



Reno, NV
505-228-3132

USNGPO 86-25

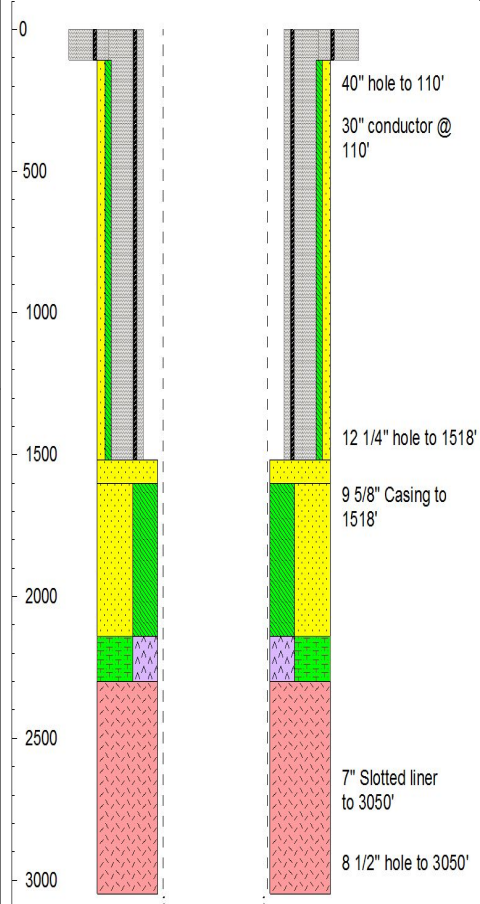
ABBREVIATIONS

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		Sand
	Claystone		Sandstone
	Silt		Basalt
	Siltstone		Andesite
	Limestone		Tuff
			Volcaniclastics

WELL CONSTRUCTION

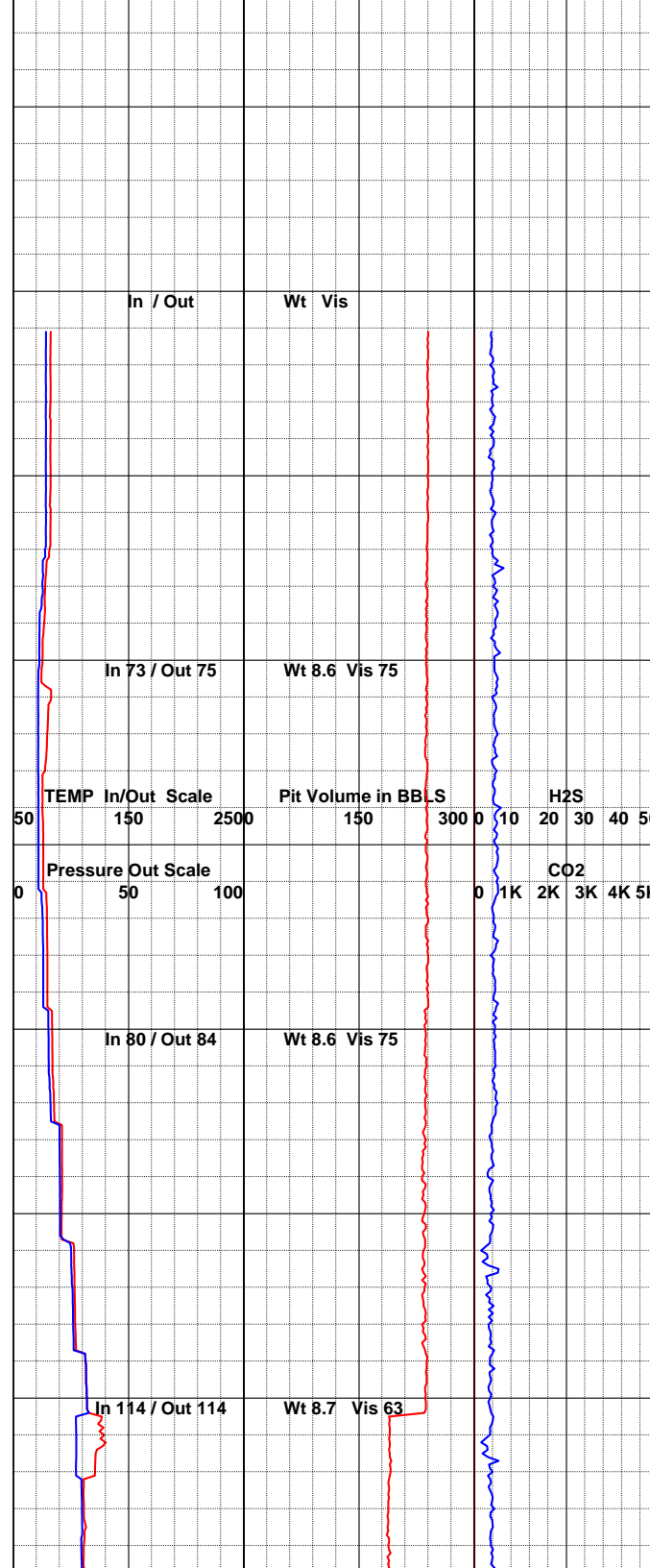
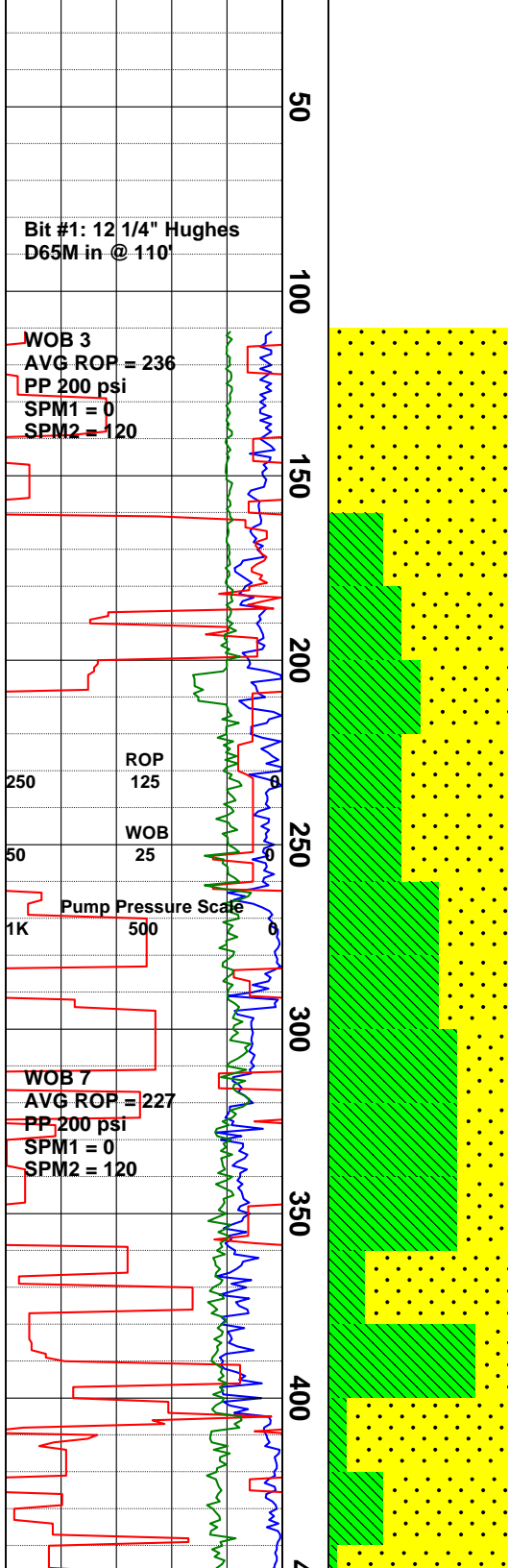


