



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Winder South 8

Location Sec. 9-T6N-R67W

State Colorado

Country USA

County Weld

Rig Number Patterson 346

API Number 05-123-43401-00

Field Wattenberg

Geographic Region DJ Basin

Drilling Completed 10/6/2016

Spud Date 9/30/2016

Surface Coordinates SHL: 2308'FNL, 388' FEL, Sec. 9 T6N R67W

Lat: 40.502672

Long: -104.890268

Bottom Hole Coordinates PBHL: 1211'FSL, 460' FWL, Sec. 8 T6N R67W

Ground Elevation 4,856'

K.B. Elevation 4,880.5'

Logged Interval 7,040 To 17,248'

Total Depth 17,248'

Formation Codell

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-589

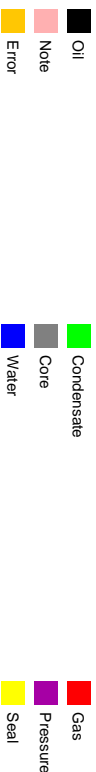
Comments Start: 9-30-16
TD: 10-6-16

Services Provided 2-man Logging
On Site Geosteering

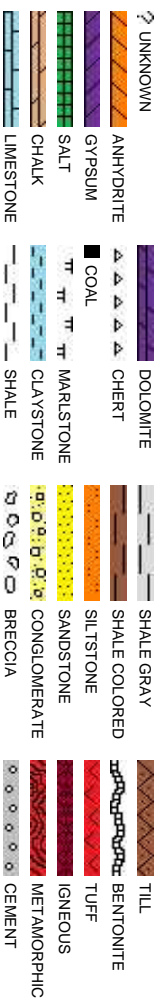
Logger Names Dominic Pitre/ Nicholas W

Address ALS Empirica
6510 Guhn Road
Houston, Texas 77040

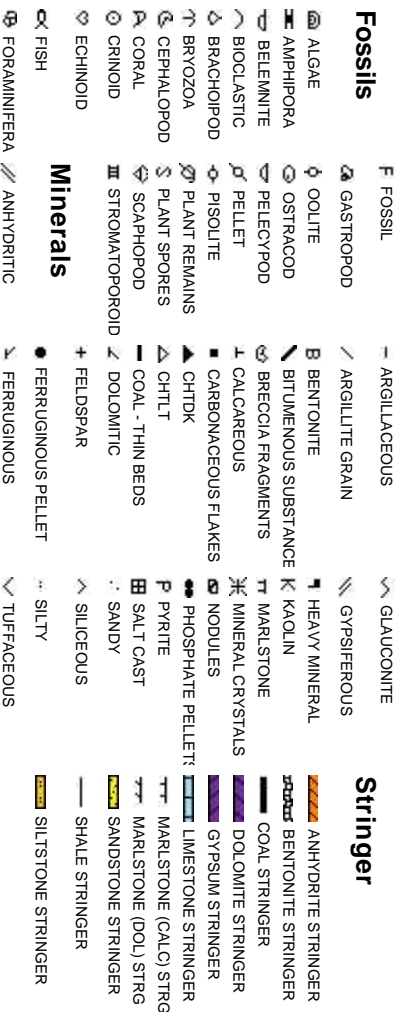
Zone Color Coding



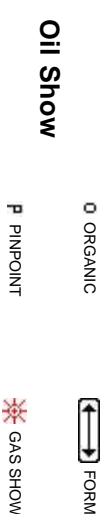
Rock Types



Accessories



Other Sym



Oil Show



Engineering



Porosity



atkins

Symbols

L LITHOGRAPHIC

Rounding

MX MICROXLN

A ANGULAR MS MUDSTONE

R ROUNDED PS PACKSTONE

B SUBANG WS WACKESTONE

F SUBRND

Sorting

AULT

Textures

M MODERATE

BS BOUNDSTONE P POOR

C CHALKY W WELL

CX CRYPTOXLN

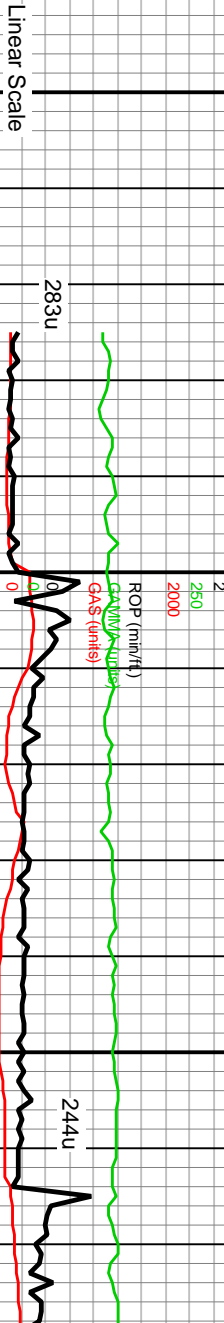
E EARTHY

FX FINELYXLN

GS GRAINSTONE

ROP
—
GAMMA
—
GAS
—

Extraction OG
Weld County, Colorado
Spud Date: 9-30-16
Surface Casing @ 1,564'
2-man logging / Geosteering Began: 9-30-16
100 units = 1% Methane
10000 units = 100% Methane



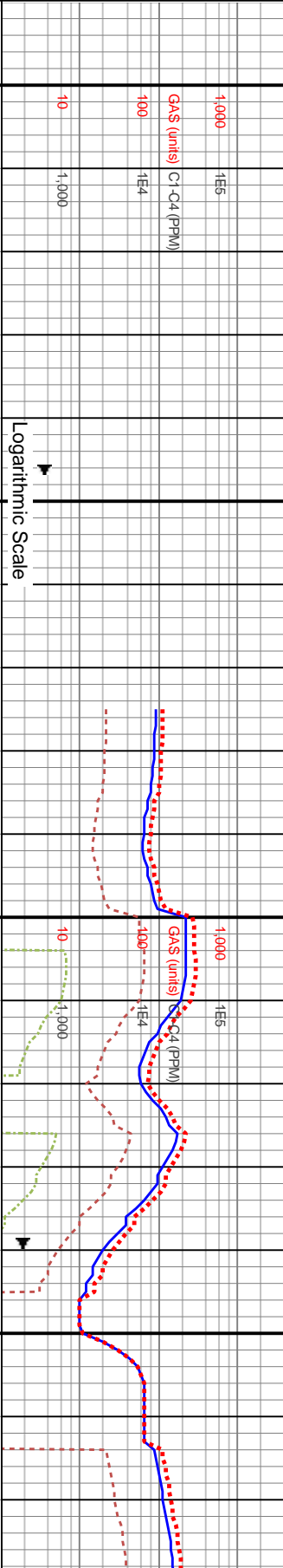
Slide/Rotate

Depth Labels

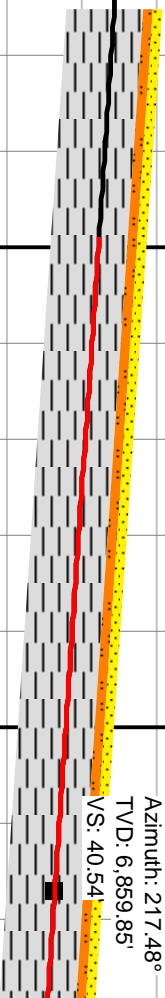
All Depths Correspond to Driller's Pipe Tally

Total Gas & Chromatograph

GAS
C1
C2
C3
C4



MD: 7,073'
Inclination: 17.51°
Azimuth: 173.81°
TVD: 6,769.73'
VS: 28.68°



MD: 7,167'
Inclination: 17.21°
Azimuth: 217.48°
TVD: 6,859.85'
VS: 40.54°

Well Bore
TVD

TVD (ft)

TVD (ft)

7040-7100 SH (65%): gy-dk gy, med frm-frm, mod fis sb rd-sb blkly ctgs, w hydrated ip, silty ip (lt gy-brn gy), thn lamm, pred non calc, SLTST (35%): dk gy, frm-brt med-hi fis ang-blky-pty ctgs, silic cnt, tr silic vn, pred non calc

7700

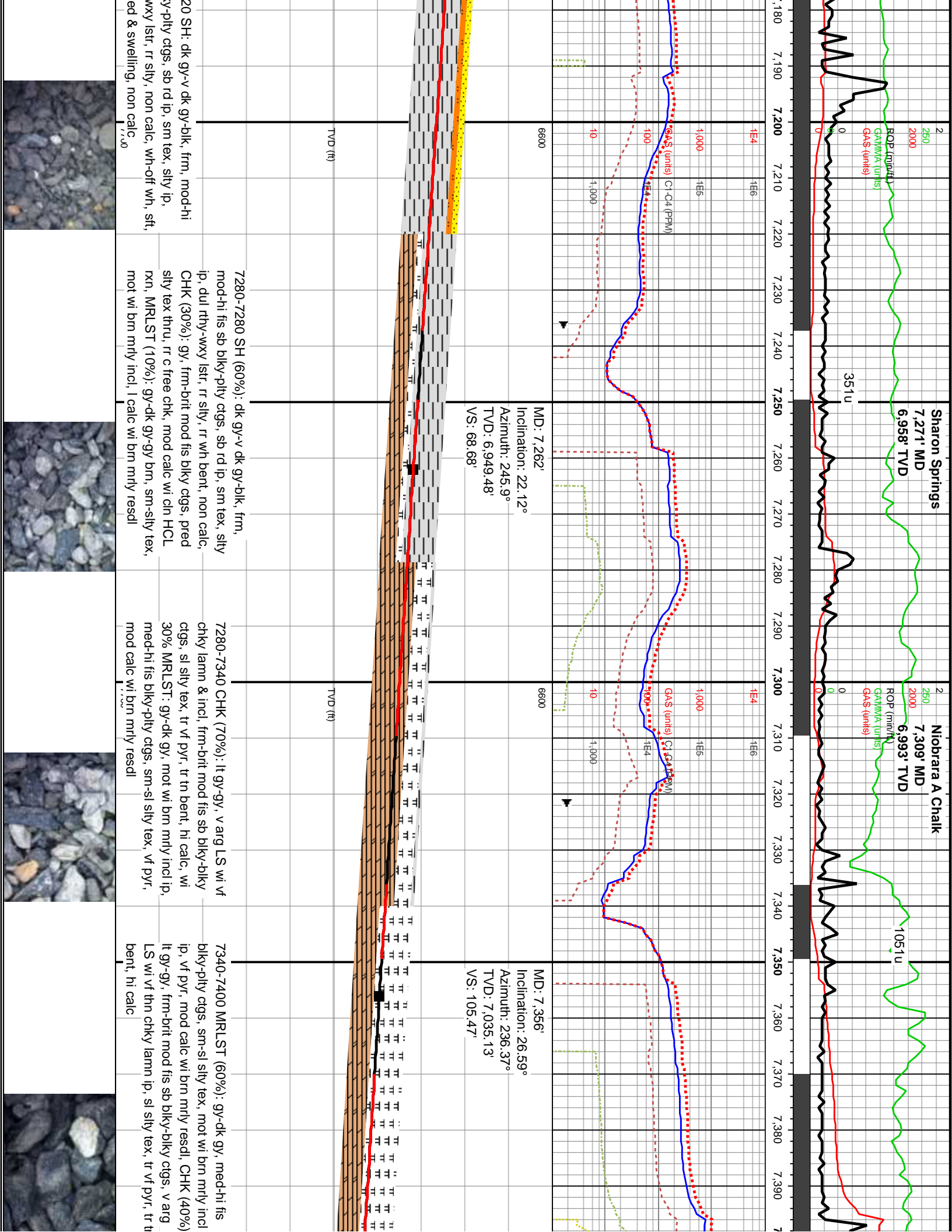
7700

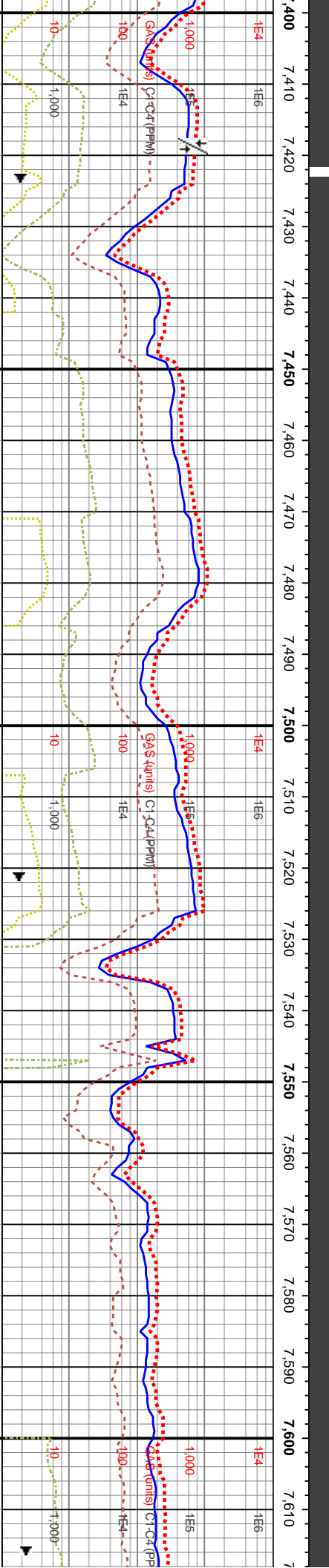
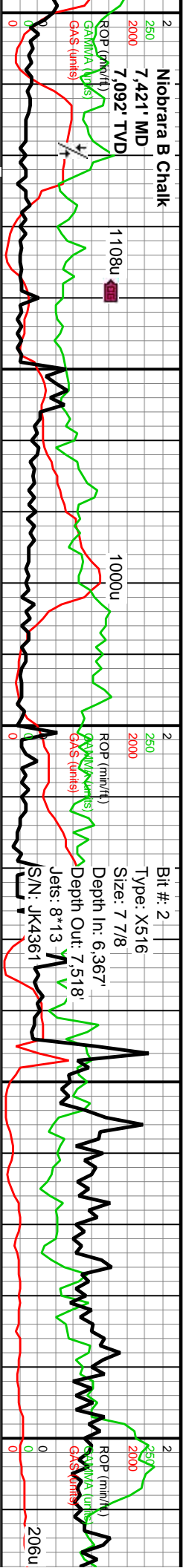
7100-7160 SH (65%): gy-dk gy, med frm-frm, mod fis sb rd-sb blkly ctgs, w hydrated ip, silty ip (lt gy-brn gy), thn lamm, pred non calc, SLTST (35%): dk gy, frm-brt med-hi fis ang-blky-pty ctgs, silic cnt, tr silic vn, pred non calc, tr intbdd sd

7160-7222
fis sb blkly
dul rthy-
w hydrat

Images





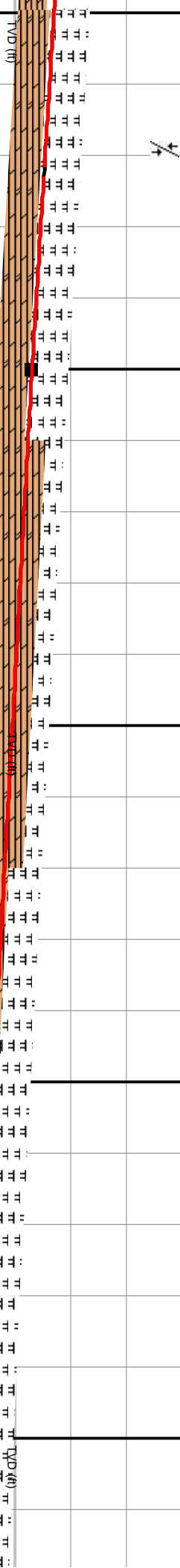


MD: 7,450'
Inclination: 34°
Azimuth: 246.56°
TVD: 7,116.26'
VS: 150.74'

WOB: 37Klbs
Rotary: 0RPM
Strokes: 220SPM
Pump Rate: 639GPM

DP

MD: 7,545'
Inclination: 44.53°
Azimuth: 255.24°
TVD: 7,189.76'
VS: 210.2'



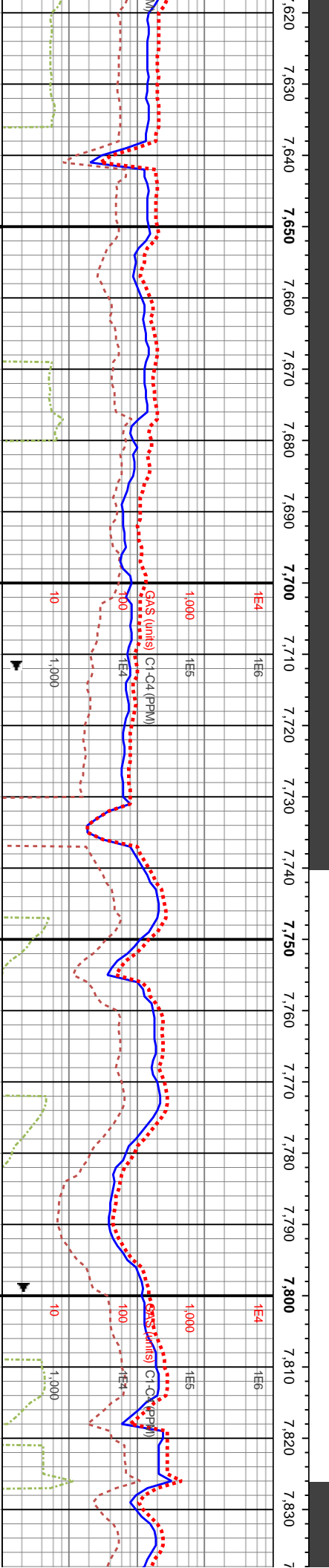
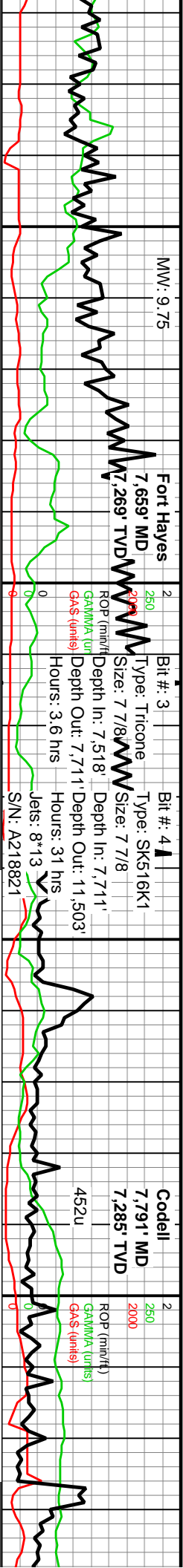
7400-7460 MRLST (55%): gy-dk gy, med-hi fis
blky-pty ctgs, sm-sl silty tex, mot wi brn mrlly
incl ip, vf pyr, mod calc wi brn mrlly resdl, CHK
(45%): lt gy-gy, frm-brit mod fis sb blky-blky
ctgs, v arg LS wi vf thn chky lamm ip, sl silty tex,
tr vf pyr, tr in bent, hi calc

7460-7520 CHK (75%): lt gy-gy, frm-brit mod
fis sb blky-blky ctgs, v arg LS wi vf thn chky
lamm ip, sl silty tex, tr vf pyr, tr in bent, hi calc,
MRLST (25%): gy-dk gy, mot wi brn mrlly incl
ip, med-hi fis blky-pty ctgs, sm-sl silty tex, vf
pyr, mod calc wi brn mrlly resdl

7520-7580 MRLST (55%): pred dk gy, ip blk,
sme brn- bf mot, mod frm- hd, sb blky- sb pty,
calc incl, frac fl cal, chky intbds thru, mod carb,
arg; CHK (45%): pred gy- med, sme lt brn, ip
brn- tn- bf mot, sl frm, pred blk, ip sl arg, occ
calc incl, sme lse cal, mrlly intbds, tr pyr

7580-7640 MRLST (55%): pred dk gy, ip blk,
sme brn- bf mot, mod frm- hd, sb blky- sb pty,
calc incl, frac fl cal, chky intbds thru, mod carb,
arg; CHK (45%): pred gy- med, sme lt brn, ip
brn- tn- bf mot, sl frm, pred blk, ip sl arg, occ
calc incl, sme lse cal, mrlly intbds, tr pyr

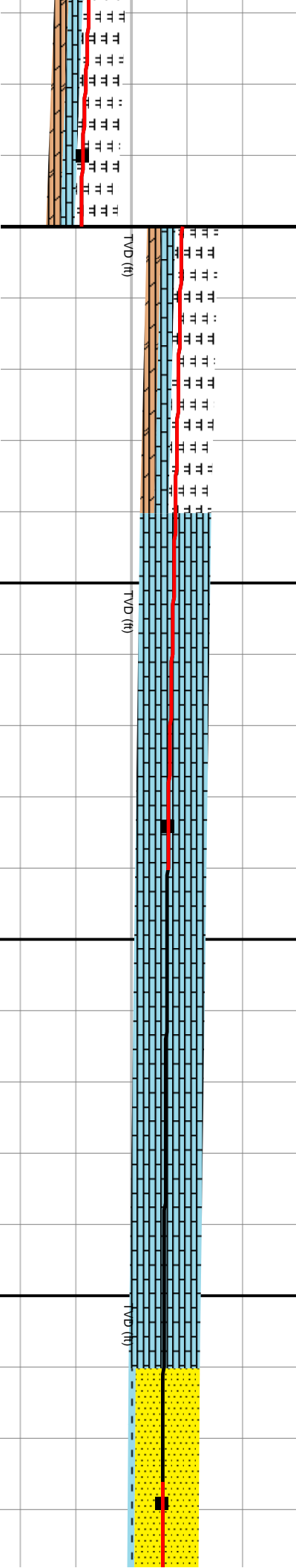




MD: 7,640'
Inclination: 61.87°
Azimuth: 259.8°
TVD: 7,246.47'
VS: 285.94'

MD: 7,734'
Inclination: 79.75°
Azimuth: 262.49°
TVD: 7,277.28'
VS: 374.26'

MD: 7,829'
Inclination: 86.3°
Azimuth: 264.17°
TVD: 7,288.76'
VS: 468.17'

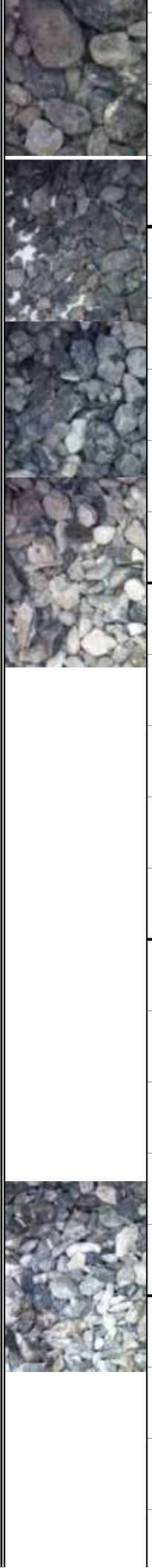


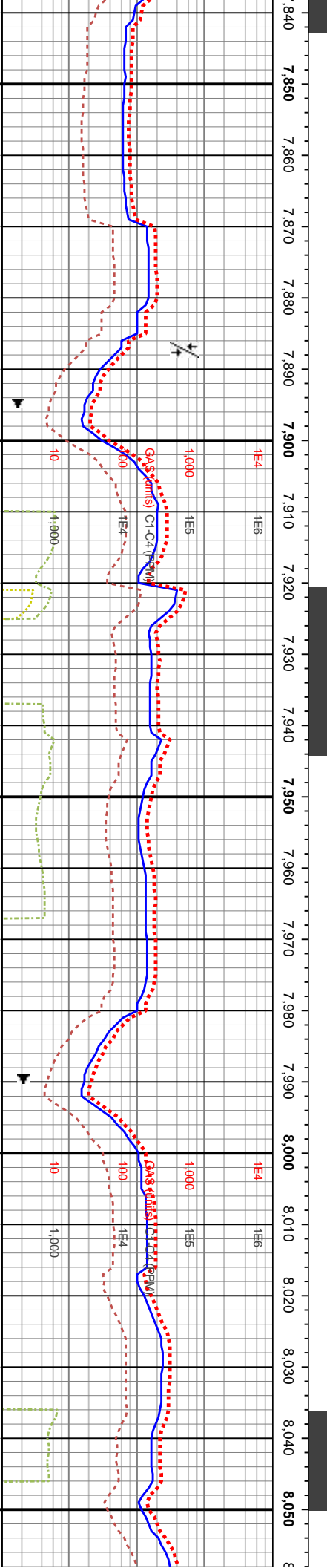
80-7690 MRLST (60%): pred dk gy, ip blk, sme brn- bf mot, mod frm- hd, sb blk- sb pty, calc incl, frac fl cal, chky intbds u, mod carb, arg; CHK (20%): pred gy- med, sme lt brn, ip n- tn- bf mot, sl frm, pred blk, ip sl arg, occ calc incl, sme lse l, mrlly intbds, tr pyr, sme silty sh intbds; LS (20%): tn- bf, sme n carb grms, microxn- cryptoxln, frm- hd, sme silty intbds

