

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 September, 1980.

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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

INTERIM REPORT

NRC Research and Technical
Assistance Report

8011060077

PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON PROGRAM

FIN#: A4067

CONTRACTOR: Battelle's 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: RS 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 risk 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: September, 1980

The final list of the MARK III BWR key accident sequences and their probabilities were received from Sandia; this will permit completion of the MARK III analyses.

Completion of the analyses of the CE PWR design is awaiting further definition of important accident sequences.

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Complete Analyses of B&W Design	4/78	3/80	5/80
2. Complete Analyses of GE Mark III Plant	9/78	4/80	10/80
3. Complete Analyses of CE Design	8/78	5/80	11/80
4. Evaluation & Documentation		7/80	11/80

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

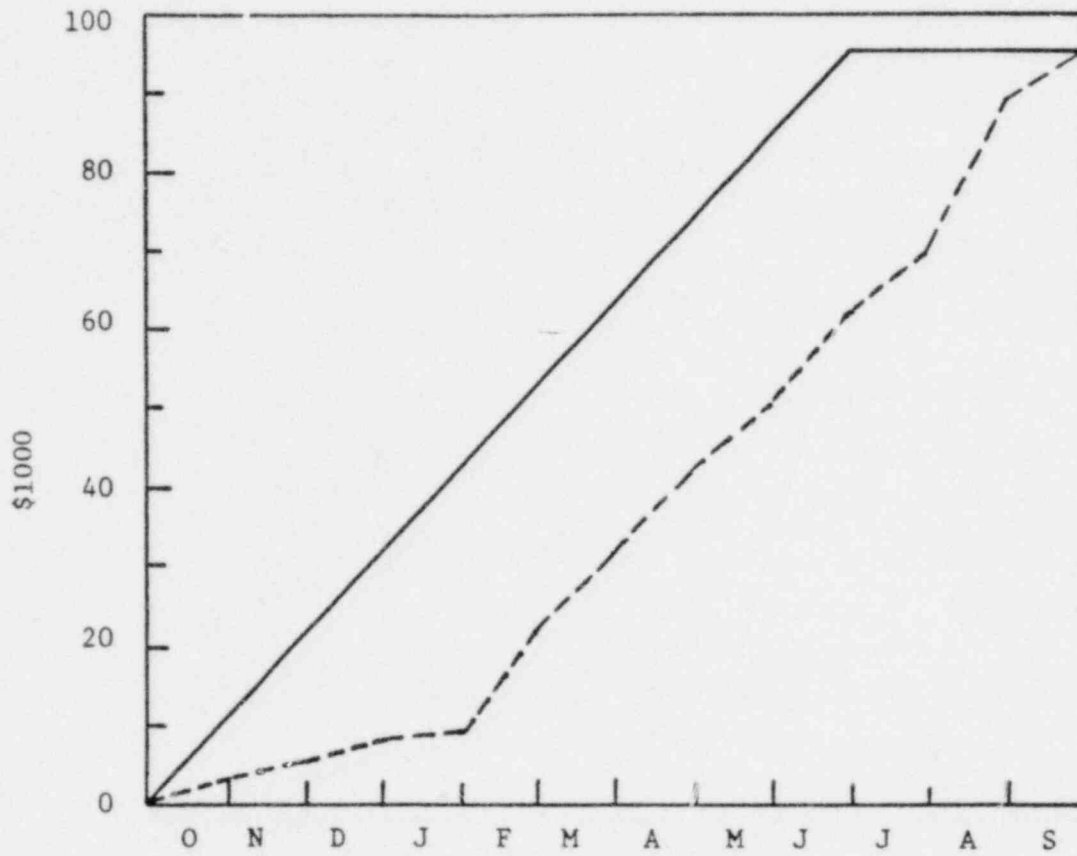
The request for additional analyses for the ice-condenser will require diversion of funding from Subtask 4 in FY'80.

* Includes \$18,099 carryover from FY'79.

