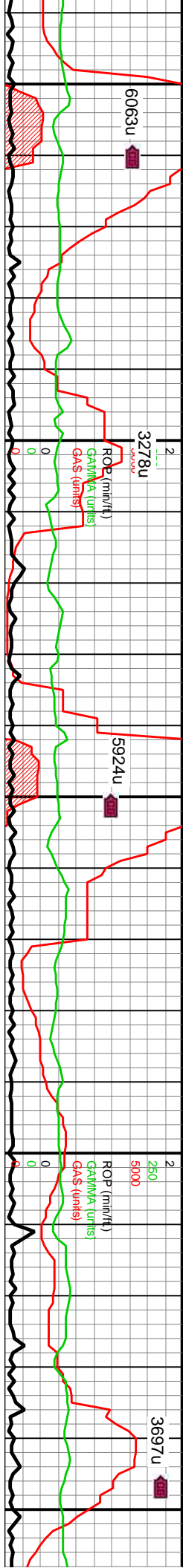




MD: 10,188'
Inclination: 90.54°
Azimuth: 271.9°
TVD: 7,310.94'
VS: 2,565.9'



med gy
brn-bf
clus wi
s, mod
sb ang
8000



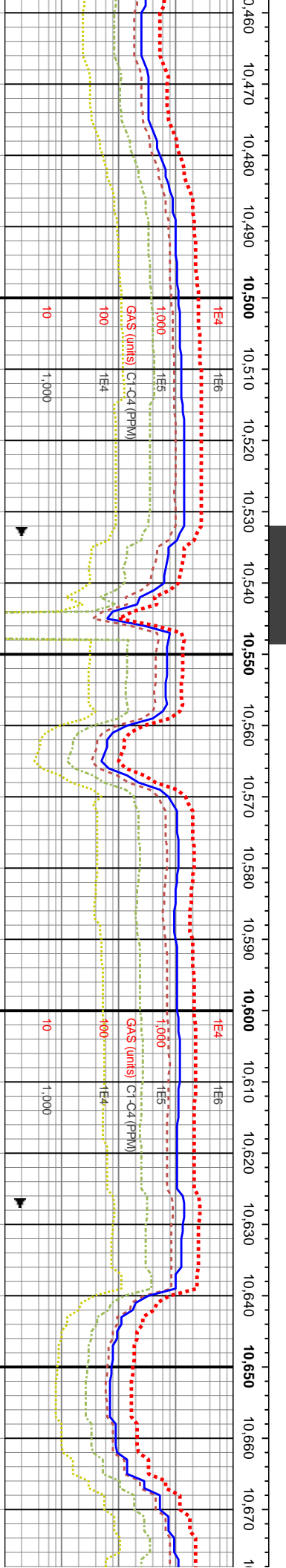
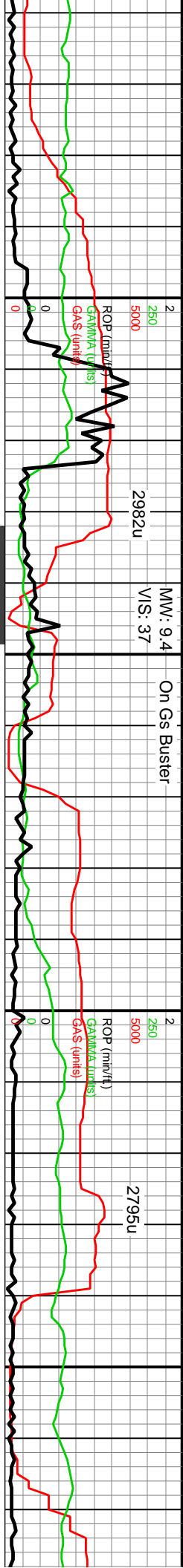
MD: 10,282'
Inclination: 90.7°
Azimuth: 271.13°
TVD: 7,309.92'
VS: 2,659.87'

TVD (ft)

TVD (ft)

10280 SS: pred gy- med gy- bf, mod lt mnt, trnsi grs thru, lt brn- bf cnt, sme mnt, frm- fri grn sup clus wi f- u f grs, x sup clus wi v f- f grs, mod u f- med grs, lt u med, sb rd- sb ang grs, ip occ calc cnt, sme lmy intbds	10280-10340 SS: pred gy- med gy- bf, mod lt brn- offwht, trnsi grs thru, lt brn- bf cnt, sme dk arg cnt, frm- fri grn sup clus wi f- u f grs, mod mlt sup clus wi v f- f grs, occ u f uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cnt, sme lmy intbds	10340-10400 SS: pred gy- med gy- bf, mod lt brn- offwht, trnsi grs thru, lt brn- bf cnt, sme dk arg cnt, frm- fri grn sup clus wi f- u f grs, mod mlt sup clus wi v f- f grs, occ u f uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cnt, sme lmy intbds	10400-10460 SS: pred gy- med gy- bf, mod lt brn- offwht, trnsi grs thru, lt brn- bf cnt, sme dk arg cnt, frm- fri grn sup clus wi f- u f grs, mod mlt sup clus wi v f- f grs, occ u f uncons grs, sb rd- sb ang grs, ip ang grs, occ calc cnt, sme lmy intbds
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MD: 10,471' WOB: 37Klbs
Inclination: 92.18° γ: 60RPM
Azimuth: 270.83° kes: 220SPM
TVD: 7,305.76ump Rate: 640GPM
VS: 2,848.8'

MD: 10,565'
Inclination: 90.4°
Azimuth: 272.29°
TVD: 7,303.65'
VS: 2,942.74'

MD: 10,660'
Inclination: 90.54°
Azimuth: 270.85°
TVD: 7,302.87'
VS: 3,037.7'

TVD: (ft)

TVD: (ft)

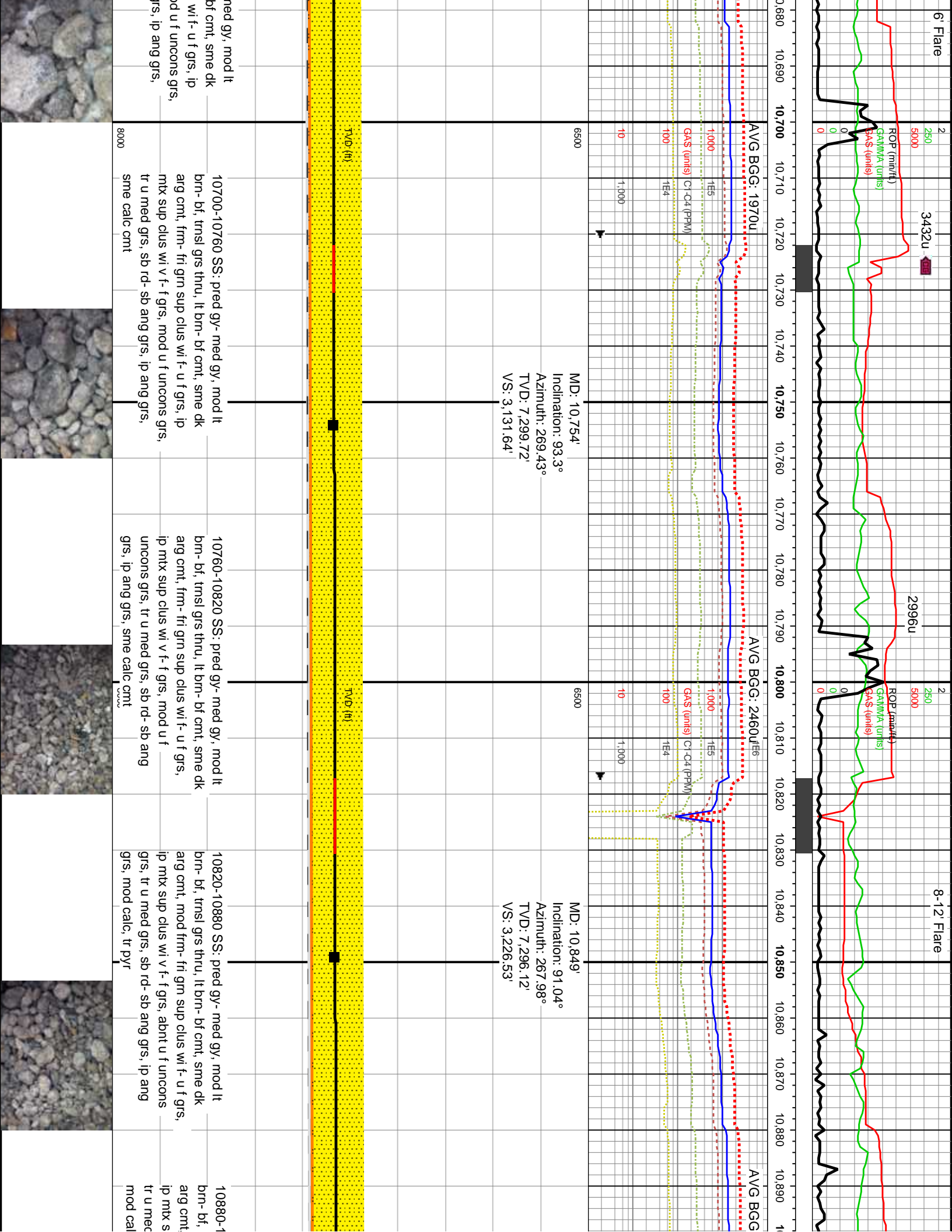
10460-10520 SS (70%): pred gy- med gy- bf, mod lt brn- offwht-brn, trnsi grs thru, lt brn- bf cnt, sme dk gy arg cnt, frm- fri grn sup clus wi f- v f grs, ip u f uncongs grs, sb rd- sb ang grs, ip ang grs, mod calc; LS (30%): wh- offwht- v lt gy, sme bf- lt brn, crpxln- microxln, tr pyr, sme dk slty- v f sd intbds

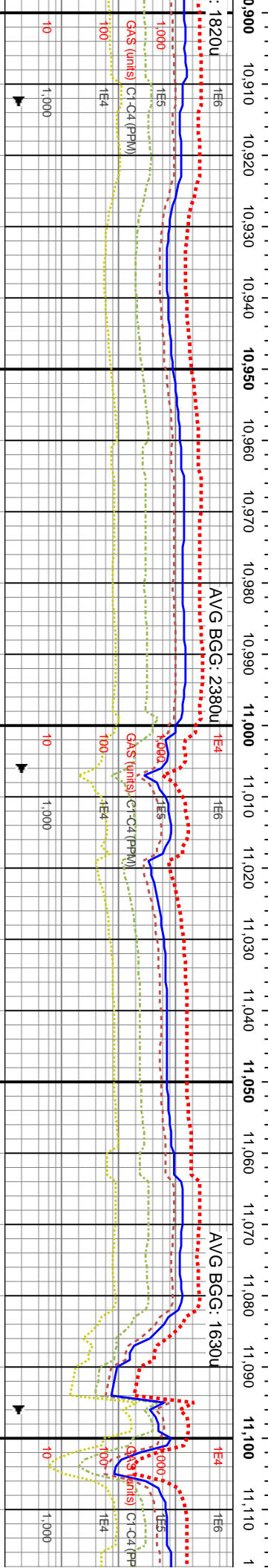
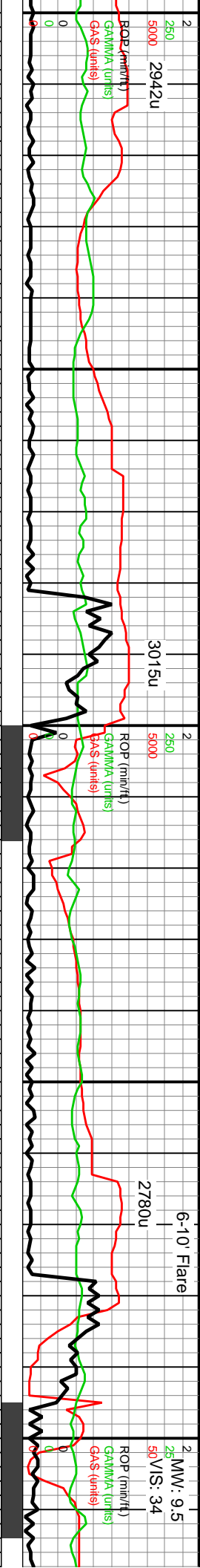
10520-10580 SS (50%): pred gy- med gy- bf, mod lt brn- offwht-brn, trnsi grs thru, lt brn- bf cnt, sme dk gy arg cnt, frm- fri grn sup clus wi f- v f grs, ip u f uncongs grs, sb rd- sb ang grs, ip ang grs, mod calc; LS (50%): wh- offwht- v lt gy, sme bf- lt brn, crpxln- microxln, tr pyr, sme dk slty- v f sd intbds

10580-10640 SS (80%): pred gy- med gy- bf, mod lt brn- offwht-brn, trnsi grs thru, lt brn- bf cnt, sme dk gy arg cnt, frm- fri grn sup clus wi f- v f grs, ip u f uncongs grs, sb rd- sb ang grs, ip ang grs, mod calc; LS (30%): wh- offwht- v lt gy, sme bf- lt brn, crpxln- microxln, tr pyr, sme dk slty- v f sd intbds

10640-10700 SS: pred gy- r brn- bf, trnsi grs thru, lt brn- arg cnt, frm- fri grn sup clus mtx sup clus wi v f- f grs, mtr u med grs, sb rd- sb ang c sme calc cnt

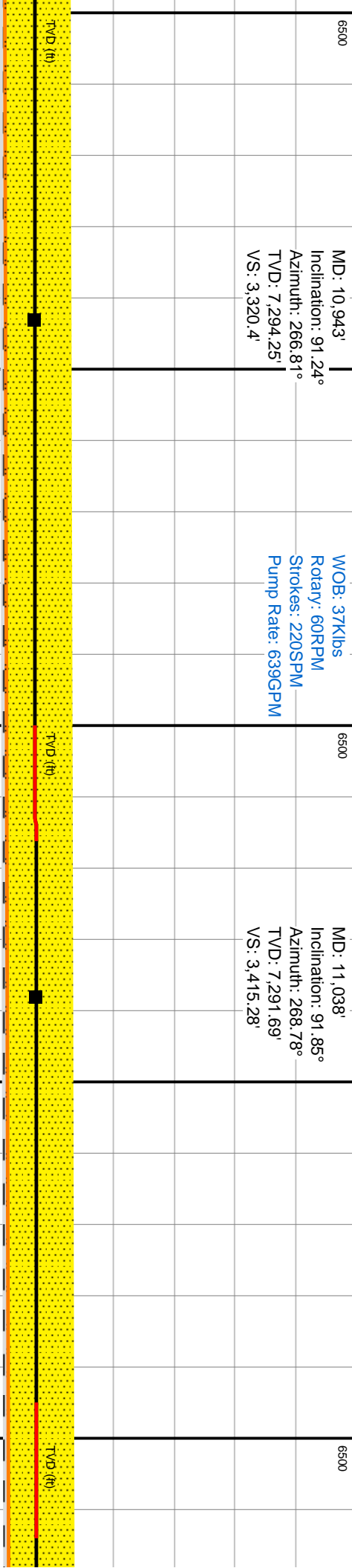






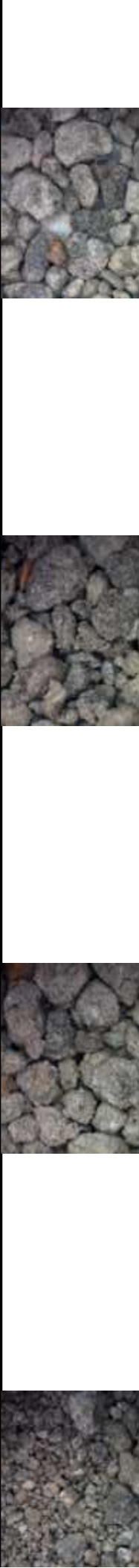
MD: 10,943'
Inclination: 91.24°
Azimuth: 266.81°
TVD: 7,294.25'
VS: 3,320.4'

