

"Operation and Control of In-Situ Combustion  
with Steam and Oxygen"

IMPLEMENTING AGREEMENT V  
UNDER THE  
MEMORANDUM OF UNDERSTANDING  
FOR COOPERATION IN THE RESEARCH AND DEVELOPMENT  
OF TAR SANDS (OIL SANDS) AND HEAVY OIL

BETWEEN

The Alberta Oil Sands Technology and  
Research Authority of the Province of Alberta

The Department of Energy, Mines and  
Resources of Canada

The Department of Energy and Mines  
of the Province of Saskatchewan

as the Canadian Participants

AND

The Department of Energy of the United States  
of America

as the U.S. Participant

Hereinafter called the "Participants".

Having agreed in the Memorandum of Understanding for Cooperation on the Research and Development of Tar Sands (Oil Sands) and Heavy Oil dated June 4, 1979 (hereinafter the "MOU") and the Amendments concerning Intellectual Property and Exchanges of Staff dated December 4, 1979 (hereinafter the "Amendments") to undertake specific projects in pursuit of the MOU's objectives, the Participants hereby decide to adopt the terms and conditions of the project described in this Implementing Agreement.

ARTICLE 1 - OBJECTIVE

The primary objective of this Implementing Agreement is to facilitate active technical interchange and information exchange on current laboratory experimentation projects to evaluate in-situ combustion processes enhanced by steam and oxygen for recovery of oil from Canadian and U.S. tar sands and heavy oils. The experiments and studies conducted in the U.S. and Canada are expected to be conducted over a roughly parallel three-year period and representatives from the Participant(s) of each country may attend annual technical review meetings held by the

Participant(s) of the other country and with its respective contractor (experimenter).

## ARTICLE 2 - MANAGEMENT

Policy direction and general project oversight will be provided by the Coordinating Committee created by Article 4 of the MOU. The Participant(s) of each country will designate one Technical Coordinator for coordinating the efforts conducted under this Implementing Agreement and reporting to the Coordinating Committee. Each Technical Coordinator will work with the appropriate project management personnel of the Participant(s) of his country in carrying out the day-to-day management of the tasks listed in Article 3.

The Technical Coordinators will jointly arrange for annual and other timely review meetings and/or presentations to the Participants by the experimenters of each of the studies, and for distribution to the Participants of quarterly or other periodic reports of study progress by the experimenters.

## ARTICLE 3 - DUTIES OF PARTICIPANTS

The Participants will cooperate by carrying out the following tasks:

- Task 1. The U.S. Participant (DOE) will sponsor a three-year study to be undertaken by the Linde Division of Union Carbide Corporation entitled "Development of Methods for Controlling Premature Oxygen Breakthrough During Fireflooding." The final scope of work will be furnished to each Canadian Participant.
- Task 2. The Canadian Participants will sponsor a three-year study to be undertaken by the Department of Chemical and Petroleum Engineering of the University of Calgary entitled "Parametric Study of Steam Assisted In-situ Combustion." The final scope of work will be furnished to the U.S. Participant.
- Task 3. The U.S. and Canadian Participants will supplement these studies with non-confidential information derived from other related research efforts.
- Task 4. The Participant(s) of each country will review the planned research efforts of the Participant(s) of the other country before the study begins to provide constructive suggestions for study emphasis and/or

redirection, and will make a best effort to attend the annual or key topical meetings of the Participant(s) of the other country. Up to three representatives of the visiting Participant(s) may attend the project reviews of the host Participant(s) in the other country.

#### ARTICLE 4 - COSTS

Except as otherwise provided herein, all costs attributable to this Implementing Agreement, including but not limited to research, reports, travel, salaries and associated expenses, will be borne by the Participant(s) incurring the expenses. The cost of the studies and experiments to the U.S. Participant will be comparable to the sum of costs of the studies and experiments to the Canadian Participants over the course of this Implementing Agreement.

#### ARTICLE 5 - INFORMATION AND PATENTS

1. The Participants will exchange pre-existing information necessary to carry out this Implementing Agreement.
2. All information arising from this Implementing Agreement will be promptly exchanged among the Participants.
3. The application or use of any information exchanged or arising from this Implementing Agreement will be the responsibility of the Participant receiving it, and the sending Participant does not warrant the suitability of such information for any particular use or application.
4. The information exchanged under and arising from this Implementing Agreement may be given wide distribution, subject to paragraphs 7 and 8 below. Such information may be made available to the public through customary channels and in accordance with the normal procedures of each Participant.
5. Copyrights of any Participant or of cooperating organizations or persons will be accorded treatment consistent with internationally recognized standards of protection.
6. It will be the responsibility of the Participant supplying proprietary information to identify the information as such and to ensure that it is appropriately marked in accordance with Article 1 of the Amendments to the MOU.

