

AGREEMENT
between
THE UNITED STATES DEPARTMENT OF ENERGY
and the
SWISS FEDERAL INSTITUTE FOR REACTOR RESEARCH
in the area of
CARBIDE FUEL DEVELOPMENT

This Agreement, to be called the "Carbide Fuel Development Agreement," is made between the United States Department of Energy (DOE), representing the Government of the United States, and the Swiss Federal Institute for Reactor Research (EIR), representing the Swiss Federal Government, hereinafter called the "Parties." This Agreement supersedes the Agreement between the United States Department of Energy and the Swiss Federal Institute for Reactor Research in the area of Carbide Fuel Development which was signed by the two Parties on March 30 and April 10, 1981.

This superseding Agreement was necessary as a result of:

- (1) Review of the US DOE budgetary position necessitating a reallocation of program cost sharing.
- (2) Consent by EIR to accept a larger share of total program costs particularly post-irradiation examinations to be made in US hot cells.
- (3) Revision of the experiment from a 37 pin test assembly to a 91 pin assembly.

WHEREAS

An Agreement for Cooperation between the Government of the United States of America and the Government of Switzerland concerning Civil Uses of Atomic Energy entered into force August 8, 1966, as amended (hereinafter referred to as the Agreement for Cooperation).

Both DOE and EIR have a mutual interest in the development of mixed plutonium carbide and uranium carbide fuels (mixed-carbide fuels) for fast breeder reactors, with DOE developing pellet-type fuel and EIR particulate-type fuel in spherical form and both Parties intend to continue these developments at least for the duration of the agreement.

Both DOE and EIR have a mutual interest in developing nuclear energy in such a manner as to enhance prospects for restraining the proliferation of nuclear weapons, and the particulate type fuel process being developed by EIR has an excellent potential for effective application of safeguards to Liquid Metal Fast Breeder Reactor (LMFBR) fuel cycles using plutonium.

Both DOE and EIR have an interest in testing the performance of DOE and EIR mixed-carbide fuels in the Fast Flux Test Facility (FFTF), and analyzing the results of such tests.

IT IS AGREED AS FOLLOWS:

ARTICLE 1 - OBJECTIVE

The objective of cooperation under this Agreement is to compare the behavior of DOE pellet-type and EIR particulate-type mixed carbide fuels under irradiation in FFTF.

ARTICLE 2 - PROGRAM

A joint program designed to meet the objective of this Agreement is outlined below:

- a. The fabrication of 66 to 76 pellet-type mixed-carbide fuel pins by DOE.
- b. The fabrication of 20 to 30 particulate-type mixed-carbide fuel pins by EIR and their shipment to the Los Alamos National Laboratory (LANL) for subsequent irradiation in FFTF. A preliminary description of these EIR fuel pins is given in Appendix A.
- c. Irradiation in FFTF and post-irradiation examination of an agreed number of the pins fabricated by DOE and EIR. The intentions of the irradiation and examination plan are outlined in Appendix B.
- d. Complete exchange of information on the design, fabrication and irradiation testing of the fuel pins fabricated by DOE and EIR.
- e. Analyses and reporting of the information developed from the irradiation test in FFTF and a complete exchange of analyses and reports.
- f. The current schedule for the joint program is given in Appendix C.

ARTICLE 3 - RESPONSIBILITIES

3.1 EIR shall be responsible for:

- a. Preparation of particulate-type fuel specifications as mutually agreed with DOE.
- b. Fabrication of 20 to 30 particulate-type fuel pins (EIR fuel pins) in accordance with EIR/DOE agreed fuel specifications and fuel pin specifications and in accordance with Quality Assurance (QA) procedures agreed to by DOE.
- c. Providing design, fabrication and irradiation test information on the EIR fuel pins to DOE.
- d. Shipping the EIR fuel pins to a mutually agreed port of entry in the United States.

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- e. Participation with DOE in the pre- and post-irradiation examination of the test fuel pins and in the resulting analysis and reporting, as mutually agreed by the Parties.

