

MEMORANDUM OF UNDERSTANDING

between

THE UNITED STATES DEPARTMENT OF ENERGY

and

THE INDIAN OIL AND NATURAL GAS COMMISSION

FOR COOPERATION IN ENHANCED OIL RECOVERY

AND UNDERGROUND COAL GASIFICATION

WHEREAS

The United States Department of Energy (DOE) and the Indian Oil and Natural Gas Commission (ONGC), hereinafter referred to as the "Parties," have a mutual interest in developing technologies and expanding efforts to enhance recovery of oil from proven reserves, and in evolving appropriate technology for underground coal gasification; believe that a program of close and long-term cooperation in energy research and development would be of mutual benefit; recognize the contribution such research and development can make to improving the environment; and

IT IS AGREED AS FOLLOWS:

L. I. [Signature]

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ARTICLE 1

OBJECTIVES

The objective of this Memorandum of Understanding, hereinafter referred to as the "MOU," is to establish a framework for a program of cooperation between the Parties in research and development activities pertaining to enhanced oil recovery and underground coal gasification and their related technologies. Such cooperation shall be on the basis of mutual benefit, equality and reciprocity.

ARTICLE 2

FIELDS OF COOPERATION

The fields of cooperation covered by this MOU may include:

1. Enhanced Oil Recovery:

- in situ combustion
- steam flood
- polymer flood
- micellar-polymer flood
- miscible/immiscible gas flood processes
- water flood
- caustic flood
- development of numerical simulators
- tracking of flood fronts
- microbial enhanced oil recovery

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2. Underground Coal Gasification

Project appraisal including;

- drilling
- completion
- linkage
- surface handling equipment
- safety and environment:
 - (a) ignition technology
 - (b) development of numerical simulators
 - (c) data analysis

Other fields of cooperation may be added by mutual written agreement of the Parties.

ARTICLE 3

FORMS OF COOPERATION

Cooperation in accordance with this MOU may include, but is not limited to, the following forms:

1. Exchange of scientists, engineers and other specialists for participation in agreed research, development, analysis, design and experimental activities conducted in research centers, laboratories, engineering offices and other facilities and enterprises of each of the Parties or its contractors for agreed periods. Such exchanges of personnel shall be in accordance with Article 6 of this MOU.

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2. Exchange, on a current basis, of scientific and technical information and results and methods of research and development.
3. Organization of seminars and other meetings on specific agreed topics in the fields listed in Article 2. Such seminars shall normally be held either in the United States or in India, as appropriate and as mutually agreed upon.
4. Joint projects in which the Parties agree to share the work and/or costs. Each such project shall be the subject of a separate agreement between the Parties pursuant to Article 4 of this MOU.

Other specific forms of cooperation may be added by mutual written agreement of the Parties.

ARTICLE 4

JOINT PROJECTS

If it is decided that a joint project is to be established under this MOU, a project agreement between the Parties shall be executed. Each such project agreement shall include all detailed provisions for carrying out that joint project, and shall cover such matters as technical scope, exchange of proprietary information, management of the cooperation, patents, exchange of

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equipment, total costs, cost sharing between the Parties, and project schedule.

ARTICLE 5
MANAGEMENT

1. To supervise the execution of this MOU, each Party shall designate one person to serve as Lead Coordinator. Each Lead Coordinator shall appoint a Technical Coordinator for each of the technical fields or groups of related technical fields listed in Article 2 of this MOU.

2. The Lead Coordinators shall normally meet each year, alternately in the United States and India. At their meetings, the Lead Coordinators shall evaluate the status of cooperation under this MOU. This evaluation shall include a review of the past year's activities and accomplishments and of the activities planned for the coming year within each of the technical fields or groups of related technical fields listed in Article 2, an assessment of the balances of exchanges within each of the technical fields or groups of related technical fields listed in Article 2, and a consideration for measures required to correct any imbalances. In addition, the Lead Coordinators shall consider and act on any major new proposals for

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cooperation. Technical coordinators may at the discretion of the Lead Coordinators participate in these annual meetings.

3. To supervise the execution of joint projects or programs established under this MOU, appropriate management provisions shall be included in the project agreements executed under Article 4 of this MOU.