7. For the purposes of this Implementing Agreement, proprietary information will mean pre-existing information of a confidential nature such as trade secrets and know-how (for example, computer programs, design procedures and techniques, manufacturing methods, processes or treatments) which is appropriately marked, provided such information:
  - 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 Participant to other entities (including the receiving Participant) except on the basis that it be held in confidence; and
  - D. Is not otherwise available to the receiving Participant from another source without restriction on its further dissemination.
8. With respect to any invention or discovery made or conceived in the course of or under this Implementing Agreement, and unless otherwise agreed to in writing:
  - A. If made or conceived by personnel of one Participant (the Assigning Participant) or its contractors while assigned to another Participant (Recipient Participant) or its contractors in connection with exchanges of scientists, engineers and other specialists, the Recipient will acquire all rights, title, and interest in and to any such invention or discovery in its own country and in third countries, and the Assigning Participant will acquire all rights, title, and interest in and to any such invention or discovery in its own country.
  - B. If made or conceived by a Participant or its contractors as a result of employing information which has been communicated to it under the Implementing Agreement by any other Participant or its contractors, or communicated during seminars or other joint meetings, the Participant making the invention will acquire all rights, title and interest in and to such invention or discovery in its own and third countries, and the other Participant will own such rights in its own country.
  - C. With regard to other specific forms of cooperation, including loans or exchanges of materials, instruments, and equipment for special joint research projects, the

Participants will provide for appropriate distribution of rights to inventions or discoveries resulting from such cooperation. In general, however, each Participant will normally own the rights to such inventions or discoveries in its own country and the rights to such inventions or discoveries in other countries will be agreed upon by the Participants on an equitable basis.

For the purposes of this paragraph, the three Canadian Participants will be considered as a single Canadian Participant.

9. Inventions made or conceived in the course of or under this Implementing Agreement will be identified and reported promptly by the inventing Participant to all Participants. Information regarding inventions on which patent protection is sought will not be published or publicly disclosed by the Participants until a patent application has been filed in either country of the Participants; provided, however, that this restriction on publication or disclosure will not exceed beyond six months from the date of reporting the invention. It will be the responsibility of the Participant reporting the invention to appropriately mark reports which disclose inventions that have not been appropriately protected by the filing of a patent application.
10. Each Participant will assume the responsibility to pay awards or compensation required to be paid to its own personnel or contractors.

#### ARTICLE 6 - GENERAL PROVISIONS

Cooperation under this Implementing Agreement will be in accordance with the laws in force in Canada and the United States of America and with the regulations of the Participants. All questions related to this Implementing Agreement arising during its term will be settled by the Participants by mutual agreement.

The Participants will take all necessary steps to realize all the activities covered by this Implementing Agreement. Any dispute arising under this Implementing Agreement will be settled by consultations between the Participants.

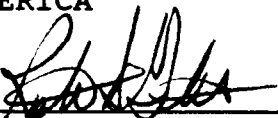
The realization of this Implementing Agreement will be subject to the availability of appropriated funds.

## ARTICLE 7 - ENTRY INTO FORCE AND DURATION

This Implementing Agreement will enter into effect upon the latter date of signature and will remain effective until December 4, 1994 or until the MOU expires, whichever is sooner. It may be modified or extended with the consent of the Participants expressed in writing. Any Participant may withdraw from this Implementing Agreement at any time, upon six months advance written notification. All joint efforts and experiments begun but not completed at the expiration or termination of this Implementing Agreement may be continued until their completion under the terms of this Implementing Agreement.

Done in quadruplicate.

FOR THE DEPARTMENT OF ENERGY  
OF THE UNITED STATES OF  
AMERICA


  
(Signature)

Robert H. Gentile  
(Printed Name)

Assistant Secretary, Fossil Energy  
(Title)

September 7, 1990  
(Date)

FOR THE DEPARTMENT OF ENERGY,  
MINES AND RESOURCES OF CANADA


  
(Signature)

Marc Denis EVERELL  
(Printed Name)

ASSISTANT DEPUTY MINISTER  
(Title) MINERAL AND ENERGY TECHNOLOGY

JULY 5, 1990  
(Date)

FOR THE DEPARTMENT OF ENERGY  
AND MINES OF THE PROVINCE OF  
SASKATCHEWAN

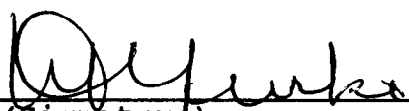
  
(Signature)

John Reid  
(Printed Name)

Deputy Minister  
(Title)

June 4, 1990  
(Date)

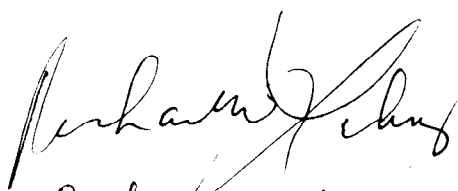
FOR THE ALBERTA OIL SANDS  
TECHNOLOGY AND RESEARCH  
AUTHORITY OF THE PROVINCE OF  
ALBERTA

  
(Signature)

WILLIAM J. YURKO  
(Printed Name)

CHAIRMAN AND CEO  
(Title)

June 12, 1990  
(Date)

  
Richard W. CUTHBERT  
Vice Chairman  
June 19/90