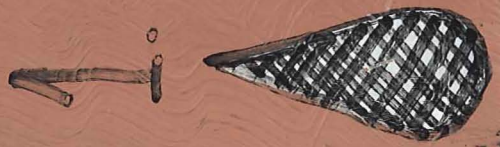
SSGF BRINE GEOCHEM. 

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production data at the time of sampling. All enthalpy values were recalculated from the flash percentage and separator pressure, and corrections were applied for the weight percents of non-condensible gas in the steam and salt in the brine. Enthalpies of the separated brine were increased by about 15 BTU/LB to account for the elevation of brine temperature at the given flash pressure.

The second component reports the concentrations of dissolved solids in the total discharge. All concentrations are expressed in units of parts per million by weight (ppm). Essentially, these represent reservoir concentrations because no free steam has been produced from the formation to the wellbore by the Salton Sea wells.

The third component is wellbore configuration data, emphasizing the probable production zones to the well. This component also gives an approximate temperature profile for the well. Together, components two and three provide the geochemical data required for geologic studies of the reservoir.

The parts of the data base obtained at the time of sampling are provided as components four through eight. More detailed production data are given as the fourth component. The original brine geochemical analyses are provided in the fifth component.

A major complication to the fifth component stems from the inconsistent reporting of the brine concentrations in units of either ppm or milligrams per liter (mg/lit). To standardize all brine analyses to common units, the analyses in mg/lit were adjusted to ppm. These standardized concentrations represent the sixth component. This adjustment requires division of the mg/lit by the brine density measured at the laboratory temperature. When brine density was unavailable for a sample, the density was estimated from the following equation (Cramer, 1978):

$$\rho_b = \rho_w + (0.03378 + 0.5622 \times 10^{-5}\exp(T/66.0))\rho_w M$$

where ρ_b = brine density at temperature T (^oK),
ρ_w = pure water density at temperature T (^oK),
M = molality of equivalent NaCl brine, and
Applicable range: 0-350 ^oC, 0-6 M_{NaCl} brine.

If the total dissolved solids are assumed to consist entirely of NaCl, then the molal equivalent NaCl concentration can be calculated from the following equation:

$$M_{NaCl} = TDS/58.44 \times 1000/(1000000 - TDS)$$

The density/salinity relationship from these equations is portrayed by the curve in Figure 2. The laboratory temperature was arbitrarily assumed to be 20 °C (298 °K). The dashed portion of the curve corresponds to brines that exceed six molal equivalent NaCl. Measured data points are also plotted on Figure 2. The measured data suggest that the calculated curve may provide slightly underestimated density values.

In the seventh component the analyses of non-condensible gas are reported both as mole percent in the dry gas and as parts per million in the combined gas plus steam condensate. Field analyses for the weight percent of non-condensible gas in the produced steam are also provided in the seventh component.

The eighth component consists of the hydrogen and oxygen isotopic compositions of the brine and steam.

Finally, the sources of the data are reported as the ninth component. Prior to 1986, most of the data was provided in reports. Since 1986, the samples have been collected by Unocal Geothermal personnel, and generally only the original analyses are available from the Geology Department files. A bibliography of the data sources for each well is attached.

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DTR/1h
cc: Dick Dondanville/Geology Central Files - Santa Rosa
Olin Whitescarver/Indio Central Files
John Featherstone/SSOO Central Files
Darrell Gallup

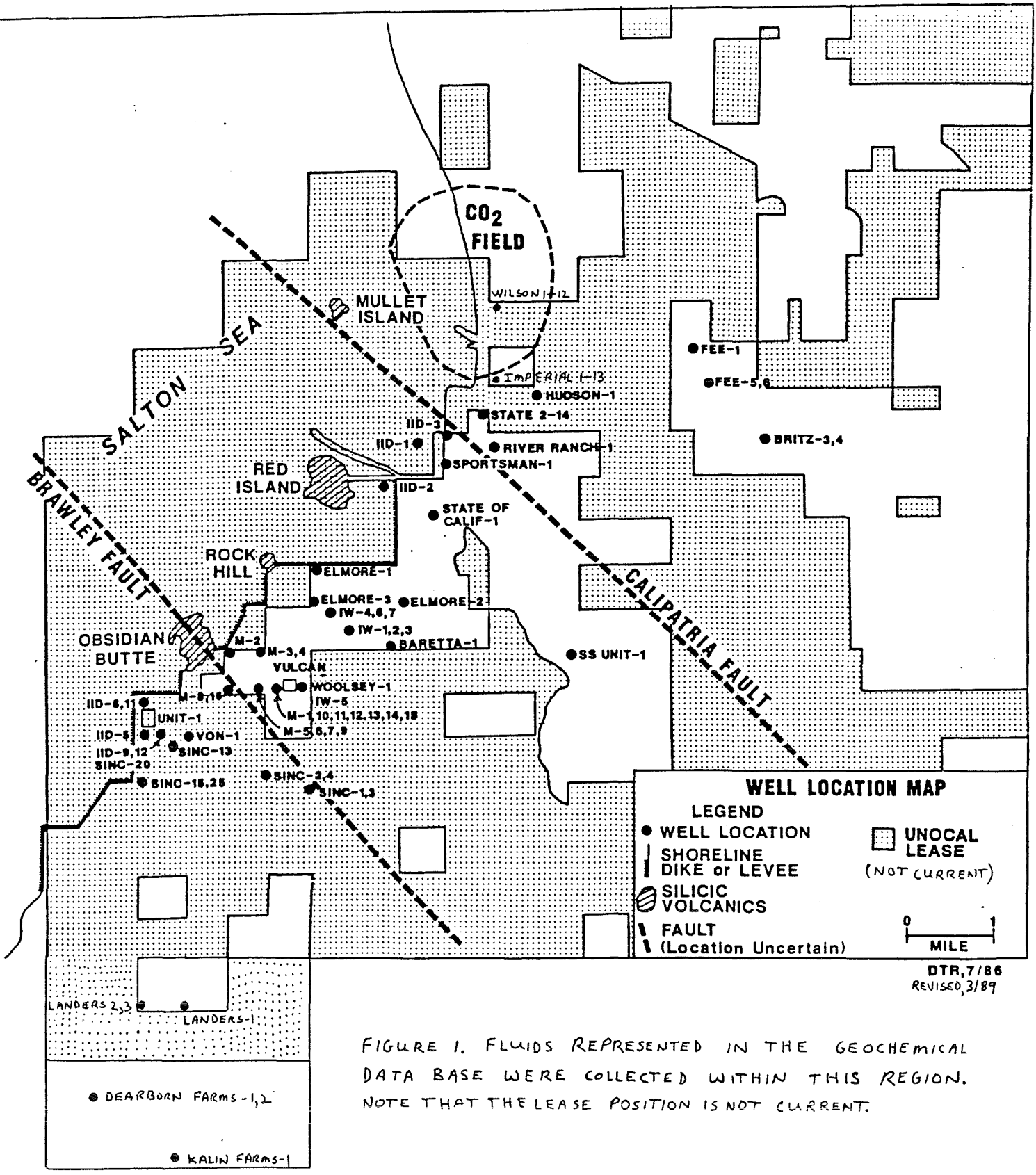

FIGURE 1. FLUIDS REPRESENTED IN THE GEOCHEMICAL DATA BASE WERE COLLECTED WITHIN THIS REGION. NOTE THAT THE LEASE POSITION IS NOT CURRENT.

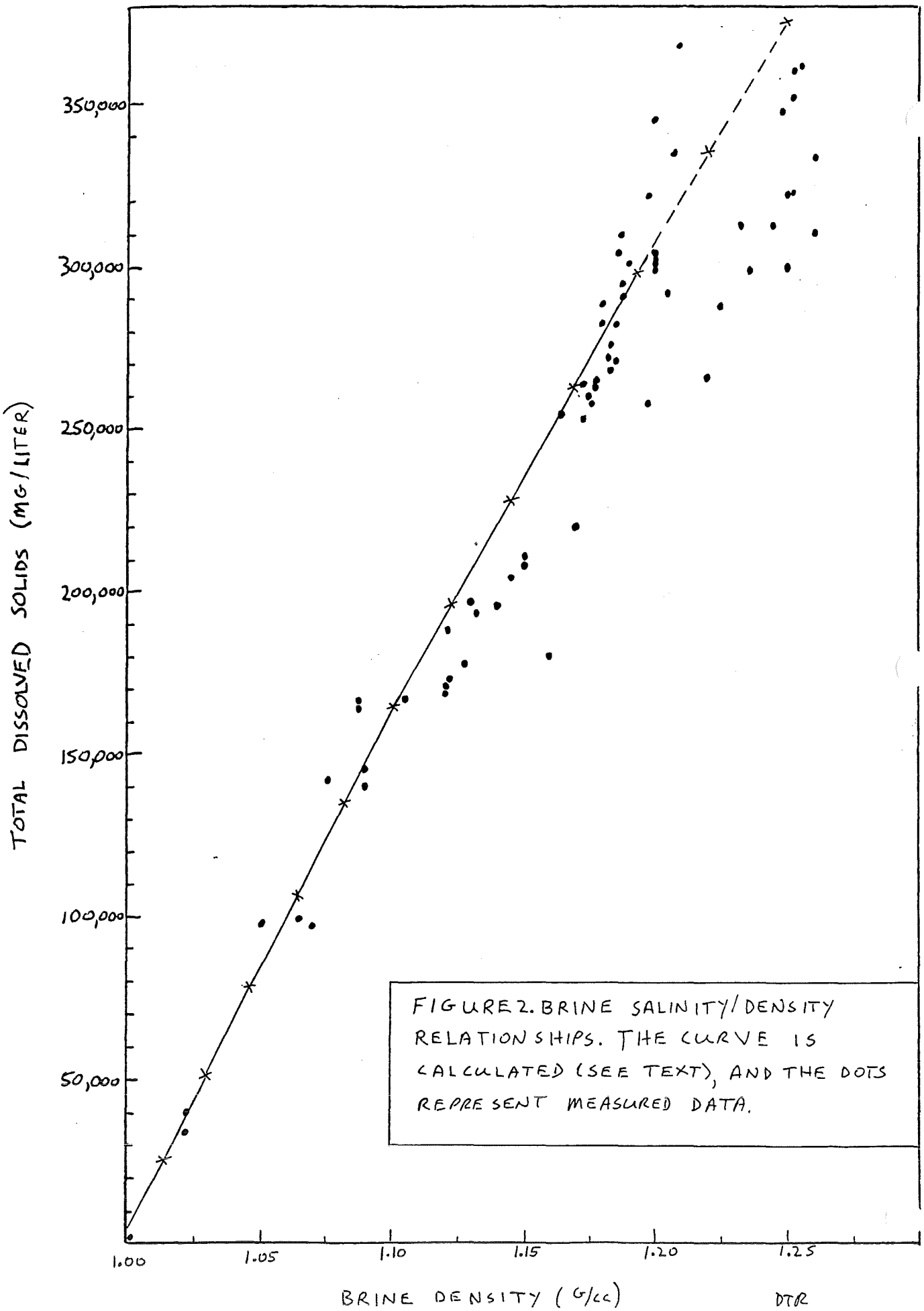

FIGURE 2. BRINE SALINITY/DENSITY RELATIONSHIPS. THE CURVE IS CALCULATED (SEE TEXT), AND THE DOTS REPRESENT MEASURED DATA.

DTR
2/17/89

WELL SINC-10 WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	2000	2500	3500	4000	4500	5000	
1	1934	5000	5000	2300		2650		4141				527	557	555	552			12/8/86
2	1934	5000	5000															
3	1934	5000	5000															
4	1934	5000	5000															
5	1934	5000	5000															

1 related
12/31/86

WELL SINCLAIR-10 SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH
							STEAM	TOTAL			
890109	1	—	450	1150000	10.3	416	1.358	0.140	247115	1934	5000′
890224	2	449	436	1301800	10.35	423	1.6213	0.168	244889	1934	5000′
890216	3	420	410	1304000	10.51	427	1.49	0.157	245000	1934	5000′
890609	4	458	450	1420000	8.45	417	1.33	0.112	240000	1934	5000′
890908	5	411	404	1583000	9.6	418	1.07	0.103	242000	1934	5000′

* – CONFUSION WHETHER THESE DATA ARE FOR VON-1 OR SINC-10.

WELL SINK-10 RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
1	–	–	–	–	–	–	–	–	–	–	–	–	–
2	<0.78	14.4	299	22270	NA	2.45	944	12776	172	36	842	48332	205
3	0.26	14.1	305	23200	9.7	2.1	963	11900	152	33	815	46800	200
4	2.70	10.5	255	22274	NA	1.83	898	12573	168	33.6	820	48504	207
5	<0.69	11.7	300	22635	NA	3.2	881	12623	170	39.2	811	50138	204

WELL SINC-1D RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_3	SiO_2	TDS	
1	-	-	—	—	—	130156	—	-	-	—	—	221662	
2	75.1	NA	405	300	92.6	131922	18.8	11.3	28.5	305	486	219543	
3	73	6.5	400	310	NA	132000	6.4	NA	10	350	490	219300	
4	80.1	NA	406	307	97	132008	16.8	10.0	15.4	349	458	219474	
5	70.7	NA	412	298	87	129143	15.3	6.9	6.1	475	475	218842	

WELL SINCLAIR-10

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
1	1434	12.9	–	–	–	–	–	–	–	ALL FIELD ANALYSES
2	1542	13.0	351	0.004	1.64	4.36	0.060	+0.50	-75.1	
3	1780	8.5	350	–	–	–	–	–	–	
4	1183	10.7	387	0.001	0.53	0.14	0.015	+1.76	-71.4	
5	1190	10.8	516	0.001	0.34	1.05	0.011			

WELL SINC-10

FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS-DAYS	TYPE	WELLHEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
1	890109	1405	F	S	–	–	450	–	450	–	118000	1032000	1150000	10.3	416
2	890224	1100	P	S	449	469	436	–	436	445	134800	1167000	1301800	10.35	423
3	890216	–	P-2	S	420	467	410	441	410	441	137000	1167000	1304000	10.51	427
4	890609	1100	P	S	458	–	450	–	450	453	120000	1300000	1420000	8.45	417
5	890908	–	P	S	411	–	404	441	404	–	150000	1413000	1563000	9.60	418

[illegible] THESE DATA [illegible] FOR VSN-1 OR SINC-10.

WELL SINK-10 BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
1	S	ppm	—	—	—	—	—	—	—	—	—	—	—	—
2	S	mg/lit	<1.04	19.2	398	29660	NA	3.26	1257	17015	229	48	1122	64371
3	S	ppm	see analysis adjusted for ppm											
4	S	mg/lit	3.5	13.7	331	28904	NA	2.39	1165	16316	217	43.6	1064	62942
5	S	mg/lit	<0.89	15.4	395	29797	NA	4.12	1160	16617	224	51.6	1068	66000

WELL SINC-10

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
1	—	—	—	—	—		—		—	—		—	—	—
2	273	100	NA	540	399	130	175700	25.0	15.0	38	406	647	292398	1.194
3	[illegible]													
4	269	104	NA	527	398	126	171300	21.9	13.0	20	453	594 564	284800	1.188
5	269	93	NA	543	393	115	170000	20.1	9.0	8	625	625 669	288078	1.19

WELL SINC-10 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
1	S	1.191	–	–	–	–	–	–	–	–	–	–	–	–
2	S	1.194	<0.87	16.1	333	24841	NA	2.73	1053	14250	192	40.2	940	53912
3	S	1.205	0.66	14.1	340	25900	10.8	2.4	1073	13300	170	37	910	52300
4	S	1.188	2.95	11.5	279	24330	NA	2.0	981	13734	183	36.7	896	52981
5	S	1.19	<0.75	12.9	332	25039	NA	3.5	975	13964	188	43.4	897	55462

WELL SINCLAIR-10 SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
1	S	-/-	-	-	-	-	145102	-	-	-	-	-	247115	
2	S	229/83.8	NA	452	334	109	147152	20.9	12.6	31.8	340	542	244889	
3	S	226/81	72	450	350	NA	147000	0.41	NA	12	340	550	245000	
4	S	226/87.5	NA	444	335	106	144192	18.4	10.9	16.8	381	500	239731	
5	S	226/78.2	NA	456	330	96.6	142857	16.9	7.6	6.7	525	525	242082	

WELL SINCLAIR-10 FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	PH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	PH	Hg
1	6.03	—	145102	247115	—	—	—	—	—	—	—	—	
2	5.84	—	144603	248729	0.49	22.5	5.0	<0.44	2.23	360	1138	6.7	
3	5.80	—	—		0.7	18	5	<0.4	0.7	430	15	6.4	
4	5.74	—	141616	249898	0.6	18.3	16	<0.52	1.30	475	1340	7.5	1.8 ppb
5	5.88	—	141467	245739	<0.49	16.5	18	<0.52	3.3	325	1091	7.5	<1 ppb

. WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

DATA SOURCES

MPLE #	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
-1-1	GHT											
-1-2	GHT											
-1-3	SMITH-EMERY		S-E									
-1-4	–		–		S-E							
-1-5	S-E		S-E									
-1-6	S-E		S-E									
-1-7	–		–		S-E							
-1-8	S-E		S-E									
-1-9	–		–		–		–		REF 81-016M	Andersen, 1981		
-1-10	LLNL									MAIMUNI, 1982		
-1-11	LLNL									"		
-1-12	LLNL									"		
-1-13	LLNL									"		
-1-14	LLNL									"	UCRL 52162	QUONG, 1976
-1-15												
-1-16A												
-1-16B												
-2-1									REF-81-016M	Andersen, 1981		
-2-2	NARW				NARW				NAG 430	Mullner, 1978		
-3-1									REF 81-016M	Andersen, 1981		

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
m-1-1					
m-1-2					
m-1-3					
m-1-4					
m-1-5					
m-1-6					
m-1-7					
m-1-8					
m-1-9					
m-1-10					
m-1-11					
m-1-12					
m-1-13					
m-1-14					
m-1-15					
m-1-16A					
m-1-16B					
m-2-1					
m-2-2					
m-3-1					

· WELL MAGMA MAX-1 / MAGMA MAX-2 / MAGMA MAX-3

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							ppm IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
m-1-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-4	—	—	—	90.45	—	—	0.02	2.15	1.77	—	—	—	—	—	—	—	—	—
m-1-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-7	—	—	—	96.66			0.01	1.09	2.09		—	—	—	—	—	—	—	—
m-1-8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-9																		
m-1-10																		
m-1-11																		
m-1-12																		
m-1-13																		
m-1-14																		
m-1-15																		
m-1-16A																		
m-1-16B																		
m-2-1																		
m-2-2				95.8				2.87	1.29									
m-3-1																		

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
m-1-1	DST	- / -	-	-	-	-	78966	-	-	-	-	1043	154991	
m-1-2	DST	- / -	-	-	-	-	20548	1.5	-	463	113	108	38072	
m-1-3	S	- / -	-	-	-	-	104454	<0.1	-	0	400	8	172555	
m-1-4	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
m-1-5	S	- / -	-	-	-	-	127820	<0.1	-	0	400	8	211166	
m-1-6	S	- / -	-	-	-	-	124080	<0.1	-	0	400	8	204475	
m-1-7	S	- / -	-	-	-	-	-	-	-	-	-	-		
m-1-8	S	- / -	-	-	-	-	108011	<0.1	-	0	400	8	177869	
m-1-9	see	analyses	corrected	for flash										
m-1-10	2ϕ	54 / 22	-	-	188	-	101000	-	-	-	-	387	169000	
m-1-11	2ϕ	85 / 22	-	-	183	-	105000	-	-	-	-	400	171000	
m-1-12	2ϕ	115 / 60	-	360	275	-	111000	-	-	-	-	407	197000	
m-1-13	2ϕ	118 / 59	-	373	285	-	112000	-	-	-	-	428	196000	
m-1-14	2ϕ	118 / 78	64	388	361	-	121000	-	-	-	-	432	208000	
m-1-15	S	- / 37	44	392	201	-	112395	-	-	-	-	443	EST 192700	
m-1-16A	S	300 / 61	52	341	252	-	124770	-	-	-	-	469	EST 212689	
m-1-16B	S	- / 61	58	418	289	-	158134	-	-	-	-	548	EST 251173	
m-2-1	see	analyses	corrected	for	flash									
m-2-2	S	94/47	-	-	343	-	116638	-	-	-	-	626	222985	
m-3-1	see	analyses	corrected	for	flash									

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
M-1-1	DST	1.160	—	—	240	13306	—	—	170	7033	120	34.5	141	26724
M-1-2	DST	1.022	—	—	69.5	2818	—	—	93	142	28	46	9.6	8562
M-1-3	S	-	—	—	<0.08	19600	—	—	70	7600	<1.0	165	<0.1	40000
M-1-4	S	-	—	—	-	—	—	—	—	—	—	—	—	—
M-1-5	S	-	—	—	<0.08	24647	—	—	70	11000	<1.0	547	<0.1	46600
M-1-6	S	-	—	—	<0.08	23223	—	—	80	9520	<1.0	554	<0.1	46600
M-1-7	S	-	—	—	—	—	—	—	—	—				
M-1-8	S	-	—	—	<0.08	16096	—	—	90	7600	<1.0	1026	<0.1	44600
M-1-9	FC	see analyses corrected for flash												
M-1-10	2ϕ	-	—	—	—	17400	—	1	202	6900	—	125	502	40900
M-1-11	2ϕ	-	—	—	—	16900	—	1	161	7000	—	125	494	42100
M-1-12	2ϕ	-	—	—	—	17900	—	1	199	6600	128	95	565	41200
M-1-13	2ϕ	-	—	—	—	18200	—	1	180	6500	135	99	570	42700
M-1-14	2ϕ	-	—	—	—	20000	—	1	256	8600	141	80	690	42000
M-1-15	S	-	—	7	405	16000	—	0.7	134	8000	110	78	453	44000
M-1-16A	S	-	—	11	440	20000	—	0.9	200	9000	124	72	596	51000
M-1-16B	S	-	—	13	512	23000	—	0.8	233	10000	142	84	680	57000
M-2-1	FC	see analyses corrected for flash												
M-2-2	S	1.166	0.07	—	—	22384	-	4.3	3559	12779	187	8.6	926	45369
M-3-1	FC	see analyses corrected for flash												