ARTICLE 6

EXCHANGE OF PERSONNEL

1. Whenever a personnel exchange is contemplated under this MOU, each Party shall ensure that qualified staff is selected for assignment to the other Party or its contractors.
2. Each such assignment shall be the subject of a separate exchange agreement between the Parties, subject to concurrence of the Technical Coordinators.
3. Each Party shall be responsible for the salaries, insurance, and allowances to be paid to its staff.
4. Each Party shall pay for the travel and living expenses of its staff while on assignment to the host Party, unless otherwise agreed.

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5. The host establishment shall do its best to arrange for comparable accommodations for the attached staff and their families on a mutually agreeable, reciprocal basis.
6. Each Party shall provide all necessary assistance to the assigned staff (and their families) as regards administrative formalities, such as travel arrangements.
7. The attached staff of each Party shall conform to the general and special rules of work and safety regulations in force at the host establishment, or as agreed in a separate personnel exchange agreement.

ARTICLE 7

EXCHANGE OF INFORMATION

1. General

The Parties support the widest possible dissemination of information provided or exchanged under this MOU, subject to the need to protect proprietary information exchanged hereunder, and to the provisions of Article 8. Each Party shall have the right to use, disclose, publish, or disseminate such information for any and all purposes whatsoever, subject to paragraph 2 below and Article 8.

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2. Use of Proprietary Information

A. Definitions as used in this MOU:

i) The term "information" means scientific or technical data, results or methods of research and development, and any other information intended to be provided or exchanged under this MOU.

ii) The term "proprietary information" means information developed prior to or outside this agreement which contains trade secrets or commercial or financial information which is privileged or confidential, and may only include such information which:

- a) has been held in confidence by its owner;
- b) is of a type which is customarily held in confidence by its owner;
- c) has not been transmitted by the transmitting Party to other entities (including the receiving Party) except on the basis that it be held in confidence; and
- d) is not otherwise available to the receiving Party from another source without restriction on its further dissemination.

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B. Procedures

- i) A Party receiving proprietary information pursuant to this MOU shall respect the privileged nature thereof. Any document which contains proprietary information shall be clearly marked with the following (or substantially similar) restrictive legend:

"This document contains proprietary information furnished in confidence under a Memorandum of Understanding dated August 31, 1987 between the United States Department of Energy and the Indian Oil and Natural Gas Commission, and shall not be disseminated outside these organizations, their contractors, and the concerned departments and agencies of the Governments of the United States and India without prior approval of the Government furnishing this document.

This notice shall be marked on any reproduction, hereof, in whole or in part. These limitations shall automatically terminate when this information is disclosed by the owner without restriction."

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ii) Proprietary information received in confidence under this MOU may be disseminated by the receiving Party to:

- a) persons within or employed by the receiving Party, and other concerned Government departments and Government agencies or undertaking in the country of the receiving Party; and
- b) prime or subcontractors of the receiving Party located within the geographical limits of the receiving Party's nation, for use only within the framework of their contracts with the receiving Party in work relating to the subject matter of the proprietary information;

provided, that any proprietary information so disseminated shall be pursuant to an agreement of confidentiality and shall be marked with a restrictive legend substantially identical to that appearing in sub-paragraph 2.B.(i) above.

iii) With the prior written consent of the Party providing proprietary information under this MOU, the Receiving Party may disseminate such proprietary information more widely than otherwise

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permitted in the foregoing subsection (ii). The Parties shall cooperate with each other in developing procedures for requesting and obtaining prior written consent for such wider dissemination, and each Party will grant such approval to the extent permitted by its national policies, regulations and laws.

- C. Each Party shall exercise its best efforts to ensure that proprietary information received by it under this MOU shall be controlled as provided herein. If one of the Parties becomes aware that it will be, or may reasonably be expected to become, unable to meet the non-dissemination provisions of this Article, it shall immediately inform the other Party. The Parties shall thereafter consult to define an appropriate course of action.
- D. Information arising from seminars and other meetings arranged under this MOU and information arising from the assignment of personnel shall be treated by the Parties according to the principles specified in this Article; provided, however, no proprietary information orally communicated shall be subject to the limited disclosure requirements of this MOU unless the individual communicating such information places the

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recipient on notice as to the proprietary character of the information communicated.

- E. Nothing contained in this MOU shall preclude the use or dissemination of information received by a Party through arrangements other than those provided for under this MOU.

