



PROJECT AND BUDGET PROPOSAL FOR NRC WORK

DATE OF PROPOSAL  
July 12, 1983

☒ NEW  
☐ REVISION NO.

PROJECT TITLE:

LWR Aerosol Release and Transport

FIN NUMBER  
B0121

NRC OFFICE Nuclear Regulatory Research,  
Division of Accident Evaluation

NRC S & R NUMBER  
60 19 02 01

DOE CONTRACTOR

UNION CARBIDE CORPORATION

PATENT STATUS

*This proposal is being transmitted in advance of patent review for evaluation purposes only. No further dissemination or publication shall be made without prior approval of the Assistant General Counsel for Patents, DOE.*

CONTRACTOR/ORNL

ACT. 41 32 55 11 1  
DIV. (16, 03)

SITE

OAK RIDGE NATIONAL LABORATORY  
OAK RIDGE, TENNESSEE 37830

DOE S & R NUMBER  
40 10 01 06

COGNIZANT PERSONNEL

ORGANIZATION

FTS PHONE NUMBER

PERIOD OF PERFORMANCE

NRC PROJECT MANAGER

T. J. Walker

SAAB

427-4262

STARTING DATE

01-01-74

OTHER NRC TECHNICAL STAFF

COMPLETION DATE

Continuing

DOE PROJECT MANAGER

W. R. Bibb

DOE-ORO

626-0742

CONTRACTOR/ORNL

PROG. DIR.: A. P. Malinauskas

CMO

624-0422

PROG. MGR.: T. S. Kress

ETD

624-0561

PROJ. MGR.: R. E. Adams

ETD

624-0556

PRIN. INVESTIGATOR(S): R. E. Adams

ETD

624-0556

G. W. Parker

CTD

624-6858

STAFF YEARS OF EFFORT (Round to nearest tenth of a year)

FY 19 83

FY 19 84

FY 1985

FY 1986

FY 1987

Direct Scientific/Technical

7.6

8.5

10.0

10.0

10.0

Other Direct

2.6

2.4

3.1

3.1

3.1

TOTAL DIRECT STAFF YEARS

10.2

10.9

13.1

13.1

13.1

COST PROPOSAL (OBLIGATIONS)

(\$ in Thousands)

Direct Salaries (Cost Centers)

530

670

790

865

925

Material and Services (Excluding ADP)

373

240

305

320

330

ADP Support

20

25

30

30

30

Subcontracts and Consultants

50

50

60

60

60

Travel Expenses

Foreign

5

5

10

10

10

Domestic

10

10

10

10

10

Indirect Labor Costs (Cost Centers)

Other (Specify)

- GSO Change

0

0

453

30

0

General and Administrative (G&A/GPS)

284

306

385

410

450

TOTAL OPERATING COST (Obligations)

1272

1306

2043

1735

1815

CAPITAL EQUIPMENT

FIN CHARGED:

0

0

0

0

0

TOTAL PROJECT COST (Obligations)

1272

1306

2043

1735

1815

FY 1984

OCTOBER

NOVEMBER

DECEMBER

JANUARY

FEBRUARY

MARCH

MONTHLY FORECAST

EXPENSE

108

108

108

108

108

108

APRIL

108

MAY

108

JUNE

108

JULY

108

AUGUST

113

SEPTEMBER

113

8507130138 850415  
PDR FOIA  
ALVAREZ85-110 PDR

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B0121

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PROJECT TITLE:

LWR Aerosol Release and Transport

DOE PROPOSING ORGANIZATION:

UNION CARBIDE CORPORATION  
OAK RIDGE NATIONAL LABORATORY  
OAK RIDGE, TENNESSEE 37830

FORECAST MILESTONE CHART: Schedule to Start— —Completed (Shown in Quarter Year)  
PROVIDE ESTIMATED DOLLAR COST FOR EACH TASK FOR EACH FISCAL YEAR