Research and Technical Assistance Report

EXPENDITURES

PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON



RESOURCES EXPENDED:

	September, 1980	CUMULATIVE
DOLLARS	6.8 K	95.7 K (100%)
MAN-MONTHS	0.6	11

PROGRAM: ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR

FIN#: A4067

CONTRACTOR: Battelle's Columbus Laboratories

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

PAS PROGRAM MANAGER: MA Cunningham

BUDGET AMOUNT: (Thousands) 111.9*

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: September, 1980

Inactive.

MAJOR MILESTONES:

MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Separate model intercomparisons with KESS	5/1/80	6/1/80	6/15/80
2. Draft report on intercomparisons	6/1/80	7/1/80	8/15/80
3. Complete draft of MARCH documentation	5/79	7/1/80	8/01/80
4. Receive comments on MARCH documentation		8/1/80	10/06/80
5. Complete documentation & Release MARCH		9/1/80	10/14/80

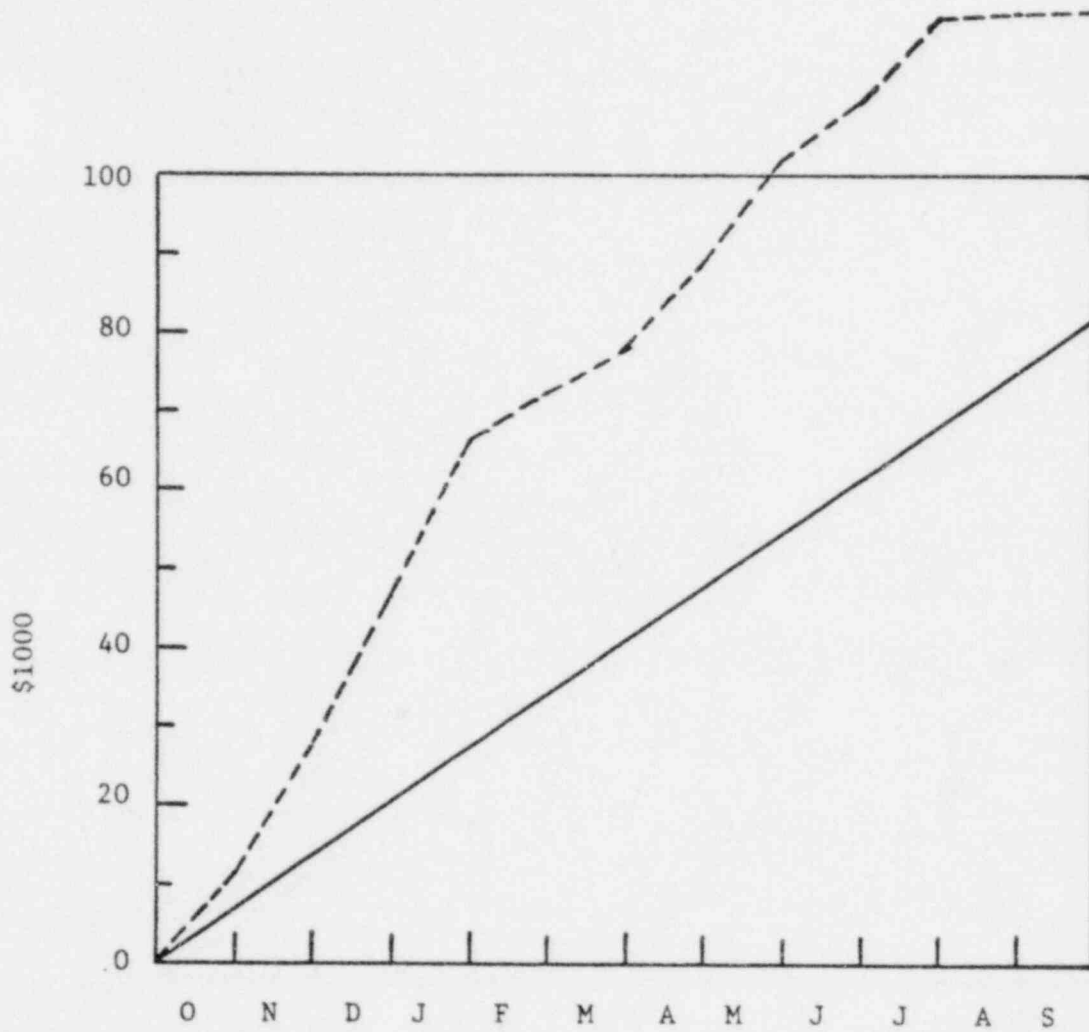
MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

Request for additional funds and revised schedules for completion of this task have been submitted to NRC. Actual expenses to complete the intercomparison and documentation have exceeded this estimate.