3. Transmission of Information

Information transmitted by one Party to the other Party under this MOU shall be accurate to the best knowledge and belief of the Transmitting Party, but the Transmitting Party does not warrant the suitability of the information transmitted for any particular use or application by the Receiving Party or by any third Party. Information developed jointly by the Parties shall be accurate to the best knowledge and belief of both Parties. Neither Party warrants the accuracy of the jointly developed information or its suitability for any particular use or application by either Party or by any third Party.

ARTICLE 8

PATENTS

1. With respect to any invention or discovery made or conceived in the course of or under this MOU:

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a. If made or conceived by personnel of one Party (the Assigning Party) or its contractors while assigned to the other Party (Recipient Party) or its contractors in connection with exchanges of scientists, engineers and other specialists:

(1) The Recipient Party shall acquire all right, title and interest in and to any such invention or discovery in its own country and in third countries, subject to a non-exclusive, irrevocable, royalty-free license in all such countries to the Assigning Party, its Government, and its nationals designated by it.

(2) The Assigning Party shall acquire all right, title and interest in and to any such invention or discovery in its own country, subject to a non-exclusive, irrevocable, royalty-free license to the Recipient Party, its Government, and its nationals designated by it.

b. If made or conceived by a Party or its contractors as a direct result of employing information which has been communicated to it under this MOU by the other Party or its contractors or communicated during seminars or other joint meetings, the Party making the invention shall acquire all right, title and interest in and to

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such invention or discovery in all countries, subject to a grant to the other Party, its Government, and its nationals designated by it, of a non-exclusive, irrevocable, royalty-free license in all countries.

- c. With regard to other specific forms of cooperation set forth in paragraph 4 of Article 3, the Parties shall provide for appropriate distribution of rights to inventions or discoveries resulting from such cooperation in project agreements pursuant to Article 4. In general, however, each Party should normally own the rights to such inventions or discoveries in its own country with a non-exclusive, irrevocable, royalty-free license to the other Party, its Government, and its nationals designated by it, and the rights to such inventions or discoveries in third countries should be agreed by the Parties on an equitable basis.

2. Each Party shall, without prejudice to any rights of inventors or authors under its national laws, take all necessary steps to provide the cooperation from its inventors and authors required to carry out the provisions of Articles 8 and 9.
3. Each Party shall assume the responsibility to pay awards or compensation required to be paid to its own nationals according to its own laws.

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ARTICLE 9
COPYRIGHTS

Copyrights of the Parties or of cooperating organizations and persons shall be accorded treatment consistent with internationally recognized standards of protection. As to copyrights on materials within the scope of paragraph 1 of Article 7 owned or controlled by a Party, that Party shall make efforts to grant to the other Party a license to reproduce copyrighted material.

ARTICLE 10
GENERAL PROVISIONS

Compensation for damages incurred during the implementation of this MOU shall be in accordance with the applicable laws of the countries of the Parties.

Cooperation under this MOU shall be in accordance with the laws of the respective countries and the regulations of the respective Parties. All questions related to the MOU arising during its term shall be settled by the Parties by mutual agreement.

ARTICLE 11
FUNDING

Except when otherwise specifically agreed in writing, all costs

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resulting from cooperation under this MOU shall be borne by the Party that incurs them. It is understood that the ability of each Party to carry out its obligations under this MOU is subject to the availability of appropriated funds.

ARTICLE 12

ENTRY INTO FORCE AND TERMINATION

1. This MOU shall enter into force upon signature and, subject to paragraphs 2, 3 and 4 of this Article, shall continue for a five (5) year period.
2. This MOU may be amended or extended by mutual written agreement of the Parties.
3. This MOU may be terminated at any time at the discretion of either Party, upon six (6) months advance notification in writing by the Party seeking to terminate the MOU. Such termination shall be without prejudice to the rights which may have accrued under this MOU to either Party up to the date of such termination.
4. All joint efforts and experiments not completed at the expiration or termination of this MOU may be continued until their completion under the terms of this MOU.

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Done in duplicate at the United States Department of Energy, this thirty-first day of August, 1987.

FOR THE DEPARTMENT OF ENERGY
OF THE UNITED STATES OF
AMERICA:



Marvin I. Singer
Deputy Assistant Secretary
for Oil, Gas, Shale and
Special Technologies
U.S. Department of Energy

FOR THE OIL AND NATURAL GAS
COMMISSION OF
INDIA:


Aug 31, 1987

K. L. Goyal
Deputy General Manager
Oil and Natural Gas
Commission