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A Compilation of Data on Fluids from Geothermal Resources in the United States

S. R. Cosner and J. A. Apps

May 1978

Earth Sciences Division
Lawrence Berkeley Laboratory
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Berkeley, California 94720

Prepared for U.S. Department of Energy under Contract W-7405-ENG-48

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COMPILATION OF DATA ON FLUIDS FROM GEOTHERMAL RESOURCES IN THE UNITED STATES

by

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I. INTRODUCTION

A. Background

The commercial development of geothermal energy for power and heating is receiving serious attention in the United States. Many resources are being investigated intensively, and the design and testing of geothermal systems and components is under way, both in government laboratories and in the private sector.

Geothermal energy can be extracted from resources containing native steam, hot water, geopressured water, hot dry rock, and magma. The most important resources in terms of immediate development potential are those containing hot water. Such resources are generally known as "liquid dominated," in contrast to "vapor dominated" or native steam sources.

Liquid dominated resources vary substantially in size, temperature, and fluid composition. The fluid composition can lead to many technical problems when such resources are exploited, including scaling, sludge formation, corrosion, and erosion in surface facilities; the disposal of noncondensable gases; the treatment of toxic gases, volatiles and precipitates; and the disposal of spent fluids. Geothermal fluids also have differing thermodynamic and transport properties from pure water, and these must be taken into account during geothermal power plant design. A knowledge of geothermal fluid characteristics is therefore important in anticipating such problems.

The purpose of this compilation is to provide information on the chemistry of geothermal fluids to scientists and engineers involved with the development of liquid dominated geothermal energy resources. The compilation is a comprehensive tabulation of available geothermal fluid data from the most important geothermal resources in the United States.

The compilation was funded by the Division of Geothermal Energy of the Department of Energy.

B. Scope of the Compilation

1. Resources Selected

The resources selected for this compilation were determined primarily from White and Williams.[1] Liquid dominated resources, with a heat capacity exceeding 1×10^{18} cal and temperatures greater than 90°C, were candidates for inclusion in the data compilation. (Yellowstone National Park, however, was omitted because exploitation of the geothermal resources in national parks is prohibited.) Thirty-four candidates were identified in White and Williams.[1] In addition, resources at Cerro Prieto in Mexico, and Puna in Hawaii were included. The former was added because of its relevance to other geothermal resources in the Imperial Valley, California, and the latter because of significant drilling results obtained in 1977.

The resources chosen were those most likely to be exploited for geothermal energy during the next ten years. Particular importance was attached to their potential for electric power generation.

Only information on the chemical composition of fluids from wells was compiled. Hot spring analyses were not collected because such analyses are not considered to be representative of geothermal fluids found at depth within a geothermal reservoir. Furthermore, the U.S. Geological Survey is conducting a separate program to collect data on hot springs in the United States.[2]

Data from 17 resources were obtained by searching the literature as far back as 1929, and by collecting data from companies working in the geothermal energy field. Much of the data held by the private sector remains confidential because of the need to protect corporate investments in a promising geothermal area. For this reason information is lacking from wells drilled recently in such locations as Valles Caldera KGRA, New Mexico (Baca location No. 1); Brawley KGRA, Imperial County, California; and Roosevelt Hot Springs KGRA, Beaver County, Utah.

2. Information Compiled

A complete listing of the kinds of information that could possibly be compiled for each sample is shown in Table 1. Not all information, however, could be found for each sample analysis. All information is recorded as found in the source document. No attempt, for example, was made to standardize units of measurement for the concentrations of components in solution.

Caution must be exercised in using the data in this compilation. The data come from a large variety of sources and are of variable quality. Users should consider the type of sample, the way it was obtained, the completeness of the analysis, the analytical methods, and the units of measurement used for reporting the results. Some samples may have been analyzed long after the sampling, leading to interim oxidation, precipitation, or evaporation of some of the constituents.

It should be recognized that geothermal fluids are rarely, if ever, uniform in composition. The analysis given for a particular geothermal well may not be representative of the resource as a whole. It may be little more than a reflection of unspecified mixtures of fluids or differing compositions from different horizons within a well. The composition of geothermal fluids can also change with time. Compositional fluctuations may occur in a flowing well during time periods as short as one hour.

C. Computer Processing

1. Storage of and Access to the Data

The compilation of geothermal fluid data has been processed and stored at Lawrence Berkeley Laboratory, using the Berkeley Data Base Management System (BDMS). This system is a generalized information retrieval system offering a broad range of capabilities for creating, maintaining, and accessing computer data bases. BDMA consists of an easy-to-use data base definition language, an editor that stores, modifies, and retrieves data, and a system that searches the data base for indices specified by the user.[3]

Table 1. Data elements of geothermal fluid data compilation.

PRELIMINARY INFORMATION
- Record number
- Code name (well name and a unique letter for each record of data from that well)
- Type of sample (water, steam condensate, noncondensable gases)
- Well name
- KGRA Or geothermal field
- Location (township, range, section, quarters, or other delineation)
- County
- State
- Country
- Well owner
- Lessee of well
- Drilling company
- Dates drilled
WELL DATA
- Well depth (in meters)
- Temperatures (in degrees Celsius)
- Depth or location of temperature reading
- Shut-in pressure
- Flow information (flow rates and pressures)
- Well casing preforation interval
- Lithology of production zone

Table 1. Data elements of geothermal fluid data compilation (continued).

SAMPLING INFORMATION
- Date sample taken
- Sample number, analyzing laboratory
- Location sample taken
- Sampling method
- Condition of sample when taken (temperature, pressure, whether fluid lost due to steam flashing)
- Condition of well when sample taken (flow time before sampling, flow rate, etc.)
PHYSICAL DATA
- pH, pH range if given, temperature of reading
- Eh, temperature of reading
- Specific gravity, temperature of reading
- Viscosity of fluid
- Total dissolved solids, whether sum of analysis or residue on evaporation
- Total alkalinity
- Other data
BRINE DATA
- Methods of analysis
- Error limits
- Units
- Constituent name, concentration, comment
- Comment, if needed, on table of analyses

Table 1. Data elements of geothermal fluid data compilation (continued).

BIBLIOGRAPHIC DATA
- Sources of data in record. Entry corresponds to the principal author's last name and year article was published

OTHER NOTES
- Other important information

The compiled geothermal fluid data are stored in the data base as records. Within each record, data are stored under data elements defined by the data base user. Over 50 elements were defined for use in the geothermal fluid data compilation as shown in Table 1. Few records contain all of the data elements because the information compiled was usually incomplete.

Each record documents a specific sample analysis from one well. In those cases where there is more than one analysis for a well, there are multiple records for the well. An attempt was made to place the most reliable analysis in the first record.

The complete compilation, obtained through a computer program written specifically for this purpose, follows in Section II of this report. Because the compilation is stored on the LBL computer system, it may be accessed and manipulated by users via a computer terminal. With special arrangements a user may connect to the LBL computer terminal. This connection also allows the user to search selectively for specific key subjects, and to print only those records of interest.

A more complicated operation using compilation through computer access involves the manipulation of the data in user-written programs. This could be done, for example, using the data as input for a program modeling thermodynamic equilibria of a geothermal system. Programs could also be written to make statistical comparisons of various parameters stored in the compilation.

2. Bibliography

The bibliography given in Section III is a listing of all the sources from which data were collected for the compilation. The bibliography, like the geothermal fluid data compilation, was input to the BDMS computer to facilitate editing and retrieval on specified subjects. The format used is the same as that used by the National Geothermal Information Resource Group (GRID) at LBL.[2,4] The descriptors for each reference are key words, taken from a standard thesaurus,[5] which describe the subject

matter discussed in the report or article. These key words facilitate computer searches for specific subjects.

The name and number in the upper right section of each bibliographic listing is made up of the principal author's last name and the year the article was published. This entry corresponds to that listed as the source of data at the end of each record in the fluid data compilation.

The bibliography contains listings of some reports and articles that were not used as sources in the compilation. They were scanned for data, however, and are included in the bibliography because they may be useful to investigators.

References

1. White, D. E. and Williams, D. L. Assessment of Geothermal Resources of the United States, U.S.G.S. Circular 726 (1975).

2. Clark, A. L., Calkins, J. A., Tongiorgi, E., and Stefanelli, E. A Report on the International Geothermal Information Exchange Program, 1974-1975, in Proceedings-Second United Nations Symposium on the Development and Use of Geothermal Resources, Lawrence Berkeley Laboratory, vol. I, pp. 67-100 (1976).

3. Richards, D. R. BDMS - Berkeley Data Base Management System User's Manual, Lawrence Berkeley Laboratory, Report LBL-4683 (April 1976, revised 1977).

4. Trippe, T., White, W., Henderson, F., and Phillips, S. L., GEODOC - The GRID Document File, Record Structure and Data Element Description, Lawrence Berkeley Laboratory, Report LBL-4432 (6 November 1975).

5. Perra, J. J. and Herr, J. J. Geothermal Thesaurus, Lawrence Berkeley Laboratory, Report LBL-4841, draft (June 1977).

COMPILATION OF GEOTHERMAL FLUID DATA

INDEX

RECORD 1
CODE NAME=BACA 11A
SAMPLE TYPE=WATER

WELL BACA 11
BACA LOCATION NO. 1 KGRA
LOCATION-- T19N, R3E, SEC. 12, 1900FT S, 1500FT W, FROM NE CORNER.
SANDOVAL COUNTY, N.M., USA

WELL INFORMATION
OWNER-- UNION OIL CO.
DATE DRILLED-- 19 SEP 73 - 13 NOV 73

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLING PERIOD A

PHYSICAL DATA
PH= 6.60
SP. CONDUCTANCE= 11160.00 MICROMHOS/CM
TOT DISS SOLIDS= 7593.00 PPM
OTHER DATA--
SUSPENDED SOLIDS = 638 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	640	
NA	2200	
K	550	
CA	46	
CL	4400	
SO4	50	
HCO3	57	
CO3	0	
S	1.5	

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76B
WITHAM 76
TONEY 76

OTHER NOTES
SEE CODE NAME = BACA 11B FOR NONCONDENSABLE GAS ANALYSIS.

RECORD 2
CODE NAME=BACA 11B
SAMPLE TYPE=NONCONDENSABLE GASES

WELL BACA 11
BACA LOCATION NO. 1 KGRA
SANDOVAL COUNTY, N.M., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLING PERIOD A
CONDITION OF SAMPLE-- NONCONDENSABLE GASES = 2.44 PERCENT BY WT.
IN STEAM PHASE.

PHYSICAL DATA
OTHER DATA--
PH OF CONDENSATE = 4.9

BRINE DATA
UNITS FOR GASES-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
CO2	33700	
H2S	290	
NH3	6	
CH4	0	
H2	2	
N2	39	

GASES IN STEAM PHASE ONLY.

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76B
TONEY 76

OTHER NOTES
SEE CODE NAME = BACA 11A FOR FLUID PHASE ANALYSIS.

RECORD 3
CODE NAME=BACA 11C
SAMPLE TYPE=WATER

WELL BACA 11
BACA LOCATION NO. 1 KGRA
SANDOVAL COUNTY, N.M., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLING PERIOD B

PHYSICAL DATA
PH= 6.80
SP. CONDUCTANCE= 10630.00 MICROMHOS/CM
TOT DISS SOLIDS= 7034.00 PPM
OTHER DATA--
SUSPENDED SOLIDS = 688 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	792	
NA	2000	
K	463	
CA	27	
CL	3400	
SO4	70	
HCO3	128	
CO3	0	
S	6	

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76B
TONEY 76

OTHER NOTES
SEE CODE NAME = BACA 11D FOR NONCONDENSABLE GAS ANALYSIS.

RECORD 4
CODE NAME=BACA 11D
SAMPLE TYPE=NONCONDENSABLE GASES

WELL BACA 11
BACA LOCATION NO. 1 KGRA
SANDOVAL COUNTY, N.M., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLING PERIOD B
CONDITION OF SAMPLE-- NONCONDENSABLE GASES = 3.99 PERCENT BY WT.
IN STEAM PHASE.

PHYSICAL DATA
OTHER DATA--
PH OF CONDENSATE = 4.5

BRINE DATA
UNITS FOR GASES-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
CO2	47390	
H2S	567	
CH4	1.5	
H2	4	
N2	109	

GASES IN STEAM PHASE ONLY.

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76B
TONEY 76

OTHER NOTES
SEE CODE NAME = BACA 11C FOR FLUID PHASE ANALYSIS.

RECORD 5
CODE NAME=BACA 11E
SAMPLE TYPE=WATER

WELL BACA 11
BACA LOCATION NO. 1 KGRA
SANDOVAL COUNTY, N.M., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLING PERIOD C

PHYSICAL DATA
PH= 7.10
SPECIFIC GRAVITY= 1.C08
SP. CONDUCTANCE= 1123C.0C MICROMHOS/CM
TCT DISS SOLIDS= 689€.00 PPM
OTHER DATA--
SUSPENDED SOLIDS = 522 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	835	
NA	2010	
K	541	
CA	36	
CL	3770	
SO4	58	
HCO3	118	
CO3	C	
S	2.2	

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76B
TONEY 76

OTHER NOTES
SEE CODE NAME = BACA 11F FOR NONCONDENSABLE GAS ANALYSIS.

RECORD 6
CODE NAME=BACA 11F
SAMPLE TYPE=NONCONDENSABLE GASES

WELL BACA 11
BACA LOCATION NO. 1 KGRA
SANDOVAL COUNTY, N.M., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLING PERIOD C
CONDITION OF SAMPLE-- NONCONDENSABLE GASES = 3.39 PERCENT BY WT.
IN STEAM PHASE.

PHYSICAL DATA
OTHER DATA--
PH OF CONDENSATE = 4.3

BRINE DATA
UNITS FOR GASES-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
CO2	45900	
H2S	360	
NH3	1.5	
CH4	6	
H2	1.5	
N2	0	

GASES IN STEAM PHASE ONLY.

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76B
TONEY 76

OTHER NOTES
SEE CODE NAME = BACA 11E FOR FLUID PHASE ANALYSIS.

RECORD 7
CODE NAME=BACA 11G
SAMPLE TYPE=NONCONDENSABLE GASES

WELL BACA 11
BACA LOCATION NO. 1 KGRA
SANDOVAL COUNTY, N.M., USA

SAMPLING INFORMATION
CONDITION OF SAMPLE-- GAS IN STEAM PHASE = 3 TO 6 PERCENT.

PHYSICAL DATA
OTHER DATA--
PH OF CONDENSATE = 4.7

BRINE DATA
UNITS FOR GASES-- MOLE PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
CO2	98.15	
H2S	1.27	
N2	.27	
H2	.21	
C2H6	.07	
CH4	.01	
C3H8	.01	
NH3	.01	

GASES IN STEAM PHASE ONLY.

BIBLIOGRAPHIC DATA
SOURCES--
TONEY 76

RECORD 8
CODE NAME=VULCAN 2A
SAMPLE TYPE=WATER

WELL VULCAN 2
BECHAWE KGRA
LOCATION-- T32N, R48E, SEC. 17, 2280FT S, 1180FT E, FROM NW CORNER.
EUREKA COUNTY, NEV., USA

WELL INFORMATION
OWNER-- SIERRA PACIFIC POWER CO., RENO, NEV.
DRILLING COMPANY-- MAGMA-VULCAN THERMAL POWER CO.

WELL DATA
TEMPERATURE 132 C AT WELLHEAD
PRESSURE, SHUT-IN-- 39 PSIG
FLOW INFORMATION-- 160C00 LB/HR, 34.5 PSIG, 8.1 PERCENT STEAM.
389000 LB/HR MAXIMUM, 32 PSIG, 6.7 PERCENT STEAM (APR 63).
COMMENT-- FLOW RATES CORRECTED FOR FLASHING.

SAMPLING INFORMATION
DATE-- 6 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- WATER SEPARATED FROM STEAM AND NONCONDENSABLE GASES BY CENTRIFUGAL SEPARATOR ABOVE WELLHEAD, COOLED UNDER LINE PRESSURE IN SS COIL AND COLLECTED INTO POLY BOTTLE.

PHYSICAL DATA
PH= 9.30
SP. CONDUCTANCE= 600.00 MICROMHOS/CM TEMP DURING READING=AT 25 C
TOT DISS SOLIDS= 855.00 PPM, EVAPORATED AT 105 C
= 710.00 PPM, EVAPORATED AT 600 C
TOTAL ALKALINITY = 279.00
OTHER DATA--
TOTAL ALKALINITY = 279 PPM
PHENOLPHTHALEIN ALKALINITY = 123 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	329	
NA	214	
K	9	
LI	-----	TRACE
CL	50	
F	6	
SO4	89	
H2S	6.1	
NH3	3	
HCO3	41	
CO3	168	
AL	.2	
B	1	
CU	-----	TRACE, <0.1 PPM
MN	-----	TRACE, <0.1 PPM
TI	-----	TRACE, <0.1 PPM
V	-----	TRACE, <0.1 PPM

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63
PORTER 77

OTHER NOTES
SEE CODE NAME = VULCAN 2B AND 2C FOR CONDENSATE AND NONCONDENSABLE GAS ANALYSES.

RECORD 9
CODE NAME=VULCAN 2B
SAMPLE TYPE=CONDENSATE

WELL VULCAN 2
BECWAWE KGRA
EUREKA COUNTY, NEV., USA

SAMPLING INFORMATION
DATE-- 6 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- STEAM AND NONCONDENSABLE GASES SEPARATED FROM WATER BY CENTRIFUGAL SEPARATOR ABOVE WELLHEAD, COOLED UNDER LINE PRESSURE IN SS COIL. CONDENSATE COLLECTED INTO POLY. BOTTLE.

PHYSICAL DATA
PH= 5.20
TOT DISS SOLIDS= 8.20 PPM, EVAPORATED AT 105 C
= 5.60 PPM, EVAPORATED AT 600 C
OTHER DATA--
ACIDITY TO PH 8.2 AS CACO3 = 38 PPM
ODOR = H2S

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	.6	
NA	.4	
CL	1.2	
SO4	2.7	
H2S	14	
NH3	8	
CO2	71	
B	.3	

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63

OTHER NOTES
SEE CODE NAME = VULCAN 2A AND 2C FOR WATER AND NONCONDENSABLE GAS ANALYSES.

RECORD 10
CODE NAME=VULCAN 2C
SAMPLE TYPE=NONCONDENSABLE GASES

WELL VULCAN 2
BEOWAWE KGRA
EUREKA COUNTY, NEV., USA

SAMPLING INFORMATION
DATE-- 6 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- NONCONDENSABLE GASES AND STEAM WERE SEPARATED FROM WATER BY CENTRIFUGAL SEPARATOR, COOLED UNDER LINE PRESSURE. GASES WERE REMOVED THROUGH TOP OF COLLECTION TRAP VIA SS LINE TO EVACUATED SS GAS CYLINDER.
CONDITION OF SAMPLE-- TOTAL GAS VOLUME COLLECTED = 27.447 L AT 60 F, 30 INCHES HG. AVG. MOLECULAR WT = 43.459. TOTAL GAS = 50.30 GM. GAS = 0.192 PERCENT BY WT. IN STEAM SAMPLE.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
H2S	.93	
CO2	97.62	
NH3	1.06	
CH4	.39	

VALUES ARE VOL. PERCENT (AT 60 F, 30 INCHES HG) OF TOTAL GASES (THE SUM OF NONCONDENSABLE GASES AND GASES DISSOLVED IN STEAM CONDENSATE). GASES DISSOLVED IN STEAM CONDENSATE = 5.64 PERCENT OF THE TOTAL.

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63

OTHER NOTES
IN STEAM CONDENSATE PORTION OF NONCONDENSABLE GASES, H2S=16.48, CO2=64.64, NH3=18.88 VOL. PERCENT. IN OTHER PORTION, CO2=99.59, CH4=0.41 VOL. PERCENT. SEE CODE NAME VULCAN 2A AND 2B FOR WATER AND CONDENSATE ANALYSES.

RECORD 11
CODE NAME=VULCAN 3A
SAMPLE TYPE=WATER

WELL VULCAN 3
BECWAWE KGRA
LOCATION-- T32N, R48E, SEC. 17, 2180FT S, 1530FT E, FROM NW CORNER.
EUREKA COUNTY, NEV., USA

WELL INFORMATION
OWNER-- SIERRA PACIFIC POWER CO., RENO, NEV.
DRILLING COMPANY-- MAGMA-VULCAN THERMAL POWER CO.

WELL DATA
TEMPERATURE 134 C AT WELLHEAD
PRESSURE, SHUT-IN-- 44 PSIG
FLOW INFORMATION-- 317000 LB/HR, 37 PSIG, 6.7 PERCENT STEAM. 470000 LB/HR MAXIMUM, 32 PSIG, 7.4 PERCENT STEAM--APR 63.
COMMENT-- FLOW RATES CORRECTED FOR FLASHING

SAMPLING INFORMATION
DATE-- 9 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- WATER SEPARATED FROM STEAM AND NONCONDENSABLE GASES BY CENTRIFUGAL SEPARATOR ABOVE WELLHEAD, COOLED UNDER LINE PRESSURE IN SS COIL AND COLLECTED INTO POLY. BOTTLE.

PHYSICAL DATA
PH= 9.30
SP. CONDUCTANCE= 600.00 MICROMHOS/CM TEMP DURING READING=AT 25 C
TOT DISS SOLIDS= 865.00 PPM, EVAPORATED AT 105 C
= 735.00 PPM, EVAPORATED AT 600 C
TOTAL ALKALINITY = 281.00
OTHER DATA--
TOTAL ALKALINITY = 281 PPM
PHENOLPHTHALEIN ALKALINITY = 133 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	329	
NA	220	
K	10	
LI	-----	TRACE
CL	66	
F	5	
SO4	91	
H2S	5.9	
NH3	3	
HCO3	20	
CO3	172	
AL	.3	
B	1.5	
CU	-----	TRACE, <0.1 PPM
MN	-----	TRACE, <0.1 PPM
TI	-----	TRACE, <0.1 PPM
V	-----	TRACE, <0.1 PPM

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63
PORTER 77

OTHER NOTES
SEE CODE NAME = VULCAN 3B AND 3C FOR CONDENSATE AND NONCONDENSABLE GAS ANALYSES.

RECORD 12
CODE NAME=VULCAN 3B
SAMPLE TYPE=CONDENSATE

WELL VULCAN 3
BEOWAWE KGRA
EUREKA COUNTY, NEV., USA

SAMPLING INFORMATION
DATE-- 9 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- STEAM AND NONCONDENSABLE GASES SEPARATED FROM WATER BY CENTRIFUGAL SEPARATOR ABOVE WELLHEAD, COOLED UNDER LINE PRESSURE IN SS COIL. CONDENSATE COLLECTED INTO POLY. BOTTLE.

PHYSICAL DATA
PH= 5.20
TOT DISS SOLIDS= 2.00 PPM, EVAPORATED AT 105 C
= .60 PPM, EVAPORATED AT 600 C
OTHER DATA--
ACIDITY TO PH 8.2 AS CACO3 = 38 PPM
ODOR = H2S

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	.3	
NA	.2	
CL	.2	
SO4	.2	
H2S	11	
NH3	7	
CO2	67	
B	.1	

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63

OTHER NOTES
SEE CODE NAME = VULCAN 3A AND 3C FOR WATER AND NONCONDENSABLE GAS ANALYSES.

RECORD 13
CODE NAME=VULCAN 3C
SAMPLE TYPE=NONCONDENSABLE GASES

WELL VULCAN 3
BEOWAWE KGRA
EUREKA COUNTY, NEV., USA

SAMPLING INFORMATION
DATE-- 9 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- NONCONDENSABLE GASES AND STEAM WERE SEPARATED FROM WATER BY CENTRIFUGAL SEPARATOR, COOLED UNDER LINE PRESSURE. GASES WERE REMOVED THROUGH TOP OF COLLECTION TRAP VIA SS LINE TO EVACUATED SS GAS CYLINDER.
CONDITION OF SAMPLE-- TOTAL GAS VOLUME COLLECTED = 28.898 L AT 60 F, 30 INCHES HG. AVG. MOLECULAR WT. = 43.552. TOTAL GAS = 53.07 GM. GAS = 0.187 PERCENT BY WT. IN STEAM SAMPLE.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
H2S	.69	
CO2	97.92	
NH3	.88	
CH4	.51	

VALUES ARE VOL. PERCENT (AT 60 F, 30 INCHES HG) OF TOTAL GASES (THE SUM OF NONCONDENSABLE GASES AND GASES DISSOLVED IN STEAM CONDENSATE). GASES DISSOLVED IN STEAM CONDENSATE = 4.84 PERCENT OF THE TOTAL.

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63

OTHER NOTES
IN STEAM CONDENSATE PORTION OF NONCONDENSABLE GASES, H2S=14.31, CO2=67.45, NH3=18.24 VOL. PERCENT. IN OTHER PORTION, CO2=99.47, CH4=0.53 VOL. PERCENT. SEE CODE NAME VULCAN 3A AND 3B FOR WATER AND CONDENSATE ANALYSES.

RECORD 14
CODE NAME=VULCAN 4A
SAMPLE TYPE=WATER

WELL VULCAN 4
BEOWAWE KGRA
LOCATION-- T32N, R48E, SEC. 17, 2090FT S, 1850FT E, FROM NW CORNER.
EUREKA COUNTY, NEV., USA

WELL INFORMATION
OWNER-- SIERRA PACIFIC POWER CO., RENO, NEV.
DRILLING COMPANY-- MAGMA-VULCAN THERMAL POWER CO.

WELL DATA
TEMPERATURE 133 C AT WELLHEAD
PRESSURE, SHUT-IN-- 38 PSIG
FLOW INFORMATION-- 409000 LB/HR, 37 PSIG, 6.7 PERCENT STEAM. 630000 LB/HR MAXIMUM, 35 PSIG, 7.3 PERCENT STEAM--APR 63.
COMMENT-- FLOW RATES CORRECTED FOR FLASHING

SAMPLING INFORMATION
DATE-- 11 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- WATER SEPARATED FROM STEAM AND NONCONDENSABLE GASES BY CENTRIFUGAL SEPARATOR ABOVE WELLHEAD, COOLED UNDER LINE PRESSURE IN SS COIL AND COLLECTED INTO POLY. BOTTLE.

PHYSICAL DATA
PH= 9.30
SP. CONDUCTANCE= 590.00 MICROMHOS/CM TEMP DURING READING=AT 25 C
TOT DISS SOLIDS= 865.00 PPM, EVAPORATED AT 105 C
= 755.00 PPM, EVAPORATED AT 600 C
TOTAL ALKALINITY = 283.00
OTHER DATA--
TOTAL ALKALINITY = 283 PPM
PHENOLPHTHALEIN ALKALINITY = 135 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	525	
NA	247	
K	12	
LI	-----	TRACE
CL	61	
F	7	
SO4	86	
H2S	5.8	
NH3	8	
HCO3	15	
CO3	218	
AL	.2	
B	1.5	
CU	-----	TRACE, <0.1 PPM
MN	-----	TRACE, <0.1 PPM
TI	-----	TRACE, <0.1 PPM
V	-----	TRACE, <0.1 PPM

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63
PORTER 77

OTHER NOTES
SEE CODE NAME = VULCAN 4B AND 4C FOR CONDENSATE AND NONCONDENSABLE GAS ANALYSES.

RECORD 15
CODE NAME=VULCAN 4B
SAMPLE TYPE=CONDENSATE

WELL VULCAN 4
BEOWAWE KGRA
EUREKA COUNTY, NEV., USA

SAMPLING INFORMATION
DATE-- 11 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- STEAM AND NONCONDENSABLE GASES SEPARATED FROM WATER BY CENTRIFUGAL SEPARATOR ABOVE WELLHEAD, COOLED UNDER LINE PRESSURE IN SS COIL. CONDENSATE COLLECTED INTO POLY. BOTTLE.

PHYSICAL DATA
PH= 5.10
TOT DISS SOLIDS= 4.80 PPM, EVAPORATED AT 105 C
= 3.20 PPM, EVAPORATED AT 60C C
OTHER DATA--
ACIDITY TO PH 8.2 AS CACO3 = 63 PPM.
ODOR = H2S

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	.2	
NA	.3	
CL	.3	
SO4	2.5	
H2S	12	
NH3	9	
CO2	90	
B	.1	

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63

OTHER NOTES
SEE CODE NAME = VULCAN 4A AND 4C FOR WATER AND NONCONDENSABLE GAS ANALYSES.

RECORD 16
CODE NAME=VULCAN 4C
SAMPLE TYPE=NONCONDENSABLE GASES

WELL VULCAN 4
BEOWAWE KGRA
EUREKA COUNTY, NEV., USA

SAMPLING INFORMATION
DATE-- 11 APR 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- NONCONDENSABLE GASES AND STEAM WERE SEPARATED FROM WATER BY CENTRIFUGAL SEPARATOR, COOLED UNDER LINE PRESSURE. GASES WERE REMOVED THROUGH TOP OF COLLECTION TRAP VIA SS LINE TO EVACUATED SS GAS CYLINDER.
CONDITION OF SAMPLE-- TOTAL GAS VOLUME COLLECTED = 29.515 L AT 60 F, 30 INCHES HG. AVG. MOLECULAR WT. = 43.511. TOTAL GAS = 54.16 GM. GAS = 0.191 PERCENT BY WT. IN STEAM SAMPLE.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
H2S	1.01	
CO2	97.38	
NH3	1.11	
CH4	.5	

VALUES ARE VOL. PERCENT (AT 60 F, 30 INCHES HG) OF TOTAL GASES (THE SUM OF NONCONDENSABLE GASES AND GASES DISSOLVED IN STEAM CONDENSATE). GASES DISSOLVED IN STEAM CONDENSATE = 6.15 PERCENT OF THE TOTAL.

BIBLIOGRAPHIC DATA
SOURCES--
LOCKHEED 63

OTHER NOTES
IN STEAM CONDENSATE PORTION OF NONCONDENSABLE GASES, H2S=12.07, CO2=69.85, NH3=18.08 VOL. PERCENT. IN OTHER PORTION, H2S=0.28; CO2=99.19, CH4=0.53 VOL. PERCENT. SEE CODE NAME VULCAN 4A AND 4B FOR WATER AND CONDENSATE ANALYSES.

RECORD 17
CODE NAME=NAME UNKNOWN
SAMPLE TYPE=WATER

WELL NAME UNKNOWN
BOISE GEOTHERMAL FIELD
LOCATION-- NEAR OLD PENITENTIARY, BOISE
ADA COUNTY, ID., USA

WELL DATA
TEMPERATURE 80 C

PHYSICAL DATA
PH= 9.00
TOT DISS SOLIDS= 290.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
H2	.0054	
HE	.0016	
CH4	.065	
N2	18.51	
O2	.029	
AR	.62	
CO2	.2	
H2S	-----	TRACE-- <0.1 PERCENT
AL	-----	MINOR-- <5 PERCENT, >0.1 PERCENT
AS	< .05	
B	.14	
BA	< .2	
CA	1.7	
CL	10	
CR	-----	MINOR
CO3	4	
CU	.08	
FE	.13	
HCO3	70	
HG	< .02	
K	1.6	
LI	.05	
MG	.05	
MN	.01	
NA	90	
NI	-----	TRACE
PB	-----	MINOR
SIO2	160	
SO4	23	
SR	< .01	
TI	-----	TRACE
ZN	-----	TRACE-MINOR
F	14	MINIMUM=2, MAXIMUM=24 RECORDED.

ANTICIPATED CHEMICAL CONTENT OF BOISE GEOTHERMAL WELLS. MINOR= <5, >0.1 PER CENT. TRACE= <0.1 PER CENT.

BIBLIOGRAPHIC DATA
SOURCES--
SCHMITT 76

RECORD 18
CODE NAME=WILSON 1

WELL WILSON 1
BRAWLEY GEOTHERMAL AREA
LOCATION-- T14S, R15E, SEC. 20, 350FT N, 1300FT E, FROM SW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- STANCARD OIL CO. OF CALIF.
DATE DRILLED-- 11 MAR 63 - 20 JUL 63
WELL ALSO KNOWN AS WILSON ET AL 1. WELL WAS OIL PROSPECT WELL, ABANDONED IN 1963

WELL DATA
DEPTH ----- 4097 METERS
TEMPERATURE 147 C

PHYSICAL DATA
PH= 6.90

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	13900	
K	2400	
CA	2560	
MG	1300	
CL	31000	
SO4	865	
NH4	165	
HCO3	1562	
FE	.4	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
WITHAM 76
LANDE 76
REED 75
HARDT 76

RECORD 19
CODE NAME=M-1AA
SAMPLE TYPE=WATER

WELL M-1A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- DEC 72
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 3 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	235	
NA	4175	
K	575	
CA	212	
LI	11	
CL	7470	
HCO3	62	
CO3	0	
B	8	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 20
CODE NAME=M-1AB
SAMPLE TYPE=WATER

WELL M-1A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- NOV 66
SAMPLE NUMBER, LABORATORY-- GEOTHERMAL ENERGY COMMISSION OF MEXICO.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	240	
NA	4450	
K	600	
LI	12	
CA	210	
MG	30	
CL	7420	
BR	5.2	
I	1	
SO4	7	
HCO3	52	
B	7	

BIBLIOGRAPHIC DATA
SOURCES--
COWR 70
SPIEWAK 70

RECORD 21
CODE NAME=M-3A
SAMPLE TYPE=WATER

WELL M-3
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- AUG 72
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 200 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	507	
NA	5875	
K	1312	
CA	331	
LI	15	
CL	11261	
HCO3	64	
CO3	13	
B	11	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 22
CODE NAME=M-3B
SAMPLE TYPE=WATER

WELL M-3
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 213 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.20

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	459.4	
NA	5566	
K	1130	
LI	15.2	
CA	301	
MG	23.8	
CL	9646	
SO4	17.5	
H2S	26.1	
HCO3	50.4	
CO3	0	
HBO2	40.7	
B	10.8	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 23
CODE NAME=M-3C
SAMPLE TYPE=WATER

WELL M-3
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 5 AUG 64

PHYSICAL DATA
TOT DISS SOLIDS= 17000.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	5610	
K	1040	
LI	13.6	
CA	320.4	
CL	9694	
F	.88	
HCO3	90	
AG	.05	
B	12.4	
BA	57	
CU	.09	
S	10	TOTAL SULFUR
SR	27.4	

BIBLIOGRAPHIC DATA
SOURCES--
KOENIG 67
CDWR 70
AUSTIN 73

RECORD 24
CODE NAME=M-3D
SAMPLE TYPE=WATER

WELL M-3
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 66
SAMPLE NUMBER, LABORATORY-- GEOTHERMAL ENERGY COMMISSION OF MEXICO.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	480	
NA	5310	
K	1100	
LI	17	
CA	310	
MG	11	
CL	9680	
BR	10	
I	2.8	
SO4	15	
HCO3	60	
CO3	680	
H2S	218	
B	8	
FE	.2	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
SPIEWAK 70

RECORD 25
CODE NAME=M-3E
SAMPLE TYPE=WATER

WELL M-3
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 16 MAR 67
SAMPLE NUMBER, LABORATORY-- CALIFORNIA DEPARTMENT OF WATER RESOURCES
CONDITION OF SAMPLE-- SAMPLE TEMP. = 157 C.

PHYSICAL DATA
PH= 6.90
TOT DISS SOLIDS= 18846.00 PPM, RESIDUE ON EVAPORATION.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	5700	
K	1100	
LI	17.6	
CA	356	
MG	0	
CL	10500	
F	2.5	
SO4	31	
NO3	3.1	
NH4	20	
HCO3	73	
CO3	0	
AS	.55	
B	14	
FE	.72	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 26
CODE NAME=M-3F
SAMPLE TYPE=WATER

WELL M-3
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 7 JUN 67
SAMPLE NUMBER, LABORATORY-- CALIFORNIA DEPARTMENT OF WATER RESOURCES

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
BR	6	
I	.45	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 27
CODE NAME=M-5A
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 25947.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	980	+-97
NA	8015	+-557
K	1918	+-118
LI	22.5	+-2.4
CA	453	+-47
CL	15398	+-298
B	19.57	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 28
CODE NAME=M-5B
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 172.3 TON/HR., 28 PERCENT STEAM, 90 PSIG SEPARATOR PRESSURE, 106 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 666, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 7.89
TOT DISS SOLIDS= 25429.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1318	
NA	8016	
K	1899	
LI	22.9	
CA	504	
MG	.5	
CL	14828	
F	2	
BR	23.75	
I	.74	
SO4	13	
HCO3	59.11	
CO3	0	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	1.5	
B	17.74	
BA	9.39	
BE	< .03	
CD	< .01	
CR	< .5	
CS	39.5	
CU	< .05	
FE	.51	
MN	.88	
NI	< .01	
RB	11.2	
SR	15.4	
ZN	.06	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 29
CODE NAME=M-5C
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 289 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1200M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.26
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	630	
NA	5250	
K	1290	
LI	14.2	
CA	330	
MG	.5	
CL	9810	
SO4	<3	
HCO3	27	
CO2	1920	
H2S	481	
B	13	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 30
CODE NAME=M-5D
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 166 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 233500 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 7.49 BAR.

SAMPLING INFORMATION
DATE-- 30 JAN 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.20 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 305.9 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1000	
NA	8350	
K	2050	
LI	22.5	
CA	525	
MG	.8	
CL	15600	
SO4	<5	
HCO3	42.8	
B	21	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 31
CODE NAME=M-5E
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JUN 73
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 300 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	864	
NA	8300	
K	2210	
CA	521	
LI	27	
CL	16431	
HCO3	44	
CO3	6	
B	15	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 32
CODE NAME=M-5F
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 280 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.20

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	736.8	
NA	6648	
K	1645	
LI	24.8	
CA	304	
MG	27.4	
CL	12274	
SO4	11.4	
H2S	58.5	
HCO3	53.8	
CO3	0	
HBO2	33.7	
B	8.4	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 33
CODE NAME=M-5G
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 66

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	740	
NA	5820	
K	1570	
LI	19	
CA	280	
MG	8	
CL	10420	
BR	14.1	
I	3.1	
SO4	0	
HCO3	73	
CO3	1600	
H2S	700	
B	10	
FE	.2	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
SPIEWAK 70

RECORD 34
CODE NAME=M-5H
SAMPLE TYPE=WATER

WELL M-5
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

PHYSICAL DATA
PH= 7.70
SP. CONDUCTANCE= 32200.00 MICROMHOS/CM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1250	
NA	9062	
K	2287	
LI	38	
CA	520	
MG	1	
CL	16045	
F	2	
BR	31	
SO4	6	
HCO3	74	
CO3	2	
B	14	
FE	.3	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 76

RECORD 35
CODE NAME=M-6A
SAMPLE TYPE=WATER

WELL M-6
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 72
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 10 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	162	
NA	4375	
K	475	
CA	552	
LI	17	
CL	8141	
HCO3	836	
CO3	0	
B	6	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 36
CODE NAME=M-6B
SAMPLE TYPE=WATER

WELL M-6
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 38 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.60

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	284.6	
NA	5641	
K	561	
LI	13.3	
CA	366	
MG	36.3	
CL	8583	
SO4	13.2	
H2S	8.5	
HCO3	134	
CO3	0	
HBO2	18.8	
B	4.7	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 37
CODE NAME=M-6C
SAMPLE TYPE=WATER

WELL M-6
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 66
SAMPLE NUMBER, LABORATORY-- GEOTHERMAL ENERGY COMMISSION OF MEXICO.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	151	
NA	5000	
K	504	
LI	11	
CA	388	
MG	33	
CL	9000	
BR	12.6	
I	2.5	
SO4	16.4	
HCO3	158	
CO3	420	
H2S	37	
B	3	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
SPIEWAK 70

RECORD 38
CODE NAME=M-6D
SAMPLE TYPE=WATER

WELL M-6
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 7 JUN 67
SAMPLE NUMBER, LABORATORY-- CALIFORNIA DEPARTMENT OF WATER RESOURCES

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
BR	6	
I	.4	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 39
CODE NAME=M-7A
SAMPLE TYPE=WATER

WELL M-7
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- NOV 72
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 71 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	530	
NA	5800	
K	1175	
CA	316	
LI	16	
CL	10258	
HCO3	197	
CO3	8	
B	14	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 40
CODE NAME=M-7B
SAMPLE TYPE=WATER

WELL M-7
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 130 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.70

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	449	
NA	5268	
K	1017	
LI	12.6	
CA	316	
MG	28.6	
CL	9099	
SO4	10	
H2S	5.2	
HCO3	60	
CO3	0	
HBO2	7.6	
B	1.9	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 41
CODE NAME=M-7C
SAMPLE TYPE=WATER

WELL M-7
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 66
SAMPLE NUMBER, LABORATORY-- GEOTHERMAL ENERGY COMMISSION OF MEXICO.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	390	
NA	5250	
K	910	
LI	13	
CA	230	
MG	18	
CL	9310	
BR	9.2	
I	2.6	
SO4	3.4	
HCO3	71	
CO3	940	
H2S	180	
B	4.5	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
SPIEWAK 70

RECORD 42
CODE NAME=M-8A
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 22571.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	952	+-108
NA	7126	+-1009
K	1733	+-285
LI	19.87	+-4
CA	374	+-98
CL	13325	+-1841
B	13.75	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 43
CODE NAME=M-8B
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 112.8 TON/HR., 37 PERCENT STEAM, 92 PSIG SEPARATOR PRESSURE, 98 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 792, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.21
TOT DISS SOLIDS= 17068.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	974	
NA	5257	
K	1310	
LI	14.5	
CA	258	
MG	.04	
CL	10128	
BR	12.5	
I	.45	
SO4	10	
HCO3	32.49	
CO3	11.38	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	.6	
B	15.52	
BA	5.72	
BE	< .03	
CD	< .01	
CR	< .5	
CS	25.5	
MN	.04	
NI	< .01	
RB	8.4	
SR	7.3	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148-76.

RECORD 44
CODE NAME=M-8C
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 305 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1220M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.43
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	590	
NA	4730	
K	1180	
LI	10.9	
CA	272	
MG	.2	
CL	9040	
SO4	9	
HCO3	28	
CO2	2580	
H2S	624	
B	12	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 45
CODE NAME=M-8D
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 170 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 224000 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 7.91 BAR.