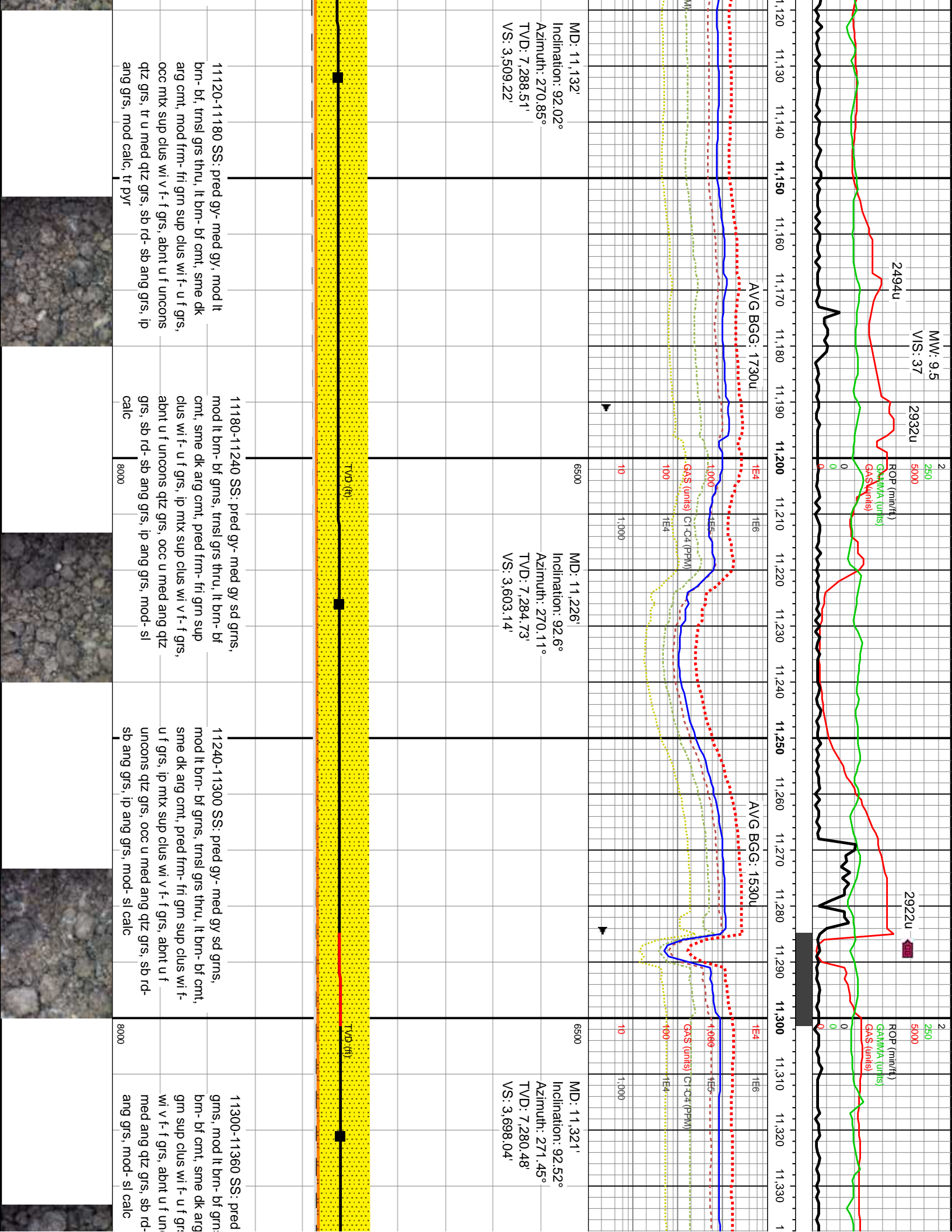
WOB: 37Klbs
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 639GPM

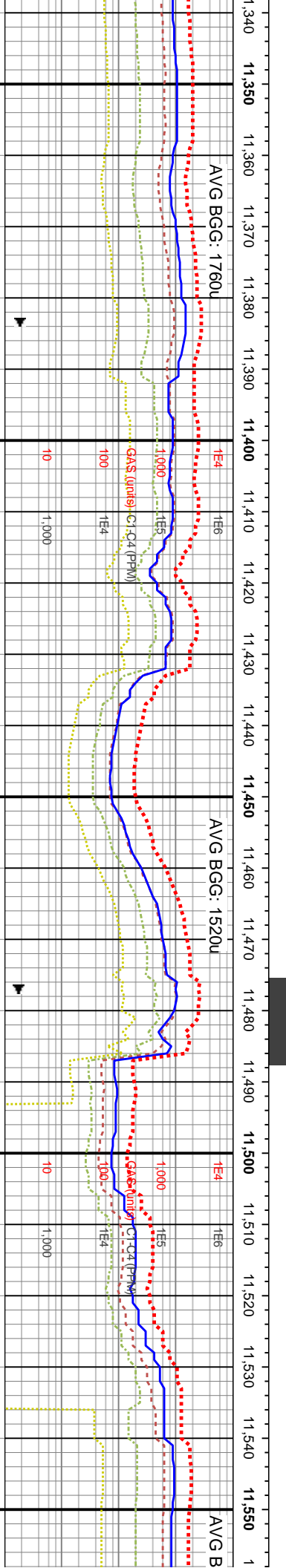
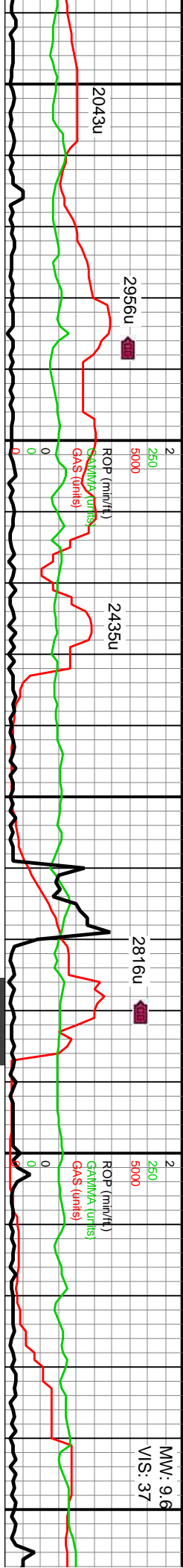


MD: 11,038'
Inclination: 91.85°
Azimuth: 268.78°
TVD: 7,291.69'
VS: 3,415.28'

0940 SS: pred gy- med gy, mod lt	10940-11000 SS: pred gy- med gy, mod lt brn- bf, trnsl grs thru, lt brn- bf cnt, sme dk arg cnt, pred frm- fri grn sup clus wi f- u f grs, ip u f uncongs grs, wi v f- f grs, mod u f uncongs qtz grs, tr u med qtz grs, sb rd- sb ang grs, ip ang grs,	11000-11060 SS: pred gy- med gy, mod lt brn- bf, trnsl grs thru, lt brn- bf cnt, sme dk arg cnt, pred frm- fri grn sup clus wi f- u f grs, occ mtz sup clus wi v f- f grs, mod u f uncongs qtz grs, tr u med qtz grs, sb rd- sb ang grs, ip ang grs, mod calc, tr pyr	11060-11120 SS: pred gy- med gy, mod lt brn- bf, trnsl grs thru, lt brn- bf cnt, sme dk arg cnt, mod frm- fri grn sup clus wi f- u f grs, occ mtz sup clus wi v f- f grs, abnt u f uncongs qtz grs, tr u med qtz grs, sb rd- sb ang grs, ip ang grs, mod calc, tr pyr
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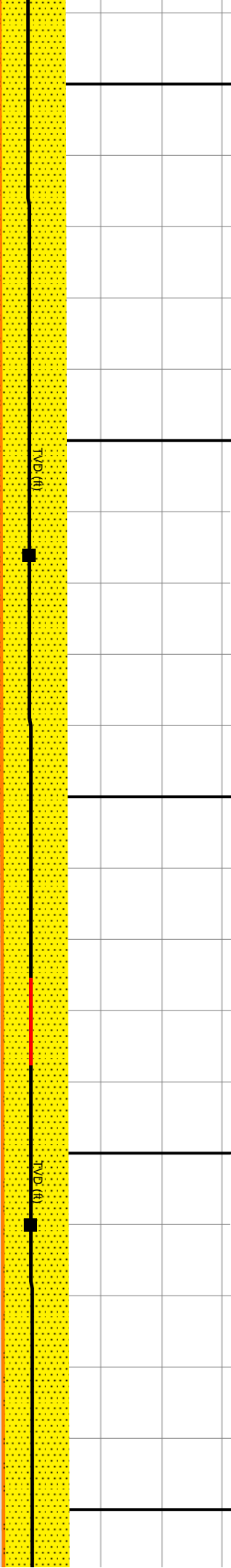




6500 MD: 11,416'
Inclination: 93.16°
Azimuth: 270.74°
TVD: 7,275.77'
VS: 3,792.91'

WOB: 38Klbs
Rotary: 58RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 11,510'
Inclination: 92.01°
Azimuth: 269.56°
TVD: 7,271.54'
VS: 3,886.81'



gy- med gy sd
s, tmsl grs thru, lt
cmt, pred frm- fri
s, ip mtz sup clus
cons qtz grs, occ u
sb ang grs, ip

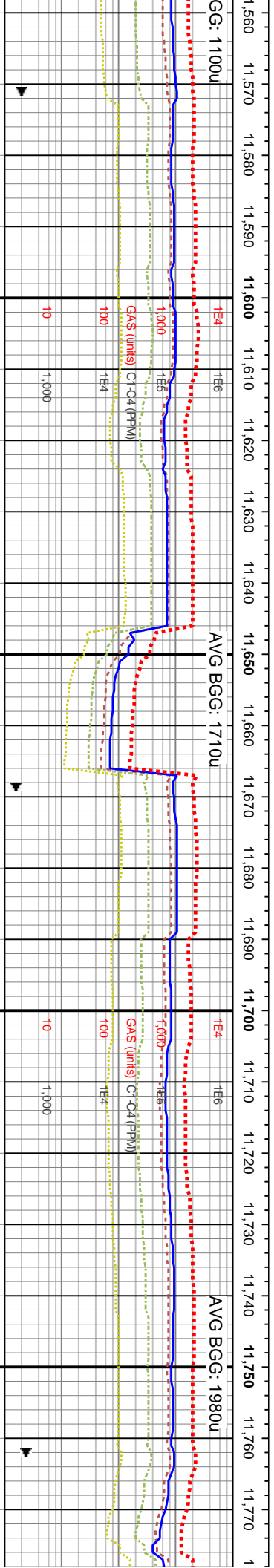
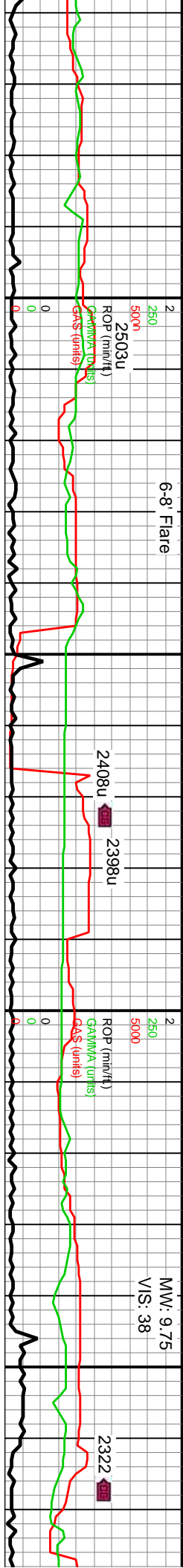
11360-11420 SS: pred med gy- brn sd grns,
mod lt brn- bf grns, tmsl grs thru, lt brn- bf cmt,
sme dk arg cmt, pred frm- fri grn sup clus wi f- u
f grs, ip mtz sup clus wi v f- f grs, abnt u f
uncons qtz grs, occ u med ang qtz grs, sb rd-
sb ang grs, ip ang grs, mod- sl calc

11420-11480 SS: pred med gy- brn sd grns,
mod lt brn- bf grns, tmsl grs thru, lt brn- bf
cmt, occ dk arg cmt, pred frm- fri grn sup clus
wi f- u f grs, ip mtz sup clus wi v f- f grs, ip u f
uncons qtz grs, tr u med ang qtz grs, sb rd- sb
ang grs, ip ang grs, mod- sl calc

11480-11540 SS: pred med gy- brn sd grns,
mod lt brn- bf grns, tmsl grs thru, lt brn- bf
cmt, occ dk arg cmt, pred frm- fri grn sup clus
wi f- u f grs, ip mtz sup clus wi v f- f grs, ip u f
uncons qtz grs, tr u med ang qtz grs, sb rd- sb
ang grs, ip ang grs, mod- sl calc

11540-11550 SS: pred med gy- brn sd grns,
mod lt brn- bf grns, tmsl grs thru, lt brn- bf
cmt, occ dk arg cmt, pred frm- fri grn sup clus
wi f- u f grs, ip mtz sup clus wi v f- f grs, ip u f
uncons qtz grs, tr u med ang qtz grs, sb rd- sb
ang grs, ip ang grs, mod- sl calc

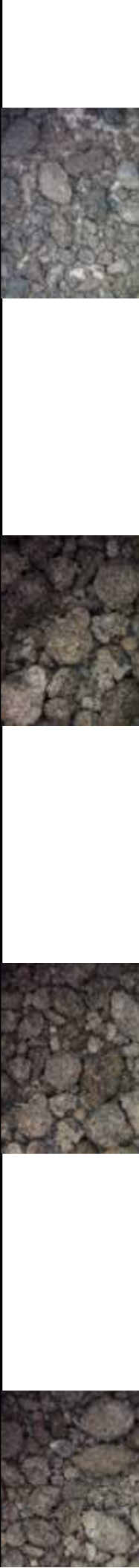


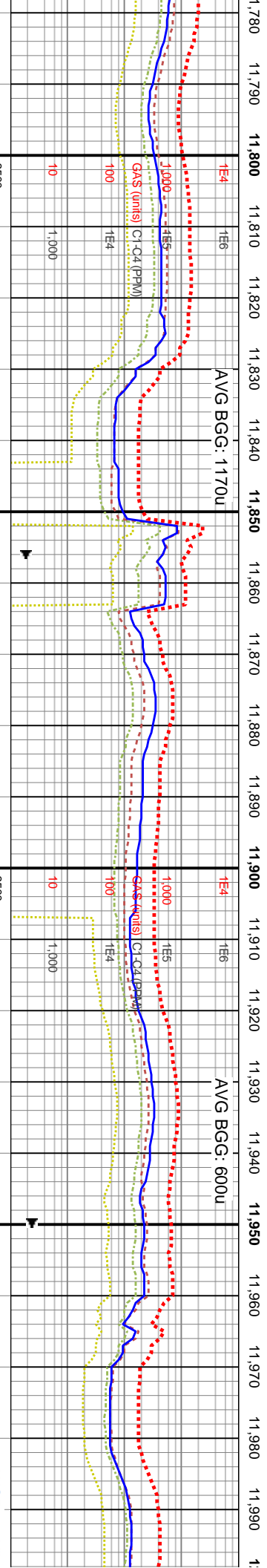
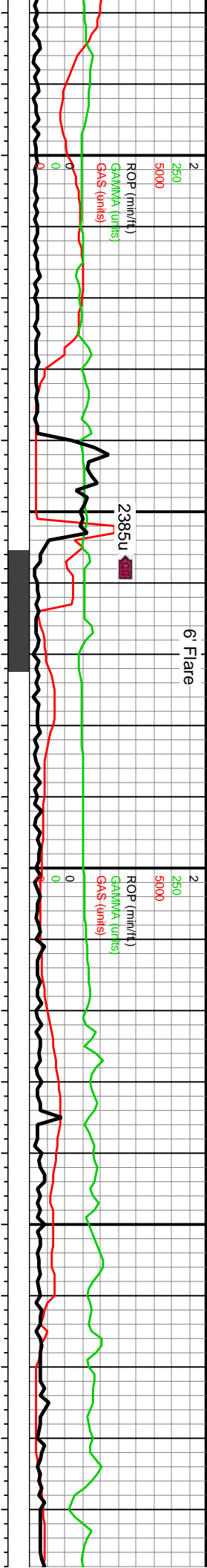


