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Geopressured Geothermal Bibliography

Volume I (Citation Extracts)

DOE/ET/27018--1 Vol. 1

DE82 002668

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Geopressured Geothermal Information System
Center for Energy Studies
The University of Texas at Austin
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This work was sponsored in part by the Department of Energy
contracts DE-AS-05-76ET28466 and DE-AC08-79ET27018.

Date Published - August 1981

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Geopressured Geothermal Bibliography

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Date Published - August 1981

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YOU AND OTHER KNOWLEDGEABLE PERSONS TO SUGGEST ARTICLES,
PAPERS, AND ANY OTHER WORK DEALING WITH FINDING, AND
EXPLOITING GEOPRESSURED GEOTHERMAL ENERGY. TO HELP US IN
OUR TASK THAT WE MAY HELP YOU IN YOURS, PLEASE FILL IN THE
BLANKS BELOW AND RETURN THIS FORM TO

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CENTER FOR ENERGY STUDIES, ENS143
THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TX 78712 (U. S. A.).

=====
Author(s): _____

Title: _____

Subtitle?: _____

Where the work appeared: Conference? Journal? Monograph,
report,
book, other?

Publisher, conference, or
journal's name: _____

Date: _____ Volume: _____ Number: _____ Page: _____
or Report Number (if known): _____

There is space on the back for you to describe the work if
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The Geopressured Geothermal Information System Bibliography (GEOBIB) contains material to help researchers do work in geopressured geothermal energy. This material derives from conferences and other meetings, journals, reports, monographs, and other sources.

The success of an information system requires it to accommodate use. What you tell us in this questionnaire will help it to do so.

1. What particular disciplines related to geopressured geothermal energy would you have a particular interest in being included in GEOBIB?
2. Are there any other particular terms which you would like to suggest for helping you find material in GEOBIB?
3. Do you know, or have possession, of any items of unpublished or not very widely distributed literature which you believe would be helpful? Could you tell us what, and where we might find it?
4. Could you provide the Geopressured Geothermal Information System with a copy, either in xerography or some other medium?
5. Are there other items besides author, title, and particulars of publication which you like research information systems to provide, and if so, which ones?

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1.0 Introduction

This bibliography of citations was compiled by the Center for Energy Studies at The University of Texas at Austin to serve as a tool for researchers in the field of geopressured geothermal energy resources. The bibliography has been compiled over a three-year period and represents citations of papers on geopressured geothermal energy resources over the past eighteen years. Topics covered in the bibliography range from the technical aspects of geopressured geothermal reservoirs to social, environmental, and legal aspects of tapping those reservoirs for their energy resources.

1.1 Scope of work

Citations in the bibliography fall into two basic groups. The first group contains citations in which the primary topic is geopressured geothermal energy resources. Every effort has been made by the Center for Energy Studies to locate and compile entries that fall into this category. The second group of citations concerns subjects which, while not directly related to geopressured geothermal energy resources, may still be of interest to researchers in this field. These citations have been entered into the bibliography whenever possible.

The bibliography currently contains more than 750 entries.

1.2 Using the bibliography

The bibliography is divided into three sections: the introduction, the citations, and the indexes.

The introduction is intended to serve as a guide to the bibliography. This section tells the reader how the bibliography is organized, what may be found in it, and how it can be quickly used to retrieve information about a particular subject. The introduction also describes how the bibliography was compiled, how it might be used, and what the future plans are for it. The introduction also gives the reader any details he/she may need to know about how to use and understand what the bibliography contains.

The listing of citations is the main body of the bibliography. These listings were compiled from a data base that has all available information about each citation. In these listings the information has been ordered and formatted so that it may be presented in a useful way.

For quick reference to a given topic, the citations are indexed into five divisions: author, category, conference title, descriptor, and sponsor. These indexes are arranged alphabetically and cross-referenced by page number.

Geopressured Geothermal Bibliography

1.3 Limitations of the bibliography

The entire bibliography has been compiled from a computer data base. This document is simply a computer listing of the output from a computer program that merges this text with data from the computer data base. Because the document has been generated entirely on a computer, there are some limitations to the character representation. These limits are strictly due to the hardware devices on which the bibliography has been printed.

The limitations on character representation result from the fact that the hardware devices are unable to do certain kinds of printing. As examples, temperatures in degrees are represented in the data base as 350 DEG C or 200 DEG F. Math notation, such as five times ten to the third power, is printed as $5 * 10 ** 3$. In addition, it is not possible for the printers which the computer uses to do any form of subscripting. Therefore some matrix notation or a chemical formula such as SiO subscript 2, is represented by SiO2.

1.4 Data components

The bibliography is compiled from a data base that contains all pertinent information for each citation. However, not every citation has every possible data component defined in the data base. As an example, the bibliography may cite a journal that may be of interest to researchers without citing a specific volume in that journal. In this case some data components, such as the abstract, are not meaningful to the citation but may be important for other citations.

The first line of each entry is a reference line containing information about the source of the citation. This line begins with "GGIS-" followed by several numbers and character sequences. The first number is the GGIS document reference number. This number is used only by the data base from which the bibliography is generated and has no other meaning. The second and third items in this line are short character strings that represent the document type and Coden of the citation. The fourth item in this line is a number that represents the bibliographic level reference number of the citation. Item number five in the line is a single character, or a blank if no data value is present, which represents the bibliographic level indicator of the citation. Items six and seven are the number of the short code year and a key character representing the short code uniqueness of the citation. The eighth item in the line is the code of the publication country. The last item in the line is a number representing the TIC category of the citation. Immediately following the descriptor line, the short code author name appears if there is a data value in the data base for it. For data values that are not defined in the data base, the data value is left blank if the item is represented by character codes or is represented by asterisks if it is a numeric item.

Immediately below the descriptor line, a line of either numerals or numerals and characters is occasionally found. This line is the sponsorship contract number.

The list of citations is arranged according to the primary title of the citations. The title and subtitle may be found within the listing of the citation prefaced by the label either "Title-" or "Subtitle-."

For documents that have been translated into English, the original title and subtitle of the document have been stored in the data base. These titles can be found in the listing prefaced by either "Original Title-" or "Original Subtitle-." The original title and the original subtitle of the document are printed in the original language of the citation.

A line may be found below the title line that contains further information pertaining to the title of the citation. This line is known as the title augmentation line. The information it contains may be such topics as the place and time where a conference was held if the entry was in some way presented with a conference. It may also contain further information delineating the title. As an example, if the title of the publication is "Geothermal Prospects of the Wilcox Formation, Texas," the title augmentation line may be "(Cenozoic Nearshore Marine and Deltaic Deposits)."

The name or names of the primary person responsible for the publication can be found in the citation listing prefaced by "Author-." The authors' names are listed last name first followed by either their first name or initials. Multiple authors are listed alphabetically by their last names.

If the publication was presented at a meeting, the title of that meeting can be found prefaced by "Conference-" in the citation listings. The conference title is as exact as the publication permits. As an example, the conference title may be as simple as "Abnormal Subsurface Pressure" or may carry more detail on the conference such as "AAPG Annual Meeting, Houston, Texas, 1979."

The publisher of the document can be found in the citation listing prefaced by "Publisher-." Information that can be found about the publisher of the document may be such things as the name of the publisher, the place the document was published, and the date the document was published. In the entry the name of the publisher will come first. Any additional information that the data base may have about the publisher is printed on succeeding lines following the name of the publisher.

If the document appeared as a journal article, the title of this journal can be found prefaced by "Journal" in the citation listing. This title will normally appear in its abbreviated form. A list of journal abbreviations and their full titles can be found as an appendix to this document.

The date of publication of the document can be found in the citation listing prefaced by "Publication date." Information that may appear is month/day/year for reports, and volume number/issue number and month/day/year for journal articles.

The document paging can be found after the preface "Pagination." For reports the total number of pages in the document will be listed. For journal articles, chapters from a report, or papers from a conference the page number at which the article begins will be listed first, followed by the total number of pages in the article.

Geopressured Geothermal Bibliography

The report/patent number of the document can be found in the citation listing prefaced by "Report/patent-." Additionally there may appear a short comment on the report/patent number following the number itself.

A statement about the document, such as related works or further information about the document (for example "with discussion") can be found listed after the preface "Note."

The language in which the document was published is listed with the preface "Language-," when that language is other than English.

The data base may contain several pieces of information about the availability of the citation. If this information is in the data base it will contain the name of the supplier of the document or the abbreviation of the supplier's name such as "Center for Energy Studies" or "NTIS" (the abbreviated form of National Technical Information Service). It may also contain the address at which the supplier can be reached. If the document is available in several forms, such as paper copy or microfiche, these forms are listed. The price of the document, in the appropriate form, may also be listed. The price listed with the document is the price at the time of publication and may not represent the current price of the document. Additionally, current supplies of the document are not known, and interested persons should contact the supplier of the document for current information regarding both its availability and price. Information about the availability of the document can be found prefaced by "Available-."

For those associated with The University of Texas at Austin, information can be found within the data base about the local availability of the document. This information is listed in the citations prefaced by "Local availability-." When this information is found in the listing it will be the abbreviation of the library at the university which holds the document. A list of these abbreviations may be found as an appendix to this document.

Documents that were published under the sponsorship of an organization have as a data component the name of this organization. The names of these organizations can be found listed in the citations listing prefaced by "Sponsor-." If the sponsorship contract number under which the document was prepared is available to the data base, it will be printed on the line immediately below the name of the sponsor.

The citation listing may contain a reference to a corporate author. This can be found in the listing prefaced by "Corporate author-." In most cases, this is the organization for which the author of the paper works. As an example, if the author of the paper was Gunnar Bodvarson, the corporate author would be Oregon State University. In the absence of an author, the corporate author will be the organization that takes responsibility for the content of the document. Further information about the corporate author, such as the address, can be found on lines following the listing of the name of the corporate author.

If a document contains illustrations (charts, graphs, maps, diagrams, figures, etc.), tables, or references, they can be found in the citation listing prefaced by "Auxiliary expression(s)-." The number of illustrations may sometimes be listed as well.

Broad subject areas that define the content of the document may be found in the citation listing prefaced by "Categories-." These subject areas are usually defined by the Technical Information Center (TIC).

Terms which narrowly define the content of the document can be found prefaced by "Proposed descriptors-." These terms have been chosen from the thesaurus that is maintained by the Geopressured Geothermal Information System (GGIS).

Some documents may be abstracted. If so, these are found in the citation listing prefaced by "Abstract by " and then a name such as "Author," "GGIS," "TIC," and so forth. The abstract of the document follows. Not all of the citations are abstracted. In some cases it was not appropriate to abstract the citation, as in the case of an entry citing an entire journal. In other cases the abstract was not available.

1.5 Bibliography availability

Paper copies of the bibliography are available in two forms. The first form is a bound listing on standard letter-size paper at a cost of \$40.00. Unbound listings on standard computer form paper are also available at a cost of \$6.00. For further information on the availability of these copies please contact:

Geopressured Geothermal Information System
Center for Energy Studies
The University of Texas at Austin
ENS 143
Austin, Texas 78712

For other Department of Energy projects, machine readable copies of this listing are available. These listings are available through two media. The first is either an 800BPI, 1600BPI, or 6250BPI magnetic tape at a cost of \$20.00. The second medium is through the Advanced Research Projects Agency computer network (ARPAnet). Please contact GGIS@UTEXAS through the ARPAnet mail for further information.

1.6 Future editions of the bibliography

Future editions the bibliography will be reissued with updated citations, or yearly updates will be available. Work is currently underway which will enlarge the scope of the bibliography by adding new citations and increasing the amount of available information for existing citations.

1.7 Byproducts of the bibliography and other services

As byproducts of the bibliography, other services are available from the Geopressured Geothermal Information System. These services include not only subjects that are directly related to the bibliography but also other computer based data bases and application programs.

Geopressured Geothermal Bibliography

A thesaurus of geothermal and geopressured terms is available. The thesaurus is used as a tool in defining descriptors for citations within the bibliography.

Also available are data bases of digitized well logs and well log header information. There are several application programs which use these data bases for well log analysis, computer plotting of well logs and other information obtained from well logs, and computer-generated color graphics.

Additionally, the Center for Energy Studies maintains the Energy Information Service, which houses paper copy and microfiche copies of documents found in the bibliography, as well as many other energy-related documents.

2.0 Citations

1. GGIS-100110/ / /*****/M/**/ / / /*****

Title- 'Chemical Caps' Can Cause Pressure Buildup

Subtitle- (In Well Logs - A Basic Drilling Tool)

Author(s)- / Louden , L. R. /

Pagination- Page 45 , 3 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Geopressure / Measurement / Origin /
Pressure buildup / Seals / Shale / Uses / Well logging /

2. GGIS-100393/0/ /*****/A/80/ / / /***** Ham

**Title- A Comparison of Selected Parameters From Tested
Geopressured-Geothermal Wells**

Author(s)- / Beck , James N. / Chavanne , Raymond E. / Ham , Russell
A. / Palermo , Joseph I. / Rogers , Stearns W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1372 , 17 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

Geopressured Geothermal Bibliography

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- McNeese State Univ. /9504854/.
Lake Charles , LA , USA

Auxiliary expression(s)-

Illus.

/ Graph (5) /

Table

Ref.

Proposed Descriptor(s)- / pH value / Dissolved solids / Edna Delcambre
No. 1 Well / Fairfax Foster Sutter No. 2 Well / Geopressured
wells / Geothermal fluids / Louisiana / Radioactivity / Sampling
/ Silicate minerals / Water analysis / Zinc /

Abstract by Author

Selected results of analysis of fluids from the Edna Delcambre #1
and the Fairfax Foster Sutter #2 wells are presented. A
comparison of parameters such as pH, silicate, and total
dissolved solids are made between the two wells. Chemical and
mechanical factors are cited to explain differences in these
parameters.

3. GGIS-100393/0/ /*****/A/80/ / / *****/ Newchurch
ET-78-S-05-5762

**Title- A Comparison of Six Geopressured-Geothermal Prospect Areas
in the Louisiana Gulf Coast Region the Basis of Potential
Environmental Impacts**

Author(s)- / Bachman , Ann L. / Bryan , Charles F. / Muller , Robert
A. / Newchruch , Edwin J. / Smith , Charles G., Jr. / Van
Sickle , Virginia R. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1389 , 25 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA). Div of
Geothermal Energy /9506839/.

ET-78-S-05-5762 /

Auxiliary expression(s)-

Illus.

/ Map (1) /

Table

Ref.

Proposed Descriptor(s)- / Air pollution / Baseline ecology /
Comparative evaluations / Ecosystems / Environmental impacts /
Flooding / Geopressure exploration / Geopressured zones / Ground
subsidence / Hurricanes / Land use / Louisiana / Noise pollution
/ Seismicity / Testing / Water pollution /

Abstract by Author

Under the sponsorship of the Division of Geothermal Energy of the U.S. Department of Energy, a preliminary environmental assessment was made of six geopressured geothermal prospect areas in the Louisiana Gulf Coast region as follows: South Johnson's Bayou, Sweet Lake, Rockefeller Refuge, Southeast Pecan Island, Atchafalaya Bay, and Lafourche Crossing. An attempt was made to determine, for each prospect area, whether the three-year reservoir testing program proposed by DOE would be likely to result in significant detrimental environmental effects. Baseline data for each prospect area was compiled from existing sources, and trade-offs among the prospects in terms of potential impacts were assessed. This assessment was made on the basis of the nature and extent of the proposed testing activities, in view of the environmental characteristics of each prospect area as regards land use, geology and geohydrology, air

Geopressured Geothermal Bibliography

quality, water resources and quality, ecological systems, and natural hazards. Based on this study, it is believed that the test program activities, because they are so small in scale, will not result in major adverse impacts. No prospect area, with the possible exception of Rockefeller Refuge, needs to be excluded from consideration for the test well program.

4. GGIS-100308/O/ /*****/A/78/ /US/ /***** Goldstein

Title- A Comparitive Analysis of Energy Costing Methodologies

Author(s)- / El-Sawy , A. / Goldstein , Steven / Leigh , J. / Trehan , Ranvir /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 223 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Mitre Corp. /9503543/.

METREK Div.
McLean , Virginia , USA

Auxiliary expression(s)-

Table

Illus.

/ Graph (2) /

Proposed Descriptor(s)- / Cost / Economics / Electric power / Energy
source development / Engineering / Geothermal energy /
Investment / Models / Power generation / Taxes /

Abstract by Author

This paper is a comparative analysis of the methodologies used by 14 organizations active in various aspects of geothermal energy development to compute the levelized busbar costs of electricity from hydrothermal resources. Available busbar cost estimates reflect different interest and taxation rate, amortization periods, special allowances and other differences in assumptions and methodologies. The study focused on two major sources of differences: those related to different approaches to estimating engineering costs; and those arising from different assumptions and procedures in the financial models which convert engineering costs to busbar costs.

5. GGIS-100144/B/ /*****/M/**/ /US/ /*****

**Title- A Computer Simulation Model for Two-Phase Wellbore Flow of
Geopressured Geothermal Fluid with Emphasis on
Texas-Louisiana Gulf Coastal Fairways**

Author(s)- / Lamb , J. Parker / Rhode , David L. /

Publication date- February 14 , 1978

Pagination- 78 Pages

Available- Center for Energy Studies
Engineering Science Bldg. 143
University of Texas at Austin
Austin
Texas
78712

Corporate Author- Texas University, Austin

Center for Energy Studies
Austin , Texas , USA

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Illus.

/ Diagram (5) / Graph (15) /

Table

Ref.

Proposed Descriptor(s)- / Flow rate / Gulf Coast / Louisiana /
Mathematical models / Simulation / Texas / Thermal conductivity
/ Two-phase flow / Well characteristics /

Abstract by Author

This report describes the development of a numerical simulation for wellbore flows of geopressured geothermal fluid wherein the liquid phase is a saturated solution of methane in water and the vapor phase is pure methane. The two-phase flow structure is assumed to be in the homogeneously distributed bubble regime. Governing equations in one-dimensional form are solved simultaneously for each segment of the flow string, beginning at the bottom of the well and marching toward the wellhead. The effect of fluid heat loss for each tube length segment is determined from the exact analytical solution for heat conduction between the tube and an infinite, homogeneous material (i.e., the assumed character of the geological formation). Results of a subsequent sensitivity analysis of physical parameters (such as bottom hole conditions, geological thermal properties, and tube diameter) on wellhead fluid properties are plotted and analyzed. Further, all physical parameters are categorized into one of two groups depending on the degree of influence each exerts on wellhead properties. These results are expected to be useful to those designing surface equipment for geopressured geothermal wells.

6. GGIS-100393/O/ /*****/A/80/ / / *****/ Wrighton

**Title- A Description of the Technoeconomical Model Used to Analyze
the Development Potential of Louisiana eopressed Energy
Prospects**

Author(s)- / Johnson , Adrain E., Jr. / Wrighton , Fred M. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1484 , 15 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Louisiana State Univ. /3826000/.
Baton Rouge , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) /

Table

Proposed Descriptor(s)- / Commercialization / Computerized simulation
/ Cost / Economics / Geopressure power plants / Geopressure
resources / Louisiana / Models / Optimization / Resource
development / Resource potential / Systems analysis /

Abstract by Author

This paper provides a description and explanation of the technoeconomic simulation model used in the analysis of the commercial potential of geopressure/geothermal prospects in Louisiana. This model has been developed and refined over the last year by members of the LSU Operations Research team in conjunction with the analysis of geopressure/ geothermal resources in Louisiana. This interdisciplinary development has produced a comprehensive model that provides substantial flexibility for the user to explore different alternatives in the simulation of a specific prospect. In addition to this feature, the model also incorporates an optimization subroutine that will solve for the optimum value of a specified parameter, either technical or economic, that would make a given prospect commercially viable. Although the model has been used predominately as a deterministic simulator, there is provision for probabilistic solutions.

7. GGIS-100237/J/AGAMA/*****/A/78/ / / *****/ Lawrence

Geopressured Geothermal Bibliography

Title- A Firm Future with Natural Gas

Author(s)- / Lawrence , George H. /

Journal- Am. Gas. Assoc. Mon.

Publication date- Vol. 60 , Issue 5 , May 1978

Pagination- Page 12 , 4 Pages

Proposed Descriptor(s)- / Biomass / Charges / Coal / Deregulation /
Economics / Energy resources / Energy supplies / Gas production /
Geopressured zones / Methane / Natural gas /

Abstract by Energyline

If the U.S. continues to use natural gas at greater rates but fails to provide producers with more money, the premium fuel will be unable to supply a major portion of the nation's energy needs. AGA, businesses, and interest groups are calling for deregulation of the wellhead price of new gas. Supplemental resources from LNG importation, coal gasification, the Alcan pipeline project to carry gas from Alaska, coal beds as a methane source, geopressured zones, and biomass conversion are discussed.

8. GGIS-100393/O/ /*****/A/80/ / / /***** Oberbeck

Title- A Legal-Regulatory Status Report for Texas

Author(s)- / Oberbeck , Arthur W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1468 , 16 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX

USA

(Paper copy (\$ 0.0)

Local Availability- CES

Proposed Descriptor(s)- / Energy source development / Environmental policy / Geopressure resources / Government / Ground subsidence / Legal aspects / Legislation / Mineral rights / Ownership / Regulations / State government / Texas / Waste disposal /

Abstract by Author

State actions to alleviate legal problems in geopressured-geothermal resource development in Texas are summarized. Legislative actions include a policy statement on resource ownership and a clarification of responsibility for waste disposal. The Railroad Commission has modified some regulations. Federal environmental regulations, particularly new programs proposed to implement statutes not yet enforced, are reviewed. These include a new hazardous waste management system proposed to implement the Resource Conservation and Recovery Act, a modified proposal for underground injection controls under the Safe Drinking Water act, and new rules for prevention of significant deterioration of air quality under the Clean Air Act. Continuing legal problem areas not yet resolved, generally because of inadequate technical knowledge of reservoir characteristics and long-term performance, are surveyed. Requirements and methods for the protection of correlative rights and prevention of resource waste, and legal and technical uncertainties associated with potential subsidence are examples. Unresolved problems of balancing energy needs against environmental protection should continue the administrative complexity and resultant delays experienced in other natural resource development.

9. GGIS-100308/O/ /*****/A/78/ /US/ /***** Austin

Title- A Low Temperature Geotherma Space Heating Demonstration Project

Author(s)- / Austin , John C. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Geopressured Geothermal Bibliography

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 23 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Photo (2) /

Proposed Descriptor(s)- / Economics / Environmental effects /
Geothermal resources / Geothermal space heating / Heat
exchangers / Idaho / Low temperature / Uses /

Abstract by Author

A demonstration project for the State of Idaho utilizes 170 DEG F geothermal water from well sources established in 1892. The project is a retrofitted gas-fired system serving three buildings. Two separate water loops are interfaced through a primary heat exchanger. The geothermal loop is capable of delivering up to 400 gpm at 166 DEG F to the exchanger which transfers about eight million Btuh to the space heating loop. The spent geothermal water is cooled and aerated, then discharged to the Boise River. The second loop is a closed system including the existing boiler, pumps, and piping retrofitted to the new heat exchanger. In addition to demonstrating the technology to utilize low temperature sources for space heating, the project examines economic feasibility, environmental impacts, and materials effects.

10. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****
4

Title- A Method of Determining Permeability by Means of a Pulsed NMR and an Application of the Method to the Study of A Gulf Coast Supernormally Pressured Well

Author(s)- / Stevens , D. O. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 67 , 4 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Boreholes / Engineering geology /
Geopressured reservoirs / Geopressure / Gulf Coast / Measurement
/ Nuclear magnetic resonance / Overburden pressure /
Permeability / Pressure buildup /

11. GGIS-100221/J/GENGA/*****/A/75/ / / *****/ Gudok

Title- A Method of Quick Calculation of the Geostatic Component of Geopressure to Be Used in Predicting Abnormal Pressures

Author(s)- / Gudok , N. S. /

Journal- Geol. Nefti Gaza

Publication date- Vol. 12 , 1975

Pagination- Page 56 , 4 Pages

Language- Russian

Proposed Descriptor(s)- / Calculation methods / Geopressure /
Geostatic pressure / Petroleum production operations /

Geopressured Geothermal Bibliography

12. GGIS-100328/R/ /*****/C/**/ /US/ /*****

Title- A National Plan for Energy Research, Development and Demonstration:

Subtitle- Creating Energy Choices for the Future

Publication date- June 30 , 1976

Report/patent- ERDA 76-1

Local Availability- CES

**Corporate Author- U.S. Energy Research and Development Administration
/9500868/.
Washington , D.C. , USA**

13. GGIS-100006/O/GAIDB/*****/A/**/ / / /*****

Title- A Note on Geological and Engineering Strain Rates, Hydraulic Fractioning, and Slope Stability

Author(s)- / Price , Neville J. /

Conference- IRPI (CNR)

**Publisher- IRPI (CNR)
Pisa, Italy**

Publication date- Vol. 8 , Issue 1 , 1973

Pagination- Page 57 , 7 Pages

Auxiliary expression(s)-

Illus.

Sum.

Proposed Descriptor(s)- / Effects / Engineering geology / Fluid pressure / Fractures / Geopressure / Gulf Coast / Hydraulic fracturing / Loading / Origin / Pore-fluid pressure / Shear / Slope stability / States / Strain / Theoretical studies /

14. GGIS-100393/0/ /*****/A/80/ /US/ /***** Thompson
DE-AC08-79ET-27112

Title- A Preliminary Creep Analysis of Rocks from the Pleasant Bayou Wells

Author(s)- / Gray , Ken E. / Jogi , Pushkar N. / McDonald , Robert C.
/ Thompson , Thomas W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 1060 , 21 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

DE-AC08-79ET-27112 /

Corporate Author- Texas Univ.

Center for Earth Sciences and Engineering
Austin , USA

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

/ Diagram (1) / Graph (6) /

Table

Ref.

Proposed Descriptor(s)- / Compaction / Creep / Drill cores /
Elasticity / Geopressured reservoirs / Models / Pleasant Bayou
No. 1 Well / Pleasant Bayou No. 2 Well / Rock deformation /
Simulation / Strains / Stresses / Texas / Time dependence /

Abstract by Author

Some cores retrieved from the Pleasant Bayou wells show pronounced time-dependent behavior. This time dependence is evident under both hydrostatic and deviatoric loading, and in drained and undrained tests. Preliminary models have been set up to analyze these preliminary data based on linear viscoelastic models. It will be shown that these models go some way towards describing the observed behavior, but that non-linearity must be accounted for. The significance of this nonelastic behavior to production and subsidence analysis is discussed.

15. GGIS-100393/O/ /*****/A/80/ / / /***** Johnson

**Title- A Report on the Economic Analyses Completed to Date of the
Most Promising Geopressured Energy Prospects in Louisiana**

**Author(s)- / Johnson , Adrain E., Jr. / Ray , Thomas G. / Wrighton ,
Fred M. /**

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1510 , 32 Pages

**Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA**

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Louisiana State Univ. /3826000/.
Baton Rouge , USA

Auxiliary expression(s)-

Illus.

/ Graph (2) /

Table

Ref.

Proposed Descriptor(s)- / Comparative evaluations / Computerized simulation / Cost / Data analysis / Economics / Exploitation / Geopressured reservoirs / Louisiana / Methane / Reservoir properties / Resource development / Site selection /

Abstract by Author

Five geopressured/goethermal prospects have been identified and described by W.J. Bernard in Evaluation of Five Potential Geopressure Geothermal Test Sites in Southern Louisiana. These five sites have been the subject of substantial analysis utilizing a techno-economic simulation model. A primary objective of this analytical work is to identify scenarios that would provide an environment conducive to the private development and exploitation of the resource. Consequently, the economics of the development of the resource have played a major role in our analyses. The base case for comparison of the sites to alternative investments has been established representing our best estimates of anticipated future investment, costs, and revenues under the existing regulatory, statutory, and institutional framework. The results of this base case analysis are reported for each site and the source of the differences identified. Scenarios in the form of recommended changes in the base case framework identified above are discussed and the economic sensitivity of changes in the framework identified.

16. GGIS-100129/R/ /*****/M/**/ /US/ /*****
EY-76-S-06-2227-021

Title- A Secondary Recovery Method for the Extraction of Geothermal Energy

Subtitle- Progress Report, July 1, 1975 - June 30, 1976

Geopressured Geothermal Bibliography

Author(s)- / Bodvarsson , Gunnar /

Publisher- ERDA
Washington, D. C.

Publication date- July 1976

Pagination- 87 Pages

Report/patent- RLO-2227-T21-1

Available- NTIS

(Paper copy (\$ 5.00)

(Microfiche (\$ 3.00)

Sponsor- / ERDA

EY-76-S-06-2227-021 /

Corporate Author- Oregon State University /4947000/.
Corvallis , Oregon , USA

Auxiliary expression(s)-

Illus.

/ Diagram (9) / Graph (16) / Map (2) /

Table

Proposed Descriptor(s)- / Boreholes / Cost / Dike intrusions /
Elasticity / Flow rate / Fluid flow / Heat extraction / Heat flow
/ Thermal conductivity / .

Abstract by Author

The concept of forced geoheat extraction involves an artificial circulation of water through natural fluid conducting structures in sufficiently hot rock. Several types of structures, viz., fault zones, dikes, formation contacts and sedimentary horizons are available for this purpose. The water is to be pumped into the structures through a series of relatively deep boreholes and will be recovered by other boreholes. The fluid conductivity may be of natural origin or be forced by a relatively high pumping pressure. The simplest

situation is obtained when a fault zone or dike of high natural fluid conductivity is available in a favorable subsurface temperature environment. Relatively simple heat conduction theory is available to estimate the fluid/rock contact area required to absorb from a homogeneous temperature environment a given amount of heat during a given period of time. The theory can be extended to cases of a non-homogeneous initial temperature of the rock and time varying flow rates. The size of the contact area is the main criterion as to the realizability of forced geoheat extraction systems. Of particular interest are systems that deliver heat for non-electrical uses in the Pacific Northwest. Theoretical considerations indicate that the contact areas required for an economical operation of such systems are not excessive and appear within the possibilities of present day technology.

17. GGIS-100995/ / /*****A/78/ /US/ /***** Tsang

Title- A Study of Alternative Reinjection Schemes for the Cerro Prieto Geothermal Field, Baja California, exico

Author(s)- / Bodvarsson , Gudmundur / Lippmann , Marcelo J. / Rivera R. , Jesus / Tsang , Chin Fu /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 659 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (4) /

Table

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Cerro Prieto geothermal field / Flow models
/ Geothermal brines / Hot water systems / Injection wells /
Mexico / Producing wells / Waste water disposal / Well spacing /

Abstract by Author

In this paper the results of an initial study of possible reinjection patterns for the Cerro Prieto geothermal field, Baja California, Mexico are discussed. First, the numerical model and assumptions made are described, then the various cases studied are presented. The resulting data indicate what may be expected from different reinjection schemes and may provide useful guidelines for future reinjection operations at Cerro Prieto and other Liquid-dominated geothermal fields.

18. GGIS-100143/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

Title- A Study of Brine Treatment

Subtitle- Final Report, November 1977

Author(s)- / Doeblor , Raymond E. / Mathur , Ashwani K. / Phillips ,
Sidney L. /

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- November 1977

Pagination- 256 Pages

Report/patent- EPRI ER-476

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (6) / Graph (10) /

Table

Ref.

Proposed Descriptor(s)- / Bibliographies / Brine treatment / Calcite
/ Coagulation / Corrosion / Corrosion protection / Corrosion
resistance / Descaling / Electric potential / PH adjustment /
Silica / Sulfides /

Abstract by Author

The objective of this project was to collect the available information pertinent to the treatment of geothermal brines by literature search and then evaluate and summarize this information for use by the electric utility and geothermal industry. The information used for this study was screened from the geothermal, oil and gas, wastewater disposal, and boiler water treatment industries. This information was evaluated and the current state of knowledge and methodology concerning the treatment of geothermal brines to control scaling and corrosion in geothermal electric power production was assessed. Currently, geothermal scale in pipes and wells is removed by physical or chemical methods. There is a growing effort on developing methods to control scale formation for both fresh and spent brines, including PH adjustment and application of an electrical potential for fresh fluids, and coagulation to treat spent fluids. Current methods of corrosion control center around planned replacement of piping and other plant components, with efforts focused primarily on development of materials with improved corrosion resistance. Recommendations for additional work to improve brine treatment include the following: 1) chemical and physical characterization of brine and scale compositions, 2) basic data on the mechanism of scale formation and the effects of inhibitors, 3) development of instrumentation to monitor geothermal brine constituents, 4) correlation of laboratory results with field test data, 5) screening of currently available commercial inhibitors for application to geothermal brines.

19. GGIS-100165/4/ /*****/M/**/ /US/ /*****
NSF-C836

Title- A Technology Assessment of Geothermal Energy Resource Development

Author(s)- / Deitch , L. / Gordon , T. J. / Maslan , F. /

Geopressured Geothermal Bibliography

Publication date- April 15 , 1975

Pagination- 563 Pages

Report/patent- PB-246 241

Available- NTIS

(Paper copy

(A24) (\$ 6.25)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Futures Group
Glastonbury , Connecticut , USA

Proposed Descriptor(s)- / Computer programs / Computerized simulation / Computer codes / Cost estimates / Cost / Decision making / Economic impact / Economics / Electric power generation / Environmental impacts / Environmental effects / Exploration / Feasibility studies / Forecasting / Geothermal prospecting / Geothermal resources / Geothermal systems / Geothermal exploration / Hot dry rock systems / Hot water systems / Leasing / Legislation / Magma systems / Mathematical models / Power generation / Regulations / Reviews / Simulation / Social effect / Social impact / Technology assessment /

Abstract by NTIS

Geothermal energy, energy derived from the intrinsic heat of the earth may become an important element of the energy inventory of the United States and the world in the next few decades. The report deals with some potential uses of geothermal energy in the United States, evaluates systems and makes recommendations for future applications. Specifically the objectives of this study were to: (1) identify potential constraints to the development of geothermal power; (2) determine feasibility; (3) determine its social, political, economic and environmental impacts in this country; and (4) provide input to the policy process regarding geothermal energy.

20. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- A Theory on the Effect of Overburden Stress on Geopressure Prediction from Well Logs

Author(s)- / Eaton , Ben A. /

**Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA**

Publication date- Vol. 3 , 1972

Pagination- Page 15 , 4 Pages

Auxiliary expression(s)-

Illus.

**Proposed Descriptor(s)- / Effects / Engineering geology /
Geopressured reservoirs / Geopressure / Overburden pressure /
Overburden / Petroleum / Prediction / Stress / Well logging /**

21. GGIS-100304/0/ /*****/A/73/ /US/ /***** Howerton

Title- A Thermodynamic Power Cycle for Recovery of Geothermal Energy

Author(s)- / Howerton , M.T. /

**Conference- 8. Intersociety Energy Conversion Engineering Conference
Philadelphia
Pennsylvania
USA (August 13 , 1973)**

**Publisher- University of Pennsylvania
Philadelphia, Pennsylvania**

Journal- Intersociety Energy Conversion Engineering Conference

Publication date- 1973

Pagination- Page 382 , 7 Pages

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Artificial recharge / Elevated temperature
/ Geothermal energy conversion / Heat exchangers / Power
generation / Thermodynamic cycles / Working fluids /

Abstract by NSF-RANN

A thermodynamic cycle is described which can efficiently recover thermal energy from natural heat sources at depths ranging from 2500 feet to 50,000 feet. For a heat source at 700 DEG F, a thermodynamic efficiency of 20-25% can be achieved. The maximum thermodynamic cycle efficiency can be approached by utilizing a multicomponent working medium composed of a noncondensable gas and a condensable fluid. The working medium circulates in a closed loop and absorbs thermal energy in a heat exchanger located in a well bore at the depth of the heat source. A low-pressure vapor mixture from the power turbine exhaust is partially condensed and injected into the well bore as a two-phase mixture. Both the temperature and pressure of the working medium are increased by adiabatic compression of the noncondensable gas as the two-phase mixture descends to the depth of the heat source. The condensable fluid is vaporized in the exchanger and the working medium is returned to the surface as a single-phase superheated, vapor mixture. This high-temperature, high-pressure vapor mixture is expanded in the power turbine to complete the cycle.

22. GGIS-100098/B/. /*****/M/**/ / / *****/

Title- Abnormal Formation Pressures

Subtitle- Implications to Exploration, Drilling, and Production of
Oil and Gas Resources

Author(s)- / Fertl , W. H. /

Publisher- Elsevier Science Publishing Co.
Amsterdam, Netherlands

Publication date- Issue 2 , 1976

Pagination- 382 Pages

Proposed Descriptor(s)- / Drilling / Effects / Exploration /
Geopressure / Petroleum resources / Production / Reservoir rocks
/ Resources / Textbooks /

23. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Abnormal High Pressure and Environment of Deposition

Author(s)- / Martin , Gene B. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 51 , 5 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Abnormal / Biostratigraphy / Deposition /
Environment / Foraminifera / Geopressured reservoirs /
Geopressure / Gulf Coast / Marine / Neritic / Oligocene /
Overburden pressure / Paleoecology / Pressure buildup /
Sandstone / Sedimentation / Sedimentary petrology / Shale /
South / Texas / United States /

24. GGIS-100002/0/PASPC/ 2/A/**/ / / /*****

**Title- Abnormal Pressures and Potential Geothermal Resources in the
Rio Grande Embayment of Texas**

(Cenozoic Near Shore Marine and Deltaic Deposits, Saline Ground
Water, Geothermal Gradient)

Author(s)- / Wallace , Raymond H., JR. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge

Geopressured Geothermal Bibliography

Louisiana
USA

Publication date- Vol. 2 , 1970

Pagination- Page 87 , 18 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Cenozoic Era / Connate water / Economic geology / Engineering geology / Geopressured reservoirs / Geopressure / Geothermal energy / Geothermal gradient / Ground water / Heat flow / Hidalgo County / Possibilities / Relation / Rio Grande Embayment / Sediments / Tabasco / Texas / United States / Weslaco /

25. GGIS-100002/O/PASPC/ 1/A/**/ /US/ /*****

Title- Abnormal Pressures in South Louisiana

Author(s)- / Wells , E. C. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 1 , Issue 1 , 1967

Pagination- Page 19 , 4 Pages

Proposed Descriptor(s)- / Economic geology / Geopressure / Gulf Coast / Louisiana / Petroleum / Production / South / United States /

26. GGIS-100024/B/APGRA/ 11/M/**/ / /*****

Title- Abnormal Subsurface Pressure

(Selected Papers from AAPG Bulletin)

Author(s)- / Dickinson , George B. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- 205 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Abnormal / Geopressure / Petroleum /
Production / Reservoir rocks /

27. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Abnormal Subsurface Pressures

Subtitle- Their Origin and Methods Employed for Prediction in India

Author(s)- / Sagay , Bhagman /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 153 , 4 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Abnormal / Asia / Boreholes / Engineering
geology / Geopressured reservoirs / Geopressure / India /
Measuring methods / Origin / Overburden pressure / Prediction /
Pressure buildup /

Geopressured Geothermal Bibliography

28. GGIS-100029/J/BTPEA/ 1802/A/**/ / / /*****

Title- Abnormally High Formation Pressures

Original Title- Pressoes de Formacao Anormalmente Altas

Author(s)- / Frank , M. R. /

Journal- Bol. Tec. Petrobras

Publication date- Vol. 18 , Issue 2

Pagination- Page 59 , 8 Pages

Language- Portuguese

Auxiliary expression(s)-

Sum.

Illus.

Proposed Descriptor(s)- / Causes / Compaction / Compression / Effects
/ Exploration / Faults / Formation pressure / Geopressure / High
pressure / Lateral / Migration / Petroleum / Pore water / Pore
pressure / Processes / Seals / Sedimentation / Vertical /
Volcanism /

29. GGIS-100004/O/ /*****/M/**/ / / /*****

Title- Abstracts

Conference- Development and Use of Geothermal Resources

Publication date- 1975

30. GGIS-100048/J/EGREA/ 1903/A/**/ / / /*****

Title- Abyssal Heat Flow in Oil and Gas-Bearing Continental Structures

Author(s)- / Makarenko , F. A. / Sergiyenko , S. I. /

Journal- Int. Geol. Rev.

Publication date- Vol. 3 , 1975

Pagination- Page 249 , 7 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Caucasus / Crust / Distribution / Effects / Geopressure / Geothermal gradient / Heat flow / Hydrocarbons / Migration / Oil and gas fields / Organic Materials / Origin / P-T conditions / Patterns / Petroleum / Piedmont / Relation / Tectonophysics / Urals / USSR / Volga River /

31. GGIS-100995/ / /*****A/78/ /US/ /***** Wonn

Title- Acoustic Sensor Development for Geothermal Borehole Televiewer

Author(s)- / Wonn , J.W. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 735 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Illus.

/ Diagram (6) /

Proposed Descriptor(s)- / Acoustic monitoring / Boreholes /
Geothermal wells / Measuring instruments / Sonic logging / Well
logging /

Abstract by Author (rev.)

Westinghouse is currently under contract to develop a geothermal borehole televiewer sensor. Environmental design goals are operation at 275 DEG C (525 DEG F) and 7000 PSI and sufficient tolerance to the corrosive borehole fluid. The primary project objective is to demonstrate the operation of the sensor under simulated geothermal borehole conditions. Results from screening tests and non-acoustic sensor tests indicate that suitable materials, components, and construction methods are available for achieving that goal. Confidence is sufficiently high to permit preliminary design of the acoustic sensor test apparatus.

32. GGIS-100995/ / /*****A/78/ /US/ /***** Maurer

Title- Advanced Turbodrills for Geothermal Wells

Author(s)- / Carwile , Clifton / Maurer , William C. / Rowley , John
C. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 411 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (4) / Photo (1) /

Ref.

Proposed Descriptor(s)- / Directional drilling / Drilling equipment /
Elevated temperature / Geothermal wells / Well drilling /

Abstract by Author

Maurer Engineering Inc. is continuing the development of a new high-temperature, 350 DEG C advanced turbodrill for use in drilling geothermal wells. Existing downhole drilling motors are temperature limited because of elastomeric degradation at elevated temperature. The new turbodrill contains high-torque turbine blades and improved seals which allow higher bit pressure drops. This new geothermal turbodrill which is designed for improved directional drilling offers economic alternatives for completing geothermal wells.

33. GGIS-100302/J/GUCBD/*****/A/79/ / / *****/ Lund

Title- Alcohol Fuel Production Using Geothermal Energy

Author(s)- / Lund , John W. /

Journal- Q. Bull., Geo-Heat Util. Cent.

Publication date- Vol. 4 , Issue 4 , October 1979

Pagination- Page 12 , 7 Pages

Auxiliary expression(s)-

Illus.

/ Figure (1) / Graph (1) /

Table

Ref.

Proposed Descriptor(s)- / Economics / Geothermal energy / Geothermal
space heating / Low temperature / Moderate temperature / Process
heating / Uses /

Geopressured Geothermal Bibliography

Abstract by Author (rev.)

Geothermal energy is a renewable resource that could make a significant impact in alcohol fuel production. One of the problems with alcohol production is that it is very energy intensive. The required energy input for production will vary from 40,000 to 70,000 BTU's per gallon of alcohol produced, depending upon the degree of heat recovery achieved in the design of the distillery. On the average, the energy input in a plant amounts to about half of the new energy output available in the alcohol. This input includes not only the fuel oil, natural gas, or waste material supplying the heat, but also electrical energy to run motors, pumps, etc. Since lower temperature geothermal resources (below 300 DEG F) are suited for process heating and space heating, and can be adapted for the production of alcohol, use of these resources can contribute to reducing the need for fossil fuels in producing alcohol. Other advantages of using geothermal energy include the lack of combustion air pollutants, the availability of hot springs and shallow low-temperature wells in rural areas where the raw products are also available, and the use of the "waste" geothermal energy for drying the protein by-product.

34. GGIS-100058/J/OIGJA/*****/A/**/ / / /*****

Title- Alternate Fuels

Publication date- Vol. 78 , Issue 1 , January 7 , 1980

Pagination- Page 50 , 1 Pages

Local Availability- CES

Proposed Descriptor(s)- / Cameron Parish / Geopressure drilling /
Geopressure exploration / Geopressure wells / Louisiana /

Abstract by PROMPT

DOE and Magma Gulf/Technadrill have signed an \$8.9 million contract to drill and test a geopressured geothermal well in Cameron Parish, Louisiana. The project objective is to evaluate the reservoir and its long-term productivity capacity and, after testing, to demonstrate that a geopressured geothermal well can be operated commercially.

35. GGIS-100333/R/ /*****/M/80/ /US/ /***** Cremer

W-7405-ENG-34

Title- Alternative Gas Workshop

Subtitle- Final Report

Author(s)- / Cremer , Glenda /

Conference- Alternative Gas Workshop
Los Alamos
New Mexico
USA (September 5 , 1979)

Publication date- March 1980

Pagination- 51 Pages

Report/patent- LA-8155-C

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy

W-7405-ENG-36 /

Corporate Author- Los Alamos Scientific Lab. /3820000/.
Los Alamos , New Mexico , USA

Auxiliary expression(s)-

Illus.

/ Figure (7) / Diagram (6) / Map (2) / Graph (5) /
Photo (1) /

Geopressured Geothermal Bibliography

Table

Ref.

Proposed Descriptor(s)- / Economics / Energy source development /
Geopressured reservoirs / Geopressured wells / Louisiana /
Meetings / Methane / Natural gas / Research programs / Texas /

Abstract by Author

The Alternative Gas Workshop met at the Los Alamos Scientific Laboratory on September 5 and 6, 1979, to review basic research needs in the development of seven categories of unconventional and nonconventional gas resources. The categories reviewed were Devonian shales, western tight gas sands, methane from coal beds, geopressured brines, methane hydrates, abiogenic methane, and other geological environments. This report presents the principal recommendations of the workshop groups.

36. GGIS-100133/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

**Title- An Analysis of the Bipole-Dipole Resistivity Method for
Geothermal Exploration**

Author(s)- / Dey , Abhijit / Morrison , H. F. /

Publication date- June 1977

Pagination- 63 Pages

Report/patent- LBL-6332

Available- NTIS

(Paper copy (\$) 4.50)

(Microfiche (\$) 3.00)

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (34) /

Ref.

Proposed Descriptor(s)- / Depth / Electric conductivity / Geothermal
exploration / Overburden / Resistivity surveys / Simulation /
Structural models /

Abstract by Author

Bipole-Dipole (B-D) resistivity mapping has been widely used as a reconnaissance method in geothermal exploration. In this technique, apparent resistivities are plotted at roving dipole receiver locations and the current source (bipole) is left fixed. Interpretation to date has been in terms of simple layered, dike, vertical contact, or sphere models. In the case of more complicated two-dimensional models the interpretation is much more ambiguous and the detection of buried conductors depends very much on the choice of transmitter location. Since apparent resistivities taken on a line collinear with the bipole are roughly equivalent to the apparent resistivities for one sounding in a dipole-dipole (D-D) pseudo-section, the two methods have been compared for several two-dimensional models. A buried quarter space and a buried horizontal block of rectangular cross section, with or without an overburden layer, have been used in the comparison. Unless the target is very shallow or close to the bipole or dipole, the resolution of the horizontal position or depth extent for the B-D method is very poor. Conductive overburden worsens the situation for both methods but the effect is more drastic for the B-D method. The spatial patterns for these models is complex for the B-D method and in fact for certain transmitter positions only subtle differences exist for the buried block and buried quarter space models. Multiple sources improve the resolution of the B-D method, but many sources coupled with the high sampling density of receivers required to define the spatial patterns would greatly reduce the cost effectiveness claimed for this method. Changing the bipole orientation with respect to the strike of the models contributes little if anything to the resolution of the models. A further experiment of calculating a residual map by subtracting the half-space or layered half-space response from the response of the buried models was also unsuccessful in improving the interpretability of the B-D method. Finally, a model representative of a typical basin-and-range valley with and without a hypothesized geothermal map would not, in a practical survey, reveal the reservoir. From these model studies it is clear that, except for some simple geological situations, the B-D method is not effective for subsurface

Geopressured Geothermal Bibliography

mapping. Selected D-D lines would be far more useful and more cost effective.

37. GGIS-100356/ / /*****/M/**/ /US/ /*****
ET-78-G-05-5958

Title- An Analysis of Ecological Effects of Geopressured-Geothermal Resource Development

(Geopressured Geothermal Technical Paper No. 4)

Publication date- July 1979

Report/patent- DOE/ET/28464-1(vol. 4)

Available- NTIS

(Paper Copy

(A07) (\$ 7.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

ET-78-G-05-5958 /

Corporate Author- RPC, Inc.
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (4) /

Table

Ref.

Proposed Descriptor(s)- / Air pollution / Energy source development /
Energy policy / Environmental effects / Fault activation /
Geopressured reservoirs / Geothermal brines / Ground subsidence
/ Gulf coast / Seismicity / Texas / Waste disposal / Water
pollution /

Abstract by Author

This report identifies the activities involved in geopressured-geothermal resource production and discusses their ecological impacts. The analysis separates those activities that are unique to geopressured-geothermal development from those that also occur in oil and gas and other resource developments. Of the unique activities, those with the greatest potential for serious ecological effect are: (1) accidental brine discharge as a result of a blowout during well drilling; (2) subsidence; (3) fault activation and enhanced seismicity; and (4) subsurface contamination of water, hydrocarbon, and mineral reservoirs. Available methods to predict and control these effects are discussed. In virtually every aspect of the study, however, information specific to Texas geothermal resource development was found to be inadequate. The analysis provided here should be refined as more Texas-specific geothermal resource data and experience become available. In addition, each geothermal resource production site will contain features that must be considered in a case-by-case assessment.

38. GGIS-100393/O/ /*****/A/80/ /US/ /***** Ohkuma

Title- An Analysis of Reservoir Mechanics of Geopressured Geothermal
Aquifers

Subtitle- The Brazoria County Prospect

Author(s)- / Knapp , Roy M. / Lewis , John T. / Lewis , John T. /
McDonald , Robert C. / Ohkuma , Hiroshi / Sepehrnoori , Kamy /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 907 , 25 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin

Geopressured Geothermal Bibliography

TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (9) /

Table

Ref.

Proposed Descriptor(s)- / Aquifers / Brazoria County / Compaction /
Dissolved gases / Gas saturation / Geopressured reservoirs /
Geothermal brines / Models / Permeability / Pleasant Bayou No. 2
Well / Productivity / Reservoir engineering / Simulation /
Systems analysis / Texas /

Abstract by Author

Aquifers of abnormally high pressures, known as "geopressured geothermal aquifers," are found extensively in the Gulf Coast Region of the United States. The hot water contained in the aquifers may have a significant amount of dissolved hydrocarbon gas. A two-phase, two-dimensional simulator using a finite difference technique was developed for simulating the production behavior of these geopressured aquifers. A series of cross-sectional model calculations were performed to analyze reservoir mechanics operative in a geopressured aquifer. Investigated are the effects of reservoir heterogeneities and completion strategies on resource recovery. Finally, an assessment is made of the effects of gas evolution about the wellbore on well productivity.

39. GGIS-100308/0/ /*****/A/78/ /US/ /***** Dhillon

Title- An Approach to Risk Analysis for Government-Sponsored
Demonstration Projects

Author(s)- / Dhillon , H. / El-Sawy , A. /

Conference- Geothermal Resources Council 2nd Annual Meeting

Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 153 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Mitre Corp. /9503543/.

METREK Div.
McLean , Virginia , USA

Auxiliary expression(s)-

Illus.

/ Figure (15) / Graph (2) /

Table

Ref.

Appendix

Proposed Descriptor(s)- / Commercialization / Demonstration plants /
Demonstration programs / Economics / Electric power / Geothermal
power plants / Investment / Risk investment /

Abstract by Author

This paper analyzes the economics of geothermal power plant demonstration from the view points of the government and the private industry organizations participating in these demonstrations. The analysis presented focuses on electric power plants only, and a similar approach can be adopted for

Geopressured Geothermal Bibliography

evaluating the demonstrations of direct-utilization alternatives.

40. GGIS-100162/B/ /*****/M/**/ /US/ /*****

Title- An Attitudinal Survey of Citizens in a Potential Gulf Coast Geopressured-Geothermal Test-Well Locality

(Research Report No. 9)

Subtitle- Final Report

Author(s)- / Blissett , Marlan / Lopreato , Sally Cook /

Publication date- May 1977

Pagination- 116 Pages

Available- Center for Energy Studies
Engineering Science Bldg. 143
University of Texas at Austin
Austin
Texas
78712

(Paper copy (\$ 4.00)

Sponsor- / ERDA /

Corporate Author- Texas University, Austin

Center for Energy Studies
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Map (1) /

Ref.

Table

Proposed Descriptor(s)- / Attitudes / Brazoria County / Communities /
 Geothermal development / Human populations / Public relations /
 Recommendations / Regional analysis / Social impact /
 Socio-economic factors /

Abstract by Energy Studies

Energy resource development projects have great potential value for particular regions and for the country as a whole, but such projects often bring problems to the small communities near which they occur. Yet, the needs and attitudes of local citizens are frequently ignored. This study entailed collection of attitudinal data, both from the general public and from representatives of various local sectors such as government, agriculture, and finance, in a potential Gulf Coast geopressured-geothermal test well locality, Brazoria and Galveston Counties. The results show that citizens are positively inclined toward energy development in their area, even though they are not yet well informed about the geopressured-geothermal resource. Satisfaction with community life is high, although some communities in the area already are experiencing difficulties with some public services. A strong sentiment was evidenced for local control of community affairs, even though outside advice and funding are viewed as necessary in meeting community needs under conditions of rapid growth. The report recommends that a more active program be pursued for the dissemination of information about the pending geothermal development, that community planning for growth be encouraged, and that federal and state assistance programs be better coordinated and streamlined. Various channels for communication within the community setting are discussed.

 41. GGIS-100002/0/PASPC/ 2/A/**/ / / /*****

Title- An Engineering Interpretation of Seismic Data
 (Techniques, Texas Gulf Coast)

Author(s)- / Pennebaker , E. S. /

Conference- Abnorm. Subsurf. Pressure
 Baton Rouge
 Louisiana
 USA

Publication date- Vol. 2 , 1970

Pagination- Page 51 , 8 Pages

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Engineering geology / Geophysical surveys /
Geopressured reservoirs / Geopressure / Gulf Coast / Prediction
/ Seismic surveys / Texas / United States /

42. GGIS-100240/J/ /*****/A/77/ / / *****/ Tarlock

Title- An Environmental Overview of Geothermal Resources
Development

Author(s)- / Tarlock , A. Dan. / Waller , Richard L. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 289 , 36 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Air pollution / Energy source development /
Environmental effects / Exploitation / Geothermal energy
conversion / Geothermal resources / Land use / Noise pollution /
Regulations / Water pollution /

Abstract by EIC

Development of geothermal energy is not without serious environmental problems, but the impacts of exploitation appear to be less severe than those associated with other fuels. The major physical adverse environmental effects at each stage of geothermal development (exploration, test drilling, production testing, field development, and power generation) are surveyed. Land use problems, water pollution, and air and noise problems are considered. A review of regulatory strategy focusing on these impacts reveals that clarity is missing.

43. GGIS-100286/J/PLINA/*****/A/**/ /US/ /*****/

Title- An Industry View of the U.S. Natural Gas Challenge

Journal- Pipe Line Ind.

Publication date- Vol. 48 , Issue 5 , May 1978

Pagination- Page 37 , 6 Pages

Auxiliary expression(s)-

Illus.

/ Photo. (5) /

Proposed Descriptor(s)- / Economics / Energy demand / Energy storage /
Financing / Geopressured zones / Gulf of Mexico / Investment /
Louisiana / Methane / Natural gas deposits / Texas /

Abstract by Energyline

AGA chairman H. A. Proctor answers questions concerning the U.S. future of natural gas, how the U.S. can approach energy independence, and how natural gas will play a key role in the U.S. economy during the next 20 years. The expansion of the gas industry's supply capability through additional storage and peak shaving facilities has stemmed the recurrence of the natural gas shortages experienced in the winter of 1976-77. The future of LNG imports is discussed. Estimates of U.S. natural gas reserves are presented. The potential of methanated geopressure zones under the Gulf of Mexico and coastal areas of Texas and Louisiana is examined. The gas supply situation next winter is expected to be better than it has been in recent years. It is estimated that, from 1978-85, the gas utility industry will invest more than \$54 billion in traditional investments areas and about \$19 billion in supplemental projects.

44. GGIS-100240/J/ /*****/A/77/ / / *****/ Trower

Title- An Overview of the California Permitting Access

Author(s)- / Trower , E. Dale /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Geopressured Geothermal Bibliography

Pagination- Page 325 , 24 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / California / Geothermal exploration /
Geothermal resources / Licensing / Regulations /

Abstract by EIC

For more than 15 years, California has been developing a sophisticated geothermal regulatory structure, which is described. The exploration permitting process is emphasized. The newly enacted Napa County Geothermal Ordinance illustrates the powers that California has delegated to local units. It is hoped that the new environmental impact review guidelines and the California Div. of Oil and Gas regulations will streamline the search and development of the geothermal resource potential.

45. GGIS-100128/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

Title- An Overview of the Imperial Valley Environmental Project

Author(s)- / Anspaugh , L. R. / Phelps , P. L. /

Publication date- April 8 , 1976

Pagination- 14 Pages

Report/patent- UCID-17067

Note- from National Geothermal Conference Palm Springs, California,
USA April 19-22, 1976.

Available- NTIS

(Paper copy (\$ 4.00)

(Microfiche (\$ 2.25)

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Livermore /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Chart (2) / Map (1) /

Table

Categories-

Environmental Sciences, Atmospheric

(Basic Studies)

Proposed Descriptor(s)- / Air quality / Ecology / Environmental effects / Ground subsidence / Imperial Valley / Research programs / Seismicity / Socio-economic factors / Water quality /

Abstract by ERA

The Lawrence Livermore Laboratory has been appointed by the U. S. Energy Research and Development Administration to be the lead laboratory for carrying out a long-term project to acquire complete understanding of the environmental quality in the Imperial Valley of California prior to any major developments. The purpose of this project is to ensure that the development of geothermal resources proceeds on an environmentally sound basis. Consequently, the Imperial Valley Environmental Project (IVP) is committed to an intensive and comprehensive study designed to establish an environmental baseline for the Imperial Valley as well as to develop an understanding of the environmental and other effects associated with development of geothermal resources. The IVP is organized into seven main study sections, which when taken together cover all the significant issues and concerns. The sections are: air quality; water quality; ecosystem quality (soil, plants, animals, etc.); subsidence and induced seismicity; health effects; socio-economics; and an integrated assessment. (AUTH)

46. GGIS-100156/R/ /*****/M/**/ /US/ /150801
E(10-1)-1375

Geopressured Geothermal Bibliography

Title- Analysis of the Binary Cycle for Geothermal Power Generation

Author(s)- / Ingvarsson , I. J. / Madsen , W. W. /

Publication date- December 1975

Report/patent- ANCR-1245

Available- NTIS

(Paper copy

(E03) (\$ 6.25)

(Microfiche

(E01) (\$ 3.25)

Corporate Author- Aerojet Nuclear Co. /9501267/.

Idaho National Engineering Lab.
Idaho Falls , Idaho , USA

Categories-

Geothermal Energy

(Geothermal Power Plants)

Geothermal Power Plants

(Design and Operation)

Proposed Descriptor(s)- / Binary cycles / Boiling / Butanes / Butane /
Computer codes / Design / Electric power generation / Geothermal
energy conversion / Geothermal power plants / Power generation /
Systems analysis / Thermodynamic properties / Working fluids /
2-methylpropane /

Abstract by NTIS

Exchanging heat from hot geothermal fluid to a secondary working fluid which is then expanded through a turbine appears to be the best way of producing electrical power from a medium temperature geothermal resource. A study has been made to determine the conceptual design state points for a dual boiling system which utilizes isobutane as the working fluid. The results of this work and the sensitivity of plant performance to variations from nominal design points are presented. In

addition, variations due to tolerances applied to thermodynamic properties and other key factors are included.

47. GGIS-100124/B/ /*****/M/**/ / / *****/

Title- Analysis of the Potential Use of Geothermal Energy for Power Generation Along the Texas Gulf Coast

Author(s)- / Kaufman , S. / Shepherd , B. P. / Wilson , J. S. /

Publication date- 1974

Note- See subsequent report NSF--RA-N--74-246, Same title, authors;
GGIS TRN 77.00125

Available- Governor's Energy Advisory Council
Governor's Energy Advisory Council
P.O. Box 12428
Capitol Station
Austin, Texas 78711

Corporate Author- State of Texas

Governor's Energy Advisory Council
Austin , Texas , USA

Proposed Descriptor(s)- / Capital / Comparative evaluations /
Exploration / Geopressed systems / Geothermal energy /
Geothermal exploration / Geothermal power plants / Gulf of
Mexico / Investment / Natural gas / Offshore sites / Power
generation / Production / Sand / Texas /

48. GGIS-100125/R/ /*****/M/**/ / / *****/

Title- Analysis of the Potential Use of Geothermal Energy for Power Generation Along the Texas Gulf Coast

Author(s)- / Kaufman , S. / Shepherd , B. P. / Wilson , J. S. /

Publication date- March 15 , 1975

Geopressured Geothermal Bibliography

Report/patent- NSF-RA-N--74-246

Corporate Author- Dow Chemical Co. /2194000/.
Freeport , Texas , USA

Proposed Descriptor(s)- / Coastal regions / Cost / Economics /
Geopressured systems / Geothermal energy / Geothermal power
plants / Geothermal resources / Gulf of Mexico / Natural gas /
Power generation / Power potential / Recovery processes / Sand /
Shale / Texas /

Abstract by ERDA/RECON

Three forms of potential geothermal energy may exist in the state of Texas: hot rocks in the Trans Pecos region, convection type geothermal water in the Rio Grande Rift Basin, and geopressured geothermal water along the Gulf Coast. Of these, only the geopressured waters have been verified. Exploration wells for oil and gas have established the presence of deep hot water deposits along the coastal area, offshore and inland for 75 miles. These exist in thick shale and sand beds in the geopressured zone. The most favorable area appears to be at depths of 12,000 to 15,000 feet where the temperatures range from 300 to 400 degrees F. Indications are that a series of relatively small, 10 to 50 megawatt, power plants could be located along the Coastal Plain of Texas. These plants could produce at least 20,000 megawatts and possibly as much as 100,000 megawatts under the most favorable conditions. Cost of the power appears to be in the range of 25 to 35 mills per kilowatt hour in 1980 providing the water is saturated with natural gas which could be sold to offset some of the cost. If the gas is present, at least 6 billion cubic feet per day of natural gas would be produced. Unit capital investment for such plants would exceed projected costs for nuclear or fossil fueled power plants. Successful development of a demonstration plant with public funds could establish the viability of geopressured waters as a source of power and natural gas and encourage private investment to exploit this energy source, should it prove competitive with other sources of electric power generation.

49. GGIS-100004/0/ /*****/A/75/ / / /***** Wilson

Title- Analysis of the Potential Use of Geothermal Energy for Power
Generation Along the Texas Gulf Coast

Author(s)- / Kaufman , S. / Shepherd , B. F. / Wilson , J. S. /

Conference- Development and Use of Geothermal Resources

Publication date- Vol. 2 , Issue 1 , May 29 , 1975

Pagination- Page 1865 , 5 Pages

Available- Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.
20402
USA

(Stock number 060-000-00005-1)

Local Availability- CES

Proposed Descriptor(s)- / Binary / Depths / Design / Economics /
Figures / Flooding / Flow rate / Fluid cycle / Forecasting /
Geopressured systems / Louisiana / Methane / Power generation /
Site selection / Tables / Temperature measurement / Texas /

50. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

**Title- Analysis of Abnormally Pressured Gas Reservoirs with Partial
Water Influx**

Author(s)- / Bass , D. M. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 81 , 6 Pages

Proposed Descriptor(s)- / Abnormal / Analysis / Engineering geology /
Geopressured reservoirs / Geopressure / Natural gas / Overburden
pressure / Partial / Pore water / Pressure buildup / Water influx
/

51. GGIS-100393/0/ /*****/A/80/ / / /***** Durham

Geopressured Geothermal Bibliography

Title- Analysis of Cameron Parish Geopressured-Geothermal Aquifer, Sweet Lake Prospect

Author(s)- / Durham , Clay O., Jr. / Parsons , Brian E. / Rodgers , Robert W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1439 , 29 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/. /

Auxiliary expression(s)-

Illus.

/ Graph (6) / Map (4) / Figure (2) /

Table

Proposed Descriptor(s)- / Aquifer tests / Areal geology / Cameron Parish / Geological setting / Geopressured reservoirs / Louisiana / Reservoir pressure / Reservoir temperature / Sand / Seismic survey / Site selection / Well testing /

Abstract by Author

The Sweet Lake geopressured-geothermal prospect is located in northern Cameron Parish, Louisiana, in T.12S., R.7W and T.12S, R.8W. approximately 10-15 miles south of Lake Charles. The region is characterized by Cenozoic sand and clay deposits of geosynclinal thickness and differentially uplifted salt structures. The primary geopressured-geothermal aquifer is the "Miogyp" sand of the Camerina zone (Upper Frio formation of

Oligocene-Miocene age). The main prospect is located in a basin on the north flank of the Hackberry-Big Lake-Sweet Lake salt ridge. Interpretation of 27 miles of seismic lines and 17 deep well logs localizes the prospect in a basin with northwesterly dip in a graben between east-west faults converging eastward. Aquifer depth ranges from 14,000 to 18,000 feet. Net sand thickness exceeds 400 feet with 22% porosity. Temperatures range from 280 DEG F (corrected) at 14,000 feet to 350 DEG F at 18,000 feet. Geopressures occur below 9,000 feet with mud wight equivalents in the sand from 12 to 13 pounds per gallon. Net sand volume of one cubic mile is estimated in the area mapped. Magma Gulf Company identified and leased the Sweet Lake prospect in 1975, submitted it as a proposed drilling and test site, and submitted it to ERDA under a Request for Proposals in 1976. It was selected over competition in 1977, and Magma Gulf preformed additional seismic evaluation under DOE sponsorship in 1978. A detailed plan for a 24-month drilling and testing program has been approved by DOE. Techadril, Inc., an affiliate of Goldrus Drilling Company, has joined Magma Gulf as a joint ventrue partner for the project. The drillsite is located on a lease acquired in 1979 from the Amoco Production Company.

52. GGIS-100264/R/ /*****/M/77/ /US/ /150500 Bloomster
EY-76-C-06-1830

**Title- Analysis of Electricity Production Costs from the Geopressured
Geothermal Resource**

Author(s)- / Bloomster , C.H. / Knutson , C.A. /

Publication date- February 1977

Pagination- 75 Pages

Report/patent- BNWL-2192

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Geopressured Geothermal Bibliography

Sponsor- / U.S. Energy Research and Development Administration /9500868/.

EY-76-C-06-1830 /

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Categories-

Geothermal Energy

(Economic and Financial Aspects)

Geothermal Power Plants

(Design and Operation)

Proposed Descriptor(s)- / By-products / Cost / Economics / Electric power / G codes / Geopressured systems / Geothermal energy conversion / Geothermal power plants / Gulf of Mexico / Methane / Optimization / Power generation / Power potential / Power range 1-10 mw / Power range 10-100 mw / Recovery processes /

Abstract by TIC

The economics of the geopressured geothermal resource along the northern coast of the Gulf of Mexico is assessed. Geopressured waters are nearly under twice the normal hydrostatic pressure and believed to be saturated with methane. The costs of generating electricity from this resource are estimated based on the description and conceptual development plans provided by the United States Geological Survey (USGS). Methane content and selling prices are the most important factors affecting the commercial potential of geopressured resources--so it is important that electrical generation be viewed as a by-product of methane production. On the same incremental cost basis, the cost of electricity generated from the geohydraulic energy is potentially competitive with conventional energy sources. This would require development of a small commercial high pressure, hydraulic turbine to extract geohydraulic energy at the wellhead in plants of about 3 MW capacity. Price/quantity relationships are developed for electricity generation from geopressured resources for each of three development plans proposed by USGS. Studies, based on field constructed plants, indicated an optimum power plant size in the range of 20 to 60 MWe, depending on water temperature. However, if standardized thermal conversion power plants could be factory produced in the 6 MWe range competitively with larger field constructed plants, then the optimum plant size might be reduced to single wellhead units. Wellhead units would completely eliminate fluid transmission costs, but would probably incur higher costs for heat rejection, power plant operation, and electrical

transmission. The upper cost target for competitive wellhead plants would be on the order of \$800/kW in 1975 dollars.

53. GGIS-100115/ / /*****/M/**/ / / /*****

Title- Analysis of Geopressed Natural Gas Reservoirs

(Research Initiation; 7/74 to 9/75)

Author(s)- / Smith , J. T. /

Note- Fiscal Year 1975 Estimated Calendar Year Funding Reported as 1975 \$13,000

Available- Mississippi State University, School of Engineering
Mississippi State University
School of Engineering
Suite 101, Engineering Bldg.
Mississippi State, Mississippi 39762

Corporate Author- U.S. National Science Foundation

Div. of Engineering

Abstract by Energyline

The primary objective of this research is to collect compressibility data on geopressed sands and water influx data on geopressed shales. It will first involve both laboratory in-situ determinations of compressibility as a function of pressure and other important properties of the reservoir. Data on water influx from compacting shales will then be obtained with core samples of undercompacted shales extracted from geopressed strata. Internal fluid and external confining pressures will be separately controlled in the high-pressure tests of these cores so as to allow the flowrate of water from the shale to be measured as controlled compaction takes place. Flow potential of the shale will be calculated from Darcy's Law. A relationship between reservoir pressure and permeability will be developed. Production data from geopressed wells, core samples and testing apparatus will be made available by the industrial participant. (AMOCO)

54. GGIS-100114/ / /*****/M/**/ / / /*****

Geopressured Geothermal Bibliography

Title- Analysis of Geopressured Natural Gas Reservoirs

(Research Initiation, 4/74 to 9/75)

Author(s)- / Smith , J. T. /

Publication date- 1974

Note- Energyline: FU-\$13,600

Available- Mississippi State University, School of Engineering
Mississippi State Univ.
School of Engineering, Petroleum Engineering
Suite 101, Engineering Bldg.
State College, Mississippi 39762

Corporate Author- U.S. National Science Foundation

Div. of Engineering

Abstract by (Unknown)

The primary objective of this research is to collect compressibility data on geopressured sands and water influx data on geopressured shales. It will first involve both laboratory in situ determinations of compressibility as a function of geopressure and other important properties of the reservoir. Data on water influx from compacting shales will then be obtained with core samples of undercompacted shales extracted from geopressured strata. Internal fluid and external confining pressures will be separately controlled in the high-pressure tests of these cores so as to allow the flow rate of water from the shale to be measured as controlled compaction takes place. Flow potential of the shale at progressive stages of compaction will be calculated from Darcy's Law. A relationship between reservoir pressure and permeability will be developed. Production data from geopressured wells, core samples and testing apparatus will be made available by the industrial participant (AMOCO).

55. GGIS-100393/O/ /*****/A/80/B/ / /***** Frederick
ET-78-G-05-5959

Title- Analysis of Government Incentives and Resource Utilization
Profiles

Subtitle- B. Six Profiles for Utilization of the
Geopressured-Geothermal Resource in the Mid-Term

Author(s)- / Frederick , David O. / Prestwood , Donna C. L. / Roberts
 , Kenneth D. / Vanston , John H., Jr. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1620 , 22 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
ET-78-G-05-5959 /

Corporate Author- Texas Univ. /9502459/.
Center for Energy Studies
Austin , USA

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Exploitation / Financial incentives /
Forecasting / Geopressure resources / Institutional aspects /
Legal aspects / Natural gas industry / Petroleum industry / Power
plants / Public utilities / Resource development / Uses /

Abstract by Author

Geopressured Geothermal Bibliography

The institutional structure through which the geopressured-geothermal resource is utilized in the mid-term is not expected to be homogenous over all reservoirs. This presentation details and rationalizes the four utilization profiles our research suggests are most likely to constitute, in some mix, the overall structure, given perpetuation of the current pattern of government initiatives. The profiles are: (1) development by a petrochemical firm through its production subsidiary of reservoirs for their methane content alone; this methane would be used as feedstock and as boiler fuel; (2) development by a gas transmission company, through its production subsidiary, of reservoirs for their methane content along; this high-cost, incrementally priced methane would be sold to an industrial boiler fuel market; (3) development by an integrated energy company of reservoirs for their methane content alone; though the company might use the methane in refinery processes, most would be sold to transmission companies; and (4) development by an electric utility, through its production subsidiary, of reservoir for their methane content along; this methane would be used as fuel for (largely) existing gas-fired boilers. The presentation also details and rationalizes two electricity generation profiles which appear less unlikely than others: (5) development by a project company of contiguous reservoirs for both their methane content and heat content; these components would be sold to an electric utility for use in a hybrid methane-heat fueled power plant owned by the project company, and (6) development by an electric utility, through its production subsidiary, of contiguous reservoirs for their methane and heat content; these components would be used in a hybrid methane-heat fueled powerplant owned by the utility.

56. GGIS-100393/O/ /*****/A/80/ / /***** Frederick
ET-78-G-05-5959

Title- Analysis of Government Incentives and Resource Utilization Profiles

Subtitle- A. Current Government Incentives Bearing On Geopressured-Geothermal Development

Author(s)- / Frederick , David O. / Prestwood , Donna C.L. / Roberts , Kenneth D. / Vanston , John H., Jr. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1602 , 18 Pages

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University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
ET-78-G-05-5939 /

Corporate Author- Texas Univ. /9502459/.

Center for Energy Studies
Austin , USA

Proposed Descriptor(s)- / Charges / Economic policy / Energy policy /
Financial incentives / Gas production / Geopressure resources /
Legal aspects / Methane / Regulations / Resource development /
Taxes / Uses / US DOE /

Abstract by Author

Numerous government initiatives have been undertaken in recent years which have impacts on geopressured-geothermal development. "Geothermal" initiatives in some cases are not clearly applicable to the geothermal component of geopressured resources because of the presence of the methane component. Various natural gas production incentives have a direct impact on geopressured methane development and, hence, make production of the geothermal component more likely also. This presentation (1) examines the applicability of the Geothermal Loan Guaranty Program to geopressured development, (2) explains DOE-DGE well drilling plans (as budgeted), (3) examines federal tax incentives to geopressured development, (4) discusses geopressured methane price incentives and disincentives, (5) explains the Economic Regulatory Administration's ruling allowing geopressured methane boiler fuel, and (6) analyzes the legal problems confronting a developer who would transport either electricity or methane from the resource site for use elsewhere.

57. GGIS-100999/0/ /*****/A/78/ / / /***** Mines

Geopressured Geothermal Bibliography

Title- Analysis of Raft River Heat Exchanger Fouling Data Using a Multivariate Regression Technique

Author(s)- / Mines , G.L. / Neill , D.T. /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1135 , 6 Pages

Report/patent- SAE--789317

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (5) /

Table

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Fluidized bed heat exchangers / Fouling / Geothermal brines / Materials testing / Performance testing / Transfer pipes /

Abstract by Author

Heat exchanger fouling is an important parameter in the design of all heat exchangers, particularly those to be employed in low to medium temperature geothermal resource applications where required heat exchange areas are large. Heat exchange fouling tests have been underway at Raft River for the past year with admiralty brass tubes, the material selected for the 5 MW(e) Raft River test facility. Initial data reduction efforts revealed that conventional methods of calculating the fouling resistance as the change in the overall thermal resistance with time would not work. By using a multivariate regression analysis, the seasonal and daily ambient air temperature changes could be incorporated into the data reduction procedure. With this technique it was possible to measure an annual fouling resistance considerably lower than specified when ordering heat exchangers for the large test facility.

58. GGIS-100393/O/ /*****/A/80/B/US/ /***** Loucks

Title- Analysis of Texas Gulf Coast Tertiary Sandstones to Delineate Areas of High-Quality Geopressured Geothermal Reservoirs

Author(s)- / Dodge , Marianne M. / Loucks , Robert G. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 373 , 41 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) Div. of
Geothermal Energy /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , TX , USA

Auxiliary expression(s)-

Illus.

/ Graph (14) / Map (4) / Figure (6) /

Table

Ref.

Proposed Descriptor(s)- / Diagenesis / Drill cores / Geopressure
exploration / Geopressured reservoirs / Mineralogy /
Permeability / Porosity / Resource assessment / Sandstone /
Texas /

Abstract by Author

Analysis of reservoir quality of lower Tertiary sandstones along
the Texas Gulf Coast delineates areas most favorable for
geopressured geothermal exploration. Reservoir quality is

Geopressured Geothermal Bibliography

determined by whole core and petrographic analyses. Wilcox sandstones exhibit no regional reservoir quality trends. In Lower and in parts of Middle and Upper Texas Gulf Coast the sandstones are relatively well consolidated, but in other parts of Middle and Upper Texas Gulf Coast they show a reversal toward increased porosity at depth. The Wilcox Group has good reservoir potential for geopressured geothermal energy in the Middle Texas Gulf Coast and possibly in adjacent areas, but other Wilcox areas are marginal. Vicksburg sandstones have the poorest reservoir quality of sandstones of any formation and are not prospective for geothermal energy. Reservoir quality in the Frio Formation increases from very poor in lowermost Texas, to marginal into the Middle Texas Gulf Coast and to good through the Upper Texas Gulf Coast. This increase in reservoir quality correlates to changes in rock composition and cementation. The Frio Formation in the Upper Texas Gulf Coast has the best deep-reservoir quality of any unit along the Texas Gulf Coast.

59. GGIS-100312/R/ /*****/M/76/B/US/ /***** Barker
E(10-1)1546

**Title- Annual Report on the Project to Design and Experimentally Test
an Improved Geothermal Drill Bit**

**Author(s)- / Barker , L.M. / DeVries , L.K. / Green , S.J. / Maurer
, W.C. /**

Publication date- June 1976

Pagination- 40 Pages

Report/patent- TID--28684

Available- NTIS

(Paper Copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Energy Research and Development Administration

E(10-1)1546 /

Corporate Author- Terra Tek, Inc. /9500842/.
Salt Lake City , Utah , USA

Auxiliary expression(s)-

Illus.

/ Diagram (5) / Diagram (5) / Photo. (3) /

Table

Ref.

Proposed Descriptor(s)- / Design / Drill bits / Elastomers /
Geothermal drilling / High temperature / Laboratory testing /
Lubricants / Research programs / Seals / Steels /

Abstract by Author (rev.)

The problem of short drill bit life in the drilling of geothermal wells has been reasonably well defined. Bit failure modes are both bearing wear and gage wear. The high bearing wear rates are attributable to the softening of the steel bearings and bearing races as a result of exceeding the design operating temperature of the drill bits. The high bit temperature is attributable to both the high formation temperature and to the friction heat generated in the drill bit. The friction heating is high because the bits have no lubricant sealed in the bearings; and no lubricant is sealed in the bearings because even a lubricated bit runs hotter than the temperature limits of currently used seals and lubricants. Thus, it appears that a significant gain in drill-bit life can be attained by the use of higher-temperature steels which retain more hardness at temperatures above 260 DEG C (500 DEG F). Two research bits of high-temperature steels have been made and will shortly be tested in a laboratory-simulated full-scale geothermal drilling environment. Two control bits of the same design, but made with conventional drill-bit steels, have also been obtained for identical laboratory test runs. Base-line properties of the steels, such as hardness and fracture toughness as functions of temperature, are being measured. A geothermal test vessel has been designed and fabricated which is capable of temperatures to 427 DEG C (800 DEG F) and pressures to 35 Mpa (5,000 psi). In the vessel, the test bit will be subjected to the same loads and RPM as are expected in field service. However, the largest gain in drill bit life may well be attained through high-temperature seal and lubrication techniques to allow the construction of bits with sealed, lubricated bearings. Some candidate seals and lubricants have been obtained for testing, and others are being procured. In addition, a seal test vessel has been designed and will soon be completed which can simulate the geothermal drilling environment in full-scale testing of seal and lubricant designs and materials. The vessel will not only simulate pressure and temperature conditions, but also axial and radial motions of the shaft, and pressure fluctuations across the seal.

Geopressured Geothermal Bibliography

60. GGIS-100231/R/ /*****/M/**/ /US/ /*****

Title- Annual Report. Bureau of Economic Geology, University of
Texas at Austin, 1975

Publication date- 1976

Available- Bureau of Economic Geology
University Station
Box X
Austin
Texas
78712

(\$ 0.0)

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

61. GGIS-100276/R/ /*****/M/79/ /US/ /***** Hill
W-7405-ENG-48

Title- Apparatus and Techniques for the Study of Precipitation of
Solids and Silica from Hypersaline Geothermal Brine

Author(s)- / Crampton , H.E. / Deutscher , S.B. / Grogan , R.G. /
Harrar , J.E. / Hendricks , V.H. / Hill , J.H. / Ottol , C.H.,
Jr. /

Publication date- July 5 , 1979

Pagination- 12 Pages

Report/patent- VCRL-52799

Available- NTIS

(Paper copy

(A02) (\$ 5.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, D.C. (USA) /9505475/.

W-7405-ENG-48 /

Corporate Author- California Univ. /9500007/.

Lawrence Livermore Lab.
Livermore , CA , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (2) /

Table

Ref.

Proposed Descriptor(s)- / Absorption spectroscopy / Dissolved solids
/ Geothermal brine / Gravimetry / Laboratory equipment /
Laboratory testing / Measuring instruments / Measuring methods /
Precipitation / Salinity / Salton Sea / Silica minerals /
Supersaturation /

Abstract by Author

The kinetics of precipitation reactions in geothermal brines can be studied accurately only if the brine samples are collected and examined under anaerobic condition and with minimum cooling. Apparatus and techniques were developed that achieve this for brine temperatures below 100 DEG C. The concentration of suspended solids is measured gravimetrically after filtration, and the concentration of dissolved silica is measured by atomic absorption spectrophotometry. Data from Woolsey No. 1 well of the Salton Sea Geothermal Field illustrate typical results of the procedures.

62. GGIS-100104/P/ /*****/M/**/ /US/ /150900

Title- Apparatus for Using a Source of Energy from an Overpressured Formation

Geopressured Geothermal Bibliography

Author(s)- / Hottman , C. E. /

Publication date- July 1967

Report/patent- 3,330,356 (US Patent

Proposed Descriptor(s)- / Distribution / Energy sources / Equipment /
Geopressured systems / Geothermal energy / Geothermal resources
/ Gulf of Mexico / Patents / Planning / Shale / Temperature
measurement / Texas / Well logging /

63. GGIS-100995/ / /*****A/78/ /US/ /***** Netherton

Title- Appartus for the Field Evaluation of Geothermal Effluent
Injection

Author(s)- / Netherton , Raymon / Owen, Lawrence B. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 487 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- California Univ., Livermore /9500007/.

Lawrence Livermore Lab.
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (4) / Graph (1) /

Ref.

Proposed Descriptor(s)- / Filtration / Geothermal reservoirs / Mineral wastes / Solid wastes / Underground disposal / Waste disposal /

Abstract by Author

Methods of evaluating suburface disposal systems, based on data derived from membrane filtration tests and core flooding experiments, have been described in the literature. Utilizing these techniques, the authors have developed and successfully tested equipment for evaluation of injectability of any geothermal effluent including hypersaline brine from the Salton Sea Geothermal Field.

64. GGIS-100123/ / / 8/A/**/ / / /*****

Title- Appendix

(From Chapter 6 in Assessment of Geothermal Resources of the United States, 1975)

Subtitle- Discussion of Data used in Assessment of Onshore Geopressed-Geothermal Resources in the Northern ulf of Mexico

Publication date- 1975

Pagination- Page 141 , 6 Pages

Proposed Descriptor(s)- / Geo brine / Geothermal resources / Geothermal energy / United States South /

Abstract by Energyline

The basis on which data presented in the various tables of ERDA/USGS report 726 were determined, calculated, or assumed is discussed, and other untabulated data and equations used in the assessments presented are examined. Using the data for evaluating energy recovery plans other than those presented in the main text of the report is illustrated. Data on average conditions in subareas, such as depth to top of geopressure, pressures, temperatures, and salinity, are analyzed. Data on properties of a conceptual reservoir include: thickness, porosity, and permeability of hydraulic conductivity; and transmissivity and storage coefficients. Density, methane content, kinematic viscosity, and specific heat of water are considered, and pipe friction and well-flow equations are detailed.

Geopressured Geothermal Bibliography

65. GGIS-100184/R/ /*****/M/**/ /US/ /150802

Title- Application of Conventional Superheaters in Geothermal Power Plants

Author(s)- / Khalifa , H. E. /

Publication date- 1976

Report/patent- COO--4051-8 (APP. C)

**Corporate Author- Brown University / 943000/.
Providence , Rhode Island , USA**

Categories-

Geothermal Energy

(Geothermal Power Plants)

Geothermal Power Plants

(Power Plant Systems and Components)

Proposed Descriptor(s)- / Feasibility studies / Flashed steam systems / Fossil-fuel power plants / Geopressured systems / Geothermal fluids / Geothermal power plants / Methane / Superheating / Vapor dominated systems /

Abstract by DOE/RECON

It was shown previously that the application of geothermal feedwater heating in an otherwise conventional steam power cycle greatly improves the utilization of the geothermal resource. Here, a study of the benefits of applying fossil-fuel superheating in the case of flash or vapor-dominated systems is presented. It is suggested that the combination of a flash system and a conventional superheater may prove to be attractive in the case of geopressured reservoirs producing some methane.

66. GGIS-100995/ / /*****/A/78/ /US/ /***** Rivera-R

Title- Application of Type Curve Procedures for the Analysis of Production Data from Geothermal Wells

Author(s)- / Rivera-R , Jesus /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 575 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (5) /

Ref.

Proposed Descriptor(s)- / Cerro Prieto geothermal field / Data
analysis / Geothermal wells / Graphs / Production / Production
decline curve /

Abstract by Author (rev.)

Past research has shown that the decline-curve analysis approach can be successfully applied to geothermal wells. By plotting monthly production vs. time on either semilog or log-log paper together with rate decline models, it was possible to predict the future production of wells of the Cerro Prieto Geothermal Field. This paper shows that production forecasting can also be performed is based on entirely graphical prodecure. The procedure is based on the use of a basic dimensionless graph, on which rate decline models can be placed on a single log-log type curve. The aim of this paper is to show how this graph was used to handle production data from some wells of the Cerro Prieto Geothermal Field. The results show that the method deserves more serious consideration for application to other geothermal fields around the world.

67. GGIS-100047/J/RIFPA/ 2609/A/**/ / / /*****

Geopressured Geothermal Bibliography

Title- Application of Well-Logging to Geopressure Problems in the Search, Drilling, and Production of Hydrocarbons

(Correlation between Geopressure and Shale-Sand Ratio, Efficient Drilling, Rock Parameters)

Original Title- Utilisation des Diagraphies en Recherche, Forage, et Production D'Hydrocarbure Pour L'Etude des Problemes de Pressions Geostatiques

Author(s)- / Fertl , W. H. / Timko , D. J. /

Publisher- Inst. Fr. Petr.

Journal- Rev. Inst. Fr. Pet.

Publication date- Vol. 26 , Issue 9 , 1971

Pagination- Page 687 , 28 Pages

Language- French

Auxiliary expression(s)-

Sum.

Illus.

/ Sketch map (1) /

Proposed Descriptor(s)- / Engineering geology / Exploration / Geopressure / Natural gas / Petroleum / Pore pressure / Rock mechanics / Uses / Well logging /

68. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Approximation of Pressures Ahead of the Bit by Analysis of the Exposed Pressure Seal

Author(s)- / Harger , C. G. / Hebert , Rene / Pertuis , J. B. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge

Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 145 , 4 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Analysis / Boreholes / Engineering geology
/ Geopressured reservoirs / Geopressure / Measurement /
Overburden pressure / Pressure buildup / Seals / Techniques /

69. GGIS-100023/J/AAPGB/ 5812/A/74/ / / /***** Magara

Title- Aquathermal Fluid Migration

Author(s)- / Magara , K. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 58 , Issue 12 , 1974

Pagination- Page 2513 , 5 Pages

Categories-

Exploration

(Hydrology)

Proposed Descriptor(s)- / Aquathermal pressuring / Compaction /
Diagrams / Discussion / Fluid dynamics / Fracturing / Geology /
Geopressured systems / Geothermal gradients / Gulf Coast /
Hydrostatic pressure / Pore pressure / Pressure gradients /
Sedimentary basins / Subsurface temperatures / Subsurface
pressures / Tables / Water expansion / Water circulation /

Geopressured Geothermal Bibliography

70. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Aquathermal Pressuring

(Paper 10 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Subtitle- Role of Temperature in Development of Abnormal Pressure Zones

Author(s)- / Barker , Colin /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 137 , 4 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Depth / Engineering geology / Geopressured reservoirs / Geopressure / Geothermal gradient / Gulf Coast / Overburden pressure / P-T conditions / Pore water / Shale / United States / Water /

71. GGIS-100318/R/ /*****/M/78/ /US/ /***** Grimsrud
W-7405-ENG-48

Title- Areas of Ground Subsidence to Geofluid Withdrawl

Author(s)- / Frame , Phillip A. / Grimsrud , G. Paul / Turner , Barbara L. /

Publisher- California Univ., Berkeley. Lawrence Berkeley Lab.
Berkeley, Calif.

Publication date- August 1978

Pagination- 329 Pages

Report/patent- LBL--8618

Local Availability- CES

Sponsor- / U.S. Department of Energy

W-7405-ENG-48 /

Corporate Author- Systems Control, Inc. /9501051/.
Palo Alto , California , USA

Proposed Descriptor(s)- / California / Chocolate Bayou Geothermal field / Data analysis / Environmental effects / Field studies / Fluid withdrawal / Geopressured zones / Geysers geothermal field / Ground subsidence / Hot water systems / Idaho / New Zealand / Raft River KGRA / Texas / Vapor dominated systems / Wairakei geothermal field /

Abstract by Author

The evaluation of the potential for subsidence of geothermal resource areas is an important consideration in resource development and exploitation. Subsidence, if it occurs, may cause a significant environmental impact as well as present problems in field operation. Consequently, methods for its prediction are required. Two approaches are currently available for predicting subsidence: the analysis method uses mathematical models; the analogy method relies on a subjective analysis and comparison of geological and hydrological features of the site under study in the past. The comparisons made in the analogy method thus require detailed information on sites which have already exhibited subsidence. This report provides such detailed information on four areas (Chocolate Bayou, Raft River Valley, Wairakei, and The Geysers geothermal fields) with histories of subsidence.

72. GGIS-100393/0/ /*****/A/80/ / / /***** Grimes

Title- Assessing the Socioeconomic Impact of Geopressured Geothermal Energy Development in Coastal Louisiana: A Preliminary Report

Author(s)- / Grimes , Michael D. / Saucier , Deborah L. /

Publisher- 4. Geopressured Geothermal Energy Conference

Geopressured Geothermal Bibliography

Publication date- Vol. 3 , June 1980

Pagination- Page 1642 , 49 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Louisiana State Univ. /3826000/.
Baton Rouge , USA

Auxiliary expression(s)-

Illus.

/ Graph (1) / Map (1) /

Table

Ref.

Proposed Descriptor(s)- / Calcasieu Parish / Cameron Parish /
Comparative evaluations / Demography / Economic impact /
Economics / Environmental impacts / Geopressure resources /
Lafourche Parish / Louisiana / Models / Populations / Resource
development / Social impact / Socio-economic factors / St Mary
Parish / Terrebonne Parish / Vermillion Parish /

Abstract by Author

This paper reports the initial analysis of the potential socioeconomic impact of geopressured/geothermal energy development for parishes in coastal Louisiana containing five targeted development sites. After a wide variety of different indicators was reviewed, a set was selected to represent five different dimensions of the socioeconomic structure of the parishes. These dimensions are: (1) population size and composition, (2) education and training, (3) income and tax base, (4) labor-force composition, and (5) health-care and social services. Using these variables, baseline data profiles for each parish are constructed and compared to both state planning district and state totals. These profiles are then used as a benchmark for accessing the potential socioeconomic impact

of a range of geopressed/geothermal energy development alternatives on the host parishes.

73. GGIS-100231/R/ /*****/A/**/ /US/ /*****

Title- Assessment of Geopressed Geothermal Resources, Texas Gulf Coast

Publication date- 1976

Pagination- Page 15 , 2 Pages

Available- Bureau of Economic Geology
University Station
Box X
Austin
Texas
78712

(\$ 0.0)

Proposed Descriptor(s)- / Continental shelf, offshore / Continental Shelf / Geopressure exploration / Geopressure resources / Geothermal prospecting / Geothermal energy / Gulf Coast / Resource assessment / Texas /

74. GGIS-100317/R/ /*****/A/79/ /US/ /***** Wallace

Title- Assessment of Geopressed-Geothermal Resources in the Northern Gulf of Mexico Basin

Author(s)- / Kraemer , T.F. / Taylor , R.E. / Wallace , R.H., Jr. / Wesselman , J.B. /

Publisher- U.S. Geological Survey
Reston, Va.

Publication date- 1979

Pagination- Page 132 , 24 Pages

Geopressured Geothermal Bibliography

Report/patent- CIRC--790

Available- U.S. Geological Survey
Branch of Distribution
1200 South Eads St.
Arlington
Virginia
22202

(Paper Copy (\$ 0.0)

Local Availability- CES

Corporate Author- U.S. Geological Survey /2752000/.
Washington , D.C. , USA

Auxiliary expression(s)-

Illus.

/ Figure (10) /

Table

Ref.

Proposed Descriptor(s)- / Electric power / Elevated temperature /
Energy yield / Fluid pressure / Geopressured systems /
Geopressured zones / Gulf Coast / Louisiana / Methane /
Mississippi / Porosity / Power potential / Resource assessment /
Salinity / Sandstone / Shale / Texas /

Abstract by Author

This report estimates the geopressured-geothermal energy contained in pore waters of sedimentary rocks to a depth of 22,500 ft (6.86 km) in the northern Gulf of Mexico basin, both onshore and offshore. The total thermal energy in waters of both sandstone and shale is estimated to be $107,000 \times 10^{18}$ J, of which $11,000 \times 10^{18}$ J is in sandstone and thus represents the amount from which initial production will be drawn. Assuming saturation of the water with methane, the total methane dissolved in water within sandstone and shale is $59,000 \times 10^{12}$ standard cubic feet. Of this, $5,700 \times 10^{12}$ standard cubic feet, equivalent to $6,000 \times 10^{18}$ J of thermal energy, is contained in water within sandstone. Application of the recoverability analysis presented by Papadopoulos and others (1975) in USGS Circular 726 suggests that recoverable thermal energy ranges from 270×10^{18} J under plan 3 (controlled development with limited pressure reduction and subsidence) to $2,800 \times 10^{18}$ J under plan 2 (depletion of reservoir pressure). The energy

equivalent of recoverable methane ranges from 158×10^{18} J under plan 3 to $1,640 \times 10^{18}$ J under plan 2. The electricity producible from this thermal energy at a conversion efficiency of 8 percent ranges from 23,000 MWe for 30 years under plan 3 to 240,000 MWe for 30 years under plan 2. As in Circular 726, the Dissolved methane is not considered to be used locally, and, accordingly, no electrical energy is calculated.

75. GGIS-100094/ / /*****M/**/ / /*****

Title- Assessment of Geothermal (Geopressure) Resources in the Texas Gulf Coast Region

(3/75 to 3/76)

Author(s)- / Bebout , D. G. / Dorfman , M. H. / Fisher , W. L. / Groat , C. /

Publication date- 1975

Note- Estimated Calendar Year Funding Reported as 1975 \$250,000

Available- University of Texas, School of Engineering
University of Texas
School of Engineering, Petroleum Engineering
200 W. 21ST
Austin, Texas 78712

Corporate Author- U.S. National Science Foundation

Proposed Descriptor(s)- / Geological setting / Geopressure resources / Geopressured reservoirs / Geothermal fluids / Gulf Coast / Resource assessment / Sediments / Stratigraphy / Texas /

Abstract by Energyline

The primary objective of this research is to evaluate the methodology of subsurface geologic reconstruction in terms of its applicability to the assessment of geothermal fluids in sedimentary terrains. The technology, featuring a genetic stratigraphic approach to basin analysis, has proven successful in South Texas for geopressured reservoir sand delineation. The proposed research will expand this depositional settings. Successful completion will provide a work into the appropriate sediments throughout the Texas Coastal Zone and will test the approach in differing valuable tool for geothermal resource

Geopressured Geothermal Bibliography

assessment in other geopressured settings and in hot brine areas as well as in the Gulf Coast area.

76. GGIS-100142/R/ /*****/M/**/ /US/ /*****

Title- Assessment of Geothermal Energy Sources

Author(s)- / Peck , D. L. /

Publication date- June 1972

Pagination- 94 Pages

Report/patent- PB-224 882

Note- 94 P., 9 P. Bibliography

Available- NTIS

(Paper copy (\$ 3.75)

(Microfiche (\$ 1.45)

Corporate Author- U. S. Department of the Interior

**Panel on Geothermal Energy Resources
D.C. , USA**

**Proposed Descriptor(s)- / Environmental effects / Geothermal energy /
Recommendations / Research programs / Resource assessment / Uses
/**

Abstract by NSF/RANN

Preliminary recommendations for research and development in the field of geothermal energy are presented. A 5-year federal program is suggested to assess the magnitude, type, and location of U.S. geothermal resources and to encourage development of technology for discovering, evaluating, and utilizing the resources. Included in the report are discussions of the nature of geothermal energy, current utilization, current research and development, environmental effects, ultimate potential, and research and development needs. (MPG)

77. GGIS-100317/R/ /*****/M/79/ /US/ /***** Muffler

Title- Assessment of Geothermal Resources of the United States--1978

Author(s)- / Muffler , L.J.P. /

Publisher- U.S. Geological Survey
Reston, Va.

Publication date- 1979

Pagination- 163 Pages

Report/patent- CIRC--790

Available- U.S. Geological Survey
Branch of Distribution
1200 South Eads St.
Arlington
Virginia
22202

(Paper Copy (\$ 0.0)

Local Availability- CES

Corporate Author- U.S. Geological Survey /2752000/.
Washington , D.C. , USA

Auxiliary expression(s)-

Illus.

/ Figure (27) / Map (3) /

Table

Proposed Descriptor(s)- / Elevated temperature / Geopressured systems
/ Geopressured zones / Geothermal resources / Hot dry rock
systems / Hydrothermal systems / Low temperature / Magma systems
/ Methane / Moderate temperature / Resource assessment / USA /

Abstract by Author

Geopressured Geothermal Bibliography

The geothermal resource assessment presented in this Circular is a refinement and updating of USGS Circular 726. Nonproprietary information available in June 1978 is used to assess geothermal energy in the ground and, when possible, to evaluate the fraction that might be recovered at the surface. Five categories of geothermal energy are discussed: (a) conduction-dominated regimes; (b) igneous related geothermal systems; (c) high-temperature (>150 DEG C) and intermediate-temperature (90 DEG-150 DEG C) hydrothermal convection systems; (d) low-temperature (<90 DEG C) geothermal waters; (e) geopressured-geothermal energy (both thermal energy and energy from dissolved methane). Assessment data are presented on three colored maps prepared in cooperation with the National Oceanic and Atmospheric Administration.

78. GGIS-100083/ /XICIA/*****/M/**/ / /*****

Title- Assessment of Geothermal Resources of the United States, 1975
(Circular No. 726)

Publication date- 1975

Corporate Author- U.S. Geological Survey

79. GGIS-100121/R/ /*****/M/**/ /US/ /*****

Title- Assessment of Geothermal Resources of the United States, 1975
(Geological Survey Circular No, 726)

Author(s)- / White , D. E. / Williams , D. L. /

Publisher- U.S. Geological Survey
Reston, Virginia

Publication date- 1975

Pagination- 159 Pages

Report/patent- CIRC--726

Corporate Author- U.S. Geological Survey
Washington , D.C. , (USA)

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Arizona / California / Conduction /
Convection / Diagrams / Economic geology / Evaluation /
Geopressure / Geopressured systems / Geothermal energy /
Geothermal resources / Geothermal wells / Geothermometry / Hot
dry rock systems / Hydrothermal / Hydrothermal convection
systems / Idaho / Imperial Valley / Louisiana / Magmas / Maps /
Nevada / New Mexico / Oregon / Production / Regional / Resources
/ Tables / Texas / United States / Washington /

Abstract by ERA

Six sections are presented along with an introduction, a
summary discussion, and conclusions. A separate abstract is
prepared for each. (LBS)

80. GGIS-100121/R/ /*****/A/**/ /US/ /295500

**Title- Assessment of Onshore Geopressured-Geothermal Resources in
the Northern Gulf of Mexico Basin**

(Chapter 6 in Assessment of Geothermal Resources of the United
States, 1975)

Author(s)- / Papadopoulos , S. S. / Taylor , R. E. / Wallace , R. H.
/ Wesselman , J. B. /

Publisher- U.S. Geological Survey
Reston, Virginia

Publication date- 1975

Pagination- Page 125 , 22 Pages

Report/patent- CIRC--726

Corporate Author- U.S. Geological Survey

Geopressured Geothermal Bibliography

Washington , D.C. , USA

Auxiliary expression(s)-

Illus.

/ Graph (4) / Map (1) / Table (5) /

Refs.

Proposed Descriptor(s)- / Aquifers / Coastal / Economic geology /
Economics / Energy sources / Energy yield / Geo brine /
Geopressured systems / Geopressure / Geothermal resources /
Geothermal energy / Ground water / Gulf of Mexico / Hydraulics /
Kinetic energy / Louisiana / Methane / Natural gas / P-T
conditions / Permeability / Porosity / Possibilities /
Production / Resources / Salinity / Texas / Thermal waters /
Thickness / United States South / United States /

Abstract by Energyline

Geopressured zones in the Northern Gulf of Mexico Basin are known to occur in Tertiary sediments beneath an area over 278,500 SQ. KM., extending from the Rio Grande in Texas northeastward to the mouth of the Pearl River in Louisiana. The resource potential of geopressured-geothermal reservoirs within the onshore part of Tertiary sediments under an area of more than 145,000 SQ. KM. along the Texas and Louisiana Gulf Coast is assessed. The study area is divided into subareas, with the geopressured zone in each area idealized as a "conceptual reservoir". The recoverability of energy from geopressured reservoirs ultimately depends on the amount of water that can be produced by wells tapping these reservoirs. Various development plans for recovering the energy are discussed. (4 graphs, 1 map, 21 references, 5 tables)

81. GGIS-100323/R/ /*****/M/78/ /US/ /150600 Knutson
EY-77-C-08-1531

**Title- Assessment of Subsurface Salt Water Disposal Experience on the
Texas and Louisiana Gulf Coast for Applications to Disposal of
Salt Water from Geopressured Geothermal Wells.**

Author(s)- / Boardman , C.R. / Knutson , C.F. /

Publication date- August 4 , 1978

Pagination- 80 Pages

Report/patent- NVO-1531-2

Available- NTIS

(Paper Copy

(A05) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy /9506839/.

EY-77-C-08-1531 /

Corporate Author- GeoEnergy Corp. /9506248/.
Las Vegas , Nevada , USA

Categories-

Geothermal Energy

(Environmental Aspects)

Proposed Descriptor(s)- / Bibliographies / Brines / Coastal regions /
Data / Geopressed systems / Geothermal fluids / Geothermal
wells / Government policies / Gulf of Mexico / Injection wells /
Liquid wastes / Louisiana / Tables / Texas / Waste disposal /
Wells /

Abstract by TIC

A representative cross section of the literature on the disposal of geothermal brine was perused and some of the general information and concepts are summarized. The following sections are included: disposal statistics--Texas Railroad Commission; disposal statistics--Louisiana Office of Conservation; policies for administering salt water disposal operations; salt water disposal experience of Gulf Coast operators; and Federal Strategic Petroleum Reserve Program's brine disposal operations. The literature cited is listed in the appended list of references. Additional literature is listed in the bibliography.

82. GGIS-100155/J/ / 492/A/**/ /US/ /*****

Geopressured Geothermal Bibliography

Title- Assignment: Drill and Complete a 'Water Well'

(Hot, geopressured brines with entrained gas may lure big rigs to new duty on the Gulf Coast is how resulting wells can be drilled and equipped.)

Subtitle- Depth: 12,000 to 20,000+ Ft., Pressure: 9000 to 15,000+ Lb., Temperature: 250 to 350 DEG f

Author(s)- / Boyd , W. E. / Dorfman , M. H. /

Journal- Drilling

Publication date- Issue 492 , March 1978

Pagination- Page 30 , 4 Pages

Local Availability- GGIS

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (1) /

Table

Proposed Descriptor(s)- / Detection / Electrical logging / Formation fracture gradients / Geopressure / Geopressured wells / Gravel packing / Safeguards / Sand control / Well casings / Well completion / Well head equipment / Well perforating /

Abstract by GGIS

The technology which can be used to drill and complete wells which tap the geothermal-geopressured resources of the Gulf Coast is discussed, including wellhead equipment, drilling safeguards, geopressure detection, formation fracture gradients, well casings, perforating procedures, completion procedures, and sand control.

83. GGIS-100054/J/LGALA/ 1201/A/**/ / / /*****

Title- Association of Salinity and Geopressures in Soft and Hard Rock

Author(s)- / Fertl , W. H. / Timko , D. J. /

Journal- Log Analyst

Publication date- Vol. 12 , Issue 1 , January 23 , 1971

Pagination- Page 5 , 11 Pages

Auxiliary expression(s)-

Ref.

Categories-

Oil Fields

(Brines)

Oil Wells

(Bottom Hole Pressure)

Geochemistry

(Salinity)

Proposed Descriptor(s)- / Bottom hole pressure / Brines /
Geochemistry / Oil fields / Oil wells / Salinity / Well logging /

Abstract by NTIS

In situ and surface measurements of salinity variations in formations penetrated by the drill bit can be conducted. Experience in soft and hard rock country indicates that changes in salinity are related to environmental conditions and tectonic features. Of importance is the evidence that such salinity variations appear to be related to the occurrence of overpressured formations (geopressures). However, such correlation may be limited by the fact that formation salinities can vary quite markedly with rock stresses due to tectonics such as faulting, salt dome uplift, unconformities, and other local or regional geology. 39 refs.

84. GGIS-100023/J/AAPGB/ 5704/A/**/ / / /*****

Title- Attainment

Geopressured Geothermal Bibliography

(Abstract)

Subtitle- A Major Fractured and Overpressured Trap

Author(s)- / Lucas , P. Peter T. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 57 , Issue 4 , 1973

Pagination- Page 791 , 1 Pages

Proposed Descriptor(s)- / Altamont Field / Economic geology /
Engineering geology / Fractures / Geopressured reservoirs /
Geopressure / Oil and gas fields / Patterns / Petroleum /
Production / Stratigraphic / Tertiary / Testing / Traps / Uinta
Basin / United States / Wash /

85. GGIS-100298/ / /*****M/78/ / /***** Elemo

Title- Automatic History Matching of Geopressured-Geothermal
Reservoir Performance Data by use of Optimal control Theory

Author(s)- / Elemo , Rufus Oladipo /

Publication date- 1978

Pagination- 344 Pages

Proposed Descriptor(s)- / Compaction / Fluid flow / Geopressured
reservoirs / Geopressured systems / Mathematical models /
Performance testing / Permeability / Porosity / Productivity /
Thickness /

Abstract by Dissertation Abstracts

Three of the pertinent parameters of stress-sensitive, geopressured-geothermal reservoir systems have been singly and jointly estimated. The method of History Matching was applied because studies showed that the current conventional well test

methods for determining the mathematical petroleum reservoir models' unknown parameters are not suitable for determining the initial values of the parameters in stress-sensitive reservoirs such as the geopressured-geothermal reservoir systems. Numerically controlled experiments indicated that the temporal response of geopressured-geothermal reservoirs pressure is sensitive to permeability, uniaxial compaction coefficient, net pay thickness, specific productivity index and, in a much less degree, to porosity. Based on these results, stress-sensitive permeability (distributions in homogenous and heterogenous reservoirs), uniaxial compaction coefficient and porosity were considered for estimation. A hypothetical reservoir with a single-phase slightly compressible fluid flowing in two dimensions was assumed for testing. There are no real data from geopressured-geothermal reservoir at this time, hence the history data was model-generated with simulated measurement errors. Three different types of data were simulated: drawdown data and two different combinations of drawdown and buildup data. The results showed that the stress-sensitive parameters can be estimated by history matching. The single-parameter estimates were most reliable; reliability decreases as the number of unknown parameters increases. Drawdown data are generally preferred to drawdown-buildup data and error-free data are also desirable.

86. GGIS-100058/J/OIGJA/*****/A/**/ /US/ /*****

Title- AGA-

Subtitle- Supplemental Gas to Bolster U.S. Supply

Publication date- Vol. 77 , Issue 31 , July 30 , 1979

Pagination- Page 120 , 2 Pages

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (1) /

Proposed Descriptor(s)- / Gas production / Geopressure resources /
Natural gas / Natural gas deposits /

Abstract by PROMPT

Geopressured Geothermal Bibliography

Conventional gas output in the continental U.S. will be 14-18 tcf/yr in 1985 and 12-14 tcd/yr in 2000, according to the American Gas Association. Output from supplemental gas sources will rise to over 17 tcf/yr by 2000, with the majority coming from Alaskan pipeline gas, LNG and coal gasification. By 2000, other gas sources will come on stream, including Devonian shale, geopressured gas, land and marine biomass and renewable urban wastes.

87. GGIS-100386/R/ /*****/M/80/ /US/ /***** Aamodt
W-7405-ENG.36

Title- Basic Research Needed for the Development of Geothermal Energy

Author(s)- / Aamodt , R. Lee / Riecker , Robert E. /

Publication date- October 1980

Pagination- 19 Pages

Report/patent- LA-8562-MS

Available- NTIS

(Paper copy

(A02) (\$ 5.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy , Washington, DC (USA). Office of Basic Energy Sciences /9505667/.

W-7405-ENG.36 /

**Corporate Author- Los Alamos Scientific Lab. /3820000/.
NM , USA**

Auxiliary expression(s)-

/ Graph (1) /

Table

Ref.

Proposed Descriptor(s)- / Convection / Energy source development /
Geopressured systems / Geothermal exploration / Heat flow /
Hydrothermal systems / Research programs / Rock fluid
interactions / Thermal conductivity /

Abstract by Author

This report was prepared for the Office of Basic Energy Sciences of the U.S. Department of Energy. The purpose of the report is to identify basic research needed to facilitate development of geothermal energy. An attempt has been made to make the report representative of the ideas of productive workers in the field. The plan of the report is to discuss the present state of knowledge of geothermal energy and then to list specific recommendations for further research, with status and priorities. Discussion is limited to a small number of applicable concepts, namely: 1) origin of geothermal flux, 2) transport of geothermal energy, 3) geothermal reservoirs, 4) rock-water interactions, and 5) geophysical and geochemical exploration.

88. GGIS-100175/J/APXJA/*****/A/77//AU//***** Evans

Title- Basin Geology and Exploration--

Subtitle- Australia, New Zealand

Author(s)- / Devine , S. Bevan / Evans , P.R. / King , David /
McQuillan , H. / Nyein , R. Kyaw / Shibaoka , M. / Smith , J. W.
/

Journal- APEA J.

Publication date- Vol. 17 , Issue 1 , 1977

Pagination- Page 42 , 63 Pages

Corporate Author- New South Wales Univ. /4629000/.
Kensington , Australia

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Table

Ref.

Illus.

