

S**ENGINEERING CHANGE NOTICE**Page 1 of 21. ECN **№ 623530**Proj.
ECN

2. ECN Category (mark one)		3. Originator's Name, Organization, MSIN, and Telephone No.		4. USQ Required?	5. Date
Supplemental <input type="radio"/>		David M. Hammond, NS&L		<input type="radio"/> Yes <input checked="" type="radio"/> No	2/29/00
Direct Revision <input checked="" type="radio"/>		R1-44, 373-1552			
Change ECN <input type="radio"/>		6. Project Title/No./Work Order No.		7. Bldg./Sys./Fac. No.	
Temporary <input type="radio"/>		Retrieval, W-211, W-521, W-522		RPP	
Standby <input type="radio"/>		9. Document Numbers Changed by this ECN (includes sheet no. and rev.)		10. Related ECN No(s).	
Supersedure <input type="radio"/>		HNF-1722, Revision 1		None	
Cancel/Void <input type="radio"/>		11. Related PO No.		None	
12a. Modification Work		12b. Work Package No.	12c. Modification Work Completed		12d. Restored to Original Condition (Temp. or Standby ECNs only)
<input type="radio"/> Yes (fill out Blk. 12b)		N/A	<input type="radio"/> Yes <input checked="" type="radio"/> No		
<input checked="" type="radio"/> No (NA Blks. 12b, 12c, 12d)			N/A		
		Design Authority/Cog. Engineer Signature & Date		Design Authority/Cog. Engineer Signature & Date	
13a. Description of Change					
Revised HNF-1722 to update the planning for developing the Authorization Basis Amendment for Double Shell Tank (DST) Waste Retrieval. This task plan identifies the activities required to authorize the equipment, activities, and operations required to support DST Waste Retrieval. The document was revised to identify the appropriate projects and companies based on recent revisions to the retrieval planning.					
14a. Justification (mark one)					
Criteria Change <input checked="" type="radio"/>					
Design Improvement <input type="radio"/>					
Environmental <input type="radio"/>					
Facility Deactivation <input type="radio"/>					
As-Found <input type="radio"/>					
Facilitate Const. <input type="radio"/>					
Const. Error/Omission <input type="radio"/>					
Design Error/Omission <input type="radio"/>					
14b. Justification Details					
The basis for the planning to retrieve and deliver waste to the private contractor was revised to support Readiness-To-Proceed 2. Thus, the task plan for development of the Authorization Basis Amendment was revised to support the new baseline.					
15. Distribution (include name, MSIN, and no. of copies)					
T. G. Goetz, R1-44, 10					
J. P. Harris, III, R1-49, 1					
J. E. Meacham, R1-49, 1					
G. W. Gault, R1-44, 1					
P. J. Certa, R3-73, 5					
RELEASE STAMP					

ENGINEERING CHANGE NOTICE

Page 2 of 2

1. ECN (use no. from pg. 1)

623530

16. Design Verification Required

- Yes
 No

17. Cost Impact

ENGINEERING

- Additional \$ N/A
 Savings \$ N/A

CONSTRUCTION

- Additional \$ N/A
 Savings \$ N/A

18. Schedule Impact (days)

- Improvement N/A
 Delay N/A

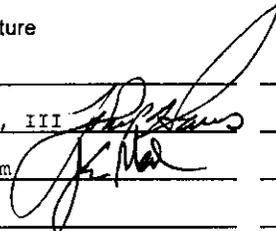
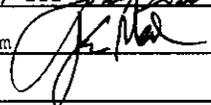
19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

<p>SDD/DD <input type="checkbox"/></p> <p>Functional Design Criteria <input type="checkbox"/></p> <p>Operating Specification <input type="checkbox"/></p> <p>Criticality Specification <input type="checkbox"/></p> <p>Conceptual Design Report <input type="checkbox"/></p> <p>Equipment Spec. <input type="checkbox"/></p> <p>Const. Spec. <input type="checkbox"/></p> <p>Procurement Spec. <input type="checkbox"/></p> <p>Vendor Information <input type="checkbox"/></p> <p>OM Manual <input checked="" type="checkbox"/></p> <p>FSAR/SAR <input type="checkbox"/></p> <p>Safety Equipment List <input type="checkbox"/></p> <p>Radiation Work Permit <input type="checkbox"/></p> <p>Environmental Impact Statement <input type="checkbox"/></p> <p>Environmental Report <input type="checkbox"/></p> <p>Environmental Permit <input type="checkbox"/></p>	<p>Seismic/Stress Analysis <input type="checkbox"/></p> <p>Stress/Design Report <input type="checkbox"/></p> <p>Interface Control Drawing <input type="checkbox"/></p> <p>Calibration Procedure <input checked="" type="checkbox"/></p> <p>Installation Procedure <input type="checkbox"/></p> <p>Maintenance Procedure <input type="checkbox"/></p> <p>Engineering Procedure <input type="checkbox"/></p> <p>Operating Instruction <input type="checkbox"/></p> <p>Operating Procedure <input type="checkbox"/></p> <p>Operational Safety Requirement <input type="checkbox"/></p> <p>IEFD Drawing <input type="checkbox"/></p> <p>Cell Arrangement Drawing <input type="checkbox"/></p> <p>Essential Material Specification <input type="checkbox"/></p> <p>Fac. Proc. Samp. Schedule <input type="checkbox"/></p> <p>Inspection Plan <input type="checkbox"/></p> <p>Inventory Adjustment Request <input type="checkbox"/></p>	<p>Tank Calibration Manual <input type="checkbox"/></p> <p>Health Physics Procedure <input type="checkbox"/></p> <p>Spares Multiple Unit Listing <input type="checkbox"/></p> <p>Test Procedures/Specification <input type="checkbox"/></p> <p>Component Index <input type="checkbox"/></p> <p>ASME Coded Item <input type="checkbox"/></p> <p>Human Factor Consideration <input type="checkbox"/></p> <p>Computer Software <input type="checkbox"/></p> <p>Electric Circuit Schedule <input type="checkbox"/></p> <p>ICRS Procedure <input type="checkbox"/></p> <p>Process Control Manual/Plan <input type="checkbox"/></p> <p>Process Flow Chart <input type="checkbox"/></p> <p>Purchase Requisition <input type="checkbox"/></p> <p>Tickler File <input type="checkbox"/></p> <p>None <input checked="" type="checkbox"/></p>
---	---	--

