

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 April, 1981

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Responsible NRC Individual and NRC Office or Division:

M. Cunningham
Office of Nuclear Regulatory Commission



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

8106040047

NRC Research and Technical Assistance Report

PROGRAM: Analysis of Thermal-Hydraulic Behavior

FIN#: A4067

CONTRACTOR: Battelle's Columbus Laboratories

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

P/S PROGRAM MANAGER: M. A. Cunningham

BUDGET AMOUNT: (Thousands) 49.2⁽¹⁻²⁾

CONTRACTOR PROGRAM MANAGER: RS 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: April, 1981

A presentation on "LWR Meltdown Accident Analysis Methods" was made at the DOE/Laboratory/IDCOR Review of Degraded Core Issues on April 14, at Germantown, MD.

Input was provided to the MARCH appraisal being conducted for NRC-RES by Sandia.

Several requests for assistance with the MARCH input received through the NRC were answered.

MAJOR MILESTONES:

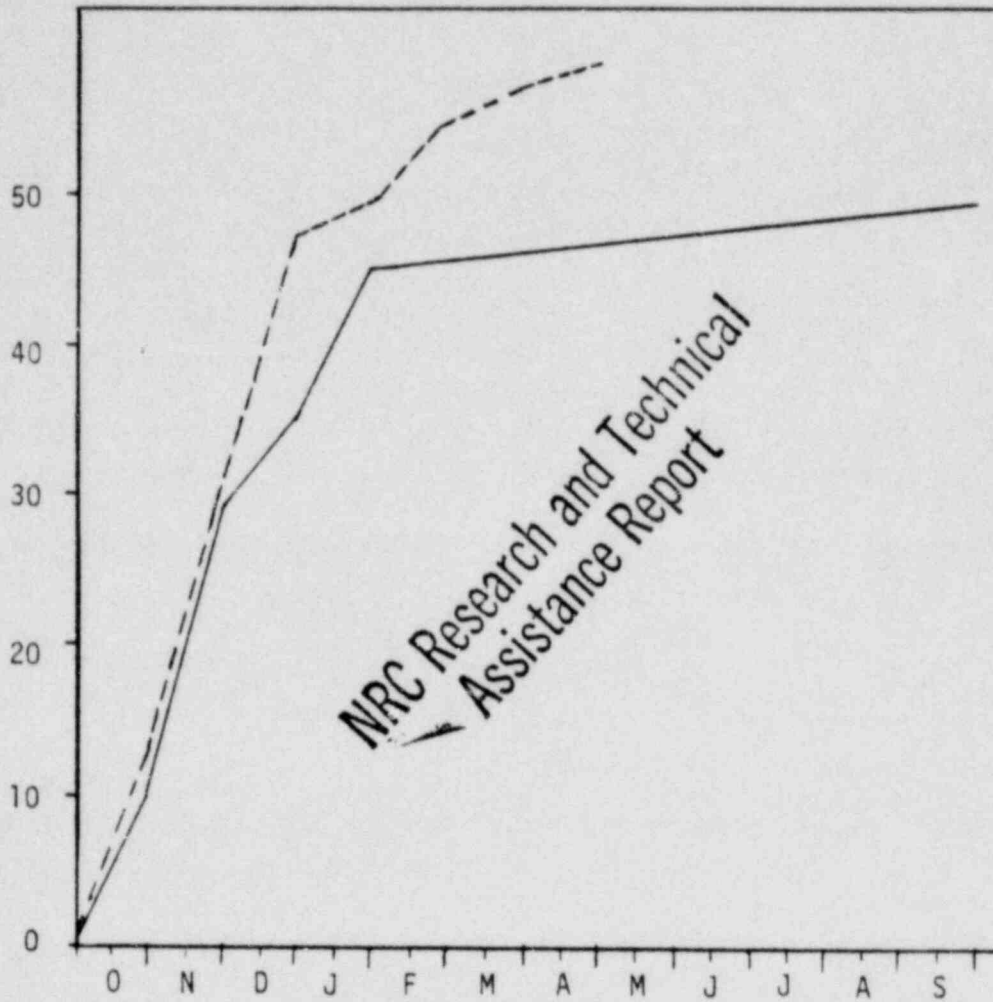
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. MARCH Workshop in FRG	10/80	11/80	11/80
2. KESS Implementation and Workshop	12/80	1/81	2/81
3.			

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

- (1) Includes FY'81 allocation of 58 K and under recovery of 8.8 K from FY'80 expenses.
- (2) Additional funding has been requested in the amount of .35 K.