SAMPLING INFORMATION
DATE-- 22 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.30 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 327.8 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1000	
NA	8000	
K	2000	
LI	18.5	
CA	460	
MG	.4	
CL	15300	
SO4	15	
HCO3	65	
B	20	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 46
CODE NAME=M-8E
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JUN 73
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 232 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1218	
NA	7999	
K	2125	
CA	427	
LI	24	
CL	15884	
HCO3	74	
CO3	5	
B	18	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 47
CODE NAME=M-8F
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 454 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.40

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1133	
NA	6429	
K	1176	
LI	15.5	
CA	347	
MG	18.6	
CL	11735	
SO4	15	
HCO3	303	
CO3	0	
H3BO2	46.4	
B	11.6	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 48
CODE NAME=M-8G
SAMPLE TYPE=WATER

WELL M-8
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 66
SAMPLE NUMBER, LABORATORY-- GEOTHERMAL ENERGY COMMISSION OF MEXICO.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	770	
NA	6100	
K	1860	
LI	17	
CA	390	
MG	6	
CL	11750	
BR	14.3	
I	3.2	
SO4	0	
HCO3	890	
B	16.2	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
BLAKE 74
SPIEWAK 70

RECORD 49
CODE NAME=M-9A
SAMPLE TYPE=WATER

WELL M-9
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 228 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1070M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.52
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	430	
NA	4730	
K	750	
LI	10.7	
CA	358	
MG	1.5	
CL	8530	
SO4	27	
HCO3	56	
CO2	823	
H2S	200	
B	11	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 50
CODE NAME=M-9B
SAMPLE TYPE=WATER

WELL M-9
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 160 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 150000 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 6.67 BAR.

SAMPLING INFORMATION
DATE-- 22 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.00 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 234 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	500	
NA	5550	
K	880	
LI	12.5	
CA	420	
MG	1.8	
CL	10000	
SO4	32	
HCO3	66	
B	13	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 51
CODE NAME=M-9C
SAMPLE TYPE=WATER

WELL M-9
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JUN 73
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 100 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	495	
NA	6331	
K	1067	
CA	447	
LI	17	
CL	11459	
HCO3	65	
CO3	8	
B	11	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 52
CODE NAME=M-9D
SAMPLE TYPE=WATER

WELL M-9
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 142 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.90

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	716	
NA	5552	
K	699	
LI	9.3	
CA	420	
MG	26.6	
CL	8626	
SO4	56.3	
HCO3	91	
CO3	0	
HBO2	31.8	
B	7.9	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 53
CODE NAME=M-10A
SAMPLE TYPE=WATER

WELL M-10
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- DEC 72
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 197 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	675	
NA	5500	
K	1487	
CA	232	
LI	17	
CL	9910	
HCO3	179	
CO3	13	
B	14	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 54
CODE NAME=M-10B
SAMPLE TYPE=WATER

WELL M-10
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 219 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 6.5C

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	516	
NA	5317	
K	1091	
LI	12	
CA	340	
MG	28.6	
CL	8844	
SO4	11.3	
HCO3	59.6	
CO3	0	
HBO2	38.5	
B	7.1	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 55
CODE NAME=M-10C
SAMPLE TYPE=WATER

WELL M-10
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 16 MAR 67
SAMPLE NUMBER, LABORATORY-- CALIFORNIA DEPARTMENT OF WATER RESOURCES.
CONDITION OF SAMPLE-- SAMPLE TEMP. = 160 C.

PHYSICAL DATA
PH= 5.80
TOT DISS SOLIDS= 12830.00 PPM, RESIDUE ON EVAPORATION.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	3900	
K	550	
LI	9.4	
CA	328	
MG	13	
CL	7175	
F	1.2	
SO4	19	
NO3	2.5	
NH4	45	
HCO3	149	
CO3	0	
AS	.38	
B	11	
FE	.64	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 56
CODE NAME=M-10D
SAMPLE TYPE=WATER

WELL M-10
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 16 MAR 67
SAMPLE NUMBER, LABORATORY-- USGS, SACRAMENTO, CALIF.

BRINE DATA
METHOD OF ANALYSIS-- EMISSION SPECTROMETRY FOR ALL BUT AG, LI, SR. THESE ANALYZED BY ATOMIC ABSORPTION.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
LI	8	
AG	< .2	
AL	.045	
BE	< .0007	
BI	< .0003	
CD	< .0017	
CO	< .0017	
CR	< .0017	
CU	< .0017	
FE	.05	
GA	< .0067	
GE	.05	
MN	.517	
MO	< .0003	
NI	.0031	
PB	< .0017	
SR	6.7	
TI	< .0007	
V	< .0003	
ZN	< .0067	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 57
CODE NAME=M-10E
SAMPLE TYPE=WATER

WELL M-10
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 16 MAR 67
SAMPLE NUMBER, LABORATORY-- UNIV. CALIF. RIVERSIDE, G. BRADFORD

BRINE DATA
METHOD OF ANALYSIS-- EMISSION SPECTROMETRY, EXCEPT LI, ANALYZED BY ATOMIC ABSORPTION SPECTROMETRY
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
LI	15	
AG	< .004	
AL	< .5	
AU	< .04	
BA	12	
BE	< .004	
BI	< .08	
CD	< .4	
CO	< .002	
CR	< .002	
CU	.005	
FE	.05	
GA	< .08	
GE	< .2	
HG	< .4	
LA	< .08	
MN	.64	
MO	< .001	
NI	.0022	
PB	.0046	
SB	< .4	
SN	< .08	
SR	10	
TI	< .12	
TL	< .08	
V	< .002	
ZN	.006	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 58
CODE NAME=M-10F
SAMPLE TYPE=WATER

WELL M-10
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 7 JUN 67
SAMPLE NUMBER, LABORATORY-- CALIFORNIA DEPARTMENT OF WATER RESOURCES

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
BR	5	
I	.4	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 59
CODE NAME=M-11A
SAMPLE TYPE=WATER

WELL M-11
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 26198.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	774	
NA	8235.5	
K	2058	
LI	24.9	
CA	522	
CL	15357	
B	19.33	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 60
CODE NAME=M-11B
SAMPLE TYPE=WATER

WELL M-11
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 59.3 TON/HR., 27 PERCENT STEAM, 92 PSIG SEPARATOR PRESSURE, 98 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 331, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 7.90
TOT DISS SOLIDS= 27123.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1345	
NA	8229	
K	2032	
LI	25.2	
CA	550	
MG	.34	
CL	16129	
F	1.7	
BR	36.5	
I	.7	
SO4	12	
HCO3	59.11	
CO3	0	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	1.1	
BA	11.48	
BE	< .03	
CD	< .01	
CR	< .5	
CS	40.9	
NI	< .01	
RB	12.3	
SR	15	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 61
CODE NAME=M-11C
SAMPLE TYPE=WATER

WELL M-11
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 261 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1150M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.34
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	610	
NA	5600	
K	1230	
LI	13.7	
CA	369	
MG	.8	
CL	11400	
SO4	27	
HCO3	27	
CO2	1250	
H2S	310	
B	13	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 62
CODE NAME=M-11D
SAMPLE TYPE=WATER

WELL M-11
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 174 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 173800 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 41.7 BAR.

SAMPLING INFORMATION
DATE-- 18 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.20 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 271.9 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	900	
NA	8200	
K	1800	
LI	20	
CA	540	
MG	1.1	
CL	16700	
SO4	10	
HCO3	40	
B	19	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 63
CODE NAME=M-11E
SAMPLE TYPE=WATER

WELL M-11
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JUN 73
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 578 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	870	
NA	8281	
K	1987	
CA	494	
LI	18	
CL	15965	
HCO3	59	
CO3	0	
B	17	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 64
CODE NAME=M-11F
SAMPLE TYPE=WATER

WELL M-11
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 265 PSIG.

SAMPLING INFORMATION
DATE-- 10 SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 7.90

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	621	
NA	6125	
K	1650	
LI	17	
CA	340	
MG	16	
CL	11286	
SO4	0	
HCO3	11	
CO3	0	
H2O2	33.2	
B	8.3	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 65
CODE NAME=M-13A
SAMPLE TYPE=WATER

WELL M-13
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JUN 72
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 148 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	880	
NA	8775	
K	2200	
CA	448	
LI	26	
CL	16254	
HCO3	27	
CO3	27	
B	11	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 66
CODE NAME=M-13B
SAMPLE TYPE=WATER

WELL M-13
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 700 PSIG.

SAMPLING INFORMATION
DATE-- 10 SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 8.00

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1416	
NA	8656	
K	2207	
LI	41	
CA	484	
MG	17	
CL	15414	
SO4	0	
HCO3	5	
CO3	1.2	
HBO2	48	
B	12	

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 67
CODE NAME=M-14A
SAMPLE TYPE=WATER

WELL M-14
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 21562.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	6982	
K	1396	
CA	474	
CL	12710	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 68
CODE NAME=M-14B
SAMPLE TYPE=WATER

WELL M-14
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 190.0 TON/HR., 30 PERCENT STEAM, 160 PSIG SEPARATOR PRESSURE, 102 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 11, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.05
TOT DISS SOLIDS= 22232.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	960	
NA	7079	
K	1439	
LI	17.7	
CA	445	
MG	.61	
CL	13113	
F	2.38	
BR	17.5	
I	.59	
SO4	11	
HCO3	43.7	
CO3	6.32	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	1.5	
B	18.48	
BA	10.71	
BE	< .03	
CO	< .01	
CR	< .5	
CS	33.2	
CU	< .05	
FE	.8	
MN	.2	
NI	< .01	
RB	7.9	
SR	17.6	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 69
CODE NAME=M-15A
SAMPLE TYPE=WATER

WELL M-15
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- MAR 69
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 315 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1231	
NA	5375	
K	1587	
CA	260	
CL	9604	
HCO3	19	
CO3	0	
B	7	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 70
CODE NAME=M-15AA
SAMPLE TYPE=WATER

WELL M-15A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 18549.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	652	+-52
NA	5991	+-185
K	1034	+-52
LI	13.4	
LI	13.4	+-0.8
CA	375	+-56
CL	11135	+-226

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 71
CODE NAME=M-15AB
SAMPLE TYPE=WATER

WELL M-15A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 218.3 TON/HR., 22 PERCENT STEAM, 95 PSIG SEPARATOR PRESSURE, 100 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 45, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.25
TOT DISS SOLIDS= 18533.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	745	
NA	5951	
K	984	
LI	12.9	
CA	407	
MG	1.57	
CL	11057	
BR	9.25	
I	.63	
SO4	8	
HCO3	54.51	
CO3	9.48	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	1.2	
B	14.72	
BA	10.73	
BE	< .03	
CO	< .01	
CR	< .5	
CS	26	
CU	< .05	
FE	1.87	
MN	.39	
NI	< .01	
RB	4.1	
SR	20.6	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 72
CODE NAME=M-15AC
SAMPLE TYPE=WATER

WELL M-15A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JAN 75
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 212 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	678	
NA	6000	
K	1125	
CA	321	
LI	15	
CL	11500	
HCO3	19	
CO3	24	
B	9	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 73
CODE NAME=M-19AA
SAMPLE TYPE=WATER

WELL M-19A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 27497.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	975	
NA	8470	+-195
K	2144	+-70
LI	23.54	
CA	526	+-29
CL	16343	+-372

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANGN 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 74
CODE NAME=M-19AB
SAMPLE TYPE=WATER

WELL M-19A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 199.4 TON/HR., 28 PERCENT STEAM, 102 PSIG SEPARATOR PRESSURE, 114 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 37, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.25
TOT DISS SOLIDS= 27365.00 PPM

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	1291	
NA	8238	
K	2058	
LI	24.4	
CA	556	
MG	.21	
CL	16329	
BR	28.33	
I	.65	
SO4	12	
HCO3	43.7	
CO3	0	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	1.11	
B	17.26	
BA	10.94	
BE	< .03	
CO	< .01	
CR	< .5	
CS	42.3	
CU	.08	RANGE .05-.10 PPM GIVEN
FE	1.35	
MN	1.8	
NI	< .01	
PB	.01	
RB	12	
SR	15.1	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANGN 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 75
CODE NAME=M-19AC
SAMPLE TYPE=WATER

WELL M-19A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- FEB 75
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 415 PSIG.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	967	
NA	8540	
K	2124	
CA	547	
LI	20	
CL	16750	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 76
CODE NAME=M-20A
SAMPLE TYPE=WATER

WELL M-20
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 281 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1100M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.50
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	520	
NA	4590	
K	1050	
LI	10	
CA	329	
MG	.9	
CL	8270	
SO4	<3	
HCO3	37	
CO2	2450	
H2S	463	
B	11	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 77
CODE NAME=M-20B
SAMPLE TYPE=WATER

WELL M-20
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 163 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 166300 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 7.08 BAR.

SAMPLING INFORMATION
DATE-- 31 JAN 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.40 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 296.3 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	800	
NA	7100	
K	1620	
LI	15.5	
CA	510	
MG	1.4	
CL	12800	
SO4	<5	
HCO3	57.9	
B	17	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 78
CODE NAME=M-20C
SAMPLE TYPE=WATER

WELL M-20
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JAN 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 120 PSIG.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	800	
NA	7100	
K	1620	
CA	510	
LI	15	
CL	12800	
HCO3	58	
CO3	5	
B	13	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 79
CODE NAME=M-20D
SAMPLE TYPE=WATER

WELL M-20
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 372 PSIG.

SAMPLING INFORMATION
DATE-- 10 SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 8.50

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	676	
NA	7875	
K	1450	
LI	20	
CA	524	
MG	19	
CL	12741	
SO4	0	
HCO3	3	
CO3	2	
H3BO2	38	
B	9.5	

AVERAGE ANALYSIS.

BIBLIOGRAPHIC DATA
SOURCES--
MCLINA 70

RECORD 80
CODE NAME=M-20E
SAMPLE TYPE=WATER

WELL M-20
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
DEPTH ----- 1385 METERS
FLOW INFORMATION-- MAXIMUM FLOW RATE = 680 TONS PER HOUR, 470 BTU/LB, AT 228 PSI.
PRODUCTION INTERVAL-- CASING SLOTTED FROM 1180 TO 1385M.

SAMPLING INFORMATION
DATE-- 17 APR 68
SAMPLING METHOD-- SAMPLE COLLECTED INTO 1L POLY. BOTTLE FROM SEPARATOR WATER LINE.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING THROUGH 6.5 INCH PIPE, WITH PRESSURE = 280 PSIG.
SAMPLE TAKEN DURING WELL DEVELOPMENT. SEE NOTE BELOW.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	506	
NA	6000	
K	1094	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 69

OTHER NOTES
WELL DEVELOPED OVER A PERIOD OF 5 MONTHS BY SLOWLY INCREASING FLOW TO FULL CAPACITY. IN PUBLISHED ARTICLE, AUTHOR LISTS 36 ANALYSES MADE DURING WELL DEVELOPMENT. OTHER ANALYSES NOT COMPILED HERE.

RECORD 81
CODE NAME=M-21A
SAMPLE TYPE=WATER

WELL M-21
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 72
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 610 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	675	
NA	5525	
K	1725	
CA	304	
LI	18	
CL	11437	
HCO3	106	
CO3	13	
B	10	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 82
CODE NAME=M-21B
SAMPLE TYPE=WATER

WELL M-21
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 908 PSIG.

SAMPLING INFORMATION
DATE-- 10 SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 7.50

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	906	
NA	6906	
K	2188	
LI	21	
CA	348	
MG	24	
CL	12425	
SO4	0	
HCO3	11	
CO3	0	
HBO2	33.2	
B	8.3	

BIBLIOGRAPHIC DATA
SOURCES--
MCLINA 70

RECORD 83
CODE NAME=M-21AA
SAMPLE TYPE=WATER

WELL M-21A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 28836.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	870	+-49
NA	8800	+-510
K	2228	+-136
LI	21.2	+-1.6
CA	604	+-53
CL	17140	+-777

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 84
CODE NAME=M-21AB
SAMPLE TYPE=WATER

WELL M-21A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 153.8 TON/HR., 42 PERCENT STEAM, 101 PSIG SEPARATOR PRESSURE, 119 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 40, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 7.95
TOT DISS SOLIDS= 29161.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1104	
NA	8761	
K	2252	
LI	21.7	
CA	679	
MG	.18	
CL	17271	
F	3.16	
BR	26.8	
I	.67	
SO4	13	
HCO3	64.25	
CO3	0	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	2.55	
B	20.71	
BA	12.1	
BE	< .03	
CO	< .01	
CR	< .5	
CS	45.2	
MN	.47	
NI	< .01	
RB	13.3	
SR	13.3	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 85
CODE NAME=M-21AC
SAMPLE TYPE=WATER

WELL M-21A
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- APR 74
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 280 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	804	
NA	5803	
K	1628	
CA	318	
LI	14	
CL	10301	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 86
CODE NAME=M-25A
SAMPLE TYPE=WATER

WELL M-25
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 26049.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	950	+-124
NA	8254	+-500
K	1954	+-54
LI	23.4	+-2.3
CA	532	+-71
CL	15750	+-566
B	15.03	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 87
CODE NAME=M-25B
SAMPLE TYPE=WATER

WELL M-25
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 110.0 TON/HR., 29 PERCENT STEAM, 80 PSIG SEPARATOR PRESSURE, 90 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 64, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 7.97
TOT DISS SOLIDS= 26015.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1141	
NA	8063	
K	1911	
LI	23.4	
CA	526	
MG	.47	
CL	15315	
F	2.5	
BR	30.75	
I	.63	
SO4	12	
HCO3	68.1	
CO3	0	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	.84	
B	20.75	
BA	10.82	
BE	< .03	
CO	< .01	
CR	< .5	
CS	41.6	
CU	< .05	
FE	.31	
MN	.6	
NI	< .01	
RB	11.1	
SR	15.7	
ZN	< .01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 88
CODE NAME=M-25C
SAMPLE TYPE=WATER

WELL M-25
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 280 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1240M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	580	
NA	5610	
K	1300	
LI	14.9	
CA	380	
MG	.4	
CL	11000	
SO4	5	
HCO3	29	
B	13	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 89
CODE NAME=M-25D
SAMPLE TYPE=WATER

WELL M-25
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 163 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 225100 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 7.58 BAR.

SAMPLING INFORMATION
DATE-- 21 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.10 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 294.3 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	900	
NA	8650	
K	2000	
LI	23	
CA	585	
MG	.6	
CL	16900	
SO4	7	
HCO3	44	
B	20	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 90
CODE NAME=M-25E
SAMPLE TYPE=WATER

WELL M-25
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JAN 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 105 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	900	
NA	8650	
K	2000	
CA	585	
LI	23	
CL	16900	
HCO3	44	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 91
CODE NAME=M-26A
SAMPLE TYPE=WATER

WELL M-26
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 22573.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	895	+-75
NA	6918	
K	1563	
LI	16.7	
CA	616	
CL	13464	
B	12.22	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 92
CODE NAME=M-26B
SAMPLE TYPE=WATER

WELL M-26
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 231.4 TON/HR., 34 PERCENT STEAM, 105 PSIG SEPARATOR PRESSURE, 312 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 528, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.00
TOT DISS SOLIDS= 21593.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1006	
NA	6686	
K	1514	
LI	19.9	
CA	581	
MG	.69	
CL	12606	
BR	32.5	
SO4	12	
HCO3	118.74	
CO3	3.79	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	2.63	
B	14.6	
BA	14.3	
BE	< .03	
CO	< .01	
CR	< .5	
CS	30.6	
CU	.03	RANGE .01-.05 PPM GIVEN
FE	.61	
MN	.33	
NI	< .01	
PB	.08	
RB	9.4	
SR	13.4	
ZN	.07	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 93
CODE NAME=M-26C
SAMPLE TYPE=WATER

WELL M-26
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 292 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1240M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	620	
NA	5630	
K	1370	
LI	12.8	
CA	522	
MG	.6	
CL	10400	
SO4	<3	
HCO3	25	
B	12	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 94
CODE NAME=M-26D
SAMPLE TYPE=WATER

WELL M-26
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 163 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 114500 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 7.19 BAR.

SAMPLING INFORMATION
DATE-- 21 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.0C TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 309.8 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1000	
NA	9050	
K	2200	
LI	20.5	
CA	840	
MG	.9	
CL	16800	
SO4	<5	
HCO3	39.6	
B	19	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 95
CODE NAME=M-26E
SAMPLE TYPE=WATER

WELL M-26
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JAN 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 92 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1000	
NA	9050	
K	2200	
CA	840	
LI	20	
CL	16800	
HCO3	40	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 96
CODE NAME=M-26F
SAMPLE TYPE=WATER

WELL M-26
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 620 PSIG.

SAMPLING INFORMATION
DATE-- 10 SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 8.0C

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1456	
NA	10062	
K	2688	
LI	29	
CA	520	
MG	23	
CL	17097	
SO4	3.2	
HCO3	2.4	
CO3	2.4	
HBO2	50	
B	12.5	

BIBLIOGRAPHIC DATA
SOURCES--
MCLINA 70

RECORD 97
CODE NAME=M-27A
SAMPLE TYPE=WATER

WELL M-27
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 18752.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	5866	
K	1523	
CA	418	
CL	10945	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 98
CODE NAME=M-27B
SAMPLE TYPE=WATER

WELL M-27
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 87.3 TON/HR., 57 PERCENT STEAM, 103 PSIG SEPARATOR PRESSURE, 110 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 24, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.05
TOT DISS SOLIDS= 19153.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	960	
NA	5884	
K	1384	
LI	13.1	
CA	361	
MG	.04	
CL	11366	
F	2.44	
BR	22	
I	.57	
SO4	14	
HCO3	77.74	
CO3	7.58	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	1.98	
B	18	
BA	6.13	
BE	< .03	
CO	< .01	
CR	.5	
CS	29.4	
CU	.95	
FE	1.4	
MN	.14	
NI	< .01	
PB	.01	
RB	9.3	
SR	8.2	
ZN	.19	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 99
CODE NAME=M-29A
SAMPLE TYPE=WATER

WELL M-29
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 21058.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	659	
NA	6818	
K	1120	
LI	19.5	
CA	542	
CL	12553	

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 100
CODE NAME=M-29B
SAMPLE TYPE=WATER

WELL M-29
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 284.1 TON/HR., 11 PERCENT STEAM, 92 PSIG SEPARATOR PRESSURE, 92 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 130, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 7.85
TOT DISS SOLIDS= 21823.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	739	
NA	6966	
K	1156	
LI	20.3	
CA	554	
MG	1.39	
CL	12971	
BR	17.5	
I	.48	
SO4	10	
HCO3	70.68	
CO3	0	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	.4	
B	17.5	
BA	10.44	
BE	< .03	
CO	< .01	
CR	.5	
CS	32.5	
FE	1.9	
MN	.54	
NI	< .01	
PB	.005	
RB	6.7	
SR	25.2	
ZN	.03	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 101
CODE NAME=M-29C
SAMPLE TYPE=WATER

WELL M-29
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 235 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 870M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.44
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	420	
NA	5450	
K	1010	
LI	12.7	
CA	406	
MG	3.1	
CL	10200	
SO4	13	
HCO3	46	
CO2	1580	
H2S	229	
B	15	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 102
CODE NAME=M-29D
SAMPLE TYPE=WATER

WELL M-29
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 164 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 64000 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 6.87 BAR.

SAMPLING INFORMATION
DATE-- 8 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.10 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 242 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	500	
NA	6450	
K	1200	
LI	15	
CA	480	
MG	3.7	
CL	12100	
SO4	15	
HCO3	54.7	
B	18	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 103
CODE NAME=M-29E
SAMPLE TYPE=WATER

WELL M-29
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- FEB 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 90 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	500	
NA	6450	
K	1200	
CA	480	
LI	15	
CL	12100	
HCO3	55	
CO3	16	
B	13	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 104
CODE NAME=M-29F
SAMPLE TYPE=WATER

WELL M-29
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 260 PSIG.

SAMPLING INFORMATION
DATE-- 10 SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 8.10

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	497	
NA	6550	
K	1331	
CA	490	
MG	22	
CL	11880	
SO4	0	
HCO3	1.4	
CO3	2.6	
HBO2	52.8	
B	13.2	

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 105
CODE NAME=M-3CA
SAMPLE TYPE=WATER

WELL M-30
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 26490.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	891	
NA	8340	+-613
K	1934	+-79
LI	23.8	+-3.0
CA	577	+-32
CL	15618	+-449

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 106
CODE NAME=M-30B
SAMPLE TYPE=WATER

WELL M-30
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 227.4 TON/HR., 25 PERCENT STEAM, 101 PSIG SEPARATOR PRESSURE, 113 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 60, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.00
TOT DISS SOLIDS= 25590.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1077	
NA	7809	
K	1833	
LI	22	
CA	596	
MG	.82	
CL	15173	
F	1.32	
BR	33.5	
I	.58	
SO4	13	
HCO3	30.84	
CO3	3.79	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	.47	
B	17.5	
BA	8.03	
CO	< .01	
CR	.5	
CS	38.9	
CU	1	
FE	.5	
MN	2.65	
NI	< .01	
RB	11	
SR	18.8	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 107
CODE NAME=M-30C
SAMPLE TYPE=WATER

WELL M-30
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 273 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1290M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	630	
NA	5650	
K	1320	
LI	14.6	
CA	389	
MG	.6	
CL	10900	
SO4	11	
HCO3	24	
B	13	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 108
CODE NAME=M-30D
SAMPLE TYPE=WATER

WELL M-30
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 169 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 348000 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 8.74 BAR.

SAMPLING INFORMATION
DATE-- 21 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.10 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 285.5 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	950	
NA	8500	
K	1980	
LI	22	
CA	585	
MG	.9	
CL	16400	
SO4	16	
HCO3	36.4	
B	19	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 109
CODE NAME=M-30E
SAMPLE TYPE=WATER

WELL M-30
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JAN 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 116 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	950	
NA	8500	
K	1980	
CA	585	
LI	22	
CL	16400	
HCO3	36	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 110
CODE NAME=M-31A
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 20928.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	755	+-72
NA	6373	+-381
K	1495	+-77
LI	16.9	+-0.8
CA	386	+-53
CL	12456	+-865

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 111
CODE NAME=M-31B
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 173.8 TON/HR., 34 PERCENT STEAM, 102 PSIG SEPARATOR PRESSURE, 109 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 305, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.05
TOT DISS SOLIDS= 22284.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	833	
NA	6913	
K	1540	
LI	18.4	
CA	463	
MG	.16	
CL	13205	
BR	13	
I	.54	
SO4	18	
HCO3	57.82	
CO3	6.32	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	.89	
B	18	
BA	7.14	
BE	< .03	
CO	< .01	
CR	.5	
CS	34.9	
FE	.26	
MN	.15	
NI	< .01	
PB	.02	
RB	9.7	
SR	15.3	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 112
CODE NAME=M-31C
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 313 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1160M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.35
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	490	
NA	4410	
K	1110	
LI	11.1	
CA	287	
MG	.1	
CL	8820	
SO4	3	
HCO3	28	
CO2	2210	
H2S	593	
B	11	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 113
CODE NAME=M-31D
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 170 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 234200 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 19.6 BAR.

SAMPLING INFORMATION
DATE-- 16 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.30 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 337.8 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	850	
NA	7700	
K	1930	
LI	19.5	
CA	500	
MG	.2	
CL	15400	
SO4	6	
HCO3	48.4	
B	19	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 114
CODE NAME=M-31E
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 1 AUG 73
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- TEMP. = 100 C, BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
PH= 8.30
SP. CONDUCTANCE= 27400.00 MICROMHOS/CM
TOT DISS SOLIDS= 16691.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	460	
NA	4982	
K	1117	
LI	15	
CA	370	
MG	.96	
CL	9650	
F	1.4	
SO4	< 20	
NO3	< .1	
PO4	<1	
NH4	38	
HCO3	105.6	
CO3	0	
BA	5	
BE	< .004	
CO	< .01	
CR	< .01	
CS	6.1	
CU	.02	
FE	1.9	
MN	.42	
PB	.16	
RB	6.3	
SB	<1	
SE	< .001	
SN	< .2	
SR	1.9	
ZN	.02	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74

RECORD 115
CODE NAME=M-31F
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- JAN 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 274 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	850	
NA	7700	
K	1930	
CA	500	
LI	20	
CL	15400	
HCO3	48	
CO3	11	
B	14	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 116
CODE NAME=M-31G
SAMPLE TYPE=WATER

WELL M-31
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 562 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 7.20

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	833	
NA	8218	
K	2089	
LI	13	
CA	245	
MG	24	
CL	14166	
SO4	0	
HCO3	8	
CO3	.6	
HBO2	46	
B	11.5	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MCLINA 70

RECORD 117
CODE NAME=M-34A
SAMPLE TYPE=WATER

WELL M-34
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 231 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1510M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

PHYSICAL DATA
PH= 5.52
COMMENT-- PH CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	450	
NA	5330	
K	900	
LI	13.5	
CA	484	
MG	2.3	
CL	9840	
SO4	30	
HCO3	36	
CO2	1270	
H2S	260	
B	12	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 118
CODE NAME=M-34B
SAMPLE TYPE=WATER

WELL M-34
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 161 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 166400 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 6.53 BAR.

SAMPLING INFORMATION
DATE-- 16 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.30 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 237.1 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	600	
NA	7100	
K	1200	
LI	18	
CA	645	
MG	3	
CL	13100	
SO4	40	
HCO3	48.4	
B	16	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 119
CODE NAME=M-34C
SAMPLE TYPE=WATER

WELL M-34
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- FEB 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 86 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	600	
NA	7100	
K	1200	
CA	645	
LI	18	
CL	13100	
HCO3	48	
CO3	0	
B	11	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 120
CODE NAME=M-34D
SAMPLE TYPE=WATER

WELL M-34
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 345 PSIG.

SAMPLING INFORMATION
DATE-- SEP 68
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 8.20

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	606	
NA	6375	
K	1206	
LI	15	
CA	460	
MG	22	
CL	10702	
SO4	0	
HCO3	3	
CO3	2	
HBO2	35.2	
B	8.8	

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 121
CODE NAME=M-35A
SAMPLE TYPE=WATER

WELL M-35
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 26504.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1010	+-72
NA	8054	+-561
K	2107	+-175
LI	22.9	+-1.9
CA	453	+-26
CL	15385	+-1162

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 122
CODE NAME=M-35B
SAMPLE TYPE=WATER

WELL M-35
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 262.0 TON/HR., 31 PERCENT STEAM, 105 PSIG SEPARATOR PRESSURE, 127 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 191, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.00
TOT DISS SOLIDS= 25012.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1207	
NA	7658	
K	1956	
CA	459	
MG	.24	
CL	14776	
F	1.28	
BR	21	
I	.66	
SO4	10	
HCO3	33.4	
CO3	10.11	
AL	-----	RANGE .01-.05 PPM GIVEN
AS	1	
B	19.87	
BA	8.9	
CO	< .01	
CR	.5	
CS	38.6	
CU	.05	
FE	1.18	
MN	.57	
NI	< .01	
PB	.04	
RB	11.5	
SR	14.6	
ZN	.02	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 123
CODE NAME=M-35C
SAMPLE TYPE=WATER

WELL M-35
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- MAR 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 290 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	9459	
K	2557	
CA	545	
LI	20	
CL	17064	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 124
CODE NAME=M-38A
SAMPLE TYPE=WATER

WELL M-38
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- OCT 72
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 540 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	755	
NA	7050	
K	1900	
CA	360	
LI	23	
CL	13984	
HCO3	58	
CO3	8	
B	15	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 125
CODE NAME=M-38B
SAMPLE TYPE=WATER

WELL M-38
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 700 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 8.10

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	851	
NA	7562	
K	1987	
LI	12	
CA	319	
MG	32	
CL	12724	
SO4	4.5	
HCO3	4	
CO3	1.5	
HBO2	52	
B	13	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 126
CODE NAME=M-39A
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
TOT DISS SOLIDS= 16121.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	581	+-53
NA	5881	+-362
K	979	+-80
LI	14.8	+-2.08
CA	425	+-27
CL	10823	+-755

DATA ARE MEDIAN VALUES OF CONCENTRATIONS DETERMINED SINCE THE BEGINNING OF ON-SYSTEM WELL PRODUCTION. RANGES GIVEN ARE STANDARD DEVIATION. DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 127
CODE NAME=M-39B
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL INFORMATION
OWNER-- COMISION FEDERAL DE ELECTRICIDAD

WELL DATA
FLOW INFORMATION-- 80.5 TON/HR., 17 PERCENT STEAM, 80 PSIG SEPARATOR PRESSURE, 90 PSIG WELLHEAD PRESSURE.

SAMPLING INFORMATION
DATE-- 23 SEP 76
SAMPLE NUMBER, LABORATORY-- NO. 134, CFE CHEMISTRY LAB, CERRO PRIETO.
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED, TAKEN AT ATMOSPHERIC PRESSURE, TEMP. = 100 C.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.

PHYSICAL DATA
PH= 8.05
TOT DISS SOLIDS= 17075.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	611	
NA	5417	
K	901	
LI	12.2	
CA	404	
MG	3.29	
CL	10181	
BR	5.8	
I	.56	
SO4	8	
HCO3	147.79	
CO3	1.26	
AL	.03	RANGE .01-.05 PPM GIVEN
AS	.32	
B	14.12	
BA	9.05	
BE	< .03	
CC	< .01	
CR	.5	
CS	23.9	
CU	.05	
FE	.62	
MN	.43	
NI	< .01	
RB	3	
SR	20	
ZN	.01	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MANON 76
DATA FROM A. MANON M., CFE, CERRO PRIETO, MEXICO. MEMO AMM/148/76.

RECORD 128
CODE NAME=M-39C
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 246 C AT BOTTOM HOLE, AVERAGE
PRODUCTION INTERVAL-- AVERAGE PRODUCTION DEPTH = 1300M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS

BRINE DATA
METHOD OF ANALYSIS-- CALCULATED AVERAGE FLUID COMPOSITION
UNITS-- MG/KG

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	470	
NA	4400	
K	780	
LI	10.1	
CA	328	
MG	1.4	
CL	8150	
SO4	34	
HCO3	44	
B	13	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 129
CODE NAME=M-39D
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
TEMPERATURE 162 C AT SEPARATOR
FLOW INFORMATION-- WELL PRODUCING 228800 KG/HR WATER AND STEAM AT WELLHEAD PRESSURE = 6.87 BAR.

SAMPLING INFORMATION
DATE-- 12 FEB 74
SAMPLE NUMBER, LABORATORY-- USGS
SAMPLE LOCATION-- SEPARATOR
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FOR POWER PRODUCTION.

PHYSICAL DATA
PH= 8.40 TEMP DURING READING= 25 C
OTHER DATA--
ENTHALPY = 254 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	650	
NA	6100	
K	1080	
LI	14	
CA	455	
MG	1.9	
CL	11300	
SO4	47	
HCO3	60.4	
B	18	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
REED 75

RECORD 130
CODE NAME=M-39E
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- 1 AUG 73
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- TEMP. = 100 C, BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
PH= 8.50
SP. CONDUCTANCE= 31400.00 MICROMHOS/CM
TOT DISS SOLIDS= 19003.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	592	
NA	5940	
K	895	
LI	13	
CA	480	
MG	1.32	
CL	11080	
F	1.8	
SO4	< 20	
NO3	< .1	
PO4	<1	
NH4	13	
HCO3	53.5	
CO3	0	
BA	3	
BE	< .004	
CD	< .01	
CR	< .01	
CS	6.1	
CU	.02	
FE	.4	
MN	.25	
PB	.1	
RB	4.7	
SB	<1	
SE	< .001	
SN	< .2	
SR	5.7	
ZN	< .005	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74

RECORD 131
CODE NAME=M-39F
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- FEB 74
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 90 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	650	
NA	6100	
K	1080	
CA	455	
LI	14	
CL	11300	
HCO3	60	
CO3	30	
B	15	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 132
CODE NAME=M-39G
SAMPLE TYPE=WATER

WELL M-39
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

WELL DATA
FLOW INFORMATION-- WELLHEAD PRESSURE = 488 PSIG.

SAMPLING INFORMATION
NO SAMPLING OR ANALYSIS METHODS GIVEN.

PHYSICAL DATA
PH= 5.60

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	166	
NA	1350	
K	460	
LI	3	
CA	68	
MG	0	
CL	2524	
SO4	0	
HCO3	6.1	
CO3	8.4	
HBO2	16	
B	4	

AVERAGE ANALYSIS

BIBLIOGRAPHIC DATA
SOURCES--
MOLINA 70

RECORD 133
CODE NAME=M-51A
SAMPLE TYPE=WATER

WELL M-51
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- APR 74
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 340 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	785	
NA	6180	
K	1905	
CA	302	
LI	16	
CL	11184	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 134
CODE NAME=M-53A
SAMPLE TYPE=WATER

WELL M-53
CERRO PRIETO GEOTHERMAL FIELD
B.C., MEXICO

SAMPLING INFORMATION
DATE-- NOV 74
SAMPLING METHOD-- SAMPLE OBTAINED BY BLEEDING WELL THROUGH A SMALL LINE.
CONDITION OF WELL DURING SAMPLING-- WELLHEAD PRESSURE = 1088 PSIG.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1441	
NA	7843	
K	2742	
CA	341	
CL	16483	

BIBLIOGRAPHIC DATA
SOURCES--
MERCADO 75

RECORD 135
CODE NAME=MESA 5-1A
SAMPLE TYPE=WATER

WELL MESA 5-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 5, 110.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 15 APR 74 - 10 MAY 74

WELL DATA
DEPTH ----- 1829 METERS
TEMPERATURE 170 C AT BOTTOM HOLE.
PRESSURE, SHUT-IN-- SLOTTED CASING BETWEEN 1525 AND 1828 M. TOTAL SLOTTED LENGTH = 241 M.
COMMENT-- MESA 5-1 WELL IS DESIGNED AS AN INJECTION WELL. ALL DEPTHS MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 31 MAY 74
SAMPLE NUMBER, LABORATORY-- 1059, USBR.
CONDITION OF WELL DURING SAMPLING-- FLOWING STEAM AND BRINE THROUGH 3 IN. ORIFICE, 26 TO 29 PSIG., T=131 C.

PHYSICAL DATA
PH= 9.12
TOT DISS SOLIDS= 1575.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	201	
NA	593	
K	29	
CA	16.2	
MG	2.1	
CL	454	
SO4	102	
HCO3	331.5	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 136
CODE NAME=MESA 5-1B
SAMPLE TYPE=WATER

WELL MESA 5-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 5, 110.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 15 APR 74 - 10 MAY 74

WELL DATA
DEPTH ----- 1829 METERS
TEMPERATURE 170 C AT BOTTOM HOLE.
PRESSURE, SHUT-IN-- SLOTTED CASING BETWEEN 1525 AND 1828 M, TOTAL SLOTTED LENGTH = 241 M.
COMMENT-- MESA 5-1 WELL IS DESIGNED AS AN INJECTION WELL. ALL DEPTHS MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 25 APR 74
SAMPLE NUMBER, LABORATORY-- W229.4, USBR.
SAMPLING METHOD-- DRILL STEM TEST NO. 2 FROM INTERVAL 1406 - 1419 M.
SAMPLE NO. 8, 25TH STAND.

PHYSICAL DATA
PH= 6.76
TOT DISS SOLIDS= 2390.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	130	
NA	798	
K	48.9	
CA	46.5	
MG	4.01	
CL	825	
SO4	196	
HCO3	705	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 137
CODE NAME=MESA 5-1C
SAMPLE TYPE=WATER

WELL MESA 5-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 5, 110.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 15 APR 74 - 10 MAY 74

WELL DATA
DEPTH ----- 1829 METERS
TEMPERATURE 170 C AT BOTTOM HOLE.
PRESSURE, SHUT-IN-- SLOTTED CASING BETWEEN 1525 AND 1826 M, TOTAL SLOTTED LENGTH = 241 M.
COMMENT-- MESA 5-1 WELL IS DESIGNED AS AN INJECTION WELL. ALL DEPTHS MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 25 APR 74
SAMPLE NUMBER, LABORATORY-- W230.4, USBR.
SAMPLING METHOD-- DRILL STEM TEST NO. 2 FROM INTERVAL 1406 - 1419 M.
SAMPLE NO. 10, 27TH STAND.

PHYSICAL DATA
PH= 6.70
TOT DISS SOLIDS= 2390.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	130	
NA	798	
K	48.9	
CA	46.5	
MG	4.01	
CL	825	
SO4	196	
HCO3	717	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 138
CODE NAME=MESA 6-1A
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- BEFORE PERFORATION, THROTTLED FLOW--<830 LB/MIN BRINE, <10 LB/MIN STEAM, P=56 PSIG, T=147 C. FULL FLOW-- 1432 LB/MIN BRINE, 272 LB/MIN STEAM, P=8 PSIG, T=104 C.
PRODUCTION INTERVAL-- SLOTTED CASING BETWEEN 2238 AND 2433 M, TOTAL SLOTTED LENGTH = 130 M.
COMMENT-- SAMPLE TAKEN ON WELL BEFORE ADDITIONAL SECTIONS OF CASING WERE PERFORATED. ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- AUG. 26, 1972
SAMPLE NUMBER, LABORATORY-- W459.2, USBR.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
PH= 7.50
TOT DISS SOLIDS= 28110.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	128	
NA	9002	
K	1047	
CA	896	
MG	15	
CL	15868	
SO4	192	
HCO3	126	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B
LBL 76

RECORD 139
CODE NAME=MESA 6-1B
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- BEFORE PERFORATION, THROTTLED FLOW--<830 LB/MIN BRINE, <10 LB/MIN STEAM, P=56 PSIG, T=147 C. FULL FLOW-- 1432 LB/MIN BRINE, 272 LB/MIN STEAM, P=8 PSIG, T=104 C.
PRODUCTION INTERVAL-- SLOTTED CASING BETWEEN 2238 AND 2433 M, TOTAL SLOTTED LENGTH = 130 M.
COMMENT-- SAMPLE TAKEN ON WELL BEFORE ADDITIONAL SECTIONS OF CASING WERE PERFORATED. ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- JAN. 23, 1973
CONDITION OF SAMPLE-- UNFLASHED BRINE.

