

COMMISSION OF THE EUROPEAN COMMUNITIES

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL

Participation of the Commission on behalf of the Community in
Annex III of the IEA implementing agreement for a programme of
research and development in energy conservation through energy
storage

COMMUNICATION FROM THE COMMISSION TO THE COUNCIL

1. On June 24 and on July 6, 1976, an agreement in the form of an exchange of letters was concluded between the European Atomic Energy Community (Euratom) and the European Economic Community on the one hand and the International Energy Agency (IEA) on the other relating to cooperation in the field of Energy Research and Development.

According to the exchange of letters, the European Communities indicated their intention to negotiate, on a case by case basis, their participation in such "Implementing Agreements" prepared within the framework of the IEA as would contribute to the attainment of the research and development objectives of the Community. For its part, the IEA took note of this intention and confirmed that such participation is open to the European Community.

2. In application of this exchange of letters ten Implementing Agreements have been concluded which have provided an "umbrella" framework setting forth rules of the execution of a number of R & D "tasks" described in the annexes to each of the said Agreements. Whilst each participant when signing the agreement confirms its intention to participate in one or more tasks, provisions for the development of additional tasks, according to a procedure set out in Article 2 (b) of the Implementing Agreement, are also specified.
3. One of these Implementing Agreements concerns a programme of research and development in energy conservation through energy storage and it contained two task annexes. The Commission decided to participate in one of these task annexes (Annex I), which related to a comparison of large scale storage systems and the eventual selection of one of them for demonstration in a subsequent project and signed the Agreement on behalf of the Community in February 1979.
4. This work has now been completed and one of the systems studied has been selected for subsequent research in a project which proposes the construction of a medium aquifer storage plant and a study of its performance. In the attached document, the Council will find details of the task (referred to as Annex III).

5. The Commission considers Community participation in Annex III is justified for the following reasons. In the first place, it complements research on thermal storage carried out under the Community's own R&D programme. The project, which will be carried out by the Centre for Hydrogeology of the University of Neuchâtel, on a site at Dorigny, Switzerland, will test the merits of a surface aquifer thermal storage plant ; this differs from the Community's efforts which have centred on a deep aquifer system. The results of the IEA project will therefore provide a range of additional comparative research material. Secondly, the Community will benefit from the international cooperation because the Swiss are acknowledged as advanced in this field. Information and scientific insights gained in this way will provide useful material for furthering the research objectives of the Community.

6. As far as dissemination of information and intellectual property is concerned, no problem arises because no exchange of licenses is envisaged in the task which the Commission intends to join. However, it is the Commission's understanding and a condition of its participation that the information obtained is for the benefit of the Community as a whole and is unrelated to any particular benefits acquired by individual Member States of the Community who also participate in the Agreement. Any information received by the Community may be made available to all Member States.

7. The project is a jointly funded one in which the participants agree to finance the construction and operation of a medium scale aquifer storage plant. The total cost of the research is estimated at 1.1 million ECU's of which the host-country, Switzerland, will contribute 0.8 million ECU's, the FRG 130.000 ECU's and Netherlands, Sweden and the Commission about 60.000 each. The Commission's contribution will be paid out of the Energy R&D programmes 1979-83 in the framework of the sub-programme "Energy conservation".

8. Both the sub-committee for energy of CREST and the advisory committee for programme management (ACPM) were consulted and their unanimous approval concerning Community participation was given at meetings of November 1981 and February 1982 respectively.

9. The Commission has now completed its negotiations on Annex III but before formally participating in the project it proposes, as was done before the "umbrella" agreement was signed, to inform the Council beforehand. (*)

10. Consequently the Commission informs the Council of its intention to participate in the additional task referred to as Annex III specified for the Implementing Agreement for a programme of R&D on energy conservation through energy storage.

