DHISERVICES
FormationEvaluationSpecialists

dhiservices.com

SCALE: 1:600

LOG INTERVAL

DEPTHS:	380'	TO	6375'
DATES:	10/25/10	TO	12/15/2010

MUD TYPES

Gel/Water	TO	6375'
	TO	
	TO	
	TO	
	TO	

CASING DATA

			HOLE DATA		
30"	TO	95'	36"	TO	100'
20"	TO	505'	26"	TO	512'
13.375"	TO	3154'	17.5"	TO	3165'
	TO		12.25"	TO	6375'
	TO			TO	

ABBREVIATIONS

NB	New Bit	LAT	Lagged After Trip
RRB	Re Run Bit	LAS	Lagged After Survey
CB	Core Bit	NR	No Returns
Cnxn	Connection	PR	Poor Returns
CG	Cnxn Gas	LC	Lost Circulation
TG	Trip Gas	CO	Circulate Out
SG	Survey Gas	SVY	Survey
SWG	Swab Gas	AZI	Azimuth
WOB	Weight On Bit	Inc	Inclination
RPM	Rotary RPM	CSG	Casing
PP	Pump Pressure		
SPM	Strokes/Min.		
MW	Mud Weight		
VIS	Funnel Viscosity		
PV	Plastic Viscosity		
YP	Yield Point		
FL	Fluid Loss		
Cl	ppm Chloride Ion		
SOL%	Solids %		
SD%	Sand %		
MB	Methylene Blue		
Ca	ppm Calcium		
FC	Filter Cake thick		
Rm	Mud Resistivity		
Rmf	Filtrate Resistivity		

MUDLOG

COMPANY:	ORMAT NAVADA INC.
WELL:	Wister 12-27
FIELD:	Wister
REGION:	Niland, CA
COUNTRY:	USA
COORDINATES:	~700' S and 150' E of NW
	Section 27-T10S-R14E SBB&M
ELEVATION:	-15' MSL
API Index:	
Spud Date:	10/25/10
Total Depth:	6375
Contractor:	GeoDrill
Rig/Type:	Rotary Triple
Logging Unit:	Unit 6
EDR:	DrillSense
Company Rep:	Bob Mueller
	Tom Turner/Joe Bunce
Engineers:	Tim Jayne
	Terry Crowson
Loggers:	Jonathan Harris/Yosief Segid
	Jack Breland/Simret Zerezghi

SYMBOLS

- Casing Shoe
- Bit Trip
- Wiper Trip
- Gas Show Good
- Gas Show Fair
- Gas Show Poor
- Sidewall Core Recovered
- Sidewall Core Unrecovered
- Wireline
- Oil Show Good
- Oil Show Fair
- Oil Show Poor
- Core Rec.
- Core Unrec.
- DEV Survey
- Connection Gas

Shows: None, Weak, Moderate, Strong

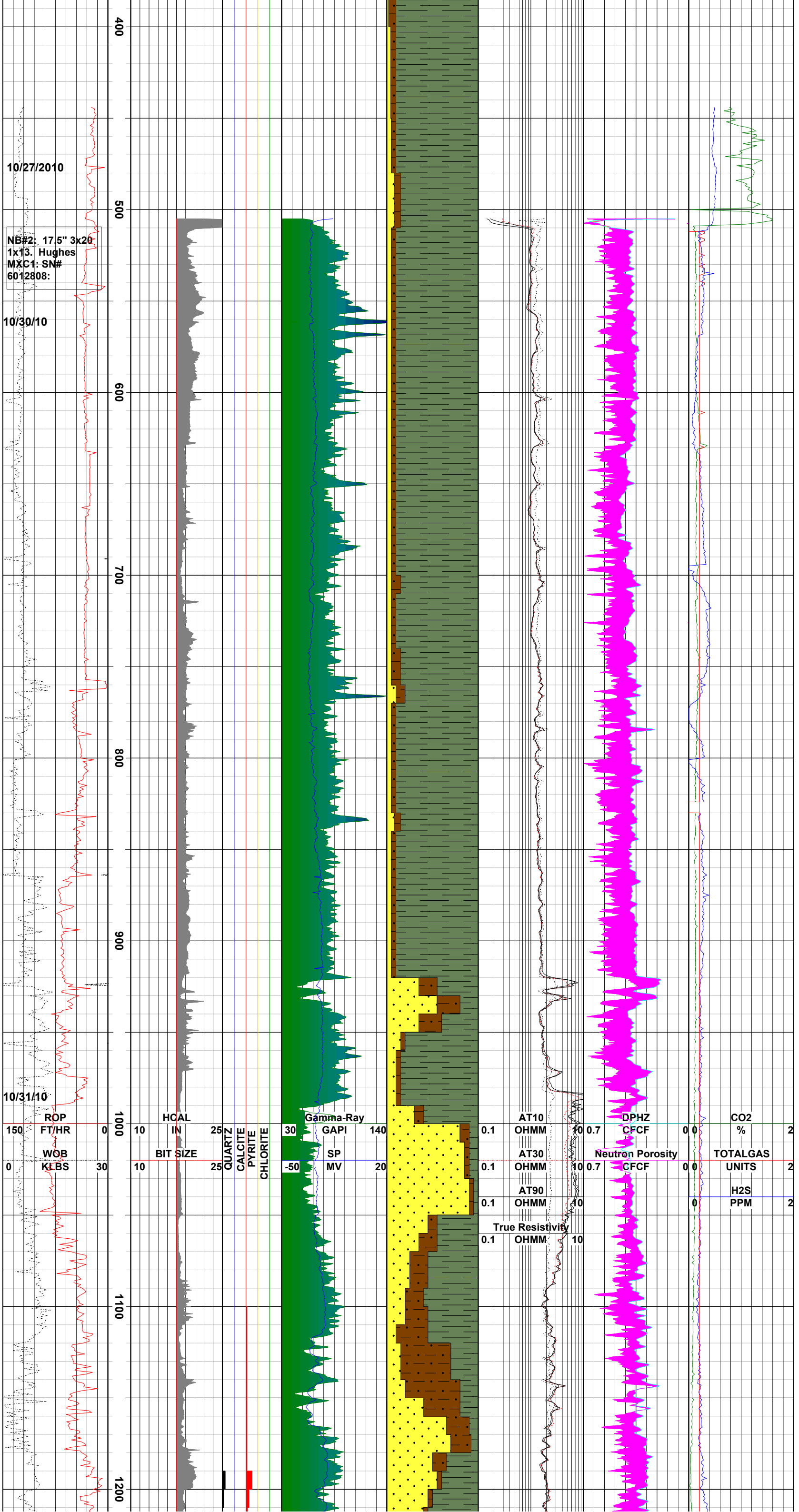
LITHOLOGY

- No Sample
- Cement
- Aluvium / Conglomerate
- Sand
- Siltstone
- Claystone
- Shale
- Limestone
- Dolomite
- Coal
- Quartzite
- Chert
- Anhydrite
- Mudstone
- Volcanics
- Basalt
- Igneous (Extrusive)
- Igneous (Intrusive)
- Tuff
- Metamorphics