3.2 DOE shall be responsible for:

- a. Preparation of fuel pin specifications as mutually agreed with EIR.
- b. Fabrication of 66 to 76 pellet-type fuel pins (DOE fuel pins).
- c. Overall test design, coordination, and preparation of documentation of the irradiation test in FFTF.
- d. Providing to EIR all fuel pin hardware and components for the EIR fuel pins, excluding fuel and special EIR-provided components, required for the fabrication of EIR fuel pins.
- e. Shipment of the fuel pins from LANL to FFTF.
- f. Providing irradiation services in FFTF.
- g. Performing all test surveillance functions.
- h. Conducting pre- and post-irradiation examination of DOE and EIR fuel pins, as mutually agreed with EIR.
- i. Disposing of EIR fuel pins after post-irradiation examination.
- j. Providing to EIR test documentation and data on irradiation test conditions.
- k. Providing to EIR the results of pre- and post-irradiation examination of DOE and EIR fuel pins, and participation with EIR in the analysis and reporting of such results.

- 3.3 DOE agrees, subject to the provisions of Article 3.4, to return to EIR in Switzerland, within a mutually agreed period of time after receipt at the U.S. port of entry of the EIR fuel pins provided under Article 3.1.d., an amount and quality of plutonium equivalent to that contained in the EIR fuel pins shipped to the United States for irradiation in FFTF. Upon dispatch of the EIR fuel pins to the United States, EIR shall transfer to DOE the ownership of that plutonium and uranium contained in EIR fuel pins for use in the joint program outlined in Article 2. At the same time DOE dispatches the equivalent amount of plutonium, DOE shall transfer to EIR the ownership of that equivalent amount. Reference data for the exchange of plutonium between DOE and EIR under this Agreement is given in Appendix D.

- 3.4 The Parties recognize that any provisions of this Agreement which depend upon the import or export of special nuclear material into or out of the United States or Switzerland shall not be implemented unless and until approval for such import or export is obtained from their respective Governments.
- 3.5 The Parties recognize that the implementation of this Agreement is contingent upon the approval by DOE of a safety review of the irradiation in FFTF of the mixed carbide fuel pins as contemplated by Article 2 of this Agreement.

ARTICLE 4 - MANAGEMENT

- 4.1 A Joint DOE/EIR Committee shall be established by the Parties to review, evaluate and assess the program to be conducted under this Agreement.
- 4.2 Each Party shall designate one person to act on its behalf in all matters concerning day-to-day implementation of this Agreement.
- 4.3 Each Party shall keep the other informed of the identity of its contractors directly participating in the work under this Agreement.

ARTICLE 5 - USE AND DISCLOSURE OF INFORMATION

5.1 General

The Parties support the widest possible dissemination of information provided or exchanged under this Agreement, subject to the need to protect proprietary information developed prior to or outside the scope of the joint program, and to the provisions of Article 7 of this Agreement.

5.2 Use of Proprietary Information

A. Definitions as used in this Agreement:

- (i) The term "information" includes scientific or technical data, results, or methods of research and development, and any other information intended to be provided or exchanged under this Agreement.
- (ii) The term "proprietary information" means information 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 without restriction on its further dissemination.

B. Procedures


- (i) A Party receiving proprietary information pursuant to this Agreement 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 an Agreement dated _____ between the United States Department of Energy and the Swiss Federal Institute for Reactor Research and shall not be disseminated outside these organizations, their contractors, licensees and the concerned departments of the Governments of the U.S.A. and Switzerland without the prior approval of:

"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."

- (ii) Proprietary information received in confidence under this Agreement may be disseminated on a need-to-know basis by the receiving Party to:
 - (a) persons within or employed by the receiving Party, and to departments and agencies of the government of the receiving Party; and
 - (b) prime or subcontractors of the receiving Party located within or without the geographical limits of the receiving Party's legal jurisdiction, for use only within the framework of its contract(s) 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 (i).

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- (iii) With the prior written consent of the Party providing proprietary information under this Agreement, the receiving Party may disseminate such proprietary information more widely than otherwise permitted in sub-paragraph (i). The Parties will cooperate with each other in developing procedures for requesting and obtaining prior written consent for such wider dissemination, and each Party will use its best efforts to grant such approval to the extent permitted by its policies, regulations and laws.
- C. Each Party will exercise its best efforts to ensure that proprietary information received by it under this Agreement 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 confidentiality provisions of this Article, it will immediately inform the other Party. The Parties will thereafter consult to define an appropriate course of action.
- D. Information arising from meetings arranged under this Agreement and information arising from staff visits will be treated by the Parties according to the principles specified in this Article; provided, however, no proprietary information orally communicated will be subject to the limited disclosure requirements of this Agreement unless the individual communicating such information places the recipient on notice as to the proprietary character of the information communicated and forthwith confirms the notice in writing.
- E. Nothing contained in this Agreement will preclude the use or dissemination of information received by a Party through arrangements other than those provided for under this Agreement.