EXPENDITURES

ANALYSIS OF THERMAL-HYDRAULIC BEHAVIOR



RESOURCES EXPENDED:

	April, 1981	CUMULATIVE
DOLLARS	2.5 K	58.8 K (120%)
MAN-MONTHS	0.3	5.8

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⁽¹⁻²⁾
 CONTRACTOR PROGRAM MANAGER: RS Lenning 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 : April, 1981

BCL contribution to the RSSMAP report for the MARK III BWR was completed and forwarded to the NRC and Sandia. The previously completed RSSMAP report on the B&W PWR was revised based on discussions with Sandia regarding changes in the understanding of the operability of containment spray systems.

NRC Research and Technical Assistance Report

MAJOR MILESTONES:

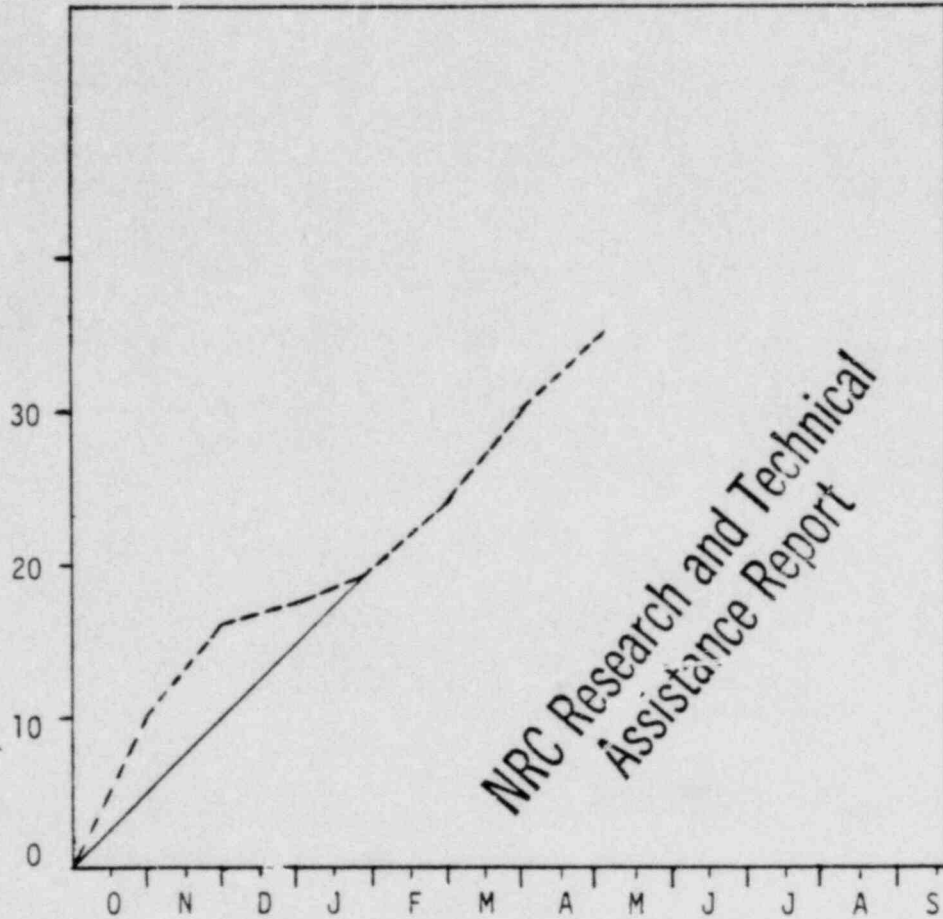
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Complete Analyses of GE Mark III Plant	9/78	4/80	10/80
2. Complete Analyses of CE Design	8/78	5/80	12/80
3. Evaluation & Documentation		7/80	6/1/81

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

- (1) Includes \$20,000 from FY'81 as reimbursement for other FY'80 tasks.
- (2) Additional funding has been requested in the amount of 70 K.

EXPENDITURES

REACTOR SAFETY STUDY FOLLOW-ON PROGRAM



RESOURCES EXPENDED:

	April, 1981	CUMULATIVE
DOLLARS	6.3 K	36.3 K (187%)
MAN-MONTHS	0.9	4.6

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: M. A. Cunningham

BUDGET AMOUNT: (Thousands) 178.1 K⁽¹⁻²⁾

CONTRACTOR PROGRAM MANAGER: RS 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.

NRC Research and Technical Assistance Report

ACTIVITIES DURING: April, 1981

Work was initiated on the construction of an interface between the new code and the Battelle-developed thermal-hydraulics code MARCH. The interface will take the form of a FORTRAN subroutine that will be designed to read the output generated by the MARCH code and process it into a format suitable for use as input data to CORRAL.

Some modifications were made to the new code, primarily in the subroutines modeling the coagulation and size-change processes.