COMPANY: U.S.N. Geothermal Program Office
 WELL NAME: 86-25
 FIELD: Naval Air Station, Fallon, NV
 COUNTY/STATE: Churchill / NV
 COORDINATES: UTM 356107 TM 4361691
 ELEVATION/KB: 3931' + 15' KB
 API NUMBER:
 COMPANY REP: Dennis McGrew
 CO. GEOLOGIST: Andrew Tiedeman
 CONTRACTOR/RIG: Barbour Well / Rig #77
 SPUD DATE: 08/22/2014
 LOGGING DATES: 08/22/2014 to 08/31/2014
 LOGGED DEPTHS: 120' to 3050'
 LOGGING
 GEOLOGISTS: Blake Bundy
 MUDLOGGERS: Jeff Lewis

DRILL RATE WOB Pump Pressure			Depth	LITHOLOGY	Fractures	SECONDARY MINERALS					TEMPERATURE			PIT TOTAL			GASES			DESCRIPTIONS
250.0	ROP	0.0				Quartz	Pyrite	Chlorite	Other	50	Temp Out	250	0	Pit Total	300	0	H2S ppm	50		
50.0	WOB	0.0								50	Temp IN	250				0	CO2 ppm	5000		
500.0	Press	0.0																		

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTE: Commence drilling on



08/22/2014. Hole was previously drilled with 40" bit to 110' and 30" conductor was set to 110' (KB). Drilled out of conductor with 12.25" bit. All depths are referenced from 15' kelly bushing. Hole depth is determined by driller's pipe tally. Sample interval 20'. ROP scale changes @ 2230' & 2630'.

Sand: clr, pl-med grn, mod-well rndd, mod-well srtd, fn-crse gr, mnv v crse wthrd basalt/andesite frags, com fn biot flakes, sl calc.

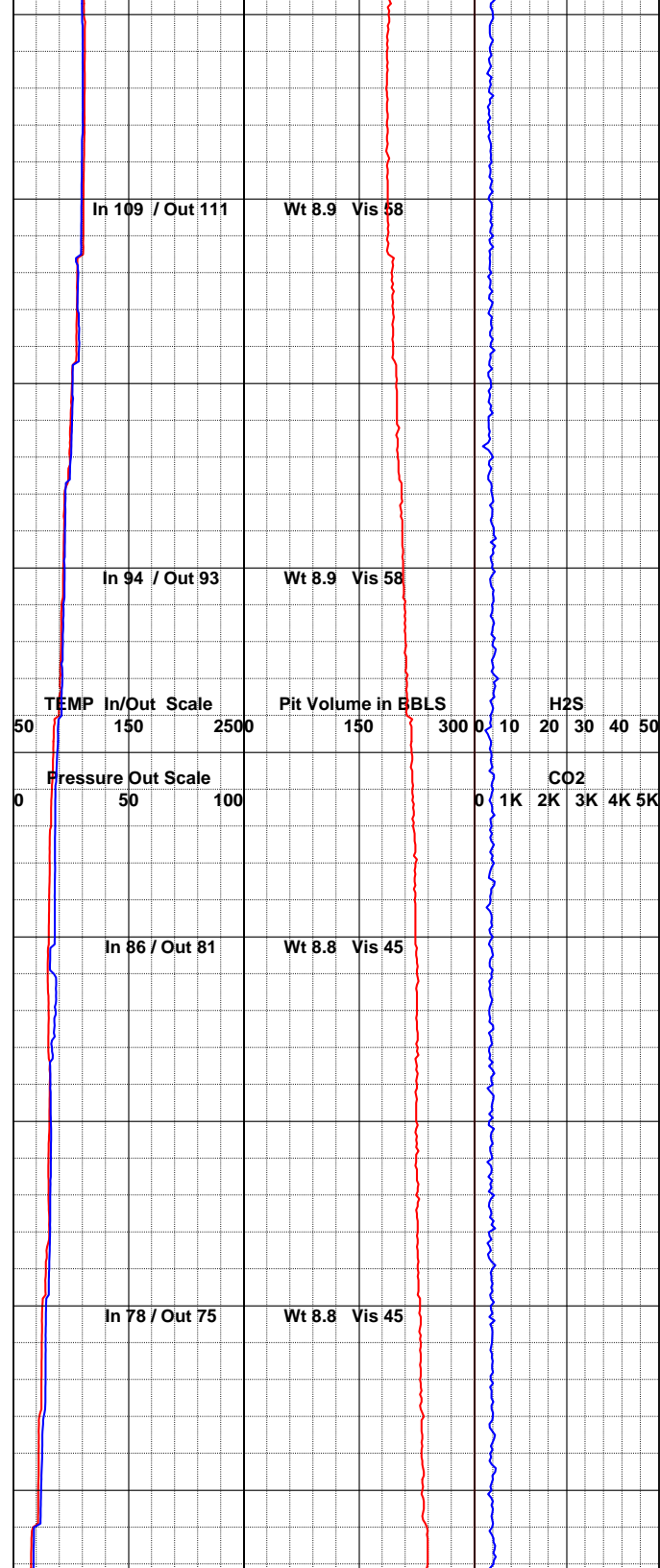
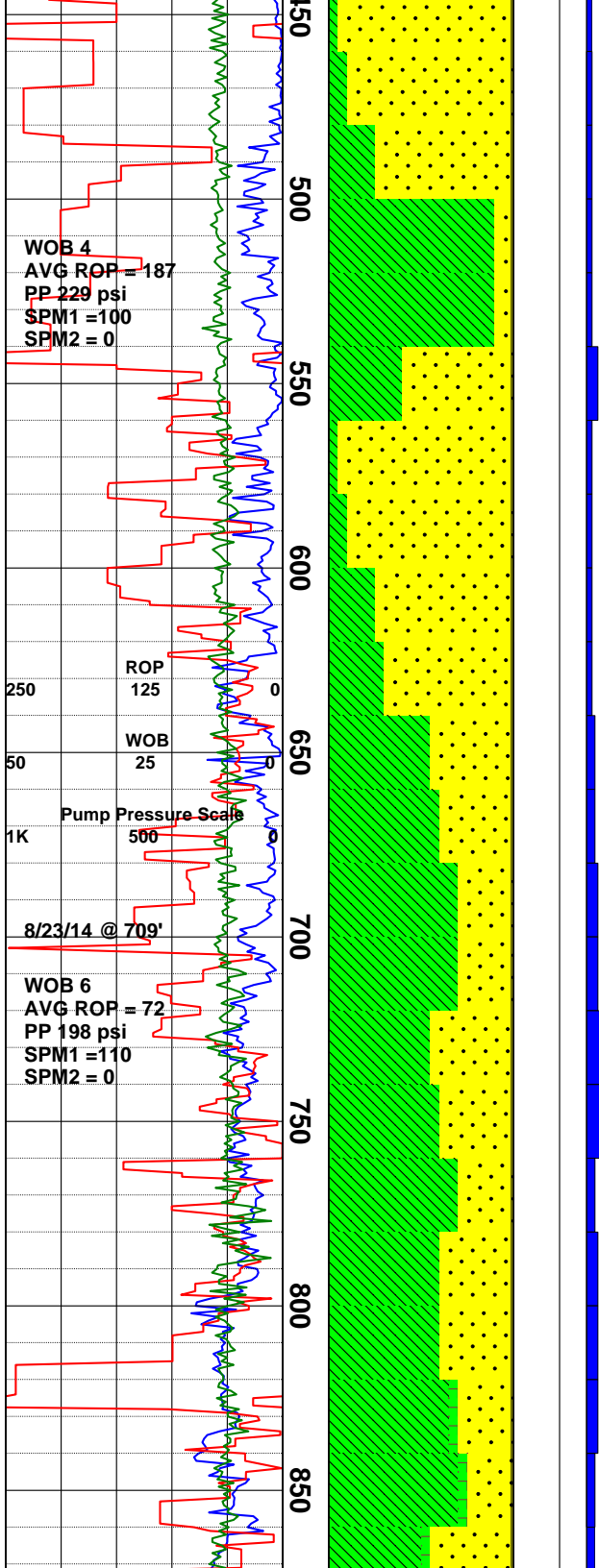
Sand/Clay: dom clr, pl-dk grn, med-dk gry, blk, sbang-well rndd, prly srtd, com-abdt fn biot, tr volcanic seds, com sticky non-sol pl-med grn clay, cohes, adhes, sl calcareous..

