APR 29 1998
Sta. 4 58

ENGINEERING DATA TRANSMITTAL

1. EDT 624392

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Operations and Projects Safety Support	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: TWRS Nuclear Safety and Licensing	6. Design Authority/ Design Agent/Cog. Engr.: E. J. Lipke and R. G. Stickney	7. Purchase Order No.: N/A
8. Originator Remarks: Authorization Basis upgrade plan for miscellaneous TWRS Facilities, Tanks and Components.		9. Equip./Component No.: N/A 10. System/Bldg./Facility: TWRS
11. Receiver Remarks: 11A. Design Baseline Document? [ ] Yes [X] No For Release.		12. Major Assm. Dwg. No.: N/A 13. Permit/Permit Application No.: N/A 14. Required Response Date: 4/27/98

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	HNF-2503	N/A	0	Authorization Basis Status Report (Miscellaneous TWRS Facilities, Tanks and Components)	ES	2	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority				1	1	Other SN Maruvada	S.N. Maruvada	4/28/98	
		Design Agent									
1	1	Cog.Eng.RG Stickney EJ Lipke	RG Stickney 4-27-98 RHH EJ Lipke 4-27-98								
1	1	Cog. Mgr. CE Leach	C.E. Leach	4/29/98							
		QA									
1	1	Safety O Jaka	Suwawan	4/27/98							
1	1	Env. BG Erlandson	Pamela Powell	4/27/98							

18.	19.	20.	21. DOE APPROVAL (if required)
RG Stickney Signature of EDT Originator 4-27-98 Date	N/A Authorized Representative for Receiving Organization Date	CE Leach Design Authority/ Cognizant Manager 4/29/98 Date	Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (05/96) GEF097

Authorization Basis Status Report (Miscellaneous TWRS Facilities, Tanks and Components)

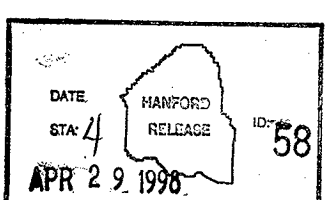
Randall G. Stickney and Edward J. Lipke
Duke Engineering and Services Hanford, Inc., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: EDT 624392 UC: 2070
Org Code: 2N140 Charge Code: N2GME
B&R Code: EW 3120072 Total Pages: ~~248~~ 260 End 4/29/98

Key Words: Authorization Basis, IMUST, Status Report, TWRS miscellaneous facilities

Abstract: This report presents the results of a systematic evaluation conducted to identify miscellaneous TWRS facilities, tanks and components with potential needed authorization basis upgrades. It provides the Authorization Basis upgrade plan for those miscellaneous TWRS facilities, tanks and components identified.

Release Approval 4/29/98 Date



Release Stamp

Approved for Public Release

HNF-2503, Rev. 0

Authorization Basis Status Report

(Miscellaneous TWRS Facilities, Tanks and Components)

FOREWORD

This document has been prepared to satisfy the Tank Waste Remediation System (TWRS) fiscal year 1998 Performance Agreement (PA) TWR 1.2.1. The stated performance expectation is: *"Prepare an Authorization Basis (AB) status report on TWRS facilities including a plan for recommended AB modifications by May 1, 1998."* The documented PA contains specific expectations regarding this report. This foreword provides a reiteration of the specific expectations and summarizes how they are met.

Report Expectation #1

"Identification of radiological and nuclear facilities, as defined in DOE-EM-STD-5502-94, clearly identified to be within the responsibility of TWRS, including major stand-alone structures and components. This shall include Inactive Miscellaneous Underground Storage Tanks (IMUSTs), the list of "orphan" facilities/structures, and any other facilities/structures identified by the Contractor during the performance of this task."

Identification of radiological and nuclear facilities. DOE-STD-EM-5502-94 provides important guidance regarding appropriate levels of safety documentation for DOE facilities based on the degree of radiological and chemical hazards posed. Chapter 3 of this report identifies all TWRS facilities, tanks and components (referred to as "FTCs" in the report) which are known or expected to fall within the DOE-STD-EM-5502-94 definition of "nuclear" and, therefore, are required to be addressed in a nuclear safety Authorization Basis per DOE Order 5480.23. Chapter 3 also identifies candidate "radiological" FTCs which may more appropriately be addressed by a lower "grade" of safety documentation. Appendix A contains detailed listings of the FTCs which are the focus of this effort to identify the remaining TWRS Authorization Basis upgrade needs.

Shall include IMUSTs. A significant portion of the effort to develop this report involved sorting through, organizing, correcting, updating and investigating many past efforts related to identifying "IMUSTs" (inactive miscellaneous storage tanks). All of these sources of information are cited in the extensive list of references provided in Chapter 8, while the identification process is discussed in Chapter 3. The first step in this effort was the introduction of new and refined definitions for the various categories of TWRS facilities which had, during RL's formulation of the PA, been informally referred to as "orphans." These definitions are provided in Chapter 2. Eleven of the sections in Appendix A provide a chronicle of the IMUST identification effort. The Appendix distills and compacts a significant amount of information in a user-friendly format.

The list of "orphan" facilities/structures. One of the motivations for the RL formulation of the PA stemmed from RL management facility walk-throughs. These walk-throughs resulted in the identification of certain TWRS facilities and structures which may not have been addressed in the TWRS Authorization Basis in a manner consistent with DOE Orders and standards. These facilities and structures were informally referred to as "orphans" predominantly because their safety documentation does not meet the standards set by the majority of the TWRS Authorization Basis documented in the TWRS Basis for Interim Operation (BIO). The informal term "orphan" does not appear in this report, however. It has been dropped in favor or the more descriptive definitions in Chapter 2. Each of the TWRS "orphan" facilities, tanks and major components

which were included in the RL management walk-throughs are a subset of those FTCs specifically addressed in Chapters 3, 4, 5, 6 and Appendices A and B. Those facilities, structures and components which were identified by RL at the time that the PA expectations were established are:

209-E Building
242-S Evaporator
242-T Evaporator
In-Tank-Solidification (ITS) Equipment
2727-W Sodium Storage Facility
Grout Treatment Facility
244-CR Vault
244-AR Vault
241-AX Ion Exchange Column
Purge Water Facility (subsequently confirmed not to be a TWRS facility)

Other facilities/structures identified by the Contractor. It was recognized by the Contractor and RL that the means to identify facilities for management walk-throughs was not systematic and identification was likely not complete. Therefore, the PA expectations include effort on the part of the Contractor to identify additional "orphans." The results of the full identification effort are found in Chapter 3 and in Appendix A.

Report Expectation #2

"Identification of the existing Authorization Bases applicable to each facility and the determination of its adequacy with respect to:

- *current mission and condition;*
- *requirements and guidance in DOE Orders 5480.22 and 5480.23 and DOE-STD-3011;*
- *comprehensive hazards identification (as ascertained by reviews of existing documentation and facility walk-downs); and*
- *existence of acceptable controls."*

Identification of existing Authorization Bases. The nuclear safety Authorization Bases for each of the TWRS facilities, tanks and components addressed in this report are identified in Chapter 5. Chapter 5 also identifies the Authorization Bases for non-TWRS facilities which are evaluated as possible contributors to the TWRS "hazard profile." "Hazard profile" is a term used in this report to refer to the collection of hazards (e.g., hazardous materials and energy sources) which, if uncontrolled, could cause a release of hazardous materials from a TWRS facility or pose a threat to TWRS facility workers or operations. Appendix A provides a comprehensive listing of the FTCs with indication of whether or not each is addressed in the TWRS BIO.

AB evaluation with respect to current mission and condition. Chapter 3 provides the descriptions of all the TWRS facilities, tanks and components addressed in this report. The descriptions include an indication of the physical condition of each FTC and its current function in the TWRS mission. Chapters 4 and 5 use this information in the evaluation of the adequacy of existing Authorization Basis documentation.

AB evaluation with respect to DOE 5480.22, 5480.23 and DOE-STD-3011. As discussed in Chapter 4, a primary evaluation criterion for the risk

prioritized ranking of AB upgrades is the "AB Status." The primary evaluation standard for "AB Status" is set by the TWRS BIO. The structure of the TWRS BIO is patterned after the chapter outline in DOE-STD-3011; although, the BIO amply exceeds the minimum technical requirements of DOE-STD-3011 and approaches that of DOE Order 5480.23. The Technical Safety Requirements (TSRs) which accompany the TWRS BIO meet the requirements of DOE Order 5480.22 and serve as a primary standard for the "Controls" evaluation criterion used in this report. Editorial considerations, such as comparison of document format to particular Orders and standards, did not strongly influence the AB evaluation. Instead, the evaluation focused on a the caliber of the document's technical content compared to that called for in the DOE Orders and standards.

AB evaluation with respect to hazards identification. Hazards are identified and discussed throughout Chapters 3, 4 and 5 and in Appendices A and B. References are provided in Chapter 5 to existing documented hazards analyses. The balance of discussion of hazards in the report is based on review of existing documentation and observations made during field walk-downs. No structured hazards analyses were performed (e.g., HazOps). Structured hazards analyses are part of the next phase of work to be performed to upgrade the TWRS AB for the facilities, tanks and components identified in this report. This is consistent with the specific documented expectations for this PA.

AB evaluation with respect to acceptable controls. As documented in Chapter 4, evaluation of the adequacy of existing controls is an influential factor in risk ranking the AB upgrade needs. Chapter 5 describes the controls applicable to each FTC. Chapter 4 describes the methods used to evaluate the controls and demonstrates how these evaluations were used to establish the prioritization for FTC AB upgrades.

Report Expectation #3

"A section which contains Authorization Basis upgrade tasks, preliminary costs and estimated schedule durations. The report shall prioritize the tasks. The prioritization rationale shall be described and based upon, at a minimum:

- *qualitative assessment of relative risk,*
- *TWRS mission objectives,*
- *cost-benefit."*

Section which contains Authorization Basis Upgrade tasks, preliminary costs and estimated schedule durations. Chapter 6 is dedicated to Authorization Basis upgrade planning. It consolidates all of the upgrade and pre-upgrade activities identified throughout the report, indicates the TWRS disciplines associates with the activities, and provides cost and schedule estimates for Authorization Basis documentation upgrade tasks.

The report shall prioritize tasks. Chapter 4 is dedicated to the prioritization of the facilities, tanks and structures with respect to the need to upgrade the AB documentation for each. Chapter 4 also details a collection of "risk ranking factors" which are used to assess safety risk and importance of the AB upgrades to the TWRS mission. Chapter 5 identifies specific tasks, including improvement of technical bases (e.g., sampling and characterization), which lead to and accomplish the AB upgrades. Chapter 6 captures all of the major tasks and applies a final test of cost-benefit to validate or adjust the prioritization developed in Chapter 4.

Prioritization rationale shall be described. Chapter 4 documents the method, criteria and rationale for prioritization based upon safety risk and mission need. Chapter 6 provides the final validation of the prioritization based upon judgement of the cost of AB and technical upgrades versus the benefit.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS, ACRONYMS, AND INITIALISMS

α	Alpha particle radioactivity
AB	Authorization Basis
AC	Administrative Control
ß	Beta particle radioactivity
BHI	Bechtel Hanford, Inc.
BIO	Basis for Interim Operation
BWHC	Babcock and Wilcox Hanford Company
CAM	Continuous air monitor
CAR	Critical Assembly Room
Ci	curie
cm	centimeter(s)
CPO	Characterization Project Office
DCRT	Double-contained receiver tank
DESH	Duke Engineering and Services Hanford, Inc.
dia.	diameter
DMF	Dry Materials Facility
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DST	Double-shell tank
DYN	DynCorp Tri-Cities Services, Inc.
Ecology	Washington State Department of Ecology
e.g.	for example
ER	Environmental Restoration Program
FDH	Fluor Daniel Hanford, Inc.
FDNW	Fluor Daniel Northwest, Inc.
ft	foot or feet
ft^2	square foot or feet
FSAR	Final Safety Analysis Report
FTC	Facility, tank or component
FTS	Feed Transfer System
g	gram(s)
gal	gallon(s)
GDF	Grout Disposal Facility
GPF	Grout Processing Facility
gpm	gallons per minute
GRE	Gas release event
GTF	Grout Treatment Facility
HazOp	Hazard and Operability Study
HEPA	High-efficiency particulate air (filter)
HLW	High-level waste
hr	hour
i.d.	inside diameter
i.e.	that is
IMUST	Inactive miscellaneous underground storage tank
in.	inch(es)
IOSR	Interim Operational Safety Requirements
ITS	In-Tank Solidification
L	liter(s)
JCO	Justification for Continued Operation
LCO	Limiting Conditions for Operation
LCT	Liquid Collection Tank
LLW	Low-level waste

LIST OF ABBREVIATIONS, ACRONYMS, AND INITIALISMS
(Cont.)

LMHC	Lockheed Martin Hanford Corporation
LMSI	Lockheed Martin Services, Inc.
m	meter(s)
m^2	square meter(s)
min	minute
μCi	microcurie(s)
MCC	Motor Control Center
NABC	No authorization basis concern
NDA	Non-destructive analysis/assay
NITS	Non-IMUST
o.d.	outside diameter
OSD	Operational Specification Document
Ph	negative log of the hydrogen ion concentration
PHA	Preliminary Hazards Analysis
pKa	kilopascal
PNNL	Pacific Northwest National Laboratory, operated for the DOE by Battelle Memorial Institute
psig	pounds per square inch gauge
Pu	plutonium
PUREX	Plutonium Uranium Extraction (Facility)
R	roentgen(s)
RCSTS	Replacement Cross Site Transfer System
RL	U.S. Department of Energy, Richland Operations Office
scfh	standard cubic feet per hour
SSC	Systems, structures and components
SST	Single-shell tank
TBP	Tributyl phosphate
TSR	Technical Safety Requirement
TWRS	Tank Waste Remediation System
USQ	Unresolved Safety Question
WHC	Westinghouse Hanford Company
WIDS	Waste Information Data System
WMH	Waste Management Federal Services of Hanford, Inc.
y, yr	year(s)

1.0 INTRODUCTION AND BACKGROUND

This report presents the results of a comprehensive activity to identify Tank Waste Remediation System (TWRS) facilities, tanks, and components (FTCs) that may require authorization basis (AB) upgrades to comply with DOE Order 5480.23. The status of the AB and controls implementation for each of these FTCs are examined, and prioritized plans are presented for AB upgrades.

The current TWRS AB is comprised of documents identified in WHC-IP-0842, Volume IV, Section 5.4, Attachment A. The primary AB documents are the TWRS Basis for Interim Operation (BIO) (HNF-SD-WM-BIO-001) and related Technical Safety Requirements (TSR) (HNF-SD-WM-TSR-006). The BIO describes and analyzes most facilities and activities associated with the TWRS waste storage mission. The BIO provides the technical basis for TSR controls that define the operational safety envelope for operation of TWRS facilities. In addition to the BIO, other specific AB documentation exists for several miscellaneous tanks and facilities owned and maintained by TWRS.

It has been recognized that certain FTCs that are owned or managed by TWRS are not explicitly addressed in the current AB, or have not been characterized to the extent that the hazards are fully understood. Thus, upgrades to the AB documentation may be needed to adequately address these FTCs. These FTCs are typically inactive and do not pose an immediate threat in their current configuration. One example of such a facility is the In-Tank Solidification (ITS) facility in the 241-BY Tank Farm, which is not described or explicitly analyzed in the BIO, nor does any other AB documentation exist for this facility. A systematic evaluation has been conducted to identify all the TWRS FTCs with potential AB upgrade needs, including those that may exhibit chemical vulnerabilities and non-TWRS facilities that may contribute to the TWRS hazard profile (i.e., pose a hazard to TWRS operations, facilities, and personnel). The effort included FTC identification, process history and documentation review, controls evaluation, and development of a strategy for upgrade of the TWRS AB to address each identified FTC that was of AB concern. This report presents the results of the effort and provides plans for AB upgrades. Further, a qualitative risk evaluation has been performed to prioritize the upgrade plans.

The driver for this effort is the recognition that the hazards of some TWRS FTCs have not been fully evaluated in an AB and that an evaluation of the risk posed by such facilities was needed so that strategies for updating the AB could be established. This would ensure that the appropriate controls would be applied in a logical sequence and at the proper level for TWRS FTCs.

The activities described in this report are a part of the overall Hanford Site implementation of U.S. Department of Energy (DOE) Nuclear Safety Orders 5480.21, 5480.22, and 5480.23 for TWRS. This implementation is being pursued in a step wise manner, with the development and release of the TWRS BIO as a first step. The TWRS Final Safety Analysis Report (FSAR) (HNF-SD-WM-SAR-067) is being developed to comply with 5480.23 requirements. The activity described in this report is a part of the overall implementation effort, in that upgrades for the miscellaneous TWRS FTCs are required to implement 5480.23. This activity is described as a major part of the TWRS compliance activities in the Fluor Daniel Hanford, Inc. (FDH) Safety Analysis Reports and Technical Safety Requirements Implementation Plan (FDH-9852566).

2.0 SCOPE

2.1 OBJECTIVE

The overall goal of the activity described in this report is to produce a prioritized AB upgrade strategy to address TWRS FTCs with potential AB upgrade needs. To accomplish the overall goal, the following interim objectives were established and completed:

- Identify and provide a comprehensive list of all 200 Area inactive miscellaneous underground storage tanks (IMUSTs).
- Identify and provide a complete listing all TWRS FTCs having potentially inadequate AB coverage.
- Provide a qualitative evaluation of the hazards and chemical vulnerabilities posed by these FTCs.
- Develop AB upgrade strategies for TWRS FTCs having potentially inadequate AB coverage.
- Develop prioritization criteria.
- Prioritize the AB upgrade strategies.

2.2 FTCs WITHIN ACTIVITY SCOPE

This activity encompasses TWRS facilities (defined in Section 2.6), tanks, components, or vessels that were capable of storing more than incidental quantities of hazardous materials. Considerable attention was given to TWRS IMUSTs, vaults or other structures containing waste storage tanks that may not have been previously identified in the TWRS AB, or have the potential to contain wastes that are not typical of single-shell tank (SST) or double shell tank (DST) wastes. These are tanks that could have been used for chemical additions or treatment missions other than routine transfers between TWRS storage tanks. IMUSTs have been the subject of several previous studies and the IMUST definition has been used in the TWRS AB to categorize a specific group of tanks (refer to Section 2.6, Definitions).

Non-TWRS facilities were considered only to the extent that they could contribute to the TWRS hazard profile. This evaluation considered the possibility of an accident in a non-TWRS facility resulting in: (1) a radiological or toxicological release from a TWRS facility, or (2) hazards to TWRS workers or disruptions to TWRS operations.

2.3 INTERFACES

There are other contractor work activities that are related to this FTC evaluation activity. The flammable gas program, for example, is evaluating miscellaneous TWRS facilities (including IMUSTs) for closure of the flammable gas unresolved safety Question (USQ). Each of these efforts has been examined to determine if a relationship should exist with this activity. Following is a description of key information interfaces established:

Characterization Project Office (CPO): The recommendations for sampling of FTCs developed in this report will be integrated into the overall tank waste characterization effort. The sampling requirements identified from the prioritization of needed AB upgrades will be provided for incorporation into the overall tank sampling priorities and the resulting sampling schedules developed for TWRS by the CPO.

Chemical Vulnerability Assessment: The TWRS activity described in this report is broader than, but in part supports, the Hanford response to process deficiencies identified from the May 14, 1997 explosion at the Plutonium Reclamation Facility. As a result of this incident, several corrective actions were undertaken. The evaluation of chemical and radiological vulnerabilities across the Hanford Site was one of the corrective actions requested by the Secretary of Energy in an August 28, 1997 memorandum. A progress report of the actions taken in response to the memorandum was published in December 1997 (DOE/RL-97-85, Rev. 0), which includes a general description of the TWRS activity described in this report.

Process Engineering: TWRS Process Engineering is responsible for establishing and maintaining tank waste behavior models, and thus has provided a significant amount of the process history information on the TWRS FTCs discussed in this report. This TWRS function is also active in the resolution of the TWRS safety issues (such as flammable gas) and is currently prioritizing IMUSTs with regard to the flammable gas hazard. This information is still being developed. An information exchange has been established with Process Engineering to ensure that a consistent set of priorities are developed.

Flammable Gas Issue Resolution: As a part of the flammable gas issue resolution activity, miscellaneous TWRS facilities, including IMUSTs, are being evaluated with respect to the flammable gas hazard. A part of this activity is the identification and field walkdown of IMUSTs. Field walkdowns were coordinated with the flammable gas program to share information and avoid duplication of effort. Information gained from the IMUST identification described in this report is being forwarded to the TWRS Safety Issue Resolution function for inclusion in the issue resolution activities.

RL Senior Management Walkthroughs: U.S. Department of Energy, Richland Operations Office (RL) senior management conducts regular walkthroughs of TWRS facilities. The recent walkthroughs have focused on facilities discussed in this report. These walkthroughs have resulted in a cursory evaluation of current facility conditions and qualitative assessment of risk. Since these facilities are of primary importance to the development of this report, representatives of TWRS Nuclear Safety and Licensing, Operations and Engineering organizations have attended most of the walkthroughs. Information obtained from them has been incorporated into the facility profiles in Appendix B.

Implementation Plans for DOE Orders: The activity described in this report is part of the continuing effort to bring TWRS facilities into compliance with DOE Order 5480.23. This activity is described in the FDH Safety Analysis Reports and Technical Safety Requirements Implementation Plan (FDH-9852566). The approved actions from this plan will be incorporated into HNF-SP-1228.

2.4 FTCs NOT WITHIN ACTIVITY SCOPE

Facilities and structures outside of the 200 Areas were not considered to be within the scope of this activity. Office facilities, change room facilities, and other structures not capable of containing radioactive, hazardous or mixed waste other than in incidental quantities were not considered. Also excluded were: DSTs, SSTs, active catch tanks, active transfer system components, inactive transfer components (other than tanks), double-contained receiver tanks (DCRTs), diversion boxes (without tanks), cribs, septic tanks, retention basins, ponds, ditches, dumping areas, valve pits, and unplanned release sites. BIO coverage for such FTCs is considered to be adequate.

A 1997 letter (97-TWR-017) discussed the proposed transfer of waste sites between the Environmental Restoration Program (ER) and TWRS. This includes the change in ownership of seven IMUSTs between ER and TWRS (three to ER and four to TWRS). This transfer of ownership has not yet occurred, and for the purposes of this report, the tanks scheduled for transfer to ER are treated as TWRS-owned. When the transfer occurs, it may result in a change in planning for the subject tanks. For completeness, the 244-UR Vault (containing four IMUSTs), scheduled to be taken over by TWRS, is treated as a TWRS-owned facility in this report. However, any activities planned for this vault cannot be pursued unless the transfer is finalized.

2.5 USQ STRATEGY

The activity described in this report is an integral part of the overall Hanford implementation of DOE Nuclear Safety Orders 5480.22 and 5480.23. During the process of planning for the TWRS AB upgrades to comply with these orders, it was recognized that the hazards of some TWRS FTCs have not been fully evaluated in the AB and that an evaluation of the risk posed by such facilities was needed so that a prioritized plan for upgrading the AB could be established. This would ensure that the appropriate controls would be applied in a logical sequence and at the proper authorization level for TWRS FTCs. This report provides a prioritized listing of the upgrade plans for certain TWRS miscellaneous FTCs. This activity is described as a major part of the TWRS compliance activities in the Fluor Daniel Hanford, Inc. (FDH) Safety Analysis Reports and Technical Safety Requirements Implementation Plan (FDH-9852566).

It is not intended that a USQ would be declared for each facility, tank, or component identified during this effort, the main purpose of which is to identify needed upgrades to the AB. This is consistent with the guidance provided by DOE (Memorandum, NE-70, RL commitment control #930020.0F) which provides interpretation for use in applying DOE Order 5480.21 "Unreviewed Safety Questions." The reference states: "Actions taken in response to upgrade requirements, such as DOE 5480.22 and 5480.23 should be treated as separate upgrade activities that do not impact the current/interim AB and, therefore, new information developed or discovered as a result of such upgrades is excluded from the requirements of section 10d of DOE 5480.21." For facilities not covered in the BIO, shortfalls in AB documentation are expected (in the same way that shortfalls in the TWRS AB documentation were expected before the BIO was developed). As an example of this, there were known inadequacies in the Interim Operational Safety Requirements (IOSR) controls during the upgrade of the TWRS AB and issuance of the BIO and TSRs. The TSRs represent a substantial improvement over the old controls. However,

a USQ was not declared on the IOSR controls because the TSR development activity addressed known inadequacies in the controls. Had there been a discovery of an immediate need for additional or different controls because of unacceptable risk to the facility worker, onsite workers or the public, a USQ would have been declared. As such, the new or different controls would have been implemented as soon as practicable rather than on the planned schedule for BIO implementation.

The adequacy of existing controls for the FTCs addressed in this report was evaluated during the facility walkdown and evaluation process. As a result of this, there were no cases identified where there is an immediate need to invoke new/different controls for the purposes of preventing facility worker fatality or serious injury, or unacceptable risks to onsite workers or the public. If such conditions are discovered during the subsequent evaluations proposed in this report, a Discovery USQ would be recommended to RL and appropriate interim controls would be put in place by the contractor via a vehicle such as a Standing Order. The contractor would propose that such a USQ could be closed once RL-approved controls are in place. In the case where it is concluded that a facility is addressed in the BIO, but the BIO is found to be inadequate to maintain the safety of the facility in question, a USQ screening of the Potential Inadequacy in the Authorization Basis (PIAB) could lead to the recommendation for a USQ to be declared and the imposition of interim controls. The USQ would be closed once the BIO is appropriately upgraded.

The overall strategy is to provide a systematic and rigorous means to identify and evaluate those facilities for which AB upgrades are required and to develop a plan for such upgrades without having an excessive number of unnecessary USQ evaluations. This is consistent with the NE-70 guidance.

In all cases where AB upgrades are required, including a systematic evaluation of hazards and subsequent development of appropriate controls, current TWRS practices associated with current facility missions were judged to sufficiently protect workers in the near term. Therefore, no additional or interim controls are proposed in the report. For instance, while the 242-T Evaporator is ranked as the highest priority concern, and it is acknowledged that there may be hazards that are not yet identified, worker activities in this facility involve only routine building surveillance and operation of the ventilation system. No entry into contaminated areas is involved. No work involving contact with or disturbance of the radioactive or hazardous debris of the shut down facility is currently planned or authorized. No controls and practices above and beyond those currently in place could be identified based on contractor knowledge of the facility. Instead, this report reflects the conclusion that safety is best served by gaining a better understanding of hazards through structured hazards analysis and characterization. Controls associated with possible characterization activities need to be developed as a part of those activities.

Another example of the application of this strategy is the ITS (in-tank solidification) system in the 241-BY Tank Farm. The facility is not explicitly covered in the BIO. A facility walkdown and review of drawings and process history have been completed. The evidence reviewed to date suggests that there are no acute energy sources of concern in this facility. Nothing suggests the need for a separate urgent controls development effort. Until there is information to suggest otherwise, the current AB upgrade plan will be implemented, acknowledging that no present TWRS AB document adequately

accounts for this structure. At this point in time, declaration of a USQ would not be useful and would result in an administrative burden that does not enhance TWRS safety.

There are currently several open USQs relating to the TWRS AB. Among these, there are two that are considered major safety issues and are directly related to the activity described in this report. These are:

FLAMMABLE GAS USQ: In 1996, a flammable gas USQ (TF-96-0433) was declared, which encompassed a large number of miscellaneous TWRS tanks and facilities that had not been previously addressed in the TWRS AB. This USQ remains open, although the hazard is addressed in Appendix E (Justification for Continued Operation) to the BIO and controlled through the TSRs. A strategy document for closure of the USQ has been issued (HNF-SD-WM-ER-680). This strategy document is currently being updated to address USQ closure for tanks and facilities other than DSTs and SSTs. Those of interest to this activity include IMUSTs, 204-AR Waste Unloading Facility, 244-AR Vault, 244-CR Vault, 242-T Evaporator, and 242-S Evaporator.

ORGANIC NITRATE USQ: In May 1996, an organic nitrate USQ (Letter, RL, 96-WSD-073) was declared, which encompassed a number of TWRS tanks that had considerable uncertainty regarding the potential for an organic nitrate reaction and had not been fully evaluated in the TWRS AB. The USQ applies to DSTs, SSTs, DCRTs, and IMUSTs. This USQ remains open, although the hazard is now addressed in the BIO and is controlled through the current TSRs. A strategy document for closure of the USQ has been issued (WHC-EP-0908). The applicable strategy is currently being implemented. It entails a significantly improved and refined quantification of the risk and demonstration that the risk falls within evaluation guidelines. On August 17, 1998, the contractor will submit an ECN to RL to amend the BIO and the TSRs to incorporate the new technical information. The refined quantification of risk will allow alleviation of some of the controls presently in place.

2.6 DEFINITIONS

The following are definitions applicable to this report. They are used primarily to categorize the information obtained in the identification phase of the activity, and correspond to the information categories presented in the FTC listings in Appendix A.

FTC: Facility, Tank or Component designed for storage and or processing of chemicals or waste materials in greater than incidental quantities, that for the purposes of this report has potential AB upgrade needs.

Facility: An identifiable unit of property that contains vessels and other components.

Major Facility: A facility designed to house multiple processes and components. A major facility would usually be housed in a building. Examples of major facilities include the 209-E Building and the 242-S and 242-T Evaporators. Vaults and diverter stations are usually not major facilities, since

they simply house multiple tanks to facilitate switching and interconnections but do not house multiple processes. Note that by this definition, 244-AR Vault is a major facility because of its previous housing of multiple process functions. All other vaults are not major facilities.

IMUST: Inactive Miscellaneous Underground Storage Tank. An IMUST is (1) inactive; (2) radioactive; (3) underground; and (4) not within a major facility "miscellaneous." "Inactive" means the tank is either physically or administratively isolated. "Radioactive" means that the tank contains radioactive material. Non-radioactive chemical tanks are not IMUSTs. "Underground" means the tank is partially or wholly below grade. It has been historically accepted that "miscellaneous" means that the tank is not within a major facility (excluding tank farms in general). This category further breaks down into TWRS and non-TWRS.

As an example, the decontamination tank (TK-111) associated with 209-E is located underground and outside the facility. It is an IMUST. The dump tanks (TK-109 and TK-110), while underground, are located within the facility proper and are therefore not IMUSTs. The 242-T Evaporator decontamination tank (242-T-135) outside of the facility is an IMUST and has been categorized as an IMUST in previous IMUST lists. Tanks within or closely associated with a facility will be dispositioned with the facility whether or not those tanks are identified as IMUSTs.

Chem: Chemical tanks are those that contain non-radioactive chemical materials. Petroleum and waste oil tanks also fall in this category. This category further breaks down into TWRS and non-TWRS.

NITs: The Non-IMUSTs are miscellaneous tanks and other waste-containing components that are not classified as IMUSTs or Chemical Tanks but may be of potential significance for safety issue resolution or chemical vulnerability. Examples include active tanks, storage pads, and dumping areas. Note that this category may include tanks in facilities. This category further breaks down into TWRS and non-TWRS.

NABCs: This final category consists of facilities, tanks, and components that have No Authorization Basis Concern. Examples include water tanks or tanks that have been identified through a source document or drawing, but have never been built.

3.0 IDENTIFICATION OF FACILITIES, TANKS AND COMPONENTS

3.1 IDENTIFICATION PROCESS

The first activity performed in support of this effort was to develop a comprehensive list of FTCs that have potential AB upgrade needs. To do this several information sources were employed as described below:

Waste Information Data System (WIDS): The WIDS is an information database maintained by BHI Bechtel Hanford, Inc. (BHI). This database contains listings by program owner of all identified waste property units on the Hanford Site. WIDS was used as the baseline list to indicate the official facility ownership during the FTC identification process. As a result of the identification process, some discrepancies in the WIDS database were identified (e.g., incorrect tank identification numbers or definitions). These discrepancies are being corrected by submittal of the appropriate change authorizations to BHI.

Hanford Drawings: The Hanford drawings system was also used as a primary information source for tank/vessel identification. As-built drawings of the TWRS facilities and tanks were reviewed to 1) identify miscellaneous tanks and structures, and 2) determine if the drawings showed any transfer routes to previously unidentified tanks. The drawings provided information on tank and vessel dimensions, construction materials, locations, interconnections, and intended use in their respective facilities or projects.

Project Files: The records of past projects were reviewed as needed to identify and verify tank locations and determine current status. Of particular interest were the records of Project B-231, which was conducted during the late 1970s and early 1980s. The objective of this project was to identify, stabilize, and isolate miscellaneous tanks and components that were inactive and had no future TWRS mission. These records provided information on tank contents at the time of stabilization and the physical modifications performed to isolate each of the tanks and components.

Interviews with Key Personnel: Informal interviews were conducted with current and former Tank Farms personnel. The FTC lists (Appendix A) were reviewed with these individuals, who typically suggested other personnel to contact for further information. The interviews were primarily directed toward the identification of FTCs that may have been excluded from the listings shown in Appendix A; however, the individuals interviewed also provided information on FTC status, modifications, contents, and past operations. A list of key personnel contacted during the FTC identification effort is included in Table 3-1.

Documentation Sources: A number of documents have been previously produced that describe tank identification and hazard assessment activities. The bulk of this information was directed toward IMUSTs. Table 3-1 lists several of the key documentation sources used in the development of the current listing of TWRS FTCs contained in Appendix A. The document numbers in the table refer to the references listed in Chapter 8.0 of this report.

Table 3-1. FTC Documentation and Personnel Information Sources

Documentation Sources

DRAFT REPORT (not issued), "Source Term Information for Inactive Miscellaneous Underground Storage Tanks."

DRAFT, HNF-SD-WM-SAR-067, "Tank Waste Remediation System Final Safety Analysis Report."

HNF-1566, "Letter Report 200 Area Plateau Inactive Miscellaneous Underground Storage Tanks Locations."

HNF-SD-WM-BIO-001, "Tank Waste Remediation System Basis for Interim Operation."

WHC-EP-0560/UC-721, "Miscellaneous Underground Radioactive Storage Waste Tanks."

WHC-EP-0775, "Safety Issue Resolution Strategy Plan for Inactive Miscellaneous Underground Storage Tanks."

WHC-EP-0861, "Status Report for Inactive Miscellaneous Underground Storage Tanks at Hanford Site 200 Areas."

WHC-SD-DD-TI-057,"Summary of Radioactive Underground Tanks Managed by Hanford Restoration Operations."

WHC-SD-EN-ES-040, "Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site, Washington."

WHC-SD-WM-ER-543, "Assessment of Chemical Vulnerabilities in the Hanford High-Level Waste Tanks."

WHC-SD-WM-HA-001, "Preliminary Hazards Analysis of the Miscellaneous Underground Storage Tanks."

WHC-SD-WM-HIE-007, "Tank Waste Remediation System FSAR Hazard Identification/Facility Configuration Verification Report."

WHC-SD-WM-TI-759, "Hazards Evaluations for the TWRS Final Safety Analysis Report."

Letter, WHC, 9550687, "Tank Waste Remediation System Management Plan for Hanford 200 Area Inactive Miscellaneous Underground Storage Tanks."

Letter, LMHC, 80232764-9-K001, "Inactive Miscellaneous Underground Storage Tanks"

Letter, FDH, 9751976a R1, "Management of IMUSTs Consistent with Single Shell Tank Program."

Letter, RL, 95-PCA-335, "Status Report on Inactive Miscellaneous Underground Storage Tanks."

Letter, LMHC, 9755398, "Management of Inactive Miscellaneous Underground Storage Tanks Memorandum."

Letter, FDH, 9761499A, "Subcontract Number 80232734-9-K001; U.S. Department of Energy, Richland Operations Office Request to Devalue Grout Facility Structures and Equipment."

Interoffice Memo, 06/30/97, LMHC, "East Tank Farms Facility Chemical Vulnerability Study."

Letter, RL, 97-TWR-017, "Contracted Number DE-AC06-96RL13200-Transfer of Waste Sites."

Letter, RL, 97-PRO-855, "Agreement for and Assignment to Waste Sites for Management by Fluor Daniel Hanford, Inc."

Key Personnel Contacted

M. D. Aichele	J. D. Adrian	J. D. Anderson	D. R. Autery	J. W. Bailey	R. W. Bailey
N. F. Barilo	B. M. Barnes	J. R. Bell	D. E. Bowers	D. A. Bragg	S. R. Briggs
R. G. Brown	R. J. Brown	R. D. Claghorn	J. A. Crawford	D. C. Derosa	L. F. Dougherty
J. N. Doeler	R. A. Dodd	R. G. Egge	P. L. Fitzgibbons	K. J. Freeman	J. D. Galbraith
R. A. Giller	R. D. Gustavson	D. Harlow	J. O. Honeyman	K. J. Hull	M. N. Islam
P. F. Kison	R. P. Knight	L. S. Krogsrud	M. E. Lakes	T. Laney	R. E. Larson
J. S. Lee	J. Lipnicki	J. E. Mitchell	R. J. Nicklas	J. L. Pennock	R. L. Powers
W. G. Richmond	O. R. Rasmussen	F. C. Schmidt	B. J. Shoemake	D. K. Smith	W. N. Smith
D. L. Sparks	G. A. Stanton	J. N. Strode	M. J. Sutey	G. R. Tardiff	A. R. Tedeschi
D. J. Tollefson	R. P. Tucker	J. A. Vood	D. D. Wanner	K. A. White	L. A. Williamson
D. D. Wodrich	J. C. Womack	L. C. Zinsli			

Site Maps: Maps of the areas of interest were obtained from Lockheed Martin Services, Inc. (LMSI) Printing and Reproduction Services. These are prepared and maintained by Fluor Daniel Northwest, Inc. (FDNW) Mapping Services. The maps were reviewed to identify specific TWRS facilities and structures that could potentially impact the list of TWRS FTCs. The information gained was pursued through further examination of specific location aerial photographs, maps and drawings.

Aerial Photographs: A set of recent (1997) aerial photographs was obtained from Pacific Northwest National Laboratory (PNNL) Photography which provided close-up views of each complete tank farm. These photos were reviewed with the respective cognizant engineers to identify aboveground structures that could potentially be an FTC of concern. Field walkdowns were conducted as needed to verify the structures and components identified through photo evidence.

Hanford FacilitiesCORE: FacilitiesCORE is a database, maintained by DynCorp Tri-Cities Services, Inc (DYN), which contains a list of previously identified facilities that have property designation numbers. This database was searched for all items in the 200 Areas, regardless of custodianship, that were described as tanks, vaults containers, or other vessels. This source provided a significant amount of information on chemical tanks, both TWRS and non-TWRS. The database is not completely accurate regarding tank identification and numbering, but is currently maintained.

Facility Walkdowns: Facility walkdowns were performed on an as-needed basis during the identification and verification of the TWRS FTCs with potential AB upgrade needs. These walkdowns were performed to varying degrees of rigor, depending on need and were primarily conducted to verify specific details for each FTC as it was being evaluated.

Raw data files of the information gathered through the sources listed above are being maintained by the TWRS Operations and Projects Safety Support organization for future reference.

3.2 FTC INFORMATION MANAGEMENT

The list of TWRS and non-TWRS FTCs identified by this activity are provided in Appendix A. Appendix A contains several subsections based on the sorting of information into distinct groups for further evaluation. A graphic description of information management for the Appendix A sections is provided in Figure 3-1, and the following subsections describe how that information was managed.

3.2.1 Historical Information

Sections A-1 and A-2 of Appendix A provide historical IMUST listings sorted by tank number and by tank owner, respectively. These sections were compiled from a number of sources, including the WIDS database, a 1994 engineering study (WHC-SD-EN-ES-040), a 1995 letter from WHC to RL providing a management plan for the 200 Area IMUSTS (Letter, WHC, 9550687), a 1995 status report issued by WHC (WHC-EP-0861, Rev. 0), a 1997 letter from RL to Fluor Daniel Hanford, Inc. (FDH) (Letter, RL, 97-PRO-855) assigning responsibility for

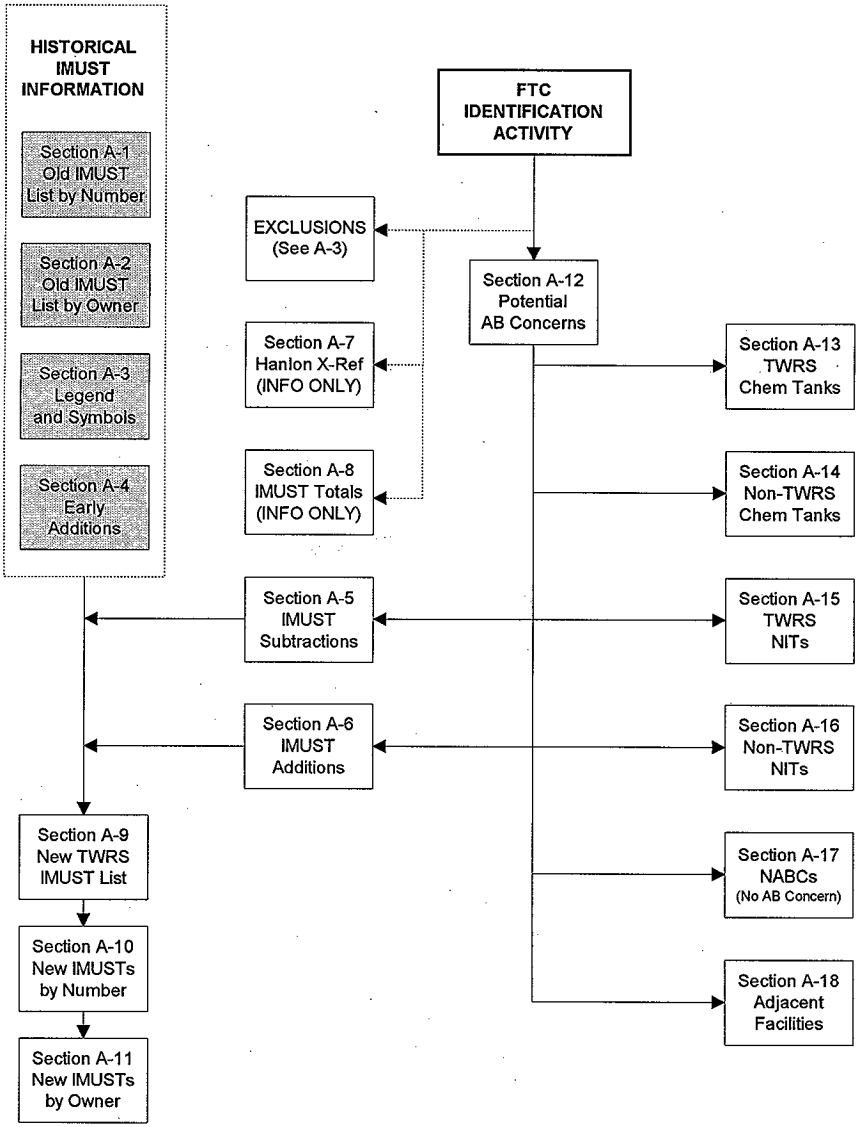


Figure 3-1. FTC Information Management

waste site management (included the WIDS listing), and a 1997 letter from RL to FDH (Letter, RL, 97-TWR-017) requesting transfer of certain waste sites between BHI and Lockheed Martin Services Corporation (LMHC) (TWRS). The tables in both sections contain information columns indicating whether the sources referenced above listed the specific tank, and the ownership indicated in the reference. The tables also list whether each specific tank is listed in the TWRS BIO (HNF-SD-WM-BIO-001) or draft FSAR (HNF-SD-WM-SAR-067). Several active catch tanks were included on the lists in Sections A-1 and A-2. This is because catch tanks were not excluded (refer to Sections 2.4 and A-3) and all items in the WIDS database that belonged to TWRS were originally listed if not on the exception list. Active catch tanks are considered to be adequately addressed in the BIO; thus, these tanks are not discussed further in this report. Note that the column headed "1997 LTR (4)" is significant insofar as it represents the IMUST listing most recently approved by DOE. Changes proposed by the current activity are in reference to this column.

Section A-3 provides references, a legend of symbols used in the tables, and a listing of the items that were excluded from the data searches. Included in the legend and indicated on several of the IMUST entries in Sections A-1 and A-2, is the proposed transfer of waste sites between the Environmental Restoration Program (ER) and TWRS (97-TWR-017). Tanks 244-UR-1 through 4 (244-UR Vault) are scheduled to be transferred from ER to TWRS, and tanks 216-BY-201, 216-TY-201, and 270-W are scheduled to be transferred from TWRS to ER. This transfer of ownership has not yet occurred, and for the purposes of this report, the tanks scheduled for transfer to ER are treated as TWRS-owned. When the transfer occurs, a change in plans for the subject tanks may result. The 244-UR Vault which is scheduled for transfer to TWRS is included in this report as TWRS-owned; however, the strategy presented in this report assumes the transfer will occur.

Section A-4 provides the identification of IMUSTs (included in Sections A-1 and A-2) that were added to the list after the letter forwarded to The Washington State Department of Ecology (Letter, LMHC, 80232764-9-K001) that established the official list of IMUSTs. The tanks added were: 213-W-1, a catch tank near the dry waste compactor facility (refer to Section 3.4.3), and 241-T-302, a catch tank in the 241-T Tank Farm, near the 241-T-151 and 241-T-152 diversion boxes (refer to Section 3.4.10). Both of these tanks are identified in the WIDS database and because of the WIDS identification, they were included in Sections A-1 and A-2, but later removed from the IMUST list (refer to Section A-5).

3.2.2 Current FTC Identification

As FTCs were identified through the means described in Section 3.1 above, they were compiled in Section A-12. FTCs that could obviously be excluded from the activity (Section A-3) were eliminated and not entered into the list. However, once a specific FTC was entered into Section A-12, it was not subsequently removed from the lists, even though it may have been determined to be in an excluded category. This quality control feature assured 100 percent resolution of all FTCs identified and also assured traceability of the process. The information on a specific tank or facility was maintained in Section A-12 until enough information (e.g. description, active status, ownership) was obtained to determine its appropriate category. Once the appropriate category was established, each specific FTC entry was moved to one of the appropriate Appendix A sections. At the end of the process, Section

A-12 was maintained as the final location of facility information only. Information on tanks and components not associated with facilities was moved to one of the sections described below.

