

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

Author(s):

R. S. Denning, P. Cybulskis, and P. Baybutt

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SECTION

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BATTELLE  
Columbus Laboratories  
505 West King Avenue  
Columbus, Ohio 43201

Prepared for  
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Washington, D. C. 20555

INTERIM REPORT

NRC Research and Technical  
Assistance Report

8012110057

PROGRAM: REACTOR SAFETY STUDY FOLLOW-ON PROGRAM

FIN#:A4067

CONTRACTOR: Battelle's Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/80-9/81

PAS PROGRAM MANAGER: J. Curry

BUDGET AMOUNT: (Thousands) 19.4\*

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 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: October, 1980

The analyses on the MARK III BWR design were completed. The summary of the results will be provided to Sandia and the NRC next month.

The latest list of important accident sequences for the CE PWR design were received and are being reviewed in light of earlier MARCH/CORRAL analyses. A revised draft of the BCL results for the ice condenser PWR was prepared and submitted to the NRC and Sandia.

MAJOR MILESTONES:

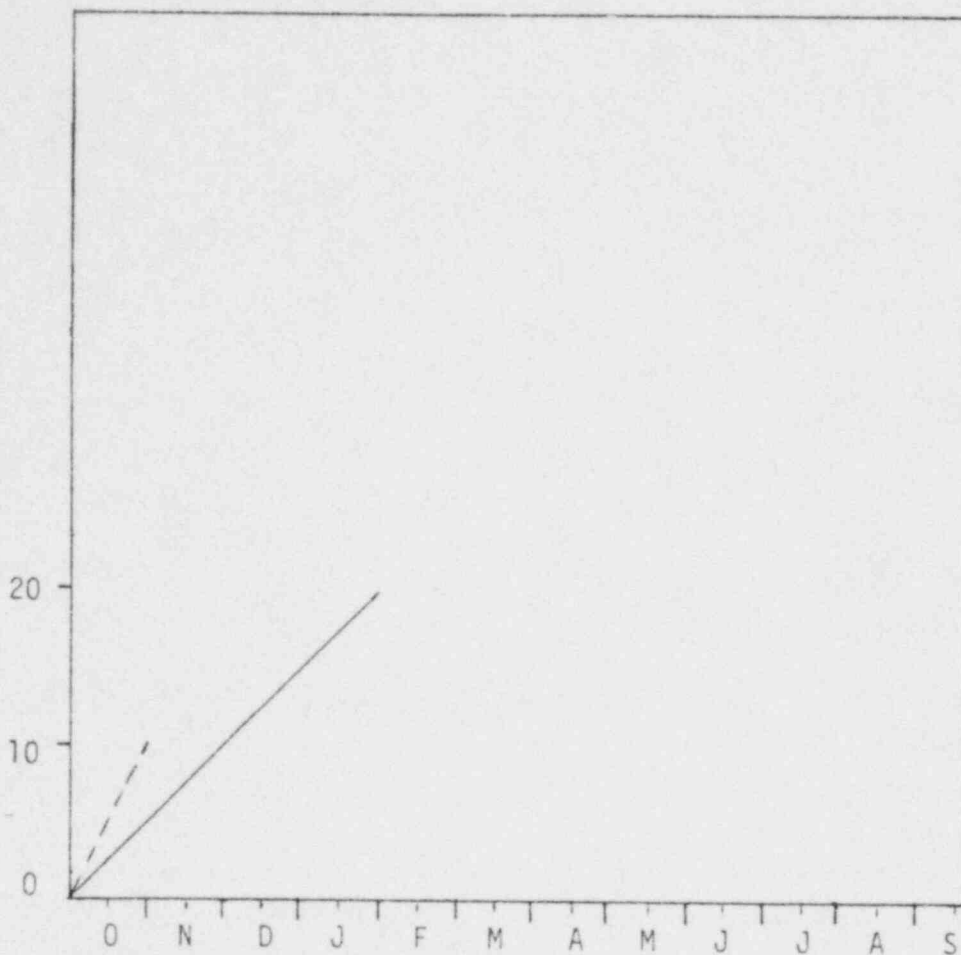
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Complete Analyses of GE Mark III Plant	9/78	4/80	10/80
2. Complete Analyses of CE Design	8/78	5/80	12/80
3. Evaluation & Documentation		7/80	1/81

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

\* Includes \$20,000 from FY'81 as reimbursement for other FY'80 tasks.

## EXPENDITURES

### REACTOR SAFETY STUDY FOLLOW-ON PROGRAM



RESOURCES EXPENDED:

	October, 1980	CUMULATIVE
DOLLARS	10.0 K	10.0 K (52%)
MAN-MONTHS	1.1	1.1

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) 49.2\*

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, 1980

The MARCH code together with draft copies of the documentation were sent to the National Energy Software Center, BNL, and EPRI.