Survey @ 254' = 1.5°

Sand/Clay: incr clay to 70%, color chng to dk grn, less cohes/adhes, soupy, sand v fn gr, well srtd, occ crse pebbly qtz gr, wk calc.

Survey @ 349' = 1.5°

RIG SERVICE



Sand/Clay: clr, lt grn, tr blk. tr brn, dom subrounded to rounded med size sand, well sorted, dom qtz grains, com silvery biotite, lt grn sticky clay, wk calcareous.

Survey @ 505' = 2.5°

Clay: gryish grn, clumpy, slt sticky, tr sand throughout, slt rxn to HCl.

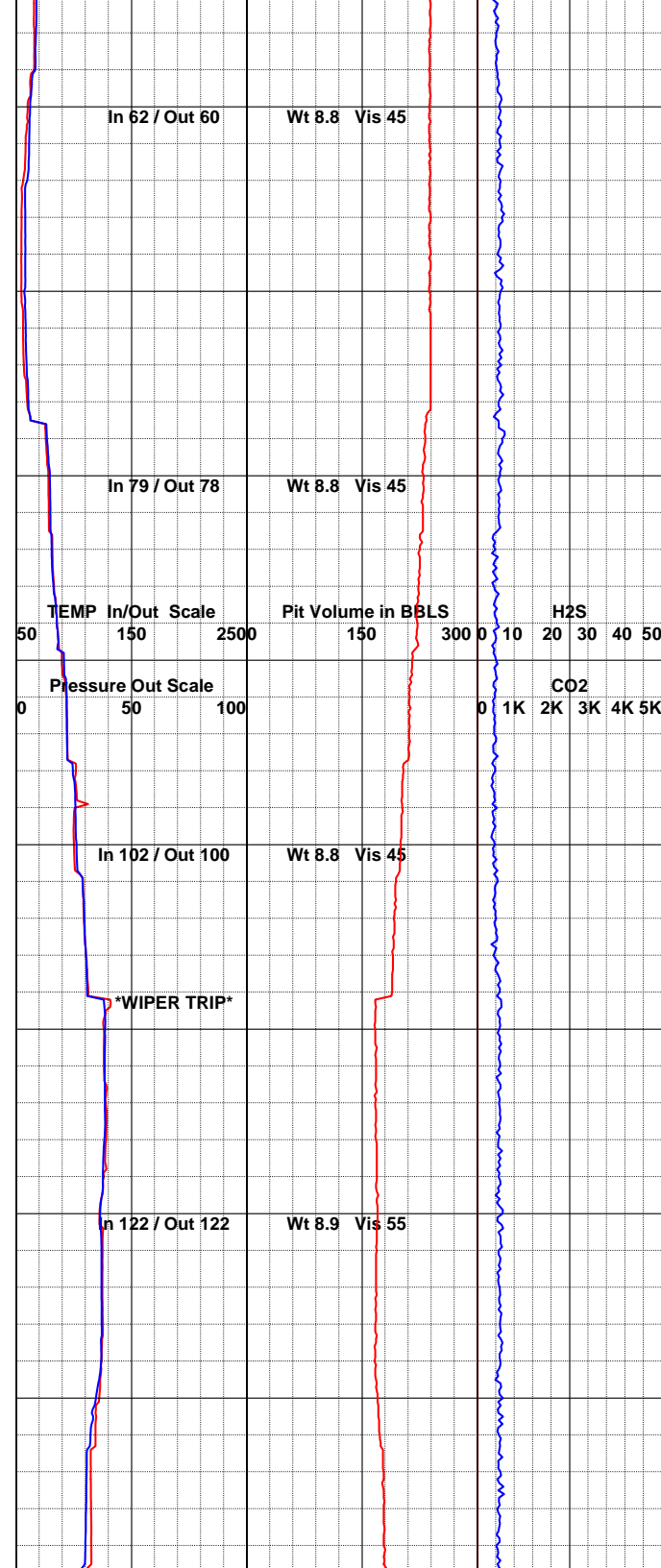
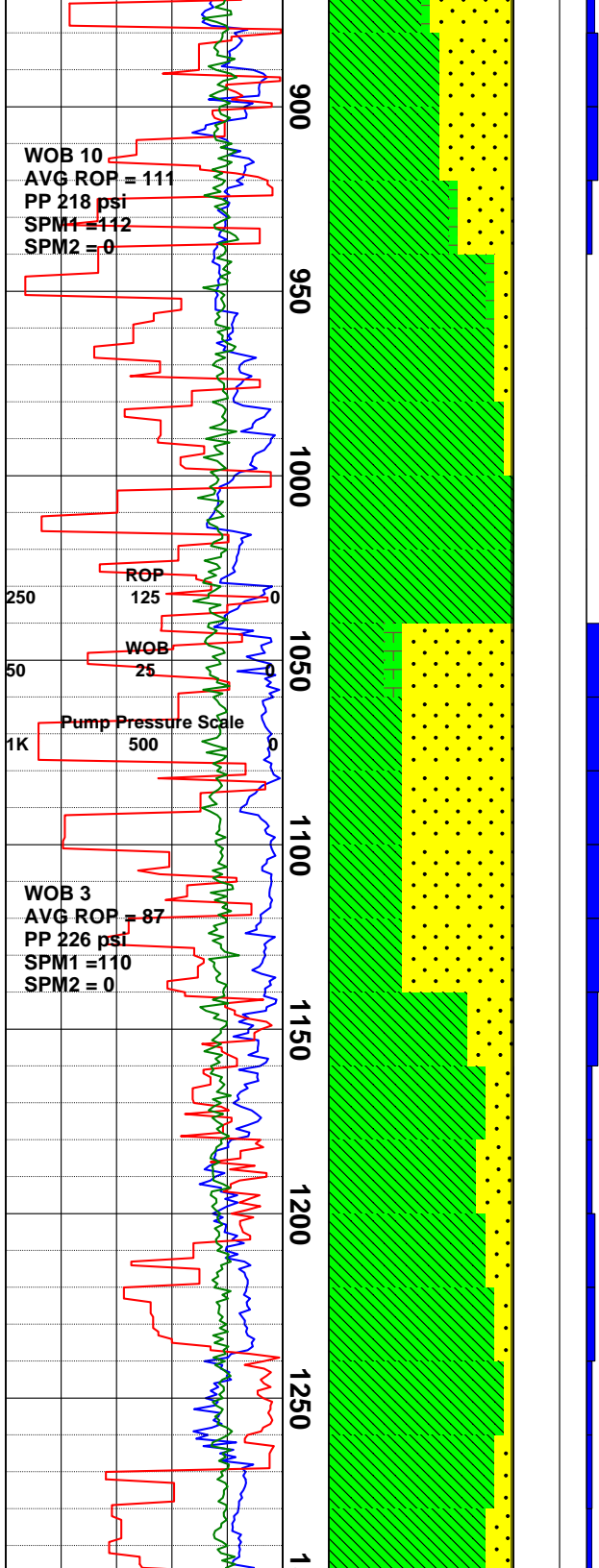
Survey @ 631' = 3.5°