WELL MAGMAMAX-1, MAGMAMAX-2, MAGMAMAX-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
M-1-1							91600					1210	179790	1.160
M-1-2							21000	1.5		473	115	110	38910	1.022
M-1-3							104454	<0.1		0	400	8	172555	1.123
M-1-4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M-1-5							127820	<0.1		0	400	8	211166	1.151
M-1-6							124380	<0.1		0	400	8	204475	1.146
M-1-7	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M-1-8							108011	<0.1		0	400	8	177869	1.127
M-1-9	see	analyses	corrected	for flash										
M-1-10	54	22	–	–	188	–	101000	–	–	–	–	337	169000	1.12
M-1-11	85	22	–	–	183	–	105000	–	–	–	–	400	171000	1.12
M-1-12	115	60	–	360	275	–	111000	–	–	–	–	407	197000	1.13
M-1-13	118	59	–	373	285	–	112000	–	–	–	–	428	196000	1.14
M-1-14	118	78	64	388	361	–	121000	–	–	–	–	432	208000	1.15
M-1-15	–	37	44	392	201	–	112395	–	–	–	–	443	–	1.128
M-1-16A	~300	61	52	341	252	–	129770	–	–	–	–	469	–	1.142
M-1-16B	–	61	58	418	289	–	158134	–	–	–	–	548	–	1.171
M-2-1	see	analyses	corrected	for flash										
M-2-2	110	55			400		136000					730	260000	
M-3-1	see	analyses	corrected	for flash										

WELL MAGMA MAX-1, MAGMA MAX-2, MAGMA MAX-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
m-1-1	DST	mg/lit			280	15515			198	8200	140	40	164	31000
m-1-2	DST	mg/lit			71	2880			95	145	29	47	9.8	8750
m-1-3	S	ppm			<0.08	19600			70	7600	<1.0	165	<0.1	40000
m-1-4	S	ppm	–	–	–	–	–	–	–	–	–	–	–	-
m-1-5	S	ppm			<0.08	24647			70	11000	<1.0	547	<0.1	46600
m-1-6	S	ppm			<0.08	23223			80	9520	<1.0	554	<0.1	46600
m-1-7	S	ppm	–	–	–	–	–	–	–	–	–	–	–	–
m-1-8	S	ppm			<0.08	16096			90	7600	<1.0	1026	<0.1	44600
m-1-9	FC	ppm	see	analyses	corrected	for	flash							
m-1-10	2ϕ	ppm	–	–	–	17400	–	1	202	6900	–	125	502	40900
m-1-11	2ϕ	ppm	–	–	–	16900	–	1	161	7000	–	125	494	42100
m-1-12	2ϕ	ppm	–	–	–	17900	–	1	199	6600	128	95	565	41200
m-1-13	2ϕ	ppm	–	–	–	18200	–	1	180	6500	135	99	570	42700
m-1-14	2ϕ	ppm	–	–	–	20000	–	1	256	8600	141	80	690	42000
m-1-15	S	ppm	–	7	405	16000	–	0.7	134	8000	110	78	453	44000
m-1-16A	S	ppm	–	11	440	20000	–	0.9	200	9000	124	72	596	51000
m-1-16B	S	ppm	–	13	512	23000	–	0.8	233	10000	142	84	680	57000
m-2-1	FC	ppm	see	analyses	corrected	for	flash							
m-2-2	S	mg/lit	0.08			26100		5	4150	14900	220	10	1080	52900
m-3-1	FC	ppm	see	analyses	corrected	for	flash							

WELL MAGMAMAX-1, MAGMAMAX-2, MAGMAMAX-3

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
m-1-1	—	—	—	—	—	—	—	—	—	—	—	—	
m-1-2	—	—	-	—	—	-	—	—	—	-	—	—	
m-1-3	6.0				-	0.08	<1.0	0	<0.1	250	1027	8.8	
m-1-4	—	—	—	—	—	—	—	—	—	—	—	—	
m-1-5	6.0				-	0.09	1850	6	756	200	3232	8.0	
m-1-6	5.8				-	0.08	872	20	370	175	1777	8.5	
m-1-7	—	—	—	—	—	—	—	-	—	—	—	—	
m-1-8	6.0				-	0.08	904	4	480	200	2240	7.5	
m-1-9													
m-1-10													
m-1-11													
m-1-12													
m-1-13													
m-1-14													
m-1-15													
m-1-16A													
m-1-16B													
m-2-1													
m-2-2													
m-3-1													

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS DAYS	TYPE	WELLHEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
m-1-1	720113	–	–	DST*	–	–	–	–	–	–	–	–	–	–	–
m-1-2	720116	–	–	DST	–	–	–	–	–	–	–	–	–	–	–
m-1-3	720427	1715	F-1	S	–	–	–	–	–	–	–	–	–	–	–
m-1-4	720429	–	F-3	S	300	428	96	344	96	334	55000	350000	405000	13.6	368
m-1-5	720430	1630	F-4	S	175	378	135	363	129	340	68000	404000	472000	14.4	388
m-1-6	720430	2100	F-4	S	135	362	110	346	105	338	50000	347000	397000	12.6	365
m-1-7	720501	1400	F-5	S	105	354	98	338	93	331	48000	246000	294000	16.3	389
m-1-8	720504	1230	F-8	S	110	344	75	–	65	316	67000	333000	400000	16.8	388
m-1-9	760000	–	–	FC	–	–	–	–	–	–	–	–	–	–	–
m-1-10	760629	–	F	2ϕ ?	225	392	–	–	–	–	–	–	~350000	~10	–
m-1-11	760630	–	F	2ϕ ?	240	417	–	–	–	–	–	–	~350000	~10	–
m-1-12	760808	–	F	2ϕ ?	320	446	–	–	–	–	–	–	~350000	~10	–
m-1-13	760810	–	F	2ϕ ?	235	419	–	–	–	–	–	–	~350000	~10	–
m-1-14	760810	–	F	2ϕ ?	235	419	–	–	–	–	–	–	~350000	~10	–
m-1-15	780120	1115	F-	S FIRST	–	–	–	~392	–	–	–	–	–	~10	–
m-1-16A	780131	0828	F-	S FIRST	–	–	–	~392	–	–	–	–	–	~10	–
m-1-16B	780131	0833	F-	S FINAL	–	–	–	~230	–	–	–	–	–	~?20	–
m-2-1	760000	–	F	FC	–	–	–	–	–	–	–	–	–	–	–
m-2-2	780500	–	F	S	280	407	–	–	–	–	–	–	450000	?	–
m-3-1	760000	–	FC	FC	–	–	–	–	–	–	–	–	–	–	–

DST= DRILL STEM TEST

MAGMAMAX-1
MAGMA MAX-2
MAGMA MAX-3

WELL WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	1000'	1250	1500	1750	2000	2263'	
M-1-1	1060	2805	2300									328	400	441	466	487	509	DST #1 2632-2556'
M-1-2	1060	2805	2300															DST # 3 1870-1930'
M-1-3	1060	2805	2300															PRESS @ 2264-1797'
M-1-4	1060	2805	2300															
M-1-5	1060	2805	2300															
M-1-6	1060	2805	2300															
M-1-7	1060	2805	2300															
M-1-8	1060	2805	2300															
M-1-9	1060	2805	2300															
M-1-10	1060	2805	2300															
M-1-11	1060	2805	2300															
M-1-12	1060	2805	2300															
M-1-13	1060	2805	2300															
M-1-14	1060	2805	2300															
M-1-15	1060	2805	2178															
M-1-16A	1060	2805	2178															
M-1-16B	1060	2805	2178															
												1400	2000	2600	3200	3750	4250	
M-2-1	1009	4368	4360									372	465	541	589	612	601	SLOTS 3784-4360
M-2-2	1009	4368	4360															
												1400	2000	2600	2800	3000	3093	
M-3-1	32	4000	3120									395	444	517	528	559	568	SLOTS 618-3076

WELL MAGMAMAX-1
MAGMAMAX-2
MAGMAMAX-3

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
m-1-1	—	—	—	—	—	—	—	—	—	All gas analyses for
m-1-2	—	—	—	—	—	—	—	—	—	m-1 should be considered
m-1-3	—	—	—	—	—	—	—	—	—	as very unreliable.
m-1-4	—	—	—	—	—	—	—	—	—	
m-1-5	—	—	—	—	—	—	—	—	—	
m-1-6	—	—	—	—	—	—	—	—	—	
m-1-7	—	—	—	—	—	—	—	—	—	
m-1-8	—	—	—	—	—	—	—	—	—	
m-1-9	25830	32	—	—	—	—	—	—	—	
m-1-10	—	—	—	—	—	—	—	—	—	
m-1-11	—	—	—	—	—	—	—	—	—	
m-1-12	—	—	—	—	—	—	—	—	—	
m-1-13	—	—	—	—	—	—	—	—	—	
m-1-14	20,000 ~10,000	10-30	30-60	—	—	—	—	—	—	
m-1-15	—	—	—	—	—	—	—	—	—	
m-1-16A	—	—	—	—	—	—	—	—	—	
m-1-16B	—	—	—	—	—	—	—	—	—	
m-2-1	—	—	—	—	—	—	—	—	—	
m-2-2	—	—	—	—	—	—	—	—	—	
m-3-1	—	—	—	—	—	—	—	—	—	

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	SiO2	NH4	TDS	
m-1-1	–	–	–	–	–	78966	–	–	–	1043	–	154991	
m-1-2	–	–	–	–	–	20548	1.5	–	463	108	113	38072	
m-1-3	–	–	–	–	–	–	–	–	–	–	–	–	
m-1-4	–	–	–	–	–	–	–	–	–	–	–	–	
m-1-5	–	–	–	–	–	109414	<0.09	–	0	6.8	342	180758	
m-1-6	–	–	–	–	–	108446	<0.09	–	0	7.0	350	178711	
m-1-7	–	–	–	–	–	–	–	–	–	–	–	–	
m-1-8	–	–	–	–	–	89865	<0.09	–	0	6.7	333	147987	
m-19	–	24	459	243	–	104900	172	–	–	512	–	188000	
m-1-10	20	–	–	169	–	90900	–	–	–	348	–	152100	
m-1-11	20	–	–	165	–	94500	–	–	–	360	–	153900	
m-1-12	54	–	324	248	–	99900	–	–	–	366	–	177300	
m-1-13	53	–	336	257	–	100800	–	–	–	385	–	176400	
m-1-14	70	58	349	325	–	108900	–	–	–	389	–	187200	
m-1-15	33	40	353	181	–	101156	–	–	–	399	–	–	
m-1-16A	55	47	307	227	–	116793	–	–	–	422	–	–	
m-1-16B	49	46	334	231	–	126507	–	–	–	438	–	–	
m-2-1	92	88	–	–	–	127800	20	–	–	790	–	219600	
m-2-2	42	–	–	309		104974	–	–	–	564	–	200687	
m-3-1		58				92700	134	–		195	2	17800	

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
m-1-1	—	—	240	13306	—	—	170	7033	120	34.5	141	26724	—
m-1-2	—	—	69.5	2818	—	—	93	142	28	46	9.6	8562	—
m-1-3	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-4	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-5	—	—	<0.07	21098	—	—	60	9416	<0.9	468	<0.09	39890	—
m-1-6	—	—	<0.07	20297	—	—	70	8320	<0.9	484	<0.09	40728	—
m-1-7	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-8	—	—	<0.07	13392	—	—	75	6323	<0.9	854	<0.09	37107	—
m-1-9	—	—	336	19820	—	1	241	9480	147	96	658	49990	702
m-1-10	—	—	—	15660	—	0.9	182	6210	—	113	452	36810	49
m-1-11	—	—	—	15210	—	0.9	145	6300	—	113	445	37890	77
m-1-12	—	—	—	16110	—	0.9	179	5940	115	86	509	37080	104
m-1-13	—	—	—	16380	—	0.9	162	5850	122	89	513	38430	106
m-1-14	—	—	—	18000	—	0.9	230	7740	127	72	621	37800	106
m-1-15	—	6.3	365	14400	—	0.6	121	7200	99	70	408	39600	—
m-1-16A	—	9.9	396	18000	—	0.8	180	8100	112	65	536	45900	~270
m-1-16B	—	10.4	410	18400	—	0.64	178	8000	114	67	544	45600	—
m-2-1	—	—	—	24480	—	7	1719	14940	173	133	1161	48240	232
m-2-2	0.06	—	—	20146	—	3.9	3203	11501	168	7.7	833	40832	85
m-3-1			19		—				121		58		170

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MRAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
720113	M-1-1	—	—	—	—	—	—	—	154991	1060	2300	DST
72416	M-1-2	—	—	—	—	—	—	—	38072	1060	2300	DST
720427	M-1-3	—	—	—	—	—	—	—	172555	1060	2300	
720429	M-1-4	300	96	405000	13.6	368	6-12(EST)	1-1.5 (EST)	—	1060	2300	
720430	M-1-5	175	135	472000	14.4	388	6-12(EST)	1-1.5 (EST)	211166	1060	2300	
720430	M-1-6	135	110	397000	12.6	365	6-12(EST)	1-1.5 (EST)	204475	1060	2300	
720501	M-1-7	105	98	294000	16.3	389	6-12(EST)	1-1.5 (EST)	—	1060	2300	
720504	M-1-8	110	75	400000	16.8	388	6-12(EST)	1-1.5 (EST)	177869	1060	2300	
760000	M-1-9	—	—	—	—	—	—	2.58	—	1060	2300	
760629	M-1-10	225	2ϕ	~350000	~10	—	—	—	169000	1060	2300	
760630	M-1-11	240	2ϕ	~350000	~10	—	—	—	171000	1060	2300	
760803	M-1-12	320	2ϕ	~350000	~10	—	—	—	197000	1060	2300	
760810	M-1-13	235	2ϕ	~350000	~10	—	—	—	196000	1060	2300	
760810	M-1-14	235	2ϕ	~350000	~10	—	10-20 (EST)	1-2 (EST)	208000	1060	2300	
760120	M-1-15	—	—	—	~10 ?	—	—	—	~ 192700	1060	2178	
780131	M-1-16A	—	—	—	~10?	—	—	—	~ 212689	1060	2178	
780131	M-1-16B	—	—	—	~20?	—	—	—	~ 251173	1060	2178	
760000	M-2-1	—	—	—	—	—	—	—	—	1009	4360	
780500	M-2-2	280	—	450000	? (EST) 10	—	—	0.00056	222985	1009	4360	12 unsuitable for analysis
760000	M-3-1	—	—	—	—	—	—	—	—	1032	3120	

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG STEAM	MEAS WT % NCG TOTAL	TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
720113	m-1-1	—	—	—	—	—	—	—	154991	1060	2300	DST
72416	m-1-2	—	—	—	—	—	—	—	38072	1060	2300	DST
720427	m-1-3	—	—	—	—	—	—	—	172555	1060	2300	
720429	m-1-4	300	96	405000	13.6	368	6-12 (est)	1-1.5 (EST)	—	1060	2300	
720430	m-1-5	175	135	472000	14.4	388	6-12 (est)	1-1.5 (EST)	211166	1060	2300	
720430	m-1-6	135	110	397000	12.6	365	6-12 (est)	1-1.5 (EST)	204475	1060	2300	
720501	m-1-7	105	98	294000	16.3	389	6-12 (EST)	1-1.5 (EST)	—	1060	2300	
720504	m-1-8	110	75	400000	16.8	388	6-12 (EST)	1-1.5 (EST)	177869	1060	2300	
760000	m-1-9	—	—	—	—	—	—	2.58	—	1060	2300	
760629	m-1-10	225	20	~350000	~10	—	—	—	169000	1060	2300	
760630	m-1-11	240	20	~350000	~10	—	—	—	171000	1060	2300	
760803	m-1-12	320	20	~350000	~10	—	—	—	197000	1060	2300	
760810	m-1-13	235	20	~350000	~10	—	—	—	196000	1060	2300	
760810	m-1-14	235	20	~350000	~10	—	10-20 (EST)	1-2 (EST)	208000	1060	2300	
780120	m-1-15	—	—	—	~10 ?	—	—	—	~ 192700	1060	2178	
780131	m-1-16A	—	—	—	~10 ?	—	—	—	~ 212689	1060	2178	
780131	m-1-16B	—	—	—	~20 ?	—	—	—	~ 251173	1060	2178	
760000	m-2-1	—	—	—	—	—	—	—	—	1009	4360	
780500	m-2-2	280	—	450000	? EST .10	—	—	0.00056	222985	1009	4360	Questionable gas analysis
760000	m-3-1	—	—	—	—	—	—	—	—	1032	3120	

WELL MAGMAMAX-1, MAGMAMAX-2, MAGMAMAX-3 RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
m-1-1	—	—	240	13306	—	—	170	7033	120	34.5	141	26724	—
m-1-2	—	—	69.5	2818	—	—	93	142	28	46	9.6	8562	—
m-1-3	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-4	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-5	—	—	<0.07	21098	—	—	60	9416	<0.9	468	<0.09	39890	—
m-1-6	—	—	<0.07	20297	—	—	70	8320	<0.9	484	<0.09	40728	—
m-1-7	—	—	—	—	—	—	—	—	—	—	—	—	—
m-1-8	—	—	<0.07	13392	—	—	75	6323	<0.9	854	<0.09	37107	—
m-1-9	—	—	336	19820	—	1	241	9480	147	96	658	49990	702
m-1-10	—	—	—	15660	—	0.9	182	6210	—	113	452	36810	49
m-1-11	—	—	—	15210	—	0.9	145	6300	—	113	445	37890	77
m-1-12	—	—	—	16110	—	0.9	179	5440	115	86	509	37080	104
m-1-13	—	—	—	16380	—	0.9	162	5850	122	89	513	38430	106
m-1-14	—	—	—	18000	—	0.9	230	7740	127	72	621	37800	106
m-1-15	—	6.3	365	14400	—	0.6	121	7200	99	70	408	39600	—
m-1-16A	—	9.9	396	18000	—	0.8	180	8100	112	65	536	45400	~270
m-1-16B	—	10.4	410	18400	—	0.64	178	8000	114	67	544	45600	—
m-2-1	—	—	—	24480	—	7	1719	14940	173	133	1161	48240	232
m-2-2	0.06	—	—	20146	—	3.9	3203	11501	168	7.7	833	40332	85
m-3-1			19		—				121		58		170

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	SiO2	NH4	TDS	
m-1-1	–	–	–	–	–	78966	–	–	–	1043	–	154991	
m-1-2	–	–	–	–	–	20548	1.5	–	463	108	113	38072	
m-1-3	–	–	–	–	–	–	–	–	–	–	–	–	
m-1-4	–	–	–	–	–	–	–	–	–	–	–	–	
m-1-5	–	–	–	–	–	109414	<0.09	–	0	6.8	342	180758	
m-1-6	–	–	–	–	–	108446	<0.09	–	0	7.0	350	178711	
m-1-7	–	–	–	–	–	–	–	–	–	–	–	–	
m-1-8	–	–	–	–	–	87865	<0.09	–	0	6.7	333	147887	
m-19	–	24	459	243	–	104900	172	–	–	512	–	188000	
m-1-10	20	–	–	169	–	90900	–	–	–	348	–	152100	
m-1-11	20	–	–	165	–	94500	–	–	–	360	–	153900	
m-1-12	54	–	324	248	–	99900	–	–	–	366	–	177300	
m-1-13	53	–	336	257	–	100800	–	–	–	385	–	176400	
m-1-14	70	58	349	325	–	108900	–	–	–	389	–	187200	
m-1-15	33	40	353	181	–	101156	–	–	–	399	–	–	
m-1-16A	55	47	307	227	–	116793	–	–	–	422	–	–	
m-1-16B	49	46	334	231	–	126507	–	–	–	438	–	–	
m-2-1	92	88	–	–	–	127800	20	–	–	790	–	219600	
m-2-2	42	–	–	309		104974	–	–	–	564	–	200687	
m-3-1		58				92700	134	–		195	2	178000	

WELL MAGMAMAX-1
MAGMAMAX-2
MAGMAMAX-3

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
m-1-1	—	—	—	—	—	—	—	—	—	All gas analyses for m-1 should be considered as very unreliable.
m-1-2	—	—	—	—	—	—	—	—	—	
m-1-3	—	—	—	—	—	—	—	—	—	
m-1-4	—	—	—	—	—	—	—	—	—	
m-1-5	—	—	—	—	—	—	—	—	—	
m-1-6	—	—	—	—	—	—	—	—	—	
m-1-7	—	—	—	—	—	—	—	—	—	
m-1-8	—	—	—	—	—	—	—	—	—	
m-1-9	25830	32	—	—	—	—	—	—	—	
m-1-10	—	—	—	—	—	—	—	—	—	
m-1-11	—	—	—	—	—	—	—	—	—	
m-1-12	—	—	—	—	—	—	—	—	—	
m-1-13	—	—	—	—	—	—	—	—	—	
m-1-14	~20,000-10,000	10-30	30-60	—	—	—	—	—	—	
m-1-15	—	—	—	—	—	—	—	—	—	
m-1-16A	—	—	—	—	—	—	—	—	—	
m-1-16B	—	—	—	—	—	—	—	—	—	
m-2-1	—	—	—	—	—	—	—	—	—	
m-2-2	—	—	—	—	—	—	—	—	—	
m-3-1	—	—	—	—	—	—	—	—	—	

MAGMA MAX-1
MAGMA MAX-2
MAGMA MAX-3

WELL WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	1000	1250	1500	1750	2000	2263'	
M-1-1	1060	2805	2300									328	400	441	466	487	509	DST #1 2632-2556'
M-1-2	1060	2805	2300															DST # 3 1870-1930'
M-1-3	1060	2805	2300															PERFS @ 2264-1797'
M-1-4	1060	2805	2300															
M-1-5	1060	2805	2300															
M-1-6	1060	2805	2300															
M-1-7	1060	2805	2300															
M-1-8	1060	2805	2300															
M-1-9	1060	2805	2300															
M-1-10	1060	2805	2300															
M-1-11	1060	2805	2300															
M-1-12	1060	2805	2300															
M-1-13	1060	2805	2300															
M-1-14	1060	2805	2300															
M-1-15	1060	2805	2178															
M-1-16A	1060	2805	2178															
M-1-16B	1060	2805	2178															
												1400	2000	2600	3200	3750	4250	
M-2-1	1009	4368	4360									372	465	541	589	612	601	SLOTS 3784-4360
M-2-2	1009	4368	4360															
												1400	2000	2600	2800	3000	3093	
M-3-1	1032	4000	3120									395	444	517	528	559	568	SLOTS 2618-3076

