

INTERIM REPORT

Accession No. _____

Contract Program or Project Title:

Analysis of Hypothetical Accidents Resulting in Core Meltdown

Subject of this Document:

Analysis of Hypothetical Accidents Resulting in Core Meltdown

Type of Document:

Monthly Progress Report for October, 1979

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Date of Document:

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Responsible NRC Individual and NRC Office or Division:

G. Edison
Office of Nuclear Regulatory Research

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.

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Prepared for
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC Research and Technical
INTERIM REPORT
Assistance Report

1402 020

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PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON PROGRAM SUBTASK FIN#: A4067

CONTRACTOR: Battelle Columbus Laboratories BUDGET PERIOD: (mm/yy-mm/yy) 10/79-9/80

PAS PROGRAM MANAGER: J. Curry 'BUDGET AMOUNT: (Thousands) 95.1*

CONTRACTOR PROGRAM MANAGER: R. S. Denning PHONE: FTS 976-7510

PRINCIPAL INVESTIGATOR(S): P. Cybulskis PHONE: FTS 976-7509

PROGRAM OBJECTIVES:

Investigate the effects of LWR plant design variations on the risks associated with reactor meltdown accidents. Specifically, determine the effects of plant design variations on the probability and nature of the radionuclide source term released during key meltdown accident sequences.

ACTIVITIES DURING October, 1979

A presentation of the potential effects of hydrogen burning in various containment designs was made to the ACRS on October 3, 1979, in Washington.

The effort on this task continues to be largely suspended in order to provide support to the NRC TMI Special Inquiry.

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1.			
2.			
3.			

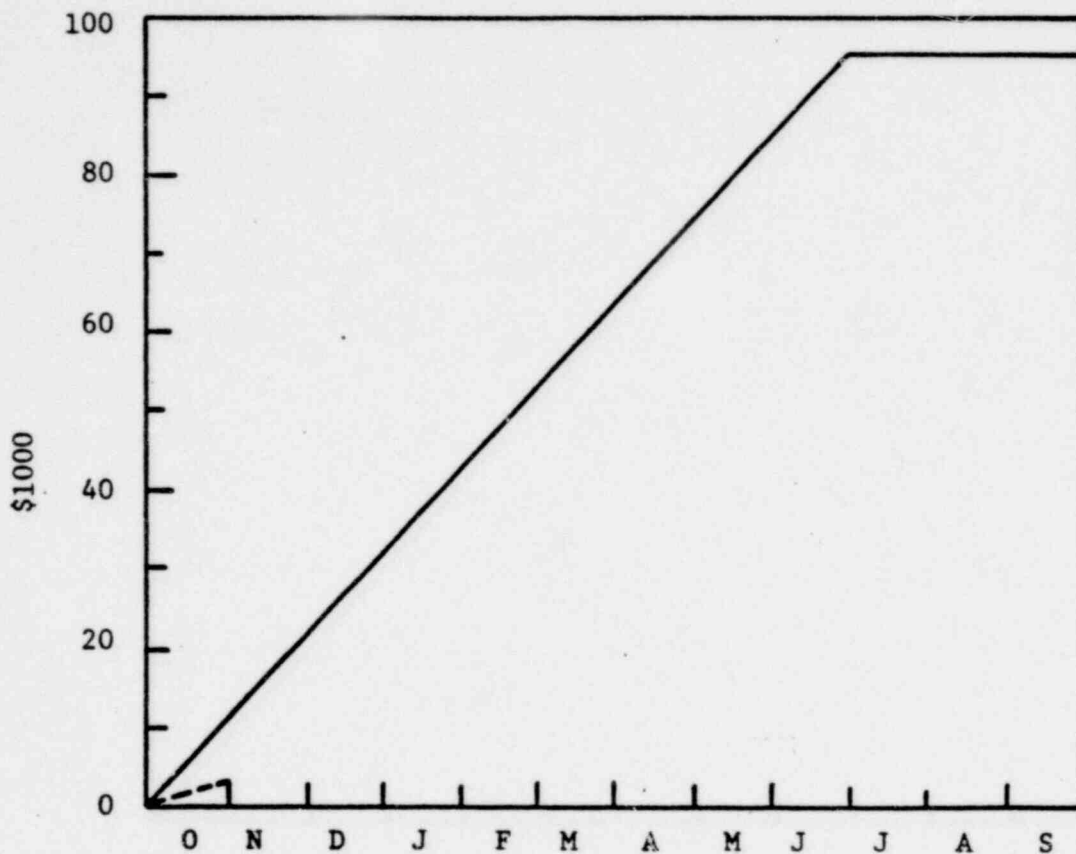
MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

In view of several delays and disruptions in the program, specific milestones will have to be developed upon resumption of normal program activities.

* Includes \$18,099 carryover from FY79.

