



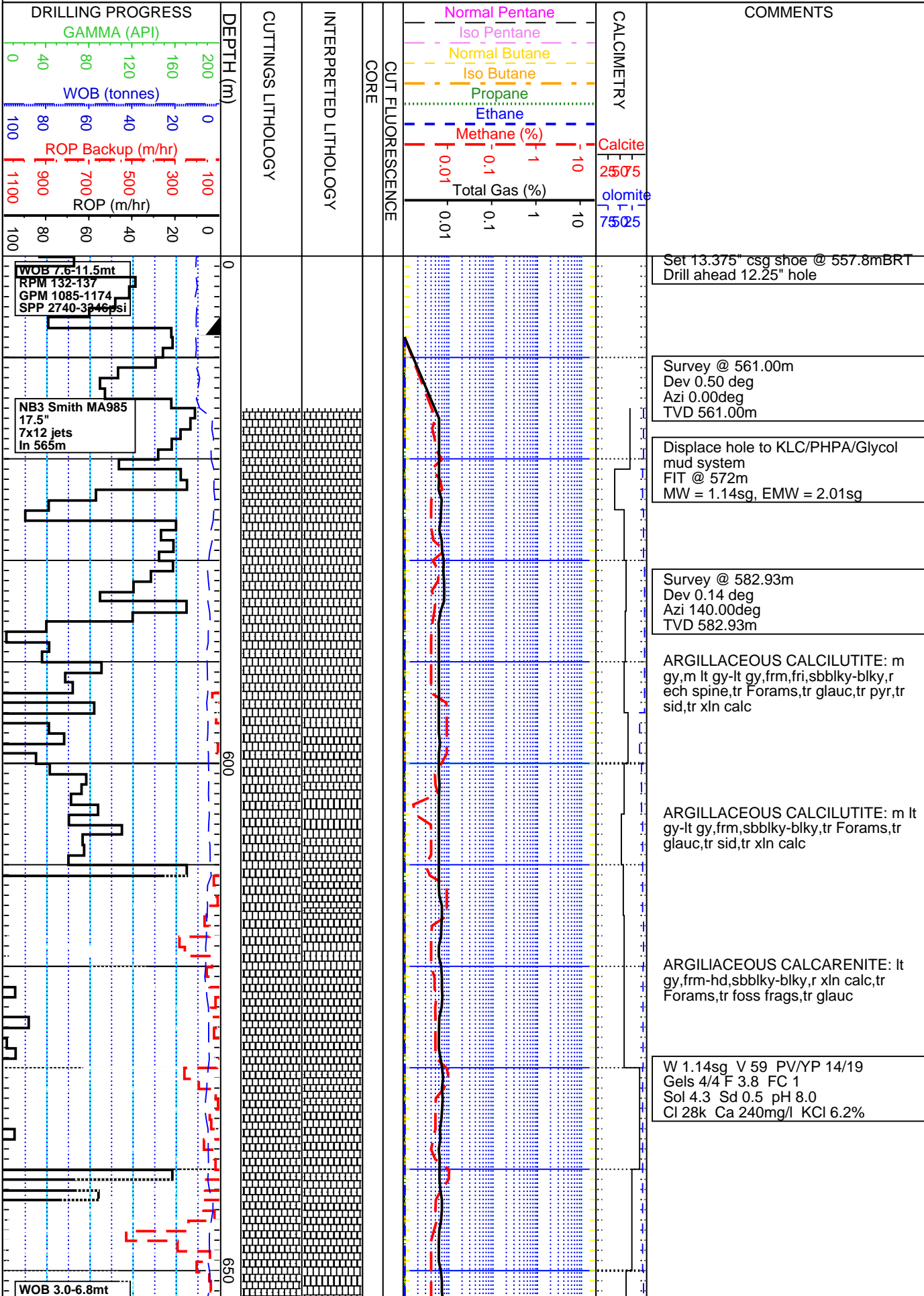
# FORMATION EVALUATION LOG

## GeographeNorth-1

### SCALE: 1:500.0



INTEQ



WOB 7.6-11.5mt  
RPM 132-137  
GPM 1085-1174  
SPP 2740-3346psi

NB3 Smith MA985  
17.5"  
7x12 jets  
In 565m

WOB 3.0-6.8mt

RPM 142-195  
GPM 889-987  
SPP 2429-2968psi

WOB 3.0-7.1mt  
RPM 160-190  
GPM 954-985  
SPP 2872-3026psi

WOB 0.8-8.8mt  
RPM 71-94  
GPM 842-977  
SPP 2327-3104psi

700

750

CALCARENITE: lt gy,lt brnsh gy.lt brn-  
mod brn,frm-hd,blky,r org stn calc cmt,  
