

ANNEX V TO THE IMPLEMENTING ARRANGEMENT  
BETWEEN THE JAPAN ATOMIC ENERGY RESEARCH INSTITUTE  
AND THE UNITED STATES DEPARTMENT OF ENERGY  
ON COOPERATION IN FUSION RESEARCH AND DEVELOPMENT  
FOR THE DOE-JAERI COLLABORATIVE PROGRAM IN THE  
DEVELOPMENT OF SUPERCONDUCTING POLOIDAL COIL TECHNOLOGY

1. INTRODUCTION AND TERMS OF REFERENCE

Whereas Article III.2 of the Implementing Arrangement between the United States Department of Energy (hereinafter referred to as "DOE") and the Japan Atomic Energy Research Institute (hereinafter referred to as "JAERI") on Cooperation in Fusion Research and Development of November 8, 1983 (hereinafter referred to as "the Implementing Arrangement") provides for additional activities through written Annexes to the Implementing Arrangement,

Whereas DOE and JAERI have held discussions regarding a collaborative testing program at JAERI involving a U.S. Demonstration Poloidal Coil (US-DPC), which will be developed by the Massachusetts Institute of Technology for DOE, and an Experimental Demonstration Poloidal Coil (DPC-EX) to be developed by JAERI, both coils being wound with Nb<sub>3</sub>Sn forced-cooled conductors,

Whereas DOE and JAERI are both interested in testing the US-DPC and the DPC-EX at the Superconducting Engineering Test Facility (SETF), at the Naka Fusion Research Establishment,

DOE and JAERI (hereinafter referred to as "the Parties") agree hereby to the following detailed provisions in a Collaborative Program to develop superconducting poloidal coil technology, in accordance with the provisions of the Implementing Arrangement, as follows:

2. OBJECTIVES

The objective of the Collaborative Program, defined in Article 3 below, is to conduct tests at SETF, involving the US-DPC to be provided by DOE and the DPC-EX to be provided by JAERI, and to evaluate conductor design concepts and performance in support of the development of superconducting poloidal coil technology which would be applicable to the next generation of fusion experimental devices.

3. COLLABORATIVE PROGRAM

- 3.1 The Collaborative Program shall consist of (a) planning of the test program for the US-DPC and DPC-EX at SETF, (b) facility interface preparation for the US-DPC tests at JAERI, (c) joint participation in the conduct of the tests on the US-DPC and DPC-EX coils, (d) joint evaluation of the test data results from both coils; (e)

provision of personnel, components including integral instrumentation<sup>1</sup>, other equipment, instruments, materials and information necessary to carry out the Collaborative Program.

3.2 The test under the Collaborative Program shall be carried out on the US-DPC and the DPC-EX coils.

3.3 The Collaborative Program shall utilize SETF and the power supply system of the JT-60 owned and operated by JAERI; but SETF and the power supply system of JT-60 shall not be dedicated exclusively to this Collaborative Program. Therefore, the schedule of the Collaborative Program is subject to the experimental schedule of JT-60. JAERI shall arrange the planning and scheduling of experiments under the Collaborative Program, in consideration of the recommendation of the Steering Committee established in Article 4 of this Annex.

3.4 The responsibilities of the Parties under the Collaborative Program are as follows:

3.4.1 DOE shall:

- (a) Design, develop, and fabricate the US-DPC and ship it to SETF, including integral instrumentation (e.g., pressure transducers, thermometers, etc.) to meet provisions of The Technical Document of Demonstration Poloidal Coil Program between the United States Department of Energy and the Japan Atomic Energy Research Institute (hereinafter referred to as the Technical Document) prepared and agreed upon both by DOE and JAERI.
- (b) Ensure that the instrumentation and control components of the US-DPC are operationally compatible with the SETF systems.
- (c) Provide the final design report of the US-DPC including documentation needed for interfacing with the electrical and mechanical systems of SETF.
- (d) Perform preliminary testing of vacuum tightness at liquid nitrogen temperature and electrical insulation on the US-DPC in the United States.
- (e) Develop test plans and operating procedures for the US-DPC in collaboration with JAERI.
- (f) Assign one or more persons to JAERI for a duration set forth in Article 7 of this Annex. The assignee(s) shall also be involved in the installation and checkout of the

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<sup>1</sup> Integral instrumentation is that instrumentation that is an integral part of the process hardware, i.e., instrumentation which is directly attached to, or inserted in, the fabricated process components and, therefore, is most appropriately designed and fabricated with the coil.

US-DPC at SETF and in the testing of the US-DPC during the duration of their assignment.