PHYSICAL DATA
PH= 6.10
TOT DISS SOLIDS= 16180.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	220	
NA	5129	
K	632	
CA	389	
MG	22	
CL	9014	
SO4	20	
HCO3	305	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
HOAGLAND 76B
WITHAM 76
LBL 76

RECORD 140
CODE NAME=MESA 6-1C
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- BEFORE PERFORATION, THROTTLED FLOW--<830 LB/MIN BRINE, <10 LB/MIN STEAM, P=56 PSIG, T=147 C. FULL FLOW-- 1432 LB/MIN BRINE, 272 LB/MIN STEAM, P=8 PSIG, T=104 C.
PRODUCTION INTERVAL-- SLOTTED CASING BETWEEN 2238 AND 2433 M, TOTAL SLOTTED LENGTH = 130 M.
COMMENT-- SAMPLE TAKEN ON WELL BEFORE ADDITIONAL SECTIONS OF CASING WERE PERFORATED. ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 31 JUL 73
SAMPLE NUMBER, LABORATORY-- ANAL. LAB.--DESERT RESEARCH INST., BOULDER CITY, NEV.
SAMPLE LOCATION-- SEPARATOR
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
PH= 7.70
SP. CONDUCTANCE= 50800.00 MICROMHOS/CM
TOT DISS SOLIDS= 32250.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE. AS, HG, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	341	
NA	9845	
K	1173	
CA	1360	
LI	30	
MG	20.8	
CL	19400	
SO4	< 20	
NO3	< .5	
PO4	<1	
NH4	83	
HCO3	45.7	
CO3	0	
BA	42	
BE	< .004	
CD	< .01	
CR	.03	
CS	12.4	
CU	.06	
F	1.6	
FE	.25	
MN	1.26	
PB	.2	
RB	6	
SB	<1	
SE	< .001	
SN	< .2	
SR	56	
ZN	< .005	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS. LOSS ESTIMATED TO BE 17 PERCENT.

BIBLIOGRAPHIC DATA
SOURCES--
DRI-76
SANDERS 74
HOAGLAND 76
HOAGLAND 76B
WITHAM 76
DRI 76

RECORD 141
CODE NAME=MESA 6-1D
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- BEFORE PERFORATION, THROTTLED FLOW--<830 LB/MIN BRINE, <10 LB/MIN STEAM, P=56 PSIG, T=147 C. FULL FLOW-- 1432 LB/MIN BRINE, 272 LB/MIN STEAM, P=8 PSIG, T=104 C.
PRODUCTION INTERVAL-- SLOTTED CASING BETWEEN 2238 AND 2433 M, TOTAL SLOTTED LENGTH = 130 M.
COMMENT-- SAMPLE TAKEN ON WELL BEFORE ADDITIONAL SECTIONS OF CASING WERE PERFORATED. ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- AUG. 1, 1973
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLE LOCATION-- MFS FEED-IN
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
PH= 7.65
SP. CONDUCTANCE= 50900.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 32516.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE. AS, HG, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	364	
NA	9845	
K	1178	
CA	1360	
LI	30	
MG	20.7	
CL	19670	
SO4	< 20	
NO3	< .5	
PO4	<1	
NH4	55	
HCO3	42.8	
BA	43	
BE	< .004	
CD	< .01	
CR	< .03	
CS	12.4	
CU	.06	
F	1.6	
FE	.25	
MN	1.26	
PB	.2	
RB	6	
SB	<1	
SE	< .001	
SN	< .2	
SR	56	
ZN	< .005	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS. LOSS ESTIMATED TO BE 17 PERCENT.

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74
WITHAM 76
HOAGLAND 76B
DRI 76

RECORD 142
CODE NAME=MESA 6-1E
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- BEFORE PERFORATION, THROTTLED FLOW--<830 LB/MIN BRINE, <10 LB/MIN STEAM, P=56 PSIG, T=147 C. FULL FLOW-- 1432 LB/MIN BRINE, 272 LB/MIN STEAM, P=8 PSIG, T=104 C.
PRODUCTION INTERVAL-- SLOTTED CASING BETWEEN 2238 AND 2433 M, TOTAL SLOTTED LENGTH = 130 M.
COMMENT-- SAMPLE TAKEN ON WELL BEFORE ADDITIONAL SECTIONS OF CASING WERE PERFORATED. ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- AUG. 1, 1973
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLE LOCATION-- MFS BRINE OUT.
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED--WASTE FROM MULTI-FLASH SEPARATOR DISTILLATION UNIT. T=71 C.

PHYSICAL DATA
PH= 7.60
SP. CONDUCTANCE= 52000.00 MICROMHOS/CM
TOT DISS SOLIDS= 33461.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE. AS, HG, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	347	
NA	10240	
CA	1391	
K	1255	
LI	30	
MG	21.8	
CL	20150	
SO4	< 20	
NO3	< .5	
PO4	<1	
NH4	37	
HCO3	34.8	
BA	45	
BE	< .004	
CD	< .01	
CR	.04	
CS	12.5	
CU	.11	
F	1.6	
FE	1	
MN	1.31	
PB	.2	
RB	6.2	
SB	<1	
SE	< .001	
SN	< .2	
SR	57	
ZN	< .005	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS. LOSS ESTIMATED TO BE 17 PERCENT.

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74
WITHAM 76
HOAGLAND 76B
DRI 76

RECORD 143
CODE NAME=MESA 6-1F
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- AFTER PERFORATION, THROTTLED FLOW-- 660 LB/MIN BRINE, NO STEAM, P=94 PSIG, T=166 C. FULL FLOW-- 3300 LB/MIN BRINE, 400 LB/MIN STEAM, P=22 PSIG, T=127 C.
PRODUCTION INTERVAL-- 130 M OF SLOTTED CASING, 2238-2433 M. PERFORATIONS BETWEEN 2075 AND 2179 M; TOTAL PERFORATED LENGTH = 56 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- FEB. 19, 1974
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1-L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL CASING PERFORATED.

PHYSICAL DATA
PH= 6.66
SP. CONDUCTANCE= 30664.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 18847.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE. AS, HG, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	300	
NA	5774	
K	898	
CA	642	
LI	37	
MG	13.8	
CL	10942	
SO4	< 10	
NO3	< .5	
PO4	<1	
NH4	41	
HCO3	223	
AG	.06	
AS	.009	
BA	18	
BE	.007	
BI	.4	
CD	< .04	
CR	< .02	
CS	26	
CU	.03	
F	1.23	
FE	3.4	
HG	< .0005	
MN	.95	
NI	.1	
PB	.17	
RB	7.2	
SB	.7	
SE	< .001	
SN	.2	
SR	58	
ZN	.1	

SAMPLE UNFLASHED.

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74
HOAGLAND 76B
WITHAM 76
LBL 76

RECORD 144
CODE NAME=MESA 6-1G
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- AFTER PERFORATION, THROTTLED FLOW-- 660 LB/MIN BRINE, NO STEAM, P=94 PSIG, T=166 C. FULL FLOW-- 3300 LB/MIN BRINE, 400 LB/MIN STEAM, P=22 PSIG, T=127 C.
PRODUCTION INTERVAL-- 130 M OF SLOTTED CASING, 2238-2433 M. PERFORATIONS BETWEEN 2075 AND 2179 M; TOTAL PERFORATED LENGTH = 56 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- FEB. 19, 1974
SAMPLE NUMBER, LABORATORY-- W84.4, USBR.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL CASING PERFORATED. WELLHEAD PRESSURE = 61 PSIG.

PHYSICAL DATA
PH= 6.80
TOT DISS SOLIDS= 19360.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	163	
NA	6263	
K	782	
CA	642	
MG	2.8	
CL	11053	
SO4	17.3	
HCO3	204	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B
LBL 76

RECORD 145
CODE NAME=MESA 6-1H
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- AFTER PERFORATION, THROTTLED FLOW-- 660 LB/MIN BRINE, NO STEAM, P=94 PSIG, T=166 C. FULL FLOW-- 3300 LB/MIN BRINE, 400 LB/MIN STEAM, P=22 PSIG, T=127 C.
PRODUCTION INTERVAL-- 130 M OF SLOTTED CASING, 2238-2433 M. PERFORATIONS BETWEEN 2075 AND 2179 M; TOTAL PERFORATED LENGTH = 56 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- JUN. 11, 1974
SAMPLE NUMBER, LABORATORY-- W1033, USBR.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- AFTER WELL CASING PERFORATED.

PHYSICAL DATA
TOT DISS SOLIDS= 21967.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	257	
NA	6362	
K	1124	
CA	759	
MG	9	
CL	11668	
SO4	51	
HCO3	221	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
HOAGLAND 76B
WITHAM 76
LBL 76

RECORD 146
CODE NAME=MESA 6-1I
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- JUL. 22, 1974
SAMPLE NUMBER, LABORATORY-- W1074, USBR.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED AT WELLHEAD.
CONDITION OF WELL DURING SAMPLING-- WELL CASING PERFORATED.

PHYSICAL DATA
PH= 7.37
TOT DISS SOLIDS= 24211.00 MG/L

BRINE DATA

CONSTITUENT	CONCENTRATION	COMMENT
CA	710	
CL	13084	
SO4	34	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
HOAGLAND 76B

RECORD 147
CODE NAME=MESA 6-1J
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- SEP. 23, 1974
SAMPLE NUMBER, LABORATORY-- W1365, USBR.
SAMPLE LOCATION-- FEED TO DESALTING PLANT.

PHYSICAL DATA
PH= 7.19
TOT DISS SOLIDS= 25701.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	277	
NA	8771	
CA	938	
CL	13629	
SO4	35	
HCO3	85	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
HOAGLAND 76

RECORD 148
CODE NAME=MESA 6-1K
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, SE QUARTER.
STANDARD COORDINATES-- N226624.29 FT, E2307483.98 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 23 JUN 72 - 16 AUG 72

WELL DATA
DEPTH ----- 2448 METERS
TEMPERATURE 204 C AT BOTTOM HOLE.
166 C AT WELLHEAD.
FLOW INFORMATION-- AFTER PERFORATION, THROTTLED FLOW-- 660 LB/MIN BRINE, NO STEAM, P=94 PSIG, T=166 C. FULL FLOW-- 3300 LB/MIN BRINE, 400 LB/MIN STEAM, P=22 PSIG, T=127 C.
PRODUCTION INTERVAL-- 130 M OF SLOTTED CASING, 2238-2433 M. PERFORATIONS BETWEEN 2075 AND 2179 M; TOTAL PERFORATED LENGTH = 56 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 6.7 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 9 JUN 76
SAMPLE NUMBER, LABORATORY-- D 6914, GHT LABORATORIES.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE TAKEN THROUGH COOLING COIL.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING AT A SLOW RATE.
PORTIONS OF SAMPLE ANALYZED AT USBR FIELD LAB.

PHYSICAL DATA
PH= 5.45
SP. CONDUCTANCE= 40000.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 26300.00 MG/L

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ANALYSIS ON METALS, WET CHEMICAL ANALYSIS ON SALTS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	320	
NA	8100	
CA	1360	
K	1050	
LI	40	
MG	17.2	
CL	15850	
SO4	42.8	
NO3	< .02	TRACE
PO4	< .01	TOTAL PHOSPHATE
NH4	40.75	
HCO3	202	
CO3	0	
AG	< .013	
AL	.04	
AS	.26	
AU	< .01	
B	9.75	
BA	14	
BE	< .02	
BI	3	
CD	< .01	
CE	2.75	
CO	.06	
CR	< .01	
CU	< .1	
F	.99	
FE	8.8	
GE	< .1	
HG	< .002	
IN	< .1	
IR	< .1	
MN	.95	
MO	< .005	
NB	.4	
NI	.1	
PB	< .5	
PD	< .1	
PT	< .1	
S	3	SULFIDE
SB	5.5	
SE	< .1	
SR	320	
TA	.14	
TI	< .1	
V	< .005	
W	< .1	
ZN	.07	

VALUES LISTED AS < A NUMBER--ASSUME NONE DETECTED.

BIBLIOGRAPHIC DATA
SOURCES--
PAPAZIAN 76
WITHAM 76
LBL 76
MATHIAS 75
USBR 74
MAIN SOURCE=HAROLD PAPAZIAN, USBR, HOLTVILLE, CA., UNPUBLISHED DATA.

RECORD 149
CODE NAME=MESA 6-1L
SAMPLE TYPE=WATER

WELL MESA 6-1
EAST MESA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- GARRETT RESEARCH AND DEVELOPMENT CO.
CONDITION OF SAMPLE-- AVERAGE OF SAMPLES TAKEN BETWEEN 16 FEB AND 9 APR, 1974.
CONDITION OF WELL DURING SAMPLING-- FLOWING 10 GPM, 13, C, 88 PSIG.
SAMPLES TAKEN WHILE MONITORING EFFLUENTS FOR SCALING AND CORROSION STUDY.

PHYSICAL DATA
PH= 5.80 PH RANGE= 5.6-6.0
SPECIFIC GRAVITY= 1.011 TEMP DURING READING=25 C
TOT DISS SOLIDS= 24800.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	286	
NA	7050	
K	890	
LI	54	
MG	16	
CL	14000	
SO4	173	
CO3	300	
BO4	36	
FE	5	VARIES FROM 1 TO 10
S	<1	SULFIDE
SR	135	

AVERAGE ANALYSIS. NO STEAM FLASHED.

BIBLIOGRAPHIC DATA
SOURCES--
WAHL 74

RECORD 150
CODE NAME=MESA 6-2A
SAMPLE TYPE=WATER

WELL MESA 6-2
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, 990 FT. S, 330 FT. W FROM CTR. SEC.
STANDARD COORDINATES-- N226614.12 FT, E2306008.19 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 17 JUL 73 - 23 AUG 73

WELL DATA
DEPTH ----- 1830 METERS
TEMPERATURE 187 C AT BOTTOM HOLE.
FLOW INFORMATION-- MAXIMUM = 1962 LB/MINUTE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1663 AND 1816 M.
COMMENT-- DEPTH MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 3 JUN 76
SAMPLE NUMBER, LABORATORY-- D 6873, GHT LABORATORIES.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE TAKEN THROUGH COOLING COIL.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING AT A SLOW RATE.
PORTIONS OF SAMPLE ANALYZED AT USBR FIELD LAB.

PHYSICAL DATA
PH= 6.12
SP. CONDUCTANCE= 6000.00 MICROMHOS/CM TEMP DURING READING=25 C.
TOT DISS SOLIDS= 5000.00 MG/L

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ANALYSIS ON METALS; WET CHEMICAL ANALYSIS ON SALTS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	269	
NA	1700	
CA	16.4	
K	150	
LI	4	
MG	.24	
CL	2142	
SO4	156	
NO3	.1	
PO4	< .2	TOTAL PHOSPHATE
NH4	14.7	
HCO3	560	
CO3	0	
AG	< .01	
AL	.03	
AS	.22	
AU	< .01	
B	7.45	
BA	.25	
BE	< .02	
BI	< .005	
CD	< .01	
CE	.38	
CO	< .01	
CR	< .01	
CU	< .1	
F	1.23	
FE	< .1	
GE	< .1	
HG	< .002	
IN	< .1	
IR	< .1	
MN	.05	
MO	< .005	
NB	.4	
NI	< .1	
PB	< .5	
PD	< .1	
PT	< .1	
S	1.5	SULFIDE
SB	.9	
SE	< .1	
SR	6.4	
TA	.17	
TI	< .1	
V	< .005	
W	< .1	
ZN	< .01	

VALUES LISTED AS < A NUMBER--ASSUME NONE DETECTED.

BIBLIOGRAPHIC DATA
SOURCES--
PAPAZIAN 76
WITHAM 76
USBR 74

RECORD 151
CODE NAME=MESA 6-2B
SAMPLE TYPE=WATER

WELL MESA 6-2
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, 990 FT. S, 330 FT. W FROM CTR. SEC.
STANDARD COORDINATES-- N226614.12 FT, E2306008.19 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 17 JUL 73 - 23 AUG 73

WELL DATA
DEPTH ----- 1830 METERS
TEMPERATURE 187 C AT BOTTOM HOLE.
FLOW INFORMATION-- MAXIMUM = 1962 LB/MINUTE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1663 AND 1816 M.
COMMENT-- DEPTH MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 23 OCT 73
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10 ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- UNFLASHED BRINE.

PHYSICAL DATA
PH= 7.70
SP. CONDUCTANCE= 3862.00 MICROMHOS/CM TEMP DURING READING=25 C.
TOT DISS SOLIDS= 2377.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA, NH4 BY SPECIFIC ION ELECTRODE. AS, HG, SE BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	250	
NA	760	
K	68.8	
CA	13	
LI	4	
MG	.012	
CL	710	
SO4	202	
NO3	< .1	
PO4	.8	
NH4	17	
HCO3	715	
AG	< .004	
AS	.045	
BA	< .1	
BE	< .005	
BI	< .1	
CD	< .002	
CR	< .04	
CS	1.82	
CU	.89	
F	3.2	
FE	.06	
HG	.0073	
MN	< .01	
NB	< 10	
NI	< .02	
PB	< .02	
RB	.6	
SB	< .2	
SE	< .001	
SN	< .2	
SR	.17	
TA	<5	
ZN	.08	

SAMPLE UNFLASHED.

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74
WITHAM 76
HOAGLAND 76B
DRI 76

RECORD 152
CODE NAME=MESA 6-2C
SAMPLE TYPE=WATER

WELL MESA 6-2
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, 990 FT. S, 330 FT. W FROM CTR. SEC.
STANDARD COORDINATES-- N226614.12 FT, E2306008.19 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 17 JUL 73 - 23 AUG 73

WELL DATA
DEPTH ----- 1830 METERS
TEMPERATURE 187 C AT BOTTOM HOLE.
FLOW INFORMATION-- MAXIMUM = 1962 LB/MINUTE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1663 AND 1816 M.
COMMENT-- DEPTH MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 6 AUG 73
SAMPLE NUMBER, LABORATORY-- W433.3, USBR
SAMPLING METHOD-- DRILL STEM TEST: INTERVAL 1678-1709 M.

PHYSICAL DATA
PH= 7.20
TOT DISS SOLIDS= 2830.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	195	
NA	918	
K	65.3	
CA	40	
CL	776	
SO4	206	
HCO3	1248	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 153
CODE NAME=MESA 6-2D
SAMPLE TYPE=WATER

WELL MESA 6-2
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, 990 FT. S, 330 FT. W FROM CTR. SEC.
STANDARD COORDINATES-- N226614.12 FT, E2306008.19 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 17 JUL 73 - 23 AUG 73

WELL DATA
DEPTH ----- 1830 METERS
TEMPERATURE 187 C AT BOTTOM HOLE.
FLOW INFORMATION-- MAXIMUM = 1962 LB/MINUTE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1663 AND 1816 M.
COMMENT-- DEPTH MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 6 AUG 73
SAMPLE NUMBER, LABORATORY-- W611.3, USBR.
SAMPLING METHOD-- DRILL STEM TEST: INTERVAL 1678-1709 M.

PHYSICAL DATA
PH= 8.60
TOT DISS SOLIDS= 2760.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	140	
NA	907	
K	73.9	
CA	39.3	
MG	-----	TRACE
CL	760	
SO4	207	
HCO3	908	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 154
CODE NAME=MESA 6-2E
SAMPLE TYPE=WATER

WELL MESA 6-2
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, 990 FT. S, 330 FT. W FROM CTR. SEC.
STANDARD COORDINATES-- N226614.12 FT, E2306008.19 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 17 JUL 73 - 23 AUG 73

WELL DATA
DEPTH ----- 1830 METERS
TEMPERATURE 187 C AT BOTTOM HOLE.
FLOW INFORMATION-- MAXIMUM = 1962 LB/MINUTE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1663 AND 1816 M.
COMMENT-- DEPTH MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 23 OCT 73
SAMPLE NUMBER, LABORATORY-- W609.3, USBR REGIONAL OFFICE LAB.
CONDITION OF SAMPLE-- UNFLASHED BRINE, FILTERED.

PHYSICAL DATA
PH= 7.40
TOT DISS SOLIDS= 2130.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	200	
NA	704	
K	68.4	
CA	2.6	
CL	665	
SO4	188	
HCO3	662	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 155
CODE NAME=MESA 6-2F
SAMPLE TYPE=WATER

WELL MESA 6-2
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 6, 990 FT. S, 330 FT. W FROM CTR. SEC.
STANDARD COORDINATES-- N226614.12 FT, E2306008.19 FT.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 17 JUL 73 - 23 AUG 73

WELL DATA
DEPTH ----- 1830 METERS
TEMPERATURE 187 C AT BOTTOM HOLE.
FLOW INFORMATION-- MAXIMUM = 1962 LB/MINUTE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1663 AND 1816 M.
COMMENT-- DEPTH MEASURED FROM KELLY BUSHING, 5.2 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 30 APR 74
SAMPLE NUMBER, LABORATORY-- 1032, USBR FIELD LAB.
CONDITION OF SAMPLE-- UNFLASHED BRINE.

PHYSICAL DATA
TOT DISS SOLIDS= 2687.00 MG/L

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	301	
NA	725	
K	83	
CA	8.5	
MG	.8	
CL	793	
SO4	182	
HCO3	749	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 156
CODE NAME=MESA 8-1A
SAMPLE TYPE=WATER

WELL MESA 8-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 8, 660 FT. S, 660 FT. E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 12 MAY 74 - 5 JUN 74

WELL DATA
DEPTH ----- 1886 METERS
TEMPERATURE 180 C AT BOTTOM HOLE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1508 AND 1829 M, TOTAL SLOTTED LENGTH = 279 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 4.9 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 22 JUN 76
SAMPLE NUMBER, LABORATORY-- GHT LABORATORIES AND USBR FIELD LAB.
SAMPLE LOCATION-- WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN THROUGH COOLING COIL.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING AT A SLOW RATE.

PHYSICAL DATA
PH= 6.27
SP. CONDUCTANCE= 3200.00 MICROMHOS/CM TEMP DURING READING=25 C.
TOT DISS SOLIDS= 1600.00 MG/L

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ANALYSIS ON METALS; WET CHEMICAL ANALYSIS ON SALTS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	389	
NA	610	
CA	8.5	
K	70	
LI	1.1	
MG	< .05	
CL	500	
SO4	173	
NO3	.34	
PO4	< .1	TOTAL PHOSPHATE
NH4	4.95	
HCO3	417	
CO3	0	
AG	< .01	
AL	.02	
AS	.053	
AU	.024	
B	1.6	
BA	.15	
BE	< .02	
BI	< .005	
CD	< .01	TRACE
CE	.14	
CO	< .01	
CR	< .01	
CU	< .1	
F	1.6	
FE	< .1	
GE	< .1	
HG	.014	
IN	< .1	
IR	< .1	
MN	< .05	
MO	< .005	
NB	.4	
NI	< .1	
PB	< .5	
PD	< .1	
PT	< .1	
S	1	
SB	1.2	
SE	.5	
SR	2.1	
TA	.12	
TI	< .1	
V	< .005	
W	< .1	
ZN	< .01	

VALUES LISTED AS < A NUMBER--ASSUME NONE DETECTED.

BIBLIOGRAPHIC DATA
SOURCES--
PAPAZIAN 76
USBR 74
WITHAM 76

RECORD 157
CODE NAME=MESA 8-1B
SAMPLE TYPE=WATER

WELL MESA 8-1
EAST MESA KGRA
LOCATION-- T16S, R17E, SEC. 8, 660 FT. S, 660 FT. E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 12 MAY 74 - 5 JUN 74

WELL DATA
DEPTH ----- 1886 METERS
TEMPERATURE 180 C AT BOTTOM HOLE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1508 AND 1829 M, TOTAL SLOTTED LENGTH = 279 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 4.9 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 10 SEP 74, 900 AM.
SAMPLE NUMBER, LABORATORY-- 1234, 1235, 1236, USBR.
SAMPLING METHOD-- TAKEN WITH A STAINLESS STEEL SAMPLING TUBE.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING, TEMP = 143 C.

PHYSICAL DATA
PH= 7.68
TOT DISS SOLIDS= 2463.00 MG/L, RESIDUE ON EVAPORATION AT 103 C.

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	263	
NA	723	
K	42	
CA	41.1	
LI	2	
MG	1.6	
CL	556	
SO4	225	
HCO3	668	
B	3.3	
FE	1.1	
SR	1.6	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 158
CODE NAME=MESA 31-1A
SAMPLE TYPE=WATER

WELL MESA 31-1
EAST MESA KGRA
LOCATION-- T15S, R17E, SEC. 31, 200 FT. S, 200 FT. E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 8 JUN 74 - 28 JUN 74

WELL DATA
DEPTH ----- 1894 METERS
TEMPERATURE 157 C AT BOTTOM HOLE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1652 AND 1882 M, TOTAL SLOTTED LENGTH=181 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 4.9 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 18 JUN 76
SAMPLE NUMBER, LABORATORY-- GHT LABORATORIES AND USBR FIELD LAB.
SAMPLE LOCATION-- WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN THROUGH COOLING COIL.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING AT A SLOW RATE.

PHYSICAL DATA
PH= 6.27
SP. CONDUCTANCE= 4700.00 MICROMHOS/CM TEMP DURING READING=25 C.
TOT DISS SOLIDS= 2900.00 MG/L

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ANALYSIS ON METALS; WET CHEMICAL ANALYSIS ON SALTS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	274	
NA	730	
CA	8.9	
K	85	
LI	.6	
MG	< .05	
CL	510	
SO4	183	
NO3	.43	
PO4	< .01	
NH4	2.45	
HCO3	845	
CO3	0	
AG	< .01	
AL	.02	
AS	.025	
AU	.08	
B	2.5	
BA	.15	
BE	< .01	
BI	< .005	
CD	.02	
CE	.2	
CO	< .01	
CR	< .01	
CU	< .1	
F	1.42	
FE	< .1	
GE	< .1	
HG	.008	
IN	< .1	
IR	< .1	
MN	< .05	
MO	< .005	
NB	.4	
NI	< .1	
PB	< .5	
PD	< .1	
PT	< .1	
S	.3	
SB	1	
SE	1.8	
SR	1.4	
TA	.1	
TI	< .1	
V	< .005	
W	< .1	
ZN	< .01	

VALUES LISTED AS < A NUMBER--ASSUME NONE DETECTED.

BIBLIOGRAPHIC DATA
SOURCES--
PAPAZIAN 76
WITHAM 76
USBR 74

RECORD 159
CODE NAME=MESA 31-1B
SAMPLE TYPE=WATER

WELL MESA 31-1
EAST MESA KGRA
LOCATION-- T15S, R17E, SEC. 31, 200 FT. S, 200 FT. E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S. BUREAU OF RECLAMATION.
DATE DRILLED-- 8 JUN 74 - 28 JUN 74

WELL DATA
DEPTH ----- 1894 METERS
TEMPERATURE 157 C AT BOTTOM HOLE.
PRODUCTION INTERVAL-- CASING SLOTTED BETWEEN 1652 AND 1882 M, TOTAL SLOTTED LENGTH = 181 M.
COMMENT-- ALL DEPTHS MEASURED FROM KELLY BUSHING, 4.9 M ABOVE GROUND SURFACE.

SAMPLING INFORMATION
DATE-- 13 SEP 74, 1030 AM.
SAMPLE NUMBER, LABORATORY-- 1225, 1226, 1227, USBR.
SAMPLING METHOD-- TAKEN WITH A STAINLESS STEEL SAMPLING TUBE.
CONDITION OF SAMPLE-- UNFLASHED BRINE.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING, TEMP=127 C.

PHYSICAL DATA
PH= 7.72
TOT DISS SOLIDS= 2311.00 MG/L, RESIDUE ON EVAPORATION, 103 C.

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	88	
NA	782	
CA	96.6	
K	25	
LI	1.8	
MG	1.1	
CL	490	
SO4	172	
HCO3	467	
B	2.2	
FE	2.4	
SR	2.3	

BIBLIOGRAPHIC DATA
SOURCES--
USBR 74
WITHAM 76
HOAGLAND 76B

RECORD 160
CODE NAME=EAST MESA 16-29
SAMPLE TYPE=WATER

WELL EAST MESA 16-29
EAST MESA KGRA
LOCATION-- T15S, R17E, SEC. 29, 1495FT N, 100FT E, FROM SW CORNER
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- REPUBLIC GEOTHERMAL, INC. AND CITY OF BURBANK, CALIF.
DRILLING COMPANY-- REPUBLIC DRILLING COMPANY
DATE DRILLED-- 4 NOV 75 - 2 DEC 75

WELL DATA
DEPTH ----- 2445 METERS
TEMPERATURE 182 C AT 2371 METERS
163 C AT 1830 METERS
139 C AT 1220 METERS
122 C AT 915 METERS
FLOW INFORMATION-- 419000 LBS/HR
PRODUCTION INTERVAL-- WELL CASING PERFORATED 1955-2129M AND 2204-2437M. TOTAL INTERVAL PERFORATED = 407M.
RESERVOIR LITHOLOGY-- SANDSTONE
COMMENT-- TEMPERATURES LOGGED 19 OCT 76.

SAMPLING INFORMATION
DATE-- 14 JUN 76
SAMPLE NUMBER, LABORATORY-- 16-29, QUALITY WATER LABORATORY, INC.
SAMPLE LOCATION-- WELLHEAD
CONDITION OF WELL DURING SAMPLING-- FLOWING AT 10 GPM.

PHYSICAL DATA
PH= 9.00 TEMP DURING READING= 25 C
SP. CONDUCTANCE= 3100.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 1978.00 MG/L, RESIDUE ON EVAPORATION
TOTAL ALKALINITY = 530.00
OTHER DATA--
TOTAL ALKALINITY = 530 MG/L, AS CACO3

BRINE DATA
METHOD OF ANALYSIS-- USGS WATER RESOURCES INVESTIGATIONS 22-74
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	489	
NA	623	
K	39	
CA	3.2	
MG	.1	
CL	514	
F	4	
SO4	169	
PO4	.9	
HCO3	342	BICARBONATE AS CACO3
CO3	188	CARBONATE AS CACO3
CO2	0	FREE CO2
AS	.12	
B	3.2	
CD	< .03	
CR	< .03	
FE	1.9	
HG	.006	
MN	< .03	
PB	< .05	
SE	< .01	
ZN	< .05	

BIBLIOGRAPHIC DATA
SOURCES--
SMITH 77

RECORD 161
CODE NAME=EAST MESA 38-30
SAMPLE TYPE=WATER

WELL EAST MESA 38-30
EAST MESA KGRA
LOCATION-- T15S, R17E, SEC. 30, 100FT N, 1420FT E, FROM SW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- REPUBLIC GEOTHERMAL, INC. AND CITY OF BURBANK, CALIF.
DRILLING COMPANY-- REPUBLIC DRILLING COMPANY
DATE DRILLED-- 24 SEP 75 - 28 OCT 75

WELL DATA
DEPTH ----- 2746 METERS
TEMPERATURE 176 C AT 2166 METERS
146 C AT 1220 METERS
133 C AT 914 METERS
FLOW INFORMATION-- 670000 LBS/HR
PRODUCTION INTERVAL-- WELL CASING PERFORATED AT INTERVALS FROM 1946-2712M. TOTAL INTERVAL PERFORATED = 547OM.
RESERVOIR LITHOLOGY-- SANDSTONE
COMMENT-- TEMPERATURES LOGGED 19 OCT 76.

SAMPLING INFORMATION
DATE-- 22 APR 76
SAMPLE NUMBER, LABORATORY-- 3830, QUALITY WATER LABORATORY, INC.
SAMPLE LOCATION-- WELLHEAD
CONDITION OF WELL DURING SAMPLING-- FLOWING AT 10 GPM.

PHYSICAL DATA
PH= 8.90 TEMP DURING READING= 25 C
SP. CONDUCTANCE= 2800.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 1967.00 MG/L, RESIDUE ON EVAPORATION
TOTAL ALKALINITY = 440.00
OTHER DATA--
TOTAL ALKALINITY = 440 MG/L, AS CACO3

BRINE DATA
METHOD OF ANALYSIS-- USGS WATER RESOURCES INVESTIGATIONS 22-74
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	518	
NA	630	
K	39	
LI	.82	
CA	4.3	
MG	.1	
CL	565	
F	3.2	
BR	.7	
SO4	142	
PO4	.7	
HCO3	312	BICARBONATE AS CACO3
CO3	128	CARBONATE AS CACO3
CO2	0	FREE CO2
AG	< .02	
AS	.13	
B	2.6	
CD	< .02	
CR	< .03	
CU	.03	
FE	1.5	
HG	.002	
MN	< .02	
NI	< .03	
PB	< .05	
SB	< .1	
SE	< .01	
ZN	< .02	

BIBLIOGRAPHIC DATA
SOURCES--
SMITH 77

RECORD 162
CODE NAME=EAST MESA 18-28
SAMPLE TYPE=WATER

WELL EAST MESA 18-28
EAST MESA KGRA
LOCATION-- T15S, R17E, SEC. 28, 175FT N, 100FT E, FROM SW CORNER
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- REPUBLIC GEOTHERMAL, INC. AND CITY OF BURBANK, CALIF.
DRILLING COMPANY-- REPUBLIC DRILLING COMPANY
DATE DRILLED-- 12 DEC 75 - 25 JAN 76

WELL DATA
DEPTH ----- 2439 METERS
TEMPERATURE 162 C AT 2330 METERS
135 C AT 1864 METERS
88 C AT 914 METERS
FLOW INFORMATION-- 36000 LBS/HR
PRODUCTION INTERVAL-- 1963-2438 METERS.
RESERVOIR LITHOLOGY-- SANDSTONE
COMMENT-- TEMPERATURES LOGGED 12 FEB 76.

SAMPLING INFORMATION
DATE-- 27 FEB 76
SAMPLE NUMBER, LABORATORY-- L-2-3, QUALITY WATER LABORATORY, INC.
SAMPLE LOCATION-- WELLHEAD
CONDITION OF WELL DURING SAMPLING-- FLOWING AT 10 GPM

PHYSICAL DATA
PH= 8.30 TEMP DURING READING= 25 C
TOT DISS SOLIDS= 2950.00 MG/L, RESIDUE ON EVAPORATION
TOTAL ALKALINITY = 1340.00
OTHER DATA--
TOTAL ALKALINITY = 1340 MG/L, AS CACO3

BRINE DATA
METHOD OF ANALYSIS-- USGS WATER RESOURCES INVESTIGATIONS 22-74
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	167	
NA	980	
K	40	
CA	.1	
MG	.1	
CL	600	
F	2.5	
SO4	64	
PO4	.4	
HCO3	1340	BICARBONATE AS CACO3
CO3	0	CARBONATE AS CACO3
CO2	4	FREE CO2
B	4.5	
FE	2.3	

BIBLIOGRAPHIC DATA
SOURCES--
SMITH 77

RECORD 163
CODE NAME=HOLTZ 1
SAMPLE TYPE=WATER

WELL HOLTZ 1
HEBER KGRA
LOCATION-- T16S, R14E, SEC. 32, 1081FT E, 195FT S, FROM CENTER SECTION.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA ENERGY INC.
DATE DRILLED-- 9 MAR 72 - 4 APR 72

PHYSICAL DATA
TOT DISS SOLIDS= 13168.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	268	
NA	5500	
K	220	
LI	4	
CA	1062	
MG	5.6	
CL	7420	
F	1.7	
SO4	100	
AL	15	
B	4.1	
BA	6	
CU	.5	
FE	15	
MN	.9	
PB	1.6	
SR	37	
ZN	.3	

BIBLIOGRAPHIC DATA
SOURCES--
EPRI 76A
WITHAM 76

RECORD 164
CODE NAME=HOLTZ 2
SAMPLE TYPE=WATER

WELL HOLTZ 2
HEBER KGRA
LOCATION-- T16S, R14E, SEC. 31, 1640FT E, 200FT S, FROM CENTER SECTION.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA ENERGY INC.
DATE DRILLED-- 3 JUN 72 - 23 JUN 72

PHYSICAL DATA
PH= 7.40
TOT DISS SOLIDS= 16330.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	187	
NA	4720	
K	231	
LI	4.1	
CA	1062	
MG	23	
CL	8242	
F	1.5	
SO4	148	
AL	12	
B	8	
BA	3	
CU	.4	
FE	5	
MN	.9	
PB	.6	
SR	42	
ZN	.1	

BIBLIOGRAPHIC DATA
SOURCES--
EPRI 76A
WITHAM 76

RECORD 165
CODE NAME=C.B. JACKSON 1
SAMPLE TYPE=WATER

WELL C.B. JACKSON 1
HEBER KGRA
LOCATION-- T16S, R14E, SEC. 32, 1262FT S, 1639FT W, FROM NE CORNER.

WELL INFORMATION
OWNER-- CHEVRON OIL CO.
DATE DRILLED-- 13 AUG 74 - 13 SEP 74

PHYSICAL DATA
PH= 5.80
TOT DISS SOLIDS= 15430.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	267	
NA	4688	
K	181	
LI	2.8	
CA	891	
MG	4.7	
CL	8320	
F	.9	
SO4	152	
AL	.5	
B	4.8	
BA	3	
CU	.4	
FE	20	
MN	1.3	
PB	.6	
SR	32	
ZN	.4	

BIBLIOGRAPHIC DATA
SOURCES--
EPRI 76A
WITHAM 76

RECORD 166
CODE NAME=J.D. JACKSON 1
SAMPLE TYPE=WATER

WELL J.D. JACKSON 1
HEBER KGRA
LOCATION-- T16S, R14E, SEC. 33, 1445FT S, 975FT E, FROM NW CORNER.

WELL INFORMATION
OWNER-- CHEVRON OIL CO.
DATE DRILLED-- 30 JUN 74 - 5 AUG 74

PHYSICAL DATA
PH= 6.50
TOT DISS SOLIDS= 15275.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	268	
NA	4563	
K	197	
LI	3.4	
CA	781	
MG	3.8	
CL	8076	
F	.6	
SO4	150	
AL	18	
B	5.2	
BA	3	
CU	.4	
FE	10	
MN	1.9	
PB	.9	
SR	36	
ZN	.5	

BIBLIOGRAPHIC DATA
SOURCES--
EPRI 76A
WITHAM 76

RECORD 167
CODE NAME=NOWLIN 1
SAMPLE TYPE=WATER

WELL NOWLIN 1
HEBER KGRA
LOCATION-- T16S, R14E, SEC. 33, 2873FT S, 3554FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- CHEVRON OIL CO.
DATE DRILLED-- 10 MAR 72 - 13 NOV 72

WELL DATA
COMMENT-- GEOTHERMAL WATERS AT HEBER ARE PRODUCED FROM A DEPTH OF 600 TO 1900M.

PHYSICAL DATA
PH= 7.10
TOT DISS SOLIDS= 14100.00 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	120	
NA	3600	
K	360	
LI	6.6	
CA	880	
MG	2.4	
CL	9000	
F	1.6	
SO4	100	
HCO3	20	
CO3	4	
AL	.04	
B	4.8	
CU	.2	
FE	.9	
PB	.1	
ZN	.68	
CO2	-----	TRACE
H2S	-----	TRACE

THERE ARE ONLY TRACES OF CO2, H2S AND OTHER NONCONDENSABLE GASES IN THE HEBER GEOTHERMAL FLUIDS.

BIBLIOGRAPHIC DATA
SOURCES--
EPRI 76A
WITHAM 76

RECORD 168
CODE NAME=LASL GT-2
SAMPLE TYPE=WATER

WELL LASL GT-2
JEMEZ RIVER BASIN
LOCATION-- T19N, R2E, SEC.13, NE QUARTER
SANDOVAL COUNTY, N.M., USA

WELL INFORMATION
OWNER-- LOS ALAMOS SCIENTIFIC LAB.
DATE DRILLED-- 19 FEB 74 - 9 DEC 74

WELL DATA
DEPTH ----- 2928 METERS
TEMPERATURE 197 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 18 MAR 74
CONDITION OF SAMPLE-- SAMPLE TAKEN DURING DRILLING OPERATION. NO WATER SOURCE AT BOTTOM HOLE.

PHYSICAL DATA
PH= 7.40
SP. CONDUCTANCE= 2920.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 2500.00 PPM, SUM
OTHER DATA--
TOTAL HARDNESS AS CACO3 = 370 PPM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	115	
NA	550	
CA	78	
MG	42	
CL	400	
F	3.1	
SO4	200	
HCO3	1300	

ANALYSIS REPRESENTATIVE OF GROUND WATER IN AREA.

BIBLIOGRAPHIC DATA
SOURCES--
SUMMERS 76
WITHAM 76
PURTYMUN 74
DENNIS 74
WEST 75A
PETTITT 75B
BLAIR 76

OTHER NOTES
SAMPLE REPRESENTATIVE OF WATER IN THE LOWER MADERA LIMESTONE FORMATION. THIS FLUID WILL NOT BE USED IN RECOVERY OF GEOTHERMAL HEAT.

RECORD 169
CODE NAME=CHANCE 1

WELL CHANCE 1
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 35
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. (NATURAL STEAM CORP.), MAGMA POWER CO.
DATE DRILLED-- 20 SEP 61 - 1 NOV 61

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 170
CODE NAME=ENDOGENOUS 1
SAMPLE TYPE=TOTAL

WELL ENDOGENOUS 1
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 184FT N, 655FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 31 JUL 60 - 17 AUG 60

WELL DATA
DEPTH ----- 192 METERS
TEMPERATURE 178 C AT 122 METERS
FLOW INFORMATION-- 69300 LB/HR STEAM, 473000 LB/HR WATER AT 39 PSIG AND 148C.

SAMPLING INFORMATION
SAMPLING METHOD-- SAMPLE TAKEN FROM WELLHEAD AFTER COOLING. NO STEAM FLASHED.