Section A-5 identifies three IMUSTs to be removed from the IMUST lists. One of these is 241-AX-151CT, which was previously identified only as a catch tank. This entry was replaced by the correct diverter station identification, with all five tanks within the station listed (refer to Section 3.3.4). The 213-W-1 catch tank (refer to Section 3.4.3) was removed from the IMUST list because it is not a radioactive tank and, thus, does not meet the IMUST definition. Tank 241-T-302 was also removed from the listings because it was determined to not exist (refer to Section 3.4.10).

Section A-6 identifies nine IMUSTs that were added to the IMUST lists. Five of the nine additions are the tanks comprising the 241-AX-151 diverter station (refer to Section 3.3.4). 209-E-TK-111 (refer to Section 3.4.2) is an underground drain tank near 209-E that meets the definition of IMUST, but was not previously identified as such. 241-BY-ITS2-TK-1 (refer to Section 3.4.7), and 241-BY-ITS2-TK-2 (refer to Section 3.4.8) are a condenser tank and heater flush tank, respectively near Tank 241-BY-112. These two tanks were originally part of the ITS-2 system operated within the 241-BY Tank Farm. Tank 216-A-5 is a neutralization tank near the Plutonium Uranium Extraction Facility (PUREX) that was not previously identified.

Section A-7 provides information to be used in correcting the monthly waste summary report (HNF-EP-0182) produced by TWRS. The intent of the monthly report is to provide current information on the TWRS tank contents; however, the monthly report currently contains some errors with regard to miscellaneous TWRS FTCs. Information gathered through the current activity will be used as a basis to ensure that the monthly report is accurate.

Section A-8 lists the total number of IMUSTs, by owner, contained in the current Appendix A lists (Sections A-9, A-10, and A-11).

Section A-9 contains the most current list of the TWRS-owned IMUSTs, including those from both historical listings (as modified by this activity), and the newly identified IMUSTs.

Sections A-10 and A-11 contain the current total 200 Area IMUST lists, sorted by tank number and tank owner, respectively. One new non-TWRS IMUST has been identified as a result of this activity. Tank 216-A-5 is a neutralization tank near PUREX that was not previously identified as an IMUST. This tank has been verified to meet the IMUST definition and has been verbally confirmed with the Babcox and Wilcox Hanford Co. (BWHC) owner.

Section A-12 provides the list of TWRS-owned facilities subject to the current evaluation activity and described in Section 3.3. Major components and storage vessels comprising each facility are listed with the facility in Section A-12. It is important to note that tanks within or closely associated with a facility will be dispositioned with the facility whether or not those tanks are identified as IMUSTs.

Section A-13 lists the tanks and vessels owned by TWRS that are or were used to store non-radioactive chemicals. These are tanks that may contribute to the TWRS hazard profile if capable of causing a release of radioactive

material from TWRS facilities, an independent toxicological release hazard, or a potential chemical runaway reaction.

Section A-14 lists the chemical tanks and vessels identified during this exercise that are not owned by TWRS. They are of concern only if they can contribute to the TWRS hazard profile.

Section A-15 lists TWRS non-IMUSTs and other structures/components that did not meet the IMUST definition, primarily because they are active. These are tanks that are of interest to the TWRS AB because they are radioactive, and are currently covered in the BIO and draft FSAR.

Section A-16 lists non-TWRS, non-IMUSTs and other structures/components determined through one of the sources listed in Section 3.1 that did not meet the IMUST definition. The items in this list may be associated with those in Section A-18 and may be of concern if they contribute to the TWRS hazard profile.

Section A-17 contains the items determined to be of no AB concern. This includes items that normally would have been excluded (refer to Section A-3), but were listed because complete information was not available at the time they were listed. This section also includes items that were identified through one of the sources listed in Section 3.1 and subsequently determined not to exist or to have been removed.

Section A-18 identifies the facilities adjacent to TWRS that may contribute to the TWRS hazard profile, disrupt TWRS operations, or pose a threat to TWRS workers. These facilities are discussed in Section 5.3.

3.3 TWRS FACILITIES IDENTIFICATION AND DESCRIPTION

This section describes the facilities that were identified during this activity. These are the facilities listed in Section A-12 of Appendix A. A general description of these facilities is given in the following subsections, highlighting the contents of the tanks or vessels designed for waste or chemical storage or processing. Additional information on each of these facilities is contained in the facility hazard checklists in Appendix B.

3.3.1 204-AR Waste Unloading Facility

The 204-AR Waste Unloading Facility is located south of the 244-AR Vault and west of the 241-AX Tank Farm. The facility was designed to receive liquid waste from rail tank cars or tank trailers and pump these wastes to a designated 200-E Area tank farm. Included in the facility design is a chemical adjustment capability utilizing four chemical make-up tanks and a sluicing system to remove sludge from the tank cars. A photo and diagram of the facility is shown in Figure 3-2. The 204-AR Waste Unloading Facility was constructed in 1981 and is a reinforced concrete structure approximately 19.5 m (64 ft) long by 12.2 m (40 ft) wide by 7.8 m (25.5 ft) high. The facility is still active except for two chemical tanks that are no longer used.

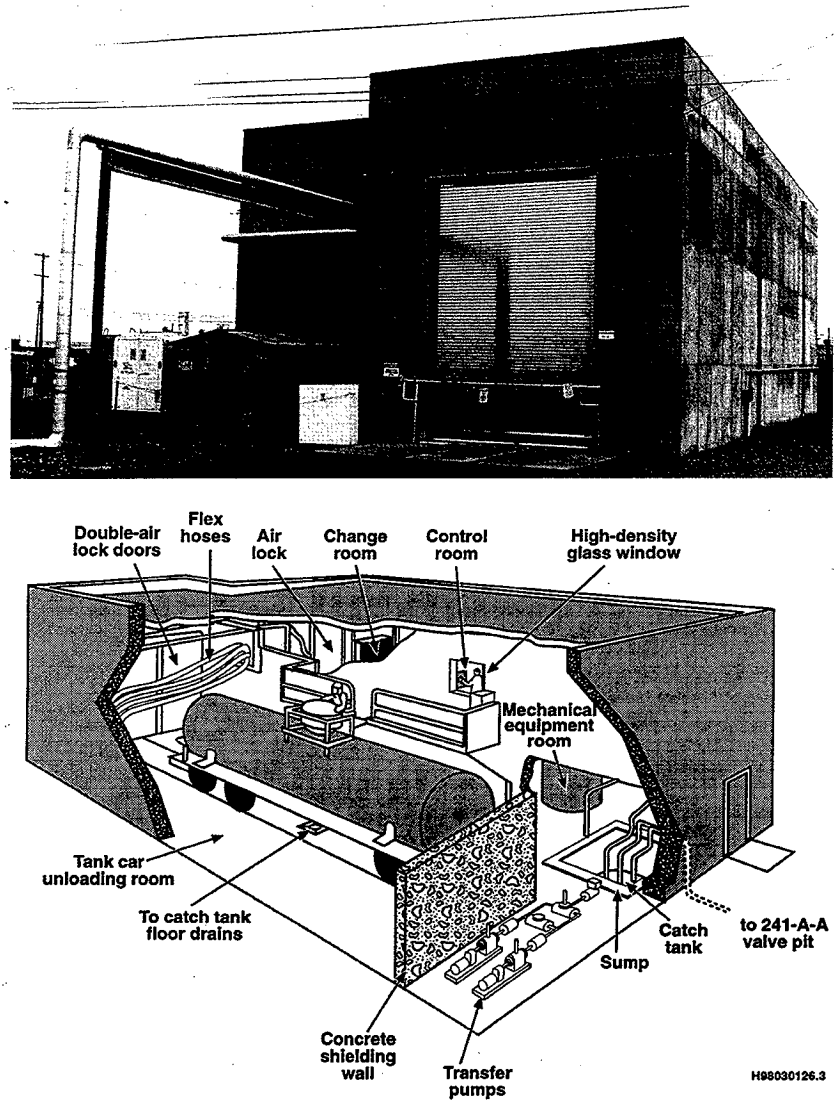


Figure 3-2. 204-AR Waste Unloading Facility

204-AR is divided into three major areas:

- A rail tank car unloading canyon (located on the first floor) containing transfer pumps, process piping, remotely operated valves, and a catch tank (located below grade).
- A mechanical equipment room (located on the first floor) containing chemical storage and makeup tanks, motor control center, ventilation system, and fire system.
- A control room and personnel facilities (located on the second floor).

The following tanks/vessels are located within the facility:

- 204-AR-TK-1 (5,678 L [1,500 gal]), a stainless steel catch tank for temporarily storing process solutions received from drains in the system. The tank is located below grade in the unloading area in a stainless steel-lined pit.
- 204-AR-TK-2 (1,893 L [500 gal]), a carbon steel nitrite solution tank, located in the mechanical equipment room.
- 204-AR-TK-3 (1,893 L [500 gal]), a stainless steel dilute caustic solution tank, located in the mechanical equipment room.
- 204-AR-TK-4 (757 L [200 gal]), a stainless steel high Ph buffer solution tank, located in the mechanical equipment room. This tank is out of service.
- 204-AR-TK-5 (6,814 L [1800 gal]), a carbon steel 50 percent caustic solution tank, located in the mechanical equipment room, that receives 50 percent sodium hydroxide solution delivered by tank truck. The fill pipe for TK-5 penetrates the 204-AR Waste Unloading Facility wall and terminates outside the building next to a platform provided for the tank truck. This tank is out of service.

Three ventilation systems within the 204-AR Waste Unloading Facility service the personnel area, the radiation zone, and the mechanical equipment room. The personnel area ventilation system operates at positive pressure. The mechanical equipment room exhaust system consists of a wall-mounted exhaust fan operated on a demand basis and only when the radiation zone exhaust system is operable. The radiation zone exhaust system operates at a negative air pressure and draws air from the canyon area and catch tank. The fan is located in the mechanical equipment room and discharges through the roof ventilator.

Record air samplers collect particulate matter on filter paper at the exhaust stack and continuous air monitors (CAMs) monitor beta-gamma activity in the airflow at the exhaust stack. CAMS and radiation probes are also located in the facility unloading canyon. Fire protection includes heat and smoke detectors and a sprinkler system installed throughout the facility.

Material Stored in the Facility

The 204-AR Waste Unloading Facility is still active, thus waste materials are not permanently stored there. The facility receives waste from the 300 Area PNNL labs and the 222-S lab. The catch tank (204-AR-TK-1) in the facility contains floor drainage from the unloading area and is maintained at a specified level (minimum 1893 L [500 gal]). Current catch tank contents are estimated to be contaminated waste water mixed with caustic (sodium hydroxide) and sodium nitrite.

Two tanks (204-AR-TK-4 and 204-AR-TK-5) in the mechanical equipment room are empty and out of service. The other two tanks in the mechanical equipment room (204-AR-TK-2 and 204-AR-TK-3) contain sodium nitrite solution and dilute caustic (sodium hydroxide) solution. Material is added to these tanks as needed for chemical adjustment of waste receipts.

3.3.2 209-E Critical Mass Laboratory

The 209-E Complex is located northwest of the PUREX Facility in the 200-E Area. The 209-E Building was constructed in 1960 to provide a heavily shielded room where criticality configurations were studied. In the late 1980s, the fissile material was removed except for residual contamination and the process tanks were flushed to reduce the residual contamination. A photo and drawing of the facility is shown in Figure 3-3.

One wing of the one-story, L-shaped concrete block and reinforced concrete building houses offices, a control room, shops and a common area. The other wing includes the equipment room, the change room, the mix room and the Critical Assembly Room (CAR). The tanks in two of these rooms (CAR and Mix Room) contain residues of plutonium. Personnel are located in the office spaces of the facility. These personnel operate the less-than-90-day storage pads adjacent to the facility.

CAR Description

Criticality experiments were conducted in the CAR, which contains two reactor hoods where the critical assemblies were held. Each hood has its own high-efficiency particulate air (HEPA) filter and instrumentation that was monitored from the control room. Contaminated equipment located in the CAR includes four hood assemblies, a water tank and eleven process tanks ranging from 38 L (10 gal) to 400 L (106 gal). They are:

- TK-101 (330 L [87 gal]), TK-102 (330 L [87 gal]), TK-103 (290 L [77 gal]), TK-104 (290 L [77 gal]), TK-105 (400 L [106 gal]) and TK-106 (400 L [106 gal]), all solution handling tanks. These tanks are tied to the facility ventilation system and have an air purge system to remove any generated hydrogen.

- TK-108 (11,735 L [3100 gal]), a water tank

- TK-141 (278 L [73 gal]), TK-161 (110 L [29 gal]), and TK-162 (400 L [106 gal]), all experimental vessels. These tanks have bottom drains and are tied to the facility ventilation system.

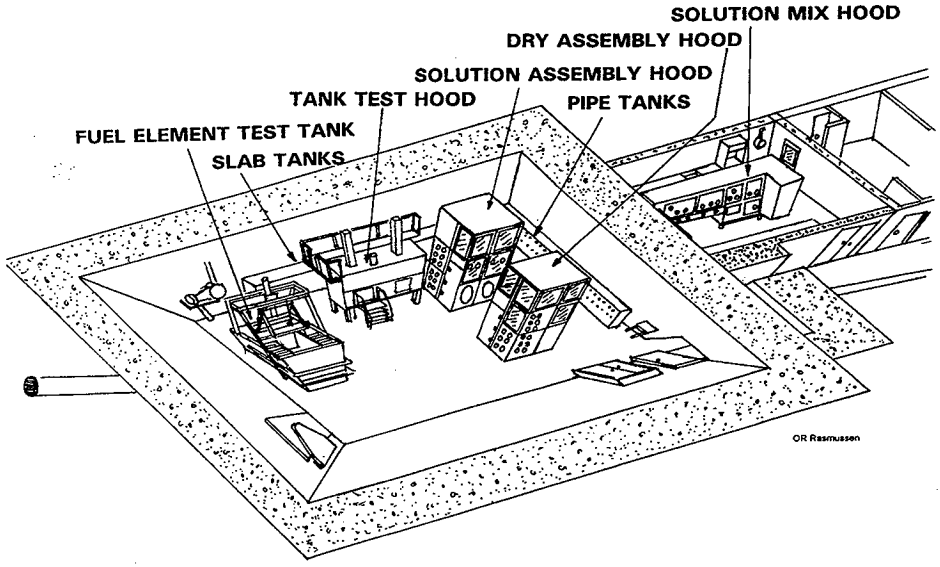


Figure 3-3. 209-E Critical Mass Laboratory

- TK-109 (35 L [9 gal]), and TK-110 (35 L [9 gal]), both dump tanks. These tanks are encased in concrete approximately 0.6 m (2 ft) below the CAR reactor hoods.

The CAR is posted in accordance with the Hanford Site Radiological Control Manual (HSRCM-1) and is maintained locked. Access is controlled through the Facility Manager.

Mix Room Description

The Mix Room provided the necessary facilities for receiving, handling, and preparing the various types and forms of radionuclides and chemicals used in the experiments. This room is also ventilated with the exhaust ventilation system that ventilates the CAR. Like the CAR, the Mix Room contains contaminated equipment including three hood assemblies and nine tanks ranging from 10 L (3 gal) to 320 L (85 gal). They are:

- TK-213 (18 L [5 gal]), TK-231 (320 L [85 gal]), TK-232 (320 L [85 gal]), TK-233 (320 L [85 gal]), TK-234 (156 L [41 gal]) and TK-235 (156 L 41 gal]), all solution handling tanks. These tanks are tied to the facility ventilation system and have an air purge system to remove any generated hydrogen.

- TK-206 (10 L [3 gal]), a calibration and solution load out tank

- TK-215 (15 L [4 gal]), and TK-216 (15 L [4 gal]), both process condensate catch tanks that are vented.

The Mix Room is posted in accordance with HSRCM-1 and maintained locked. Access is controlled through the Facility Manager.

Drain Tank

Another tank, TK-111, was used as a drain tank and is located underground, adjacent to the south end of the facility. This tank is passively ventilated.

Exhaust Ventilation System

The CAR and Mix Room are ventilated with an active ventilation system. A damper in the inlet ventilation duct has been locked in the closed position, forcing ventilation to be supplied through infiltration only. The exhaust ventilation system consists of fire-resistant HEPA filters, an exhaust fan, and a stack. Power is supplied to the fan via a breaker in the Equipment Room. The damper on the exhaust fan was secured in the open position to allow a ventilation pathway in case of a ventilation failure.

Air Purge System

Air is supplied to the twelve process tanks via an air purge system. The purge air exits the tanks through tubing tied into the exhaust ventilation system. The air purge system consists of tubing, air compressors, pressure reducing valves, and flow indicating controllers (i.e., rotameters). The pressure reducing valves limit the supply pressure of the air to 5 Kpa (35 psig).

Fire Suppression System

Fire protection for the CAR is provided by a pre-action sprinkler system, meaning the system remains dry and pressurized with air. Pressurization with air achieves freeze protection during cold weather. The Mix Room and the rest of the 209-E building have a wet pipe system.

Materials Stored in the Facility

There are twelve process tanks in the 209-E Building that were used for solution handling. These tanks include TK-101, TK-102, TK-103, TK-104, TK-105, and TK-106, located in the Criticality Assembly Room (CAR) and TK-213, TK-231, TK-232, TK-233, TK-234, and TK-235, located in the Mix Room. Per the status report, these tanks were flushed, are tied into the exhaust ventilation system, and have an air purge system to remove any generated hydrogen.

Another tank, TK-111, was used as a drain tank and is located underground, adjacent to the south end of the facility. This passively ventilated tank was sampled routinely, where it was determined that plutonium levels were below limits for discharging the contents to a crib. A recent vapor sample of the drain tank (TK-111) identified no detectable flammable gas within the tank (letter, FDH, 9760653).

One tank, TK-108, contained water and not process solution; it is open to room atmosphere, is located in the CAR, and is considered flushed since it only contained water.

The experimental vessels, TK-141, TK-161, and TK-162, have a bottom drain and are vented to the exhaust ventilation system for hydrogen removal. These tanks are all located in the CAR. As stated in the status report, TK-141 was thoroughly flushed. The status report also states that a nondestructive analysis (NDA) was performed to provide "before" plutonium quantities (i.e., baseline indications prior to decontamination efforts). This was used as a guide to perform limited decontamination on certain experimental vessels. TK-161 and TK-162, were each assayed by NDA to contain 4 g of plutonium and were not flushed as thoroughly as TK-141.

Tank TK-206 was used for calibration and loadout of solutions and is located in the Mix Room. The tank was flushed prior to facility turnover.

Two tanks, TK-215 and TK-216, were used as process condensate catch tanks, are vented, and are considered flushed since they only contained condensate. These tanks are located in the Mix Room.

Lastly, tanks TK-109 and TK-110 are designated as dump tanks and were designed to preclude criticalities at expected plutonium concentrations. The dump tanks' function was to receive the experiment solution, ending the experiment when desired or if the neutron flux became too high. The 35 L (10 gal) dump tanks are encased in concrete 0.6 m (2 ft) underneath the CAR reactor hoods. TK-109 is known to have received process solutions, was flushed and is vented by the ventilation system. There is no knowledge that TK-110 was ever used.

A non-destructive analysis (NDA) was performed in 1989 to quantify the fissile material remaining following the flushes at 209-E. Remaining quantities of fissile material are: 1 g Pu in TK-101; 8 g Pu in TK-103; 15 g Pu in TK-104; 38 g Pu in TK-105; 123 g Pu in TK-106; 36 g Pu in TK-141; 4 g Pu in TK-161;

4 g Pu in TK-162; 1 g Pu in TK-213; 2 g Pu in TK-206, TK-215, and TK-216; 42 g Pu in TK-231; 31 g Pu in TK-232; 47 g Pu in TK-233; 33 g Pu in TK-234; 3 g Pu in TK-235; 5 g Pu in pump P-203; 15 g Pu in pump P-201; and 5 g Pu in the valve area of the Mix Room. The remaining three tanks, TK-109, TK-110, and TK-111 could not be assayed because of their location. However, as indicated above, TK-109 was thoroughly flushed, no knowledge exists that TK-110 was ever used, and TK-111 was sampled routinely where it was determined that Pu concentration was low enough for discharge to a crib. The total Pu material at 209-E, per the status report, is 420 g +/- 150 g.

3.3.3 213-W Dry Waste Compactor

The 213-W Building is located in the 200-W Area, adjacent to and north of the 272-WA building and south of the Central Waste Complex. This facility was used to compact low-level solid wastes and is referred to as the Dry Waste Compactor Facility. The facility was constructed in the mid 1980s and was used only sporadically starting in 1985 to compact low activity solid waste for disposal in the 200-W Area Low Level Waste (LLW) Burial Grounds. Compaction activities have ceased and will not be resumed. Activities such as contaminated instrument repair take advantage of the controlled environment in the 213-W Building, which is unoccupied except during such activities. Photos of the facility are shown in Figure 3-4.

The 213-W Building is a pre-engineered, self-framing metal structure having three rooms with a combined floor space of approximately 79 m^2 (850 ft^2). The rooms, arranged in series, include a personnel entry room separated by an airlock from a work room and a package inspection room with a roll-up garage door. The work room is maintained at a slight negative pressure and ventilated through two HEPA filters to an external, dedicated 8.8 m (29 ft) monitored exhaust stack. All rooms are protected by a dry pipe fire suppression system and have personnel doors that open to the outside. Floor drains are connected to an inactive, underground retention tank (213-W-1) with a pit access. The 213-W Building is adjacent to 272-WA Building, which contains offices, change rooms, support shops, a garage, and a lunchroom.

Materials Stored in the Facility

The 213-W Dry Waste Compactor Facility is no longer used to compact low level solid waste. The compactor is empty and is only slightly contaminated. Radiation surveys are performed weekly in this facility and recent results indicate no alpha contamination, less than 1,000 dpm/100 cm^2 (beta) smearable contamination, and less than 5,000 dpm/100 cm^2 (total beta) contamination. Dose rates throughout the facility are less than 0.5 mr/hr at 30 cm. The Compactor Room in the facility is still occasionally used for equipment maintenance and repair activities. Waste materials or chemicals in other than household quantities are not stored there. The catch tank adjacent to the facility formerly contained floor drainage from the compactor room and the ventilation system. The contents of this catch tank have been sampled and have been determined to be below the level of radiological concern.

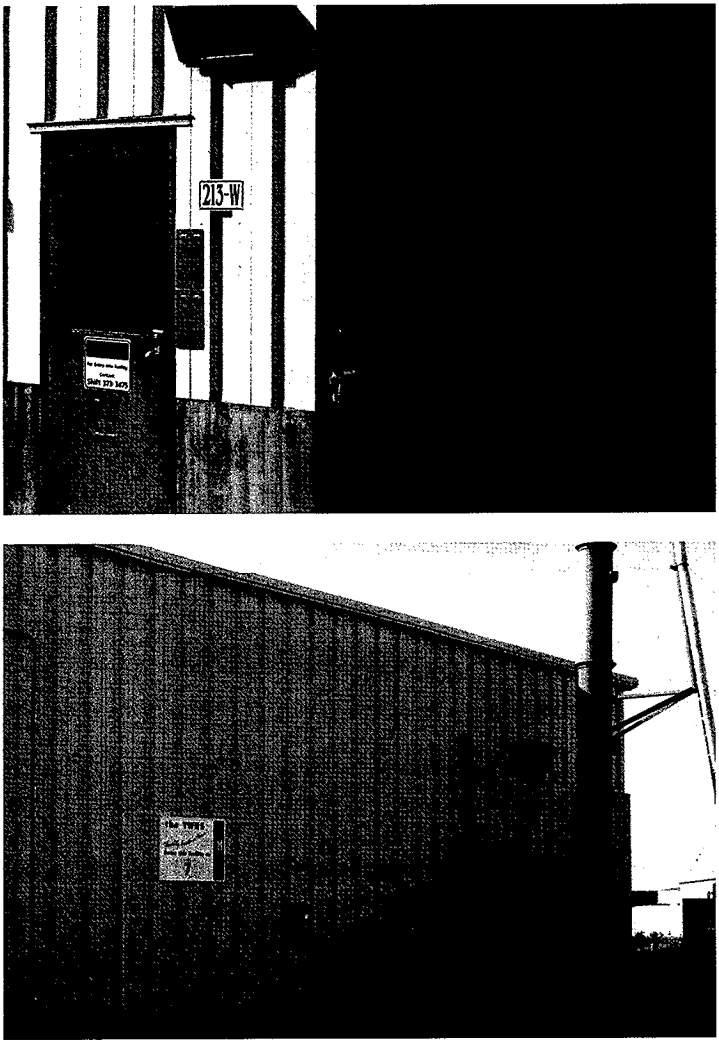


Figure 3-4. 213-W Dry Waste Compactor

3.3.4 241-AX-151 Diverter Station

The 241-AX-151 diverter station is located in the 200-E Area, southwest of 241-A Tank Farm. The unit is an underground reinforced concrete structure that is 13.4 m (44 ft) long, 3 m (10 ft) wide and 7.6 m (25 ft) high. The top of the diverter station extends approximately 30.5 cm (12 in.) above grade. There are four small 189 L (50 gal) diverter tanks in individual cells and a pump pit. Each cell has a stainless steel liner on the floor that extends up the wall. The cells and pump pit drain into a catch tank below. The catch tank is equipped with a water jet so that accumulated waste solutions can be transferred to a waste storage tank. The catch tank also has a stainless steel liner. A 3.8 cm (1.5 in.) dia. liquid level port is provided for the use of portable level detection in the catch tank. Operation began in 1965, and the last documented waste transfer was in 1977. The station was interim stabilized and isolated by the B-231 Project in the early 1985, but there are some inconsistent transfer records indicating that transfers through the facility occurred in 1985, after it was isolated. A diagram of a typical diverter station is shown in Figure 3-5.

The diverter station is similar to a diversion box in that it houses multiple ports for routing of flow between tanks. The station differs from a diversion box (which were excluded from this activity) because it contains tanks and equipment that allow waste streams to be routed without manually changing jumpers. Several incoming waste transfer lines are routed into four 189 L (50 gal) diverter tanks. A moveable spout on the bottom of each receiver tank directs the flow of waste to any one of several exit pipe funnels located within the diverter station. Each routing funnel represents a direct transfer line to a specific receiver tank. The diverter station operates under gravity flow only.

The following tanks are contained within the 241-AX-151 diverter station:

- 241-AX-151-CT (41,600 L [11,000 gal]) catch tank
- 241-AX-151-TK-D (189 L [50 gal]) diverter tank
- 241-AX-151-TK-E (189 L [50 gal]) diverter tank
- 241-AX-151-TK-F (189 L [50 gal]) diverter tank
- 241-AX-151-TK-G (189 L [50 gal]) diverter tank.

These tanks are IMUSTs and are discussed in Sections 3.4.6 and 5.2.

3.3.5 241-AX-IX Ion Exchange Column

The 241-AX Tank Farm ion exchange column is located East of the 241-A Tank Farm complex, between the 241-A and 241-AX Tank Farms. The facility was designed to remove cesium from the Aging Waste Facility exhauster (702-A) condensate. Treated condensate was discharged to the 216-A-08 Crib. The column was designed and built in about 1967-1969, and was operated routinely from 1973-1976. There are no plans for future use of the facility.

The facility consists of an ion exchange column and piping system to connect the facility to the 241-A-417 Catch Tank and transfer system, and a discharge line to the 216-A-08 Crib. The facility has been isolated from the catch tank and transfer system by isolating/capping the connecting lines. The discharge line to the 216-A-08 Crib has not been modified. There is a drain line

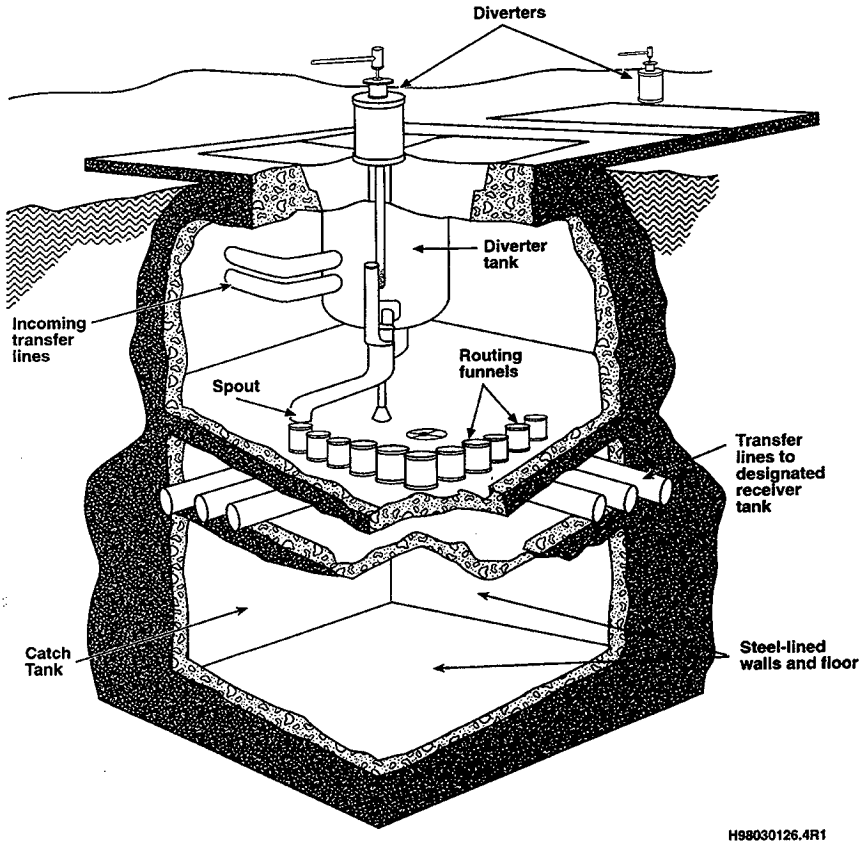


Figure 3-5. 241-AX-151 Diverter Station

running from the bottom of the column to the 241-A-417 Catch Tank. A photo and diagram of the facility are shown in Figure 3-6. Hardware includes a carbon steel ion exchange column, 0.6 m (24 in.) dia. by 3.5 m (11.5 ft) tall, on a concrete pedestal that allows access for resin removal at the bottom of the column, iron piping connecting the facility to the 241-A-417 catch tank, radiation monitoring equipment, filter assembly, flowmeter, diaphragm operated valve, and manual valves.

Materials Stored in these Components

The ion exchange column and attached filter assembly both potentially contain some residual wastes from their operation. The ion exchange column has a total capacity of 0.8 m^3 (29.8 ft^3) and is filled with a man-made zeolite ion exchange medium. It is not known if there is any liquid currently present in the column, nor is it known whether the column was eluted prior to its shutdown in 1978. The filter assembly has a capacity of approximately 0.6 m^3 (22.1 ft^3) and it is not known how much waste material it contains.

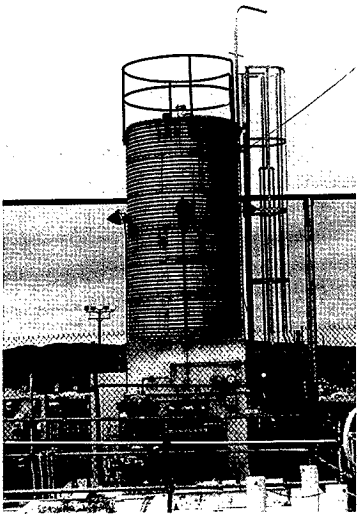
The ion exchange column was used to treat condensate from the aging waste facility exhauster (702-A) stored in catch tank 241-A-417. Waste materials remaining in the column or attached filter would be derivatives of that waste stream. No process history information could be located to determine the constituents of the waste material remaining, if any.

An unreleased hazards evaluation conducted in 1969 (refer to the checklist in Appendix B) indicated that organic solvent material used in solvent extraction processes at PUREX and B-Plant accumulated at low levels in tank 241-A-417. The evaluation concluded that the accumulation of this organic material in the filter and piping was a potential hazard.

3.3.6 242-S Evaporator

The 242-S Evaporator facility is located north of the 241-S Tank Farm and West of the 241-SY Tank Farm. The 242-S Evaporator consists of a segmented building containing process, control, and personnel areas. The process section of the facility is approximately 23 m (75 ft) long by 15 m (50 ft) wide and 18 m (60 ft) high. The process portions of the facility contain the condenser and evaporator rooms and a separate vault for the ion exchange column. The geometry of individual vessels within the facility is described below. The control room, lunch room, change room, and cold storage room are located in a one-story service building on the west side of the process rooms. The service building is approximately 14 m (45 ft) square. A photo and diagram of the facility are shown in Figure 3-7.

The mission of 242-S was to concentrate tank waste in the 241-S Tank Farm. Operation of the evaporator began in 1973 and continued until 1980. The facility was shut down in 1980 and placed in a standby mode in 1981. A number of configuration changes were made to the evaporator in 1985 so that the ion exchange column and some of the process tanks could be used to reduce uranium content in the 216-U1/U2 Crib groundwater. This activity was conducted during 1985. The facility currently contains controls for the tank waste transfer system and houses the control room for the Replacement Cross Site Transfer System (RCSTS). The facility also houses instrument air compressors for 241-SY Tank Farm and alarms for the 244-S DCRT, and the 241-SY/SX Tank Farms.



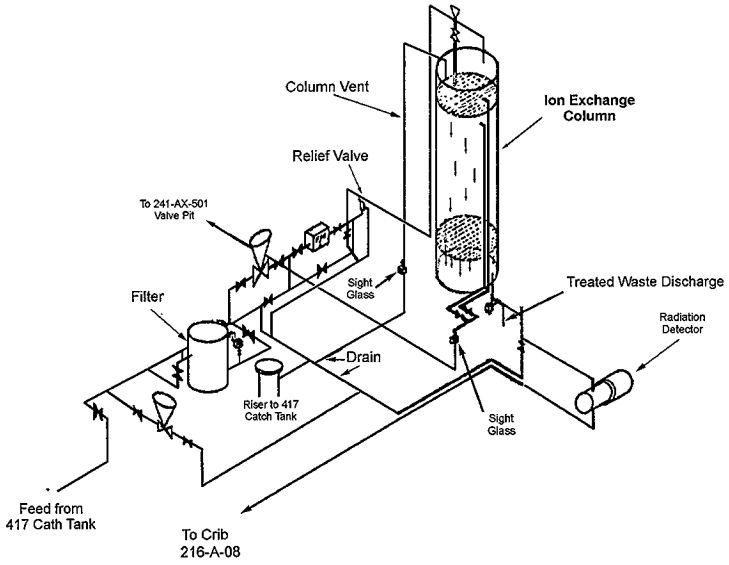
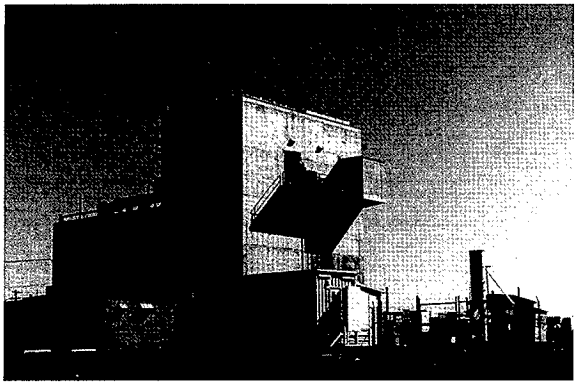


Figure 3-6. 241-AX-IX Ion Exchange Column



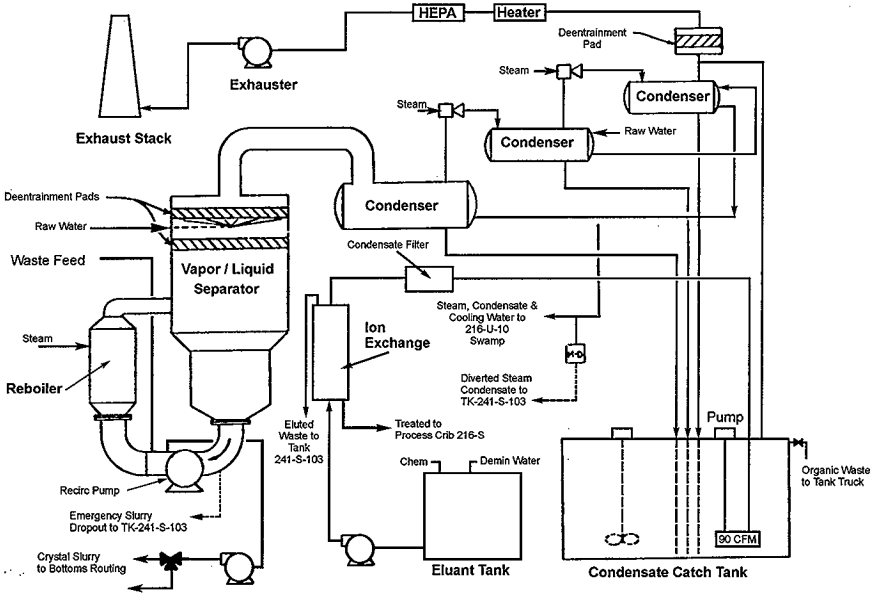


Figure 3-7. 242-S Evaporator

In its original configuration, the facility was connected by piping to Tank 241-S-102 (and later to Tank 241-SY-102), which was the feed and blending tank for the evaporator and Tank 241-S-103 which was the effluent tank for concentrated waste and other byproducts of the process. Tank 241-S-103 received the concentrated waste returned from the evaporation process and other facility effluents. Treated condensate was routed to the 216-S-25 Crib. The facility consists of a number of components for evaporation of the liquid from the feed/staging tank (Tank 241-S-102, or 241-SY-102) and return of the concentrated waste to Tank 241-S-103. The following is a listing of the major vessels within the facility:

- 242-S-C-A-1 (134,750 L [35,600 gal]), a vapor/liquid separator approximately 12 m (40 ft) high and 4.6 m (15 ft) dia.
- E-A-1, a reboiler approximately 4.6 m (15 ft) high and 1 m (3.5 ft) dia.
- 242-S-E-C-1, a primary condenser approximately 5.5 m (18 ft) long and 2 m (7 ft) dia.
- 242-S-E-C-2, an inter condenser approximately 2 m (7 ft) long and 0.5 m (1.5 ft) dia.
- 242-S-E-C-3, an after condenser approximately 2.3 m (7.5 ft) long 25 cm (10 in.) dia.
- 242-S-TK-C-100 (67,370 L [17,800 gal]), a condensate catch tank
- 242-S-IX-D-1 (4,288 L [1,133 gal]), an ion exchange column approximately 1.2 m (4 ft) dia. and 4.9 m (16 ft) high
- 242-S-TK-E-101 (15,897 L [4,200 gal]), an eluent tank
- 242-S-TK-E-102 (379 L [100 gal]), an anti-foam tank
- 242-S-TK-C-103 (1,893 L [500 gal]), a flow measurement tank
- 242-S-TK-E-104 (2,347 L [620 gal]), a decontamination tank approximately 1.5 m (5 ft) dia and 1.5 m high
- 242-S-DU-C-1, a de-entrainment unit
- 242-S-TK-302-C (177,895 L [47,000 gal]), an acid storage tank located above ground, outside of the facility. This tank was originally an acid addition tank and was also later used as lag storage for the U1/U2 Crib groundwater before it was treated in the ion exchange column. This tank has been emptied and cleaned for use as a raw water storage and chemical addition tank for the RCSTS.
- Floor sump in the hot side of the facility, 3,785 L (1,000 gal) capacity, approximately 1.5 m (5 ft) square and 1.8 m (6 ft) deep.

The building is ventilated by two independent ventilation systems serving the "hot" and "cold" sides of the facility, respectively. The hot side of the facility (evaporator and pump rooms) is maintained at a negative pressure relative to the cold side. The facility has a raw water wet pipe fire suppression system, common to the facility and zoned for specific areas.

Materials Stored in the Facility

The 242-S Evaporator contains residual waste materials in several of its vessels. The following process vessels were drained and flushed following the facility shutdown in 1981 and may contain small amounts of liquid from that activity: E-C-1 (Primary Condenser), E-C-2 (Inter Condenser), E-A-1 (Reboiler), E-C-3 (After Condenser), TK-C-103 (Flow Measurement Tank), DU-C-1 (De-Entrainment Unit). The following is the status of the other vessels within the facility:

C-A-1 (Vapor/Liquid Separator) - The vapor/liquid separator contains a residual liquid of about 7.6 to 10.1 cm (3 to 4 in.) remaining in the bottom of the vessel. It is not known what this liquid is, but it is likely to be undrained liquid from the flushing operation.

TK-C-100 (Condensate Catch Tank) - The condensate catch tank was last used during the U1/U2 groundwater treatment campaign in 1985. It was not re-used after that. The tank contains approximately 30,000 to 34,000 L (8,000 to 9,000 gal) (approximately 2.5 to 3 m [8 to 10 ft] depth) of residual waste. The amount of sludge in this waste is unknown. Since the resin in the ion exchange column was organic, the tank likely also contains some organic materials. The concentration of organic material is unknown. No sample data is available to determine the constituents of the waste material and only limited process history information is available for 242-S.

IX-D-1 (ion exchange column) - The column originally contained a zeolite ion exchange medium (ARH-MA-119). To support the U1/U2 groundwater treatment campaign in 1985, an organic ion exchange resin was added to the ion exchange column (letter, 65950-85-350-AX; SD-WM-SSP-002). After the U1/U2 treatment the resin was regenerated with sodium hydroxide and the column was filled with water to cover the resin. The column is not vented, but is opened and inspected periodically. Radioactive material in the column is expected to be similar to that contained in the condensate catch tank.

TK-E-101 (Eluent Tank) - The eluent tank originally contained sodium nitrate for regeneration of the ion exchange column, and was later used in the U1/U2 treatment campaign to contain sodium hydroxide for regeneration of the ion exchange column. The tank is currently empty.

TK-E-102 (Anti-Foam Tank) - The anti-foam tank was used in the U1/U2 treatment campaign. It contains a residual amount of white powder and is labeled as "Sodium Bicarbonate." The tank was sampled in 1997 and the analysis confirmed that the tank contained sodium bicarbonate.

TK-E-104 (Decontamination Tank) - The decontamination tank was sampled in 1997. It currently contains a minimal heel of yellow-tinted water. Analysis determined a Ph of 10.0 and a specific gravity of 1.028. It was concluded from the sample data that the heel was primarily water and rust residue. No hazardous materials were indicated by the sample results.

TK-302-C - This tank was originally an acid addition tank for injection of dilute nitric acid in the process stream, and was more recently used during the groundwater treatment campaign as lag storage for the

216-U1/U2 Crib groundwater. This tank has been emptied and cleaned for use as a raw water storage and chemical addition tank for the RCSTS.

Pump Room Floor Sump - This sump contains an undetermined amount of floor drainage from the hot side of the facility.

3.3.7 242-T Evaporator

The 242-T Evaporator facility is located in the 200-W Area, northeast of and adjacent to the 241-TX Tank Farm. The facility was built as a prototype in the early 1950s to remove liquids and reclaim space in existing waste storage tanks, and later to process PFP waste. The evaporator was modified several times. It was used to process liquid into concentrated solids (crystallization), as well as to remove liquids and concentrate waste.

The evaporator was first operated as a batch unit from 1952 until its first shutdown in 1955. The plant was not used again until 1965, when the first modifications were made and the plant was run as a continuous evaporation process until 1972. In 1973 modifications were made to allow the facility to neutralize and concentrate waste from PFP. This role continued until 1980. In April 1981, a shutdown/standby plan was written. A final waste transfer out of the facility was made in 1982. In April 1983, a revised shutdown/standby report (SD-HS-SAR-009) was issued that details the steps necessary to place the process portion of the 242-T Evaporator facility in shutdown/standby condition V (no operational mission is predicted). The shutdown/standby report requires the maintenance of controlled air flow within the 242-T Evaporator facility and HEPA filtration of exhaust air.

The facility is housed in a rectangular concrete building with a divided process area (radiological area, or "hot"), a control area (non radiological, or "cold"), and a stand alone chemical storage tank building. The process area has 0.6 m (2 ft) of concrete shielding and is approximately 13 m (43 ft) long, 12.8 m (42 ft) wide, with 6.7 m (22 ft) tall walls, and a 12.7 cm (5 in.) thick cover block (flat) roof, reinforced with external steel trusses. The process area roof cover blocks have been foamed over. The processing area consists of a feed cell, evaporator cell, and a condensate cell that are separated by one foot thick concrete walls. One corner of the condensate cell holds the sample gallery and the decontamination sink. A photo and diagram of the facility are shown in Figure 3-8.

The attached single story control area contained a now defunct lunch room, wash room and lavatory, a change room, a control room, instrument air dryers, and an anti-foam tank and pump.

242-T-601, a small chemical storage building, next to the evaporator has seven tanks (both inside and outside the building) that were used to store make-up chemicals for the evaporation process.

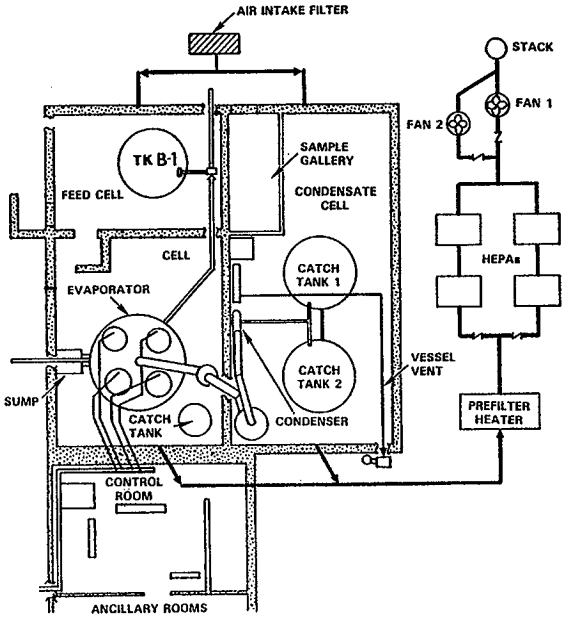


Figure 3-8. 242-T Evaporator

The following vessels are located within the 242-T Facility:

- 242-T-101 (41,635 L [11,000 gal]), an evaporator vessel
- 242-T-102 (also known as TK-B1) (15,987 L [4,200 gal]), a feed tank.
- 242-T-103 (178 L [47 gal]), a preheater
- 242-T-104 (178 L [47 gal]), a preheater
- 242-T-105 (568 L [150 gal]), a cyclone separator
- 242-T-106, a packed scrubber
- 242-T-107, a condenser
- 242-T-108 (16,276 L [4,300 gal]), a condenser catch tank
- 242-T-109 (16,276 L [4,300 gal]), a condenser catch tank
- 242-T-110 (360 L [95 gal]), a cyclone catch tank
- 242-T-123, a compressor receiver tank
- 242-T-112, an anti-foam tank.

