

IMPLEMENTING ARRANGEMENT
BETWEEN
DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA
AND
THE DEPARTMENT OF NATURAL RESOURCES CANADA
FOR COOPERATION
IN THE AREA OF FOSSIL FUELS

WHEREAS

The Department of Energy (DOE) of the United States of America and the Department of Natural Resources of Canada (NRCan) (hereinafter referred to as the "Participants");

Noting the Memorandum of Understanding on Collaboration in Energy Research and Development (hereinafter referred to as the Energy R&D MOU) between the Participants signed on March 18, 1998, supports wide cooperation in the areas of research and development;

Recognizing the long history of productive cooperation between the Participants both informally and formally;

Believing the Participants continue to have capabilities which can assist each other in specific areas in their effort to advance the status of research and development in a wide range of fossil fuel technologies; and

Noting that Article 4 of the Energy R&D MOU provides for the execution of written Implementing Arrangements governing cooperation under the Energy R&D MOU;

IT IS THEREFORE AGREED AS FOLLOWS:

Article 1 - Objective

The objective of this Implementing Arrangement is to establish a framework for collaboration between the Participants directed toward finding solutions to common problems associated with the knowledge base for a wide range of fossil fuel technologies. The activities undertaken in accordance with this Implementing Arrangement are intended to result in substantial mutual benefit and are intended to occur in specific areas where the programs of the Participants complement one another as well as those in which comparability exists.

This Implementing Arrangement is subject to and governed by the Energy R&D MOU. In the event of any conflict between the terms and conditions of that MOU and this Implementing Arrangement, the terms and conditions of the MOU will govern.

Article 2 - Areas of Cooperation

1. Technical areas for possible cooperation under this Implementing Arrangement include research, development and demonstration activities related to the following topics. Cooperative activities related to both base and enabling technologies, including the underlying science and engineering, along with assessment of technology options and economics are of interest.
 - a. Environmentally friendly discovery, characterization, production, processing and transportation technologies for fossil fuels
 - b. Advanced, high-efficiency power systems, including:
 - i. integrated gasification combined cycle (IGCC) systems
 - ii. pressurized fluidized bed combustion (PFBC) systems
 - iii. advanced pulverized coal combustion (APCC) systems
 - iv. advanced gas turbines
 - v. hybrid systems
 - c. Advanced environmental control systems for conventional and advanced power systems, including:
 - i. particulates
 - ii. nitrogen oxides (NO_x)
 - iii. sulfur oxides (SO_x)
 - iv. hazardous air pollutants
 - v. greenhouse gases
 - d. Production and use of high-quality transportation fuels and chemicals
 - e. Development of advanced central-station power and/or fuels production systems with very low emissions
 - f. Development and assessment of sequestration options for carbon dioxide (CO₂) and other greenhouse gases from fossil fuel-based systems, including capture, storage, and utilization
 - g. Development and assessment of technologies to recover coal bed and coal mine methane, including options to sequester carbon dioxide from fossil fuel-based systems

- h. Other environmental technologies for assessment, control, and remediation of ground water and soils, including acid mine drainage, affected by fossil fuel production and use
 - i. Other related technologies, such as minimization and utilization technologies for wastes resulting from fossil fuel production and use (e.g., coal combustion by-products)
- 2. Other areas of cooperation may be added by mutual written agreement of the Participants in the form of an exchange of letters between the Lead Coordinators for the Energy R&D MOU.

Article 3 - Forms of Cooperation

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

- 1. Exchange and provision of information and data on scientific and technical activities, developments, practices and results, and on program policies and plans including exchange of proprietary information on the terms and conditions in accordance with Article 8;
- 2. Exchange of scientists, engineers, and other specialists for agreed periods of time in order to participate in experiments, analysis, design and other research and development activities at existing and new research centers, laboratories, engineering offices and other facilities and enterprises of each of the Participants or its associated organizations or contractors in accordance with Articles 5;
- 3. Meetings of various forms to discuss and exchange information on scientific and technological aspects of general or specific subjects in the areas listed in Article 2, and to identify additional cooperative actions which may be usefully undertaken;
- 4. Exchange and provision of samples, materials, and equipment for experiments, testing and evaluation in accordance with Articles 6 and 7;
- 5. Execution of joint studies, projects or experiments including their joint design, construction and operation;
- 6. Other specific forms of cooperation may be added by mutual written agreement of the Participants.