MD: 11,605'
Inclination: 92.82°
Azimuth: 270.03°
TVD: 7,267.53'
VS: 3,981.72'

MD: 11,699'
Inclination: 93.42°
Azimuth: 269.32°
TVD: 7,262.42'
VS: 4,075.58'

1600 SS: pred med gy- brn sd grns, ip br- bf grns, trnsl grs thru, lt brn- bf c dk arg cnt, pred frm- fri grm sup clus grs, ip mtz sup clus wi v f- f grs, ip u f qtz grs, tr med ang qtz grs, sb rd- sb ip ang grs, calc	11600-11660 SS: pred med gy- brn sd grns, ip lt brn- bf grns, trnsl grs thru, lt brn- bf cnt, occ med- dk gy arg cnt, pred frm- fri grm sup clus wi f- u f grs, ip mtz sup clus wi v f- f grs, ip u f uncons qtz grs, tr med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	11660-11720 SS: pred med gy- brn sd grns, ip lt brn- bf grns, trnsl grs thru, lt brn- bf cnt, occ med- dk gy arg cnt, pred frm- fri grm sup clus wi f- u f grs, ip mtz sup clus wi v f- f grs, ip u f uncons qtz grs, tr med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	11720-11780 SS: pred med gy- brn sd grns, ip lt brn- bf grns, trnsl grs thru, lt brn- bf cnt, occ med- dk gy arg cnt, pred frm- fri grm sup clus wi f- u f grs, ip mtz sup clus wi v f- f grs, ip u f uncons qtz grs, tr med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc
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MD: 11,793'
Inclination: 94.07°
Azimuth: 269.44°
TVD: 7,256.28'
VS: 4,169.37'

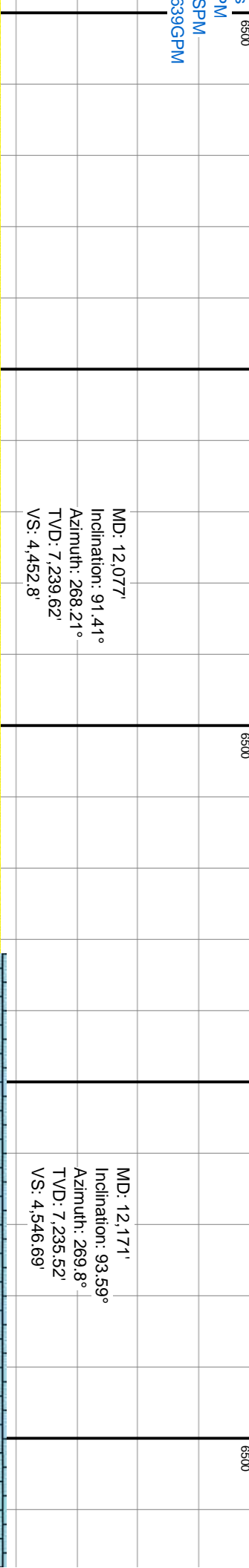
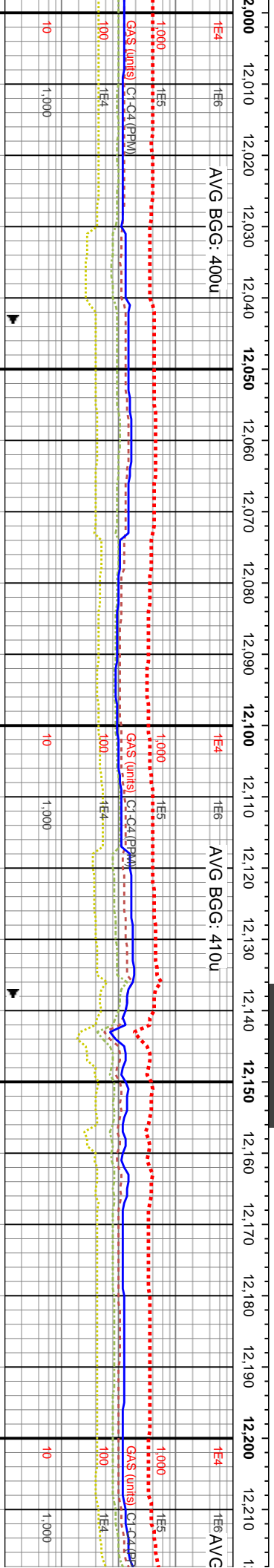
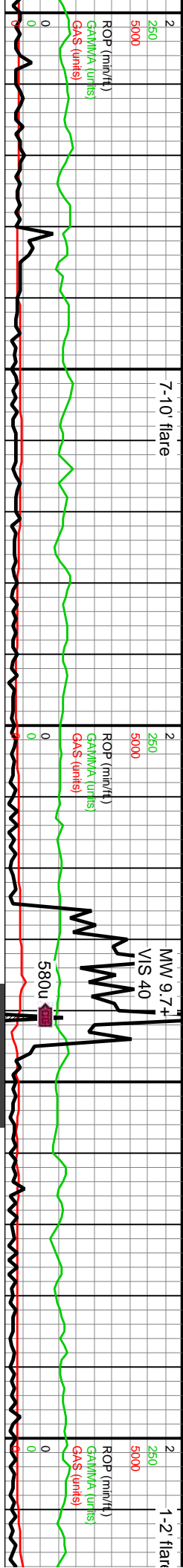
MD: 11,887'
Inclination: 94.04°
Azimuth: 271.13°
TVD: 7,249.67'
VS: 4,263.11'

MD: 11,982'
Inclination: 93.34°
Azimuth: 270.15°
TVD: 7,243.56'
VS: 4,357.91'

WOB: 40Klb
Rotary: 61RPM
Strokes: 220
Pump Rate: 1

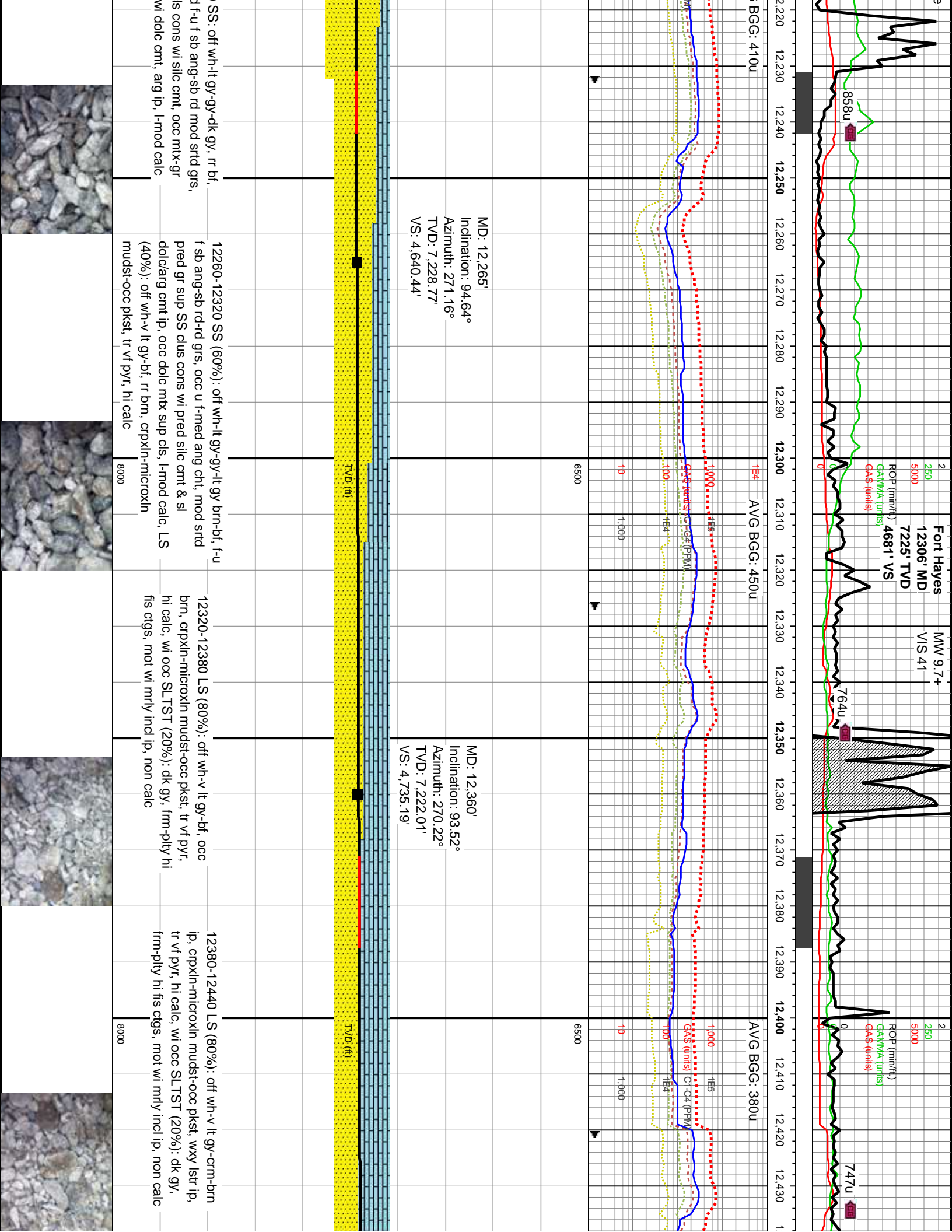
11780-11840 SS: pred med gy- brn sd grms, ip lt brn- bf grms, trnsd grs thru, lt brn- bf cmt, occ med- dk gy arg cmt, pred frm- fri grn sup clus wi f- u f grs, sme mtz sup clus wi v f- f grs, abnt u f uncons qtz grs, tr med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc		11840-11900 SS: off wh- lt gy- gy, sl brn hue ip, mod strd pred f sb ang- sb rd- rd grs, occ med- c ang cht grs, pred gr sup cls cons wi silc & sl dolc cmt, occ dolc mtz sup cls, arg ip, l- mod calc		11900-11960 SS: off wh- lt gy- gy- bf ip, pred f- u f sb ang- sb rd- rd mod strd grs, occ med- c ang cht, pred gr sup cls cons wi silc & sl dolc cmt, occ dolc mtz sup cls, arg ip, l- mod calc		11960-12020 SS: off wh- lt gy- gy- lt ang- sb rd- rd grs, occ u f- med ang gr sup SS clus cons wi pred silc cr cmt ip, occ dolc mtz sup cls, l- mod	
8000		8000		8000		8000	

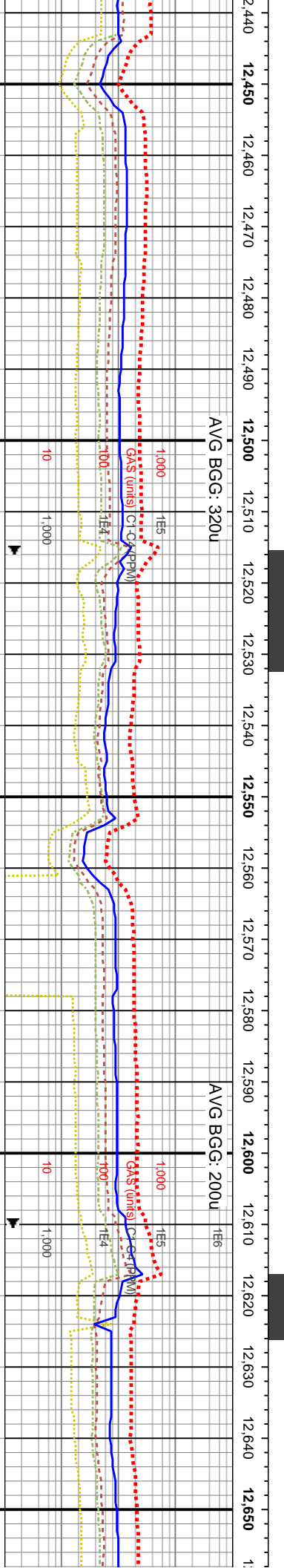




gy brn-bf, f-u f sb srted pred f sb ang-sb rd-rd grs, occ med-c ang qtz nt & sl dolc/arg calc	12020-12080 SS: off wh-it gy-gy, sl brn hue ip, mod srted pred f sb ang-sb rd-rd grs, occ med-c ang qtz grs, pred gr sup cls cons wi silc & sl dolc cnt, occ dolc mtz sup cls, arg ip, l-mod calc	12080-12140 SS: off wh-it gy-gy-dk gy, rr bf, pred mod srted f-u f sb ang-sb rd mod srted grs, pred gr sup cls cons wi silc cnt, occ mtz-gr sup cls cons wi dolc cnt, arg ip, l-mod calc	12140-12200 SS: off wh-it gy-gy-lt gy brn-bf, f-u f sb ang-sb rd-rd grs, occ u f-med ang cht, mod srted pred gr sup SS clus cons wi pred silc cnt & sl dolc/arg cnt ip, occ dolc mtz sup cls, l-mod calc	12200-12260 pred mod srted pred gr sup c sup cls cons
8000	8000	8000	8000	8000







MD: 12,454'
Inclination: 93.12°
Azimuth: 270.5°
TVD: 7,216.56'
VS: 4,829.03'

MD: 12,549'
Inclination: 91.18°
Azimuth: 271.46°
TVD: 7,213'
VS: 4,923.95'

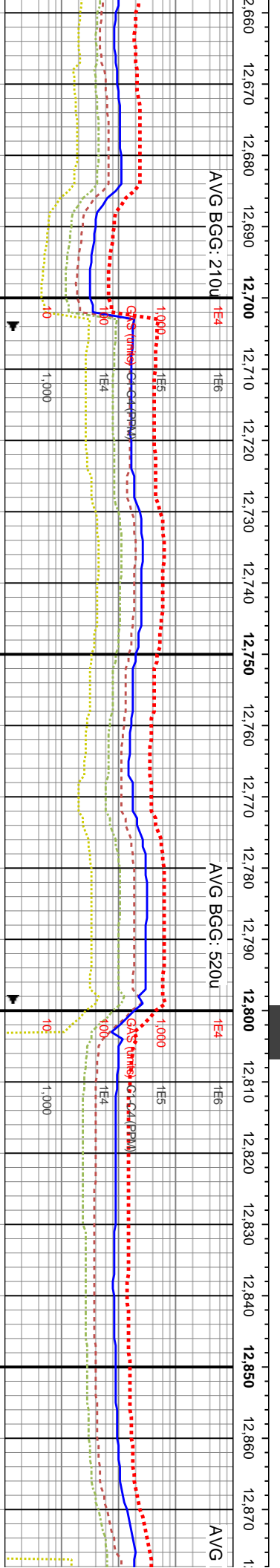
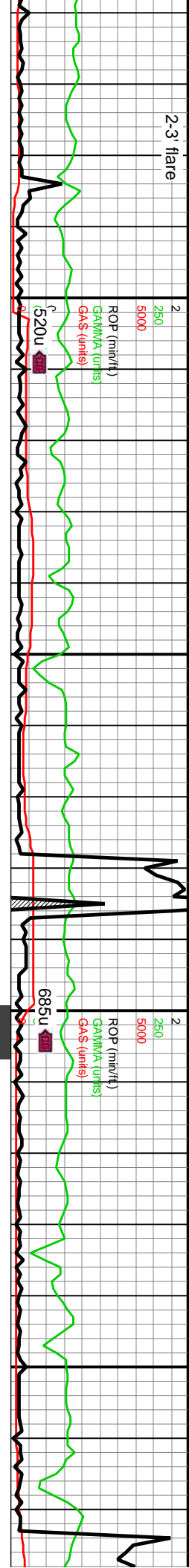
12440-12500 LS (85%): off wh-v lt gy-bf, occ
brn, crpxln-microxln mudst-occ pkst, tr vf pyr,
hi calc; wi occ SLTST (15%): dk gy, frm-pty hi
fis ctgs, mot wi mrlly incl ip, non calc

