



Company : Apache

Well : Speke South-1

Interval : 91.00 - 2947.30 meters

Created : 16/Apr/2008 10:21:05 PM

INTEQ

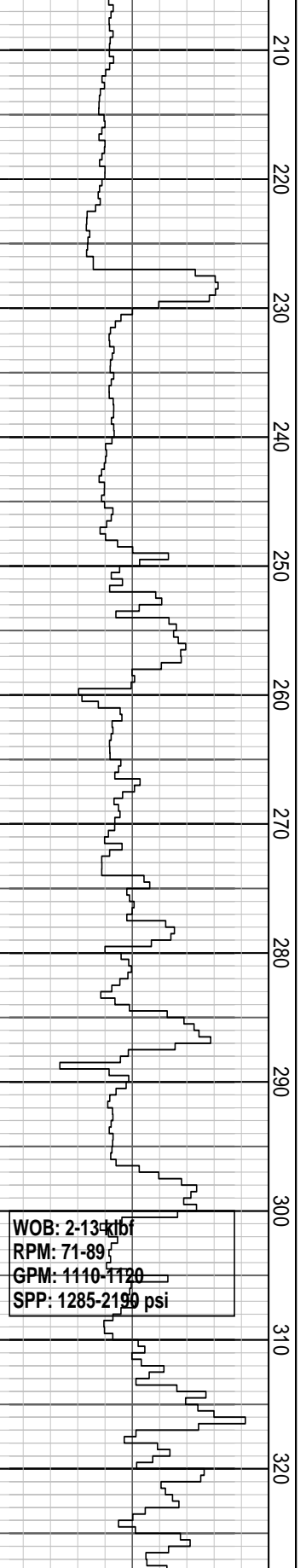
FORMATION EVALUATION LOG

Drilling Rate ROP (m/hr)		MD meters 1:500	TVDRT meters	Cuttings Lithology	Oil Show P F G	Visual Inferred Porosity P F G	Gas Data		Chromatograph Data		Calcmetry	Interpreted Lithology	Lithology Description
ROP (m/hr)							Gas Hydrocarbon Avg %	Methane ppm					
200	20						0.01 0.1 1 10	1	100000				
180	40						Resistivity Shall	1	Ethane ppm	100000			
160	60						Ohm.m	1	Propane ppm	100000			
140	80						Resistivity Deep	1	iso-Butane ppm	100000			
120	100						Ohm.m	1	n-Butane ppm	100000			
100	120							1	iso-Pentane ppm	100000			
80	140							1	n-Pentane ppm	100000			
60	160												
40	180												
20	200												
Gamma Ray													
API													
1RR 660 mm (26") Smith MZ1716 Type: Rock Jets: 4x18 Depth in: 91.1 m Depth Out: 185.0 m Drilled 94.0 m in 2.5 hrs Grade: 0-0- -A-E-I-NO-TD		100											RT - AHD: 37.0 mMDRT Water Depth: 54.1 mMDRT RT - Seabed: 91.1 mMDRT
WOB: 2-10 klbf RPM: 42-82 GPM: 480-1050 SPP: 290-2300 psi		110											Spud Speke South-1 at 1930 hrs on 07/04/2008
07/04/2008		120											Drill with sea water and hi-vis pills, returns to seabed. 91.1 m to 903.0 m
		130											
		140											
		150											
		160											
		170											
		180											

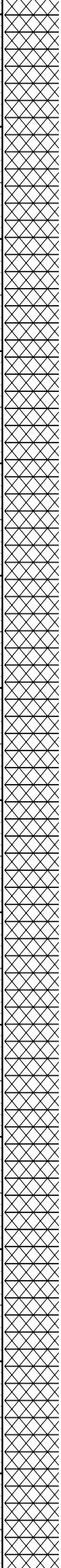
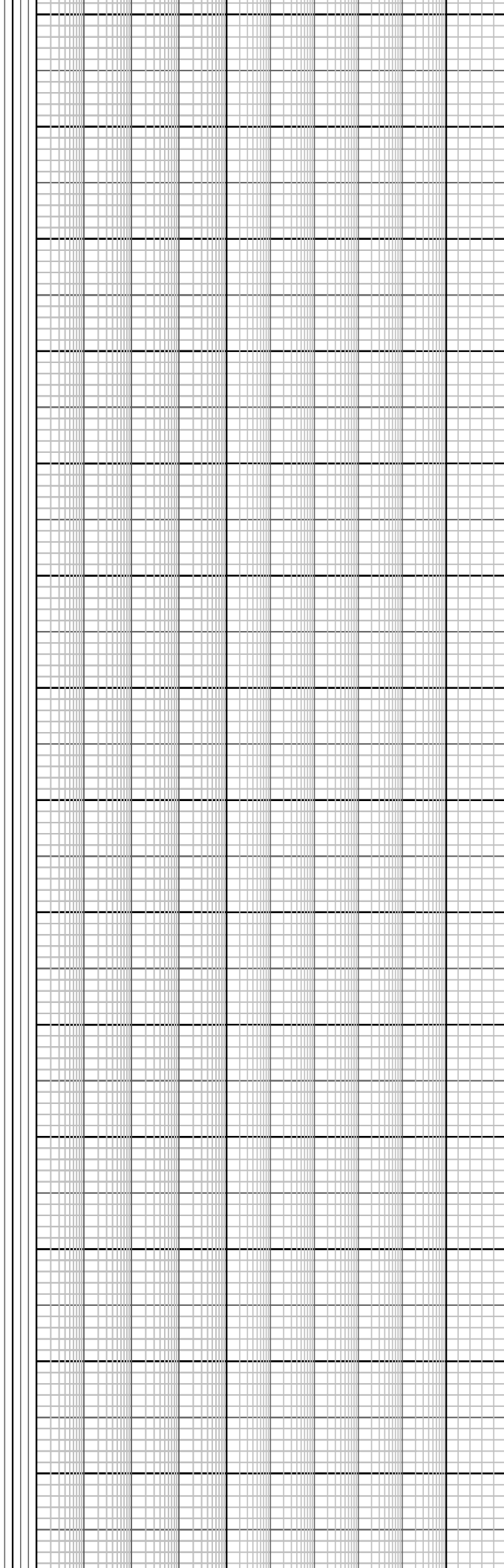
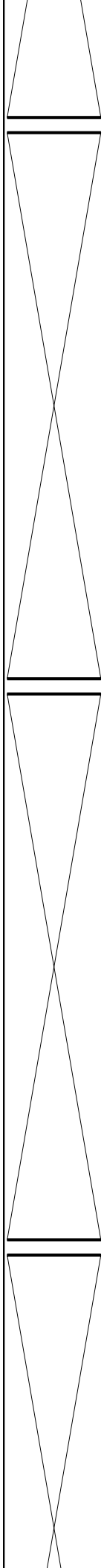
Drill with sea water and hi-vis pills, returns to seabed. 91.1 m to 903.0 m

660 mm (26") Section TD @ 185.0 mMDRT on 07/04/2008

NB2 406 mm (16")
Hughes GX CIV
Type: Mill Tooth
Jets: 4x20
Depth in: 185.0 m
Depth Out: 903.0 m
Drilled 718.0 m in 22 hrs
Grade: 1-1-WT-A-0-I-NO-TD

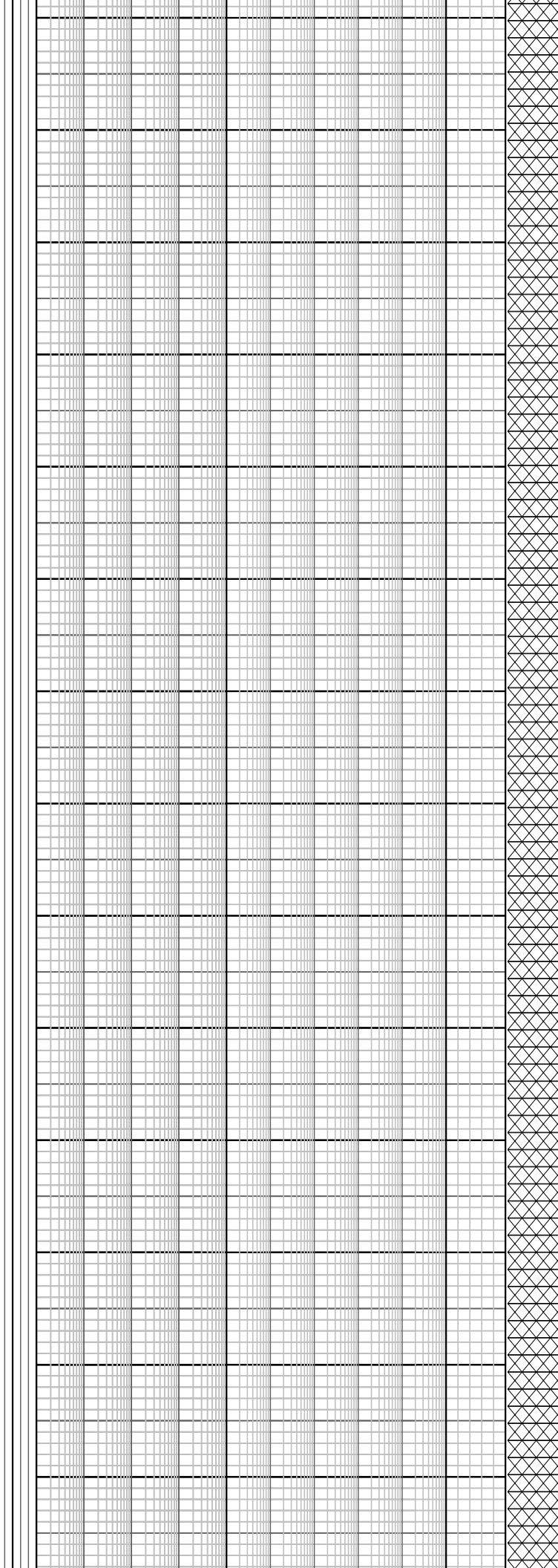
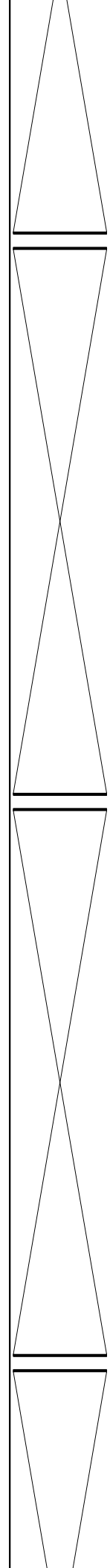
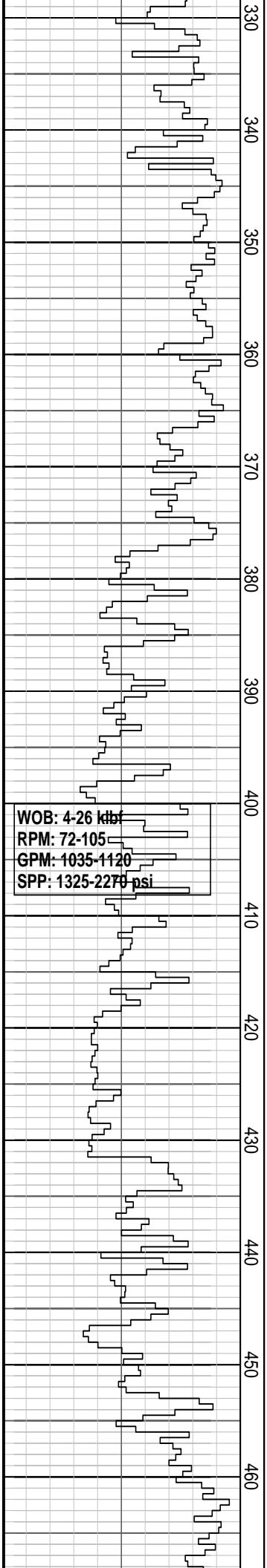