Article 4 - Management

- 1. To direct the execution of this Implementing Arrangement, a Joint DOE/NRCan Coordinating Committee (JCC) for Fossil Fuels will be established. Membership of the

JCC will consist of designated and equal representation from each Participant and can include up to three representatives from each Participant. These members will meet at agreed times and places. The Head of the Delegation of the receiving Participant will act as Chairperson during the meetings of the JCC.

2. The JCC will coordinate its activities with the Lead Coordinators designated under Article 5 of the Energy R&D MOU.
3. At its meetings, the JCC will evaluate the status of cooperation under this Implementing Arrangement. This evaluation will include an assessment of the balance of exchanges in the various areas of cooperation listed in Article 2, and, if necessary, a consideration of measures required to correct any imbalances.

Article 5 - Assignments and Exchanges of Personnel

Unless otherwise agreed in writing, the following provisions shall apply concerning assignments and exchanges of personnel under this Implementing Arrangement:

1. Each Participant may, at its own expense, and subject to agreement of the other Participant, observe test activities and analytical work of the other Participant. Such observation may be accomplished by short-term visits or by the assignment of staff, subject to the prior agreement of the receiving Participant on each occasion.
2. Whenever an assignment or exchange of staff is contemplated under this Implementing Arrangement, each Participant shall ensure the selection of qualified staff for assignment to the other Participant to conduct the activities planned under this Implementing Arrangement. Each such exchange of personnel shall be mutually agreed in advance by an exchange of letters between the Participants, referencing this Implementing Arrangement and its pertinent intellectual property provisions.
3. Each Participant shall be responsible for the salaries, insurance, and allowances to be paid to its staff or contractors.
4. Each Participant shall pay for the travel and living expenses of its staff while on assignment to the host Participant.
5. Each Participant shall arrange for accommodations for other Participant's assigned staff or its contractors (and their families) on a mutually agreeable reciprocal basis.
6. The host Participant shall provide all necessary assistance to the assigned staff or its contractors (and their families) of the other Participant regarding administrative formalities.
7. The staff of each Participant, and its contractors, shall conform to the general and special rules of work and safety regulations in force at the host establishment.

Article 6 - Equipment

Unless otherwise agreed in writing, the following provisions shall apply to the provision of equipment by one Participant to the other under this Implementing Arrangement:

1. The sending Participant shall supply as soon as possible a detailed list of the equipment to be provided together with the associated specifications and technical and informational documentation.
2. The equipment, spare parts, and documentation supplied by the sending Participant shall remain the property of the sending Participant and shall be returned to the sending Participant upon completion of the mutually agreed upon activity unless otherwise agreed.
3. The host establishment shall provide the necessary premises and shelter for the equipment, and shall provide for electric power, water, gas, etc., in accordance with all technical requirements which shall be as mutually agreed upon.
4. The sending Participant shall bear all expenses and risk of loss for shipment of equipment to the place of delivery of the receiving Participant. Upon receipt by the receiving Participant, the receiving Participant shall bear risk of loss.
5. The equipment provided by the sending Participant for carrying out mutually agreed-upon activities shall be considered to be scientific, not having a commercial character.

Article 7 - Samples and Materials

Unless otherwise agreed in writing, the following provisions shall apply to the transportation and use of such samples and materials by one Participant to the other under this Implementing Arrangement:

1. All samples and materials provided by the sending Participant to the receiving Participant shall become the property of the receiving Participant upon delivery, and shall not be returned to the sending Participant.
2. Where one Participant requests that a sample or material be provided by the other Participant, the Participant making the request shall bear all costs and expenses associated with the transportation of the sample or material from the location of the sending Participant to the final destination.
3. Each Participant shall promptly disclose to the other Participant all information arising from the examination or testing of samples or materials exchanged under this Implementing Arrangement. The Participants agree that business confidential information as defined in Article 8.IV, which was developed prior to or outside the scope of this Agreement, shall remain business confidential even though it is contained in the results of an examination or testing of samples or materials. Such information shall be

identified as business confidential by the Participant asserting its business confidential nature as soon as possible after disclosure is made to such Participant and the other Participant shall be immediately advised of that identification. All information identified as business confidential shall be controlled as provided under Article 8.IV. It is further understood and agreed that one Participant providing samples or materials to the other Participant may also provide a partial or complete list of the types of information which will arise from the examination or testing of such samples or materials and which is business confidential as defined in Article 8.IV. and all such business confidential information is to be controlled as set out in Article 8.IV.