r xln calc,r foss frags,r xln calc

CALCAREOUS CLAYSTONE: lt gy-m  
lt gy,m dk gy,frm-hd,blky,occ fis,tr foss  
frags

SANDSTONE: blksh rd-v dsky rd,dk  
yelsh or,dsky brn-dsky yelsh brn stn,  
trans,rsns-glas-mky-prly,Lstrise,v crs-  
m,sbang-wl rndd,elong-sbsphr,v p srt,  
tr glauc nodds,p vis por,n shw

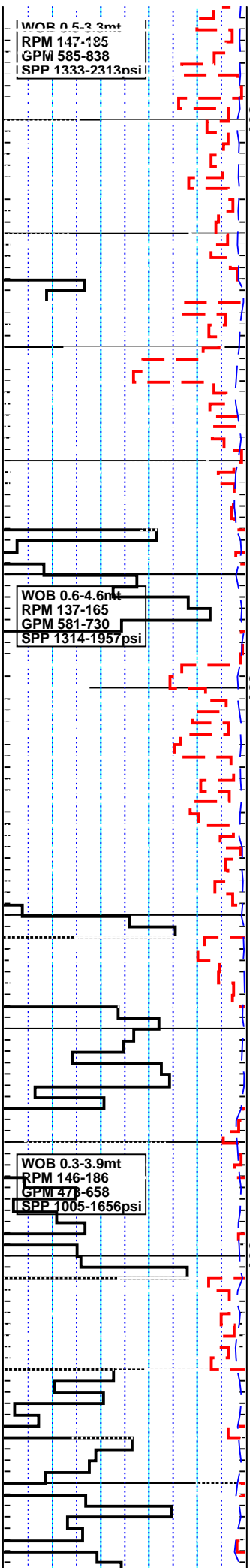
Reduce pump rate to 600-700GPM to  
control losses at shakers

W 1.14sg V 56 PV/YP 19/19  
Gels 4/5 F 4.4 FC 1  
Sol 4.28 Sd 0.75 pH 9.5  
Cl 49k Ca 320mg/l KCl 5.9%