Sand/Clay: overall drk grnsh in clr, mod sorted med sand size grains, dom subang, com clr- slt milky qtz, com withrd volcanic seds w occ felty xln texture, gd tr silvery grn mica mnl, rr diss pyrite, rr yel epidote, wk rxn to HCl.

Clay/Sand: med grn, gry, smooth, sl adhes, mod sol, fn-med gr sand, mod-well rndd, tr-com slvry biot flakes, tr withrd sbrnrd volcanic frags, tr brt rd ox grs, com-abdt buff-gry ostracods, tr yelsh grn epidote, rr aggr pyr, mod calc.

Survey @ 726' = 3.0°

Clay/Sand: med grn, pl gry, v sft, smooth, sl sol, sl tacky, prly srted sand w/ occ crse gr qtz, rr frstd, tr fria pl gry Clstn, rr SS, com-abdt microfossils, rr aggr pyr, mod-gd rxn to HCl.



Survey @ 850' = 2°

Clay/Sand: clay & sand a/a, tr bluish grn sl frm Clstn, decr ostracods, v wk-no calc.

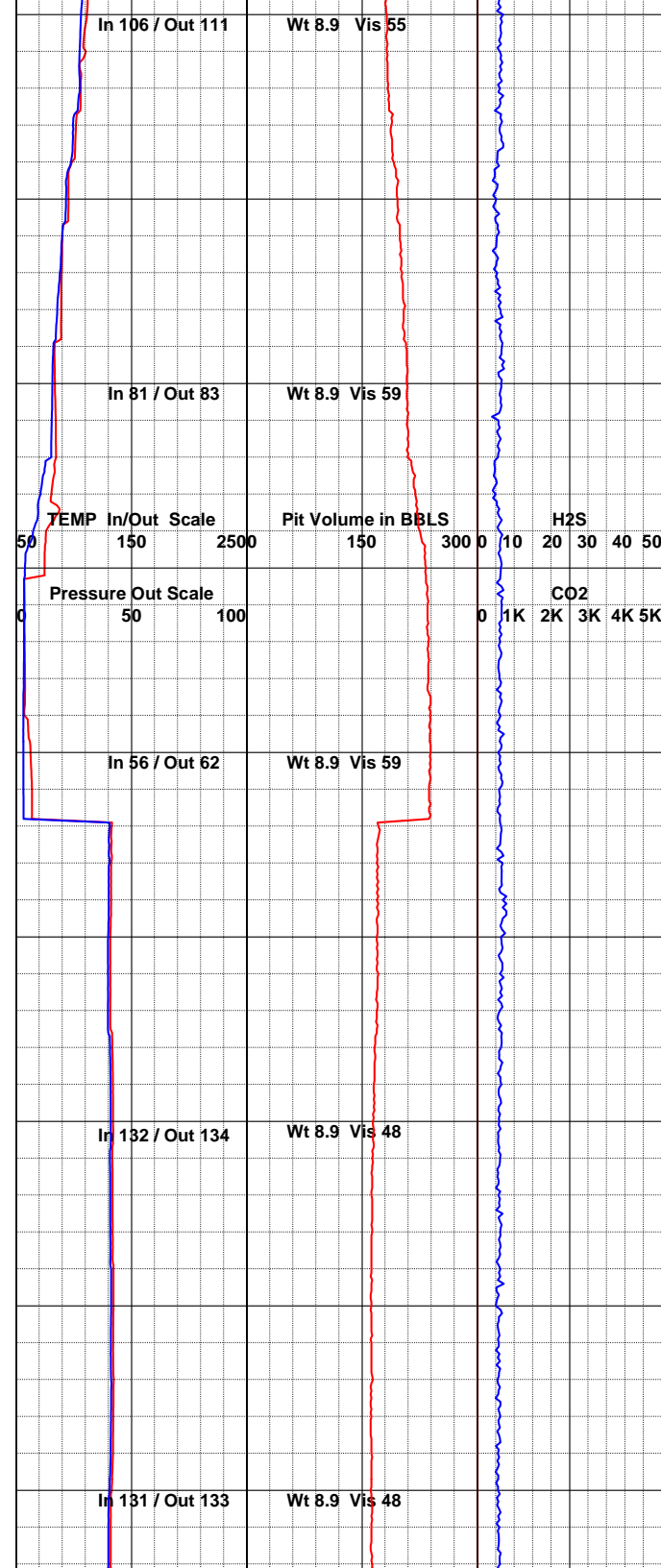
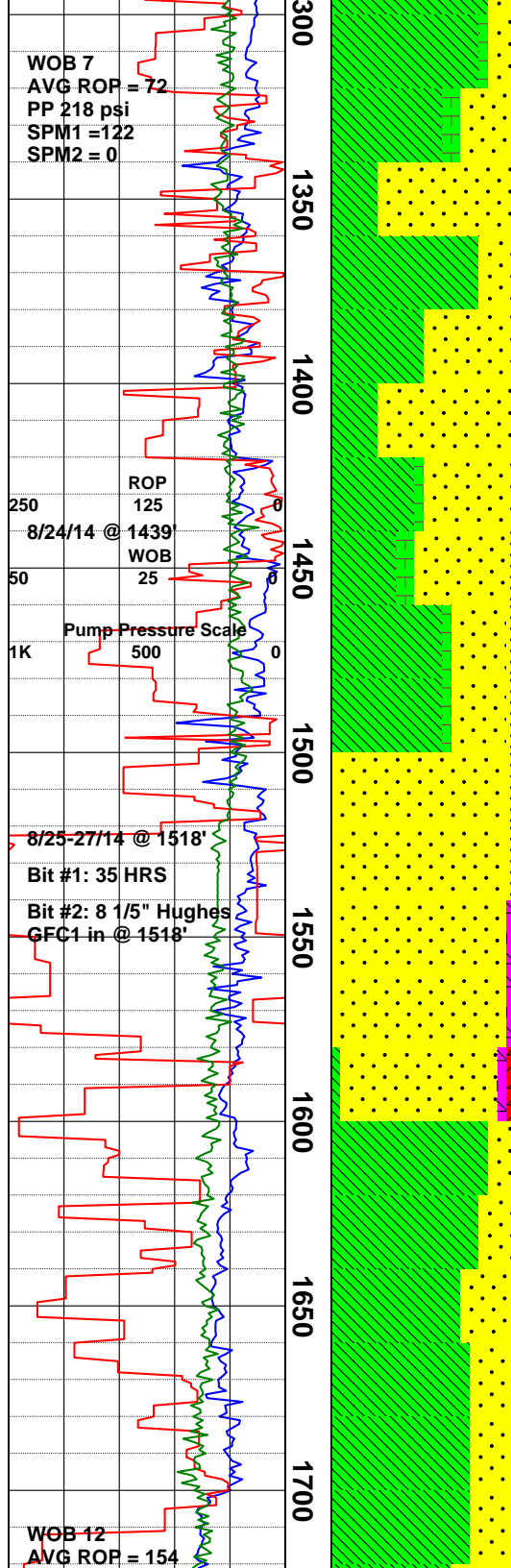
Survey @ 976' = 2.5°

