

No. 21019

**UNITED STATES OF AMERICA
and
FRANCE**

Technical Exchange and Co-operation Arrangement in the field of light water reactor safety research (with appendices). Signed at Paris on 16 July 1980 and at Washington on 12 September 1980

Authentic texts: English and French.

Registered by the United States of America on 15 April 1982.

**ÉTATS-UNIS D'AMÉRIQUE
et
FRANCE**

Accord d'échanges techniques et de coopération dans le domaine de la recherche sur la sûreté des réacteurs à eau ordinaire (avec annexes). Signé à Paris le 16 juillet 1980 et à Washington le 12 septembre 1980

Textes authentiques : anglais et français.

Enregistré par les États-Unis d'Amérique le 15 avril 1982.

TECHNICAL EXCHANGE AND COOPERATION ARRANGEMENT¹ BETWEEN THE UNITED STATES NUCLEAR REGULATORY COMMISSION AND THE COMMISSARIAT À L'ÉNERGIE ATOMIQUE OF FRANCE IN THE FIELD OF LIGHT WATER REACTOR SAFETY RESEARCH

The Contracting Parties, i.e., the United States Nuclear Regulatory Commission (USNRC) and the Commissariat à l'Énergie Atomique (CEA) of France,

Considering

- (a) They have a mutual interest in cooperation in the field of light water reactor (LWR) safety research, with the objective of improving and thus ensuring the safety of LWRs on an international basis;
- (b) They have cooperated in the field of LWR safety under the terms of a 5-year Technical Exchange Arrangement, originally signed on October 16, 1974,² between the United States Atomic Energy Commission (USAEC) and the CEA; but continued after January 19, 1975, as between the USNRC and the CEA;
- (c) They have indicated their mutual wish to continue the cooperation established under the aforementioned arrangement and, accordingly, have continued their cooperation pending the execution of this Arrangement;

Hereby agree as follows:

Article 1. OBJECTIVE

The USNRC and the CEA will continue their cooperation in the field of LWR safety research in accordance with the provisions of this Arrangement and on the basis of a reasonably balanced exchange. Nothing contained in this Arrangement shall require either party to take any action which would be inconsistent with its laws, regulations and national policy. Should any conflict arise between the terms of this Arrangement and those laws, regulations and national policy, the parties agree to consult before any action is taken.

Article 2. FORMS OF COOPERATION

Cooperation between the parties may take the following forms:

- 2.1. The exchange of information in the form of technical reports, experimental data, correspondence, newsletters, visits, joint experts meetings, and such other means as the parties agree.
- 2.2. The temporary assignment of personnel of one party or of its contractors to the laboratory or facilities owned by the other party or in which it sponsors research; each such assignment to be considered on a case-by-case basis and be the subject of a separate attachment-of-staff agreement between appropriate representatives of the recipient and assigning organizations.
- 2.3. The execution of joint programs and projects, including those involving a division of activities between the parties; each such joint program and

¹ Came into force on 12 September 1980 by signature, in accordance with section 8.1.

² United Nations, *Treaty Series*, vol. 1066, p. 305.

project shall be considered on a case-by-case basis and be the subject of a separate agreement between the parties.

- 2.4. The use by one party of facilities which are owned by the other party or in which research is being sponsored by the other party; such use of facilities shall be the subject of separate agreements between the relevant entities and may be subject to commercial terms and conditions.
- 2.5. If either party wishes to visit, assign personnel or use the facilities owned or operated by entities other than the parties to this Arrangement, the parties recognize that the prior approval of such entities will be required in respect to the terms upon which such visit, assignment or use shall be made.
- 2.6. Any other form agreed between the parties.

Article 3. SCOPE OF INFORMATION EXCHANGE

3.1. Each party will make available to the other information in the field of LWR safety research which it has the right to disclose, either in its possession or available to it, in the technical areas listed in the appendices, in which the parties are sponsoring LWR safety research. These appendices may be modified by common agreement of the Administrators (see article 4).