190
200
210
220
230
240
250
260
270
280
290
300
310
320

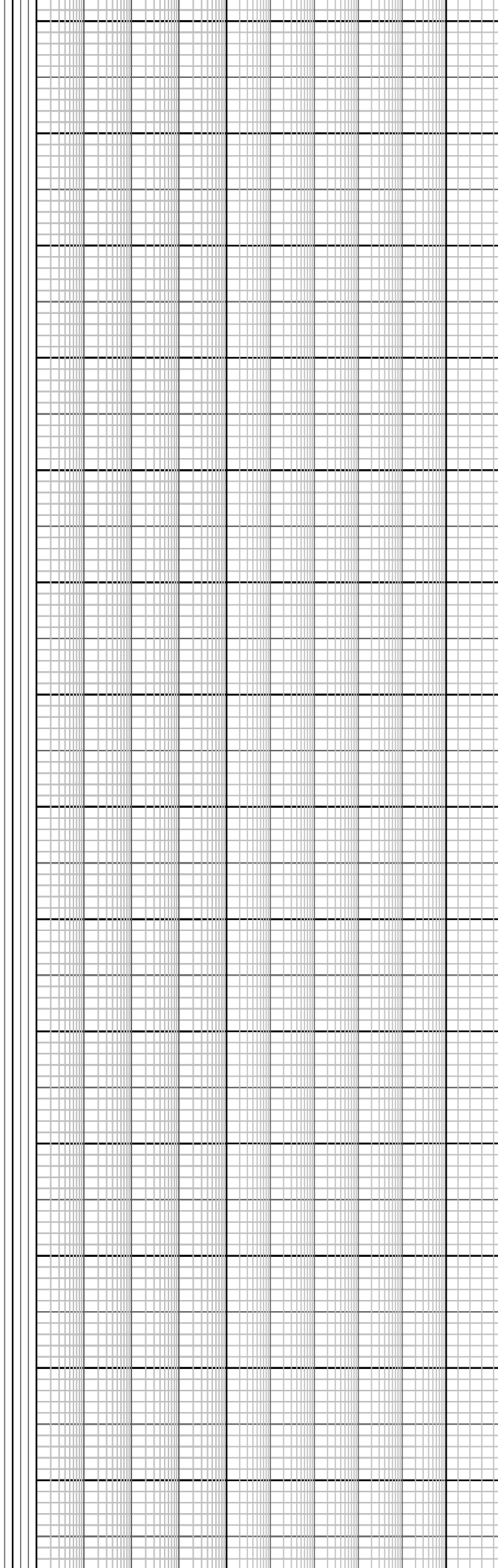
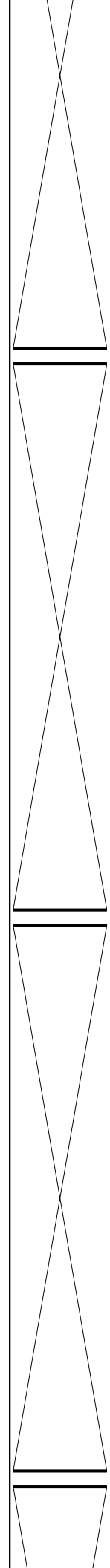
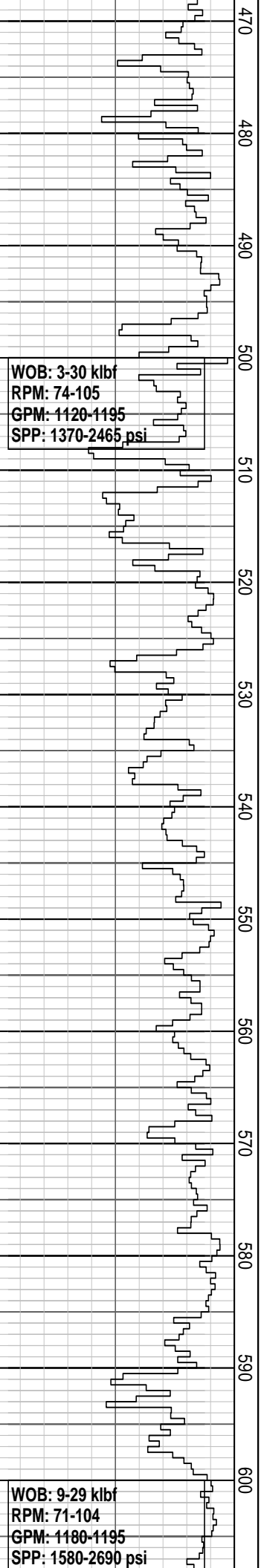


WOB: 2-13 kbf
RPM: 71-89
GPM: 1110-1120
SPP: 1285-2150 psi

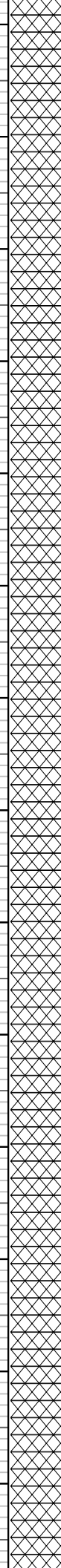
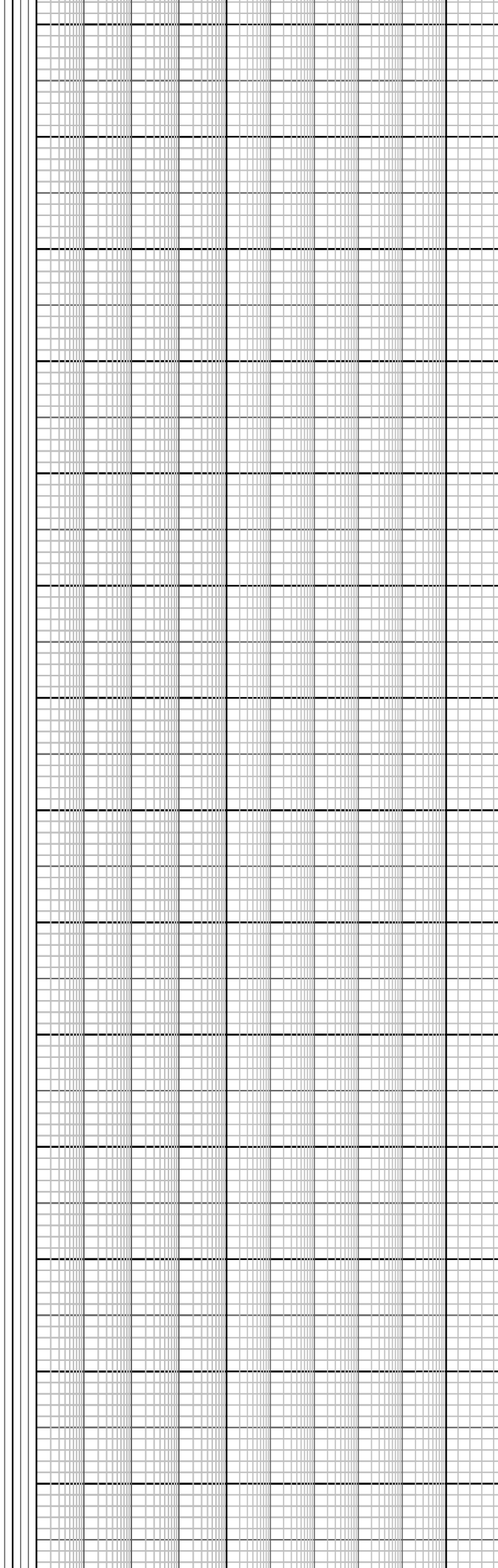
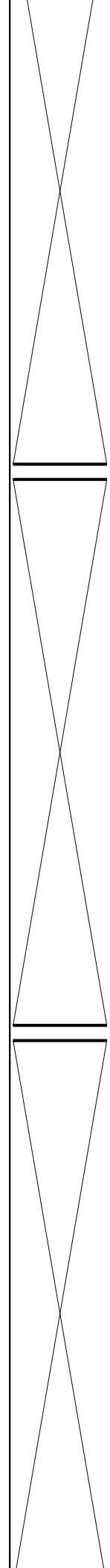
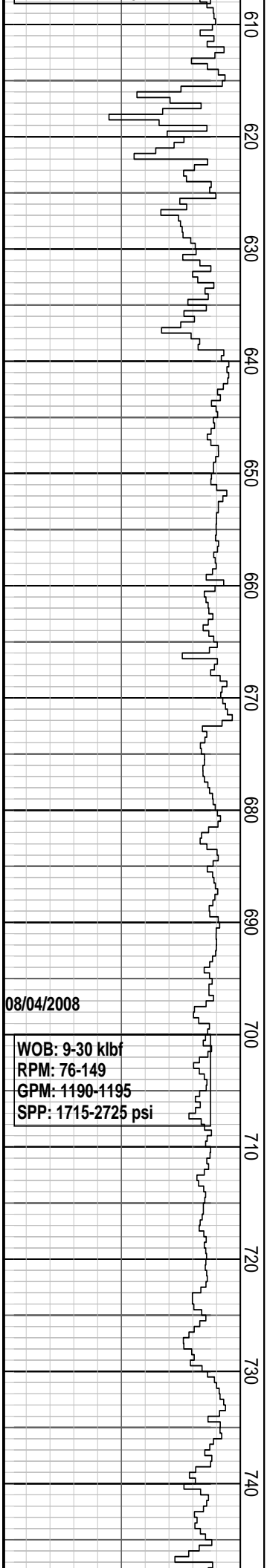
Drill with sea water and hi-vis pills, returns to seabed. 91.1 m to 903.0 m



Drill with sea water and hi-vis pills, returns to seabed. 91.1 m to 903.0 m



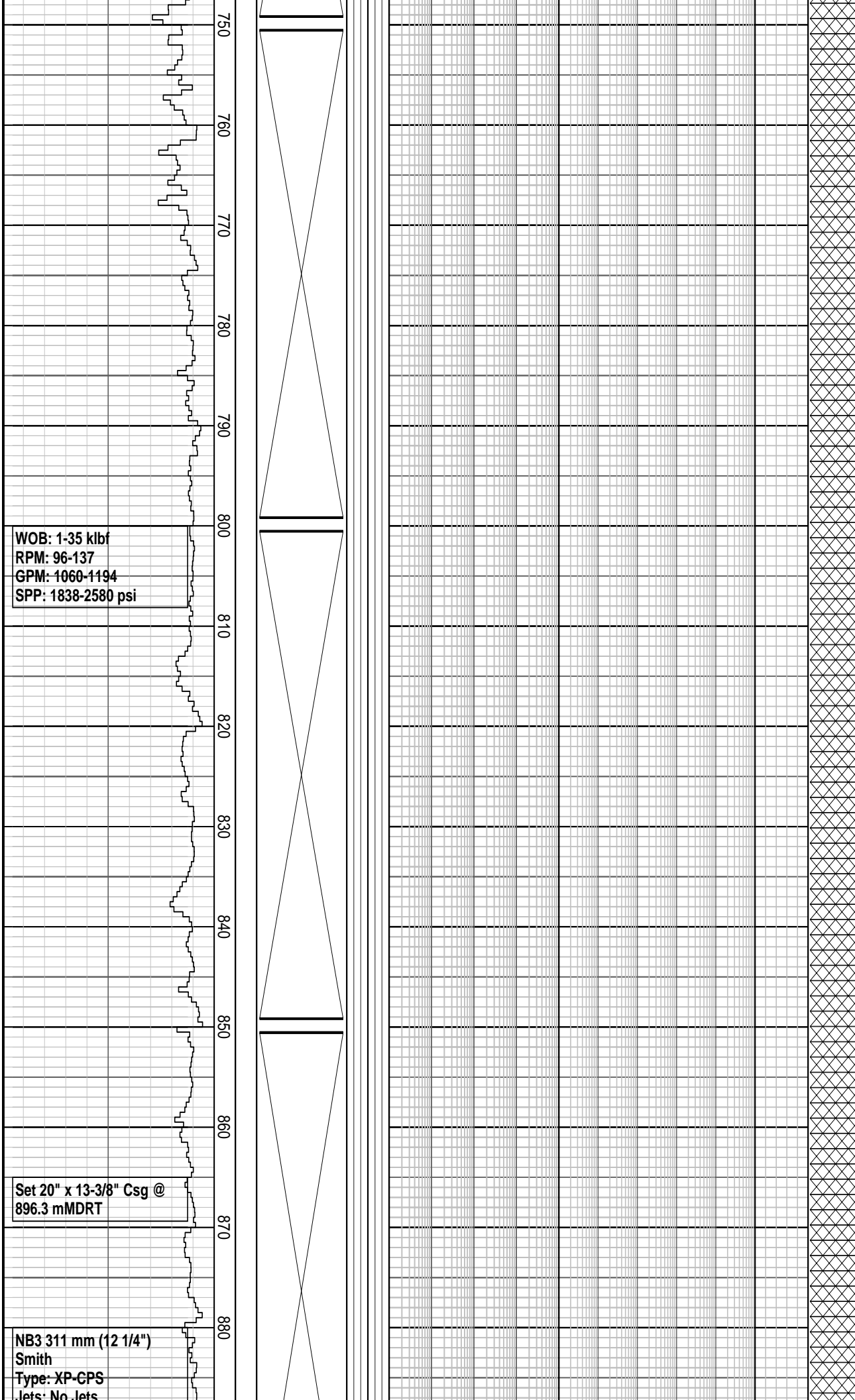
Drill with sea water and hi-vis pills, returns to seabed. 91.1 m to 903.0 m