(*) Energy Council 21 December 1978, docs. r/3528/78

COMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
WORKING PARTY ON ENERGY CONSERVATION

Proposal for a Third Annex to the
Implementing Agreement on Energy Conservation
through Energy Storage

(Note by the Secretariat)

1. The final text of a proposal for co-operation in the field of large scale thermal energy storage at Dorigny (Switzerland) attached herewith, was agreed on 14th April 1981 by the Executive Committee of the Energy Storage Programme.
2. The overall objective of the Annex is to construct a medium-scale seasonal aquifer storage of hot water and to gain performance data by its operation over one full cycle.
3. Participation in the Annex is subject to contributing to a common fund of SF 2.2 million, out of which Switzerland is prepared to carry the major share. The complete time schedule for the Annex is three years.
4. L'Université de Neuchâtel, the designated Operating Agent for this Annex, is not a Contracting Party to the Implementing Agreement. In order to have the Université de Neuchâtel committed to this function, it is asked to sign the following statement:

"L'Université de Neuchâtel, acting through its Centre d'hydrogéologie, hereby agrees to carry out the obligations and functions of the Operating Agent for Annex III as provided in the Implementing Agreement for a Programme of Research and Development on Energy Conservation through Energy Storage and Annex III thereof."

5. It is requested that those National Authorities and other organisations wishing to participate in this Annex communicate to the IEA Secretariat (Mr. Kramer) by 1st November 1981 their intention to participate, their approval of the attachment and the full legal name of the Contracting Party.

IEA: ENERGY CONSERVATION THROUGH ENERGY STORAGE

Annex III

Aquifer Storage Demonstration Plant
in Lausanne - Dorigny

1. Background

The potential for saving energy by storing heat in the subsoil has been investigated and assessed both from a technical and an economical point of view under Annex I to this Implementing Agreement. Drawing on the results from the study carried out under Annex I, this Annex concerns the experimental realization of a seasonal storage of underground hot water.

2. Objectives

The objectives of this Task are: To construct a medium-scale seasonal aquifer storage of hot water and to gain performance data on the following points by its operation over one full cycle:

- (a) Construction technique;
- (b) Geometry and seasonal movements of the body of hot water;
- (c) Effects of the lay-out and number of vertical drains sand on the vertical permeability of the water-bearing soil and on the geometry of the hot water body;

- (d) Immobilization of the water table in the area of the storage;
- (e) Heat losses by the sides and the top, through the unsaturated zone;
- (f) Artificial thermal insulation of the roof of the storage;
- (g) Evolution of the permeability of the water-bearing soil;
- (h) Verification of the results of the calculation model;
- (i) Effect of the increase in temperature of the underground water on its chemical properties;
- (j) Biological effects in the soil, underground and on the surface;
- (k) Chemical behaviour of the water in the heat exchanger;
- (l) Water treatment;
- (m) Optimization of operation;
- (n) Thermal efficiency;
- (o) Economic calculation and comparison with other storage systems;
- (p) Extrapolation of the results to other geological situations and to large-sized storage plants.

3. Means

The work will be carried out as a jointly-funded project in the following three phases:

(a) Phase I

Construction of the storage plant at the Swiss Federal Institute of Technology of Lausanne on the Dorigny site, installation of the measuring equipment, running tests and elaboration of a calculation model.

(b) Phase II

Experimental operation of the storage plant and mathematical simulation during two annual cycles.

(c) Phase III

Evaluation of the results.

4. Funding

(a) The expenditure incurred in the operation of the Task shall be jointly borne by the Participants, as provided in Article 6(g) of the Agreement, in the proportions indicated by the Scale of Contributions set forth below. Such expenditure is not expected to exceed SF 2,200.000 at 1st November, 1981 price levels for the initial period of one and one-half years and may not exceed such level except upon unanimous agreement of the Executive Committee. If significant changes in price levels occur, the Executive Committee, acting by unanimity, shall consider whether to adjust the Programme of Work to the available funds or to increase the Budget.

