

INTERIM REPORT

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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 August, 1979

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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.

**NRC Research and Technical
Assistance Report**

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

INTERIM REPORT

998 346

PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON PROGRAM SUBTASK FIN#: A4067
 CONTRACTOR: Battelle Columbus Laboratories BUDGET PERIOD: (mm/yy-mm/yy) 10/78-9/79
 PAS PROGRAM MANAGER: J. Curry BUDGET AMOUNT: (Thousands) 180.2*
 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 AUGUST, 1979

Discussions aimed at resolving the continuing questions on PWR power shutdown transients were held with NRC in Bethesda on August 2, 1979. No immediate resolution to this program is foreseen. The results todate and overall status of the program were reviewed with the NRC on August 8, 1979.

NRC Research and Technical
 Assistance Report

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. RSS PWR BASELINE ANALYSES	4/78-4/78	6/78	6/78
2. B&W PWR ANALYSES	4/78-4/78	6/78	11/78
3. CE PWR ANALYSES	7/78-8/78	9/78	**
4. RSS BWR BASELINE ANALYSES	6/78-6/78	9/78	11/78
5. GE MARK III BWR ANALYSES	9/78-9/78	12/78	**

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MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

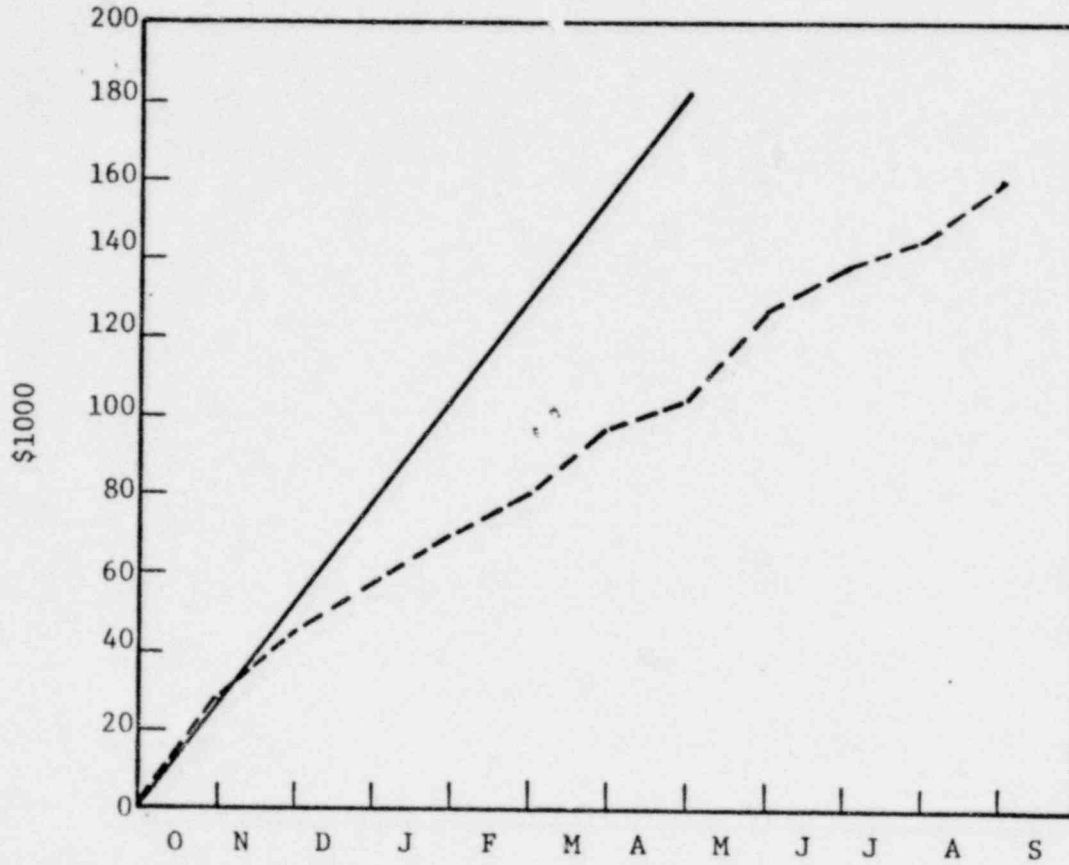
In addition to the impacts associated with the delay in FY79 authorizations, the activities undertaken as a result of the TMI accident will further delay the planned program. Definition of the shutdown power transient to be used for the reactor protection system failure sequences for the PWR plants are still required. Reanalysis of the plants previously considered may be required in order to have a consistent treatment of these sequences.