TASK		FY 1983				FY 1984				FY 1985				FY 1986				FY 1987			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Subtask A:	SCHEDULE																				
Project Management and Analysis	COST																				
Subtask B:	SCHEDULE																				
Basic Aerosol Studies in CRI-II Facility	COST																				
Subtask C:	SCHEDULE																				
Core-Melt Studies Using 1 kg Furnace	COST																				
Subtask D:	SCHEDULE																				
Core-Melt Studies Using 10 kg Furnace	COST																				
Subtask E:	SCHEDULE																				
Single-Component Aerosol Tests in NSPP	COST																				
TOTAL ESTIMATED PROJECT COST																					

(continued on next page)

PROJECT DESCRIPTION: (Provide narrative descriptions on NRC Form 189 page 3 of 3 for the following topics in the order listed. Check applicable block. If an item is not applicable, so state.)

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> 1. OBJECTIVE OR PROPOSED WORK                | <input checked="" type="checkbox"/> 9. DESCRIBE SPECIAL FACILITIES REQUIRED |
| <input checked="" type="checkbox"/> 2. SUMMARY OF PRIOR EFFORTS                  | <input checked="" type="checkbox"/> 10. CONFLICT OF INTEREST INFORMATION    |
| <input checked="" type="checkbox"/> 3. WORK TO BE PERFORMED AND EXPECTED RESULTS | <input checked="" type="checkbox"/> 11. OBLIGATION ESTIMATES                |
| <input checked="" type="checkbox"/> 4. DESCRIPTION OF ANY FOLLOW-ON EFFORTS      | <input checked="" type="checkbox"/> 12. OTHER (SPECIFY):                    |
| <input checked="" type="checkbox"/> 5. RELATIONSHIP TO OTHER PROJECTS            | a. Quality Assurance and Control  |
| <input checked="" type="checkbox"/> 6. REPORTING SCHEDULE                        | b. Cost and Milestone Charts  |
| <input checked="" type="checkbox"/> 7. SUBCONTRACTOR INFORMATION                 |   |
| <input checked="" type="checkbox"/> 8. LIST NEW CAPITAL EQUIPMENT REQUIRED       |   |

APPROVAL AUTHORITY-SIGNATURE

*A. J. Malinauskas*

DATE

9-14-83

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

80121

DATE


July 12, 1983

PROJECT TITLE:






LWR Aerosol Release and Transport

DOE PROPOSING ORGANIZATION:

UNION CARBIDE CORPORATION  
OAK RIDGE NATIONAL LABORATORY  
OAK RIDGE, TENNESSEE 37830

FORECAST MILESTONE CHART: Schedule to Start—  —Completed (Shown in Quarter Year)

PROVIDE ESTIMATED DOLLAR COST FOR EACH TASK FOR EACH FISCAL YEAR

TASK		FY 1983				FY 1984				FY 1985				FY 1986				FY 1987					
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th		
<u>Subtask F:</u> Mixed-Aerosol Tests in NSPP		SCHEDULE																					
		COST		100				450				300											
<u>Subtask G:</u> Tests of Engineered Safety Features in NSPP		SCHEDULE																					
		COST						106				365				200				200			
<u>Subtask H:</u> Final Core-Melt and Containment Tests to Validate LWR Codes		SCHEDULE																					
		COST														805				1015			
		SCHEDULE																					
		COST																					
		SCHEDULE																					
		COST																					
TOTAL ESTIMATED PROJECT COST		1272				1306				1590				1705				1815					

PROJECT DESCRIPTION: (Provide narrative descriptions on NRC Form 189 page 3 of 3 for the following topics in the order listed. Check applicable block. If an item is not applicable, so state.)

