



Reno, NV
505-228-3132

USNGPO Well# 61-36

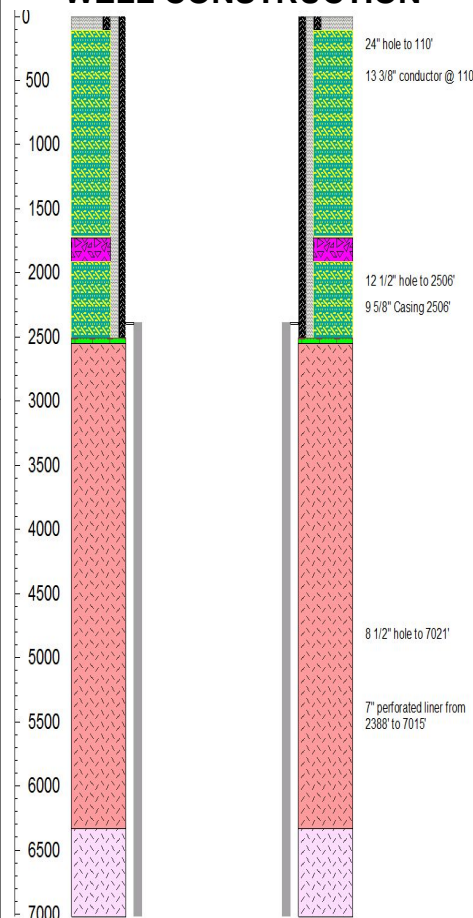
ABBREVIATIONS

NB	New Bit
RRB	Re-run Bit
CB	Core Bit
WOB	Weight on Bit
RPM	Revolutions per Minute
PP	Pump Pressure
SPM	Strokes per Minute
POOH	Pull Out of Hole
WR	Wiper Run
LAT	Logged After Trip
LC	Lost Circulation
NR	No Returns

Lithology Symbols

	Clay		Quartzite
	Claystone & Siltstone		Granite
	Sand & Sandstone		Granodiorite
	Dolostone & Limestone		Qtz Diorite
	Chert		Andesite
	Tuff		Dacite
	Rhyolite		Basalt
	Felsite		Volcaniclastic

WELL CONSTRUCTION



COMPANY: U.S. Navy Geothermal Program Office
 WELL NAME: 61-36
 FIELD: Fallon NAS
 COUNTY/STATE: Churchill/NV
 LOCATION: UTM 355764, TM 4360922
 ELEVATION/KB: 3929' + 20' KB
 API NUMBER:
 COMPANY REP: Dennis McGrew
 SR. CO. GEOLOGIST: Andrew Tiedeman
 CONTRACTOR/RIG: Barbour Well/#117
 SPUD DATE: 10/22/2013
 LOGGING DATES: 10/22/2013 to 11/21/2013
 LOGGED DEPTHS: 110' to 7021'
 LOGGING GEOLOGISTS:
 MUDLOGGERS: Jeff Lewis / Richard Taylor

DRILL RATE ft/hr
WOB
PUMP PRESSURE

200 ROP 0
 50 WOB 0
 2000 Press 0

LITHOLOGY

Depth

SECONDARY MINERALS

Fractures

Quartz
Pyrite
Chlorite
Other
Calcite
Epidote
Hematite

TEMPERATURE

50 Temp Out 250
 50 Temp IN 250

PIT TOTAL

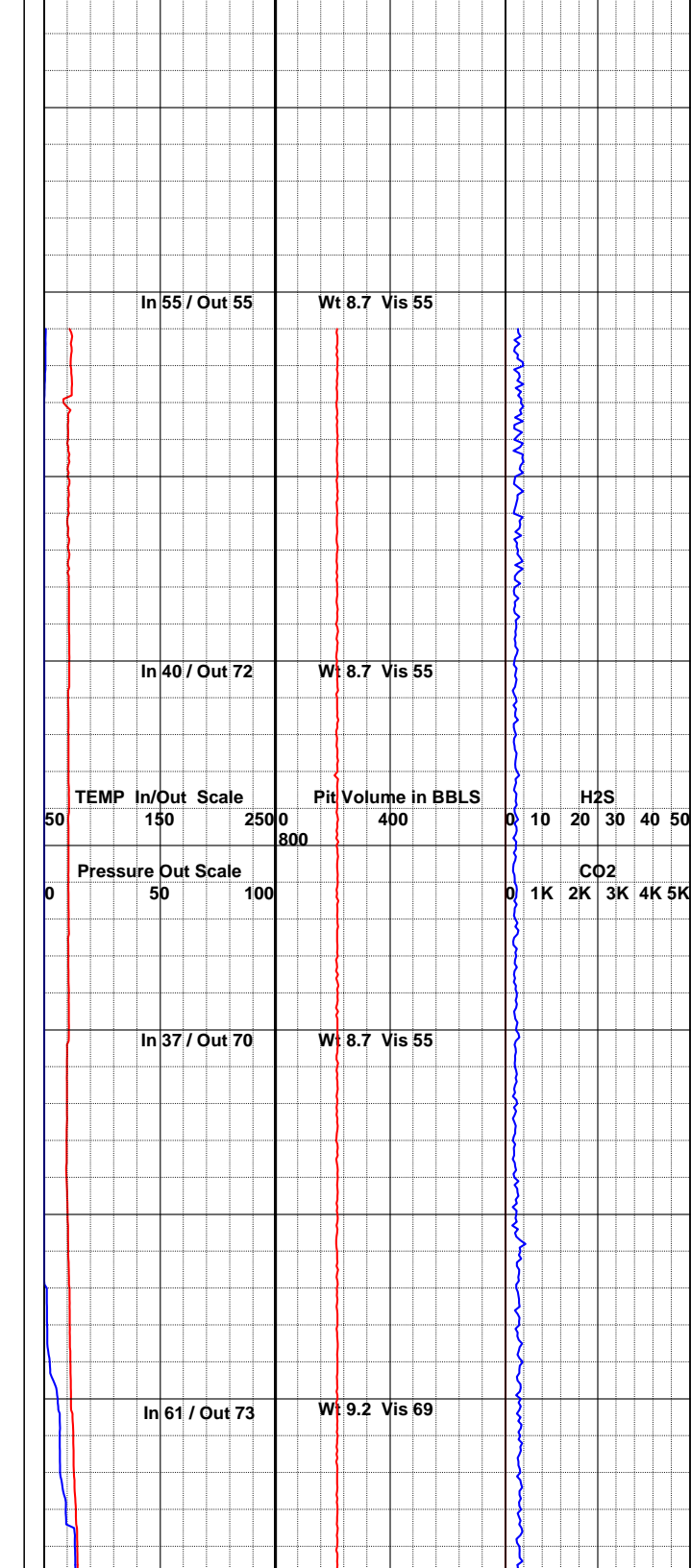
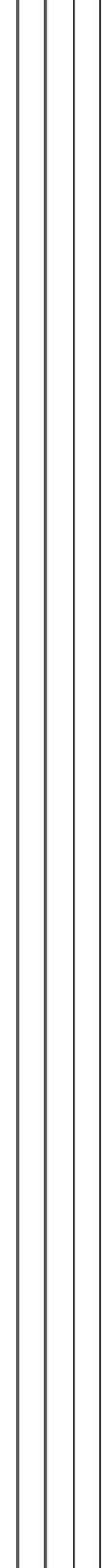
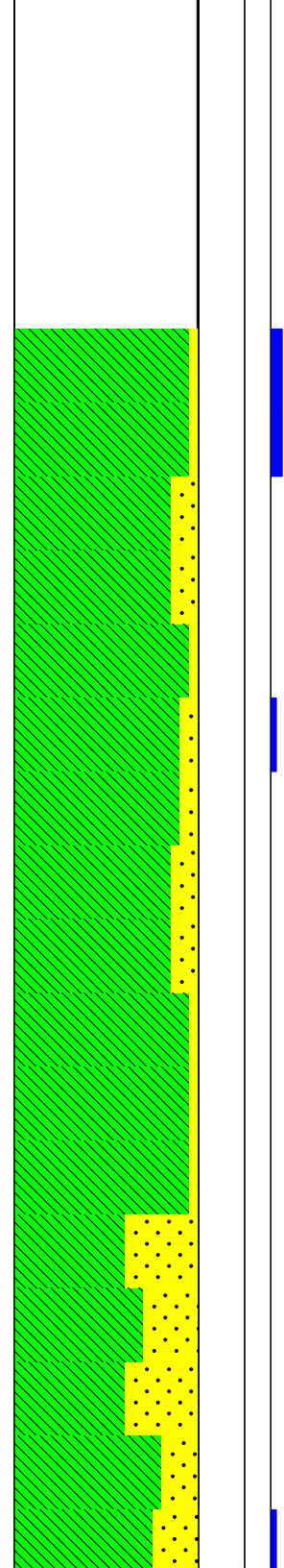
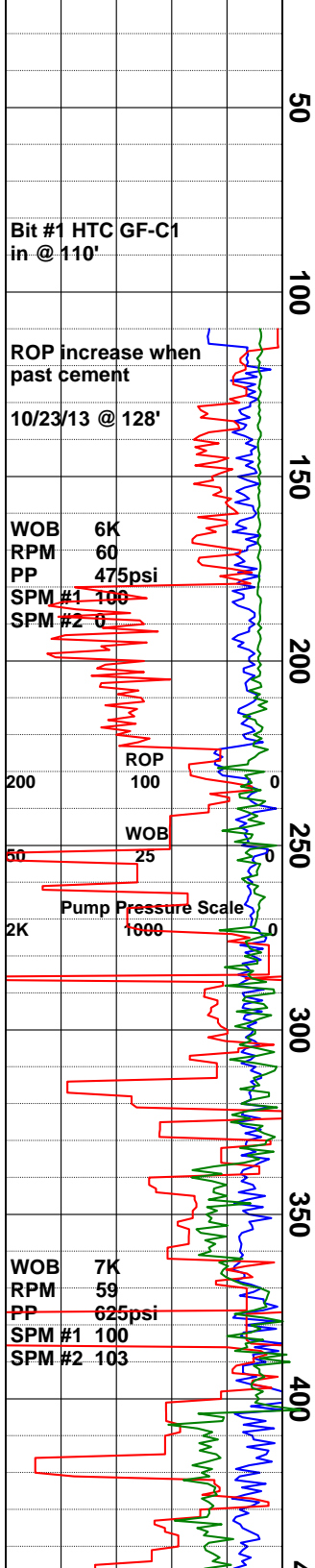
0 Pit Total 800

GASES

0 H2S ppm 50
 0 CO2 ppm 5000

DESCRIPTIONS

NOTE: Commence drilling on 10/22/2013 @ 10:35hrs. Hole was previously drilled with 24"



19.53m/s. Hole was previously drilled with 24
bit to 110' and 13 3/8" conductor was set to
110'. Drilled out of conductor with 12 1/4" bit.
All depths are referenced from 20' kelly
bushing. Hole depth is determined by driller's
pipe tally.

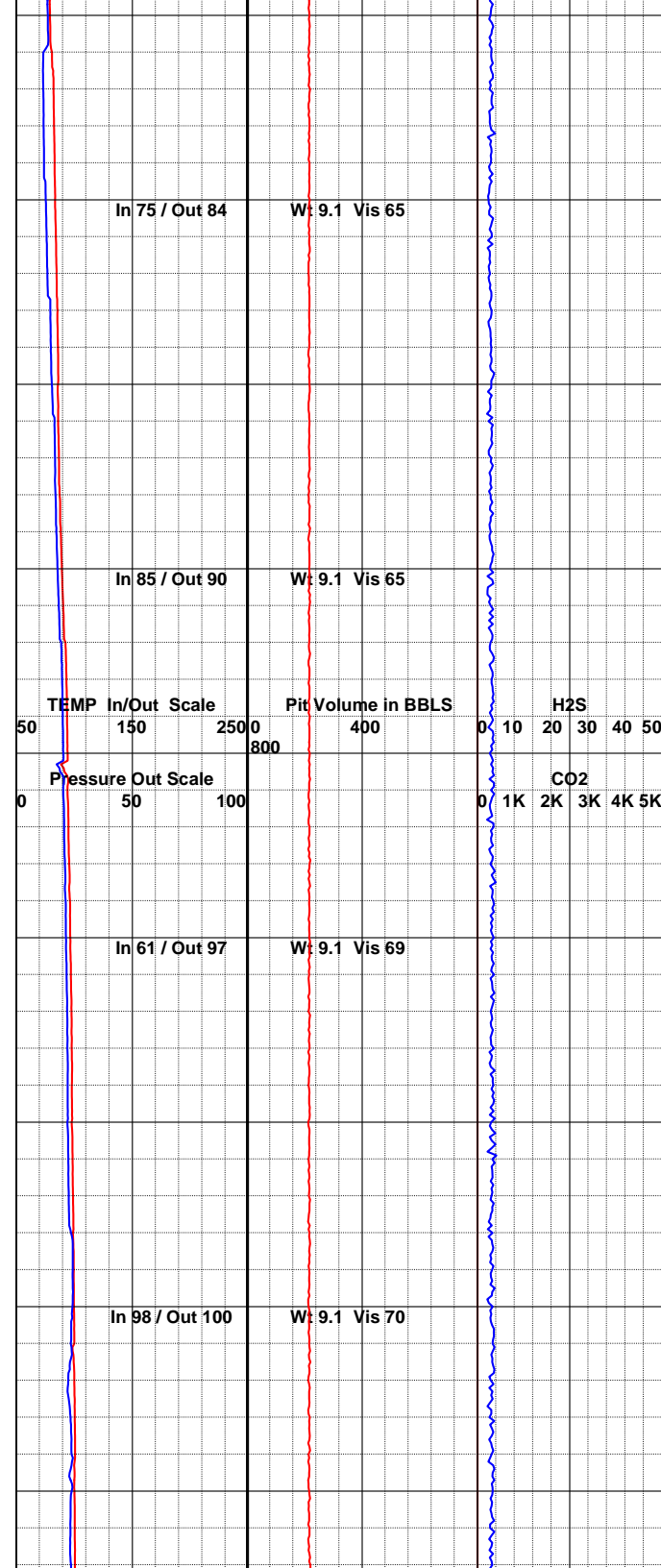
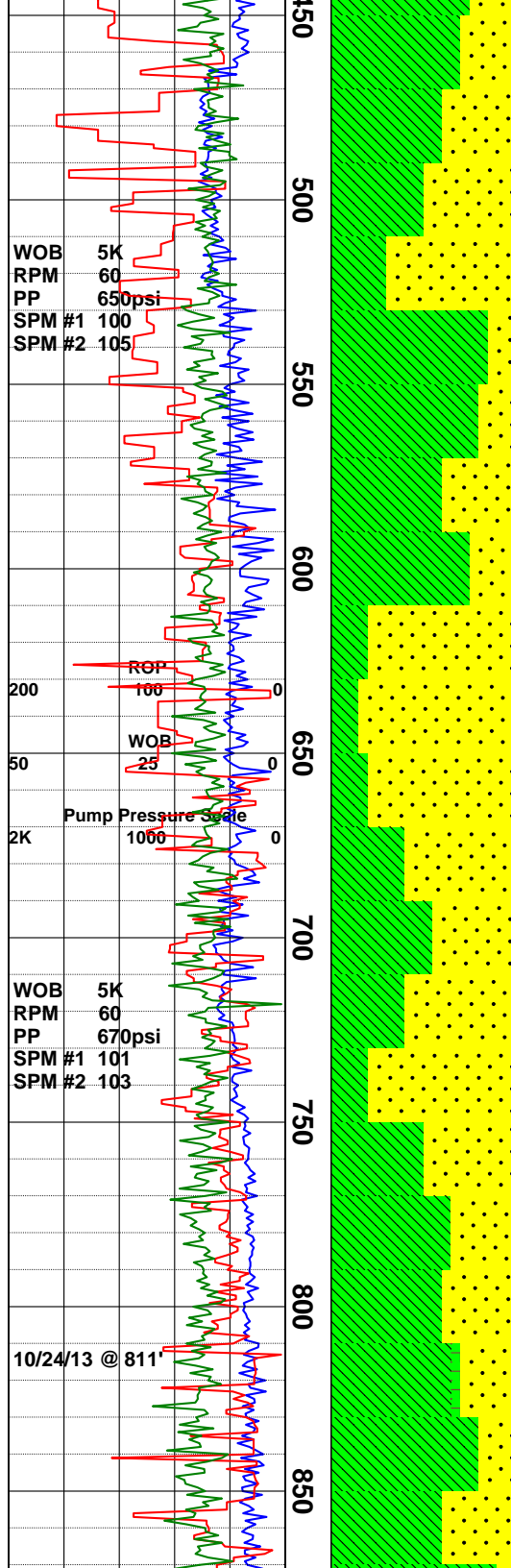
NOTE: Temp in and out @ 100' while running
in hole with no circulation.