MODIFIERS

- Calcareous
- Dolomitic
- Limestone Stringer
- Dolomite Stringer
- Sandy
- Argillaceous
- Coal
- Pyritic
- Silicic
- Fossils
- Porphyritic
- Euhedral Crystals
- Fractures
- Epidote
- Mica
- Chlorite
- Anhydrite
- Fe-Ti Oxides

Penetration	M. Depth	Hole Size	Sec Mnrls	Gamma Ray	Percent Lithology	Resistivity	Porosity	Gas	Lithology Remarks
ROP 150 FT/HR 0 WOB 0 KLBS 30		HCAL 10 IN 25 BIT SIZE 10 25		Gamma-Ray 30 GAPI 140 SP -50 MV 20		AT10 0.1 OHMM 10 AT30 0.1 OHMM 10 AT90 0.1 OHMM 10 True Resistivity 0.1 OHMM 10	DPHZ 0.7 CFCF 0 Neutron Porosity 0.7 CFCF 0	CO2 0 % 2 TOTALGAS 0 UNITS 2 H2S 0 PPM 2	
10/26/2010 NB #1; 26 in., 3x18 ; Serial:B884444	300		QUARTZ CALCITE PYRITE EPIDOTE CHLORITE						All depths driller's depths measured from kelly bushing. All lithology descriptions from wet cuttings unless noted. All gas calibrated to SPWLA standards. Started collecting 10 foot samples at the depth of 380 ft. Claystone: yellowish brown, large



Claystone: yellowish brown, light olive grey, chunky to blocky, gummy texture, sticking to shale screens, highy calcareous, traces of yellowish brown silty sand imbedded in clay cuttings.

Claystone: yellowish brown, light olive grey, chunky to blocky, gummy texture, sticking to shale screens, highy calcareous, tr of yellowish brown silty sand imbedded in clay cuttings.

Set 20 inch diameter Surface Casing @ approx 505 ft. N/U BOP, Pressure Test, RIH drill out shoe.

Claystone: light olive grey, tr yellowish brown, chunky to blocky, gummy texture, sticking to shale screens, highy calcareous, tr of yellowish brown silty sand imbedded in clay cuttings.

Claystone: yellowish brown, chunky to blocky, gummy texture, sticking to shale screens, highy calcareous, tr of yellowish brown silty sand imbedded in clay cuttings.

Clay: reddish brn to tan gy. Lrg blcky ctgs, mod firm but pliable. sticky to earthy tex, calc. abundant anhydrite nodules. sli sandy in places. backing up on shakers

Note: Drill t/757'. Circ and survey. POOH for new BHA (RRB#2)

Clay: tan/brn to olive gy. firm plas ctgs, sticky text. anhydrite nodules, calc.

Clay: reddish brn to tan gy. Lrg blcky ctgs, mod firm but pliable. sticky to earthy tex, calc. sli sandy in places. backing up on shakers

Sandstone, dk grey, brown, fine grained, very hard, ferriferous, well cemented, interbedded off white soft silt layers, minor soft cohesive clay.

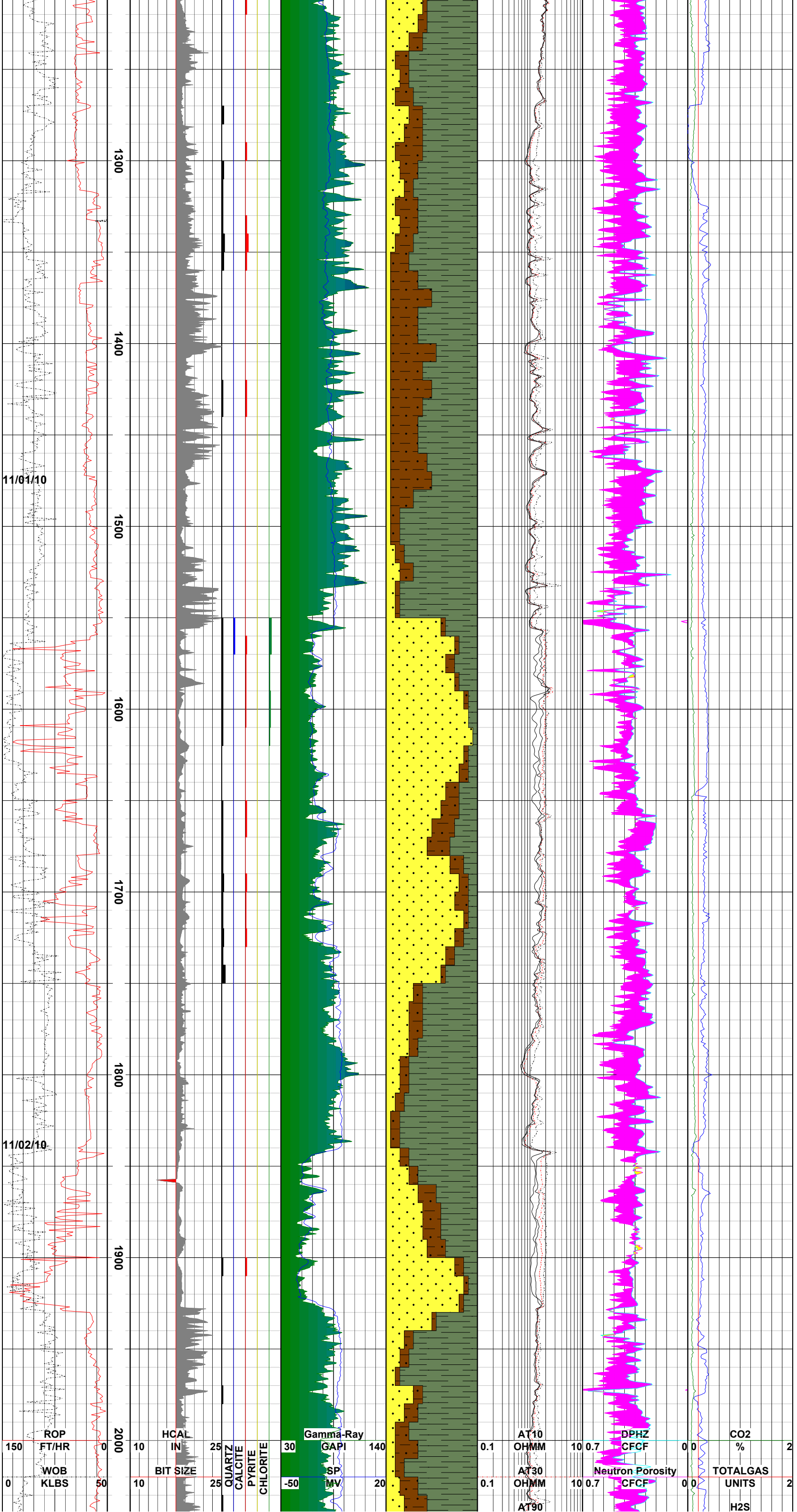
Clay: tan/brn to olive gy. firm plas ctgs, sticky text. anhydrite nodules, calc.