12500-12560 LS (85%): off wh-v lt gy-crm-brn ip, crpxln-microxln mudst-occ pkst, wxy lstr ip, tr v pyr, hi calc, wi occ SLTST (15%): dk gy, frm-ply hi fis ctgs, mot wi mrlly incl ip, non calc

12560-12620 LS (85%): off wh-v lt gy-crm-brn ip, cpxln-microxln mudst-occ pkst, wxy lstr ip, tr vf pyr, hi calc, wi occ SLTST (15%): dk gy, lfrm-ply hi fis ctqgs, mot wi mrly incl ip, non calc

12620-12680 LS (70%): off wh-v lt
crpxh-microxln mudst-occ pkst, wxx
calc, SS (30%); off wh-lt gy-gy-lt gy
f sb ang-sb rd-rd gis, frm-hd sli f r
cllus cons wi silic cmt, occ dolc mtx
l-mud calc



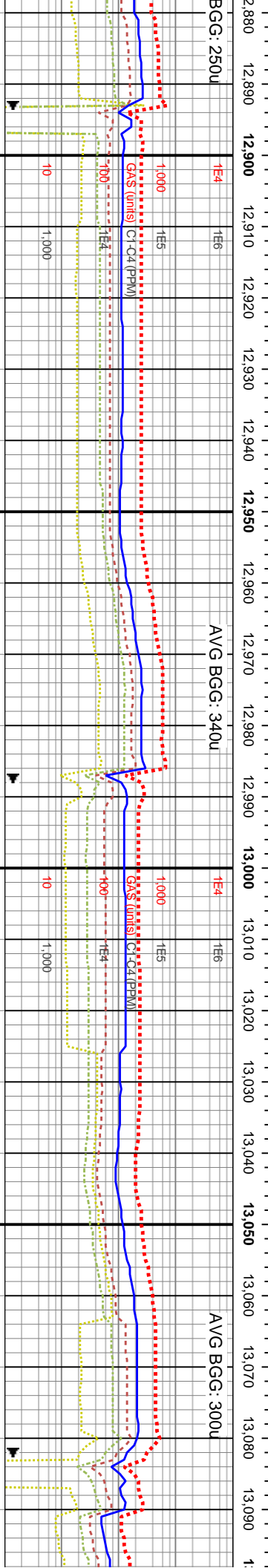
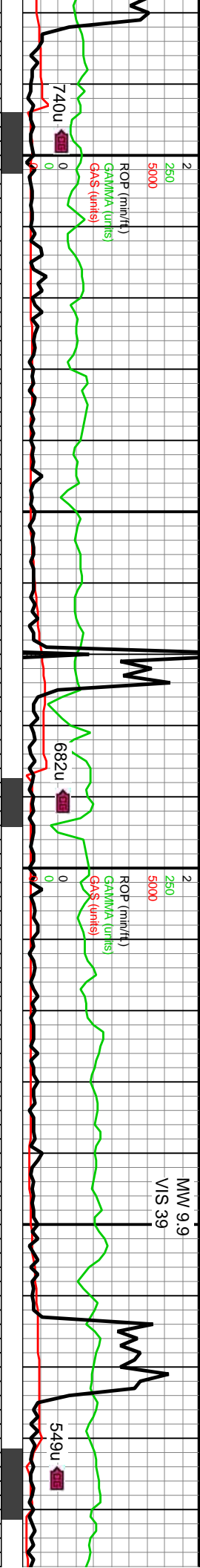


MD: 12,738'
Inclination: 90.13°
Azimuth: 271.18°
TVD: 7,212.09'
VS: 5,112.9'

MD: 12,832'
Inclination: 90.87°
Azimuth: 270.84°
TVD: 7,211.26'
VS: 5,206.89'

gy-crm-brn ip, y lstr ip, tr vf pyr, hi brn, p-mod srtf f-u	12680-12740 LS (60%): off wh-v lt gy-crm-brn ip, crpxln-microxln mudst-occ pkst, wxy lstr ip, tr vf pyr, hi calc, SS (40%): off wh-lt gy-gy-lt gy brn, p-mod srtf f-u f sb ang-sb rd-rd grs, frm-hd sli ftn pred gr sup SS clus cons wi silc cnt, occ dolc mtz sup cis, arg ip, l-mod calc	12740-12800 LS (50%): off wh-v lt gy-crm-brn ip, crpxln-microxln mudst-occ pkst, wxy lstr ip, tr vf pyr, hi calc, SS (50%): off wh-lt gy-gy-lt gy brn, p-mod srtf f-u f sb ang-sb rd-rd grs, frm-hd sli ftn pred gr sup SS clus cons wi silc cnt, occ dolc mtz sup cis, arg ip, l-mod calc	12800-12860 SS (80%): off wh-lt gy-gy-bf, p-mod srtf f-u f sb ang-sb rd grs cons wi arg & silc cnt, com u f uncons sb rd grs ip, l-mod calc, LS (20%): off wh-v lt gy-crm-brn ip, crpxln-microxln mudst-occ pkst, wxy lstr ip, tr vf pyr, hi calc	12860-12920 sb ang-sb rd grs arg & silc cnt sd ip, non-l ce
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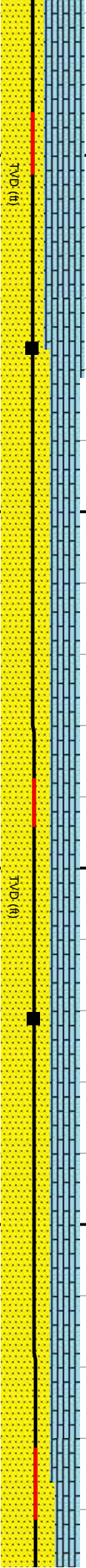




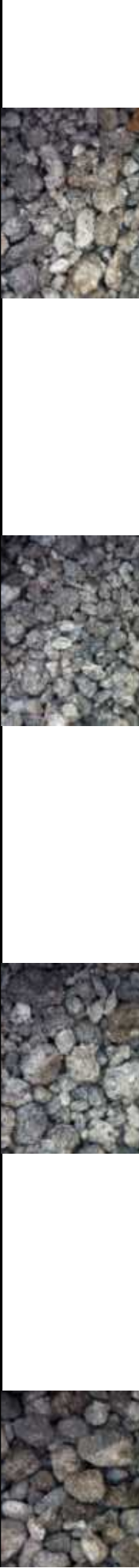
MD: 12,927'
Inclination: 91.58°
Azimuth: 270.47°
TVD: 7,209.23'
VS: 5,301.86'

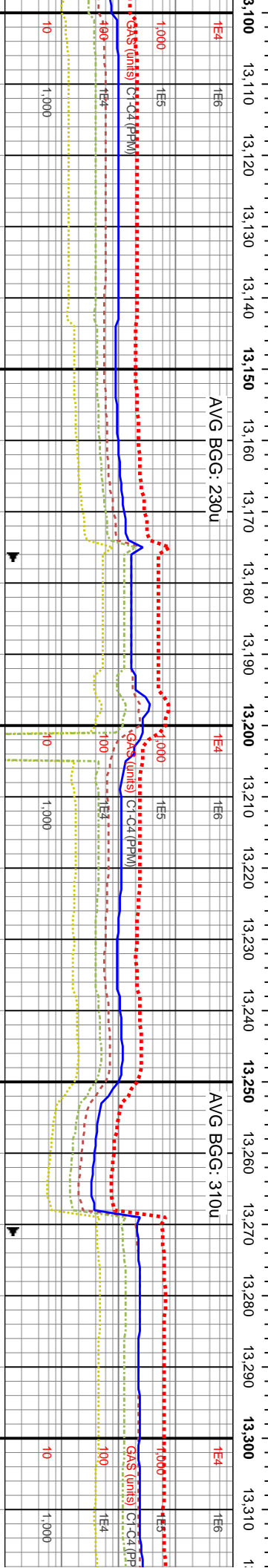
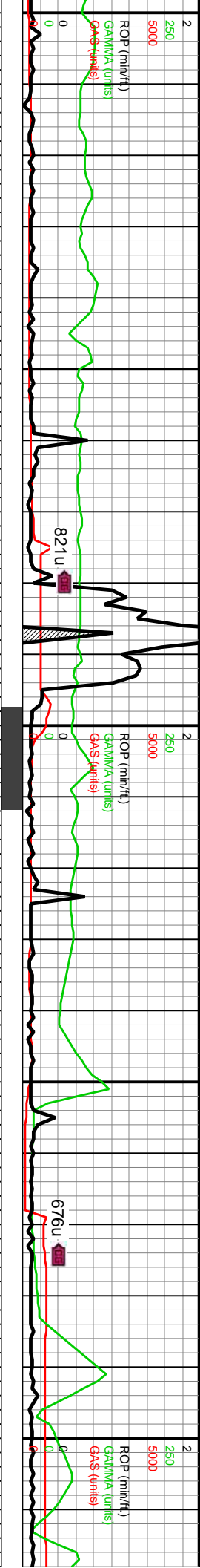
WOB: 33Klbs
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 13,021'
Inclination: 91.78°
Azimuth: 269.75°
TVD: 7,206.47'
VS: 5,395.82'



SS: off wh-lt gy-gy-bf, p-mod strd f-u f grs, pred gr sup sil-v fri clus cons wi ip, occ mtix sup cls, com u f uncons calc	12920-12980 SS: off wh-lt gy-gy-bf, p-mod strd f-u f sb ang-sb rd grs cons wi arg & silc cmt, com u f uncons sb rd grs ip, l-mod calc,	12980-13040 SS: off wh-lt gy-gy-bf, p strd f-u f sb ang-sb rd grs, pred gr sup sil-v fri clus cons wi arg & silc cmt ip, occ mtix sup cls, com u f uncons sd ip, non-l calc	13040-13100 SS: pred gy, occ off wh-lt gy-bf, p-mod strd f-u f sb ang-sb rd grs, pred gr sup sil fri gr sup clus cons wi silc cmt, arg cmt ip, occ mtix sup cls, com u f uncons sd ip, non-l calc
8000	8000	8000	8000

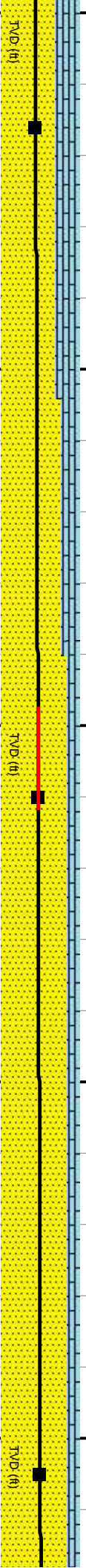




MD: 13,116'
Inclination: 93.94°
Azimuth: 270.69°
TVD: 7,201.73'
VS: 5,490.7'

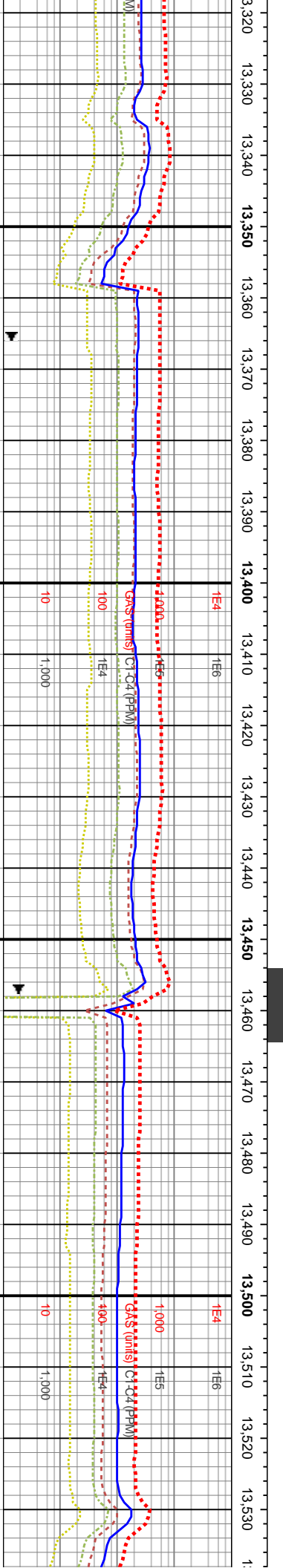
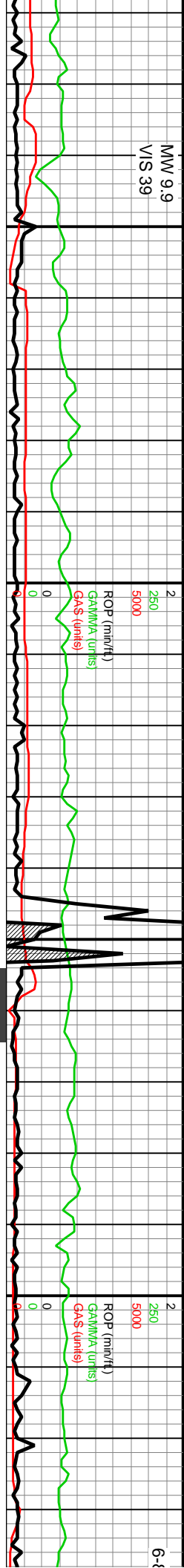
MD: 13,210'
Inclination: 93.39°
Azimuth: 270.59°
TVD: 7,195.72'
VS: 5,584.5'

MD: 13,305'
Inclination: 92.91°
Azimuth: 269.96°
TVD: 7,190.49'
VS: 5,679.36'



13100-13160 SS: pred gy, occ off wh-lt gy-bf, p-mod strd f-u f sb ang-sb rd grs cons wi arg & silic cnt, com u f unconcs sb rd grs ip, non-l calc	13160-13220 SS: pred gy, occ off wh-lt gy-bf, p-mod strd f-u f sb ang-sb rd grs, pred gr sup sli fri gr sup clus cons wi silic cnt, arg cnt ip, occ mtx sup cls, com u f unconcs sd ip, non-l calc	13220-13280 SS: pred gy, occ off wh-lt gy-bf, p-mod strd f-u f sb ang-sb rd grs cons wi arg & silic cnt, com u f unconcs sb rd grs ip, pred non calc, l calc ip	13280-13340 SS: pred med lt brn- bf grns, trnsl grs thru, med- dk gy arg cnt, pred frm f- u f grs, sme mtx sup clus v unconcs qtz grs, occ med- c & sb ang grs, ip ang grs, mod
8000	8000	8000	



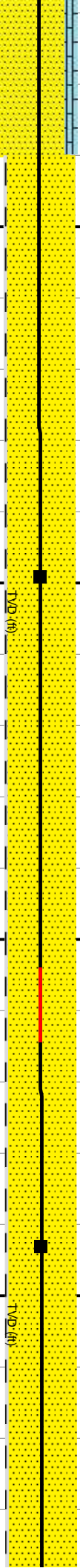


DP

MD: 13,399⁵⁰⁰
Inclination: 93.32°
Azimuth: 270.19°
TVD: 7,185.37'
VS: 5,773.24'

