CONFIDENTIAL

EXLOG SMITH R.F. SMITH CORP.
GEOTHERMAL DIVISION

GEOTHERMAL DATA LOG

GLO4365

COMPANY: GEO OPERATOR CORPORATION
WELL: AIDLIN 5, SIDETRACK #2
FIELD: GEYSERS
COUNTY: SONOMA STATE: CALIFORNIA
LOCATION: 3650'N&4668'W of SW corner SEC4 T11N R9W
ELEVATION: 1258' + 29' KB ☒ DF ☐ GL ☐
CONTRACTOR/RIG: Loffland Brothers #306
SPUD DATE: 5/24/88 TD DATE: 6/12/88
TD: 9690' TRUE VERT DEPTH:
BOTTOM HOLE LOCATION:
WELL STATUS: Shut in Producer
COMPANY REPRESENTATIVE: M. Crumb, D. Johnson, J. Brower

HOLE SIZE		CASING RECORD	
26"	to 330'	30"	at 71'
20½"	to 2378'	22"	at 325'
14¾"	to 5793'	16"	at 2364'
10⅝"	to 9000'	11¾"	at 5793'
7⅞"	to 9690'	8⅝"	at 8945'

ENTRIES-WATER/STEAM

8222' 2# 0°F	9143' 22# +2°F
8281' 7# +45°F	9145' 38# +14°F
8334' 5# +9°F	9153' 8# +1°F
8337' 13# +11°F	9278' 14# +1°F
8902' 6# 0°F	9288' 11# 0°F
8913' 4# +4°F	9305' 4# +5°F
8932' 6# 0°F	9317' 7# +5°F
8958' 4# +1°F	9326' 10# +4°F
8991' 5# +5°F	9349' 22# +1°F
8993' 2# +1°F	9357' 18# 2°F
9008' 8# +1°F	9386' 91# ?°F
9117' 8# 0°F	9516' 13# 0°F

TESTED ZONES

LOST CIRCULATION ZONES: 9556' 10# +5°F

MISC. REMARKS

LOG INTERVAL

DATE LOGGED	5/24/88	to	6/14/88
DEPTH LOGGED	5785'	to	9690'
MUD DRILLING	5785'	to	5869'
AIR DRILLING	5869'	to	9690'

TEMPERATURE INSTRUMENT TYPE: T-Thermocouple
PRESSURE INSTRUMENT TYPE: Silicon Chip
GAS TRAP-AGITATOR ELEC ☐ AIR ☒
LOG SCALE: 1:500 UNIT NO.: 355
LOG PREPARED BY: C. Hultgren, J. Fenton, M. McLaughlin

LITHOLOGY SYMBOLS: Breccia; Tuff and tuff-breccia; Conglom.; Graywacke; Sandstone; Siltstone; Claystone Argillite; Limestone Dolomite; Chert; Solution Deposit; Mineralized Zone; Granitic Rock; Intermed Igneous; Basic Igneous; Peridotite; Acidic Volcanic; Intermed. Volcanic; Basic Volcanic; Porphyry; Serpentine; Schist Gneiss

SECONDARY MINERALS: Q = QUARTZ; C = CALCITE; P = PYRITE; E = EPIDOTE; R = PYRRHOTITE; N = PREHNITE; X = AXINITE; A = ACTINOLITE; T = TOURMALINE

NB NEW BIT; RRB RE-RUN BIT; CB CORE BIT; WOB WEIGHT ON BIT; RPM REVS PER MINUTE; SPM STROKES PER MINUTE; CFM CUBIC FT PER MINUTE; NR NO RETURNS; C CARBIDE TEST; LAT LOGGED AFTER TRIP; BHT BOTTOM HOLE TEMPERATURE; TC TIME SINCE CIRCULATION; W MUD DENSITY ppg; V FUNNEL VISCOSITY; PV PLASTIC VISCOSITY; YP YIELD POINT; F FILTRATE API; FC FILTER CAKE; SOL SOLIDS-%; SD SAND CONTENT-%; S SALINITY-PPM Cl; CA CALCIUM-PPM Ca; RM MUD RESISTIVITY; WIRELINE LOG RUN; CASING SHOE; CORED INTERVAL; NO RECOVERY; WATER/STEAM ENTRY; ORIFICE/FLOW TEST