PHYSICAL DATA
PH= 8.86

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	250	
NA	380	
K	47	
CL	276	
SO4	61	

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 171
CODE NAME=ENDOGENOUS 1B
SAMPLE TYPE=WATER

WELL ENDOGENOUS 1
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 184FT N, 655FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 31 JUL 60 - 17 AUG 60

WELL DATA
DEPTH ----- 192 METERS
TEMPERATURE 178 C AT 122 METERS

SAMPLING INFORMATION
SAMPLING METHOD-- SAMPLE TAKEN FROM WELLHEAD IMMEDIATELY AFTER FLOWING.
CONDITION OF SAMPLE-- SOME WATER FLASHED TO STEAM.

PHYSICAL DATA
PH= 7.50

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	278	
CA	2	
MG	-----	TRACE
NA	236	
K	62	
LI	4	
FE	5	
AL	2	
B	60	
CL	266	
SO4	108	

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 172
CODE NAME=ENDOGENOUS 2
SAMPLE TYPE=TOTAL

WELL ENDOGENOUS 2
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 516FT N, 431FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 21 AUG 60 - 10 SEP 60

WELL DATA
DEPTH ----- 247 METERS
TEMPERATURE 174 C AT 122 METERS
FLOW INFORMATION-- 45000 LB/HR STEAM, 233500 LB/HR WATER AT 38.5 PSIG, 181 C.

SAMPLING INFORMATION
SAMPLING METHOD-- SAMPLE TAKEN FROM WELLHEAD AFTER COOLING. NO STEAM FLASHED.

PHYSICAL DATA
PH= 8.61

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	250	
NA	375	
K	45	
CL	276	
SO4	62	

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 173
CODE NAME=ENDOGENOUS 3

WELL ENDOGENOUS 3
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC.32, 866FT N, 159FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 12 SEP 60 - 28 SEP 60

WELL DATA
DEPTH ----- 174 METERS
TEMPERATURE 172 C AT MAXIMUM
FLOW INFORMATION-- 19000 LB/HR STEAM, 330000 LB/HR WATER, AT 30 PSIG AND 157 C.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 174
CODE NAME=ENDOGENOUS 4
SAMPLE TYPE=TOTAL

WELL ENDOGENOUS 4
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 797FT N, 884FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 2 NOV 61 - 26 DEC 61

WELL DATA
DEPTH ----- 156 METERS

SAMPLING INFORMATION
SAMPLING METHOD-- SAMPLE TAKEN FROM WELLHEAD AFTER COOLING. NO STEAM FLASHED.

PHYSICAL DATA
PH= 6.50

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	200	
CA	4	
NA	308	
K	32	
LI	.3	
B	11	
CL	227	
SO4	96	
H2S	14	
F	20	
NH3	.1	
CO2	180	
AS	.2	

NONCONDENSABLE GAS IN STEAM=0.87 PERCENT BY WT. 98.64 PERCENT OF GAS BY WT IS CO2, 1.36 PERCENT H2S.

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76
DWR 76

RECORD 175
CODE NAME=ENDOGENOUS 5

WELL ENDOGENOUS 5
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 888FT N, 720FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 28 JUN 62 - 24 AUG 62

WELL DATA
DEPTH ----- 323 METERS

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 176
CODE NAME=ENDOGENOUS 6

WELL ENDOGENOUS 6
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 1192FT N, 1789FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 27 AUG 62 - 24 SEP 62

WELL DATA
DEPTH ----- 230 METERS

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 177
CODE NAME=ENDOGENOUS 7

WELL ENDOGENOUS 7
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 972FT N, 533FT E, FROM W Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- ENDOGENOUS POWER CO. AND MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 28 AUG 62 - 25 SEP 62

WELL DATA
DEPTH ----- 204 METERS

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 178
CODE NAME=MAMMOTH 1
SAMPLE TYPE=WATER

WELL MAMMOTH 1
MONO-LONG VALLEY KGRA
LOCATION-- T3S, R28E, SEC. 32, 1240FT N, 3034FT E, FROM N Q.COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER CO., MAGMA ENERGY CO.
DATE DRILLED-- 27 NOV 59 - 6 DEC 59

WELL DATA
DEPTH ----- 324 METERS
TEMPERATURE 148 C AT MAXIMUM
FLOW INFORMATION-- 25000 LB/HR STEAM, 471000 LB/HR WATER AT 7.5 PSIG AND 132 C.

SAMPLING INFORMATION
SAMPLING METHOD-- SAMPLE TAKEN FROM WELLHEAD IMMEDIATELY AFTER FLOWING.
CONDITION OF SAMPLE-- SOME WATER FLASHED TO STEAM.

PHYSICAL DATA
PH= 8.00

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	292	
CA	30	
MG	-----	TRACE
NA	247	
K	71	
LI	3	
FE	4	
AL	1	
B	49	
CL	301	
SO4	124	

BIBLIOGRAPHIC DATA
SOURCES--
MC NITT 63
WITHAM 76

RECORD 179
CODE NAME=STATE PRC 4397.1--1

WELL STATE PRC 4397.1--1
MONO-LONG VALLEY KGRA
LOCATION-- T1N, R27E, SEC. 17, 262FT N, 330FT E, FROM SW COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S.GEOLOGICAL SURVEY AND SOUTHERN CALIFORNIA EDISON
DATE DRILLED-- 13 SEP 71 - 27 SEP 71

WELL DATA
DEPTH ----- 1237 METERS
TEMPERATURE 54 C AT 1220 METERS
RESERVOIR LITHOLOGY-- VOLCANIC ASH AND SEDIMENTS TO 550 M; SAND, SILTSTONE WITH SOME VOLCANIC ASHES TO 1180; GRANITE GNEISS TO 1237 M.
COMMENT-- WELL DRILLED VERTICALLY TO 304.5 M, THEN AT AN ANGLE SO BOTTOM HOLE IS 561 FT N32E FROM DRILLING SITE.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WHITE 74
AXTELL 72
WITHAM 76

RECORD 180
CODE NAME=STATE PRC 4572.1--23.1

WELL STATE PRC 4572.1--23.1
MONO-LONG VALLEY KGRA
LOCATION-- T2N, R26E, SEC. 23, 600FT S, 400FT E FROM NW COR.
MONO COUNTY, CA., USA

WELL INFORMATION
OWNER-- U.S.GEOLOGICAL SURVEY AND SOUTHERN CALIFORNIA EDISON.
DRILLING COMPANY-- GETTY OIL CO.
DATE DRILLED-- 18 NOV 71 - 28 NOV 71

WELL DATA
DEPTH ----- 744 METERS
TEMPERATURE 58 C AT 744 METERS
RESERVOIR LITHOLOGY-- UNCONSOLIDATED CINDERS TO 75 M; SAND, SILTSTONE, VOLCANIC ASH TO 530; GRANODIORITE TO 744 M.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WHITE 74
AXTELL 72
WITHAM 76

RECORD 181
CODE NAME=HAWAII GEOTHERMAL HGP-A A
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

WELL INFORMATION
OWNER-- U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION, UNIVERSITY OF HAWAII.
DATE DRILLED-- 10 DEC 75 - 27 APR 76

WELL DATA
DEPTH ----- 1964 METERS
TEMPERATURE 280 C AT 1420 METERS

SAMPLING INFORMATION
DATE-- 3 JUL 76
SAMPLE NUMBER, LABORATORY-- II-1
SAMPLE LOCATION-- WELLHEAD
CONDITION OF SAMPLE-- AFTER STEAM FLASHED

PHYSICAL DATA
PH= 6.50

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	151	
NA	350	
CL	610	
SO4	160	
HCO3	27	
CR	< .1	
HG	< .0001	
PB	.3	

AFTER STEAM FLASHED

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 182
CODE NAME=HAWAII GEOTHERMAL HGP-A B
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 4 AUG 76
SAMPLE LOCATION-- WELLHEAD

PHYSICAL DATA
PH= 5.10
SP. CONDUCTANCE= 3050.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SI	200	
CL	880	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 183
CODE NAME=HAWAII GEOTHERMAL HGP-A C
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 12 AUG 76
SAMPLE LOCATION-- WELLHEAD

PHYSICAL DATA
PH= 5.50
SP. CONDUCTANCE= 2900.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SI	240	
CL	930	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 184
CODE NAME=HAWAII GEOTHERMAL HGP-A D
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 19 AUG 76
SAMPLE LOCATION-- WELLHEAD

PHYSICAL DATA
PH= 5.20
SP. CONDUCTANCE= 3250.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SI	370	
CL	1000	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 185
CODE NAME=HAWAII GEOTHERMAL HGP-A E
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 19 AUG 76
SAMPLE LOCATION-- 300M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 5.60
SP. CONDUCTANCE= 2700.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SI	210	
CL	830	
HG	.0444	
S	190	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 186
CODE NAME=HAWAII GEOTHERMAL HGP-A F
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 12 OCT 76
SAMPLE LOCATION-- 300M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 4.90
SP. CONDUCTANCE= 1980.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SI	220	
CL	725	
HG	.0263	
S	250	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 187
CODE NAME=HAWAII GEOTHERMAL HGP-A G
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 17 AUG 76
SAMPLE LOCATION-- 692M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 5.30
SP. CONDUCTANCE= 3200.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	300	
CL	950	
HG	.0024	

LEAK SUSPECTED IN SAMPLING DEVICE.

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 188
CODE NAME=HAWAII GEOTHERMAL HGP-A H
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 12 OCT 76
SAMPLE LOCATION-- 692M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 1.40
SP. CONDUCTANCE= 3450.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	620	
CL	730	
HG	.0036	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 189
CODE NAME=HAWAII GEOTHERMAL HGP-A I
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 30 OCT 76
SAMPLE LOCATION-- 692M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 2.30
SP. CONDUCTANCE= 3650.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	630	
CL	685	
HG	.0009 +-.00048	
S	210	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 190
CODE NAME=HAWAII GEOTHERMAL HGP-A J
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 18 AUG 76
SAMPLE LOCATION-- 915M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 2.30
SP. CONDUCTANCE= 4450.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	530	
CL	710	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 191
CODE NAME=HAWAII GEOTHERMAL HGP-A K
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 19 AUG 76
SAMPLE LOCATION-- 1310M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 5.30
SP. CONDUCTANCE= 2950.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	270	
CL	900	
HG	.0035	
S	300	

LEAK SUSPECTED IN SAMPLING DEVICE.

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 192
CODE NAME=HAWAII GEOTHERMAL HGP-A L
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 29 OCT 76
SAMPLE LOCATION-- 1310M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 2.70
SP. CONDUCTANCE= 2700.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	630	
CL	685	
HG	.0008 +-.00041	
S	210	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 193
CODE NAME=HAWAII GEOTHERMAL HGP-A M
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 12 OCT 76
SAMPLE LOCATION-- 1675M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 1.90
SP. CONDUCTANCE= 3050.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	650	
CL	735	
HG	.0075	

LEAK SUSPECTED IN SAMPLING DEVICE.

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 194
CODE NAME=HAWAII GEOTHERMAL HGP-A N
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 19 AUG 76
SAMPLE LOCATION-- 1770M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 2.50
SP. CONDUCTANCE= 4400.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	340	
CL	800	
HG	.0032	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 195
CODE NAME=HAWAII GEOTHERMAL HGP-A O
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 19 AUG 76
SAMPLE LOCATION-- 1770M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 3.50
SP. CONDUCTANCE= 2550.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	430	
CL	780	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 196
CODE NAME=HAWAII GEOTHERMAL HGP-A P
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 29 OCT 76
SAMPLE LOCATION-- 1770M BELOW WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 3.40
SP. CONDUCTANCE= 2600.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	630	
CL	850	
HG	.0005 +-.00064	
S	210	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 197
CODE NAME=HAWAII GEOTHERMAL HGP-A Q
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 19 AUG 76
SAMPLE LOCATION-- 1920M BELOW WELLHEAD
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 3.00
SP. CONDUCTANCE= 2800.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	190	
CL	660	
HG	.0016	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 198
CODE NAME=HAWAII GEOTHERMAL HGP-A R
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL HGP-A
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 30 OCT 76
SAMPLE LOCATION-- 1920M BELOW WELLHEAD
SAMPLING METHOD-- SAMPLE TAKEN WITH DOWNHOLE SAMPLING DEVICE.

PHYSICAL DATA
PH= 3.50
SP. CONDUCTANCE= 1650.00 MICROMHOS/CM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SI	630	
CL	440	
HG	.0067	
S	370	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 77

RECORD 199
CODE NAME=HAWAII GEOTHERMAL 3A
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL 3
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

WELL DATA
TEMPERATURE 93 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 7 JAN 75

PHYSICAL DATA
PH= 6.85

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	96.6	
NA	2050	
K	190	
CA	76.8	
MG	52	
CL	3274	
SO4	314	
HCO3	30	
N	.003	NO2 + NO3
P	.006	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 76
KAMINS 77

RECORD 200
CODE NAME=HAWAII GEOTHERMAL 3B
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL 3
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 21 JUL 75

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	2000	
K	195	
CA	81	
MG	59	
CL	3410	
SO4	335	
N	.32	NO2 + NO3 + NH4
P	.076	
SR	1.4	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 76

RECORD 201
CODE NAME=HAWAII GEOTHERMAL 3C
SAMPLE TYPE=WATER

WELL HAWAII GEOTHERMAL 3
PUNA GEOTHERMAL FIELD
HAWAII COUNTY, HAWAII, USA

SAMPLING INFORMATION
DATE-- 21 JUL 75
SAMPLE LOCATION-- TAKEN 15 - 20M BELOW WATER SURFACE.
CONDITION OF SAMPLE-- TEMPERATURE = 74 C.

PHYSICAL DATA
PH= 1.40

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	1740	
K	158	
CA	71	
MG	62.5	
CL	2980	
SO4	317	
HCO3	20	
P	.053	
SR	1.2	

BIBLIOGRAPHIC DATA
SOURCES--
SHUPE 76

RECORD 202
CODE NAME=RAFT RIVER 1A
SAMPLE TYPE=WATER

WELL RRGE 1
RAFT RIVER KGRA
LOCATION-- T15S, R26E, SEC 23, 31
CASSIA COUNTY, ID., USA

WELL INFORMATION
OWNER-- ERDA, AEROJET NUCLEAR COMPANY
DATE DRILLED-- 4 JAN 75 - 31 MAR 75

WELL DATA
DEPTH ----- 1521 METERS
TEMPERATURE 146 C AT 1521 METERS
PRESSURE, SHUT-IN-- 170 PSI - HOT
2003 PSI - AT BOTTOM HOLE
FLOW INFORMATION-- 650 GPM--AVERAGE.
PRODUCTION INTERVAL-- 1326-1494M
RESERVOIR LITHOLOGY-- RESERVOIR IN TUFF WITH INTERMITTENT INTERBEDDED SILTSTONE.

SAMPLING INFORMATION
DATA ARE COMPILATION OF CHEM ANALYSES TO 30 SEP 75.

BRINE DATA
UNITS-- PPM UNITS FOR GASES-- ML/L AT STP

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	91	
CL	605	
F	5.4	+-.3
HCO3	71	AS CACO3
CO3	-----	ND
NA	359	
K	25	
CA	51	
MG	1.9	
H2	.53	
HE	.027	
N2	31.9	
O2	.1	
AR	.66	
CO2	5.8	

BIBLIOGRAPHIC DATA
SOURCES--
KUNZE 758

RECORD 203
CODE NAME=RAFT RIVER 1B
SAMPLE TYPE=WATER

WELL RRGE 1
RAFT RIVER KGRA
LOCATION-- T15S, R26E, SEC 23, 31
CASSIA COUNTY, ID., USA

WELL INFORMATION
OWNER-- ERDA, AEROJET NUCLEAR COMPANY
DATE DRILLED-- 4 JAN 75 - 31 MAR 75

WELL DATA
DEPTH ----- 1521 METERS
TEMPERATURE 146 C AT 1521 METERS

SAMPLING INFORMATION
CONDITION OF SAMPLE-- PRESSURIZED SAMPLES, 96C (BOILING T AT ELEVATION)
CONDITION OF WELL DURING SAMPLING-- CASED HOLE, FULL FLOW.
SAMPLES TAKEN AFTER WELL ALLOWED TO FLOW FREELY.

PHYSICAL DATA
PH= 7.23 PH RANGE= 7.05-7.40
SP. CONDUCTANCE= 2800.00 MICROMHOS/CM
OTHER DATA--
SALINITY GIVEN AS 1715 MICRO-G/ML OR PPM.
NA ABSORPTION=19.5

BRINE DATA
UNITS-- PPM UNITS FOR GASES-- ML/L AT STP

CONSTITUENT	CONCENTRATION	COMMENT
AG	-----	ND
AL	-----	MINOR-TRACE
B	.2	
BA	< .4	
BE	< .002	
CA	57	
CD	-----	ND
CO	-----	ND
CR	-----	MINOR-TRACE
CU	-----	TRACE
FE	.32	
K	26.7	
LI	1.25	
MG	.76	
MN	.07	
NA	400	
NI	3.7	
PB	-----	TRACE
P	.016	
SI	46	
SN	-----	ND
SR	1.44	
TI	-----	TRACE-MINOR
V	-----	ND
ZR	-----	MINOR
ZN	-----	ND
CL	614	
BR	<2.5	
I	.036	
F	5.4	
PO4	.05	CALCULATED FROM TOTAL PHOS CONTENT.
SO4	61	
S	< .2	
NO3	.44	
HCO3	45.4	CALCULATED FROM CA(HCO3)2 CONTENT.
CO3	8.8	CALCULATED FROM CACO3 CONTENT.
SIO2	102	AVERAGE OF CALCULATIONS FROM TOT. SIO2 AND TOT. SI(OH)4.
NH4	1.99	
SI(OH)4	167.2	
H2	.28	
HE	.02	
N2	50.5	
O2	.06	
AR	.82	
CO2	.5	

TOTAL GAS AT STP = 56.7 ML/L.

BIBLIOGRAPHIC DATA
SOURCES--
KUNZE 75

RECORD 204
CODE NAME=RRGE 1C
SAMPLE TYPE=NONCONDENSABLE GASES

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 6 FEB 76
SAMPLE NUMBER, LABORATORY-- 1-60206-G
SAMPLING METHOD-- SAMPLE OF GAS AND LIQUID COLLECTED INTO 1L EVACUATED STAINLESS STEEL BOMB.
CONDITION OF SAMPLE-- VOLUME GAS COLLECTED = 12.2ML
SAMPLE RECEIVED FOR ANALYSIS 10 FEB 76. ANALYSIS LOG NUMBER 76-587 RRIX 702066.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
CO2	7.21	
N2	90.16	
O2	.459	
A	1.89	
HE	.148	
H2	.049	
CH4	.369	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 205
CODE NAME=RRGE 1D
SAMPLE TYPE=NONCONDENSABLE GASES

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 6 FEB 76
SAMPLE NUMBER, LABORATORY-- 1-60206-F
SAMPLING METHOD-- SAMPLE OF GAS AND LIQUID COLLECTED INTO 1L EVACUATED STAINLESS STEEL BOMB.
CONDITION OF SAMPLE-- VOLUME GAS COLLECTED = 31.8ML AT STP.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING
SAMPLE RECEIVED FOR ANALYSIS 10 FEB 76. ANALYSIS LOG NUMBER 76-587 RRIXX 702066.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
CO2	4.5	
N2	86.16	
O2	7.55	
A	1.35	
HE	.082	
CH4	.22	
H2	.025	

SAMPLE POSSIBLY CONTAMINATED BY AIR.

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 206
CODE NAME=RRGE 1E
SAMPLE TYPE=WATER

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 4 APR 75
SAMPLE NUMBER, LABORATORY-- 1-50404-F
CONDITION OF SAMPLE-- ATMOSPHERIC PRESSURE, 97 C.
SAMPLE RECEIVED FOR ANALYSIS 7 APR 75. ANALYSIS LOG NUMBER 75-2053.

PHYSICAL DATA
PH= 7.14
TOT DISS SOLIDS= 1215.00 PPM, SUM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE-- NA-K-CA, 161 C. QUARTZ, 134 C.
COMMENT-- PH IN QUESTION

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	94.9	
NA	314	
K	21	
LI	.93	
CA	59	
MG	3.9	
CL	553	
F	4.3	+-0.2
BR	<2.5	
I	.036	
SO4	61	
P	.021	+-0.006
NH4	1.3	
HCO3	101	
CO3	<2	
B	.2	
FE	.05	
MN	.06	
SI	39	
SR	1.1	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 207
CODE NAME=RRGE 1F
SAMPLE TYPE=NONCONDENSABLE GASES

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 23 MAR 75
SAMPLE NUMBER, LABORATORY-- 1-50323-C
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE OF GAS AND LIQUID COLLECTED INTO 1L EVACUATED STAINLESS STEEL BOMB.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.
SAMPLING DATE MAY HAVE BEEN 22 MAR 75. SAMPLE RECEIVED FOR ANALYSIS 25 MAR 75. ANALYSIS LOG NUMBER 75-1669.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTIT-UENT	CONCEN-TRATION	COMMENT
CO2	14.8	
N2	81	
O2	.25	
A	1.7	
HE	.07	
H2	-----	
SO2	-----	ND

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 208
CODE NAME=RRGE 1G
SAMPLE TYPE=WATER

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 23 MAR 75
SAMPLE NUMBER, LABORATORY-- 1-50323-B
SAMPLING METHOD-- COLLECTED IN PLASTIC CONTAINER.
CONDITION OF SAMPLE-- GRAB SAMPLE, UNDILUTED, COLLECTED AT 160 PSI. VOLUME COLLECTED = 1L.
SAMPLE RECEIVED FOR ANALYSIS 24 MAR 75. ANALYSIS LOG NUMBER 75-1669.

PHYSICAL DATA
TOT DISS SOLIDS= 1319.00 PPM, SUM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE--NA-K-CA, 166C. QUARTZ, 133 C.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	91.8	
NA	368	
K	25	
LI	1.1	
CA	52	
MG	1.9	
CL	611	
F	5.5	+-0.3
BR	<2.5	
I	.035	
SO4	63	
S	< .2	
NO3	.19	
P	< .003	
NH4	4.53	
HCO3	86.6	
CO3	-----	ND
B	.3	
BA	< .4	
FE	3.2	
MN	.08	
NI	3.5	
SI	44	
SR	1.3	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 209
CODE NAME=RRGE 1H
SAMPLE TYPE=WATER

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 17 MAR 75
SAMPLE NUMBER, LABORATORY-- 1-50317-C
SAMPLING METHOD-- FILTERED, COLLECTED IN STAINLESS STEEL BOMB.
CONDITION OF WELL DURING SAMPLING-- SAMPLE TAKEN AFTER REPAIR OF COLLAPSED CASING.
SAMPLE RECEIVED FOR ANALYSIS 18 MAR 75. ANALYSIS LOG NUMBER 75-1574.

PHYSICAL DATA
TOT DISS SOLIDS= 1812.00 PPM, SUM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE-- NA-K-CA, 167 C. QUARTZ, 150 C.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	125	
NA	543	
K	34	
LI	1.8	
CA	56	
MG	.32	
CL	936	
F	7.1	+-0.4
BR	<2.5	
I	.039	
SO4	59	
S	< .2	
NO3	.4	
P	.012	+-0.003
NH4	1.8	
HCO3	22.7	
CO3	22.3	
BA	< .4	
BE	< .0002	
FE	.4	
SI	61	
SR	2	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 210
CODE NAME=RRGE 1I
SAMPLE TYPE=WATER

WELL RRGE 1
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 10 FEB 75
SAMPLE NUMBER, LABORATORY-- 1-50210-D
SAMPLING METHOD-- 500ML COLLECTED IN PLASTIC CONTAINER.
CONDITION OF SAMPLE-- GRAB SAMPLE, UNDILUTED.
SAMPLE ANALYSIS LOG NUMBER 75-854.

PHYSICAL DATA
TOT DISS SOLIDS= 1614.00 PPM, SUM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE-- NA-K-CA, 163 C. QUARTZ, 142 C.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	108.6	
NA	456	
K	29	
LI	1.4	
CA	69	
MG	3	
CL	806	
F	6.2	+-0.6
BR	<1	
I	.037	
SO4	62	
S	< .2	
NO3	< .5	
NH4	< .2	
HCO3	71.4	
BA	< .5	
BE	< .005	
SI	64	
SR	1.6	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 211
CODE NAME=RAFT RIVER 2A
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
LOCATION-- T15S, R26E, SEC 23, 111
CASSIA COUNTY, ID., USA

WELL INFORMATION
OWNER-- ERDA, AEROJET NUCLEAR COMPANY
DATE DRILLED-- 27 APR 75 - 27 JUN 75

WELL DATA
DEPTH ----- 1825 METERS
TEMPERATURE 147 C AT 1825 METERS
143 C AT 1289 METERS
PRESSURE, SHUT-IN-- 150 PSI--HOT.
FLOW INFORMATION-- AVERAGE--800 GPM.
PRODUCTION INTERVAL-- 1310-1525 METERS
RESERVOIR LITHOLOGY-- PRODUCTION INTERVAL IN SAND AND GRAVEL, CALCAREOUS TUFF, QUARTZITE WITH MINOR SCHIST, QUARTZ MONZONITE.
COMMENT-- HOLE WITH 13.38 IN. CASING TO 1289M.

SAMPLING INFORMATION
DATA ARE COMPILATION OF CHEM ANALYSES TO 30 SEP 75.

PHYSICAL DATA
TOT DISS SOLIDS= 2000.00 PPM

BRINE DATA
UNITS-- PPM UNITS FOR GASES-- ML/L AT STP.

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	170	
CL	661	
F	7.6	+-.4
HCO3	42	AS CACO3
CO3	-----	ND
NA	389	
K	35	
CA	38	
MG	.1	
H2	1.29	
HE	.023	
N2	23	
C2	.042	
AR	.38	
CO2	.79	

BIBLIOGRAPHIC DATA
SOURCES--
KUNZE 75B

RECORD 212
CODE NAME=RAFT RIVER 2B
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
LOCATION-- T15S, R26E, SEC. 23, 111
CASSIA COUNTY, ID., USA

WELL INFORMATION
OWNER-- ERDA, AEROJET NUCLEAR COMPANY

WELL DATA
DEPTH ----- 1825 METERS
TEMPERATURE 147 C AT 1825 METERS

SAMPLING INFORMATION
CONDITION OF SAMPLE-- PRESSURIZED SAMPLES, 96C (BOILING T AT ELEVATION).
CONDITION OF WELL DURING SAMPLING-- CASED HOLE, FULL FLOW.
SAMPLES TAKEN AFTER WELL ALLOWED TO FLOW FREELY.

PHYSICAL DATA
PH= 7.74 PH RANGE= 7.38-8.10
OTHER DATA--
NA ABSORPTION RATIO=16.4.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
AL	-----	MINOR-TRACE
AS	< .05	
B	.25	
BA	< .4	
BE	< .0001	
CA	48	
CR	-----	MINOR
CU	-----	TRACE
FE	-----	M-M
HG	-----	ND
K	36.3	
LI	1.2	
MG	1.23	
MN	.06	
NA	433	
NI	3.6	
PB	-----	TRACE
P	.01	
SI	59.3	
SR	1.37	
TI	-----	MINOR
ZR	-----	TRACE
CL	804	
BR	<1.5	
I	.053	
F	7.64	
SO4	53	
S	< .1	
HCO3	63.6	AN AVERAGE OF PRESSURIZED SAMPLES (GREATEST CONCENTRATION WITH PRESSURE).
CO3	16.1	FROM NON-PRESSURIZED SAMPLE (GREATEST CONCENTRATION WITHOUT PRESSURE).
SIO2	129	AVERAGE OF CALCULATIONS FROM TOT. SIO2 AND TOT. SI(OH)4
NH4	.33	
SI(OH)4	193.7	

BIBLIOGRAPHIC DATA
SOURCES--
KUNZE 75

RECORD 213
CODE NAME=RRGE 2C
SAMPLE TYPE=NONCONDENSABLE GASES

WELL RRGE 2
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 16 OCT 76
SAMPLE NUMBER, LABORATORY-- 2-51016-E
SAMPLING METHOD-- SAMPLE OF GAS AND LIQUID COLLECTED INTO 1L EVACUATED STAINLESS STEEL BOMB.
CONDITION OF SAMPLE-- COLLECTED AT 104 PSI AND 133 C. GAS/LIQUID RATIO = 468 ML/L AT STP.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING.
SAMPLE ANALYSIS LOG NUMBER 75-5876-9 RR 2910165.

BRINE DATA
UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
CO2	.58	
N2	80.4	
O2	18	
A	.983	
H2	.049	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 214
CODE NAME=RRGE 2D
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 3 JUN 75
SAMPLE NUMBER, LABORATORY-- 2-50603-B
SAMPLE LOCATION-- WELLHEAD
CONDITION OF WELL DURING SAMPLING-- WELL DRILLED TO 1465M. WELL FLOWED 4 HRS, THEN CLOSED BEFORE SAMPLING.
SAMPLE RECEIVED FOR ANALYSIS 4 JUN 75. ANALYSIS LOG NUMBER 75-3690.

PHYSICAL DATA
PH= 7.38
TOT DISS SOLIDS= 1596.00 PPM, SUM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE-- NA-K-CA, 179 C. QUARTZ, 156 C.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	136	
NA	442	
K	37	
LI	1.2	
CA	57	
MG	1.8	
CL	784	
F	7.33	
BR	<1.5	
I	.05	
SO4	54	
S	< .1	
P	.011	+-0.007
HCO3	74.4	
CO3	-----	ND
B	.3	
BA	< .4	
BE	< .0001	
FE	.8	
MN	.06	
NI	.9	
SR	1.4	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 215
CODE NAME=RRGE 2E
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 9 JUL 75
SAMPLE NUMBER, LABORATORY-- 2-50709-D
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- COLLECTED IN 1L PLASTIC BOTTLE.
CONDITION OF SAMPLE-- UNFILTERED.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWED 5 HRS. TEMP = 66 C, PRESSURE = 132 PSI AT SAMPLING TIME.
SAMPLE ANALYSIS LOG NUMBER 75-4129-11

PHYSICAL DATA
PH= 7.46
TOT DISS SOLIDS= 1341.00 PPM, SUM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- NA-K-CA, 194 C. QUARTZ, 128 C.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	83.7	
NA	395	
K	42	
LI	1.02	
CA	37	
MG	.4	
CL	644	
F	8.7	+-.5
BR	<1.5	
I	.012	
SO4	58	
HCO3	59.5	
NH4	.43	
B	2	
BA	<4	
BE	< .001	
NI	8.2	
P	< .2	
S	< .1	
SI	43	
SR	1.03	
ZR	.5	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 216
CODE NAME=RRGE 2F
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 21 JUL 75
SAMPLE NUMBER, LABORATORY-- 2-50721-C
SAMPLE LOCATION-- WELLHEAD
CONDITION OF SAMPLE-- UNFILTERED.
ANALYSIS LOG NUMBER 75-4341 (5).

PHYSICAL DATA
PH= 6.93
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- NA-K-CA, 180 C. QUARTZ, 145 C.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	114	
NA	397	
K	33	
LI	1.04	
CA	37	
MG	.1	
CL	648	
F	7.15	+-.33
BR	<1.5	
I	.04	
SO4	53.5	
HCO3	38.2	
NH4	.56	
BA	<4	
BE	< .001	
MN	.2	
P	.016	+-.007
SI	60	
SR	1.1	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 217
CODE NAME=RRGE 2G
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 24 JUL 75
SAMPLE NUMBER, LABORATORY-- 2-50724-E
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- COLLECTED IN STAINLESS STEEL BOMB.
CONDITION OF WELL DURING SAMPLING-- TEMP. = 128 C, PRESSURE = 110 PSI.
SAMPLE ANALYSIS LOG 75-4472 (4).

PHYSICAL DATA
SPECIFIC GRAVITY= .998
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- NA-K-CA, 182 C. QUARTZ, 162 C.
COMMENT-- SPECIFIC GRAVITY ERROR, +-.0008

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	150	
NA	394	
K	34	
LI	1	
CA	38	
MG	.2	
CL	753	
F	9	+-.5
I	.01	
SO4	55	
HCO3	44.6	
NH4	.22	
BA	<4	
BE	< .001	
NI	.4	
P	< .01	
S	< .1	
SI	71	
SR	1	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 218
CODE NAME=RRGE 2H
SAMPLE TYPE=WATER

WELL RRGE 2
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 16 OCT 75
SAMPLE NUMBER, LABORATORY-- 2-51016-D
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED IN STAINLESS STEEL BOMB.
CONDITION OF SAMPLE-- SAMPLE HEATED TO 220 C FOR 8 HRS.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWED AT 400 GPM FOR 30 DAYS, THEN SHUT IN 2 HRS BEFORE SAMPLING. AT SAMPLING TIME, TEMP = 126 C, PRESSURE = 108 PSI.
SAMPLE ANALYSIS LOG 75-5898 (RR2110165)

PHYSICAL DATA
PH= 6.96
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- NA-K-CA, 187 C. QUARTZ, 129 C.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	86.8	
NA	408	
K	36	
LI	1.1	
CA	27.5	
MG	.038	
CL	678	
F	7.4	+-.3
HCO3	37.9	
NH4	1.2	
BA	<4	
MN	.55	
NI	.66	
P	.02	+-.01
SI	40.4	
SR	.9	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 219
CODE NAME=RRGE 3A
SAMPLE TYPE=WATER

WELL RRGE 3
RAFT RIVER KGRA
LOCATION-- T15S, R26E, SEC. 25, 14
CASSIA COUNTY, ID., USA

WELL INFORMATION
OWNER-- ERDA

WELL DATA
DEPTH ----- 1809 METERS
TEMPERATURE 147 C AT WELLHEAD
148 C AT BOTTOM HOLE
FLOW INFORMATION-- 800 GPM, NO PUMPING
COMMENT-- WELL DRILLED WITH 3 BRANCHING LEGS TO INCREASE PRODUCTION. LEG A DRILLED TO 1784M, B TO 1686M, C TO 1809M. HORIZONTAL COORDINATES OF BOTTOM HOLES FROM WELLHEAD LOCATION--A, N24M, W369M. B, N23M, W37M. C, N89M, W120M.

SAMPLING INFORMATION
SAMPLE LOCATION-- WELLHEAD
CONDITION OF SAMPLE-- PRELIMINARY SAMPLE--WELL NOT FLOWED FOR ANY SUBSTANTIAL PERIOD.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SI(OH)4	193	
SI	67	TOTAL SI
NA	1156	
K	91	
LI	3.1	
CA	193	
CL	2001	
F	4.3	
I	.24	
SO4	32	
NH4	.47	
HCO3	53	
P	.25	TOTAL P
SR	6.4	

BIBLIOGRAPHIC DATA
SOURCES--
ALLEN 77
KUNZE 76

RECORD 220
CODE NAME=RRGE 3B
SAMPLE TYPE=WATER

WELL RRGE 3
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 11 APR 76
SAMPLE NUMBER, LABORATORY-- 3-60411
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE DILUTED WITH 9 VOLUMES OF DEMINERALIZED WATER. FILTERED THROUGH 5 MICRON FILTER. NO RESIDUE RETAINED.
CONDITION OF WELL DURING SAMPLING-- WELL DRILLED TO 1160M, LEG A. FLOW RATE USING AIR-LIFT, WAS 225 GPM, TEMP. AT WELLHEAD WAS 88 C.
SAMPLE RECEIVED FOR ANALYSIS 16 APR 76. ANALYSIS LOG NUMBER 76-2240.

PHYSICAL DATA
PH= 6.80
TOT DISS SOLIDS= 5664.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	114	
NA	1790	
K	43	
LI	3.9	
CA	280	
MG	2.7	
CL	3310	
F	4.4	+-1.5
SO4	67	
NH4	.15	
HCO3	40.6	
CO3	-----	ND
SI	42	
SR	8.7	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 221
CODE NAME=RRGE 3C
SAMPLE TYPE=WATER

WELL RRGE 3
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 15 APR 76
SAMPLE NUMBER, LABORATORY-- 3-60415
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE DILUTED WITH 9 VOLUMES OF DEMINERALIZED WATER. FILTERED THROUGH 5 MICRON FILTER. NO RESIDUE RETAINED.
CONDITION OF WELL DURING SAMPLING-- WELL DRILLED TO 1284M, LEG A. FLOW STIMULATED USING AIR LIFT.
SAMPLE RECEIVED FOR ANALYSIS 16 APR 76. ANALYSIS LOG NUMBER 76-2240.

PHYSICAL DATA
PH= 6.70
TOT DISS SOLIDS= 6006.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	80.5	
NA	1940	
K	46	
LI	4.2	
CA	283	
MG	2.1	
CL	3540	
F	4.5	+-1.5
SO4	61	
NH4	1.6	
HCO3	32.5	
CO3	-----	ND
SI	46	
SR	10	

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 222
CODE NAME=RRGE 3D
SAMPLE TYPE=WATER

WELL RRGE 3
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 26 MAY 76
SAMPLING METHOD-- COLLECTED IN STAINLESS STEEL BOMB, DILUTED AND FILTERED.
CONDITION OF WELL DURING SAMPLING-- TEMP. = 134 C, PRESSURE = 35 PSI.
SAMPLE RECEIVED FOR ANALYSIS 27 MAY 76. ANALYSIS LOG NUMBER 76-3144.

PHYSICAL DATA
SP. CONDUCTANCE= 9003.00 MICROMHOS/CM TEMP DURING READING=AMBIENT

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	149	
NA	1193	
K	87.5	
LI	3.1	
CA	206	
MG	.9	
CL	2418	
F	-----	ND
BR	-----	ND
I	-----	ND
SO4	30.8	
HCO3	56.3	
CO3	-----	ND
NH4	-----	ND
NI	-----	ND
P	-----	ND
SI	72	
SR	7.2	

ND MEANS NONE DETECTED.

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 223
CODE NAME=RRGE 3E
SAMPLE TYPE=WATER

WELL RRGE 3
RAFT RIVER KGRA
CASSIA COUNTY, ID., USA

SAMPLING INFORMATION
DATE-- 14 JUN 76
SAMPLING METHOD-- COLLECTED IN STAINLESS STEEL BOMB, DILUTED.
CONDITION OF WELL DURING SAMPLING-- TEMP = 138 C, PRESSURE = 90 PSI
SAMPLE RECEIVED FOR ANALYSIS 17 JUN 76. ANALYSIS LOG 76-3616.

PHYSICAL DATA
SP. CONDUCTANCE= 11000.00 MICROMHOS/CM TEMP DURING READING=AMBIENT

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	159	
NA	1200	
K	100	
LI	3	
CA	209	
MG	.5	
CL	2330	
F	-----	ND
BR	-----	ND
I	-----	ND
CO3	-----	ND
HCO3	44.7	
NH4	-----	ND
B	-----	ND
CU	.08	
NI	-----	ND
P	-----	ND
SI	69	
SR	7	

ND MEANS NONE DETECTED.

BIBLIOGRAPHIC DATA
SOURCES--
MCATEE 77

RECORD 224
CODE NAME=PHILLIPS 3-1
SAMPLE TYPE=WATER

WELL PHILLIPS 3-1
ROOSEVELT HOT SPRINGS KGRA
LOCATION-- APPROX. 500FT S OF PHILLIPS 54-3 WELL.
BEAVER COUNTY, UT., USA

WELL INFORMATION
OWNER-- PHILLIPS PETROLEUM CO.
WELL BLEW OUT, IS NOW CONTAINED AND CONTROLLED.

WELL DATA
TEMPERATURE 205 C AT BOTTOM HOLE
COMMENT-- TEMPERATURE AT BOTTOM HOLE IS >205 C.

SAMPLING INFORMATION
DATE-- 25 MAY 75
SAMPLE NUMBER, LABORATORY-- PHILLIPS PETROLEUM CO.

PHYSICAL DATA
PH= 6.30
TOT DISS SOLIDS= 7067.00 PPM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- NA-K-CA, 273 C. NA-K, 294 C. QUARTZ, 263 C.
COMMENT-- QUARTZ SATURATION TEMPERATURE QUESTIONABLE.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	560	CONCENTRATION QUESTIONABLE
NA	2437	
K	448	
LI	20	
CA	8	
MG	.01	
CL	4090	
F	5	
SO4	59	
NO3	.1	
HCO3	180	
B	25	

BIBLIOGRAPHIC DATA
SOURCES--
PARRY 76
PHILLIPS 76
PARRY 76B

RECORD 225
CODE NAME=PHILLIPS 9-1
SAMPLE TYPE=WATER

WELL PHILLIPS 9-1
ROOSEVELT HOT SPRINGS KGRA
LOCATION-- T27S8 R9W, SEC. 9, 2638FT E, 962FT S, 18 DEGREE W, FROM NW CORNER.
BEAVER COUNTY, UT., USA

WELL INFORMATION
OWNER-- PHILLIPS PETROLEUM CO.
DATE DRILLED-- 13 MAR 75 - 8 APR 75
WELL ALSO NAMED U-27388 9-1

WELL DATA
COMMENT-- WELL CASED TO ABOUT 1500FT, FLOWS FROM BELOW CASING.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- UNIV. OF UTAH
SAMPLE NOT ACIDIFIED OR FILTERED, COLLECTED FROM FLOWING WELL AT APPROX. 30 C TEMPERATURE.

PHYSICAL DATA
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- QUARTZ, 170 C. NA-K-CA, 262 C.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	170	POSSIBLY LOW BY X2
NA	2210	
K	425	
CA	83	
CL	3800	
SO4	122	

BIBLIOGRAPHIC DATA
SOURCES--
PARRY 76
WITHAM 76
PARRY 76B

RECORD 226
CODE NAME=PHILLIPS 54-3A
SAMPLE TYPE=WATER

WELL PHILLIPS 54-3
ROOSEVELT HOT SPRINGS KGRA
LOCATION-- T27S, R9W, SEC. 3, 2210FT S; 2219FT W, FROM NE CORNER.
BEAVER COUNTY, UT., USA

WELL INFORMATION
OWNER-- PHILLIPS PETROLEUM CO.
DATE DRILLED-- 5 JUL 75 - 28 AUG 75
WELL ALSO NAMED U-27386 54-3

WELL DATA
TEMPERATURE 260 C AT BOTTOM HOLE
COMMENT-- TEMPERATURE AT BOTTOM HOLE IS >260 C.

SAMPLING INFORMATION
DATE-- 26 AUG 75
SAMPLE NUMBER, LABORATORY-- PHILLIPS PETROLEUM CO.