/ Figure (31) / Graph (18) / Map (26) /

Proposed Descriptor(s)- / Australia / Diagenesis / Geology /
Geopressure exploration / Geopressured zones / Hydrocarbons /
Natural gas fields / Petroleum exploration / Sandstone /
Sedimentary basins / Seismic surveys /

Abstract by Energyline

Basin geology and exploration in Australia and New Zealand is discussed in eight papers on the following topics; petroleum geology of western New South Wales; sandstone reservoir geometry of non-marine sediments in the Toolachee gas field; pattern of diagenesis in some Australian sedimentary basins; occurrence, prediction, and control of geopressures on the northwestern shelf of Australia; the special roles of stable isotopes in assessing hydrocarbon occurrences; a seismic survey in the Copper Basin in Queensland; application of semi-automated and interactive magnetic interpretation techniques in petroleum exploration; and hydrocarbon potential of the north Wanganui Basin, New Zealand.

89. GGIS-100241/O/ /*****/A/77/C/US/ /299002 Tarlock

Title- Bibliography

Author(s)- / Tarlock , A. D. / Waller , R. L. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Bibliographies / Geothermal resources /
Laws / Legal aspects / Regulations /

Abstract by TIC

A geothermal bibliography is presented that is primarily
composed of legal terms. (MHR)

90. GGIS-100000/T/ /*****/M/77/ / / *****/ Wilkins

Title- Bibliography

(A Storage and Retrieval System of GeoPressured Geothermal
Citations)

Subtitle- GEOBIB

Publisher- The University of Texas at Austin: Center for Energy
Studies
Austin, Texas (USA)

91. GGIS-100308/O/ /*****/A/78/ /US/ *****/ Kennelly

Title- Binary Cycle Expander for Geothermal Power Generation

Author(s)- / Geary , Carl H. / Kennelly , James R. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council

Geopressured Geothermal Bibliography

Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 367 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Elliott Co. /9502968/.
Jeannette , Pennsylvania , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Photo (1) /

Table

Proposed Descriptor(s)- / Binary cycle power generation / Elevated temperature / Geothermal energy conversion / Turbines / Working fluids / 2-methylpropane /

Abstract by Author

A 50 megawatt hydrocarbon expander turbine was designed with an actual mechanical limit of approximately 80 MWE. The design pressures of 34 bar (500 PSIA) inlet and 13 bar (200 PSIA) exhaust were based on a mixture of iso-butane and iso-pentane. Inlet temperature is 149 DEG C (300 DEG F). The turbine is capable of being directly coupled to a two-pole 3600 R/S (3600 RPM) AC generator. The expander casing is a single body, vertically split barrel. Internal access and rotor removal are through the end opposite the drive end. The double flow rotor configuration has three expansion stages in each of the two flow paths. The flexible shaft design operates between the first and second critical speeds. Mechanical contact seals contain the hydrocarbon under all operating and shutdown conditions. The turbine design incorporates already developed components with operating experience.

92. GGIS-100995/ / /*****A/78/ /US/ /***** Wassenaar

Title- Busbar Economics of Liquid-Dominated Geothermal Power

Author(s)- / Wassenaar , Johan A. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 703 , 5 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (8) /

Proposed Descriptor(s)- / Cost / Economics / Electric power /
Geothermal energy conversion / Geothermal power plants /
Geothermal resources / Power generation / Reservoir properties /

Abstract by Author(rev.)

The state-of-the-art of electrical power generation using hot-water geothermal resources as opposed to geothermal steam, has yet to be developed to where an accurate prognosis of busbar cost can be made. This paper discusses the following main causes of uncertainty about the cost of hot-water geothermal power: (1) plant utility (availability) factor; (2) conversion cycle efficiency; (3) fuel (heat) price; (4) capital cost; (5) resource decay characteristics; (6) plant cooling provisions (7) operations and maintenance cost (O & M); (8) power transmission cost.

93. GGIS-100049/J/IVUGA/ 10/A/**/ / /*****

Geopressured Geothermal Bibliography

Title- Calculation of Commercial Reserves of Thermal Water in a Pressurized System, with Examples from the Caucasian Foreland

Author(s)- / Kovshov , I. V. / Polevoy , S. L. /

Journal- Izv. Vyssh. Uchebn. Zaved, Geol. Razved.

Publication date- Issue 10 , 1968

Pagination- Page 79 , 7 Pages

94. GGIS-100148/R/ /*****/M/**/ /US/ /150802
W-7405-ENG-48

Title- Calculation of Geothermal Power Plant Cycles Using Program GEOTHM

Author(s)- / Green , M. A. / Pines , H. A. /

Publication date- May 1975

Pagination- 33 Pages

Report/patent- LBL-3238

Available- NTIS

(Paper copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Categories-

Geothermal Energy

(Geothermal Power Plants)

Geothermal Power Plants

(Power Plant Systems and Components)

Proposed Descriptor(s)- / Ammonia / Binary cycles / Computer codes / Design / Energy yield / Flashed steam systems / G codes / Geothermal power plants / Mathematical models / Noncondensable gases / Optimization / Thermodynamics / Total flow systems / Working fluids / 2-methylpropane /

Abstract by NTIS

Program GEOTHM, a thermodynamic process program under development at the Lawrence Berkeley Laboratory, can be used to calculate the thermodynamic characteristics of geothermal power plant cycles. The computer program has been used to model some of the major geothermal power plant cycles. These include: (1) flashed steam cycles, (2) two-phase expander cycles, and (3) bi-fluid or binary cycles. The program will design the power plant thermodynamically (for example, it calculates pump and turbine ratings and heat exchanger area), and it can be used to model off-design operation of the plant. The paper includes three examples of program GEOTHM's capabilities: (1) a study of the electrical energy yield per unit well flow in bi-fluid cycles using ammonia, R-22, isobutane, and R-113 as a function of turbine inlet temperature and pressure is presented; (2) the change in power plant yield in bi-fluid cycles using ammonia and isobutane as the brine heat exchanger U factor changes is shown; and (3) the effect of noncondensable gases on the optimum performance of flashed steam and two-phase expander power plants is calculated.

95. GGIS-100160/R/ /*****/M/**/ /US/ /150903
EY-76-C-02-0016

Title- Cementing of Geothermal Wells

Subtitle- Progress Report NO. 4, January-March 1977

Author(s)- / Kukacka , L. E. / Steinbeg , M. /

Publication date- 1977

Pagination- 14 Pages

Geopressured Geothermal Bibliography

Report/patent- BNL-50657

Available- NTIS

(Paper copy

(A02) (\$ 4.00)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Brookhaven National Lab. / 936000/.
Upton , New York , USA

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Corrosion, Scaling, and Materials Development)

Proposed Descriptor(s)- / Geothermal wells / Materials testing /
Polymers / Well cementing /

Abstract by ERA

A coordinated program for the development of improved cements specifically designed for geothermal well applications was continued. Polymer cements (PC) have been identified as promising well cementing materials. Tests indicate that at temperatures above 218 DEG C (425 DEG F) only PC materials containing mixtures of silica and Portland cement are durable to brine and steam. Differential thermal analysis (DTA) studies are underway to determine the reason. Tests are also being conducted on two monomer systems that may further extend the operating temperature range.

96. GGIS-100308/O/ /*****/A/78/ /US/ /***** Hankins

Title- Chemical Analysis of Water from the World's First
Geopressured-Geothermal Well

Citations

Author(s)- / Chavanne , R.E. / Ham , R.A. / Hankins , B.E. /
Karkalits , O.C. / Palermo , J.I. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 253 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- McNeese State University /9504853/.
Lake Charles , Louisiana , USA

Auxiliary expression(s)-

Table

Illus.

/ Diagram (1) /

Ref.

Proposed Descriptor(s)- / Chemical analysis / Chemical composition /
Geopressured wells / Louisiana / Vermillion Parish / Water
chemistry /

Abstract by Author(rev.)

This paper focuses on the chemical analyses of geopressured water from an abandoned gas well, the Edna Delcambre et. al. No. 1, Tigre Lagoon Field, East Vermillion Parish, Louisiana. Because this project will serve as a prelude to testing other wells in different sections of the Texas-Louisiana Gulf Coast,

Geopressured Geothermal Bibliography

it is important to answer these questions about the water's chemical composition: 1. Are noxious components (H (sub 2) S, NH (sub 3), boron compounds, radioactive species, etc.) present?; 2. How corrosive is the water to surface equipment: Are special alloys needed?; 3. What should be the ultimate disposition of the water: What environmental problems are presented?; 4. Does the chemical composition of the flowing water change with time?

97. GGIS-100308/O/ /*****/A/78/ /US/ /***** Karkalits

**Title- Chemical Analysis Of Dissolved Natural Gas In Water From The
World's First Geopressured-Geothermal ell**

Author(s)- / Hankins , B.E. / Karkalits , O.C. /

**Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)**

**Publisher- Geothermal Resources Council
Davis, California**

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 351 , 4 Pages

**Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616**

Local Availability- CES

**Corporate Author- McNeese State Univ. /9504854/.
Lake Charles , Louisiana , USA**

Auxiliary expression(s)-

Table

Illus.

/ Diagram (1) / Graph (1) /

Ref.

Proposed Descriptor(s)- / Aquifers / Chemical analysis / Chemical analysis methods / Chemical composition / Dissolved gas / Geopressured wells / Louisiana / Methane / Natural gas / Solubility /

Abstract by Author (rev.)

Before this project was begun, there was widespread disagreement as to the amount of natural gas dissolved in geopressured geothermal water. Everyone who had sampled geopressured geothermal water could easily observe that it contained natural gas in solution. There was, however, no assurance that the water was saturated. Jones (1976) had confidently asserted that the water was saturated. A major question to be answered in the McNeese project was to find out if the waters were in fact saturated with natural gas. Two sand bed aquifers were tested with the following results: (1) the waters from sand-bed aquifers No. 1 and No. 3 are substantially saturated with respect to natural gas at the pressure and temperature existing in the aquifers; (2) the solubility of methane in saline waters, containing 11-14% total dissolved solids, is reduced by 35-50% over that which it would have had in pure water at reservoir conditions; (3) there is a possibility that the other components of natural gas (CO (sub 2), N (sub 2), higher hydrocarbons) tend to diminish the solubility of methane in water. The matter needs more study than was possible within the time frame of this project.

98. GGIS-100995/ / /*****A/78/ /US/ /***** Robertson
EY-76-C-06-1830

Title- Chemical Characterization of Gases and Volatile Heavy Metals in Geothermal Effluents

Author(s)- / Crecelius , Eric A. / Evans , John C. / Fruchter , Jonathon S. / Ludwick , J. Donald / Robertson , David E. / Wilerson , Connie L. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 579 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98

Geopressured Geothermal Bibliography

Davis
California
95616

Local Availability- CES

Sponsor- / National Science Foundation

75-14714

Sponsor- / U.S. Department of Energy

EY-76-C-06-1830 /

Corporate Author- Batelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) /

Table

Proposed Descriptor(s)- / Ammonia / Arsenic / Boron / California /
Chemical composition / Chemical effluents / Geothermal fluids /
Geothermal power plants / Hydrogen sulfides / Idaho / Louisiana /
Mercury / Radon /

Abstract by Author (rev.)

The rapidly increasing number of successfully drilled geothermal production wells is a good indication that geothermal energy development may meet or exceed projected forecasts of its potential as a cheap, clean source of energy. However, geothermal energy is not without some environmental impact. Indeed, the very hot geothermal processes which create the steam or hot water used for energy production can also mobilize volatile and hot-water-leachable chemical constituents and bring them to the surface from great depths in the earth. Non-condensable gases such as hydrogen sulfide, ammonia, radon, carbon dioxide, methane, and other volatile elements such as mercury, boron, arsenic and selenium are vented to the air when geothermal resources are tapped. Thermal waters reaching the earth's surface contain very high concentrations of a wide variety of dissolved chemical constituents, some of which are toxic in relatively low concentrations (H (sub 2) S, NH (sub 3), Hg, As, Cu, Zn, Se, Pb, Ag, Zn, Sb and Cd. It is essential that the effluents from each specific site be characterized to define

an quantify the releases of undesirable materials. This paper summarized some of the results of our chemical characterizations of geothermal effluents.

99. GGIS-100023/J/AAPGB/*****/A/72/ / / / 30300 Dickey

Title- Chemical Composition of Deep Formation Waters in Southwestern Louisiana

Author(s)- / Collins , A.G. / Dickey , P.A. / Fajardo , I /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 56 , Issue 8 , August 1972

Pagination- Page 1530 , 4 Pages

Categories-

Natural Gas

(Drilling, Production, and Processing)

Proposed Descriptor(s)- / Chemical composition / Geological surveys / Geopressured systems / Ground water / Hydrology / Interstitial water / Louisiana / Natural gas fields / Water chemistry /

100. GGIS-100174/J/TANSA/*****/A/78/ / / /150302 Wilson

Title- Chemical Problems in Geopressured Geothermal Energy Development

Author(s)- / Wilson , J.S. /

Journal- Trans. Am. Nucl. Soc.

Publication date- Vol. 28 , June 1978

Pagination- Page 5

Geopressured Geothermal Bibliography

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geochemical Techniques and Surveys)

Proposed Descriptor(s)- / Artificial recharge / Brines / Chemical reactions / Chemical composition / Chemistry / Fluid withdrawal / Geopressured systems / Geothermal fluids / Pressure dependence / Scaling / Waste disposal /

Abstract by Author

Chemical problems in the production, utilization, and disposal of geopressured geothermal waters are considered. Chemical compositions of the waters are uncertain due to lack of actual production and analyses. However, probable compositions are inferred on the basis of analyses of oil field brines from the geopressured zones in Texas and Louisiana and the results of the recent data gathered in the testing of the Delcambre well near Lafayette, Louisiana. The apparent origin of these brines is the re-solution of salts rather than the evaporation of old seas. For expected concentrations at their depths they contain lower sodium chloride, calcium, bromide, and sulfate but higher bicarbonate and chloride/potassium levels. Production effects considered include those of pressure loss in the formation as drawdown occurs, plus the drop in pressure as the brine moves up the well tubing. These effects may include solids formation within the producing sands leading to decreased permeability and scaling in the well tubing reducing flow rates. Utilization effects include scaling at points of pressure and/or temperature drop plus release of noncondensable gases of an undesirable nature and corrosivity of the waters. Reinjection effects deal with suspended solids which must be removed prior to injection and possible chemical interactions of the reinjected brines with existing formation waters to produce solids and thus reduce the permeability of the receiving sands. Current data indicate that the geopressured waters will present less severe chemical problems than those encountered in the utilization of the average convection-type geothermal system.

101. GGIS-100308/O/ /*****/A/78/ /US/ /***** Kharaka

Title- Chemistry of Waters in the Geopressured Zone from Coastal Louisiana--

Subtitle- Implications for the Geothermal Development

Author(s)- / Brown , Patrick M. / Carothers , William W. / Kharaka ,
Yousif K. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 371 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Geological Survey /2751000/.
Menlo Park , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Chemical analysis / Chemical composition /
Energy source development / Geopressured zones / Gulf Coast /
Interstitial water / Louisiana / Salinity / Waste injection /
Water chemistry /

Abstract by Author

Detailed chemical analyses of 27 formation-water samples from 7
oil and gas fields in the Lafayette area, Louisiana, show that
the salinity of water in the geopressured zone ranges from about
22,000 to 275,000 MG/L dissolved solids. The large differences

Geopressured Geothermal Bibliography

in the salinity of water in the geopressured zone from different fields result mainly from interaction of water with salt beds. The concentrations of H₂S (<1 MG/L), silica (<114 MG/L), and a number of toxic trace metals are low in the geopressured geothermal waters. The relatively high salinity of these waters, however, and the moderately high concentration of environmentally toxic components (boron, up to 69 MG/L, and ammonia, up to 100 MG/L, for example) are unfavorable to geothermal development. The chemical data indicate that careful evaluation of the compatibility of the spent geothermal waters and the waters in the formations used for injection waters and the waters in the loss of porosity due to precipitation of carbonates and sulfates of Ca, Sr, and Ba.

102. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Clays with Abnormal Interstitial Fluid Pressures

(Paper 9 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Chapman , Richard C. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 131 , 6 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Clay / Compaction / Fluid pressure /
Geopressured zones / Gulf Coast / Interstitial water / Migration
/ Overburden / Permeability / Porosity /

103. GGIS-100995/ / /*****/A/78/ /US/ /***** West

Title- Combined Electromagnetic and Galvanic (d.c.) Electrical Resistivity Soundings

Author(s)- / Pritchard , James A. / West , Richard C. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 713 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Electrodyne Surveys
Sparks , Nevada , USA

Auxiliary expression(s)-

Illus.

/ Figure (2) /

Ref.

Proposed Descriptor(s)- / Electromagnetic surveys / Exploration
methods / Geologic structures / Geothermal exploration /
Magnetic surveys / Magnetotelluric surveys / Resistivity surveys
/ Telluric surveys /

Abstract by Author

The problem often encountered in the exploration for geothermal resources by any geophysical method is the complexity of the geologic setting. Because the known geothermal fields of the world are associated with crustal block movement, volcanic activity, faulting and fracturing systems, two and three dimensional geologic structures are normally encountered and have to be considered when planning an exploration program. Electrical resistivity methods have been very successful in locating areas of low resistivity associated with geothermal resources, but resolving the complexity of the geoelectric structure is difficult because of the high cost of detailed surveys or because of weaknesses inherent in some of the less expensive methods, such as galvanic or telluric current methods. A new combination of three of the basic electrical methods, galvanic, controlled source electromagnetic and telluric profiling methods, is discussed as an alternative detailing tool which can provide less ambiguous results at a reasonable cost.

Geopressured Geothermal Bibliography

104. GGIS-100324/R/ /*****/M/**/ /US/ / 30600
EV-78-C-01-6457

Title- Commercialization Focus Group Interview:

(Summary Report)

Subtitle- Gas from Unconventional Sources

Publication date- August 1978

Pagination- 11 Pages

Report/patent- DOE/TIC-10026

Available- NTIS

(Paper Copy

(A02) (\$ 4.00)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U. S. Department of Energy

EV-78-C-01-6457 /

**Corporate Author- Elrick and Lavidge, Inc. /9506591/.
San Francisco , California , USA**

Categories-

Natural Gas

(Marketing and Economics)

Energy Management and Policy

(Natural Gas)

**Proposed Descriptor(s)- / Coal deposits / Commercialization /
Devonian period / Geopressured systems / Government policies /
Market / Meetings / Methane / Natural gas deposits / Sandstone /**

Abstract by TIC

A group interview conducted on the subject of gas from unconventional sources is summarized. Sources examined included geopressurized methane, tight sands, Devonian shale, and coalbed methane. The group did not feel that there were any technological barriers to the development of any of these sources. They are all viewed as commercially feasible but they are more costly than present sources of natural gas. Group participants felt that involvement by the Federal government inhibits rather than stimulates progress insofar as the development and sale of natural gas is concerned. Private industry feels that if it were allowed to operate without intervention, it could effect solutions more quickly and economically. Companies would follow a variety of different actions depending on their own expertise and the competitive market situation.

105. GGIS-100218/J/MAGFA/*****/A/76/ / / *****/ Marko

Title- Compaction and Its Influence to Well Logging Profiles with Special Regard to the Study of Overpressure Areas

Author(s)- / Gellert , T. / Marko , L. /

Journal- Magy. Geofiz.

Publication date- Vol. 17 , Issue 6 , 1976

Pagination- Page 225 , 9 Pages

Language- Hungarian

Proposed Descriptor(s)- / Compaction / Geopressure exploration / Geopressured zones / Petroleum exploration / Sediment compaction / Well logging /

106. GGIS-100024/B/APGRA/ 11/A/**/ / / *****/

Title- Compaction and Migration of Fluids in Miocene Mudstone, Nagaoka Plain, Japan

(Paper 5 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Geopressured Geothermal Bibliography

Author(s)- / Magara , Kinji /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 62 , 36 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Asia / Compaction / Diagenesis / Economic geology / Exploration / Gas / Geopressure / Hydrostatic pressure / Isopach maps / Japan / Migration / Miocene / Mudstone / Nagaoka Plain / Oil and gas fields / Permeability / Petroleum / Pore water / Porosity / Pyroclastics / Release / Reservoir rocks /

107. GGIS-100099/ / /*****/M/**/ / / /*****

Title- Compaction of Argillaceous Sediments

Author(s)- / Chilingarian , G. V. / Rieke , H. H., 3. /

Publication date- Issue 2

Pagination- Page 490 , 50 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Argillaceous / Clastic rocks / Compaction / Diagenesis / Geopressure / Sedimentation /

108. GGIS-100034/J/DVSDA/ 16/A/**/ / / /*****

Title- Compaction of Argillaceous Sediments

(Festschrift to N. B. Vassidovich and K. O. Emery)

Author(s)- / Chilingarian , George V. / Rieke , Herman H., 3. /

Journal- Dev. Sedimentol.

Publication date- Issue 16 , 1974

Pagination- 424 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Argillaceous / Basins / Brines / Chemical composition / Clastic rocks / Compaction / Density / Depth / Diagenesis / Elastic properties / Engineering geology / Fluid mechanics / Geopressure / Ground water / Materials / Models / Petroleum / Pore water / Porosity / Pressure buildup / Rheology / Sediments / Sedimentation / Shale / Strength / Subsidence / Terrigenous / Textbooks / Thermodynamic properties / Water /

109. GGIS-100030/J/SNPBA/ 602/A/**/ / / /*****

Title- Compaction, Diagenesis, and Migration in Argillaceous Sediments

(Vertical Stress, Fluid Pressure, Grain-to-Grain Pressure, Clay Mineralogy, Geopressure, Oil)

Original Title- Compactions Diagenese, et Migration Dans les Sediments Argileux

Author(s)- / Rumeau , Jean-Louis / Sourisse , Claude /

Journal- Cent. Rech. Pau, Bull.

Publication date- Vol. 6 , Issue 2 , 1972

Pagination- Page 313 , 33 Pages

Language- French

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Sum.

Illus.

Proposed Descriptor(s)- / Argillaceous / Clastic rocks / Clay
mineralogy / Composition / Compaction / Diagenesis /
Experimental studies / Fluid pressure / Geopressure / Migration
/ Natural gas / Origin / Petroleum / Relation / Sediments /
Sedimentation / Shale / Terrigenous /

110. GGIS-100308/O/ /*****/A/78/ /US/ /***** Jacobs

**Title- Comparison of Direct Contact Binary Power Plants for
Geothermal Application Using Multiple Cycles**

Author(s)- / Boehm , Robert F. / Cook , D. Scott / Jacobs , Harold R.
/

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 321 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

**Corporate Author- Utah Univ. /6633000/.
Salt Lake City , Utah , USA**

Auxiliary expression(s)-

Table

Illus.

/ Diagram (3) /

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Elevated temperature / Geothermal brines / Hexane / Pentane / Salinity / Thermodynamic cycles / Working fluids /

Abstract by Author

Direct contact systems with bottoming cycles for moderate temperature brines are shown to increase significantly the net power that may be produced per unit flow rate of brine. For 143.3 DEG C brine a pentane-hexane system yields the highest brine utilization.

111. GGIS-100899/0/ /*****/A/76/ / / /***** Elliott
AT(04-3)-1086

Title- Comparison of Geothermal Power Conversion Cycles

Author(s)- / Elliott , David G. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 771 , 7 Pages

Report/patent- SAE--769136

Sponsor- / U.S. Energy Research and Development Administration
/9500868/.

AT(04-3)-1086 /

Corporate Author- Jet Propulsion Lab.
Pasadena , California , USA

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

/ Diagram (7) / Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Binary fluid systems / Energy yield /
Flashed steam systems / Geothermal energy conversion /
Performance / Thermal efficiency / Turbines /

Abstract by Author

Geothermal power conversion cycles are compared with respect to recovery of the available wellhead power. The cycles compared are flash steam, in which steam turbines are driven by steam separated from one or more flash stages; binary, in which heat is transferred from the brine to an organic turbine cycle; flash binary, in which heat is transferred from flashed steam to an organic turbine cycle; and dual steam, in which two-phase expanders are driven by the flashing steam-brine mixture and steam turbines by the separated steam. Expander efficiencies assumed are 0.7 for steam turbines, 0.8 for organic turbines, and 0.6 for two-phase expanders. The fraction of available wellhead power delivered by each cycle is found to be about the same at all brine temperatures: 0.65 with one stage and 0.7 with four stages for dual steam; 0.4 with one stage and 0.6 with four stages for flash steam; 0.5 for binary; and 0.3 with one stage and 0.5 with four stages for flash binary.

112. GGIS-100368/ / /*****/M/78/B/US/ /***** Newchurch
ET-78-S-05-5762

**Title- Comparison of Prospect Areas on the Basis of Potential
Environmental Impacts**

Subtitle- 1. Volume

Author(s)- / Bachman , A. L. / Bailey , J. I., Jr. / Bryan , C. F. /
Harrison , D. P. / Kelly , G. G. / Muller , R. A. / Newchurch ,
E. J. / Newman , J. P., Jr. / Reibert , K. C. / Smith , C. G.,
Jr. /

Publication date- October 15 , 1978

Pagination- 150 Pages

Report/patent- ORO-5862-7(vol. 1)

Available- NTIS

(Paper Copy

(A07) (\$ 7.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

ET-78-S-05-5762 /

Corporate Author- Louisiana State Univ. Baton Rouge /3826000/.

Institute for Environmental Studies
Baton Rouge , Louisiana , USA

Auxiliary expression(s)-

Illus.

/ Figure (8) /

Table

Ref.

Proposed Descriptor(s)- / Air quality / Ecology / Environmental
effects / Geology / Geopressured zones / Gulf Coast /
Hydrogeology / Land use / Louisiana / Testing / Water quality /

Abstract by Author

This two-volume report presents the results of a preliminary environmental assessment of the following geopressured-geothermal prospect areas in the Louisiana Gulf coast region: South Johnson's Bayou, Sweet Lake, Rockefeller Refuge, Southeast Pecan Island, Atchafalaya Bayou, and Lafourche Crossing. In Volume I, these prospect areas have been compared to determine their relative environmental acceptability for the test program. Trade-offs among the prospects in terms of potential impacts are highlighted. This assessment was made on the basis of the nature and extent of the proposed testing activities in view of the environmental characteristics of each prospect area: land use, geology and geohydrology, air quality, water resources and quality, ecological systems, and natural hazards. Volume II includes a compilation of environmental

Geopressured Geothermal Bibliography

baseline data for each prospect area derived from existing sources. The comparison of prospect areas presented in this report includes consideration of worst case situations. However, we believe that the test program activities, because they are so small in scale, will not result in major adverse impacts. No prospect area, with the possible exception of Rockefeller Refuge, needs to be excluded from consideration for the test well program.

113. GGIS-100267/B/ /*****A/77/D/ / /150400 Elmer

Title- Comparison of Scientific and Legal Definitions of Geothermal Energy Resources

Author(s)- / Elmer , D.B. /

**Publisher- Geothermal World Publications
Reseda, California**

Publication date- 1977

Pagination- Page 360 , 9 Pages

Auxiliary expression(s)-

Ref.

Categories-

Geothermal Energy

(Legal and Institutional Aspects)

**Proposed Descriptor(s)- / Geopressure resources / Geothermal systems
/ Goethermal resources / Laws / Legal aspects /**

Abstract by TIC

Differences in scope and perspective of definitions of geothermal energy resources as adopted by the scientific and legal professions are discussed. Variations in statutory approaches taken by the Federal government and several states are discussed. The importance of placing geopressured-geothermal systems is emphasized. A detailed legal definition is suggested. A recommended condensed version that preserves the structural validity from scientific

characterization states: "geothermal energy resources" are and include: (i) any and all geologic formations, systems, or configurations; (ii) which possess large amounts of heat energy at temperatures significantly higher than ordinary thermal gradient in surrounding geologic strata; (iii) and are so situated that the energy of the system is available to do work or provide heat; (iv) and which may involve complex thermal conduction/convection systems which contain natural or artificially introduced heat transfer mediums; (v) and which mediums may contain as by-products, associated gases and solute minerals; (vi) and which express energy as heat and/or pressure. (JGB)

114. GGIS-100055/J/ / 1245/A/**/ / /*****

Title- Comparison of 50 Millibar Geopotentials Derived from Satellite Infrared Spectrometer Readings with those Derived from a Series of Analyzed Charts

Author(s)- / Bailey , V. / Watson , N. R. /

Journal- Meteorol. Mag.

Publication date- Vol. 105 , Issue 1245 , 1976

Pagination- Page 105 , 5 Pages

115. GGIS-100259/R/ /*****/M/**/ /US/ /152001

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

Publication date- May 1978

Pagination- 112 Pages

Report/patent- LBL-5936

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Geopressured Geothermal Bibliography

Categories-

Geothermal Energy

(Geothermal Data and Theory)

Geothermal Data and Theory

(Properties of Aqueous Solutions)

Proposed Descriptor(s)- / Data / Geothermal fluids / Geothermal wells
/ USA / Water chemistry /

Abstract by TIC

Available data on the chemistry of geothermal fluids from important geothermal resources in the U. S. are presented. Candidates for inclusion in the compilation were fluids from wells, but not hot springs, with a heat capacity exceeding 1×10^{18} CAL and temperatures greater than 90 DEG C. The data is stored in the computer data base as records. (JGB)

116. GGIS-100393/0/ /*****/A/80/ /US/ /***** Stevens

Title- Completion and Testing of No. 2 Pleasant Bayou Well

Author(s)- / Clark , J. Don / Stevens , John E. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 200 , 17 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (3) / Map (1) /

Table

Proposed Descriptor(s)- / Chemical composition / Dissolved gases /
Dissolved solids / Geopressured wells / Methane / Pleasant Bayou
No. 2 Well / Production testing / Well completion / Well head
pressure / Well testing /

Abstract by Author

Beginning with preparation on July 8, 1979, (between 14,704 and 14,684 ft) the well was subjected to a 24-hour production test which is described in detail and interpreted via the wellhead pressure variations. Initial brine chemical analysis indicated a dissolved gas content of 21 ft³/bbl. Primary constituents of the gas were methane (84%), ethane (3%), and carbon dioxide (10%). The brine contained dissolved solids at a total concentration of 156,000 MG/L. This paper also describes the planned one-year test program which will include an initial phase limited to 20,000 BBL/day flow followed by installation of more extensive surface equipment which will allow the maximum flow rate to be increased to 40,000 BBL/day. It is anticipated that 4,7000,000 BBL of brine will be withdrawn during the dynamic portion of these tests.

117. GGIS-100329/R/ /*****/M/77/B/US/ /***** Boyd
E-(40-1)-5243

Title- Completion Techniques for Geothermal-Geopressured Wells

Subtitle- Final Report

Author(s)- / Boyd , W.E. /

Publication date- 1977

Pagination- 162 Pages

**Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin**

Geopressured Geothermal Bibliography

Texas
78712

(Paper Copy (\$) 2.50)

Local Availability- CES

Sponsor- / U.S. Energy Research and Development Administration
/9500868/.

E-(40-1)-5243 /

Corporate Author- Texas Univ., Austin /9502459/.

Center for Energy Studies
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Diagram (44) / Graph (4) / Photo (7) /

Table

Ref.

Proposed Descriptor(s)- / Flow rate / Geopressured wells / Gravel
packing / Gulf Coast / Pipes / Sand control / Well casings / Well
completion /

Abstract by Author

Geological studies have established that goethermal geopressurd fromations can be found at depths of 10,000 to 18,000 feet in the Gulf Coast area of Texas and Louisiana Bottom hole pressures are in the range of 9,000 to 15,000 psig and temperatures 150-350 DEG F. Test wells to tap these reservoirs can be drilled routinely, utilizing available equipment and methods. Electric logs, surveys, cores and production tests can be used to assess these resources and to evaluate their economic viability as primary sources of energy. But it will be necessary to complete the wells in such a fashion that production of the high-pressured fluid can be obtained to deliver heat, mechanical energy and methane gas in economic quantities. This will require carefully considered completion techniques, involving pipe sizes and accessory equipment suitable for high volumes of stimulation treatments and/or sand control measures to obtain optimum rates flow with minimum sand influx. It appears that gravel-packed completions will be more feasible at this time than chemical consolidation treatments to control sand production because of

high flow rates. Flow rates up to 100 barrels per day per foot of perforations should be possible from consolidated formations without sand control treatments.

118. GGIS-100058/J/OIGJA/ 7347/A/**/ / / / 20200

Title- Complex Sediments Hard to Interpret

(North Sea)

Subtitle- 2. of 2 pt., Interpreting Pressure Profiles

Author(s)- / Gill , J. A. / Gregg , D. N. /

Journal- Oil and Gas Journal

Publication date- Vol. 73 , Issue 47 , November 24 , 1975

Pagination- Page 63 , 4 Pages

Corporate Author- NL Industries, Inc.
Houston , Texas , USA

Proposed Descriptor(s)- / Boreholes / Control / Diagenesis / Drilling fluids / Exploration / Geopressed systems / Natural gas deposits / North Sea / Petroleum deposits / Pressure dependence / Pressure measurement / Rock drilling / Sea bed / Sediments / Shale / Solids / Stratigraphy / Water / Well drilling / Well logging /

119. GGIS-100043/J/GTMCA/*****/A/77/ /US/ /150302 Palmer

Title- Computer Storage, Processing and Display of Geothermal Data

Author(s)- / Palmer , R.A. /

Publication date- Vol. 6 , Issue 1 , 1977

Pagination- Page 31 , 7 Pages

Geopressured Geothermal Bibliography

Categories-

Geothermal energy

(Geothermal exploration and exploration technology)

Geothermal exploration and exploration technology

(Geochemical techniques and surveys)

Proposed Descriptor(s)- / Chemical analysis / Computer codes / Data /
Data processing / Geothermal fluids / Liquid wastes / Steam /
Waste water /

Abstract by TIC

A computer program is described for storing and processing the chemical analyses of steam and water discharges for geothermal fields. Examples of the commands used to control the program are given and some sample output is presented.

120. GGIS-100177/R/ /*****/M/**/ /US/ /150301
USGS/WRD/WRI--77/035

**Title- Computer Techniques to Aid in the Interpretation of Subsurface
Fluid-Pressure Gradients**

Subtitle- Computer Contribution

Author(s)- / Heath , J. / Wesselman , J. B. /

Publication date- June 1977

Pagination- Page 36

Report/patent- PB--268603

Available- NTIS

(Paper copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / USGS

USGS/WRD/WRI--77/035 /

Corporate Author- Geological Survey /9506057/.

Water Resources Div.
Bay St. Louis , Mississippi , USA

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geophysical Techniques and Surveys)

Proposed Descriptor(s)- / Computer calculations / Data analysis /
Evaluation / Geopressed systems / Louisiana / Pressure
gradients / Texas / Well logging /

Abstract by DOE/RECON

Fluid-pressure gradients have been investigated in two geopressed-geothermal areas in Texas and Louisiana. Data were obtained from drilling records, resistivity curves of geophysical logs, and pressure tests made in bore holes. These data were converted to gradients and graphed by computer techniques. Resistivity interpretation gave reasonable results at some point in about 70 percent of the wells. Evaluation of all available data shown in the individual and adjacent wells was found to be necessary for proper gradient interpretation.

121. GGIS-100393/0/ /*****A/80/ / / *****/ Potter
DE-AC08-79ET-27018

Title- Computerized Log Analysis: A "Non-Black Box" Approach

Author(s)- / Hill , Tom / Potter , Jeff / Rusk , Mark / Schneider ,
Robert /

Geopressured Geothermal Bibliography

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1263 , 8 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
DE-AC08-79ET-27018 /

Corporate Author- Texas Univ. /9502459/.
Center for Energy Studies
Austin , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Computers / Data processing / Geopressured
reservoirs / Information systems / Resistivity logging /
Salinity / Sand / Shale / SP logging / Well logging / Zonation /

Abstract by Author

A Geopressured Geothermal Information Ssystem (GGIS) is being developed as a part of the Geothermal Energy Research Program of the Center for Energy Studies (CES), The University of Texas at Austin. GGIS has developed a system of log analysis routines which will develop and plot sand and salinity profiles. Input data is the digitized SP log and header data. Additional routines provide SP correction utilizing the digitized resistivity log. The system, dubbed ANALYSE, enables the user of a Tektronix terminal to inspect the log, sand profile, and shale base-line data being used by ANALYSE. As many data windows may be inspected as desired. The routine then gives the user the option of requesting a new sand profile run using new zoning

parameters. In effect, the analyst is able to "draw" the shale base-line and sand profiles to his own standards using the computer as a high-speed tool.

122. GGIS-100118/ / /*****/M/**/ / / /*****

Title- Conceptual Design of Total Flow Prime Movers for Geopressure Resource Utilization

(7/74 to 6/75)

Author(s)- / Underhill , G. K. /

Publication date- 1975

Available- University of Texas, School of Engineering
Univ. of Texas
School of Engineering, Mechanical Engineering
200 W. 21st
Austin, Texas 78712

Corporate Author- Texas Univ.

Abstract by Energyline

The efficiency of geopressure geothermal electricity generation may be significantly enhanced by using so-called "total flow" prime movers--impluse turbines or reaction turbines. Not only would a higher efficiency for thermal energy conversion be attained, but the geohydraulic energy could be converted as well. There are several problems associated with use of total flow prime movers; two problems --separation of entrained particulates upstream of the turbine and tapping-off of methane as it comes out of solution--are addressed in this project. Flows in conceptual designs of particulate separators and a total flow prime mover are investigated numerically to evaluate design efficiency for particulate separation and methane extraction, respectively.

123. GGIS-100393/0/ /*****/A/80/ /US/ /***** Lamb

Title- Conceptual Design Studies of Energy Conversion Plants Using Geopressured Fluid

Geopressured Geothermal Bibliography

Author(s)- / Bradley , Stephen P. / Lamb , J. Parker / Polansky , Gary F. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 875 , 29 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Texas Univ. /9508086/.

Dept. of Mechanical Engineering
Austin , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (11) /

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Design / Economics / Flashed steam systems / Flow rate / Geopressure power plants / Geopressured reservoirs / Geothermal energy conversion / Geothermal fluids / Planning / Propane / Rankine cycle / Scaling / Simulation / Systems analysis / Texas / 2-methylpropane /

Abstract by Author

This paper reviews development of system simulation models and selected results that predict performance of future power plants in Texas. Predictions are categorized as follows: (1) wellbore results which demonstrate relative unimportance of heat loss to the geological formation and importance of potential scale growth to power generation; (2) wellbore-reservoir simulations

which illustrate effects of depletions rate and hence how uncertainties in initial pressure, temperature, and total aquifer volume can affect wellhead fluid conditions; (3) conversion plant performance estimates which include (a) influence of hydraulic recovery, (b) choice of thermal recovery system (flash or binary), (c) choice of binary working fluid (propane or isobutane), (d) potential performance gains from variable condensing conditions, and (e) extreme importance of maximizing gas recovery. Discussion emphasizes both design and economic compromises.

124. GGIS-100091/ / /*****/M/**/ / / /*****

Title- Conference on Geopressure Geothermal Energy

(2/75 to 6/75)

Subtitle- Research and Development

Author(s)- / Dorfman , M. H. /

Note- Estimated Calendar Year Funding Reported as 1975 \$17,000

Available- University of Texas, School of Engineering
University of Texas
School of Engineering, Petroleum Engineering
200 W. 21ST
Austin, Texas 78712

Corporate Author- U.S. National Science Foundation

Abstract by Energyline

This conference is to be held at the Joe C. Thompson Conference Center at the University of Texas at Austin for the purpose of acquainting governmental agencies, University and industrial research groups and potential user groups with a summary of the preliminary research into the geopressured geothermal resources. The conference will be divided into component parts of the resource assessment; advanced research and technology; legal; institutional, and environmental; and resource utilization. Speakers from governmental agencies, energy companies, industrial companies and universities involved in research will participate in this three day program. It is anticipated that rapid and widespread dissemination of research and technology will promote additional interest in the utilization of geopressured geothermal fluids.

Geopressured Geothermal Bibliography

125. GGIS-100002/0/PASPC/ 1/A/**/ /US/ /*****

Title- Consolidation and Early Diagenesis of Clays

Author(s)- / Coleman , J. M. / Ho , C. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 1 , Issue 1 , 1967

Pagination- Page 23 , 28 Pages

Proposed Descriptor(s)- / Clastic rocks / Clay / Consolidation /
Diagenesis / Sediments / Sedimentation / Terrigenous /

126. GGIS-100241/0/ /*****/A/77/B/US/ /299002 McNamara

Title- Constraints on Geothermal Development

Subtitle- Tax and Beyond

Author(s)- / McNamara , J. J. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 18 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Constraints / Energy source development /
Energy policy / Geothermal resources / Government policies /
Land use / Legal aspects / Taxes /

Abstract by TIC

Difficulties with tax policies, energy policy, and various constraints as they relate to energy, especially geothermal energy, are reviewed. (MHR)

127. GGIS-100240/J/ /*****/A/77/ / / /***** McNamara

Title- Constraints on Geothermal Development

Subtitle- Tax and Beyond

Author(s)- / McNamara , Jack /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 203 , 14 Pages

Proposed Descriptor(s)- / Constraints / Energy source development /
Energy policy / Geothermal resources / Government policies /
Land use / Legal aspects / Taxes /

Abstract by EIC

Much of the delay on development of the nation's vast geothermal resource base has been due to legal roadblocks. Developers have been denied provisions available to other fuel exploiters, namely the option to currently expense most costs and a noncost-related deduction from production income. In the

Geopressured Geothermal Bibliography

absence of more favorable tax treatments, there is a dramatic downward impact on a geothermal project's internal rate of return. Possible forms of incentives are discussed. Other constraints are assessed under the heading land use; no policy decision-making process in the U. S. assimilates the diverse and conflicting values of environmentalists, consumers, energy producers, regions, and governmental agencies.

128. GGIS-100995/ / /*****/A/78/ /US/ /***** Newsom

Title- Continuous Chain Drill Bit Developments

Author(s)- / Newsom , M.M / St. Clair , J.A. / Stoller , H.M. /
Varnado , S.G. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 495 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Department of Energy
AT(29-1)-789 /

Corporate Author- Sandia Labs. /5659000/.
Albuquerque , New Mexico , USA

Auxiliary expression(s)-

Illus.

/ Photo. (7) / Graph (3) /

Proposed Descriptor(s)- / Drill bits / Geothermal drilling /

Abstract by Author

Under DOE's Geothermal Well Technology Program, the continuous chain drill bit, in which fresh cutting surfaces are cycled into place without removing the bit from the hole, is under development by Sandia Laboratories. Fixed head bit testing has optimized cutting surface diamond patterns, developed adequate bit hydraulics, and solved the apex problem through application of Stratapax**R cutters in the bit nose. Prototype chain drill testing has demonstrated structural integrity, identified some hydraulic erosion and cycling mechanism problems, and confirmed superior drilling rate and lifetime performance to commercial diamond bits when drilling hard abrasive rock.

129. GGIS-100308/0/ /*****/A/78/ /US/ /***** Goldsmith

Title- Cooling Water Requirements for Geothermal Power Plants and Water Availability in the Imperial Valley

Author(s)- / Goldsmith , Martin /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 215 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Table

Illus.

Geopressured Geothermal Bibliography

/ Graph (1) /

Ref.

Proposed Descriptor(s)- / California / Cooling / Electric power /
Geothermal power plant / Geothermal reservoirs / Heat transfer /
Power generation / Reservoir properties / Water /

Abstract by Author

The purpose of this paper is to calculate the cooling water reservoir temperature and power plants as a function of reservoir temperature and power plant type, and to examine the availability of cooling water in the Imperial Valley of California. All power plants that convert heat to mechanical or electrical energy require a means of cooling. This is usually accomplished in one of three ways: direct transfer of heat to a body of water; direct transfer of heat to the atmosphere; evaporation of water into the atmosphere. Because geothermal resources are at a low temperature as compared to those found in ordinary steam boilers, the thermodynamic efficiency of geothermal power plants is low, and their cooling requirements are much greater as compared to conventional plants.

130. GGIS-100995/ / /*****/A/78/ /US/ /***** McCright
W-7405-Eng-48

Title- Corrosion Testing in a Multiple-Stage Flash System.

Author(s)- / Garrison , R.E. / Locke , F.E. / McCright , R.D. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 415 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Department of Energy

W-7405-ENG-48 /

Corporate Author- California Univ., Livermore /9500007/.

Lawrence Livermore Lab.
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) /

Table

Ref.

Proposed Descriptor(s)- / Carbon steels / Corrosion / Corrosion
resistant alloys / Flashed steam systems / Geothermal brines /
Geothermal power plants / Materials testing /

Abstract by Author

Corrosion rate results from a 720-hour exposure period to geothermal brine acidified to pH4 are discussed in this paper. The corrosion tests were performed in a four-stage flash system so that results obtained at different temperatures could be compared. Carbon steel and alternate construction materials were used as test specimens. Results indicate that carbon steel corrodes excessively (more than 50 mils/year) at temperatures above 150 DEG C Alternate construction materials (alloy steels) may be utilized under these conditions.

131. GGIS-100267/B/ /*****/A/77/C/US/ /150500 Larson
AER7508793

**Title- County Property Taxes Derived from Geothermal Energy
Development**

Subtitle- January 1977

Author(s)- / Larson , Tod /

Publisher- Geothermal World Publications
Reseda, California

Geopressured Geothermal Bibliography

Publication date- 1977

Pagination- Page 337 , 17 Pages

Report/patent- PB-297 889

Available- NTIS

(Paper copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / National Science Foundation /4514000/.

AER7508793 /

Corporate Author- California Univ., Riverside

Dry-Lands Research Institute
Riverside , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (3) /

Table

Ref.

Categories-

Geothermal Energy

(Economic and Financial Aspects)

Proposed Descriptor(s)- / California / Energy source development /
Geothermal fields / Imperial County / Income / Profits / Public
utilities / Taxes /

Abstract by TIC

The amount of money that the County of Imperial will receive in property taxes due to geothermal development is estimated. There are two components of property tax revenues from the geothermal fields that are assessed by the County, and the revenues from the utility plant that are assessed by the State Board of Equalization. Data on changes in the tax income of Sonoma County as a result of the development of the Geysers geothermal field are able to get \$3,000 to \$7,000 per Megawatt of installed capacity. The average tax rate in Sonoma County is \$8 (per \$100 assessed). Imperial County is closer to \$10. Imperial should County collect approximately 25% more taxes.

132. GGIS-100058/J/OIGJA/*****/A/78/B/US/ /***** Price

Title- Deep Geopressured Waters--

Subtitle- An Alternative Energy Source

Author(s)- / Price , Leigh C. /

Publication date- Vol. 76 , Issue 51 , 1978

Pagination- Page 88 , 4 Pages

Note- This article is a condensation of a paper published in the Proceedings of the Third Conference on Geopressure Geothermal Energy, held at Lafayette, La., Nov. 16-18, 1977

Auxiliary expression(s)-

Illus.

/ Figure (5) /

Ref.

Proposed Descriptor(s)- / Brines / Elevated temperature / Geopressured zones / Gulf Coast / Methane / Natural gas / Permeability / Petroleum / Porosity / Salinity / Sandstone / Sediments /

Abstract by Author (rev.)

A greater awareness has developed of the possibility of utilizing abnormally pressured sand and shale waters in the Gulf Coast as an alternate energy source. Flow rates of

Geopressured Geothermal Bibliography

50,000-100,000 bbl of brine per day may allow adequate recovery of geothermal energy and dissolved methane to make commercial production feasible. Jones (1977) gave an overview for this proposed energy source for sediments at temperatures of 100-180 DEG C. However, new data suggest that we should consider the possibility of deeper geothermal-geopressure resource, which would utilize brines at temperatures higher than 180 DEG C. These deeper, hotter waters are more attractive than shallower waters because they have lower salinities and, therefore, will present less of a disposal problem. And they have much greater total energy content in the form of geothermal energy and dissolved oil and gas. This article discusses calculations that were made from aqueous crude oil and natural gas solubility data (Price, 1978) to determine the amount of dissolved oil and dissolved gas that we can expect in sediment formations waters under different natural conditions.

133. GGIS-100058/J/OIGJA/ 7432/A/**/ / / /*****

Title- Deep Smackover Drilling in Mississippi Reveals Geopressured Oil and Gas

Author(s)- / Parker , Calvin A. /

Journal- Oil and Gas Journal

Publication date- Vol. 74 , Issue 32 , August 9 , 1976

Pagination- Page 95 , 4 Pages

Auxiliary expression(s)-

Illus.

/ Map (3) / Graph (1) / Figure (4) /

Ref.

Categories-

Mississippi

(Petroleum Prospecting)

(Natural Gas)

(Petroleum Geology)

Proposed Descriptor(s)- / Basins / Economic geology / Exploration /
 Geopressure / Jurassic / Mississippi / Natural gas / Petroleum /
 Petroleum prospecting / Petroleum geology / Smackover Formation
 / United States /

Abstract by NTIS

Some geologists who have experience in relatively young geopressured basins often assume that older geopressured rocks have "old" pressures of like origin and nature. This assumption has led to faulty application of "young" basin pressure-prediction techniques involving compaction trends to older basins which may or may not experience undercompaction. Through field examples, the author examines diverse origins for deep Jurassic geopressures in the interior salt of Mississippi, contrasting them with geopressures in Gulf Coast Tertiary. Unlike the latter, which result from loading and undercompaction caused by rapid decomposition, the deep Jurassic geopressures appear associated with late geologic events involving inflation and hydrocarbon phase changes. A related purpose is to argue that deep Jurassic reservoirs are not a result of interparticle pores being propped open by geopressure, as happens in the Gulf Coast Tertiary, but rather are due to secondary porosity.

 134. GGIS-100222/J/PENGA/*****/A/78/ / / /150101 Bernard

Title- Deep, Geopressured Aquifers

Subtitle- A New Energy Source?

Author(s)- / Bernard , William J. /

Journal- Pet. Eng.

Publication date- Vol. 50 , Issue 3 , March 1978

Pagination- Page 84 , 3 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (1) /

Ref.

Geopressured Geothermal Bibliography

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Geopressure resources / Geopressured zones
/ Gulf Coast / Louisiana / Research programs / Texas / Well
testing /

Abstract by TIC

The possibility of developing the geopressure resource from aquifers near existing oil and gas operations is studied, and a method is proposed for recovering geopressured energy. Details are given about the first well to be drilled specifically for Gulf Coast geopressure, which is scheduled for 16,500-Ft. depth. Usable types of energy in geopressured waters are hydraulic, thermal, and natural gas.

135. GGIS-100023/J/AAPGB/ 5909/A/**/ / / /*****

Title- Depositional Framework of Frio Formation (Oligocene)

(Subdivision into Six Subunits, Foraminiferal Generation,
Depositional Patterns, Structure)

Subtitle- Lower and Middle Texas Gulf Coast

Author(s)- / Agagu , O. K. / Bebout , D. G. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 59 , Issue 9 , 1975

Pagination- Page 1723 , 1 Pages

Note- SEPM (Gulf Coast) Meeting.

Proposed Descriptor(s)- / Biostratigraphy / Classification / Coastal
/ Deposition / Distribution / Evaluation / Facies / Foraminifera
/ Frio Formation / Geopressure / Geothermal energy / Gulf Coast /
Oligocene / Patterns / Resources / Sand / Sedimentary petrology /
Sedimentation / Shale / Structure / Texas / United States / Units
/ Zoning /

136. GGIS-100161/R/ /*****/M/**/ /US/ /150901
EY-76-S-02-2677

**Title- Design of a Water Jet Drill for Development of Geothermal
Resources**

Subtitle- Annual Progress Report, June 1, 1976--May 31, 1977

Publication date- 1977

Pagination- 37 Pages

Report/patent- C00-2677-8

Available- NTIS

(Paper copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Missouri University, Rolla /4283000/.

Rock Mechanics and Explosives Research Center
Rolla , Missouri , USA

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Drilling Technology and Well Hardware)

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Boreholes / Drill bits / Geothermal wells /
Jets / Penetration rate / Rock drilling / Well drilling /

Abstract by ERA

Research was expanded to the drilling of crystalline rock. Advance rates of 40 inches per minute have been achieved at 16,000 PSI, 10GPM flow rate in a 30,000 PSI compressive strength rock using the water alone as the drilling mechanism. The quality of the hole achieved as the jet drilled a variety of rock was found to vary and a hydromechanical drilling bit, combining high pressure water jets with roller cones, has been developed. A field drilling unit has been tested and modified to allow the drilling of holes to 3 1/2 inch diameter using the hydromechanical drill. Preliminary work on the development of a cavitation test for rock is also included.

137. GGIS-100002/0/PASPC/ 1/A/**/ /US/ /*****

Title- Detection Methods for Abnormal Fluid Pressures

Author(s)- / Wood , J. J. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 1 , Issue 1 , 1967

Pagination- Page 51 , 30 Pages

Proposed Descriptor(s)- / Determination / Geopressure / Measuring
methods / Petroleum / Production /

138. GGIS-100308/0/ /*****/A/78/ /US/ /***** Ingvarsson

**Title- Determination of the 5 MW Design Case for Power Production at
Raft River**

Author(s)- / Ingvarsson , I.J. / Madsen , W.W. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 305 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability--CES

Corporate Author- Idaho National Engineering Lab. /9502158/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (2) /

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Elevated
temperature / Geothermal fluids / Idaho / Rankine cycle /
Thermodynamic cycles / 2-methylpropane /

Abstract by Author

This paper documents a series of Rankine Cycle studies for power generation utilizing geothermal fluid as the heat source and isobutane as the working fluid. To find the plant configuration which would most effectively utilize the available energy, a parametric study was performed. The study considered the desirability of supercritical, single boiler or double cycles, and the relative boiler temperatures and percentage isobutane flow split between the boilers in the double cycles for geothermal fluid temperatures of 260 DEG F to 360 DEG F. This study was designed to discover thermodynamic trends which would point to an optimum isobutane cycle for geothermal fluid

Geopressured Geothermal Bibliography

temperatures in this temperature range. The results of the parametric study were applied to derive a Nominal Design Case for a demonstration plant at Raft River, with a geothermal fluid resource at 290 DEG F.

139. GGIS-100388/B/ /*****/M/79/ /US/ /***** Caudle

Title- Determination of Water Resistivity by Computer Analysis of the Induction-Electric Log

Author(s)- / Caudle , Susan Lynette /

**Publisher- Texas Univ.
Austin**

Publication date- May 1979

Pagination- 143 Pages

Local Availability- CES

**Corporate Author- Texas Univ. /6203000/.
Austin , Tx , USA**

Auxiliary expression(s)-

Illus.

/ Diagram (23) / Graph (2) / Figure (32) /

Table

Ref.

**Proposed Descriptor(s)- / Algorithms / Computer calculations /
Computer codes / Data analysis / Equations / Hydrocarbons /
Induction logging / Numerical analysis / Permeability /
Producing wells / Productivity / Resistivity logging / Sp
logging /**

Abstract by Author

A major source of information for predicting production zones in a newly drilled well is the Induction Electric log. The Spontaneous Potential log measures a voltage in the strata and

the Induction Resistivity Log measures the true resistivity of the formation. These estimates generally indicate if a zone is permeable and, if so, if hydrocarbons fill the pore spaces. A computer algorithm is presented which will find possible hydrocarbon-containing zones by the Spontaneous Potential and Induction Electric log values. The program finds the water resistivity of the possible producible zones. Two cases which the program does not allow for are shaly sands and thin zones, but the program can be altered to handle these conditions. The program is also unable to detect shale base line shifts.

140. GGIS-100366/R/ /*****/M/79/ /US/ /***** Wonn
DE-AC04-76ET15391

**Title- Development of an Acoustic Sensor for a Geothermal Borehole
Televiwer**

Author(s)- / Wonn , J. W. /

Publication date- March 1979

Pagination- 268 Pages

Report/patent- AL0-5391-T2

Available- NTIS

(Paper Copy

(A12) (\$ 10.75)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

DE-AC04-76ET15391 /

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

/ Photo. (83) / Diagram (24) / Figure (37) / Graph (13) /

Table

Ref.

Proposed Descriptor(s)- / Boreholes / Fractures / Geothermal exploration / Measuring instruments / Physical properties / Sonic logging /

Abstract by Author

The objective of this project is to upgrade acoustic sensor technology such that appropriate well logging instruments can be made to operate under the hostile environment conditions anticipated in geothermal resource exploration and evaluation. The Borehole Televier (BHTV) was selected as the vehicle for this sensor improvement work, primarily because of its demonstrated ability to detect and characterize fractures under sub-geothermal conditions. This Final Technical report describes the work done toward providing an improved sensor for the televier. An experimental sensor concept was devised, incorporating a thin metal acoustic window, an improved, high-temperature internal coupling fluid, and thermally resistant sensor internals. During an autoclave test, it was successfully demonstrated that the resulting experimental sensor design concept provides the basic target detection and characterization functions required of a fracture mapping, Borehole Televier under simulated geothermal conditions. In particular, the experimental sensor remained operational at 275 DEG C and 7000 psi.

141. GGIS-100070/R/ /*****/S/**/ / / /*****/

Title- Development of an Assessment Methodology for Geopressured Zones of the Upper Gulf Coast Based on a Study of Abnormally Pressured Gas Fields in South Texas

Report/patent- C00--2687

142. GGIS-100070/R/ /*****/M/**/ / / /150200
E(11-1)-2687

Title- Development of an Assessment Methodology for Geopressured Zones of the Upper Gulf Coast Based on a Study of Abnormally Pressured Gas Fields in South Texas

Subtitle- Progress Report, 1 March 1976 - 31 May 1976

Author(s)- / Hagens , R. C. / Oetking , O. P. / Osoba , J. S. /
Swanson , R. K. /

Pagination- 24 Pages

Report/patent- C00--2687

Corporate Author- Southwest Research Institute /5865000/.
San Antonio , Texas , USA

Proposed Descriptor(s)- / Faults / Geopressured systems /
Geopressured zones / Geothermal resources / Natural gas fields /
Natural gas wells / Permeability / Sand / Technology assessment /
Texas /

Abstract by NTIS

During the fourth quarterly reporting period project change-in-scope was approved extending the study area to include Brooks, the remainder of Kenedey and Live Oak Counties. An interim progress report covering that reporting period is presented. Effort during the quarter was directed toward (1) locating drillstem and production test results from geopressured formations, (2) determining formation parameters in an additional large number of producing wells, and (3) searching production records for assessment of geopressured production in Brooks and Kenedey Counties. Several unsuccessful completion tests of geopressured water sands (attempted as gas completions) have been located and these give insight into the problems of completing high-volume water wells in that zone. A successful fracture treatment in a geopressured gas well indicates a producibility increase equivalent to a two-fold improvement in permeability. Permeability calculations for a large number of geopressured and normally pressured gas wells throughout the study area have been completed. In no case has a producing Rio Grande Valley gas well deeper than 10,000 FT. been identified with effective permeability as great as 10 MD. Preliminary investigation of Brooks County production has located geopressured production in seven gas fields and in North Kenedey County, and additional three. ERA citation 01:023136)

143. GGIS-100070/R/ /*****/M/**/ / / /150200
E(11-1)02687

Geopressured Geothermal Bibliography

Title- Development of an Assessment Methodology for Geopressured Zones of the Upper Gulf Coast Based on a Study of Abnormally Pressured Gas Fields in South Texas

(300 DEG F Isothermal Surface at 10,500 to 14,000 FT.)

Subtitle- Progress Report, 1 December 1975 - 29 February 1976

Author(s)- / Hagens , R. C. / Oetking , O. P. / Osoba , J. S. / Swanson , R. K. /

Pagination- 30 Pages

Report/patent- C00--2687

Corporate Author- U.S. Energy Research and Development Administration /5865000/.

**Southwest Research Institute
San Antonio , Texas , USA**

Proposed Descriptor(s)- / Aquifers / Depth / Geopressured systems / Geophysics / High temperature / Natural gas / Natural gas fields / Permeability / Sand / Temperature measurement / Texas / USA / Wells /

Abstract by ERDA/RECON

Twenty-four separate gas fields producing from geopressured sands have been identified in the South Texas area that includes Hidalgo, Cameron, Willacy and The lower half of Kenedey Counties. Of these, twenty are in Hidalgo County. Geological study and detailed investigation of reservoir parameters in each of the fields have been accomplished. Two areas in particular are discussed in some detail in this paper: the Vicksburg trend on the west, represented by McAllen Ranch Field, and the South Central Frio-Vicksburg Delta, including the McAllen-Pharr-Edinburg area. The depth of the geopressured zone in the study area ranges from 7,000 feet in Western Hidalgo County to 12,000 feet in the Central Cameron County. Temperature data within the fields, corrected to equilibrium value, yields a 300 degree F. isogeothermal surface at depths of 10,500 feet to 14,000 feet over the study area. The most critical reservoir parameter was found to be the effective permeability in all the fields in the region. Permeability values ranged from 0.03 MD to 8.0 MD, with average values over all the fields near 1.0 MD. A permeability profile of McAllen-Pharr shows permeability there to be an inverse function of depth, with effective permeability values from 16 MD above the geopressured zone to 0.03 MD at 14,000 feet. The

permeability reduction amounts to approximately one order of magnitude for each 2,000 feet of depth.

144. GGIS-100005/0/ / 2/A/**/ / / /*****

Title- Development of the Nation's Geothermal Energy Resources

Conference- Energy Technology
Washington, D.C. (May 12 , 1975)

Publisher- Govt. Inst., INC.
Washington, D.C.

Publication date- Vol. 2 , 1975

Pagination- Page 271 , 8 Pages

Auxiliary expression(s)-

Ref.

Table

Proposed Descriptor(s)- / Energy resources / Geothermal energy /
Research /

Abstract by NTIS

The Energy and Research Administration's plan to implement the demonstration of commercial feasibility of liquid-dominated hydrothermal systems at an accelerated basis and the technical development of advanced systems such as geopressured basins and hot dry rock formations is discussed. Data in tabular form are appended. 10 Refs.

145. GGIS-100102/R/ /*****/M/**/ / / /150100

Title- Development of Geothermal Reservoirs from Overpressured Areas Beneath the Gulf Coastal Plain of Texas

(Final Report)

Geopressured Geothermal Bibliography

Subtitle- A Feasibility Study of Power Production from
Overpressured Reservoirs

Author(s)- / Herrin , E. /

Publication date- March 1973

Report/patent- AD--767855-1

Available- NTIS

(\$ 9.50)

Corporate Author- Southern Methodist University /5856000/.
Dallas , Texas , USA

Proposed Descriptor(s)- / Boreholes / Ecology / Electric power /

146. GGIS-100308/O/ /*****/A/78/ /US/ /***** Eilers

Title- Development of Geothermal Well Completion Systems--

Subtitle- I.

Author(s)- / Eilers , L.H. / Moran , L.K. / Nelson , E.B. / Simpson
, B.E. / Spangle , L.B. / Williams , J.F. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 ; 1978

Pagination- Page 173 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98

Davis
California
95616

Local Availability- CES

Corporate Author- Dow Chemical Co. /9506133/.

Dowell Div.
Tulsa , Oklahoma , USA

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Geothermal wells / Well cementing / Well completion /

Abstract by Author

Cementing of geothermal wells requires special consideration because of unusual conditions of temperature, corrosive fluids, and fragile formations. Systems traditionally used in oil and gas well cementing may not function predictably in harsh geothermal environments thus leading to cement failure and costly blow-outs. The current research program consists of two phases: (1) definition of problem/determination of requirements and (2) development of a cementing system which will function effectively over long periods of time at the specified conditions. Phase I has been completed and preliminary Phase II results will be reported in this work.

147. GGIS-100308/0/ /*****/A/78/ /US/ /***** Black

Title- Development of Improved Rotary Seals for Downhole Motors in Geothermal Applications

Author(s)- / Black , Alan D. / Green , Sidney J. / Nixon , Jeddy D. / Wilson , James G. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Geopressured Geothermal Bibliography

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 51 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Terra Tek, Inc. /9500842/.
Salt Lake City , Utah , USA

Corporate Author- Maurer Engineering, Inc. /9502171/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Diagram (5) / Graph (1) / Photo (4) /

Table

Proposed Descriptor(s)- / Bearings / Drill bits / Geothermal wells /
High temperature / Seals / Well drilling /

Abstract by Author

The major limitation of downhole mud motors for geothermal well drilling as well as straighthole oil and gas well drilling is the bearing section. Reduced bearing life has been a direct result of the inability to seal lubricant in the bearing section. Along with extending bearing life, a reliable rotary seal is needed to allow high pressure drops across the drill bit for improved bottomhole cleaning and increased drilling rate. A new approach to the development of an improved rotary seal is being carried out. The performance of candidate "high temperature" rotary seals compared with "standard" industry seals is being measured in a full-scale laboratory seal tester capable of simulating the temperatures, pressures and dynamic conditions of geothermal well drilling. A description of the candidate "high

temperature" seals, the seal tester and current seal test results and findings are presented.

148. GGIS-100995/ / /*****A/78/ /US/ /***** Tewhey
W-7405-Eng-48

Title- Development of Injection Criteria for Geothermal Resources

Author(s)- / Chan , Marjorie A. / Kasameyer , Paul W. / Owen ,
Lawrence B. / Tewhey , John D. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 649 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Energy Research and Development Administration
W-7405-Eng-48 /

Corporate Author- California Univ., Livermore /9500007/.
Lawrence Livermore Lab.
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Photo (4) / Graph (8) /

Proposed Descriptor(s)- / pH value / Filtration / Geothermal brines /
Geothermal resources / Hot water systems / Moderate temperature
/ Reservoir pressure / Salton Sea / Solids / Waste injection /

Abstract by Author

Geopressured Geothermal Bibliography

The ability to inject large quantities of brine effluent will be an important factor in the development of liquid-dominated geothermal systems. Experimental studies have been conducted by the Earth Science Division of the Lawrence Livermore Laboratory to evaluate injection of "spent" geothermal brine at the Salton Sea Geothermal Field. The studies have dealt principally with the injectability of suspended solids that are produced in the brine during the energy conversion process. In the experimental plan the subsurface medium was represented by membrane filters with pore diameters ranging from 0.4 to 10 microns and by sandstone core material. Changes in permeability with time were evaluated with respect to the following variables: (1) prefiltration of brine upstream from the core or membrane filter, (2) brine temperature (20 DEG C to 100 DEG C), (3) brine pH and (4) confining pressure.

149. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Diagenesis of Gulf Coast Clayey Sediments and its Possible Relation to Petroleum Migration

(Paper 6 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Burst , John F. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 98 , 21 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Changes / Clay minerals / Clay / Dehydration / Diagenesis / Geopressure / Gulf Coast / Indicators / Migration / Models / Petroleum / Reactions / Relation / Sedimentation / Sedimentary petrology / Shale / Tertiary / United States / Water /

150. GGIS-100265/J/CHWKA/*****/A/**/ / / /*****

Title- Digging Deeper Eases Threat of Gas Shortages.

Journal- Chem. Week

Publication date- Vol. 123 , Issue 22 , November 29 , 1978

Pagination- Page 11 , 2 Pages

Auxiliary expression(s)-

Illus.

/ Map (1) /

Proposed Descriptor(s)- / Aquifers / Cost / Devonian period / Energy demand / Energy sources / Gas production / Geopressured reservoirs / Gulf Coast / Natural gas deposits / USA /

Abstract by Energyline

Recent favorable developments and more optimistic projections of new natural gas sources suggest that supplies through 1990-2000 will be at least adequate. Supplementary gas sources, unconventional sources, expanded reserve estimates, and new exploration in deep offshore and onshore areas contribute to the new optimism, contrary to the spector of dire shortages previously predicted. Reserve and cost estimates from western gas sands, coal-seam gas, geopressured aquifers, and deep basins are presented.

151. GGIS-100899/0/ /*****/A/76/ / / *****/ Schmidt

Title- Direct Applications of Geothermal Energy

Author(s)- / Brown , W.S. / Griffith , J.L. / Schmitt , R.C. / Schultz , R.J. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 815 , 7 Pages

Report/patent- SAE--769141

Geopressured Geothermal Bibliography

Note- Work performed under cognizance of the U.S. Energy Research and Development Administration Geothermal Energy Division.

Corporate Author- Idaho National Engineering Lab. /9502158/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Map (1) / Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Demonstration programs / Direct energy utilization / Geothermal energy / Idaho / Moderate temperature / Raft River KGRA / Space heating /

Abstract by Author

The direct application of geothermal energy commenced in the United States in the late 1800's, but utilization has developed on a very limited scale. The U.S. Energy Research and Development Administration's Idaho National Engineering Laboratory has engaged in expanding the scope of applications and in stimulating the utilization of the low-to-intermediate temperature hydrothermal resources. The techniques currently being used to stimulate growth of the industry include the proposed Geothermal Loan Guarantee Program, compilations of engineering and economic analyses, resource/utilization surveys, demonstration or field verification unit development, and various technology transfer mechanisms. Geothermal energy can be used for almost any activity requiring large quantities of heat at relatively low temperatures. Several types of demonstration and field verification projects have been initiated by the INEL to illustrate this viability. These project areas are central space heating districts, large building space heating using low temperature resources, industrial food processing, agriculture uses and aquaculture. Information which is provided on these project areas includes process type, location, technical problems and goals, and status and schedules.

152. GGIS-100899/0/ /*****/A/76/ / / /***** Boehm
E(10-1)1523

Title- Direct Contact Heat Exchangers for Geothermal Power Plants

Author(s)- / Bliss , R. / Boehm , R. / Jacobs , H. / Kelly , D. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 754 , 7 Pages

Report/patent- SAE--769131

Sponsor- / U.S. Energy Research and Development Administration
/9500868/.

E(10-1)1523 /

Corporate Author- Utah Univ., Salt Lake City /9502313/.

Mechanical and Industrial Engineering Dept.
Salt Lake City , Utah , USA

Auxiliary expression(s)-

Illus.

/ Diagram (5) / Graph (10) /

Table

Ref.

Proposed Descriptor(s)- / Boilers / Design / Geothermal brines /
Geothermal power plants / Heat exchangers / Performance testing
/ Turbines /

Abstract by Author

Several details relating to the design considerations for geothermal power plants using direct contact heat exchangers are given. Primary emphasis is given here to boiler and turbine parameters. Reports are outlined of tests of various types of heat exchangers in our laboratory and at the Raft River Geothermal Well. Also discussed are various parameters that affect the operation of turbines that utilize a mixture of two vapors.

153. GGIS-100309/R/ /*****/M/**/ /US/ /*****/
EY-76-S-03-1340

Geopressured Geothermal Bibliography

Title- Direct Utilization of Geothermal Energy

Subtitle- A Symposium

Conference- Direct Utilization of Geothermal Energy : A Symposium
San Diego
California
USA (January 31 , 1978)

Publication date- January 31 , 1978

Pagination- 145 Pages

Report/patent- CONF--780133

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EY-76-S-03-1340 /

Corporate Author- Geothermal Resources Council /9501507/.
Davis , California , USA

154. GGIS-100308/O/ /*****/A/78/ /US/ /***** Defferding

Title- Disposal of Liquid Effluents from Geothermal Installations

Author(s)- / Defferding , Leo J. / Walter , Ron A. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 141 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Batelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Economics / Environmental effects /
Geothermal fluids / Waste disposal / Waste injection / Waste
water /

Abstract by Author

The disposal of spent geothermal fluids from power plants and nonelectric installations is a major expense to the resource developer. Subsurface injection, the most favored of all disposal options, accounts for 10-20% of the cost of power from a binary fluid cycle power plant. The disposal of liquid effluents has been successfully demonstrated at a number of geothermal sites but numerous technological difficulties must often be overcome, including hostile fluid chemistry, large disposal volumes, adverse environmental impacts, the site-specific nature of each geothermal resource, and the lack of geothermal reservoir definition. A summary of the applicability of various disposal options is provided. A number of areas are identified where additional work on disposal can result in more economical and reliable disposal systems.

155. GGIS-100393/0/ /*****/A/80/ / / /***** Wallace

Title- Distribution of Geopressured-Geothermal Energy in Reservoir
Fluids of the Northern Gulf of Mexico Basin

Author(s)- / Wallace , Raymond M., Jr. /

Publisher- 4. Geopressured Geothermal Energy Conference

Geopressured Geothermal Bibliography

Publication date- Vol. 3 , June 1980

Pagination- Page 1087 , 49 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Geological Survey /9500418/.
Bay St. Louis , MS , USA

Auxiliary expression(s)-

Illus.

/ Diagram (5) / Graph (2) / Map (13) /

Ref.

Proposed Descriptor(s)- / Distribution / Exploration methods /
Geopressure exploration / Geopressure resources / Geopressured
zones / Gulf Coast / Louisiana / Maps / Methane / Reservoir
fluids / Resource assessment / Texas /

Abstract by Author

An estimated 17,000 quintillion (10^{18}) joules of thermal and thermal-equivalent methane energy comprises the resource base (energy in place) in reservoir fluids in sandstone underlying a 120,000 square mile (310,000 square kilometer) area of the northern Gulf of Mexico basin. Almost 50 percent of this energy occurs beneath the Federal Outer Continental Shelf (OCS) area, 24 percent or less beneath Louisiana, and the remainder beneath Texas. In 44 areas, a thermal energy content of 60 quadrillion (10^{15}) joules per square kilometer or more occurs below the depth of occurrence of geopressure to a depth of 22,500 feet (6.86 kilometers) below mean sea level. Dissolved methane content exceeds 30 billion (10^9) standard cubic feet per square kilometer in 29 areas. Most of these areas are located within about six trends of high energy concentration that occur outside the areas of shallowest occurrence of geopressure. A preliminary examination of the high energy content areas occurring offshore the northern Gulf of Mexico basin has

resulted in the designation of five new geopressured-geothermal prospects with excellent sandstone thicknesses and favorable pressure and temperature conditions. The potential for economically extracting dissolved methane from water is the most attractive aspect of these new prospects.

156. GGIS-100252/R/ /*****/M/78/ /US/ /150200 Weres
W-7405-ENG-48

Title- Documentation for Program OGRE

Author(s)- / Schroeder , R. C. / Weres , O. /

Publication date- June 1978

Pagination- 61 Pages

Report/patent- LBL-7060

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Proposed Descriptor(s)- / Computer codes / Computerized simulation /
Documentation / Geothermal reservoirs / Simulation /

Abstract by TIC

The program OGRE is fully operational and allows construction of a grid made up of closed N-sided polygons in 3-space for use in reservoir simulation. The output of the grid construction from OGRE is input for the two-phase reservoir simulator SHAFT78. The output could be made compatible with any of the other related integrated finite difference programs which have evolved from the original trump program. The input to OGRE is simple, consisting basically of one card defining the number of real elements and dummy elements followed by the X, Y, and Z coordinates of each of the elements. The output provides the interface distances and cross-sectional areas, and the element

Geopressured Geothermal Bibliography

volumes. The plotting of the resulting calculation grid is automatic when the control cards are used as shown.

157. GGIS-100212/O/ /*****/A/76/ /US/ /150303 Edwards

Title- Drill Stem Testing and Sampling of Geopressured Brines

Author(s)- / Edwards , A. G. / Montgomery , J. M. /

Conference- 1. Workshop on Sampling Geothermal Effluents
Las Vegas
Nevada
USA (October 20 , 1975)

Publication date- May 1976

Pagination- Page 97 , 17 Pages

Report/patent- EPA-600/9-76-011

Corporate Author- Environmental Protection Agency /9501304/.
Environmental Monitoring and Support Lab.
Las Vegas , Nevada , USA

Corporate Author- Halliburton Services /9502926/.
Duncan , Oklahoma , USA

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

(Geothermal Engineering)

Geothermal Exploration and Exploration Technology

(Exploratory Drilling and Well Logging)

Geothermal Engineering

(Drilling Technology and Well Hardware)

Proposed Descriptor(s)- / Brines / Equipment / Flow rate /
Geopressured systems / Geothermal fluids / Geothermal wells /
Permeability / Pressure dependence / Pressure measurement /
Sampling / Testing /

Abstract by DOE/RECON

Technology and equipment are available today for obtaining samples and reservoir data on geopressured and most geothermal wells. The ultra-deep search for hydrocarbons has fostered development of subsurface equipment capable of withstanding pressure differentials of 10,000 PSI at 500 DEG F. This equipment has been successfully used in a limited number of geothermal wells but has seen wide usage in the oil field. In addition to obtaining samples of the formation effluents, the following formation characteristics can be calculated: static reservoir pressure, indicated flow capacity, transmissibility, average effective permeability, damage ratio theoretical potential with damage removed, and the approximate radius of investigation.

158. GGIS-100007/0/ / 1/A/**/ /US/ /150900

Title- Drill-Stem Testing and Sampling of Deep Frio and Wilcox Reservoirs

Author(s)- / Montgomery , J. M. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 206 , 9 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

Geopressured Geothermal Bibliography

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (6) / Drawing (6) /

Ref.

Proposed Descriptor(s)- / Boreholes / Electrical surveys / Flow rate /
Geopressured systems / Permeability / Sampling / Temperature
measurement / Testing / Texas / Well logging /

Abstract by Author

Methods of sampling and evaluating geopressured geothermal aquifers in extreme South Texas are discussed. The area of investigation includes Starr, Hidalgo, Kenedey Willacy, and Cameron Counties in the Texas Valley and covers representative methods of evaluating the Frio Formation (Oligocene) and the Wilcox Formation (Eocene).

159. GGIS-100082/0/ /*****/M/**/ / / *****/

**Title- Drilling and Well Completion Problems in Geopressured
Formations of the Carpathian Basin**

Author(s)- / Alliquander , O. / Csaba , J. /

Publisher- American Institute of Mining, Metallurgical, and Petroleum
Engineers
New York

Publication date- 1976

Report/patent- CONF-760477-13

Proposed Descriptor(s)- / Blowouts / Geopressured systems / Hungary /
Oil wells / Well completion / Well drilling /

Abstract by ERDA/RECON

Exploration drilling in the Carpathian Basin is extremely risky in view of the presence of overpressured formations. This can easily cause blowouts. The simultaneous use of drilling rate and modified "D" factor logs combined with a calculated log of the drillability factor has proved to be a suitable method for detecting relatively thin, overpressured transition formations. A complementary method exists in observing changes in flowline mud temperature. Bringing the deeper, heavily overpressured reservoirs into production is also a most difficult job. Perforating the casing at a depth of 4,000 M will easily result in a rapid production decline because of the early closing of the overpressured reservoirs and because rock debris fills the well. Acid fracturing and opening only the most permeable intervals seems to be the best method of maintaining well productivity.

160. GGIS-100266/R/ /*****/M/77/B/US/ /150600 Gustavson
DI-14-16-0008/2141

**Title- Ecological Implications of Geopressured-Geothermal Energy
Development, Texas-Louisiana Gulf Coast Region**

**Author(s)- / Gustavson , Thomas C. / McGraw , M.M. / Parker , Faust /
Tandy , Mills / Wohlschlag , Donald E. /**

Publication date- August 1977

Pagination- 670 Pages

Report/patent- PB-287 817/1st

Available- NTIS

(Paper Copy

(A99)

(Microfiche

(A01) (\$ 3.00)

Geopressured Geothermal Bibliography

Local Availability- CES

Sponsor- / Fish and Wildlife Service / 950416/.

DI-14-16-0008-2141 /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Corporate Author- Texas Univ., Port Aransas

Marine Science Institute
Port Aransas , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (38) /

Table

Categories-

Geothermal Energy

(Environmental Aspects)

Proposed Descriptor(s)- / Animals / Commercialization / Ecology /
Electric power / Energy source development / Environmental
effects / Exploitation / Fishes / Geopressure resources /
Geothermal energy conversion / Gulf Coast / Louisiana / Power
generation / Texas /

Abstract by TIC

This report reviews the ramifications of commercial development of thermal-hydraulic energy for the generation of electrical power. It includes an extensive review of information regarding fish and wildlife, and the estimated impact from geothermal developments; a review of geothermal energy conversion systems, contrasting them with alternate systems; and a listing of unique or endangered species within the region.

161. GGIS-100358/R/ /*****/M/**/ /US/ /*****
ET-78-G-05-5958

Title- Economic and Financial Evaluation of Geopressured-Geothermal Resource Development

(Geopressured-Geothermal Technical Paper No. 2)

Publication date- July 1979

Pagination- 104 Pages

Report/patent- DOE/ET/28464-1 (vol. 2)

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

ET-78-G-05-5958 /

Corporate Author- RPC, Inc.
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Cost / Energy source development / Energy policy / Feasibility studies / Financing / Geopressure drilling / Geopressure resources / Leasing / Models / Public lands / Texas /

Abstract by Author

Geopressured Geothermal Bibliography

The purpose of the financial analysis was to provide the School Land Board and General Land Office of Texas with an analytical framework for analyzing the effect of leasing policies on the financial feasibility of geopressure geothermal field development. Such an analytical framework was developed and was applied to eleven sets of development assumptions. The analytical framework, its applications, and results are discussed in this paper.

162. GGIS-100007/0/ / 1/A/**/ /US/ /150300

Title- Economic Analysis of the Use of Texas Geopressured Geothermal Resources for the Production of Electrical Power

Author(s)- / Kaufman , S. / Shepherd , B. P. / Wilson , John S. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 267 , 15 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

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Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (6) /

Table

Categories-

Economics

(Geothermal Energy)

Geothermal Energy

(Geo Brine)

Proposed Descriptor(s)- / Binary fluid systems / Capital costs / Cost / Economics / Flashed steam systems / Geo brine / Geopressured systems / Geothermal energy conversion / Geothermal power plants / Geothermal resources / Geothermal energy economics / Geothermal energy / Methane / Proceedings / Texas / USA /

Abstract by Author

Two geopressured geothermal-reservoir sands in South Texas were identified and described. Power production from these reservoirs was evaluated, using both flash and secondary-fluid systems. Results indicated water yields sufficient to power a 25-MW plant in one reservoir and a 60-MW plant in the second. Economics of plants were most favorable in the latter, where a two-flash system gave power at 26.8 MILS per kilowatt hour as compared to the secondary isobutane system at 33.3 MILS per kilowatt hours. Both values assume credit for 30 SCF methane per barrel of water. Power-cost calculations show this power to be competitive for 50-MW and larger plants at 20 percent return on investment. Using 15 percent return on investment, this power source is shown to be very competitive. All costs are given on a 1980 basis, assuming a 5 percent annual inflation rate.

163. GGIS-100995/ / /*****A/78/ /US/ /***** Larson
ET-78-C-03-1529

Title- Economic Feasibility Mode for Direct Heat Applications of Geothermal Energy

Author(s)- / Larson , Tod C. /

Publication date- Vol. 2 , Issue 2 , 1978

Geopressured Geothermal Bibliography

Pagination- Page 395 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Department of Energy
ET-78-C-03-1529 /

Auxiliary expression(s)-
Table

Proposed Descriptor(s)- / Commercialization / Direct energy
utilization / Economics / Geothermal energy / Investment /
Models / Uses /

Abstract by Author

An Economic Feasibility Model (GEYSER) to determine the viability of direct heat applications of geothermal energy is described. The Price of the Product or the Return on Investment can be determined given the required economic parameters. Variables can be adjusted to perform sensitivity analysis, the key economic variables can be highlighted, and the range of profitability can be forecasted.

164. GGIS-100899/0/ /*****/A/76/ / / /***** Walter

Title- Economic Optimization of Binary Fluid Cycle Power Plants for
Geothermal Systems

Author(s)- / Walter , Ronald A. / Wilson , Stephen W. /

Conference- 11 Intersociety Energy Conversion Engineering Conference
State Line
Nevada
USA (September 12 , 1976)

Publication date- Vol. 1 , September 12 , 1976

Pagination- Page 731 , 8 Pages

Note- Work performed under the auspices of the U.S. Energy and Research Development Administration

Available- American Institute of Chemical Engineers
345 E. 47 Street
New York City
New York
10017

Local Availability- Eng.

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (10) /

Table

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Binary fluid systems / Comparative evaluations / Computer calculations / Cost / Design / Economics / Geothermal power plants / Geothermal systems / Models / Optimization / Performance / Working fluids /

Abstract by Author

The analytical model called GEOCOST has been constructed and used to study the design, performance and cost of geothermal power plants using the binary fluid cycle. The GEOCOST computer program simulates all the major components of a geothermal system and calculates the cost of energy production by equating the present worth of revenues and expenses including investment return over the economic life of the plant and/or reservoir. The characteristics of the binary fluid cycle power plant are determined for a variety of geothermal resources, working fluids, and cycle types. An optimization technique based upon the maximum use of available energy in the geothermal fluid is generated, and results of this optimization technique are

Geopressured Geothermal Bibliography

compared with computed cost data for a variety of binary power plants

165. GGIS-100374/O/ /*****/A/79/ /US/ /***** Greider

Title- Economic Risk of Geothermal Projects

(5. Session: Workshop: Next Generation Geothermal Power Systems)

Author(s)- / Greider , Bob /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 10 , 7 Pages

Report/patent- EPRI-WS-79-166

Local Availability- CES

Proposed Descriptor(s)- / Cost / Economics / Electric power / Elevated temperature / Financial incentives / Geothermal energy / Geothermal fluids / Geothermal power plants / Risk assessment /

Abstract by GGIS

This paper discusses the critical economic factors affecting the risk of a geothermal project. Factors which must be considered are reservoir temperature, reservoir production life, field development costs, rate of return on investment, financial incentives, competing sources of energy, power plant design, and electricity pricing structure. Cost comparisons among the various sources of fuel for electric power generation show that geothermal energy systems are the least expensive. Despite this fact, the biggest problem facing geothermal developers is the difficulty of obtaining risk capital.

166. GGIS-100059/J/ORBIA/ 3602/A/74/ / / /***** Rex

Title- Economics of Geothermal Development

Author(s)- / Rex , K. W. /

Journal- Ore Bin

Publication date- Vol. 36 , Issue 2 , 1974

Pagination- Page 17 , 8 Pages

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Economics / Geopressured systems /
Geothermal resources / Maps / Market price / Oregon / Reserves /
Return on investments / Revenues / Tables / United States /

167. GGIS-100040/J/GLGYB/ 312/A/**/ / / /*****

**Title- Effect of Geologic Structure and Metamorphic Fluids on Seismic
Behaviour of the San Andreas Fault System in Central and
Northern California**

Author(s)- / Barnes , I. / Irwin , W. P. /

Journal- Geology

Publication date- Vol. 3 , Issue 12 , 1975

Pagination- Page 713 , 4 Pages

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / California / Deep / Displacements / Earthquakes / Factors / Faults / Fault zones / Franciscan Formation / Geopressure / Gouge / Large / Magnitude / Mechanism / Mechanics / Mesozoic / Metamorphic water / Metamorphic rocks / Migration / Moderate / North-Central / Pore pressure / San Andreas Fault / Seismicity / Seismology / Serpentine / Small / Strike-slip / Structural geology / United States /

168. GGIS-100999/0/ /*****/A/78/ / / *****/ Hajela

Title- Effect of Noncondensable Gases on Geothermal Power Generation

Author(s)- / Hajela , GP / Katz , B /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1121 , 8 Pages

Report/patent- SAE--789315

Corporate Author- Rockwell International Corp. /9503031/.
Canoga Park , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (8) /

Table

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Cost / Equipment / Flashed steam systems / Geothermal brines / Geothermal power plants / Noncondensable gases / Thermal efficiency /

Abstract by Author

Two geothermal power generation cycles--direct-flash steam and steam binary cycles--are compared, on the basis of total cost of major equipment, for a power plant of 10-MWe net output, using a brine containing noncondensable (NC) gases. The concentration of the NC gases was varied over a wide range. The effect of the NC gases on the cost and efficiency of both cycles is discussed.

Both cycles are optimized with respect to the given parameter, and the cost of major components is estimated. Over the entire range of NC gas concentrations, the direct-flash steam cycle was found to be more economical.

169. GGIS-100053/J/JPTJA/ 2408/A/**/ / / /*****

Title- Effect of Overburden Stress on Geopressure Prediction from Well Logs

Author(s)- / Eaton , Ben A. /

Journal- Journal of Petroleum Technology

Publication date- Vol. 24 , Issue 8 , August 1972

Pagination- Page 929 , 6 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Petroleum prospecting / Petroleum reservoir engineering / Well logging /

Abstract by NTIS

A theory is presented concerning the effect of overburden stress gradient on geopressure magnitude prediction. The theory involves the relationship of overburden stress, rock matrix stress, pore pressure, normal shale compaction, and the technique used to predict geopressure magnitudes from resistivity and sonic log data. It has been suggested elsewhere that commercial production is never found in geopressure environments where the log resistivity ratios exceed 3.50. This paper indicates that the limiting ratio is a function also of overburden stress gradient. The use of this ratio as an exploration tool is discussed. 8 refs.

170. GGIS-100196/R/ /*****/A/77/ / / /152002 Aruna

Title- Effect of Temperature and Stress on the Absolute Permeability of Sandstones and Limestones

Geopressured Geothermal Bibliography

Author(s)- / Arihara , N. / Aruna , M / Ramey , H. J., Jr. /

Conference- American Nuclear Society Topical Meeting on Energy and
Mineral Recover Research
Golden
Colorado
USA (April 12 , 1977)

Publication date- 1977

Pagination- Page 541 , 10 Pages

Report/patent- CONF-770440--

Corporate Author- Stanford Univ. /5915000/.
Stanford , California , USA

Categories-

Geothermal Energy

(Geothermal Data and Theory)

Geothermal Data and Theory

(Properties of Minerals and Rocks)

Proposed Descriptor(s)- / Consolidation / Experimental results /
Laboratory studies / Limestone / Permeability / Sandstone /
Stresses / Temperature effects /

Abstract by TIC

Experiments by Weinbrands (1972) indicated that the absolute permeability to water for consolidated sandstones decreased markedly with an increase in either confining pressure or the system temperature. Recent experiments by Casse (1974) showed that a large decrease in absolute permeability with temperature increase was peculiar to flow of water in the several consolidated sandstones studied. These experiments were repeated in the present study for other sandstones, and no strong effect was observed for flow of gas, mineral oil, or octanol. Under the hypothesis that a temperature level effect was caused by an attraction between water and quartz which increased with temperature increase, experiments were conducted with flow of water in both consolidated and unconsolidated sandstones. A large, reversible reduction in absolute permeability to water with temperature increase was observed, while no temperature level effect was observed for flow of gas or other non-aqueous fluids. Several experiments with flow of water through

limestone samples were conducted. No temperature level effect was observed. It appears that temperature level may affect permeability to water in sandstone systems to an important degree. This should have important connotations to thermal oil recovery and geothermal fluid production.

171. GGIS-100899/0/ /*****/A/76/ / / *****/ Pivirotto
NAS 7-100

Title- Electric Utility Companies and Geothermal Power

Author(s)- / Pivirotto , Donna Shirley /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 843 , 7 Pages

Report/patent- SAE--769145

Sponsor- / U.S. Energy Research and Development Administration
/9500868/.

NAS 7-100

Sponsor- / National Aeronautics and Space Administration

NAS 7-100 /

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Commercialization / Demonstration programs
/ Electric power industry / Feasibility studies / Financing /
Geopressure resources / Geothermal energy / Investment / Pilot
plants / Power plants / Research programs /

Abstract by Author

The electric utility industry is currently the primary potential market for geothermal energy. Engineers concerned with the design of geothermal power plants, electric conversion equipment or exploration and development technology must therefore

Geopressured Geothermal Bibliography

consider utility industry requirements which may affect such designs. This paper discusses the needs of the electric utility industry, its structure, the forces which influence utility companies and their relationship to geothermal energy. Considerations necessary to a federal program for geothermal development are presented, and a strategy for federal stimulation of utility investment in geothermal energy is suggested. The needs for demonstration of commercial feasibility of hydrothermal resources and for reservoir engineering technique development are pointed out. Possibilities are discussed for stimulating utility investment through financial incentives, amelioration of institutional barriers, and technological improvements.

172. GGIS-100393/O/ /*****/A/80/ /US/ /***** Eliezer

Title- Electrochemical Corrosion Measurements in Geothermal Brines

Author(s)- / Eliezer , Zwy / Mecredy , Henry E. / Pearsall ,
Katherine J. / Tjong , S.C. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 848 , 27 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

Sponsor- / Houston Lighting and Power Co., TX (USA) /9500442/.

Sponsor- / Gulf States Utilities Co., Beaumont, TX (USA) /9500423/.

Sponsor- / Central Power and Light Co., San Benito, TX (USA)
/9506470/. /

Corporate Author- Texas Univ. /9508086/.

Dept. of Mechanical Engineering
Austin , USA

Auxiliary expression(s)-

Illus.

/ Photo (4) / Graph (14) /

Table

Proposed Descriptor(s)- / Corrosion / Corrosion protection /
Corrosion resistant alloys / Geothermal brines / Laboratory
testing / Materials testing / Pleasant Bayou No. 2 Well /
Stainless steels / Texas /

Abstract by Author

Electrochemical corrosion measurements on several types of structural materials were performed in both synthetic and natural brines. It has been found that the uniform corrosion rate is relatively low for all the materials tested (except the low carbon steel). The localized corrosion is very severe for the regular austenitic, martensitic, and ferritic stainless steels as well as for Inconel 600. No localized corrosion was seen on the low carbon 1018 steel. The two alloys identified in the text as 28 and 2205 showed excellent resistance to localized corrosion. The nature of the passivating film formed in brine on alloy 28 was identified by the Auger electron spectroscopy (AES) technique. It has been found, contrary to expectations, that the protective film is depleted of molybdenum and enriched in manganese. The possible effects of these findings on the development of new corrosion-resistant alloys for the geothermal industry are under study.

173. GGIS-100035/J/ /*****/A/78/ /US/ /***** Sharp

Title- Energy and Momentum Transport Model of the Ouachita Basin
and its Possible Impact on Formation of Economic Mineral
Deposits

Author(s)- / Sharp , John M., Jr. /

Geopressured Geothermal Bibliography

Publication date- Vol. 73 , Issue 6 , September 1978

Pagination- Page 1057 , 12 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Arkansas / Economic geology / Energy transfer / Faulting / Geopressured zones / Interstitial water / Lateral faulting / Lead / Mineral deposits / Missouri / Models / Paleozoic era / Zinc /

Abstract by Unknown

Analysis of energy and momentum transport in the Paleozoic Ouachita basin lends support to the lateral secretion hypothesis for ore mineral deposition. The processes of importance in energy transport and viscous flow are discussed for the one-dimensional model of the Ouachita basin and the governing partial differential equations are presented. A simple two-stage computer model of the Ouachita basin is then used to test the lateral secretion hypothesis. The lead-zinc mineralization in the northern Arkansas-southeastern Missouri area may have been formed by discrete pulses of hot pore fluid from the Ouachitas which probably originated after faulting of geopressured sections in the late Paleozoic.

174. GGIS-100046/J/TGCGA/ 24/A/**/ / / /*****

Title- Energy for Action, Action for Energy

Publisher- Gulf Coast Association Geological Society

Journal- Transactions, Gulf Coast Association of Geologic Societies

Publication date- Vol. 24 , 1974

Pagination- 480 Pages

175. GGIS-100234/J/ /*****/A/78/B/ / /***** Born

Title- Energy to Burn?

Subtitle- Mystery Well in the Bayous Ignites a Controversy Over Methane

Author(s)- / Born , Roscoe C. /

Journal- Barrons

Publication date- Vol. 58 , February 13 , 1978

Pagination- Page 4 , 2 Pages

Auxiliary expression(s)-

Illus.

/ Photo (2) /

Proposed Descriptor(s)- / Blowouts / Commercialization / Economics / Geopressured reservoirs / Louisiana / Methane / Well drilling /

Abstract by Energyline

A drilling project sponsored by the Chevron Corp. discovered a vast reservoir of untapped geopressured methane near Baton Rouge, La. The economics and practicability of extracting this resource for commercial use are examined. Estimates of how much of the gas is recoverable are considered. Opinions from such sources as AGA and the U.S. Dept. of Energy are surveyed. The blowout of the well tapping the methane resource is described. The potentials and commercial applications of geopressured gas resources are argued.

176. GGIS-100335/J/ /*****/A/79/ / / /***** Higgins

Title- Energy Credit for Investments in Business

Author(s)- / Higgins , J. Warren /

Publication date- Vol. 45 , Issue 5 , September 1979

Pagination- Page 56 , 2 Pages

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Energy / Energy conservation / Equipment /
Facilities / Federal Legislation / Financial incentives / Gas
production / Geopressure resources / Geothermal brines /
Investment tax credits / Investment / Natural gas / Tax credits /
Taxes /

Abstract by ABI/Inform

The Energy Act of 1978 was designed to reduce the amounts of oil and gas used as a primary source of energy by business and agriculture. The scope of the investment tax credit was enlarged to cover investments in new energy property for agricultural and industrial use; the property must have a useful life of at least 3 years and have been acquired between 9/30/78 and 12/31/82. In calculating the credit, only costs attributable to the taxpayer's basis during the cited period can be included, and an unused portion of the credit may be carried back 3 years and forward 7. The credit can offset 100% of the tax liability; if the credit exceeds that amount, the portion applicable to the wind and solar section are refundable. Any energy property items financed by tax-exempt industrial revenue bonds, partially or wholly, are entitled to only a 5% credit. Energy property falls into 6 categories: 1. alternative energy property, 2. wind or solar energy property, 3. specially defined energy property, 4. shale oil equipment, 5. recycling equipment, and 6. equipment for production of natural gas from geopressured brine.

177. GGIS-100171/R/ /*****/M/**/ /US/ /*****

Title- Energy Information Data Bases

Subtitle- Produced by the DOE Technical Information Center

Pagination- 28 Pages

Report/patent- TID-22783

Available- Technical Information Center
Department of Energy
P.O. BOX 62
Oak Ridge
TN
37830

(No cost in small quantities)

(Paper copy

Corporate Author- Department of Energy /9500788/.

Technical Information Center
Oak Ridge , Tennessee , USA

Auxiliary expression(s)-

Table

Proposed Descriptor(s)- / Energy / Information retrieval /
Information systems /

Abstract by GGIS

The Energy Information Data Base (EDB) which is produced by the DOE Technical Information Center, the scope of its coverage of the various fields of energy research, other TIC-produced files, and the RECON interactive on-line retrieval system are discussed.

178. GGIS-100180/J/GAWWA/*****/A/**/ /DE/ /150101

Title- Energy Problems of the USA with Particular Regard to
Geothermal Energy

Author(s)- / Adam , R. /

Journal- Gas, Wasser, Waerme

Publication date- Vol. 31 , Issue 6 , 1977

Pagination- Page 194 , 2 Pages

Language- German

Categories-

Geothermal Energy

(Resources and Availability)

Resources and Availability

(USA)

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Energy sources / Geopressured systems /
Geothermal resources / Hot water systems / USA / Vapor dominated
systems /

Abstract by DOE/RECON

Conventional energy resources in the U. S. are limited, and sources such as solar, wind, and tidal power are in early stages of development and promise only a small contribution to the energy economy. Among the future renewable energy resources geothermal energy appears to be the most easily developable and has the greatest potential for significant production. The major portion of the western U. S. possesses significant hot water and steam reservoirs. The Gulf Coast area contains a geopressured area which, in addition to containing an enormous amount of hot, pressurized water, is the largest known natural gas deposit in the U. S. Hot water sources in the state of Oregon are believed to contain energy equivalent to the Alaskan oil fields. It is believed that geothermal energy could provide as much as 10 percent of the U. S. A.'s energy requirements.

179. GGIS-100233/B/ /*****M/**/ /US/ /*****

Title- Energy Resources and Excavation Technology

Author(s)- / Clark , G. B. / Wang , F. D. /

Conference- 18. Symposium on Rock Mechanics; Rock Mechanics in
Geothermal Development
Colorado
USA
Keystone (June 22 , 1977)

Publisher- Colorado School of Mines
Golden, CO

Publication date- 1977

Note- see CONF-770628--P1

180. GGIS-100038/J/BUGMA/ 8703/A/**/ / / /*****

Title- Energy Transport in Thick Sequences of Compacting Sediment

Author(s)- / Domenico , P. A. / Sharp , J. M., JR. /

Publisher- Geological Society of America

Journal- Geological Society of America Bulletin

Publication date- Vol. 87 , Issue 3 , 1976

Pagination- Page 390 , 11 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Cenozoic Era / Compaction / Cretaceous /
Diagenesis / Energy / Evolution / Geopressure / Gulf of Mexico /
Hydraulic conductivity / Low-grade / Marine geology /
Metamorphism / Models / Oceanography / Pore pressure / Regional /
Sedimentation / Temperature / Theoretical studies / Thermal
conductivity /

181. GGIS-100271/R/ /*****/M/78/ /US/ /150904 Jorda

Title- Engineering Study of Water Reinjection for Geothermal Systems

Author(s)- / Jorda , R.M. /

Publication date- January 1978

Pagination- 107 Pages

Report/patent- SAND-78-7009

Available- NTIS

(Paper Copy

(A06) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Geopressured Geothermal Bibliography

Local Availability- CES

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (31) /

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Geothermal Reservoir and Well Performance)

Proposed Descriptor(s)- / Artificial recharge / Bubbles / Diagrams /
Equations / Filtration / Flow rate / Fluid flow / Geopressured
reservoirs / Geopressured wells / Geopressured systems /
Geothermal fluids / Geothermal wells / Gulf Coast / Injection
wells / Oxygen / Performance testing / Pitting corrosion /
Sealing / Solids / Tables / Trace amounts / Tubes / Water /

Abstract by TIC

Information related to the effects of suspended solids and, to some extent, vapor bubbles on injection well performance is presented. The means of evaluating the tolerable amounts of solids in injected water are presented, and all necessary derivations, equations, test procedures and correlations are explicitly described. Methods of determining whether surface filtration of solids, deep bed filtration of solids, or solids pass-through occurs in the well, and two sets of correlation parameters are presented. An injection well typical of those expected in Gulf Coast geopressured energy recovery systems is described, and optimum injection tubing sizes are calculated. It is concluded that the predominant sources of suspended solids in a system not containing atmospheric, uncovered ponds will be corrosion products and scale particles. Trace oxygen causes a devastating type of pitting corrosion. A technique is used to simulate injection well performance and provides data which illustrate the danger of injecting waters which contain finely divided, flocced solids, and demonstrates that injection problems caused by rigid particulates in the low micron range will be minimal if the process system is designed to produce and handle treated injection water containing specified limits of particulate content, size, and texture. The effects of well damage over a wide range of conditions is presented in a graph

which demonstrates that continuous invasion of the reservoir by trappable particulates should be avoided.

182. GGIS-100995/ / /*****A/78/ /US/ /***** Miller

Title- Enhanced Recovery Reservoir Engineering Aspects of Geothermal Development

Author(s)- / Miller , Richard J. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 457 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Energy source development / Enhanced recovery / Geothermal resources / Heat / Reservoir engineering / Resource assessment /

Abstract by Author

The recovery of heat resources is the primary purpose of geothermal development. The production of primary reservoir fluids however, may recover only a very small percentage of reservoir heat. The adoption of effective enhanced recovery methods will be necessary if efficient use is to be made of existing geothermal resources. This summary paper outlines the reservoir engineering aspects of both primary fluid recovery and enhanced recovery methods.

183. GGIS-100383/R/ /*****M/79/ /US/ /***** Viets

Geopressured Geothermal Bibliography

W-7405-ENG-48

Title- Environmental and Economic Effects of Subsidence

(Category 4, Project 1)

Subtitle- Final Reports

Author(s)- / Harding , R.C. / Vaughan , C.K. / Viets , V.F. /

Publication date- May 1979

Pagination- 244 Pages

Report/patent- LBL-8615

Available- NTIS

(Paper copy

(A11) (\$ 18.50)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA), Div. of
Geothermal Energy /9506839/.

W-7405-ENG-48 /

Corporate Author- California Univ. /1112800/.

Lawrence Berkeley Lab.
Berkeley , CA , USA

Auxiliary expression(s)-

Illus.

/ Diagram (6) / Graph (2) / Map (27) / Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Arizona / California / Case histories / Communities / Compaction / Cost / Earth movements / Economic impact / Environmental effects / Galveston County / Geothermal reservoirs / Ground subsidence / Harris County / Mexico / Nevada / Research programs / Texas / Wairakei geothermal field /

Abstract by Author

The development of geothermal energy sources may result in land deformation, commonly referred to as subsidence, as a result of removal or injection of fluids from or into geothermal reservoirs. Data on the actual damages and economic losses that have occurred in subsidence areas were collected, and local responses Documented, to more clearly define the subsidence problem. Analysis was limited to nine case study areas which seemed to have the best potential for providing reliable data. The areas selected represent rather extreme cases of subsidence. Information was collected from three groups: (1) scientists and engineers studying the technical aspects of subsidence; (2) economists and others studying the environmental and economic effects of subsidence; and (3) public administrators and industry managers who might have primary data on the costs of subsidence. Data collection methods included: literature review; telephone and personal interviews; a mail-out questionnaire (to foreign countries) and site visits. During the course of the research, direct and indirect effects of subsidence were distinguished. It was found that environmental and economic effects directly caused by primary subsidence phenomena can vary from negligible to severe depending on the nature of the land use present and the severity of the subsidence phenomena. Indirect effects, particularly increased flooding, are frequently more severe than the direct effects. Subsidence phenomena such as tilting, horizontal strain and fissuring of the ground surface appear to be more responsible for damage than the simple vertical subsidence of the ground. While there is a serious lack of reliable data on actual subsidence effects in the area studied, it does appear that it is possible to quantitatively predict many types of subsidence effects using conventional engineering techniques to supplement the data.

184. GGIS-100393/O/ /*****/A/80/ /US/ /***** Badger
DE-AS05-79ET27127

Title- Environmental Analysis of Geopressed Geothermal Prospect Areas, DeWitt and Colorado Counties, Texas

Author(s)- / Badger , Elizabeth / Gustavson , Thomas C. / Reeder , Florette /

Geopressured Geothermal Bibliography

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 591 , 244 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) Div. of
Geothermal Energy /9506839/.

DE-AS05-79ET27127 /

Corporate Author- Texas Univ. /9501193/.

Bureau of Economic Geology
Austin , USA

Auxiliary expression(s)-

Illus.

/ Diagram (5) / Graph (6) / Map (34) /

Table

Ref.

Proposed Descriptor(s)- / Agriculture / Areal geology / Climate /
Colorado County / Cultural resources / DeWitt County /
Ecosystems / Environment / Environmental effects / Faulting /
Geopressured zones / Ground subsidence / Ground water /
Hydrology / Industry / Land use / Lithology / Plants / Pollution
/ Regional analysis / Site selection / Soils / Surface water /
Texas / Topography / Water pollution / Wild animals /

Abstract by Author

Environmental data including structural geology, substrate lithology, soils, natural hazards, water resources, biological assemblages, cultural resources, meteorological data, and regulatory considerations have been compiled and analyzed for two Wilcox Formation geopressured geothermal prospect areas. The Cuero prospect area in DeWitt County and the Eagle Lake prospect area in Colorado County each comprise approximately 218 km² (85 mi²). Analysis of the environmental data, within the spatial limitations set by subsurface reservoir conditions, has allowed recognition of areas within each prospect area that are most suitable as sites for geopressured geothermal test wells. General environmental concerns that apply to both areas include potential accidental brine spills which could impact water resources and potential subsidence and faulting which could damage man-made structures. The Eagle Lake prospect area includes the town of Eagle Lake and is an area of heavy rice production. Rice requires precisely controlled water depths during irrigation. Thus, either accidental brine spills or subsidence could result in substantial impacts. Furthermore, the northeastern portion of the Eagle Lake area is one of the last remaining habitats of the Attwater prairie chicken. The range of this endangered species includes both riceland in the northeastern portion of the prospect area and the Attwater Prairie Chicken National Wildlife Refuge. The western limit of the Eagle Lake prospect includes Eagle Lake, which supports a large population of the endangered American alligator. In the Cuero prospect area there are a few areas of valuable land uses or biological resources.

 185. GGIS-100316/R/ /*****/M/78/ /US/ /***** White
 EG-77-S-05-5401

Title- Environmental Analysis of Geopressured-Geothermal Prospect Areas, Brazoria and Kenedy Counties, Texas.

Author(s)- / Gustavson , Thomas C. / McGraw , Maryann / White , William A. /

Publication date- 1978

Pagination- 203 Pages

Report/patent- ORO-5401-T2

Available- NTIS

(Paper Copy

Geopressured Geothermal Bibliography

(A10) (\$ 9.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9560683/.

EG-77-S-05-5401 /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (33) /

Table

Ref.

Proposed Descriptor(s)- / Biological effects / Brazoria County /
Environmental effects / Fault activation / Geopressured zones /
Ground subsidence / Gulf Coast / Lithology / Meteorology /
Regulations / Site selection / Soils / Texas / Water resources /

Abstract by Author

Preliminary environmental data, including current land use, substrate lithology, soils, natural hazards, water resources, biological assemblages, meteorological data, and regulatory considerations have been collected and analyzed for approximately 150 KM**2 of land: (1) near Chocolate Bayou, Brazoria County, Texas, where a geopressured geothermal test well is being drilled in 1978, and (2) near the rural community of Armstrong, Kenedy County, Texas, where future geopressured-geothermal test well development may occur. The study was designed to establish an environmental data base and to determine, within spatial constraints set by subsurface reservoir conditions, environmentally suitable sites for geopressured-geothermal wells. In Brazoria County, preliminary analyses of data revealed the need for focusing on the following areas: potential for subsidence and fault activation, susceptibility of test well and support facilities to fresh- and salt-water flooding, possible effects of produced saline waters on biological assemblages and ground-water resources,

distribution of expansive soils, and effect of drilling and associated support activities on known archeological-cultural resources. The Kenedy County geopressured-geothermal prospect area is not as promising as the Brazoria County Prospect in terms of known and suspected reservoir characteristics. Environmental problems associated with geopressured-geothermal resource development in this relatively unpopulated South Texas area, however, will be fewer than those in the Chocolate Bayou area.

186. GGIS-100149/R/ /*****/M/**/ /US/ /150600
EPA-68-02-1329

Title- Environmental Assessment of Geopressured Waters and their Projected Uses

Subtitle- Final Report

Author(s)- / Hamilton , J. R. / Manning , J. A. / Muehlberg , P. E.
/ Wilson , J. S. /

Publication date- April 1977

Pagination- 99 Pages

Report/patent- PB-268289

Available- NTIS

(Paper copy

(A05) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES MF

Corporate Author- Dow Chemical Co. /2194000/.
Freeport , Texas , USA

Categories-

Geothermal Energy

Geopressured Geothermal Bibliography

(Environmental Aspects)

Proposed Descriptor(s)- / Artificial recharge / Economics / Environmental effects / Environmental impacts / Geopressure resources / Geopressured systems / Ground subsidence / Gulf Coast / Louisiana / Power generation / Reinjection / Texas / Uses / Waste water disposal /

Abstract by DOE/RECON

A possible source of alternate energy for the nation is believed to exist in the deep geopressured reservoirs found in the Texas and Louisiana Gulf Coast sedimentary basins. This report considers the potential uses of the geopressured geothermal resource and the environmental aspects of those uses. Economics of power production are estimated as an aid to assignment of priority research and development in the area. Principal environmental impacts of any of the proposed uses will result from the waste fluid streams and from possible subsidence of the wellfield. In most instances, disposal of this large volume of saline fluid will require reinjection, canalizing to a saline water body, or some more imaginative method. The area is one of natural subsidence which may be accelerated by deep fluid withdrawal. This report describes the resource, the possible uses, the projected resulting emissions, other impacts upon the land, the present stage of development, and projections of future developmental plans.

187. GGIS-100361/R/ /*****/M/**/ /US/ /*****

Title- Environmental Assessment: Geothermal Energy Geopressure Subprogram

Subtitle- DOE Sweet Lake No. 1, Cameron Parish, Louisiana

Publication date- February 1980

Pagination- 245 Pages

Report/patent- DOE/EA-0065*

Available- NTIS

(Paper Copy

(A11) (\$ 14.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Corporate Author- U. S. Department of Energy

Assistant Secretary for Resource Assessment

Auxiliary expression(s)-

Illus.