Sand: light grey to med grey, fine to coarse grained, sb ang to sb round, unconsolidated, poorly to moderately sorted,

Clay: light olive grey, tr yellowish brown, chunky to blocky, gummy texture, sticking to shale screens, highy calcareous, tr of yellowish brown silty sand imbedded in clay cuttings.

Silt: off white to very light grey, soft, slightly cons, sucrosic tex., calcareous, interbedded in clay and sand layers as above.

Sandstone: pl brn to predom lt-med gray, mod hard to hard, calcitic, fine to crs grn, overall well sorted, low sphericity, sli subrnd to



most subang.

Note: Drill to 1239'. Circ, Wipe hole to shoe.

Clay: predom lt olive gry to lt gry, punky to mushy to clumpy, occ gelat, loc malleable, erthy fract, nod ctgs habit, dull erthy luster, sli gritty clayey text, occ banded to predom soft sed struct.

CLT: tan gy to reddish brn. blocky to flaky ctgs hbt, mod firm to firm, earthy lust, easily scored. calc. occ. anhydrite w/ loc. dolostone stringers. scat. qtz and pyrite xtls.

Silt: off white to very light grey, soft, slightly cons to lsly cons, sucrosic tex., calcareous, interbedded in clay and sand layers as above.

Clay: light olive grey, reddish brown, tr yellowish brown, flaky, platy to blocky, gummy texture, sticking to shale screens, highy calcareous, tr of yellowish brown silty sand, layered and imbedded in clay cuttings.

Sand: overall gy. unconsol. w/ weak clay matrix suprt. f grn, sub rnd to rnd. well srt. predom frosted qtz. access. calcite, fldsp, micas. loc chlorite, pyrite.

Sand: overall lt gy to gy. unconsol w/ occ. clay matrix suprt. vf grn, well srt. predom qtz w/ plag fldsp, mica. com carbonaceous frags.

Note: Drill t/1648'. Circ and survey, Wipe hole to shoe.

Claystone: lt gry to med drk gry to loc redish hues, sli mshy to clmpy to loc mod stiff consis, eas crmbl to occ sli crnchy, planar to irreg frac, globular to massive to loc plty ctgs, dull erthy to sli grsy lstr, smooth clayey to vry sli gritty text, scat thin lam to massive struct.

Sand: gy. predom. uncosol (weak clay suprt) w/ occ SST pieces. vf to f grn, subrnd to rnd, mod well to well srt. dom frosted qtz w/ fldsp, mica. sme scndry minrlztn (qtz, pyr). occ dolostone stringers.

Clay: light olive grey, flaky, platy to blocky, gummy texture, sticking to shale screens, highy calcareous, tr of yellowish brown silty sand, layered and imbedded in clay cuttings.

Sand: gy. predom. uncosol occ SST pieces. vf to f grn, subrnd to rnd, mod well to well srt. dom frosted qtz w/ fldsp, mica. sme scndry minrlztn (qtz, pyr).

Clay: lt gray to med gray. occ platy, soft, slightly crumbly. smooth sli gritty texture. mostly massive/globular ctgs, good cohesion, weak-mod adhesion. dull earthy luster. soluble.

Note: Drill t/2056'. Wipe hole to shoe.

Siltstone: med gray. faint dark

equant to wedgelike ctgs habit. sli vitreous luster. silty/gritty text, occ laminae to massive struct. mod calc.

Clay: lt gray to med gray. occ platy, soft, slightly crumbly. smooth sli gritty texture. mostly massive/globular ctgs, good cohesion, weak-mod adhesion. dull earthy luster. soluble.

Clay: light olive grey, mod sft to firm, flaky, platy to blocky, gummy texture, highy calcareous, tr of yellowish brown, hd, sandstone, layered and imbedded in clay cuttings.

Claystone: med/dk gy to red/brn. firm to mod hd. massive to platy ctgs. smooth to sli waxy text, easily scored. occ laminae vis. calc.

Note: Drill t/2244'. POOH. Change bit (NB#3).

Claystone: med/dk gy to red/brn. firm to mod hd. massive to platy ctgs. smooth to sli waxy text, easily scored. occ laminae vis. calc.

Siltstone: med lt gry to drk gry to loc dsky red to mod redsh brn, scat fnt blk inclusions, fria to frm friable. nodular to wedgelike ctgs habit. sli sprklg earthy luster. silty/gritty text, ovrall massive struct. sli to mod calc.

Sandstone: vry lt gry to med gry to occ lt red, vry fn to fn to trace med grn, ovrall well srtd, sli subang to subrnd'd angulrty, mod sphrticty, occ sli frsted, friable to mod hard, vry sli calcitic cement matrix.

Note: Drill t/2431', wipe hole to shoe.

Clay: lt gry to med gry to dsky red, mushy to pasty/tacky to loc sctile, soft to occ slightly crmbly, smooth sli grtty text, massive to globular ctgs, ovrall gd cohsn/adhsn, dull erthy lster, massive to scat vry thin lam strct, mod calc.

Claystone: med gry to occ. gry/brn. firm, mod well indurated. blocky to platy ctgs. smooth to sli gritty text, easily scored. overall massive struct. w/ loc laminae vis. mod calc.

Clay: lt gry w/ greenish hues.mushy to tacky. massive ctgs habit. dull earthy luster.smooth text, good choesion mod/good adhesion, weak to mod calc.

Note: Drill to 2659'. Circ. POOH to inspect bit. (RRB#3)