Clay: pl gry-drk grn, v sft, tacky, silty, v
cohes/adhes, com fn-crse prly srted multicol
snd grs, tr sbrnd crse qtz grs, sl-non calc.

Clay: dk gry-dk grn, sft, cohes/adhes, com fn
sand sz subrnd clasts decrs f/ 290', v wk rxn
w/ HCl, non sol.

Clay: dk gry-dk grn, sft, cohes/adhes, com
prly srted sand w/ subrnd-subang clasts incr f/
350', v wk rxn w/ HCl, non sol.

Sandy Clay: Clay is pred m gry-grnsh gry, occ
lt gry, sft, gd cohes/adhes, mod-non sol,



Sandy Clay: Clay is dom m gry, bcmng blush-grnsh gry, gd cohes, mod adhes, gd sol in 510' & 530' smpls, non-sl sol in 550'smpl, up to 50% Sand in 490' & 510' smpls, dcrsng w depth, Sand is dom m-dk grn, lsr clr, occ dk gry, blk, dom lwr m-u fn grain, occ crs, sbrnd, sl calcic.

Sandy Clay: Clay is pred m grn, grysh grn, occ m gry, sl-gd adhes, bcmng weakly indurated Claystone ip, varying sol from non-well, Sand is gen as above, bcmng > 80% from 630' smpl with som v crs grains, v sl-mod calcic.

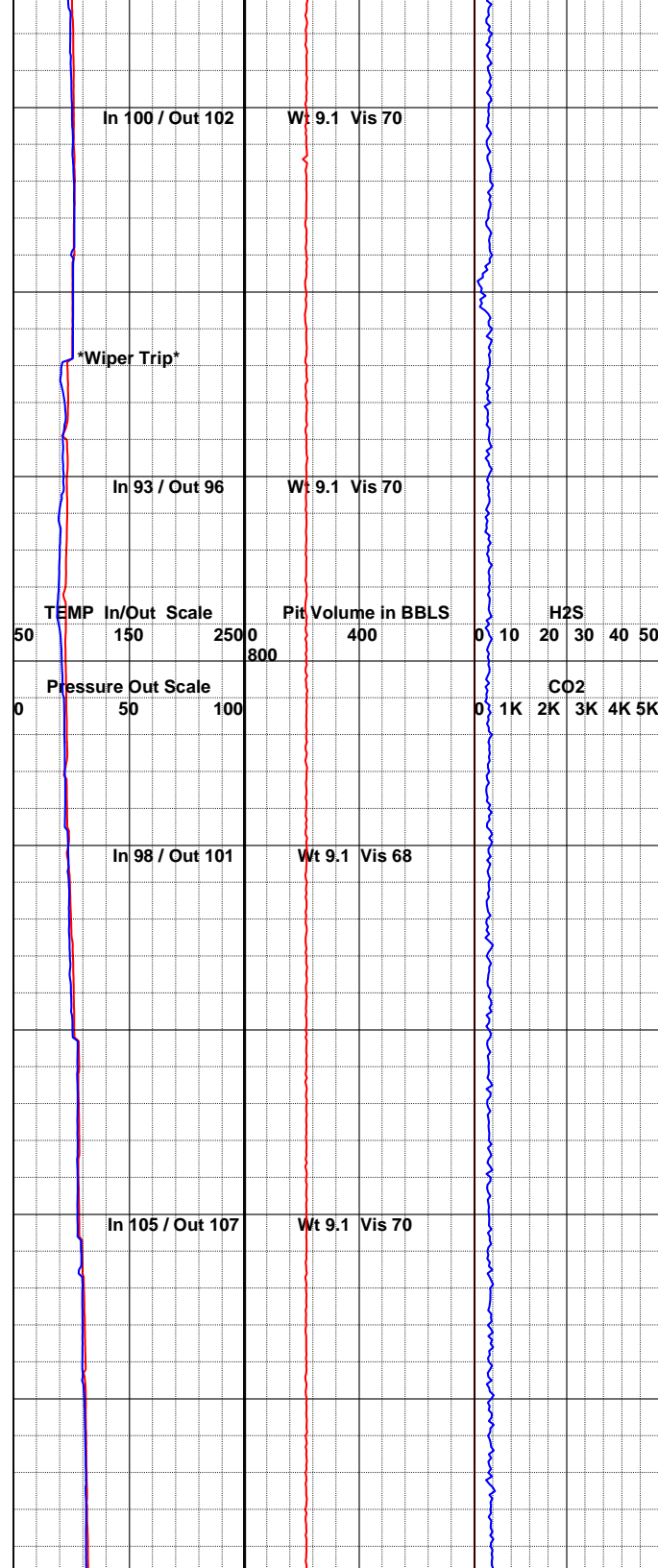
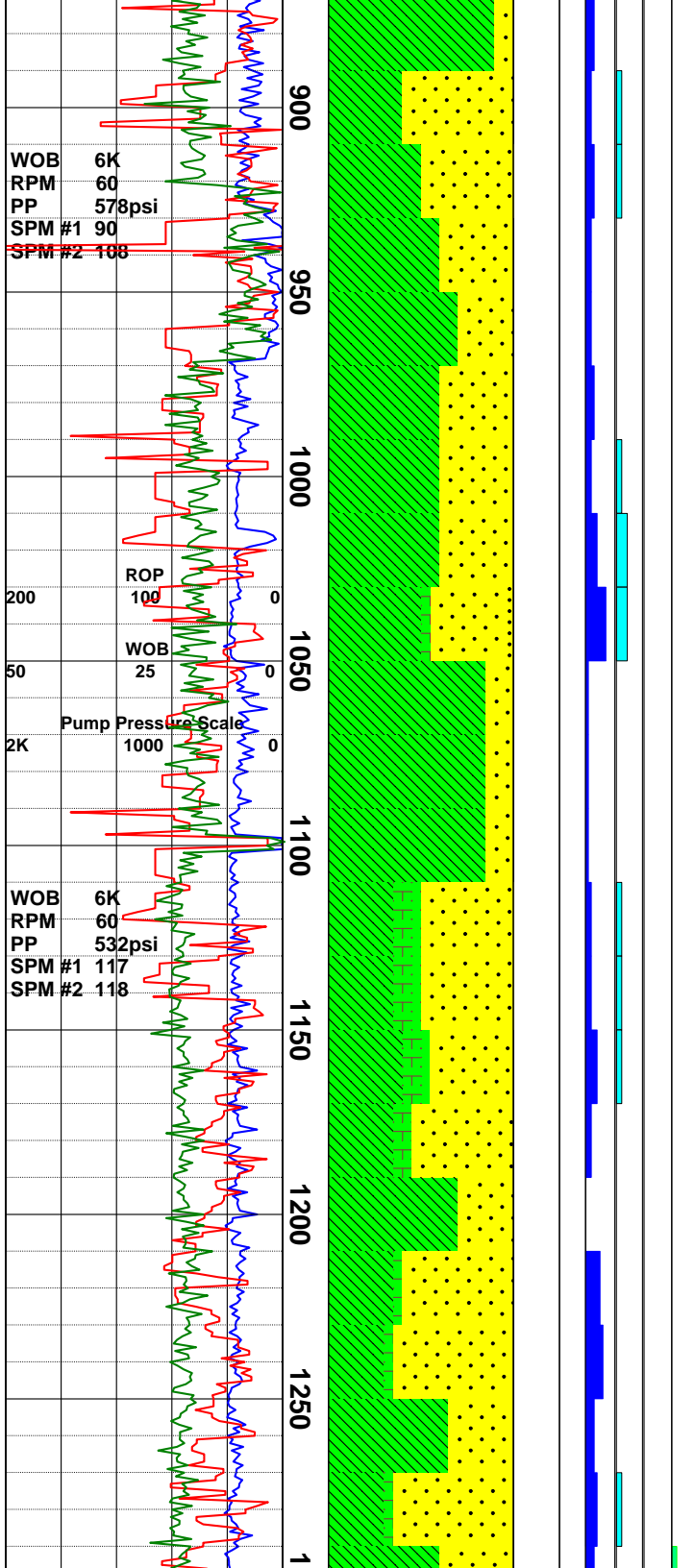
Survey @ 651' = 3.5°

Sandy Clay: Sand is pred clr, lt-m jade grn, lsr multi colored, dom sbrnd-rndd, com lwr m-u crs grain, occ rdsh scoriaceous & dk gry-blk ang volcanic frags, rr clr anhed qtz xls to 4mm, Clay is cont grnsh gry-gry, mod-strong adhes/cohes, gd sol, bcmng mod-non sol w depth, rr sft grn nontronite, rr silvery blk biotite, non to slightly calcareous w rr tr wht-yelsh wht anhed calcite xls.

NOTE: Reposition Temp In probe @ 779'.

Survey @ 810' = 1.5°

Clay/Sand: dk grn, gry, sft-firm, cohes/adhes, com interbeds of prly srt fn coarse sand, com



com interbeds of prly srt fn-coarse sand, com hematite in interbeds, rr pyrite, rr ostracods f/ 830'-890', wk rxn w/ HCl.

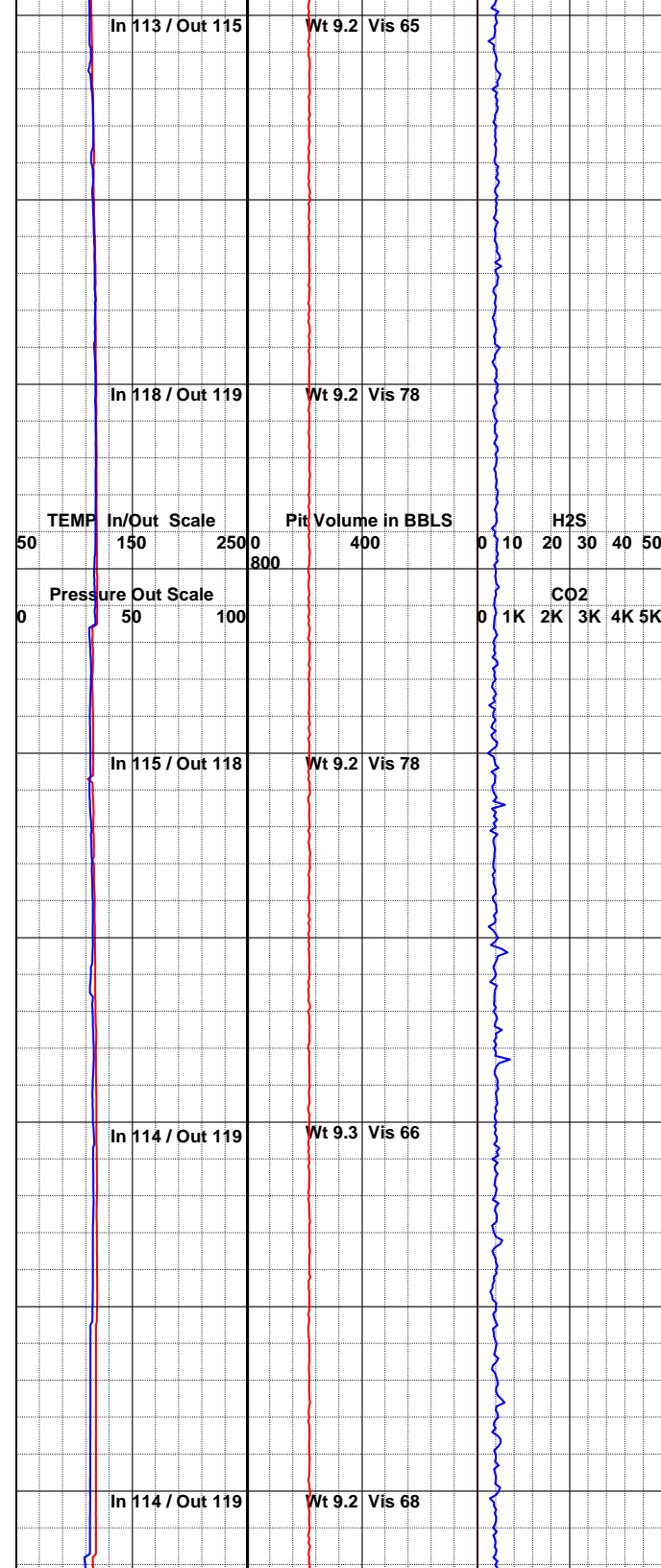
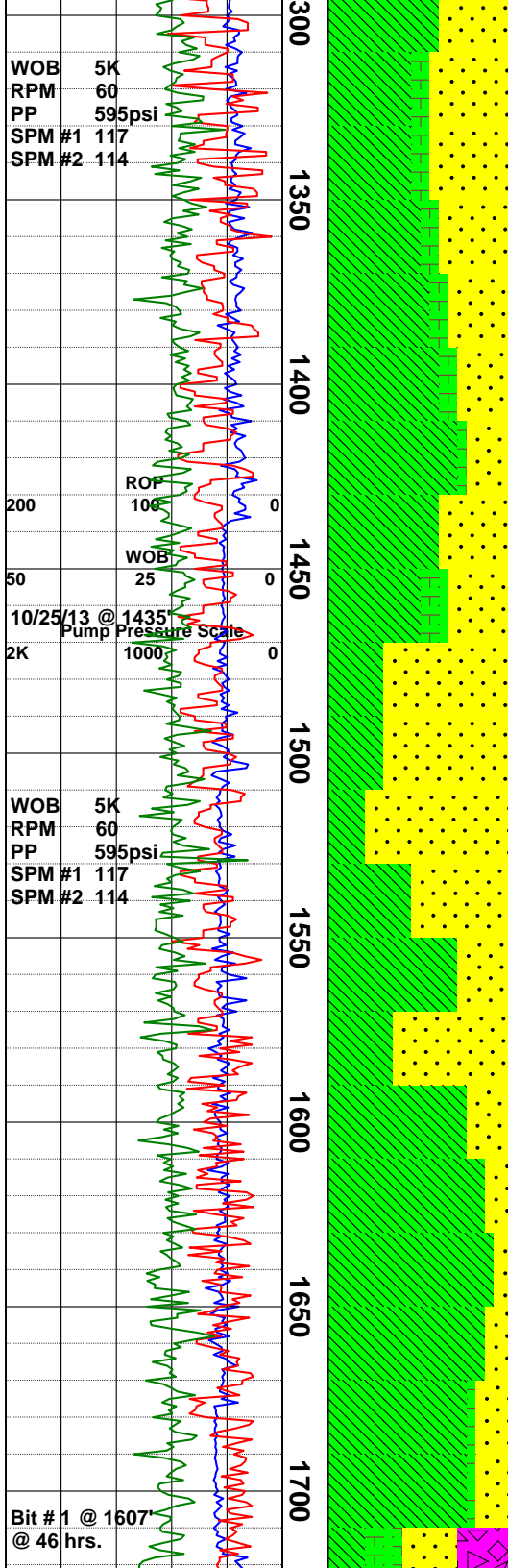
Clay/Sand: dk grn-gry, firm, cohes/adhes, com prly srt fn-coarse sand, rr hematite, rr pyrite, wk rxn w/ HCl, com indurated gry claystone f/1030'-1050'.