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

FLOW TEST FIELD DATA

SAMPLE #	DATE yy mm DD	TIME	STATUS DAYS	TYPE	WELLHEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
M-1-1	720113	–	–	DST*	–	–	–	–	–	–	–	–	–	–	–
M-1-2	720116	–	–	DST	–	–	–	–	–	–	–	–	–	–	–
M-1-3	720427	1715	F-1	S	–	–	–	–	–	–	–	–	–	–	–
M-1-4	720429	–	F-3	S	300	428	96	344	96	334	55000	350000	405000	13.6	368
M-1-5	720430	1630	F-4	S	175	378	135	363	129	340	68000	404000	472000	14.4	388
M-1-6	720430	2100	F-4	S	135	362	110	346	105	338	50000	347000	397000	12.6	365
M-1-7	720501	1400	F-5	S	105	354	98	338	93	331	48000	246000	294000	16.3	384
M-1-8	720504	1230	F-8	S	110	344	75	–	65	316	67000	333000	400000	16.8	388
M-1-9	760000	–	–	FC	–	–	–	–	–	–	–	–	–	–	–
M-1-10	760629	–	F	2φ ?	225	392	–	–	–	–	–	–	~350000	~10	–
M-1-11	760630	–	F	2φ ?	240	417	–	–	–	–	–	–	~350000	~10	–
M-1-12	760808	–	F	2φ ?	320	446	–	–	–	–	–	–	~350000	~10	–
M-1-13	760810	–	F	2φ ?	235	419	–	–	–	–	–	–	~350000	~10	–
M-1-14	760810	–	F	2φ ?	235	419	–	–	–	–	–	–	~350000	~10	–
M-1-15	780120	1115	F–	S FIRST	–	–	–	~392	–	–	–	–	–	~10	–
M-1-16A	780131	0828	F–	S FIRST	–	–	–	~392	–	–	–	–	–	~10	–
M-1-16B	780131	0833	F–	S FINAL	–	–	–	~230	–	–	–	–	–	~?20	–
M-2-1	760000	–	F	FC	–	–	–	–	–	–	–	–	–	–	–
M-2-2	780500	–	F	S	280	407	–	–	–	–	–	–	450000	?	–
M-3-1	3000	–	FC	FC	–	–	–	–	–	–	–	–	–	–	–

DST = DRILL STEM TEST

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
m-1-1	—	—	—	—	—	—	—	—	—	—	—	—	
m-1-2	—	—	-	—	—	-	—	—	—	-	—	—	
m-1-3	6.0				-	0.08	<1.0	0	<0.1	250	1027	8.8	
m-1-4	—	—	—	—	—	—	—	—	—	—	—	—	
m-1-5	6.0				-	0.08	1850	6	756	200	3232	8.0	
m-1-6	5.8				-	0.08	872	20	370	175	1777	8.5	
m-1-7	—	—	—	—	—	—	—	-	—	—	—	—	
m-1-8	6.0				-	0.08	904	4	480	200	2240	7.5	
m-1-9													
m-1-10													
m-1-11													
m-1-12													
m-1-13													
m-1-14													
m-1-15													
m-1-16A													
m-1-16B													
m-2-1													
m-2-2													
m-3-1													

WELL MAGMA MAX-1, MAGMA MAX-2, MAGMA MAX-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
m-1-1	DST	mg/lit			280	15515			198	8200	140	40	164	31000
m-1-2	DST	mg/lit			71	2880			95	145	29	47	9.8	8750
m-1-3	S	ppm			<0.08	19600			70	7600	<1.0	165	<0.1	40000
m-1-4	S	ppm	–	–	–	–	–	–	–	–	–	–	–	-
m-1-5	S	ppm			<0.08	24647			70	11000	<1.0	547	<0.1	46600
m-1-6	S	ppm			<0.08	23223			80	9520	<1.0	554	<0.1	46600
m-1-7	S	ppm	–	–	–	–	–	–	–	–	–	–	–	–
m-1-8	S	ppm			<0.08	16096			90	7600	<1.0	1026	<0.1	44600
m-1-9	FC	ppm	see	analyses	corrected	for	flash							
m-1-10	2ϕ	ppm	–	–	–	17400	–	1	202	6900	–	125	502	40900
m-1-11	2ϕ	ppm	–	–	–	16900	–	1	161	7000	–	125	494	42100
m-1-12	2ϕ	ppm	–	–	–	17900	–	1	199	6600	128	95	565	41200
m-1-13	2ϕ	ppm	–	–	–	18200	–	1	180	6500	135	99	570	42700
m-1-14	2ϕ	ppm	–	–	–	20000	–	1	256	8600	141	80	690	42000
m-1-15	S	ppm	–	7	405	16000	–	0.7	134	8000	110	78	453	44000
m-1-16A	S	ppm	–	11	440	20000	–	0.9	200	9000	124	72	596	51000
m-1-16B	S	ppm	–	13	512	23000	–	0.8	233	10000	142	84	680	57000
m-2-1	FC	ppm	see	analyses	corrected	for	flash							
m-2-2	S	mg/lit	0.08			26100		5	4150	14900	220	10	1080	52900
m-3-1	F	ppm	see	analyses	corrected	for	flash							

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
M-1-1							91600					1210	179790	1.160
M-1-2							21000	1.5		473	115	110	38910	1.022
M-1-3							104454	<0.1		0	400	8	172555	1.123
M-1-4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M-1-5							127820	<0.1		0	400	8	211166	1.151
M-1-6							124080	<0.1		0	400	8	204475	1.146
M-1-7	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M-1-8							108011	<0.1		0	400	8	177869	1.127
M-1-9	see	analyses	corrected	for	flash									
M-1-10	54	22	–	–	188	–	101000	–	–	–	–	387	169000	1.12
M-1-11	85	22	–	–	183	–	105000	–	–	–	–	400	171000	1.12
M-1-12	115	60	–	360	275	–	111000	–	–	–	–	407	197000	1.13
M-1-13	118	59	–	373	285	–	112000	–	–	–	–	428	196000	1.14
M-1-14	118	78	64	388	361	–	121000	–	–	–	–	432	208000	1.15
M-1-15	–	37	44	392	201	–	112395	–	–	–	–	443	–	1.128
M-1-16A	~300	61	52	341	252	–	129770	–	–	–	–	469	–	1.142
M-1-16B	–	61	58	418	289	–	158134	–	–	–	–	548	–	1.171
M-2-1	see	analyses	corrected	for	flash									
M-2-2	110	55			400		136000					730	260000	
M-3-1	see	analyses	corrected	for	flash									

WELL MAGMAMAX-1 / MAGMAMAX-2 / MAGMAMAX-3 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
M-1-1	DST	1.160	—	—	240	13306	—	—	170	7033	120	34.5	141	26724
M-1-2	DST	1.022	—	—	69.5	2818	—	—	93	142	28	46	9.6	8562
M-1-3	S	-	—	—	<0.08	19600	—	—	70	7600	<1.0	165	<0.1	40000
M-1-4	S	-	—	—	—	—	—	—	—	—	—	—	—	—
M-1-5	S	-	—	—	<0.08	24647	—	—	70	11000	<1.0	547	<0.1	46600
M-1-6	S	-	—	—	<0.08	23223	—	—	80	9520	<1.0	554	<0.1	46600
M-1-7	S	-	—	—	—	—	—	—	—	—				
M-1-8	S	-	—	—	<0.08	16096	—	—	90	7600	<1.0	1026	<0.1	44600
M-1-9	FC	see analyses corrected for flash												
M-1-10	2ϕ	"	—	—	—	17400	—	1	202	6900	—	125	502	40900
M-1-11	2ϕ	"	—	—	—	16900	—	1	161	7000	—	125	494	42100
M-1-12	2ϕ	"	—	—	—	17900	—	1	199	6600	128	95	565	41200
M-1-13	2ϕ	"	—	—	—	18200	—	1	180	6800	135	99	570	42700
M-1-14	2ϕ	"	—	—	—	20000	—	1	256	8600	141	80	690	42000
M-1-15	S	"	—	7	405	16000	—	0.7	134	8000	110	78	453	44000
M-1-16A	S	"	—	11	440	20000	—	0.9	200	9000	124	72	596	51000
M-1-16B	S	"	—	13	512	23000	—	0.8	233	10000	142	84	680	57000
M-2-1	FC	see analyses corrected for flash												
M-2-2	S	1.166	0.07	—	—	22384	—	4.3	3559	12779	187	8.6	926	45369
M-3-1	FC	see analyses corrected for flash												

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3 SEPARATED BRINE ADJUSTED TO ppm WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
m-1-1	DST	- / -	-	-	-	-	78966	-	-	-	-	1043	154991	
m-1-2	DST	- / -	-	-	-	-	20548	1.5	-	463	113	108	38072	
m-1-3	S	- / -	-	-	-	-	104454	<0.1	-	0	400	8	172555	
m-1-4	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
m-1-5	S	- / -	-	-	-	-	127820	<0.1	-	0	400	8	211166	
m-1-6	S	- / -	-	-	-	-	124080	<0.1	-	0	400	8	204475	
m-1-7	S	- / -	-	-	-	-	-	-	-	-	-	-		
m-1-8	S	- / -	-	-	-	-	108011	<0.1	-	0	400	8	177869	
m-1-9	see	analyses	corrected	for flash										
m-1-10	2ϕ	54 / 22	-	-	188	-	101000	-	-	-	-	387	169000	
m-1-11	2ϕ	85 / 22	-	-	183	-	105000	-	-	-	-	400	171000	
m-1-12	2ϕ	115 / 60	-	360	275	-	111000	-	-	-	-	407	197000	
m-1-13	2ϕ	118 / 59	-	373	285	-	112000	-	-	-	-	428	196000	
m-1-14	2ϕ	118 / 78	64	388	361	-	121000	-	-	-	-	432	208000	
m-1-15	S	- / 37	44	392	201	-	112395	-	-	-	-	443	EST 192700	
m-1-16A	S	300 / 61	52	341	252	-	129770	-	-	-	-	469	EST 212689	
m-1-16B	S	- / 61	58	418	289	-	158134	-	-	-	-	548	EST 251173	
m-2-1	see	analyses	corrected	for	flash									
m-2-2	S	94/47	-	-	343	-	116638	-	-	-	-	626	222985	
m-3-1	see	analyses	corrected	for	flash									

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							ppm IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
m-1-1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m-1-2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m-1-3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m-1-4	–	–	–	90.45	–	–	0.02	2.15	1.77	–	–	–	–	–	–	–	–	–
m-1-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m-1-6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m-1-7	–	–	–	96.66			0.01	1.09	2.09		–	–	–	–	–	–	–	–
m-1-8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m-1-9																		
m-1-10																		
m-1-11																		
m-1-12																		
m-1-13																		
m-1-14																		
m-1-15																		
m-1-16A																		
m-1-16B																		
m-2-1																		
m-2-2				95.8				2.87	1.29									
m-3-1																		

WELL MAGMAMAX-1 MAGMAMAX-2 MAGMAMAX-3

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
m-1-1					
m-1-2					
m-1-3					
m-1-4					
m-1-5					
m-1-6					
m-1-7					
m-1-8					
m-1-9					
m-1-10					
m-1-11					
m-1-12					
m-1-13					
m-1-14					
m-1-15					
m-1-16A					
m-1-16B					
m-2-1					
m-2-2					
m-3-1					

. WELL MAGMAMAX -1
MAGMAMAX -2
MAGMAMAX -3

DATA SOURCES

[illegible]	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERANCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
-1	GHT											
1-2	GHT											
1-3	SMITH-EMERY		S-E									
-4	–		–		S-E							
1-5	S-E		S-E									
1-6	S-E		S-E									
-7	–		–		S-E							
-8	S-E		S-E									
-9	–		–		–		–		REF 81-016m	Andersen, 1981		
-10	LLNL									MAIMONI, 1982		
-11	LLNL									"		
-12	LLNL									"		
-13	LLNL									"		
-14	LLNL									"	UCRL 52162	QUONG, 1976
-15												
-16A												
-16B												
-1									REF-81-016m	Andersen, 1981		
-2	NARG				NARG				NAG 430	Mulliner, 1978		
-1									REF 81-016m	Andersen, 1981		

WELL ELMORE-1 SSW-1 ELMORE-3 SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
640522	E-1-1	235	200	366000	26.2	514	1.57	0.41	—	4745	7097	
640524	E-1-2	235	200	373000	24.9	502	—	—	EST 283652	4745	7097	
640525	E-1-3A	275	240	311000	28.6	543	1.76	0.50	EST 271407	4745	7097	
640525	E-1-3B	275	240	311000	28.6	543	1.76	0.50	EST 301907	4745	7097	
640525	E-1-4	200	150	335000	29.9	534	1.11	0.33	EST 299547	4745	7097	
640525	E-1-5	175	100	350000	31.4	532	—	—	EST 291478	4745	7097	
710502	E-1-6	—	—	73358	10.2	?	—	—	—	4745	4164	
710508	E-1-7	?	?	?	?	?	—	—	—	4745	3529	
710511	E-1-8	?	?	?	?	?	—	—	188000	4745	2830	
710514	E-1-9	?	?	135751	10.5	~ 297	—	—	—	4745	2050	
710514	E-1-10	?	?	135751	10.5	~ 297	—	—	—	4745	2050	
710515	E-1-11	?	?	135751	10.5	~ 297	—	—	184000	4745	2050	
—	SSW-1	No	Samples							2347	8450	
760416	E-3-1	—	—	—	—	—	—	—	230743	1068	2510	

WELL ELMORE-1 SSU-1 ELMORE-3

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
E-1-1	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2	—	—	—	22230	—	—	—	15621	188	122	—	47388	—
E-1-3A	—	—	—	21134	—	—	—	15208	182	119	—	41341	—
E-1-3B	—	—	—	21703	—	—	—	15575	187	116	—	40022	—
E-1-4	—	—	—	20253	—	—	—	14835	174	116	—	42377	—
E-1-5	—	—	194	18202	—	3.2	4422	13167	148	110	645	40534	—
E-1-6	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-7	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-8	—	—	—	20585	—	—	—	4708	—	48	—	28103	—
E-1-9	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-10	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-11	—	—	—	16737	—	—	—	5236	—	501	—	40991	—
SSU-1	No	samples											
E-3-1	—	—	—	EST 17664	—	—	148	EST 12711	—	—	—	EST 34553	—

WELL ELMORE-1 SSA-1 ELMORE-3 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH_3	SiO_2	TDS	
E-1-1	—	—	—	—	—	—	—	—	—	—	—	—	
E-1-2	—	—	517	—	—	126958	—	—	—	—	—	213023	
E-1-3A	—	—	494	—	—	115306	—	—	—	—	—	193785	
E-1-3B	—	—	496	—	—	114613	—	—	—	—	—	192712	10.6% flash to atm
E-1-4B	—	—	469	—	—	114986	—	—	—	—	—	193209	8% flash to atm
E-1-5	65	—	400	—	—	111633	—	—	—	—	—	188135	5.9% flash to atm
E-1-6	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-7	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-8	—	—		—	—	86278	—	—	96	—	—	168260	
E-1-9	—	—	—	—	—	—	—	—	—	—	—	—	
E-1-10	—	—	—	—	—	—	—	—	—	—	—	—	
E-1-11	—	—	—	—	—	102030	—	—	48	—	—	164680	
SSA-1													
E-3-1	—/71	—	344	—	—	95900	—	—	—	—	132	EST 161520	30% flash assumed

WELL ELMORE-1
SSH-1
ELMORE-3

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
E-1-1	3759	81	—	—	—	105	0.48	—	—	
E-1-2	—	—	—	—	—	—	—	—	—	
E-1-3A	5034	—	—	—	—	—	—	—	—	
E-1-3B	5034	—	—	—	—	—	—	—	—	
E-1-4	2846	14.8	—	—	142	99	—	—	—	
E-1-5	—	—	—	—	—	—	—	—	—	
E-1-6	—	—	—	—	—	—	—	—	—	
E-1-7	—	—	—	—	—	—	—	—	—	
E-1-8	—	—	—	—	—	—	—	—	—	
E-1-9	—	—	—	—	—	—	—	—	—	
E-1-10	—	—	—	—	—	—	—	—	—	
E-1-11	—	—	—	—	—	—	—	—	—	
SSH-1								—	—	
E-3-1	—	—	—	—	—	—	—	—	—	

ELMORE -1
ELMORE -3
SSUNIT-1

WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	2000'	2730'	3000'	4000'	4630	6890'	
E-1-1	4745'	7117'	7097'									480	563	585	634	658	682	PERFED - 4766 - 7097'
E-1-2	"	"	"															
E-1-3A	"	"	"															
E-1-3B	"	"	"															
E-1-4	"	"	"															
E-1-5	"	"	"															
E-1-6	4745'	7117	4164'											3000'	3634'			PERFED @ 3975 - 3570
E-1-7	4745'	7117	3529'									1520 / 2020	2500 / 2824	349	381			PERFED @ 3390 - 3116'
E-1-8	4745'	7117	2830'										379 / 387					PerfEd 2758 - 2108
E-1-9	4745'	7117	2050									399 / 439		(FLOWING T SURVEY				Perfed @ 1735 - 2028', 1520 - 1592'
E-1-10	4745	7117	2050															
E-1-11	4745	7117	2050															
												3000	4000	5000	6000	7000	8000	MEASRD DAYS AFTER INJECT.
SSU-1	2397'	8450	8450'									282	349	399	446	516	566	2000 BBLS OF COLD WATER
												1500'	2000'	2450'				
E-3-1	1068	2510	2510									477	513	526				SLOTS 2505 - 2007'

WELL ELMORE-1, ELMORE-3, SSUNIT-1

FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS-DAYS	TYPE	WELLHEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
E-1-1	640522	-	F-1	S	235	-	200	409	200	409	96000	270000	366000	26.2	514
E-1-2	640524	-	F-3	S	235	-	200	-	200	-	93000	280000	373000	24.9	502
E-1-3A	640525	-	F-4	S	275	-	240	420	240	420	89000	222000	311000	28.6	543
E-1-3B	640525	-	F-4	FA	275	-	240	420	240	420	89000	222000	311000	28.6	543
E-1-4	640525	-	F-4	FA	200	-	150	384	150	380	100000	235000	335000	29.9	534
E-1-5	640525	-	F-4	FA	175	-	100	359	100	358	110000	240000	350000	31.4	532
E-1-6	710502	1915	F-1	S	-	-	-	311 ?	-	-	7500	65858	73358	10.2	?
E-1-7	710508	1430	F-2	S	?	?	?	?	?	?	?	?	?	?	?
E-1-8	710511	1500	F-1	S	?	?	?	220	?	?	? 10,000	?	45000	?	?
E-1-9	710514	2300	F-2	S	?	?	?	248	?	250	14200	121551	135751	10.5	~ 297
E-1-10	710514	2330	F-2	S	?	?	?	248	?	250	14200	121551	135751	10.5	~ 297
E-1-11	710515	0300	F-3	S	?	?	?	248	?	250	14200	121551	135751	10.5	~ 297
SSU-1	No Samples														
E-3-1	760216	1830	F-1?	FA?	-	-	-	-	-	-	-	-	-	-	-

WELL ELMORE -1
ELMORE -3
SSGU IT-1

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	PH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	PH	
E-1-1													
E-1-2													
E-1-3A													
E-1-3B													
E-1-4													
E-1-5													
E-1-6													
E-1-7													
E-1-8													
E-1-9													
E-1-10													
E-1-11													
SSGU-1													
E-3-1													

WELL ELMORE-1 SSUNIT-1 ELMORE-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
E-1-1	S	GAS ONLY	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2	S	ppm				29600				20800	250	162		63100
E-1-3A	S	ppm				29600				21300	255	167		57900
E-1-3B	FA	ppm				34000				24400	293	181		62700
E-1-4	FA	ppm				31400				23000	269	180		65700
E-1-5	FA	ppm			300	28200		5	4700	20400	230	170	1000	62800
E-1-6	S	ppm												
E-1-7	S	ppm												
E-1-8	S	ppm				23000				5260		54		31400
E-1-9	S	ppm												
E-1-10	S	ppm												
E-1-11	S	ppm				18700				5850		560		45800
SSU-1	—													
E-3-1	FA?	mg/liter				EST 29600			248	EST 21300				EST 57900

WELL ELMORE-1 SSUNIT-1 ELMORE-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
E-1-1	—	—	—	—	—	..	—	—	—	—	—	—	—	—
E-1-2				688										
E-1-3A				692										
E-1-3B				777										
E-1-4				727										
E-1-5		100		620										
* E-1-6							59172							1.038
E-1-7							156213							1.215
E-1-8							96400			107			188000	1.121
E-1-9														
E-1-10														
E-1-11							114000			54			184000	1.146
SSU-1														
E-3-1		118			576		160700					220	EST 270662	EST 1.173

* MAX Cl^- MEASURED. NOTE SAMPLES COULD BE CONTAMINATED BY FRESH WATER USED TO COOL HOLE.