Survey @ 787.44m  
Dev 0.24 deg

Azi 327.54deg  
TVD 787.44m

WOB 0.5-3.3mt  
RPM 147-185  
GPM 585-838  
SPP 1333-2313psi



WOB 0.6-4.6mt  
RPM 137-165  
GPM 581-730  
SPP 1314-1957psi

WOB 0.3-3.9mt  
RPM 146-186  
GPM 478-658  
SPP 1005-1656psi

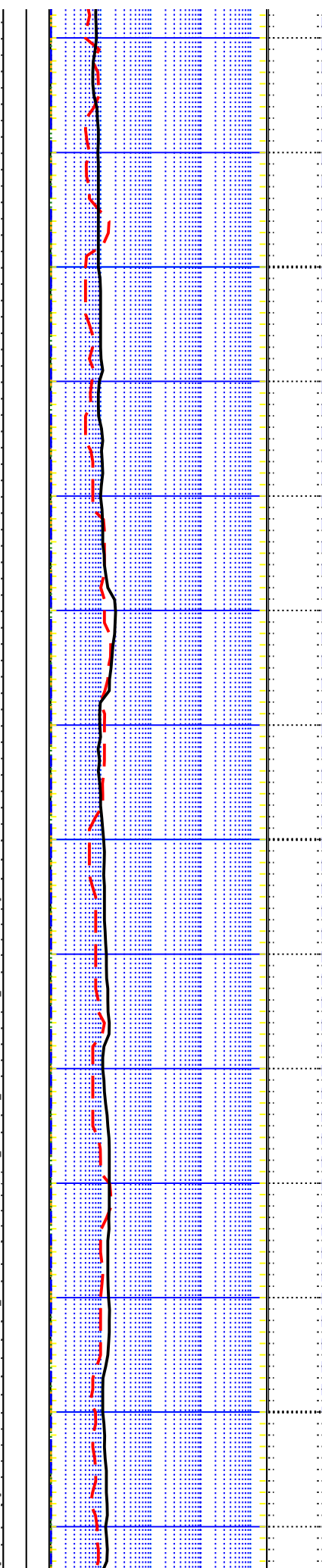
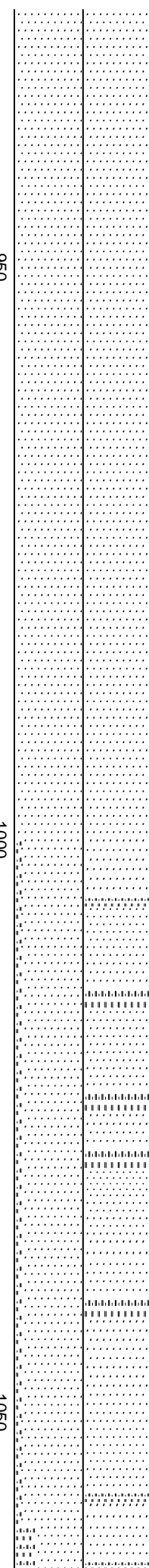
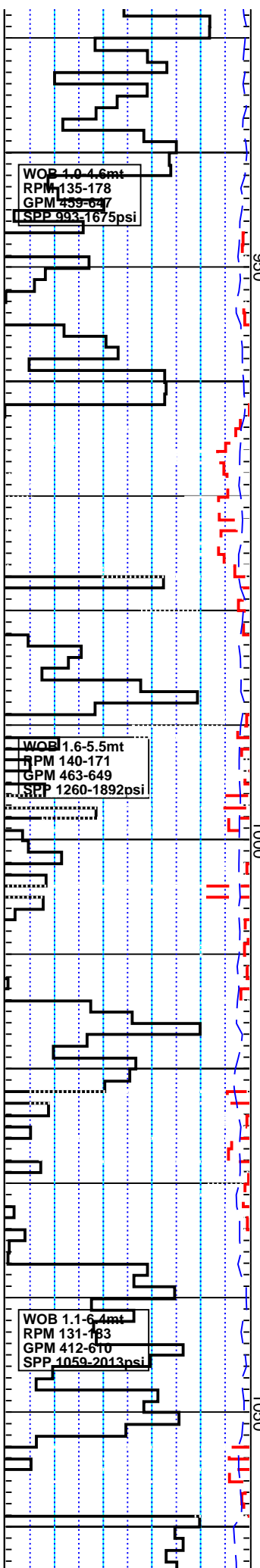
SANDSTONE: blksh rd-v dsky rd,dk yelsh or,dsky brn-dsky yelsh brn stn, trans,rsns-glas-mky-prly,Lstrise,v crs-m,sbrndd-wl rndd,elong-sbsphr,v p srt, r pyr nod,r pyr cmt,tr glauc nods,p vis por,n shw

SANDSTONE: gysh brn,dk yelsh or stn,trans,rsns,glasy,mky,prly,lstr,qtz gr,lse,m-v crs,sbrndd-wl rndd,elong-sbsphr,v p-mod wl srt,r pyr nod,r pyr cmt,r slt mtx,r Fe cmt,tr glauc nods,tr micmic,p vis por,n shw