ARTICLE 6 - DISCLAIMER

The application or use of any information exchanged or transferred between the Parties under this Agreement shall be the responsibility of the Party receiving it, and the transmitting Party does not warrant the suitability of such information for any particular use or application.

ARTICLE 7 - PATENTS

- 7.1 With respect to any invention or discovery made or conceived in the course of or under this Agreement:
 - a. If made or conceived by personnel of one Party (the Assigning Party) or its contractors while assigned to the other Party (Receiving Party) or its contractors in connection with exchanges of scientists, engineers and other specialists:
 - (1) The Receiving 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, under any such invention or discovery and any patent application, patent or other protection related thereto.

- (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 Receiving Party, its Government and its nationals designated by it, under any such invention or discovery and any patent application, patent or other protection relating thereto.
- b. If made or conceived by a Party or its contractors when testing the fuel pins:
- (1) The Party which fabricated the fuel pin shall acquire all right, title and interest in and to such invention or discovery in its own country and in third countries, subject to a non-exclusive, irrevocable, royalty-free license to the other Party, its Government and its nationals designated by it, under any such invention or discovery and any patent application, patent or other protection relating thereto.
 - (2) The other 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 Party which fabricated the fuel pin, its Government and its nationals designated by it, under any such invention or discovery and any patent application, patent or other protection relating thereto.

7.2 Each Party shall, without prejudice to any rights of inventors or authors, take all necessary steps to provide cooperation from its authors and inventors required to carry out the provisions of Articles 7 and 8 of this Agreement.

7.3 Each Party shall assume the responsibility to pay awards or compensation required to be paid to its nationals according to its own laws.

ARTICLE 8 - 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 of materials owned or controlled by a Party, that Party shall make efforts to grant to the other a license to reproduce copyrighted material.

ARTICLE 9 - FINANCIAL TERMS

- 9.1 An estimate of the costs to EIR of the joint program under this Agreement, is given in Appendix E. The estimated total cost for Phase 1, 2 and 4, including inflation escalation and the costs incurred for Phase 3 will be used for the final settlement within the cost ceiling defined in Article 9.3.

The estimated costs given in Appendix E represent all program costs excepting those costs incurred by both Parties for fuel pin and assembly hardware, costs for fabrication development, costs of transport of the fuel pins and of plutonium and costs incurred by DOE in providing irradiation services in FFTF.

- 9.2 For purposes of this Article 9, costs are defined as DOE's full costs, less depreciation and added factor costs. DOE agrees to waive such depreciation and added factor costs in recognition of the programmatic benefit to DOE from the joint program under this Agreement.
- 9.3 The Parties agree that the EIR cost ceiling for the joint program is established at \$1,105,000 in mid-calendar year 1979 dollars.
- 9.4 EIR shall bear the costs set forth in Appendix E not to exceed the above cost ceiling.
- 9.5 EIR will be notified by DOE in a timely manner of any foreseen increase in costs above the established cost ceiling and the Parties will decide on action to be taken.
- 9.6 DOE, at its own expense, agrees to provide EIR with all components and materials, excluding fuel and special EIR-provided components, required for the fabrication of the 20 to 30 EIR fuel pins.
- 9.7 On consideration of the cooperative effort, EIR shall make payments to DOE in accordance with the following schedule:
- a. \$100,000 within 2 months after the start of EIR fabrication of EIR fuel pins, estimated to be October 1982.
 - b. \$100,000 when EIR fuel pins are shipped to LANL, estimated to be September 1983.
 - c. \$200,000 when test components are shipped by LANL to the Hanford Engineering Development Laboratory (HEDL), estimated to be July 1984.
 - d. \$100,000 at start of irradiation, estimated to be March 1985.
 - e. \$100,000 during irradiation, estimated to be March 1986.
 - f. \$200,000 at start of PIE, estimated to be October 1987.

- g. \$200,000 for PIE continuation, estimated to be May 1988.
 - h. Reconciliation of the balance and final settlement at completion of final reporting estimated to be June 1989, but no later than 12 months after that event.
- 9.8 The above payments are specified in mid-calender year 1979 dollars. Actual payments will be escalated through the year prior to the payment based on implicit price deflators for U.S. Government purchases of nondefense goods and services published in Survey of Current Business, United States Department of Commerce/Bureau of Economic Analysis (issued monthly).
- The escalation rate from the middle of 1979 to the end of calender year 1981 was 26.6%.
- 9.9 Final adjustments for inflation escalation to the scheduled payments in accordance with Article 9.7 shall be made no later than 12 months after the payment in question.
- 9.10 The payments made under Article 9.7, 9.8 and 9.9 shall be made in U.S. dollars in accordance with procedures to be identified by DOE prior to the first payment. The payments shall be used to meet the EIR share of the expenses incurred during the life of this Agreement. After receiving payments, the utilization of the sums received shall become the sole responsibility of DOE.
- 9.11 The ability of each Party to carry out its obligations under this Agreement is subject to the availability of appropriated funds.
- 9.12 The payment by EIR of the amounts in Article 9.7 will be paid only on the actual achievement of the events listed therein.