The following chemical make-up tanks are located in or near the 242-T-601 building:

- 242-T-601-TK-1 (5,000 L [1,322 gal]), a sodium ferrocyanide tank
- 242-T-601-TK-2 (24,000 L [6,345 gal]), an acid tank
- 242-T-601-TK-3 (1200 L [317 gal]), a nickel sulfate tank
- 242-T-601-TK-4 (208 L [55 gal]), a nickel sulfate tank
- 242-T-601-TK-5 (12,810 L [3,384 gal]), a caustic tank
- 242-T-601-TK-6 (2,230 L [588 gal]), a caustic tank
- 242-T-601-TK-7 (5,000 L [1,322 gal]), a unlabeled chemical tank.

Materials Stored in the Facility

The radiological and chemical materials contained in the 242-T Evaporator are unknown. The facility suffered a breakdown in the evaporator and was abandoned. The shutdown report (SD-HS-SAR-009) tasks, if completed, were never documented. Process vessels are not maintained. The building and ventilation systems are inspected and maintained. The building and the roof are of questionable integrity. In the early 1970s, the ground under the floor of the 242-T Evaporator was washed out, and side wall and floor cracks developed. The cracks and foundation voids were back-filled with grout. Yearly structural inspections have noted no visible deterioration.

Waste material may still remain in the sump, as the shutdown plan to pump the sump back to the feed tank may not have been implemented. Other process vessels such as the evaporator, condenser, and catch tanks may contain waste material of unknown concentrations and volumes. Flammable gas is a concern for certain vessels. The radiation level from the side wall of the evaporator is 1 R/hr at 2.4 m (8 ft). The level of alpha contamination inside a vessel cannot be measured. The neutron counters in the feed tank are broken.

The seven chemical storage tanks associated with the 242-T-601 facility were inspected in 1997 (Interoffice Memo, LMHC, July 22, 1997). Six of the tanks were found to be empty and a seventh (242-T-601-TK-03) contained a small liquid heel that was sampled and found to have a neutral Ph. It was concluded that this liquid was water. Therefore, all of these tanks are considered to be benign.

3.3.8 244-AR Vault

The 244-AR Vault, located north and west of 241-A Tank Farm in the 200-E Area, was constructed in 1966. The vault was designed to remove, treat, and transfer PUREX sludges to B-Plant for fission product removal; provide interim storage for PUREX Facility acid waste feed to B-Plant; and receive and distribute the neutralized high-level waste of B-Plant. While most of the TWRS vaults are no more than an underground vault with tanks and transfer equipment, the 244-AR Vault is actually a self-contained processing facility. The major structures and components comprising this facility, described below, are the canyon building and process cells, ventilation systems, and control rooms. A photo and diagram of the facility are shown in Figure 3-9.

Canyon Building and Process Cells

The canyon building is a reinforced concrete structure with 0.5 m (1.5 ft) thick walls. The canyon building measures 29 m (94 ft) by 5.5 m (18 ft) internally and is 11 m (36 ft) high above the process cell concrete cover blocks on the canyon floor. The canyon building also contains two shielded personnel access doors and a large, shielded motor-driven equipment access door that slides on a rail. A metal wind-reduction structure is attached to the east end of the building for weather protection when the equipment-access doors are open.

Three process cells and a failed equipment storage cell are located below the canyon. Each of the three process cells contains a sump with an overflow connection to adjacent cells. Cell Nos. 1 and 2 have identical inside dimensions, 6.4 m (21 ft) square by 9.98 m (32.75 ft) deep. Cell No. 3 is 9.8 m (32 ft) long by 3.7 m (12 ft) wide by 6.4 m (21 ft) deep. The concrete cell walls are 0.6 m (2 ft) thick. The following four tanks are contained in the process cells:

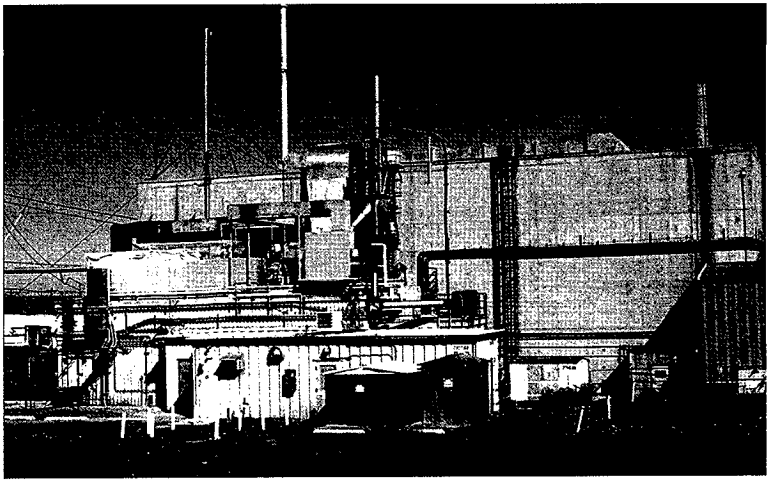
- TK-244-AR-001 is located in Cell No. 1. This is a stainless steel flat-bottomed 163,333 L (43,148 gal) tank, 6.1 m (20 ft) dia. and 6.02 m (19.75 ft) high. It was the primary storage tank for neutralized current acid waste (high-level first-cycle solvent extraction waste from the PUREX Facility).

- TK-244-AR-002 is located in Cell No. 2. It is a stainless steel flat-bottomed 164,431 L (43,438 gal) tank, 6.1 m (20 ft) dia. and 6.02 m (19.75 ft) high.

- TK-244-AR-003 is located in Cell No. 3. It is a stainless steel slope-bottomed 18,143 L (4,793 gal) tank, 2.9 m (9.5 ft) dia. and 2.7 m (9 ft) high.

- TK-244-AR-004 is located in Cell No. 3. It is a stainless steel slope-bottomed 18,143 L (4,793 gal) tank, 2.9 m (9.5 ft) dia. and 2.7 m (9 ft) high.

The failed equipment storage area is located next to Cell No. 1 in the east end of the canyon building. This storage area contains three storage tubes, each constructed of 1.4 m (4.5 ft) dia., 12-gauge, corrugated, galvanized pipe, that extend 11 m (35 ft) below the failed equipment storage area cover blocks. Each of the storage tubes have open drains to the Cell No. 1 floor.



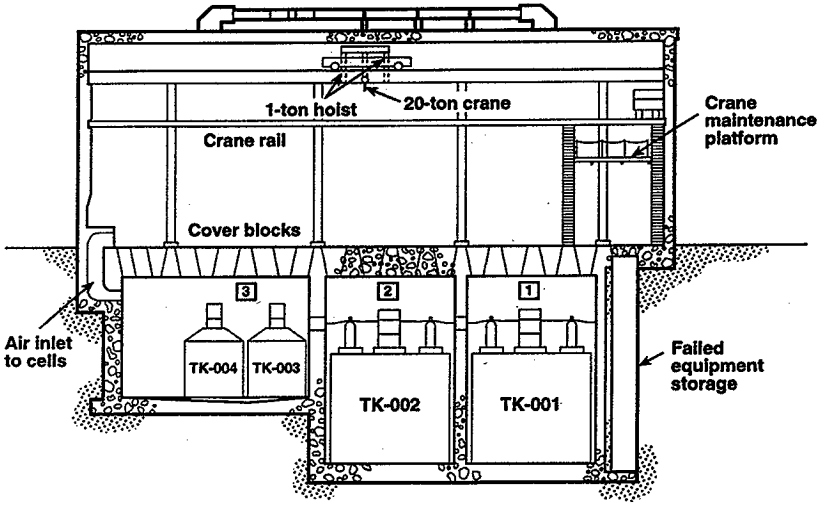


Figure 3-9. 244-AR Vault

The storage tubes are vented to Cell No. 1 through 15.2 cm (6 in.) dia. vent pipes located 6.7 m (22 ft) above the storage tube bottom. The storage tubes are covered with a 0.6 m (2 ft) thick reinforced concrete block.

Four ventilation systems formerly serviced the 244-AR Vault Facility:

- Control room ventilation system, K-1
- Canyon intake ventilation system, K-2
- Canyon exhaust ventilation system, K-3
- Tank ventilation system, K-4.

These systems are not currently operable, and significant modifications or upgrades would be required to return these systems to service. The facility process area is passively ventilated to the building.

Materials Stored in the Facility

The 244-AR Vault has not received wastes through the transfer system since the late 1970s. The cells and tanks within the facility currently contain wastes, as described below.

Tank TK-001 contains approximately 379 L (100 gal) of residual sludge from past transfers or transfer line leakage. TK-001 also contains approximately 4,540 L (1,200 gal) of liquid that is believed to be water from past transfer line flushes. No sampling information is available. The cell sump contains approximately 900 L (240 gal) of liquid that may be drainage from a recent (January 1997) flooding event that was initiated by a failed sanitary water line near the facility. The level of the water in the sump is slowly decreasing, which may be attributable to leakage. There is an additional consideration that the increased sump level reading may have been partially attributable to oil leakage into the instrument air lines, which happened at the same time as the flooding event.

Tank TK-002 contains approximately 2,270 L (600 gal) of residual sludge from 241-AX-104. This material was transferred into the 244-CR Vault in early 1978. TK-002 also contains about 44,100 L (11,650 gal) of water transferred from TK-004 and past transfer line flushes. Sampling information is available for the 241-AX-104 sludge. The Cell No. 2 sump contains about 150 L (40 gal) of liquid. The level of the Cell No. 2 sump also rose sharply at the time of the flooding event and has since returned to its previous level.

Tank TK-003 contains approximately 190 L (50 gal) of residual sludge from past transfers. TK-003 also contains about 7,380 L (1,950 gal) of water from the cell sump and past transfer line flushes. No sampling information is available. The Cell No. 3 sump contains about 11,600 L (3,074 gal) of water (rain and snowmelt) from roof leaks and seal pot overflow. The level of the sump in this cell also rose during the flooding event, but has remained roughly constant since then.

Tank TK-004 contains about 190 L (50 gal) of residual sludge from 241-AX-104 and other transfers. TK-004 also contains about 757 L (200 gal) of water from TK-003 and past transfer line flushes. Sampling information is available for the 241-AX-104 sludge.

The failed equipment tubes are believed to be empty, but this cannot be verified. Removal of the cover blocks is necessary to inspect them, but the overhead crane is out of service and the cover blocks cannot be removed.

3.3.9 244-BXR Vault

The 244-BXR Vault is located in the 200-E Area adjacent to and within the fencing at the southern end of 241-BX Tank Farm. 244-BXR is a four-cell, two-level, concrete underground vault. The vault dimensions are 31 m (102 ft) long, 8 m (26 ft) wide (at widest point) and 15.5 m (51 ft) deep. Two of the cells measure 6.7 m by 8 m by 8.8 m (22 ft by 26 ft by 29 ft) and the other two are 4.9 m by 6 m by 5.8 m (16 ft by 20 ft by 19 ft). The cells each have a pump pit located above the cells and an associated cell access pit. Each cell houses a waste storage tank. A schematic diagram of the vault is shown in Figure 3-10. The 244-BXR Vault is not a major facility; thus, its tanks are regarded as IMUSTs.

The 244-BXR Vault was operated from 1951 to 1957 and was utilized in the Uranium Recovery Program. The facility received waste material from the 241-BX and 241-BY Tank Farms, processed the waste and transferred it to U-Plant for the recovery of the uranium in the waste material. The 244-BXR Vault was isolated in 1985. Isolation was accomplished by cutting and capping the pipes connecting it to the 241-BX and 241-BY Tank Farms and the 241-ER-151 diversion station. Isolation also included cutting and capping ducts, sealing a conduit trench, and installing a weather cover over the vault at grade level. The acid tank (TK-BXR-004) used by the facility during its operation has been removed. There are no plans for future use of the facility. Condition of the tanks is not known except for TK-BXR-011 which is reported to have a buckled wall.

244-BXR Vault contains four IMUSTs (IMUSTs are discussed in Section 5.2):

- TK-BXR-001 (189,250 L [50,000 gal]), a carbon steel slurry tank.
- TK-BXR-002 (56,775 L [15,000 gal]), a stainless steel blend tank.
- TK-BXR-003 (56,775 L [15,000 gal]), a stainless steel blend tank.
- TK-BXR-011 (189,250 L [50,000 gal]), a stainless steel pump out tank.

3.3.10 244-CR Vault and 271-CR/CRL Laboratory

The 244-CR Vault is located in the 200-E Area, within the fencing and at the southern end of the 241-C Tank Farm. 244-CR is a four-cell, two-level, underground concrete vault containing four tanks. The vault dimensions are 31 m (102 ft) long, 8 m (26 ft) wide (at widest point) and 15 m (49 ft) deep. Two of the cells measure 6.7 m by 8 m by 8.8 m (22 ft by 26 ft by 29 ft) and the other two are 4.9 m by 6 m by 5.8 m (16 ft by 20 ft by 19 ft). The cells each have a pump pit located above the cells and an associated cell access pit. A photo and diagram of the facility is shown in Figure 3-11. The 244-CR Vault is not a major facility; thus, its tanks would be regarded as IMUSTs were it not for the fact that one of the tanks (TK-CR-003) remains active.

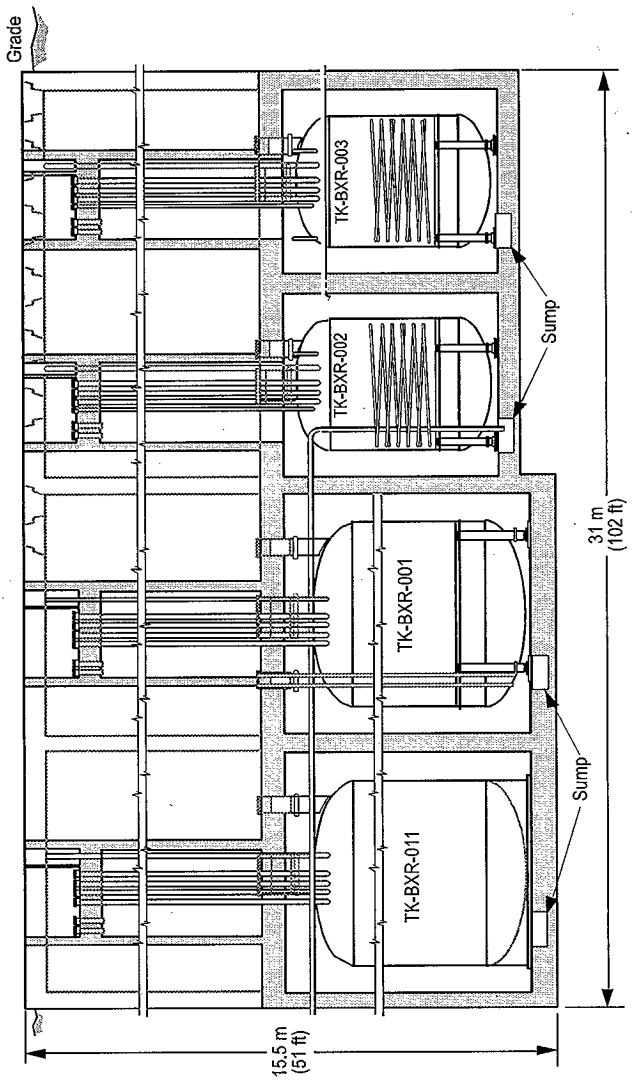
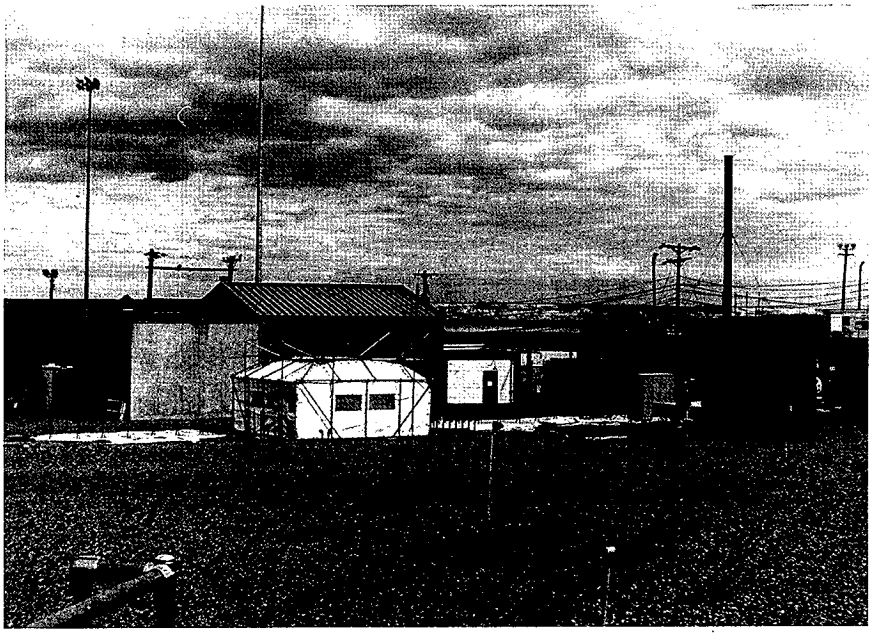
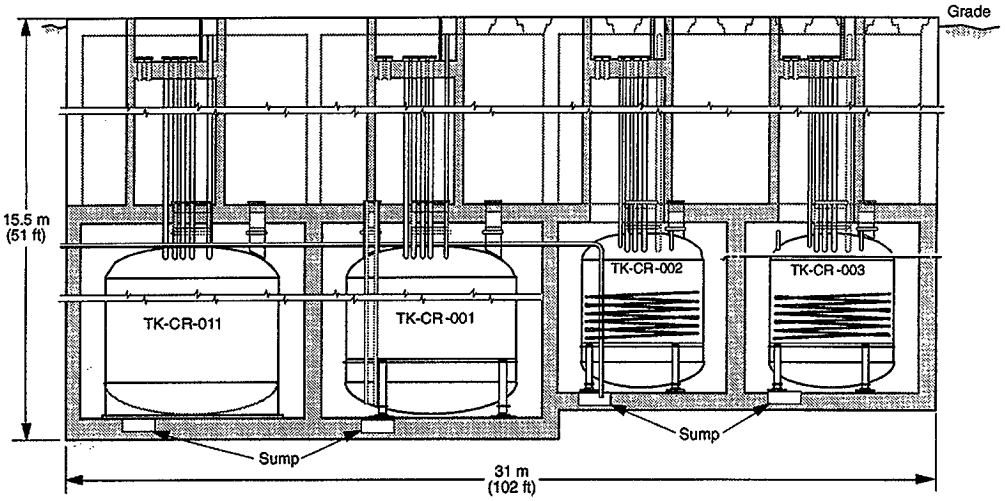


Figure 3-10. 244-BXR Vault





HG98040145.2

Figure 3-11. 244-CR Vault

Adjacent to the vault is the 271-CR/CRL facility. 271-CR operated as the control room/shift office for the 244-CR uranium recovery and ferrocyanide programs and housed the saltwell pumping alarm panels. 271-CRL was used as a shielded laboratory facility for reactor coolant studies. 271-CR is a wood frame building 9.75 m (32 ft) wide at its widest and 19 m (62.5 ft) long. 271-CRL is a metal and concrete building 9.75 m (32 ft) wide and 15.75 m (51.67 ft) long. A 30,280 L (8,000 gal) tank outside the facility was previously used as the nitric acid tank for 244-CR. The tank has been removed and the facility is not currently in use.

The 244-CR Vault was also used for interim storage and transfer of waste from B-Plant, Hot Semiworks and PUREX. 244-CR Vault operation began in the early 1950s and partial operation continued through the 1995 saltwell pumping activities. Tanks CR-001, 002 and 011 were deactivated during the 1970 to 1980 time frame and only CR-003 remained active as a saltwell receiver tank. 271-CR was built in 1953 and operated supporting various vault and 241-C Tank Farm activities through the present time. 271-CRL was constructed in 1962 and operated as a laboratory and later as a shift office through 1978.

244-CR Vault contains four tanks:

- TK-CR-001 (189,250 L [50,000 gal]), a carbon steel slurry accumulation tank.
- TK-CR-002 (56,775 L [15,000 gal]), a stainless steel blend tank.
- TK-CR-003 (56,775 L [15,000 gal]), a stainless steel blend tank.
- TK-CR-011 (189,250 L [50,000 gal]), a carbon steel pump out tank.

The 244-CR Vault is inactive except for TK-CR-003 which is an available DCRT for 241-C Tank Farm saltwell transfers. 271-CR is active as the Motor Control Center (MCC) for the 241-C Tank Farm and 271-CRL is inactive. The only identified future mission for the 244-CR Vault is the use of TK-CR-003 in conjunction with possible 241-C Tank Farm saltwell transfers (i.e., Tank 241-C-103). 271-CR will continue to provide the MCC for the 241-C Tank Farm and transfer activities. No future mission has been identified for 271-CRL.

Materials Stored in the Facility

The tanks within each cell in the 244-CR Vault contain waste associated with their previous use as interim storage and for transfer of liquid process waste. The 244-CR Vault was used as the uranium sludge recovery and distribution vault for the 241-C Tank Farm. Sludge was recovered by sluicing, dissolved with nitric acid and pumped cross-site for uranium recovery at U-Plant. The vault was later used for interim storage and transfer of waste from B-Plant, Hot Semiworks and PUREX.

TK-CR-003 is still an active saltwell receiver tank and contains approximately 15,900 L (4,220 gal) of saltwell waste from Tanks 241-C-102, 241-C-107, and 241-C-110, with an unknown amount of solids associated with it. The TK-CR-003 tank level decreased approximately 1893 L (500 gal) from October 1997 to January 1998. The cause of this decrease is suspected to be evaporation, but this has not been confirmed. The contents of the other tanks are estimated based on discussions with cognizant individuals, but are not verified. Contents are estimated to be: 7,570 L (2,000 gal) of Uranium Recovery Program

solids in TK-001; 5,680 L (1,500 gal) of waste solids from PUREX acidified sludge in TK-002; and 132,000 L (35,000 gal) of supernate and rainwater in TK-011. Each cell has a 170 L (45 gal) capacity sump with the possibility of containing standing liquids that would contain contamination. Within the 271-CR/CRL complex, only the MCC instrumentation and piping for the fire suppression system remain as operational equipment. The buildings themselves contain radiological contamination and entry is controlled.

3.3.11 244-TXR Vault

The 244-TXR Vault is located in the 200-W Area adjacent to and within the fencing at the south end of 241-TX Tank Farm. 244-TXR is a three-cell, underground reinforced concrete vault. The vault dimensions are 22.6 m (74 ft) long, 7.9 m (26 ft) wide at widest point and 15.2 m (50 ft) deep. One cell measures 6.7 m by 8 m by 8.8 m (22 ft by 26 ft by 29 ft) and the other two are 4.9 m by 6 m by 5.8 m (16 ft by 20 ft by 19 ft). The cells each have a pump pit located above the cells and an associated cell access pit. Each cell houses a waste storage tank. A diagram of the vault is shown in Figure 3-12. The 244-TXR Vault is not a major facility; thus, its tanks are regarded as IMUSTs.

The 244-TXR Vault contains three IMUSTs (IMUSTs are discussed in Section 5.2):

- TK-TXR-001 (189,250 L [50,000 gal]), carbon steel receiver tank.
- TK-TXR-002 (56,775 L [15,000 gal]), stainless steel blend tank.
- TK-TXR-003 (56,775 L [15,000 gal]), stainless steel blend tank.

The vault was in service from 1951 to 1956, receiving waste from tanks 241-TX-103 through 108 and 241-T-101 through 103. The waste was received in TK-TXR-001 and the waste slurry was pumped to TK-TXR-002 and/or TK-TXR-003 for acidification and blending. The processed waste was then pumped to U-Plant as feed for the uranium recovery process. The vault was taken out of regular service in 1957 and underwent isolation and interim stabilization in 1984.

The current condition of the vault and tanks is not known. The condition of the two blend tanks is unknown.

3.3.12 244-UR Vault

The 244-UR Vault is located in the 200-W Area, adjacent to and within the fencing at the north end of the 241-U Tank Farm. 244-UR Vault is a four-cell, two-level reinforced concrete underground structure 27.4 m (90 ft) long, 8 m (26 ft) wide at its widest point and 15.2 m (50 ft) deep at the deepest cell. Cell No. 1 has internal dimensions of 8 m by 6.7 m by 9 m (26 ft by 22 ft by 29.5 ft) with 0.6 m (2 ft) thick walls, ceiling and floor. Above the cell is a 3.8 m (12.5 ft) deep pump pit. Cell Nos. 2 and 3 measure 6 m by 4.9 m by 5.9 m (20 ft by 16 ft by 19.5 ft) internally and also have a pump pit located above them. Cell No. 4 measures 4.3 m by 4.9 m by 5.5 m (14 ft by 16 ft by 18 1951 to 1956, receiving waste from the 241-TX Tank Farm.

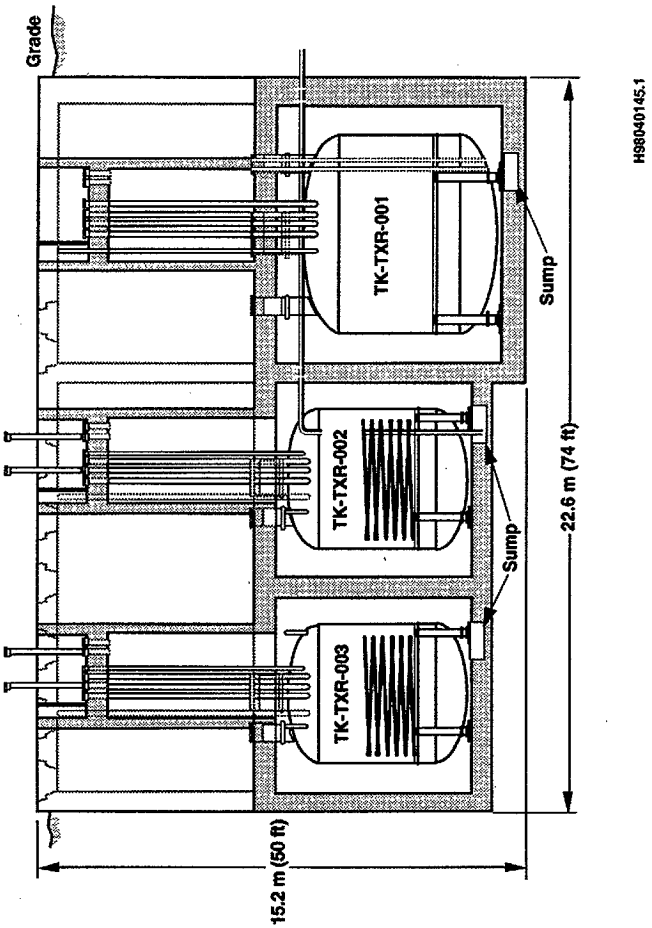


Figure 3-12. 244-TXR Vault

A diagram of the vault is shown in Figure 3-13. The 244-UR Vault is not a major facility; thus, its tanks are regarded as IMUSTs.

244-UR Vault contains four IMUSTS (IMUSTs are discussed in Section 5.2):

- TK-UR-001 (189,250 L [50,000 gal]), a carbon steel receiver tank.
- TK-UR-002 (56,775 L [15,000 gal]), a stainless steel blend tank.
- TK-UR-003 (56,775 L [15,000 gal]), a stainless steel blend tank.
- TK-UR-004 (31,150 L [8,230 gal]), a stainless steel pump out tank.

The 244-UR Vault supported the uranium recovery project and was operated from 1952 to 1957. The vault was taken out of regular service in 1957 and underwent isolation and interim stabilization in 1984-1985. Current condition of the vault and tanks is not known.

3.3.13 2727-W and 2727-WA Sodium Storage Facilities

The 2727-W Sodium Storage Facility houses five horizontally mounted sodium storage tanks in a pre-engineered, self-framing metal structure located in the south-central part of the 200-W Area approximately 11 m (35 ft) west of a north-south rail spur. Although according to WIDS, TWRS owns the facility, it is managed by Waste Management Federal Services Hanford, Inc. (WMH), which provides oversight, safety surveillance, and maintenance. The insulated tanks are approximately 4.3 m (14 ft) outer dia. and 7.16 m (23.5 ft) long. A photo and drawing of the facility is shown in Figure 3-14.

The headspace of each sodium storage tank contains pressurized nitrogen gas 14 Kpa to 69 Kpa (2 to 10 psig) to preclude oxidation of the sodium. A nitrogen gas pressure monitoring system is connected to each tank through an externally mounted, common weatherproof control panel. The common control panel includes an audible horn, indicator lights, and a strobe light. The 8.5 m by 26 m (28 ft by 84 ft) building encloses one large room with a floor space of approximately 214 m^2 (2,300 ft^2). Features of the building include:

- Four passive roof ventilators are located on the ridge line of the roof approximately 6.7 m (22 ft) above grade. Personnel doors on each end of the building are louvered for ventilation.
- The metal building is electrically grounded by interconnected, 2.4 m (8 ft) grounding rods in six locations to form a grounding grid. Each internal sodium tank is grounded to the building grounding grid. The tank pressure control panel and the externally mounted master fire alarm cabinet outside the facility are also connected to the grounding grid.
- No water or steam service is provided and external signs visible from all angles clearly indicate water should not be used to fight fires. No weeds or other combustibles are allowed near the building.

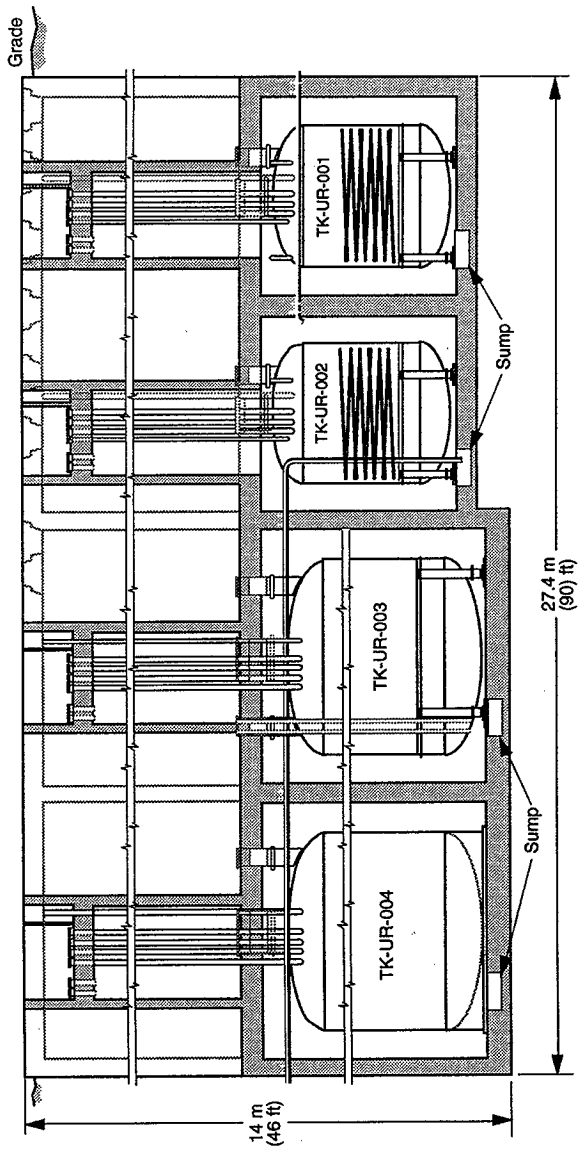


Figure 3-13. 244-UR Vault

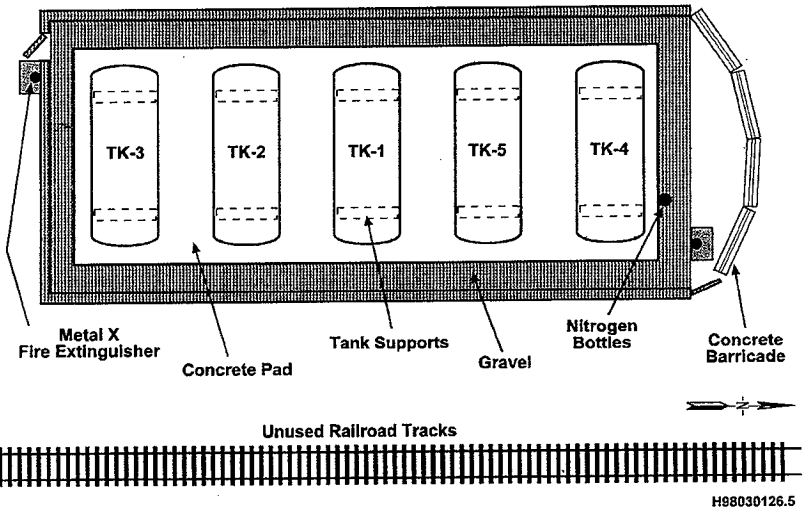


Figure 3-14. 2727-W Sodium Storage Facility

External resistance heaters wrapped around the tanks to melt the sodium are disconnected (i.e., the sodium is solid). An insulating layer of refractory brick held in place by a wire mesh covered with an aluminum sheath surrounds the heaters and tanks. A second sodium storage facility (2727-WA) is located East of 2727-W that was used for drum storage. There are no tanks within the facility. This facility is currently empty, and there are no plans for its future use.

Materials Stored in the Facility

The five tanks in the 2727-W Sodium Storage Facility contain a total of approximately 125,000 kg (276,000 lb) of slightly contaminated sodium metal. Contamination stems from irradiated sodium-22 that has a half-life of 2.58 years. Total inventory of sodium-22 is estimated to be less than 0.005 Ci (WHC-WD-WM-TI-759).

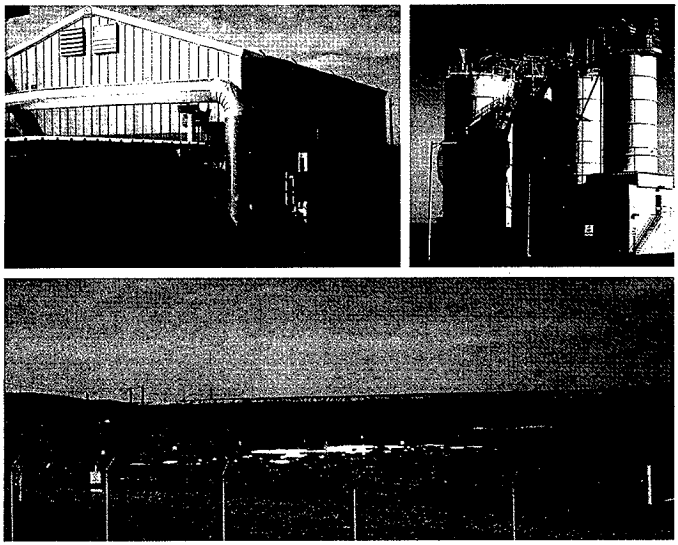
3.3.14 Grout Treatment Facility (GTF)

The Grout Treatment Facility (GTF) is a low-level waste (LLW) non-reactor nuclear facility that was designed and constructed to combine cementitious materials with low-level radioactive liquid waste for permanent disposal. It consists of a nonradioactive dry component storage and mixing plant, a dry component-waste mixing facility, and below grade disposal vaults for the resultant grout. The Grout Treatment Facility was shut down in 1989 and placed in standby in 1994. The standby plan allowed for a facility restart within two years if emergency tank space is needed (WHC-SD-WM-SSP-005). Prior to placing the facility in standby mode, one below-grade disposal vault was filled with low-activity grouted waste during the August 1988 start up. This vault is actively storing radioactive waste. The above-ground portions of the GTF has recently been declared to be of no value and are planned for turnover to the ER program (Letter, RL, 97-WSD-243), and there are no plans for restart of the facility for its original purpose. The remaining vaults will be used for interim storage of immobilized LLW (Project W-465).

The GTF comprises three separate facilities, the Dry Materials Facility (DMF) located in the 200-E Area, northwest of PUREX, the Grout Processing Facility (GPF) (designated 243-G) east of and adjacent to 241-AP Tank Farm, and the Grout Disposal Facility (GDF) area near the 218-E-16 Area outside the 200-E fence. The Feed Transfer System (FTS) underground piping feeds tank waste to the GPF. Drawings and photos of the GTF are shown in Figure 3-15.

The components of the DMF are:

- 2402E Compressor Building with an 8251 L (2180 gal) Air Receiver Tank.
- 2402EA Railcar unloading pit containing an 18,925 L (5,000 gal) dry materials transfer bin.
- 2402EB Storage Bin, 6.6 m (21 ft 6 1/2 in.) dia. and 19.9 m (65 ft 1 5/8 in.) high.
- 2402EC Storage Bin, 8 m (26 ft 1 7/8 in.) dia. and 19.9 m (65 ft 1 5/8 in.) high.
- 2402ED Storage Bin, 3.75 m (12 ft 3/4 in.) dia. and 14.9 m (48 ft 11 in.) high.
- 2402EF Storage Bin, 6.6 m (21 ft 6 1/8 in.) dia. and 19.9 m (65 ft 1/8 in.) high.



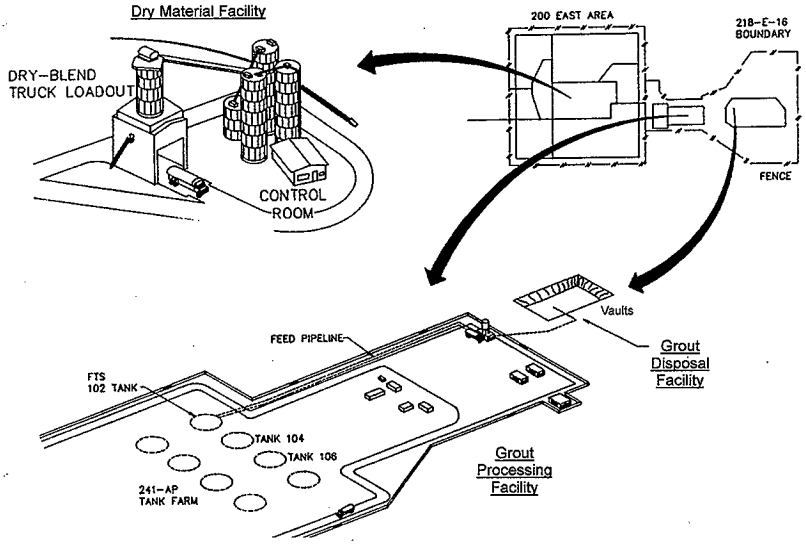


Figure 3-15. Grout Treatment Facility

- 2402EG Pump Pit containing a 18,925 L (5,000 gal) transfer bin
- 2403E Blended Material Storage/Truck Loadout
- 2403EA Compressor Building
- 2451E Electrical Substation

Components of the GPF are the Control Room, Change Room/Lunch Room, Decon Additive Module, Dry Blend Module, Air Filtration module, Motor Pit, and adjacent Liquid Collection Tank (LCT)/Mixer Module. The Decon Additive Module contains the following five tanks:

- Tank R01, a 378.5 L (100 gal) additive tank
- Tank R02, a 1,893 L (500 gal) additive tank
- Tank R03, a 946 L (250 gal) additive tank
- Tank R04, a 757 L (200 gal) additive tank
- Tank F01, a 1,893 L (500 gal) decontamination solution storage tank.

The Dry Blend Module contains a 62.3 m^3 (2,200 ft^3) storage bin that is 3 m (10 ft) dia. and 7.9 m (26 ft) high, and two-bag house filters. The Air Filtration module contains two separate banks of two-stage HEPA filters. The Motor Pit contains a small sampling glovebox. The LCT/Mixer Module contains a 18,925 L (5,000 gal) liquid collection tank and a 1,893 L (500 gal) hopper-fed surge tank.

The GDF consists of four empty 5,299,000 L (1.4 M gal) near-surface vaults, one of which is filled with low-level DST phosphate/sulfate grouted waste.

Materials Stored in the GTF

The Grout Treatment Facility (GTF) is inactive and all of the above ground facilities comprising the GTF have been declared to have no monetary value and are planned for turnover to the ER program (Letter, RL, 97-WSD-243). There is one grout disposal vault that currently contains low-level (Class C per 10CFR 61) DST phosphate/sulfate grouted waste from one processing campaign through the facility. All other structures, components, and vessels are empty of radioactive wastes and chemicals.

3.3.15 ITS-1 In-Tank Solidification System

The In-Tank Solidification (ITS) system was constructed in the 200-E Area, 241-BY Tank Farm, to concentrate wastes from tanks 241-BY-102 and 241-BY-112. Two separate systems were constructed that shared some operating components. The ITS systems were constructed in the late 1950s and operated until the mid-1970s, when they were shut down.

The ITS-1 system evaporated Tank 241-BY-102 contents by circulating heated air through the waste. An offgas system removed and decontaminated condensate, and filtered the dried air exhaust. The condensate from the system was treated by use of an ion exchange column and the effluent was discharged to a crib. The ITS-2 system included in-tank heaters in tank 241-BY-112 to produce saturated offgas from the tank. Offgas from 241-BY-112 was routed by an above-ground piping system to the processing location near ITS-1. The above ground evaporation system for ITS-2 was similar to ITS-1 and some components, such as the ion exchange column, were used with both systems.

Several configuration changes were made over the operating life of the ITS systems, and some processing components were used with both systems. For the most part, the ITS-2 above-ground piping and processing equipment has been removed, and the remaining above ground equipment is referred to as ITS-1.A drawing and photo of the ITS-1 system is shown in Figure 3-16.

The remaining ITS-1 equipment consists of the following components:

- 241-BY-ITS1-IX-1 ion exchange column, 0.5 m (18 in.) dia. by 2.7 m (9 ft) tall, 0.3 m^3 (10.5 ft^3) resin capacity
- 241-BY-ITS1-IX-2 cuno filter, 0.6 m (2.1 ft) dia. by 1.3 m (4.5 ft) tall
- 241-BY-ITS1-TK-2 condensate catch tank, 1.7 m (5.5 ft) dia. by 1.5 m (5 ft) tall
- 241-BY-ITS1-DM-102 de-entrainment vessel, 3.3 m (11 ft) dia. by 5.8 m (19 ft) tall
- 241-BY-ITS1-EX-1 condenser, 0.7 m (2.25 ft) dia. by 4.3 m (14 ft) long
- 241-BY-ITS1-DM-1 demister and cyclone
- HEPA filtered exhaust system
- Concrete IX column enclosure.

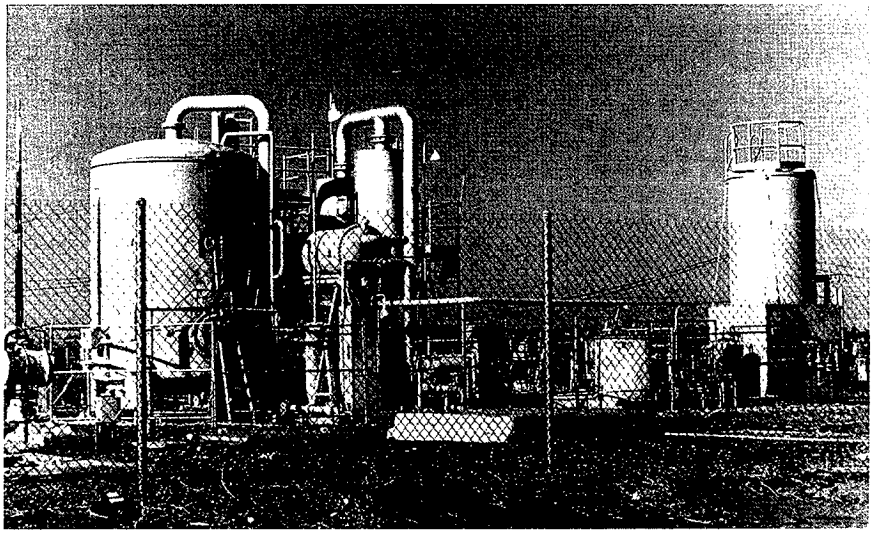
There are two tanks remaining (a condenser tank and a heater flush tank) that were a part of the ITS-2 system near Tank 241-BY-112. Considering that the ITS-2 system has been removed and that these tanks are not a part of the ITS-1 system, they meet the IMUST definition. The ITS-2 IMUSTs are discussed in Sections 3.4.7 and 3.4.8.

Materials Stored in the Facility

The ITS-1 In-Tank Solidification (ITS) system has tanks and process vessels that are capable of containing waste material. The ion exchange column associated with the facility may still contain the ion exchange medium (zeolite). It is not known if there is any liquid currently present in the column, nor is it known whether the column was eluted prior to its shutdown in 1974. The other ITS-1 process vessels may also still contain residual wastes from processing. The amount of waste material contained in these vessels is also unknown. No records exist that would indicate current contents. This system treated the vapor from Tank 241-BY-102, and thus current contents could be representative of that tank, but some of the system components were shared between ITS-1 and ITS-2 so the current constituents in the remaining waste material (if any) are unknown.

