[DOE (RLOO) LETTERHEAD]

FEB 10 1997

97-WSD-014

The Honorable Mr. 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 DEFENSE NUCLEAR FACILITIES SAFETY BOARD (DNFSB) RECOMMENDATION 93-5 IMPLEMENTATION PLAN (IP) QUARTERLY REPORT FOR OCTOBER THROUGH DECEMBER 1996

The  DNFSB 93-5 Quarterly Report, October 1 through December 31, 1996, is attached (Attachment 1). This quarterly report addresses issues and milestones as presented in Recommendation 93-5 IP, Revision 1.

Attachment 2 (Change 2, dated January 15, 1997) lists minor changes to Recommendation 93-5 IP, Revision 1. The page changes included in Attachment 2 should be inserted into all copies of the IP to keep it up to date. This change clarifies those tanks that will be sampled to satisfy Milestone 5.6.3.1.g, "Letter Reporting Completion of Tank Waste Characterization Basis (Brown et al., 1995) High Priority Tanks Sampling and Analysis." Additional detail regarding this change is given in Section 3.2.3 of this quarterly report. A revised sampling schedule reflecting the change in the high priority tank list will be formally documented in the next DNFSB Recommendation 93-5 quarterly report due to the DNFSB on April 30, 1997.

Please note that the quarterly report gives a forecasted date of March 1997 for completing the qualification of the Rotary Mode Core Sampling System in Flammable Gas Tanks.

If you have any questions, please contact me, or your staff may contact

Jackson Kinzer, Assistant Manager for the Office of Tank Waste Remediation System, on (509) 376-7591.

Sincerely,

John D. Wagoner
Manager

WSD:NWW

Attachments (2)

cc w/attachs:
J. Owendoff, EM-2
J. Tseng, EM-4
R. Erickson, EM-38
K. Lang, EM-38
M. Whitaker, S-3.1

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

EXECUTIVE SUMMARY

Significant accomplishments this quarter included submittal of eleven milestones, closure of the Ferrocyanide Issue, submittal of the Criticality Issue Topical Report, conditional approval of the Basis for Interim Operations, and completion of tank C-106 liquid and sludge sampling.

The current issues discussed are the transition of vapor analytical lab support, the flammable gas Unreviewed Safety Question (USQ) impact on sampling, resumption of rotary core drilling, resumption of push mode core drilling, clarification of the High Priority Tanks (HPTs) for core sampling, status of the organic safety issue Data Quality Objective (DQO) revision, status of the flammable gas safety issue DQO revision, and the planned cancellation of the Generic In-Tank Health and Safety Vapor DQO.

A Justification for Continued Operation (JCO) for the Flammable Gas USQ was reviewed by Department of Energy Richland Operations Office (DOE/RL) with comments to be incorporated into the JCO by mid-February 1997. As an interim measure, DOE approved Tank Farm Operations Standing Orders for East and West Tank Farms that direct those controls and compensatory measures necessary for work in the Tank Farms. The approval during the last week in December of temporary exceptions to the Standing Order controls and requirements allowed the resumption of sampling as USQ evaluations are done for each type of sampling. All types of scheduled sampling, except rotary mode, were resumed during January 1997. Three milestones were impacted by the implementation of flammable gas controls. Milestone 5.4.3.5f, “Letter reporting completion of AN Tank Farm ventilation upgrade,” was delayed until January 1997 (completed on January 30, 1997.) Milestones 5.5.6.1a, “Letter reporting 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 reporting completion of *Tank Waste Characterization Basis* (Brown et al. 1995) High Priority Tanks sampling and analysis” may be delayed unless the three month pause in core sampling can be recovered.

The milestone for completing the qualification of the Rotary Mode Core Sample system for use in flammable gas tanks will be completed by March 1997. A Department of Energy Operational Readiness Review (ORR) was completed in December.

Two other milestones that were due this quarter were delayed. Milestone 5.4.3.3a, “Letter reporting completion of supporting technical document on Organic Complexant Safety Issue,” will be completed in June 1997. The delay is to allow incorporation of Defense Nuclear Facilities Safety Board (DNFSB) staff comments on the technical document. A rough draft of the document, with incorporated comments, will be provided to DNFSB staff by March 1997. Another Milestone, 5.4.3.5h, “Letter reporting completion of supporting technical document on Flammable Gas Safety Issue,” was delayed until January 1997 (completed on January 30, 1997.) The delay allowed incorporation of comments from independent reviewers.