WELL ELMORE-1 SSUNIT-1 ELMORE-3 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
E-1-1	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2	S	—	—	—	—	29600	—	—	—	20800	250	162	—	63100
E-1-3A	S	—	—	—	—	29600	—	—	—	21300	255	167	—	57900
E-1-3B	FA	—	—	—	—	34000	—	—	—	24400	293	181	—	62700
E-1-4	FA	—	—	—	—	31400	—	—	—	23000	269	180	—	65700
E-1-5	FA	—	—	—	300	28200	—	5	4700	20400	230	170	1000	62800
E-1-6	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-7	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-8	S	—	—	—	—	23000	—	—	—	5260	—	54	—	31400
E-1-9	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-10	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-11	S	—	—	—	—	18700	—	—	—	5850	—	560	—	45800
SSU-1		No Samples												
E-3-1	FA?	EST 1.173	—	—	—	EST 25234	—	—	211	EST 18159	—	—	—	EST 49361

WELL ELMORE-1 SSU UNIT-1 ELMORE-3

SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
E-1-1	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
E-1-2	S	- / -	-	688	-	-	EST 169052	-	-	-	-	-	EST 283652	
E-1-3A	S	- / -	-	692	-	-	EST 161493	-	-	-	-	-	EST 271407	
E-1-3B	FA	- / -	-	777	-	-	EST 179556	-	-	-	-	-	EST 301907	
E-1-4	FA	- / -	-	727	-	-	EST 178271	-	-	-	-	-	EST 299547	
E-1-5	FA	- / 100	-	620	-	-	EST 172953	-	-	-	-	-	EST 291478	
E-1-6	S	- / -	-	-	-	-	59172	-	-	-	-	-	-	
E-1-7	S	- / -	-	-	-	-	156413	-	-	-	-	-	-	
E-1-8	S	- / -	-	-	-	-	96400	-	-	107	-	-	188000	
E-1-9	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
E-1-10	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
E-1-11	S	- / -	-	-	-	-	114000	-	-	54	-	-	184000	
SSU-1	-	No	Samples											
E-3-1	FA?	- / 101	-	-	491	-	137000	-	-	-	-	188	230743	

· WELL ELMORE-1 SSH-1 ELMORE-3

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							ppm IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
E-1-1	1.57	–	0.0066	90.33	2.51	–	–	–	6.91	0.25	14348	309	–	–	–	400	1.82	15060
E-1-2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E-1-3A	1.76	–	–	–	–	–	–	–	–	–	~17600	–	–	–	–	–	–	–
E-1-3B	1.76	–	–	–	–	–	–	–	–	–	~17600	–	–	–	–	–	–	–
E-1-4	1.11	–	0.01122	84.77	0.57	–	–	6.61	8.05	–	9520	49.6	–	–	472	330	–	10371
E-1-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E-1-6																		
E-1-7																		
E-1-8																		
E-1-9	–	–	–	97.24	0.02	–	–	1.23	0.82	0.14								
E-1-10	–	–	–	98.37	0.03	–	–	0.00	0.79	0.21								
E-1-11	–	–	–	98.77	0.01	–	–	0.00	0.81	0.13								
		–																
SSH-1																		
E-3-1	–	–	–	98.59	0			0.23	0.84	0.22								

WELL ELMORE-1 SSU-1 ELMORE 3

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
E-1-1					
E-1-2					
E-1-3A					
E-1-3B					
E-1-4					
E-1-5					
E-1-6					
E-1-7					
E-1-8					
E-1-9					
E-1-10					
E-1-11					
SSU-1					
E-3-1					

ELMORE-1

WELL DATA SOURCES

MPLE #	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
-1-1	Po				Po				REP: 64-387	Holbrook + Stanley, 1964	REP 64-372	Bouchet, 1964
-1-2	Po								"	"	"	"
-1-3A	Po								"	"	"	"
-1-3B	Po				Po				"	"	"	"
E-1-4	Po								"	"	"	"
E-1-5	Po								"	"	"	"
E-1-6	UOC								ANAL 71-153	Fraser, 1971		
E-1-7	UOC								"	"		
-1-8	UOC								"	"		
E-1-9	UOC				UOC				"	"		
#10	UOC				UOC				"	"		
-1-11	UOC				UOC				"	"		
SH-1	—											
E-3-1	UOC				UOC				ARS-77-11014	WHEATLEY, 1977		

ELMORE-1

WELL DATA SOURCES

MPLE #	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
-1-1	PO				PO				REP: 64-387	Hulbrook + Stanley, 1964	REP 64-372	Bouchet, 1964
-1-2	PO								"	"	"	"
-1-3A	PO								"	"	"	"
-1-3B	PO				PO				"	"	"	"
-1-4	PO								"	"	"	"
-1-5	PO								"	"	"	"
-1-6	UOC								ANAL 71-153	Fraser, 1971		
-1-7	UOC								"	"		
-1-8	UOC								"	"		
-1-9	UOC				UOC				"	"		
-1-10	UOC				UOC				"	"		
-1-11	UOC				UOC				"	"		
SW-1	—											
-3-1	UOC				UOC				ARS-77-110M	WHEATLEY, 1977		

WELL ELMORE-1 SSM-1 ELMORE 3

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
E-1-1					
E-1-2					
E-1-3A					
E-1-3B					
E-1-4					
E-1-5					
E-1-6					
E-1-7					
E-1-8					
E-1-9					
E-1-10					
E-1-11					
SSM-1					
E-3-1					

WELL Elmore-1 SSU-1 Elmore-3

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							PPM IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
E-1-1	1.57	–	0.0066	90.33	2.51	–	–	–	6.91	0.25	14348	309	–	–	–	400	1.82	15060
E-1-2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E-1-3A	1.76	–	–	–	–	–	–	–	–	–	~17600	–	–	–	–	–	–	–
E-1-3B	1.76	–	–	–	–	–	–	–	–	–	~17600	–	–	–	–	–	–	–
E-1-4	1.11	–	0.01122	84.77	0.57	–	–	6.61	8.05	–	9520	49.6	–	–	472	330	–	10371
E-1-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E-1-6																		
E-1-7																		
E-1-8																		
E-1-9	–	–	–	97.24	0.02	–	–	1.23	0.82	0.14								
E-1-10	–	–	–	98.37	0.03	–	–	0.00	0.79	0.21								
E-1-11	–	–	–	98.77	0.01	–	–	0.00	0.81	0.13								
		–																
SSU-1																		
E-3-1	–	–	–	98.59	0			0.23	0.84	0.22								

WELL ELMORE-1 / ELMORE UNIT-1 / ELMORE-3

SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	
E-1-1	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
E-1-2	S	- / -	-	688	-	-	EST 169052	-	-	-	-	-	EST 283652	
E-1-3A	S	- / -	-	692	-	-	EST 161493	-	-	-	-	-	EST 271407	
E-1-3B	FA	- / -	-	777	-	-	EST 179556	-	-	-	-	-	EST 301907	
E-1-4	FA	- / -	-	727	-	-	EST 178271	-	-	-	-	-	EST 299547	
E-1-5	FA	- / 100	-	620	-	-	EST 172953	-	-	-	-	-	EST 291478	
E-1-6	S	- / -	-	-	-	-	59172	-	-	-	-	-	-	
E-1-7	S	- / -	-	-	-	-	156413	-	-	-	-	-	-	
E-1-8	S	- / -	-	-	-	-	96400	-	-	107	-	-	188000	
E-1-9	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
E-1-10	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
E-1-11	S	- / -	-	-	-	-	114000	-	-	54	-	-	184000	
SSU-1	-	No	Samples											
E-3-1	FA?	- / 101	-	-	491	-	137000	-	-	-	-	188	230743	

WELL ELMORE-1 SSUNIT-1 ELMORE-3 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
E-1-1	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2	S	—	—	—	—	29600	—	—	—	20800	250	162	—	63100
E-1-3A	S	—	—	—	—	29600	—	—	—	21300	255	167	—	57900
E-1-3B	FA	—	—	—	—	34000	—	—	—	24400	293	181	—	62700
E-1-4	FA	—	—	—	—	31400	—	—	—	23000	269	180	—	65700
E-1-5	FA	—	—	—	300	28200	—	5	4700	20400	230	170	1000	62800
E-1-6	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-7	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-8	S	—	—	—	—	23000	—	—	—	5260	—	54	—	31400
E-1-9	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-10	S	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-11	S	—	—	—	—	18700	—	—	—	5850	—	560	—	45800
SSU-1		No Samples												
E-3-1	FA?	EST 1.173	—	—	—	EST 25234	—	—	211	EST 18159	—	—	—	EST 49361

WELL ELMORE-1 SSUNIT-1 ELMORE-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
E-1-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2				688										
E-1-3A				692										
E-1-3B				777										
E-1-4				727										
E-1-5		100		620										
* E-1-6							59172							1.038
E-1-7							156213							1.215
E-1-8							96400			107			188000	1.121
E-1-9														
E-1-10														
E-1-11							114000			54			184000	1.146
SSU-1														
E-3-1		118			576		160700					220	EST 270662	EST 1.173

* MAX Cl^- MEASURED. NOTE SAMPLES WOULD BE CONTAMINATED BY FRESH WATER USED TO COOL HOLE.

WELL ELMORE-1 SSUNIT-1 ELMORE-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
E-1-1	S	GAS ONLY	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2	S	ppm				29600				20800	250	162		63100
E-1-3A	S	ppm				29600				21300	255	167		57900
E-1-3B	FA	ppm				34000				24400	293	181		62700
E-1-4	FA	ppm				31400				23000	269	180		65700
E-1-5	FA	ppm			300	28200		5	4700	20400	230	170	1000	62800
E-1-6	S	ppm												
E-1-7	S	ppm												
E-1-8	S	ppm				23000				5260		54		31400
E-1-9	S	ppm												
E-1-10	S	ppm												
E-1-11	S	ppm				18700				5850		560		45800
SSU-1	—													
E-3-1	FA?	mg/lit				EST 29600			248	EST 21300				EST 57900

WELL ELMORE-1
ELMORE-3
SSCU IT-1

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	PH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	PH	
E-1-1													
E-1-2													
E-1-3A													
E-1-3B													
E-1-4													
E-1-5													
E-1-6													
E-1-7													
E-1-8													
E-1-9													
E-1-10													
E-1-11													
SSCU-1													
E-3-1													

WELL ELMORE-1 ELMORE-3 SSU-1

FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS DAYS	TYPE	WELLHEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
E-1-1	640522	–	F-1	S	235	–	200	409	200	409	96000	270000	366000	26.2	514
E-1-2	640524	–	F-3	S	235	–	200	–	200	–	93000	280000	373000	24.9	502
E-1-3A	640525	–	F-4	S	275	–	240	420	240	420	89000	222000	311000	28.6	543
E-1-3B	640525	–	F-4	FA	275	–	240	420	240	420	89000	222000	311000	28.6	543
E-1-4	640525	–	F-4	FA	200	–	150	384	150	380	100000	235000	335000	29.9	534
E-1-5	640525	–	F-4	FA	175	–	100	359	100	358	110000	240000	350000	31.4	532
E-1-6	710502	1915	F-1	S	–	–	–	311 ?	–	–	7500	65858	73358	10.2	?
E-1-7	710508	1430	F-2	S	?	?	?	?	?	?	?	?	?	?	?
E-1-8	710511	1500	F-1	S	?	?	?	220	?	?	? 10,000	?	45000	?	?
E-1-9	710514	2300	F-2	S	?	?	?	248	?	250	14200	121551	135751	10.5	~ 297
E-1-10	710514	2330	F-2	S	?	?	?	248	?	250	14200	121551	135751	10.5	~ 297
E-1-11	710515	0300	F-3	S	?	?	?	248	?	250	14200	121551	135751	10.5	~ 297
SSU-1	No Samples														
E-3-1	760216	1830	F-1?	FA?	–	–	–	–	–	–	–	–	–	–	–

ELMORE -1
ELMORE -3
SSUNIT-1

WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	2000'	2730'	3000'	4000'	4630	6890'	
E-1-1	4745'	7117'	7097'									480	563	585	634	658	682	PERFED - 4766 - 7097'
E-1-2	"	"	"															
E-1-3A	"	"	"															
E-1-3B	"	"	"															
E-1-4	"	"	"															
E-1-5	"	"	"															
E-1-6	4745'	7117	4164'											3000'	3634'			PERFED @ 3975 - 3570
E-1-7	4745'	7117	3529'									1520 / 2020	2500 / 2824	349	381			PERFED @ 3390 - 3116'
E-1-8	4745'	7117	2830'										379 / 387					PERFED @ 2758 - 2108
E-1-9	4745'	7117	2050									399 / 439		(FLOWING TEMPERATURE SURVEY)				PERFED @ 1735 - 2028', 1520 - 1592
E-1-10	4745	7117	2050															
E-1-11	4745	7117	2050															
												3000	4000	5000	6000	7000	8000	MEASURED DAYS AFTER INJECT.
SSU-1	2397'	8450	8450'									282	349	399	446	516	566	200 BBLS OF COLD WATER
												1500'	2000'	2450'				
E-3-1	1068	2510	2510									477	513	526				SLOTS 2505 - 2007'

WELL ELMORE-1, SSU-1, ELMORE-3

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
E-1-1	3759	81	—	—	—	105	0.48	—	—	
E-1-2	—	—	—	—	—	—	—	—	—	
E-1-3A	5034	—	—	—	—	—	—	—	—	
E-1-3B	5034	—	—	—	—	—	—	—	—	
E-1-4	2846	14.8	—	—	142	99	—	—	—	
E-1-5	—	—	—	—	—	—	—	—	—	
E-1-6	—	—	—	—	—	—	—	—	—	
E-1-7	—	—	—	—	—	—	—	—	—	
E-1-8	—	—	—	—	—	—	—	—	—	
E-1-9	—	—	—	—	—	—	—	—	—	
E-1-10	—	—	—	—	—	—	—	—	—	
E-1-11	—	—	—	—	—	—	—	—	—	
SSU-1								—	—	
E-3-1	—	—	—	—	—	—	—	—	—	

WELL ELMORE-1 SSLA-1 ELMORE-3 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH_3	SiO_2	TDS	
E-1-1	—	—	—	—	—	—	—	—	—	—	—	—	
E-1-2	—	—	517	—	—	126158	—	—	—	—	—	213023	
E-1-3A	—	—	494	—	—	115306	—	—	—	—	—	193785	
E-1-3B	—	—	496	—	—	114613	—	—	—	—	—	192712	10.6% flash to atm
E-1-4B	—	—	469	—	—	114986	—	—	—	—	—	193209	8% flash to atm
E-1-5	65	—	400	—	—	111633	—	—	—	—	—	188135	5.9% flash to atm
E-1-6	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-7	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-8	—	—		—	—	86278	—	—	96	—	—	168260	
E-1-9	—	—	—	—	—	—	—	—	—	—	—	—	
E-1-10	—	—	—	—	—	—	—	—	—	—	—	—	
E-1-11	—	—	—	—	—	102030	—	—	48	—	—	164680	
SSLA-1													
E-3-1	—/71	—	344	—	—	95900	—	—	—	—	132	EST 161520	30% flash assumed

WELL ELMORE-1, SSU-1, ELMORE-3

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
E-1-1	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-2	—	—	—	22230	—	—	—	15621	188	122	—	47388	—
E-1-3A	—	—	—	21134	—	—	—	15208	182	119	—	41341	—
E-1-3B	—	—	—	21703	—	—	—	15575	187	116	—	40022	—
E-1-4	—	—	—	20253	—	—	—	14835	174	116	—	42377	—
E-1-5	—	—	194	18202	—	3.2	4422	13167	148	110	645	40534	—
E-1-6	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-7	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-8	—	—	—	20585	—	—	—	4708	—	48	—	28103	—
E-1-9	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-10	—	—	—	—	—	—	—	—	—	—	—	—	—
E-1-11	—	—	—	16737	—	—	—	5236	—	501	—	40991	—
SSU-1	No	samples											
E-3-1	—	—	—	EST 17664	—	—	148	EST 12711	—	—	—	EST 34553	—

WELL ELMORE-1 SSW-1 ELMORE-3

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
640522	E-1-1	235	200	366000	26.2	514	1.57	0.41	—	4745	7097	
640524	E-1-2	235	200	373000	24.9	502	—	—	EST 283652	4745	7097	
640525	E-1-3A	275	240	311000	28.6	543	1.76	0.50	EST 271407	4745	7097	
640525	E-1-3B	275	240	311000	28.6	543	1.76	0.50	EST 301907	4745	7097	
640525	E-1-4	200	150	335000	29.9	534	1.11	0.33	EST 299547	4745	7097	
640525	E-1-5	175	100	350000	31.4	532	—	—	EST 291478	4745	7097	
710502	E-1-6	—	—	73358	10.2	?	—	—	—	4745	4164	
710508	E-1-7	?	?	?	?	?	—	—	—	4745	3529	
710511	E-1-8	?	?	?	?	?	—	—	188000	4745	2830	
710514	E-1-9	?	?	135751	10.5	~ 297	—	—	—	4745	2050	
710514	E-1-10	?	?	135751	10.5	~ 297	—	—	—	4745	2050	
710515	E-1-11	?	?	135751	10.5	~ 297	—	—	184000	4745	2050	
—	SSW-1	No Samples								2397	8450	
760416	E-3-1	—	—	—	—	—	—	—	230743	1068	2510	

MAGMAMAX-11
BARETTA-IRD

WELL WOOLSEY-1

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
850000	M-11-1	—	—	—	—	—			—	?	3491	
860000?	BA-1-1	—	—	—	—	—	—	—	—	2332	5020	
720228	W-1-1	—	—	—	—	—	—	—	131732	1084	2400	
220229	W-1-2	—	—	—	—	—	—	—	92692	1084	2400	
720321	W-1-3	—	—	—	—	—	—	—	151237	1084	2400	
760000	W-1-4	—	—	—	—	—	—	—	—	1084	2400	

WELL MAGMAMAX-1 / BARETTA-1RD / WOOLSEY-1

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
M-1-1	—	—	204	22786	—	—	582	12486	159	19	801	46243	183
BA-1-1	—	ND	92	2500	—	ND	86	2500	55	54	60	15000	45
W-1-1	—	—	—	8550	—	—	84	2831	65	651	121	49257	—
W-1-2	—	—	—	7284	—	—	141	3055	63	113	150	28195	—
W-1-3	—	—	—	12658	—	—	244	6510	90	136	150	49729	—
W-1-4	—	—	197	17368	—	1	184	7614	114	118	438	33333	131

WELL MAGMAMAX-11 / BARRIA-1 RD / WOOLSEY-1 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	SiO2	NH4	TDS	
M-1-1	69	—	376	321	95	128000	—	—	120	336	339	213152	
BA-1-1	3	—	112	11	24	31000	—	—	53	255	103	62100	
W-1-1	—	—	—	—	—	54015	—	—	—	112	—	131732	
W-1-2	—	—	—	—	—	49342	—	—	—	141	—	92692	
W-1-3	—	—	—	—	—	83183	—	—	—	181	—	151237	
W-1-4	34	—	289	127	—	99385	—	—	67	347	270	166929	

MAGMAMAX-11
BARETTA-1 RD
WELL WOOLSEY-1

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
MH-1	1000	—	—	—	—	—	—	—	—	
BA-1-1	10 100	ND	—	—	—	—	—	—		
W-1-1	—	—	—	—	—	—	—	—	—	
W-1-2	—	—	—	—	—	—	—	—	—	
W-1-3	—	—	—	—	—	—	—	—	—	
W-1-4	3800	2.4	—	—	—	—	—	—		

MAGMAMAX-II
Baretta-IRD

WELL Woolsey-1 WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%				3491'			
M-II-1	?	3491	3491	3491	100										572			
														3117'				
BA-1-1	2332	5020	5020	3117'	100									464				
												1400	1800	2200	2600	3000	3480	
W-1-1	1084	2400	2400									375	406	448	–	–	–	DST #1 1230-1294'
W-1-2	1084	2400	2400															DST #2 1913-1977'
W-1-3	1084	2400	2400															DST #3 2319-2400'
W-1-4	1084	2400	2400															SLOTS 1866-2375'
W-1-5	1084	3490	3490									374	375	383	424	482	527	REDRILL 1978
																		SLOTS 1866-3485

WELL MAGMAMAX-11 / BARIELLA-1 RD / WOOLSEY-1

FLOW TEST FIELD DATA

SAMPLE #	DATE YY MM DD	TIME	STATUS-DAYS	TYPE	WELL HEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
M-11-1	850000	–	FL	FL	–	–	–	–	–	–	–	–	–	–	–
BA-1-1	8[illegible]0000?	–	F	FL	–	–	–	–	–	–	–	–	–	–	–
W-1-1	720228	–	DST	DST	–	–	–	–	–	–	–	–	–	–	–
W-1-2	720229	–	–	DST	–	–	–	–	–	–	–	–	–	–	–
W-1-3	720301	–	–	DST	–	–	–	–	–	–	–	–	–	–	–
W-1-4	760000	–	–	FL	–	–	–	–	–	–	–	–	–	–	–

DST = DRILL STEM TEST

WELL MACAMAX-11
BARETTA-1RD
WOOLSEY-1

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
M-11-1													
BA-1-1													
W-1-1													
W-1-2													
W-1-3													
W-1-4													

WELL MAGMAMAX-11
BARETTA-1RD
WOOLSEY-1

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
M-11-1	FL	ppm	see	analyses	corrected	for	flash							
BA-1-1	FL	ppm	see	analyses	corrected	for	flash							
W-1-1	DST	mg/lit				9200			90	3100	70	700	130	53000
W-1-2	DST	mg/lit				7750			150	3250	67	120	160	30000
W-1-3	DST	mg/lit				14000			270	7200	100	150	540	55000
W-1-4	FL	ppm	see	analyses	corrected	for	flash							

WELL Magma max-11 BARETTA-IRD WOOLSEY-1

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
M-11-4	see	analyses	corrected		for	flash								
BA-1-1	see	analyses	corrected		for	flash								
W-1-1							63500					120	141744	1.076
W-1-2							52500					150	98624	1.064
W-1-3							92000					200	167268	1.106
W-1-4	see	analyses	corrected		for	flash								

WELL Magmamax-1 / BARETTA-1 RD / WOOLSEY-1 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
M-1-1	FC	see	analyses	corrected	for	flash								
BA-1-1	FC	see	analyses	corrected	for	flash								
W-1-1	DST	1.076	–	–	–	8550	–	–	84	2881	65	651	121	49257
W-1-2	DST	1.064	–	–	–	7284	–	–	141	3055	63	113	150	28195
W-1-3	DST	1.106	–	–	–	12658	–	–	244	6510	90	136	488	49729
W-1-4	FC	see	analyses	corrected	for	flash								

WELL MAGMAMAX-11 / BARETTA-1RD / WOOLSEY-1

SEPARATED BRINE ADJUSTED TO ppm WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	
M-1-1	FC	see analyses corrected for flash												
BA-1-1	FC	see analyses corrected for flash												
W-1-1	DST	– / –	–	–	–	–	59015	–	–	–	–	112	131732	
W-1-2	DST	– / –	–	–	–	–	49342	–	–	–	–	141	92692	
W-1-3	DST	– / –	–	–	–	–	83183	–	–	–	–	181	151237	
W-1-4	FC	see analyses corrected for flash												

WELL MAGMAMAX-11, BARRETTA-1RD, WOOLSEY-1

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							PPM IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	PPM IN STM
M-11-1																		
BA-1-1																		
W-1-1																		
W-1-2																		
W-1-3																		
W-1-4																		

WELL MAGMAMAX-1I
BARETTA-1RD
WOOLEY-1

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
M-11-1					
BA-1-1					
W-1-1					
W-1-2					
W-1-3					
W-1-4					