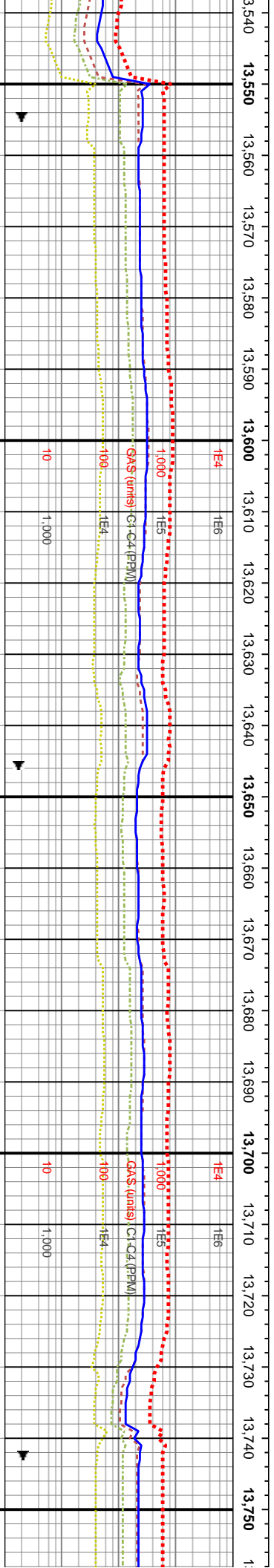
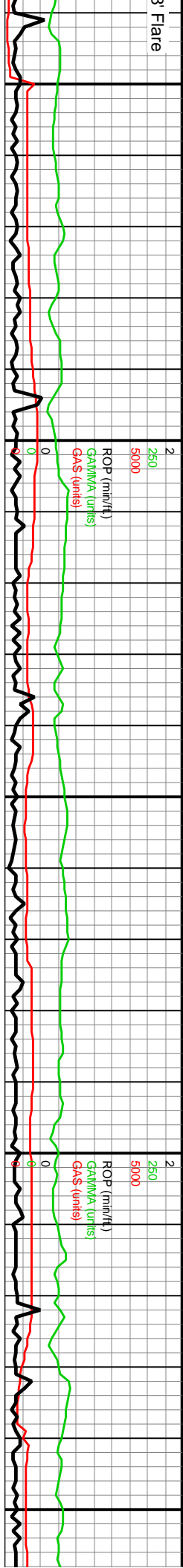
WOB: 29Klbs | 6500
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 13,493'
Inclination: 90.5°
Azimuth: 269.08°
TVD: 7,182.24'
VS: 5,867.17'



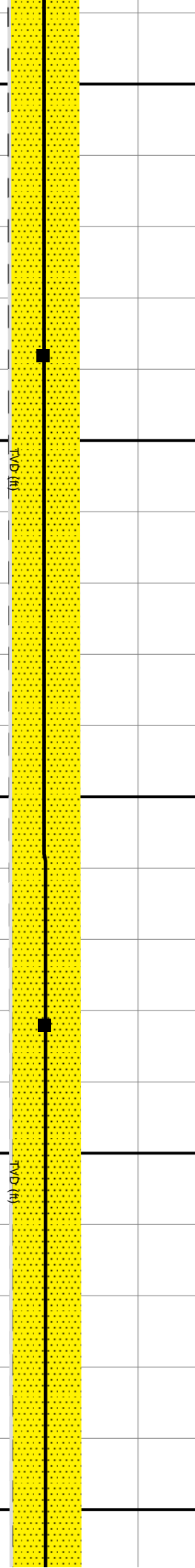
gy- bmn sd grms, ip	13340-13400 SS: pred med gy- bmn sd grms, ip lt brn- bf grms, trnsf grs thru, lt brn- bf cmt, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- u f grs, smt mx sup clus wi v f- f grs, abnt u f uncons qtz grs, sb rd- sb ang grs, mod calc		8000
lt brn- bf cmt, occ	13400-13460 SS: pred med gy- bmn sd grms, ip lt brn- bf grms, trnsf grs thru, lt brn- bf cmt, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- u f grs, smt mx sup clus wi v f- f grs, abnt u f uncons qtz grs, sb rd- sb ang grs, mod calc		8000
- fri grm sup clus wi		brn- bf grms, abnt trnsf grs thru, clus wi lt brn- bf cmt, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- u f grs, smt mx sup clus wi v f- f grs, abnt u f uncons qtz grs, sb rd- sb ang grs, mod calc	8000
wi v f- f grs, abnt u f			
uncons qtz grs, sb rd-			
calc			

1352
lt brn
brn-1
pred
mtx s
unco
sb ar

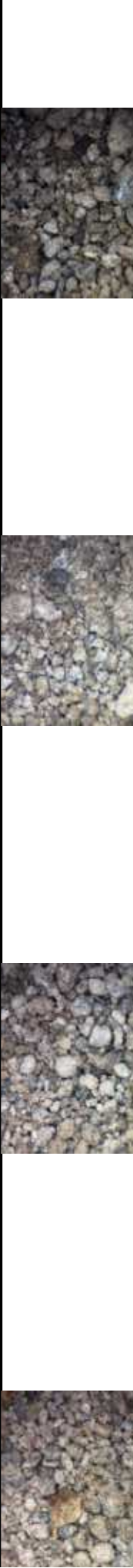


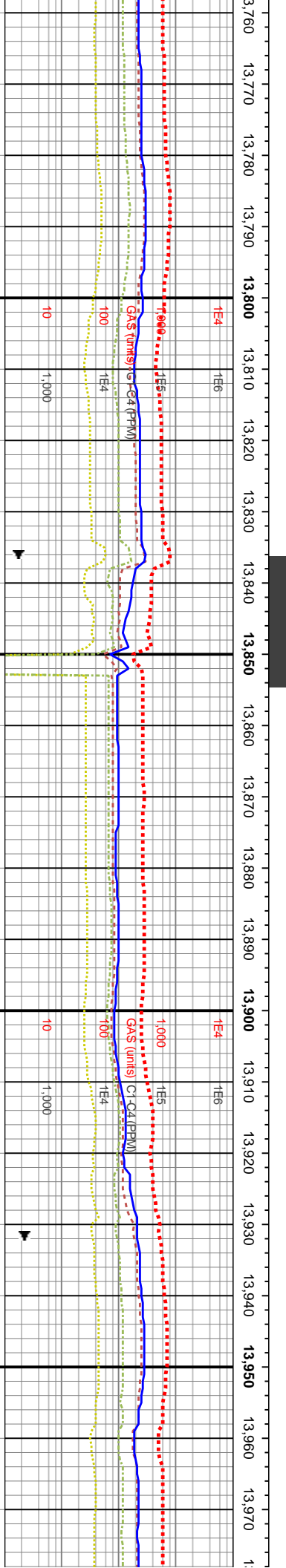
MD: 13,588'
Inclination: 90.94°
Azimuth: 269.22°
TVD: 7,181.04'
VS: 5,962.15'

MD: 13,682'
Inclination: 91.71°
Azimuth: 268.7°
TVD: 7,178.87'
VS: 6,056.1'



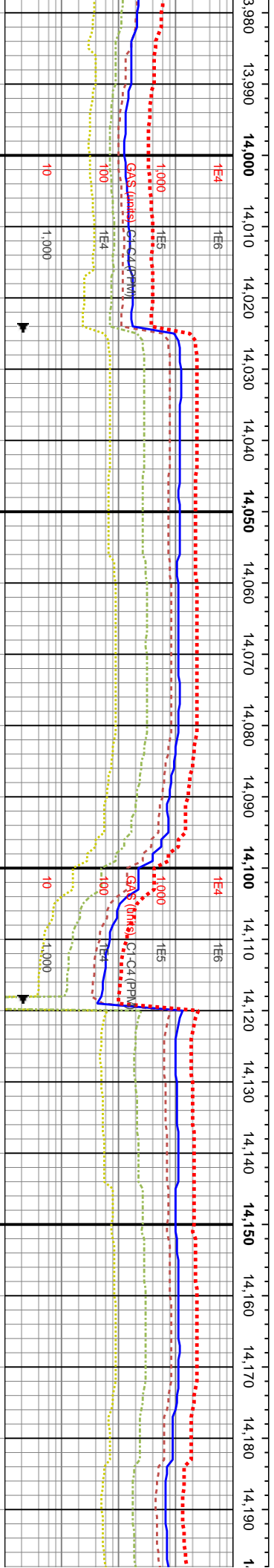
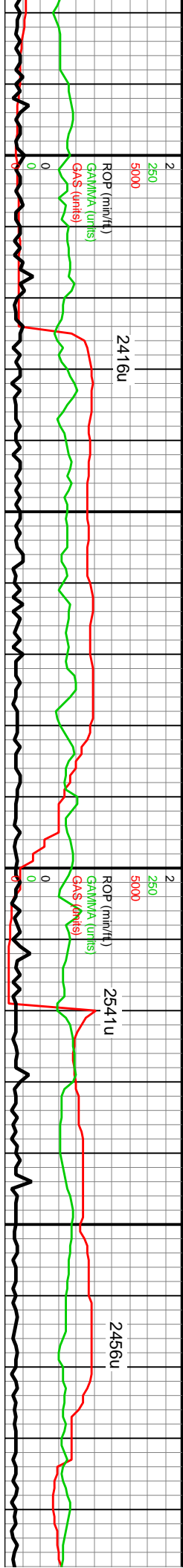
0-13580 SS: pred gy- brn sd grns, ip - bf grns, abnt trnsl grs thru, clus wi lt of- gy cnt, occ med- dk gy arg cnt, frm- frt grn sup clus wi f- u f grs, sme clus wi v f- f grs, abnt u f- med ang grs, ip ang grs, mod calc	13580-13640 SS: pred gy- brn sd grns, ip lt brn- bf grns, abnt trnsl grs thru, clus wi lt brn- bf- gy cnt, occ med- dk gy arg cnt, pred frm- frt grn sup clus wi f- u f grs, sme mtz sup clus wi v f- f grs, abnt u f- med uncongs qtz grs, sme c ang qtz grs, sb rd- sb rd- sb ang grs, ip ang grs, mod calc	13640-13700 SS: pred gy- brn sd grns, ip lt brn- bf grns, abnt trnsl grs thru, clus wi lt brn- bf- gy cnt, occ med- dk gy arg cnt, abnt u f- med uncongs qtz grs, abnt frm- frt grn sup clus wi f- u f grs, sme mtz sup clus wi v f- f grs, sme c ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	13700-13760 SS: pred gy- brn sd grns, ip lt brn- bf grns, abnt trnsl grs thru, clus wi lt brn- bf- gy cnt, occ med- dk gy arg cnt, abnt u f- med uncongs qtz grs, abnt frm- frt grn sup clus wi f- u f grs, sme mtz sup clus wi v f- f grs, sme c ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc
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MD: 13,965'
Inclination: 91.74°
Azimuth: 270.56°
TVD: 7,170.02'
VS: 6,338.92'

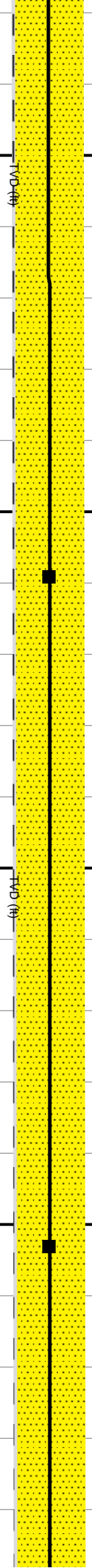
13940-14000 SS: pied gy-
brn- bl grns, abrt trnsj grs
bf- gy cmt, occ med- dk gy
med uncons qtz grs, ip fmm
wi- f u f grs, occ mix sup c
c ang qtz grs, sb rd- sb an
mod calc



WOB: 44Klbs
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 639GPM

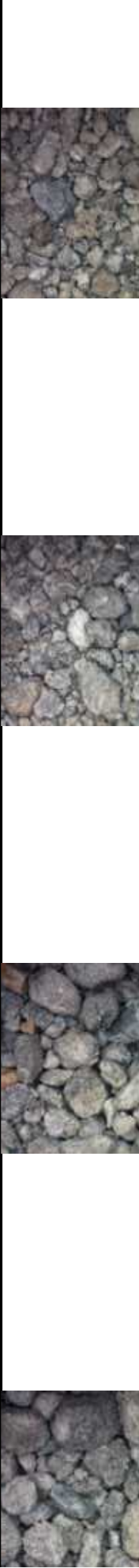
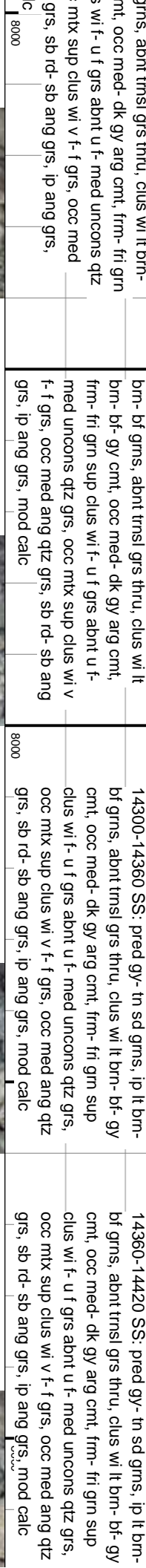
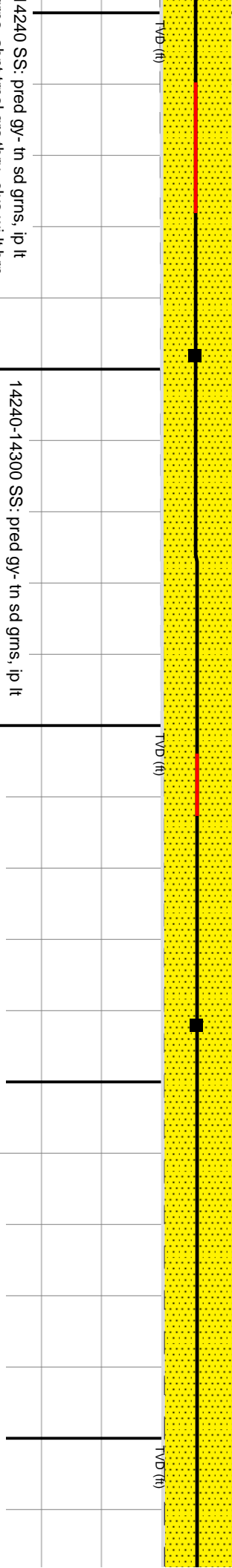
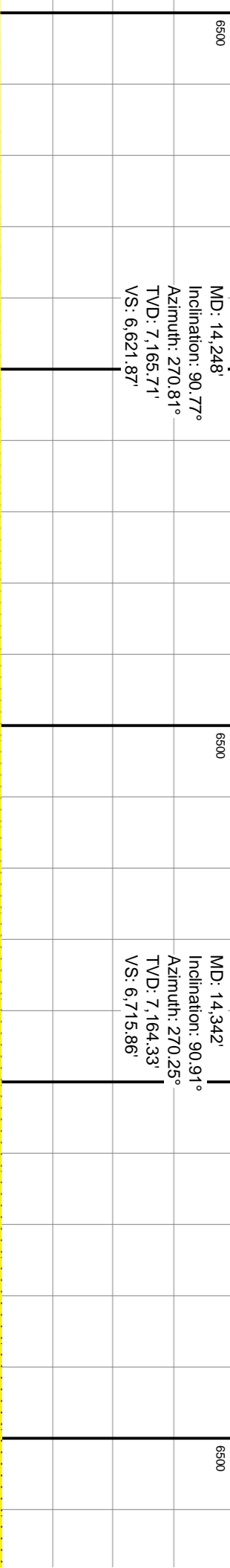
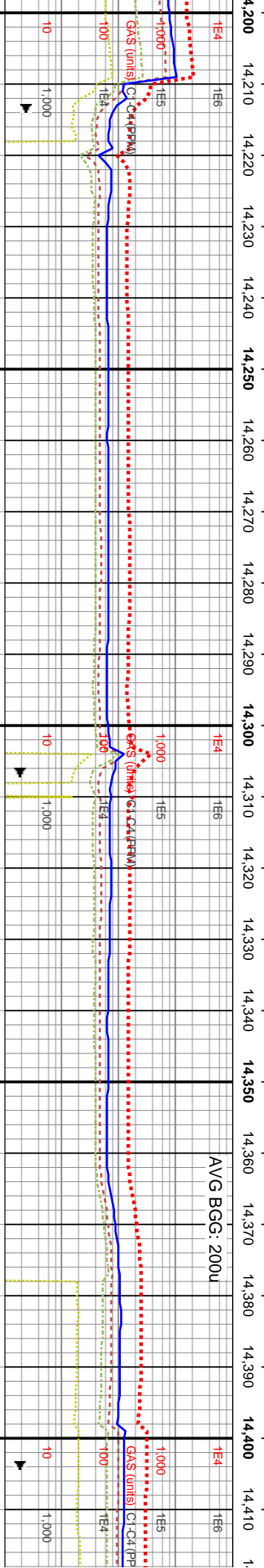
MD: 14,059'
Inclination: 90.87°
Azimuth: 269.82°
TVD: 7,167.88'
VS: 6,432.89'