3.4 IMUST IDENTIFICATION AND DESCRIPTION

IMUSTs encompass a variety of tanks, all of which meet the definition criteria given in Section 2.6. After considering the facilities and tanks listed above, IMUSTs by definition represent the remainder of the TWRS radiological FTCs. No above-ground radiologically contaminated tanks/vessels owned by TWRS



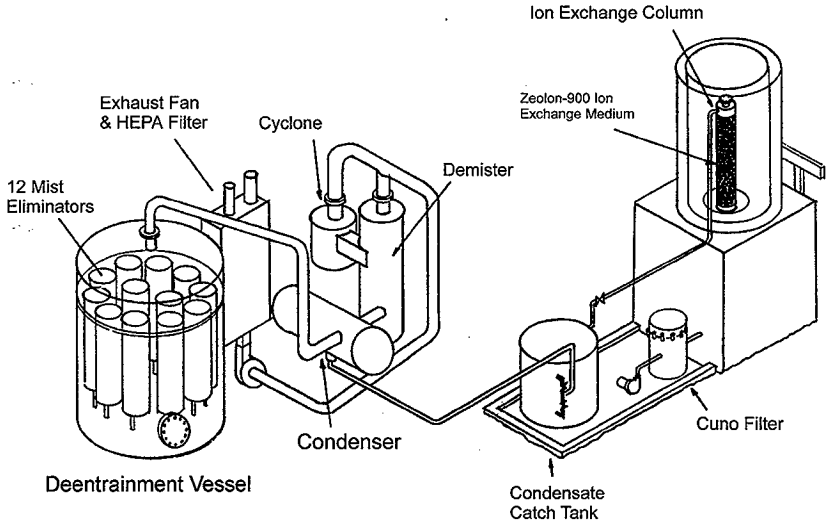


Figure 3-16. ITS-1 In-Tank Solidification System

were identified, other than those associated with major facilities. IMUSTs are located throughout the 200-E and 200-W Areas, many of which are buried tanks, and others are contained in underground vaults. Included in the IMUST definition are catch tanks, storage and treatment tanks in vaults, decontamination tanks, experimental tanks, neutralization tanks and tanks used for other purposes such as lag storage. Tanks associated with facilities have been illustrated in Figures 3-2 through 3-16. Figures 3-17 and 3-18 provide illustrations of two types of catch tanks that are fairly representative of typical IMUSTs. IMUSTs associated with a facility will be dispositioned and managed with the facility. Individual AB strategies for these tanks will be a part of the strategy developed for the facility.

IMUSTs have been the subject of several previous studies and projects, notable among them was an engineering study done in 1994 (WHC-SD-EN-ES-040) that provided a reasonably rigorous process history evaluation of the IMUSTs that had been identified at that time. The engineering study provided detailed descriptions of those IMUSTs and they will not be repeated in this report. Several tanks have been added to the IMUST list since the engineering study. These are listed in the various sections of Appendix A and described in the following subsections.

3.4.1 200-W-7

200-W-7 is a 2,082-L (550-gal) fiberglass catch tank formerly associated with MO-0326, which was a personnel decontamination facility located in the 200-W Area northwest of the 242-S Evaporator. The decontamination trailer has been removed. The tank is located below grade with a minimum of 0.9 m (3 ft) of soil overburden and has three 10.2-cm (4-in.) dia. risers. This tank is also identified as 243-S-TK-1. No documentation or drawings associated with the facility have been found.

The current contents are unknown. Since it received the effluent stream from personnel decontamination, the contents are expected to be soap, water, and low levels of contamination. A walkdown revealed a cleanout riser for lines at grade and a level gauge of unknown condition. The tank is located within a chained 3 m by 3 m (9.8 ft by 9.8 ft) area. The tank is posted as an IMUST.

3.4.2 209-E-TK-111

This 189-L (50-gal) capacity tank is located underground adjacent to the CAR at the south end of the 209-E facility. TK-111 was used as a drain tank and is currently inactive. The tank is passively ventilated and was sampled routinely, where it was determined that plutonium levels were below limits for discharging the contents to a crib. A recent vapor sample of the drain tank (TK-111) identified no detectable flammable gas within the vessel.

The tank was used to hold condensate from the facility prior to its release to cribs. Based on process knowledge, this tank was routinely sampled where it was determined that plutonium levels were below limits for discharge to a crib. Therefore, the present contents of the tank are estimated to consist of residual water from the condensate collection and low levels of plutonium.

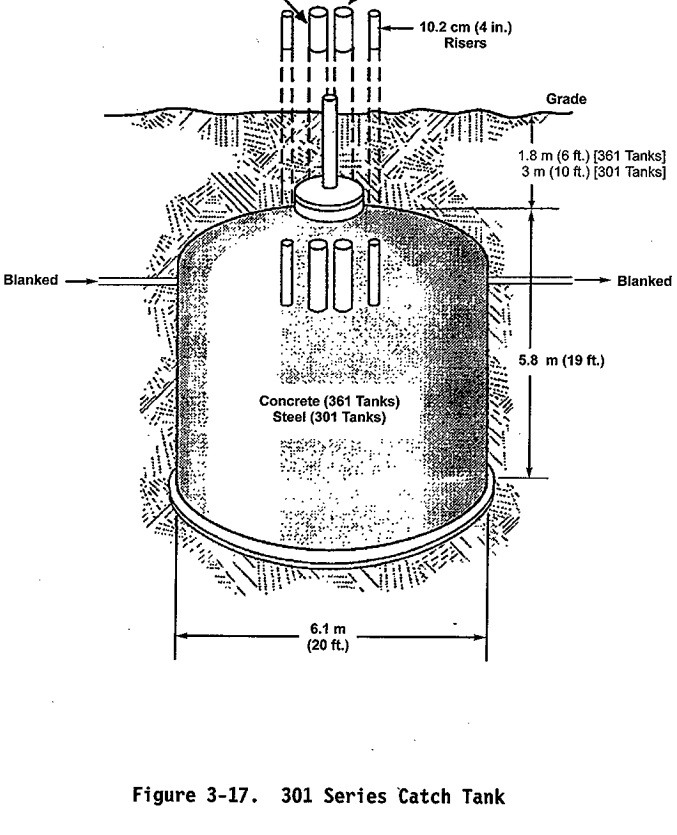


Figure 3-17. 301 Series Catch Tank

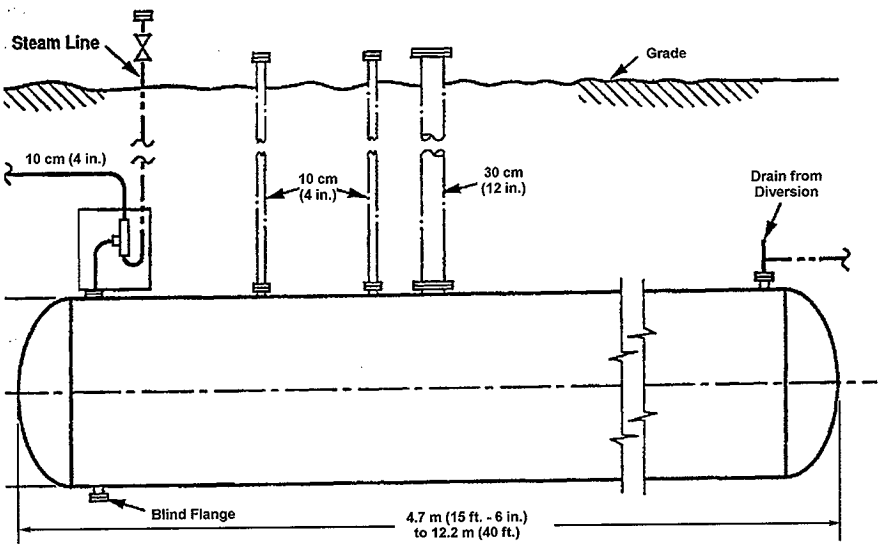


Figure 3-18. 302 Series Catch Tank

The tank location is covered by a steel pit cover and is posted as a radioactive material and contamination area and as a confined space entry location. This tank meets the definition of an IMUST. However, it is managed as a part of the 209-E facility.

3.4.3 213-W-1

This 7,097-L (1,875-gal) capacity (2 m high by 2.1 m dia. [6.5 ft by 7 ft]) carbon steel retention tank is located east of the 213-W Compactor Facility and north of the 272-WA operations building in the 200-W Area. It is plumbed to the 213-W HVAC system, the 272-WA service garages, and the 213-W compactor room. The tank is buried with 1.2 m (4 ft) of soil overburden. It has two risers, a 7.6-cm (3-in.) HEPA vent riser and a 10.2-cm (4-in.) level gauge riser.

The tank collected drainage from floor drains in both the 213-W Compactor Room, and the 272-WA Service Garage. It also received HVAC condensate from the 213-W ventilation system. The water contained in the tank is released after analyzing for radionuclides. This tank began operation in 1985 and the tank has been inactive since 1995. It is posted as an IMUST, but there are no posted radiological signs associated with the tank.

Two samples of the contents of tank 213-W-1 were taken in March 1995, and were analyzed for Ph and radiological content. The results showed a Ph of about 7.16 with a maximum total α = <1.28E-6 μCi/L and maximum total β = <7.50E-6 μCi/L. The tank was last sampled in 1997, and contained releasable quantities of radionuclides, making it non radioactive, and thus it does not meet the definition of an IMUST. The line from the compactor room has been reported to be sealed off, but has not been confirmed through documentation. If the compactor drain or the HVAC drains are still connected and open, the tank would be considered an active vessel.

3.4.4 216-BY-201

This 42,468 L (11,220 gal) capacity (12.6 m by 1.9 m by 5.2 m [41.3 ft by 6.3 ft by 17 ft]) rectangular concrete supernatant disposal flush tank is located in the northwest portion of 200-E Area, between 241-BY Tank Farm and the 216-B-43 through 216-B-50 Cribs.

The tank is underground, with at least 1.5 m (5 ft) of soil overburden. It has no visible risers or vents and is not discernible from the surface . A monitoring pit with a steel cover is located near the north corner of the tank. A manhole is located at each end of the tank. A siphon is located at the bottom of the tank and drains waste through a 35.6 cm (14 in.) line to the 216-B Cribs. An overflow pipe is also connected to this line.

Radioactive waste from the 241-BY Tank Farm system of cascading tanks overflowed to this tank en route to the 216-B Cribs. Although relatively free of solids, a small amount of saltcake may have been deposited in the tank. Based on the "Best Basis Inventory" from Appendix D of the Tank Characterization Reports (HNF-SD-WM-ER-637 and HNF-SD-WM-ER-687), the major

constituents expected for the 241-BY Tanks Farm supernatant liquid would be:

- Chemical constituents of nitrate, sodium, aluminum, carbonate, and hydroxide.
- Radiological constituents of primarily strontium and cesium, with their associated decay products, yttrium and barium.

The tank also received waste from the tributyl phosphate (TBP) waste line. The tank was designed to scavenge the TBP waste and the supernate was sent to the 216-B Cribs. It is expected that a small amount of material, mainly water remaining from line flush, could remain in the tank. Waste containing TBP should all have been transferred to the cribs. 216-BY-201 is in a contamination area with a portion identified as an underground radiation area. The site is posted with an IMUST sign.

3.4.5 216-TY-201

This 42,468 L (11,220 gal) (8.2 m by 3 m by 2.9 m [27 ft by 10 ft by 9.5 ft]) reinforced concrete rectangular supernate disposal flush tank is located in the 200-W Area, east of 241-TY Tank Farm, approx 65.5 m (215 ft) east of Camden Ave and 152 m (500 ft) north of 22nd Street. It is 30.5 cm (1 ft) thick with a 7.6 cm (3 in.) schedule 40 inlet that was blanked in 1955 halfway between the cribs (216-T-26, 216-T-27, and 216-T-28) and the 241-TY Tank Farm. There is a capped spare inlet and an 20.3 cm (8 in.) schedule 40 siphon (trap) under the tank leading to cribs 216-T-26, 216-T-27, and 216-T-28 through 35.6 cm (14 in.) schedule 40 pipe. 216-TY-201 has 1.5 m (5 ft) of soil overburden and three 20.3 cm (8 in.) risers, two with blind flanges, and one with some electrical equipment in place. The outlet siphon emptied the tank to a minimum of 15.2 cm (6 in.). The operating depth of the tank was 15.2 cm (0.5 ft) to 1.7 m (5.5 ft).

Supernatant liquid from the 241-TY Tank Farm system of cascading tanks overflowed to this tank en route to the cribs from 1953 to 1955. This supernatant liquid originated from the 242-T Evaporator and consisted of evaporator bottoms. Although relatively clear liquid, a small amount of saltcake may have deposited in the tank. Based on the "Best Basis Inventory" from the Tank Characterization Reports (HNF-SD-WM-ER-699) the major constituents expected for the 241-TY Tank Farm supernatant liquid would be:

- Chemical constituents of sodium, nitrate, phosphate and hydroxide.
- Radiological constituents of primarily strontium and cesium, with their associated decay products, yttrium and barium.

There should be no organic or explosive materials (LA-UR-97-311 and HNF-SD-ER-699) in this IMUST. The tank is posted as an underground radioactive area and as an IMUST location.

3.4.6 241-AX-151

The 241-AX-151 diverter station location is described in Section 3.3.4. Previous IMUST lists contained only a single entry for the catch tank (241-AX-151CT) in this diverter station. The station is an underground

(241-AX-151CT) in this diverter station. The station is an underground reinforced concrete structure located in a large dirt mound. The top of the diverter station extends approximately 30.5 cm (12 in.) above grade. Within the diverter station there are four small 76-cm (30-in.) dia. by 1.3-m (52-in.) high stainless steel diverter tanks with a maximum capacity of 602 L (159 gal) and an operating capacity of 189 L (50 gal). The tanks are designated 241-AX-151TK D, E, F and G and are located in individual cells. Located with these cells on the upper level of the diverter station is a pump pit containing a 378.5 L/min (100 gpm) pump. Each cell has a stainless steel liner on the floor that extends up the wall. A 41,635 L (11,000 gal) stainless steel-lined catch tank is located below the diverter tanks. A 3.8 cm (1-1/2 in.) dia. liquid level port is provided for the use of portable level detection in the catch tank. Each cell having a tank is furnished with a diverter operator mechanism. The diverter operators were used to route the waste out of the tanks to any desired transfer line. Drainage into the catch tank was pumped or jetted to diverter tank E or F. Each diverter tank was equipped with a 5-cm (2-in.) dia. clean out pipe.

The diverter station was in operation from 1962 to 1985. The station was isolated by the B-231 Project in 1985 and was covered with foam weather covering. The four diverter operator mechanisms, leak detector lines, electrical conduits, flush lines, raw water line and other piping systems were isolated as part of the B-231 project.

This diverter station originally provided multiple diversion capabilities from which four PUREX lines could be routed to lines connecting tanks in the 241-A, -AX, and -AY Tank Farms and the 244-AR Vault. Since the diversion station tanks were used in the routing of liquids for the 241-AX Tank Farm, any contents remaining should reflect the waste types similar to the 241-AX tanks. An accumulation of solids is unlikely. It is be possible that any remaining solids (and certainly liquids) are of the type represented by the last transfer through the diversion station tanks. The last transfers from the 241-AX Tank Farm were saltwell liquor. Tank 241-AX-102 historical sample data for supernate (similar to saltwell liquor) is available for 1981 and 1988.

The catch tank contents are questionable since one cannot determine which transfers had spills to the catch tank. It is expected that the contents are bounded by the overall composition of the wastes in the 241-AX tanks. Significant accumulations are unlikely since this tank was not used for long term storage.

Based on "Best Basis Inventory" (HNF-SD-WM-ER-472) for the AX tanks, the possible contents for these vessels are likely to be: (in order of content)

- Chemical constituents of sodium, nitrate/nitrite, hydroxide, and some iron and potassium.

- Radiological constituents of strontium, cesium, with their associated decay products, yttrium and barium, with small amounts of plutonium and americium.

Although Tanks 241-AX-101 and 241-AX-103 are on the hydrogen/flammable gas watchlist and 241-AX-102 contains some organic salts, it is unlikely that more than a trace of organic materials is present in these vessels. The diverter station is posted as an underground radioactive area and as an IMUST location.

3.4.7 241-BY-ITS2-TK-1

Tank 241-BY-ITS2-TK-1 is located in the 241-BY Tank Farm in the 200-E Area. It is a small vapor condenser, 76.2 cm (30 in.) dia. by 2.9 m (9.5 ft) long with approximately 1,320 L (349 gal) capacity. The tank is contained within the sluice pit of Tank 241-BY-112. This condenser was a component of the ITS-2 In-Tank Solidification (ITS) system (refer to Section 3.3.15). The above ground components of the ITS-2 system have been removed and this tank was abandoned in place. The current contents of the condenser tank are unknown. However, the tank would have received condensate from the heated in-ground waste tank for return to Tank 241-BY-112. Any residual material would have the composition of the tank waste vapors and carry over particles.

3.4.8 241-BY-ITS2-TK-2

Tank 241-BY-ITS2-TK-2 is a heater flush tank located in the 200-E Area, 241-BY Tank Farm, between Tanks 241-BY-111 and 241-BY-112. This tank was used in support of the ITS-2 system (refer to section 3.3.15). The above ground components of the ITS-2 system have been removed and this tank was abandoned in place.

The tank served as a decontamination solution receiver tank for decontamination of the in-tank heater assemblies used in the ITS-2 system. It is vertically oriented, constructed of carbon steel and is 1 m (40 in.) i.d. by 12.8 m (42 ft) long. The tank is encased in a stepped two-piece caisson. The upper section of the caisson is 122 cm (48 in.) dia., extending to a depth of 5.18 m (17 ft) below grade, and the lower section is 118 cm (46.5 in.) dia., extending to the bottom of the flush tank.

The radiological and chemical contents in the approximately 10,400 L (2,700 gal) flush tank are unknown. However, the radiological composition of any residual material would be expected to consist of the same material as in the heated waste tank. The tank was abandoned when the ITS-2 above ground components were removed. The tank has been inactive since 1977.

3.4.9 241-ER-311A

This 104,485-L (27,700-gal), 11-m (36-ft) long by 2.7-m (9-ft) dia. carbon steel catch tank is located in the 200-E Area approximately 220 m (720 ft) southwest of B-Plant. The top of the tank is 5.2 m (17 ft) below grade. A 1.9-cm (3/4-in.) dia. riser with an elbow extends 15 cm (6 in.) above grade. There are two 5-cm (2-in.) dia. pipes with elbows and pipe caps extending 0.6 m (2 ft) above grade at the north end of the tank area.

The tank received waste from the 241-ER-151 Diversion Box due to leaks and decontamination activities. It appears that this system interfaced with B-Plant but information is not conclusive. Since it was a catch tank that would receive occasional leaks and surface runoff, the composition of any residuals is unknown. This tank was taken out of service (abandoned in place) in 1954 and replaced by 241-ER-311. It is unlikely that any significant accumulations remain in this tank. There are no records of contents or pump out when the tank was replaced.

The tank is located within a chain link fenced area. The area within the fence is posted as a surface contamination area and labeled with IMUST signs.

3.4.10 241-T-302

Tank 241-T-302 was referenced in two of the source documents reviewed as a part of this activity (DOE/RL-91-61, and HNF-1566). It is also identified in the WIDS database and was thus initially listed in the Appendix A tables (Sections A-1 and A-2).

The "T-Plant Source Aggregate Area Management Study Report" (DOE/RL-91-61) states "additional research will be required to verify the existence of this catch tank" and indicates that the tank is posted with a placard and is surrounded by a metal fence. Location drawings in this report show that the tank is located west of the 241-T-152 diversion box, in the southeast corner of the 241-T Tank Farm, 200-W Area. This report (DOE/RL-91-61) references the WIDS database as the identification source for 241-T-302.

A recent report on IMUST locations (HNF-1566) indicates the location of the tank in the northeast corner of the 241-T Tank Farm, as opposed to the southeast location reported in the earlier document. HNF-1566 does not contain a narrative description of the IMUSTs or the methods used to verify the locations presented.

Several field walkdowns were conducted to locate this tank by both cognizant Operations and Engineering staff, none of which provided any physical evidence of the existence of the tank. There were no visible risers in either indicated location, no postings, nor any fenced off areas that would indicate the presence of this tank. The walkdowns were supplemented by discussions with the cognizant Engineering and Operations personnel, as well as former Tank Farms employees. None of the personnel consulted had any knowledge of the existence of the tank.

In addition to field walkdowns and interviews, an extensive review of the Hanford drawings was conducted. The drawings associated with the 241-T Tank Farm (other than SST details) and the B-231 project were reviewed. None of the drawings indicated the existence of the tank, nor did any of them show a pipeline routing to an unidentified location. Typically, the 302 series catch tanks received drainage from the diversion boxes. However, all the diversion boxes in the 241-T Tank Farm drain to the 241-T-301B catch tank.

The final effort conducted to verify the existence of the 241-T-302 catch tank consisted of a geophysical survey of the 241-T Tank Farm locations where the tank was indicated by the source documents. This survey was conducted using ground electrical magnetic conductivity scanning, with a GEONICS EM-31 system. The results of the survey verified the locations of several underground structures indicated in the tank farm drawings, but there was no evidence of a catch tank in either of the reported locations.

Based on the activities described above, the tank is being removed from the list of IMUSTs; is considered to be nonexistent and will not be further evaluated in this report. Considering the thoroughness of the investigation to verify this tank's existence, follow-on investigations to locate the tank are not deemed necessary.

3.4.11 242-T-135

This 3,142-L (830-gal), 1.4-m (4.5-ft) dia. by 2.1-m (7-ft) high stainless steel decontamination liquid storage tank is located in the 200-W Area, outside 241-TX Tank Farm. It is partially below grade with a hopper installed on top. It has two 7.6-cm (3-in.) risers and one 5-cm (2-in.) riser that may contain equipment.

The purpose of this tank when installed at the 242-T Evaporator was to provide decontamination solutions (probably caustic and acid solutions) to the feed tank, evaporator, cyclone separator, and scrubber. Decontamination solutions were charged through a hopper in the tank top and solutions were removed through the top using a jet. The tank is equipped with an agitator but has no instrumentation.

The contents of the tank are unknown but it is assumed that any remaining materials would consist of the decontamination solutions previously stored in the vessel. The hopper cover above the tank is offset and is not covering the opening completely, exposing the inside of the tank to the atmosphere.

The area around the tank is congested and considered a contamination area. A radiation shield wall consisting of a steel structural frame filled with approximately 15 cm (6 in.) of concrete is placed on the northeast side of the tank for radiation shielding.

The area around the tank is posted as a contamination area and is also posted as an IMUST location.

3.4.12 242-TA-R1

This 15,897-L (4,200-gal), 2.7-m (9-ft) dia. by 3-m (9.7-ft) high stainless steel tank is located in the 200-W Area, within the 241-TX Tank Farm, southwest of the 242-T Evaporator. The tank is located in the bottom of the 242-TA concrete receiver vault (4.9 m [16 ft] dia. by 6 m [20 ft] high). The tank has seventeen nozzles including six spare nozzles. The tank overflows to a sump at the receiver vault bottom. The tank is equipped with a pump and agitator. The sump is also equipped with a pump. The receiver tank and the blending tank were used for neutralization of PFP acid waste. Use of the 242-T Evaporator facility to neutralize PFP waste was concluded with the anticipated start up of 244-TX, a double shell receiver tank (RHO-CD-1410). The transfer line was re-routed to a different receiver tank (244-TX Vault) in 1980. It is estimated that the receiver tank was in operation from 1972 to 1980.

In April 1981, a shutdown/standby plan (RHO-CD-1410) was developed for the 242-T Evaporator. The plan detailed the activities that would place the entire 242-T Evaporator facility, including 242-TA-R1 tank in a condition wherein all process lines would be blanked, equipment would be disabled, and instruments disconnected, to effectively isolate the 242-T process area. The 242-T Evaporator facility shutdown/standby plan was never fully implemented. This is documented in an RL audit conducted in 1987 (letter, RL, FDH# 8956942) that recommends that the shutdown/standby plan be deleted. Examination of existing documentation provides no proof that many parts of the plan were ever actually completed, although some tasks identified in the plan have been verified as complete.

The contents, amount, and residual heel remaining are unknown. However, since this tank was used to receive plutonium-bearing wastes, the bottom layers of residual material can be expected to contain this constituent. The waste stream composition is based on design criteria established for the process. The mixed aqueous waste stream No. 3 was used for processing High Salt waste from 236-Z and 242-Z after it was treated in Tank D-5 located in the 241-Z building. This waste stream was routed from Tank D-5 to 242-TA-R1, then to Blending Tank TK-B1 (242-T-102) and then on to the evaporator (242-T-101). Waste stream No. 3 composition was as follows:

- 0.005 g/gal of plutonium (Pu), 3.457 molar concentration of nitrate ion, 0.124 molar concentration of sodium ion, 0.564 molar concentration of trivalent aluminum, 0.620 molar concentration of free hydrogen ions, 0.331 molar concentration of divalent aluminum fluoride, 0.091 molar concentration of bivalent magnesium, 0.012 molar concentration of trivalent iron, 0.040 molar concentration of potassium ion, 0.009 molar concentration of sulphate ion, and 0.0004 molar concentration of divalent uranium oxide.

The tank is located in a contamination area. Alpha contamination exists in the area. The area around the tank is posted as an IMUST area.

3.5 TWRS CHEMICAL TANKS AND FACILITIES

There are several chemical, nonradioactive tanks and facilities owned by TWRS in the 200 Areas. These are listed in Appendix A, Section A-13. They are primarily tanks associated with facilities, and their contents (if any) are discussed in the respective facility descriptions in Section 3.3. Tanks in the 204-AR Unloading Facility contain chemicals for treatment of received waste (refer to Section 3.3.1) and the tanks in 242-T-601 are associated with the 242-T Evaporator and are discussed in Section 3.3.7. The two other chemical tanks listed in Appendix A-13 are on a concrete storage pad outside of the 241-BY Tank Farm. Both of these tanks have been flushed and are currently empty (Interoffice Memorandum, July 22, 1997).

3.6 NON-TWRS FACILITIES, TANKS AND COMPONENTS

There are a large number of chemical tanks and facilities in the 200 Areas that are not owned by TWRS that are listed in Appendix A, Sections A-14 and A-18. These tanks and facilities could potentially contribute to the TWRS hazard profile by presenting accident initiators for TWRS, resulting in consequences to TWRS workers or disruption to TWRS operations. The tanks and facilities in Sections A-14 and A-15 encompass items ranging from individual chemical tanks, shops, chemical tank farms and major facilities. A qualitative evaluation of whether or not these tanks and facilities will have an effect on the TWRS hazard profile is given in Section 5.3.

4.0 PRIORITIZATION

4.1 EVALUATION CRITERIA

One objective of this effort is to prioritize the AB upgrade actions listed in Section 5. The results of that prioritization are presented in this section of the report. To develop criteria for ranking the proposed actions, qualitative factors that could be observed during FTC reviews and walkdowns were considered. The resulting criteria needed to reflect a relative, perceived risk presented by the FTC being evaluated. This provides only a comparative basis among the FTCs and not a qualitative determination of risk or consequences, which would be a part of upgrade activities if warranted. The criteria developed and used for the prioritization of the FTCs having potential AB upgrade needs are listed in Table 4-1.

It should be noted that detailed Hazard and Operability Studies (HazOp) or Preliminary Hazards Analyses (PHA) have not been done specifically as a part of this exercise for the FTCs covered by this report. However, some of the facilities covered in this report were subject to hazard evaluations as a part of the BIO/FSAR development effort (WHC-SD-WM-TI-759) or have had a hazard evaluation done in the past when the facilities were active. The information contained in such evaluations was considered in determining AB needs.

The factors used in ranking the upgrade recommendations included tank/vessel contents, controls, AB status, configuration, containment, and personnel access. These are all factors that can usually be readily determined. If certain factors in the list are unknown, a high risk is assigned. For example, a tank may be thought to contain relatively benign materials, but if there is no characterization data or process history information available, a high risk is assigned because there is no knowledge of tank contents. On the other hand, if there is confirmed characterization data or a well-documented process history available, risk level is assigned based on knowledge of the tank contents.

Risk ranking factors were applied to the categories below based on perceived dominance of the specific category to drive subsequent action. The numbers given are arbitrary and serve only to differentiate the results generated for respective FTCs.

Risk Ranking Factors (RRF):

Tank/Vessel Contents	10
Controls	8
AB Coverage	7
Configuration	5
Containment	5
Personnel Access	5

Tank/Vessel Contents: The material at risk (tank/vessel contents) was given the highest risk ranking factor. This assures that an FTC that does not contain hazardous materials is not given a high priority simply because it has no controls and is not described in the AB. Factors of concern are whether there is sufficient knowledge of the tank/vessel contents, whether those contents differ from typical DST or SST waste, and whether the tanks contain reactive materials.

Table 4-1. Risk Ranking Criteria

TANK/VESSEL CONTENTS RRF = 10	H_a - Unknown		
	L_a - Empty		
	Material Present	Characterized	L_b - Rad content below concern L_c - Contains typical tank waste M_a - Not typical tank waste M_b - Organic materials present H_b - Organics and acids both present
		Process History Known/Documented	L_d - Typical tank waste M_c - Not typical tank waste M_d - Organics used in process H_c - Organics and acids both used in process
		Process History Not Well Documented	M_e - Unconfirmed benign information H_d - Process unknown H_e - Unconfirmed adverse information
CONTROLS RRF = 8	No Controls Applied	Controls Needed	L_a - Programmatic controls adequate M_a - Procedural controls needed H_a - TSR/AB level controls needed
		L_b - Controls Not Needed	
	Controls In Place	Adequate	L_c - Correct level M_b - Incorrect level
		Inadequate	M_c - Procedural level controls needed H_b - AB/TSR level controls needed

Note: L = Low risk (weighting factor = 1)
M = Medium risk (weighting factor = 3)
H = High risk (weighting factor = 5)

Subscripts are used in Table 4-2 to indicate the source of the risk ranking result.

Table 4-1. (cont) Risk Ranking Criteria

AUTHORIZATION BASIS STATUS RRF = 7	Described/ Analyzed in BIO/FSAR	No Upgrade Required	Not of further AB concern
		Upgrade Needed	L_a - Descriptive information only M_a - Evaluation required H_a - Analysis needed
	Not in BIO/FSAR	Other AB Documentation Exists	Adequate as-is - Not of further AB concern M_b - Integrate into BIO/FSAR H_b - Analysis Needed
		Outdated Safety Documentation Exists (not AB)	M_c - Can upgrade and integrate into BIO/FSAR M_d - Additional analysis needed H_c - Not applicable/new analysis needed
		No Safety Documentation Exists	M_e - Descriptive information needed H_d - New analysis needed
CONFIGURATION RRF = 5	Open Connection to Active TWRS Systems		L_a - No interaction likely M_a - Limited interaction H_a - Near ongoing operations/interactions possible
	Isolated		L_b - No interaction with other TWRS facilities M_b - Near other TWRS/interaction possible
	Stabilized/ Solidified		L_c - Known/documented stabilization M_c - No documentation/not stabilized
	Ventilation Of Waste Containing Vessels		L_d - Ventilation not needed L_e - Ventilation present/operating M_d - Ventilation present/vent path not confirmed H_b - Ventilation not present

Notes: L = Low risk (weighting factor = 1)
M = Medium risk (weighting factor = 3)
H = High risk (weighting factor = 5)

Subscripts are used in Table 4-2 to indicate the source of the risk ranking result.

Table 4-1. (cont) Risk Ranking Criteria

CONTAINMENT RRF = 5	L_a - Material Containment Assured	
	Potential For Leaks	M_a - Not confirmed/leakage possible H_a - Leakage suspected H_b - Confirmed leak potential H_c - Material containment capability unknown
PERSONNEL ACCESS RRF = 5	L_a - No or very little personnel access needed M_a - Personnel routinely work in or near facility M_b - Personnel permanently housed in or near facility H_a - Personnel routinely access waste areas	

Notes: L = Low risk (weighting factor = 1)
M = Medium risk (weighting factor = 3)
H = High risk (weighting factor = 5)

Subscripts are used in Table 4-2 to indicate the source of the risk ranking result.

Controls: The next highest risk ranking factor was given to controls, since controlling whatever risks are present is the objective of the AB. The evaluation considers whether or not appropriate controls are applied to manage the known or perceived risks, and whether those controls are applied at the correct level (e.g., TSR level, safety programs, operating procedures, standard field practice). This requires a subjective evaluation considering the lack of consequence analyses for the FTCs discussed in this report. In ranking the adequacy of controls, TWRS or site-wide programmatic safety was considered (see Section 5.1). This includes, for example, the Radiation Control Program, the Emergency Preparedness Program, the Fire Protection Program, and standard industrial safety practices such as scheduled roof inspections. Implementation and effectiveness of these programs and practices were assumed for the controls evaluation unless there was indication during the review of a given FTC that it should be assumed otherwise.

AB Status: The status or condition of the AB documentation followed controls on the risk ranking list. The evaluation of AB status considers whether any AB documentation exists, whether this documentation is adequate, and estimated level of coverage required. In the unique case where the AB is considered completely adequate (including controls), the ranking process was suspended and the FTC was considered not to be of further AB concern. This precludes a high relative risk ranking based solely on the presence of a high risk in the tank/vessel contents RRF.

Configuration: Configuration refers to the current mission and status of the FTC. Specific consideration is given to relationship to active TWRS systems and structures, configuration of the waste container and hazardous materials. Also considered was the status and need for ventilation systems.

Containment: Containment refers to the condition of the FTC and its ability to safely store contained hazardous materials. Evidence of past leakage is evaluated under this RRF.

Personnel Access: Personnel access considers whether TWRS workers are routinely working in or near the FTC, or routinely need to gain access to the hazardous materials.

Collectively, these RRFs address *relative safety risk* and TWRS *mission needs* for the purpose of ranking the importance of individual FTC AB upgrades. The Tank/Vessel Contents, Containment, Personnel Access, and Controls RRFs address the potential for releases, immediate threats to workers, and thus, relative safety risk. Additionally, significant uncertainty about FTC Configuration may also contribute to the relative safety risk. The FTC Configuration, including operational status, and the Personnel Access RRFs address the TWRS mission objectives for the FTC. For instance, a permanently shut down facility with no possible mission function (other than its own deactivation and decommissioning) and little or no personnel access does not have an immediate *mission* driver for an AB upgrade.

4.2 RISK RANKING RESULTS

Table 4-2 presents a tabulation of the relative risk ranking results for TWRS facilities and IMUSTs. The TWRS facilities are listed in order of priority, as are the IMUSTs. The table does not provide the individual numerical scores assigned to a facility or tank by the prioritization exercise. But, for

Table 4-2. Relative Risk Ranking Results

Relative Ranking	Contents	Controls	AB Status	Config-uration	Contain-ment	Access
Facilities (in order of priority):						
1. 242-T	H_a	H_b	H_b	M_b	H_a	L_a
2. 244-CR	H_e	M_c	M_a	M_a	M_a	M_a
3. 244-AR	M_c	M_c	H_a	M_b	H_a	M_a
4. 242-S	M_d	H_b	H_b	L_a	M_a	M_a
5. ITS-1	H_a	M_a	M_e	M_b	M_a	M_a
6. 241-AX-IX	H_a	M_a	M_e	M_b	M_a	M_a
7. 204-AR	M_c	H_b	M_a	H_a	L_a	M_a
8. 2727-W	L_b	M_c	L_a	M_b	L_a	L_a
9. GTF	L_c	L_b	M_b	L_b	L_a	L_a
10. 213-W	L_b	L_c	L_a	L_b	L_a	M_a
11. 209-E	N/A	N/A	N/A	N/A	N/A	N/A
IMUSTs (in order of priority):						
1. 240-S-302	H_e	H_b	M_a	L_b	H_b	L_a
2. 241-AX-151-TK-D	H_e	H_a	H_d	L_b	L_a	L_a
3. 241-AX-151-TK-E	H_e	H_a	H_d	L_b	L_a	L_a
4. 241-AX-151-TK-F	H_e	H_a	H_d	L_b	L_a	L_a
5. 241-AX-151-TK-G	H_e	H_a	H_d	L_b	L_a	L_a
6. 244-UR-002	H_b	H_a	H_d	L_b	L_a	L_a
7. 244-UR-003	H_c	H_b	H_d	L_b	L_a	L_a
8. 241-A-302B	H_e	H_b	M_a	L_b	M_a	L_a
9. 241-AX-151CT	H_e	H_b	M_a	L_b	M_a	L_a
10. 241-C-301	H_e	H_b	M_a	L_b	M_a	L_a
11. 270-W	H_c	H_b	M_a	L_b	M_a	L_a
12. 241-B-301	H_e	H_b	M_a	L_b	M_a	L_a
13. 241-B-302B	H_e	H_b	M_a	L_b	M_a	L_a
14. 241-BX-302B	H_e	H_b	M_a	L_b	M_a	L_a

Table 4-2. (cont) Relative Risk Ranking Results

IMUSTS: (Cont)	Contents	Controls	AB Status	Config-uration	Contain-ment	Access
15. 241-BX-302C	H_e	H_b	M_a	L_b	M_a	L_a
16. 241-SX-302	H_e	H_b	M_a	L_b	M_a	L_a
17. 241-TX- 302B(R)	H_e	H_b	M_a	L_b	M_a	L_a
18. 241-TX- 302XB	H_e	H_b	M_a	L_b	M_a	L_a
19. 241-TY-302A	H_e	H_b	M_a	L_b	M_a	L_a
20. 241-Z-8	H_e	H_b	M_a	L_b	M_a	L_a
21. 241-TX-302B CT	M_d	H_b	H_b	L_b	M_a	L_a
22. 244-BXR-002	H_c	H_b	M_a	L_b	L_a	L_a
23. 244-BXR-003	H_c	H_b	M_a	L_b	L_a	L_a
24. 241-TX-302A	M_d	M_c	M_a	L_b	H_b	L_a
25. 244-UR-001	M_d	M_a	H_d	L_b	L_a	L_a
26. 216-BY-201	M_d	M_c	M_a	L_b	M_a	L_a
27. 216-TY-201	M_d	M_c	M_a	L_b	M_a	L_a
28. 241-BY-ITS2-TK-1	M_e	M_a	M_e	L_b	M_a	L_a
29. 241-BY-ITS2-TK-2	M_e	M_a	M_e	L_b	M_a	L_a
30. 241-T-301B	M_d	M_c	M_a	L_b	M_a	L_a
31. 242-T-135	M_e	M_c	M_a	L_b	M_a	L_a
32. 241-S-302A	M_e	M_b	L_a	L_b	H_b	L_a
33. 244-TXR-002	M_a	M_c	M_a	L_b	L_a	L_a
34. 244-TXR-003	M_c	M_c	M_a	L_b	L_a	L_a
35. 242-TA-R1	M_e	M_c	M_a	L_b	L_a	L_a
36. 244-BXR-001	M_e	M_c	M_a	L_b	L_a	L_a
37. 244-UR-004	L_a	H_a	M_e	L_b	L_a	L_a
38. 209-E-TK-111	M_c	L_a	M_e	L_b	M_a	L_a
39. 241-ER-311A	M_e	L_c	L_a	L_b	H_a	L_a
40. 200-W-7	M_c	L_c	L_a	L_b	M_a	L_a

Table 4-2. (cont) Relative Risk Ranking Results

IMUSTS: (Cont)	Contents	Controls	AB Status	Config-uration	Contain-ment	Access
41. 231-W-151-001	M_a	L_b	L_a	L_b	L_a	L_a
42. 231-W-151-002	M_a	L_b	L_a	L_b	L_a	L_a
43. 241-BX-302A	L_c	L_c	L_a	L_b	M_a	L_a
44. 241-S-302B	L_a	L_c	L_a	L_b	M_a	L_a
45. 244-BXR-011	L_c	L_c	L_a	L_b	L_a	L_a
46. 241-TY-302B	L_a	L_c	L_a	L_b	L_a	L_a
47. 244-TXR-001	L_d	L_c	L_a	L_b	L_a	L_a

Note: Subscripts refer to Table 4-1

purposes of determining the ranking of the FTCs, a distinct numerical value was tabulated for each FTC by assigning the low (L), medium (M), and high (H) designation values of 1, 3, and 5, respectively. These scores are not significant for any purpose other than to create the prioritized list (i.e., the number does not indicate a quantification of risk posed by any of the FTCs). An indication of the risk level ranking for each of the Table 4-1 categories is included in Table 4-2 to provide an indication of the areas of concern. Refer to the discussions of each facility or IMUST in Sections 5.1 and 5.2, respectively, for further information.

IMUST priorities are given individually for each tank, with required actions being the summation of all those listed within the respective IMUST groupings in Section 5.2. Of the facilities evaluated, the 242-T Evaporator was ranked as the first priority. This is primarily due to the facts that the material inventory and constituents in the facility tanks/vessels are unknown and the current AB describes a facility configuration that is known to be inaccurate. The highest priority for IMUSTs are those tanks that have unknown contents or are known to contain both acid and organic waste materials. These are the tanks that need to be evaluated for organic nitrate reaction potential.

A final consideration for prioritization is addressed in Chapter 6.0. This is the relative safety and AB documentation benefit derived from the cost of the upgrade effort. Chapter 6.0 provides cost estimates for AB documentation work and commentary on the additional costs associated with improvement of technical bases (e.g., waste sampling and characterization). This input is used as a final check to validate or adjust the prioritization.

5.0 AUTHORIZATION BASIS STRATEGY

The following sections present the strategy to upgrade the AB for the identified TWRS Facilities and IMUSTs. Controls specific to each of the identified facilities and IMUSTs are listed in the following sections. The controls listed are those specifically called out in the applicable AB document. In addition to the specific controls identified in the following sections, site-wide and TWRS administrative and safety programs are implemented that further provide the overall control necessary for ensuring safety of TWRS FTCs:

Criticality Safety: The provisions of the Hanford Site Nuclear Criticality Safety program as detailed in the HNF Procedures and Criticality Safety Evaluation Reports and specification documents for specific TWRS facilities apply to the TWRS FTCs identified in this report. This program places requirements and controls on the handling, storage, transfer, and posting of fissionable material.

Radiation Protection: The provisions of the Hanford Site Radiological Control Manual (HSRCM-1) apply to the TWRS FTCs identified in this report. This manual defines the requirements and controls necessary to assure radiological safety and protection for TWRS workers and other onsite personnel.

Occupational Safety and Industrial Hygiene: The Hanford Site Safety and Industrial Hygiene programs as defined by the HNF procedures relating to occupational health and safety apply to the TWRS FTCs identified in this report. These program procedures define the requirements and controls to be applied throughout the Hanford Site to assure safe working conditions.

Fire Protection: The fire protection requirements and controls identified in the Hanford Fire Protection program apply to the TWRS FTCs identified in this report. The requirements and controls identified in the program are contained in FDH procedures dealing with methods and requirements for providing adequate fire protection and prevention throughout the Hanford Site. Specific Fire Hazards Analysis (FHA) documentation relating to TWRS activities and facilities include WHC-SD-WM-FHA-020, WHC-SD-WM-FHA-022 and WHC-SD-WM-FHA-023.

Quality Assurance: The Quality Assurance program defined for the Hanford Site applies to the TWRS FTCs identified in this report. Quality assurance requirements and controls are detailed in HNF-MP-599 and in specific activity plans or the TWRS Quality Assurance Program Plan (HNF-IP-0842).

Environmental Compliance: The Hanford Site Environmental Compliance program and the specific requirements of permits for TWRS facilities apply to the TWRS FTCs identified in this report.

Emergency Preparedness: The Hanford Site Emergency Preparedness program and TWRS facility-specific emergency plans apply to the TWRS FTCs identified in this report. The site-wide and TWRS emergency preparedness requirements are documented in the Hanford Emergency Response Plan (DOE/RL-94-02) and the TWRS Emergency Preparedness Program Plan (WHC-IP-0971), respectively.

Except where specifically noted in the balance of this chapter, these programs were observed to be implemented and effective.

5.1 TWRS FACILITIES

5.1.1 204-AR Waste Unloading Facility

5.1.1.1 Authorization Basis Status

The BIO and draft FSAR both currently address the 204-AR facility. The facility was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007). These walkdowns resulted in identification of hazards in the following categories: corrosives, criticality, flammable materials, friction, electrical, radiation, kinetic energy, mass, gravity-height, pressure-volume, and thermal. A recent walkdown of the facility did not reveal any hazards additional to those previously identified, other than normally encountered industrial hazards. Natural event phenomena such as lightning and seismic events were also identified during the walkdown. These accident initiators are addressed in the BIO. There were no bounding scenarios that were found to involve 204-AR related to natural phenomena.

A specific HazOp analysis was conducted to identify accident scenarios for the 204-AR facility and is documented in WHC-SD-WM-TI-759. Representative and bounding accidents identified by the HazOp were carried forward into the BIO/FSAR accident analyses. The HazOp, in general, reflects the current facility configuration with the exception that a waste transporter (LR-56) will replace the current rail cars used to transport waste from the 340 facility to 204-AR. The volume of the transporter (5,678 L [1,500 gal]) is considerably smaller than that of the rail cars (75,700 L [20,000 gal]). The impact of the change in transporters needs to be evaluated to determine if there is any effect on the accidents evaluated in the BIO.

5.1.1.2 Controls Evaluation

The controls currently applied to the Waste Unloading Facility are listed in Table 5-1.

There is one instance where the TSR written for general usage in the tank farms may not be suitable for the 204-AR facility, related to the transfer pump administrative lock program (Administrative Control [AC] 5.20). Limiting Condition for Operation (LCO) 3.1.2 (temporarily exempted)

Table 5-1. 204-AR Controls

CONTROL	LEVEL	SOURCE
Service water pressure detection system operability	TSR (temporary exemption through 9/30/98)	LCO 3.1.2 (see note)
Ventilation stack CAM interlock system operability	TSR (temporary exemption through 9/30/98)	LCO 3.1.4 (see note)
Exhaust stack high radiation alarm operability	TSR	LCO 3.1.4A
	OSD	OSD-T-151-00008
	Procedure	TO-040-710
Leak detection system operability	TSR	LCO 3.1.3
Criticality	TSR	AC 5.7
	Specification	CPS-T-149-00010
Transfer controls	TSR	AC 5.12
HEPA filter controls	TSR	AC 5.18
	OSD	OSD-T-151-00008
	Procedure	TO-040-710
		TF-OR-EF-204AR
Catch tank vent temperature	OSD	OSD-T-151-00008
	Procedure	TO-040-710
		TF-OR-EF-204AR
Catch tank level	OSD	OSD-T-151-00008
	Procedure	TO-040-710
		TF-OR-EF-204AR
Flammability controls	TSR (204-AR-TK-1 only)	AC 5.9 (204-AR-TK-1 only)
Waste composition/ Source inventory control	TSR	AC 5.8 (see note)
		AC 5.12 (see note)
	OSD	OSD-T-151-00008
	Procedure	TO-290-052
		TO-290-120
		TO-290-130

Table 5-1. (cont) 204-AR Controls

Transfer pump lock administrative controls	TSR	AC 5.20
	Procedure	TO-290-052
		TO-290-120
		TO-290-130

Notes: LCO 3.1.2, LCO 3.1.4, AC 5.8, and AC 5.12 contain requirements specific to 204-AR.