Clay/Sand: med-dk grn, sft, mushy, smooth-tacky, adhesive, sl-non cohes, med-crse gr sbrnd-rndd volcanic seds, occ pebbly sz clr qtz, gd tr slvry grn altd biot, gd tr ostracods, abdt @ 1050', tr aggr & fn dissem pyr, sl-gd rxn to HCl.

Sandy Clay/Claystone: Sand is pred clr, m-dk grn, dk gry, occ pnk, rdsh orng, poorly sorted, sbang-sbrndd overall, Clay is grn-grnsh gry, gry, ash wht ip in 1290' smpl, gen sticky, gd cohes/adhes, Claystone is mod indurated-sft, rr ostracodes, rr tr pyrite in 1110' & 1130' smpls, rr tr silvery blk biotite/mica, gd tr wht-yelsh wht anhed calcite xtls, gd-non rxn to HCL.

Survey @ 1214' = 0.5°

Sandy Clay: Clay is grnsh gry-lt gry, m-dk grn cast overall, mushy-mod frm, sl-gd cohes/adhes, sol ip, sand is dom grn, clr, lsr multi hued, predom sbrnd-rnd, dom u med-lwr crs grain, com-abdt ostracodes in 1230' &



Sandy Clay/Claystone: Clay is lt-m gry, bcmng notable darker in the 1390' smpl, gd cohes/adhes, mod sol, sft-sl firm, claystone is pred lt gry, lsr grnsh-blush gry, rr emerald grn, frm-hd, sand is multi colored, dom grn, gry, clr, occ orng & pnk hues, rr blk, pred subrnd-rnd, lwr m-lwr crse grain, poorly srted, tr-com ostracods, tr hematite, tr silvery blk biotite mica, rr tr pyrite, strngly-slgthy calcareous.

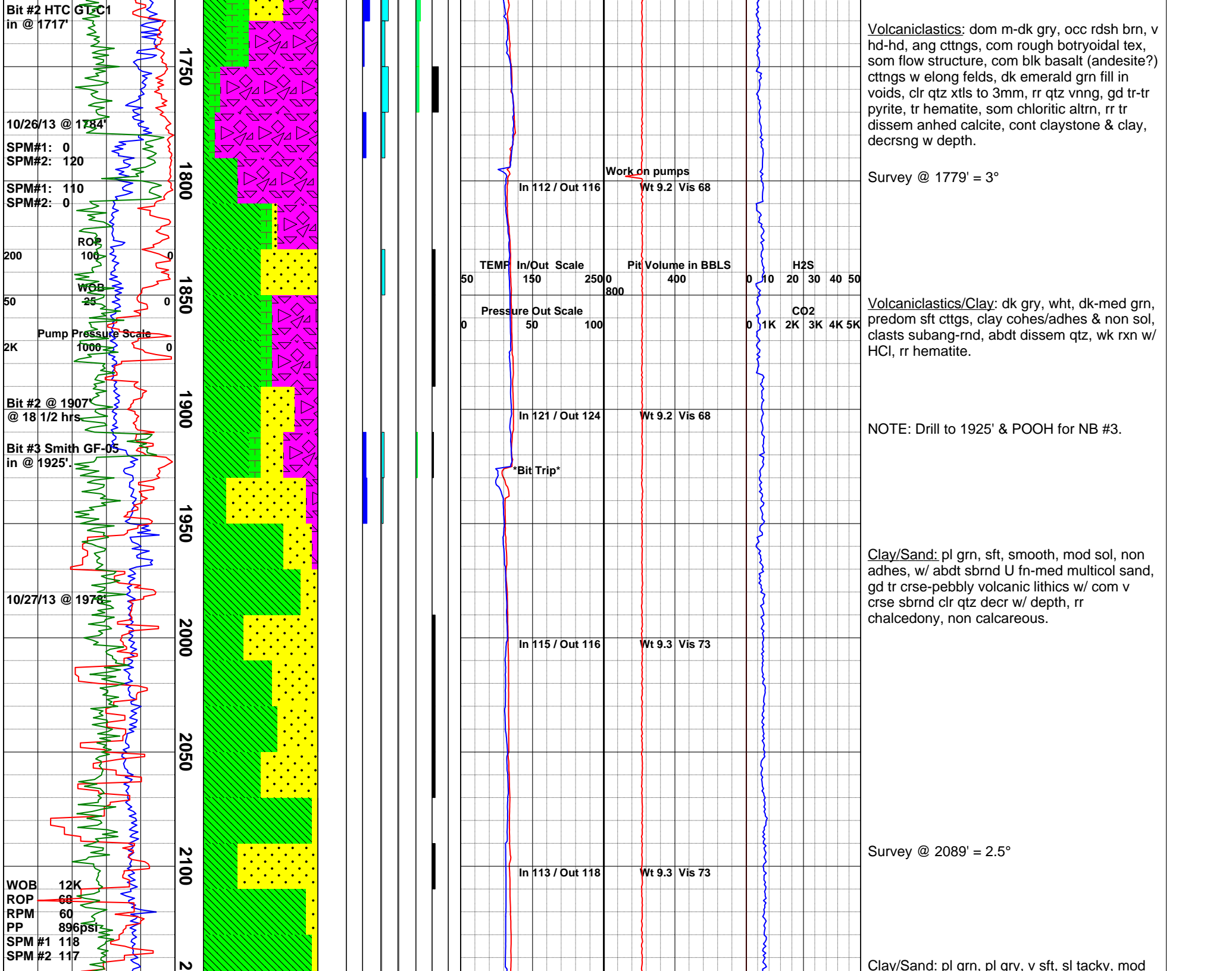
Survey @ 1435' = 3.5°

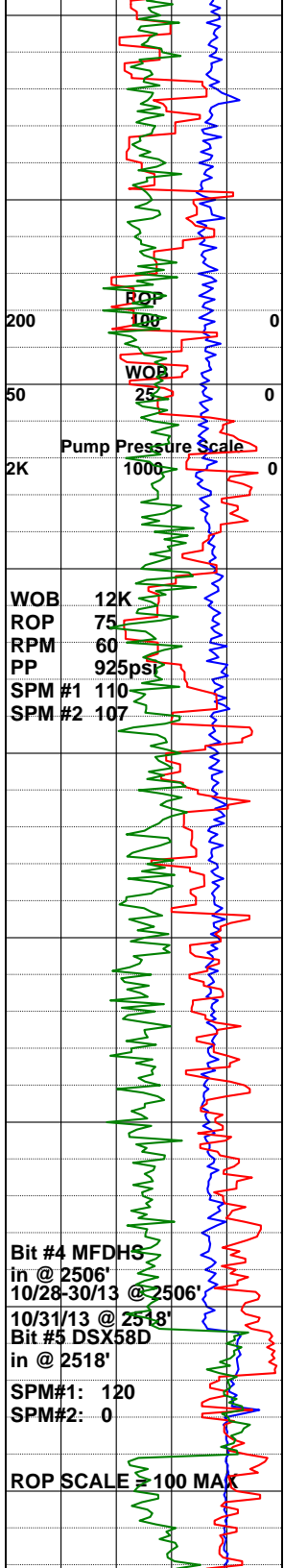
Clay/Sand: grn, gry, prly srted, med-fn sand, subrnd, abdt tan ostracods @ 1430' & 1530', tr pyrite, com hematite in sand interbeds, wk-mod rxn w/ HCl.

Clay/Sand: dk grn, dk gry, mod srted, cohes/adhes, subrnd fn sand, rr-com hematite, tr pyrite, wk rxn w/ HCl.

Survey @ 1686' = 3.0°

NOTE: Drill to 1717' & POOH for NB #2.



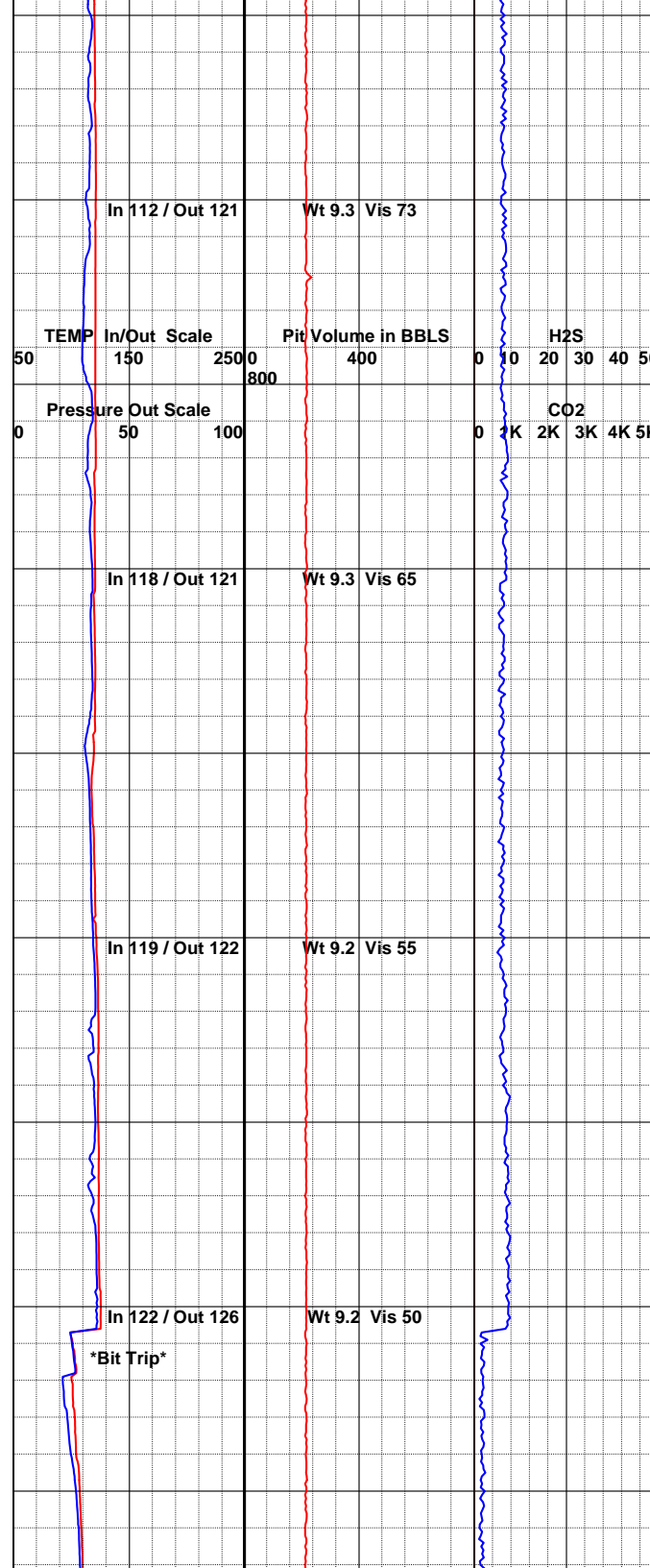
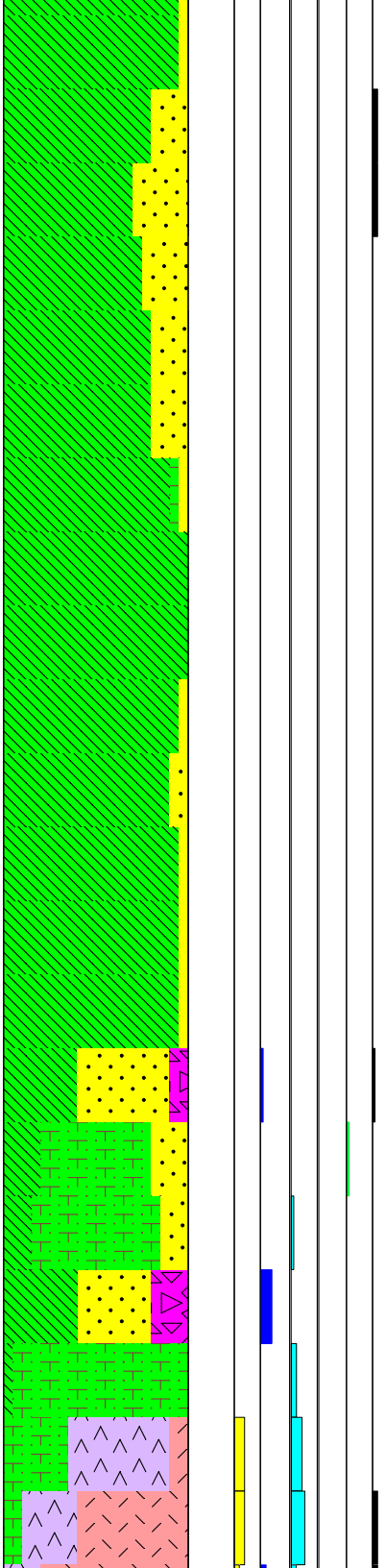


150
2200
2250
2300
2350
2400
2450
2500
2550

ROP 108
WOB 25
Pump Pressure Scale
2K 1000 0
WOB 12K
ROP 75
RPM 60
PP 925psi
SPM #1 110
SPM #2 107

Bit #4 MFDH3
in @ 2506'
10/28-30/13 @ 2506'
10/31/13 @ 2518'
Bit #5 DSX58D
in @ 2518'
SPM#1: 120
SPM#2: 0

ROP SCALE = 100 MAX



In 112 / Out 121 Wt 9.3 Vis 73

TEMP In/Out Scale Pit Volume in BBLS H2S
50 150 250 800 0 10 20 30 40 50
Pressure Out Scale
0 50 100 0 K 2K 3K 4K 5K

In 118 / Out 121 Wt 9.3 Vis 65

In 119 / Out 122 Wt 9.2 Vis 55

In 122 / Out 126 Wt 9.2 Vis 50

Bit Trip

adhes, sl-non sol, com med snd grs, com v crse clr qtz grs, com scatt fn brnzy/blk biot flakes, tr hem stng, non calc.