MAMMAMAX-11
WELL BARETTA-1RD
WOOLSEY-1

DATA SOURCES

SAMPLE #	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
M-1-1	UCR?								Geochemics Wksm.	McKibben et al, 1988		
BA-1-1	UCR?								Fenn Geol	McKibben et al, 1988		
W-1-1	GHT											
W-1-2	GHT											
W-1-3	GHT											
W-1-4	-								REF 81-016m	Andersen, 1981		

WELL IID-1 IID-2 IID-3 STATE-1

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
620600	I-1-1	200	92	632911	19.75	425	—	—	245562	1672	5216	
660118	I-1-2	461	444	—	11.0?	436	0.66	0.073	—	1672	5216	
660216	I-1-3	452	413	—	11.0?	436	0.56	0.062	—	1672	5216	
660421	I-1-4	—	—	—	—	—	—	—	—	1672	5216	
0.00000	I-1-5	201	—	550000	18.2	—	—	—	300000	1672	5216	
650000	I-2-1	—	—	—	—	—	—	0.05	—	1598	3702	
640300	I-2-2	225?	200?	434000	16.6	417	EST 0.30	—	300000	1598	3702	
640411	I-2-3	—	300	—	15.2	421.	EST 0.33	—	322000	1598	3702	
650318	I-3-1	—	—	—	—	—	—	—	34400	1562	1699	
640500	ST-1-1	—	300	390000	23.1?	509	EST 2.16	—	258000	1191	4839	Questionable steam flash
640500	ST-1-2	—	—	—	—	—	—	0.5	—	1191	4839	

IID-1 STATE-1
IID-2
IID-3

WELL

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
1 I-1-1	1.3	—	331	25436	12.7	15.9	1908	15134	204	—	636	34338	127
2 I-1-2	—	—	—	—	-	-	-	-	-	-	-		-
3 I-1-3	—	—	—	—	—	—	-	-		-	-		-
4 I-1-4	1	12	390	28000	14	8	2290	17500	215	54	1400	50400	235
I-1-5	0.02	—	335	26994	13.1	21	2127	16360	237	30	1636	41718	—
I-2-1	2	—	390	27800	20	3	2000	16500	240	10	1370	53000	250
I-2-2	1.7	—	359	28022	20	8.3	3069	17180	225	30	1276	44452	—
I-2-3	—	—	628	27645	—	—	2883	18402	195	85	1442	54866	30
I-3-1	—	0.16	100	1130	—	—	0.70	1250	40	74	6.4	10600	3
ST-1-1	<1	—	308	20455	10	2.3	1333	13227	—	69	907	41526	—
ST-1-2	<1	NA	290	21200	17	2	1200	14000	180	27	950	47800	190

WELL IDD-1 IDD-2 IDD-3 STATE-1 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	SiO2	NH4	TDS	
I-1-1	64	64	1272	445	–	117005	–	–	6.4	–	–	197064	
I-1-2	–	–	–	–	–	–	–	–	–	–	–	–	
I-1-3	–	–	–	–	–	–	–	–	–	–	–	–	
I-1-4	102	135	400	540	120	155000	15	18	5	400	409	258000	
I-1-5	21	106	384	491	–	149285	–	–	–	–	–	245400	
I-2-1	80	70	440	500	–	155000	–	–	30	400	–	259000	
I-2-2	75	83	450	584	–	149286	–	–	43.4	434	–	250200	
I-2-3	–	–	543	–	106	160272	–	12.7	27.1	509	319	273056	
I-3-1	–	–	85	–	15	19700	1	4.5	621	120	321	34400	
ST-1-1	65	40	338	461	–	115542	–	–	–	–	–	198402	
ST-1-2	80	65	NA	500	NA	127000	NA	NA	30	NA	–	219500	

WELL IID-1 STATE-1
IID-2
IID-3

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
I-1-1	—	—	—	—	—	—	—	—	—	
I-1-2	739	—	—	—	—	—	—	—	—	
I-1-3	627	—	—	—	—	—	—	—	—	
I-1-4	—	16	—	—	—	—	—	—	—	
I-1-5	—	—	—	—	—	—	—	—	—	
I-2-1	500	—	—	—	—	—	—	—	—	
I-2-2	—	—	—	—	—	—	—	—	—	
I-2-3	—	—	—	—	—	—	—	—	—	
I-3-1	—	—	—	—	—	—	—	—	—	
ST-1-1	—	—	—	—	—	—	—	—	—	
ST-1-2	5000	—	—	—	—	—	—			

IID-1 STATE-1
IID-2
WELL IID-3

WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	MEASURED TEMPERATURES 2000	2500'	3000	3500	4000	4500'	REMARKS
I-1-1	1672	5230	5216	4900-5212	100							450	510	560	584	594	~600	Perfed 4900-5212
I-1-2																		
I-1-3																		
I-1-4																		
I-1-5																		
I-2-1	1598'	5826	5811	3490-3702	100							2000'	2500'	3000	3500'	4000'	5000'	Perfed 3490-3702
I-2-2												466	532	572	594	606	622	
I-2-3																		
												1550'						
I-3-1	1562'	1699'	1699	1550-1700	100							378						
												2000	2500	3000	3500	4000	4860	
* ST-1-1	1191	4840	4839	4435-4806	100							426	482	525	546	555	575	Perfed 4435-4806
ST-1-2	1191	4840	4839	4435-4806	100													

* [illegible] when 2 7/8" tubing is in hole, well produces a lower enthalpy fluid. 4435-4806 may be zone of [illegible]

WELL I ID-1 I ID-2 I ID-3 STATE-1

FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS DAYS	TYPE	WELL HEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
I-1-1	620600	–	F	S	200	405	–	–	92	342	125000	507911	632911	19.75	425
I-1-2	660118	–	F	S	461	–	–	–	444	–	–	–	–	11.0?	436
I-1-3	660216	–	F	S	452	–	–	–	413	–	–	–	–	11.0?	436
I-1-4	660421	–	F	S-FC	–	–	–	–	–	–	–	–	–	–	–
I-1-5	050000	–	F	S	201	–	–	–	–	–	100000	450000	550000	18.2	–
I-2-1	630000	–	F	S-FC	–	–	–	–	–	–	–	–	–	–	
I-2-2	640300	–	F	S	225?	–	200?	–	–	–	72000	362000	434000	16.6	417
I-2-3	640411	–	F	S	–	–	300	443	–	–	–	–	–	15.2	421
I-3-1	650318	–	–	–	–	–	–	–	–	–				–	–
ST-1-1	640500	–	F	S	–	–	300	–	300	–	90000	300000	390000	23.1?	509
ST-1-2	640500	–	F	FC	–	–	–	–	–	–	–	–	–	–	–

WELL IID-1 STATE-1
IID-2
IID-3

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
I-1-1													
I-1-2													
I-1-3													
I-1-4													
I-1-5													
I-2-1													
I-2-2													
I-2-3	—	1250	—	—	—	24	0±0.5	—	3.3	366	—	6.75	
I-3-1													
ST-1-1													
ST-1-2													

WELL IID-1 IID-2 IID-3 STATE-1

BRINE ANALYSES

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
I-1-1	S	mg/kg	2	—	520	40000	20	25	3000	23800	321	—	1000	54000
I-1-2	S													
I-1-3	S													
I-1-4	S-FL	ppm	see	analyses	corrected	for	flash							
I-1-5	S	ppm?	0.02		410	33000	16	26	2600	20000	290	37	2000	51000
I-2-1	FL	ppm	see	analyses	corrected	for	flash							
I-2-2	S	ppm	2	—	430	33600	24	10	3680	20600	270	36	1530	53300
I-3-3	S	ppm	—	—	740	32600	—	—	3400	21700	230	100	1700	64700
I-3-1	—	ppm	—	0.16	100	1130	—	—	0.70	1250	40	74	6.4	10600
ST-1-1	S	ppm	<1	NA	400	26600	13	3	1740	17200	NA	90	1180	54000
ST-1-2	SFL	see	analyses	corrected	for	flash								

WELL IID-1 IID-2 IID3 STATE-1

BRINE ANALYSES

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
I-1-1	200	100	100	2000	700	—	184000	—	—	10	—	—	309900	1.262
I-1-2														
I-1-3							155100							1.215
I-1-4	see	analyses	corrected	for	flash									
I-1-5	—	26	130	470	600		182500						300000	1.2
I-2-1	see	analyses	corrected	for	flash									
I-2-2	—	88	100	540	700	—	179000	—	—	52	—	520	300000	1.25
I-23	35	—	—	640		125	189000		15	32	376	600	322000	1.251
I-3-1	3	—	—	85	—	15	19700	1	4.5	621	321	120	34400	1.023
ST-1-1	NA	84	52	440	600	NA	150250	NA	NA	NA	NA	NA	258000	1.198
ST-1-2	see	analyses	corrected	for	flash									

WELL IID-1 STATE-1
IID-2
IID-3

SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
I-1-1	S	1.262	1.6	—	412	31696	15.8	19.8	2377	18859	254	—	792	42781
I-1-2	S	—	—	—	—	—	.	—	—	—		—	-	
I-1-3	S	-	—	—	—	—	—	—	—	—	—	—	—	
I-1-4	FC	—	See analyses corrected for flash											
I-1-5	S	1.20	0.02	—	410	33000	16	26	2600	20000	290	37	2000	51000
I-2-1	FC	—	See analyses corrected for flash											
I-2-2	S	1.25	2	—	430	33600	24	10	3680	20600	270	36	1530	53300
I-2-3	S	1.251	—	—	740	32600	—	—	3400	4700	230	100	1700	64700
I-3-1	-	1.023	—	0.16	100	1130	—	—	0.70	1250	40	74	6.4	10600
ST-1-1	S	1.198	<1	—	400	26600	13	3	1740	17200	—	90	1180	54000
ST-1-2	FC	—	See analyses corrected for flash											

WELL IID-1 STATE-1
IID-2
IID-3

SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
I-1-1	S	158/79	79	1585	555	–	145800	–	–	7.9	–	–	245562	
I-1-2	S	–/–	–	–	–	–	–	–	–	–	–	–		
I-1-3	S	–/–	–	–	–	–	–	–	–	–	–	–	–	
I-1-4	FC	/	see analyses		corrected for flash									
I-1-5	S	–/26	130	470	600	–	182500	–	–	–	–	–	300000	
I-2-1	FC	/	see analyses		corrected for		flash							
I-2-2	S	–/88	100	540	700	–	179000	–	–	52	–	520	300000	
I-2-3	S	35/–	–	640	–	125	189000	–	15	32	376	600	322000	
I-3-1	–	3/–	–	85	–	15	19700	1	4.5	621	321	120	34400	
ST-1-1	S	–/84	52	440	600	NA	150250	–	–	–	–	–	258000	
ST-1-2	FC	/	see	analyses	corrected	for	flash							

WELL IID-1 IID-2 IID-3 STATE-1

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							ppm IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
I-1-1	—	—	—	—	0.5	—	—	—	—	—	—	—	—	—	—	—	—	—
I-1-2	0.66	—	0.00772	—	—	—	—	—		—	6722	—	—	—	—	—	—	6722
I-1-3	0.56	—	0.00233	—	—	—	—	—	—	—	5698	—	—	—	—	—	—	5698
I-1-4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
I-1-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
I-2-1																		
I-2-2																		
I-2-3																		
I-3-1																		
I-3-2																		
ST-1-1																		
ST-1-2																		

WELL IID-1 IID-2 IID-3 STATE-1

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
I-1-1					
I-1-2					
I-1-3					
I-1-4					
I-1-5					
I-2-1					
I-2-2					
I-2-3					
I-3-1					
I-3-2					
ST-1-1					
ST-1-2					

WELL II-1 II-2 II-3 STATE-1

DATA SOURCES

	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
I-1-1	USGS									Barry, 1963		
I-1-2												
I-1-3												
I-1-4	USGS									Muffler & White, 1969		
I-1-5	? SHELL									?		
I-2-1	SHELL?	USGS ?								Helgeson, 1967		
I-2-2	SHELL?									?		
I-2-3	USGS											
I-3-1	USGS											
ST-1-1	SHELL									SHELL FILES?		
ST-1-2	SHELL									Helgeson, 1968		

Hudson Ranch-1
River Ranch-1
WELL Sportsman-1

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
640717	HR-1A	220	100	482000	19.9	417	1.03?	0.205?	EST 299437	5884	6141	
640717	HR-1B	220	0	482000	—	—	—	—	—	5884	6141	Flashed to atmosphere
640718	HR-2A	250	150	529000	16.8	407	1.37?	0.231?	EST 291556	5884	6141	
640718	HR-2B	250	0	529000	—	—	—	—	—	5884	6141	Flashed to atmosphere
640719	HR-3A	285	200	527000	14.6	405	1.37?	0.200?	EST 283679	5884	6141	
640719	HR-3B	285	0	527000	—	—	—	—	—	5884	6141	Flashed to atmosphere
640720	HR-4	220	100	465000	21.5	432	0.85?	0.183?	—	5884	6141	
640000	HR-5	—	—	—	—	—	—	0.117	—	5884	6141	
640103	RR-1	—	—	—	—	—	0.64	—	360000	6632	8100	
640114	RR-2	85	52	239000	21.3	396	—	—	338000	6632	8100	
640116	RR-3	—	100	244000	21.3	420	0.82	0.175	342000	6632	8100	
640125	RR-4	—	50	235000	22.1	399	—	—	362000	6632	8100	
640209	RR-5	—	60	339000	20.1	393	—	—	325000	6632	8100	
640210	RR-6	—	102	331500	20.7	415	—	—	340000	6632	8100	
640000	RR-1-7	—	—	—	—	—	—	0.157	—	6632	8100	
610406	S1-1	130?	—	324000?	17.0	—	—	—	334783	1196	4729	
610710	S-1-2	160	90	—	—	—	—	—	EST 281000	1196	4729	
610711	S-1-3	200	120	335000	17.0	397	0.76	0.129	EST 276000	1196	4729	
610000	S-1-4	—	—	—	—	—	—	—	299000	1196	4729	
610000	S-1-5	—	—	—	—	—	—	0.137	—	1196	4729	

HUDSON RANCH-1
RIVER RANCH-1

WELL SPORTSMAN-1

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
HR-1A	—	—	—	24030	—	—	2243	19064	—	—	1762	48861	—
HR-1B	—	—	—	—	—	—	—						
HR-2A	—	—	—	25293	—	—	2413	16890	—	—	1830	49920	—
HR-2B	—	—	—	—	—	—	—		—	—		—	
HR-3A	—	—	—	24168	—	—	2647	18361	—	—	1793	49703	—
HR-3B	—	—	—	—	—	—	—	—	—	—	—	—	—
HR-4	—	—	—	—	—	—	—	—	—	—	—	—	—
HR-5	—	—	—	23558	—	—	2285	18752	225	—	1733	47982	—
RR-1	—	—	—	—	—	—	—	—	—	—	—	—	—
RR-2	0.2	—	472	29906	—	5.5	1574	17078	228	—	1338	51391	236
RR-3	ND	—	415	29541	—	7.1	1889	17708	236	—	1417	50211	87
RR-4	—	—	—	29836	—	—	1558	17683	—	195	—	54530	—
RR-5	—	—	—	29030	—	—	—	17086	221	174	—	52206	—
RR-6	—	—	—	28786	—	—	1269	17208	222	159	1190	52972	—
RR-1-7	—	—	454	29376	—	5.8	1800	16560	209	144	1800	55152	288
S1-1	—	—	—	—	—	—	—	—	—	—	—	—	—
S-1-2	—	—	61	23771	—	—	3486	16116	157	3807	—	58100	—
S 1-3	—	—	277	23063	—	—	1511	12068	179	5156	—	47678	—
S 1-4	—	—	58	23738	—	—	1347	16102	158	3810	—	44248	—
S-1-5	—	—	274	22757	—	—	1330	11908	177	5087	—	43662	—

HUDSON RANCH-1

WELL RIVER RANCH-1 RESERVOIR BRINE PPM, WT.

SPORTS MAN-1

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO_2	TDS	
HR-1-1A	—	—	—	—	—	EST 143888	—	—	—	—	—	EST 239849	
HR-1-1B	—	—	—	—	—	—	—	—	—	—	—	—	
HR-1-2A	—	—	—	—	—	EST 146229	—	—	—	—	—	EST 242575	
HR-1-2B	—	—	—	—	—	—	—						
HR-1-3A	—	—	—	—	—	EST 145589	—	—	—	—	—	EST 242262	
HR-1-3B	—	—	—	—	—	—	—	—					
HR-1-4	—	—	—	—	—	—	—	—	—	—		—	
HR-1-5	—	—	561	—	—	(EST 139456)	—	—	—	—	—	(EST 234552)	
RR-1-1	—	—	—	—	—		—	—	—				
RR-1-2	8	—	669	—	—	168418	—	—	—	354	—	266006	
RR-1-3	31	—	740	—	—	164483	—	—	—	—	—	269154	
RR-1-4	—	—	—	—	—	173714	—	—	—	—	—	281998	
RR-1-5	—	—	570	—	—	169274	—	—	—	—	—	257075	
RR-1-6	—	—	571	—	—	169702	—	—	—	—	—	~~269620~~	
RR-1-7	216	—	662	—	—	159120	—	—	—	414	760	~~266547~~	
S1-1	—	—	—	—	—	—	—	—	—	—	—	—	
S1-2	141	—	—	—	—	140042	—	—	31	—	—	233230	
S1-3	141	—	—	—	—	142870	—	—	21	—	—	229080	
S1-4	141	—	—	—	—	140270	—	—	31	—	—	248170	
S1-5	139	—	—	—	—	166400	—	—	25	—	—	251779	

WELL HUDSON RANCH-1
RIVER RANCH-1
SPORTSMAN-1

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
HR-1-1A	2052	–	–	–	–	–	–	–	–	
HR-1-1B	–	–	–	–	–	–	–	–	–	
HR-1-2A	2361	–	–	–	–	–	–	–	–	
HR-1-2B	–	–	–	–	–	–	–	–	–	
HR-1-3A	2052	–	–	–	–	–	–	–	–	
HR-1-3B	–	–	–	–	–	–	–	–	–	
HR-1-4	1865	–	–			–	–	–	–	
HR-1-5	1170	2.3	–	–	–	–	–	–	–	
RR-1-1	–	–	–	–	–	–	–	–	–	
RR-1-2	–	–	–	–	–	–	–	–	–	
RR-1-3	1750	10.8	–	–	–	–	0.82	–	–	
RR-1-4	–	–	–	–	–	–	–	–	–	
RR-1-5	–	–	–	–	–	–	–	–	–	
RR-1-6	–	–	–	–	–	–	–	–	–	
RR-1-7	1559	9	–	–	–	–	–			
S1-1	–	–	–	–	–	–	–			
S1-2	–	–	–	–	–	–	–			Most difficult well to understand. All analyses are suspect.
S1-3	1369	2	–	–	–	–	–			
S1-4		–	–	–	–	–	–	–	–	
S1-5	1330	–	–	–	–	–	–			
								–		
								–		
								–	–	

WELL HUDSON RANCH-1
RIVER RANCH-1
SPORTSMAN-1

WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%							
HR-1A	5884'	6141	6141	5830-6141	100							-	-	-	-	-	-	NO TEMPS AVAILABLE
HR-1B	5884	6141	6141															
HR-2A	5884	6141	6141															
HR-2B	5884	6141	6141															
HR-3A	5884	6141	6141															
HR-3B	5884	6141	6141															
HR-4	5884	6141	6141														-	---
HR-5	5884	6141	6141									3000	4000	5000'	6000	7000	8000	TEMPS 6 10/27/64
RR-1-1	6632	8100	8100	6600-8100	100							457	552	586	607	640	650	SLOTTED LIN. 6600-8100
RR-2	6632	8100	8100	"	"													PERF: 6470-6570
RR-3	6632	8100	8100	"	"													
RR-4	6632	8100	8100	"	"													PERF 6090-6355
RR-5	6632	8100	8100	"	"													
RR-6	6632	8100	8100	"	60	3890-4460	40											PERF 3890-4460
RR-1-7	6632	8100	8100															
												2500'	3000'	3500'	4000'	4500'		
S-1-1	1196	4729	4729			3980-4720	100					470	515	547	565	584		PERFS- 3980-4720'
S-1-2	1196	4729	4729															
S-1-3	1196	4729	4729															
S-1-4	1196	4729	4729															
S-1-5	1196	4729	4729															

WELL HUDSON RANCH-1 / RIVER RANCH-1 / SPORTSMAN-1

FLOW TEST FIELD DATA

SAMPLE #	DATE YY MM DD	TIME	STATUS DAYS	TYPE	WELLHEAD PSIG	WELLHEAD °F	SEPARATOR BRINE PSIG	SEPARATOR BRINE °F	SEPARATOR STEAM PSIG	SEPARATOR STEAM °F	STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
HR-1A	640717	–	F-1	S	220	–	100	364	–	–	96000	386000	482000	19.9	417
HR-1B	640717	–	F-1	FA	220	–	100	364	–	–	–		482000	–	–
HR-2A	640718	–	F-2	S	250	–	150	384	–	–	89000	440000	529000	16.8	407
HR-2B	640718	–	F-2	FA	250	–	150	384	–	–	–	–	529000	–	–
HR-3A	640719	–	F-3	S	285	–	200	411	–	–	77000	450000	527000	14.6	405
HR-3B	640719	–	F-3	FA	285	–	200	411	–	–	–	–	–	–	–
HR-4	640720	–	F-4	S	220	–	100	–	–	–	100000	365000	465000	21.5	432
HR-5	640000	–	–	FC	–	–	–	–	–	–	–	–	–	–	–
RR-1-1	640103	–	F	S											
RR-1-2	640114	–	F	S	85	–	52	–	–	–	51000	188000	239000	21.3	
RR-1-3	640116	–	F	S	–	–	100	–	–	–	52000	192000	244000	21.3	
RR-1-4	640125	–	F	S	–	–	50	–	–	–	52000	183000	235000	22.1	
RR-1-5	640209	–	F	S	–	–	60	–	–	–	71000	268000	339000	20.9	
RR-1-6	640210	–	F	S	–	–	102	–	–	–	68500	263000	331500	20.7	
RR-1-7	640000	–	–	FC	–	–	–	–	–	–	–	–	–	–	
S-1-1	610406	–	F-1	FA?	130?	360?	–	–	–	–	–	–	324000?	17.0	–
S-1-2	610710	–	F-2	S	160	385	90	335	87	345	–	–	–	–	–
S-1-3	610711	–	F-3	S	200	391	120	362	116	368	57000	278000	335000	17.0	397
S-1-4	610000	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S-1-5	610000	–	–	FC	–	–	–	–	–	–	–	–	–	–	–

