

INTERIM REPORT

Accession No. _____
ORNL/FTR-850

Contract Program or
Project Title: Advanced Instrumentation for Reflood Studies

Subject of this Document: Report of Foreign Travel of M. B. Herskovitz,
Staff Member, N. D. McCollough, Engineering
Associate, and M. J. Roberts, Staff Member,
Advanced Instrumentation for Reflood Studies
(AIRS) Program.

Type of Document: ORNL Foreign Trip Report

Authors: M. B. Herskovitz, N. D. McCollough, and
M. J. Roberts

Date of Document: June 5, 1980

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
Washington, D. C. 20555
Under Interagency Agreements DOE 40-551-75 and 40-552-75
NRC FIN No. B-0413

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

INTERIM REPORT

NRC Research and Technical
Assistance Report

8002150 016

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-850

DATE: June 5, 1980

SUBJECT: Report of Foreign Travel of M. B. Herskovitz, Staff Member, N. D. McCollough, Engineering Associate, and M. J. Roberts, Staff Member, Advanced Instrumentation for Reflood Studies (AIRS) Program at ORNL

TO: Herman Postma

FROM: M. B. Herskovitz, N. D. McCollough, and M. J. Roberts

PURPOSE: To participate in a Design Review of the Slab Core Test Facility I (SCTF I) and the Cylindrical Core Test Facility II (CCTF II) at the Japanese Atomic Energy Research Institute (JAERI). ORNL supplied sensors were installed in the SCTF I Core at Iwaka, Japan. This work is a part of the German-Japanese-U.S. 2D/3D Program.

SITES VISITED: 5/14-15/80 Japanese Atomic Energy Research Institute
5/16-22/80 Okazaki Manufacturing Company (OMC), Iwaka,
Japan

ABSTRACT: The travelers installed nine ORNL furnished in-core sensors for the SCTF I at Iwaka, Japan.

The travelers also participated in Design Review Meetings at JAERI on May 14 and 15, 1980. Design requirements for SCTF I and CCTF II were discussed.

NRC Research and Technical
Assistance Report

REPORT

The travelers participated in design reviews for the Cylindrical Core Test Facility II (CCTF II) and the Slab Core Test Facility I (SCTF I) at the Japanese Atomic Energy Research Institute (JAERI), Tokai, Japan, on May 14 and 15, 1980. For a week period starting on May 16, nine in-core sensors for the SCTF I were installed, tested and accepted by JAERI for installation in the process vessel.

The designs for CCTF II were reviewed, and with the exception of hard cable lengths, the designs for the in-core impedance probe, upper plenum structurals film probe, and vent valve string probes were fixed. Minor design issues exist on the upper plenum prong probe, the hot leg film probe spool piece modules, and the pipe length of the reference conductivity probe.

The Slab Core Test Facility installation has proceeded to the point at which our field activities need to be scheduled. JAERI agreed to install all of the soft pack cable and cable terminations, and to install all hard cables with the exception that ORNL will provide the termination. The electronic cabinets and pressure control station can be delivered at Tokai as late as October 10, 1980. A five-day period starting on November 10 has been assigned for calibration of ORNL instrumentation system using air, water and superheated steam. A schedule of JAERI preoperational testing was received.

In the software and data acquisition meetings on May 14-15, 1980 in Tokai, requirements for filtering, data tape formats and pre-test calibration procedures on SCTF I were discussed. The agreements were:

1. JAERI's proposed digital tape format and probe signal nomenclature are acceptable to ORNL and will be used in future communications.
2. JAERI agreed that ORNL will provide FORTRAN analysis sub-routines only and not a complete software package for their machine. ORNL will send to JAERI complete interface information on analysis subroutines by July 31, 1980.

3. ORNL agreed to send a final version of its calculational algorithm description to JAERI by August 31, 1980.
4. ORNL will provide all analysis subroutines to JAERI by October 31, 1980.
5. JAERI agreed to provide, one time, at initial sensor installation, three calibration conditions; all air, all water and all steam. These will be used to completely check ORNL's instrumentation system and establish calibration constants.
6. JAERI will provide two 100 A, 100 V, 50 Hz power services to power the ORNL provided electronics.
7. JAERI agreed to consider providing anti-aliasing filters and manual switching of cables and inform NRC of their decision by May 19, 1980 by Telex.

