
PNL Nuclear Waste Technology Programs

Monthly Management Report



January 1990

Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute



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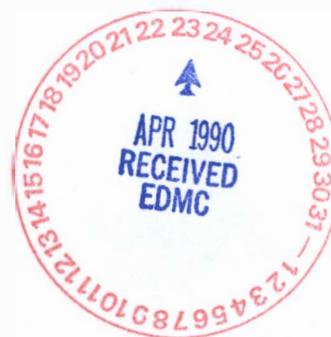
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PNL NUCLEAR WASTE TECHNOLOGY PROGRAMS
MONTHLY MANAGEMENT REPORT

K. A. Borgeson and K. A. Parnell, Compilers

January 1990



Pacific Northwest Laboratory
Richland, Washington 99352

PREFACE

This monthly management report provides the technical progress and status of commitments and budgets for Waste Management programs at Pacific Northwest Laboratory (PNL). These programs are conducted for the U.S. Department of Energy's (DOE) Office of Assistant Secretary for Nuclear Energy (NE) and the Office of Assistant Secretary for Defense Programs (DP). The DOE programs are managed at DOE-Richland through the Office of the Assistant Manager for Operations.

At PNL, the Waste Technology Center (J. L. McElroy) is responsible for DOE waste technology programs. Management responsibility for DP environmental programs is assigned to the Office of Hanford Environment (M. S. Hanson).

This report is one of two that cover nuclear waste management activities at PNL. The other report is:

- Office of Civilian Radioactive Waste Management Programs, PNL-2710-b series.

EXECUTIVE SUMMARY

Contaminated Materials Treatment Project - Modifications to several feed system and sampler/decontamination system jumper drawings were completed. The revised drawings were transmitted to West Valley Nuclear Services (WVNS). Results from the first set of tests on canister labels were provided to WVNS. The tests showed that the planned decontamination process would not impact the integrity of the labels. A test plan for the oxidation/reduction of melter feeds was provided to WVNS for review. The tests will examine potential problems associated with foaming of the feed in either the concentrator feed makeup tank or the melter feed hold tank. The TEMPEST computer model for liquid-fed ceramic melters has been further improved by the ability to specify polarities of the electrode pairs. Staff traveled to the Retech plant in California to discuss alternatives to the torch design. It was decided to use a graphite, rather than water cooled, plasma torch. This alternative will eliminate cooling water connections to the torch, simplify the overall design, and greatly reduce costs.

Low-Level Waste Coordination - Routine monitoring of the Special Waste Form Lysimeters-Arid Facility was continued. Radionuclide contents of drainage were measured and samples to be used for chemical analysis were preserved. The radionuclide activity levels have remained relatively constant over the past year. A study plan for using ancient concretes to investigate the long-term performance of concretes was outlined. Preliminary arrangements have been made for meetings with low-level waste management staff at the Nevada Test Site and the Idaho National Engineering Laboratory to discuss plans for the natural analogs project.

324 and 325 Building Hot Cell Cleanout - One 6-1/2-ton burial box was loaded with hot cell waste from B-Cell of the 324 Building. Three technicians reported to work at the 324 Building, thus relieving some of the staffing shortages. Plans are being developed for clearing the floor in B-Cell to permit placement of a container for grouted waste. Removal of racks from B-Cell has been delayed because of repairs that were needed on the B-Cell 3-ton crane. Verification tests were performed in support of the plans to grout waste in some of the 324 Building hot cells. The implementation of a new "super saw" system in B-Cell has improved the productivity of the size reduction work.

MK-42 Program - Testing has been completed on all of the components to be used in the target processing equipment. Comments on the Safety Evaluation Document were received from Laboratory Safety. The Operational Readiness Plan was approved.

Defense High-Level Waste Technology Support Program - In conjunction with the Hanford Waste Vitrification Program (HWVP), plans are being developed to construct a tenth-scale melter that would be representative of the melter design used by the Defense Waste Processing Facility. This melter would provide the capability to complete production enhancement melter tests

at lower costs because of reductions in chemical and labor costs. Waste producers could also use the melter to assess site-specific waste processing concerns, such as noble metals and refractory sludge formation, for different wastes.

Coordination of Hazardous Waste Remedial Actions Program - Modifications to the pilot-scale bioreactor system continued in preparation for shakedown tests. The fluidized-bed bioreactor was modified to permit recycle of the coal particles. Results from a survey of off-gas air quality from the pilot-scale system indicated that hazardous vapors are not being generated at detectable levels, and personnel exposure to vapors is not a concern. The electrodes and barrier wall were installed for the in situ vitrification (ISV) of the 116-B-6A crib. Westinghouse Hanford Company (WHC) adopted ISV as the preferred option for remediation of Hanford single-shell tanks. Site preparations for a pilot-scale test of underground tank vitrification were initiated.

Hanford Grout Technology - Two draft reports were submitted to WHC, thus meeting two milestone commitments: Gas Generation and Release from Double-Shell Slurry Feed (DSSF) Grout Vaults and Formulation Verification Study Results for Tank 106-AN Waste. Staff from Pacific Northwest Laboratory (PNL) and WHC visited Oak Ridge National Laboratory and the Savannah River Site to review grout-related activities. An analytic solution to the problem being used for verification of the TRACR3D code was completed. Results from a TRACR3D run that models the grout system will be compared to the analytic solution. Design drawings of the grout vault were reviewed to determine the physical dimensions to be used in modeling the grout vault and barrier system. Verification studies were completed on grout made from simulated Tank 106-AN waste and a modified dry blend formulation. The only formulation criteria that was not met in all cases was for drainable liquid.

Development/Demonstration of Double-Shell Tank Retrieval Technology - Discussions continued between PNL and WHC regarding the computer code developed in FY 1989 to calculate the forces on internal tank components from the fluid jets produced by mixer pumps. Anomalies in the output of the code have been found and are being investigated. The erosion corrosion test that is now being conducted to evaluate rates of metal loss will be extended for another 30 days to evaluate the effect of frequent shutdowns on weight loss measurements.

Single-Shell Tank Technology Support Program - Meetings were held with WHC to continue discussions regarding plans for FY 1990 work. Statements of Work for several of the program tasks are being drafted. Staff provided support to WHC in answering questions on potential ferrocyanide safety issues.

Hanford Waste Vitrification Project (HWVP) - Work is continuing to define the set of glass compositions to be studied in the second-order composition variability studies. Terms and conditions of the contract to procure an agitator for the full-scale feed preparation system are being negotiated with Philadelphia Mixer Corporation. A conceptual design for the

tenth-scale noble metals test melter was completed. The melter cavity will be hexagonal to reduce refractory costs, and will incorporate a modified vacuum discharge section. Installation of the laboratory-scale forming equipment in the shielded facility at the 324 Building was completed.

Double-Shell Tank Waste Pretreatment - Formal direction from WHC regarding work on the flowsheet for neutralized cladding removal waste sludge pretreatment has not yet been received. Equipment is being assembled to test the electrochemical destruction of the organics present in actual complexant concentrate waste.

Double-Shell Tank (DST) Waste Characterization - Staff have been identified to provide additional support to the project. In preparation for processing the washed solids from 101-AZ Core #1, a simulated waste was prepared and treated with formic acid. Glass frit was added to the formed simulant. The forming equipment was installed in the shielded facility at the 324 Building. Washing of 101-AZ Core #2 was completed, and characterization of the washed solids is underway. Two samplers were received for use in functional testing of the new extruder.

International Program Support - PNL staff provided support to the Department of Energy at the last OECD/Nuclear Energy Agency's Radioactive Waste Management Committee meeting. A proposal was submitted for the International Program Support Office to support the Office of Environmental Restoration and Waste Management in international technology exchange. Arrangements were made for upcoming visits by foreign nationals from the Federal Republic of Germany and the United Kingdom for discussions under the technology information exchange agreements.

Nuclear Waste Materials Characterization Center (MCC) - Burnup analyses results were obtained from the first rod of approved testing material (ATM)-108, the first spent fuel ATM that contains burnable poison. This fuel initially contained 3 wt% gadolinium oxide as burnable poison. As expected, the burnup of this fuel is lower than that of similar rods in the same fuel assembly that did not contain burnable poison. The decrease in burnup ranged from 12% to 23% in various axial rod locations. A progress review meeting on the analysis of nuclear waste glass and related materials was held in Pleasanton, California. Seven nuclear waste analytical laboratories were represented at the meeting. Details of compositions for the two analytical reference glasses proposed by the MCC were discussed, and acquisition activities were initiated.

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1. CONTAMINATED MATERIALS TREATMENT PROJECT

CONTAMINATED MATERIALS TREATMENT PROJECT

SUMMARY

OBJECTIVE

The objective of this project is to provide radioactive waste treatment expertise to identified commercial fuel cycle needs. During FY 1990 the project will support efforts at the West Valley Demonstration Project (WVDP); complete shipment of fabricated radiation sources to the Federal Republic of Germany (FRG); assess and develop treatment technology for Greater-Than-Class-C (GTCC) low-level wastes (LLW); and develop an understanding of phenomena controlling vitrification plant production rates.

PROGRESS DURING JANUARY 1990

Modifications were completed on several feed system and sampler/decon system jumper drawings and the revisions were forwarded to West Valley Nuclear Services (WVNS). A test plan to minimize analytical variability was prepared and provided to WVNS. The plan identifies several alternative analyses that could be performed to improve the accuracy with which the composition of the final product can be controlled. The first set of testing on the canister label was completed and provided to WVNS. The tests showed that the planned decontamination process would not impact the label integrity. A literature review on the potential for stress corrosion cracking of the canister during decontamination and storage was completed. The review identified some potential conditions that should be tested to improve the assurance that the canisters will not crack due to stress corrosion during storage. A test plan for the oxidation/reduction of melter feeds was completed and provided to WVNS for their review. The testing will address the concern about foaming of the feed in either the concentrator feed makeup tank or the melter feed hold tank. The results from PNL's recent experimental work on corrosion of the mild steel Tank 8D-1 were presented at a meeting with other corrosion experts at West Valley. The concerns about Tanks 8D-1 and 8D-2 were identified and discussed. Detailed reviews of the previous publications from West Valley that identify quantities of GTCC LLW were begun. A table summarizing the information was prepared. Lists of wastes that will be generated during operations and final D&D of the facilities were also started.

The Environmental Assessment for the Handling and Transportation of Isotopic Heat Sources Prepared at the Hanford Site, Washington (DOE/EA-0358) (EA) was revised and transmitted to DOE-Richland for review and approval. This revised EA includes four additional transportation alternatives: shipment to Seattle by barge, truck, and train, and shipment to Houston, Texas by truck. A meeting was held with Washington and Oregon State officials to discuss the EA.

The draft report Evaluation of Alternatives for Packaging and Transport of Greater-Than-Class C Wastes was reviewed by EG&G Idaho. Their comments are being addressed. Completion of the next draft is expected in February. Program milestones are being reviewed based on the delay until August of the Waste Projection and Characterization Report from EG&G, Idaho. FY 1990 milestones will be impacted, but only minor impacts on longer range milestones are anticipated.

The TEMPEST computer model for liquid-fed ceramic melters has been further improved by the ability to specify polarities of the electrode pairs. The code is also being modified to include a temperature control mechanism in the model and to account for SCR wave form chopping. A set of experiments was designed for studying relative slurry rheology during cold cap formation. A furnace is being set up to run the experiments. Design of a small melting furnace is also underway to allow statistical testing of physical and chemical parameters and their impact on melting rate.

Project staff traveled to the Retech plant in Ukiah, California to discuss alternatives to the torch design. It was decided to use a graphite, rather than water-cooled, plasma torch. This change would eliminate cooling water connections to the torch, simplify the overall design, and greatly reduce costs. The graphite will be consumed at a rate of 2 or 3 feet every 40 hours and will require regular replacements. A method for replacing worn graphite electrodes was developed. The switch to the graphite electrode was instigated by PNL's request in December to increase the maximum furnace feed stock size from 15 to 24 inches in diameter (i.e., 55 gallon drums). A longer plasma arc length is needed, which is not practical with the previously considered water-cooled torch design. This decision also led to major changes in the torch mount design. As a result, the completion date for the plasma torch design by Retech will be delayed from February 1990 to May 1990. The PNL design effort on the furnace is progressing and is expected to be finished by February. Drawings for the feed mechanism, canister handling mechanism, support structures, remote fasteners, hearth assembly, and piping and instrumentation are either finished or near completion.

MAJOR PROBLEMS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

- West Valley Support: Complete process description of off-gas system, complete evaluation of ammonium nitrate buildup and safety in off-gas system, receive radioactive sludge from West Valley, and complete letter report on effects of corrosion on canister materials during decontamination.

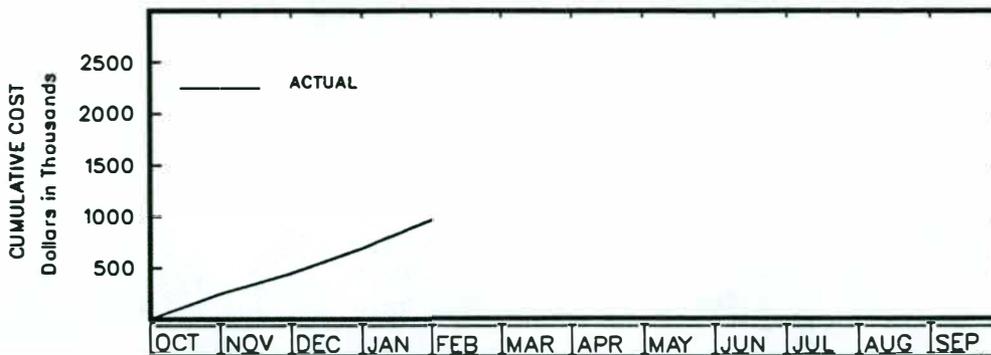
- FRG Heat and Radiation Source Canisters: Obtain approval on the EA.
- GTCC LLW: Complete the preliminary draft of the treatment, disposal concepts/systems technical evaluation framework, and projection reports on repository disposal costs for GTCC wastes.
- Production Rate Enhancement: Complete initial slurry rheology runs, complete TEMPEST code changes for electrode firing sequence input and melter temperature control algorithm, and compare actual melter electrode wiring scheme to TEMPEST code.
- Miscellaneous Waste Treatment: Complete design of the plasma torch and furnace for remote melting of contaminated materials, and obtain approval to start construction.