PHYSICAL DATA
PH= 6.50
TOT DISS SOLIDS= 6442.00 PPM
OTHER DATA--
GEOTHERMOMETER TEMPERATURE -- NA-K-CA, 294 C. NA-K, 290 C.
QUARTZ, 263+ C. AMORPHOUS SILICA, 139+ C.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	560	CONCENTRATION 560+
NA	2000	
K	410	
LI	19	
CA	10.1	
MG	.24	
CL	3400	
F	5	
SO4	54	
NO3	-----	TRACE
HCO3	200	
B	29	

BIBLIOGRAPHIC DATA
SOURCES--
PARRY 76
PHILLIPS 76
PARRY 76B
WITHAM 76

RECORD 227
CODE NAME=PHILLIPS 54-3B
SAMPLE TYPE=WATER

WELL PHILLIPS 54-3
ROOSEVELT HOT SPRINGS KGRA
LOCATION-- T27S, R9W, SEC. 3, 2210FT S, 2219FT W, FROM NE CORNER.
BEAVER COUNTY, UT., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- CHEMICAL AND MINERALOGICAL SERVICES
ANALYST

PHYSICAL DATA
SPECIFIC GRAVITY= 1.004

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	775	
NA	2400	
K	565	
LI	18	
CA	9	
MG	19	
CL	4800	
BR	7	
SO4	200	
AG	.09	
AS	3.5	
B	45	
CO	.15	
CR	.01	
CU	.03	
MN	.15	
MO	.04	
NI	.18	
PB	.1	
ZN	.04	

BIBLIOGRAPHIC DATA
SOURCES--
PARRY 76
WITHAM 76

RECORD 228
CODE NAME=DEARBORN--MAGMA ENERGY 1

WELL DEARBORN--MAGMA ENERGY 1
SALTON SEA GEOTHERMAL AREA
LOCATION-- T12S, R13E, SEC. 30, 925FT S, 2390FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA, USA

WELL INFORMATION
OWNER-- MAGMA ENERGY
DATE DRILLED-- 22 JAN 72 - 31 JAN 72
WELL ABANDONED, DRY HOLE.

WELL DATA
DEPTH ----- 1260 METERS

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76
INFORMATION UNPUBLISHED, FROM CALIF. DIV. OF OIL AND GAS.

RECORD 229
CODE NAME=DEARBORN-REPUBLIC GEOTHERMAL 1

WELL DEARBORN-REPUBLIC GEOTHERMAL 1
SALTON SEA GEOTHERMAL AREA
LOCATION-- T12S, R13E, SEC. 30, 2765FT S, 2425FT E, FROM NW CORNER.

WELL INFORMATION
OWNER-- REPUBLIC GEOTHERMAL, INC.
NEW WELL, PRODUCES STEAM.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
INFORMATION UNPUBLISHED, FROM CALIF. DIV. OF OIL AND GAS.

RECORD 230
CODE NAME=ELMORE 1
SAMPLE TYPE=WATER

WELL ELMORE 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 27, 330FT S, 400FT E, FROM W QUARTER
CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER COMPANY
DRILLING COMPANY-- EARTH ENERGY, INC.
DATE DRILLED-- 28 MAR 64 - 20 MAY 64
WELL ALSO NAMED J.J. ELMORE 1.

WELL DATA
DEPTH ----- 2170 METERS
TEMPERATURE 360 C AT MAXIMUM
FLOW INFORMATION-- 316000 LB/HR WITH 35 PERCENT STEAM.

SAMPLING INFORMATION
CONDITION OF SAMPLE-- TEMP=191.1 C.

PHYSICAL DATA
PH= 4.90
TOT DISS SOLIDS= 318000.00 MG/L, RESIDUE ON EVAPORATION
OTHER DATA--
ENTHALPY=285 CAL/G.

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
NA	62800	
K	20800	
LI	270	
CA	31500	
MG	16	
CL	185000	
SO4	49	
HCO3	40	
AL	< 15	
B	350	
BA	480	
CR	<1	
CU	12	
FE	2500	
MN	570	
PB	100	
SR	1050	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
HOFFMANN 75
WITHAM 76
PALMER 75B

RECORD 231
CODE NAME=ELMORE 3

WELL ELMORE 3
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 27, 250FT N, 200FT E, FROM SW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
DATE DRILLED-- 28 MAR 74 - 6 APR 74
WELL STATUS--STEAM WELL, SUSPENDED (NEITHER ABANDONED NOR CAPABLE OF PRODUCTION).

WELL DATA
DEPTH ----- 761 METERS
PRODUCTION INTERVAL-- WELL CASED TO 760M, PERFORATED 608-760M.

BRINE DATA
NO BRINE DATA AVAILABLE

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76
PALMER 75B

RECORD 232
CODE NAME=HUDSON 1A
SAMPLE TYPE=WATER

WELL HUDSON 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 13, 200FT S, 175FT E, FROM CENTER SECTION.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER CO.
DRILLING COMPANY-- EARTH ENERGY INC.
DATE DRILLED-- 8 JUN 64 - 16 JUL 64
WELL ABANDONED IN 1971.

WELL DATA
DEPTH ----- 1864 METERS
TEMPERATURE 260 C AT MAXIMUM
FLOW INFORMATION-- 432333 LB/HR, 22 PERCENT STEAM DURING 4-DAY TEST IN AUGUST, 1964. OTHER REPORT--570 GPM.
PRODUCTION INTERVAL-- 1767 TO 1858M.
COMMENT-- WELL USED AS INJECTION WELL.

SAMPLING INFORMATION
CONDITION OF SAMPLE-- TEMP=180 C.

PHYSICAL DATA
PH= 2.50
TOT DISS SOLIDS= 308000.00
OTHER DATA--
ENTHALPY=225 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	45500	
K	20800	
LI	319	
CA	38700	
MG	25	
CL	178000	
SO4	18	
AL	< .1	
B	650	
BA	85	
CR	<1	
CU	6	
FE	1500	
MN	1300	
PB	140	
SR	280	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
HARDT 76
WITHAM 76
MUFFLER 69
HOFFMANN 75
PALMER 75B

RECORD 233
CODE NAME=HUDSON 1B
SAMPLE TYPE=WATER

WELL HUDSON 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 13, 200FT S, 175FT E, FROM CENTER SECTION.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER CO.
DRILLING COMPANY-- EARTH ENERGY INC.
DATE DRILLED-- 8 JUN 64 - 16 JUL 64
WELL ABANDONED IN 1971.

WELL DATA
DEPTH ----- 1864 METERS
TEMPERATURE 260 C AT MAXIMUM
COMMENT-- WELL USED AS INJECTION WELL.

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	60000	
K	20300	
CA	30400	
FE	2900	
MN	2200	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
WITHAM 76
HOFFMANN 75
MUFFLER 69
HARDT 76
CALIFORNIA 70

RECORD 234
CODE NAME=IID 1A
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 1285FT S, 1310FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- O'NEILL GEOTHERMAL, INC.
DATE DRILLED-- 18 JAN 62 - 8 AUG 62
WELL ABANDONED 1977.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE
FLOW INFORMATION-- 625500 LB/HR, 200 PSI, 25 PERCENT STEAM--90 DAY TEST, 1962. 172000 LB/HR, 585 PSI, 10 PERCENT STEAM--8 DEC 65.
PRODUCTION INTERVAL-- CASING PERFORATED 1491-1586M.

SAMPLING INFORMATION
DATE-- 21 APR 1966
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY
CONDITION OF SAMPLE-- TEMP = 300 C.

PHYSICAL DATA
PH= 5.20 TEMP DURING READING= 20 C
TOT DISS SOLIDS= 257800.00 PPM, SUM.

BRINE DATA
METHOD OF ANALYSIS-- CONSIDERED BEST VALUES FROM SAMPLES OF BRINE-AFTER-FLASHING AND STEAM CONDENSATE.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	400	
NA	50400	
K	17500	
CA	28000	
LI	215	
MG	54	
CL	155000	
F	15	
BR	120	
SO4	5.4	
NH4	409	
HCO3	150	
AG	1.4	
AL	4.2	
AU	0	
B	390	
BA	235	
CD	2	
CS	14	
HG	.006	
FE	2290	SOME REPORTS GIVE 2090
MN	1400	SOME REPORTS GIVE 1560
PB	102	
RB	135	
S	16	TOTAL SULFIDE AS H2S
SB	.4	
SN	.5	
SR	400	
TL	1.5	
ZN	540	

BIBLIOGRAPHIC DATA
SOURCES--
WHITE 68
SKINNER 67
MUFFLER 69
PALMER 75B
DRI 76
WITHAM 76
MCNITT 63
LANDE 77

RECORD 235
CODE NAME=IID 1B
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 1285FT S, 1310FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- O'NEILL GEOTHERMAL, INC.
DATE DRILLED-- 18 JAN 62 - 8 AUG 62

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE
FLOW INFORMATION-- 625500 LB/HR, 200 PSI, 25 PERCENT STEAM--90 DAY TEST, 1962. 172000 LB/HR, 585 PSI, 10 PERCENT STEAM--8 DEC 1965.
PRODUCTION INTERVAL-- CASING PERFORATED 1491-1586M.

PHYSICAL DATA
PH= 5.50 PH RANGE= 5-6
SPECIFIC GRAVITY= 1.264 TEMP DURING READING=20 C
TOT DISS SOLIDS= 319000.00 PPM, RESIDUE ON EVAPORATION
= 310000.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	> 110	
NA	51000	
K	25000	
LI	300	
CA	40000	
MG	35	SOME TABLES GIVE 730
CL	185000	
F	18	
BR	146	
I	22	
SO4	56	
NO3	35	
NH4	482	
AG	1	
AL	450	
AS	.15	
B	520	
BA	200	
CS	20	
CU	10	
HG	.008	
FE	3200	
MN	2000	
PB	104	
RB	169	
SB	.5	
SN	.65	
SR	750	
ZN	970	

DATA NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
WHITE 65
CDWR 70
PALMER 75B
WITHAM 76

RECORD 236
CODE NAME=IID 1C
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 1285FT S, 1310FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- O'NEILL GEOTHERMAL, INC.
DATE DRILLED-- 18 JAN 62 - 8 AUG 62

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 3 MAR 62
SAMPLE DATE INDICATES THIS SAMPLE IS A DRILL STEM TEST.

PHYSICAL DATA
PH= 5.90
SPECIFIC GRAVITY= 1.239 TEMP DURING READING=25 C
TOT DISS SOLIDS= 278000.00 PPM, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	10	
NA	55500	
K	18200	
CA	30500	
CL	168000	
SO4	30	
B	745	
FE	2000	
MN	1300	

DATA PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 237
CODE NAME=IID 1D
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- MAY 62
CONDITION OF SAMPLE-- TEMP. = 220 C.

PHYSICAL DATA
PH= 5.10
SPECIFIC GRAVITY= 1.235 TEMP DURING READING=25 C

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	26	
NA	76000	
K	29900	
CA	34430	
MG	486	
CL	200000	
B	432	
FE	3416	
MN	30	

DATA PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 238
CODE NAME=IID 1E
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 27 JUL 62
SAMPLE NUMBER, LABORATORY-- SMITH-EMERY COMPANY
CONDITION OF SAMPLE-- TEMP = 206 C

PHYSICAL DATA
PH= 4.00
TOT DISS SOLIDS= 345300.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	4	
NA	73000	
K	27000	
LI	425	
CA	34030	
MG	1701	
CL	192000	
SO4	67.9	
B	449	
FE	2500	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 239
CODE NAME=IID 1F
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 7 JUN 62

PHYSICAL DATA
PH= 5.20
SP. CONDUCTANCE= 217000.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 393000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	87000	
K	250	
CA	38000	
MG	3000	
CL	280000	
B	440	
FE	3200	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
HARDT 76

RECORD 240
CODE NAME=IID 1G
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 9 AUG 62

PHYSICAL DATA
TOT DISS SOLIDS= 313000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	49	
NA	66000	
K	24000	
LI	310	
CA	33000	
MG	0	
CL	220000	
B	140	
FE	2400	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
HARDT 76

RECORD 241
CODE NAME=IID 1H
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
PH= 2.30
TOT DISS SOLIDS= 319000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	< 10	
NA	51000	
K	25000	
LI	300	
CA	40000	
MG	730	
CL	185000	
F	18	
BR	146	
SO4	57	
NO3	35	
NH4	482	
AL	450	
B	300	
BA	200	
FE	3200	
MN	2000	
SR	410	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 242
CODE NAME=IID 1I
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
AS	15	
CU	3.7	
ZN	970	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 243
CODE NAME=IID 1J
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
LI	270	
MG	33	
AL	<7	
B	530	
BA	220	
CR	.5	
CU	10	
FE	2300	
MN	2500	
NI	2.2	
PB	110	
SR	1200	
ZN	< 400	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 244
CODE NAME=IID 1K
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
PH= 5.30
TOT DISS SOLIDS= 326000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT		CONCENTRATION	COMMENT
LI		260	
MG		42	
AL	<	450	
B		420	
BA		360	
CU		59	
FE		2000	
MN		4600	
PB		114	
SR		590	
ZN	<	400	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 245
CODE NAME=IID 1L
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
TOT DISS SOLIDS= 332000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	54000	
K	24400	
LI	321	
CA	40500	
MG	558	
CL	184000	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 246
CODE NAME=IID 1M
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
PH= 2.40
TOT DISS SOLIDS= 332000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
LI	398	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 247
CODE NAME=IID 1N
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
PH= 2.30
TOT DISS SOLIDS= 317000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
CL	181000	
LI	444	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 248
CODE NAME=IID 1O
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL CCUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
TOT DISS SOLIDS= 300000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1500	
NA	51000	
K	20000	
LI	290	
CA	33000	
MG	37	
CL	182300	
BR	40	
AL	22	
AS	7	
B	410	
BA	230	
BE	< .1	
CR	.16	
CU	26	
FE	2600	
MN	2000	
NI	.48	
PB	120	
SR	470	
ZN	600	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 249
CODE NAME=IID 1P
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
TOT DISS SOLIDS= 270600.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	54100	
K	17800	
LI	330	
CA	30400	
MG	140	
CL	163800	
SO4	16	
AL	1400	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 250
CODE NAME=IID 1Q
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
TOT DISS SOLIDS= 366300.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	55700	
K	22100	
LI	250	
CA	26600	
MG	700	
CL	257200	
AL	1400	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 251
CODE NAME=IID 1R
SAMPLE TYPE=WATER

WELL IID 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.

WELL DATA
DEPTH ----- 1591 METERS
TEMPERATURE 316 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 31 MAY 73
SAMPLE NUMBER, LABORATORY-- U.S. GEOLOGICAL SURVEY, MENLO PARK, CA.
CONDITION OF SAMPLE-- TEMP = 315.5 C

PHYSICAL DATA
PH= 5.20
TOT DISS SOLIDS= 370100.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	80	
NA	79000	
K	33000	
LI	600	
CA	36340	
MG	972	
CL	250000	
B	513.6	
FE	3073	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 252
CODE NAME=IID 2A
SAMPLE TYPE=WATER

WELL IID 2
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 22, 3300FT S, 660FT W, FROM NE CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- SHELL DEVELOPMENT COMPANY.
DATE DRILLED-- 25 NOV 63 - 20 DEC 63
WELL ABANDONED 1977.

WELL DATA
DEPTH ----- 1769 METERS
TEMPERATURE 330 C AT MAXIMUM.
FLOW INFORMATION-- 440000 LB/HR AT 225 PSI AND 18 PERCENT STEAM--MARCH,1964. 350000 LB/HR AT 263 PSI AND 16 PERCENT STEAM--MARCH,1964.
PRODUCTION INTERVAL-- CASING PERFORATED 1060-1125 M.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SHELL DEVELOPMENT COMPANY AND COLORADO SCHOOL OF MINES RESEARCH FOUNDATION.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING FROM FRACTURE ZONE AT 1100M. MEASURED TEMPERATURE AT THIS DEPTH-- 320 C.

PHYSICAL DATA
PH= 4.64 TEMP DURING READING= 20 C
TOT DISS SOLIDS= 259000.00 PPM, SUM
OTHER DATA--
ENTHALPY=235 CAL/G
COMMENT-- PH IS CALCULATED.

BRINE DATA
METHOD OF ANALYSIS-- DATA ARE AVERAGES OF SEVERAL HUNDRED ANALYSES.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	400	
NA	53000	
K	16500	
LI	210	
CA	27800	
MG	10	
CL	155000	
CO2	500	TOTAL CARBONATE
AG	<1	
B	390	
BA	250	
CS	20	
CU	3	
FE	2000	
MN	1370	
PB	80	
RB	70	
S	30	TOTAL SULFUR
SR	440	
ZN	500	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
HELGESON 67
HELGESON 68
SKINNER 67
CDWR 70
WHITE 68
PALMER 75B
HOFFMANN 75
WITHAM 76
DRI 76
DOE 66
HARDT 76
LANDE 77

RECORD 253
CODE NAME=IID 2B
SAMPLE TYPE=WATER

WELL IID 2
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL DATA
DEPTH ----- 1769 METERS
TEMPERATURE 330 C AT MAXIMUM

SAMPLING INFORMATION
CONDITION OF SAMPLE-- TEMP = 348.8 C

PHYSICAL DATA
TOT DISS SOLIDS= 273000.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	510	
NA	54800	
K	18400	
LI	195	
CA	27600	
MG	85	
CL	160000	
BR	106	
NO3	16	
AL	22	
B	630	
BA	254	
CR	< .6	
CU	10	
FE	2880	
MN	1520	
NI	< .6	
PB	132	
SR	543	
ZN	475	

DATA NOT VERIFIED.
DATA ARE SELECTED FROM VALUES GIVEN IN RECORDS 'IID 2C' AND 'IID 2D' AND CORRECTED FOR 15.3 PERCENT STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 254
CODE NAME=IID 2C
SAMPLE TYPE=WATER

WELL IID 2
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL DATA
DEPTH ----- 1769 METERS
TEMPERATURE 330 C AT MAXIMUM

SAMPLING INFORMATION
CONDITION OF SAMPLE-- TEMP = 348.8 C.

PHYSICAL DATA
PH= 5.40
TOT DISS SOLIDS= 322000.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	600	
NA	64700	
K	21700	
LI	230	
CA	32600	
MG	100	
CL	189000	
BR	125	
NO3	19	
NH4	376	
HCO3	136	
B	740	
BA	35	
FE	3400	
MN	1700	
SR	640	

DATA NOT VERIFIED. PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 255
CODE NAME=IID 2D
SAMPLE TYPE=WATER

WELL IID 2
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL DATA
DEPTH ----- 1769 METERS
TEMPERATURE 330 C AT MAXIMUM

SAMPLING INFORMATION
CONDITION OF SAMPLE-- TEMP = 348.8 C.

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	400	
MG	60	
AL	26	
B	370	
BA	300	
CR	< .7	
CU	12	
FE	2970	
MN	1400	
NI	< .7	
PB	156	
SR	520	
ZN	560	

DATA NOT VERIFIED. PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 256
CODE NAME=IID 3
SAMPLE TYPE=WATER

WELL IID 3
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 100FT S, 2640FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DATE DRILLED-- MAR 1965
WELL ABANDONED 1977.

WELL DATA
DEPTH ----- 517 METERS
TEMPERATURE 200 C AT MAXIMUM
188 C AT BOTTOM HOLE
PRODUCTION INTERVAL-- NEAR 480 METERS.

SAMPLING INFORMATION
DATE-- 18 MAR 65
SAMPLE NUMBER, LABORATORY-- C.E. ROBERTSON
SAMPLE LOCATION-- WELLHEAD
CONDITION OF SAMPLE-- BRINE BEFORE STEAM FLASHED. TEMP = 105 C.
SOME TABLES GIVE TEMP = 146 C.

PHYSICAL DATA
PH= 7.50 TEMP DURING READING= 25 C
SPECIFIC GRAVITY= 1.023 TEMP DURING READING=25 C
SP. CONDUCTANCE= 47600.00 MICROMHOS/CM
TOT DISS SOLIDS= 34700.00 PPM, SUM
= 34800.00 MG/L, RESIDUE ON EVAPORATION
COMMENT-- ERROR DETECTED IN DATA--SUM OF CONCENTRATIONS = 35963.

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	120	
NA	10600	
K	1250	
LI	40	
CA	1130	
MG	74	
CL	19700	
F	1	
BR	15	
I	4.5	
SO4	621	
NO3	9	
NH4	321	
HCO3	574	SOME TABLES GIVE 1880
AL	2	
AS	.16	
B	100	
BA	3	
FE	.7	
MN	6.4	
SR	85	

VALUES CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
MUFFLER 69
COWR 70
HOFFMANN 75
WITHAM 76
HELGESON 68
HARDT 76
DRI 76
PALMER 75B
LANDE 77

RECORD 257
CODE NAME=LANDERS 2

WELL LANDERS 2
SALTON SEA GEOTHERMAL AREA
LOCATION-- T12S, R13E, SEC. 20, 2540FT S, 210FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- REPUBLIC GEOTHERMAL INC.
DATE DRILLED-- 10 FEB 76 - 4 MAR 76

WELL DATA
DEPTH ----- 2288 METERS

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76

RECORD 258
CODE NAME=MAGMAMAX 1A
SAMPLE TYPE=WATER

WELL MAGMAMAX 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 1120FT E, 200FT N, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
LESSEE--SAN DIEGO GAS AND ELECTRIC CO.
DATE DRILLED-- 6 JAN 72 - 21 JAN 72
U.S. BUREAU OF MINES AND SAN DIEGO GAS AND ELECTRIC CO. ARE WORKING ON DEVELOPMENT OF MAGMAMAX 1.

WELL DATA
DEPTH ----- 875 METERS
TEMPERATURE 240 C AT WELLHEAD
265 C AT MAXIMUM
FLOW INFORMATION-- HIGH AS 400-500 GPM REPORTED. 50 GPM AT 350 PSI AND 240 C. 542000 LB/HR AT 160 PSI, 13 PERCENT STEAM.
PRODUCTION INTERVAL-- WELL CASED TO 686M, PERFORATED 544-686M.

SAMPLING INFORMATION
DATE-- 13 - 16 JUNE, 1976
SAMPLE NUMBER, LABORATORY-- U.S. BUREAU OF MINES MOBILE CHEMISTRY LAB.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE DRAWN FROM PORT AT SIDE OF PIPE, COOLED, COLLECTED INTO 1L NALGENE BOTTLES. ATOMIC ABSORPTION SAMPLES COLLECTED INTO CONC. HNO3. CARBONATE SAMPLES COLLECTED INTO 3 PERCENT HNO3
CONDITION OF WELL DURING SAMPLING-- LARGE FLOW RATE--400-500 GPM.

PHYSICAL DATA
PH= 5.14 PH RANGE= +-.11 TEMP DURING READING= AMBIENT
OTHER DATA--
ENTHALPY = 250 CAL/G.

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ABSORPTION, STANDARD ADDITION METHOD, AVERAGE OF 3 RUNS. CL BY TITRATION.
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
NA	46200	+-6100
K	7360	+-644
LI	192	+-17
CA	61500	+-13200
CL	135900	+-3070
HCO3	4472	+-1570, TOTAL CARBONATE
CU	77	+-29
FE	273	+-68
PB	59	+-15
SR	415	+-98

CONCENTRATIONS ARE THE AVERAGE OF SAMPLES TAKEN REGULARLY DURING TEST RUN 13-16 JUN, 76. HCO3--7 DAYS IN OCT. 76. RANGES GIVEN ARE STANDARD DEVIATION OF AVERAGE.

BIBLIOGRAPHIC DATA
SOURCES--
USBM 76B
WITHAM 76
HOFFMANN 75
BULK OF DATA PRESENTED IN UNPUBLISHED REPORT TO BE PUBLISHED IN 1977 BY U.S. BUREAU OF MINES.

RECORD 259
CODE NAME=MAGMAMAX 1B
SAMPLE TYPE=WATER

WELL MAGMAMAX 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 1120FT E, 200FT N, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
LESSEE--SAN DIEGO GAS AND ELECTRIC CO.
DATE DRILLED-- 6 JAN 72 - 21 JAN 72
U.S. BUREAU OF MINES AND SAN DIEGO GAS AND ELECTRIC CO. ARE WORKING ON DEVELOPMENT OF MAGMAMAX 1.

WELL DATA
DEPTH ----- 875 METERS
TEMPERATURE 240 C AT WELLHEAD
265 C AT MAXIMUM
FLOW INFORMATION-- HIGH AS 400-500 GPM REPORTED. 50 GPM AT 350 PSI AND 240C. 542000 LB/HR AT 160 PSI, 13 PERCENT STEAM.
PRODUCTION INTERVAL-- WELL CASED TO 686M, PERFORATED 544-686M.

SAMPLING INFORMATION
DATE-- AUGUST 8,9 1976
SAMPLE NUMBER, LABORATORY-- U.S. BUREAU OF MINES MOBILE CHEMISTRY LAB.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE DRAWN FROM PORT AT SIDE OF PIPE, COOLED, COLLECTED INTO 1L NALGENE BOTTLES. ATOMIC ABSORPTION SAMPLES COLLECTED INTO CONC. HNO3.
CONDITION OF WELL DURING SAMPLING-- THROTTLED FLOW, 50 GPM, 350 PSI, 240 C.

PHYSICAL DATA
PH= 5.22 PH RANGE= +-0.15 TEMP DURING READING= AMBIENT
OTHER DATA--
ENTHALPY = 250 CAL/G.
COMMENT-- PH MONITORED DURING TEST RUN 8-6 TO 8-9-76.

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ABSORPTION, STANDARD ADDITION METHOD, AVERAGE OF 3 RUNS. SAMPLES DILUTED 1/10 + 3 PERCENT HNO3, OR 1/100 + 3 PERCENT ACID (NA AND CA). CL ANALYSIS BY AGNO3 TITRATION USING 2,4-DICHLOROFLUORESCEIN INDICATOR.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	46900	+-300
K	9310	+-180
LI	149	+-14
CA	17400	3-3700
CL	114000	+-8000
CU	16.5	+-.6
FE	451	+-65
PB	48.8	+-3.7
SR	783	+-6

CONCENTRATIONS ARE THE AVERAGE OF SAMPLES TAKEN REGULARLY DURING A TEST RUN 8,9 AUG, 76. CL TESTS 6-9 AUG, 76. RANGES GIVEN ARE STANDARD DEVIATION OF AVERAGE.

BIBLIOGRAPHIC DATA
SOURCES--
USBM 76B
WITHAM 76
HOFFMANN 75
PALMER 75B
BULK OF DATA PRESENTED IN UNPUBLISHED REPORT TO BE PUBLISHED IN 1977 BY U.S. BUREAU OF MINES.

RECORD 260
CODE NAME=MAGMAMAX 1C
SAMPLE TYPE=WATER

WELL MAGMAMAX 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 1120FT E, 200FT N, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
LESSEE--SAN DIEGO GAS AND ELECTRIC CO.
DATE DRILLED-- 6 JAN 72 - 21 JAN 72

WELL DATA
DEPTH ----- 875 METERS
TEMPERATURE 240 C AT WELLHEAD
265 C AT MAXIMUM

SAMPLING INFORMATION
DATE-- 14 MAR 74
SAMPLE NUMBER, LABORATORY-- DESERT RESEARCH INSTITUTE, BOULDER CITY, NEV.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE FILTERED, COLLECTED INTO 1L POLY. BOTTLE, ACIDIFIED WITH HNO3. 10ML DILUTED TO 100 ML FOR SIO2 ANALYSIS.
CONDITION OF SAMPLE-- BRINE AFTER STEAM FLASHED.

PHYSICAL DATA
PH= 6.10
SP. CONDUCTANCE= 226297.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 203406.00 MG/L, SUM

BRINE DATA
METHOD OF ANALYSIS-- METALS BY AA; NH4 BY SPECIFIC ION ELECTRODE; AS, HG, SE, BY SPECIAL METHOD INVOLVING AA. SEE SANDERS AND MILES (1974) FOR FURTHER DETAILS.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	435	
NA	47300	
K	7960	
LI	75.6	
CA	23600	
MG	110	
CL	123389	
F	12	
SO4	< 10	
PO4	< .8	
NH4	570	
HCO3	61.6	
AG	.43	
AS	.187	
BA	55.3	
BE	.08	
BI	5	
CD	1.12	
CR	.3	
CS	250	
FE	172	
HG	.014	
NI	1.05	
PB	36.2	
RB	50.4	
SB	6.7	
SE	< .001	
SN	2.2	
SR	102.4	
ZN	283	

BIBLIOGRAPHIC DATA
SOURCES--
SANDERS 74
WITHAM 76
DRI 76
HOFFMANN 75

RECORD 261
CODE NAME=MAGMAMAX 1D
SAMPLE TYPE=WATER

WELL MAGMAMAX 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 1120FT E, 200FT N, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
DATE DRILLED-- 6 JAN 72 - 21 JAN 72

WELL DATA
DEPTH ----- 875 METERS
TEMPERATURE 240 C AT WELLHEAD
265 C AT BOTTOM HOLE

SAMPLING INFORMATION
DATE-- 17 JAN 72

PHYSICAL DATA
PH= 6.60
SPECIFIC GRAVITY= 1.022 TEMP DURING READING=20 C
TOT DISS SOLIDS= 38900.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	108	
NA	8562	
K	142	
LI	29	
CA	2818	
MG	47	
CL	20548	
FE	95	
MN	9.8	

BIBLIOGRAPHIC DATA
SOURCES--
PALMER 75B
WITHAM 76
HOFFMANN 75
HARDT 76

RECORD 262
CODE NAME=MAGMAMAX 2

WELL MAGMAMAX 2
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 200FT S, 200FT E, FROM W QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER CO.
DRILLING COMPANY-- MAGMA ENERGY CO.
DATE DRILLED-- 4 NOV 72 - 25 NOV 72
WELL CLASSIFIED AS INJECTION WELL.

WELL DATA
DEPTH ----- 1329 METERS
TEMPERATURE 278 C AT MAXIMUM
PRODUCTION INTERVAL-- WELL CASED TO 1325M, PERFORATED 1150-1325M.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76
HOFFMANN 75
HARDT 76
PALMER 75B
SOME DATA FROM CALIF. DIV. OF OIL AND GAS MAP G2-1.

RECORD 263
CODE NAME=MAGMAMAX 3

WELL MAGMAMAX 3
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 200FT S, 200FT W FROM CENTER SECTION.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER CO.
DRILLING COMPANY-- MAGMA ENERGY CO.
DATE DRILLED-- 11 OCT 72 - 2 NOV 72
WELL CONVERTED TO INJECTION WELL.

WELL DATA
DEPTH ----- 1216 METERS
TEMPERATURE 321 C AT MAXIMUM
PRODUCTION INTERVAL-- WELL CASED TO 934M, PERFORATED 794-934M.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76
HOFFMANN 75
USBM 76B
HARDT 76
PALMER 75B

RECORD 264
CODE NAME=MAGMAMAX 4

WELL MAGMAMAX 4
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 200FT S, 250FT W, FROM CENTER SECTION.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- MAGMA POWER CO.
DATE DRILLED-- 24 NOV 72 - 1 DEC 72
WELL USED AS OBSERVATION WELL.

WELL DATA
DEPTH ----- 780 METERS
TEMPERATURE 240 C AT MAXIMUM
PRODUCTION INTERVAL-- WELL CASED TO 764M, PERFORATED 721-764M.

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76
HOFFMANN 75
HARDT 76

RECORD 265
CODE NAME=PIONEER 3
SAMPLE TYPE=WATER

WELL PIONEER 3
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 10
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- PIONEER DEVELOPMENT COMPANY.
DATE DRILLED-- 1927 - 1928
PIONEER WELLS SOMETIMES REFERRED TO AS MULLET ISLAND WELLS.

WELL DATA
DEPTH ----- 449 METERS
TEMPERATURE 68 C AT 383 M
COMMENT-- DEPTHS/TEMPERATURES OF PIONEER WELLS-- 1) 222M/118 C; 2) 385M/82 C; 3) 449M/68 C.

SAMPLING INFORMATION
DATE-- 21 MAY, 1929
SAMPLE NUMBER, LABORATORY-- HOOPER FOUNDATION FOR MEDICAL RESEARCH.

PHYSICAL DATA
PH= 6.50
TOT DISS SOLIDS= 116000.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	20400	NA + K
CA	16000	
MG	4000	
CL	68000	
SO4	200	
NO3	1050	
HCO3	300	
FE	50	FERROUS IRON

BIBLIOGRAPHIC DATA
SOURCES--
COLEMAN 29
HOFFMANN 75
WITHAM 76
CDWR 76

RECORD 266
CODE NAME=RIVER RANCH 1A
SAMPLE TYPE=WATER

WELL RIVER RANCH 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 24, 1000FT S, 340FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
DRILLING COMPANY-- EARTH ENERGY, INC.
DATE DRILLED-- 14 OCT 63 - 30 JAN 64
WELL ABANDONED IN 1971.

WELL DATA
DEPTH ----- 2464 METERS
TEMPERATURE 345 C AT MAXIMUM
FLOW INFORMATION-- 244700 LB/HR AT 20 PERCENT STEAM.
PRODUCTION INTERVAL-- CASING PERFORATED 1181-2462 M

PHYSICAL DATA
PH= 5.20
TOT DISS SOLIDS= 385000.00 MG/L, RESIDUE ON EVAPORATION
OTHER DATA--
ENTHALPY=250 CAL/G

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	760	
NA	7400	
K	23600	
LI	259	
CA	41000	
MG	62	
CL	225000	
BR	137	
SO4	35	
NO3	26	
NH4	496	
HCO3	175	
AL	94	
B	470	
BA	199	
CR	8.7	
CU	6.5	
FE	1305	
MN	1375	
NI	6.5	
PB	152	
SR	470	
ZN	724	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
WITHAM 76
HOFFMANN 75
PALMER 75B

RECORD 267
CODE NAME=RIVER RANCH 1B
SAMPLE TYPE=WATER

WELL RIVER RANCH 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 24, 1000FT S, 340FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA (MAGMA POWER CO.)
DRILLING COMPANY-- EARTH ENERGY, INC.
DATE DRILLED-- 14 OCT 63 - 30 JAN 64
WELL ABANDONED IN 1971.

WELL DATA
DEPTH ----- 2464 METERS
TEMPERATURE 345 C AT MAXIMUM

PHYSICAL DATA
PH= 4.00
TOT DISS SOLIDS= 372600.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	560	
NA	74700	
K	21900	
LI	239	
CA	39700	
MG	59	
CL	216000	
NO3	41	
NH4	478	
AL	56	
B	518	
BA	241	
CR	.8	
CU	5.5	
FE	1515	
MN	1480	
PB	155	
SR	482	
ZN	740	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
WITHAM 76
HOFFMANN 75

RECORD 268
CODE NAME=SINCLAIR 1

WELL SINCLAIR 1
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 10, 150FT S, 165FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DRILLING COMPANY-- KENT IMPERIAL OIL CO.
DATE DRILLED-- 10 NOV 57 - 21 MAR 58
WELL DRILLED AS OIL PROSPECT, DEVELOPED FOR STEAM, PLUGGED BY SCALE AFTER 4 MONTHS USE IN 1959.

WELL DATA
DEPTH ----- 1440 METERS

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
HOFFMANN 75
WITHAM 76
LANDE 76
PALMER 75B

RECORD 269
CODE NAME=SINCLAIR 2

WELL SINCLAIR 2
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 150FT N, 200FT E, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DRILLING COMPANY-- WESTERN GEOTHERMAL.
DATE DRILLED-- 13 FEB 61 - 14 APR 61
WELL ABANDONED, DRY HOLE.

WELL DATA
DEPTH ----- 722 METERS

BRINE DATA
NO BRINE DATA AVAILABLE.

BIBLIOGRAPHIC DATA
SOURCES--
WITHAM 76
LANDE 76
PALMER 75B

RECORD 270
CODE NAME=SINCLAIR 3A
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 10, 330FT S, 330FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
LESSEE--PHILLIPS PETROLEUM CO., SOUTHERN PACIFIC LAND CO. AND SOUTHERN CALIFORNIA EDISON.
DRILLING COMPANY-- WESTERN GEOTHERMAL
DATE DRILLED-- 2 NOV 62 - 22 APR 63
WELL NOW CONNECTED AS REINJECTION WELL FOR BRINE FROM SINCLAIR 4

WELL DATA
DEPTH ----- 2110 METERS
TEMPERATURE 280 C AT MAXIMUM
FLOW INFORMATION-- 593000 LB/HR, 185 PSI, 12 PERCENT STEAM. TEST ON 23 MAY 63.
PRODUCTION INTERVAL-- CASING PERFORATED 1151-2090M.
COMMENT-- MAX. TEMP. ALSO GIVEN AS 250 C.

SAMPLING INFORMATION
DATE-- 19 APR 62
SAMPLE NUMBER, LABORATORY-- GHT LAB, BRAWLEY, CA.

PHYSICAL DATA
PH= 5.30
SPECIFIC GRAVITY= 1.114 TEMP DURING READING=25 C
SP. CONDUCTANCE= 247360.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 183700.00 PPM, RESIDUE ON EVAPORATION
= 153300.00 PPM, SUM
OTHER DATA--
ENTHALPY=240 CAL/G

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	350	DATUM NOT VERIFIED
NA	36340	
K	7820	
LI	49	
CA	14550	
MG	780	
CL	93650	
F	2.4	
SO4	58	
NH4	340	
HCO3	60	
AG	0	
AS	10	
B	210	
BA	540	
CU	6	
FE	166	DATUM NOT VERIFIED
MN	410	
PB	80	
SB	.2	
SR	360	

VALUES PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
HOFFMANN 75
HELGESON 68
WITHAM 76
PALMER 75B
DRI 76
MUFFLER 69
DOE 66
REX 71
HARDT 76

RECORD 271
CODE NAME=SINCLAIR 3B
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 10, 330FT S, 330FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 2 NOV 62 - 22 APR 63
WELL NOW USED AS INJECTION WELL.

WELL DATA
DEPTH ----- 2110 METERS

SAMPLING INFORMATION
DATE-- 23 APR 63
SAMPLE NUMBER, LABORATORY-- GHT LABORATORIES, BRAWLEY, CA.

PHYSICAL DATA
PH= 4.30
SPECIFIC GRAVITY= 1.180 TEMP DURING READING=25 C
SP. CONDUCTANCE= 362400.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 276100.00 PPM, RESIDUE ON EVAPORATION
= 230240.00 PPM, SUM

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1300	DATUM NOT VERIFIED
NA	50600	
K	13200	
LI	80	
CA	23000	
MG	1940	
CL	141500	
F	5.3	DATUM NOT VERIFIED
SO4	0	
NO3	0	
NH4	570	
HCO3	0	
AG	0	
AS	10	
B	280	DATUM NOT VERIFIED
BA	570	
CU	1	
MN	1000	
PB	200	
SB	.2	
SR	510	

VALUES PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
DRI 76
WITHAM 76

RECORD 272
CODE NAME=SINCLAIR 3C
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 10, 330FT S, 330FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
WELL NOW USED AS INJECTION WELL.

WELL DATA
DEPTH ----- 2110 METERS

SAMPLING INFORMATION
DATE-- 3 AUG 63
SAMPLE NUMBER, LABORATORY-- ABBOT A. HANKS, INC.

PHYSICAL DATA
PH= 4.90
SP. CONDUCTANCE= 300.00 MICROMHOS/CM TEMP DURING READING=25 C
TOT DISS SOLIDS= 116500.00 MG/L, RESIDUE ON EVAPORATION
= 122044.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	64	
NA	19490	
K	34	
CA	20360	
MG	90	
CL	81080	
SO4	4	
NH4	410	IN QUESTION
CO2	500	IN QUESTION, UNITS UNKNOWN
CU	6	
PB	6	

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
HAROT 76
WITHAM 76

RECORD 273
CODE NAME=SINCLAIR 3D
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
CONDITION OF SAMPLE-- FLOW LINE TEST TAKEN FROM 1070-1525M DEPTH.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	96	
NA	14500	
K	3000	
LI	61	
CA	2880	
MG	194	
CL	31600	
SO4	162	
PO4	-----	+-1
NH4	60	
HCO3	220	
CO3	-----	+-1
B	132	
FE+MN	70	

BIBLIOGRAPHIC DATA
SOURCES--
REX 71

RECORD 274
CODE NAME=SINCLAIR 3E
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
CONDITION OF SAMPLE-- FLOW LINE TEST TAKEN FROM 2130-2290M DEPTH.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	47700	
K	11500	
LI	170	
CA	21100	
MG	1350	
CL	128600	
SO4	287	
PO4	-----	+-1
NH4	-----	+-1
HCO3	-----	+-1
CO3	-----	+-1
B	530	
FE+MN	1090	

BIBLIOGRAPHIC DATA
SOURCES--
REX 71

RECORD 275
CODE NAME=SINCLAIR 3F
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- WESTERN GEOTHERMAL, INC.

PHYSICAL DATA
PH= 5.60
TOT DISS SOLIDS= 22000.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	1170	
NA	47000	
K	13000	
LI	210	
CA	23000	
MG	130	
CL	132200	
PO4	<1	
HCO3	146	
AS	1	
B	310	
BA	300	
CU	10	
FE	1200	
PB	82	
SR	420	
ZN	360	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 276
CODE NAME=SINCLAIR 3G
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- 13 JUN 63
SAMPLE NUMBER, LABORATORY-- US GEOLOGICAL SURVEY, MENLO PARK, CA.

PHYSICAL DATA
PH= 6.00
TOT DISS SOLIDS= 236000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	51100	
K	13100	
LI	307	
CA	23200	
MG	95	
CL	132200	
AL	140	
B	270	
BA	320	
CU	11	
FE	750	
MN	1200	
SR	410	

DATA NOT VERIFIED

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 277
CODE NAME=SINCLAIR 3H
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- OIL RESEARCH, INC.

PHYSICAL DATA
PH= 7.10
TOT DISS SOLIDS= 39800.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	153	
NA	12500	
CA	2200	
MG	343	
CL	23800	
SO4	242	
NH4	67	
HCO3	349	
B	42	
FE	1	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 278
CODE NAME=SINCLAIR 3I
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- OIL RESEARCH, INC.