Clay: med grn, tr pl gry, tacky, clumpy, well indur, frm, non sol, non calc.

Clay/Sand: med grn, pl gry, clumpy, smooth, multicol fn-med gr sand, mod srtd, com crse gr qtz, occ frstd, rr basalt frags, mnr Clstn, tr ostracods, mod-v gd rxn to HCl.

Clay/Sand: grysh grn, soft and clumpy, slt soluble, com lt tan spherical ostracods, med size sand grs, tr pyrite throughout, multi colored sand, mod rxn to HCl.

Survey @ 1253' = 1.5°



Clay: @ 1280' v sticky, mod hard, bec less sticky & more clumpy @ 1300', com silvery blk biotite, tr brn fossiliferous calcareous seds, tr pyrite, tr creamy v fn white clumpy clay?mud additive?, overall slt rxn to HCl.

Sand/Clay: overall drk grnsh in clr, dom composed of grn andesite, com basalt, com qtz, ang to subang med size poorly sorted sand, gd tr pyrite, mod soluble sft mushy clay, wk rxn to HCl.

Clay/Sand: pl gry, med grn, tacky, gritty, mod sol, mnr bluish grn & pl gry Clstn, mnr med brn-med grn SS, tr aggr pyr, rr biot flakes, gd tr tan ostracods, wk-sl calc.