VARIANCE

Detailed milestone and budgets have not yet been formally established for the project.

MANAGEMENT SUMMARY REPORT

TITLE: CONTAMINATED MATERIALS TREATMENT PROJECT B & R NO: MULTIPLE
 MANAGER: W. A. ROSS SPONSOR IDENT: DOE-RL
 FY 1990 FUNDING: *TBD REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL	248	200	248	271								
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL	248	448	696	967								
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	*FY-90 budget and milestones have not been established											

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

WEST VALLEY SUPPORT

AH-10-50/10571

OBJECTIVE

The objective of this task is to perform studies and tests and prepare designs that support the West Valley Demonstration Project (WVDP). All activities in this task are funded directly from deobligated West Valley funding sources.

PROGRESS DURING JANUARY 1990

Management

Preparations were made to attend an enhanced melting rate workshop sponsored by WVNS. PNL will give presentations to review the data collection and analysis activity and the experimentation progress made during the past year.

Quality Assurance staff from West Valley visited PNL to conduct a surveillance and discuss the potential need for duplicate record storage or fire-protected storage for the West Valley Support Program Records.

Remote Technology Support

Modifications were completed on several feed system and sampler/decon system jumper drawings. The revisions were forwarded to WVNS. Design questions have been asked about the glass pour viewing system and the off-gas reamer, and responses to those questions were provided. Electronic files related to previous stress analysis work and selected PNL drawings were also provided to WVNS.

Waste Qualification Report Support

A test plan to minimize analytical variability was prepared and provided to WVNS. The plan identifies several alternative analyses that could be performed to further identify and potentially improve the accuracy with which the composition of the final product can be controlled. The test plan builds on the results of previous work that was reported to WVNS this month.

The first set of tests on the canister label were completed and provided to WVNS. The tests showed that the planned decontamination process would not impact the label integrity. A literature review on the potential for stress corrosion cracking of the canister during decontamination and storage was completed. The review identified some potential conditions that should be tested to improve the assurance that the canisters will not crack due to stress corrosion during storage.

Vitrification Facility Process Support

A test plan for the oxidation/reduction of melter feeds was completed and provided to WVNS for their review and comment. The testing will address the concern about foaming of the feed in either the concentrator feed makeup tank or the melter feed hold tank. Foaming is the result of a reaction between nitric acid and sugar that generates carbon dioxide or nitrogen oxides.

Recommendations were also prepared for improving sludge removal from the submerged bed scrubber. The buildup of sludge in the scrubber during the last run was much greater than anticipated. Four alternatives were identified for WVNS review and comment.

Tank Farm Process Support

The results from PNL's recent experimental work on corrosion of the mild steel Tank 8D-1 were presented at a meeting with other corrosion experts at West Valley. The concerns about both Tanks 8D-1 and 8D-2 were identified and discussed. Followup tests will be identified by WVNS.

Long-Range Planning

Detailed reviews of the previous publications from West Valley on existing Greater-Than-Class-C Low-Level Wastes were started and a table prepared to summarize the information. Lists were also begun of wastes that will be generated during operations and final D&D of the facilities. The initial evaluations of the lists suggest that surface-contaminated metals will be the major waste form for treatment.

MAJOR PROBLEMS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

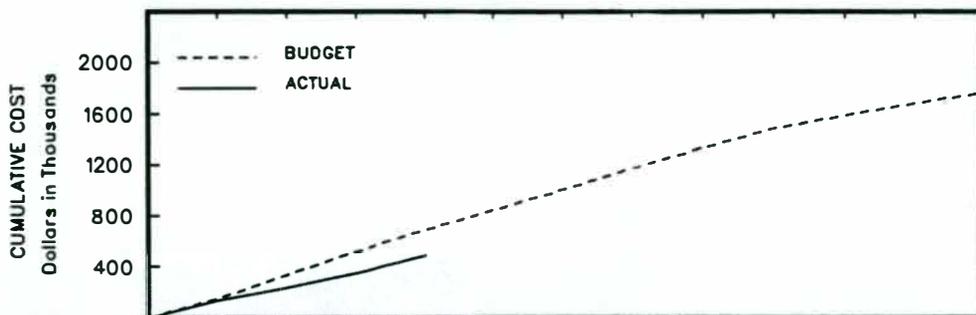
- Complete process description of off-gas system (March).
- Complete evaluation of ammonium nitrate buildup and safety in off-gas system (February).
- Receive radioactive sludge from West Valley (February).
- Complete letter report on effects of corrosion on canister materials during decontamination (April).

VARIANCE EXPLANATION

Costs originally planned but not realized include use of management reserve, start of the analytical work on radioactive sludge (now forecasted for March), work on characterization of the grinder and on buildup of particulate in the feed tanks, corrosion testing for Tank 8D-2, LWTS flowsheet integration, and support to long-range planning. Late starts are generally a result of late arrival of needed information from WVNS.

MANAGEMENT SUMMARY REPORT

TITLE: WEST VALLEY SUPPORT B & R NO: AH-10-50/10571
 MANAGER: W. A. ROSS SPONSOR IDENT: DOE-RL
 FY 1990 FUNDING: \$1771K REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	152	184	186	171	155	161	166	165	152	101	95	83
	ACTUAL	137	101	110	140								
	VARIANCE	15	83	76	31								
FYTD COSTS	BUDGET	152	336	522	693	848	1009	1175	1340	1492	1593	1688	1771
	ACTUAL	137	238	348	488								
	VARIANCE	15	98	174	205								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
ISSUE CERAMIC MELTER DESTRUCTIVE EXAMINATION PLAN	■											
REPORT HYDRAGARD AND CSMT HOMOGENEITY TEST RESULTS	■	■										
ISSUE DRAFT ENGINEERING OPERATING DESCRIPTION FOR THE OFF-GAS SYSTEM TO WVNS									□			
PROVIDE DRAFT OF WASTE QUALIFICATION SECTION ON CANISTER DECONTAMINATION CORROSION TO WVNS										□		
SUBMIT DRAFT TECHNICAL PROGRAM PLAN FOR FY-91 TO WVNS												□
REPORT ANALYSIS OF RADIOACTIVE SLUDGE TO WVNS												□
DOCUMENT GLASS DURABILITY MODEL												□

LEGEND
 ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED - - - - SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

FRG CANISTER LOADOUT AND TRANSPORTATION

AH-10-50/10571

OBJECTIVE

The objective of this task is to characterize and load 32 isotopic heat and radiation sources (canisters) containing borosilicate glass for shipment to West Germany.

PROGRESS DURING JANUARY 1990

The Environmental Assessment for the Handling and Transportation of Isotopic Heat Sources Prepared at the Hanford Site, Washington (DOE/EA-0358) (EA) was revised and transmitted to DOE-Richland for review and approval. Comments received previously from DOE-Richland and DOE-Headquarters, Environmental Safety and Health, and General Counsel have been incorporated into this revised version. In addition, at the request of DOE-Richland, four additional alternatives for transportation routes have been added to the EA. These are: 1) truck transport from Hanford to Seattle, Washington, followed by ocean transport to the Federal Republic of Germany (FRG); 2) train transport to Seattle followed by ocean transport to the FRG; 3) barge transport from Hanford to Seattle via the Columbia River, followed by ocean transport to the FRG; and 4) truck transport to Houston, Texas, followed by ocean transport to the FRG.

A meeting was held with representatives from the Washington State Patrol, Washington State Department of Transportation, Oregon State Department of Energy, Edlow International, and DOE-Richland on January 4, 1990, in Vancouver, Washington to discuss the content of the EA, logistics associated with the transportation of the sources, and transport route selection. Both Washington and Oregon States are requesting that the EA include route-specific data in the transportation risk assessment. In later discussions with DOE-Richland it was agreed to include this route-specific analysis in a separate letter to Washington and Oregon States, and maintain the current conservative analysis based upon national transportation accident statistics in the EA.

MAJOR PROBLEMS AND ACTIONS TAKEN

None.

PLANNED ACTIVITIES

- Assure approval of the Environmental Analysis for the Handling and Transportation of Isotopic Heat Sources Prepared at the Hanford Site, Washington (DOE/EA-0358).

- Revise and reapprove the Technical Program Plan for the FRG Canister Loadout and Transportation Program.

VARIANCE EXPLANATION

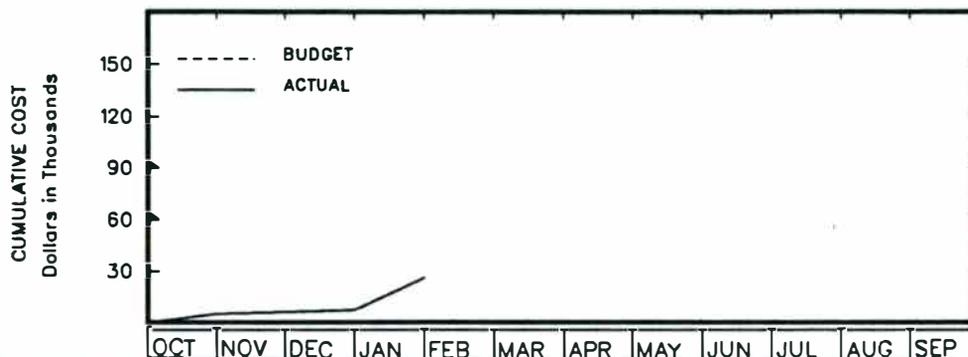
None.

MANAGEMENT SUMMARY REPORT

TITLE: FRG - CANISTER LOADOUT & TRANSPORTATION B & R NO: AH-10-50/10571

MANAGER: L. K. HOLTON SPONSOR IDENT: DOE-RL

FY 1990 FUNDING: \$690K REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	5	1	1	19								
	ACTUAL	5	1	1	19								
	VARIANCE	0	0	0	0								
FYTD COSTS	BUDGET	5	6	7	26								
	ACTUAL	5	6	7	26								
	VARIANCE	0	0	0	0								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
*FY-90 Milestones have not been established												

LEGEND DOE-HQ CONTROLLED/MONITORED OTHER CONTROLLED ----- SLIP
 DOE-RL CONTROLLED/MONITORED PNL CONTROLLED : TIME NOW ===== REPROGRAM

2. LOW-LEVEL WASTE COORDINATION

LOW-LEVEL WASTE COORDINATION

GF-02-05/10603, 10611, 13820, 14654

OBJECTIVE

The objectives of this task are to identify and conduct appropriate long-term research and development programs on characterization, treatment, and disposal of low-level waste (LLW).

PROGRESS DURING JANUARY 1990

Identification and Characterization of DOE-Defense Programs Special-Case (SC) Wastes

Hanford Record Services transferred boxed records to EG&G Idaho, and contacts were made with PNL SC-LLW generators/holders to assist in completing the required data record sheets. The PNL data record sheets will be sent to DOE-Richland early in February.

Special Waste Form Lysimeters - Arid

Routine monitoring of the Special Waste Form Lysimeters-Arid (SWLA) Facility was continued. A neutron probe measurement was taken on January 30 for calculation of moisture storage. The lysimeters were drained of all water on January 5. Radionuclide contents of the drainage were measured and samples for chemical analysis were preserved pending additional monies. The radionuclide activity levels have remained relatively constant over the past year.

Low-Level Waste Site Natural Analog Studies

The report Strategy for Identifying Natural Analogs of the Long-Term Performance of Low-Level Waste Disposal Sites is expected to be ready for printing early in February. The study plan for using ancient concretes to investigate the long-term performance of concretes has been outlined. Tentative dates have been arranged for meetings with LLW management staff at the Nevada Test Site and the Idaho National Engineering Laboratory to discuss the natural analogs project. Discussions of the potential for analog studies of the impacts of climate, soil development, and vegetation change on the performance of LLW disposal facilities at those sites will also be held.

MAJOR PROBLEMS AND ACTIONS TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

Identification and Characterization of DOE-Defense Programs SC Wastes

- Depending on funding and work requests, review the initial and final drafts of the Special-Case Waste Characterization Report.

Special Waste Form Lysimeters - Arid

- Continue neutron probe measurements, lysimeter draining, and radioactive counting following a schedule of once/month and once/six weeks, respectively, until the spring increase in drainage, at which time sampling will be increased.

Low-Level Waste Site Natural Analog Studies

- Continue visiting other major LLW sites to discuss the potential for site-specific natural analog studies with local researchers.
- Publish Strategy for Identifying Natural Analogs of the Long-Term Performance of Low-Level Waste Disposal Sites.
- Begin taking water balance data for the coppice dune study.
- Finalize the plan for studying the long-term performance of concretes.
- Proceed with the literature review portion of the ancient man-made mounds analog study.

VARIANCE EXPLANATION

None.

CAPITAL STATUS

No FY 1990 capital dollars are budgeted for this program.

