INTERIM REPORT

NRC Research and Technical Assistance Report

Accession No.
ORNL/FTR-1025

Contract Program or Project Title: Advanced Instrumentation for Reflood Studies Program

Subject of this Document: Report of foreign travel of R. A. Hess and H. R. Payne, Staff Members, and C. T. Alexander, Engineering Assistant, Advanced Instrumentation for Reflood Studies (AIRS) Program.

Type of Document: ORNL Foreign Trip Report

Authors: R. A. Hess, H. R. Payne, and C. T. Alexander

Date of Document: February 19, 1981

Responsible NRC Individual and NRC Office or Division: W. S. Farmer, Division of Reactor Safety Research, NRC--FTS 427-4272

This document was prepared primarily for preliminary or internal use. It has not received full review and approval. Since there may be substantive changes, this document should not be considered final.

Prepared for the
U.S. Nuclear Regulatory Commission
Under Interagency Agreements DOE 40-551-75 and 40-552-75
NRC FIN No. B0413

Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830
operated by
Union Carbide Corporation
for the
Department of Energy

NRC Research and Technical Assistance Report

INTERIM REPORT

OAK RIDGE NATIONAL LABORATORY
OPERATED BY
UNION CARBIDE CORPORATION
NUCLEAR DIVISION

POST OFFICE BOX X
OAK RIDGE, TENNESSEE 37830

ORNL

FOREIGN TRIP REPORT

ORNL/FTR-1025

DATE: February 19, 1981

SUBJECT: Report of Foreign Travel of R. A. Hess and H. R. Payne, ORNL Staff Members, and C. T. Alexander, Engineering Assistant, Advanced Instrumentation for Reflood Studies (AIRS) Program.

TO: Herman Portma

FROM: R. A. Hess, H. R. Payne, and C. T. Alexander

PURPOSE: The purpose of this trip was to provide field testing, modification, and calibration of ORNL supplied SCTF-I equipment, to participate in SCTF-II and CCTF-II design review meetings, and to review the software for SCTF-I.

SITES VISITED: January 10-22, 1981 Japanese Atomic Energy Research Institute, Tokai, Japan

ABSTRACT: The travelers performed field tests and modifications on the SCTF-I electronics. They also attended design interface meetings for SCTF-II and CCTF-II with JAERI personnel.

REPORT

The purpose of this trip was to install a modification to the multiple Pomona boxes used to interface the hard triaxial cables from the sensor to the soft coax cables to the electronics and to participate in the SCTF-II & III and CCTF-II design meetings. The following major tasks were accomplished:

1) Improved shielding to the inner conductors of the flag probe triaxial cables was installed, and jumper bars were installed in the shields of the soft-pack cable from the multiple Pomona boxes to the electronics. These measures were performed to increase the stability of the measuring system.
2) The ORNL-supplied software for the SCTF-I data system was reviewed. Minor corrections to the software were made.
3) Operating procedures for SCTF-I vent tube pressure controller were discussed with JAERI personnel.
4) A complete set of calibration points was taken on the SCTF-I electronics to check out stability of the electronics.
5) The travelers remained on site for an additional day at the request of JAERI to be on hand for one of the heater rod acceptance tests; however, the test had to be cancelled due to a leak in the pressure vessel.

SCTF-II & III and CCTF-II Design Meetings

Two days were devoted to discussing the design details, interfacing problems, shipping and installation schedules, installation procedures and JAERI's concerns on design and reusing instruments for the SCTF-II and CCTF-II. JAERI did not have sufficient information to discuss SCTF-III instrumentation.

Each instrument for the two facilities was taken up individually and design questions were discussed. All the known interfacing problems were resolved. Of particular concern to JAERI was the removal of instruments from SCTF-I for reuse in SCTF-II. We informed JAERI that some replacement parts would be provided but the exact quantities would be determined by NRC.

JAERI felt very strongly that ORNL personnel should be present for the disassembly of instruments from SCTF-I. We agreed that it would be desirable and stated we would advise the program management of their wishes.

The number of in-core flag probes to be furnished for SCTF-II has not been resolved to JAERI's satisfaction. We informed them that ORNL's present plan is to fabricate two rods with two measurement positions each. They expect four rods and will pursue this matter with the NRC at the March 3D Coordination Meeting.

JAERI proposed that eleven in-core film rods be provided, whereas ORNL's present plan is to provide six. As an alternative to eleven new rods, they suggested that five rods be removed from SCTF-I and

used in SCTF-II. They would perform the removal operation in the presence of ORNL personnel. We agreed to bring this to the attention of the program's management. This will be discussed at the March meeting.