Article 8 - Intellectual Property Rights

In conformity with the U.S.-Canada Agreement effected by exchange of notes at Ottawa, February 4, 1997, concerning Intellectual Property rights:

The Participants shall ensure adequate and effective protection of Intellectual Property created or furnished in the course of cooperative research activities conducted under this Implementing Arrangement. Rights to such Intellectual Property shall be allocated as set forth below:

I. Definitions

- a. For purposes of this Implementing Arrangement, "Intellectual Property" shall have the meaning found in Article 2 of the Convention establishing the World Intellectual Property Organization, done at Stockholm, July 14, 1967.
- b. "Cooperative Research" means any activity carried on under this Implementing Arrangement between the Participants.
- c. "Written Agreement means an agreement between the Participants regarding a specific Cooperative Research activity which may incorporate the terms of these provisions.

II. Scope

- a. Any intellectual property created as a result of the Cooperative Research undertaken between the Participants shall be allocated according to the terms of this Article, unless otherwise specifically agreed by the Participants in writing.
- b. This Article addresses the allocation of rights, interests, and royalties between the Participants with respect to Cooperative Research conducted under this Implementing Arrangement. Each Participant that is involved in a Cooperative Research activity, shall ensure that the other Participant can obtain the rights to intellectual property allocated in accordance with

this Article. The Participants shall notify one another in a timely fashion of any intellectual property arising in the course of Cooperative Research and protect such intellectual property in a timely fashion. This Article does not otherwise alter or prejudice the allocation of intellectual property between a Participant and its nationals, which shall be determined by the laws and practices of that Participant.

- c. Disputes concerning intellectual property arising under this Implementing Arrangement shall be resolved in accordance with any applicable Written Agreements between the Participants, except that such Written Agreements shall not include provisions which call for binding arbitration. In the event that an applicable Written Agreement does not include a dispute resolution mechanism, disputes arising under such a Written Agreement shall be resolved through discussions between the Participants. Upon mutual agreement of the Participants, a dispute shall be submitted to an arbitral tribunal for binding arbitration. Unless the Participants agree otherwise in writing, the arbitration will be governed by the rules of UNCITRAL. From the date of receipt of an official request by a Participant for arbitration and pending resolution of the matter the intellectual property shall be jointly managed (i.e., intellectual property shall be jointly maintained) by the Participants, but shall not be commercially exploited except by mutual agreement, in writing.
- d. Termination or expiration of this Implementing Arrangement shall not affect the validity or duration of intellectual property rights or obligations that arise while this Implementing Arrangement is in force.

III. Allocation of Rights

- a. Each Participant shall be entitled to a non-exclusive, irrevocable, royalty-free license in all countries to translate, reproduce, and publicly distribute scientific and technical journal articles, public reports, and books directly arising from Cooperative Research. Notwithstanding the preceding sentence, the Participants shall abide by requirements for publication of scientific journals and books, including publishers' rights, where appropriate, when doing so would promote dissemination of information. All publicly distributed copies of a copyrighted work prepared under this provision shall indicate the names of the authors of the work unless an author explicitly declines to be named.
- b. Rights to all forms of intellectual property, other than those rights described in Article 8.111. a. above, shall be allocated as follows:
 - 1) Visiting researchers shall receive rights to intellectual property according to the policies of the host institution. In addition, each visiting researcher named as an inventor/creator of intellectual

property shall be entitled to the same treatment as accorded a national of the host country who is a visiting researcher with regard to awards, bonuses, benefits, royalties or any other awards, in accordance with the policies and laws of the host institution.

- 2) (a) For intellectual property created during joint research, when the Participants have agreed in advance on the scope of work, the Participants shall agree upon a written arrangement concerning the protection and allocation of rights regarding intellectual property that may be created during such research, either prior to the start of their cooperative activity or within a reasonable time from the time a Participant becomes aware of the creation of intellectual property.

(b) In reaching agreement, the Participants shall consider the following factors: Relative contributions of the Participants, the benefits of exclusive or non-exclusive licensing by territory or for field of use, requirements imposed by the Participants' domestic laws, and other factors deemed appropriate. The written arrangement will normally address inter alia: ownership and protection of background and foreground information, user rights for research and development purposes, exploitation and dissemination, including arrangements for joint publication, the rights and obligations of visiting researchers, the rules governing disclosure of undisclosed information, licensing and dispute settlement procedures.