Clay: pl grnsh gry changing to med gry f/ 2290', clumpy, frm, indur, non sol, adhes/cohes, decr sand (<5%), mntr bluish grn clystn, non calcareous.

Survey @ 2338' = 1.5°

Clay: lt-med gry, clumpy, frm, indurated, non sol, v adhes/cohes, tr sand clasts, bluish grn clystn, wk rxn w/ HCl.

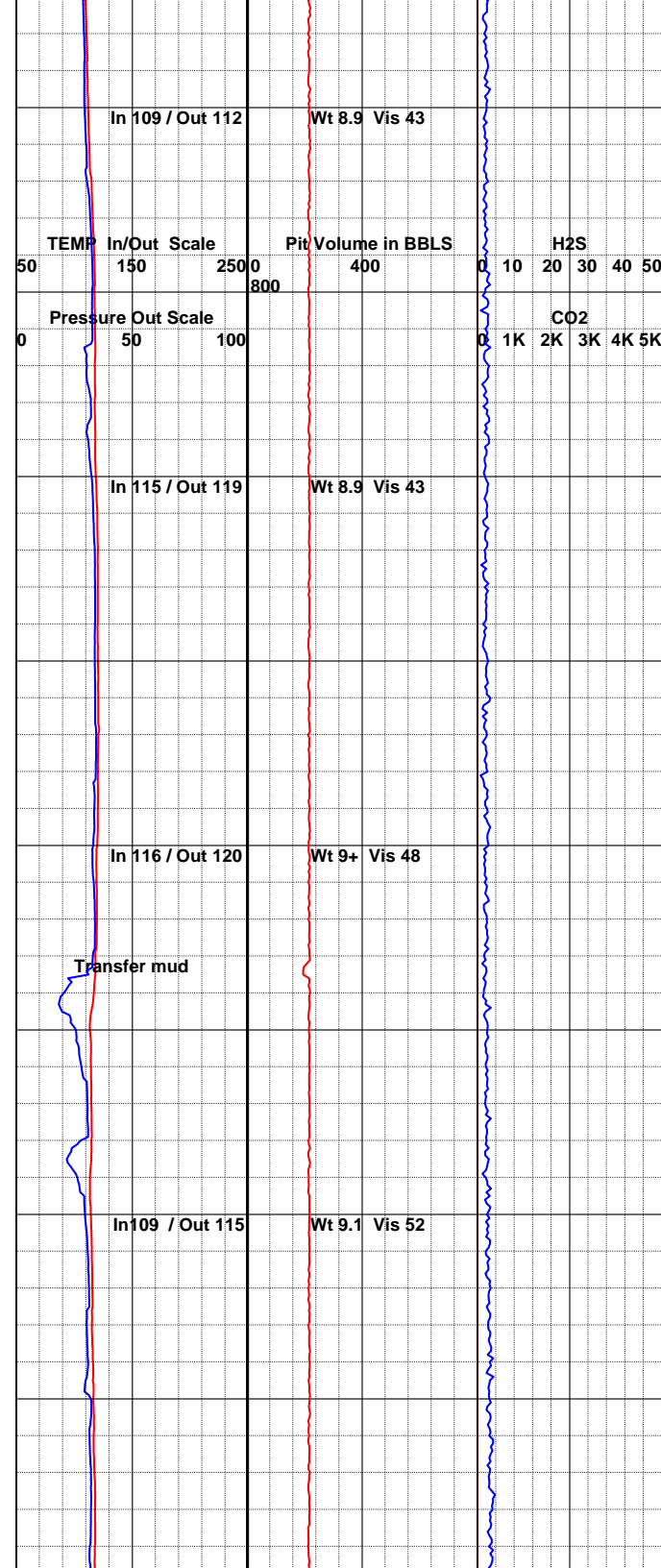
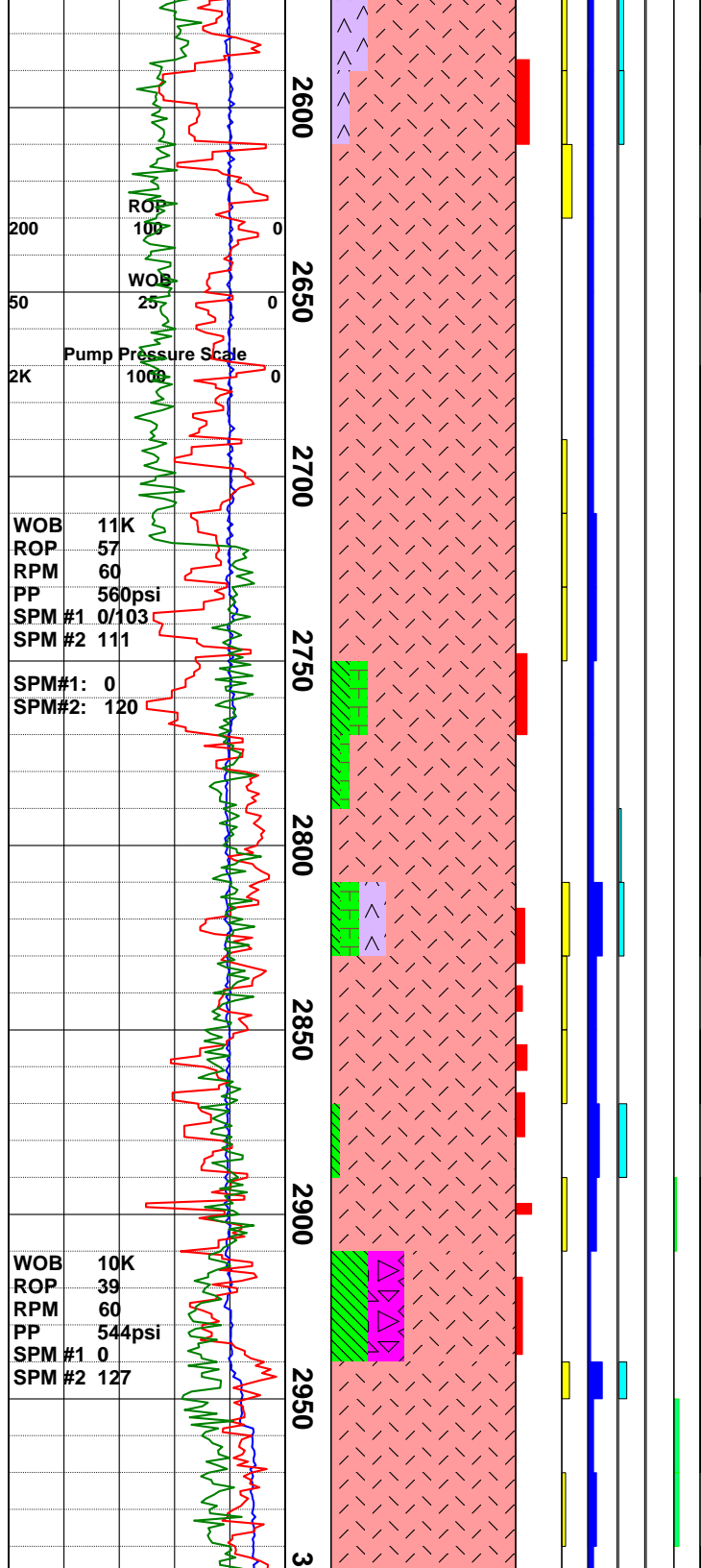
Claystone: lt-m gry, m tan, friable to firm, com v sandy, blocky ctngs, sand is pred m gr size, rndd-well rndd overall, clay is m gry, gd cohes, sl adhes, rr tr pyrite in 2490' smpl, sl calcic in 2450' smpl.

NOTE: Drilled 12 1/4" hole to 2506' and set 9 5/8" casing to 2506'. Survey @ 2506' = 2.2°.

NOTE: Drilled to 2518' and POOH for new bit #4.

Siltstone: tan-med brn, w/ blk, wht, & orng incl's, sbang-sbrnd, frm-sl hd, silicic appr, tr aggr pyr, non calcareous.

Tuff/Andesite: bluish arn. med-pl arv. v frm-



fria, sbang-sbrnd, mottled appr, com pl gry spkling, dom ashy, tr lithics, rr xls, med-dk gry vesic Andesite w/ Fe ox, mod hd, sbang, tr amygd & lse vug fill, rr plag phenos, tr elong microlites, gd tr aggr pyr, tr 2ndy qtz, non-sl calc.

Survey @ 2617' = 1.0°

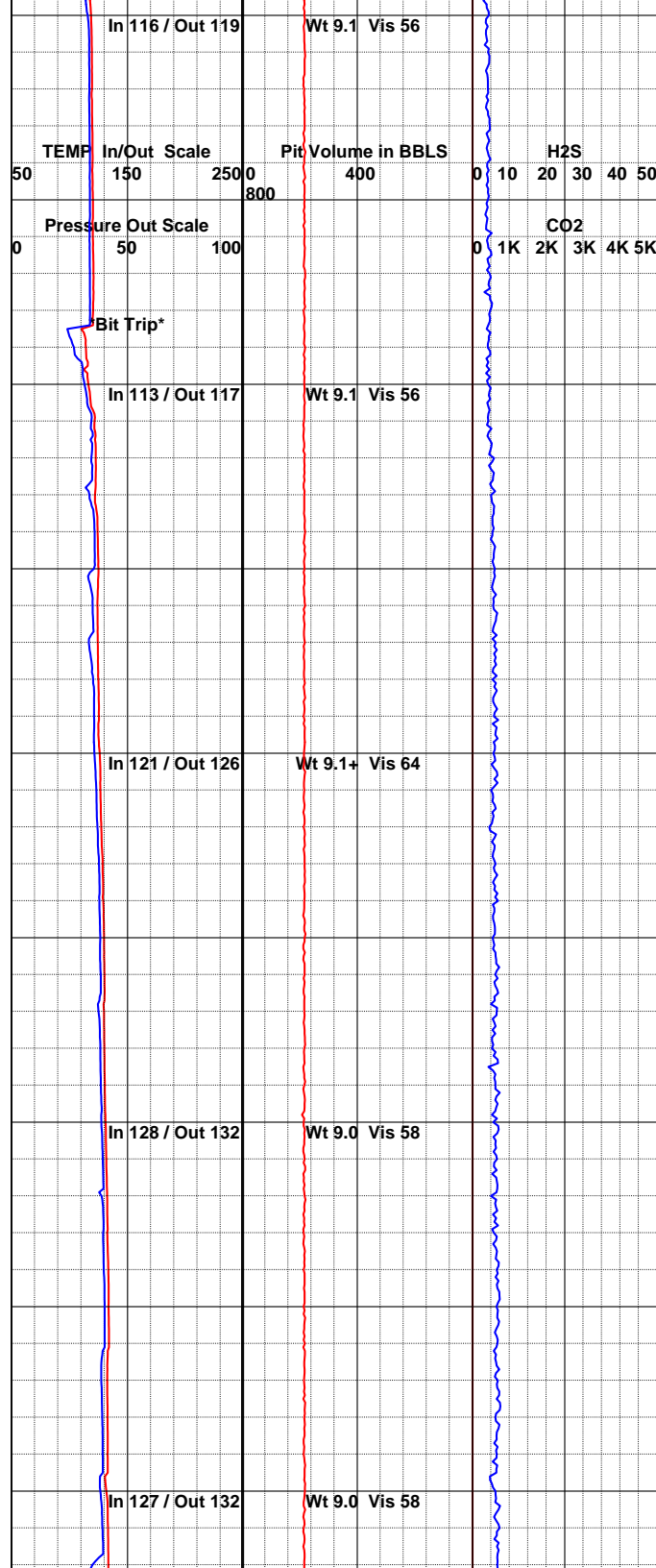
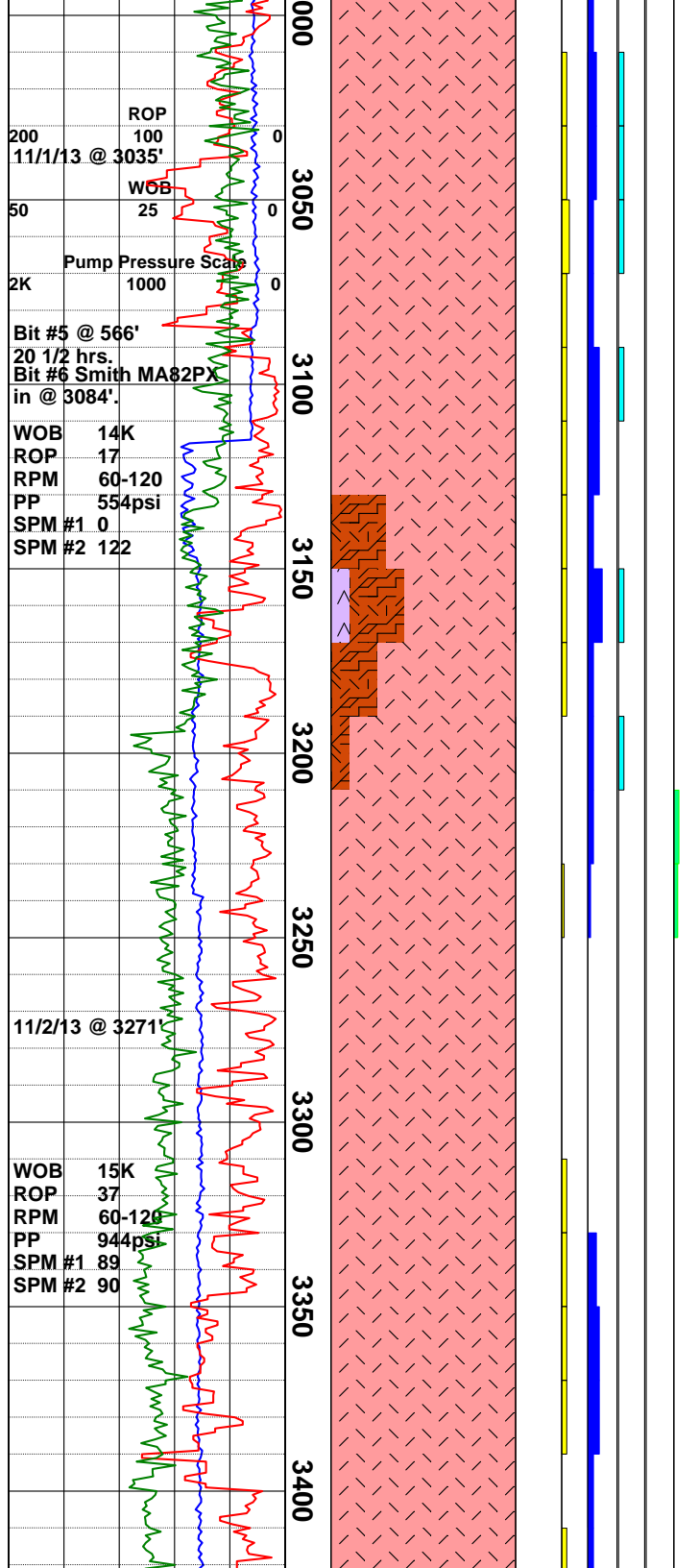
Andesite: med-dk gry, rr brn, ang-blocky, aphan-rr porphyr, microxln, grainy, sl vesic, com dk grn vug fill, rr zeolite, tr 2ndry qtz, rr chalcedony, tr hem stng incr @ 2750' w/ tr scoria, tr inststl & incr lse calcite.

