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INTERIM REPORT

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ORNL

FOREIGN TRIP REPORT

ORNL/FTR-804

DATE: March 28, 1980

SUBJECT: Report of Foreign Travel of M. B. Herskovitz, Staff Member, and J. O. Hylton, Staff Member, Advanced Instrumentation for Reflood Studies Program of ORNL

TO: Herman Postma

FROM: M. B. Herskovitz and J. O. Hylton

PURPOSE: To participate in the 2D/3D Coordination Meeting at the Japanese Atomic Energy Research Institute (JAERI) for the purpose of reviewing the progress of work by German, Japanese and U.S. participants and to review schedules and problems. In another meeting at Iwaoka, the installation of an ORNL-supplied in-core sensor for the Slab Core Test Facility was discussed. Finally, the ORNL sensor was inspected conjointly with JAERI personnel to determine that the shipment met the customs requirements, and that no physical damage was experienced in the shipment.

SITES VISITED: March 3-7 Japanese Atomic Energy Research Institute, Tokai, Japan

March 10-11 Okazaki Manufacturing Company, Iwaoka and Kobe, Japan

March 12 Tokyo Air Cargo Terminal, Nishi Funabashi, Japan

ABSTRACT

The travelers, M. B. Herskovitz and J. O. Hylton, participated in the regularly scheduled 2D/3D coordination meeting at the Japanese Atomic Energy Research Institute in Tokai, Japan during the week of March 3, 1980.

The travelers also attended a meeting in Iwaoka and Kobe, Japan to discuss arrangements for installation of an ORNL supplied sensor. This sensor was inspected at the Tokyo Air Cargo Terminal for physical damage and none was observed.

REPORT

Each participant in the 2D/3D Program presented the status of his current work.

These participants were:

Japan Atomic Energy Institute (JAERI)
Kraftwerk Union (KWU)
Gesellschaft fur Reaktor Sicherheit (GRS)
Los Alamos Scientific Laboratory (LASL)
Idaho National Engineering Laboratory (INEL)
U. S. Nuclear Regulatory Commission (USNRC)
MPR Associates
Battelle Institute, Frankfurt (BI)
ORNL

M. B. Hershovitz and J. O. Hylton presented the status of the AIRS Program in four areas: sensor fabrication, electronics, testing and analysis.

The following items of interest were discussed:

1. The Primarkreislauf II (PKL II) instrument sensors will be required at Erlangen in November, 1980, and the electronics are required at Erlangen in June to September, 1981.

2. The Cylindrical Core Test Facility II requires ORNL in-core sensor delivery around November, 1980. JAERI had just signed a contract for the design of the facility with Ishikawajima-Harima Heavy Industries, Inc. (IHI). Some question exists as to whether our first scheduled deliveries will be required on the initially specified date. The design of the in-core sensors were discussed, but the design was not frozen.

3. The German Upper Plenum Test Facility schedule was received, and GRS plans to issue a contract for design by April, 1980. Our earliest sensor deliveries are required to start on December, 1981. This facility and follow-on Japanese facilities will be designed with full end boxes and upper tie plate; but SCTF-II will have split upper internals. This joint GRS-JAERI and NRC decision will probably affect the drag body design now being developed by ORNL.

4. It is likely that the JAERI Slab Core Test Facility II will have design changes which will impact on ORNL work. It was originally planned that ORNL sensors would be identical for all of the Slab Core facilities.

5. The Okazaki Manufacturing Company (OMC) is supplying simulated fuel pins (electrical heaters) for Slab Core Test Facility I. ORNL will be responsible for installation of ORNL supplied sensors. The first installation is scheduled for April 7, 1980, and the balance of nine sensors will be installed in the ten-day period starting on May 16, 1980.

6. The ORNL supplied upper plenum structural film probes are tentatively scheduled for installation on June 15, 1980, at the IHI Yokahoma plant.

APPENDIX A

The following is a list of the participants in the 2D/3D Coordination Meetings on March 3-7, 1980 at JAERI.

USA	FRG	JAPAN
L. S. Tong (NRC)	F. Mayinger (T-HN)	M. Nozawa (JAERI)
W. S. Farmer (NRC)	K. Hofmann (GRS)	M. Osanai (JAERI)
L. M. Shotkin (NRC)	E. F. Hicken (GRS)	K. Hirano (JAERI)
Y. Y. Hsu (NRC)	F. Winkler (KWU)	H. Adachi (JAERI)
D. M. Chapin (MPR)	E. Kersting (GRS)	Y. Murao (JAERI)
J. Jackson (LASL)	G. Hampel (Battelle)	T. Iguchi (JAERI)
W. L. Kirchner (LASL)	H. Sawitzki	M. Sobajima (JAERI)
J. Ireland (LASL)	H. G. Herdtle (GRS/ JAERI)	J. Sugimoto (JAERI)
R. Fujita (LASL)		H. Akimoto (JAERI)
R. E. Rice (INEL)		T. Ohkubo (JAERI)
J. Colson (INEL)		K. Fujioka (MAPI/JAERI)
C. Winsel (INEL)		K. Sekiguchi (JAERI)
J. O. Hylton (ORNL)		Y. Fukaya (JAERI)
M. B. Herskovitz (ORNL)		N. Suzuki (JAERI)
H. Renner (NUS/KWU)		T. Wakabayahsi (JAERI)
C. K. Lewe (NUS/JAERI)		T. Iwamura (JAERI)

The following is a list of the participants in the meeting on March 10, 1980, at the Okazaki Manufacturing Company.

