**Department of Energy**
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JUL 28 1998

98-SCD-096

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

TRANSMITTAL OF THE DEFENSE NUCLEAR FACILITIES SAFETY BOARD (DNFSB) RECOMMENDATION 93-5 IMPLEMENTATION PLAN (IP) QUARTERLY REPORT FOR APRIL THROUGH JUNE 1998

The DNFSB 93-5 Quarterly Report for April through June 1998 is attached. This quarterly report addresses issues and milestones as presented in Recommendation 93-5 IP, Revision 1.

The U.S. Department of Energy (DOE), Richland Operations Office staff has completed several significant technical achievements this quarter. All comments from the Tier 1 and Chemical Reaction Sub-Tank Advisory Panel members have been incorporated into the Revised Organic Solvent Topical Report. This report provides the basis for closure of the Organic Solvent Safety Issue and also provides the needed information to complete three DNFSB 93-5 milestones. Review of the Organic Complexant Topical Report has been completed. Resolution of the comments by the contractor is in progress. The significance of this report is to provide the basis for closure of the Organic Complexant Safety Issue and to provide the information needed to complete one DNFSB 93-5 milestone.

The certification of the PAS-1 shipping cask, which will be used to transport tank waste samples from the 222-S Laboratory to the Tank Waste Remediation System (TWRS) Privatization Contractor, was issued on June 11, 1998. The procedures for the cask inspection required by the certification have been drafted and are currently under review at DOE-Headquarters.

If you have any questions, please contact me or your staff may contact Jackson Kinzer, Assistant Manager for TWRS, on (509) 376-7591.

Sincerely,

John D. Wagoner
Manager

SCD:WSL

Attachment

cc w/attach:
J. M. Owendoff, EM-2
C. A. Peabody, EM-4
R. E. Lightner, EM-38
K. T. Lang, EM-38
M. A. Payne, LMHC (w/o attach)
W. E. Ross, LMHC (w/o attach)
M. B. Whitaker, S-3.1

# ATTACHMENT

# DNFSB 93-5 RECOMMENDATION IMPLEMENTATION PLAN QUARTERLY REPORT APRIL 1, 1998 TO JUNE 30, 1998

# DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

## EXECUTIVE SUMMARY

The highlights for this quarter were the continued operation of the Rotary Mode Core System (RMCS) in SX and S Tank Farms, continuing progress toward issuing both the Organic Solvent and Organic Complexant Topical Reports, and certification of the PAS-1 shipping cask. No Implementation Plan Milestones were due or completed this quarter. The current issues discussed are the status of the two milestones related to the High Heat Safety Issue, the status of the Final Safety Analysis Report, and a temporary suspension of work activities at the 222-S Laboratory for conduct of operations concerns.

**DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998**

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# DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

## 1 PURPOSE

This quarterly report covers High Level Waste Tank Characterization activities at the Hanford Site related to the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 93-5 during the period April 1, 1998 to June 30, 1998. The Recommendation dealt with insufficient technical information to ensure safe storage, operation, retrieval, and disposal of the Hanford high level tank wastes in both single and double-shell tanks. An Implementation Plan responding to Recommendation 93-5 was transmitted to the DNFSB by the Secretary of Energy in January 1994. The plan was accepted by the DNFSB on March 25, 1994. On June 17, 1996, Revision 1 to the Implementation Plan was submitted to the DNFSB. Revision 1 was accepted by the DNFSB on September 4, 1996 with comments.

## DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

## 2 QUARTERLY HIGHLIGHTS

1.1 Milestones Submitted - None

1.2 Status of Rotary Mode Core Sampling (RMCS) - A second core from tank SX-105, two cores from SX-103, and two cores from S-110 were obtained using rotary mode operation. Modifications to the RMCS Exhauster to meet the major stack requirements were completed for one exhauster and are in progress on the second exhauster. A revised Toxic Air Pollutant Notice of Construction for the RMCS Exhauster is under review by DOE/RL and will be submitted to the Washington Department of Ecology during the next quarter. When approved by Ecology, this will allow operation of the RMCS Exhauster on all of the remaining tanks that require rotary drilling.

1.3 Organic Solvent Topical Report - Comments from the Tier I and Chemical Reaction Sub-Tank Advisory Panel (SubTAP) reviews have been incorporated into the report. When approved, this report will provide the basis for closure of the Organic Solvent Safety Issue, removal of solvent tanks from the Organic Watchlist, and provide the basis for an Authorization Basis amendment. It will also allow disposition of three DNFSB 93-5 milestones: 5.4.3.4d, "Letter reporting completion of vapor sampling of all SSTs," 5.4.3.4e, "Letter reporting adequate vent path in all SSTs suspected of containing organic solvents," and 5.4.3.4f, "Letter reporting completion of vapor sampling of all DSTs."