- (g) Comply with the applicable Japanese industrial regulations are provided by JAERI such as the high pressure gas control law of Japan with respect to the fabrication of the US-DPC. Any request for exceptions to these regulations shall be made by DOE to JAERI who, upon mutual agreement to its necessity, shall submit this request formally to the appropriate governing Japanese agency.
- (h) Assume responsibility for assuring that the US-DPC meets the conditions of vacuum tightness and insulation voltage as specified by the Technical Document.
- (i) Plan, participate in, and evaluate test results from experiments on both coils in collaboration with JAERI.
- (j) Provide for the return shipment of the US-DPC and its associated equipment and instrumentation to the United States at the conclusion of testing.

#### 3.4.2 JAERI shall:

- (a) Design, develop, and fabricate the DPC-EX, including integral instrumentation (e.g., pressure transducers, thermometers, etc.) to meet provisions of the Technical Document prepared and agreed upon both by DOE and JAERI.
- (b) Make SETF available for testing both the US-DPC and DPC-EX coils and, in conjunction with DOE assignee(s), perform testing on these coils.
- (c) With respect to safety, develop those necessary performance parameters for the DOE-supplied US-DPC, and approve its final design to meet the requirements for the safe operation of the SETF. Prior to completion of final design of the US-DPC, JAERI shall provide DOE with information about the boundary conditions and operational parameters for the test of the US-DPC and information regarding applicable Japanese industrial regulations.
- (d) In conjunction with DOE assignee(s), install the US-DPC into SETF, check out the US-DPC performance test capabilities, and acquire necessary data from the tests.
- (e) Install necessary equipment, instruments, and material provided by DOE for testing at SETF in conjunction with DOE assignee(s).
- (f) Provide necessary data recording equipment. Other such instrumentation may be used by JAERI in the tests as JAERI deems appropriate.

- (g) Provide the final design report of the DPC-EX.
  - (h) Plan, participate in, and evaluate test results from experiments on both coils in collaboration with DOE.
  - (i) Remove from SETF and pack for return shipment the US-DPC and its associated equipment and instrumentation at the conclusion of testing.
- 3.5 Technical Progress Meetings shall be held as required to exchange technical information and to review technical status and accomplishments of the Collaborative Program, in accordance with Article 4.5 (b) and (c) in this Annex.
4. MANAGEMENT
- 4.1 The Parties agree to establish a Steering Committee
- 4.2 The Steering Committee shall be responsible for management of the Collaborative Program.
- 4.3 The Steering Committee shall be composed of four members, two each to be assigned by JAERI and DOE. The Steering Committee shall have the functions as described in paragraph 4.5 below.
- 4.3.1 DOE and JAERI each shall identify a person to serve as co-chairman of the Steering Committee. Official communications shall be channeled through these co-chairmen or their designees.
- 4.3.2 DOE and JAERI shall designate an appropriate alternate who shall serve if a member is unable to do so and each shall inform the other in writing of all such designations. DOE and JAERI shall each have one vote in the Steering Committee and all decisions shall be by unanimity. The Steering Committee shall be chaired by the host country of the Steering Committee meeting.
- 4.4 The Steering Committee shall meet annually at JAERI or on a date and at a location mutually agreed upon. An exchange of letters between the co-chairmen may serve as a substitute for a meeting of the Steering Committee.
- 4.5 The function of the Steering Committee shall include:
- (a) Developing an implementing plan for the Collaborative Program, and recommending the annual program of work, budget, and other such matters to DOE and JAERI for approval;
  - (b) Arranging Technical Progress Meetings;
  - (c) Reviewing progress in preparation for, and during conduct of, the test, and convening meetings for that purpose if necessary;

- (d) Evaluating the results of the test at its end and convening meetings for that purpose if necessary;
- (e) Reporting to the U.S.-Japan Coordinating Committee on Fusion Energy through Contact Persons described in Article I of the Exchange of Letters between the Science and Technology Agency of Japan and DOE on January 25, 1983;
- (f) Reaching agreement on arrangement for the assignee(s) to JAERI; and
- (g) Discussing other matters necessary for conduct of the Collaborative Program.

In addition to these functions, the Steering Committee shall be responsible for evaluating periodically the Collaborative Program's relevance to both the DOE and JAERI fusion programs and shall report these evaluations as needed to the U.S.-Japan Coordinating Committee on Fusion Energy.

## 5. FINANCE

Except when otherwise mutually agreed in writing, each Party shall bear the cost of its activities in accordance with its responsibilities as described in this Annex. The activities to be conducted under this Annex shall be subject to the availability of appropriated funds in each country.