PHYSICAL DATA
PH= 6.30
TOT DISS SOLIDS= 108500.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	173	
NA	31500	
CA	8220	
MG	1000	
CL	66000	
SO4	69	
NH4	189	
HCO3	107	
B	211	
BA	20	
FE	1	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 279
CODE NAME=SINCLAIR 3J
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- OIL RESEARCH, INC.

PHYSICAL DATA
PH= 6.20
TOT DISS SOLIDS= 81000.00 MG/L, RESIDUE ON EVAPORATION.

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	807	
NA	25000	
CA	51000	
MG	589	
CL	49300	
SO4	70	
NH4	144	
HCO3	191	
B	206	
BA	11	
FE	2	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 280
CODE NAME=SINCLAIR 3K
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SHELL OIL CO.

PHYSICAL DATA
TOT DISS SOLIDS= 220000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	350	
NA	5100	
K	12500	
LI	220	
CA	23000	
MG	150	
CL	133000	
AL	.04	
AS	1	
B	350	
BA	270	
CR	.6	
CU	8	
FE	1300	
MN	1200	
NI	2.4	
SR	500	
ZN	380	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 281
CODE NAME=SINCLAIR 3L
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SHELL OIL CO.

PHYSICAL DATA
PH= 5.60
TOT DISS SOLIDS= 225000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	300	
NA	46800	
K	12600	
LI	197	
CA	22800	
MG	620	
CL	131000	
SO4	0	
NO3	42	
PO4	0	
NH4	373	
HCO3	135	
AL	129	
AS	12	
B	310	
BA	260	
BR	14	
F	5	
FE	1100	
MN	960	
SR	590	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 282
CODE NAME=SINCLAIR 3M
SAMPLE TYPE=WATER

WELL SINCLAIR 3
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- 1968
SAMPLE NUMBER, LABORATORY-- US GEOLOGICAL SURVEY, MENLO PARK, CA.

PHYSICAL DATA
PH= 5.60
TOT DISS SOLIDS= 198000.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
LI	240	
MG	75	
CL	117000	
AL	< 16	
B	240	
BA	180	
CU	1.6	
FE	620	
MN	830	
PB	<4	
SR	360	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 283
CODE NAME=SINCLAIR 4A
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.COR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL OWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
DATE-- 3 APR 75
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 6''THS (HILL AND MORRIS 75).
SAMPLE LOCATION-- 25FT FROM WELLHEAD
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO TOP PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.
CONDITION OF SAMPLE-- SAMPLE TEMP=210 C, SAMPLE PRESSURE=220 PSIG. SAMPLE NOT COOLED DURING SAMPLING.
CONDITION OF WELL DURING SAMPLING-- WELL IN FULL FLOW THROUGH 6 IN. PIPE.

PHYSICAL DATA
PH= 5.10 TEMP DURING READING= AMBIENT
ELECTRIC POTENTIAL= .180 VOLT. TEMP DURING READING= AMBIENT
TOT DISS SOLIDS= 291.00 G/L, SUM
= 300.00 G/L, RESIDUE ON EVAPORATION
OTHER DATA--
DENSITY= 1.22 AT 25 C.
ENTHALPY= 210 CAL/G.
COMMENT-- PH AND EH VALUES TAKEN ON SAMPLE PRESSURIZED BY GAS COLLECTED WITH SAMPLE.

BRINE DATA
METHOD OF ANALYSIS-- RECONSTRUCTED ANALYSES--CALCULATED FROM LIQUID AND SOLID PHASES IN SAMPLE.
ACCURACY OF ANALYSIS-- 5 PERCENT, EXCEPT NA AND AG--10 PERCENT; AL--1 PPM; S POSSIBLY LOW BY A FACTOR OF 2 OR 3.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	64000	
MG	76	
AL	5	
SI	278	
S	14	
CL	179000	
K	14700	
CA	30400	
MN	1310	
FE	1600	
CU	3.3	
PB	111	
AG	.7	

CONCENTRATIONS NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 284
CODE NAME=SINCLAIR 4B
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.COR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL CWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
DATE-- 3 APR 75
SAMPLE NUMBER, LABCRATORY-- SAMPLE NO. 6''8HS (HILL AND MORRIS 75).
SAMPLE LOCATION-- 25FT FROM WELLHEAD
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO BOTTOM PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.
CONDITION OF SAMPLE-- SAMPLE TEMP=210 C, SAMPLE PRESSURE=220 PSIG. SAMPLE NCT COOLED DURING SAMPLING.
CONDITION OF WELL DURING SAMPLING-- WELL IN FULL FLOW THROUGH 6 IN. PIPE.

PHYSICAL DATA
PH= 5.30 TEMP DURING READING= AMBIENT
ELECTRIC POTENTIAL= .180 VOLT. TEMP DURING READING= AMBIENT
TOT DISS SOLIDS= 310.00 G/L, SUM
= 325.00 G/L, RESIDUE ON EVAPORATION
CTHER DATA--
ENTHALPY=363 BTU/LB, AVERAGE OF MEASUREMENTS 3 APR 75, 427 BTU/LB, AVERAGE--24 APR 75.
COMMENT-- PH AND EH VALUES TAKEN ON SAMPLE PRESSURIZED BY GAS COLLECTED WITH SAMPLE.

BRINE DATA
METHOD OF ANALYSIS-- RECONSTRUCTED ANALYSES--CALCULATED FROM LIQUID AND SOLID PHASES IN SAMPLE.
ACCURACY OF ANALYSIS-- 5 PERCENT, EXCEPT NA AND AG--10 PERCENT; AL--1 PPM; S POSSIBLY LOW BY A FACTOR OF 2 OR 3.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	74000	
MG	80	
AL	3	
SI	277	
S	11	
CL	185000	
K	16700	
CA	31500	
MN	1340	
FE	1550	
CU	6.2	
PB	110	
AG	.7	

CONCENTRATIONS SHOULD BE REDUCED BY 15 PERCENT TO OBTAIN CONCENTRATION IN UNFLASHED BRINE.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
AUSTIN 75B
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 285
CODE NAME=SINCLAIR 4C
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.CCR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
CWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL OWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
DATE-- 9 APR 75
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 18HS (HILL AND MORRIS 75).
SAMPLE LOCATION-- 25FT FROM WELLHEAD
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO BOTTOM PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.
CONDITICN OF SAMPLE-- SAMPLE TEMP=239 C, SAMPLE PRESSURE=430 PSIG. SAMPLE NCT COOLED DURING SAMPLING.
CONDITION OF WELL DURING SAMPLING-- WELL FLOW IN THROTTLED CONDITION.

PHYSICAL DATA
PH= 5.60 TEMP DURING READING= AMBIENT
ELECTRIC POTENTIAL= .130 VOLT. TEMP DURING READING= AMBIENT
TOT DISS SOLIDS= 277.00 G/L, SUM
= 290.00 G/L, RESIDUE ON EVAPORATION
COMMENT-- PH AND EH VALUES TAKEN ON SAMPLE PRESSURIZED BY GAS COLLECTED WITH SAMPLE.

BRINE DATA
METHOD OF ANALYSIS-- RECONSTRUCTED ANALYSES--CALCULATED FROM LIQUID AND SOLID PHASES IN SAMPLE.
ACCURACY OF ANALYSIS-- 5 PERCENT, EXCEPT NA AND AG--10 PERCENT; AL--1 PPM; S POSSIBLY LOW BY A FACTOR OF 2 OR 3.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	64000	
MG	90	
AL	2	
SI	257	
S	6	
CL	166000	
K	15300	
CA	28700	
MN	1200	
FE	1490	
CU	3.9	
PB	102	
AG	.7	

CONCENTRATIONS SHOULD BE REDUCED BY 7.5 PERCENT TO OBTAIN CONCENTRATION IN UNFLASHED BRINE.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
AUSTIN 75B
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 286
CODE NAME=SINCLAIR 4D
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.COR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL OWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
DATE-- 14 APR 75
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 28HS (HILL AND MORRIS 75).
SAMPLE LOCATION-- 25FT FROM WELLHEAD.
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO BOTTOM PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.
CONDITION OF SAMPLE-- SAMPLE TEMP=247 C, SAMPLE PRESSURE=440 PSIG. SAMPLE NOT COOLED DURING SAMPLING.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING IN THROTTLED CONDITION.

PHYSICAL DATA
PH= 4.80 TEMP DURING READING= AMBIENT
ELECTRIC POTENTIAL= .260 VOLT. TEMP DURING READING= AMBIENT
TOT DISS SOLIDS= 267.00 G/L, SUM
= 284.00 G/L, RESIDUE ON EVAPORATION
COMMENT-- PH AND EH VALUES TAKEN ON SAMPLE PRESSURIZED BY GAS COLLECTED WITH SAMPLE.

BRINE DATA
METHOD OF ANALYSIS-- RECONSTRUCTED ANALYSES--CALCULATED FROM LIQUID AND SOLID PHASES IN SAMPLE.
ACCURACY OF ANALYSIS-- 5 PERCENT, EXCEPT NA AND AG--10 PERCENT; AL--1 PPM; S POSSIBLY LOW BY A FACTOR OF 2 OR 3.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	61000	
MG	71	
AL	2	
SI	234	
S	6	
CL	161000	
K	14000	
CA	28200	
MN	1180	
FE	1490	
CU	3.9	
PB	92	
AG	.6	

CONCENTRATIONS SHOULD BE REDUCED BY 7.5 PERCENT TO OBTAIN CONCENTRATION IN UNFLASHED BRINE.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
AUSTIN 75B
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 287
CODE NAME=SINCLAIR 4E
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.COR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL OWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
DATE-- 23 APR 75
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 38HU (HILL AND MORRIS 75).
SAMPLE LOCATION-- 25FT FROM WELLHEAD.
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO BOTTOM PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.
CONDITION OF SAMPLE-- SAMPLE TEMP=255 C, SAMPLE PRESSURE=445 PSIG. SAMPLE NOT COOLED DURING SAMPLING.
CONDITION OF WELL DURING SAMPLING-- WELL FLOWING IN THROTTLED CONDITION.

PHYSICAL DATA
PH= 5.20 TEMP DURING READING= AMBIENT
ELECTRIC POTENTIAL= .160 VOLT. TEMP DURING READING= AMBIENT
TOT DISS SOLIDS= 283.00 G/L, SUM
= 290.00 G/L, RESIDUE ON EVAPORATION
COMMENT-- PH AND EH VALUES TAKEN ON SAMPLE PRESSURIZED BY GAS COLLECTED WITH SAMPLE.

BRINE DATA
METHOD OF ANALYSIS-- RECONSTRUCTED ANALYSES--CALCULATED FROM LIQUID AND SOLID PHASES IN SAMPLE.
ACCURACY OF ANALYSIS-- 5 PERCENT, EXCEPT NA AND AG--10 PERCENT; AL--1 PPM; S POSSIBLY LOW BY A FACTOR OF 2 OR 3.
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	70000	
MG	71	
AL	2	
SI	249	
S	4	
CL	165000	
K	15800	
CA	29000	
MN	1230	
FE	1450	
CU	2.7	
PB	101	
AG	.5	

CONCENTRATIONS SHOULD BE REDUCED BY 7.5 PERCENT TO OBTAIN CONCENTRATION IN UNFLASHED BRINE.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
AUSTIN 75B
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 288
CODE NAME=SINCLAIR 4F
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.COR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL OWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
DATE-- 23 APR 75
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 38HS (HILL AND MORRIS 75)
SAMPLE LOCATION-- 25FT FROM WELLHEAD.
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO BOTTOM PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.

BRINE DATA
METHOD OF ANALYSIS-- SPARK SOURCE MASS SPECTROMETRY
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
BE	< .05	
B	92	
F	.8	
MG	39	
AL	.5	
SI	24	
P	< .08	
S	390	
SC	< .5	
TI	<8	
V	< .8	
CR	<8	
MN	7500	MAJOR CONSTITUENT
FE	4100	MAJOR CONSTITUENT
CO	< .8	
NI	1200	
CU	130	
ZN	6100	MAJOR CONSTITUENT
GA	<2	
GE	5	
AS	100	
SE	≤ 20	
BR	<2	
RB	5300	MAJOR CONSTITUENT
SR	4800	MAJOR CONSTITUENT
Y	<2	
ZR	24	
NB	<2	
MO	<8	
RU	<5	
RH	<2	
PD	≤5	
AG	<3	
CD	< 40	
IN	<2	
SN	< 20	
SB	<3	
TE	≤5	
I	<2	
CS	52	
BA	2600	MAJOR CONSTITUENT
LA	20	
CE	<1	
PR	<2	
ND	<3	
SM	<3	
EU	<5	
GD	<3	
TB	<1	
DY	<3	
HO	<1	
ER	<3	
TM	<1	
YB	<3	
LU	<1	
HF	<3	
TA	≤8	
W	<3	
RE	<2	
OS	<2	
IR	<2	
PT	<3	
AU	<3	
HG	<3	
TL	<2	
PB	500	
BI	<3	
TH	<1	
U	<1	

LIQUID PHASE OF SAMPLE ANALYZED ONLY--RESULTS NOT QUANTITATIVE.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 289
CODE NAME=SINCLAIR 4G
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
LOCATION-- T12S, R13E, SEC. 4, 400FT N, 200FT E, FROM S Q.COR.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- GEOTHERMAL ENERGY AND MINERAL CORP.
DATE DRILLED-- 25 APR 64 - 4 JUN 64
ORIGINAL OWNER--WESTERN GEOTHERMAL

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD
PRESSURE, SHUT-IN-- >445 PSIG.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 48HU (HILL AND MORRIS 75).
SAMPLE LOCATION-- 25FT FROM WELLHEAD.
SAMPLING METHOD-- SAMPLING PROBE INSERTED INTO BOTTOM PORTION OF 6 IN. PIPE, COLLECTED UNDER PRESSURE INTO TEFLON-LINED STAINLESS STEEL BOTTLE.

BRINE DATA
METHOD OF ANALYSIS-- SPARK SOURCE MASS SPECTROMETRY
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
BE	.15	
B	140	
F	2	
MG	27	
AL	1	
SI	9	
P	.6	
S	270	
SC	< .6	
TI	<6	
V	< .6	
CR	<6	
MN	1900	
FE	1000	
CO	< .6	
NI	450	
CU	45	
ZN	2200	
GA	<1	
GE	3	
AS	2700	
SE	6	
BR	<2	
RB	120	
SR	3700	MAJOR CONSTITUENT
Y	<1	
ZR	6	
NB	<1	
MO	<6	
RU	<1	
RH	<1	
PD	<2	
AG	3	
CD	9	
IN	<1	
SN	< 15	
SB	<3	
TE	<1	
I	<2	
CS	20	
BA	3000	MAJOR CONSTITUENT
LA	15	
CE	<1	
PR	<2	
ND	<2	
SM	<2	
EU	<3	
GD	<3	
TB	<1	
DY	<2	
HO	<1	
ER	<2	
TM	<1	
YB	<2	
LU	<1	
HF	6	
TA	≤6	
W	<2	
RE	<1	
OS	<2	
IR	<1	
PT	<2	
AU	<2	
HG	<3	
TL	<1	
PB	450	
BI	<2	
TH	<1	
U	<1	

LIQUID PHASE OF SAMPLE ANALYZED ONLY--RESULTS NOT QUANTITATIVE.

BIBLIOGRAPHIC DATA
SOURCES--
HILL 75
WITHAM 76
HOFFMANN 75
MEADOWS 73
HELGESON 68
MUFFLER 69

RECORD 290
CODE NAME=SINCLAIR 4H
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD

SAMPLING INFORMATION
DATE-- 4 JUN 64

PHYSICAL DATA
PH= 5.00
TOT DISS SOLIDS= 387500.00 PPM, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	625	
NA	78000	
K	20690	
CA	37735	
MG	2225	
CL	210700	OTHERS GIVE 170000
SO4	75	
FE	88	

DATA PROBABLY NOT CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70
HARDT 76
HOFFMANN 75

RECORD 291
CODE NAME=SINCLAIR 4I
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD

SAMPLING INFORMATION
DATE-- 5 JUL 67
SAMPLE NUMBER, LABORATORY-- CALIF. DEPT. WATER RESOURCES
CONDITION OF SAMPLE-- TEMP > 100 C

PHYSICAL DATA
PH= 5.30
SPECIFIC GRAVITY= 1.220 TEMP DURING READING=25 C
TOT DISS SOLIDS= 266560.00 PPM, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	90	
NA	58443	
K	14918	
LI	287	
CA	26992	
MG	736	
CL	154590	
F	14	
BR	25	
I	13	
SO4	19	
NO3	5	
NH4	442	
HCO3	0	
AS	10	
B	332	
FE	1148	
MN	1025	
SR	434	

DATA CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 292
CODE NAME=SINCLAIR 4J
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- UNIV. OF CALIF., RIVERSIDE. G. BRADFORD.

BRINE DATA
METHOD OF ANALYSIS-- DIRECT-READING EMISSION SPECTROGRAPH.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
AG	1	
AL	< 100	
BA	1100	
BE	< .002	
BI	< .0005	
CD	< .005	
CO	< .0005	
CR	<4	
CU	6	
FE	1200	
GA	< .0005	
GE	< .1	
HG	< .2	
MN	2000	
MO	< .1	
NI	<4	
PB	70	
SB	< .2	
SN	< .04	
SR	610	
TI	< .04	
V	6	
ZN	600	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 293
CODE NAME=SINCLAIR 4K
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- USGS, SACRAMENTO, CA.

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ABSORPTION SPECTROMETRY, EXCEPT GE, MEASURED BY EMISSION SPECTROMETRY.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
CU	.47	
FE	1370	
GE	.005	
MN	1400	

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 294
CODE NAME=SINCLAIR 4L
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABCRATORY-- LOS ANGELES DEPT. WATER AND POWER.
G. UMAN.

BRINE DATA
METHOD OF ANALYSIS-- ARC ATOMIC EMISSION SPECTROMETRY.
SEMIQUANTITATIVE RESULTS.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
LI	400	
AG	1.4	
CU	2.5	
PB	50	
SR	300	

DATA SEMIQUANTITATIVE.

BIBLIOGRAPHIC DATA
SOURCES--
CDWR 70

RECORD 295
CODE NAME=SINCLAIR 4M
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

WELL DATA
DEPTH ----- 1617 METERS
TEMPERATURE 255 C AT WELLHEAD

SAMPLING INFORMATION
DATE-- 22 MAR 73
CONDITION OF SAMPLE-- TEMP = 181.1 C

PHYSICAL DATA
PH= 5.60
TOT DISS SOLIDS= 285000.00 MG/L, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- MG/L

CONSTITUENT	CONCENTRATION	COMMENT
NA	60100	
K	15000	
LI	243	
CA	29800	
MG	35	
CL	167000	
SO4	1.3	
HCO3	114	
AL	< 10	
B	280	
BA	260	
CR	<1	
CU	2	
FE	770	
MN	430	
PB	80	
SR	770	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
ORI 76

RECORD 296
CODE NAME=SINCLAIR 4N
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- JUL 74

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	53800	
K	18000	
CA	26300	

BIBLIOGRAPHIC DATA
SOURCES--
AUSTIN 75

RECORD 297
CODE NAME=SINCLAIR 4O
SAMPLE TYPE=WATER

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- 19 SEP 74

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	52000	
K	13300	
CA	20200	

BIBLIOGRAPHIC DATA
SOURCES--
AUSTIN 75

RECORD 298
CODE NAME=SINCLAIR 4P
SAMPLE TYPE=WATER
=GAS

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- 23 OCT 74
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 1
SAMPLE LOCATION-- 8.5M FROM WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN FROM PORT AT SIDE OF BRINE LINE.
SAMPLE VOLUMES-- LIQUID=800ML, GAS=4350ML AT STP.

BRINE DATA
METHOD OF ANALYSIS-- GASES BY MASS SPECTROMETRIC ANALYSIS.
UNITS-- PPM UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
CO2	97.1	
CH4	1.88	
N2	.42	
H2	.57	
NA	46600	
K	12400	
CA	22200	

GAS ANALYSIS DOES NOT INCLUDE DISSOLVED GASES.

BIBLIOGRAPHIC DATA
SOURCES--
AUSTIN 75

RECORD 299
CODE NAME=SINCLAIR 4Q
SAMPLE TYPE=WATER
=GAS

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- 23 OCT 74
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 2
SAMPLE LOCATION-- 8.5M FROM WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN FROM PORT AT SIDE OF BRINE LINE.
SAMPLE VOLUMES-- LIQUID=250ML, GAS=4930ML AT STP.

BRINE DATA
METHOD OF ANALYSIS-- GASES BY MASS SPECTROMETRIC ANALYSIS.
UNITS-- PPM UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
NA	52500	
K	13700	
CA	23400	
CO2	97.6	
CH4	1.45	
N2	.33	
H2	.42	

GAS ANALYSIS DOES NOT INCLUDE DISSOLVED GASES.

BIBLIOGRAPHIC DATA
SOURCES--
AUSTIN 75

RECORD 300
CODE NAME=SINCLAIR 4R
SAMPLE TYPE=GAS
=STEAM CONDENSATE

WELL SINCLAIR 4
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
DATE-- 23 OCT 74
SAMPLE NUMBER, LABORATORY-- SAMPLE NO. 3
SAMPLE LOCATION-- 8.5M FROM WELLHEAD.
SAMPLING METHOD-- SAMPLE TAKEN FROM PORT ON TOP OF BRINE LINE.
ANALYSIS SHOWS SAMPLE TO BE MOSTLY CONDENSED STEAM.

BRINE DATA
METHOD OF ANALYSIS-- GASES BY MASS SPECTROMETRIC ANALYSIS
UNITS-- PPM UNITS FOR GASES-- VOLUME PERCENT

CONSTITUENT	CONCENTRATION	COMMENT
NA	.33	
CA	.15	
CO2	97.9	
CH4	1.31	
N2	.35	
H2	.35	
H2S	.01	

GAS ANALYSIS DOES NOT INCLUDE DISSOLVED GASES.

BIBLIOGRAPHIC DATA
SOURCES--
AUSTIN 75

RECORD 301
CODE NAME=SPORTSMAN 1A
SAMPLE TYPE=WATER

WELL SPORTSMAN 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 1820FT S, 2800FT E, FROM NW CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- O'NEILL GEOTHERMAL, INC.
DATE DRILLED-- 26 JAN 61 - 9 MAR 61
WELL ABANDONED 1977.

WELL DATA
DEPTH ----- 1441 METERS
TEMPERATURE 310 C AT MAXIMUM
340 C AT BOTTOM HOLE, EXTRAPOLATED.
FLOW INFORMATION-- 324000 LB/HR, 17 PERCENT STEAM, AT 200 PSIG AND 199 C.
PRODUCTION INTERVAL-- CASING PERFORATED 1209-1435M.

SAMPLING INFORMATION
DATE-- 31 AUG 61
SAMPLE NUMBER, LABORATORY-- SMITH-EMERY CO., LOS ANGELES

PHYSICAL DATA
PH= 5.46 PH RANGE= 4.82 - 6.1
SPECIFIC GRAVITY= 1.207 TEMP DURING READING=20 C
TOT DISS SOLIDS= 335000.00 PPM, SUM
OTHER DATA--
ENTHALPY = 220 CAL/G.

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	5	
NA	70000	
K	24000	
LI	150	
CA	34470	
MG	18	
CL	201760	
B	149	
FE	4200	
SO4	34	

DATA GIVEN AS REPRESENTATIVE ANALYSIS.

BIBLIOGRAPHIC DATA
SOURCES--
MCNITT 63
PALMER 758
DRI 76
HOFFMANN 75
WITHAM 76
HARDT 76
LANDE 77

RECORD 302
CODE NAME=SPORTSMAN 1B
SAMPLE TYPE=WATER

WELL SPORTSMAN 1
SALTON SEA KGRA
IMPERIAL COUNTY, CA., USA

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SMITH-EMERY CO., LOS ANGELES
CONDITION OF SAMPLE-- TEMP = 199 C.

PHYSICAL DATA
PH= 4.00
TOT DISS SOLIDS= 321400.00 MG/L, SUM

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	5	
NA	66000	
K	24400	
LI	54	
CA	34220	
MG	18	
CL	192100	
B	540.5	PROBABLY 8407
FE	4130	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76

RECORD 303
CODE NAME=STATE 1A
SAMPLE TYPE=WATER

WELL STATE 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 194FT N, 2814FT W, FROM SE CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- SHELL DEVELOPMENT COMPANY.
DATE DRILLED-- 11 APR 64 - 2 MAY 64

WELL DATA
DEPTH ----- 1475 METERS
TEMPERATURE 310 C AT MAXIMUM.
FLOW INFORMATION-- 405000 LB/HR AT 347 PSI AND 20 PERCENT STEAM. 305000 LB/HR AT 465 PSI AND 15 PERCENT STEAM.
PRODUCTION INTERVAL-- CASING PERFORATED 1348-1462M. 1395 AND 1450M ARE MAIN PRODUCTION ZONES.

SAMPLING INFORMATION
SAMPLE NUMBER, LABORATORY-- SHELL DEVELOPMENT CO. AND COLORADO SCHOOL OF MINES RESEARCH FOUNDATION.

PHYSICAL DATA
TOT DISS SOLIDS= 219500.00 PPM, SUM
OTHER DATA--
ENTHALPY = 280 CAL/G

BRINE DATA
METHOD OF ANALYSIS-- DATA ARE AVERAGES OF SEVERAL HUNDRED ANALYSES.
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
NA	47800	
K	14000	
LI	180	
CA	21200	
MG	27	
CL	127000	
CO2	5000	TOTAL CARBONATE
AG	<1	
B	290	
BA	190	
CS	17	
CU	2	
FE	1200	
MN	950	
PB	80	
RB	65	
S	30	TOTAL SULFUR
ZN	500	

CONCENTRATIONS CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
HELGESON 68
HOFFMANN 75
WITHAM 76
PALMER 75B

RECORD 304
CODE NAME=STATE 1B
SAMPLE TYPE=WATER

WELL STATE 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 23, 194FT N, 2814FT W, FROM SE CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL THERMAL PRODUCTS, INC.
DRILLING COMPANY-- SHELL DEVELOPMENT CO.
DATE DRILLED-- 11 APR 64 - 2 MAY 64

WELL DATA
DEPTH ----- 1475 METERS
TEMPERATURE 310 C AT MAXIMUM
PRODUCTION INTERVAL-- 1385 M AND 1450 M ARE MAIN PRODUCTION ZONES.

SAMPLING INFORMATION
CONDITION OF SAMPLE-- TEMP = 234 C.

PHYSICAL DATA
PH= 2.00
TOT DISS SOLIDS= 260000.00 MG/L, RESIDUE ON EVAPORATION.

BRINE DATA
UNITS-- MG/L

CONSTIT-UENT	CONCEN-TRATION	COMMENT
NA	54100	
K	16500	
LI	233	
CA	22200	
MG	25	
CL	153000	
SO4	1.2	
AL	25	
B	230	
BA	180	
CR	<1	
CU	5	
FE	1040	
MN	440	
PB	80	
SR	700	

DATA NOT VERIFIED.

BIBLIOGRAPHIC DATA
SOURCES--
DRI 76
HOFFMANN 75
WITHAM 76
PALMER 75B

RECORD 305
CODE NAME=WOOLSEY 1A
SAMPLE TYPE=WATER

WELL WOOLSEY 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 225FT N, 2415FT E, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA
LESSEE--SOUTHERN CALIFORNIA EDISON CO.
DATE DRILLED-- 23 FEB 72 - 16 MAR 72

WELL DATA
DEPTH ----- 732 METERS
TEMPERATURE 238 C AT MAXIMUM
PRODUCTION INTERVAL-- WELL CASED TO 720M, PERFORATED 565-720M.

SAMPLING INFORMATION
DATE-- FEB 72

PHYSICAL DATA
PH= 6.20
SPECIFIC GRAVITY= 1.076 TEMP DURING READING=20 C
TOT DISS SOLIDS= 120735.00 PPM, SUM
= 131732.00 PPM, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- PPM

CONSTIT-UENT	CONCEN-TRATION	COMMENT
SIO2	112	
NA	49257	
K	2881	
LI	65	
CA	8550	
MG	651	
CL	59015	
FE	84	
MN	121	

NOT KNOWN IF CORRECTED FOR STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
PALMER 75B
COWR 70
HOFFMANN 75
WITHAM 76

RECORD 306
CODE NAME=WOOLSEY 1B
SAMPLE TYPE=WATER

WELL WOOLSEY 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 225FT N, 2415FT E, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA
LESSEE--SOUTHERN CALIFORNIA EDISON CO.
DATE DRILLED-- 23 FEB 72 - 16 MAR 72

WELL DATA
DEPTH ----- 732 METERS
TEMPERATURE 238 C AT MAXIMUM

SAMPLING INFORMATION
DATE-- MAR, 72

PHYSICAL DATA
PH= 6.45
SPECIFIC GRAVITY= 1.064 TEMP DURING READING=20 C
TOT DISS SOLIDS= 88484.00 PPM, SUM
= 98624.00 PPM, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	141	
NA	28195	
K	3055	
LI	63	
CA	7284	
MG	113	
CL	49342	
FE	141	
MN	150	

VALUES POSSIBLY CORRECTED FOR 6 PERCENT STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
PALMER 75B
HOFFMANN 75
WITHAM 76

RECORD 307
CODE NAME=WOOLSEY 1C
SAMPLE TYPE=WATER

WELL WOOLSEY 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 225FT N, 2415FT E, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA
LESSEE--SOUTHERN CALIFORNIA EDISON CO.
DATE DRILLED-- 23 FEB 72 - 16 MAR 72

WELL DATA
DEPTH ----- 732 METERS
TEMPERATURE 238 C AT MAXIMUM

SAMPLING INFORMATION
DATE-- MAR, 72

PHYSICAL DATA
PH= 6.25
SPECIFIC GRAVITY= 1.106 TEMP DURING READING=20 C
TOT DISS SOLIDS= 153219.00 PPM, SUM
= 151237.00 PPM, RESIDUE ON EVAPORATION

BRINE DATA
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
SIO2	181	
NA	49729	
K	6510	
LI	90	
CA	12658	
MG	136	
CL	83185	
FE	244	
MN	488	

VALUES POSSIBLY CORRECTED FOR 10 PERCENT STEAM LOSS.

BIBLIOGRAPHIC DATA
SOURCES--
PALMER 75B
HOFFMANN 75
WITHAM 76
HARDI 76
DRI 76

RECORD 308
CODE NAME=WOOLSEY 1D
SAMPLE TYPE=WATER

WELL WOOLSEY 1
SALTON SEA KGRA
LOCATION-- T11S, R13E, SEC. 33, 225FT N, 2415FT E, FROM S QUARTER CORNER.
IMPERIAL COUNTY, CA., USA

WELL INFORMATION
OWNER-- IMPERIAL MAGMA
LESSEE--SOUTHERN CALIFORNIA EDISON CO.
DATE DRILLED-- 23 FEB 72 - 16 MAR 72

WELL DATA
DEPTH ----- 732 METERS
TEMPERATURE 238 C AT MAXIMUM

SAMPLING INFORMATION
DATE-- 28 OCT 76
SAMPLE NUMBER, LABORATORY-- US BUREAU OF MINES MOBILE CHEM. LAB.
SAMPLE LOCATION-- WELLHEAD
SAMPLING METHOD-- SAMPLE COLLECTED INTO BOTTLES, AA SAMPLES ACIDIFIED WITH HNO3.
CONDITION OF SAMPLE-- SAMPLES COLLECTED EVERY 2 HOURS DURING A 10-HOUR FLOW OF WELL.
CONDITION OF WELL DURING SAMPLING-- FIRST FLOW TEST AFTER WELL SHUT-IN FOR EXTENDED TIME PERIOD. FLOW PRESSURE 100-250 PSI, T=180-205 C.

PHYSICAL DATA
PH= 5.71 PH RANGE= +-0.35 TEMP DURING READING= AMBIENT

BRINE DATA
METHOD OF ANALYSIS-- ATOMIC ABSORPTION SPECTROSCOPY, WITHOUT STANDARD ADDITION TECHNIQUES. CL ANALYSIS BY AGNO3 TITRATION USING 2,4-DICHLOROFLUORESCEIN INDICATOR.
ACCURACY OF ANALYSIS-- VALUES PROBABLY REPRESENT A LOWER LIMIT TO VALUES FOR ALL ELEMENTS. MORE TESTING IS SCHEDULED.
UNITS-- PPM

CONSTITUENT	CONCENTRATION	COMMENT
NA	23000	+-3300
CA	11000	+-600
K	5080	+-170
LI	93	+-3.7
CL	85700	+-5600
FE	64.8	+-8.4
SR	513	+-116

BIBLIOGRAPHIC DATA
SOURCES--
USBM 76B
HOFFMANN 75
WITHAM 76
DATA TO BE PUBLISHED IN 1977 BY U.S. BUREAU OF MINES.

BIBLIOGRAPHY AND RELATED REFERENCES

AIDLIN 71

TITLE- GEOTHERMAL POWER IN THE WEST. TALK GIVEN AT FIRST NORTHWEST CONFERENCE ON GEOTHERMAL POWER, OLYMPIA, WASH.

AUTHOR- AIDLIN, J.W. [MAGMA POWER COMPANY, LOS ANGELES, CALIF. (USA)].

REFERENCE- UNPUBLISHED, 21 MAY, 1971, 16 P.

DESCRIPTORS- MAGMAMAX PROCESS.

ALBRIGHT 75

TITLE- TEMPERATURE MEASUREMENTS IN THE PRECAMBRIAN SECTION OF GEOTHERMAL TEST HOLE NO. 2.

AUTHOR- ALBRIGHT, J.N. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- TEMPERATURE MEASUREMENTS IN THE PRECAMBRIAN SECTION OF GEOTHERMAL TEST HOLE NO. 2. LA-6022-MS, JUL 75, 11 P.

DESCRIPTORS- DRY-HOT-ROCK SYSTEMS; TEMPERATURE MEASUREMENT; TEMPERATURE LOGGING.

ALLEN 77

TITLE- WRITTEN COMMUNICATION--TRANSMITTAL OF DATA FROM REPORT AT EPA SAMPLING CONFERENCE - CAA-001-77. DATA DISPLAYED BY R.E. MCATEE DURING PRESENTATION.

AUTHOR- ALLEN, C.A. [EG AND G IDAHO, INC.].

REFERENCE- WRITTEN COMMUNICATION--TRANSMITTAL OF DATA FROM REPORT AT EPA SAMPLING CONFERENCE - CAA-001-77. DATA DISPLAYED BY R.E. MCATEE DURING PRESENTATION.

DESCRIPTORS- RAFT RIVER KGRA; QUANTITATIVE CHEMICAL ANALYSIS; CHEMICAL ANALYSIS METHODS.

AUSTIN 73

TITLE- THE TOTAL FLOW CONCEPT FOR RECOVERY OF ENERGY FROM GEOTHERMAL HOT BRINE DEPOSITS.

AUTHOR- AUSTIN, A.L.; HIGGINS, G.H.; HOWARD, J.H. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- THE TOTAL FLOW CONCEPT FOR RECOVERY OF ENERGY FROM GEOTHERMAL HOT BRINE DEPOSITS. UCRL-51366, LAWRENCE LIVERMORE LAB., LIVERMORE, CALIF. (USA), 3 APR 1973, 37 P.

DESCRIPTORS- SALTON SEA KGRA; CERRO PRIETO GEOTHERMAL FIELD; ARIZONA; HEAT SOURCES; TOTAL FLOW SYSTEM; LAWRENCE LIVERMORE LABORATORY; THERMODYNAMICS; SCALING; CORROSION; ECONOMICS; IMPERIAL VALLEY.

AUSTIN 75

TITLE- THE LLL GEOTHERMAL ENERGY DEVELOPMENT PROGRAM. STATUS REPORT--JANUARY, 1974 - JANUARY, 1975.

AUTHOR- AUSTIN, A.L. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- THE LLL GEOTHERMAL ENERGY DEVELOPMENT PROGRAM. STATUS REPORT--JANUARY, 1974 - JANUARY, 1975. UCID-16721, LAWRENCE LIVERMORE LAB., 1975,

DESCRIPTORS- IMPERIAL VALLEY; GEOTHERMAL ENERGY CONVERSION; TOTAL FLOW SYSTEM.

AUSTIN 75B

TITLE- THE LLL GEOTHERMAL ENERGY DEVELOPMENT PROGRAM. STATUS REPORT--JANUARY, 1975 - AUGUST, 1975.

AUTHOR- AUSTIN, A.L.; HOWARD, J.H.; LUNDBERG, A.W.; TARDIFF, G.E. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- THE LLL GEOTHERMAL ENERGY DEVELOPMENT PROGRAM. STATUS REPORT--JANUARY, 1975 - AUGUST, 1975. UCID--16954, LAWRENCE LIVERMORE LAB., 1975, 27 P.

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL ENERGY CONVERSION; CHEMICAL ANALYSIS; CORROSION; SCALING.

AXTELL 72

TITLE- MONO LAKE GEOTHERMAL WELLS ABANDONED.

AUTHOR- AXTELL, L.H. [CALIFORNIA STATE DIV. OF OIL AND GAS, SACRAMENTO (USA)].

REFERENCE- CALIFORNIA GEOLOGY, V. 25 (3), P. 66-67(1972).

DESCRIPTORS- MONO-LONG VALLEY KGRA; LITHOLOGY; TEMPERATURE GRADIENTS; EXPLORATORY WELLS.

BARRETT 76

TITLE- HYDROGEOLOGICAL DATA OF THERMAL SPRINGS AND WELLS IN COLORADO.

AUTHOR- BARRETT, J.K.; PEARL, R.H. [COLORADO GEOLOGICAL SURVEY].

REFERENCE- HYDROGEOLOGICAL DATA OF THERMAL SPRINGS AND WELLS IN COLORADO. INFORMATION SERIES NO. 6, COLORADO GEOLOGICAL SURVEY, DENVER, COLO., 1976, 124 P.

DESCRIPTORS- COLORADO; THERMAL WATERS; HOT SPRINGS; WELLS; QUANTITATIVE CHEMICAL ANALYSIS; TEMPERATURE MEASUREMENT.

BEBOUT 76

TITLE- SUBSURFACE TECHNIQUES FOR LOCATING AND EVALUATING GEOPRESSURED GEOTHERMAL RESERVOIRS ALONG THE TEXAS GULF COAST.

AUTHOR- BEBOUT, D.G. [TEXAS UNIV., AUSTIN (USA). BUREAU OF ECONOMIC GEOLOGY].

REFERENCE- PROCEEDINGS--SECOND GEOPRESSURED GEOTHERMAL ENERGY CONFERENCE. VOLUME 2--RESOURCE ASSESSMENT. CENTER FOR ENERGY STUDIES, TEX. UNIV., AUSTIN, TEX., 1976, 44 P.

DESCRIPTORS- GEOPRESSURED SYSTEMS; TEXAS; GEOLOGY; EXPLORATION.

BLAIR 76

TITLE- LASL HOT DRY ROCK GEOTHERMAL PROJECT.

AUTHOR- BLAIR, A.G.; TESTER, J.W.; MORTENSEN, J.J. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- LASL HOT DRY ROCK GEOTHERMAL PROJECT. LA-6525-PR, OCT 76, 238 P.

DESCRIPTORS- HOT-DRY-ROCK SYSTEMS; LASL; MEASURING INSTRUMENTS; RESERVOIR PROPERTIES; FRACTURE PROPERTIES; VALLES CALDERA GEOTHERMAL FIELD; BACA LOCATION NO. 1; GEOLOGY; GEOTHERMAL WELLS; GEOTHERMAL DRILLING.

BLAKE 74

TITLE- EXTRACTING MINERALS FROM GEOTHERMAL BRINES--A LITERATURE STUDY.

AUTHOR- BLAKE, R.L. [TWIN CITIES METALLURGY RESEARCH CENTER, TWIN CITIES, MINN. (USA)].

REFERENCE- EXTRACTING MINERALS FROM GEOTHERMAL BRINES--A LITERATURE STUDY. INFORMATION CIRCULAR 8638, BUREAU OF MINES, WASHINGTON, D.C, 1974, 25 P.

DESCRIPTORS- GEOTHERMAL BRINES; MINERAL RESOURCES; ENVIRONMENTAL EFFECTS.

BROWN 72

TITLE- A NEW METHOD FOR EXTRACTING ENERGY FROM DRY GEOTHERMAL RESERVOIRS.

AUTHOR- BROWN, D.W.; SMITH, M.C.; POTTER, R.M. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- A NEW METHOD FOR EXTRACTING ENERGY FROM DRY GEOTHERMAL RESERVOIRS. LA-DC-72-1157, LOS ALAMOS SCIENTIFIC LAB, 20 SEP 72, 23 P.

DESCRIPTORS- HOT-DRY-ROCK SYSTEMS.

CALIF. GEOTHERM. RESOUR. BOARD 70

TITLE- COMPENDIUM OF PAPERS--IMPERIAL VALLEY-SALTON SEA AREA GEOTHERMAL HEARING.

AUTHOR- CALIF. GEOTHERMAL RESOURCES BOARD.

REFERENCE- COMPENDIUM OF PAPERS--IMPERIAL VALLEY-SALTON SEA AREA GEOTHERMAL HEARING. CALIF. DIV. OIL AND GAS, SACRAMENTO, CALIF, 22 OCT, 1970,

DESCRIPTORS- SALTON SEA KGRA; IMPERIAL VALLEY.

CARTER 74

TITLE- CORROSION RESISTANCE OF SOME COMMERCIALLY AVAILABLE METALS AND ALLOYS TO GEOTHERMAL BRINES.

AUTHOR- CARTER, J.P.; CRAMER, S.D. [BUREAU OF MINES, COLLEGE PARK, MD. (USA). COLLEGE PARK METALLURGY RESEARCH CENTER].

REFERENCE- CORROSION PROBLEMS IN ENERGY CONVERSION AND GENERATION. THE ELECTROCHEMICAL SOCIETY, CORROSION DIVISION, PRINCETON, N.J., 1974, P. 240-250.