A minor change (Change 2) to Recommendation 93-5 Implementation Plan, Revision 1, is a second attachment to the forwarding letter for this report. This change clarifies those tanks that will be sampled to satisfy the Implementation Plan (IP) Milestone 5.6.3.1.g, "Letter Reporting completion of Tank Waste Characterization Basis (Brown et al. 1995) High Priority Tanks Sampling and Analysis." The schedule for High Priority Tank core sampling is currently being reviewed for ways to recover the delays from the Flammable Gas USQ and Authorization Basis development. A revised schedule will be provided in the next Quarterly Report.

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

TABLE OF CONTENTS

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

1 PURPOSE

This quarterly report covers High Level Waste Tank Characterization activities at the Hanford Site related to the DNFSB Recommendation 93-5 during the period October 1 to December 31, 1996. The Recommendation dealt with the 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.

2 QUARTERLY HIGHLIGHTS

2.1 Milestones Submitted - The following milestone completion reports were submitted to DNFSB during this quarter:

- 2.1.1 5.4.3.4a, Safety Assessment Covering Pool and Entrained Organic Solvent Fires, October 21, 1996.
- 2.1.2 5.4.3.4b, Organic Speciation of Core Samples for BY-108 and BY-110, and Auger Samples for C-102, October 21, 1996
- 2.1.3 5.4.3.6a, C-106 Supernatant Sampling and Analysis, October 30, 1996.
- 2.1.4 5.4.3.5e, Safety Assessment for Saltwell Pumping in Flammable Gas Tanks, October 31, 1996.
- 2.1.5 5.4.3.5g, Flammable Gas Safety Screening of Remaining Passively Ventilated SSTs, November 12, 1996.
- 2.1.6 5.6.3.1b, Implementation of FTIR Moisture Analysis Capability in 222-S Laboratory, November 19, 1996.
- 2.1.7 5.4.3.5j, Voidmeter and Viscometer Readings in Tanks AN-103, AN-104, and AN-105, December 18, 1996.
- 2.1.8 5.4.3.7a, Topical Report to Resolve the Criticality Safety Issue, December 18, 1996.
- 2.1.9 5.4.3.4c, Supporting Technical Document for Organic Solvent Safety Issue, December 23, 1996.
- 2.1.10 5.4.3.5i, External Equipment Spark Sources in Flammable Gas Tanks, December 24, 1996.
- 2.1.11 5.4.3.1c, Approved BIO, December 30, 1996,

2.2 Ferrocyanide Issue Closure - A letter accepting the Ferrocyanide Topical Report and concurring with closure of the Ferrocyanide safety issue was received from the DNFSB. Removal of the remaining Ferrocyanide tanks from the Watchlist has been approved by DOE/RL.

2.3 Criticality Topical Report - A topical report was issued to provide the basis for closing the Criticality safety issue. This report evaluated the safety margins and the potential physical and chemical concentration mechanisms in the tank farms. The report concluded that: 1) fissile material in the waste tanks is distributed at subcritical concentrations, and 2) no physical or chemical phenomena or mechanism has been identified that could cause an accidental criticality.

2.4 Basis for Interim Operation Conditional Approval - DOE/RL is reviewing the Basis for Interim Operations (BIO.) This review has included discussions with members of the DNFSB Staff. Refinement of the Technical Specification Requirements (TSRs) is continuing. Although the BIO was conditionally approved by DOE/RL on December 12, 1996, work will continue to be performed under the Interim Safety Basis until transition to the BIO and its associated controls are accomplished.

2.5 Final Safety Analysis Report -DOE/RL is reviewing a draft of the Final Safety Analysis Report (FSAR). This report is also currently undergoing an independent review. Upon completion of these reviews, comments will be provided to the contractor for incorporation.

2.6 C-106 Liquid and Sludge Sampling Completed - A document entitled, "Chemical and Chemically Related Considerations Associated with Sluicing Tank C-106 Waste to Tank AY-102," WHC-SD-WM-TI-756, Revision 1, was released on October 10, 1996. This report addresses Chemical Reactions Sub-Tank Advisory Panel (CRS Sub-TAP) concerns related to waste compatibility issues associated with the upcoming retrieval of Tank C-106 sludge and transfer of the sludge to Tank AY-102. This document satisfies DNFSB 93-5 Implementation Plan Milestone 5.4.3.6.a, “Letter reporting completion of tank C-106 supernatant and sludge sampling and analysis.”

3 CURRENT ISSUES

3.1 Management/Administration

3.1.1 Transition of Vapor Analytical Laboratory to Numatec Special Analytical Support - As reported last quarter, DOE has directed that the role of "lead vapor laboratory" should be shifted from Pacific Northwest National Laboratory (PNNL) to Numatec Special Analytical Support group of Hanford Analytical Services by January 15, 1997. This transition is on schedule. All equipment and personnel are in place, the procedures have been developed and personnel trained, and a Quality Assessment has been conducted satisfactorily. A demonstration analysis on a tank vapor sample is in progress and will complete the transition plan. To ensure technical continuity, PNNL will analyze the remaining Temporal and Homogeneity Study samples.