MANAGEMENT SUMMARY REPORT

TITLE: LOW LEVEL WASTE COORDINATION

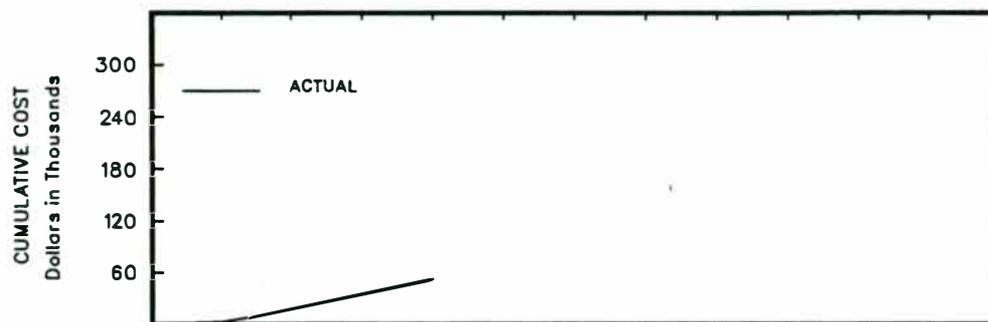
B & R NO: GF-02-05
10603/13820/14654

MANAGER: J.H. JARRETT

SPONSOR IDENT: DOE-RL

FY 1990 FUNDING: TBD*

REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL		3	13	21	16							
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL		3	16	37	53							
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
<p>*Fy-90 budget & milestones are being established</p>	<div style="display: flex; justify-content: space-between; border-top: 1px dotted black; border-bottom: 1px dotted black; height: 20px;"></div>											
<p>LEGEND</p>	▽DOE-HQ CONTROLLED/MONITORED			○OTHER CONTROLLED			----- SLIP					
	◇DOE-RL CONTROLLED/MONITORED			□PNL CONTROLLED			TIME NOW			----- REPROGRAM		

3. 324 AND 325 BUILDING HOT CELL CLEANOUT PROGRAM

324 AND 325 BUILDING HOT CELL CLEANOUT

AH-10-20/13802

OBJECTIVE

The objective of this program is to remove and dispose of obsolete research equipment and cell wastes located in three radiochemical engineering cells (A-, B-, and C-Cells) in Hanford's 324 Building, and three radiochemical engineering cells (A-, B-, and C-Cells) in Hanford's 325 Building.

PROGRESS DURING JANUARY 1990

Program Management

One 6-1/2-ton burial box was loaded with hot cell waste from B-Cell of the 324 Building.

Three technicians reported to work at the 324 Building in mid-January, bringing the total technician staffing level to 10 for this program. The technicians will be trained over the next few months. A day/swing shift will be initiated on March 5, 1990.

324 Building Hot Cell Cleanout Operations

B-Cell Phase I: Task 1 - Failed Equipment and Waste Removal

The frit feed lines are being removed from the cell, and the remaining items will be placed in the HN-200 cask disposal containers.

A review of a videotape of the B-Cell floor shows that the floor is cluttered with debris that will be difficult to remove. The debris covers the floor to such an extent that the grouted waste container designed to fit into the HN-200 cask may not be placed directly on the floor. The 5A furnace and rack are now located at the spot where the stand for the grouted waste container must be placed. After removal of the 5A rack, the floor will be cleared for the grouting station stand.

Task 7 - 5A Furnace Removal

Several cuts in the 5A furnace rack dunnage have been completed, and the rack is scheduled to be removed from the B-Cell wall next month.

Task 9 - 3C and 4C Rack Removal

Removal of the 3C and 4C racks requires the use of the 3-ton B-Cell crane. Because the crane required repairs to replace a sprocket on the main hoist motor, work on this task has been delayed.

The alkaline foam/pressurized water cleaning process that can be used in both B-Cell and the airlock cell will allow the use of a 4 x 4 x 8 plywood burial box for the 4C rack following contact size reduction in the airlock.

Waste Compactor Operations

Airlock waste has been compacted without any additional handling problems. The material normally placed into 4 x 4 x 8 plywood burial containers may be compacted into two 55-gallon barrels.

Master-Slave Manipulator Repair

Staff from Crafts Services have not been available to work on this task this month. An agreement has been reached with Crafts Services so that the assignment of craft priority will not include the crafts personnel assigned to the manipulator repair shop.

325 Building Hot Cell Cleanout

Removal of Radioactive Equipment

Approval from DOE-Richland to dispose of the spent fuel samples is required to complete this task. Once approval is received, the spent fuel segments will be packaged for storage in an EBR-II cask per approved Hanford procedures.

Cell Cleanout Engineering

Laboratory grout tests were performed to verify grout formulation and rheological properties. The results of the testing verified the planned operational parameters for the grout system. An operational test procedure was prepared for the grout transfer system.

The waste characterization procedure has been drafted. This procedure covers the characterization of all items sent to the 200 Area for burial.

Cleanout Equipment Fabrication and Testing

The installation of the grout transfer system was initiated this month. The work is expected to be complete early in February. The grout system incorporates existing equipment located in the 324 Building.

Testing of the new "super saw" was completed this month. The implementation of this system in the B-Cell cleanout activities has improved the productivity of the size reduction activities on the 5A furnace, as well as other equipment components requiring size reduction. Materials for a new saw are being procured so that backup equipment is available.

The fabrication of the electrostatic precipitators is progressing at a much slower rate than planned due to delays in receiving materials. Efforts to complete the fabrication will be stepped up next month so that testing and implementation of the plasma torch can begin.

Waste Transportation and Disposal

A grout container stand was fabricated for use in B-Cell. Ten B-Cell grouting containers were constructed by Tri-City Fabricating in Kennewick, Washington.

Ten HN-200 liners were fabricated by Westinghouse Radiation Services (WRS) in November 1989. A Nonconformance Report (NCR) was written because of the oversize lifting hooks that are attached to the container, which prevent the lines from being properly inserted into the cask. An engineering change notice (ECN) was initiated to delete the hooks and permanently attach the lifting cable to the lid, thus permitting the liner to be lowered into the cask. This modification provided a second advantage by reducing the amount of cable handling by the hot cell technicians, thus reducing time and contamination potential. Two-month delays in receipt of the liners have occurred due to this change. The HN-200 cask lease arrangements will be made with WRS after receipt of the liners is resolved. The HN-200 cask lifting slings have been received. All grout chemicals have been received (blast furnace slag, fly ash and cement). A contract has been placed with ACME Concrete Company to blend a dry mix of these chemicals and to deliver the product.

Comments have been received on the draft version of the cask loading and critical lift procedures. An engineering analysis was received on the strength of the B-Cell grouting containers and the floor loading for the containers.

Waste Transportation and Disposal Fees

To date, PNL has shipped 2206 cubic feet of low-level waste to the Westinghouse Burial ground. The billing should be \$86K; however, PNL was billed for only \$8K. In February, the charges for the remaining waste will be costed to bring the cost account back on schedule.

Productivity Improvement

Decontamination of large, slightly contaminated equipment components, followed by contact size reduction, can be employed to reduce disposal costs. This size reduction approach will be attempted for the upcoming size reduction of the 4C and 3C service racks.

Remote size reduction is the critical path activity for most of the in-cell cleanout tasks. The application of existing size reduction technologies, including pipe shears and "Jaws of Life" technologies, are being examined. Equipment vendors have been invited to the Laboratory to demonstrate these size reduction technologies.

MAJOR PROBLEMS AND ACTIONS TAKEN

Staff support is the limiting factor in maintaining the planned schedules. In mid-January three technicians reported to work, bringing the total number of technicians assigned to this program to ten. The multiyear program plan assumes that the FY 1990 and FY 1991 activities will be supported by ten technicians. Engineering staff support has also been insufficient during the first quarter of FY 1990. Discussions with PNL management have resolved this situation. Based upon the level of staff commitment, schedule recovery should be achievable within the next few months.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Complete an Operational Readiness Review for dismantlement of the B-Cell radioactive melter (Task 10, B-Cell Cleanout).
- Complete tasks 1, 7, and 9 of the B-Cell, 324 Building, Equipment Removal work.
- Implement the HN-200 cask liner disposal system.
- Revise and resubmit the multiyear baseline program plan to DOE-Richland for approval. The key for approval of this plan will be concurrence from DOE-Richland on the plan for disposition of special-case waste generated from the program.

VARIANCE EXPLANATION

The fiscal year-to-date (FYTD), budgeted cost of work scheduled is \$1484K. The FYTD budgeted cost of work performed is \$1197K, and the FYTD actual cost of work performed is \$1245K. The unfavorable cost variance to date is \$47K, or 4% of the FYTD actual cost of work performed. The unfavorable schedule variance to date is \$287K, or 19% of the FYTD budgeted cost of work scheduled.

The overall cost improvement resulted primarily from hiring three technicians to support this program. The fabrication charges for the supersaw II and the HN-200 cask have been added to the actual task costs. The schedule variance has not improved as the supersaw II was not available for cell work until the last week of January.

The Program Management Task has a FYTD budgeted cost of work scheduled of \$121K, a budgeted cost of work performed of \$121K, and an actual cost of work performed of \$99K.

The 324 Building Hot Cell Cleanout Task has a FYTD budgeted cost of work scheduled of \$1024K, a budgeted cost of work performed of \$726K, and an actual cost of work performed of \$899K. The FYTD unfavorable schedule variance is

\$298K, and the unfavorable cost variance is \$172K. The charges for fabricating the supersaw II and repairing the chain sprocket on the main hoist motor were not anticipated and contributed to the variance.

The Cell Cleanout Engineering Task has a FYTD budgeted cost of work scheduled of \$111K, a budgeted cost of work performed of \$98K, and an actual cost of work performed of \$109K. The unfavorable FYTD cost variance of \$10K and the unfavorable schedule variance of \$12K are below the reportable levels. Work on this task was directed towards installing the HN-200 grout transfer system and preparing the grout and waste characterization procedures in support of the HN-200 cask implementation.

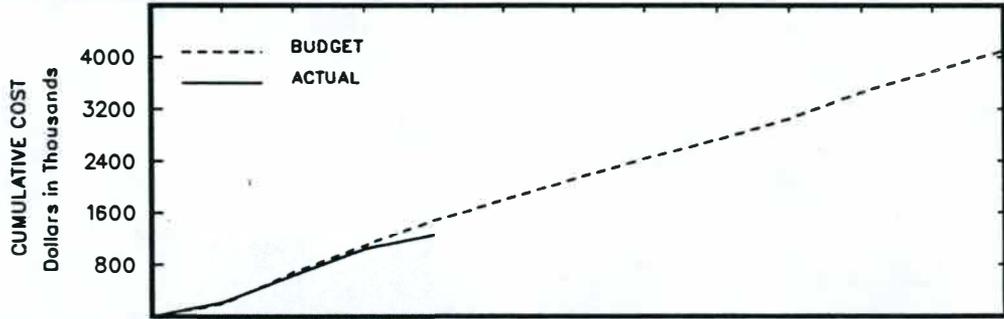
The Waste Transportation and Disposal Task has a FYTD budgeted cost of work scheduled of \$228K, a budgeted cost of work performed of \$251K, and an actual cost of work performed of \$139K. The favorable schedule variance is \$23K and is due to the implementation of the HN-200 cask system.

CAPITAL STATUS

A request for \$30K of capital funds has been made to DOE-Richland to recover expenses incurred in the purchase of a low-level waste compactor.

MANAGEMENT SUMMARY REPORT

TITLE: 324 & 325 BUILDING HOT CELL CLEANOUT B & R NO: AH-10-20/13802
DB-01-03-020/13802
 MANAGER: L. K. HOLTON SPONSOR IDENT: DOE-RL
 FY 1990 FUNDING: REQUEST (4102K) AVAILABLE (2666K) REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	201	477	406	400	316	323	315	291	327	407	318	321
	ACTUAL	219	411	396	219								
	VARIANCE	-18	66	10	181								
FYTD COSTS	BUDGET	201	678	1084	1484	1800	2123	2438	2729	3056	3463	3781	4102
	ACTUAL	219	630	1026	1245								
	VARIANCE	-18	48	58	239								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	1. COMPLETE REPAIR OF B-CELL 3 TON CRANE	█										
2. INPLEMENT COMMERCIAL CASK/LINER LLW DISPOSAL SYSTEM												
3. ESTABLISH PLAN FOR PACKAGE/STORAGE FOR SPECIAL WASTE												
4. COMPLETE REMOVAL OF B-CELL RADIOACTIVE MELTER												
5. COMPLETE REMOVAL OF B-CELL CANISTER HANDLING TURNTABLE												

LEGEND ∇ DOE-HQ CONTROLLED/MONITORED ○ OTHER CONTROLLED ----- SLIP
 ◇ DOE-RL CONTROLLED/MONITORED □ PNL CONTROLLED : TIME NOW ===== REPROGRAM

4. MK-42 PROGRAM

MK-42 PROGRAM

GE-02-21-010/15364

PROGRAM OBJECTIVE

The objective of this program is to receive the MK-42 target from the Savannah River Plant (SRP), process the target, and ship the processed target to Oak Ridge National Laboratory (ORNL) for further processing. The primary PNL objective is to segment the target and package the segments in individual welded canisters that are verified to be leak tight and are decontaminated to Department of Transportation (DOT) shipping levels.

PROGRESS DURING JANUARY 1990

Testing has been completed on all of the components to be used in the target processing equipment.

Comments on the Safety Evaluation Document have been received from Laboratory Safety. This document must be approved before processing operations in C-Cell can begin.

The Operational Readiness Plan (ORP) has been approved and two meetings with the review board have been conducted. It is anticipated that all ORP items will be completed early in February.

DOE-Headquarters has indicated that additional funding (\$350K) for a second and third target will be added to the program budget, in addition to funding requested (\$80K) for completion of the first target processing activity.

MAJOR PROBLEMS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Install the MK-42 processing equipment in C-Cell.
- Process the first MK-42 target.
- Ship the first target to ORNL.

VARIANCE EXPLANATION

An FYTD variance of \$24K exists due to unanticipated design changes to the processing equipment. The changes were determined to be necessary during equipment testing. A second factor in the variance is the increases in crafts overhead costs. The increases were costed in January for work conducted anytime during FY 1990.