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
None		

21. Approvals

Signature	Date	Signature	Date
Design Authority <u>N/A</u>		Design Agent <u>N/A</u>	
Cog. Eng. <u>J. P. Harris, III</u> 	<u>3-16-00</u>	PE <u>N/A</u>	
Cog. Mgr. <u>J. E. Meacham</u> 	<u>3/22/00</u>	QA <u>N/A</u>	
QA <u>N/A</u>		Safety <u>N/A</u>	
Safety <u>N/A</u>		Design <u>N/A</u>	
Environ. <u>N/A</u>		Environ. <u>N/A</u>	
Other _____		Other _____	
RCD, Mgr. D. J. Cortez signature			
<u>not required RAC</u>  <u>3/24/00</u>			
DEPARTMENT OF ENERGY			
Signature or a Control Number that tracks the Approval Signature			
<u>N/A</u>			
ADDITIONAL			
_____		_____	
_____		_____	
_____		_____	
_____		_____	

River Protection Project Double Shell Tank Waste Retrieval Authorization Basis Amendment Task Plan

J. P. Harris, III
CH2M Hill Hanford Group
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 623530 UC: 2030
Org Code: 74F00 Charge Code: 110381
B&R Code: EW3130010 Total Pages: 42

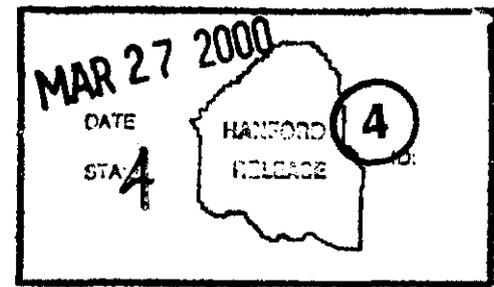
Key Words: Authorization Basis, RPP, Waste Feed Delivery, Retrieval, W-211, W-521, W-522

Abstract: This task plan is a documented agreement between Nuclear Safety and Licensing and Retrieval Engineering. The purpose of this task plan is to identify the scope of work, tasks and deliverables, responsibilities, manpower, and schedules associated with an authorization basis amendment as a result of the Waste Feed Delivery Program, Project W-211, Project W-521, and Project W-522.

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: Document Control Services, P.O. Box 950, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.


Release Approval Date 3/27/00



Release Stamp

Approved For Public Release

HNF-1722
Revision 2

River Protection Project Double-Shell Tank Waste Retrieval Authorization Basis Amendment Task Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.

Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

Approved for Public Release; Further Dissemination Unlimited

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This report has been reproduced from the best available copy. Available in paper copy and microfiche.

Available electronically at
<http://www.doe.gov/bridge>. Available for a processing fee to the U.S. Department of Energy and its contractors, in paper, from:
U.S. Department of Energy
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831-0062
phone: 865-576-8401
fax: 865-576-5728
email: [reports@adonis.osti.gov\(423\)](mailto:reports@adonis.osti.gov(423)) 576-8401

Available for sale to the public, in paper, from:
U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone: 800-553-6847
fax: 703-605-6900
email: orders@ntis.fedworld.gov
online ordering:
<http://www.ntis.gov/ordering.htm>

River Protection Project Double-Shell Tank Waste Retrieval Authorization Basis Amendment Task Plan

J. P. Harris III

Date Published
March 2000

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.

P. O. Box 1500
Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

Approved for Public Release; Further Dissemination Unlimited

This page intentionally left blank.

FOREWORD

This task plan is a documented agreement between the Nuclear Safety and Licensing and the Retrieval Engineering organizations. The purpose of this task plan is to identify the scope of work, tasks and deliverables, responsibilities, manpower, and schedules associated with the requirement for an Authorization Basis amendment as a result of the Waste Feed Delivery Program, Project W-211, Project W-521, and Project W-522. This task plan is an internal working-level "living" document that supports HNF-IP-0842, RPP Administration, Volume IV, "Engineering," Section 5.10, "Authorization Basis Document Process" (LMHC 1999b).

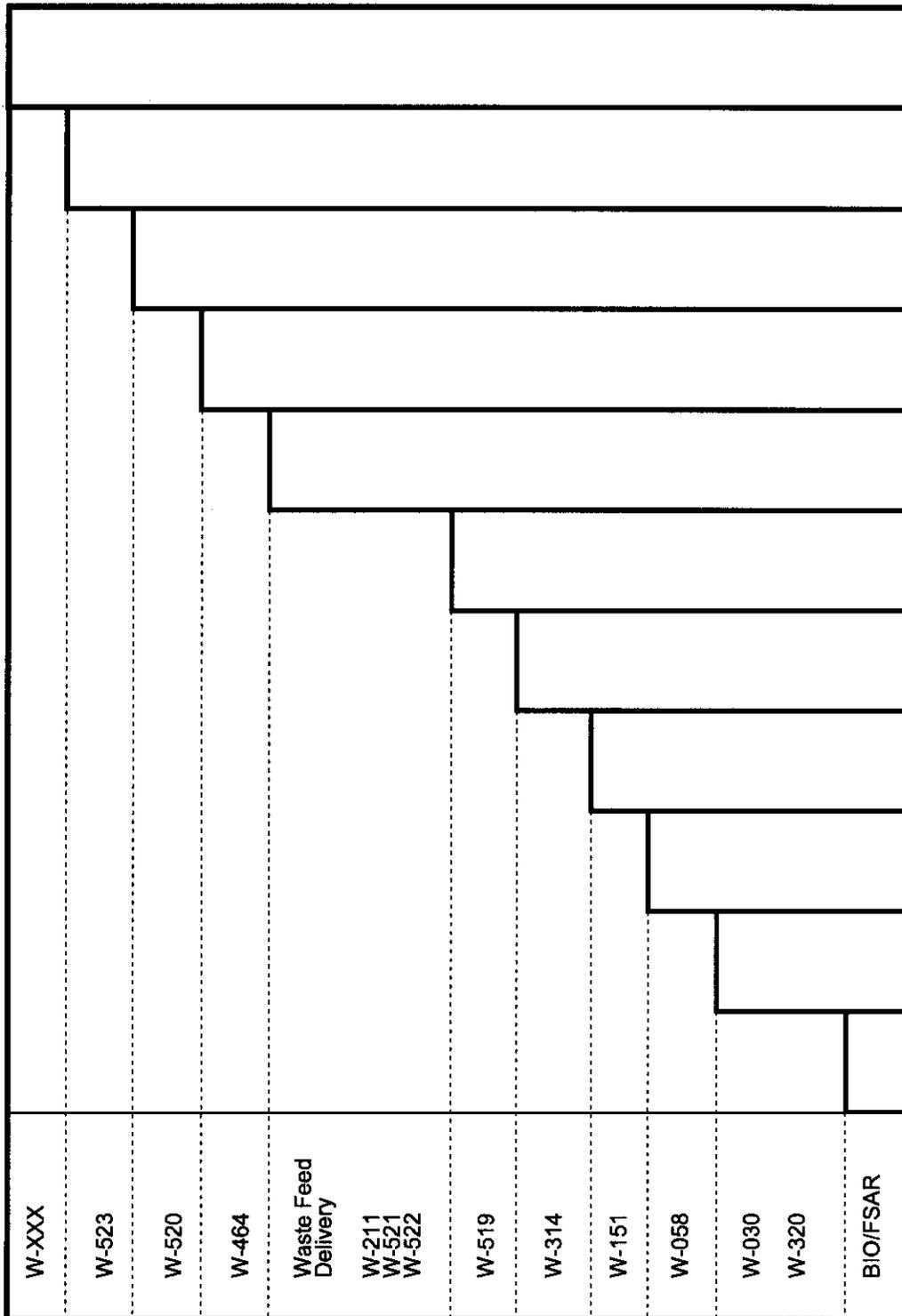
This task plan does not include a detailed scope of work, tasks and deliverables, responsibilities, manpower, or schedules for Projects W-314, W-464, W-519, W-520, and W-523. The details for these projects are provided in the individual project task plans, as necessary. These projects are only addressed in this task plan to demonstrate the relationship between these projects and the projects actually included within this task plan.