Survey @ 2768' = 2.5°

Andesite: pred dk-m gry, occ dk brn, rr grnsh cast, comt sft dull emerald grn nontronite w com waxy tex, notable incrs in botryoidal chalcedony in 2830' smpl, dom wht/clr, com blu, grn, & gry hues, lsr yellow, tr pyrite, tr hematite, strng rxn to HCL in 2830' smpl due to incrs in lse calcite xls.

Survey @ 2926' = 3°

Andesite: m-dk gry, m brn, bcmng pred grn-grnsh gry in 2970' smpl, v hd-hd, porphyritic-aphanitic, com elong blk inclnsns, v gd tr aggregate anhed-sbhed pyrite on frac srfs & dissem in 2950' smpl, gd tr qtz vnng & loose in smpls, > 2mm, sl-mod calcareous, up to 20% clay & volcanic seds f /2910'-2940'.



Andesite: dom med gry, occ grysh brn, aphan, microIn, vitreous, sbang-sbrnd, tr dull yelsh brn limonite, tr aggr & fn dissem pyr, tr 2ndry qtz, gd tr Fe ox, abdt @ 3090'.

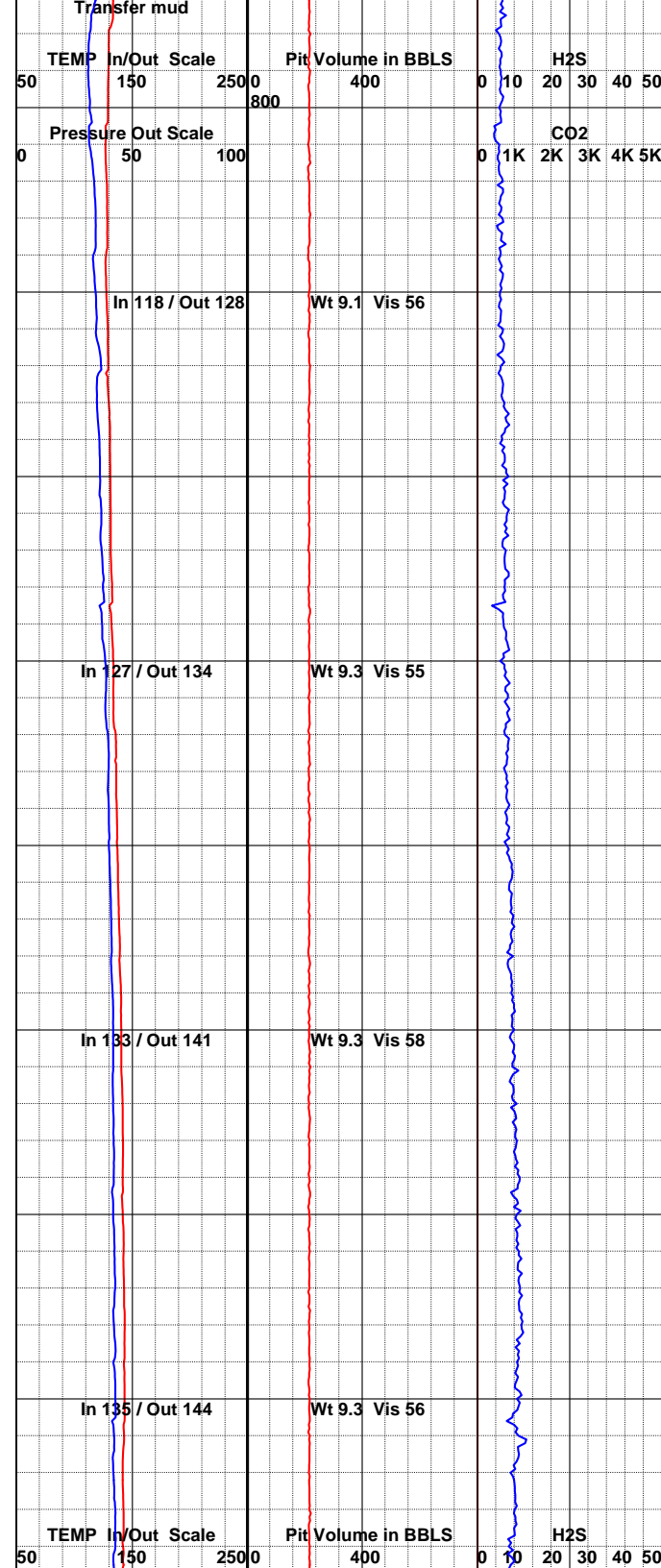
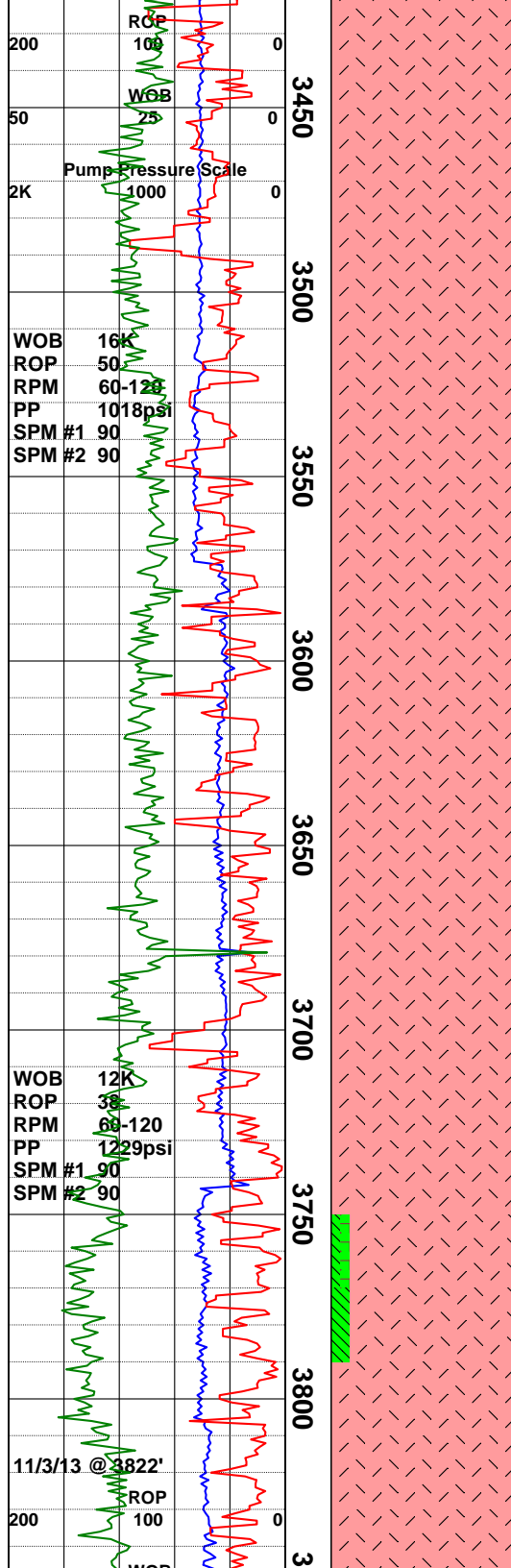
NOTE: Drill to 3084' & POOH for new bit #6.

Andesite: pred dk gry, hd, porphyritic-aphanitic, scoriaceous ip, bcmng up to 30% brt rdsh orng-rdsh brn scoria, com sft grn mnrl in vugs, weathered appr, pos top of flow, rr pale root beer brn & lsr yellow tuff w wht spkng as inclnsns, tr 2ndry qtz & hematite, rr tr pyrite, sl-mod calc.

Survey @ 3238' = 2.5°

Andesite: med-dk gry, rddsh brn, ang-sbrnd, aphan-rr porphyr, grainy, rr sbtrnsclnt, com fn blk scatt biot, rr-tr mag, rr euhd hmbld, abdt microlites, gd tr 2ndry qtz, rr drusy @ 3330', incr Fe ox w/ scoriaceous ctngs f/ 3350-3390' w/ com lse anhd calc xls.

Survey @ 3395' = 3.0°



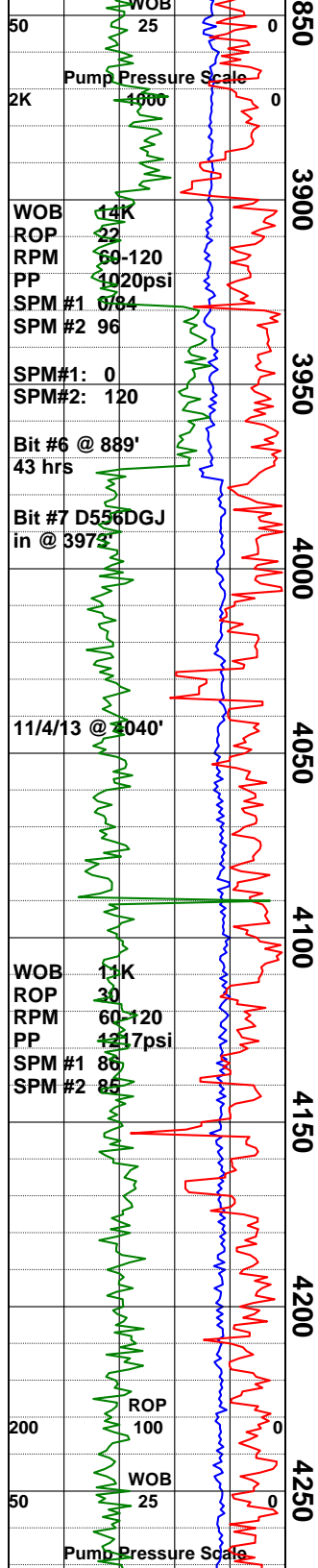
Andesite: dom dk gry, dk grn, dk brn, sbang-blocky, mod hd, microphyric, com clr felds/plag microlites, rr-tr v fn dissem mag, gd tr 2ndry qtz, rr botr chalcedony @ 3510', com-abdt lse dk grn nontronite, wk-sl rxn to HCl.

Survey @ 3570' = 2°

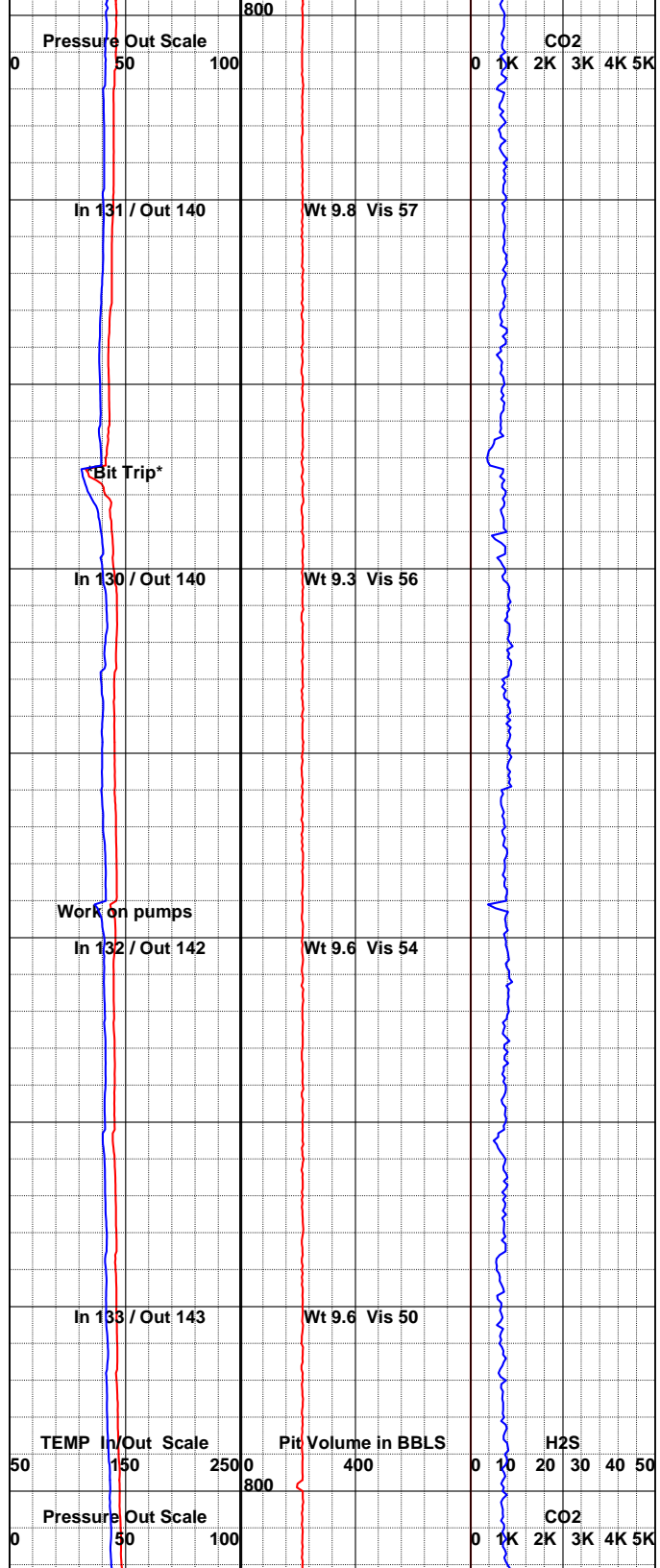
Andesite: dom dk-m gry, lsr grnsh gry, occ blk w/elong plag laths in grndms, v hd-hd, blocky-ang ctngs, com aphanitic w/micro-crypto xln grndms w/dk grn & blk inclns, som porphyritic ctngs, cont gd tr pale-cobalt blu chalcedony, rr silvery blk biotite, sl chloritic altn, tr m-dk grn mnrl, sft w/an earthy lstr, tr dissem wht & clr anhed calcite.

Andesite: dk-m gry, dk tan-m brn, hd, friable ip due to weathering (top of flow?), aphanitic-porphyritic, com microxln, up to 10% lt brn-pnksh brn Clay/Claystone in 3770' & 3790' smpls, gd tr qtz vnng & lse in smpls, sl-mod rxn to dilute HCl due to dissem anhed calcite xls.