3.2 Technical

3.2.1 Flammable Gas Unreviewed Safety Question Impact on Sampling - Core sampling was stopped on October 8, 1996, and all sampling was stopped on October 18, 1996 by the uncertainties surrounding the proposed Justification for Continued Operation (JCO) for the Flammable Gas USQ, and by issuance of Tank Farm Standing Orders 96-34 and 96-36. The JCO and its associated Implementation Plan have been reviewed by DOE/RL. DOE comments will be incorporated by mid-February 1997. Implementation of the Standing Orders suspended nearly all tank intrusive activities until an adequate Authorization Basis could be put in place that defined an acceptable safety envelope. As an interim measure, DOE/RL approved specific East and West Tank Farm Standing Orders that implemented a modified version of the proposed JCO controls. Vapor sampling of some tanks was resumed in November. All types of scheduled sampling, except rotary mode core sampling (see section 3.2.2), were resumed during January 1997 as checklist and USQ evaluations were completed that demonstrate compliance with the Standing Orders. Three milestones were impacted by the implementation of flammable gas controls. Milestone 5.4.3.5f, "Letter reporting completion of AN Tank Farm ventilation upgrade," was delayed until January 1997 (completed on January 30, 1997.) Milestones 5.5.6.1a, "Letter reporting 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 reporting completion of *Tank Waste Characterization Basis* (Brown et al. 1995) High Priority Tanks sampling and analysis," may be delayed unless the three month pause in core sampling can be recovered.

3.2.2 Resumption of Rotary Core Drilling - During October, issues identified by the ORR process were addressed and a second contractor ORR was conducted during November. An intensive review of the contractor ORR process and findings was conducted by DOE/RL line management before restarting the DOE Independent ORR. The DOE Independent ORR was completed in early December. Three prestart items were identified that required completion before resumption of rotary core drilling. During resolution of these items, an additional design issue concerning the calibration of the exhauster flammable gas monitor sensor was discovered. A separate letter has been sent to the DNFSB advising them of this delay in completing Milestone 5.4.3.5d, "Letter reporting qualification of Rotary Mode Core Sampling System for use in Flammable Gas Tanks." Resumption of rotary core drilling with Truck #3 requires the installation of

modifications similar to those installed in Truck #4 and resolution of the same design issue. The estimate for closing these issues and completing Milestone 5.4.3.5d is March 1997.

3.2.3 High Priority Tanks (HPTs) for Core Sampling - A review was completed to clarify those tanks that will be sampled to satisfy the Implementation Plan (IP) Milestone 5.6.3.1.g, "Letter Reporting completion of Tank Waste Characterization Basis (Brown et al. 1995) High Priority Tanks Sampling and Analysis." Closure of the Ferrocyanide safety issue, new information gained from sample results, and revised information needs identified by the information user programs lead to the proposed revision in the HPT list.

The high relative priorities for tanks BY-105 and SX-104 in Revision 1 of the Tank Waste Characterization Basis and in Revision 1 to the Recommendation 93-5 Implementation Plan were due in part to a high prioritization for all Flammable Gas Safety Issue tanks. A combination of recent experiments, tank characterization information, and technical studies were summarized in a new report “Gas Retention and Release Behavior in Hanford Single-Shell Waste Tanks,” PNNL-11391, issued in December 1996. Based on this report, each of the flammable gas tanks have been placed into four waste types. Waste types 1 and 2 appear to retain the most flammable gases, based on both analysis of the waste physical properties and observed tank measurements. Tanks BY-105 and SX-104 contain the lower priority waste type 3. The four tanks that are now expected to provide the most information when core sampled with the Retained Gas Sampler are U-103 (waste type 1A), A-101 (waste type 1B), S-106 (waste type 2A), and BY-101 (waste type 2B). These tanks are included in the revised HPT core sampling list. If adequate samples cannot be obtained from these tanks, secondary (four tanks) and tertiary (two tanks) lists of tanks with flammable gas waste types 1 and 2 will be evaluated for placement on the HPT core sampling. Tanks BY-105 and SX-104 are not included in the primary, secondary, or tertiary lists, and therefore have been removed from the HPT list.

The revised core sampling HPT list includes 17 tanks that have been sampled, one tank that has been sampled but is being evaluated for adequacy (U-107), four original tanks that remain to be sampled, and five replacement tanks that remain to be sampled, for a total of 27 tanks that either have been sampled or will be core sampled to complete this milestone. These changes are summarized in a table in Section 5.1. A complete status of the core sampling HPTs is provided in Section 5.2.