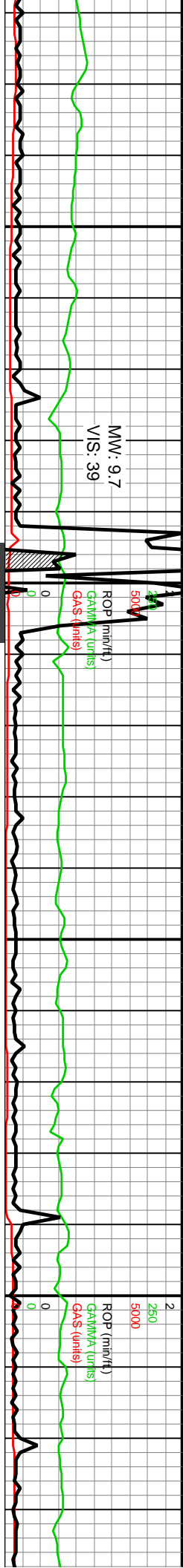
MD: 14,153'
Inclination: 90.5°
Azimuth: 269.25°
TVD: 7,166.76'
VS: 6,526.88'



tn sd grns, ip lt thru, clus wi lt brn- arg cmt, pred u f- - fri grn sup clus us wi v f- f grs, occ g grs, ip ang grs,	14000-14060 SS: pred gy- tn sd grns, ip lt brn- bf grns, abnt trnsf grs thru, clus wi lt brn- bf- gy cmt, occ med- dk gy arg cmt, pred u f- med uncon qtz grs, ip frm- fri grn sup clus wi f- u f grs, occ mtx sup clus wi v f- f grs, occ c ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	14060-14120 SS: pred gy- tn sd grns, ip lt brn- bf grns, abnt trnsf grs thru, clus wi lt brn- bf- gy cmt, occ med- dk gy arg cmt, pred u f- med uncon qtz grs, ip frm- fri grn sup clus wi f- u f grs, occ mtx sup clus wi v f- f grs, occ c ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	14120-14180 SS: pred gy- tn sd grns, ip lt brn- bf grns, abnt trnsf grs thru, clus wi lt brn- bf- gy cmt, occ med- dk gy arg cmt, pred u f- med uncon qtz grs, ip frm- fri grn sup clus wi f- u f grs, occ mtx sup clus wi v f- f grs, occ c ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	14180- brn- bf f bf- gy ci sup clus grs, occ ang qtz mod cal
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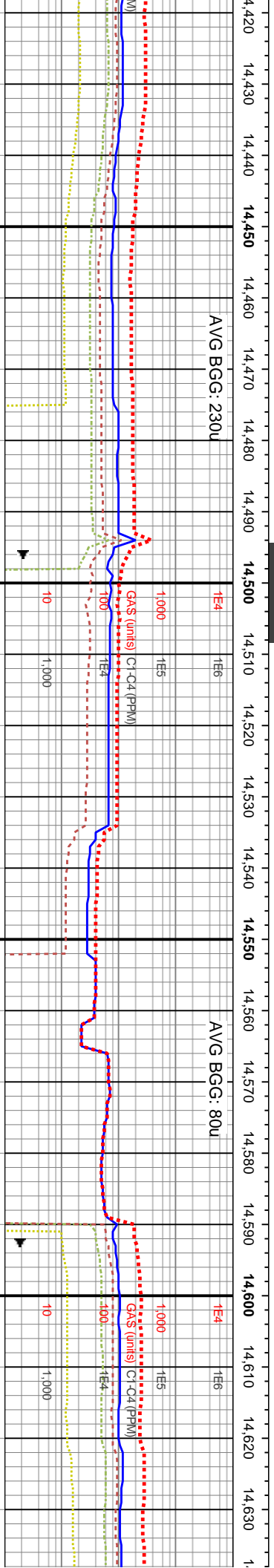




MW: 9.7
VIS: 39

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

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



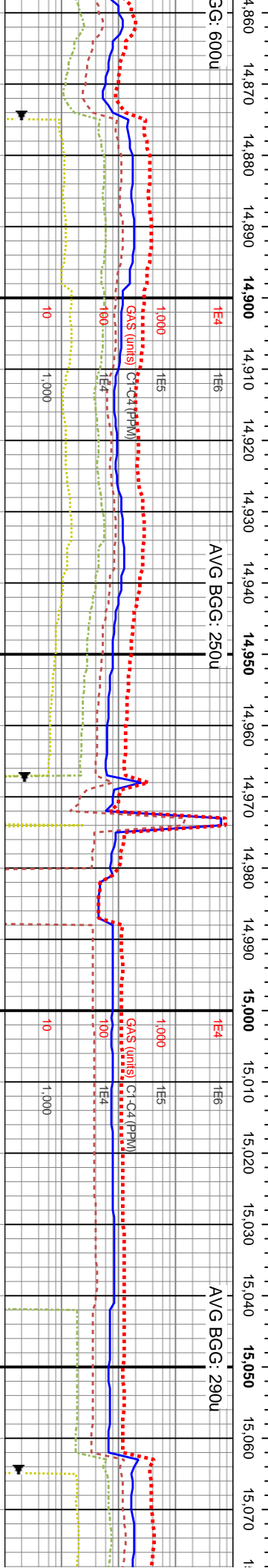
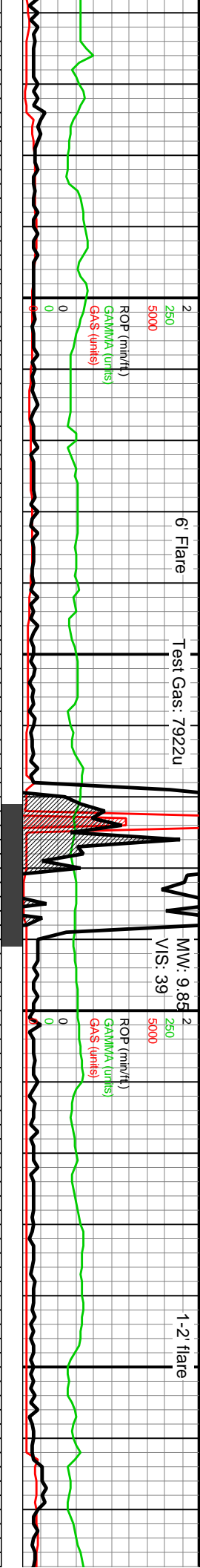
MD: 14,436'
Inclination: 91.45°
Azimuth: 269.95°
TVD: 7,162.39'
VS: 6,809.84'

WOB: 38Klbs
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 14,531'
Inclination: 92.61°
Azimuth: 270.89°
TVD: 7,159.03'
VS: 6,904.77'

MD: 14,626'
Inclination: 93.75°
Azimuth: 270.68°
TVD: 7,153.76'
VS: 6,999.62'

14420-14480 SS: pred gy sd grns, ip lt brn- bf grns, abnt trnsl grs thru, clus wi lt brn- bf- gy cnt, sme med- dk gy arg cnt, frm- fri grn sup clus wi f- u f grs, abnt u f- med uncons qtz grs, occ mtz sup clus wi v f- f grs, ip l med- med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc		14480-14540 SS: pred gy sd grns, ip lt brn- bf grns, abnt trnsl grs thru, clus wi lt brn- bf- gy cnt, sme med- dk gy arg cnt, frm- fri grn sup clus wi f- u f grs, abnt u f- med uncons qtz grs, occ mtz sup clus wi v f- f grs, ip l med- med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc		14540-14600 SS: pred gy sd grns, ip lt brn- bf grns, abnt trnsl grs thru, clus wi lt brn- bf- gy cnt, sme med- dk gy arg cnt, frm- fri grn sup clus wi f- u f grs, abnt u f- med uncons qtz grs, occ mtz sup clus wi v f- f grs, ip l med- med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc		14600-14660 SS: pred gy s grns, abnt trnsl grs thru, clu cnt, sme med- dk gy arg cr clus wi f- u f grs, abnt u f- r occ mtz sup clus wi v f- f gr ang qtz grs, tr c grs, sb rd- grs, mod calc	
TVD (ft)		TVD (ft)		TVD (ft)		TVD (ft)	



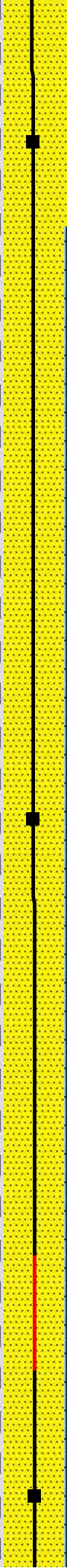
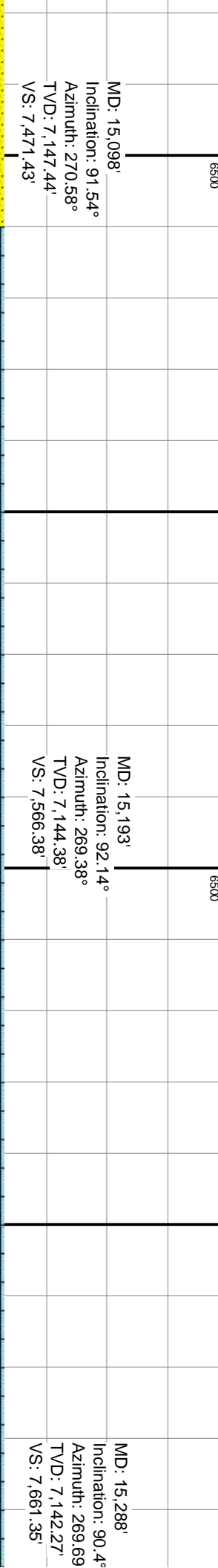
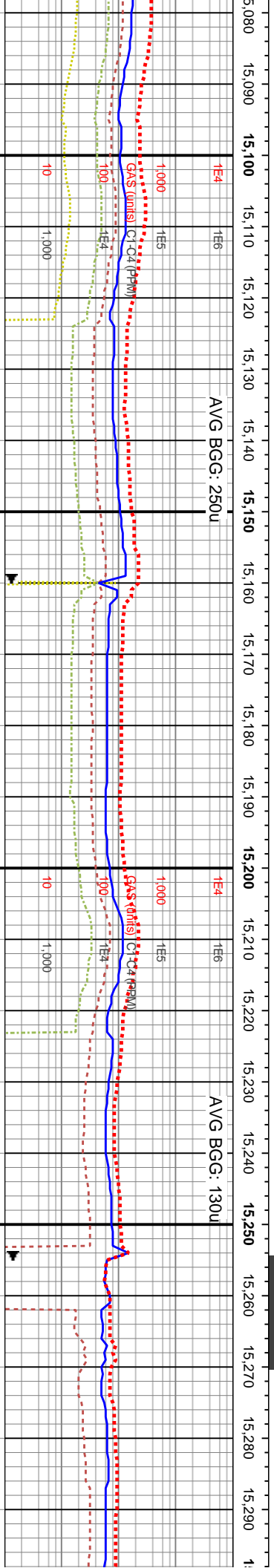
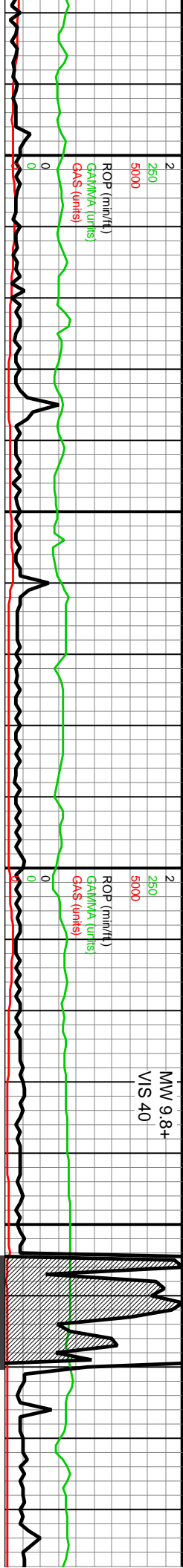
MD: 14,909'
Inclination: 89.6°
Azimuth: 268.73°
TVD: 7,149.86'
VS: 7,282.49'

WOB: 29Klbs
Rotary: 61RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 15,004'
Inclination: 90.91°
Azimuth: 270.95°
TVD: 7,149.43'
VS: 7,377.48'