Survey @ 1505' = 1.0°

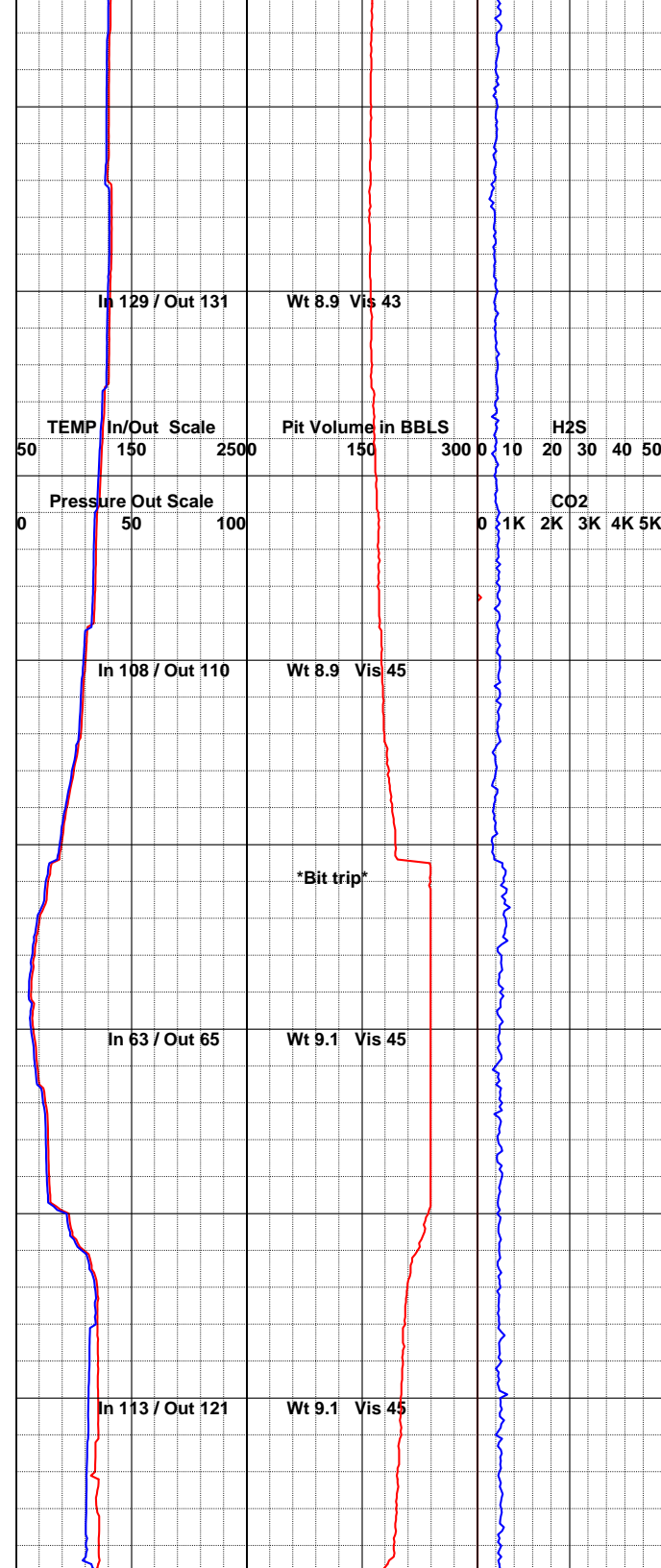
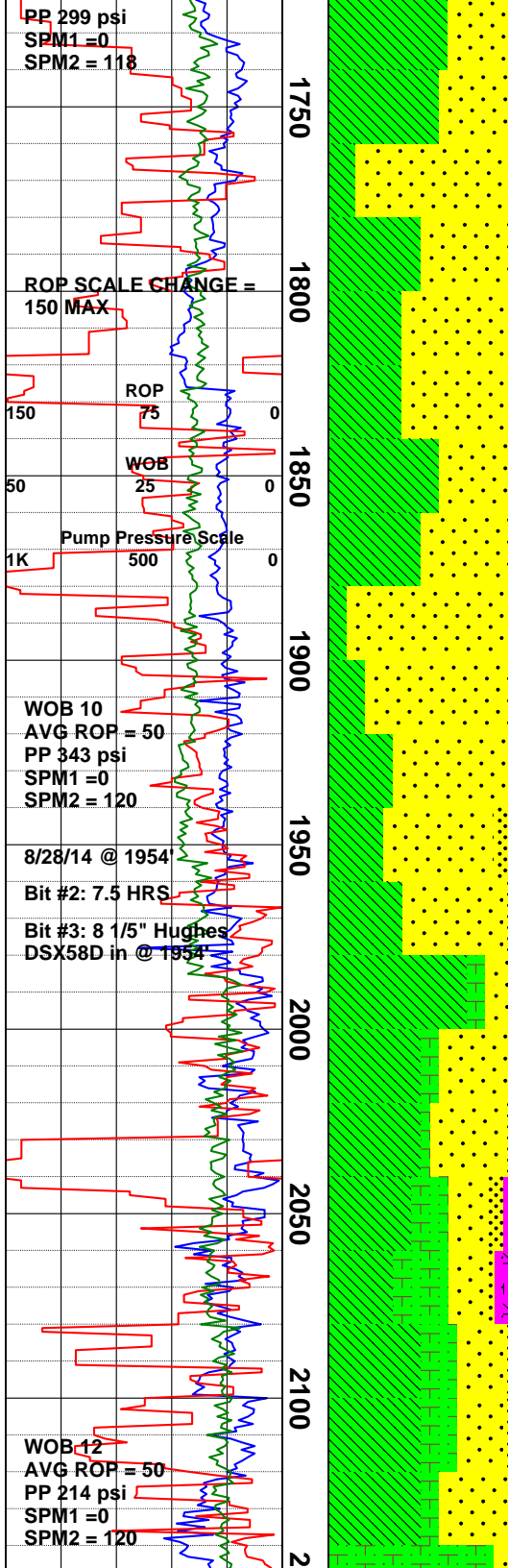
NOTE: Drilled to 1,518', ran 9 5/8" casing to bottom. Cement top job. Tested BOPE. RIH w/ NB #2.

Sand: overall drk grnsh in clr, blk, grn, ang to subang, poorly sorted fine to v crse sized sand, dom clr qtz, grn volcanics, com ostracods, tr pyrite, tr basalt, mod rxn to HCl.

Clay/Sand: drk tan, sticky, sft, slt soluble, sand a/a, v wk rxn to HCl.

Survey @ 1659' = 1.0°

Clay/Sand: med grn-gry, pl gry, sft, smooth, v soluble in H2O, multicol fr-med gr sand, mod srtd, com ang-subang crse gr qtz, tr silvery blk biotite flakes, rr basalt frags, v wk rxn to HCl.



Sand/Clay: @ 1780' abdt fine to v crse sand, dom clr ang qtz, occ wkly welded conglomerate like sand chunks, tr magnetic mnls, com grn subrnd volcanic sands, v rr to absent pyrite, v wk rxn to HCl.

Survey @ 1819' = 2.5°

Clay/Sand: overall drk grysh grn, clr, milky white, lt grn, tr redsh brn, rr blk, smooth and soft, slt soluble clay, fine to med size sand grains, mod sorted, ang-subang, dom composed of clr ang qtz, com lt grn andesite?, tr shiny blk biotite flakes, rr pyrite, v wk-no rxn to HCl.

