

ANNEX III 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 DEVELOPMENT OF IMPROVED COMPONENTS
FOR THE FUEL CLEANUP SYSTEM
OF THE TRITIUM SYSTEMS TEST ASSEMBLY

1. INTRODUCTION AND TERMS OF REFERENCE

Whereas the United States Department of Energy (hereinafter referred to as "DOE") and the Japan Atomic Energy Research Institute (hereinafter referred to as "JAERI") have a testing program underway of two small-scale components for the Fuel Cleanup System (FCU) of the Tritium Systems Test Assembly facility, (TSTA) at the Los Alamos National Laboratory (LANL),

Whereas Article III.2 of the Implementing Arrangement between DOE and 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 wish to use the FCU to develop technology to separate hydrocarbons, ammonia, and other impurities from mixtures of hydrogen, deuterium, and tritium,

DOE and JAERI (hereinafter referred to as "the Parties") agree to a Collaborative Program in accordance with the provisions of the Implementing Arrangement, as follows.

2. OBJECTIVE

The objective of the Collaborative Program, defined in Article 3 below, is to test at TSTA two process-ready components, the palladium diffuser, and the ceramic electrolysis cell, designed and manufactured by JAERI for the purpose of developing improved components for the FCU, 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 of the palladium diffuser and the ceramic electrolysis cell at TSTA, (b) preparation for and conduct of the test at TSTA, (c) evaluation of the results of the test, and (d) provision of personnel, components, including integral instrumentation¹, and information necessary to carry out the Collaborative Program, as well as possible provision of equipment, instruments, and material.
- 3.2. The test under the Collaborative Program shall be carried out on the two process-ready components, the palladium diffuser, and the ceramic electrolysis cell at TSTA. The palladium diffuser is to separate hydrogen isotopes from all other chemical species and the ceramic electrolysis cell is to decompose tritiated water without serious degradation to the cell itself.
- 3.3. The Collaborative Program shall be one of several users of TSTA; TSTA shall not be dedicated exclusively to this Collaborative Program. The impact to the operation and conduct of the scheduled test program at TSTA shall be minimal.
- 3.4. The responsibilities of the Collaborative Program are as follows:
 - 3.4.1 JAERI shall:
 - (a) Design, develop, and build a palladium diffuser and ceramic electrolysis cell components and ship them to TSTA, including integral instrumentation¹ (e.g., pressure transducers, thermocouples, etc.).
 - (b) Ensure that the instrumentation and control philosophy of the components are compatible with the rest of TSTA's systems.
 - (c) Provide documentation needed for interfacing with the electrical and mechanical systems of TSTA.
 - (d) Perform preliminary testing of the palladium diffuser and the ceramic electrolysis cell without tritium.

¹ "Integral instrumentation" is that instrumentation that is an integral part of the process hardware; that is, instrumentation which is directly attached to, or inserted in, the fabricated process components and, therefore, is most appropriately designed and fabricated with the components. Also included are any local readouts or signal conditioners directly associated with those instruments. "Integral instrumentation" includes, but may not be limited to, all instrumentation required for testing and evaluation of the components without tritium at JAERI. Integral instrumentation shall be installed (as appropriate), packaged, and shipped to TSTA along with the basic components.

- (e) Develop testing plans and operating procedures for the palladium diffuser and the ceramic electrolysis cell in collaboration with DOE.
- (f) Provide to DOE equipment, instruments, and material as necessary for testing the components.
- (g) Assign one or more persons to LANL for a duration set forth in Article 7 in this Annex. The assignee(s) shall aid in the installation and checkout of the palladium diffuser and the ceramic electrolysis cell at TSTA. The assignee(s) shall also be involved in the testing of the two components during the duration of their assignment.
- (h) Evaluate test results in collaboration with DOE.

3.4.2 DOE shall:

- (a) Develop necessary performance parameters for the JAERI-supplied palladium diffuser and ceramic electrolysis cell and approve their final design. DOE shall provide JAERI with information about the boundary conditions and operational parameters for the test of the palladium diffuser and the ceramic electrolysis cell.
- (b) Install the palladium diffuser and the ceramic electrolysis cell into the off-line test apparatus of TSTA, checkout their performance test capabilities with tritium, and acquire necessary data from the test. Testing with tritium shall be done off-line, that is, not in the TSTA process flow loop.
- (c) Install necessary equipment, instruments, and material provided by JAERI.
- (d) Provide necessary data recording equipment. Other appropriate instrumentation may be used by DOE in the test as DOE deems appropriate.
- (e) Be responsible for ultimate disposal of both the palladium diffuser and the ceramic electrolysis cell.
- (f) Evaluate test results in collaboration with JAERI.

