

JCN - J5167

**MONTHLY LETTER STATUS REPORT
For April 2002**

Project Title: Spent Fuel Review Assistance
Period of Performance: February 3, 1997 - September 30, 2003
JCN: J5167
PNNL Project Manager: M. A. Khaleel (509-375-2438)
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Richland, WA 99352
Facsimile: 509-375-6605
NRC Project Manager: P. Kinney (301-415-7805)
NRC Technical Monitor: C. Bajwa (301-415-1237)

Project Objective: The objective of this project is to conduct safety and environmental reviews and development of regulatory guidance related to Independent Spent Fuel Storage Installations and Dry Cask Storage facilities.

Task Orders 1, 2, 3, 4, 5, 6, 7, 8, & 9 COMPLETED

Task #10

Title: ADVANCED NUHOMS THERMAL ANALYSIS

JCN: J5167

PNNL Task Manager: T. E. Michener (509-375-2162)
NRC Technical Monitor: C. Bajwa (301-415-1237)

OBJECTIVE

The objective of this task is to perform thermal-hydraulic calculations of the Advanced NUHOMS cask system design in order to determine the thermal responses of the Pressurized Water Reactor (PWR) Westinghouse 14x14 fuel cladding, canister components (24PT1-DSC), and the Advanced Horizontal Storage Module (AHSM) under normal, off-normal, and accident conditions which also includes transfer, vacuum-drying and backfilling operations, and conditions as directed by the SRP (NUREG-1536).

PROGRESS DURING REPORTING PERIOD

During the month of April PNNL continued to provide support for the TN 32 assembly DSC application. This included performing sensitivity analyses with the COBRA-SFS and ANSYS computer codes to try and provide insight as to why the applicants temperature predictions were over 100°F higher than our predictions. Our conclusion was that the TN model was incorrectly formulated.

The Star-CD tip over of the Hi-Storm cask was completed and the results provided to Michael Waters of the NRC

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TRAVEL

None.

REPORT, PAPERS, AND PUBLICATIONS

None.

ANTICIPATED AND ENCOUNTERED PROBLEM AREAS

None.

PLANS FOR NEXT REPORTING PERIOD

April will be the last month for activities under this task. Any additional supporting work in this area will be performed under Task 12.

FINANCIAL STATUS AND VARIANCE ANALYSIS

See attached financial status report. The cost and funding information reported on the Cost Status by Element Table includes the necessary adjustments to account for the DOE Adder. All other cost information reflects only the Pacific Northwest National Laboratory costs and does not include the DOE Adder.

No additional funds remain on this task order.

PROPERTY AND SOFTWARE

None.

Task #11

Title: THERMAL-HYDRAULIC ANALYSIS CODE VERIFICATION TECHNICAL SUPPORT

JCN: J5167

PNNL Task Manager:	T. E. Michener	(509-375-2162)
NRC Technical Monitor:	C. Bajwa	(301-415-1237)

OBJECTIVE

The objective of this task is to provide SFPO technical staff assistance in validating the ANSYS computer program for thermal-hydraulic analyses of dry storage casks and to provide technical assistance in the area of thermal-hydraulic modeling techniques.

PROGRESS DURING REPORTING PERIOD

PNNL continued to provide support to NRC staff on general ANSYS modeling approaches and potential new work scope, in addition to providing technical reviews on an as requested basis.

TRAVEL

None.

REPORT, PAPERS, AND PUBLICATIONS

None.

ANTICIPATED AND ENCOUNTERED PROBLEM AREAS

None.

PLANS FOR NEXT REPORTING PERIOD

This task will be completed by May 1, 2002. All new support in this area will be performed under Task 12.

FINANCIAL STATUS AND VARIANCE ANALYSIS

See attached financial status report. The cost and funding information reported on the Cost Status by Element Table includes the necessary adjustments to account for the DOE Adder. All other cost information reflects only the Pacific Northwest National Laboratory costs and does not include the DOE Adder.

Funds currently allocated to this task have been spent.

PROPERTY AND SOFTWARE

None.

Task #12

Title: Development and Analysis of Spent Fuel and Radioactive Material Cask Models for Casework Evaluations

JCN: J5167

PNNL Task Manager: T. E. Michener (509-375-2162)
NRC Technical Monitor: C. Bajwa (301-415-1237)

OBJECTIVE

The objective of this task order is to provide package analyses in support of ongoing casework using the ANSYS, ANSYS LS-DYNA FEA, COBRA-SFS, and Star-CD packages.

PROGRESS DURING REPORTING PERIOD

Work on this new task was initiated in April. PNNL staff performed a review of the MP-197 SAR, latest round of thermal related RAI's issued to the NRC, and the associated NCT and HAC analytical models provided by Transnuclear.

Comments were provided on two line items lacking proper conservatism, followed by reviewed Transnuclear's response concerning these items. An additional item in the form of a model error was discovered on the last submittal. TN has yet to correct and submit for final review.