* Includes Carryover of \$31,918 from FY'79 and \$30,000 requested but not yet authorized.

EXPENDITURES

PROGRAM: ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR



RESOURCES EXPENDED:

	September, 1980	CUMULATIVE
DOLLARS	0.5 K	121.2 K (108%)
MAN-MONTHS	0	16.3

PROGRAM: ANALYSIS OF RADIONUCLIDE TRANSPORT

FIN#: A4067

CONTRACTOR: Battelle's Columbus Laboratories

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

PAS PROGRAM MANAGER: MA Cunningham

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: September, 1980

The CORRAL3 code is being constructed. In September, the principal effort involved coding of the vapor deposition models. The report on model improvements is still undergoing editing.

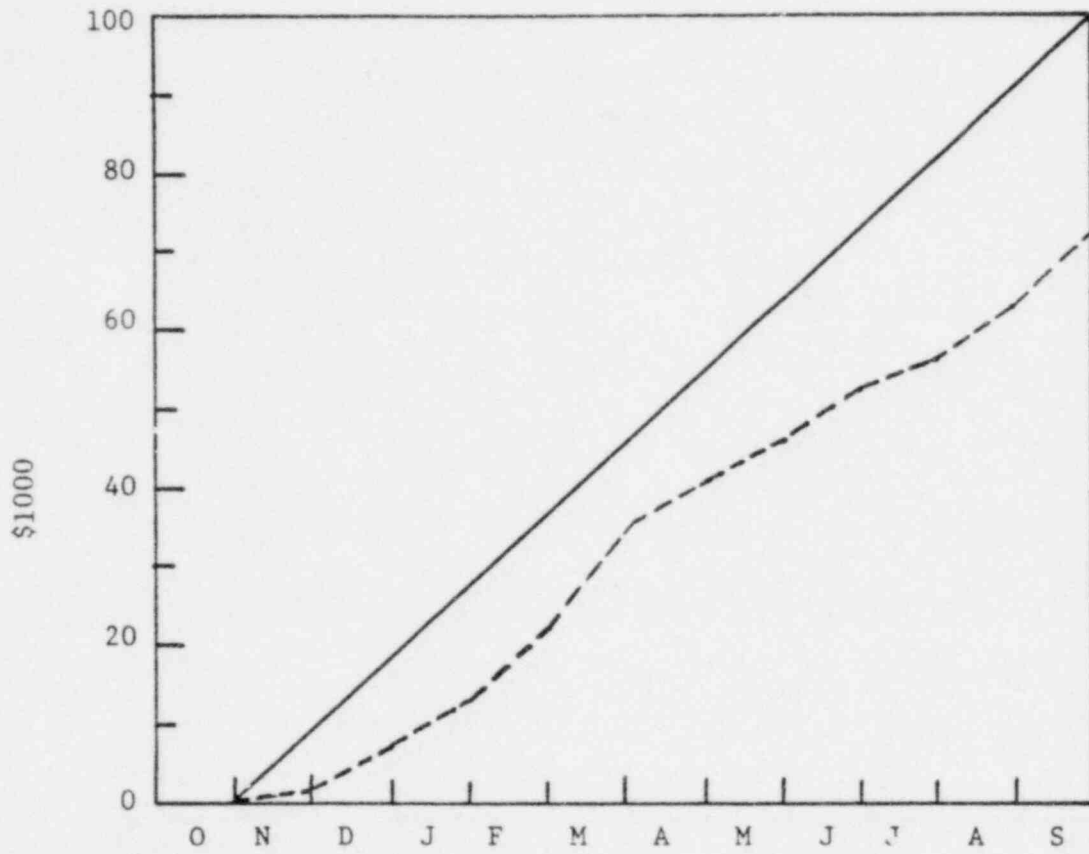
MAJOR MILESTONES:

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

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

EXPENDITURES

PROGRAM: ANALYSIS OF RADIONUCLIDE TRANSPORT



RESOURCES EXPENDED:

	September, 1980	CUMULATIVE
DOLLARS	9.3 K	71.9 K (72%)
MAN-MONTHS	1.4	6.6

PROGRAM: PROBABILISTIC UNCERTAINTY ANALYSIS SUBTASK

FIN#: A4067

CONTRACTOR: Battelle's Columbus Laboratories

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

PAS PROGRAM MANAGER: MA Cunningham

BUDGET AMOUNT: (Thousands) 155.4*

CONTRACTOR PROGRAM MANAGER: R. S. Denning

PHONE: FTS-976-7510

PRINCIPAL INVESTIGATOR(S): P. Baybutt

PHONE: FTS-976-7499

PROGRAM OBJECTIVES:

- Perform probabilistic uncertainty analysis 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

September, 1980

Work continued on the editing and finalization of the project reports.

Two of these reports will be issued by October 17, a third report on October 24, and the major reports are planned to be issued on November 14.

MAJOR MILESTONES:

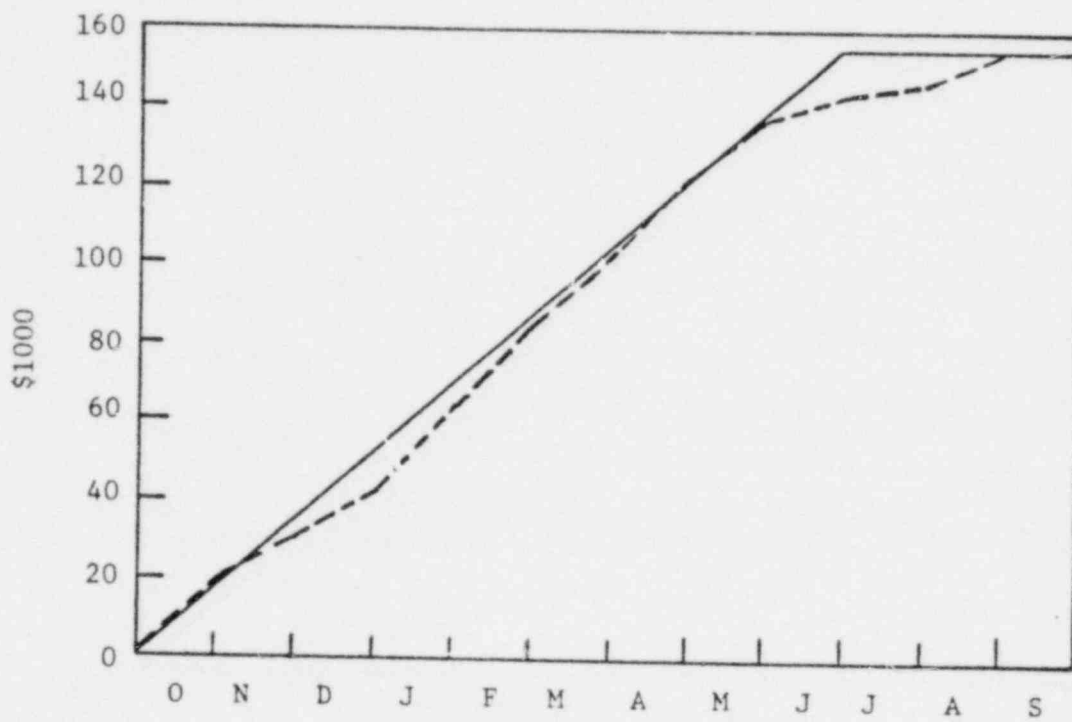
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Methodology/Application Topical Reports	-----	10/31/79	10/31/79
2. Task Completion	-----	05/31/80	11/30/80
3.			

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

* Carryover from FY'79.

EXPENDITURES

PROGRAM: PROBABILISTIC UNCERTAINTY ANALYSIS



RESOURCES EXPENDED:

	September, 1980	CUMULATIVE
DOLLARS	0.3 K	155.9 K (100%)
MAN-MONTHS	0	19.8