/ Figure (26) /

Table

Ref.

Proposed Descriptor(s)- / Blowouts / Cameron Parish / Disposal wells /
Environmental effects / Flow rate / Gas saturation / Geology /
Geopressure drilling / Geopressured wells / Ground subsidence /
Hydrology / Louisiana / Reservoir temperature / Site selection /
Test facilities / Water chemistry /

Abstract by Author

This Environmental Assessment (EA) has been prepared to assess the environmental implications of the Department of Energy's (DOE's) proposal to drill, complete, and test one geopressure well located in Cameron Parish on a 2 ha (5 ac) test site, 23 km (14 mi) southwest of Lake Charles, Louisiana. The test well is herein referred to as DOE Sweet Lake No. 1. One or more disposal wells will be located within .8 km (.50 mi) of the proposed well. DOE and the State of Louisiana through the State University system proposes to operate the test facility for 26 months to evaluate the geopressure potential of the subsurface. Tests to be conducted include flow rates, fluid compositions, temperature, gas content, geological characteristics, and the land subsidence potential for subsequent production. This EA evaluates the impacts of the proposed action on the area.

188. GGIS-100007/0/ / 1/A/**/ /US/ /150600

Title- Environmental Considerations and Economic Implications in the
Development of Geothermal Energy

Geopressured Geothermal Bibliography

Author(s)- / Moseley , Frank N. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 321 , 5 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Discuss.

Proposed Descriptor(s)- / Concepts / Control / Economics / Effects / Energy-economic-environment triangle / Energy source development / Environmental effects / Environmental geology / Geo brine / Geopressured systems / Geopressure / Geothermal energy / Geothermal energy economics / Ground subsidence / Management / Proceedings / Quality / Resources / United States / Water pollution /

Abstract by Energyline

The development of geopressured areas for electrical generation and other uses presents an opportunity to employ data management in the decision-making process. A new resource and its development must be economically competitive with existing resources and processes. The initial phase of geothermal

exploration, well drilling, and testing is the best time to consider environmental changes that might result from development of the resource. Various options for handling potential changes must be determined so that management plans may be revised. Probably the most serious item of environmental concern about geopressured areas involves water used to produce the energy. Another potential critical problem is subsidence caused by removal of large quantities of water from deep subterranean reservoirs. Discussion is included.

Abstract by ERDA/RECON

The role of economics in determining the feasibility of developing a new resource from both a technological and environmental viewpoint is illustrated. It is pointed out that general environmental guidelines should be developed during the research phase of geopressured geothermal development. It is suggested that during the initial phase of geothermal exploration, consideration should be given to environmental problems that may be associated with the development, choices available in working with these problems, techniques that could be employed, and environmental responses to the various alternatives. (LS)

189. GGIS-100224/B/ /*****A/77/ /US/ /150600 Gustavson

Title- Environmental Considerations. Geothermal Resources of the Texas Gulf Coast

(In- Geology of Alternate Energy Resources in the South-Central United States)

Subtitle- Environmental Concerns Arising from the Production and Disposal of Geothermal Waters

Author(s)- / Gustavson , T. C. / Kreitler , C. W. /

**Publisher- Houston Geological Society
Houston, Texas**

Publication date- 1977

Pagination- Page 297 , 39 Pages

**Available- Geothermal Information Services
318 Cherrywood St.
West Covina**

Geopressured Geothermal Bibliography

CA
91791

(\$ 25.00)

Categories-

Geothermal Energy

(Environmental Aspects and Waste Disposal)

Proposed Descriptor(s)- / Compaction / Environmental effects /
Faulting / Geothermal fluids / Ground subsidence / Gulf Coast /
Saline aquifers / Storage / Texas / Waste disposal / Waste
storage / Waste water / Water production /

Abstract by TIC

Disposal and temporary surface storage of spent geothermal fluids and surface subsidence and faulting are the major environmental problems that could arise from geopressured geothermal water production. Geopressured geothermal fluids are moderately to highly saline (8,000 to 72,000 parts per million total dissolved solids) and may contain significant amounts of boron (19 to 42 parts per million). Disposal of hot saline geothermal water in subsurface saline aquifers will present the least hazard to the environment. It is not known, however, whether the disposal of as much as 310,000 barrels (54,000 cubic meters) of spent fluids per day into saline aquifers at the production site is technically or economically feasible. If saline aquifers adequate for fluid disposal cannot be found, geothermal fluids may have to be disposed of by open watercourses, canals, pipelines to coastal bays on the Gulf of Mexico. Overland flow or temporary storage of geothermal fluids may cause negative environmental impacts. As the result of production of large volumes of geothermal fluid, reservoir declines may cause compaction of sediments within and adjacent to the reservoir. The amount of compaction depends on pressure decline, reservoir thickness, and reservoir compressibility.

190. GGIS-100336/R/ /*****/M/**/ /US/ / 30800

Title- Environmental Development Plan (EDP)

Subtitle- Enhanced Gas Recovery, FY 1977

Publication date- March 1978

Pagination- 104 Pages

Report/patent- DOE/EDP-23

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- U.S. Department of Energy /9505475/.
Washington , D.C. , USA

Categories-

Natural Gas

(Environmental Effects)

Energy Management and Policy

(Natural Gas)

Natural Gas

(Artificial Stimulation, Plowshare, Etc.)

Proposed Descriptor(s)- / Aquifers / Enhanced recovery /
Environmental policy / Gas production / Geopressed systems /
Legislation / Methane / Pollution control / Research programs /
Socio-economic factors / Technolgy assessment /

Abstract by NTIS

This enhanced gas recovery EDP addresses the environmental impacts of enhanced gas recovery processes in shale and sandstone, methane drainage from coalbeds, and methane recovery from geopressed aquifers. The EDP addresses planning in two basic areas: environmental research and environmental assessment. Environmental research can be categorized as follows: characterization of pollutants from EGR processes; selective application of monitoring and measuring techniques; evaluation of control/mitigation techniques; and evaluation of the synergistic impacts of the development of EGR techniques. Environmental assessment activities scheduled by EDP include: assessment of ecological impacts; assessment of socioeconomic effects; EIA/EIS preparation; evaluation of control technology

Geopressured Geothermal Bibliography

needs; and analysis of applicable and proposed emission, effluent, and health and safety standards. The EGR EDP includes a technology overview (Section 2), a discussion of EGR environmental issues and requirements (Section 3), an environmental action plan (Section 4), an environmental management strategy for the EGR program (Section 5), and supporting appendices which present information on Federal legislation applicable to EGR technology, a summary of ongoing and completed research, and future research and assessment projects.

191. GGIS-100319/R/ /*****/M/**/ /US/ /*****

Title- Environmental Development Plan for Geothermal Energy Systems

Publication date- August 1979

Pagination- 71 Pages

Report/patent- DOE/EDP--0036

Available- NTIS

(Paper Copy

(A05) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Corporate Author- U.S. Department of Energy /9506973/.

Office of Energy Technology
Washington , D.C. , USA

Auxiliary expression(s)-

Illus.

/ Figure (10) /

Table

Ref.

Proposed Descriptor(s)- / Air pollution / Environmental effects /
 Geopressured systems / Geopressured zones / Geothermal systems /
 Ground subsidence / Hot dry rock systems / Hydrothermal systems /
 Seismicity / Socio-economic factors / Water pollution /

Abstract by Author

Three types of geothermal resources are covered in this Environmental Development Plan: hydrothermal convection systems, geopressured systems, and hot dry rock systems. Of these three, only hydrothermal convection systems are considered ready for commercial development, and an Environmental Readiness Document for these systems has been published. The other two systems show promise of future development, but current research is now oriented toward resource exploration and confirmation and toward small-scale experiments of heat extraction systems. The geopressured resource is projected to contain large amounts of dissolved methane. The recovery of this methane is part of the geothermal geopressured program. In terms of immediate need and importance in getting power online, the emission of H(sub 2)S is the most important concern and the demonstration of an effective abatement system is the most significant requirement. Demonstration of one such system is targeted for FY 1979 at The Geysers geothermal area. Other significant concerns are the management or disposal of spent geothermal fluids, the potential of land subsidence, questions of water availability for heat rejection systems, land use conflicts, and socioeconomic and cultural problems. The requirements to appropriately research and mitigate these and other concerns in time to permit orderly and timely development of geothermal energy systems are scheduled in this EDP.

 192. GGIS-100393/O/ /*****/A/80/ / / /***** Newchurch

Title- Environmental Issues of Geopressured Resource Development in Louisiana: Integrating Different Goals and Viewpoints

Author(s)- / Bachman , Ann L. / Bryan , Charles F. / Harrison , Douglas P. / Muller , Robert A. / Newchurch , Edwin J. / Wilcox , Ronald E. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1414 , 23 Pages

Geopressured Geothermal Bibliography

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Louisiana State Univ. /3826000/.
Baton Rouge , USA

Auxiliary expression(s)-

Illus.

/ Map (1) /

Table

Ref.

Proposed Descriptor(s)- / Accidents / Air pollution / Energy source
development / Environmental impacts / Exploitation / Geopressure
resources / Ground subsidence / Hurricanes / Industry / Legal
aspects / Liquid wastes / Louisiana / Noise pollution /
Regulations / Seismicity / Waste disposal /

Abstract by Author

This paper describes an assessment of the key environmental issues of geopressured resource development in south Louisiana. Priorities were assigned on the basis of seven criteria, the application of which reflects the differing goals and viewpoints of regulatory agencies and industry. Underlying the entire assessment is the particular attention paid to two factors: (1) the large scale of geopressure operations which is the characteristic unique to geopressured operations which is the characteristic usual oil and gas field experience; and (2) the regulatory and legal framework of environmental issues. The application of the first factor represents the goal of preserving environmental quality; the second, industry's point of view. Environmental issues are assigned as follows: (1) high priority--subsidence, fluid disposal, and surface disruption in wetland areas; (2) medium priority-- accidental spills; and (3) low priority--air quality and noise impacts, induced seismicity and fault activation, and natural hazards.

193. GGIS-100241/O/ /*****/A/77/B/US/ /299002 Tarlock

Title- Environmental Overview of Geothermal Resources Development

Author(s)- / Tarlock , A. D. / Waller , R. L. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 12 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

(Geothermal)

Proposed Descriptor(s)- / Air pollution / Energy source development /
Environmental effects / Exploitation / Geothermal energy
conversion / Geothermal resources / Land use / Noise pollution /
Regulations / Water pollution /

Abstract by TIC

Geothermal exploration can be divided into exploration test drilling, production testing, field development, and power generation stages. The major expected physically adverse environmental impacts that can be expected during each of these five major stages are discussed. Next, the regulations applicable to each of the four potential conflicts (land use, water, air, and noise) are surveyed. (MHR)

194. GGIS-100007/O/ / 1/A/**/ /US/ /*****

Geopressured Geothermal Bibliography

Title- Environmental Problems Associated with Power Production from Geopressured Reservoirs

Author(s)- / Goforth , Tom / Herrin , Eugene /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 311 , 8 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Map (4) /

Discuss.

Proposed Descriptor(s)- / Cameron County / Earthquakes / Effects / Environmental effects / Environmental impact assessment / Environmental geology / Exploration / Fluid withdrawal / Geo brine / Geopressured systems / Geopressure / Geothermal energy / Ground subsidence / Gulf Coast / Land subsidence / Louisiana / Proceedings / Seismology / Southeast / Subsidence / Surveys / Tectonics / Texas / United States /

Abstract by ERDA/RECON

Various environmental problems that may arise in the exploration for and exploitation of geopressured reservoirs are considered. A particular reservoir in Northwest Cameron County, Texas, is used as a model. Subsidence effects, tectonic activity, and induced activity are discussed. It is concluded that two important environmental problems cannot be adequately evaluated at this time: surface subsidence and the possible inducement of earthquakes, which could result from the efficient production of power over the lifetime of the reservoir. (LS)

195. GGIS-100308/O/ /*****/A/78/ /US/ /***** Beauchamp

Title- Environmental Response to Non-Electric Geothermal Energy: An Attitudinal Assessment

Author(s)- / Beauchamp , Ellen L. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 39 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Table

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / California / Energy source development /
Environmental effects / Geothermal resources / Public opinion /
Uses /

Abstract by Author

In the assessment of potential environmental impacts of technological change, it is increasingly important to assess public attitude about such change. Typically, public attitude surveys use questions directed toward a specific issue. As part of the engineering and economic assessment of potential utilization of geothermal energy for non-electric applications in the City of Desert Hot Springs, California, an attempt was made to assess basic attitudes and values toward the environment as an indication of community acceptance of increased use of the resource. This was accomplished using the Environmental Response Inventory (ERI), an attitudinal assessment survey. The results indicated that both city officials and the general public fundamentally endorsed technological development. This paper presents the results of the ERI in the City of Desert Hot Springs, and assesses the implications of its use in evaluating implementation of energy technology.

196. GGIS-100054/J/LGALA/*****/A/78/ /US/ /***** Obbe

Title- Estimation of Aquifer Permeabilities from Electric Well Logs

Author(s)- / Bassiouni , Zaki / Obbe , David /

Publication date- Vol. 19 , Issue 5 , September 1978

Pagination- Page 21 , 7 Pages

Corporate Author- Louisiana State Univ., Baton Rouge /3826000/.
Baton Rouge , Louisiana , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Aquifers / Electrical logging / Geopressure
resources / Permeability / Resistivity surveys / Well data /

Abstract by Compendex

Evidence from core data and log studies shows that permeability is related to formation resistivity factor. Empirical correlation relating the two rock parameters is determined using core data. Knowing the formation resistivity factor from electric logs, it is possible to calculate the permeability of a given formation interval. Field examples show that the proposed method is applicable in both water bearing and hydrocarbon bearing zones. The ability to predict the permeability of water bearing zones from electric well logs is of great importance in the assessment of aquifers geopressure energy resource.

197. GGIS-100393/O/ /*****/A/80/ /US/ /***** Elemo

Title- Estimation of Stress-Sensitive Reservoirs' Initial Parameters by Use of the Conventional Well Test Methods

Author(s)- / Elemo , Rufus O. / Knapp , Roy M. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 960 , 12 Pages

**Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712**

(Paper copy (\$ 0.0)

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (2) / Figure (1) /

Table

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Compaction / Evaluation / Geopressured
reservoirs / Models / Permeability / Reservoir engineering /
Reservoir properties / Simulation / Stresses / Well testing /

Abstract by Author

This paper discusses the results of the study made to estimate the initial values of some pertinent parameters for stress-sensitive reservoirs by using current conventional well test methods. Stress-sensitive reservoirs possess rock and fluid properties that change as the effective stress on the reservoir rock changes. As a result of some of the assumptions made to develop the conventional well test methods, such methods may not be suitable for stress-sensitive reservoir parameter estimation. This study was made to determine the degree of discrepancy that can be expected if the conventional well test methods are applied. A hypothetical, stress-sensitive geopressured-geothermal closed square reservoir flowing a single-phase, slightly compressible fluid was selected for the investigation. The parameter determined is the initial formation permeability. Pressure drawdown, pressure buildup, and multiple flow rate tests were simulated for the purpose of the estimation. A two-dimensional finite difference model of the reservoir was used. The results obtained by use of these conventional well test methods are poor. Actual data from a geopressured-geothermal reservoir will be required to confirm the validity of the model.

198. GGIS-100079/ / /*****/M/**/ / /*****

Title- Eugene Island Block 18 Field

(Paper 8 in Offshore Louisiana Oil and Gas Fields)

Subtitle- Offshore Louisiana

Author(s)- / Robinson , B. Brick /

Pagination- Page 51 , 5 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Contour maps / Data / Economic geology /
Eugene Island Block 18 Field / Gas / Geopressure / Gulf Coast /
Louisiana / Miocene / Offshore / Oil and gas fields / Petroleum /

Production / Sandstone / St. Mary Parish / Stratigraphy /
Structure / United States /

199. GGIS-100216/J/ /*****/A/76/ / / *****/ Aud

Title- Evaluating Overpressure in the Twilight Zone

Author(s)- / Aud , B. W. / Fertl , W. H. /

Publication date- Vol. 48 , Issue 6 , 1976

Pagination- Page 122 , 9 Pages

Proposed Descriptor(s)- / Continental shelf, offshore / Continental
Shelf / Geopressure / Reservoir studies / Reservoir description
/ Seismic prospecting / Seismic detection / Seismic surveys /

200. GGIS-100280/R/ /*****/M/78/ /US/ /*****/ Bebout

**Title- Evaluation of an Energy Resource - Geopressed Geothermal
Zone, Texas Gulf Coast**

Author(s)- / Bebout , Don G. / Gregory , A.R. / Loucks , Robert G. /

Conference- 53. Technical Conf. and Exhibition of SPE-AIME
Houston
Texas
USA (October 1 , 1978)

Publication date- 1978

Pagination- 8 Pages

Report/patent- SPE-7539

Available- SPE-AIME
6200 N. Central Expy.
Dallas
TX
75206

Geopressured Geothermal Bibliography

(Paper copy)

Local Availability- CES

Corporate Author- Society of Petroleum Engineers (AIME) /9503255/.
Dallas , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (6) / Map (4) /

.Ref.

Proposed Descriptor(s)- / Austin Bayou Prospect / Brazoria County /
Exploratory wells / Fairway analysis / Frio Formation /
Geopressured zones / Gulf Coast / Reservoir properties /
Resource assessment / Texas /

Abstract by Author

Regional and detailed geological studies of the Frio, Vicksburg, and Wilcox Formation along the Texas Gulf Coast have been conducted in order to delineate areas favorable for the production of geopressured geothermal energy. These studies have been completed for the Frio Formation, and several geothermal fairways have been identified that contain thick sandstone zones with temperatures higher than 300 DEG F. The Brazoria Fairway was found to meet best the specifications believed necessary for a successful test of the resource, and the Austin Bayou Prospect has been outlined in this fairway. A geothermal test well is scheduled to be drilled in the Austin Bayou Prospect, and several geopressured sandstones will be tested between the depths of 13,500 and 16,500 FT.

201. GGIS-100012/0/ / 1/A/**/ / / /*****

Title- Evaluation of the Abnormally High and Low Pressure Morrow Formation, Oklahoma

Author(s)- / Helander , Donald P. /

Conference- Southeast Asia Petroleum Exploration Society Proceedings

Publication date- Vol. 1 , 1974

Pagination- Page 92

Proposed Descriptor(s)- / Economic geology / Morrow Formation /
Oklahoma / Pennsylvanian / Petroleum / Pressure buildup /
Regional / Reservoir rocks / United States /

202. GGIS-100223/J/GERED/*****/A/77/ / / /150100 Barnea

Title- Evaluation of Geopressured Zones

Author(s)- / Barnea , J. /

Journal- Geotherm. Rep.

Publication date- Vol. 6 , Issue 7 , April 1 , 1977

Pagination- Page 1 , 4 Pages

Categories-

Geothermal Energy

(Resource Status and Assessment)

Proposed Descriptor(s)- / Geopressured systems / Geopressured zones /
Gulf Coast / Natural gas fields / Research programs / Resource
assessment / Reviews / Texas /

Abstract by DOE/RECON

A critique of a recently completed, ERDA-sponsored study on methodology for geopressured zones is presented. The study is entitled "Development of an Assessment Methodology for Geopressured Zones of the Upper Gulf Coast Based on a Study of Abnormally Pressured Gas Fields in South Texas, Final Report." Inadequacies of the study are emphasized. (JGB)

203. GGIS-100308/O/ /*****/A/78/ /US/ /***** Arnold

Title- Evaluation of Seals for a Geothermal Logging Tool

Geopressured Geothermal Bibliography

Author(s)- / Arnold , Charles, Jr. / Baker , Leonard E. / Coquat ,
Joseph A. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 17 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Sandia Labs. /5659000/.
Albuquerque , New Mexico , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Photo (2) / Graph (1) /

Table

Ref.

Proposed Descriptor(s)- / Elastomers / Elavated pressure / Elevated
termperature / Geothermal brines / Seals / Well logging /

Abstract by Author

The seal efficiency and environmental resistance of various elastomeric o-rings and a metallic joint that were immersed in geothermal brine of water at elevated temperatures and pressures were determined. A leakproof seal was maintained with a stainless steel Conoseal-joint for 100 hours in water and 24 days in geothermal brine at 275 DEG C and 34.5 MPa (5000 PSI). Only

very small quantities of moisture penetrated o-ring seals made from Kalrez, a perfluoroelastomer, ethylene/propylene rubber and a Parylene C coated Viton o-ring. All other rubber seals failed catastrophically.

204. GGIS-100010/O/ /*****/A/**/ / / *****/

Title- Evaluation of Sulfide Corrosion Cracking Resistance in Low Alloy Steels

(Paper 96)

Conference- International Corrosion Forum
Toronto
Ontario
Canada

Publication date- April 18 , 1975

Pagination- Page 19

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Corrosion resistance / Oil wells / Oil field equipment / Steel corrosion / Steel / Stress corrosion cracking / Sulfide corrosion cracking / Tubular goods /

Abstract by NTIS

An environmental fracture mechanics test is described which had proven useful in evaluating the sulfide corrosion by the oil industry for high strength production tubulars which are required for the new, deep geopressured wells. The test, which quickly and quantitatively evaluates sulfide corrosion cracking resistance, is required both to qualify steel for sour service and to facilitate research into finding more resistant steels. 17 refs.

205. GGIS-100260/R/ /*****/M/78/B/ / / 30900 Kuuskraa
EF-77-C-01-2705

Title- Executive Summary

Geopressured Geothermal Bibliography

Subtitle- 1. Volume

Author(s)- / Brashear , J.P. / Doscher , T.M. / Elkins , L.E. /
Kuuskraa , V.A. /

Publication date- Vol. 1 , October 1978

Pagination- 60 Pages

Report/patent- HCP/T2705-01

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Lewin and Associates, Inc. /9503039/.
Washington , D.C. , USA

Auxiliary expression(s)-

Illus.

/ Figure (14) /

Categories-

Natural Gas

(Artificial Stimulation, Plowshare, Etc.)

Energy Management and Policy

(Natural Gas)

Proposed Descriptor(s)- / Aquifers / Cost benefit analysis /
Financial incentives / Gas production / Geopressured systems /
Natural gas deposits / Research programs /

Abstract by TIC

R and D efforts in enhanced gas recovery of near-conventional and unconventional gas sources are needed in order to augment domestic supplies. Unconventional gas sources could provide 200 to 220 Tcf of additional gas supply, if a combination of economic incentives and publicly sponsored R and D is used, and as much as 2 to 8 Tcf could be delivered per year by 1990. This volume comprises three parts discussing the public policy issues, proposed research strategy in enhanced gas recovery, and methodology.

206. GGIS-100337/R/ /*****/M/**/ /US/ /150904 Matthews
EW-78-X-05-2259

Title- Existence and Flow Behavior of Gas at Low Saturation in Geopressed Formations

Subtitle- Final Report

Author(s)- / Matthews , C.S. /

Publication date- April 1979

Pagination- 62 Pages

Report/patent- HCP/T2259-05

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- U.S. Department of Energy /9506839/.

Geothermal Energy Div.
Washington , D.C. , USA

Categories-

Geothermal Energy

Geopressured Geothermal Bibliography

(Geothermal Engineering)

Geothermal Engineering

(Geothermal Reservoir and Well Performance)

Proposed Descriptor(s)- / Flow rate / Gas saturation / Geopressured
reservoirs / Geopressured wells / Geothermal brines / Methane /
Sand / Water production / Well logging /

Abstract by TIC

The first geopressured brine well tested for the Department of Energy produced gas and brine at a ratio far above the solution ratio for the gas in that brine. One explanation advanced was that the geopressured formation contained gas at a low saturation, and that this gas flowed into the well during the test. This hypothesis is examined and found to be untenable based on evidence from well logs, flow tests and thermodynamics, and on currently accepted concepts for migration and accumulation of petroleum. The probable explanation for the observed high gas/water ratios is shown to be a thin, tight gas-bearing layer in the case of one sand and an updip gas cap in the case of the second and tested.

207. GGIS-100067/J/ZANGA/ 2009/A/**/ / /*****

**Title- Experience and Technological Problems Involved in Boring
Through Abnormally Layered Horizons Subjected to Risks of
Losses of High Pressure and Flushing**

Original Subtitle- Erfahrungen und Technisch-Tecnologische Probleme
Beim Aufschluss Wechselgelagerter Hochdruck- und
Spelungsverlustgefaerdeter Horizonte

Author(s)- / Japp , Dieter / Kappler , Werner / Karkossa , Hans /

Journal- Z. Angew. Geol.

Publication date- Vol. 20 , Issue 9 , 1974

Pagination- Page 426 , 9 Pages

Language- German

Auxiliary expression(s)-

Sum.

Proposed Descriptor(s)- / Bryven / Complications / Deep / East /
Engineering geology / Europe / Geochemistry / Geopressure /
Germany / Ground water / Horizons / Hydrostatic / Paleozoic /
Penetration / Permian / Pressure buildup / Problems /
Rotliegendes / Surveys / Triassic / Uses / Well logging / Wells /
Zechstein /

208. GGIS-100016/0/ /*****/A/**/ / / *****/

Title- Experience with Perforating Efficiency in Underbalanced
Completions of Geopressured Reservoirs

(Paper SPE 4793)

Conference- Form Damage Control
New Orleans
Louisiana
USA

Publication date- February 8 , 1974

Pagination- Page 253 , 4 Pages

Auxiliary expression(s)-

Ref.

Categories-

Natural Gas Wells

(Completion)

Oil Well Casing

(Gun Perforators)

Proposed Descriptor(s)- / Gun perforators / Natural gas wells / Oil
well casing / Well completion /

Abstract by NTIS

Geopressured Geothermal Bibliography

Underbalanced perforating has been proposed as a method of improving perforating efficiency in gas wells. However, it has not proven to be an effective means of establishing unimpaired communication with geopressured Vicksburg Gas Reservoirs in South Texas. Lack of effective jet perforating guns in the small-diameter sizes is the probable cause. Average skin factors and delta-P skins of 8.09 and 3352 PSI respectively were determined on ten wells after perforating with an underbalance of 4700 PSI. The results in South Texas emphasize the need for improved through-tubing perforating guns. 7 refs.

209. GGIS-100995/ / /*****/A/78/ /US/ /***** Rimstidt
G1055140

Title- Experiments for Rapid Assessment of the Scaling Properties of Geothermal Fluids

Author(s)- / Barnes , H.L. / Rimstidt , J.D. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 567 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Bureau of Mines
G1055140 /

Corporate Author- Pennsylvania State Univ.
Ore Deposits Research Section
University Park , Pennsylvania , USA

Auxiliary expression(s)-

Illus.

/ Graph (2) / Diagram (2) /

Proposed Descriptor(s)- / Chemical properties / Geothermal fluids / Heat extraction / Kinetic energy / Mineral wastes / Precipitation / Scaling / Scaling control / Thermodynamic properties /

Abstract by Author (rev.)

Too often heat extraction systems are designed with only minimal regard for scale prevention. However, there are some simple thermodynamic and kinetics principles that can be utilized in the basic design of these systems. In addition, it is useful to perform simple field tests on the geothermal fluid to determine its scaling characteristics under conditions similar to those expected in the heat extraction facility. Two simple experimental methods have been designed which can be used at low cost to empirically test scaling behavior prior to the installation of expensive pilot or power plants. These experiments and related kinetic factors are considered here.

210. GGIS-100234/J/ /*****/A/78/ / /***** Born

Title- Eyes of Texas are Upon the First Test Well Drilling for Geopressured Methane

Author(s)- / Born , Roscoe C. /

Journal- Barrons

Publication date- Vol. 58 , Issue 41 , October 9 , 1978

Pagination- Page 11 , 5 Pages

Proposed Descriptor(s)- / Geopressure resources / Geopressured wells / Methane / Test wells / Texas / Well testing /

Abstract by EIC

To skeptical oil and gas people, estimates of enough geopressured methane to last from one to 50 centuries are fanciful. But renewed interest in the energy resource is about to explode. For the U. S. Dept. of Energy, the General Crude Oil Co. is sinking in Texas the first well known to be deliberately aimed at geopressured methane. A degree of mystery surrounds potential in the superheated, superpressured zone where briny waters are saturated with methane. Rep. John Dingell (D-Mich.) and his subcommittee on energy and power are expected

Geopressured Geothermal Bibliography

to open hearings to consider the energy potential of the unconventional gas source.

211. GGIS-100308/O/ /*****/A/78/ /US/ /***** D'Alessio

Title- EPA Pollution Control Guidance for the Geothermal Industry

Author(s)- / D'Alessio , Gregory J. / Hartley , Robert /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 133 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- U.S. Environmental Protection Agency /9500215/.
Washington , D.C. , USA

Proposed Descriptor(s)- / Air pollution / Energy source development /
Environmental effects / Geothermal resources / Noise Pollution /
Pollution regulations / Radioactive wastes / US EPA / Waste
disposal / Water pollution /

Abstract by Author (rev.)

The pollutant control regulatory approach being adopted by EPA is designed to (1) establish point source emission and discharge limitations prior to significant commercialization; (2) provide guidance documents through the development and demonstration

phase on limitations that can be anticipated prior to construction; (3) by way of the same periodic guidance, minimize uncertainties in emission and discharge requirements; (4) develop and evaluate information which supports guidance and regulations throughout the precommercialization stage, in concert with the industry and other involved government agencies; and (5) regulate geothermal pollution throughout the precommercialization period by application of the emission and discharge permit systems, which may be State-administered, with permit conditions based upon present ambient standards, known or expected effects, and state-of-the-art technology. Periodic guidance will be issued by EPA with respect to these factors beginning with the initial geothermal pollution guidance document. Guidelines are being established for the control of air pollution, water pollution, waste disposal, noise pollution, and radiological pollutants.

212. GGIS-100042/J/GTEMA/*****/A/**/ /US/ /*****

Title- EPRI Examines Geopressured Water/Gas as Potential Energy Source

Publication date- Vol. 7 , Issue 2 , February 1979

Pagination- Page 8 , 2 Pages

Proposed Descriptor(s)- / Binary cycle power generation / Economics / Electric power / Geopressured zones / Louisiana / Methane / Power potential / Research programs / Technology utilization / Texas /

Abstract by GGIS

Researchers at Southwest Research Institute, San Antonio, Texas, recently started work on a one-year project to determine how existing technology can extract and use geopressured water and gas to produce commercial electric power. Sponsored by the Electric Power Research Institute, the project's aim is to evaluate the economic aspects of the geopressured resource and demonstrate its use in the mid-1980s. Researchers are also investigating ways of strengthening existing equipment for converting pressure into electric energy so that it can tolerate the high pressures, temperatures, and corrosive fluids.

213. GGIS-100219/J/ /*****/A/**/ / / /*****

Geopressured Geothermal Bibliography

Title- ERDA Seeks Proposals to Identify Gulf Coast Geopressured Wells

Journal- Ground Waterr News1.

Publication date- Vol. 6 , Issue 8 , 1977

Pagination- Page 3

Proposed Descriptor(s)- / Coastal areas / Geopressure exploration / Geopressured wells / Geothermal energy / Gulf of Mexico / Gulf Coast / Research programs /

214. GGIS-100217/J/ /*****/A/**/ / / /*****

Title- ERDA Seeks Proposals to Identify Gulf Coast Geopressured Wells

Journal- Inf. ERDA Wkly. Announce.

Publication date- Vol. 3 , Issue 14 , 1977

Pagination- Page 4

Proposed Descriptor(s)- / Exploration management / Geopressure exploration / Geopressured wells / Geothermal prospecting / Gulf Coast / Research programs / Southern Central States /

215. GGIS-100005/0/ / 3/A/**/ / / /*****

Title- ERDA'S Geothermal R&D Program

Conference- Energy Technology

Publisher- Govt. Inst., INC.
Washington, D.C.

Publication date- Vol. 3 , March 31 , 1976

Pagination- Page 115 , 14 Pages

Corporate Author- U.S. Energy Research and Development Agency

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Map (2) / Photo (1) / Table (1) /

Proposed Descriptor(s)- / ERDA / Geo brine / Geothermal energy research and development / Geothermal research and development / Geothermal energy / Geothermal resources / Geothermal wells / Hot dry rock systems / Hot water / U.S. Energy Research and Development Administration /

Abstract by Energyline

ERDA'S Geothermal Energy Program aims to: Reduce resource uncertainties and increase reservoir predictability; develop identified hydrothermal resources and help establish an industry base; and help industry develop technology to exploit geopressured and hot dry rock resources. The nation's geothermal resources, which are described, are large enough to warrant an intensive development program. ERDA geothermal development strategies are discussed. (2 diagrams, 2 maps, 1 photo, 1 table)

216. GGIS-100032/J/CSGEA/ 5203/A/**/ / / /*****

Title- Factors that Control Subsurface Pressures

Author(s)- / Massengill , G. L. /

Journal- Compass

Publication date- Vol. 52 , Issue 3 , 1975

Pagination- Page 63 , 7 Pages

Proposed Descriptor(s)- / Changes / Chemical / Diastrophism / Engineering geology / Geopressured reservoirs / Geopressure / Overburden pressure / Overburden / Petroleum / Potential energy / Pressure buildup / Static / Temperature /

Geopressured Geothermal Bibliography

217. GGIS-100393/O/ /*****/A/80/ /US/ /***** Loucks

Title- Factors Controlling Porosity and Permeability in Geopressured Frio Sandstone Reservoirs, General Crude Oil/Department of Energy Pleasant Bayou Test Wells, Brazoria County, Texas

Author(s)- / Loucks , Robert G. / Milliken , Kitty L. / Richmann , Debra L. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 46 , 39 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) Div. of Geothermal Energy /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Photo (10) / Graph (13) / Map (1) /
Figure (5) /

Ref.

Proposed Descriptor(s)- / Brazoria County / Depositional environment / Diagenesis / Drill cores / Frio formation / Geopressured reservoirs / Mineral composition / Permeability / Pleasant Bayou No. 1 Well / Pleasant Bayou No. 2 Well / Porosity / Reservoir properties / Sandstone /

Abstract by Author

Reservoir characteristics of Frio sandstones in the GCO/DOE Pleasant Bayou No. 1 and No. 2 wells are influenced by depositional environment, sandstone composition, and diagenetic history. The sandstones and shales were deposited in delta, plain, delta front, prodelta, and continental slope environments. Fluvial channel and distributary-mouth bar sandstones are most favorable for development and preservation of porosity. Sandstones in the geopressured zone are lithic arkoses and feldspathic litharenites. Depositional matrix (detrital material less than 20 um in size) occluded most or all of the potential primary porosity between grains in many of the fine-grained sandstones at the time of deposition. Quartz, calcite, and kaolinite cements reduced both primary and secondary porosity during diagenesis. The most porous sandstones contain no depositional matrix, but may contain abundant cement. Depositional matrix not only plugs pore spaces between grains but prohibits the flow of fluids that may create secondary porosity by the dissolution of grains. Cements are not abundant enough to prevent fluids from flowing through the sandstones. Consequently, even if cements are present, dissolution of grains and development of secondary porosity do take place. Permeable geopressured sandstone reservoirs are characterized by porosity that is dominantly secondary. The best reservoir in the geothermal test well is a medium-grained sandstone that was deposited in a traction load fluvial channel. This type of fluvial channel has good dip continuity, and in contrast to other types of fluvial channels it has good strike continuity.

218. GGIS-100210/R/ /*****/M/76/ /US/ /***** Kreitler

Title- Fault Control of Subsidence Houston-Galveston Area, Texas

Subtitle- Research note 5

Author(s)- / Kreitler , Charles W. /

Publication date- 1976

Pagination- 17 Pages

Geopressured Geothermal Bibliography

Note- Preprint of article to appear in "Geoscience and Man."

Local Availability- GGIS

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Graph (6) / Map (6) / Photo (1) /

Proposed Descriptor(s)- / Fault activation / Fault control / Faults /
Flooding / Fluid withdrawal / Galveston County / Ground
subsidence / Harris County / Hurricanes / Hydrologic barriers /

Abstract by Author

Land subsidence increases the area in the Texas coastal zone which will be inundated by marine waters from Hurricane flooding. Storm surge from a Carla-sized Hurricane in 1976 would flood at least 25 square miles more land than Hurricane Carla did in 1961. Land subsidence in Harris and Galveston Counties results primarily from ground-water production. The two-county area is interlaced with active surface faults with topographic escarpments and surface faults with no topographic escarpments that control drainage patterns and create subtle photographic linear patterns. Ground-water production activates these faults by differential compaction of the aquifer. The faults appear to be partial hydrologic barriers that compartmentalize land subsidence into several individual basins.

219. GGIS-100235/O/ /*****/A/77/ /FR/ / 20300 Kreitler

Title- Faulting and Land Subsidence from Groundwater and
Hydrocarbon Production, Houston-Galveston, Texas

Author(s)- / Kreitler , C. W. /

Conference- 2. International Symposium on Land Subsidence
Anaheim, CA, USA (December 10 , 1976)

Publisher- International Association of Hydrological Sciences
Paris

Publication date- 1977

Pagination- Page 435 , 12 Pages

Report/patent- CONF-761217--

Categories-

Petroleum

(Drilling and Production)

Proposed Descriptor(s)- / Fault activation / Faulting / Fluid withdrawal / Galveston County / Gas production / Ground subsidence / Harris County / Natural gas fields / Oil fields / Oil production / Permeability barrier / Texas / Water production /

Abstract by TIC

Land subsidence in Harris and Galveston Counties, Texas, results from production of both ground water and hydrocarbon. Although ground water withdrawal (over 2 million cubic meters) is the predominant cause of land subsidence, subsidence and faulting are also associated with at least six oil and gas fields: South Houston, Clinton, Mykawa, Blue Ridge, Goose Creek, and Webster Fields. The two-county area is interlaced with active surface faults with topographic escarpments and surface faults which control drainage patterns and create subtle photographic linear patterns, but exhibit no topographic escarpments. Fluid production activates a given fault by differential compaction of the sediments on either side of the fault. The faults appear to be partial fluid barriers that compartmentalize land subsidence. The Texas City area is an example of a subsidence compartment where subsidence has been restricted by growth faults. Correlation of electric log data from boreholes across the faults indicates as much as 21 M of displacement of sand beds within the Chicot Aquifer. This much offset of permeable beds is considered sufficient to create partial hydrologic barriers.

220. GGIS-100369/R/ /*****/M/77/ /US/ /***** Swanson
E(40-1)5268

Geopressured Geothermal Bibliography

Title- Feasibility Investigation and Design Study of Optical Well Logging Methods for High Temperature Geothermal Wells

Subtitle- Final Report

Author(s)- / Anderson , R. E. / Ash , J. I. / Beissner , R. E. /
Smith , V. Devon / Swanson , R. K. /

Publication date- December 1977

Pagination- 121 Pages

Report/patent- SWRI-15-4706

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy

E(40-1)5268 /

Corporate Author- Southwest Research Inst. /5865000/.
San Antonio , Texas , USA

Auxiliary expression(s)-

Illus.

/ Diagram (17) / Photo. (11) / Graph (39) / Figure (2)
/

Table

Ref.

Proposed Descriptor(s)- / Bottom hole temperature / Elevated temperature / Feasibility studies / Geothermal resources / High temperature / Quartz / Well logging /

Abstract by Author

This report documents the results of a one-year program designed to investigate the feasibility of optical techniques applied to well-logging, to extend measurement capabilities in high-temperature geothermal bore holes. The basic concept makes use of a special armored cable containing fiber optic wave guides, connected to passive, downhole optical transducers. The latter modulate an optical carrier in response to bore-hole parameters. The optical carrier is a beam of infrared light transmitted from an optical source at the surface over an optical fiber. The modulated beam from the transducer is then returned to the surface over a second fiber, where conventional optical communications techniques are used to detect and decode the down-hole information. Quartz, from which low-loss optical fibers are constructed, is virtually unaffected by temperatures at least as high as 600 DEG C. The use of optical signal transmission in well-logging offers the possibility of bypassing many problems normally associated with high-temperature operation. Since optical fibers are highly efficient communication channels, optical communication also offers the capability of measurements which require higher data rates than conventional electrical cables permit. Since neither the optical fiber nor passive optical transducers require electrical power, problems associated with electronic devices at high-temperatures will not occur. However, the implementation of such an optical system must overcome formidable obstacles. Quartz fibers themselves exhibit inherently high tensile strength, but their relatively low ductility and susceptibility to brittle fracture, require new concepts in cable construction. Quartz also must be protected from direct contact with hot steam or water, requiring protective coatings which can tolerate the high temperatures encountered. Geothermal energy offers one of the most immediately available energy options under current investigation. A serious limitation in the evaluation of this resource lies in the inability to reliably make adequate geophysical measurements at those temperatures of greatest interest to successful geothermal exploitation. The optical approach offers one step along the path toward solving these difficulties.

221. GGIS-100373/R/ /*****/M/77/B/US/ /***** Swanson
E(40-1)-5268

Title- Feasibility Investigation and Design Study of Optical Well Logging Methods for High Temperature Geothermal Wells

Geopressured Geothermal Bibliography

Subtitle- Semiannual Technical Progress Report, 30 September
1976-31 March 1977

Author(s)- / Beissner , R. E. / Fogwell , J. W. / Smith , V. D. /
Swanson , R. K. /

Publication date- April 1977

Pagination- 54 Pages

Report/patent- ORO-5268-T1

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Energy Research and Development Administration
/9501252/.

E(40-1)-5268 /

Corporate Author- Southwest Research Inst. /5865000/.
San Antonio , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (25) /

Ref.

Proposed Descriptor(s)- / Bottom hole temperature / Elevated
temperature / Feasibility study / Geothermal resources / High
temperature / Quartz / Well logging /

Abstract by Author

Measurement of the absorption-edge in the compound semiconductor GaAs show that changes in temperature over a range from 200 DEG C to 500 DEG C produce a cut-off transmission wavelength approximately coincident with the optimum spectral transmission region of quartz optical fibers. Thin GaAs elements are thus shown to be suitable for use as passive optical temperature transducers in the logging of high temperature geothermal wells in conjunction with fiber-optic cables. Stress effects on the optical transmission properties of quartz fibers, indicate increased attenuation amounting to approximately 5%, due to tensile stress of 90 ksi, or an elongation of 1%. Temperature effects on optical transmission were found to be negligible to 500 DEG C. Preliminary results of this study indicate that construction of a borehole geophysical cable based on single-fiber quartz waveguides is entirely feasible. Present upper temperature limits in successfully measuring certain geophysical parameters in boreholes can be extended appreciably by the use of such a cable in conjunction with passive optical transducers which require little or no down-hole electronics.

222. GGIS-100241/0/ /*****A/77/B/US/ /299002 Stephens

Title- Federal Role in Geothermal Resource Development

Author(s)- / Stephens , R. C. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 11 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

Geopressured Geothermal Bibliography

(Geothermal)

Proposed Descriptor(s)- / Energy source development / Geothermal resources / Government policies / Institutional aspects / National government / Regulations /

Abstract by TIC

The components of the federal program mandated by PL 93-410 include, specifically: (1) resource inventory and assessment, (2) research and development, (3) demonstration, (4) scientific and technical education, and (5) loan guaranties. Included in the goals of the research and development effort were social, legal, and economic studies for the development of policy conducive to commercial geothermal development. ERDA has taken the lead role in policy development. This aspect is discussed in some detail, following a brief description of the program areas. Areas covered include: institutional development, federal land management, federal taxation, the geothermal loan guaranty program, state and local government, and federal incentives. (MHR)

223. GGIS-100103/R/ /*****/M/**/ / / /*****
1-1-C-21

Title- Final Report for the U.S. Energy Research and Development Administration, Lawrence Livermore Laboratory

Author(s)- / Hornburg , C. D. / Marin , C. D. /

Publication date- 1975

Pagination- Page 210

Report/patent- UCRL-13633

Corporate Author- DSS Engineers
Ft. Lauderdale , Florida , USA

Proposed Descriptor(s)- / Case histories / Chemical composition / Cost / Diagrams / Economics / Flow rate / Fluid flow / Geopressured systems / Geothermal wells / Injection wells / Louisiana / Maps / Nonelectrical / Pressure measurement / Process heat / Site selection / Tables / Temperature measurement / Texas / Uses / Waste disposal /

224. GGIS-100222/J/PENGA/*****/A/78/ / / *****/ Wieland

Title- First Gulf Coast Geopressured-Geothermal Test Completed

Author(s)- / Wieland , Denton R. /

Journal- Pet. Eng.

Publication date- Vol. 50 , Issue 4 , April 1978

Pagination- Page 72 , 9 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (10) /

Table

Proposed Descriptor(s)- / Edna Delcambre No. 1 Well / Geopressured wells / Louisiana / Sand production / Surface equipment / Water production / Well characteristics / Well completion / Well data / Well drilling / Well testing /

Abstract by Energy Info. Abstracts

Tests of the geopressured-geothermal resource of the Edna Delcambre No. 1 Well in Louisiana have been conducted. OHRW Engineering oversaw drilling, completion of the disposal well, testing of the sands at depths of 12,900 Ft. and 12,500 Ft., and plugging of the well. The completion design, assembly, surface equipment used, and test schedule are described. Data on temperature, pressures, and water production are tabulated. Sand production occurred during one of the test flow periods; problems resulting from sand production are summarized.

225. GGIS-100995/ / / *****/A/78/ /US/ *****/ Schmitt

Title- Fludized Bed Low-Temperature Geothermal Drying

Author(s)- / Cole , L.T. / Oates , J.H. / Schmitt , R.C. /

Geopressured Geothermal Bibliography

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 591 , 2 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (1) /

Proposed Descriptor(s)- / Agriculture / Direct energy utilization /
Geothermal heating / Moderate temperature / Waste management /

Abstract by Author (rev.)

EG&G Idaho, Inc., is commencing a series of low temperature geothermal drying experiments at the Raft River Geothermal Site. This paper will delineate the results from the initial test work, particularly as it pertains to the use of geothermal heat in drying operations on waste materials from potato processing operations. However, the experiment has the potential for stimulating a more widespread direct use of geothermal energy since there may be numerous applications for a system of this type in food processing operations, agriculture (grain, sugar beet pulp, alfalfa, onion drying operations are a few examples), and waste management.

226. GGIS-100899/0/ /*****/A/76/ / / /***** Allen

Title- Fluidized Bed Heat Exchangers for Geothermal Applications

Author(s)- / Allen , C.A. / Grimmett , E.S. / Wagner , K.L. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 761 , 7 Pages

Report/patent- SAE--769132

Corporate Author- Allied Chemical Corp. / 204600/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (2) / Photo. (1) /

Ref.

Proposed Descriptor(s)- / Design / Fluidized bed heat exchangers /
Fouling / Geothermal brines / Heat transfer / Scaling /

Abstract by Author

Bench-scale liquid-fluidized bed heat exchangers used with geothermal water prevented fouling and nearly doubled the rate of heat transfer compared to identical tube and shell arrangements. A six-inch pressurized unit operated at the Raft River geothermal site near Malta, Idaho verified these results. Horizontal and vertical configurations and other design considerations are discussed. Insufficient data currently exists to make valid correlations for scale-up for demonstration or commercial size units. An experimental program is in progress to correct this deficiency.

227. GGIS-100898/J/ /*****/A/76/ / / /***** Csaba I

Title- Forecasting of Overpressure Formations Experiences in Hungary

Author(s)- / Csaba , J. /

Publication date- Vol. 19 , Issue 2 , 1976

Pagination- Page 27 , 6 Pages

Proposed Descriptor(s)- / Forecasting / Geopressure exploration /
Hungary / Reservoir description /

Geopressured Geothermal Bibliography

228. GGIS-100334/ / /*****M/78/ /US/ /***** Bebout

Title- Frio Sandstone Reservoirs in the Deep Subsurface along the Texas Gulf Coast-

Subtitle- Their Potential for the Production of Geopressured Geothermal Energy

Author(s)- / Bebout , D.G. / Gregory , A.K. / Loucks , R.G. /

Publication date- 1978

Pagination- 93 Pages

**Available- Bureau of Economic Geology
University of Texas at Austin
University Station
Box X
Austin
Texas
78712**

(Paper Copy (\$ 4.50)

Corporate Author- Texas Univ., Austin /9501193/.

**Bureau of Economic Geology
Austin , Texas , USA**

Auxiliary expression(s)-

Illus.

/ Figure (106) /

Table

**Proposed Descriptor(s)- / Austin Bayou prospect / Brazoria County /
Elevated temperature / Fairway analysis / Frio formation /
Geological surveys / Geophysical surveys / Geopressured
reservoirs / Gulf Coast / Permeability / Texas /**

Abstract by Author

The Frio formation of the subsurface Tertiary section in the Gulf Coast Basin has been the focus of extensive evaluation for potential resources of geopressured geothermal energy. This

report represents a comprehensive summary of the Bureau's geothermal programs in the Frio, which have culminated in the selection of Texas' first test-well site for geothermal production. The Hidalgo, Armstrong, Corpus Christi, Matagorda, and Brazoria fairways are delineated in this report. The Austin Bayou Prospect in the Brazoria fairway of Galveston and Brazoria Counties is pinpointed as the most suitable site for Frio geothermal production. At this site, 250 to 350 feet of reservoir sandstone occurs with core permeabilities between 40 and 60 millidarcys and fluid temperatures from 300 DEG to 350 DEG F. Detailed geological, geophysical, and engineering studies have been applied to delineate the Austin Bayou test-well site.

229. GGIS-100224/B/ /*****A/77/ /US/ /150201 Jones

Title- Frontier Areas and Exploration Techniques

(In; Geology of Alternate Energy Resources in the South-Central United States)

Subtitle- Geopressured Geothermal Energy in the South-Central United States

Author(s)- / Jones , P. A. /

Publisher- Houston Geological Society
Houston, Texas

Publication date- 1977

Pagination- Page 215 , 36 Pages

Available- Geothermal Information Services
318 Cherrywood St.
West Covina
CA
91791

(\$ 25.00)

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

Geopressured Geothermal Bibliography

(USA)

Proposed Descriptor(s)- / Exploration methods / Geopressure
exploration / Geopressured systems / Gulf Coast / Maps / Seismic
surveys / Subsurface mapping / Well logging /

Abstract by TIC

The Mississippi Salt Dome Basin occupies a rift which opened at the time the Gulf Basin was formed, but was superseded by a rift to the south, now occupied by the Gulf Coast Geosyncline and the Gulf Coast Salt Dome Basin. Seismic and borehole logging methods were used in mapping fluid pressure; borehole logging methods provide data for isothermal mapping; seismic and borehole logging methods provide the data for structure mapping; borehole methods, mainly electric logging, provide the data for sand-bed reservoir mapping and for isosalinity mapping. Together, these maps provide the information necessary for selection and evaluation of prospects for geopressured geothermal energy development.

230. GGIS-100065/J/ / 2903/A/**/ / / /150100

Title- Future Developments in the Utilization of Geothermal Energy

Author(s)- / Fanelli , M. /

Journal- Termotecnica (Milan)

Publication date- Vol. 29 , Issue 3 , May 1975

Pagination- Page 140 , 5 Pages

Language- Italian

Proposed Descriptor(s)- / China / El Salvador / Electric power /
Exploitation / Geopressured systems / Geothermal energy /
Geothermal power plants / Hot dry rock systems / Iceland / Italy
/ Japan / Mexico / New Zealand / Reviews / Turkey / Uses / USA /
USSR / West Indies /

231. GGIS-100176/O/ /*****/M/**/ /US/ /*****

Title- Future Supply of Nature-Made Petroleum and Gas

Subtitle- 1. Unitar Conference on Energy and the Future

Author(s)- / Meyer , R. F. /

Conference- Unitar Conference on Energy and the Future
Laxenburg, Austria (July 5 , 1976)

Publisher- Pergamon Press, Inc.
Elmsford, N. Y.

Publication date- 1977

Pagination- 1085 Pages

Report/patent- CONF--760763

232. GGIS-100374/O/ /*****/A/79/ /US/ /***** Lessor

Title- FLOSCAL--

(3. Session: EPRI Progress Reports)

Subtitle- A Computer Code for Predicting Scale Formation in
Geothermal Systems

Author(s)- / Cheatham , R. L. / Kreid , D. K. / Lessor , D. L. /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 4 , 5 Pages

Geopressured Geothermal Bibliography

Report/patent- EPRI-WS-79-166

Local Availability- CES

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Auxiliary expression(s)-

Illus.

/ Figure (1) / Diagram (1) /

Table

Ref.

Proposed Descriptor(s)- / Chemical composition / Computer codes /
Corrosion / Forecasting / Geothermal brines / Scaling /

Abstract by Author

FLOSCAL is a computer program that may be used to predict the chemical composition, rate of formation, and distribution of mineral scale and iron corrosion products in a mineral laden aqueous flowstream. FLOSCAL is one of a family of geothermal scaling codes (EQUILIB, FLOSCAL, PLANT, and GEOSCALE) that have recently been developed by Battelle-Northwest under the sponsorship of the Electric Power Research Institute. The purpose of these codes is to provide an analytical tool for predicting scaling and consequent performance degradation in geothermal power generating plants and associated facilities. This paper provides a description of FLOSCAL capabilities and limitations. We will also describe the other codes in the family for perspective.

233. GGIS-100130/R/ /*****/M/**/ /US/ /*****

Title- FY 1974 Program Plan for Geothermal Project

Author(s)- / Brugger , R. M. / Kunze , J. F. /

Publication date- February 5 , 1974

Pagination- 71 Pages

Report/patent- ANCR-1139

Sponsor- / US AEC /

Corporate Author- Aerojet Nuclear Co. / 47300/.

National Reactor Testing Station
Idaho Falls , Idaho , 83401 , USA

Categories-

KGRA

(Raft River)

Proposed Descriptor(s)- / Demonstration programs / Economics /
Elevated temperature / Geothermal energy / Geothermal power
plants / Raft River KGRA /

Abstract by NSF/RANN

The postulated end objective for the program is to construct and operate a power plant on relatively low temperature hot water (nominally 150 degrees C or 300 degrees F). The likely location for the plant is in the Raft River Valley. The principal purpose of the program is to determine, by actual demonstration, the economic conditions for which low temperature systems can be expected to operate. If successful in this endeavor, such resources will then be developed by others contemplating utilizing geothermal energy for large scale commercial endeavors. (auth. from purpose)

234. GGIS-100299/J/ /*****A/**/ / / *****/

**Title- Gas and High-Pressure Water Find in Louisiana Termed
Significant**

Publisher- Twin Coast Newspapers, Inc.
New York, NY

Journal- J. Commerce

Publication date- Vol. 332 , Issue 2398 , June 21 , 1977

Pagination- Page 8 , 1 Pages

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Gas production / Geopressured reservoirs /
Geopressure zones / Geothermal brines / Louisiana / Natural gas /
Water production /

Abstract by PROMPT

Natural gas and hot, high-pressure salt water have been found trapped two miles beneath a Louisiana bayou. The discovery raised hope among government experts that Gulf coast reservoirs may hold major untapped reserves which might double supplies of natural gas, the US' most precious fuel, and provide geothermal energy as a bonus. Researchers working under government contract reopened an abandoned gas well 25 miles south of Lafayette, La., to check the potential for getting energy from high-pressure subterranean pockets called "geopressured zones." Preliminary analysis showed a two-week test at a depth of 12,900 feet produced 200,000-1.5 million cubic feet of gas/day, plus 10,300 bbls/day water at 240 DEG F.

235. GGIS-100066/J/W00IA/*****/A/**/ / / *****/

Title- Gas in Geopressured Wells

Publication date- Vol. 185 , Issue 2 , 1977

Proposed Descriptor(s)- / Geopressured wells / Louisiana / Natural
gas / Well stimulation /

236. GGIS-100176/O/ /*****/A/**/ /US/ / 30200

Title- Gas in Geopressured Zones

Author(s)- / Jones , P. H. /

Conference- Unitar Conference on Energy and the Future
Laxenburg, Austria (July 5 , 1976)

Publisher- Pergamon Press, Inc.
Elmsford, N. Y.

Publication date- 1977

Pagination- Page 889 , 23 Pages

Report/patent- CONF--760763

Categories-

Natural Gas

(Geology and Exploration)

Proposed Descriptor(s)- / Coastal regions / Dissolved gases / Exploration / Geology / Geological surveys / Geopressure resources / Geopressured zones / Geopressured systems / Global aspects / Gulf Coast / Gulf of Mexico / Interstitial water / Kerogen / Methane / Natural gas / Natural gas deposits / Sedimentary rocks / USA /

Abstract by DOE/RECON

The natural gas resources in geopressured zones worldwide are very great if they are comparable to those in the Northern Gulf of Mexico Basin. The geology of geopressured zones is discussed with emphasis on the U. S. Gulf of Mexico Basin. The world's known geopressured zones are identified and described. Methane, produced by the thermal degradation of petroleum in the geopressured zone, is dissolved in the formation waters of the zone. This natural gas in water solution can contribute greatly to future energy supplies.

237. GGIS-100897/ / /*****/A/79/ /US/ /***** Pitrolo

Title- Gas Recovery from Unconventional Sources

Author(s)- / Overbey , W. K. / Pitrolo , A. A. / Schrider , L. A. / Wise , R. L. /

Publisher- Gov. Inst., Inc.
Washington, D. C.

Publication date- Vol. 6 , 1979

Pagination- Page 483 , 12 Pages

Local Availability- CES

Geopressured Geothermal Bibliography

Corporate Author- U. S. Department of Energy /9505660/.

Morgantown Energy Research Center
Morgantown , West Virginia , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Map (2) /

Table

Ref.

Proposed Descriptor(s)- / Energy source development / Energy sources
/ Financing / Gas production / Geopressured reservoirs /
Investment / Methane / Research programs /

Abstract by Energyline

Unconventional sources of natural gas are identified. The federal government must complement industry's efforts in the R & D necessary to lead to full commercialization of these resources. Research needs for production of tight gas sands in several western states are surveyed. Gas shale deposits in eastern states are discussed. The feasibility of obtaining methane from coal beds, and problems associated with commercial exploitation of Gulf Coast geopressured aquifers are examined.

238. GGIS-100342/J/JDAED/*****/A/79/ / / *****/ Chopra

Title- Geo-Science Related Aspects of Geopressure Energy

Author(s)- / Chopra , Prem S. / Saxena , Surendra K. /

Journal- J. Energy Div., ASCE

Publication date- Vol. 105 , Issue 2 , August 1979

Pagination- Page 213 , 16 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Map (1) /

Ref.

Proposed Descriptor(s)- / Environmental effects / Geochemistry /
Geology / Geological surveys / Geopressured reservoirs /
Geophysics / Ground subsidence / Hydrogeology / Lithology /
Louisiana / Mathematical models / Reservoir engineering / Texas
/ Waste water / Waste disposal /

Abstract by Compendex

Geo-science related aspects of geopressured energy have been critically reviewed. Geopressure is defined as any pressure that exceeds the hydrostatic column of water extending from the reservoir zone to the land surface. The U. S. Geological Survey estimates that the thermal-mechanical energy in geopressure reservoirs in the Texas and Louisiana coasts alone is about 34,000 MW-centuries. This paper has attempted to cover reservoir geology, geomechanics, and geochemistry and their synergy in exploitation strategy has been highlighted. The need for new analytical models covering the response of the geomass, consisting of rock matrix and sediment clay, and its intercoupling with the motion of the geofluids in the presence of terrestrial heat flow is stressed. The effect of reservoir geometry in the selection of reservoir well spacing has been discussed.

239. GGIS-100153/0/GAAPB/*****/A/**/ /US/ /150302

Title- Geochemical Methods for Geothermal Water Samples

Subtitle- Trans-Pecos, Texas

Author(s)- / Curtis , R. E. /

Conference- 11. Annual Meeting of the Geological Society of America,
South-Central Section
El Paso
Texas
USA (March 17 , 1977)

Publication date- Vol. 9 , January 1977

Pagination- Page 13 , 2 Pages

Geopressured Geothermal Bibliography

Corporate Author- Texas University, El Paso
El Paso , Texas , USA

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geochemical Techniques and Surveys)

Proposed Descriptor(s)- / Calcium / Chemical analysis / Chlorine /
Dissolved solids / Fluorine / Geochemical surveys / Geothermal
exploration / Geothermometry / Hot springs / Lithium / Potassium
/ Silicon / Sodium / Texas / Trans-Pecos hot rocks / Water
analysis / Water chemistry / Water springs /

Abstract by ERA

Over 700 water samples from hot to cold springs and wells have been collected from a six County area of approximately 22,000 square miles in West Texas. Geochemical studies of the waters are in progress to locate possible hot water geothermal sites in the region. For each water sample information concerning depth of the well, rate of discharge, color and turbidity, and geologic occurrences of the water were recorded. Samples have been analysed for sodium, potassium, calcium, lithium, and silicon by atomic absorption and fluoride and chloride by specific ion electrodes. The analyses show the following concentrations in PPM: sodium, 2-2,400; potassium, 0.1-215; calcium, 0.4-693; lithium, 0.0-3.2; silicon, 4-82; fluoride, 0.2-19; and chloride, 2.1-3,400. A Kernco DS meter was employed to determine dissolved solids content which range from 200 to 11,000 PPM. In addition, the samples are currently being analyzed for uranium, magnesium, beryllium, boron, mercury, arsenic, and strontium. The Na-Ca-K and SiO₂ geothermometers have been calculated from above analyses and used to indicate the most favorable geothermal sites.

240. GGIS-100393/O/ /*****/A/80/ /US/ /***** Kharaka

Title- Geochemistry of Formation Waters from Pleasant Bayou No. 2
Well and Adjacent Areas in Coastal Texas

Author(s)- / Carothers , William W. / Kharaka , Yousif K. / Lico ,
Michael S. / Wright , Victoria A. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 168 , 32 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Geological Survey /2751000/.
Menlo Park , CA , USA

Auxiliary expression(s)-

Illus.

/ Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Brazoria County / Brines / Chemical composition / Dissolved gases / Dissolved solids / Geochemistry / Injection / Interstitial water / Methane / Pleasant Bayou No. 2 Well / Salinity / Waste disposal / Waste water /

Abstract by Author

Pleasant Bayou No. 2 in Brazoria County, Texas, is the first well drilled and completed exclusively for evaluating the energy resources from geopressured-geothermal zones. Water samples were obtained from two sandstone units in the geopressured zone (4,737-4,740m and 4,453-4,471m) during production tests of these units. Thirty formation-water samples were also obtained from normally and geopressured zones from five oil and gas fields located to the east and north of the test well in Brazoria and Galveston Counties, Texas. All the samples are from sandstone units within the Frio Clay of Oligocene (?) age. Detailed chemical and isotope analyses of the waters show that: (1) the salinities of water from Pleasant Bayou well are 110,000 and

Geopressured Geothermal Bibliography

130,000 mg/L for the lower and upper sandstone units, respectively; (2) the salinity of water in the geopressured zone from the oil and gas fields ranges from about 55,000 to 75,000 mg/L dissolved solids--the salinity of water in the overlying normally pressured zone is lower and the two waters are not chemically compatible; (3) all the formation waters are modified marine connate waters of the Na-Cl type; (4) Na and Cl constitute more than 90 and 95 percent of cations and anions, respectively; and (5) the concentrations of H₂S (less than 2 mg/L), SiO₂ (less than 120 mg/L), and toxic trace metals are low in comparison with most geothermal waters, but the concentrations of boron (as much as 90 mg/L) and NH₃ (as much as 120 mg/L) are moderately high. The formation waters from Pleasant Bayou No. 2 are saturated with methane; the amount of methane produced, however, is about half of the solubility of methane in fresh water at the same temperatures and pressures. The CO₂ content of this gas (up to 10 mole percent) is much higher than that of natural gas produced from oil and gas wells. Subsurface injection is the method planned for the disposal of spent waters from Pleasant Bayou well. Careful evaluation of the compatibility of these waters with the waters in the injection aquifers will be required to minimize porosity reduction due to precipitation of minerals. Also, the presence of faults in the area and the large volumes of fluids involved may require monitoring wells to detect any pollution of the groundwaters.

241. GGIS-100170/J/GLGYB/*****/A/**/ / / /150302

Title- Geochemistry of Geopressured Geothermal Waters from the Frio Clay in the Gulf Coast Region of Texas

Author(s)- / Callender , E. / Kharaka , Y. K. / Wallace , R. H., JR.

Publication date- Vol. 5 , Issue 4 , April 1977

Pagination- Page 241 , 4 Pages

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geochemical Techniques and Surveys)

Proposed Descriptor(s)- / Acid carbonates / Ammonia / Boron / Calcium / Chemical analysis / Chlorine / Clay / Dilution / Dissolved solids / Frio Formation / Galveston County / Geochemistry / Geopressed systems / Geothermometry / Gulf of Mexico / Gulf Coast / Harris County / Hydrogen sulfide / Interstitial water / Iron / Magnesium / Manganese / Natural gas / Natural gas wells / Nueces County / Oil wells / Potassium / Pressure measurement / PH value / Quartz / Rubidium / Salinity / Silica / Sodium / Strontium / Sulfates / Temperature measurement / Texas / Thermal waters /

Abstract by DOE/RECON

Detailed chemical analyses of 54 formation-water samples from the Frio Clay from 11 oil and gas fields in the Houston-Galveston and Corpus Christi areas, Texas, indicate that the salinity of water in the geopressed zone ranges from about 20,000 to 70,000 MG/L dissolved solids. Samples from many gas wells yield low salinities that are not representative of the true salinity of formation water because of dilution by condensed water vapor produced with natural gas. Quartz and Na-K-Ca geothermometers are used in conjunction with the measured subsurface temperatures to identify the diluted samples and to estimate their true salinities.

242. GGIS-100026/ / /*****A/**/ /US/ /*****

Title- Geochemistry of Some Formation Waters from Louisiana Reservoirs with Normal and Abnormal High Pressures

Author(s)- / Collins , A. G. / Dickey , Parke A. /

Publisher- American Chemical Society

Publication date- 1970

Proposed Descriptor(s)- / Connate water / Geochemistry / Geopressed reservoirs / Geopressure / Ground water / Hydrogeology / Interpretation / Louisiana / Overburden pressure / Pressure buildup / Southwest / Statistical analysis / United States /

243. GGIS-100153/0/GAAPB/*****A/**/ /US/ /150201

Title- Geologic Setting of Hot Springs

Geopressured Geothermal Bibliography

Subtitle- Trans-Pecos, Texas and adjacent Mexico

Author(s)- / Henry , C. D. /

Conference- 11. Annual Meeting of the Geological Society of America,
South-Central Section
El Paso
Texas
USA (March 17 , 1977)

Publication date- Vol. 9 , January 1977

Pagination- Page 25 , 1 Pages

Corporate Author- Texas University, Austin /6203000/.
Austin , Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Proposed Descriptor(s)- / Evaporites / Extrusive rocks / Geologic
control / Geological setting / Hot springs / Limestone / Mexico /
Normal faults / Texas / Thermal waters / Trans-Pecos hot rocks /

Abstract by ERA

Hot springs in Trans-Pecos Texas (up to 47 DEG C) and adjacent Mexico (up to 80 DEG C) are found in a zone along the Rio Grande between the Quitman Mountains and Big Bend National Park. Two distinct types of springs occur: fault controlled and stratigraphically-controlled springs. Most hot springs are on or immediately basin-ward of major northwest-trending, basin margin normal faults. Other springs occur either along similar normal faults more basinward or those cutting middle Tertiary or older bedrock. Springs of both types are located in topographically low areas. It is probable that thermal waters are present in other localities but discharge into highly permeable bolson sediments without reaching the land surface as springs. Thermal waters are in contact with limestone, siliceous volcanic rocks, bolson deposits composed of volcanic rocks and limestones, and evaporites. Chemical equilibrium of the thermal waters should be controlled by these lithologies. Travertine deposits associated with many springs imply low

reservoir temperatures or near-surface reequilibration with limestone. Precipitation of carbonates and flow of thermal waters through siliceous volcanic rocks and evaporites limit the use of silica or Na-K-Ca geothermometers. Recent igneous activity, though common in southern New Mexico, has not been documented in Trans-Pecos Texas and is an unlikely heat source for the thermal waters. Groundwater may be heated by deep circulation along faults in an area of high heat flow due to a thinned crust from late Cenozoic extension.

244. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Geological Aspects of Abnormal Reservoir Pressure in Gulf Coast Louisiana

(Paper 1 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Dickinson , George B. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 4 , 23 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Cameron Parish / Chalkley Field / Economic geology / Gas / Geopressure / Iberia Parish / Lithofacies / Louisiana / Oil and gas fields / Petroleum / Production / Reservoir rocks / Stratigraphy / Structure / Tertiary / United States / Weeks Island /

245. GGIS-100393/O/ /*****/A/80/ /US/ /***** Bebout
DE-AC08-79ET-27111

Title- Geological Aspects of Pleasant Valley Geopressured Geothermal Test Well, Austin Bayou Prospect, Brazoria County, Texas

Geopressured Geothermal Bibliography

Author(s)- / Bebout / Don G. / Gregory , A. Ray / Loucks , Robert G.

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 11 , 35 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) Div. of
Geothermal Energy /9506839/.

DE-AC08-79ET-27111 /

Corporate Author- Texas Univ. /9501193/.

Bureau of Economic Geology
Austin , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (9) / Graph (1) / Map (10) / Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Areal geology / Brazoria County /
Exploratory wells / Fairway analysis / Frio formation / Geologic
structures / Geopressured wells / Geopressured zones / Methane /
Pleasant Bayou No. 1 well / Pleasant Bayou No. 2 well / Sandstone
/ Well characteristics /

Abstract by Author

Regional geological studies of the Frio Formation in Texas resulted in the delineation of several geothermal fairways which contain thick sandstones with fluid temperatures greater than 300 DEG F (149 DEG C); additional studies of these fairways indicated that only one of these, the Brazoria Fairway, contained sandstones with permeabilities greater than the 20 md required to produce fluids at high rates needed for a successful geothermal well. Through further detailed mapping, the Austin Bayou Prospect was identified within the fairway, and a test-well site area was outlined within this prospect. The prospective sandstones at the top of seven progradational cycles occur below the T5 marker of the lower Frio Formation. In the original test-site proposal (Bebout, Loucks, and Gregory, 1978) the T5 marker was projected by BEG to occur at 14,000 ft (4,267 m) below sea level; it is also below this depth that subsurface fluid temperatures exceed 300 DEG F (149 DEG C). It was also predicted that there would be 840 ft (256 m) of net sandstone and that 30 percent would have permeabilities higher than 20 md in the test-site area. At the actual test-well site, 1.75 mi (2.8 km) northeast of the original site, the T5 marker was projected at 13,600 ft (4,145 m) below sea level and 690 ft (210 m) of sandstone was expected below T5. The Department of Energy and General Crude Oil (GCO/DOE) No. 2 Pleasant Bayou well drilled on the actual test-well site to a total depth of 16,500 ft (5,029 m) encountered the T5 marker at 13,960 ft (4,255 m) indicating a slightly steeper dip into the salt-withdrawal basin than originally predicated. A total of 660 ft (201 m) of net sandstone is present beneath the T5 marker, slightly less than the 690 ft (210 m) expected. Present perforations are in the fluvial sandstones of the C, D, and E depositional cycles. Methane solubility of formation waters below the T5 marker is expected to be between 28 and 31 ft³/bbl based on BHSIP data from drill stem tests, salinity analyses of water samples, and equilibrium borehole temperatures. Calculations assume that waters are saturated with methane.

 246. GGIS-100338/R/ /*****/M/79/ /US/ /150201 Eaton
 AC08-79ET27129

**Title- Geological, Geophysical and Engineering Investigation to
 Evaluate the Potential of the Geothermal-Geopressured Reservoir
 in Section 30, T15S-R17E, La Fourche Parish, Louisiana**

Subtitle- Final Report

Author(s)- / Eaton , B.A. /

Publication date- April 1979

Pagination- 55 Pages

Geopressured Geothermal Bibliography

Report/patent- DOE/ET/27129-T1

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9501081/.

AC08-79ET27129 /

Corporate Author- Eaton Industries of Houston, Inc. /9509454/.
Houston ; Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, Geothermal Systems

(USA)

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geophysical techniques and Surveys)

Proposed Descriptor(s)- / Engineering geology / Fault systems / Flow rate / Geologic structures / Geopressure drilling / Geopressured reservoirs / Geopressured wells / LaFourche Parish / Louisiana / Maps / Reservoir pressure / Reservoir temperature / Salinity / Seismic surveys / Site selection / Stratigraphy /

Abstract by TIC

The potential for drilling a well and encountering a geopressure section capable of yielding large quantities of fluids for a two-year flow test is explored. Tabulations, geologic cross

sections, geologic maps, and drilling recommendations are included. Interpretations of seismic data and well information are included with geologic cross sections through the recommended drill site area showing fault locations, reservoir sands, and other pertinent facts concerning the well site subsurface structure.

247. GGIS-100107/R/ /*****/M/**/ /US/ /150100
W-7405-ENG-48

Title- Geology and Potential Uses of the Geopressure Resources of the Gulf Coast

(6,000 MW-Centuries of Recoverable Electric Energy, 200 TCF of Methane)

Author(s)- / Agagu , O. K. / Bebout , D. G. / Dorfman , M. H. /
Hornburg , C. D. / House , P. A. / Howard , H. H. / Johnson , P.
M. / Morin , D. J. / Towse , D. F. /

Publication date- June 1976

Pagination- 23 Pages

Report/patent- UCID--17163

Available- NTIS

(Paper copy

(A02) (\$ 3.50)

(Microform

(A01)

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California Univ. /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Coastal regions / Geopressured systems / Geothermal energy conversion / Geothermal resources / Geothermal power plants / Gulf of Mexico / Heat / Methane / Power potential / Processing / Recovery processes / Texas / USA /

Abstract by ERDA/RECON

The U. S. ERDA has supported efforts to evaluate the potential contribution to the national energy supply of geopressured geothermal resources in the Gulf Coast. Efforts include a program of resource assessment and programs to examine utilization of the resource for the production of electricity and as a source of industrial-process heat. Work on resource assessment has suggested the presence of perhaps as much as 6,000 MW-centuries of recoverable electric energy and of 200 TCF of methane. This program has emphasized finding significantly large sand bodies within the geopressured stratigraphic section in addition to defining the distribution of abnormal fluid pressures and formation temperatures. Regional sand facies analyses conducted thus far indicate five locations in the Frio Formation of central and south Texas where adequately large geopressured geothermal resources may be present. Engineering studies of energy-conversion systems based on total-flow, flashed-steam, and binary-cycle concepts show that development of electric power from the Gulf Coast geopressure resource is technically feasible. Study of use of the resource as process heat in pulp and paper mills and new sugar refineries has shown that these uses also are technically sound. The thermal content of a barrel of geothermal brine can cost as little as 9 mills when credited for recoverable hydraulic energy and methane. The value of heat approaches 50 mills per BBL for certain applications. All programs have pointed out clearly the need for better specific understanding of the resource, especially its dissolved methane content and its ability to produce for tens of years.

248. GGIS-100023/J/AAPGB/ 6004/A/**/ / / /*****

Title- Geology and Potential Uses of Geopressure Resources of Gulf Coast

Author(s)- / House , P. A. / Howard , J. H. / Johnson , P. M. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 60 , Issue 4 , 1976

Pagination- Page 682

Proposed Descriptor(s)- / Economic geology / Economics / Energy
sources / Exploration / ERDA / Geopressure / Geothermal energy /
Gulf Coast / North America / Production / Programs / Resources /
Reviews / Technology / United States / Uses /

249. GGIS-100224/B/ /*****/M/**/ /US/ /150101

Title- Geology of Alternate Energy Resources in the South-Central
United States

Author(s)- / Campbell , Michael D. /

Publisher- Houston Geological Society
Houston, Texas

Publication date- 1977

Pagination- 379 Pages

Available- Geothermal Information Services
318 Cherrywood St.
West Covina
CA
91791

(\$ 25.00)

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Energy source development / Environmental
effects / Exploration methods / Geothermal exploration /
Geothermal resources / Lignite / Louisiana / Texas / Uranium /
Uses /

Abstract by TIC

Geopressured Geothermal Bibliography

Uranium, lignite, and geothermal resources of the South-Central United States are considered from four aspects: frontier exploration and exploration techniques, trend areas and exploration techniques, resources development and utilization, and environmental considerationS. A separate chapter is devoted to an extensive bibliography for each alternative energy source. Separate abstracts were prepared for each chapter. (JSR)

250. GGIS-100374/0/ /*****/A/79/ /US/ /***** Meidev

Title- Geophysical Methods in Reservoir Engineering and Reservoir Management

(2. Session: EPRI Project Reports)

Author(s)- / Meidav , Tsvi /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 31 , 7 Pages

Report/patent- EPRI-WS-79-166

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (1) / Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Exploitation / Forecasting / Geophysical surveys / Geothermal wells / Measuring methods / Monitoring / Reservoir engineering / Reservoir properties / Resource assessment /

Abstract by Author

Economic pressures will always militate for the development of each discovered reservoir to its ultimate capacity, provided that the reservoir does not decline to sub-economic pressure, temperature and flow before the power plant has reached its ultimate design life, which is typically taken as 30 years. The reservoir manager must call upon a variety of both standard and exotic geoscientific methods which assist in estimating the ultimate reservoir capacity. In doing that, the reservoir manager must detect changes in any of the parameters which have been employed in the simulation forecast, and modify his forecast accordingly. Management must be advised as far ahead in advance as possible should current monitoring indicate that the reservoir is likely to decline at a rate faster than anticipated, so that proper responses are formulated and acted upon. Various methods may be employed to provide a prediction of reservoir characteristics and their changes over time. These techniques may be employed for estimation of reservoir volume, temperature, changes in volume and temperature, and other characteristics, in the three distinct phases of reservoir exploration and utilization: (a) pre-drilling exploration, (b) during drilling, and (c) during field exploitation. This paper discusses those techniques which are related to reservoir monitoring during field exploitation.

251. GGIS-100996/ / /*****A/79/ /US/ /***** Mumme

Title- Geopressure in Houma and Hollywood fields, Louisiana

Author(s)- / Ferrell , R.E. Jr. / Mumme , S.T. /

**Conference- Gulf Coast Asso. of Geological Societies 29th Annual Meeting
San Antonio
Texas
USA (October 10 , 1979)**

Publication date- Vol. 63 , Issue 9 , 1979

Pagination- Page 1609 , 1 Pages

Geopressured Geothermal Bibliography

Note- Abstract only of a paper presented at the 29th annual meeting, Gulf Coast Association of Geological Societies and the Gulf Coast Section, Society of Economic Paleontologists and Mineralogists, San Antonio, Texas, October 10-12, 1979

Corporate Author- Louisiana State Univ., Baton Rouge /3826000/.
Baton Rouge , Louisiana , USA

Proposed Descriptor(s)- / Elevated temperature / Fluid flow / Gas production / Geopressured zones / Growth faults / Leakage / Lost circulation / Louisiana / Resource assessment / Salinity /

Abstract by Document

The Houma and Hollywood fields comprise one of the largest gas and gas-condensate producing areas in Louisiana. Three zones, the hydro pressured Bigenerina humblei and Krumbhaar sands and the geopressured Southdown-Hollywood sands, are responsible for estimated ultimate recoveries of 30 million bbl of condensate and 2.5 Tcf on nonassociated gas. The Hollywood shale forms a geopressure seal 1,200 to 2,000 FT (360 to 600 M) thick over most of the area. Pressure differentials between the Krumbhaar and Southdown-Hollywood sands range from 3,700 to 7,200 PSI (25,512 to 49,644 kPa). The Houma-Hollywood field area is from the geopressured zone. The higher than normal temperatures and low salinities at the base of the hydro pressured zone provide evidence for this proposed leakage. The routes of fluid escape are numerous and are associated with the large growth faults of the area. The fluid escape paths are identified by the use of structure, temperature, and salinity maps. The absence of deep wells in parts of the study area and the uncertainties of the log-derived temperatures and salinities may produce some uncertainties in the interpretations. However, our observations are consistent with predictions based on the present theories concerning geopressure processes.

252. GGIS-100284/R/ /*****/A/78/C/US/ /***** Rehm

Title- Geopressure Blowout Control

(Book 4)

Subtitle- Phase II: Program Plan for Geopressure Blowout Control

Author(s)- / Goins , W.C., Jr. / Rehm , William A. /

Journal- A Study of Technology in Well Control for Geothermal and Geopressured Wells

Publication date- November 1978

Pagination- 18 Pages

Report/patent- IDO-1603-1

Available- NTIS

(Paper Copy

(A13) (\$ 11.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (1) /

Table

Proposed Descriptor(s)- / Blowouts / Cost / Cost benefit analysis /
Detection / Drilling fluids / Equipment / Geopressure drilling /
Geopressured wells / Hazards / Personnel / Reservoir pressure /
Reservoir temperature / Safety / Well casings / Well drilling /

Abstract by Author

A safe and assured geopressure drilling program is at the very edge of the state-of-the-art and to assure the safe drilling of the extremely hot, deep, and pressured well requires strong supervisory control and improved detection equipment. Geopressure drilling is hazardous because of the extreme pressures and the presence of flammable gas. It is difficult on paper to explain the relative paradoxes of dealing with a geopressured well. Despite the difficulty of interpreting the conditions deep in the ground, the geopressured well can be kept under control by the mud system in conjunction with a good casing program. Even if the well kicks, it can be controlled in a simple and straight forward manner. However, an error in judgment or equipment that malfunctions at a critical moment can cause situations that are difficult to analyze and control. The drilling personnel are the real key to avoiding blowouts. The following report on the Development Program for Geopressure Well Control reflects the importance of the people in the first series

Geopressured Geothermal Bibliography

of recommendations. These indicate the training and information that are paramount to avoiding blowouts. Further recommendations suggest that the detection equipment be made more reliable and that the unknown condition of the blowout control equipment under conditions of temperature and pressure be examined. Finally the recommendation is made that a procedures and operations guide be made available to the Federal personnel and their contractors. Recommended total expenditures for a basic program over a five year period are \$790,000. This budget and time will provide for the development, demonstrations, and technology transfer for improved geopressure blowout control procedure and equipment. Savings in excess of 90 times the cost of the program can be expected from the outlined program.

253. GGIS-100284/R/ /*****/A/78/B/US/ /***** Rehm

Title- Geopressure Blowout Control

(Book 2)

Subtitle- Phase I: Study of Existing Technology

Author(s)- / Goins , W.C., Jr. / Rehm , William A. /

Journal- A Study of Technology in Well Control for Geothermal and Geopressured Wells

Publication date- November 1978

Pagination- 99 Pages

Report/patent- IDO-1603-1

Available- NTIS

(Paper Copy

(A13) (\$ 11.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (35) /

Ref.

Proposed Descriptor(s)- / Blowout preventers / Blowouts / Bottom Hole Pressure / Depth / Drilling equipment / Erosion / Geopressure drilling / Geopressured wells / Geopressured zones / Hazards / Reservoir pressure / Reservoir temperature / Safety / Water production /

Abstract by Author

Geopressure drilling is hazardous because of the pressures and gas that will be encountered. The hazard is compounded by the great depth of the wells and the difficulty in properly interpreting the well conditions. The present state-of-the-art provides no guaranteed safe and assured manner to drill the very high pressured geopressured well. Safeguards do exist that reduce the hazard to what has been economically acceptable. The equipment, techniques, and guidelines that have been developed for drilling into high pressure and geopressured drilling for high pressured oil and gas fields. Equipment to detect the potential blowout in its earliest stages is unreliable and needs improvement. The standards on well-control equipment do not encompass the higher temperatures postulated for geopressure water and gas production and so the temperature limits need to be examined. The real key to geopressure drilling lies in well site supervision and well programming. These are harder to grasp problems than equipment limitations, but the pressures from the geopressured well are so great (10,000 to 20,000 PSI) and the problem of sand erosion of equipment is severe, that the geopressure well must be controlled at all times.

254. GGIS-100283/R/ /*****/M/79/ / / /***** Samuels
W-7405-eng-26

Title- Geopressure Energy Resource Evaluation

Author(s)- / Samuels , Garland /

Publication date- May 1979

Pagination- 72 Pages

Geopressured Geothermal Bibliography

Report/patent- ORNL/PPA--79/2

Available- NTIS

(Paper Copy

(A05) (\$ 6.05)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9505475/.

W-7405-eng-26 /

Corporate Author- Oak Ridge National Lab. /4832000/.
Oak Ridge , Tennessee , USA

Auxiliary expression(s)-

Illus.

/ Map (4) / Graph (7) /

Table

Appendix

Ref.

Proposed Descriptor(s)- / Aquifers / Compressibility / Cost /
Economics / Exploitation / Flow rate / Geopressured reservoirs /
Gulf of Mexico / Louisiana / Low temperature / Methane / Mexico /
Natural gas / Permeability / Resource assessment / Texas / Water
production / Well completion / Well spacing /

Abstract by Author

The geopressured aquifers that extend along the northern Gulf of Mexico are a large, perhaps the largest, potential source of geothermal energy and natural gas in the United States. Because of the high cost of completing wells into these formations and their relatively low temperatures (200 to 400 DEG F), the utilization of the geothermal energy will be highly dependent on, and of secondary importance to, the value of the methane. The economics of extracting either the geothermal energy or natural gas from these aquifers does not look promising. The

combined requirements of high well flow rates (40,000 bbl/day, long life (20 years), and the necessity for close well spacing to minimize the cost of the collection system may be incompatible with the actual characteristics of the reservoirs. These factors place such stringent requirements on the reservoir size, permeability, and compressibility, or specific storage coefficient, that the number of promising production areas may be severely limited.

255. GGIS-100053/J/JPTJA/*****/A/77/ / / /***** Eaton

Title- Geopressure Magnitude Determination using a Graphical Method

Author(s)- / Eaton , B.A. /

Publication date- Vol. 29 , Issue 4 , 1977

Pagination- Page 404

Proposed Descriptor(s)- / Geopressure / Graphical methods / Rock properties /

256. GGIS-100299/J/ /*****/A/**/ / / /*****

Title- Geopressure Zones Studied as Potential Energy Source

Publisher- Twin Coast Newspapers, Inc.
New York, NY

Journal- J. Commerce

Publication date- Vol. 332 , Issue 2392 , April 5 , 1977

Pagination- Page 9 , 1 Pages

Proposed Descriptor(s)- / Geopressured wells / Geopressured zones / Geothermal brines / Louisiana / Natural gas wells / Sand production / Water production /

Abstract by PROMPT

Geopressured Geothermal Bibliography

Geopressure zones are potential energy sources. Researchers are conducting experiments on a south Louisiana gas well to test a theory that vast pools of hot, pressurized underground water contain enough gas to dwarf any discovery in the US to date. The well will tap a geopressure zone 12,000 feet deep, according to Dr. O. C. Karkalits, dean of the engineering school at McNeese State University (Lake Charles, La.). The test will determine how much gas is contained in the pressurized water in the zone and if producing the water will cause sand in the underground formation to flow into the well pipe and plug it. The project is being sponsored by ERDA.

257. GGIS-100011/0/ /*****/A/**/ / / *****/

Title- Geopressured systems

(3. Subgroup Paper)

Author(s)- / Dorfman , Myron /

Conference- Magnitude and Deployment Schedule of Energy Resources

Publication date- September 1975

Pagination- Page 70 , 7 Pages

Report/patent- CONF--750720-

Note- NTIS 2/4/77 #6 L. 971

Auxiliary expression(s)-

Illus.

Ref.

Proposed Descriptor(s)- / Energy resources / Geology / Geopressured systems / Tectonics /

Abstract by NTIS

Geothermal zones and power production estimates are discussed. Map shows resource areas. 8 refs.

258. GGIS-100393/0/ /*****/A/80/ /US/ /***** Byrnes

Title- Geopressured Aquifer Simulator

Author(s)- / Byrnes , Alan P. / Kelkar , Sharad M. / Randolph ,
Phillip L. / Rockar , Evelyn M. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 933 , 27 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Brooklyn Union Gas Co., NY (USA) /9508317/.

Sponsor- / Columbia Gas System Service Corp., Wilmington, DE (USA)
/9508201/.

Sponsor- / Consolidated Natural Gas Service Co., Inc., Cleveland, OH
(USA) /9509886/. /

Corporate Author- Institute of Gas Technology /9500656/.
Chicago , IL , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Photo (1) /

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Aquifers / Brines / Compaction /
Compression / Core analysis / Geopressured reservoirs /
Laboratory equipment / Laboratory testing / Methane /
Permeability / Reservoir properties / Simulation / Solubility /

Abstract by Author

Ten natural gas companies have funded the Institute of Gas Technology (IGT) development of a laboratory facility for fluid and core analyses at temperatures and pressures characteristic of geopressured aquifers. The facility has been designed and constructed to measure the following parameters at pressures up to 20,000 psi and temperatures to 450 DEG F: (1) solubility of methane in brines from actual geopressured aquifers; (2) dependence of compression and compaction reservoir drive upon pressure; (3) dependence of permeability upon reservoir pressure and temperatures; (4) dependence of relative permeabilities to gas and to water upon the water saturation of pores, pressure, and temperature. Brine pumped through the core can be either gas-free or from a reservoir of brine with gas in solution. The facility is modular in design with major components-- including the reservoir of gas-saturated brine, high-pressured, high-temperature brine are fabricated from holder--housed in a large oven. All components contracted by high-pressure, high-temperature brine are fabricated from Hastelloy C-276, Elgaloy, or Inconel 625 to avoid corrosion. The temperatures, pressures, differential pressure, and flow rates are controlled and/or recorded by a digital microcomputer/microprocessor. Operation will be controlled from a separate room and programmed; hands-off operation will be the normal mode of operation. The facility has been constructed and is now being tested. Following performance testing with Berea sandstone, initial emphasis will be upon studies of brine and available core from DOE's Pleasant Bayou No. 1 and No. 2 wells.

259. GGIS-100273/J/ /*****/A/78/B/ / /***** Bernard

Title- Geopressured Aquifers--

Subtitle- A New Source of Natural Gas?

Author(s)- / Bernard , William J. /

Journal- Panhandle Mag.

Publication date- Issue 2 , 1978

Pagination- Page 13 , 8 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (9) / Map (1) /

Proposed Descriptor(s)- / Aquifers / Binary cycle power generation /
Direct energy utilization / Economics / Energy transfer /
Environmental effects / Geology / Geopressured drilling /
Geopressured zones / Gulf Coast / Legal aspects / Louisiana /
Natural gas / Texas /

Abstract by Energyline

The potential of geopressured aquifers to yield natural gas has received much publicity lately. The geologic basin along the Gulf of Mexico contains subsurface geopressured formations. The geological development of such aquifers is reviewed. Energy can be recovered from these formations in the form of hydraulic and thermal power, and natural gas. However, special equipment will have to be designed to recover the energy. Possibilities for using the energy include direct use of the heat, conversion in a binary engine, or extraction of the dissolved natural gas. Legal, environmental, and transportation problems are listed. The economic feasibility of this resource must be determined.

260. GGIS-100355/J/GYPSA/*****/A/80/ / / *****/ Dorfman

Title- Geopressured Formation Parameters of the Armstrong and Corpus Christi Fairways, Frio Formation (Oligocene), Central and South Texas

(Paper no. GT-11)

Author(s)- / Dorfman , M. H. / Gregory , A. R. / Hainey , B. W. /
Ritchie , M. S. /

Publication date- Vol. 45 , Issue 4 , April 1980

Pagination- 1 Pages

Note- Abstract only of a paper presented at the 49th Annual International Meeting and Exposition Society of Exploration Geophysicists, New Orleans, Louisiana, Nov. 4-8, 1979

Local Availability- Geol.

Geopressured Geothermal Bibliography

Corporate Author- Texas Univ., Austin /6203000/.
Austin , Texas , USA

Proposed Descriptor(s)- / Acoustic measurements / Brazoria County /
Elasticity / Geopressured wells / Sonic logging / Sound waves /
Texas /

Abstract by Author

Digital waveform recordings were obtained from a long-spaced sonic logging tool in the Dept. of Energy geothermal well in Brazoria County, Texas. Analyses of these recordings are compared with conventional velocity logs, and with other logs obtained in this well and a second nearby well. Large (>20dB) variations observed in the amplitude of the P-wave are apparently due to lithologically controlled "coupling" variations. Direct interpretation of the sonic waveforms provides a basis for obtaining improved velocity logs in those sections where conventional sonic logs may be significantly in error due to waveform amplitude variations. In general, the long-spaced sonic log waveforms appear to provide considerable useful information regarding in-situ elastic properties which is not available from conventional logs. The expected reflecting properties of potential objective sands in the deep geopressure environment, and in shallower normal pressure environments, is discussed on the basis of this analysis.

261. GGIS-100002/0/PASPC/ 1/A/**/ /US/ /*****

Title- Geopressured Gas Reservoir Performance in the Hollywood Field

Author(s)- / Atwater , G. I. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 1 , Issue 1 , 1967

Pagination- Page 11 , 7 Pages

Proposed Descriptor(s)- / Economic geology / Geopressure / Gulf Coast
/ Hollywood Field / Natural gas / Production / United States /

262. GGIS-100237/J/AGAMA/*****/A/**/ / / *****/

Title- Geopressured Gas Resources Subject of A.G.A. Seminar

Journal- Am. Gas. Assoc. Mon.

Publication date- Vol. 60 , Issue 9 , September 1978

Pagination- Page 28 , 2 Pages

Auxiliary expression(s)-

Illus.

/ Photo. (2) /

Proposed Descriptor(s)- / Commercialization / Gas production /
Geopressure resources / Geopressured wells / Louisiana /
Meetings / Methane / Research programs / Texas / Well drilling /

Abstract by GGIS

Significant commercial production of geopressured methane to supplement the nation's gas supply is not expected for at least 10 to 15 years. That was the consensus of opinion of the guest speakers at the American Gas Association's Seminar on Geopressured Gas Resources, June 13, 1978 in Arlington, Virginia. Commercial feasibility will depend largely upon solution of certain critical problems such as; the ability to locate and drill reservoirs having suitable flow rates, temperatures, methane content and long-term productivity to justify further development; the determination that environmental problems (potential subsidence, satisfactory water disposal and resolution of thermal pollution effects) can be coped with successfully; and the resolution of legal barriers to geothermal development, including separation of geothermal and water rights, resolution of the horizontal divestiture problem and an accurate legal description of the resources. Results of field operations on test wells in Texas and Louisiana indicate that additional drilling is warranted.

263. GGIS-100220/J/OCIDA/*****/A/76/ / / *****/ Weeden

Title- Geopressured Geothermal Energy

Subtitle- Will it Work?

Geopressured Geothermal Bibliography

Author(s)- / Weeden , S. L. /

Journal- Ocean Ind.

Publication date- Vol. 11 , Issue 6 , 1976

Pagination- Page 119 , 8 Pages

Proposed Descriptor(s)- / Geopressured systems / Geothermal energy /
Gulf of Mexico / Gulf Coast /

264. GGIS-100251/R/ /*****/M/**/ /US/ /150201
EY-76-S-05-4891

**Title- Geopressured Geothermal Fairway Evaluation and Test-Well Site
Location, Frio Formation, Texas Gulf Coast**

Author(s)- / Bebout , D. G. / Gregory , A. R. / Loucks , R. G. /

Publication date- January 1978

Pagination- 126 Pages

Report/patent- ORO--4891-4

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Proposed Descriptor(s)- / Austin Bayou Prospect / Distribution / Frio
Formation / Geologic cross sections / Geopressure resources /
Geopressured reservoirs / Gulf Coast / Regional analysis /

Resource evaluations / Resource potential / Sandstone / Site
selection / Texas /

Abstract by TIC

Tertiary strata of the Texas Gulf Coast comprise a number of terrigenous depositional wedges, some of which thicken abruptly at their downdip ends as a result of contemporaneous movement of growth faults and underlying salt. The Frio Formation, one of these wedges, has been studied regionally by means of a grid of correlation cross sections aided by micropaleontological control. By means of these sections, the Frio was subdivided into six map units; maps of sandstone distribution within these units delineate principal elongate sandstone trends parallel to the Gulf Coast composed of deltaic, barrier-bar, and strandplain sandstones. These broad regional studies, followed by detailed local investigations, were pursued in order to delineate prospective areas for production of geopressed geothermal energy. A prospective area must meet the following minimum requirements: reservoir volume of 3 cubic miles, minimum permeability of 20 millidarcies (MD), and fluid temperatures of 300 DEG F. Several geothermal fairways were identified as a result of this Frio study. In summary, detailed geological, geophysical, and engineering studies conducted on the Frio Formation have delineated a geothermal test well site in the Austin Bayou Prospect which extends over an area of 60 square miles. A total of 800 to 900 feet of sandstone will occur between the depths of 13,500 and 16,500 feet. At least 30% of the sand will have core permeabilities of 20 to 60 millidarcies. Temperature at the top of the sandstone section will be 300 DEG F. Water, produced at a rate of 20,000 to 40,000 barrels per day, will probably have to be disposed of by injection into shallower sandstone reservoirs. More than 10 billion barrels of water are in place in these sandstone reservoirs of the Austin Bayou Prospect; there should be approximately 400 billion cubic feet of methane in solution in this water.

265. GGIS-100000/T/ /*****/C/**/ /US/ /*****

Title- Geopressed Geothermal Information System

Author(s)- / Hill , Thomas R. /

Publisher- The University of Texas at Austin: Center for Energy
Studies
Austin, Texas (USA)

Publication date- November 1 , 1977

Geopressured Geothermal Bibliography

Local Availability- CES

Sponsor- / ERDA /9500868/. /

Corporate Author- Texas University, Austin /6203000/.

Center for Energy Studies
ENS 143 , Austin , Texas , 78712 , USA

Abstract by CES

The Center for Energy Studies at The University of Texas at Austin is developing the Geopressured Geothermal Information System to provide a coordinated information resource for support of research in geopressured geothermal energy. Its contents currently include a thesaurus, a bibliography, well log traces and well head statistics with index, research project statistics and abstracts, sand profiles, and the results of a social survey of attitudes in a county slated for a pilot development site. The digitized well logs provide a basis for a detailed regional study of formation parameters which are expected to prove useful to researchers in nongeothermal fields. These parameters will be displayed in both tabular and graphic (outline maps, histograms, etc.) formats. The system uses a variety of automated text-processing and computational software to provide interactive as well as batch access. Following initial announcement of system availability to potential users, further documentation will be presented in a quarterly newsletter and in a series of users' bulletins. Funds for system development have been furnished by the Energy Research and Development Administration, several private utilities, and The University of Texas.

266. GGIS-100090/ / /*****/M/**/ / / /*****

Title- Geopressured Geothermal Investigations in South Texas

(7/74 to 6/75)

Author(s)- / Dorfman , M. H. /

Publication date- 1975

Note- Funding \$100,000

Available- University of Texas, School of Engineering
Univ. of Texas

School of Engineering, Petroleum Engineering
200 W. 21ST
Austin, Texas 78712

Sponsor- / Texas Utilities Services, Inc. /

Corporate Author- Central Power and Light Co.

Abstract by Energyline

This research will augment the assessment of the geothermal resource in the Texas Gulf Coast region, the phase 0 scope-of-work and management study of the feasibility of the use of geopressured geothermal fluids on the Gulf Coast, and other research proposals related to the investigation of the geothermal potential of the Texas coastal area. It is anticipated that the resource will lead to specific objectives, such as site selection, environmental impact studies, drilling design and well drilling and practical demonstration of the use of geothermal fluids at test bed facilities. These funds will serve as seed funds for new projects needed for the overall feasibility and assessment studies and will also help unify and integrate all components in the geopressured geothermal area within the Center for Energy Studies.

267. GGIS-100095/ / /*****M/**/ / /*****

Title- Geopressured Geothermal Investigations in South Texas

(7/75 to 6/76)

Author(s)- / Delatorre , F. G. / Dorfman , Myron H. / Hyun , I. /
Lui , W. Q. / Vancott , M. /

Available- University of Texas, School of Engineering
Univ. of Texas
School of Engineering, Petroleum Engineering
200 W. 21ST
Austin, Texas 78712

Sponsor- / Texas Utilities Services

Sponsor- / Gulf States Utilities /

Geopressured Geothermal Bibliography

Corporate Author- Central Power and Light Co.

Abstract by Energyline

A comprehensive program to delineate the extent of geopressured geothermal resources in Texas, including plans for reservoir evaluations and well design. This project will be conducted through the Center for Energy Studies.

268. GGIS-100023/J/AAPGB/ 6009/A/**/ / / /*****

Title- Geopressured Geothermal Prospects in the Frio Formation of the Texas Gulf Coast

Subtitle- Ideal Versus Actual Models

Author(s)- / Bebout , D. G. / Loucks , R. G. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 60 , Issue 9 , 1976

Pagination- Page 1606 , 2 Pages

Note- NTIS: (EN).

269. GGIS-100126/I/ /*****/M/**/ / / / 0

Title- Geopressured Geothermal Resource

Author(s)- / Austin , A. L. / Howard , J. H. /

Note- ERDA/RECON: "Expenditures: 0; 20000 " RCS PERF Type: FF "
Research location: TX: CA " Publication: Some Elements of the
Northern Gulf of Mexico Basin Geopressure Energy Resource,
UCRL--74807 REV. L, R. Myers R. Nelson, J. Howard, R. Austin
(LLL) GEORES Candidates

Sponsor- / U.S. Atomic Energy Comm. Div. App. Tech.

Sponsor- / ERDA /

Corporate Author- Lawrence Livermore Lab.
California , USA

Proposed Descriptor(s)- / Feasibility studies / Geopressured systems
/ Geothermal energy / Geothermal resources /

270. GGIS-100085/ / /*****/M/**/ / / /*****

Title- Geopressured Geothermal Resource Utilization Development
(7/75 to 6/76)

Author(s)- / Austin , A. L. / Howard , J. H. /

Publication date- 1975

Note- Estimated Calendar Year Funding Reported as 1975 \$200,000

Available- Univ. of California, Lawrence Livermore Lab.
Univ. of California
Lawrence Livermore Laboratory
P.O. Box 808
Livermore, California 94550

Proposed Descriptor(s)- / Feasibility studies / Geopressure resources
/ Gulf Coast / Methane / Resource assessment / Resource
development / Total flow systems /

Abstract by Energyline

The purpose of this program is to carry out the necessary development work leading to methods for economical recovery and conversion of the energy stored in geopressured deposits. Known deposits underlie the Gulf Coast region of the United States, where there may be enough energy stored in form of heat and pressure to supply millions of megawatt-years of electric energy. Also, it is estimated that significant quantities of methane are associated with these water deposits. The geopressured resource development program will initially emphasize resource and reservoir assessment activities.

Geopressured Geothermal Bibliography

Conversion of the energy to electricity may utilize the higher efficiency total flow concept, once developed. The first task will be to carry out a general feasibility study including sufficient field work to better define the nature and extent of exploitable reservoirs.

271. GGIS-100321/ / /*****M/79/ /US/ /***** Hainey

Title- Geopressured Reservoir Parameters of the Armstrong Fairway,
Kenedy County, South Texas

Author(s)- / Hainey , Bryant Wilson /

Publication date- May 1979

Pagination- 97 Pages

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Illus. (23) /

Ref.

Appendix

Proposed Descriptor(s)- / Bottom hole temperature / Electrical logging / Frio formation / Geopressured reservoirs / Kenedy County / Permeability / Porosity / Productivity / Reservoir properties / Reservoir temperature / Reservoir pressure / Salinity / SP logging / Texas / Well logging /

Abstract by Author

The geopressured reservoir parameters of the Armstrong Fairway in Kenedy County, South Texas were studied to help determine the area's potential for geothermal energy production. The history of oil and gas development in the region and the geology of the area were reviewed. Formation pressures were determined from shale resistivities of electric logs, the salinity of formation waters were measured from SP logs and equilibrium formation temperatures were calculated from logging bottom hole temperature data. The rock properties of porosity and permeability were also examined. While the Armstrong Fairway

contains extensive, thick, geopressured sands in the Frio formation, temperatures are only moderately hot except at great depth and salinities in geopressured sands are probably too high for the water to be used for consumption of irrigation and will have to be reinjected. In addition, the low permeability of Frio sandstones may restrict the deliverability of a well in this area. Based on this study of reservoir parameters, the Armstrong Fairway appears to be only marginally attractive as a source of geopressured geothermal energy.

272. GGIS-100076/R/ / 7/A/**/ / / /299000

Title- Geopressured Resource R and D

(Appendix G in Program Definition for the Development of Geothermal Energy; Appendices, Vol. 3)

Publisher- Jet Propulsion Lab.
Pasadena, California

Publication date- Vol. 3 , 1975

Pagination- 8 Pages

Report/patent- JPL--5040-6 (Vol.3)

Proposed Descriptor(s)- / Geophysical surveys / Geopressured systems
/ Geothermal exploration / Geothermal resources / Research
programs / Thermal waters / Well logging /

Abstract by ERDA/RECON

This appendix provides a background on the current knowledge and uncertainties associated with the development of this potentially valuable resource. (MOW)

273. GGIS-100296/J/HYPRA/*****/A/77/ / / /***** Holt

Title- Geopressured Resource:

Subtitle- A Sleeping Giant

Geopressured Geothermal Bibliography

Author(s)- / Holt , Ben /

Journal- Hydrocarbon Process

Publication date- Vol. 56 , Issue 7 , July 1977

Pagination- Page 96 , 3 Pages

Corporate Author- Ben Holt Co.
Pasadena , California , USA

Auxiliary expression(s)-

Illus.

/ Figure (2) /

Ref.

Proposed Descriptor(s)- / Economics / Electric power / Environmental effects / Geopressure resources / Gulf Coast / Legal aspects / Louisiana / Methane / Power generation / Resource assessment / Texas /

Abstract by Author (rev.)

At depths ranging commonly from 10,000 to 20,000 feet and extending onshore and offshore in a broad band 100 to 200 miles wide and 800 miles long in Texas and Louisiana is an immense body of hot water containing dissolved methane and existing at pressures exceeding hydrostatic. This is the Gulf Coast geopressured resource. From oil and gas well drilling experience the resource is known to exist. The technology to recover and utilize the energy also exists. But, no one knows as yet how much energy can be recovered or at what cost. A knowledge of and an interest in this resource have so far largely been confined to the geothermal community. The geopressured resource is potentially of great importance to the future of the hydrocarbon processing industry, centered as it is in the same geographical area. The author reviews the potential methane content, electric power generating capacity, resource utilization schemes, and legal, economic, and environmental problems associated with this geopressured area.

274. GGIS-100300/J/MEENA/*****/A/**/ / /*****

Title- Geopressured Water/Gas as Potential Energy Source

Journal- Mech. Eng.

Publication date- Vol. 101 , Issue 4 , April 1979

Pagination- Page 48 , 1 Pages

Local Availability- ENG

Proposed Descriptor(s)- / Binary cycles / Electric power /
Geopressured zones / Louisiana / Natural gas / Power generation /
Research programs / Texas /

Abstract by GGIS

Research sponsored by the Electric Power Research Institute and performed by Southwest Research Institute is examining the commercial recovery of natural gas from brine extracted from Texas and Louisiana geopressured zones. To realize maximum resource utilization researchers are also investigating binary-cycle systems for heat conversion and ways of strengthening existing equipment for converting pressure into electric energy.

275. GGIS-100341/J/PLGJA/*****/A/79/ / / *****/ Rosenberg

Title- Geopressured Zones Key to Tomorrow's Gas Supplies

Author(s)- / Rosenberg , Robert B. /

Journal- Pipeline Gas J.

Publication date- Vol. 206 , Issue 11 , September 1979

Pagination- Page 52 , 4 Pages

Corporate Author- Gas Research Inst. /9507097/.
Chicago , Illinois , USA

Proposed Descriptor(s)- / Economics / Gas production / Geopressured
zones / Methane / Resource assessment / Technology assessment /

Abstract by Compendex

Geopressured Geothermal Bibliography

Geopressured zones, one of the unconventional sources of natural gas, have generated much interest in the U.S. recently. This article briefly describes the current status of geopressured-gas technology and indicates the primary areas of uncertainty that must be resolved before the size of the resource can be fully assessed. Natural gas from geopressured zones could provide from 150 to 2000 trillion cu ft of gas in the future--anywhere from 5 to 100 years' supply at present consumption rates--if the zones can be economically and efficiently produced.

276. GGIS-100340/R/ /*****/M/**/ / / /150901

Title- Geopressured-Geothermal Drilling and Testing Plan

Subtitle- General Crude Oil - Dept. of Energy Pleasant Bayou No. 2 Well, Brazoria County, Texas

Publication date- April 1977

Pagination- 103 Pages

Report/patent- NVO-194 (Rev. 1)

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Corporate Author- U.S. Department of Energy / 950710/.

Nevada Operations Office
Las Vegas , Nevada , USA

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Drilling Hardware and Technology)

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Geothermal Reservoir and Well Performance)

Proposed Descriptor(s)- / Brazoria County / Disposal wells / Drill
cores / Drilling fluids / Drilling rigs / Environmental effects /
Erosion / Geopressure drilling / Geopressured systems /
Geopressured wells / Injection / Licencing / Management / Pipes /
Planning / Safety / Site selection / Site preparation / Testing /
Texas / Well casings /

Abstract by TIC

A program to conduct the drilling, completion and testing of one
geopressured-geothermal well (Pleasant Bayou No. 1) and two
disposal wells in Brazoria County, Texas, is described.
Problems with Pleasant Bayou No. 1 forced its plugging back to
the bottom of the 13 3/8 casing at approximately 8,400 feet.
This hole will be used as one of the two disposal wells. This
revised plan describes moving the rig 500 feet southwest of the
Pleasant Bayou No. 1 and drilling the offset Pleasant Bayou No. 2
using the same program objectives. The following are covered in
this plan: generalized site activities, occupational health and
safety, drilling operations, production testing, environmental
assessment and monitoring program, permits, program management,
reporting, and schedule.

277. GGIS-100339/R/ /*****/M/**/ /US/ /150303

Title- Geopressured-Geothermal Drilling and Testing Plan

Subtitle- General Crude Oil - Dept. of Energy Pleasant Bayou No. 1
Well, Brazoria County, Texas

Publication date- May 1978

Pagination- 102 Pages

Report/patent- NVO-194

Geopressured Geothermal Bibliography

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Corporate Author- U.S. Department of Energy /9505710/.

Nevada Operations Office
Las Vegas , Nevada , USA

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Exploratory Drilling and Well Logging)

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Geothermal Reservoir and Well Performance)

Proposed Descriptor(s)- / Brazoria County / Compaction / Depth / Disposal wells / Dissolved gases / Environmental effects / Flow rate / Fluid pressure / Geopressure drilling / Geopressured wells / Geothermal fluids / Ground subsidence / Gulf Coast / Health hazards / Permeability / Planning / Porosity / Pressure decline / Reservoir pressure / Reservoir temperature / Reservoir thickness / Resource assessment / Rock properties / Safety / Sampling / Site preparation / Surface equipment / Testing / Texas / Viscosity /

Abstract by TIC

As a result of geopressured resource assessment studies in the Gulf Coast region, the Brazoria fairway, located in Brazoria County, Texas was determined to be an optimum area for additional studies. A plan is presented for drilling completion, and testing of one geopressured-geothermal well and two disposal

wells in Brazoria County, Texas. The objectives of the well drilling and testing program are to determine the following parameters: reservoir permeability, porosity, theickness, rock material properties, depth, temperature, and pressure; reservoir fluid content, specific gravity, resistivity, viscosity, and hydrocarbons in solution; reservoir fluid production rates, pressure temperature, production decline, and pressure decline; geopressed well and surface equipment design requirements for high-volume production and possible sand production; specific equipment design for surface operations, hydrocarbons distribution, and effluent disposal; and possibilities of reservoir compaction and/or surface subsidence.