TSR controls are contained in HNF-SD-WM-TSR-006.

requires the service water pressure detection system to be operable if the detection system is connected to a transfer pump that is not administratively locked out. An alarming pressure detector requires physically connected transfer pumps to be shut down. This effectively prevents line flushing at 204-AR since the transfer pumps are needed for line flushing. Compensatory actions are in progress to resolve this issue.

Since this facility is a point of receipt for introduction of hazardous mixed wastes into the tank farms, the controls on receipt of material into the facility (AC 5.8 and 5.12) are important. The appropriate controls are in place, in that waste verification is required before receipt into the facility and transfer to the tank farms.

5.1.1.3 Authorization Basis Strategy

The following actions are required for this facility:

- Evaluate the need to update the BIO or FSAR to reflect the changes related to the waste transporter (LR-56 transporter).
- Resolve the pressure switch issue under the compensatory measures actions, and prepare a TSR modification, if necessary.
- Complete facility modifications to comply with LCO 3.1.2 and 3.1.4, currently exempted under compensatory measures.
- If the evaluations above indicate that analysis changes are required, prepare modifications to the BIO or FSAR and submit for RL approval as appropriate.
- Close the flammable gas USQ for Tank 204-AR-TK-01 according to the USQ closure strategy document (HNF-SD-WM-ER-680).

5.1.2 209-E Critical Mass Laboratory

5.1.2.1 Authorization Basis Status

A small description of the 209-E Complex is in the BIO, but is mainly applicable to the less-than-90-day waste storage pad to the west of the 209-E Building. The 209-E Complex BIO description includes a few sentences about the layout of the 209-E Building, but no hazards or controls are identified. Additionally, the 209-E Complex was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007); however, information is only recorded for the less-than-90-day storage pad. No unique accident phenomena were identified pertaining to the 209-E Building at that time. The 209-E less-than-90-day storage pad is assigned a Hazard Category 3 in the BIO and draft FSAR.

A Preliminary Hazards Analysis (WHC-SD-WM-TI-789) was developed for the 209-E Building. During the development, hazards were identified and frequency and consequences were qualitatively assessed. One hazard, fire in the CAR, was assigned a frequency of "Anticipated" with potential consequences to the onsite worker.

In October of 1996, an Unreviewed Safety Question (USQ) screening/ determination (USQ TF-96-1000) was performed that led to the conclusion that the 209-E Building did not have an AB. Subsequent review of documentation identified that the facility contains 562 grams of plutonium (conservative total based on both Pu^{239} and Pu^{240} from a plutonium inventory performed in 1990). Additionally, a Criticality Safety Evaluation Report (CSER 90-008) concluded that a criticality is not credible. Since a criticality is not credible and the facility contains more than 450 g of plutonium (conservative value based on estimated margin of error, 420 g + 150 g = 570 g Pu), the facility is considered a Hazard Category 3 nuclear facility per DOE-STD-1027-94. This categorization requires that the facility have an AB per DOE Order 5480.23.

Shortly after the USQ determination was completed, interim controls were imposed as a precautionary measure for personnel safety. These interim controls were not AB level controls and were intended to remain in place only until the hazards were addressed and the AB issue was resolved. An AB (WSD-97-160) for the 209-E Building was issued by the U.S. Department of Energy, Richland Office (RL) on August 8, 1997 and included many of the initial contractor imposed interim controls. The AB was implemented at a time when there were still unknowns associated with the facility (e.g., extent of contamination in the CAR and Mix Room, configuration and operability of SSCs). Information was subsequently obtained during entries into the CAR and Mix Room for purposes of assessing hazards and implementation of the interim controls of WSD-97-160. Additional information was obtained through vapor sampling activities on the drain tank (TK-111). The PHA and the subsequently obtained physical data and observations provided a basis to depart from many of the interim controls that were imposed as precautionary measures. The basis for departure from the controls is documented in the AB that will close the USQ for the 209-E Building (LMHC-9851283). Once approved, the document provided in letter LMHC-981283 will become the AB for pre-deactivation activities at the 209-E Building.

The pre-deactivation AB was written to fully replace RL letter WSD-97-160 as the 209-E Building AB. The pre-deactivation AB identifies activities allowed during the pre-deactivation phase and provides the controls and safety programs necessary to maintain the facility in a safe configuration. The controls and safety programs are based on the hazards identified in the PHA in addition to supplemental information obtained through facility evolutions (e.g., entries into the CAR and Mix Room, vapor sampling of TK-111, management walkdowns). The pre-deactivation AB and its associated controls and safety programs will remain in place until safety documentation addressing deactivation of the 209-E Building is developed by the contractor and approved by RL.

5.1.2.2 Controls Evaluation

The AB controls applicable to the 209-E Building are provided in the pre-deactivation AB for the 209-E Building. Bases and applicable safety analysis are provided for each control. A very brief summary of the controls is as follows. The pre-deactivation AB for the 209-E Building must be consulted for control details.

- LCO: The exhaust ventilation system shall be operable.
- LCO: The air purge on the twelve solution handling tanks (TK-101, TK-102, TK-103, TK-104, TK-105, TK-106, TK-213, TK-231, TK-232, TK-233, TK-234, TK-235) shall be operable.
- AC: HEPA filter nominal particulate removal efficiency shall be verified to be $\geq$ 99.95 percent.

These controls are sufficient to maintain the 209-E Building in a safe configuration.

5.1.2.3 Authorization Basis Strategy

Upon approval, the pre-deactivation AB will become the AB for the 209-E Building and will serve as the AB until the start of deactivation. The deactivation activities will require a deactivation AB to be developed and approved by RL. Once approved by RL, the deactivation AB will replace the pre-deactivation AB as the 209-E Building AB. Thus, no further AB actions are required for the 209-E Building.

5.1.3 213-W Dry Waste Compactor Facility

5.1.3.1 Authorization Basis Status

The BIO currently contains a description of the 213-W facility and adjacent catch tank. The facility was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007). The BIO Appendix D (draft FSAR Appendix A) "Material at Risk" table identifies that residue of radioactive materials are present in the facility HEPA filtration system and that there are some household quantities of cleaning materials.

A PHA was conducted specifically for this facility (WHC-SD-WM-TI-759). Identified accident scenarios were carried forward in the BIO/FSAR analyses, but did not result in significant consequences. This facility was assigned Hazard Category 3 in the BIO and draft FSAR.

5.1.3.2 Controls Evaluation

The following control is currently applied to the compactor facility:

- AC 5.18: HEPA Filter Controls

There are no implementing procedures specific to this facility and none are warranted considering the low inventories of materials present. Normal programmatic controls are adequate to maintain this facility in a safe condition.

5.1.3.3 Authorization Basis Strategy

The following actions are required for this facility:

- Review of the radiation survey data available for the facility to estimate the volume of radioactive materials remaining.
- Estimate radioactive material inventory to re-evaluate the facility hazard classification for a possible reduction to "Radiological Facility."
- Prepare an update to the BIO or FSAR to reflect the revised hazard classification, if the facility is re-classified.

5.1.4 241-AX-151 Diverter Station

The 241-AX-151 Diverter Station is inactive and has been isolated. The individual tanks within the diverter station are IMUSTs. The AB strategy for IMUSTS is discussed in Section 5.2.

5.1.5 241-AX-IX Ion Exchange Column

5.1.5.1 Authorization Basis Status

Neither the BIO nor draft FSAR currently contains a hazard or accident analysis that addresses the 241-AX ion exchange column. However, the facility is listed in the "Material at Risk" tables contained in BIO Appendix D (FSAR Appendix A), which indicate only low level waste residue being present. The facility was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007), but no hazards or unique accident phenomena were identified.

5.1.5.2 Hazards Controls Assessment

Normal programmatic and access controls are currently applied to the ion exchange column. There are no procedural inspection or maintenance requirements. Based on the fact that the waste content in the exchange column and filter are unknown, access control and monitoring for flammable gases/organic vapors before conducting work within these vessels is needed. There is no immediate concern with the facility in its current shutdown state; however, if the subsequent actions specified below

indicate the presence of flammable gases or organic materials, interim controls would need to be established.

5.1.5.3 Authorization Basis Strategy

The following actions are required for this facility:

- Perform vapor space sampling of both the ion exchange column and filter assembly to determine if flammable gases/organic vapors are present.
- Perform an inspection of vessel contents and perform sampling, if any significant quantity of material is indicated to be present by the vapor sampling results.
- Perform a limited hazards analysis to determine if the facility presents any unique hazards that need to be analyzed for inclusion in the BIO or FSAR.
- Impose interim controls through a Standing Order if the need is indicated by hazards analysis and/or sampling results.
- Prepare an update to the BIO or FSAR to include a description of this facility, or if hazards analysis warrants, update the appropriate analysis sections, modify the TSRs, and submit for RL approval as appropriate.

5.1.6 242-S Evaporator

5.1.6.1 Authorization Basis Status

Neither the BIO nor the draft FSAR currently provides analysis of the 242-S Evaporator facility. The facility was not included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007).

A specific HazOp analysis was conducted for the 242-S facility as a part of the BIO/FSAR preparation, and is documented in WHC-SD-WM-TI-759. However, the scope of this HazOp was limited to the consideration of 242-S as an interfacing facility to TWRS, and accident scenarios for the facility were not developed as a part of this effort.

The 242-S Facility Shutdown and Standby Plan (SD-WM-SSP-002), issued in 1988, is the current AB documentation for the 242-S Evaporator. This report was written to describe the physical modifications made to the facility to place it into standby condition III (whereby re-start of the facility is possible, but would require more than six months to accomplish). The document also provides a number of maintenance and monitoring requirements to maintain the facility's standby status. It does not identify or evaluate the consequences of accident scenarios for the facility. The shutdown/standby plan has not been kept current, and

does not reflect the facility configuration, since not all the actions specified in the plan were completed.

5.1.6.2 Controls Evaluation

The types of controls currently applied to the 242-S Evaporator are shown in Table 5-2. There are no TSR controls applied to the facility and the scope statement in the TSR document (HNF-SD-WM-TSR-006) specifically excludes 242-S. Although the AB document contains several controls/monitoring requirements (not derived from accident analyses), many of them are not currently implemented because they describe equipment that is no longer in service. The facility is periodically inspected and liquid levels in the catch tank (TK-C-100) are regularly checked and maintained under the maintenance procedure (TO-780-020). The liquid cover over the ion exchange column resin is actively monitored and maintained under the general maintenance procedure and round sheet.

Based on current knowledge of 242-S, the inspection activity and the maintenance of liquid cover over the ion exchange resin are currently maintaining the facility in a safe condition. Key safety systems such as ventilation and fire protection are being maintained. However, if the subsequent actions specified below indicate any hazards not presently controlled, interim controls would need to be established.

5.1.6.3 Authorization Basis Strategy

The following actions are required for this facility:

- Perform sampling and analysis of the contents of Tank TK-C-100.
- Perform a hazards evaluation to determine credible accident scenarios that need to be addressed in the AB.
- Impose interim controls through a Standing Order if the need is indicated by the hazard evaluation and/or sampling results.
- Perform consequence analyses for credible accident scenarios, as needed.
- Prepare an update to the BIO or FSAR to include a description of this facility, or if hazards and consequence analyses warrant, update the appropriate analysis sections, modify the TSRs, and submit for RL approval as appropriate.
- Remove the shutdown/standby plan from the AB and use only as a historical document upon issuance of the BIO or FSAR revisions.

Table 5-2. 242-S Controls

CONTROL	LEVEL	SOURCE
Contamination control and housekeeping	AB	SD-WM-SSP-002
	Radiation Control Manual	HSRCM-1
	Procedure	TO-780-020
Building ventilation control and monitoring	AB	SD-WM-SSP-002
	OSD	OSD-T-151-00015
	Procedures	TO-780-020 TO-720-020 TO-720-140
Emergency procedures	AB	SD-WM-SSP-002
	Procedures	ARP-T-701-0001 through ARP-T-701-0007
Intrusion detection and removal (rain water, flooding)	AB	SD-WM-SSP-002
	Procedure	TO-780-020
Shutdown/standby logbook	AB	SD-WM-SSP-002
Property control	AB	SD-WM-SSP-002
Effluent discharge sources	AB	SD-WM-SSP-002
Safety showers	AB	SD-WM-SSP-002
Equipment and facilities left in service	AB	SD-WM-SSP-002
	Procedure *	TO-780-020
Miscellaneous maintenance	AB	SD-WM-SSP-002
	Procedure *	TO-780-020

* The procedure only partially implements the maintenance activities specified in the shutdown/standby plan. Monitoring of the catch tank and facility inspection are required by procedure TO-780-020.

- Close the flammable gas USQ for this facility according to the USQ closure strategy document (HNF-SD-WM-ER-680).

The above actions are limited to the maintenance of the facility in its current shutdown/standby condition. Further actions would be necessary to address facility deactivation.

5.1.7 242-T Evaporator

5.1.7.1 Authorization Basis Status

Neither the BIO nor the draft FSAR currently provides analysis of the 242-T Evaporator facility. The facility was not included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007).

A specific HazOp analysis was conducted for the 242-T facility as a part of the BIO/FSAR preparation, and is documented in WHC-SD-WM-TI-759. However, the scope of this HazOp was limited to the consideration of 242-T as an interfacing facility to TWRS, and accident scenarios for the facility were not developed as a part of this effort.

The 242-T Facility Shutdown/Standby to Condition V Safety Analysis Report (SD-HS-SAR-009), is the current AB documentation for the 242-T Evaporator. This report was written to describe the physical modifications made to the facility to place it into Standby Condition V (no operational mission is predicted). The physical modifications to 242-T described in the shutdown/standby report were started but were never completed.

5.1.7.2 Controls Evaluation

The controls currently applied to the 242-T Evaporator are listed in Table 5-3. Although the shutdown/standby plan (SD-HS-SAR-009) has controls listed, there is no implementing document other than a procedure for ventilation control. The controls in the shutdown/standby plan do not address accident consequences and the plan does not provide any accident analyses. Radioactive material controls are programmatic in nature and are implemented through the site radiological control program (HSRCM-1). There are no TSR controls applied to the facility and the scope statement in the TSR document (HNF-SD-WM-TSR-006) specifically excludes 242-T.

Current controls require an annual building structural inspection to verify integrity. Because of structural concerns, roof trusses were added to the facility in 1989. There is no current safety analysis of this configuration. Specific inspection and analysis of the ability of the decaying building walls to support the (increased) roof load (static and dynamic) need to be conducted as a part of the AB upgrade strategy. Based on the current knowledge of the facility, there is no reason to believe that an imminent hazard exists that would require the immediate imposition

Table 5-3. 242-T Controls

CONTROL	LEVEL	SOURCE
Control of radioactive contamination and exposure to radiation - minimize exposure	AB	SD-HS-SAR-009, Section 11.1.1 Safety Limit and LCO
	Radiological Control Manual	HSRCM-1
Survey instruments and protective clothing - minimize exposure	AB	SD-HS-SAR-009, Section 11.2.1 LCO
	Radiological Control Manual	HSRCM-1
Building ventilation control and monitoring - minimize spread of contamination	AB	SD-HS-SAR-009, Section 11.2.2 LCO
	OSD	OSD-T-151-00015
	Procedure	TO-820-040
Structural containment - assure structural integrity	AB	SD-HS-SAR-009, Section 11.2.3 LCO
Nuclear criticality accident prevention - prevent criticality	AB	SD-HS-SAR-009, Section 11.2.4 LCO

Note: BIO Appendix E imposes flammable gas ignition and monitoring controls on the blend tank (242-T-TK-B1) and evaporator vessel (242-T-101). These controls are not included in the TSR because the TSR specifically excludes 242-T.

of interim controls. However, because the contents of many of the vessels in the facility are unknown and the building structure is of questionable integrity, the actions specified below should be pursued as a high priority.

5.1.7.3 Authorization Basis Strategy

The following actions are required for this facility:

- Perform sampling and analysis of the contents of tanks and storage vessels, pending determination of accessibility, worker safety considerations, and cost-benefit evaluation.
- Perform a hazards evaluation to determine credible accident scenarios that need to be addressed in the AB.
- Perform static and dynamic analyses of the roof loading configuration.
- Impose interim controls through a Standing Order if the need is indicated by the hazard evaluation and/or sampling results.
- Perform consequence analyses for credible accident scenarios, as needed.
- Prepare an update to the BIO or FSAR to include a description of this facility, or if hazards and consequence analyses warrant, update the appropriate analysis sections, modify the TSRs, and submit for RL approval as appropriate.
- Remove the shutdown/standby report from the AB and use only as a historical document upon issuance of the BIO or FSAR revisions.
- Close the flammable gas USQ for this facility according to the USQ closure strategy document (HNF-SD-WM-ER-680).

The above actions are limited to the maintenance of the facility in its current shutdown/standby condition. Further actions would be necessary to address facility deactivation.

5.1.8 244-AR Vault

5.1.8.1 Authorization Basis Status

The BIO and draft FSAR currently address the 244-AR Vault. The vault was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007). A PHA was conducted specifically for this facility (WHC-SD-WM-TI-759). Identified accident scenarios were carried forward in the BIO/FSAR analyses. The description in the BIO does not currently reflect the modifications made in an unsuccessful attempt to jet pump the sump contents. If the sump levels increase significantly above current levels, damage to the tanks could

occur, releasing radioactive material, which would be of AB and safety concern.

5.1.8.2 Controls Evaluation

The controls currently applied to the 244-AR Vault are listed in Table 5-4. The controls applied to 244-AR are primarily applied to a single tank (244-AR-TK-002). This is appropriate since TK-002 is reported to contain the bulk of the facility's radioactive waste. Vapor samples of the tanks in the facility did not indicate the presence of flammable gas in tanks other than TK-002.

The controls currently in place in the facility are adequate to maintain it in a safe configuration, based on currently known information. However, controls may be required for mitigation of the current sump levels, if indicated by the actions specified below. The facility is suspected of leakage and has had water intrusion problems in the past. Deactivation of the facility and removal of sump contents should be a priority, even if there are no immediate AB concerns.

5.1.8.3 Authorization Basis Strategy

The following actions are required for this facility:

- Perform a re-evaluation of sump level data and instrument performance to determine if the potential for tank damage or leakage exists.
- Characterize vault contents and develop a plan for waste removal.
- Perform a limited hazards analysis to determine if there are any unique accident phenomena or scenarios associated with the facility and current water intrusion problems.
- Perform consequence analyses for credible accident scenarios, as needed.
- Impose interim controls through a Standing Order if the need is indicated by the hazard evaluation results.
- Update the BIO or FSAR, and the TSRs if required by the above activities, and submit for RL approval as appropriate.
- Close the flammable gas USQ for this facility according to the USQ closure strategy document (HNF-SD-WM-ER-680).

5.1.9 244-BXR Vault

The 244-BXR Vault is inactive and has been isolated. The individual tanks within the vault are IMUSTs. The AB strategy for IMUSTs, including those in the 244-BXR Vault, is discussed in Section 5.2.

Table 5-4. 244-AR Controls

CONTROL	LEVEL	SOURCE
≥3 scfh purge air flow to TK-002	TSR	LCO 3.2.5
	OSD	OSD-T-151-00014
	Procedure	TO-040-700
		TF-OR-ER-244AR
Leak detection system operability	TSR	LCO 3.1.1
Criticality	TSR	AC 5.7
	Criticality Specification	CPS-T-149-00010
Source inventory controls	TSR	AC 5.8
Flammability controls	TSR	AC 5.9
	OSD	OSD-T-151-00014
Ignition controls	TSR	AC 5.10
	OSD	OSD-T-151-00014
Flammable gas monitoring controls	TSR	AC 5.11
	OSD	OSD-T-151-00014
Transfer controls	TSR	AC 5.12
HEPA filter controls	TSR	AC 5.18
Tank levels	OSD	OSD-T-151-00014
	Procedure	TF-OR-EF-244AR
Sump levels	Procedure	TF-OR-EF-244AR

Note: TSR controls are contained in HNF-SD-WM-TSR-006.

5.1.10 244-CR Vault

5.1.10.1 Authorization Basis Status

The BIO and draft FSAR currently address the 244-CR facility. A brief description of the facility in general and Tank TK-003 in particular are included in the facility description sections. The facility was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007). This included the identification of only the material in the active tank (TK-003); The contents of the other tanks in the vault are listed as unknown. No unique accident phenomena or scenarios were identified for 244-CR during the walkdown.

Neither a PHA nor HazOp was conducted specifically for this facility in preparation for the BIO and draft FSAR. The vault is specifically called out in the following BIO accident scenarios: HEPA filter failure, flammable gas deflagration, organic solvent fire, and spray leaks from structures. With the exception of the flammable gas deflagration scenario, this coverage is limited to TK-003, as an active saltwell pumping receiver tank.

5.1.10.2 Controls Evaluation

The controls currently applied to the 244-CR Vault are listed in Table 5-5. Based on the current lack of knowledge of the contents of the tanks within 244-CR, the controls need to be re-evaluated through hazards and accident analyses to determine applicability of existing controls and need for additional controls. Flammable gas monitoring and ignition controls apply to all the tanks in the facility and the ventilation control applies to TK-003. There is no evidence that an unsafe condition of immediate concern currently exists and the controls applied to the facility are adequate to maintain facility safety, since monitoring is required before work is performed in the tanks.

5.1.10.3 Authorization Basis Strategy

The following actions are required for this facility:

- Perform sampling and analysis of the contents of tanks and cell sumps, to the extent accessible.
- Perform a hazards evaluation to determine credible accident scenarios that need to be addressed in the AB.
- Continue tank and sump level monitoring for leakage and intrusion.
- Perform consequence analyses for credible accident scenarios, as needed.

Table 5-5. 244-CR Controls

CONTROL	LEVEL	SOURCE
Ventilation: Active system, vent stack CAM interlock, and HEPA low differential pressure interlock or stack hi rad operable for TK-CR-003	TSR	LCO 3.1.4/3.1.4A
		LCO 3.2.4
	OSD	OSD-T-151-00015
	Procedures	TO-060-205
		TF-FT-359-007
Leak detection system operability	TSR	LCO 3.1.3
Flammability	TSR	AC 5.9
Ignition control	TSR	AC 5.10
Flammable gas monitoring	TSR	AC 5.11
Transfer controls	TSR	AC 5.12

Note: TSR controls are contained in HNF-SD-WM-TSR-006.

- Impose interim controls through a Standing Order if the need is indicated by the hazard evaluation results.
- Update the BIO or FSAR, and the TSRs if required by the above activities, and submit for RL approval as appropriate.
- Close the flammable gas USQ for this facility according to the USQ closure strategy document (HNF-SD-WM-ER-680).

The above actions should be limited to the maintenance of the facility in its current configuration. Further actions would be necessary to address facility deactivation.

5.1.11 244-TXR Vault

The 244-TXR Vault is inactive and has been isolated. The individual tanks within the vault are IMUSTs. The AB strategy for IMUSTs, including those in the 244-TXR Vault, is discussed in Section 5.2.

5.1.12 244-UR Vault

The 244-UR Vault is inactive and has been isolated. The individual tanks within the vault are IMUSTs. The AB strategy for IMUSTs, including those in 244-UR, is discussed in Section 5.2. AB actions relative to the tanks in the 244-UR Vault are subject to the transfer of ownership of the facility from ER to TWRS (97-TWR-017).

5.1.13 2727-W Sodium Storage Facility

5.1.13.1 Authorization Basis Status

The BIO and draft FSAR currently address the 2727-W facility. The facility was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007), and a PHA specific to the facility was performed (WHC-SD-WM-TI-759). One accident scenario (sodium fire) is included as one of the representative and bounding accidents in both the BIO and FSAR.

The material in the facility is owned and managed by WMH, although the facility "landlord" is TWRS and the facility is covered by the TWRS AB. There is no AB documentation maintained by WMH for 2727-W. The facility is carried in the TWRS AB as a "Radiological Facility" per the definition in HNF-PRO-704.

5.1.13.2 Controls Evaluation

The controls currently applied to the 2727-W Sodium Storage Facility are listed in Table 5-6.

There is an issue with ownership of the facility as it relates to controls implementation. Although the defense-in-depth controls identified in the BIO are currently implemented, an interface with WMH for implementation of TWRS controls has not been established. The procedures being followed by WMH comply with those specified in the BIO, so the facility is being maintained in a safe condition, but there is no formal interface or mechanism to ensure that this continues to be the case.

5.1.13.3 Authorization Basis Strategy

The following actions are required for this facility:

- Establish/confirm ownership of facility.
- If TWRS-owned, develop Memorandum of Understanding with WMH regarding implementation of TWRS controls.
- If WMH-owned, remove the facility from the TWRS AB.

5.1.14 Grout Treatment Facility (GTF)

5.1.14.1 Authorization Basis Status

Neither the BIO nor the draft FSAR currently addresses the Grout Treatment Facility. The GTF is currently considered a Hazard Category 2 facility. The facility is addressed in a separate AB document (WHC-SD-WM-SSP-005, Grout Facilities Standby Plan). The purpose of this report was to describe the actions and physical modifications necessary to place the GTF in a standby condition, with ability to restart with two years notice. This does not reflect the current status of the facility since there are no plans for restart. At present, the empty vaults are planned for modification by TWRS Project W-465. The modified vaults will contain immobilized low level waste from Phase I of the TWRS tank waste treatment mission.

5.1.14.2 Controls Evaluation

There are no controls currently applied to the GTF. No controls are required, based on information in the shutdown/standby plan (i.e., there are no hazards requiring controls).

Table 5-6. 2727-W Controls

CONTROL	LEVEL	SOURCE
Facility structure	Design feature	HNF-SD-WM-BIO-001
Nitrogen cover gas - preclude oxidation (2 to 10 psig)	Defense-in-depth	HNF-SD-WM-BIO-001
	Procedure	SW-040-043
Building and tank grounding - to prevent lightning damage	Defense-in-depth	HNF-SD-WM-BIO-001
No water service to building	Defense-in-depth	HNF-SD-WM-BIO-001
Fire detectors - warn of early threat to tanks	Defense-in-depth	HNF-SD-WM-BIO-001
Metal-X fire extinguishers and external postings - no water to be used to fight fires.	Defense-in-depth	HNF-SD-WM-BIO-001

5.1.14.3 Authorization Basis Strategy

The following actions are required for this facility:

- Re-evaluation of the hazard categorization assignment for possible reduction.
- Removal of WHC-SD-WM-SSP-005 from the AB.
- Update of the BIO or FSAR to include a description of the disposal vault containing waste material.
- The remaining vaults are being addressed as part of TWRS Project W-465.

5.1.15 ITS-1 In-Tank Solidification System

5.1.15.1 Authorization Basis Status

Neither the BIO nor draft FSAR currently addresses the ITS-1 system. The facility was included in the hazards identification walkdowns conducted as a part of the BIO/FSAR preparation (WHC-SD-WM-HIE-007). However, the components were assumed to be empty and no further evaluation of the system was performed. There is no other AB documentation covering this facility.

5.1.15.2 Controls Evaluation

Normal programmatic safety and access controls are currently applied to the ITS-1 system. There are no procedural inspection or maintenance requirements. Based on the fact that the waste contents in the system components are unknown, access control and monitoring for flammable gases before conducting work within these vessels is needed. There is no immediate concern with the facility in its current shutdown state; however, if the subsequent actions specified below indicate the presence of flammable gases or organic materials, interim controls would need to be established.

5.1.15.3 Authorization Basis Strategy

The following actions are required for this facility:

- Perform vapor space sampling of ITS-1 components to determine if flammable gases/organic vapors are present.
- Perform an inspection of vessel contents and perform sampling, if any significant quantity of material is indicated to be present by the vapor sampling results.
- Inspection of vessel contents and sampling if any significant material is present.

- Perform a limited hazards analysis to determine if the facility presents any unique hazards that need to be analyzed for inclusion in the BIO or FSAR.

- Impose interim controls through a Standing Order if the need is indicated by hazards analysis and/or sampling results.

- Prepare an update to the BIO or FSAR to include a description of this facility, or if hazards analysis warrants, update the appropriate analysis sections, modify the TSRs, and submit for RL approval as appropriate.

5.2 IMUST CATEGORIZATION

The TWRS IMUSTs have been categorized using the information gathered during the process history reviews. A matrix on the information used to group the tanks is contained in Table 5-7. Tanks are placed into groups that have common AB actions required. It should be noted that tanks can be placed into more than one group, depending on their characteristics. Tanks within major facilities are not IMUSTs and will be dispositioned with the facility, i.e. all of the tanks will be managed as a common unit of property. Note that not all of the TWRS IMUSTs are listed in the following groups. Tanks that do not fall in the groups below are considered to be adequately managed in the current configuration and there is no further action required for them. The one exception to this is that closure of the flammable gas USQ for all IMUSTs is required, according to the USQ closure strategy document (HNF-SD-WM-ER-680).

5.2.1 IMUST Group 1: IMUSTs Not Listed, or Incorrectly Listed in the AB

Several of the IMUSTs are not currently contained in the TWRS AB. This is primarily due to the fact that some of them were not identified as IMUSTs prior to the activity described in this report. The tanks in the 244-UR Vault were previously identified as IMUSTs, but are not in the AB because ownership of the vault has not yet transferred to TWRS. The following IMUSTS are not currently addressed in the TWRS AB: **209-E-TK-111, 241-AX-151-TKD, 241-AX-151-TKE, 241-AX-151-TKF, 241-AX-151-TKG, 241-BY-ITS2-TK1, 241-BY-ITS2-TK-2, 244-UR-001, 244-UR-002, 244-UR-003, and 244-UR-004.**

Based on the reviews conducted, some of the IMUSTs listed in the BIO and TSRs (HNF-SD-WM-TSR-006) may be listed incorrectly in the facility groups under AC 5.9, "Flammability Controls." Tank **241-S-302A** has been grouted and documentation indicates that it contains no liquids, yet it is listed in facility group 2 (capable of large induced gas release events). Tank **241-ER-311A** is also listed in facility group 2, but documentation indicates this tank is empty. Tank **241-TX-302B** is listed as a facility group 2 tank, but is not listed in the BIO, Table B2-16. Tanks **241-BX-302A, 241-TY-302A, 241-Z-8, 244-BXR-001, 244-TXR-002, and 244-TXR-003** do not contain liquids and

are listed in facility group 3 (small induced gas release events may be possible). These listings are not of immediate concern because all of the foregoing tanks appear to be listed in a more conservative facility group than they should be.

Table 5-7. IMUST Categorization

IMUST TANK	ANALYSIS DATA	PROCESS KNOWLEDGE	ORGANICS	ACID TREAT/ RECPT	WASTE TYPE	AC5.9 F.G. FAC GRP
200-W-7	NONE	LIMITED	NOT INDICATED	NO	DECON SOLUTION - FORM UNKNOWN	2
209-E-TK-111	LIMITED	GOOD	NOT INDICATED	NO	DECON SOLUTION LIQUID	N/A
216-BY-201	NONE	LIMITED	INDICATED	NO	SST TYPE WASTE - FORM UNKNOWN	2
216-TY-201	NONE	LIMITED	INDICATED	NO	SST TYPE WASTE - FORM UNKNOWN	2
231-W-151-001	LIMITED	GOOD	NOT INDICATED	NO	UNKNOWN TYPE SUPERNATANT	NGRE
231-W-151-002	LIMITED	GOOD	NOT INDICATED	NO	UNKNOWN TYPE SUPERNATANT AND SLUDGE	NGRE
240-S-302	NONE	POOR	INDICATED	NO	WASTE TYPE AND FORM UNKNOWN	2
241-A-302B	NONE	POOR	INDICATED	YES	PUREX PROCESS SUPERNATANT AND SLUDGE	2
241-AX-151-TK-D	NONE	POOR	INDICATED	YES	PUREX WASTE TYPE - FORM UNKNOWN	2
241-AX-151-TK-E	NONE	POOR	INDICATED	YES	PUREX WASTE TYPE - FORM UNKNOWN	2
241-AX-151-TK-F	NONE	POOR	INDICATED	YES	PUREX WASTE TYPE - FORM UNKNOWN	2
241-AX-151-TK-G	NONE	POOR	INDICATED	YES	PUREX WASTE TYPE - FORM UNKNOWN	2
241-AX-151CT	NONE	POOR	INDICATED	YES	PUREX WASTE TYPE - FORM UNKNOWN	2

Table 5-7. (cont) IMUST Categorization

IMUST TANK	ANALYSIS DATA	PROCESS KNOWLEDGE	ORGANICS	ACID TREAT/ RECPT	WASTE TYPE	AC5.9 F.G. FAC GRP
241-B-301	LIMITED	LIMITED	INDICATED	NO	B PLANT UNKNOWN TYPE SUPERNATANT AND SLUDGE	2
241-B-302B	NONE	LIMITED	INDICATED	NO	B PLANT UNKNOWN TYPE SUPERNATANT AND SLUDGE	2
241-BX-302A	GOOD	GOOD	< 3% TOC	NO	B PLANT PROCESS SLUDGE	3
241-BX-302B	NONE	LIMITED	INDICATED	NO	B PLANT PROCESS SUPERNATANT AND SLUDGE	3
241-BX-302C	NONE	LIMITED	INDICATED	NO	B PLANT PROCESS SUPERNATANT AND SLUDGE	2
241-BY-ITS2-TK-1	NONE	LIMITED	NOT INDICATED	NO	B PLANT PROCESS WASTE - FORM UNKNOWN	N/A
241-BY-ITS2-TK-2	NONE	LIMITED	NOT INDICATED	NO	B PLANT PROCESS WASTE - FORM UNKNOWN	N/A
241-C-301	LIMITED	LIMITED	INDICATED	YES	REDOX/PUREX UNKNOWN TYPE SUPERNATANT AND SLUDGE	2
241-ER-311A	NONE	LIMITED	NOT INDICATED	NO	WASTE UNKNOWN - POSSIBLY EMPTY	2
241-S-302A	NONE	LIMITED	INDICATED	NO	UNKNOWN WASTE AND GROUT	2
241-S-302B	NONE	LIMITED	NOT INDICATED	NO	EMPTY	NGRE
241-SX-302	NONE	LIMITED	INDICATED	NO	SX FARM SUPERNATANT AND SLUDGE	2
241-T-301B	LIMITED	GOOD	INDICATED	NO	TX FARM SUPERNATANT AND SLUDGE	2

Table 5-7. (cont) IMUST Categorization

IMUST TANK	ANALYSIS DATA	PROCESS KNOWLEDGE	ORGANICS	ACID TREAT/ RECPT	WASTE TYPE	AC5.9 F.G. FAC GRP
241-TX-302A	LIMITED	LIMITED	INDICATED	NO	MIXED WASTE SUPERNATANT AND SLUDGE	3
241-TX-302B CT	LIMITED	GOOD	INDICATED	NO	TX FARM WASTE - FORM UNKNOWN	2*
241-TX-302B(R)	NONE	LIMITED	INDICATED	NO	TX FARM WASTE - FORM UNKNOWN	2
241-TX-302XB	NONE	LIMITED	INDICATED	NO	TX FARM SUPERNATANT AND SLUDGE	2
241-TY-302A	NONE	POOR	INDICATED	NO	TY FARM SLUDGE	3
241-TY-302B	NONE	LIMITED	NOT INDICATED	NO	EMPTY	NGRE
241-Z-8	LIMITED	LIMITED	INDICATED	NO	RECUPLEX SLUDGE	3
242-T-135	NONE	POOR	NOT INDICATED	NO	242-T DECON WASTE - FORM UNKNOWN	2
242-TA-R1	LIMITED	LIMITED	NOT INDICATED	NO	EVAPORATOR FEED WASTE - FORM UNKNOWN	2
244-BXR-001	LIMITED	GOOD	INDICATED	NO	BX AND BY FARM SLUDGE	3
244-BXR-002	LIMITED	GOOD	INDICATED	YES	BX AND BY PROCESSED WASTE SUPERNATANT AND SLUDGE	2
244-BXR-003	LIMITED	GOOD	INDICATED	YES	BX AND BY PROCESSED WASTE SUPERNATANT AND SLUDGE	2
244-BXR-011	GOOD	GOOD	< 3% TOC	YES	BX AND BY PROCESSED WASTE SUPERNATANT AND SLUDGE	3

Table 5-7. (cont) IMUST Categorization

IMUST TANK	ANALYSIS DATA	PROCESS KNOWLEDGE	ORGANICS	ACID TREAT/ RECPT	WASTE TYPE	AC5.9 F.G. FAC GRP
244-TXR-001	LIMITED	GOOD	NOT INDICATED	NO	T AND TX FARM SUPERNATANT AND SLUDGE	3
244-TXR-002	GOOD	GOOD	NOT INDICATED	YES	T AND TX PROCESSED SLUDGE	3
244-TXR-003	NONE	GOOD	NOT INDICATED	YES	T AND TX PROCESSED SLUDGE	3
244-UR-001	LIMITED	GOOD	INDICATED	NO	U FARM SUPERNATANT AND SLUDGE	N/A
244-UR-002	GOOD	GOOD	INDICATED	YES	U FARM PROCESSED SUPERNATANT AND SLUDGE	N/A
244-UR-003	LIMITED	GOOD	INDICATED	YES	U FARM PROCESSED SLUDGE	N/A
244-UR-004	NONE	GOOD	NOT INDICATED	YES	EMPTY	N/A
270-W	NONE	GOOD	INDICATED	YES	U PLANT WASTE - FORM UNKNOWN	2

* Flammable Gas Facility Group designation is included in AC 5.9, but the tank is not listed in BIO Table B2-16. BIO Table B2-16 needs to be updated to include this IMUST.

The required actions for IMUST group 1 tanks are:

- Determine the correct flammability control facility group for each tank.
- Modify the BIO or FSAR, and TSRs to include the tanks not previously listed as IMUSTs and to place the incorrectly listed tanks in the correct facility group.
- Close the flammable gas USQ for this group of tanks according to the USQ closure strategy document (HNF-SD-WM-ER-680).

Required actions for the 244-UR Vault tanks are dependent on transfer of ownership to TWRS.

5.2.2 IMUST Group 2: Tanks With Unknown Contents

The contents of several tanks could not be determined through process history review, nor was any characterization data available for them. Even though the total volume of waste contained in some of them was known, the process knowledge was considered poor. The following tanks have unknown contents: **240-S-302, 241-A-302B, 241-AX-151CT, 241-AX-151-TKD, 241-AX-151-TKE, 241-AX-151-TKF, 241-AX-151-TKG, 241-TX-302B(R), 241-TY-302A, 241-C-301, 241-B-301, 241-302B, 241-BX-302B, 241-BX-302C, 241-SX-302, 241-TX-302XB,** and **241-Z-8.**

The required actions for this group of tanks are:

- Perform sampling and analysis of tank contents, if accessible.
- Continue current access restrictions pending further characterization.
- Continue process history evaluation.
- Perform further AB actions as dictated by the results of the above activities.
- Close the flammable gas USQ for this group of tanks according to the USQ closure strategy document (HNF-SD-WM-ER-680).

The tanks are currently maintained in a safe condition by access restriction and the monitoring required before work within the tanks is conducted.

5.2.3 IMUST Group 3: Tanks Containing Organics

Based on the review of process history data and available analytical data, the following tanks may contain more than incidental quantities of organic materials: **216-BY-201, 216-TY-201, 241-T-301B, 241-TX-302A, 241-TX-302B CT,**

244-BXR-002, 244-BXR-003, 244-UR-001, 244-UR-002, 244-UR-003, and 270-W. This group of tanks is of concern for the organic salt-nitrate reaction described in the BIO (Section 5.3.2.17). The analysis referenced in the BIO indicates that a risk of this reaction is possible if the concentration of certain organic complexants in the waste is greater than 3 percent total organic content (TOC) by weight. The concentration of organic material in the waste is not known for most of the tanks. They are identified on this list because the process history indicated the likelihood of organics being present in more than incidental quantities (refer to Table 5-7). None of the tanks that had quantified analytical sample data available on TOC content were shown to have greater than 3 percent TOC.

If tank contents can be demonstrated to be typical of DST or SST waste, it can likely be concluded (from the evaluations already done under the organic safety program) that no chemical runaway is possible. However, if tank contents are not similar to SST and DST waste, the possibility of an uncontrolled chemical reaction must be considered.

The required actions for this group of tanks are:

- Perform sampling and analysis of contents, if quantity of organics is unknown, cannot be reasonably estimated, or concentration through evaporation is suspected.
- Continue current access restrictions pending further evaluation.
- Perform a limited hazard evaluation to determine if these tanks represent an unanalyzed risk in their current configuration.
- Perform further AB actions as dictated by the results of the above activities.
- Close the flammable gas USQ for this group of tanks according to the USQ closure strategy document (HNF-SD-WM-ER-680).

The tanks are currently maintained in a safe condition by access restriction and the monitoring required before work within the tanks is conducted.

5.2.4 IMUST Group 4: Acid Treatment or Receipt Tanks with Organics

Based on the review of process history data and available analytical data, the following tanks are known to have received acidic waste or were used for acid treatment of waste materials and are known or suspected to contain organics: **244-BXR-002, 244-BXR-003, 244-UR-002, 244-UR-003, and 270-W.** This is of concern because the acids used in the Hanford processes can contribute oxidizers for an organic salt-nitrate reaction as discussed in Section 5.3.2.17 of the BIO (HNF-SD-WM-BIO-001).

The required actions for this group of tanks are:

- Sampling and analysis of contents if accessible and if organics are known to be present.

- Continue access restrictions pending further evaluation.

- Perform a limited hazard evaluation to determine if these tanks represent an unanalyzed risk in their current configuration.

- Perform further AB actions as dictated by the results of the above activities.

- Close the flammable gas USQ for this group of tanks according to the USQ closure strategy document (HNF-SD-WM-ER-680).

The tanks are currently maintained in a safe condition by access restriction and the monitoring required before work within the tanks is conducted.

5.3 FACILITIES ADJACENT TO TWRS

Non-TWRS facilities in the 200 Area of the Hanford Site were evaluated for potential impacts to TWRS facilities and personnel.

5.3.1 Methodology

All non-TWRS facilities in the 200 Area were grouped into two main categories:

- Facilities with no significant amounts of hazardous materials present and no authorization basis concern (Section 5.3.2).

- Facilities with significant amounts or unknown quantities of hazardous materials.

The facilities with significant amounts or unknown quantities of hazardous materials were further categorized:

- Facilities with SARs (Section 5.3.3).

- Facilities without SARs (Section 5.3.4).

Facilities with SARs were reviewed for accidents with the potential to impact TWRS facilities. No mitigated accidents exceed the onsite risk guidelines used in these SARs for control selection. Further, no new safety interfaces were identified to be required between these non-TWRS facilities and TWRS.

Facilities without SARs and significant amounts of hazardous materials need to be screened for potential impact to TWRS facilities and personnel. Facilities without SARs and with unknown amounts of hazardous materials require further investigation. Facilities posing a potential impact to TWRS facilities need to be screened for a TWRS Authorization Basis update.

5.3.2 Facilities with no Significant Amounts of Hazardous Materials

The following facilities have no significant amounts of hazardous materials, or are in a long-term disposal condition (e.g., LLW Burial Grounds):

- 242-B, PNNL particle research lab
- 2721-EA, Hanford Fire Department maintenance shop
- 276-C, Hot Semiworks solvent storage building
- 283-E, 200-E Area water treatment plant
- 284-E, 200-E Area powerhouse
- 200 Area Liquid Effluents Treatment Facility (includes 200 Area Effluent Treatment Facility, 200 Area Liquid Effluent Retention Facility, 200 Area Treated Effluent Disposal Facility, and State-Approved Land Disposal System)
- 200-W-13, 2713WB shop
- 283-W, West Area water treatment plant
- 284-W, West Area powerhouse
- Environmental Restoration Disposal Facility (ERDF)
- 616 Nonradioactive Dangerous Waste Storage Facility
- Waste Retrieval and Packaging (WRAP) facility (unfinished, evaluate when operational)
- LLW Burial Grounds, 200-E and 200-W Areas
- US Ecology commercial LLW disposal facility
- 600 Area Purgewater Storage and Treatment Facility
- REDOX (202-S)
- U-Plant

5.3.3 Facilities with SARs

The facilities not eliminated from consideration in Section 5.3.2 that have active SARs are shown in Table 5-8. All accidents postulated in the facility SARs were evaluated for the potential to initiate a release at TWRS facilities, a disruption of TWRS operations, or a potential dose to TWRS personnel above risk guidelines. Whether an accident in an adjacent facility could result in a TWRS release or disrupt TWRS operations was a qualitative judgement, since this information is not contained in the referenced SARs. No mitigated accidents in these SARs resulted in an unacceptable dose above risk guidelines to onsite workers.

These SARs do not specifically provide an interface with TWRS for response to the accidents analyzed. However, the Hanford Site Emergency Preparedness Program (EPP) (DOE/RL-94-02) controls interfaces between the TWRS EPP (HNF-IP-0971) and other Site contractor EPPs. These programs and their implementing procedures are relied upon to assure worker protection.