DESCRIPTORS- CORROSION; STAINLESS STEELS; ALLOYS; SALTON SEA KGRA; EAST MESA KGRA.

CDWR 67

TITLE- INVESTIGATION OF GEOTHERMAL WATERS IN THE LONG VALLEY AREA, MONO COUNTY.

AUTHOR- CALIF. DEPT. OF WATER RESOURCES.

REFERENCE- INVESTIGATION OF GEOTHERMAL WATERS IN THE LONG VALLEY AREA, MONO COUNTY. CALIFORNIA STATE RESOURCES AGENCY, SACRAMENTO (USA). DEPT. OF WATER RESOURCES, 1967,

DESCRIPTORS- MONO-LONG VALLEY KGRA; WASTE DISPOSAL; WATER POLLUTION; HYDROGEOLOGY; HYDROLOGY; WATER QUALITY.

CDWR 70

TITLE- GEOTHERMAL WASTES AND THE WATER RESOURCES OF THE SALTON SEA AREA.

AUTHOR- CALIF. DEPT. OF WATER RESOURCES.

REFERENCE- GEOTHERMAL WASTES AND THE WATER RESOURCES OF THE SALTON SEA AREA. BULLETIN 143-7, CALIF. DEPT. OF WATER RESOURCES, FEB 1970, 123 P.

DESCRIPTORS- IMPERIAL VALLEY; SALTON SEA KGRA; WATER QUALITY; GEOLOGY; HYDROLOGY; WASTES; QUANTITATIVE CHEMICAL ANALYSIS.

CHEM. ENG. NEWS 65

TITLE- GEOTHERMAL BRINE DRAWS MORTON SALT. SHELL OIL WITHDRAWS, BUT MORTON STARTS BUILDING PILOT PLANT.

AUTHOR- CHEM. ENG. NEWS.

REFERENCE- CHEM. ENG. NEWS, V. 43 (5), P. 16(1 FEB 1965).

DESCRIPTORS- SALTON SEA KGRA.

COLEMAN 29

TITLE- A BIOLOGICAL SURVEY OF SALTON SEA.

AUTHOR- COLEMAN, G.A. [CALIFORNIA DEPT. OF FISH AND GAME, SACRAMENTO (USA)].

REFERENCE- CALIF. FISH GAME, V. 15 (3), P. 218-227(JUL 1929).

DESCRIPTORS- SALTON SEA; SALTON SEA KGRA; BIOLOGICAL EFFECTS; ENVIRONMENTAL EFFECTS.

COPLEN 73

TITLE- COOPERATIVE GEOCHEMICAL INVESTIGATION OF GEOTHERMAL RESOURCES IN THE IMPERIAL VALLEY AND YUMA AREAS.

AUTHOR- COPLEN, T.B. [PRINCIPAL INVESTIGATOR] [GEOLOGICAL SURVEY, RESTON, VA. (USA)].

REFERENCE- COOPERATIVE GEOCHEMICAL INVESTIGATION OF GEOTHERMAL RESOURCES IN THE IMPERIAL VALLEY AND YUMA AREAS. IGPP-UCR-73-48, CALIF. UNIV., INST. OF GEOPHYSICS AND PLANETARY PHYSICS, RIVERSIDE, CALIF., 1973, 21 P.

DESCRIPTORS- IMPERIAL VALLEY; GEOCHEMISTRY; CHEMICAL ANALYSIS; ISOTOPES.

COPLEN 74

TITLE- INVESTIGATIONS OF THE DUNES GEOTHERMAL ANOMALY, IMPERIAL VALLEY, CALIFORNIA. PART 1. GEOCHEMISTRY OF GEOTHERMAL FLUIDS.

AUTHOR- COPLEN, T.B.; KOLESTAR, P. [CALIFORNIA UNIV., RIVERSIDE (USA). INST. OF GEOPHYSICS AND PLANETARY PHYSICS].

REFERENCE- INVESTIGATIONS OF THE DUNES GEOTHERMAL ANOMALY, IMPERIAL VALLEY, CALIFORNIA. PART 1. GEOCHEMISTRY OF GEOTHERMAL FLUIDS. IGPP-UCR-74-18, CALIF. UNIV., INST. OF GEOPHYS. AND PLANET. PHYS., RIVERSIDE, CALIF., 1974, 21 P.

DESCRIPTORS- DUNES GEOTHERMAL ANOMALY; IMPERIAL VALLEY; GEOTHERMAL FLUIDS; GEOCHEMISTRY; CHEMICAL ANALYSIS; ISOTOPES; GEOTHERMOMETERS.

COPLEN 76

TITLE- COOPERATIVE GEOCHEMICAL RESOURCE ASSESSMENT OF THE MESA GEOTHERMAL SYSTEM.

AUTHOR- COPLEN, T.B. [CALIFORNIA UNIV., RIVERSIDE (USA). INST. OF GEOPHYSICS AND PLANETARY PHYSICS].

REFERENCE- COOPERATIVE GEOCHEMICAL RESOURCE ASSESSMENT OF THE MESA GEOTHERMAL SYSTEM. IGPP-UCR-76-1, CALIF. UNIV., INST. OF GEOPHYS. AND PLANET. PHYS., RIVERSIDE, CALIF., 1976, 97 P.

DESCRIPTORS- IMPERIAL VALLEY; GEOTHERMAL RESERVOIRS; HOT-WATER SYSTEMS; EAST MESA KGRA; GEOPHYSICAL SURVEYS; ISOTOPES; HYDROLOGY; GEOCHEMISTRY; CHEMICAL ANALYSIS.

CRAIG 69

TITLE- DISCUSSION--SOURCE FLUIDS FOR THE SALTON SEA GEOTHERMAL SYSTEM.

AUTHOR- CRAIG, H. [CALIFORNIA UNIVERSITY, LA JOLLA, SAN DIEGO (USA). SCRIPPS INST. OF OCEANOGRAPHY].

REFERENCE- AM. J. SCI., V. 267, P. 249-255(FEB 1969).

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL BRINES; ISOTOPES.

CRAMER 74

TITLE- THE SOLUBILITY OF OXYGEN IN GEOTHERMAL BRINES.

AUTHOR- CRAMER, S.D. [BUREAU OF MINES, COLLEGE PARK, MD. (USA). COLLEGE PARK METALLURGY RESEARCH CENTER].

REFERENCE- CORROSION PROBLEMS IN ENERGY CONVERSION AND GENERATION. THE ELECTROCHEMICAL SOCIETY CORROSION DIVISION, PRINCETON, N.J., 1974, P. 251-262.

DESCRIPTORS- CORROSION; SOLUBILITY; OXYGEN.

DELISLE 75

TITLE- DETERMINATION OF PERMEABILITY OF GRANITIC ROCK IN GT-2 FROM HYDRAULIC FRACTURING DATA.

AUTHOR- DELISLE, G. [FEDERAL INST. FOR GEOSCIENCES AND NATURAL RESOURCES (F.R. GERMANY); CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB].

REFERENCE- DETERMINATION OF PERMEABILITY OF GRANITIC ROCK IN GT-2 FROM HYDRAULIC FRACTURING DATA. LA-6169-MS, LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS, N. MEX., DEC 75, 5 P.

DESCRIPTORS- PERMEABILITY; GRANITE; HOT-DRY-ROCK SYSTEMS.

DELLACHAIE 75

TITLE- A HYDROCHEMICAL STUDY OF THE SOUTH SANTA CRUZ BASIN NEAR COOLIDGE, ARIZONA.

AUTHOR- DELLACHAIE, F. [AMAX EXPLORATION, INC., DENVER (USA)].

REFERENCE- PROCEEDINGS--SECOND UNITED NATIONS SYMPOSIUM ON THE DEVELOPMENT AND USE OF GEOTHERMAL RESOURCES. LAWRENCE BERKELEY LAB, BERKELEY, CALIF., 1976, VOL. 1, P. 339-348.

DESCRIPTORS- ARIZONA; WELLS; IRRIGATION; EXPLORATORY WELLS; MODERATE TEMPERATURE; TEMPERATURE MEASUREMENT; TEMPERATURE LOGGING; CHEMICAL ANALYSIS; CHEMICAL ANALYSIS METHODS.

DENNIS 74

TITLE- INSTRUMENTATION FOR GRANITE TEST NO. 1.

AUTHOR- DENNIS, B.R.; POTTER, R.M. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- INSTRUMENTATION FOR GRANITE TEST NO. 1. LA-5626-MS, LOS ALAMOS SCIENTIFIC LAB., LOS ALAMOS, N. MEX., JUN 74, 14 P.

DESCRIPTORS- HOT-DRY-ROCK SYSTEMS; MEASURING INSTRUMENTS; PRESSURE MEASUREMENT; FRACTURE PROPERTIES.

DOE 66

TITLE- PRELIMINARY INVESTIGATION OF THE SOURCE OF LEAD AND STRONTIUM IN DEEP GEOTHERMAL BRINES UNDERLYING THE SALTON SEA GEOTHERMAL AREA.

AUTHOR- DOE, B.R.; HEDGE, C.E.; WHITE, D.E. [GEOLOGICAL SURVEY (USA)].

REFERENCE- ECON. GEOL., V. 61, P. 462-483(1966).

DESCRIPTORS- SALTON SEA KGRA; ISOTOPES; STRONTIUM; LEAD; GEOTHERMAL BRINES.

DRI 76

TITLE- CHEMICAL ANALYSES OF GEOTHERMAL WATER. COMPUTER PRINTED TABLE.

AUTHOR- DESERT RESEARCH INST., LAS VEGAS (USA).

REFERENCE- CHEMICAL ANALYSES OF GEOTHERMAL WATER. DESERT RESEARCH INST., LAS VEGAS, NEV., 1976, 154 P.

DESCRIPTORS- HOT SPRINGS; WELLS; GEOTHERMAL WELLS; QUANTITATIVE CHEMICAL ANALYSIS; TEMPERATURE MEASUREMENT; NORTH AMERICA.

DUTCHER 72

TITLE- PRELIMINARY APPRAISAL OF GROUND WATER IN STORAGE WITH REFERENCE TO GEOTHERMAL RESOURCES IN THE IMPERIAL VALLEY AREA, CALIFORNIA.

AUTHOR- DUTCHER, L.C.; HARDT, W.F.; MOYLE, W.R., JR. [U.S. GEOLOGICAL SURVEY].

REFERENCE- PRELIMINARY APPRAISAL OF GROUND WATER IN STORAGE WITH REFERENCE TO GEOTHERMAL RESOURCES IN THE IMPERIAL VALLEY AREA, CALIFORNIA. GEOL. SURVEY CIRCULAR 649, U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C., 1972, 57 P.

DESCRIPTORS- IMPERIAL VALLEY; CALIFORNIA; GEOTHERMAL RESOURCES; GEOTHERMAL RESERVOIRS; GEOTHERMAL FLUIDS; CHEMISTRY; HEAT FLOW.

EIC 76

TITLE- CONFERENCE ON SCALE MANAGEMENT IN GEOTHERMAL ENERGY DEVELOPMENT. PROCEEDINGS.

AUTHOR- EIC CORP., NEWTON, MASS. (USA).

REFERENCE- CONFERENCE ON SCALE MANAGEMENT IN GEOTHERMAL ENERGY DEVELOPMENT. EIC CORP., NEWTON, MASS. (USA), 1976,

DESCRIPTORS- SCALING; GEOTHERMAL ENERGY CONVERSION; GEOTHERMAL BRINES; SILICA.

EINARSSON 76

TITLE- DISPOSAL OF GEOTHERMAL WASTE WATER BY REINJECTION.

AUTHOR- EINARSSON, S.S. [OTC, UNITED NATIONS, MANAGUA (NICARAGUA)].
VIDES, A.R.; CUELLAR, G. [COMISION EJECUTIVA HIDROELECTRICA DEL RIO LEMPA, SAN SALVADOR (EL SALVADOR)].

REFERENCE- PROCEEDINGS--SECOND UNITED NATIONS SYMPOSIUM ON THE DEVELOPMENT AND USE OF GEOTHERMAL RESOURCES. CALIF. UNIV., LAWRENCE BERKELEY LAB., BERKELEY, CALIF., APR 1976, V. 2, P. 1349-1363.

DESCRIPTORS- AHUACHAPAN GEOTHERMAL FIELD; REINJECTION; GEOTHERMAL BRINES.

ELLIS 67

TITLE- THE CHEMISTRY OF SOME EXPLORED GEOTHERMAL SYSTEMS. CHAPTER 11.

AUTHOR- ELLIS, A.J. [DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH (NEW ZEALAND)].
BARNES, H.L. (ED.) [PENNSYLVANIA STATE UNIV., UNIVERSITY PARK (USA)].

REFERENCE- GEOCHEMISTRY OF HYDRO-THERMAL DEPOSITS. HOLT, RINEHART AND WINSTON, INC., 1967, P. 465-514.

DESCRIPTORS- STEAMBOAT SPRINGS KGRA; SALTON SEA KGRA; YELLOWSTONE; GEOTHERMAL FIELDS; CHEMICAL COMPOSITION; VAPORS; ICELAND; JAPAN; NEW ZEALAND; USSR; ITALY; DENSITY; SOLUBILITY; ACTIVITY COEFFICIENT; CHEMICAL EQUILIBRIUM.

ENG. MIN. J. 64

TITLE- SALTON SEA GEOTHERMAL WELLS YIELD STEAM POWER AND MINERAL-RICH BRINE.

AUTHOR- ENG. MIN. J.

REFERENCE- ENG. MIN. J., V. 165 (11), P. 116(1964).

DESCRIPTORS- SALTON SEA KGRA; WELL DRILLING.

EPA 76

TITLE- PROCEEDINGS OF THE FIRST WORKSHOP ON SAMPLING GEOTHERMAL EFFLUENTS. INCLUDES TWELVE PAPERS.

AUTHOR- ENVIRONMENTAL PROTECTION AGENCY, LAS VEGAS (USA). ENVIRONMENTAL MONITORING AND SUPPORT LAB..

REFERENCE- PROCEEDINGS OF THE FIRST WORKSHOP ON SAMPLING GEOTHERMAL EFFLUENTS. EPA-600/9-76-011, U.S. ENVIRONMENTAL PROTECTION AGENCY, LAS VEGAS, NEV., MAY 1976, 234 P.

DESCRIPTORS- GEOTHERMAL ENERGY; THERMAL EFFLUENTS; SAMPLING METHODS; DOWNHOLE SAMPLING; RADIOACTIVITY; CHEMICAL ANALYSIS METHODS.

EPRI 76A

TITLE- GEOTECHNICAL ENVIRONMENTAL ASPECTS OF GEOTHERMAL POWER GENERATION AT HEBER, IMPERIAL VALLEY, CALIFORNIA.

AUTHOR- GEONOMICS, INC., BERKELEY, CALIF. (USA).

REFERENCE- GEOTECHNICAL ENVIRONMENTAL ASPECTS OF GEOTHERMAL POWER GENERATION AT HEBER, IMPERIAL VALLEY, CALIFORNIA. EPRI ER-299, ELECTRIC POWER RESEARCH INST, PALO ALTO, CALIF., OCT 1976, 79 P.

DESCRIPTORS- HEBER KGRA; IMPERIAL VALLEY; GEOLOGY; GEOPHYSICS; HYDROGEOLOGY; SEISMICITY; SUBSIDENCE; ENVIRONMENT; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

EPRI 76B

TITLE- GEOTHERMAL ENERGY CONVERSION AND ECONOMICS--CASE STUDIES.

AUTHOR- HOLT/PROCON, PASADENA, CALIF. (USA).

REFERENCE- GEOTHERMAL ENERGY CONVERSION AND ECONOMICS--CASE STUDIES. EPRI ER-301, ELECTRIC POWER RESEARCH INST., PALO ALTO, CALIF., NOV 1976, 117 P.

DESCRIPTORS- GEOTHERMAL ENERGY CONVERSION; ECONOMICS; BINARY CYCLES; FLASHING; HEBER KGRA; VALLES CALDERA GEOTHERMAL FIELD.

FENNER 36

TITLE- BORE-HOLE INVESTIGATIONS IN YELLOWSTONE PARK.

AUTHOR- FENNER, C.N. [CARNEGIE INSTITUTION OF WASHINGTON, D.C. (USA). GEOPHYSICAL LAB.].

REFERENCE- J. GEOL., V. 44 (2), PART 2, P. 225-315(1936).

DESCRIPTORS- YELLOWSTONE NATIONAL PARK; DRILLING; PETROLOGY; FRACTURE PROPERTIES; GEOLOGIC SETTING; MINERALOGY; TEMPERATURE MEASUREMENT; PRESSURE MEASUREMENT.

FOURNIER 66

TITLE- ESTIMATION OF UNDERGROUND TEMPERATURES FROM THE SILICA CONTENT OF WATER FROM HOT SPRINGS AND WET-STEAM WELLS.

AUTHOR- FOURNIER, R.O. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].
ROWE, J.J. [GEOLOGICAL SURVEY, WASHINGTON, D.C. (USA)].

REFERENCE- AM. J. SCI., V. 264, P. 685-697(NOV 1966).

DESCRIPTORS- SOLUBILITY; SILICA; GEOTHERMOMETERS; QUARTZ; CONCENTRATION DEPENDENCE; RESERVOIR TEMPERATURE; HOT SPRINGS; HOT-WATER SYSTEMS; YELLOWSTONE NATIONAL PARK; CHEMICAL ANALYSIS; EXPERIMENTAL RESULTS.

GARRETT 74

TITLE- SILICATE SCALE CONTROL IN GEOTHERMAL BRINES. FINAL REPORT.

AUTHOR- GARRETT RESEARCH AND DEVELOPMENT CO.

REFERENCE- SILICATE SCALE CONTROL IN GEOTHERMAL BRINES. FINAL REPORT. G R AND D 74-048, GARRETT RESEARCH AND DEVELOPMENT CO., LA VERNE, CALIF., 1974, 100 P.

DESCRIPTORS- GEOTHERMAL BRINES; SILICA; SCALING; SCALING CONTROL; QUANTITATIVE CHEMICAL ANALYSIS.

GARSIDE 74

TITLE- GEOTHERMAL EXPLORATION AND DEVELOPMENT IN NEVADA THROUGH 1973. INCLUDES UPDATES THROUGH 1977.

AUTHOR- GARSIDE, L.J. [NEVADA BUREAU OF MINES AND GEOLOGY, RENO (USA); NEVADA MINING ANALYTICAL LAB., RENO (USA)].

REFERENCE- GEOTHERMAL EXPLORATION AND DEVELOPMENT IN NEVADA THROUGH 1973. NBMG REPT. 21, UNIV. OF NEVADA, RENO, NEV, 1974, 12 P.

ABSTRACT- A BRIEF DESCRIPTION OF NEVADA'S GEOTHERMAL RESOURCES, AND EXPLORATION ACTIVITY FOR GEOTHERMAL POWER THROUGH 1973. THE USE, GEOLOGY, EXPLORATION, AND REGULATION OF THE STATES GEOTHERMAL ENERGY RESOURCES ARE DISCUSSED.(AUTH)

DESCRIPTORS- NEVADA; GEOTHERMAL EXPLORATION; GEOTHERMAL WELLS; GEOLOGY; LEGAL ASPECTS; REGULATIIONS; KGRAS.

GODWIN 71

TITLE- CLASSIFICATION OF PUBLIC LANDS VALUABLE FOR GEOTHERMAL STEAM AND ASSOCIATED GEOTHERMAL RESOURCES.

AUTHOR- GODWIN, L.H.; HAIGLER, L.B.; RIOUX, R.L.; WHITE, D.E.; MUFFLER, L.J.P.; WAYLAND, R.G. [GEOLOGICAL SURVEY (USA)].

REFERENCE- CLASSIFICATION OF PUBLIC LANDS VALUABLE FOR GEOTHERMAL STEAM AND ASSOCIATED GEOTHERMAL RESOURCES. GEOLOGICAL SURVEY CIRCULAR 647, U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C., 1971, 18 P.

DESCRIPTORS- LEGAL ASPECTS; KGRAS; LAWS; LAND LEASING.

GOLDSMITH 71

TITLE- GEOTHERMAL RESOURCES IN CALIFORNIA--POTENTIALS AND PROBLEMS.

AUTHOR- GOLDSMITH, M. [CALIFORNIA INST. OF TECH., PASADENA (USA). ENVIRONMENTAL QUALITY LAB.].

REFERENCE- GEOTHERMAL RESOURCES IN CALIFORNIA--POTENTIALS AND PROBLEMS. EQL REPORT NO. 5, CALIF. INST. OF TECH., PASADENA, CALIF., DEC 1971, 45 P.

DESCRIPTORS- ENVIRONMENTAL EFFECTS; CALIFORNIA; GEOTHERMAL RESOURCES; GEYSERS KGRA; IMPERIAL VALLEY; EXPLOITATION; ECONOMICS.

HALL 75

TITLE- MATERIALS PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF GEOTHERMAL ENERGY RESOURCES. PAPERS PRESENTED AT WORKSHOP, 3 DEC, 1974.

AUTHOR- HALL, B.A. (ED.) [GEOTHERMAL RESOURCES COUNCIL, DAVIS, CALIF. (USA)].

REFERENCE- MATERIALS PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF GEOTHERMAL ENERGY RESOURCES. USBM GRANT NO. PC 150296, GEOTHERMAL RESOURCES COUNCIL, DAVIS, CALIF., 1975, 44 P.

DESCRIPTORS- IMPERIAL VALLEY; GEOTHERMAL FIELDS; SALTON SEA KGRA; HEBER KGRA; KIZILDERE GEOTHERMAL FIELD; CORROSION; SCALING; CORROSION RESISTANT ALLOYS.

HARDT 76

TITLE- SELECTED DATA ON WATER WELLS, GEOTHERMAL WELLS, AND OIL TESTS IN IMPERIAL VALLEY, CALIFORNIA. OPEN FILE REPORT.

AUTHOR- HARDT, W.F.; FRENCH, J.J. [GEOLOGICAL SURVEY, LAGUNA NIGUEL, CALIF. (USA)].

REFERENCE- SELECTED DATA ON WATER WELLS, GEOTHERMAL WELLS, AND OIL TESTS IN IMPERIAL VALLEY, CALIFORNIA. OPEN FILE REPORT. U.S. GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA), JUL 1976, 251 P.

DESCRIPTORS- IMPERIAL VALLEY; GEOTHERMAL WELLS; OIL WELLS; WATER; QUANTITATIVE CHEMICAL ANALYSIS; ISOTOPES; TEMPERATURE LOGGING; PRESSURE MEASUREMENT.

HELGESON 65

TITLE- HIGH TEMPERATURE SOLUTION CHEMISTRY OF SULFIDES.

AUTHOR- HELGESON, H.C.

REFERENCE- ECON. GEOL., V. 60 (7), P. 1385(AUG 1965).

DESCRIPTORS- GEOTHERMAL BRINES; SALTON SEA KGRA; SULFIDES.

HELGESON 67

TITLE- SOLUTION CHEMISTRY AND METAMORPHISM.

AUTHOR- HELGESON, H.C. [CALIFORNIA UNIV., BERKELEY (USA). DEPT. OF GEOLOGY AND GEOPHYSICS].
ABELSON (ED.) [CARNEGIE INSTITUTION OF WASHINGTON (USA). GEOPHYSICAL LABORATORY].

REFERENCE- RESEARCHES IN GEOCHEMISTRY. VOLUME 2. JOHN WILEY AND SONS, INC., 1967, P. 362-404.

DESCRIPTORS- SALTON SEA KGRA; THERMODYNAMICS; ACTIVITY COEFFICIENTS; CHEMICAL EQUILIBRIUM; PHASE DIAGRAMS; LITHOLOGY.

HELGESON 67B

TITLE- SILICATE METAMORPHISM IN SEDIMENTS AND THE GENESIS OF HYDROTHERMAL ORE SOLUTIONS.

AUTHOR- HELGESON, H.C. [NORTHWESTERN UNIV., EVANSTON, ILL. (USA)].
BROWN, J.S. (ED.)

REFERENCE- ECONOMIC GEOLOGY--MONOGRAPH 3. GENESIS OF STRATIFORM LEAD-ZINC-BARITE-FLUORITE DEPOSITS IN CARBONATE ROCKS (THE SO-CALLED MISSISSIPPI VALLEY TYPE DEPOSITS)--A SYMPOSIUM. THE ECONOMIC GEOLOGY PUBLISHING CO., 1967, P. 333-342.

DESCRIPTORS- SILICATE MINERALS; METAMORPHISM; HYDROTHERMAL SYSTEMS; MINERAL RESOURCES; SULFIDE MINERALS; GALENA; GEOLOGIC DEPOSITS; ORIGIN; SEDIMENTARY ROCKS; PHASE DIAGRAMS; ELECTROLYTES; SEAWATER; TEMPERATURE DEPENDENCE; GEOTHERMAL FLUIDS; SALTON SEA GEOTHERMAL FIELD.

HELGESON 68

TITLE- GEOLOGIC AND THERMODYNAMIC CHARACTERISTICS OF THE SALTON SEA GEOTHERMAL SYSTEM.

AUTHOR- HELGESON, H.C. [NORTHWESTERN UNIV., EVANSTON, ILL. (USA). DEPT. OF GEOLOGY].

REFERENCE- AM. J. SCI., V. 266, P. 129-166(MAR 1968).

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL BRINES; THERMODYNAMICS; ENTHALPY; STRATIGRAPHY; LITHOLOGY.

HILL 75

TITLE- SAMPLING A TWO-PHASE GEOTHERMAL BRINE FLOW FOR CHEMICAL ANALYSIS.

AUTHOR- HILL, J.M.; MORRIS, C.J. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- SAMPLING A TWO-PHASE GEOTHERMAL BRINE FLOW FOR CHEMICAL ANALYSIS. PREPRINT UCRL-77544, CALIF. UNIV., LLL, LIVERMORE, CALIF., 5 DEC 1975, 27 P.

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

HOAGLAND 76

TITLE- PETROLOGY AND GEOCHEMISTRY OF HYDROTHERMAL ALTERATION IN BOREHGLE MESA 6-2, EAST MESA GEOTHERMAL AREA, IMPERIAL VALLEY, CALIFORNIA.

AUTHOR- HOAGLAND, J.R. [CALIFORNIA UNIV., RIVERSIDE (USA)].

REFERENCE- PETROLOGY AND GEOCHEMISTRY OF HYDROTHERMAL ALTERATION IN BOREHOLE MESA 6-2, EAST MESA GEOTHERMAL AREA, IMPERIAL VALLEY, CALIFORNIA. THESIS (M.S.), IGPP-UCR-76-12, CALIF. UNIV., RIVERSIDE, CALIF., JUN 1976, 90 P.

DESCRIPTORS- EAST MESA KGRA; GECTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; PETROLOGY; GEOCHEMISTRY; GEOTHERMAL RESERVOIRS; ROCKS; WATER CHEMISTRY; HYDROTHERMAL ALTERATION.

HOAGLAND 76B

TITLE- PRELIMINARY EVALUATION OF FLUID CHEMISTRY IN THE EAST MESA KGRA.

AUTHOR- HOAGLAND, J.R. [CALIFORNIA UNIV., RIVERSIDE (USA). INST. OF GEOPHYSICS AND PLANETARY PHYSICS].

REFERENCE- PRELIMINARY EVALUATION OF FLUID CHEMISTRY IN THE EAST MESA KGRA. UNPUBLISHED COPY, OCT 1976, 89 P.

DESCRIPTORS- EAST MESA KGRA; GEOTHERMAL WELLS; GEOTHERMAL FLUIDS; WATER CHEMISTRY; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL RESERVOIRS; PETROLOGY; MATHEMATICAL MODELS; COMPUTER CALCULATIONS.

HODGSON 76

TITLE- WELL RECORDS RELEASED.

AUTHOR- HODGSON, S.F. [CALIF. DIV. OIL, GAS].

REFERENCE- CALIFORNIA GEOLOGY, P. 162(1976).

DESCRIPTORS- GEOTHERMAL WELLS; CALIFORNIA; DATA.

HOFFMANN 75

TITLE- BRINE CHEMISTRY - SCALING AND CORROSION. GEOTHERMAL RESEARCH STUDY IN THE SALTON SEA REGION OF CALIFORNIA.

AUTHOR- HOFFMANN, M.R. [CALIFORNIA INST. OF TECH., PASADENA (USA). ENVIRONMENTAL QUALITY LAB.].

REFERENCE- BRINE CHEMISTRY - SCALING AND CORROSION. GEOTHERMAL RESEARCH STUDY IN THE SALTON SEA REGION OF CALIFORNIA. EQL MEMORANDUM NO. 14, CALIFORNIA INST. OF TECH., ENVIRONMENTAL QUALITY LAB., PASADENA, CALIF. (USA), JUL 1975, 48 P.

DESCRIPTORS- SALTON SEA KGRA; BRINES; SCALING; CORROSION; GEOTHERMAL FLUIDS; CHEMICAL ANALYSIS; SILICA.

HSU 75

TITLE- FORCED OSCILLATIONS OF THE LOS ALAMOS SCIENTIFIC LABORATORY'S DRY HOT ROCK GEOTHERMAL RESERVOIR.

AUTHOR- HSU, Y.C. [NEW MEXICO UNIV., ALBUQUERQUE (USA). DEPT. OF MECHANICAL ENGINEERING].

REFERENCE- FORCED OSCILLATIONS OF THE LOS ALAMOS SCIENTIFIC LABORATORY'S DRY HOT ROCK GEOTHERMAL RESERVOIR. LA-6170-MS, DEC 75, 6 P.

DESCRIPTORS- GEOTHERMAL RESERVOIRS; RESERVOIR ENGINEERING; HOT-DRY-ROCK SYSTEMS.

KAMINS 77

TITLE- THE HAWAII GEOTHERMAL PROJECT--AN ASSESSMENT OF GEOTHERMAL DEVELOPMENT IN PUNA, HAWAII.

AUTHOR- KAMINS, R.M.; TINNING, K.J. [HAWAII UNIV., HONOLULU (USA)].

REFERENCE- THE HAWAII GEOTHERMAL PROJECT--AN ASSESSMENT OF GEOTHERMAL DEVELOPMENT IN PUNA, HAWAII. UNIV. OF HAWAII, HONOLULU, HAWAII, JAN 1977, 103 P.

DESCRIPTORS- HAWAII; ENVIRONMENTAL EFFECTS; RESOURCE DEVELOPMENT.

KELLER 75

TITLE- GEOTHERMAL SPACE HEATING OF A GEOTHERMAL DRILLING RIG.

AUTHOR- KELLER, J.G.; MILLER, L.G.; MINES, G.L.; RICHARDSON, A.S. [AEROJET NUCLEAR CO., IDAHO FALLS, IDAHO (USA)].

REFERENCE- GECTHERMAL SPACE HEATING OF A GEOTHERMAL DRILLING RIG. ANCR-1241, AEROJET NUCLEAR COMPANY, IDAHO FALLS, IDAHO, JUN 1975, 19 P.

DESCRIPTORS- RAFT RIVER KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL SPACE HEATING; DRILLING RIGS.

KOENIG 66

TITLE- GEOTHERMAL RESOURCES IN CALIFORNIA. A STATUS REPORT.

AUTHOR- KOENIG, J.B.

REFERENCE- MINERAL INFORMATION SERVICE, V. 19 (6), P. 94-95B(1966).

DESCRIPTORS- CALIFORNIA; LEASING; EXPLORATION; GEYSERS-CALISTOGA KGRA; GEYSERS GECTHERMAL FIELD; IMPERIAL VALLEY; MONO-LONG VALLEY KGRA; GEOTHERMAL BRINES; SCALING; CORROSION.

KOENIG 67

TITLE- THE SALTON SEA GEOTHERMAL PROVINCE.

AUTHOR- KOENIG, J.B. [CALIFORNIA DIV. OF MINES AND GEOLOGY].

REFERENCE- MINERAL INFORMATION SERVICE, V. 20 (7), P. 75-81(JUL 1967).

DESCRIPTORS- IMPERIAL VALLEY; SALTON SEA KGRA; CERRO PRIETO GEOTHERMAL FIELD.

KUNZE 75A

TITLE- GEOTHERMAL R AND D PROJECT REPORT FCR PERIOD APRIL 1, 1975 TO JUNE 30, 1975.

AUTHOR- KUNZE, J.F. [AEROJET NUCLEAR CO., IDAHO FALLS, IDAHO (USA)].

REFERENCE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD APRIL 1, 1975 TO JUNE 30, 1975. ANCR-1247, AEROJET NUCLEAR COMPANY, IDAHO FALLS, IDAHO, SEP 1975, 60 P.

DESCRIPTORS- RAFT RIVER KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL POWER PLANTS; FEASIBILITY STUDIES; HEAT EXCHANGERS; GEOTHERMAL ENERGY; GEOTHERMAL SPACE HEATING; DIRECT ENERGY UTILIZATION.

KUNZE 75B

TITLE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD JULY 1, 1975 TO SEPTEMBER 30, 1975.

AUTHOR- KUNZE, J.F. [AERCJET NUCLEAR CO., IDAHO FALLS, IDAHO (USA)].

REFERENCE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD JULY 1, 1975 TO SEPTEMBER 30, 1975. ANCR-1281, AEROJET NUCLEAR COMPANY, IDAHO FALLS, IDAHO, DEC 1975, 54 P.

DESCRIPTORS- RAFT RIVER KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL POWER PLANTS; FEASIBILITY STUDIES; HEAT EXCHANGERS; GEOTHERMAL ENERGY; GECTHERMAL SPACE HEATING; DIRECT ENERGY UTILIZATION.

KUNZE 75C

TITLE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD JANUARY 1, 1975 TO MARCH 31, 1975.

AUTHOR- KUNZE, J.F. [AEROJET NUCLEAR CO., IDAHO FALLS, IDAHO (USA)].

REFERENCE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD JANUARY 1, 1975 TO MARCH 31, 1975. ANCR-1222, AEROJET NUCLEAR COMPANY, IDAHO FALLS, IDAHO, JUN 1975, 52 P.

DESCRIPTORS- RAFT RIVER KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL ENERGY; FEASIBILITY STUDIES; HEAT EXCHANGERS; GEOTHERMAL SPACE HEATING.

KUNZE 76

TITLE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD APRIL 1, 1976, TO JUNE 30, 1976.

AUTHOR- KUNZE, J.F. (ED.)

REFERENCE- GEOTHERMAL R AND D PROJECT REPORT FOR PERIOD APRIL 1, 1976, TO JUNE 30, 1976. TREE-1008, IDAHO NATIONAL ENGINEERING LABORATORY, IDAHO FALLS, IDAHO, OCT 1976, 59 P.

DESCRIPTORS- RAFT RIVER KGRA; IDAHO; GEOTHERMAL WELLS; HEAT EXCHANGERS; SPACE HEATING.

LANDE 76

TITLE- MEMORANDUM--TELEPHONE COMMUNICATION. STATUS OF VARIOUS WELLS IN THE IMPERIAL VALLEY, CALIF.

AUTHOR- LANDE, D. [CALIFORNIA DIV. OF OIL AND GAS, LONG BEACH (USA)].

REFERENCE- MEMORANDUM--TELEPHONE COMMUNICATION.

DESCRIPTORS- IMPERIAL VALLEY; GEOTHERMAL WELLS.

LANDE 77

TITLE- MEMORANDUM--TELEPHONE COMMUNICATION. ABANDONMENT OF SEVERAL IMPERIAL VALLEY GEOTHERMAL WELLS.

AUTHOR- LANDE, D. [CALIFORNIA DIV. OF OIL AND GAS, LONG BEACH (USA)].

REFERENCE- MEMORANDUM--TELEPHONE COMMUNICATION.

DESCRIPTORS- IMPERIAL VALLEY; GEOTHERMAL WELLS.

LAWRENCE 64

TITLE- WHAT'S INVOLVED IN THE NEW STEAM PLAY.

AUTHOR- LAWRENCE, C.J.

REFERENCE- OIL GAS J., P. 60-63(FEB 10, 1964).

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL WELLS; NATURAL STEAM; WELL DRILLING; DATA; CALIFORNIA.

LBL 76

TITLE- GEOTHERMAL COMPONENT TEST FACILITY. EAST MESA, IMPERIAL VALLEY, CALIFORNIA.

AUTHOR- CALIFORNIA UNIV., BERKELEY (USA). LAWRENCE BERKELEY LAB.

REFERENCE- GEOTHERMAL COMPONENT TEST FACILITY. EAST MESA, IMPERIAL VALLEY, CALIFORNIA. LAWRENCE BERKELEY LAB., UNIV. OF CALIF., BERKELEY, APR 1976, 11 P.

DESCRIPTORS- EAST MESA KGRA; GEOTHERMAL ENERGY; PILOT PLANTS; GEOTHERMAL WELLS; WELL CHARACTERISTICS.

LIND 70

TITLE- SPECIFIC CONDUCTANCE AS A MEANS OF ESTIMATING IONIC STRENGTH.

AUTHOR- LIND, C.J. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].

REFERENCE- USGS PROF. PAPER 700-D. U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C., 1970, P. D272-D280.

DESCRIPTORS- THERMODYNAMIC PROPERTIES.

LOCKHEED 63

TITLE- TEST REPORT ON GEOTHERMAL WELLS, BEOWAWE, NEVADA, FOR SIERRA PACIFIC POWER COMPANY, RENO, NEVADA.

AUTHOR- LOCKHEED, R. [STONE AND WEBSTER ENGINEERING CO.].

REFERENCE- TEST REPORT ON GEOTHERMAL WELLS, BEOWAWE, NEVADA, FOR SIERRA PACIFIC POWER COMPANY, RENO, NEVADA. UNPUBLISHED REPORT, MAY 1963, 18 P.

DESCRIPTORS- BEOWAWE KGRA; GEOTHERMAL WELLS; FLOW RATE; WELL HEAD TEMPERATURE; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; NONCONDENSABLE GASES.

MANON 76

TITLE- RESULTS OF WATER AND SCALE SAMPLE ANALYSES FROM CERRO PRIETO GEOTHERMAL OPERATIONS. MEMOS FROM CERRO PRIETO, MEXICO. (SPANISH).

AUTHOR- MANON, M.A. [COMISION FEDERAL DE ELECTRICIDAD, MEXICALI (MEXICO)].

REFERENCE- RESULTS OF WATER AND SCALE SAMPLE ANALYSES FROM CERRO PRIETO GEOTHERMAL OPERATIONS. MEMOS FROM CERRO PRIETO, MEXICO. MEMO AMM 148/76, UNPUBLISHED,

DESCRIPTORS- CERRO PRIETO GEOTHERMAL FIELD; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; SCALING; DATA.

MATHIAS 76

TITLE- THE MESA GEOTHERMAL FIELD-A PRELIMINARY EVALUATION OF FIVE GEOTHERMAL WELLS.

AUTHOR- MATHIAS, K.E. [BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA)].

REFERENCE- PROCEEDINGS--SECOND UNITED NATIONS SYMPOSIUM ON THE DEVELOPMENT AND USE OF GEOTHERMAL RESOURCES. CALIF. UNIV., LAWRENCE BERKELEY LAB., BERKELEY, CALIF., 1976, V. 3, P. 1741-1747.

DESCRIPTORS- EAST MESA KGRA; WELL CHARACTERISTICS; INJECTION WELLS; TEMPERATURE LOGGING.

MATHIAS 76B

TITLE- MEMORANDUM--TELEPHONE COMMUNICATION. STANDARD COORDINATES FOR MESA 6-1 AND 6-2 WELLS.

AUTHOR- MATHIAS, K.E. [BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA)].

REFERENCE- MEMORANDUM--TELEPHONE COMMUNICATION.

DESCRIPTORS- EAST MESA KGRA.

MCATEE 77

TITLE- COLLECTION OF DATA SAMPLING SHEETS, RAFT RIVER WELLS.

AUTHOR- MCATEE, R.E. [IDAHO NATIONAL ENGINEERING LABORATORY, IDAHO FALLS (USA)].

REFERENCE- COLLECTION OF DATA SAMPLING SHEETS, RAFT RIVER WELLS. UNPUBLISHED DATA, 25 MAR 77,

DESCRIPTORS- RAFT RIVER KGRA; CHEMICAL ANALYSIS; GEOTHERMAL WELLS.

MCNITT 63

TITLE- EXPLORATION AND DEVELOPMENT OF GEOTHERMAL POWER IN CALIFORNIA.

AUTHOR- MCNITT, J.R. [CALIFORNIA DIVISION OF MINES AND GEOLOGY, SAN FRANCISCO (USA)].

REFERENCE- EXPLORATION AND DEVELOPMENT OF GEOTHERMAL POWER IN CALIFORNIA. SPECIAL REPORT 75, CALIF. DIV. OF MINES AND GEOLOGY, SAN FRANCISCO, CALIF., 1963, 45 P.

DESCRIPTORS- GEOTHERMAL ENERGY; EXPLORATION; EXPLOITATION; CALIFORNIA; NATURAL STEAM; GEYSERS GEOTHERMAL FIELD; WELL DRILLING; RESERVOIR ENGINEERING; RESERVOIR PROPERTIES; GEOLOGY; ECONOMICS; MONO-LONG VALLEY KGRA; SALTON SEA KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

MEADOWS 73

TITLE- GEOTHERMAL WORLD DIRECTORY.

AUTHOR- MEADOWS, K.F. (ED.)

REFERENCE- GEOTHERMAL WORLD DIRECTORY. KATHERINE F. MEADOWS, GLENDORA, CALIF., AUG 1973, 242 P.

DESCRIPTORS- GEOTHERMAL ENERGY; RESOURCE DEVELOPMENT; USA; NEW ZEALAND; ICELAND.

MERCADO 69

TITLE- CHEMICAL CHANGES IN GEOTHERMAL WELL M-20, CERRO PRIETO, MEXICO.

AUTHOR- MERCADO G., S. [COMISION FEDERAL DE ELECTRICIDAD, PROYECTO CERRO PRIETO, MEXICALI, MEXICO].

REFERENCE- GEOL. SOC. AM. BULL., V. 80, P. 2623-2630(1969).

DESCRIPTORS- CERRO PRIETO GEOTHERMAL FIELD; GEOTHERMAL WELLS; CHEMICAL ANALYSIS.