278. GGIS-100153/0/GAAPB/*****/A/**/ /US/ /150201

**Title- Geopressed-Geothermal Energy from the Frio Formation,
Texas Gulf Coast**

Subtitle- Review of Ideal and Actual Prospects

Author(s)- / Bebout , D. G. / Loucks , R. G. /

**Conference- 11. Annual Meeting of the Geological Society of America,
South-Central Section
El Paso
Texas
USA (March 17 , 1977)**

Publication date- Vol. 9 , January 1977

Pagination- Page 4 , 1 Pages

**Corporate Author- Texas University, Austin /6203000/.
Austin , Texas , USA**

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Brazoria County / Formation thickness / Frio Formation / Geological surveys / Geopressure exploration / Geopressured reservoirs / Geopressured zones / Geopressured systems / Geothermal exploration / Gulf Coast / Gulf of Mexico / Methane / Permeability / Sand / Shale / Tertiary Period / Texas /

Abstract by DOE/RECON

The Bureau of Economic Geology, the University of Texas at Austin, has been searching for geopressured geothermal prospects in the downdip portion of several offlapping, basin-ward-thickening wedges of Tertiary sand and shale along the Texas Gulf Coast. The ideal prospect model is a reservoir with a volume of at least three cubic miles (which translates into a cumulative sand thickness of greater than 300 feet and areal extent of 50 square miles), greater than 300/SUP O/F subsurface fluid temperature, permeability greater than 20 millidarcies, and water saturated with methane. Several prospective geothermal fairways have been identified in the Frio Formation of Kenedey, Nueces, Matagorda, and Brazoria Counties. However, only the prospect in the Brazoria Fairway (the Austin Bayou Prospect) meets all of the requirements of the ideal geopressured geothermal prospect. The Austin Bayou Prospect contains up to 1,200 feet of sand with hundreds of millidarcies permeability below 13,500 feet in depth. The optimal sand thickness extends over an area of at least 60 square miles/subsurface temperatures are as high as 330/SUP O/F. Enormous reservoirs extending over hundreds of square miles with hundreds of millidarcies permeability predicted by previous workers have not been found in the Frio. However, initial studies indicate that the smaller reservoirs which are being delineated are capable of producing significant quantities of thermal energy and methane.

279. GGIS-100360/R/ /*****/M/**/ /US/ /*****
ET-78-G-05-5958

Title- Geopressured-Geothermal Energy Development:

(Geopressured-Geothermal Technical Paper No. 3)

Subtitle- Social and Economic Issues

Publication date- July 1979

Pagination- 53 Pages

Report/patent- DOE/ET/28464-1 (vol. 3)

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

ET-78-G-05-5958 /

Corporate Author- RPC, Inc.
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (7) /

Table

Ref.

Proposed Descriptor(s)- / Energy source development / Geopressure
resources / Leasing / Socio-economic factors / Texas /

Abstract by Author

This paper presents information relevant to rule-making for geopressured-geothermal development on state-owned lands. The analysis is focused on those potential social and economic effects of resource development, if any, which may require special attention during the leasing and permitting process. For the most part, many of the expected socioeconomic impacts are not unique to geothermal development, but are already being felt by residents of the fairways because of ongoing developmental activities. The social and economic impacts likely to result from resource development depend upon characteristics specific to the site and surrounding social and economic systems. Specific impacts and their probability, magnitude, and duration can only be determined through a case-by-case analysis.

Geopressured Geothermal Bibliography

280. GGIS-100359/R/ /*****/M/**/ /US/ /*****
ET-78-G-05-5958

**Title- Geopressured-Geothermal Resource Development on Public Free
School Lands**

Publication date- July 1979

Pagination- 105 Pages

Report/patent- DOE/ET/28464-1

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

ET-78-G-05-5958 /

Corporate Author- RPC, Inc.
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (3) / Map (4) /

Table

Proposed Descriptor(s)- / Energy source development / Environmental
effects / Feasibility studies / Financing / Geopressure
resources / Leasing / Legislation / Public lands / Regulations /
Texas /

Abstract by Author

This study was formulated to make recommendations to the commissioner of the General Land Office of Texas and the School Land Board in order to encourage and promote the development of the geopressed-geothermal resource on Public Free School Land. These recommendations were to be based on analyses of the financial feasibility of resource development, the potential environmental effects, and associated legal issues. In addition, the recommendations were to include draft rules and regulations concerning the leasing, exploration, and production of the resource on PFSL. The recommendations from this study are designed to contribute to rapid and orderly resource development by providing an initial framework for development on PFSL in an environmentally sound manner, thus reducing uncertainty for the field developer. Consequently, if and when the time comes for exploration and development of the resource on PFSL, the field developer will know what to expect in terms of leasing and permitting procedures, and he will know how to proceed.

 281. GGIS-100320/R/ /*****/M/78/B/US/ /***** Hankins
 EY-76-S-05-4937

Title- Geopressed-Geothermal Test of the Edna Delcamber No. 1 Well, Tigre Lagoon Field, Vermilion Parish, Louisiana:

Subtitle- Analysis of Water and Dissolved Natural Gas

Author(s)- / Hankins , B.E. / Karkalits , O.C. /

Publication date- September 1978

Pagination- 144 Pages

Report/patent- ORO--4937--T1

Available- NTIS

(Paper Copy

(A08) (\$ 8.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Geopressured Geothermal Bibliography

Sponsor- / U.S. Department of Energy /9506839/.

EY-76-S-05-4937 /

Corporate Author- McNeese State Univ. /9504854/.
Lake Charles , Louisiana , USA

Auxiliary expression(s)-

Illus

/ Figure (17) /

Table

Ref.

Proposed Descriptor(s)- / Chemical composition / Dissolved gases /
Dissolved solids / Gas analysis / Geopressured wells /
Geopressured zones / Louisiana / Methane / PH Value / Qualitative
chemical analysis / Quantitative chemical analysis / Salinity /
Tigre Lagoon geothermal field / Vermilion Parish / Water
analysis /

Abstract by Author

The main objective of the research reported here was to determine the volume of gas dissolved in the geopressured water, as well as the qualitative and quantitative composition of the water and the dissolved gas. A further objective was to use an existing shut-in gas well so that drilling time and the attendant costs could be avoided. The Edna Delcambre et al. No. 1 gas well, shut-in since June 1975, was made available for the project. Two geopressured sand-bed aquifers were tested: sand No. 3 at a depth of 12,900 feet and sand No. 1 at a depth of 12,600 feet. Each aquifer was subjected to flow tests which lasted approximately three weeks in each case. The temperature in sand No. 3 was about 238 DEG F and the pressure was about 10,990 psig. The temperature in sand No. 1 was about 234 DEG F with a pressure of 10,600 psig. Water flow rates from sand No. 3 varied from 2,500 to 9,000 barrels per day. The net sand thickness of sand No. 3 was 52 feet and permeability was 40.6 millidarcies. Water flow rates on sand No. 1 varied from 1,200 to 11,800 barrels per day. The net sand thickness of sand No. 1 was 30 feet and the permeability was 364 millidarcies. Water samples were obtained during flow testing of the two geopressured aquifers. The water contained 11.3-13.3% dissolved solids. The water was acidic, but in-line measurements of pH were 1-2 pH units lower than comparable samples measured in the on-site laboratory. Several radioactive species were measured. Radium-226 was found to be approximately 10 times more concentrated than the average amount observed in surface waters. No appreciable amount of heavy metals was detected. Recombination studies at bottom-hole conditions indicate the solubility of natural gas per barrel of

water to be about 24 SCF. The methane content was 93-95%, and the gas had a heating value in the range of 1,020-1,070 BTU/cu. ft. During the flow tests, the gas/water ration at the well-head was observed to be 45-88 SCF/bbl water produced. Collections of bottom-hole samples from each of the sand-bed aquifers were attempted with a wire-line sampler. Several attempts were made to obtain representative samples but none of the attempts proved to be satisfactory.

282. GGIS-100002/0/PASPC/ 2/A/**/ / / /*****

Title- Geopressures

(Supplement)

Author(s)- / Stuart , Charles A. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 2 , 1970

Pagination- 121 Pages

Proposed Descriptor(s)- / Economic geology / Geopressure / Gulf of Mexico / Petroleum / Production / Regional /

283. GGIS-100002/0/PASPC/ 2/A/**/ / / /*****

Title- Geopressures

(Abstract)

Author(s)- / Stuart , Charles A. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Geopressured Geothermal Bibliography

Publication date- Vol. 2 , 1970

Pagination- Page 1 , 3 Pages

Proposed Descriptor(s)- / Cenozoic Era / Engineering geology /
Geopressured reservoirs / Geopressure / Gradient / Gulf of
Mexico / Porosity / Regional / Relation / Sediments /

284. GGIS-100046/J/TGCGA/ 24/A/**/ / / /*****

Title- Geopressures and Secondary Porosity in the Deep Jurassic of Mississippi

Author(s)- / Parker , Calvin A. /

Publisher- Gulf Coast Association Geological Society

Journal- Transactions, Gulf Coast Association of Geologic Societies

Publication date- Vol. 24 , 1974

Pagination- Page 69 , 12 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Carbon dioxide / Distribution / Economic
geology / Gas / Gases / Geopressure / Gradient / Hydrogen sulfide
/ Jurassic / Mississippi / Norphlet Formation / Petroleum /
Porosity / Pressure buildup / Sandstone / Secondary /
Sedimentary rocks / Smackover Formation / United States /

285. GGIS-100009/O/ /*****/M/**/ / / /*****

Title- Geopressures and Secondary Porosity in Deep Jurassic of Mississippi

Author(s)- / Parker , C. A. /

Conference- Gulf Coast Association of Geological Societies ISEPM
Annual Meeting

Publisher- Gulf Coast Association of Geological Societies

286. GGIS-100023/J/AAPGB/ 5810/A/**/ / /*****

**Title- Geopressures and Secondary Porosity in Deep Jurassic of
Mississippi**

Author(s)- / Parker , C. A. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 58 , Issue 10 , 1974

Pagination- Page 2212 , 1 Pages

Note- in GCAGS-SEPM Annual Meeting. GEOREF lists as abstract

Proposed Descriptor(s)- / Carbon dioxide / Distribution / Economic
geology / Gas / Gases / Gradient / Hydrogen sulfide / Jurassic /
Mississippi / Norphlet Formation / Petroleum / Porosity /
Pressure buildup / Sandstone / Secondary / Sedimentary rocks /
Smackover Formation / United States /

287. GGIS-100023/J/AAPGB/ 6004/A/**/ / /*****

**Title- Geopressures and Secondary Porosity in Deep Smackover of
Mississippi**

Author(s)- / Parker , C. A. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Geopressured Geothermal Bibliography

Publication date- Vol. 60 , Issue 4 , 1976

Pagination- Page 705 , 1 Pages

Note- NTIS: (EN).

Proposed Descriptor(s)- / Clastic rocks / Economic geology /
Geopressure / Jurassic / Mississippi / Natural / Petroleum gas /
Reservoir properties / Sandstone / Secondary porosity /
Sedimentary rocks / Smackover Formation / Terrigenous / United
States /

288. GGIS-100053/J/JPTJA/ 2508/A/**/ / /*****

Title- Geopressures in the Deep Smackover of Mississippi

Author(s)- / Parker , Calvin A. /

Journal- Journal of Petroleum Technology

Publication date- Vol. 25 , Issue 8 , August 1973

Pagination- Page 971 , 9 Pages

Categories-

Petroleum Reservoir Engineering

(Mississippi)

Oil Wells

(Bottom Hole Pressure)

Petrology

(Sedimentology)

Proposed Descriptor(s)- / Bottom hole pressure / Mississippi / Oil
wells / Petroleum reservoir engineering / Petrology /
Sedimentology /

Abstract by NTIS

Geopressures in the interior basin of Mississippi appear to be geologically late events associated with inflation and hydrocarbon phase changes. Acids associated with these late geopressures have impressed secondary porosity in Deep Smackover sandstones. Anomalous deep porosity in Mississippi need not be overpressured and is primary porosity. By means of field examples, this paper examines diverse origins for the deep Jurassic geopressures and contrasts them with origins of geopressures in the Gulf Coast Tertiary. 15 refs.

289. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Geopressures in the Smackover of Mississippi

Author(s)- / Parker , Calvin A. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 109 , 4 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Carbonate rocks. / Distribution /
Engineering geology / Geopressured reservoirs / Geopressure /
Gulf Coast / Jurassic / Mississippi / Oil and gas fields /
Overburden pressure / Porosity / Pressure buildup / Rankin
County / Sandstone / Smackover Formation / Traps / United States
/

290. GGIS-100053/J/JPTJA/*****/A/77/ /US/ /***** Stuart

**Title- Geopressuring Mechanism of Smackover Gas Reservoirs,
Jackson Dome Area, Mississippi**

Author(s)- / Kozik , H.G. / Stuart , C.A. /

Geopressured Geothermal Bibliography

Publication date- Vol. 29 , Issue 5 , May 1977

Pagination- Page 579 , 7 Pages

Corporate Author- Shell Oil Co.

Auxiliary expression(s)-

Illus.

/ Figure (7) /

Table

Ref.

Proposed Descriptor(s)- / Compacting / Geopressure gradients /
Geopressured reservoirs / Geosynclines / Mississippi / Natural
gas / Porosity / Reservoir pressure / Smackover formation /
Temperature gradients /

Abstract by Compendex

To help understand the problems associated with geopressures in the Mississippi salt basin, the Smackover sour gas reservoirs were studied and a geopressuring mechanism was conceived. The concept presented is that gas was sealed in a confined container, and then geopressed by the temperature and pressure of the earth's crust with subsequent burial. Knowledge of temperature gradients in the basin and trends in gas composition have permitted accurate forecasts of abnormal pressures in two discoveries. The authors conclude that porosities in the basin should be preserved below 20,000 ft.

291. GGIS-100181/O/ /*****/M/**/ /US/ /*****

Title- Geothermal

Subtitle- State of the Art

Conference- Geothermal; State of the Art
San Diego
California
USA (May 9 , 1977)

Publisher- Geothermal Resources Council

Davis, CA

Publication date- 1977

Pagination- 315 Pages

Report/patent- CONF-770569--

292. GGIS-100284/R/ /*****/M/78/ /US/ /***** Rehm
EG-76-C-07-1603

Title- Geothermal and Geopressure Blowout Control

Subtitle- Phase I: Study of Existing Technology; Phase II: Program
Plan for Geothermal and Geopressure Blowout Control

Author(s)- / Goins , W.C., Jr. / Rehm , William A. /

Journal- A Study of Technology in Well Control for Geothermal and
Geopressured Wells

Publication date- November 1978

Pagination- 276 Pages

Report/patent- IDO-1603-1

Available- NTIS

(Paper Copy

(A13) (\$ 11.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / Department of Energy /9506839/.

Geopressured Geothermal Bibliography

EG-76-C-07-1603 /

Corporate Author- Maurer Engineering, Inc. /9502171/.
Houston , Texas , USA

293. GGIS-100895/ / /*****A/77/ /US/ /***** Kumar

Title- Geothermal and Geopressure Patterns of Bayou Carlin-Lake
Sand Area, South Louisiana

Subtitle- Implications

Author(s)- / Kumar , Madhurendu Bhushan /

Conference- AAPG--Sepm Annual Convention

Publication date- Vol. 61 , Issue 1 , January 1977

Pagination- Page 65 , 14 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Anticlines / Exploration methods / Geology
/ Geopressure zones / Growth faults / Louisiana / Maps /
Petroleum exploration / Reservoir pressure / Reservoir
temperature /

Abstract by Compendex

This study examines the patterns of subsurface pressures and temperatures in light of the known geologic history of the area and recommends geothermal-geopressure mapping as an important and regular adjunct to the conventional approaches to petroleum exploration where well control exists. The Bayou Carlin-Lake Sand area is part of a well-known "hot belt" and geopressured region of south Louisiana. The geothermal approach is recommend for selecting areas of possible petroleum prospects prior to detailed appraisal, for delineating untested rollover anticlines against growth faults, and for locating deeper hydrocarbon accumulations of commercial significance.

294. GGIS-100007/0/ / 1/A/**/ /US/ /150200

Title- Geothermal and Hydrocarbon Regimes, Northern Gulf of Mexico Basin.

Author(s)- / Jones , Paul H. /

Conference- Geopressed Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 15 , 83 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (63) / Table (2) /

Ref.

Discuss.

Proposed Descriptor(s)- / Abundance / Aerial geology / Economic geology / Energy sources / Exploration / Geo brine / Geochemistry / Geology / Geopressed systems / Geopressure / Geothermal

Geopressured Geothermal Bibliography

energy / Geothermal resources / Gulf of Mexico / Hydrocarbons /
Hydrodynamics / Maps / Methane / Natural gas / North / Origin /
Petroleum / Possibilities / Proceedings / Resources / Salinity /
Tables / Temperature measurement / Thermal waters / United
States South / Wells /

Abstract by Author

Geothermal heat flow in the Gulf Basin is primarily a function of its hydrology. Water expelled from sediments with deepening burial and increasing overburden load escapes upward and toward the basin margin. Where it moves freely in the hydropressure zone, the basin is relatively cool; but where rapid sedimentation and contemporaneous faulting have retarded water loss from compacting sediments, the interstitial fluid pressure reflects a part of the overburden load and the formation waters are superheated and geopressured. The geopressured zone is common below depths of about 3 KM (9,600 FT) in the basin, beneath area of 375,000 SQ KM (150,000 SQ MI), and extends downward perhaps 15 KM (50,000 FT) to the base of Cenozoic deposits. The upper boundary of the geopressured zone is the most important physical interface in the basin.

295. GGIS-100004/0/ /*****/A/**/ / / *****/

Title- Geothermal and Hydrodynamic Regimes in the Northern Gulf of Mexico Basin

Author(s)- / Jones , Paul H. /

Conference- Development and Use of Geothermal Resources

Publication date- 1975

Note- See Geothermics, Spec. Iss., No. 2, P. 14(20)

Auxiliary expression(s)-

Illus.

/ Figure (21) / Map (12) / Graph (8) / Drawing (1) /

Ref.

Proposed Descriptor(s)- / Aquifers / Crust / Effects / Faults /
Geopressure / Geothermal / Ground water / Gulf Coast / Gulf of
Mexico / Hydrogeology / Hydrodynamics / Loading / Mass transfer /

North / Sediments / Subsidence / Systems / Tectonics / Uplifts /
Vertical tectonics /

296. GGIS-100048/J/EGREA/ 1702/A/**/ / / /*****

Title- Geothermal Conditions in Oil-Gas Regimes

Author(s)- / Afanás'yev , T. P. / Makarenko , F. A. / Pokrovskiy , V.
A. /

Journal- Int. Geol. Rev.

Publication date- Vol. 17 , Issue 2 , 1975

Pagination- Page 164 , 3 Pages

Proposed Descriptor(s)- / Accumulation / Correlation / Depth /
Economic geology / Gas / Gas condensates / Geochemistry /
Geopressure / Hydrocarbons / Metamorphism / Oil and gas fields /
Organic Materials / Origin / P-T conditions / Petroleum /
Pressure buildup / Regional / Temperature / USSR /

297. GGIS-100995/ / /*****/A/78/ /US/ /***** Varnado

Title- Geothermal Drilling and Completion Technology Development

Author(s)- / Stoller , H.M. / Varnado , S.G. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 675 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Geopressured Geothermal Bibliography

Corporate Author- Sandia Labs. /5659000/.
Albuquerque , New Mexico , USA

Auxiliary expression(s)-

Illus.

/ Graph (2) /

Ref.

Proposed Descriptor(s)- / Cost / Drilling equipment / Geothermal
drilling / Geothermal wells / Research programs / Well
completion /

Abstract by Author

The high cost of drilling and completing geothermal wells is an impediment to the development of geothermal energy resources. Technological deficiencies of geothermal drilling techniques are evidenced when drilling geothermal wells. The Division of Geothermal Energy (DGE) of the U.S. Department of Energy has initiated a program aimed at developing new drilling and completion techniques for geothermal wells. The goals of this program are to reduce well costs by 25% by 1982 and by 50% by 1986. Sandia Laboratories has been selected to manage this technology development program, and this paper presents an overview of the program. Program justification which relates well cost to busbar energy cost and to DGE power-on-line goals is presented. Technological deficiencies in current rotary drilling techniques for geothermal wells are discussed. A program for correcting these deficiencies is described.

298. GGIS-100277/J/ERCHD/*****/A/76/ /US/ /***** Zrally

Title- Geothermal Energy

Author(s)- / Zrally , Arthur J. /

Journal- Energy Rep. CHASE

Publication date- August 1976

Pagination- 4 Pages

Auxiliary expression(s)-

Table

Proposed Descriptor(s)- / California / Economics / Electric power / Energy source development / Geopressure resources / Geysers geothermal field / Hot dry rock systems / Hot water systems / Imperial Valley / Power generation / Steam / Vapor dominated systems /

Abstract by Energyline

Special report: Dry steam, hot water, geopressured, and hot dry rock geothermal resources are explained, and the economics of developing these alternative energy sources are weighed. A geothermal generating station is less efficient than one fueled by oil is. The dry steam reservoir at the Geysers, Calif., is expected to have 1800 MW installed by 1985. Imperial Valley in southern California is one of the largest and most studied hot water fields in the U.S. The hope is to produce 200 MW by 1985. Experienced forecasters say geothermal systems will provide 3000 Mw of power by 1985--less than 1% of total electric generation available at that time.

299. GGIS-100305/R/ /*****/M/72/ / / /***** Hickel

Title- Geothermal Energy

Subtitle- A National Proposal for Geothermal Resources Research

Author(s)- / Hickel , W.J. /

Conference- Geothermal Resources Research Conference
Seattle
Washington
USA (September 18 , 1972)

Journal- Geothermal Resources Research Conference

Publication date- September 18 , 1972

Pagination- 95 Pages

Report/patent- PB-222326

Available- NTIS

Geopressured Geothermal Bibliography

(Paper Copy (\$ 4.85)

(Microfiche (\$ 1.45)

Corporate Author- Battelle Seattle Research Center
Seattle , Washington , USA

Proposed Descriptor(s)- / Commercialization / Economics / Energy
source development / Environmental effects / Financing /
Geothermal exploration / Geothermal reservoirs / Geothermal
resources / Institutional aspects / Production / Research
programs / Resource assessment /

Abstract by TIC

This report presents the results of the Geothermal Resources Research Conference held in September, 1972. The importance of geothermal resources to the nation is discussed first, followed by budget recommendations for research on geothermal resources and an overview of geothermal resources. Reports of the six conference panels are included: Resource Exploration; Resource Assessment; Reservoir Development and Production; Utilization Technology and Economics; Environmental Effects; and Institutional Considerations. The report concludes with a summary of research needs and an extensive bibliography.

300. GGIS-100256/R/ /*****/M/**/ /US/ /*****

Title- Geothermal Energy

(Special Study Guide No. 7)

Subtitle- A National Opprotunity (The Federal Impact)

Publication date- 1978

Pagination- 157 Pages

Report/patent- NP--23437

Proposed Descriptor(s)- / Economics / Energy source development /
Financial incentives / Geothermal exploration / Geothermal power
/ Geothermal resources / Institutional aspects / Land leasing /
Legal aspects / Ownership / Power generation / Regulations /
Resource assessment / Taxes /

Abstract by GGIS

Separate abstracts were prepared for two presentations from this report.

301. GGIS-100246/R/ /*****/M/77/ /US/ /***** Justus

Title- Geothermal Energy

Subtitle- US Library of Congress Congressional Research Service
Report IB74056

Author(s)- / Justus , John R. /

Publication date- September 1977

Pagination- 14 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Geothermal energy / Geothermal energy
conversion / Legislation / Research programs / US ERDA /

Abstract by EIC

The primary application of geothermal resources is electric power generation. Methods of tapping this resource are described. The geothermal steam act of 1970 granted the Secretary of the Interior the authority to issue leases for developing geothermal resources on federal lands. The act, however, did not include any specific recommendations for R and D of geothermal resources. Geothermal legislation introduced in the 92-93 Congress tended toward this direction. Considerations, problems, and needs taken into account in the geothermal R and D legislation are summarized. In 1975, ERDA began a focused and fully coordinated national geothermal energy program. The overall goal of ERDA's geothermal R and D efforts is to assure that, by 1985, there will be a 20,000-30,000 MW commercial electric power generating capacity. ERDA programs involve: resource exploration and assessment; environmental, legal, and institutional constraints on geothermal development, resource utilization projects; and supportive research and technology to improve the state of the art of geothermal energy conversion facilities.

Geopressured Geothermal Bibliography

302. GGIS-100127/R/ /*****/M/**/ / / /151000

Title- Geothermal Energy

Subtitle- Residential Space Heating

Original Title- La Geothermie

Original Subtitle- Chauffage de Logements

Publisher- ERDA
Washington, D. C.

Publication date- March 1977

Pagination- 26 Pages

Report/patent- ERDA-TR-260

Available- US GPO
Washington, D. C.
20402

(Stock #060-000-00062-0)

(\$ 1.20)

Available- NTIS

(Paper copy

(A03)

(Microfiche

(A01)

Auxiliary expression(s)-

Illus.

/ Chart (3) / Diagram (7) / Graph (29) / Map (1) /

Categories-

Geothermal Energy

(Direct Energy Utilization)

Proposed Descriptor(s)- / Climates / Computer codes / Cost benefit analysis / Geothermal space heating / Heat exchangers / Heaters / Houses / Optimization / Performance / Radiators / Simulation /

Abstract by Author

The purpose of this study, which was carried out under the auspices of the DGRST, was to determine the best way to use geothermal hot water for residential space heating. It quickly became apparent that the type of heating apparatus used in the housing units was most important and that heat pumps could be a valuable asset, making it possible to extract even more geothermal heat and thus substantially improve the cost benefit of the systems. Many factors play a significant role in this problem. Therefore, after a first stage devoted to analyzing the problem through a manual method which proved quite useful, the systematic consideration of all important aspects led us to use a computer to optimize solutions and process a large number of cases. The software used for this general study can also be used to work out particular cases: it is now available to any interested party through DGRST. This program makes it possible to 1) take climatic conditions into account in a very detailed manner, including temperatures as well as insolation. 864 cases corresponding to 36 typical days divided into 24 hours each were chosen to represent the heating season. They make it possible to define the heating needs of any type of housing unit. 2) Simulate and analyze the behavior in practice of a geothermal heating system when heat is extracted from the well by a simple heat exchanger. This simulation makes it possible to evaluate the respective qualities of various types of heating apparatus which can be used in homes. It also makes it possible to define the best control systems for the central system and substations and to assess quite accurately the presence of terminal controls, such as radiators with thermostatically controlled valves. 3) Determine to what extent the addition of a heat pump makes it possible to improve the cost benefit of geothermal heating. When its average characteristics and heating use conditions (price, coefficient of performance, length of utilization, electrical rates, etc.) are taken into account, the heat pump should not be scaled for maximum heating power. Consequently, the program considers several possible sizes, with different installation schemes, and selects for each case the value which corresponds to the lowest cost of heating.

303. GGIS-100060/J/ / 6107/M/**/ / /*****

Geopressured Geothermal Bibliography

Title- Geothermal Energy

Subtitle- A Viable Resource

Author(s)- / Klostermeyer , William C. /

Journal- Reclamation Era

Publication date- Vol. 61 , Issue 3 , August 1975

Pagination- Page 6 , 7 Pages

Note- NTIS accession number and title not available due to faulty acquisition transmission.

Corporate Author- U.S. Bureau of Reclamation

Categories-

Geothermal Energy

(Hot Rocks)

(Hot Water)

(Steam)

(Geo Brine)

Proposed Descriptor(s)- / Desalination / Geo brine / Geothermal energy / Hot dry rock systems / Hot water / Imperial Valley / Steam / U.S. Bureau of Reclamation /

304. GGIS-100072/B/ /*****/M/**/ / / /*****/

Title- Geothermal Energy

(Federal Energy Administration Project Independence Blueprint Final Task Force Report)

Publication date- November 1974

Pagination- 110 Pages

Available- US GPO
Washington, DC
20402

((Stock Number 4118-00011))

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (1) / Table (11) /

Proposed Descriptor(s)- / Energy self-sufficiency / Energy development financing / Energy environmental constraints / Energy conservation / Environmental-energy data / Environmental-energy economics / Geothermal energy / Geysers / Hot springs / Oil shortage / Power plants / U.S. Federal Energy Administration / United States West /

Abstract by NTIS

The final technical analysis of the Project Independence Interagency Geothermal Task Force is presented. The Task Force was formed to estimate the production potential of the geothermal industry. It evaluated two different strategies: the first strategy, termed "business-as-usual", assumed the continuation of all current policies that could affect levels of geothermal production; and the second, called "accelerated demand", assumed selected changes in policies or practices that would allow a greater expansion of potential production. The U. S. geothermal resource base compares favorable with current oil and gas reserves. Development of geothermal resources, located mostly in the western third of the U. S., could considerably contribute to meeting U. S. power needs. Only one geothermal resource, dry steam, is presently utilized for power generation in the U. S. However, several other resource types appear favorable: brines, moderate temperature/low-salinity fluids, geopressured reservoirs, hot rock formations, and magmatic deposits. Private investment in these resources is estimated to be: \$10 million for exploration; \$35 million for land leases; \$25 million for exploratory wells; and \$5 million for power plant and component technology. Major problems restricting the growth of geothermal energy include: (1) lack of confidence by major industrial energy users in geothermal reserves as reliable, long-term supplies of energy; (2) institutional, legal, and environmental problems; and (3) unsolved technical problems and economic uncertainties concerning use of geothermal energy in an environmentally acceptable manner. The recommended strategy would involve short-term governmental participation with the geothermal industry. The primary goal of the national geothermal energy program is to encourage the private sector to augment commercial production of electric power by 20,000-30,000 MW by 1965, thereby conserving the equivalent of 1 million BPD of oil. The national program is aimed at: (1)

Geopressured Geothermal Bibliography

providing the necessary technology to improve the economics of geothermal power production; (2) expanding the knowledge of recoverable geothermal resources; and (3) resolving environmental, legal, and institutional problems. (1 diagram, 1 graph, 11 tables)

305. GGIS-100239/J/ /*****/A/**/ / / *****/

Title- Geothermal Energy

Subtitle- Its Promise for the Future

Journal- Ground Water Age

Publication date- Vol. 12 , Issue 1 , September 1977

Pagination- 3 Pages

Auxiliary expression(s)-

Illus.

/ Graph (1) / Photo (1) /

Proposed Descriptor(s)- / Cost / Forecasting / Geopressure resources / Geopressured systems / Geothermal power plants / Geothermal resources / Hot springs / Hydrothermal systems / Louisiana / Power potential / Public utilities / Texas /

Abstract by EIC

The present status and potential of geothermal energy resources are examined. Several estimates of geothermal capacity are made as a measure of the state of the geothermal art. The hydrothermal resource associated with hot springs having temperatures above 150 DEG C in the western states is about 15,000 MW for 100 years. Some 6000 MW/100 YR of geothermal capacity are available, most in a few large systems, at a capital cost of from \$600-950/KW for both plant and reservoir development. In addition to the western hydrothermal resource, the Texas and Louisiana coastal geopressured region holds about 24,000 MW/100 YR of potential capacity in hot water. Geothermal power plant costs are estimated. Energy firms and utilities are discussed in terms of current geothermal R and D projects and in light of their influence on such developments.

306. GGIS-100239/J/ /*****/A/**/ / / *****/

Title- Geothermal Energy

Subtitle- It's Hot Stuff

Journal- Ground Water Age

Publication date- Vol. 12 , Issue 1 , September 1977

Pagination- Page 26 , 4 Pages

Auxiliary expression(s)-

Illus.

/ Drawing (1) / Map (2) /

Proposed Descriptor(s)- / Energy source development / Geopressed systems / Geothermal resources / Hot water systems / Hydrothermal systems / Magma systems / Power potential / USA / Vapor dominated systems /

Abstract by EIC

A gap exists between the potential U.S. geothermal resources and the developed geothermal capacity. Potential steam and hot water geothermal energy that could be tapped by known methods is 46,000 MW, while developed geothermal resources are 502 MW, all belonging to the Pacific Gas and Electric Co., Calif. The different physical forms of geothermal energy are considered, including dry steam, hot water, geopressed systems, and hot igneous material. Locations of major developed and undeveloped geothermal sources are given, and type of development is noted briefly.

307. GGIS-100033/J/ / 2901/A/**/ / / *****/

Title- Geothermal Energy

Subtitle- A Look into the Future

Geopressured Geothermal Bibliography

Author(s)- / Benson , W. Alan /

Journal- Earth Science

Publication date- Vol. 29 , Issue 1 , January 23 , 1976

Pagination- Page 22 , 5 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Geo brine / Geothermal resources /
Geothermal energy / Hot water / Hot dry rock systems / Land
subsidence / Steam / Water pollution /

Abstract by Energyline

If 10% of the geothermal energy trapped in the upper 2 Mi. of the earth's crust were extracted, it would provide 58,000 MW/Yr. for 50 years. Vapor- and liquid-dominated geothermal systems, geopressurized basins, hot and dry rock formations, and near-normal thermal gradient environments all have energy potential. Although geothermal energy has proved to be cost-effective, there are several implementation problems. The history of geothermal energy and factors that have spurred its recent development are summarized. (14 referneces)

308. GGIS-100036/J/ENRGD/ 304/A/**/ / / /150100

Title- Geothermal Energy

Subtitle- A Hot Subject

Journal- Energies

Publication date- Vol. 1 , Issue 4 , September 1976

Pagination- Page 8 , 3 Pages

Proposed Descriptor(s)- / Geothermal resources / Heat exchangers /
Hot dry rock systems / Hot water systems / Power potential /
Vapor dominated systems /

Abstract by ERDA/RECON

A brief discussion is given on the types of geothermal resources; dry steam, wet steam, hot dry rock, volcanoes and geopressed deposits. The downhole heat exchanger is pointed out as a promising means of tapping geothermal power more efficiently and cleanly. It is concluded that with proper encouragement, geothermal energy can be made available virtually anywhere on earth with the application of new technologies. (LBS)

309. GGIS-100357/R/ /*****/M/**/ /US/ /*****

Title- Geothermal Energy and the Eastern U. S.:

Subtitle- A Scenario for Geothermal Energy Development, the Eastern Gulf Coastal Plain

Publication date- February 1978

Pagination- 59 Pages

Report/patent- APL/JHU/QM-77-129-3

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Corporate Author- Johns Hopkins Univ. /9501497/.

Applied Physics Lab.
Laurel , Maryland , USA

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

/ Map (4) /

Table

Ref.

Proposed Descriptor(s)- / Alabama / Energy source development /
Florida / Forecasting / Geopressured reservoirs / Gulf Coast /
Hydrothermal systems / Mississippi / Resource assessment /

Abstract by Author

This brief report explains and discussess a scenario for the development of potential geothermal resources in the Eastern Gulf Coastal Plain states of Mississippi, Alabama, of the potential applications and energy market in this region are given. A ranking of the resources as to their energy content, potential market, etc., is described, and the assumptions and strategy used to generate the scenario are discussed. A more complete report on the detailed aspects involved in the preparation of the development scenario will be issued in the near future.

310. GGIS-100309/R/ /*****/A/78/B/US/ /***** Arnold

Title- Geothermal Energy and the Food Industry, South Louisiana

Author(s)- / Arnold , Alanson J. /

Conference- Direct Utilization of Geothermal Energy : A Symposium
San Diego
California
USA (January 31 , 1978)

Publication date- January 31 , 1978

Pagination- Page 111 , 9 Pages

Report/patent- CONF---780133

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Map (1) / Diagram (1) /

Proposed Descriptor(s)- / Food processing / Geopressured reservoirs /
Geothermal space heating / Industrial plants / Louisiana /
Methane / Power generation / Process heat / Uses /

Abstract by Energyline

The potential of geothermal energy resources in southern Louisiana for application to the food processing industry is assessed. Large geopressured aquifers exist both onshore and offshore in Louisiana, and have suitable characteristics for use in the food industry. Food products that could be prepared using geothermal energy processes are listed, including cane sugar, alcohol, cotton seed oil, and prepared fish and seafood products. Geothermal energy also could be used for power generation, drying, and dehumidifying in food processing plants. Technical problems that need to be solved include coordinating the timing of geothermal supply and demand, and transporting the energy.

311. GGIS-100042/J/GTEMA/*****/A/79/ /US/ /***** Arnold

Title- Geothermal Energy and the Food Industry, South Louisiana

Author(s)- / Arnold , Alanson J. /

Publication date- Vol. 7 , Issue 2 , February 1979

Pagination- Page 22 , 7 Pages

Auxiliary expression(s)-

Illus.

/ Map (1) / Figure (4) /

Proposed Descriptor(s)- / Aquifers / Environmental effects / Food
products / Geopressured reservoirs / Louisiana / Uses /

312. GGIS-100289/R/ /*****/M/80/ / / /***** O'Banion
W-7405-ENG-48

Geopressured Geothermal Bibliography

Title- Geothermal Energy and the Land Resource

**Subtitle- Conflicts and Constratints in the Geysers - Calistoga
KGRA**

Author(s)- / Hall , Charles / O'Banion , Kerry /

Publication date- July 14 , 1980

Pagination- 34 Pages

Report/patent- UCRL-52970

Available- NTIS

(Paper copy

(A03) (\$ 6.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

W-7405-ENG-48 /

Corporate Author- California Univ. /9500007/.

**Lawrence Livermore Lab.
Livermore , CA , USA**

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Map (9) /

Ref.

**Proposed Descriptor(s)- / Argiculture / Communities / Comparative
evaluation / Ecology / Energy source development / Environmental
impacts / Exploitation / Geothermal energy conversion / Geysers
geothermal field / Hydrology / KGRAs / Land use / Public lands /**

Regional analysis / Regulatory guides / Socio-economic factors /
Uses / Zoning /

Abstract by Author

This study of potential land-related impacts of geothermal power development in The Geysers region, one component of the Lawrence Livermore National Laboratory (LLNL)/Lawrence Berkeley National Laboratory (LBNL) socioeconomic program, focuses on Lake county because it has most of the undeveloped resource and the least regulatory capability. We first characterize the land resource in terms of its ecological, hydrological, agricultural, and recreational value; intrinsic natural hazards; and the adequacy of roads and utility systems. Based on those factors, we identify the potential land-use conflicts and constraints that geothermal development may encounter in the region and determine the availability and relative suitability of land for such development. We conclude with a brief review of laws and powers germane to geothermal land-use regulation. The material in this study will be dovetailed with economic and demographic forecasts, now in preparation, in a combined final report in late 1980. The final report will include a more detailed analysis of potential socioeconomic impacts and land-use outcomes, as well as an evaluation of policy options to mitigate adverse impacts.

313. GGIS-100213/R/ /*****/M/75/ /US/ /***** Stone
Aer 7509194

Title- Geothermal Energy and the Law

Subtitle- I. The Federal Lands Management Program

Author(s)- / McNamara , J. . / Stone , C. D. /

Publication date- September 30 , 1975

Pagination- 287 Pages

Report/patent- NSF-RA-S--75-050

Available- National Science Foundation
Washington, D. C.

Local Availability- CES (R C280)

Geopressured Geothermal Bibliography

Sponsor- / NSF/RANN

Aer 7509194 /

Corporate Author- University of Southern California /9505270/.

Law Center
Los Angeles , California , USA

Proposed Descriptor(s)- / By-products / Compensation / Energy policy
/ Geothermal energy / Geothermal exploration / Government
policies / Institutional aspects / Land leasing / Land use / Laws
/ Leases / Leasing / Legal aspects / Licensing / Ownership /
Regulations / Uses / Water rights /

Abstract by EAPA

A broad range of problems in the legal and institutional environment which hampers the development of the geothermal industry is discussed. The topics include: the development of geothermal energy; pre-leasing procedures-- public vs. private assessment; exploratory permits and related strategies; the rate of geothermal leasing--past and future; compensation strategies; lessee qualifications; lands available for leasing; noncompensatory lease terms; ongoing leasehold and production requirements; problems of "secondary" geothermal uses; and water law conflicts. (LBS)

314. GGIS-100384/R/ /*****/M/80/ /US/ /***** DiPippo
AS02-76ET28320

Title- Geothermal Energy as a Source of Electricity

Subtitle- A Worldwide Survey of the Design and Operation of
Geothermal Power Plants

Author(s)- / DiPippo , Ronald /

Publication date- January 1980

Pagination- 370 Pages

Report/patent- DOE/RA/28320-1

Available- Superintendent of Documents

U.S. Government Printing Office
Washington
DC
USA
20402

(Paper copy

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA). Div. of
Geothermal Energy /9506839/.

AS02-76ET28320 /

Corporate Author- Brown Univ. / 943000/.
Providence , RI , USA

Auxiliary expression(s)-

Illus.

/ Diagram (89) / Photo (42) / Graph (7) / Map (23) /

Table

Ref.

Proposed Descriptor(s)- / China / Economics / Electric power /
Environmental effects / Geological setting / Geopressure
resources / Geothermal energy conversion / Geothermal
exploration / Geothermal fields / Geothermal fluids / Geothermal
power plants / Iceland / Italy / Japan / Mexico / New Zealand /
Performance / Philippines / Turkey / USA / USSR / Wells /

Abstract by Author

A worldwide survey of all existing geothermal,
electricity-producing installations up to July 1979 is
presented. A brief introduction to the types of geothermal
resources and energy conversion systems is given. The
geological characteristics of each plant are discussed. The
discussion is arranged by country. The survey is intended to
have broad appeal, particularly among energy planners.

315. GGIS-100151/P/ /*****/M/**/ /US/ /150900

Title- Geothermal Energy from Salt Formations

Author(s)- / Altschuler , S. J. /

Publication date- October 11 , 1977

Pagination- 8 Pages

Report/patent- 4,052,857 (U. S. Patent

Note- Filed Data 6 October 1976 to Dow Chemical Co.

Auxiliary expression(s)-

Illus.

/ Figure (7) /

Claim

Proposed Descriptor(s)- / Geothermal energy / Heat exchangers / Heat extraction / Patents / Pipes / Salt deposits /

Abstract by ERA

A method is described for obtaining geothermal energy from salt formations in which a well is drilled and cased into a suitable salt formation to a depth where the temperature is such that the salt behaves plastically. A weighted, closed end pipe is inserted into the well with its lower, closed end at about the bottom of the salt formation. Thereafter an insulated open end pipe is inserted, after the weight has been removed from the closed end pipe, within the closed end pipe, thus forming a double pipe heat exchanger. A heat exchange fluid is circulated, usually in a closed loop, through the double pipe heat exchanger, an energy extracting means, such as, for example, a steam generator or an hydraulic turbine, and back through the heat exchanger.

316. GGIS-100995/ / /*****/A/78/ /US/ /***** Metzger

Title- Geothermal Energy Direct Applications Market-Estimator Model

Author(s)- / Metzger , S.W. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 437 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Table

Proposed Descriptor(s)- / Commercialization / Direct energy
utilization / Economics / Geothermal energy / Market /
Mathematical models /

Abstract by Author

The subject model, which can best be described as a marketing economics tool, was conceived on the premise that a "quick and dirty" estimation technique often provides an acceptable degree of perception into the basic character of a market. This rather superficial calibration of a market could be considered in lieu of the data a more expensive, in-depth investigation would produce. The value of this market-estimator model will be dependent, however, upon the resources available to the researcher. Moreover, the model's value will be contingent upon the desired quality of data upon which a decision, either preliminary or final, will be based. The model is ideal for those situations which depict limited study resources and permit "order-of-magnitude" assessments.

317. GGIS-100328/R/ /*****/A/**/ / / *****/

Title- Geothermal Energy Executive Summary

Publication date- Vol. 2 , June 30 , 1976

Pagination- Page 117 , 35 Pages

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Diagram (9) /

Table

Proposed Descriptor(s)- / Budgets / Demonstration programs /
Economics / Energy source development / Environmental effects /
Geopressured systems / Geothermal resources / Hot water systems
/ Magma systems / Research programs / Resource assessment /
Socio-economic factors / Technology assessment / Vapor dominated
systems /

Abstract by Energyline

A comprehensive federal energy geothermal program to develop geothermal resources as an economically, environmentally, and socially acceptable energy option is presented. The geothermal resources considered include dry steam, hot water, geopressured water, hot dry rock, thermal gradients in the Earth's crust, and magma. The latest assessment of the nation's geothermal resources estimates a total energy content in the first four types in excess of 400,000 quads; the energy content of the latter two is, in theory, almost limitless. Due to the strong influence on commercial scale development of geothermal resources of regional and local factors, the federal government hopes to work closely with state and local governments and with local industry and environmental groups in identifying appropriate methods of geothermal resource recovery.

318. GGIS-100164/J/CEPRA/*****/A/**/ /US/ /150801

Title- Geothermal Energy Plant

Author(s)- / Wilson , J. S. /

Journal- Chem. Eng. Prog.

Publication date- Vol. 73 , Issue 11 , November 1977

Pagination- 4 Pages

Categories-

Geothermal Energy

(Geothermal Power Plants)

Geothermal Power Plants

(Design and Operation)

Other Synthetic and Natural Fuels

Proposed Descriptor(s)- / Calculation methods / Cost / Diagrams /
Economics / Geopressured systems / Geothermal fluids /
Geothermal power plants / Injection wells / Methane / Natural gas
deposits / Planning / Reservoir rocks / Turbomachinery /

Abstract by DOE/RECON

Results are presented of research works, done by both government and private industry, on the conceptual design of a plant to produce both electric power and natural gas, plus calculations of the economics of such an undertaking. It is demonstrated that geopressured, geothermal reservoirs appear to have potential as sources of electrical power. However, for the power to compete economically, the water must contain large volumes of recoverable methane, temperatures must be above 300 DEG F, reservoirs must be large, and well flow must be quite large. Should all these criteria be met, geopressured geothermal electricity should be a technical and economic possibility.

319. GGIS-100238/J/ /*****/A/77/ / / *****/ Pryde

Title- Geothermal Energy Potential in Western United States

Author(s)- / Pryde , Phillip R. /

Journal- J. Geography

Publication date- Vol. 76 , Issue 5 , September 1977

Pagination- Page 170 , 5 Pages

Auxiliary expression(s)-

Illus.

/ Map (1) / Photo (2) /

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Geothermal energy / Power potential /
Technology assessment / USA /

Abstract by EIC

Although geothermal energy has a high energy ratio, it must overcome numerous problems before it becomes commercially feasible. Certain technical problems, such as scaling and reinjection, must be addressed by ERDA and other researchers. While increased costs of traditional energy supplies, especially natural gas and imported oil, enhance the importance of continued research on geothermal energy sources, the support through private investment of ERDA loans and subsidies provides the most promising approach to R and D with practical applications. Further research can probably resolve environmental problems satisfactorily.

320. GGIS-100225/R/ /*****/M/**/ /US/ /299002

Title- Geothermal Energy Prospects for the Next 50 Years*

Publication date- February 1978

Pagination- 92 Pages

Report/patent- EPRI-ER--611-SR

Corporate Author- Electric Power Research Inst. /9500767/.
Palo Alto , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Map (4) /

Table

Ref.

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Direct energy utilization / Energy source development / Environmental effects / Forecasting / Geothermal development / Geothermal energy conversion / Geothermal resources / Power potential /

Abstract by TIC

Three facets of geothermal energy--resource base, electric power potential, and potential nonelectric uses-- are considered, using information derived from three sources: (1) analytic computations based on gross geologic and geophysical features of the earth's crust, (2) the literature, and (3) a worldwide questionnaire. Discussion is presented under the following section headings: geothermal resources; electric energy conversion; nonelectric uses; recent international developments; environmental considerations, and bibliography. (JGB)

321. GGIS-100279/R/ /*****/M/**/ /US/ /*****

Title- Geothermal Energy Research, Development and Demonstration Program Definition Report

Publication date- 1975

Pagination- 73 Pages

Report/patent- ERDA-86

Available- NTIS

(Paper Copy (\$ 5.45)

(Microfiche (\$ 2.25)

Local Availability- CES

Corporate Author- U.S. Department of Energy /9506839/.

Geothermal Energy Div.
Washington , D.C. , USA

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Commercialization / Economics / Energy source development / Geopressured systems / Geothermal energy / Geothermal exploration / Hot dry rock systems / Hydrothermal systems / Industry / Magma systems / Socio-economic factors /

Abstract by GGIS

The goal for the National Geothermal Energy Development Program is to achieve a utilization of geothermal energy equivalent to one million barrels of oil per day by 1985. The objective of the Federal Government program is to stimulate industry by creating favorable conditions for making the necessary commitment. This project stressed the discovery and development of hydrothermal systems in meeting the 1985 goal. Geopressured systems were also considered. In addition, the project considered the advancement of the technology and the development of hot dry rock, normal temperature gradient and magma systems to enable geothermal energy use after 1985. Nontechnological issues received particular attention because they are presently the major factors inhibiting rapid growth of geothermal exploration. Actions to overcome both technological and nontechnological impediments were evaluated.

322. GGIS-100011/0/ /*****/A/**/ / / *****/

Title- Geothermal Energy Resources

(Group Position Paper, 3 Subgroup Papers, and 1 Review Paper)

Author(s)- / Kruger , Paul /

Conference- Magnitude and Deployment Schedule of Energy Resources

Publication date- September 1975

Pagination- Page 59 , 6 Pages

Report/patent- CONF--750720-

Proposed Descriptor(s)- / Desalination / Energy resources / Environmental effects / Exploration / Forecasting / Geological surveys / Geopressured systems / Geothermal energy / Geothermal resources / Hot dry rock systems / Hot water systems / Legal aspects / Materials recovery / Planning / Production / Space heating / USA /

Abstract by ERDA/RECON

Geothermal energy may be considered to be the thermal energy contained in the upper 10 KM. of the earth's crust, which has a mean temperature gradient between 20 to 30 degrees C/KM, a mean emissive heat flux of about 1.5 degrees CAL/CM(SQ) SEC, and a heat content above 15 DEG C of some 3×10^{26} CAL, of which about 6×10^{24} U CAL IS under the United States. This resource base is equivalent to the heat content of 8×10^{14} metric tons of coal or 5×10^{18} , representing about 375,000 times the forecasted U.S. total electric power production for the year 1985. Unfortunately, geothermal heat in the outer 10 KM of the earth's crust is too diffuse to be exploitable as an energy resource on a worldwide basis. Resources suitable for commercial exploitation may be defined as localized geologic deposits of heat concentrated at attainable depths, in confined volumes, and at sufficient temperatures for intended utilization. Although geothermal resources have been developed largely for generation of electric power, utilization of geothermal resources for non-electrical purposes such as space or industrial heating, desalination of water, and mineral recovery may be of great value in conserving fossil and nuclear fuels. Environmental impacts of geothermal energy are discussed. Legal problems associated with geothermal resources vary from state to state. Three subgroup papers include: wet and dry steam systems, by David L. Williams; hot dry rock systems, by William E. Brigham; and geopressed systems, by Myron Dorfman. A review of geothermal energy resources was presented by Geoffrey Robson. (MCW)

323. GGIS-100995/ / /*****/A/78/ /US/ /***** Takashima

Title- Geothermal Energy Resources:

Subtitle- Exploration Budget and Costs Recovery

Author(s)- / Takashima , Ronald T. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 643 , 2 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Geopressured Geothermal Bibliography

Local Availability- CES

Auxiliary expression(s)-

Table

Proposed Descriptor(s)- / Budgets / Cost / Geothermal energy /
Geothermal exploration /

Abstract by Author

Increasing costs of geothermal exploration have made it a necessity that program managers be adequately trained to collect and analyze budgetary data. Exploration budgets should be used to monitor and control dollar expenditures. Furthermore, the program manager must properly utilize the available geothermal exploration techniques with an adequate economic and technical analysis of the acquired data in order to provide a supported determination to continue each exploration venture. Finally, appropriate utilization of cost information should allow geothermal exploration management to make proper decisions as to cost control and calculations of cost recovery.

324. GGIS-100278/J/AWAEB/*****/A/**/ /US/ /*****

Title- Geothermal Energy--

Subtitle- The Hot Prospect

Journal- Aware

Publication date- Issue 81 , June 1977

Pagination- Page 2 , 6 Pages

Proposed Descriptor(s)- / Cost / Economics / Electric power / Energy
source development / Geopressured resources / Geothermal power
plants / Geothermal resources / Geysers geothermal field / Magma
/ Power generation / Steam /

Abstract by Energyline

The potential capacity of U.S. geothermal resources is about 450,000 MW/day--just a little less than the total U.S. generating capacity today. Developed geothermal capacity,

however, stands in distinct contrast: 502 MW, all of it belonging to the Pacific Gas & Electric Co. at the Geysers in California. Dry steam system, hot water, geopressured systems, and crystalline rock and magma are methods of exploiting geothermal power that are waiting to be tapped. The rationale for costing available geothermal resources is complex, but among the major elements are power plant costs of from \$400-650/KW.

325. GGIS-100261/R/ /*****/M/**/ /US/ /150101

Title- Geothermal Energy, Research, Development and Demonstration Program

Subtitle- Second Annual Report

Publication date- April 1978

Pagination- 162 Pages

Report/patent- IGCC-3

Available- NTIS

(Paper Copy

(A08) (\$ 8.00)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- U.S. Department of Energy /9506839/.

Geothermal Energy Div.
Washington , D.C. , USA

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Geopressed Geothermal Bibliography

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Energy

(Economic and Financial Aspects)

Proposed Descriptor(s)- / Alaska / Arizona / California / Colorado / Commercialization / Demonstration / Financing / Geopressed systems / Geothermal energy / Geothermal exploration / Geothermal power plants / Geothermal resources / Geothermal wells / Hawaii / Hot dry rock systems / Idaho / Louisiana / Management / Maps / Montana / Nevada / Oregon / Planning / Research programs / Tables / Technology assessment / Texas / Utah / USA / Well drilling / Wyoming /

Abstract by TIC

The discussion is presented under the following section headings: Executive summary; national geothermal utilization estimates; federal geothermal energy program objective; federal geothermal energy strategy; federal program planning, implementation, and progress monitoring; organization of the report; national progress and achievements; regional progress and accomplishments; fiscal year 1978 activities; federal program activities in fiscal year 1979 and beyond; Appendix A--Interagency coordination and program management interagency geothermal coordinating council (IGCC); and Appendix B--International activities.

326. GGIS-100308/O/ /*****/M/**/ /US/ /*****

Title- Geothermal Energy:

(2. Volume, 1. Section)

Subtitle- A Novelty Becomes Resource

Conference- Geothermal Resources Council 2nd Annual Meeting

Hilo

Hawaii

USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- 385 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

327. GGIS-100362/R/ /*****/M/**/ /US/ /*****

Title- Geothermal Energy:

Subtitle- Obstacles and Uncertainties Impede Its Widespread Use

Publication date- January 18 , 1980

Pagination- 41 Pages

Report/patent- PB 80-134430

Available- NTIS

(Paper Copy

(A04) (\$ 7.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Corporate Author- General Accounting Office /9505734/.

Energy and Minerals Div.
Washington , D. C. , USA

Proposed Descriptor(s)- / Energy source development / Geothermal
energy / Government policies / Institutional aspects /
Regulations / Research programs / Uses /

Geopressured Geothermal Bibliography

Abstract by Author

This report discusses the obstacles and uncertainties impeding the widespread use of geothermal energy. It includes a perspective on geothermal energy's development and potential, and a discussion of Federal actions needed to help accelerate geothermal development and use.

328. GGIS-100371/R/ /*****/M/79/ /US/ /***** Weiss
68-03-2668

Title- Geothermal Environmental Impact Assessment:

(Final Report)

Subtitle- Ground Water Monitoring Guidelines for Geothermal
Development

Author(s)- / Coffee , Theodora O. / Weiss , Richard B. / Williams ,
Tamata L. /

Publication date- September 1979

Pagination- 232 Pages

Report/patent- PB 80-144801

Available- NTIS

(Paper Copy

(A11) (\$ 9.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Environmental Protection Agency /9501304/.

68-03-2668 /

Corporate Author- Harding-Lawson Asso..

San Rafael , California , USA

Auxiliary expression(s)-

Illus.

/ Figure (41) /

Table

Ref.

Proposed Descriptor(s)- / Aquifers / Artificial recharge / Corrosion / Costs / Fluids / Geothermal systems / Ground subsidence / Ground water / Hot water systems / Injection wells / Liquid wastes / Monitoring / Plugging / Reservoir engineering / Rock properties / Scaling / Seismicity / Vapor dominated systems / Waste disposal / Well logging /

Abstract by Author

The proposed ground water monitoring methodology for geothermal development specifies a six-step planning and evaluation procedure as follows: (1) define baseline conditions and project development; (2) forecast aquifer conditions; (3) define limits of detection; (4) evaluate ground water and disposal facility monitoring techniques; (5) design monitoring plan and alternatives; (6) implement monitoring plan. A philosophy of prevention is emphasized as an integral, natural and essential component of the monitoring methodology. Natural geothermal processes and reservoir development are discussed from the point of view of their effects on ground water systems. A liquid-dominated field will produce a far greater volume of effluent than a vapor-dominated field. Most geothermal reservoirs exhibit fracture porosity. They may consist of many separate pockets of fluids at various depths and with varying degrees of hydraulic connection. The relationship between shallow ground water, deep ground water and the geothermal system must be known in order to assess potential degradation. Borehole logging techniques provide continuous and detailed vertical profiles of rock and fluid properties. These can be used for ground water monitoring in geothermal areas to define baseline conditions, construct wells and monitor observation and injection wells. Well logging techniques cannot be directly applied to the fractured, crystalline environment typical of geothermal reservoirs since the standard calibration and interpretation methods have been developed for the intergranular, sedimentary petroleum environment. Currently, the most effective disposal method for liquid waste is injecting it into subsurface strata. Injection is also beneficial in that it helps prevent subsidence and facilitates reservoir recharge. Before injection of liquid wastes is initiated, geologic, hydrologic and reservoir engineering evaluations must be conducted. Potential problems may be chemical (e.g., scaling, formation plugging, corrosion) or physical (induced seismicity,

Geopressured Geothermal Bibliography

hydrofracturing, thermal stress). Actual injection experience is summarized, along with costs and areas of the technology needing research and development.

329. GGIS-100179/O/ /*****/M/**/ /US/ /*****

Title- Geothermal Environmental Seminar

Publication date- 1975

Pagination- Page 156

Report/patent- CONF-7511133

330. GGIS-100153/O/GAAPB/*****/A/**/ /US/ /150201

Title- Geothermal Exploration of Presidio County, Trans-Pecos, Texas

Author(s)- / Kopp , R. A. /

Conference- 11. Annual Meeting of the Geological Society of America,
South-Central Section
El Paso
Texas
USA (March 17 , 1977)

Publication date- Vol. 9 , January 1977

Pagination- Page 31 , 2 Pages

Corporate Author- Texas University, El Paso
El Paso , Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Proposed Descriptor(s)- / Geothermal exploration / Hot springs /
 Presidio County / Reservoir temperature / Subsurface waters /
 Temperature surveys / Thermal waters / Trans-Pecos hot rocks /

Abstract by ERA

Over 250 water samples from springs and wells have been collected in Presidio County. Three broad areas within the county contain a total of 13 wells or springs having surface temperatures from 30 to 72 DEG C; these areas include: (1) Candelaria, (2) south of Marfa, and (3) near Ruidosa. Based on the silica geothermometer a total of 138 samples show subsurface reservoir temperatures equal to or greater than 100 DEG C. The hottest areas occur north and south of Candelaria and south of Marfa where subsurface temperatures are estimated to exist from 125 to 177 DEG C. Current studies are aimed at defining the extent of the hot water areas, determine the relationship of the hot waters to the geology of the area, and analyze the chemistry of the waters.

 331. GGIS-100153/0/GAAPB/*****/A/**/ /US/ /*****

Title- Geothermal Exploration Program

Subtitle- Trans-Pecos, Texas

Author(s)- / Hoffer , J. M. /

Conference- 11. Annual Meeting of the Geological Society of America,
 South-Central Section
 El Paso
 Texas
 USA (March 17 , 1977)

Publication date- Vol. 9 , January 1977

Pagination- Page 26 , 1 Pages

Corporate Author- Texas University, El Paso
 El Paso , Texas , USA

Categories-

Geopressured Geothermal Bibliography

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geochemical Techniques and Surveys)

Proposed Descriptor(s)- / Brewster County / Culberson County / El Paso County / Geochemical surveys / Geothermal exploration / Hudspeth County / Jeff Davis County / Presidio County / Reservoir temperature / Surface temperature / Temperature surveys / Texas / Thermal waters / Trans-Pecos hot rocks / Water analysis /

Abstract by ERA

A program to evaluate the geothermal potential of a six county area in West Texas was recently initiated. The region of study includes approximately 22,000 square miles in El Paso, Culberson, Hudspeth, Jeff Davis, Presidio and Brewster Counties. The first year program includes geological and geochemical studies in an attempt to locate and define the occurrence of natural hot waters. To date over 700 water samples have been collected. Forty-five spring or well samples show surface temperatures ranging from 30 to 72 DEG C. These warm to hot water occurrences are found in twelve different areas of the region. Based on the silica geothermometer approximately 250 springs and wells have reservoir temperatures of at least 100 DEG C. In addition to silica, each water sample has been analysed for sodium, potassium, calcium, lithium, fluoride, chloride, magnesium plus numerous metals. Geological studies include detailed surface mapping in the immediate area of selected hot water localities plus the construction of a regional geologic map showing the locations plus the construction of a regional geologic map showing the locations of major structures and igneous rock occurrences.

332. GGIS-100256/R/ /*****/A/**/ /US/ /150500

Title- Geothermal Fuels Comparison with Other Fuels

(Paper 10 in Geothermal Energy- A National Opportunity (the Federal Impact))

Author(s)- / Greider , B. /

Publication date- 1978

Pagination- 19 Pages

Report/patent- NP--23437

Categories-

Geothermal Energy

(Economic and Financial Aspects)

Proposed Descriptor(s)- / Coal / Comparative evaluations / Cost /
Economics / Fossil fuels / Fuels / Geothermal energy / Natural
gas / Petroleum / Power generation /

333. GGIS-100042/J/GTEMA/*****/A/**/ / / /150101

Title- Geothermal Geopressure Resources and Problems of the Gulf
Coast

Author(s)- / Romans , W.A. /

Publication date- Vol. 1 , Issue 1 , August 1973

Pagination- 14 Pages

Categories-

Geothermal energy

(Resource status and assessment)

(Geology, hydrology, and geothermal systems)

Resource status and assessment

(USA)

Proposed Descriptor(s)- / Diagrams / Geology / Geophysical surveys /
Geopressured systems / Geothermal energy / Geothermal resources
/ Gulf of Mexico / Hydrology / Methane / Pressure dependence /
Shores / Steam / Temperature dependence / Water /

334. GGIS-100240/J/ /*****/A/77/ / / /***** Kitchen

Title- Geothermal Leasing Practices

Geopressured Geothermal Bibliography

Author(s)- / Kitchen , Gerald J. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 25 , 35 Pages

Proposed Descriptor(s)- / Energy source development / Geothermal resources / Land leasing / Leasing / Legal aspects /

Abstract by EIC

No one is quite sure what the geothermal resource is, so the question of who owns it is open to doubt. Few prospective lessors have any understanding of the resource in general or any knowledge of how development might impact their land. Legal and practical problems involved in developing the geothermal resource are discussed. A hypothetical land situation illustrates leasing premises.

335. GGIS-100241/O/ /*****/A/77/B/US/ /299002 Kitchen

Title- Geothermal Leasing Practices

Author(s)- / Kitchen , G. J. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 38 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Energy source development / Geothermal
resources / Land leasing / Leasing / Legal aspects /

Abstract by TIC

A general overview of the resource is presented to the extent the subject bears on leasing practices. Some legal and practical problems involved in developing the resource are discussed. Finally, a hypothetical land situation is described and some suggestions are made for leasing geothermal resources on the described premises. (MHR)

336. GGIS-100232/J/CAMJA/*****/A/77/ / / /***** Austin

Title- Geothermal Power Emerging as an Alternate Energy Source

Author(s)- / Austin , Ward H., JR. /

Journal- Can. Min. J.

Publication date- Vol. 98 , Issue 10 , October 1977

Pagination- Page 361 , 3 Pages

Auxiliary expression(s)-

Illus.

/ Drawing (4) /

Table

Proposed Descriptor(s)- / France / Geothermal energy / Geothermal
power generation / Italy / Japan / South America / USA /

Abstract by EIC

Geopressured Geothermal Bibliography

Geothermal energy as an alternate energy source is examined. Part of the delay in the development of geothermal energy in the U. S. is related to the argument over the assignment of royalties in the event of commercial production. The Italian, U. S., Japanese, South American, and French approaches to geothermal energy are surveyed. By the year 2000, 30,000 MW of geothermal energy could be installed in the U. S. if bureaucratic problems are solved. In Japan, extensive geothermal exploration is underway, and it is expected that, by 1982, Japan's geothermal electrical production should be up from the current 70 MW to 1000 MW. Japan is aiming at establishing 50,000 MW of geothermal generating capacity by the year 2000.

337. GGIS-100367/R/ /*****/M/80/ /US/ /***** Layton
W-7405-ENG-48

Title- Geothermal Power Production:

Subtitle- Impact Assessments and Environmental Monitoring

Author(s)- / Layton , David W. / Pimentel , Kenneth D. /

Conference- 26 Annual Meet., Institute for Environmental Sciences
Philadelphia
Pennsylvania
USA (May 11 , 1979)

Publication date- January 1980

Pagination- 7 Pages

Report/patent- UCRL-83681

Available- NTIS

(Paper Copy

(A02) (\$ 5.00)

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(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9505475/.

W-7405-ENG-48 /

Corporate Author- California Univ., Livermore /9500007/.

Lawrence Livermore Lab.
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Map (1) /

Ref.

Proposed Descriptor(s)- / Air quality / California / Environmental effects / Geothermal energy conversion / Ground subsidence / Imperial Valley / Models / Monitoring / Power generation / Seismicity / Water quality /

Abstract by Author

This paper focuses on the role that baseline and postoperational environmental monitoring plays in assessing impacts of geothermal power production. Based on our experience in the Imperial Valley, where substantial geothermal resources exist, we examine the important characteristics of monitoring programs involving subsidence, seismicity, and air and water quality. We discuss the importance of environmental monitoring for situations where predictive models either do not exist (e.g., seismicity), or are still being developed (e.g., land subsidence). In these cases we emphasize the need for acquiring and analyzing data that can provide timely information on changes caused by geothermal operations. Monitoring is also useful in verifying predictions of air quality changes--in particular, violations of ambient standards after control technologies are implemented. Water quality can be monitored with existing sampling programs where the potential for geothermal impacts is thought to be rather small. We summarize the significant issues in these environmental areas, the status of baseline data and predictive capability that currently exists, and the need for future monitoring and modeling programs to assess the impacts of geothermal development.

338. GGIS-100899/0/ /*****/A/76/ / / /***** Neill

Title- Geothermal Powered Heat Pumps to Produce Process Heat

Geopressured Geothermal Bibliography

Author(s)- / Jensen , W.P. / Neill , D.T. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 802 , 6 Pages

Report/patent- SAE--769139

Proposed Descriptor(s)- / Cost / Elevated temperature / Flashed steam systems / Geothermal fluids / Heat exchangers / Power plants / Process heat / Uses / Working fluids /

Abstract by Author

Most geothermal electrical power generating facilities will produce tremendous volumes of hot water having residual heat at a temperature of 100 to 150 DEG C. Such heat is difficult to utilize economically but it becomes much more usable if a heat pump is employed to raise the temperature of a portion of the residual heat to significantly higher temperatures. An attractive scheme for such a system employs a two-stage flash steam generator in which steam from the first stage goes to the heat pump compressor as working fluid and steam from the second stage is used to power a turbine which in turn drives the compressor. Calculations have been performed on such a system which delivers process heat via the working fluid at temperatures of 150 DEG C to 260 DEG C from geothermal resource temperatures of 100 DEG C to 150 DEG C. Cost studies show that the heat pump system can deliver process heat at costs competitive with the use of fossil fuel heaters.

339. GGIS-100013/0/ / 31/M/**/ / / /*****

Title- Geothermal Projects and Estimates Through 1985 and the Year 2000

(Paper SPE 5397)

Author(s)- / Glass , W. A. /

Conference- Society of Petroleum Engineers of AIME Regular Meeting

Publication date- Issue 5397 , 1975

Pagination- Page 57 , 6 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Geothermal energy / Steam /

Abstract by NTIS

This paper examines various current and future aspects of geothermal energy production and utilization. The contribution of geothermal energy to the total present U.S. energy needs is 410 MWE, or an amount of energy equivalent to less than 0.1% of U.S. daily oil consumption. If this very small output is to be significantly increased, an "accelerated" program ought to be implemented through speeded research and development, and removal of institutional, regulatory, and legal, environmental, and technological constraints. This would lead to an estimated output of 20,000 MWE by 1985 and 200,000 by the year 2000. The geothermal projects that will contribute to this growth include dry steam fields, hot brines, moderate temperature/ low salinity fluids, geopressured reservoirs, hot dry rock and magmatic deposits. 1 ref.

340. GGIS-100245/O/ /*****/M/**/ /US/ /*****

Title- Geothermal Research and Advanced Technology

Author(s)- / La Mori , Phillip /

Conference- Energy Technology 3. Conf.
Washington, D. C., USA (March 29 , 1976)

Publication date- 1976

Pagination- Page 103 , 12 Pages

Auxiliary expression(s)-

Illus.

/ Graph (6) /

Ref.

Table

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Commercialization / Energy source development / Exploitation / Forecasting / Geothermal energy conversion / Technology assessment / Technology utilization / Vapor dominated systems /

Abstract by EIC

Technology for the commercialization of vapor-dominated hydrothermal geothermal systems is demonstrated. Near-term utilization of geothermal energy in the U. S. is dependent on several factors: accurate evaluation of the resource base; predictions of growth in utilization; risks as perceived by utilities and how these will affect growth; institutional issues; economic issues; and environmental problems. Previous estimates of the growth of geothermal electric power production are examined, and it is found that all but the most conservative are too high for 1985. The present estimate for 1985 is less than 4000 MWE installed. As the available hydrothermal convective systems become more developed, significant inputs from the hot igneous and geopressure systems will be necessary to maintain the established growth rate.

341. GGIS-100042/J/GTEMA/ 310/A/75/ / / /***** Takahashi

Title- Geothermal Reservoir Engineering

Author(s)- / Chen , B. / Takahashi , P. K. /

Journal- Geothermal Energy Magazine

Publication date- Vol. 3 , Issue 10 , 1975

Pagination- Page 7 , 15 Pages

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Aquifer tests / Diagrams / Forecasting / Geopressured systems / Hot-dry rocks / Photographs / Power generation / Reservoir engineering / Reviews / Structural models / Tables / Vapor dominated systems / Well logging /

342. GGIS-100290/ / /*****/A/77/ /UK/ /***** Leardini

Title- Geothermal Resource Assessment and Cost of Geothermal Power

Author(s)- / Leardini , T. /

Conference- 10. World Energy Conference (Energy Resources:
Availability and Rational Use)
Istanbul
Turkey (September 19 , 1977)

Publisher- IPC Science and Technology Press
Guildford, England

Publication date- Vol. 10 , September 1977

Pagination- Page 126 , 1 Pages

Note- Abstract only

Local Availability- Eng.

Proposed Descriptor(s)- / Cost / Economics / Electric power /
Geopressured systems / Hot dry rock systems / Magma systems /
Power generation / Resource assessment / Vapor dominated systems
/

Abstract by Compendex

The assessment of geothermal energy is based on a careful definition and evaluation of thermal energy resources and reserves in different systems which can be schematically subdivided into convection systems (vapor dominated and steam-dominated), geopressurized systems, hot dry rock systems and magmatic systems. Major attention is attached to the steam-dominated fields, delivering steam or steam and water mixtures, which can be utilized to generate electricity in conventional low-pressure steam power-plant equipment. Although, generally speaking, there is rather scarce knowledge of the potential involved in single systems, recent work has been devoted in many countries to resource assessment and is dealt with in the first part of this paper. The economic evaluation of the power produced by geothermal fluids is analyzed in the second part. Updated capital costs involved in the different phases of geothermal resource exploitation are reviewed, including prospection, drilling, steam collection, power plant and electrical equipment and installation. Methods are suggested

Geopressured Geothermal Bibliography

for the evaluation of energy costs, according to prevailing local capital and labor costs, etc.

343. GGIS-100007/0/ / 1/A/**/ /US/ /150100

Title- Geothermal Resource Utilization

Subtitle- Paper and Sugar Cane Industries

Author(s)- / Hornburg , C. D. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 233 , 28 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (13) / Graph (5) / Map (3) / Drawing (5) /

Table

Ref.

Categories-

Geothermal Energy

(Geo Brine)

Energy Usage

(Industry)

Paper

(Pulp)

(Paperboard)

Proposed Descriptor(s)- / Confectionary sugar / Cost / Energy sources / Geo brine / Geopressured systems / Geothermal energy / Geothermal resources / Geothermal heating cooling / Gulf of Mexico / Industrial plants / Industry / Industrial energy usage / Louisiana / Paper / Paper pulp / Paper board / Proceedings / Refining / Stores / Sugar cane / Texas / Uses / 206 (SIC) / 261-3 (SIC) /

Abstract by ERDA/RECON

The feasibility of utilizing geothermal resources of the geopressured zone along the Gulf of Mexico Coast in the pulp and paper industry and sugar cane industry was studied. A summary of the findings is presented, which includes energy requirements, specific plants and sites, diagrams of main processes, energy-recovery system, waste disposal and economics. The overall conclusion of the study is that utilization of thermal energy from the geoenergy fluid in pulp and paper mills and new sugar refineries is technically sound and economically viable, provided that the other energy in the fluid (natural gas and pressure) is recovered concurrently. (LS)

344. GGIS-100241/0/ /*****/A/77/B/US/ /299002 Vranesh

Title- Geothermal Resources

(An Alternative Energy Source which is Gathering Steam)

Subtitle- Water and Other Conflicts Encountered by the Developer

Geopressured Geothermal Bibliography

Author(s)- / Musick , J. D., JR. / Vranesh , G. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 66 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Colorado / Energy source development /
Geothermal resources / Laws / Legal aspects / Legislation /
Mineral rights / Water rights /

Abstract by TIC

Geothermal resources are described briefly. Various environmental, legal, and technical obstacles are reviewed. Federal and state legislation and case law that might affect geothermal development if the resource is treated as either mineral or water are outlined. The treatment of geothermal resources in one jurisdiction, Colorado, is summarized, and possible legal solutions necessary to meet a goal of fuel sufficiency that is prudently accountable both environmentally and technologically are summarized. (MHR)

345. GGIS-100087/R/ /*****/M/**/ /US/ /150200

Title- Geothermal Resources

Subtitle- Frio Formation, South Texas

Author(s)- / Agagu , O. K. / Bebout , D. G. / Dorfman , M. H. /

Publication date- 1975

Pagination- 36 Pages

Report/patent- T1D--26955

Available- NTIS

(Paper copy (\$ 4.00)

(Microform (\$ 2.25)

Corporate Author- Texas Univ. /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Distribution / Faults / Geological surveys
/ Geologic deposits / Geopressured systems / Geothermal
resources / Methane / Sand / Seismic surveys / Site selection /
Texas /

Abstract by Energyline

Due to prospective oil wells that penetrated the Tertiary sediments, a geopressured zone containing fluids with high temperatures exists along the Texas Gulf Coast. Limited data indicate that pore spaces within the sands in this zone are filled with water high in temperature, relatively low in dissolved solids, and saturated with methane gas. These waters are considered an important potential source of methane gas and thermal energy. A preliminary study of one of the two main sand trends (the Frio Formation), its sand distribution, and formation temperatures and pressures was undertaken to define prospective areas needing a detailed reservoir analysis prior to selection of a geothermal well site. (Numerous diagrams, numerous maps)

Geopressured Geothermal Bibliography

346. GGIS-100086/ / /*****/M/**/ / / /*****

Title- Geothermal Resources

(University of Texas Geological Circular 75-8)

Subtitle- Frio Formation, Middle Texas Gulf Coast

Author(s)- / Agagu , O. K. / Bebout , D. G. / Dorfman , M. H. /

Publication date- 1975

Pagination- 43 Pages

Corporate Author- University of Texas

Auxiliary expression(s)-

Illus.

Categories-

Geothermal Energy

(Geo Brine)

Proposed Descriptor(s)- / Geo brine / Geothermal resources /
Geothermal energy / Methane / Texas /

Abstract by Energyline

The geothermal resources of the Frio Formation in the middle Texas Gulf Coast area are evaluated. At depths generally greater than 7000 FT the sands and shales of the Frio Formation are overpressured and undercompacted. The insulating effect of these sediments results in the accumulation of subsurface heat, and, thus, high temperature water. The geopressured zone's resource consists of high temperature water with relatively low salinity and with dissolved methane gas. The following areas are investigated: depositional environments; and the geopressured zone and its relationship to sand-shale distribution, growth faults, and fluid temperatures. (Numerous maps)

347. GGIS-100062/J/SCIEA/ 191/A/75/ / / /***** Hammond

Title- Geothermal Resources

Subtitle- A New Look

Author(s)- / Hammond , A. L. /

Journal- Science

Publication date- Vol. 190 , Issue 4213

Pagination- Page 370

Proposed Descriptor(s)- / Geopressured systems / Geothermal resources
/ Hot dry rock systems / Hydrothermal systems / Magma systems /
Resource assessment /

348. GGIS-100159/R/ /*****/M/**/ /US/ /150201

Title- Geothermal Resources

(Geological Circular 76-3)

Subtitle- Frio Formation, Upper Texas Gulf Coast

Author(s)- / Bebout , D. G. / Bosch , S. C. / Dorfman , M. H. /
Loucks , R. G. /

Pagination- 48 Pages

Report/patent- NP-22439

Available- Bureau of Economic Geology
University of Texas at Austin
University Station
BOX X
Austin
Texas
78712

(Paper copy (\$ 1.50)

Geopressured Geothermal Bibliography

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Cross section (5) / Diagram (3) / Map (29) /

Ref.

Table

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Proposed Descriptor(s)- / Brazoria County / Deposition / Distribution / Electric logging / Frio Formation / Galveston County / Geologic cross sections / Geologic structures / Geopressure resources / Geopressured systems / Geothermal exploration / Growth faults / Gulf Coast / Gulf of Mexico / Isothermal maps / Isotherm / Maps / Salt domes / Sand / Sand percent maps / Shales / Subsurface temperatures / Temperature measurement / Tertiary Period / Texas / Well logging / Wells /

Abstract by DOE/RECON

Major sand trends were identified in the Frio Formation, Upper Texas Gulf Coast as part of the evaluation of its potential for producing geothermal energy. Electrical logs from 465 wells spaced 55 to 10 miles apart were used in the study. Maps illustrating total net sand and total sand percentage of the Frio Formation are included. It was found that subsurface fluid temperatures of greater than 250 DEG F occur in the Frio Sand bodies up to 100 FT thick downdip of the high-sand trends. A broad band in Brazoria and Galveston Counties was delineated as having geothermal potential.

349. GGIS-100240/J/ /*****/A/77/ / / /***** Vranesh

Title- Geothermal Resources

(An Alternative Energy Source which is "Gathering Steam")

Subtitle- Water and Other Conflicts Encountered by the Developer

Author(s)- / Musick , John D. , JR. / Vranesh , George /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 109 , 41 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Colorado / Energy source development /
Geothermal resources / Laws / Legal aspects / Legislation /
Mineral rights / Water rights /

Abstract by EIC

Various environmental, legal, and technical obstacles to developing geothermal resources are described. Federal and state legislation and case law that might affect geothermal development if the resource is treated as mineral or water are reviewed. Treatment of geothermal resources in Colorado is described. The need is to accommodate a new kind of water with existing rights systems.

350. GGIS-100043/J/GTMCA/ 2/A/**/ /US/ /*****

Title- Geothermal Resources of the Northern Gulf of Mexico Basin

(Published Maps Show Little Potential, Deep Drilling Shows High Geopressures, Geothermal Gradients)

Author(s)- / Jones , Paul H. /

Journal- Geothermics

Publication date- Vol. 2 , 1970

Geopressured Geothermal Bibliography

Pagination- Page 14 , 13 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Clay / Dehydration / Depth / Distribution /
Drilling / Economic geology / Faults / Fresh water / Geopressure
/ Geopressured systems / Geothermal energy / Geothermal gradient
/ Geothermal resources / Ground water / Gulf Coast / Gulf of
Mexico / Heat flow / Heat sources / Maps / Movement /
Possibilities / Regional / Resources / Temperature / Temperature
gradients / Thermal waters /

351. GGIS-100101/ / /*****M/**/ / /*****

Title- Geothermal Resources of the Texas Gulf Coast

(Geological Circular 76-7)

Subtitle- Environmental Concerns Arising from the Production and
Disposal of Geothermal Waters

Author(s)- / Gustavson , T. C. / Kreitlung , C. W. /

Publication date- 1975

Pagination- 35 Pages

Corporate Author- Texas Univ.

Bureau of Economic Geology
Austin , Texas , USA

Categories-

Exploration

(Evaluation)

352. GGIS-100172/R/ /*****M/**/ /US/ /150600

Title- Geothermal Resources of the Texas Gulf Coast

(Geological Circular 76-7)

Subtitle- Environmental Concerns Arising from the Production and Disposal of Geothermal Waters

Author(s)- / Gustavson , Thomas C. / Kreitler , Charles W. /

Publication date- 1976

Pagination- 40 Pages

Report/patent- NP-21775

Available- Bureau of Economic Geology
University of Texas at Austin
University Station
Box X
Austin
Texas
78712

(Paper copy (\$ 1.25)

Local Availability- GGIS

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Graph (8) / Map (15) /

Ref.

Table

Categories-

Geothermal Energy

(Environmental Aspects and Waste Disposal)

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Chemical composition / Environmental effects / Erosion / Faults / Fault activation / Floods / Geopressured systems / Geothermal fluids / Ground subsidence / Gulf of Mexico / Gulf Coast / Hazards / Hurricanes / Regulations / Reservoir compaction / Saline aquifers / Storage / Storms / Texas / Transport / Waste disposal / Waste water / Water chemistry / Water production / Wind /

Abstract by TIC

Disposal and temporary surface storage of spent geothermal fluids and surface subsidence and faulting are the major environmental problems that could arise from geopressured geothermal water production. Geopressured geothermal fluids are moderately to highly saline and may contain significant amounts of boron. Disposal of hot saline geothermal water in subsurface saline aquifers will present the least hazard to the environment. It is not known, however, whether the disposal of as much as 54,000 cubic M of spent fluids per day into saline aquifers at the production site is technically or economically feasible. If saline aquifers adequate for fluid disposal cannot be found, geothermal fluids may have to be disposed of by open watercourses, canals, pipelines to coastal bays on the Gulf of Mexico. Overland flow or temporary storage of geothermal fluids may cause negative environmental impacts. As the result of production of large volumes of geothermal fluid, reservoir pressure declines may cause compaction of sediments within and adjacent to the reservoir. The amount of compaction depends on pressure decline, reservoir thickness, and reservoir compressibility. The magnitude of environmental impact of subsidence and fault activation varies with current land use. Geothermal resource production facilities on the Gulf Coast of Texas could be subject to a series of natural hazards: (1) hurricane- or storm-induced flooding, (2) winds from tropical storms, (3) coastal erosion, or (4) expansive soils. None of these hazards is generated by geothermal resource production, but each has potential for damaging geothermal production and disposal facilities that could, in turn, result in leakage of hot saline geothermal fluids.

353. GGIS-100241/O/ /*****/M/**/ /US/ /299002

Title- Geothermal Resources Development Institute Conference

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Abstract by TIC

Fourteen papers and a bibliography are presented. A separate abstract was prepared for each. (MHR)

354. GGIS-100241/O/ /*****/A/77/B/US/ /299002 Schlauch

Title- Geothermal Resources Joint Ventures

Author(s)- / Schlauch , P. J. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 23 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Geopressured Geothermal Bibliography

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Agreements / Geothermal resources / Legal aspects /

Abstract by TIC

An attempt is made to identify and analyze the more important of the differences between joint ventures in oil and gas and those in geothermal resources. Matters that should receive special attention in structuring a geothermal resource joint venture are discussed.

355. GGIS-100240/J/ /*****/A/77/ / / /***** Schlauch

Title- Geothermal Resources Joint Ventures

Author(s)- / Schlauch , Paul J. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 13 , 24 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Agreements / Geothermal resources / Legal aspects /

Abstract by EIC

Joint venturing for geothermal resources is not radically different from the more familiar mining and oil and gas joint ventures. However, differences are sufficient to merit special consideration, and the more important ones are identified and analyzed. Ultimately, the success of a geothermal resource joint venture will depend on the good faith of participants much more than on the language chosen to define the agreement.

356. GGIS-100250/R/ /*****/M/**/ /US/ /150201
EY-76-S-05-4891

Title- Geothermal Resources, Vicksburg Formation, Texas Gulf Coast

Author(s)- / Loucks , R. G. /

Publication date- January 1978

Pagination- 54 Pages

Report/patent- ORO--4891-2

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

**Proposed Descriptor(s)- / Deliverability / Geopressure resources /
Geopressured reservoirs / Gulf Coast / Hidalgo County /
Permeability / Resource availability / Sandstone / Texas /
Vicksburg Formation /**

Abstract by TIC

The potential for discovering geopressured geothermal reservoirs in the Vicksburg Formation is limited to Hidalgo County along the lower Texas Gulf Coast. In Hidalgo County, an area of approximately 385 square miles (designated the Vicksburg Fairway) contains up to 1,300 feet of geopressured sandstones with fluid temperatures greater than 300 DEG F. In-place effective permeability, however, averages less than 1 millidarcy in the Vicksburg Sandstones because of fine grain size and extensive late carbonate cementation. Also, areal extent of individual reservoirs is limited in a dip direction by growth faults and in a strike direction by the lenticular morphology of the sandstone bodies. In conclusion, under the

Geopressed Geothermal Bibliography

present specifications set for a geothermal fairway, the Vicksburg has minimal potential because of low reservoir deliverability, which is constrained by low permeability and somewhat limited reservoir continuity. If future tests indicate that lower permeabilities are acceptable, the Vicksburg Fairway should be reconsidered because of the presence of extremely thick sandstone bodies.

357. GGIS-100242/R/ /*****/M/**/ /US/ /150201
EY-76-S-05-4891

Title- Geothermal Resources, Wilcox Group, Texas Gulf Coast

Author(s)- / Bebout , D. G. / Gavenda , V. J. / Gregory , A. R. /

Publication date- January 1978

Pagination- 84 Pages

Report/patent- ORO--4891-3

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Proposed Descriptor(s)- / Electrical surveys / Geopressure resources
/ Geopressed zones / Geothermal exploration / Geothermal
resources / Gulf Coast / Regional analysis / Sandstone /
Stratigraphic maps / Texas / Thickness / Wilcox Formation /

Abstract by TIC

Results are presented of a regional study to identify areas where the Wilcox Group contains significant thicknesses of sandstone with subsurface temperatures higher than 300 DEG F.

Eight of these geothermal fairways were identified. Control for this study was based on wells chosen so as to provide stratigraphic dip sections spaced 15 to 20 miles apart along the entire Texas Gulf Coast. Electrical well logs from the eight fairways are shown. (MHR)

358. GGIS-100241/0/ /*****/A/77/B/US/ /299002 Snyder

Title- Geothermal Sales Contracts

Author(s)- / Snyder , S. A. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 37 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Contracts / Geothermal resources / Legal aspects / Trade /

Abstract by TIC

The sixteen sections in the first geothermal steam sales contract between Magma Power Company and Thermal Power Company and Pacific Gas and Electric Company are listed and discussed briefly. The legal developments between contracts are

Geopressured Geothermal Bibliography

mentioned. A checklist is given of matters that must be considered in negotiating a sales contract for geothermal energy: restrictions contained in seller's title, consideration of problems involving the lease term, the problem of "other minerals", produced with the geothermal fluids, water law, other lease clauses that must be considered in the negotiations of a sales contract, the royalty problem, conditions precedent to the effectiveness of a contract, rights committed to the contract, taxes, price and measurement, equipment for conversion of the geothermal energy to electricity, surface rights, effluent disposal, right to terminate, renegotiation on changed conditions, assignments, indemnities and insurance, settlement of disputes, applicable law, and confidentiality. (MHR)

359. GGIS-100240/J/ /*****/A/77/ / / /***** Snyder

Title- Geothermal Sales Contracts

Author(s)- / Snyder , Sam A. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 259 , 30 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Contracts / Geothermal resources / Legal aspects / Trade /

Abstract by EIC

Things that a producer of geothermal energy should consider when selling the resource to another party for the purpose of generating electricity are discussed. Reference for the sale of geothermal steam by the Union Oil Co. of California from its properties in the northern part of the state is to the original contract between the Magma Power Co. and the Pacific Gas and Electric Co. The checklist for consideration by attorneys includes 20 items.

360. GGIS-100343/J/RGPSB/*****/A/79/ / / *****/ White

Title- Geothermal Systems and Their Energy Resources

Author(s)- / Guffanti , Marianne / White , Donald E. /

Journal- Rev. Geophys. Space Phys.

Publication date- Vol. 17 , Issue 4 , June 1979

Pagination- Page 887 , 16 Pages

Corporate Author- Geological Survey /2751000/.
Menlo Park , California , USA

Proposed Descriptor(s)- / Direct energy utilization / Electric power
/ Exploration methods / Geopressured zones / Geothermometers /
Gulf Coast / Hydrothermal systems / Methane / Power generation /
Uses /

Abstract by Compendex

Outstanding advances in geothermal resource utilization include: (1) rapid growth in electrical generation from hydrothermal convection systems; (2) increasing interest in low-temperature geothermal waters for non-electrical (direct) uses; and (3) recognition of the resource potential of the geopressured environment of the Gulf Coast for geothermal and methane energy. Major advances in the understanding of geothermal systems have resulted from several new developments. (1) A variety of chemical and isotopic geothermometers and mixing models were developed and are being widely used for predicting subsurface temperatures of hydrothermal convection systems. (2) High $^3\text{He}/^4\text{He}$ ratios are now recognized as reliable indicators of mantle or deep crustal contributions to the hydrosphere and atmosphere. (3) Many geophysical techniques have been tested in exploration of hydrothermal convection systems and delineation of reservoir extent. (4) Teleseismic P-wave delays and attenuation of seismic energy imply huge volumes of magma under Yellowstone National Park (Wyoming), The Geysers--Clear Lake (California), and Long valley (California).

361. GGIS-100119/ / / *****/M/**/ / / *****/

Title- Geothermal Utilization Technology for Gulf Coast Geopressure Resources

Geopressured Geothermal Bibliography

(7/74 to 6/75)

Author(s)- / Underhill , G. K. /

Publication date- 1975

Available- University of Texas, School of Engineering
Univ. of Texas
School of Engineering, Mechanical Engineering
200 W. 21St
Austin, Texas 78712

Corporate Author- Texas Univ.

Abstract by Energyline

At the present time U. S. interest in the development of geothermal generation of electricity is high even though total U. S. generation is only about 500 MW(E) from the big Geysers dry steam field in California. It has been estimated, however, that the geopressure geothermal resources located along the Gulf of Mexico Coast in Texas could play a very significant role in electrical generation, process heat supply, and methane production. The resource, however, presents challenging technological and environmental problems if it is to be developed efficiently and acceptably. The main utilization problems are: 1) the efficient use of the low-enthalpy geothermal fluid with flash-steam or total flow direct cycles or with binary-fluid cycles interfaced to the geothermal fluid with heat exchangers, 2) the total or multiple-use integration of process heat exchangers, 3) the total or multiple-use integration of process heat industry with the geothermal resource, 4) the net energetics and economics aspect of resource utilization, and 5) the environmental considerations attendant with the large quantities of waste water exhausted from the utilization cycle or process. Investigations, designed to elucidate aspects of the preceding four problems, are proceeding.

362. GGIS-100228/R/ /*****/M/78/ /US/ /150901 Snyder
EY-76-C-04-0789

Title- Geothermal Well Completions

Subtitle- An Overview of Existing Methods in Four Types of Developments

Author(s)- / Snyder , R. E. /

Publication date- January 1978

Pagination- 128 Pages

Report/patent- SAND--78--7010

Local Availability- CES

Sponsor- / US DOE

EY-76-C-04-0789 /

Corporate Author- Completion Technology Co.
Houston , Texas , USA

Auxiliary expression(s)- •

Illus.

/ Figure (35) /

Table

Ref.

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Drilling Technology and Well Hardware)

Proposed Descriptor(s)- / Geopressured wells / Geothermal wells /
Gulf Coast / Injection wells / Producing wells / Well completion
/

Abstract by TIC

Existing practices and capabilities for completing producing and injection wells for geothermal application in each of four categories of geothermal environments are discussed. Included are steam wells in hard, fractured rocks (The Geysers, California), hot water wells in sedimentary formations

Geopressured Geothermal Bibliography

(Imperial Valley, California), hot, dry impermeable rocks with circulating water systems (Valles Caldera, New Mexico), and geopressured, geothermal water wells with associated hydrocarbon production on the U. S. Gulf Coast.

363. GGIS-100995/ / /*****A/78/ /US/ /***** Snyder

Title- Geothermal Well Completions:

Subtitle- State of the Art

Author(s)- / Snyder , Robert E. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 601 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (1) /

Ref.

Proposed Descriptor(s)- / Geopressured wells / Geopressured zones / Geothermal wells / Geysers geothermal field / Gulf Coast / Hot dry rock systems / Hot water systems / Imperial Valley / Louisiana / Texas / Valles Caldera geothermal field / Vapor dominated systems / Well completion /

Abstract by Author

Present methods for completing steam and liquid dominated, dry rock, and geopressured geothermal wells are described by interpretive review of actual and proposed operations in The

Geysers, Imperial Valley, the Valles Caldera, New Mexico project, and Louisiana-Texas geopressured zones. Limitations of technology and equipment that has been adapted for the petroleum industry to meet new and unique requirements of these downhole environments are objectively analyzed.

364. GGIS-100308/0/ /*****/A/78/ /US/ /***** Godare

Title- Geothermal Wellheads--

Subtitle- The Heart of Geothermal Production Systems

Author(s)- / Godare , Bill /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 207 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus..

/ Diagram (4) /

Proposed Descriptor(s)- / Geothermal wells / Producing wells /
Surface equipment / Well casings / Well completion / Wellheads /

Geopressured Geothermal Bibliography

Abstract by Author

The properly designed wellhead unit provides complete well control during the drilling, casing, cementing, well testing, and well production phases of a geothermal well's life. The geothermal wellhead unit must provide total well control, as does the oil, gas, and domestic water wellhead assemblies do, and it must accomplish and provide the total well control at elevated temperatures. Consequently, because of the elevated temperatures, the wellhead must be designed to absorb varying amounts of production casing thermal expansion, while maintaining adequate environmental protection and personnel safety.

365. GGIS-100267/B/ /*****/M/**/ /US/ /150000

Title- Geothermal World Directory

Subtitle- 1977/78

Publisher- Geothermal World Publications
Reseda, California

Publication date- 1977

Pagination- 379 Pages

Available- Geothermal World Publications
18014 Sherman Way
Suite 169
Reseda
California
91335

(Cloth (\$ 40.00)

Local Availability- CES

Categories-

Geothermal Energy

Proposed Descriptor(s)- / Contracts / Directory / Geopressure
resources / Geothermal energy / Hot dry rock systems / Hot water
systems / Public utilities / US ERDA / Vapor dominated systems /

Abstract by TIC

The directory is made up of two parts. Part I consists of: table of contents; contacts and organization of USERDA's Division of Geothermal Energy; public utilities; power pools; business listing; international individual listings; individuals (U.S. and Canada); and universities and colleges. Part II is made up of articles, important news items, and general geothermal information.

366. GGIS-100028/J/AMREA/ 2808/A/**/ / / /***** Rinehart

Title- Geothermics

Author(s)- / Rinehart , John S. /

Journal- Appl. Mech. Rev.

Publication date- Vol. 28 , Issue 8 , August 1975

Pagination- Page 1081 , 4 Pages

Proposed Descriptor(s)- / Cost / Geopressured systems / Geothermal energy / Geothermal resource systems / Hot water systems / Hot dry rock systems / Mexico / New Zealand / Power potential / Temperature gradients / United States / Vapor dominated systems /

Abstract by NTIS

This article describes the five general types of geothermal resources that can be used to generate electric power: dry steam which streams from holes drilled to great depth (a steam-dominated system); wet steam which is generated when superheated water gushing from drilled holes partly flashes into steam (a water-dominated system); geopressurized reservoirs in which fresh water at high pressure is stored deep underground; hot water which flows from natural or man-made holes at a temperature less than its boiling point (a hot water system); and hot rocks, deeply buried, from which dry steam can be generated by dousing with water (a dry steam). The three main producing areas (Wairakei, The Geysers, and Lardarello) as well as a number of pilot plants are described.

367. GGIS-100061/J/RGTHA/13146/A/**/ / / /150100

Geopressured Geothermal Bibliography

Title- Geothermy and the Geologists

Original Title- La Geothermie et les Geologues

Author(s)- / Sahores , J. /

Journal- Rev. Gen. Therm.

Publication date- Vol. 13 , Issue 146 , February 1974

Pagination- Page 115 , 4 Pages

Language- French

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Dry-steam systems / Geology / Geophysics /
Geopressured systems / Geothermal energy / Geothermal
exploration / Geothermal resources / Hot dry rock systems / Hot
water systems / Legislation /

Abstract by NTIS

Experience gained in oil prospecting is useful in prospecting and working geothermal sites. In the search for geothermal energy the steam sites are distinct from the hot water ones (numerous deep deposits); amongst the latter, the hot water sites, at the hydrostatic pressure, are distinct from the hot water ones in geopressure condition. Very hot compact rocks could also release their energy through hydraulic fracturation. A knowledge of the importance of this energy should lead to the setting up of a national legislation concerning it and to the organization of a geothermal teaching discipline. 5 refs. In French.

368. GGIS-100023/J/AAPGB/ 5704/A/**/ / / /*****

Title- Global Look at High Pressures

(Abstract)

Author(s)- / Deju , Raul A. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 57 , Issue 4 , 1973

Pagination- Page 775 , 1 Pages

Proposed Descriptor(s)- / Engineering geology / Gas / Geopressured
reservoirs / Geopressure / Global / High / Mechanism / Origin /
Petroleum /

369. GGIS-100236/J/WRERA/*****/A/77/ / / *****/ Brownell

Title- Governing Equations for Geothermal Reservoirs

Author(s)- / Brownell , D. H. /

Journal- Water Resour. Res.

Publication date- Vol. 13 , Issue 6 , December 1977

Pagination- Page 929 , 6 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Equations / Fluid flow / Geothermal
reservoirs / Hydrothermal systems / Mathematical models / Rock
matrix / Two-phase flow /

Abstract by EIC

Governing equations--specifically balance laws and
constitutive relations--are developed for hydrothermal
geothermal reservoirs. Topics include: balance Laws single
phase (liquid water); balance equations for passive reservoir;
nondimensional analysis; extension to two-phase (liquid-vapor)
flow; and constitutive relations for the rock matrix.

Geopressured Geothermal Bibliography

370. GGIS-100066/J/W00IA/18206/A/**/ / / /*****

Title- Graphical Method Predicts Geopressures Worldwide

Author(s)- / Eaton , Ben A. /

Journal- World Oil

Publication date- Vol. 182 , Issue 6 , May 1976

Pagination- Page 51 , 6 Pages

Note- 2. Next Issue NTIS see also 2/4/77 #8 L. 1831: (EN)

Proposed Descriptor(s)- / Blowout prevention / Bottom hole pressure /
Oil well drilling / Oil wells / Well logging /

Abstract by ERDA/RECON

Past methods for calculating and locating abnormally pressured formations usually were applicable only in areas for which they were derived, but a new technique described here should be useful throughout the world. Equations are derived empirically and take into account variations in overburden pressure between geographical locations. The use of equations to develop a graphical method of determining geopressure magnitudes from well log or seismic data is described.

371. GGIS-100066/J/W00IA/18206/A/**/ / / /580200

Title- Graphical Method Predicts Geopressures Worldwide

Author(s)- / Eaton , Ben A. /

Journal- World Oil

Publication date- Vol. 182 , Issue 6 , May 1976

Pagination- Page 100 , 5 Pages

Note- 2. Next Issue NTIS see also 2/4/77 #8 L. 1831: (EN)

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Calculation methods / Data analysis /
Exploration / Geopressured / Graphic methods / Oil well drilling
/ Overburden / Well logging /

Abstract by NTIS

In 1972, a theory explaining the effect of overburden stress gradients on geopressure prediction techniques was presented. Since that time, enough actual well data have been published to enable formulation of equations that can be used to reliably calculate geopressure magnitudes from basic log parameters in all parts of the world. This article introduces these new equations, presents graphical solutions to the equations, and illustrates their use with several actual well situations. 8 refs.

372. GGIS-100995/ / /*****/A/78/ /US/ /***** Weiss

Title- Ground Water Monitoring Methodology for Geothermal Development

Author(s)- / Weiss , Richard /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 709 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (1) /

Geopressured Geothermal Bibliography

Ref.

Proposed Descriptor(s)- / Aquifers / Geothermal reservoirs / Ground water / Injection wells / Waste injection / Water monitoring / Water pollution /

Abstract by Author

The proposed ground water monitoring methodology for geothermal development specifies a seven-step monitoring system development and evaluation procedure consisting of (1) definition of baseline conditions and projected development; (2) forecast of aquifer conditions; (3) definition of necessary detection limits; (4) evaluation of alternative ground water and disposal facility monitoring techniques; (5) proposal of monitoring system and alternatives; (6) implementation of monitoring system; and (7) continuation of monitoring program and modification as necessary.

373. GGIS-100281/R/ /*****/M/79/ /US/ /***** Van Til
W-7405-ENG-48

Title- Guidelines Manual for Surface Monitoring of Geothermal Areas

Author(s)- / Van Til , C.J. /

Publication date- May 1979

Pagination- 128 Pages

Report/patent- LBL-8617

Available- NTIS

(Paper copy

(A07) (\$ 12.50)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, D.C. (USA) /9505475/.

W-7405-ENG-48 /

Corporate Author- California Univ. /1112800/.

Lawrence Berkeley Lab.
Berkeley , CA , USA

Auxiliary expression(s)-

Illus.

/ Diagram (15) / Photo (1) / Graph (5) / Map (13) /

Table

Ref.

Proposed Descriptor(s)- / Data analysis / Design / Fluid withdrawal /
Geopressured systems / Geothermal fields / Ground subsidence /
Information / Measuring instruments / Measuring methods /
Operation / Statistical models / Surface monitoring /

Abstract by Author

In order to deal with the problem of geothermal subsidence, one must also consider subsidence resulting from other causes, because of both the necessity of distinguishing among different causes and the scarcity of data on geothermal subsidence. Various subsidence processes are discussed; these include groundwater withdrawal, oil and gas withdrawal, tectonism, collapsing soils (hydrocompaction), soil oxidation, underground mining, and slope creep. Subsidence in an area may result from two or more processes simultaneously; thus geopressured fields may be subject to subsidence from oil and gas withdrawal as well as from water withdrawal. The primary cause of subsidence in geothermal areas is loss of pore space due to fluid withdrawal. Because of the damage that subsidence can cause, it is important to establish programs of subsidence monitoring for all geothermal fields. Guidelines for the establishment of such a program are presented. Included are the preliminary investigation, the design of the system, the operation of the system, and data handling and analysis. Instrumentation is discussed and formats for data presentation are described. Procedures for statistical analysis of data are presented.

374. GGIS-100374/O/ /*****/A/79/ /US/ /***** Lamb

Title- Gulf Coast Geopressured Geothermal Energy:

Geopressured Geothermal Bibliography

(4. Session: Utility Projects and Plans.)

Subtitle- Summary of Research at the University of Texas at Austin

Author(s)- / Lamb , J. Parker /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 38 , 4 Pages

Report/patent- EPRI-WS-79-166

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (1) /

Proposed Descriptor(s)- / Diagenesis / Environmental effects /
Geology / Geopressure resources / Institutional aspects / Legal
aspects / Meetings / Methane / Research programs / Reservoir
engineering / Resource assessment / Rock properties / Sandstone
/ Texas / Uses /

Abstract by Author (rev.)

A comprehensive investigation of Gulf coast geopressured-geothermal energy resources has been in progress at The University of Texas at Austin since 1974. In this review, each of the following areas of investigation will be described briefly: geological assessment, entrained methane, environmental impacts, sandstone diagenesis, elastic rock properties, resource engineering, resource utilization, legal and institutional studies, operations research, and geopressured-geothermal conferences.

375. GGIS-100995/ / /*****A/78/ /US/ /***** Leigh
EG-77-C-01-4014

Title- GELCOM:

Subtitle- A Geothermal Electric Levelized Cost Model

Author(s)- / Gupta , J.N. / Leigh , J.G. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 399 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Energy Research and Development Administration
EG-77-C-01-4014 /

Corporate Author- Mitre Corp. /9503543/.
METREK Div.
McLean , Virginia , USA

Auxiliary expression(s)-

Illus.

/ Figure (4) /

Proposed Descriptor(s)- / Computer codes / Cost / Economics / Electric
power / Geothermal power plants / Hot water systems / Models /
Power generation /

Abstract by Author

Geopressured Geothermal Bibliography

The model described in this paper is designed to project the costs of electricity generated from liquid-dominated hydrothermal geothermal resources. It exists in the form of an interactive computer program called GELCOM, written in FORTRAN IV. This paper provides an analytic explanation of the methodology.

376. GGIS-100088/R/ /*****/M/**/ / / /*****

Title- GEOCOST

Subtitle- A Computer Program for Geothermal Cost Analysis

Author(s)- / Bloomster , C. H. / Cohn , P. D. / De Steese , J. G. /
Huber , H. D. / La Mori , P. N. /

Publication date- February 1975

Pagination- 54 Pages

Report/patent- BNWL-1888

Local Availability- CES

Corporate Author- Battelle-Pacific Northwest Labs
Washington , USA

Proposed Descriptor(s)- / Construction costs / Economics / Geo brine /
Geothermal energy / Geothermal power plants / Geothermal wells /
Geothermal drilling / Geothermal exploration / Hydrothermal
reservoirs / Mathematical models / Operating-maintenance costs /
Power plant design / Power plant construction / Power plant
operation / Production costs / Unconventional energy /

Abstract by Energyline

The GEOCOST computer program, a simulation model that calculates the cost of generating electricity from geothermal energy, is described. GEOCOST can simulate the production of electricity from most types of geothermal resources. It is composed of two principal parts: a reservoir model that simulates the exploration, development, and operation of a geothermal reservoir; and a power plant model that simulates the design, construction, and operation of the power plant. Five different types of power plants can be simulated: flashed

steam, binary fluid cycle, a hybrid combined flashed steam-binary fluid cycle, total flow, and geopressured reservoirs.

377. GGIS-100253/R/ /*****M/77/ /US/ /150301 Swanson

Title- GEOTHERM User Guide

Author(s)- / Swanson , J. R. /

Publisher- Geological Survey
Washington, D. C.

Publication date- 1977

Pagination- 43 Pages

Report/patent- USGS-OFR--77-504

Note- Portions of the document are illegible.

Corporate Author- Geological Survey /9500728/.
Reston , Virginia , USA

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Geophysical Techniques and Surveys)

Proposed Descriptor(s)- / Chemical analysis / Data / Geothermal fields / Geothermal resources / Geothermal wells / Information retrieval / Information systems / Manuals /

Abstract by TIC

GEOTHERM is a computerized geothermal resources file that contains data on geothermal fields, wells, and chemical analyses from the United States and international sources. The general information processing system (GIPSY) on the IBM

Geopressured Geothermal Bibliography

370/155 computer is used to store and retrieve data. The GIPSY retrieval program contains simple commands which can be used to search the file, select a narrowly defined subset, sort the records, and output the data in a variety of forms. Eight commands are listed and explained so that the GEOTHERM file can be accessed directly by geologists. No programming experience is necessary to retrieve data from the file.

378. GGIS-100057/J/ / 1401/A/**/ / / /*****

Title- Harnessing the Fires Below

Author(s)- / Alexander , George /

Journal- Natl. Wildlife

Publication date- Vol. 14 , Issue 1 , December 23 , 1975

Pagination- Page 36 , 4 Pages

Corporate Author- Los Angeles Times

Auxiliary expression(s)-

Illus.

/ Drawing (1) / Map (1) / Photo (1) /

Proposed Descriptor(s)- / Geo brine / Geothermal resources /
Geothermal energy / Geysers / Greenhouses / Hot dry rock systems
/

Abstract by Energyline

Dry steam geothermal fields that are ideal for electricity production are few. The more common low grade water and steam systems have various other uses, such as home heating and cooling, food production, and animal husbandry. Worldwide examples of multiple uses of geothermal power are cited. Hot dry rocks and geopressurized zones, two other types of geothermal fields, also have potential for heat retrieval. Difficulties with using geothermal power are outlined. (1 drawing, 1 map, 1 photo)

379. GGIS-100999/0/ /*****/A/78/ / /***** Dambly

Title- Heat Exchanger Design for Geothermal Power Plants

Author(s)- / Dambly , Benjamin W. /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1102 , 7 Pages

Report/patent- SAE--789311

Auxiliary expression(s)-

Illus.

/ Diagram (9) / Graph (2) / Photo. (1) /

Ref.

Proposed Descriptor(s)- / Design / Geothermal brines / Geothermal power plants / Heat exchangers / Rankine cycle power systems / Transfer pipes / Working fluids /

Abstract by Author

This paper describes the development of a unique and proprietary method of shell-and-tube heat exchanger construction. Designed specifically for use in a pilot hydrothermal geothermal power plant the units described here will utilize isobutane in an organic Rankine cycle power process. This design provides true counterflow configuration by eliminating the conventional crossbaffles normally associated with such equipment. Spacing and support are provided by deformed short tubes shaped to fit within each cluster of seven tubes. These spacers are held in place by the clamping action of a strap around each cluster. The exchanger tube bundle is made up of an integration of such support clusters both along its length, and laterally across the tube bank. By providing an optimum ratio of surface area-to-pressure drop, efficiency of heat exchange is effectively increased and pumping power is significantly reduced.