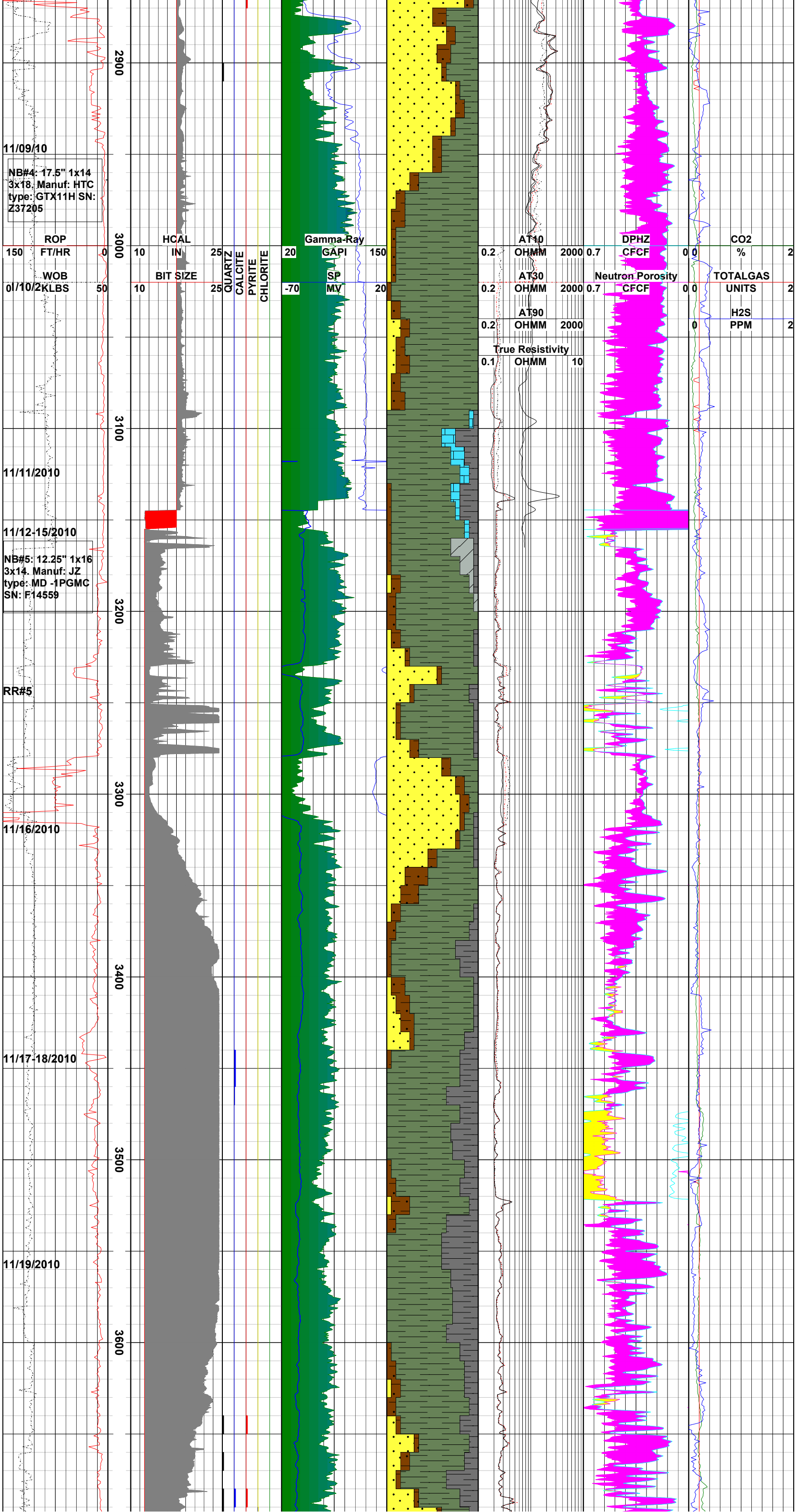
Claystone: med/dk gy to red/brn. firm to mod hd. tabular to platy ctgs. smooth to loc. gritty text,. overall massive structure with occ. laminae vis. mod calc.

Sandstone: lt to med gy w/scat greenish hues. vf to f grn, v well sorted, rounded grs. irregular nodular ctgs, friable to firm/friable. earthy/sli sprklng luster, gritty text predom qtz. weak to loc. mod calc.

Note: Drill to 2813'. Circ. POOH to inspect bit. (RRB#3)

Sand: wht to vry lt gry, indiv grains are clear to transl to mlky wht, vry fn to fn to loc crs, well to vry well srtd, subang to subrnd ang, low sheric, frosted to sli polished, predom grn support, unsol at surf, tr pyrite, sli to loc mod calc.

Sandstone: lt gry to med gy to pale



Sandstone: lt gry to med gry to pale rddish brn. fri to mod hd. med to crse grn. mod to well srt, rnd to sbang, low spher. crumbly to brittle. tabular to nodular ctgs habit. frsted to mod sparkling luster. gritty to sucrosic text. massive structure. fair to loc mod calc. cmnt. com mafic lithic frags.

Note: Drill to 2964'. Circ. POOH to change bit. (NB#4)

Claystone/ Marl: lt gry to med gray, occ red brn; dom v well hydrated, over all clumpy to sticky; occ firm to mod hard tabular to platy ctgs; smooth w/minor gritty text; weak to faint laminated; increased amount of calcareous to marly layers F/ 3010 to 3020'

POOH @ 3020' for stab. RRB#4

Claystone/Shale: gry to med gry; fine smooth tex; occ laminated; over all mod hydrated, occ firm ctgs; similar to above units; highly calcareous to marly.

Wipe hole 5 Stands @ 3132'

Claystone/shale: f/ 3140' to 3165', dom brn reddish w/ minor med gry; fine smooth tex; big ctgs firm to hard; dom hydrated to soft clay; mod calc

Drill to 3165'; Wipe hole to shoe; RIH and circ b/u, POOH for E-Log. Set 13 3/8" casing @ 3154'. Cement. N/U BOP. Pressure test. Drill out shoe, drill ahead.

Claystone: med gry to occ. gry/brn, mod well indurated. blocky to platy ctgs. smooth to sli gritty text, easily scored. overall massive struct. w/ occ. loc. fissility. mod calc.

Note: Drill t/3246'. POOH, change BHA (RRB#5)

Sandstone: med gry to white; upper med to fine grained; mod well sorted and rounded; dom consolidated, easily friable w/occ firm carbonate cemented ctgs; over all massive w/no visible bedding structure becomes thinly bedded f/3310' to 3340'; mainly comp of qtz , occ surfaces of conc black mica minerals; mixed with minor brn and drk gry claystone, similar to above units; slightly calc.

Claystone/shale: med to drk gry, minor reddish brn; vfn smooth tex; appears thickly bedded with occ visible pronounced fissilty; slightly to mod calc.

Note: Drill t/3442'. pulled to shoe for rig power repair.