- |   |  |
|---|--|
| <input type="checkbox"/> 1. OBJECTIVE OR PROPOSED WORK                | <input type="checkbox"/> 9. DESCRIBE SPECIAL FACILITIES REQUIRED |
| <input type="checkbox"/> 2. SUMMARY OF PRIOR EFFORTS                  | <input type="checkbox"/> 10. CONFLICT OF INTEREST INFORMATION    |
| <input type="checkbox"/> 3. WORK TO BE PERFORMED AND EXPECTED RESULTS | <input type="checkbox"/> 11. OBLIGATION ESTIMATES                |
| <input type="checkbox"/> 4. DESCRIPTION OF ANY FOLLOW-ON EFFORTS      | <input type="checkbox"/> 12. OTHER (SPECIFY):                    |
| <input type="checkbox"/> 5. RELATIONSHIP TO OTHER PROJECTS            |  |
| <input type="checkbox"/> 6. REPORTING SCHEDULE                        |  |
| <input type="checkbox"/> 7. SUBCONTRACTOR INFORMATION                 |  |
| <input type="checkbox"/> 8. LIST NEW CAPITAL EQUIPMENT REQUIRED       |  |

APPROVAL AUTHORITY-SIGNATURE

DATE

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

30121

PROJECT TITLE:

LWR Aerosol Release and Transport

ITEM NO.

1. OBJECTIVE OF PROPOSED WORK:

Summary

The objective of this work is to investigate the release and subsequent behavior of aerosols under a range of LWR accident conditions in terms of source-term magnitude, attenuation rate, and persistence in containment environments. The results from these varied experiments are required for the validation of, or modification to, existing analytical models and codes, or for the development of new models and codes, which will accurately predict release, transport, and subsequent behavior of LWR accident-released aerosols within containment.

Additional Information

This project is divided into eight subtasks:

Subtask A: Project management and analysis. Analyze experiments, develop test plans, make pre-test and post-test predictions, evaluate models for predicting aerosol behavior in reactor accidents, provide assistance to NRC/RES, coordinate with other aerosol research projects, and maintain assessment of foreign research activities in aerosol behavior.

Subtask B: Conduct basic aerosol experiments in CRI-II facility. Define characteristics of aerosols produced from components of fuel rods, control rods, and materials of construction.

Subtask C: Conduct core-melt aerosol release experiments using 1 kg induction furnace. Simulated fuel rods/control rod bundles together with core structural material will be taken up to and through the melt phase in a steam-hydrogen atmosphere; interaction of materials at melting will be defined, and released aerosol material will be characterized.

Subtask D: Conduct core-melt aerosol release experiments using 10 kg induction furnace. Repeat key experiments defined from results of Subtask C; characterize behavior of released aerosols in CRI-II vessel.

Subtask E: Conduct single-component LWR aerosol tests in NSPP containment vessel under steam atmosphere. Aerosols include simulated fuel aerosol ( $U_3O_8$ ), simulated core structural material aerosol ( $Fe_2O_3$ ), and simulated aerosol emanating from reaction of concrete with molten core.

Subtask F: Conduct LWR mixed-aerosol tests in NSPP containment vessel under steam atmosphere. Mixed-aerosols to be composed of those in Subtask E together with other aerosols of significance determined by core-melt studies.

Subtask G: Conduct tests of engineered safety systems (such as in-containment sprays, ice condensers, filtration systems) using NSPP facility.

Subtask H: Final tests in core-melt project and containment project to provide data deemed to be of significance for complete validation of computer codes for prediction of aerosol release, transport, and containment in LWR accident sequences.

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

BO121

PROJECT TITLE:

LWR Aerosol Release and Transport

ITEM NO.