Draft of the MARCH document as well as technical assistance was provided to Westinghouse at the request of NRC. Preparations were made for the forthcoming MARCH Workshop in Germany. The arrangements for this and the related KESS workshop were discussed with FRG representatives during the Eighth Water Reactor Safety Research Information meeting in Gaithersburg.

MAJOR MILESTONES:

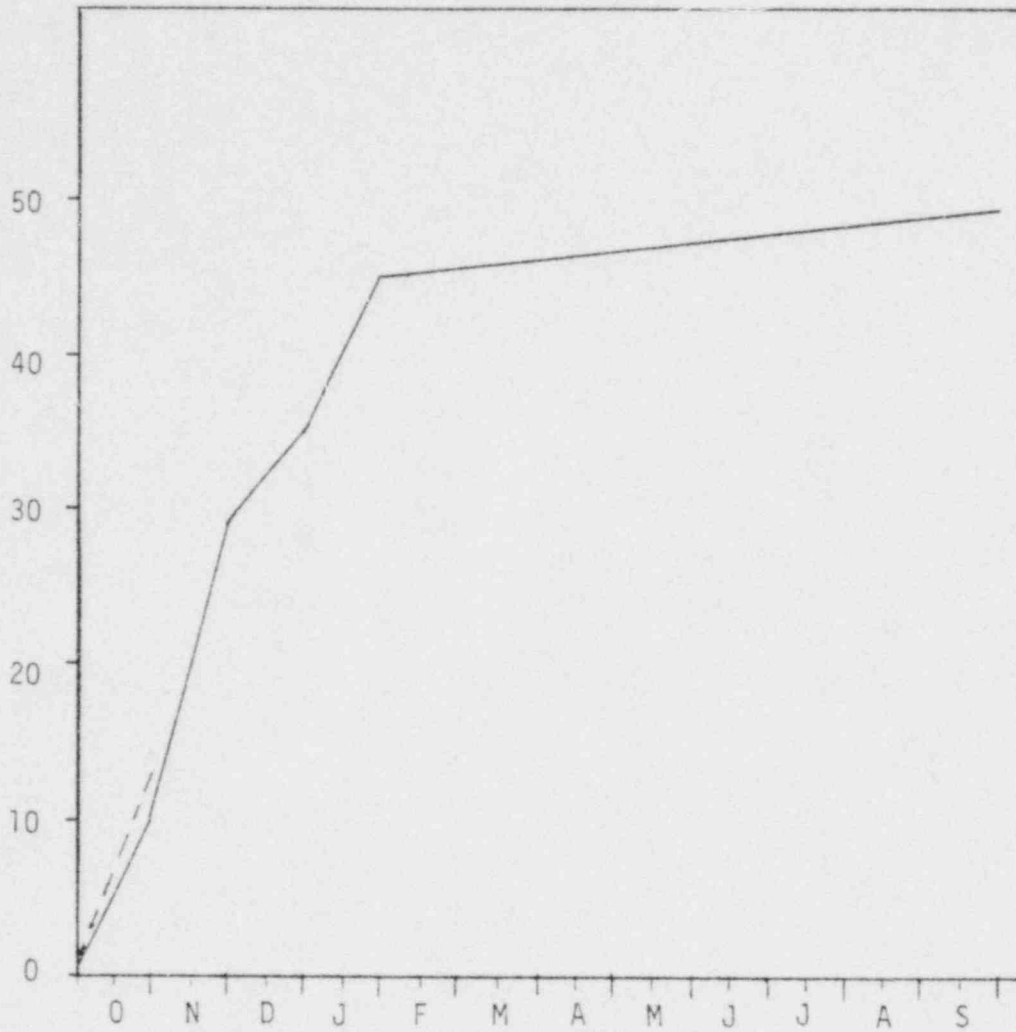
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. MARCH Workshop in FRG	10/80	11/80	
2. KESS implementation and Workshop	12/80	1/81	
3.			

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

\* Includes FY'81 allocation on 58 K and under recovery of 8.8 K from FY'80 expenses.

# EXPENDITURES

## ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR



RESOURCES EXPENDED:

	October, 1980	CUMULATIVE
DOLLARS	12.8 K	12.8 K (26%)
MAN-MONTHS	1.8	1.8



PROGRAM: ANALYSIS OF RADIONUCLIDE TRANSPORT

FIN#: A4067

CONTRACTOR: Battelle's Columbus Laboratories

BUDGET PERIOD: (mm/yy-mm/yy) 10/80-9/81

PAS PROGRAM MANAGER: MA Cunningham

BUDGET AMOUNT: (Thousands) 178.1 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, 1980

Vapor and particle deposition models have been incorporated in CORRAL3. Subroutines for calculating fluid properties have been written. Work is currently underway on coding the coagulation and agglomeration mechanisms.