* Includes \$30,250 carryover from FY78.

** Milestones are under review as a result of the delay in FY79 authorization.

EXPENDITURES

PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON PROGRAM



RESOURCES EXPENDED:

	AUGUST, 1979	CUMULATIVE
DOLLARS	15.1 K	160.9 (89%)
MAN-MONTHS	2.0	20.4

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PROGRAM: PROBABILISTIC UNCERTAINTY ANALYSIS SUBTASK

FIN#: A4067

CONTRACTOR: Battelle Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/78-9/79

PAS PROGRAM MANAGER: J. A. Murphy

BUDGET AMOUNT: (Thousands) 228.1K*

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 August, 1979

Two meetings were held with NRC staff to present and discuss the schedule of work for FY79. Work continued on the analysis of previously obtained results and report writing.

A review of Sandia's report NUREG/CR-0394 "Risk Methodology for Geologic Disposal of Radioactive Waste: Sensitivity Analysis Techniques" was completed.

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1.	Project milestones have been defined for FY79. NRC approval is still required.		
2.			
3.			

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

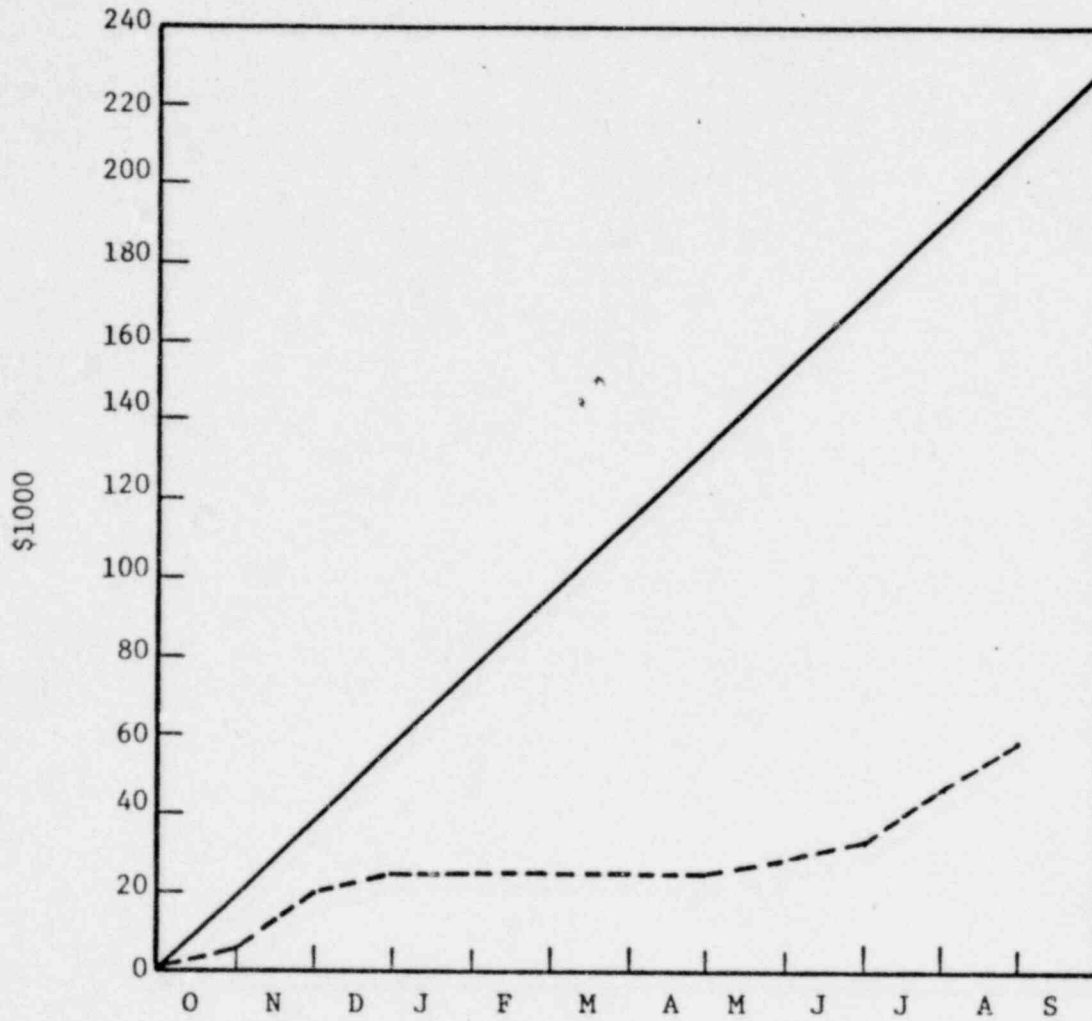
The delay in funding authorization will require rescheduling of the FY79 effort.