7690-7750 LS: tn- offwht, sme brn, frm- hd, blk, microxn- cryptoxln, sme mtz sup cb grms, sme gy silty intbds

7750-7810 LS: tn- offwht, sme brn, frm- hd, blk, microxn- cryptoxln, sme mtz sup cb grms, sme gy silty intbds

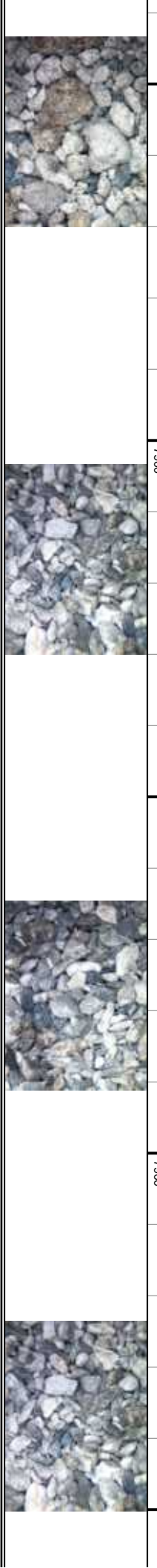
7810-7870 SS: pred off sil fri cls, mod strd vf-f s clus cons wi silic cnt, cc arg & silic cnt, unconcs ip calc

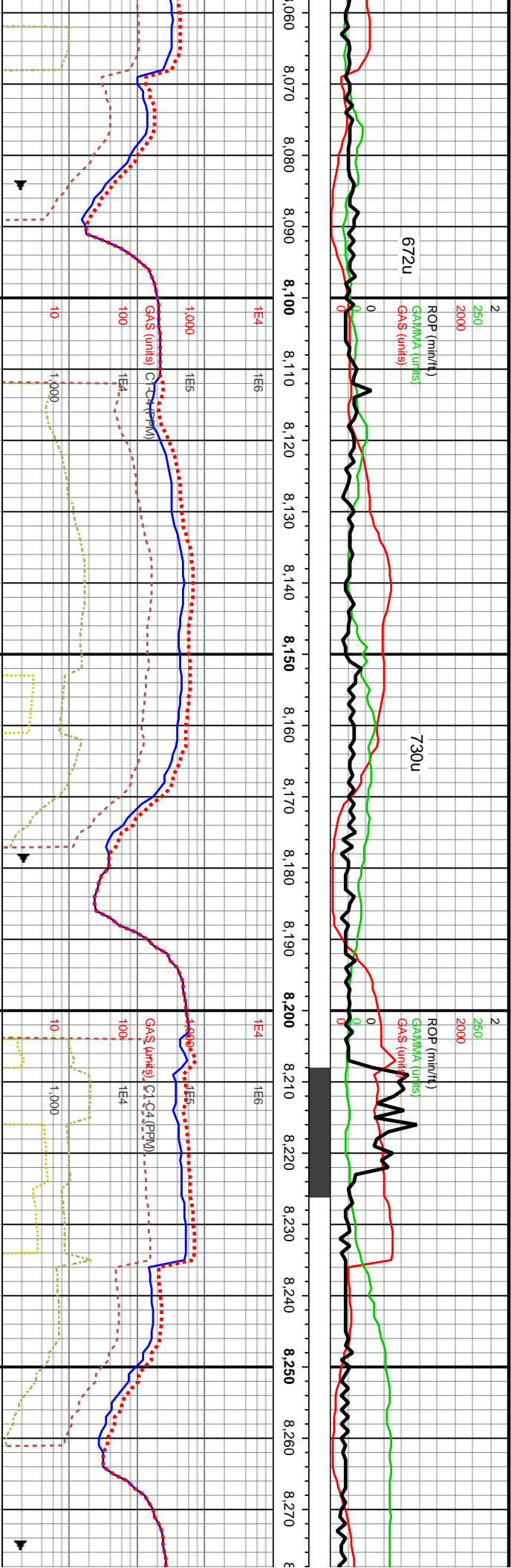




MD: 8,018'
Inclination: 88.82°
Azimuth: 266.91°
TVD: 7,296.37'
VS: 655.42'

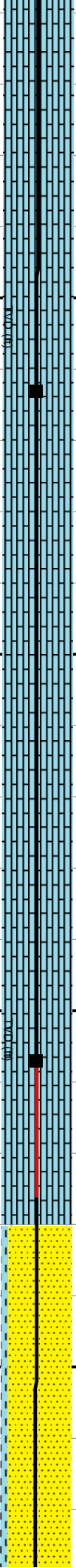
8050-8
microxl
intbds





MD: 8,113'
Inclination: 89.06°
Azimuth: 265.95°
TVD: 7,298.13'
VS: 749.5'

MD: 8,207'
Inclination: 88.92°
Azimuth: 267.26°
TVD: 7,299.79'
VS: 842.55'



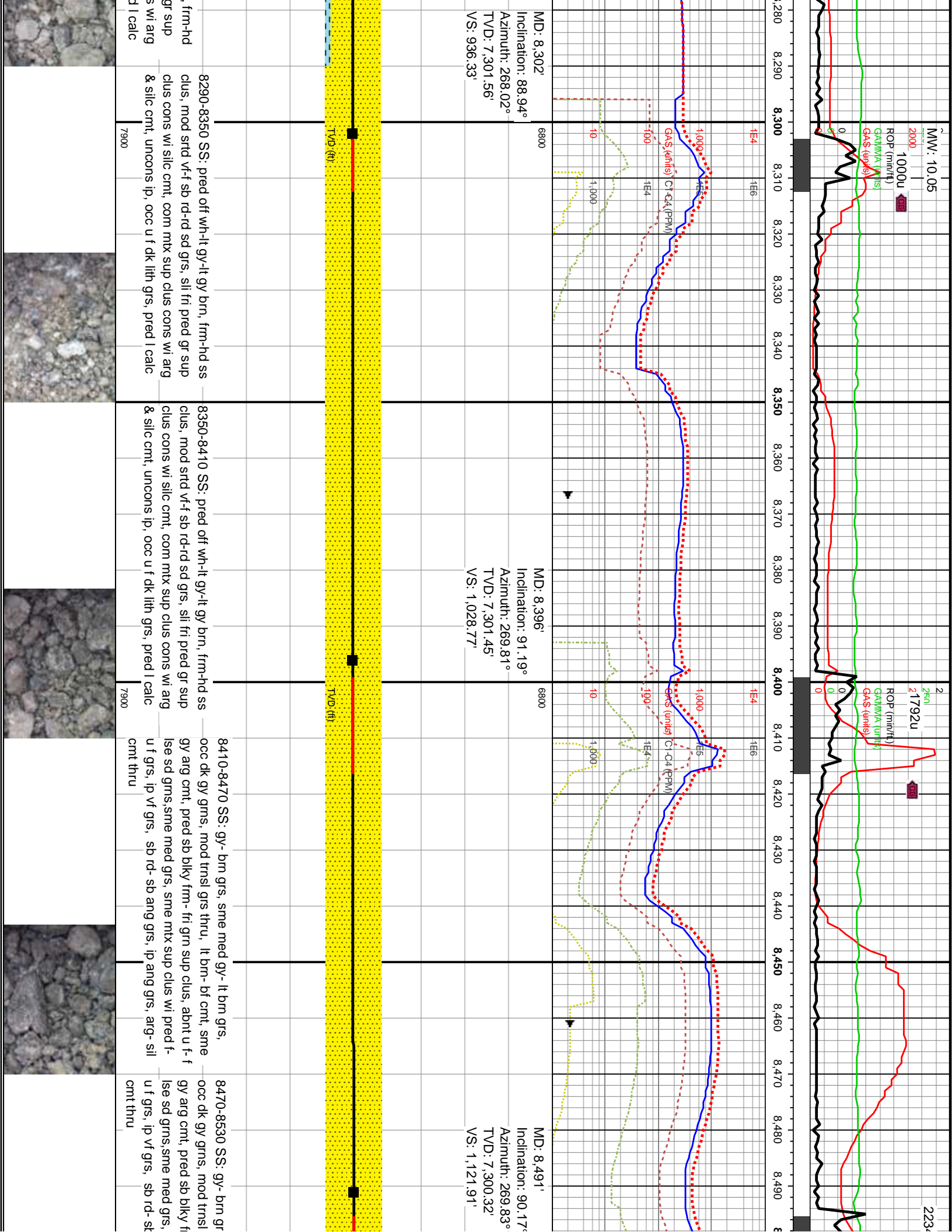
810 LS: tr- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtz sup crb grms, sme gy silty intbds

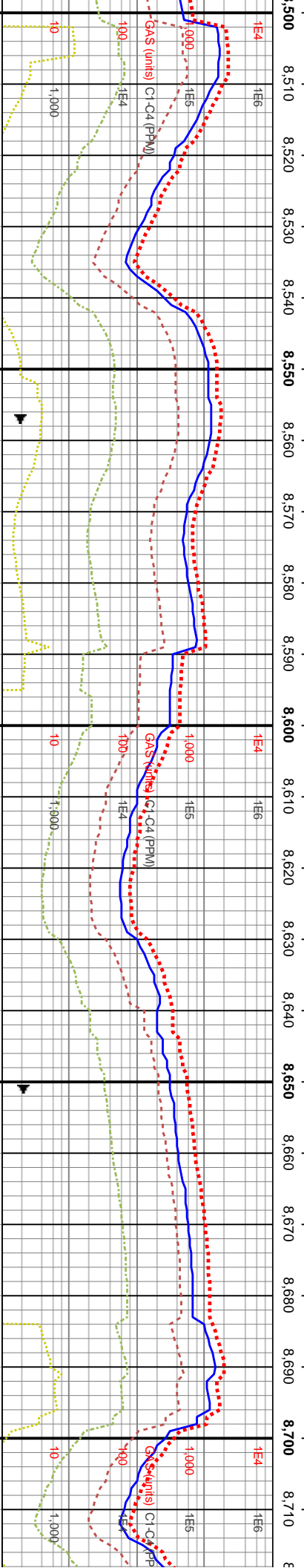
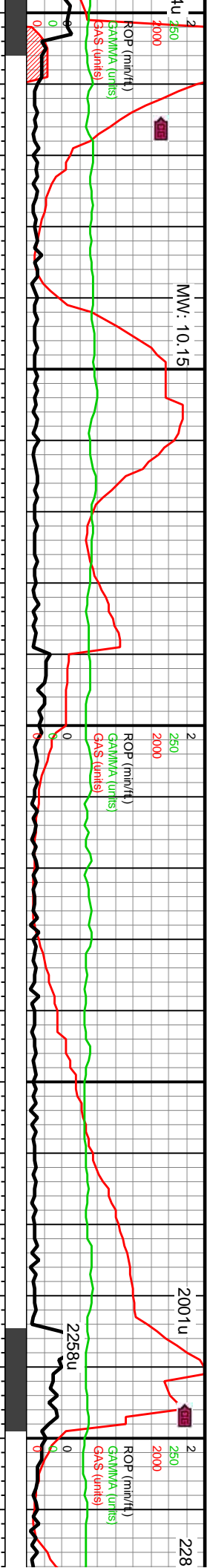
8110-8170 LS: tr- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtz sup crb grms, sme gy silty intbds

8170-8230 LS: tr- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtz sup crb grms, sme gy silty intbds

8230-8290 SS: pred off wh-ht gy, lt gy brn ip sli fri cls, mod strd v-f sb rd-rd sd grs, pred clus cons w/ silic cnt, com mtz sup clus con: & silic cnt, unconsp ip, occ u f dk lith grs, pre







WOB: 35klbs

Rotary: 50RPM

Strokes: 110SPM

Pump Rate: 640GPM

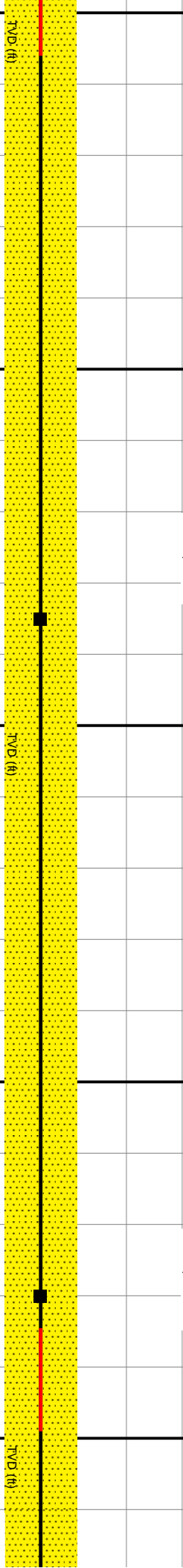
MD: 8,585'

Inclination: 89.76°

Azimuth: 269.7°

TVD: 7,300.38'

VS: 1,214.1'



MD: 8,680'

Inclination: 90.73°

Azimuth: 269.87°

TVD: 7,299.97'

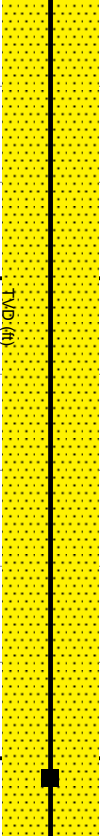
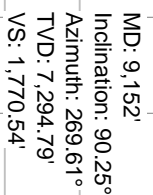
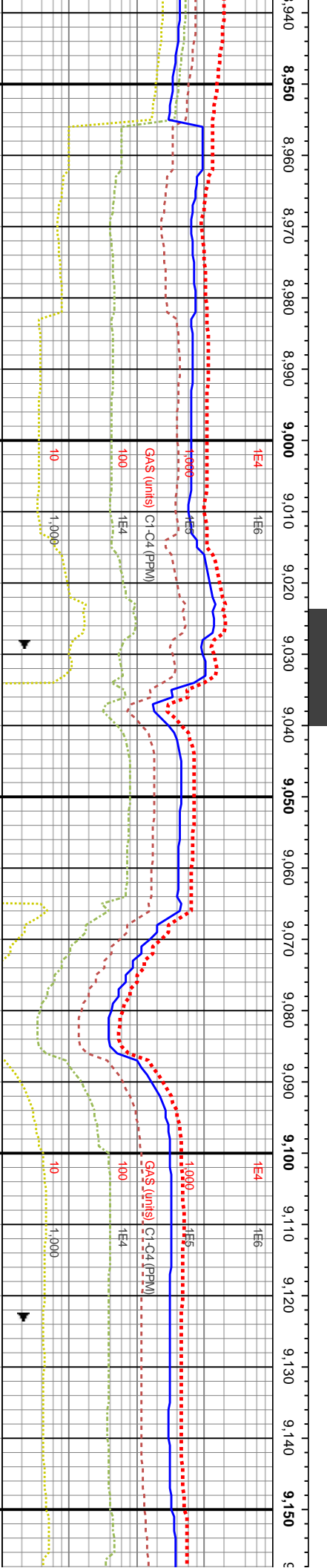
VS: 1,307.27'

8530-8590 SS: gy- brn grs, sme med gy- lt brn grs, occ dk gy grns, mod trns grs thru, lt brn- bf cnt, sme gy arg cnt, pred sb blkly frm- fri grm sup clus, about u f- f lse sd grns, sme med grs, sme mtz sup clus wi pred f- u f grs, ip vf grs, sb rd- sb ang grs, ip ang grs, arg- sil cnt thru

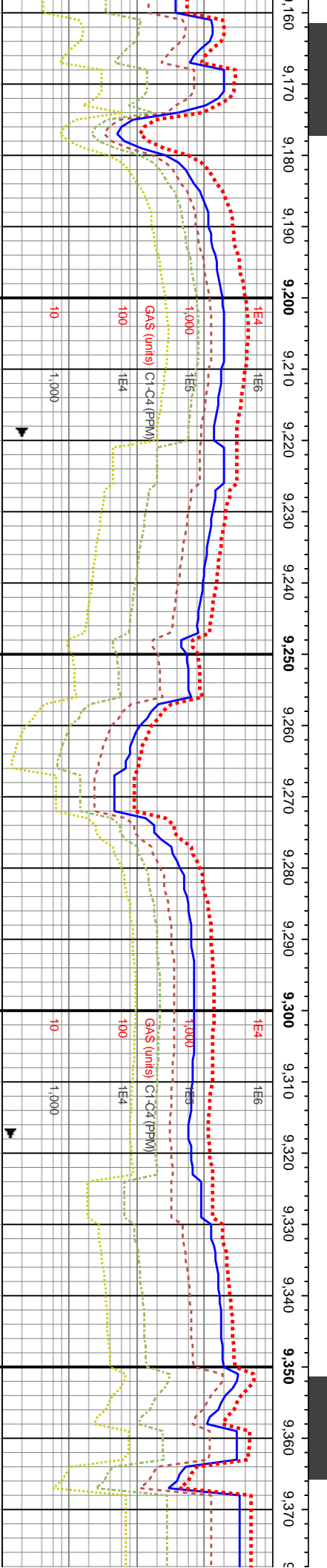
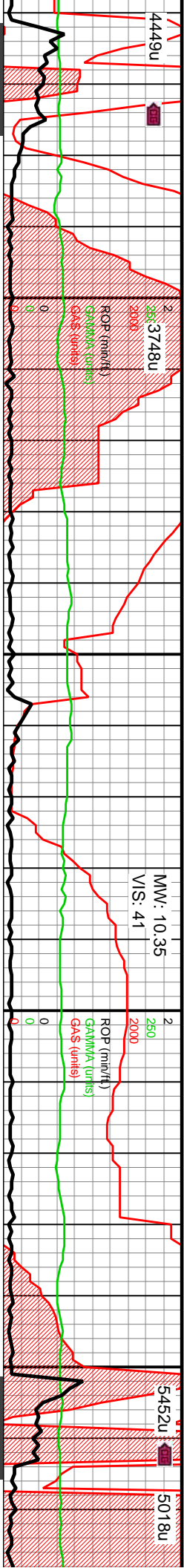
8590-8650 SS: lt gy- tn grs, sme med gy- lt brn grs, ip dk gy grns, trns grs thru, lt brn- bf cnt, occ gy arg cnt, pred sb blkly frm- fri grm- mtz sup clus wi vf sd grs, ip f- med sd grns, sb rd- sb ang grs, ip ang grs, arg- sil cnt thru, tr pyr

8650-8710 SS: lt gy- tn grs, sme med gy- lt brn grs, ip dk gy grns, trns grs thru, lt brn- bf cnt, occ gy arg cnt, pred sb blkly frm- fri grm- mtz sup clus wi vf sd grs, ip f- med sd grns, sb rd- sb ang grs, ip ang grs, arg- sil cnt thru, tr pyr





9130-9200 SS: pred
mod srt'd vf-f sb rd-rd
wi silic cmnt, com mtx
uncons ip, occ u f dk



MD: 9,247'
Inclination: 90.8°
Azimuth: 268.81°
TVD: 7,293.92'
VS: 1,863.88'

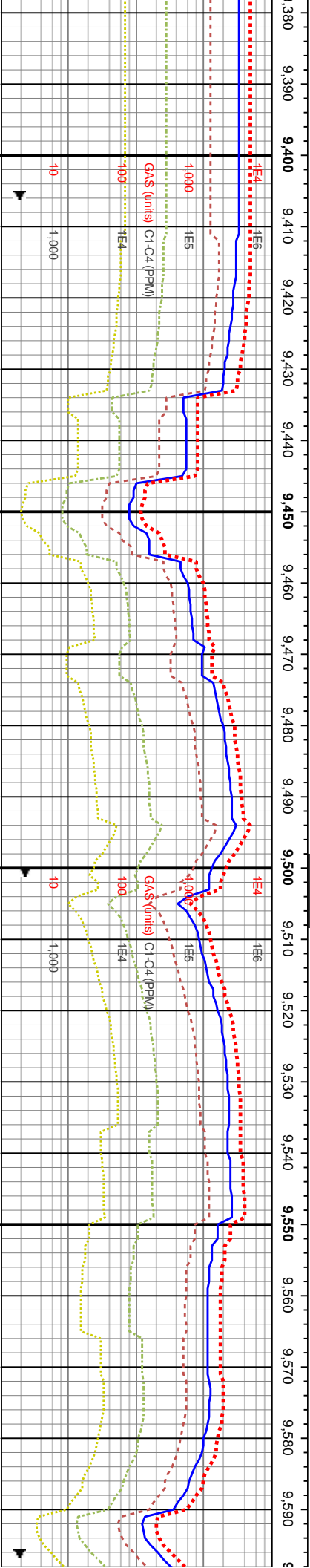
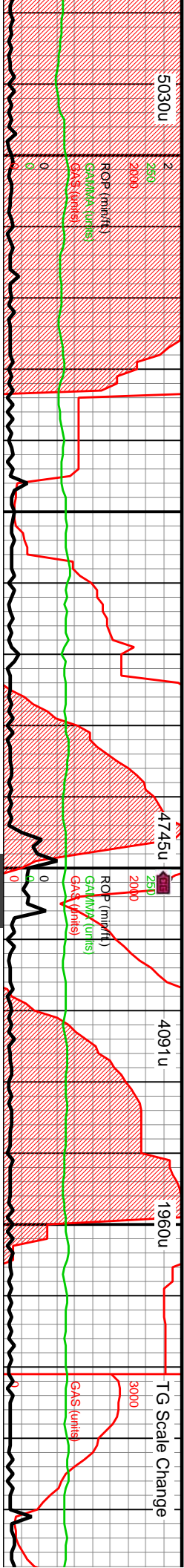
MD: 9,341'
Inclination: 89.51°
Azimuth: 269.77°
TVD: 7,293.67'
VS: 1,956.22'

TVD: (ft)

TVD: (ft)

off wh-it gy-lt gy brn, frm-hd ss clus, sd grs, sil fri pred gr sup clus cons sup clus cons wi arg & silic cnt, lith grs, pred l calc	9200-9260 SS: gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, trns l grs thru, pred bf- offwht cnt thru, mod gy arg cnt, pred sb blkly frm- fri grm sup clus wi vf- f sd grs, occ f- med uncons sd grs, occ lse u med qtz grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr pyr	9260-9320 SS: gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, trns l grs thru, pred bf- offwht cnt thru, mod gy arg cnt, pred sb blkly frm- fri grm sup clus wi vf- f sd grs, occ f- med uncons sd grs, occ lse u med qtz grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr pyr	9320-9380 SS: gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, trns l grs thru, pred bf- offwht cnt thru, mod gy arg cnt, pred sb blkly frm- fri grm sup clus wi vf- f sd grs, occ f- med uncons sd grs, occ lse u med qtz grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr pyr
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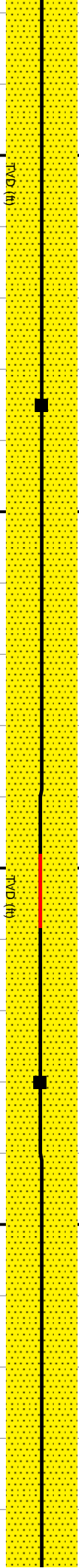