This task plan represents only one of the deliverables provided by the Nuclear Safety and Licensing organization to support the retrieval baseline and is, therefore, not intended to represent a complete description of all activities performed. The Nuclear Safety and Licensing organization also provided an execution plan, technical-basis review risk-assessment tables, technical-basis reviews, and associated resource-loaded schedules for Level 1 Logic activities. These other sources provide information on organization mission; objectives; work activities supporting retrieval, waste feed delivery, and waste receipt; execution strategy; risks; enabling assumptions; and mitigation plans. Thus, this task plan, in conjunction with other deliverables

provided, demonstrates the Nuclear Safety and Licensing organization's support of the Waste Feed Delivery Program.

Figure F-1 demonstrates the recent developments of allowable operations for the River Protection Project and the expected developments of allowable operations to support retrieval, waste feed delivery, and waste receipt. As previously stated, the only activities identified in Figure F-1 that are within the scope of this task plan are the Waste Feed Delivery Program, Project W-211, Project W-521, and Project W-522. Note that projects may or may not change the Authorization Basis for the River Protection Project.

Figure F-1. Allowable Operations.



Note 4

1722-F1-R

- Notes:
1. Phase 1 BIO to FSAR transition occurred 10/99.
 2. Phase 2 BIO to FSAR transition began in FY 2000.
 3. Projects may or may not change the Authorization Basis.
 4. Scheduled completion dates are provided in the project planning and Multi-Year Work Plan.
- BIO = Basis for Interim Operation
 FSAR = Final Safety Analysis Report

This page intentionally left blank.

CONTENTS

1.0 INTRODUCTION 1-1

2.0 PURPOSE AND SCOPE..... 2-1

 2.1 PURPOSE..... 2-1

 2.2 SCOPE OF AUTHORIZATION BASIS AMENDMENT..... 2-1

 2.3 SAFETY ANALYSIS SCOPE 2-2

3.0 TASK DESCRIPTION AND DELIVERABLES..... 3-1

 3.1 U.S. DEPARTMENT OF ENERGY ORDERS,
 STANDARDS, AND PROCEDURES 3-1

 3.2 SAFETY ANALYSIS ASSUMPTIONS AND PARAMETERS..... 3-2

 3.3 TASK AND DELIVERABLE DESCRIPTIONS..... 3-3

4.0 RESPONSIBILITIES AND STAFFING REQUIREMENTS..... 4-1

5.0 SCHEDULE..... 5-1

6.0 TASK CONTROL 6-1

7.0 REFERENCES 7-1

APPENDIX

A WASTE FEED DELIVERY AUTHORIZATION BASIS ASSESSMENT
LICENSING STRATEGY EVALUATION TOPICS..... A-i

LIST OF FIGURES

Figure 1. Overview of Retrieval Licensing Strategy..... 1-2

Figure 2. Task Plan Development Flow Chart..... 3-3

LIST OF TERMS

DOE	U.S. Department of Energy
DST	double-shell tank
FSAR	final safety analysis report
HAZOP	hazard and operability (study)
RPP	River Protection Project
TSR	technical safety requirement
USQ	unreviewed safety question
WFD	Waste Feed Delivery (organization)

This page intentionally left blank.