2. SUMMARY OF PRIOR EFFORTS:

Aerosol source term experiments were conducted in the CRI-II facility and utilized a bundle of simulated fuel rods and control rods (0.5 to 1 kg in total weight) which was subjected to induction heating up to and through the melt temperature. The induction furnace developed in this program is unique in that the heat is generated directly in the fuel tubes allowing realistic heatup and meltdown phases. Other core-melt tests with fission-product elements implanted in the  $UO_2$  fuel pellets developed information on release rates and release behavior. Separate effects aerosol tests were conducted in the CRI-II vessel on constituents of LWR control rods and on fission-product elements. Aerosol production was accomplished by use of the plasma torch aerosol generator, another unique generator developed in this program. Physical characteristics were established on both metallic and metal oxide aerosols; some of this work was done in support of the MARVIKEN Program and the DEMONA Program. In a cooperative effort with the TRAP-MELT Verification Tests (BO488) the 1 kg induction furnace and the plasma torch aerosol generator as well as use of the CRI-II facility were made available to that program as the schedule of the core-melt project permitted. Design and construction of the larger induction furnace, which will permit realistic meltdown of bundles of fuel rods/control rods weighing up to 10 kg, was completed. The 250 kW power supply was received and installation of the system was initiated.

The behavior of LWR accident aerosols in containment was studied in the 38.3 m<sup>3</sup> vessel of the Nuclear Safety Pilot Plant (NSPP). Successful conversion of the facility, aerosol sampling equipment, and the plasma torch aerosol generator for operation in a steam environment was accomplished. A series of tests on the behavior of  $U_3O_8$  aerosol in steam was completed and the significant effect of steam on this aerosol was demonstrated. Tests on the behavior of  $Fe_2O_3$  aerosol (simulating those aerosols from core structure material) in dry and steam environments were completed. A study into methods for generating a concrete aerosol was completed and tests on concrete aerosol in dry and steam environments were started. These single-component aerosol tests form the base for comparison with results from future multi-component aerosol tests in steam.

3. WORK TO BE PERFORMED AND EXPECTED RESULTS:

Summary

Core-melt aerosol release studies will be started in the 10 kg induction furnace. Simulated fuel rods/control rod bundles with core structural materials will be taken up to and through the melt phase in a steam-hydrogen environment. The interaction of fission product elements with aerosols emanating from the melt will be investigated by means of simulant fission product additives to the  $UO_2$  pellets. Key experiments conducted with the smaller induction furnace will be repeated to investigate the scaling effect. These aerosols will be transported to the CRI-II vessel and measurements made of their aerodynamic behavior. Final experiments are planned to determine the effect of hydrogen burning on core-melt aerosol behavior. Aerosol behavioral tests in steam will be continued in the large vessel of the NSPP. A series of tests, in steam, will be conducted using various mixtures of aerosols; these tests will utilize those mixtures of aerosols expected to be released over a range of assumed LWR accident sequences. A study of the



PROJECT AND BUDGET PROPOSAL FOR NRC WORK

B0121

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LWR Aerosol Release and Transport

ITEM NO.

3. WORK TO BE PERFORMED AND EXPECTED RESULTS (Cont'd):

efficacy of engineered safeguards on mixed-aerosol removal will be conducted. Data from both the core-melt aerosol release experiments and the containment experiments will be made available on a continuous basis to those organizations developing the various aerosol/fission product release, transport and containment codes.

FY 1984

Core-melt aerosol release studies using the 10 kg induction furnace will be initiated. Simulated fuel rods/control rod bundles with core structural materials will be taken up to and through the melt phase in a steam-hydrogen environment. The interaction of fission product elements with aerosols emanating from the melt will be investigated by means of simulant fission product additives to the  $UO_2$  fuel pellets. These additives will consist of various mixtures of: oxides of strontium, barium and cesium; metallic forms of molybdenum, ruthenium and tellurium; and compounds of cesium and iodine which release elemental forms upon heating. The effect of control rod constituents on these fission products will be studied by performing tests both with and without control rod alloys. A series of key experiments, as defined by the 1 kg core-melt experiment, will be initiated with the 10 kg furnace. The aerosol/fission products released during these experiments will be transported into the CRI-II vessel and additional measurements made to define their aerodynamic behavior. In a cooperative effort with the TRAP-MELT Verification Tests (B0488) the 1 kg induction furnace and the plasma torch aerosol generator as well as use of the CRI-II facility will continue to be made available to that program as the schedule of the core-melt aerosol release project permits. Aerosol behavioral tests in steam will be continued in the large vessel of the NSPP. A series of tests using mixtures of  $U_3O_8$ ,  $Fe_2O_3$  and concrete aerosol will be started. These tests will utilize those mixtures of aerosols expected to be released over a range of assumed LWR accident sequences. A decision will be made, based upon the results of the core-melt aerosol release project, as to which of the aerosols from fuel cladding and control rods will be included in a series of final mixed-aerosol tests. Test plans and preliminary equipment designs will be made for tests of the efficacy of engineered safeguards, such as in-containment sprays and vented containment concepts, for removal of mixed aerosols from a steam environment.