We also reviewed/commented on the MP-197 SER documentation generated by NRC staff. Development of the Holtec HiStar 100 thermal model to be used for the Baltimore tunnel fire evaluation and future HAC criteria establishment was initiated in April.

TRAVEL

None.

REPORT, PAPERS, AND PUBLICATIONS

None.

ANTICIPATED AND ENCOUNTERED PROBLEM AREAS

None.

PLANS FOR NEXT REPORTING PERIOD

We will continue to support all ongoing efforts describe above and will respond to requests for support as directed by the NRC technical monitor.

FINANCIAL STATUS AND VARIANCE ANALYSIS

See attached financial status report. The cost and funding information reported on the Cost Status by Element Table includes the necessary adjustments to account for the DOE Adder. All other cost information reflects only the Pacific Northwest National Laboratory costs and does not include the DOE Adder.

PROPERTY AND SOFTWARE

None.

SPENT FUEL REVIEW ASSISTANCE

M. A. Khaleel
(509) 375-2438
April 2002

	<u>Current Month</u>	<u>FYTD</u>	<u>Cumulative To Date</u>
I. Direct Staff Labor Hours	284.0	2,189.5	13,519.7
II. Direct Salaries	16,102	131,844	698,505
Materials & Services (Excluding ADP)	0	1,498	6,380
ADP Support	0	0	0
Subcontracts	0	0	57,316
Travel Expenses	0	3,274	44,083
Indirect Labor Costs	6,804	58,223	306,085
Other Direct Costs	1,261	10,687	72,902
G&A, Nuclear, and Serv Assmt	10,918	92,217	516,629
Total PNNL Costs	<u>\$35,085</u>	<u>\$297,743</u>	<u>\$1,701,899</u>
Percent Spent		70%	93%
Total Costs to NRC (Includes DOE Adder)	<u>\$36,138</u>	<u>\$306,675</u>	<u>\$1,756,734</u>

III. Overall Funding Status

PNNL Available Funding (Adjusted: Reflects DOE Adder Initiated in FY92)

<u>Total JCN Funding</u>	<u>Prior FY Carryover</u>	<u>FY02 Projected Funding Level</u>	<u>FY02 Funds Received to Date</u>	<u>FY012Funding Bal. Needed</u>
\$1,829,741	\$134,706	TBD	\$290,880	TBD

NRC Funding Provided to DOE

<u>Total JCN Funding</u>	<u>Prior FY Carryover</u>	<u>FY02 Projected Funding Level</u>	<u>FY02 Funds Received to Date</u>	<u>FY02 Funding Bal. Needed</u>
\$1,888,100	\$138,747	TBD	\$299,606	TBD

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Task Funding Status (PNNL dollars)

Task No.	NRC \$ Task Funds	PNNL \$ Task Funds	NRC Funds Rec To Date	PNNL Funds Rec. To Date	Monthly Costs	Cumulative Costs	Remaining Funds	Additional NRC Funds Requested
Unobligated	0	0	0	0	0	0	0	0
01	18,089	17,343	18,089	17,343	0	17,343	0	0
02	50,729	48,638	50,729	48,638	0	48,638	0	0
Sub-Total	68,818	65,981	68,818	65,981	0	65,981	0	0

NOTE: PNNL received a stop work order on the tasks above.

03	191,974	185,743	191,974	185,743	0	184,880	863	0
04	50,400	48,322	50,400	48,322	0	48,291	31	0
05	298,139	288,169	298,139	288,169	0	288,164	5	0
06	113,503	110,197	113,503	110,197	0	110,197	0	0
07	155,400	150,874	155,400	150,873	0	150,785	88	0
08	165,300	160,485	165,300	160,485	0	159,744	741	0
09	352,800	342,524	352,800	342,524	0	342,515	9	0
10	228,200	221,553	228,200	221,553	9,344	221,551	2	0
11	154,700	150,194	113,564	110,256	6,200	110,251	5	41,136
12	200,000	194,175	150,000	145,631	19,541	19,541	126,090	50,000
Total	1,979,234	1,918,218	1,888,100	1,829,741	35,085	1,701,899	127,835	91,136

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Task 09

CSFM Methodology for Calculating Cladding Temperature Limits for High Burnup

1. Financial Summary

PNNL Available Funding (Adjusted: Reflects DOE Adder Initiated in FY92)

Authorized Cost Ceiling	Funding Obligation	Period Costs	Total Costs to Date	Cumulative Percent Spent
\$342,524	\$342,524	\$0	\$342,515	100.0%

NRC Funding Provided to DOE

Authorized Cost Ceiling	Funding Obligation	Period Costs	Total Costs to Date	Cumulative Percent Spent
\$352,800	\$352,800	\$0	\$352,790	100.0%

2. Task Cost Status:

	Current Month	Fiscal Year to Date	Cumulative To Date
Direct Staff Labor Hours	0	39	2,625
Labor	\$0	6,071	\$313,388
Travel Expenses	0	0	9370
Service Equipment Centers	0	0	\$530
Other Intermediate Costs	0	0	\$0
Value Added Overheads	0	0	\$0
Services - Other RL Contractors	0	0	\$0
Procurements	0	0	\$439
Subcontracts	0	0	\$18,786
Total PNNL Costs	\$0	\$6,071	\$342,515
Total Costs to NRC	\$0	\$6,253	\$352,790