During the week starting May 16, 1980, three flag probes and six film probes were installed in SCTF I bundles 2, 4 and 8. The installation went smoothly and the sensors were installed using a pulling force which varied from 1 to 4 Kg (the specification permitted 8 Kg). The use of ethyl alcohol as a lubricant during the assembly was a key step in the installation. Upon completion of the work, an acceptance statement was executed by Okazaki, IHI, JAERI and ORNL.

APPENDIX A

The following is a list of those contacted at the Okazaki Manufacturing plant at Iwaoka, Japan, on May 16-22, 1980.

T. Kobayashi (IHI)
 T. Wakabayashi (JAERI)
 E. Nakagawa (OMC)
 Y. Ohnishi (OMC)

At the JAERI meetings at Tokai on May 14 and 15, the following were participants:

<u>JAERI</u>		<u>U.S.</u>
K. Hirano		M. B. Herskovitz
M. Sobajima	T. Hishibe	C. K. Lewe (NUS)
T. Iwamura	K. Watanabe	N. D. McCollough
T. Iguchi	A. Okubo	M. J. Roberts
Y. Murao		G. Rhee (USNRC)
H. Adachi		B. Carrick (MPR)
M. Osakabe	<u>OKI</u>	
N. Suzuki	A. Sato	
K. Sekiguchi	A. Teramoto	
Y. Fuyaka	T. Fujii	
<u>FRG</u>		
H. G. Herdtle (GRS/ JAERI)		

APPENDIX B

Itinerary

May 14-15, 1980	SCTF I and CCTF II Design Review Meetings at Japanese Atomic Energy Research Institute, Tokai, Japan	M. B. Herskovitz N. D. McCollough M. J. Roberts
May 16-22, 1980	Sensor installation Okazaki Manufacturing Plant, Iwaoka, Japan	M. B. Herskovitz N. D. McCollough

APPENDIX C

The following documents were received and are on file:

1. SCTF I final data format and PCM channel assignments.
2. CCTF II Proposed In-Core Sensor Installation (IHI sketch)
3. SCTF I Electronics Cabinet Layout Drawings
4. ECS-PCI-CC2-008 (5/10/80) Installation Methods of USNRC Sensors
5. Plot Plan of CCTF II Upper Plenum (Design Information)
6. SCTF I Upper Plenum 05A00067 and 68 (Design Drawing)
7. Location of Pressure Control Station - ECS-SLC-152, 2 sheets,
(Design sketch)
8. Proposed SCTF I Field Installation and Test (Sketch dated 5/13/80)

DISTRIBUTION

- 1-2. Assistant Administrator for International Affairs, DOE, Washington
3. Thomas E. Murley, 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, Assistant Director, Division of Reactor Safety Research, NRC, Washington
8. W. S. Farmer, Project Engineer, NRC, Washington
9. Y. Y. Hsu, NRC, Washington
- 10-11. Division of Technical Information and Document Control, NRC, Washington
- 12-13. Technical Information Center, P. O. Box 62, Oak Ridge, TN 37830
14. J. A. Lenhard, DOE-ORO
15. J. S. Denton, DOE-ORO
16. H. Postma, Director, ORNL
17. B. G. Eads
18. I. T. Dudley
19. J. E. Hardy
20. M. B. Herskovitz
21. R. A. Hess
22. H. N. Hill
23. J. H. Holladay
24. J. O. Hylton
25. J. M. Jansen, Jr.
26. W. H. Leavell
27. D. B. Lloyd
28. C. D. Martin, Jr.
29. N. D. McCollough
30. R. N. McGill
31. A. J. Moorhead
32. C. S. Morgan
33. C. A. Mossman
34. F. R. Mynatt
35. H. R. Payne
36. M. J. Roberts
37. D. G. Thomas
38. H. E. Trammell
39. D. B. Trauger
40. P. S. Damerell, MPR Associates, Inc.
- 41-42. Laboratory Records Department
43. Laboratory Records Department-RC
44. Laboratory Protection Division
45. ORNL Patent Section
46. ORNL Public Relations Office