**RIVER PROTECTION PROJECT DOUBLE-SHELL TANK WASTE
RETRIEVAL AUTHORIZATION BASIS AMENDMENT
TASK PLAN**

1.0 INTRODUCTION

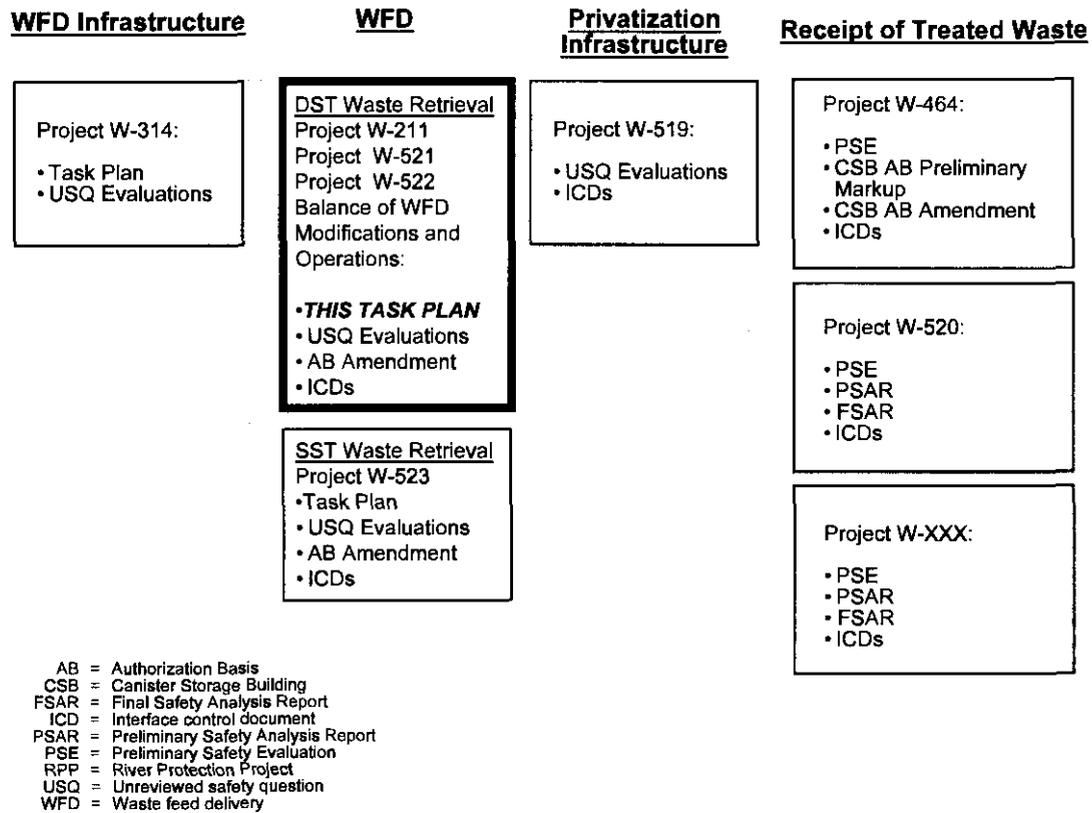
Waste Feed Delivery (WFD) is a modified mission that involves the retrieval of both high-level waste and low-activity waste from double-shell tanks (DST) and subsequent transfer to the Private Contractor for vitrification, followed by return of the vitrified products to the River Protection Project (RPP) for disposal. Privatization Phase 1B is the first portion of the overall WFD campaign and involves retrieval from selected DSTs between the years 2004 and 2018. This mission requires installation of new equipment and performance of retrieval operations that previously have not been performed at the Hanford Site. A necessary prerequisite to the actual retrieval and delivery of waste is ensuring that the RPP Authorization Basis envelops the proposed activities.

The major projects that support DST waste retrieval are Project W-211, Initial Tank Retrieval System; Project W-521, Waste Feed Delivery Systems; Project W-522, DST Waste Retrieval Systems; and Project W-314, Tank Farms Restoration and Safe Operation. Projects W-211, W-521, and W-522 install mixer pumps and transfer pumps to facilitate retrieval of waste from DSTs. Project W-314 complements these projects by installing new transfer lines, upgrading the valve/pump pits, and making other improvements to facilitate transfer of the waste to the Private Contractor. Other projects (i.e., Projects W-519, Privatization Infrastructure Project and W-523, Single-Shell Tank Waste Retrieval Systems) also support WFD. For the disposal mission, the major projects are W-464, Solidified High-Level Waste Interim Storage (Canister Storage Building facility modifications); W-520, Immobilized Low-Activity Waste Disposal Facility (Remote-Handled Trench); and W-XXX, Immobilized High-Level Waste Module 1.

It is important to note that it is within the scope of each of the aforementioned projects to evaluate the project-specific activities against the Authorization Basis and to make the necessary modifications to ensure that the activities are enveloped by the Authorization Basis. The scope of this task plan is to evaluate the integrated process of WFD and modify the Authorization Basis as necessary to envelop the activities (taking advantage of the fact that some of this work is done by the projects). Additional work scope may be undertaken during the preparation for WFD. When sufficiently defined, these additional projects are factored into the licensing strategy, as delineated by this task plan. The relationship between this task plan and all projects and activities that comprise the retrieval mission is shown in Figure 1.

The first step in determining the adequacy of the Authorization Basis documentation is to evaluate the proposed WFD activities against the current Authorization Basis via the unreviewed safety question (USQ) process.

Figure 1. Overview of Retrieval Licensing Strategy.



Note: This task plan addresses the DST Waste Retrieval portion of the retrieval licensing strategy.

1722-1-R

Because the RPP Authorization Basis (i.e., HNF-SD-WM-SAR-067, *Tank Waste Remediation System Final Safety Analysis Report* [FSAR] [LMHC 1999a]), was written for the storage mission only, some positive USQ screenings (and subsequent positive USQ determinations) are anticipated. To reconcile these positive USQ determinations with the Authorization Basis, the following activities are performed.

1. Perform a hazard and operability (HAZOP) study following the methodology outlined in Section 3.3 of the FSAR (LMHC 1999a) and approved procedures to analyze the WFD activities identified as outside the scope of the current Authorization Basis.
2. Analyze the new accidents or reanalyze the existing FSAR (LMHC 1999a) accidents based on the new WFD parameters (i.e., inputs into frequency or consequence calculations that are expected to increase the original FSAR results). Based on the analysis results, identify safety-class and safety-significant structures, systems, and components. As an alternative, planned operations may be changed to reduce the consequences to acceptable levels.
3. Modify the technical safety requirements (*Tank Waste Remediation System Technical Safety Requirements*, HNF-SD-WM-TSR-006 [TSR]) (LMHC 1999d), based on the revised accident analysis results.

4. Revise and/or develop new procedures to implement the modified TSRs.
5. Incorporate the revised HAZOP study and control identification results in the hazard analysis database.
6. Complete other implementation actions identified in the Authorization Basis Implementation Checklist (to be created).

Those accidents identified for WFD that are adequately covered in the FSAR (LMHC 1999a) are not reanalyzed, but the adequacy of coverage of these accidents in the FSAR is discussed in the supporting safety-analysis documentation. Accidents similar to those analyzed in the FSAR, but not bounded by the FSAR (because of differences in key parameters), are reanalyzed and documented in the Authorization Basis amendment package. New accidents are identified and analyzed as needed.

This page intentionally left blank.

2.0 PURPOSE AND SCOPE

2.1 PURPOSE

This document establishes the plan to amend the Authorization Basis so that it encompasses WFD DST waste retrieval activities. Because of the breadth and duration of WFD activities, adequate technical information on some activities may not be available for inclusion in the initial amendment to the Authorization Basis that is described in this task plan. Therefore, the intent is to capture the best available information (particularly on the first tanks to be retrieved) and prepare the Authorization Basis amendment package accordingly with the acknowledgment that future amendments almost certainly will be required as additional technical information becomes available.