08/04/2008

WOB: 9-30 klbf
RPM: 76-149
GPM: 1190-1195
SPP: 1715-2725 psi

Drill with sea water and hi-vis pills, returns to seabed. 91.1 m to 903.0 m

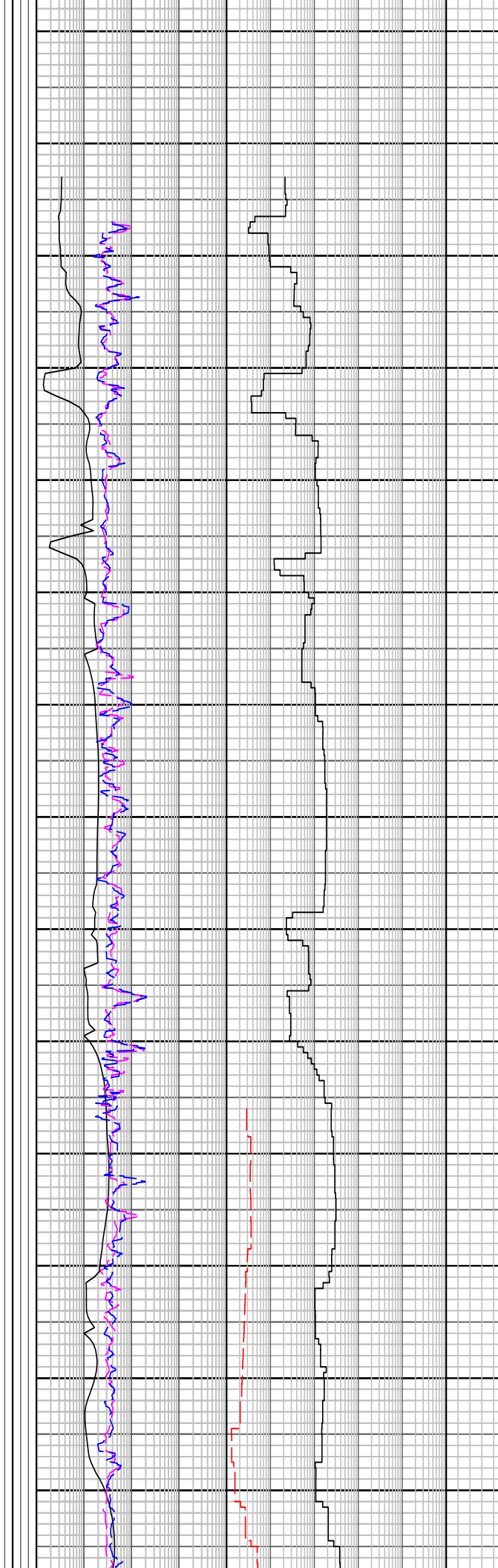
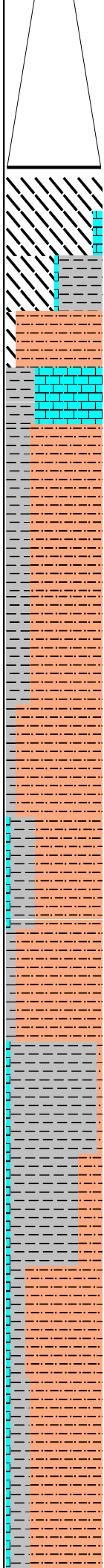


Depth in: 903.0 m
Depth Out: 906.0 m
Drilled 3.0 m in 0.6 hrs
Grade: XXXXX

NB4 216 mm (8 1/2")
Hughes
Type: HC6052
Jets: 2x16 3x15
Depth in: 906.0 m
Depth Out: xxxx m
Drilled 2034 m in 38.1 hrs
Grade: XXXXX

WOB: 8-20 klbf
RPM: 58-177
GPM: 570-885
SPP: 1170-2525 psi

890
900
910
920
930
940
950
960
970
980
990
1000
1010
1020



406 mm (16") Section TD @
903.0 mMDRT on 09/04/2008

FIT @ 906.0 m, with 1.12 sg
mud, 620 psi, EMW:1.6 sg

MW: 1.12 sg FV: 71
PV: 18 YP: 26
Gels: 11/13 pH: 9.1

CALCARENITE: v lt gy, sft-v
hd, sb blkly, v arg i/p, qtz gr
i/p, calc gr i/p

CALCILUTITE: dk yelsh or, v
lt gy, v arg, v f glauc spk,
occ v f qtz, tr lith, tr foram
spines, grd-Arg Clclt, hd-tr v
hd, sbblkly-blky.

CALCAREOUS SILTSTONE:
lt-m gy, v arg, v f glauc spk,
occ v f qtz grn, tr lith, tr
foram, grd-Calc Clyst, hd-tr v
hd, sbblkly-blky.

CALCILUTITE: yelsh gy, v lt
gy, crpxln, hd-sbbkly.

CALCAREOUS SILTSTONE:
m lt gy, v arg, v f glauc spk,
occ v f qtz grn, tr lith, tr
foram, grd-Calc Clyst, calc
spks, v sft- hd, sbblkly-blky

CALCAREOUS CLAYSTONE:
m dk gy, sft-frm, slty,
sbbkly-blky

CALCILUTITE: yelsh gy, v lt
gy, crpxln, foram, hd-sbbkly

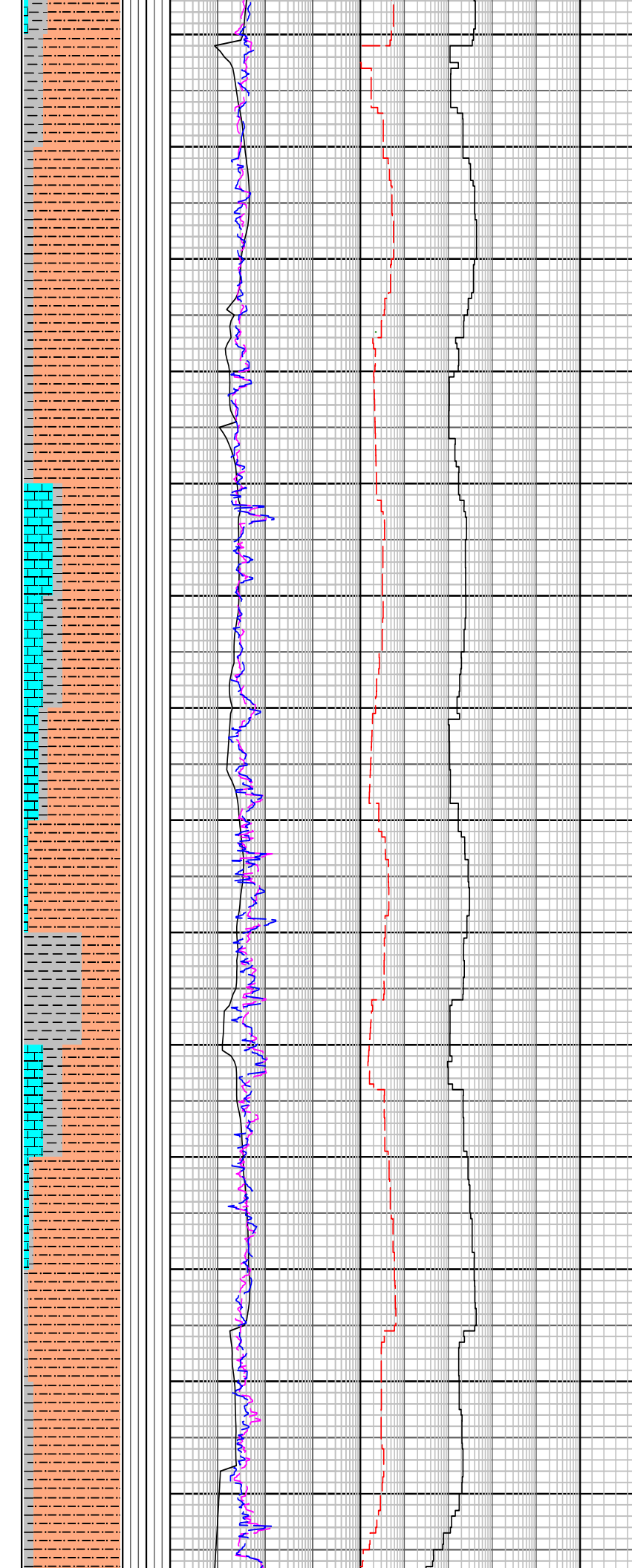
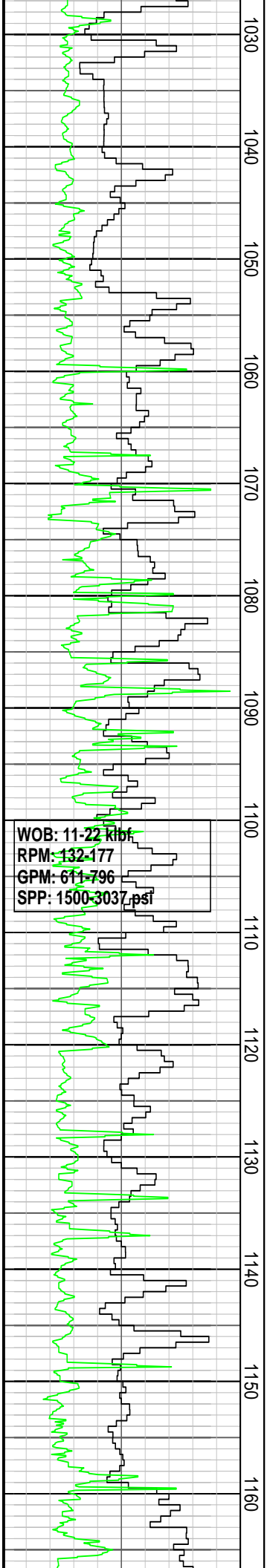
CALCAREOUS SILTSTONE:
m lt gy, v arg, v f glauc spk,
occ v f qtz grn, tr lith, tr
foram, grd-Calc Clyst, calc
spks, v sft- hd, sbblkly-blky

CALCILUTITE: yelsh gy, v lt
gy, crpxln, foram, hd-sbbkly

CALCAREOUS CLAYSTONE:
m-lt gy, spkled w kaolinitic
cly, tr v f glauc, calc spks,
sft-frm, slty, sbblkly-blky

CALCAREOUS SILTSTONE:
m lt gy, v arg, v f glauc spk,
occ v f qtz grn, tr lith, tr
foram, grd-Calc Clyst, calc
spks, v sft- hd, sbblkly-blky

CALCAREOUS CLAYSTONE:



m-lt gy, spkled w kaolinitic cly, tr v f glauc, calc spks, sft frm, slty, sbblky-blky

CALCAREOUS SILTSTONE:
m gy, v arg, v f glauc spk, occ v f Qtz grn, tr lith, tr foram, grd-Calc Clyst, calc spks, v sft-hd, sbblky-blky

CALCAREOUS CLAYSTONE:
m gy, tr glauc spks, frm, sbblky

CALCAREOUS SILTSTONE:
m gy-m dk gy, grd-Calc Clyst, occ foss frag, com glauc spks, frm-tr hd, sbblky

CALCILUTITE: lt gy, tr brn m gy, com foss frag, mod arg, crpxln, hd, sbblky

CALCAREOUS CLAYSTONE:
m gy, tr glauc spks, frm, sbblky

CALCILUTITE: lt gy, tr brnsh m gry, com foss frags, mod arg, crpxln, hd, sbblky.

CALCAREOUS SILTSTONE:lt gy - m dk gy, wh kaolinitic cly i/p, v argl, v f glauc, occ v f Qtz, frm - mod hd i/p, sbblky - blky.

CALCAREOUS SILTSTONE:
lt gy - m dk gy, wh kaolinitic cly i/p, v arg, v f glauc, occ v f Qtz, frm to mod hd i/p, sbblky - blky.

CALCILUTITE: lt gy, com foss frags, mod argl, crpxln, hd, sbblky.

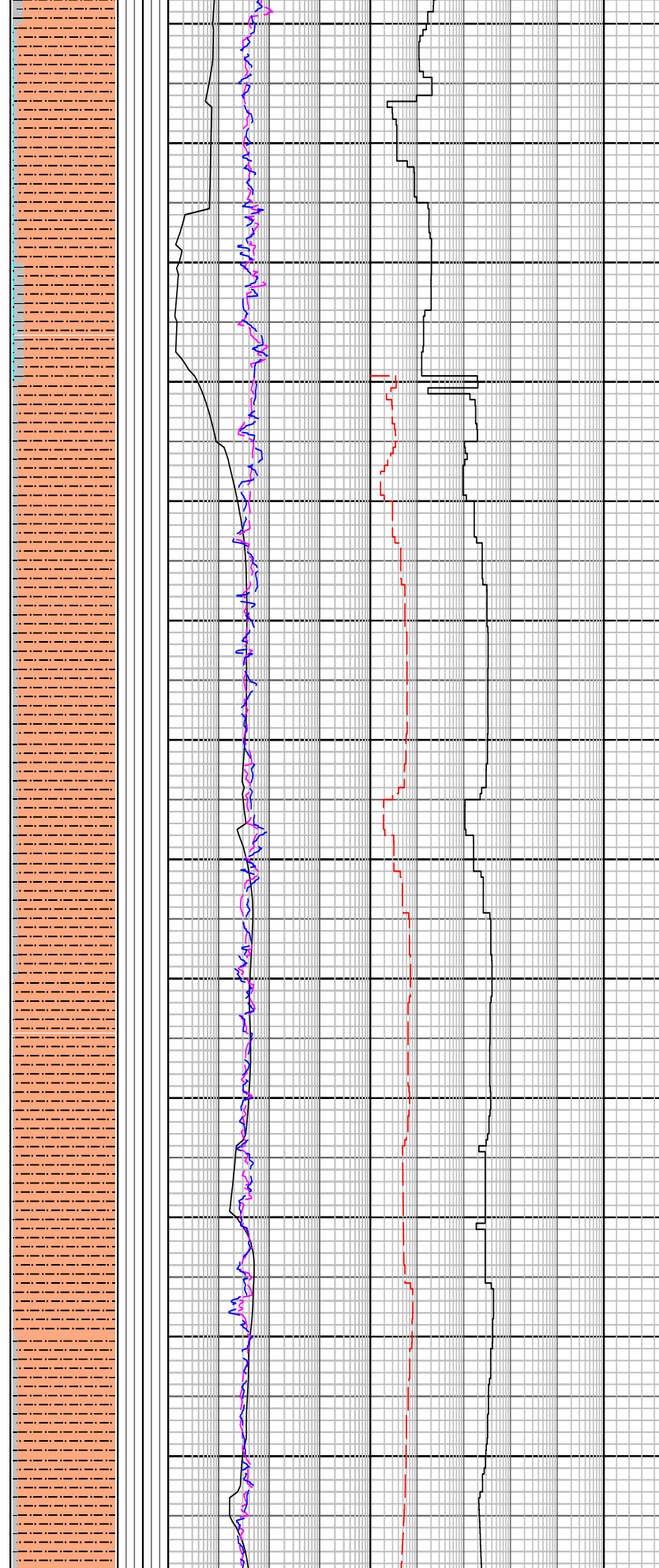
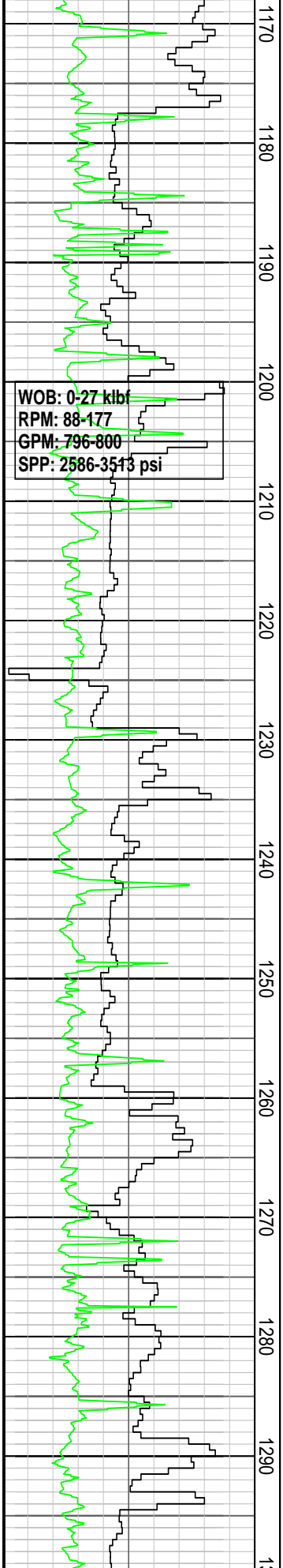
CALCAREOUS CLAYSTONE:
lt gy - m lt gy, slty, foss frags, sft - mod hd, sbblky.