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 4.4. (b) in this Annex.

4. MANAGEMENT

- 4.1 A Joint Steering Committee shall be responsible for management of the Collaborative Program.
- 4.2 The Steering Committee shall be composed of four members, two each to be assigned by DOE and JAERI. The Steering Committee shall have the functions as described in paragraph 4.4 below.
- 4.2.1 DOE and JAERI each shall identify a person to serve as co-chairman of the Steering Committee. All communications shall be channeled through these co-chairmen or their designees.
- 4.2.2 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.
- 4.3 The Steering Committee shall meet as required on a date and at a location mutually agreed upon. An exchange of letters may serve as a substitute for a meeting of the Steering Committee.
- 4.4 The functions of the Steering Committee shall include:
- (a) developing an implementing plan for the Collaborative Program;
 - (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 the assignee(s) to LANL, and
 - (g) discussing other matters necessary for conduct of the Collaborative Program.

5. FINANCE

Except when otherwise mutually agreed in writing, each Party shall bear the costs 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 JAERI shall provide DOE with all information, including engineering drawings on the design, development, manufacturing, and testing of both the palladium diffuser and the ceramic electrolysis cell, necessary for installing, checking out, and running the test of the palladium diffuser and the ceramic electrolysis cell. This information shall be non-proprietary and shall not include detailed manufacturing know-how.
- 6.2 DOE shall provide to JAERI all information resulting from the testing of the palladium diffuser and the ceramic electrolysis cell.
- 6.3 Each Party shall provide to the other Party information resulting from the evaluation of the test results.
- 6.4 Each Party shall support the widest possible dissemination of information in Article 6.1, 6.2, and 6.3 above for any and all purposes whatsoever, subject to Article 6.5.
- 6.5 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 DOE to JAERI. Information regarding 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 reporting of the invention. It shall be the responsibility of DOE to appropriately mark reports which disclose inventions that have not been appropriately protected by the filing of a patent application.
- 6.6 Arising inventions shall be owned (a) by JAERI in Japan, subject to a royalty-free, non-exclusive, irrevocable license to DOE, its Government and the nationals of its country designated by it and (b) by DOE in the United States and third countries, subject to a royalty-free, non-exclusive, irrevocable license to JAERI, its Government, and the nationals of its country designated by it.
- 6.7 The provisions of Article 6.5. shall apply mutatis mutandis to the protection of utility model and of design.
- 6.8 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

JAERI shall assign one or more persons to LANL for a total duration as technically required up to but no more than 25 weeks. The co-chairmen shall determine the duration of the assignment(s) before the assignment(s) begin(s). 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 JAERI is responsible for the shipment of both the palladium diffuser and the ceramic electrolysis cell components to the TSTA facility at LANL. DOE shall accept responsibility for the protection and operation of these components after they have passed LANL inspection upon arrival at the TSTA facility. Paragraphs 1, 3, 4, and 7 of Article X of the Implementing Arrangement shall apply to the supply of the components.

8.2 Loan of equipment, instruments, and material by JAERI 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 JAERI shall be considered to be the property of the Government of Japan.

9. INCORPORATION BY REFERENCE

Such other terms and conditions that are not described in this Annex shall be subject to Articles V and VIII of the Implementing Arrangement.

10. DURATION AND TERMINATION

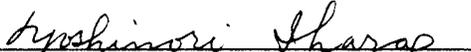
The Collaborative Program shall enter into force upon signature of this Annex by DOE and JAERI and shall remain in force for a period of two years. The Collaborative Program may be renewed or amended by written agreement between DOE and JAERI. The Collaborative Program may be terminated at the discretion of either DOE or JAERI upon six (6) months advance notice in writing by the side seeking to terminate the Collaborative Program.

Done at Tokyo, this 10th day of November, 1986, in duplicate
in the English and Japanese languages, both being equally authentic.

for THE UNITED STATES
DEPARTMENT OF ENERGY

for THE JAPAN ATOMIC ENERGY
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