EXPENDITURES

PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON PROGRAM



RESOURCES EXPENDED:

	OCTOBER, 1979	CUMULATIVE
DOLLARS	2.9 K	2.9 (3%)
MAN-MONTHS	0.3	0.3

1402 022

PROGRAM: PROBABILISTIC UNCERTAINTY ANALYSIS SUBTASK

FIN#: A4067

CONTRACTOR: Battelle Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/79-9/80

PAS PROGRAM MANAGER: J. A. Murphy

BUDGET AMOUNT: (Thousands) 155.4K *

CONTRACTOR PROGRAM MANAGER: R. S. Denning

PHONE: FTS 976-7510

PRINCIPAL INVESTIGATOR(S): P. Baybutt

PHONE: FTS 976-7499

PROGRAM OBJECTIVES:

- Perform probabilistic uncertainty analyses for PWR and BWR accident sequences
- Evaluate the uncertainty analysis methodology and develop decision criteria
- Assess the feasibility of developing response surfaces for the MARCH and CORRAL codes.

ACTIVITIES DURING October, 1979

A procedure to categorize accidents according to their uncertainty characteristics was developed this month. The objective of the procedure is to aid in the selection of representative accident sequences which will map the spectrum of possible uncertainty characteristics. Work on the statistical validation of the uncertainty analysis methodology continued with effort devoted to the selection of appropriate statistical designs and uncertainty measures. The use of percentiles as uncertainty measures was explored.

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Methodology/Application Topical Reports	--	10/31/79	10/31/79
2. Task Completion		5/31/80	5/31/80
3.			

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

* Carryover from FY79.

1402 023

PROGRAM: ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR

FIN#: A4067

CONTRACTOR: Battelle-Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/79-9/80

PAS PROGRAM MANAGER: J. Curry

BUDGET AMOUNT: (Thousands) \$81.9*

CONTRACTOR PROGRAM MANAGER: R. S. Denning

PHONE: FTS 976-7510

PRINCIPAL INVESTIGATOR(S): P. Cybulskis

PHONE: FTS 976-7509

PROGRAM OBJECTIVES:

1. Test each of the modules in the MARCH code
2. Standardize programming and units
3. Document the MARCH code
4. Verify against available data and compare with similar codes

ACTIVITIES DURING October, 1979

Work continued on improved input and output algorithms as well as corresponding plotting subroutines.

The written definition of MARCH input variables, a key aspect of the user's manual, was substantially completed.

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. MARCH Testing/ Documentation	4/79-5/79	12/79	
2. MARCH			
3. Verification	10/79	9/80	

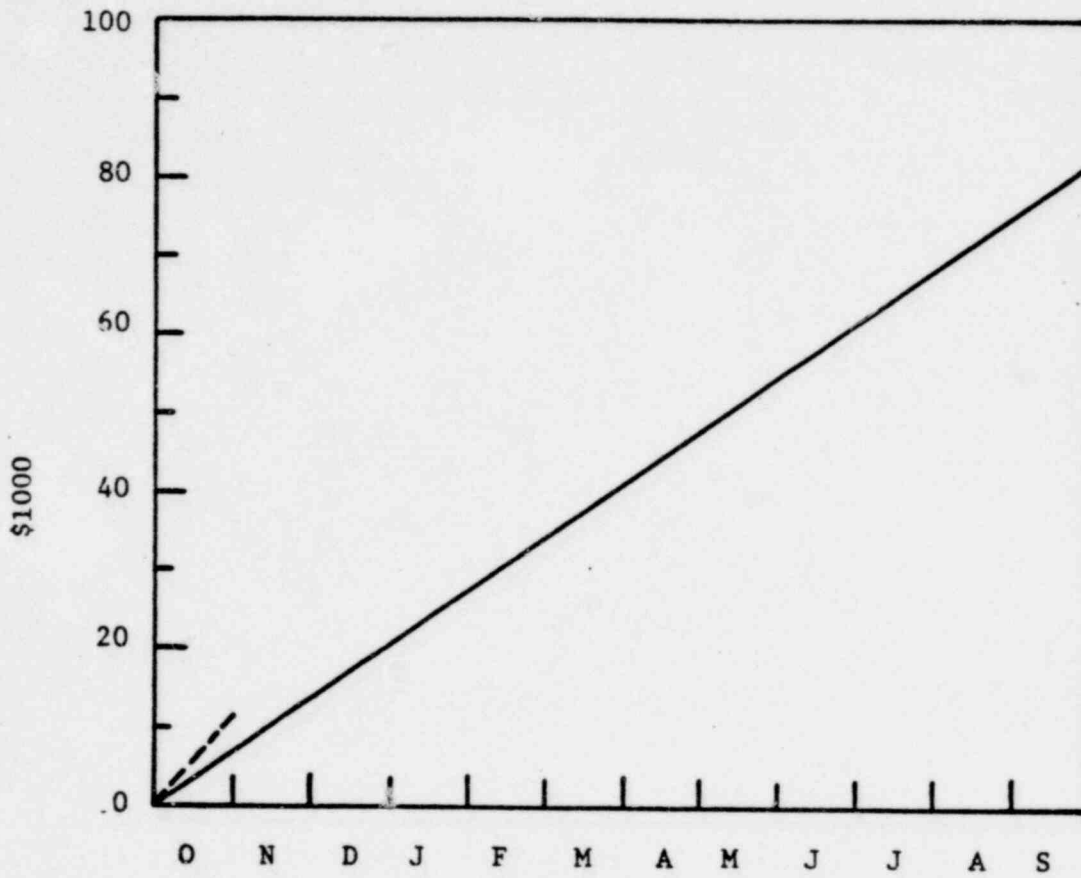
MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

* Includes carryover of \$31,918 from FY79.