MANAGEMENT SUMMARY REPORT

TITLE: MK-42

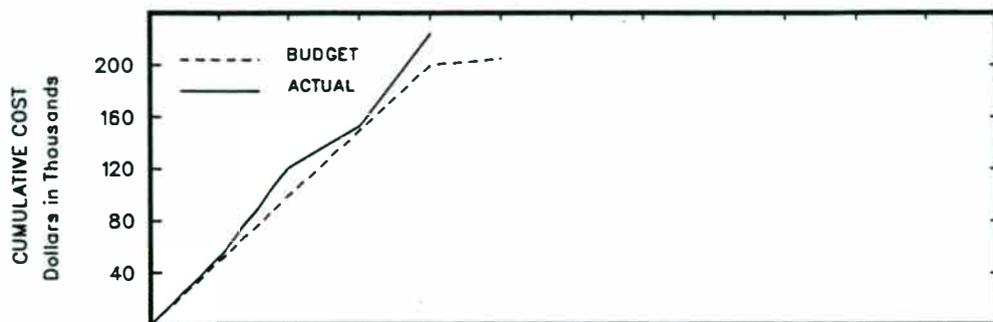
B & R NO: GE-02-21-010/15364

MANAGER: J. E. SURMA

SPONSOR IDENT: DOE-RL

FY 1990 FUNDING: \$227K

REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	50	50	50	50	5							
	ACTUAL	53	68	32	71								
	VARIANCE	-3	-18	18	-21								
FYTD COSTS	BUDGET	50	100	150	200	205							
	ACTUAL	53	121	153	224								
	VARIANCE	-3	-21	-3	-24								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	RECEIPT OF MK-42 TARGET FROM SRO	■										
SHIPMENT OF PROCESS MK-42 TARGET TO ORNL										□		

LEGEND	▽DOE-HQ CONTROLLED/MONITORED	○OTHER CONTROLLED	----- SLIP
	◇DOE-RL CONTROLLED/MONITORED	□PNL CONTROLLED	----- REPROGRAM
		TIME NOW	

5. DEFENSE HIGH-LEVEL WASTE TECHNOLOGY SUPPORT PROGRAM

DEFENSE HIGH-LEVEL WASTE TECHNOLOGY SUPPORT PROGRAM

GF-73-01-51/15357

OBJECTIVE

The objectives of this program are to identify and pursue technical opportunities to reduce costs for defense high-level waste (DHLW) management; provide direct support to the DHLW projects; and provide a flexible, experienced resource staff and facilities for solution of unanticipated problems.

PROGRESS DURING JANUARY 1990

Program Management

The scope of the project was changed this month. The cost modeling effort and enhanced processing activities have been extended to provide funds along with HWVP for construction of a tenth-scale melter. The melter will be representative of the HWVP (Defense Waste Processing Facility) melter designs. This effort is being coordinated with HWVP. The tenth-scale melter will provide the capability to complete future production enhancement melter tests at lower costs because of reductions in chemical and labor costs. In addition, the melter can be used by waste producers to assess site-specific waste processing concerns, such as noble metals and refractory sludge formation, for different wastes. A memorandum purchase order and authorization from Savannah River was received. This effort is directed toward site support and partial support for characterization of the radioactive melter in B-cell during its dismantlement this fiscal year.

Enhanced Processing Activities

Presentations summarizing the progress to date in enhanced processing studies were prepared. The presentations will be given by PNL at West Valley during a two-day technical meeting. Representatives from Savannah River, West Valley and Hanford will attend the meeting.

Cost Model

Work to compile a revised cost model report has begun. Studies to date have shown that the major portion of cost savings that may be realized from increasing waste loading and waste canister size is due to reductions in repository disposal costs. Therefore, current repository charge formulas issued by DOE for DHLW are being reviewed to ensure that the cost model accurately reflects potential savings in repository disposal costs.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Continue value engineering work and the cost model effort.

VARIANCE EXPLANATION

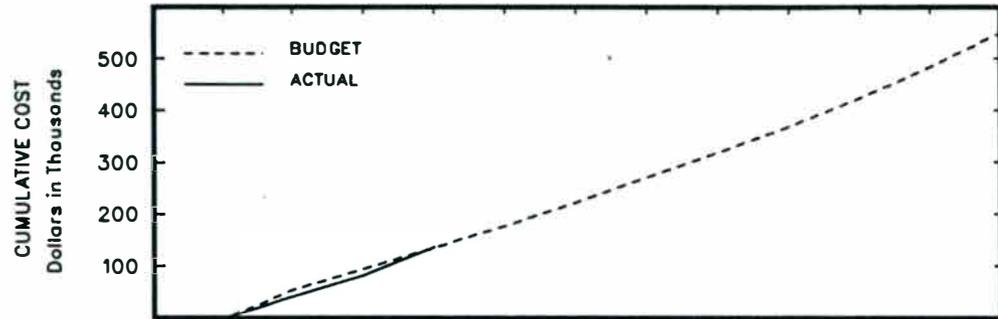
No significant variance.

CAPITAL STATUS

None.

MANAGEMENT SUMMARY REPORT

TITLE: DEFENSE HLW TECHNOLOGY SUPPORT PROGRAM B & R NO: GF-73-01-51/15357
 MANAGER: C. C. CHAPMAN SPONSOR IDENT: DOE-RL
 FY 1990 FUNDING: 550K REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	0	55	40	40	43	45	48	48	50	55	60	66
	ACTUAL	0	42	41	53								
	VARIANCE	0	13	-1	-13								
FYTD COSTS	BUDGET	0	55	95	135	178	223	271	319	369	424	484	550
	ACTUAL	0	42	83	136								
	VARIANCE	0	13	12	-1								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	2.1 REPORT: DETAILED TECHNICAL AND INSTITUTIONAL FEASIBILITY FOR IMPLEMENTING PROPOSED DHLW COST SAVING CONCEPTS											
2.2 REPORT: TIME AND EVENT DEPENDENT SYSTEM COST MODEL FOR TOTAL DHLW MANAGEMENT COSTS												
2.3 REPORT: ESTIMATES FOR THE DECONTAMINATION DECOMMISSIONING AND DISPOSAL OF DHLW PROCESSING EQUIPMENT OF FACILITIES												
3.1 REPORT: PRELIMINARY MELTING RATE ENHANCEMENT STUDIES; LABORATORY AND ANALYSIS RESULTS						■						
3.2 REPORT: PILOT PLANT MELTER TEST RESULTS EVALUATING SEVERAL RATE ENHANCEMENT TECHNIQUES												□
4.1 COMPLETE CONSTRUCTION OF A TENTH SCALE MELTER WHICH IS TECHNICALLY REPRESENTATIVE OF THE HWVP (DWPF) MELTER												

FY-91
FY-91

LEGEND	▽DOE-HQ CONTROLLED/MONITORED	○OTHER CONTROLLED	----- SLIP
	◇DOE-RL CONTROLLED/MONITORED	□PNL CONTROLLED	===== REPROGRAM

6. COORDINATION OF HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM (HAZWRAP)

COORDINATION OF HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM (HAZWRAP)

GF-02-06-000/11471 & 14412

GF-11-01-000/13808 & 14648

OBJECTIVE

The objectives of this program are to identify and conduct research and development, pilot-scale testing, and technology demonstration programs for the remediation of hazardous waste sites and the treatment of hazardous waste streams.

PROGRESS DURING JANUARY 1990

Waste Acid Detoxification and Reclamation Project

The vacuum column was tested using propylene glycol, and modifications to the support plates for the column packing were completed. The vacuum column achieved an excellent separation between propylene glycol (nitric acid simulant) and water. During testing it was observed that the column packing support plates could be modified to further improve column performance. Modifications were completed and are expected to improve column stability and increase separation efficiency. A temporary glass section will be installed in the top of the vacuum column to allow observation of the vapor/liquid interaction in the packing and support plates.

U1/U2 Groundwater Treatment Demonstration

Process modifications to the pilot-scale system continued in preparation for shakedown testing in the spring. The fluidized-bed bioreactor was modified to permit recycle of the coal particles. Sludge digestion was also continued to evaluate the feasibility of reducing the volume of waste biological sludge through extended aeration.

A survey of the quality of off-gas air from the pilot-scale system was conducted to determine whether any hazardous organic vapors are being generated as a result of microbial activity. It was found that hazardous vapors are not being generated at detectable levels, and personnel exposure to vapors is not a concern.

An overview of the demonstration project was presented to members of the Department of Energy, Washington Department of Ecology, and Environmental Protection Agency.

In Situ Vitrification (ISV) Demonstration Project for the 116-B-6A Crib

Installation of the electrodes and barrier wall was completed. In an attempt to inject a conductive slurry below the crib, it was found that only

soil (no gravel or rock layer) exists beneath the crib. Approximately 2 cubic meters of slurry was injected into the crib itself. It will be necessary to obtain more glass frit to finish filling the crib void.

Underground Tank Remediation by ISV

After a series of meetings with WHC staff to discuss the underground tank vitrification process and the advantages of applying ISV for remediation of Hanford single-shell tanks, WHC has adopted ISV as the preferred option for remediating those tanks not requiring removal of the contents and for "emptied" tanks. The required NEPA documentation for a pilot-scale test of the underground tank vitrification process has been finalized and is currently being reviewed by DOE-Richland. Site preparations for the pilot-scale test were initiated. Gravel was received from Oak Ridge National Laboratory for use in simulating the configuration of typical underground storage tanks.

Preparations for a large-scale test to be conducted in September were initiated. The engineering-scale test report was completed and is being reviewed internally.

PROBLEMS AND ACTIONS TAKEN

Additional glass frit powder must be procured from an offsite vendor for use in the ISV Demonstration Project of the 116-B-6A Crib. This purchase may delay the startup beyond March 5. Internal review of the Work Plan and the air quality documentation has taken much longer than expected. Delays by the regulators in approving these documents could also delay the test startup. Because of the barrier wall installation and other unexpected costs, the FY 1990 estimate to complete the work is about \$150K over the original budget.

WORK PLANNED FOR SUBSEQUENT MONTHS

Waste Acid Detoxification and Reclamation Project

- Complete shakedown testing of the pilot-scale test system.
- Test simulated spent acids.

ISV Demonstration Project for the 116-B-6A Crib

- Install off-gas hood, piping, and electrode cables.
- Train the operations staff.
- Initiate test.

U1/U2 Groundwater Treatment Demonstration

- Install modified fluidized-bed bioreactor.
- Replace system feed pumps.
- Add a ventilation system for the reactor and clarifier off-gas.

Underground Tank Remediation by ISV

- Finalize design of the pilot-scale hood containment system and initiate fabrication of the hood.
- Finalize pilot-scale test plan and conduct peer review.
- Install tank and instrumentation at the test site.

VARIANCE EXPLANATION

No significant variance.

MANAGEMENT SUMMARY REPORT

GF-02-06-000/11471

14412

GF-11-01-000/13808

14648

TITLE: HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
(HAZWRAP) COORDINATION

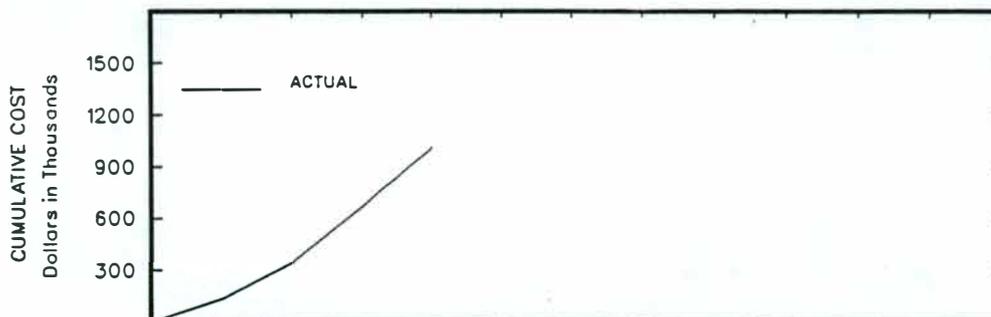
B & R NO: _____

MANAGER: T. L. STEWART

SPONSOR IDENT: DOE-RL

FY 1990 FUNDING: _____

REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL		136	209	328	337							
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL		136	345	673	1010							
	VARIANCE												

MILESTONE STATUS FY 1990 Awaiting funding guidance	1st QTR	2nd QTR	3rd QTR	4th QTR
	O N D	J F M	A M J	J A S

LEGEND ▽ DOE-HQ CONTROLLED/MONITORED ○ OTHER CONTROLLED ----- SLIP
 ◇ DOE-RL CONTROLLED/MONITORED □ PNL CONTROLLED : TIME NOW ===== REPROGRAM

7. DEFENSE WASTE TECHNOLOGY PROGRAMS

HANFORD GROUT TECHNOLOGY PROGRAM

ED0038-0041/16736-16739

OBJECTIVE

The Hanford Grout Technology Program (HGTP) provides technical support to WHC's Grout Disposal Program through development and evaluation of the grout waste form, testing and evaluation of grout system barriers, assessment of the long-term performance of the grout system, and testing and evaluation to support the operation of the Grout Treatment Facility.

PROGRESS DURING JANUARY 1990

Program Management

The FY 1990 Statement of Work for the HGTP was revised to include final WHC comments and was submitted for signature.

The draft report, "Gas Generation and Release from Double-Shell Slurry Feed (DSSF) Grout Vaults," was transmitted to WHC, completing Key Milestone HGTP-90-02-01. Another draft report, "Formulation Verification Study Results for Tank 106-AN Waste," was also transmitted to WHC, completing Key Milestone HGTP-90-03-01.

Staff from PNL and WHC visited Oak Ridge National Laboratory on January 24 and the Savannah River Site on January 25 and 26 to review current grout-related activities. Discussions were held with Savannah River staff to compare and contrast the performance assessment (PA) activities at Hanford and Savannah River in preparation for a presentation regarding the PAs to be given at DOE-Headquarters.

Performance Assessment and Barrier Technology Task

Performance assessment studies are being conducted to confirm that grout will adequately protect the environment over the long term. Experimental measurements of the properties of the solid diffusion barrier surrounding the grout vaults are included in this task.

Verification of the TRACR3D code is focused on solving a flow problem consisting of a no-infiltration zone followed by two zones with step changes in flow rates. This technique simulates the diversion of water by a sloping clay layer above a grout vault. Dimensions similar to those used for the PA are being used in the test problem. An analytic solution to this problem has been completed. The results from a TRACR3D run modeling this system will be compared with the analytic solution as part of the code verification.