WELL Hudson Ranch-1
River Ranch-1
Sportsman-1

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
HR-1-1A													
HR-1-1B													
HR-1-2A													
HR-1-2B													
HR-1-3A													
HR-1-3B													
HR-1-4													
HR-1-5													
RR-1-1A													
RR-1-2													
RR-1-3													
RR-1-4													
RR-1-5													
RR-1-6													
RR-1-7													
S1-1													
S1-2													
S1-3													
S1-4													
S-1-5													

WELL HUDSON RANCH-1
RIVER RANCH-1
SPORTSMAN-1

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
HR-1A	S	ppm				30000			2800	23800		NA	2200	61000
HR-1B	FA	ppm				33800			3800	23700		NA	2400	66500
HR-2A	S	ppm				30400			2900	20300		NA	2200	60000
HR-2B	FA	ppm				33400			3700	21600		NA	2500	64500
HR-3A	S	ppm				28300			3100	21500		NA	2100	58200
HR-3B	FA	ppm				33200			3600	22800		NA	2400	62700
HR-4	S	ppm	—	—	—	—	—	—	—	—	—	—	—	—
HR-5	FC	ppm	See	analyses	corrected	for flash.								
RR-1-1	S	ppm	ND		630	40800		8	2500	23000	290	200	2500	76600
RR-1-2	S	ppm	0.3		601	38000		7	2000	21700	290	—	1700	65300
RR-1-3	S	ppm	ND		527	37600		9	2400	22500	300	—	1800	63800
RR-1-4	S	ppm	—		—	38300		—	2000	22700	—	250	—	70000
RR-1-5	S	ppm	—		—	36700		—	—	21600	280	220	—	66000
RR-1-6	S	ppm	—		—	36300		—	1600	21700	280	200	1500	66800
RR-1-7	FC	ppm	See	analyses	corrected	for	flash							
SI-1	FA?	ppm			149	34470			4200	24000	150	18		70000
SI-2	S	mg/kit			92	35400			2250	24000	233	5670	—	71000
SI-3	S	mg/kit			414	34400			2010	18000	268	7690		66000
SI-4	S	ppm			70	28600			1800	19400	190	4590		57500
SI-5	FC	See	analyses	corrected	for	flash								

WELL HUDSON RANCH-1
RIVER RANCH-1
SPORTSMAN-1

BRINE ANALYSES

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP GRAV. g/cc
HR-1-1A							EST 179636						EST 249437	
HR-1-1B							EST						EST	
HR-1-2A							EST						EST	
HR-1-2B							EST						EST	
HR-1-3A							EST						EST	
HR-1-3B							EST						EST	
HR-4	–	–	–	–	–	–	–	–	–	–	–	–	–	
HR-5	see analyses corrected for flash													
RR-1-1	400	300		920			221000				450		360000	1.2530
RR-1-2	300	10		850			214000				–		338000	1.2491
RR-1-3	110	40		940			209000				–		342000	1.2531
RR-1-4	–	–		–			223000				–		362000	1.2553
RR-1-5	–	–		720			–				–		325000	–
RR-1-6	–	–		720			–				–		340000	–
RR-1-7	see analyses corrected for flash													
S1-1							201757			34			334783	1.207
S1-2		210					208500			46				1.236
S1-3		210					203100			31				1.238
S1-4		170					169000			37			299000	1.236
S-1-5	see analyses corrected for flash													

WELL Hudson Ranch-1 / River Ranch-1 / SPORTSMAN-1 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
HR-1-1A	S	–	–	–	–	30000	–	–	2800	23800	–	–	2200	61000
HR-1-1B	FA	–	–	–	–	33800	–	–	3800	23700	–	–	2400	66500
HR-1-2A	S	–	–	–	–	30400	–	–	2900	20300	–	–	2200	60000
HR-1-2B	FA	–	–	–	–	33400	–	–	3700	21600	–	–	2500	64500
HR-1-3A	S	–	–	–	–	28300	–	–	3100	21500	–	–	2100	58200
HR-1-3B	FA	–	–	–	–	33200	–	–	3600	22800	–	–	2400	62700
HR-4	S	–	–	–	–	–	–	–	–	–	–	–	–	–
HR-5	FC	–	see analyses		corrected	for flash								
RR-1-1	S	–	ND	–	630	40800	–	8	2500	2300	290	200	2500	76600
RR-1-2	S	–	0.3	–	601	38000	–	7	2000	21700	290	–	1700	65300
RR-1-3	S	–	ND	–	527	37600	–	9	2400	22500	300	–	1800	63800
RR-1-4	S	–	–	–	–	38300	–	–	2000	22700	–	250	–	70000
RR-1-5	S	–	–	–	–	36700	–	–	–	21600	280	220	–	66000
RR-1-6	S	–	–	–	–	36300	–	–	1600	21700	280	200	1500	66800
RR-1-7	FC	–	see	analyses	corrected	for flash								
S-1-1	FA?	–	–	–	149	34470	–	–	4200	24000	150	18	–	70000
S-1-2	S	1.236	–	–	74	28640	–	–	1820	19417	189	4587	–	57443
S-1-3	S	1.238	–	–	334	27787	–	–	1623	14540	216	6212	–	53311
S-1-4	S	–	–	–	70	28600	–	–	1800	19400	190	4540	–	57500
S-1-5	FC	see	analyses	corrected	for flash									

WELL Hudson Ranch-1 / River Ranch-1 / Sportsman-1

SEPARATED BRINE ADJUSTED TO ppm WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
HR-1-1A	S	- / -	-	-	-	-	EST 179636	-	-	-	-	-	EST 249437	
HR-1-1B	FA	- / -	-	-	-	-	EST 196017	-	-	-	-	-	EST 326217	
HR-1-2A	S	- / -	-	-	-	-	EST 175756	-	-	-	-	-	EST 291556	
HR-1-2B	FA	- / -	-	-	-	-	EST 192428	-	-	-	-	-	EST 318129	
HR-1-3A	S	- / -	-	-	-	-	EST 170479	-	-	-	-	-	EST 283679	
HR-1-3B	FA	- / -	-	-	-	-	EST 188286	-	-	-	-	-	EST 312986	
HR-4	S	- / -	-	-	-	-	-	-	-	-	-	-	-	
HR-5	FC	See	analyses	corrected	for	flash								
RR-1-1	S	400 / 300	-	920	-	-	221000	-	-	-	450	-	360000	
RR-1-2	S	300 / 10	-	850	-	-	214000	-	-	-	-	-	338000	
RR-1-3	S	110 / 40	-	940	-	-	209000	-	-	-	-	-	342000	
RR-1-4	S	- / -	-	-	-	-	223000	-	-	-	-	-	362000	
RR-1-5	S	- / -	-	720	-	-	EST 214000	-	-	-	-	-	325000	
RR-1-6	S	- / -	-	720	-	-	EST 214000	-	-	-	-	-	340000	
RR-1-7	FC	See	analyses	corrected	for	flash								
S-1-1	FA?	- / -	-	-	-	-	201757	-	-	34	-	-	334783	
S-1-2	S	- / 170	-	-	-	-	168689	-	-	37	-	-	EST 281000	
S-1-3	S	- / 170	-	-	-	-	172132	-	-	25	-	-	EST 276000	
S-1-4	S	- / 170	-	-	-	-	169000	-	-	37	-	-	299000	
S-1-5	FC	See	analyses	corrected	for	flash								

WELL Hudson Ranch-1 / Rivan Ranch-1 / Sportsman-1

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							PPM (IN COMBINED) STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
HR-1A	1.03?	—	0.00431								10314							10314
HR-1B																		
HR-2A	1.37?		0.00575								14053							14053
HR-2B																		
HR-3A	1.37?		0.00575								14053							14053
HR-3B																		
HR-4	0.35?		0.00355								8674							8674
HR-1-5																		
RR-1-1	0.64?		0.00267	98.9	0.68					0.4	6400	34.3					1.19	6435
RR-1-2																		
RR-1-3	0.82	—	0.00342	98.2	0.78					1.0	8214	50.5					3.33	8268
RR-1-4																		
RR-1-5																		
RR-1-6																		
RR-1-7																		
S1-1																		
S1-2																		
S1-3	0.76		0.00317								7748							7748
S-1-4																		
S-1-5																		

WELL Hudson Ranch-1
River Ranch-1
SPORTSMAN-1

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
HR-1-1A					
HR-1-1B					
HR-1-2A					
HR-1-2B					
HR-1-3A					
HR-1-3B					
HR-1-4					
HR-1-5					
RR-1-1					
RR-1-2					
RR-1-3					
RR-1-4					
RR-1-5					
RR-1-6					
RR-1-7					
S1-1					
S-1-2					
S1-3					
S-1-4					
S-1-5					

HUDSON RANCH-1

WELL DATA SOURCES

	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
HR-1A	PO								REP 64-484	Stanley & Holbrook, 1964	Rep 64-501	Boulet, 1964
HR-1B	PO								"	"	"	"
HR-2A	PO								"	"	"	"
HR-2B	PO								"	"	"	"
HR-3A	PO								"	"	"	"
HR-3B	PO								"	"	"	"
HR-4	PO								"	"	"	"
HR-5	PO								REF 81-016m	Andersen, 1981		
RR-1-1A	PO				PO				POR 64-135	Miller, 1964	64-372	Boulet, 1964
RR-1-2	PO											
RR-1-3	PO											
RR-1-4	PO				PO							
RR-1-5	PO											
RR-1-6	PO											
RR-1-7	PO								REF 81-016m	Andersen, 1981		
SI-1	?									Palmer et al., 1975		
SI-2	O'NEIL &	ASSOC.							PROJ 21-93P	Braun, 1961		
SI-3	O'NEIL &	ASSOC.							PROJ 21-93P	Braun, 1961		
SI-4									REP 64-372	Boulet, 1964		
SI-5	?								REF 81-016m	Andersen, 1981		

WELL STATE 2-14 DATA SOURCES

SAMPLE #	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
2-14-4A	?				?				GRC TRANS, V. 10	Michels, 1987		
2-14-4B	?				?				"	"		
2-14-4C	?				?				"	"		
2-14-4D	?				?				"	"		
2-14-5									JGR, V. 93, NB11	Elders & Sass, 1988		
2-14-6									?			
2-14-7	UURI		UURI		TCM		SMU					

WILSON 1-12

WELL STATE 2-14

DATA SOURCES

	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
-12-1	UURI		—		—		—		Kennecott	Files		
-12-2	UURI								Unocal Files			
-12-3	UURI								Kennecott Files			
-12-4A	UURI								Unocal Files			
-12-4B	UURI								Unocal Files			
1-12-5	Quality	Assurance Lab							Kennecott	Files		
1-12-6	Quality	Assurance Lab							Kennecott	Files		
1-12-7	UURI								Kennecott	Files		
1-12-8	UURI								Unocal	Files		
2-14-1A	USGS								JGR, V.93, N.B11	Thompson & Fournier, 1988		
2-14-1B	USGS								"	"		
2-14-1C	USGS								"	"		
2-14-1D	USGS								"	"		
2-14-1E	USGS								"	"		
2-14-2A					USGS				EOS, V.68, N.16	Janik et al., 1987		
2-14-2B					USGS				"	"		
2-14-2C					USGS				"	"		
2-14-2D					USGS				"	"		
2-14-3A	?								GRC TRANS, V.10	Michels, 1986		
2-14-3B	?								"	"		
2-14-3C	?								"	"		

WELL STATE 2-14 ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
2-14-4A					
2-14-4B					
2-14-4C					
2-14-4D					
2-14-5					
2-14-6					
2-14-7	0.81	0.39	-79.4	-69.6	

WILSON 1-12
WELL STATE 2-14

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
1-12-1	–	–	–	–	
1-12-2	–	–	–	–	
1-12-3	–	–	–	–	
1-12-4A	+2.09	–	-72.4	–	} 2 ϕ samples
1-12-4B	+2.12	–	-71.1	–	
1-12-5	–	–	–	–	
1-12-6	–	–	–	–	
1-12-7	–	–	–	–	
1-12-8	–	–	–	–	
2-14-1A					
2-14-1B					
2-14-1C					
2-14-1D					
2-14-1E					
2-14-2A					
2-14-2B					
2-14-2C					
2-14-2D					
2-14-3A					
2-14-3B					
2-14-					

WELL STATE 2-14 NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							ppm IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
2-14-4A											15524	–						
2-14-4B											10521	46.2						
2-14-4C											9462	38.3						
2-14-4D											8988	–						
2-14-5																		
2-14-6																		
2-14-7	–	–	0.007961	92.1	1.13	5.48	1.4^{-3}	0.292	0.542	0.479	17600	167	405	0.242	35.5	37.7	4.19	18225

WILSON 1-12

WELL STATE 2-14

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							PPm IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
1-12-1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-12-2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-12-3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-12-4A	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-12-4B	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-12-5	7.1	–	0.03165	–	–	–	–	–	–	–	77324	–	–	–	–	–	–	
1-12-6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-12-7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H2-8																		
2-14-1A																		
2-14-1B																		
2-14-1C																		
2-14-1D																		
2-14-1E																		
2-14-2A	–	–	0.0169	93.6	0.75	3.83	.0036	0.28	0.32	1.17	38643	240	612	1.35	73.6	48.2	22.1	39640
2-14-2B	–	–	0.0075	90.8	0.59	7.37	.0032	0.24	0.23	0.78	16636	83.7	522	1.20	28.0	15.4	1.93	17288
2-14-2C	–	–	0.0062	88.5	0.71	7.78	.034	2.16	0.22	0.55	13404	83.3	456	4.67	208	12.1	3.82	14172
2-14-2D	–	–	0.0058	81.4	0.63	7.48	.029	2.44	0.19	7.88	11533	69.1	410	3.73	220	9.81	51.1	12297
2-14-3A																		
2-14-3B																		
2-14-																		

WELL STATE 2-14 SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
2-14-4D	S	218 / 105	–	450	559	–	171720	–	–	–	382	530	284307	
2-14-4B	S	224 / 108	–	480	603	–	181800	–	–	–	413	466	300968	
2-14-4C	S	237 / 115	–	496	616	–	186900	–	–	–	361	434	309808	
2-14-4D	S	243 / 122	–	498	624	–	188600	–	–	–	415	380	313109	
2-14-5	–	– / –	–	–	–	–	–	–	–	–	–	–	–	
2-14-6	FA	– / –	–	–	–	–	216883	–	–	–	–	–	373936	
2-14-7	S	225 / 109	–	415	513	120	167018	7.09	2.68	96.5	360	106	273802	

WELL WILSON 1-12 / STATE 2-14

SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
1-12-1	FA	147 / <2.8	–	243	74	–	66822	5.7	–	7.5	–	440	112143	
1-12-2	2φ	117 / <2.9	–	229	100	6.6	66853	1.9	<0.1	31.7	251	371	109971	
1-12-3	FA?	155 / <2.9	–	268	137	–	74214	7.8	–	9.2	–	446	126035	
1-12-4A	2φ	138 / 3.3	–	243	122	7.9	69860	1.8	<0.1	6.5	259	470	115612	
1-12-4B	2φ	138 / <2.9	–	244	123	5.9	69145	1.9	3.6	49.3	305	469	116766	
1-12-5	2φ	161 / 5.1	–	–	187	–	73800	3.5	–	9.3	306	180	127000	
1-12-6	FA	180 / 2.5	–	–	219	–	98068	1.9	–	6.4	350	170	169000	
1-12-7	FA	171 / <2.9	–	319	223	–	101345	10.8	–	9.0	–	278	165835	
1-12-8	2φ	167 / 29.8?	–	305	272	10.8	93044	3.61	1.2	36.1	246	294	158140	
2-14-1A	S	234 / –	132	495	547	–	170800	17	–	0	–	322	288400	
2-14-1B	S	271 / –	139	545	610	–	186200	15	–	0	–	340	313200	
2-14-1C	S	187 / –	156	580	625	–	185100	19	–	0	–	428	313000	
2-14-1D	S	219 / –	155	586	614	–	190000	12	–	0	–	251	323600	
2-14-1E	S	184 / –	161	590	634	–	196800	15	–	0	–	236	334400	
2-14-2A	S	– / –	–	–	–	–	–	–	–	–	–	–	–	
2-14-2B	S	– / –	–	–	–	–	–	–	–	–	–	–	–	
2-14-2C	S	– / –	–	–	–	–	–	–	–	–	–	–	–	
2-14-2D	S	– / –	–	–	–	–		–	–	–	–			
2-14-3A	S	220 / 108	–	453	571	–	170980	–	–	–	389	511	283936	
2-14-3B	S	236 / 114	–	482	604	–	179160	–	–	–	364	470	298736	
2-14-		251 / 191	–	499	626	–	187090	–	–	–	383	342	311414	

WELL STATE 2-14 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
2-14-4A	S	–	–	–	281	29428	–	–	1697	18598	211	41	1531	58756
2-14-4B	S	–	–	–	300	30995	–	–	1774	19488	222	40	1651	62405
2-14-4C	S	–	–	–	309	32614	–	–	1857	20109	232	45	1688	65714
2-14-4D	S	–	–	–	311	32967	–	–	1897	20316	235	48	1702	64753
2-14-5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-6	FA	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-7	S	1.2334	1.28	17.4	396	28581	–	2.66	1665	17054	214	43.8	1494	55357

WELL WILSON 1-12 / STATE 2-14 SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
1-12-1	FA	1.073	7.0	11.7	330	6801	—	<0.71	1.98	5110	141	44.5	185	31833
1-12-2	2ϕ	1.071	<0.6	8.1	300	7048	—	<0.72	12.0	5006	127	56	240	29301
1-12-3	FA?	1.082	<0.6	10.4	333	9612	—	<0.72	44.1	6239	146	57.8	355	34086
1-12-4A	2ϕ	1.075	<0.6	9.7	304	8374	—	<0.72	43.6	5520	130	54.5	305	30470
1-12-4B	2ϕ	1.076	<0.6	10.0	307	8430	—	<0.72	44.1	5566	132	54.0	308	30834
1-12-5	2ϕ	—	—	9.8	400	11500	—	0.6	51.9	5960	—	57	—	32300
1-12-6	FA	—	—	13.4	420	13600	—	<0.72	63.8	6983	—	62.2	—	37800
1-12-7	FA	1.115	<0.6	11.8	361	13955	—	<0.72	53.8	8297	166	63	561	40102
1-12-8	2ϕ	1.107	<0.6	11.3	326	15436	—	<0.72	226	8888	151	65.9	696	37985
2-14-1A	S	—	—	—	530	36100	—	6.0	1430	18800	241	42.6	1730	57100
2-14-1B	S	—	—	—	411	38600	—	8.2	1640	20000	250	46.5	1830	62500
2-14-1C	S	—	—	—	420	40900	—	8.6	1630	20300	270	49.5	2050	60600
2-14-1D	S	—	—	—	437	42500	—	8.7	1890	21800	286	52.6	2150	62700
2-14-1E	S	—	—	—	528	43200	—	9.4	—	22600	281	51.9	NA	69500
2-14-2A	S	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2B	S	—	—	—	—	—	—	—	—	—	—	—	—	
2-14-2C	S		—	—	—	—	—	—	—	—	—	—	—	
2-14-2D	S	—	—	—	—	—	—	—	—	—	—	—	—	
2-14-3A	S	—	—	—	282	29939	—	—	1682	18357	212	41	1533	58638
2-14-3B	S	—	—	—	304	31435	—	—	1834	19813	226	45	1654	61988
2-14-		—	—	—	314	33331		—	1906	20419	237	43	[illegible]	64348

WELL STATE 2-14 BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
2-14-4A	218	105	NA	450	559	NA	171720	NA	NA	NA	382	530	284307	–
2-14-4B	224	108	NA	480	603	NA	181800	NA	NA	NA	413	466	300968	–
2-14-4C	237	115	NA	496	616	NA	186900	NA	NA	NA	361	434	309808	–
2-14-4D	243	122	NA	498	624	NA	188600	NA	NA	NA	415	380	313109	–
2-14-5	—	—	–	—	—	—	—	—	—	—	—	—	—	–
2-14-6	—	—	—	—	—	—	216883	—	—	—	—	—	373936	–
2-14-7	277	135	NA	512	633	148	206000	8.75	3.3	119	444	131	337708	1.2334

WILSON 1-12
STATE 2-14

WELL

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
1-12-1	158	<3.05	NA	261	79.4	NA	71700	6.1	NA	8.0	NA	472	120329	–
1-12-2	125	<3.12	NA	245	107	7.10	71600	2.03	<0.40	34	269	397	117779	–
1-12-3	168	<3.05	NA	290	148	NA	80300	8.45	NA	10	NA	483	136370	–
1-12-4A	148	3.56	NA	261	131	8.5	75100	1.9	≤0.10	7	278	505	124287	–
1-12-4B	148	<3.12	NA	263	132	6.4	74400	2.02	3.90	53	323	505	125640	–
1-12-5	161	5.1	–	–	187	–	73800	3.5	–	9.3	306	180	127000	–
1-12-6	180	2.5	–	–	219	–	98068	1.9	–	6.4	350	170	169000	–
1-12-7	191	<3.05	NA	356	249	NA	113000	12.0	NA	10.0	NA	310	184906	–
1-12-8	185	33.01?	NA	338	302	12.0	103000	4.0	1.30	40.0	272	325	175061	–
2-14-1A	234	NA	132	495	547	NA	170800	17	NA	0	NA	322	288400	1.222
2-14-1B	271	NA	139	545	610	NA	186200	15	NA	0	NA	340	313200	1.236
2-14-1C	187	NA	156	580	625	NA	185100	19	NA	0	NA	428	313000	1.245
2-14-1D	219	NA	155	586	614	NA	190000	12	NA	0	NA	251	323600	1.252
2-14-1E	184	NA	161	590	634	NA	196800	15	NA	0	NA	236	334400	1.261
2-14-2A	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-2B	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-2C	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-2D	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-3A	220	108	NA	453	571	NA	170980	NA	NA	NA	389	511	283936	–
2-14-3B	236	114	NA	482	604	NA	179160	NA	NA	NA	364	470	298736	–
2-14-	251	119	NA	499	626	NA	190	NA	NA	NA	383	342	311414	–