380. GGIS-100007/0/ / 1/A/**/ /US/ /150900

Geopressured Geothermal Bibliography

Title- Heat Exchanger Performance with Low-Salinity Geothermal Brines

Author(s)- / Hinrichs , Tom /

**Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA**

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 263 , 4 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Proposed Descriptor(s)- / Binary fluid systems / Brines / Geopressured systems / Heat exchangers / Performance / Salinity / Scaling / Temperature effects / Testing /

Abstract by ERDA/RECON

Portable, small-scale heat exchanger testing units were used to evaluate heat exchanger performance for low-salinity brines in the Imperial Valley Field. One unit involves four shell-and-tube heat exchangers operating in series. Another involves one tube and four shell-and-tube heat exchangers in series. In addition to the overall heat exchanger performance, the effects of brine temperature were also studied. It is suggested that a test device should be used to supplement any well testing heat exchanger performance for these reservoirs. (LS)

381. GGIS-100050/J/ / 8017/A/75/ / / /***** Decker

Title- Heat Flow and Gravity Interpretation Across the Rio Grande Rift in Southern New Mexico and West Texas

Author(s)- / Decker , E. R. / Smithson , S. B. /

Journal- Journal of Geophysical Research

Publication date- Vol. 80 , Issue 17 , 1975

Pagination- Page 2542 , 11 Pages

Categories-

Exploration

(Geophysics)

Proposed Descriptor(s)- / Diagrams / Drilling / Geological setting / Geothermal gradients / Gravity surveys / Heat flow / Lithology / Maps / New Mexico / Radiogenic heat sources / Rio Grande Rift / Structural geology / Subsurface temperatures / Tables / Tectonics / Texas /

382. GGIS-100004/O/ /*****/A/**/ / / /*****

Title- Heat Generation in Lithification of Oil-Forming Clay Strata

Author(s)- / Schvetsov , Peter F. /

Conference- Development and Use of Geothermal Resources

Publication date- Vol. 2 , Issue 1 , May 29 , 1975

Pagination- Page 609 , 4 Pages

**Available- Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.**

Geopressured Geothermal Bibliography

20402
USA

(Stock number 060-000-00005-1)

Local Availability- CES

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Catagenesis / Clay minerals / Consolidation
/ Diagenesis / Heat flow / Kanty-Maorsijsk Basin / Origin / Pore
water / Processes / Sedimentary rocks / Tectonophysics /
Tersko-Kumsk Basin / USSR /

383. GGIS-100995/ / /*****/A/78/ /US/ /***** Michel

Title- Heat Transfer Consideration in Utilizing Geothermal Energy

Author(s)- / Michel , John W. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 441 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (2) / Photo (1) /

Table

Ref.

Proposed Descriptor(s)- / Ammonia / Binary cycle power generation /
Elevated temperature / Geopressure resources / Geothermal energy
/ Heat exchangers / Heat transfer / Moderate temperature / Pipes
/ Power generation / Waste heat / Working fluids /
2-methylpropone /

Abstract by Author

Although some forms of geothermal energy will require the application of high temperature technology, most involve only low temperatures. This paper emphasizes the importance of efficient, low cost heat exchangers in the use of low temperature sources and in the waste heat rejection systems of power generation cycles. Results of recent heat transfer development work at ORNL show that for the working fluids which are attractive for use in these cycles the condensation heat transfer effectiveness can be improved by a factor of from 3 to 7 by the use of fluted tubes and condensate drain-off skirts. Data are presented for condensation of six fluorocarbons, isobutane, and ammonia on a variety of tube surfaces. These results are being applied to the design of a 40-tube heat exchanger to be tested in a geothermal energy test facility.

384. GGIS-100344/R/ /*****/M/**/ /US/ /*****

Title- Help for Declining Natural Gas Production Seen in the
Unconventional Sources of Natural Gas

Publication date- January 1980

Pagination- 47 Pages

Report/patent- PB 80-128929

Available- NTIS

(Paper Copy

(A03) (\$ 6.00)

(Microfiche

(A01) (\$ 3.50)

Corporate Author- General Accounting Office /9505734/.

General Accounting Office, Energy and Minerals Div.

Geopressured Geothermal Bibliography

Washington , D.C. , USA

Proposed Descriptor(s)- / Deregulation / Energy supplies / Energy policy / Financial incentives / Gas production / Geopressured zones / Geopressured systems / Government policies / Natural gas / Technology assessment /

Abstract by TIC

Oil imports could be reduced and domestic gas production increased if additional gas production is obtained from four unconventional resources--eastern Devonian shales, tight sands, coal beds, and geopressured zones. This report discusses these four unconventional sources of natural gas and the prospects that gas from these resources can help supply the country with needed fuel. The report notes that gas produced from the unconventional gas sources could help to maintain overall gas production levels. Observations are included on technical progress required to increase gas recovery and Federal incentives for encouraging the use of these resources.

385. GGIS-100995/ / /*****A/78/ /US/ /***** Veneruso
AT(29-1)-789

Title- High temperature Instrumentation for Geothermal Applications

Author(s)- / Stoller , H.M. / Veneruso , A.F. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 679 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Sponsor- / U.S. Department of Energy
AT(29-1)-789 /

Corporate Author- Sandia Labs. /5659000/.
Albuquerque , New Mexico , USA

Auxiliary expression(s)-

Illus.

/ Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Boreholes / Elevated temperatures /
Geothermal wells / Measuring instruments / Research programs /
Well logging /

Abstract by Author

Instrumentation for making the geothermal borehole measurements is limited by the temperature capabilities (180 DEG C) of existing logging equipment developed for the oil and gas industry. The Geothermal Logging Instrumentation Development Program being conducted by Sandia Laboratories for the Department of Energy, Division of Geothermal Energy is an industry based effort to develop and apply the high temperature instrumentation needed to make geothermal borehole measurements. The near-term goal is to develop instrumentation for use at 275 DEG C in pressures up to 48.3 MPa (7,000 PSI); subsequent goals are to extend the capabilities to 350 DEG C and 138MPa (20,000 PSI). Working closely with geothermal producers, logging service companies are conducting R&D to correct technical deficiencies so they may adequately serve the growing geothermal market. The basic impediments they face involve special technologies which are not normally required in their trade and for which there are insufficient incentives for them to develop. These technologies are precisely those which are being developed by this program; components development activities are directed toward stimulating industries' own inventions and field applications of geothermal logging instruments having improved reliability, appropriate size, reasonable cost and performance versatility which encompasses not only geothermal but conventional petroleum and hot, deep natural gas logging as well. Tools to be upgraded and/or developed include temperature, flow rate, high resolution downhole pressure, caliper and fracture mapping sondes.

386. GGIS-100023/J/AAPGB/ 5705/A/**/ / / /*****

Title- High Fluid Potential in California Coast Ranges and their
Tectonic Significance

Geopressured Geothermal Bibliography

(Mudstones with Low Fluid Transmissibilities, Fracture Flow
Igneous Chemistry, Relation to Folds, Genesis of Folds and
Faults Regionally Interpreted)

Author(s)- / Berry , Fredrick A. F. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 57 , Issue 5 , 1973

Pagination- Page 1219 , 31 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Block / Cenozoic Era / Coast ranges /
Deformation / Effects / Faults / Folds / Fractures / Geopressure
/ Ground water / High / Interpretation / Mudstone / Oil and gas
fields / Relation / Structural geology / Structure / Subsidence /
Systems / Tectonics / United States /

387. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

**Title- High Fluid Potentials in California Coast Ranges and Their
Tectonic Significance**

(Paper 14 in Abnormal Subsurface Pressure- Selected Papers from
AAPG Bulletin)

Author(s)- / Berry , Frederick A. F. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 175 , 31 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / California / Coalinga / Coast ranges /
 Faults / Fluid release / Folds / Fractures / Geochemistry /
 Geopressure / Great Valley / Hydrodynamics / Kettleman Hills /
 Lost Hills / North / Oil and gas fields / Origin / Porosity / San
 Joaquin Valley / Structural geology / Structure / Tectonics /
 United States /

 388. GGIS-100066/J/W00IA/*****/A/78/C/ / /***** Snyder

Title- High Pressure Well Completions

Subtitle- 2 Part--Improved Logging, Coring and Testing Methods for
 Extreme Downhole Environments, plus New Wellhead Equipment
 Developments help make better wells

Author(s)- / Snyder , Robert E. / Suman , George O. /

Publication date- Vol. 187 , Issue 2 , August 1 , 1978

Pagination- Page 47 , 10 Pages

Corporate Author- Completion Technology Co. /9506922/.
 Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (11) /

Table

Ref.

Proposed Descriptor(s)- / Bottom hole pressure / Bottom hole
 temperature / Downhole sampling / Drilling equipment / Drilling
 fluids / Drill stem testing / Elevated temperature /
 Geopressured zones / High pressure / Well casings / Well
 completion / Wellheads / Well logging /

Abstract by Author

Geopressured Geothermal Bibliography

Obtaining accurate formation data, critical to successful drilling and completion in hostile areas, depends highly on equipment capabilities and safety considerations. Latest state-of-the-art techniques are described. Also, important concepts of high pressure wellhead selection are included.

389. GGIS-100066/J/W00IA/*****/A/**/B/ / /***** Snyder

Title- High Pressure Well Completions

Subtitle- I. Part--Origin of Abnormal or High Pressure, Detection Techniques and Fracture Gradient Calculations are Discussed

Author(s)- / Snyder , Robert E. / Suman , George O. /

Publication date- Vol. 187 , Issue 2 , August 1 , 1978

Pagination- Page 35 , 10 Pages

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (13) /

Table

Ref.

Proposed Descriptor(s)- / FFG / Geopressured exploration /
Geopressured wells / Well casings / Well completion / Well
drilling /

Abstract by Compendex

Part 1 of this article discusses the application of basic geopressure concepts in drilling and completion planning, including; definitions, origin of geopressures; how to detect, determine and/or predict geopressures; and fracture gradient prediction. Hints for designing casing programs using fracture gradients are described.

390. GGIS-100066/J/W00IA/*****/A/78/F/ / /***** Snyder

Title- High Pressure Well Completions

Subtitle- 5. Part--Perforating.

Author(s)- / Snyder , Robert E. / Suman , George O., Jr. /

Publication date- Vol. 187 , Issue 2 , August 1 , 1978

Pagination- Page 57 , 8 Pages

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (11) /

Table

Ref.

Proposed Descriptor(s)- / Compaction / Density / Drilling equipment /
Drilling fluids / Geopressured wells / Gun perforating /
Permeability / Productivity / Well completion /

Abstract by Author

Perforating high pressure, deep well can present some unique problems. This article is a discussion of basic factors that should be considered to obtain best perforating performance--and productivity--in such completions.

391. GGIS-100066/J/W00IA/*****/A/79/ / / /***** Snyder

Title- High Pressure Well Completions

Subtitle- 6. Part--What to consider when planning stimulation and sand control jobs

Geopressured Geothermal Bibliography

Author(s)- / Snyder , Robert E. / Suman , George O., Jr. /

Publication date- Vol. 187 , Issue 2 , August 1 , 1978

Pagination- Page 113 , 9 Pages

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (12) /

Table

Ref.

Proposed Descriptor(s)- / Acidization / Bottom hole pressure /
Fracturing / Geopressured wells / Sand control / Well
stimulation /

Abstract by Compendex

Unique downhole factors related to deep wells, especially those penetrating geopressured sections, require carefully planned and engineered stimulation treatments. Part 6 of this article discusses these special conditions and how they may be contemplated. Such control for high pressure wells is discussed briefly.

392. GGIS-100066/J/W00IA/*****/A/79/C/ / /***** Snyder

Title- High Pressure Well Completions

Subtitle- 8. Part--New tool that improves packer bore receptacle completions and methods for selecting downhole seal materials are discussed

Author(s)- / Snyder , Robert E. / Suman , George O., Jr. /

Publication date- Vol. 187 , Issue 2 , August 1 , 1978

Pagination- Page 73 , 6 Pages

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (6) /

Table

Ref.

Proposed Descriptor(s)- / Control / Drilling equipment / Elastomers /
Geopressured wells / Materials testing / Performance testing /
Seals / Well completion /

Abstract by Author

Physical and performance properties of material used in downhole sealing elements are presented to aid in their selection. Also discussed is a new completion tool that may be used in conjunction with a packer bore receptacle to allow for smaller diameter, less expensive tubing in high pressure wells.

393. GGIS-100066/J/W00IA/*****/A/78/E/US/ /***** Snyder

Title- High Pressure Well Completions.

Subtitle- 4. Part--Considerations for designing completion and packer fluids and cements for higher temperature, applications are given

Author(s)- / Snyder , Robert E. / Suman , George O. /

Publication date- Vol. 187 , Issue 5 , October 1978

Pagination- Page 77 , 8 Pages

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Figure (8) /

Table

Ref.

Proposed Descriptor(s)- / Density / Elevated temperature /
Geopressured wells / Well cementing / Well completion / Working
fluids /

Abstract by Author

Recommendations for formulating non-damaging, high density completion fluids plus uses of packer fluids are discussed. Effects of varying circulating temperatures and low pipe to wellbore clearances on cementing operations are also described.

394. GGIS-100066/J/W00IA/*****/A/**/D/US/ /***** Snyder

Title- High Pressure Well Completions.

Subtitle- 3. Part--Special H2S resistant alloys plus methods of controlling stress cracking in standard downhole tubulars are described

Author(s)- / Snyder , Robert E. / Suman , George O., Jr. /

Publication date- Vol. 187 , Issue 5 , October 1978

Pagination- Page 123 , 8 Pages

Corporate Author- Completion Technology Co. /9506922/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Graph (3) / Diagram (2) /

Table

Ref.

Proposed Descriptor(s)- / Corrosion resistant alloys / Drill pipes /
Drilling equipment / Geopressured wells / Hydrogen sulfides /
Pore pressure / Steels / Stress corrosion / Well casings / Well
completion /

Abstract by Author

Exploration and development drilling depths continue to increase, resulting in a higher probability of encountering sour gas that can produce sulfide stress cracking. Causes of the problem and methods for controlling it are discussed. Also included are recommendations for designing casing to meet down-hole-loading conditions in an H(sub 2)S environment.

395. GGIS-100131/R/ /*****/M/**/ /US/ /*****

Title- Hot Dry Rock Geothermal Energy

(Report No. 1 of the Hot Dry Rock Assessment Panel)

Subtitle- Status of Exploration and Assessment

Author(s)- / Combs , J. / Mallis , R. / McGetchin , T. / Rowley , J.
/

Publication date- June 1977

Pagination- 218 Pages

Report/patent- ERDA 77-74

Available- NTIS

(Paper copy (\$ 7.75)

(Microfiche (\$ 3.00)

Corporate Author- U. S. Energy Research and Development
Administration

Div. of Geothermal Energy
D.C. , USA

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Diagram (4) / Graph (9) / Map (40) / Photo (8) /

Table

Categories-

KGRA

(Marysville)

(Coso Hot Springs)

(Mono-Long Valley)

Proposed Descriptor(s)- / Case histories / Coso Hot Springs KGRA /
Geothermal exploration / Hot dry rock systems / Marysville KGRA /
Mono-Long Valley KGRA / Resource assessment / Valles Caldera
Geothermal Field /

Abstract by ERA

The status of knowledge of attempts to utilize hot dry rock (HDR) geothermal energy is summarized. It contains (1) descriptions or case histories of the ERDA-funded projects at Marysville, MT, Fenton Hill, NM, and Coso Hot Springs, CA; (2) a review of the status of existing techniques available for exploration and delineation of HDR; (3) descriptions of other potential HDR sites; (4) definitions of the probable types of HDR resource localities; and (5) an estimate of the magnitude of the HDR resource base in the conterminous United States. The scope is limited to that part of HDR resource assessment related to the determination of the extent and character of HDR, with emphasis on the igneous-related type. It is estimated approximately 74 Q (1 Q = 1,000 quads) of heat are stored in these sites within the conterminous U. S. at depths less than 10 KM and temperatures above 150 DEG C, the minimum for power generation. ($Q = 10^{18}$ BTU = 10^{21} J; the total U. S. consumption for 1972 was approximately 0.07 Q). Approximately 6300 Q are stored in the conduction-dominated parts of the crust in the western U. S. (23% of the total surface area), again at depths less than 10 KM and temperatures above 150 DEG C. Nearly 10,000 Q are believed to be contained in crustal rocks underlying the entire conterminous U. S., at temperatures above 150 DEG C. The resource base is significantly larger for lower grade heat.

396. GGIS-100011/0/ /*****/A/**/ / / *****/

Title- Hot Dry Rock Systems

(2. Subgroup Paper)

Author(s)- / Brigham , William E. /

Conference- Magnitude and Deployment Schedule of Energy Resources

Publication date- September 1975

Report/patent- CONF--750720-

397. GGIS-100066/J/W00IA/*****/A/77/ / / /***** Pilkington

Title- How to Avoid Errors in Predicting Geopressures

Author(s)- / Fertl , W.H. / Pilkington , P.E. /

Publication date- Vol. 184 , Issue 7 , 1977

Pagination- Page 85 , 5 Pages

Proposed Descriptor(s)- / Geopressure / Geopressure exploration /
Well logging /

Abstract by Compendex

The ability to locate and quantitatively evaluate overpressured formations encountered world-wide is critical to drilling operations, completion techniques and development of exploratory and reservoir engineering concepts for the world's hydrocarbon resources. This discussion evaluates the potential of drilling and well log information in current abnormal pressure detection technology. Special emphasis is focused on limitations and possible pitfalls as experienced throughout the world. Abnormal formation (pore) pressures are defined as any departure from the normal hydrostatic pressure gradient at any given depth.

398. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Geopressured Geothermal Bibliography

Title- How to Predict Formation Pressures of Cretaceous-Jurassic Age Sediments

Subtitle- Mississippi

Author(s)- / Matthews , W. R. / McClendon , R. T. / Sourck , C. R. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 137 , 4 Pages

Auxiliary expression(s)-

Illus.

/ Sketch map (1) /

Proposed Descriptor(s)- / Arkansas / Cretaceous / Engineering geology
/ Florida / Geopressured reservoirs / Geopressure / Gulf Coast /
Jurassic / Mississippi / Overburden pressure / Prediction /
Pressure buildup / Shale / Texas / United States / Well logging /

399. GGIS-100268/J/FORTA/*****/A/77/ /US/ /***** Faltermayer

Title- How to Stop Worrying about Natural Gas

Author(s)- / Faltermayer , Edmund /

Journal- Fortune

Publication date- Vol. 96 , Issue 2 , August 1977

Pagination- Page 156 , 8 Pages

Auxiliary expression(s)-

Illus.

/ Photo (2) /

Proposed Descriptor(s)- / Charges / Economic impact / Gas production /
Geopressure resources / Institutional aspects / Methane /
Natural gas / Reserves /

Abstract by Energyline

The prospect that the U.S. will run out of natural gas reserves in the near future is dismissed. There is enough gas available to accomodate most present users. It is possible that unconventional sources of gas might extend the gas era much farther in to the future. Current gas production rates and supplies are surveyed. Low priority gas users, such as industrial plants, should switch to coal as a fuel source to extend the present gas supplies for high priority uses, such as the heating of homes and stores. The economic prospects for utilizing geopressured methane resources are assessed. Factors affecting natural gas prices on the world market are reviewed. Natural gas price control policies are explored. Price decontrol is also considered. Recommendations are detailed.

400. GGIS-100393/0/ /*****/A/80/ /US/ /***** Brown

Title- Hydrocarbon Source Facies Analysis, Department of Energy and
General Crude Oil Company Pleasant Bayou No. 1 and 2 Wells,
Brazoria County, Texas

Author(s)- / Brown , Stephen W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 132 , 21 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Geopressured Geothermal Bibliography

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (4) /

Proposed Descriptor(s)- / Brazoria County / Cuttings analysis /
Exploitation / Facies / Geopressured zones / Hydrocarbons /
Maturation / Methane / Pleasant Bayou No. 1 Well / Pleasant Bayou
No. 2 Well / Reflectance / Vitrinite /

Abstract by Author

The stratigraphic section penetrated by the No. 1 and No. 2 Pleasant Bayou Wells, Brazoria County, Texas, over the gross well interval 2,072 feet to 16,500 feet, contains zones with little or no potential for indigenously generated hydrocarbons. With the exception of a very thin interval at approximately 7,000 feet, the entire evaluated section is considered immature and organically lean and has no significant potential for generating producible quantities of either liquid or gaseous hydrocarbons. The organic rich interval, which extends from approximately 6,800 feet to 7,400 feet, contains significant amounts of coal which may have generate large quantities of "dry" methane gas during the coalification process. Although large quantities of methane were not detectable within these sediments, the possibility exists that producible accumulations may exist within this interval in the local vicinity of this well.

401. GGIS-100999/0/ /*****/A/78/ / / /***** Iqbal

**Title- Hydrocarbon Working Fluid and Operating Conditions Selection
for the Conventional Geothermal Binary Cycle**

Author(s)- / Iqbal , K.B. / Starling , K.E. / West , H.H. /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1114 , 7 Pages

Report/patent- SAE--789314

**Note- Work supported by the University of Oklahoma and the Department
of Energy.**

Corporate Author- Oklahoma Univ., Norman /4923000/.
Norman , Oklahoma , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (1) /

Table

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Geothermal
energy conversion / Hydrocarbons / Rankine cycle / Working
fluids / 2-methylpropane /

Abstract by Author

The subject of selecting working fluid and process operating conditions for the geothermal binary power cycle is addressed herein. To examine a wide variety of potential working fluids, a fluid screening procedure was developed. The first phase of the three phase screening procedure permits a quick evaluation, with potential working fluids identified for more detailed analysis. The second phase screening procedure requires more thermophysical property data for the potential working fluid in order to evaluate a series of cycle parameters. The final phase of the screening procedure requires evaluation with the aid of a power cycle simulation program complete with rigorous thermodynamics, process, and economic estimation routines. The working fluids compared in detail herein include isobutane, isopentane, cis-2-butene, R-11, R-114 and an equimolar mixture of isobutane and isopentane. It is concluded that the range of working fluids considered by the industry to date has been too limited.

402. GGIS-100285/J/37EUA/*****/A/77/ / / *****/ Kolodii

Title- Hydrochemical Anomalies in Petroleum- and Gas-Containing
Geopressured Water Systems

Author(s)- / Kolodii , V.V. /

Publication date- Russian

Pagination- Page 19 , 8 Pages

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Chemical analysis / Geopressured systems /
Geopressured zones / Geothermal fluids / Natural gas / Petroleum
exploration / Water chemistry /

403. GGIS-100052/J/SPTJA/*****/A/**/ / / /150200

**Title- Hydrodynamics of Geopressure in the Northern Gulf of Mexico
Basin**

Author(s)- / Jones , P. H. /

Publication date- July 1969

Proposed Descriptor(s)- / Geophysics / Geopressured systems /
Geothermal resources / Gulf of Mexico / Hydrodynamics /
Louisiana / Rocks / Texas / USA / Water /

404. GGIS-100053/J/JPTJA/ 2107/A/**/ / / /150200

**Title- Hydrodynamics of Geopressure in the Northern Gulf of Mexico
Basin**

Author(s)- / Jones , P. H. /

Journal- Journal of Petroleum Technology

Publication date- Vol. 21 , Issue 7 , July 1969

Pagination- Page 803 , 8 Pages

405. GGIS-100051/J/JRGSA/ 205/A/**/ / / /*****

**Title- Hydrogeologic Aspects of Structural Deformation in the
Northern Gulf of Mexico Basin**

(Growth Faults, Geopressured Water, Upper Tertiary Deposits)

Author(s)- / Jones , Paul H. / Wallace , Raymond H., JR. /

Publisher- U. S. Geological Survey

Journal- Journal of Research U.S. Geological Survey

Publication date- Vol. 2 , Issue 5 , 1974

Pagination- Page 511 , 7 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Aquifers / Continental Shelf / Faults /
Geopressure / Geophysical surveys / Ground water / Gulf Coast /
Gulf of Mexico / Louisiana / Marine geology / Mechanics /
Mississippi / North / Pore water / Pore pressure / Pressure
buildup / Sedimentary structures / Sediments / Sedimentary
petrology / Seismic surveys / Soft sediment deformation /
Tertiary / Texas / United States / Upper Tertiary /

406. GGIS-100003/0/IGCGA/ 2411/A/**/ / / /*****

Title- Hydrogeologic Aspects of Structural Deformation in the
Northern Gulf of Mexico Basin

(Abstract. No Uniform Relation to Depth, Normal Faults,
Geopressure Reduces Resistance to Shear, Rotational Stress.)

Conference- International Geol. Congr.

Publication date- Vol. 24 , Issue 11

Pagination- Page 72

Proposed Descriptor(s)- / Aquifers / Diagenesis / Displacements /
Faults / Geopressure / Ground water / Gulf of Mexico /
Hydrogeology / Normal / North / Pore water / Sediments /
Thermodynamic properties /

407. GGIS-100003/0/IGCGA/ 2411/M/**/ / / /*****

Geopressured Geothermal Bibliography

Title- Hydrology

(Section 11)

Original Title- Hydrologie

Conference- International Geol. Congr.

Publication date- Vol. 24 , Issue 11

408. GGIS-100005/0/ / 3/A/**/ / / /*****

Title- Hydrothermal Geothermal Resources and Growth in Utilization

Conference- Energy Technology

Publisher- Govt. Inst., INC.
Washington, D.C.

Publication date- Vol. 3 , March 31 , 1976

Pagination- Page 103 , 12 Pages

Corporate Author- Electric Power Research Institute

Auxiliary expression(s)-

Illus.

/ Graph (6) / Table (6) /

Categories-

Geothermal Energy

(Hot Water)

(Steam)

Proposed Descriptor(s)- / Energy development estimate comparisons /
Geothermal energy / Geothermal resources / Geothermal power
plants / Geysers / Hot water / Steam / United States West /

Abstract by Energyline

Although water dominated hydrothermal geothermal systems produce significant amounts of electric power in several countries, its commercialization has not been demonstrated in the U.S. Use of geopressure and hot dry rock geothermal resources is still in the R&D stage and is not likely to have an impact on total geothermal energy power production until the last decade of the century, so use of the hydrothermal resources is of paramount importance in the near to mid-term development of a U.S. geothermal industry. An analytical relationship is developed between the temperature and the number of hydrothermal systems. The information is sufficient to estimate various levels of potential development of hydrothermal resources with temperatures high enough for electric power generation in the 11 western states. Previous estimates of the growth of geothermal electric power production are examined and found to be too high for 1985. The present estimate is 4,000 MW installed. (6 graphs 6 tables)

409. GGIS-100066/J/W00IA/*****/A/77//US//***** Daw

Title- I. Mud Gas Logs Help Predict Occurrence of Geopressures

Author(s)- / Daw , Robert N. / Mercer , Richard F. / Myers , Donald L. /

Publication date- Vol. 184 , Issue 2 , February 1 , 1977

Pagination- Page 43 , 4 Pages

Auxiliary expression(s)-

Illus.

/ Figure (7) /

Proposed Descriptor(s)- / Drilling fluids / Geopressure / Oil drilling / Well logging /

Abstract by Compendex

Mud gas logging techniques used in detecting and controlling overpressurized zones, especially in wildcats are described. Resulting detailed information will allow overpressured sections to be penetrated safely. Nomenclature used in mud gas logging is briefly defined.

Geopressured Geothermal Bibliography

410. GGIS-100097/R/ /*****/M/**/ /US/ /150400

Title- Impact of State and Federal Law on Development of Geothermal Resources in Texas

(Project L/R-9, Final Report)

Author(s)- / Edwards , T. /

Publisher- National Science Foundation
Washington, D.C.

Report/patent- NSF-RA--74-244

Corporate Author- State of Texas /9502446/.

Governor's Energy Advisory Council
Austin , Texas , USA

Proposed Descriptor(s)- / Geopressured systems / Geothermal exploration / Geothermal fields / Geothermal fluids / Geothermal resources / Regulations / Texas /

Abstract by ERDA/RECON

The significant geothermal resource in Texas consists of enormous reservoirs of hot, geopressured water formed along the Gulf Coast when water-laden sediments were deposited between surrounding impermeable features, so that the water which would otherwise have been forced out of the sediments was unable to escape. These deposits exist under tremendous pressure created by the weight of the overburden. A geopressure source absorbs heat indirectly, because the geopressured deposits create an insulating barrier that traps and absorbs the thermal energy of the underlying magma. The water from a geopressure source will not be as hot as water from a dry steam or wet steam source, but the quantity available is enormous, and the water pressure itself would be an additional energy source along with the thermal energy. The water may be fresh, or nearly so, and it will contain significant amounts of recoverable methane gas in solution. It may be possible to utilize the water pressure, thermal energy, and the methane gas to generate electricity in small power plants at the recovery site, and the water that has been passed through the turbines and heat exchangers may be a valuable by-product in itself, depending on its quality and regional demands for agriculture and industry. One of the impediments to the development of this resource, given the very sizable commitments of capital entailed, is the uncertain legal status of geothermal resources. This report attempts to locate

geothermal resources within the general framework of Texas Property Law and to determine whether these resources can be developed under the law as it now exists. (MCW)

411. GGIS-100023/J/AAPGB/ 5910/A/75/ / /***** Magara

Title- Importance of Aquathermal Pressuring Effect in Gulf Coast

Author(s)- / Magara , K. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 59 , Issue 10 , 1975

Pagination- Page 2037 , 9 Pages

Categories-

Exploration

(Hydrology)

412. GGIS-100308/O/ /*****/A/78/ /US/ /***** Hirasuna

**Title- Important Conclusions Based on Results of Geothermal Casing
Packer Seal Elastomers Testing**

Author(s)- / Hirasuna , A.R. / Stephens , C.A. / Veal , G.R. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Geopressured Geothermal Bibliography

Pagination- Page 279 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- L'Garde, Inc.
Newport Beach , California , USA

Auxiliary expression(s)-

Illus.

/ Photo (8) /

Table

Ref.

Proposed Descriptor(s)- / Elastomers / Elevated temperatures /
Geothermal well / Seals / Well casings /

Abstract by Author

Development of casing packer seal elastomers sponsored by the Department of Energy, Division of Geothermal Energy, was initiated in late 1976. Special evaluation tests were designed and fabricated to simulate the unusually severe environment and to evaluate critical characteristics. Testing to date indicates fundamental deficiencies will exist with current day packer systems operating at higher geothermal temperatures.

413. GGIS-100995/ / /*****/A/78/ /US/ /***** McDonald

Title- Improved Geothermal Drilling Fluids

Author(s)- / Carwile , Clifton / McDonald , William J. / Remont ,
Larry J. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 419 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Graph (5) /

Table

Ref.

Proposed Descriptor(s)- / Cost / Drilling fluids / Elevated
temperature / Filtration / Geothermal drilling / Geothermal
reservoirs / Lost circulation / Rheology /

Abstract by Author (rev.)

Most constituents of drilling fluids start degenerating slowly at temperatures above 150 DEG C. The rate degeneration increases with temperature but mud properties can be maintained up to about 200 DEG C by the replacement of degraded components. Breakdown is rapid above that temperature and there is no existing drilling fluid which retains its required rheological and filtration control properties above 250 DEG C. Improved geothermal drilling fluids will reduce well costs 10% and reduce the cost of power-on-line 3 to 5%. One new mud system to accomplish this has been developed and will be field tested soon. Laboratory work is continuing for further improvements. Also, a concerted effort is underway to assure application and utilization of the best available geothermal drilling fluid technology.

414. GGIS-100241/O/ /*****/A/77/B/US/ /299002 Maxfield

Title- Income Taxation of Geothermal Resources

Author(s)- / Maxfield , P. C. /

Geopressured Geothermal Bibliography

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 51 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Depletion allowance / Geothermal resources
/ Laws / Resource depletion / Taxes /

Abstract by TIC

The state of the law with regard to geothermal resources is outlined. Because the federal income tax laws relating to mineral exploration and development to a great extent turn at least indirectly on the specific depletion laws applicable to the various forms of geothermal energy, and the type of depletion allowable, i.e., statutory (percentage) and/or cost, it appears necessary to eschew herein a transactional type of approach that would proceed from acquisition to exploration, to development, to operation, to disposition in favor of the keystone questions, i.e., the allowability of depletion vel non and the type(s) of depletion allowable. These other subjects are examined primarily in so far as there are tax problems peculiar to the fledgling geothermal industry-- or in so far as there is uncertainty as to applicability of otherwise settled law. (MHR)

415. GGIS-100240/J/ /*****/A/77/ / / *****/ Maxfield

Title- Income Taxation of Geothermal Resources

Author(s)- / Maxfield , Peter C. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 217 , 42 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Depletion allowance / Geothermal resources
/ Laws / Resource depletion / Taxes /

Abstract by EIC

The state of federal tax laws applicable to some activities and transactions relating to geothermal resources is embryonic. The allowability of depletion velnon and the types of depletion allowable are examined in so far as they are problems peculiar to the fledgling geothermal industry. Geothermal resource depletion as a gas and not as a gas is considered.

416. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Increasing Occurrence of Abnormally High Reservoir Pressures in Boreholes, and Drilling Problems Resulting Therefrom

(Paper 2 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Bottema , J. A. / Thomeer , J. H. M. A. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 27 , 10 Pages

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Asia / Boreholes / Control / Drilling /
Engineering geology / Europe / Geopressured reservoirs /
Geopressure / Germany / New Guinea / Oil and gas fields /
Overburden pressure / Pakistan / Permian / Tertiary /

417. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Indication of Proximity of High Pressure Fluid Reservoir,
Louisiana and Texas Gulf Coast

(Paper 7 in Abnormal Subsurface Pressure- Selected Papers from
AAPG Bulletin)

Author(s)- / Forgotson , James M., SR. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 119 , 3 Pages

Proposed Descriptor(s)- / Engineering geology / Faults / Geopressured
reservoirs / Geopressure / Gulf Coast / Indicators / Louisiana /
Oil and gas fields / Overburden pressure / Pore water / Release /
Shale / Texas / United States /

418. GGIS-100381/R/ /*****/M/80/ /US/ /***** Coffer
AC08-77ET28459

Title- Industry Participation in DOE-Sponsored Geopressured
Geothermal Resource Development

Subtitle- Final Report for September 1, 1977 - April 30, 1979

Author(s)- / Coffer , Henry F. /

Publication date- 1980

Pagination- 453 Pages

Report/patent- DOE/ET/28459-1

Available- NTIS

(Paper copy

(A20) (\$ 32.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA). Div. of
Geothermal Energy /9506839/.

AC08-77ET28459 /

Corporate Author- GeoEnergy Corp. /9506248/.
Las Vegas , NV , USA

Auxiliary expression(s)-

Illus.

/ Diagram (32) / Graph (26) / Map (42) /

Table

Ref.

Proposed Descriptor(s)- / Drilling / Energy source development /
Environmental effects / Geopressure resources / Geothermal
resources / Government policies / Ground water recharge / Gulf
Coast / Industry / Institutional aspects / Laboratory studies /
Legal aspects / Permeability / Salt water / Site selection /
Testing / Waste disposal /

Abstract by Author

Under contract to the Department of Energy (DOE), C.K. GeoEnergy Corporation (CKG) has carried out a series of DOE/Industry forums to keep industry advised of the DOE program to develop the geopressured geothermal resources of the Gulf Coast. A total of eighteen meetings were held with registered attendance of 621 representing a good cross section of industry, state, and federal agencies. An Overview Group and four working subgroups - Site Selection, Drilling and Testing, Environmental/Laboratory Research, and Legal Institutional were established to subdivide

Geopressured Geothermal Bibliography

the DOE programs into areas of interest and expertise. During the contract period three Overview, four Site Selection, three Drilling and Testing, five Environmental/Laboratory research and three Legal/Institutional meetings have been conducted. Interest in and attendance at the meetings continue to grow reflecting increased industry contact with the DOE Geopressured Geothermal Resource Development Program. Two other studies were carried out for DOE under this contract; a Salt Water Disposal Study and an Industry Survey to evaluate the DOE Resource Development Program. The Salt Water Disposal Study reviewed subsurface salt water disposal experience on the Texas and Louisiana Gulf Coast. This preliminary study concluded that subsurface brine disposal should be possible in the areas of interest with adequate evaluation of the geology of each area and a well designed and constructed surface and subsurface facility. The industry survey indicated general satisfaction with the technical design of the resource evaluation program but felt the program should be moving faster. Excellent communication with industry had been maintained through the forum meetings and the status reports. Two major problems remain: uncertainties about reservoir continuity and permeability. These will govern the rates at which the hot water can be produced and the production life of the reservoir. Industry is vitally interested in the results of the current tests and those planned in the future to determine if this huge energy source can be produced economically.

419. GGIS-100330/R/ /*****/M/79/ /US/ /***** Vetter
EI-78-C-03-2044

Title- Injection, Injectivity, and Injectability in Geothermal Operations

(Phase I - Definition of the Problem)

Subtitle- Problems and Possible Solutions

Author(s)- / Crichlow , H.B. / Vetter , O.J. /

Publication date- February 14 , 1979

Pagination- 176 Pages

Report/patent- SAN-2044-1

Available- NTIS

(Paper Copy

(A09) (\$ 9.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy / 956839/.

ET-78-C-03-2044 /

Auxiliary expression(s)-

Table

Illus.

/ Graph (16) / Diagram (26) / Figure (1) /

Ref.

Appendix

Proposed Descriptor(s)- / Environmental effects / Geothermal brines /
Geothermal wells / Injectability / Injection wells / Injectivity
/ Scaling / Well stimulation /

Abstract by Author

A definition study of geothermal reinjection problems was conducted. The wide spectrum of problems related to the reinjection of heat-depleted brines was outlined. Emphasis was focused on problems relating to both injectivity and injectability. The main objectives of the study were to define the problems and to suggest further R & D work. It can be stated that the geothermal reinjection technology is in desperate need of development. No refined and readily useable technology for reinjection seems to exist. Top priority problems (problems which must be solved for the geothermal industry to survive) include: 1) suspended particles and their effects on injectability and injectivity; 2) scale formation in the entire injection system; 3) well stimulation techniques must be developed; 4) need for new tracer technology is strongly indicated; 5) organizational difficulties. Medium priority problems (problems which should be attacked to allow an economic operation of the geothermal industry) include: 1) improvement of engineering technology used for optimization of energy recovery through proper heat-timing; 2) major environmental problems in combination with technology aimed at improvement of reinjection operations; 3) improvement of drilling and well

Geopressured Geothermal Bibliography

completion technology. Low priority problems (problems which should be handled to improve the cost-efficiency and provide long-term stability of the geothermal industry) include: 1) fundamental research not directly related to solving top and medium priority problems; 2) minor environmental problems which still permit operation within guidelines of compliance. This report proposes and R & D framework to solve many of the outlined problems. It involves: 1) a coherent combination of theoretical, laboratory and field experiments; 2) transfer of advanced technology from other fields of science and its adaption to geothermal operations; 3) coordination of R & D work aimed at solving production and injection problems.

420. GGIS-100267/B/ /*****/A/77/ /US/ /150400 Kuhn

Title- Institutional Barriers to Geothermal Energy Development

Subtitle- Second Report of the Institutional Barrier Panel to the Geothermal Advisory Council

Author(s)- / Kuhn , Edwin A. /

Publisher- Geothermal World Publications
Reseda, California

Publication date- 1977

Pagination- Page 208 , 7 Pages

Categories-

Geothermal Energy

(Legal and Institutional Aspects)

Proposed Descriptor(s)- / Drilling / Energy source development /
Geothermal energy / Institutional aspects / Land leasing /
Leases / Leasing / Licensing / Royalties /

Abstract by TIC

In the interim since the First Report to the Council, the Institutional Barrier Panel has met formally on four areas, namely: (1) delays in the issuance of non-competitive leases; (2) drilling permit delays; (3) casual use-- burdensome and discriminatory treatment of lessees; (4) force majeure clause in

the lease agreement; (5) assessment of geothermal resources on Indian lands; (6) steam price review; (7) redefinition of KGRA and reclassification of non-competitive lease tracts; (8) limitation of the Secretary of the Interior's discretion to readjust lease terms and conditions; (9) royalty rebate; and (10) royalty reduction contingencies. Item numbers 1, 2, 3, are outlined as to problem, impact, approach to solution and recommended actions in Section II of this report. Of the remaining items, number 4 has been taken care of through stipulations in the lease agreement; 5 is not perceived as a problem, at this time, because only intermediate temperature resources are thought to exist on Indian Lands (no KGRA's) and a joint USGS/BLM/USBM Mineral Inventory Program will include an assessment program of geothermal energy resources on Indian Lands; items 6 and 10 are pending legal review by BLM; 7 is being handled by a special task force within BLM; 8 requires more information but does not appear to be a formidable problem at this time; item 9, dealing with a recommendation to increase the percentage of the Federal royalty and rentals apportioned to the States, was subsequently enacted through an amendment to the Mineral Leasing Act of 1920 (S.391).

421. GGIS-100308/0/ /*****/A/78/ /US/ /***** Edmunds

Title- Institutional Policy and Planning Issues in Geothermal Development--

Subtitle- The Case of Imperial County

Author(s)- / Edmunds , Stahrl W. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 167 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California

Geopressured Geothermal Bibliography

95616

Local Availability- CES

Auxiliary expression(s)-

Table

Proposed Descriptor(s)- / California / Cost benefit analysis / Energy source development / Environmental effects / Geothermal energy / Government policies / Legal aspects / Local government / Socio-economic factors /

Abstract by Author

The institutional issues of geothermal development may be analyzed by research which relates resource and engineering assessments to the interests, benefits and costs, associated with a geothermal resource, as they impact various institutional constituencies, like the developers, utilities, county government, agriculturalists, citizens, or unemployed. The sum of the benefits, in the Imperial County case, significantly exceed costs; and the institutional issues center mainly upon environmental abatement, income distribution effects, and land use. The paper illustrates how these institutional issues can be resolved by policy and planning.

422. GGIS-100041/J/GEYPA/ 1108/A/**/ / / /*****

Title- Instruments and Methods for Measuring Pressures at Depth,
Used in Czechoslovakia

Original Title- Merici Prittroji A Pumucky K Hlubineemu Meremi
Tlaku, Pouzivane V CSSR

Author(s)- / Krajca , J. /

Journal- Geol. Prukum.

Publication date- Vol. 11 , Issue 8 , 1969

Pagination- Page 241 , 4 Pages

Language- Czech

Auxiliary expression(s)-

Sum.

Illus.

Proposed Descriptor(s)- / Boreholes / Czechoslovakia / Engineering
geology / Geopressure / Instruments / Manometers / Measuring
methods /

423. GGIS-100003/0/IGCGA/*****/S/**/ / / /*****

Title- International Geol. Congr.

Subtitle- Proceedings

Original Title- Congr. Geol. Int.

Original Subtitle- Programme

Conference- International Geol. Congr.

424. GGIS-100058/J/OIGJA/ 734/A/**/ / / /*****

Title- Interpreting Pressure Profiles

(2 PTS. in successive issues, Nov. 1975, Vol. 73)

Author(s)- / Gill , J. A. / Gregg , D. N. /

Journal- Oil and Gas Journal

Publication date- Vol. 73 , Issue 46 , November 1975

Pagination- Page 64

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Illus.

/ Figure (14) /

Ref.

Proposed Descriptor(s)- / Comparative evaluations / Cost / Data /
Drilling fluids / Geological surveys / Geopressures systems /
Natural gas / North Sea / Petroleum / Pressure measurement /
Sediments / Shale / Stratigraphy / Water / Well drilling / Well
logging /

425. GGIS-100997/ / /*****/A/79/ /US/ /***** Fertl

**Title- Interpretive Well-Logging Concepts Solve South Texas
Formation-Evaluation Problems**

Author(s)- / Fertl , Walter H. /

**Conference- Gulf Coast Asso. of Geological Societies 29th Annual
Meeting
San Antonio
Texas
USA (October 10 , 1979)**

Publication date- Vol. 63 , Issue 9 , 1979

Pagination- Page 1600 , 1 Pages

**Note- Abstract only of a paper presented at the Gulf Coast Association
of Geological Societies and Gulf Coast Section, Society of
Economic Paleontologist and Mineralogists, 29th annual meeting,
San Antonio, Texas, October 10-12, 1979**

**Proposed Descriptor(s)- / Cations / Evaluation / Exploration methods
/ Gamma ray logging / Gamma spectroscopy / Geopressured zones /
Pore pressure / Productivity / Reservoir engineering / Reservoir
properties / Reservoir temperature / Salinity / Texas / Well
drilling / Well logging /**

Abstract by Document

Proper selection and application of properly calibrated well logs provides valuable information for exploration, drilling, and reservoir engineering. Interpretive log-derived concepts allow determination of subsurface pressure, temperature, and

salinity variations, define the type of depositional environment, and evaluate the production potential of clastic and carbonate reservoir rocks. Overpressure detection and pore-pressure evaluation are of further assistance. Gamma-ray spectral-logging techniques have located permeable and/or fractured reservoir intervals in the Cretaceous carbonate trend (Austin Chalk, Eagle Ford Shale, and Buda Limestone), to determine the source-rock potential of shales, and the type of clay minerals present. A new method allows a reliable log-derived estimate of the cation exchange capacity and hence improved water saturation estimates in shaly, hydrocarbon-bearing clastic reservoir rocks.

426. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Interstitial Water Composition and Geochemistry of Deep Gulf Coast Shales and Sandstones

(Paper 12 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Schmidt , Gene W. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 149 , 7 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Calcasieu Parish / Clay minerals / Cores / Density / Fluid release / Geochemistry / Geopressure / Gulf Coast / Ion exchange / Louisiana / Manchester Field / Mechanism / Oil and gas fields / Pore water / Porosity / Sandstone / Sedimentary rocks / Shale / Tertiary / United States /

427. GGIS-100241/0/ /*****/A/77/ /US/ /299002 Root

Title- Introduction and Legal Overview of Geothermal Resources

Geopressured Geothermal Bibliography

Author(s)- / Root , T. E. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 6 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Geothermal resources / Legal aspects /

Abstract by TIC

A brief introduction to the papers to follow is presented.
(MHR)

428. GGIS-100370/R/ /*****M/77/ /US/ /***** Schnadelbach
EG-77-C-07-1629

**Title- Inventory and Case Studies of Louisiana, Non-Electric
Industrial Applications of Geopressured Geothermal Resources**

Subtitle- Quarterly Progress Report for Period March 1, 1977-May
31, 1977

Author(s)- / Schnadelbach , T. W.,Jr. /

Publication date- June 1977

Pagination- 131 Pages

Report/patent- IDO-1629-2

Available- NTIS

(Paper Copy

(A07) (\$ 7.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Energy Research and Development Administration
/9501252/.

EG-77-C-07-1629 /

Auxiliary expression(s)-

Illus.

/ Map (17) / Diagram (4) /

Table

Proposed Descriptor(s)- / Case histories / Economics / Food
processing / Geopressure resources / Industrial plants /
Louisiana / Resource assessment / Uses /

Abstract by Author

The potential utilization of geopressured geothermal energy in the State of Louisiana as a primary source of additional energy has not yet been fully determined. The theoretical amounts of existing resource beneath the earth's surface of southern Louisiana indicate endless volumes of high pressured, hot water and more than abundant reserves of natural gas. To date, there has not been sufficient enough factual proof to stimulate the actual drilling of a bona fide geothermal well. Evidence must be provided to prospective beneficiaries that there indeed are large-enough volumes of water, at the proper temperature, within the estimated proximity, containing tolerable properties and are reasonable accessible, to attract private investment industries.

Geopressured Geothermal Bibliography

It is the intent of this project to provide a quick reference source of all the above answers that will illustrate the potential resource areas within the State of Louisiana. All available data of known geopressured geothermal locations together with the theoretical high potential areas can provide much to progress the interests and the useful development of the resource. Also, it is the intent of this project to catalogue and inventory all of the industries within the State of Louisiana, classified as "Food and Kindred Products", to determine potential and specific industrial uses of the known energy resources. This will allow for the provision of technical and economic criteria for the conversion, application and transmission of energy necessary to industrial processing as a means of supplanting or reducing present energy consumption. There will also be the possibility of relocating industries to the available resources, offering the opportunity of developing geothermal energized industrial complexes. Finally, the project will provide and present individual case studies for near term industrial conversion for resource application. The case studies will illustrate the technical and economic feasibility of the non-electric industrial applications of geopressured and geothermal waters from the production well site to the disposal well, indicating the various opportunities for resource application-processing, heating, cooling, production, etc.

429. GGIS-100263/R/ /*****/M/**/ / / /150500
EG-77-C-07-1629

**Title- Inventory and Case Studies of Louisiana, Non-Electric
Industrial Applications of Geopressured Geothermal Resources**

Subtitle- Final Report

Author(s)- / Arnold , Alanson J. /

Publication date- February 1978

Pagination- 358 Pages

Report/patent- IDO/1629-4

Available- NTIS

(Paper Copy

(A16) (\$ 12.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EF-7-C-07-1629 /

Corporate Author- de Laureal Engineers, Inc. /9505301/.
New Orleans , Louisiana , USA

Auxiliary expression(s)-

Illus.

/ Diagram (16) / Map (19) / Graph (1) / Figure (9) /

Table

Appendix

Categories-

Geothermal Energy

(Economic and Financial Aspects)

Proposed Descriptor(s)- / Case histories / Direct energy utilization
/ Economics / Food processing / Geopressure resources /
Louisiana / Uses /

Abstract by TIC

Vast reservoirs of geopressured geothermal energy exist in Louisiana which present opportunities for development as energy sources in the form of hydro-energy, geothermal energy, and natural gas. The hydro-energy may be harnessed within impulse turbines for mechanical drives or for electrical generation. The geothermal energy can be applied as hot water to a variety of food processing operations. Applications for the natural gas content as a fuel are obvious. The cost for development of these resources will exceed current cost experience in the development of hydrocarbon energy resources. Transmission distances for the fluid geothermal waters to points of utilization are restricted by economics. Plant thermal apparatus will be longer and more expensive than conventional equipment. In projection, the most promising non-electric application of geopressured geothermal energy to a food processing operation would first require the evaluation of a

Geopressured Geothermal Bibliography

specific reservoir by drilling and testing a geopressured geothermal well to furnish energy to a plant which had been designed expressly to utilize the available energy at or near the well site.

430. GGIS-100244/R/ /*****/M/**/ /US/ /150202
EY-76-S-05-4937

Title- Investigation and Definition of Parameters Associated with Testing Geopressured Water

Subtitle- Interim Report, Phase I Activities, June 1, 1975-- August 31, 1976

Author(s)- / Hodges , J. / Jones , P. / Karkalits , O. C. /

Publication date- 1976

Pagination- 99 Pages

Report/patent- ORO--4937-1

Corporate Author- McNeese State University /9504854/.
Lake Charles , Louisiana , USA

Corporate Author- Osborn-Hodges-Roberts-Wieland Engineering
/9504853/.
Bryan , Texas , USA

Categories-

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(Non-USA)

Proposed Descriptor(s)- / Aquifer tests / Geopressured reservoirs /
Geothermal fluids / Louisiana / Natural gas wells / Reservoir
properties / Tigre Lagoon Field / Vermilion Parish / Water
analysis /

Abstract by TIC

Analysis of the waters in the geopressed zone in a specific south Louisiana shut in gas well are reported. Dynamic testing of two aquifers trapped by an existing gas well in the Tigre Lagoon Field in Vermilion Parish was conducted. Information about the characteristics of the reservoir fluid and the behavior of the reservoir under varying flow conditions was obtained.

431. GGIS-100396/R/ /*****/M/**/ /US/ /*****
EG-77-C-08-1528

Title- Investigation and Evaluation of Geopressed-Geothermal Wells

Subtitle- Package No. 1 of Wells-of-Opportunity Candidates

Publication date- February 1978

Report/patent- NVO-1528-6

Available- NTIS

(Paper Copy (\$ 5.75)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EG-77-C-08-1528 /

Corporate Author- Gruy Federal, Inc. /9508533/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (5) / Map (5) / Diagram (3) /

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Aquifers / Cameron Parish / Exploratory wells / Geopressure exploration / Geopressured wells / Louisiana / Reentry / Testing / Texas /

Abstract by Author

This group of wells-of-opportunity (WOO) consists of six candidates; one in Texas and five in Cameron Parish, Louisiana. Of the latter, two of three candidates in Twp 15S, Rge 5W are considered to be mutually exclusive in that each exhibits good potential for testing geopressured geothermal aquifers which are indicated to be of sufficient volume for purposes of a 30-day test well. A final selection of one location may be made from these three wells, assuming all pass screening criteria, based on estimated cost of the test and the negotiation of a satisfactory agreement with the owners of the surface and/or the minerals.

432. GGIS-100397/R/ /*****/M/79/ /US/ /***** Dobson
EG-77-C-08-1528

Title- Investigation and Evaluation of Geopressured-Geothermal Wells

Subtitle- Final Report, Gladys McCall No. 1 Well, Cameron Parish, Louisiana

Author(s)- / Dobson , R. J. / Hartsock , James H. / Willits , M. H.
/

Publication date- January 1979

Pagination- 91 Pages

Report/patent- NVO-1528-4

Available- NTIS

(Paper Copy

(A05) (\$ 8.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

EG-77-C-08-1528 /

Corporate Author- Gruy Federal, Inc. /9508533/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Diagram (20) /

Appendix

Proposed Descriptor(s)- / Abandoned wells / Cameron Parish / Cost /
Exploratory wells / Geopressure exploration / Geopressured wells
/ Louisiana / Reentry / Testing /

Abstract by Author

This well, originally drilled in 1965 as Buttes Gas & Oil-Getty Oil Company No. 1 Gladys McCall, was approved for reentry and test operations after consideration of a number of reentry prospects in Cameron Parish. This was a marsh location that required 2.3 miles of board road and replacement of two bridges. Road work was commenced on June 19, 1978, and site preparation was completed on October 25. Progress Drilling Company Rig No. 21 moved on location on November 2. This rig was released on December 16. Reentry operations were completely unsuccessful because of failure to effect a tieback of the 7" casing. The plugging and abandonment records filed with the Louisiana Department of Conservation indicated that the top of the 7" casing was at or near the base of the 10 3/4" casing when the well was plugged. These records did not specify that the 7" casing had been dynamited one or more times during the recovery operation. Numerous attempts were made to locate and condition the 7" casing for tying back to the surface. All these were unsuccessful. The top of the 7" casing was never clearly located, or if located was subsequently lost, and therefore it was not possible to cut and recover the damaged section in order to effect a tieback. The total cost of the attempted reentry was approximately \$1,925,000. Of this amount, some \$444,000 was spent on road and site preparation and disposal well. This expenditure can be salvaged in the event a decision is made to redrill the well.

433. GGIS-100395/R/ /*****/M/**/ /US/ /*****

Geopressured Geothermal Bibliography

EG-77-C-08-1528

Title- Investigation and Evaluation of Geopressured-Geothermal Wells

Subtitle- Notes on Gruy Federal's Well-of-Opportunity Program

Publication date- February 1979

Pagination- 115 Pages

Report/patent- NVO-1528-5

Available- NTIS

(Paper Copy

(A06) (\$ 9.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EG-77-C-08-1528 /

Corporate Author- Gruy Federal, Inc. /9508533/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Map (2) / Figure (2) / Diagram (1) / Graph (2) /

Proposed Descriptor(s)- / Abandoned wells / Geopressure drilling /
Geopressured wells / Louisiana / Research programs / Texas /

Abstract by Author

The Gruy Federal, Inc. contract to obtain geopressured geothermal test data from private industry sources became effective on September 26, 1977. The charge was to obtain test

data from geopressed aquifers along the Texas and Louisiana Gulf Coast by arranging to assume operation of wells already drilled and found nonproductive of conventional oil or gas accumulations before such wells were abandoned by the operators. The program was styled "Well of Opportunity" (WOO) since advantage could be take of expenditures which had been made already by the operator. It was proposed that upon assuming control of the well, Gruy Federal would test the geopressed aquifers after performing whatever additional operations were required, such as deepening and/or installing additional casing or wellhead sytems. The major activities and important milestones accomplished are discussed in this progress report.

434. GGIS-100347/R/ /*****/M/**/ /US/ /*****
EG-77-C-08-1528

Title- Investigation and Evaluation of Geopressed-Geothermal Wells

Subtitle- Prospective Test Wells in the Texas and Louisiana Gulf Coast

Publication date- March 1978

Pagination- 47 Pages

Report/patent- NVO-1528-2

Available- NTIS

(Paper Copy

(A03) (\$ 6.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EG-77-C-08-1528 /

Corporate Author- Gruy Federal, Inc. /9508533/.
Houston , Texas , USA

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Map (8) / Figure (4) / Diagram (4) /

Proposed Descriptor(s)- / Abandoned wells / Cost / Geology /
Geopressure drilling / Geopressure wells / Louisiana / Reentry /
Texas /

Abstract by Author

This group of wells-of-opportunity (WOOs) consists of four reentry candidates located in Southern Louisiana. In addition, some preliminary information, not a part of this package but an addendum, is presented on a Galveston County well which, if dry when drilled in late summer, can be deepened to test a hot interval having unknown permeability. The four Louisiana wells have penetrated a thick section of deep hot and geopressured Miocene or Oligocene sand. Thus the geological risk is essentially eliminated. Each of these wells has been abandoned. We have placed particular emphasis on selecting wells which are reported to have been left in such a mechanical condition that the risk of reentry operations is low. Every effort will be made to further check any well chosen for unreported conditions.

435. GGIS-100394/R/ /*****M/78/ /US/ /***** Lohse
EG-77-C-08-1528

Title- Investigation and Evaluation of Geopressured-Geothermal Wells
(Final Report)

Subtitle- Final Report, Alice C. Plantation No. 2 Well, St. Mary
Parish, Louisiana. Volume 1: Narrative Report

Author(s)- / Lohse , Alan / Willits , M.H. /

Publication date- December 1978

Pagination- 113 Pages

Report/patent- NVO-1528-3(Vol. 1)

Available- NTIS

(Paper Copy

(A06) (\$ 9.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EG-77-C-08-1528 /

Corporate Author- Gruy Federal, Inc. /9508533/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (1) / Graph (3) / Map (2) / Diagram (5) /

Table

Proposed Descriptor(s)- / Abandoned wells / Cost / Disposal wells /
Geopressure drilling / Geopressured wells / Louisiana / Reentry
/ Site selection / St. Mary Parish /

Abstract by Author

Gruy Federal, Inc. operates under contract to the Department of Energy, Division of Geothermal Energy, to evaluate potential alternate energy sources occurring within geopressured-geothermal aquifers in Miocene, Oligocene, Tuscaloosa, Wilcox, and Frio formations along the Texas and Louisiana Gulf Coast. The first well on which testing was attempted was the Alice C. Plantation No. 2 Well, located in St. Mary Parish, Louisiana. Originally drilled by the Sun Oil Company to a total depth of 19,000 feet, this well was abandoned as a dry hole in January 1964. Gruy's reentry attempt ended with plugging and abandonment after a saltwater flow on September 17, 1978. This report is a comprehensive document detailing all events and costs relating to the Alice C. Plantation well, from its initial selection as a reentry well through the plugging and abandonment operations.

436. GGIS-100899/0/ /*****/A/76/ / / /***** Giedt

Geopressured Geothermal Bibliography

Title- Investigation of Heat Exchanger Flow Arrangement on Performance and Cost in a Geothermal Binary Cycle

Author(s)- / Giedt , Warren H. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 747 , 7 Pages

Report/patent- SAE--769130

Note- Work performed under the auspices of the U.S. Energy Research and Development Administration

Corporate Author- California Univ., Livermore /9500007/.

Lawrence Livermore Lab.
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (10) /

Ref.

Proposed Descriptor(s)- / Binary cycles / Geothermal brines / Geothermal energy conversion / Heat exchangers / Performance testing / Working fluids /

Abstract by Author

The performance of an idealized geothermal binary-fluid-cycle energy conversion system is shown to be a function of the temperatures of brine and working fluid leaving the heat exchanger. System power output, heat exchanger area required and initial well and heat exchanger costs are determined for counterflow, single and multi-pass parallel-counterflow exchangers. Results are presented graphically as functions of the brine and working fluid exit temperatures from the exchanger. Use of the system analysis developed is illustrated by showing quantitatively the advantage of the counterflow over the other flow arrangements considered.

437. GGIS-100995/ / /*****A/78/ /US/ /***** Tleimat

Title- Investigation of Heat Transfer Coefficients of Working Fluids in Geothermal Power Cycles

Author(s)- / Laird , A.D.K. / Tleimat , B.W. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 655 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- California Univ., Richmone /9503378/.

Sea Water Conversion Lab.
Richmond , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) /

Proposed Descriptor(s)- / Binary cycles / Geothermal energy
conversion / Heat transfer / Power generation / Working fluids /

Abstract by Author

The objective of the binary fluid experiment described herein is to obtain data to determine baseline heat transfer data for working fluids being considered for binary cycle systems to produce from hot geothermal brines. These data will be used to calculate film coefficients for heating, boiling, superheating, desuperheating as well as condensation for candidate working fluids.

438. GGIS-100066/J/W00IA/18301/A/**/ / /*****

Title- Iron in Shale Samples Can Mask Geopressurized Zones

Geopressured Geothermal Bibliography

Author(s)- / Brooks , Robert A. / Kovisars , Leon S. /

Journal- World Oil

Publication date- Vol. 183 , Issue 6 , July 1976

Pagination- Page 123 , 1 Pages

Note- NTIS also #3 L. 1757: (EN).

Proposed Descriptor(s)- / Blowout prevention / Chemical analysis /
Oil well drilling / Shale /

Abstract by NTIS

High iron concentrations in shales can mask decreasing shale densities--an indication that abnormal pressure formations are being approached. However, equipment and methods are available that are fast and simple and extremely important in certain drilling areas. 3 refs.

439. GGIS-100899/0/ /*****/M/**/ / / /*****/

Title- II. Intersociety Energy Conversion Engineering Conference
Proceedings

Subtitle- Volume 1

Conference- 11 Intersociety Energy Conversion Engineering Conference
State Line
Nevada
USA (September 12 , 1976)

Publication date- Vol. 1 , September 12 , 1976

Pagination- 1002 Pages

Note- Work performed under the auspices of the U.S. Energy and
Research Development Administration

Available- American Institute of Chemical Engineers
345 E. 47 Street

New York City
New York
10017

Local Availability- Eng.

Corporate Author- American Inst. of Chemical Engineers /9503443/.
New York

440. GGIS-100066/J/W00IA/*****/A/77/B/US/ / 20300 Daw

Title- II. Mud Gas Logs Help Predict Occurrence of Geopressures

Author(s)- / Daw , R.N. / Mercer , R.F. / Myers , D.L. /

Publication date- Vol. 184 , Issue 4 , March 1977

Pagination- Page 61 , 4 Pages

Auxiliary expression(s)-

Illus.

/ Figure (8) /

Categories-

Petroleum

(Drilling and Production)

Proposed Descriptor(s)- / Drilling fluids / Exploration /
Geopressured systems / Monitoring / Well drilling /

Abstract by DOE/Recon

Careful monitoring of mud gas has proven to be invaluable for predicting the occurrence and magnitude of geopressures. Related techniques were used to determine mud weight requirements and casing setting depths for a wildcat that encountered abnormal pressures.

Geopressured Geothermal Bibliography

441. GGIS-100026/ / /*****/M/**/ /US/ /*****

Title- Joint Southeast Southwest Regional Meeting

(Abstracts of Papers)

Publisher- American Chemical Society

Publication date- 1970

Corporate Author- American Chemical Society

Southeast-Southwest Regions

442. GGIS-100345/R/ /*****/M/78/ /US/ /150802 Austin
UCRL-50046-77

Title- Lawrence Livermore Laboratory Geothermal Energy Program

Subtitle- A Status Report on the Development of the Total-Flow
Concept

Author(s)- / Austin , A.L. / Lundberg , A.W. /

Publication date- November 2 , 1978

Pagination- 77 Pages

Report/patent- UCRL-50046-77

Available- NTIS

(Paper Copy

(A05) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy

W-7405-ENG-48 /

Corporate Author- California Univ., Livermore /9500007/.

Lawrence Livermore Lab
Livermore , California , USA

Categories-

Geothermal Energy

(Geothermal Power Plants)

Geothermal Power Plants

(Power Plant Systems and Components)

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Economics / Efficiency / Electric power /
Geopressure resources / Geopressured systems / Geothermal energy
conversion / Hot water systems / Nozzles / Performance testing /
Power generation / Technology assessment / Total flow systems /
Turbines / Two phase flow /

Abstract by TIC

The technology development activities of the Geothermal Energy Program at the Lawrence Livermore Laboratory are summarized. Significant progress toward development of the Total-flow concept was made during FY 1978. The results show that the original goal of 70% engine efficiency for the Total-Flow impulse turbine is achievable, that a Total-Flow system is competitive economically with conventional systems, and that the Total-Flow concept offers the benefit of more efficient utilization of geothermal resources for electric power production. The evaluation of several liquid expanders designed for low-temperature (including geopressured) resources suggests that if development were continued, these expanders could be used in combination with conventional systems to increase overall system efficiency. Although the program was terminated before complete field testing of prototype systems could be carried out, the concepts have been adopted in other countries (Japan and Mexico), where development is continuing.

Geopressured Geothermal Bibliography

443. GGIS-100008/0/ / 1/A/**/ /US/ /150800

Title- Lawrence Livermore Laboratory Geothermal Projects

Author(s)- / Austin , A. L. /

Conference- Geothermal Power Development

Publication date- June 18 , 1974

Pagination- Page 15 , 11 Pages

Report/patent- LBL--3099

Available- NTIS

(Paper copy

(A07) (\$ 5.45)

(Microfiche

(A01) (\$ 1.45)

Local Availability- CES

Proposed Descriptor(s)- / Binary fluid systems / Brines / Design / Geopressured systems / Geothermal energy conversion / Geothermal power plants / Lawrence Livermore Laboratory / Pilot plants / Planning / Research programs / Total flow systems /

Abstract by ERDA/RECON

The LLL Geothermal Development Project emphasizes the development of methods for recovery and conversion of the energy of high temperature, high salinity brines. Construction and operation of a small (.10 MW(SUB E)) field experimental power plant is planned to demonstrate technical and economical feasibility of the concepts, and to provide a continuing source of operating data useful for design of larger commercial size systems. The binary cycle system and the total flow system are currently under development. A program for recovery and utilization of geopressured resources is also under development. (LBS)

444. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Legal and Environment Aspects

(5. Session)

Author(s)- / Vanston , John H. /

Conference- Geopressed Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 303 , 32 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

445. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Legal Aspects of Utilizing Geopressed Water as a Source of Energy

Author(s)- / Hardy , George /

Conference- Geopressed Geothermal Energy Conference

Geopressured Geothermal Bibliography

Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 305 , 5 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Discuss.

446. GGIS-100042/J/GTEMA/ 409/A/**/ / / /*****

Title- Legal Issues in the Development of Geopressured Geothermal Resources of Texas and Louisiana Gulf Coast

Author(s)- / Elmer , Donald B. /

Journal- Geothermal Energy Magazine

Publication date- Vol. 4 , Issue 9 , February 1976

Pagination- Page 13 , 19 Pages

Note- Continuance Pagination: 13(3), 22(4), 27(12)

Proposed Descriptor(s)- / Geothermal energy / Legislation /

Abstract by NTIS

This report is divided into two major sections, legal scholarship and legal support. Scholarship is distinguished from support by concentration on abstract analyses of issues which include resource definition, ownership, taxation, and multistate reservoirs. Support is based entirely on those legal tasks called up by the technical work scheduled in the areas of resource assessment, advanced research and technology, institutional and environmental and resource utilization. The thirteen western states, Texas and Louisiana, and the United States all have statutes which deal with geothermal resources in various manners. The scope of many of these legislative provisions is limited to leases of state-owned lands and regulation of operation of wells and facilities on all lands. Few of the statutes define the resource so as to include all types of geothermal resource, with hot rock massifs and geopressured systems being most commonly left out. Few of the statutes define the resource so as to include the entire system as set out in the physical model.

447. GGIS-100363/R/ /*****/M/**/ /US/ /*****
ET-78-G-05-5958

Title- Legal Issues Related to Geopressured-Geothermal Resource Development

(Geopressured-Geothermal Technical Paper No. 1)

Publication date- July 1979

Pagination- 49 Pages

Report/patent- DOE/ET/28464-(vol. 1)

Available- NTIS

(Paper Copy

(A03) (\$ 4.50)

(Microfiche

Geopressured Geothermal Bibliography

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Department of Energy /9506839/.

ET-78-G-05-5958 /

Corporate Author- RPC, Inc.
Austin , Texas , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Commercialization / Electric power / Energy
source development / Energy policy / Geopressure resources /
Ground subsidence / Legal aspects / Liabilities / Rates /
Regulations / Taxes / Texas / Waste disposal /

Abstract by Author

This paper discusses the legal aspects of geopressured geothermal development in Texas. Many of the legal issues associated with geopressured geothermal development in Texas are unsettled and represent areas of developing policy and law. Lawsuits can be expected either before or shortly after the first commercial development of geopressured geothermal resources.

448. GGIS-100007/0/ / 2/A/76/ /US/ /***** Vanston

Title- Legal, Institutional, and Environmental

(5. Volume)

Author(s)- / Elmer , Donald B. / Gustavson , Thomas C. / Kreidler ,
Charles G. / Letlow , Kathlene / Lopreato , Sally Cook /
Meriwether , Marian / Ramsey , Paula / Rogers , Kathryn E. /
Vanston , John H. / Williamson , James K. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 2 , February 25 , 1976

Pagination- 420 Pages

Note- Energyline Acq. 2/22/77 #6.

Auxiliary expression(s)-

Illus.

/ Diagram (7) / Graph (7) / Map (33) /

Ref.

Tables

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Alaska / Arizona / Baseline data / California / Chemical composition / Colorado / Diagrams / Discussion / Economics / Environmental impact assessment / Environmental effects / Faults / Federal law / Federal taxation / Flow rate / Geo brine / Geological setting / Geopressed systems / Geothermal energy / Geothermal drilling / Gulf of Mexico / Hawaii / Idaho / Land subsidence / Land use / Legal aspects / Litigation / Louisiana / Maps / Measurement / Montana / Nevada / New Mexico / Oregon / Proceedings / Regulations / Salinity / State and local law / State and local taxation / State public lands / Subsidence / Tables / Taxes / Temperature / Texas / Utah / Washington / Waste disposal / Water pollution /

Abstract by Energyline

Legal, environment, socioeconomic, demographic, and political factors in the development of geopressed geothermal resources off the U.S. Gulf Coast are analyzed. Legal issues include resource definition, ownership, taxation, and multistate reservoirs. The physical model of the geopressed geothermal resource is compared with the model articulated in statutes and case law. Few statutes include all types of geothermal resource in definition. Geothermal fluid disposal, particularly of hot saline water, potential land subsidence, and possible activation of faults are major environmental concerns. Baseline social, political, and demographic data are presented, and the local socioeconomic impacts of drilling, development, and production are assessed. (7 diagrams, 17 graphs, 33 maps 468 references, 14 tables)

Geopressured Geothermal Bibliography

449. GGIS-100136/R/ /*****/M/**/ /US/ /*****

Title- Lineations and Faults in the Texas Coastal Zone

Subtitle- Report of Investigations No. 85

Author(s)- / Kreitler , Charles W. /

Publication date- 1976

Pagination- 34 Pages

Report/patent- RI-85

**Available- Bureau of Economic Geology
University Station
Box X
Austin, Texas
78712**

(\$ 1.25)

Corporate Author- Texas University, Austin

**Bureau of Economic Geology
Austin , Texas , USA**

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (11) / Map (9) / Photo (3) /

Ref.

**Proposed Descriptor(s)- / Fault activation / Faults / Fluid
withdrawal / Ground subsidence / Gulf Coast / Lineations / Texas
/**

Abstract by Author

Over 7,000 miles of lineations have been observed on aerial photographic mosaics of the Texas Coastal Zone. These lineations, in part, represent the surface traces of faults originating in the Tertiary sediments and propagating through

the Quaternary sediments. The extrapolation of subsurface faults from specific oil and gas reservoirs are commonly coincident to lineations in those areas. Some extrapolated fault traces weave back and forth across lineations for 10 to 20 miles and then coincide with another lineation and follow it for 20 miles. They also may partially represent fracture-joint systems within the sedimentary deposits of the Gulf Basin. In the Houston-Galveston area of land subsidence, lineations commonly correspond with zones of active faulting. Coincidence of lineations and active faults occurs along the Hockley escarpment and in the complexly faulted Ellington Air Force Base-NASA area. Many lineations coincide with zones of differential subsidence; fifty percent of intersections of subsidence profiles and lineations occur at points of differential subsidence. Differential subsidence may be a precursor to active faulting; the land surface flexes before fault displacement is evident. with increased regional subsidence, active surface faults may be expected to develop within zones of differential subsidence. Movement on faults in the Houston area is being activated and accelerated by ground-water withdrawal. The rate of fault movement on the Long Point Fault and Eureka Heights Fault increases and decreases as the piezometric surface rises and declines, respectively. Land subsidence and fault activation can be expected in areas of the Texas Coastal zone other than the Houston-Galveston area if in these areas there is extensive ground-water withdrawal from shallow (less than 3,000 FT) fresh-water artesian aquifers. In these areas surface faulting and/or differential subsidence would be expected to occur in part within the zones defined by the lineations.

450. GGIS-100999/0/ /*****/A/78/ / / /***** Cole

Title- Liquid-Fluidized-Bed Heat Exchanger Flow Distribution Models

Author(s)- / Allen , C.A. / Cole , L.T. /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1129 , 6 Pages

Report/patent- SAE--789316

Corporate Author- Allied Chemical Corp. / 204600/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Illus.

/ Diagram (4) / Graph (2) /

Ref.

Proposed Descriptor(s)- / Flow Models / Fluidized bed heat exchangers
/ Geothermal brines / Heat transfer / Performance testing /
Scaling control /

Abstract by Author

Allied Chemical Corporation at the Idaho National Engineering Laboratory is developing liquid-fluidized-bed shell-and-tube heat exchangers for geothermal applications. Sand fluidized by geothermal water on the shell-side prevents scaling and increases heat transfer coefficients over conventional heat exchangers. Tests were conducted on two instrumented fluidized-bed exchanger models, constructed primarily of plexiglass, which differ in tube bundle orientation. One contains a horizontal bundle and the other a vertical tube bundle. The vertical model proved to have more uniform flow distribution and higher heat transfer coefficients than the horizontal model. The horizontal heat exchanger experienced piling on top of the tubes and "dead" areas in the bed. New design concepts for both vertical and horizontal assemblies were developed and recommendations for further developmental work are presented.

451. GGIS-100999/0/ /*****/A/78/ / / /***** Allen

Title- Liquid-Fluidized-Bed Heat Exchanger Scale Control and Corrosion Tests

Author(s)- / Allen , C.A. / Grimmett , E.S. / McAtee , R.E. /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1109 , 5 Pages

Report/patent- SAE--789312

Corporate Author- Allied Chemical Corp. / 204600/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (2) / Photo (1) /

Table

Ref.

Proposed Descriptor(s)- / Corrosion / Corrosion resistant alloys /
Geothermal brines / Heat exchangers / Heat transfer / Scaling
control / Testing /

Abstract by Author

Tests of a liquid-fluidized-bed heat exchanger in a horizontal configuration were conducted at the Department of Energy (DOE) Geothermal Components Testing Facility (GCTF) to study scale control on the heat transfer surfaces. No scale appeared on the bedside of the heat exchanger tubes. Scale did deposit above the bed and muscovite crystals were found in the silica sand bed material. Heat transfer data from this experiment correlated with theoretical calculations derived from Raft River experiments. Corrosion, scaling, and erosion of candidate construction materials showed the weight loss of 1025 carbon steel to be 314.4 $\mu\text{m}/\text{yr}$. Harder alloys such as Hastelloy G, Hastelloy C-276, SS 340L, SS 316, SS 347, and Nitronic 50 had weight losses of less than 1.0 $\mu\text{m}/\text{yr}$. Heat transfer data and observations from this experiment will be used to design liquid-fluidized-bed heat exchangers for electric and non-electric applications.

452. GGIS-100308/0/ /*****/A/78/ /US/ /***** Allen

Title- Liquid-Fluidized-Bed Heat Exchangers for a 50-MW Plant

Author(s)- / Allen , C.A. / Lawford , T.W. / Van Haaften , D.H. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Geopressured Geothermal Bibliography

Pagination- Page 5 , 5 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Idaho National Engineering Lab. /9502158/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) /

Table

Proposed Descriptor(s)- / Fouling / Geothermal brines / Heat
exchangers / Scaling control / Thermal efficiency /

Abstract by Author

Liquid-fluidized-bed and conventional heat exchangers were sized for a 50-MW dual boiling plant for the Raft River resource. Thermal performance was calculated for low and high-pressure preheaters, low and high-pressure boilers, and condensers. A plant using liquid-fluidized-bed exchangers requires 56 percent of the heat-transfer surface area compared to a plant with conventional tube-and-shell exchangers. Shell volume is greater for fluidized-bed exchangers; however, increased shell cost is partially offset by the lower design pressure achieved by putting the geothermal fluid on the shell side. With the working fluid on the tube side, the isobutane inventory in the exchangers is reduced by 45 percent. Parasitic pumping costs due to pressure drops are the same for both systems within the accuracy of calculation.

453. GGIS-100308/O/ /*****/A/78/ /US/ /***** Anglin

Title- Local Government Management of Geothermal Resources

Author(s)- / Anglin , Richard L. , Jr. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Figure (1) /

Ref.

Proposed Descriptor(s)- / Geothermal industry / Geothermal resources
/ Legal aspects / Local government / Regulations /

Abstract by Author

Potential policy options for regulation of geothermal resources by local government may be conceptualized along a continuum from no regulation to total regulation of the industry. The practical lower limit is regulation of nuisance impacts such as pollutant emissions, noise, and the like. Options along the regulatory continuum may be grouped roughly into two categories based on the information required to regulate surface manifestations of geothermal development versus that required to control the resource itself. Management scenarios controlling the resource itself from the practical upper limit on local government regulation of geothermal resources. Local government must carefully balance the benefits to be derived from seeking to control the resource itself against the costs of that regulation. It is not clear that local government should or can impose regulations on use of the resource itself.

Geopressured Geothermal Bibliography

454. GGIS-100217/J/ /*****/A/**/ / / *****/

Title- Louisiana Geopressured Well

Journal- Inf. ERDA Wkly. Announce.

Publication date- Vol. 3 , Issue 25 , 1977

Pagination- Page 3

Proposed Descriptor(s)- / Geopressure exploration / Geopressured
wells / Geothermal prospecting / Louisiana / Thermal springs /

455. GGIS-100084/R/ /*****/M/**/ /US/ /150800

Title- LLL Geothermal Energy Development Program

(Impulse Turbines, Total Flow Conversion System)

Subtitle- Status Report, January 1974--January 1975

Author(s)- / Austin , A. L. /

Publication date- February 14 , 1975

Report/patent- UCID--16721

Note- NTIS 2/4/77 #9 L. 612

Available- NTIS

(Paper copy (\$ 4.00)

(Microform (\$ 2.25)

Corporate Author- California Univ. / 950007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Proposed Descriptor(s)- / Brines / Chemical composition / Corrosion / Design / Gas analysis / Geochemistry / Geopressured systems / Geothermal energy conversion / Geothermal resources / Hot water systems / Materials testing / Nozzles / Precipitation / Research programs / Salton Sea / Scaling / Turbines / Two-phase flow /

456. GGIS-100021/J/AGGMB/ 601/A/**/ / / /*****

Title- Mechanism of Ocean-Floor Spreading as Disclosed by High Pressure Experiments

Original Title- Mechanismus des "Oceanic Spreading" in Lichte Von Hochdruck Experimenten

Author(s)- / Szadecky-Kardoss , E. /

Journal- Acta. Geod. Geophys. Montan.

Publication date- Vol. 6 , Issue 1 , 1971

Pagination- Page 203 , 19 Pages

Language- German

Auxiliary expression(s)-

Sum.

Illus.

Proposed Descriptor(s)- / Argillaceous rocks / Benioff zones / Causes / Crust / Evolution / Experimental studies / Geopressure / Geosynclines / Isostasy / Lithosphere / Magmas / Mechanism / Models / Movement / Origin / P-T conditions / Plate tectonics / Sea-floor spreading / Sediments / Tectonophysics / Tectonics / Upper mantle /

457. GGIS-100058/J/OIGJA/*****/A/79/ /US/ /***** Doscher

Title- Methane from Geopressured Aquifers Studied

Geopressured Geothermal Bibliography

Author(s)- / Cox , D. / Doscher , T.M. / Osborne , R.H. / Rhee , S.W. / Wilson , T. /

Publication date- Vol. 77 , Issue 15 , April 9 , 1979

Pagination- Page 178 , 3 Pages

Corporate Author- University of Southern California /6521000/.
Los Angeles , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (4) /

Table

Ref.

Proposed Descriptor(s)- / Aquifers / Cost / Economics / Gas production / Geopressured reservoirs / Gulf Coast / Methane / Reservoir properties / Texas /

Abstract by Author (rev.)

The economics of methane production from Texas geopressured aquifers is assessed. For a realistic expectation of reservoir size (a reservoir volume of 0.06 cu mile) a sustained production rate of less than 5,000 psi could be expected. Further, such a reservoir containing 226,000 bbl/acre would show a recovery of only 6% when drilled on 640-acre spacing, decreasing to 2% if drilled on 40,000-acre spacing. The cost of the produced gas, assuming 100% recovery of the gas in the brine, was calculated using a 15% return on investment. The investment in a single well complex was estimated at \$5,145,000. The total operating costs per 1,000 bbl of brine was comprised of three unit costs; \$.10 for the operation and overhead of the producing well; \$.20 for the operation of the stripping facility, the disposal pumps, and well; and \$(0.50)(P)(Gas cost/MMBTU) for the energy to dispose of the water. No allowance was made for substantial workovers of the wells, stabilization, and filtration of the brine. The overall results of the cost calculations indicate that the cost of methane recovered from geopressured aquifers could be brought down to \$4/Mscf only if reservoir volume were in excess of 1 cu mile and the optimistic estimates of operating costs prevailed. For the more likely reservoir volumes, the costs would be in excess of \$10/Mscf. Considering that these calculations are based on a 15% rate of return, include no predevelopment costs, and no land costs, it does not appear that methane recovered from geopressured aquifers can be a

competitive supply of energy in the United States for many generations to come.

458. GGIS-100393/0/ /*****/A/80/ / / *****/ Blount
ET-78-S-07-1716

Title- Methane Solubility in Aqueous NaCl Solutions at Elevated Temperatures and Pressures

Author(s)- / Blount , Charles W. / Price , Leigh C. / Tarullo ,
Michae / Wenger , Lloyd M. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1225 , 38 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

ET-78-S-07-1716 /

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (16) /

Table

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Aqueous solutions / Elevated pressure /
Elevated temperature / Equations / Experimental results /
Laboratory studies / Measuring methods / Methane / Resource
assessment / Sodium chloride / Solubility / Statistical models /

Abstract by Author

The solubility of methane in water and in various concentrations of aqueous NaCl solutions has been experimentally measured at a range of elevated temperatures and pressures. Increasing pressure and increasing temperature both result in an increase in the solubility of methane in water and in aqueous NaCl solutions. Increasing the NaCl concentration at constant temperature and pressure markedly decreases the solubility of methane. In log-log plots, methane solubility increases linearly with increasing pressure at constant temperature and constant NaCl concentration; it decreases linearly with increasing NaCl concentration at constant temperature and pressure. An empirical equation was derived from the solubility data using regression analysis. Using this equation, one can interpolate aqueous methane solubilities (to 6 percent) for any given temperature over the range from 212 DEG to 464 DEG F, pressure from 2,000 to 22,500 psi, and NaCl concentration from 0.3 to 25 weight percent.

459. GGIS-100183/P/ /*****/M/**/ /US/ / 30900

Title- Method for Increasing the Recovery of Natural Gas from a
Geo-Pressured Aquifer

Author(s)- / Cook , H. L., JR. / Geer , E. C. /

Publication date- August 16 , 1977

Report/patent- 4,042,034 (US Patent

Note- to Transco Energy Co. Filed Date 24 May 1976

Categories-

Natural Gas

(Artificial Stimulation)

(Plowshare)

Proposed Descriptor(s)- / Aquifers / Enhanced recovery / Geopressured systems / Natural gas / Natural gas wells / Well stimulation /

Abstract by DOE/RECON

A method is claimed of increasing the recovery of natural gas from a geopressured aquifer containing water and gas and having a zone of free gas dispersed in water, by providing one or more wells extending from the surface to and completed in the geopressured aquifer in said zone and allowing the aquifer to flow water and gas under natural pressure through the well and lowering the pressure in the aquifer sufficiently to allow the gas to be released from solution in the water whereby the gas released will migrate more freely to the well and be produced. Also, any gas-phase saturation in the aquifer and any deposit of gaseous hydrocarbons in the formation in pressure communication with the wells will expand due to lowered aquifer pressure and be encouraged to flow to the wells and be recovered. Preferably, the wells are produced at a high enough rate of production to reduce the existing aquifer pressure in the drainage area of the wells as quickly as possible so that gas may be released from solution in the water and so that gaseous hydrocarbons in the formation may expand and flow to the wells. A high initial flow rate of at least 15,000 barrels of water per day from each well is necessary to effect the lowering of the aquifer pressure by at least 25 percent in order to provide the necessary mobility of the gas to obtain the enhanced gas recovery by the present method.

460. GGIS-100182/P/ /*****/M/**/ /US/ / 30900

Title- Method for Increasing the Recovery of Natural Gas from a Geo-Pressured Aquifer

Author(s)- / Cook , H. L., JR. / Geer , E. C. / Katz , D. L. /

Publication date- August 9 , 1977

Report/patent- 4,040,487 (US Patent

Note- to Transco Energy Co. Filed Date 24 May 1976

Categories-

Natural Gas

(Artificial Stimulation)

Geopressured Geothermal Bibliography

(Plowshare)

Proposed Descriptor(s)- / Aquifers / Enhanced recovery / Geopressured systems / Natural gas / Natural gas wells / Well stimulation /

Abstract by DOE/RECON

A method of increasing the recovery of natural gas from a geopressured aquifer containing water and gas and having a zone of free gas dispersed in water, by providing one or more wells extending from the surface to and completed in the geopressured aquifer in said zone and allowing the aquifer to flow water and gas under natural pressure through the well and lowering the pressure in the aquifer sufficiently to allow the gas to be released from solution in the water whereby the gas released will migrate more freely to the well and be produced. Also, any gas-phase saturation in the aquifer and any deposit of gaseous hydrocarbons in the formation in pressure communication with the wells will expand due to lowered aquifer pressure and be encouraged to flow to the wells and be recovered. Preferably, the wells are produced at a high enough rate of production to reduce the existing aquifer pressure in the drainage area of the wells as quickly as possible so that gas may be released from solution in the water and so that gaseous hydrocarbons in the formation may expand and flow to the wells. A high initial flow rate of at least 15,000 barrels of water per day from each well is necessary to effect the lowering of the aquifer pressure by at least 25 percent in order to provide the necessary mobility of the gas to obtain the enhanced gas recovery by the present method.

461. GGIS-100995/ / /*****A/78/ /US/ /***** Meidav

Title- Methodology of Socioeconomic Impact Assessments of Geothermal Energy Development

Author(s)- / Meidav , Mae Z. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 433 , 4 Pages

**Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616**

Local Availability- CES

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Energy source development / Environmental effects / Geothermal energy / Socio-economic factors /

Abstract by Author

Impacts which are likely to be perceived as having the greatest positive consequences include: (1) decreasing rate of depletion of oil and gas, because of substitution by geothermal energy; (2) reduction in the amount of imported energy; (3) development of industries that use geothermal electricity, heat, or minerals in geothermal regions; (4) increase in government income; (5) reduction of inflation rate due to lower energy cost; (6) improvement in GNP. Impacts which are likely to be perceived as having greatest negative consequences, in decreasing rank order, were ranked as follows: (1) increased possibility of seismicity and land subsidence due to geothermal fluid extraction; (2) increased noise level, especially during drilling and development; (3) diminished water and air quality near geothermal installations; (4) relocation of local population in order to accommodate geothermal installations; (5) use of recreation, park, and wilderness areas for geothermal installations; (6) use of agricultural and forest lands for development of geothermal installations.

462. GGIS-100064/J/TCPKA/ 1304/A/**/ / / /*****

Title- Methods of Detecting Abnormal Formation Pressure Zones

Original Title- Metody Wykrywania Stref O Anomalmym Cisnieniu Zlozowym

Journal- Tech. Poszukiwan

Publication date- Vol. 13 , Issue 4 , 1974

Pagination- Page 34 , 9 Pages

Language- Polish

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Sum.

Illus.

Proposed Descriptor(s)- / Abnormal / Acoustical / Anhydrite /
Artesian waters / Clay / Conductivity / Detection / Diagenesis /
Drilling / Electrical / Factors / Formation pressure / Gamma /
Geophysical methods / Geopressure / Neutron / Osmosis /
Petroleum / Pressure buildup / Production / Radioactivity /
Rates / Rehydration / Resistivity / Salt / Sedimentation /
Seismic methods / Techniques / Tectonics / Uses / Well logging /

463. GGIS-100117/ / /*****M/**/ / / /*****

Title- Methods Developed for Gravel Packing High-Pressure
Unconsolidated Zones

Author(s)- / Szescila , A. J. /

Note- This citation, entered as monograph pending correction of
transmission failure at acquisition, is probably journal
article or conference paper. CF. ASMSA4 SEP 21-25 1975(5).

Proposed Descriptor(s)- / Bottom hole pressure / Gravel packing / Oil
wells / Oil well completion / Petroleum reservoir engineering /

Abstract by NTIS

Recent improvements in down-hole completion tools, fluids,
and gravel-packing methods have made it possible to pack off and
subsequently produce unmanageable geopressured zones. The
techniques, field proven for both upper and lower-zone packs,
are compatible with any currently used carrying agent or
workover fluid. The basic tool alignment requires minor
modifications of the conventional crossover-tool assembly. The
entire system has successfully functioned in fluids weighing
17.8 Lb/Gal. 3 refs.

464. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Mineralogy of Montmorillonite Under Elevated Temperature and
Pressure

Author(s)- / Rieke , Herman H., 3. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 89 , 16 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Clay minerals / Crystal structure /
Diagenesis / Experimental studies / Geopressure / Geothermal
gradient / Minerals / Mixed layer / Montmorillonite / P-T
conditions / Sea water / Sediments / Transformation /

465. GGIS-100282/ / /*****/M/79/ /US/ /***** Sun

Title- Modeling Injection and Aquifer Pressure for Geothermal
Disposal Wells

Author(s)- / Sun , Jimmy A.F. /

Publication date- 1977

Pagination- 86 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
Texas
78712

(Paper Copy (\$ 0.0)

Local Availability- CES

Geopressured Geothermal Bibliography

Corporate Author- Texas Univ. Austin

Center for Energy Studies, Geothermal Div.
Austin , Texas , USA

Auxiliary expression(s)-

Table

Illus.

/ Figure (12) /

Ref.

Appendix

Proposed Descriptor(s)- / Aquifers / Boron / Bottom hole pressure / Brazoria County / Computer calculations / Depth / Disposal wells / Elements / Flow rates / Fresh water / Geopressured reservoirs / Geopressured wells / Gulf Coast / Injection wells / Miocene epoch / Models / Natural gas deposits / Petroleum deposits / Pleistocene epoch / Reservoir pressure / Reservoir properties / Salinity / Sandstone / Surface disposal / Texas / Trace amounts / Water production / Well logging / Well spacing /

Abstract by Author (rev.)

In the geopressured geothermal test well project, water produced (at a rate of 20,000 to 40,000 barrels per day) from Pleasant Bayou No. 2 well will probably have to be disposed of by injection into shallower sandstone reservoirs. High salinity (40,00 to 60,000 ppm) and possible high concentration of certain trace elements, such as boron, will probably prohibit water disposal at the surface. It is anticipated that for each producing geothermal well several disposal wells will have to be drilled into the shallower, thick sandstones of Miocene to Pleistocene age. The disposal interval must be located beneath the deepest freshwater zones and above the shallowest oil and gas zones. Thus, in the area of the test well site the disposal interval will be between the depths of 2,000 and 7,000 feet. From existing well logs from this area, it is estimated that in this 5,000 foot interval there will be 1,500 to 1,800 feet of sandstone suitable for injection of the geothermal water. In this study, the author has developed a computational model to simulate well bore pressure at different reinjection rates during salt water disposal, and another program to calculate the average reservoir pressures, at different times and flow rates. The features of the model include provisions for: (1) infinite acting or bounded aquifers (2) multiple injection wells (3) variation in average reservoir properties (ϕ , k , h) and fluid properties (μ , c , B sub:w) (4) variation in injection rate with time. The model is based upon the superposition of line source and sink solutions.

466. GGIS-100051/J/JRGSA/*****/A/78/ /US/ /***** Potter

Title- Models for Calculating Density and Vapor Pressure of
Geothermal Brines

Author(s)- / Haas , John L., Jr. / Potter , Robert W., II /

Publisher- U. S. Geological Survey

Publication date- Vol. 6 , Issue 2 , March 1978

Pagination- Page 247 , 11 Pages

Corporate Author- Geological Survey /2751000/.
Menlo Park , California , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Chemical properties / Density / Equations /
Geopressured reservoirs / Geothermal brines / Geothermal
reservoirs / Models / Salinity / Thermodynamic properties /
Turbines / Vapor pressure / Volume /

Abstract by Compendex

In a model for estimating density of a brine, the density of a natural brine at a know temperature, pressure, and composition can be calculated from the densities of the component salt solutions in the complex brine. The model developed for estimating vapor pressure require two direct or indirect estimates of the vapor pressure and uses a published "reference-substance principle" to extrapolate these data 200 degrees to 300 degrees above the temperature of the highest observation. The methods can be used to estimate the partial molal volume and partial molal enthalpy of H sub-20 in the natural brine and the partial molal volume change and partial molal heat change for the H sub-20 component in the vaporization process. The equations for density and vapor pressure and the derived thermochemical properties will help in designing turbines for operation with geothermal and geopressured brines, in optimizing production conditions, and physical and chemical modeling of a geothermal reservoir.

Geopressured Geothermal Bibliography

467. GGIS-100274/R/ /*****/M/78/ /US/ /***** Phillips
W-7405-ENG-48

Title- National Geothermal Information Resource

Subtitle- Annual Report, 1977

Author(s)- / Phillips , Sidney L. /

Publication date- April 19 , 1978

Pagination- 68 Pages

Report/patent- LBL-7803

Available- NTIS

(Paper copy (\$ 8.00)

(Microfiche (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, D.C. (USA). Div. of Basic
Energy Science /9505667/.

W-7405-ENG-48

Sponsor- / Department of Energy, Washington, D.C. (USA). Div. of
Biomedical and Environmental Research /9506939/.

W-7405-ENG-48

Sponsor- / Department of Energy, Washington, D.C. (USA). Div. of
Geothermal Energy /9506839/.

W-7405-ENG-48 /

Corporate Author- California Univ. /1112800/.

Lawrence Berkeley Lab.
Berkeley , USA

Auxiliary expression(s)-

/ Photo (1) / Graph (3) / Figure (13) /

Table

Ref.

Proposed Descriptor(s)- / Brine treatment / Brines / Data analysis /
Direct energy utilization / Documentation / Energy conversion /
Environmental effects / Evaluation / Exploration / Ground
subsidence / Hydrogen sulfides / Information systems / Magma /
Research programs / Resource assessment / Saline aquifers /
Viscosity /

Abstract by Author (rev.)

The National Geothermal Information Resource (GRID) of the Lawrence Berkeley Laboratory is chartered by the U.S. Department of Energy (DOE) to provide critically evaluated data and other information for the development and utilization of geothermal energy. Included are both site dependent and site independent information related to resource evaluation, electrical and direct utilization, environmental aspects, and the basic properties of aqueous electrolytes. There are currently three U.S. data centers working to implement the collection and exchange of information on geothermal energy research and production: the DOE Technical Information Center (TIC), Oak Ridge, the GEOTHERM database of the U.S. Geological Survey in Menlo Park, and the GRID project. The data systems of TIC, GEOTHERM and GRID are coordinated for data collection and dissemination, with GRID serving as a clearinghouse having access to files from all geothermal databases including both numerical and bibliographic data. The GRID program also maintains interfaces with relevant data efforts; for example, the National Standard Reference Data System for collection and evaluation of basic numerical data. Standards for interchange of bibliographic data are patterned after that of the International Atomic Agency's International Nuclear Information System (INIS). Utilization of the INIS format ensures compatibility with other INIS styled computer centers. Data is available in the form of bibliographic compilations, numerical tables, or graphical displays disposed to paper, film or magnetic tape. In addition to the maintenance of a current geothermal database, the program is responsible for literature reviews and critical evaluations of the status of data by the technical staff. The program is organized into four principal areas: (1) basic geothermal energy data; (2) site-dependent data for both electrical and direct utilization; (3) environmental aspects, and (4) data handling development. The four sections of the report are organized in this way.

468. GGIS-100062/J/SCIEA/ 191/A/**/ / / /294000

Geopressured Geothermal Bibliography

Title- Natural Gas

Subtitle- United States Has It if the Price is Right

Author(s)- / Maugh , T. H., 2. /

Journal- Science

Publication date- Vol. 190 , Issue 4213

Proposed Descriptor(s)- / Charges / Coal / Control / Cost / Economics
/ Energy supplies / Exploration / Geopressured systems /
Meetings / Methane / Natural gas / Production reserves / USA /

Abstract by ERDA/RECON

Evidence was presented at a meeting of the National Research Council Forum on Potential Resources of Natural Gas that if gas companies were allowed to sell new gas at prices comparable to those already charged for intrastate deliveries, they might be able to tap already-identified sources that would greatly increase natural gas reserves. This price would remain competitive with the prices of alternative energy supplies. Four types of natural gas resources that are unexploited are examined, namely: gas trapped in coal deposits, gas from shales, gas from the tight sands, and gas from geopressured zones. The US has natural gas resources of about 8 trillion cubic meters that can be produced and sold at current prices, with an additional 18.5 trillion cubic meters of undiscovered natural gas in conventional deposits. (MCW)

469. GGIS-100077/R/ /*****A/**/ /US/ /*****

Title- Natural Gas from Geopressured Aquifers

(Chapter 3 of Natural Gas from Unconventional Geologic Sources)

Author(s)- / Hise , B. R. /

Publication date- 1976

Pagination- Page 41 , 23 Pages

Report/patent- FE-2271-1

Note- with discussion

Auxiliary expression(s)-

Illus.

/ Table (1) /

Proposed Descriptor(s)- / Aquifers / Economic geology / Economics /
Geopressured zones / Geopressure / Gulf of Mexico / Gulf Coast /
Hydrocarbons / Louisiana / Mississippi / Natural gas /
Occurrence / Recovery processes / Resources / Sandstone /
Sedimentary rocks / Shale / Texas / United States /

470. GGIS-100053/J/JPTJA/*****/A/78/ / / *****/ Randolph

Title- Natural Gas from Geopressured Aquifers (Gulf Coast Reservoirs)

Author(s)- / Randolph , P.L. /

Publication date- Vol. 30 , Issue 3 , 1978

Pagination- Page 402

Proposed Descriptor(s)- / Aquifers / Coastal regions / Geopressured
systems / Gulf Coast / Gulf of Mexico / Natural gas / Reservoir
description /

471. GGIS-100077/R/ /*****/M/**/ /US/ / 30100
E(49-18)-2271

Title- Natural Gas from Unconventional Geologic Sources

(From Geopressured Zones of Gulf of Mexico, Appalachian Brown
Shales, Tight Sands of Western Basins, and in Association with
Coal)

Publication date- 1976

Pagination- 255 Pages

Geopressured Geothermal Bibliography

Report/patent- FE-2271-1

Note- NTIS 2/4/77 #3 L. 185

Corporate Author- National Research Council /9502304/.

Board on Mineral Resources
Washington , D.C. , USA

Proposed Descriptor(s)- / Coal deposits / Economics / Exploitation /
Geologic structures / Geopressured systems / Gulf of Mexico /
Meetings / Methane / Natural gas / Natural gas deposits /
Reserves / Sand / Shale / USA /

Abstract by ERDA/RECON

There are four major types of occurrences of large amounts of methane that have not been exploited to any significant degree. These are (1) in the deep geopressurized zone of the Gulf Coast, (2) in association with the brown shales of the Appalachian and other Eastern Devonian-Mississippian basins, (3) in tight sands of the Uinta, Peceance, and other Western basins, and (4) in association with coal. In a series of thirteen written papers presented in a forum sponsored by the Board on Mineral Resources and in discussions following the presentation of papers evaluations were made of the nature and physical dimensions of these beds, the extent of the resource, recovery problems, economic and institutional problems, and the potential of the source both in the short-term and the long-term. The papers and discussions are compiled, together with a summary of the findings and conclusions. (JSR)

472. GGIS-100077/R/ /*****/A/**/ /US/ /*****

Title- Natural Gas Resources of the Geopressured Zones in the Northern Gulf of Mexico Basin

(Chapter 1 of Natural Gas from Unconventional Geologic Sources)

Author(s)- / Jones , P. H. /

Publication date- 1976

Pagination- 17 Pages

Report/patent- FE-2271-1

Auxiliary expression(s)-

Illus.

Discuss.

Proposed Descriptor(s)- / Basins / Cenozoic Era / Clay / Economic geology / Economics / Exploration / Geopressured zones / Geopressure / Gulf of Mexico / Gulf Coast / Louisiana / Natural gas / Occurrence / Recovery processes / Resources / Sand / Sediments / Texas / United States /

473. GGIS-100179/O/ /*****/A/**/ /US/ /150600

Title- Needed Studies for the Future

Author(s)- / Champlin , J. B. F. /

Publication date- 1975

Pagination- Page 18 , 6 Pages

Report/patent- CONF-7511133

Categories-

Geothermal Energy

(Environmental Aspects)

Proposed Descriptor(s)- / Baseline ecology / Brines / Coordinated research programs / Data analysis / Energy source development / Environmental impacts / Functional models / Geology / Geopressured systems / Geothermal energy / Hot dry rock systems / Hydrology / Information needs / Recommendations / Systems analysis /

Abstract by DOE/RECON

It is suggested that future studies should clarify the systems within which variations in the environment occur, so that when actual, factual data is obtained, it fits and helps to calibrate or substantiate a functional model of what the natural operative system is. Future studies considered particularly germane to geothermal development are listed under the following headings:

Geopressured Geothermal Bibliography

hydrogeothermal, hot rock, geopressured, hot brine and
geomechanical.

474. GGIS-100346/R/ /*****/M/78/B/US/ / 150 Austin
W-7405-ENG-48

**Title- New Concepts for Converting the Energy in Low- to Medium-
Temperature Liquids, with Emphasis on Geothermal Applications**

Author(s)- / Austin , A.L. / House , P.A. /

Publication date- September 20 , 1978

Pagination- 18 Pages

Report/patent- UCRL-52583

Available- NTIS

(Paper Copy

(A02) (\$ 4.00)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy

W-7405-ENG-48 /

Corporate Author- California Univ., Livermore /9500007/.

**Lawrence Livermore Lab.
Livermore , California , USA**

Categories-

Geothermal Energy

(Geothermal Power Plants)

Geothermal Power Plants

(Power Plant Systems and Components)

Proposed Descriptor(s)- / Flashed steam systems / Geopressure resources / Geopressured systems / Geothermal energy conversion / Geothermal power plants / Moderate temperature / Nozzles / Performance testing / Power generation / Pumps / Thermal efficiency / Turbines / Waste heat / Working fluids /

Abstract by TIC

The Geothermal Development Program at Lawrence Livermore Laboratory has produced several novel expanders for liquids of low to medium temperatures (approx. 180 DEG C). A unique radial outflow reaction turbine (RORT) has been developed and laboratory-tested; results indicate that 50% engine efficiency is achievable. This work has led to a new concept called the velocity pump reaction turbine (VPRT), which could significantly increase the gross engine efficiency of the RORT. VPRT and its modifications are a unique family of turbines created specifically for expanding liquids to produce shaft work at potential engine efficiencies of up to 70%. Such devices, if used between the two separation stages of a double-flash system, could increase the overall power output by 15 to 20%, reducing power costs by at least 10% for about a 3% increase in capital costs. Geothermal applications are discussed with emphasis on geopressured resources. Also, these machines are suitable for utilizing solar heated fluids and waste heat sources from industrial processes.

475. GGIS-100348/J/ /*****/A/79/ / / /***** Glanternik

Title- New Energy and Expanded Investment Credits Provide Opportunities for Increased Savings

Author(s)- / Glanternik , Henry J. / Lipton , Charles N. /

Publication date- Vol. 23 , Issue 5 , November 1979

Pagination- Page 260 , 7 Pages

Proposed Descriptor(s)- / Equipment / Financial incentives / Gas production / Geopressured reservoirs / Geothermal brine / Investment / Natural gas / Taxes /

Abstract by ABI/Inform

As a stimulus to capital investment, the Revenue and Energy Tax Acts of 1978 have: (1) liberalized the amount of investment credits which can be used to reduce taxes each year and broadened the types of property eligible for the regular investment credit,

Geopressured Geothermal Bibliography

and (2) created six new classes of business energy property which may, in some cases, result in both energy tax credits and investment tax credits. They are: (1) alternative energy property which includes boilers and burners using primarily alternate substances, (2) specially-defined energy property which can include recuperators, heat wheels, and regenerators, (3) recycling equipment used to sort and prepare solid waste for recycling, (4) equipment used to extract oil from oil-bearing shale rock, (5) equipment for producing natural gas from geopressured brine, and (6) equipment using solar or wind energy to generate heat, cooling, electricity, or hot water. Depreciable tangible personal property with a life of at least 3 years is eligible for the investment credit.

476. GGIS-100385/R/ /*****/M/80/ /US/ /***** Roy
DE-AC02-76CH00016

Title- New High Temperature Cementing Materials for Geothermal Wells: Stability and Properties

Subtitle- Final Report

**Author(s)- / Grutzeck , Michael W. / Langton , Christine A. / Roy ,
Della M. / White , Elizabeth L. /**

Publication date- July 1980

Pagination- 85 Pages

Report/patent- BNL-51249

Available- NTIS

(Paper copy

(A04) (\$ 8.00)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

DE-AC02-76CH0016 /

Corporate Author- Brookhaven National Lab.

Geothermal Materials Group
Upton , NY , USA

Auxiliary expression(s)-

Illus.

/ Diagram (12) / Photo (17) / Graph (24) /

Table

Ref.

Proposed Descriptor(s)- / Chemical properties / Geothermal wells /
High temperature / Performance / Permeability / Phase
transformation / Physical properties / Stresses / Well cementing
/

Abstract by Author

Potential high-temperature cements have been formulated and evaluated in terms of their properties for geothermal well cementing. Phase formation and compatibility in two major compositional regions were investigated in the temperature region between 200 and 400 DEG C and pressures up to 69 MPa (10,000 psi). These were followed by an evaluation of properties of the cements formed. One area in the system $\text{CaO-MgO-SiO}_2\text{-H}_2\text{O}$ centered around the xonotilite-chrysotile join while the other area of interest centered around the anorthite composition in the system $\text{CaO-Al}_2\text{O}_3\text{-SiO}_2\text{-H}_2\text{O}$. After numerous exploratory studies, the magnesia-containing mixtures were prepared by mixing a Class J cement with various sources of magnesia such as calcined chrysotile, or magnesium oxide. Calcium oxide and silica fine quartz powder were also added to adjust the compositions. The aluminous system cements were formulated from high-alumina cements which were mixed with various silica source. The potential geothermal cements which have been developed have fulfilled the following general requirements: a) 24-hour compressive strength greater than 6.9 MPa (1000 psi); b) water permeability less than 0.1 millidarcy; c) cement/steel bond strength greater than 0.07 MPa (10 psi); d) 96-day stability in hydrothermal water or 20% brine; e) noncorrosive to steel casing; f) 2-hour room temperature workability well within specifications; g) maintenance of pumpability at temperatures up to 350 DEG F (177 DEG C) for 4 hours. These cements hold promise as new geothermal cements, but additional long-term testing is still needed to fully evaluate their true potential. Some samples have been tested for pumpability, which has been shown to be adequate. Some have been submitted to the National Bureau of Standards (NBS) for their standard testing program.

477. GGIS-100349/J/ENGYD/*****/A/**/ / / /*****

Title- New Lease on Life for Gas

Journal- Energy (Stamford, Conn.)

Publication date- June 1979

Pagination- 3 Pages

Local Availability- CES

Proposed Descriptor(s)- / Gas production / Geopressured zones / Gulf Coast / Louisiana / Natural gas / Texas /

Abstract by Compendex

Natural gas currently supplies about 25% of the total energy consumed in the United States. Unfortunately, the annual addition to gas reserves from new discoveries continues to be less than withdrawals. A decade ago, there were 15 years worth of reserves. At current production rates, there is about a 10-year supply. Much of the gas currently being produced in the U.S. is found in conjunction with oil. Supplemental supplies could come from coal gasification, Alaskan gas, imports from Canada and Mexico, LNG from the abundant resources now being flared, geopressured zones, Devonian shales, and tight formations in the West. Among the most promising unconventional sources of gas is the geopressured zone in the Texas and Louisiana Gulf Coast, reservoirs which contain hot, gas-saturated brine under high pressure. The huge coal reserve of the U.S. contains an estimated resource base of 2,500 trillion cubic feet, of which 350 trillion cubic feet is thought to be recoverable at costs up to \$4/thousand cubic feet. Consolidated Edison Co. and the nationwide study by AGA published in April 1977 concluded that, comparing coal consumption for electric generation and coal consumption for production of high Btu gas, coal gasification is up to 50% more efficient than coal gasification.

478. GGIS-100052/J/SPTJA/ 1504/A/**/ / / / 20100

Title- New Pseudo Functions to Control Numerical Dispersion

Author(s)- / Berry , D. W. / Kyte , J. R. /

Journal- Soc. Pet. Eng. J.

Publication date- Vol. 15 , Issue 4 , 1975

Pagination- Page 269 , 8 Pages

Proposed Descriptor(s)- / Capillary flow / Comparative evaluations / Cross sections / Dispersions / Functional models / Geopressured systems / Heterogeneous effects / Liquid flow / Natural gas / Oil wells / Permeability / Petroleum / Petroleum deposits / Recovery processes / Reliability / Saturation / Simulation /

479. GGIS-100066/J/W00IA/*****/A/78/ /US/ /***** Ausburn

Title- New Seismic Techniques Aid Petroleum Engineers

Author(s)- / Ausburn , Brian E. / Nemeth , L.K. / Reid , Gordon B. /

Publication date- Vol. 187 , Issue 6 , November 1978

Pagination- Page 52 , 6 Pages

Corporate Author- J. R. Butler & Co.
Houston , Texas , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Enhanced recovery / Geopressured reservoirs / Petroleum exploration / Seismic surveys / Well drilling /

Abstract by Compendex

Benefits of new seismic developments include improved reserve determinations, better planning of enhanced oil recovery projects and optimum location of new drilling wells, all of which usually are handled by or are under control of the reservoir section. But others also can take advantage of the data. For example, drilling departments are becoming more adept at using seismic to predict occurrence and magnitude of geopressures. In

Geopressured Geothermal Bibliography

fact, it is predicted that seismic expenditures by engineers will exceed those by explorationists in the near future.

480. GGIS-100234/J/ /*****/A/79/ / /*****/ Born

Title- New Source of Energy?

Subtitle- Moves Are Afoot to Tap the Vast Reserves of Geopressured Methane

Author(s)- / Born , Roscoe C. /

Journal- Barrons

Publication date- Vol. 59 , June 30 , 1979

Pagination- Page 9 , 3 Pages

Auxiliary expression(s)-

Illus.

/ Map (1) /

Proposed Descriptor(s)- / Exploitation / Exploratory wells / Financial incentives / Geopressure drilling / Geopressure resources / Geopressured reservoirs / Louisiana / Methane / Texas /

Abstract by Energyline

The potential of geopressured methane for supplying the U.S. with energy is assessed. Estimates of the size of the resource vary widely, from 5,000-50,000 TCF; most of this is in Texas and Louisiana. President Jimmy Carter has plans to provide incentives for exploiting the geopressured methane resource. Several companies are conducting exploratory test drilling programs. Middle South Utilities has leased 3,000 acres in Louisiana for test wells; DOE drilled a well in Brazoria, Tex., and plans to install surface equipment soon; the Dow Chemical Co. plans to drill another geopressured demonstration in a reservoir of known but limited size; and Magma Gulf proposed to drill on a prime site in Louisiana, and to utilize heat and mechanical force as well as methane. Other projects are described.