A one-dimensional problem was solved to describe the initial moisture distribution in the undisturbed soil beneath the grout vaults. This distribution was then used as the initial conditions for the two-dimensional flow problem to be solved by TRACR3D. Grout vault design drawings were reviewed in order to determine the physical dimensions to be used in modeling the grout vault and barrier system. From these dimensions, a grid was developed for solving the unsaturated flow problem by TRACR3D.

TRACR3D was used to determine the unsaturated flows for time periods to more than 5000 years. Flows were approximately 35% of expected final values after 1020 years, 19% after 1560 years, 7% after 3170 years, and 3% after 5170 years. All results are consistent with expected behavior.

Qualitative tests to evaluate the flow behavior of the solid asphalt barrier have been planned. The tests involve subjecting an asphalt pavement sample to high g forces and elevated temperatures to observe flow. A test plan was sent to WHC in early January, and responses to WHC review comments have been provided. Work will begin as soon as the test plan is approved.

Grout and Laboratory Studies Task

Laboratory support is provided to ensure that grouts will meet established PA criteria before they are produced by the GTF. Radioactive grouts are also produced by this function for leaching and sorption tests.

Verification studies were completed on grout made from simulated Tank 106-AN waste and a modified dry blend formulation. The modified dry blend formulation includes ground limestone, which reduces the total amount of reactive solids in the formulation, thereby decreasing the temperature rise of the grout due to hydration. The verification studies were conducted to determine compliance with selected formulation criteria. The only criterion not met in all cases was that for drainable liquid.

Equipment needed to construct three new adiabatic calorimeters has been received. The new calorimeters will permit more precise control of the bath temperature relative to the grout temperature by minimizing instrumentation error and calibration drift. The control and recording software is currently being modified for the new systems. Calibration runs will begin the first part of February, and hydration runs will begin shortly thereafter.

Process Support Task

The process support task provides scale-up testing of the grout process to ensure that the formulations can be processed and that satisfactory grout quality is achieved. Compatibility testing and other vault component testing is included in this task.

Core samples taken at three different radial positions within the vessel that contains grout from last year's pilot-scale test have passed toxicity tests required for disposal. Efforts are now underway to dispose of the grout

produced in pre- and post-run activities as a nonhazardous waste. Disposal of the grout is being delayed until it is determined that no further samples will be needed.

MAJOR PROBLEMS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Conduct measurements of water vapor diffusion rates through asphalt pavement.
- Conduct computer modeling to describe contaminant movement from the grout to the aquifer in order to assess the performance of the grout disposal system.
- Use adiabatic calorimetry to evaluate methods to reduce the heat of hydration.
- Determine sorption of iodine and technetium on asphalt.

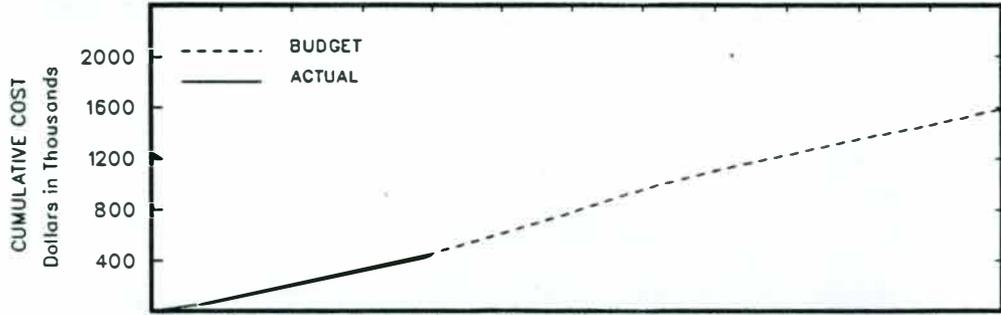
VARIANCE EXPLANATION

At the client's direction, work on lower priority activities has been delayed pending final approval of the Statement of Work.

Work to develop a decontamination solution for process equipment has been delayed until staff can be identified to conduct the work. These staff have been identified and the work will begin in April.

MANAGEMENT SUMMARY REPORT

TITLE: HANFORD GROUT TECHNOLOGY PROGRAM B & R NO: ED0038/16736
ED0039/16737
 MANAGER: J.H. WESTSIK, JR. SPONSOR IDENT: WHC
 FY 1990 FUNDING: \$1.59K REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	76	91	145	147	158	168	179	147	123	126	107	123
	ACTUAL	75	86	151	128								
	VARIANCE	1	5	-6	19								
FYTD COSTS	BUDGET	76	167	312	459	617	785	964	1111	1234	1360	1467	1590
	ACTUAL	75	161	312	440								
	VARIANCE	1	6	0	19								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	EVALUATE CREEP OF GRAVEL INTO HDPE LINERS				■	□						
VERIFY SELECTION OF REFERENCE GROUT FORMULATION				■	■							
DETERMINE NEED FOR VENTS IN GROUT CLOSURE COVER				■	■							
DETERMINE WATER VAPOR DIFFUSIVITY THROUGH ASPHALT									□			
COMPLETE DRAFT PERFORMANCE ASSESSMENT FOR DSSF GROUT										□		
COMPLETE DRAFT REPORT ON DSSF GROUT DURABILITY												□

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED. ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

DEVELOPMENT/DEMONSTRATION OF DOUBLE-SHELL TANK RETRIEVAL TECHNOLOGY

ED9071/14203

OBJECTIVE

The objective of this program is to define, develop, and demonstrate the technology needed to retrieve liquid and solid wastes stored in double-shell tanks on the Hanford Site.

PROGRESS DURING JANUARY 1990

Program Management

The FY 1990 Technical Program Plan was revised and sent to WHC for signature. The Waste Management '90 paper was cleared by DOE-Richland; a poster is being developed for the conference. Per request, a draft proposal to develop a remote ultrasonic inspection system for in situ examination of airlift circulator welds was sent to WHC for review.

Fluid Jet Testing and Analysis

One-sixth scale fluid jet testing was completed this month and a letter report is being written. The objective of the testing program is to estimate the forces on aging waste tank components from a mixer pump during retrieval operations. A draft of the report is due to WHC for review the first of February, with final issuance of the report scheduled for the end of February.

Discussions between PNL and WHC are ongoing regarding the computer code developed in FY 1989 to calculate the forces on internal tank components from the fluid jets produced by the mixer pumps. Anomalies in the output of the code have been found and are being investigated. Work required to expand the objectives of the code and upgrade the code to QA Impact Level II is being evaluated.

Erosion Corrosion Testing

Tests to evaluate the expected rates of metal loss from erosion corrosion phenomena during retrieval operations in DSTs containing neutralized current acid waste (NCAW) were continued this month. One scheduled shutdown of the test to examine the test specimens was performed after the test ran uninterrupted for 40 days. After reviewing the data, PNL and WHC decided to run the test for an additional 30 days to evaluate the effect of frequent shutdowns on the weight loss measurements. This decision impacts the milestone for issuing a final report; a project change request was written to reschedule the milestone.

A proposed simulant composition for 102-SY waste was discussed with WHC. The simulant will be used 1) to verify the adequacy of the lap material used

in the radioactive Miller number test apparatus, and 2) for the next erosion corrosion test. Further discussions with WHC identified a concern about the need to perform erosion corrosion tests with simulated 102-SY. This issue must be resolved quickly if a second erosion corrosion test is to be completed this fiscal year.

Double-Shell Tank Pilot-Scale Testing

Work to develop a test strategy for confirming the equation used to determine the cleaning effectiveness (ECR) of a mixer pump was initiated. Lack of staff may prevent the test strategy plan from being completed by the milestone date.

MAJOR PROBLEMS AND ACTION TAKEN

A decision regarding the waste to be tested in the next erosion corrosion test must be made quickly to allow enough time to complete a second test this fiscal year, and to retain continuity in the test program by keeping the staff who are currently working on the program. Lack of staff may prevent the DST pilot-scale testing activities from being performed on schedule.

WORK PLANNED FOR SUBSEQUENT MONTHS

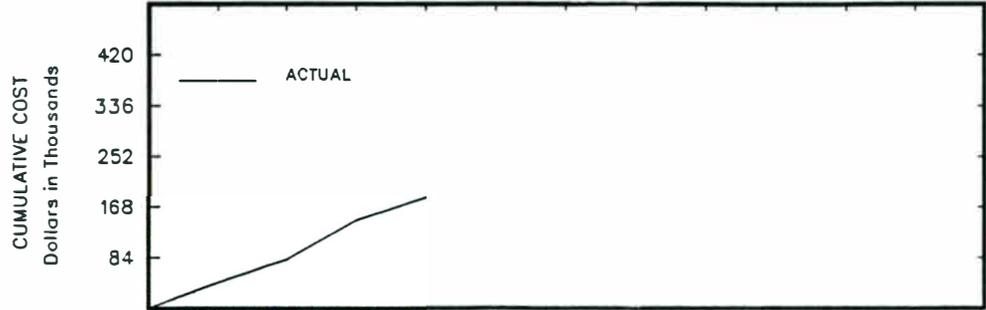
- Obtain sign-off on the FY 1990 Technical Program Plan.
- Resubmit suggested composition of the simulated 102-SY waste for WHC approval.
- Issue final report on jet forces testing.
- Continue erosion corrosion testing using simulated NCAW.
- Initiate workshop to develop the ECR test strategy plan.

VARIANCE EXPLANATION

Budget has not yet been approved.

MANAGEMENT SUMMARY REPORT

TITLE: DEVELOPMENT/DEMONSTRATION OF DOUBLE-SHELL TANK RETRIEVAL TECHNOLOGY B & R NO: ED9071 - 14203
 MANAGER: C.L. FOW SPONSOR IDENT: WHC
 FY 1990 FUNDING: \$300K (estimated) REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL		43	38	65	38							
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL		43	81	146	184							
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR	2nd QTR	3rd QTR	4th QTR								
	O	N	D	J	F	M	A	M	J	J	A	S
TPP not yet approved												

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

HANFORD WASTE VITRIFICATION PROGRAM

ED0044/16721

OBJECTIVE

The objectives of this program are to apply vitrification technology to selected Hanford waste streams; to develop the process and equipment to be used in a Hanford waste facility; and to perform vitrification testing, process development, and waste form qualification activities in support of the Hanford Waste Vitrification Program (HWVP).

PROGRESS DURING JANUARY 1990

Program Management

An Implementation Plan was developed this month for use in directing PNL's implementation of OGR/B-14. The draft plan was submitted to WHC for review. This plan will provide a reference for documenting PNL's approach to the implementation of OGR/B-14. Drafts of three implementing procedures for OGR/B-14 were completed and are ready for internal review and signature. Implementation training will be conducted in February.

Work on the Project Management Plan continues. All review comments on the annotated outline were incorporated. Final FY 1990 cost account plans are being developed, and a time-phase performance measurement baseline will be included in the Project Management Plan.

Representatives from WHC, PNL, and Stone and Webster met to discuss the most recent supplement to the Stone and Webster audit of May/June 1989. The results of the meeting have been incorporated into a third response to Stone and Webster. The supplements have been transmitted to WHC for incorporation into WHC's response.

Revision four of the Quality Assurance plan has been drafted. Internal comments on the plan have been received and incorporated.

Process Development

To support preparation of the test plan for the second-order composition variability studies (CVS), glass compositions were formulated for neutralized current acid waste (NCAW), complexant concentrates, Plutonium Finishing Plant waste, neutralized coating removal waste (NCRW), and blended NCAW/NCRW waste streams based on the results of the first-order CVS. The resulting silica weight fractions fell within the 42-57 wt% range of the first-order study, with the exception of an unblended NCRW waste stream. The latter case required a 60 wt% silica weight fraction because of the low (16 wt%) waste loading attainable.

A draft report entitled The Effect of Nitrate and Carbonate Slurry Concentration and Formic Acid Addition on Glass Redox State was submitted for internal review. This report describes the chemical and physical characteristics of the formed slurry. Chemical reactions are proposed for the observed solubility and redox behavior. The formic acid requirement is defined in terms of the formic acid/nitrate mole ratio.

The test plan for the full-scale feed preparation work is being prepared.

Equipment Adaptation and Testing

Terms and conditions of the contract to procure an agitator are being negotiated with Philadelphia Mixer Corporation. The agitator is needed for the full-scale feed preparation system [specifically, the slurry feed adjustment tank/slurry mix evaporator/melter feed tank (SRAT/SME/MFT)].

Condenser fabrication drawings from Alaska Copper Works were approved by PNL. The condenser will be mounted on the full-scale SRAT/SME/MFT for testing.

Fabrication drawings for the transfer and sample pumps to be used in the full-scale SRAT/SME/MFT were reviewed and comments were transmitted to Lawrence Pumps, Inc. The design drawing for the Hydragard slurry sample station to be used on the full-scale SRAT/SME/MFT was issued for internal review.

Comments on the draft report HWVP Transuranic Process Waste Treatment by Ion Exchange were received from WHC. The draft report HWVP Transuranic Process Waste Treatment Laboratory- and Pilot-Scale Filtration Tests was issued for internal PNL review.

Preliminary internal design reviews on the submerged bed scrubber and the film cooler for the liquid-fed ceramic melter were conducted. The film cooler was designed to provide water cooling capabilities at the cooler's tip. However, this feature could result in steam condensation, and thus increase the probability of solids accumulation. Calculations will be performed to evaluate the possibility of using steam to cool the tip of the film cooler to avoid condensation, while at the same time reducing the temperature below the softening point of the solids materials.

A conceptual design for the tenth-scale noble metals test melter was completed. The melter cavity will be hexagonal to reduce refractory costs, and will incorporate a modified vacuum discharge section.

Waste Form Qualification (WFQ)

Simplified quadratic correlations relating durability to glass composition are being constructed based on results from the first-order CVS.

Review comments have been incorporated into the draft process flow diagram, and the flowsheet for the bench-scale melter system is being developed.

Installation of the radioactive laboratory-scale forming equipment in the shielded facility at the 324 Building was completed. Functional testing of this equipment was completed using an NCAW simulant.

Preliminary sizing calculations for the bench-scale melter support equipment have been completed. Results from the calculations will be used to determine space requirements and the arrangement of the bench-scale vitrification equipment.