The location (city) and time when the instruments for both facilities would be installed were discussed. The only problem appears to be meeting the JAERI schedule for arrival of CCTF-II in-core rods.

There were two principal concerns regarding the CCTF-II hot-leg film probe. One is related to fitting the probe assembly (spool) into the existing piping and the other is potential leakage at the metal seals of the sensor units. We agreed to delay final welding of the spool until JAERI can determine the required length accurately and ORNL agreed to perform leak tests on a prototype at the maximum operating temperature and a pressure of about 1.7 times the normal operating pressure. A cold hydrostatic pressure test at 240 psig will be done on the seal rings.

The assembly procedure for the CCTF-II core prepared by the JAERI contractor was discussed.

APPENDIX A

ITINERARY

January 8-9	R. A. Hess and C. T. Alexander travel to Mito, Japan
January 10-17	Field Test of ORNL supplied instrument, electronic equipment
January 16-18	H. R. Payne travel to Mito, Japan and weekend
January 19-20	Design interface meeting with JAERI on SCTF-II and CCTF-II
January 21-22	Field test of electronic equipment
January 23	Travel Mito, Japan to Knoxville/Oak Ridge.

APPENDIX B

The following is a list of those contacted at the Japanese Atomic Research Institute January 10-22, 1981:

JAERI	IHI	U.S.
H. Adachi	K. Harada	R. A. Hess
Y. Fukaya	T. Nishibe	C. K. Lewe
K. Hirano		D. H. Miyasaki
T. Iguchi		H. R. Payne
T. Iwamura		
Y. Murao		
K. Sekiguchi		
M. Sobajima		
Y. Sudo		
N. Suzuki		
T. Wakabayashi		

APPENDIX C

The following documents were received:

1. ECS-PF-CC2-008 Rev. 4, CCTF-II, Installation Method of U.S.NRC Sensors

2. ECS-PF-CC2-019, CCTF-II, Fuel Assembly Procedure

3. ECS-PF-CC2-020, CCTF-II, Questions List About Interface Problems

4. JAERI CCTF-Core II Construction Schedule

5. CCTF-II Drawings numbered as follows:

000 K 001	041K 324
000 K 002	041K 325
041 K 301B	041K 341
041 K 302	047K 001
041 K 311	047K 012
041 K 321	047K 015
041 K 322A	077K 001
041 K 323A	

6. New Design of Thermal Insulator for the SCTF Core-II (Sketch)

7. SCTF-II Wall Film Probes -- Concept for New Mounting Ring (Sketch)

DISTRIBUTION

1-2. Assistant Administrator for International Affairs, DOE, Washington
3. Lawrence C. Shao, Acting Director, Division of Reactor Safety Research, NRC, Washington
4. Director, Division of Safeguards and Security, DOE, Washington
5-6. Director, Division of International Security Affairs, DOE, Washington
7. L. S. Tong, Chief Scientist, Office of Nuclear Regulatory Research, NRC, Washington
8. W. S. Farmer, Manager, 2D/3D Program, NRC, Washington
9. Y. Y. Hsu, NRC, Washington
10. G. S. Rhee, NRC, Washington
11. J. A. Lenhard, DOE-ORO
12. J. S. Denton, DOE-ORO
13-14. Director of International Programs, NRC, Washington
15-16. Division of Technical Information and Document Control NRC, Washington
17-18. Technical Information Center, DOE
19. Herman Postma, Director, ORNL
20. C. T. Alexander
21. R. A. Hess
22. H. R. Payne
23. C. L. Britton
24. M. E. Buchanan
25. I. T. Dudley
26. B. G. Eads
27. R. P. Gates
28. J. E. Hardy
29. M. B. Herskovitz
30. H. N. Hill
31. J. H. Holladay
32. J. O. Hylton
33. W. H. Leavell
34. D. B. Lloyd
35. A. J. Moorhead
36. C. S. Morgan
37. C. A. Mossman
38. F. R. Mynatt
39. R. C. Muller
40. M. J. Roberts
41. D. G. Thomas
42. R. H. Thornton
43. H. E. Trammell
44. D. B. Trauger
45. P. S. Damerell, MPR Associates, Inc.
46-47. Laboratory Records Department
48. Laboratory Records Department-RC
49. Laboratory Protection Division
50. ORNL Patent Office
51. ORNL Public Relations Office