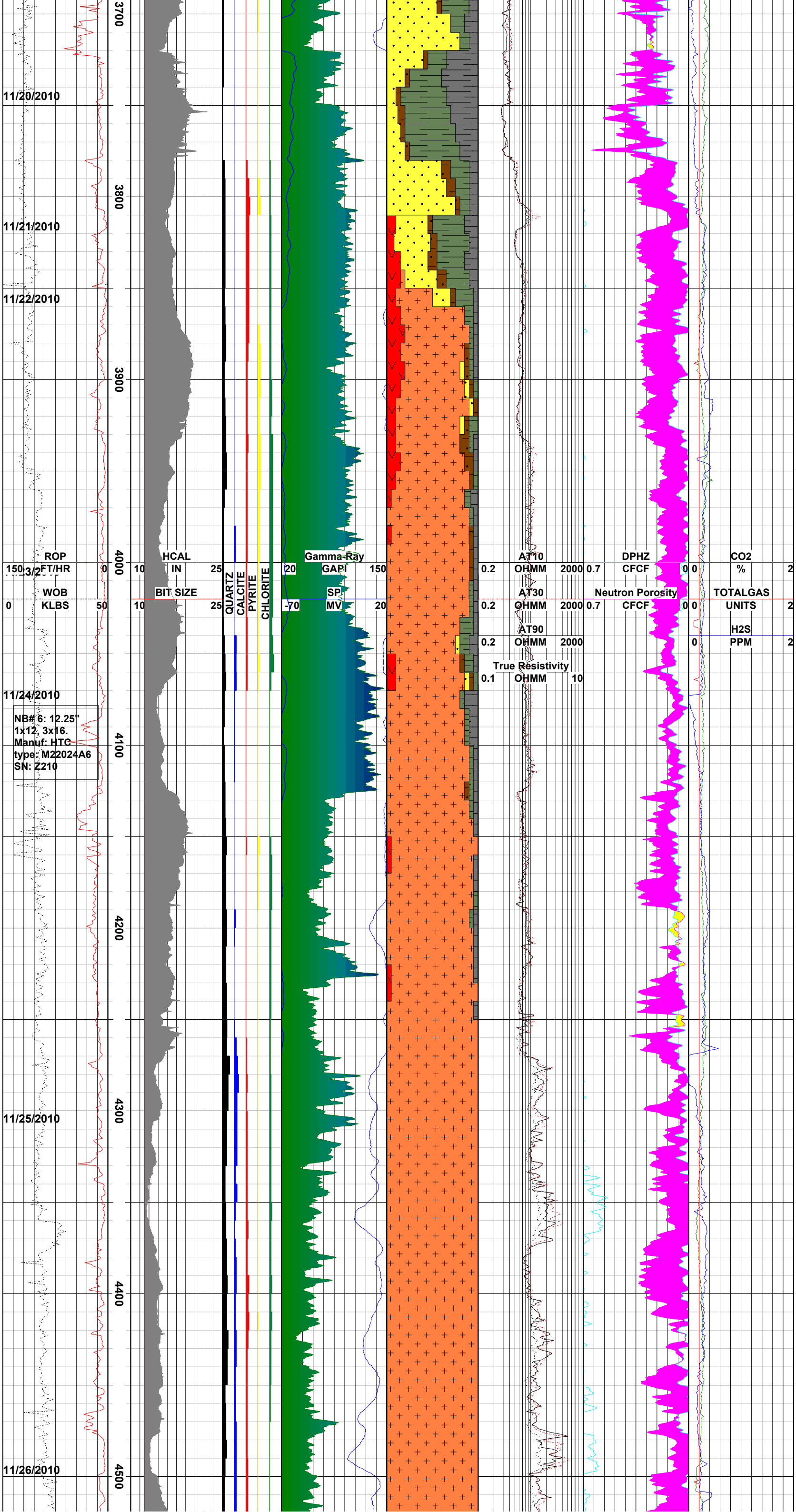
Claystone/Shale: med to drk gry, minor reddish to brwn ctgs; vfn smooth tex; firm to mod hard; occ show grading in color and tex; appears dom thinly to thickly bedded, w/com fissile thin platy ctgs; minor calcite crystal @ 3460'; overall slightly calc.

Note: Drill t/3536'. Circ and survey. POOH to change BHA (RRB#5).

Claystone/Shale: med to drk gry, similar to above units; vfn smooth tex; firm to mod hard; dom platy ctgs; thickly to thinly bedded with/com in bed lamination defined by color/ composition variation; no vis mineralization/alteration; over all slightly calc.

Note: wipe hole to shoe@ 3603'.

Sandstone: lt gy to grysh ornge pink to loc. pale red, rare greenish hues. mod hd to occ friable. vf to low f grn, sbrnd to rnd, mod well srt. predom qtz w/ access calcite, fldsp, lithic frags. mod calc cmnt. overall massive structure, loc



xtalline qtz/pyr aggs.

Note: wipe hole to shoe @ 3732'

Claystone/Shale: med to drk gry; occ lt gry, similar to above units; vfn smooth tex; firm to mod hard; dom pebble size platy ctgs; over all thinly bedded with/com in bed lamin.

Sandstone: med gy to gryish orng pink. bleached apprnce when dry. overall mottled apprnce. mod hd to v hd. signific. appar. alteration. grain structure occ. not obvious. com qtz, pyrite xtals, some epidote. low to non calc.

Note; Pulled to shoe @ 3815' to replace Motor.

Granitoid: slightly Altered, variegated colored; white, pink, lt greenish to slightly lt reddish; over all crystalline; intermidate grained, appears intrusive; mainly compo of feldspars; mixed w/minor porphyry dacitic ctgs, w/com elongated to rectangular plagioclase incrusted in fine ground mass; very hard to hard; occ slightly chloritized, with abundant microcrystalline pyrite.

Volcanics: porphyritic dacite/rhyolite. varieg color f/ dk brnsh rd t/ gy to grn. hd to vhd ctgs. porphyritic text, lath shaped feldsp. phenocrysts in aphanitic to vf xtalline groundmass. loc chloritization, scat pyrite xtals.

Granitoid: lt greenish to lt pink; com white patches; med grained; predom crystalline w/occ porphyritic tex; comp of feldspars, qtz and minor mafic minerals; disseminated pyrite minerals throughtout, minor reddish oxidized spots; over chloritized; minor thin calcite veins; weak to non calc.

Note: Wipe hole to shoe @ 4035'

Granitoid:as above, with loc. mineralized striations, com calcite xtals. apparent alteration to clay in places

Note: Drill t/ 4072. circ. POOH for bit (NB#6)

Granitoid: predom white to lt mint green, com pink shades; med to fine crystalline tex; comp of feldspars and qtz; increased amount of pinkish feldspars from above unit; over all appears fractured filled with oxidized reddish mineral precipitates, @ 4140' fractures filled w/quartz , trc to non pyritic; show slight variation in comp/color with depth; weak to non calc

Granitoid: similar to above units. lt grn to whitish, com pinkinsh. loc grysh red. fine to med xtalline, phaneritic text loc. discernable. dom small ctgs. predom qtz, feldsp, minor mafics, occ mica. scat pyr. com chloritized. some fractures/ minrlzd (qtz) veining vis.

Note: drill t/4224'. WIpe hole (pull 2 stands).

Granitoid: predom. wh to v pa grn. loc dk grn. v small pulvrzd ctgs. larger ctgs show f to med phaneritic text, composed qtz, fldps, minor mafics.