WELL STATE 2-14 BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
2-14-4A	S PART 3	ppm	NA	NA	281	29428	NA	NA	1697	18398	211	41	1531	58756
2-14-4B	S PART 4	ppm	NA	NA	300	30995	NA	NA	1774	19488	222	40	1651	62405
2-14-4C	S PART 5	ppm	NA	NA	309	32614	NA	NA	1857	20109	232	45	1688	63794
2-14-4D	S PART 6	ppm	NA	NA	311	32967	NA	NA	1897	20316	235	48	1702	64753
2-15-5	No	Analyses Are Reported Due to Contamination						–						
2-15-6	FA	ppm	–	–	–	–	–	–	–	–	–	–	–	–
2-15-7	S	mg/liit	1.58	21.5	488	35252	NA	3.28	2053	21034	264	54.0	1843	68277

WELL WILSON 1-12 STATE 2-14

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
1-12-1	FA	mg/lit	7.51	12.60	354	7297	NA	<0.76	2.12	5483	151	47.7	199	34157
1-12-2	2ϕ	mg/lit	<0.62	8.70	321	7548	NA	<0.78	12.9	5361	136	60	257	31381
1-12-3	FA	mg/lit	<0.61	11.2	360	10400	NA	<0.76	47.43	6751	158	62.5	384	36881
1-12-4A	2ϕ	mg/lit	<0.62	10.43	327	9006	NA	<0.78	46.9	5934	140	58.6	328	32755
1-12-4B	2ϕ	mg/lit	<0.62	10.73	330	9071	NA	<0.78	47.5	5989	142	58.1	331	33177
1-12-5	2ϕ	ppm	—	9.8	400	11500	—	0.6	51.9	5960	—	57	—	32,300
1-12-6	FA	ppm	—	13.4	420	13600	—	ND	63.3	6983	—	62.3	—	37800
1-12-7	FA	mg/L.	<0.61	13.2	403	15560	NA	<0.76	60	9251	185	70.2	626	44714
1-12-8	2ϕ	mg/l	<0.62	12.5	361	17088	NA	<0.78	250	9839	167	72.9	771	42049
2-14-1A	S Port 2	ppm	NA	NA	530	36100	NA	6.0	1430	18800	241	42.6	1730	57100
2-14-1B	S Port 3	ppm	NA	NA	411	38600	NA	8.2	1640	20000	250	46.5	1830	62300
2-14-1C	S Port 4	ppm	NA	NA	420	40900	NA	8.6	1630	20300	270	49.5	2050	60300
2-14-1D	S Port 5	ppm	NA	NA	437	42500	NA	8.7	1890	21800	286	52.6	2150	62700
2-14-1E	S Port 6	ppm	NA	NA	528	43200	NA	9.4	NA	22600	281	51.9	NA	69500
2-14-2A	S WELL HEAD	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2B	S PORT 3	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2C	S PORT 4	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2D	S PORT 6	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-3A	S Port 3	ppm	NA	NA	282	29939	NA	NA	1682	18357	212	41	1533	58658
2-14-3B	S Port 4	ppm	NA	NA	304	31435	NA	NA	1834	19823	226	45	1654	61988
2-14	PORT 5	ppm	NA	NA	314	33331		NA	1906	20419	237	43	1704	64348

WELL STATE 2-14

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
2-14-4A													
2-14-4B													
2-14-4C													
2-14-4D													
2-14-5													
2-14-6													
2-14-7	5.48	—	176025	293374	1.63	20.2	4.0	<0.52	0.68	NA	685	6.71	

WILSON 1-12

WELL STATE 2-14

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	PH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	PH	
1-12-1	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-2	6.35	—	64000	118000	—	—	—	—	—	—	—	—	
1-12-3	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-4A	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-4B	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-5	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-6	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-7	—	—	—	—	—	—	—	—	—	—	—	—	
1-12-8													
2-14-1A													
2-14-1B													
2-14-1C													
2-14-1D													
2-14-1E													
2-14-2A													
2-14-2B													
2-14-2C													
2-14-2D													
2-14-3A													
2-14-3B													
2-1.													

WELL STATE 2-14 FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS DAYS	TYPE	WELLHEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
2-14-4A	851230	1215	F-2	S PORT 3	442	455	–	455	–	–	–	–	150000	10.5	349 ?
2-14-4B	851230	1341	F-2	S PORT 4	442	455	–	395	–	–	–	–	150000	15.5	349 ?
2-14-4C	851230	1430	F-2	S PORT 5	442	455	–	346	–	–	–	–	150000	17.8	349 ?
2-14-4D	851230	1255	F-2	S PORT 6	442	455	–	328	–	–	–	–	150000	18.5	349 ?
2-14-5	860320	–	F-2	S	450	460	–	–	–	–	–	–	700,000	–	–
2-14-6	870831	1700	F-1	FA	310	445	–	–	–	–	–	–	420000	–	–
2-14-7	880609	1000	F-7	S	540	501	208	402	208	405	59500	224100	283600	21.0	464 ?

WILSON 1-12

WELL STATE 2-14 FLOW TEST FIELD DATA

SAMPLE #	DATE YY MM DD	TIME	STATUS DAYS	TYPE	WELL HEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
1-12-1	870705	1310	F-1	FA	30	250	–	–	–	–	–	200,000	–	–	–
1-12-2	870709?	?	F-1	2φ	140	330	–	–	–	–	–	240,000	–	–	–
1-12-3	870711	1245	F-1	FA?	45?	305?	–	–	–	–	–	201,000	–	–	–
1-12-4A	870711	1600?	F-1	2φ	60	285	–	–	–	–	–	359000	–	–	–
1-12-4B	870711	1600?	F-1	2φ	60	285	–	–	–	–	–	359000	–	–	–
1-12-5	870711	1830	F-1	2φ	45	281	–	–	–	–	–	359000	–	–	–
1-12-6	870711	1940	F-1	FA	45	281	–	–	–	–	–	359000	–	–	–
1-12-7	870711	2051	F-1	FA	43?	278?	–	–	–	–	–	359000	–	–	–
1-12-8	870716	?	F-1	2φ	40?	285?	–	–	–	–	–	350000	–	–	–
														–	
														–	
													QUALIFICABLE	–	
2-14-1A	851229	1930	F-1	S PORT 2	457	455	457	455	–	–	–	–	79380	–	411
2-14-1B	851229	1600	F-1	S PORT 3	457	455	262	430	–	–	–	–	79380	–	411
2-14-1C	851229	1630	F-1	S PORT 4	457	455	124	372	–	–	–	–	79380	–	411
2-14-1D	851229	1810	F-1	S PORT 5	457	455	59	327	–	–	–	–	79380	–	411
2-14-1E	851229	1645	F-1	S PORT 6	457	455	37	309	–	–	–	–	79380	–	411
2-14-2A	851229	–	F-1	S WELL HEAD	435	435	–	–	–	–	–	–	79380	–	–
2-14-2B	851229	–	F-1	S PORT 3	435	435	–	430	–	–	–	–	79380	10.7	–
2-14-2C	851229	–	F-1	S PORT 4	435	435	–	369	–	–	–	–	79380	14.6	–
2-14-2D	851229	–	F-1	S PORT 6	435	435	–	286	–	–	–	–	79380	18.2	–
2-14-3A	851229	1750	F-1	S PORT 3	435	435	–	431	–	–	–	–	79380	10.7	335?
2-14-3B	851229	1755	F-1	S PORT 4	435	435	–	373	–	–	–	–	79380	14.6	335?
2-14-3C	851229	1755	F-1	S PORT 5	435	435	–	7	–	–	–	–	79380	17.3	335?

WELL STATE 2-14 WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%							
2-14-4A																		
2-14-4B																		
2-14-4C																		
2-14-4D														10400				
2-14-5	10135	10564	10564	6119	?	6601	?	8800	?	10476	?			671°				CONTAMINATED
2-14-6	6000'	10564	7200'	6119'		6601'		—		—			5000'	WHILE FLOWING?				
2-14-7	6000'	10564'	7200'	6119'		6601'							593					

WILSON 1-12
WELL STATE 2-14

WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEATH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%		3200'	3286'				
1-12-1	2816'	4617'	3320	2800-2920		3150-3320	100	3540-3630					496°F	503°F				Prod zones est. from logs
1-12-2	2816	4617	3320				100											
1-12-3	2816	4617	3320				100											
1-12-4A	2816	4617	3320				100											
1-12-4B	2816	4617	3320				100											
1-12-5	2816	4617	3320				100											
1-12-6	2816	4617	3320				100											
1-12-7	2816	4617	3320				100											
1-12-8	286	4617	3320				100											
														6227'				
2-14-1A	6000'	6227'	6227'	6119-6158'	100									581°				
2-14-1B																		
2-14-1C																		
2-14-1D																		
2-14-1E																		
2-14-2A																		
2-14-2B																		
2-14-2C																		
2-14-2D																		
2-14-3A																		
2-14-3B																		
2-1...																		

WELL STATE 2-14

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
2-14-4A	1664	7.01	336	–	–	–	–	–	–	
2-14-4B	"	"	"	–	–	–	–	–	–	
2-14-4C	"	"	"	–	–	–	–	–	–	
2-14-4D	"	"	"	–	–	–	–	–	–	
2-14-5	–	–	–	–	–	–	–	–	–	
2-14-6	–	–	–	–	–	–	–	–	–	
2-14-7	3696	35.07	369	0.051	7.46	7.92	0.88	+0.72	-77.3	I suspect that the steam flash is too high - N.M.C.; steam flash was provided at the site by Magma running the flow test.

WILSON 1-12

WELL STATE 2-14

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
1-12-1	–	–	–	–	–	–	–	–	–	
1-12-2	–	–	–	–	–	–	–	–	–	
1-12-3	–	–	–	–	–	–	–	–	–	
1-12-4A	–	–	–	–	–	–	–	–	–	
1-12-4B	–	–	–	–	–	–	–	–	–	
1-12-5	17243	–	–	–	–	–	–	–	–	
1-12-6	–	–	–	–	–	–	–	–	–	
1-12-7	–	–	–	–	–			–	–	
1-12-8	–	–	–	–	–	–	–	–	–	
2-14-1A	–	–	–	–	–	–	–	–	–	
2-14-1B	–	–	–	–	–	–	–	–	–	
2-14-1C	–	–	–	–	–		–	–	–	
2-14-1D	–	–	–	–			–	–	–	
2-14-1E	–	–	–	–	–	–	–	–	–	
2-14-2A	–	–	–	–	–	–	–	–	–	
2-14-2B	1780	8.96	381	0.13	3.00	1.65	0.21	–	–	
2-14-2C	1957	12.2	392	0.68	30.4	1.77	0.56	–	–	
2-14-2D	2099	12.6	400	0.68	40.0	1.79	9.30	–	–	
2-14-3A	–	–	–	–	–	–	–	–	–	
2-14-3B	–	–	–	–	–	–	–	–	–	
2-14-3	–	–	–	–	–	–	–	–	–	

WELL STATE 2-14 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
2-14-4A	95	–	405	506	–	153668	–	–	–	336	387	254654	
2-14-4B	"	–	"	"	–	"	–	–	–	"	"	"	
2-14-4C	"	–	"	"	–	"	–	–	–	"	"	"	
2-14-4D	"	–	"	"	–	"	–	–	–	"	"	"	
2-14-5	–	–	–	–	–	–	–	–	–	–	–	–	
2-14-6	–	–	–	–	–	–	–	–	–	–	–	–	
2-14-7	86	–	328	405	94.8	131944	5.6	2.1	76.2	2.84	84	216304	

WILSON HL

WELL STATE 2-14 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	SiO_2	NH_4	TDS	
1-12-1	<2.0	–	173	53	–	47644	4.1	–	5.3	314	–	79940	
1-12-2	<2.4	–	190	83	5.5	55421	1.6	<0.1	26.3	308	208	91120	
1-12-3	<2.4	–	192	98	–	53286	5.6	–	6.6	320	–	90500	
1-12-4A	2.6	–	191	96	6.2	55050	1.4	<0.1	5.1	370	204	91100	
1-12-4B	<2.4	–	192	97	4.6	54486	1.5	2.8	38.8	370	240	92000	
1-12-5	4.0	–	–	145	–	57343	2.7	–	7.2	140	238	98700	
1-12-6	1.8	–	–	159	–	71394	1.4	–	4.7	124	255	123050	
1-12-7	<2.1	–	232	162	–	73678	7.9	–	6.5	202	–	120610	
1-12-8	23.2?	–	238	212	8.4	72481	2.3	0.93	28.1	229	192	123130	
2-14-1A	–	–	–	–	–	151500	–	–	–	800	–	252000	
2-14-1B	–	–	–	–	–	"	–	–	–	"	–	"	
2-14-1C	–	–	–	–	–	"	–	–	–	"	–	"	
2-14-1D	–	–	–	–	–	"	–	–	–	"	–	"	
2-14-1E	–	–	–	–	–	"	–	–	–	"	–	"	
2-14-2A	–	–	–	–	–	–	–	–	–	–	–	–	
2-14-2B	–	–	–	–	–	–	–	–	–	–	–	–	
2-14-2C	–	–	–	–	–	–	–	–	–	–	–	–	
2-14-2D	–	–	–	–	–	–	–	–	–	–	–	–	
2-14-3A	98	–	409	514	–	153410	–	–	–	380	325	255396	
2-14-3B	"	–	"	"	–	"	–	–	–	"	"	"	
2-14-3C	"	–	"	"	–	"	–	–	–	"	"	"	

WELL STATE 2-14 RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
2-14-4A	–	–	253	26515	–	–	1522	16502	190	36	1385	52661	294
2-14-4B	–	–	"	"	–	–	"	"	"	"	"	"	"
2-14-4C	–	–	"	"	–	–	"	"	"	"	"	"	"
2-14-4D	–	–	"	"	–	–	"	"	"	"	"	"	"
2-14-5	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-6	–	–	–	–	–	–	–	–	–	–	–	–	–
2-14-7	1.01	13.8	313	22579	–	2.1	1315	13472	169	34.6	1180	43732	177

WELL WILSON 1-12 STATE 2-14

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
1-12-1	5.0	8.3	235	4849	—	<0.51	1.41	3643	101	31.7	132	22697	105
1-12-2	<0.5	6.7	249	5843	—	<0.6	9.9	4150	105	46.4	199	24291	97
1-12-3	<0.5	7.5	239	6901	—	<0.6	31.7	4480	105	41.5	255	24474	111
1-12-4A	<0.5	7.6	240	6599	—	<0.6	34.4	4350	102	42.9	240	24010	109
1-12-4B	<0.5	7.9	242	6643	—	<0.6	34.8	4386	104	42.6	243	24297	109
1-12-5	—	7.6	311	8936	—	0.5	40.3	4631	—	44.3	—	25097	125
1-12-6	—	9.7	306	9901	—	<0.6	46.4	5084	—	45.4	—	27518	131
1-12-7	<0.5	8.6	262	10145	—	<0.6	39.1	6032	121	45.8	408	29154	124
1-12-8	<0.5	8.8	254	12025	—	<0.6	176	6924	118	51.3	542	29590	130
2-14-1A	—	—	—	33200	—	—	—	17200	220	39.6		50000	—
2-14-1B	—	—	—	"	—	—	—	"	"	"	"	"	—
2-14-1C	—	—	—	"	—	—	—	"	"	"	"	"	—
2-14-1D	—	—	—	"	—	—	—	"	"	"	"	"	—
2-14-1E	—	—	—	"	—	—	—	"	"	"	"	"	—
2-14-2A	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2B	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2C	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-2D	—	—	—	—	—	—	—	—	—	—	—	—	—
2-14-3A	—	—	257	27048	—	—	1548	16736	193	37	1397	52843	202
2-14-3B	—	—	"	"	—	—	"	"	"	"	"	"	"
2-14-3I	—	—	"	"	—	—	"	"	+1	"	"	"	"

WELL STATE 2-14 SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
851230	2-14-4A	442	–	150000?	10.5	349 ?	–	0.1664	284307	6000	6227	
851230	2-14-4B	442	–	150000?	15.5	349 ?	–	"	304968	6000	6227	
851230	2-14-4C	442	–	150000?	17.8	349 ?	–	"	309808	6000	6227	
851230	2-14-4D	442	–	150000?	18.5	349 ?	–	"	313109	6000	6227	
860320	2-14-5	450	–	700000	–	–	–	–	–	10135	10564	
870831	2-14-6	310	–	420000	–	–	–	–	373936	6000	7200	
880609	2-14-7	540	208	283600	21.0	464	1.82	0.383	273802	6000	7200	Questionable steam flash

WILSON 1-12

WELL STATE 2-14

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH* %	ENTHALPY** BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
870705	1-12-1	30	Atm	200000	EST↓ 28.7	ASSUMED↓ 438	–	–	112143	2816	3320	
870709?	1-12-2	140	2ϕ	240000	17.1	438	–	–	109971	2816	3320	
870711	1-12-3	45?	Atm?	201000	28.2	438	–	–	126035	2816	3320	
870711	1-12-4A	60	2ϕ	359000	21.2	438	–	–	115612	2816	3320	
870711	1-12-4B	60	2ϕ	359000	21.2	438	–	–	116766	2816	3320	
870711	1-12-5	45	2ϕ	359000	22.3	438	7.1	1.58	127000	2816	3320	
870711	1-12-6	45	ATM	359000	27.2	438	–	–	169000	2816	3320	
870711	1-12-7	43?	ATM	359000	27.3	438	–	–	165835	2816	3320	
870716	1-12-8	40?	2ϕ	350000	22.1	438	–	–	158140	2816	3320	
851229	2-14-1A	457	457	79380?	–	411	–	–	288400	6000	6227	
851229	2-14-1B	457	262	79380?	–	411	–	–	313200	6000	6227	
851229	2-14-1C	457	124	79380?	–	411	–	–	313000	6000	6227	
851229	2-14-1D	457	59	79380?	–	411	–	–	323600	6000	6227	
851229	2-14-1E	457	37	79380?	–	411	–	–	334400	6000	6227	
851229	2-14-2A	435	–	79380?	–	–	–	–	–	6000	6227	
851229	2-14-2B	435	–	79380?	10.7	335?	–	–	–	6000	6227	
851229	2-14-2C	435	–	79380?	14.6	335?	–	–	–	6000	6227	
851229	2-14-2D	435	–	79380?	18.2	335?	–	–	–	6000	6227	
851229	2-14-3A	435	–	79380?	10.7	335?	EST 1.56	0.1664	283936	6000	6227	
851229	2-14-3B	435	–	79380?	14.6	335?	EST 1.14	"	298736	6000	6227	
851229	2-14-3C	435	–	79380?	17.3	335?	EST 0.[illegible]	"	311414	6000	6227	

* FOR WILSON WELLS ASSUME A TWO STEP FLASH WHEN FLASHING TO ATMOSPHERE (THIS TABLE GIVES EFFECTIVE TOTAL FLASH)

LANDERS-1 OH AND RD
LANDERS-2
WELL LANDERS-3

SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
770208	L-1-1	<5.0	—	135700 EST	23 EST	353	—	—	79199	5966	7705	OH
770404	L-1-2	31	—	278700 EST	23 EST	355	—	—	63132	5100	7000	RD
760226	L-2-1	—	—	—	—	—	—	—	4400	5947	6010	DST
760226	L-2-2	—	—	—	—	—	—	—	14683	5947	6010	DST
760226	L-2-3	—	—	—	—	—	—	—	20891	5947	6010	DST
760226	L-2-4	—	—	—	—	—	—	—	20772	5947	6010	DST
760226	L-2-5	—	—	—	—	—	—	—	23577	5947	6010	DST
760226	L-2-6	—	—	—	—	—	—	—	15079	5947	6010	DST
760303	L-2-7	—	—	—	—	—	—	—	15228	5947	7507	DST #2
760409	L-2-8	185	2.5	218400 EST	15.3	300	—	—	57874	5947	7507	
760409	L-2-9	185	5	260800 EST	18.1	328	—	—	54951	5947	7507	
760409	L-2-10	85	18	661100 EST	13.1	311	—	—	65577	5947	7507	
770504	L-2-11	213	4.2	182300	19.9	336	—	—	91919	5947	7507	
770512	L-2-12	158	4.2 EST	186300	23.1	365	15	3.47	71655	5147	7507	
770527	L-2-13	92	8.2	283160	20.9	346	—	—	104542	5147	7507	
761112	L-3-1	155	—	437700 EST	5 EST	208	—	—	25901	3114	4650	
770303	L-3-2	232	2.4	118800	5.4	210	—	—	26324	3114	4650	
770317	L-3-3	234	—	139881	4.3	204	40.7	1.75	—	3114	4650	

LANDERS -1 OH AND RD
LANDERS-2
LANDERS-3

WELL

RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
L-1-1	0.07	1.5	121	1945	–	0.11	79	1651	73	51	22	17250	73
L-1-2	–	–	–	867	–	–	0.07	6568	–	29	–	20261	–
L-2-1	–	–	2.4	38.2	–	–	0.55	98.0	–	37.6	–	1100	–
L-2-2	–	–	5.1	72.6	–	–	0.64	321	–	37.3	–	4464	–
L-2-3	–	–	22.1	53.1	–	–	21.8	436	–	28.5	–	6653	–
L-2-4	–	–	7.5	96.2	–	–	4.4	444	–	33.3	–	6337	–
L-2-5	–	–	10.9	60.9	–	–	4.2	443	–	30.8	–	8202	–
L-2-6	–	–	8.1	95.2	–	–	6.3	321	–	32.5	–	5079	–
L-2-7	–	–	59	476	–	–	193	655	–	49	1.5	3988	–
L-2-8	–	1.90	2.0	1391	–	0.08	0.9	1555	–	65	4.8	17186	–
L-2-9	–	2.43	1.7	1161	–	0.09	0.8	1352	–	33	3.7	15664	–
L-2-10	–	3.22	1.5	1412	–	0.03	49	1212	–	35	10.4	13787	–
L-2-11	0.15	0.86	114	3255	–	0.19	83	1158	326	757	6.7	19662	662
L-2-12	0.07	3.53	110	1803	–	0.15	48	1177	53	50	4.6	18581	442
L-2-13	–	–	–	3929	–	–	–	2439	–	104	–	25205	–
L-3-1	–	0.6	75	33	–	0.03	0.14	582	10.0	8.6	0.05	9387	–
L-3-2	–	–	101	9.1	–	–	0.09	439	42	11.7	–	8413	12.2
L-3-3	–	–	–	–	–	–	–	–	–	–	–	–	–

