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RRGE-1 PRODUCTION CAPABILITY

This letter is transmitted in response to personal communication with Ray Sanders concerning the rate at which well RRGE-1 can be constantly produced over a five-year period. It is emphasized that figures presented here are only estimates and are subject to change, as more information concerning the Raft River Geothermal Reservoir is obtained.

Some qualifying assumptions must be taken into account in estimating a five-year (43,800 hours) production rate for RRGE-1. The drawdown in well head pressure at RRGE-1 was based upon a 667 hour pump test conducted between February 2 and 6, 1976. It ~~was~~^{is} assumed first, that a constant drawdown was experienced after RRGE-1 was shut-in for an additional 43,133 hours. It ~~was~~^{is} assumed next, that a barrier boundary resulting in a constant doubling of drawdown was experienced 167 hours after shut-in. The initial well head pressure before production begins is assumed to be 160 pounds per square inch (psi). The ability of the reservoir to transmit water between wells RRGE-1, RRGE-2, RRGP-4 and RRGP-5 is assumed to be 33% higher than the reservoir's ability to transmit water between RRGE-1 and the injection wells in the vicinity of RRGE-3. The reservoir temperature is assumed to be 290⁰F. Drawdown, well loss, due to head losses caused by turbulent flow in the well, is not considered. Drawdown caused by the wells being open to different portions of the reservoir is assumed negligible. Interference drawdown caused by the pumpage of wells RRGE-2, RRGP-4 and RRGP-5, is calculated by use of the Theis Nonequilibrium Formula, and reservoir characteristics based upon current data. Interference build up caused by the injection of 2500 gallons per minute (gpm) into wells in the vicinity of RRGE-3, RRG-6 and

RRGI-7, is estimated to be equal to that caused by pumpage of RRGP-4.

Table I shows the drawdown in well head pressure acceptable for different pump bowl depths. It is assumed that 90 psi must be maintained above the pump bowls. The columns on the table represent: depth to pump bowls (Depth); initial well head pressure (WHP); total pressure above pump bowls (Pressure); acceptable drawdown after five years of pumpage (Drawdown).

TABLE I

<u>Depth</u>	<u>WHP</u>	<u>Pressure</u>	<u>Drawdown</u>
650 ft	160 psi	420 psi	330 psi
700 ft	160 psi	440 psi	350 psi
750 ft	160 psi	460 psi	370 psi
800 ft	160 psi	480 psi	390 psi
850 ft	160 psi	500 psi	410 psi

Table II estimates the drawdown to be expected at RRGE-1 for different pumping rates and reservoir conditions. The drawdown includes estimates of interference caused by production and injection wells. Columns in the table represent: production rate at RRGE-1 (Q); was the effect of a boundary assumed in the analysis (Boundary); the drawdown at RRGE-1 to be expected after five years of continuous pumpage (Drawdown); production rate at RRGE-2 (RRGE-2); production at RRGP-4 (RRGP-4); and production rate at RRGP-5 (RRGP-5).

TABLE II

<u>Q</u>	<u>Boundary</u>	<u>Drawdown</u>	<u>RRGE-2</u>	<u>RRGP-4</u>	<u>RRGP-5</u>
800 gpm	No	340 psi	400 gpm	650 gpm	650 gpm
800 gpm	Yes	360 psi	400 gpm	650 gpm	650 gpm
1000 gpm	No	410 psi	400 gpm	550 gpm	550 gpm
1000 gmp	Yes	440 psi	400 gpm	550 gpm	550 gpm

RRGE-1 currently appears capable of producing between 800 and 1000 gpm for five years and maintain 90 psi over the pump bowls. This prediction of production capability is subject to change as the reservoir characteristics are further defined by testing of RRG-4 and RRG-5. The production of RRGE-1 productivity becomes more reliable as additional information is obtained.