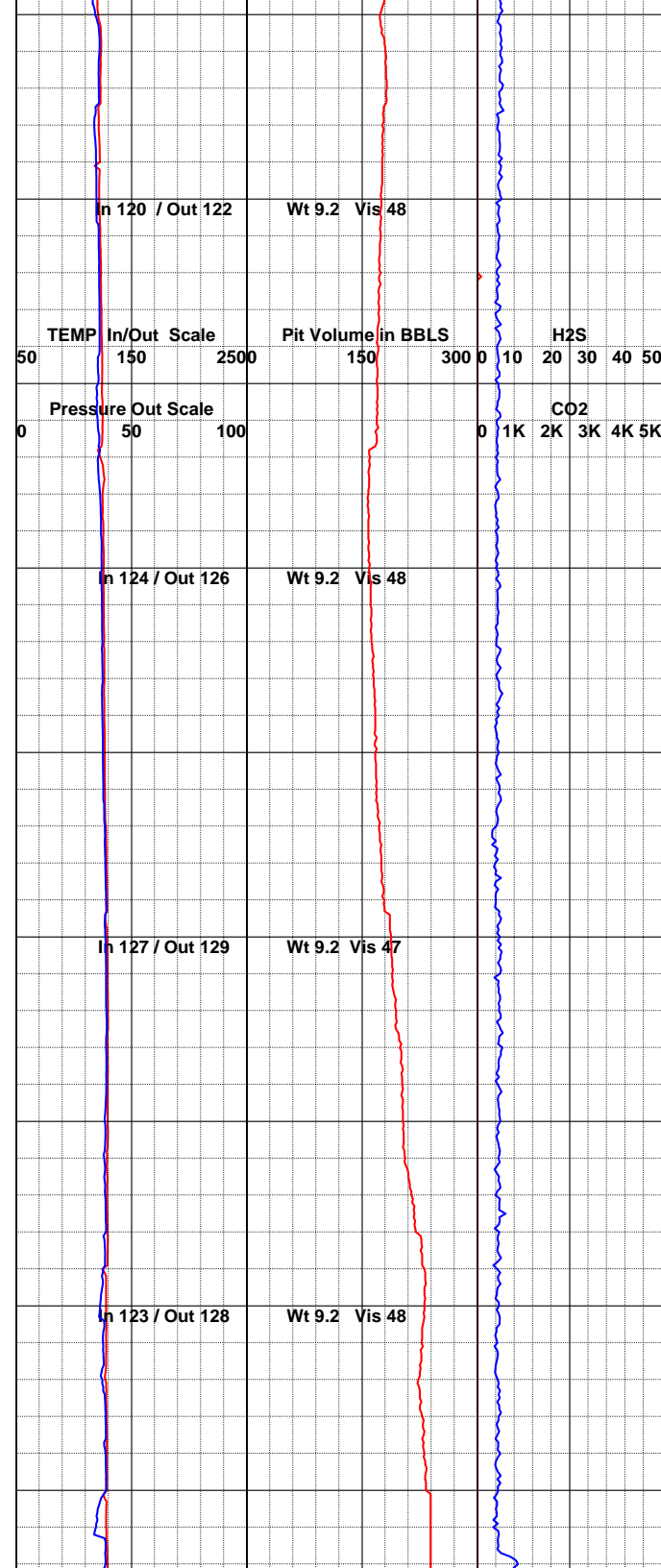
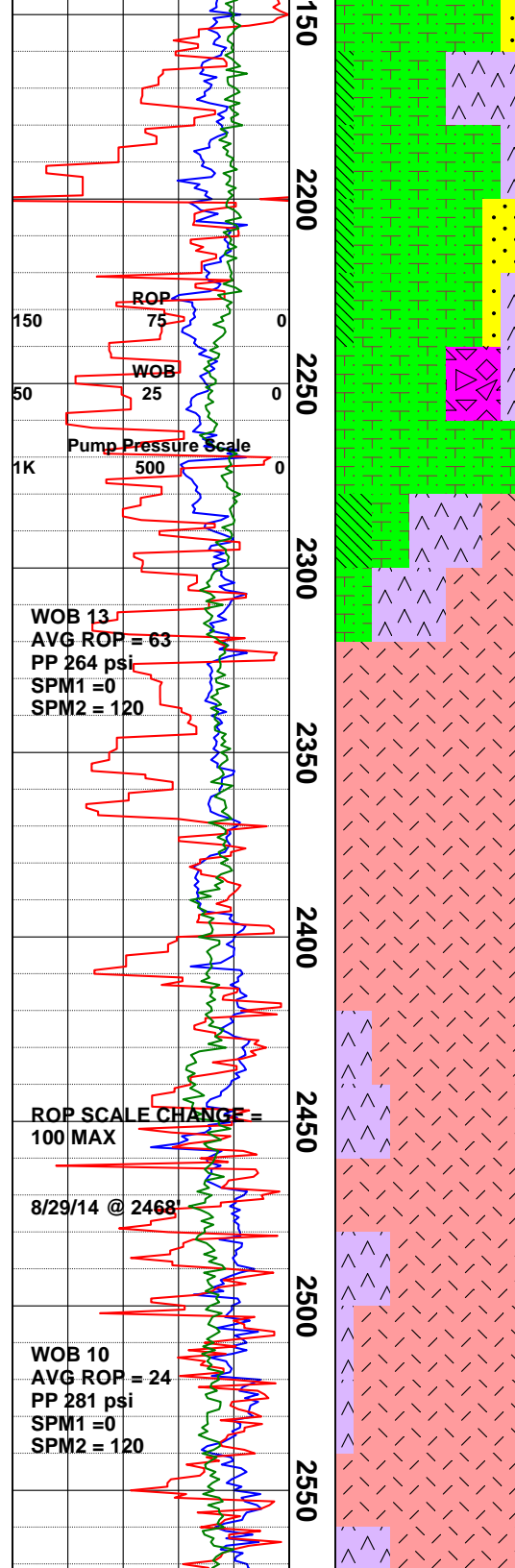
Survey @ 1945' = 2.5°

NOTE: POOH @ 1954' for NB #3.

Clay/Sand: color change to dk brn clay at 2000', mn'r fria-fr'm brn & bluish grn Clstn, non calc.

Survey @ 2039' = 2.5°

Clay/Sand: tan, med-dk brn, med grn, bluish grn, smooth, mod sol, sl tacky, med-crse gr prly srt'd sand, com rndd pebbly qtz gr, occ frstd, v rr rutile, fria-fr'm bluish grn-med brn Clstn, tr fria-fr'm SS, tr rndd volc seds, tr rddsh brn basalt, pl bluish wht rhyolite, rr tuff, rr dissem pyr, non calc.



Claystone: dk tan to brn, fine grained, easily friable, chunky, no rxn to HCl.

Tuff: (possible silicified claystone/tuff @ 2180?) brn, long platy ang cuttngs, hd-v hard (scratches probe), v silicified, conchoidal fractures, v fn grained, microxln, tr blk specks, no rxn to HCl.

Survey @ $2257' = 1.5^\circ$

Volcaniclastic: gry, microxln, granular
tex, massive ctns, blocky, frm fria,
porphyritic, v wk rxn to HCl.