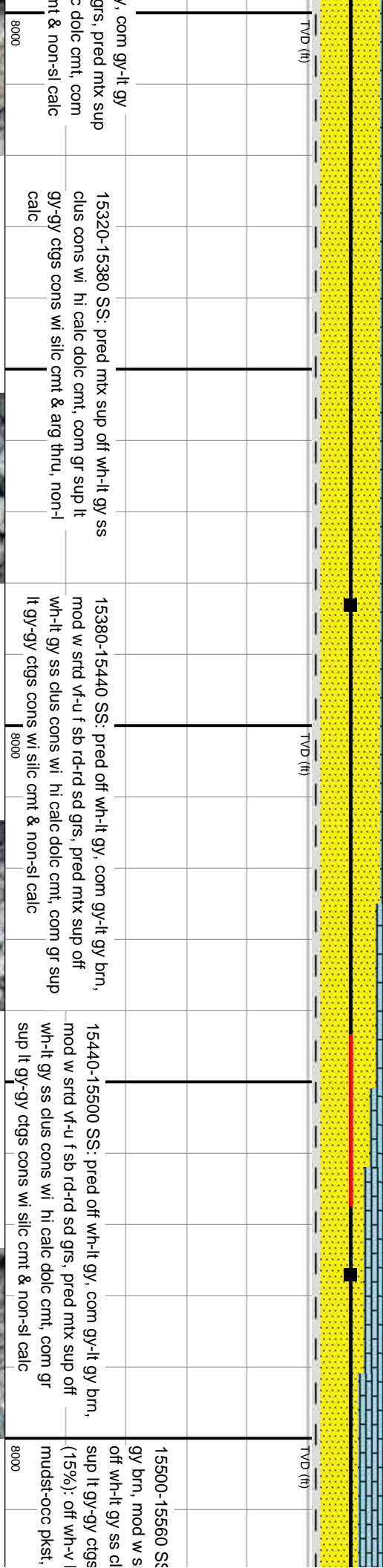
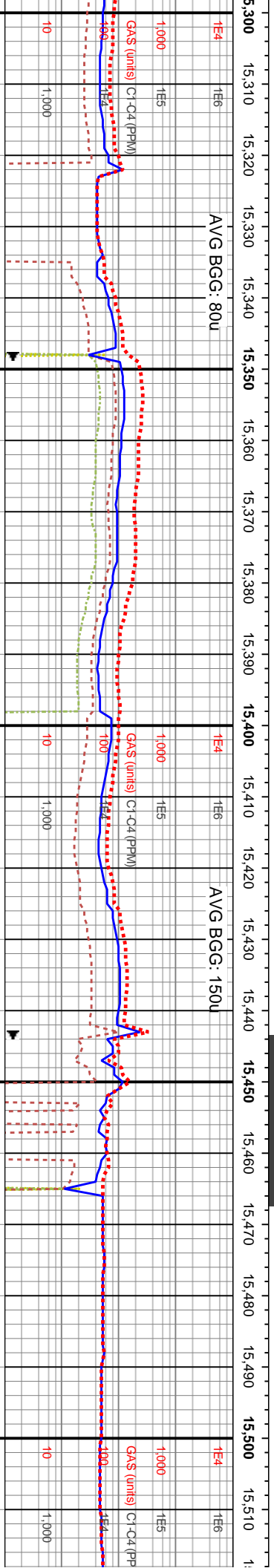
14900 SS: pred brn- gy sd grms, ip lt grms, abnt trnsf grs thru, clus wi lt brn- it, sme med- dk gy arg cnt, pred frm- p clus wi f- u f grs, mod u f- med qtz grs, occ mtb sup clus wi v f- f med- med ang qtz grs, sb rd- sb ang grs, mod calc	14900-14960 SS: pred brn- gy sd grms, ip lt brn- bf grms, abnt trnsf grs thru, clus wi lt brn- bf- gy cnt, sme med- dk gy arg cnt, pred frm- fri grn sup clus wi f- u f grs, mod u f- med uncons qtz grs, occ mtb sup clus wi v f- f grs, occ l med- med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	14960-15020 SS: pred brn- gy sd grms, ip lt brn- bf grms, abnt trnsf grs thru, clus wi lt brn- bf- gy cnt, sme med- dk gy arg cnt, pred frm- fri grn sup clus wi f- u f grs, mod u f- med uncons qtz grs, occ mtb sup clus wi v f- f grs, sme l med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	15020-15080 SS: off wh- lt gy- gy- lt gy brn, mod w strd vf- u f sb ang- sb rd grs, gr- mtb sup sil fri ss clus cons wi pred silic cnt, dolc ip & mod arg thru, tr gn chlor/ glau, mod calc
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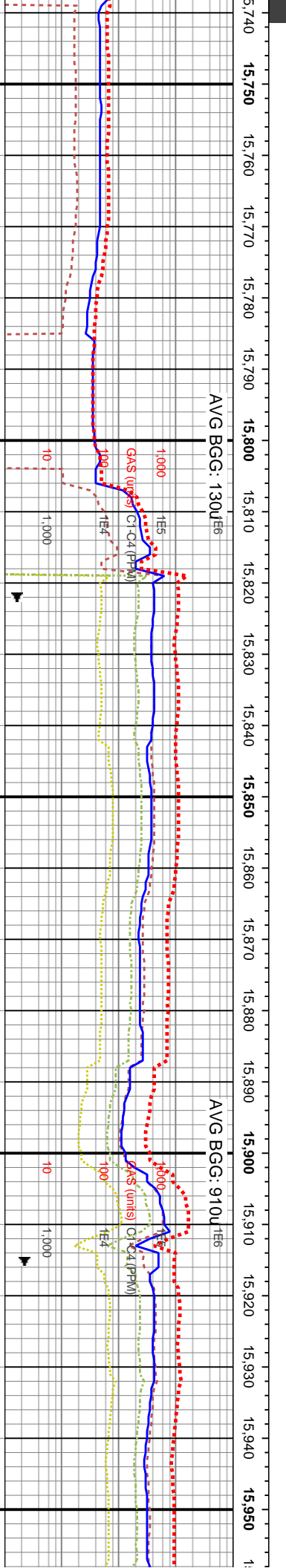
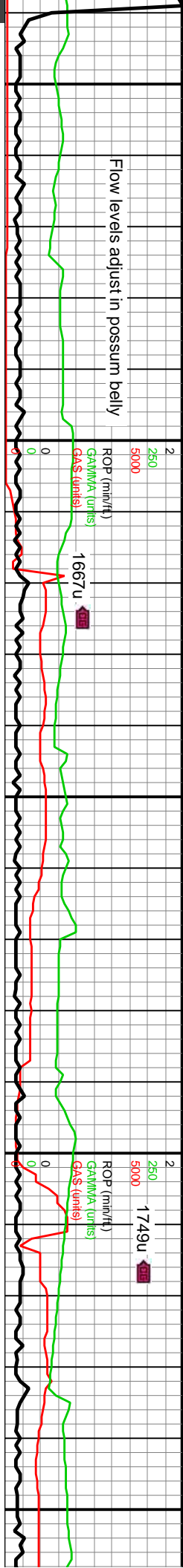




MD: 15,098' Inclination: 91.54° Azimuth: 270.58° TVD: 7,147.44' VS: 7,471.43'		MD: 15,193' Inclination: 92.14° Azimuth: 269.38° TVD: 7,144.38' VS: 7,566.38'		MD: 15,288' Inclination: 90.4° Azimuth: 269.69° TVD: 7,142.27' VS: 7,661.35'	
15080-15140 SS: off wh-lt gy-gy-lt gy brn, mod w	15140-15200 SS: off wh-lt gy-gy-lt gy brn, mod w	15200-15260 SS: off wh-lt gy-gy-lt gy brn, mod w	15260-15320 SS: pred off wh-lt gy		
strd vf-u f sb ang-sb rd grs, pred gr sup sli fri ss	strd vf-u f sb ang-sb rd grs, gr-mix sup sli fri ss	strd vf-u f sb ang-sb rd grs, pred gr sup sli fri ss	brn, mod w strd vf-u f sb rd-rd sd		
clus cons wi silic cnt, occ mtz sup clus cons wi	cons wi pred silic cnt, dolc ip & mod arg thru, tr gn	clus cons wi silic cnt, occ mtz sup clus cons wi	off wh-lt gy ss clus cons wi hi cal		
dolc/silic cnt, arg thru, tr gn chlor/glau, tr vf pyr,	chlor/glau, mod calc	dolc/silic cnt, arg thru, tr gn chlor/glau, tr vf pyr, mod	gr sup lt gy-gy clgs cons wi silic cr		
mod calc		calc			
8000	8000	8000			







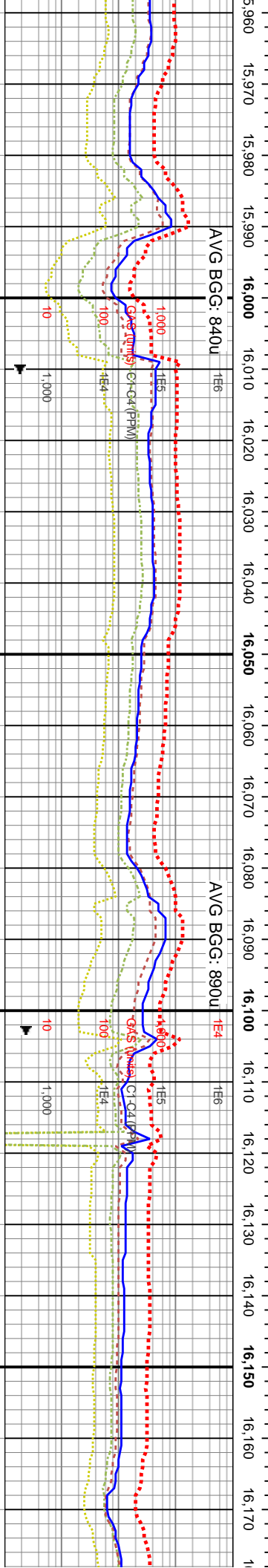
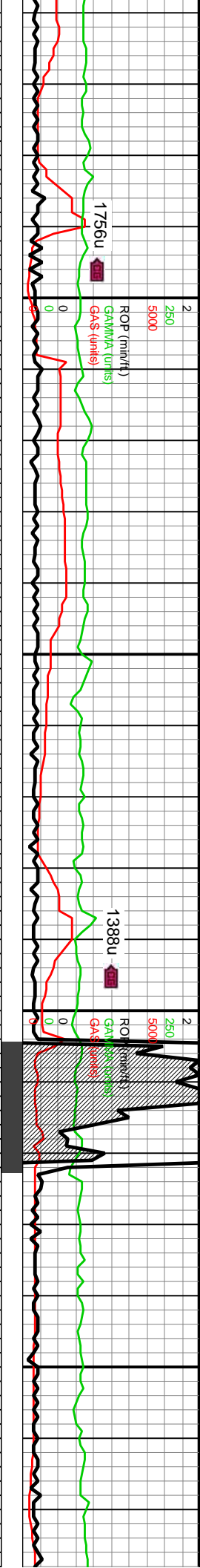
MD: 15,760'
Inclination: 87.96°
Azimuth: 271.37°
TVD: 7,144.5'
VS: 8,133.23'

MD: 15,855'
Inclination: 89.49°
Azimuth: 272°
TVD: 7,146.61'
VS: 8,228.17'

MD: 15,949'
Inclination: 90.8°
Azimuth: 272.43°
TVD: 7,146.37'
VS: 8,322.1'

15740-15800 SS: pred gy- tn sd grms, ip lt brn- brn grms, trnsi grs thru, clus wi bf- offwht cnt, sme med- dk gy arg cnt, frm- fri grn sup clus wi f- u f grs, abnt u f uncongs qtz grs, occ mtz sup clus wi v f- f grs, ip l med- med ang qtz grs, sb rd- sb ang grs, ip ang grs, mod calc	15800-15860 SS: pred gy- tn sd grms, ip lt brn- brn grms, trnsi grs thru, clus wi bf- offwht cnt, sme med- dk gy arg cnt, frm- fri grn sup clus wi f- u f grs, abnt u f uncongs qtz grs, occ mtz sup clus wi v f- f grs, ip l med- med ang qtz grs, sb rd- sb ang grs, mod calc	15860-15920 SS: pred gy- brn sd grms, abnt lt brn- brn grms, trnsi grs thru, clus wi bf- offwht cnt, sme med- dk gy arg cnt, pred frm- fri grn sup clus wi f- u f grs, occ u f- l med uncongs qtz grs, occ mtz sup clus wi v f- f grs, sb rd- sb ang grs, ip ang grs, mod calc	15920-15980 SS: pred gy- brn brn- brn grms, trnsi grs thru, clus wi bf- offwht cnt, sme med- dk gy arg cnt, frm- fri grn sup clus wi f- u f grs, occ u f- l med uncongs qtz grs, occ mtz sup clus wi v f- f grs, ip ang grs, mod calc
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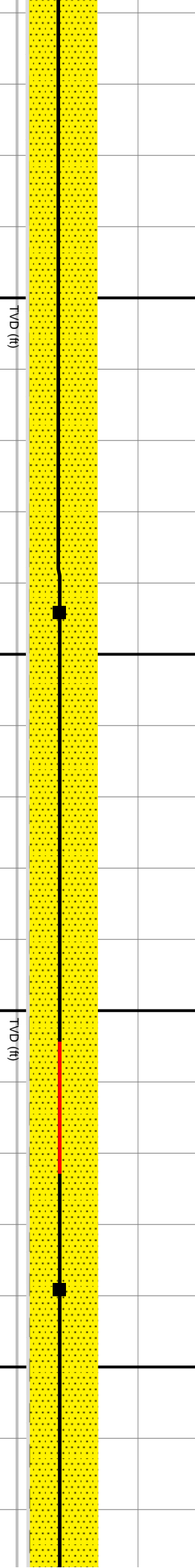




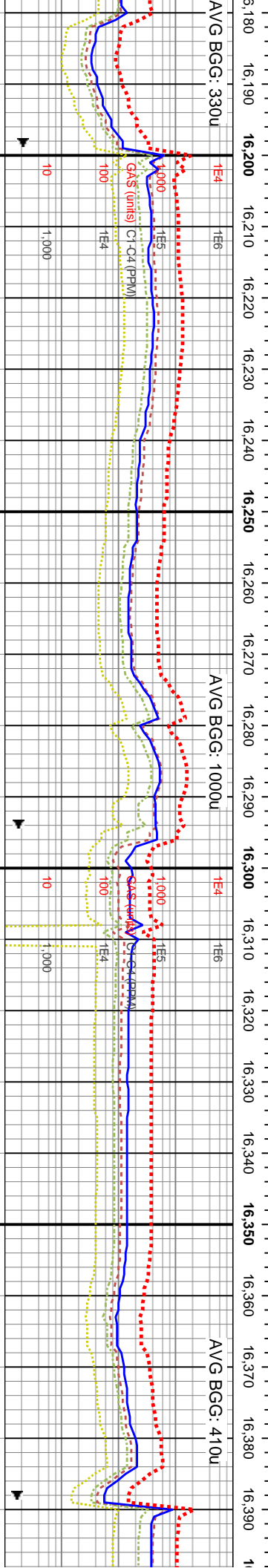
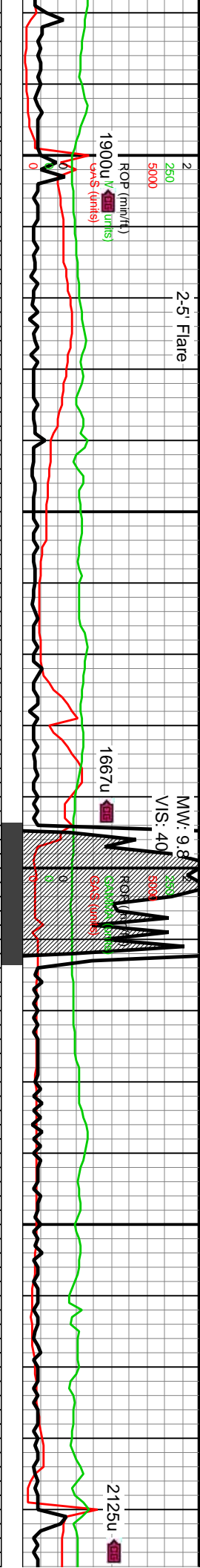
WOB: 36Klbs
Rotary: 60RPM
Strokes: 200SPM
Pump Rate: 581GPM

MD: 16,044'
Inclination: 92.08°
Azimuth: 272.48°
TVD: 7,143.99'
VS: 8.417'

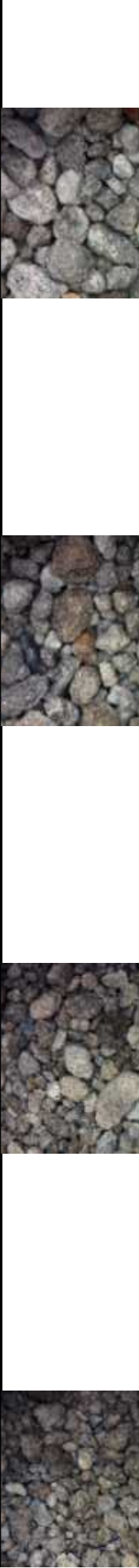
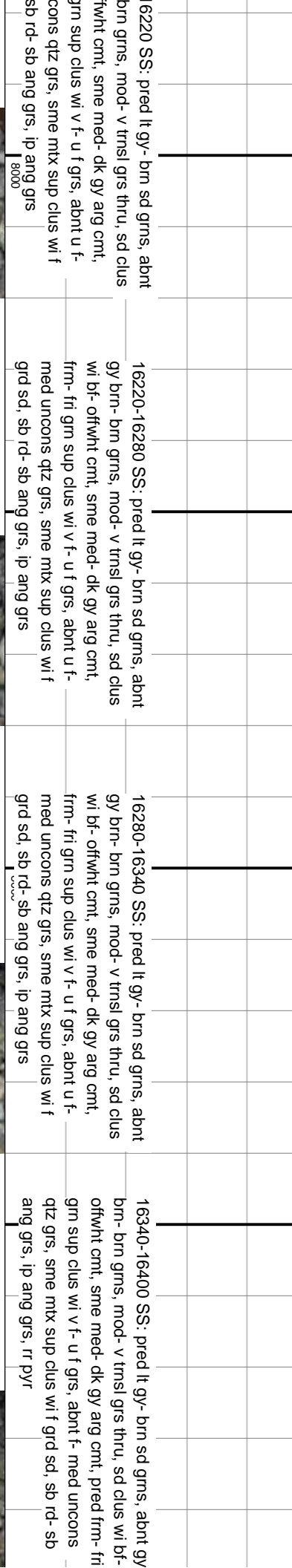
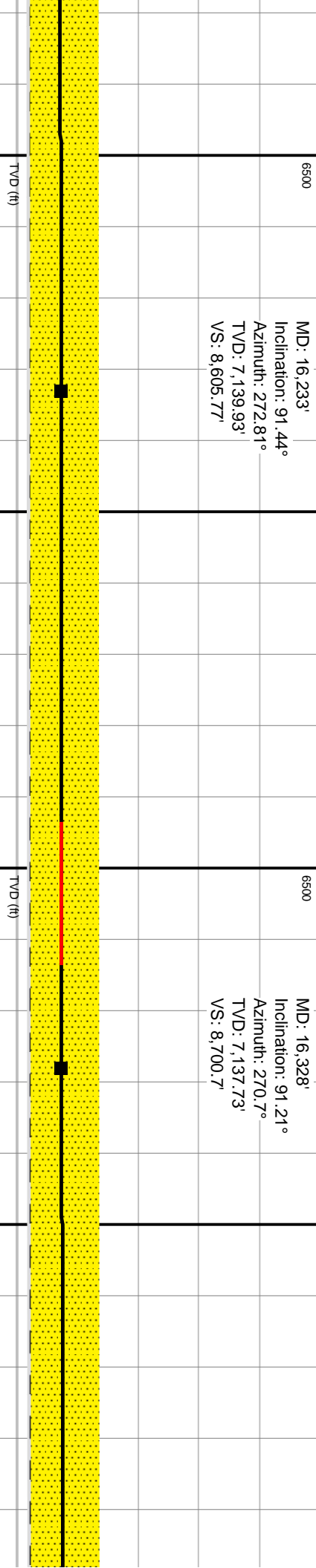
MD: 16,139'
Inclination: 90.7°
Azimuth: 272.66°
TVD: 7,141.68'
VS: 8.511.88'

