ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue, Argonne, Illinois 60439

February 14, 1986

Dr. John Telford
U. S. Nuclear Regulatory Commission
Mail Stop 1130 SS
Washington, D.C. 20555

Dear John:

Enclosed is the Monthly Progress Report for the Corium Coolant Mixing Tests, FIN. No. A2260 Task A, for January 1986.

Sincerely,

Bruce

Bruce W. Spencer
Manager, Experiment Modeling Section
Reactor Analysis and Safety Division

BWS/ve
enclosure

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RAS Files - 8M656-01
EMS Files - Chron, NRC

FOIA-86-678
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Monthly Progress Report

NRC FIN. No.: A2260

Title: Corium Coolant Mixing (Task A)

Report period: January 1986

NRC Technical Monitor: J. L. Telford

Investigators: B. W. Spencer, C. A. Blomquist, and L. M. McUmber

Subtask 1: Reactor Material Experiments

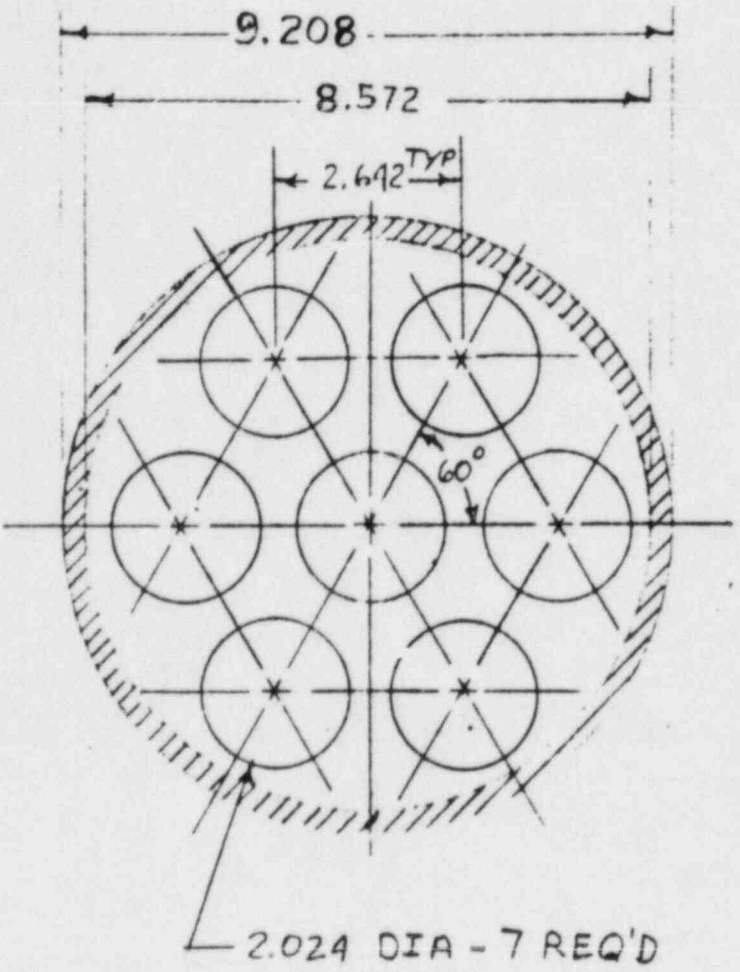
In order to perform the set of experiments for the investigation of the effects of water depth and number of holes in a submerged stainless steel plate on the phenomena governing corium coolant mixing, a new thermite vessel and interaction vessel for the COREXIT Facility had to be designed and fabricated.

A. Thermite Injector

The design of the new thermite injector with a 12 kg charge capacity has been completed and shop drawings are being prepared. Basically the injector is similar to the existing 4 kg injector whose performance has been proved by 14 tests. The new injector consists of a section of 8-in. Sch 80 pipe with a modified class 150 flange on each end. A blind flange that adapts to the existing slide gate mechanism forms the bottom of the injector. The top section is a 10-in. modified class 150 weld-neck flange with a flat head. Internals consist of a Mullite® liner, porous grid plate and gas baffle, and a vapor separator. Provision for two burnwires, gas connections, and instrument connections are also provided. The material is type 304 stainless steel and the design pressure is 5.2 MPa at 100C.

