



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MAY 25 1983

MEMORANDUM FOR: Jesse L. Funches, Director  
Planning and Program Analysis Staff  
Office of Nuclear Reactor Regulation

FROM: Roger J. Mattson, Director  
Division of Systems Integration  
Office of Nuclear Reactor Regulation

SUBJECT: REPROGRAMING OF FUNDS FROM A-3705 TO A-3706

Due to changes in the schedule of severe-accident activities within DSI, I want to reprogram \$20,000 of FY83 Funds from A-3705, "Safety Evaluation of Core-Melt Accident: CESSAR-FDA; WESTINGHOUSE STANDARD PLANT-FDA" to A-3706, "Safety Evaluation of Core-Melt Accidents: Mark-I BWRs." With this reprogramming adjustment, the FY83 Approved Funding for A-3705 would be \$80K (\$50K of which has already been committed) and for A-3706 would be \$120K (\$120K committed as per attached letter). I believe this use of funds within the severe accident program will enable the contractor to keep better pace with the required schedule milestones.

*Roger J. Mattson*

Roger J. Mattson, Director  
Division of Systems Integration  
Office of Nuclear Reactor Regulation

cc: B. Grenier  
R. Swisher

A3706 120K should allow <sup>1 1/2 mo</sup> 1mo. carryover in accordance with 4/12/83 proposal  
A3705 8K should allow 1/2 mo carryover in accordance with 2/28/83 proposal

DSI	A3706	DU=55	+20	PPAS	DU=53	N0010	-20
DSI	A3705	DU=44	-20	PPAS	DU=41	N0016	+20

8505230080 841002  
PDR FDIA  
SHOLLYB4-243 PDR



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

A3706

MAY 25 1983

MEMORANDUM FOR: Jesse L. Funches, Director  
Planning and Program Analysis Staff  
Office of Nuclear Reactor Regulation

FROM: Roger J. Mattson, Director  
Division of Systems Integration  
Office of Nuclear Reactor Regulation

SUBJECT: REPROGRAMING OF FUNDS FROM A-3705 TO A-3706

Due to changes in the schedule of severe-accident activities within DSI, I want to reprogram \$20,000 of FY83 Funds from A-3705, "Safety Evaluation of Core-Melt Accident: CESSAR-FDA; WESTINGHOUSE STANDARD PLANT-FDA" to A-3706, "Safety Evaluation of Core-Melt Accidents: Mark-I BWRs." With this reprogramming adjustment, the FY83 Approved Funding for A-3705 would be \$80K (\$50K of which has already been committed) and for A-3706 would be \$120K (\$120K committed as per attached letter). I believe this use of funds within the severe accident program will enable the contractor to keep better pace with the required schedule milestones.

*Roger J. Mattson*

Roger J. Mattson, Director  
Division of Systems Integration  
Office of Nuclear Reactor Regulation

cc: B. Grenier  
R. Swisher

## PPAS ACTION SUMMARY SHEET

DATE RECEIVED BY PPAS:

8/17/83

FIN(S): B8657

TYPE OF ACTION:

FY83  
B8657 41 +30 DSI  
A3705 41 -30 DSIFY84  
A3705 41 +30 DSI  
N0221 42 -30 DSI

PPAS REMARKS, COMMENTS, IDENTIFICATION OF DEFICIENCIES:

B8657 41 +20 DSI  
N0221 42 -20 DSI

DOCUMENT(S) MISSING FROM FILE

DATE ACTION COMPLETED BY PPAS:

5/18/83

OFFICE OF NUCLEAR REACTOR REGULATION  
PROJECT IDENTIFICATION SUMMARY (PIDS)

TITLE: Evaluation of MARK-I and NREP Studies

*Designs Under Severe Accident Conditions*

FIN: New  
(A3706)

CONTRACT NUMBER (Non-DOE):

B&R NUMBER:  
20-19-50-53-3

NRR OPERATING PLAN  
INDEX NO.:

DIVISION: DSI

BRANCH: RSB

PROJECT MANAGER: J. Meyer

CONTRACTOR: BNL

CONTRACT METHOD: DOE Work Order

CITY, STATE (Non-DOE):

SMALL BUSINESS/MINORITY CONTRACT (Non-DOE):

SUB-CONTRACTOR(S):