Table 5-8. Facilities with SARs (3 Sheets)

FACILITY & SAR	ACCIDENTS	CAN INITIATE TWRS RELEASE?	POTENTIAL DOSE TO TWRS PERSONNEL ABOVE RISK GUIDELINES?	CAN DISRUPT TWRS OPERATIONS?
B-Plant, HNF-SD-WM-BIO-003 Rev. 0	Seismic	NO	NO	NO
	High winds	NO	NO	NO
	Flood	NO	NO	NO
	Ashfall/snow load	NO	NO	NO
	Leaks and spills	NO	NO	NO
	HEPA filter fire	NO	NO	YES
	Organic solvent fire in canyon	NO	NO	NO
	Hydrogen generation	NO	NO	NO
	Red oil explosion	NO	NO	NO
	Misc. mechanical failures	NO	NO	NO
	Air cleaning train (ACT) filter failure	NO	NO	YES
T-Plant, HNF-SD-WM-ISB-006 Rev. 0	Spray release	NO	NO	NO
	Spill release	NO	NO	NO
	Spent fuel release	NO	NO	NO
	2706-T filter fire	NO	NO	NO
	LLW drum fire	NO	NO	NO
	291-T filter fire	NO	NO	YES
	Organic/acid explosion	NO	NO	NO
	Sodium metal fire	NO	NO	NO
222-S Laboratory, HNF-SD-CP-ISB-002 Rev. 2	Earthquake	NO	NO	NO
	Laboratory spills	NO	NO	NO
	Fire	NO	NO	YES
	Dropped cover block	NO	NO	NO

Table 5-8. Facilities with SARs (3 Sheets)

FACILITY & SAR	ACCIDENTS	CAN INITIATE TWRS RELEASE?	POTENTIAL DOSE TO TWRS PERSONNEL ABOVE RISK GUIDELINES?	CAN DISRUPT TWRS OPERATIONS?
WESF (225-B), WHC-SD-WM-SAR-005 Rev. 12	Hydrogen explosion in cells	NO	NO	NO
	Release of contamination to the K-3 filter	NO	NO	NO
	Fire in K-3 filter unit	NO	NO	YES
	K-3 filter dropped	NO	NO	YES
	Dropped or falling equipment	NO	NO	NO
	Rapid loss of pool cell shielding water	NO	NO	YES
	Fire in truck port	NO	NO	NO
	Cross contamination from K-3 to K-1 ventilation	NO	NO	NO
	Capsule return	NO	NO	NO
242-A Evaporator HNF-SD-WM-SAR-023 Rev. 3	Loss of confinement	NO	NO	YES
	Uncontrolled chemical reactions	NO	NO	NO
	External occurrences	NO	NO	YES
	Radiological hazards	NO	NO	YES
	Industrial hazards	NO	NO	NO

Table 5-8. Facilities with SARs (3 Sheets)

FACILITY & SAR	ACCIDENTS	CAN INITIATE TWRS RELEASE?	POTENTIAL DOSE TO TWRS PERSONNEL ABOVE RISK GUIDELINES?	CAN DISRUPT TWRS OPERATIONS?
Central Waste Complex, WHC-SD-WM-SAR-041 Rev. 0	Seismic event	NO	NO	NO
	Wind effects	NO	NO	NO
	Fire within a package	NO	NO	NO
	Range fire	NO	NO	NO
	Fire within a building	NO	NO	NO
	Material handling mishaps	NO	NO	NO
	Criticality	NO	NO	YES
	Flood	N/A	NO	N/A
	Toxicological exposure from chemical hazards	NO	NO	YES
PFP/PRF, WHC-SD-CP-SAR-021 Rev. 0	Explosions	NO	NO	NO
	Fire	NO	NO	NO
	Criticality	NO	NO	NO
	Seismic event	NO	NO	NO
	Strong wind	NO	NO	NO
	Hydrogen fluoride-induced plutonium release	N/A	N/A	N/A
	Aircraft accident	NO	NO	NO
	Toxic chemical release	NO	NO	NO

Note: Natural event phenomena such as high winds and seismic events are listed as "NO" in the columns above. This is because these phenomena are analyzed in the TWRS AB and consequences associated with them are already part of the TWRS hazard profile.

The facilities that have SARs are:

- B-Plant (760 m [2500 ft] south of the 241-BX Tank Farm)
- WESF (760 m [2500 ft] south of 241-BX Tank Farm)
- 242A Evaporator (immediately south of 241-A Tank Farm)
- T-Plant (630 m [2060 ft] east of 241-T Tank Farm)
- 222-S Laboratory (630 m [2060 ft] southeast of 241-SX Tank Farm)
- Central Waste Complex (630 m [2060 ft] west of 241-TX Tank Farm)
- Plutonium Finishing Plant (503 m [1650 ft] northwest of 241-U Tank Farm)

5.3.4 Facilities with Hazardous Materials and No SAR

The facilities listed in Table 5-9 have hazardous materials and no SARs. These facilities need to be evaluated for the potential to initiate a release at TWRS facilities.

Any evaluation must include a method for tracking adjacent facility conditions which may change. For example, the acceptability of the Johnson Controls (JCI) package boiler located near 242-A (across the street from 241-AW tank farm) is based on assumptions made in USQ TF-97-694. There is currently no formal process to ensure that any change JCI makes to this boiler will generate a TWRS USQ screening.

Table 5-9. Facilities with Hazardous Materials and No SAR

FACILITY	MATERIAL	POSSIBLE ACCIDENT	TWRS ACTION REQUIRED
PUREX	PUREX AB is in the process of changing from operating to shutdown. Review will be required when AB is finalized.		
2711-E Garage	Waste oil	Fire	Evaluate
2721-E Hanford Patrol HQ	Ammunition, explosives	Fire, explosion	Evaluate
Craft shops	Industrial chemicals	Fire	Evaluate
Conoco station	Gasoline, diesel fuel	Fire	Evaluate
JCI package boilers	Fuel, steam	Fire, steam explosion	None; addressed in TWRS USQ #TF-97-694
JCI portable package boilers	Fuel, steam	Fire, steam explosion	TBD; under evaluation

6.0 AUTHORIZATION BASIS UPGRADE PLANNING

6.1 AUTHORIZATION BASIS UPGRADE TASKS

Tables 6-1 and 6-2 present rough cost estimates and durations for the AB upgrade actions specified in Chapter 5.0 for facilities and IMUSTs, respectively. These cost estimates are only initial rough estimates based on preliminary information. They are subject to change significantly as the work planning process progresses. All of the actions specified in Chapter 5.0 are included in the tables, as are some supporting activities not called out explicitly in Chapter 5.0 that are necessary to implement some of the specified AB actions. Cost estimates are more accurate for all tasks that are not dependent on the results of a piece of work that defines the scope of a successive task. For example, Chapter 5.0 calls for characterization of some FTCs for which no information is available. Since the results of the characterization could indicate that there are no hazards, or conversely indicate that there are significant hazards, the costs of the follow-on work to update the AB is highly uncertain. Table 6-1 is arranged in order of the priority shown in Chapter 4.0. Table 6-2 is arranged by IMUST group (refer to Section 5.2). The costs in this table represent totals for all tanks in a given group. In all cases the estimate for the follow-on activity assumes the need to upgrade the authorization basis, but the estimate cannot be validated until the precursor tasks are complete.

6.2 FISCAL YEAR 1998 REMAINING TASKS

6.2.1 Facilities

The work accomplished to date for TWRS facilities addressed in this report includes identification and categorization, ownership verification, process history review, safety documentation review, risk ranking criteria development, facility walkdowns and hazard assessment, characterization data review, AB strategy development, and status report preparation. Costs to date are estimated to total approximately $300,000.00 for Fiscal Year (FY) 1998. Remaining funding of approximately $60,000.00 will be utilized to (1) plan and schedule additional AB upgrade work for both facilities and IMUSTs, (2) respond to RL questions and comments on this report, (3) organization of material from this activity into retrievable files for each FTC evaluated, (4) develop planning interfaces and strategies with the TWRS Facility Deactivation program and the TWRS Characterization Project Office, and (5) Provide change documentation to the WIDS and FacilitiesCORE databases and the TWRS monthly status report (HNF-EP-0182) to reflect information gathered from this activity for facilities and IMUSTs.

6.2.2 IMUSTs

The work accomplished to date for TWRS IMUSTs includes IMUST documentation reviews, identification and categorization of IMUSTs, ownership verification, field walkdowns and hazard assessment, geophysical survey, characterization data review and planning for follow-on characterization activities. Costs to

date are estimated to total approximately $67,000.00 for FY 1998. Remaining funding of approximately $36,000.00 will be utilized to develop a modification to the BIO and TSR to list the tanks (IMUST Group No. 1) that are not currently listed or are incorrectly listed in the BIO and TSR.

6.3 MULTI-YEAR WORK PLANNING

Currently, TWRS is conducting a review of the multi-year work plan to better define the interrelationships between the various contractor and sub-contractor organizations, and to ensure a clear definition and cost estimate of all committed work. This review is resulting in the development of Technical Basis Review (TBR) packages for all work covered under the Safe Storage portion of the TWRS level 0 schedule. These TBR packages include the technical scope, enabling assumptions, schedules, risks, and affected organizations involved in the completion of the scope of work. TWRS Nuclear Safety & Licensing is involved in this planning process, and has defined interrelationships in several of the work scope area defined in Tables 6-1 and 6-2. The total funding required to accomplish the identified AB upgrades needs to include the costs of improving the TWRS technical baseline (e.g., sampling and characterization), AB documentation upgrades and AB field implementation (e.g., procedure updates, equipment modifications). Characterization and Operations impacts need to be addressed in their Project Baseline Summaries (PBS) (TWO1 and TWO3, respectively). The actual AB documentation upgrade work will be part of the Tank Safety Issue Resolution Project PBS (TWO2).

6.4 COST-BENEFIT CRITERION FOR TASK PLANNING

Specific AB upgrade strategies have been developed for the TWRS FTCs addressed in this report, and those strategies have been ranked in order of relative risk (refer to Chapter 4.0). Planning for follow-on activities must address not only the relative risk ranking, but also the cost versus benefit aspects of the tasks proposed. Application of this criterion results in scheduling of follow-on tasks that are not fully in order of relative risk.

The immediate follow-on activity for IMUSTs is to upgrade the BIO to include those IMUSTs that are not currently listed or are incorrectly listed in the BIO and TSR. This is a funded activity for Fiscal Year 1998, and thus, the AB activities required for these particular IMUSTs will be pursued before the activities for some of the IMUSTs that have been ranked as a higher priority.

The activities specified for some facilities must be evaluated in light of the facility's mission, considering such factors as future planned use of the facility, shutdown/standby status, and accessibility factors. For example, the 242-T Evaporator is listed as the highest priority facility for follow on AB action. The first AB action listed for this facility is the sampling of the tanks and vessels to characterize the materials remaining in the facility. Because the facility is in poor condition, and the tanks needing sampling are in high radiation areas, sampling would be a time consuming and costly effort and would require a safety justification specifically for the sampling activity. The time remaining until the facility is planned for deactivation

and the results of a structural analysis would be factored into a decision as to whether there would be any beneficial gain to sampling at this time. Interim controls could be considered on the basis of the deactivation planning and any needs identified through structural analysis or a hazards analysis effort.

Table 6-1.
Cost and Duration Estimates for Facility AB Upgrade Activities
(4 Sheets)

Required Actions	Cost Est. ($ X 1000)	Duration (Months)
242-T Evaporator[3]		
AB Justification for Entry and Sampling	50	3
DQO, Sample, and Analysis	CPO[1]	CPO[1]
Hazards Evaluation	70	2
Roof Loading Analysis	30	1
Implement Interim Controls as Necessary	25[2]+OPS[5]	1[2]+OPS[5]
Consequence Analysis for New Credible Accidents	150[2]	6[2]
Amend Authorization Basis	60[2,6,7]	4[2,6,7,8]
Remove Shutdown/Standby Report from AB	--[4]	--[4]
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[4]	--[4]
Total	385	14[10]+CPO+ OPS
244-CR Vault[3]		
AB Justification for Sampling	35	2
DQO, Sample, and Analysis	CPO[1]	CPO[1]
Hazards Evaluation	50	2
Continue Tank and Sump Level Monitoring	OPS[5]	OPS[5]
Consequence Analysis for New Credible Accidents	80[2]	4[2]
Implement Interim Controls as Necessary	10[2]	1[2]
Amend Authorization Basis	40[2,6,7]	3[2,6,7,8]
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[4]	--[4]
Total	215	10[10]+CPO

Table 6-1.
Cost and Duration Estimates for Facility AB Upgrade Activities
(4 Sheets)

Required Actions	Cost Est. ($ X 1000)	Duration (Months)
244-AR Vault[3]		
Re-evaluate Sump Level Data/Instrument Performance	10	1
AB Justification for Sampling	40	2
Characterize Vault Contents	CPO[1]	CPO[1]
Hazards Evaluation	50	2
Consequence Analysis for New Credible Accidents	25[2]	1[2]
Implement Interim Controls as Necessary	10[2]	1[2]
Amend Authorization Basis	40[2,6,7]	3[2,6,7,8]
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[4]	--[4]
Total	175	8[10]+CPO
242-S Evaporator[3]		
AB Justification for Sampling	35	2
DQO, Sample, and Analysis	CPO[1]	CPO[1]
Hazards Evaluation	30	1
Implement Interim Controls as Necessary	10[2]	1[2]
Consequence Analysis for New Credible Accidents	30[2]	2[2]
Amend Authorization Basis	40[2,6]	3[2,6,7,8]
Remove Shutdown/Standby Plan from AB	--[4]	--[4]
Close the Flammable Gas USQ per HNF-SD-WM-ER-680	--[4]	--[4]
Total	145	6[10]+CPO
ITS-1 In-Tank Solidification System[3]		
AB Justification for Sampling	10	1
DQO/Sample Vapor Space of Components	CPO[1]	CPO[1]
AB Justification for Sampling	30[2]	2[2]
Inspect/Sample Vessels per Vapor Sample Results	CPO[1,2]	CPO[1,2]
Inspect/Sample Vessels if Significant Mtl. Present	CPO[1,2]	CPO[1,2]

Table 6-1.
Cost and Duration Estimates for Facility AB Upgrade Activities
(4 Sheets)

Required Actions	Cost Est. ($ X 1000)	Duration (Months)
ITS-1 In-Tank Solidification System[3] (Cont)		
Hazards Analysis	40	3
Implement Interim Controls as Necessary	10[2]	1[2]
Amend Authorization Basis	40[2,6,7]	3[2,6,7,8]
Total	130	6[10]+CPO
241-AX-IX Ion Exchange Column[3]		
AB Justification for Sampling	10	1
DQO/Sample Vapor Space of Ion Exc. Column & Filter	CPO[1]	CPO[1]
AB Justification for Sampling	25[2]	2[2]
DQO/Inspect/Sample Vessel per Vapor Space Results	CPO[1,2]	CPO[1,2]
Hazards Analysis	40	3
Implement Interim Controls as Necessary	10[2]	1[2]
Amend Authorization Basis	40[2,6,7]	3[2,6,7,8]
Total	125	6[10]+CPO
204-AR Waste Unloading Facility[3]		
Evaluate Waste Transporter	10	1
Resolve Pressure Switch Issue	15[7]	2[7]
Comp. Modifications per LCO 3.1.2 & 3.1.4 req.	OPS[5]	OPS[5]
Amend Authorization Basis	40[2,6,7]	3[2,6,7,8]
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[4]	--[4]
Total	65	6+OPS
2727-W Sodium Storage Facility[3]		
Establish/Confirm Facility Ownership	5	1
Develop MOU with WMH for TWRS Controls (Owned)	5[2]	1[2]
Remove from AB (Not Owned)	5[2]	1[2]
Total	15	3

Table 6-1.
Cost and Duration Estimates for Facility AB Upgrade Activities
(4 Sheets)

Required Actions	Cost Est. ($ X 1000)	Duration (Months)
Grout Treatment Facility (GTF)[3]		
Re-Evaluate Hazard Category Assignment	15	1
Remove WHC-SD-WM-SSP-005 from AB	5	1
Update AB to Include Waste Containing Vault	5[6]	1[6]
Address Remaining Vaults in Project W-465	W-465[9]	W-465[9]
Total	20	3 + W-465
213-W Dry Waste Compactor Facility[3]		
Review Radiation Survey Data	10	1
Re-evaluate Facility Hazard Classification	15	1
Update Authorization Basis	5[2]	1[2]
Total	30	3
209-E Critical Mass Laboratory[3]		
No New Activities Required for Pre-deactivation	--	--

Notes:

1 Characterization Project Office (CPO) is responsible for DQO development, sampling, and analysis. CPO cost and schedule to be incorporated in FY 99/00 MYWP.

2 Cost estimate is uncertain due to dependence on the outcome of preceding tasks.

3 Scope depends upon the schedule for facility deactivation.

4 Cost and duration is considered as part of the AB amendment task.

5 TWRS Operations (OPS) is responsible for cost/schedule to be incorporated in FY 99/00 MYWP.

6 Cost does not include non-contractor Tier 2&3 activities.

7 Includes only TWRS Nuclear Safety and Licensing activities.

8 Tier 2&3 review duration is not included.

9 Project W-465 is responsible for cost/schedule to be incorporated in FY 99/00 MYWP.

10 Durations are not additive since some individual activities may be performed concurrently.

Table 6-2.
Cost and Duration Estimates for IMUST Group AB Upgrades
(2 Sheets)

Required Actions	Cost Est. ($ X 1000)	Duration (Months)
IMUST Group 1		
Determine Flammable Gas Facility Group	5	1
Update AB	31	3
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[a]	--[a]
Total	36	4
IMUST Group 2		
AB Justification for Sampling	60[b]	4[b]
DQO, Sample, and Analysis	CPO[c]	CPO[c]
Continue Current Access Restrictions	--	--
Continue Process History Evaluation	50	3
Perform Additional AB actions as Required	60[d]	5[d]
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[a]	--[a]
Total	170	12+CPO

Table 6-2.
Cost and Duration Estimates for IMUST Group AB Upgrades
(2 Sheets)

Required Actions	Cost Est. ($ X 1000)	Duration (Months)
IMUST Group 3		
AB Justification for Sampling	80[b]	5[b]
DQO, Sample, and Analysis	CPO[c]	CPO[c]
Hazards Evaluation	70	3
Perform Additional AB Actions as Required	60[d]	5[d]
Close Flammable Gas USQ per HNF-SD-WM-ER-680	--[a]	--[a]
Total	210	12+CPO
IMUST Group 4		
AB Justification for Sampling	100[b]	5[b]
DQO, Sample, and Analyze	CPO[c]	CPO[c]
Continue Access Restrictions	--	--
Hazards Evaluation	70	3
Perform Additional AB Actions as Required	60[d]	5[d]
Close Flammable Gas USQ per HNF-SD-WM-ER-690	--[a]	--[a]
Total	230	12+CPO

Notes:

a Flammable Gas USQ for all IMUSTs will be closed concurrently. Funding is planned separately.

b Cost estimates for each group of IMUSTs strongly depend on the applicability of one safety justification logic which applies to all the tanks in a given group.

c Characterization Project Office (CPO) is responsible for DQO development, sampling, and analysis. CPO cost and schedule to be incorporated in FY 99/00 MYWP.

d Cost estimate is uncertain due to dependence on the outcome of preceding tasks.

7.0 CONCLUSION

It has been recognized that certain FTCs that are owned or managed by TWRS are not explicitly addressed in the current TWRS AB, or may have not been characterized to the extent that the hazards are fully understood. This report describes a comprehensive activity to evaluate such FTCs and determine the extent and priority of needed AB upgrades to address them. These FTCs may have originally been excluded from the scope of the BIO due to uncertainties regarding their status (i.e., active or inactive) or ownership. Initial reviews of data available for these FTCs, including IMUSTs, revealed that there was conflicting information in the source documents that described these FTCs. For example, several documents addressing IMUSTs (refer to Table 3-1) have been produced in the last few years containing differences in the list of IMUSTs, both in identification and total number of IMUSTs. Because of the uncertain AB status of these FTCs, there was a need to evaluate the adequacy and effectiveness of current controls, programs, and operational practices to maintain a safe configuration in these FTCs.

To establish the actions necessary to upgrade the AB for the TWRS FTCs addressed in this report, it was necessary to perform a comprehensive review of each FTC to determine accuracy of available information, adequacy of current controls, and understanding of facility hazards. The key activities conducted included:

- Collection of documented information
- Interviews with past and present TWRS personnel
- Field walk-downs of facilities and IMUSTs
- Review of photos, maps, and drawings
- Establishment of interfaces with relevant activities and functions:
  - WIDS database
  - TWRS Process Engineering
  - TWRS Characterization
  - Site Chemical Vulnerability Study
  - TWRS Monthly Status Report (HNF-EP-0182)
  - Flammable gas safety issue resolution
  - Organics safety issue resolution
  - Site Order Implementation Plan (HNF-SP-1228)
  - Corrections to other data bases, information sources, etc.
- Evaluation of hazards to assess whether any immediate changes in field practices or AB-level controls were warranted or advised
- Evaluation of AB documentation and assessment of upgrade needs
- Assessment of the need to improve the facility technical baseline (e.g., characterization, structural evaluation)

- Development of a comprehensive list of IMUSTs, facilities and other tanks/components owned by TWRS

- Development of path forward for each facility and prioritization on the bases of safety, mission need and cost-benefit.

These activities resulted in the following conclusions:

There are two major components that are not addressed in any part of the current TWRS AB. They are:

241-AX-IX Ion Exchange Column
In-Tank Solidification (ITS-1) system in the 241-BY Tank Farm.

There are four facilities that are inadequately addressed in the current TWRS AB. They are:

242-S Evaporator
242-T Evaporator
244-AR Vault
244-CR Vault.

The facilities evaluated and determined to be adequately addressed in the TWRS AB (although certain updates will be included in an Annual Update) are:

204-AR Waste Unloading Facility
209-E Critical Mass Laboratory
213-W Dry Waste Compactor
2727-W Sodium Storage Facility
Grout Treatment Facility (GTF).

There are forty three IMUSTs that currently belong to TWRS. These are:

200-W-7	241-C-301	241-Z-8	270-W
231-W-151-001	241-ER-311A	242-T-135	209-E-TK-111
231-W-151-002	241-S-302A	242-TA-R1	241-AX-151CT
240-S-302	241-S-302B	244-BXR-001	241-AX-151-TK-D
241-A-302B	241-SX-302	244-BXR-002	241-AX-151-TK-E
241-B-301	241-T-301B	244-BXR-003	241-AX-151-TK-F
241-B-302B	241-TX-302A	244-BXR-011	241-AX-151-TK-G
241-BX-302A	241-TX-302B	244-TXR-001	
241-BX-302B	241-TX-302B(R)	244-TXR-002	
241-BX-302C	241-TX-302XB	244-TXR-003	
241-BY-ITS2-TK-1	241-TY-302A	216-BY-201	
241-BY-ITS2-TK-2	241-TY-302B	216-TY-201	

There are four IMUSTs (all within the 244-UR Vault) that are currently owned by the ER program but are planned for transfer to TWRS. These are:

244-UR-001
244-UR-002
244-UR-003
244-UR-004.

Thirteen IMUSTs are not currently addressed (or are only partially addressed) in the TWRS AB. These are:

209-E-TK-111
241-AX-151-TKD
241-AX-151-TKE
241-AX-151-TKF
241-AX-151-TKG
241-BY-ITS2-TK1
241-BY-ITS2-TK2
241-TX-302-B
244-UR-001 (currently ER owned)
244-UR-002 (currently ER owned)
244-UR-003 (currently ER owned)
244-UR-004 (currently ER owned)
241-TX-302B (not listed in BIO, Table B2-16).

Eight IMUSTs are addressed in the TWRS AB, but may be in an incorrect flammable gas facility group. These are:

241-S-302A
241-ER-311A
241-BX-302A
241-TY-302A
241-Z-8
244-BXR-001
244-TXR-002
244-TXR-003.

Seventeen IMUSTs require further characterization because their contents are unknown. These are:

240-S-302
241-A-302B
241-AX-151CT
241-AX-151-TKD
241-AX-151-TKE
241-AX-151-TKF
241-AX-151-TKG
241-TX-302B(R)
241-TTY-302A
241-C-301

241-B-301
241-B-302B
241-BX-302B
241-BX-302C
241-SX-302
241-TX-302XB
241-Z-8.

For all of the FTCs facilities where it was determined that the facility is either not addressed in the AB or is not adequately addressed in the AB, one of the following two conditions apply:

(1) Available information about the facility, the nature of the activities planned in and around the facility for the near-term, and field observations lead to the conclusion that there are no immediate risks for release of hazardous materials and no identified benefit to immediately imposing new restrictions or controls. It is anticipated that systematic hazards analysis and gathering of more physical data will confirm that existing controls and field practices prudently manage the risks associated with the facility. In some cases, it is anticipated that some facilities will be able to be down-graded from "nuclear" to "radiological."

OR

(2) To some degree, suspected or possible hazards associated with the facility are not well understood. Because the hazards are not well understood, meaningful and effective controls to address them are not identified in this report. In these cases, however, the current role of the facility in the TWRS mission (usually minimal) is judged to be such that ongoing work activities would not initiate accidents, aggravate hazardous conditions, or unduly expose workers to safety risks. It is anticipated that in some of these cases, systematic hazards analysis and gathering of additional physical data will result in the development of new or different controls to better manage the risks posed by the facility. It is also possible that for facilities where nothing is known about contained materials, that additional gathering of physical data will result in relaxation of controls.

In both cases, systematic and disciplined hazards analysis is required; although, the second case warrants priority over the first case. Systematic hazards analysis, in some cases requiring materials sampling and analysis, is the next major step beyond this report in the overall effort to upgrade the TWRS AB. Current approved work scope allows for limited progress, all on behalf of upgrading the AB for IMUSTs, for the balance of FY 1998. FY 1999 and FY 2000 multi-year work planning (MYWP) is in progress. Starting with the information in Chapter 6 of this report, the contractor has begun to incorporate this work scope in FY 1999 and FY 2000 MYWP.

AB upgrade strategies have been presented in this report for the TWRS FTCs identified during the current activity. The priorities for these upgrades, based on perceived or known risk and status of the AB, have been established for each facility or IMUST. Although the immediate imposition of new or different controls is not called for in this report, any new work (including sampling) or changes in facility configuration may well require new restrictions. The safety work associated with the gathering of additional physical data on each facility is included in Chapter 6.

Any changes to the TWRS mission which increases the level of worker activity or changes the way a facility is used, may invalidate the conclusions regarding no need for immediate imposition of new or different interim controls. Such changes would be evaluated within the USQ process before taking place.

This report represents the first major step in what is assumed to become an uninterrupted, reasonably expedited process, to accomplish remaining and necessary upgrades to the TWRS AB. As long as there is a defined and approved work scope to accomplish the tasks defined in this report, the AB upgrade is in progress and the USQ process is adjusted per the guidance of the NE-70 guidance on implementation of DOE Order 5480.21 (as discussed in Section 2.5). If the AB upgrade effort is interrupted or canceled, however, the contractor must invoke the USQ process to formally re-advise RL of inadequacies in the AB. In this case, the inadequacies would be recast as multiple open Discovery USQs requiring closure.

8.0 REFERENCES

ARH-MA-119, "242-S Evaporator-Crystallizer Information Manual," Atlantic Richfield Hanford Co., dated September, 1975.

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, dated December, 1992.

DOE Order 5480.23, "Nuclear Safety Analysis," U. S. Department of Energy, Richland Operations Office, Richland, Washington, dated April, 1992.

DOE/RL-97-85, "Plutonium Reclamation Facility Incident Response Project Progress Report," Rev. 0, U. S. Department of Energy, Richland Operations Office, Richland, Washington, dated December, 1997.

DOE/RL-91-61, "T Plant Source Aggregate Area Management Study," Rev. 0, dated November, 1992.

HNF-1566, Rev. 0, "Letter Report 200 Area Plateau Inactive Miscellaneous Underground Storage Tanks Locations," Rev. 0, Fluor Daniel Northwest, Richland, Washington, dated November, 1997.

HNF-EP-0182, "Waste Tank Summary Report for Month Ending November 30, 1997," Fluor Daniel Hanford, Inc., Richland, Washington, dated January 8, 1998.

HNF-SD-WM-ER-680, Rev. 0, "Strategy for resolution of the Flammable Gas Safety Issue," Fluor Daniel Hanford, Inc., Richland, Washington, dated May 23, 1997.

HNF-IP-0842, "TWRS Administrative Manual," Volume XI, Section 1.1, Rev. 0-A, Quality Assurance, Fluor Daniel Hanford, Inc., Richland, Washington, dated February 19, 1998.

HNF-IP-0842, "TWRS Administrative Manual," Volume IV, Section 5.4, Attachment A, Fluor Daniel Hanford, Inc., Richland, Washington, dated July 21, 1997.

HNF-MP-599, Rev. 1, "Project Hanford Quality Assurance Program Description, Fluor Daniel Hanford, Inc., Richland, Washington, dated October 31, 1997.

HNF-PRO-704, Rev. 0, "Hazard and Accident Analysis Process," Fluor Daniel Hanford, Inc., Richland, Washington, dated December 29, 1997.

HNF-SD-WM-BIO-003, Rev. 0, "B-Plant Basis for Interim Operation," B&W Hanford Company, Richland, Washington, dated March 16, 1998.

HNF-SD-WM-BIO-001, Rev. 0-G, "Tank Waste Remediation System Basis for Interim Operation," Fluor Daniel Hanford, Inc., Richland, Washington, dated February 27, 1998.

HNF-SD-WM-ER-472, Rev. 0-C, "Best Basis Inventory, Appendix D of Tank Characterization Report," Fluor Daniel Hanford, Inc., Richland, Washington, dated August 25, 1997.

HNF-SD-WM-ER-637, Rev. 0A, "Best Basis Inventory, Appendix D of Tank Characterization Report," Fluor Daniel Hanford, Inc., Richland, Washington, dated August 25, 1997.

HNF-SD-WM-ER-687, Rev. 0, "Best Basis Inventory, Appendix D of Tank Characterization Report," Fluor Daniel Hanford, Inc., Richland, Washington, dated August 25, 1997.

HNF-SD-WM-SAR-023, Rev 3, "242-A Evaporator/Crystallizer Safety Analysis Report," Westinghouse Hanford Company, Richland, Washington, dated March 30, 1998.

HNF-SD-WM-SAR-067, "Tank Waste Remediation System Final Safety Analysis Report," DRAFT, Fluor Daniel Hanford, Inc., Richland, Washington, dated 1997.

HNF-SD-WM-TSR-006, Rev. J, "Tank Waste Remediation System Technical Safety Requirements," Fluor Daniel Hanford, Inc., Richland, Washington, dated February 26, 1998.

HNF-SD-CP-ISB-002, Rev. 2, "222-S Laboratory Interim Safety Basis," Numatec Hanford Corporation, Richland, Washington, dated April 25, 1997.

HNF-SP-1228, "Quality Assurance Program Implementation Plan for Nuclear Facilities," Fluor Daniel Hanford, Inc., Richland, Washington, dated July 1, 1997.

HSRCM-1, Rev. 2, "Hanford Site Radiological Control Manual," Westinghouse Hanford Company, Richland, Washington, dated 1995.

Interoffice Memo, Data Assessment and Interpretation to M. J. Sutey, "Data Review of Samples Taken at 242-S and 242-T Evaporator Facilities," 74620-97-208, dated July 30, 1997.

Interoffice Memo, P. F. Kison, LMHC, to G. L. Dunford, LMHC, "West Tank Farms Facility Chemical Inventory and Vulnerability Evaluation," Lockheed Martin Hanford Corporation, Richland, Washington, dated July 22, 1997.

Interoffice Memo, East Tank Farms Engineering, to D. G. Baide, "East Tank Farms Facility Chemical Vulnerability Study," Lockheed Martin Hanford Corporation, Richland, Washington, dated June 30, 1997.

LA-UR-97-311, S. F. Agnew, P. Baca, R.A. Corbin, T.B. Duran, and K.A. Jurgensen, "Waste Status and Transaction Record Summary (WSTRS), Rev. 4," Los Alamos National Laboratory, Los Alamos, New Mexico, dated 1997.

Letter, A. M. Umek, FDH, to L. E. Hall, LMHC, "Subcontract Number 8023734-9-K001; U.S. Department of Energy, Richland Operations Office Request to Devalue Grout Facility Structures and Equipment," FDH-9761499A, Fluor Daniel Hanford, Inc., Richland, Washington, dated December 11, 1997.

Letter, J. K. McClusky, RL, to H. J. Hatch, FDH, "Contract Number DE-AC06-96RL13200 - U. S. Department of Energy, Richland Operations Office (RL) Request to Devalue Grout Facility Structures and Equipment," 97-WSD-243, U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated December 9, 1997.

Letter, J. E. Kinzer, RL to H. J. Hatch, FDH, "Contracted Number Request to Devalue Grout Facility Structures and Equipment," 97-TWR-017, U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated August 20, 1997.

Letter, T. N. Turpin, Jr. RL, to H. J. Hatch, FDH, Attachment 1 Appendix C to WIDS database listing for EM-30 Waste Management Units, "Agreement for and Assignment to Waste Sites for Management by Fluor Daniel Hanford, Inc.," 97-PRO-855, U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated August 20, 1997.

Letter, DOE 1997, "Contract Number DE-AC06-96RL13200 - Declaration of 209-E Unreviewed Safety Question for Deficient Authorization Basis and Institution of Interim Controls," 97-WSD-160, 9757083A, U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated August 8, 1997.

Letter, E. E. Mayer, LMHC, to A. M. Umek, FDH, "Management of Inactive Miscellaneous Underground Storage Tanks Memorandum," LMHC-9755398, Lockheed Martin Hanford, Corporation, Richland, Washington, dated June 23, 1997.

Letter, J. E. Rasmussen, RL-EAP, to EPA Sherwood and Ecology (Wilson), "Status Report on Inactive Miscellaneous Underground Storage Tanks," 95-PCA-335, dated June 9, 1995.

Letter, A. M. Umek, FDH, to J. E. Kinzer, RL-TWRS, "Management of IMUSTs consistent with Single Shell Tank Program," FDH-9751876aR1, Fluor Daniel Hanford, Inc., Richland, Washington, dated May 15, 1997.

Letter, H. L. Boston, LMHC, to A. M. Umek, FDH, "Inactive Miscellaneous Underground Storage Tanks," 80232764-9-K001, Lockheed Martin Hanford Corporation, Richland, Washington, dated April 16, 1997.

Letter, J. D. Wagoner, RL to Dr. A. L. Trego, WHC, "Recommendation for Declaring an Unreviewed Safety Question (USQ) Regarding Condensed-Phase Organic Nitrate Reactions," 96-WSD-073, U.S. Department of Energy, Richland Operations Office, Richland, Washington, dated May 24, 1996.

Letter, J. L. Lee, WHC TWRS, to A. Sidpara, RL-TOD, Transmitting "Tank Waste Remediation System Management Plan for Hanford 200 Area Inactive Miscellaneous Underground Storage Tanks," 9550687, Westinghouse Hanford Company, Richland, Washington, dated February 6, 1995.

Letter, D. A. Turner, WHC, to R. E. Gerton, RL, "The Department of Energy, Richland Operations Office (DOE-RL), Standby/Shutdown Program Audit December 15-16, 1987," Westinghouse Hanford Company, Richland, Washington, dated December 4, 1989.

Letter, R. T. Kimura to R. D. Wojtasek, "Temporary Use of 242-S Evaporator Equipment for U-1/U-2 Crib Groundwater Treatment Project," 65950-85-350-AX, dated July 29, 1985.

Memorandum, "Interpretation of DOE 5480.21, Unreviewed Safety Questions," DOE NE-70 to Managers, DOE Field Offices, et. al., RL control no. 930020.0F, dated December 29, 1992.

OSD-T-151-00008, Rev. E-2, "Operating Specifications for the 204-AR Waste Unloading Facility," Westinghouse Hanford Company, Richland, Washington, dated January 19, 1995.

OSD-T-151-00014, Rev. A-5, "Operating Specifications for 244-AR Vault Facility," Westinghouse Hanford Company, Richland, Washington, dated February 8, 1996.

OSD-T-151-00015, Rev B-9, "Unclassified Operating Specifications for Miscellaneous Facilities," Westinghouse Hanford Company, Richland, Washington, dated February 8, 1996.

RHO-CD-1410, "242-T Evaporator Facility Shutdown/Standby Plan," Rockwell Hanford Operations, Richland, Washington, dated April 30, 1981.

RHO-RE-SA-116P, "Chemical and Anion Exchange Removal of Uranium From Hanford Groundwater," Rockwell Hanford Operations, Richland, Washington, dated 1986.

SD-HS-SAR-009, Rev. 0, "242-T Evaporator Facility Shutdown/Standby to Condition V Safety Analysis Report," dated February 4, 1983.

SD-WM-SSP-002, "242S Facility Shutdown/Standby Plan," Westinghouse Hanford Company, dated September, 1988.

USQ-TF-96-1000, Rev. 0, "Unreviewed Safety Question; HEPA Filter Change at the 209-E Facility," Duke Engineering and Services Hanford, Richland, Washington, dated October 29, 1996.

WHC-EP-0775, "Safety Issue Resolution Strategy Plan for Inactive Miscellaneous Underground Storage Tanks," Westinghouse Hanford Company, Richland, Washington, dated September 26, 1994.

WHC-EP-0861, "Status Report for Inactive Miscellaneous Underground Storage Tanks at Hanford Site 200 Areas," Westinghouse Hanford Company, Richland, Washington, dated October 23, 1995.

WHC-EP-0908, "Strategy for Resolution of the Organic Complexant and Organic Solvent Safety Issues," Westinghouse Hanford Company, Richland, Washington, dated 1996.

WHC-IP-0263-TF, "Tank Farms Building Emergency Plan," Westinghouse Hanford Company, Richland, Washington, dated 1990b.

WHC-IP-0842, "TWRS Administration," Volume IV, Section 5.4, Attachment A, Westinghouse Hanford Company, Richland, Washington, dated September 27, 1996.

WHC-IP-0971, "Tank Waste Remediation System - TWRS - Emergency Preparedness Program Plan," Westinghouse Hanford Company, Richland, Washington, dated November 10, 1994.

WHC-SD-CP-SAR-021, Rev. 0, "Plutonium Finishing Plant Final Safety Analysis Report," Westinghouse Hanford Company, Richland, Washington, dated March 7, 1995.

WHC-SD-EN-ES-040, Rev 0, "Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site, Washington," Westinghouse Hanford Company, Richland, Washington, dated May 18, 1994.

WHC-SD-RE-SAP-013, Rev. 6, "Safety Analysis Report for Packaging, Railroad Liquid Waste Tank Cars", Westinghouse Hanford Company, Richland, Washington, dated August 4, 1993.

WHC-SD-TP-SEP-001, Rev. 0, "Safety Evaluation for Packaging for the 222-S Laboratory Cargo Tank," Westinghouse Hanford Company, Richland, Washington, dated July 30, 1996.

WHC-SD-WM-ER-543, Rev. 0, "Assessment of Chemical Vulnerabilities in the Hanford High-Level Waste Tanks," Westinghouse Hanford Company, Richland, Washington, dated February, 1996.

WHC-SD-WM-FHA-020, Rev. 0, "Tank Farm Fire Hazards Analysis," Westinghouse Hanford Company, Richland, Washington, dated August 29, 1996.

WHC-SD-WM-FHA-022, Rev. 0, "Fire Hazards Analysis for the 242-S Evaporator," Westinghouse Hanford Company, Richland, Washington, dated July 25, 1996.

WHC-SD-WM-FHA-023, Rev. 0, "Fire Hazards Analysis for the 242-T Evaporator," Westinghouse Hanford Company, Richland, Washington, dated July 30, 1996.

WHC-SD-WM-HA-001, "Preliminary Hazards Analysis of the Miscellaneous Underground Storage Tanks," Westinghouse Hanford Company, Richland, Washington, dated July 31, 1995.

WHC-SD-WM-HIE-007, "Tank Waste Remediation System FSAR Hazard Identification/Facility Configuration Verification Report," Westinghouse Hanford Company, Richland, Washington, dated September, 1996.

WHC-SD-WM-SAR-005, Rev 12, "WESF Safety Analysis Report," Westinghouse Hanford, Company, Richland, Washington, dated January 11, 1996.

WHC-SD-WM-SAR-041, Rev 0, "Hanford Central Waste Complex Final Safety Assessment Document," Westinghouse Hanford Company, Richland, Washington, dated April 3, 1991.

WHC-SD-WM-SSP-005, "Grout Treatment Facility Standby Plan," Westinghouse Hanford Company, Richland, Washington, dated September 21, 1994.

WHC-SD-WM-TI-614, Rev. 1, "Waste Status and Transaction Record Summary for the SW Quadrant of the Hanford 200 Area," Westinghouse Hanford Company, Richland, Washington, dated January 29, 1996.

WHC-SD-WM-TI-615, Rev. 1, "Waste Status and Transaction Record Summary for the NE Quadrant of the Hanford 200 Area," Westinghouse Hanford Company, Richland, Washington, dated January 29, 1996.

WHC-SD-WM-TI-689, Rev. 1, "Waste Status and Transaction Record Summary for the SE Quadrant of the Hanford 200 Area," Westinghouse Hanford Company, Richland, Washington, dated January 29, 1996.

WHC-SD-WM-TI-669, Rev. 1, "Waste Status and Transaction Record Summary for the NW Quadrant of the Hanford 200 Area," Westinghouse Hanford Company, Richland, Washington, dated January 26, 1996.

WHC-SD-WM-TI-759, Rev. 0., "Hazards Evaluations for the TWRS Final Safety Analysis Report," Westinghouse Hanford Company, Richland, Washington, dated September 30, 1996.

WHC-SD-WM-TI-789, Rev. 0, "Preliminary Hazards Analysis - 209-E Building - Critical Mass Laboratory," Fluor Daniel Hanford, Inc., Richland, Washington, dated November 5, 1996.

WHC-EP-0560/UC-721, "Miscellaneous Underground Radioactive Storage Waste Tanks," Westinghouse Hanford Company, Richland, Washington, dated December, 1992.

WHC-SD-DD-TI-057, "Summary of Radioactive Underground Tanks Managed by Hanford Restoration Operations," Westinghouse Hanford Company, Richland, Washington, dated October, 1991.

WHC-SD-SQA-CSA-20326, "CSER 90-008: Reclassification of the Critical Mass Laboratory, Building 209-E As a Limited Control Facility," Rev. 0, Westinghouse Hanford Company, Richland, Washington, dated 1990.

Procedures:

ARP-T-701-0001 through ARP-T-701-0007, "242-S Evaporator Alarm Response."

ARP-T-801-001, Rev. A-3, "Respond To Alarms at 244-TX and 242-T Evaporator."

CPS-T-149-00010, Rev. H-0, "Waste Storage in Double-Shell Tanks and Associated Equipment."

SW-040-043, "Inspect the CWC and Sodium Storage Building and Associated Equipment."

TF-FT-359-007, Rev. A-0, "Perform Vault Exhauster 244-CR Exhaust Stack Radiation Monitor Functional Test."

TF-OR-EF-C-D, Rev. C-18, "C, CR Tank Farms and 244-A DCRT Lift Station Daily Rounds."

TF-OR-EF-204AR, Rev. C-2, "204AR Rail Car Waste Unloading Building Daily Rounds."

TF-OR-ER-244AR, Rev. C-4, "244 AR Vault Rounds."

TO-040-700, Rev. D-1, "Perform Surveillance at 244-AR Vault."

TO-040-710, Rev. C-1, "Perform Routine Surveillance of 204-AR Building and Tank Cars at TC-4."

TO-060-205, Rev. D-8, "Perform Ventilation Control and Surveillance at 244-CR Vault."

TO-290-052, Rev. C-0, "204-AR Unloading Facility Transfers."

TO-290-120, Rev. D-0, "Perform 204-AR Tank Trailer Operations."

TO-290-130, Rev. F-0, "Transfer From 241-A Rail Car to Tank Farm."

TO-720-020, Rev C-4, "Operate 242-S Heating/Ventilation System."

TO-720-140, Rev C-2, "Operate the 242-S Evaporator Compressed Air System."

TO-780-020, Rev C-1, "242-S Shutdown Surveillance and Routines."

TO-820-040, Rev. D-2, "Operate 242-T Process Cell Ventilation."