MD: 9,435'
Inclination: 89.1°
Azimuth: 269.04°
TVD: 7,294.81'
VS: 2,048.52'

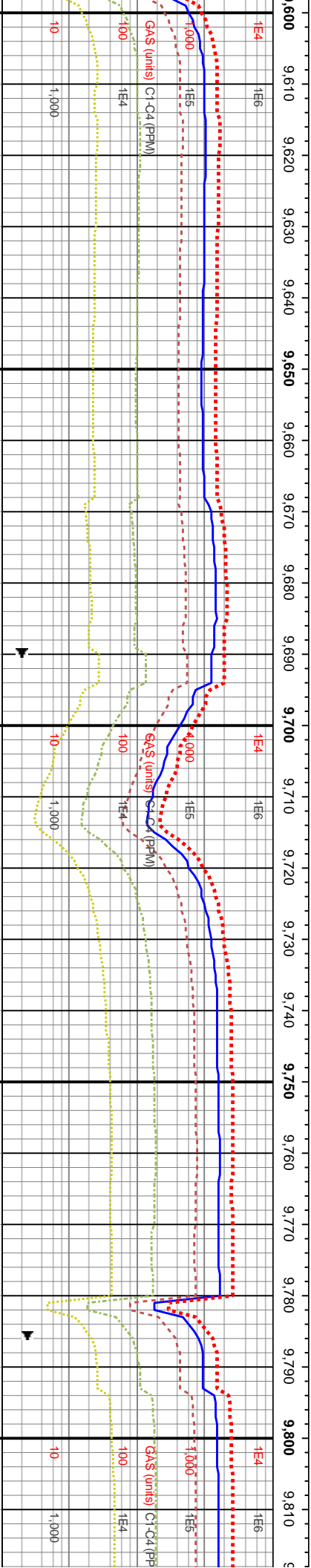
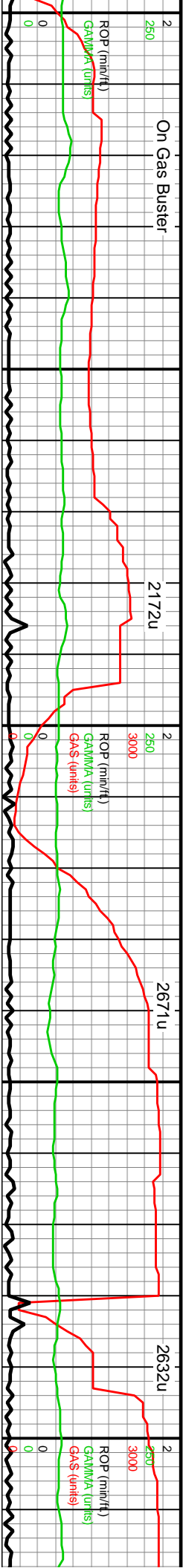
WOB: 43Klbs
Rotary: 55RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 9,530'
Inclination: 90.5°
Azimuth: 270.22°
TVD: 7,295.14'
VS: 2,141.73'

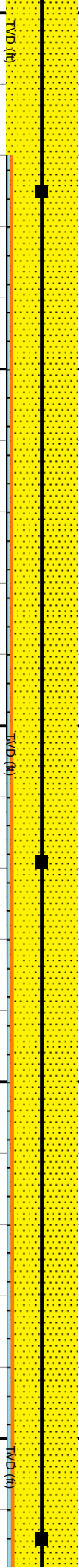


9380-9440 SS: pred gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsl grs thru, bf- offwht cnt thru, ip gy arg cnt, pred sb blkly, frm- fri grn sup clus wi vf- f sd grs, occ f- u med unconc sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr pyr, tr lmy intbds	7900
9440-9500 SS: pred gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsl grs thru, bf- offwht cnt thru, ip gy arg cnt, pred sb blkly, pred frm- fri grn sup clus wi vf- f sd grs, abnt f- u med unconc sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr lith frags, tr silty sh intbds	
9500-9560 SS: pred gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsl grs thru, bf- offwht cnt thru, ip gy arg cnt, pred sb blkly, pred frm- fri grn sup clus wi vf- f sd grs, abnt f- u med unconc sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr lith frags, tr silty sh intbds	7965
9560-9620 SS: pred gy- brn grs, grs, ip dk gy grns, mod- v trnsl g cnt thru, ip gy arg cnt, pred sb l sup clus wi vf- f sd grs, abnt f- u grs, pred sb rd- sb ang grs, sme arg- sil cnt, tr lith frags, tr silty sr	



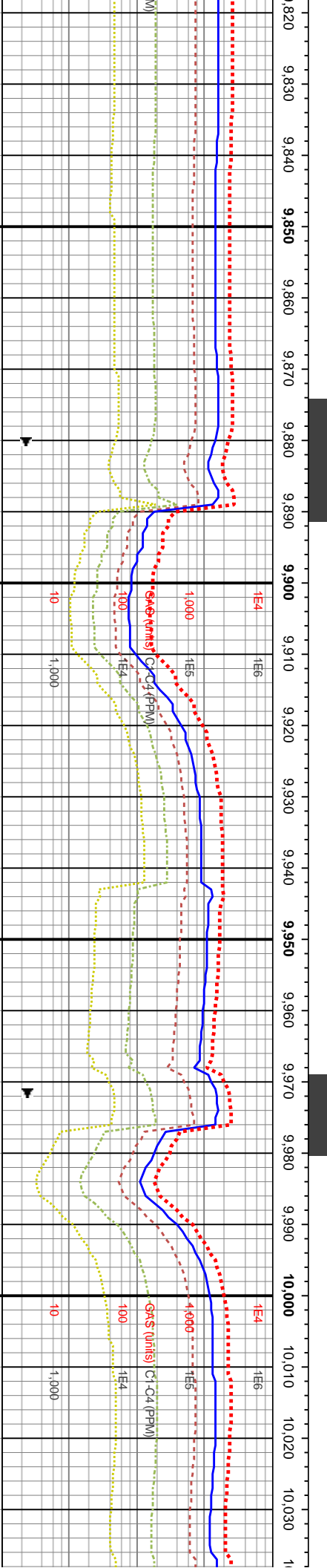
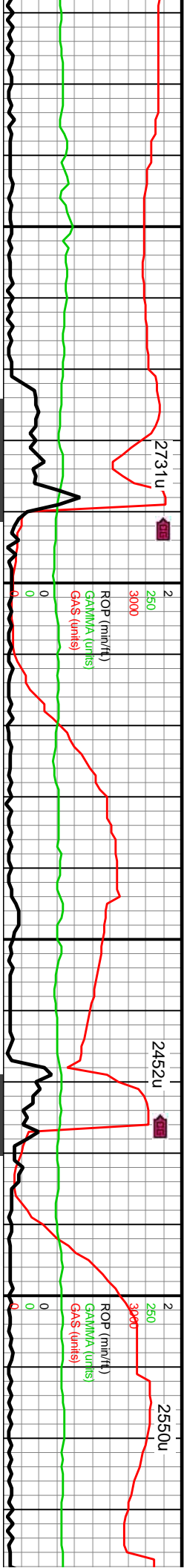


6800	MD: 9.625' Inclination: 91.02° Azimuth: 271.14° TVD: 7,293.88' VS: 2,234.58'	6800	MD: 9.719' Inclination: 90.58° Azimuth: 269.88° TVD: 7,292.57' VS: 2,326.52'	6800	MD: 9.740' Inclination: 90.58° Azimuth: 269.88° TVD: 7,292.57' VS: 2,326.52'
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9620-9680 SS: pred gy- brn grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsi grs thru, bf- offwht cnt thru, ip gy arg cnt, pred sb blk, pred frm- fri grm sup clus wi vf- f sd grs, about f- u med uncons sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, tr lith frags, tr silty sh- lmy intbds	9680-9740 SS: pred gy- brn- offwht grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsi grs thru, bf- offwht sil- calc cnt thru, ip med gy arg cnt, pred sb blk, pred frm- fri grm sup clus wi vf- f sd grs, sme f- u med uncons sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, lith frags, sme silty sh- lmy intbds	9740-9800 SS: pred gy- brn- offwht grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsi grs thru, bf- offwht sil- calc cnt thru, ip med gy arg cnt, pred sb blk, pred frm- fri grm sup clus wi vf- f sd grs, sme f- u med uncons sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, lith frags, sme silty sh- lmy intbds	9800-9860 SS: pred gy- brn- offwht grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsi grs thru, bf- offwht sil- calc cnt thru, ip med gy arg cnt, pred sb blk, pred frm- fri grm sup clus wi vf- f sd grs, sme f- u med uncons sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, lith frags, sme silty sh- lmy intbds
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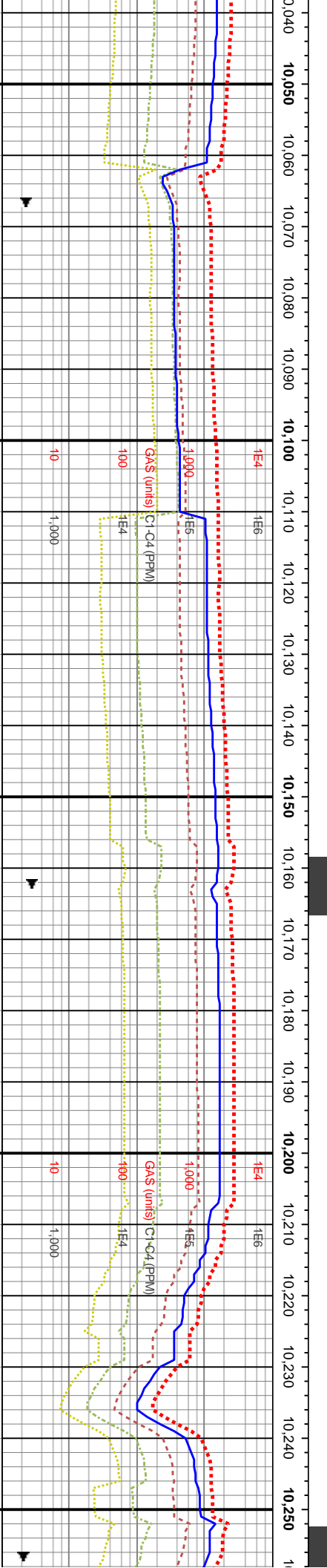




814'	6800	MD: 9,908'	MD: 10,002'	6800
ion: 89.33°	Inclination: 90.01°	Inclination: 92.38°	Rotary: 34Klbs	
h: 268.29°	Azimuth: 270.16°	Azimuth: 269.97°	Strokes: 220SPM	
292.64'	TVD: 7,293.18'	TVD: 7,291.22'	Pump Rate: 639GPM	
119.89'	VS: 2,512.24'	VS: 2,604.32'		

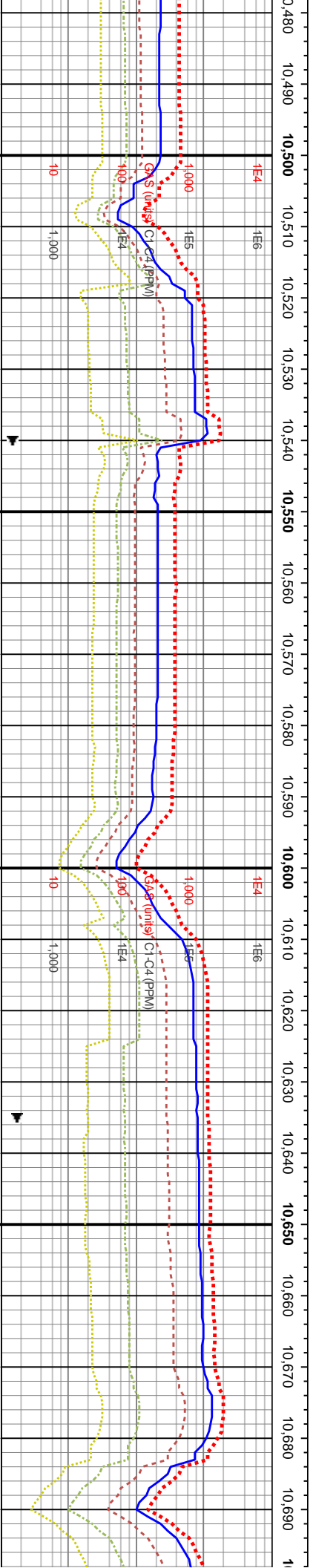
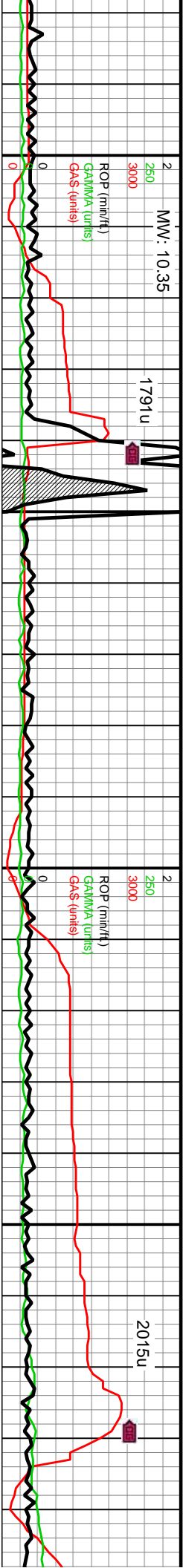
S: pred gy- brn- offwht grs, sme med ip dk gy grns, mod- v trnsl grs thru, calc cnt thru, ip med gy arg cnt, pred frm- fri gm sup clus wi vf- f sd med uncons sd grs, pred sb rd- sb calc, ip ang grs, arg- sil cnt, lith ly sh- lmy intbds	9860-9920 SS: pred gy- brn- offwht grs, sme med gy- lt brn grs, ip dk gy grns, mod- v trnsl grs thru, bf- offwht sil- calc cnt thru, ip med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus wi vf- f sd grs, sme f- u med uncons sd grs, pred sb rd- sb ang grs, sme calc, ip ang grs, arg- sil cnt, lith frags, sme slty sh- lmy intbds	9920-9980 SS: pred brn- gy- offwht grs, sme med gy- tn grs, ip dk gy grns, mod- v trnsl grs thru, bf- offwht sil- calc cnt thru, ip med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus wi vf- f sd grs, occ f- u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, sme mod calc, lith frags, sme slty sh intbds	9980-10040 SS: pred brn- gy- offwht grs, sme med gy- tn grs, ip dk gy grns, mod- v trnsl grs thru, bf- offwht sil- calc cnt thru, ip med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus wi vf- f sd grs, occ f- u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, sme mod calc, lith frags, sme slty sh intbds
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[illegible][illegible]

10220-10280 LS (90%): tr-
frm- hd, blkly, microxln- crys-
carb grms, sme gy stly intbd
brn- gy- offtwht grs wi med q
offtwht sil- calc cmt, pried frm
wi v- f sd grs, sme stly sh il

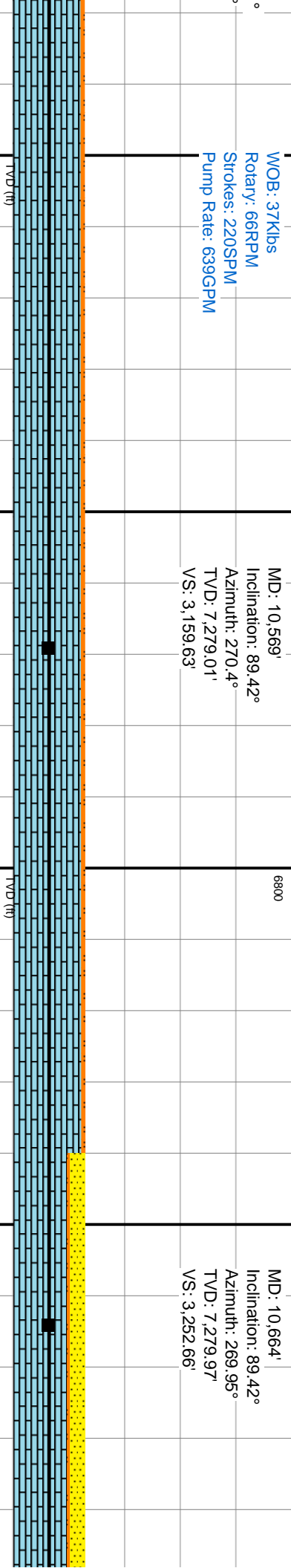




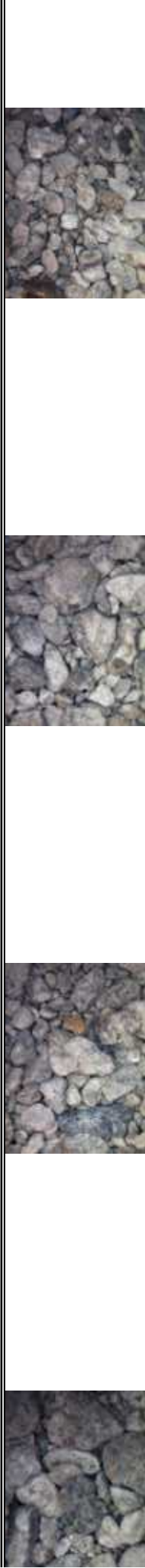
WOB: 37Klbs
Rotary: 66RPM
Strokes: 220SPM
Pump Rate: 639GPM

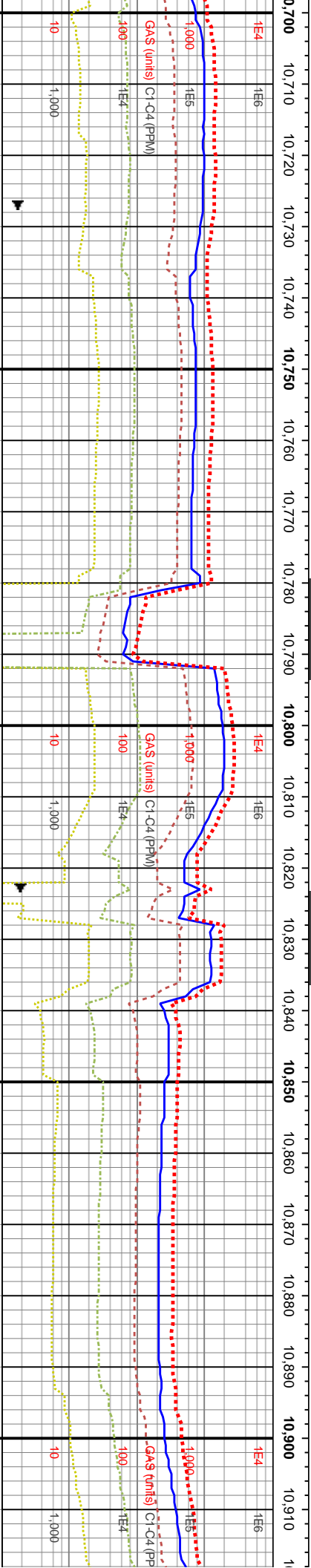
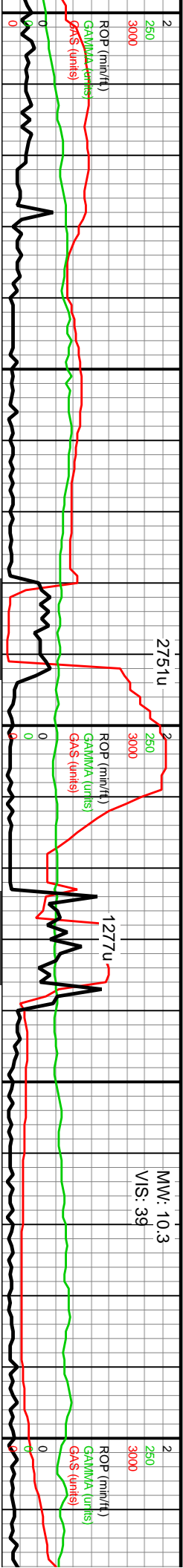
MD: 10,569'
Inclination: 89.42°
Azimuth: 270.4°
TVD: 7,279.01'
VS: 3,159.63'

MD: 10,664'
Inclination: 89.42°
Azimuth: 269.95°
TVD: 7,279.97'
VS: 3,252.66'



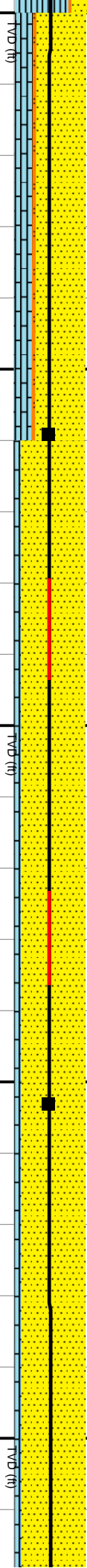
0520 LS: lt brn- brn- offwht, sme tn- -hd, blkly, microxln- cryptoxln, sme carb grms, sme gy slty intbds 7900	10520-10580 LS: lt brn- brn- offwht, sme tn- crm, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grms, sme gy slty intbds	10580-10640 LS: lt brn- brn- offwht, sme tn- crm, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grms, sme gy slty intbds	10640-10700 LS (80%): tn- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grms, sme gy slty- sdy intbds; SD (20%): pred brn- gy- offwht grs, sme bf- offwht ls mtx, tr pyr
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MD: 10,759'
Inclination: 88°
Azimuth: 269.34°
TVD: 7,282.11'
VS: 3,345.84'

MD: 10,853'
Inclination: 92.35°
Azimuth: 271.49°
TVD: 7,281.82'
VS: 3,437.79'



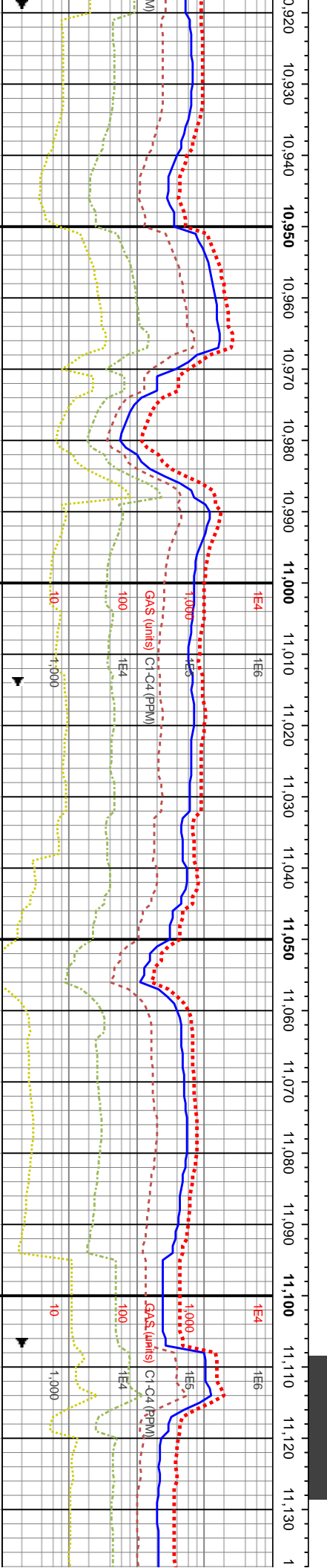
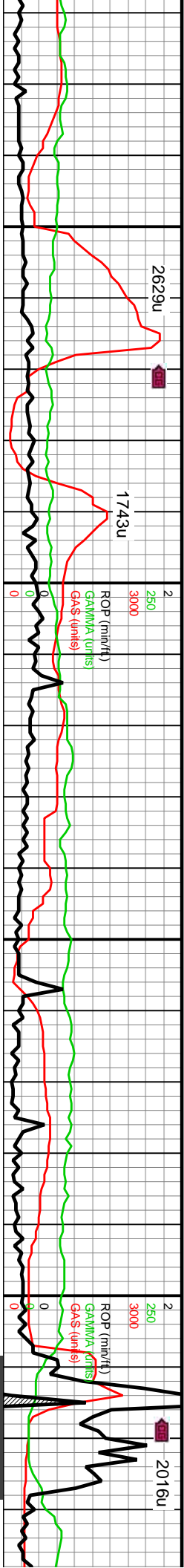
10700-10760 SS (70%): pred brn- gy- offwht grs, sme med gy- tn grs, ip dk gy grs, mod- v trnsl grs thru, bf- offwht lmy mtz thru, ip med gy arg cmt, pred sb blkly, pred frm- fri gm sup clus wi vf- f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, offwht lmy intbds, tr pyr; LS (30%): tn- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtz sup carb 79%