2.2 SCOPE OF AUTHORIZATION BASIS AMENDMENT

Because of the size of the WFD mission, the DST waste retrieval Authorization Basis amendment encompasses new activities, including the installation of new equipment by multiple ongoing projects and the performance of new operations. A listing of the WFD Authorization Basis assessment licensing strategy evaluation topics is provided in Appendix A. This list identifies the topics evaluated to determine which aspects of the WFD process are outside the current RPP Authorization Basis. This list is updated as additional information is provided for evaluation of impact on the RPP Authorization Basis.

Several key assumptions have been made to define the scope of the DST waste retrieval Authorization Basis amendment. First, the Authorization Basis amendment does not include safety analysis of equipment, activities, and operations required to support activities and operations of the Private Contractor. Thus, no modifications to RPP tanks and systems based on Private Contractor operations are evaluated. Second, waste streams are not returned to the RPP from the Private Contractor. The fiscal year 2000 U.S. Department of Energy (DOE) guidance requires the RPP to provide the capability to receive waste returns, entrained solids, and out-of-specification feed. The return of waste streams will be evaluated when defined by DOE. Thus, no source terms associated with the by-products of the vitrification processes are evaluated during the development of the DST waste retrieval Authorization Basis amendment. Third, the design of retrieval systems for additional tanks in Projects W-211, W-521, and W-522 is consistent with the design of the retrieval systems for the first tanks. Thus, separate Authorization Basis amendments are not required. Fourth, Projects W-521 and W-522 do not require the development of a preliminary safety evaluation or a preliminary safety analysis report to obtain project validation and design approval. This assumption is based on the similarity between these projects and Project W-211, which results in similar hazards as identified in the current Authorization Basis, combined with the safety analysis developed to support Project W-211.

In addition, the following subjects are mentioned, but are not specifically addressed as part of the DST waste retrieval Authorization Basis amendment.

- The discussion of decontamination and decommissioning of the WFD equipment is deferred to an update to the RPP FSAR (LMHC 1999a).
- In accordance with the current Authorization Basis, transfers require a waste compatibility study and characterization to verify that transferred waste is within the inventory assumptions in the current Authorization Basis or the revised inventory assumptions resulting from the WFD Authorization Basis amendment, as necessary.
- Authorization Basis justification for Project W-314 is discussed.

2.3 SAFETY ANALYSIS SCOPE

Hazard analyses and accident analyses are performed, documented, and reviewed in accordance with designated procedures. The scope of these analyses is DST waste retrieval activities not covered by the current Authorization Basis, with the exception of Project W-314. As shown in Figure 1, Project W-314 is not within the scope of this task plan. Hazard and accident analyses for this project are performed, documented, and reviewed, as required, based on the appropriate USQ evaluations.

3.0 TASK DESCRIPTION AND DELIVERABLES

3.1 U.S. DEPARTMENT OF ENERGY ORDERS, STANDARDS, AND PROCEDURES

The following DOE orders and standards apply to the Authorization Basis amendment process:

- DOE Order 5480.21, *Unreviewed Safety Questions*
- DOE Order 5480.22, *Technical Safety Requirements*
- DOE Order 5480.23, *Nuclear Safety Analysis Reports*
- DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*
- DOE-STD-1104-96, *Review and Approval of Nonreactor Nuclear Facility Safety Analysis Reports*
- DOE-STD-3009-94, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports*
- DOE-STD-3011-94, *Guidance for Preparation of DOE 5480.22 (TSR) and 5480.23 (SAR) Implementation Plans.*

The following RPP contractor documents apply to the Authorization Basis amendment process:

- RPP-PRO-233, *Review and Approval of Documents*
- RPP-PRO-244, *Engineering Data Transmittal Requirements*
- RPP-PRO-440, *Engineering Document Change Control Requirements*
- RPP-PRO-700, *Safety Analysis and Technical Safety Requirements*
- RPP-PRO-702, *Safety Analysis Process - Facility Change or Modification*
- RPP-PRO-703, *Safety Analysis Process - New Project*
- RPP-PRO-704, *Hazard and Accident Analysis Process*
- RPP-PRO-1819, *Engineering Requirements*
- HNF-2353, *Nuclear Safety & Licensing Desk Instructions*, Desk Instruction 4.2, "Nuclear Safety & Licensing Quality and Technical Peer Review of Authorization Basis Documents," (LMHC 1999c).

- HNF-IP-0842, *RPP Administration* (LMHC 1999b)
 - Volume IV, “Engineering,” Section 5.4, “Unreviewed Safety Questions”
 - Volume IV, “Engineering,” Section 5.10, “Authorization Basis Document Process”
 - Volume IV, “Engineering,” Section 5.14, “Tier 1 Review of Authorization Basis Documents.”

3.2 SAFETY ANALYSIS ASSUMPTIONS AND PARAMETERS

DOE Order 5480.23, *Nuclear Safety Analysis Reports*, requires that the assumptions used in the analysis be stated. Key assumptions (i.e., those with an impact on frequency and/or consequence) are defined for each accident that is evaluated. Assumptions are stated in sufficient detail to facilitate following the analysis logic without using references.

Assumptions used in the analysis are consistent with those in the FSAR (LMHC 1999a). The following assumptions are already defined. Others are defined based on review of the FSAR and other documents.

- Material at risk
 - The toxicological/radiological source terms are examined to determine if WFD mission activities (i.e., transfers and waste conditioning) affect the validity of the storage mission source-term assumptions. The storage assumption material at risk that is used in the FSAR (LMHC 1999a) is documented in WHC-SD-WM-SARR-016, *Tank Waste Compositions and Atmospheric Dispersion Coefficients for Use in Safety Analysis Consequence Assessments* (Van Keuren 1996) and WHC-SD-WM-SARR-011, *Toxic Chemical Considerations for Tank Farm Releases* (Van Keuren and Davis 1996). The assumptions from these documents are compared to inventory information in the WFD technical baseline documentation
- Risk-evaluation guidelines as described in the FSAR (LMHC 1999a)

- Facility description
 - Descriptions of existing RPP facilities are provided in the FSAR (LMHC 1999a)
 - Descriptions of equipment to be installed for WFD activities come from project documentation as well as WFD technical baseline documentation such as HNF-SD-WM-SP-012, *Tank Waste Remediation System Operation and Utilization Plan to Support Waste Feed Delivery* (Kirkbride et al. 1999), HNF-SD-TWR-TM-001, *Technical Baseline Description of High-Level Waste and Low-Activity Waste Feed Mobilization and Delivery* (Papp 1997), and HNF-1939, *Waste Feed Delivery Technical Basis* (LMHC 1998).