SANDSTONE: pl yelsh or,lt gy stn, tran,glas,fros,lse,qtz grns, crs-md sd, sb rnded-rnded,elong-sphr,mod srt,r non calc,tr amor CARBONACEOUS SILTSTONE,tr marcasite cmt,tr jasp

Increase MW to 1.25sg over several circulations

SANDSTONE: pl yelsh or,lt gy stn, tran,glas,fros,lse,qtz grns, crs-md sd, sb rnded-rnded,elong-sphr,mod srt,r non calc,amor,carb siltstone,tr jasp,tr sid



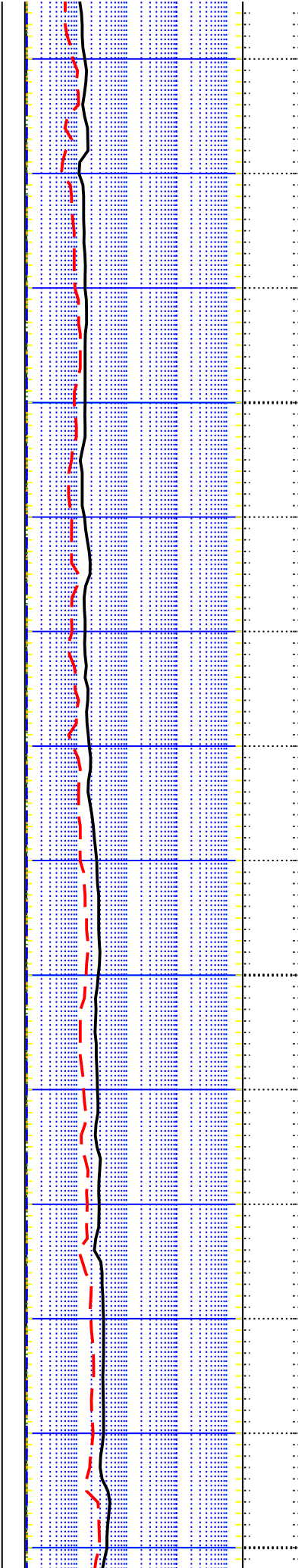
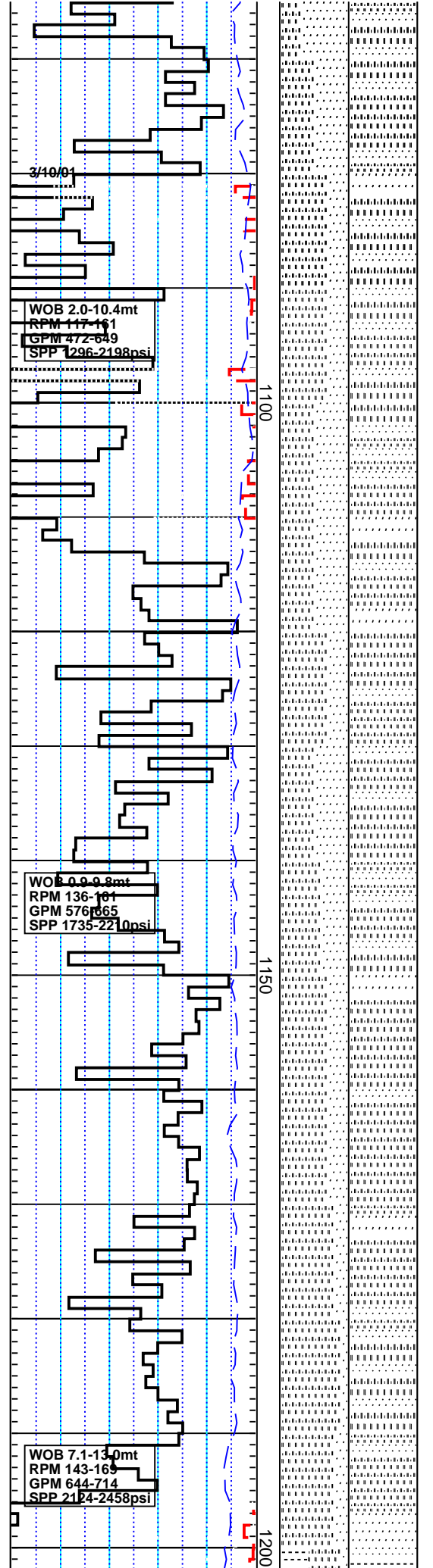
SANDSTONE: pl yelsh or,lt gy stn, tran,glas,fros,lse,qtz grns, crs-md sd, sb rnded-rnded,elong-sphr,mod srt,r non calc,amor,carb siltstone,tr jasp,tr sid