FY 1985

Complete 10 kg core-melt aerosol release series emphasizing fission product element distribution between melt and released aerosol. Perform detailed characterization of aerodynamic behavior of released material in CRI-II vessel. Conduct test series illustrating effects of hydrogen burning on chemical form of fission product/aerosol material and on its ensuing behavior in containment. Continue series of mixed aerosol tests in the NSPP by adding aerosols noted to be released from fuel clad and control rod alloys during core-melt aerosol release tests. Construct equipment necessary and conduct tests defining the efficiency of in-containment spray systems, ice condenser pressure suppression systems, and filter systems in removing aerosols from containment systems.

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

B0121

PROJECT TITLE:

LWR Aerosol Release and Transport

ITEM NO.

3. WORK TO BE PERFORMED AND EXPECTED RESULTS (Cont'd):

Beyond FY 1985

Conduct core-melt aerosol release tests to develop additional data for final development/validation of TRAP-MELT code. Conduct special purpose aerosol tests in the NSPP to provide data for final validation of codes describing aerosol behavior in LWR containment. Support LMFBR efforts by completing  $U_3O_8/Na_2O_x$  aerosol studies halted in FY 81 when efforts were redirected toward LWR aerosol studies. Consolidate all tests and results for assessment of consequences of assumed accident sequences. Provide consultation to RES and be responsive to guidance for utilization of ART facilities and derived expertise in areas of core-melt source terms and aerosol behavior in containment.

4. DESCRIPTION OF ANY FOLLOW-ON EFFORTS:

This is a continuing research program.

5. RELATIONSHIP TO OTHER PROJECTS:

This program is coordinated with work at EMI-Columbus on aerosol code development, with molten metal-concrete work at Sandia, with the CSTF tests at HEDL and with aerosol work covered by NRC foreign exchange agreements.

6. REPORTING SCHEDULE:

Publications in FY 1983

1. R. E. Adams and M. L. Tobias, *Aerosol Release and Transport Program Quarterly Progress Report for October-December 1982*, NUREG/CR-2809, Vol. 4, ORNL/TM-8397/V4 (May 1983).
2. R. E. Adams and M. L. Tobias, *Aerosol Release and Transport Program Quarterly Progress Report for January-March 1983*, ORNL/TM-8849/V1.
3. R. E. Adams and M. L. Tobias, *Aerosol Release and Transport Program Quarterly Progress Report for April-June 1983*, ORNL/TM-8849/V2.
4. R. E. Adams and M. L. Tobias, *Aerosol Release and Transport Program Quarterly Progress Report for July-September 1983*, ORNL/TM-8849/V3.

Expected Future Reports

1. Quarterly Technical Progress Reports.
2. Data Record Report: NSPP Tests 401-406 (Draft to be submitted to NRC October 1983).
3. Data Record Report: NSPP Tests 501-505 (Draft to be submitted to NRC December 1983).

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

80121

PROJECT TITLE:

LWR Aerosol Release and Transport

ITEM NO.

6. REPORTING SCHEDULE:

Expected Future Reports

4. Basic Aerosol Experiments in CRI-II Facility (Draft to be submitted to NRC November 1983).
5. Core-Melt Aerosol Release Experiments with 1 kg Furnace (Draft to be submitted to NRC January 1984).
6. Core-Melt Aerosol Release Experiments with 10 kg Furnace (FY 1986).
7. Data Record Reports: NSPP Tests in Steam with Mixed Aerosols (FY 1985 and FY 1986).
8. Reports on Tests of Engineered Safety Features in NSPP (FY 1986 and FY 1987).