A minor change with replacement pages for the Recommendation 93-5 Implementation Plan reflecting the revised core sampling HPT list is an attachment to the forwarding letter for this Report. This change has been reviewed with the DNFSB Staff. The schedule for High Priority Tank core sampling is currently being reviewed for ways to recover the delays from the Flammable Gas USQ and Authorization Basis development. A revised schedule will be provided in the next Quarterly Report.

3.2.4 Organic Safety Issue DQOs - At a meeting of the CRS Sub-TAP in September, the Sub-TAP expressed a concern that the Organic DQO did not properly address the information needed to close the organic complexant safety issue. Following receipt of the CRS Sub-TAP’s written comments and meeting minutes, an Organic Complexant DQO stakeholder meeting was held in November to develop a revised problem statement and decision questions. Agreement was reached on these items, and a revised Organic Complexant DQO is being drafted by the contractor. A separate Organic Solvent DQO has been written to allow this portion of the Organic DQO to proceed, since a consensus

had previously been reached in this area. The draft Organic Solvent DQO is under review by DOE/RL and Ecology.

3.2.5 Flammable Gas DQO - Revision 3 to the Flammable Gas DQO has been submitted to DOE/RL and is under review. Approval of the DQO is expected during the next Quarter.

3.2.6 Planned Cancellation of the Generic In-Tank Health and Safety Vapor DQO - The "Data Quality Objectives for Generic In-Tank Health and Safety Vapor Issue Resolution," WHC-SD-WM-DQO-002, was written to provide the information necessary to resolve concerns related to the safety of personnel who were required to work near the High Level Waste Tanks. These concerns were expressed in five Secretarial Safety Initiatives. Vapor sampling under this DQO supported the closure of the last of these initiatives in September 1996. Cancellation of this DQO is under review by the contractor and is anticipated in the near future.

3.3 Personnel and Equipment: None

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

4 STATUS OF REVISION 1 MILESTONES DUE WITHIN SIX MONTHS OR COMPLETED DURING THE REPORTING QUARTER (INCLUDES DELAYED MILESTONES)

4.1 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:

c. Approved BIO.

Due Date: December 1996

Status: Conditionally approved by DOE/RL on December 12, 1996. Reported to DNFSB on December 30, 1996.

d. Approved FSAR.

Due Date: June 1997

Status: On schedule. Draft submitted by contractor is in independent review.

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:

a. Letter reporting completion of supporting technical document on Organic Complexant Safety Issue. (This topical report will describe the current understanding of the issue and future work for resolution).

Due Date: December 1996

Status: Overdue. Document will be revised to incorporate DNFSB comments by June 1997.

5.4.3.4 Organic Solvents

Statement: Use vapor samples to identify organic solvent tanks.

Responsible Manager: Assistant Manager, TWRS

Applicable facilities and programs: TWRS

Milestone deliverables/due dates:

a. Letter reporting completion of safety assessment covering pool and entrained organic solvent fires.

Due Date: October 1996

Status: Complete. Reported to DNFSB on October 21, 1996.

b. Letter reporting completion of organic speciation of core samples for BY-108 and BY-110, and auger samples for C-102.

Due Date: October 1996

Status: Complete. Reported to DNFSB on October 21, 1996.

c. Letter reporting completion of supporting technical document for Organic Solvent Safety Issue. (This topical report will describe the current understanding of the issue and future work for resolution).
Due Date: December 1996
Status: Complete. Reported to DNFSB on December 23, 1996.

5.4.3.5 Flammable Gas

Statement: Complete analytical evaluations and steady-state vapor samples to determine which flammable gas tanks require mitigative actions. Qualify saltwell pumping and rotary-mode core sampling for flammable gas environments.

Responsible Manager: Assistant Manager, TWRS
Applicable facilities and programs: TWRS
Milestone deliverables/due dates:

d. Letter reporting qualification of Rotary Mode Core Sampling System for use in Flammable Gas Tanks.
Due Date: September 1996
Status: Overdue. DOE Independent ORR completed on December 12, 1996. Completion requires resolution of open items from ORR and design issues identified subsequent to the ORR. The estimated completion date is March 1997.

e. Letter reporting approval of safety assessment for saltwell pumping in flammable gas tanks and documenting incorporation into the Authorization Basis.
Due Date: October 1996
Status: Complete. Reported to DNFSB on October 31, 1996.

f. Letter reporting completion of AN Tank Farm ventilation upgrade.
Due Date: November 1996
Status: Complete. Reported to DNFSB on January 30, 1997.

g. Letter reporting completion of flammable gas safety screening of remaining passively ventilated SSTs to determine if steady-state vapors are less than 25% of the LFL. (If any tanks are greater than 25% of the LFL, the letter will include the schedule to evaluate corrective actions).
Due Date: November 1996
Status: Complete. Reported to DNFSB on November 12, 1996.