10760-10820 SS: pred brn- gy- offwht grs, sme med gy- tn grs, ip dk gy grs, mod- v trnsl grs thru, bf- offwht lmy mtz thru, ip med gy arg cmt, pred sb blkly, pred frm- fri gm sup clus wi vf- f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, offwht lmy intbds, tr pyr

10820-10880 SS: pred brn- gy- offwht grs, sme med gy- tn grs, ip dk gy grs, mod- v trnsl grs thru, bf- offwht lmy mtz thru, ip med gy arg cmt, pred sb blkly, pred frm- fri gm sup clus wi vf- f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, mod offwht lmy intbds, tr pyr

10880-10940 SS: pred brn- gy- med gy- tn grs, ip dk gy grs, n bf- offwht lmy mtz thru, ip med blkly, pred frm- fri gm sup clus v sb rd- sb ang grs, ip ang grs, lith offwht lmy intbds, tr pyr





MD: 10,948'
Inclination: 91.33°
Azimuth: 269.69°
TVD: 7,278.77'
VS: 3,530.63'

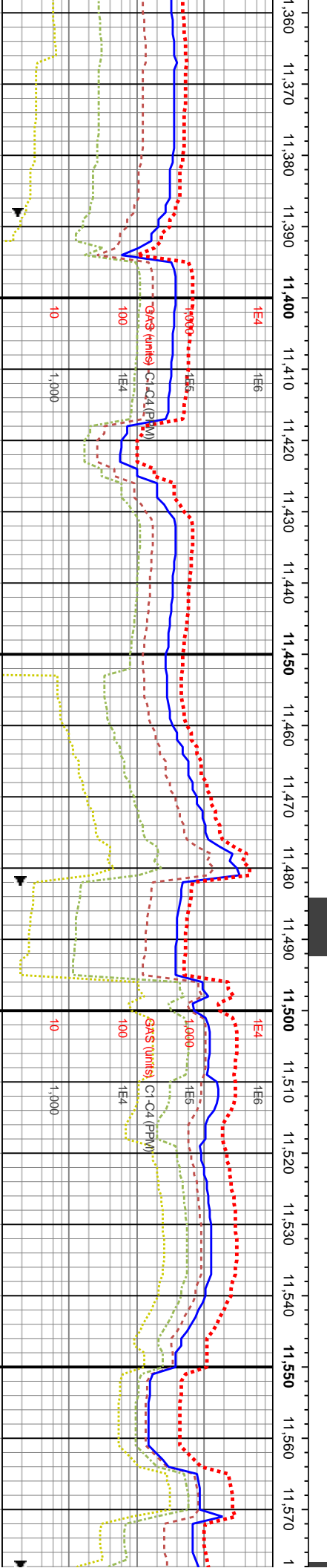
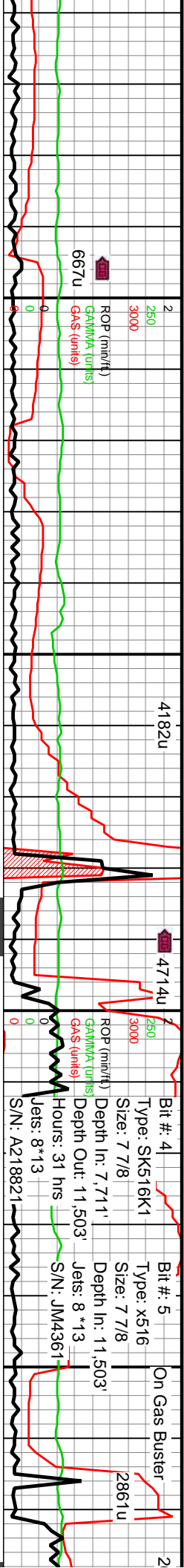
MD: 11,042'
Inclination: 88.91°
Azimuth: 268.23°
TVD: 7,278.57'
VS: 3,623.06'

WOB: 40Klbs
Rotary: 55RPM
Strokes: 220SPM
Pump Rate: 639GPM

MD: 11,142'
Inclination: 88.91°
Azimuth: 268.23°
TVD: 7,278.57'
VS: 3,623.06'

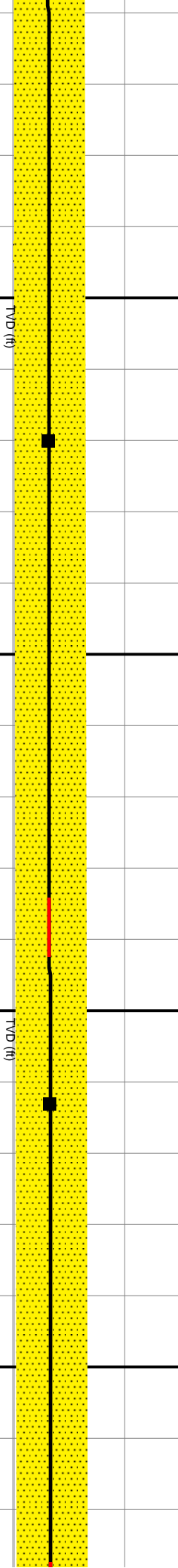
Depth (ft)	Formation	Grain Size	Color	Texture	Notes
10,940-11,000	SS	pred brn- gy-	offwht	grs, sme	
11,000-11,060	LS (80%)	tn- offwht,	sme brn,		
11,060-11,120	SS (65%)	pred brn- gy-	offwht	grs, sme	
11,120-11,180	LS (35%)	tn- offwht,	sme brn,	frn- hd,	





6800

MD: 11,420'
Inclination: 91.61°
Azimuth: 268.67°
TVD: 7,279.79'
VS: 3,993.51'



11360-11420 SS: pred brn- gy- ofwht grs, sme med gy- tn grs, ip dk gy grs, mod- v trnsi grs thru, bf- ofwht lmy mlt thru, ip med gy arg cmt, pred sb blkly, pred frm- fri grn sup clus wi vf- f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, mod ofwht lmy intbds- tr ls

7900

11420-11480 SS: pred brn- gy- ofwht grs, sme med gy- tn grs, ip dk gy grs, mod- v trnsi grs thru, bf- ofwht lmy mlt thru, ip med gy arg cmt, pred sb blkly, pred frm- fri grn sup clus wi vf- f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, mod ofwht lmy intbds- tr ls

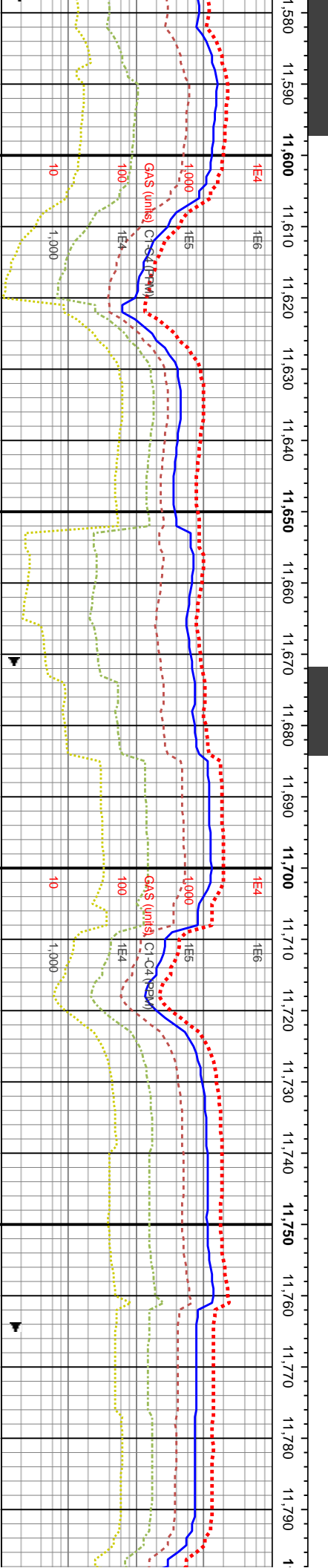
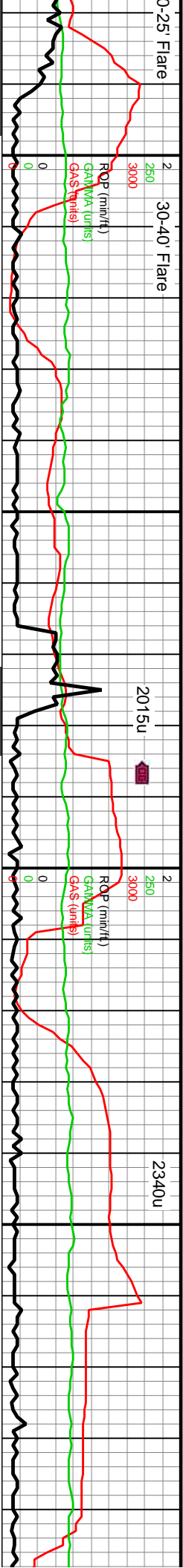
7900

11480-11540 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsi grs thru, bf- ofwht sil cmt thru, ip gy arg cmt, pred sb blkly, pred frm- fri grn sup clus wi vf- f sd grs, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr lith frags, tr silty sh intbds

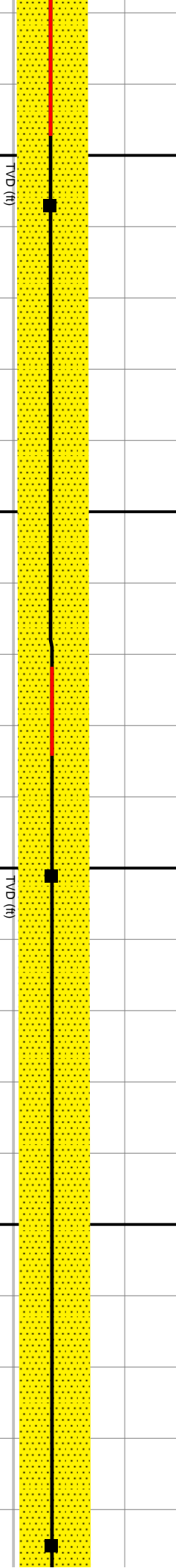
7900

11540-11600 SS: pred lt gy- l med gy- tn grs, mod- v trnsi grs thru, ip gy arg cmt, pred frm- fri grn sup clus wi vf- f sd uncons sd grs, pred sb rd- sb ang grs, ip calc cmt, tr lith frags, tr

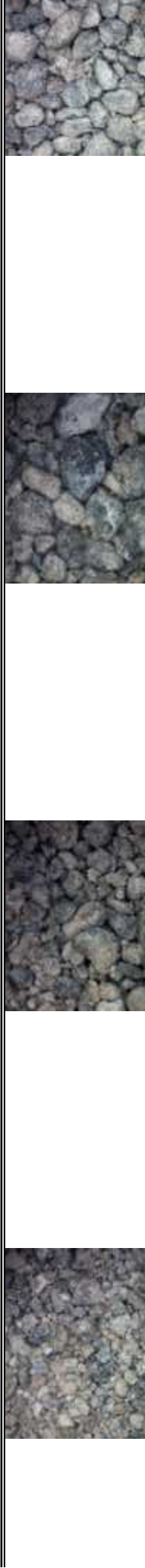


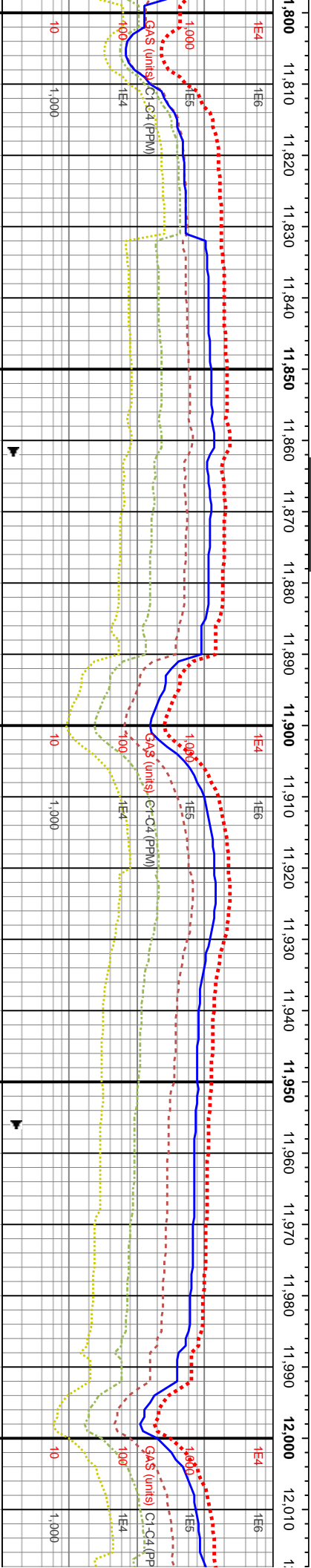
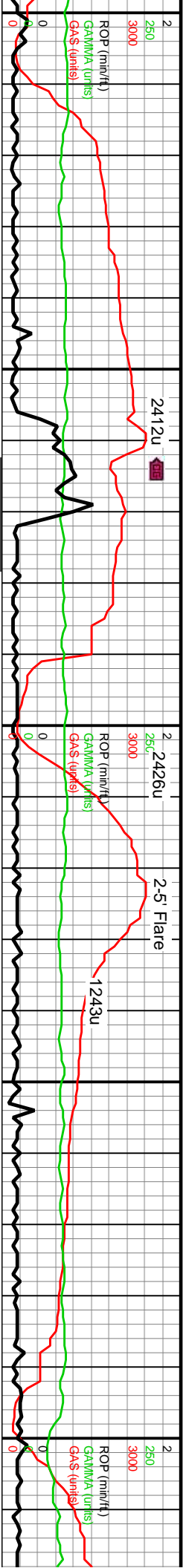


6800	MD: 11,607' Inclination: 90.88° Azimuth: 269.52° TVD: 7,276.07' VS: 4,177.89'	6800	MD: 11,701' Inclination: 90.62° Azimuth: 270.65° TVD: 7,274.83' VS: 4,269.97'	6800	MD: 11,795' Inclination: 90.57° Azimuth: 269.3° TVD: 7,273.84' VS: 4,362.09'
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11600-11660 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsi grs thru, bf- offwht sil cmt thru, ip gy arg cmt, pred sb blkyl, pred frm- fri grn sup clus wi vf- f sd grs, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr lith frags, occ dk silty sh inthds	11660-11720 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsi grs thru, bf- offwht sil cmt thru, ip gy arg cmt, pred sb blkyl, pred frm- fri grn sup clus wi vf- f sd grs, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr lith frags, occ dk silty sh inthds	11720-11780 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsi grs thru, bf- offwht sil cmt thru, occ gy arg cmt, pred sb blkyl, pred frm- fri grn sup clus wi vf- f sd grs, ip u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr lith frags, occ dk silty sh inthds	11780-11840 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsi grs thru, bf- offwht sil cmt thru, ip gy arg cmt, pred sb blkyl, pred frm- fri grn sup clus wi vf- f sd grs, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr lith frags, occ dk silty sh inthds
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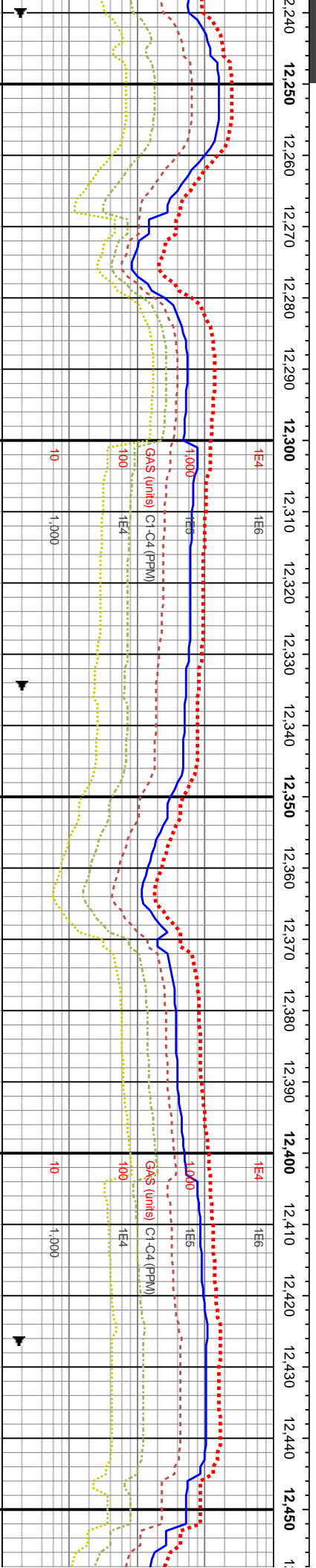
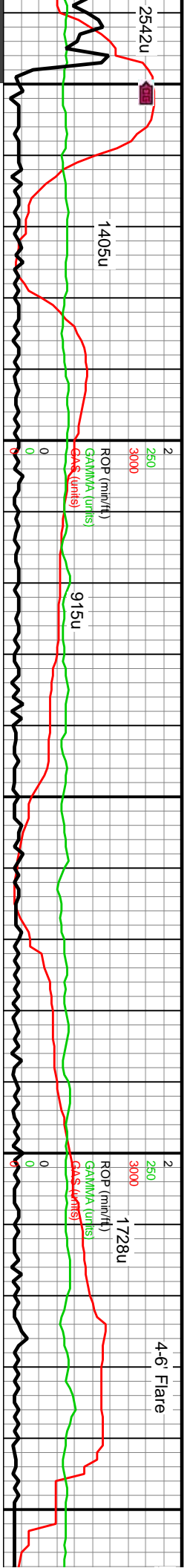


MD: 11,890'
Inclination: 90.77°
Azimuth: 270.85°
TVD: 7,272.73'
VS: 4,455.15'

WOB: 41Klbs
Rotary: 65RPM
Strokes: 212SPH
Pump Rate: 614

11840 SS: pred lt gy- lt brn grs, sme tn grs, mod- v trnsl grs thru, brn- l cnt thru, sme gy arg cnt, pred sb l frm- fri grn sup clus wi vf- f sd grs, tr u med unconcs sd grs, pred sb rd- sb ang grs, s, ip calc cnt, sme dk lith frags- dk intbds	11840-11900 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsl grs thru, brn- offwht sil cnt thru, sme gy arg cnt, pred sb blky, pred frm- fri grn sup clus wi vf- f sd grs, tr u med unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, sme dk lith frags- dk dk silty sh intbds	11900-11960 SS: pred lt gy- lt brn grs, sme med gy- tn grs, mod- v trnsl grs thru, brn- offwht sil cnt thru, sme gy arg cnt, pred sb blky, pred frm- fri grn sup clus wi vf- f sd grs, tr u med unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, sme dk lith frags- dk silty sh intbds	11960-12020 SS: pred med gy- lt brn grs, sme gy- tn grs, mod- v trnsl grs thru, brn- bf si cnt thru, sme med gy arg cnt, pred sb blky, - pred frm- fri grn sup clus f sd grs, ip v f sd, mod u med unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, ip dk silty sh intbds
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)

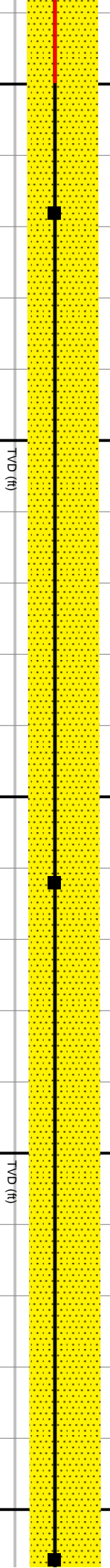




MD: 12,268'
Inclination: 90.33°
Azimuth: 272.18°
TVD: 7,270.93'
VS: 4,825.52'

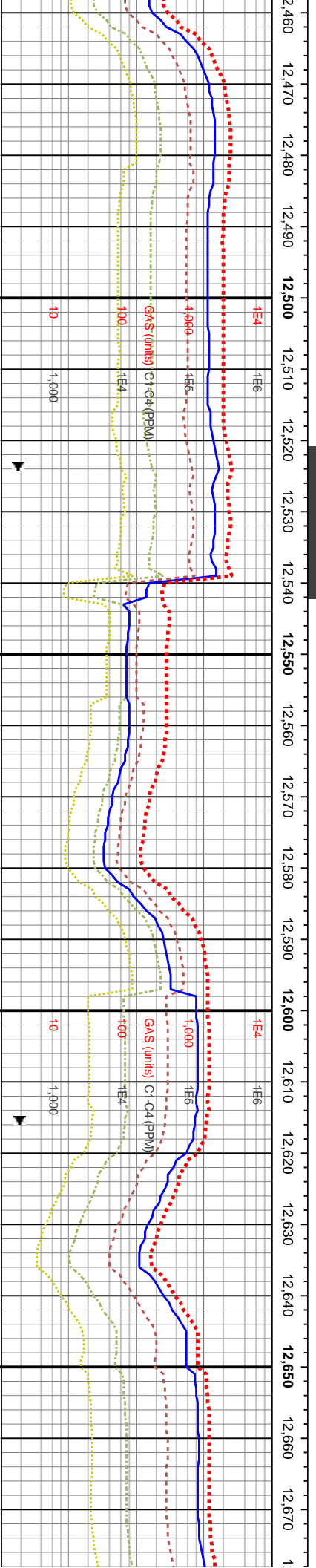
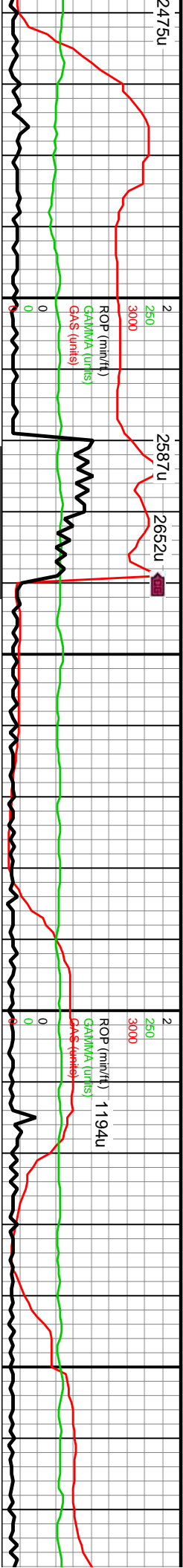
MD: 12,362'
Inclination: 90.02°
Azimuth: 272.12°
TVD: 7,270.64'
VS: 4,916.87'

MD: 12,440'
Inclination: 90.02°
Azimuth: 272.12°
TVD: 7,270.64'
VS: 4,916.87'