CALCAREOUS CLAYSTONE:
m lt gy, lt brnsh gy, v arg, com glauc spks, sft - frm, sbblky.

CALCAREOUS CLAYSTONE:
m lt gy - m dk gy, slty, com foss frags, sft to mod hd, sbblky.

CALCAREOUS SILTSTONE:m gy, v arg, com glauc spks, tr blk carb spks, mod Qtz, frm, sbblky

tr v f Qtz, sst - frm, sbbiky.



CALCAREOUS CLAYSTONE:
m dk gy, slty, frm - mod hd, sbbiky.

CALCISILTITE: lt yelsh gy, wh, hd, fri i/p, sbang.

CALCAREOUS SILTSTONE:
m lt gy - m dk gy, lt brnsh gy, v arg, com glauc spks, tr foram, sdy i/p grd to Sltly Sst, frm - mod hd, sbbiky - blkly.

CALCAREOUS SILTSTONE :
m gy - m dk gy, occ lt brnsh gy, arg, com glau, com v f to f Qtz, frm to tr mod hd, sbang - sbbiky.

CALCAREOUS CLAYSTONE:
m dk gy, slty, frm - mod hd, sbbiky.

CALCAREOUS SILTSTONE:
lt brnsh olv gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm to mod hd, sbbiky.

CALCAREOUS CLAYSTONE:
m dk gy, slty, frm - mod hd, sbbiky.

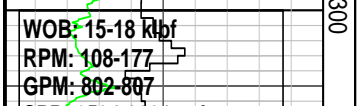
CALCAREOUS SILTSTONE:
m gy - m dk gy, occ lt brnsh gy, arg, com glauc, com v f - f qtz, frm - tr mod hd, sbang - sbbiky

CALCAREOUS SILTSTONE:
lt brnsh olv gy, m lt gy i/p, arg, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm to mod hd, sbbiky.

CALCAREOUS CLAYSTONE:
m dk gy, slty, tr glauc spks, frm - mod hd, sbbiky.

CALCAREOUS SILTSTONE:
lt brnsh olv gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbbiky.

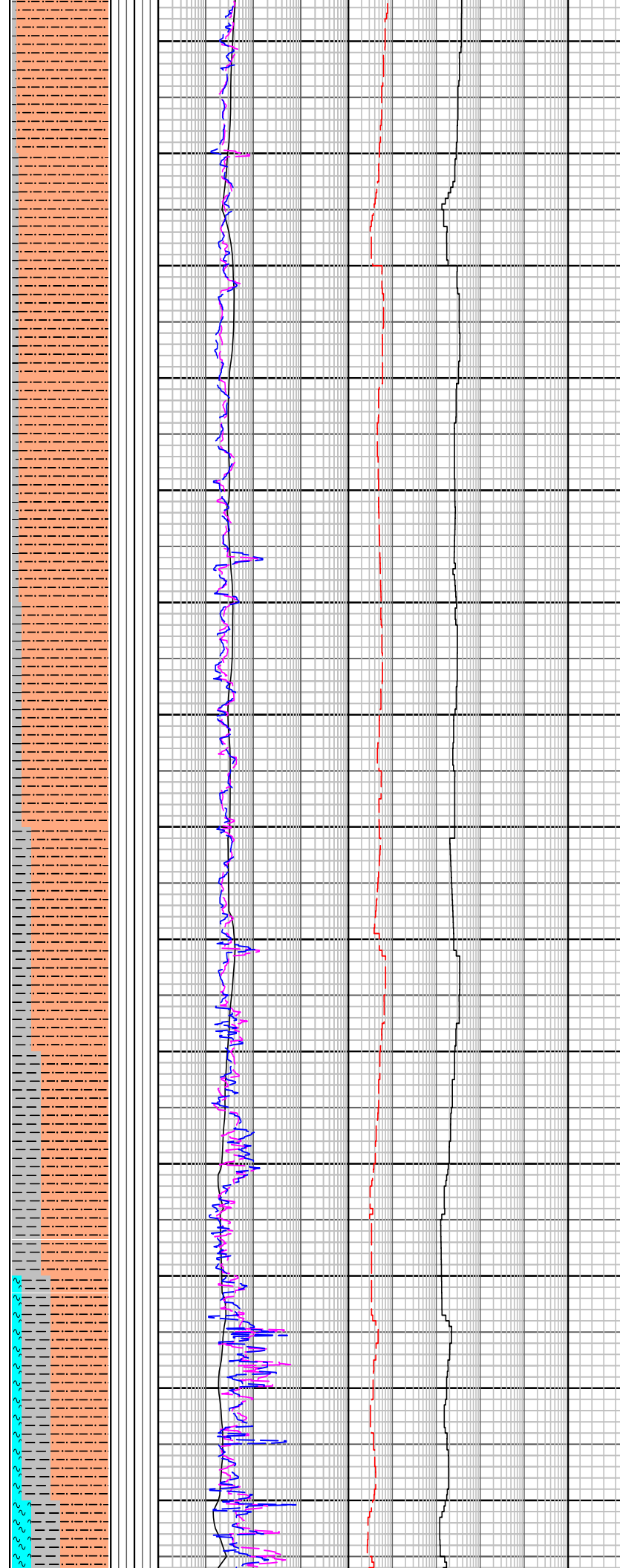
CALCAREOUS SILTSTONE:



SPP: 2534-3391 psi

WOB: 16-20 kbf
RPM: 143-179
GPM: 801-886
SPP: 1494-3645 psi

1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440



CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

CALCAREOUS CLAYSTONE:
m dk gy, slty, tr glau spks, frm - mod hd, sbblky.

CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

CALCAREOUS CLAYSTONE:
m dk gy, slty, tr glau spks, frm - mod hd, sbblky.

CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

CALCAREOUS CLAYSTONE:
m dk gy, slty, tr glau spks, frm - mod hd, sbblky.

CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

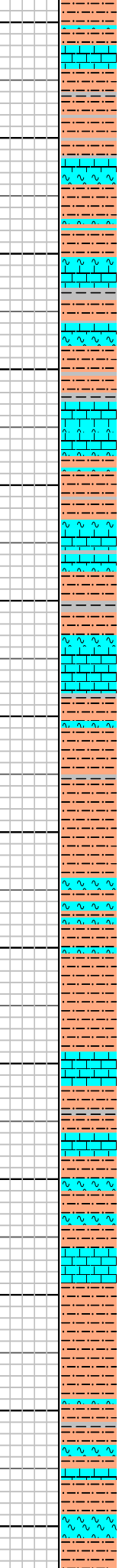
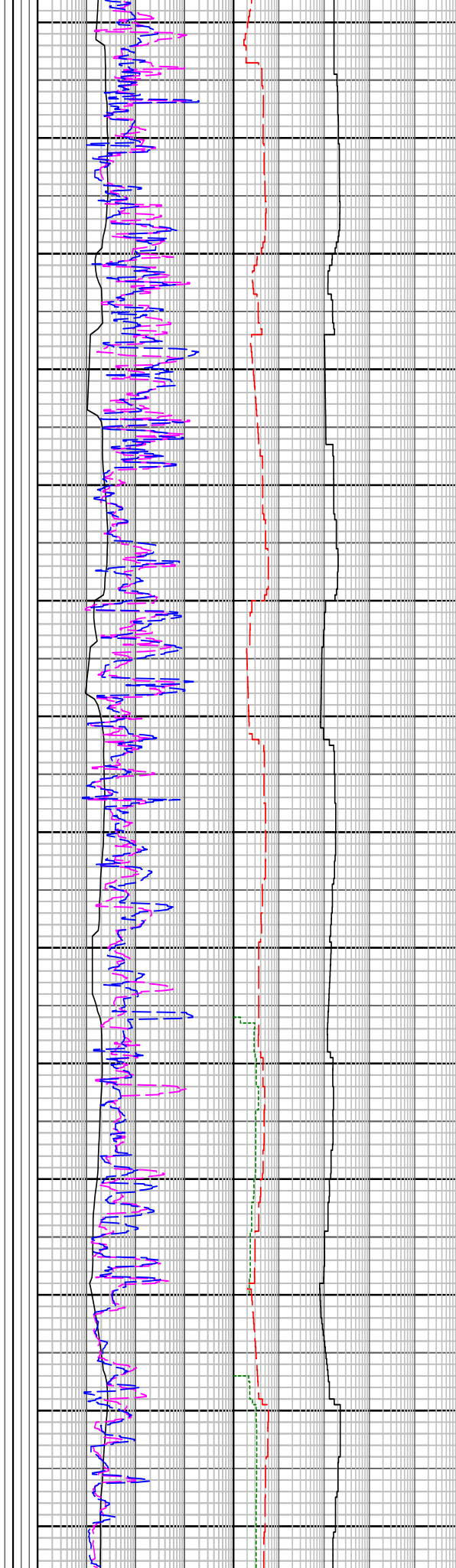
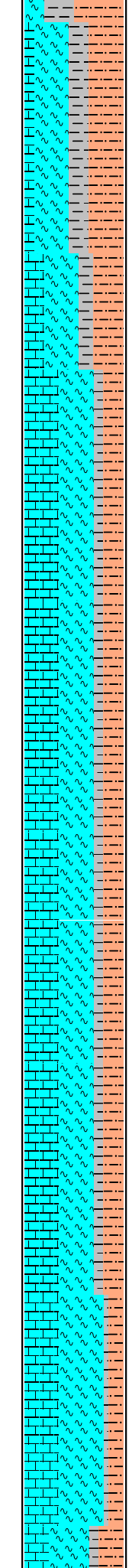
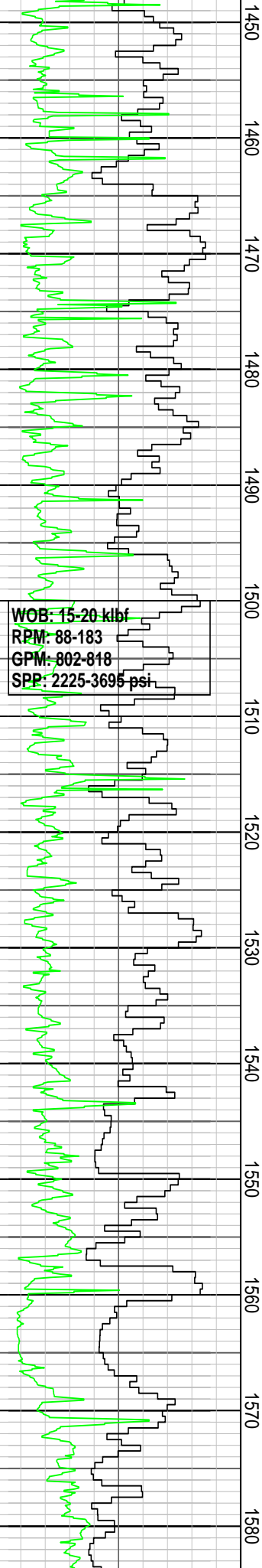
CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

CALCAREOUS SILTSTONE:
lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

CALCAREOUS CLAYSTONE:
gnsh gy - m lt gy, wh i/p, slty i/p, tr glau spks, sft amor - frm.

MARL: wh, tr blk carb streaks, tr loc w/ m grn rndd glau pel, tr loc w/ v f sbrndd sd & r grd to Cclar i/p, sft - mod hd.

CALCAREOUS SILTSTONE:



CALCAREOUS SILTSTONE: lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

MARL: wh, tr blk carb streaks, tr loc w/ m grn rndd glau pel, tr loc w/ v f sbrndd sd & r grd to Clcar i/p, sft - mod hd.