h. Letter reporting completion of supporting technical document on Flammable Gas Safety Issue. (This topical report will describe the current understanding of the issue and future work for resolution).
Due Date: December 1996
Status: Complete. Reported to DNFSB on January 30, 1997.

i. Letter reporting that external equipment spark sources in flammable gas tanks have been managed by controls or the equipment has been modified.
Due Date: December 1996
Status: Complete. Reported to DNFSB on December 24, 1996.

j. Letter reporting completion of voidmeter and viscometer readings in tanks AN-103, AN-104, and AN-105.
Due Date: December 1996
Status: Complete. Reported to DNFSB on December 18, 1996.

k. Letter reporting completion of retained gas sampling in tanks AW-101, AN-103, AN-104, AN-105, and A-101. If the retained gas sampling performance is satisfactory, include future deployment schedule.
Due Date: March 1997
Status: On schedule.

l. Letter reporting refinement of flammable gas generation/retention models using void meter and retained gas sampling data.
Due Date: May 1997
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:

a. Letter reporting completion of tank C-106 supernatant and sludge sampling and analysis.
Due Date: October 1996
Status: Complete. Reported to DNFSB on October 30, 1996.

5.4.3.7 Criticality

Statement: Resolve the Criticality Safety Issue.
Responsible Manager: Assistant Manager, TWRS
Applicable facilities and programs: TWRS
Milestone deliverables/due dates:

a. Letter reporting completion of topical report to resolve the Criticality Safety Issue.
Due Date: December 1996
Status: Complete. Reported to DNFSB on December 18, 1996.

4.2 Technical Basis for Characterization

Commitment Number

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 DQOs.
Responsible Manager: Assistant Manager, TWRS
Applicable facilities and programs: TWRS
Milestone deliverables/due dates:

b. Letter reporting implementation of FTIR moisture analysis capability in 222-S Laboratory.
Due Date: November 1996
Status: Complete. Reported to DNFSB on November 19, 1996.

c. Letter reporting submittal of proposed content and format for tank-by-tank safety status evaluation.
Due Date: January 1997
Status: Complete. Reported to DNFSB on January 30, 1997.

d. **Updated HTCEs.**
Due Date: June 1997
Status: On schedule.

5 APPENDICES

5.1 Core Sampling High Priority Tank Change Summary

93-5 IP Rev 1				93-5 IP Rev 2		
Original Tank		Information Need	Remove Reason / Status	Substitution Tank		Information Need
1	BY-105	Flammable[1] FeCN Organic History	Flammable gas priority reduced. Ferrocyanide issue closed. / Partial cores obtained 10/06/95.	- 1 2 -	Note[1] U-103 BY-101 SX-101	Flammable Organic History (saltcake) History (spatial)
2	BY-103	FeCN Organic History	Ferrocyanide issue closed. / Not sampled.	3 - -	BX-110 BY-101 SX-101	Organic History (saltcake) History (spatial)
3	SX-104	Flammable[1] History	Flammable gas priority reduced. / Not sampled.	- 4 -	Note[1] S-106 SX-101	Flammable History (spatial) History (sludge)
4	TX-111	History	Not flammable gas. / Not sampled.	5	TY-102	History (T2 Saltcake)
5	TY-103	FeCN	Ferrocyanide issue closed . / Not sampled.	-	--------	
6	S-110	History	Priority reduced. / Not sampled.	-	SX-101	History (sludge)

[1] The high relative priorities for tanks BY-105 and SX-104 in Revision 1 of the Tank Waste Characterization Basis and in Revision 1 to the Recommendation 93-5 Implementation Plan were due in part to a high prioritization for all Flammable Gas Safety Issue tanks. A combination of recent experiments, tank characterization information, and technical studies were summarized in a new report "Gas Retention and Release Behavior in Hanford Single-Shell Waste Tanks," PNNL-11391, issued in December 1996. Based on this report, each of the flammable gas tanks have been placed into four waste types. Waste types 1 and 2 appear to retain the most flammable gases, based on both analysis of the waste physical properties and observed tank measurements. Tanks BY-105 and SX-104 contain the lower priority waste type 3. The four tanks that are now expected to provide the most information when core sampled with the Retained Gas Sampler are U-103 (waste type 1A), A-101 (waste type 1B), S-106 (waste type 2A), and BY-101 (waste type 2B). These tanks are included in the revised HPT core sampling list. If adequate samples cannot be obtained from these tanks, secondary (four tanks) and tertiary (two tanks) lists of tanks with flammable gas waste types 1 and 2 will be evaluated for placement on the HPT core sampling. Tanks BY-105 and SX-104 are not included in the primary, secondary, or tertiary lists, and therefore have been removed from the HPT list.