IHI

K. Harada
T. Kobayashi

OMC

H. Sato
E. Nakagawa
Y. Ohnishi

JAERI

T. Wakabayashi
K. Hirano

NUS

C. K. Lewe

U.S. (ORNL)

M. B. Herskovitz
J. O. Hylton

APPENDIX B

Itinerary

March 3-7, 1980	2D/3D Meeting at Japanese Atomic Research Institute, Tokai, Japan	M. B. Herskovitz J. O. Hylton
March 10-11, 1980	Meeting at Okazaki Manufacturing Company, Kobe and Iwaoka, Japan	M. B. Herskovitz J. O. Hylton
March 12, 1980	Tokyo Air Cargo Terminal (TACT), Tokyo, Japan	M. B. Herskovitz J. O. Hylton

APPENDIX C

Copies of presentations were obtained and are on file. These include:

(a) FRG Presentation

- G-1 PKL Small Leak Experiments Status of the Program
- G-2 PKL Small Leak Experiments First Results from Shake Down Tests
- G-3 SCTF - Steam - Supply During End of Blowdown
- G-4 NRC Instrumentation Delivery Dates to PKL
- G-5 Comments on the JAERI Paper "Comments on UPTF"
- G-6 UPTF Distribution of Test Instrumentation
- G-7 UPTF Core Simulator Concepts
- G-8 UPTF Test Procedure 6 Details
- G-9 UPTF Design
- G-10 PKL Experiment Experience with Advanced Instrumentation
- G-11 Schedule of UPTF
- G-12 Calibration Requirements of the Advanced Instrumentation
- G-13 Subjects for Workshop Meeting
- G-14 UPTF - Design
- G-15 Status of Work on the Design of the Steam Inlet Nozzles for the Slab Core and the Attached Piping Systems

(b) JAERI Presentation

- J-1 Review of SCTF Core-II Design
- J-2 Comments on UPTF
- J-3 Cylindrical Core Reflood Test Program
- J-4 Test Matrix of SCTF Core-I
- J-5 Flow Resistance Simulator
- J-6 Design of Cylindrical Core Test Facility Core II
- J-7 Status of CCTF Core II Instrumentation
- J-8 JAERI's Downcomer Drag Disk
- J-9 CCTF Test Results and Data Analysis (the Effects of the Baffle Plates in the Control Rod Guide Tubes)
- J-10 CCTF Test Results and Data Analysis (Visual Data of the Flow in the System)
- J-11 RELAP4/MOD6 Analysis of CCTF Test C1-2 (Run 11)
- J-12 Hand Out of Steam Supply System
- J-13 Review of SCTF Core-II Design Philosophy
- J-14 Development of Water Purge Pitot Tube
- J-15 Measurement Experience with USNRC-Provided Instruments
- J-16 Review of Instrumentation Requirement for Analysis - CCTF Core II
- J-17 JAERI-memo 8685
- J-18 JAERI-memo 8696
- J-19 JAERI Proposal on Workshop Session
- J-20 Design of Steam Supply System and Combined Injection System of SCTF

APPENDIX C (Cont'd)

(c) USNRC Presentations

U-1 Blockage Sleeve Deformation and Instrumentation Test Report
U-2 Measuring Downcomer Flows Durir; Bypass and Refill
U-3 COBRA/TRAC Reflood Analysis of the JAERI Slab Core Test Facility with a 60% Flow Blockage in Two Bundles
U-4 COBRA/TRAC Reflood Analysis of JAERI SCTF
U-5 Flow Blockage Study for Slab Core Test Facility
U-6 CCTF Test C1-1 (Run 010) Posttest Analysis Using TRAC
U-7 Status of TRAC-PD2 Modeling Development and Reflood Assessment
U-8 The Distribution and Temperature of ECC Water Injected Into Upper Plenum
U-9 Status of TRAC Modeling and Development
U-10 Status of Video-optical Systems for 2D/3D Multinational Refill-Reflood Program
U-11 Slab Core Test Facility Steam Supply Studies
U-12 A Numerical Study of Hot Leg ECC Penetration
U-16 Comparison of FLECHT Reflood Data and Early CCTF Results
U-17 Instruments for FLECHT SEASET 21-Rod Blocked Bundle
U-18 Summary of USNRC Instrumentation Scope Change Since February, 1979
U-19 CCTF-I Data Interpretation INEL Instruments
U-20 INEL Instrument Status SCTF Core-I
U-21 UPTF Instruments from INEL
U-22 Heated/Unheated TC for Sputtering Measurements
U-23 Status of EG&G Instrumentation
U-24 CCTF Core-II Instruments
U-25 Table I: NRC 2D/3D Analysis
U-26 Measurements to Meet Objectives of 2D/3D Refill/Reflood Program
U-27 Status of TRAC Reference Reactor and UPTF Calculations
U-28 Workshop Issues - Instrumentation
U-29 ORNL Discussion Items for Separate Workshop Meeting with JAERI

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