ARTICLE 10 - VISITS AND ASSIGNMENTS

- 10.1 Short-term visits of DOE staff to EIR or its contractors or of EIR staff to DOE or its contractors to discuss any aspect of this Agreement during the life of this Agreement shall be made subject to approval of and at no cost to the Receiving Party.
- 10.2 Long-term assignments of 1 month or more duration shall be the subject of separate personnel assignment agreements.

ARTICLE 11 - TRANSPORTATION

- 11.1 The responsibility and expenses for the transport of equipment and materials within the United States of America and from the United States of America to a mutually agreed location at the border of Switzerland, and the responsibility for their safekeeping and insurance en route, shall rest with DOE.

- 11.2 The responsibility and expenses for the transport of equipment and materials within Switzerland and from Switzerland to a mutually agreed port of entry to the United States of America, and responsibility for their safekeeping and insurance en route, shall rest with EIR.


ARTICLE 12 - DAMAGES

Each Party shall accept liability to the extent authorized by its national laws for damages arising from cooperative activities under this Agreement.

ARTICLE 13 - GENERAL PROVISIONS

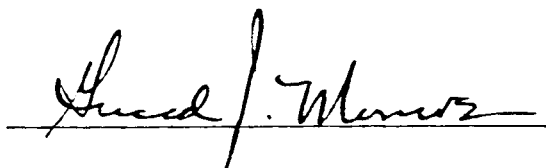
- 13.1 The provisions of this Agreement shall not affect the rights or duties of the Parties hereto under other agreements or arrangements. This Agreement also in no way precludes commercial firms or other legally constituted enterprises in each of the countries of the two Parties from engaging in commercial dealings in accordance with applicable laws of each country; nor does it preclude the Parties from engaging in activities with other Governments or persons, except that proprietary information shall have limited dissemination as set forth in Article 5.2 of this Agreement.
- 13.2 Cooperation under this Agreement shall be in accordance with the Agreement for Cooperation and the laws and regulations of the countries of the Parties. All questions related to the Agreement arising during its term shall be settled by the Parties by mutual agreement.

ARTICLE 14 - DURATION

- 14.1 This Agreement shall enter into force upon the later date of signature and supersedes the Agreement of 1981. It shall continue for an 8-year period to the end of 1990 and may be extended by mutual consent. The implementation and progress of the joint program may be subject to review by the Parties.
- 14.2 This Agreement may be terminated at any time at the discretion of either Party, upon 6 months advance notification in writing by the Party seeking to terminate the Agreement. Such termination shall be without prejudice to the rights which may have accrued under this Agreement to either Party up to the date of such termination.
- 14.3 All joint efforts and experiments not completed at the termination of this Agreement shall be continued until their completion under terms of this Agreement. Following the termination of this Agreement, both Parties shall continue to share in information derived from the experiments conducted under the terms of this Agreement until final reports are completed.
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- 14.4 On termination of the joint agreement, the Parties shall agree on the final possession of proprietary information provided under Article 5.
- 14.5 In the event either of the Parties is refused a license for the export of plutonium or uranium pursuant to Article 3.3 of this Agreement, both Parties shall thereupon be relieved of any further requirements to discharge their responsibilities as set forth in Articles 3 and 9 of this Agreement.

FOR THE UNITED STATES
DEPARTMENT OF ENERGY

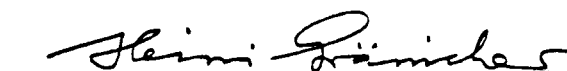


NAME: Gerald J. Monroe

TITLE: Economic Counselor

DATE: November 15, 1982

FOR THE SWISS FEDERAL INSTITUTE
FOR REACTOR RESEARCH REPRESENTING
THE SWISS FEDERAL GOVERNMENT



NAME: W.H. Heini Gränicher

Prof. Dr.

TITLE: Director of EIR

DATE: November 15, 1982.