1.4 Organic Complexant Topical Report - A draft of this report was submitted to DOE by the contractor this quarter, and has since been reviewed by DOE/RL and the Chemical Reaction SubTAP. Resolution of the comments by the contractor is in progress. Approval of this report is anticipated during the next quarter. When approved, this report will provide the basis for closure of the Organic Complexant Safety Issue, removal of tanks from the Organic Watchlist, and an Authorization Basis amendment. It will also complete DNFSB 93-5 milestone 5.4.3.3b, "Letter reporting results of testing completion (using real waste samples) to confirm safe storage criteria, and organic solubility and aging effects on fuel content. If models are confirmed, an assessment of tank wastes compared to safe storage criteria will be scheduled."

1.5 PAS-1 Cask Certification - The certification of the PAS-1 shipping cask to transport tank waste samples was issued June 11, 1998. This cask will be required to transfer TWRS tank sample material from the 222-S Laboratory to the TWRS Privatization Contractor starting October 1998. The procedures for the cask inspection required by the certification have been drafted and submitted to DOE-HQ for their approval.

1.6 Tanks Sampled - During this quarter seven tanks were core sampled, eight grab samples were taken, four tracer gas vapor samples were taken, and monthly vapor grab samples at the Standard Hydrogen Monitoring System (SHMS) cabinets were taken.

## DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

## 3 CURRENT ISSUES

1.7 High Heat Safety Issue Milestones - Initiating the retrieval of tank C-106 is on schedule for November 1998. Resolution of the High Heat Safety Issue is estimated to be completed in December 1999.

1.8 Final Safety Analysis Report (FSAR) Milestone - In the letter from J. Wagoner to J. T. Conway, DNFSB, "Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 93-5 Implementation Plan (IP) Revision 1, Milestone 5.4.3.1.d, 'Approved Final Safety Analysis Report (FSAR),'" 98-TWR-015, dated April 29, 1998, RL reported that the TWRS FSAR approval will be delayed until January 30, 1999. The Tier II and the initial Tier III reviews are being conducted concurrently.

1.9 222-S Laboratory Standdown - Activities in the 222-S Laboratory were suspended June 26, 1998, due to a recent increase in the number of Radiological Work Procedures infractions and related conduct of operations issues. This work stoppage was initiated to allow a critique of the situation and development of corrective actions. A review of those procedures that govern work being performed by each employee was initiated to ensure employees understand the applicable procedures and job requirements as part of the corrective action from the critique. Completion of this corrective action will delay laboratory work by approximately 21 days.

DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

## 4 STATUS OF REVISION 1 MILESTONES OVERDUE, DUE WITHIN SIX MONTHS, OR COMPLETED DURING THE REPORTING QUARTER

1.10 Safe Storage of Tank Wastes and Safe Operation of Tank Farms

**Commitment Number**

**5.4.3.1 TWRS Manage Tank Waste Function Authorization Basis**

Statement: Upgrade the Authorization Basis for the TWRS Manage Tank Waste Function

Responsible Manager: Assistant Manager, TWRS

Applicable facilities and programs: TWRS

Milestone deliverables/due dates:

d. **Approved FSAR.**
Due Date: June 1997
Status: Overdue. The estimated completion date (ECD) is January 1999.

**5.4.3.3 Organic Complexants**

Statement: Complete testing and evaluation confirming simulant results with real waste.

Responsible Manager: Assistant Manager, TWRS

Applicable facilities and programs: TWRS

Milestone deliverables/due dates:

b. **Letter reporting results of testing completion (using real waste samples) to confirm safe storage criteria, and organic solubility and aging effects on fuel content. If models are confirmed, an assessment of tank wastes compared to safe storage criteria will be scheduled.**
Due Date: November 1998
Status: On Schedule.

**5.4.3.6 High Heat**

Statement: Retrieve wastes from tank C-106

Responsible Manager: Assistant Manager, TWRS

Applicable facilities and programs: TWRS

Milestone deliverables/due dates:

c. **Letter reporting initiation of tank C-106 waste retrieval.**
Due Date: October 1997
Status: Overdue. Equipment modifications were delayed until the safety assessment was approved. ECD is November 1998.

d. **Letter reporting completion of topical report to resolve the High Heat Safety Issue.**
Due Date: May 1998
Status: Overdue. ECD is December 1999.

