GL07352-2

CALCULATIONS
RRGI-6 INJECTION

1. Assumptions

	u	γ	B
T injection is 280°F	.19	57.93	1.06
T injection is 150°F	.427	61.13	1.02
T in situ is 220°F	.264	59.63	1.045

D (depth) is 2300 feet

Q is 600 gpm (20,571 ST B/D)
800 gpm (27,428 ST B/D)
1000 gpm (34,286 ST B/D)

kh is 40,000 md-ft.

2. $P_{tsc} = P_{tsw} - (61.13-59.63)\ \frac{2300}{144}\text{psi}$

$P_{tsc} = 35 - 1.5 \times \frac{2300}{144}\text{psi} = 11$ psi for 150°F water

$P_{tsc} = 35 - (57.93-59.63)\ \frac{2300}{144}\text{psi}$

$P_{tsc} = 35 + 1.7 \times \frac{2300}{144}\text{psi}$

$P_{tsc} = 35 + 27 = 62$ psi for 280°F water

3. $\Delta p_s = \frac{141.2qBu}{kh} \times 3.42$

$\Delta p_{s600h} = \frac{141.2 \times 20{,}571 \times 1.06 \times .19}{40{,}000} \times 3.42 = 50.02$ psi

$\Delta p_{s600c} = \frac{141.2 \times 20{,}571 \times 1.02 \times .427}{40{,}000} \times 3.42 = 108.16$ psi

$\Delta p_{s800c} = \frac{141.2 \times 27{,}428 \times 1.02 \times .427}{40{,}000} \times 3.42 = 144.22$ psi

$\Delta p_{s1000} = \frac{141.2 \times 34{,}286 \times 1.02 \times .427}{40{,}000} \times 3.42 = 180.28$ psi

4. $S_{10} = \frac{5759Qu}{kh}$

$S_{10_{600h}} = \frac{5759 \times 600 \times .19}{40,266} = 16.3$ psi/cycle

$S_{10_{600c}} = \frac{5759 \times 600 \times .427}{40,266} = 36.63$ psi/cycle

$S_{10_{800c}} = \frac{5759 \times 800 \times .427}{40,266} = 48.86$ psi/cycle

$S_{10_{1000}} = \frac{5759 \times 1000 \times .427}{40,266} = 61.07$ psi/cycle

5.

INJECTION RATE (gpm)	TEMPERATURE (^{o}F)	EQUATION FOR PRESSURE
600	280	62 + 50 + 16.3 log t.
600	150	11 + 108 + 36.64 log t.
800	150	11 + 144 + 48.86 log t.
1000	150	11 + 180 + 61.07 log t.

6.

INJECTION RATE (gpm)	TEMPERATURE (^{o}F)	1 DAY (1440m)	1 YEAR (5.26×10^{5})	3 YEARS (1.58×10^{6})	5 YEARS (2.63×10^{6})
600	280	163.50	205.24	213.06	216.65
600	150	234.72	328.60	346.17	354.23
800	150	309.40	434.48	457.93	468.68
1000	150	383.98	540.32	569.63	583.07

Assume kh of the recharge boundary = 54,710 md-ft.

7.

INJECTION RATE (gpm)	TEMPERATURE (^{o}F)	EQUATION FOR PRESSURE
600	280	62 + 36.57 + 12 log t.
600	150	11 + 79.08 + 26.97 log t.
800	150	11 + 105.44 + 35.96 log t.
1000	150	11 + 131.81 + 44.95 log t.

8.

INJECTION RATE (gpm)	TEMPERATURE (^{o}F)	1 DAY	1 YEAR	3 YEARS	5 YEARS
600	280	136.49	167.21	172.97	175.61
600	150	175.31	244.35	257.29	263.23
800	150	230.07	322.13	339.39	347.30
1000	150	284.85	399.92	421.50	431.39