

ARRANGEMENT BETWEEN THE U.S. ATOMIC ENERGY COMMISSION
AND THE ICELANDIC NATIONAL ENERGY AUTHORITY
TO EXCHANGE INFORMATION ON THE UTILIZATION
OF ENERGY FROM GEOTHERMAL SOURCES

The United States Atomic Energy Commission (USAEC) and The Icelandic National Energy Authority having a mutual interest in the exchange of information on the utilization of energy from geothermal sources, hereby agree as follows:

The USAEC and The Icelandic National Energy Authority will make available to each other unclassified information on the utilization of energy from geothermal sources which each has the right to disclose either in its possession or available to it, including especially information from the technical areas listed in Appendix A.

The information exchange will be in the form of technical reports, scientific papers, published literature, letters, conferences and visits.

The USAEC will invite the Department of the Interior, the National Science Foundation and other interested agencies of the U.S. Government to participate in the arrangement as appropriate.

The application or use of any information exchanged or transferred between the parties under this arrangement shall be the responsibility of the party receiving it, and the transmitting party does not warrant the suitability of such information for any particular use or application.

The information exchanged under this arrangement shall be subject to the patent provisions in the Patent Addendum to this exchange arrangement.

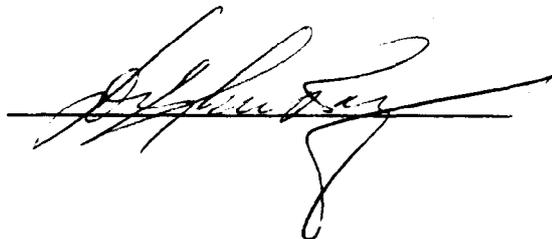
Technical specialists working in the field of geothermal energy in each country are encouraged to communicate directly with persons known to have common interests with the objective of fostering the exchange of ideas and results to accelerate the overall rate of progress in the field.

Upon the coming into force of this arrangement, correspondents will be named on each side and all correspondence relating to detailed arrangements and procedures for implementing this exchange arrangement should be addressed to these correspondents.

This arrangement shall come into force on the date of signature of this document and shall remain in force for a period of five (5) years, subject to the availability of funds to either party to carry on the work covered by the arrangement. This arrangement may be terminated at the discretion of either party, upon six months advance written notification by the party seeking to terminate, to the other party.

Done at Reykjavik, Iceland, the 23rd of November 1973.

FOR THE U.S. ATOMIC ENERGY
COMMISSION:

A handwritten signature in black ink, appearing to read "Dixy Lee Ray", written over a horizontal line.

Dixy Lee Ray
Chairman
U.S. Atomic Energy
Commission

FOR THE ICELANDIC NATIONAL
ENERGY AUTHORITY:

A handwritten signature in black ink, appearing to read "Jacob Bjornsson", written over a horizontal line.

Jacob Bjornsson
Director General
Icelandic National Energy
Authority

APPENDIX "A"

Technical Scope

U.S.-Icelandic Geothermal Energy Information Exchange

United States

The United States will provide information concerning:

1. Experience obtained from the operation of the electrical generating facilities at the Geysers in California, utilizing dry steam;
2. Research on the development of new geothermal exploration techniques and resource evaluation methods;
- *3. Analysis and development of binary cycles;
- *4. Evaluation of the utilization of hydrothermal systems for power generation;
- *5. Investigation of the feasibility of energy recovery from hot, dry rock;
- *6. Production of fresh water from saline geothermal fluids;
- *7. Cost-benefit studies and systems analyses of various techniques of geothermal energy utilization.

Iceland

Iceland will provide information concerning:

1. Engineering and operating experience using geothermal sources for process heating;
2. Generation of electricity from geothermal sources, including plant design, construction, and operating experience;
3. Geophysical prospecting, well completion, stimulation of wells, and the use of downhole pumps.

* Work in these areas is scheduled for 1974.

ARRANGEMENT BETWEEN THE U.S. ATOMIC ENERGY
COMMISSION AND THE ICELANDIC NATIONAL ENERGY
AUTHORITY TO EXCHANGE INFORMATION ON THE
UTILIZATION OF ENERGY FROM GEOTHERMAL SOURCES

PATENT ADDENDUM

A. With respect to any invention or discovery made or conceived during the period of, or in the course of, or under this exchange arrangement on the application of energy from geothermal sources between the United States Atomic Energy Commission and the Icelandic National Energy Authority:

(1) If made or conceived when employing information which has been communicated under this exchange arrangement by one party or its contractors to the other party or its contractors, each party shall grant to the other party a royalty-free, non-exclusive, irrevocable license, with the right to grant sublicenses, in and to any such invention, discovery, patent application, or patent, in all countries, for use in the utilization of energy from geothermal sources.