(c) Notwithstanding the foregoing, in light of the Free Trade Agreement between the Governments of the United States and Canada, if the Participants cannot reach agreement on a written arrangement within a reasonable time, not to exceed nine months from the time each Participant is made aware of the creation of the intellectual property, the Participants shall jointly seek protection for the intellectual property in both countries. Each Participant shall control intellectual property in its territory and in all cases shall allow full market access to the other Participant to exploit their intellectual property rights in accordance with the factors listed in Article 8.111. b.(2)(b). Rights and interests in third countries shall be jointly determined.

- 3) In the event that either Participant believes that a particular joint research project under this Implementing Arrangement will lead to, or has led to, the creation of intellectual property of a type not protected by the applicable laws of one of the Participants, except in the case of copyright being unavailable for the works of the United States of America, the Participants shall immediately hold

discussions to determine the allocation of the rights to the said intellectual property; the joint activities in question will be suspended during the discussions unless otherwise agreed in writing by the Participants. If no agreement can be reached within a three-month period from the date of the request for discussions, the Participants shall cease the cooperation in the project in question. Notwithstanding Article 8.III.b.(2)(b), rights to any intellectual property which has been created will be resolved in accordance with the provisions of Article 8.II.c.

IV. Business-Confidential Information

In the event that information identified in a timely fashion as business-confidential is furnished or created under this Implementing Arrangement, each Participant shall protect such information in accordance with applicable laws, regulations and administrative practice. Information may be identified as business-confidential if a person having the information may derive an economic benefit from it or may obtain a competitive advantage over those who do not have it, the information is not generally known or publicly available from other sources, and the owner has not previously made the information available without imposing in a timely manner an obligation to keep it confidential. Without prior written consent, neither Participant shall disclose any business-confidential information provided by the other Participant except to “contracted employees” and government personnel authorized for this Implementing Arrangement. All such disclosures shall be for use only within the scope of their contracts or employment with the Participants relating to cooperation under this Implementing Arrangement. The Participants shall impose, or shall have imposed, an obligation on those receiving such information to keep it confidential. If one of the Participants becomes aware that, under its laws or regulations, it will be, or may reasonably be expected to become, unable to meet the non-disclosure provisions, it shall immediately inform the other Participant. The Participants shall thereafter consult to define an appropriate course of action.

Article 9 - General Provisions

1. Cooperation under this Implementing Arrangement shall be in accordance with the laws and regulations of the respective countries. All questions related to the Implementing Arrangement arising during its term shall be settled by the Participants by mutual agreement.
2. It is understood that this Implementing Arrangement does not constitute a treaty. The obligations described herein are binding and enforceable in accordance with the existing domestic laws of both countries.

Article 10 - Funding

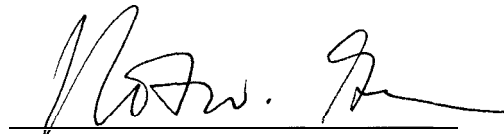
Unless otherwise specifically agreed to in writing by the Participants, all costs resulting from cooperation under this Implementing Arrangement shall be borne by the Participant that incurs them. Each Participant shall carry out its obligations under this Implementing Arrangement subject to the availability of appropriated funds.

Article 11 - Duration and Termination

1. This Implementing Arrangement shall enter into force upon the last signature by both Participants and shall remain in force for five (5) years and may be automatically extended for another five (5) years upon written agreement of the Participants.
2. This Implementing Arrangement may be amended by mutual written agreement of the Participants. This Implementing Arrangement may be terminated upon six (6) months advance notification in writing by either Participant. Such termination shall be without prejudice to any rights and interests which may have accrued under this Implementing Arrangement to either Participant up to the date of termination.
3. All joint efforts and experiments not completed at the expiration or termination of this Implementing Arrangement may be continued until their completion under the terms of this Implementing Arrangement.

Done in duplicate in English and in French, each version being equally authentic.

FOR THE
DEPARTMENT OF ENERGY
OF THE
UNITED STATES OF AMERICA



Robert W. Gee
Assistant Secretary
Office of Fossil Energy

2/1/00
Date

FOR THE
DEPARTMENT OF NATURAL RESOURCES
OF CANADA



Michael Cleland
Assistant Deputy Minister
Energy Sector

01/02/00
Date