Survey @ 3837' = 4.0°



850
3900
3950
4000
4050
4100
4150
4200
4250



Andesite: dk gry, med gry, brick rd, occ grnsh hue, ang-blocky, grainy, aphan, fria-hd, com microlites, com lse dk grn nontronite, gd tr 2ndry qtz, abdt Fe ox @ 3890-3910', wk calc.

NOTE: Drill to 3973' & POOH for new bit #7.

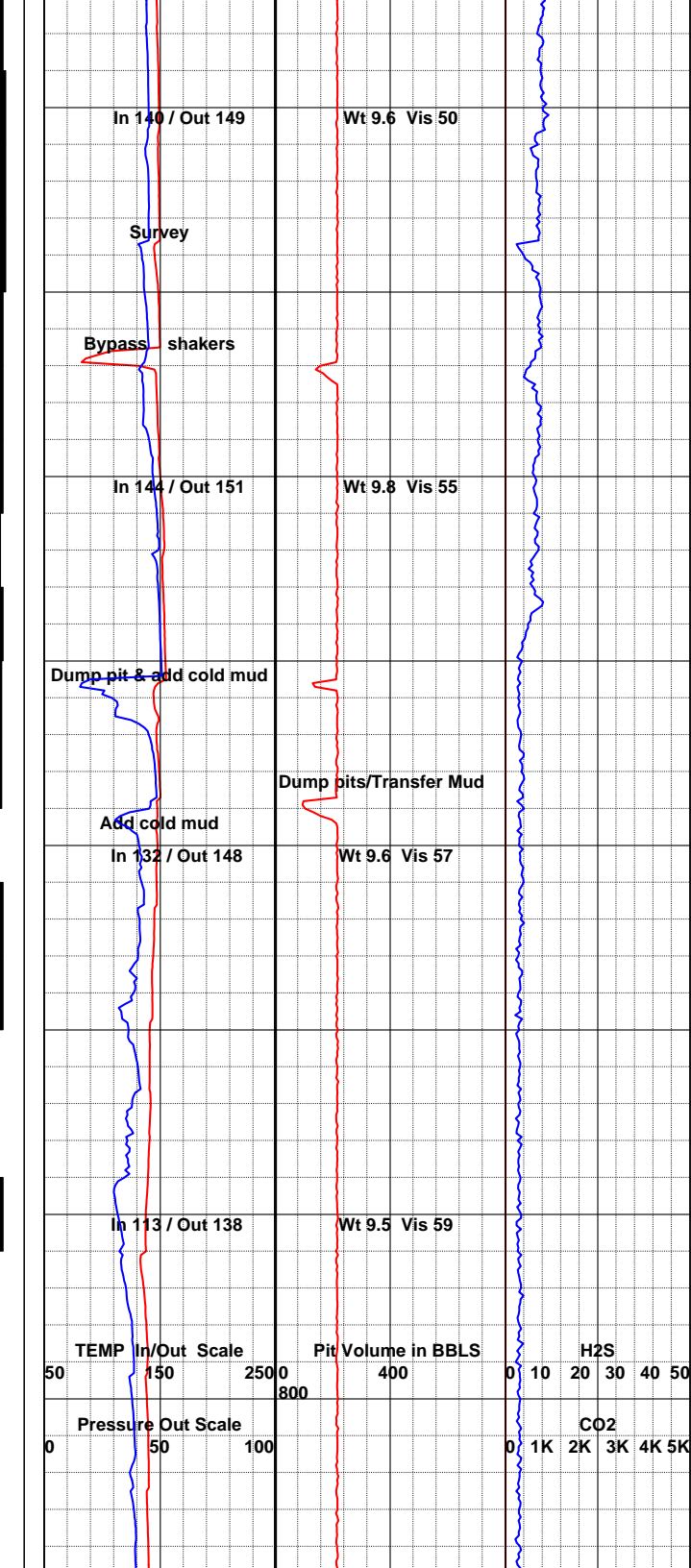
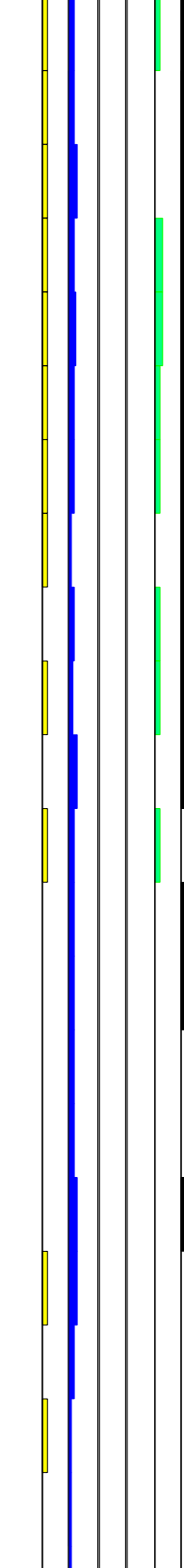
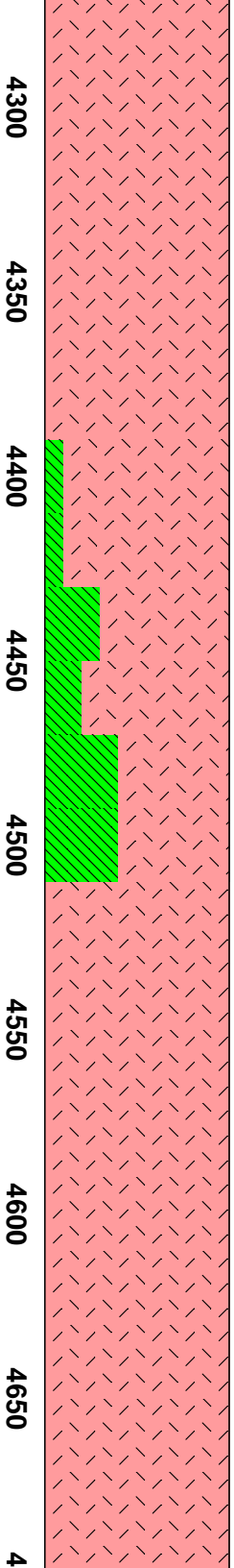
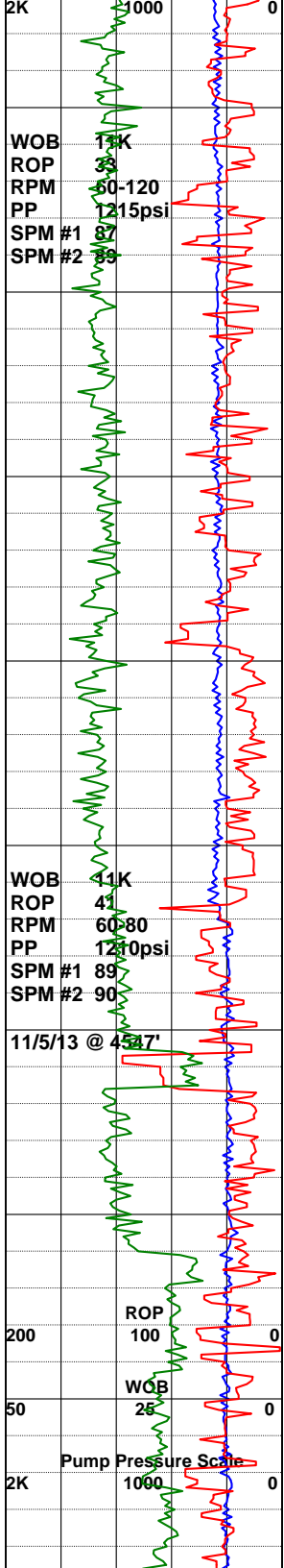
Andesite: med-dk gry, rddsh brn, brick rd, ang-blocky, microxln, v frm-hd, aphanitic-rr porphy, rr felds laths, tr-com felty microlites, rr euhd hrnblnd, rr mag, gd tr 2ndry qtz, sl calc.

Survey @ 4091' = 7.0°

Andesite: com Fe ox stng & altn of grndms f/ 4030-4050', gd tr 2ndry qtz/chalcedony f/ 4170-4110', tr hem, tr clr lse calc.

Andesite: dom dk gry, brn, rddsh brn, grnsh hue, com dk grn-olive grn nontronite lse & on frac sfcs, argil ip, v frm-hd, rr fria, com microlites w/ rr along plag laths.

Andesite: dk gry, dk rdsh brn, porphyritic, aphanitic ip, hd, blocky-rndd ctnngs, rr blk mafic spklnq, tr pnksh brn v sft & sol Clay.



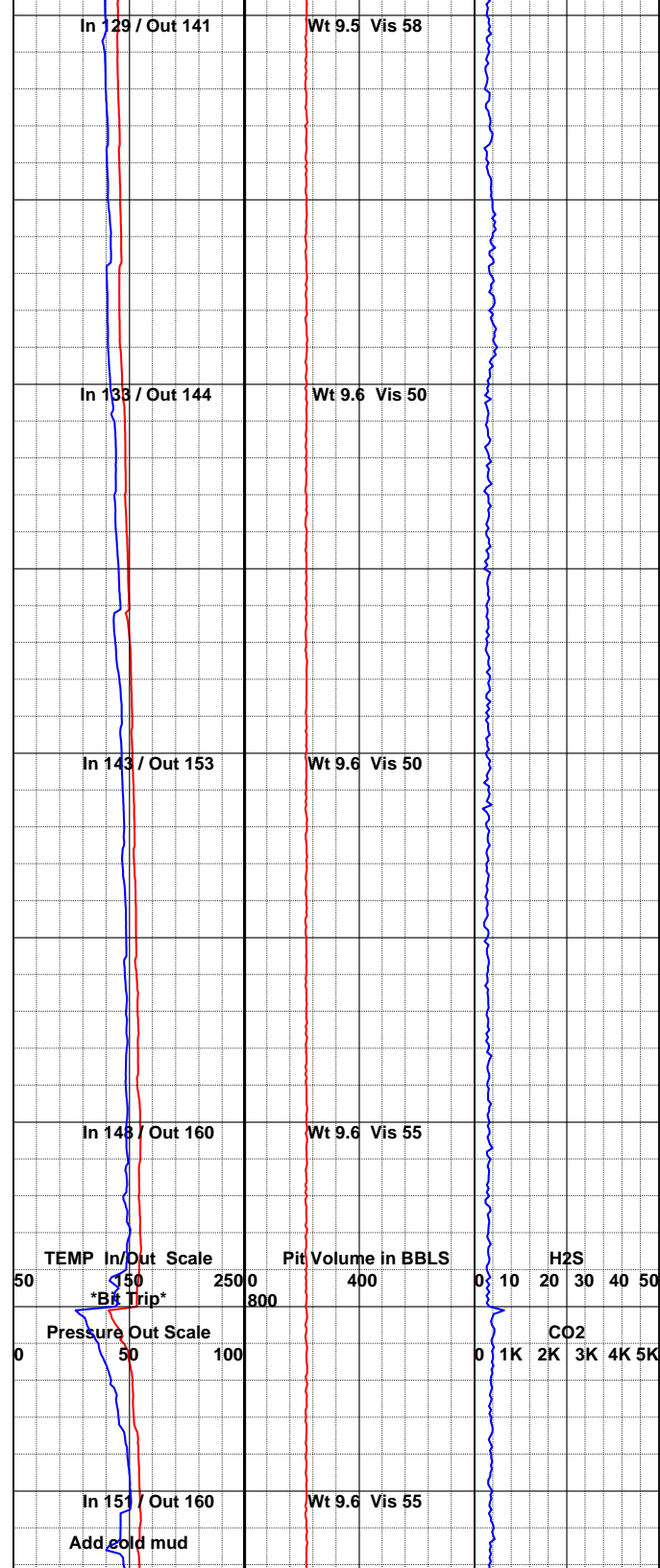
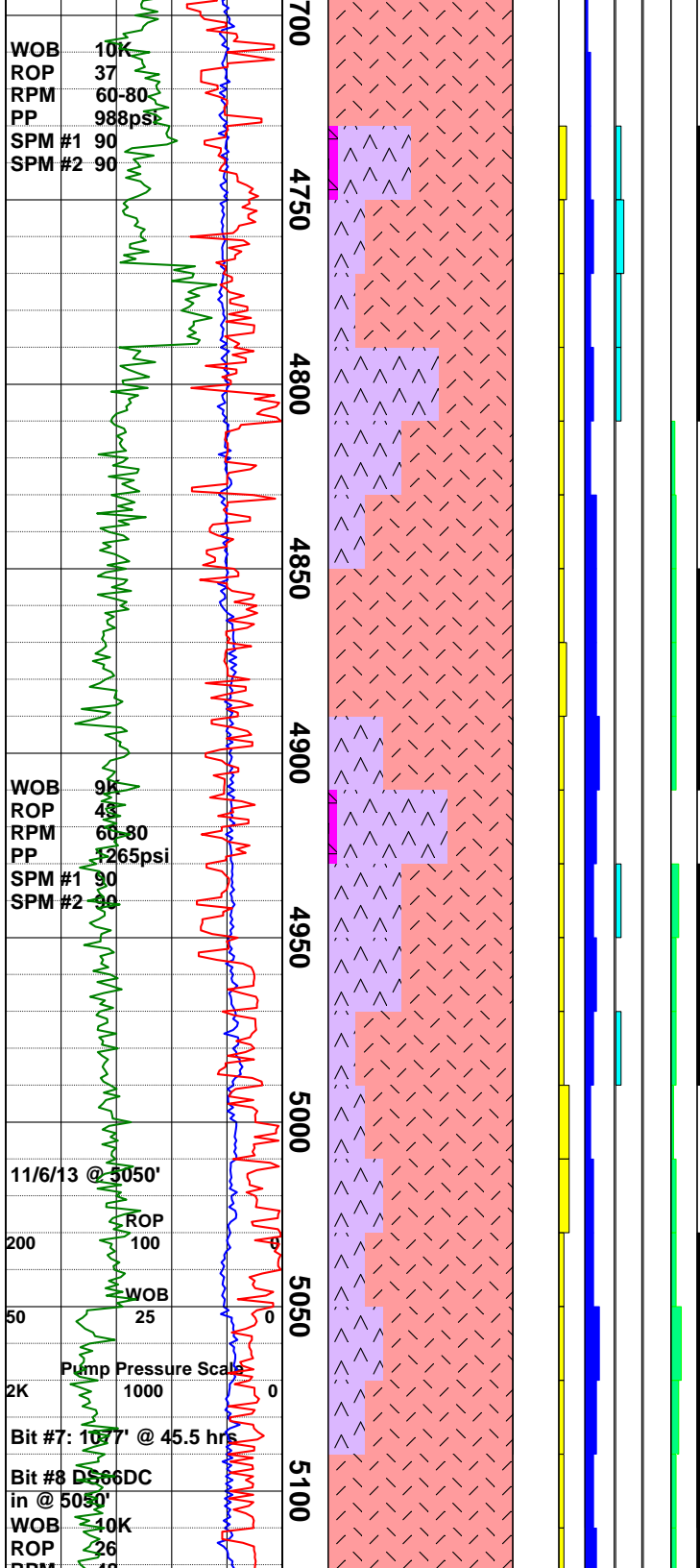
Survey @ 4337' = 6.0°.