Appendix A: Facilities, Tanks and Components Matrix

Appendix A

TABLE OF CONTENTS

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-1 HISTORICAL LIST OF IMUSTS SORTED BY TANK NUMBER:

	IMUST TANK	Alternate Names	Active?	1995 Ltr(1)	Status Rep(2)	DOE(3) WIDS	1997 Ltr(4)	Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	200-W-7	243-S-TK-1, 246L		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y	Decon Catch Tank	
2	213-W-1	213-W-TK-1		xUndet	xTWRS	xTWRS		TWRS	New	Y	N	Water	
3	216-BC-201				xER*			ER		NA	NA		
4	216-BY-201	241-BY, 216-BY-47		xTWRS	xTWRS	xTWRS	xTWRS	TWRS s	New	Y	Y	Flush Tank, Settling Tank	Assume = 216-BY in (1)
5	216-TY-201			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS s	New	Y	Y	Supernatant Dispos Flush Tk	
6	231-W-151-001			xER	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y	In 231-W-151 vault	(1) TWRS*; WIDS=vault
7	231-W-151-002			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y	In 231-W-151 vault	WIDS only shows vault
8	240-S-302			xER	xTWRS*	xTWRS	xTWRS*	TWRS	Y	Y	Y	Leaker; TWRS surveills	
9	241-A-302A		Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
10	241-A-302B			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
11	241-A-350		Y			xTWRS •		TWRS@	New	Y	Y	Catch Tank	
12	241-A-417		Y			xTWRS •		TWRS@	New	Y	Y	Catch Tank	
13	241-AX-151			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y	Diverter Station with 5 tanks	
14	241-AX-152CT		Y			xTWRS •		TWRS@	New	Y	Y	Catch Tank	
15	241-AZ-151CT		Y			xTWRS •		TWRS@	New	Y	Y	Catch Tank	
16	241-B-301	241-B-301B		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
17	241-B-302B			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y		
18	241-B-361			xER	xER			ER	Y	NA	NA		
19	241-BX-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
20	241-BX-302B			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y		
21	241-BX-302C			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
22	241-C-301	241-C-301C		xTWRS	xTWRS	xTWRS@	xTWRS	TWRS	Y	Y	Y		
23	241-CX-70			xER	xER			ER	Y	NA	NA		
24	241-CX-71			xER	xER			ER	Y	NA	NA		
25	241-CX-72			xER	xER			ER	Y	NA	NA		
26	241-ER-311		Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
27	241-ER-311A	old 241-ER-311		xB-Plant	xTWRS	xTWRS	xTWRS*	TWRS	New	Y	Y		(1) TWRS*
28	241-EW-151		Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
29	241-S-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Grout; others; leaker	
30	241-S-302B			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Empty	
31	241-S-304		Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
32	241-SX-302	SX-304		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
33	241-T-301B	241-T-301		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
34	241-T-302					xTWRS •		TWRS		N	N	Catch Tank	Does not exist
35	241-T-361			xER	xER			ER	Y	NA	NA		
36	241-TX-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
37	241-TX-302B catch			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	N	Y		
38	241-TX-302B(R)			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y	Unknown	Second TX-302B in (1)

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

39	241-TX-302C		Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
40	241-TX-302XB	241-TX-302X		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
41	241-TY-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
42	241-TY-302B			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Empty	
43	241-U-301	241-U-301B	Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
44	241-U-361			xER	xER			ER	Y	NA	NA		
45	241-UX-302A	UX-302	Y			xTWRS •		TWRS@		Y	Y	Catch Tank	
46	241-WR-001			xER	xER			ER	Y	NA	NA		
47	241-WR-002			xER	xER			ER	Y	NA	NA		
48	241-WR-003			xER	xER			ER	Y	NA	NA		
49	241-WR-004			xER	xER			ER	Y	NA	NA		
50	241-WR-005			xER	xER			ER	Y	NA	NA		
51	241-WR-006			xER	xER			ER	Y	NA	NA		
52	241-WR-007			xER	xER			ER	Y	NA	NA		
53	241-WR-008			xER	xER			ER	Y	NA	NA		
54	241-WR-009			xER	xER			ER	Y	NA	NA		
55	241-Z-361			xPFP	xPFP			TPD/BWHC	Y	NA	NA	Settled Solids/Moderate Pu	Transition Projects
56	241-Z-8			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
57	242-T-135			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y		
58	242-TA-R1			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y		
59	244-BXR-001			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
60	244-BXR-002			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
61	244-BXR-003			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
62	244-BXR-011			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
63	244-TXR-001			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	In 244-TXR vault	
64	244-TXR-002			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	In 244-TXR vault	
65	244-TXR-003			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	In 244-TXR vault	
66	244-UR-001			xER	xER*			ER s	Y	NA	NA		(1) TWRS*
67	244-UR-002			xER	xER*			ER s	Y	NA	NA		(1) TWRS*
68	244-UR-003			xER	xER*			ER s	Y	NA	NA		(1) TWRS*
69	244-UR-004			xER	xER*			ER s	Y	NA	NA	Empty	(1) TWRS*
70	270-E-1	270-E_CNT, 216-ER-1		xTWRS	xTWRS			TPD/BWHC	Y	NA	NA	Condensate Neutraliz Tank	EM-60, Transition Projects
71	270-W			xTWRS	xTWRS*	xTWRS	xTWRS	TWRS s	Y	Y	Y		(1) ER*
72	276-S-141	276-S-306A		xER	xER			ER		NA	NA		
73	276-S-142	276-S-306B		xER	xER			ER		NA	NA		
74	292T-TK-1	200-W-16			xT-Plant*	WPD/WMH		WPD/WMH		NA	NA	55 gal SS lab waste	T-Plant; Waste Programs
75	292T-TK-2	200-W-16			xT-Plant*	WPD/WMH		WPD/WMH		NA	NA	55 gal SS lab waste	T-Plant; Waste Programs

Note: Tanks identified with "@" are active tanks and therefore are not IMUSTs by definition.

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-2 HISTORICAL LIST OF IMUSTS SORTED BY CURRENT OWNER:

	IMUST TANK	Alternate Names	Active?	1995 Ltr(1)	Status Rep(2)	DOE(3) WIDS	1997 Ltr(4)	Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	216-BC-201				xER*			ER		NA	NA		
2	241-B-361			xER	xER			ER	Y	NA	NA		
3	241-CX-70			xER	xER			ER	Y	NA	NA		
4	241-CX-71			xER	xER			ER	Y	NA	NA		
5	241-CX-72			xER	xER			ER	Y	NA	NA		
6	241-T-361			xER	xER			ER	Y	NA	NA		
7	241-U-361			xER	xER			ER	Y	NA	NA		
8	241-WR-001			xER	xER			ER	Y	NA	NA		
9	241-WR-002			xER	xER			ER	Y	NA	NA		
10	241-WR-003			xER	xER			ER	Y	NA	NA		
11	241-WR-004			xER	xER			ER	Y	NA	NA		
12	241-WR-005			xER	xER			ER	Y	NA	NA		
13	241-WR-006			xER	xER			ER	Y	NA	NA		
14	241-WR-007			xER	xER			ER	Y	NA	NA		
15	241-WR-008			xER	xER			ER	Y	NA	NA		
16	241-WR-009			xER	xER			ER	Y	NA	NA		
17	276-S-141	276-S-306A		xER	xER			ER		NA	NA		
18	276-S-142	276-S-306B		xER	xER			ER		NA	NA		
19	244-UR-001			xER	xER*			ER s	Y	NA	NA		(1) TWRS*
20	244-UR-002			xER	xER*			ER s	Y	NA	NA		(1) TWRS*
21	244-UR-003			xER	xER*			ER s	Y	NA	NA		(1) TWRS*
22	244-UR-004			xER	xER*			ER s	Y	NA	NA	Empty	(1) TWRS*
23	241-Z-361			xPFP	xPFP			TPD/BWHC	Y	NA	NA	Settled Solids/Moderate Pu	Transition Projects
24	270-E-1	270-E_CNT, 216-ER-1		xTWRS	xTWRS			TPD/BWHC	Y	NA	NA	Condensate Neutraliz Tank	EM-60, Transition Projects
25	200-W-7	243-S-TK-1, 246L		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y	Decon Catch Tank	
26	213-W-1	213-W-TK-1		xUndet	xTWRS	xTWRS		TWRS	New	Y	N	Water	
27	231-W-151-001			xER	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y	In 231-W-151 vault	(1) TWRS*; WIDS=vault
28	231-W-151-002			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y	In 231-W-151 vault	WIDS only shows vault
29	240-S-302			xER	xTWRS*	xTWRS	xTWRS*	TWRS	Y	Y	Y	Leaker; TWRS surveills	
30	241-A-302B			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
31	241-AX-151			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y	Diverter Station with 5 tanks	
32	241-B-301	241-B-301B		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
33	241-B-302B			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y		
34	241-BX-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
35	241-BX-302B			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y		
36	241-BX-302C			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
37	241-C-301	241-C-301C		xTWRS	xTWRS	xTWRS@	xTWRS	TWRS	Y	Y	Y		
38	241-ER-311A	old 241-ER-311		xB-Plant	xTWRS	xTWRS	xTWRS*	TWRS	New	Y	Y		(1) TWRS*

39	241-S-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Grout; others; leaker	
40	241-S-302B			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Empty	
41	241-SX-302	SX-304		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
42	241-T-301B	241-T-301		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
43	241-T-302					xTWRS•		TWRS		N	N	Catch Tank	Does not exist
44	241-TX-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
45	241-TX-302B catch			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	N	Y		
46	241-TX-302B(R)			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS	Y	Y	Y	Unknown	Second TX-302B in (1)
47	241-TX-302XB	241-TX-302X		xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
48	241-TY-302A			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
49	241-TY-302B			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Empty	
50	241-Z-8			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y		
51	242-T-135			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y		
52	242-TA-R1			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	New	Y	Y		
53	244-BXR-001			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
54	244-BXR-002			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
55	244-BXR-003			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
56	244-BXR-011			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
57	244-TXR-001			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	In 244-TXR vault	
58	244-TXR-002			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	In 244-TXR vault	
59	244-TXR-003			xTWRS	xTWRS	xTWRS	xTWRS	TWRS	Y	Y	Y	In 244-TXR vault	
60	216-BY-201	241-BY, 216-BY-47		xTWRS	xTWRS	xTWRS	xTWRS	TWRS s	New	Y	Y	Flush Tank, Settling Tank	Assume = 216-BY in (1)
61	216-TY-201			xTWRS	xTWRS	xTWRS	xTWRS*	TWRS s	New	Y	Y	Supernatant Dispos Flush Tk	
62	270-W			xTWRS	xTWRS*	xTWRS	xTWRS	TWRS s	Y	Y	Y		(1) ER*
63	241-A-302A		Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
64	241-A-350		Y			xTWRS•		TWRS@	New	Y	Y	Catch Tank	
65	241-A-417		Y			xTWRS•		TWRS@	New	Y	Y	Catch Tank	
66	241-AX-152CT		Y			xTWRS•		TWRS@	New	Y	Y	Catch Tank	
67	241-AZ-151CT		Y			xTWRS•		TWRS@	New	Y	Y	Catch Tank	
68	241-ER-311		Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
69	241-EW-151		Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
70	241-S-304		Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
71	241-TX-302C		Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
72	241-U-301	241-U-301B	Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
73	241-UX-302A	UX-302	Y			xTWRS•		TWRS@		Y	Y	Catch Tank	
74	292T-TK-1	200-W-16			xT-Plant*	WPD/WMH		WPD/WMH		NA	NA	55 gal SS lab waste	T-Plant; Waste Programs
75	292T-TK-2	200-W-16			xT-Plant*	WPD/WMH		WPD/WMH		NA	NA	55 gal SS lab waste	T-Plant; Waste Programs

Note: Tanks identified with "@" are active tanks and therefore are not IMUSTs by definition.

A-3 **LEGENDS and FOOTNOTES FOR IMUST TABLES:**

(1) 1995, Letter from J.L. Lee (WHC) to A.B. Sidpara (DOE-RL), *Tank Waste Remediation System Management Plan for Hanford 200 Area Inactive Miscellaneous Underground Storage Tanks*, #9550687, February 8, 1995.

(2) 1995, *Status Report for Inactive Miscellaneous Underground Storage Tanks at Hanford Site 200 Areas*, WHC-EP-0861, October 1995, Westinghouse Hanford Company, Richland Washington.

(3) 1997, Attachment 1 (Appendix C to WIDS database listing for EM-30 Waste Management Units), Letter from T. N. Turpin, Jr. (DOE-RL) to H. J. Hatch (FDH), 97-PRO-885, August 20, 1997.

(4) 1997, Letter from E.E. Mayer (LMHC) to A.M. Umek (FDH), *#80232764-9-K001-Management of Inactive Miscellaneous* Storage Tanks (IMUST) Memorandum, Letter number LMHC-9755398, Lockheed Martin, Co., June, 20, 1997.

Symbols:

* - proposed ownership

x - tank is included in listing indicated in column heading

• - tank identified in WIDS but not in Status Report

s - present owndership is shown, but tank is scheduled for ownership switch (5)

@ - active tank

Reference for Future Ownership Switching:

(5) 1997, Letter from J. Kinzer (DOE-RL) to H. J. Hatch (FDH), *Contract Number DE-AC06-96RL13200 - Transfer of Waste Sites*, #97-TWR-017, August 20, 1997.

WIDS listings:

In searching for IMUSTs, the following were excluded from the EM-30 WIDS list:

DSTs	(list verified)
SSTs	(list verified)
DCRTs	
Diversion Boxes (without tanks)	
Cribs	
Septic Tanks	
Retention Basins	
Ponds	
Ditches	
Dumping Areas	
Valve Pits	
Unplanned Release Sites	
French Drains	

A-4 IMUST ADDITIONS TO THE LIST SINCE 8/97 LETTER TO ECOLOGY:

	IMUST TANK	Alternate Names	Active?	1995 Ltr(1)	Status Rep(2)	DOE(3) WIDS	1997 Ltr(4)	Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	213-W-1	213-W-TK-1		x Undet	x TWRS	x TWRS		TWRS	New	N	N	Water	Need to verify no rad contam
2	241-T-302					x TWRS •		TWRS		N	N	Catch Tank	Existence not proved!

A-5 TANKS TO BE REMOVED FROM IMUST LIST:

	IMUST TANK	Alternate Names	REASON:	Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	213-W-1	213-W-TK-1	Contains only water	TWRS	New	N	N		No rad contam
2	241-AX-151		This is a diverter station, not a tank	TWRS	New	Y	Y		
3	241-T-302		Does not exist	TWRS		N	N	Catch Tank	Does not exist

A-6 TANKS TO BE ADDED TO THE IMUST LIST:

	IMUST TANK	Alternate Names	REASON:	Current Owner				Descriptive Comments	Additional Comments
1	209-E-TK-111		Underground drain tank outside 209-E	TWRS	New	N	N	189 L capacity	Low Pu contamination
2	241-AX-151CT		Catch tank in diverter station	TWRS	New	N	N	11,000 gal capacity	
3	241-AX-151-TK-D		Diverter tank in diverter station	TWRS	New	N	N	50 gal capacity	
4	241-AX-151-TK-E		Diverter tank in diverter station	TWRS	New	N	N	50 gal capacity	
5	241-AX-151-TK-F		Diverter tank in diverter station	TWRS	New	N	N	50 gal capacity	
6	241-AX-151-TK-G		Diverter tank in diverter station	TWRS	New	N	N	50 gal capacity	
7	241-BY-ITS2-TK-1		Original Facility Demolished	TWRS	New	N	N	Condensate Tank	
8	241-BY-ITS2-TK-2		Original Facility Demolished	TWRS	New	N	N	Heater Flush Tank	
9	216-A-5 Tank	270-A	Inactive tank not previously identified	BWHC		NA	NA	Neut Tk @ PUREX	Drained & flushed; limestone

A-7 OBSERVATIONS ON THE "Hanlon Report" (MONTHLY WASTE SUMMARY REPORT)

1 Hanlon lists 45 tanks; this listing has over 60.

2 Hanlon list has some identification inaccuracies:

Hanlon:	Should be:	
361-T-Tank	241-T-361	
361-U-Tank	241-U-361	
361-B-Tank	241-B-361	
241-TX-302	241-TX-302A	(Catch tank associated with 241-TX-153 diversion box)

3 Hanlon lists tanks that do not belong in the IMUST list:

241-TX-302	No such tank exists.
244-U	244-U-DCRT is an active DCRT.
244-TXR Vault	Tanks within a vault may be IMUSTs, but the vault itself is not a tank and should not be listed.
244-AR Vault	Tanks within a vault may be IMUSTs, but the vault itself is not a tank and should not be listed.

A-8 TOTAL IMUSTS IN THE 200 AREA:

Owner	Count
TWRS (LMHC)	43
ER (BHI)	22
TPD (BWHC)	3
WPD (WMH) (T-Plant)	2
TOTAL	70

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-9	*CURRENT LIST OF TWRS IMUSTs:*													
	IMUST TANK	Alternate Names	Ac-tive?					Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	200-W-7	243-S-TK-1, 246L	N					TWRS	New	Y	Y	Decon Catch Tank	
2	231-W-151-001		N					TWRS	Y	Y	Y	In 231-W-151 vault	(1) TWRS*; WIDS=vault
3	231-W-151-002		N					TWRS	Y	Y	Y	In 231-W-151 vault	WIDS only shows vault
4	240-S-302		N					TWRS	Y	Y	Y	Leaker; TWRS surveills	
5	241-A-302B		N					TWRS	Y	Y	Y		
6	241-B-301	241-B-301B	N					TWRS	Y	Y	Y		
7	241-B-302B		N					TWRS	Y	Y	Y		
8	241-BX-302A		N					TWRS	Y	Y	Y		
9	241-BX-302B		N					TWRS	Y	Y	Y		
10	241-BX-302C		N					TWRS	Y	Y	Y		
11	241-BY-ITS2-TK-1		N					TWRS	New	N	N	Facil. demolished; 2 tks left	Condensate drain tank
12	241-BY-ITS2-TK-2		N					TWRS	New	N	N	Facil. demolished; 2 tks left	Heater flush tank
13	241-C-301	241-C-301C	N					TWRS	Y	Y	Y		
14	241-ER-311A	old 241-ER-311	N					TWRS	New	Y	Y		(1) TWRS*
15	241-S-302A		N					TWRS	Y	Y	Y	Grout; others; leaker	
16	241-S-302B		N					TWRS	Y	Y	Y	Empty	
17	241-SX-302	SX-304	N					TWRS	Y	Y	Y		
18	241-T-301B	241-T-301	N					TWRS	Y	Y	Y		
19	241-TX-302A		N					TWRS	Y	Y	Y		
20	241-TX-302B catch		N					TWRS	Y	N	Y		
21	241-TX-302B(R)		N					TWRS	Y	Y	Y	Unknown	Second TX-302B in (1)
22	241-TX-302XB	241-TX-302X	N					TWRS	Y	Y	Y		
23	241-TY-302A		N					TWRS	Y	Y	Y		
24	241-TY-302B		N					TWRS	Y	Y	Y	Empty	
25	241-Z-8		N					TWRS	Y	Y	Y		
26	242-T-135		N					TWRS f	New	Y	Y		
27	242-TA-R1		N					TWRS f	New	Y	Y		
28	244-BXR-001		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
29	244-BXR-002		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
30	244-BXR-003		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
31	244-BXR-011		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
32	244-TXR-001		N					TWRS	Y	Y	Y	In 244-TXR vault	
33	244-TXR-002		N					TWRS	Y	Y	Y	In 244-TXR vault	
34	244-TXR-003		N					TWRS	Y	Y	Y	In 244-TXR vault	
35	216-BY-201	241-BY, 216-BY-47	N					TWRS s	New	Y	Y	Flush Tank, Settling Tank	Assume = 216-BY in (1)
36	216-TY-201		N					TWRS s	New	Y	Y	Supernatant Dispos Flush Tk	
37	270-W		N					TWRS s	Y	Y	Y		(1) ER*
38	209-E-TK-111	Undergr Drain Tank	N					TWRS f	New	N	N	Ouside 209-E; 189 L capacity	Low Pu contamination

39	241-AX-151CT	Catch Tank in DS	N					TWRS f	New	N	N	11,000 gal capacity		
40	241-AX-151-TK-D	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity		
41	241-AX-151-TK-E	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity		
42	241-AX-151-TK-F	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity		
43	241-AX-151-TK-G	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity		

f = tank within a facility

s = tank scheduled for being swapped between TWRS and ER

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-10	CURRENT IMUST LIST BY TANK NUMBER													
	IMUST TANK	Alternate Names	Ac-tive?					Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	200-W-7	243-S-TK-1, 246L	N					TWRS	New	Y	Y	Decon Catch Tank	
2	209-E-TK-111	Undergr Drain Tank	N					TWRS f	New	N	N	Ouside 209-E; 189 L capacity	Low Pu contamination
3	216-A-5 Tank	270-A	N					BWHC		NA	NA	Neut Tk @ PUREX	Drained & flushed; limestone
4	216-BC-201		N					ER		NA	NA		
5	216-BY-201	241-BY, 216-BY-47	N					TWRS s	New	Y	Y	Flush Tank, Settling Tank	Assume = 216-BY in (1)
6	216-TY-201		N					TWRS s	New	Y	Y	Supematant Dispos Flush Tk	
7	231-W-151-001		N					TWRS	Y	Y	Y	In 231-W-151 vault	(1) TWRS*; WIDS=vault
8	231-W-151-002		N					TWRS	Y	Y	Y	In 231-W-151 vault	WIDS only shows vault
9	240-S-302		N					TWRS	Y	Y	Y	Leaker; TWRS surveills	
10	241-A-302B		N					TWRS	Y	Y	Y		
11	241-AX-151-TK-D	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
12	241-AX-151-TK-E	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
13	241-AX-151-TK-F	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
14	241-AX-151-TK-G	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
15	241-AX-151CT	Catch Tank in DS	N					TWRS f	New	N	N	11,000 gal capacity	
16	241-B-301	241-B-301B	N					TWRS	Y	Y	Y		
17	241-B-302B		N					TWRS	Y	Y	Y		
18	241-B-361		N					ER	Y	NA	NA		
19	241-BX-302A		N					TWRS	Y	Y	Y		
20	241-BX-302B		N					TWRS	Y	Y	Y		
21	241-BX-302C		N					TWRS	Y	Y	Y		
22	241-BY-ITS2-TK-1		N					TWRS	New	N	N	Facil. demolished; 2 tks left	Condensate drain tank
23	241-BY-ITS2-TK-2		N					TWRS	New	N	N	Facil. demolished; 2 tks left	Heater flush tank
24	241-C-301	241-C-301C	N					TWRS	Y	Y	Y		
25	241-CX-70		N					ER	Y	NA	NA		
26	241-CX-71		N					ER	Y	NA	NA		
27	241-CX-72		N					ER	Y	NA	NA		
28	241-ER-311A	old 241-ER-311	N					TWRS	New	Y	Y		(1) TWRS*
29	241-S-302A		N					TWRS	Y	Y	Y	Grout; others; leaker	
30	241-S-302B		N					TWRS	Y	Y	Y	Empty	
31	241-SX-302	SX-304	N					TWRS	Y	Y	Y		
32	241-T-301B	241-T-301	N					TWRS	Y	Y	Y		
33	241-T-361		N					ER	Y	NA	NA		
34	241-TX-302A		N					TWRS	Y	Y	Y		
35	241-TX-302B catch		N					TWRS	Y	N	Y		
36	241-TX-302B(R)		N					TWRS	Y	Y	Y	Unknown	Second TX-302B in (1)
37	241-TX-302XB	241-TX-302X	N					TWRS	Y	Y	Y		
38	241-TY-302A		N					TWRS	Y	Y	Y		

39	241-TY-302B		N					TWRS	Y	Y	Y	Empty	
40	241-U-361		N					ER	Y	NA	NA		
41	241-WR-001		N					ER	Y	NA	NA		
42	241-WR-002		N					ER	Y	NA	NA		
43	241-WR-003		N					ER	Y	NA	NA		
44	241-WR-004		N					ER	Y	NA	NA		
45	241-WR-005		N					ER	Y	NA	NA		
46	241-WR-006		N					ER	Y	NA	NA		
47	241-WR-007		N					ER	Y	NA	NA		
48	241-WR-008		N					ER	Y	NA	NA		
49	241-WR-009		N					ER	Y	NA	NA		
50	241-Z-361		N					TPD/BWHC	Y	NA	NA	Settled Solids; Moderate Pu	PFP; Transitions Projects
51	241-Z-8		N					TWRS	Y	Y	Y		
52	242-T-135		N					TWRS f	New	Y	Y		
53	242-TA-R1		N					TWRS f	New	Y	Y		
54	244-BXR-001		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
55	244-BXR-002		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
56	244-BXR-003		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
57	244-BXR-011		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
58	244-TXR-001		N					TWRS	Y	Y	Y	In 244-TXR vault	
59	244-TXR-002		N					TWRS	Y	Y	Y	In 244-TXR vault	
60	244-TXR-003		N					TWRS	Y	Y	Y	In 244-TXR vault	
61	244-UR-001	Tank in UR Vault	N					ER s	Y	NA	NA	Tank in UR Vault	
62	244-UR-002	Tank in UR Vault	N					ER s	Y	NA	NA	Tank in UR Vault	
63	244-UR-003	Tank in UR Vault	N					ER s	Y	NA	NA	Tank in UR Vault	
64	244-UR-004	Tank in UR Vault	N					ER s	Y	NA	NA	Tank in UR Vault	Empty
65	270-E-1	270-E_CNT, 216-ER-1	N					TPD/BWHC	Y	NA	NA	Condensate Neutraliz Tank	EM-60, Transition Projects
66	270-W		N					TWRS s	Y	Y	Y		(1) ER*
67	276-S-141	276-S-306A	N					ER		NA	NA		
68	276-S-142	276-S-306B	N					ER		NA	NA		
69	292T-TK-1		N					WPD/WMH		NA	NA		T-Plant; Waste Programs
70	292T-TK-2		N					WPD/WMH		NA	NA		T-Plant; Waste Programs

f = tank within a facility

s = tank scheduled for being swapped between TWRS and ER

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-11	CURRENT IMUST LIST BY TANK OWNER														
	IMUST TANK	Alternate Names	Ac-tive?					Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	216-BC-201		N					ER		NA	NA		
2	241-B-361		N					ER	Y	NA	NA		
3	241-CX-70		N					ER	Y	NA	NA		
4	241-CX-71		N					ER	Y	NA	NA		
5	241-CX-72		N					ER	Y	NA	NA		
6	241-T-361		N					ER	Y	NA	NA		
7	241-U-361		N					ER	Y	NA	NA		
8	241-WR-001		N					ER	Y	NA	NA		
9	241-WR-002		N					ER	Y	NA	NA		
10	241-WR-003		N					ER	Y	NA	NA		
11	241-WR-004		N					ER	Y	NA	NA		
12	241-WR-005		N					ER	Y	NA	NA		
13	241-WR-006		N					ER	Y	NA	NA		
14	241-WR-007		N					ER	Y	NA	NA		
15	241-WR-008		N					ER	Y	NA	NA		
16	241-WR-009		N					ER	Y	NA	NA		
17	276-S-141	276-S-306A	N					ER		NA	NA		
18	276-S-142	276-S-306B	N					ER		NA	NA		
19	244-UR-001	Tank in UR Vault	N					ERs	Y	NA	NA	Tank in UR Vault	
20	244-UR-002	Tank in UR Vault	N					ERs	Y	NA	NA	Tank in UR Vault	
21	244-UR-003	Tank in UR Vault	N					ERs	Y	NA	NA	Tank in UR Vault	
22	244-UR-004	Tank in UR Vault	N					ERs	Y	NA	NA	Tank in UR Vault	Empty
23	216-A-5 Tank	270-A	N					BWHC		NA	NA	Neut Tk @ PUREX	Drained & flushed; limestone
24	241-Z-361		N					TPD/BWHC	Y	NA	NA	Settled Solids; Moderate Pu	PFP; Transitions Projects
25	270-E-1	270-E_CNT, 216-ER-1	N					TPD/BWHC	Y	NA	NA	Condensate Neutraliz Tank	EM-60, Transition Projects
26	200-W-7	243-S-TK-1, 246L	N					TWRS	New	Y	Y	Decon Catch Tank	
27	231-W-151-001		N					TWRS	Y	Y	Y	In 231-W-151 vault	(1) TWRS*; WIDS=vault
28	231-W-151-002		N					TWRS	Y	Y	Y	In 231-W-151 vault	WIDS only shows vault
29	240-S-302		N					TWRS	Y	Y	Y	Leaker; TWRS surveills	
30	241-A-302B		N					TWRS	Y	Y	Y		
31	241-B-301	241-B-301B	N					TWRS	Y	Y	Y		
32	241-B-302B		N					TWRS	Y	Y	Y		
33	241-BX-302A		N					TWRS	Y	Y	Y		
34	241-BX-302B		N					TWRS	Y	Y	Y		
35	241-BX-302C		N					TWRS	Y	Y	Y		
36	241-BY-ITS2-TK-1		N					TWRS	New	N	N	Facil. demolished; 2 tks left	Condensate drain tank
37	241-BY-ITS2-TK-2		N					TWRS	New	N	N	Facil. demolished; 2 tks left	Heater flush tank
38	241-C-301	241-C-301C	N					TWRS	Y	Y	Y		

39	241-ER-311A	old 241-ER-311	N					TWRS	New	Y	Y		(1) TWRS*
40	241-S-302A		N					TWRS	Y	Y	Y	Grout; others; leaker	
41	241-S-302B		N					TWRS	Y	Y	Y	Empty	
42	241-SX-302	SX-304	N					TWRS	Y	Y	Y		
43	241-T-301B	241-T-301	N					TWRS	Y	Y	Y		
44	241-TX-302A		N					TWRS	Y	Y	Y		
45	241-TX-302B catch		N					TWRS	Y	N	Y		
46	241-TX-302B(R)		N					TWRS	Y	Y	Y	Unknown	Second TX-302B in (1)
47	241-TX-302XB	241-TX-302X	N					TWRS	Y	Y	Y		
48	241-TY-302A		N					TWRS	Y	Y	Y		
49	241-TY-302B		N					TWRS	Y	Y	Y	Empty	
50	241-Z-8		N					TWRS	Y	Y	Y		
51	242-T-135		N					TWRS f	New	Y	Y		
52	242-TA-R1		N					TWRS f	New	Y	Y		
53	244-BXR-001		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
54	244-BXR-002		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
55	244-BXR-003		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
56	244-BXR-011		N					TWRS	Y	Y	Y	Cs & Sr extraction/Purex	
57	244-TXR-001		N					TWRS	Y	Y	Y	In 244-TXR vault	
58	244-TXR-002		N					TWRS	Y	Y	Y	In 244-TXR vault	
59	244-TXR-003		N					TWRS	Y	Y	Y	In 244-TXR vault	
60	209-E-TK-111	Undergr Drain Tank	N					TWRS f	New	N	N	Ouside 209-E; 189 L capacity	Low Pu contamination
61	241-AX-151CT	Catch Tank in DS	N					TWRS f	New	N	N	11,000 gal capacity	
62	241-AX-151-TK-D	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
63	241-AX-151-TK-E	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
64	241-AX-151-TK-F	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
65	241-AX-151-TK-G	Diverter Tank in DS	N					TWRS f	New	N	N	50 gal capacity	
66	216-BY-201	241-BY, 216-BY-47	N					TWRS s	New	Y	Y	Flush Tank, Settling Tank	Assume = 216-BY in (1)
67	216-TY-201		N					TWRS s	New	Y	Y	Supernatant Dispos Flush Tk	
68	270-W		N					TWRS s	Y	Y	Y		(1) ER*
69	292T-TK-1		N					WPD/WMH		NA	NA		T-Plant; Waste Programs
70	292T-TK-2		N					WPD/WMH		NA	NA		T-Plant; Waste Programs

f = tank within a facility

s = tank scheduled for being swapped between TWRS and ER

A-12	FACILITIES, TANKS, AND COMPONENTS WITH POTENTIAL AB UPGRADE NEEDS										
	TANK or FACILITY	Alternate Names	Type	Listed in WIDS	Current Status	Current Owner	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	204-AR		Facility	Y	Active	TWRS	Y	Y	Waste Unloading Station	1 CT + 4 chem tanks
2	204-AR-TK-1		Tank	N	Active	TWRS	Y	Y	Catch Tank	
3	204-AR-TK-2		Chem	N	Active	TWRS	Y	Y	Nitrate Solution Tank	Chem
4	204-AR-TK-3		Chem	N	Active	TWRS	Y	Y	Dilute Caustic Solution Tank	Chem
5	204-AR-TK-4		Chem	N	Active	TWRS	Y	Y	High pH Buffer Soln Tank	Chem
6	204-AR-TK-5		Chem	N	Active	TWRS	Y	Y	50% Caustic Solution Tank	Chem
7	204-AR-Sump		Component	N	Active	TWRS	N	N	Contains Catch Tank TK-1	
8	209-E	Criticality Facility	Facility	N	Inactive	TWRS	N	N	Criticality Facility	
9	200-E-4		Component	Y	Active	TWRS	N	N	209-E French Drain	Crit Mass Lab Dry Well North
10	209-E-WS-1		Component	Y	Inactive	TWRS	N	N	209-E French Drain	
11	209-E-WS-2		Component	Y	Inactive	TWRS	N	N	209-E French Drain	
12	209-E-WS-3		Component	Y	Inactive	TWRS	N	N	Valve Pit	
13	209-E-TK-101		Tank	N	Inactive	TWRS	N	N	330 L capacity	1 g Pu in heel
14	209-E-Tk-102		Tank	N	Inactive	TWRS	N	N	330 L capacity	Residual U
15	209-E-TK-103		Tank	N	Inactive	TWRS	N	N	290 L capacity	8 g Pu in heel
16	209-E-TK-104		Tank	N	Inactive	TWRS	N	N	290 L capacity	15 g Pu in heel
17	209-E-TK-105		Tank	N	Inactive	TWRS	N	N	400 L capacity	38 g Pu in heel
18	209-E-TK-106		Tank	N	Inactive	TWRS	N	N	400 L capacity	123 g Pu in heel
19	209-E-TK-108		Tank	N	Inactive	TWRS	N	N	11,735 L capacity	Clean; contained water
20	209-E-TK-109		Tank	N	Inactive	TWRS	N	N	35 L capacity	Catch tank - Pu contamination
21	209-E-TK-110		Tank	N	Inactive	TWRS	N	N	35 L capacity	Catch tank - Pu contamination
22	209-E-TK-111		Tank	N	Inactive	TWRS	N	N	189 L capacity; decon tank	Lo Pu contamination - IMUST
23	209-E-TK-141		Tank	N	Inactive	TWRS	N	N	278 L capacity	36 g Pu in heel
24	209-E-TK-161		Tank	N	Inactive	TWRS	N	N	110 L capacity	4 g Pu in heel
25	209-E-TK-162		Tank	N	Inactive	TWRS	N	N	400 L capacity	4 g Pu in heel
26	209-E-TK-206		Tank	N	Inactive	TWRS	N	N	10 L capacity	2 g total w/tanks 215 & 216
27	209-E-TK-213		Tank	N	Inactive	TWRS	N	N	18 L capacity	1 g Pu in heel
28	209-E-TK-215		Tank	N	Inactive	TWRS	N	N	15 L capacity	See TK-106
29	209-E-TK-216		Tank	N	Inactive	TWRS	N	N	15 L capacity	See TK-106
30	209-E-TK-231		Tank	N	Inactive	TWRS	N	N	320 L capacity	42 g Pu in heel
31	209-E-TK-232		Tank	N	Inactive	TWRS	N	N	320 L capacity	31 g Pu in heel
32	209-E-TK-233		Tank	N	Inactive	TWRS	N	N	320 L capacity	47 g Pu in heel
33	209-E-TK-234		Tank	N	Inactive	TWRS	N	N	156 L capacity	33 g Pu in heel
34	209-E-TK-235		Tank	N	Inactive	TWRS	N	N	156 L capacity	3 g Pu in heel
35	209-EA	90 d. storage pad	Facility	N	Active	TWRS	Y	Y	rad, mixed, and haz sections	90 d. storage pad
36	213-W		Facility	Y	Active	TWRS	Y	Y	Compactor Facility	Facility
37	241-AX-151	Diverter Station	Facility	Y	Inactive	TWRS	Y	Y	Contains 5 IMUSTs	
38	241-AX-151CT	Catch Tank	Tank	N	Inactive	TWRS	N	N	IMUST	
39	241-AX-151-TK-D	Diverter Tank	Tank	N	Inactive	TWRS	N	N	IMUST	

40	241-AX-151-TK-E	Diverter Tank	Tank	N	Inactive	TWRS	N	N	IMUST	
41	241-AX-151-TK-F	Diverter Tank	Tank	N	Inactive	TWRS	N	N	IMUST	
42	241-AX-151-TK-G	Diverter Tank	Tank	N	Inactive	TWRS	N	N	IMUST	
43	241-AX-152	Diverter Station	Facility	N	Active	TWRS	Y	Y		
44	241-AX-152CT	Catch Tank	Tank	Y	Active	TWRS	Y	Y		
45	241-AX-152-TK-A	Diverter Tank	Tank	N	Active	TWRS	Y	Y		
46	241-AX-152-TK-B	Diverter Tank	Tank	N	Active	TWRS	Y	Y		
47	241-AX-IX-1	241-AX farm ion-exchg	Facility	N	Inactive	TWRS	N	N	AX farm ion-exchange column	
48	241-AX-IX-2	AX ion-exchg filter	Component	N	Inactive	TWRS	N	N	filter	
49	241-BY-ITS1	In-tank solidification sys	Facility	N	Inactive	TWRS	N	N	Disconnected; few components	
50	241-BY-ITS1-XT-1	Ion-exchg col.	Component	N	Inactive	TWRS	N	N		
51	241-BY-ITS1-F-2	Cuno Filter	Component	N	Inactive	TWRS	N	N		
52	241-BY-ITS1-TK-2	Condensate Catch Tk	Tank	N	Inactive	TWRS	N	N	Aboveground	
53	241-BY-ITS1-DM-102	Deentrainment vessel	Tank	N	Inactive	TWRS	N	N	Aboveground	
54	241-BY-ITS1-EX-1	Condenser	Component	N	Inactive	TWRS	N	N		
55	241-BY-ITS1-DM-1	Demister	Component	N	Inactive	TWRS	N	N		
56	241-BY-ITS2		Facility	N	Inactive	TWRS	N	N		
57	241-BY-ITS2-TK-1	Tank	Tank	N	Inactive	TWRS	N	N	Condenser Tank	IMUST
58	241-BY-ITS2-TK-2	Tank	Tank	N	Inactive	TWRS	N	N	Heater Flush Tank	IMUST
59	241-BY-254	Ctrl Hse & Compr ITS2	Component	N	Inactive	TWRS	N	N	Ctrl House & compressor #2	
60	241-BY-254 Tank	Air Receiver Tank	Tank	N	Inactive	TWRS	N	N	Air receiver tank	No radioactivity
61	241-BY-301	Control House ITS1	Component	N	Inactive	TWRS	N	N	Control House #1	
62	241-BY-302	Compressor House ITS1	Facility	N	Inactive	TWRS	N	N	Compressor House #1	
63	241-BY-302A	Compressed Air Station	Component	N	Inactive	TWRS	N	N	Compressed Air Station	
64	241-BY-302A Tank	Air Receiver Tank	Tank	N	Inactive	TWRS	N	N	Air Receiver Tank	No radioactivity
65	242-S		Facility	Y	Inactive	TWRS	N	N	Evaporator	
66	242-S-C-A-1	Vapor/Liquid Separator	Component	N	Inactive	TWRS	N	N	Separator; drained & flushed	3-4" residual
67	242-S-E-A-1	Reboiler	Component	N	Inactive	TWRS	N	N	Reboiler, empty	drained and flushed
68	242-S-E-C-1	Primary Condenser	Component	N	Inactive	TWRS	N	N	Condenser, empty	drained and flushed
69	242-S-E-C-2	Inter Condenser	Component	N	Inactive	TWRS	N	N	Condenser, empty	drained and flushed
70	242-S-E-C-3	After Condenser	Component	N	Inactive	TWRS	N	N	Condenser, empty	drained and flushed
71	242-S-TK-C-100	Cond Catch Tank	Tank	N	Inactive	TWRS	N	N	17,800 gal capacity	8000-9000 gal sludge w/organ
72	242-S-IX-D-1	Ion Exchange Column	Component	N	Inactive	TWRS	N	N	Dowex MSA-1 resin	regen w/NaOH; water cover
73	242-S-HX-E-1	Glycol HX	Component	N	Inactive	TWRS	N	N	Glycol heat exchanger	located outside 242-S bldg
74	242-S-E-E-6	Glycol Aftercooler	Component	N	Inactive	TWRS	N	N	Glycol After Cooler	
75	242-S-TK-E-1	Glycol Surge Tank	Tank	N	Inactive	TWRS	N	N	Coolant Surge Tank	
76	242-S-TK-E-101	Eluent Tank	Tank	N	Inactive	TWRS	N	N	4200 gal capacity	last used for NaOH; quant=?
77	242-S-TK-E-102	Anti Foam Tank	Tank	N	Inactive	TWRS	N	N	100 gal capacity	contains dry sodium bicarb.
78	242-S-TK-C-103	Flow Meas Tank	Tank	N	Inactive	TWRS	N	N	500 gal capacity, now empty	drained and flushed
79	242-S-TK-E-104	Decontamination Tank	Tank	N	Inactive	TWRS	N	N	620 gal capacity	yellow liquid, pH=10, quant=?
80	242-S-DU-C-1	De-Entrainment Unit	Component	N	Inactive	TWRS	N	N	empty	drained and flushed
81	242-S-TK-302-C	Acid Storage Tank	Tank	N	Inactive	TWRS	N	N	47,000 gal capacity	emptied; cleaned for H2O stor
82	242-S Floor Sump	Floor Sump	Component	N	Inactive	TWRS	N	N	250 gal capacity;	current quant unknown

83	242-T		Facility		Y	Inactive	TWRS		N	N	Evaporator	Facility
84	242-TA	Vault	Facility		N	Inactive	TWRS		N	N		
85	242-TB	Ventilation Building	Facility		N	Inactive	TWRS		N	N		
86	242-TA-R1	Rcvr Tank, aka TK-R1	Tank		N	Inactive	TWRS		N	N	Receiver Tank, 4000 gal	In 242-TA Vault, IMUST
87	242-T-601	Chem Storage Bldg	Facility		N	Inactive	TWRS		N	N	Chemical storage w/tanks	Facility
88	242-T-601-TK-1		Chem Tk		N	Inactive	TWRS		N	N	1322 gal empty & vented	inside 242-T-601; chem
89	242-T-601-TK-2		Chem Tk		N	Inactive	TWRS		N	N	6345 gal cap; empty	outside 242-T-601; chem
90	242-T-601-TK-3		Chem Tk		N	Inactive	TWRS		N	N	317 gal cap; 10 gal clr liquid	In 242-T-601; rec sampl;chem
91	242-T-601-TK-4		Chem Tk		N	Inactive	TWRS		N	N	55 gal cap; empty	outside 242-T-601; chem
92	242-T-601-TK-5		Chem Tk		N	Inactive	TWRS		N	N	3348 gal cap; empty	In 242-T-601; rec sampl;chem
93	242-T-601-TK-6		Chem Tk		N	Inactive	TWRS		N	N	588 gal cap; empty	outside 242-T-601; chem
94	242-T-601-TK-7		Chem Tk		N	Inactive	TWRS		N	N	empty & vented	inside 242-T-601; chem
95	242-TC	Microcomputr Eqpt Bldg	Facilty		N	Inactive	TWRS		N	N	non-rad portion of T-evap	
96	242-T-701	Compr Air Station	Facility		N	Inactive	TWRS		N	N	non-rad portion of T-evap	
97	242-T Floor Sump	Floor Sump	Facility		N	Inactive	TWRS		N	N	In 242-T	
98	242-T Hot Sump	Hot Sump	Facility		N	Inactive	TWRS		N	N	In 242-T	
99	242-T-101	Evaporator	Component		N	Inactive	TWRS		N	N	Evaporator	
100	242-T-102	Feed Tank, aka TK-B1	Tank		N	Inactive	TWRS		N	N	Feed Tank, 4000 gal.	Located in feed cell in 242-T
101	242-T-105	Cyclone Separator	Component		N	Inactive	TWRS		N	N	Cyclone Separator	
102	242-T-106	Packed Scrubber	Component		N	Inactive	TWRS		N	N	Packed Scrubber	
103	242-T-107	Condenser	Component		N	Inactive	TWRS		N	N	Condenser	
104	242-T-108	Condenser Catch Tank	Tank		N	Inactive	TWRS		N	N	Condenser Catch Tank	4000 gal
105	242-T-109	Condenser Catch Tank	Tank		N	Inactive	TWRS		N	N	Condenser Catch Tank	4000 gal
106	242-T-110	Cyclone Catch Tank	Tank		N	Inactive	TWRS		N	N	Cyclone Catch Tank	
107	242-T-123	Compressor Rcvr Tank	Tank		N	Inactive	TWRS		N	N	Compressor Receiver Tank	
108	242-T-135	Decon Tank	Tank		N	Inactive	TWRS		N	N	Decontamination Tank	Partly underground; IMUST
109	242-T-112	Anti Foam Tank	Tank		N	Inactive	TWRS		N	N	Anti Foam Tank	Located in Control Building
110	244-AR Vault		Facility		Y	Inactive	TWRS		Y	Y	Process vault with tanks	
111	244-AR Sumps	(Overflowed to cell floor)	Sumps		N	Inactive	TWRS		N	N	Volume: 240, 41, 3074 gal	Capacity: 41, 41, 27 gal
112	2904-AR		Component		N	Inactive	TWRS		N	N	Sampler pit for AR vault	200E; no tanks
113	244-AR-TK-01	Tank in vault	Tank		N	Inactive	TWRS		Y	Y	vol 1300 gal; cap 50,000 gal	Rec's rain from sump
114	244-AR-TK-02	Tank in vault	Tank		N	Inactive	TWRS		Y	Y	vol 12,500 gal; cap 50,000 gal	Rec's rain from sump
115	244-AR-TK-03	Tank in vault	Tank		N	Inactive	TWRS		Y	Y	vol 2000 gal; cap 5000 gal	Rec's rain from sump
116	244-AR-TK-04	Tank in vault	Tank		N	Inactive	TWRS		Y	Y	vol 250 gal; cap 5000 gal	Rec's rain from sump
117	244-CR Vault		Vault		Y	Active	TWRS		Y	Y	Vault with 4 Tanks	
118	244-CR-TK-001		Tank		N	Inactive	TWRS		N	N	vol - 2000 gal U Recov waste	50,000 gal cap
119	244-CR-TK-011		Tank		N	Inactive	TWRS		N	N	vol - 35,000 gal supern & rain	50,000 gal cap
120	244-CR-TK-002		Tank		N	Inactive	TWRS		N	N	vol - 1500 gal Purex acid slud	15,000 gal cap
121	244-CR-TK-003		Tank		N	Active	TWRS		Y	Y	vol - 4220 gal saltwell waste	Active - 15,000 gal cap
122	244-CR-WS-1	244-CR French Drain	Component		Y	Inactive	TWRS		N	N	French Drain	
123	271-CR		Component		N	Active	TWRS		N	N	Control Room for CR Vault	MCC eqpt for 241-C Farm
124	271-CRL		Component		N	Inactive	TWRS		N	N	Process Laboratory	acid tank removed
125	244-BXR	Vault	Facility		Y	Inactive	TWRS		Y	Y	Vault	