DRILL RATE ft/hr ☒ min/ft ☐ m/hr ☐ min/m ☐ | DEPTH | LITHOLOGY | SECONDARY MINERALIZATION | TEMPERATURE °C ☐ °F ☐ IN — OUT; PRESSURE KSC ☐ PSI ☐ IN — OUT; LOSS/GAIN M³ ☐ BBLS ☐ | H2S ppm; CO2 ppm; METHANE ppm; ETHANE ppm | SURVEYS | RESISTIVITY Ω-M | LITHOLOGY DESCRIPTION AND REMARKS

LITHOLOGY DESCRIPTION AND REMARKS

Note: Kick off plug @ 5785' w/Navi Drill, drill t/5869' on mud. Go to Air Drilling.

Argillite: gry blk-blk (N1-N2), mod hd, dull/earthy, loc massive, loc wk phyllitic, rare dism and euh pyrite, local tr silty grdg to Siltstone.

Graywacke: dk-med gry, (N3-N5), hd, silicic mtrx pred mg w/loc vfg-fg, pred fair gr bndrs, rare to trace detrital mica, felds, and qtz, tr milky calcite veining, r qtz.

Argillite: dk gry-blk, (N1-N2), pred mod hd, earthy, massive, occ wk lam, abnt-wk phyllitic, loc rare dism & vein pyrite, loc sandy grdg to Graywacke.

Siltstone: pred gry blk (N2), mod hd, pred arg mtrx, loc silic mtrx, occ weakly laminated app, tr milky calcite veining, rare milky qtz, dism pyrite.

Note: getting 20' fill at connections from 6004', add 4th comprs at 6099'.

Argillite: generally cont'd as above, loc micaceous, tr euh and dism pyrite.

Argillite: blk-gry blk, (N1-N2), mod hd, loc sft, pred dull/earthy, mass, loc sheared app, loc wk phyll sheen, mnr calc vng, loc r-tr pyr.

Siltstone: med gry-gry blk, (N2-N5), mod hd-loc hd, pred arg matrix, loc r silic matrix, r dism pyr, loc tr-mnr calc vng.

Graywacke: dk gry-med gry (N3-N5), arg-incr silic matrix w/depth, hd-loc v hd, fn-pred med gr, fr-pr gr bndrs, pr-mod srtd qtz & felds tr qtz vng, tr-mnr calc vng, r pyr.

Greenstone: pred lt grn, (5G5/2) hd-occ v hd, mod-pred strongly altrd, occ gd vis relict tex, loc mott appr, tr dism pyr, r qtz vng.

Argillite: dk gry-blk, (N1-N3), mod hd, loc hd, cont'd dull/earthy app, occ sheared app, rare phyllitic sheen, occ laminated, grd to Siltstone: pred gry blk (N2), mod hd-hd, arg mtrx, local abndt milky calc veining, tr euhedral and dism pyrite.

Graywacke: gry blk-med dk gry (N2-N4), mod hd-hd pred argillaceous mtrx, local silicic mtrx, fg-mg, fair-poor grn bndrs, wk-absent foliation, loc detrital felds, qtz, mica and epidote, com milky calcite veining, rare milky qtz veining, rare dism and euh pyrite.

Argillite: gry blk-blk (N1-N2), pred mod hd, loc soft, dull/earthy, massive, loc wk-sl phyl sheen, occ sheared & silicified app, tr-mnr calc vng, r dism & vn pyr, w/Siltstone: gry blk-brn gry (N2-5YR 4/1) mod hd-loc hd, pred arg matrix, loc lineations, tr calc vng, loc r dism pyr.

