GL04467_5

R. F. SMITH CORP.

GEOTHERMAL DATA LOG

COMPANY THERMAL POWER COMPANY
WELL "Dixie Federal" 45-14
FIELD Dixie Valley COUNTY Churchill
LOCATION SEC 14 T 23N R 35E
STATE Nevada COUNTRY USA

LOGGING GEOLOGISTS H.J. Karabel, M.T. MacLeod, W. Grabert
PRESSURE INST. TYPE Silicon Chip TEMP. TYPE J-Thermocouple

DEPTH LOGGED FROM 120' TO 4618'
DATE LOGGED FROM 4/26/79 TO 5/21/79
ELEVATION 3410' (GL) + 22' to KB ☒ DF ☐ GR ☐

-LITHOLOGY-

Sandstone, Siltstone, Graywacke Type #1, Graywacke Type #4, Solution Deposit, Basalt or Andesite, Peridotite, Schist, Gabbro
Breccia, Claystone, Graywacke Type #2, Chert, Minerlzd Deposit, Other Volcanic, Igneous Rock, Quartzite
Conglom., Shale or Argillite, Graywacke Type #3, Limestone, MELANGE, Tuff or Tuff Brec, Granitic Rock, Serpentine

ENGINEERING DATA

HOLE SIZE
26" to 124'
17½" 1330'
12¼" to
to

CASING SIZE
20" to 124'
13 3/8" to 1330'
9 5/8" to

DRILLING RATE
☒ FT/HR ☐ MIN/FT

ROCK DENSITY ----

DEPTH

LITHOLOGY

AIR AND MUD DRILLING DATA

TEMPERATURE (°F)
IN ----------
OUT ———

CO2 ppm on Air Drilling
TOTAL MUD GAIN/LOSS

PRESSURE PSIG
IN ------
OUT ———

METHANE ppm
ETHANE ppm

H2S ppm
Resistivity

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REMARKS

DESCRIPTIONS
CORE RESULTS
SURVEYS
FORMATION TESTS
MUD AGITATOR
ELECTRIC ☐
AIR ☒

Note:Drl 26" hole to 124';set 20" csg to 124';begin logging on 4/26/79 from 124';drlg ahead w/ 17½" bit.

Alluvial Sediments:unconsolidated,pred lt brn weathered sedmts, sme var amts fresh rx frags,abnt volcanics, andesite,sme propylitized,abnt felsic frag, var amts prob diorite-gabbro frags,occ-com minrlized frags,pyrite, prob cinn,limon-hematite,prob chloritzed bio & hornblde,tr xln calcite,CaCO3 cmt .

Note: Bulk Density of Alluvium 2.45 - 2.89

Alluvial Sedments: v heterogeneous, unconsolidated, pred volc frags, andesite, rhyolite, dacite, diorite, gabbro, sme min frags, calc, pyrite, hematite, sec chlor, vari col, m-w srt rnd-subrnd.

Alluvial Sedments con't as above, W/ tuffaceous material alt. to cly, pos kaolinite, cinn, qtzite, qtz grains, m-pr srt.

Alluvial Sediments: uncon-solidated, heterogeneous, pred volc frags, grn, gry, brn, abun felsic material, andesite rhyolite, minor gabbro, incr min frags, pyrite, sec chlorite, cly, limonite, hematite, incr grain size, pr srt, rnd-subang.

Note: both pumps in operation.

Alluvial Sediments con't as above, sme volc frags to cly, decr pyr & chlor-ite, m-pr srt rnd-subrnd

Note: No. 1 pump down; drawworks/rotary table problems-decr to 50 RPM;decrd drl rate due to incrd freshness of smpl in part.

Note:Repair Rotary.

Tuff/Andesite:sample more homogeneous from 700-840',poss pred volcanic gravels?;pred grnish gry,sme brn,wldd tuff-andesite,v fresh, no vis weathering,abnt dism & agg xln pyrite

Note:con't minor rotary clutch/chain probl.

Alluvial Sediments: uncon-solidated, heterogeneous, pred volc frags, andesite, rhyolite, tuff granodiorite, gabbro, sme min frags, pyrite, calc, cinn, chlorite, hematite, limonite, cly, vari col, pr srt, rnd-subang,vis weathered, incrg brns from 940'.

Note: Increased amts of clay matrix from approx 990',w/ abnt clay from 1010';lost fluid over shakers.

Alluvial Sediments:lt-med brn overall color, visibly weathered/oxidized,heterogeneous, volcanics,granodiorite, sme gabbro,com-abnt clay matrix/alteration, minor mnrlized lith frags,tr calcite.