YES / / NO / / AMOUNT \$

PROJECTED PERIOD OF PERFORMANCE

START: ~~10/1/82~~

END: ~~10/30/84~~

*(COA) 5/15/83*

*9/30/84*

PROJECTED FINANCIAL DATA (000's)

PROJECT -			FY 1983			
TOTAL VALUE	TOTAL OBLIG	TOTAL COSTED	CARRY OVER	FY 83 BUDG	FY 84 BUDG	FY 85 BUDG
<i>270</i>	<i>265</i>			<i>100K</i>	<i>110K</i>	
				<i>120</i>	<i>145K</i>	

APPLICATION (RELATE THE PROJECT TO A SPECIFIC PLANNED ACCOMPLISHMENT)

Analyses of MARK-I BWR's (Multi-plant category) for severe accidents as per SECY 82-1A requirements.

Containment Analyses as part of NREP implementation program required assessments as per SECY-82-1A.

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WORK REQUIREMENTS (DESCRIBE WHAT IS TO BE PERFORMED)

The following analyses and assessments will be performed by this project: core-melt accident progressions with emphasis on containment loadings (pressure and temperature) and containment failure characteristic; evaluation and release of radiological source term during core-melt accidents from fuel, primary system, and containment system; radiological consequences to the public from core-melt accidents. End products include reports documenting analyses; reviews licensee submittals; input to staff licensing actions related to degraded and/or molten- accidents; preparation of input for anticipated hearing.

Products: NUREG 1 CR (FY 1983)  
NUREG 1 CR (FY 1984)

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MODIFICATIONS (DESCRIBE MAJOR CHANGES TO THE PROJECT)

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COMPLETE AS APPLICABLE -

Recommended:  
PROJECT MANAGER

Endorsed:  
SECTION LDR

Endorsed:  
BRANCH CHF

Endorsed:  
ASST DIR.

Approved:  
DIV. DIR

\_\_\_\_\_  
(Initials)

\_\_\_\_\_  
(Date)



OFFICE OF NUCLEAR REACTOR REGULATION  
PROJECT IDENTIFICATION SUMMARY (PIDS)

Revised 5/10/83  
Revised 5/18/83

NOTE: Title Change

TITLE: ~~Review of PRAs for Standard Plant Designs~~ *Safety Evaluation of Core-Melt Accidents: CESSAR-FDA* FIN: A3705  
CONTRACT NUMBER (Non-DOE): B&R NUMBER: *Westinghouse Standard Plant FDA* NRR OPERATING-PLAN INDEX NO.:

DIVISION: DSI BRANCH: RSB PROJECT MANAGER: J. Meyer

CONTRACTOR: BNL CONTRACT METHOD: DOE Work Order  
CITY, STATE (Non-DOE): SMALL BUSINESS/MINORITY CONTRACT (Non-DOE):  
SUB-CONTRACTOR(S): YES / / NO / / AMOUNT \$

PROJECTED PERIOD OF PERFORMANCE START: ~~1/1/83~~ (est) END: 9/30/85  
*4/13/83*

PROJECTED FINANCIAL DATA (000's)

PROJECT -			FY 1983			
TOTAL VALUE	TOTAL OBLIG	TOTAL COSTED	CARRY OVER	FY 83 BUDG	FY 84 BUDG	FY 85 BUDG
<del>525</del> 600				<del>150</del> 10080	<del>175</del> 280	<del>250</del> 240

APPLICATION (RELATE THE PROJECT TO A SPECIFIC PLANNED ACCOMPLISHMENT)

Review of PRA studies for:

- CESSAR System 80 FDA review
- Westinghouse Standard Plant FDA review

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WORK REQUIREMENTS (DESCRIBE WHAT IS TO BE PERFORMED)

The following analyses and assessments will be performed by this project: core-melt accident progressions with emphasis on containment loadings (pressure and temperature) and containment failure characteristic; evolution and release of radiological source term during core-melt accidents from fuel, primary system, and containment system; radiological consequences to the public from core-melt accidents; and safety benefit from features to mitigate the consequences of core melt accidents. To support these analyses, the contractor will be required to maintain and modify the MARCH, CORRAL, MATADOR and CRAC Codes as required in light of the current RES MARCH-2 and MELCOR development program and assimilate results of phenomenological studies (RES, IDOOR, foreign, and DOE) and engineering research programs. In addition, an overall integrated assessment which considers all of these factors will be prepared for design. Products: miscellaneous letter reports for input to SERs, input to hearing testimony, if required.