3.3 TASK AND DELIVERABLE DESCRIPTIONS

The major tasks for the WFD Authorization Basis amendment are described below. Detailed listings of responsibilities and estimated staff loadings for these tasks have been compiled as part of the WFD technical basis review. This information is provided in the annual multiyear work plans.

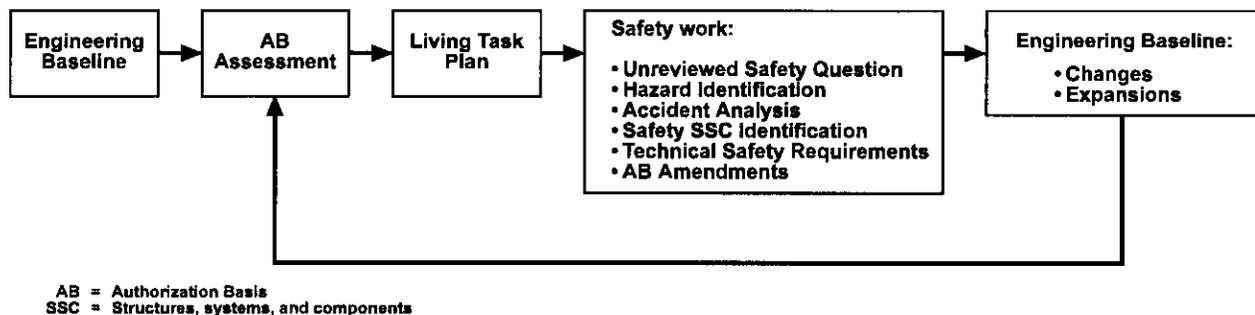
Task 1 - Oversee Scope, Cost, and Schedule

The primary responsibility for preparation, completion, and implementation of this Authorization Basis amendment lies with the licensing engineer, who oversees the scope, cost, and schedule.

Task 2 - Prepare, Review, and Revise Task Plan

This task plan was prepared to document expectations for deliverables, responsibilities, and schedules. The RPP contractor and subcontractor organizations responsible for actions identified in the plan review the plan for acceptability. The task plan is revised upon receipt and review of the engineering baseline documentation that defines the equipment and operations associated with the WFD mission. The frequency and schedule of task plan updates are a function of the nature and extent of changes that occur to the configuration-managed engineering baseline documentation as shown in Figure 2.

Figure 2. Task Plan Development Flow Chart.



1722-2-R

Task 3 - Complete Authorization Basis Assessment for Waste Feed Delivery Activities for Privatization Phase 1B

The first technical activity associated with this task plan is assessment of the available engineering baseline documents with respect to the current Authorization Basis. This task precedes the performance of USQ evaluations because of the considerable breadth of the WFD mission. The assessment methodology is, however, fashioned after the USQ process and is designed to be a preliminary evaluation to determine the mission aspects that may be outside of the current Authorization Basis. For this purpose, the information in the available technical baseline documents has been parsed into seven topics as listed in Appendix A. The outcome of the assessment is used to refine task planning for safety analysis scope, including USQ evaluations, hazards identification, technical analyses, and Authorization Basis amendment package preparation. This information is used to update this task plan as discussed above (Task 2).

DST waste retrieval construction and operational activities are evaluated against the Authorization Basis, using the USQ process as a guide. For planning purposes, it has been assumed that USQ screenings on construction activities produce negative results (i.e., construction activities are enveloped by the current Authorization Basis). This assumption is based on the initial USQ screenings performed for Project W-211 construction activities. It has also been assumed that USQ evaluations of DST waste retrieval operational activities conclude that some activities are not enveloped by the Authorization Basis. Thus, an Authorization Basis amendment requiring U.S. Department of Energy, Office of River Protection approval is being developed.

Another key assumption is that project and program documentation provide sufficient detail on DST waste retrieval activities to allow the USQ screenings to commence. All aspects of the effort are not documented at this time. However, it is assumed that sufficient details are known, particularly on the first tanks to be retrieved, to enable the USQ screenings (and subsequent Authorization Basis modifications) to begin, in accordance with the schedule established to support DST waste retrieval. Additional USQ screenings are performed, as required, when additional technical information becomes available.

If any of the key assumptions described prove to be incorrect, this task plan is revised accordingly.

As stated previously, it is assumed that the USQ screenings for construction and other activities directly related to the projects cited above fall within the project scope. However, the results of these screenings for the individual project activities are factored into the USQ screening(s) of the integrated retrieval and disposal process.

Task 4 - Oversee Privatization Phase 1B Licensing Strategy

The initial portion of this activity lies in preparing this task plan, which was described in Task 2. However, the licensing strategy continues to evolve as additional project and programmatic information becomes available. The licensing engineer is responsible for reformulating the licensing strategy based on project and program changes.

Task 5 - Safety Analysis and Evaluation Including Development of Safety-Class and Safety-Significant Structures, Systems, and Components and Technical Integration

The USQ screenings for DST waste retrieval activities are assumed to result in some positive findings that require modifications to the Authorization Basis, including some new safety analyses. A HAZOP study is performed to determine which accidents are required to be analyzed (or the FSAR [LMHC 1999a] accidents that need to be reanalyzed). The HAZOP study is performed in accordance with approved procedures. After the new accidents (or FSAR accidents that require reanalysis) are identified, frequencies and consequences are determined. The consequence analysis is performed in accordance with approved procedures. The assumptions and methodologies used in the FSAR are carried forward in this analysis wherever possible. Safety analysis that has been completed within the scope of the projects (i.e., Projects W-211, W-521, W-522) is captured within the integrated analysis for the entire DST waste retrieval process.

After the accident consequences have been determined, the safety-class and safety-significant structures, systems, and components are identified (or as an alternative, planned operations may be changed to reduce the consequences to acceptable levels). Safety designation of equipment previously performed under the projects' scopes is captured in this effort.