The grant of license rights of this section shall not apply if the information is already generally available to the public, or is available from other sources to the party making the invention, or is not directly employed so as to become a part of the invention or discovery claimed.

B. Neither party shall discriminate against citizens of the country of the other party with respect to granting any license or sublicense under any invention under subparagraph A(1) above.

C. Each party waives any and all claims against the other party for compensation, royalty or award as regards any such inventions or discovery, patent application, or patent, and releases the other party with respect to any and all such claims.

AMENDMENT TO THE ARRANGEMENT BETWEEN THE
U.S. ATOMIC ENERGY COMMISSION AND THE
ICELANDIC NATIONAL ENERGY AUTHORITY TO
EXCHANGE INFORMATION ON THE UTILIZATION
OF ENERGY FROM GEOTHERMAL SOURCES

Whereas the United States Atomic Energy Commission and the Icelandic National Energy Authority on November 23, 1973, signed an "Arrangement Between the U.S. Atomic Energy Commission and the Icelandic National Energy Authority to Exchange Information on the Utilization of Energy from Geothermal Resources" (hereinafter referred to as "the Arrangement"),

Whereas the Parties desire to expand the scope of the Arrangement to include cooperation in the undertaking of projects involving certain research on and development and demonstration of applications of geothermal energy,

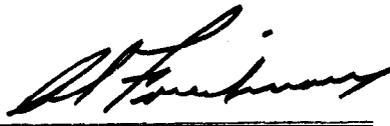
The Parties hereby agree to amend the Arrangement as follows:

- (1) The sixth paragraph of the Arrangement is amended to read as follows:
"The information exchanged under this Arrangement shall be subject to the provisions of Section 5 of Appendix B to this exchange Arrangement";
- (2) Appendix B annexed hereto shall be added; and
- (3) The Patent Addendum to the Arrangement is deleted in its entirety.

This amendment shall enter into force on the latter date of signature by a Party and shall remain in force for the period of the Arrangement as provided therein.

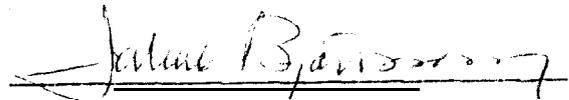
Done in duplicate:

FOR THE U.S. ATOMIC ENERGY
COMMISSION



(Name and title)

FOR THE ICELANDIC NATIONAL
ENERGY AUTHORITY



(Name and title)

DATE: DEC 18 1974

DATE: Jan 20 1975

APPENDIX "B"

Section 1. Pursuant to this Appendix, the Parties envisage establishment of cooperative projects in the United States or Iceland, or both, including separate but complimentary projects, for research on or development of applications of geothermal energy in areas such as set forth in Section 2 below.

Section 2. It is the intent of the Parties that projects be undertaken in areas such as listed below, and in such other areas as the Parties may mutually agree:

- (a) Heat transfer from hot brine to fresh water using advanced heat exchangers to improve efficiencies.
- (b) Steam-water separation to provide higher quality steam for turbines.
- (c) Removal of dissolved solids from geothermal fluids to reduce corrosion and scaling effect;.
- (d) Geophysical exploration and reservoir modeling to enable more precise definition of reservoirs and better understanding of reservoir behavior as fluids are withdrawn and reinjected.
- (e) Rock fracturing and formation stimulation techniques to increase production of geothermal fluids.
- (f) Deep drilling technology, including drilling methods, high-temperature drilling muds and cements, high-strength materials for improved and more economical drilling.
- (g) Sea chemical recovery of minerals presently considered uneconomical or nonfeasible..

- (h) Geothermal process heating and freeze drying, including green-house application.
- (i) Power cycle studies, including multiple flash, binary and other advanced systems, to improve power conversion efficiencies.
- (j) Brine reinjection studies to assess effect on overall reservoir control and adjacent withdrawal wells, and well bore corrosion and **scaling**.

Section 3. Projects undertaken pursuant to this Appendix shall be subject to applicable provisions of the Arrangement, to the availability of funds, personnel, material and equipment, and to the applicable laws, regulations, and license requirements in force in the respective countries of the Parties.