481. GGIS-100147/R/ /*****/M/**/ /US/ /150901
W-7405-ENG-48

Title- Nitinol Self-Descaling Surface for Geothermal Scale Control

Author(s)- / Weres , Oleh /

Publication date- June 1977

Pagination- 9 Pages

Report/patent- LBL-6324

Available- NTIS

(Paper copy

(A02) (\$ 3.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Photo (2) /

Ref.

Categories-

Geothermal Energy

(Geothermal Engineering)

Geopressured Geothermal Bibliography

(Drilling Technology and Well Hardware)

Proposed Descriptor(s)- / Alloys / Descaling / Scaling / Scaling control /

Abstract by ERA

The shape memory effect (SME) in nitinol is discussed. The second memory phenomenon in nitinol wires which have been working in a heat engine for some time is described. The ways in which The SME may be applied to scale control are listed. The demonstration of the concept with actual geothermal brine is described. The application of SME in the kind of scaling encountered at Cerro Prieto, Mexico is proposed.

482. GGIS-100022/J/DZPVA/ 29/A/**/ / / /*****

Title- Notes on the Physical Composition of the Earth's Interior Under Extreme P-T Conditions

Original Title- Beitrage Zum Stofflichen Zustand des Erdinnern aus Physikalischen Messungen Unter Extremen P,T-Bedingungen

Author(s)- / Rollstadt , H. / Seipold , U. /

Publisher- Akad. Wiss. DDR.
DDR

Journal- Akad. Wiss. DDR, Zentralinst. Phy. Erde, Veroeff.

Publication date- Issue 29 , 1974

Pagination- Page 33 , 12 Pages

Language- German

Auxiliary expression(s)-

Sum.

Illus.

Proposed Descriptor(s)- / Chemical composition / Earth / Electrical properties / Experimental studies / Geopressure / Interior / Sulfur / Theoretical studies /

483. GGIS-100315/0/ /*****/M/78/ /US/ /***** Kadiroglu

Title- Nuclear Energy and Alternatives

Author(s)- / Kadinglu , Osman Kemal / Perlmutter , ARnold / Scott , Linda /

Conference- International Scientific Forum on an Acceptable Nuclear Energy Future of the World
Fort Lauderdale
Florida
USA (November 7 , 1977)

Publisher- Ballinger Pub. Co.
Cambridge, Massachusetts

Publication date- 1978

Pagination- 730 Pages

Local Availability- ENG

Corporate Author- Miami Univ. /4102000/.

Center for Theoretical Studies
Coral Gables , Florida , USA

484. GGIS-100181/0/ /*****/A/**/ /US/ /150904

Title- Numerical Simulation of the Effects of Reinjection Upon the Performance of a Geopressed Geothermal Reservoir

Author(s)- / Garg , S. K. / Pritchett , J. W. / Riney , T. D. /

Conference- Geothermal; State of the Art
San Diego
California

Geopressured Geothermal Bibliography

USA (May 9 , 1977)

Publisher- Geothermal Resources Council
Davis, CA

Publication date- 1977

Report/patent- CONF-770569--

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Geothermal Reservoir and Well Performance)

Proposed Descriptor(s)- / Fluid withdrawal / Geopressured systems /
Geothermal wells / Mathematical models / Reinjection /
Simulation /

Abstract by DOE/RECON

A general computer model was developed which can be used to simulate the behavior of Gulf Coast geopressured geothermal reservoirs undergoing fluid production and/or fluid injection. The model considers all of the important drive mechanisms and their interactions and is capable of representing reservoir heterogeneity and anisotropy in one, two and three-dimensional configurations. The results of these calculations would seem to make a strong case for reinjection into geopressured aquifers as a production technique.

485. GGIS-100894/ / /*****A/77/B/US/ /***** Gary

Title- Numerical Simulation of Geopressured Geothermal Reservoirs

Author(s)- / Garg , S.K. / Pritchett , J.W. / Rice , M. H. /

Conference- American Geophysical Union Spring Meeting
Washington
D.C.
USA (May 30 - June 3 , 1977)

Publication date- Vol. 58 , Issue 6 , June 1977

Pagination- Page 394 , 1 Pages

Note- Abstract only. Microfiche copies are available for a minimal fee from the American Geophysical Union

Available- American Geophysical Union
1919 K St., N.W.
Washington
D.C.
20006

(Microfiche

Corporate Author- Systems, Science and Software /9500706/.
La Jolla , California , USA

Proposed Descriptor(s)- / Artificial recharge / Compaction /
Compression / Gas production / Geopressured reservoirs /
Mathematical models / Methane / Performance / Permeability /
Reservoir engineering / Simulation / Waste water / Water influx /

Abstract by Author

A comprehensive theoretical formulation is presented for the important thermomechanical processes operative in a geopressured geothermal reservoir system. The formulation includes the effects of the four major reservoir drive mechanisms (water compressibility, reservoir rock compaction, evolution of methane gas, and influx of water from shale dehydration). A fully three dimensional multiphase (liquid water with dissolved methane) computer program has been developed for solving the system of governing equations. A preliminary series of calculations was made in which the input data for the simulator was varied to assess the sensitivity of the reservoir performance to (1) the presence of gaseous methane in the pores, (2) relative permeability, (3) sediment compaction, and (4) reinjection of the waste fluids. The principal effect of the free gas, sediment compaction and reinjection is to increase the producing life of the reservoir. Effects of relative permeability depend upon the amount of gas saturation in the pore fluid. Finally, the effect that reinjecting the processed fluid will have on the long-term performance of a representative geopressured reservoir system was examined in some detail. The increase methane gas and thermal energy production are very great; however, no analysis of the energy recovered for the entire energy extraction cycle was made.

Geopressured Geothermal Bibliography

486. GGIS-100007/0/ / 1/A/**/ /US/ /150900

Title- Numerical Simulation of Geopressured Geothermal Reservoirs

Author(s)- / Knapp , Roy M. / Riney , T. David /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 217 , 10 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (4) / Graph (4) /

Ref.

Equ.

Proposed Descriptor(s)- / Aquifers / Differential equations / Energy balance / Geopressured systems / Heat transfer / Mass transfer / Mathematical models / Simulation /

Abstract by Author

This paper discusses the governing equations describing mass and energy in geopressured geothermal reservoirs. A fully interacting rock-fluid system with rock porosity, permeability, and thermal conductivity dependent on the fluid and rock stresses is considered. The mathematical model includes the effects of solution and free natural gas. Sample calculations of a hypothetical hydrothermal reservoir are presented to show the applicability of reservoir simulation.

487. GGIS-100175/J/APXJA/*****/A/**/ /AU/ / 20300

Title- Occurrence, Prediction and Control of Geopressures on the Northwest Shelf of Australia

Author(s)- / MacLean , L. / Nyein , R. K. / Warris , B. J. /

Journal- APEA J.

Publication date- Vol. 17 , 1977

Pagination- Page 64 , 9 Pages

Auxiliary expression(s)-

Ref.

Categories-

Petroleum

(Exploration)

(Drilling and Production)

Geosciences

(Geophysics)

Proposed Descriptor(s)- / Australia / Blowouts / Diagrams / Exploration / Geophysical surveys / Geopressured systems / Oil fields / Oil wells / Porosity / Pressure control / Pressure dependence / Reservoir rocks / Well casings / Well drilling /

Abstract by DOE/RECON

Geopressured Geothermal Bibliography

Careful velocity studies are carried out by the geophysicists in areas without well control in order to outline zones of abnormally low velocities which are correlated with geopressing. From these data for any wildcat well, a suitable casing program can be devised prior to commencement of drilling. This will aim at sealing off any geopressured zones and thus allow rapid and trouble-free drilling with the correct mud density. During the drilling of the well, the modified 'D' exponent method is used to detect the actual zones of geopressing within the well. These methods have allowed the problems of geopressures to be overcome and have considerably improved drilling times on the Northwest Shelf. A case history of one wildcat well Lewis No. 1A, is presented.

488. GGIS-100078/B/ /*****/M/**/ / / *****/

Title- Offshore Louisiana Oil and Gas Fields

Publisher- Lafayette Geological Society

Publication date- 1973

Pagination- 124 Pages

Corporate Author- New Orleans Geological Society

489. GGIS-100995/ / /*****/A/78/ /US/ /***** Lowell

Title- On Transient Temperature Inversions in Geothermal Boreholes

Author(s)- / Chen , C.H. / Fulford , J.K. / Lowell , R.P. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 407 , 3 Pages

**Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616**

Local Availability- CES

Corporate Author- Georgia Inst. of Tech. / 950360/.

School of Geophysical Sciences
Atlanta , Georgia , USA

Auxiliary expression(s)-

Illus.

/ Graph (1) /

Ref.

Proposed Descriptor(s)- / Boreholes / Drilling fluids / Geothermal
reservoirs / Geothermal wells / Models / Permeability /
Reservoir temperature / Temperature inversions / Temperature
logging /

Abstract by Author

Normally, the temperature increases with depth in the earth's crust. In geothermal areas, however, temperature profiles often show a rapid increase with depth over the first few hundred meters followed by a nearly isothermal region; and in many cases, there exist temperature inversion, regions in which the temperature decreases with depth. There is one class of temperature inversions which involves transient temperature inversions due to drilling disturbances. Very often in drilling a geothermal well, drilling fluid is lost from the wellbore into the adjacent rock formation. Since the drilling fluid is typically much cooler than the rock. Temperature logs taken drilling fluid will cool the rock. Temperature logs taken shortly after the injection of drilling fluid will show a region containing a temperature decrease with depth. After drilling ceases, the borehole will gradually return to equilibrium, and the artificially induced temperature inversion will disappear. The purpose of this paper is to give some simple models for the generation of temperature inversions which may result from the injection of drilling fluid into a formation and the subsequent relaxation of such inversions after drilling ceases.

490. GGIS-100322/R/ /*****/M/78/ /US/ /***** Wilkins
EG-77-S-05-5442

Title- Operations Research and Systems Analysis of
Geopressured/Geothermal Resources in Louisiana:

Geopressured Geothermal Bibliography

Subtitle- Final Report for Initiation Project

Author(s)- / Wilkins , Bert, Jr. /

Publication date- February 1978

Pagination- 180 Pages

Report/patent- ORO-5442-1

Available- NTIS

(Paper Copy

(A09) (\$ 9.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Energy Research and Development Administration

EG-77-S-05-5442 /

Corporate Author- Louisiana State Univ. /3826000/.

Baton Rouge , Louisiana , USA

Auxiliary expression(s)-

Illus.

/ Figure (1) / Diagram (1) / Map (2) /

Table

Ref.

Appendix

Proposed Descriptor(s)- / Energy source development / Geopressure
resource / Louisiana / Planning / Research programs / Resource
assessment / Systems analysis /

Abstract by Author

The overall objective of this project was to develop a plan for Louisiana's participation in a Gulf Coast regional operations research and systems analysis activity. To achieve this overall objective, the following subobjectives were proposed: (1) a set of preliminary planning scenarios for geopressured geothermal resource development in Louisiana will be prepared and analyzed; (2) key decision makers and "stake holders" with respect to geopressured geothermal energy policy in the state of Louisiana will be identified; (3) a state-wide advisory group for geopressured geothermal resource development in Louisiana will be established; (4) operations research activities will be coordinated with a parallel project in the state of Texas; (5) specific recommendations for a regional operations research activity in support of geopressured geothermal resource development in the Texas-Louisiana region will be formulated. This final report gives the status of these subobjectives.

491. GGIS-100248/R/ /*****/M/77/ /US/ /***** Zinn

**Title- Operations Research and Systems Analysis of
Geothermal/Geopressured Resources in Texas**

Subtitle- Final Report

Author(s)- / Zinn , C. Dale /

Publication date- December 1977

Pagination- 86 Pages

**Available- Center for Energy Studies
Engineering Science Bldg. 143
The University of Texas at Austin
Austin
Texas
78712**

(Paper copy (\$ 3.50)

Local Availability- CES

Sponsor- / US ERDA

EG-77-S-05-5443 /

Geopressured Geothermal Bibliography

Corporate Author- Texas University, Austin

Center for Energy Studies
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Map (1) /

Table

Ref.

Proposed Descriptor(s)- / Economic analysis / Energy source
development / Frio Formation / Geopressured resources /
Geopressured zones / Gulf Coast / Operations research / Planning
/ Systems analysis / Texas /

Abstract by Author (Rev.)

The Center for Energy Studies at the University of Texas at Austin has contracted with ERDA to perform an operations research and systems analysis of the geothermal geopressured resources in Texas. The planning support project has concentrated on the development of the geopressured resources of the Texas Gulf Coast. A similar project at Louisiana State University is dealing with the geopressured resources of the Louisiana Gulf Coast. The objective of the projects is the formulation of a coordinated regional plan for the development of the geothermal/geopressured energy resources in the Texas/Louisiana region. The primary goal of this project is the preparation and analysis of preliminary geothermal geopressured energy development scenarios for the state of Texas. A secondary goal is the establishment of a regional organization to continue the planning support activity so that more comprehensive development plans can be formulated and analyzed. This report describes the status of the project and reflects the accomplishment of the goals of the project. The report also outlines the projected continuation of the present work and the work directed toward establishment of additional objectives.

492. GGIS-100995/ / /*****A/78/ /US/ /***** Pope .

Title- Optimization of Geothermal Cycle Shell and Tube Exchanges of
Various Configurations with Various Fluid Properties and Site
Specific Fouling

Author(s)- / Doyle , P.A. / Fulton , R.L. / Green , M.A. / Pines ,
H.H. / Pope , W.L. / Silvester , L.F. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 539 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- California Univ., Berkeley /1112800/.

Lawrence Berkeley Lab.
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (2) /

Table

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / Computer
codes / Economics / Fouling / Geothermal brines / Heat exchangers
/ Models / Rankine cycle / Working fluids /

Abstract by Author

A new heat exchanger design program, SIZEHX, is described. This program allows single step multiparameter cost optimizations on single phase or supercritical exchanger arrays with variable properties and arbitrary fouling for a multitude of matrix configurations and fluids. SIZEHX uses a simplified form of Tinker's method for characterization of shell side performance; the Starling modified BWR equation for thermodynamic properties of hydrocarbons; and transport properties developed by NBS. The report will include results of four parameter cost optimizations on exchangers for specific geothermal applications. The relative mix of capital cost, pumping cost, and brine cost (\$/.Btu) are determined for geothermal exchangers illustrating

Geopressured Geothermal Bibliography

the invariant nature of the optimal cost distribution for fixed unit costs.

493. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Origin and Maintenance of Abnormal Pressures

Author(s)- / Louden , Lester R. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 23 , 5 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Abnormal / Basins / Engineering geology /
Geopressured reservoirs / Geopressure / Models / Origin /
Overburden pressure / Pressure buildup / Tectonics / Traps /

494. GGIS-100054/J/LGALA/*****/A/78/ / / /***** Carstens

**Title- Origin of Abnormal Formatin Pressures in Central North Sea
Lower Tertiary Clastics**

Author(s)- / Carstens , H. /

Publication date- Vol. 19 , Issue 2 , 1978

Pagination- Page 24 , 7 Pages

Categories-

Petroleum

(Geology and Exploration)

Proposed Descriptor(s)- / Clastic rocks / Geopressure / Geopressured
reservoirs / North Sea / Sealing / Sediments / Tertiary Period /

Abstract by TIC

The existence of definite seals bounding an abnormally pressured formation in Central North Sea Lower Tertiary argillaceous sediments is questioned. The hypothesis submitted favors a self-sealing mechanism, provided by four major factors; high clay content, dominance of swelling clays, discontinuous limestone stringers, and gas.

495. GGIS-100351/R/ /*****/M/79/ /US/ /580100 Marine
EV-76-C-09-0001

Title- Osmotic Model to Explain Anomalous Heads

Author(s)- / Fritz , S. J. / Marine , I. W. /

Publication date- 1978

Pagination- 30 Pages

Report/patent- DP-MS-78-43

Available- NTIS

(Paper Copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy

EY-76-C-09-0001 /

Corporate Author- Du Pont de Nemours (E. I.) and Co. /2204000/.

Savannah River Lab.

Geopressured Geothermal Bibliography

Aiken , South Carolina , USA

Auxiliary expression(s)-

Illus.

/ Figure (7) /

Table

Categories-

Geosciences

(Geology and Hydrology)

Proposed Descriptor(s)- / Aqueous solutions / Aquifers / Chemical composition / Clay / Compaction / Geochemistry / Geopressured reservoirs / Ground water / Hydrology / Ions / Osmosis / South Carolina / Wells /

Abstract by TIC

Laboratory experiments showed that compacted clays act as osmotic membranes when they separate aqueous solutions of unequal ionic concentration. Osmotically induced differential water pressure in ground water systems can be relatively high. The magnitude depends primarily upon concentration differences across the membrane and type of ions as well as upon the type of clay and its degree of compaction. In experiments, thin, compacted clay membranes commonly exhibit low osmotic efficiencies due to ion leakage through the clay. In natural systems, the membrane and solution containers are not as distinct and well defined as they are in the laboratory. In addition, the membrane is commonly thick, inhomogeneous, and composite. Higher osmotic efficiencies in natural systems may arise as a result of ion leakage being impeded by relatively thick membrane systems. In a buried Triassic Basin at the Savannah River Plant near Aiken, South Carolina, it is suspected that osmosis causes the saline water in the basin center to be slightly geopressured in relation to fresh water in the overlying Coastal Plain aquifer. Two wells have different heads of 7.88 and 12.98 bars (114.3 and 188.3 psi) above the head in the Coastal Plain aquifer. The head in each of these wells approximates the osmotic equilibrium head calculated from solution concentration of water produced by each well (12,000 and 18,500 mg/L, respectively). Other wells penetrating the very top and edge of the Triassic Basin probably penetrate a zone where ion leakage gives rise to less saline water. Thus, these wells are not geopressurized.

496. GGIS-100258/O/ /*****/A/**/ /US/ /*****

**Title- Overpressure Detection and Control at IMP Immerk B-48 Using
a Wellsite Mud Gas Detector**

Author(s)- / Daw , R. N. / Mercer , R. F. / Myers , D. L. /

Conference- SPWLA Annual Logging Symposium
New Orleans
Louisiana
USA (June 4 , 1975)

Publication date- Vol. 16 , 1975

Pagination- 15 Pages

Proposed Descriptor(s)- / Detection / Equipment / Geopressure /
Geopressure exploration / Mackenzie District / Natural gas
exploration / Natural gas / Petrophysical methods / Petroleum
equipment / Pressure control / Reservoir studies / Testing / Well
testing /

497. GGIS-100058/J/OIGJA/*****/A/70/B/US/ /***** Fertl

Title- Overpressured Formations--1

Subtitle- Occurence and Significance of Abnormal-Pressure
Formations

Author(s)- / Fertl , Walter H. / Timko , Donald J. /

Publication date- Vol. 68 , Issue 1 , January 5 , 1970

Pagination- Page 97 , 6 Pages

Auxiliary expression(s)-

Illus.

/ Figure (4) /

Table

Geopressured Geothermal Bibliography

Ref.

Proposed Descriptor(s)- / Clay minerals / Compaction / Geopressured zones / Gulf Coast / Illite / Montmorillonite / Osmosis / Permeability / Pore pressure / Porosity / Reservoir pressure / Reservoir properties / Reservoir temperature / Salinity / Shale / Well drilling /

Abstract by Author (rev.)

Formation pressures higher than hydrostatic occur worldwide and are important factors in the successful planning of drilling programs. Many techniques are used in the industry to detect and evaluate these zones and an understanding of their occurrence and detection is necessary to make the best of modern drilling techniques, reduce blowout hazards, and provide the most effective completion. Changes in the properties of shales can be used to detect overpressured formations. These include in-place or surface measurements of shale resistivity, sonic travel time, bulk density, clay mineral abundance ratio, and salinity changes. In addition, borehole temperature and rate of penetration are used to detect overpressures. Increasing exploratory efforts in new areas on and offshore, and the general trend to deeper drilling will broaden the areas of overpressures which are accompanied by associated drilling and production problems. Therefore, in this first article of a two part series, the authors examine the geologic significance, clay mineral properties, shale factors, pressure and permeability, and temperature characteristics of overpressured formations as an aid in the detection and evaluation of these zones.

498. GGIS-100058/J/OIGJA/*****/A/70/ /US/ /***** Fertl

Title- Overpressured Formations--2

Subtitle- How Abnormal-Pressure-Detection Techniques are Applied

Author(s)- / Fertl , W.H. / Timko , D.J. /

Publication date- Vol. 68 , Issue 2 , January 12 , 1970

Pagination- Page 62 , 6 Pages

Auxiliary expression(s)-

Illus.

/ Figure (10) /

Ref.

Proposed Descriptor(s)- / Bottom hole temperature / Density /
Geopressure drilling / Geopressured reservoirs / Neutron logging
/ Penetration rate / Resistivity logging / Salinity / Thermal
conductivity /

Abstract by Compendex

The best approach in detecting and evaluating geopressures is to study a combination of several measured properties of the formation, i.e., bulk density, conductivity, resistivity as well as neutron measurements. Salinity variations, drill penetration rate, borehole temperature, and presence of gas in mud supply are also indices for determination of abnormal geopressures.

499. GGIS-100023/J/AAPGB/*****/A/76/ / /***** Weimer

**Title- Overpressured Shale Masses and Growth Faulting, New
Tectonic Style in Cretaceous Foreland Basin, Colorado**

Author(s)- / Davis , T.L. / Weimer , R.J. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 60 , Issue 8 , 1976

Pagination- Page 1413 , 2 Pages

Proposed Descriptor(s)- / shale / Colorado / Cretaceous period /
Geopressure / Growth faults / Oil shale / Tectonics /

500. GGIS-100241/O/ /*****/A/77/B/US/ /299002 Trower

Title- Overview of the California Permitting Process

Author(s)- / Trower , E. D. /

Conference- Geothermal Resources Development Institute Conference

Geopressured Geothermal Bibliography

Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 27 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / California / Geothermal exploration /
Geothermal resources / Licensing / Regulations /

Abstract by TIC

During the more than fifteen years that it has lived with geothermal power production, California has developed, and continues to develop, a sophisticated geothermal regulatory structure. An overview is presented of that structure giving special emphasis to the exploration permitting process. The newly enacted Napa County Geothermal Ordinance is a focal point for discussion of the substantial powers that California has delegated to local units of state government. (MHR)

501. GGIS-100254/R/ /*****/M/78/ /US/ /150000 Howard
W-7405-ENG-48

Title- Overview of Geothermal Technology

Author(s)- / Howard , J. H. /

Conference- Geothermal Seminar

Sacramento
California
USA (May 9 , 1978)

Publication date- May 1978

Pagination- 47 Pages

Report/patent- LBL-7048

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Categories-

Geothermal Energy

Proposed Descriptor(s)- / Energy source development / Geothermal
resources / Power generation / Technology assessment / Waste
disposal /

Abstract by TIC

The technology of geothermal resource development includes the technologies associated with finding the resource, defining it well enough to invest in its development, plumbing it to move the heat from the earth to where it will be used, using it, and finally disposing of it. The base of earth sciences experience needed to adequately project limited data so as to discover and define a geothermal resource is growing rapidly as new resources are developed and elucidated. Technologies for moving the fluid are improving as new challenges are faced, e. g., the development of downhole pumps in order to increase flow rates from costly wells. Although a wide variety of applications of geothermal resources exist, still to be evaluated commercially are the use of binary cycles in electric power production and the possibility of using geothermal energy in the production of heavy water and in sugar milling and refining. Disposal of spent geothermal fluid underground (in contrast to surface disposal) is receiving increasing favor, both because of its greater acceptability from an environmental point of view and because of its beneficial effects on minimizing subsidence and recovering additional heat stored in rock framework of a geothermal reservoir.

502. GGIS-100393/O/ /*****/A/80/ / / /***** Paine

Geopressured Geothermal Bibliography

ET-78-S-05-6064

Title- Part I: The Abbeville Area

Author(s)- / Duhon , Michael P. / Dungan , James R. / Kinsland , Gary
L. / Paine , William R. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1160 , 40 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
ET-78-S-05-6064 /

Corporate Author- Southwestern Louisiana Univ. /9507640/.
Lafayette , USA

Auxiliary expression(s)-

Illus.

/ Diagram (4) / Map (15) / Figure (5) /

Table

Ref.

Proposed Descriptor(s)- / Areal geology / Exploration methods /
Geopressured reservoirs / Louisiana / Maps / Methane / Moderate
temperature / Permeability / Porosity / Pressure / Reservoir
description / Reservoir properties / Resource assessment /

Salinity / Sand / Seismic surveys / Subsurface mapping /
Vermillion Parish /

Abstract by Author

The structure investigated is a basin which is roughly bounded by the Abbeville Dome on the west, the Erath Dome on the southeast, and the Grosse Isle Dome on the northeast and whose center is located at approximately Section 31 T14S R4E. The geopressured sands investigated are below approximately 12,800 ft (3901 m) in the center of the basin and consist of two groups of rather thin, discontinuous, marly sands. These two groups, rather arbitrarily defined, are termed the upper and lower geopressured sands, and the following map types and analyses have been derived from subsurface data of each: structure, temperature, pressure, salinity, and net sand maps; and porosity, permeability, and methane content analyses. Seismic data proved to be very important in the evaluation of this prospect. Well control data proved to be very important in the evaluation of this prospect. Well control is sparse within the basin but quite adequate on the surrounding domes. Four CDP seismic lines were purchased and reprocessed, and structural maps from four horizons were prepared from them. These maps confirmed that the major faults found over the domes do in fact extend into the basin. The general basin structure and shape are also confirmed, as is the shape of an unconformity surface which appears to mark the top of geopressure in the area. Perhaps the most important result of the seismic data is the proof that the rocks below the unconformity, i.e., in the geopressured region of interest, are highly and complexly faulted. An indication that this might be the case can be seen over the Grosse Isle structure where sufficient well control penetrates the uplifted unconformity to establish copious faulting; however, in the basin itself the seismic data were necessary to establish the DEGREE of faulting.

503. GGIS-100999/0/ /*****/A/78/ / / /***** Jacobson

Title- Performance of a 10 MW Geothermal Energy Conversion Test Facility

Author(s)- / Jacobson , William O. /

Conference- 13 Intersociety Energy Conversion Engineering Conference

Pagination- Page 1074 , 3 Pages

Report/patent- SAE--789232

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Diagram (1) /

Table

Proposed Descriptor(s)- / Binary fluid system / Electric power /
Flashed steam systems / Geothermal brines / Geothermal energy
conversion / Performance / Scaling /

Abstract by Author

The performance of San Diego Gas and Electric's Geothermal Loop Facility has been generally good. Comparison of initial flash/binary conversion cycle selection criteria to performance data has led to renewed interest in a flash cycle. Brine system performance has been generally successful but hampered by scale accumulation. Improved scale removal and control techniques are being evaluated. Geothermal steam and condensate systems have shown good steady state performance, but performance is adversely affected by upsets or oscillations. Operation of the binary system, originally designed for isobutane, with water as the working fluid has been off design, but no performance problems are expected if design conditions are approached.

504. GGIS-100393/0/ /*****A/80/ /US/ /***** DiBona

Title- Perspectives on Geopressured Resources Within the Geothermal Program

Author(s)- / DiBona , Bennie /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 219 , 16 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Department of Energy /9506839/.

Div. of Geothermal Energy
Washington , DC , USA

Auxiliary expression(s)-

Illus.

/ Graph (1) / Map (1) /

Table

Proposed Descriptor(s)- / Direct energy utilization / Energy source development / Energy policy / Exploitation / Geopressure resources / Geothermal drilling / Power generation / Research programs / Resource assessment / Uses /

Abstract by Author

This paper reviews the potential of geothermal energy in the United States. Current sources of and uses for geothermal energy are described. The paper outlines how geopressed resources fit into the geothermal program of the Department of Energy (DOE). Description of the program status includes progress in drilling and assessing geopressed resources.

505. GGIS-100122/B/ /*****/M/**/ / / /*****

Title- Petroleum from the Deposits of the Soviet Union

(Physical Chemical Properties of Petroleum, Brief Descriptions of Oil and Gas Fields)

Original Title- Nefti Mestorozhdeniy Sovetskogo Soyuza

Author(s)- / Charygin , N. V. / Obukhova , T. M. / Trebin , G. F. /

Publisher- IZD. Nedra
Moscow, USSR

Geopressured Geothermal Bibliography

Publication date- 1974

Pagination- 423 Pages

Language- Russian

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Abundance / Chemical composition / Density / Deposits / Dissolved / Economic geology / Fractions / Gases / Geopressure / Natural gas / Oil and gas fields / Petroleum / Physical properties / Regional / Reservoir rocks / Saturation pressure / Temperature / Thermal properties / USSR / Viscosity /

506. GGIS-100092/ / /*****/M/**/ / / /*****
NSF-7510970

**Title- Phase 0 Resource Management and Scope-of-Work Study for
Generation of Electric Power**

(3/75 to 11/75)

Subtitle- Gulf Coast Geopressured Geothermal Resource

Author(s)- / Dorfman , M. H. /

Publication date- 1975

Note- Estimated Calendar Year Funding Reported as 1975 \$318,000

Available- University of Texas, School of Engineering
University of Texas
School of Engineering, Petroleum Engineering
200 W. 21ST
Austin, Texas 78712

Corporate Author- U.S. National Science Foundation

Abstract by Energyline

The objectives of this research are to establish boundaries and criteria for the viable utilization of Gulf Coast geopressed geothermal resources and to develop preliminary plans and cost estimates for a geopressed resource test facility. The project is broken down into four discrete areas of endeavor: resource assessment; advanced research and technology; legal, institutional, and environmental; and resource utilization. Integral to the research is the inclusion of electric utilities, industrial companies, energy companies, potential user groups, and state, and local governmental agencies. The research effort will culminate in a geopressed geothermal symposium to insure the rapid transfer of research and technology to user groups in an effort to establish the viability of geopressed geothermal resources as quickly and as efficiently as possible.

507. GGIS-100365/R/ /*****/M/**/ /US/ /*****
E(49-18)-2359

Title- Phase 1 Report:

Subtitle- Investigation of Geothermal Energy Information Sources

Publication date- July 14 , 1976

Pagination- 86 Pages

Report/patent- DGE-2359-T1

Available- NTIS

(Paper Copy

(A05) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U. S. Energy Research and Development Administration
/9501252/.

E(49-18)-2359 /

Geopressured Geothermal Bibliography

Corporate Author- Franklin Inst. Research Labs. /9504582/.

Science Information Services Dept.
Rockville , Maryland , USA

Proposed Descriptor(s)- / Document types / Geothermal energy /
Information systems /

Abstract by Author

To provide a base for ERDA geothermal energy information activities, the Science Information Services Department (SIS) of the Franklin Institute Research Laboratories engaged in a geothermal literature survey. The activity consists of two discrete phases: Phase 1, Investigate Available Information Services; and Phase 2, Design Information Dissemination Tools. In this report the results of Phase 1 activities are presented. The initial task under Phase 1 was the development of a subject screening list which would be used by acquisitions specialists as a guide to the orientation of pertinent literature. The subject screening list was derived primarily from the geothermal subset of the ERDA Energy Thesaurus and from the ERDA Energy Information Data Base Subject Categories. Removed from those sources were terms not pertinent to geothermal energy, and added were relevant terms and concepts not covered. Subsequent to preparation of the subject screening list, a core list of serial publications containing geothermal energy information was generated by SIS library scientists. This list was correlated with the ERDA-TIC serial publications list to produce a list of serial titles not currently available to ERDA-TIC. Included in both lists is an estimate of the annual geothermal information yield of the serial sources. In Section 4 is presented a listing of sources of geothermal energy information other than serial publications and in Section 5 the conclusions, including methods of acquisitioning to be utilized and the estimated annual volume of information from all sources is presented.

508. GGIS-100262/R/ /*****/M/78/ /US/ /***** Newchruch

Title- Plan for the Long Term Environmental Assessment of
Geopressured Resource Development in the Louisiana Gulf
Region.

Author(s)- / Bachman , A.L. / Bryan , C.F. / Cunningham , K.J. /
Harrison , D.P. / Hilding , R.K. / Muller , R.A. / Newchurch ,
E.J. / Newman , J.P. / Rehage , J.L. / Wilcox , R.E. /

Publication date- June 15 , 1978

Pagination- 319 Pages

Report/patent- UCRL--13913

Available- NTIS

(Paper Copy

(A14) (\$ 11.75)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Louisiana State Univ., Baton Rouge /9503680/.

Inst. for Environmental Studies
Baton Rouge , Louisiana , USA

Categories-

Geothermal Energy

(Environmental Aspects)

Proposed Descriptor(s)- / Air quality / Ecosystems / Environmental effects / Geology / Geopressure resources / Gulf Coast / Louisiana / Planning / Regional analysis / Resource assessment / Social impact / Socio-economic factors / Water quality /

Abstract by TIC

Results of research to develop a plan for the long-term environmental assessment of geopressured/ geothermal resource development in the Louisiana Gulf Coast region are reported. An overall view of the environmental issues facing decision-makers in the area of geopressured resource development is presented, along with a plan for monitoring potential environmental impacts. Separate assessments and plans are presented for geological effects, air and water quality, ecosystem quality, and socioeconomic and cultural considerations.

509. GGIS-100066/J/W00IA/18105/A/**/ / / / 20300

Title- Planning and Drilling Abnormally Pressured Wildcats

Geopressured Geothermal Bibliography

Author(s)- / Goldsmith , R. G. /

Journal- World Oil

Publication date- Vol. 181 , Issue 5 , October 1975

Pagination- Page 56 , 4 Pages

Proposed Descriptor(s)- / Data / Design / Drilling fluids / Drilling
rigs / Engineering / Exploration / Geology / Geopressured
systems / Oil wells / Personnel / Petroleum / Planning / Pressure
dependence / Safety / Well drilling /

510. GGIS-100301/J/ /*****/A/79/ / / /***** Adams

Title- Popping the Cork on Natural Gas

Author(s)- / Adams , James Ring /

Journal- Wall St. J.

Publication date- Vol. 63 , Issue 105 , May 30 , 1979

Pagination- Page 24 , 1 Pages

Local Availability- PCL

Proposed Descriptor(s)- / Blowouts / Brazoria County / Geopressured
wells / Heat extraction / Louisiana / Methane / Power generation
/ Texas / Well drilling /

Abstract by Author (rev.)

Hydro-geologist Paul Hastings Jones contends that the research at the Brazoria County geopressure-geothermal test well should concentrate on methane extraction rather than on geothermal energy for power generation. A recently released report for the Federal Energy Regulatory Commission puts the recoverable water-dissolved methane in Louisiana alone at 163 trillion cubic feet, equal to some 80% of the present proved natural gas reserve in the entire U.S. Jones suggests that this estimate be tested by drilling geopressured wells in the following manner: After tapping the geopressured zone, flow the well wide open at up to

three times its maximum designed capacity. This would cause a sharp drop in reservoir pressure at the borehole. With this sudden change, natural gas would bubble out of solution. If the pressure were manipulated to "milk" the gas from the water in this fashion, the well would flow less steam and more methane and eventually form a gas cap that could be tapped much like a natural gas well. This theory is opposed by petroleum engineers, who fear serious damage to well casings and drilling equipment caused by blowouts. Others contend that most sandstone formations are too lacking in pore space, and too cut through with thin layers of shale to allow the migration of gas bubbles that would form a gas cap. And Department of Energy experts are reluctant to test the Brazoria well in this manner because, should Jones' theory fail, the temperature of the water produced by the well would be lowered so much that it would be useless as geothermal energy.

511. GGIS-100364/R/ /*****/M/77/ /US/ /***** Pick
AER 75-08793

**Title- Population Analysis Relative to Geothermal Energy Development
Imperial County, California**

Author(s)- / Butler , E. / Jung , T. H. / Pick , J. B. /

Publication date- January 1977

Pagination- 119 Pages

Report/patent- DLRI-16

Available- NTIS

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / National Science Foundation /4514000/.

AER 75-08793 /

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Figure (11) /

Table

Ref.

Proposed Descriptor(s)- / California / Data analysis / Employment /
Energy source development / Forecasting / Geothermal energy /
Geothermal power plants / Human populations / Imperial County /
Rural populations / Socio-economic factors / Urban populations /

Abstract by Author

This report intends to examine the historical and current population characteristics of Imperial County, California. These include such features as vital rates, urbanization, town sizes, labor force composition, income, utility usage, and ethnic composition. From this basic data inferences are drawn on some of the important social and economic processes. Multivariate statistical analysis is used to study present relationships between variables. Another intent of the report is to speculate on the adaptation or range of adaptations that the county's population will follow, as geothermal plant capacity is scaled up. To accomplish the above goals this report is divided into nine sections. Section 2 reviews historical studies and past research which relates in methods or results to the present work. Section 3 analyzes population trends for the county as a whole. Subcounty data is analyzed in Section 4 for 1970. Regional trends in characteristics such as ethnic composition, dependency ratio, and mobility are studied, and compared with each other for energy development implications. Section 5 investigates characteristics which distinguish enumeration districts overlying geothermal fields from those not overlying fields. Section 6 looks at the population of the county's largest ethnic group, Spanish American. In Section 7, two analyses are conducted of county employment--the first specific for farm labor displacements in relation to plant capacities and the second a regression study of three broad factors affecting regional employment: age eligibility, participation and unemployment. Section 8 performs population projections for the county under historical, standard, and "geothermal" projection assumptions. Section 9 examines the transferability of methods and results to other geothermal regions anticipating energy development. It is shown that many techniques used are transferable to any geothermal area in the United States, with certain alterations in approach to suit local conditions.

512. GGIS-100023/J/AAPGB/ 6004/A/**/ / / /*****

Title- Possibility of Abnormally High Fluid Pressures During Folding and Faulting in Eastern West Virginia

Author(s)- / Perry , W. J., JR. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 60 , Issue 4 , 1976

Pagination- Page 707

Proposed Descriptor(s)- / Calcite / Deformation / Devonian / East / Extension / Faults / Field studies / Folds / Fractures / Geopressure / Origin / Petroleum / Porosity / Quartz / Reservoir rocks / Sandstone / Sedimentary rocks / Structural geology / Tectonics / United States / Veins / West Virginia /

513. GGIS-100899/0/ /*****/A/76/ / / /***** Swink

Title- Potential for the Use of Intermediate Temperature Geothermal Heat in Food Processing

Author(s)- / Swink , D.G. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 808 , 7 Pages

Report/patent- SAE--769140

Auxiliary expression(s)-

Illus.

/ Figure (4) / Diagram (2) /

Ref.

Proposed Descriptor(s)- / Economics / Food processing / Geothermal resources / Moderate temperature / Process heat / Uses /

Geopressured Geothermal Bibliography

Abstract by Author

The application of geothermal heat to industrial food processing is dependent upon the requirements of a given process and the quantity and quality of the geothermal heat available. Three major food industries are examined for potential use of intermediate temperature (90 DEG C-175 DEG C) geothermal water. The industries are sugar beet processing, dairy processing and potato dehydration. The sugar beet process is examined from raw beets to refined sugar with dissolution, concentration and final drying as the most important steps adaptable to geothermal heat use. Dairy processes require heat for pasteurization, cheese manufacture and cleaning of processing equipment. There is also a requirement for process refrigeration. This could potentially be supplied by absorption refrigeration employing a geothermal heat source. Potato dehydration results in four main products: flakes, granules, slices and potato flour. The peeling, blanching and cooking operations can employ intermediate temperature geothermal heat, as can some of the final drying operations. The economics of such uses are studied along with the engineering requirements.

514. GGIS-100080/B/ /*****/M/**/ / / /150400

Title- Potential for Energy Production from Geothermal Resources

Subtitle- Report of the Subcommittee on Water and Power Resources,
Committee on Interior and Insular Affairs, Ninety-Third
Congress, First Session, December 1973

Publisher- United States of America
Washington, D.C. (USA)

Publication date- December 1973

Pagination- 48 Pages

Corporate Author- U.S. Congress Joint Economic Committee /9500494/.
Washington , D.C. , USA

Auxiliary expression(s)-

/ Table (3) /

Categories-

Geothermal Energy

(Hot Water)

(Steam)

(Geo Brine)

(Hot Rocks)

Proposed Descriptor(s)- / Brines / Congressional report / Dry-steam systems / Environmental effects / Federal Government Agencies / Forecasting / Geo brine / Geopressured systems / Geothermal resources / Geothermal leasing / Geothermal energy / Geothermal energy research and development / Geothermal exploration / Hearings / Hot water / Hot dry rock systems / Hot water systems / Legal aspects / Power potential / Recommendations / Senate Committee Interior and Insular Affairs / Steam / U.S. National Aeronautics and Space Administration / U.S. National Science Foundation / U.S. Department of the Interior / U.S. Atomic Energy Commission / USA /

Abstract by NTIS

Findings of an investigation into the potential contribution of geothermal resources towards energy production include: (1) electrical power production from geothermal resources is technically and economically feasible in certain parts of the U. S.; (2) these resources could produce substantial amounts of heat and electric power, especially for regional power supplies; (3) geothermal technologies may offer environmentally acceptable ways of producing energy; (4) available information is inadequate for reliable estimates of the nature and extent of geothermal energy development and the anticipated achievement of technological capabilities; (5) geothermal resources occur in various situations posing widely different technological problems--dry steam, wet steam, hot dry rock, and geopressured brines; (6) lack of a federal leasing program, financing difficulties, and the risk involved in advanced technologies are inhibiting development by private industry; and (7) aggressive governmental leadership is lacking and R&D is sporadic and uncoordinated. Additional findings and issues are presented. (3 tables)

515. GGIS-100004/0/ /*****/A/**/ / / *****/

Title- Potential for Geothermal Energy

Subtitle- Relationships of Regional Sand Distribution to Pressure and Temperature in the Geopressured Frio Formation (Oligocene), South Texas

Geopressured Geothermal Bibliography

Author(s)- / Dorfman , M. H. / Sanders , G. B., Jr. /

Conference- Development and Use of Geothermal Resources

Publication date- 1975

Pagination- Page 160 , 2 Pages

Proposed Descriptor(s)- / Distribution / Economic geology /
Engineering properties / Engineering geology / Exploration /
Frio Formation / Geopressured reservoirs / Geopressure /
Oligocene / Overburden pressure / Reservoir rocks / Resources /
Sand / Sandstone / South / Temperature / Texas / Thermal waters /
United States /

516. GGIS-100207/R/ /*****/M/76/ /US/ /***** McDonald

**Title- Potential for Heating Western Tree Seedling Greenhouses with
Geothermal Energy**

Subtitle- Special report

Author(s)- / Austin , Carl F. / Lott , James R. / McDonald , Stephen
E. /

Publisher- USDA Forest Service Equipment Development Center
Missoula, Montana

Publication date- November 1976

Pagination- 19 Pages

Report/patent- NP-22082

Local Availability- GGIS

Auxiliary expression(s)-

Illus.

/ Map (1) / Photo (2) /

Table

Ref.

Proposed Descriptor(s)- / Geothermal heating / Geothermal resources / Greenhouses / Hot springs / Resource evaluations / Site selection / Thermal waters / Waste water /

Abstract by Author (Rev.)

Most U. S. greenhouses are heated with fossil fuels, usually natural gas, which is becoming more expensive. An alternative energy source with high potential is geothermal energy. The technology to apply it to greenhousing is available; it is compatible with greenhouse heat exchange hardware; and it is abundant in the western U. S. Geothermal resources suitable for greenhousing are natural springs, deep hot water or steam wells, and waste water from electrical power plants. The use of known resources reduces the risk factors to reliability of the source and its estimated lifespan. Factors influencing greenhouse heating needs are climate, elevation, and quality of the geothermal energy source. Greenhouse sites should be evaluated for suitability, size, availability of labor supply, markets, etc. When considering geothermal energy as an alternative energy source, these steps are recommended: 1) determine the geographic region the greenhouse will serve; 2) tabulate known geothermal resources within region; 3) rank potential locations in terms of geothermal fluid chemistry and location; 4) obtain data on chemistry, flow potential, temperature, and probable lifespan of resources; 5) conduct economic analysis of proposed greenhouse operation using these geothermal sources; compare with optimum fossil fuel economics and long term availability in the region; 6) proceed with project if economically attractive.

517. GGIS-100308/O/ /*****/A/78/ /US/ /***** Gustavson

Title- Potential Environmental Concerns Associated with the Development of Geopressured-Geothermal Resources of the United States Gulf Coast

Author(s)- / Gustavson , Thomas C. / McGraw , M.M. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Geopressured Geothermal Bibliography

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 245 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) /

Ref.

Proposed Descriptor(s)- / Commercialization / Environmental effects /
Geopressure power plants / Geopressure resources / Geothermal
brines / Ground subsidence / Gulf Coast / Louisiana / Texas /
Waste disposal /

Abstract by Author

The commercial development of geothermal resources is described in terms of three location scenarios: production, generation, and disposal facilities that are on coastal lowlands or uplands; these facilities on coastal marshlands or offshore production facilities; and onshore generation and disposal. The ramifications and environmental impacts of these scenarios are explored.

518. GGIS-100039/R/GAAPB/ 702/A/**/ / / /***** 160

Title- Potential Geothermal Energy

Subtitle- Relationships of Regional Sand Distribution to Pressure
and Temperature in the Geopressed Frio Formation (Oligocene),
South Texas

Author(s)- / Dorfman , M. H. / Sanders , G. B., JR. /

Publisher- Geological Society of America

Publication date- Vol. 7 , Issue 2 , 1975

Pagination- Page 160 , 1 Pages

Proposed Descriptor(s)- / Distribution effects / Economic geology /
Frio Formation / Geopressure / Geothermal energy / Occurrence /
Oligocene / P-T conditions / Possibilities / Resources / Sand /
South / Texas / United States /

519. GGIS-100211/R/ /*****/M/73/ /US/ /***** Dorfman

Title- Potential Geothermal Resources in Texas

Subtitle- Technical Memorandum ESL-TM-3

Author(s)- / Dorfman , Myron /

Publication date- December 14 , 1973

Pagination- 15 Pages

Report/patent- ESL-TM-3

Note- Presented to Committee on the Energy Crisis Texas House of
Representatives 14 Dec. 1973

Local Availability- GGIS

Corporate Author- Texas University, Austin

College of Engineering. Engineering Systems Labs.
Austin , Texas , USA

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Map (1) /

Proposed Descriptor(s)- / Cost / Environmental effects / Geothermal energy / Geothermal resources / Gulf Coast / Rio Grande Rift / Texas / Trans-Pecos hot rocks /

Abstract by Author (Rev.)

Geothermal energy represents a "here and now" energy source which, with rapid development, may partially fulfill our energy requirements. Present technology is sufficiently advanced to explore for, drill and develop geothermal fields. Costs are usually less than those encountered for power generation using other petroleum substitutes or alternatives. Environmental effects are also less troublesome than those reported using alternative power sources. Texas contains areas of known and suspected major reserves of geothermal energy: the Rio Grande rift system, the Trans-Pecos hot rocks, and the Gulf Coast geothermal sands. Intensive research and development can lead to rapid utilization of this resource.

520. GGIS-100096/R/ /*****/M/**/ /US/ /150100

Title- Potential Geothermal 74-4

Author(s)- / Dorfman , M. H. / Kehle , R. O. /

Publisher- Univ. of Texas
Austin, Texas (USA)

Publication date- 1974

Report/patent- NP--20391

Corporate Author- Texas University /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Proposed Descriptor(s)- / Cost / Environmental effects / Geologic deposits / Geopressured systems / Geothermal exploration /

Geothermal resources / Hot springs / Hot dry rock systems / Hot water systems / Power potential / Texas /

521. GGIS-100042/J/GTEMA/*****/A/77/ /US/ /150600 Finnemore

Title- Potential Land Subsidence at Geothermal Development Sites

Author(s)- / Finnemore , E.J. /

Publication date- Vol. 5 , Issue 5 , May 1977

Pagination- Page 35 , 5 Pages

Categories-

Geothermal energy

(Environmental aspects)

Proposed Descriptor(s)- / Compaction / Forecasting / Geology / Geopressured systems / Geothermal fields / Geothermal fluids / Ground subsidence / Hot dry rock systems / Hot water systems / Magma systems / Vapor dominated systems /

Abstract by DOE/Recon

Potential severities of five physical subsidence processes for magma, hot rock, steam, hot water, and geopressured systems are summarized. Compaction is thought to be the most significant, possibly followed by fracture closing. Site geology, fluid, reservoir, and material characteristics are identified as indicators of subsidence potential. Two methods of subsidence prediction, analogy and analysis, are discussed.

522. GGIS-100154/0/ /*****/A/**/ /US/ /150101
E-(45-1)-1830

Title- Potential National Benefits of Geothermal Electrical Energy Production from Hydrothermal Resources in the West

Author(s)- / Bloomster , C. H. / Engel , R. L. /

Geopressured Geothermal Bibliography

Conference- Intersociety Energy Conversion Engineering Conference
State Line, Nevada (September 12 , 1976)

Publication date- 1976

Pagination- 22 Pages

Report/patent- CONF-760906-4

Available- NTIS

(Paper copy

(A02) (\$ 4.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES MF

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Availability / Comparative evaluations /
Computerized simulation / Cost / Economic analysis / Economics /
Electric power / Electric power generation / Fossil fuels /
Geothermal energy / Geothermal power plants / Geothermal
resources / Hydrothermal systems / Nuclear fuels / Optimization
/ Power generation / Power potential / Public utilities /
Scenarios / Simulation / USA /

Abstract by NTIS

The potential national benefits of geothermal electric energy development are estimated for several different scenarios. This analysis uses a computer simulation of the U.S. electrical economy using a linear programming optimization

technique. Under most of the scenarios, the benefits are estimated at \$2--\$4 billion over the next 50 years on a discounted present value basis. The electricity production from hydrothermal plants reaches 2--4 percent of the national total which will represent 10--20 percent of the installed capacity in the West. Installed geothermal capacity in 1990 is estimated to reach 9,000--17,000 MWE. The peak geothermal capacity reaches 28,000--65,000 MWE by year 2015. The most likely scenario yields the lower values in the above ranges. Under this scenario geothermal development would save the utility industry \$11 billion in capital costs (undiscounted); 32 million separative work units; 64,000 tons of U308 and 700 million barrels of oil. The most favorable scenario for geothermal energy occurred when fossil fuel prices were projected to increase at the rate of 5 percent/year. The benefits of geothermal energy then exceeded \$8 billion on a discounted present value basis.

523. GGIS-100106/R/ /*****/M/75/ /US/ /150100 House
W-7405-ENG-48

**Title- Potential Power Generation and Gas Production from Gulf Coast
Geopressure Reservoirs**

Author(s)- / House , P. A. / Johnson , P. M. / Towse , D. F. /

Publication date- May 27 , 1975

Pagination- 42 Pages

Report/patent- UCRL--51813

Note- Energyline 2/22/77 #34 NTIS Report NTIS 2/4/77 #6 L. 379:
"39p"

Available- NTIS

(Paper copy (\$ 4.00)

(Microform (\$ 2.25)

Corporate Author- California Univ. /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Binary cycles / Chemical composition / Cost / Diagrams / Economics / Fluid flow / Gas production / Geo brine / Geological setting / Geopressured systems / Geothermal energy / Geothermal energy conversion / Geothermal power plants / Geothermal resources / Geothermal wells / Gulf of Mexico / Hydraulics / Injection wells / Louisiana / Maps / Mathematical models / Natural gas / Natural gas resources / Performance / Power generation / Power potential / Pressure dependence / Pressure measurement / Sealing / Systems analysis / Tables / Temperature measurement / Texas / Theoretical treatments / Thermodynamics / Total flow systems / United States North /

Abstract by NTIS

Extensive onshore and offshore geopressured water reservoirs are found in the Texas and Louisiana Gulf Coast region. Energy in these reservoirs is present as natural gas in solution, as thermal energy, and as hydraulic energy. Reservoir depths generally vary from 5000 to 20,000 Ft. with corresponding temperatures from below 200 to above 300 DEG F. For the purposes of this study the resource was divided into three classes depending on depth, with corresponding temperatures, pressures, and gas concentrations. Natural gas is presumed to be present at saturation levels in each class of reservoir. Total-flow, flashed-steam, and binary-cycle thermal energy conversion systems were investigated. The total-flow system was selected for incorporation into a detailed power-plant systems analysis. Power-plant net power output as a function of wellhead pressure was determined for the two disposal methods (surface and injection) of the wastewater. The peak power output for each class of reservoir and disposal method was selected as the operating points to be used in the economic analysis. The range of output of electricity and gas from 7-IN.-nominal production wells is from 0.36 MW and 6.4 SCF/Sec for the shallow reservoir with fluid disposal by injection to 6.2 MW and 39.9 SCF/Sec for the deepest reservoir with surface disposal. Economic analysis indicates that the relatively shallow reservoirs would not be profitable for combined gas production and electrical power generation, but might be profitable for gas production alone. Deeper reservoirs would be profitable for combined gas production and power generation. The deepest reservoir without gas, would be marginally profitable for electrical generation alone.

524. GGIS-100105/R/ /*****/M/**/ /US/ /150100

Title- Potential Power Generation and Gas Production from Gulf Coast Geopressured Reservoirs

Author(s)- / House , P. A. / Johnson , P. M. / Towse , D. F. /

Publication date- May 15 , 1975

Pagination- 28 Pages

Report/patent- UCRL--76416 (Conf--750612-1

Note- SEE ERA 75 06 #01054

Available- NTIS

(Paper copy (\$ 4.00)

(Microform (\$ 2.25)

Corporate Author- California Univ. /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Proposed Descriptor(s)- / Binary cycles / Economics / Electric power /
Flashed steam systems / Geopressured systems / Geothermal energy
/ Geothermal power plants / Hydraulics / Louisiana / Natural gas
/ Natural gas production / Power generation / Power potential /
Production / Texas / Total flow systems /

Abstract by Energyline

Geopressured aquifers are anomalous in that fluid pressure exists at a value higher than hydrostatic does. The function of a geopressure surface plant would be to recover natural gas as it comes out of solution, and to produce power from hydraulic and thermal energy contained in the water of the geopressured reservoir. The resource geology of such a reservoir is described, and the recoverable energy is estimated. An engineering evaluation of the net power and gas production under various operating conditions is provided.

525. GGIS-100007/0/ / 1/A/**/ /US/ /150100

Title- Potential Power Generation and Gas Production from Gulf Coast
Geopressured Reservoirs

Author(s)- / House , P. A. / Johnson , P. M. / Towse , D. F. /

Geopressured Geothermal Bibliography

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 283 , 15 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50).

(Microform (\$ 2.25)

Corporate Author- California University, Livermore

Lawrence Livermore Laboratories

Auxiliary expression(s)-

Illus.

/ Figure (9) / Graph (6) / Map (2) / Drawing (1) /

Table

Abstract

Proposed Descriptor(s)- / Economic geology / Economics / Generation / Geothermal energy / Geothermal energy conversion / Geothermal resources / Gulf of Mexico / Gulf Coast / Hydraulics / Louisiana / Natural gas / Possibilities / Power generation / Power plants / Production / Texas / Total flow systems /

Abstract by Author

Extensive on-shore and offshore zones for geopressured water reservoirs are found in the Texas and Louisiana Gulf Coast region. Energy in these reservoirs is present in the form of natural gas in solution, thermal energy, and hydraulic energy. Reservoir depths generally vary from 5000 to 20,000 feet, with corresponding temperatures from below 200 to above 300 DEG F. Natural gas is presumed to exist at saturation levels in the reservoirs. Total-flow, flashed-stream, and binary-cycle thermal energy conversion systems were investigated as a means to utilize the thermal energy. The total-flow system was selected for a detailed power-plant systems analysis. Power-plant net power output was determined for both surface and injection disposal of the waste water. The range of electrical and gas output from 7-inch nominal production wells is from 0.36 megawatts (MW) and 6.4 standard cubic feet per second (SCF/SEC) to 6.2 MW and 39.9 SCF/SEC. The lowest values are for the shallow reservoirs with fluid disposal by injection, and the higher values are for the deepest reservoirs with surface disposal. The shallow reservoirs would not be profitable for combined gas production and electrical-power generation, but might be profitable for gas production alone. Deeper reservoirs would be profitable for combined gas production and power generation. The class of deepest reservoirs, without the presence of gas, would be marginally profitable for electrical generation alone.

526. GGIS-100288/R/ /*****/M/77/ /US/ / 30300 Cronquist
EX-76-C-01-2025

Title- Potential Producibility and Recovery of Natural Gas from
Geopressured Aquifers of the Cenozoic Sediments of the Gulf
Coast Basin.

Subtitle- Final Report

Author(s)- / Cronquist , C. / Malott , J.P. / Olsen , N.H. / Purser
, P.E. / Zimmerman , F.W. /

Publication date- 1977

Pagination- 39 Pages

Report/patent- FE-2025-3

Available- NTIS

(Paper Copy

Geopressured Geothermal Bibliography

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy /9505816/.

EX-76-C-01-2025 /

Corporate Author- Gulf Universities Research Consortium /9506084/.
Bellaire , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (5) /

Table

Appendix

Categories-

Natural Gas

(Drilling, Production, and Processing)

Energy Management and Policy

(Fossil Fuels)

Fossil Fuels

(Natural Gas)

Natural Gas

(Artificial Stimulation, Plowshare, Etc.)

Proposed Descriptor(s)- / Aquifers / Brines / Cost / Economics /
Enhanced recovery / Environmental effects / Gas production /
Geopressured reservoirs / Gulf Coast / Louisiana / Natural gas /
Power generation / Texas / Waste disposal /

Abstract by TIC

The geothermal geopressured gas resource of the Texas-Louisiana Gulf Coast area appears to offer a reasonable chance of developing into an energy resource of considerable magnitude. It has the additional advantage that the gas and electricity can

be fed into existing transportation systems at minimal investments, and it would supplement declining production from other sources as it was brought on stream. No fundamental technical problems are foreseen. There appears to be no radically new technology development required. Four critical questions exist--are the individual reservoirs of economic size; are the brines saturated with natural gas; can high well productivity be sustained; and can the brine be disposed of in an economical and environmentally satisfactory manner. These questions can be answered at reasonable cost exposures, and the odds for a successful outcome appear good.

527. GGIS-100077/R/ /*****/A/**/ /US/ /*****

Title- Potential Reserves of Natural Gas in the United States Gulf Coast Geopressured Zones

(Chapter 2 of Natural Gas from Unconventional Geologic Sources)

Author(s)- / Dorfman , M. H. /

Publication date- 1976

Pagination- Page 34 , 7 Pages

Report/patent- FE-2271-1

Note- with discussions

Proposed Descriptor(s)- / Economic geology / Economics / Geopressured zones / Geopressure / Gulf of Mexico / Gulf Coast / Louisiana / Natural gas / Possibilities / Reserves / Resources / Texas / United States /

528. GGIS-100167/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

Title- Potential Uses for a High-Temperature Borehole Gravimeter

Author(s)- / Hearst , Joseph R. / Kasameyer , Paul W. / Owen , Lawrence B. /

Geopressured Geothermal Bibliography

Journal- Houston

Publication date- March 8 , 1978

Pagination- 11 Pages

Report/patent- UCRL-52421

Available- NTIS

(Paper copy (\$ 4.00)

(Microfiche (\$ 3.00)

Local Availability- GGIS

Sponsor- / U. S. Department of Energy

W-7405-ENG-48 /

Corporate Author- California University, Livermore /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA , 94550

Auxiliary expression(s)-

Illus.

/ Graph (4) /

Ref.

Table

Proposed Descriptor(s)- / Aquifers / Compaction / Density /
Deposition / Elevated temperature / Formation damage / Geologic
structures / Geothermal wells / Gravimetry / Gravity surveys /
Natural gas wells / Plugging / Porosity / Stratigraphy /

Abstract by Author

It is possible to design a canister to cool a borehole gravimeter for use in geothermal and high-temperature (up to 350 DEG C) gas wells. Repeat surveys with such a gravimeter could (1) help estimate the extent of reservoir plugging in geothermal injection well after one year of operation and (2) detect

compaction of a geothermal aquifer if the change in thickness of the aquifer exceeds 1 M. The instrument could be used together with conventional logging tools to evaluate radial dependence of density around a well; or to estimate gas-filled porosity around wells drilled with mud. A high-temperature borehole gravimeter could also be used to evaluate structure and stratigraphy around geothermal and high-temperature gas wells.

529. GGIS-100146/B/ /*****/M/**/ /US/ /*****

Title- Power from the Earth

(Public Policy Bibliographies;3)

Subtitle- Geothermal Energy

Author(s)- / Tompkins , Dorothy Campbell /

Publication date- September 1972

Pagination- 34 Pages

Available- Institute of Governmental Studies
University of California
Berkeley
California

(\$ 2.50)

Corporate Author- California University, Berkeley

Institute of Governmental Studies
Berkeley , California , USA

Proposed Descriptor(s)- / Bibliographies / Engineering / Geology /
Geothermal energy / Government policies / USA / Water resources /

Abstract by NSF/RANN

This bibliography covers publications since 1965 on geothermal energy in the United States and public administration, water resources, engineering, and earth sciences relating to geothermal energy. Separate sections are devoted to geothermal energy in nine states and federal geothermal programs including the Plowshare Program. The bibliography contains 246 citations and an index. (MPG).

Geopressured Geothermal Bibliography

530. GGIS-100163/4/ /*****/A/77/ / / /***** Swearingen

Title- Power from Hot Geothermal Brines

Author(s)- / Swearingen , J.S. /

Journal- Chem. Eng. Prog.

Publication date- Vol. 73 , Issue 7 , July 1977

Pagination- Page 83 , 4 Pages

Auxiliary expression(s)-

Illus.

 / Diagram (2) / Graph (2) / Photo (2) /

Table

Proposed Descriptor(s)- / Binary fluid systems / Geothermal brines /
Heat transfer / Power generation / Scaling / Scaling control /

Abstract by EIC

A method of overcoming scale problems in binary systems, which involve the transfer of heat from a hot well stream into a secondary boiling clean liquid to generate power, is described. The proposal is to transfer the heat from the fluid to the working fluid boiler. Problems with steps in the process and their solutions are explained. The hot brine well system envisioned will produce power, excluding royalty expenses, at around 1.67 cents/kwh.

531. GGIS-100899/0/ /*****/A/76/ / / /***** Sheinbaum

Title- Power Production from High Temperature Geothermal Waters

Author(s)- / Sheinbaum , I. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 778 , 8 Pages

Report/patent- SAE--769137

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Binary fluid systems / Cost / Economics /
Flashed steam systems / Geothermal brines / High temperature /
Performance / Power generation / Thermal efficiency /

Abstract by Author

It appears that the first electrical power production from a liquid-dominated geothermal reservoir to be developed in the United States will be processed from the high salinity, high temperature reservoir. There are currently two recognized state-of-the-art processes and one experimental process for the conversion of high temperature geothermal waters into electric power. The adaptability, the efficiency, and the relative costs of the Direct Contact Binary Cycle for the conversion of high temperature geothermal resources into power, will be explored in this paper and compared with the existing processes. Two types of hot geothermal waters are evaluated: a. high temperature, low salinity, no noncondensables. The Direct Contact Binary Cycle can be characterized as highly efficient, flexible, and very economical when compared to the other power conversion processes. The process is especially suitable for handling high salinity and precipitating brines.

532. GGIS-100052/J/SPTJA/ 1504/A/**/ / / /*****

Title- Practical Applications of Optimal Control Theory to History Matching Multiphase Simulator Models

Author(s)- / Emanuel , A. S. / Seinfeld , J. H. / Wasserman , M. L.

Journal- Soc. Pet. Eng. J.

Geopressured Geothermal Bibliography

Publication date- Vol. 15 , Issue 4 , 1975

Pagination- Page 347 , 9 Pages

Proposed Descriptor(s)- / Algorithms / Control / Differential
equations / Geopressured systems / Lagrange equations /
Petroleum deposits / Porosity / Simulation / Storage / Thickness
/

533. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Predicting Gas Reserves in Abnormally Pressured Reservoirs

Author(s)- / Hammerlindl , D. J. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 7 , 7 Pages

Auxiliary expression(s)-

Illus.

534. GGIS-100054/J/LGALA/ 1305/A/**/ / / /*****

**Title- Prediction of Fracture Gradients from Log Derived Elastic
Modulus**

Author(s)- / Berry , L. N. / MacPherson , L. A. /

Journal- Log Analyst

Publication date- Vol. 13 , Issue 5 , September 31 , 1972

Pagination- Page 12 , 8 Pages

Auxiliary expression(s)-

Ref.

Categories-

Oil Wells

(Hydraulic Fracturing)

Proposed Descriptor(s)- / Hydraulic fracturing / Oil wells / Well logging /

Abstract by NTIS

Sonic and density logs have been obtained where possible from wells in the fields with measured breakdown gradients. Unfortunately, offshore logistics, risks, costs, and particularly hole conditions in highly deviated, geopressure penetrations often preclude obtaining desired porosity logs. However, it is believed the logs and breakdown data available are adequate to investigate the method proposed above. Values for elastic modulus (M) calculated from logs should be related to tensile strength, elasticity and possibly the stress configuration around the well bore. Elastic moduli calculated from logs have been compared with trends of measured fracture gradients in 10 offshore fields and a correlation has been shown to exist. 6 refs.

535. GGIS-100002/0/PASPC/ 2/A/**/ / /*****

Title- Prediction of Pore Pressure from Penetration Rate

(Application in Louisiana)

Author(s)- / Combs , George D. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 2 , 1970

Geopressured Geothermal Bibliography

Pagination- Page 35 , 10 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Engineering geology / Engineering properties / Geopressured reservoirs / Geopressure / Gulf Coast / Louisiana / Penetration / Pore pressure / Rates / Relation / Sedimentary rocks / Thermodynamic properties / United States /

536. GGIS-100899/0/ /*****/A/76/ / /***** Gault

Title- Preliminary Analysis of Electric Generation Utilizing Geopressured Geothermal Fluids

Author(s)- / Gault , Jack / Hall , James W. / Michael , Herb / Rios-Castellon , Lorenzo / Rios-Castellon , Lorenzo / Shepherd , Burchard P. / Underhill , Gary / Wilson , John S. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 790 , 8 Pages

Report/patent- SAE--769128

Auxiliary expression(s)-

Illus

/ Diagram (4) / Graph (1) /

Table

Ref.

Proposed Descriptor(s)- / Binary fluid systems / Economics / Elevated temperature / Environmental effects / Feasibility studies / Flashed steam systems / Geopressure resources / Geothermal fluids / Gulf Coast / Power generation / Power plants / Texas /

Abstract by Author

The geopressured geothermal resources along Texas' Gulf Coast were studied to determine the feasibility of electric power

generation. A model resource, developed from regional resource assessment, was characterized for the study: 163 DEG C, 138 bar, 40,000 bbl/day wellhead, 1.13 SCM methane/bbl water. Wells 4300 meter-deep extract the fluids; after utilization, disposal is via 1825 meter-deep reinjection wells. Preliminary conceptual designs for double-flash steam plant and for isobutane secondary working fluid plant are characterized as follows: 8.5 production wells, $0.39 \times 10^{**6}$ SCM methane/day, 25 MW \$738/kW, and 10.2 wells, $0.46 \times 10^{**6}$ SCM methane/day, 25 MW, \$786/kW, respectively. Present worth economic analysis using 1976 prices of \$2.04/ 10^{**6} kJ (methane) and 42 mills/kW-hr busbar (electricity), escalated 2.5% annually, with operation commencing 1980, yields approximately 5% after tax earnings for each plant with a 28¢/ 10^{**6} kJ brine fuel price (relative to 43 DEG C condenser conditions).

537. GGIS-100995/ / /*****A/78/ /US/ /***** Phelps

Title- Preliminary Environmental Assessments of Known Geothermal Resource Areas in the United States

Author(s)- / Anspaugh , Lynn R. / Ermak , Don L. / Jackson , Calvin D. / Miller , Lowell A. / Phelps , Paul L. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 523 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Energy source development / Environmental effects / Geothermal resources / Gulf Coast / KGRAs / Louisiana / Texas / US DOE /

Abstract by Author (rev.)

Geopressured Geothermal Bibliography

In order to assure that any development of geothermal resources takes place in an environmentally acceptable fashion, the Office of Assistant Secretary for Environment, DOE, has recently implemented a program that focuses on the early identification of environmental assessment needs. This program is called the Geothermal Overview Project. The basic purpose of the Geothermal Overview Project is to identify, summarize, and assess the environmental issues of the top priority KGRAs from among the approximately 40 KGRAs currently identified by the Division of Geothermal Energy, DOE, as having high possibilities for commercial development. The Geothermal Overview Project addresses issues pertaining to air quality, ecosystems quality, noise effects, geological effects, water quality, socioeconomic effects and health effects. For each KGRA the following functions are accomplished: (1) identification of key issues, (2) inventory of all available data, (3) analysis and assessment of available data, and (4) identification of what additional information is required for adequate assessments.

538. GGIS-100135/R/ /*****/M/**/ /US/ /150301
W-7405-ENG-48

**Title- Preliminary Interpretation of Resistivity and Seismic Refraction
Data from the Salton Sea Geothermal Field**

Author(s)- / Kasameyer , Paul W. /

Publication date- September 3 , 1976

Pagination- 13 Pages

Report/patent- UCRL-52115

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Livermore /9500007/.

**Lawrence Livermore Laboratories
Livermore , California , USA**

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

(Geophysical Techniques and Surveys)

Proposed Descriptor(s)- / Data analysis / Resistivity surveys /
Salton Sea Geothermal Field / Seismic refraction surveys /

Abstract by Author/ERA

Seismic refraction and electrical resistivity surveys have been conducted in the Salton Sea Geothermal Field. The resistivity data are used to infer the boundaries of a reservoir of saline fluid. One lateral boundary closely coincides with a fault that was located by seismic refraction.

539. GGIS-100093/I/ /*****/M/**/ / / / 0

Title- Preliminary Investigation of Geothermal Energy in South Texas
(June 1974-March 1975)

Author(s)- / Bebout , D. G. / Dorfman , M. H. /

Note- ERDA/RECON: "Expenditures: 0; 56000; 40000 Research location:
TX GEORES candidate Estimated Calendar Year Funding Reported as
1975 \$40,000

Available- University of Texas, Center for Nuclear Studies
University of Texas, Center for Nuclear Studies
200 W. 21ST
Austin, Texas 78712

Sponsor- / Texas Univ. Bureau of Economic Geology

Sponsor- / U.S. Atomic Energy Commission: ERDA /

Corporate Author- Texas Univ.

Center for Energy Studies
Austin , Texas , USA

Categories-

Energy

(Energy Sources)

Geopressured Geothermal Bibliography

(Geothermal Energy)

Proposed Descriptor(s)- / Geopressured systems / Geothermal energy /
Geothermal resources / Geothermal surveys / Salt /

Abstract by ERDA/RECON

The objective of this research is to make a preliminary geological evaluation of the geothermal resource in South Texas. The first step in implementing study of the Gulf Coast geothermal resources entails a detailed geological and facies analysis of Frio and trends. In this way the style of deposition of the Frio may be determined as well as the relation of sedimentation to growth faulting and salt diapirism. Although extensive distribution and occurrence of geopressured zones are inferred, extraction of geothermal fluids will depend upon adequate sand reservoirs being present. This study is for a basic fairway analysis of one discrete interval within the geopressured region. The Frio (Oligocene) appears a likely candidate for detailed investigations. This study will concentrate not only on sand distribution and facies analysis but will correlate and integrate physical parameters from evaluation of an extensive data base of well logs. The physical parameters include porosities, temperatures, temperature gradients, geopressures, top of geopressure horizons, and fluid salinities.

540. GGIS-100310/R/ /*****/M/78/ /US/ /***** Hornburg
EG-77-C-07-1627

Title- Preliminary Research on Geothermal Energy Industrial
Complexes

Subtitle- Final Report

Author(s)- / Hornburg , C.D. / Lindal , B. /

Publication date- March 1978

Pagination- 227 Pages

Report/patent- IDO/1627-4

Available- NTIS

(Paper Copy

(A11) (\$ 9.50)

(Microfiche

(A03) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EG-77-C-07-1627 /

Corporate Author- DSS Engineers, Inc. /9502001/.
Fort Lauderdale , Florida , USA

Auxiliary expression(s)-

Table

Illus.

/ Figure (67) /

Ref.

Proposed Descriptor(s)- / California / Cost / Economics / Flashed
steam systems / Geopressure resources / Geothermal energy /
Idaho / Industrial plants / Louisiana / Mineral production /
Oregon / Process heat / Site selection / Texas / Uses /

Abstract by Author

The overall purpose of this study was to provide economic, technical and other related information on developing industrial complexes to utilize geothermal energy. An initial screening of products and production processes led to the selection of the following potential Geothermal Energy Industrial Complexes (GEICs): Forest Products; Chlor-Alkali Industries; Alumina-Aluminum; Cellulosic Fibers; Magnesium Compounds and Soda Ash; Petro-Chemicals Complex; Food and Fermentation Products. These were further narrowed down by a market survey, siting analysis and a survey of raw material availability to: Forest Products; Caustic Chlorine; Corn Products and 3 others. Best sites for these are in Oregon, Southern California and Idaho. To supply steam for the process plants in the recommended complexes, a self-beneficiation steam system is developed. Steam can be obtained by flashing low temperature geothermal fluid. The flashed fluid would be passed thru a direct contact boiler to evaporate a secondary fluid. This would drive a turbine and provide shaft power to compress the flashed steam to

Geopressured Geothermal Bibliography

desired pressures for process use. Steam at pressures up to 135 psia can be produced by this system from geothermal fluid as low as 250 DEG F at lower costs than direct production from fossil fuel. A geothermal system supplying energy to a Forest Products Complex could yield attractive rates of return on investment. A wood chemicals plant that could be built as part of the complex would yield a marginal return on investment. A total of 71 major GEICs can be developed by 2000. These would use 347×10^{12} Btu/yr of geothermal energy. Recommendations include encouraging industrial companies to make specific site studies and pilot testing the steam beneficiation system conceived.

541. GGIS-100899/0/ /*****/A/76/ / / /***** Krause

Title- Prerequisites for Military/Civilian Geopressured Geothermal Resource Development

Author(s)- / Krause , Fritz R. / McKown , Gary L. / Schmidt , Ronald E. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 860 , 7 Pages

Report/patent- SAE--769148

Corporate Author- National Space Technology Labs /9509832/.
NTSL Station , Mississippi , USA

Auxiliary expression(s)-

Illus.

/ Map (2) / Graph (2) / Diagram (2) /

Table

Ref.

Proposed Descriptor(s)- / Energy source development / Energy demand /
Environmental effects / Federal buildings / Geopressure
resources / Geothermal energy conversion / Gulf Coast /
Hydrocarbons / Military facilities / Recovery processes /
Resource assessment / Uses /

Abstract by Author

The applicability of geopressured geothermal energy resources in the US Gulf Coast region to demands of federal installations has been examined. Energy demands for selected NASA and Department of Defense facilities are determined and compared to potential supplies from geopressured formations. A system emphasizing hydrocarbon recovery is proposed, some advantages of offshore development are discussed, and a case is presented for federal involvement in resource exploration and utilization technology during early stages of development.

542. GGIS-100138/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

**Title- Present Status of the Polymeric-Materials Screening Program
for the LLL Geothermal Project**

Author(s)- / Lorensen , Lyman E. / Mones , E. T. / Walkup , C. M. /

Publication date- July 9 , 1975

Pagination- 31 Pages

Report/patent- UCRL-51843

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Livermore /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Proposed Descriptor(s)- / Erosion / Materials testing / Nozzles /
Polymers / Scaling / Total flow systems /

Abstract by Author

Progress is reported on the continuing experimental program aimed at finding high-performance polymeric materials for use in the Lawrence Livermore Laboratory "total flow" process for producing electricity by the use of geothermal brines. Out of a total of 29 polymeric materials which have been screened in a 300 DEG C static brine-test, 7 types of polymers have withstood tests up to 555 hr with less than 10% weight loss. Also, 5 polymeric materials were tested at 250 DEG C for possible

Geopressured Geothermal Bibliography

service in the less demanding plant components. Polymer structures containing either substantial aromaticity, flourine, carbonized structure, or aliphatic unsaturation which has been crosslinked, show considerable stability. The presence of water-sensitive groups such as imide, amide, or ester is detrimental even in very thermally stable polymers. Eight nozzles and two wear plates were tested in the field. While plugging of nozzle throats by well debris made interpretation of results difficult, both the nozzles and a wear plate of teflon PFA showed minimal scale deposition and erosion after more than 100 hours of operation. Teflon TFE, and to a much lesser extent teflon PFA, developed surface fibrils while subjected to well flow. Equipment corrosion problems, acquisitions, part fabrication, critical-path planning and future-work plans are discussed.

543. GGIS-100229/J/ /*****/A/77/ / / / 30100 Bresee

Title- Present Status of Geopressured Geothermal Energy

Author(s)- / Bresee , J. /

Journal- Interstate Oil Compact Comm. Com. Bull.

Publication date- Vol. 19 , Issue 2 , December 1977

Pagination- Page 1 , 5 Pages

Categories-

Natural Gas

(Reserves)

- **Proposed Descriptor(s)-** / Energy source development / Geopressured zones / Gulf Coast / Institutional aspects / Louisiana / Natural gas / Taxes / Texas /

Abstract by TIC

Development of geopressured areas of the Texas and Louisiana coasts is discussed. Separation and use of the natural gas and heat energy are examined. Calculated values for the total recoverable energy in the areas are given. Other discussions are concerned with institutional problems and taxes. (JRD)

544. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Pressure Depth Relations in Appalachian Region

(Paper 8 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Russell , Williams L. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 122 , 9 Pages

Proposed Descriptor(s)- / Africa / Appalachians / Asia / Basins / Borneo / Clay / Compaction / Deformation / Diagenesis / Economic geology / Engineering geology / Erosion / Fluid pressure / Gas / Geopressure / Geopressured reservoirs / Gravity / Gulf Coast / Loading / Nigeria / Oil and gas fields / Overburden pressure / Permeability / Petroleum / Pore water / Reservoir rocks / Sealing / Shale / Tectonics / United States /

545. GGIS-100041/J/GEYPA/ 1101/A/**/ / / /*****

Title- Pressure Measuring at the Depth Used in Geological Prospecting

Subtitle- Criteria and Techniques

Original Title- Hlubinna Mereni Tlaku V Geologickm Pruzkumu

Author(s)- / Krajca , J. /

Journal- Geol. Prukum.

Publication date- Vol. 11 , Issue 1 , 1969

Pagination- Page 8 , 4 Pages

Geopressured Geothermal Bibliography

Language- Czech

Auxiliary expression(s)-

Sum.

Proposed Descriptor(s)- / Boreholes / Geopressure / Measuring methods
/ Measurement / Well logging /

546. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Pressure Prediction with Flowline Temperature Gradients

Author(s)- / Bush , R. E. / Wilson , G. J. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 75 , 5 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Engineering geology / Flowline /
Geopressured reservoirs / Geopressure / Gradient / Measurement /
Measuring methods / Overburden pressure / Pressure buildup /
Sandstone / Shale / Temperature /

547. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Pressured Shale and Related Sediment Deformation

(Paper 13 in Abnormal Subsurface Pressure- Selected Papers from
AAPG Bulletin)

Subtitle- Mechanism for Development of Regional Contemporaneous
Faults

Author(s)- / Bruce , Clement H. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 166 , 9 Pages

Proposed Descriptor(s)- / Contemporaneous faults / Deformation /
Faults / Geopressure / Gulf Coast / Mechanics / Oil and gas
fields / Pore water / Shale / Structural geology / Tertiary /
Texas / United States /

548. GGIS-100023/J/AAPGB/ 5704/A/**/ / / /*****

Title- Pressured Shale and Related Sediment Deformation

(on Seaward Flanks of Deeply Buried Linear Shale Masses, on
Seismic Data, Texas)

Subtitle- Mechanism for Development of Regional Contemporaneous
Faults

Author(s)- / Bruce , Clement H. /

Publisher- American Association of Petroleum Geologists

Journal- American Association of Petroleum Geologist Bulletin

Publication date- Vol. 57 , Issue 4 , 1973

Pagination- Page 878 , 9 Pages

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Clastic rocks / Contemporaneous /
Deformation / Distribution / Faults / Geopressure / Gulf Coast /
Origin / Regional / Sedimentary rocks / Shale / Structural
geology / Terrigenous / Tertiary / Texas / United States /

549. GGIS-100023/J/AAPGB/*****/A/**/ /US/ / 20200

Title- Primary Migration of Petroleum from Clay Source Rocks

Author(s)- / Chapman , R.E. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 56 , Issue 11 , November 1972

Pagination- Page 2185 , 7 Pages

Categories-

Petroleum

(Exploration)

Proposed Descriptor(s)- / Clay / Compaction / Diagenesis / Diffusion /
Geopressured systems / Migration / Petroleum / Petroleum
migration /

Abstract by DOE/Recon

An important difficulty in explaining primary migration from compacting source rocks concerns timing. The commonly accepted compaction curves for clay rocks imply maximum fluid expulsion early in a clay's compaction history, whereas most accumulations clearly have been formed later, after burial to depths of several thousands of feet. It was shown recently that abnormally pressured clays have been abnormally pressured since burial to a shallow depth. It was concluded that the thicker clays in most sedimentary basins have been abnormally pressured to some extent. If this conclusion is correct, the expulsion of petroleum becomes reconcilable with the time of entrapment because (a) thicker source clays, e.g., more than 200 feet, or 60 m, initial thickness, are probably more important than thinner source clays, and (b) mean fluid expulsion from the thicker clays is retarded. In addition, most of the fluid in a thin clay is expelled under geothermal temperatures and essentially hydrostatic pressures (implied in early migration) over a small depth range, whereas fluid in a thick clay is exposed to

geothermal temperatures and near-geostatic pressures over a much greater depth range. The protopetroleum thus may be subjected to higher temperatures and much higher pressures for a longer time, thereby facilitating its solution in the pore water. The pressure decrease that necessarily accompanies expulsion may lead to the release of petroleum from solution in the outer, compacting layer of clay, and the accumulation of a slug that could be expelled by capillary force aided by the fluid potential gradient.

550. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Primary Migration of Petroleum from Clay Source Rocks

(Paper 11 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Author(s)- / Chapman , Richard E. /

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 141 , 7 Pages

Proposed Descriptor(s)- / Clay / Compaction / Diagenesis / Fluid release / Geopressure / Mechanism / Migration / Origin / P-T conditions / Petroleum / Primary / Shale / Sources /

551. GGIS-100308/O/ /*****/A/78/ /US/ /***** Ershaghi

Title- Problems in Estimation of Salinity Profile in Liquid Dominated Geothermal Systems

Author(s)- / Dougherty , E.L. / Ershaghi , I. / Ghassemi , F. / Ucok , H. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Geopressured Geothermal Bibliography

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 181 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- University of Southern California /9507194/.

Petroleum Engineering Dept.
Los Angeles , California , USA

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Geothermal wells / Resistivity logging /
Salinity / Well logging /

Abstract by Author

Estimation of salinity profile in producing geothermal wells is of great importance in subsurface mapping and in designing the well completion. Well logs have traditionally been used to estimate R_{sw} and, hence salinity, in sedimentary type oil field reservoirs. Geothermal reservoirs introduce complexities which can lead to errors in interpretation of well log data using existing oil field correlations. This paper presents a review of certain aspects of the problem with examples from the Cerro Prieto field in Mexico.

552. GGIS-100071/R/ /*****/M/**/ / / *****/

Title- Problems in Identifying, Developing, and Using Geothermal Resources

Publisher- Government Accounting Office

Publication date- March 3 , 1975

Pagination- 76 Pages

Report/patent- RED--75--330

Auxiliary expression(s)-

Illus.

/ Photo (1) /

Proposed Descriptor(s)- / California / Desalination / Drinking water / Energy development financing / Federal environmental law / Geothermal energy / Geysers / Offshore fuel leasing / Onshore fuel leasing / Power plants / Public lands / U.S. Energy Research and Development Administration / U.S. Bureau of Reclamation /

Abstract by NTIS

Geothermal resources, including dry steam, hot mineralized water, hot dry rock, and geopressured zones, can be used to produce energy, fresh water, and minerals. The federal budget for FY 1975 requested \$49 million for geothermal exploration and R&D. Development of electrical power from geothermal resources, the geothermal leasing program and production of potable water from geothermal brines are assessed. Recommendations are provided. (1 photo)

553. GGIS-100297/J/CENEA/*****/A/79/ / / *****/ Waldrop

Title- Problems Arise for Geopressure Natural Gas

Author(s)- / Waldrop , Mitch /

Journal- Chem. Eng. News (Wash., D.C.)

Publication date- Vol. 57 , Issue 5 , January 29 , 1979

Pagination- Page 31 , 2 Pages

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Geopressured reservoirs / Methane /
Salinity / Solubility / Toxicity / Waste disposal / Waste
injection / Waste water /

Abstract by PROMPT

DOE will spend \$27 million to study the problems of geopressure natural gas such as disposal of the water produced, about 8,000 m³/well/day. Salinities are very high, ranging 15,000-275,000 mg/l of dissolved solids, mostly sodium, calcium and chloride ions. The presence of toxic components such as boron, ammonia, and other trace metals make it unsuitable for drinking, irrigation or straightforward disposal into the ocean. Researchers have corrected the dilution factor by using chemical geothermometers, which help them measure the dilution factor and calculate the original water's true salinity underground. In order to reinject the water into shallower strata, the water in the disposal site will have to be matched with the geopressure waters, or the carbonate and sulfate precipitates of calcium, strontium and barium will block the porosity in the rocks around the injection point. Also, the solubility of methane decreases substantially as salinities increase, so it is unknown whether the water is saturated with methane.

554. GGIS-100004/0/ /*****/M/**/ / / *****/

Title- Proceedings

Conference- Development and Use of Geothermal Resources

Publication date- Vol. 2 , Issue 1 , May 29 , 1975

Available- Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.
20402
USA

(Stock number 060-000-00005-1)

Local Availability- CES

555. GGIS-100008/0/ / 1/M/**/ /US/ /*****/

Title- Proceedings

Conference- Geothermal Power Development

Publication date- June 18 , 1974

Report/patent- LBL--3099

Available- NTIS

(Paper copy

(A07) (\$ 5.45)

(Microfiche

(A01) (\$ 1.45)

Local Availability- CES

556. GGIS-100212/O/ /*****/M/**/ /US/ /*****

Title- Proceedings of the First Workshop on Sampling Geothermal Effluents

Conference- 1. Workshop on Sampling Geothermal Effluents
Las Vegas
Nevada
USA (October 20 , 1975)

Publication date- May 1976

Pagination- 234 Pages

Report/patent- EPA-600/9-76-011

557. GGIS-100999/O/ /*****/M/**/ / / /*****

Title- Proceedings of the 13. Intersociety Energy Conversion Engineering Conference

Geopressured Geothermal Bibliography

Subtitle- Volume 2

Conference- 13 Intersociety Energy Conversion Engineering Conference
San Diego
California
USA (August 20 , 1978)

Publication date- Vol. 2 , August 20 , 1978

Pagination- 819 Pages

Available- Society of Automotive Engineers, Inc.
400 Commonwealth Drive
Warrendale
Pennsylvania
15096

Local Availability- Eng.

Corporate Author- Society of Automotive Engineers, Inc. /9506420/.
Warrendale , Pennsylvania , USA

558. GGIS-100304/O/ /*****/M/**/ /US/ /*****

Title- Proceedings of the 8. Intersociety Energy Conversion
Engineering Conference

Conference- 8. Intersociety Energy Conversion Engineering Conference
Philadelphia
Pennsylvania
USA (August 13 , 1973)

Publisher- University of Pennsylvania
Philadelphia, Pennsylvania

Journal- Intersociety Energy Conversion Engineering Conference

Publication date- 1973

559. GGIS-100214/O/ /*****/M/75/B/US/ /***** Stone

Aer 7509194

Title- Proceedings of Conference on Geothermal Energy and the Law

Author(s)- / Stone , C. D. /

Conference- Conference on Geothermal Energy and the Law
Santa Barbara
California
USA (February 3 , 1975)

Publication date- 1975

Pagination- 77 Pages

Report/patent- NSF-RA-S--75-003

Available- University of Southern California
Santa Barbara
California
USA

Local Availability- CES

Sponsor- / NSF/RANN

Aer 7509194 /

Corporate Author- University of Southern California /9505270/.
Los Angeles , California , USA

Proposed Descriptor(s)- / Geothermal development / Institutional aspects / Investment / Jurisdiction / Land leasing / Laws / Leasing / Legal aspects / Licensing / Ownership / Public utilities / Taxes / Uses / Water rights /

Abstract by TIC

Work group reports are presented for the following problem areas: legal and other institutional barriers complicating efforts at the earliest stages of geothermal development; the perspective of potential investors and the connection with specific uncertainties in the legal environment; preserving the interests of the government, the public generally, and the private geothermal lessors; the various water law conflicts,

Geopressured Geothermal Bibliography

including potential conflicts between users of water in geothermal production and users of water for other purposes; jurisdictional conflict and overlapping administration; and problems of utilities and dependent users. (MHR)

560. GGIS-100995/ / /*****A/78/ /US/ /***** Quong

Title- Processing of Geothermal Brine Effluents for Reinjection

Author(s)- / McLain , F.R. / Quong , R. / Schoepflin , F. / Stout , N.D. / Tardiff , G.E. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 551 , 551 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- California Univ., Livermore /9500007/.

Lawrence Livermore Lab.
Livermore , California , USA

Auxiliary expression(s)-

Table

Illus.

/ Graph (1) / Diagram (1) /

Ref.

Proposed Descriptor(s)- / Chemical composition / Cost / Geothermal brines / Mineral wastes / PH value / Silica minerals / Solids / Waste injection /

Abstract by Author

The handling of brine effluents for injection is a critical part of any geothermal conversion process. Brine effluents from the San Diego Gas & Electric/Department of Energy - Geothermal Loop Experimental Facility were characterized for particulate concentration and chemical composition. Bench scale tests were conducted with inorganic and organic coagulants as a means of enhancing the sedimentation process for separation and removal of suspended solids, principally amorphous silica. The effects of temperature, retention time, and pH on the precipitation of supersaturated silica, subsequent floc settling properties, and supernatant clarity were determined. A pilot sized clarifier with mixed media sand or precoat pressure filtration have been successfully tested as a means of producing injectable brine effluents. Preliminary cost estimates range in the vicinity of 20¢/1000 gallons.

561. GGIS-100374/O/ /*****/A/79/ /US/ /***** Swanson

Title- Production Behavior and Economic Assessment of Geopressed Reservoirs in the Texas and Louisiana Gulf Coast

(2. Session: EPRI Project Reports)

Author(s)- / Osoba , J. S. / Swanson , R. K. /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 1 , 8 Pages

Report/patent- EPRI-WS-79-166

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Map (1) / Graph (10) /

Geopressured Geothermal Bibliography

Table

Ref.

Proposed Descriptor(s)- / Economics / Flow rate / Gas production /
Geopressured reservoirs / Gulf coast / Louisiana / Methane /
Power potential / Resource assessment / Texas / Water production
/

Abstract by Author

Gulf Coast geopressured zones show promise of yielding moderately large quantities of hot water and methane. Based on the sand volume contained within the twenty prospective geopressured areas so-far defined, the total energy recoverable by primary pressure depletion is in the range of 7 trillion cu. ft. of methane and 13 Quads of thermal energy, assuming all these areas prove productive. Wells drilled to exploit these reservoirs will probably be capable of flowing at rates from 10,000 to 40,000 bbl/day for periods of from ten to twenty years. Reservoir modelling and economic analysis of the Brazoria, TX prospect, site of a currently drilling DOE test well, indicates a well will produce a total of 71 million barrels of 300 DEG F water in twenty years, based on optimistic reservoir parameters. On this basis, the well will show a small net return on investment if the gas can be sold for 7.50/mcf, if the water can be sold for 5¢/bbl, and if the spent fluid can be disposed of for 5¢/bbl.

562. GGIS-100076/R/ /*****/M/**/ /US/ /*****

Title- Program Definition for the Development of Geothermal Energy
(1. Vol.)

Subtitle- Background and Program Definition Summary

Publisher- Jet Propulsion Lab.
Pasadena, California

Publication date- Vol. 3 , August 29 , 1975

Pagination- 57 Pages

Report/patent- JPL--5040

Proposed Descriptor(s)- / Commercialization / Geothermal resources /
Institutional aspects / Research programs /

Abstract by EPA

The research program defined, with its supporting rationale, includes proposed federal government actions to facilitate a significant acceleration in the commercial utilization of the nation's valuable geothermal energy.

563. GGIS-100076/R/ /*****/M/**/ /US/ /*****

Title- Program Definition for the Development of Geothermal Energy
(2. Vol.)

Subtitle- Program Definition Development Rationale and Subprogram
Descriptions

Publisher- Jet Propulsion Lab.
Pasadena, California

Publication date- Vol. 3 , August 29 , 1975

Pagination- 195 Pages

Report/patent- JPL--5040

Proposed Descriptor(s)- / Energy source development / Geothermal
exploration / Geothermal resources / Government policy /
Research programs / Socio-economic factors / Uses /

Abstract by EPA

The purpose of this study is to give a comprehensive program definition of an integrated effort and commitment for effectively developing geothermal energy resources. A problem analysis discussion is given along with program development suggestions. Subprograms such as resource exploration, utilization, research and development, community planning, and policy analysis are described in detail. (MOW)

564. GGIS-100076/R/ /*****/M/**/ /US/ /*****

Geopressured Geothermal Bibliography

Title- Program Definition for the Development of Geothermal Energy

(3. Vol.)

Subtitle- Appendices

Publisher- Jet Propulsion Lab.
Pasadena, California

Publication date- Vol. 3 , August 29 , 1975

Pagination- 389 Pages

Report/patent- JPL--5040

Abstract by EPA

The following appendixes are given: (1) implication of the 1985 goal and updated sensitivity analysis, (2) geothermal development timelines, (3) leasing and exploration, (4) research and development, (5) electric utilities, (6) nonelectric geothermal market, (7) geopressurized resource R and D, (8) community planning, (9) summary of ERDA patent policy relevant to geothermal energy (10) factors affecting the development of known geothermal prospects, (11) environmental laws and regulations, (12) elementary treatment of economics of geothermal power production, (13) conversion cycle analysis, (14) Geothermal Energy, Research, Development, and Demonstration Act of 1974. Separate abstracts were prepared for each appendix. (MOW)

565. GGIS-100076/R/ /*****/M/**/ /US/ /*****/
NA57-100

Title- Program Definition for the Development of Geothermal Energy

(3 Volumes)

Publisher- Jet Propulsion Lab.
Pasadena, California

Publication date- Vol. 3 , August 29 , 1975

Report/patent- JPL--5040

Corporate Author- Jet Propulsion Lab
Pasadena , California , USA

566. GGIS-100045/J/BEGOA/ 8305/A/**/ / /*****

**Title- Programmed Modelling of Deep Thermodynamic Conditions in
Experimental Studies of Elastic Properties of Mineral Matter**

Author(s)- / Korchnoi , V. A. / Lebedev , T. S. / Shapoval , V. I. /

Journal- Gerlands Beitr. Geophys.

Publication date- Vol. 83 , Issue 5 , 1974

Pagination- Page 340 , 7 Pages

Auxiliary expression(s)-

Sum.

Illus.

Proposed Descriptor(s)- / Automatic data processing / Crust / Deep /
Effects / Elasticity / Experimental studies / Geophysics /
Geothermal gradient / Mathematical methods / Models / P-T
conditions / Physical properties / Pressure buildup / Rocks /
Temperature / Theoretical studies / Thermodynamics / Ukraine /
USSR /

567. GGIS-100393/O/ /*****/A/80/B/US/ /***** Gregory
DE-AC08-78ET-11397

**Title- Progress Report on Evaluation of Entrained Methane in Deep
Reservoirs, Texas Gulf Coast**

Author(s)- / Dodge , Marianne M. / Gregory , A. Ray / Posey , Jan S.

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Geopressured Geothermal Bibliography

Pagination- Page 414 , 60 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
DE-AC08-78ET-11397 /

Corporate Author- Texas Univ., Austin /9501193/.
Bureau of Economic Geology
Austin , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (7) / Graph (15) / Map (14) / Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Areal geology / Bulk density / Electrical logging / Evaluation / Fluid pressure / Formation thickness / Frio Formation / Geopressured reservoirs / Maps / Methane / Porosity / Reservoir / Resource assessment / Salinity / Texas / Vicksburg Formation / Wilcox Formation /

Abstract by Author

The major objective of this study is to appraise the total volume of in-place and recoverable methane dissolved in formation waters of sandstone reservoirs along the onshore Texas Gulf Coast from 8,000 FT (approximate base of oil production) to the base of the Wilcox Group (deepest significant sandstone occurrence). Volume and distribution of potential reservoirs were determined by utilizing electric logs which form a grid of structural dip and strike cross sections that extend from near the Wilcox outcrop to the coastline. Total thickness and net-sandstone distribution maps were constructed for each

formation. Significant amounts of sandstone are found in the Wilcox Group, Upper Claiborne (Yegua), Vicksburg, and Frio Formations. Only the Yegua Formation is not geopressed. The Texas Gulf Coast was divided into 24 subdivisions for purposes of detailed mapping and calculation of methane resource. Boundaries of these subdivisions were determined by structural provinces, the San Marcos arch and Houston and Rio Grande embayments, and by location of the Wilcox, Vicksburg, and Frio fault zones. Subdivision No. 2 in South Texas, was used to illustrate methods for evaluating bulk volume of sandstone, porosity, fluid pressure, temperature, salinity, and the amount of methane dissolved in formation waters.

568. GGIS-100014/O/ / 12/M/**/ / /*****

Title- Progress Report on Shale Electric Log

(Paper B.)

Conference- Annual Logging Symposium

Auxiliary expression(s)-

Ref.

Categories-

Oil Well Logging

(Electric)

Proposed Descriptor(s)- / Electric well logs / Well logging /

Abstract by NTIS

A complete electric log may be made from drill cuttings, simultaneously with drilling. The NAU potential, resistivity of a shale water mix, and the matrix resistivity all may be measured, to yield geological as well as drilling information. The water filtered from shale may also be used to measure CAUU, KU, REDOX and cationic potentials. These are useful in determining limey sands and pressure caps for log interpretation, for location of geopressed zones, and for determining hydrocarbon environment. 4 refs.

569. GGIS-100076/R/ / 14/A/**/ / /299000

Geopressured Geothermal Bibliography

Title- Projection of Attainable Geothermal Energy Development

(Appendix N. in Program Definition for the Development of Geothermal Energy- Appendices, Vol. 3)

Publisher- Jet Propulsion Lab.
Pasadena, California

Publication date- Vol. 3 , 1975

Pagination- 21 Pages

Report/patent- JPL--5040-6 (Vol.3)

Proposed Descriptor(s)- / Forecasting / Geophysical surveys / Geopressured systems / Geothermal energy conversion / Geothermal exploration / Geothermal resources / Geothermal systems / Hot dry rock systems / Hydrothermal systems / Land leasing / Planning / Research programs /

Abstract by ERDA

In order to aid in determining a suitable target for the geothermal energy program, an attempt is made to estimate how rapid an increase in use of geothermal energy is possible. Attainable limits for geothermal development and use are projected through the year 2000 and are summarized by resource type. The projected level of geothermal energy usage by the end of 1985 is modest (i. e., on the order of 6,000 MWE). The potential growth in the post-1985 time period is significant and could approach 140,000 MWE by the YEAR 2000. (MOW)

570. GGIS-100227/J/ECLQA/*****/A/77/ / / /299002 Sato

Title- Property Rights to Geothermal Resources

Author(s)- / Crocker , T. D. / Sato , S. /

Journal- Ecol. Law Q.

Publication date- Vol. 6 , Issue 2 , 1977

Pagination- Page 247 , 75 Pages

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Geothermal resources / Imperial Valley /
Legal aspects / Licensing / Ownership /

Abstract by TIC

The current status of the property regime governing geothermal resources is examined and alternative regimes are investigated with a view to identifying that system which promotes the most efficient allocation of resources. First, the current status of proprietary claims to geothermal resources is explored. Second, the various property regimes which might be applied to geothermal resources are analyzed and a system based on government licensing is proposed. A brief technical discussion provides the geological and engineering information necessary to an understanding of the article. This is followed by a discussion of the property rights to geothermal resources in California's Imperial Valley. (MHR)

x

571. GGIS-100227/J/ECLQA/*****/A/77/B/ / /***** Sato

Title- Property Rights to Geothermal Resources-

Subtitle- Part Two

Author(s)- / Sato , Sho /

Journal- Ecol. Law Q.

Publication date- Vol. 6 , Issue 3 , 1977

Pagination- Page 481 , 89 Pages

Auxiliary expression(s)-

Illus.

Geopressured Geothermal Bibliography

/ Graph (2) /

Ref.

Proposed Descriptor(s)- / Allocations / Efficiency / Geothermal resources / Legal aspects / Property rights /

Abstract by EIC

Allocative regimes for geothermal resources in several western states are examined. Possible alternative models for allocation of geothermal resources are assessed for their economic efficiency. Property regimes based on governmental responsibility to control geothermal resource development through the power to define property rights are considered. On the state level, four models for evaluating the efficiency of potential property regimes are examined; the rule of capture, the reasonable use rule, the correlative rights doctrine, and the appropriation system. An appropriation system that would be relatively efficient compared with other allocative regimes is detailed.

572. GGIS-100042/J/GTEMA/ 205/A/**/ / / /150100

Title- Proposed Geopressured Energy Investigation

(Reservoirs, Feasibility Economics, Gulf Coastal Plain, and Gulf of Mexico)

Author(s)- / Durham , C. O., JR. /

Journal- Geothermal Energy Magazine

Publication date- Vol. 2 , Issue 5 , May 1974

Pagination- Page 7 , 13 Pages

Note- GEOREF 100

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Continental Shelf / Economic geology / Economics / Energy sources / Evaluation / Feasibility studies /

Geopressure / Geopressured reservoirs / Geopressured systems /
Geothermal resources / Ground water / Gulf Coast / Gulf of Mexico
/ Louisiana / Methane / Possibilities / Power generation /
Pressure buildup / Research programs / Surveys / Texas / United
States /

573. GGIS-100116/0/ /*****/M/**/ / / /150100

Title- Prospect for Geothermal Power

Author(s)- / Smith , M. C. /

Publication date- 1974

Pagination- 9 Pages

Report/patent- LA-UR--74-1111 (CONF--740709-2

Available- NTIS

(Paper copy (\$ 4.00)

(Microform (\$ 2.25)

Corporate Author- Los Alamos Scientific Lab. /3820000/.
New Mexico , USA

Proposed Descriptor(s)- / Dry-steam systems / Forecasting /
Geopressured systems / Geothermal resources / Geothermal energy
/ Hot dry rock systems / Natural steam / Power generation / Power
potential / Thermal waters /

574. GGIS-100393/0/ /*****/A/80/ /US/ /***** Weise

**Title- Prospect Areas for Testing Entrained Methane Resources in the
Shallow Geopressured and Deep Hydrothermal Zones, Texas Gulf
Coast**

Author(s)- / Allie , Adrienne D. / Bebout , Don G. / Edwards , Marc
B. / Gregory , A. Ray / Hamlin , H. Scott / Lockley , James L. /
Weise , Bonnie R. /

Geopressured Geothermal Bibliography

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 474 , 40 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Gas Research Inst., Chicago, IL (USA) /9507097/. /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (2) / Map (13) / Figure (7) /

Table

Ref.

Proposed Descriptor(s)- / Cameron Fairway / Comparative evaluations /
Corpus Christi Fairway / Distribution / Fairway analysis /
Formation thickness / Frio Formation / Geopressure exploration /
Geopressure resources / Geopressured zones / Kenedy Fairway /
Matagorda Fairway / Methane / Montgomery Fairway / Permeability
/ Production testing / Resource assessment / Sand stone / Site
selection / Texas / Wilcox Formation /

Abstract by Author

The primary objective of geological studies of geopressured zones funded by the Gas Research Institute is to identify the most favorable sites for test wells which will be capable of long-term production of methane-bearing water from primarily the

shallow geopressured and secondarily the deep hydro pressured zones of the Texas Gulf Coast. To facilitate study, four zones within the hydro pressured and geopressured Tertiary section were defined as follows: (1) the A zone, or deep hydro pressured zone below depths of 4,500 ft (1,370 m), in which the fluid pressure gradient is 0.465 psi/ft (10.5 kPa/m), (2) the B zone, in which fluid pressure gradients are greater than 0.465 psi/ft (10.5 kPa/m) but less than 0.7 psi/ft (15.8 kPa/m), (3) the C zone, in which fluid pressure gradients are greater than 0.7 psi/ft (15.8 kPa/m) and fluid temperatures are less than 300 DEG F (149 DEG C), and (4) the D zone, in which fluid pressure gradients are greater than 0.7 psi/ft (15.8 kPa/m) and temperatures are greater than 300 DEG F (149 DEG C). This study concentrates on the A, B and C zones; the D zone has been the subject of previous studies of geopressured geothermal energy. Delineation of the four zones on regional cross sections and a survey of sandstone distribution defined sandstone-rich corridors for each of the zones. Net-sandstone maps defined high-sandstone fairways within the corridors. These fairways were ranked on the basis of net-sandstone thickness, areal sandstone distribution, average sandstone bed thickness, permeability, and coincidence with fairways of other zones. The most prospective fairways within the Frio Formation are Cameron, Kenedy, Corpus Christi, and Matagorda; the Montgomery Fairway is within the Wilcox Group. One or two prospect areas within each fairway are being studied in detail. Several sites for wells which will test the various pressure zones will be selected within the prospect areas.

575. GGIS-100352/J/EEZED/*****/A/78/ / / *****/ Geertsma

Title- Prospects for Geothermal Energy Recovery

Author(s)- / Geertsma , J. /

Journal- Erdoel-Erdgas-Z. Int. Ed.

Publication date- Vol. 4 , Issue 2 , 1978

Pagination- Page 33 , 6 Pages

Corporate Author- Koninklijke Shell /3632200/.

Lab.
Amsterdam , Netherlands

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Illus.

/ Diagram (4) / Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Cost / Europe / Financial incentives /
Geopressured reservoirs / Geothermal energy / Geothermal space
heating / Greenhouses / Hot dry rock systems / Hot water systems
/ Uses / Vapor dominated systems / Well drilling /

Abstract by Energyline

Geothermal energy resources in western Europe are available from vapor-dominated systems, liquid-dominated systems, geopressured reservoirs, and hot dry rock regions. The incentives for geothermal energy production in western Europe include increasing prices of conventional energy and the potential for efficient application of geothermal power to domestic energy needs; constraints include high drilling costs and the short productive lifetime of geothermal wells. The technical feasibility of recovering geothermal energy is examined.

576. GGIS-100267/B/ /*****/A/77/ /US/ /***** Ruzicka

Title- Psychosocial Ecology in the Development of Resources:

Subtitle- Psychosocial Ecology in Geothermal Development

Author(s)- / Ruzicka , William J. / Stolesen , Kay /

Publisher- Geothermal World Publications
Reseda, California

Publication date- 1977

Pagination- Page 219 , 6 Pages

Auxiliary expression(s)-

Ref.

Categories-

Geothermal Energy

(Environmental Aspects)

Proposed Descriptor(s)- / Energy source development / Environmental effects / Geothermal energy / Social impact / Socio-economic factors /

Abstract by TIC

A proposed model of how the development of a natural resource (geothermal energy) affects and is affected by the human environment (psychosocial ecology) is described. Data obtained by a variety of methods would be assessed and interpreted; conclusions would be based on consensual and divergent evaluation by adversary groups.

577. GGIS-100024/B/APGRA/ 11/A/**/ / / /*****

Title- Quantitative Determination of Reservoir Pressure from Conductivity Log

(Paper 3 in Abnormal Subsurface Pressure- Selected Papers from AAPG Bulletin)

Publisher- American Association of Petroleum Geologists

Publication date- Vol. 11 , 1974

Pagination- Page 37 , 10 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Acadia Parish / Depth / Electric conductivity / Electrical logging / Geopressured zones / Induction logging / Jefferson Davis Parish / Lafayette Parish / Louisiana / Pressure gradients / Reservoir pressure / Shale /

578. GGIS-100190/ / /*****/A/78/ / / /***** Balzhiser

Title- R & D Status Report-

Geopressured Geothermal Bibliography

Subtitle- Fossil Fuel and Advanced Systems Division

Author(s)- / Balzhiser , Richard E. /

Journal- EPRI J.

Publication date- Vol. 3 , Issue 4 , May 1978

Pagination- Page 38 , 5 Pages

Corporate Author- Electric Power Research Inst. /9500767/.
Palo Alto , California , USA

Auxiliary expression(s)-

Illus.

/ Photo. (1) / Diagram (3) / Graph (1) /

Proposed Descriptor(s)- / Binary cycles / Cooling systems / Economics
/ Gas turbine power generation / Geopressure resources /
Geothermal brines / Research programs / Scaling /

Abstract by Energyline

Recent work and the latest accomplishments of EPRI's fossil fuel and advanced system division are reported. Water-cooled gas turbine development, hydrothermal resource development, a subprogram addressing the technical and economic issues of geopressured resources, hydrocarbon turbine binary-cycle properties, improvement of hydrocarbon working fluid data properties, binary-loop test, and scale formation simulation in geothermal brine systems are discussed.

579. GGIS-100190/ / /*****A/79/ / /***** Balzhiser

Title- R & D Status Report-

Subtitle- Fossil Fuel and Advanced Systems Division

Author(s)- / Balzhiser , Richard E. / Golden , Dean / Hughes , Evan /
Roberts , Vasei /

Journal- EPRI J.

Publication date- Vol. 3 , Issue 4 , May 1978

Pagination- Page 35 , 6 Pages

Corporate Author- Electric Power Research Inst. /9500767/.
Palo Alto , California , USA

Auxiliary expression(s)-

Illus.

/ Photo. (3) /

Table

Proposed Descriptor(s)- / Computer calculations / Energy source
development / Geopressure resources / Geothermal brines /
Louisiana / Mathematical models / Research programs / Technology
assessment / Texas /

Abstract by Energyline

Recent research and the latest developments in EPRI's Fossil Fuel and Advanced Systems Div. are reported. The geothermal program includes elements oriented to hydrothermal and geopressured resource development and to generic research and technology development. The geothermal program is continuing to assess technical issues. One of EPRI's newest research areas is solids by-products and hazardous waste disposal to develop a sensitive method of assessing hazard potential and to find safe disposal systems.

580. GGIS-100995/ / /*****/A/78/ /US/ /***** Kruger

Title- Radon in Geothermal Reservoir Engineering

Author(s)- / Kruger , Paul /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 383 , 3 Pages

Geopressured Geothermal Bibliography

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Geothermal reservoirs / Measuring methods /
Radon / Reservoir engineering / Reservoir properties / Resource
assessment /

Abstract by Author

Radon transient analysis appears promising as a method complimentary to pressure transient analysis in the assessment of geothermal reservoirs. Measurement of radon is proving useful in two types of studies in geothermal reservoir engineering: (1) examining the structural properties of the reservoir as they affect the emanation radon from rock to pore fluids, and (2) examining the flow properties of the reservoir as they affect radon migration. Several radon transient tests have been conducted to examine the relationship between radon concentration in wellhead condensate and changes in flow rate. The results indicate that details of reservoir structure and transport may be examined with radon as an internal reservoir tracer.

581. GGIS-100393/O/ /*****A/80/ / / /***** Rogers
DE-AC08-78ET27098

Title- Ration of Produced Gas to Produced Water from DOE's Edna
Delcambre No. 1 Geopressured Geothermal Aquifer Gas Well Test

Author(s)- / Randolph , Phillip L. / Rogers , Leo A. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1273 , 54 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

DE-AC08-78ET27098 /

Corporate Author- Institute of Gas Technology /9500656/.
Chicago , IL , USA

Auxiliary expression(s)-

Illus.