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1.11 Technical Basis for Characterization

5.6.3.1 Complete Tank Waste Characterization Basis Sampling and Analysis

Statement: Complete the sampling and analysis specified by the Tank Waste Characterization Basis (approximately 28 tanks) to provide the highest priority information requested by the programmatic Data Quality Objectives.

Responsible Manager: Assistant Manager, TWRS

Applicable facilities and programs: TWRS

Milestone deliverables/due dates:

h. **Letter reporting completion of tank-by-tank safety status evaluation.**
   Due Date: July 1998
   Status: On Schedule.

l. **Update Tank Content Models or define limitations of the models.**
   Due Date: December 1998
   Status: On Schedule.

3 REFERENCES

None.

## DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

# 4 APPENDICES

## 4.1 High Priority Tank Core Sampling and Analysis Status

This information will no longer be reported. Milestones 5.5.6.1a, "Letter report completion of *Tank Waste Characterization Basis* (Brown et al. 1995) High Priority Tanks sampling and analysis for the Disposal Program," and 5.6.3.1g, "Letter report completion of *Tank Waste Characterization Basis* (Brown et al. 1995) High Priority Tanks sampling and analysis," were reported complete in the last quarterly report.

## 4.2 Tanks Sampled during Third Quarter FY 1998 (April through June 1998)

| SAMPLE | Actual Start | Actual Finish |
|---|---|---|
| AP-103 Grab Sample | 3/26/98 | 4/1/98 |
| S-102 Push Samples 1 Segments 11 | 2/27/98 | 4/2/98 |
| AN-101 Grab Sample Compatibility | 4/7/98 | 4/8/98 |
| C-104 Tracer Gas Vapor Sample | 4/13/98 | 4/17/98 |
| TX-118 Rotary Samples 2 Segments 6 High Priority | 3/9/98 | 4/13/98 |
| AN-107 Grab Sample Privatization | 4/10/98 | 4/14/98 |
| S-111 Push Sample 1 Segments 11 | 4/6/98 | 4/16/98 |
| Vapor SHMS Grab Samples | 4/15/98 | 4/16/98 |
| U-244 Tracer Gas Vapor Sample | 4/2/98 | 4/17/98 |
| AW-101 Grab Samples - Privatization | 4/21/98 | 4/21/98 |
| U-109 Push Sample 1 Segments 10 | 4/20/98 | 4/28/98 |
| TX-244 Vapor Tracer Gas Study | 5/4/98 | 5/7/98 |
| SX-103 Rotary Samples 2 Segments 13 High Priority | 4/17/98 | 5/11/98 |
| Vapor SHMS Grab Samples | 5/11/98 | 5/26/98 |
| AP-106 Grab Sample | 5/27/98 | 5/27/98 |
| SX-105 Rotary Sample 1 Segments 13 | 5/12/98 | 6/1/98 |
| S-110 Rotary Samples 2 Segments 8 High Priority | 5/8/98 | 6/3/98 |
| TX-244 Vapor Tracer Gas Study | 6/3/98 | 6/3/98 |
| AN-107 Grab Sample Privatization | 6/9/98 | 6/9/98 |
| Vapor Sample Humidity Study | 5/22/98 | 6/11/98 |
| SX-104 Grab Sample (Saltwell) | 6/16/98 | 6/19/98 |
| AW-101 Grab Sample Privatization | 6/23/98 | 6/24/98 |
| Vapor SHMS Grab Samples | 6/5/98 | 6/26/98 |

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4.3 Sampling Schedule for Fourth Quarter FY 1998 (July through September 1998)

| TITLE | Early Start | Early Finish |
|---|---|---|
| SX-102 Rotary Samples 2 Segments 11 | 6/15/98 | 7/20/98 |
| U-107 Rotary Samples 2 Segments 9 High Priority | 6/24/98 | 7/29/98 |
| AN-102 Grab Sample 3 Privatization | 6/30/98 | 7/13/98 |
| Vapor Standard Hydrogen Monitoring System Samples(SHMS) | 7/1/98 | 7/23/98 |
| S-304 Grab Sample Compatibility | 7/21/98 | 7/23/98 |
| AN-102 Grab Sample 3 Privatization | 7/24/98 | 8/4/98 |
| BY-105 Rotary Samples 2 Segments 9 High Priority | 7/30/98 | 9/1/98 |
| Vapor SHMS Samples | 8/3/98 | 8/21/98 |
| AP-104 Grab Sample - Caustic Verification | 8/7/98 | 8/11/98 |
| S-103 Grab Sample Compatibility | 8/12/98 | 8/14/98 |
| Vapor SHMS Samples | 9/1/98 | 9/22/98 |
| C-104 Rotary Sample 3 Segment 5 | 9/11/98 | 10/30/98 |
| TX-118 Rotary Sample 2 Segments 8 High Priority | 9/16/98 | 10/19/98 |