Section 4. Implementation of project activities undertaken pursuant to this Appendix shall be pursuant to agreed arrangements and, notwithstanding the provisions of Section 5, shall accord with the following :

(a) Upon the mutual agreement of the Parties, institutions, organizations or firms in the country of either Party may participate in project activities undertaken in the United States or Iceland:

(b) Unless otherwise agreed, each Party, including any participating institution, organization or firm, shall bear the costs of its participation and that of its personnel;

(c) Establishment of agreed implementing arrangements, and coordination thereof in the course of cooperation under this Appendix, shall be undertaken through the respective correspondents of the Parties designated pursuant to the Arrangement;

(d) At the discretion of the correspondents, meetings between them, including others as they may designate, may be held as deemed necessary, particularly with respect to reviewing implementation of project activities and the agreed procedures therefor;

(e) In addition to the opportunities for exchange of information as envisaged in the Arrangement, implementation of projects under this Appendix may include assignments of scientists, technicians, or other experts on general or specific subjects under terms and conditions as may be agreed, and may include expenditure of funds available to one Party in the country of the other Party for agreed purposes under this Appendix; and

section. 5. The following guiding principles are for use in negotiating individual cooperative activities, including separate but complimentary projects, under this Arrangement, with the understanding that the principles may be modified during negotiations of individual cooperative activities where necessary or desirable. It is further understood that these principles do not cover prior activities, or related, but independent, activities of either Party or of private organizations unless mutually and specifically identified as being included in the cooperative activities under this Arrangement.

In this context, the Parties agree on the following guiding principles :

(a) The Parties support the widest possible dissemination and exchange of scientific and technical information resulting from cooperative activities under this Arrangement. Such information may be made available

to the public by either Party through customary channels and in accordance with the normal procedures of participating agencies.

(b) Certain results of these cooperative activities may contain industrial property, the right to which must be protected in accordance with applicable laws. Industrial property of a proprietary nature, such as trade secrets, inventions, patent information, and know-how, made available hereunder, but acquired by either Party or private organization prior to or outside the course of these activities) and which bear a restrictive designation, shall be respected and shall not be used for commercial purposes or made public without the consent of the originating Party or private organization, except as may be required by the laws of the receiving Party and paragraph (c) below, where such industrial property:

- (i) is of a type customarily held in confidence by commercial firms;
- (ii) is not generally known or publicly available from other sources;
- (iii) has not already been made available by the originating Party or others without an agreement concerning its confidentiality; or
- (iv) is not already in the possession of the receiving Party or its contractors or does not come into their possession from another source.

(c) Each Party shall use its best efforts to make available to the other Party such relevant industrial property of a proprietary nature as may reasonably be necessary to a specific cooperative project. Such industrial property may be disseminated without the prior consent of the originating Party or private organization as follows:

- (i) to persons within or employed by the recipient Party, and to other concerned Government agencies of the recipient Party; and
- (ii) to prime or subcontractors of the recipient Party for use only within the framework of its contract with the respective Party engaged in work relating to the subject matter of the information so disseminated:

provided that the information disseminated to any person under subparagraphs (i) or (ii) above shall bear a marking restricting dissemination outside the recipient's organization without prior written approval of the originating Party.

(d) Each Party will use its best efforts to ensure that the dissemination of proprietary data received under this Arrangement is controlled as prescribed herein.

(e) As to rights in patents owned or controlled by a Party at the commencement of a particular cooperative activity, or owned or controlled by a Party as the result of related but independent concurrent work, each Party shall agree to grant a royalty-free license to the other under patents that bear a direct relationship to those cooperative activities, for use during the period of the cooperative activities only.

(f) As to any invention subject to patents originated in connection with exchanges of personnel or equipment or joint work efforts or experiments under this Arrangement, the following rule shall apply:

- (1) each Party shall determine the allocation of all rights to such invention in its own country subject to a non-exclusive, irrevocable, royalty-free license to the other Party with the right to grant sub-licenses under such inventions; and

(2) the Party in whose country the invention is originated shall have the first option to acquire all right, title, and interest in and to such inventions in third countries, subject to a non-exclusive, irrevocable, royalty-free license to the other Party with the right to grant sublicenses under such inventions.

(g) As to any invention subject to patents originated during the period of this Arrangement while in attendance at meetings, consultations, seminars or panels, or when employing information which has been communicated under this Arrangement by one Party to the other, or originated in connection with separate but complimentary projects, the Party of the inventor shall acquire all right, title, and interest in and to such inventions, subject to a non-exclusive, irrevocable, royalty-free license to the other Party with the right to grant sublicenses under such inventions.

(h) The Parties shall provide all necessary cooperation from its inventors to carry out the provisions of paragraphs f and g above.

(i) Each Party shall assume the responsibility to pay awards or compensation required to be paid to its own nationals according to its own laws.

(j) Copyrights of either Party or of cooperating organizations and persons shall be accorded treatment consistent with internationally recognized standards of protection.

(k) As to copyrights owned or controlled by a Party at the commencement of particular cooperative activities or acquired by a Party as the result of related independent concurrent work, each Party shall agree to

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grant to the other a royalty-free license to reproduce copyrighted materials having a direct relationship to those cooperative activities for use in those cooperative activities only.

(1) Any material which may be subject to copyright developed in any cooperative activity may be copyrighted. A Party securing a copyright or rights thereto shall grant a royalty-free license to the other Party to reproduce the copyrighted material.