CALCARENITE: wh - yelsh gy i/p, com blk spks, tr loc w/ m grn rndd glau pels, mod hd - hd.

MARL: wh, tr blk carb streaks, tr loc w/ m grn rndd glau pel, tr loc w/ v f sbrndd sd & r grd to Clcar i/p, sft - mod hd.

CALCAREOUS SILTSTONE: lt olv gy - gnsh gy, m lt gy i/p, argl, com glau, com v f to f Qtz, loc grd to Sltly Sst, frm - mod hd, sbblky.

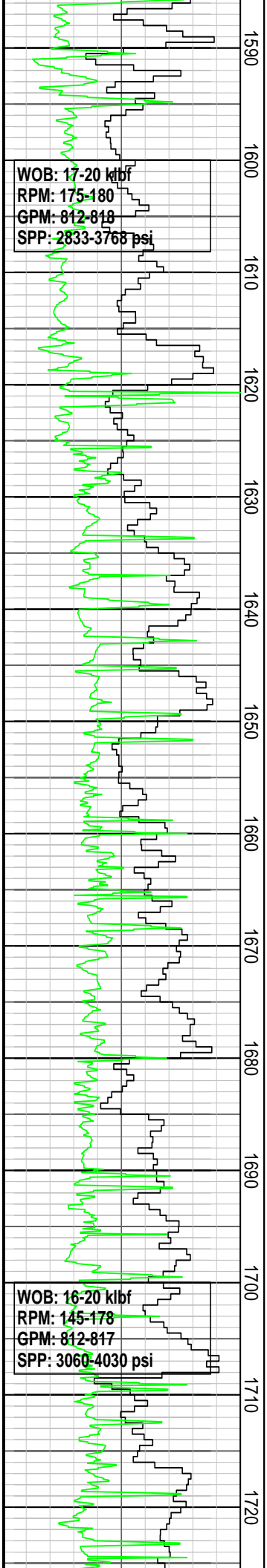
MARL: wh, tr blk carb streaks, tr loc w/ m grn rndd glau pel, tr loc w/ v f sbrndd sd & r grd to Clcar i/p, sft - mod hd.

CALCARENITE: wh - yelsh gy i/p, com to abd blk spks, tr loc w/ v f m grn rndd glau pels, tr w/ v f sd, mod hd - hd.

MARL: wh, com loc w/ abd blk carb strks, tr loc m grn rndd glau pels, tr loc w/ v f snrndd sd & sft - mod hd.

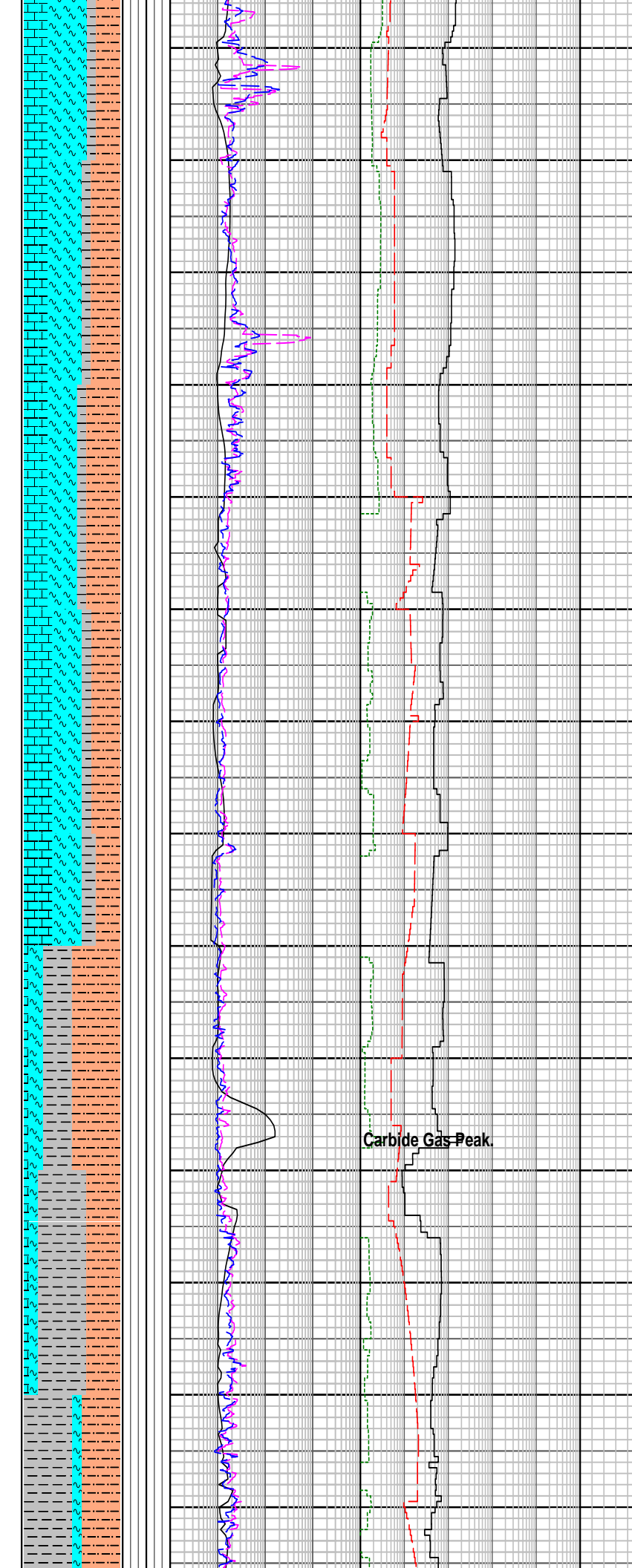
SILTSTONE: olv gy, r sdy Sltst i/p, r forams, mod hd - hd, sbblky - fiss, 1% blk, v calc, hd, sbfiss shale.

CLAYSTONE: m gy, hom to slty i/p, sft amor to frm i/p.



WOB: 17-20 klbf
 RPM: 175-180
 GPM: 812-818
 SPP: 2833-3768 psi

WOB: 16-20 klbf
 RPM: 145-178
 GPM: 812-817
 SPP: 3060-4030 psi



Carbide Gas Peak

MARL: wh, com loc w/ abd blk carb strks, tr loc m grn rndd glau pels, tr loc w/ v f snrdd sd & sft - mod hd.

CALCAREOUS SILTSTONE:
 olv gy, r sdy Siltst i/p, r forams, mod hd - hd, sbbiky - fiss, 1% blk, v calc, hd, sbfiss shale.

CALCARENITE: wh - yelsh gy i/p, com to abd blk spks, tr loc w/ v f m grn rndd glau pels, tr w/ v f sd, mod hd - hd.

CALCAREOUS CLAYSTONE:
 m gy, hom to slty i/p, sft amor to frm i/p.

MARL: wh, com loc w/ abd blk carb strks, tr loc m grn rndd glau pels, tr loc w/ v f sbrndd sd & sft - mod hd.

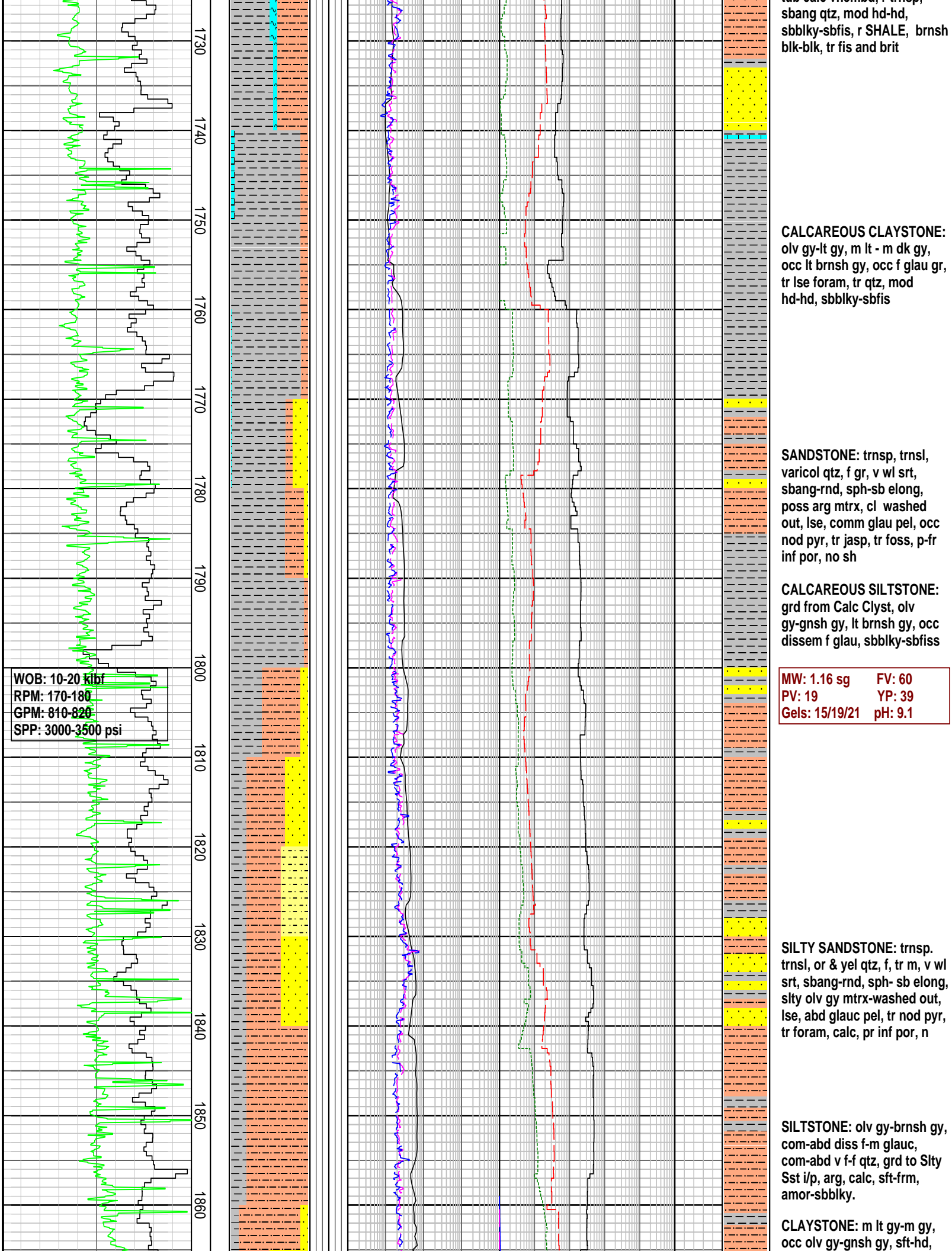
CALCARENITE: wh - yelsh gy i/p, com to abd blk spks, tr loc w/ v f m grn rndd glau pels, tr w/ v f sd, mod hd - hd.

Carbide Run @ 1677.0mMDRT
 Theo: 4503 Stk
 Actual: 4583 Stk
 Hole Washout = 2%

CALCAREOUS SILTSTONE:
 olv gy, r sdy Siltst i/p, r forams, mod hd - hd, sbbiky - fiss, 1% blk, v calc, hd, sbfiss shale.

CALCAREOUS CLAYSTONE:
 m gy, hom to slty i/p, sft amor to frm i/p.

CALCAREOUS SILTSTONE:
 gnsh gy-mgy, tr lseforam and tub calc vnembd. r trnsp.



WOB: 10-20 kbf
 RPM: 170-180
 GPM: 810-820
 SPP: 3000-3500 psi

to calc from sh, tr sp, sbang qtz, mod hd-hd, sbblky-sbfis, r SHALE, brnsh blk-blk, tr fis and brit

CALCAREOUS CLAYSTONE:
 olv gy-lt gy, m lt - m dk gy, occ lt brnsh gy, occ f glau gr, tr lse foram, tr qtz, mod hd-hd, sbblky-sbfis

SANDSTONE: trnsp, trnsl, varicol qtz, f gr, v wl srt, sbang-rnd, sph-sb elong, poss arg mtrx, cl washed out, lse, comm glau pel, occ nod pyr, tr jasp, tr foss, p-fr inf por, no sh

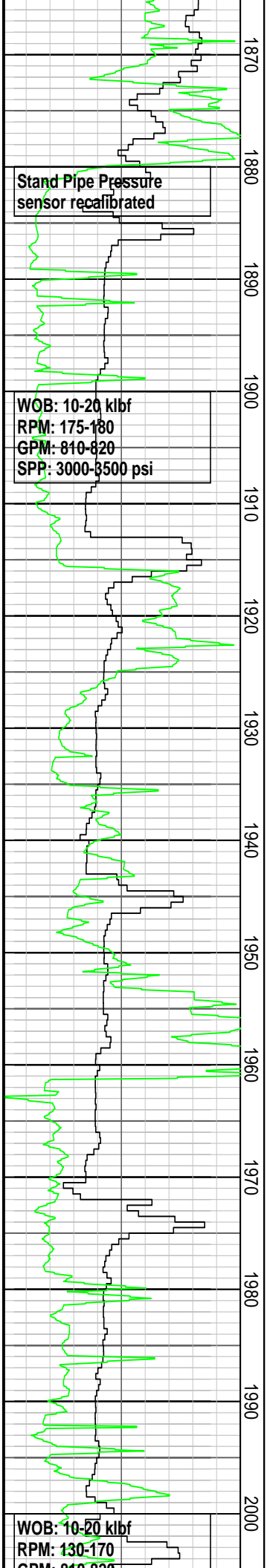
CALCAREOUS SILTSTONE:
 grd from Calc Clyst, olv gy-gnsh gy, lt brnsh gy, occ dissem f glau, sbblky-sbfiss

MW: 1.16 sg	FV: 60
PV: 19	YP: 39
Gels: 15/19/21	pH: 9.1

SILTY SANDSTONE: trnsp, trnsl, or & yel qtz, f, tr m, v wl srt, sbang-rnd, sph- sb elong, slty olv gy mtrx-washed out, lse, abd glauc pel, tr nod pyr, tr foram, calc, pr inf por, n

SILTSTONE: olv gy-brnsh gy, com-abd diss f-m glauc, com-abd v f-f qtz, grd to Sly Sst i/p, arg, calc, sft frm, amor-sbblky.