7. SUBCONTRACTOR INFORMATION:

Description and Justification	Cost Estimates			
	FY-1984	FY-1985	FY-1986	FY-1987
(a) Subcontract and Consultants				
Science Applications, Inc.;				
G. E. Creek. Consultant	20	25	25	25
to Core-Melt Project				
A. W. Castleman, Jr.,				
Pennsylvania State Univ.;	10	10	10	10
Consultant to ART Program				
in Aerosol Physics				
S. K. Loyalka, University	20	25	25	25
of Missouri; Consultant				
to NSPP Program in LWR				
Aerosols				
TOTAL	<u>50</u>	<u>60</u>	<u>60</u>	<u>60</u>

8. NEW CAPITAL EQUIPMENT REQUIRED:

None.

9. SPECIAL FACILITIES REQUIRED:

Existing facilities satisfactory for proposed work. No special facilities required.



PROJECT AND BUDGET PROPOSAL FOR NRC WORK

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ITEM NO.

10. CONFLICT OF INTEREST INFORMATION:

There are no known relationships between this organization or its employees with industries regulated by the NRC and suppliers thereof that might give rise to an apparent or actual conflict of interest regarding the work described in this proposal.

11. OBLIGATION ESTIMATES:

Operating Expenses	Obligation Estimates				
	FY-1983	FY-1984	FY-1985	FY-1986	FY-1987
(1) Cost Estimates	1272	1306	1590	1705	1815
(2) Goods and Services on Order - GSO Estimate	62	62*	515	545	545
Less: Uncosted Balance 9/30	<u>62</u>	<u>62</u>	<u>62</u>	<u>515</u>	<u>545</u>
GSO Change	0	0	453	30	0
(3) TOTAL OBLIGATIONS - CHANGE	<u>1272</u>	<u>1306</u>	<u>2043</u>	<u>1735</u>	<u>1815</u>

\*Please note that an additional \$350 k in FY-1984 is needed for adequate forward financing.

12. OTHER:

12(a). QUALITY ASSURANCE AND CONTROL: Approved ORNL Quality Assurance procedures are followed.

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

80121

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LWR Aerosol Release and Transport

ITEM NO.

12. OTHER (Cont'd):

12(b). COST AND MILESTONE CHARTS:

A. PROJECT COST SCHEDULE

<u>Costs</u>	<u>Prior Years</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>Total Estimated Cost</u>
Subtask A	538	357	350	425	500	600	2770
Subtask B	392	100	-	-	-	-	492
Subtask C	175	240	-	-	-	-	415
Subtask D	-	90	400	500	200	-	1190
Subtask E	1010	385	-	-	-	-	1395
Subtask F	-	100	450	300	-	-	850
Subtask G	-	-	106	365	200	200	871
Subtask H	-	-	-	-	805	1015	1820

B. 189 SUBTASK/MILESTONE CHARTS

See attached pages.

NO. 12(b)

SUBTASK/MILESTONE SCHEDULE

SUBTASK/MILESTONE	FY 83				FY84				FY 85				FY86	FY87	FY	FY	FY	BEYOND FY
	1	2	3	4	1	2	3	4	1	2	3	4						
<b>A. Management and Analysis</b>																		
1. Test plan for LWR experiments in NSPP (containment aerosols)		▲																
2. Test plan for core-melt aerosol experiments		▲																
3. Report on IMFBR mixed aerosol tests				(Completed)														
4. Test plan for engineered safety system tests in NSPP					△													
5. Steam behavior model for NSPP vessel					▽													
6. Scaling studies - Core Melt Project													▽					
<b>B. Basic Aerosol Experiments in CRI-II Facility</b>																		
1. Fuel rod component aerosols				▼														
2. Control rod component aerosols				(Completed)														
3. Core structural material aerosol				(Completed)														
4. Report on results					△													
<b>C. Core-Melt Aerosol Release Experiments - 1 kg Induction Furnace</b>																		
1. Aerosols from fuel/cladding				(Completed)														
2. Aerosol from fuel rods, control rods and core structural materials		▼																