SILTSTONE: gysh blk,olv blk,plas, stky,amor,tr dissem pyr,tr carb mat

W 1.25sg V 60 PV/YP 24/25  
 Gels 5/6 F 4.2 FC 1  
 Sol 8.45 Sd 0.75 pH 9.5  
 Cl 48k Ca 320mg/l KCl 5.9%

Survey @ 1045.27m  
 Dev 1.06 deg  
 Azi 176.39deg  
 TVD 1045.26m

SANDSTONE: trnsp,trnsl,lse,vf-v crs, pred m,sbang-rnd,sbelong-sbrnd,p srt, fr inf por,NO SHOW



ARGILLACEOUS SILTSTONE: olv gy,  
olv blk,disp,stky,amor,tr carb mat

SANDSTONE: olv blk-brnsh blk,dk gy,  
occ m gy,vf-crs,occ v crs,pred f-m,  
sbang-sbrnd,occ rnd,sbelong-sbsphr,  
mod srt,mod strg calc cmt,tr-mnr pyr,tr  
glau,tr carb mat,p-fr inf por,NO SHOW

ARGILLACEOUS SILTSTONE: olv  
blk-brnsh blk,dk gy,disp,stky,amor,  
mnr pyr,tr carb mat,tr glau

Survey @ 1134.01m  
Dev 1.32 deg  
Azi 323.02deg  
TVD 1133.99m

SANDSTONE: trnsl,trnsp,lse,vf-f,occ  
m-crs,sbang-sbrnd,sbelong-sbrnd,p  
srt,p-fr inf por,NO SHOW

ARGILLACEOUS SILTSTONE: olv  
blk-brnsh blk,dk gy,disp,stky,amor,tr  
pyr nod,tr glau,tr carb mat,grd to Silty

Way 208 V 65 PV/YF 21/31  
Gels 5/6 F 3.2 FC 1  
Sol 11 Sd 1.25 pH 8.5  
Cl 43k Ca 320mg/l KCl 5.8%

SANDSTONE: trnsl,trnsp,lse,vf-f,occ  
m-crs,sbang-sbrnd,sbelong-sbrnd,p

srt,p-fr inf por,NO SHOW

Survey @ 1221.07m  
Dev 1.31deg  
Azi 340.49deg  
TVD 1221.03m

SILTY CLAYSTONE: olv gy-brnsh gy,  
dk gy,disp,stky,amor,mnr vf-f qtz sit,tr  
pyr,tr glauc,tr carb mat

WOB 4.7-14.6mt  
RPM 148-166  
GPM 494-651  
SPP 1412-2195psi

1250

Carbide gas = 0.23/0.5%

Carbide check @ 1249m  
Theo strks = 6168  
Actl strks = 6570  
Avg Hole Size = 12.9"