Technical integration, an important aspect of the strategy for the safety analysis, involves examining the treatment of the major RPP safety issues to ensure assumptions, approaches, and methodologies are compatible with those used by other RPP groups working on these same issues. Currently, the four major issues are as follows:

- Flammable gas
- Organics
- Heat generation
- Criticality.

Other major issues that may arise as the DST waste retrieval process evolves also are subject to technical integration.

NOTE: The HAZOP study developed to support the WFD Program and Project W-211 is being revised to incorporate the DSTs included in Projects W-521 and W-522.

Task 6 - Establish Technical Safety Requirements and Administrative Controls

Based on the results of Task 5, new and/or revised TSRs (LMHC 1999d) and administrative controls are identified and documented. Input to this activity includes the "control decision boards" conducted based on the Task 5 HAZOP activities and the Task 5 hazard and accident analysis results.

Task 7 - Prepare Final Safety Analysis Report and Technical Safety Requirement Revisions

The results from Tasks 3 through 6 are used to prepare revisions to the FSAR (LMHC 1999a) and the TSRs (LMHC 1999d), which are prepared as page changes to the existing documents. The safety analysis is documented in accordance with approved procedures and includes risk-evaluation guidelines from the FSAR.

The safety analysis is documented as page changes to the FSAR (LMHC 1999a) that follow the format and content guidance of DOE-STD-3009-94 and includes the following:

- Documentation of key assumptions
- Description of changes to the facility
- Additional hazard and accident analyses
- Resolutions to issues identified in USQs
 - Potential increased frequency of analyzed accidents
 - Potential increased consequences of analyzed accidents
 - Potential increased frequency of previously evaluated equipment malfunctions
 - Potential increase in consequences of previously evaluated equipment malfunctions
 - The need for new or revised TSRs (LMHC 1999d)
- New or revised designations of safety-class and safety-significant structures, systems, and components
- TSR (LMHC 1999d) derivations, and compensatory measures if needed.

The review package is assembled containing a redline/strikeout version of the affected pages of the FSAR (LMHC 1999a) and TSR (LMHC 1999d), review instructions, and a schedule for comment submittal and disposition.

Task 8 - Perform Nuclear Safety and Licensing Quality and Technical Peer Review

The revised FSAR (LMHC 1999a) and TSR (LMHC 1999d) pages developed in Task 7 is reviewed by Nuclear Safety and Licensing in accordance with HNF-2353, *Nuclear Safety & Licensing Desk Instructions*, Desk Instruction 4.2, “Nuclear Safety & Licensing Quality and Technical Peer Review of Authorization Basis Documents” (LMHC 1999c). The revised pages are reviewed by the manager of Licensing, the manager of Safety Analysis, the Safety Analysis technical peer reviewer, and additional Nuclear Safety and Licensing reviewers designated by the manager of Safety Analysis. All comments are addressed and the review package is prepared for Tier 1 review.

Task 9 - Perform Tier 1 Review

The review package developed in Task 8 is reviewed by the Safety Review Board in accordance with HNF-IP-0842, Volume IV, "Engineering," Section 5.14, "Tier 1 Review of Authorization Basis Documents" (LMHC 1999b). The review rules, composition of the Safety Review Board, and the review criteria are provided in HNF-IP-0842, Volume IV, Section 5.14. The licensing engineer facilitates the review and comment resolution. All comments are addressed and the Authorization Basis amendment package prepared for submittal to DOE.

Task 10 – Prepare Licensing Strategy

The licensing engineer prepares the licensing strategy in accordance with HNF-IP-0842, Volume IV, "Engineering," Section 5.10, "Authorization Basis Document Process" (LMHC 1999b).

The licensing strategy addresses the following topics: (1) purpose/drivers for the Authorization Basis submittal, (2) content of the submittal including a summary of key changes and a description of new and/or changed controls, (3) contractor requests including the needed approval date and the basis, and (4) implementation information including implementation activities, implementation schedule following approval, and major implementation issues.

Task 11 - Submit Authorization Basis Amendment Package to U.S. Department of Energy

The Licensing Engineer prepares the Authorization Basis amendment package transmittal letter in accordance with HNF-IP-0842, Volume IV, "Engineering," Section 5.10, "Authorization Basis Document Process." The letter provides (1) the reason approval is being requested, (2) the requested approval date, and (3) the planned implementation date if the Authorization Basis amendment is approved as proposed and when requested. The letter includes (1) the licensing strategy prepared in Task 10, (2) the Safety Review Board Review sheet from Task 9, (3) the revised FSAR (LMHC 1999a) and TSR (LMHC 1999d) pages produced by Tasks 7, 8, and 9, and (4) other attachments as required.

Task 12 - U.S. Department of Energy Review and Approval of Authorization Basis Amendment Package

The Office of River Protection performs the Tier II review of the package. Comments are resolved accordingly, and then the Office of River Protection issues the safety evaluation report.

Task 13 - Revise and Issue Final Safety Analysis Report and Technical Safety Requirements

The FSAR (LMHC 1999a) and TSRs (LMHC 1999d) are revised as required by the safety evaluation report. The approved version of the FSAR and TSR page changes are formally issued in accordance with appropriate document control procedures. The process for issuing the FSAR and TSR page changes is provided in HNF-IP-0842, Volume IV, "Engineering," Section 5.10, "Authorization Basis Document Process."

This page intentionally left blank.

4.0 RESPONSIBILITIES AND STAFFING REQUIREMENTS

Detailed listings of responsibilities and estimated staff loadings have been compiled as part of the WFD technical basis review. This information is provided in the annual multiyear work plans.

This page intentionally left blank.

5.0 SCHEDULE

A detailed schedule for completion of the activities required to provide an Authorization Basis amendment has been developed as part of the WFD technical basis review. The schedule is adjusted based on DOE guidance, priorities, and budget restrictions. The schedule is included in the development of the retrieval baseline and updated as part of each multiyear work plan.

This page intentionally left blank.

6.0 TASK CONTROL

The task is managed with the following:

- Nuclear Safety and Licensing internal status meetings
- Project review status meetings with CH2M HILL Hanford Group, Inc., and DOE as required
- Project-specific status and reporting requirements.

This page intentionally left blank.

7.0 REFERENCES

Department of Energy Orders

DOE Order 5480.21, *Unreviewed Safety Questions*, U.S. Department of Energy, Washington, D.C.

DOE Order 5480.22, *Technical Safety Requirements*, U.S. Department of Energy, Washington, D.C.