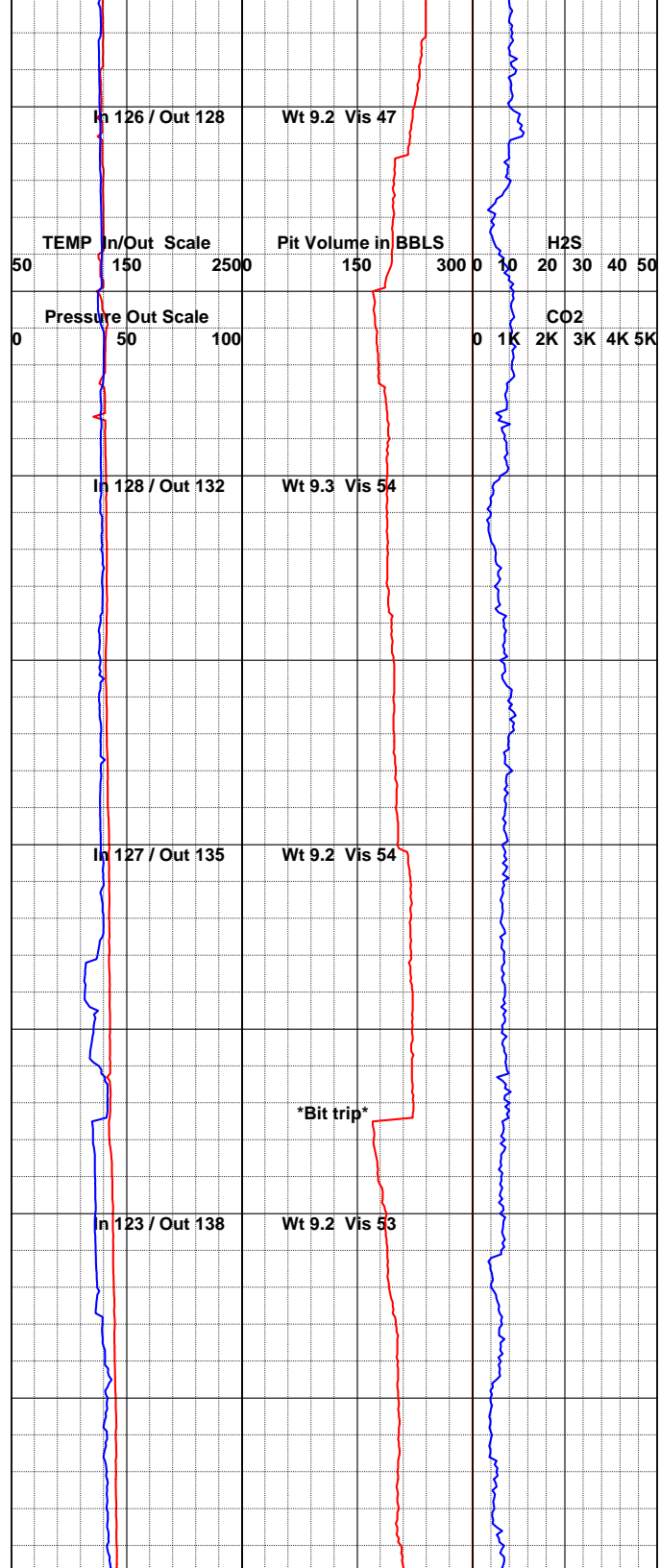
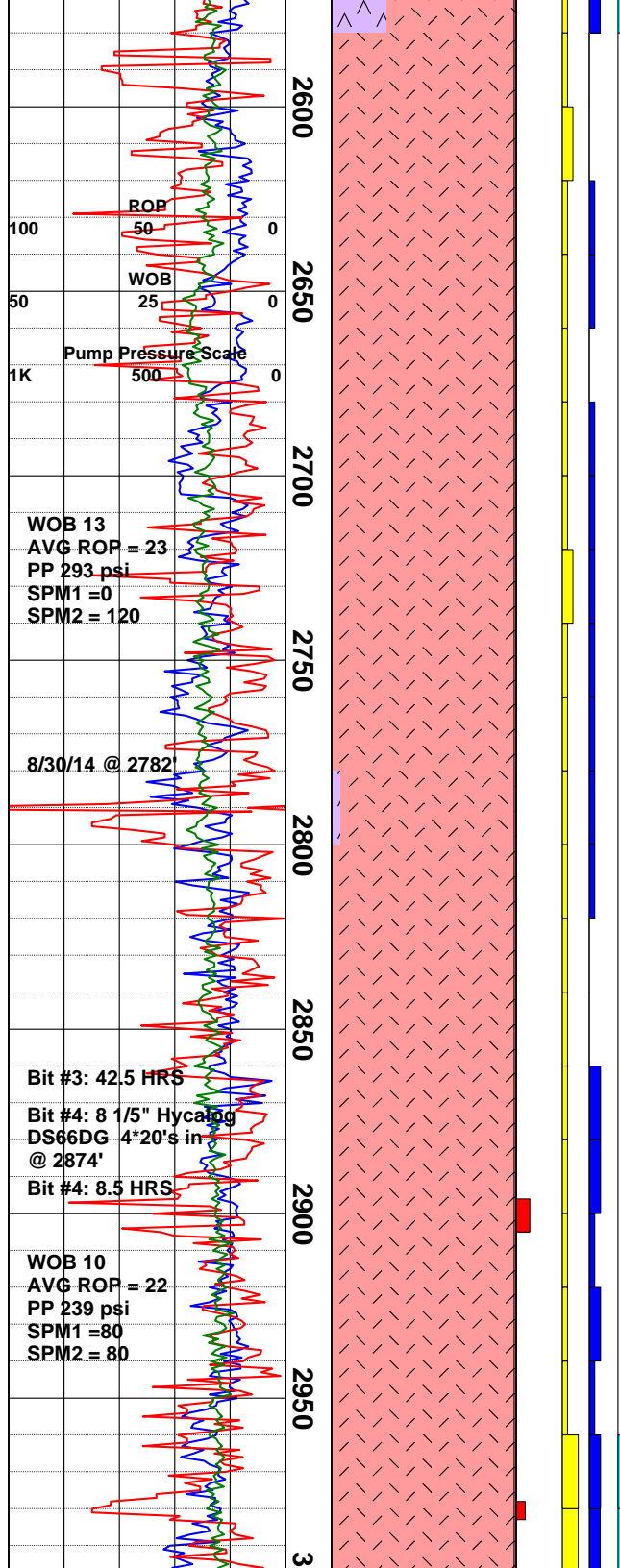
Tuff: lt gry-gry, fn grained, cryptoxln, mod fria, tr flow banding (layered clr change), granular, wht sft calcareous clay clumps appr @ 2300'.

Andesite: dom gry to drk gry, com blk, granular tex, massive mod hd cuttngs, com vugs with qtz fill, com milky feldspar laths, tr Fe oxidation, microxln, tr loose calcite xls appr @ 2360'.

Andesite: drk brn to blk, massive blocky
hd cuttngs, com hematite stng, tr loose
milky calcite xls, com grn vug fill
(nonttronite?), clr feldspar laths, microxln,
tr diss pyrite, tuff a/a.

Survey @ 2479' = 2.5°

Andesite: dk gry, rddsh brn, sbang-blocky ctgs, microxln, vuggy, com lse grn nontronite, pl-med gry lithic ash tuff, tr pl bluish wht chalcedony frac & vug fill, com hem stng rimming vugs, gd tr mustard yel limonite, tr drusy clr calc, rr diss pyr.



Andesite: dk gry, dk grn, hd ang-sbrndd ctgs, microxln, com felty microlites, along plag laths, com amydules, rr botryoidal qtz vug fill & drusy frac fill, com lse nontronite, tr brnsh gry lithic tuff, non-v calcareous.

Andesite: drk brn-blk, microxln, massive blocky cuttings, com grn nontronite, slt felty tex, incr in hematite stng in 2730' drill break & 2740 smpl, slt increase in calcite, incr in 2ndry qtz, tr drusy qtz, wk to mod rxn to HCl.

Andesite: dk gry, dk grn, sbang-sbrndd ctgs, v frm-hd, microxln, grainy, com amygdules w/ dk grn nontronite, tr lse yelsh wht calc, rr-tr hem stng, rr chalcedony.

Survey @ 2790' = 1.5°

Survey @ 2852' = 1.0°

NOTE: Drill to 2874' & POOH for NB #4.

Andesite: drk gry to blk, hd massive blocky vitreous cuttings, com felty tex, microxln, com magnetic mnls throughout, wht acicular radiating mnl @ 2900' (zeolite?), gd tr 2ndry qtz, incr in 2ndry qtz @ 2980' drill break, diss pyrite appr in 2ndry qtz and 2ndry calcite, gd tr spherical nontronite in vugs, mod rxn to HCl.