5.2 Core Sampling High Priority Tank Sampling and Analysis Status

Tank	Rank	Planned Samples	Samples Obtained	Sampling Completed	Lab Analysis Completed	Tank Characterization Report (TCR)
U-103 (New)	100[7]	2P[4]				
BY-101 (New)	55[7]	2P[4]				
U-105[1]	93	3R[3]	3 cores	3/18/96	6/25/96	WHC-SD-WM-ER-617
U-109[1]	91	3R[3]	3 cores	1/18/96	6/29/96	WHC-SD-WM-ER-609

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

Tank	Rank	Planned Samples	Samples Obtained	Sampling Completed	Lab Analysis Completed	Tank Characterization Report (TCR)
BX-110 (New)	65[7]	2R				
U-108[1]	84	3R[3]	3 cores	5/6/96	11/6/96	
U-107[1]	76	3R[3]	3 partial cores, need rotary to complete. Under review.			WHC-SD-WM-ER-614
BY-106[1]	74	2R[3]	2 cores[6]	12/19/95	4/29/96	WHC-SD-WM-ER-616
S-102	74	2R[3]	2 cores	3/8/96	7/12/96	WHC-SD-WM-ER-611
SX-103	78[7]	2R[5]				
BY-108[1]	65[2]	3R	3 cores	8/18/95	2/12/96	WHC-SD-WM-ER-533
A-101	99[7]	3R[5]	2 cores	7/25/96		
TX-118	62[7]	3R[5]				
S-106 (New)	60[7]	2P[4]				
BY-110[1]	52[2]	3R	9 cores	10/20/95	4/25/96	WHC-SD-WM-ER-591
TY-102 (New)	48[7]	2R				
BY-104[1]	51	2R[3]	2 cores	11/15/95	5/2/96	WHC-SD-WM-ER-608
C-104	78[7]	2R[5]	2 cores	7/31/96		
S-107	50	3P	3 cores	9/28/95	3/15/96	WHC-SD-WM-ER-589
S-101	50	2R[3]	2 cores	4/3/96	7/23/96	WHC-SD-WM-ER-613
SX-101	48[7]	2R[5]	need rotary			
AW-101	47	2P[4]	2 RGS cores	5/6/96	12/6/96	WHC-SD-WM-ER-470
AN-104	85[7]	2P[4]	2 cores	9/12/96		
AX-101	70[7]	3R[5]	need rotary			
AN-105	37	2P[4]	2 cores	6/28/96		
AN-103	85[7]	2P[4]	2 cores	9/23/96		
B-104	15	2P	2 cores	6/14/95	10/1/95	WHC-SD-WM-ER-552

Notes:

NA = Not Applicable
P = push mode core sample
R = rotary mode core sample
RGS = Retained Gas Sample (RGS). RGS can only be used with truck #1 (push mode truck).

[1] High Priority Tanks (HPTs) designated for additional laboratory analysis (related to organic aging and organic solubility as well as propagation testing with real waste using the Propagating Reactive System Screening Tool (PRSST)) in the *Test Plan for Samples From Hanford Waste Tanks 241-BY-103, BY-104, BY-105, BY-106, BY-108, BY-110, TY-103, U-105, U-107, U-108, AND U-109* (WHC-SD-WM-TP-378).

[2] High Priority Tanks (BY-108 & BY-110) selected for rotary mode core sampling testing to develop rotary mode core sampling procedures (July 1995 - October 1995).

[3] High Priority Tanks originally scheduled for rotary mode core sampling which were push mode sampled using rotary trucks based on the results of the rotary mode core sampling testing conducted in BY-108 & BY-110. This allowed sampling of some HPTs to proceed until authorization for rotary mode core sampling in flammable gas atmospheres is obtained.

[4] High Priority Tanks which require sampling with truck #1 and Retained Gas Sampler. Retained Gas Sampler laboratory extrusion system completed December 1995. Originally, only HPTs AW-101, AN-103, AN-104 and AN-105 required sampling with the RGS. Tank A-101 was determined to require sampling with RGS on 5/20/96.

[5] High Priority Tanks which were determined to require rotary mode core sampling based on the results of the rotary mode core sampling conducted in BY-108 and BY-110 (July - October 1995).

[6] First rotary mode core obtained with nitrogen purge during period October 1994 to January 1995.

[7] The "Rank" value for this tank is from Revision 2 of the Tank Waste Characterization Basis document.