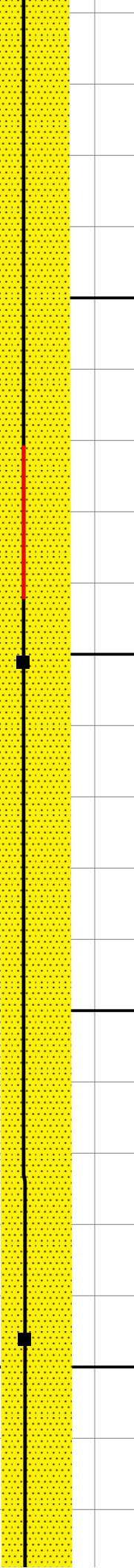


med gy- gy grs, sme trnsd grs thru, lt brn- ang cmt, pred frm- fri p v f sd, occ u med lt- sb ang grs, ip sl silty intbds, lith	12260-12320 SS: pred med gy- gy grs, sme dk gy- lt brn grs, mod- v trnsd grs thru, lt brn- bf sil cmt thru, ip med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip v f sd, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, sme sl silty intbds, lith frags	12320-12380 SS: pred med gy- gy grs, sme dk gy- lt brn grs, mod- v trnsd grs thru, lt brn- bf sil cmt thru, ip med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip v f sd, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, sme sl silty intbds, lith frags	12380-12440 SS: pred med gy- gy grs, sme dk gy- lt brn grs, mod- v trnsd grs thru, lt brn- bf sil cmt thru, ip med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip v f sd, occ u med uncons sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, sme sl silty intbds, lith frags	12440 SS brn grs, n thru, ip m clus wi f s sd grs, tr ang grs, i
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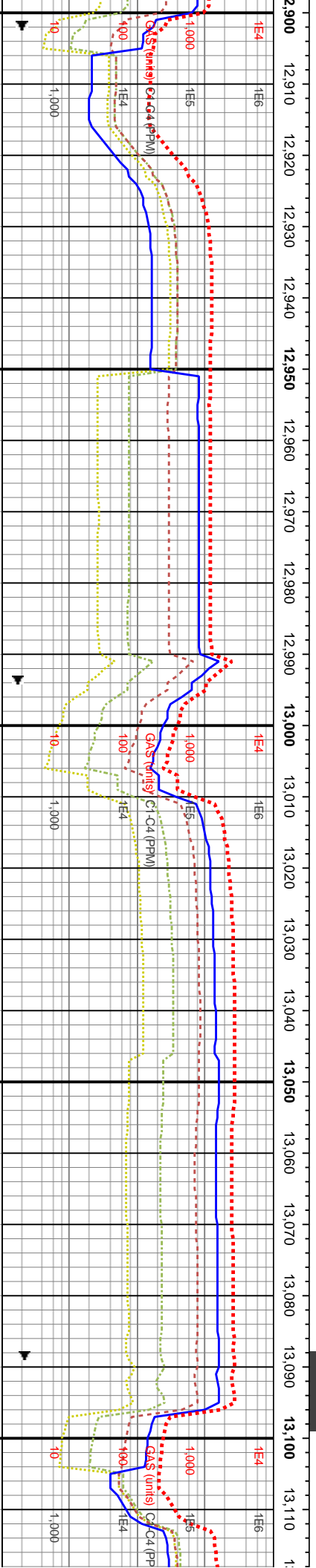
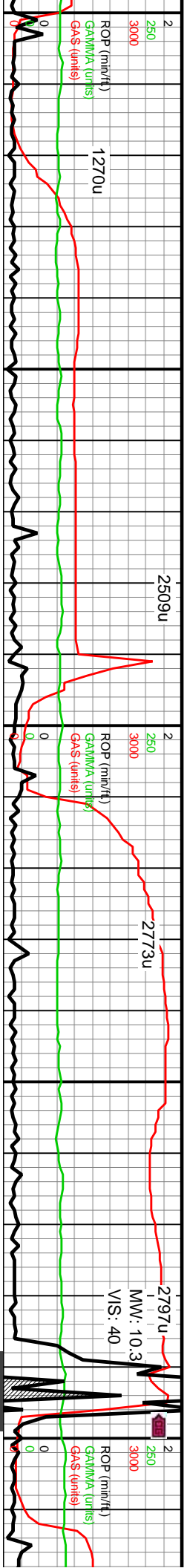


2,457' ion: 89.51° h: 271.18° ,271.03' 009.37'	WOB: 36Klbs Rotary: 65RPM Strokes: 212SPM Pump Rate: 615GPM	6800	MD: 12,551' Inclination: 90.7° Azimuth: 273.43° TVD: 7,270.86' VS: 5,100.66'	6800	MD: 12,646' Inclination: 91.27° Azimuth: 273.32° TVD: 7,269.23' VS: 5,192.47'
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12500-12560 SS: pred med gy- gy grs, sme dk gy- lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, ip med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip v f sd, ip f- u med uncongs sd grs, tr c sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr dk slty sh intbds	7900
12560-12620 SS: pred med gy- gy grs, sme dk gy- lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, ip med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip v f sd, ip f- u med uncongs sd grs, tr c sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr dk slty sh intbds	7900
12620-12680 SS: pred med gy- gy grs, sme dk gy- lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, ip med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip v f sd, ip f- u med uncongs sd grs, tr c sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, tr dk slty sh intbds	





MD: 12,929'
Inclination: 91.3°
Azimuth: 270.86°
TVD: 7,262.29'
VS: 5,466.94'

WOB: 32Klbs
Rotary: 65RPM
Strokes: 214SPM
Pump Rate: 622GPM

MD: 13,024'
Inclination: 92.51°
Azimuth: 271.42°
TVD: 7,259.13'
VS: 5,559.58'

MD: 13,100'
Inclination: 92.51°
Azimuth: 271.42°
TVD: 7,259.13'
VS: 5,559.58'

TVD (ft)

TVD (ft)

TVD (ft)

lt gy grs, sme med
grs thru, lt brn-bf sil
x sup clus, ip v f
sd grs, pred sb
o calc cnt, rr dk

12920-12980 SS: pred gy- lt gy grs, sme med
gy- lt brn grs, mod- v trns grs thru, lt brn-bf sil
cnt thru, ip med gy arg cnt, pred frm- fri grn
sup clus wi f sd grs, occ mtz sup clus, ip v f sd,
sme u f- u med uncon sd grs, pred sb rd- sb
ang grs, ip ang grs, ip calc cnt, tr pyr

12980-13040 SS: pred gy- lt gy grs, sme med
gy- lt brn grs, mod- v trns grs thru, lt brn-bf sil
cnt thru, ip med gy arg cnt, pred frm- fri grn
sup clus wi f sd grs, occ mtz sup clus, ip v f
sd, sme u f- u med uncon sd grs, pred sb rd-
sb ang grs, ip ang grs, ip calc cnt, rr dk silty sh
inbds, tr pyr

13040-13100 SS: pred gy- lt gy grs, sme med gy- lt
brn grs, mod- v trns grs thru, lt brn-bf sil cnt thru,
ip med gy arg cnt, pred frm- fri grn sup clus wi f sd
grs, occ mtz sup clus, ip v f sd, sme u f- u med
uncon sd grs, pred sb rd- sb ang grs, ip ang grs,
ip calc cnt, tr pyr

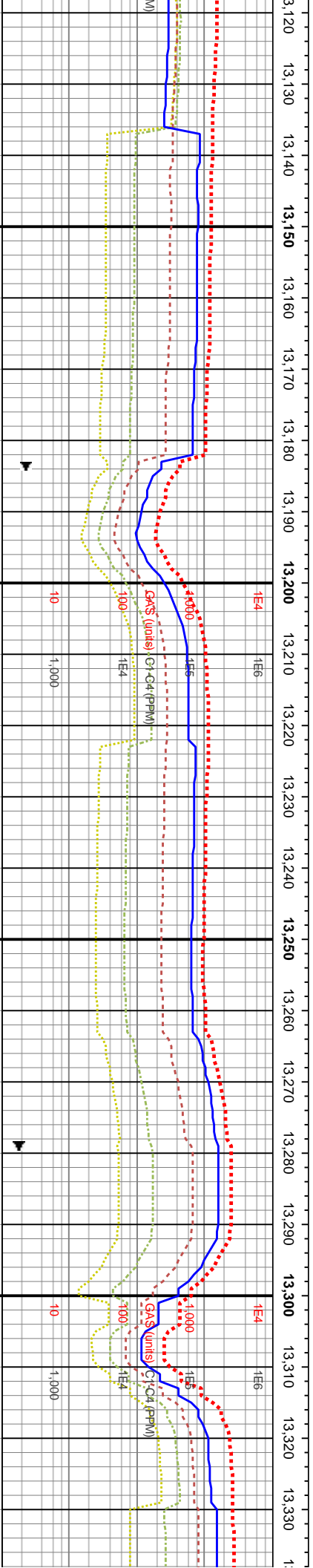
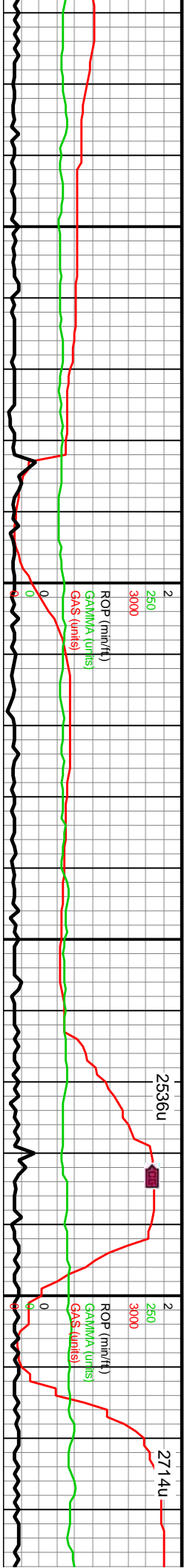
13100-13110 SS: pred gy- lt gy grs, sme med gy- lt
brn grs, mod- v trns grs thru, lt brn-bf sil cnt thru,
ip med gy arg cnt, pred frm- fri grn sup clus wi f sd
grs, occ mtz sup clus, ip v f sd, sme u f- u med
uncon sd grs, pred sb rd- sb ang grs, ip ang grs,
ip calc cnt, tr pyr

7900

7900

7900

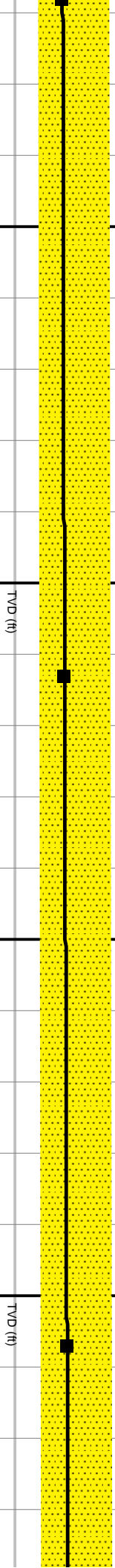




3,118'
ion: 91.79°
h: 271.15°
,255.6'
551.2'

6800 MD: 13.213'
Inclination: 92.75°
Azimuth: 271.85°
TVD: 7,251.84'
VS: 5,743.69'

6800 MD: 13.307'
Inclination: 93.31°
Azimuth: 271°
TVD: 7,246.87'
VS: 5,835.18'



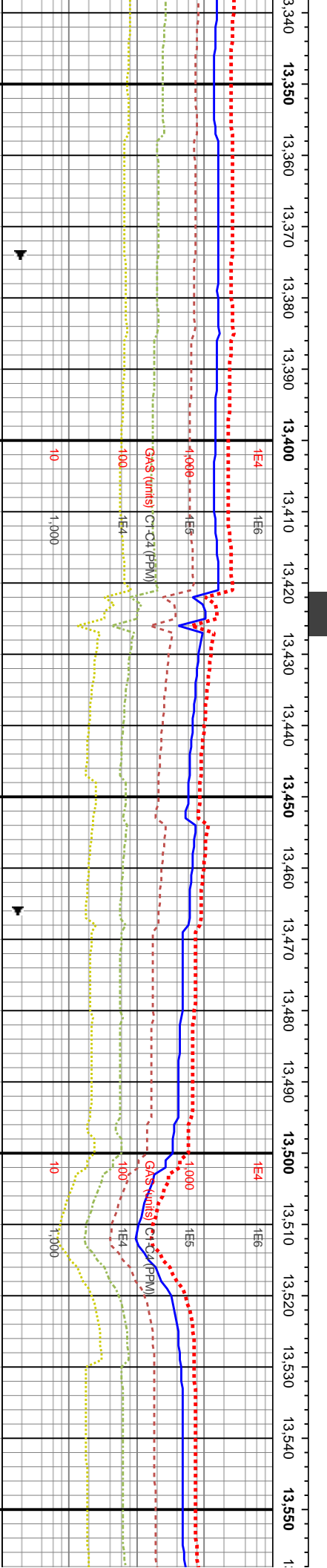
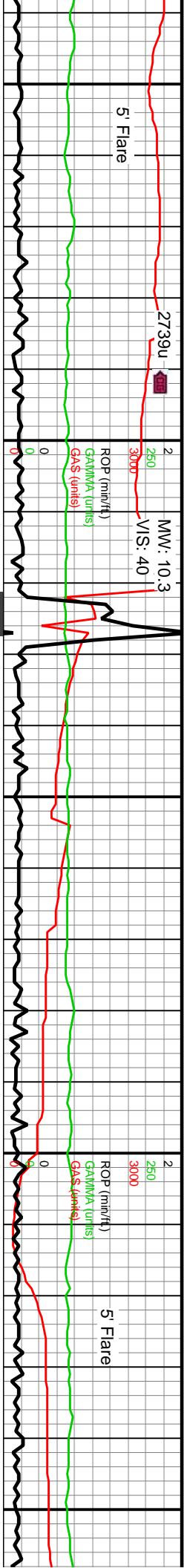
13160 SS: pred gy- lt gy grs, sme med
grs, mod- v trnsi grs thru, lt brn- bf sil
occ med- dk gy arg cmt, pred frm- fri
plus wi f- uf sd grs, occ mtz sup clus,
u f- u med uncongs sd grs thru, pred
ang grs, ip ang grs, ip calc cmt

13160-13220 SS: pred gy- lt gy grs, sme med
gy- lt brn grs, mod- v trnsi grs thru, lt brn- bf sil
cmt thru, occ med- dk gy arg cmt, pred frm- fri
grn sup clus wi f- uf sd grs, occ mtz sup clus, ip v
f sd, u f- u med uncongs sd grs thru, pred sb rd-
sb ang grs, ip ang grs, ip calc cmt

13220-13280 SS: pred gy- lt gy grs, sme med
gy- lt brn grs, mod- v trnsi grs thru, lt brn- bf sil
cmt thru, occ med- dk gy arg cmt, pred frm- fri
grn sup clus wi f- uf sd grs, occ mtz sup clus, ip
v f sd, u f- u med uncongs sd grs thru, pred sb
rd- sb ang grs, ip ang grs, ip calc cmt

13280-13340 SS: pred gy- lt gy grs, sme med gy-
lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt
thru, occ med- dk gy arg cmt, pred frm- fri grn sup
clus wi f- uf sd grs, occ mtz sup clus, ip v f sd, u f-
u med uncongs sd grs thru, pred sb rd- sb ang
grs, ip ang grs, ip calc cmt





MD: 13,401'
Inclination: 93.79°
Azimuth: 270.87°
TVD: 7,241.05'
VS: 5,926.81'

MD: 13,495'
Inclination: 92.15°
Azimuth: 269.67°
TVD: 7,236.18'
VS: 6,018.71'

WOB: 42Klbs
Rotary: 65RPM
Strokes: 106SPM
Pump Rate: 615GPM

TVD (ft)

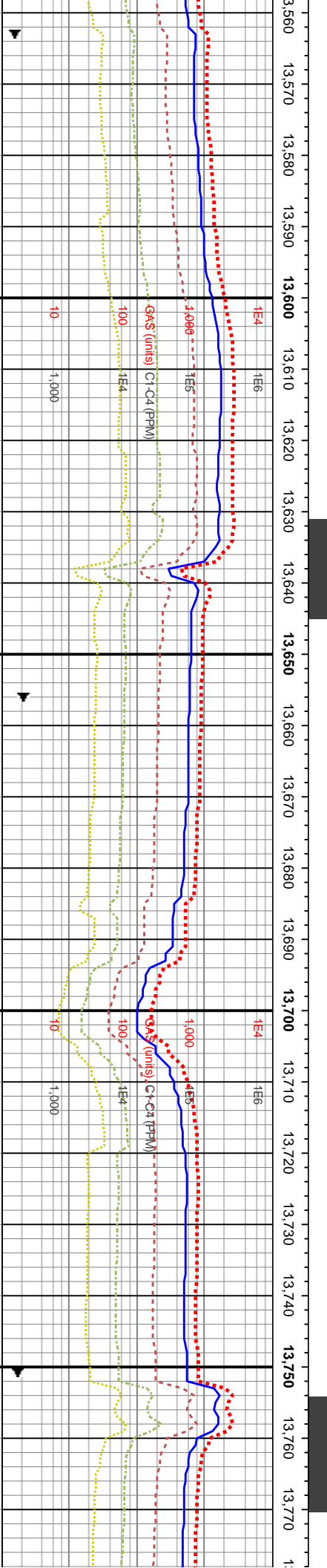
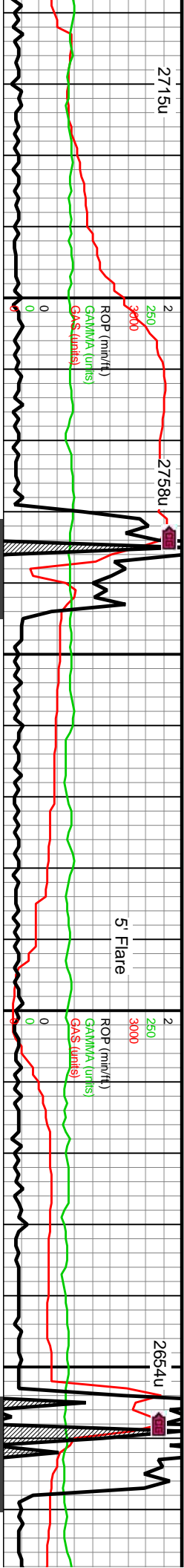
TVD (ft)

13340-13400 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsl grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred frm- fri grn sup clus wi f- uf sd grs, occ mtz sup clus, ip v f sd, sme u f- u med uncongs sd grs, sme sl stly, pred sb rd- sb ang grs, ip ang grs, ip calc cmt

13400-13460 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsl grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred frm- fri grn sup clus wi f- uf sd grs, occ mtz sup clus, ip v f sd, sme u f- u med uncongs sd grs, sme sl stly, pred sb rd- sb ang grs, ip ang grs, ip calc cmt

13460-13520 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsl grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred u f- u med uncongs sd grs, mod frm- fri grn sup clus wi f- uf sd grs, occ mtz sup clus, sme sl stly, pred sb rd- sb ang grs, ip ang grs, ip calc cmt

13520-13580 SS: pred me lt brn grs, mod- v trnsl grs cmt thru, occ med- dk gy a grn sup clus wi f- uf sd grs ip v f sd, sme u f- u med ur sl stly, pred sb rd- sb ang g calc cmt



MD: 13,590'
Inclination: 91.33°
Azimuth: 268.35°
TVD: 7,233.3'
VS: 6,112.07'

MD: 13,684'
Inclination: 93.08°
Azimuth: 267.65°
TVD: 7,229.68'
VS: 6,204.72'

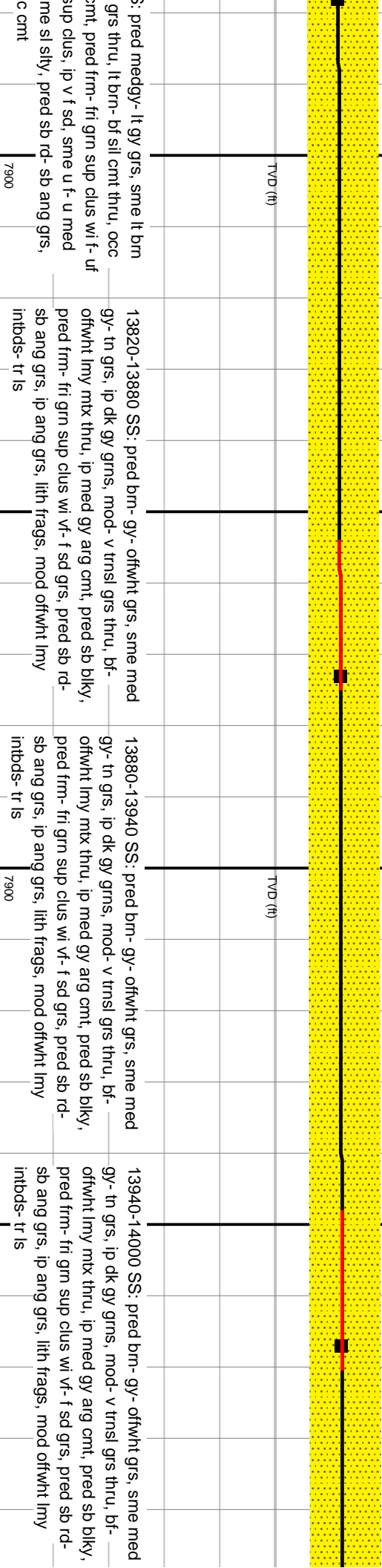
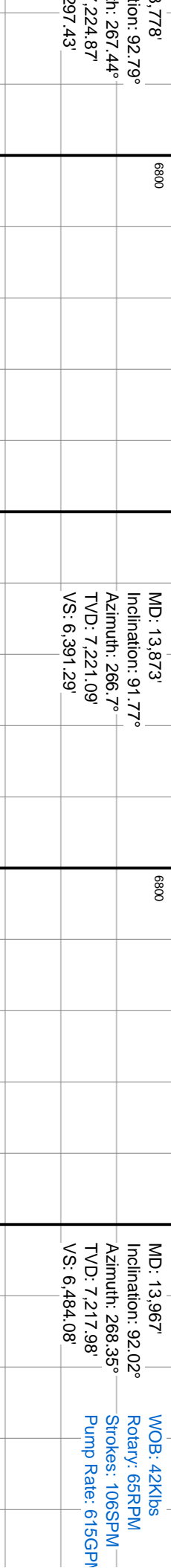
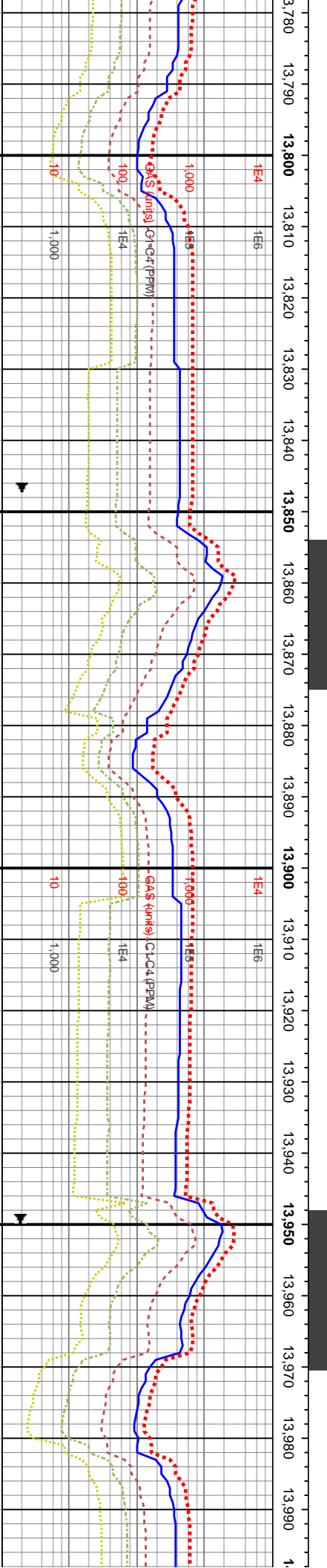
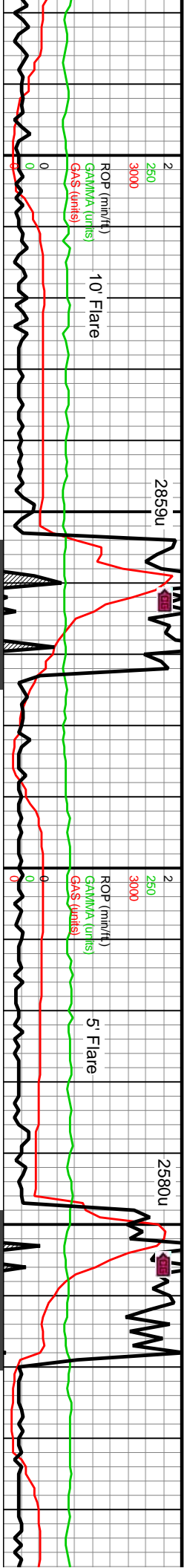
MD: 13,760'
Inclination: 93.08°
Azimuth: 267.65°
TVD: 7,229.68'
VS: 6,204.72'