## 6. INFORMATION AND PATENTS

- 6.1 DOE shall provide JAERI with all information, including engineering drawings on design, development, manufacturing, and the test of the US-DPC, necessary for joint participation in the testing of the US-DPC. This information shall be non-proprietary and shall not include detailed manufacturing know-how.
- 6.2 JAERI shall provide DOE with all information, including engineering drawings on design, development, manufacturing, and the test of the DPC-EX, necessary for joint participation in the testing of the DPC-EX. This information shall be non-proprietary and shall not include detailed manufacturing know-how.
- 6.3 JAERI shall provide promptly to DOE all information resulting from testing of the US-DPC and of the DPC-EX coil.
- 6.4 Each Party shall provide promptly to the other Party all information resulting from evaluation of the test results.
- 6.5 Each Party supports the widest possible dissemination of information in Article 6.1, 6.2, 6.3, and 6.4 above for any and all purposes whatsoever, subject to Article 6.6.
- 6.6 Inventions made or conceived in the course of or under the Collaborative Program of this Annex (hereinafter referred to as "arising inventions") shall be identified and reported promptly by

the inventing Party to the other Party. Information regarding arising inventions on which patent protection is to be obtained shall not be published or publicly disclosed by the Parties until a patent application has been filed in either country of the Parties, provided, however, that this restriction on publication or disclosure shall not extend beyond six months from the date of the invention. It shall be the responsibility of the inventing Party to appropriately mark reports which disclose inventions that have not been appropriately protected by the filing of a patent application.

- 6.7 Arising inventions shall be owned (a) by DOE in the United States subject to a royalty-free, nonexclusive, irrevocable license to JAERI, its Government, and the nationals of its country designated by it and (b) by JAERI in Japan and the third countries subject to a royalty-free, nonexclusive, irrevocable license to DOE, its Government, and the nationals of its country designated by it.
- 6.8 The provisions of Article 6.6 shall apply mutatis mutandis to the protection of utility model and of design.
- 6.9 Each Party shall assume the responsibility to pay awards or compensation required to be paid to its own nationals according to its own laws. Each Party shall, without prejudice to any rights of inventors under its national laws, take all necessary steps to provide the cooperation from its inventors required to carry out the provisions of this Article.

#### 7. ASSIGNMENT OF PERSONNEL

DOE may assign one or more persons to JAERI for such a duration as technically required. The co-chairmen shall determine the duration of the assignment(s) before the assignment(s) begins. Assignments of personnel shall be made in accordance with Article IX of the Implementing Arrangement. Each such assignment of personnel shall be the subject of a separate assignment agreement.

#### 8. LOAN OF COMPONENTS, EQUIPMENT, INSTRUMENTS, AND MATERIAL

- 8.1 DOE is responsible for the shipment of US-DPC and the associated hardware to SETF at JAERI. JAERI shall use all reasonable skill and care in carrying out its duties under this Annex in accordance with all applicable laws and regulations. Except as otherwise agreed in writing, the cost and expense of assuring that the US-DPC and associated hardware meet the requirements of the Technical Document shall be borne by DOE.
- 8.2 Except as otherwise provided in this Annex, loan of equipment, instruments, and material by DOE under the Collaborative Program shall be done in accordance with Article X of the Implementing Arrangement. For the duration of the Collaborative Program, components, equipment, instruments, and material provided by DOE shall be considered to be the property of the United States, and transportation of all such property shall be the responsibility of DOE.

9. INCORPORATION BY REFERENCE

This Annex shall be subject to Articles V, VII and VIII of the Implementing Arrangement.

10. SUSPENSION OF OBLIGATIONS

The obligations of JAERI or DOE shall be suspended for any period during which JAERI or DOE is prevented or substantially hindered from complying therewith in whole or part by any cause beyond its control including, but not limited to, acts of God, unavoidable accidents, laws, rules, regulations or orders of any governmental or local authority, strikes, lockouts or other labor disputes, shortage of materials, equipment or labor or shortage of or delays in transportation; the one so prevented or hindered shall give notice to the other promptly after the start and finish of such prevention or hindrance.

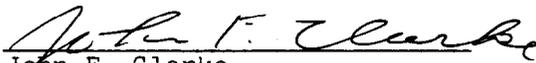
11. DURATION AND TERMINATION

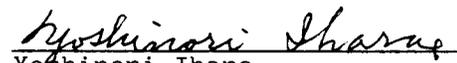
The Collaborative Program shall enter into force upon signature of this Annex by DOE and JAERI and shall remain in force for a period of five years or until termination of the Implementing Arrangement whichever occurs first. The Collaborative Program may be renewed or amended by written agreement between DOE and JAERI. The Collaborative Program may be terminated at the discretion of either DOE or JAERI upon six (6) months advance notice in writing by the side seeking to terminate the Collaborative Program. Specific activities initiated hereunder but not completed at the termination of this Annex may be continued until their completion under the terms of this Annex.

Done at Tokyo, this 19th day of May, 1988 in duplicate in the English and Japanese languages, both being equally authentic.

for THE UNITED STATES  
DEPARTMENT OF ENERGY

for THE JAPAN ATOMIC ENERGY  
RESEARCH INSTITUTE

  
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