Graywacke: gry blk-med gry (N2-N5), mod hd-pred hd, arg matrix w/incr silic matrix w/depth, fg-mg detrital felds & qtz, fr-incr pr gr bndrys, loc wk-occ mod fol, com calc vng, tr-loc mnr qtz vng.

Greenstone: wht-grn gry (N9-5GY6/1), pred hd, silic, mod-loc v rexln, strongly altrd, com-mnr abndt bleached app, v wk relict tex, loc tr grn phyl, loc tr-abndt
Serpentine: wht-grn gry (N9-5GY6/1), sft, waxy, opq-transl.

Chert: multi colored, silicic, hd, loc brittle microxtln, com silicic micro veining, rare dism and euhedral pyrite.

Greenstone: gray green (10GY5/2), mod hd-hd, strongly altered, occ bleached app, fn grain remnant porph tex, com ashy mtrx, loc chlor amygs, rare epidote, w/
Serpentine: pale green (10G6/2), v pale green (10G8/2), sft-brittle, sl transl, occ talcy, waxy texture.

Graywacke: gry blk-med lt gry (N2-N6), mod hd-hd, pred silicic mtrx w/cmn arg mtrx, fg-mg, loc vfg, pred pr grain boundaries, loc fair w/ incrs indistinct grain bndrys w/depth with cmn cataclastic tex and loc rare gneisic tex, cmn milky calc veining.

Argillite: pred gry blk-blk (N1-N2), mod hd, loc sft, dull/earthy app, massive, local rare sl laminated app, occ silty grdg to Siltstone: gry blk (N2), mod hd, arg mtrx, local wk laminated, loc slightly silic mtrx.

Graywacke: dk gry-med lt gry (N3-N6), mod hd-hd, silic and arg mtrx, pred mg w/vfg-fg, fr-pr grain boundaries, local wk foliation, com-abndt calcite veining, rare euh and dism pyrite, loc detr feldspar.

Graywacke: pred gray green (5G5/2), hd, local mod hd, pred chlor mtrx, cmn silicic mtrx, fg-mg, fair-poor grain bndrys, no visible foli, occ lithic frags of Arg & Sltstn, loc detrital felds, mica, and rare epidote.

Argillite: gry blk-blk, (N1-N2), mod hd-hd, dull earthy app, massive, loc wk laminated app, com silty tex grdg to Siltstone: dk gry-gry blk, (N2-N5), mod hd-hd, pred arg mtrx, loc calc vein, rare dism pyr & milky qtz.

Graywacke: med dk gry-med lt gry (N4-N6), mod hd-pred hd, silicic matrix-incr arg matrix, fg-pred mg qtz, felds & lithic frags, fair-incr pr gr bndrys, r wl foli, loc mnr chloritized, com-abndt milky calcite vng, loc tr-mnr milky qtz, r-tr dism pyr, r epidote.

Argillite: gry blk-blk (N1-N2), mod hd-loc hd, mass, dull/earthy, abndt-wk phyllitic sheen, occ laminated, r sheared & silicified, com-abndt calcite veining.

Siltstone: dk gry-brn gry (N4-5YR4/1), mod hd-hd, pred arg matrix, occ wk laminated, tr-mnr calc veining.

Graywacke: med dk gry-lt gry (N4-N7), pred hd, pred silic matrix, fg-mg, fr-pr gr bndrys, loc wk foli, incr vein epid @7880'.

Graywacke: dk gry-med lt gry, hd-v hd, pred silicic mtrx, pred fg, pr-loc indst grn bndrs, loc wk fol, loc slight-mod rexln, tr dism sulfides, abnt epidote, Greenstone: v pale green-pale green (10G8/2-10G6/2), hd, mottled tex, rexln, loc waxy appr.

Note: Possible Steam Entry @8222'. 2# incr no temp or gas incrs.

Graywacke: dk gry-md lt gry (N3-N6), pred hd, silicic mtrx, fr-pr grn bndrys, loc indist, fg-mg, loc mod foli w/cataclastic tex, incrs rexln app w/rare epidote vng.