TITLE: LWR Aerosol Release and Transport

ACTIVITY NO. 41 32 55 11 1  
1984 NO. 30121  
FTP/A NO. \_\_\_\_\_

NO. 12(b)

## SUBTASK/MILESTONE SCHEDULE

SUBTASK/MILESTONE	FY 83				FY 84				FY 85				FY 86	FY 87	FY	FY	FY	BEYOND FY
	1	2	3	4	1	2	3	4	1	2	3	4						
C. <u>Core-Melt Aerosol Release Experiments - 1 kg Induction Furnace (Cont'd)</u>																		
3. Aerosol from simulated fuel rod bundles with additive fission product elements				▼														
4. Report on results				▲														
D. <u>Core-Melt Aerosol Release Experiments - 10 kg Induction Furnace</u>																		
1. Development of 10 kg furnace and shakedown testing				△														
2. Aerosols from simulated bundles of fuel rods/control rods/core structural material; aerosol behavior in CRI-II													▼					
3. Aerosols from simulated bundles of fuel rods containing fission product additives/ control rods/core structural materials; aerosol behavior in CRI-II vessel													▼					
4. Test configuration same as (3) with hydrogen ignition													▼					
5. Report on results														▲				
E. <u>Single-Component Aerosol Tests in Steam (NSPP Facility)</u>																		
1. Fuel simulant ( $U_3O_8$ ) aerosol																		(Completed)
2. Core structural material aerosol ( $Fe_2O_3$ )																		(Completed)

TITLE: LMR Aerosol Release and Transport

ACTIVITY NO. 41 32 55 11.1  
199A NO. B0121  
OR  
FTP/A NO.

NO. 12(b)

## SUBTASK/MILESTONE SCHEDULE

SUBTASK/MILESTONE	FY 83				FY 84				FY 85				FY 86	FY 87	FY	FY	FY	BEYOND FY
	1	2	3	4	1	2	3	4	1	2	3	4						
<u>E. Single-Component Aerosol Tests in Steam (NSPP Facility) (Cont'd)</u>																		
3. Concrete aerosol	((Completed))																	
4. Data record report on U <sub>3</sub> O <sub>8</sub> aerosol tests				▽														
5. Data record report on Fe <sub>2</sub> O <sub>3</sub> aerosol tests					▽													
6. Data record report on concrete aerosol tests						▽												
<u>F. Mixed-Aerosols Tests in Steam (NSPP Facility)</u>																		
1. Fuel plus core structural material aerosols								▽										
2. Fuel, core structural material, and concrete aerosols												▽						
3. Fuel, core structural materials, concrete, and control rod aerosols												▽						
4. Data record report													△					
<u>G. Tests on Engineered Safety Systems (NSPP Facility)</u>																		
1. Design and construct test systems										△								
2. Conduct tests														△				
3. Report on results															△			

TITLE: LWR Aerosol Release and Transport

ACTIVITY NO. 41 32 55 11.1  
ISSA NO. 20121  
or  
FTP/A NO.



TITLE: LWR Aerosol Release and Transport

ACTIVITY NO. 41 32 55 11 1

189A NO. 30121

or

FTP/A NO.

NO. 12(b)	SUBTASK/MILESTONE SCHEDULE																
	SUBTASK/MILESTONE	FY 83				FY 84				FY 85				FY 86	FY 87	FY	BEYOND FY
		1	2	3	4	1	2	3	4	1	2	3	4				
H. <u>Final Tests: Core-Melt and Containment Facilities; Data for Complete Validation of Codes</u>																	
	</																