MAJOR PROBLEMS AND ACTION TAKEN

Based on initial inquiries, the availability of Inconel 690 for the plenum heaters may be limited. None of the vendors contacted had the required materials in stock, and indications were that the materials may not be available in FY 1990. Action plans are being considered.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Complete the test plan for the second-order CVS, and the overall plan for the combined FY 1990/FY 1991 CVS.
- Issue report on redox/rheology control laboratory studies.
- Continue development of a comprehensive list of test objectives, the test matrix, and a list of expected test results for the full-scale feed preparation system.
- Issue approved drawings for the Holledge level detector calibration tank and order materials for construction.
- Issue a draft of the test system calibration, grooming, and alignment plan.
- Modify the liquid-fed ceramic melter to provide a "representative" melter for use in FY 1991 testing.
- Complete negotiations concerning matching funds for the design, fabrication, and installation of a tenth-scale Defense Waste Processing Facility prototypic test melter.
- Complete the CVS product model.
- Complete the bench-scale melter flowsheet model and prepare facility modifications design for nonradioactive testing.

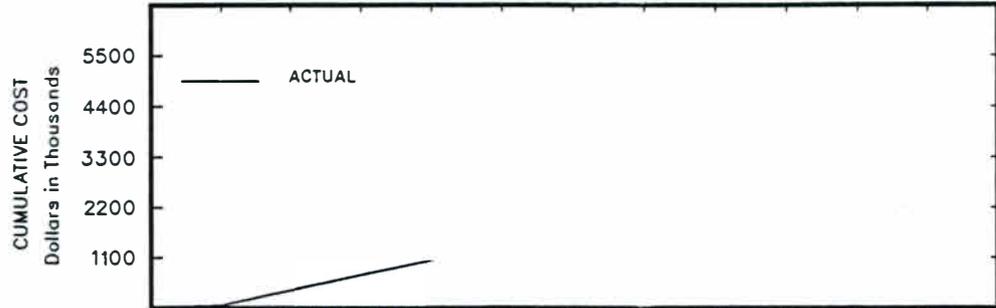
- Complete functional testing of the forming equipment in the laboratory-scale shielded facility.
- Complete forming of Tank 101-AZ Core #1 washed solids and characterize the formed waste.
- Vitrify and begin leach testing the third NCAW core simulant.
- Complete the plan describing the bench-scale melter radioactive tests, schedule, and test equipment design.
- Complete the design of the bench-scale melter system equipment.

VARIANCE EXPLANATION

Technical Program Plan not yet approved.

MANAGEMENT SUMMARY REPORT

TITLE: HANFORD WASTE VITRIFICATION PROGRAM B & R NO: ED0044 - 16721
 MANAGER: C. R. ALLEN SPONSOR IDENT: WHC
 FY 1990 FUNDING: \$6333K REPORT PERIOD: JANUARY 1990



OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

MONTHLY COSTS	BUDGET														
	ACTUAL		51	332	333	314									
VARIANCE															
FYTD COSTS	BUDGET														
	ACTUAL		51	383	716	1030									
	VARIANCE														

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
FY 1990 time-phased budget and milestones will be determined when the final letter of instruction is received from WHC	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border-left: 1px dashed black; width: 100%; height: 200px;"></div> </div>											

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED TIME NOW ===== REPROGRAM

SINGLE-SHELL TANK PROGRAM

ED0146/16744 ED0056/15497
ED0199/16747 ED0237/16749
ED0089/13924

OBJECTIVE

The objective of this program is to provide planning and technical support to WHC in 1) developing a record of decision in accordance with the Hanford Defense Waste Environmental Impact Statement, and 2) completing the final disposition of the Hanford single-shell tanks (SSTs) in accordance with the Tri-Party Agreement.

PROGRESS DURING JANUARY 1990

Program Management

Meetings were conducted with PNL project managers and WHC cost account managers to continue discussions regarding plans for FY 1990 work. Statements of Work for several of the program tasks are being drafted.

Regulatory Requirements

Planning meetings to define FY 1990 regulatory support to WHC were continued. A Scope of Work was drafted and is being negotiated with WHC.

Systems Engineering

Discussions were continued with WHC on the FY 1990 Statement of Work. The only definite support identified by WHC is the completion of a draft systems analysis report that was prepared last year. All comments on the draft report have been received, and a cost estimate for completing the report was developed and accepted by WHC. Work to complete the report was initiated.

Characterization

Support was provided to WHC in answering questions from other agencies on ferrocyanide safety issues. Preparation of the Statement of Work for characterization and ferrocyanide studies continued.

Waste Package Development

Planning meetings with WHC to discuss waste package development were continued. The FY 1990 Scope of Work was developed and a draft Statement of Work was reviewed by WHC. Resolution of WHC comments and commitment of PNL resources will be completed soon.

MAJOR PROBLEMS AND ACTION TAKEN

Discussions between PNL and WHC regarding plans for managing the SST work are continuing. WHC comments on the draft Program Management Plan are required before issues can be resolved.

Preparation of the Statements of Work is being delayed because of higher priority SST work in support of WHC activities. PNL is attempting to fulfill these commitments and obtain agreement for all SST work.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Facilitate review, comments, and negotiations of a program management plan.
- Continue integrating project budgets into a rolled-up program budget.
- Continue preparing the Statements of Work.
- Obtain written agreements for all future SST work.

VARIANCE EXPLANATION

Program Management Plan not yet approved.

CAPITAL STATUS

Not applicable.

MANAGEMENT SUMMARY REPORT

ED0199/16747
 ED0089/13924
 ED0056/15497
 ED0237/16749
 ED0146/16744

TITLE: SINGLE SHELL TANK PROGRAM

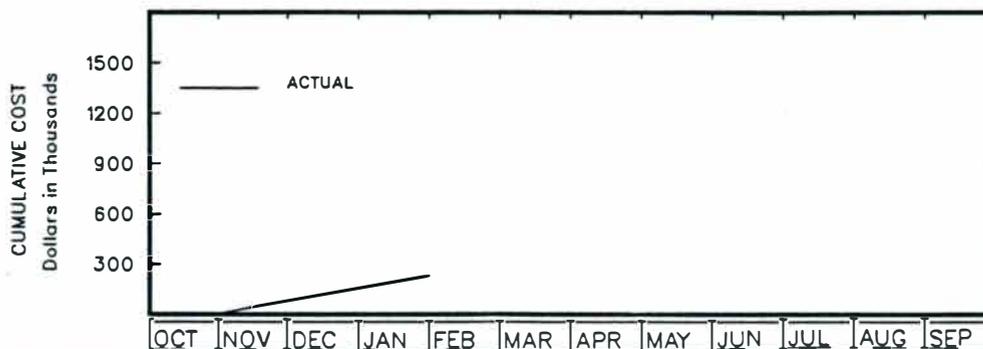
B & R NO: _____

MANAGER: JM CREER (Acting)

SPONSOR IDENT: WHC

FY 1990 FUNDING: *TBD

REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL		3	88	161	233							
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL		3	88	161	233							
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
*TO BE DETERMINED--LEVEL OF EFFORT												
DOES NOT INCLUDE SAMPLE ANALYSIS												

LEGEND ∇DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED TIME NOW ===== REPROGRAM

DOUBLE-SHELL TANK WASTE PRETREATMENT

ED9091, 9219-9221/12765, 14607-14609

OBJECTIVE

The objective of this program is to develop and test potential processes for pretreatment of selected types of Hanford double-shell tank wastes.

PROGRESS DURING JANUARY 1990

Program Management

The letter from WHC formally requesting additional work on the neutralized cladding removal waste sludge pretreatment flowsheet has not yet been received. Therefore, work on the task is being delayed.

Equipment is being assembled to test the electrochemical destruction of the organics present in actual complexant concentrate waste.

MAJOR PROBLEMS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Develop plans for FY 1990 work.

VARIANCE EXPLANATION

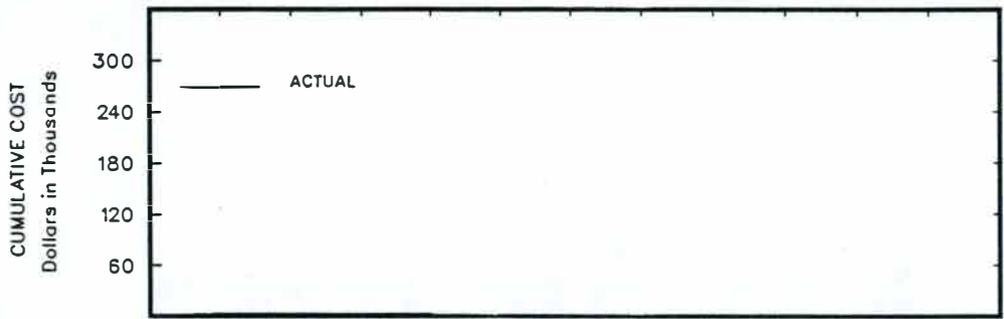
Spending projections are not yet in place.

CAPITAL STATUS

None.

MANAGEMENT SUMMARY REPORT

TITLE: DOUBLE-SHELL TANK WASTE PRETREATMENT B & R NO: ED9091-12765
ED9219-14607
 MANAGER: J.L. SWANSON, L.A. BRAY SPONSOR IDENT: WHC
 FY 1990 FUNDING: _____ REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL	3	0	0	0								
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL	3	3	3	3								
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR	2nd QTR	3rd QTR	4th QTR								
	O	N	D	J	F	M	A	M	J	J	A	S
Planning for FY-90 activities is underway												

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

DOUBLE-SHELL TANK WASTE CHARACTERIZATION

ED9125/14598, ED9145/15498

OBJECTIVE

The objective of this program is to physically, chemically, and radiologically characterize samples of waste from the double-shell tanks (DSTs) on the Hanford Site.

PROGRESS DURING JANUARY 1990

Program Management

The revised schedule and milestones for the project were updated and submitted to WHC. The revised schedule was accepted by WHC, and the Technical Program Plans have been updated with new milestones and time-phased spending plans. The Technical Program Plans are being approved by PNL.

PNL management identified staff to provide additional support to the project and thus accelerate the work schedule. An additional scientist and a technician began supporting the project this month; another technician will be assigned in March.

The Technical Program Plan to develop analytical methods for measuring some noble metals and iodine-129 using inductively coupled plasma mass spectrometry (ICP/MS) was approved by PNL and transmitted to WHC for final approval. The deliverable for this activity will be approved procedures that can be used to analyze for these components in archived samples of DST waste.

PNL received a draft version of a WHC letter requesting the characterization of a four-segment core sample from DST 102-SY. This core sample will be received and extruded at PNL in February. The draft Technical Program Plan for the work is being prepared.

WHC requested that PNL evaluate a method for disposing of the new core samplers directly from the 325 Building. Currently, the samplers are shipped back to WHC for decontamination. PNL has reviewed potential methods for packaging and disposing of the samplers. However, the final method must meet the approval of WHC's waste packaging and disposal organization. This issue was discussed with WHC and a meeting between PNL and WHC is needed to develop an acceptable packaging and disposal plan.

DST 101-AZ and 102-AZ Waste Characterization

In preparation for the HWVP feed preparation processing of 101-AZ Core #1 washed solids, a simulated waste was prepared and treated with formic acid. Glass frit was added to the formatted simulant. The simulated waste and glass

frit slurry were dried and transferred to the 324 Building for vitrification. The processing and characterization of this nonradioactive simulant provides data that will be compared with the results from radioactive testing.

The forming equipment has been installed in the shielded facility. Equipment verification will be completed early next month, and the 101-AZ Core #1 washed solids will be treated with formic acid and the formed waste characterized.

Washing of 101-AZ Core #2 was completed. The available solids and supernate from this core were blended; however, the solids in the resulting slurry did not settle, even after the ferric nitrate addition. Therefore, the supernate was not decanted and a sample of the supernate for chemical analyses could not be obtained. Characterization of the washed solids is underway.

DST 102-AY Waste Characterization

Analyses of the characterization data for waste from DST 102-AY is nearly complete. The September 1988 characterization report will be updated to include this additional data. The report will be issued to WHC in early February.

DST 102-SY Waste Characterization

The updated report Results of the Characterization of Samples of Waste from Double-Shell Tank 102-SY was issued to WHC. Results from the carbon-14 analyses of the DST 102-SY waste were included in this report. The Miller Number measurement of the waste is currently scheduled for March.

DST 103-AW Waste Characterization

The Miller Number test on the DST 103-AW waste was initiated. However, not enough supernate was available to prepare the required 30 vol% slurry, and simulated supernate (nonradioactive) is not readily available. WHC's Process Chemical Laboratory has identified an additional 100 g of liquid that was obtained during extrusion of the waste. It appears that this liquid is aqueous and, therefore, is supernate. If analysis confirms that this liquid is supernate, it can be used for the Miller Number test. If the liquid is not supernate, the procedure for the Miller Number test will have to be revised and the test conducted with a more concentrated slurry.

Extruder Fabrication

Two samplers were received for use in functional testing of the extruder: a newly designed disposable sampler and a conventional sampler. The newly designed sampler is not compatible with the existing extruder design. Minor modification of the extruders (including the extruder currently used in the shielded facility) and fabrication of a special tool to open the rotary valve will be required to enable the extruders to be used for both samplers. The Engineering Change Notice for these modifications was prepared.

Modification of the two new extruders has been completed and the tool has been fabricated. Functional testing of the extruders will be completed in February.

MAJOR PROBLEMS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

- Treat DST 101-AZ Core #1 with formic acid and characterize the core.
- Complete the characterization of washed solids from DST 101-AZ Core #2.
- Transmit the preliminary results of the physical and rheological characterization of waste from DST 101-AZ Core #2 to WHC.
- Initiate characterization of DST 102-AZ Core #1.
- Document the results of the Miller Number measurement on waste from DST 101-AZ Core #3 in a letter to WHC.
- Issue the report documenting results of the DST 102-AY characterization.
- Complete the Miller Number measurement on DST 103-AW and 102-SY waste.
- Complete functional testing of the waste extruders.