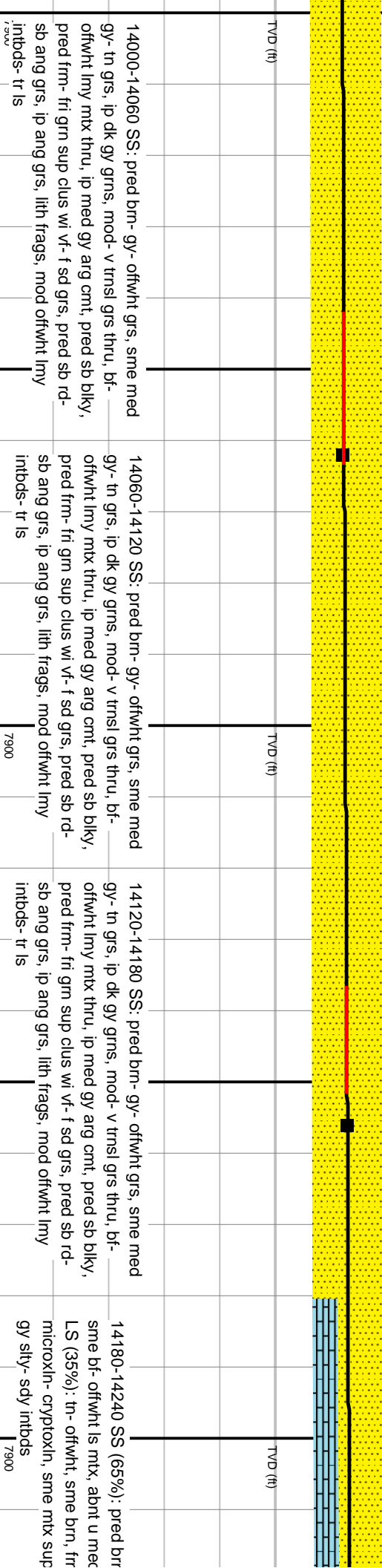
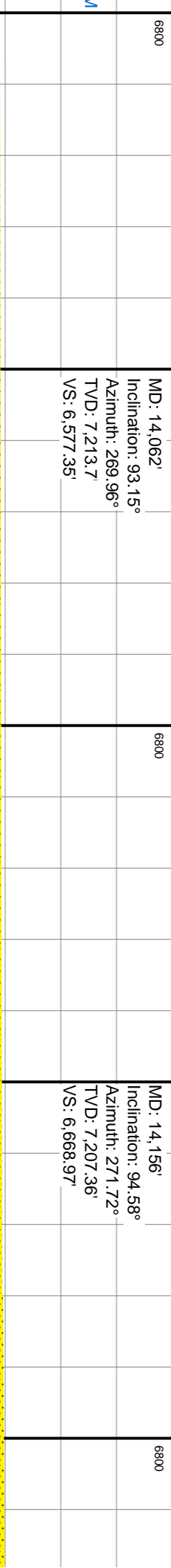
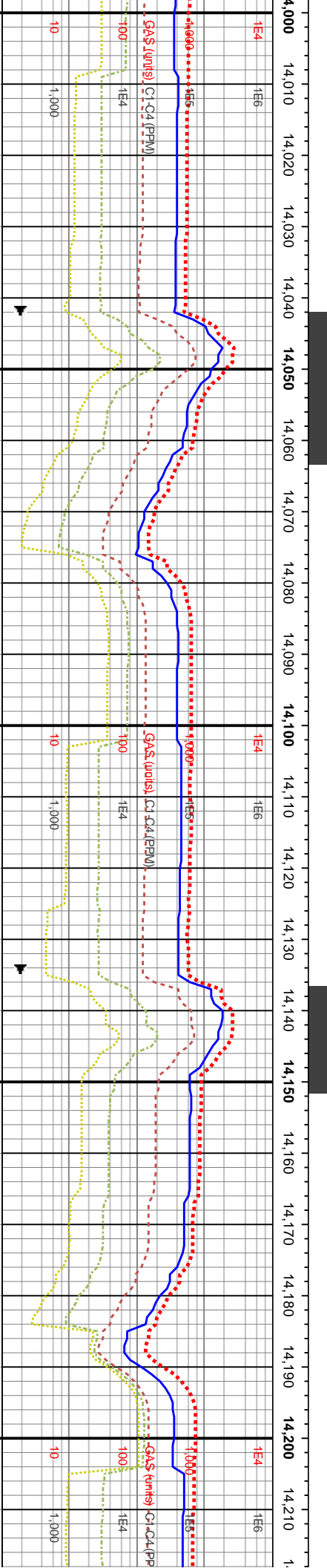
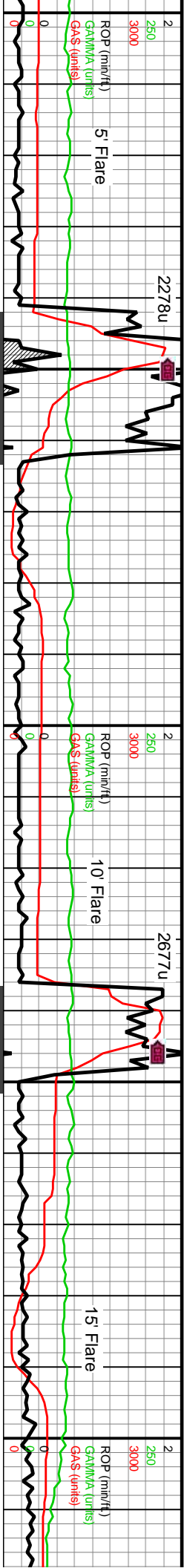
TVD (ft)

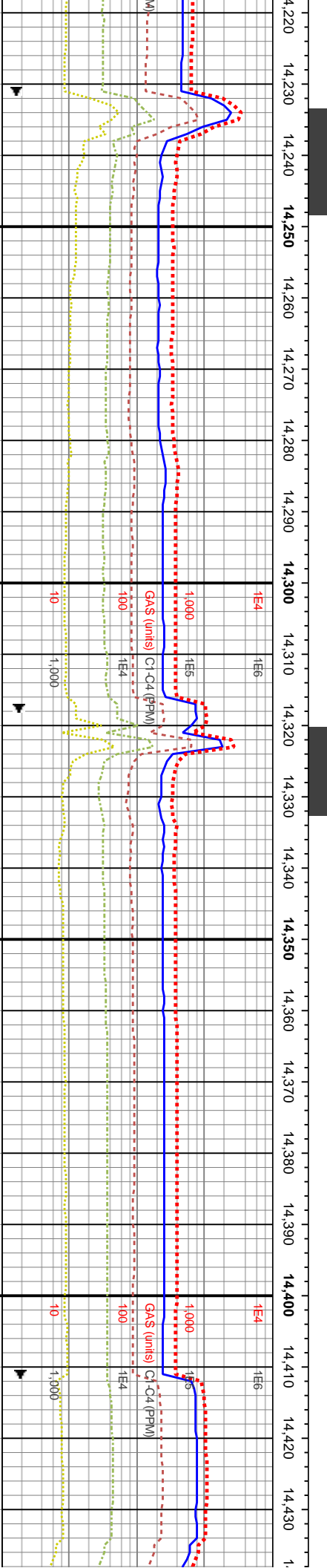
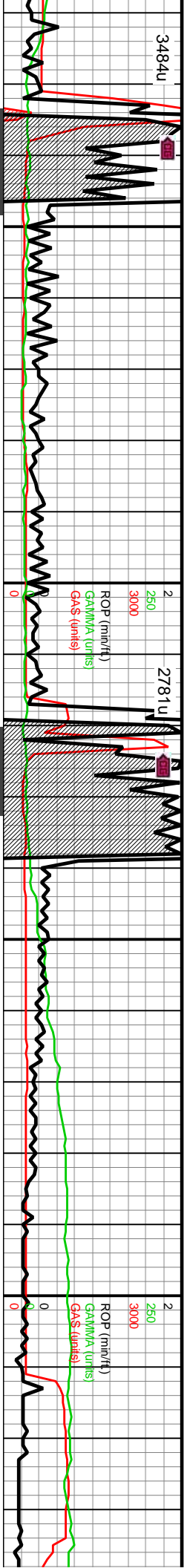
TVD (ft)

13580-13640 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- uf sd grs, occ mtix sup clus, ip v f sd, sme u f- u med uncons sd grs, sme sl slty, pred sb rd- sb ang grs, ip ang grs, ip calc cmt	13640-13700 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- uf sd grs, occ mtix sup clus, ip v f sd, sme u f- u med uncons sd grs, sme sl slty, pred sb rd- sb ang grs, ip ang grs, ip calc cmt	13700-13760 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- uf sd grs, occ mtix sup clus, ip v f sd, sme u f- u med uncons sd grs, sme sl slty, pred sb rd- sb ang grs, ip ang grs, ip calc cmt	13760-13820 SS: pred medgy- lt gy grs, sme lt brn grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, occ med- dk gy arg cmt, pred frm- fri grm sup clus wi f- uf sd grs, occ mtix sup clus, ip v f sd, sme u f- u med uncons sd grs, sme sl slty, pred sb rd- sb ang grs, ip ang grs, ip calc cmt
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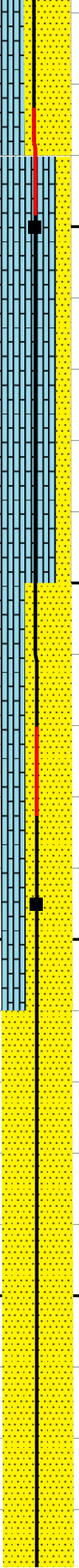




MD: 14,250'
Inclination: 93°
Azimuth: 270.78°
TVD: 7,201.15'
VS: 6,760.45'

MD: 14,345'
Inclination: 90.9°
Azimuth: 271.05°
TVD: 7,197.92'
VS: 6,853.17'

MD: 14,439'
Inclination: 90.72°
Azimuth: 270.41°
TVD: 7,196.59'
VS: 6,945.04'



TVD (ft)

TVD (ft)

14240-14300 LS (80%): tn- offwht, sme brn, frm-
hd, blkly, microxln- cryptoxln, sme mtz sup carb
grms, sme gy silty- sdy intbds; SD (20%): pred brn-
gy- offwht grs, sme bf- offwht ls mtz, tr pyr, sme u
med unconcs sd grs

14300-14360 LS (80%): tn- offwht, sme brn, frm-
hd, blkly, microxln- cryptoxln, sme mtz sup carb
grms, sme gy silty- sdy intbds; SD (20%): pred brn-
gy- offwht grs, sme bf- offwht ls mtz, tr pyr, sme u
med unconcs sd grs

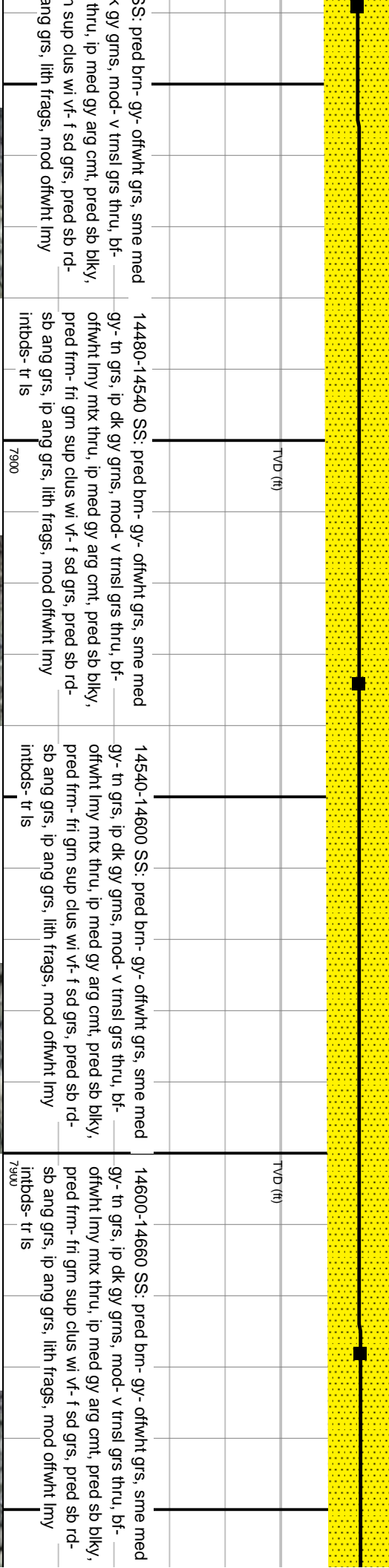
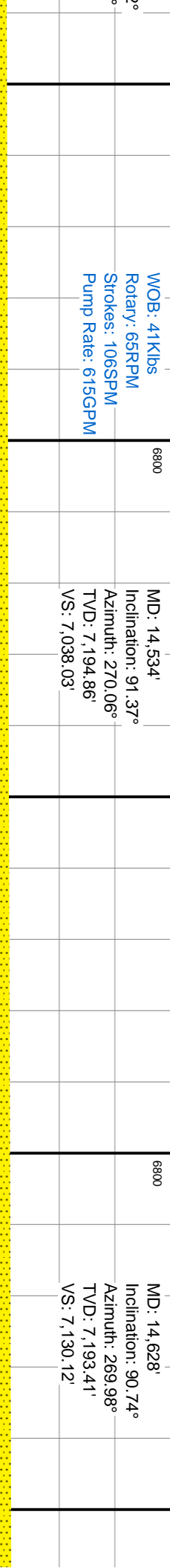
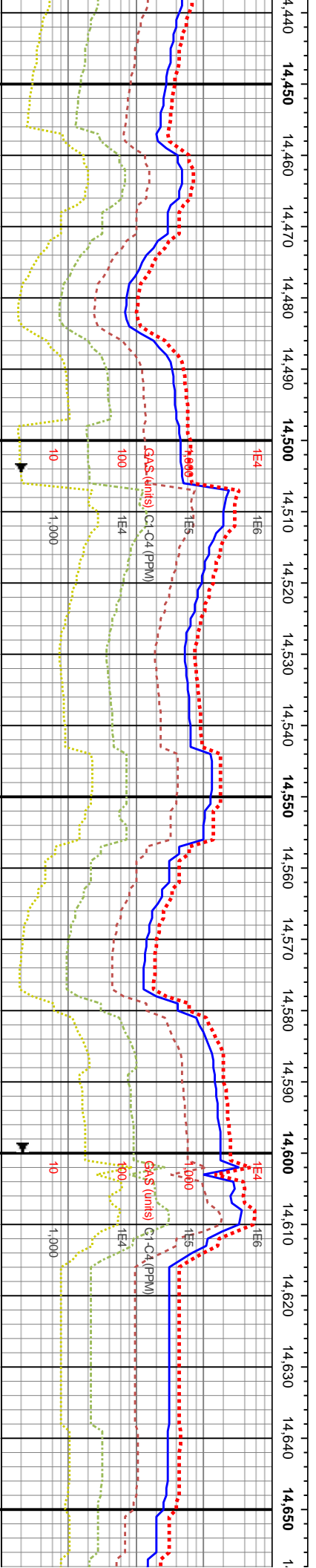
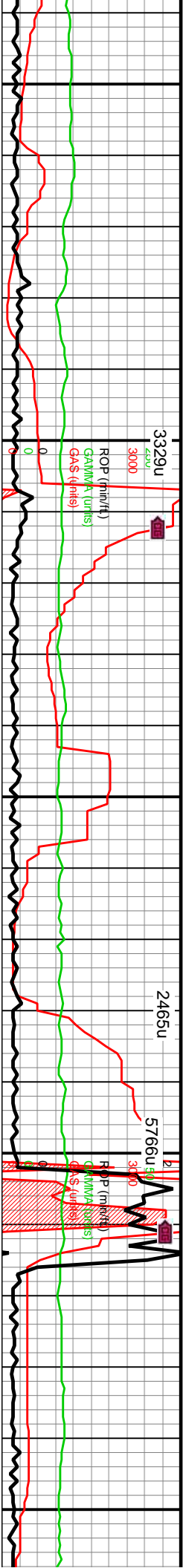
14360-14420 SS (65%): pred brn- gy- offwht grs,
sme bf- offwht ls mtz, abnt u med unconcs sd grs;
LS (35%): tn- offwht, sme brn, frm- hd, blkly,
microxln- cryptoxln, sme mtz sup carb grms, sme
gy silty- sdy intbds

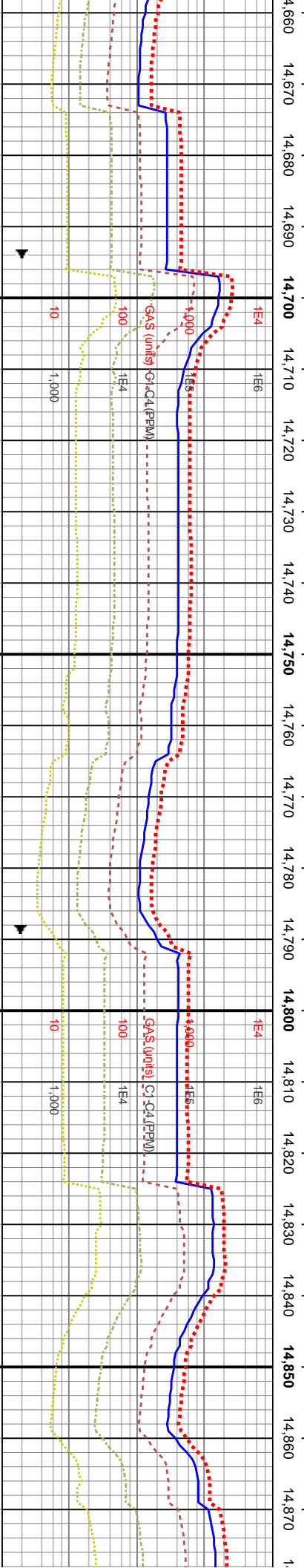
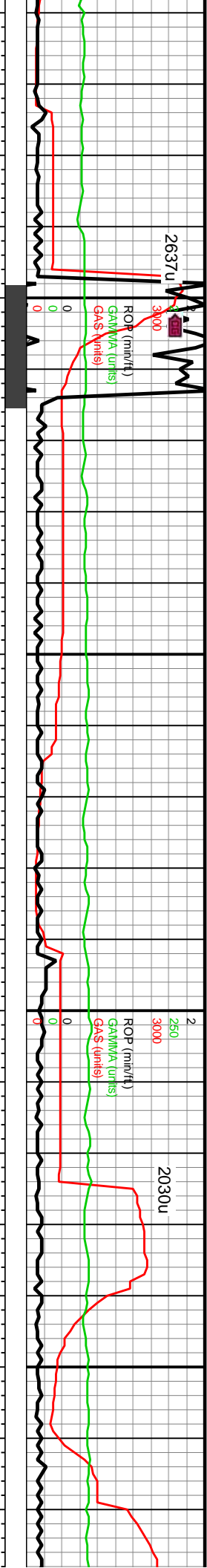
14420-14480 S
gy- tn grs, ip di
offwht lmy mtz
pred frm- tr gr
sb ang grs, ip
intbds- tr ls

TVD (ft)

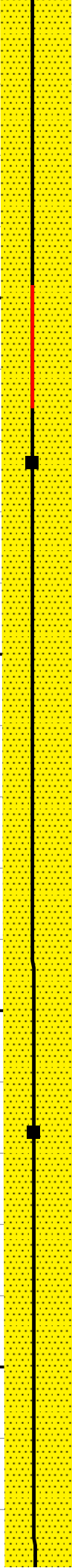
TVD (ft)





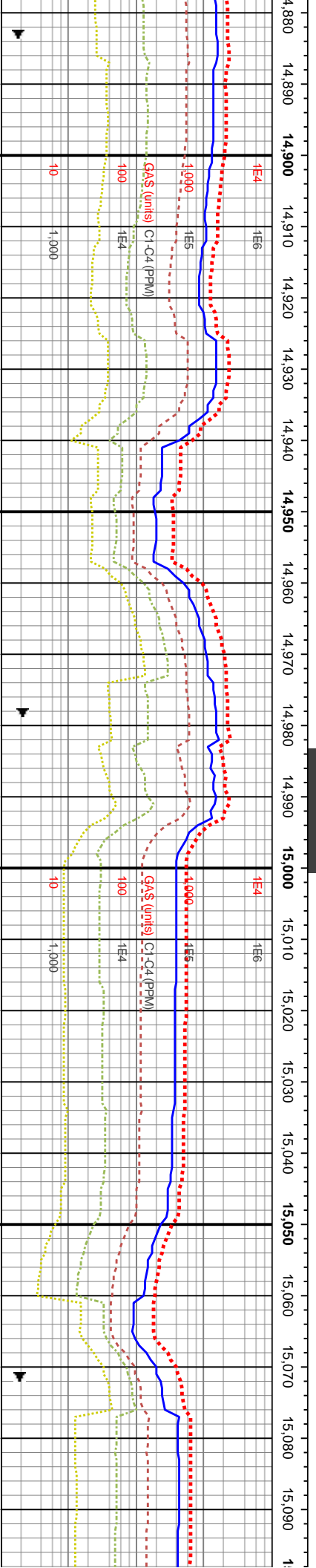
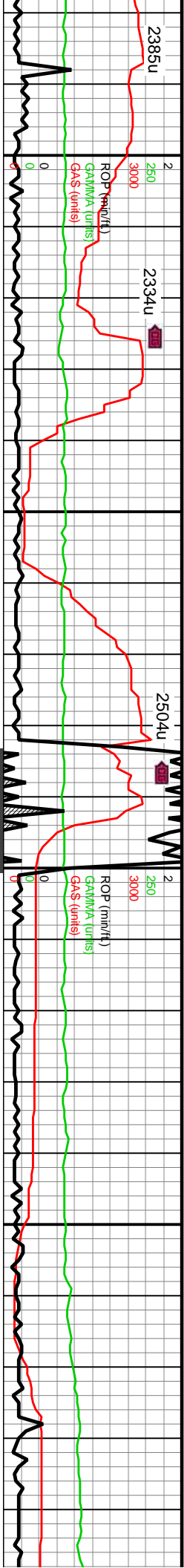