3.2. Each party will promptly transmit and call to the other party's attention any information on its research results appearing to have significant safety implications. If the transmitting party denotes such information to be of a proprietary nature, the recipient party shall control the further dissemination of the information in accordance with the provisions of article 5.

3.3. As agreed upon, the parties may also exchange information on any other topic related to LWR safety.

Article 4. ADMINISTRATION OF THE ARRANGEMENT

Each party will designate as Administrator a senior representative to coordinate its participation in the overall exchange. The Administrators will establish agreed upon procedures for implementing the Arrangement. Approximately annually, the Administrators will meet to review the status of exchange and co-operation established under this Arrangement, to recommend revisions for improving and developing the cooperation, and to discuss topics within the scope of the cooperation. The time, place and agenda for such meetings shall be agreed upon in advance.

Article 5. EXCHANGE AND USE OF INFORMATION

5.1. The parties support the widest possible dissemination of information provided or exchanged under this Arrangement, subject to the need to protect proprietary information exchanged hereunder, and to the provisions of article 6.

5.2. It is recognized by the parties that in the process of exchanging information, or in the process of other cooperation, the parties may provide to each other proprietary information. Such information, including trade secrets, inventions, patent information, and know-how, is defined as:

- (a) Of a type customarily held in confidence by commercial firms;
- (b) Not generally known or publicly available from other sources;

- (c) Not having been made available previously by the transmitting party or others without an agreement concerning its confidentiality; and
- (d) Not already in the possession of the receiving party or its contractors.

5.3. The party receiving proprietary information pursuant to this Arrangement shall respect the nature thereof, provided such information is clearly marked with the appropriate legend of the transmitting party and with the following (or substantially similar) restrictive legend:

“Except as set forth in the Arrangement dated or in the specific memorandum dated between the USNRC and the CEA, this document containing proprietary information shall not be disseminated outside the recipient’s organization without prior approval of *name of transmitting party.*”

5.4. Information of a proprietary nature, as defined above, provided by one party to the other under this Arrangement shall be used only in the furtherance of nuclear safety programs in the receiving country. Its dissemination will, unless otherwise mutually agreed in a specific memorandum, be limited as follows:

- (a) To persons within or employed by the receiving party, and to other concerned government agencies of the receiving party, and
 - (b) To prime or subcontractors of the receiving party for use only within the country of the receiving party and within the framework of their contract(s) with the respective party engaged in work relating to the subject matter of the information so disseminated, and
 - (c) On an as-needed case-by-case basis, to organizations licensed in the country of the receiving party to construct or operate light water reactors, provided that such information is used only within the terms of the license and in work relating to the subject matter of the information so disseminated, and
 - (d) To contractors of licensed organizations in subparagraph (c) receiving such information, for use only in work within the scope of the license,
- provided that the information disseminated to any person under 5.4 (b), (c) and (d) above shall be pursuant to an agreement of confidentiality entered into between the recipient party and the contractors, subcontractors or licensed organizations above-mentioned in 5.4 (b), (c) and (d).

5.5. Nondocumentary proprietary information provided in seminars and other meetings organized under this Arrangement, or information arising from the attachment of staff, use of facilities or joint projects shall be treated by the parties in accordance with the principles specified in this article, provided, however, that the party communicating such proprietary information places the recipient on notice as to the character of the information communicated.

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

5.7. Each party shall exercise its best efforts to ensure that proprietary information received by it under this Arrangement is 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.

5.8. Nothing contained in this Arrangement shall be construed as requiring either party to transmit to the other party information that it considers of a proprietary nature and which has been acquired or developed prior to or outside the course of cooperative activities under this Agreement.

5.9. Nothing contained in this Arrangement shall preclude the use or dissemination of information received by a party from sources outside of this Arrangement.