EFC	SF	124'000
Germany		260'000
Netherlands		124'000
Sweden		124'000
Switzerland		1'568'000
TOTAL	SF	2'200'000

- (b) In addition to these contributions each Participant will bear the expenses resulting from the travelling, the accommodation and the work of its experts done under paragraph 6 below.
- (c) From the Swiss contribution an amount of SF 1.045.000 will be designated for the hardware part of the project (construction, equipping, connection to the heat production system). This sum is fixed and independent from the number of Participants or the inflation rate.
- (d) During the first twelve months after the date of entry into force of this Annex, the work in constructing, equipping and operating the storage plant will be entirely financed by Switzerland. Two thirds of the contribution of the Participants shall be paid in the 13 months after that date and the balance in the 25th month following that date.

5. Responsibilities of the Operating Agent

- (a) The Operating Agent, in consultation with the other Participants, shall develop a detailed Programme of Work and Budget, including methodology and schedule. This Programme shall be submitted to the Executive Committee for approval within three months after the entry into force of the Agreement.
- (b) The Operating Agent shall be responsible for the construction and experimental operation of the storage at the Dorigny site, as described in the approved Programme of Work. In particular, such responsibility shall include, but shall not be limited to:
 - (1) Acquiring on behalf of the Participants information, data and intellectual property rights, now held by third parties, necessary for the carrying out of the Project;

(2) Procurement of equipment and material.

(c) The Operating Agent shall also be responsible for the preparation and distribution to the Participants, of the intermediate and final reports agreed by the Executive Committee.

(d) The Operating Agent may arrange meetings between experts whenever necessary.

6. Responsibility of the Participants

Apart from the financial contributions specified in paragraph 4 above, the Participants may assist the Operating Agent in the correct development of operations, in accordance with the Task objectives defined under paragraph 2 above. They may delegate experts, to participate in the experimental work on the storage plant. These experts may also carry out research not foreseen in the Task objectives, providing those activities are agreed by the Executive Committee, acting by unanimity.

7. Operating Agent

Université de Neuchâtel, acting through its Centre d'Hydrogéologie (Switzerland).

8. Information and Intellectual Property

(a) Executive Committee's Powers. The publication, distribution, handling, protection and ownership of information and intellectual property arising from activities conducted under this Annex to the IEA Implementing Agreement for a Programme of Research and Development on Energy Conservation through Energy Storage shall be determined by the Executive Committee, acting by unanimity, in conformity with this Agreement.

(b) Right to Publish. Subject only to the patents and copyright restrictions of this Annex, the Participants in this Annex shall have the right to publish all

information provided to or arising from this Annex except proprietary information, but they shall not publish it with a view to profit, except as agreed by the Executive Committee, acting by unanimity.

(c) Proprietary Information. The Participants and the Operating Agent shall take all necessary measures in accordance with this Annex, the laws of their respective countries and international law to protect proprietary information. For the purposes of this Annex, proprietary information shall mean information of a confidential nature such as trade secrets and know-how (for example, computer programmes, design procedures and techniques, chemical composition of materials or manufacturing methods, processes, or treatments) which is appropriately marked, provided such information:

- (1) Is not generally known or publicly available from other sources;
- (2) Has not previously been made available by the owner to others without obligation concerning its confidentiality; and
- (3) Is not already in the possession of the recipient Participants or the Operating Agent without obligation concerning its confidentiality.

It shall be the responsibility of each Participant supplying proprietary information to identify the information as such and to ensure that it is appropriately marked.

(d) Production of Relevant Information. The Operating Agent should encourage the governments of all Agency Participating Countries to make available or to identify to the Operating Agent all published or otherwise freely available information known to them

that is relevant to the Task. The Participants should notify the Operating Agent of all pre-existing information, and information developed independently of the Task known to them which is relevant to the Task and which can be made available to the Task without contractual or legal limitations.