1402 025

EXPENDITURES

PROGRAM: ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR



RESOURCES EXPENDED:

	OCTOBER, 1979	CUMULATIVE
DOLLARS	11.7 K	11.7 (14%)
MAN-MONTHS	1.8	1.8

1402 026

PROGRAM: ANALYSIS OF RADIONUCLIDE TRANSPORT SUBTASK

FIN#: A4067

CONTRACTOR: Battelle Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/79/9/80

PAS PROGRAM MANAGER: J. A. Murphy

BUDGET AMOUNT: (Thousands) 100 K

CONTRACTOR PROGRAM MANAGER: R. S. Denning

PHONE: FTS 976-7510

PRINCIPAL INVESTIGATOR(S): P. Baybutt

PHONE: FTS 976-7499

PROGRAM OBJECTIVES:

- To revise the CORRAL code
- To verify the revised code
- To provide for the coupling of CORRAL with other codes

ACTIVITIES DURING October, 1979

Preparatory efforts were made on the project work plan.

MAJOR MILESTONES:

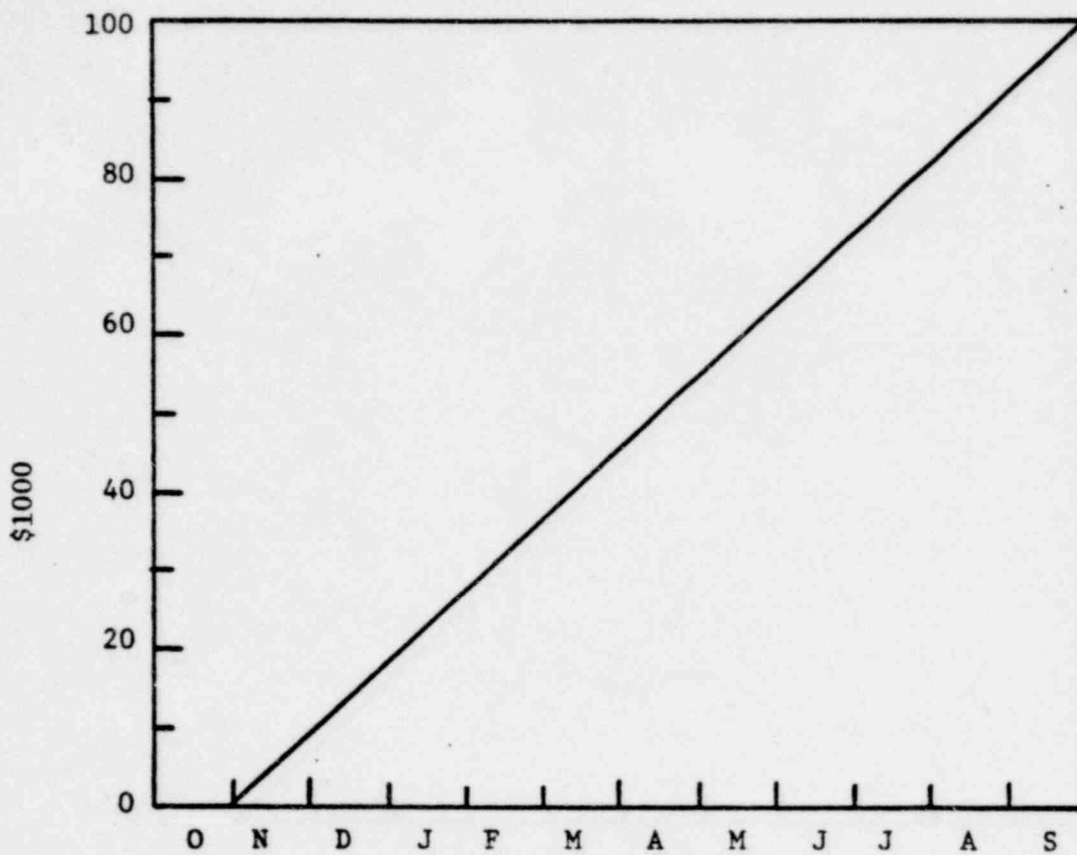
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Specification of model improvements	10/1/79	2/29/80	
2. Specification of new model requirements	12/1/79	6/30/80	
3. Identification of interface requirements	2/1/79	9/30/80	

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

1402 027

EXPENDITURES

PROGRAM: ANALYSIS OF RADIONUCLIDE TRANSPORT



RESOURCES EXPENDED:

	OCTOBER, 1979	CUMULATIVE
DOLLARS	0	0
MAN-MONTHS	0	0

1402 028