/ Graph (12) / Map (2) / Figure (6) /

Table

Ref.

Proposed Descriptor(s)- / Aquifer tests / Computerized simulation /
Drilling / Edna Delcambre No. 1 Well / Flow rate / Gas production
/ Geopressured wells / Louisiana / Mathematical models / Natural
gas deposits / Numerical analysis / Water production /

Abstract by Author

A paper presented by the Institute of Gas Technology (IGT) at the Third Geopressured-Geothermal Energy Conference hypothesized that the high ration of produced gas to produced water from the No. 1 sand in the Edna Delcambre No. 1 well was due to free gas trapped in pores by imbibition over geological time. This hypothesis was examined in relation to preliminary test data which reported only average gas-to-water ratios over the roughly 2-day steps in flow rate. Subsequent public release of detailed test data revealed substantial departures from the previously reported computer simulation results. Also, data now in the public domain reveal the existence of a gas cap on the aquifer tested. This paper describes IGT's efforts to match the observed gas/water production with computer simulation. Two models for

Geopressured Geothermal Bibliography

the occurrence and production of gas in excess of that dissolved in the brine have been used. One model considers the gas to be dispersed in pores by imbibition, and the other model considers the gas as a nearby free gas cap above the aquifer. The studies revealed that the dispersed gas model characteristically gave the wrong shape to plots of gas production on the gas/water ratio plots such that no reasonable match to the flow data could be achieved. The free gas cap model gave a characteristically better shape to the production plots and could provide an approximate fit to the data if the edge of the free gas cap is only about 400 feet from the well. Because the geological structure maps indicate the free gas cap to be several thousand feet away and the computer simulation results match the distance to the nearby Delcambre Nos. 4 and 4A wells, it appears that the source of excess free gas in the test of the No. 1 sand may be from these nearby wells. The gas source is probably a separate gas zone and is brought into contact with the No. 1 sand via a conduit around the No. 4 well.

582. GGIS-100174/J/TANSA/*****/A/**/ / / /150800

Title- Recent Developments in Geothermal Energy

Author(s)- / Underhill , G. /

Journal- Trans. Am. Nucl. Soc.

Publication date- Vol. 27 , 1977

Pagination- Page 8 , 2 Pages

Note- See Conf-771109--

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Geothermal Energy

(Geothermal Power Plants)

Proposed Descriptor(s)- / Bench-scale experiments / Binary fluid systems / Brines / Flashed steam systems / Geopressured systems / Geothermal energy / Geothermal power plants / Geothermal resources / Government policies / Heat exchangers / Heat transfer / Heber Geothermal Field / Hydrocarbons / Pilot plants / Research programs / Reviews / Steam turbines / Technology assessment / USA / Working fluids /

583. GGIS-100372/R/ /*****/M/75/ /US/ /***** Burnham
NSF-C839

Title- Recommendations for a U. S. Geothermal Research Plan

Subtitle- Volume 1

Author(s)- / Bloomster , C. H. / Burnham , J. B. / Cohn , P. D. / Eliason , J. R. / Peterson , P. L. / Rohrmann , C. A. / Sandness , G. A. / Stewart , D. H. / Wallace , R. W. /

Publication date- December 1975

Pagination- 249 Pages

Report/patent- NSF-RA-N-75-093

Available- NTIS

(Paper Copy

(A11) (\$ 9.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / National Science Foundation /4514000/.

NSF-C839 /

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Illus.

/ Figure (25) /

Table

Proposed Descriptor(s)- / Budgets / Cost benefit analysis /
Environmental effects / Geopressured systems / Geothermal
exploration / Hot dry rock systems / Hot water systems /
Institutional aspects / Research programs / Resource assessment
/ Socio-economic factors / Technology assessment / USA / Vapor
dominated systems / Well drilling /

Abstract by Author

Based on data in recent reports and plans for the development of U. S. geothermal resources, a multidisciplinary Battelle-Northwest study team developed a comprehensive research program. Five- and ten-year program plans in this study emphasize critical five-year milestones. Recommended plans are presented here under constraint of three different five-year budgets: \$100, \$300 and \$500 million respectively. Plans are detailed in six resource subprograms: high temperature water, moderate temperature water, hot dry rock, brine, geopressured, and dry steam. Also presented are plans for five subprograms common to all geothermal resources: exploration, assessment, drilling technology, environmental-social, and institutional. A benefit/cost analysis performed in the Battelle-Northwest study shows favorable ratios under all conditions considered; they ranged from 46/1 to 28/1 for the three budget levels at a discount rate of 10 percent. Lower discount rates increase these ratios while higher than 10 percent rates decrease them. The net return (benefit minus cost) analyses show that the high budget has a return of over \$10 billion; the medium and low budgets show lesser returns. Oil equivalents up to 6.6 million barrels per day are found for the high budget by the year 2000 with somewhat less oil savings for the other budget levels. The corresponding impact on the balance of foreign trade for the high budget is \$19 billion per year in the year 2000 at an oil price of \$8 per barrel. On the basis of these analysis the \$500 million budget is recommended by the Battelle-Northwest study team. A rationale is described for the allocation of research funds based on the maximum probability of successful economic demonstration in five years and on the energy potential of the resource. Subprogram plans were first developed using three (high, medium and low) budget definitions. Under these circumstances they represent a cohesive plan for the resource development with little reduction on the research funds. Overlaps between subprograms were then minimized. A comprehensive program plan was finally developed for three specific levels of five-year budget: \$100, \$300 and \$500 million. The specific program plans were recommended on the basis of a probability-payoff model.

584. GGIS-100007/0/ / 1/A/75/ /US/ /150300 And

Title- Reflection Seismic Techniques Locate Geopressured Geothermal Anomalies

Author(s)- / Aud , B. W. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 133 , 12 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies
(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (10) / Graph (10) /

Ref.

Discuss.

Categories-

Geopressured Geothermal Bibliography

Exploration

(Geophysics)

Proposed Descriptor(s)- / Acoustic logs / Calculation methods / Continental Shelf / Data / Diagrams / Exploration / Geopressured systems / Geophysical methods / Geopressure / Geothermal exploration / Geothermal energy / Ground / Interpretation / Lithology / Logs / Louisiana / Measuring methods / Pressure gradients / Pressure measurement / Reflection / Seismic surveys / Seismic methods / Temperature measurement / Texas / Uses /

Abstract by ERDA/RECON

Interpretive techniques for predicting abnormal pressure and relative lithology from velocity analysis of seismic data are outlined. By use of correlations between high temperature and abnormal pressure zones, these techniques can be applied to the exploration of geopressured geothermal anomalies. (LS)

585. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Regional Sand Distribution of the Frio Formation, South Texas

Subtitle- A Preliminary Step in Prospecting for Geothermal Energy

Author(s)- / Agagu , O. K. / Bebout , D. G. / Dorfman , M. H. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 101 , 53 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

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Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (28) /

Ref.

Proposed Descriptor(s)- / Distribution / Electrical surveys /
Geological surveys / Geopressured zones / Geothermal exploration
/ Maps / Sand / Shale / Shores / Temperature measurement / Texas
/ Thickness / Well logging / Wells /

Abstract by ERDA/RECON

A geologic study is made of the main sand trends of the Frio Formation. Three major Frio Sand depocenters have been delineated: (1) Southeastern Hidalgo, Western Willacy, and Western Cameron Counties; (2) Eastern Kenedy and Kleberg Counties; and (3) North-Central Nueces County. Sand percentage maps were made based on data obtained from the interpretation of the spontaneous wells spaced approximately 5 to 10 miles apart throughout the South Texas area. Potential geothermal areas were delineated from correlations of isothermal and sand-percentage maps. (LS)

586. GGIS-100150/R/ /*****M/**/ /US/ /150101

Title- Regional Tertiary Cross Sections

Subtitle- Texas Gulf Coast

Author(s)- / Bebout , D. G. / Luttrell , P. E. / Seo , J. H. /

Publication date- 1976

Geopressured Geothermal Bibliography

Pagination- 10 Pages

Report/patent- NP-22410

Available- Bureau of Economic Geology
University of Texas at Austin
University Station
Box X
Austin
Texas
U. S. A.
78712

(Paper copy (\$ 1.25)

Corporate Author- Texas University, Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (7) /

Table

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Distribution / Electrical surveys / Frio
Formation / Geographical distribution / Geologic cross sections
/ Geology / Geopressured reservoirs / Geopressured systems /
Gulf Coast / Maps / Paleontology / Regional analysis / Sand /
Sandstone / Shale / Tertiary Period / Texas / Wells /

Abstract by DOE/RECON

Regional studies of the Frio Formation along the Texas Gulf
Coast were conducted to evaluate potential geothermal energy
from deep, geopressured sandstone reservoirs. Published
regional cross sections, unpublished cross sections provided by

several major oil companies, and extensive micropaleontological and electrical-log files at the Bureau of Economic Geology served as basic data. These sections are meant to show gross regional distribution of sand and shale facies both laterally and vertically throughout the entire Tertiary section along the Texas Gulf Coast.

587. GGIS-100393/O/ /*****/A/80/ /US/ /***** Garg
DE-AC-08-79ET27202

Title- Reinjection of Fluids into a Producing Geopressured Reservoir

Author(s)- / Garg , Sabodh K. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 1000 , 31 Pages

**Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712**

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

DE-AC-08-79ET27202 /

**Corporate Author- Systems, Science and Software /9500706/.
La Jolla , CA , USA**

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (9) /

Geopressured Geothermal Bibliography

Table

Ref.

Proposed Descriptor(s)- / Brines / Compressibility / Geopressured reservoir / Injection pumps / Injection wells / Methane / Permeability / Productivity / Simulation /

Abstract by Author

A reservoir simulator (MUSHRM) was employed to examine the effects of reinjecting the processed brine on the long-term performance of a representative geopressured reservoir. These calculations indicate that reinjection can be used to substantially increase methane and brine production. The results suggest that power requirements for reinjection pumps can be met either by burning approximately two-thirds of the produced methane (which may in some cases negate the benefits of reinjection as far as methane production is concerned) or by using the heat of the produced brine (320 DEG F) to generate electric power. Assuming that electric power produced from hot brine is used to reinject the processed fluids, it appears that reinjection is a viable production strategy for increasing methane recovery from geopressured systems. The attractiveness of reinjection to recover methane increases with increasing formation permeability and decreasing formation compressibility.

588. GGIS-100053/J/JPTJA/*****/A/71/ /US/ /***** Fertl

Title- Relationship Between Hydrocarbon Accumulation and Geopressure and its Economic Significance

Author(s)- / Fertl , W.H. / Timko , D.J. /

Publication date- Vol. 23 , Issue 8 , August 1971

Pagination- Page 923 , 11 Pages

Corporate Author- Continental Oil Co. /9500736/.
Houston , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (19) /

Table

Ref.

Proposed Descriptor(s)- / Gas production / Geopressured zones / Gulf Coast / Natural gas deposits / Oil production / Petroleum deposits / Reservoir engineering / Reservoir pressure / Well drilling / Well logging /

Abstract by Compendex

Commercial oil and gas accumulations appear to be related to the pressure distribution in the Gulf Coast area. The extent of overpressures appears to have an important bearing on the accumulation of oil and gas and, as a result, on the related drilling, production, and reservoir engineering. The magnitude of porefluid pressures as derived from conventional well logs correlates very well with the distribution and type of hydrocarbons. This knowledge can be used in economic decision-making. Several field examples and case histories are given for illustration.

589. GGIS-100058/J/OIGJA/ 6802/A/**/ / / /*****

Title- Relationship Between Hydrocarbon Accumulation and Geopressure and Its Economic Significance

Author(s)- / Fertl , W. H. / Timko , D. J. /

Journal- Oil and Gas Journal

Publication date- Vol. 6802 , Issue 2 , February 12 , 1970

Pagination- Page 62 , 6 Pages

Categories-

Oil Well Drilling

(Blowout Protection)

Oil Well Logging

(Radioactive)

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Blowout prevention / Oil well drilling /
Radioactive logs / Well logging /

Abstract by NTIS

The best approach in detecting and evaluating geopressures is to study a combination of several measured properties of the formation, i. e., bulk density, conductivity, resistivity as well as neutron measurements. Salinity variations, drill penetration rate, borehole temperature, and presence of gas in mud supply are also indices for determination of abnormal geopressures. 16 refs.

590. GGIS-100893/ /BEGOA/*****/A/73/ / / *****/ Mauerberger

Title- Relationships of Stationary Flow Processes in Open Surface and Overpressure Groundwater in Anisotropic and Inhomogeneous Medium

Author(s)- / Mauerberger , P. /

Publication date- Vol. 82 , Issue 2 , 1973

Pagination- Page 115 , 6 Pages

Language- German

Proposed Descriptor(s)- / Fluid flow / Geopressure / Ground water /

591. GGIS-100353/ / *****/M/78/ /US/ / 30100 Christopherson
EV-78-C-01-6388

Title- Report on a Focus Group Discussion

Author(s)- / Christopherson , G. R. /

Publication date- November 10 , 1978

Pagination- 44 Pages

Report/patent- DOE/TIC-10023

Available- NTIS

(Paper Copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U. S. Department of Energy

EV-78-C-01-6388 /

Corporate Author- Mathematica Policy Research, Inc. /9509043/.
Princeton , New Jersey , USA

Categories-

Natural Gas

(Reserves)

Energy Management and Policy

(Fossil Fuels)

Fossil Fuels

(Natural Gas)

Proposed Descriptor(s)- / Aquifers / Capital / Commercialization /
Economic policies / Financial incentives / Geopressure resources
/ Institutional aspects / Investment / National government /
Natural gas / Regulations / Research programs / Well drilling /

Abstract by TIC

Three separate technologies were discussed but, because of the background of the discussants, the greater part of the discussion focused on geopressure aquifers. In general, there was considerable agreement with regard to the level and types of technological and economic uncertainty, the institutional barriers, and the role that the federal government should take in enhancing commercialization. The resource is considered to be vast and if the market were allowed to operate freely the demand for the gas would be considerable. It was estimated that in a free market an annual demand of up to 30 trillion cubic feet could be expected in the near future. The industry

Geopressured Geothermal Bibliography

representatives think that the market demand would be greater than estimates compiled by the government because those demand estimates were influenced downward by assumptions of relatively constrained supply. It was agreed that the economic incentives available to industry, given the current regulation of price, are not sufficient to induce significant risk capital into well drilling in search of geopressurized gas. A common industry position is that the government needs to provide front-end funds to at least assist in well drillings, or for additional research within existing wells. The goal of this research would be to compile necessary engineering data to reduce the technological uncertainty and provide a basis for economic decision-making on possible risk-capital expenditures by industry. Industry opinion at this time is that the ceiling price of gas is going to have to be above the current price to induce some investment decisions in favor of these technologies over alternative uses of risk capital.

592. GGIS-100995/ / /*****A/78/ /US/ /***** Miller

Title- Reservoir Engineering Aspects of Fluid Recharge and Heat Transfer in Geothermal Reservoirs

Author(s)- / Cinco , H. / Kucuk , F. / Miller , F.G. / Ramey , H.J. Jr. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 449 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Stanford Univ. /5915000/.
Stanford , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (2) / Diagram (1) /

Ref.

Proposed Descriptor(s)- / Geothermal reservoirs / Heat transfer /
Natural recharge / Reservoir engineering / Water influx /

Abstract by Author

Natural recharge of fluid filled geothermal reservoirs is shown to be important in the development of these reservoirs and in increasing geothermal energy reserves. Research contributions on methods for calculating water influx and heat transfer in petroleum reservoirs are discussed. The need to forecast the performance of geothermal fluid reservoirs subject to water influx is emphasized.

593. GGIS-100007/0/ / 1/A/**/ /US/ /150900

Title- Reservoir Mechanics of Geopressure Aquifers

Author(s)- / Bernard , William J. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 157 , 13 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

Geopressured Geothermal Bibliography

(Paper cover (\$) 10.50)

(Microform (\$) 2.25)

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Aquifers / Energy yield / Engineering geology / Equations / Flow rate / Geopressured systems / Geopressure / Geopressured reservoirs / Geothermal wells / Geothermal energy / Mathematical models / Measuring methods / Overburden pressure / Performance / Petroleum / Power potential / Prediction / Production / Reservoir rocks / Reviews /

Abstract by Author

To evaluate the practicality of producing energy from geopressured aquifers, methods to predict energy-production rates are necessary. This paper reviews established petroleum-reservoir engineering techniques as applied to geopressured systems. Also, the effects of dissolved natural gas, shale water influx, and abnormally high rock compressibilities on aquifer behavior are discussed.

594. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Reservoir Research and Technology

(3. Session)

Author(s)- / Podio , Augusto L. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 155 , 86 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors

for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Map (2) / Photo (3) /

Ref.

Categories-

Geothermal Energy

(Geo Brine)

Mathematical Models

(Unconventional Energy Resources)

Proposed Descriptor(s)- / Geo brine / Geothermal energy / Geothermal drilling / Mathematical models / Proceedings / Resource / Texas / Unconventional energy /

Abstract by Energyline

Methods of predicting energy production rates are needed to assess the feasibility of obtaining energy from geopressed aquifers. Established petroleum reservoir engineering techniques applied to geopressed systems are reviewed. The effects of dissolved natural gas, shale water influx, and abnormally high rock compressibilities on aquifer behavior are assessed. The energy potential of geothermal waters in the geopressed reservoirs of the Gulf Coast ultimately depends on the yield of wells tapping these reservoirs. Possible well yields in a geopressed reservoir in Texas are analyzed. Contemporary well information systems applied to geopressed reservoir description are discussed with emphasis on useful equipment and procedures. Methods of sampling and evaluating

Geopressured Geothermal Bibliography

geopressured geothermal aquifers in extreme southern Texas are surveyed. The governing equations describing mass and energy transport in geopressured geothermal reservoirs are studied. A fully interacting rock fluid system with rock porosity, permeability, and thermal conductivity dependent on the fluid and rock stresses is advanced. (Numerous diagrams, numerous graphs, 2 maps, 3 photos, numerous references)

595. GGIS-100007/0/ / 1/A/76/ /US/ /***** Podio

Title- Reservoir Research and Technology

(3. Volume)

Author(s)- / Gray , Kenneth E. / Isokrari , Ombo F. / Knapp , Roy M.
/ Podio , Augusto L. / Silberberg , Irwin H. / Thompson , Thomas
W. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 365 , 365 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Diagram (42) / Graph (42) / Map (3) / Photo (2) /

Table

Ref.

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Computer codes / Computer calculations / Cost / Diagrams / Drilling / Economics / Flow rate / Geo brine / Geopressured systems / Geothermal energy / Geothermal drilling / Geothermal wells / Geothermal energy economics / Gulf of Mexico / Maps / Mathematical models / Methane solubility / Pore pressure / Pressure measurement / Proceedings / Rock / Rock properties / Subsidence / Tables / Temperature measurement / Texas / Theoretical treatments / Unconventional energy / Water sampling / Well logs / Well completion data / Well head pressure /

Abstract by Energyline

Advanced research and technology in well drilling, well design, well completion, well performance, data acquisition, and reservoir performance are explored, and preliminary plans with cost estimates for a geothermal test well are developed. Available drilling and completion technology and equipment are adequate to successfully complete a geopressured geothermal well. Certain long lead-times can be determined based on the approximate site definition, but a detailed program design requires complete definition of the test site. Development of a geothermal reservoir simulator is necessary to properly design the test sequence and to evaluate reservoir performance. Recommendations for reservoir performance are also discussed. (42 diagrams, 41 graphs, 3 maps, 2 photos, 80 references, 30 tables)

596. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Resource Assessment

(2. Session)

Author(s)- / Groat , Charles C. /

Geopressured Geothermal Bibliography

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 99 , 55 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Proposed Descriptor(s)- / Geology / Geothermal resources /
Proceedings / Seismology / Texas /

597. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Resource Assessment

(2. Volume)

Author(s)- / Bebout , D. G. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 53

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Diagram (13) /

Illus.

/ Map (9) /

Ref.

Table

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Cross sections / Diagrams / Drilling technology / Faults / Fluid pressure / Geological setting / Geopressured systems / Geothermal resources / Geothermal energy / Geothermal brines / Geothermal wells / Gulf of Mexico / Lithology / Maps / Permeability / Proceedings / Site selection / Tables / Temperature measurement / Texas / United States /

Abstract by Energyline

Geopressured Geothermal Bibliography

Subsurface techniques for locating and evaluating geopressured geothermal reservoirs, previously applied in petroleum exploration, are described and used to determine the extent and location of potential geothermal reservoirs along the Texas Gulf Coast. A potential reservoir should have at least 3 CU. MI., a subsurface fluid temperature (uncorrected) of at least 250 degrees F., and a permeability above 20 millidarcies. The Gulf Coast geologic framework is outlined, wells analyzed are tabled, and potential geothermal corridors are mapped. Site selection is also discussed. (13 diagrams, 9 maps, 14 references, 4 tables)

598. GGIS-100224/B/ /*****/A/77/ /US/ /150101 Lombard

Title- Resource Development/Utilization

(In; Geology of Alternate Energy Resources in the South-Central United States)

Subtitle- Development and Utilization of Geopressured Geothermal Resources in the South-Central United States

Author(s)- / Lombard , D. B. /

Publisher- Houston Geological Society
Houston, Texas

Publication date- 1977

Pagination- Page 275 , 21 Pages

Available- Geothermal Information Services
318 Cherrywood St.
West Covina
CA
91791

(\$ 25.00)

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Direct energy utilization / Energy source development / Geopressure resources / Geopressured reservoirs / Geothermal energy conversion / Institutional aspects / Legal aspects / Power generation / Reservoir properties / Uses /

Abstract by TIC

The geopressured geothermal aquifers of the South-Central United States represent a potentially enormous store of mechanical, thermal and chemical energy. Nonetheless, it is not yet certain whether that energy can be utilized in ways that are technically sound, economically attractive and environmentally clean. The principal issues and concerns related to the possible recovery and conversion of energy from the geopressured resource are reviewed. Geopressured brines occur in well-defined sandstone formations, or reservoirs, which vary widely in size, temperature, and productive capacity. Plants capable of generating electricity from geopressurized "fuel" would require certain minimum reservoir properties. To what extent Gulf Coast geopressured aquifers meet these criteria has not yet been determined. Less stringent reservoir requirements would govern the direct application of geopressured heat to industrial and agricultural processes. The technical and economic feasibility of systems proposed for the extraction, conversion, and utilization of geopressured energy are examined in relation to resource properties. Concepts for the conversion of the mechanical and thermal energy components to electricity are discussed, and several approaches to nonelectric energy utilization are noted. A brief review highlights the importance of legal and institutional issues that may impede the development of geopressured resources. It is concluded that a better understanding of geopressured resource characteristics is prerequisite to the resolution of most outstanding concerns, both technical and nontechnical.

599. GGIS-100393/O/ /*****/A/80/ / / /***** Karkalits

Title- Results of Flow Tests of Edna Delcambre No. 1:

Subtitle- II. Summary of Gas Analysis

Author(s)- / Hankins , B.E. / Karkalits , O. Carroll /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Geopressured Geothermal Bibliography

Pagination- Page 1347 , 25 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/. /

Corporate Author- McNeese State Univ. /9504854/.
Lake Charles , LA , USA

Auxiliary expression(s)-

Illus.

/ Diagram (3) / Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Chemical composition / Dissolved gases /
Edna Delcambre No 1. Well / Experimental results / Fluid flow /
Gas analysis / Geopressured wells / Geothermal brines /
Louisiana / Natural gas / Sampling methods / Solubility / Testing
/

Abstract by Author

One of the major objectives of the flow tests was to determine the amount of gas dissolved in the geopressured brine. The gas/water ration was measured on bottom-hole samples, as well as on flowing streams from the gas/water separator. Problems connected with gas/water ratio from bottom-hole samples are discussed. Gas analyses are presented, along with a discussion of recombination and differential liberation study results. The latter studies were made to determine the solubility limit of the dissolved gas in the geopressured brine. At the reservoir temperature and pressure (about 240 DEG F and 11,000 psi), this value was found to be 44-88 SCF/bbl. The natural gas associated with the geopressured brine was of pipeline quality (after dehydration), and had a heating value (HHV) of about 1040

BTU/SCF. A companion paper by Dr. B. E. Hankins et al. presents data on the chemical analysis of the geopressed brine.

600. GGIS-100139/R/ /*****/M/**/ /US/ /*****/
W-7405-ENG-48

Title- Results of Reservoir Evaluation Tests, 1976

Subtitle- East Mesa Geothermal Field, CA

Author(s)- / McEdwards , D. G. / Narasimhan , T. N. / Witherspoon ,
P. A. /

Publication date- July 1977

Pagination- 9 Pages

Report/patent- LBL-6369

Local Availability- CES

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- University of California, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (5) / Map (2) /

Table

Ref.

Proposed Descriptor(s)- / Aquifer tests / East Mesa Geothermal Field /
Geologic structures / Permeability / Reservoir properties /
Transmissivity /

Geopressured Geothermal Bibliography

Abstract by Author

Two interference well tests, conducted at the U. S. Bureau of Reclamation's East Mesa Geothermal test facility in Southern California by the Lawrence Berkeley Laboratory, serve to better define the geothermal reservoir's geometry and hydrologic characteristics. Temperature profiles taken indicate that the reservoir is approximately 3000 feet thick and is located about 6000 feet below the ground surface. The temperature at depth is approximately 350 DEG C. The two well tests, each of approximately 10 days' duration yield respectively reservoir transmissivities of 11,200 and 29,500 millidarcy-feet and compressibilities of 5.7×10^{-3} and 2.1×10^{-3} feet per PSI. The tests also indicate the possible presences of a sealed fault and a leaky fault in the reservoir.

601. GGIS-100056/J/ /*****/A/80/ / /***** Walsh

Title- Review of Alternative Energy Technologies

Author(s)- / Walsh , Terry E. /

Publication date- Vol. 32 , Issue 1 , January 1980

Corporate Author- Bechtel National, Inc. /9506433/.
San Francisco , California , USA

Proposed Descriptor(s)- / Electric power / Geopressure resources /
Hot dry rock systems / Hydrothermal systems / Magma systems /
Power generation / Technology assessment /

Abstract by Compendex

The author addresses two important alternative energy resources, solar and geothermal, with emphasis on their potential application in electric power generation. The objective of this presentation is to provide a realistic view of the principal technology options that are being developed or that are available. The solar systems discussed employ various means of collection and conversion, excluding biological and hydroelectric. The resources for geothermal power applications include hydrothermal, geopressured, hot dry rock, and magma.

602. GGIS-100053/J/JPTJA/ 2809/A/76/ / /***** Lane

Title- Review of Geopressure Evaluation from Well Logs

Subtitle- Louisiana Gulf Coast

Author(s)- / Lane , R. A. / MacPherson , L. A. /

Journal- Journal of Petroleum Technology

Publication date- Vol. 78 , Issue 9 , September 1976

Pagination- Page 963 , 8 Pages

Note- also NTIS #1 L. 1723

Auxiliary expression(s)-

Ref.

Categories-

Exploration

(Geophysics)

Proposed Descriptor(s)- / Acoustic logs / Bottom hole pressure / Density logs / Diagrams / Electric oil well logging / Geopressured systems / Logging / Louisiana / Oil wells / Oil well drilling / Oil shale / Pressure gradients / Resistivity log / Sand log / Statistical analysis / Tables / Temperature gradients / Well logging /

Abstract by NTIS

Recent Gulf Coast drilling experience and log data reveal irregularities in resistivity trends. Anomalies caused by age boundaries, younger sediments, and other phenomena may make log relationships difficult to apply. The geographic distribution and interpretation techniques for some of these anomalies are presented. Resistivity- trend departure/pressure relationships are examined. To estimate formation pressures from logs in the Gulf established normal log response trend in hydro pressured shales, (2) an observed departure from the normal trends, and (3) an empirical relationship between this trend departure and formation pressure gradient. 5 refs.

Geopressured Geothermal Bibliography

603. GGIS-100011/0/ /*****/A/**/ / / *****/

Title- Review of Geothermal Resources

Author(s)- / Robson , Geoffrey /

Conference- Magnitude and Deployment Schedule of Energy Resources

Publication date- September 1975

Pagination- Page 77 , 8 Pages

Report/patent- CONF--750720-

**Proposed Descriptor(s)- / Capital / Electric power / Exploitation /
Financing / Geopressure resources / Geothermal industry /
Geothermal power plants / Geothermal resources / Investment /
Power generation / Resource development /**

604. GGIS-100002/0/PASPC/ 2/A/**/ / / *****/

**Title- Review of Techniques in the Detection and Drilling of
Overpressured Formations**

Author(s)- / Fertl , Walter H. / Timko , Donald J. /

**Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA**

Publication date- Vol. 2 , 1970

Pagination- Page 131 , 5 Pages

Auxiliary expression(s)-

Illus.

/ Sketch map (1) /

Proposed Descriptor(s)- / Clastic rocks / Diagenesis / Drilling /
Engineering geology / Engineering properties / Geopressured
reservoirs / Geopressure / Gulf Coast / Pore water / Techniques /
Terrigenous /

605. GGIS-100267/B/ /*****/A/77/ / / /150500 Larson
AER 7508793

Title- Risk and Return on Investment for Geothermal Development

Subtitle- January 1977.

Author(s)- / Larson , Tod /

Publisher- Geothermal World Publications
Reseda, California

Publication date- 1977

Pagination- Page 304 , 10 Pages

Report/patent- PB-297 889

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / National Science Foundation /4514000/.

AER7508793 /

Corporate Author- California Univ., Riverside

Dry-Lands Research Institute
Riverside , California , USA

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Illus.

/ Graph (4) /

Table

Categories-

Geothermal Energy

(Economic and Financial Aspects)

Proposed Descriptor(s)- / California / Cost / Energy source
development / Geothermal exploration / Imperial County /
Investment / Power range 100-1000 MW / Profits / Public utilities
/ Risk assessment /

Abstract by TIC

Optimistic and pessimistic assumptions for development of a 200-MW field in Imperial County, California are summarized. The differing views of risk from the standpoint of the field developer and the public utility are discussed. Development costs are compared with coal and nuclear energy production.

R

606. GGIS-100053/J/JPTJA/ 2112/A/**/ / / /*****

Title- Rock Compressibility and Failure as Mechanisms in
Geopressured Gas Reservoirs

Author(s)- / Harville , D. W. / Hawkins , M. F., JR. /

Journal- Journal of Petroleum Technology

Publication date- Vol. 21 , Issue 12 , December 1969

Pagination- Page 1528 , 3 Pages

Proposed Descriptor(s)- / Geopressure / Natural gas wells / Petroleum
reservoir engineering / Rock mechanics /

Abstract by NTIS

Rock compressibility has been recognized as an important factor in material-balance calculations of oil in place for

closed reservoirs producing above bubble- point pressure. Because gas compressibilities decrease with increasing pressures, the consideration of rock compressibility becomes increasingly important for deeper, high pressure gas reservoirs. It is proposed that because of low net overburden pressures, rock compressibilities in geopressed reservoirs are much greater than for similar rocks in normally pressured reservoirs.

607. GGIS-100002/0/PASPC/ 1/A/**/ /US/ /*****

Title- Rock Compressibility and Failure as Reservoir Mechanisms in Good Reservoirs

Author(s)- / Harville , D. W. / Hawkins , M. F. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 1 , Issue 1 , 1967

Pagination- Page 81 , 10 Pages

Proposed Descriptor(s)- / Compression / Engineering geology / Failure / Geopressure / Mechanism / Natural gas / Production / Relation / Reservoir rocks / Rock mechanics /

608. GGIS-100048/J/EGREA/ 1505/A/**/ / / /*****

Title- Role of Anomalously High Formation Pressures (AHFP) in Development of Traps for and Accumulations of Oil and Gas in Southern Caspian Basin

Author(s)- / Dermish'yan , A. G. /

Journal- Int. Geol. Rev.

Publication date- Vol. 15 , Issue 5 , 1973

Geopressured Geothermal Bibliography

Pagination- Page 508 , 9 Pages

Auxiliary expression(s)-

Illus.

609. GGIS-100241/O/ /*****/A/77/B/US/ /299002 Kramer

Title- Role of Municipalities in Geothermal Resource Development

Author(s)- / Hammer , M. / Kramer , W. K. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 29 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / California / Contracts / Energy source
development / Exploitation / Geothermal exploration / Geothermal
resources / Laws / Legal aspects / Public utilities / Urban areas
/

Abstract by TIC

Those provisions of California law affecting municipal utilities interest in geothermal exploration, development, and exploitation are explored. The various problems encountered by the City of Burbank and the Northern California Power Agency are used as illustrations. The impact of self-imposed limitations in the form of outstanding bond covenants and other contractual obligations are considered. (MHR)

610. GGIS-100275/I/ /*****/M/**/ /US/ /*****

Title- Rules Having Statewide General Application to Oil, Gas and Geothermal Resource Operations Within the State of Texas

Publication date- November 1975

Pagination- 210 Pages

Available- Railroad Commission of Texas
1124 S. IH 35
Austin
TX

(Paper copy

Local Availability- CES

Corporate Author- Texas Railroad Commission /9506326/.
Austin , TX , USA

Proposed Descriptor(s)- / Gas production / Geopressure resources / Geothermal exploration / Geothermal resources / Oil production / Production / Regulations / Regulatory guides / Resource development / Texas / Texas Railroad Commission /

Abstract by GGIS

Rules and regulations adopted by the Texas Railroad Commission governing the exploration, development, and production of geothermal, oil, and gas resources are presented. A glossary of terms used in the report is included.

611. GGIS-100056/J/ / 26/A/76/ / / /***** Jacoby

Geopressured Geothermal Bibliography

Title- Salt Domes as a Source of Geothermal Energy

Author(s)- / Jacoby , C. H. / Paul , D. R. /

Journal- Min. Eng. (New York)

Publication date- Vol. 26 , 1974

Pagination- Page 34 , 6 Pages

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Alabama / Drilling technology / Heat flow /
Lithology / Louisiana / Mississippi / Rocks / Salt deposits /
Temperature gradients / Temperature measurement / Texas /
Theoretical treatments / United States /

612. GGIS-100995/ / /*****/A/78/ /US/ /***** Vetter

Title- Sampling in Geothermal Operations

Subtitle- Philosophy and Reality

Author(s)- / Shannon , D. / Vetter , O. / Watson , J. / Woodruff ,
E. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 693 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Geothermal fluids / Sampling methods /
Standardization /

Abstract by Author

The sampling and analysis (chemical or other) geothermal fluids, i.e., liquids, gases and suspended particles, is being done today by different investigators using methods of their own choice. In the majority of the cases, the analytical numbers reported are not truly representative of the geothermal systems. Sampling problems are compounded by two-phase flows (or even flows with more than two phases present), and chemical reaction and precipitation processes occurring during sampling. The problem of sampling and analyzing geothermal fluids is further compounded by the fact that many wells produce fluids which can change their composition at various times as a function of changing reservoir and operational conditions. Battelle Pacific Northwest Laboratories is undertaking a new and comprehensive study of sampling and analytical methods used in geothermal operations. This study does not involve sampling for suspended or deposited solids. This paper describes the reasoning behind Battelle's efforts. The final goal of this study is to evaluate the possibility of standardizing the sampling methods in geothermal operations.

613. GGIS-100326/R/ /*****/M/79/ /US/ /***** Loucks
EG-77-S-05-5554

**Title- Sandstone Consolidation Analysis to Delineate Areas of
High-Quality Reservoirs Suitable for Production of Geopressured
Geothermal Energy along the Texas Gulf Coast**

Author(s)- / Dodge , M.M. / Galloway , W.E. / Loucks , R.G. /

Publication date- January 1979

Pagination- 103 Pages

Report/patent- ORO-5541-1

Available- NTIS

Geopressured Geothermal Bibliography

(Paper Copy

(A06) (\$ 6.50)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EG-77-S-05-5554 /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (23) / Map (15) / Graph (40) / Photo (3) /

Ref.

Proposed Descriptor(s)- / Consolidation / Diagnosis / Frio formation
/ Geopressured reservoirs / Geopressured zones / Gulf Coast /
Mineral composition / Permeability / Porosity / Reservoir
pressure / Reservoir properties / Reservoir temperature /
Sandstone / Sonic logging / Texas / Vicksburg formation / Wilcox
formation /

Abstract by Author (rev.)

Analysis of reservoir quality of lower Tertiary sandstones along the Texas Gulf Coast delineates areas most favorable for geopressured geothermal exploration. Reservoir quality is determined by whole core, acoustic log, and petrographic analyses. Wilcox sandstones exhibit no regional reservoir quality trends. In Lower and parts of Middle and Upper Texas Gulf Coast the sandstones are relatively well consolidated, but in other parts of Middle and Upper Texas Gulf Coast they show a reversal toward increased porosity at depth. Vicksburg sandstones have the poorest reservoir quality of sandstones of any formation prospective for geothermal energy. Frio sandstones show a systematic increase in reservoir quality from Lower to Upper Texas Gulf Coast. This increase in reservoir quality correlates to changes in rock composition and cementation. Acoustic log analysis substantiates a progression of greater consolidation from Upper to Lower Texas Gulf Coast.

The Wilcox Group has good reservoir potential for geopressured geothermal energy in the Middle Texas Gulf Coast and possibly in adjacent areas, but other Wilcox areas are marginal. The Vicksburg Formation in the Lower Texas Gulf coast is not prospective. Reservoir quality in Texas, to marginal into the Middle Texas Gulf Coast and to good through the Upper Texas Gulf Coast. The Frio Formation in the Upper Texas Gulf Coast has the best deep-reservoir quality of any unit along the Texas Gulf Coast.

614. GGIS-100224/B/ /*****A/**/ /US/ /150000

Title- Selected Geopressured Geothermal Energy Bibliography

(In; Geology of Alternate Energy Resources in the South-Central United States)

Publisher- Houston Geological Society
Houston, Texas

Publication date- 1977

Pagination- Page 337 , 6 Pages

Available- Geothermal Information Services
318 Cherrywood St.
West Covina
CA
91791

(\$ 25.00)

Categories-

Geothermal Energy (General)

Proposed Descriptor(s)- / Bibliographies / Energy source development
/ Environmental effects / Geopressure / Geopressure exploration
/ Geopressured systems / Uses /

Abstract by TIC

A bibliography covering geopressured geothermal energy exploration, development and utilization, and environmental considerations is presented. (LBS)

Geopressured Geothermal Bibliography

615. GGIS-100311/R/ /*****/M/76/ /US/ /***** Barker
E(10-1)1546

Title- Semi-Annual Report on the Project to Design and
Experimentally Test an Improved Geothermal Drill Bit

Author(s)- / Barker , L.M. / Green , S.J. / Maurer , W.C. /

Publication date- January 1976

Pagination- 74 Pages

Report/patent- TID--28704

Available- NTIS

(Paper Copy

(A05) (\$ 6.00)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Energy Research and Development Administration
E(10-1)1546 /

Corporate Author- Terra Tek, Inc. /9500842/.
Terra Tek, Inc. , Salt Lake City , Utah , USA

Auxiliary expression(s)-

Illus.

/ Diagram (7) / Graph (13) / Map (4) / Photo (1) /

Table

Ref.

Proposed Descriptor(s)- / Design / Drill bits / Elastomers /
Geothermal drilling / High temperature / Laboratory testing /
Seals / Steels /

Abstract by Author

Work was started on the effort to design and test an improved geothermal drill bit on May 19, 1975. Terra Tek, Inc., is the prime contractor, with Maurer Engineering as a subcontractor and Reed Tool Company providing informal industry participation. The major tasks of the Phase I effort are (1) failure mechanisms of existing bits, (2) new steels and new bearing design, and (3) new seals and lubricants. Considerable progress has been made in understanding the causes of premature drill-bit failure in the geothermal well drilling environment. As a result, there appears to be a high probability that very significant gains in drill-bit life can be achieved by optimizing the drill-bit materials and the design for operation at higher temperatures. Drill-bits of high-temperature steels are being fabricated, as well as a test chamber to simulate the geothermal environment. In addition, several basic properties of the candidate steels and of the conventional drill-bit steels have been gathered from the literature, and provisions have been made for completing the material property picture through a materials testing program at Terra Tek. Considerable background material has been gathered on the drill-bit seal problem and on candidate seal materials. Some seal materials have been selected for further testing, and seal tester is being designed to provide a very good simulation of the environment experienced by seals in geothermal well drill-bits.

616. GGIS-100313/R/ /*****/M/76/C/US/ /***** Barker
E(10-1)1546

Title- Semi-Annual Report on the Project to Design and
Experimentally Test an Improved Geothermal Drill Bit , Phase II

Author(s)- / Barker , L.M. / Green , S.J. /

Publication date- December 1976

Pagination- 49 Pages

Report/patent- TID--28685

Available- NTIS

Geopressured Geothermal Bibliography

(Paper Copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Energy Research and Development Administration

E(10-1)1546 /

Corporate Author- Terra Tek, Inc. /9500842/.
Salt Lake City , Utah , USA.

Auxiliary expression(s)-

Illus.

/ Diagram (6) / Graph (3) / Photo (5) /

Table

Ref.

Proposed Descriptor(s)- / Design / Drill bits / Elastomers /
Geothermal drilling / High temperature / Laboratory testing /
Lubricants / Seals / Steels /

Abstract by Author

Work began on an effort to design and test an improved geothermal drill bit on May 19, 1975. Phase I of the contract, which lasted for one year, was devoted largely to (1) the study of the geothermal environment and the failure mechanisms of existing geothermal drill bits, (2) the design and construction of test facilities for testing both drill bit seals and full-scale drill bits under simulated geothermal drilling conditions, and (3) the procurement of research drill bits of high-temperature steels for the initial testing in the geothermal drill-bit test facility. The present semi-annual report describes the progress made during the first half of Phase II of the program, covering the period from May 19 to November 19, 1976. During the period of this report, the test facilities (the geothermal drilling vessel and the geothermal drill-bit seal tester) were completed and "de-bugged", and the first tests were run on full-scale research drill bits and drill-bit seals. In addition, more materials information was gathered, and a number of additional seals of high-temperature elastomer materials were obtained for testing. Maurer Engineering, on a subcontract basis, has also been active in the design and procurement of candidate high-temperature drill-bit seals for testing, and has done a literature and patent search on the problem of drill-bit insert

retention. Reed Tool Co. has cooperated in the fabrication of drill bits for testing, and has offered consultation on certain seal designs.

617. GGIS-100393/0/ /*****/A/80/ / / *****/ Ray

Title- Sensitivity of the Economics of a Geopressured Energy Prospect to Variation in Geologic Parameters

Author(s)- / Johnson , Adrain E., Jr. / Ray , Thomas G. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1499 , 11 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin "
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Louisiana State Univ. /3826000/.
Baton Rouge , USA

Auxiliary expression(s)-

Illus.

/ Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Aquifers / Compressibility / Computerized simulation / Economic impact / Economics / Geopressured reservoirs / Geothermal brines / Louisiana / Methane / Models /

Geopressured Geothermal Bibliography

Permeability / Porosity / Reservoir pressure / Reservoir
properties / Reservoir temperature / Resource development /
Volume /

Abstract by Author

This paper analyzes the effects of changes in geologic parameters upon economic indicators, such as net present value (NPV), for a specific geopressured prospect site, using the techno-economic simulation model described in a separate presentation at this conference. Results are presented showing the variations in the economic indicators with geologic parameters such as reservoir size, effective compressibility, porosity, permeability, etc. Those parameters which were found to be most important (that is, have major effects when varied to the extent of their uncertainty range) are identified. These results are subject to the assumption that an aquifer brine is saturated with methane at the temperature, pressure, and salinity predicted for it. The saturated methane amount was calculated quite accurately within the ranges of the variables encountered in Louisiana aquifers by a correlation of the available literature data.

618. GGIS-100058/J/OIGJA/ 7346/A/**/ / / / 20300

Title- Shale Data Key to Drilling Problems

(Illustrations of Australian, Persian Gulf, Indonesian Well
Logs to Explain North Sea Drilling Problems)

Subtitle- 1. of 2 pt, Interpreting Pressure Profiles

Author(s)- / Gill , J. A. / Gregg , D. N /

Journal- Oil and Gas Journal

Publication date- Vol. 73 , Issue 46 , November 17 , 1975

Pagination- Page 64 , 5 Pages

Auxiliary expression(s)-

Illus.

/ Figure (8) /

619. GGIS-100002/0/PASPC/ 3/A/**/ / /*****

Title- Shale Mineralogy and Overpressure

Subtitle- Some Case Histories of Pressure Detection Worldwide
Utilizing Consistent Shale Mineralogy Parameters

Author(s)- / Gill , J. A. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 121 , 3 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Africa / Anadarko Basin / Arabian Gulf /
Australia / Clastic rocks / Coastal / Diagenesis / Geopressure /
Mechanism / Mineral composition / Pore water / Pressure buildup /
Relation / Sedimentary rocks / Shale / Terrigenous / United
States / West / Western Australia /

620. GGIS-100393/0/ /*****/A/80/ /US/ /***** Freed

**Title- Shale Mineralogy of the No. 1 Pleasant Bayou Geothermal Test
Well: A Progress Report**

Author(s)- / Freed , Robert L. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 153 , 15 Pages

Geopressured Geothermal Bibliography

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Trinity Univ., San Antonio, TX (USA) /9505276/.

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/. /

Auxiliary expression(s)-

. Illus.

/-Graph (2) /

Table

Ref.

Proposed Descriptor(s)- / Brazoria County / Chemical analysis methods
/ Clay mineralogy / Geopressured zones / Mineral composition /
Mineralogy / Pleasant Bayou No. 1 Well / Shale /

Abstract by Author

Thirty-three shale samples, ranging in depth from 2,185 to 15,592 ft, were examined by x-ray diffraction methods to determine changes in mineralogy with depth. Quartz is present in all samples and averages 15 weight percent (wt%). Above 7,800 ft, calcit content ranges from 0-9 wt%. Total clay content, combining kaolinite, illite, mixed-layer illite-montmorillonite (I/M), and traces of chlorite, is essentially constant, averaging 65 wt%. Individual clay minerals have quite variable contents from sample to sample, but distinct trends are noted: (1) kaolinite content is constant at an average of 25% total clay; (2) illite content initially averages 35% total clay, decreases with depth, and is zero in 10 of the 14 samples below 10,000 ft; and (3) mixed-layer I/M averages 40% total clay in shallow samples and 70% in deeper samples. The top of the geopressured zone, occurring at a fluid pressure gradient of 0.465 psi/ft and equilibrium temperature of about 190 DEG F, is marked by a definite increase of illite in mixed-layer I/M at approximately 8,500 ft. A major change in montmorillonite content from 60% at 11,210 ft, to 16% at 11,750 ft, corresponds to a pressure gradient of 0.7 psi/ft, and equilibrium

temperature of 250 DEG F. In addition, the arrangement of the I/M layers changes from random interstratification in samples from 11,540 ft, and shallower, to an ordered layering from 11,750 feet and deeper.

621. GGIS-100233/B/ /*****/A/77/ /US/ /150906 Garg

Title- Simulation of Drive Mechanisms in Geopressured Reservoirs

(In; Energy Resources and Excavation Technology)

Author(s)- / Garg , S. K. / Pritchett , J. W. /

Conference- 18. Symposium on Rock Mechanics; Rock Mechanics in
Geothermal Development
Colorado
USA
Keystone (June 22 , 1977)

Publisher- Colorado School of Mines
Golden, CO

Publication date- 1977

Pagination- 4 Pages

Note- see CONF-770628--P1

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Reservoir Stimulation and Extraction Technology)

Proposed Descriptor(s)- / Artificial recharge / Compaction /
Compressibility / Computer calculations / Computer codes /
Geopressured reservoirs / Geothermal energy / Heat flow /
Methane / Performance / Permeability / Reservoir rocks /
Simulation / Water influx /

Abstract by TIC

Geopressured Geothermal Bibliography

A fully three dimensional multiphase (liquid water with dissolved methane reversible methane gas) computer program has been developed for solving the system of equations which govern mass and heat flow in a geopressured geothermal reservoir. The computer model includes the effects of the four major reservoir drive mechanisms (water compressibility, reservoir rock compaction, evolution of methane gas, and influx of water from shale dehydration). A preliminary series of calculations was made in which the input data for the computer program were varied to assess the sensitivity of the reservoir performance to (1) the presence of gaseous methane in the pores, (2) relative permeability, (3) sediment compaction, and (4) reinjection of the waste fluids. The principal effect of the free gas, sediment compaction and reinjection is to increase the producing life of the reservoir. Effects of relative permeability depend upon the amount of gas saturation in the pore fluid.

622. GGIS-100896/R/ /*****/M/78/ /US/ /150101 Leigh
EG-77-C-01-4014

Title- Site Specific Analysis of Geothermal Development

Subtitle- Volume I. Summary Report

Author(s)- / Cohen , A. / Jacobsen , W. / Leigh , J. / Trehan , R. /

Publication date- Vol. 1 , August 1978

Pagination- Page 63

Report/patent- HCP/T4014-01/1

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy /9505475/.

EG-77-C-01-4014 /

Corporate Author- Mitre Corp. /9500382/.
McLean , Virginia , USA

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Energy source development / Forecasting /
Geopressured systems / Hydrothermal systems / Planning / USA /

Abstract by TIC

MITRE/Metrek has analyzed development scenarios for 37 hydrothermal and geopressured prospects in the United States to assist DOE's Division of Geothermal Energy in mission-oriented planning of geothermal resource development. A summary of the site-specific analyses is presented with particular emphasis on possible recommendations for the Federal Geothermal Program.

623. GGIS-100896/R/ /*****/M/78/ /US/ /150101 Williams
EG-77-C-01-4014

Title- Site Specific Analysis of Geothermal Development--Data Files of
Prospective Sites:

Subtitle- Volume III.

Author(s)- / Cohen , A. / Pfundstein , R. / Pond , S. / Williams ,
F. /

Publication date- February 3 , 1978

Pagination- Page 554

Report/patent- HCP/T4014-01/3

Available- NTIS

Geopressured Geothermal Bibliography

(Paper Copy

(A24) (\$ 16.25)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Department of Energy /9505475/.

EG-77-C-01-4014 /

Corporate Author- Mitre Corp. /9503543/.

METREK Div.
McLean , Virginia , USA

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hrdrology, and Geothermal Systems

(USA)

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Proposed Descriptor(s)- / Arizona / California / Data compilation /
East Mesa KGRA / Energy source development / Geochemical surveys
/ Geological surveys / Geopressured systems / Geophysical
surveys / Geothermal resources / Geysers Geothermal Field /
Hawaii / Hydrothermal systems / Idaho / Legal aspects / Louisiana
/ Maps / Montana / Nevada / New Mexico / Oregon / Ownership /
Populations / Resource assessment / Site selection / Tables /
Texas / Utah / Washington /

Abstract by TIC

Development scenarios for 37 hydrothermal and geopressured prospects in the United States were analyzed. This third of three volumes presents site-specific data and sample development

schedules for the first plant on line at each of the 37 prospects.

624. GGIS-100243/R/ /*****/M/**/ /US/ /150101
EG-77-C-01-4014

Title- Site Specific Analysis of Geothermal Development-Data Files of Prospective Sites

Subtitle- Volume II

Author(s)- / Cohen , A. / Gupta , J. / Jacobsen , W. / Leigh , J. /
Trehan , R. / True , S. /

Publication date- Vol. 2 , August 1978

Pagination- 488 Pages

Report/patent- HCP/T4014--01/2

Corporate Author- Department of Energy /9505475/.

Div. of Geothermal Energy
Washington , D.C. , USA

Categories-

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Proposed Descriptor(s)- / Economics / Energy source development /
Geopressure resources / Geopressured zones / Geothermal
development / Planning / Site selection / Technology utilization
/

Abstract by TIC

Development scenarios for 37 hydrothermal and geopressured prospects in the United States were analyzed to assist DOE's division of geothermal energy in mission-oriented planning of

Geopressured Geothermal Bibliography

geothermal resource development. This second volume of the three-volume series contains the detailed site-specific analyses in terms of technological, economic, and other requirements for meeting the postulated schedules. This presentation should be used in conjunction with volume III, which contains detailed descriptive data files for each of the 37 prospects. These data files were used for the analyses contained in volume II and should be useful for other geothermal resource studies.

625. GGIS-100895/ / /*****/A/78/ /US/ /***** Bonham

Title- Solubility of Methane in Water at Elevated Temperatures and Pressures

Author(s)- / Bonham , L.C. /

Conference- AAPG--Sepm Annual Convention

Publication date- Vol. 62 , Issue 12 , December 1978

Pagination- Page 2478 , 4 Pages u

Auxiliary expression(s)-

Illus.

 / Graph (2) /

Ref.

Proposed Descriptor(s)- / Depth / Elevated temperature / Fluid pressure / Geopressure gradients / Geopressured zones / Geothermal gradients / Low temperature / Methane / Moderate temperature / Salinity / Solubility /

Abstract by Author

Published data on the solubility of methane in water covering the range from 70 to 680 DEG F (21 to 360 DEG C) and from 600 to 16,000 psi (4,137 to 110,320 kPa) can be used to construct depth-versus-solubility curves for given geothermal and geopressure gradients.

626. GGIS-100111/R/ /*****/M/**/ / / /*****

**Title- Some Elements of the Northern Gulf of Mexico Basin
Geopressure Energy Resource**

Author(s)- / Austin , R. / Howard , J. / Myers , R. / Nelson , R. /

Pagination- 27 Pages

Report/patent- UCRL--74807-1

Corporate Author- Lawrence Livermore Lab. /9500007/.
California University , Livermore , California , USA

Proposed Descriptor(s)- / Cost / Economics / Geopressured reservoirs
/ Geopressured zones / Geothermal energy conversion / Louisiana
/ Methane / Power potential / Resource assessment / Texas / Total
flow systems /

627. GGIS-100355/J/GYPSA/*****/A/80/ / / /***** Bachus

**Title- Sonic Log Waveforms from a Geothermal Well in Brazoria
County, Texas**

(Paper no. GT-12)

Author(s)- / Bachus , Milo M. / Castagna , John / Gregory , A. R. /

Publication date- Vol. 45 , Issue 4 , April 1980

Pagination- Page 587 , 1 Pages

Note- Abstract only of a paper presented at the 49th Annual
International Meeting and Exposition, Society of Exploration
Geophysicists, New Orleans, Louisiana, Nov. 4-8, 1979

Local Availability- Geol.

Corporate Author- Texas Univ., Austin /6203000/.
Austin , Texas , USA

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Aquifers / Compaction / Depth / Drill stem testing / Elevated temperature / Frio formation / Geopressured reservoirs / Geopressured zones / Gulf Coast / Natural gas / Permeability / Porosity / Pressure gradients / Reservoir properties / Salinity / Sandstone / Temperature gradients / Texas / Well logging /

Abstract by Author

Ongoing geopressured geothermal energy research at the University of Texas has identified several fairway areas containing large volumes of sandstone at temperatures of 300 DEG F, or higher, with abnormally high-pressure gradients at depths of below 8000 ft. These fairways may contain locations suitable for future well drilling. It is believed that aquifers within the geopressured environment of the Gulf Coast may contain significant quantities of dissolved natural gas, in addition to the thermal and kinetic energy of the water, for use as a future energy alternative. Intensive investigations into two of these fairway areas in the Frio formation, the Corpus Christi and Armstrong fairways of central and south Texas, have been undertaken using well log, drillstem test and core data, to attempt to refine porosity-permeability relationships, temperature gradients, pressure gradients at depth, and salinity variations within the geopressured zones. Results indicate decreasing salinity with depth in the geopressured zones, and varying trends of compaction of sediments in the Frio formation. These variations affect location of top of geopressure and pressure gradients in each area, and appear to be related to depositional environments and other factors. Results differ substantially from previously published data on Miocene age sediments in south Louisiana. These results should allow investigators to more accurately and easily determine reservoir parameters within the geopressured Frio formation in central and south Texas.

628. GGIS-100392/R/ /*****/M/80/ /US/ /***** Kestin
EY-76-S-4051.A002

Title- Sourcebook on the Production of Electricity From Geothermal Energy

Author(s)- / DiPippo , Ronald / Kestin , Joseph / Khalifa , H. Ezzat / Ryley , D. John /

Publication date- March 1980

Pagination- 1014 Pages

Report/patent- DOE/RA/4051-1

Available- Superintendent of Documents
U.S. Government Printing Office
Washington
DC
USA
20402

(Paper copy

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA). Div. of
Geothermal Energy /9506839/.

EY-76-S-4051.A002 /

Corporate Author- Brown Univ. / 943000/.
Providence , RI , USA

Auxiliary expression(s)-

Illus.

/ Diagram (154) / Photo (28) / Graph (220) / Map (10) /
Figure (1) /

Table

Ref.

Proposed Descriptor(s)- / Corrosion / Design / Economics / Electric
power / Environmental effects / Fluid flow / Geology / Geophysics
/ Geopressed systems / Geothermal drilling / Geothermal energy
conversion / Geothermal power plants / Heat transfer / Mass
transfer / Performance / Power generation / Site selection /
Thermodynamics / Waste heat / Well logging / Working fluids /

Abstract by GGIS

A unification of expert knowledge drawn from a wide variety of specialized fields is presented to develop an integrated view of geothermal energy. The geology and geophysics of geothermal areas, geothermal exploration, reservoir mechanics and reservoir modeling are discussed. Drilling, well logging and fluid flow are described. The thermodynamic principles of energy conversion are discussed as they relate to geothermal installations. The concept of available work emphasized here demonstrates the importance of the heat-rejection system in a

Geopressured Geothermal Bibliography

geothermal installation. Established and developmental energy conversion systems are discussed. Materials selection guidelines are presented. Economic considerations governing the choice among alternative power systems are examined. Criteria for site selection and design are presented. Statutes and technical problems relating to environmental considerations are described. The final chapter, presenting a compendium of information on geothermal power plants that now exist, once existed, or are planned in the foreseeable future, is a condensation of a companion volume, Geothermal Energy as a Source of Electricity, by Ronald DiPippo.

629. GGIS-100230/R/ /*****/M/77/ /US/ /150903 Jorda
EY-76-C-04-0789

Title- State of the Art in Well Completion Technology as Applied to
Geothermal Development

Subtitle- Preliminary Report

Author(s)- / Ellis , R. C. / Jorda , R. M. /

Publication date- November 1977

Pagination- 160 Pages

Report/patent- SAND--78-7008

Sponsor- / EY-76-C-04-0789

EY-76-C-04-0789 /

Corporate Author- Completion Technology Co.
Houston , Texas , USA

Categories-

Geothermal Energy

(Geothermal Engineering)

Geothermal Engineering

(Corrosion, Scaling, and Materials Development)

Proposed Descriptor(s)- / Corrosion / Disposal wells / Geopressured wells / Injection wells / Scaling / Scaling control / Well completion /

Abstract by TIC

The preliminary phase of a state-of-the-art report concerning well completions for geopressured and geothermal energy source and injection wells is presented. The report covers corrosion and metal problems, scale deposition and control, general production interval completion techniques, and a model of an all-liquid heat recovery system. Both hot water geopressured source wells and water disposal (injection) wells are discussed in some detail. Areas for further development and study with regards to United States Gulf Coast geopressured well completions are identified. (JGB)

630. GGIS-100256/R/ /*****/A/**/ /US/ /150400

Title- State Geothermal Laws and Regulations

(Paper 13 in Geothermal Energy; A National Opportunity (The Federal Impact)

Author(s)- / Polich , G. / Sacarto , D. M. / Wonstolen , K. A. /

Publication date- 1978

Pagination- 28 Pages

Report/patent- NP--23437

Categories-

Geothermal Energy

(Legal and Institutional Aspects)

Proposed Descriptor(s)- / Alaska / Arizona / California / Colorado / Energy source development / Geothermal development / Geothermal industry / Idaho / Land leasing / Laws / Leasing / Legal aspects / Louisiana / Montana / Nevada / New Mexico / Oregon / Regulations / State Government / Texas / Utah / Washington / Wyoming /

Geopressured Geothermal Bibliography

631. GGIS-100208/R/ /*****/M/76/ /US/ /150400 Sacarto

Title- State Policies for Geothermal Development

Author(s)- / Sacarto , D. M. /

**Publisher- National Science Foundation
Washington, D. C.**

Publication date- 1976

Pagination- Page 104

Report/patent- NSF/RA--760230

**Corporate Author- National Conference of State Legislatures
/9503477/.
Denver , Colorado , USA**

Categories-

Geothermal Energy

(Legal and Institutional Aspects)

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

**Proposed Descriptor(s)- / Alaska / Arizona / California / Colorado /
Economics / Energy policy / Geopressured systems / Geothermal
energy / Geothermal exploration / Geothermal resources / Global
aspects / Government policies / Hawaii / Idaho / Land leasing /
Legislation / Louisiana / Montana / Nevada / New Mexico / Oregon
/ Origin / Regulations / Taxes / Texas / Utah / USA / Washington
/ Wyoming /**

Abstract by DOE/RECON

The most prominent geothermal resources in the U. S. A. occur in fifteen Gulf and western states including Alaska and Hawaii. In each state, authority and guidelines have been established for administration of geothermal leasing and for regulation of development. Important matters addressed by these policies

include resource definition, leasing provisions, development regulations, water appropriation, and environmental standards. Some other policies that need attention include taxation, securities regulations, and utility regulations. It is concluded that conditions needed for the geothermal industry to pursue large-scale development are consumer (utility) confidence in the resource, equitable tax treatment, prompt exploration of extensive land areas, long and secure tenure for productive properties, prompt facility siting and development and competitive access to various consumers. With these conditions, the industry should be competitive with other energy sectors and win its share of investment capital. This publication reviews for the states various technical, economic, and institutional aspects of geothermal development. The report summarizes research results from numerous specialists and outlines present state and federal policies. The report concludes generally that if public policies are made favorable to their development, geothermal resources offer an important energy resource that could supply all new electric capacity for the fifteen states for the next two decades. This energy--100,000 MW--could be generated at prices competitive with electricity from fossil and nuclear power plants. An extensive bibliography is included. (MCW)

632. GGIS-100247/R/ /*****/M/76/ /US/ /***** Sacarto

Title- State Policies for Geothermal Development

Subtitle- Uncovering a Major Resource

Author(s)- / Sacarto , Douglas M. /

Publication date- November 1976

Pagination- 104 Pages

Report/patent- PB-261 744

Available- NTIS

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Geopressured Geothermal Bibliography

Corporate Author- National Conference of State Legislatures
/9503477/.
Denver , Colorado , USA

Proposed Descriptor(s)- / Economics / Energy source development /
Energy policy / Geothermal development / Geothermal resources /
Government policies / Institutional aspects / State government /

Abstract by EIC

Policies suited to the development of new energy sources and ideas for enhancing the development of geothermal resources are discussed. Various technical, economic, and institutional aspects of geothermal development are reviewed. Research results from several specialists are summarized, and present state and federal policies affecting the geothermal industry are outlined. Key policy areas are identified, and specific actions are suggested for the states.

633. GGIS-100292/R/ /*****/M/80/ /US/ /***** Stephens
W-7405-ENG-48

Title- State-of-the-Art Hydrogen Sulfide Control for Geothermal Energy Systems

Subtitle- 1979

Author(s)- / Hill , John H. / Phelps , Paul L., Jr. / Stephens ,
Frederick B. /

Publication date- March 1980

Pagination- 134 Pages

Report/patent- DOE/EV-0068

Available- NTIS

(Paper copy

(A07) (\$ 12.50)

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA). Div. of Environmental Control Technology /9506097/.

W-7405-ENG-48 /

Corporate Author- California Univ. /9500007/.

Lawrence Livermore Lab.
Livermore , CA , USA

Auxiliary expression(s)-

Illus.

/ Diagram (18) / Photo (3) / Map (4) / Graph (19) /

Table

Ref.

Proposed Descriptor(s)- / Air pollution abatement / Dissolved gases / Environmental effects / Gaseous wastes / Geothermal energy conversion / Hot water systems / Hydrogen sulfides / Pollution control / Pollution control equipment / Pollution regulations / Stack disposal / Technology assessment / Vapor dominated systems / Water pollution abatement /

Abstract by Author

Present efforts by the geothermal industry are directed toward developing economically viable hydrogen sulfide emission control technologies having efficiencies that satisfy federal and state emission control requirements. This report discusses existing state-of-the-art technologies for removal of hydrogen sulfide along with a comparative assessment of their efficiencies, reliabilities and costs. Other related topics include the characteristics of vapor-dominated and liquid-dominated resource, energy conversion systems, and the sources of hydrogen sulfide emissions. The report indicates that upstream control technologies are preferred over downstream technologies primarily because upstream removal of hydrogen sulfide inherently controls all downstream emissions including steam-stacking. Two upstream processes for vapor-dominated resources appear promising; the copper sulfate (EIC) process, and the steam converter (Cory) process combined with an off-gas abatement system such as a Stretford unit. For liquid-dominated systems that produce steam, the process where the non-condensable gases are scrubbed with spent geothermal fluid appears to be promising. An efficient downstream technology is the Stretford process for non-condensable gas removal. In this case, partitioning in the surface condenser will determine the

Geopressured Geothermal Bibliography

overall abatement efficiency. Recommendations for future environmental control technology programs include a) studies addressing H₂S emissions associated with steam stacking, b) examining the use of the Stretford process upstream, c) continuing studies of the steam converter (Coury) process, d) determining the feasibility of electrolytic processes for hydrogen sulfide removal and, e) a follow-up program of the DOE sponsored ASCOT study.

634. GGIS-100325/R/ /*****/M/79/ /US/ /***** Pinder
W-7405-ENG-48

Title- State-of-the-Art Review of Geothermal Reservoir Modelling

Author(s)- / Pinder , George F. /

Publication date- March 1979

Pagination- 144 Pages

Report/patent- LBL-9093

Available- NTIS

(Paper Copy

(A08) (\$ 8.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

W-7405-ENG-48 /

Corporate Author- California Univ., Berkeley /1112800/.

Lawrence Berkeley Lab.
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Figure (10) /

Ref.

Proposed Descriptor(s)- / Deformation / Energy transfer / Equations /
 Fluid flow / Geothermal reservoirs / Ground subsidence /
 Mathematical models /

Abstract by Author

The simulation of subsidence in a geothermal reservoir involves the solution of equations governing fluid movement, energy transport, and reservoir skeleton deformation. The three phenomena are, of course, coupled and in the most rigorous formulation would be considered and approximated as a single system. In practice, however, deformation of the reservoir skeleton has only a minor impact on fluid flow and energy transport whereas these latter phenomena are very important in reservoir deformation. This type of one-way coupling is not unusual in mathematical physics and can be used effectively to enhance the efficiency of a geothermal reservoir subsidence code. The most important consequence of this is a decoupling of the fluid flow and energy transport from the deformation equations such that they can be solved sequentially rather than simultaneously without the introduction of significant error. Thus, the geothermal reservoir model, exclusive of skeletal deformation, can be viewed and analyzed meaningfully as a separate entity. The objective of this report is to summarize and, to the degree possible, evaluate the state of the art in geothermal reservoir modelling. As used herein the term geothermal reservoir model refers to the representation of the dynamics and thermodynamics of a geothermal reservoir, without skeletal deformation, using the concepts of porous flow physics and the subsequent solution of the resulting assemblage of differential and partial differential equations. Only those models which have been developed exclusively for geothermal simulation will be considered within the scope of this report.

 635. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Statistical Study of Geopressed Reservoirs in Southwest Louisiana

Author(s)- / Perry , D. J., JR. /

**Conference- Abnorm. Subsurf. Pressure
 Baton Rouge
 Louisiana
 USA**

Publication date- Vol. 3 , 1972

Geopressed Geothermal Bibliography

Pagination- Page 115 , 3 Pages

Proposed Descriptor(s)- / Distribution / Engineering geology /
Geopressed reservoirs / Gulf Coast / Louisiana / Natural gas /
Overburden pressure / Pressure buildup / Southwest / Statistical
methods / Tertiary / United States /

636. GGIS-100314/R/ /*****/M/76/ /US/ /***** McDonald
EY-76-C-07-1546

**Title- Steady-State and Transient Wellbore Temperatures During
Drilling**

Author(s)- / McDonald , William J. /

Publication date- May 20 , 1976

Pagination- 37 Pages

Report/patent- TID--28777

Available- NTIS

(Paper Copy

(A03) (\$ 4.50)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / U.S. Energy Research and Development Administration

EY-76-C-07-1546 /

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (13) /

Table

Ref.

Proposed Descriptor(s)- / Bottom hole temperature / Computer calculations / Design / Drill bits / Drilling fluids / Geothermal drilling / High temperature /

Abstract by Author

An extensive literature search was made to locate technical publications and computer programs relating to wellbore temperatures during drilling operations. Examples in these publications confirmed the need for knowledge of transient and steady state circulating temperatures in the design of geothermal bits. Two approaches were used in calculating borehole temperatures: The steady state solution of Holmes & Swift was programmed and 2100 cases calculated for various borehole configurations. For transient temperature studies, Exxon Production Research Co. made calculations for ten borehole configurations under a \$5,000 subcontract. These calculations help emphasize the need for better high temperature bit performance and improved engineering procedures in drilling.

637. GGIS-100137/R/ /*****/M/**/ /US/ /*****
GI-34925

Title- Stimulation of Geothermal Aquifers

Subtitle- Progress Report No. 1

Author(s)- / Kruger , P. / Ramey , H. J., JR. /

Publication date- March 1973

Pagination- 91 Pages

Report/patent- PB-238 054

Available- NTIS

(Microfiche

(A01) (\$ 3.50)

Local Availability- CES

Sponsor- / NSF/RANN

Geopressured Geothermal Bibliography

GI-34925 /

Corporate Author- Stanford University /5915000/.
Stanford , California , 94305 , USA

Proposed Descriptor(s)- / Aquifers / Computerized simulation / Energy source development / Environmental impact / Environmental effects / Geopressured reservoirs / Geothermal energy / Geothermal reservoirs / Mathematical models / Models / Reservoir engineering / Simulation / Steam / Stimulation / Unconventional energy sources / Underground explosions / Water quality / Well stimulation /

Abstract by NSF/RANN

The three major objectives of this program are: (1) development of experimental and numerical data to evaluate the optimum performance of explosion- stimulated geothermal aquifers; 2) development of a geothermal steam reservoir model to evaluate the many thermophysical, hydrodynamic, and chemical parameters involved; and 3) development of a laboratory model of an explosion-produced chimney to obtain experimental data on the processes of in-place boiling, moving flash fronts, and two-phase flow in hot porous media, as well as chemical and radiochemical data for the fluids production. The progress achieved during this initial period of the project is reported in this first progress report. (Auth, from introduction)

638. GGIS-100073/B/ /*****M/**/ / / *****/

Title- Structure, Stratigraphy and Petroleum Potential of the Northern Gulf of Mexico

Publisher- Houston Geological Society
Houston, Texas (U.S.A.)

Publication date- 1974

639. GGIS-100393/O/ /*****A/80/ / / *****/ Hamilton

Title- Study of a Geopressured Reservoir by Drilling and Producing a Well in a Limited Geopressured Water Sand

Author(s)- / Hamilton , John R. / Wilson , John S. /

Publisher- 4. Geopressed Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1137 , 23 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Dow Chemical Co. /2194000/.
Freeport , TX , USA

Auxiliary expression(s)-

Illus. u

/ Diagram (3) / Map (3) / Figure (2) /

Table

Proposed Descriptor(s)- / Aquifers / Areal geology / Evaluation /
Field studies / Geopressure drilling / Installation / Louisiana
/ Pressure decline / Reservoir description / Sand / Test wells /

Abstract by Author

A 13,600' well will be drilled in Parcperdue field, near Lafayette, Louisiana, to test a small, geopressed water sand. Excellent geologic control of the fault block and uniformity of the reservoir sand will afford detailed analysis of reservoir behavior. The data generated will permit extrapolation to predict the performance of larger reservoirs. Water will be produced through 5-1/2" tubing at rates up to 25,000 bbl/day. The completion will be a cased hole gravel pack. The disposal well will be a 5,000' open hole gravel pack. The testing program will include detailed logging, coring and core analysis, analytical chemistry of water and gas, and PVT analyses. Pressure testing will consist of a short-term, 2-week series of four, staged isochronal pressure drawdown and buildup tests, followed by a long-term production test of approximately 9 months' duration. Periodic pressure buildup monitoring will be

Geopressured Geothermal Bibliography

done during the long-term testing. A Hewlett-Packard temperature-pressure gauge will be utilized for both short- and long-term pressure testing.

640. GGIS-100393/O/ /*****/A/80/ /US/ /***** Bachman

Title- Subsurface Disposal of Geopressured Fluid: Potential Geologic and Operational Problems with Recommendations for Disposal System Testing

Author(s)- / Bachman , Ann L. / Smith , Charles G., Jr. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 972 , 28 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Louisiana State Univ. /3826000/.
Baton Rouge , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Disposal wells / Faulting / Geopressured wells / Geothermal fluids / Hydrogeology / Injection wells / Injectivity / Louisiana / Migration / Monitoring / Operation / Performance testing / Subsidence / Testing / Underground disposal / Waste disposal /

Abstract by Author

This paper reports the results of the Workshop on Subsurface Disposal of Geopressured Fluids held at Louisiana State University, March 6-7, 1979. The LSU Workshop was the first to specifically address, in a group discussion format, the potential geological and operational problems of subsurface disposal of geopressured fluids. The participants represented a wide range of expertise and included the major industry representatives and researchers in the field. The conclusions and recommendations of this group are discussed in this paper in three areas: (1) potential hydrogeologic and fluid-formation compatibility problems; (2) operational factors; and (3) the potential for fluid migration. The paper also describes the disposal system testing program that was developed as a result of issues raised during the Workshop. The program is part of a geopressured test well that has been proposed by the Louisiana Department of Natural Resources for a prospect near Lafourche Crossing in Terrebonne Parish, Louisiana. The goals of the program are (1) to test the efficiency of the wells before disposal begins, (2) to evaluate potential fluid migration/compatibility problems; (3) to monitor the performance of the wells during injection; and (4) to assess any long-term problems that might develop as a consequence of large volume disposal.

641. GGIS-100007/0/ / 2/A/**/ /US/ /*****

Title- Subsurface Technology and Resource Utilization

(4. Volume)

Author(s)- / Carlson , Ronald A. / Erdos , Jozsef / Gault , John A. /
Glendenning , Williams A. / Hall , James W. / Jones , Robert L.
/ Michael , Herbert K. / Powell , Paul H. / Riemann , Carl F. /
Rios-Castellon , Lorenzo / Shepherd , Burchard P. / Underhill ,
Gary K. / Wilson , John S. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 2 , February 25 , 1976

Note- Energyline Acq. 2/22/77 #6.

642. GGIS-100123/ / / 8/M/**/ / /*****

Geopressured Geothermal Bibliography

Title- Summary and Conclusions

(Chapter 7 in Assessment of Geothermal Resources of the United States - 1975)

Author(s)- / White , D. E. / Williams , D. L. /

Publication date- 1975

Corporate Author- U.S. Geological Survey

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Geo brine / Geothermal resources /
Geothermal energy / Hot water /

Abstract by Energyline

The geopressured fluids of the Gulf Coast have a huge geothermal potential. Much of this resource is probably paramarginal under present conditions, but some part is probably recoverable now from areas where the environmental impact is low. The high temperature convection systems (greater than 150 degrees C.) of interest for the generation of electricity are predominantly in the western conterminous U. S., but some are in Alaska and Hawaii. The intermediate temperature convection system (90-100 degrees C.) have much potential for supplying geothermal energy for home and industrial heating, thereby releasing oil and gas for more critical use. The hot igneous magma systems and some areas of high regional temperature gradients provide relatively favorable areas for utilizing the heat of hot dry rock, provided that satisfactory methods of recovery can be developed. Disregarding cost, the total magnitude of geothermal resources that can be recovered by present and near-current technology is very large. The resource base and recoverability are examined. (4 tables)

643. GGIS-100007/0/ / 2/A/76/ /US/ /***** Dorfman

Title- Summary and Future Projections

(1. Volume)

Author(s)- / Deller , Richard W. / Dorfman , Myron H. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 2 , February 25 , 1976

Pagination- Page 85

Note- Energyline Acq. 2/22/77 #6.

Auxiliary expression(s)-

Illus.

/ Diagram (6) / Map (1) /

Ref.

Table

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Diagrams / Direct energy utilization /
Drilling / Economics / Environmental effects / Forecasting /
Geological setting / Geopressured systems / Geothermal energy /
Geothermal brines / Geothermal resources / Geothermal energy
research and development / Geothermal drilling / Geothermal
energy economics / Geothermal power plants / Geothermal wells /
Geothermal gradients / Gulf of Mexico / Legal aspects / Power
generation / Proceedings / Snaps / Tables / Temperature
measurement / Texas / Theoretical treatments /

Abstract by Energyline

Results of an ERDA-sponsored management and scope-of-work study to determine the feasibility of electric power generation through development of geopressured geothermal aquifers underlying the U.S. Gulf Coast are summarized. The study investigated: geological background; resource assessment; well design and reservoir research and technology; methods of resource utilization; and legal, institutional, and environmental factors in resource development. Drilling and completion technology are adequate for successful development of geopressured geothermal wells. Electricity generation is economically and energetically attractive if fluid temperatures, production rates, and methane content approach

Geopressured Geothermal Bibliography

those assumed in the study--325 degrees F. at well head, 40,000 BPD, and 40 CU. FT./BBL. Recommendations, a time schedule, and cost estimates for further research and technology development are included. (6 diagrams, 1 map, 11 references, 7 tables)

644. GGIS-100393/0/ /*****/A/80/ / /*****/ Hankins

Title- Summary of Flow Tests of Edna Delcambre No. 1:

Subtitle- 1. Summary of Water Analyses

Author(s)- / Chavanne , Raymond E. / Ham , Russell A. / Hankins ,
B.E. / Karkalits , O. Carroll / Palermo , Joseph I. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1327 , 20 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

• Sponsor- / Department of Energy, Washington, DC (USA) /9505475/. /

Corporate Author- McNeese State Univ. /9504854/.
Lake Charles , LA , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) /

Table

Ref.

Proposed Descriptor(s)- / Chemical analysis / Chemical composition / Dissolved gases / Edna Delcambre No. 1 Well / Fluid flow / Geopressured wells / Laboratory testing / Louisiana / Surface equipment / Vermilion Parish / Water analysis / Well testing /

Abstract by Author

DOE funded a proposal by McNeese State University in June 1975 to test a shut-in well that penetrated the geopressured zone. The McNeese team obtained samples of water from the well and determined the chemical composition of each. The amount of gas dissolved in the water was determined also. This paper focuses on the chemical analyses of the water. A companion paper by Dr. O. C. Karkalits presents data on the amount and composition of the gas. The Edna Delcambre et al. No. 1, located in Tigre Lagoon Field, East Vermilion Parish, Louisiana, was chosen as the test well. Two sands at approximately 12,700 feet were tested for about 20 days each. A summary of the test equipment available and the analyses performed on-site as well as the analyses performed at the McNeese laboratories is discussed. A comparison of laboratory and in-line pH determinations is made in order to show some of the problems involved in testing geopressured-geothermal water. Recommendations are made regarding the testing of future wells.

645. GGIS-100393/O/ /*****/A/80/ / / /***** Prestwood
ET-78-G-05-5959

Title- Summary of Industry-Government Conferences and Process Heat Market Survey

Subtitle- A. Summary of Four Industry-Government Conferences on Appropriate Geopressured-Geothermal Initiatives

Author(s)- / Frederick , David O. / Prestwood , Donna C.L. / Roberts , Kenneth D. / Vanston , John H., Jr. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1574 , 14 Pages

Available- Center for Energy Studies

Geopressured Geothermal Bibliography

University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$) 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

ET-78-G-05-5959 /

Corporate Author- Texas Univ. /9502459/.

Center for Energy Studies
Austin , USA

Proposed Descriptor(s)- / Commercialization / Energy policy /
Financial incentives / Geopressure resources / Industry /
Institutional aspects / Legislation / Meetings / Resource
development / Texas / Uses /

Abstract by Author

The successful development of the geopressured geothermal resource along the Texas Gulf Coast depends in part on the impacts and mix of incentives offered by governmental agencies; there exists a variety of opinions as to which incentives offer the most motivation to the private sector. This report presents the results of a series of four meetings held on September 5 and 6, 1978, in Houston, Texas, at which incentives were discussed by members of the research team, DOE representatives, and representatives from four categories of potential geopressured-geothermal developers. These categories were: electric utilities and architectural engineering firms, large industrial energy consumers, gas transmission and distribution companies, and energy production companies and financial institutions. All groups viewed geopressured-geothermal as an industry in its initial stages still requiring considerable research and development before it can become economically feasible. Therefore, they endorsed DOE's well-drilling program. They also agreed that current geothermal tax incentives due to expire either in 1982 or 1984 must be extended if they are to have any effect on commercialization. Other areas of concern developed by the participants included applications for geothermal heat and hot water, possible subsidence from deep-well withdrawal, possible aquifer contamination from reinjection, and the geophysical characteristics of geopressured-geothermal formations.

646. GGIS-100393/O/ /*****/A/80/ / / /***** Roberts
ET-78-G-05-5959

**Title- Summary of Industry-Government Conferences and Process
Heat Market Survey**

Subtitle- B. Texas Industrial Process Heat Market Potential for
Geopressured Brine

Author(s)- / Frederick , David O. / Prestwodd , Donna C.L. / Roberts
, Kenneth D. / Vanston , John H., Jr. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1588 , 14 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
ET-78-G-05-5959 /

Corporate Author- Texas Univ. /9502459/.
Center for Energy Studies
Austin , USA

Auxiliary expression(s)-

Illus.

/ Map (1) /

Geopressured Geothermal Bibliography

Table

Ref.

Proposed Descriptor(s)- / Commercialization / Direct energy
utilization / Financial incentives / Geopressure resources /
Geothermal brines / Industrial heating / Industry /
Institutional aspects / Market / Methane / Process heat / Texas /

Abstract by Author

The Technology Forecasting and Assessment Division of the Center for Energy Studies at The University of Texas at Austin has for the past year studies the institutional structures and initiatives which must evolve in order to support an accelerated commercialization program for the geothermal resource underlying the Texas Gulf Coast region. As part of this study a market survey of 267 low-grade process heat users was conducted along the 30-county coastal area to define the potential market for thermal or combined thermal-methane components of the resource. The principal findings were; (1) methane is the major fuel of all industry groups, though some substitution of other fuels is anticipated; (2) low anticipated capital replacements and the existence of unused low-grade heat limit the potential market; (3) fuel costs and reliability of supply are primary considerations in purchase of process-heat equipment; (4) geothermal companies, oil companies, and utilities are all acceptable geothermal suppliers, while government agencies are not; and (5) successful commercial application, followed by reservoir insurance, will stimulate participation more than any other government incentives.

647. GGIS-100374/0/ /*****/A/79/B/US/ /***** Lessor

Title- Summary of Recent FLOSCAL/EQUILIB Simulations of Scaling and Corrosion in Geothermal Systems

(3. Session: EPRI Progress Reports)

Author(s)- / Cheatham , R. L. / Kreid , D. K. / Lessor , D. L. /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 15 , 7 Pages

Report/patent- EPRI-WS-79-166

Local Availability- CES

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Auxiliary expression(s)-

Illus.

/ Graph (4) / Diagram (1) /

Table

Ref.

Proposed Descriptor(s)- / Case histories / Chemical composition /
Computer codes / Corrosion / Geothermal brines / Geothermal
power plants / Scaling / Testing /

Abstract by Author

A research program is currently in progress wherein the family of geothermal scaling codes (EQUILIB, FLOSCAL, PLANT, GEOSCALE) is being applied to simulate scaling and corrosion in actual geothermal facilities. FLOSCAL/EQUILIB simulations will be performed for all selected cases using prototypic brine data and flow/process specifications. Simulations of power plant performance degradation due to the effects of scale and corrosion will also be performed for some of the cases using the entire family of codes. The objective of this paper is to summarize the results of simulations completed or in progress. Case evaluations planned for review include results of simulations of the Heber 2000 hr heat exchange tests, simulation of flashing well tests, and preliminary plans for simulations of the PSEMT. A brief discussion is also provided for other cases that have tentatively been identified for evaluation.

648. GGIS-100332/R/ /*****/M/76/ /US/ /***** Baker

Title- Summary Appraisals of the Nation's Ground-Water Resources--

Geopressured Geothermal Bibliography

Subtitle- Texas-Gulf Coast Region

Author(s)- / Baker , E.T. / Wall , J.R. /

Publication date- 1976

Pagination- 30 Pages

Auxiliary expression(s)-

Illus.

/ Graph (3) / Map (2) /

Proposed Descriptor(s)- / Aquifers / Artificial recharge / Dissolved solids / Geopressured reservoirs / Ground subsidence / Ground water / Gulf Coast / Injection wells / Texas / Water resources / Water table /

Abstract by Enviroline

Groundwater in the Texas Gulf region is a large and important resource that can provide a more significant percentage of the area's total water supply. Total water requirements within the region are expected to rise sharply from 14 million acre-FT. (17 CU. KM.) in 1970 to nearly 26 million acre-FT. (32 CU. KM.) in 2020. About half of the water used in 1970 was groundwater. Information on the importance of subsurface reservoirs in water development and conservation plans in the Texas Gulf region is provided. The advantage of considering the ground and surface water subsystems as closely related and equal parts of the entire water supply system is stressed. The potential for obtaining electrical energy and freshwater from geopressured reservoirs and constraints on the development of groundwater resources, including water rights and technological obstacles, are examined.

649. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Summation and Future Projections

(Panel Discussion)

Author(s)- / Bel , Clyde F., JR / Bernea , Joseph / Lombard , David / Repper , Fred C. / Suter , Hans / Woodson , Herbert H. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 335 , 28 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Proposed Descriptor(s)- / Geo brine / Geothermal energy / Geothermal energy research and development / U.S. Energy Research and Development Administration /

Abstract by Energyline

A summation of issues discussed at a conference on the development of thermal energy from geopressured zones, including future projections is presented. Speakers included Joseph Barnea, U. N. Inst. for Training and Research; Louisiana State Rep. Clyde F. Bel, JR.; David Lombard, ERDA; Fred C. Repper, Central Power and Light Co.; Hans Suter, Environmental Consultant; and Herbert H. Woodson, Univ. of Texas.

650. GGIS-100168/J/ /*****A/**/ /US/ /*****

Title- Superpressured, Superhot and Bubbling with Gas

Geopressured Geothermal Bibliography

(Gulf Coast Geopressured, Geothermal Formations Hold
Three-in-One Energy Source)

Publisher- Houston Chamber of Commerce
Houston, Texas

Journal- Houston

Publication date- Vol. 49 , Issue 4 , May 1978

Pagination- Page 14 , 6 Pages

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Map (1) / Photo (1) /

Proposed Descriptor(s)- / Brazoria County / Corrosion / Economics /
Environmental effects / Forecasting / Geopressure resources /
Gulf Coast / Methane / Offshore sites / Ownership / Research
programs / Resource assessment / Resource development /

Abstract by GGIS

Beneath the Gulf Coast lies what may be an important new source of energy; methane gas dissolved in very hot salt water under very high pressure. Whether this resource can be used in the near future depends upon the success of current research. The U.S. DOE is funding studies to locate likely onshore geopressured geothermal zones and learn how to exploit them. The world's first well drilled specifically for geopressured methane will be located in Brazoria County, Texas. Existing wells in potentially geopressured areas are being tested to obtain reservoir production data necessary to access the energy potential of dissolved gas and heat within Gulf Coast aquifers. Commercialization, ownership, environmental concerns, corrosion problems, and economic factors in geopressure development are also discussed.

651. GGIS-100176/O/ /*****/A/**/ /US/ / 30200

Title- Supply of Natural Gas From Geopressured Zones

Subtitle- Engineering and Costs

Author(s)- / Dorfman , M. H. /

Conference- Unitar Conference on Energy and the Future
Laxenburg, Austria (July 5 , 1976)

Publisher- Pergamon Press, Inc.
Elmsford, N. Y.

Publication date- 1977

Pagination- Page 873 , 16 Pages

Report/patent- CONF--760763

Auxiliary expression(s)-

Ref.

Categories-

Natural Gas

(Geology and Exploration)

Energy Management and Policy

(Fossil Fuels)

Fossil Fuels

(Natural Gas)

Proposed Descriptor(s)- / Cenozoic Era / Coastal regions / Cost /
Economics / Engineering / Exploitation / Geological setting /
Geology / Geological surveys / Geopressured zones / Geopressured
systems / Gulf Coast / Gulf of Mexico / Hydrology / Methane /
Natural gas / Natural gas deposits / Power generation /
Technology assessment / USA /

Abstract by DOE/RECON

Research on deposits of methane (swamp gas, shale gas, gas occluded in coal, and other unusual occurrences) has been initiated, particularly sources contained in solution in waters of geopressured zones of the U. S. Gulf Coast Basin. A major research effort has been underway for 3 years to evaluate the

Geopressured Geothermal Bibliography

geologic and hydrologic regimes of this basin and the utilization technology for production of electricity and concomitant extraction of methane. This analysis, although confined to the U. S. Gulf Coast Basin, may serve as a model for similar basins known to exist worldwide, wherever predominantly clastic sediments have been rapidly deposited in Cenozoic time.

652. GGIS-100163/4/ /*****/A/**/ /US/ /*****

Title- Surface Disposal System for Geothermal fluids

Author(s)- / Rios-Castellon , Lorenzo Alberto /

Publication date- December 1976

Pagination- 176 Pages

Corporate Author- Texas University, Austin /6203000/.
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Diagram (16) / Graph (14) / Map (5) /

Ref.

Table

Proposed Descriptor(s)- / Cooling ponds / Environmental effects /
Flashed steam systems / Fluid flow / Geopressure power plants /
Geothermal brines / Gulf Coast / Gulf of Mexico / Heat flow /
Heat transfer / Numerical solution / Pipelines / Surface
disposal / Texas / Thermal diffusion / Working fluids /

Abstract by Author

This report presents information about the surface disposal of geothermal effluent brines, especially about the disposal of geothermal effluent from the potential geopressured geothermal energy utilization facilities along the Texas Gulf Coast on the Gulf of Mexico. An effort has been made to cover the subject thoroughly, including the environmental description of the area involved -- the Texas Gulf Coast and Gulf of Mexico -- and the physical description of a potential surface disposal system. The descriptions and technical calculations contained in the

report are presented as guides for the preliminary conceptual design of a geothermal waste surface disposal system that could be used in the Texas Gulf Coast geopressured geothermal energy development project.

653. GGIS-100393/O/ /*****/A/80/B/US/ /***** Stevens

Title- Surface Facilities for Resource Evaluation Studies at Pleasant Bayou Test Well Site

Author(s)- / Lamb , J. Parker / Stevens , John E. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Pagination- Page 835 , 8 Pages-

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (1) /

Proposed Descriptor(s)- / Disposal wells / Geopressured wells / Geothermal power plants / Pleasant Bayou No. 1 Well / Pleasant Bayou No. 2 Well / Production testing / Resource assessment / Surface equipment / Test facilities / Texas /

Abstract by Author

First stage construction of surface facilities will include only a relatively small amount of equipment, primarily a wellhead

Geopressured Geothermal Bibliography

choke and high-pressure gas separator. Brine pressure will be maintained at 1,000 psia downstream of the separator so that no additional pumping will be required for reinjection (into Pleasant Bayou No. 1. well). Extensive instrumentation will be installed to determine pressures, temperatures, gas content, water chemistry, and corrosion characteristics. After analysis of data from the initial production tests, a decision will be made on specific facilities required for the long-term test program. It is anticipated, for example, that an additional gas separator (low pressure) will be installed along with fan-type brine coolers and a system of tanks for water clarification. Also required will be a battery of high pressure pumps for reinjecting the spent brine and a gas processing unit for delivering pipeline quality methane.

654. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- Surface Technology and Resource Utilization

(4. Session)

Author(s)- / Underhill , Gary K. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 231 , 73 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$) 10.50)

(Microform (\$) 2.25)

655. GGIS-100258/O/ /*****/M/**/ /US/ /*****

Title- SPWLA 16. Annual Meeting Logging Symposium

Conference- SPWLA Annual Logging Symposium
New Orleans
Louisiana
USA (June 4 , 1975)

Publication date- Vol. 16 , 1975

656. GGIS-100054/J/LGALA/*****/A/77/ /US/ /***** Banthia

Title- Technical note-

Subtitle- Some Practical Aspects of Log Interpretation of
Gas-bearing Formations

Author(s)- / Banthia , B.S. /

Publication date- Vol. 18 , Issue 2 , March 1977

Pagination- Page 39 , 3 Pages

Corporate Author- Terra Mar Consult.
Dallas , Texas , USA

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Density / Gamma ray logging / Geopressured
zones / Induction logging / Neutron logging / Porosity /
Resistivity surveys / Shale / Sonic logging / Water saturation /

Abstract by Compendex

Geopressured Geothermal Bibliography

Due to geopressured mechanism along with shaliness, resistivity is reduced but the apparent porosity as indicated from the acoustic and neutron logs is increased. As a result of these self-compensating factors, the log analysis based on acoustic, neutron, gamma-ray and induction logs shows reliable water saturations but somewhat higher porosities. The density-induction log combination, on the other hand, gives realistic porosities but somewhat higher water saturations.

657. GGIS-100004/0/ /*****/A/**/ / / /*****

**Title- Technical Assessment of the Impact of Geopressure Development
in the Corpus Christi Area of Texas**

Author(s)- / Freeland , Thomas F. / Haynes , Kingsley E. / Kleeman ,
W. Tom /

Conference- Development and Use of Geothermal Resources

Publication date- Vol. 2 , Issue 1 , May 29 , 1975

Pagination- Page 2389 , 13 Pages

Available- Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.
20402
USA

(Stock number 060-000-00005-1)

Local Availability- CES

Proposed Descriptor(s)- / Capital / Cost / Depths / Diagrams /
Economics / Environmental effects / Forecasting / Geopressured
systems / Land use / Maps / Power generation / Statistical
analysis / Tables / Texas / Theoretical treatments / Well head
temperatures / Well head pressure /

658. GGIS-100240/J/ /*****/A/77/B/ / /***** Austin

Title- Technical Overview of Geothermal Resources

Author(s)- / Austin , Carl F. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 9 , 16 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (8) /

Ref.

Proposed Descriptor(s)- / Exploitation / Geologic processes /
Geothermal resources /

Abstract by EIC

Geological processes that provide heat and accumulate it within the crust of the earth into a localized concentrated deposit are described. Key variables that determine the exploitability of a given geothermal occurrence are discussed. While the problems of finding and producing geothermal energy should not be glossed over, the opportunities are tremendous.

659. GGIS-100025/ /ASMSA/ 7537/A/**/ / / /*****

**Title- Techniques for Gravel Packing Abnormally Pressured
Unconsolidated Reservoirs**

Author(s)- / Szescila , A. J. /

Publisher- ASME

Journal- American Society of Mechanical Engineers (Papers)

Publication date- 1975

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Bottom hole pressure / Flow / Oil well
production / Oil wells / Petroleum reservoir engineering /
Slurry packing /

Abstract by NTIS

Recent improvements in down hole completion tools and fluids, along with improvements in gravel packing methods have made it possible to pack off and subsequently produce unmanageable geopressured zones. The techniques are field proven for both upper and lower zone packs and are compatible with any currently used carrying agent or workover fluid. The basic tool alignment would only require minor modifications of the conventional crossover tool assembly. The entire system has successfully functioned in fluids weighing 17.8 PPG.

660. GGIS-100004/0/ /*****/A/75/ / / /***** Maslan

**Title- Technology Forecast in United States Geothermal Energy
Resource Development**

Author(s)- / Gordon , Theodore J. / Maslan , Frank / Stover , John /

Conference- Development and Use of Geothermal Resources

Publication date- Vol. 2 , Issue 1 , May 29 , 1975

Pagination- Page 2409 , 11 Pages

Available- Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.
20402
USA

(Stock number 060-000-00005-1)

Local Availability- CES

Corporate Author- The Futures Group
124 Hebron Avenue , Glastonbury , Connecticut , 06033 , USA

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Cost / Diagrams / Economics / Energy reserves / Forecasting / Geopressed systems / Hot dry rock systems / Hot water systems / Power generation / Statistical model / Tables / United States / Vapor dominated systems /

661. GGIS-100004/0/ /*****/A/**/ / / *****/

Title- Tectonic and Hydrologic Control of the Nature and Distribution of Geothermal Resources

Author(s)- / Muffler , L. J. R. /

Conference- Development and Use of Geothermal Resources

Publication date- Vol. 2 , Issue 1 , May 29 , 1975

Pagination- Page 499 , 9 Pages

Available- Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.
20402
USA

(Stock number 060-000-00005-1)

Local Availability- CES

Proposed Descriptor(s)- / Control / Crust / Distribution / Effects / Geopressure / Geothermal energy / Global / Heat flow / Hydrologic controls / Hydrologic properties / Plate tectonics / Reservoir rocks / Resources / Structural controls / Structure / Thermodynamic properties /

662. GGIS-100039/R/GAAPB/ 802/A/**/ / / *****/

Geopressured Geothermal Bibliography

Title- Temperature and Pressure of Cenozoic Petroleum Reservoirs in Louisiana

Author(s)- / Thompson , K. F. M. /

Publisher- Geological Society of America

Publication date- Vol. 8 , Issue 1 , 1976

Pagination- Page 68

Proposed Descriptor(s)- / Cenozoic Era / Continental Shelf / Economic geology / Geopressure / Gulf Coast / Louisiana / Natural gas / Oil and gas fields / Petroleum / Reservoir rocks / Sedimentary rocks / South / Temperature / United States /

663. GGIS-100004/0/ /*****/A/**/ / / *****/

Title- Temperature Pressure Relations in Shallow Parts of Thermal Areas of Yellowstone National Park, Wyoming

Author(s)- / Fournier , R. O. / Muffler , L. J. P. / Truesdell , A. H. / White , D. E. /

Conference- Development and Use of Geothermal Resources

Publication date- 1975

Proposed Descriptor(s)- / Aquifers / Drilling / Economic geology / Exploration / Flow / Geopressure / Geothermal energy / Ground water / Permeability / Porosity / Pressure buildup / Relation / Self-sealing / Temperature / United States / Wyoming / Yellowstone National Park /

664. GGIS-100895/ / /*****/A/**/ / / /150101

Title- Test Site for Geopressured Geothermal Well

Subtitle- Frio Sandstone, Texas Gulf Coast

Author(s)- / Bebout , D.G. / Gregory , A.R. / Loucks , R.G. /

Conference- AAPG--Sepm Annual Convention
Washington
DC
USA (June 12 , 1977)

Publication date- Vol. 61 , Issue 5 , May 1977

Pagination- Page 765

Categories-

Geothermal Energy

(Resources and Availability)

(USA)

Proposed Descriptor(s)- / Austin bayou / Brazoria county / Frio
Formation / Galveston county / Geopressured reservoirs /
Geopressured systems / Geopressured wells / Geothermal
exploration / Gulf coast / Permeability / Sand / Site selection /
Temperature measurement / Texas /

u

Abstract by DOE/Recon

A geopressured geothermal reservoir should have a sand volume of 3 CU MI (4.8 CU KM), 50 SQ MI (130 SQ KM) in area and 300 FT (90 M) thick, subsurface fluid temperature of 300/ sup O/F (150/sup O/C), and permeability of at least 20 MD. Data available suggest that the water will be saturated with methane. Regional and detailed studies of the Frio formation along the Texas Gulf Coast were completed to develop such a prospect. In Hidalgo, Kenedy, Nueces, Matagorda, Brazoria, and Galveston Counties, several large fairways were identified which have sufficient sand thickness and fluid temperatures to be prospective. However, optimum permeability in sand bodies deeper than 12,000 FT (3,600 M) is present in the quartz-rich sands of the Brazoria-Galveston County fairway. For this reason, more detailed work has centered on this area, and the Austin Bayou prospect was identified. The Austin Bayou prospect has maximum dimensions of 10 by 25 MI (16 by 40 KM) but, sands cumulate to 1,200 FT (360 M) and temperatures are as high as 320/SUP O/F (160/SUP O/C). The Austin Bayou prospect meets all of the geologic requirements for a geopressured geothermal reservoir. Barring environmental and legal problems, it is anticipated that a test well will be drilled in this area to evaluate further this potential alternate source of energy.

Geopressured Geothermal Bibliography

665. GGIS-100089/B/ /*****/M/**/ /US/ /*****
E-(40-1)-5243

Title- Testing and Sampling Procedures for Geothermal-Geopressured Wells

(Final Report: 1. Task of 1. Part "Special Projects Reserach for Petroleum Engineering Aspects of Ge othermal Research")

Author(s)- / Boyd , W. E. / Dorfman , M. H. / Podio , A. L. /

Publisher- University of Texas at Austin, Center for Energy Studies

Pagination- 152 Pages

Available- Center for Energy Studies
Center for Energy Studies
Engineering Science Bldg. 143
The University of Texas at Austin
Austin, Texas 78712

Sponsor- / ERDA

E-(40-1)-5243 /

Corporate Author- Texas Univ.

Center for Energy Studies
Austin , Texas , USA

Auxiliary expression(s)-

Illus.

/ Figure (54) /

Abstract by Author

Test wells to tap and sample geothermal-geopressured formations at 15,000-20,000 feet in the Gulf Coast area can be drilled routinely utilizing available equipment and methods. Electrical logs, surveys and fluid samplers can be used to obtain accurate and reliable information as to depths, temperatures, pressures, and fluid content of the geopressured formations before the well is completed. But it will be necessary to set casing and flow the well, at least temporarily to secure fluid production volume and pressure data to evaluate the producibility of the geopressured resource. Electric

logging and wireline survey methods are fully developed techniques for measuring the parameters needed to assess a geopressured zone before setting casing. Formation subsidence, though it may be slow to develop can be measured using radioactivity tracer surveys.

666. GGIS-100998/ / /*****/A/79/ /US/ /***** Bebout

Title- Testing Geopressured Geothermal Resource, Frio Formation, Texas Gulf Coast

Author(s)- / Bebout , D.G. / Gregory , A.R. / Loucks , R.G. /

Conference- Gulf Coast Asso. of Geological Societies 29th Annual Meeting
San Antonio
Texas
USA (October 10 , 1979)

Publication date- Vol. 63 , Issue 9 , 1979

Pagination- Page 1595 , 1 Pages

Note- Abstract only of a paper presented at the 29th annual meeting of the Gulf Coast Association of Geological Societies and the Gulf Coast Section, Society of Economic Paleontologists and Mineralogists San Antonio, Texas, October 10-12, 1979

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin , Texas , USA

Proposed Descriptor(s)- / Austin Bayou Prospect / Brazoria County / Elevated temperature / Frio formation / Geopressure drilling / Geopressured reservoirs / Geopressured wells / Gulf Coast / Methane / Permeability / Reservoir pressure / Salinity / Sandstone / Testing / Texas / Volume /

Abstract by GGIS

Drilling of the first well designed to test the geopressured geothermal resource for a sustained period of time was initiated in July 1978. Regional and site-specific geologic and engineering studies supportive of this site were conducted by the University of Texas Bureau of Economic Geology and

Geopressured Geothermal Bibliography

Department of Petroleum Engineering/Center for Energy Studies with funds from the U.S. Department of Energy. The area sought during these studies needed reservoir volume of 3 CU MI (12.5 CU KM), minimum permeability of 20 MD, and fluid temperatures of 300 DEG F (149 DEG C). The Brazoria fairway, Brazoria and Galveston Counties, Texas, best met these specifications and the Austin Bayou Geothermal Prospect was developed in this fairway. Funds for drilling the Nos. 1 and 2 Pleasant Bayou geothermal test wells in the Austin Bayou Prospect were provided by DOE; the operator of the wells is General Crude Oil Co. The geopressured sandstone reservoirs are in the lower part of the Frio Formation between the depths of 14,000 and 17,000 FT (4,200 and 5,100 M). The sandstone units are at the top of at least seven progradational deltaic cycles; cumulative thickness of all permeable sandstone units is 250 to 300 FT (75 to 90 M). Each deltaic cycle is composed of a gradational vertical succession characterized by low-permeability prodelta and distal delta-front sandstone and shale at the base grading to permeable distributary-mouth-bar and delta-plain sandstone and shale at the top. Fluid will be produced from the 2 Pleasant Bayou well, stripped of methane and heat, then injected into Miocene sandstones at 6,000 to 7,000 FT (1,800 to 2,100 M) depth in the nearby 1 Pleasant Bayou disposal well. The produced water is expected to have salinities ranging from 50,000 to 80,000 PPM, temperature from 300 to 350 DEG F (149 to 177 DEG C), pressure from 10,000 to 15,000 PSI (68,950 to 103,425 kPa) and 40 CU FT (1.2 CU M) of methane per barrel. The 2-year test period will evaluate the feasibility of long-term production of large quantities of water (ultimately 40,000 BBL/day) from geopressured reservoirs.

667. GGIS-100058/J/OIGJA/*****/A/**/ / / *****/

Title- Tests Set for Texas Geopressured Well

Publication date- Vol. 77 , Issue 37 , September 10 , 1979

Pagination- Page 113 , 1 Pages

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Photo. (1) /

Proposed Descriptor(s)- / Brazoria County / Geopressured wells /
Surface equipment / Texas / Wellheads /

Abstract by GGIS

Two years of tests by the Department of Energy will measure the extent and energy potential of the Pleasant Bayou 2 geopressured-geothermal well in Brazoria County, Texas. To test the feasibility of producing methane and hot water from geopressured brine deposits along the Gulf of Mexico coast, gas is to be removed from the brine by pressure reduction, then reinjected into shallower deposits through one or more injection wells.

668. GGIS-100226/R/ /*****/M/**/ /US/ /292000

Title- Texas Energy

Subtitle- Flows, Forecasts, and Policy Implications

Pagination- 53 Pages

Report/patent- NP-22996

Available- University of Houston
Houston
Texas
USA

Corporate Author- Houston University /9506570/.

Energy Institute
Houston , Texas , USA

Categories-

Energy Management and Policy
(Supply, Demand, and Forecasting)

Proposed Descriptor(s)- / Energy demand / Energy supply / Forecasting
/ Petroleum / Petroleum industry / Texas /

Abstract by TIC

This report is essentially on Texas energy supply and demand. It contains surveys of the historical and forecasted energy flows which show the complexity and magnitude of the energy

Geopressured Geothermal Bibliography

problems that Texas must solve. The various sources of energy--oil, gas, coal, hydroelectric, and electrical-- are shown in multicolored fold-outs as historic flows for 1960 and 1970, and as projected flows for 1980, 1985, and a variation for 1985 assuming some significant increase in the use of Texas lignite. The five flow charts give the trends in supply and demand, the form of energy used, any conversion in use, the end use, and the amount of energy lost in the processes. The role of Texas as both a producer and consumer of energy is summarized. Texas oilmen drill more than 25 percent of the wells in the U. S. and produce about one-third of the oil and gas in the U. S. Texas has about 27 percent of the nation's refining capacity, and that percentage will probably increase in the next few years. Presently, more than one out of every four gallons of U.S. major oil products is made in Texas refineries. An overwhelming proportion of the nation's petrochemical industry is Texas-based: 36 percent of the carbon black, 54 percent of the propylene, 67 percent of the methanol, and 87 percent of the butadiene capacities. A large number of important industries have been drawn to Texas because of the availability of petroleum by-products for fuel and feedstocks. Energy industries--not transportation, as in most other states--account for the largest single block of energy demand. (MCW)

669. GGIS-100255/R/ /*****/M/**/ /US/ /292000

Title- Texas Energy Outlook

Subtitle- The Next Quarter Century

Publication date- 1977

Pagination- 174 Pages

Report/patent- NP--22777

Available- Texas Governor's Energy Advisory Council
Austin
TX

Corporate Author- Texas Governor's Energy Advisory Council /9502446/.
Austin , Texas , USA

Categories-

Energy Management and Policy

(Supply, Demand, and Forecasting)

Proposed Descriptor(s)- / Air quality / Charges / Economics / Energy conservation / Energy policy / Energy sources / Forecasting / Government policies / Market / Natural gas / Prices / Regulations / Taxes / Texas /

Abstract by TIC

This report summarizes the first year's work of the Governor's Energy Advisory Council of Texas. Following an executive summary and an introductory chapter, Chapter 2 examines Texas energy futures, specifically forecasting alternative sources. Chapter 3 investigates alternative energy programs in three scenarios: business as usual, maximum government control, and free market. Chapter 4 includes individual policy impacts, specifically: natural gas and crude oil pricing; boiler fuel restrictions; strip-mining regulation; nuclear power restrictions; air quality standards; utility rate structures; strategic reserves of crude oil; government conservation programs; and tax structures. Following the summary chapter, additional information is given in the appendices. (MCW)

670. GGIS-100209/B/ /*****/M/**/ /US/ /290000

Title- Texas Energy Report, Number 25

Publisher- Governor's Energy Advisory Council
Austin, TX

Publication date- 1977

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

(Fossil Fuels)

(Policy, Legislation, and Regulation)

(Nuclear Energy)

(Conservation)

Unconventional Sources and Power Generation

Geopressured Geothermal Bibliography

(Geothermal)

Fossil Fuels

(Coal)

(Petroleum)

Geothermal Energy

(Geology, Hydrology, and Geothermal Systems)

Geology, Hydrology, and Geothermal Systems

(USA)

Proposed Descriptor(s)- / Air pollution / Alaska / Capital / Coal / Continental Shelf / Energy conservation / Energy policy / Energy sources / Environmental impacts / Exploration / Geological surveys / Geopressured systems / Geothermal energy / Lignite / Noise / Petroleum / Recovery processes / Reviews / Statistics / Technology assessment / Texas / Tools / Transportation Systems / Uranium /

Abstract by DOE/RECON

Geothermal energy development and utilization is discussed in general with emphasis on its capability in Texas. Transporting Alaskan crude from the point of drilling to the lower 48 is followed and the plans of Sohio to send some of the oil from California to Texas for nationwide distribution via existing pipelines owned by Southern California Gas Company and El Paso Natural Gas Company are told. An article, Coal as a Feedstock, discusses Texas' plans for future use of coal and lignite. Some new tools for uranium exploration have been tested in Texas to directly measure uranium ore grade, thus contributing to more rapid and less expensive uranium ore discovery and production. This new tool transmits lithologic and radiometric data to surface recording equipment. A new purchasing program called the experimental technology incentives program is expected to save Texas thousands of dollars in yearly operating costs and some data on state purchases are cited. An energetic energy conservation program implemented by San Antonio's transportation systems management element is reviewed. Its intent is to reduce the amount of fuel consumed by local citizens, thus improving the city's economy. The reserves of oil estimated in the U. S. OCS and legislation pertaining to this resource are summarized. Legislation and revenues dealing with OCS reserves lying off the coast of Texas are discussed. Recent information published in the Energy Policy Monitor on energy sources and much related data are briefly abstracted. (MCW)

671. GGIS-100166/4/ /*****/M/**/ /US/ /*****

Title- Texas Energy Resources

Subtitle- Final Draft

Publisher- National Science Foundation
Washington, D. C.