Major Product: (2) NUREG/CRs - FY 1985.

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MODIFICATIONS (DESCRIBE MAJOR CHANGES TO THE PROJECT)

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COMPLETE AS APPLICABLE -

Recommended:  
PROJECT MANAGER

Endorsed:  
SECTION LDR

Endorsed:  
BRANCH CHF

Endorsed:  
ASST DIR.

Approved:  
DIV. DIR

\_\_\_\_\_  
(Initials)

\_\_\_\_\_  
(Date)

DOE SOURCE SELECTION JUSTIFICATION

A-3706

4/5/83

2. FIN TITLE Safety Evaluation of Core-Melt Accidents;  
Mark-I BWRs

3. SELECTED SOURCE

Brookhaven National Laboratory (BNL)

4. ORGANIZATION (Office, Division and Branch)

Office of Nuclear Reactor Regulation, Division of Systems Integration, Reactor Systems Branch

5. SIGNATURE—PROJECT MANAGER

DATE

6. TYPED NAME—PROJECT MANAGER

James Meyer (P-1122C; x24754)

4/7/83

7. BASIS FOR SELECTION (Describe the factor(s) used to justify the basis for selection, see Bulletin 1401-1)

BNL can provide us with the required technical support because they have been intimately involved with severe accident (degraded core/core-melt) analysis and assessment for a large variety of nuclear power plants for the past nine (9) years. This involvement has led to a unique level of expertise in the areas of severe accident phenomenology and accident progressions through the reactor and containment systems and on into the site environment. This background makes BNL the most appropriate source for these services.

In addition:

- o BNL has large computer facilities which are required for the complex computer analysis;
- o BNL has no conflict of interest problem;
- o BNL has expertise in areas supportive of the direct contractual activities, e.g., (1) Probabilistic Risk Assessment, (2) Structural Analysis, and (3) RES research program.

8. APPROVAL (Initials and Signature)

DATE

Brian W. Sheron/R. Wayne Houston

4/5/83

9. APPROVED (Signature of Office Director or Designee)

DATE

R. J. Mattson

4/5/83

*R. J. Mattson*



NRR TECHNICAL ASSISTANCE PROGRAM

PPAS ACTION SUMMARY SHEET

DATE RECEIVED BY PPAS:

5/26/83

redirect

FIN(S):

A3706

TYPE OF ACTION:

Accepts Proposal  
Inc Fund

FY83

DSI A3706 DU=55 +20  
DSI A3705 DU=44 -20  
PPAS N0010 DU=53 -20  
PPAS N0016 DU=41 +20

FY84

DSI A3706 DU=55 +15-  
A3705 DU=44 +20  
N0221 DU=42 -35

PPAS REMARKS, COMMENTS, IDENTIFICATION OF DEFICIENCIES:

DU=55 FY85 A3706  
DU=55  
-10  
balance 0

DOCUMENT(S) MISSING FROM FILE

DATE ACTION COMPLETED BY PPAS:

6/2/83

TPN-265

Mr. Gregory J. Ogeka, Chief  
Administrative Branch  
Brookhaven Area Office  
U. S. Department of Energy  
Upton, New York 11973

OCT 20 1983

Dear Mr. Ogeka:

SUBJECT: BNL TECHNICAL ASSISTANCE TO THE DIVISION OF SYSTEMS  
INTEGRATION, NRR, NRC - "SAFETY EVALUATION OF CORE-  
MELT ACCIDENTS: CESSAR-FDA; WESTINGHOUSE STANDARD  
PLANT-FDA" (FIN-83705)

The enclosed NRC Form 173, Standard Order for DOE Work, is hereby submitted in accordance with Section III.B.2 of the DOE/NRC Memorandum of Understanding, dated February 24, 1978.

Funding authorization in the amount of \$50,000 was provided with my letter dated April 15, 1983. In accordance with the proposal dated March 7, 1983, the enclosed order provides additional funding authorization in the amount of \$150,000 to continue work on the project. The balance of the funds for completion of the project will be provided incrementally at a later date. Please note that the NRC Project Manager has been changed to Warren Lyon. He can be reached on FTS 492-9405.

If you have any questions concerning the acceptance of this order, please contact Mrs. Sybil Boyd on FTS 492-7685.