CLAYSTONE: m lt gy-m gy, occ olv gy-gnsh gy, sft-hd,



1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Stand Pipe Pressure
sensor recalibrated

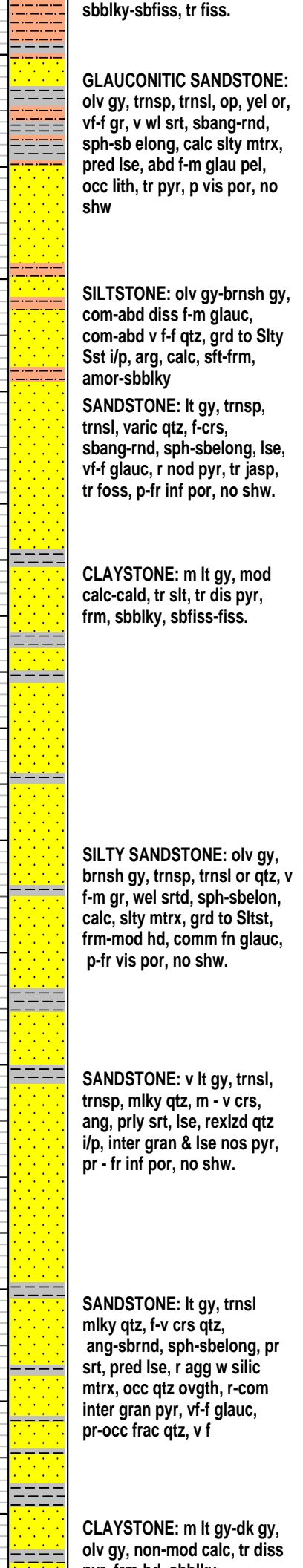
WOB: 10-20 klbf
RPM: 175-180
GPM: 810-820
SPP: 3000-3500 psi

WOB: 10-20 klbf
RPM: 130-170
GPM: 810-820

1880.0 mMDRT
Total Gas: 0.13% 86/8/3/tr

1930 mMDRT
Total Gas: 0.2365% 85/8/4/tr

1963.0 mMDRT
Total Gas: 0.2000% 90/6/2/tr



sbbkly-sbfiss, tr fiss.
GLAUCONITIC SANDSTONE: olv gy, trnsp, trnsl, op, yel or, vf-f gr, v wl srt, sbang-rnd, sph-sb along, calc slty mtrx, pred lse, abd f-m glauc pel, occ lith, tr pyr, p vis por, no shw

SILTSTONE: olv gy-brnsh gy, com-abd diss f-m glauc, com-abd v f-f qtz, grd to Slty Sst i/p, arg, calc, sft-frm, amor-sbbkly

SANDSTONE: lt gy, trnsp, trnsl, varic qtz, f-crs, sbang-rnd, sph-sbelong, lse, vf-f glauc, r nod pyr, tr jasp, tr foss, p-fr inf por, no shw.

CLAYSTONE: m lt gy, mod calc-cald, tr slit, tr dis pyr, frm, sbbkly, sbfiss-fiss.

SILTY SANDSTONE: olv gy, brnsh gy, trnsp, trnsl or qtz, v f-m gr, wel srt, sph-sbelon, calc, slty mtrx, grd to Slst, frm-mod hd, comm fn glauc, p-fr vis por, no shw.

SANDSTONE: v lt gy, trnsl, trnsp, mlky qtz, m - v crs, ang, prly srt, lse, rexld qtz i/p, inter gran & lse nos pyr, pr - fr inf por, no shw.

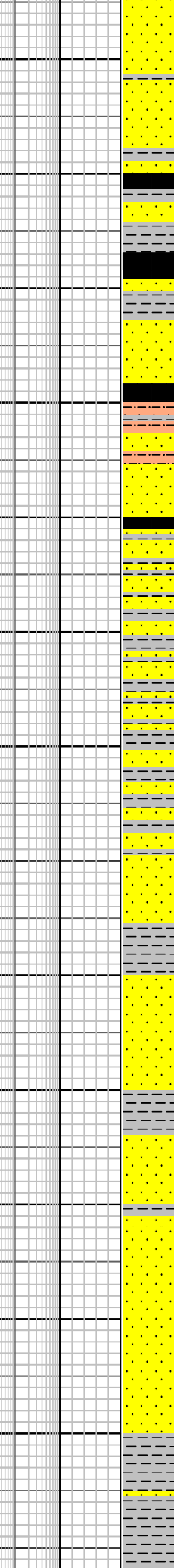
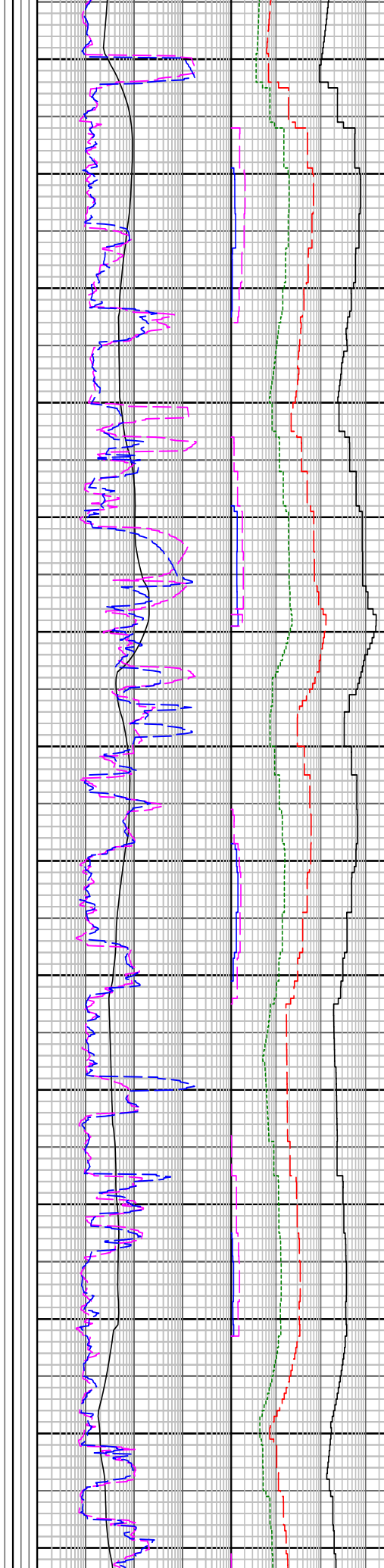
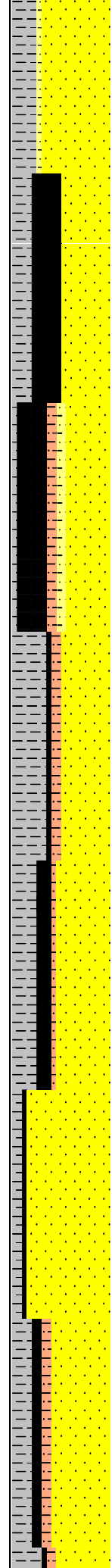
SANDSTONE: lt gy, trnsl mlky qtz, f-v crs qtz, ang-sbrnd, sph-sbelong, pr srt, pred lse, r agg w silic mtrx, occ qtz ovgr, r-com inter gran pyr, vf-f glauc, pr-occ frac qtz, v f

CLAYSTONE: m lt gy-dk gy, olv gy, non-mod calc, tr diss

GPM: 810-820
SPP: 2480-3090 psi

WOB: 10-20 kbf
RPM: 150-180
GPM: 810-820
SPP: 1990-2950 psi

2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140



pyr, frm-nd, sbblky, sbfiss-fiss, carb spk i/p.

COAL: blk, sbvitr-vitr, antracitic, sbchonc-conch frac, blk.

SANDSTONE: lt gy, trnsl mlky qtz, m-v crs qtz, ang-sbrnd, sbsph, mod-prly srt, pred lse, r silic mtrx, occ qtz ovgt, r inter gran & lse pyr, occ frac grns, pr-fr inf por, no shw.

SILTSTONE: olv gy, brn gy-brnsh blk, carb spks & lam, tr v f qtz i/p, mod arg i/p, non-v wk calc, frm-mod hd.

SANDSTONE: lt gy, trnsl mlky qtz, m-v crs qtz, ang-sbrnd, sbsph, mod-prly srt, pred lse, r silic mtrx, occ qtz ovgt, r inter gran & lse pyr, occ frac grns, pr-fr inf por, no shw.

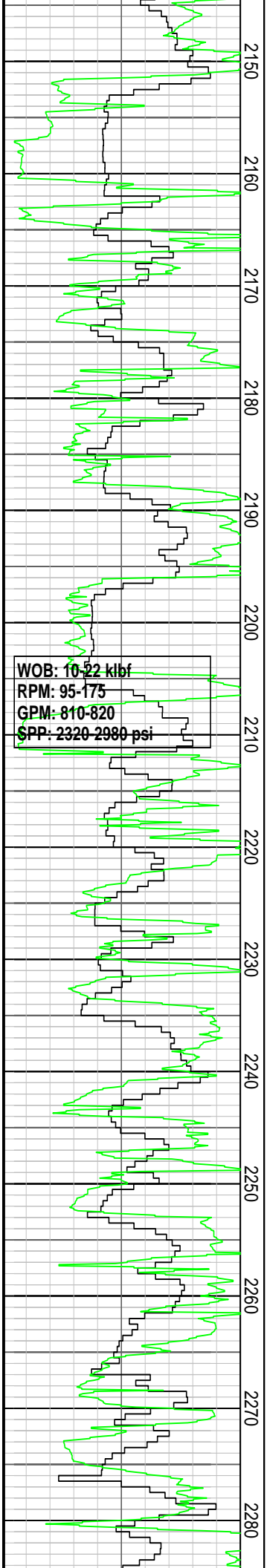
CLAYSTONE: m lt gy - dk gy, olv gy, olv blk, non - wkly calc, carb spks i/p, stly i/p, frm - tr v hd, sbblky, sbfiss - fiss.

SANDSTONE: v lt gy, trnsl, trnsp, mky qtz, m-v crs, pred crs-v crs qtz, ang-sbrndd, sbsph, mod wl srt, lse, occ qtz.

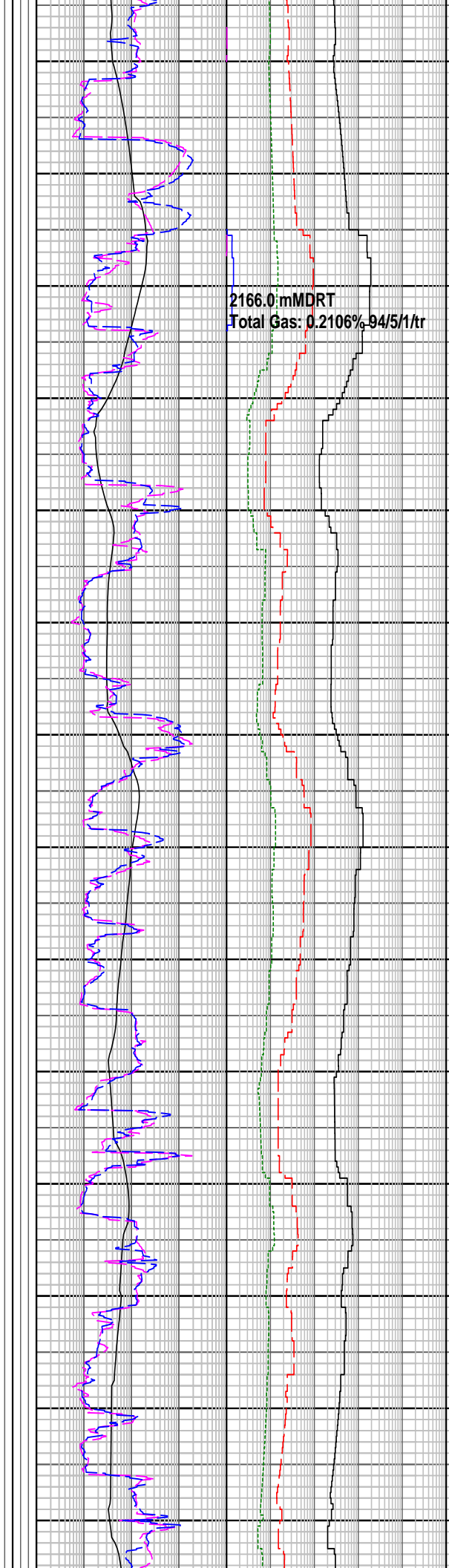
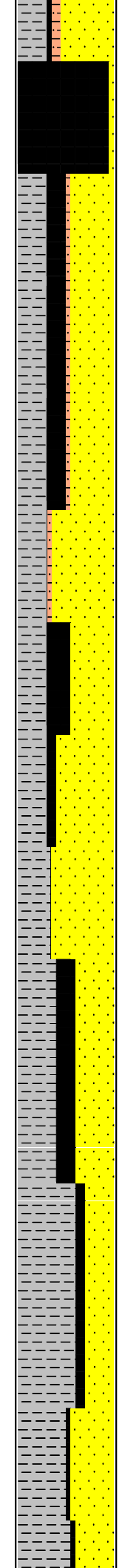
SANDSTONE: v lt gy, trnsl mlky qtz, m-v crs qtz, ang-sbrnd, sbsph, mod-prly srt, pred lse, r silic mtrx, occ qtz ovgt, r inter gran & lse pyr, occ frac grns, pr-fr inf por, no shw.