4.4 List of Tank Sampling and Analysis Plans Issued during the Quarter

None

4.5 List of Tank Characterization Reports Issued during the Quarter

| Tank | Number | Rev | Date |
|---|---|---|---|
| B-107 | HNF-SD-WM-ER-723 | 1 | 05/04/98 |
| BX-111 | HNF-SD-WM-ER-653 | 1 | 05/05/98 |
| BY-109 | HNF-SD-WM-ER-648 | 1 | 04/14/98 |
| S-106 | HNF-SD-WM-ER-714 | 1 | 04/20/98 |
| T-105 | HNF-SD-WM-ER-369 | 2 | 06/18/98 |
| T-112 | HNF-SD-WM-ER-699 | 1 | 06/11/98 |
| U-112 | HNF-SD-WM-ER-720 | 1 | 05/28/98 |

4.6 List of Laboratory Analytical Reports Issued

| Tank | Title | Number | Date |
|---|---|---|---|
| AW-102 | Tank 241-AW-102, Grab Samples 2AW-97-1 through 2AW-97-2, Analytical Results for the Final Report | HNF-SD-WM-DP-295, Rev. 0 | 4/15/98 |
| AW-103 | Tank 241-AW-103, Cores 193 and 194 Analytical Results for the Final Report | HNF-SD-WM-DP-249, Rev. 0A | 5/8/98 |
| AW-106 | Tank 241-AW-106, Grab Samples, 6AW-97-4, 6AW-97-5 and 6AW-97-6 Analytical Results for | HNF-SD-WM-DP-303, Rev. 0 | 6/8/98 |

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| Tank | Title | Number | Date |
|---|---|---|---|
| | the Final Report | | |
| AX-101 | Tank 241-AX-101, Cores 226 and 228 Analytical Results for the Final Report | HNF-SD-WM-DP-300, Rev. 0 | 6/18/98 |
| AX-104 | Tank 241-AX-104 Auger Samples, 97-AUG-001, 97-AUG-002, 97-AUG-003 and 97-AUG-004 Analytical Results for the Final Report | HNF-SD-WM-DP-298, Rev. 0 | 4/15/98 |
| SX-101 | Tank 241-SX-101, Cores 225 and 227 Analytical Results for the Final Report | HNF-SD-WM-DP-293, Rev. 0 | 6/12/98 |
| SX-106 | Tank 241-SX-106, Cores 223 and 224 Analytical Results for the Final Report | HNF-SD-WM-DP-288, Rev. 0 | 6/9/98 |
| SX-115 | Tank 241-SX-115, Grab Samples 15SX-98-1, 15SX-98-2 and 15SX-98-3 Analytical Results for the Final Report | HNF-SD-WM-DP-304, Rev. 0 | 5/19/98 |
| SY-102 | Tank 241-SY-102 Grab Samples, 2SY-98-1, 2SY-98-2, 2SY-98-3 and 2SY-98-4 Analytical Results for the Final Report | HNF-SD-WM-DP-307, Rev. 0 | 6/18/98 |