* Includes \$18.1K carryover from FY78.

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EXPENDITURES

PROGRAM: PROBABILISTIC UNCERTAINTY ANALYSIS



RESOURCES EXPENDED:

	AUGUST, 1979	CUMULATIVE
DOLLARS	12.0 K	58.4 (26%)
MAN-MONTHS	1.6	7.3

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PROGRAM: ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR

FIN#: A4067

CONTRACTOR: Battelle-Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/78-9/79

PAS PROGRAM MANAGER: J. Curry

BUDGET AMOUNT: (Thousands) \$90

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 AUGUST, 1979

Work continued on the modification of the MARCH input and output subroutines. Documentation efforts, particularly the development of logic flow diagrams for the various subroutines were initiated.

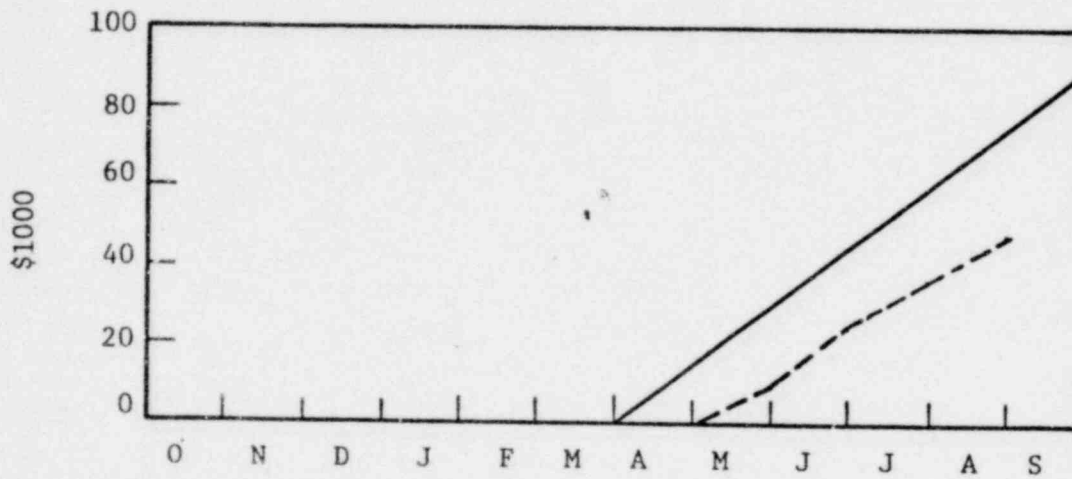
MAJOR MILESTONES:

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

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

EXPENDITURES

PROGRAM: ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR



RESOURCES EXPENDED:

	AUGUST, 1979	CUMULATIVE
DOLLARS	12.1 K	47.9 (53%)
MAN-MONTHS	1.7	6.5

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