(Includes DOE Adder)

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Task 10

Advanced NUHOMS Thermal Analysis

1. Financial Summary

PNNL Available Funding (Adjusted: Reflects DOE Adder Initiated in FY92)

<u>Authorized</u> <u>Cost Ceiling</u>	<u>Funding</u> <u>Obligation</u>	<u>Period Costs</u>	<u>Total</u> <u>Costs to Date</u>	<u>Cumulative</u> <u>Percent Spent</u>
\$221,553	\$221,553	\$9,344	\$221,551	100.0%

NRC Funding Provided to DOE

<u>Authorized</u> <u>Cost Ceiling</u>	<u>Funding</u> <u>Obligation</u>	<u>Period Costs</u>	<u>Total</u> <u>Costs to Date</u>	<u>Cumulative</u> <u>Percent Spent</u>
228,200	228,200	\$9,624	\$228,199	100.0%

2. Task Cost Status:

	<u>Current</u> <u>Month</u>	<u>Fiscal</u> <u>Year to Date</u>	<u>Cumulative</u> <u>To Date</u>
Direct Staff Labor Hours	64.0	1,185.2	1,541.2
Labor	\$9,337	\$173,324	\$219,381
Travel Expenses	0	229	\$229
Service Equipment Centers	0	76	\$76
Other Prime Costs	7	7	\$7
Value Added Overheads	0	0	\$0
Services - Other RL Contractors	0	0	\$0
Procurements	0	1,149	\$1,857
Subcontracts	0	0	\$0
Total PNNL Costs	\$9,344	\$174,786	\$221,551
Total Costs to NRC	\$9,624	\$180,030	\$228,199
(Includes DOE Adder)			

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Task 11

Thermal Hydraulic Analysis Code Verification Technical Support

1. Financial Summary

PNNL Available Funding (Adjusted: Reflects DOE Adder Initiated in FY92)

<u>Authorized</u>	<u>Funding</u>		<u>Total</u>	<u>Cumulative</u>
<u>Cost Ceiling</u>	<u>Obligation</u>	<u>Period Costs</u>	<u>Costs to Date</u>	<u>Percent Spent</u>
\$150,194	\$110,256	\$6,200	\$110,251	100.0%

NRC Funding Provided to DOE

<u>Authorized</u>	<u>Funding</u>		<u>Total</u>	<u>Cumulative</u>
<u>Cost Ceiling</u>	<u>Obligation</u>	<u>Period Costs</u>	<u>Costs to Date</u>	<u>Percent Spent</u>
\$154,700	113,564	\$6,386	\$113,557	100.0%

2. Task Cost Status:

	<u>Current</u>	<u>Fiscal</u>	<u>Cumulative</u>
	<u>Month</u>	<u>Year to Date</u>	<u>To Date</u>
Direct Staff Labor Hours	43.0	788.3	891.8
Labor	\$6,192	\$92,017	\$104,922
Travel Expenses	0	4,772	\$4,772
Service Equipment Centers	0	0	\$0
Other Prime Costs	8	8	\$8
Value Added Overheads	0	0	\$0
Services - Other RL Contractors	0	0	\$0
Procurements	0	548	\$548
Subcontracts	0	0	\$0
Total PNNL Costs	\$6,200	\$97,345	\$110,251
Total Costs to NRC	\$6,386	\$100,265	\$113,557
(Includes DOE Adder)			

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Task 12 - Development of Analysis of Spent Fuel & Radioactive Material Cask
Cask Models for Casework Evaluations

1. Financial Summary

PNNL Available Funding (Adjusted: Reflects DOE Adder Initiated in FY92)

Authorized Cost Ceiling	Funding Obligation	Period Costs	Total Costs to Date	Cumulative Percent Spent
\$194,175	\$145,631	\$19,541	\$19,541	13.4%

NRC Funding Provided to DOE

Authorized Cost Ceiling	Funding Obligation	Period Costs	Total Costs to Date	Cumulative Percent Spent
\$200,000	150,000	\$20,127	\$20,127	13.4%

2. Task Cost Status:

	Current Month	Fiscal Year to Date	Cumulative To Date
Direct Staff Labor Hours	177.0	177.0	177.0
Labor	\$19,541	\$19,541	\$19,541
Travel Expenses	0	0	\$0
Service Equipment Centers	0	0	\$0
Other Intermediate Costs	0	0	\$0
Value Added Overheads	0	0	\$0
Services - Other RL Contractors	0	0	\$0
Procurements	0	0	\$0
Subcontracts	0	0	\$0
Total PNNL Costs	\$19,541	\$19,541	\$19,541
Total Costs to NRC	\$20,127	\$20,127	\$20,127

(Includes DOE Adder)