Andesite: m-lt gry, occ dk gry, dom grnsh cast w gd chloritic altn in 4370' smpl, pred porphyritic, com microlites, com hem stng in 4350' smpl, gd 2ndry qtz vnng & dissem, up to 10% sft lt gry Clay in 4410' smpl, sl-mod calc xtls dissem throughout.

Andesite: dk-m gry, bcmng pred leucocratic in 4490' smpl, hd, friable ip, ashy-earthy tex dry, dom porphyritic, com elong felds laths in dkr ctngs, com rdsh hem stng in 4450' smpl, up to 40% sft, v sol lt gry-wht clay/ash w com blk & dk emerald grn spkng, tr dissem wht & lsr clr anhed calcite xtls.

Survey @ 4610' = 6.0°.

Andesite: dk gry, med gry, aphan-porphy, hd, tr-com lse anhed calc xls, tr nontronite, tr dk gry sol clay <5% prob bit gen, rr mylonitic mtrl @ 4590', rr-tr vesic frags w/ hvy ox.



Andesite/Ash Tuff: dk gry, med gry, rdsh brn, wht, sbang-blocky, grainy, microxln, rr brnzy/blk biot sheets, tr lse orbicular calc vug fill, com nonttronite, tr fn dissem pyr; pl grnsh wht Tuff, fria-frn, brittle, granular appr, siliceous w/ fn scatt micro mafics, tr 2ndry qtz as frac fill & rndd grs, sl calc.

Survey @ 4860' = 3.5°.

Andesite/Ash Tuff: Andesite is m-dk gry, occ lt gry, dk brn, occ pale grn-emerald grn, hd-friable, dom aphanitic, microxtln grndmss, tr-com hem stnng, Ash Tuff is pale grnsh gry, wht, pred v sft, v sol, friable-mod hd ip, com volcanioclastic sand/seds in ash mtrx, com wht & lsr clr dissem calcite xtls.

Andesite/Ash Tuff: Andesite is m-dk gry, dk brn, occ lt grn, rr blk, hd-v hd, occ friable, blocky-ang ctgs, pred porphyritic, abdt clr, wht, grn & lsr blk phenos in typically micro xln grndmss, occ aphanitic, esp in dk gry & blk (basaltic?) cttngs, com microlites, Ash Tuff (bcmng less ashy w depth) is wht, pale grn w/com dk emerald incls, occ pnksh gry, v sft/sol, tr-gd tr 2ndry qtz, tr pyrite, mod-gd calc rxn to dilute HCL.

NOTE: Drill to 5050' and POOH for new bit #8.

Survey @ 5050' = 5.0°.

Andesite: dk-m gry, dk rdsh brn, occ dk grysh grn-lt grn, dom hd-friable, som v hd, porphyritic & lsr aphanitic, com blk micromafic

RPM 48
PP 1378psi
SPM #1 89
SPM #2 87

SPM#1: 0
SPM#2: 120

11/7/13 @ 5208

WOB 10K
ROP 25
RPM 86
PP 937psi
SPM #1 0
SPM #2 129

11/8/13 @ 5413

ROP 100

WOB 25

Pump Pressure Scale

2K 1000

WOB 11K
ROP 35
RPM 84
PP 1327psi
SPM #1 89
SPM #2 91

5150

5200

5250

5300

5350

5400

5450

5500

5

In 153 / Out 164

Wt 9.6 Vis 60

In 158 / Out 163

Wt 9.6+ Vis 59

Add cold mud

In 149 / Out 160

Wt 9.7 Vis 58

TEMP In/Out Scale

Pit Volume in BBLS

H2S

Pressure Out Scale

CO2

In 151 / Out 162

Wt 9.5 Vis 55

& lsr yelsh wht spkng, microxln grndmss, som argillic altn, rr flow algnmt of xls, especially in pale grn ctngs, gd qtz vnng, lse anhd qtz w rr calcite vnng, abdt dissem calcite in 5070' smpl.

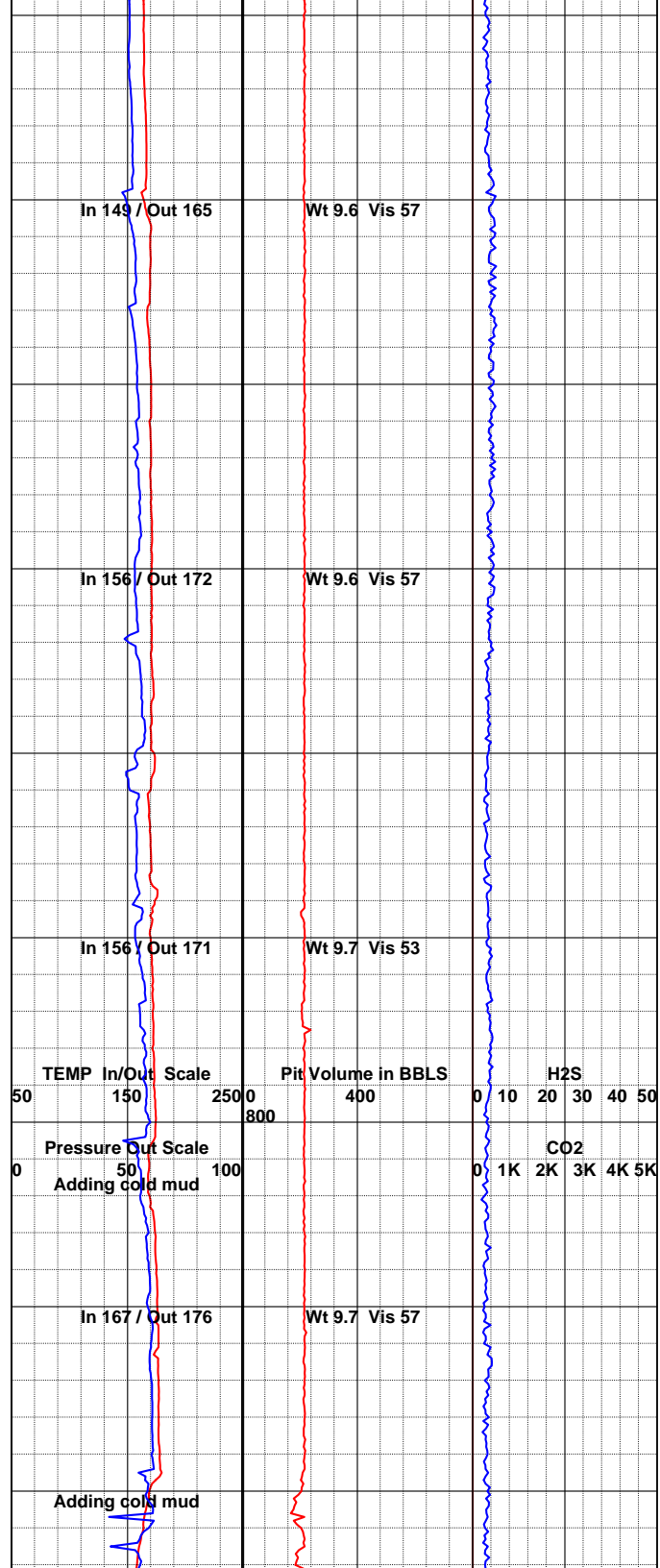
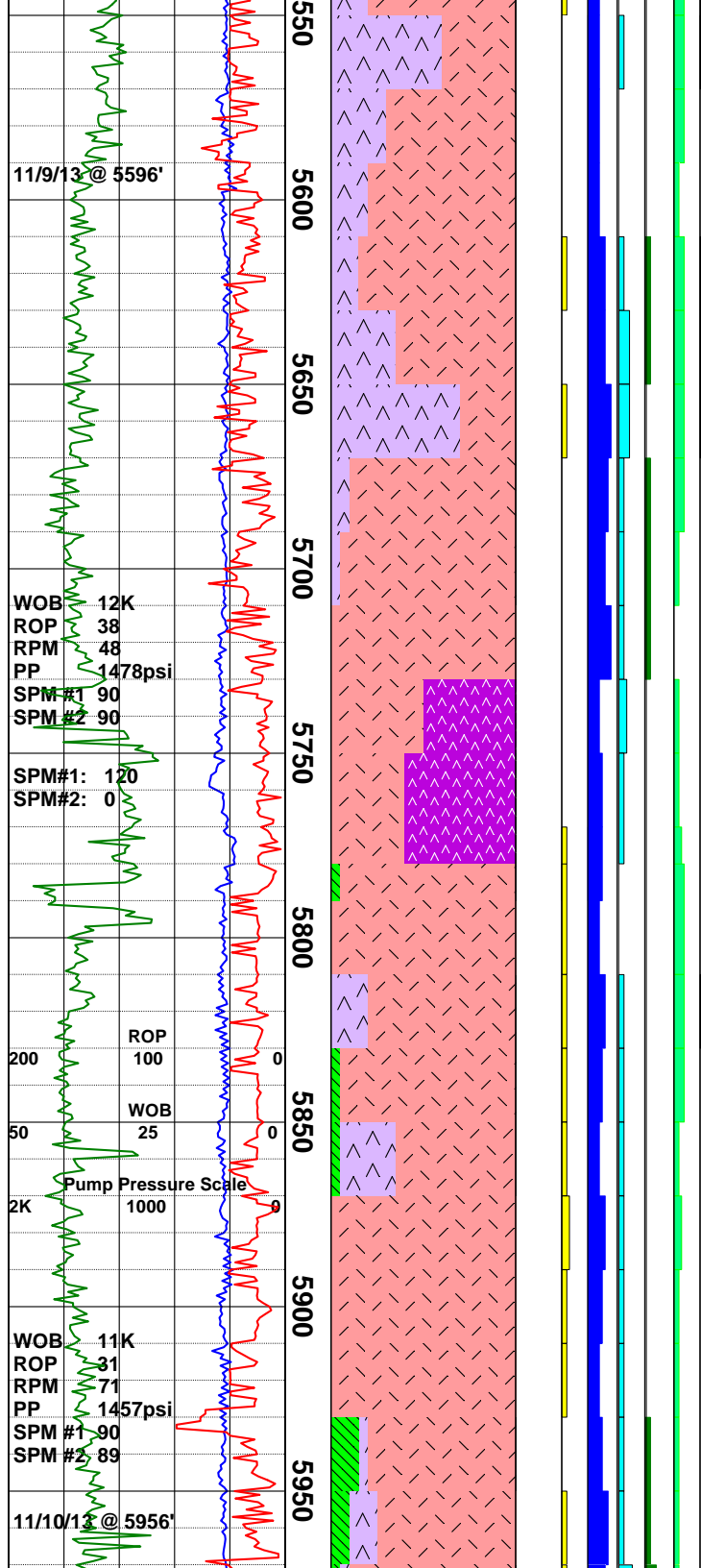
Andesite: med gry, med-dk grn, rdsh brn, ang-blocky, frm-hd, microxln, com microlites, gd tr felds laths, com argil altn f/ 5230', incr lse anhd-euhd calc, com-abdt hem stng w/ rr anhd xls, abdt dk grn nontronite, tr calc & rr qtz vnng, tr 2ndry qtz.

Survey @ 5303' = 3.0°.

Lithic Ash Tuff: dom pl grn, med-pl gry, ang, platy, com acic xls & elong laths occ altd to chlorite, dom trachytic, crumbly-hd, rr calc vnng, abdt free calcite, tr sbtrnslcnt grn dacite ctgs, frm-hd w/ fn dissem biot & off wht/buff spkng, tr hem stng & rr xls, andesite a/a.

NOTE: Drill to 5413', POOH to shoe, lay down top drive & track, pick up kelly.

Andesite/Lithic Ash Tuff: Andesite is m gry, m-dk brn, hd, ashy-erthy tex dry, dom aphan, lsr porphy, com laths, micro-crypto xtnl grndmss, Tuff is pred pale grn, occ milky wht, dom friable-sft, occ hd, dom platy ctngs, com trachytic, abndt dissem wht anhed calcite xtls, com emerald grn laths (chloritic altn), tr silvery blk biotite mica books, rr m brn well indurated Claystone at various depths.



Survey @ 5596' = 7.0°.

Andesite/Tuff: med gry, tr dk gry, pl grn, grysh wht, frm-hd, ang-sbrndd, microxln, gd tr argil-propylitic altn, rr pl brn bleached appr f/ 5630', com altn of plag to chlorite, com sft milky wht kaolin f/ 5390', pl grn fria-frm Tuff, dom ash w/ rr lithics, tr fn cubic & aggr pyr, tr epidote f/ 5630-5650' w/ rr euhd Qtz, tr hem stng, com chlorite stng, v calcareous.

Survey @ 5691' = 10.0°.