5.3 Tanks Sampled during First Quarter FY 1997 (October through December 1996)

SAMPLE	Actual Start	Actual Finish
BY-112 Rotary Samples 2 Segments 6	9/20/96	10/8/96
AY-102 Grab Sample	10/1/96	10/9/96
B-103 Homogeneity Vapor Samples 6 (4) High Priority	10/15/96	10/17/96
244-TX Grab Sample	10/18/96	10/18/96
BY-108 Temporal Vapor Sample (3)	11/11/96	11/15/96
TY-103 Homogeneity Vapor Samples 6 (4) High Priority	11/20/96	11/22/96
U-112 Homogeneity Vapor Samples 6 (4) High Priority	12/3/96	12/6/96
BX-104 Temporal Vapor Sample (4)	12/12/96	12/13/96
C-107 Temporal Vapor Sample (3)	12/16/96	12/17/96
S-102 Temporal Vapor Sample (3)	12/18/96	12/19/96

5.4 Chart of Samples Taken vs. Samples Scheduled

Two pages inserted following this page.

5.5 Sampling Schedule for Second Quarter FY 1997 (January through March 1997)

TITLE	Early Start	Early Finish
T-110 Grab Sample Compatibility	1/6/97	1/8/97
U-103 Push Samples 2 Segments 9 High Priority	1/7/97	2/3/97
SY-102 Grab Sample compatibility	1/13/97	1/15/97
T-110 Rotary Sample 2 Segments 8	1/14/97	2/14/97
A-106 Vapor Sample (4) (Rotary)	1/15/97	1/16/97
AN-107 Grab Samples	1/21/97	1/23/97
AX-104 Vapor Sample (4) (LDUA)	1/22/97	1/23/97
BY-108 Temporal Vapor Sample (3) High Priority	2/3/97	2/5/97
AZ-101 Grab Sample	2/5/97	2/7/97
BX-104 Temporal Vapor Sample (4) High Priority	2/10/97	2/11/97
S-106 Push Samples 2 Segments 10 High Priority	2/11/97	3/11/97
BX-110 Rotary Samples 2 Segments 4 High Priority	2/18/97	3/21/97
T-112 Rotary Sample 2 Segments 2	2/18/97	3/21/97
C-107 Temporal Vapor Sample (3) High Priority	2/18/97	2/20/97
S-102 Temporal Vapor Sample (3) High Priority	2/25/97	2/27/97
AX-104 Testing Light Duty Utility Arm High Priority	3/10/97	4/2/97
BY-101 Push Samples 2 Segments 10 High Priority	3/12/97	4/8/97
TX-106 Vapor Sample (4) (Rotary)	3/12/97	3/13/97
SX-104 Grab Sample Compatibility	3/17/97	3/19/97
AP-108 CAMPAIGN 97-2 Grab Sample	3/24/97	3/26/97
TY-102 Rotary Samples 2 Segments 2 High Priority	3/24/97	4/24/97
T-204 Rotary Samples 1 Segments 10	3/24/97	4/8/97
TX-114 Vapor Sample (4) (Rotary)	3/26/97	3/27/97
AX-101 Grab Sample Compatibility	3/31/97	4/2/97

5.6 Tank Characterization Plan Completion Schedule

The Tank Characterization Plans for tanks that may be sampled in FY-1997 were submitted to the Washington State Department of Ecology with the Tank Waste Analysis Plan (TWAP) on October 31, 1996. The additional plans listed in Section 5.7 are those with emergent requirements for sampling or those requiring revision. The next planned submittal of Tank Characterization Plans is for FY-1998 in August 1997.

5.7 List of Tank Characterization Plans issued during the Quarter

Tank	Number	Rev	Date
A-101	WHC-SD-WM-TP-331	3	10/24/96
A-103	WHC-SD-WM-TP-497	1	10/24/96
A-106	WHC-SD-WM-TP-501	1	10/24/96
AN-103	WHC-SD-WM-TP-383	3	10/24/96
AN-104	WHC-SD-WM-TP-384	3	10/24/96
AN-105	WHC-SD-WM-TP-385	3	10/24/96
B-105	WHC-SD-WM-TP-502	1	10/25/96