SILTY CLAYSTONE: olv gy,dk gy,  
stky,amor,tr carb mat,mnr f qtz sd

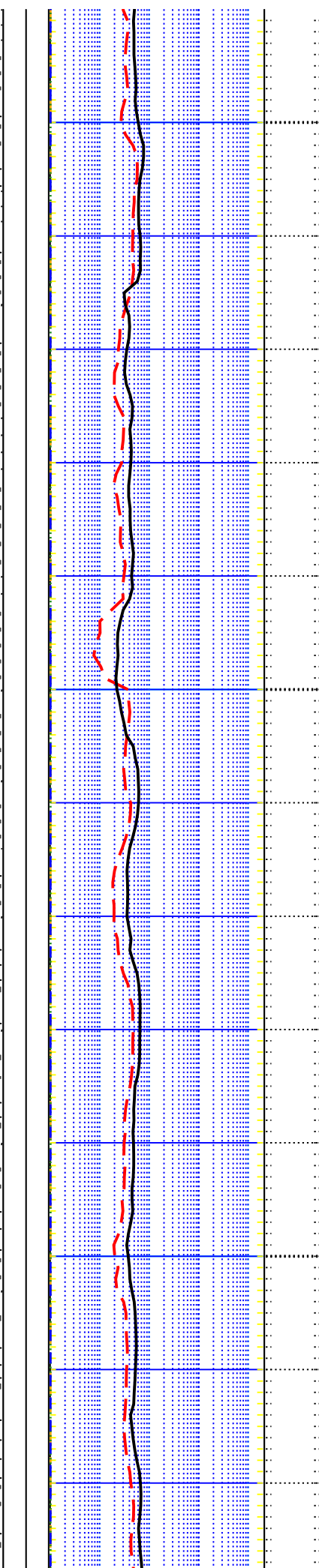
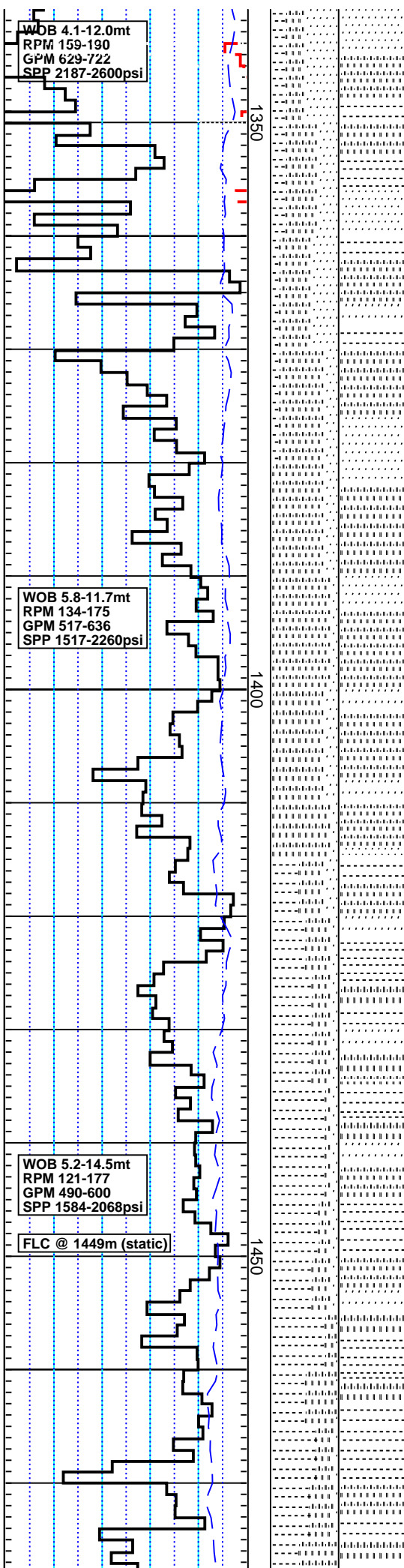
WOB 6.5-13.4mt  
RPM 160-189  
GPM 667-702  
SPP 2262-2805psi

1300

SILTSTONE:dk gy,dk brnsh gy,sft,  
blky,tr carb mat,tr f qtz sd

Survey @ 1308.98m  
Dev 1.44 deg  
Azi 340.75deg  
TVD 1308.91m  
WOB 1308.91m  
olv gy-brnsh gy,stky,  
amor,tr carb mat,tr mic,tr pyr,tr glauc