Tuff:lt grn-gry grn,unweathered/fresh,incrd homogeneous,fresh xln dism pyrite,sme propylitized,sme sluff.

Pred Tuff: gry-grn, incr propylitization, slt weathered, sme volc gravel, rhyolite, andesite, tr gabbro, granodiorite, sme xln pyrite, sec chlorite, limonite, hematite.

Pred Siliceous Lithic Tuff: wht-gry, sme gra-nitic frags, tr andesite, gabbro, sme min frags, pyrite, tr sulfur, cinn?, hematite, limonite,vis ang-rndd var lith frags,lt grnish gry mtx.

Note:Drld to 1330';ran E-log;set 13 3/8" csg @ 1330';drl 12¼" hole; drilling w/ water.

Tuff:pred lt gry-lt ol grn,sme v lt red brn irreg mottling,poss sl lithic,pred v silic, cryptoxln-sl microxln, sme wht flds,tr bio, abnt veined & dism pyr.

Andesite:pred med-dk brn,sme prob oxidized, intercalated w/ lt grn-lt gry tuff,sme red-brn silic,aphan-xln prob andesite,decr amt pyrite,tr clr qtz & calite spar.

Andesite con't as above; well weathered, flds alt to kaolinite, mafics slt alt to chlorite

Andesite: gry-blk - brn, slt weathered, intercalated w/ silicic tuff, gry - wht, sme vein and dism pyrite, tr sulfur, calc, hematite, limonite

Andesite? gry-blk - rd-brn, v oxidized, and weathering to cly, sme silicic tuff, decr pyrite tr sulfur, cinn?

Note:Switch water to mud

Tuff: wht, alt to cly, w/ ang qtz frags, sugary cryptoxln matrix, sme rem felds, abun andesite, sluff?, abun calc, tr pyrite

Tuff?:(devitrified?)wht-lt gry,com lt grn tint,com vitreous app,com felds,abun ang qtz frag,cryptoxtln matrix,occ altered to cly,cont vari amnts andesite,in samp,abun calc,tr pyr

Tuff?:(poss devitrified wht-lt gry,com lt grn tint,com vit,com cryptoxtln,abun qtz & felds,occ altered to opaque wht-lt pnk cly,abun calc,gd tr pyr

Note:approx 45' of fill after survey @ 1854'

Andesite/Basalt: blk, grn, brn, fine xln matrix, w/ interlayered tuffs, wht-lt brn, tr calc hematite, cinn?

Andesite: grn, blk, brn, hrnbld bearing, sme propylitisation, w/ fine xln opaque grains, rexlized felds/qtz, tr Fe oxide, vari amnts of tuff in samp, prob sluff tr calc, hematite, cinn?

Andesite:grn,blk,brn, rd,gen a/a w/ abun sluf after 2080'.

Note:Drawworks motor problems,approx 50' of fill after repairwork.

Andesite: grn, blk, brn, hnbld bearing, slt propylitized, sme tuff in sample, tr calc, Fe oxide.

Andesite con't as above, w/ intercalated welded tuff, wht-clr, crypto-microxln, pred qtz & felds.

Tuff(welded?):wht,clr, lt gry grn,lt pnk brn, crypto-microxtln,pred qtz & felds w/ app sec xtalization,com sm blk ang lith frags,tr dism pyr incl,occ clr & euhed qtz,poss frac fill,occ abun calc,occ mnr alt to cly

Note:tripped to retrieve lost survey tool, approx 60' of fill after trip.

Vitric Tuff: wht, clr, weathering to lt brn, crypto-microxtln, abun glassy particles, minor qtz & felds, w/ blk, brn ang lithic frags, sme sec mins, chlorite, kaolinite, calc, tr dism pyrite.

Vitric Tuff: wht, clr, gry-lt grn, con't as above, w/ incr dism pyrite, samp has vari amts of andesite frags, brn, grn, slt weathered and slt propylitized, tr calc, hematite.

Metasiltstone:blk,med-dk gry,v fn,wl srtd, aphan,hd,v silic,com rextln,mod amt pyr,tr-mod calc,occ qtz veins

Metasiltstone:blk,med-dk gry,cont gen as above w/ mnr chloritized

Metasiltstone:blk,med-dk gry,silty,wl srtd, aphan,hd,sugary tex, rextln,pyr,tr-mod calc, occ qtz veins,mod- mnr chloritiztn

NOTE; from 2650' to 2705 one pump in operation.

Metasiltstone:blk-gry, v hd, w srt, aphanitic, v silic, sme rexln, slt chloritized, mod amnt dism & agg xln pyrite, occ qtz veins, w/ sme euhed qtz xls, tr gypsum

Metasiltstone:blk, gry-lt grn, v hd, w srt, aphanitic, slt silicified, tr chloritization, occ qtz & calc veins, sme agg pyrite, vari amnts of vitric tuff,-prob sluff.