6800	MD: 14,723' Inclination: 90.78° Azimuth: 271.61° TVD: 7,192.15' VS: 7,222.94'	DP	6800	MD: 14,817' Inclination: 91.67° Azimuth: 272.16° TVD: 7,190.14' VS: 7,314.37'
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14660-14720 SS: pred gy- lt brn grs, sme gy- offwht grs, mod- v trnsl grs thru, lt brn- bf sil cnt thru, sme med gy arg cnt, pred sb blkly, pred frm- fri grn sup clus f sd grs, ip v f sd, mod u med- u f unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, tr pyr	7900	14720-14780 SS: pred gy- lt brn grs, sme gy- offwht grs, mod- v trnsl grs thru, lt brn- bf sil cnt thru, sme med gy arg cnt, pred sb blkly, pred frm- fri grn sup clus f sd grs, ip v f sd, mod u med- u f unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, tr pyr	7900	14780-14840 SS: pred gy- lt brn grs, sme gy- offwht grs, mod- v trnsl grs thru, lt brn- bf sil cnt thru, sme med gy arg cnt, pred sb blkly, pred frm- fri grn sup clus f sd grs, ip v f sd, mod u med- u f unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, tr pyr	7900	14840-14900 SS: pred gy- lt offwht grs, mod- v trnsl grs th cnt thru, sme med gy arg cr pred frm- fri grn sup clus f sd abnt med- u f unconcs sd grs, grs, pred sb rd- sb ang grs, ip cnt, occ dk lith frags, tr pyr
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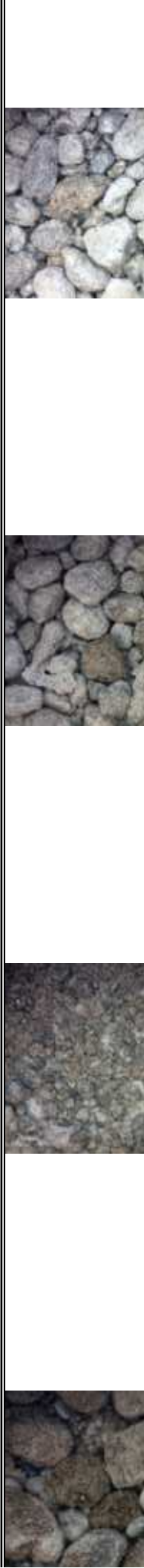
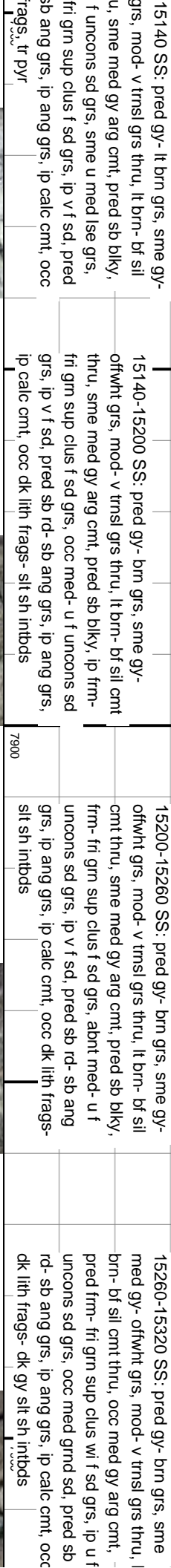
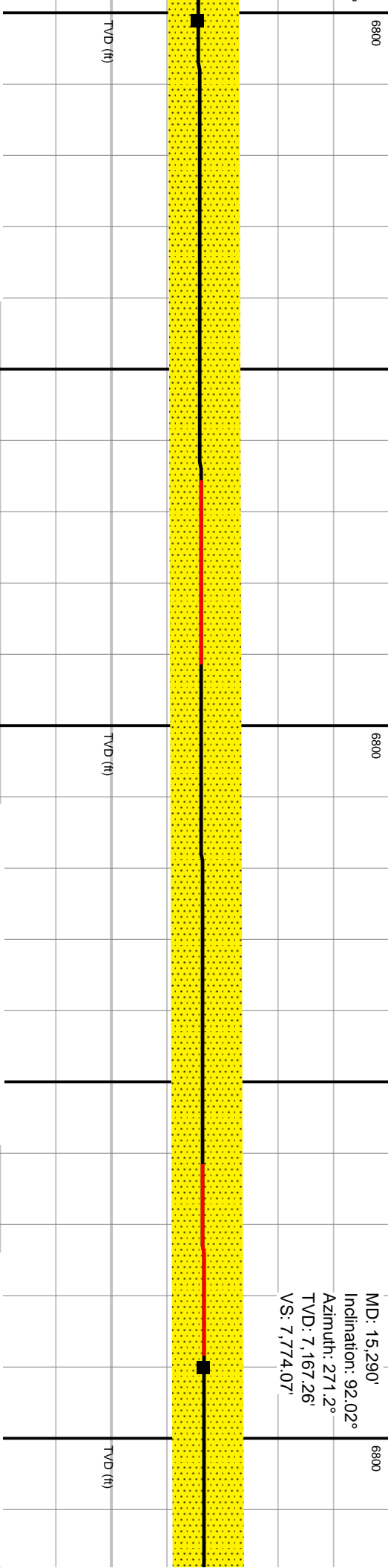
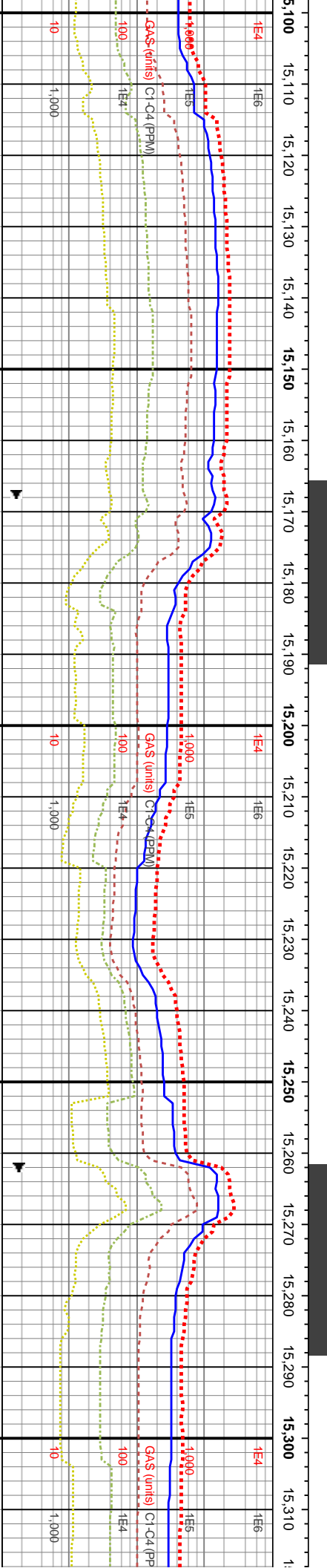


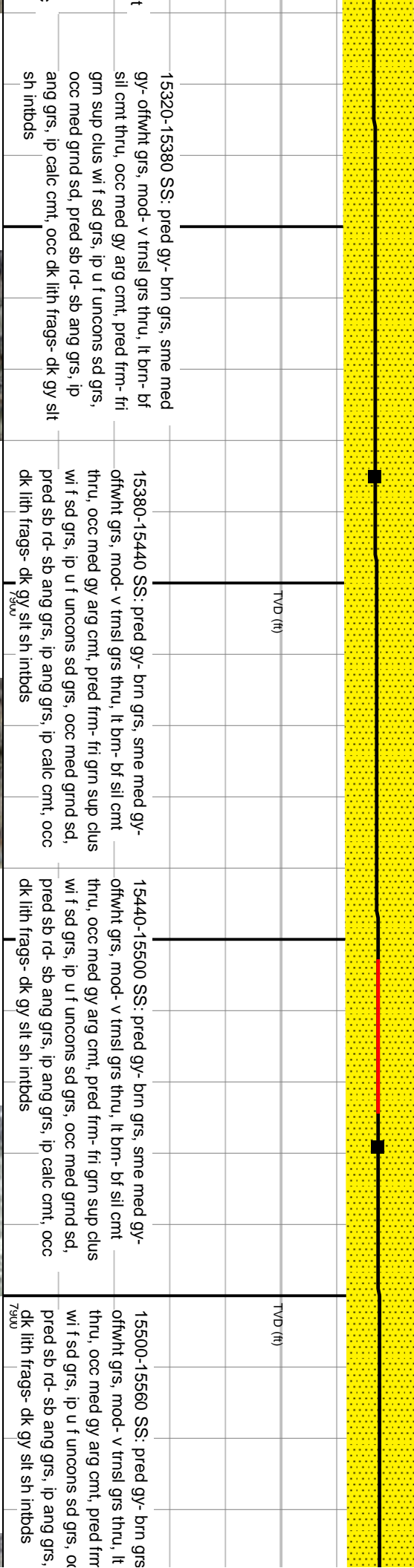
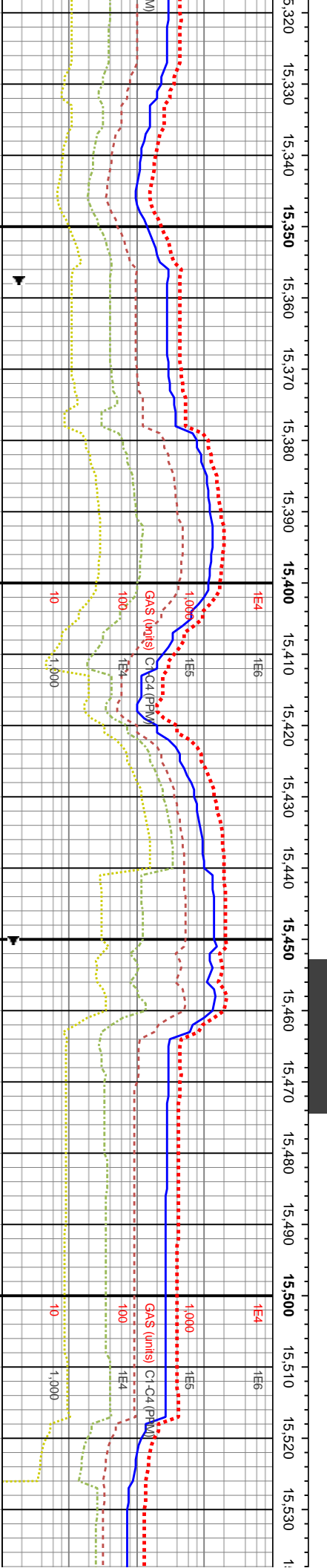


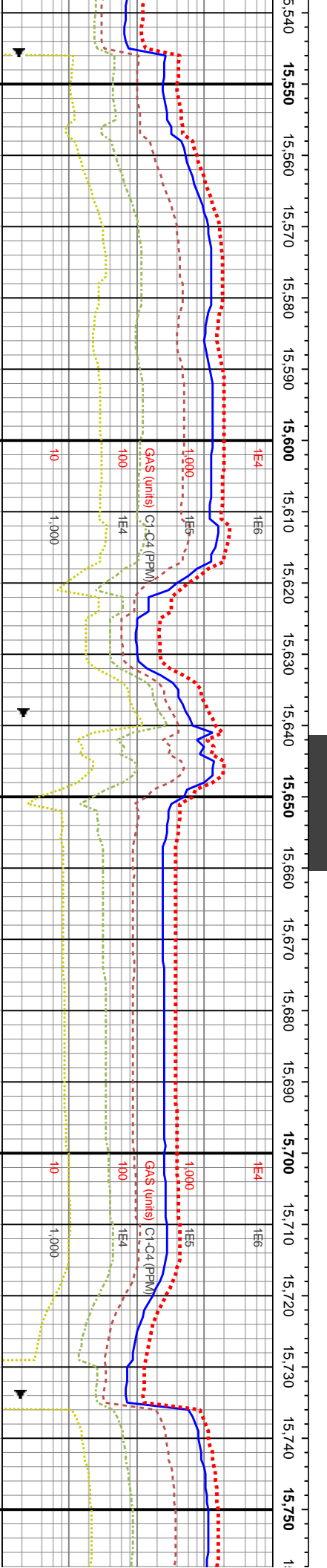
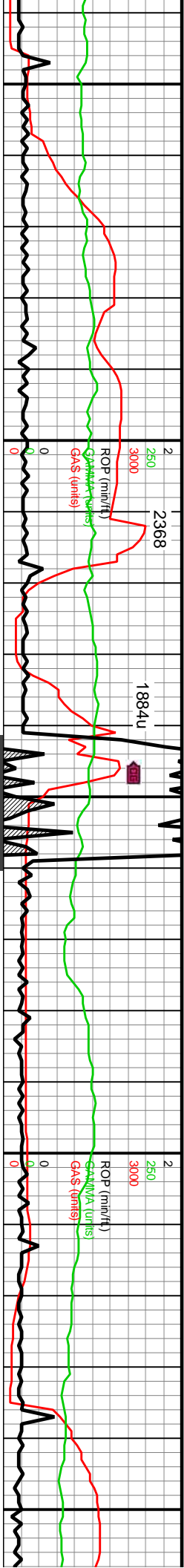
6MD: 14.912' Inclination: 92.96° Azimuth: 272.63° TVD: 7,186.3' VS: 7,406.51'	WOB: 86Klbs Rotary: 30RPM Strokes: 210SPM Pump Rate: 611GPM	6800	MD: 15.006' Inclination: 92.32° Azimuth: 272.51° TVD: 7,181.97' VS: 7,497.6'	MD: 15.101' Inclination: 93.82° Azimuth: 271.14° TVD: 7,176.88' VS: 7,589.91'

bmn grs, sme gy- rtu, lt brn- bf sil lt, pred sb blkly, grs, ip v f sd, sme u med lse ang grs, ip calc	TVD (ft)	14900-14960 SS: pred gy- lt brn grs, sme gy- offwht grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, sme med gy arg cmt, pred sb blkly, pred frm- fri grn sup clus f sd grs, ip v f sd, abtnt med- u f uncongs sd grs, sme u med lse grs, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags, tr pyr	TVD (ft)	14960-15020 SS: pred gy-brn grs, sme gy- offwht grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, sme med gy arg cmt, pred sb blkly, med- u f uncongs sd grs, sme u med lse grs, ip frm- fri grn sup clus f sd grs, ip v f sd, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags, tr pyr	15020-15080 SS: pred lt brn- gy grs, sme gy- offwht grs, mod- v trnsi grs thru, lt brn- bf sil cmt thru, sme med gy arg cmt, pred sb blkly, med- u f uncongs sd grs, sme u med lse grs, ip frm- fri grn sup clus f sd grs, ip v f sd, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags, tr pyr	15080- offwht cmt thr med- u ip frm- sb rd- s dk lith l









MD: 15,574'
Inclination: 93.29°
Azimuth: 270.39°
TVD: 7,153.19'
VS: 8,049.33'

MD: 15,668'
Inclination: 92.67°
Azimuth: 269.65°
TVD: 7,148.3'
VS: 8,141.32'

MD: 14,141'
Inclination: 92.67°
Azimuth: 269.65°
TVD: 7,148.3'
VS: 8,141.32'

TVD (ft)

TVD (ft)

15560-15620 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v trns grs thru, lt brn- bf sil cmt thru, occ med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip u f uncon sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags- dk gy silt sh intbds

15620-15680 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v trns grs thru, lt brn- bf sil cmt thru, occ med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip u f uncon sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags- dk gy silt sh intbds

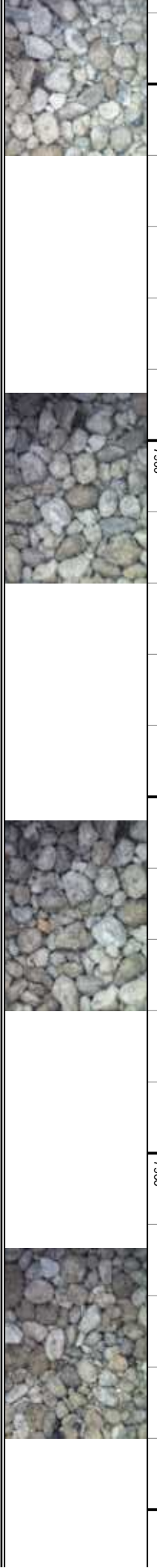
15680-15740 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v trns grs thru, lt brn- bf sil cmt thru, occ med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip u f uncon sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags- dk gy silt sh intbds

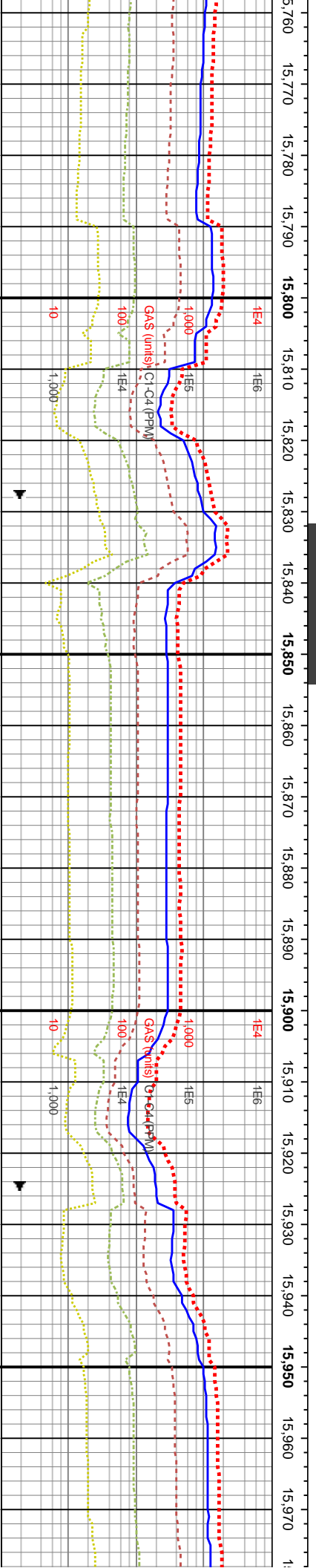
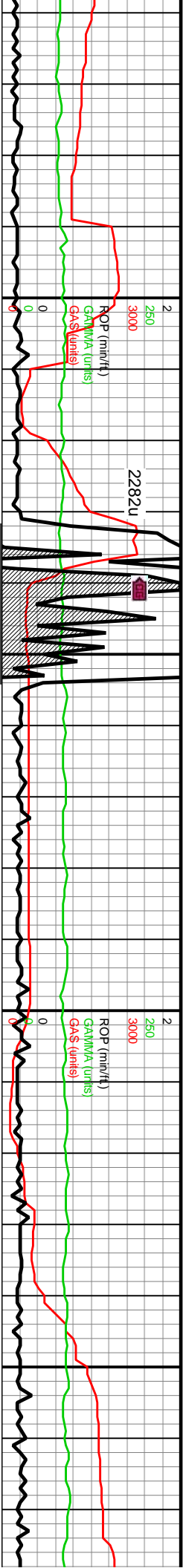
15740-15800 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v trns grs thru, lt brn- bf sil cmt thru, occ med gy arg cmt, pred frm- fri grn sup clus wi f sd grs, ip u f uncon sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cmt, occ dk lith frags- dk gy silt sh intbds

7900

7900

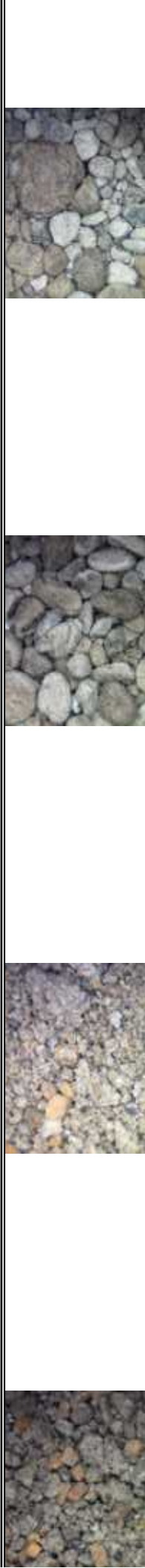
7900



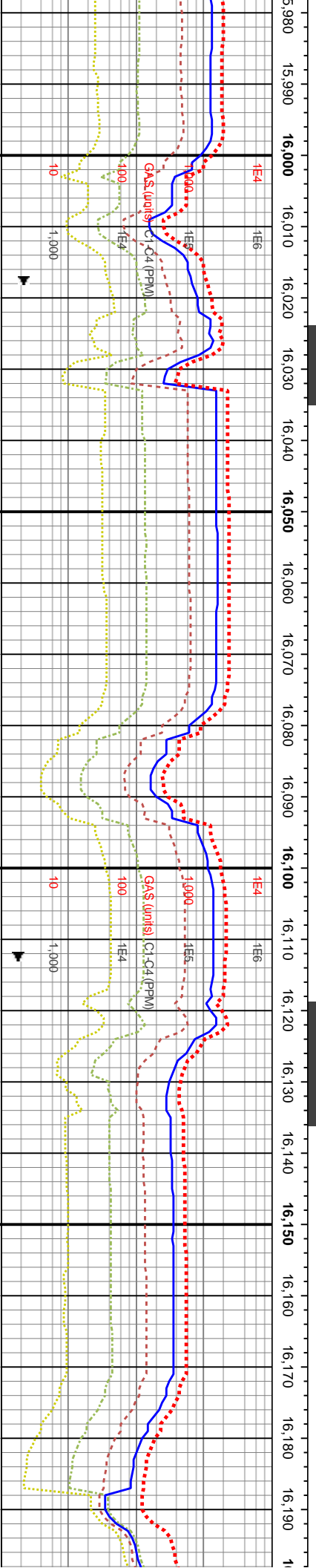
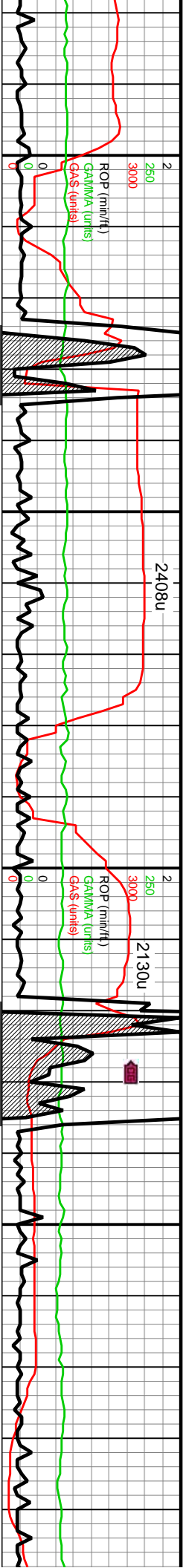


5,763'	6800	MD: 15,858'	6800	MD: 15,952'
tion: 93.77°		Inclination: 92.75°		Inclination: 92.86°
h: 270.04°		Azimuth: 270.23°		Azimuth: 269.02°
,142.96'		TVD: 7,137.56'		TVD: 7,132.96'
234.32'		VS: 8,327.22'		VS: 8,419.34'

	15800-15860 SS: pred gy- brn grs, sme med gy-offwht grs, mod- v trnsi grs thru, lt brn- bf sil cnt thru, occ med gy arg cnt, pred frm- fri grn sup clus wi f sd grs, ip u f uncongs sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags- dk gy sit sh intbds	15860-15920 SS: pred gy- brn grs, sme med gy-offwht grs, mod- v trnsi grs thru, lt brn- bf sil cnt thru, occ med gy arg cnt, pred frm- fri grn sup clus wi f sd grs, ip u f uncongs sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags- dk gy sit sh intbds	15920-15980 SS: pred gy- brn grs, sme med gy-offwht grs, mod- v trnsi grs thru, lt brn- bf sil cnt thru, occ med gy arg cnt, pred frm- fri grn sup clus wi f sd grs, ip u f uncongs sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags- dk gy sit sh intbds
	TVD (ft)	TVD (ft)	
		7900	



