No. 18051

UNITED STATES OF AMERICA
and
NETHERLANDS

Letter Agreement relating to a co-operative research programme on zircaloy tubing. Signed at Washington on 9 December 1976 and at Petten on 24 December 1976

Authentic text: English.
Registered by the United States of America on 14 November 1979.

ÉTATS-UNIS D'AMÉRIQUE
et
PAYS-BAS

Lettre d'accord concernant un programme de coopération pour la recherche des gaines de combustible en alliage de zirconium. Signée à Washington le 9 décembre 1976 et à Petten le 24 décembre 1976

Texte authentique : anglais.
Enregistrée par les États-Unis d'Amérique le 14 novembre 1979.

LETTER AGREEMENT[1]

This is an Agreement between the Stichting Energieonderzoek Centrum Nederland (ECN) and the United States Nuclear Regulatory Commission (NRC) concerning a cooperative research program entitled, "In-Pile Creep and Collapse of Zircaloy Tubing" to be conducted in the High Flux Reactor (HFR) at ECN-Petten as part of the NRC-sponsored research program entitled "Zircaloy Fuel Cladding Collapse Studies" to be performed by the United States Energy Research and Development Administration (ERDA) at the Oak Ridge National Laboratory (ORNL) which is operated for ERDA by Union Carbide Corporation.

This Agreement shall become effective on the date of last signature by both parties, and shall terminate on December 31, 1980, unless extended by mutual agreement, or unless terminated earlier by either party upon written notice of six months prior to the effective date of termination.

1. The NRC, subject to the availability of funds for the research program, "Zircaloy Fuel Cladding Collapse Studies" at the Oak Ridge National Laboratory, shall be responsible for the following:

a. The conduct of the feasibility study for the experimental methods and equipment, and a preliminary safety analysis of the irradiation experiments;

b. The detailed design of the in-pile capsule, the specimen and specimen train, and the surface displacement sensing system including its associated instrumentation;

c. The provision of the specimens, and the inner parts and instrumentation leads for the capsules, as determined by mutual agreement;

d. Aid and advice in the assembly, installation, conduct, and analysis of the first experiment; this may be extended to the subsequent in-pile experiments by mutual agreement;

e. The experimental test matrix, the analyses of the experimental data, and the publication of progress and final technical reports in the publicly available literature; it is anticipated that a maximum of twenty and a minimum of twelve in-pile experiments will be performed, and that four or more experiments will be conducted in the first twelve months of the program; if the test results indicate a need for additional tests, the number may be increased by mutual agreement; and

f. The provision of the pressurizing equipment, temperature controllers and recorders required for controlling and recording the temperature of the specimen, heaters and power supplies required for heating the specimen to the desired test temperature, and the instrumentation required for the surface displacement sensing system.

2. The ECN, through the ECN-Petten Research Centre, will be responsible for the following:

a. Provision of the necessary information and advice on the design of the in-pile capsule and associated experimental equipment as related to the HFR, the experimental position in the core, the requirements of the Reactor Safety Committee at Petten, and the preparation and presentation of the safety assessment to that safety committee;

[1] Came into force on 24 December 1976 by signature.

b. Provision of the irradiation services in a suitable position in the HFR, normal operating services during irradiation, monitoring of the progress of each experiment, and the collection and storage of the raw data printout;

c. Provision of the post-irradiation capsule disassembly and specimen examination services in suitable hot cells, as mutually agreed upon;

d. Assembly of the in-pile capsules including the furnishing of such capsule parts as are mutually agreed upon, the final assembly of the specimen surface displacement measuring system and specimen train, the installation in the experimental position in the HFR core, and the instrumentation installation, hook-up, and check-out;

e. The maintenance and repair of equipment furnished by NRC/ORNL;

f. The transmission of the collected data to ORNL in either raw form or to the degree of reduction mutually agreed upon, or both; and

g. Provision of the instrumentation required for monitoring the reactor flux at the experimental position used, and other equipment required for operation of the experiment but not associated directly with the specimen or its measurement.

3. Each of the participants may make free use of the raw experimental data for their own, in-house, purpose. Each shall be individually responsible for their own subsequent analyses of that data, but a mutually agreed upon cooperative analysis is desired. Publication of details of the experimental technique, equipment, or results in any form releasable to others shall give proper credit to both organizations. Coauthorship of experimental reports in open literature technical publications is encouraged by both participants, but this shall not hinder publication of the experimental results in the Quarterly and Topical Reports made by ORNL to NRC and available to the public, nor in similar reports made by ECN-Petten.

4. NRC shall issue to ECN-Petten notices of and invitations to attend the Cladding Review Group and Fuel Behavior Code Review Group meetings conducted by the Fuel Behavior Research Branch, Division of Reactor Safety Research (RSR), NRC, and to attend the RSR Information Meetings now held annually by the Division of Reactor Safety Research, NRC. ECN shall be responsible for any expenses encountered by its staff members in attending or participating in any such meetings.

5. NRC shall make available to ECN-Petten the updated versions of the computer programs developed by and for the Fuel Behavior Research Branch, RSR/NRC, notably FRAP-S, FRAP-T, and SIMTRAN I, but not excluding others developed later and as mutually agreed upon. The updated version shall be defined as the latest revision ready for release to the Argonne Code Center, as they become available and as determined by NRC.

6. In return for the contributions made by each participant to this agreement, there will be no financial accounts to be settled between ECN and NRC in this program.

7. It is understood that satisfactory arrangements must be agreed upon for the fabrication of parts and the assembly of capsules.

8. Each participant shall be responsible for the travel and other expenses of its own staff involved in this program, and in the attendance at any of the

meetings, symposia, etc., at which presentations are made concerning this program.

9. Non-expendable items of equipment furnished by NRC/ORNL for this program shall remain the property of the U.S. Government and are loaned to ECN-Petten for the duration of this cooperative research program.

10. With respect to any invention or discovery made or conceived during the period of, or in the course of, or under this agreement, the NRC, on behalf of the United States Government, and the ECN-Petten, on behalf of the Netherlands Government, hereby agree that:

a. If made or conceived while in attendance at meetings or when employing information which has been communicated under this Agreement by one party or its contractors, the party making the invention shall acquire all right, title, and interest in and to any such invention, discovery, patent application or patent in all countries, subject to the grant to other party of a royalty-free non-exclusive, irrevocable license, with the right to grant sublicenses, in and to any such invention, discovery, patent applications, or patent, in all countries, for use in the production or utilization of special nuclear material or atomic energy;

b. Neither party shall discriminate against citizens of the country of the other party with respect to granting any license or sublicense under any invention pursuant to subparagraph *a* above;

c. Each party or its Government will assume the responsibility to pay awards or compensation required to be paid to its nationals according to the laws of its country.

For the United States Nuclear Regulatory Commission:
[*Signed*]
LEE V. GOSSICK
Executive Director for Operations
Date: December 9, 1976

For the Stichting Energieonderzoek Centrum Nederland:
[*Signed*]
J. A. GOEDKOOP
Wetenschappelijk Directeur[1]
Date: December 24, 1976

[1] Scientific Director—Le Directeur scientifique.