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

Tank	Number	Rev	Date
B-107	WHC-SD-WM-TP-517	0	10/29/96
B-108	WHC-SD-WM-TP-421	3	10/25/96
B-109	WHC-SD-WM-TP-505	1	10/25/96
BX-102	WHC-SD-WM-TP-518	0	10/29/96
BX-111	WHC-SD-WM-TP-504	1	10/25/96
BY-101	WHC-SD-WM-TP-496	1	10/25/96
BY-102	WHC-SD-WM-TP-446	2	10/25/96
BY-107	WHC-SD-WM-TP-274	3	10/25/96
BY-109	WHC-SD-WM-TP-498	1	10/25/96
BY-111	WHC-SD-WM-TP-280	3	10/25/96
BY-112	WHC-SD-WM-TP-281	2	10/25/96
C-102	WHC-SD-WM-TP-206	3	10/25/96
C-104	WHC-SD-WM-TP-208	3	10/24/96
S-106	WHC-SD-WM-TP-389	3	10/24/96
S-108	WHC-SD-WM-TP-390	2	10/29/96
S-109	WHC-SD-WM-TP-391	4	10/24/96
S-110	WHC-SD-WM-TP-205	4	10/24/96
S-111	WHC-SD-WM-TP-317	3	10/25/96
SX-101	WHC-SD-WM-TP-450	2	10/25/96
SX-102	WHC-SD-WM-TP-499	1	10/25/96
SX-103	WHC-SD-WM-TP-313	3	10/28/96
SX-104	WHC-SD-WM-TP-321	3	10/25/96
SX-106	WHC-SD-WM-TP-314	2	10/25/96
T-101	WHC-SD-WM-TP-519	0	10/29/96
T-103	WHC-SD-WM-TP-424	2	10/29/96
T-110	WHC-SD-WM-TP-511	1	10/25/96
T-112	WHC-SD-WM-TP-224	2	10/25/96
T-201	WHC-SD-WM-TP-513	0	10/29/96
T-202	WHC-SD-WM-TP-514	0	10/28/96
T-203	WHC-SD-WM-TP-515	0	10/28/96
T-204	WHC-SD-WM-TP-516	0	10/28/96
TX-103	WHC-SD-WM-TP-394	1	10/29/96
TX-105	WHC-SD-WM-TP-293	3	10/25/96
TX-106	WHC-SD-WM-TP-396	1	10/25/96
TX-108	WHC-SD-WM-TP-397	1	10/29/96
TX-111	WHC-SD-WM-TP-399	3	10/25/96
TX-118	WHC-SD-WM-TP-241	3	10/25/96
TY-101	WHC-SD-WM-TP-299	1	10/29/96
TY-102	WHC-SD-WM-TP-486	2	10/25/96
U-102	WHC-SD-WM-TP-451	2	10/25/96
U-103	WHC-SD-WM-TP-288	4	10/25/96
U-104	WHC-SD-WM-TP-520	0	10/29/96
U-106	WHC-SD-WM-TP-245	3	10/25/96
U-108	WHC-SD-WM-TP-315	3	10/25/96
U-111	WHC-SD-WM-TP-249	1	10/25/95
U-112	WHC-SD-WM-TP-521	0	10/29/96

Tank	Number	Rev	Date
Vapor Sampling and Analysis Plan/Test Plan for Temporal Studies of Tanks BX-104, BY-108, C-107 and S-102)	WHC-SD-WM-TP-522	0 0-A 0-B	12/05/96 12/16/96 12/19/96

5.8 List of Tank Characterization Reports issued during the Quarter

None

5.9 List of 45 Day Reports Issued

Tank	Title	Number	Date
A-101	Tank 241-A-101, Cores 154 and 156 Analytical Results for the 45 Day Report	WHC-SD-WM-DP-200, Rev. 0	10/18/96
B-109	Tank 241-B-109, Cores 169 and 170 Analytical Results for the 45 Day Report	WHC-SD-WM-DP-201, Rev. 0	11/1/96
AP-105	Tank 241-AP-105, Grab Samples 5AP-96-1C, 5AP-96-2C, 5AP-96-3C, 5AP-96-4 and 5AP-96-IB2 Analytical Results for the 45 Day Report	WHC-SD-WM-DP-202, Rev. 0	11/6/96
C-104	Tank 241-C-104, Cores 162 and 165 Analytical Results for the 45 Day Report	WHC-SD-WM-DP-211, Rev. 0	10/23/96

5.10 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 BIO	12/31/96	12/30/96
5.4.3.1d	Approved FSAR.	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	
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	10/21/96
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 SSTs.	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 DSTs.	12/31/00	

DNFSB 93-5 QUARTERLY REPORT, OCTOBER 1 TO DECEMBER 31, 1996

Number	Description	Due Date	Submitted to DNFSB
5.4.3.5a	Analyses to Determine If Additional Tanks Have Potential to Exceed 25% of the 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 in Flammable Gas Tanks	9/30/96	9/27/96
5.4.3.5d	Qualification of Rotary Mode Core Sampling System for Use in Flammable Gas Tanks.	9/30/96	
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	
5.4.3.5l	Refinement of Flammable Gas Generation/Retention Models	5/31/97	
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	
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	
5.6.3.1a	Comparison Between Truck and Cart Vapor Sampling Systems.	9/30/96	9/27/96
5.6.3.1b	Implementation of FTIR 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 HTCEs	6/30/97	
5.6.3.1e	Verification of Headspace Homogeneity	10/31/97	
5.6.3.1f	Standard Inventory Estimates for All Tanks.	11/30/97	
5.6.3.1g	Completion of High Priority Tanks Sampling and Analysis.	3/31/98	
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	