Note: Steam Entry @ 8281'. 7# incrs, +45°F temp incrs, incrs gas.

Note: Steam Entries @ 8334'=5# incrs, +9°F temp incrs, gas kick, 8337'=13# incrs, +11°F temp incrs.

Serpentinite: dusky grn-dk grn gry (5G3/2-5GY/1), mod hd-loc sft, occasional brittle, rexln local translucent.

Graywacke: dk gry-med lt gry (N3-N6), loc lt-v lt gry (N7-N8), hd-v hd, pred silicic mtrx, loc arg mtrx, fg, fr-pr indstnct grain bndrs, loc wk foliation, loc v altrd & blched @8420-8440', cont'd rare epidote, loc rare prehnite.

Graywacke: dk gry-med lt gry (N3-N6), pred hd, vfg-fg, silicic and arg mtrx fair-poor grain bndrys, loc indistinct, absent-mod foliation, local lithic arg frags, rare milky calcite, qtz, and pyrite, v-rare yel/grn epidote veining.

Argillite: gry blk-blk, (N1-N2), mod hd-hd, dull earthy, locally sl rexln w/phyl shn, rare dism pyrite, occ silty tex.

Graywacke: dk gry-med lt gry (N3-N6), hd-v hd, fg, pred silicic mtrx, loc arg mtrx, pr grain bndrs, loc fair bndrs, loc mod rexln w/indstnct grain bndrs, tr wk foliation, decr calcite w/depth, loc tr pyrrhotite.

Note: Steam Entries @ 8902'=6# incrs, no temp incrs, H2S kick. 8913'=4# incrs, +4°F temp incrs, gas kick. 8932'=6# incrs, no temp or gas incrs.

Note: Steam Entries @ 8958'=4# incrs, +1°F temp incrs, no gas incr. 8991'=5# incrs, +3°F temp incrs, gas incrs. 8993'=2# incrs, +1°F temp incrs.

Note: Run 8⅝" liner. Shoe @8945', top of perforated @7964', hanger @2083'. Drill ahead w/ 7⅞" bit.

Note: Possible Steam Entries @9008'=8# incrs, +1°F temp incrs @9117'=8# incrs, no temp incrs, slight incrs CO_2 level.

Note: Steam Entries @ 9143'=22# incrs, +2°F temp incrs. 9145'=38# incrs, +14°F temp incrs. 9163'=8# incrs, +1°F temp incrs.

Graywacke: dk-lt gry, (N3-N7), vfg-fg, poor-indist gr bndrys, silic mtrx, hd-v hd, rexln, Argillite: gry blk-blk, (N1-N2), hd, phyllitic, rexln/schistose app.

Note: Steam Entries @ 9278'=14# incrs, +1°F temp incrs. 9288'=11# incrs, no temp incrs. 9305'=4# incr, +5°F temp incrs. 9317'=7# incr, +5°F. 9326'=10# incr, +4°F. 9349'=22# incr, +1°F.

Note: Steam Entries @ 9357' 18# incrs, no temp incrs. 9386' 91# incrs, ? temp incrs. Venturi effect on blooie line resulting in lower than normal temperature and gas values. Change location of temp probe on blooie line @9470'.

Note: Test well @ 9498' using 5½" orifice plate. Mass Flow= 154,400#/hr, 390°F w/ +31°F super heat, 137 psig on blooie line.

Note: Steam Entries @ 9516'=13# incrs, no temp incrs. 9556'=10# incrs, +5°F temp incrs.

Note: T.D. well @9690' Test well w/5½" orifice plate for 12 hours. Mass Flow=179,400#/hr 162 psig, 397°F, +25.5°F superheat.

Aidlin 5, ST#2 | LITHOLOGY | SECONDARY MINERALIZATION | TEMPERATURE IN — OUT; PRESSURE (psi) IN — OUT; LOSS-GAIN (bbls) | H_2S (ppm) — METHANE (ppm); CO_2 (ppm) — ETHANE (ppm) | SURVEYS | RESISTIVITY | REMARKS - LITHOLOGY