4.7 Table of DNFSB 93-5 Implementation Plan Revision 1 Commitments Status

| Number | Description | Due Date | Submitted to DNFSB |
|---|---|---|---|
| 5.4.3.1a | Comprehensive Source Terms Report | 6/30/96 | 6/30/96 |
| 5.4.3.1b | Report on Lightning Evaluation | 8/31/96 | 8/30/96 |
| 5.4.3.1c | Approved Basis for Interim Operations | 12/31/96 | 12/30/96 |
| 5.4.3.1d | Approved Facility Safety Analysis Report. | 6/30/97 | |
| 5.4.3.2a | Topical Report on Resolution of Ferrocyanide Safety Issue | 1/31/97 | 9/23/96 |
| 5.4.3.3a | Supporting Technical Document on Organic Complexant Safety Issue | 12/31/96 | 6/27/97 |
| 5.4.3.3b | Confirm Safe Storage Criteria, and Organic Solubility and Aging Effects on Fuel Content | 11/30/98 | |
| 5.4.3.4a | Safety Assessment Covering Pool and Entrained Organic Solvent Fires | 10/31/96 | 10/21/96 |
| 5.4.3.4b | Organic Speciation of Core Samples for BY-108 and BY-110, and Auger Samples for C-102 | 10/31/96 | 10/31/96 |
| 5.4.3.4c | Supporting Technical Document for Organic Solvent Safety Issue | 12/31/96 | 12/23/96 |
| 5.4.3.4d | Vapor Sampling of all Single-Shell Tanks (SST) | 12/31/99 | |
| 5.4.3.4e | Adequate Vent Path in All SSTs Suspected of Containing Organic Solvents | 4/30/00 | |
| 5.4.3.4f | Letter Reporting Completion of Vapor Sampling of All Double-Shell Tanks (DST) | 12/31/00 | |
| 5.4.3.5a | Analyses to Determine If Additional Tanks Have Potential to Exceed 25% of the Lower Flammability Limit (LFL) | 6/30/96 | 6/28/96 |
| 5.4.3.5b | Gas Monitoring Instrumentation Upgrade Needs for Additional Tanks with the Potential to Exceed 25% of the LFL | 8/31/96 | 8/19/96 |
| 5.4.3.5c | Safety Assessment for Rotary Mode Core Sampling (RMCS) in Flammable Gas Tanks | 9/30/96 | 9/27/96 |
| 5.4.3.5d | Qualification of RMCS System for Use in Flammable Gas Tanks. | 9/30/96 | 1/7/98 |

## DNFSB 93-5 QUARTERLY REPORT, APRIL 1, 1998 TO JUNE 30, 1998

| Number | Description | Due Date | Submitted to DNFSB |
|---|---|---|---|
| 5.4.3.5e | Safety Assessment for Saltwell Pumping in Flammable Gas Tanks | 10/31/96 | 10/31/96 |
| 5.4.3.5f | Letter Reporting Completion of AN Tank Farm Ventilation Upgrade | 11/30/96 | 1/30/97 |
| 5.4.3.5g | Flammable Gas Safety Screening of Remaining Passively Ventilated SSTs | 11/30/96 | 11/12/96 |
| 5.4.3.5h | Supporting Technical Document on Flammable Gas Safety Issue. | 12/31/96 | 1/30/97 |
| 5.4.3.5i | External Equipment Spark Sources in Flammable Gas Tanks | 12/31/96 | 12/24/96 |
| 5.4.3.5j | Voidmeter and Viscometer Readings in Tanks AN-103, AN-104, and AN-105 | 12/31/96 | 12/18/96 |
| 5.4.3.5k | Retained Gas Sampling in Tanks AW-101, AN-103, AN-104, AN-105, and A-101 | 3/31/97 | 3/28/97 |
| 5.4.3.5l | Refinement of Flammable Gas Generation/Retention Models | 5/31/97 | 5/27/97 |
| 5.4.3.6a | C-106 Supernatant Sampling and Analysis | 10/31/96 | 10/30/96 |
| 5.4.3.6b | C-106 Retrieval Safety Assessment | 7/31/97 | 10/3/97 |
| 5.4.3.6c | Initiation of Tank C-106 Waste Retrieval | 10/31/97 | |
| 5.4.3.6d | Topical Report to Resolve the High Heat Safety Issue | 5/31/98 | |
| 5.4.3.7a | Topical Report to Resolve the Criticality Safety Issue | 12/31/96 | 12/18/96 |
| 5.5.6.1a | Completion of High Priority Tanks Sampling and Analysis for the Disposal Program | 3/31/98 | 3/27/98 |
| 5.6.3.1a | Comparison Between Truck and Cart Vapor Sampling Systems | 9/30/96 | 9/27/96 |
| 5.6.3.1b | Implementation of Fourier Transform Infrared Moisture Analysis Capability in 222-S Laboratory | 11/30/96 | 11/19/96 |
| 5.6.3.1c | Proposed Content and Format of Tank-by-Tank Safety Status Evaluation | 1/31/97 | 1/30/97 |
| 5.6.3.1d | Updated Hanford Tank Contents Estimates | 6/30/97 | 6/6/97 |
| 5.6.3.1e | Verification of Headspace Homogeneity | 10/31/97 | 10/22/97 |
| 5.6.3.1f | Standard Inventory Estimates for All Tanks. | 11/30/97 | 10/31/97 |
| 5.6.3.1g | Completion of High Priority Tanks Sampling and Analysis. | 3/31/98 | 3/27/98 |
| 5.6.3.1h | Tank-by-Tank Safety Status Evaluation | 7/31/98 | |
| 5.6.3.1i | Update Tank Content Models | 12/31/98 | |
| 5.6.3.1j | Completion of Core Sampling of All Tanks | 12/31/02 | |