MAJOR MILESTONES:

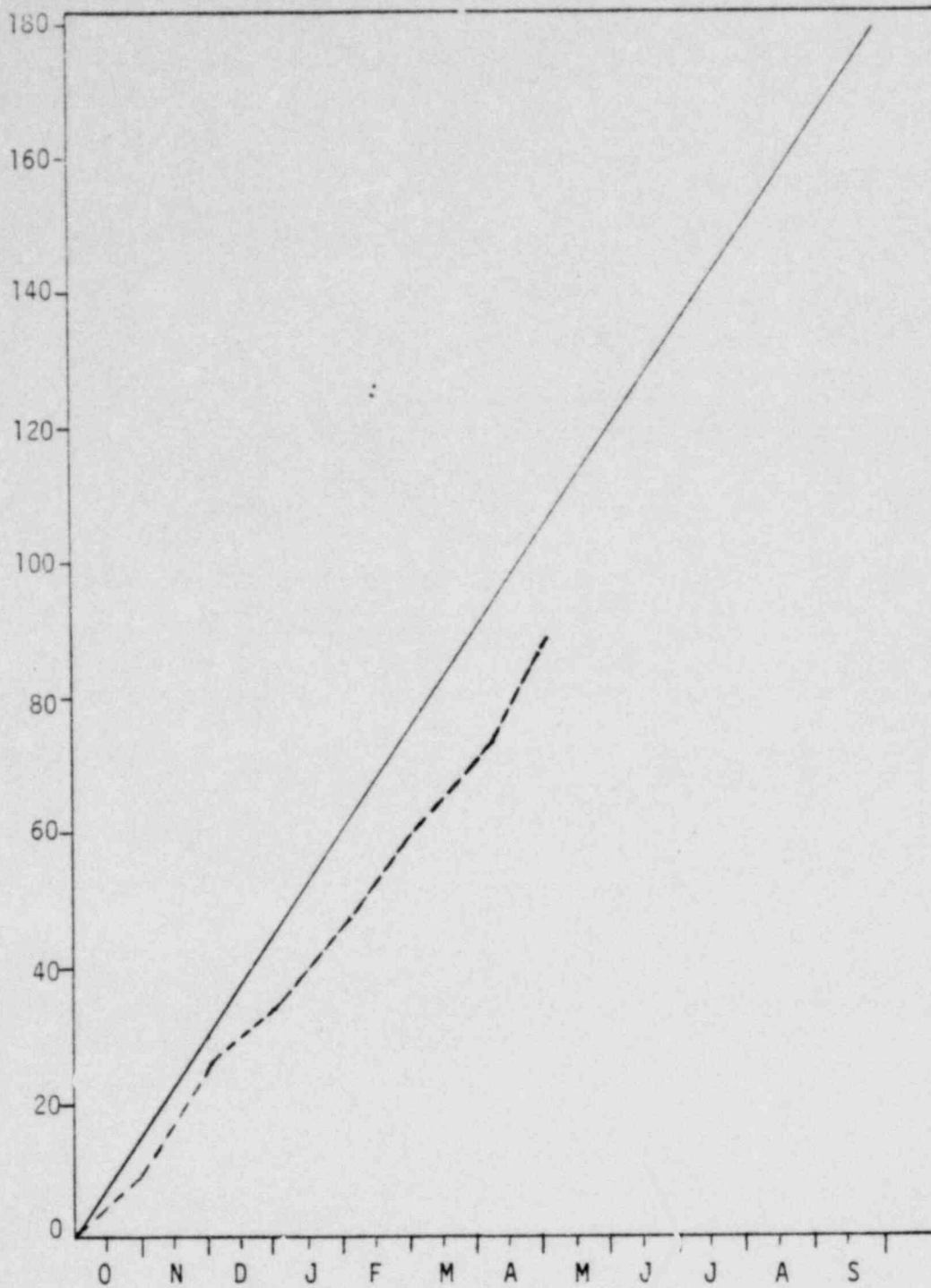
MILESTONE DESCRIPTION	SCHEDULED/ACTUAL START	SCHEDULED COMPLETION	ACTUAL/PROJECTED COMPLETION
1. Completion of New Code		12/80	02/81
2. MARCH/TRAP Interface		02/81	06/81
3. Code Comparison Runs		07/81	
4. Documentation and Public Release		09/81	

MANAGEMENT AND TECHNICAL ISSUES/POTENTIAL SCHEDULE OR FUNDING PROBLEMS:

- (1) Includes 150 K FY'81 authorization and 28.1 K unexpended from FY'80.
- (2) Additional funds have been requested in the amount of 55 K.

EXPENDITURES

ANALYSIS OF RADIONUCLIDE TRANSPORT



RESOURCES EXPENDED:

	April, 1981	CUMULATIVE
DOLLARS	15.1 K	88.1 (49%)
MAN-MONTHS	1.6	11.8