WC
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Str
Pu

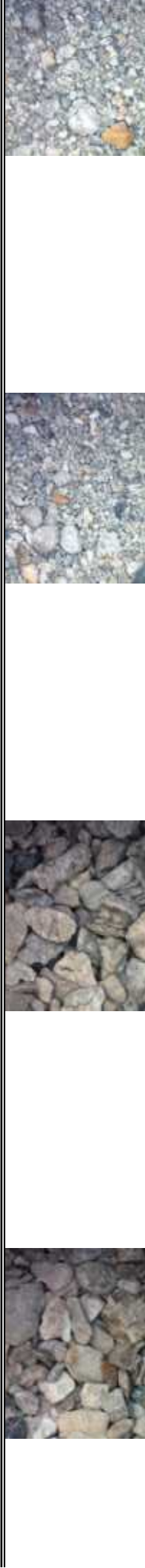
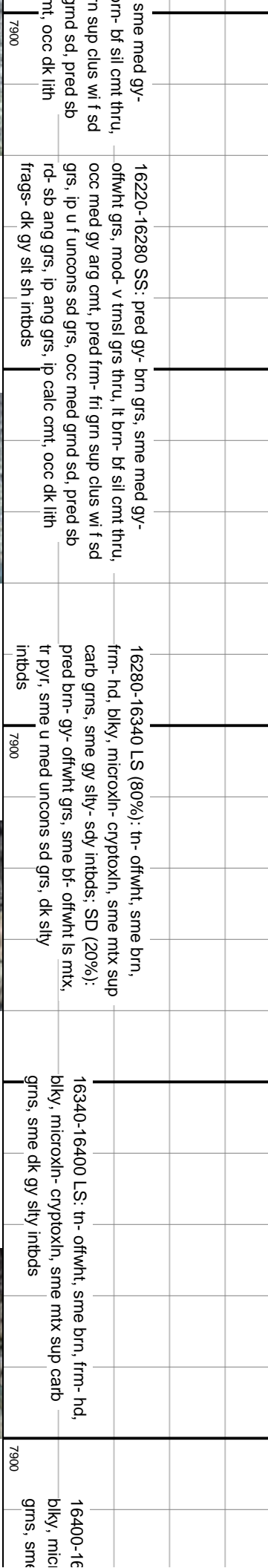
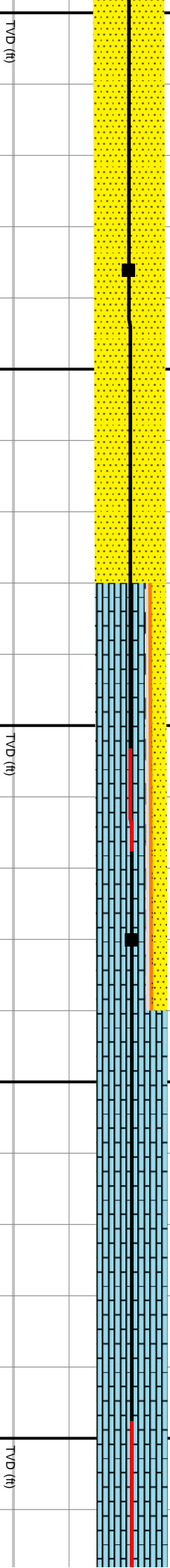
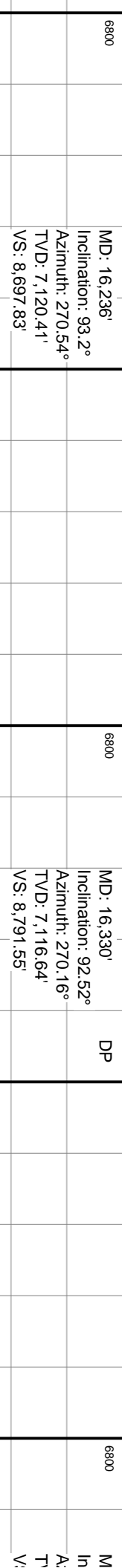
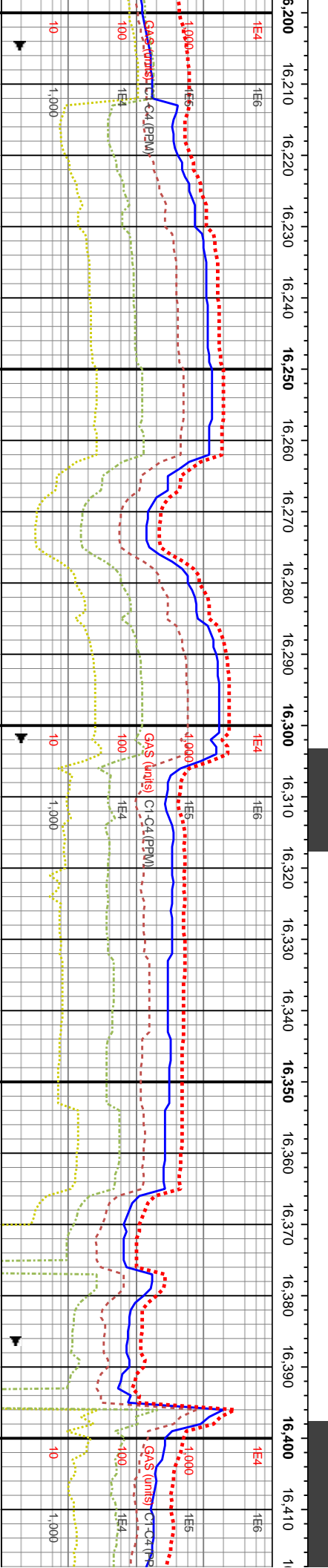
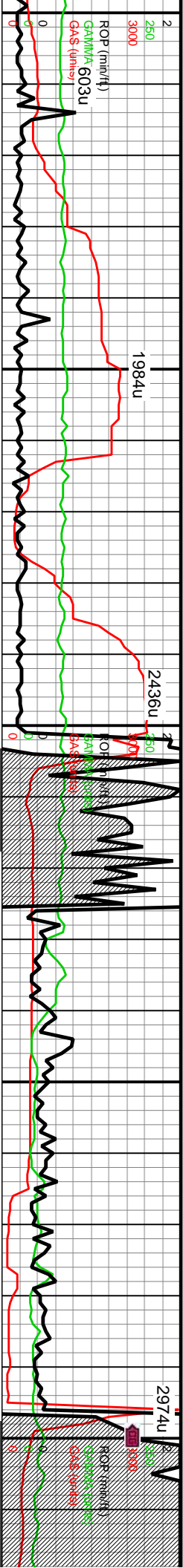


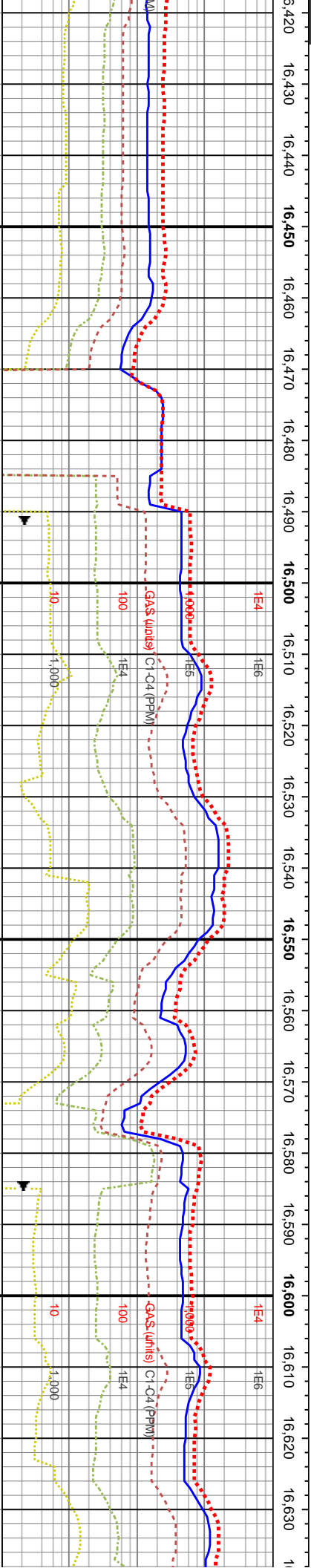
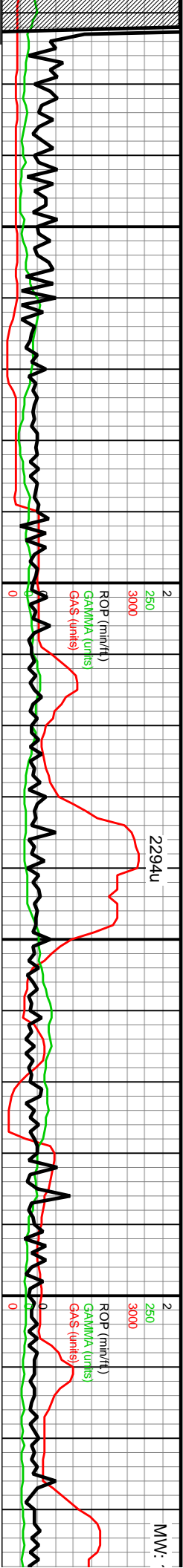
DB: 36Klbs ary: 65RPM okes: 105SPM mp Rate: 610GPM	6800	MD: 16,046' Inclination: 92.6° Azimuth: 268.81° TVD: 7,128.48' VS: 8,511.69'

15980-16040 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v tmsl grs thru, lt brn- bf sil cnt thru, occ med gy arg cnt, pred frm- fri grn sup clus wi f sd grs, ip u f unconsd sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags- dk gy slt sh intbds	7900	

16040-16100 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v tmsl grs thru, lt brn- bf sil cnt thru, occ med gy arg cnt, pred frm- fri grn sup clus wi f sd grs, ip u f unconsd sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags- dk gy slt sh intbds	7900	

16100-16160 SS: pred gy- brn grs, sme med gy- offwht grs, mod- v tmsl grs thru, lt brn- bf sil cnt thru, occ med gy arg cnt, pred frm- fri grn sup clus wi f sd grs, ip u f unconsd sd grs, occ med grnd sd, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags- dk gy slt sh intbds	7900	



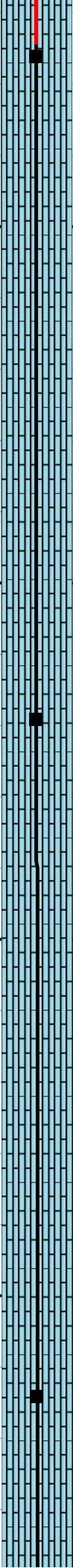


D : 16,426'
Inclination: 89.72°
Azimuth: 269.46°
TVD: 7,114.76'
S: 8,885.66'

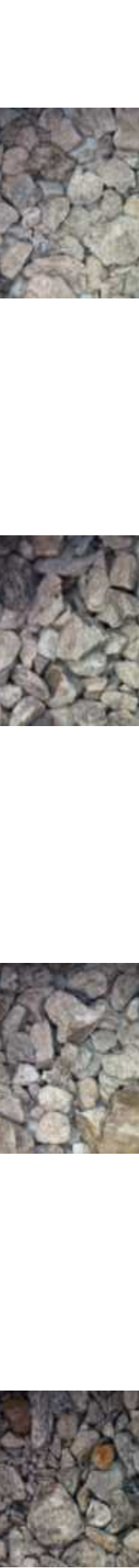
WOB: 42Klbs
Rotary: 64RPM
Strokes: 210SPM
Pump Rate: 610GPM

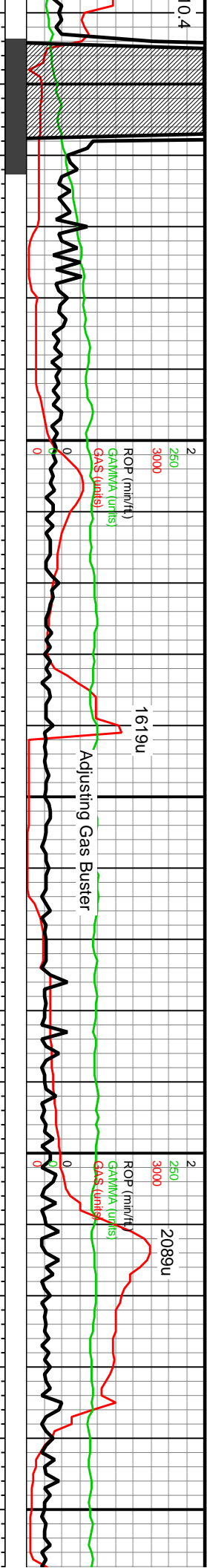
6800 MD: 16,519'
Inclination: 90.11°
Azimuth: 270.08°
TVD: 7,114.9'
VS: 8,976.87'

6800 MD: 16,614'
Inclination: 91.16°
Azimuth: 269.6°
TVD: 7,112.95'
VS: 9,068.18'



16460-16520 LS: tn- offwht, sme brn, frm- hd, microxln- cryptoxln, sme mtx sup carb e dk gy silty intbds	16520-16580 LS: tn- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grns	16580-16640 LS: tn- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grns
7900	7900	7900
TVD (ft)	TVD (ft)	TVD (ft)





MD: 16,709'
Inclination: 89.81°
Azimuth: 269°
TVD: 7,112.15'
VS: 9,161.5'

MD: 16,804'
Inclination: 90.45°
Azimuth: 268.71°
TVD: 7,111.93'
VS: 9,254.95'

TVD (ft)

TVD (ft)

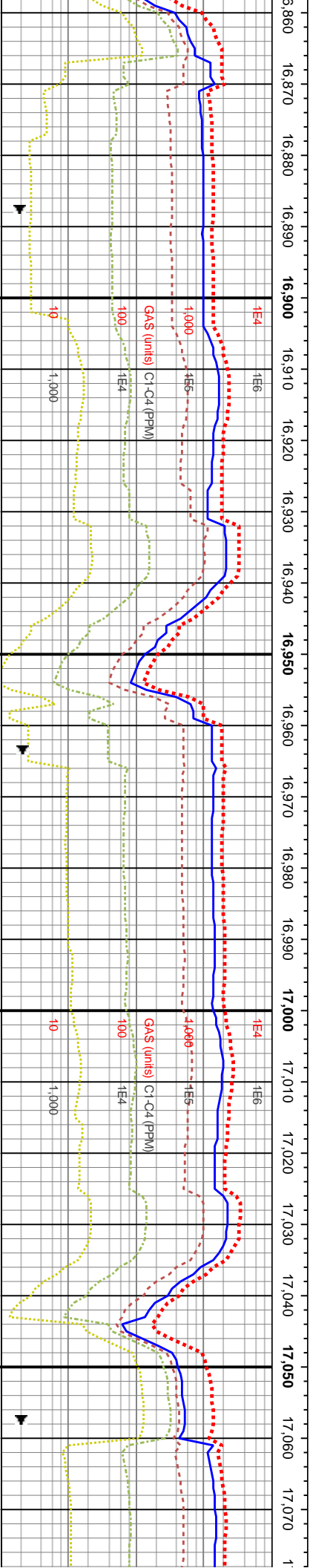
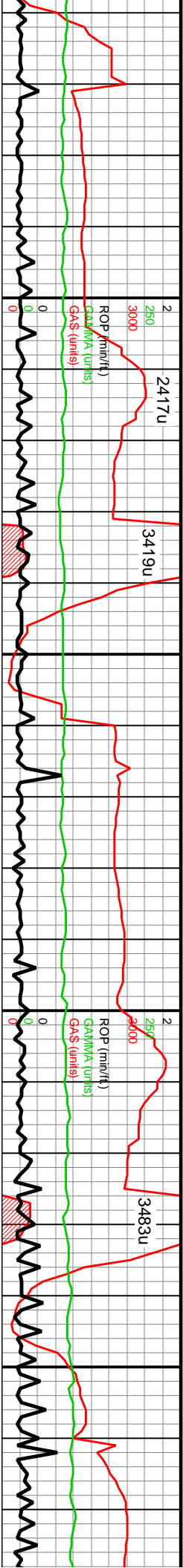
16640-16700 LS (80%): tn- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grns, sme gy silty- sdy intbds; SD (20%): pred brn- gy- offwht grs, sme bf- offwht is mtx, tr pyr, sme u med unconcs sd grs, dk silty intbds

16700-16760 SS (65%): pred brn- gy- offwht grs, sme bf- offwht is mtx, abnt u med unconcs sd grs; LS (35%): tn- offwht, sme brn, frm- hd, blkly, microxln- cryptoxln, sme mtx sup carb grns, sme gy silty- sdy intbds

16760-16820 SS: pred brn- gy- offwht grs, sme med gy- tn grs, ip dk gy grns, mod- v trnsi grs thru, bf- offwht lmy mtx thru, ip med gy arg cntl, pred sb blkly, pred frm- fri grn sup clus wi vf- f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, mod offwht lmy intbds- tr ls

16820-16880 SS: pred brn- gy- offwht grs, ip dk gy grns, mod- v trr offwht lmy mtx thru, ip med gy arg pred frm- fri grn sup clus wi vf- f sd sb ang grs, ip ang grs, lith frags, m intbds- tr ls



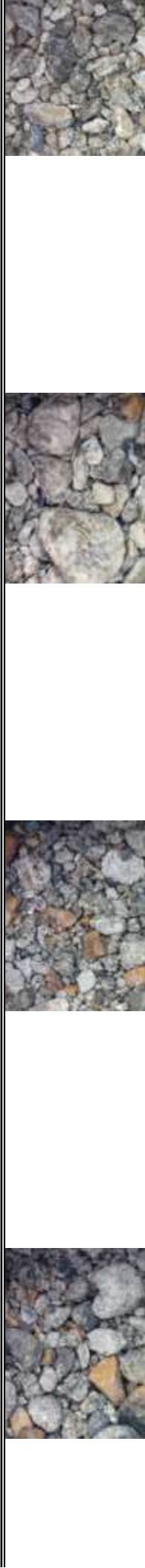


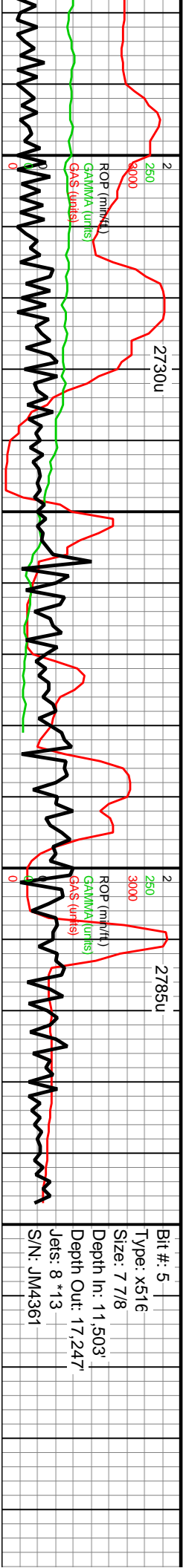
MD: 16,898'
Inclination: 91.2°
Azimuth: 267.25°
TVD: 7,110.58'
VS: 9,347.66'

MD: 16,992'
Inclination: 92.5°
Azimuth: 267.71°
TVD: 7,107.55'
VS: 9,440.46'

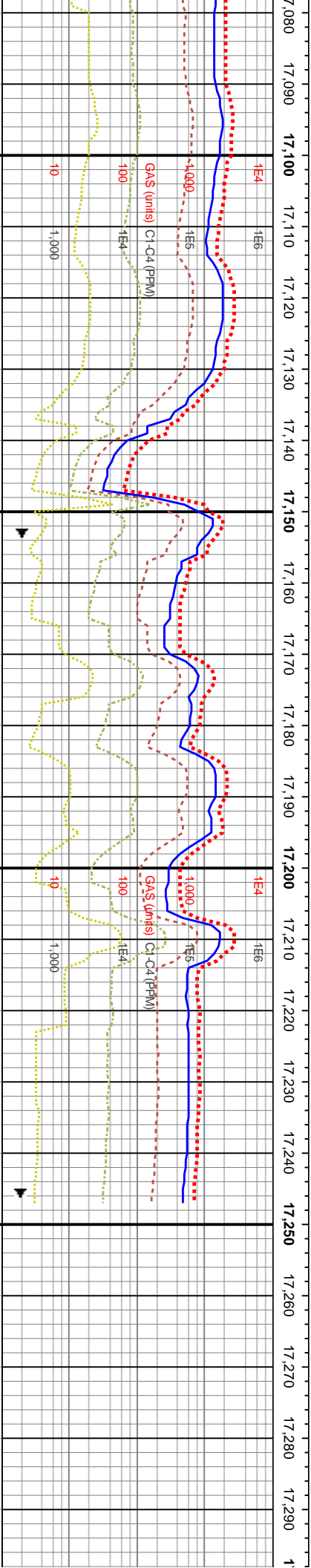
WOB: 39Klbs
Rotary: 65RPM
Strokes: 110SPM
Pump Rate: 615GPM

16880-16940 SS: pred brn- gy- ofwht grs, sme med gy- tn grs, ip dk gy grs, mod- v trnsl grs thru, bf- ofwht lmy mtz thru, ip med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus wi v f sd grs, pred sb rd- sb ang grs, ip ang grs, lith frags, mod ofwht lmy intbds- tr ls		16940-17000 SS: pred gy- lt brn grs, sme gy- ofwht grs, mod- v trnsl grs thru, lt brn- bf sil cnt thru, sme med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus f sd grs, ip v f sd, mod u med- u f unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, tr pyr		17000-17060 SS: pred gy- lt brn grs, sme gy- ofwht grs, mod- v trnsl grs thru, lt brn- bf sil cnt thru, sme med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus f sd grs, ip v f sd, mod u med- u f unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, tr pyr		17060-17120 SS: pred gy- lt brn grs, sme gy- ofwht grs, mod- v trnsl grs thru, lt brn- bf sil cnt thru, sme med gy arg cnt, pred sb blkly, pred frm- fri gm sup clus f sd grs, ip v f sd, mod u med- u f unconcs sd grs, pred sb rd- sb ang grs, ip ang grs, ip calc cnt, occ dk lith frags, tr pyr	
TVD (ft)		TVD (ft)		TVD (ft)		TVD (ft)	
7900							



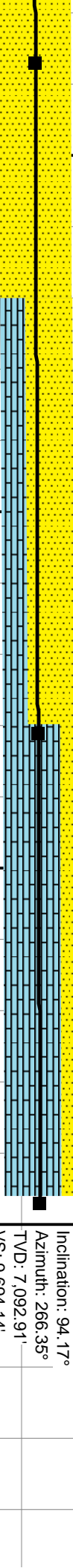


Bit #: 5
Type: x516
Size: 7 7/8
Depth In: 11,503'
Depth Out: 17,247'
Jets: 8 *13
S/N: JM4361



MD: 17,087'
Inclination: 93.18°
Azimuth: 266.87°
TVD: 7,102.84'
VS: 9,534.23'

MD: 17,181'
Inclination: 94.17°
Azimuth: 266.35°
TVD: 7,097.34'
VS: 9,627.41'



Reach TD on 10/6/2016 at 17,247

MD: 17,247'
Inclination: 94.17°
Azimuth: 266.35°
TVD: 7,092.91'
VS: 9,694.14'

17120-17180 SS (65%): pred brn- gy- ofwht grs, sme bf- ofwht ls mtx, abnt u med unconcs sd grs, LS (35%): tn- ofwht, sme brn, frm- hd, blkly, microxin- cryptoxln, sme mtx sup carb grns, sme gy slty- sdy intbds

17180-17247 LS (80%): tn- ofwht, sme brn, frm- hd, blkly, microxin- cryptoxln, sme mtx sup carb grns, sme gy slty- sdy intbds, SD (20%): pred brn- gy- ofwht grs, sme bf- ofwht ls mtx, tr pyr, sme u med unconcs sd grs, dk slty intbds