MERCADO 75

TITLE- CERRO PRIETO GEOTHERMOELECTRIC PROJECT--POLLUTION AND BASIC PROTECTION.

AUTHOR- MERCADO G., S. [COMISION FEDERAL DE ELECTRICIDAD (MEXICO)].

REFERENCE- PROCEEDINGS--SECOND UNITED NATIONS SYMPOSIUM ON THE DEVELOPMENT AND USE OF GEOTHERMAL RESOURCES. LAWRENCE BERKELEY LAB., BERKELEY, CALIF., 1976, V. 2, P. 1385-1398.

DESCRIPTORS- CERRO PRIETO GEOTHERMAL FIELD; POLLUTION; POLLUTION CONTROL; HYDROGEN SULFIDE; CORROSION PROTECTION; CHEMICAL EFFLUENTS; WASTE DISPOSAL.

MERCADO 76

TITLE- CERRO PRIETO GEOTHERMAL FIELD, MEXICO. WELLS AND PLANT OPERATION. PAPER PRESENTED TO INTERNATIONAL CONGRESS ON THERMAL WATERS, GEOTHERMAL ENERGY AND VULCANISM OF THE MEDITERRANEAN AREA, ATHENS.

AUTHOR- MERCADO G., S. [COMISION FEDERAL DE ELECTRICIDAD (MEXICO)].

REFERENCE- CERRO PRIETO GEOTHERMAL FIELD, MEXICO. WELLS AND PLANT OPERATION. UNPUBLISHED COPY, OCT 5, 1976, 15 P.

DESCRIPTORS- CERRO PRIETO GEOTHERMAL FIELD; GEOTHERMAL WELLS; PRODUCTION; GEOTHERMAL POWER PLANTS; OPERATION; CHEMICAL ANALYSIS.

MIDDLETON 61

TITLE- ENGINEERING REPORT ON CASA DIABLO GEOTHERMAL STEAM WELLS FOR ENDOGENOUS POWER CO.

AUTHOR- MIDDLETON, W.M. [THERMAL POWER CO., SAN FRANCISCO, CALIF. (USA)].

REFERENCE- ENGINEERING REPORT ON CASA DIABLO GEOTHERMAL STEAM WELLS FOR ENDOGENOUS POWER CO. UNPUBLISHED, JAN 1961, 47 P.

DESCRIPTORS- MONO-LONG VALLEY KGRA; GEOTHERMAL WELLS; NATURAL STEAM; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

MILLER 77

TITLE- THE USE OF GEOCHEMICAL-EQUILIBRIUM COMPUTER CALCULATIONS TO ESTIMATE PRECIPITATION FROM GEOTHERMAL BRINES.

AUTHOR- MILLER, D.G.; PIWINSKII, A.J.; YAMAUCHI, R. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB].

REFERENCE- THE USE OF GEOCHEMICAL-EQUILIBRIUM COMPUTER CALCULATIONS TO ESTIMATE PRECIPITATION FROM GEOTHERMAL BRINES. UCRL-52197, LAWRENCE LIVERMORE LAB, LIVERMORE, CALIF., 28 JAN, 1977, 35 P.

DESCRIPTORS- COMPUTER CALCULATIONS; COMPUTER CODES; PRECIPITATION; SCALING; GEOTHERMAL BRINES; SALTON SEA KGRA; SOLUBILITY; CHLORIDES.

MINERAL INFORMATION SERVICE 68

TITLE- GEOTHERMAL RESOURCES.

AUTHOR- MINERAL INFORMATION SERVICE.

REFERENCE- MINERAL INFORMATION SERVICE, V. 21 (2), P. 26(1968).

DESCRIPTORS- CALIFORNIA; LEASING; GEYSERS GEOTHERMAL FIELD; NILAND; GEOTHERMAL BRINES.

MOLINA 70

TITLE- CHEMICAL STUDIES IN MEXICAN GEOTHERMAL FIELDS.

AUTHOR- MOLINA B., R. [COMISION FEDERAL DE ELECTRICIDAD, MEXICO CITY (MEXICO)].
BANWELL, C.J.

REFERENCE- GEOTHERMICS, SPECIAL ISSUE 2, V. 2 (PART 2), P. 1377-1391(1970).

DESCRIPTORS- MEXICO; CERRO PRIETO GEOTHERMAL FIELD; PATHE GEOTHERMAL FIELD; GAS ANALYSIS; HOT SPRINGS; QUANTITATIVE CHEMICAL ANALYSIS.

MUFFLER 69

TITLE- ACTIVE METAMORPHISM OF UPPER CENOZOIC SEDIMENTS IN THE SALTON SEA GEOTHERMAL FIELD AND THE SALTON TROUGH, SOUTH EASTERN CALIFORNIA.

AUTHOR- MUFFLER, L.J.P.; WHITE, D.E. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].

REFERENCE- GEOL. SOC. AM. BULL., V. 80, P. 157-182(FEB 1969).

DESCRIPTORS- SEDIMENTS; CENOZOIC ERA; GEOLOGY; METAMORPHISM; SALTON SEA KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

OWEN 76

TITLE- CHEMICAL GEOTHERMOMETRY--ACCURACY OF SUBSURFACE TEMPERATURE ESTIMATES FOR THE SALTON SEA GEOTHERMAL FIELD.

AUTHOR- OWEN, L.B.; PALMER, T.D. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- CHEMICAL GEOTHERMOMETRY--ACCURACY OF SUBSURFACE TEMPERATURE ESTIMATES FOR THE SALTON SEA GEOTHERMAL FIELD. PREPRINT UCRL-78289, LAWRENCE LIVERMORE LAB., LIVERMORE, CALIF., 1976, 11 P.

DESCRIPTORS- GEOTHERMOMETRY; SALTON SEA KGRA; RESERVOIR TEMPERATURE; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

PALMER 75A

TITLE- GEOTHERMAL DEVELOPMENT OF THE SALTON TROUGH, CALIFORNIA AND MEXICO.

AUTHOR- PALMER, T.D.; HOWARD, J.H.; LANDE, D.P. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- GEOTHERMAL DEVELOPMENT OF THE SALTON TROUGH, CALIFORNIA AND MEXICO. UCRL-51775, LAWRENCE LIVERMORE LAB., LIVERMORE, CALIF., APR 1, 1975, 45 P.

DESCRIPTORS- GEOTHERMAL ENERGY; EXPLOITATION; SALTON SEA KGRA; CERRO PRIETO GEOTHERMAL FIELD; GEOLOGY; CALIFORNIA.

PALMER 75B

TITLE- CHARACTERISTICS OF GEOTHERMAL WELLS LOCATED IN THE SALTON SEA GEOTHERMAL FIELD, IMPERIAL COUNTY, CALIFORNIA.

AUTHOR- PALMER, T.C. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- CHARACTERISTICS OF GEOTHERMAL WELLS LOCATED IN THE SALTON SEA GEOTHERMAL FIELD, IMPERIAL COUNTY, CALIFORNIA. UCRL-51976, LAWRENCE LIVERMORE LAB., LIVERMORE, CALIF., DEC 15, 1975, 54 P.

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; WELL CHARACTERISTICS; HEAT FLOW SURVEYS.

PALMER 75C

TITLE- SALTON SEA GEOTHERMAL FIELD--CHEMICAL ANALYSIS OF GEOTHERMAL BRINES.

AUTHOR- PALMER, T.C. [CALIFORNIA UNIV., LIVERMORE (USA). LAWRENCE LIVERMORE LAB.].

REFERENCE- SALTON SEA GEOTHERMAL FIELD--CHEMICAL ANALYSIS OF GEOTHERMAL BRINES. LLL INTERDEPARTMENTAL MEMORANDUM, GG 75-24, 9 MAY 1975, 10 P.

DESCRIPTORS- SALTON SEA KGRA; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL BRINES.

PAPAZIAN 76A

TITLE- BRINE ANALYSIS OF EAST MESA USBR WELLS--MESA 6-1, MESA 6-2, MESA 31-1.

AUTHOR- PAPAZIAN, H. [BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA)].

REFERENCE- BRINE ANALYSIS OF EAST MESA USBR WELLS--MESA 6-1, MESA 6-2, MESA 31-1. UNPUBLISHED, 1976, 11 P.

DESCRIPTORS- EAST MESA KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS.

PAPAZIAN 76B

TITLE- DEEP WELL CHEMISTRY AT THE EAST MESA KGRA.

AUTHOR- PAPAZIAN, H.A. [BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA)].

REFERENCE- DEEP WELL CHEMISTRY AT THE EAST MESA KGRA. UNPUBLISHED, DRAFT, 1976, 13 P.

DESCRIPTORS- EAST MESA KGRA; WATER CHEMISTRY; GEOTHERMAL WELLS; GEOTHERMAL BRINES.

PARRY 76

TITLE- GEOCHEMISTRY AND HYDROTHERMAL ALTERATION AT SELECTED UTAH HOT SPRINGS.

AUTHOR- PARRY, W.T.; BENSON, N.L.; MILLER, C.D. [UTAH UNIV., SALT LAKE CITY (USA). DEPT. OF GEOLOGY AND GEOPHYSICS].

REFERENCE- GEOCHEMISTRY AND HYDROTHERMAL ALTERATION AT SELECTED UTAH HOT SPRINGS. FINAL REPORT, VOL. 3, UTAH UNIV., SALT LAKE CITY, UTAH, 1976, 131 P.

DESCRIPTORS- ROOSEVELT HOT SPRINGS KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; GEOCHEMISTRY; HYDROTHERMAL ALTERATION; GEOLOGY; MONROE-JOSEPH KGRA; HOT SPRINGS; GEOTHERMOMETRY.

PARRY 76B

TITLE- MEMORANDUM--TELEPHONE COMMUNICATION. AUGMENTATION OF INFORMATION IN REPORT WRITTEN BY PARRY, 1976--GEOCHEMISTRY AND HYDROTHERMAL ALTERATION AT SELECTED UTAH HOT SPRINGS.

AUTHOR- PARRY, W.T. [UTAH UNIV., SALT LAKE CITY (USA). DEPT. OF GEOLOGY AND GEOPHYSICS].

REFERENCE- MEMORANDUM--TELEPHONE COMMUNICATION. 12 OCT, 1976.

DESCRIPTORS- ROOSEVELT HOT SPRINGS KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES.

PETTITT 75A

TITLE- PLANNING, DRILLING, AND LOGGING OF GEOTHERMAL TEST HOLE GT-2, PHASE I.

AUTHOR- PETTITT, R.A. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- PLANNING, DRILLING, AND LOGGING OF GEOTHERMAL TEST HOLE GT-2, PHASE I. LA-5819-PR, LOS ALAMOS SCIENTIFIC LAB, LOS ALAMOS, N. MEX., JAN 75, 42 P.

DESCRIPTORS- GEOTHERMAL WELLS; DRILLING; VALLES CALDERA GEOTHERMAL FIELD; HOT-DRY-ROCK SYSTEMS.

PETTITT 75B

TITLE- TESTING, DRILLING, AND LOGGING OF GEOTHERMAL TEST HOLE GT-2, PHASE II.

AUTHOR- PETTITT, R.A. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- TESTING, DRILLING, AND LOGGING OF GEOTHERMAL TEST HOLE GT-2, PHASE II. LA-5897-PR, LOS ALAMOS SCIENTIFIC LAB, LOS ALAMOS, N. MEX., MAR 75, 21 P.

DESCRIPTORS- GEOTHERMAL WELLS; DRILLING; VALLES CALDERA GEOTHERMAL FIELD; HOT-DRY-ROCK SYSTEMS.

PHILLIPS 76

TITLE- SELECTED WATER ANALYSES OF ROOSEVELT KGRA.

AUTHOR- PHILLIPS PETROLEUM CO.

REFERENCE- SELECTED WATER ANALYSES OF ROOSEVELT KGRA. PHILLIPS PETROLEUM CO., DEL MAR, CALIF., 1976, 1 P.

DESCRIPTORS- ROOSEVELT HOT SPRINGS KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; TEMPERATURE MEASUREMENT.

PORTER 77

TITLE- MEMORANDUM--TELEPHONE COMMUNICATION. INFORMATION ON BEOWAWE AND BRADY HOT SPRINGS WELLS.

AUTHOR- PORTER, L.K. [SIERRA PACIFIC POWER CO., RENO, NEV. (USA)].

REFERENCE- MEMORANDUM--TELEPHONE COMMUNICATION. 29 APR 77.

DESCRIPTORS- BEOWAWE KGRA; BRADY HOT SPRINGS KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES.

PURTYMUN 74

TITLE- GEOLOGY OF GEOTHERMAL TEST HOLE GT-2 FENTON HILL SITE, JULY 1974.

AUTHOR- PURTYMUN, W.D.; WEST, F.G.; PETTITT, R.A. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- GEOLOGY OF GEOTHERMAL TEST HOLE GT-2 FENTON HILL SITE, JULY 1974. INFORMAL REPORT, LA-5780-MS, NOV 74, 15 P.

DESCRIPTORS- HOT-DRY-ROCK SYSTEMS; GEOLOGY; GEOTHERMAL WELLS; HYDROLOGY.

REED 71

TITLE- WATER GEOCHEMISTRY, IMPERIAL VALLEY. APPENDIX I.

AUTHOR- REED, M.J.
REX, R.W.; BABCOCK, E.A.; BIEHLER, S.; COMBS, J.; COPLEN, T.B.; ELDERS, W.A.; FURGERSON, R.B.; FARFUNKEL, Z.; MEIDAV, T.; ROBINSON, P.T. [CALIFORNIA UNIV., RIVERSIDE (USA)].

REFERENCE- COOPERATIVE GEOLOGICAL-GEOPHYSICAL-GEOCHEMICAL INVESTIGATIONS OF GEOTHERMAL RESOURCES IN THE IMPERIAL VALLEY AREA OF CALIFORNIA. CALIF. UNIV., RIVERSIDE, CALIF., 1 JUL 1971, P. 107-111.

DESCRIPTORS- IMPERIAL VALLEY; ARTESIAN WELLS; THERMAL WATERS; QUANTITATIVE CHEMICAL ANALYSIS; GEOCHEMISTRY.

REED 75A

TITLE- CHEMISTRY OF THERMAL WATER IN SELECTED GEOTHERMAL AREAS OF CALIFORNIA.

AUTHOR- REED, M.J. [CALIFORNIA DIVISION OF OIL AND GAS, SACRAMENTO (USA)].

REFERENCE- CHEMISTRY OF THERMAL WATER IN SELECTED GEOTHERMAL AREAS OF CALIFORNIA. TR15, CALIF. DIV. OF OIL AND GAS, SACRAMENTO, CALIF., 1975, 31 P.

DESCRIPTORS- GEOTHERMAL FIELDS; IMPERIAL VALLEY; LAKE CITY-SURPRISE VALLEY KGRA; SIERRA VALLEY; WENDEL-AMEDEE KGRA; MODOC PLATEAU; GEOLOGY; GEOTHERMAL WELLS; ARTESIAN WELLS; THERMAL WATERS; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMOMETRY.

REED 76

TITLE- GEOLOGY AND HYDROTHERMAL METAMORPHISM IN THE CERRO PRIETO GEOTHERMAL FIELD, MEXICO.

AUTHOR- REED, M.J. [CALIFORNIA UNIV., RIVERSIDE (USA); GEOLOGICAL SURVEY, MENLO PARK (USA). CONSERVATION DIVISION].

REFERENCE- PROCEEDINGS--SECOND UNITED NATIONS SYMPOSIUM ON THE DEVELOPMENT AND USE OF GEOTHERMAL RESOURCES. LAWRENCE BERKELEY LAB., BERKELEY, CALIF., 1976, V. 1, P. 539-547.

DESCRIPTORS- CERRO PRIETO GEOTHERMAL FIELD; GEOLOGY; HYDROTHERMAL ALTERATION; LITHOLOGY; QUANTITATIVE CHEMICAL ANALYSIS.

REX 71

TITLE- THE WATERS OF THE IMPERIAL VALLEY.

AUTHOR- REX, R.W.; BABCOCK, E.A.; BIEHLER, S.; COMBS, J.; COPLEN, T.B.; ELDERS, W.A.; FURGERSON, R.B.; GARFUNKEL, Z.; MEIDAV, T.; ROBINSON, P.T. [CALIFORNIA UNIV., RIVERSIDE (USA)].

REFERENCE- COOPERATIVE GEOLOGICAL-GEOPHYSICAL-GEOCHEMICAL INVESTIGATIONS OF GEOTHERMAL RESOURCES IN THE IMPERIAL VALLEY AREA OF CALIFORNIA. CALIFORNIA UNIVERSITY, RIVERSIDE, CALIF., 1 JUL 1971, P. 89-106.

DESCRIPTORS- IMPERIAL VALLEY; HYDROLOGY; GEOLOGICAL SETTING; STRATIGRAPHY.

SANDERS 74

TITLE- MINERAL CONTENT OF SELECTED GEOTHERMAL WATERS.

AUTHOR- SANDERS, J.W.; MILES, M.J. [NEVADA UNIV., LAS VEGAS (USA). DESERT RESEARCH INST.].

REFERENCE- MINERAL CONTENT OF SELECTED GEOTHERMAL WATERS. OFR 14-75, U.S. BUREAU OF MINES, MAY 74, 36 P.

DESCRIPTORS- GEOTHERMAL BRINES; WATER CHEMISTRY; GEOTHERMAL WELLS; HOT SPRINGS; QUANTITATIVE CHEMICAL ANALYSIS; CHEMICAL ANALYSIS METHODS; GEOTHERMOMETRY; IMPERIAL VALLEY; CALIFORNIA; NEVADA; OREGON; UTAH; WASHINGTON; MEXICO.

SCHMITT 76

TITLE- PROJECT SUMMARY FOR THE BOISE SPACE HEATING PROJECT. REPORT TO THE IDAHO GOVERNOR.

AUTHOR- SCHMITT, R.C.; DONOVAN, L.E.; SPENCER, S.G.; KELLER, J.G.; STOKER, R.C. [IDAHO NATIONAL ENGINEERING LAB. (USA)].

REFERENCE- PROJECT SUMMARY FOR THE BOISE SPACE HEATING PROJECT. REPORT TO THE IDAHO GOVERNOR. IDAHO NATIONAL ENGINEERING LAB., IDAHO FALLS, IDAHO, 1976, 31 P.

DESCRIPTORS- IDAHO; GEOTHERMAL WELLS; THERMAL WATERS; QUANTITATIVE CHEMICAL ANALYSIS; GEOTHERMAL SPACE HEATING; DIRECT ENERGY UTILIZATION.

SHUPE 76

TITLE- THE HAWAII GEOTHERMAL PROJECT. INITIAL PHASE II PROGRESS REPORT. FEBRUARY 1976.

AUTHOR- SHUPE, J.W. [HAWAII UNIV., HONOLULU (USA)].

REFERENCE- THE HAWAII GEOTHERMAL PROJECT. INITIAL PHASE II PROGRESS REPORT. FEB 1976, 148 P.

DESCRIPTORS- HAWAII; GEOTHERMAL FIELDS; GEOTHERMAL EXPLORATION; GEOPHYSICAL SURVEYS; GEOTHERMAL DRILLING.

SHUPE 77

TITLE- THE HAWAII GEOTHERMAL PROJECT--PHASE III - WELL TESTING AND ANALYSIS, PROGRESS REPORT FOR THE FIRST QUARTER OF FEDERAL FY77, JANUARY 1, 1977.

AUTHOR- SHUPE, J.W.; HELSLEY, C.E.; YUEN, P.C.

REFERENCE- THE HAWAII GEOTHERMAL PROJECT--PHASE III - WELL TESTING AND ANALYSIS, PROGRESS REPORT FOR THE FIRST QUARTER OF FEDERAL FY77, JANUARY 1, 1977. UNIV. OF HAWAII, HONOLULU, HAWAII, 1 JAN, 1977, 67 P.

DESCRIPTORS- HAWAII; GEOTHERMAL WELLS; HYDROLOGY; GEOLOGY; GEOPHYSICS; PRESSURE LOGGING; TEMPERATURE MEASUREMENT; QUANTITATIVE CHEMICAL ANALYSIS.

SKINNER 67

TITLE- SULFIDES ASSOCIATED WITH THE SALTON SEA GEOTHERMAL BRINE.

AUTHOR- SKINNER, B.J.; WHITE, D.E.; ROSE, H.J.; MAYS, R.E. [U.S. GEOLOGICAL SURVEY].

REFERENCE- ECON. GEOL., V. 62, P. 316-330(1967).

DESCRIPTORS- SALTON SEA KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; SULFIDES; METALS; SCALING.

SMITH 76

TITLE- SUMMARY OF 1975 GEOTHERMAL DRILLING WESTERN UNITED STATES.

AUTHOR- SMITH, J.L.; MATLICK, J.S. [REPUBLIC GEOTHERMAL, INC.]

REFERENCE- GEOTHERM. ENERGY MAG., V. 4 (6), P. 28-31(1976).

DESCRIPTORS- GEOTHERMAL WELLS; DRILLING; IMPERIAL VALLEY; CALIFORNIA; IDAHO; GEYSERS GEOTHERMAL FIELD; NEVADA; OREGON; UTAH; NEW MEXICO; HAWAII.

SMITH 77

TITLE- WRITTEN COMMUNICATION--TRANSMITTAL OF DATA, REPUBLIC GEOTHERMAL WELLS, EAST MESA, CALIFORNIA.

AUTHOR- SMITH, J.L. [REPUBLIC GEOTHERMAL, INC., SANTA FE SPRINGS, CALIF. (USA)].

REFERENCE- WRITTEN COMMUNICATION--TRANSMITTAL OF DATA, REPUBLIC GEOTHERMAL WELLS, EAST MESA, CALIFORNIA. 6 JAN 77, 8 P.

DESCRIPTORS- EAST MESA KGRA; CHEMICAL ANALYSIS; GEOTHERMAL WELLS.

SPENCER 75

TITLE- ENVIRONMENTAL REPORT DEEP GEOTHERMAL TEST WELLS IN THE RAFT RIVER VALLEY.

AUTHOR- SPENCER, S.G. [AEROJET NUCLEAR CO., IDAHO FALLS, IDAHO (USA)].

REFERENCE- ENVIRONMENTAL REPORT DEEP GEOTHERMAL TEST WELLS IN THE RAFT RIVER VALLEY. ANCR-1204, AEROJET NUCLEAR COMPANY, IDAHO FALLS, IDAHO, JAN 1975, 27 P.

DESCRIPTORS- RAFT RIVER KGRA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; QUANTITATIVE CHEMICAL ANALYSIS; ENVIRONMENTAL EFFECTS.

SPIEWAK 70

TITLE- PRELIMINARY INVESTIGATION DESALTING OF GEOTHERMAL BRINES IN THE IMPERIAL VALLEY OF CALIFORNIA.

AUTHOR- SPIEWAK, I.; HISE, E.C.; REED, S.A.; THOMPSON, S.A. [OAK RIDGE NATIONAL LAB., TENN. (USA)].

REFERENCE- PRELIMINARY INVESTIGATION DESALTING OF GEOTHERMAL BRINES IN THE IMPERIAL VALLEY OF CALIFORNIA. ORNL-TM-3021, 1970, 46 P.

DESCRIPTORS- IMPERIAL VALLEY; CALIFORNIA; GEOTHERMAL BRINES; DESALINATION; SILICA; QUANTITATIVE CHEMICAL ANALYSIS.

SUMMERS 76

TITLE- CATALOG OF THERMAL WATERS IN NEW MEXICO.

AUTHOR- SUMMERS, W.K.

REFERENCE- CATALOG OF THERMAL WATERS IN NEW MEXICO. HYDROLOGIC REPORT 4, NEW MEXICO BUREAU OF MINES AND MINERAL RESOURCES, SOCORRO, NEW MEXICO, 1976, 80 P.

DESCRIPTORS- NEW MEXICO; THERMAL WATERS; HOT SPRINGS; GEOTHERMAL WELLS; CHEMICAL ANALYSIS.

SWAJIAN 69

TITLE- IDENTIFICATION AND EVALUATION OF FEDERAL, STATE, AND LOCAL INTERESTS IN SALTON SEA, CALIFORNIA. REVISED EDITION.

AUTHOR- SWAJIAN, A. [COLORADO RIVER REGIONAL WATER QUALITY CONTROL BOARD].

REFERENCE- IDENTIFICATION AND EVALUATION OF FEDERAL, STATE, AND LOCAL INTERESTS IN SALTON SEA, CALIFORNIA. REVISED EDITION. 75 P.

DESCRIPTORS- SALTON SEA; WATER QUALITY; LEGAL ASPECTS; GOVERNMENT POLICIES.

TONEY 76

TITLE- METALLURGICAL EVALUATION OF MATERIALS FOR GEOTHERMAL POWER PLANT APPLICATIONS.

AUTHOR- TONEY, S.; COHEN, M. [GENERAL ELECTRIC CO., LYNN, MASS. (USA). MEDIUM STEAM TURBINE DEPT.].
CRON, C.J. [UNION OIL CO., BREA, CALIF. (USA). UNION OIL RESEARCH CENTER].

REFERENCE- EXTENDED ABSTRACTS, THE ELECTROCHEMICAL SOCIETY, INC., V. 76-2, P. 326-327(1976).

DESCRIPTORS- CORROSION; METALLURGY; GEOTHERMAL POWER PLANTS; GEOTHERMAL FLUIDS; CHEMICAL ANALYSIS; BACA LOCATION NO. 1; VALLES CALDERA GEOTHERMAL FIELD.

TONEY 76B

TITLE- METALLURGICAL EVALUATION OF MATERIALS FOR GEOTHERMAL POWER PLANT APPLICATIONS. PAPER TO BE PRESENTED AT ELECTROCHEMICAL SOCIETY MEETING, FALL, 1976.

AUTHOR- TONEY, S.; COHEN, M. [GENERAL ELECTRIC CO., LYNN, MASS. (USA). MEDIUM STEAM TURBINE DEPT.].
CRON, C.J. [UNION OIL CO., BREA, CALIF. (USA). UNION OIL RESEARCH CENTER].

REFERENCE- METALLURGICAL EVALUATION OF MATERIALS FOR GEOTHERMAL POWER PLANT APPLICATIONS. UNPUBLISHED MANUSCRIPT, 1976, 44 P.

DESCRIPTORS- CORROSION; METALLURGY; GEOTHERMAL POWER PLANTS; GEOTHERMAL FLUIDS; CHEMICAL ANALYSIS; BACA LOCATION NO. 1; VALLES CALDERA GEOTHERMAL FIELD.

TOOMS 70

TITLE- REVIEW OF KNOWLEDGE OF METALLIFEROUS BRINES AND RELATED DEPOSITS.

AUTHOR- TOOMS, J.S. [IMPERIAL COLL. OF SCIENCE AND TECHNOLOGY, LONDON (UK)].

REFERENCE- INST. MIN. METALL., TRANS., V. 79, SECT. B, P. 116-126(1970).

DESCRIPTORS- SALTON SEA; GEOTHERMAL WELLS; GEOTHERMAL BRINES; CHEMICAL ANALYSIS.

TRUESDELL 74

TITLE- THE CALCULATION OF AQUIFER CHEMISTRY IN HOT-WATER GEOTHERMAL SYSTEMS.

AUTHOR- TRUESDELL, A.H. [GEOLOGICAL SURVEY, MENLO PARK (USA)].
SINGERS, W. [DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH (NEW ZEALAND)].

REFERENCE- J. RES. U.S. GEOL. SURV., V. 2 (3), P. 271-278(1974).

DESCRIPTORS- WAIRAKEI GEOTHERMAL FIELD; GEOTHERMAL WELLS; QUANTITATIVE CHEMICAL ANALYSIS; GEOCHEMISTRY; GEOTHERMOMETRY; RESERVOIR PROPERTIES; MATHEMATICAL MODELS; COMPUTER CODES.

USBLM 76

TITLE- PLANNING MAPS FOR GEOTHERMAL ENERGY PROGRAM.

AUTHOR- BUREAU OF LAND MANAGEMENT, SACRAMENTO (USA).

REFERENCE- PLANNING MAPS FOR GEOTHERMAL ENERGY PROGRAM. 3200 (C-931.2), U.S. BUR. LAND MANAGEMENT, SACRAMENTO, CALIF., 1976, 39 P.

DESCRIPTORS- CALIFORNIA; MAPS; KGRAS; LEASING.

USBM 76

TITLE- SECOND WORKSHOP ON MATERIALS PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF GEOTHERMAL ENERGY SYSTEMS. PROCEEDINGS.

AUTHOR- HALL, B.A. (ED.) [GEOTHERMAL RESOURCES COUNCIL].

REFERENCE- SECOND WORKSHOP ON MATERIALS PROBLEMS ASSOCIATED WITH THE DEVELOPMENT OF GEOTHERMAL ENERGY SYSTEMS. PROCEEDINGS. GEOTHERMAL RESOURCES COUNCIL, DAVIS, CALIF. (USA), 1976, 136 P.

DESCRIPTORS- SCALING; CORROSION; SILICA; CHEMICAL REACTIONS; CORROSION RESISTANT ALLOYS; STAINLESS STEELS; SALTON SEA KGRA; CERRO PRIETO GEOTHERMAL FIELD; GEYSERS KGRA.

USBM 76B

TITLE- U.S. BUREAU OF MINES WORK IN THE IMPERIAL VALLEY. COLLECTION INCLUDES 6 PAPERS--1. 1976 GEOTHERMAL SUMMARY. 2. GEOTHERMAL BRINES CHEMISTRY SUMMARY (E. MESA). 3. MAGMAMAX 1 TEST RESULTS. 4. SCALE ANALYSES--MAGMAMAX 3. 5. TELEPHONE COMMUNICATION WITH JERRY CONNOR. 6. PART OF QUARTERLY REPORT, 12-13-76.

AUTHOR- U.S. BUREAU OF MINES.

REFERENCE- U.S. BUREAU OF MINES WORK IN THE IMPERIAL VALLEY. UNPUBLISHED COLLECTION, 1976.

DESCRIPTORS- SALTON SEA KGRA; EAST MESA KGRA; SCALING; QUANTITATIVE CHEMICAL ANALYSIS.

USBR 71

TITLE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. STATUS REPORT, APRIL, 1971.

AUTHOR- BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA).

REFERENCE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. STATUS REPORT, APRIL, 1971. BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA), 1971, 47 P.

DESCRIPTORS- EAST MESA KGRA; IMPERIAL VALLEY; GEOTHERMAL RESOURCES; RESOURCE AVAILABILITY.

USBR 71B

TITLE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. SITE LOCATION REPORT, DEEP GEOTHERMAL TEST WELL, OCTOBER, 1971.

AUTHOR- BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA).

REFERENCE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. SITE LOCATION REPORT, DEEP GEOTHERMAL TEST WELL, OCTOBER, 1971. BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA), 1971, 11 P.

DESCRIPTORS- EAST MESA KGRA; IMPERIAL VALLEY; GEOPHYSICAL SURVEYS; GEOTHERMAL GRADIENT SURVEYS; SEISMIC SURVEYS; GRAVITY SURVEYS; EXPLORATORY WELLS; RESOURCE DEVELOPMENT.

USBR 72

TITLE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. DEVELOPMENTAL CONCEPTS, JANUARY, 1972.

AUTHOR- BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA).

REFERENCE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. DEVELOPMENTAL CONCEPTS, JANUARY, 1972. BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA), 1972, 58 P.

DESCRIPTORS- EAST MESA KGRA; IMPERIAL VALLEY; GEOTHERMAL RESOURCES; RESOURCE AVAILABILITY; RESOURCE DEVELOPMENT; FEASIBILITY STUDIES; GEOLOGY; ENVIRONMENTAL EFFECTS; RESERVES.

USBR 73

TITLE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. TEST WELL MESA 6-1,SPECIAL REPORT, FEBRUARY, 1973.

AUTHOR- BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA).

REFERENCE- GEOTHERMAL RESOURCE INVESTIGATIONS, IMPERIAL VALLEY, CALIFORNIA. TEST WELL MESA 6-1,SPECIAL REPORT, FEBRUARY, 1973. BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA), 1973, 44 P.

DESCRIPTORS- EAST MESA KGRA; GEOTHERMAL WELLS; QUANTITATIVE CHEMICAL ANALYSIS; TEMPERATURE LOGGING; PRESSURE MEASUREMENT; WELL DRILLING.

USBR 74

TITLE- GEOTHERMAL RESOURCE INVESTIGATIONS, EAST MESA SITE, IMPERIAL VALLEY, CALFIORNIA. STATUS REPORT, NOVEMBER, 1974.

AUTHOR- BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA).

REFERENCE- GEOTHERMAL RESOURCE INVESTIGATIONS, EAST MESA SITE, IMPERIAL VALLEY, CALFIORNIA. STATUS REPORT, NOVEMBER, 1974. BUREAU OF RECLAMATION, BOULDER CITY, NEV. (USA), 1974, 64 P.

DESCRIPTORS- HEAT FLOW; GEOTHERMAL WELLS; INJECTION WELLS; QUANTITATIVE CHEMICAL ANALYSIS; DESALINATION; EAST MESA KGRA; ENVIRONMENTAL IMPACT STATEMENTS; GROUND SUBSIDENCE.

WEST 75A

TITLE- HYDROLOGIC TESTING GEOTHERMAL TEST HOLE NO. 2.

AUTHOR- WEST, F.G.; KINTZINGER, P.R.; PURTYMUN, W.D. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- HYDROLOGIC TESTING GEOTHERMAL TEST HOLE NO. 2. LA-6017-MS, LOS ALAMOS SCIENTIFIC LAB, LOS ALAMOS, N. MEX., JUL 75, 8 P.

DESCRIPTORS- WELL LOGGING; PERMEABILITY; HOT-DRY-ROCK SYSTEMS.

WEST 75B

TITLE- GEOPHYSICAL LOGGING IN LOS ALAMOS SCIENTIFIC LABORATORY GEOTHERMAL TEST HOLE NO. 2.

AUTHOR- WEST, R.G.; KINTZINGER, P.R.; LAUGHLIN, A.W. [CALIFORNIA UNIV., LOS ALAMOS, N. MEX. (USA). LOS ALAMOS SCIENTIFIC LAB.].

REFERENCE- GEOPHYSICAL LOGGING IN LOS ALAMOS SCIENTIFIC LABORATORY GEOTHERMAL TEST HOLE NO. 2. LA-6112-MS, LOS ALAMOS SCIENTIFIC LAB, LOS ALAMOS, N. MEX., NOV 75, 12 P.

DESCRIPTORS- GEOPHYSICAL SURVEYS; VALLES CALDERA GEOTHERMAL FIELD; HOT-DRY-ROCK SYSTEMS.

WHITE 62

TITLE- EPIDOTE IN HOT-SPRING SYSTEMS, AND DEPTH OF FORMATION OF PROPYLITIC EPIDOTE IN EPITHERMAL ORE DEPOSITS.

AUTHOR- WHITE, D.E. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].
SIGVALDASON, G.E. [UNIV. RESEARCH INSTITUTE, REYKJAVIK (ICELAND)].

REFERENCE- USGS PROFESSIONAL PAPER 450-E. GEOLOGICAL SURVEY RESEARCH 1962. USGS, 1962, P. E80-E84.

DESCRIPTORS- MINERALOGY; EPIDOTES; WATER SPRINGS; WELLS.

WHITE 63

TITLE- GEOTHERMAL BRINE WELL--MILE-DEEP DRILL HOLE MAY TAP ORE-BEARING MAGMATIC WATER AND ROCKS UNDERGOING METAMORPHISM.

AUTHOR- WHITE, D.E. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].
ANDERSON, E.T. [O'NEILL GEOTHERMAL INC., MIDLAND, TEX. (USA)].
GRUBBS, D.K. [VIRGINIA UNIV., CHARLOTTESVILLE (USA)].

REFERENCE- SCIENCE, V. 139 (3558), P. 919-922(1963).

DESCRIPTORS- SALTON SEA KGRA; NILAND; METAMORPHISM; GEOTHERMAL WELLS; GEOTHERMAL BRINES; SPECTROSCOPY; METALS; CHEMICAL ANALYSIS.

WHITE 63B

TITLE- CHEMICAL COMPOSITION OF SUBSURFACE WATERS.

AUTHOR- WHITE, D.E.; HEM, J.D.; WARING, G.A. [GEOLOGICAL SURVEY (USA)].
FLEISCHER, M. (ED.)

REFERENCE- DATA OF GEOCHEMISTRY. 6 ED., GEOLOGICAL SURVEY PROFESSIONAL PAPER 440-F, USGS, WASHINGTON, D.C., 1963,

DESCRIPTORS- BRINES; QUANTITATIVE CHEMICAL ANALYSIS; WATER SPRINGS; THERMAL SPRINGS; OIL WELLS; SURFACE WATERS; DATA; TABLES.

WHITE 65

TITLE- SALINE WATERS OF SEDIMENTARY ROCKS.

AUTHOR- WHITE, D.E. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].
YOUNG, A.; GALLEY, J.E. (EDS.)

REFERENCE- FLUIDS IN SUBSURFACE ENVIRONMENTS. A SYMPOSIUM. AAPG MEMOIR 4, AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, TULSA, OKLA. (USA), 1965, P. 342-366.

DESCRIPTORS- SALINE AQUIFERS; BRINES; SEDIMENTARY ROCKS; SALTON SEA KGRA.

WHITE 67

TITLE- MERCURY AND BASE-METAL DEPOSITS WITH ASSOCIATED THERMAL AND MINERAL WATERS. CHAPTER 13.

AUTHOR- WHITE, D.E. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].
BARNES, H.L. (ED.) [PENNSYLVANIA STATE UNIV., UNIVERSITY PARK (USA)].

REFERENCE- GEOCHEMISTRY OF HYDROTHERMAL DEPOSITS. HOLT, RINEHART AND WINSTON, INC., 1967, P. 575-631.

DESCRIPTORS- MERCURY; THERMAL WATERS; QUANTITATIVE CHEMICAL ANALYSIS; STEAMBOAT SPRINGS KGRA.

WHITE 68

TITLE- ENVIRONMENTS OF GENERATION OF SOME BASE-METAL ORE DEPOSITS.

AUTHOR- WHITE, D.E. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].

REFERENCE- ECONOMIC GEOLOGY, V. 63 (4), P. 301-335(1968).

DESCRIPTORS- SALTON SEA KGRA; RED SEA; SULFUR ISOTOPES; VOLCANISM; MAGMA; BRINES; GEOTHERMAL BRINES.

WHITE 68B

TITLE- HYDROLOGY, ACTIVITY, AND HEAT FLOW OF THE STEAMBOAT SPRINGS THERMAL SYSTEM, WASHOE COUNTY NEVADA.

AUTHOR- WHITE, D.E. [GEOLOGICAL SURVEY (USA)].

REFERENCE- HYDROLOGY, ACTIVITY, AND HEAT FLOW OF THE STEAMBOAT SPRINGS THERMAL SYSTEM, WASHOE COUNTY NEVADA. GEOL. SURV. PROF. PAP. 458-C, U.S. GOV. PRINTING OFFICE, WASHINGTON, D.C., 1968, 115 P.

DESCRIPTORS- STEAMBOAT SPRINGS KGRA; HYDROLOGY; HEAT FLOW; GEOLOGY; GEOTHERMAL WELLS; CHEMISTRY.

WHITE 71

TITLE- VAPOR-DOMINATED HYDROTHERMAL SYSTEMS COMPARED WITH HOT-WATER SYSTEMS.

AUTHOR- WHITE, D.E.; MUFFLER, L.J.P.; TRUESDELL, A.H. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].

REFERENCE- ECON. GEOL., V. 66, P. 75-97(1971).

DESCRIPTORS- VAPOR-DOMINATED HYDROTHERMAL SYSTEMS; HOT-WATER SYSTEMS; CALIFORNIA; NEVADA; WYOMING; NEW ZEALAND; ITALY; JAPAN; GEOTHERMAL WELLS; GEOTHERMAL BRINES; NATURAL STEAM; QUANTITATIVE CHEMICAL ANALYSIS; WELL CHARACTERISTICS; FLOW MODELS; THERMODYNAMICS; MINERALS.

WILLEY 74

TITLE- CHEMISTRY OF THERMAL WATERS IN LONG VALLEY, MONO COUNTY, CALIFORNIA.

AUTHOR- WILLEY, L.M.; O'NEIL, J.R.; RAPP, J.B. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].

REFERENCE- CHEMISTRY OF THERMAL WATERS IN LONG VALLEY, MONO COUNTY, CALIFORNIA. OPEN FILE REPORT, U.S. GEOLOGICAL SURVEY, MENLO PARK, CALIF., JAN 1974, 19 P.

DESCRIPTORS- MONO-LONG VALLEY KGRA; THERMAL WATERS; WATER CHEMISTRY; SAMPLING; QUANTITATIVE CHEMICAL ANALYSIS.

WITHAM 76

TITLE- GEOTHERMAL WELLS IN THE UNITED STATES.

AUTHOR- WITHAM, R.; REED, M. [GEOLOGICAL SURVEY (USA). CONSERVATION DIVISION].

REFERENCE- GEOTHERMAL WELLS IN THE UNITED STATES. U.S. GEOLOGICAL SURVEY, UNPUBLISHED, MAY 1976, 31 P.

DESCRIPTORS- GEOTHERMAL WELLS; USA; WELL CHARACTERISTICS.

ZOHDY 73

TITLE- RESISTIVITY, SELF-POTENTIAL, AND INDUCED-POLARIZATION SURVEYS OF A VAPOR-DOMINATED GEOTHERMAL SYSTEM.

AUTHOR- ZOHDY, A.A.R.; ANDERSON, L.A. [GEOLOGICAL SURVEY, DENVER, COLO. (USA)].
MUFFLER, L.J.P. [GEOLOGICAL SURVEY, MENLO PARK, CALIF. (USA)].

REFERENCE- GEOPHYSICS, V. 38 (6), P. 1130-1144(1973).

DESCRIPTORS- YELLOWSTONE NATIONAL PARK; RESISTIVITY SURVEYS; VAPOR-DOMINATED HYDROTHERMAL SYSTEMS; GEOPHYSICAL SURVEYS.

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