5.10. The provisions on nondissemination of proprietary information given in this article shall continue notwithstanding the termination of this Arrangement or any extension thereof, until release is authorized by the transmitting party.

Article 6. PATENTS

6.1. With respect to any invention or discovery conceived or first actually reduced to practice in the implementation of this Arrangement:

6.1.1. If conceived or first actually reduced to practice by personnel of a party (the Assigning Party) or its contractors while assigned to the other party (the Recipient Party) or its contractors in connection with an exchange of scientists, engineers and other specialists:

6.1.1.1. The Recipient Party shall acquire all right, title and interest in and to such invention or discovery, and any patent application or patent that may result, in its own country and in third countries; and

6.1.1.2. The Assigning Party shall acquire all right, title and interest in and to such invention, discovery, patent application or patent in its own country.

6.1.2. If conceived by or first actually reduced to practice by a party or its contractors as a direct result of employing information which has been communicated to it under this Arrangement by the other party or its contractors, but not otherwise agreed to under a cooperative effort covered by paragraph 6.1.3:

6.1.2.1. The party so conceiving or first actually reducing to practice such invention or discovery shall acquire all right, title and interest in and to such invention or discovery, and any patent application or patent that may result, in its own country and in third countries; and

6.1.2.2. The other party shall acquire all right, title and interest in or to such invention, discovery, patent application or patent in its own country.

6.1.3. For other specific forms of cooperation, including exchange of samples, materials, instruments and components for special joint research projects, the parties shall provide for appropriate distribution of rights to inventions. In general, however, each party should normally determine the rights to such inventions in its own country, and the rights to such inventions in other countries should be agreed by the parties on an equitable basis.

6.1.4. Notwithstanding the allocation of rights covered under paragraphs 6.1.1 and 6.1.2, in any case where one party first actually reduces to practice after the execution of this Arrangement an invention, either conceived or actually reduced to practice by the other party prior to the execution of this Arrangement, or conceived or actually reduced to practice by the other party outside of the cooperative activities implementing this Arrangement, then the parties shall provide for an appropriate distribution of rights, taking into account existing commitments with third parties; provided, however, that each party shall determine the rights to such invention in its own country.

6.2. The party owning a patent covering any invention referred to in paragraph 6.1 above shall license the patents to nationals of the other party, upon request of the other party, on nondiscriminatory terms and conditions under similar circumstances. At the time of such a request, the other party will be informed of all licenses already granted under such patent.

6.3. Each party shall take all necessary steps to provide the cooperation from its inventors required to carry out the provisions of this article. Each party shall assume the responsibility to pay awards or compensation required to be paid to its employees according to the laws of its country.

6.4. It is understood that after the Community Patent Convention has come into force, the parties shall consult together to adapt the geographical allocation of the patent rights in order to allow a possible implementation of the said Convention.

Article 7. COSTS

Except when otherwise specifically agreed upon by the parties, all costs arising in the implementation of this Arrangement shall be borne by the party that incurs them. It is understood that the ability of the parties to carry out their obligations is subject to the availability of appropriate funds.

Article 8. FINAL PROVISIONS

8.1. This Arrangement shall enter into force upon the last date of signature, and, subject to paragraph 8.2, shall remain in force for a period of 5 years, unless extended for a further period of time by agreement of the parties.

8.2. Either party may withdraw from the present Arrangement after providing the other party written notice 6 months prior to its intended date of withdrawal.

DONE in duplicate in the English and French languages, each equally authentic.