VARIANCE EXPLANATION

No significant variance.

CAPITAL STATUS

All of the capital funding (\$50K) for the fabrication of two waste extruders has been received at PNL and the fabrication work is complete. The functional testing will be completed in February.

Capital funding (\$31K) for the automation of the Haake viscometer was received. The rheocontroller and computer board required to connect the viscometer to a personal computer was received. A technical representative from Haake will connect the viscometer and verify its operation. This work is being scheduled.

MANAGEMENT SUMMARY REPORT

TITLE: DOUBLE-SHELL TANK WASTE CHARACTERIZATION

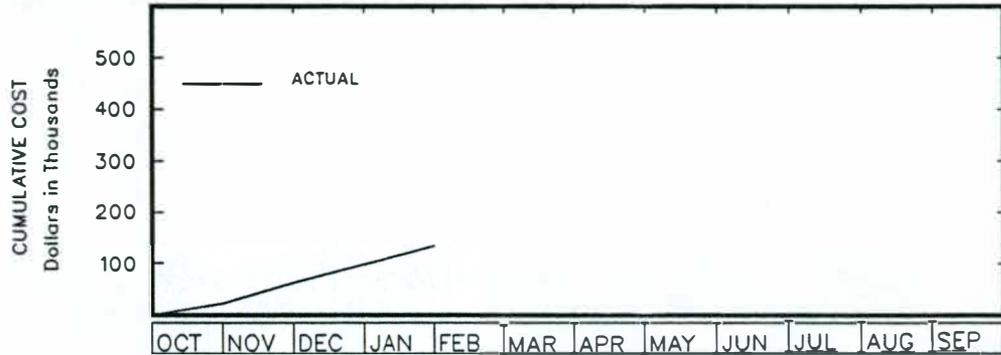
B & R NO: ED9125/14598
ED9124/15498 - 15499

MANAGER: M. E. PETERSON

SPONSOR IDENT: WHC

FY 1990 FUNDING: \$368K

REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET												
	ACTUAL		23	40	35	35							
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL		23	63	98	133							
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	Revised TPP not yet approved											
PROVIDE RESULTS OF STRATIFICATION AND ANALYSES OF WASTE LAYERS FOR THE SECOND 101-AZ CORE												▽
PROVIDE RESULTS OF PHYSICAL AND RHEOLOGICAL CHARACTERIZATION OF THE AS-RECEIVED WASTE FOR THE SECOND 101-AZ CORE												▽
COMPLETE FABRICATION AND TESTING OF TWO EXTRUDERS												▽
COMPLETE 102-AY CHARACTERIZATION												▽
COMPLETE 103-AW CHARACTERIZATION												▽
COMPLETE ANALYSES OF THE FIRST CORE FROM 101-AZ												▽
COMPLETE ANALYSES OF THE SECOND CORE FORM 101-AZ												▽

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED TIME NOW ===== REPROGRAM

8. INTERNATIONAL PROGRAMS

INTERNATIONAL PROGRAM SUPPORT

AH-10 GF-02 DB-05/10748

OBJECTIVES

The objectives of this program are to provide a center for the collection, organization, evaluation, and dissemination of information on international programs; provide technical assistance to DOE in planning, coordinating and evaluating international information exchange activities; and conduct special studies identified by DOE.

PROGRESS DURING REPORT PERIOD

A staff member participated in and supported DOE senior management at the OECD/Nuclear Energy Agency's (NEA) Radioactive Waste Management Committee meeting. This committee convenes once or twice each year to review and advise the NEA on their nuclear waste management activities and to review the status of major waste management activities being conducted in member countries.

A proposal was submitted for the International Program Support Office (IPSO) to support the Office of Environmental Restoration and Waste Management (DOE/EM) in international technology exchange. This proposal will be compiled with other proposals from PNL for submittal to the Research, Development, Demonstration, Testing and Evaluation (RDDT&E) Program. IPSO's proposal calls for support to DOE/EM in planning, coordinating, evaluating, information collecting/disseminating, and administration of international technology exchange activities. The Activity Data Sheet for the support work was also updated.

A paper was completed for presentation at the High-Level Radioactive Waste Management Conference and Exposition, to be held in Las Vegas in April. The paper, "Spent Fuel and High-Level Waste Management in Selected Countries: Trends and Issues," is co-authored by C.R. Cooley, DOE-Headquarters.

PNL staff comments to a draft report by E.R. Johnson, "The Needs for Classification, Inspection and Testing of Spent Nuclear Fuel (SNF) Delivered to DOE" were coordinated and submitted to Oak Ridge National Laboratory staff who are compiling comments from other laboratories.

A session on "Radioactive Waste Management Transportation and Packaging" will be organized and chaired by an IPSO staff member during the 1990 Summer National AIChE Meeting in San Diego to be held in August. The session will be one of nine on nuclear activities, including five on radioactive and mixed waste management.

An update of the DOE's International Commitment Log was issued. The Log identifies and provides the status of DOE commitments in technical exchanges with other countries and multi-national agencies on radioactive waste management.

Arrangements were made for upcoming visits by foreign nationals from the Federal Republic of Germany and the United Kingdom for discussions under the bilateral technology information exchange agreements.

Funding authorization was received in response to a proposal submitted to the Nuclear Waste Technical Review Board (TRB) for coordinating the FY 1990 visit of TRB members to European waste management facilities. Work on the project has begun.

Current information, received from foreign nationals and U.S. site personnel, is being used for updating the International Nuclear Fuel Cycle Fact Book and IPSO databases. Information on hazardous chemical and mixed waste programs and organizations was also requested and is being incorporated into these files.

Submittal of abstracts from appropriate U.S. staff was coordinated for the DOE-supported International Seminar on "Requirements for Waste Acceptance and Quality Control," to be held May 28 - June 1, 1990 at the research institute (KFA) in Jülich, West Germany.

Work continued on preparing the 1990 updated revision of National Briefing Summaries: Nuclear Fuel Cycle and Waste Management, PNL-6241. This document, last issued in 1988, presents overview technical information on the nuclear fuel cycle and radioactive waste management in more than 20 countries and multi-national agencies.

The following draft work items were prepared for DOE-Headquarters and others in response to ad-hoc requests:

graphic schedule ("roadmap") of potential significant DOE/EM activities in international technology exchange

writeup on the planned DOE/EM international technology exchange activities for use by DOE-Headquarters management at the OECD/Nuclear Energy Agency's (NEA) Radioactive Waste Management Committee meeting in Paris

updated information on the organization and responsibilities for waste management in the Federal Republic of Germany

copies of documents on transmutation of radionuclides and international repositories for high-level radioactive wastes

draft of potential future directions for the International Atomic Energy Agency (IAEA) in preparing safety documents on radioactive waste management. The draft information will be used by a DOE-Headquarters person in an IAEA planning meeting.

MAJOR PROBLEMS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Respond to ad-hoc requests from DOE for technical assistance in their administration of the international exchange activities in DOE/EM and DOE/RW.

Initiate development of a data base on foreign technologies related to DOE's environmental restoration and waste management program.

Maintain/update information data bases that are used as information sources on: 1) domestic and foreign waste management activities, 2) visits by foreign nationals to the U.S. and on embassy contacts in the U.S. and abroad, and 3) U.S. bilateral agreements in the nuclear fuel cycle area and associated international information exchange guides.

Continue preparing updates of the DOE's International Commitment Log to identify and provide the status of DOE commitments in technical exchanges with other countries on radioactive waste management.

Assist DOE Offices of Environmental Restoration and Waste Management and Civilian Radioactive Waste Management in developing and implementing plans for international technology exchange activities.

Continue support to DOE on periodic updating of a listing of international coordinators for international technology exchange activities.

Continue preparing and issuing the monthly highlight newsletter on significant foreign activities and events on radioactive waste management.

Continue preparations for the next issues of the International Nuclear Fuel Cycle Fact Book (PNL-3594) and the National Briefing Summaries: Nuclear Fuel Cycle and Waste Management (PNL-6241).

Initiate preparation of a letter report on the approaches and methodologies used or under development by foreign countries to carry out performance assessment of disposal of spent fuel and high-level waste.

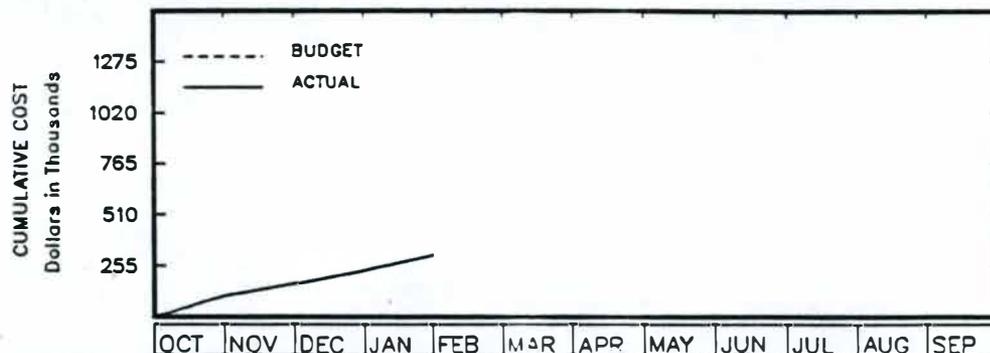
Participate in the review of papers for the SPECTRUM '90 waste management meeting.

VARIANCE EXPLANATION

None.

MANAGEMENT SUMMARY REPORT

TITLE: INTERNATIONAL SUPPORT PROGRAM B & R NO: DC-DB-AH-GF/10748
 MANAGER: D.J. BRADLEY SPONSOR IDENT: DOE-RL
 FY 1990 FUNDING: \$1510K REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	105											
	ACTUAL	105	59	70	72								
	VARIANCE	0											
FYTD COSTS	BUDGET	105											
	ACTUAL	105	164	234	306								
	VARIANCE	0											

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	Draft letter report on Evaluation of Foreign Waste Management Practices Note: Further milestones and budget projections are pending receipt of client's funding guidance				◆							

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ◊OTHER CONTROLLED ----- SLIP
 ◊DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED TIME NOW ===== REPROGRAM

9. NUCLEAR WASTE MATERIALS CHARACTERIZATION CENTER

NUCLEAR WASTE MATERIALS CHARACTERIZATION CENTER

DB-01-02-02/10133
TD2859/15829
AH-10-30/11017

GF-02-02-00/11015
GF-02-02-00/16604

OBJECTIVE

The objective of the Materials Characterization Center (MCC) is to support waste management programs by 1) providing well-characterized test materials and test material documentation, 2) conducting testing of waste package components in support of waste form qualification, 3) providing assistance related to enhancing the quality and inter-laboratory consistency of analytical data obtained by these programs, and 4) conducting independent testing to confirm data obtained by others related to the behavior of waste package components.

The MCC activities support a broad range of DOE waste management programs. For the convenience of those who are interested only in certain programs, this report is arranged in sections as follows:

- A. Program Administration
- B. Quality Assurance
- C. Support to the Yucca Mountain Project Office
- D. Support to the Defense HLW Technology Program
- E. Support to the Westinghouse Savannah River Company
- F. Support to the West Valley Demonstration Project

A. Program Administration

The Technical Program Plan (TPP) for MCC Support to the Yucca Mountain Project (YMP) was revised to reflect the \$1.2M funding level.

The MCC hosted the Analytical Methods Round Robin-4 meeting in Pleasanton, California, on January 16-17, 1990.

A meeting was held with the DOE-RL contact to discuss the MCC's approach to approved testing material (ATM) confirmation.

D. Shugars, West Valley Nuclear Services Quality Assurance Department, visited PNL, January 19, 1990 and conducted an informal surveillance of the MCC record keeping activities.

Presentations were made to DOE-NV-YMP personnel regarding MCC activities in support of the YMP on January 10, 1990.

Contractual negotiations took place with Japan Atomic Energy Research Inc., (JAERI) regarding shipment of an MCC produced radioactive glass to Japan for testing by the Japanese in their high-level waste program.

Battelle received notification that the work that had been performed for the DOE-HQ Office of Facilities Siting and Development will now be monitored

by the Yucca Mountain Project. The funding for this work will come to PNL through Lawrence Livermore National Laboratory (LLNL).

B. Quality Assurance

Revision 3 of QA Plan WTC-002 was written and is currently being routed for internal approval.

C. Support to the Yucca Mountain Project Office

Waste Forms and Analytical Standards/Analytical Methods Validation

Chemical Analysis Reference Glass - The proposed composition of an analytical reference glass (ARG) was developed by the MCC in FY 1989 and circulated for comment. Comments received at that time from potential users of the glass suggested that additional components be included to increase the reference glass' relevance to specific waste glass compositions. Several alternatives have been considered by MCC, keeping in mind the need to produce a stable, homogeneous glass with carefully verified composition and wide applicability.

Spent Fuel Characterization

A letter to R. A. Proebstle of General Electric Company (GE) was prepared for signature by Carl Gertz (YMPO) requesting assistance from GE on determining the limiting distribution of fission gas release and rod gas pressure in GE fuel rods to be placed in the repository. A similar letter has been prepared for transmittal to Westinghouse.

Radiochemical and Solid-State Analysis - Preliminary results for the burnup analyses of fuel samples from Rod ADNO206 of ATM-108 were received. Three fuel samples, one from the peak-power region and two from lower-power locations near one end of the rod, were analyzed for neodymium-148 to determine the fuel burnups. The measured burnups for the ATM-108 rod were 12.2, 19.6, and 27.7 MWd/kgM based on the peak gamma activity measured for Rod ADNO206 and the relationship between cesium-137 activity and burnup that was developed for ATM-105 rods. These ATM-105 and ATM-108 rods were irradiated in the same fuel bundle and differ only by the addition of gadolinia in the ATM-108 rod.