WELL LANDERS-1 OH & RD / LANDERS-2 / LANDERS-3 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
L-1-1	1.0	—	—	35	10.7	30536	1.9	—	<0.7	1.0	198	60983	
L-1-2	—	—	—	—	—	34733	—	—	37.5	—	—	48612	
L-2-1	—	—	—	—	—	272	2.0	—	550	—	72.8	4400	
L-2-2	—	—	—	—	—	6548	2.2	—	332	—	93.5	14683	
L-2-3	—	—	—	—	—	10991	1.6	—	112	—	225	20891	
L-2-4	—	—	—	—	—	9901	1.6	—	218	—	195	20772	
L-2-5	—	—	—	—	—	12154	1.6	—	77	—	232	23577	
L-2-6	—	—	—	—	—	7292	1.2	—	69	—	145	15079	
L-2-7	—	—	—	—	—	4960	3.8	—	2430	—	99	15228	
L-2-8	4.7	—	—	82	—	31752	0.71	—	1640	65.5	260	49020	
L-2-9	2.5	—	—	72	—	28466	1.16	—	1352	84.2	253	45055	
L-2-10	11.7	—	—	100	—	32253	1.30	—	1387	79	334	56986	
L-2-11	30	—	—	136	11.8	42397	1.24	—	0.4	0.92	258	73627	
L-2-12	12	—	—	110	9.3	32379	2.21	—	0.18	1.80	227	55102	
L-2-13	—	—	—	—	—	50410	—	—	—	—	262	82732	
L-3-1	<0.05	—	—	0.06	14.6	10608	6.6	—	70	<0.5	100	24606	
L-3-2	—	—	—	—	5.2	9348	1.07	—	15.2	0.17	88.4	24903	
L-3-3	—	—	—	—	—	—	—	—	—	—	—	—	

LANDERS-1 OH AND RD
LANDERS -2
WELL LANDERS -3

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES		
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD	
L-1-1	—	—	—	—	—	—	—	—	—	
L-1-2	—	—	—	—	—	—	—	—	—	
L-2-1	—	—	—	—	—	—	—	—	—	
L-2-2	—	—	—	—	—	—	—	—	—	
L-2-3	—	—	—	—	—	—	—	—	—	
L-2-4	—	—	—	—	—	—	—	—	—	
L-2-5	—	—	—	—	—	—	—	—	—	
L-2-6	—	—	—	—	—	—	—	—	—	
L-2-7	—	—	—	—	—	—	—	—	—	
L-2-8		—	—	—	—	—	—	—	—	
L-2-9	—	—	—	—	—	—	—	—	—	
L-2-10	—	—	—	—	—	—	—	—	—	
L-2-11	—	—	—	—	—	—	—	—	—	
L-2-12	33317	—	—	13.1	260	272	0.49	—	—	
L-2-13	—	—	—	—	—	—		—	—	
L-3-1	—	—	—	—	—	—	—	—	—	
L-3-2	—	—	—	—	—	—	—	—	—	
L-3-3	16466	—	—	15.4	604	85.6	0.26	—	—	

LANDERS-1 ON AND RD
LANDERS-2
WELL LANDERS-3

WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	2500	3500	4500	5500	6500	7500	
L-1-1	5966	7705'	7705'									212	267	307	357	418	487	SLOTS 5745-7705'
L-1-2	5100	-7000	7000									224	285	331	380	443		REDRILL SLOTS 5100-6998
L-2-1	5947	6010	6010															DST #1 5947-6010'
L-2-2	5947	6010	6010															DST #1
L-2-3	5947	6010	6010															DST #1
L-2-4	5947	6010	6010															DST #1
L-2-5	5947	6010	6010															DST #1
L-2-6	5947	6010	6010															DST #1
L-2-7	5947	7507	7507														SLOTS 5965-7507'	DST #2
L-2-8	5947	7507	7507															FLOW TESTS
L-2-9	5947	7507	7507															
L-2-10	5947	7507	7507															
L-2-11	5947	7507	7507															
L-2-12	5947	7507	7507															
L-2-13	5947	7507	7507															
												3000	3500	4000	4425			
L-3-1	3114	4650	4650									237	257	271	313			SLOTS 3013-4640'
L-3-2	3114	4650	4650															

LANDERS-1 (1 & 1D)
LANDERS-2
WELL LANDERS-3

FLOW TEST FIELD DATA

SAMPLE #	DATE YY MM DD	TIME	STATUS DAYS	TYPE	WELL HEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
L-1-1	770208	1600	F-1	FA	45.0	–	–	–	–	–	31200 EST	104500	135700 EST	23 EST	353
L-1-2	770404	–	F-1	FA?	31	260	–	–	–	–	64100 EST	214600	278700 EST	23 EST	355
L-2-1	760226	–	*DP	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-2	760226	–	DP	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-3	760226	–	DP	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-4	760226	–	DP	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-5	760226	–	DP	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-6	760226	–	DP	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-7	760303	–	F?	DST	–	–	–	–	–	–	–	–	–	–	–
L-2-8	760409	1100	F-1	S	185	328	2.5	–	2.5	–	33400	185000 EST	218400 EST	15.3	300
L-2-9	760409	1330	F-1	S	185	344	5	–	5	–	47200	213600 EST	260800 EST	18.1	328
L-2-10	760409	1530	F-1	S	85	316	18	–	18	–	86600	574500 EST	661100 EST	13.1	311
L-2-11	770504	1707	F-1	S	213	351	4.2	–	4.2	–	36300	146000	182300	19.9	336
L-2-12	770512	1430	F-1	S	158	347	4.2 EST	–	4.2 EST	–	43000	143250	186300	23.1	365
L-2-13	770527	1800	F-1	S	92	326	8.2	–	8.2	–	59260	223900	283160	20.9	346
L-3-1	761112	1600	F-1	FA?	155	243	–	–	–	–	21700 EST	413000	437700 EST	5 EST	208
L-3-2	770303	1730	F-1	S?	232	226	2.4	–	2.4	–	6450	112350	118800	5.4	210
L-3-3	770317	1630	F-1	S	234	228	–	–	–	–	6060	133821	139881	4.3	204

* DP = SAMPLE COLLECTED FROM DRILL PIPE AFTER FAILED DST

WELL LANDERS-1 OH AND RD
LANDERS-2
LANDERS-3

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	pH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
L-1-1	5.3	463	–	–	–	–	–	–	–	–	–	–	
L-1-2	7.5	601	–	–	–	–	–	–	–	–	–	–	
L-2-1	7.8	2180											
L-2-2	7.6	2060											
L-2-3	7.6	1620											
L-2-4	6.9	2040											
L-2-5	6.9	1940											
L-2-6	7.6	1780											
L-2-7	6.8	2500											
L-2-8	6.0	86											
L-2-9	6.1	102											
L-2-10	5.8	62											
L-2-11	5.9	93											
L-2-12	5.5	58.6											
L-2-13	5.0	–											
L-3-1	8.3	5840											
L-3-2	8.0	5001											
L-3-3													

LANDERS-1 OH AND RD

WELL LANDERS-2

LANDERS-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
L-1-1	FA	mg/lit	0.1	2.08	165	2650	–	0.15	108	2250	100	70	30.0	23500
L-1-2	FA?	mg/lit	-	–	–	1168	–	-	0.10	8850	–	39	–	27300
L-2-1	DST	mg/lit			2.4	382			0.55	98.0		37.6		1100
L-2-2	DST	mg/lit			5.1	73.2			0.65	324		37.6		4500
L-2-3	DST	mg/lit			22.4	53.6			22.0	440		28.8		6720
L-2-4	DST	mg/lit			7.6	97.2			4.4	448		33.6		6400
L-2-5	DST	mg/lit			11.0	61.6			4.2	448		31.2		8300
L-2-6	DST	mg/lit			8.2	96			6.4	324		32.8		5120
L-2-7	DST	ppm			59	480		<0.1	195	660		49	1.5	4020
L-2-8	S	mg/lit		2.32	2.4	1700		0.10	1.1	1900		80	5.9	21000
L-2-9	S	mg/lit		3.05	2.2	1460		0.11	1.0	1700		42	4.7	19700
L-2-10	S	mg/lit		3.85	1.8	1690		0.10	59	1450		42	12.5	16500
L-2-11	S	mg/lit	0.2	1.14	150	4300		0.25	110	1530	431	1000	8.8	25970
L-2-12	S	mg/lit	0.1	4.80	150	2450		0.2	65	1600	72	68	6.25	25250
L-2-13	S	mg/lit				5300				3290		140		34000
L-3-1	FA?	mg/lit		0.60	80	35		0.03	0.15	620	10.6	9.2	0.05	10000
L-3-2	S?	mg/lit			108	9.7			0.10	470	45	12.5		9000
L-3-3	S													

WELL LANDERS-1 OK AND RJ
LANDERS-2
LANDERS-3

BRINE ANALYSES, ORIGINAL

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
L-1-1	100	1.4	–	–	48	14.6	41600	2.64	–	<1.0	1.4	269.5	83080	–
L-1-2	–	–	–	–	–	–	46800	–	–	50.5	–	–	65500	–
L-2-1							272	2.0		550		72.8	4400	
L-2-2							6600	2.2		335		94.2	14800	
L-2-3							11100	1.6		113		227	21100	
L-2-4							10000	1.6		220		197	20980	
L-2-5							12300	1.6		78		235	23860	
L-2-6							7350	1.2		70		146	15200	
L-2-7							5000	3.8		2450		100	15350	
L-2-8		5.8			100		38800	0.87		2004	80	318	59900	
L-2-9		3.1			90		35800	1.46		1700	106	318	56600	
L-2-10		14.0			120		38600	1.56		1660	95	400	68200	
L-2-11	875	39.0			180	15.6	56000	1.64		0.5	1.22	341	97250	
L-2-12	600	16			150	12.6	44000	3.0		0.25	2.44	308	74879	
L-2-13							68000					353	111600	
L-3-1		<0.05			0.06	15.4	11300	7.0		75	<0.5	106	26212	
L-3-2	13					5.6	10000	1.14		163	0.18	94.6	26640	
L-3-3														

WELL LANDERS-1 (1 & 1R) LANDERS-2 LANDERS-3

SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
L-1-1	FA	1.049	0.1	2.0	157	2526	–	0.14	103	2145	95	67	28.6	22402
L-1-2	FA?	1.0375	–	–	–	1126	–	–	0.1	8530	–	38	–	26913
L-2-1	DST	1.0	–	–	2.4	38.2	–	–	0.55	98.0	–	37.6	–	1100
L-2-2	DST	1.008	–	–	5.1	72.6	–	–	0.64	321	–	37.3	–	4464
L-2-3	DST	1.01	–	–	22.1	53.1	–	–	21.8	436	–	28.5	–	6653
L-2-4	DST	1.01	–	–	7.5	96.2	–	–	4.4	444	–	33.3	–	6337
L-2-5	DST	1.012	–	–	10.9	60.9	–	–	4.2	443	–	30.3	–	8202
L-2-6	DST	1.008	–	–	8.1	95.2	–	–	6.3	321	–	32.5	–	5079
L-2-7	DST	1.008	–	–	59	476	–	–	193	655	–	49	1.5	3988
L-2-8	S	1.035	–	2.24	2.3	1643	–	0.1	1.1	1836	–	77	5.7	20290
L-2-9	S	1.03	–	3.0	2.1	1417	–	0.11	0.97	1650	–	41	4.6	19126
L-2-10	S	1.04	–	3.7	1.7	1625	–	0.1	57	1394	–	40	12.0	15865
L-2-11	S	1.058	0.2	1.08	142	4064	–	0.24	104	1446	407	945	8.3	24546
L-2-12	S	1.045	0.1	4.6	144	2344	–	0.20	62	1531	69	65	6.0	24163
L-2-13	S	1.067	–	–	–	4967	–	–	–	3083	–	131	–	31865
L-3-1	FA?	1.012	–	0.60	79	35	–	0.03	0.15	613	10.5	9.1	0.05	9881
L-3-2	S?	1.012	–	–	107	9.6	–	–	0.10	464	44	12.4	–	8893
L-3-3	S	–	–	–	–	–	–	–	–	–	–	–	–	–

WELL LANDERS-1 01+ AND RD
LANDERS-2
LANDERS-3

SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
L-1-1	FA	95./1.3	–	–	46	13.9	39657	2.5	–	<1.0	1.3	257	79199	
L-1-2	FA?	–/–	–	–	–	–	45108	–	–	48.7	–	–	63132	
L-2-1	DST	–/–	–	–	–	–	272	2.0	–	550	–	72.8	4400	
L-2-2	DST	–/–	–	–	–	–	6548	2.2	–	332	–	93.5	14683	
L-2-3	DST	–/–	–	–	–	–	10991	1.6	–	112	–	225	20891	
L-2-4	DST	–/–	–	–	–	–	9901	1.6	–	218	–	195	20772	
L-2-5	DST	–/–	–	–	–	–	12154	1.6	–	77	–	232	23577	
L-2-6	DST	–/–	–	–	–	–	7292	1.2	–	69	–	145	15079	
L-2-7	DST	–/–	–	–	–	–	4960	3.8	–	2430	–	99	15228	
L-2-8	S	–/5.6	–	–	97	–	37488	0.84	–	1936	772.3	307	57874	
L-2-9	S	–/3.0	–	–	87	–	34757	1.42	–	1650	103	309	54951	
L-2-10	S	–/13.5	–	–	115	–	37115	1.50	–	1596	91	385	65577	
L-2-11	S	827/37	–	–	170	14.7	52930	1.55	–	0.5	1.15	322	91919	
L-2-12	S	574/15	–	–	144	12.1	42105	2.88	–	0.24	2.33	295	71655	
L-2-13	S	–/–	–	–	–	–	63730	–	–	–	–	331	104592	
L-3-1	FA?	–/<0.05	–	–	0.06	15.2	11166	6.9	–	74	<0.5	105	25901	
L-3-2	S?	12.8/–	–	–	–	5.5	9881	1.13	–	16.1	0.18	93.5	26324	
L-3-3	S	–/–	–	–	–	–	–	–	–	–	–	–	–	

WELL LANDERS-1 OH AND RD
LANDERS-2
LANDERS-3

NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							PPM IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
L-1-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-1-2																		
L-2-1																		
L-2-2																		
L-2-3																		
L-2-4																		
L-2-5																		
L-2-6																		
L-2-7																		
L-2-8																		
L-2-9																		
L-2-10																		
L-2-11																		
L-2-12	15.0	-	0.0731	96.465	0	-	0.041	1.167	2.131	0.003	146397	0	-	56.5	1127	1179	0.21	148760
L-2-13																		
L-3-1	18.9*			98.82				0.12	1.02									
L-3-2																		
L-3-3	40.7	-	0.284	92.996	-	-	0.096	5.356	1.326	0.032	382940	-	-	359	14038	1990	6.04	

* TWO-PHASE SAMPLE

LANDERS-1 OLD AND RD

WELL LANDERS-2

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	
L-1-1					
L-1-2					
L-2-1					
L-2-2					
L-2-3					
L-2-4					
L-2-5					
L-2-6					
L-2-7					
L-2-8					
L-2-9					
L-2-10					
L-2-11					
L-2-12					
L-2-13					
L-3-1					
L-3-2					
L-3-3					

LANDERS-1 OH AND RJ

WELL LANDERS-2

DATA SOURCES

PLE =	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
1-1	Quality	Water Lab							Republic	Matlick, 1977		
1-2	"	"							"	Matlick, 1977		
2-1	Quality								Republic	TURNER, 1976a		
2-2	"								"	"		
2-3	"								"	"		
2-4	"								"	"		
2-5	"								"	"		
2-6	"								"	"		
2-7	ORLANDO								"	TURNER, 1976B		
2-8	Quality								Republic	Matlick, 1976		
2-9	"								"	"		
2-10	"								"	"		
2-11	Quality								"	Matlick, 1977		
2-12	"				WEST WAST				"	"		
2-13	"								"	"		
3-1	Quality				West West				"	Matlick, 1977		
3-2	"								"	"		
3-3	"				West West				"	"		

WELL IID-10 DATA SOURCES

	BRINE		STEAM		NCG		ISOTOPES		REFERENCE #1	AUTHOR	REFERENCE #2	AUTHOR
	LAB	#	LAB	#	LAB	#						
1	UURI		UURI		TCM		SMU					
2	UURI		UURI		TCM		SMU					

WELL IID-10

ISOTOPIC ANALYSES

SAMPLE #	$\delta^{18}O$ BRINE	$\delta^{18}O$ STEAM	δD BRINE	δD STEAM	$\delta^{18}O$ res. brine	δD res. brine
1	+0.60	-1.60	-65.0	-63.1	0.22	-64.8
2	+0.76	-1.43	-72.7	-61.1	0.28	-70.68
					0.59	-65.0 (third smpl — SMU)

WELL IID-10 NON-CONDENSIBLE GAS ANALYSES

SAMPLE #	FIELD WT% NCG	FIELD H_2S (ppm)	GAS/STM mole RATIO	Mole % IN Dry Gas							PPM IN COMBINED STEAM + CONDENSATE							Σ GAS
				CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	ppm IN STM
1	4.08	NA	0.0164	96.4	0.656	1.90	0.00	0.222	0.661	0.15	37200	196	283	0.41	54.6	92.9	2.65	37820
2	3.96	NA	0.0166	96.5	0.630	1.92	0.00	0.205	0.583	0.16	37700	190	290	0.438	50.9	83.0	2.86	38318

WELL IDD-1

SEPARATED BRINE ADJUSTED TO PPM WT. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	Ba/Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
1	S	176/7.3	NA	263	137	69.4	98110	4.4	5.0	<0.9	360	347	16252	
2	S	177/9.0	NA	263	145	73.1	104745	4.8	4.7	<0.9	321	365	170023	

WELL [illegible]

SEPARATED BRINE ADJUSTED TO ppm wt. (TYPE FC = FLASH CORRECTED)

SAMPLE #	TYPE	DENSITY ADJUSTMENT FACTOR	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
1	S	1.111	<0.14	<7.5	199	14817	NA	<0.93	101	7730	107	62.2	410	39653
2	S	1.117	<0.14	7.6	201	15113	NA	<0.93	99	7853	108	63.4	416	40131

WELL IID-10

BRINE ANALYSES

SAMPLE #	Ba	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO_4	NH_4	SiO_2	TDS	MEAS. SP. GRAV. g/cc
1	195	8.1	NA	292	152	77.1	109000	4.85	5.5	<1.0	400	385	180560	NA
2	198	10.0	NA	294	162	81.6	117000	5.40	5.20	<1.0	359	408	189916	NA

WELL IID-10 BRINE ANALYSES

SAMPLE #	TYPE	CONCEN. UNITS	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na
1	RS	mg/lit	<0.83	<8.33	221	16462	NA	<1.04	112	8588	119	69.1	456	44055
2	RS	mg/lit	<0.83	8.54	225	16881	NA	<1.04	111	8749	121	70.8	465	44826

WELL ITD-10

FIELD ANALYSES AND STEAM ANALYSES

SAMPLE #	FIELD BRINE ANALYSES (ppm, wt)				LABORATORY STEAM ANALYSES (mg/liter)								
	PH	ALKALINITY	Cl	TDS	As	B	Cl	SiO_2	Na	NH_4	TDS	pH	
1	NA	NA	96224	165881	<0.41	5.12	4.0	0.44	2.91	307	848	6.85	
2	NA	NA	99260	181131	<0.41	5.37	7.0	0.66	25.3	294	858	6.82	

WELL IID-10 FLOW TEST FIELD DATA

SAMPLE #	DATE YYMMDD	TIME	STATUS-DAYS	TYPE	WELL HEAD		SEPARATOR				STEAM #/HR	BRINE #/HR	TOTAL FLOW #/HR	FLASH %	ENTHALPY BTU/LB
							BRINE		STEAM						
					PSIG	°F	PSIG	°F	PSIG	°F					
1	880220	1400	F-1	RS	270	420	260	-	260	-	36017	171276	207293	17.4	467
2	880220	1630	F-1	RS	270	420	260	-	260	-	36017	171276	207293	17.4	467

WELL IID-10 WELL CONFIGURATION DATA

SAMPLE #	PROD CSG DEPTH	ORIG. TMD	EFFECT. TD	SPINNER PRODUCTION ZONES								MEASURED TEMPERATURES						REMARKS
				INTERVAL	%	INTERVAL	%	INTERVAL	%	INTERVAL	%	600'	700'	800'	900'	1000'	1100'	
1	659'	1519'	1519'									442	443	446	454	459	453	Produced from open hole
2	659	1519'	1519															

WELL IID-10

SAMPLE #	GAS IN TOTAL DISCHARGE (PPM, WT)							ISOTOPES	
	CO_2	H_2S	NH_3	Ar	N_2	CH_4	H_2	$\delta^{18}O$	δD
1	6473	34.1	346	0.07	9.5	16.2	0.46	+0.22	-64.7
2	6560	33.1	315	0.08	8.9	14.4	0.50	+0.38	-73.7

WELL IDD-10 RESERVOIR BRINE PPM, WT.

SAMPLE #	Pb	Rb	Sr	Zn	Br	Cl	F	I	SO4	NH4	SiO2	TDS	
1	6.0	NA	217	113	57.3	81030	3.61	4.1	<0.75	297	286	134242	
2	7.4	NA	217	120	60.3	86519	4.00	3.8	<0.75	265	301	140439	

WELL IID-10 RESERVOIR BRINE, PPM, WT.

SAMPLE #	Ag	As	B	Ca	Cs	Cu	Fe	K	Li	Mg	Mn	Na	Ba
1	<0.62	<6.2	164	12239	NA	<0.3	83	6385	83	51.4	339	32754	145
2	<0.62	6.3	166	12483	NA	<0.8	82	6470	89	52.4	344	33148	146

WELL DD-10 SUMMARY OF PRODUCTION DATA

DATE	SAMPLE #	WHP (PSIG)	SEP (PSIG)	TOTAL MASS #/HR	FLASH %	ENTHALPY BTU/LB	MEAS WT % NCG		TDS ppm wt.	PROD CSG SHOE	EFFECT. TOTAL DEPTH	
							STEAM	TOTAL				
880220	1	270	260	207293	17.4	467	4.08	0.71	16252	659	1519	
880220	2	270	260	207293	17.4	467	3.96	0.69	17302.3	659	1519	