Sincerely,

Original signed by  
Roger J. Mattson

Roger J. Mattson, Director  
Division of Systems Integration  
Office of Nuclear Reactor Regulation

Enclosure: NRC Form 173

cc: T. Romano, BNL  
W. T. Pratt, BNL  
H. Rauch, DOE-CH  
R. Barber, DOE-HQ

8311080310 XA

lp.

OFFICE	WLyons	DSI:RSB	DSI:RSB	DSI:AD:PS	DSI:AD:PS	NRR:PPAS	DSI:D
URNAME	WLyons:nc	JRosenthal	BSheron	RHouston	JBoyce	BGrenier	RMattson
DATE	10/14/83	10/14/83	10/17/83	10/17/83	10/17/83	10/17/83	10/17/83

OFFICIAL RECORD COPY

USGPO: 1981-330-91

<b>NRC FORM 173</b> (5-79)		U.S. NUCLEAR REGULATORY COMMISSION		ORDER NUMBER 20-84-013	
<b>STANDARD ORDER FOR DOE WORK</b>				DATE OCT 20 1983	
ISSUED TO: (DOE Office) Brookhaven Area Office		ISSUED BY: (NRC Office) Office of Nuclear Reactor Regulation, DSI		ACCOUNTING CITATION APPROPRIATION SYMBOL 31X0200.204	
PERFORMING ORGANIZATION AND LOCATION Brookhaven National Laboratory Upton, NY				B&R NUMBER 20-19-40-41-3	
				FIN NUMBER A3705-4	
FIN TITLE    Safety Evaluation of Core-Melt Accidents: CESSAR-FDA Westinghouse Standard Plant-FDA				WORK PERIOD - THIS ORDER FIXED <input checked="" type="checkbox"/> ESTIMATED <input type="checkbox"/> FROM:                      TO: 04/25/83                  08/31/85	
OBLIGATION AVAILABILITY PROVIDED BY:					
A. THIS ORDER				\$ 150,000	
B. TOTAL OF ORDERS PLACED PRIOR TO THIS DATE WITH THE PERFORMING ORGANIZATION UNDER THE SAME "APPROPRIATION SYMBOL" AND THE FIRST FOUR DIGITS OF THE "B&R NUMBER" CITED ABOVE.				\$ 444,000	
C. TOTAL ORDERS TO DATE (TOTAL A & B)				\$ 594,000	
D. AMOUNT INCLUDED IN "C" APPLICABLE TO THE "FIN NUMBER" CITED IN THIS ORDER.				\$ 150,000	
FINANCIAL FLEXIBILITY: <input checked="" type="checkbox"/> FUNDS WILL NOT BE REPROGRAMMED BETWEEN FINS. LINE D CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED. <input type="checkbox"/> FUNDS MAY BE REPROGRAMMED NOT TO EXCEED $\pm 10\%$ OF FIN LEVEL UP TO \$50K. LINE C CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED.					
STANDARD TERMS AND CONDITIONS PROVIDED DOE ARE CONSIDERED PART OF THIS ORDER UNLESS OTHERWISE NOTED.					
ATTACHMENTS: THE FOLLOWING ATTACHMENTS ARE HEREBY MADE A PART OF THIS ORDER: <input type="checkbox"/> STATEMENT OF WORK <input type="checkbox"/> ADDITIONAL TERMS AND CONDITIONS <input type="checkbox"/> OTHER			SECURITY: <input checked="" type="checkbox"/> WORK ON THIS ORDER IS NOT CLASSIFIED. <input type="checkbox"/> WORK ON THIS ORDER INVOLVES CLASSIFIED INFORMATION. NRC FORM 187 IS ATTACHED.		
REMARKS (Reference the proposal by number and date, and indicate if the attached statement of work modifies the DOE proposal): This order provides incremental funds for continuation of work in accordance with the BNL proposal dated March 7, 1983 and changes the Project Manager from J. Meyer to W. Lyon.					
After acceptance, please send to the NRC Office of Resource Management, ATTN: D. Dandois, and provide a copy to the Office of Nuclear Reactor Regulation, ATTN: C. Paugh.					
ISSUING AUTHORITY			ACCEPTING ORGANIZATION		
SIGNATURE Roger J. Mattson, Director <i>RJM</i>			SIGNATURE		
TITLE Division of Systems Integration, NRR			TITLE		
DATE 10/27/83			DATE		