W 1.25sg V 69 PV/YP 21/32  
Gels 5/7 F 3.1 FC 1  
Sol 11 Sd 1.0 pH 9.1  
Cl 45k Ca 320mg/l KCl 5.9%



ARGILLACEOUS SILTSTONE: olv gy, brnsh blk, olv blk, sft-mod hd, amor, sbbiky, tr carb lam, tr carb spks, tr pyr cmt

SANDSTONE: lt gy-m lt gy, vf-f, trns-op qtz gr, sbang-sbrndd, p srt, calc cmt, tr carb mat, p vis por, n shw

Survey @ 1395.89m  
Dev 1.46deg  
Azi 335.28deg  
TVD 1395.79m

ARGILLACEOUS SILTSTONE: v dsky rd, dsky yelsh brn-dsky brn, v sft-sft, amor, sbbiky, tr carb lam

Add Apex to mud from 1399m

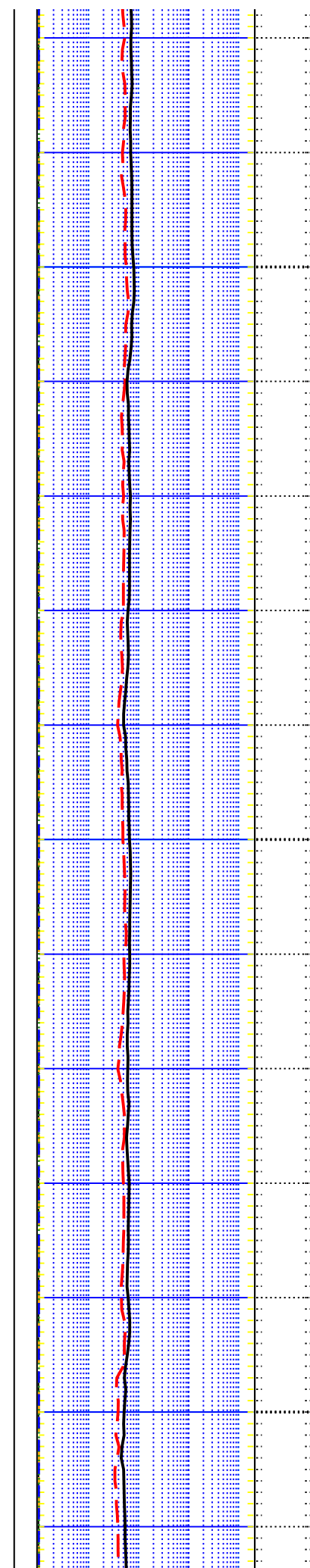
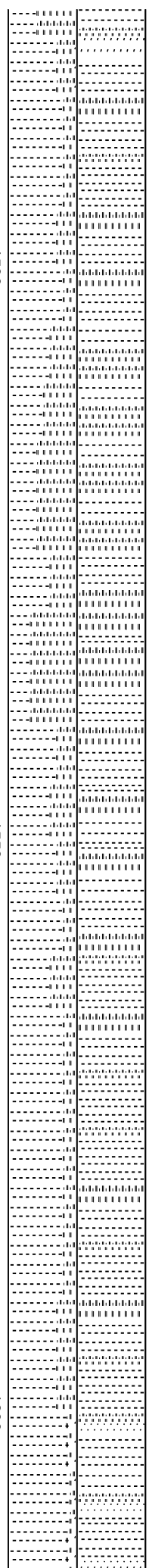
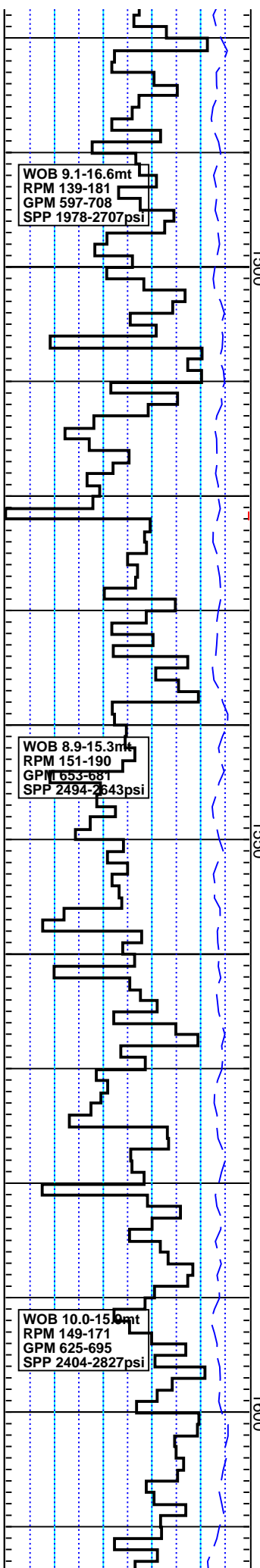
CLAYSTONE: mod brn, dsky yelsh brn-dsky brn, sft-disp, amor, tr vf qtz gr