MAJOR MILESTONES:

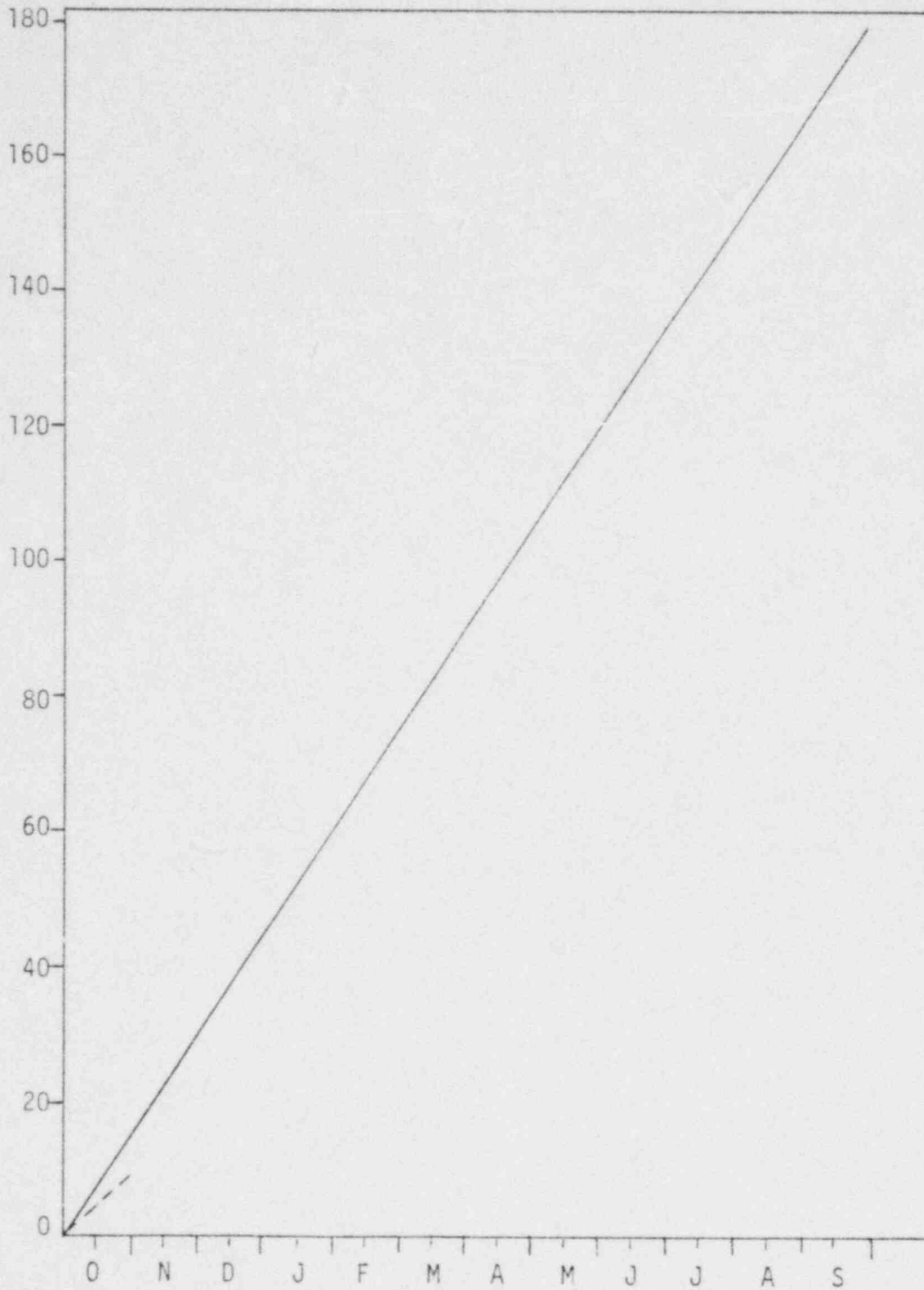
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Completion of New Code			12/80
2. MARCH/TRAP Interface			2/81
3. Code Comparison Runs			7/81
4. Documentation and Public Release			9/81

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

\* Includes 150 K FY'81 authorization and 28.1 K unexpended from FY'80.

# EXPENDITURES

## ANALYSIS OF RADIONUCLIDE TRANSPORT



RESOURCES EXPENDED:

	October, 1980	CUMULATIVE
DOLLARS	9.1 K	9.1 K (5%)
MAN-MONTHS	1.2	1.2