NRC FORM 173 (5-79)

8311080314 XA  
 3pp.

<b>NRC FORM 173</b> (5-79)		U.S. NUCLEAR REGULATORY COMMISSION		ORDER NUMBER 20-84-013	
<b>STANDARD ORDER FOR DOE WORK</b>				DATE OCT 20 1983	
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PERFORMING ORGANIZATION AND LOCATION Brookhaven National Laboratory Upton, NY				B&R NUMBER 20-19-40-41-3	
				FIN NUMBER A3705-4	
FIN TITLE Safety Evaluation of Core-Melt Accidents: CESSAR-FDA; Westinghouse Standard Plant-FDA				WORK PERIOD - THIS ORDER FIXED <input checked="" type="checkbox"/> ESTIMATED <input type="checkbox"/>	
				FROM: 04/25/83 TO: 08/31/85	
OBLIGATION AVAILABILITY PROVIDED BY:					
A. THIS ORDER				\$ 150,000	
B. TOTAL OF ORDERS PLACED PRIOR TO THIS DATE WITH THE PERFORMING ORGANIZATION UNDER THE SAME "APPROPRIATION SYMBOL" AND THE FIRST FOUR DIGITS OF THE "B&R NUMBER" CITED ABOVE.				\$ 444,000	
C. TOTAL ORDERS TO DATE (TOTAL A & B)				\$ 594,000	
D. AMOUNT INCLUDED IN "C" APPLICABLE TO THE "FIN NUMBER" CITED IN THIS ORDER.				\$ 150,000	
FINANCIAL FLEXIBILITY:					
<input checked="" type="checkbox"/> FUNDS WILL NOT BE REPROGRAMMED BETWEEN FINs. LINE D CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED.					
<input type="checkbox"/> FUNDS MAY BE REPROGRAMMED NOT TO EXCEED $\pm 10\%$ OF FIN LEVEL UP TO \$50K. LINE C CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED.					
STANDARD TERMS AND CONDITIONS PROVIDED DOE ARE CONSIDERED PART OF THIS ORDER UNLESS OTHERWISE NOTED.					
ATTACHMENTS: THE FOLLOWING ATTACHMENTS ARE HEREBY MADE A PART OF THIS ORDER: <input type="checkbox"/> STATEMENT OF WORK <input type="checkbox"/> ADDITIONAL TERMS AND CONDITIONS <input type="checkbox"/> OTHER			SECURITY: <input checked="" type="checkbox"/> WORK ON THIS ORDER IS NOT CLASSIFIED. <input type="checkbox"/> WORK ON THIS ORDER INVOLVES CLASSIFIED INFORMATION. NRC FORM 187 IS ATTACHED.		
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After acceptance, please send to the NRC Office of Resource Management, ATTN: D. Dandois, and provide a copy to the Office of Nuclear Reactor Regulation, ATTN: C. Paugh.					
ISSUING AUTHORITY			ACCEPTING ORGANIZATION		
SIGNATURE Roger J. Mattson, Director <i>RJM</i>			SIGNATURE <i>GREGORY J. KOGEKA</i>		
TITLE Division of Systems Integration, NRR			TITLE GREGORY J. KOGEKA, CHIEF ADMINISTRATIVE BRANCH		
DATE 11/4/83			DATE 11/4/83		



NRR TECHNICAL ASSISTANCE PROGRAM

PPAS ACTION SUMMARY SHEET

DATE RECEIVED BY PPAS:

10/18/83

FIN(S):

A3705

TYPE OF ACTION:

Incremental funds  
Project Manager Change

PPAS REMARKS, COMMENTS, IDENTIFICATION OF DEFICIENCIES:

DU=41

TPU-600

DOCUMENT(S) MISSING FROM FILE

DATE ACTION COMPLETED, BY PPAS:

10/20/83



NRR TECHNICAL ASSISTANCE PROGRAM

PPAS ACTION SUMMARY SHEET

DATE RECEIVED BY PPAS: 10/24/72

FIN(S): A3705

TYPE OF ACTION:

PPAS REMARKS, COMMENTS, IDENTIFICATION OF DEFICIENCIES:

DOCUMENT(S) MISSING FROM FILE

DATE ACTION COMPLETED BY PPAS: 10/25/72