Gap Inventory - Numerous samples of fuel-cladding gap deposits from high gas release ATM-106 and ATM-105 fuel have been prepared for transmission electron microscope analysis. The preparation method, described last month, allows individual 10- to 100- μ m particles of sample material to be prepared for analysis in an analytical transmission electron microscope. The initial analyses were conducted on particles that contained cesium, silver, and iodine. However, these particles were noncrystalline--possibly due to electron beam damage in the transmission electron microscope. Continuing analyses are concentrating on the particles that remain crystalline for 60 seconds or more during the electron beam analysis.

Data Analysis and Reporting - Comments received from DOE-RL, DOE-NV, and Scientific Applications International Corporation were incorporated in the paper entitled "Evaluation of ORIGEN2 Models Against Spent-Fuel Radiochemical

Measurements." DOE-HQ did not recommend any changes. The revised paper was sent to DOE-RL to be cleared for presentation at the 1990 summer meeting of the American Nuclear Society in Nashville, Tennessee.

Spent Fuel Operations

Technical Management - The TPP was revised to a final budget for the year for Task 05 of \$132K. Based on spending to date, that figure will just meet costs to maintain the facility and keep some staff involvement. Input was made to DOE on the quantity of Greater-Than-Class C waste generated by the MCC.

D. Support to the Defense HLW Technology Program

Comprehensive Data Base - The MCC is in the process of modifying the format of its comprehensive data base (CDB) of waste glass properties. A major impetus for completing modifications is a request by PNL's Performance Assessment Scientific Support (PASS) program that the data be made available to them in a more useful format than in the Lotus files in which it currently exists. The PASS program will use the data as input to a glass performance assessment analysis that they will initiate in FY 1990 in support of the DOE-HQ Office of Systems Integration and Regulations (OSIR). Lawrence Livermore National Laboratory, which is doing waste package related work for the YMP, has also expressed a desire for access to the data.

PASS personnel have provided significant input regarding the capabilities and criteria that should be considered in modifying the CDB. Once a working version of the modified CDB has been completed, personnel at LLNL and YMPO will be furnished a working copy of the CDB so that they can have an opportunity to use the CDB and provide comments and suggestions to the MCC. These suggestions will be addressed in the final version of the CDB.

E. Support to Westinghouse Savannah River Company

Analytical Methods - The Progress Review Meeting on Analysis of Nuclear Waste Glass and Related Materials was conducted January 16-17 at Pleasanton, California. The twenty-one participants represented seven nuclear waste analytical laboratories.

F. Support to West Valley Demonstration Project

West Valley Sludge Glass-1-Characterization - Chemical characterization via hot ICP and radiochemistry has been completed. The nonradioactive components were found to be present within 10% of the expected values except for boron oxide which was almost 30% low. The reason for this one large discrepancy (B₂O₃) is not known; the premelt batch was not analyzed because insufficient material was available. The ferrous-to-ferric ratio (0.003) indicated that the glass was highly oxidized.

MAJOR PROBLEMS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

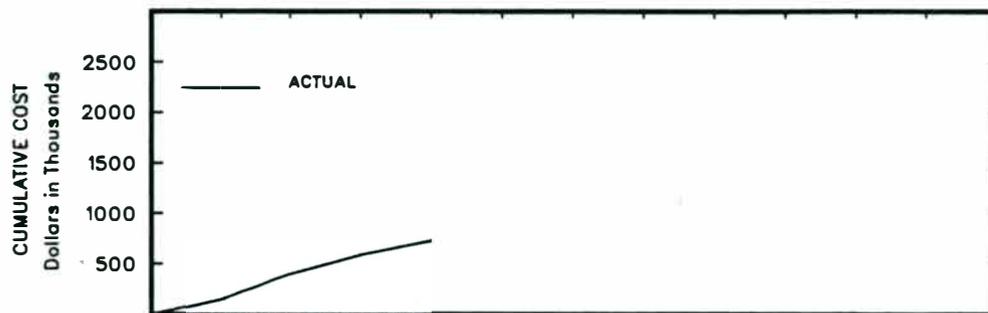
- Coordinate and evaluate radiochemistry of ATM-108 Rod ADN0206.
- Complete revision of the ATM-104 characterization report.
- Write paper on carbon-14 inventory in spent fuel rods.
- Complete letter report on Round Robin #4 and Review Meeting.
- Plan and conduct Analytical Round Robin #5.
- Continue activities to acquire standard glass for use in participant laboratory calibrations and interlaboratory round robins.
- Follow functional description by detailed design effort to complete first working version of the Comprehensive Data Base.
- Complete radiochemical analysis of leachates from pulsed flow testing of ATM-10 and PCT testing of WVSG-1.
- Complete final report on pulsed flow testing results.
- Conduct characterization of the West Valley Sludge Glass 1.

VARIANCE EXPLANATION

None.

MANAGEMENT SUMMARY REPORT

TITLE: MATERIALS CHARACTERIZATION CENTER B & R NO: MULTIPLE
 MANAGER: G. B. MELLINGER SPONSOR IDENT: MULTIPLE
 FY 1990 FUNDING: TRD* REPORT PERIOD: JANUARY 1990



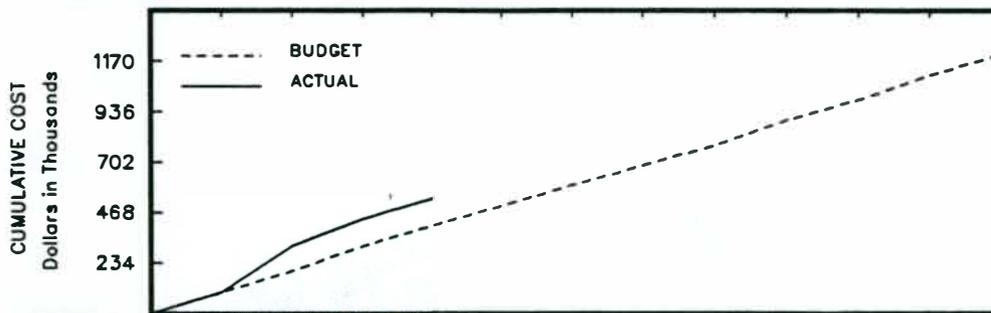
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MONTHLY COSTS	BUDGET												
	ACTUAL		148	255	183	141							
	VARIANCE												
FYTD COSTS	BUDGET												
	ACTUAL		148	403	586	727							
	VARIANCE												

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S

LEGEND ∇ DOE-HQ CONTROLLED/MONITORED ○ OTHER CONTROLLED ----- SLIP
 ◇ DOE-RL CONTROLLED/MONITORED □ PNL CONTROLLED TIME NOW ===== REPROGRAM

MANAGEMENT SUMMARY REPORT

TITLE: MATERIALS CHARACTERIZATION CENTER (YMP) B & R NO: DB-01-02-02/10133
 MANAGER: G. B. MELLINGER SPONSOR IDENT: RW
 FY 1990 FUNDING: \$1200K REPORT PERIOD: JANUARY 1990



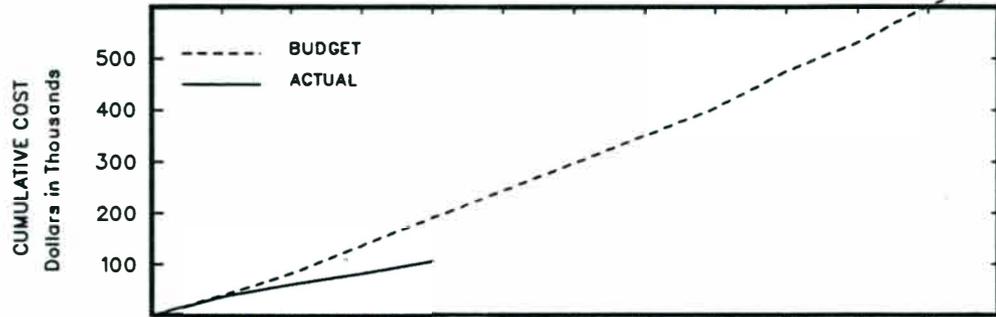
		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	99	99	115	94	94	95	93	94	115	93	115	94
	ACTUAL	101	212	127	93								
	VARIANCE	-2	-113	-12	1								
FYTD COSTS	BUDGET	99	198	313	407	501	596	689	783	898	991	1106	1200
	ACTUAL	101	313	440	533								
	VARIANCE	-2	-115	-127	-126								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
	FY-90 MILESTONES TBD*											

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED TIME NOW ===== REPROGRAM

MANAGEMENT SUMMARY REPORT

TITLE: MATERIALS CHARACTERIZATION CENTER (WVNS) B & R NO: AH-10-30/11017
 MANAGER: G. B. MELLINGER SPONSOR IDENT: NE
 FY 1990 FUNDING: \$656K (\$156K Carryover) REPORT PERIOD: JANUARY 1990



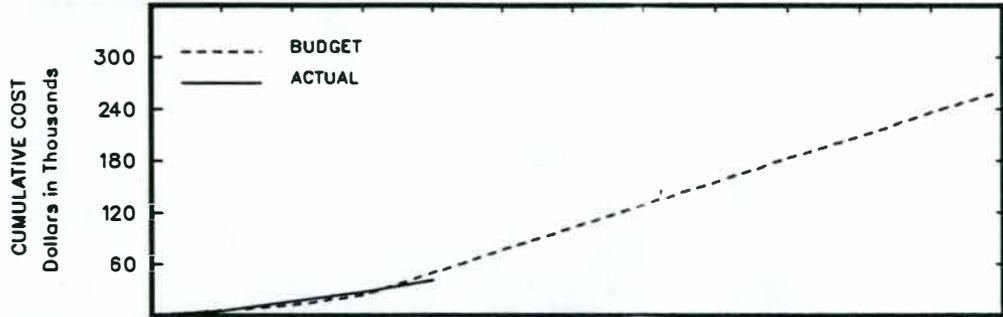
		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	40	42	55	54	53	54	54	54	71	54	71	54
	ACTUAL	38	23	22	23								
	VARIANCE	2	19	33	31								
FYTD COSTS	BUDGET	40	82	137	191	244	298	352	406	477	531	602	656
	ACTUAL	38	61	83	106								
	VARIANCE	2	21	54	85								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
1. ISSUE REPORT ON FABRICATION AND CHARACTERIZATION OF ANALYTICAL REFERENCE SIMULATED WASTE GLASS												▽
2. ISSUE FINAL REPORT ON PULSED FLOW TESTING OF ATM-10, WVCM-50, AND SF-6 REFERENCE WASTE GLASSES												▽
3. ISSUE SUMMARY LETTER REPORT INCLUDING DATA EVALUATION AND STATISTICAL ANALYSIS OF RESULTS FOR FY-90 ANALYTICAL METHODS ROUND ROBIN												▽

LEGEND ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED TIME NOW ===== REPROGRAM

MANAGEMENT SUMMARY REPORT

TITLE: MATERIALS CHARACTERIZATION CENTER (DHLWTP0) B & R NO: GF-02-02-00/11015
 MANAGER: G. B. MELLINGER SPONSOR IDENT: DP
 FY 1990 FUNDING: \$300K (\$35K Carryover) REPORT PERIOD: JANUARY 1990



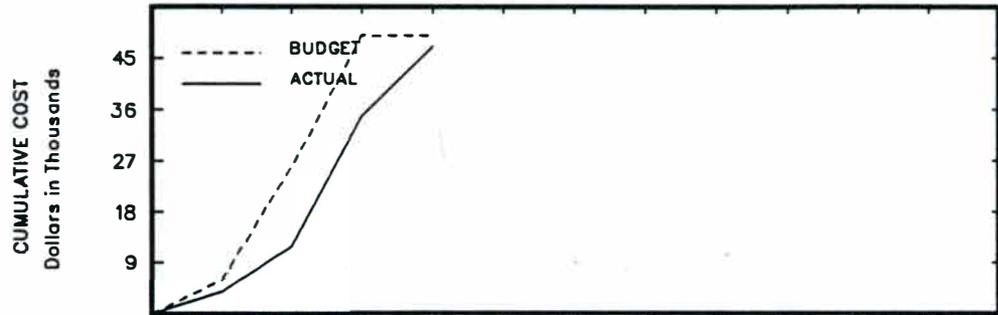
		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	6	6	12	26	27	26	26	27	28	25	28	24
	ACTUAL	5	12	11	13								
	VARIANCE	1	-6	1	13								
FYTD COSTS	BUDGET	6	12	24	50	77	103	129	156	184	209	237	261
	ACTUAL	5	17	28	41								
	VARIANCE	1	-5	-4	9								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
1. DOCUMENT FIRST FY-90 ANALYTICAL METHODS ROUND ROBIN / WORKSHOP												
2. COMPLETE DATA FORMAT REVISIONS AND CONVERSION OF COMPREHENSIVE DATA BASE TO RELATIONAL TYPE DATA BASE												◇
3. DOCUMENT SECOND FY-1990 ANALYTICAL METHODS ROUND ROBIN / WORKSHOP												◇

LEGEND
 ▽DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

MANAGEMENT SUMMARY REPORT

TITLE: MATERIALS CHARACTERIZATION CENTER (WSRC) B & R NO: TD-2859/15829
 MANAGER: G. B. MELLINGER SPONSOR IDENT: DP
 FY 1990 FUNDING: \$49K REPORT PERIOD: JANUARY 1990



		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY COSTS	BUDGET	6	20	23	0								
	ACTUAL	4	8	23	12								
	VARIANCE	2	12	0	-12								
FYTD COSTS	BUDGET	6	26	49	49								
	ACTUAL	4	12	35	47								
	VARIANCE	2	14	14	2								

MILESTONE STATUS FY 1990	1st QTR			2nd QTR			3rd QTR			4th QTR		
	O	N	D	J	F	M	A	M	J	J	A	S
1. REPORT ON RESULTS OF SECOND FY 1989 ANALYTICAL ROUND ROBIN												

LEGEND ∇DOE-HQ CONTROLLED/MONITORED ○OTHER CONTROLLED ----- SLIP
 ◇DOE-RL CONTROLLED/MONITORED □PNL CONTROLLED : TIME NOW ===== REPROGRAM

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