For the United States Nuclear
Regulatory Commission:

By: [Signed]

WILLIAM J. DIRCKS

Title: Acting Executive Director for
Operations

Date: September 12, 1980

For the Commissariat à l'énergie
atomique of France:

By: [Signed]

PIERRE TANGUY

Title: Délégué à la protection et à la
sûreté nucléaire

Date: 16 juillet 1980

APPENDIX A

AMERICAN NUCLEAR SAFETY RESEARCH AREAS INCLUDED FOR USNRC-CEA TECHNICAL EXCHANGE AND COOPERATION—LWR SAFETY RESEARCH

1. *LWR Accident Behavior and Consequences*
 - 1.1. Separate Effects Testing
(Blowdown Heat Transfer, ECC Bypass, Reflood, Pump Characteristics)
 - 1.2. LOCA Integral System Testing
 - 1.3. LOCA-ECCS Analysis
 - 1.4. Fuel Behavior Under Accident Conditions
(LOC/Overpower Transients, F. P. Release, Fuel Melt-down, Cladding Behavior, Code Development)
 - 1.5. Containment Testing and Analysis
(Dynamic Loadings, Pressure Suppression, H₂ Production)
2. *Primary System Integrity*
 - 2.1. Materials and Mechanical Problems
 - 2.2. Quality Assurance
(NDE Methodology)
3. *Mechanical and Structural Engineering*
 - 3.1. Behavior and Integrity of Mechanical and Structural Components Under Reactor Operation and Accident Conditions
4. *Site Safety*
 - 4.1. External Impacts
(Earthquakes, Chemical Explosions, Airplanes)
 - 4.2. F. P. Release and Transport
5. *Operational Safety*
 - 5.1. Noise Diagnostics For Safety Assessment
 - 5.2. Human Factors
 - 5.3. Qualification Testing Evaluation
 - 5.4. Fire Protection
 - 5.5. Valve Modeling And Testing
6. *Risk and Reliability Analysis*
 - 6.1. Accident Sequence Analysis
 - 6.2. Consequences Modeling and Analysis
 - 6.3. Containment studies (Safety margins and failure modes)

APPENDIX B

FRENCH NUCLEAR SAFETY RESEARCH AREAS INCLUDED FOR USNRC-CEA TECHNICAL EXCHANGE AND COOPERATION

1. *Thermal hydraulics (LOCA)*
 - 1.1. Blowdown tests in OMEGA loop

- 1.2. Critical flow tests (SUPER MOBY DICK)
- 1.3. Reflood experiments (ERSEC)
- 1.4. Steam water mixing studies (EPIS)
- 1.5. Blowdown of a PWR vessel
- 1.6. Development of advanced models and advanced codes for the study of the LOCA in PWR: Coordinated general program
- 1.7. Two-phase two-component flow (REBECA)
- 1.8. Study on the condensation on a wall of air steam mixture in transient conditions (ECOTRA)
- 1.9. Two-phase flow instrumentation
2. *Fuel*
 - 2.1. PHEBUS PROGRAM
 - 2.2. Zircaloy cladding diametral expansion during a LOCA (EDGAR)
 - 2.3. Characterization of fission product releases from defected fuel rod in normal operation
 - 2.4. Characterization of fission product releases from fuel in accidental conditions (FLASH)
3. *Structures and components*
 - 3.1. Irradiation embrittlement of pressure vessel steel
 - 3.2. Fatigue behaviour of steel
 - 3.3. Ultrasonic non-destructive examination program
 - 3.4. Failure probability calculation of a PWR pressure vessel
 - 3.5. Local behaviour of reinforced concrete walls under missile impacts
 - 3.6. Qualification of safety-related components in accidental conditions: safety requirements
 - 3.7. Pipe rupture studies (AQUITAINE 2)
 - 3.8. Valve testing in transient conditions
 - 3.9. Viscous damping values of structures and components
4. *Sites external aggressions*
 - 4.1. Gaseous explosions
 - 4.2. Earthquakes
5. *Operational safety*
 - 5.1. Human factors: maintenance and control processes
 - 5.2. Simulators and their use for studies in diagnosis of accidental situations
6. *Risk assessment*
 - 6.1. Accident sequence analysis
 - 6.2. Consequence modeling and analysis
 - 6.3. Containment studies (Safety margins and failure modes)