DOE Order 5480.23, *Nuclear Safety Analysis Reports*, U.S. Department of Energy, Washington, D.C.

Department of Energy Standards

DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*, U.S. Department of Energy, Washington, D.C.

DOE-STD-1104-96, *Review and Approval of Nonreactor Nuclear Facility Safety Analysis Reports*, U.S. Department of Energy, Washington, D.C.

DOE-STD-3009-94, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports*, U.S. Department of Energy, Washington, D.C.

DOE-STD-3011-94, *Guidance for Preparation of DOE 5480.22 (TSR) and 5480.23 (SAR) Implementation Plans*, U.S. Department of Energy, Washington, D.C.

RPP Procedures

RPP-PRO-233, *Review and Approval of Documents*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-244, *Engineering Data Transmittal Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-440, *Engineering Document Change Control Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-700, *Safety Analysis and Technical Safety Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-702, *Safety Analysis Process - Facility Change or Modification*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-703, *Safety Analysis Process - New Project*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-704, *Hazard and Accident Analysis Process*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-1819, *Engineering Requirements*, CH2M HILL Hanford Group, Inc., Richland, Washington.

Documents

Kirkbride, R.A., G. K. Allen, R. M. Orme, R. S. Wittman, J. H. Baldwin, T. W. Crawford, J. Jo, L. J. Fergestrom, T. M. Hohl, and D. L. Penwell, 1999, *Tank Waste Remediation System Operation and Utilization Plan to Support Waste Feed Delivery*, HNF-SD-WM-SP-012, Rev. 1, Volumes I and II, prepared by Numatec Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.

LMHC, 1998, *Waste Feed Delivery Technical Basis*, HNF-1939, prepared by Lockheed Martin Hanford Corporation for Fluor Daniel, Hanford, Inc., Richland, Washington.

LMHC, 1999a, *Tank Waste Remediation System Final Safety Analysis Report*. HNF-SD-WM-SAR-067, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

LMHC, 1999b, *RPP Administration*, HNF-IP-0842, Lockheed Martin Hanford Corporation, Richland, Washington.

LMHC, 1999c, *Nuclear Safety & Licensing Desk Instructions*, Desk Instruction 4.2, "Nuclear Safety & Licensing Quality and Technical Peer Review of Authorization Basis Documents," HNF-2353, prepared by Lockheed Martin Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.

LMHC 1999d, *Tank Waste Remediation System Technical Safety Requirements*, HNF-SD-WM-TSR-006, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

Papp, I. G., 1997, *Technical Baseline Description of High-Level Waste and Low-Activity Waste Feed Mobilization and Delivery*, HNF-SD-TWR-TM-001, Rev. 0, prepared by Numatec Hanford Corporation for Fluor Daniel Hanford Inc., Richland, Washington.

Van Keuren, J. C., 1996, *Tank Waste Compositions and Atmospheric Dispersion Coefficients for Use in Safety Analysis Consequence Assessments*, WHC-SD-WM-SARR-016, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

Van Keuren, J. C., and J. S. Davis, 1996, *Toxic Chemical Considerations for Tank Farm Releases*, WHC-SD-WM-SARR-011, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A
WASTE FEED DELIVERY AUTHORIZATION BASIS ASSESSMENT
LICENSING STRATEGY EVALUATION TOPICS

This page intentionally left blank.

APPENDIX A

**WASTE FEED DELIVERY AUTHORIZATION BASIS ASSESSMENT
LICENSING STRATEGY EVALUATION TOPICS***

- A. **Waste Mobilization** (source tanks)
 - Sludge/solids mobilization (mixer pumps)
 - Sludge/solids mobilization (sluicer).

- B. **Waste Transfer** (source to feed staging tanks)
 - Waste conditioning (dilution/pH adjustment)
 - Transfer to staging tanks.

- C. **Interim Storage** (source and feed delivery tanks)
 - Supernatant (minimal solids) consolidation and storage
 - Sludge/solids consolidation and storage
 - Waste return feed storage (return from treatment plant)
 - Return and interim storage of spent resin.

- D. **Waste Separation** (source tanks)
 - Caustic sludge washing
 - Water-based sludge washing.

- E. **Waste Batch Transfer** (feed staging to Private Contractor tanks)
 - Waste sampling
 - Waste feed adjustments (“shimming”)
 - Transfer to Private Contractor tanks.

* Not all topics (i.e., activities and operations) evaluated in the initial Waste Feed Delivery Authorization Basis assessment are included in the current retrieval baseline.

F. Immobilized Waste Transport and Storage/Disposal

Immobilized low-activity waste transport and disposal (W-520)

Immobilized high-level waste transport and storage (W-464).

G. Miscellaneous Waste Feed Delivery Activities

Maintenance of critical equipment

Removal and packaging of long-length equipment

Others - to be identified.

DISTRIBUTION

Onsite

U.S. Department of Energy
Richland Operations Office

Reading Room H2-53

DE&S Hanford, Inc.

Gault, G. W. R1-44

Pacific Northwest National Laboratory

Hanford Technical Library P8-55

Subcontractors

Root, R. W., Jr. Informatics R2-53

Stokes, W. J. MACTEC R2-89

Lockheed Martin Services, Inc.

Central Files B1-07

Document Processing Center A3-94

Numatec Hanford Corporation

Certa, P. J. (5) R3-73

Choho, A. F. R3-73

DISTRIBUTION (cont)

CH2M HILL Hanford Group, Inc.

Allen, D. I.	R2-50
Bores, J. F.	R2-89
Bryan, C. B.	R2-58
DeLozier, M. P.	H6-08
Erlandson, B. G.	R1-51
Friberg, A. H.	R3-83
Gasper, K. A.	H6-64
Goetz, T. G. (10)	R1-49
Haass, C. C.	H6-64
Halvorson, O. A.	R1-04
Harris, J. P., III	R1-49
Honeyman, J. O.	H6-62
Leach, C. E.	R1-44
Mayer, E. E.	R2-50
Meacham, J. E.	R1-49
O'Toole, S. M	R2-53
Payne, M. A.	R2-58
Peck, L. G.	H7-06
Popielarczyk, R. S.	R2-58
Powell, R. W.	R3-75
Rice, C. J.	R2-53
Schaus, P. S.	R2-89
Thompson, W. T.	R3-73
Van Beek, J. E.	R3-47
Voogd, J. A.	H6-64
Wojtasek, R. D.	R2-53