SILTSTONE: dk rdsh brn, brnsh gy, sft-mod hd, sbbiky, cl mtx, tr carb mat, tr vf qtz gr

W 1.25sg V 81 PV/YP 24/26  
Gels 4/6/9 F 3.3 FC 1  
Sol 11 Sd 1.25 pH 10.9  
Cl 45k Ca 60mg/l KCl 6.2%

SANDSTONE: clr-trans qtz gr, vf-f, sbang-sbrndd, p srt, tr pyr nod, tr carb mat, p vis por, n shw

CLAYSTONE: olv bk, dsky yelsh brn-dsky brn, brn gy, sft-disp, amor, tr carb mat



CLAYSTONE: dk gy,brnsh gy,dsky  
brn,sbblky-blky,frm-mod hd,disp i/p,tr  
carb mat,tr glauc

Survey @ 1510.17m  
Dev 1.39deg  
Azi 334.24deg  
TVD 1510.04m

SILTSTONE: dk gy,grnsh blk,grnsh  
blk lam,sbblky-blky,frm-hd,tr carb mat,  
tr glauc

SILTSTONE: dk gy,grnsh blk,grnsh  
blk lam,sbblky-blky,frm-hd,rr glauc  
nod,tr carb mat,tr calc,tr vf qtz gr,

Survey @ 1568.32m  
Dev 1.65deg  
Azi 336.38deg  
TVD 1568.17m

CLAYSTONE: brnsh gy,mod brn,dsky  
brn,amor,sft,disp i/p,tr carb mat,tr  
glauc

SILTSTONE: dk gy-gysh blk,olv blk,  
dsky brn,olv blk lam,sbblky-blky,frm-  
hd,rr glauc nod,tr carb mat,tr foss  
frags,tr vf qtz gr,tr pyr nod

W 1.25sg V 78 PV/YP 25/25



Gels 4/6 F 3.7 FC 1  
Sol 11 Sd 1.25 pH 11  
Cl 45k Ca 40mg/l KCl 5.8%

WOB 8.7-17.2mt  
RPM 153-177  
GPM 631-720  
SPP 2310-2997psi

WOB 5.9-15mt  
RPM 148-183  
GPM 703-726  
SPP 2798-3023psi

WOB 5.6-10.9mt  
RPM 175-194  
GPM 695-719  
SPP 2785-2936psi

1650

1700

1750

Carbide gas = 0.29/0.7%

SILTY CLAYSTONE:dsky brn,brnsh  
blk,brnsh gy,sft,disp,amor,tr carb mat

Carbide check @ 1684m  
Theo strks = 7243  
Actl strks = 7320  
Avg Hole Size = 12.4"

SILTY CLAYSTONE:dsky brn,brnsh  
blk,brnsh gy,sft,amor,tr carb mat,,tr  
glauc nod,tr foss frag,microlam,tr xln  
calct vn