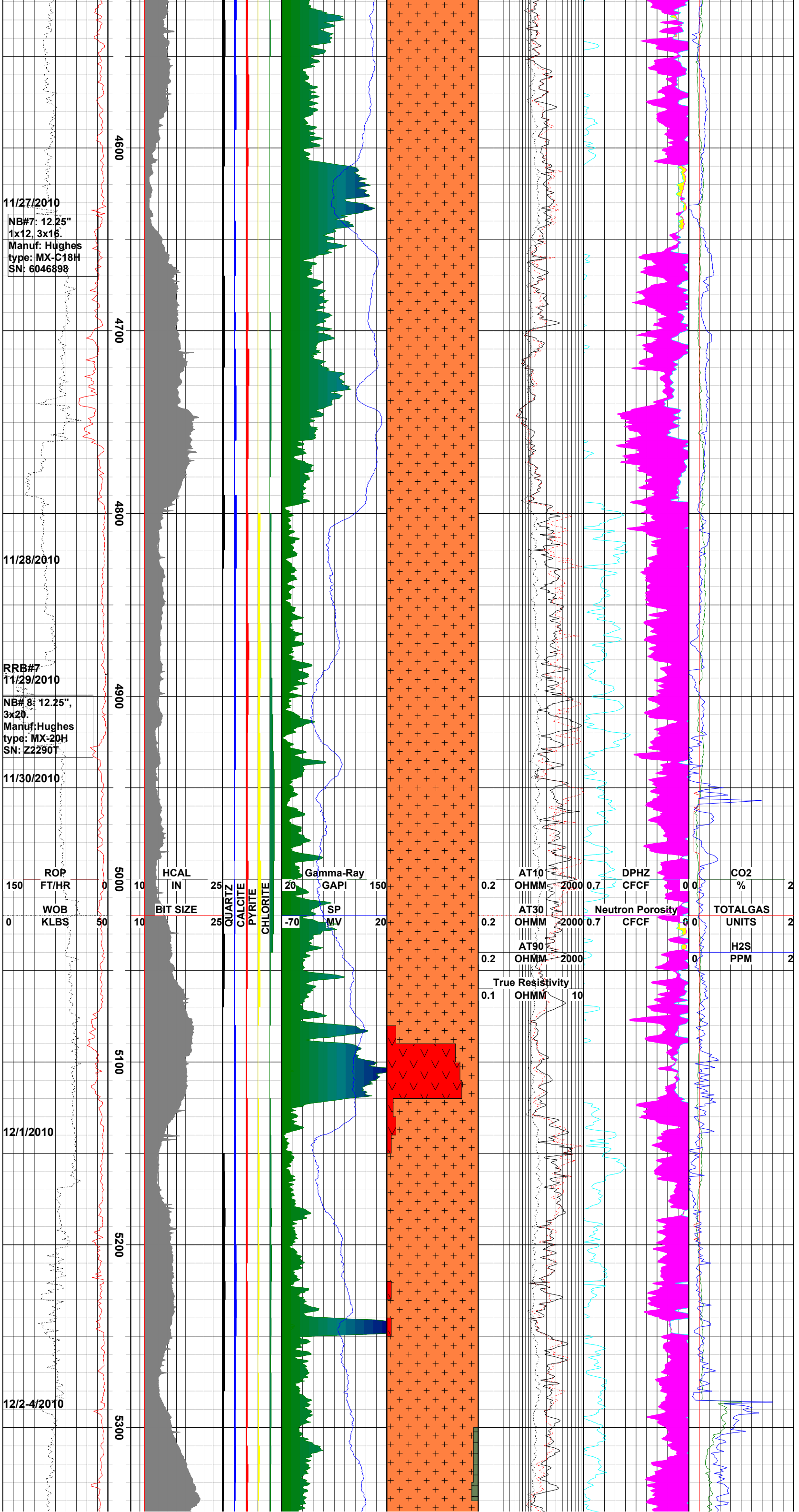
Note: Drill t/ 4268'. Pull to shoe to replace kelly hose

Granitoid: over all pale green to white, com peppered white and deep green; med to fine crystalline tex; comp of qtz, feldspars and mafic minerals; F/4290' to 4350' increased amnt of deep green mafic minerals; abnd qtz and calcite crystals/veins; minor microcrystaline pyrite, slightly chloritized; occ appears sheared with reduced grain size; show slight variation in comp/color with depth; weak to non calc

Note: Drill t/ 4381'. Wipe hole (pull 3 stands).

Granodiorite: darker than above units, dusky grn to gryish olive grn, loc light gry. hd to v hd. microxtalline to med xtalline. phaneritic text. dom feldsp, qtz, signif mafics inc. hornblnd. scat mica. com. fracs. and minrlzd vng (qtz, calcite fill). pervasive microxtalline pyr. loc red/brn oxidizd precipitates. mod to loc. significant chloritization.

Diorite: similar to above units; coarse to med grained; drk green, black peppered by dusky white; vhard to hard; mafic rich; comp of pyroxenes, amphiboles, plagioclase; minor qtz; com euhedral to microxlline pyrite, calcite crystals; gradually with depth becoming mafic rich in composition (f/4480'-4520'); thin fractures filled by



calcite, qtz veins; over all mod to weak calc

Note: wipe hole @ 4506'; 4 stands.

Granodiorite: gryish olive grn to lt grnsh gry, loc v pa gry. hd to v hd. blocky irregular ctgs. med xtalline, phaneritic text. dom feldsp, qtz, com mafics (pyrx, amphiboles). com minerlzd striations and minrlzd veining (qtz, calcite), com microxtalline pyr dissem. through ctgs. rare red/brn precipitates on fracture surfaces.

Note: Drill t/ 4631'. Circ and survey. POOH to inspect bit and change BHA. Change bit (NB#7)

Granitoid: over all light colored, white to lt pink peppered with minor lt greenish; med to coarse grained; crystalline tex; mainly compo of qtz, feldspars, minor mafic minerals; becoming more felsic than above ctgs; very hard to hard; minor microcrystalline pyrite, calcite crystals; fractures filled with reddish brn precipitates; mod calc.

Granitoid: lt grnsh gry to v pa gy. hd. f to med xtalline. overall irregular ctgs, w/ an increase of v small pulverized ctgs f/4730', resembling coarse sand. predom qtz, fdlsp, mod mafic component, scat micas., rare loc pyr. com fractures and veining. rare loc. alteration to v. pa grn clay.

Note: Drill t/ 4760'. Wipe hole (pull 2 stands).

Granitoid : f/ 4800' to 4870' mix of drk, lt greenish and white ctgs; vhard; fn to med grained; becoming darker w/depth, abundant amphiboles w/ cleavage surfaces vis., qtz, epidote, minor feldspars, and trc micas; minor ctgs slightly altered/ sheared w/aligned minerals under microscope, disseminated pyrite xtals throughout, com calcite crystals; slightly chloritized; pulverized ctgs w/slickenside; slightly calc.

Note: Drill t/4884'. Circ and survey. POOH to change BHA. RRB#7.

Note: Drill t/4919'. POOH for new bit and BHA. (NB#8)

Granitoid: similar to above unit w/com chloritized ctgs; mix of drk, lt greenish and white ctgs; v hard; fn to med grained; abundant amphiboles, qtz, slight incr in plagioclase, epidote, minor localized biotites; disseminated euhedral pyrite throughout, minor calcite crystals; minor pulverized ctgs w/slickenside, thin fractures filled with reddish and white precipitates; slightly to mod calc.

Granitoid: overall olive gry to dusky grn, loc med gy. v hd. small, occ pulverized ctgs. med xtalline, phaneritic text. composed fldsp, some qtz, mafics include pyrxn, amphib. occ micas. mineral comp occ grading to more dioritic, w/ more abundant mafic component. com epidote and chloritization. scat minrlzd fracs and veining w/ qtz and occ. calcite fill. com dissem pyr cubes.