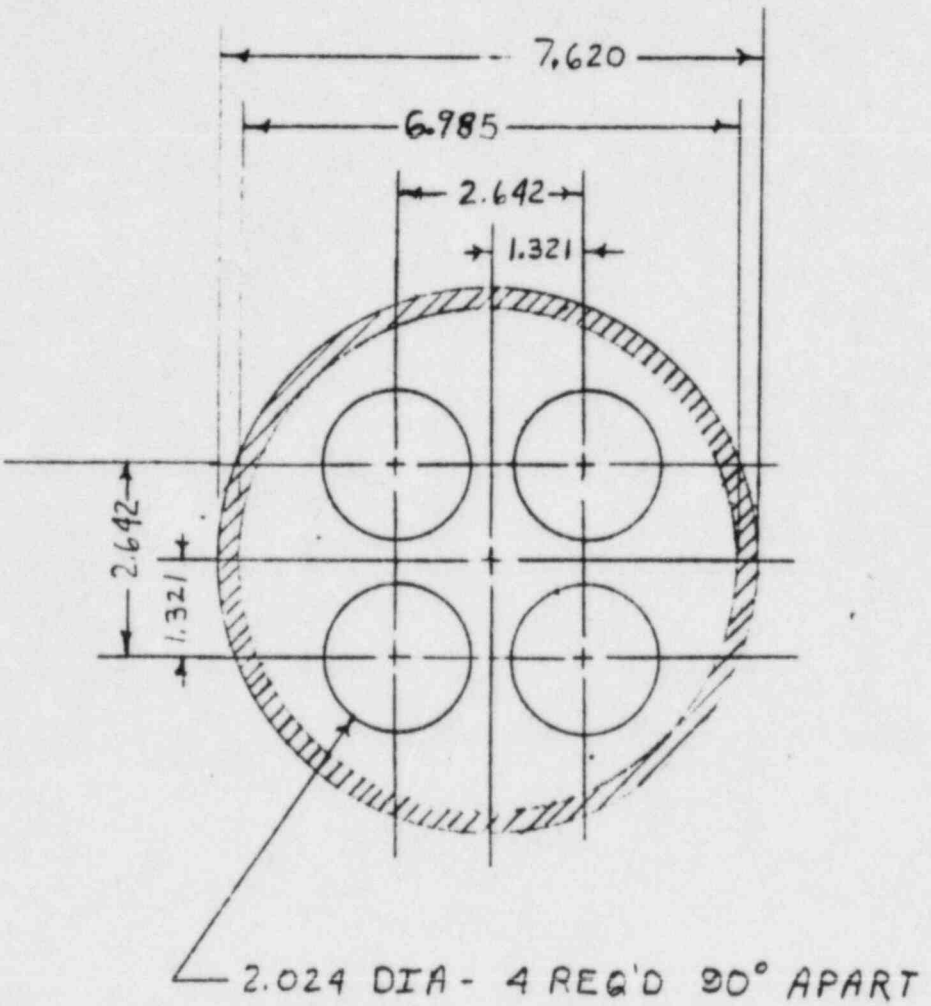
B. Interaction Vessel

The interaction vessel consists of sections of 8-in. Sch 10 stainless steel type 304 pipe with class 150 slip-on flanges. Depending on the depth of water desired, a 12-in. long or an 18-in. long section can be bolted to the main 28-in. long section. A 4-in. Sch 10 pipeway exits the main section 6 in. below its top and provides the connection to the expansion vessel. Each section has radial penetrations for pressure sensors and thermocouples. The 12-in. long section exists from previous studies, whereas the other two sections need to be fabricated. Material ordered for these sections has arrived and the equipment is awaiting fabrication. The bottom head will be an 8-in. class 150 blind flange that will have penetrations for thermocouples. A base plate with surface thermocouples will rest atop the bottom head. An existing head will be used for the top of the interaction vessel. Bolted to the underside of this head is a flanged cylindrical tube with a 1/8-in. thick wall. Welded to the bottom of this tube is a steel plate with either four or seven holes (see Figs. 1 and 2) to represent a submerged lower grid forging. These components have been machined and are awaiting welding.



ALL DIMENSIONS IN CM

Figure 2. Submerged Grid Plate with Seven Holes on a Triangular Pitch.



ALL DIMENSIONS IN CM

Figure 1. Submerged Grid Plate with Four Holes on a Square Pitch.

FIN A02606 ACCOUNT 8M656 TITLE CORIUM - COLLANT MIXING

B&R 40-10-01-06

TOTALS FOR: 8M656 CORIUM - COLLANT MIXING

	CURRENT MONTH	YEAR-TO-DATE
I. EFFORT:		
DIRECT MAN-MONTHS	2.50	2.50
TOTAL EFFORT	2.50	2.50
II. COSTS:		
DIRECT LOADED LABOR COSTS	11,205.00	11,205.00
MATERIALS AND SERVICES	3,974.30	4,064.46
GENERAL AND ADMINISTRATIVE	9,128.98	9,152.09
TOTAL COST	24,308.28	24,421.55

III. FUNDING STATUS:

PRIOR FY CARRYOVER	FY __ PROJECTED FUNDING LEVEL	FY __ FUNDS RECD TO DATE	FY __ FUNDING BAL. NEEDED

* TECHNICAL SERVICES LABOR COST IS INCLUDED WITH MATERIALS AND SERVICES COST.

FIN A22606 ACCOUNT 8M656-01 TITLE EXPS IN COREXIT FACILITY

B&R 40-10-01-06

	CURRENT MONTH	YEAR-TO-DATE
I. EFFORT:		
DIRECT MAN-MONTHS	.50	.50
TOTAL EFFORT	.50	.50
II. COSTS:		
DIRECT LOADED LABOR COSTS	2,853.00	2,853.00
MATERIALS AND SERVICES	3,974.30	4,064.46
GENERAL AND ADMINISTRATIVE	2,798.11	2,821.22
TOTAL COST	9,625.41	9,738.68

* TECHNICAL SERVICES LABOR COST IS INCLUDED WITH MATERIALS AND SERVICES COST.