Metasiltstone:gry, blk, lt grn, brn, con't as above, slt incr silicification, slt chloritization, tr anhed epidote

Note: one pump in operation, no sample from 3020-3040', Mixing mud to incr vis.

Meta Lithic Wacke:lt-dk gry,lt brn,slty,v hd,volcanic clasts w/ rnded altered felds incl,rextl,silic,tr euh calc,tr epid,tr pyr,vari amnts dk gry Metasltstn,a/a,poss intbdd.

Wt 67 FV 33 PV 7 YP 3
pH 10.5 F 18 Cl 1300

Meta Lithic Wacke:lt-dk gry,lt brn,slty,lt rndd incl (poss alt felds laths),incr amts Metasltstn.

Meta Silty Shale: blk gry, lt grn-brn, slty-cly matrix w/ rnd alt incl, prob alt felds, slt sheen, slt rexlized, occ qtz veins, sme agg pyrite, tr anhed calc & epidote.

Meta Silty Shale con't as above, slt fissile, incr mica sheen, aggs of cryptoxln qtz & pyrite.

Metasiltstone:blk,dk gry,dk grn brn,hd,wl indurated,slty-aphan, wl srtd,argillaceous, sl rextln,sl phyl sheen,occ qtz veins,tr calc, tr epid,tr pyr.

Metasiltstone:blk,dk gry,hd,argil,occ rnd alt felds ,sl sheen, sl rextln,occ qtz,tr pyr,tr calc,tr epid.

Wt 67 FV 42 PV 12 YP 8
pH 10.5 F 14 Cl 1300

MetaSltstn/Shale:dk gry-blk,pred aphan,sl-mod siliceous,com plty-fissle,sl rexln,com micro elongated oval structures,sme replaced w/ pyrite,loc agg pyr, com sl-mod phyllitic scheen,tr calc.

MetaSltstn/Shale:con't as last above,loc incr amts of wht sec veining,some sl incr siliceous,no significant changes in lithology.

MetaSltstn/Shale:dk gry-blk,pred aphan,mod hd,incrly silic,com phyl text,com plty-fissle,sl rextln,com micro rnd lt colored incl,mnr wht silic veinng,tr pyr,tr calc.

Wt 67 FV 34 PV 9 YP 4
pH 10.5 F 15.2 Cl 1300

Gabbroic(?) dike:microxln,med grn,xln plag, pyrox,hornblde,prob sl-mod chloritized,sl kaol felds,tr pyrite,sl calc.

Shale/Quartz Arenite: pred dk gry-blk,fissile, phyl scheen;clean qtz arenite to 30%,vis grs, interlayered w/ shale.

Shale:dk gry-blk,incr siliceous,less fissile, sl rexln,mnr-tr amts qtz arenite,incr sec veining,xln calcite w/ silica 3860-80';lt-med grn gry tuff(?)to 20%.

Note: POH to change stabilizer/work on motor;drilling w/ #2 pump on hole.

Shale/MetaSltstn:con't a/a,sl incr cleav,silic.

MetaSltstn/Shale:dk gry-blk,pred aphan,wl ind, silic,phyl sheen,sl rextln,sl fissile,occ sm wht incl,tr epid,tr pyr,tr wht silic veing, occ zones of up to 40% lt gry-lt grn v silic rk (4050').

Note: Tripped for NB#10 & to change out stabilizers;reamed 1011' to bottom;drilling w/ #1 pump on hole.

Gabbro:pred med grn, microxln,sme decr xln size w/ depth,xln plag, pyrox,poss olivine,tr pyrite,occ sec microveined calc,tr euhed qtz,tr poss cinn/rose color vein,incrd Fe oxide from 4140'-4155'.

Qtz Arenite:lt gry,v clean,mnr metasltstn; altd Gabbroic dike/vein 4170-80',abnt magnetite xls?,g tr cinn stains.

MetaSltstn/Shale:med-dk gry,some v silic interlayered,pred phyl scheen,loc com lt grn silic-poss tuff @ 4220'

MetaSltstn/Shale:pred dk gry,pred aphan,massive,occ silic,phyl sheen sl rextln,tr pyr,gen cont as above.

Wt 68 FV 48 PV 23 YP 12
pH 10.5 F 12 Cl 1300

MetaSltstn:con't as last above;com intercalated volcanic tuff/rhyolite? from 4360-85' to 40% of smple,pred lt gry-wht to buff,vis occ flds,v abnt calc veining/cement w/ volc.

14 3/4° N83E @ 4422'