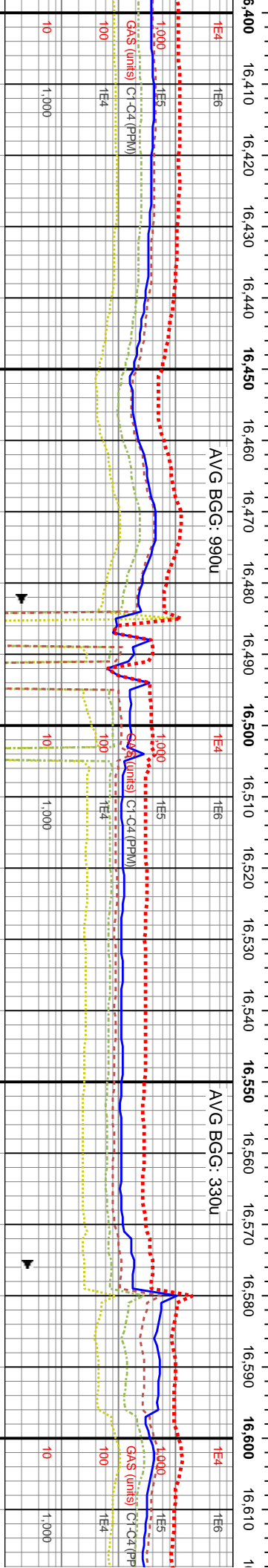
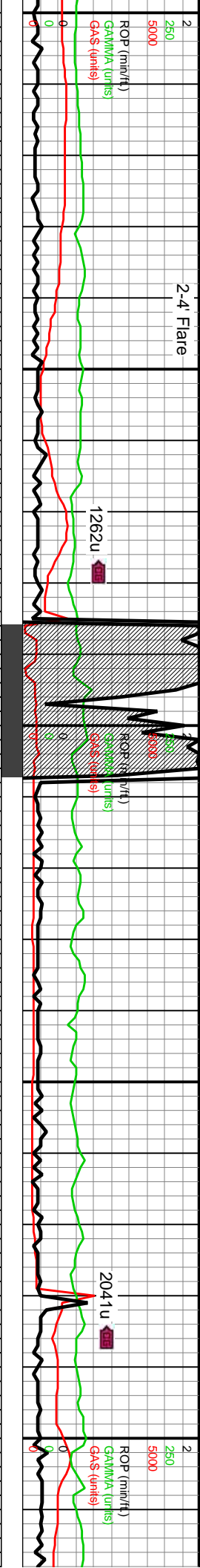


sd grms, abnt lt	15980-16040 SS: pred gy- brn sd grms, abnt lt	16040-16100 SS: pred gy- brn sd grms, abnt lt	16100-16100 SS: pred gy- brn sd grms, abnt lt	16160-16160 SS: pred gy- brn sd grms, abnt lt
s wi bf- offwht	brn- brn grms, tmsl grs thru, clus wi bf- offwht	brn- brn grms, tmsl grs thru, clus wi bf- offwht	brn- brn grms, tmsl grs thru, clus wi bf- offwht	gy brn- brn grms, tmsl grs thru, clus wi bf- offwht
pred frm- fri grn	cnt, sme med- dk gy arg cnt, pred frm- fri grn	cnt, occ med- dk gy arg cnt, frm- fri grm sup	cnt, occ med- dk gy arg cnt, frm- fri grm sup	wi bf- offwht
med uncongs qtz	sup clus wi f- u f grs, occ u f- l med uncongs qtz	clus wi f- u f grs, abnt u f- med uncongs qtz grs,	clus wi f- u f grs, abnt u f- med uncongs qtz grs,	frm- fri grn
grs, sb rd- sb ang	grs, occ mtx sup clus wi v f- f grs, sb rd- sb ang	sme mtx sup clus wi f grd sd, sb rd- sb ang	sme mtx sup clus wi f grd sd, sb rd- sb ang	med uncongs qtz
	ang grs, ip ang grs, mod calc	grs, ip ang grs, mod calc	grs, ip ang grs, mod calc	grd sd,



MD: 16,233'
Inclination: 91.44°
Azimuth: 272.81°
TVD: 7,139.93'
VS: 8,605.77'





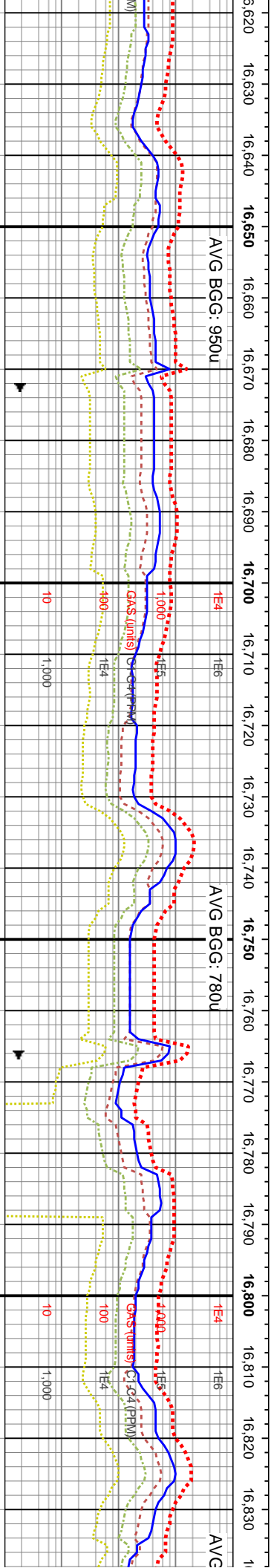
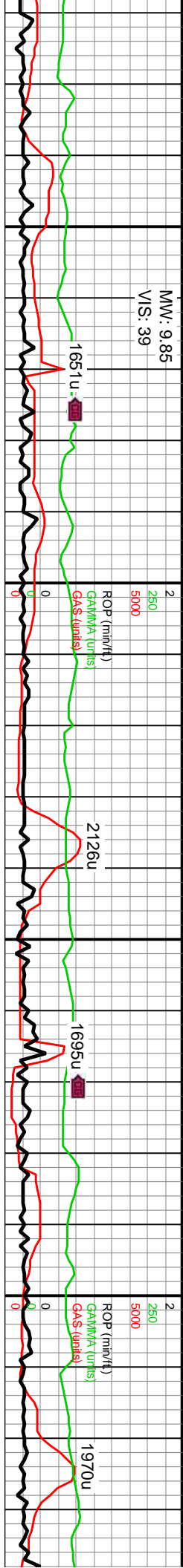
MD: 16,422'
Inclination: 92.36°
Azimuth: 270.64°
TVD: 7,134.8'
VS: 8,794.65'

WOB: 72Klbs
Rotary: 30RPM
Strokes: 200SPM
Pump Rate: 581GPM
MD: 16,517'
Inclination: 90.44°
Azimuth: 270.95°
TVD: 7,132.48'
VS: 8,889.61'

MD: 16,612'
Inclination: 91.1°
Azimuth: 270.5°
TVD: 7,131.23'
VS: 8,984.6'

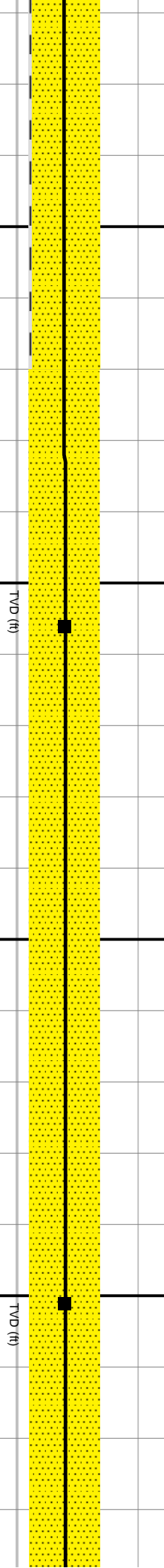
16400-16460 SS: pred lt gy- brn sd grns, abnt gy brn- brn grns, mod- v trnsi grs thru, sd clus wi bf- offwht cmt, sme med- dk gy arg cmt, pred frm- fri grn sup clus wi v f- u f grs, abnt f- med uncons qtz grs, sme mtx sup clus wi f grd sd, sb rd- sb ang grs, ip ang grs, rr pyr	16460-16520 SS: pred lt gy- brn sd grns, abnt gy brn- med gy grns, mod- v trnsi grs thru, sd clus wi bf- offwht cmt, sme gy- dk gy arg cmt, pred frm- fri grn sup clus wi v f- u f grs, abnt f- med uncons qtz grs, sme mtx sup clus wi f grd sd, sb rd- sb ang grs, ip ang grs, rr pyr	16520-16580 SS: pred lt gy- brn sd grns, abnt gy brn- med gy grns, mod- v trnsi grs thru, sd clus wi bf- offwht cmt, sme gy- dk gy arg cmt, pred frm- fri grn sup clus wi v f- u f grs, abnt f- med uncons qtz grs, sme mtx sup clus wi f grd sd, sb rd- sb ang grs, ip ang grs, rr pyr	16580-16640 SS: pred lt gy- brn- med gy grns, mod- v trnsi grs thru, sd clus wi bf- offwht cmt, sme gy- dk gy arg cmt, pred frm- fri grn sup clus wi v f- u f grs, abnt f- med uncons qtz grs, sme mtx sup clus wi f grd sd, sb ang grs, ip ang grs, rr pyr
8000	8000	8000	8000





MD: 16,706'
Inclination: 90.94°
Azimuth: 270°
TVD: 7,129.58'
VS: 9,078.58'

MD: 16,801'
Inclination: 90.84°
Azimuth: 269.4°
TVD: 7,128.17'
VS: 9,173.55'



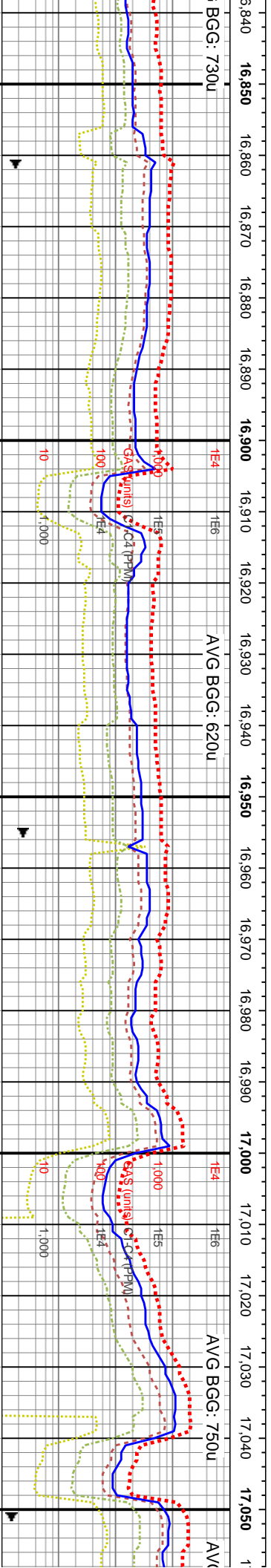
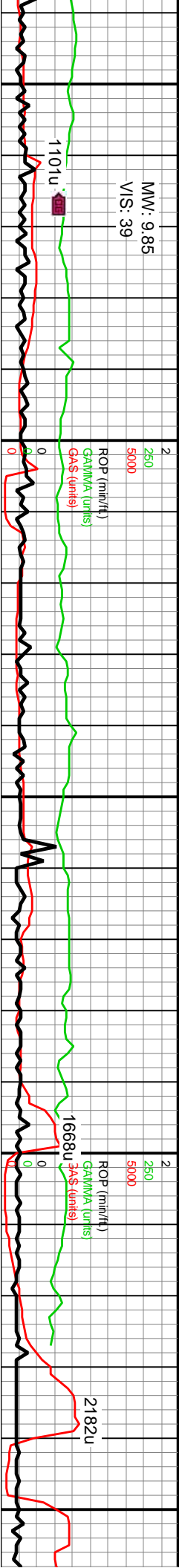
16640-16700 SS: lt gy-gy-dk gy ip, frm sli fri ss
clus, mod w strd vf-f sb rd-rd sd grs, gr-mtx sup
ss clus cons wi wh-v lt gy arg & silic cnt, dolc ip, tr
vf pyr, tr gn chlor/glau, non-l calc

16700-16760 SS: lt gy-gy-dk gy ip, mod w strd
vf-f sb rd-rd sd grs, frm sli fri gr-mtx sup ss
clus cons wi wh-v lt gy arg & silic cnt, dolc ip,
tr vf pyr, tr gn chlor/glau, non-l calc

16760-16820 SS: lt gy-gy-dk gy ip, frm sli fri ss
clus, mod w strd vf-f sb rd-rd sd grs, gr-mtx sup ss
clus cons wi wh-v lt gy arg & silic cnt, dolc ip, tr vf
pyr, tr gn chlor/glau, non-l calc

16820-16880 SS: lt gy-gy-dk gy ip, frm sli fri ss
clus, mod w strd vf-f sb rd-rd sd grs, gr-mtx sup ss
clus cons wi wh-v lt gy arg & silic cnt, dolc ip, tr vf
pyr, tr gn chlor/glau, non-l calc





MD: 16,896'
Inclination: 90.03°
Azimuth: 267.68°
TVD: 7,127.45'
VS: 9,268.5'

WOB: 39Klbs
Rotary: 60RPM
Strokes: 200SPM
Pump Rate: 581GPM

MD: 16,990'
Inclination: 89.3°
Azimuth: 266.32°
TVD: 7,128'
VS: 9,362.35'

MD: 17,014'
Inclination: 89.43°
Azimuth: 266.22°
TVD: 7,128.27'
VS: 9,386.3'

TVD (ft)

TVD (ft)

SS: lt gy-gy-dk gy ip, mod w strd
d grs, frm sil fri gr-mtx sup ss
wh-v lt gy arg & silc cnt, dolc ip,
chlor/glau, non-l calc

16880-16940 SS: pred off wh-v lt gy, com gy-gy brn,
p-mod w strd vf-f sb rd-rd sd grs, occ u f sb rd sd
grs, mtx sup ss clus cons wi wh-v lt gy arg & silc
cnt, dolc ip, tr gr sup, tr vf pyr, non-l calc

16940-17000 SS: pred off wh-v lt gy, com gy-dk gy,
p-mod w strd vf-f sb rd-rd sd grs, occ u f sb rd sd
uncons qtz grs thru, pred mtx sup ss clus cons wi
wh-v lt gy arg & silc cnt, dolc ip, occ gr sup clus cons
wi silc cnt, tr vf pyr, non-l calc

17000-17075 SS: pred off wh-v lt gy, com gy-dk gy
strd vf-f sb rd-rd sd grs, occ u f sb rd sd uncons qtz
pred mtx sup ss clus cons wi wh-v lt gy arg & silc cnt
occ gr sup clus cons wi silc cnt, tr vf pyr, non-l calc

8000

8000