Silicified Rhyolite: f/ 5090' to 5120'; dusky white; felsic, aphanitic xtalline rock; smooth, v hard, irrg angular ctgs; com of dom microcrystalline qtz, plagioclase; appears silicified; with no visible mafic minerals; minor euhedral pyrite crystals, calcite crystals; fractured filled with calcite precipitate; probably a rhyolite dike/silicified tonalite; weak to non calc

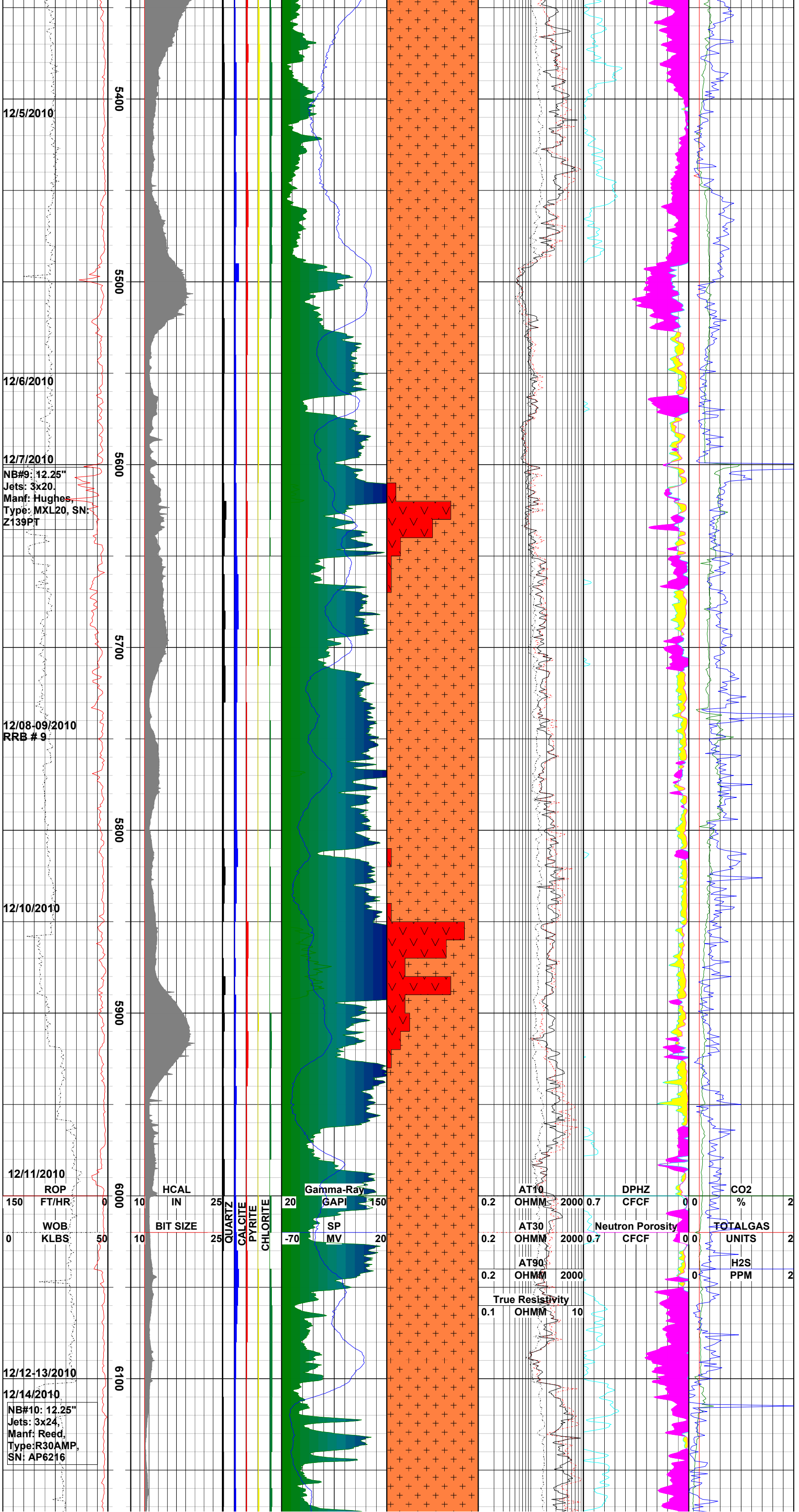
Note: Wipe hole @ 5168' to 5001'.

Granitoid: over med gy to olive gy colored, com dusky white peppered by drk greenish; med to fn grained xtalline rock; v hard to hard; dom comp of qtz, feldspars and mafic minerals; occ appears silicified; occ epidotized and chloritized ctgs; com calcite, pyrite and qtz crystals; mod calc. com. minrlzd slickensides/fracs.

Granitoid: predom med gy to lt mint green, loc grdng to dusky grn. v hard. med to fine crystalline tex, comp of feldspars and qtz; minor mafic component (mafic component inc. pyx, amphbole, scat mica). minor fractures filled w/quartz ,dissem pyr. loc chloritization.

Note:Pulled to shoe @ 5286' for Rig repair.

Granitoid: med gy to olive gy, loc grdng to drk green. hd. med xtalline. predom. feldsp, qtz with minor mafics. com to abundant micas and dissem pyr. occ. minrlzd fracs (milky qtz, some calcite). scat claystone ctgs (mod brn



Note: Drill t/5370'. Pull to 4906'. L/D washed out drillpipe.

Granitoid: It to med dark greenish peppered w/white; med to occ coarse grained; hard; comp of qtz, feldspars, amphiboles, brn biotite; occ chloritized and epidotized ctgs; @ 5400' minor sheared ctgs w/faint foliation surfaces; euhedral pyrite, calcite; minor pulverized with slickenside ctgs; shows minor change in comp and color with depth.

Granitoid (Granodiorite): overall olive gry to dusky grn. v hd. small, occ pulverized ctgs. med xtalline, phaneritic text. composed fldsp, some qtz, mafics inc amphib. biotite. mineral comp occ grading to more dioritic occ. gabbroic, w/ more abundant mafic component. more felsic f/4490', w/com calcite minrlztn.

Note: Wipe hole @ 5543', 2 stand.

Granitoid: F/ 5510' to 5600'; over all white w/minor lt greenish ctgs; upp med to med grained xtalline rock; dom comp of qtz, plagioclase, w/decreased biotite/mica from above units; becomes more felsic/tonalitic in comp with depth; minor pulverized w/slickenside ctgs; euhedral pyrite, calcite; greenish ctgs dom chloritzed, and epidotized; mod to weak calc

Note: Drill t/ 5599'. Circ and survey, POOH (L/D washed out DP @ 897'). Change BHA and bit (NB#9).

Silicified volcanics: lt grnsh gy to pa grnsh yel to loc light olive grn. v hd sml irreg ctgs. aphanitic to cyptocrystalline. silicified, occ intergrowth of pyr xtals on ctgs.

Note: Drill t/5658'. Pull t/ 4984'. L/D washed out drillpipe.

Altered Granitoid: f/ 5670-90'. v lt to lt gy. v hd. small irreg. ctgs. apparent silicification, along w/ abundant calcite minrlzation. difficult to make out any fabric or texture. possible vein fill. no epidote, minor chlorite specks, rare pyr.

Note: Drill t/5739', Lost pressure ~ 300 psi; POOH look for washed out DP and L/D 118 joints of DP. M/U new BHA and P/U new DP. RRB#9.

Granitoid: f/ 5700 to 5780'; dom white w/minor lt greenish shades; felsic crystalline rock; dom comp of plagioclase, qtz, v minor biotite; v few ctgs chloritized, no visible epidotization; minor yellowish to reddish iron oxidation @ 5760', prob limonite; minor pyrite crystals;com calcite crystals; minor qtz veins; weak to mod calc

Note: Drill t/5826'. attempt to run survey. cable snapped, POOH to retrieve survey tool. RIH. re-run survey

Silicified volcanics/Quartzite?: dom yellowish gry w/minor white and pale greenish varieties; dom irregular/angular ctgs. crypto to microcrystalline , smooth tex; v hard; appears silicified, micro crystals of pyrite throughout ctgs; minor calcite.