COAL: blk, sbvit - tr vit, sbanthr, sbconch frac, sbblky.

CLAYSTONE: m lt gy - dk gy, olv gy, olv blk, non to wkly calc, carb spks i/p, stly i/p, frm i tr v hd, sbblky, sbfiss -

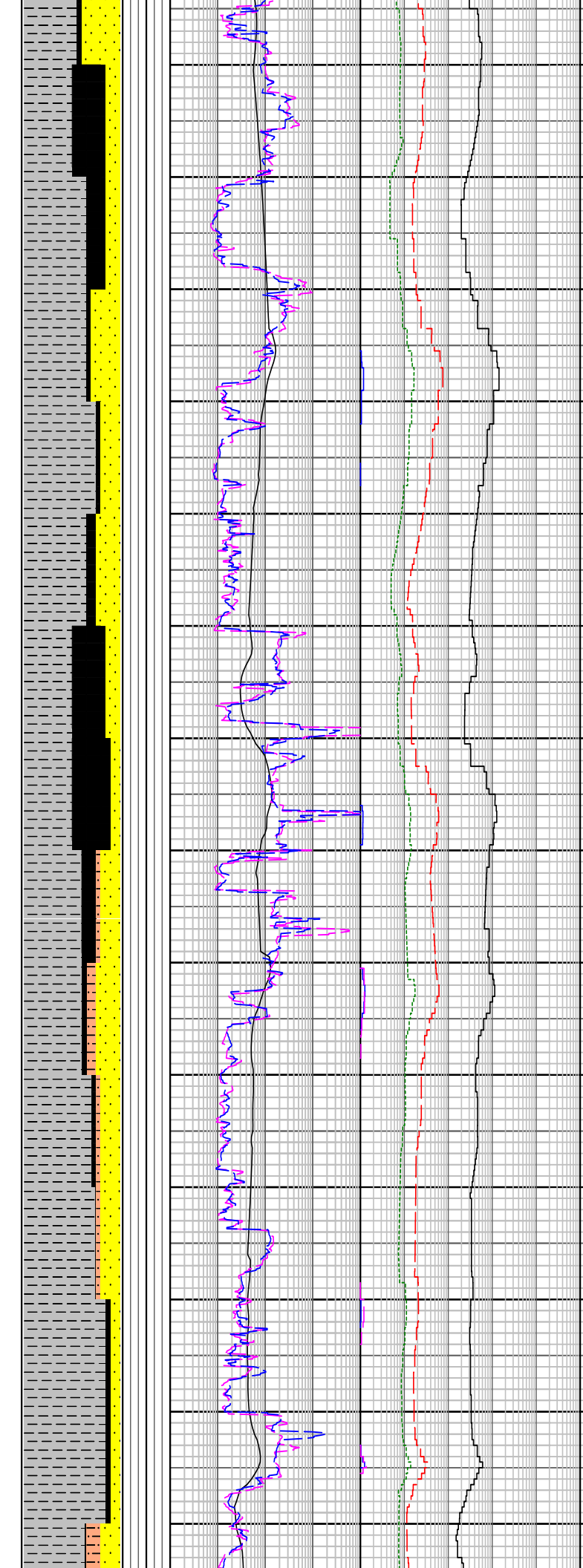
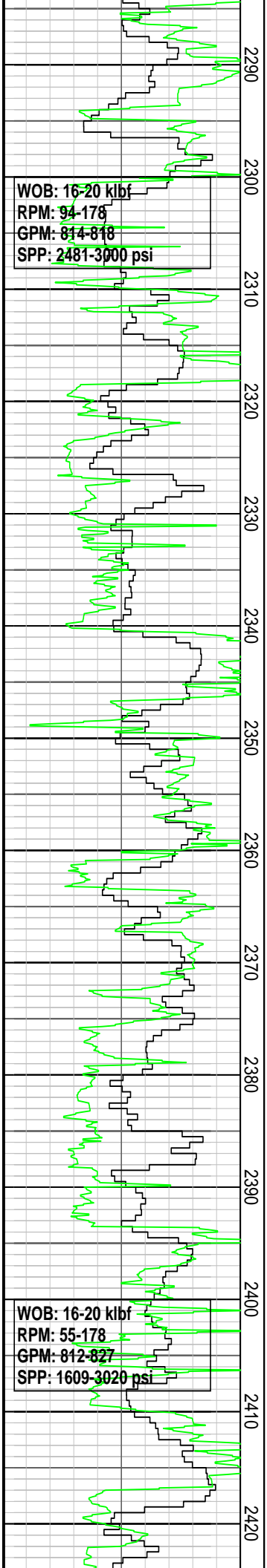


WOB: 10-22 kbf
 RPM: 95-175
 GPM: 810-820
 SPP: 2320-2980 psi



2166.0 mMDRT
 Total Gas: 0.2106% 94/5/1/tr

- fiss.
- COAL: blk, sbvit - tr vit, sbanthr, sbconch frac, sbbkly.
- SILTSTONE: brnsh gy - brnsh blk, olv gy, lt brnsh gy, v lt gy, com carb spks & lam, mod arg i/p, non calc, tr mica, qtz slt i/p, mod frm, sbbkly - sbfiss.
- SANDSTONE: v lt gy, trnsl, trnsp, mlky qtz, crs - v crs, ang - sbrnd, sbsph, wl srt, lse, occ qtz ovgt, tr inter gran pyr, pr - fr inf por, no shw.
- COAL: blk, sbvit - tr vit, sbanthr, sbconch frac, sbbkly.
- CLAYSTONE: lt gy - m gy, non - mod calc, tr - abd v f qtz i/p 20% grd to arg f grn Sst, com qtz slt, frm - sbbkly, sbfiss
- SANDSTONE: v lt gy, trnsl, trnsp, mlky qtz, crs - v crs, ang - sbrnd, sbsph, wl srt, lse, occ qtz ovgt, tr inter gran pyr, pr - fr inf por, no shw.
- CLAYSTONE: wh, m lt gy - lt brnsh gy, lt yeish gy, occ blk & carb flks, tr disse pyr, sft & amor i/p, frm - hd, sbbkly, sbfiss i/p, non calc & grd to Slst i/p.
- SILTSTONE: brnsh gy - brnsh blk, olv gy, lt brnsh gy, v lt gy, com carb spks & lam, mod arg i/p, non calc, tr mica, qtz slt i/p, mod frm, sbbkly - sbfiss.
- SANDSTONE: v lt gy, trnsl, trnsp, mlky qtz, m - v crs, ang, prly srt, lse, rexld qtz i/p, inter gran & lse nos pyr, pr - fr inf por, no shw.
- SILTSTONE: brnsh gy - brnsh



blk, olv gy, lt brnsh gy, v lt gy, com carb spks & lam, mod arg i/p, non calc, tr mica, qtz slit i/p, mod frm, sbblky - sbfiss.

COAL: blk, sbvit - tr vit, sbanthr, sbconch frac, sbblky.

SANDSTONE: v lt gy, trnsl, trnsp, mlky qtz, m - v crs, ang, prly srt, lse, rexlzd qtz i/p, inter gran & lse nod pyr, pr - fr inf por, no shw.

SILTSTONE: brnsh gy - brnsh blk, olv gy, lt brnsh gy, v lt gy, com carb spks & lam, mod arg i/p, non calc, tr mica, qtz slit i/p, mod frm, sbblky - sbfiss.

CLAYSTONE: wh, m lt gy - lt brnsh gy, lt yelsh gy, occ blk & carb flks, tr dissem pyr, sft & amor i/p, frm - hd, sbblky, sbfiss i/p, non calc & grd to Slst i/p.

SANDSTONE: v lt gy, trnsl, trnsp, mlky qtz, m - v crs, ang, prly srt, lse, rexlzd qtz i/p, inter gran & lse nos pyr, pr - fr inf por, no shw.

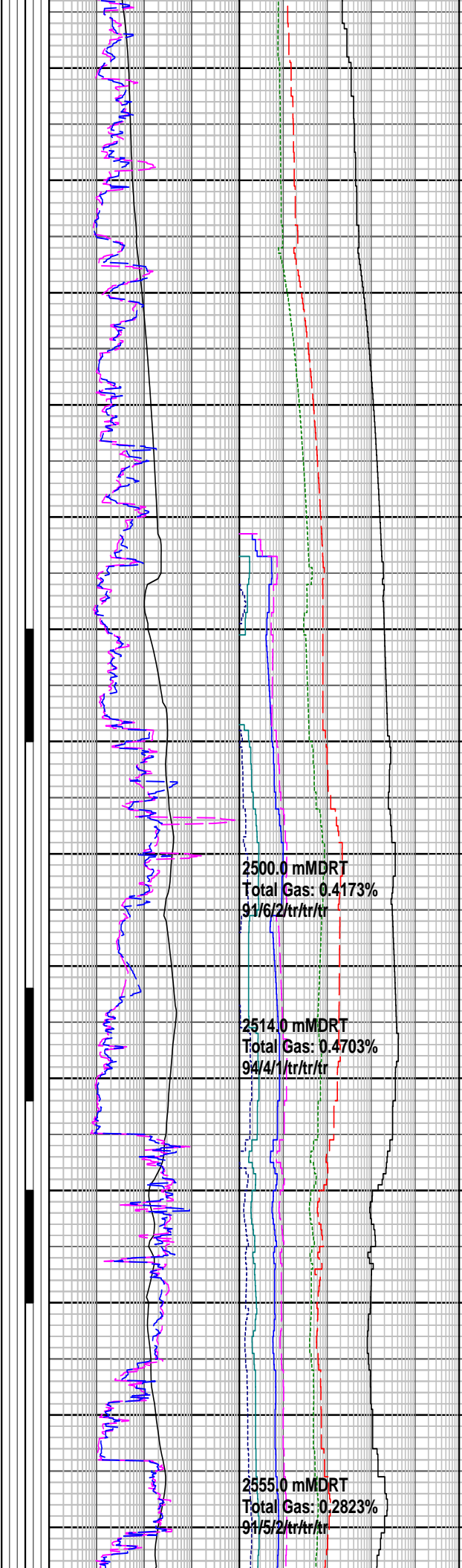
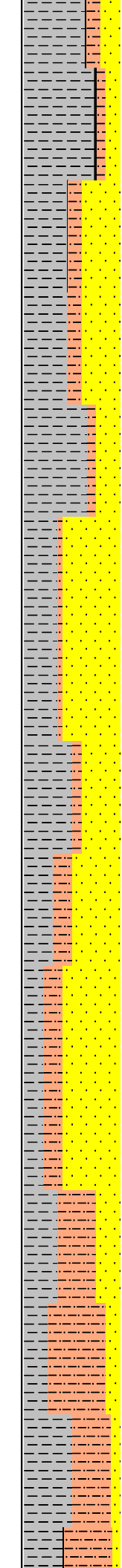
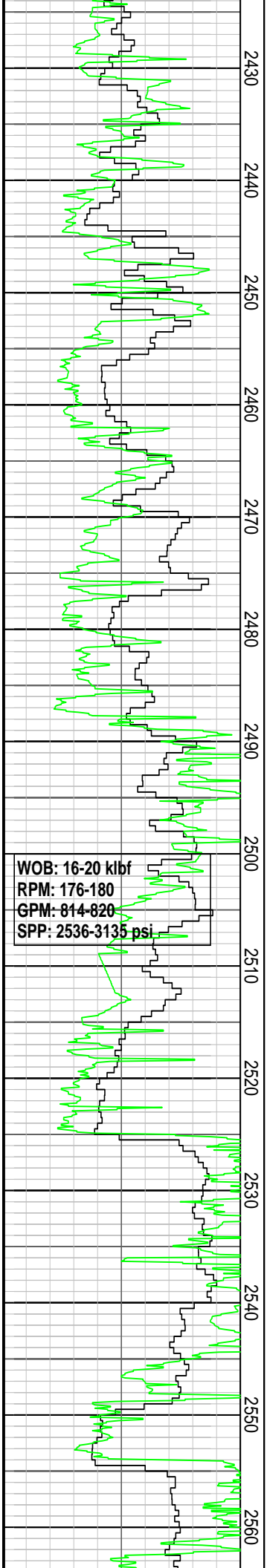
COAL: blk, sbvit - tr vit, sbanthr, sbconch frac, 1% loc w/ abd microxin pyr, sbblky - sbfiss & fiss i/p.

CLAYSTONE: wh, m lt gy - lt brnsh gy, lt yel gy, occ blk & carb flks, tr dissem pyr, sft 7 amor i/p, frm - hd, sbblky, sbfiss i/p, non calc, & grd to Slst i/p.