Publication date- July 1974

Pagination- 31 Pages

Report/patent- NSF-RA-N-74-223

Corporate Author- Governor's Energy Advisory Council
Austin , Texas , USA

Proposed Descriptor(s)- / Energy reserves / Energy sources /
Geopressure resources / Geothermal resources / Gulf Coast /
Natural gas / Rio Grande Rift / Texas / Trans-Pecos hot rocks /

Abstract by Geothermal Energy Update

A summary of the energy resources including lignite, coal, geothermal energy, uranium ores, and petroleum and the potentiality of solar, solid waste, and wind energy is presented. It is indicated that Texas has about 146 billion barrels of oil-in-place. As of January 1, 1973, Texas had 94.9 trillion CU FT remaining reserve of natural gas that is being used faster than new finds are made. It is estimated that Texas has over 6 billion tons of bituminous coal resources and that there are about 20 billion tons of lignite within surface minable depths and over 100 billion tons of deep basin lignite resources. Three areas for potential geothermal resources are the Rio Grande Rift System, the Trans-Pecos hot rocks, and the Gulf Coast geothermal sands. The solid waste generation rates for agricultural and municipal-industrial sources are estimated. Generation of electrical energy from wind is of great potential in the Texas Panhandle. Texas qualifies as a potential area for the utilization of solar energy according to the isopeths of mean daily direct solar radiation. Texas has significant quantities of uranium, and more than six nuclear power plants are in the planning stage for the state. (MCW)

672. GGIS-100058/J/OIGJA/*****/A/77/B/ / /***** Bebout

Geopressured Geothermal Bibliography

Title- Texas Geothermal Prospect Slated to Begin Operations at Martin Ranch

Author(s)- / Bebout , D.G. / Gregory , A.R. /

Publication date- Vol. 75 , Issue 41 , October 3 , 1977

Pagination- Page 184

Proposed Descriptor(s)- / Geopressure resources / Geopressured wells / Potential energy / Test wells / Texas /

Abstract by EIC

In the Texas Austin Bayou prospect, the Anomalina bilateralis zone is composed of depositional events that consist of prodelta shale at the base, delta-front shale and sand in the middle, and delta-plain sandstone and shale at the top. Geological analysis indicates a proposed test well in the Austin Bayou prospect will drain many sandstone reservoirs in an area of approximately four sq miles. The potential electrical energy of deep (16,000 ft) geopressured geothermal reservoirs at 100 DEG F is estimated to be 49.1×10^{11} Mw yr/lb of reservoir water in place. Based on this estimate, the total electrical energy potential of water contained by reservoirs in the Austin Bayou prospect is 1733 Mw years. Recovery factors depend on variables such as reservoir driving forces, shale water influx, and rock and fluid compressibilities.

673. GGIS-100354/J/BGRCD/*****/A/**/ / / *****/

Title- Texas Geothermal/Geopressure Drilling Program Continuing in Brazoria County

Journal- Bull., Geotherm. Resour. Counc. (Davis, Calif.)

Publication date- Vol. 8 , Issue 4 , April 1979

Pagination- Page 2 , 2 Pages

Proposed Descriptor(s)- / Brazoria County / Geopressure drilling / Research programs / Texas /

Abstract by Document

General Crude, Houston, is drilling below 8500 feet at 2 Pleasant Bayou, located on a 320-acre lease in Perry & Austin Survey 2, Brazoria County, Texas. The scheduled 16,500 foot test is the company's second in a Department of Energy-sponsored Texas geothermal/geopressure program. The Texas project, according to DOE, will be ongoing with four to five wells drilled annually. The first wells in the program will be drilled in potential geopressure areas, while later wells will explore other thermal areas.

674. GGIS-100042/J/GTEMA/*****/A/78/B/ / /***** McNamara

Title- The "Effective Tax Rates" of Extractive Industries and the Case for a Geothermal Resource Tax Incentive

Author(s)- / McNamara , Jack /

Publication date- Vol. 6 , Issue 6 , June 1978

Pagination- Page 11 , 8 Pages

Auxiliary expression(s)-

Ref.

Table

Proposed Descriptor(s)- / California / Depletion allowance / Economics / Environmental policy / Geopressure resources / Geothermal development / Geothermal industry / Geysers geothermal field / Hot dry rock systems / Hot water systems / Land use / Payout / Profits / Taxes /

Abstract by Energy Info. Abstracts

A case is made for establishing a geothermal resource tax incentive. Congressional legislation extending tax breaks for intangible costs to all types of geothermal resources has been passed. However, opposition to some geothermal tax incentives is growing because of possible tax windfalls for rich investors. The geothermal industry feels that if investors were forced to pay minimal taxes on intangibles, development would suffer. Reported tax payments and profit margins of oil and gas producers are used as a model to illustrate the effects on geothermal developers of an intangibles tax and a percentage depletion deduction allowance. Two assumptions underlying the anti-tax arguments are; that the percentage depletion deduction actually lowers the effective tax rate of resource companies, giving them

Geopressured Geothermal Bibliography

artificially higher after-tax rates of return; and that without a federal tax, rates of return are equal among extractive industries. Using the model based on oil and gas experiences, these assumptions are nullified.

675. GGIS-100393/O/ /*****/A/80/ / / *****/ McCoy

Title- The Analyses of Test Results from the Fairfax Foster Sutter No. 2 Well

Author(s)- / Hartsock , James H. / McCoy , R. Lynn /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1200 , 25 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Corporate Author- Gruy Federal, Inc. /9508533/.
Houston , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (3) / Map (1) / Figure (2) /

Table

Proposed Descriptor(s)- / Abandoned wells / Aquifer tests / Chemical analysis / Data analysis / Dissolved gases / Exploratory wells / Fairfax Foster Sutter No. 2 Well / Fluid properties / Geopressured reservoirs / Louisiana / Moderate temperature /

Pressure gradients / Reservoir properties / Resource assessment
 / Salinity / Sand / St. Mary Parish / Surface equipment / Test
 facilities / Testing / Wells of opportunity /

Abstract by Author

The Fairfax Foster Sutter No. 2 Well, located in the East Franklin area of St. Mary Parish, Louisiana, is the first successful test of a geopressured-geothermal aquifer under the Well-of-Opportunity program. Gruy Federal assumed operations on March 8, 1979, when the operator, Neuhooff Oil and Gas Company, abandoned the well as a dry hole at a total depth of 16,340 feet. Agreements with the operator, landowner, and drilling contractor were executed, and the necessary permit applications were filled with the Louisiana Department of Conservation. The section tested was the MA-6 sand of lower Miocene age which has produced large quantities of gas from the adjacent but structurally separated Garden City Field. In Garden City this sand is characterized by pressure gradients of up to 0.94 psi/ft. and reservoir temperatures in the 290 DEG F (143 DEG C) range. In the subject well the observed temperature was 270 DEG F (132 DEG C) and the measured pressure gradient was 0.77 psi/ft. The net sand thickness of the tested interval was 58 ft. with an effective porosity of 19 percent. The temperature and pressure encountered were on the threshold of the limitations of the surface-recording bottomhole pressure gauge and particularly the single-conductor cables on which the gauges were run. Several gauge failures were experienced initially, probably caused by wireline malfunctions. However, these difficulties were overcome and important transient pressure data were recorded. The objectives of the tests were all accomplished, and data were obtained which will contribute to the overall assessment of the geopressured-geothermal resource of the Upper Gulf of Mexico basin. In general, the gas solubility (22.8 scf/bbl) was as expected for the temperature, pressure, and salinity of the brine. The produced water was more saline than expected (160,000 mg/l). The high concentration of dissolved solids in these waters creates a problem that will have to be addressed in future tests. The results of the analyses of the production data, along with the geological and petrophysical implications, are presented.

 676. GGIS-100001/J/APGAB/ 2/A/**/ /US/ /*****

Title- The Application of Trend Surface Analysis to Geothermal and Geopressure Data on Petroleum Exploration

Author(s)- / Miller , Betty M. /

Conference- Soc. Econ. Paleontol. Mineral. Annu. Mtg.

Geopressured Geothermal Bibliography

Publisher- Am. Assoc. Petr. Geol.

Publication date- 1975

Pagination- Page 51

Proposed Descriptor(s)- / Economic geology / Geopressure / Geothermal
gradient / Lower Tertiary / Petroleum / Stratigraphic traps /
Tertiary / Trend surface analysis / Uinta Basin / United States /
Utah /

677. GGIS-100267/B/ /*****/A/77/B/US/ /150500 Larson
AER7508793

Title- The Costs of Geothermal Energy Development

Subtitle- Final Report, January 1977

Author(s)- / Larson , Tod /

Publisher- Geothermal World Publications
Reseda, California

Publication date- 1977

Pagination- Page 314 , 23 Pages

Report/patent- PB-297 889

Available- NTIS

(Paper Copy

(A04) (\$ 5.25)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / National Science Foundation /4514000/.

AER7508793 /

Corporate Author- California Univ. Riverside

Dry-Lands Research Institute
Riverside , California , USA

Auxiliary expression(s)-

Table

Illus.

/ Graph (1) /

Categories-

Geothermal Energy

(Economic and Financial Aspects)

Proposed Descriptor(s)- / California / Capital / Cost / Energy source
development / Geothermal development / Geothermal plants /
Imperial County / Investment / Power range 100-1000 MW / Public
utilities / Risk assessment /

Abstract by TIC

Risks and reward associated with geothermal development are summarized. Various methods for evaluating geothermal energy as an investment are discussed; factors affecting the investors' risk perceptions are described. Factors influencing the different view of risk taken by the public utilities, in contrast to that of private industry, are discussed.

678. GGIS-100393/0/ /*****/A/80/ /US/ /***** Gray
DE-AC08-79-ET-27112

Title- The Deformation Behavior of Rocks from the Pleasant Bayou
Wells

Author(s)- / Gray , Ken E. / Jogi , Pushkar N. / Morita , Nobuo /
Thompson , Thomas W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 2 , June 1980

Geopressured Geothermal Bibliography

Pagination- Page 1031 , 29 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.
DE-AC08-79-ET-27112 /

Corporate Author- Texas Univ.

Center for Earth Sciences and Engineering
Austin , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (5) /

Table

Ref.

Proposed Descriptor(s)- / Compaction / Density / Drill cores /
Elasticity / Fluid withdrawal / Geopressured reservoirs /
Laboratory equipment / Laboratory testing / Permeability /
Pleasant Bayou No. 1 Well / Pleasant Bayou No. 2 Well / Porosity
/ Reservoir engineering / Rock deformation / Sound velocity /
Texas /

Abstract by Author

Tests have been run on cores retrieved from DOE-GCO Pleasant Bayou wells #1 and #2. These have included uniaxial compaction and triaxial loading tests (both jacketed and unjacketed). In each series of tests, deformation behavior, pore volume changes, permeabilities, and acoustic velocities have been measured. All of the tests reported have been carried out under rapid loading conditions and analyzed on the basis of pseudoelastic behavior. In addition to providing numerical data, the nonelastic and that dynamic data shows little relationship to static data. The

values for compressibilities obtained from these tests are considerably lower than those used in some earlier production models.

679. GGIS-100899/0/ /*****/A/76/ / / *****/ Kunze

Title- The Economic Generation of Electricity from Moderate Temperature Geothermal Resources

Author(s)- / Dart , R.H. / Kunze , J.F. / Whitbeck , J.F. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 768 , 3 Pages

Report/patent- SAE--769135

Corporate Author- Idaho National Engineering Lab. /9502158/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Graph (1) /

Proposed Descriptor(s)- / Binary fluid systems / Economics / Electric power / Elevated temperature / Flashed steam systems / Geothermal resources / Power generation /

Abstract by Author

The large energy potential of the medium temperature geothermal resource (125-170 DEG C) makes it attractive for power production. The lower efficiency inherent with lower source temperatures apriori leads to the conclusion that it will be difficult to show favorable economics. However, there are basic differences in the engineering approaches that can be applied which favor the use of moderate temperatures. These approaches which are being evaluated on the Raft River geothermal resource (150 DEG C) and the economics of power production from this resource, compared with more conventional thermal power systems, are presented in this paper.

Geopressured Geothermal Bibliography

680. GGIS-100995/ / /*****A/78/ /US/ /***** Kunze

Title- The Economics of the Heat Pump as a Device to Assist in Geothermal District Space Heating

Author(s)- / Forsgren , Klane F. / Kunze , Jay. F. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 387 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Farsgren, Perkins and Associates
Rexburg , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Graph (1) /

Table

Ref.

Proposed Descriptor(s)- / Direct energy utilization / District heating / Economics / Geothermal space heating / Hot water heating / Uses /

Abstract by Author (rev.)

Can heat pumps economically assist in geothermal space and water heating? If so, common cooler waters can be developed in addition to the rare hot resources which are now exploited. The case studies summarized in this paper consider source water of four temperatures: 55 DEG F, 80 DEG F, 130 DEG F and 180 DEG F. Since every one of the cases using heat pumps showed a combination of attractive economics and convenience, the test drilling for geothermal water is a sound investment. Regardless of the water temperature discovered, the typical situation

should lead to a "geothermal" heating system that is attractive if implemented on a large enough scale.

681. GGIS-100374/O/ /*****/A/79/ /US/ /***** Reynolds

Title- The Effect of Acid Addition for Scale Control on Geothermal Field and Plant Systems

Subtitle- 3. Session: EPRI Progress Reports

Author(s)- / Reynolds , Stan L. /

Conference- 3. Annual Geothermal Conference and Workshop Proceedings
Monterey
California
USA (June 26 , 1979)

Publisher- Electric Power Research Institute
Palo Alto, California

Publication date- October 1979

Pagination- Page 9 , 6 Pages

Report/patent- EPRI-WS-79-166

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (1) /

Table

Proposed Descriptor(s)- / Calcite / Computer codes / Corrosion /
Geothermal brines / Geothermal power plants / Scaling / Scaling
control / Silica minerals / Sulfides /

Abstract by Author

Geopressured Geothermal Bibliography

A chemical equilibrium computer code (EQUILIB) has been developed which is designed to compute the changes in chemical species present in solid, liquid and gaseous phases of a geothermal brine. Specific objectives of this project are to use EQUILIB to: (1) verify EQUILIB operability from a user standpoint; (2) predict mineral precipitation in untreated (i.e., no acid added) brine under typical power cycle operation; (3) examine the effects of acid addition to brines under typical operating conditions; and (4) indicate the potential for problems of corrosion and adverse brine/rock interactions under typical geothermal operating conditions.

682. GGIS-100035/J/ / 6606/A/**/ / / /150300

Title- The Effect of Salinity on the Maximum Geothermal Gradient of a Hydrothermal System at Hydrostatic Pressure

Author(s)- / Hass , J. L., JR. /

Journal- Economic Geology

Publication date- Vol. 66 , Issue 6 , September 31 , 1971

Pagination- Page 940 , 7 Pages

Proposed Descriptor(s)- / Boiling / Brines / Calcium / Chlorides / Depth / Geopressured systems / Hot springs / Hydrothermal systems / Mathematical models / Potassium / Salinity / Sodium / Temperature distribuion / Temperature gradients / Thermal waters /

683. GGIS-100308/O/ /*****A/78/ /US/ /***** Danesh

Title- The Effect of Temperature Level on Absolute Permeability of Unconsolidated Silica and Stainless Steel

Author(s)- / Danesh , A. / Ehlig-Economides , C. / Ramey , H.J. Jr. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 137 , 3 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (3) /

Ref.

Proposed Descriptor(s)- / Elevated temperature / Fluid flow /
Geothermal fluids / Permeability / Pressure dependence / Quartz
/ Temperature dependence / Viscosity /

Abstract by Author

The absolute permeability of porous media may depend significantly on the flowing liquid. The permeabilities of unconsolidated samples of silica and stainless steel were shown to decrease with an increase in temperature for water flow. There was no effect with the temperature level for oil flow. The phenomenon may be a result of the intermolecular force field within the boundary layer of water adjacent to the solid which is different from that of the bulk water. The dependence of the physical properties of this layer, e.g., viscosity, with temperature is different from those of the bulk liquid. Hence the effect of the temperature level on the mobility of water through porous media cannot be adequately explained by time change with temperature of the bulk water viscosity alone.

684. GGIS-100308/O/ /*****/A/78/B/US/ /***** Jorda

Geopressured Geothermal Bibliography

Title- The Effects of Corrosion and Scale Deposits on the Capacity of
Water Rejection Wells in Liquid Dominated Geothermal Systems

Author(s)- / Jorda , R.M. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 341 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Table

Illus.

/ Graph (5) /

Ref.

Proposed Descriptor(s)- / Corrosion / Corrosive effects / Geothermal
reservoirs / Gulf Coast / Hot water systems / Injection wells /
Mathematical methods / Scaling / Texas / Well casings /

Abstract by Author

Scale deposits or corrosion damage in water reinjection well tubing strings can result in reduction of reinjection capacity, thereby limiting power recovery in liquid dominated geothermal systems. Simulation of a Texas Gulf Coast reinjection well under scaling and corrosive conditions indicates that either scale deposits or corrosion may require a tubing size of at least one

nominal diameter larger than would be required if corrosion or scale deposition did not occur. This, in turn, would require the use of larger protective casing strings and bigger drilling bits.

685. GGIS-100007/0/ / 1/A/**/ /US/ /150900

Title- The Energy Potential of Geopressured Reservoirs

Subtitle- Hydrogeologic Factors

Author(s)- / Papadopoulos , Stavros S. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 173 , 20 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Table (1) / Figure (13) /

Equ.

Ref.

Proposed Descriptor(s)- / Engineering geology / Geopressured systems / Geopressured reservoirs / Geopressure / Geothermal energy / Hidalgo County / Information systems / Lithology / Measuring methods / Monitoring / Overburden pressure / Possibilities / Pressure measurement / Production / South / Temperature measurement / Tertiary / Texas / United States / Well drilling / Well logging /

Abstract by Author

The energy potential of geothermal waters in the geopressured reservoirs of the Gulf Coast ultimately depends on the yield of wells tapping these reservoirs. An analysis is made to determine possible well yields on a geopressured reservoir in Hidalgo County, Texas. The reservoir lies beneath an area 16 kilometres (10 miles) wide and 48 kilometres (30 miles) long, with the long axis extending northeast-southwest parallel to and east of the McAllen Fault. The average pressure-to-depth ratio in the reservoir is 17 kilonewtons per square metre per metre (0.75 pound per square inch per foot). The average temperature of the water is 135 degrees C (275 degrees F), and the average salinity is about 25,000 milligrams per litre. On the basis of solubility data, the average methane content is estimated to be 4.8 standard cubic metres per cubic metre (standard cubic feet per cubic foot). Based on an idealized model of the reservoir, the results of the analysis indicate that a single 0.23-metre (0.75-foot) diameter well at the center of the reservoir could sustain a flow rate of 0.31 cubic metre per second (11 cubic feet per second) for 20 years. The total production rate from the reservoir could be increased to 2.7 cubic metres per second (95 cubic feet per second) for the 20-year period by assuming that a minimum flow rate of 0.15 cubic metre per second (5.3 cubic feet per second) per well is satisfactory and by developing the reservoir with 18 wells at optimum spacing. Estimates of subsidence under the 18-well production scheme indicate that the average subsidence over the reservoir area would be about 1 metre (3 feet) at the end of the 20-year production period. In the immediate vicinity of a centrally located well, subsidence would be about 2 metres (6 feet). The thermal, mechanical, and methane energy contained in the waters produced with the 18-well development scheme is equivalent to 11.32×10^{17} joules (10.73×10^{14} British Thermal Units). The thermal and mechanical energy components of this total could be converted to 94 megawatts (estimates) of electrical power over the 20-year production period. In addition to this analysis of a geopressured reservoir, the sensitivity of well yields to hydrogeologic factors is examined. It is concluded that the most important hydrogeologic factor in the development of geopressured reservoirs is the transmissivity. The results of calculations made for this

sensitivity determination are presented graphically and can be used to make quick estimates of the yield of wells tapping geopressured reservoirs.

686. GGIS-100240/J/ /*****/A/77/ / / *****/ Stephens

Title- The Federal Role in Geothermal Resource Development

Author(s)- / Stephens , Randall C. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 187 , 15 Pages

Proposed Descriptor(s)- / Energy source development / Geothermal resources / Government policies / Institutional aspects / National government / Regulations /

Abstract by EIC

The private sector will ultimately determine the extent of geothermal energy use, but its decisions will be strongly influenced by the action, inactions, and policies of the federal government. Program strategy established through the Geothermal Energy Research, Development, and Demonstration Act of 1974 is outlined. The project's areas include; resource identification, technological development, institutional development, federal land management, federal taxation, and a loan guaranty. Federal, state, and local governmental regulation also play an important part in the institutional framework for geothermal development.

687. GGIS-100042/J/GTEMA/ 508/M/77/ / / *****/ Oberbeck

Title- The Geopressured Geothermal Resources of Texas

(A Report on Legal Ownership and Royalty Issues)

Author(s)- / Oberbeck , A. W. /

Geopressured Geothermal Bibliography

Journal- Geothermal Energy Magazine

Publication date- Vol. 5 , Issue 8 , 1977

Pagination- Page 18 , 21 Pages

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Analysis / Case histories / Depths /
Geopressured systems / Laws / Legal aspects / Regulations / Texas
/

688. GGIS-100145/B/ /*****/M/**/ /US/ /*****
EY-76-S-05-5243

Title- The Geopressured Geothermal Resources of Texas

Subtitle- Regulatory Controls over Water Pollution

Author(s)- / Oberbeck , A. W. / Rogers , K. E. /

Publication date- July 1 , 1977

Pagination- 85 Pages

Available- Center for Energy Studies
Engineering Science Bldg. 143
University of Texas at Austin
Austin
Texas
78712

Sponsor- / ERDA

EY-76-S-05-5243 /

Corporate Author- Texas University, Austin

Center for Energy Studies
Austin , Texas , USA

Proposed Descriptor(s)- / Liquid wastes / Pollution regulations /
Surface waters / Texas / Waste disposal / Waste injection / Water
pollution control / Water quality /

Abstract by Energy Studies

This report is a comprehensive survey of the federal and state regulations that pertain to the development of geopressured-geothermal resources along the Texas Gulf Coast. Heat, salinity, and possible presence of trace minerals in the water from the geopressured zones are the main pollutants that are anticipated. The difficulty and cost of properly disposing of waste fluids will strongly influence the ultimate feasibility of geopressured-geothermal development. Regulations in this area are myriad, as this report explains in detail, and they are often complicated, ambiguous, or contradictory.

689. GGIS-100140/B/ /*****/M/**/ /US/ /*****

Title- The Geopressured Geothermal Resources of Texas

Subtitle- A Report on Legal Ownership and Royalty Issues

Author(s)- / Oberbeck , A. W. /

Publication date- January 27 , 1977

Pagination- 55 Pages

Available- Center for Energy Studies
Engineering Science Bldg. 143
University of Texas at Austin
Austin
Texas
78712

(\$ 2.50)

Corporate Author- Texas University, Austin

Center for Energy Studies
Austin , Texas , USA

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Geopressured resources / Leasing / Legal aspects / Mineral resources / Ownership / Royalties / Salt water / Subsurface waters / Texas / Water resources /

Abstract by Energy Studies

Because the geopressured-geothermal resources of Texas are new and commercially undeveloped, their legal identity has not yet been established conclusively. Several unresolved legal issues exist which hinder development. This report outlines the laws on this subject and surveys the legal decisions that have been made. The report recommends that categorizing geopressured resources as mineral resources rather than water resources would be most correct and most beneficial to the public interest.

690. GGIS-100074/B/ /*****/M/**/ / / /*****

Title- The Gulf Coast Geosyncline

(Reprint from New Orleans Geological Society, May 1973)

Author(s)- / Durham /

Publisher- Houston Geological Society
Houston, Texas (U.S.A.)

Publication date- 1974

Pagination- 14 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Cenozoic Era / Crust / Diapirs / Evolution / Faults / Geopressures / Geosynclines / Gulf of Mexico / Gulf Coast geosyncline / Gulf Coast / Louann Salt / Marine geology / Massifs / Mesozoic / North / Origin / Ridges / Salt tectonics / Salt domes / Structural geology /

691. GGIS-100042/J/GTEMA/*****/A/78/ / / /***** McNamara

Title- The Habendum Clause of a Geothermal Resources Lease

Subtitle- A suggestion

Author(s)- / McNamara , Jack /

Publication date- Vol. 6 , Issue 4 , April 1978

Pagination- Page 17 , 3 Pages

Proposed Descriptor(s)- / Geothermal resources / Habendum clause /
Leases / Leasing / Legal aspects /

Abstract by Energy Info. Abstracts

The habendum clause of a geothermal lease is examined with emphasis on the construction and selection of language used in such clauses. The habendum clause defines the duration, or term of the agreement between lessor and lessee of geothermal resources. Since uncertainties persist as to just what geothermal resources actually are, the clauses must be clarified to avoid future legal controversy. The aim of revised wording of the habendum clause is to create a geothermal lease that takes account of the current state of both geothermal development and the regulations devoted to it. A revised reading of the habendum clause is presented. The major revision suggested is that a lease should contain a primary term of not less than 15 years ranging to 20 or even 25 years. The lessor should be compensated for the additional term. Other suggestions serve to simplify the unnecessarily arcane lease forms that are unintelligible to the layman.

692. GGIS-100152/R/ /*****/A/**/ /US/ /*****
NSF-GI-38972

Title- The Marysville, Montana Geothermal Project

(Annual Report No. 1)

Subtitle- Part 1

Author(s)- / Bott , Winston / Eliason , Jay R. / Kuwada , James /
McSpadden , William R. /

Publication date- June 1974

Geopressured Geothermal Bibliography

Pagination- 147 Pages

Report/patent- PB-248-213

Note- See also PB248214 Prepared in cooperation with Rogers Engineering Co., Inc., San Francisco, Calif., Southern Methodist Univ., Dallas, Tex., and Systems, Science and Software, La Jolla, Calif.

Available- NTIS

(Paper copy

(A07) (\$ 7.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES MF

Corporate Author- Battelle Pacific Northwest Labs. /9500022/.
Richland , Washington , USA

Proposed Descriptor(s)- / Aerial photography / Aerial surveys / Computerized simulation / Drilling / Energy resources / Environmental impacts / Environmental effects / Geophysical prospecting / Geophysical surveys / Geothermal prospecting / Geothermal exploration / Geothermal resources / Graphs (charts) / Graphs / Heat measurement / Heat transfer / Heat flow / Infrared mapping / Infrared photography / Infrared surveys / Marysville (Montana) / Marysville KGRA / Mathematical models / Montana / Simulation / Tables (data) / Tables / Temperature measurement /

Abstract by NTIS

The purpose of this project is to research the geothermal region near Marysville, Montana, to determine the nature and size of the resource, how the energy might be extracted, the potential monetary value of the energy, and how similar resources elsewhere might be located. Part 1 includes a project summary, description of Marysville area, summary of site construction work, the drilling program, the 1974 environmental analysis, a summary of geophysical surveys and a preliminary survey of the area using aerial thermal infrared imaging techniques. Heat flow data are included.

693. GGIS-100260/R/ /*****M/79/ / / / 30900 Kuuskraa
EF-77-C-01-2705

Title- The Methodology

Subtitle- 3. Volume

Author(s)- / Brashear , J.P. / Doscher , T.M. / Elkins , L.E. /
Kuuskraa , V.A. /

Publication date- Vol. 3 , February 1979

Pagination- 407 Pages

Report/patent- HCP/T2705-03

Available- NTIS

(Paper Copy

(A18) (\$ 13.25)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Lewin and Associates, Inc. /9503039/.
Washington , D.C. , USA

Categories-

Natural Gas

(Artificial Stimulation, Plowshare, Etc.)

Natural gas

(Drilling, Production and Processing)

Proposed Descriptor(s)- / Aquifers / Economics / Enhanced recovery /
Forecasting / Gas production / Geopressured systems / Gulf Coast
/ Methane / Tables / Technology assessment /

Abstract by TIC

Geopressured Geothermal Bibliography

The methodology is described in chapters on the analytic approach, estimated natural gas production, recovery from tight gas sands, recovery from Devonian shales, recovery from coal seams, and recovery from geopressured aquifers.

694. GGIS-100331/ / /*****/M/**/ /US/ /*****

Title- The National Energy Act

Publication date- November 1978

Pagination- 48 Pages

Local Availability- CES

Corporate Author- U.S. Department of Energy /9508177/.

Office of Public Affairs
Washington , D.C. , USA

Proposed Descriptor(s)- / Charges / Deregulation / Energy source development / Financial incentives / Financing / Gas production / Geopressure resources / Natural gas / Public utilities / Regulations / Taxes /

Abstract by Energyline

The National Energy Act of 1978 is designed to conserve U.S. energy supplies, to accelerate the shift to coal and the use of fuels other than oil and gas, and to reduce U.S. oil imports. The act, which was passed by Congress almost a year and a half after it was proposed in April 1977, consist of five bills: the National Energy Conservation Policy Act of 1978; the Power Plant and Industrial Fuel Use Act of 1978; the Public Utility Regulatory Policies Act of 1978; the Natural Gas Policy Act of 1978; and the Energy Tax Act of 1978. The Conservation Act provides for a utility conservation program for residences, weatherizaion grants for low income families, a \$100 million solar energy loan program, an energy efficiency improvement program for schools and hospitals, energy audits for public buildings, appliance efficiency standards, and civil penalties for automobile fuel efficiency standards, standards enforcement. The Fuel Use Act prohibits the use of natural gas for boiler fuel, and establishes and \$800 million pollution control loan program for utilities. The Utility Policies Act proposes 11 voluntary rate design standards, establishes rules to promote the use of cogeneration, grants loans to aid development of small hydroelectric facilities, and institutes a process for

expediting the issuance of permits for a crude oil transportation system. The Natural Gas Act sets a series of maximum price limits for various categories of gas, deregulates new gas and certain intrastate gas as of 1985, establishes incremental gas pricing procedures, and grants to the President emergency authority for allocating gas supplies to high priority users. The Energy Tax Act provides residential insulation, conservation, and solar energy tax credits; exempts gasoline from the federal excise tax; imposes a graduated excise tax on gas guzzling automobiles; grants incentives for geothermal resource development and geopressured natural gas development; allows minimum tax exclusion for intangible oil and gas drilling costs; and denies investment tax credits for new oil and gas burners. The estimated imported oil savings from the five bills will total from 2,390,000-2,950,000 BPD by 1985. The natural gas bill will save an estimated 1.0-1.4 million BPD, depending on the degree of oil displacement that results from increased gas supplies.

695. GGIS-100350/J/NSWKA/*****/A/78/ / / *****/ Sheils

Title- The New Gas Bonanza

Author(s)- / Cook , William J. / Donosky , Lea / Henkoff , Ronald /
Sheils , Merrill / Simons , Pamela Ellis /

Journal- Newsweek

Publication date- Vol. 92 , Issue 18 , October 30 , 1978

Pagination- Page 64 , 3 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Graph (1) / Photo (1) /

Proposed Descriptor(s)- / Cost / Deep drilling / Deregulation / Energy
policy / Geopressured zones / Natural gas /

Abstract by Energyline

In an about-face from previous policy, the Carter Administration placed natural gas at the center of the Nation's energy efforts. Deregulation is expected to provide a stimulus for developing new supplies, especially from deep wells. Problems of deep drilling, including high cost and technical difficulties, will

Geopressured Geothermal Bibliography

have to be overcome. Among the more promising exotic sources of natural gas that will be developed are Devonian shales, western tight sands, geopressured zones, and coal seams.

696. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- The Origin and Detailed Occurrence of the Resource

(1. Session)

Author(s)- / Dorfman , Myron H. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 13 , 86 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

697. GGIS-100044/J/BHGLA/ 1708/A/**/ / / /*****

Title- The Petroleum Geology of Young Regressive Sequences

Author(s)- / Chapman , Richard E. /

Publisher- Houston Geological Society

Journal- Houston Geological Society Bulletin

Publication date- Vol. 17 , Issue 8 , 1975

Pagination- Page 2

Proposed Descriptor(s)- / Abnormal / Accumulation / Clay /
Engineering geology / Geopressure / Materials / Migration /
Origin / Petroleum / Pressure buildup / Property / Regressive /
Relation / Retarded / Undercompaction /

698. GGIS-100081/B/ /*****/M/**/ /US/ /295500

Title- The Potential for Energy Production from Geothermal Resources

Subtitle- Report of the Subcommittee on Water and Power Resources,
Committee on Interior and Insular Affairs

Publisher- United States of America
Washington, D.C. (USA)

Publication date- December 1973

Available- GPO

(\$ 0.50)

Corporate Author- U.S. 93. Congress, 1. Session Senate Committee on
Interior Insular Affairs, Subcommittee on Water and Power
Resources
Washington , D.C. , USA

Proposed Descriptor(s)- / Dry-steam systems / Economics / Energy
policy / Environmental effects / Financing / Geopressured
systems / Geothermal energy / Geothermal resources / Government
policies / Hot dry rock systems / Hot water systems / Legislation
/ Research programs /

Geopressured Geothermal Bibliography

699. GGIS-100315/0/ /*****/A/78/ /US/ /***** Barnea

Title- The Potential of Geothermal Resources

Author(s)- / Barnea , J. /

**Conference- International Scientific Forum on an Acceptable Nuclear
Energy Future of the World
Fort Lauderdale
Florida
USA (November 7 , 1977)**

**Publisher- Ballinger Pub. Co.
Cambridge, Massachusetts**

Publication date- 1978

Pagination- 5 Pages

Local Availability- ENG

Auxiliary expression(s)-

Ref.

**Proposed Descriptor(s)- / Geopressured zones / Geothermal drilling /
Geothermal power plants / Geothermal brines / Geothermal heating
/ Hot dry rock systems / Hot water systems / Louisiana / Magma
systems / Methane / Resource assessment / Texas / Vapor dominated
systems /**

Abstract by Energyline

In every country in which they operate, geothermal power stations produce electricity more cheaply than it can be produced by nuclear power stations. Yet geothermal energy is the most poorly funded and researched of all know renewable resources. The six types of geothermal resources (dry steam fields, hot water fields, low enthalpy geothermal water, geopressured zones, hot dry rock, and magma) are reviewed, and geological and geographical areas of their occurrence are outlined. It is predicted that there will be a meteoric rise in geothermal drilling in the next 22 years, and that geothermal energy will be an important source of low cost energy by the year 2000.

700. GGIS-100042/J/GTEMA/*****/A/**/ / / *****/

Title- The Private Sector in Geothermal and Hydrothermal Resource Development

Author(s)- / Rodzianko , Paul /

Publication date- Vol. 6 , Issue 4 , April 1978

Pagination- Page 40 , 4 Pages

Proposed Descriptor(s)- / Financing / Geothermal development / Investment / Reliability / Risks / Uses /

Abstract by Energy Information Abstracts

The role of the private sector in geothermal and hydrothermal resource development is explored. Factors indicating their need for the private sector to learn from past successful geothermal development experiences to minimize unnecessary front end field investment in favor of smaller initial unit sizes are given. These factors are; the impact field investment, reservoir risk, base load reliability, resource utilization, and utility financing constraints. A recommendation to solve the complicated impasse between the developer and the utility consists of matching front end field investment to smaller initial unit sizes and developing a capital base specifically designed to accept reservoir risk. Suggested is a technique for implementing the recommendation that involves the forming of a company designated to; accept reservoir risks; purchase the geothermal resource at the wellhead; own, finance, and construct the needed power plant; and sell electricity to the utility.

701. GGIS-100995/ / *****/A/78/ /US/ *****/ Rodzianko

Title- The Private Sector in Hydrothermal Resource Development

Author(s)- / Rodzianko , Paul /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 583 , 3 Pages

Geopressured Geothermal Bibliography

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Proposed Descriptor(s)- / Electric power / Energy source development
/ Financing / Geothermal industry / Geothermal reservoirs /
Geothermal resource / Investment / Power generation /

Abstract by Author (rev.)

For a highly-regulated utility to commit its own funds for the construction of a power generation facility, an exploration company must invest great amounts of front-end drilling and testing dollars to "prove" a geothermal reservoir. In order to generate a satisfactory rate of return on such an investment, the resource company is forced to look at 55 MW units, not smaller ones, as the starting point for reservoir development. To date, however, no utility has been willing to finance and construct, at its own risk, a power plant on this basis. The considerations outlined in this paper (impact of field investment, reservoir risk, base load reliability, resource utilization, and utility financing constraints) point out the need for the private sector to learn from past successful geothermal development experiences and thus minimize front-end field investment in anticipation of smaller initial unit sizes. Implicit in this approach is the recognition of the crucial need for reservoir operating experience particularly at the early stages of field development. Upon these beginnings can be built the firm financial foundation necessary for a thriving and sustained development in the geothermal industry.

702. GGIS-100260/R/ /*****M/78/C/ / / 30900 Kuuskraa
EF-77-C-01-2705

Title- The Program

Subtitle- 2. Volume

Author(s)- / Brashear , J.P / Doshcher , T.M. / Elkins , L.E. /
Kuuskraa , V.A. /

Publication date- Vol. 2 , October 1978

Citations

Pagination- 568 Pages

Report/patent- HCP/T2705-02

Available- NTIS

(Paper Copy

(A25) (\$ 16.50)

(Microfiche

(A01) (\$ 3.00)

Corporate Author- Lewin and Associates, Inc. /9503039/.
Washington , D.C. , USA

Categories-

Natural Gas

(Artificial Stimulation, Plowshare, Etc.)

Proposed Descriptor(s)- / Aquifers / Coal deposits / Degasification /
Devonian period / Economics / Enhanced recovery / Geopressure
resources / Methane / Natural gas / Oil shale / Planning /
Research programs /

Abstract by TIC

This study was conducted to assist public decision- makers in selecting among many choices to obtain new gas supplies by addressing 2 questions: 1) how severe is the need for additional future supplies of natural gas; and 2) what is the economic potential of providing part of future supply through enhanced recovery from unconventional natural gas resources. The study also serves to assist the DOE in designing a cost-effective R and D program to stimulate industry to recover this unconventional gas and to produce it sooner. Tight gas basins, Devonian shale, methane from coal seams, and methane from geopressured aquifers are considered. It is concluded that unconventional sources, already providing about 1 Tcf per year, could provide from 3 to 4 Tcf in 1985 and from 6 to 8 Tcf in 1990 (at \$1.75 and \$3.00 per Mcf, respectively). However, even with these additions to supply, gas supply is projected to remain below 1977 usage levels.

703. GGIS-100393/O/ /*****/A/80/ / / *****/ Cornwell

Geopressured Geothermal Bibliography

DE-AS08-78ET-27087

Title- The Resource Assessment Scheduling, and Economics of
Developing the Geopressured-Geothermal Resource in Texas

Author(s)- / Cornwell , John B. / Lesso , William G. / Zinn , C. Dale
/

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 3 , June 1980

Pagination- Page 1545 , 29 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
USA

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

DE-AS08-78ET-27087 /

Corporate Author- Texas Univ. /9502459/.

Center for Energy Studies
Austin , USA

Auxiliary expression(s)-

Illus.

/ Graph (2) / Figure (4) /

Table

Proposed Descriptor(s)- / Computerized simulation / Cost / Economics
/ Fairway analysis / Feasibility studies / Fluid flow /
Geopressure resources / Models / Resource assessment / Resource
development / Resource potential / Systems analysis / Texas /

Abstract by Author

For the geopressured-geothermal resource to be a viable source of energy, a number of physical and economic conditions must be met. A fair amount of uncertainty exists with regard to these factors. In order to evaluate the impact of these uncertainties, a series of models has been developed to assess the feasibility of the resource under known and/or best estimate conditions and to determine the minimum acceptable values. The first model assesses the individual fairways' ability to provide a designated flow for one well for a set minimum lifetime. The fairways which cannot meet the minimum requirements are dismissed as possible development candidates. The second model takes the usable fairways and produces a development scenario based upon chosen "hit" probabilities. This model yields a time line for the introduction of the resource based upon the aggressiveness of the development chosen, i.e., the number of rigs available. The third model performs an economic analysis of the fairway development scenarios based upon the time line history, total number of wells required investment, methane recovered. This analysis uses a present worth analysis that takes into account the required investment, revenues, operating cost, and economic life. Currently, only a few of the fairways show promise of being viable sources based on physical properties, and then only if the price of natural gas is substantially increased over its current value.

704. GGIS-100240/J/ /*****/A/77/ / / *****/ Kramer

Title- The Role of Municipalities in Geothermal Resource Development

Author(s)- / Hammer , Michael / Kramer , William K. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 85 , 23 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / California / Contracts / Energy source development / Exploitation / Geothermal resources / Geothermal exploration / Laws / Legal aspects / Public utilities / Urban areas /

Geopressured Geothermal Bibliography

Abstract by EIC

Approximately 900 publicly owned electrical systems generate all or part of their own power requirements, and about 125 of these are in western states, where geothermal energy production seems most promising. Provisions of California law affecting municipal utilities' interest in geothermal exploration, development, and exploitation are explored. Various problems encountered by the City of Burbank and the Northern California Power Agency are specifically examined. The impacts of self-imposed limitations in the form of outstanding bond covenants and other contractual obligations are discussed.

705. GGIS-100007/0/ / 1/A/**/ /US/ /*****

Title- The Role of Public Lands in Geothermal Energy

Author(s)- / Armstrong , B. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 327 , 8 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Discuss.

Proposed Descriptor(s)- / Control / Energy source development /
Environmental geology / Geopressure / Geothermal energy / Gulf
Coast / Land use / Public lands / Resources / Texas / United
States / West /

706. GGIS-100899/0/ /*****/A/76/ / / *****/ Altseimer

Title- The Subterrene Rock-Melting Concept Applied to the
Production of Deep Geothermal Wells

Author(s)- / Altseimer , John H. /

Conference- 11 Intersociety Energy Conversion Engineering Conference
State Line
Nevada
USA (September 12 , 1976)

Publication date- Vol. 1 , September 12 , 1976

Pagination- Page 717 , 7 Pages

Note- Work performed under the auspices of the U.S. Energy and
Research Development Administration

Available- American Institute of Chemical Engineers .
345 E. 47 Street
New York City
New York
10017

Local Availability- Eng.

Auxiliary expression(s)-

Illus.

/ Photo. (2) / Diagram (3) / Graph (7) /

Ref.

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Cost / Drill bits / Drill pipes / Drilling equipment / Drilling fluids / Geopressure drilling / Geothermal drilling / Subterrene penetrators /

Abstract by Author

The drilling of wells comprises a large fraction of the costs of geothermal energy-extraction plants, and billions of dollars for wells will be needed before geothermal energy is nationally significant. Technical and cost studies were made of the application of the Subterrene concept, i.e., excavating and penetrating rocks or soils by melting, to deep wells such as may be used for dry-hot-rock or geopressure geothermal energy extraction systems. Technically, it was found that Subterrene requirements are compatible with those of current rotary drilling practices. Certain features of the rock-melting concept such as the glass lining on the borehole wall, and nonrotation, provide opportunities for the development of better well production techniques in hot wells. A typical optimum-cost well would be rotary-drilled in the upper regions and then rock-melted to total depth. Indicated cost savings are significant: a 33% or 4.5 million dollars reduction from rotary drilled well costs are estimated for a 10 km depth well with bottom hole temperatures of 673 K. Even for normal geothermal gradient conditions, the savings for the 10 km depth is estimated as 23% or 2 million dollars.

707. GGIS-100995/ / /*****A/78/ /US/ /***** Pines

Title- The Thermodynamic and Cost Benefits of a Floating Cooling Geothermal Binary Cycle Power Plant at Heber, California

Author(s)- / Doyle , P.A / Fulton , R.L. / Green , M.A. / Pines , H.S. / Pope , W.L. / Silvester , L.F. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 531 , 6 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- California Univ., Berkeley /1112800/.

Lawrence Berkeley Lab.
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (4) / Diagram (2) /

Table

Ref.

Proposed Descriptor(s)- / Binary cycle power generation / California
/ Computer codes / Cooling systems / Cost benefit analysis /
Economics / Elevated temperature / Geothermal fluids /
Geothermal power plants / Models / Waste heat / 2-methylpropane /

Abstract by Author

The application of the floating cooling concept to evaporative heat rejection systems is studied as a method of improving the performance of geothermal powerplants operating upon medium temperature hydrothermal resources. The LBL thermodynamic process computer code GEOTHM is used in the case study of a 50 MWe isobutane binary cycle power plant at Heber, California. It is shown that operating a fixed capacity plant in the floating cooling mode can generate significantly more electrical energy at a higher thermodynamic efficiency and reduced bus bar cost for approximately the same capital investment. Floating cooling is also shown to minimize the adverse influence on plant performance due to a declining resource temperature.

708. GGIS-100899/0/ /*****/A/76/ / / /***** Pines

Title- The Use of Program GEOTHM to Design and Optimize
GeothermalPower Cycles

Author(s)- / Green , M.A. / Pines , H.S. /

Conference- 11 Intersociety Energy Conversion Engineering Conference

Pagination- Page 836 , 7 Pages

Report/patent- SAE--769144

Geopressured Geothermal Bibliography

Corporate Author- California Univ., Berkeley / 112800/.

Lawrence Berkeley Lab.
Berkeley , California , USA

Auxiliary expression(s)-

Illus

/ Diagram (3) / Graph (3) /

Table

Ref.

Proposed Descriptor(s)- / Codes / Computer codes / Geothermal brines /
Mathematical models / Optimization / Thermodynamic cycles /
Working fluids /

Abstract by Author

The Lawrence Berkeley Laboratory program GEOTHM has been under development for nearly two years. GEOTHM will design and optimize a wide variety of thermodynamic cycles. The most recent improvements in the GEOTHM program are included in this paper. These improvements include: a model for concentrated saline brines and a single step cycle optimization process. Geothermal power cycles are given as examples.

709. GGIS-100002/0/PASPC/ 2/A/**/ / / /*****

Title- The Use of Subsurface Temperature to Detect Geopressure
(Applications in Louisiana)

Author(s)- / George , E. Rush /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 2 , 1970

Pagination- Page 5 , 22 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Detection / Engineering geology /
Geopressured reservoirs / Geopressure / Gulf Coast / Heat flow /
Louisiana / Measurement / Temperature / United States / Uses /

710. GGIS-100020/0/CMPPA/ 9/A/**/ / / /*****

**Title- Thermodynamic Behavior and Production Forecast of High
Pressure and High Temperature Reservoirs Containing
Carbonated Natural Gases**

Author(s)- / Balint , V. / Ban , A. / Doleschall , S. / Turok , J. /

Conference- World Petroleum Congress

Publication date- Vol. 9 , Issue 4 , 1975

Pagination- Page 401 , 7 Pages

Auxiliary expression(s)-

Illus.

Sum.

Proposed Descriptor(s)- / Chemical composition / Geopressure / Models
/ Natural gas / Production / Reservoir rocks / Thermodynamic
properties / Thermodynamics /

711. GGIS-100120/R/ /*****/M/**/ /US/ /150800
AT (45-1)-1830

Title- Thermodynamic Modeling of Geothermal Power Plants

Author(s)- / Bloomster , C. M. / Walter , R. A. / Wise , S. E. /

Publication date- May 1975

Geopressured Geothermal Bibliography

Pagination- Page 58

Report/patent- BNWL--1911

Note- NTIS 2/4/77 #8 L. 525

Available- NTIS

(Paper copy (\$ 4.50)

(Microform (\$ 2.25)

Corporate Author- Battelle Pacific Northwest Labs /9500022/.
Richland , Washington , USA

Categories-

Thermodynamics

(Binary Cycles)

(Total Flow System)

(Flashed Steam System)

Proposed Descriptor(s)- / Binary cycles / Computer codes / Cost /
Design / Flashed steam systems / G codes / Geopressured systems /
Geothermal power plants / Geothermal systems / Mathematical
models / Operation / Optimization / Physical properties /
Simulation / Thermodynamic properties / Thermodynamics / Total
flow systems / Working fluids /

Abstract by NTIS

Different types of power plants for generating electricity from geothermal reservoirs have been proposed. A computer program has been constructed at Battelle-Northwest Laboratories to analytically model four different geothermal power plants for these applications. This program is one part of an overall geothermal system model called "GEOCOST". GEOCOST, a simulation model which calculates the cost of generating electricity from geothermal energy, is composed of two principal sections: a reservoir model which simulates the exploration, development, and operation of a geothermal reservoir, and a power plant model which simulates the design, construction, and operation of the power plant. Power plant modeling results are given in this report. (The power plant models include the flashed steam plant, binary fluid cycle plant, total flow plant, and the geopressured plant. For each of these plants, fluid mass flow rates, physical and

thermodynamic state points, component sizes, and plant design performance are determined for a variety of geothermal fluid conditions. This computer model can be used to predict the optimum power plant types and operating conditions for use with a particular geothermal resource. Using the overall model, sensitivity analyses can be performed to determine the relative effect of different economic parameters, assumptions, and uncertainties on the cost of generating electricity.

712. GGIS-100296/J/HYPRA/*****/A/78/ / / *****/ Chiang

Title- Tomorrow's Fuels Will be Less Efficient

Author(s)- / Chiang , S.H. / Cobb , J.T. / Klinzing , G.E. /

Journal- Hydrocarbon Process

Publication date- Vol. 57 , Issue 11 , November 1978

Pagination- Page 209 , 3 Pages

Corporate Author- Pittsburgh Univ. /5223000/.
Pittsburgh , Pennsylvania , USA

Auxiliary expression(s)-

Illus.

/ Figure (2) /

Table

Ref.

Proposed Descriptor(s)- / Energy consumption / Energy yield /
Geopressure resources / Geothermal resources / Oil shale / Power
generation / Power plants / Power potential / Solar energy /

Abstract by PROMPT

Future alternate fuel systems may not be efficient, according to S. H. Chiang, G. E. Linzing, and J. T. Cobb of University of Pittsburgh. A common feature of the future energy resources, oil shale, geothermal-geopressured reservoirs and solar energy, is their need for large external energy subsidies in terms of material, machines and mechanical power. When compared with the

Geopressured Geothermal Bibliography

conventional energy resources, several observations can be made. Liquid fuels derived from oil shale are far less energy efficient than those derived from petroleum. Gas produced from geothermal-geopressured reservoirs needs much more external energy subsidy than gas from natural gas wells. Electricity generation, based on proposed solar and geothermal systems, has an overall energy efficiency of 5-10%, vs the higher level in direct-fossil-fuel-fired power plants. However, solar and geothermal systems are comparable in performance with synthetic fuel derived from coal. Roof-top solar heating has an energy efficiency of 70%, which compares favorably with the conventional home heating system using natural gas or oil.

713. GGIS-100157/R/ /*****/M/**/ /US/ /151000
EY-76-C-03-1327

Title- Total Energy Recovery System for Agribusiness

Subtitle- Final Report

Publisher- ERDA
Washington, D. C.

Publication date- May 1977

Pagination- 68 Pages

Report/patent- SAN/1327-2

Available- NTIS

(Paper copy (\$ 4.50)

(Microfiche (\$ 3.00)

Auxiliary expression(s)-

Illus.

/ Diagram (8) / Map (1) /

Table

Ref.

Categories-

Geothermal Energy

(Direct Energy Utilization)

714. GGIS-100158/R/ /*****/M/**/ /US/ /151000
EY-76-C-03-1327

Title- Total Energy Recovery System for Agribusiness

Subtitle- Final Report

Author(s)- / Black , Allan R. / Fisher , Leonard A. / Fogelman , Sam
F. / Singh , Dev P. /

Publisher- ERDA
Washington, D. C.

Publication date- May 1977

Pagination- 68 Pages

Report/patent- SAN/1327-2

Available- NTIS

(Paper copy (\$ 4.50)

(Microfiche (\$ 3.00)

Sponsor- / ERDA

EY-76-C-03-1327 /

Auxiliary expression(s)-

Illus.

/ Diagram (8) / Map (1) /

Table

Ref.

Geopressured Geothermal Bibliography

Categories-

Geothermal Energy

(Direct Energy Utilization)

Proposed Descriptor(s)- / Aquaculture / Biogas process / Cucumbers /
Cultivation techniques / Direct energy utilization / Greenhouses
/ Heat exchangers / Hot water systems / Mushrooms / Prawns /
Scaling / Tomatoes / Total energy systems /

Abstract by ERA

An engineering and economic study was made to determine a practical balance of selected agribusiness subsystems resulting in realistic estimated produce yields for a geothermally heated system known as the Total Energy Recovery System for Agribusiness. The subsystem cycles for an average application at an unspecified hydrothermal resources site in the western United States utilize waste and by-products from their companion cycles insofar as practicable. Based on conservative estimates of current controlled environment yields, produce wholesale market prices, production costs, and capital investment required, it appears that the family-operation-sized TERSA module presents the potential for marginal recovery of all capital investment costs. In addition to family- or small-cooperative-farming groups, TERSA has potential users in food-oriented corporations and large-cooperative-agribusiness operations. The following topics are considered in detail: greenhouse tomatoes and cucumbers; fish farming; mushroom culture; biogas and heat exchanger selection; and the system.

715. GGIS-100001/J/APGAB/ 2/A/**/ /US/ /*****

Title- Trapping Mechanisms for Oil in Lower Cretaceous Muddy Sandstone in Recluse Field, Wyoming

Author(s)- / Berg , R. R. /

Conference- Soc. Econ. Paleontol. Mineral. Annu. Mtg.

Publisher- Am. Assoc. Petr. Geol.

Publication date- 1975

Pagination- Page 3

716. GGIS-100224/B/ /*****/A/77/ /US/ /150303 Bebout

Title- Trend Areas and Exploration Techniques

(In; Geology of Alternate Energy Resources in the South-Central United States)

Subtitle- Subsurface Techniques for Locating and Evaluating Geopressured Geothermal Reservoirs Along the Texas Gulf Coast

Author(s)- / Bebout , D. G. /

Publisher- Houston Geological Society
Houston, Texas

Publication date- 1977

Pagination- Page 251 , 23 Pages

Available- Geothermal Information Services
318 Cherrywood St.
West Covina
CA
91791

(\$ 25.00)

Categories-

Geothermal Energy

(Geothermal Exploration and Exploration Technology)

Geothermal Exploration and Exploration Technology

(Exploratory Drilling and Well Logging)

Proposed Descriptor(s)- / Depositional environment / Exploration methods / Formation thickness / Frio Formation / Geopressure exploration / Geopressured reservoirs / Geopressured zones / Gulf Coast / Resource evaluations / Sand / Sand trends / Texas /

Abstract by TIC

A high percentage of the Texas Gulf Coast oil and gas is produced from the Frio Formation; most of the hydrocarbons are

Geopressured Geothermal Bibliography

derived from fluvial sands on the updip portion of the Frio Sedimentary wedge and are less than 100 feet thick. The downdip Frio sands are considerably thicker 100 to 700 feet (31 to 214 M) and were deposited either as deltas or as strandplain deposits. These thick sands at depths greater than 10,000 feet commonly produce water fresher than sea water with temperatures between 250 to 300 DEG F (122 to 150 DEG C) and are saturated with methane gas. The objective of this project is to evaluate the potential of producing water from these large geopressured reservoirs in order to obtain thermal energy, methane gas, and potable water. The first essential step in such an evaluation is to determine regional trends of the sand bodies and their depositional environments. Sand-percent maps of the lower part of the Frio outline thick dip-oriented sand bodies which were deposited as high-constructive deltas along the lower Texas Gulf Coast. To the north, along the middle and upper Texas Gulf Coast, sands along the main sand depocenter are strike-aligned and were deposited as strandplain sands and barrier bars. The sands of the upper part of the Frio, on the other hand, are predominantly strike-oriented throughout the Texas Gulf Coast. Sand-percent maps along with isothermal maps identify gross geothermal fairways which contain sand bodies greater than 300 DEG F (122 DEG C). More detailed studies of these fairways, then, incorporate both detailed analysis of sand distribution with closely spaced well-logs and porosity and permeability data obtained from core analysis and log interpretation.

717. GGIS-100178/J/ENERA/*****/A/**/ /DE/ /290400

Title- Trends in the Development of Heat and Power Production

Author(s)- / Jurisch , J. /

Journal- Energie

Publication date- Vol. 26 , Issue 10 , 1974

Pagination- Page 291 , 6 Pages

Language- German

Categories-

Geothermal Energy

(Resources and Availability)

Energy Management and Policy

(Energy Resources)

Solar Energy

(Resources and Availability)

(Ocean Thermal Gradient Power Plants)

Hydro Energy

(Resources and Availability)

Tidal Power

Proposed Descriptor(s)- / Coal reserves / Energy consumption / Energy sources / Forecasting / Geopressed systems / Geothermal energy / Hydroelectric power / Natural gas deposits / Ocean thermal energy conversion / Petroleum deposits / Reviews / Solar energy / Tidal power /

Abstract by DOE/RECON

A survey is made of the present state of energy consumption and estimates are made of future demand. Both conventional and new energy sources are discussed. It is predicted that no major shortage of energy will occur within the next century. The total reserves of petroleum and natural gas are estimated to be 3.46×10^{11} and 2.33×10^{11} tons (coal equivalent), respectively. the western hemisphere is believed to be essentially independent of the eastern hemisphere with regard to natural gas. New sources of coal, ranging from anthracite to lignite, are continuously being discovered in previously unsurveyed countries. Production of coal, however, continues to decline. New energy sources which may be considered to be essentially renewable and environmentally clean are hydrodynamic power, tidal energy, ocean thermal gradients, geopressed energy, solar energy, and geothermal energy. The potential output of geothermal energy is estimated to be 2.0×10^{13} tons (coal equivalent). The geothermal energy potential of the U.S.A. as of 1985 is predicted to be about 400 GW.

718. GGIS-100995/ / /*****A/78/ /US/ /***** Nichols

Title- Turbine Testing in Direct Contact Binary Loop

Author(s)- / Hunt , J.W. / Lobach , J.L. / Nichols , K.E. /

Publication date- Vol. 2 , Issue 2 , 1978

Geopressured Geothermal Bibliography

Pagination- Page 499 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Barber-Nichols Engineering Co. /9508482/.
Arvada , Colorado , USA

Auxiliary expression(s)-

Table

Illus.

/ Diagram (1) / Graph (2) /

Ref.

Proposed Descriptor(s)- / Binary cycles / Equipment / Geothermal
brines / Heat exchangers / Power generation / Scaling / Testing /
Turbines / 2-methylpropane /

Abstract by Author

The turbine power loop test program successfully demonstrated the production of electricity from a geothermal source using isobutane in a direct contact heat exchanger. The tests were completed at the East Mesa Component Test Facility utilizing brine from well Mesa 6-2. The turbo-generator unit consists of an axial flow, partial admission turbine, a gearbox, and a 60 KW 3600 rpm KATO generator. These components, along with controls and safety features, were mounted on a common skid. The turbine was calibrated on pure isobutane at subcritical and supercritical turbine inlet conditions. The IC (sub 4) was heated using a conventional tube and shell heat exchanger. An endurance run of 500 hours was then completed using an existing direct contact heat exchanger loop designed and operated by DSS Engineers of Ft. Lauderdale, Florida. At the conclusion of this testing, the turbine, connecting pipes, and a portion of the direct contact heat exchanger were disassembled and inspected for evidence of scaling or erosion in the test hardware. The only scale deposition noted was in the turbine nozzles and blading. The remainder of the loop was in good condition and gave no evidence of distress which would prevent continued operation of the test loop. The scale formed on the nozzles and blading was shown to be primarily silicate by analysis. It was

felt that liquid brine carryover was occurring. A demister component was added between the DCHX and the turbine and a subsequent 105 hour run showed insignificant scaling in the turbine.

719. GGIS-100215/J/ /*****/A/77/ / / /***** Djurasek

Title- Two Examples of Overpressure Prediction and Detection Based on Seismic Data

Author(s)- / Baric , F. / Djurasek , S. /

Journal- Geophys. Prospect.

Publication date- Vol. 25 , Issue 3 , 1977

Pagination- Page 595 , 2 Pages

Proposed Descriptor(s)- / Bangladesh / Detection / Geopressure / Geopressure exploration / Seismic prospecting / Seismic detection / Yugoslavia /

720. GGIS-100295/J/ENERB/*****/A/78/ / / /***** Garg

Title- Two-Phase Flow in Geopressured Geothermal Wells

Author(s)- / Garg , S.K. / Pritchett , J.W. /

Journal- Energy Convers.

Publication date- Vol. 18 , Issue 1 , 1978

Pagination- Page 45 , 7 Pages

Corporate Author- Systems, Science and Software /9500706/.
La Jolla , California , USA

Auxiliary expression(s)-

Geopressured Geothermal Bibliography

Ref.

Illus.

/ Graph (6) / Map (2) /

Table

Proposed Descriptor(s)- / Aquifers / Compressibility / Depth / Flow
Rate / Gas Production / Geopressured Wells / Mathematical Models
/ Methane / Permeability / Reservoir Temperature / Two Phase Flow
/ Water Production /

Abstract by Compendex

The production characteristics of two-phase (free methane and liquid water with dissolved methane) geopressured geothermal wells are analyzed. The fluid flow in the aquifer is treated as single-phase (liquid water with dissolved methane) unsteady radial Darcian flow; two-phase flow is assumed to occur only in the cased part of the production hole. The mathematical model allows for different gas and liquid velocities in the two-phase regime. Sample calculations illustrate the effects on production of aquifer permeability and compressibility, the depth of the geopressured aquifer, the reservoir temperature, and the dissolved methane content of the aquifer fluids.

721. GGIS-100037/J/ /17610/A/75/ / / /***** Eng. Min. J.

Title- U.S. Geothermal Resources

(No Panacea, but Potential for Additional Energy)

Journal- Eng. Min. J.

Publication date- Vol. 176 , Issue 10 , 1975

Pagination- Page 29 , 2 Pages

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / California / Forecasting / Geopressured
systems / Power generation / Temperature measurement /

722. GGIS-100058/J/OIGJA/ 7247/A/**/ / / /*****

Title- U.S. Geothermal, Geologic Patterns Compared

Author(s)- / Horn , M. K. / Lassley , R. H. / Shelton , J. W. /

Journal- Oil and Gas Journal

Publication date- Vol. 72 , Issue 47 , 1974

Pagination- Page 173 , 2 Pages

Categories-

Exploration

(Geophysics)

Proposed Descriptor(s)- / Geothermal gradients / Gravity surveys /
Heat flow / Maps / Regional geology / Texas / Wells /

723. GGIS-100100/R/ /*****/M/77/ / / /***** Gang

Title- U.S. Gulf Coast Geopressured Geothermal Reservoir Simulation
(Final Report)

Author(s)- / Garg , S. K. / Pritchett , J. K. / Rice , M. H. / Riney
, T. D. /

Publication date- 1977

Pagination- 112 Pages

Report/patent- SSS-R-77-3147

Corporate Author- Systems, Science, and Software
La Jolla , California , USA

Geopressured Geothermal Bibliography

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Computer calculations / Density / Diagrams
/ Fluid flow / Geopressures systems / Injection wells / Louisiana
/ Maps / Mathematical models / Non-condensibles / Tables / Texas
/ Theoretical treatments / Thermodynamic properties /
Water-methane mixtures / Water /

724. GGIS-100237/J/AGAMA/*****/A/78/ / / *****/ Sarkes

Title- Unconventional Gas Supply Options

Author(s)- / Nicholls , John / Sarkes , Louis A. /

Journal- Am. Gas. Assoc. Mon.

Publication date- Vol. 60 , Issue 1 , January 1978

Pagination- Page 25 , 6 Pages

Auxiliary expression(s)-

Illus.

/ Graph (1) / Photo (3) /

Table

Ref.

Proposed Descriptor(s)- / Availability / Energy source development /
Energy supplies / Geopressure resources / Natural gas / Natural
gas deposits / Resource assessment /

Abstract by EIC

Future gas supplies, under the proper regulatory and economic conditions, can be developed in a time frame that can assure the U. S. with a constant and adequate supply for many years. Gas from waste materials, bioconversion research, determination of development parameters, SNG from coal, HYGAS, carbon dioxide acceptors, BIGAS, steam-iron hydrogen, SNG from oil shale,

geopressured water zones, production past 1985, and SNG from biomass are discussed. Though the potential supply of unconventional gas exceeds both proved reserves and potential resources of conventional gas, little research has been done to develop them. At a consumption rate of 20 TCF/YR, there are from 35-65 years of conventional gas supply remaining to be produced.

725. GGIS-100075/ / /*****/M/**/ / / /*****
E(40-1) 4900

Title- United States Gulf Coast Geopressured Geothermal Management and Scope-of-Work Study for Generation of Electrical Power

Publication date- Vol. 5

Note- Sec 2. Geopressured Geothermal Energy Conference 500

Sponsor- / U. S. ERDA
E(40-1) 4900 /

726. GGIS-100327/R/ /*****/M/79/ /US/ /***** Dorfman
EY-76-S-05-5243

Title- United States Gulf Coast Geopressured Geothermal Program
(Final Report for the Period 1 October 1977 - 30 November 1978.)

Subtitle- Special Projects Research and Coordination Assistance

Author(s)- / Bebout , D.G. / Dorfman , Myron H. /

Publication date- April 1979

Pagination- 124 Pages

Report/patent- ORO-5243-T1

Available- NTIS

Geopressured Geothermal Bibliography

(Paper Copy

(A07) (\$ 7.25)

(Microfiche

(A01) (\$ 3.00)

Local Availability- CES

Sponsor- / U.S. Department of Energy /9506839/.

EY-76-S-05-5243 /

Auxiliary expression(s)-

Illus.

/ Figure (1) /

Table

Appendix

Proposed Descriptor(s)- / Geopressured drilling / Geopressure
exploration / Geopressured reservoirs / Legal aspect / Research
programs / Resource assessment / Texas / Well completion / Well
logging /

Abstract by Author

The United States Gulf Coast Geopressured Geothermal Program Special Projects Research and Coordination Assistance contract calls for the Center for Energy Studies and the Bureau of Economic Geology at UT Austin to assist DOE/DGE in the orderly development of the potential Geopressured Geothermal resource in the Gulf Coast region. In general, this coordination assistance function takes the form of providing liaison with various industrial components that participate in the program and with state and local agencies. This document contains a report of the activities of the UT research group in the areas of Coordination and Assistance as performed under this contract. The material is grouped by activities as described in the proposal from which the contract was generated.

727. GGIS-100241/O/ /*****A/77/B/US/ /299002 Goldstein

Title- Unitization for Geothermal Resources

Subtitle- United We Save

Author(s)- / Goldstein , D. B. /

Conference- Geothermal Resources Development Institute Conference
Salt Lake City
Utah
USA (January 27 , 1977)

Publisher- Rocky Mountain Mineral Law Foundation
Boulder, CO

Publication date- January 27 , 1977

Pagination- 40 Pages

Report/patent- CONF-770135--

Categories-

Energy Management and Policy

(Unconventional Sources and Power Generation)

Unconventional Sources and Power Generation

(Geothermal)

Proposed Descriptor(s)- / Efficiency / Energy source development /
Geothermal resources / Geysers Geothermal Field / Legal aspects
/ Reservoir models / Unitization /

Abstract by TIC

The following subjects are discussed: a reservoir model, unitization applied to the geothermal model, maximizing total energy recovery through unitized operations, maximizing the economic use of recovered geothermal energy, prevention of the drilling of unnecessary wells, the need for drilling units, protection of correlative rights, allocation of unit production, "stand-by" wells, injection, rights-of-way, statutory law applicable to geothermal unitization in California, practical obstacles to voluntary unitization, and the need for compulsory geothermal unitization. (MHR)

728. GGIS-100240/J/ /*****A/77/ / /***** Goldstein

Geopressured Geothermal Bibliography

Title- Unitization for Geothermal Resources

Subtitle- United We Save

Author(s)- / Goldstein , Dennis B. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 159 , 28 Pages

Auxiliary expression(s)-

Ref.

Proposed Descriptor(s)- / Efficiency / Energy source development /
Geothermal resources / Geysers Geothermal Field / Unitization /

Abstract by EIC

The lack of unitization or pooling at the Geysers Geothermal Field in California should not be construed as an indication that such cooperative development is unnecessary or lacks utility. Unitization is applied to the geothermal model of the Geysers reservoir. Benefits of unitized operations would be as valuable in the geothermal context as in the oil and gas context. Timely enactment of compulsory unitization schemes is necessary to prevent unnecessary inefficiency and waste in the geothermal industry.

729. GGIS-100066/J/W00IA/18201/A/**/ / / /*****

Title- Use of Seismic Data Can Cut Arctic Drilling Costs

Author(s)- / Dumont , A. E. / Purdy , V. S. /

Journal- World Oil

Publication date- Vol. 182 , Issue 1 , January 1976

Pagination- Page 71 , 4 Pages

Proposed Descriptor(s)- / Arctic regions / Cost / Drilling / Drilling fluids / Drilling rigs / Equipment / Geopressured systems / Oil wells / Petroleum / Seismic surveys / Velocity / Well drilling /

Abstract by ERDA/RECON

In the frontier drilling areas, geophysical data are important tools in information from offset wells is seldom available. By using seismic interval velocity profiles, Gulf Oil Canada has been able to predict troublesome drilling areas and abnormally high pressures in addition to reducing drilling costs through better utilization of bits and casing.

730. GGIS-100154/0/ /*****/A/**/ /US/ /*****
W-7405-ENG-48

Title- Using Salton Sea Geothermal Brines for Electrical Power

Subtitle- A Review of Progress in Chemistry and Materials Technology, 1976 status

Author(s)- / Tardiff , George E. /

Conference- Intersociety Energy Conversion Engineering Conference
Washington, D. C. (August 28 , 1977)

Publication date- May 31 , 1977

Pagination- 12 Pages

Report/patent- CONF-770804-8

Available- NTIS

(Paper copy

(A02) (\$ 4.00)

(Microfiche

(A01) (\$ 3.00)

Sponsor- / ERDA

Geopressured Geothermal Bibliography

W-7405-ENG-48 /

Corporate Author- California University, Livermore /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Graph (5) / Photo (8) /

Table

Ref.

Proposed Descriptor(s)- / Chemical composition / Corrosion resistance
/ Corrosion resistant alloys / Flashing / Geothermal brines /
Materials testing / Precipitation / PH adjustment / Salton Sea /
Scaling / Scaling control / Total flow systems /

Abstract by Author

Geothermal energy development research at the Lawrence Livermore Laboratory through 1976 has been aimed at solving the problems associated with the use of high-temperature, high-salinity brines found in the Salton Sea Geothermal Field for their practical conversion to electrical energy. Specifically, part of the program has been oriented toward solving the problems of scale and solids deposition and corrosion of system components that are exposed to the highly mineralized brines. Brine acidification was found to be a promising method for controlling scale and solids deposition. Titanium, zirconium, and chromium-molybdenum alloys were shown to be the best economical corrosion-resistant materials for use in various parts of a total-flow turbine system. Scale and solids control and materials tests for conversion systems based on brine flashing are currently being evaluated. Some initial results and test plans are discussed.

731. GGIS-100995/ / /*****/A/78/ /US/ /***** Morrison

Title- Utilization of Geothermal Cooling Waters for Waste Containment

Author(s)- / Morrison , Robert D. /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 469 , 2 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Auxiliary expression(s)-

Illus.

/ Diagram (2) /

Ref.

Proposed Descriptor(s)- / Binary power generation / Coding systems /
Geothermal power plants / Waste heat / Waste water /

Abstract by Author

Geothermal power production utilizing a binary conversion process requires a substantial quantity of water for the cooling of the secondary or working fluid. Once this cooling water has left the condenser in such a system, it requires some form of process to lower its temperature. Several process alternatives are available: an evaporative dry cooling tower, a wet cooling tower, or a cooling lake. In those operations where a cooling lake is utilized or where large amounts of makeup water are stored, certain design parameters can be easily integrated into this cooling loop for the purpose of isolating geothermal or associated wastes. The necessary physical conditions and benefits of this arrangement are the subject of this paper.

732. GGIS-100134/R/ /*****/M/**/ /US/ /*****
EY-76-C-03-1249

**Title- Utilization of Seismic Exploration Technology for High
Resolution Mapping of a Geothermal Reservoir**

Subtitle- Final Report

Author(s)- / Cherry , J. T. / Goupillaud , P. L. /

Geopressured Geothermal Bibliography

Publisher- ERDA
Washington, D. C.

Publication date- April 1977

Pagination- 59 Pages

Report/patent- SAN/1249-1

Available- NTIS

(Paper copy (\$ 4.50)

(Microfiche (\$ 3.00)

Sponsor- / ERDA

EY-76-C-03-1249 /

Corporate Author- Systems, Science and Software
La Jolla , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (4) / Graph (28) / Map (2) /

Ref.

Categories-

KGRA

(East Mesa)

Proposed Descriptor(s)- / Compressional waves / East Mesa KGRA / East Mesa / Exploration / Geothermal exploration / Geothermal reservoirs / Geothermal reservoir / Imperial Valley / Seismic P waves / Seismic reflection surveys / Seismic S waves / Seismic reflection / VP/VS ratio / "Vibroseis" technique /

Abstract by Author

A seismic reflection survey using the "Vibroseis" technique and a combination of both compressional and horizontally polarized shear waves has been successfully completed over the

East Mesa Geothermal Field. The interpreted results of the survey clearly demonstrate that: 1) the compressional waves have the resolving power to detect anomalous conditions such as faults and fracture zones of critical importance in geothermal reservoir investigations; 2) the shear waves have penetrated to the target depth but the lower quality of the data thus acquired renders its processing and interpretation more difficult and less reliable. However, it also contains information which may prove essential for lithological discrimination, such as estimating the ratio VP/VS of the velocities.

733. GGIS-100113/R/ /*****/M/76/ / / /***** Reitzel

Title- Utilization of U.S. Geothermal Resources

(Final Report)

Author(s)- / Reitzel , J. /

Publisher- TRW, Inc.
Redondo Beach, California (USA)

Publication date- 1976

Report/patent- ER-382

Corporate Author- TRW, Inc.
Systems and Energy Group
Redondo Beach , California , USA

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / California / Diagrams / Economics /
Forecasting / Geopressured systems / Geothermal wells /
Geothermometers / Hot springs / Idaho / Losses / Louisiana / Maps
/ Nevada / New Mexico / Oregon / Power generation / Tables /
Tectonics / Temperature measurement / Texas / Theoretical
treatments / Utah / Wyoming /

Geopressured Geothermal Bibliography

734. GGIS-100132/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

Title- Vapor-Droplet Flow Equations

Author(s)- / Crowe , C. T. /

Publication date- August 18 , 1975

Report/patent- UCRL-51877

Sponsor- / ERDA

W-7405-ENG-48 /

Corporate Author- California University, Livermore /9500007/.

Lawrence Livermore Laboratories
Livermore , California , USA

Proposed Descriptor(s)- / Energy transfer / Equations / Mass transfer
/ Phase transformations / Vapor dominated hydrothermal systems /
Vapor droplet flow /

Abstract by Author

This report discusses the general features of a vapor-droplet flow and derives the equations expressing the conservation of mass, momentum, and energy for the vapor, liquid, and mixture using the control volume approach. The phenomenological laws describing the exchange of mass, momentum, and energy between phases are also reviewed. The results have application to development of water-dominated geothermal resources.

735. GGIS-100058/J/OIGJA/*****/A/78/ /US/ /***** Kuuskraa

Title- Vast Potential Held by Four "Unconventional Gas Sources

Author(s)- / Brashear , J.P. / Doscher , Todd M. / Elkins , Lloyd E.
/ Kuuskraa , Vello A. /

Publication date- Vol. 76 , Issue 24 , June 12 , 1978

Pagination- Page 47 , 8 Pages

Corporate Author- Lewin and Associates, Inc. /9503039/.
Washington , D.C. , USA

Auxiliary expression(s)-

Illus.

/ Graph (6) / Map (2) /

Table

Ref.

Proposed Descriptor(s)- / Exploitation / Gas production /
Geopressured zones / Methane / Natural gas / Permeability /
Resource assessment /

Abstract by Compendex

A study of unconventional sources of natural gas shows that advanced technology and a \$3/Mcf gas price could stimulate U.S. production from these sources and potentially double the amount of currently proved natural gas reserves. As much as 220 trillion cu. ft. of additional gas is projected. These unconventional sources include tight gas basins, Devonian shale, methane from coal seams, and methane from geopressured aquifers.

736. GGIS-100303/R/ /*****/M/77/ /US/ /***** Fair

Title- Viscosity and Density Tables of Sodium Chloride Solutions

Author(s)- / Fair , James A. / Ozbek , Huseyin / Phillips , Sidney L.

Publication date- April 1977

Pagination- 48 Pages

Corporate Author- California Univ., Berkeley /1112800/.

Lawrence Berkeley Lab., National Geothermal Information Resource
Berkeley , California , USA

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Aqueous solutions / Bibliographics / Data /
Density / Elevated concentration / Elevated pressure / Elevated
temperature / Geothermal resources / Low concentration /
Moderate concentration / Sodium chlorides / Viscosity /

Abstract by Author (rev.)

Numerical data printouts on the viscosity and density of sodium chloride solutions at elevated temperatures and pressures is presented. The printouts contain tabulated experimental data which were extracted from the available literature and which, where necessary, were recalculated to conform to the following units: molality, g/cm³, and 12°C atomic weight standard. These data tabulations give the user a comprehensive consideration of the current status of experimental data on the viscosity and density of sodium chloride solutions at elevated temperatures and pressures, data urgent both to research and development of geothermal electrical and non-electrical systems. The bibliography follows the tables.

737. GGIS-100141/R/ /*****/M/**/ /US/ /*****
W-7405-ENG-48

Title- Viscosity of Aqueous Sodium Chloride Solutions from 0-150 DEG
C

Author(s)- / Fair , J. A. / Ozbek , H. / Phillips , S. L. /

Publication date- December 1977

Pagination- 61 Pages

Report/patent- LBL-5931

Note- Presented in part at the American Chemical Society 29.
Southeast Regional Meeting, Tampa, FL. NOV. 9-11, 1977.

Sponsor- / U. S. Department of Energy

W-7405-ENG-48 /

Corporate Author- California University, Berkeley /1112800/.

Lawrence Berkeley Laboratories
Berkeley , California , USA

Auxiliary expression(s)-

Illus.

/ Graph (5) /

Table

Ref.

Proposed Descriptor(s)- / Aqueous solutions / Concentration
dependence / Elevated temperature / Empirical equations /
Pressure dependence / Sodium chlorides / Temperature dependence
/ Viscometers / Viscosity /

Abstract by Author

A critical evaluation of data on the viscosity of aqueous sodium chloride solutions is presented. The literature was screened through October 1977, and a databank of evaluated data was established. Viscosity values were converted when necessary to units of degrees C, centipoise and molal concentration. The data were correlated with the aid of an empirical equation to facilitate interpolation and computer calculations. The result of the evaluation includes a table containing smoothed values for the viscosity of NaCl solutions to 150 DEG C.

738. GGIS-100995/ / /*****A/78/ /US/ /***** Potter

Title- Viscosity of Geothermal Brines

Author(s)- / Potter , Robert W., II /

Publication date- Vol. 2 , Issue 2 , 1978

Pagination- Page 543 , 2 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Geopressured Geothermal Bibliography

Auxiliary expression(s)-

Table

Ref.

Proposed Descriptor(s)- / Geothermal brines / Models / Salinity /
Viscosity /

Abstract by Author

One of the prerequisites of modeling the flow of fluid in a geothermal reservoir is knowledge of the viscosity of the fluid involved. Due to a general paucity of viscosity data for high-temperature brines, the general practice outside the petroleum industry has been to use some empirical correlation of the viscosity of pure water other than those formulated for the steam tables. This paper suggests some alternative methods to model the viscosity of brines and describes a model which allows the limited data for brines to be extrapolated to conditions of interest in a geothermal reservoir.

739. GGIS-100393/O/ /*****/A/80/ /US/ /***** Schwab
5011-321-0125

Title- Visual Kerogen and Vitrinite Reflectance Analysis of the
Pleasant Bayou No. 1 Well, Brazoria County, Texas

Author(s)- / Schwab , Karl W. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 85 , 47 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Gas Research Inst., Chicago, IL (USA) /9507097/.

5011-321-0125 /

Corporate Author- Geo-Strat, Inc. /9510721/.
Houston , TX , USA

Auxiliary expression(s)-

Illus.

/ Diagram (16) / Graph (6) / Map (1) / Figure (1) /

Table

Proposed Descriptor(s)- / Bottom hole temperature / Brazoria County /
Cuttings analysis / Exploitation / Frio Formation / Geopressured
zones / Geothermal gradients / Hydrocarbons / Kerogen /
Maturation / Methane / Organic matter / Pleasant Bayou No. 1 Well
/ Production testing / Reflectance / Sedimentation / Strata /
Vitrinite /

Abstract by Author

Visual kerogen vitrinite reflectance analyses of forty (40) well cuttings samples and two (2) core specimens from the Pleasant Bayou No. 1 well show that the maturation of the sediments ranges from immature at 2,894 feet to marginally mature at 16,500 feet. A significant jump in the thermal maturation index, T.A.I., occurs near the T-3 seismic horizon of the Frio Formation. Whether this jump represents a regional unconformity, a change in the environment of deposition, or a change in the quality of the drill cuttings is unclear at this writing. Although the present temperature of the sediments at 16,500 feet is in excess of 325 DEG F, the color of the extracted palynomorphs indicates that the paleotemperature was considerably less, probably in the range of 190 DEG F to 200 DEG F. <Note: Paleotemperature, as used in this report, refers to the maximum sustained temperature experienced by the kerogenaceous debris since its deposition and incorporation into the surrounding sediment. It is the paleotemperature which is used to define the state of thermal maturity and the hydrocarbon facies one can expect to encounter in a given stratigraphic section.> The organic matter type, O.M.I., as defined from the visual kerogen slides, is variable. Above 6,080 feet the kerogenaceous debris is predominantly an amorphous, spore-pollen, vitrinite suite. Its source quality, i.e. "oil generating potential," is good. From 6,080 feet to T.D., the kerogen assemblage is primarily a vitrinite, plant tissue, and spore-pollen mixture. Its source quality, insofar as lipid-rich constituents are concerned, is fair. Distinct changes in the organic matter suite were observed in the Miocene

Geopressed Geothermal Bibliography

between 5,360 and 6,080 feet and at the top of the Frio, 9,020 to 9,440 feet, and at the T-3 seismic horizon, 11,180 to 11,600 feet. Additional variations can also be seen between the T-3/T-4 and T-4/T-5 seismic horizons at 11,180-11,600 and 12,260-12,680 feet respectively. Due to the gross immaturity of the sediments in the Pleasant Bayou No. 1 Well, one can only speculate that the major hydrocarbons which have been formed in situ consist of non-commercial quantities of biogenic methane and/or wet gas. This prediction does not exclude the possibilities of large accumulations of thermally derived methane.

740. GGIS-100031/J/ / 54/A/**/ / / /*****

Title- Wairakei Geothermal Steam Project

Journal- Civ. Eng. (London)

Publication date- Vol. 54 , February 1969

Pagination- Page 191 , 4 Pages

Proposed Descriptor(s)- / Geopressed systems / Geothermal fluids /
Geothermal wells / New Zealand / Performance / Specifications /
Wairakei Geothermal Field /

741. GGIS-100240/J/ /*****/A/77/ / / /***** Hansen

Title- Water Conflicts from the Viewpoint of a Regulator

Author(s)- / Hansen , Dee C. /

Journal- Land Water Law Review

Publication date- Vol. 13 , Issue 1 , 1977

Pagination- Page 151 , 8 Pages

Proposed Descriptor(s)- / Energy source development / Evaporation /
Geothermal resources / Legal aspects / Water rights /

Abstract by EIC

The potential for geothermal development in the western U. S. appears very good. The biggest hurdle to overcome is the large quantities of water that will be consumptively evaporated into the atmosphere in the generations of electricity. At present, there are more questions than answers as to the effects of geothermal development on existing water rights.

742. GGIS-100053/J/JPTJA/*****/A/**/ /US/ /*****

Title- Water Drive from Interbedded Shale Compaction in Superpressured Gas Reservoirs

Subtitle- A Model Study

Author(s)- / Chierici , G.L. / Ciucci , G.M. / Sclocchi / Terzi , L.
/

Publication date- Vol. 30 , Issue 6 , June 1978

Pagination- Page 937 , 10 Pages

Proposed Descriptor(s)- / Compaction / Geopressure / Geopressured reservoirs / Natural gas deposits / Permeability / Sand / Shale / Simulation / Water drive /

Abstract by J. Pet. Tech.

The behavior of abnormally high-pressured gas reservoir in sand formations with randomly interbedded, thin, noncontinuous shale layers is examined using numerical simulation. The relevance of the internal water drive resulting from shale compaction and the influence of mobile water generation on reservoir and well behavior are discussed.

743. GGIS-100018/0/ / 8/M/**/ / / /*****

Title- Water Management by the Electric Power Industry

Author(s)- / Gloyna , E. F. /

Geopressured Geothermal Bibliography

Conference- Water Resources

Publication date- Vol. 8 , 1975

744. GGIS-100053/J/JPTJA/ 2107/A/**/ / / /*****

Title- Water Production from Abnormally Pressured Gas Reservoirs in South Louisiana

Author(s)- / Wallace , W. E. /

Journal- Journal of Petroleum Technology

Publication date- Vol. 21 , Issue 7 , July 1969

Pagination- Page 969

Auxiliary expression(s)-

Ref.

Categories-

Natural Gas Wells

(Dewatering)

Proposed Descriptor(s)- / Dewatering / Natural gas wells / Petroleum reservoir engineering /

Abstract by NTIS

In some cases, when gas is produced from geopressured reservoirs, water will appear in quantity, occasionally to exclusion of all gas; Gulf Coast area contains many thick sections of undercompacted shales with interspersed geopressured sand lenses; when pressures within these lenses are reduced by gas production, compaction process, interrupted by state approaching equilibrium, is permitted to resume; as result water is often expelled from shale into space formerly occupied by gas and ultimately reaches well bore; activity of water can be anticipated and calculated. 15 refs.

745. GGIS-100002/0/PASPC/ 2/A/**/ / / /*****

Title- Water Production from Abnormally Pressured Gas Reservoirs in South Louisiana

(2. Part)

Author(s)- / Wallace , W. E. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 2 , 1970

Pagination- Page 63 , 16 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Connate water / Engineering geology / Gas /
Geopressured reservoirs / Geopressure / Ground water / Gulf
Coast / Louisiana / Production / United States /

746. GGIS-100169/J/JAWWA/*****/A/**/ /US/ /150800

Title- Water Required to Develop Geothermal Energy

Author(s)- / Dorfman , M. H. /

Journal- Journal of the American Water Works Association

Publication date- Vol. 68 , July 1976

Pagination- Page 370 , 5 Pages

Categories-

Geothermal Energy

Geopressured Geothermal Bibliography

(Geothermal Power Plants)

Proposed Descriptor(s)- / Binary fluid systems / Contamination / Environmental effects / Geopressured systems / Geothermal resources / Geothermal energy conversion / Ground subsidence / Ground water / Hot water systems / Pollution / Vapor dominated systems / Water pollution / Water requirements /

Abstract by DOE/RECON

Geothermal resources may be found distributed in the earth in a variety of modes consisting of various fluid and reservoir characteristics. It seems likely that these resources will represent a substantial portion of the world's total energy supply as the availability of petroleum declines. Important environmental considerations, however, including the problems of subsidence and ground-water contamination, must be further researched in order to determine the extent of possible problems and methods for mitigating their effects.

747. GGIS-100018/0/ / 8/A/**/ / / /150100

Title- Water Required to Develop Geothermal Energy, Problems of Residuals Disposal and Geopressured Zones as Water Sources

(Paper 21 in Water Management by the Electric Power Industry)

Author(s)- / Dorfman , Myron H. /

Conference- Water Resources

Publication date- Vol. 8 , 1975

Pagination- Page 230 , 12 Pages

Auxiliary expression(s)-

Illus.

Proposed Descriptor(s)- / Geological surveys / Geopressured systems / Geopressure / Geothermal energy / Geothermal resources / Hot water systems / Production / Reviews / Uses / Vapor dominated systems / Water requirements / Water resources /

Abstract by ERDA/RECON

Geologic modes of geothermal occurrence that are in current use and those that appear to represent potential sources of useful energy are described. The concomitant water problems and benefits that may be associated with each type are discussed. Vapor-dominated, liquid-dominated, and geopressurized zones are considered. (MOW)

748. GGIS-100018/0/ / 8/A/**/ / /*****

Title- Water Required to Develop New Fuel Sources

(Section 4 in Water Management by the Electric Power Industry)

Author(s)- / Backus , Charles E. / Brown , Merwin L. / Dorfman ,
Myron H. / Hocott , Claude R. / Parker , Frank L. / Shock , D.
A. / Underhill , G. K. /

Conference- Water Resources

Publication date- Vol. 8 , 1975

Pagination- Page 225 , 53 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (16) / Graph (6) / Map (8) / Photo (5) /

Ref.

Table

Categories-

Water Supply

(Industrial)

Geothermal Energy

(Geo Brine)

(Hot Water)

Proposed Descriptor(s)- / Acid mine drainage / Coal mining / Coal
preparation / Coal slurry pipelines / Geo brine / Geothermal

Geopressured Geothermal Bibliography

energy / Hot water / Industrial water supply / Nuclear fuel cycle
/ Nuclear fuel processing / Secondary recovery / Solar power
plants / Tertiary recovery / Water flooding /

Abstract by Energyline

Water requirements for development and processing of oil recovery, geothermal energy, nuclear fuels, coal, and solar energy are reviewed. Enhanced oil recovery relies primarily on water as the basic displacing agent. Modes of geothermal energy, such as vapor- and liquid-dominated convective systems and geopressured zones, all have different fluid and reservoir characteristics, and water problems and benefits; electric generation mechanics are diagramed for each. Total water and electric energy requirements are given for one 1000 MWE LWR for: uranium mining and milling, uranium hexafluoride production, uranium enrichment, fuel fabrication, reactors, fuel reprocessing, and waste management. The coal mining industry is profiled; eastern coal mining requires design for minimal water drainage, water treatment plants, and close control of water in coal preparation plants, while western coal mines require more attention to hazards of stripmining. Solar power water requirements are also reviewed. (16 diagrams, 6 graphs, 8 maps, 5 photos, 68 references, 9 tables)

749. GGIS-100018/0/ / 8/A/**/ / /150600

Title- Water Requirements for Geothermal Energy Utilization

(Paper 22 in Water Management by the Electric Utility Industry)

Author(s)- / Underhill , G. K. /

Conference- Water Resources

Publication date- Vol. 8 , 1975

Pagination- Page 242 , 8 Pages

Proposed Descriptor(s)- / Cooling / Electric power / Geopressured systems / Geothermal power plants / Hot dry rock systems / Hot water systems / Power generation / Thermal efficiency / Uses / Vapor dominated systems / Water pollution / Water requirements /

Abstract by ERDA/RECON

Geothermal resources are divided into four distinct types: (1) vapor-dominated convective, (2) liquid-dominated convective, (3) geothermal pressure, and (4) hot dry rocks. The characteristics and current uses of these four resource conventional thermal power plants for electricity generation. The impact of low thermal efficiencies of requirements.

750. GGIS-100108/B/ /*****/M/**/ / / *****/

Title- Well logs

Subtitle- A Basic Drilling Tool

Author(s)- / Matthews , W. R. /

Publisher- Petroleum Publishing Company
Tulsa, Oklahoma (USA)

Publication date- 1972

751. GGIS-100007/0/ / 1/A/**/ /US/ /150900

Title- Well-Information Systems as Applied to Geopressured Reservoir Descriptions

Author(s)- / Young , F. S. /

Conference- Geopressured Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 1 , Issue 1 , 1975

Pagination- Page 193 , 12 Pages

Note- GEOREF cites individual papers within the scope of its bibliography under separate authors. R Energyline cites session under names of paper authors. Conference 2. Session Conference 2. Session GEOREF 18 Energyline cites paper authors for session. with discussion. Dean Hardy did not submit a

Geopressured Geothermal Bibliography

copy of his presentation in sufficient time to be included in the proceedings. Discussion. Energyline 2/22/77 #15

Available- Center for Energy Studies

(\$ 12.00)

Available- NTIS

(Paper cover (\$ 10.50)

(Microform (\$ 2.25)

Auxiliary expression(s)-

Illus.

/ Figure (6) / Graph (6) / Photo (3) /

Ref.

Table

Proposed Descriptor(s)- / Geopressured systems / Information systems / Lithology / Measuring methods / Monitoring / Pressure measurement / Temperature measurement / Well drilling / Well logging /

Abstract by ERDA/RECON

Some of the problems encountered in drilling for indigenous energy sources include high temperature and pressure, unstable rock formations, and severe drilling-fluid contamination. To avert the consequences of many of these occurrences, elaborate and sophisticated systems have been developed to monitor the drilling operational safety. In addition, valuable quantitative information is generated during the monitoring process, which can be used to describe subsurface structural features, the nature of pore fluids, and certain basic rock properties useful in reservoir engineering. A brief discussion of contemporary well-information systems, description are emphasized. (LS)

752. GGIS-100308/O/ /*****/A/78/ /US/ /***** Adams

Title- Wellsite Verification Testing of an Advanced Geothermal Primary Heat Exchanger

Author(s)- / Addoms , J.F. / Breindel , B. / Gracey , C.M. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 1 , 4 Pages

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Aerojet Energy Conversion Co. /9501058/.
Sacramento , California , USA

Auxiliary expression(s)-

Illus.

/ Diagram (1) / Photo (3) / Graph (2) /

Proposed Descriptor(s)- / Fouling / Geothermal brines / Heat
exchangers / Scaling control /

Abstract by Author

This paper describes the wellsite test phase of a research program conducted by Aerojet Energy Conversion Company to establish the feasibility of using a recirculating solid bed material to eliminate heat exchanger fouling in geothermal service. Phase I of this program culminated in a laboratory demonstration APEX concept feasibility with brine simulants. Testing under the current project phase of the research effort was conducted at the Geothermal Component Test Facility located at East Mesa, California. Technical feasibility was established by testing the effectiveness of the bed material in preventing the fouling of a heat exchanger test section. The elimination of

Geopressured Geothermal Bibliography

fouling was demonstrated using both geothermal well water and facility cooling water as the fouling fluids.

753. GGIS-100011/0/ /*****/A/**/ / / /*****/

Title- Wet and Dry Steam Systems

(1. Subgroup Paper)

Author(s)- / Williams , David L. /

Conference- Magnitude and Deployment Schedule of Energy Resources

Publication date- September 1975

Pagination- Page 65 , 3 Pages

Report/patent- CONF--750720-

Proposed Descriptor(s)- / Economics / Hot water systems / Land leasing
/ Legal aspects / Mineral rights / Power potential / Resource
development / Taxes / Vapor dominated systems /

754. GGIS-100058/J/OIGJA/*****/A/78/ / / / 30100 Berg

**Title- Wilcox Gas-Reservoir Characteristics in Northeast
Thompsonville Field**

Author(s)- / Berg , R.R. / Tedford , F.J. /

Publication date- Vol. 76 , Issue 6 , February 6 , 1978

Pagination- Page 96 , 7 Pages

Categories-

Natural gas

(Reserves)

Proposed Descriptor(s)- / Geologic structures / Geological setting /
Natural gas fields / Petrography / Reservoir properties /
Reservoir rocks / Sandstone / Subsurface reservoirs / Texas /
Wilcox Formation /

Abstract by TIC

A turbidite origin for deeper Tertiary sandstones is found to be encouraging for future exploration in the Gulf Coast Province. The discovery of Northeast Thompsonville field in 1959 showed significant gas production could be found in the deep Wilcox Eocene of South Texas. Prior to that find, it was generally thought few reservoir sandstones would be present in the dominantly marine-shale facies of the deep Wilcox and the potential for production was poor. The regional structure of South Texas, the petrography of Wilcox sandstones, and the reservoir morphology are examined.

755. GGIS-100393/O/ /*****/A/80/ /US/ /***** Edwards
DE-AS05-76ET-28461

**Title- Wilcox Group - Potential for Geopressured Geothermal
Sandstone Reservoirs**

Author(s)- / Bebout , Don G. / Edwards , Marc B. / Gregory , A. Ray /
Weise , Bonnie R. /

Publisher- 4. Geopressured Geothermal Energy Conference

Publication date- Vol. 1 , June 1980

Pagination- Page 312 , 62 Pages

Available- Center for Energy Studies
University of Texas at Austin
ENS 143
Austin
TX
78712

(Paper copy (\$ 0.0)

Local Availability- CES

Sponsor- / Department of Energy, Washington, DC (USA) /9505475/.

Geopressured Geothermal Bibliography

DE-AS05-76ET-28461 /

Corporate Author- Texas Univ., Austin /9501193/.

Bureau of Economic Geology
Austin, TX, USA

Auxiliary expression(s)-

Illus.

/ Diagram (11) / Graph (4) / Map (16) /

Table

Ref.

Proposed Descriptor(s)- / Areal geology / Colorado Fairway / DeWitt Fairway / Duval Fairway / Fairway analysis / Formation thickness / Geopressure exploration / Geopressured reservoirs / Harris Fairway / Live Oak Fairway / Methane / Power potential / Productivity / Reservoir properties / Resource assessment / Site selection / Stratigraphy / Texas / Wilcox formation / Zapata Fairway /

Abstract by Author

The objective of this study is to identify areas along the Wilcox trend favorable for producing large quantities of hot water from the geopressured zone in order to separate methane from solution and produce electrical energy from heat. Reservoirs likely to contain geopressured geothermal fluids in economic quantities occur in the Wilcox Group where the gulfward-dipping sandstone/shale wedge thickens abruptly across a complex growth-fault system. The Wilcox comprises sandstone-rich upper and lower parts representing two major progradational cycles, and a shale-rich middle part representing a major transgression. Lower Wilcox deltaic sequences occur in lobate patterns along the Middle and Upper Texas Gulf Basin, while major upper Wilcox deltas occur in the Lower Texas Gulf Basin. On the basis of maximum sandstone development and formation temperatures greater than 300 DEG F (149 DEG C), six geothermal fairways were delineated in Zapata, Duval, Live Oak, De Witt, Colorado, and Harris Counties. In addition, detailed studies were conducted to identify sites for drilling test wells. The De Witt Fairway is considered the prime test site area; the Cuero Prospect contains more than 550 ft (170 m) of sandstone with an area of approximately 14 mi**2 (36 km**2). The prospective sandstones occur at the tops of at least eight coarsening upward cycles; progressively shallower cycles contain increasingly permeable sandstones deposited in more proximal deltaic environments. The Colorado Fairway contains the second test site area. The Eagle Lake Prospect contains 1,240 ft (380 m) of sandstone and extends over an area of approximately 10 mi**2 (26 km**2). However,

there is a question as to the presence of adequate thickness of high-permeability zones.

756. GGIS-100308/O/ /*****/A/78/ /US/ /***** Ingvarsson

Title- Working Fluid and Cycle Selection Criteria for Binary Geothermal Power Plant

Author(s)- / Ingvarsson , I.J. / Turner , S.E. /

Conference- Geothermal Resources Council 2nd Annual Meeting
Hilo
Hawaii
USA (July 25 , 1978)

Publisher- Geothermal Resources Council
Davis, California

Publication date- Vol. 2 , Issue 1 , 1978

Pagination- Page 309 , 3 Pages !!

Available- Geothermal Resources Council
P.O. Box 98
Davis
California
95616

Local Availability- CES

Corporate Author- Idaho National Engineering Lab. /9502158/.
Idaho Falls , Idaho , USA

Auxiliary expression(s)-

Illus.

/ Diagram (4) / Graph (1) /

Proposed Descriptor(s)- / Binary cycle power generation / Elevated temperature / Geothermal fluids / Geothermal power plants / Pentane / Propane / Thermodynamic cycles / Working fluids / 2-methylpropane /

Geopressured Geothermal Bibliography

Abstract by Author

Binary cycles using refrigerants as working fluids are an effective means of developing geothermal resources for power production. In order to maximize the utilization of the geothermal fluid resource over a temperature range of from 220 DEG to 400 DEG F (104 DEG to 204 DEG C), a study was performed to optimize a 50 MW plant design with respect to working fluid and thermodynamic cycle. Results indicate that, of the four fluids studied, propane is optimum for geothermal fluid temperatures of 200 DEG to 280 DEG F (93 DEG to 138 DEG C). For a temperature range of 300 DEG to 360 DEG F (149 DEG to 182 DEG C), isobutane performed best, and for temperatures of 380 DEG to 400 DEG F (193 DEG to 204 DEG C), pentane was most effective.

757. GGIS-100042/J/GTEMA/ 402/A/**/ / / /*****

Title- Worldwide Geothermal Energy Resource Development

Author(s)- / Jasso , Abel / Saint , Prem K. /

Journal- Geothermal Energy Magazine

Publication date- Vol. 4 , **Issue** 2 , February 1976

Pagination- Page 5 , 7 Pages

Auxiliary expression(s)-

Illus.

/ Diagram (2) / Photo (2) /

Ref.

Proposed Descriptor(s)- / Eastern Europe / East Africa / Geothermal power plants / Geothermal heating cooling / Iceland / India / Israel / Japan / Latin America / Mexico / New Zealand / Philippines / Turkey / USSR /

Abstract by Energyline

Geothermal energy resources, on a worldwide scale are being used for space heating, bathing, agriculture, industry, and electrical production. Divergent plate boundaries, convergent plate boundaries, and geopressured basins are defined. Geothermal development in Iceland, New Zealand, Mexico, El

Salvador, Guadalupe, Chile, Nicaragua, Eastern Europe, the Philippines, Japan, the USSR, Italy, Israel, Turkey, East Africa, and India is surveyed. (2 diagrams, 5 photos, 17 referneces)

758. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Worldwide Occurrence of Abnormal Formation Preesures

Subtitle- 1. Part

Author(s)- / Fertl , Walter H. /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 29 , 11 Pages

759. GGIS-100002/0/PASPC/ 3/A/**/ / / /*****

Title- Worldwide Occurrence of Abnormal Formation Pressures

Subtitle- 2. Part

Author(s)- / Rehm , Bill /

Conference- Abnorm. Subsurf. Pressure
Baton Rouge
Louisiana
USA

Publication date- Vol. 3 , 1972

Pagination- Page 43

Geopressured Geothermal Bibliography

Proposed Descriptor(s)- / Africa / Gas / North Sea / Occurrence /
Southeast / United States /

760. GGIS-100249/J/ /*****/A/**/ / / *****/

Title- You've Struck White Gold

(Geothermal Potential in Texas)

Author(s)- / Chandler , James /

Journal- Tex. Flyer

Publication date- October 1977

Pagination- Page 27 , 2 Pages

Local Availability- GGIS

Proposed Descriptor(s)- / Constraints / Energy source development /
Geopressured systems / Geothermal systems / Hot dry rock systems
/ Hot springs / Methane / Power potential / Research programs /
Texas /

761. GGIS-100290/ / /*****/M/77/ /UK/ /*****/ Grainger

Title- 10. World Energy Conference

(A Digest)

Subtitle- Energy Resources: Availability and Rational Use

Author(s)- / Grainger , L. /

Conference- 10. World Energy Conference (Energy Resources:
Availability and Rational Use)
Istanbul
Turkey (September 19 , 1977)

Publisher- IPC Science and Technology Press

Guildford, England

Publication date- Vol. 10 , September 1977

Note- Abstract only

Local Availability- Eng.

762. GGIS-100173/R/ /*****/M/**/ /US/ / 30100

Title- 100,000 Quads of Natural Gas

Author(s)- / Brown , W. M. /

Publication date- October 1976

Pagination- 38 Pages

Report/patent- HI--2451/3-P

Available- Hudson Institute, Inc.
Croton-on-Hudson
NY

(\$ 7.00)

Corporate Author- Hudson Inst., Inc. /9500524/.
Croton-on-Hudson , New York , USA

Categories-

Natural Gas

(Reserves)

Geothermal Energy

(Resource Status and Assessment)

Resource Status and Assessment

(USA)

Energy Management and Policy

Geopressured Geothermal Bibliography

(Fossil Fuels)

Fossil Fuels

(Natural Gas)

Proposed Descriptor(s)- / Coastal regions / Economics / Exploitation
/ Exploration / Forecasting / Geopressured systems / Gulf of
Mexico / Natural gas / Natural gas deposits / Thermal waters /

Abstract by DOE/RECON

Of the various possible unconventional natural gas resources that have been examined, the most recent, and by far the largest, is that which is dissolved in the hot salt water within the geopressurized zones of the Gulf Coast. Recent assessments have estimated that the amount of gas contained in these waters, underlying about 150,000 SQ. MI. of Texas and Louisiana--both onshore and offshore--is between 60,000 and 100,000 quads. In addition to the natural gas, there is a huge potential for producing electric power from the heat content of the fluid, as well as other potential uses for hot water. The net value of this geothermal heat may be about half that of the natural gas. The major problems associated with commercial production of the fluids from these zones and the extraction of energy from the heat and pressure of the fluid are discussed and the long-term potential is estimated. It appears likely that commercial production will depend upon the existence of uncontrolled prices for natural gas and the satisfactory resolution of various legal, environmental, and institutional problems, all of which are likely to require considerable effort. Although the production potential from the Gulf Coast zones might be accurately estimated after a decade or so of active research and development, at present the long-term potential appears to be between 4 percent and 50 percent of the fluid within the reservoirs that are eventually developed. Although the costs of production of gas and electric power from this resource may not be cheap, the principal reservoirs should be relatively easy to locate in the onshore Gulf region because of the existing data available from the vast number of wells that have already been drilled.

763. GGIS-100153/0/GAAPB/*****/M/**/ /US/ /*****

Title- 11. Annual Meeting of the Geological Society of America,
South-Central Section

Conference- 11. Annual Meeting of the Geological Society of America,
South-Central Section
El Paso
Texas

USA (March 17 , 1977)

Publication date- Vol. 9 , January 1977

764. GGIS-100007/0/ / 2/M/75/ /US/ /***** Texas University

Title- 2. Geopressed Geothermal Energy Conference

(Feb. 23-25, 1976; Austin, Texas (USA))

Conference- Geopressed Geothermal Energy Conference
Austin
Texas
USA

Publication date- Vol. 2 , February 25 , 1976

Pagination- Page 369

Note- Energyline Acq. 2/22/77 #6.

Categories-

Exploration

(Evaluation)

Proposed Descriptor(s)- / Chemical composition / Diagrams / Direct
utilization / Drilling / Economics / Energy reserves /
Environmental effects / Forecasting / Geological setting /
Geopressed systems / Hydrology / Land use / Legal aspects /
Louisiana / Maps / Mathematical models / Power generation /
Reservoir engineering / Seismic surveys / Texas /

765. GGIS-100235/0/ /*****/M/**/ /FR/ /*****

Title- 2. International Symposium on Land Subsidence

Conference- 2. International Symposium on Land Subsidence
Anaheim, CA, USA (December 10 , 1976)

Geopressured Geothermal Bibliography

Publisher- International Association of Hydrological Sciences
Paris

Publication date- 1977

Pagination- 676 Pages

Report/patent- CONF-761217--

Abstract by TIC

The Second International Symposium on Land Subsidence was held on December 13-17, 1976 at Anaheim, California. Its purpose was to bring together international specialists on land subsidence, to present the results of research and practice related to cause, effect, and control, and to take stock of the advance in knowledge taking place in the subject since the 1969 Symposium. Intensive development of water, oil, gas, and minerals to meet the needs of a more and more highly industrialized world has resulted in an increasingly wider interest in the land subsidence that frequently results from such development. The papers range in scope from mathematical modeling through broad descriptions of project progress and subsidence case histories to legal and economic aspects.

766. GGIS-100005/0/ / 2/M/**/ / / /*****

Title- 2. Proceedings

(Washington, D.C.)

Subtitle- May 12-14, 1975

Conference- Energy Technology
Washington, D.C. (May 12 , 1975)

Publisher- Govt. Inst., INC.
Washington, D.C.

Publication date- Vol. 2 , 1975

Pagination- Page 344

767. GGIS-100328/R/ /*****/M/**/ / / *****/

Title- 2. Volume: Program Implementation

Publication date- Vol. 2 , June 30 , 1976

Pagination- 421 Pages

768. GGIS-100005/0/ / 3/M/**/ / / *****/

Title- 3. Proceedings

(Washington, D.C.)

Subtitle- Mar. 29-30, 1976

Conference- Energy Technology

Publisher- Govt. Inst., INC.
Washington, D.C.

Publication date- Vol. 3 , March 31 , 1976

Pagination- 200 Pages

769. GGIS-100897/ / /*****/M/**/ /US/ *****/

Title- 6. Proceedings

Subtitle- Achievements in Perspective

Publisher- Gov. Inst., Inc.
Washington, D. C.

Publication date- Vol. 6 , 1979

Geopressured Geothermal Bibliography

Local Availability- CES

3.0 Appendix A

Local availability abbreviations

CES	Energy Information Service Center for Energy Studies University of Texas at Austin ENS 143 Austin, Texas 78712 (512 - 471 - 4946)
CES MF	Energy Information Service Microfiche collection
GGIS	Geopressured Geothermal Information System Center for Energy Studies University of Texas at Austin ENS 143 Austin, Texas 78712 (512 - 471 - 4946)

u

Geopressured Geothermal Bibliography

4.0 Appendix B

Journal abbreviations

Acta. Geod. Geophys. Montan.	Acta Geodetica, Geophysica et Montanistica (Hungary)
Akad. Wiss. DDR. Zentralinst. Phy. Erde, Veroeff.	Veroeffentlichungen des Zentralinstituts Physik der Erde
Am. Gas. Assoc. Mon.	American Gas Association Monthly
APEA J.	APEA (Australian Petroleum Exploration Association) Journal
Appl. Mech. Rev.	Applied Mechanics Reviews
Bol. Tec. Petrobras	Boletim Tecnico da PETROBRAS (Brazil)
Can. Min. J.	Canadian Mining Journal
Cent. Rech. Pau, Bull.	Societe Nationale des Petroles D'Aquitaine, Centre de Recherches, Bulletin (Pau, France)
Civ. Eng. (London)	Civil Engineering (London, England)
Dev. Sedimentol.	Developments in Sedimentology (Amsterdam, Netherlands)
Ecol. Law Q.	Ecology Law Quarterly (U.S.)
Energie	Energie (West Germany)
Energies	Energies (Canoga Park, California, U.S.)
Eng. Min. J.	Engineering and Mining Journal (U.S.)
Geol. Nefti Gaza	Geologiya Nefti i Gaza (USSR)
Geol. Pruzkum.	Geologicky Pruzkum (Czechoslovakia)
Geophys. Prospect.	Geophysical Prospecting (The Hague)
Geotherm. Rep.	Geothermal Report (U.S.)
Gerlands Beitr. Geophys.	Gerlands Beitrage zur Geophysik (East Germany)
Ground Water Newsl.	Ground Water Newsletter

Geopressured Geothermal Bibliography

Inf. ERDA Wkly. Announce.	Information from ERDA Weekly Announcements
Int. Geol. Rev.	International Geology Review (U.S.)
Interstate Oil Compact Comm. Com. Bull.	Interstate Oil Compact Commission Committee Bulletin (U.S.)
Izv. Vyssh. Uchebn. Zaved, Geol. Razved.	Izvestiya Vysshikh Uchebnykh Zavedenii, Geologiya i Razvedka (USSR)
Magy. Geofiz.	Magyar Geofizika (Hungary)
Meteorol. Mag.	Meteorological Magazine (England)
Min. Eng. (New York)	Mining Engineer (New York, U.S.)
Natl. Wildlife	National Wildlife (U.S.)
Ocean Ind.	Ocean Industry (U.S.)
Rev. Gen. Therm.	Revue Generale de Thermique (France)
Soc. Pet. Eng. J.	Society of Petroleum Engineers Journal (U.S.)
Tech. Poszukiwan	Technika Poszukiwan (Poland)
Tex. Flyer	Texas Flyer: Texas International Airlines' Inflight Magazine
Trans. Am. Nucl. Soc.	Transactions of the American Nuclear Society (U.S.)
Water Resour. Res.	Water Resources Research (U.S.)
Z. Angew. Geol.	Zeitschrift fuer Angewandte Geologie (East Germany)

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