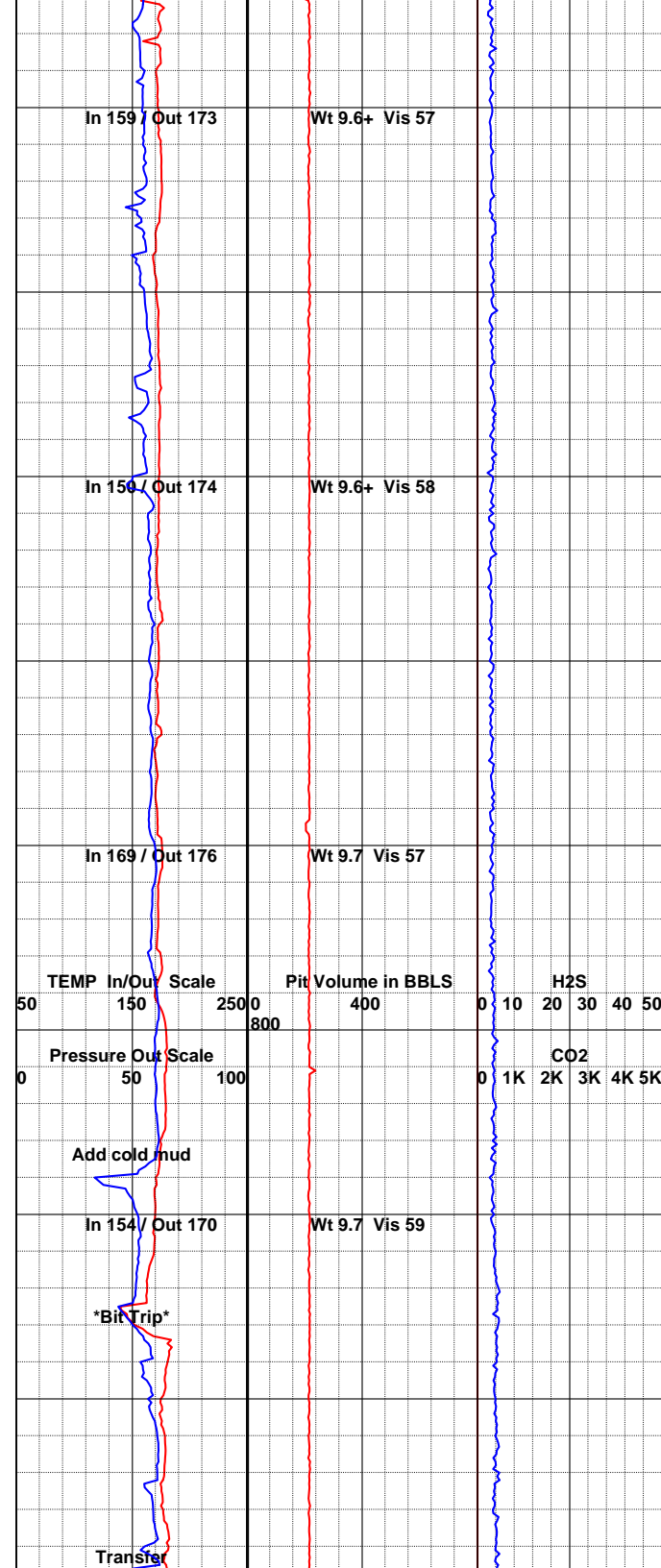
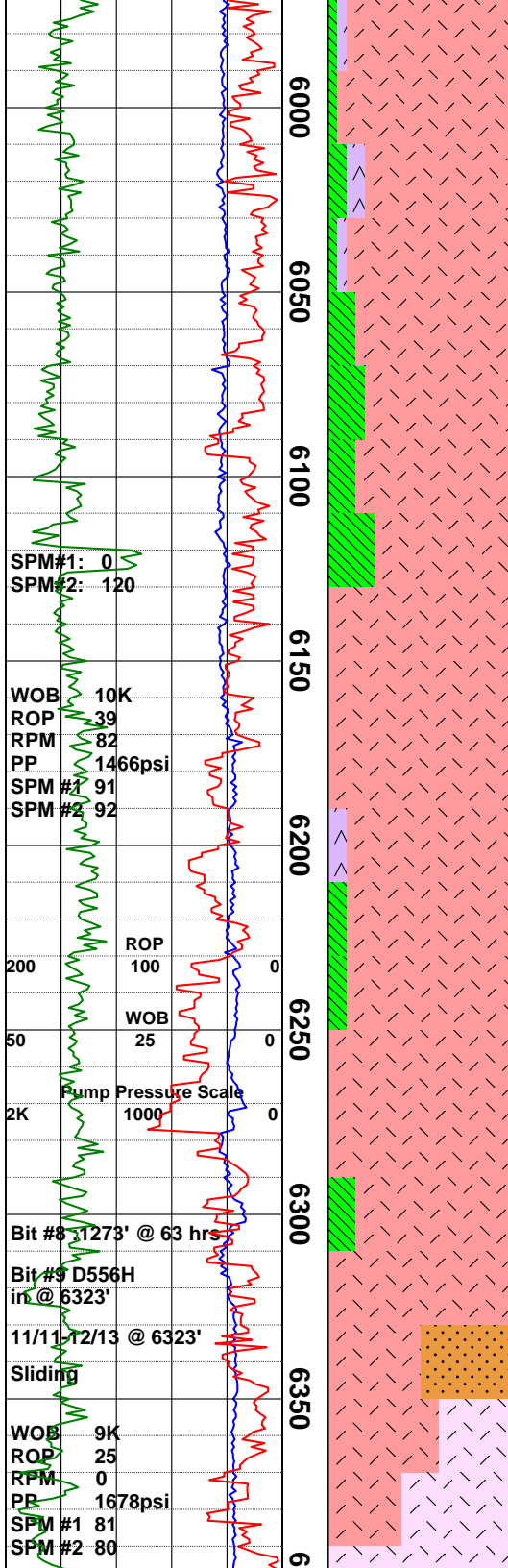
Felsite: dom wht, occ grnsh wht, v hd-hd, ang ctngs, aphanitic, gd tr cubic pyrite, abndt dissem anhd calcite, rr instl calcite, som laths altrd to chlorite.

Andesite: med-dk gry, occ prplsh hue, ang-blocky, hd, aphan-porphyr, microxln, com plag laths occ altrd to chlorite, com instl calcite, tr calc vnng, tr anhd-euhd pyr, rr-tr yelsh grn epidote, rr dacite ctgs (<5%), strong rxn to HCl.

Survey @ 5849' = 11.0°.

Andesite: m-dk grn, grnsh gry, occ m gry, dk brn, hd, dom ang ctngs, aphan-porphyr, com micromafic spkng, gd tr Qtz vnng, gd tr pyrite cubes & sbhd, com felds, som altrd to chlorite, rr tr yelsh grn epidote, v calcareous.

Andesite: med gry, med-pl grn, rr lt brn, ang-sbrndd, v frm-hd, microxln, aphan, mpr pl gry-



sbndd, v mm-hd, microxln, aphan, mm pl gry-
pl grn sol clay, mn ash tuff, tr euhd pyr, tr
yels grn epidote, tr 2ndry qtz frac fill, v
calcareous.

Andesite: med-dk gry, dk brn, rr blk, sbang-
sbrndd, frm-hd, grainy, com weathered appr,
tr basaltic ctgs, v fn scatt mafics, com propyl
altn of grndms, com plag altd to chlorite, gd tr
epidote, gd tr hem stng, rr rhomboidal qtz clstr
@ 5930', com lse anhd-euhd calc xls.

Survey @ 6071' = 11.0°.

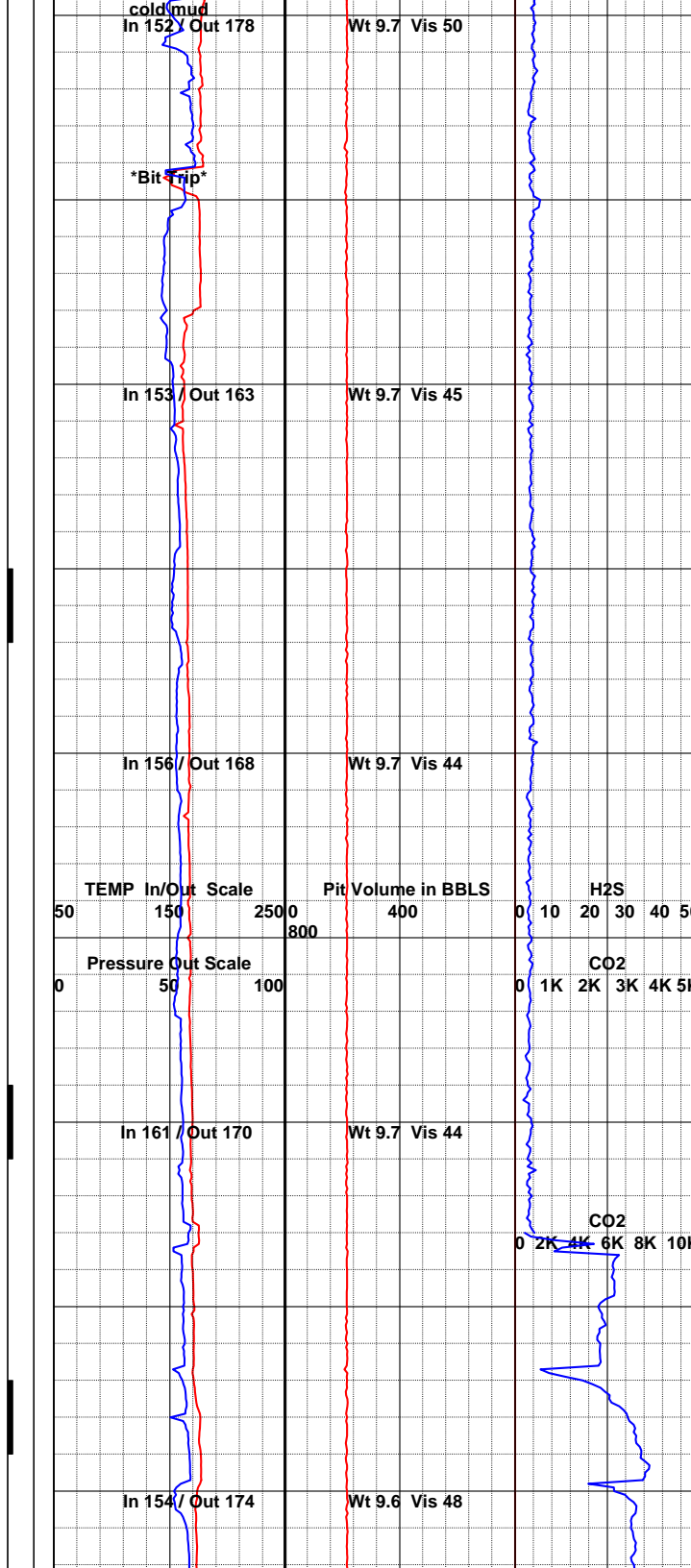
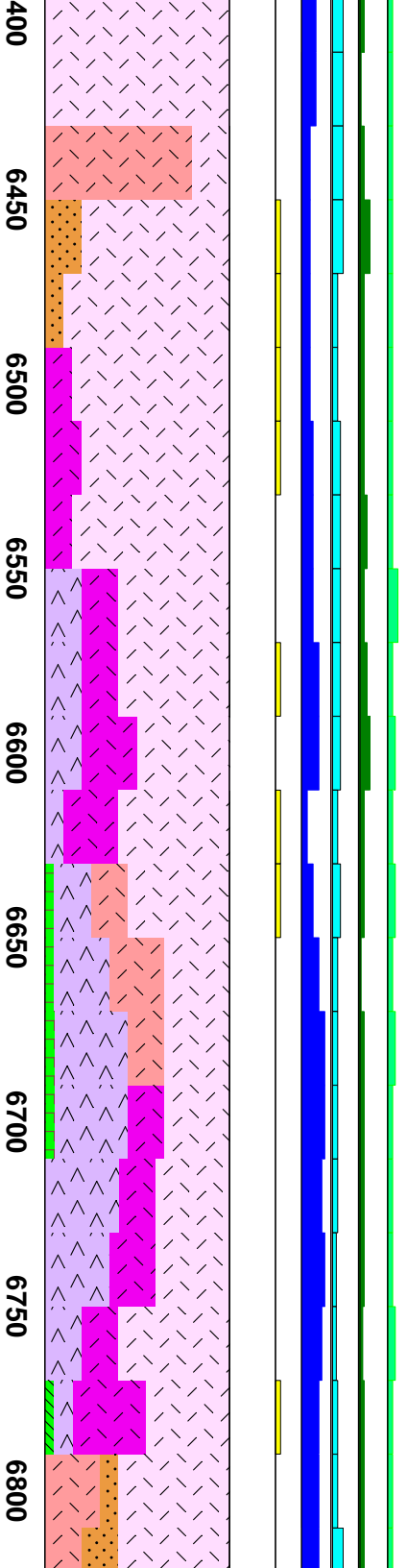
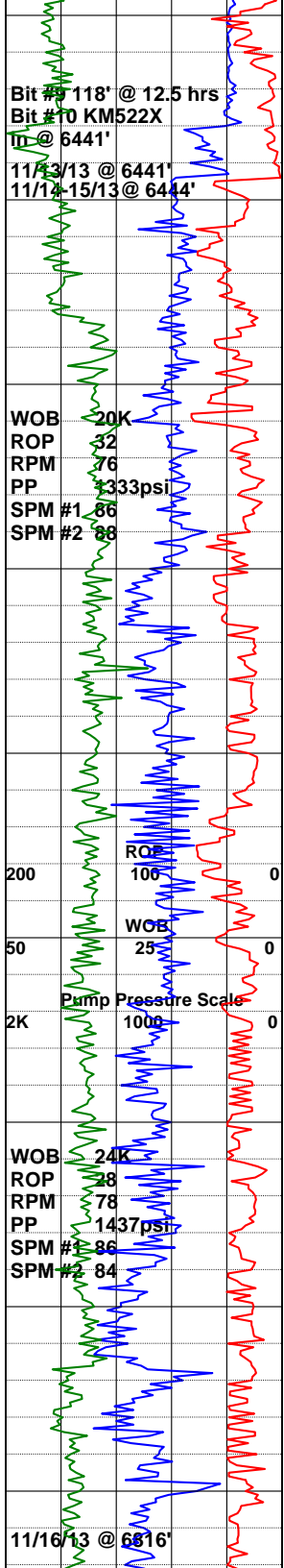
Andesite: med gry, pl grn, lt brn, frm-hd, abdt
lse altd smectite w/ buff spkng, pl gry v sol
clay, gd tr cubic pyr, gd tr hem stng, tr Fe ox
ctgs, gd rxn to HCl.

Andesite: m-dk gry, grnsh gry, dk brn, pred
grn cast f/6210' smpl, hd, porphy, bcmng pred
aphan f/6210' smpl, gd tr euhed-sbhed pyrite
both dissem & on frac srfs, gd tr yelsh grn
epidote, tr v sol clay and ash tuff interbeds, v
calcareous.

Survey @ 6323' = 10.0°.

NOTE: Drill to 6323' and POOH for new bit
#9. RIH w/ mud motor.

Quartzite/Quartz Diorite: gray, sbtrnslcnt, tr
qtz phenos, micro-cryptoxln, sucrosic, com
wht, orng, brn incls, abdt milky wht & clr plag,
tr sbrnd basalt & andesite frags, poss granitic
wash or flow boulder?, tr yelsh grn epidote, tr
cubic & fn dissem pyr, com calc xls.



NOTE: Drill to 6441' and POOH for new bit #10.

NOTE: Drill to 6444' and POOH to change out rotary table.

Quartz Diorite/Dacite: pl grn, wht, clr, blk, sbang-sbrndd, hd, micro-cryptoxln, aphanitic, com-abdt wht spkling, tr fn blk spkling, gd tr phyllitic altn w/ fn slvry mica & sl foliation f/ 6440', tr pl gry-grysh brn dacite; sbtrnsclnt, rr qtz phenos, tr mag, tr lse rndd qtz grs, gd tr anhd epidote, gd tr cubic pyr, mod rxn to HCl.

Quartz Diorite/Dacite: dk gry, lt grnsh gry, occ dk brn-rdsh brn, frm-hd, friable-crumblly ip, crypto-micro xtltn, sucrosic tex, occ sandy appr, com intrbds of Dacite and Lithic Ash Tuff, com dissem wht anhed calcite, gd tr-com pyrite cubes & as vnng on frac sfs, gd tr yelsh epidote, tr-com chloritic altn, tr qtz vnng rr tr dk grn sft/waxy nontronite, rr m brn Clystn.

Ash Tuff/Quartz Diorite: Ash Tuff in milky wht, occ grnsh wht, f sft- sl frm, gd tr dk emerald grn & blk mafic inclnsns, Qtz Diorite is pred wht, grnsh wht w gd tr chloritic altn, com striated plag & lsr calcite xtlts, gd tr pyrite as above, gd tr yelsh grn epidote, tr silvery blk biotite, cont intrbdddng w Dacite flows, bcmng v calcareous from 6671'.

Quartz Diorite/Dacite: wht, grnsh wht, lt grn, hd-fri, com pale yel spkling on grn cttngs, dcrrng pyrite/epidote, cont gd chlor altn, Dacite has com blk biot & grn altrd plag phenos, tr sft m brn Clay, v calcareous.