(e) Reports on Programme Work. Reports containing arising information and pre-existing information necessary for and used in this Task, including proprietary information, shall be provided to each Participant. It shall be the responsibility of each Participant to identify information which qualifies as proprietary information under this Annex and ensure that it is appropriately marked. The Operating Agent shall provide summary reports of work performed under this Annex and results thereof (arising information), excluding proprietary information, to the Executive Committee.

(f) Licensing of Proprietary Information. Each Participant agrees to license all pre-existing proprietary information necessary for and used in its work in the Task and which it owns or controls to the Participants, their governments, and the nationals of their respective countries designated by them royalty-free for research, development and demonstration purposes (non-commercial uses) in the field of energy conservation through energy storage. The Operating Agent agrees to license all arising proprietary information to the Participants, their governments, and the nationals of their respective countries designated by them:

- (1) Royalty-free for use in their country only; and
- (2) On reasonable terms and conditions for use in all other countries.

The Operating Agent agrees to license all such arising proprietary information to all Agency Participating Countries on reasonable terms and conditions for use in their own country in order to meet their energy needs.

- (g) Licensing of Patents Needed for Task. Patents solely owned or controlled by a Participant which are needed for use in the Task shall be licensed to the Operating Agent for use in the Task only at no cost. If such patents are partially owned or controlled by a Participant, then efforts shall be made by the Participant to reduce or eliminate as possible the benefit that might accrue to it.
- (h) Arising Inventions. Inventions made or conceived in the course of or under the Task (arising inventions) shall be owned in all countries by the Operating Agent for the benefit of the Participants. Information regarding inventions on which patent protection is to be obtained by the Operating Agent shall not be published or publicly disclosed by any Participant until a patent application has been filed, provided, however, that this restriction on publication or disclosure shall not extend beyond six months from the date of receipt of such information. It shall be the responsibility of the Operating Agent to appropriately mark reports which disclose inventions that have not been appropriately protected by the filing of a patent application.
- (i) Licensing of Inventions. The Operating Agent agrees to license all arising inventions to the Participants, their governments and the nationals of their respective countries designated by them:
- (1) Royalty-free for use in their country only; and
 - (2) On reasonable terms and conditions for use in all other countries.

The Operating Agent agrees to license all such arising inventions to all Agency Participating Countries on reasonable terms and conditions for use in their own country in order to meet their energy needs.

- (j) Copyright. The Operating Agent may take appropriate measures necessary to protect copyrightable material generated under the Task. Copyrights obtained shall be held the benefit of the Participants, provided, however, that Participants may reproduce and distribute such material, but shall not publish it with a view to profit.

- (k) Inventors and Authors. Each Participant shall, without prejudice to any rights of inventors or authors under its national laws, take all necessary steps to provide the co-operation from its authors and inventors required to carry out the provisions of this paragraph. Each Participant will assume the responsibility to pay awards or compensation required to be paid to its employees according to the laws of its country.

- (l) Determination of "National". The Participants may establish guidelines to determine what constitutes a "national" of a Participant.

9. Results

The results of this Annex will be contained in a final report. It will include:

- A full season cycle of experience in operating aquifer heat storage;

- A detailed description of results obtained, covering the issues mentioned in paragraph 2;

- Information of energy benefits from vertical piston flow energy storage system; .
- A comparison between calculated (foreseen) and experimental results; .
- An identification on technical barriers brought to light during the study, overcome or subsisting;
- A study of the cost reduction by scaling up the size of the storage plant;
- Proposal for further R&D activities in the aquifer storage field.

10. Time Schedule

This Annex will enter into force on 1st November, 1981, and shall remain in force for an initial period of three years from that date. It may be extended by the Executive Committee, acting by unanimity.

11. Participants in this Task

The Contracting Parties which are Participants in this Task are the following:

The Ministry of Trade and Industry (Denmark),

Kernforschungsanlage Jülich GmbH (Germany),

Stichting Energieonderzoek Centrum Nederland (Netherlands),

The National Swedish Board for Energy Source Development,

The Federal Office of Energy (Switzerland),

The Commission of the European Communities.