Granitoid: predom lt gy to lt grnish gry, loc grdng to dusky grn. v hard. f to med crystalline tex, comp of feldspars and qtz; minor mafic component (scat mica). minor fractures filled w/quartz, dissem pyr. loc to com. chloritization. loc minrlzd fracs and striations (calcite fill).

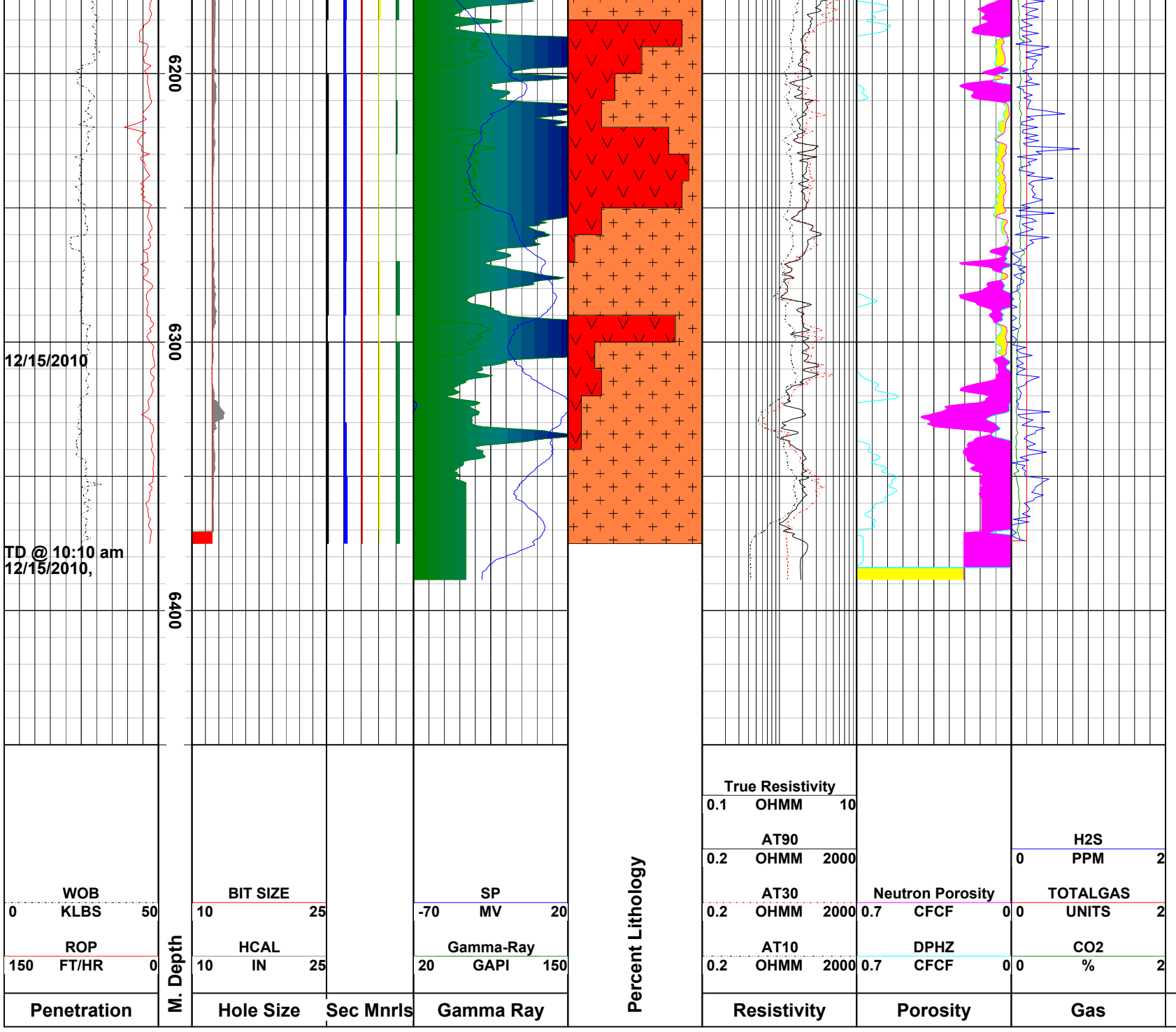
Granitoid: f/5950'-5980' intermediate intrusive rock (meta granitoid); dom comp of qtz, biotite and plagioclase; some chloritized; shows parallel alignments of mica minerals, and clear striations; weak to mod calc.

Granitoid: F/5980 to 6000' lt gry to dusky white; med grained felsic crystalline rock; hard; dom comp of plagioclase, qtz, and minor biotites; becomes intermediate to mafic intrusive F/6000' to 6020' w/ predom comp of biotite, amphibole, plagioclase and minor qtz; slightly chloritized, minor epidotized ctgs; occ shows faint foliation/ alignment of minerals; grades back to light felsic rock F/6020' to 6040', similar to above units. F/6040 to 6090', becomes more mafic rich w/increased chloritized ctgs; abandant calcite crystals throughout.

Note: Lost ~ 500 psi and 40k pounds Hook load @ 6100'; twisted off @ 5804', POOH.

Note:lost 250 psi @ 6118' POOH.

Granitoid: F/ 6100' to 6180' drk greenish to black, mixed with white ctgs; hard, intermediate intrusive, comp of biotite, amphibole, plagioclase, & qtz; moderately



Penetration	M. Depth	Hole Size	Sec Mnrls	Gamma Ray	Percent Lithology	Resistivity	Porosity	Gas	Lithology Remarks

chloritized, occ faint to well developed folation surfaces; calcite crystals, minor epidote and pyrite.

Silicified Volcanics: dom yellowish gry w/minor white and pale greenish varieties; felsic, crypto to microcrystalline, smooth tex; mod hard; appears silicified w/minor porphyry muscovite, micro crystals of pyrite and calcite crystals; pulverized ctgs with slickenside; similar to upper volcanic units.

Granitoid: F/ 6260' to 6290'; lt to dark greenish to occ black, mixed with white ctgs; mod hard, intermediate crystalline rock, comp of biotite, amphibole, plagioclase, & qtz; slightly chloritized, occ faint foliation/ alignment of minerals; calcite crystals, minor epidote and pyrite.

Granitoid; pale grnish to dark intermediate intrusive; moderately to highly chloritized; comp of amphibole, feldspare, biotite and qtz; sec minls pyrite, calcite and epidote; occ fracture surfaces.

Granitoid: F/ 6350 to 6375'; similar to above units, drk greenish peppered w/white , intermidate intrusive rock with increased mafic minerals; com chloritized ctg, com calcite crystals, minor epidot, and tr of pyrite.

POOH @ 6375' for E-Log. Run E-log, conduct injection test on open hole @ 1.52 strokes/min, 600 psi; Change over, L/D DP.