SANDSTONE: lse v crs to gran < 3mm. ang & f - m, sbrndd i/p, prly srt, rexlzd qtz i/p, inter gran & lse nod pyr, 1% Musc flks pr inf por, no shw.

CLAYSTONE: wh, m lt gy - lt brnsh gy, lt yel gy, occ blk & carb flks, tr dissem pyr, sft 7 amor i/p, frm - hd, sbblky, sbfiss i/p, non calc, & grd to Slst i/p.

SANDSTONE: lse v crs to gran < 3mm. ang & f - m, sbrndd i/p, prly srt, rexlzd qtz i/p, inter gran & lse nod pyr,



1% Musc flks pr inf por, no shw.

SILTSTONE: pl yelsh brn, mod hd, v f trnsp qtz, v f mic, sbblky - sbfiss i/p.

CLAYSTONE: wh, m lt gy - lt brnsh gy, lt yel gy, occ blk & carb flks, tr dissem pyr, sft & amor i/p, frm - hd, sbblky, sbfiss i/p, non calc, & grd to Slstst i/p.

SILTSTONE: pl yelsh brn, mod hd, v f trnsp qtz, v f mic, sbblky - sbfiss i/p.

SANDSTONE: lse v crs - gran < 3mm, ang - sbang i/p, v f - f, sbrnrd - rndd i/p, v pr srt, 1% inter gran & lse nod pyrite, por inf por.

FLUORESCENCE:(Tr) pl yel mineral fluor, no cut.

COAL: blk, sbvit - tr vit, sbanthr, sbconch frac, 1% loc w/ abd microxin pyr, sbblky - sbfiss & fiss i/p.

SANDSTONE: lse v crs - gran < 3mm, ang - sbang i/p, v f - f, sbrnrd - rndd i/p, v pr srt, 1% inter gran & lse nod pyrite, por inf por.

FLUORESCENCE:(Tr) pl yel mineral fluor, no cut.

SANDSTONE: lse v crs - gran < 3mm, ang - sbang i/p, v f - f, sbrnrd - rndd i/p, v pr srt, 1% inter gran & lse nod pyrite, por inf por.

FLUORESCENCE:(Tr) pl yel mineral fluor, no cut.

SILTSTONE: pl yelsh brn, mod hd, v f trnsp qtz, v f mic, sbblky - sbfiss i/p.

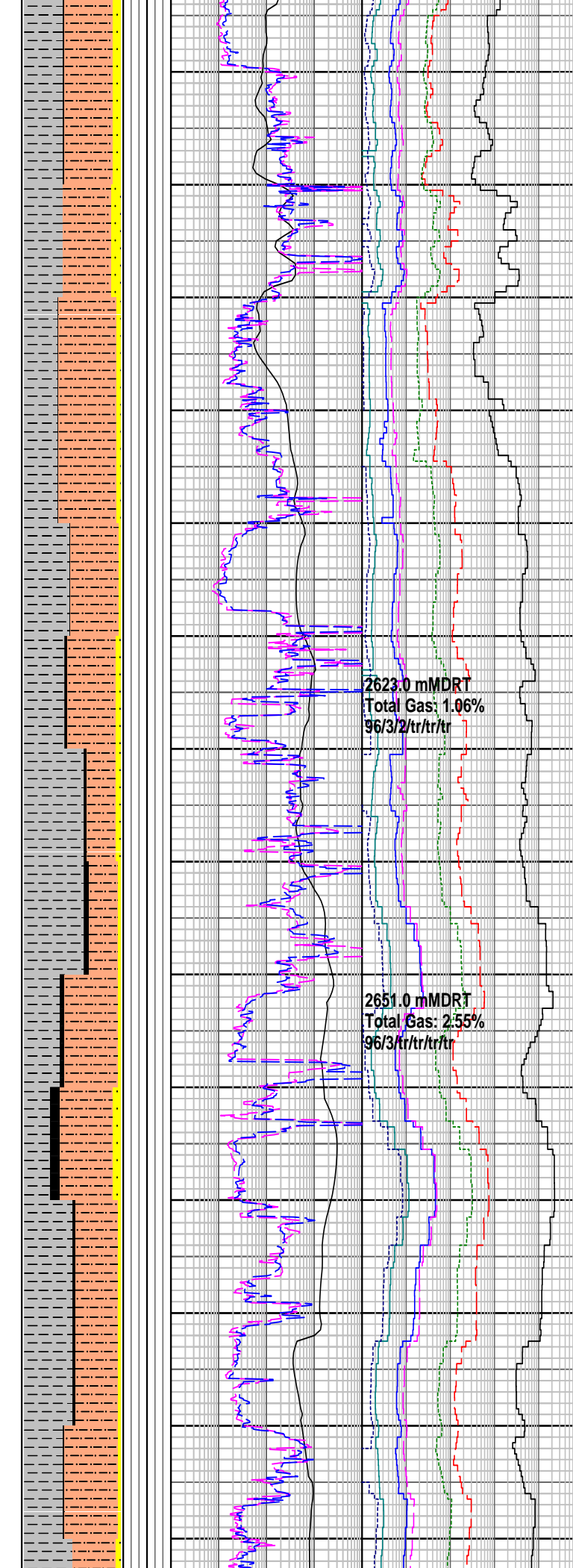
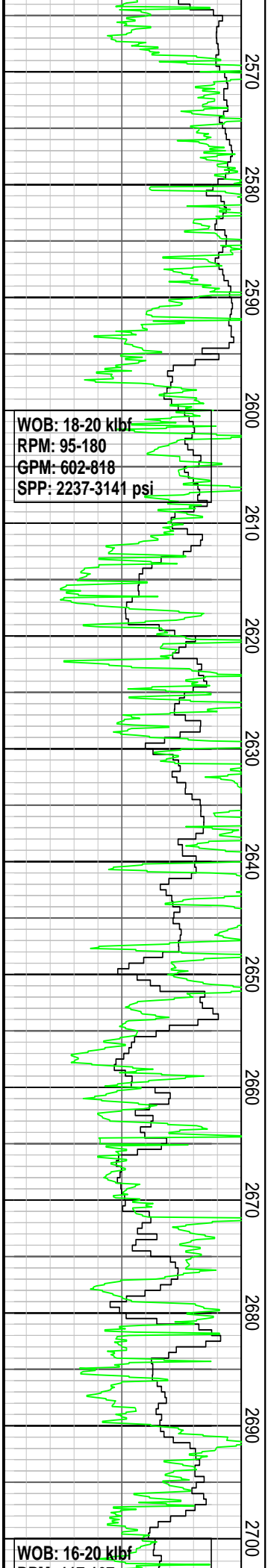
SANDSTONE: lse sd, trnsp - trnsl, v f - m & v crs i/p, sbrnrd - rndd, ang i/p, mod - prly srt, 1% lse Musc flks, pr to fr inf por.

WOB: 16-20 klbf
 RPM: 176-180
 GPM: 814-820
 SPP: 2536-3135 psi

2500.0 mMDRT
 Total Gas: 0.4173%
 91/6/2/tr/tr/tr

2514.0 mMDRT
 Total Gas: 0.4703%
 94/4/1/tr/tr/tr

2555.0 mMDRT
 Total Gas: 0.2823%
 91/5/2/tr/tr/tr

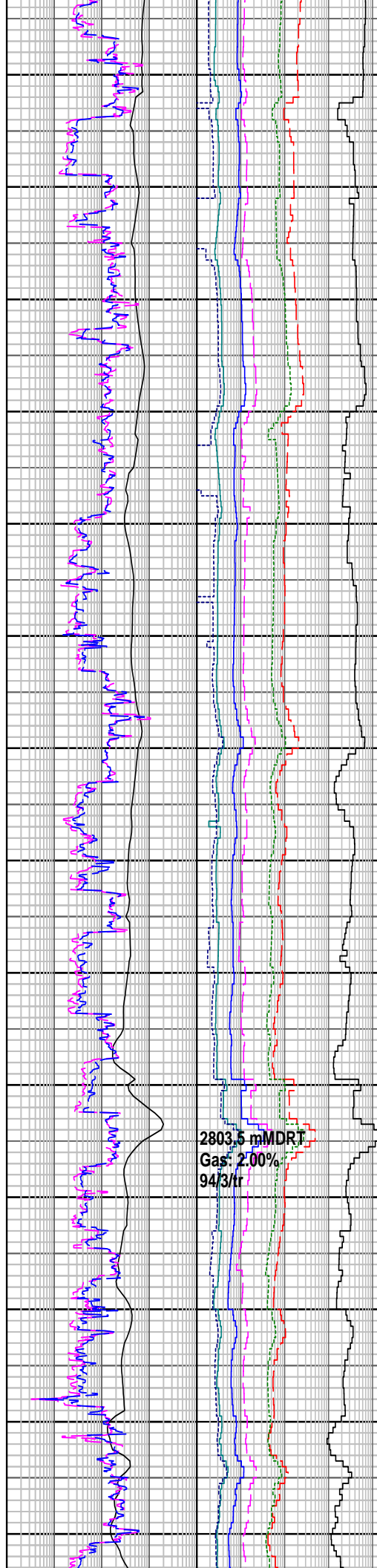


- to tr int por.
- FLUORESCENCE:(Tr) pl yel mineral fluor, no cut.
- CLAYSTONE: m lt gy-m gy, dk gy i/p, yel gy - wh i/p, occ blk & carb flk thru, tr diss pyr, sft & amorp - frm, non calc, loc w v f sd, grd to Sltst i/p.
- COAL: blk, sb vit, sb anthr, sb conch frac, 1% loc w abd microIn ply, sbblky - sbfiss.
- SANDSTONE:lse sd, trnsp - trnsl, v f - m & v crs i/p, sbrndd - rndd, ang i/p, mod - pr srt, 1% lse Muscv flks, 1% lse v crs to gran crpxln pyr, pr - fr inf por.
- FLUORESCENCE:(Tr) pl yel mineral fluor, no cut.
- CLAYSTONE: wh, m ly gy - m gy, dk gy i/p, yel gy i/p, occ blk & carc flk thru, tr dis pyr, sft & amor - fm, non calc, loc w v f sd, grd to Sltst i/p.
- COAL: blk, sb vit, sb anthr, sb conch frac, 1% loc w abd microIn ply, sbblky - sbfiss
- COAL: blk, sb vit, sb anthr, sb conch frac, 1% loc w abd microIn ply, sbblky - sbfiss
- SANDSTONE: lse sd, sd agg, wh - pl yelsh or, fri, f - m, sbang, mod srt, tr loc w/ v f blk carb flks, arg mtrx, inf sil cmt i/p, pr to fr por.
- COAL: blk, sb vit, sb anthr, sb conch frac, 1% loc w abd microIn ply, sbblky - sbfiss
- SILTSTONE: dk yelsh brn - brnsh gy, m gy i/p, frm - hd, comm blk flk - thn strk, 1% m biot flk, 1% v f sd, sbblky - sbfiss i/p, grd to v f Sst i/p, occ wh - gy Sh, hd, brit
- COAL: blk, sb vit, sb anthr, sb conch frac, 1% loc w abd microIn ply, sbblky - sbfiss
- SANDSTONE: lse sd, sd agg, wh - pl yelsh or, fri, f - m

RPM: 117-167
GPM: 801-809
SPP: 2574-3254 psi

WOB: 10-27 kifb
RPM: 127-160
GPM: 800-807
SPP: 2000-3000 psi

2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840



wh - pr yeish c, m, f - m, sbang, mod srt, tr loc w/ v f blk carb flks, arg mtrx, inf sil cmt i/p & pyr cmt i/p, nil to fr por.

CLAYSTONE: wh, m lt gy - m gy, dk gy i/p, yel gy i/p, occ blk & carc flk thru, tr dis pyr, sft & amor - fm, non calc, loc w v f sd, grd to Sltst i/p

SANDSTONE: olv gy com, v lt gy-yel gy agg, trnsp, trnsl, v f-m gr qtz, wl rndd-sbang, mod wl srt, fri agg, pred lse, olv gy slty mtr, wh/yeish gy arg mtr i/p, wk sil cmt, occ carb mat, 5% v crs relxzd qtz, pr vis por, no shw.

SANDSTONE: olv gy com, v lt gy-yeish gy agg, trnsp, trnsl, v f-m gr qtz, wl rndd-sbang, mod wl srt, fri agg, com lse, olv gy slty mtr, grd to slty Sst, wh/yeish gy arg mtr i/p, pr - gd vis por, tr fluor

FLUORESCENCE:(1%) dull to mod bri yel natural fluor.

CLAYSTONE: m dk gy - gysh blk, brnsh blk, gen more carb, com disse pyr, slty i/p

SANDSTONE: olv gy agg, trnsp, trnsl, qtz, com v f - f grn fri agg, rnd - sbang, mod wl srt, v f - m lse qtz, olv gy slty mtr i/p, wh arg mtr i/p, wk - hd sil cmt, carb i/p, tr pyr, no shw.

SILTSTONE: lt olv gy - olv gy, brnsh gy, carb mat i/p, sdy i/p, hd, r v hd, sbblky, sbfiss

SANDSTONE: olv gy agg, trnsp, trnsl, qtz, com v f - f grn fri agg, rnd - sbang, mod wl srt, v f - m lse qtz, olv gy slty mtr i/p, wh arg mtr i/p, wk - hd sil cmt, carb i/p, tr pyr, no shw.

SILTSTONE: olv gy, m dk gy, carb i/p, occy lam i/p, com of