126	244-BXR-001		Tank		Y	Inactive	TWRS		Y	Y	Cs & Sr extraction/Purex	IMUST
127	244-BXR-002		Tank		Y	Inactive	TWRS		Y	Y	Cs & Sr extraction/Purex	IMUST
128	244-BXR-003		Tank		Y	Inactive	TWRS		Y	Y	Cs & Sr extraction/Purex	IMUST
129	244-BXR-011		Tank		Y	Inactive	TWRS		Y	Y	Cs & Sr extraction/Purex	IMUST
130	244-TXR	Vault	Facility		Y	Inactive	TWRS		Y	Y	Vault	
131	244-TXR-001		Tank		Y	Inactive	TWRS		Y	Y	In 244-TXR vault	IMUST
132	244-TXR-002		Tank		Y	Inactive	TWRS		Y	Y	In 244-TXR vault	IMUST
133	244-TXR-003		Tank		Y	Inactive	TWRS		Y	Y	In 244-TXR vault	IMUST
134	244-UR Vault		Vault		Y	Inactive	BHI		NA	NA	Receiving Vault	
135	244-UR-001		Tank		Y	Inactive	ER s		NA	NA	Tank in UR Vault	IMUST
136	244-UR-002		Tank		Y	Inactive	ER s		NA	NA	Tank in UR Vault	IMUST
137	244-UR-003		Tank		Y	Inactive	ER s		NA	NA	Tank in UR Vault	IMUST
138	244-UR-004		Tank		Y	Inactive	ER s		NA	NA	Tank in UR Vault	IMUST; Empty
139	2727-W		Facility		N	Active	TWRS		Y	Y	Sodium Storage	
140	2727-WA		Facility		Y	Inactive	TWRS		N	N	Sodium Storage	Empty
141	GTF	Grout Treatment Facility	Facility		Y	Active	TWRS		N	N	Grout Treatment Facility	Collective Designation for all
142	DMF	Dry Materials Facility	Facility		N	Inactive	TWRS		N	N	Empty	
143	2400-E	DMF Control Bldg	Facility		N	Inactive	TWRS		N	N		
144	2402-EA	Railcar Unloading Pit	Component		N	Inactive	TWRS		N	N	Has 5000 gal dry mat'l bin	
145	2402-EB	Storage Bin	Component		N	Inactive	TWRS		N	N	21.5' dia x 65' hi	
146	2402-EC	Storage Bin	Component		N	Inactive	TWRS		N	N	26' dia x 65' hi	
147	2402-ED	Storage Bin	Component		N	Inactive	TWRS		N	N	12.3' dia x 49' hi	
148	2402-EF	Storage Bin	Component		N	Inactive	TWRS		N	N	21.5' dia x 65' hi	
149	2402-EG	Pump Pit	Component		N	Inactive	TWRS		N	N	w/5000 gal transfer bin	
150	2402-E	Compressor Bldg.	Component		N	Inactive	TWRS		N	N	w/2180 gal extern air rcvr tk	
151	2403-E	Blended Mat'l Storage	Component		N	Inactive	TWRS		N	N	also truck loadout	
152	2403-EA	Compressor Bldg.	Component		N	Inactive	TWRS		N	N		
153	2451-E	Electrical Substation	Component		N	Inactive	TWRS		N	N		
154	GPF	Grout Processing Facil.	Facility		N	Inactive	TWRS		N	N		
155	GPF-TK-R-01	Additive Tank	Tank		N	Inactive	TWRS		N	N	100 gal cap	
156	GPF-TK-R-02	Additive Tank	Tank		N	Inactive	TWRS		N	N	500 gal cap	
157	GPF-TK-R-03	Additive Tank	Tank		N	Inactive	TWRS		N	N	250 gal cap	
158	GPF-TK-R-04	Additive Tank	Tank		N	Inactive	TWRS		N	N	200 gal cap	
159	GPF-TK-F-01	Decon Sol'n Sto Tank	Tank		N	Inactive	TWRS		N	N	500 gal cap	
160	GPF-DBM	Dry Blend Module	Component		N	Inactive	TWRS		N	N	2200 cu ft cap bin	10' dia x 26' high
161	243-G-LCT/MM	Liquid Collec/Tank Mixer	Tank		N	Inactive	TWRS		N	N	Empty:5000 gal cap, 500 surge	Liquid Collec Tk/Mixer Module
162	GDF	GTFL	Facility		Y	Inactive	TWRS		N	N	Grout Disposal Facility	
163	218-E-16-101	Vault 101, PSW	Component		Y	Inactive	TWRS		N	N	Phosphate/Sulfate Grout; GDF	Low Level; 1.4 M gal cap
164	218-E-16-102	Vault 102	Component		N	Inactive	TWRS		N	N	Empty; GDF	1.4 M gal cap
165	218-E-16-103	Vault 103	Component		N	Inactive	TWRS		N	N	Empty; GDF	1.4 M gal cap
166	218-E-16-104	Vault 104	Component		N	Inactive	TWRS		N	N	Empty; GDF	1.4 M gal cap
167	218-E-16-105	Vault 105	Component		N	Inactive	TWRS		N	N	Empty; GDF	1.4 M gal cap

A-13	CHEMICAL TANKS OWNED BY TWRS:											
	TANK or FACILITY	Alternate Names		Type		Listed in WIDS	Current Status	Current Owner		In BIO	In FSAR	Descriptive Comments	Additional Comments
1	204-AR-TK-2			Chem		N	Active	TWRS		Y	Y	Nitrate Solution Tank	Chem
2	204-AR-TK-3			Chem		N	Active	TWRS		Y	Y	Dilute Caustic Soln Tk	Chem
3	204-AR-TK-4			Chem		N	Active	TWRS		Y	Y	High pH Buffer Soln Tk	Chem
4	204-AR-TK-5			Chem		N	Active	TWRS		Y	Y	50% Caustic Soln Tk	Chem
5	241-BY-TK-302-C	Chem sto tank		Chem		N	Inactive	TWRS		N	N	Acid sto for AR vault	Drained, flushed, empty;chem
6	241-BY-TK-2	Chem sto tank		Chem		N	Inactive	TWRS		N	N	Caustic sto for AR vault	Drained, flushed, empty;chem
7	242-T-601-TK-1			Chem Tk		N	Inactive	TWRS		N	N	empty & vented	inside 242-T-601; chem
8	242-T-601-TK-2			Chem Tk		N	Inactive	TWRS		N	N	55 gal cap; empty	outside 242-T-601; chem
9	242-T-601-TK-3			Chem Tk		N	Inactive	TWRS		N	N	10 gal clear liquid	in 242-T-601; rec sampl;chem
10	242-T-601-TK-4			Chem Tk		N	Inactive	TWRS		N	N	150 gal cap; empty	outside 242-T-601; chem
11	242-T-601-TK-5			Chem Tk		N	Inactive	TWRS		N	N	probably empty; held caustic	in 242-T-601; rec sampl;chem
12	242-T-601-TK-6			Chem Tk		N	Inactive	TWRS		N	N	2500 gal cap; empty	outside 242-T-601; chem
13	242-T-601-TK-7			Chem Tk		N	Inactive	TWRS		N	N	empty & vented	inside 242-T-601; chem

	TANK or FACILITY	Alternate Names	Type	Listed in WIDS	Current Status	Current Owner	In BIO	In FSAR	Descriptive Comments	Additional Comments
A-14	*CHEMICAL TANKS IN THE 200-AREA NOT OWNED BY TWRS:*									
1	200-W-13	2713-WB	Facility	Y	Inactive	Dyncorp	NA	NA	Maintenance Shop	Green Hut Complex
2	200-W-13-TK-1		Chem	N	Inactive	Dyncorp	NA	NA		
3	200-W-13-TK-2		Chem	N	Inactive	Dyncorp	NA	NA		
4	200-W-13-TK-3		Chem	N	Inactive	Dyncorp	NA	NA		
5	203-U		Chem Fac	N	Inactive	BHI	NA	NA	Facility with 5 tanks at U-Plant	
6	TK-X1		Chem	N	Inactive	BHI	NA	NA	In 203-U Bldg	
7	TK-X2		Chem	N	Inactive	BHI	NA	NA	In 203-U Bldg	
8	TK-X36		Chem	N	Inactive	BHI	NA	NA	In 203-U Bldg	
9	TK-X37		Chem	N	Inactive	BHI	NA	NA	In 203-U Bldg	
10	TK-X-38		Chem	N	Inactive	BHI	NA	NA	In 203-U Bldg	
11	204-A		Chem Fac	N	Inactive	BWHC	NA	NA	Beneath U-cell within PUREX	Acid Storage Vault
12	204-A-TK-U-1		Chem	N	Inactive	BWHC	NA	NA	Empty	
13	204-A-TK-U-2		Chem	N	Inactive	BWHC	NA	NA	Empty	
14	204-A-TK-U-3		Chem	N	Inactive	BWHC	NA	NA	Empty	
15	204-A-TK-U-4		Chem	N	Inactive	BWHC	NA	NA	Empty	
16	211-A		Chem Fac	N	Inactive	BWHC	NA	NA	Cold chem makeup @ PUREX	9 tanks; 211-A-NU is in WIDS
17	211-A-TK-10		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
18	211-A-TK-11		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
19	211-A-TK-40		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
20	211-A-TK-41		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
21	211-A-TK-342		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
22	211-A-TK-20		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
23	211-A-TK-21		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
24	211-A-TK-30		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
25	211-A-TK-50		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	N of Purex	
26	211-B		Chem Fac	N	Inactive	BWHC	NA	NA	Cold Chem Makeup @ B Plant	8 + 13 tanks; 10 remaining
27	TK-SQ-141		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
28	TK-SQ-142		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
29	TK-SQ-143		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
30	TK-161		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
31	TK-MNB-173		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
32	TK-SD-111		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
33	TK-SA-101		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
34	TK-SA-102		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
35	TK-SA-103		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
36	TK-SF-120		Cold Chem Makeup	N	Inactive	BWHC	NA	NA	211-B Tank Farm	
37	211-S		Chem Fac	N	Inactive	BHI	NA	NA	Cold Chem Makeup Tk Farm	10 tanks; Redox
38	211-S-301		Cold Chem Makeup	N	Inactive	BHI	NA	NA	W of REDOX	

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

39	211-S-302A			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
40	211-S-302B			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
41	211-S-302C	Not Built?		Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
42	211-S-303A			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
43	211-S-303B			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
44	211-S-303D			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
45	211-S-305A			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
46	211-S-305B			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
47	211-S-305C			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
48	211-S-305D			Cold Chem Makeup	N	Inactive	BHI		NA	NA	W of REDOX	
49	211-T			Chem Fac	Y	Active	WMH		NA	NA	<90 d. waste storage pad	T Plant; 4 tks orig; 1 remains
50	TK-SQ-141			Cold Chem Makeup	N	Inactive	WMH		NA	NA	211-T Chem Tank Farm	Tank Removed
51	TK-SQ-142			Cold Chem Makeup	N	Inactive	WMH		NA	NA	211-T Chem Tank Farm	Tank Removed
52	TK-SQ-143			Radwaste?	N	Active?	WMH		NA	NA	211-T Chem Tank Farm	10-18" solid cake; radwaste?
53	TK-SQ-145			Cold Chem Makeup	N	Inactive	WMH		NA	NA	211-T Chem Tank Farm	Tank Removed
54	TK-SY-181A			Cold Chem Makeup	N	Inactive	WMH		NA	NA	At 211-T	Tank Removed
55	211-U			Chem Facil	Y	Inactive	BHI		NA	NA	Solvent Recovery Facility	U plant; chem
56	211-U-301			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
57	211-U-302			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
58	211-U-303			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
59	211-U-306			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
60	211-U-307			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
61	211-U-308			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
62	211-U-310			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
63	211-U-311			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
64	211-U-312			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
65	211-U-321			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
66	211-U-322			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
67	211-U-323			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
68	211-U-324			Cold Chem Makeup	N	Inactive	BHI		NA	NA	In 211-U Bldg	
69	211-UA			Chem Facil	N	Inactive	BHI		NA	NA	Addition to 211-U	
70	211-UA-312			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
71	211-UA-314			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
72	211-UA-315			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
73	211-UA-325			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
74	211-UA-326			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
75	211-UA-327			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
76	211-UA-332			Cold Chem Makeup	N	Inactive	BHI		NA	NA	U Plant	
77	276-A			Chem Facil	N	Inactive	BWHC		NA	NA	Solvent Tanks	Purex; chem
78	TK-R1			Solvent Tank	N	Inactive	BWHC		NA	NA	276-A Bldg	
79	TK-R2			Solvent Tank	N	Inactive	BWHC		NA	NA	276-A Bldg	
80	TK-R5			Solvent Tank	N	Inactive	BWHC		NA	NA	276-A Bldg	
81	TK-R7			Solvent Tank	N	Inactive	BWHC		NA	NA	276-A Bldg	

82	TK-R8			Solvent Tank	N	Inactive	BWHC		NA	NA	276-A Bldg	
83	T-R2			Solvent Tank	N	Inactive	BWHC		NA	NA	276-A Bldg	
84	276-B			Chem Facil	N	Inactive	BWHC		NA	NA	Solvent Tanks	chem
85	TK-MO-154			Solvent Tank	N	Inactive	BWHC		NA	NA	276-B Bldg	
86	TK-SO-151			Solvent Tank	N	Inactive	BWHC		NA	NA	276-B Bldg	
87	TK-SO-152			Solvent Tank	N	Inactive	BWHC		NA	NA	276-B Bldg	
88	276-BA			Chem Facil	N	Inactive	BWHC		NA	NA	Solvent Tanks	chem
89	276-BA-TK-1			Chem	N	Inactive	BWHC		NA	NA	Empty; to be removed	
90	276-BA-TK-2			Chem	N	Inactive	BWHC		NA	NA	Empty	
91	276-S			Chem Facil	N	Inactive	BHI		NA	NA		
92	276-S-308			Chem	N	Inactive	BHI		NA	NA	REDOX	
93	276-S-309			Chem	N	Inactive	BHI		NA	NA	REDOX	
94	276-S-310			Chem	N	Inactive	BHI		NA	NA	REDOX	
95	276-S-TK-311			Chem	N	Inactive	BHI		NA	NA	REDOX	
96	203-A-TK-P1			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
97	203-A-TK-P2			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
98	203-A-TK-P3			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
99	203-A-TK-P4			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
100	203-A-TK-P5			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
101	203-A-TK-P6			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
102	203-A-TK-P13			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
103	203-A-TK-P14			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
104	203-A-TK-P15			Chem	N	Inactive	BHI		NA	NA	203-A, PUREX	
105	276-U			Chem Facil	N	Inactive	BHI		NA	NA	Solvent Tanks	U plant; chem
106	276-U-380			Chem	N	Inactive	BHI		NA	NA	Solvent tank	U-plant
107	276-U-381			Chem	N	Inactive	BHI		NA	NA	Solvent tank	U-plant
108	276-U-388			Chem	N	Inactive	BHI		NA	NA	Solvent tank	U-plant
109	293-A			Chem Fac	N	Inactive	BWHC		NA	NA	PUREX Offgas treatment bldg	
110	293-A-T-XA			Chem	N	Inactive	BWHC		NA	NA	PUREX	
111	293-A-T-XB			Chem	N	Inactive	BWHC		NA	NA	PUREX	
112	293-A-T-XC			Chem	N	Inactive	BWHC		NA	NA	PUREX	
113	293-A-T-XD			Chem	N	Inactive	BWHC		NA	NA	PUREX	
114	293-A-SK-3			Chem	N	Inactive	BWHC		NA	NA	PUREX	
115	293-AA-TK-X10			Chem	N	Inactive	BWHC		NA	NA	PUREX	Removed
116	293-AA-TK-X11			Chem	N	Inactive	BWHC		NA	NA	PUREX	Removed
117	293-AA-TK-X12			Chem	N	Inactive	BWHC		NA	NA	PUREX	Removed
118	276-C			Chem Fac	N	Inactive	BHI		NA	NA	Hot Semi Works	Solvent Handling Building
119	276-C-22			Chem	N	Inactive	BHI		NA	NA	Solvent Tank	
120	276-C-23			Chem	N	Inactive	BHI		NA	NA	Solvent Tank	
121	276-C-24			Chem	N	Inactive	BHI		NA	NA	Solvent Tank	
122	276-C-25			Chem	N	Inactive	BHI		NA	NA	Solvent Tank	
123	276-C-26			Chem	N	Inactive	BHI		NA	NA	Solvent Tank	
124	276-C-27			Chem	N	Inactive	BHI		NA	NA	Solvent Tank	

125	276-C-28			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
126	276-C-29			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
127	276-C-30			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
128	276-C-31			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
129	276-C-58			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
130	276-C-59			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
131	276-C-60			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
132	276-C-61			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
133	276-C-62			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
134	276-C-63			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
135	276-C-66			Chem		N	Inactive	BHI		NA	NA	Solvent Tank	
136	283-WC			Chem		N	Active	Dyncorp		NA	NA	Clarifier Tank	200W Water Plant; chem
137	284-WA			Chem		N	Inactive	Dyncorp		NA	NA	Salt/Brine Tank; removed?	200W Power House; chem
138	2711E-66	2711E-TK-1		Chem		N	Active	Dyncorp		NA	NA	Waste Oil	200E Garage; chem
139	2711E-66A	2711E-TK-2		Chem		N	Active	Dyncorp		NA	NA	Waste Oil	200E Garage; chem
140	???	Emerg Gen Fuel Tk		Chem		N	Active	WMH		NA	NA	At 222-S	
141	???	Diesel Fuel Tk		Chem		N	Active	BWHC		NA	NA	North of B-Plant	40 gal.
142	T-101	Fuel Oil Tk		Chem		N	Active	BWHC		NA	NA	NW of WESF, by 225-BA	10,000 gal.
143	282-B	Diesel Fuel Tk		Chem		N	Active	BWHC		NA	NA	West of WESF	200 gal.
144	282-BA	Diesel Fuel Tk		Chem		N	Active	BWHC		NA	NA	West of WESF	200 gal.
145	TK-101	Diesel Fuel Tk		Chem		N	Active	BWHC		NA	NA	NW of WESF, by 225-BC	
146	TK-225BG-2000-1	Diesel Fuel Tk		Chem		N	Active	BWHC		NA	NA	SW of WESF	500 gal.
147	TK-225BG-2000-2	Diesel Fuel Tk		Chem		N	Active	BWHC		NA	NA	SW of WESF	500 gal.

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-15 TWRS NITs (TWRS NON-IMUSTS)

	TANK or FACILITY	Alternate Names	Type	Listed in WIDS	Current Status	Current Owner	In 040	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	200-W-48	241-TX 90d Accum Area	Component	Y	Inactive	TWRS		N	N	<90d Storage Pad	
2	241-AZ-154	Steam conden receiver	Tank	N	Active	TWRS		Y	Y	Steam condensate rcvr tank	
3	244-A DCRT	DCRT	Tank	Y	Active	TWRS		Y	Y		
4	244-A LS	244-AR LS	Component	Y	Active	TWRS		N	N	Control Structure, Lift Station	Part of DCRT equipment
5	244-BX	DCRT	Tank	Y	Active	TWRS		Y	Y	DCRT	
6	244-S	DCRT	Tank	Y	Active	TWRS		Y	Y	DCRT	
7	244-TX	DCRT	Tank	Y	Active	TWRS		Y	Y	DCRT	
8	244-U	DCRT	Tank	Y	Active	TWRS		Y	Y	DCRT	No rad content yet
9	241-A-302A		Tank	Y	Active	TWRS		Y	Y	Catch Tank	
10	241-A-350		Tank	Y	Active	TWRS	New	Y	Y	Catch Tank	
11	241-A-417		Tank	Y	Active	TWRS	New	Y	Y	Catch Tank	
12	241-AX-152CT		Tank	Y	Active	TWRS	New	Y	Y	Catch Tank	
13	241-AZ-151CT		Tank	Y	Active	TWRS	New	Y	Y	Catch Tank	
14	241-ER-311		Tank	Y	Active	TWRS		Y	Y	Catch Tank	
15	241-EW-151		Tank	Y	Active	TWRS		Y	Y	Catch Tank	
16	241-S-304		Tank	Y	Active	TWRS		Y	Y	Catch Tank	
17	241-TX-302C		Tank	Y	Active	TWRS		Y	Y	Catch Tank	
18	241-U-301	241-U-301B	Tank	Y	Active	TWRS		Y	Y	Catch Tank	
19	241-UX-302A	UX-302	Tank	Y	Active	TWRS		Y	Y	Catch Tank	

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-16 NON-TWRS NITS (NON-TWRS NON-IMUSTS)

	TANK or FACILITY	Alternate Names	Type	Listed in WIDS	Current Status	Current Owner	In BIO	In FSAR	Descriptive Comments	Additional Comments
1	218-W5-T31-T1	TR31-ST-T1	Tank	N	Active	WMH	NA	NA	Trench 31 Leachate Sto Tk	Aboveground
2	218-W5-T34-T1	TR34-ST-T1	Tank	N	Active	WMH	NA	NA	Trench 34 Leachate Sto Tk	Aboveground
3	270-T		Neut Tank	N	Unk	WMH	NA	NA	Neutralization Tank	Inside T Plant
4	2706T-201		Component	N	Active	WMH	NA	NA	Sumps	
5	2706T-202		Component	N	Active	WMH	NA	NA	Sumps	
6	???	Stack Drain	Crib	N	?	WMH/BHI	NA	NA	B, C, S, T, U Plants	Stack Drainage is cribbed
7	200-W-3	2713-W N.Parking Lot	Facility	Y	Inactive	Dyncorp	NA	NA	Dumping Area	
8	600-214	Purgewater Facility	Facility	Y	Active	BHI	NA	NA	Purgewater Sto & Trtmt Facil	2 Modutanks
9	219-S-102		Tank	N	Active	WMH	N	N	In 219-S facility	219-S is part of 222-S lab
10	216-A-TK-1		Tank	N	Active	BWHC	NA	NA	Conden. Catch Tk	Stack Sample Pit @ PUREX
11	216-A-TK-2		Tank	N	Active	BWHC	NA	NA	Conden. Catch Tk	Stack Sample Pit @ PUREX
12	TK-V11-10-1	Filter Drain Tk (filter #2)	Tank	N	Active	BWHC	NA	NA	PUREX	

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

A-17	FTCS HAVING NO AB CONCERN (NABC)								
	TANK or FACILITY	Alternate Names	Type	Listed in WIDS	Current Status	Current Owner	Reason	Descriptive Comments	Additional Comments
1	213-W-1	213-W-TK-1	Tank	Y	Inactive	TWRS	Non-rad water		
2	241-S-303		Tank	N	Not Built	TWRS	Never built	Dump Waste Tank in S-farm	Never Built
3	216-A-5 Crib		Crib	N	Inactive	BWHC	Crib; non-TWRS	Crib @ PUREX	
4	241-HN-701-66		Chem	N	Not Built	TWRS	Never Built		Never Built
5	241-SN-701-66	Diesel Fuel Sto Vault	Chem	N	Not Built	TWRS	Never Built	Diesel Fuel Storage Vault	200W area; chem; not built
6	242-A-211		Chem	N	Not Built	TWRS	Never Built	HNO3 Storage Tank	At A Evaporator; chem; not blt
7	241-T-302		Tank	Y	Not Exist	TWRS	Does Not Exist	Catch Tank	
8	216-T-31		Component	Y	Inactive	TWRS	Does Not Exist	French Drain	Removed in 1962
9	222-EC		Facility	N	Not Built	TWRS	Does Not Exist	Lab Waste & Emerg Gen facil	Never Built
10	TK-SA-02		Tank	N	Inactive	BWHC	Does Not Exist	Not present; never built	Behind T Plant; removed?
11	???	Catch Tank	Tank	?	Inactive	BWHC	Does Not Exist	Purex RR Tunnel	Does Not Exist
12	???	Fuel Tank	Tank	?	Inactive	BWHC	Does Not Exist	PUREX	Removed
13	293-AA		Facility	N	Inactive	BWHC	Does Not Exist	Hydrogen Peroxide Storage	3 tanks; all removed
14	2721E-66	2721E-63?	Chem	N	Inactive	Dyncorp	Does Not Exist	Fuel	Security; chem; not built
15	241-A-702-WS-1	702-A Drain Lines	Component	Y	Inactive	TWRS	Non-rad, non-haz	French Drain	

APPENDIX A: FACILITIES, TANKS, AND COMPONENTS MATRIX

	TANK or FACILITY	Alternate Names	Type	Current Status	Current Owner	Descriptive Comments	Additional Comments
A-18	*FACILITIES ADJACENT TO TWRS*						
1	200-W-13	2713-WB	Facility	Inactive	Dyncorp	Shop	
2	202-A	PUREX	Facility	Inactive	BWHC		
3	202-S	REDOX	Facility	Inactive	BHI		
4	221-B	B-Plant	Facilty	Active	BWHC		
5	221-T	T-Plant	Facilty	Inactive	WMH		
6	221-U	U-Plant	Facility	Inactive	BHI		
7	222-S	Laboratory	Facility	Active	WMH	Laboratory	
8	225-B	WESF	Facility	Active	BWHC	Cesium storage	
9	234-5Z	PFP	Facility	Active	BWHC		
10	242-A	Evaporator	Facility	Active	WMH		
11	242-B	Particle Research	Facility	Inactive	PNNL	Rad Particle Research Lab	Old Evaporator Building
12	2711E	200E Garage	Facilty	Active	Dyncorp	Shop	
13	2721E	Patrol HQ	Facilty	Active	B&W Prot		
14	2721EA	HFD Maintenance	Facilty	Active	BHI	Shop	
15	276-C	Hot Semi Works	Facility	Inactive	BHI	Solvent Storage	
16	283-E	200E Water Plant	Facilty	Active	Dyncorp		
17	283-W	200W Water Plant	Facility	Active	Dyncorp		
18	284-E	200E Powerhouse	Facility	Inactive	Dyncorp		
19	284-W	200W Powerhouse	Facilty	Inactive	Dyncorp		
20	616	Haz Waste Storage	Facility	Inactive	WMH	Non-Rad Haz Waste Storage	Empty
21		Conoco Station	Facility	Active	R. H. Smith		
22		Package Boilers	Facility	Active	Johnson Ctrl	Numerous Locations	
23		ETF/LERF	Facility	Active	WMH	Outside 200-E Fence	
24		ERDF	Facility	Active	BHI	Outside 200-E Fence	
25		WRAP	Facility	Active	WMH	Solid Waste Processing	
26	2401, 2402, 2403-W	RMWSF	Facilities	Active	WMH	Mixed Waste Storage	Solid Waste
27		200-E LLBG	Disposal	Active	WMH	Low Level Burial Grounds	Solid Waste
28		200-E SRC Trench	Disposal	Active	WMH	Sub Reactor Compartments	Solid Waste
29		200-W LLBG	Disposal	Active	WMH	Low Level Burial Grounds	Solid Waste
30		US Ecology Landfill	Disposal	Active	US Ecology	Commercial LLW Disposal	Solid Waste

Appendix B: Hazard Profile Sheets

A "hazard profile sheet" has been prepared for each FTC evaluated in this report, except those addressed in WHC-SD-EN-ES-040. The areas of information contained on the sheets were specifically included in order to assess FTC physical conditions, mission purpose and safety hazards. The hazard profile sheets document the starting point of the FTC evaluations for needed AB upgrades. They are provided in this report to give insight into the process used by the contractor to research each FTC and to communicate the focus of this research.

Once the initial effort was performed to complete the sheets, they were not revisited to incorporate additional technical information unless correction of an error was required. The use of all information gained from research of the FTCs is evidenced in the main body of this report. The collection of raw data and information supporting the FTC research is being maintained by the TWRS Nuclear Safety & Licensing Department for use in the follow-on work to upgrade the TWRS AB.

Appendix B

TABLE OF CONTENTS

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	200-W-7	Facility Name:	Catch Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	N134667.406, E566720.5, 200W, NW of 242-S Evaporator	2082 L (550 gal).	Unknown	Unknown	Unknown	3, 10 cm (4") dia. riser	Inactive	Unk	Unknown

Geometry	The tank is 1.22m (4') dia. x 1.98m (6' 6") long. The tank material is 8mm (5/16") thick fiberglass, Owens-Corning, Model D-5 with 50 Mil corrosion resistant wrapping (Drawing H-2-72885).
Configuration	The catch tank is northwest of 242-S Evaporator and just north of Decontamination Trailer MO-0326: Personnel Decontamination Facility 200 West Tank Farms. The decontamination trailer has been removed. The catch tank remains below grade with a minimum of 3' of soil overburden. The tank is fiberglass construction. There are three risers extending above ground. One 10 cm (4") dia. steel riser has a threaded plug, second 10 cm (4") steel riser has a thread cap and third 10 cm (4") dia. PVC vent riser is equipped with a breather filter and bird house type sheet metal cover. The decontamination water from the decontamination trailer entered above the tank through a 10 cm (4") PVC pipe about two feet below grade level. Level gauge has been removed from the riser and riser is plugged. Field walk down identified a 10 cm (4") dia. pipe (similar to a clean out located about 61 cm (2') southwest of vent riser.) inclined at 45° with a plug sitting at ground level. The tank drawing did not identify any such connection. It is possible that this piece of pipe may be an abandoned pipe stuck in the ground. The site is a chained 3m x 3m (10' x 10') area. Tank is also identified as 243S-TK-1, 243-S-TK1 and 246-L. The tank has been isolated from the mobile office MO-326 per ECN 621598.
Hardware	Catch Tank and associated piping.
Contents	Unknown (Most likely contaminated soap water)
Condition	Walkdown revealed a clean out type pipe with a plug at grade level. See above Configuration section for more details.
Original Mission (Process History)	The site was a personnel decontamination facility used by West Tank Farms. The tank was in service from late 1970s to late 1980s. (May have been referred to as 243S-TK-1)
Current Mission	None
Future Mission	None
Processes	No processing was performed.
Input Streams	Effluent stream from personnel decontamination. Expect soap, water, and low levels of contamination.

Product/Effluent	Same as input streams
Material at Risk	Unknown
Form/Charac	Unknown
Quantity	Unknown
Material Stored	Unknown
Condition	Unknown
Interactions	Unknown
Energy Sources	None
Energy Needs	None
Energy Status	N/A
Source Condition	N/A
Past Controls	Unknown
Current Controls	Posted as underground contamination area with IMUST sign.
Planned Controls	None
Barriers	Fiberglass tank wall
Chemical Segregation	None
Safeguards and Security	The site has been chained.
Monitoring and Surveillance	None
Historical Risks	None identified

Current or Future Risks	Unknown
Occurrence History	None identified
Root Cause	N/A
Records Location	Contact operations
Records Access	N/A
Adjacent Facility Location	242-S is about 91.5 m (100 yd) SE of the tank. 272-S maintenance shop is about 91.5 m (100 yd) south of the tank.
Underground Facilities	None
Aboveground Facilities	None
BIO Coverage	Yes under 243S-TK-1 name.
FSAR Coverage	Yes under 243S-TK-1 name.
Information Source	Drawing H-2-72885, Decontamination Trailer & Radiation Monitoring Tank. Out standing changes to the drawing: CEO # 044770, ECN # 101299 and 621598. Field walk down on 3/25/98 by Sohan Gahir and Jim Williams

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	204-AR	Facility Name:	Waste Unloading Station

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	South of 244-AR Vault	See below	See below	None	See below	N/A	Active	None	Low-level

Geometry	Rectangular; 19.8 m (65 ft) long by 12.2 m (40 ft) wide by 7.6 m (25 ft) high.
Configuration	The facility is a two-story reinforced concrete structure. The first floor contains the rail tank car unloading canyon and mechanical equipment room. The second floor contains the control room, locker room, and airlock leading to the rail car access balcony. A catch tank is located below grade and an air compressor is located in an outdoor enclosure. The mechanical equipment room contains four tanks storing chemicals which ensure tank car waste can be treated to meet tank farm acceptance criteria. The mechanical room also contains pumps and piping asssociated with waste treatment operations. Separate HVAC systems are provided for personnel areas and radiation zones. A diesel generator is located approximately 15.25m (50 ft) northwest of the facility.
Hardware	Tank TK-1 (catch tank) - Located in below-grade sump in rail car unloading canyon. Stainless steel, 5678 L (1500 gal) capacity. Provides temporary storage of liquids from floor drains. Tank contents are periodically pumped to the tank farms. Tank overflow is collected in the sump. The tank is connected to the ventilation exhaust system through a HEPA filter. Tank TK-2 (sodium nitrite storage) - Located in mechanical equipment room. Carbon steel, 1893 L (500-gal) capacity. Connected to raw water and steam supply lines. Tank TK-3 (dilute caustic storage) - Located in mechanical equipment room. Stainless steel, 1893 L (500-gal) capacity. Connected to steam and raw water supply lines. Tank TK-4 (high pH buffer storage) - Located in mechanical equipment room. Stainless steel, 757 L (200-gal) capacity. Connected to raw water supply line. Tank TK-5 (50% caustic storage) - Located in mechanical equipment room. Carbon steel, 6814 L (1800-gal) capacity. Connected to steam supply line. Fill line penetrates wall and terminates outside building. Pumps, related piping and valves, rad and non-rad HVAC systems. 3.7 kW (5 hp) instrument air compressor. Diesel generator and 2082 L (550 gal.) fuel tank.
Contents	TK-1 currently contains water and a dilute amount of caustic material. TK-2 contains a residual amount of sodium nitrite solution.

	TK-3 contains a residual amount of 5.4 M (18 wt%) sodium hydroxide solution. TK-4 is currently empty, but had been used to store high pH buffer solution (sodium hydroxide and disodium phosphate) used for pH probe calibration. TK-5 is currently empty, but had been used to store 50% sodium hydroxide solution. Diesel generator fuel tank contains diesel fuel.
Condition	Facility is regularly inspected and maintained in a good state of repair.
Original Mission (Process History)	The unit received wastes generated from decontamination and regeneration operations in the 100 and 200 Areas; from recovery, fuel fabrication, and laboratory operations in the 200 and 300 Areas; and from decontamination operations in the 400 Area.
Current Mission	The facility continues to receive waste delivered via railroad tank car.
Future Mission	Modification to accommodate LR-56 truck trailer.
Processes	The structure allows the pumping, sampling, and sluicing of tank cars. The waste is chemically adjusted in-line during pump-out to double-shell underground storage tanks to meet corrosion specifications.
Input Streams	222-S and 340 (PNNL) laboratory waste.
Product/Effluent	Low-level waste meeting tank farms acceptance criteria.
Material at Risk	T-Plant, 340, and 222-S facility wastes (heavy metal, process chemical, and radioactive waste), sodium nitrate, sodium hydroxide, diesel fuel, potentially contaminated HEPA filters.
Form/Charac	Described under "Contents" above.
Quantity	Described under "Contents" above.
Material Stored	Process materials remain in the process vessels. Diesel fuel remains in the generator fuel tank.
Condition	Storage vessels are inspected and well maintained.
Interactions	Interaction of process chemicals and tank car waste would dilute the waste and not increase the existing hazard if the waste is non-acidic. Interaction of acidic waste with process chemicals should be evaluated.
Energy Sources	Facility is served with steam and electrical power.
Energy Needs	Facility requires steam for tank heating and sampling, and electrical power for instrument air compressor, mixers, pumps, instrumentation, HVAC, lighting, control room functions, and radiation monitors.
Energy Status	Electrical power is active.

Source Condition	Steam supply is blanked off. Electrical power is maintained for use.
Past Controls	Radiation probes are located in the rail car unloading canyon, the balcony, and the main floor. These alarm locally and in the control room. Heat and smoke detectors and a sprinkler system are installed throughout the facility.
Current Controls	Fire suppression system is active. Ventilations systems, CAMs, and stack high radiation alarms are active. Facility is inspected daily. Raw water backflow preventer is inspected annually. Operating controls are applied to the instrument and control functions in the facility. Normal radiological and criticality control, industrial safety, and hazardous materials controls apply. Administrative controls are placed on composition of incoming waste shipments and transfers to tank farms. Other administrative controls are placed on HEPA filter pressure drop, HEPA filter efficiency, and HEPA filter inlet temperature. Catch tank level is limited to 80% of capacity.
Planned Controls	No planned changes to existing controls.
Barriers	Doors are closed during waste unloading operations. Ventilation systems are operating during unloading operations. Doors are closed and locked when not staffed.
Chemical Segregation	Chemicals are segregated by being contained in the process vessels which are physically separated.
Safeguards and Security	No unique access requirements. Facility is under Shift Manager control.
Monitoring and Surveillance	Connected to Computer Automated Surveillance System (CASS). Facility is inspected daily.
Historical Risks	Original facility SAR analyzed for leaks, waste misrouting, backflow from tank farms, HEPA failure, contamination spread, personnel radiation exposure, criticality, earthquake, tornado, high winds, thunderstorm, fire, loss of utilities, aircraft strike, and normal industrial hazards.
Current or Future Risks	Current TWRS FSAR analyzes this facility for caustic spray leaks, HEPA failure, rail car leaks, spray leaks from waste transfer system, and surface leaks resulting in pool.
Occurrence History	No unplanned releases have been reported from this facility.
Root Cause	N/A
Records Location	Maintained by East Tank Farms.
Records Access	No special requirement for access.
Adjacent Facility Location	Facility is located west of the 242-A Evaporator and south of the 244-AR Vault in 200E.

Underground Facilities	51-mm (2-in.) raw water, 51-mm (2-in.) sanitary water, 152-mm (6-in.) raw water, septic tank, electrical.
Aboveground Facilities	152-mm (6-in.) steam line (capped).
BIO Coverage	The facility is extensively described in the TWRS BIO.
FSAR Coverage	The facility is extensively described in the TWRS FSAR.
Information Sources	HNF-SD-WM-BIO-001 Rev. 0, "Tank Waste Remediation System Basis for Interim Operation," Lockheed Martin Hanford Co. WHC-SD-WM-SAR-067 Rev. E, "Tank Waste Remediation System Final Safety Analysis Report," Lockheed Martin Hanford Co. Waste Information Data System (WIDS) General Summary Report for 204-AR, February 20, 1998 Drawings H-2-70703, H-2-70704, H-2-70705, H-2-60685 Procedure TF-OR-EF-204-AR Rev. C-4, "204AR Rail Car Waste Unloading Building Daily Rounds" Procedure TO-290-120 Rev. D-0, "Perform 204-AR Tank Trailer Operations" Discussion with Terry Laney 3/4/98 Facility Walkdown 3/2/98 WHC-SD-WM-SAR-040 Rev. 1, "Safety Analysis Report for 204-AR," Westinghouse Hanford Co. (Historical; not part of current AB)

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	209-E	Facility Name:	209-E Building

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS/WMI	200-E Area, 7th Street, Between B-Plant and 241-C tank farm	Detailed below	Detailed below	Unknown	Detailed below	N/A	Inactive	Detailed below	Detailed below

Geometry	The 209-E Building is an L-shaped building consisting of the Critical Assembly Room (CAR), Mix Room, Equipment Room, a change room, and office space. The CAR is 10.67m (35 ft) by 10.67m (35 ft) with a 6.1m (20 ft) high ceiling. The Mix room is approximately 6.7m (22 ft) by 9.75m (32 ft) with a 3m (10 ft) ceiling. The Equipment Room is 7.92m (26 ft) by 8.53m (28 ft) with 3m (10 ft) ceilings. The change room is 6.1m (20 ft) by 9.75m (32 ft) with 3m (10 ft) ceilings. The office space is approximately 24.38m (80 ft) by 10.67m (35 ft) with 3m (10 ft) ceilings. Geometry of individual vessels within the facility is described under "Hardware" below.
Configuration	The facility is not connected to other TWRS facilities. There are twelve tanks within the CAR, nine tanks within the Mix Room, and a drain tank located adjacent to the CAR that was used to send low level solutions to a crib.
Hardware	As metioned above, there are twelve tanks within the CAR, nine tanks within the Mix Room, and a drain tank located adjacent to the CAR. All of these tanks, are inactive and are slated to be decommisioned during facility decontamination and decommisioning. These tanks therefore have no future use. Support systems at the 209-E Building include an air purge system, an exhaust ventilation system, and a fire suppression system. Twelve process tanks were used for solution handling. These tanks include TK-101, TK-102, TK-103, TK-104, TK-105, TK-106, located in the CAR and TK-213, TK-231, TK-232, TK-233, TK-234, and TK-235, located in the Mix Room. Per the PNNL status report, these tanks were flushed, are tied into the exhaust ventilation system, and have an air purge system to remove any generated hydrogen. Another tank, TK-111, was used as a drain tank and is located underground, adjacent to the south end of the facility. This passively ventilated tank was sampled routinely, where it was determined that plutonium levels were below limits for discharging the contents to a crib. A recent vapor sample of the drain tank (TK-111) identified no detectable flammable gas within the tank. One tank, TK-108, contained water and not process solution; it is open to room atmosphere, is located in the CAR, and is considered flushed since it only contained water. The experimental vessels, TK-141, TK-161, and TK-162, have a bottom drain and are vented to the exhaust ventilation system for hydrogen removal. These tanks are all located in the CAR. As stated in the status report, TK-141 was thoroughly flushed. The status report states that an NDA was performed to provide "before" plutonium quantities (i.e., baseline indications prior to decontamination efforts). This was used as a guide to perform limited decontamination on certain experimental vessels. TK-161 and TK-162, each assayed by NDA to contain 4 g of plutonium, fell into this realm.

	Tank TK-206 was used for calibration and load out of solutions and is located in the Mix Room. The tank was flushed prior to facility turnover as indicated in the status report. Two tanks, TK-215 and TK-216, were used as process condensate catch tanks, are vented, and are considered flushed since they only contained condensate. These tanks are located in the Mix Room. Lastly, tanks TK-109 and TK-110 are designated as dump tanks and were designed to preclude criticalities at expected plutonium concentrations. The dump tanks' function was to receive the experiment solution, ending the experiment when desired or if the neutron flux became too high. The 38 L (10 gal) dump tanks are located in concrete two ft underneath the CAR reactor hoods. TK-109 is known to have received process solutions, was flushed and is vented by the exhaust ventilation system. There is no knowledge that TK-110 was ever used.
Contents	The tanks are documented to have been flushed with efforts to remove the fissile material. After flushing, some residual fissile material remained. The residual fissile material includes 1 g Pu in TK-101, 8 g Pu in TK-103, 15 g Pu in TK-104, 38 g Pu in TK-105, 123 g Pu in TK-106, no Pu in TK-108, undetermined amount in TK-109 and TK-110 (i.e., these tanks are located in concrete 2 ft below the reactor hoods and therefore could not be determined by an NDA. As indicated in the hardware section, TK-109 was flushed and TK-110 was never used), undermined amount in TK-111 (i.e., located underground adjacent to the south end of the facility. During use, this tank was sampled routinely where Pu contents were verified to be minimal prior to being sent to the crib. Therefore, minimal Pu is expected), 36 g Pu in TK-141, 4 g Pu in TK-161, 4 g Pu in TK-162, 2 g Pu total in TK-206, TK- 215, and TK-216, 1 g Pu in TK-213, 42 g Pu in TK-231, 31 g Pu in TK-232, 47 g Pu in TK 233, 33 g Pu in TK-234, and 3 g Pu in TK-235. There is some residual uranium in TK-102, but no quantification has been made. TK-102 is documented to have been flushed thoroughly during facility turnover.
Condition	Tanks are intact. It was documented in the PNNL status report that small leaks have occurred in the vacinity of the sight tubes of TK-105 and TK-106.
Original Mission (Process History)	The 209-E Building was constructed in 1960 and was designed such that quantities of plutonium or uranium in solution could be brought into critical configurations under carefully controlled and monitored conditions. Bulk fissile materials used in the experiments have been removed from the facility and the tanks have been flushed. Only residual materials remain behind.
Current Mission	The 209-E Building is currently not operating. The building is being used as office space in support of the 209-E 90-day storage pad, located to the west of the 209-E Building. The CAR and Mix Room portions of the 209-E Building are not routinely accessed. The only access to the CAR and Mix Room is during support system surveillance and is being undertaken on a quarterly basis.
Future Mission	The 209-E Building has been slated for decontamination and decommissioning. The tanks are no longer going to be used. Efforts are currently being taken to identify a new site for the 90-day storage pad such that the building will have no use (i.e., it is currently used as office space in support of the 90-day storage pad).
Processes	There are no processes currently being performed at the 209-E Building. The only systems that remain operational are the exhaust ventilation system, the air purge system, and the fire suppression system.
Input Streams	There are no input streams at the 209-E Building.

Product/Effluent	There are no effluents from the 209-E Building.
Material at Risk	Materials at risk include the residual fissile materials mentioned in the Contents section of this checklist, and minute quantities of household cleaners, solvents, and chemicals located in chemical storage cabinets. There is additional contamination within the ventilation system. It is estimated that 560 g of Pu is located at the 209-E Building.
Form/Charac	Material at risk is in the form of residual Pu held up within the process vessels and ventilation system. This residual was documented in Appendix B of the 209-E JCO to be most likely a mixture of plutonium polymer, plutonium nitrate precipitate, and other plutonium ions.
Quantity	It is estimated that approximately 560 g of Pu is located within the 209-E Building.
Material Stored	The only materials stored are those found within the chemical storage cabinets located in the Equipment Room. These materials include household cleaners and solvents. There are no bulk storage chemicals, only small quantities of "off the shelf" products.
Condition	The condition of the stored materials is good.
Interactions	There are no interactions. The flammable products are designated as such and are stored in a flammable chemical cabinet.
Energy Sources	There is a 240 volt supply to the 209-E Building. This is the only source of energy.
Energy Needs	There are no additional energy needs.
Energy Status	The power supply to the 209-E Building is functional and in working condition.
Source Condition	The source is in a stable condition with no potential for criticality.
Past Controls	The Department of Energy, Richland Office (RL) issued a letter identifying controls for the 209-E Building. This letter, 97-WSD-160 was issued on August 8, 1997 and included requirements for access control, contamination control, minimum ventilation flow rate, air purge flow rate, barriers, HEPA filter efficiency, and allowed activities.
Current Controls	RL letter 97-WSD-160 is the current Authorization Basis and the controls therein are currently being followed. There is an exception with the minimum ventilation flow rate since it was required to perform a daily surveillance on the ventilation flow rate. There was no technical basis for this control nor a means to implement the control. Therefore, ventilation flow rate surveillance was relaxed to be performed when work was being undertaken in the CAR and Mix Room. The minimum ventilation flow was slated to be removed in the 209-E Building JCO.
Planned Controls	A revision to the 209-E Building JCO, which will replace 97-WSD-160, will include controls for HEPA filter efficiency, ventilation system operability, and air purge operability. The other controls identified in 97-WSD-160 were either found to have no technical basis or were incorporated into existing TWRS safety programs, i.e., Radiological Control.
Barriers	There is a requirement within 97-WSD-160 to provide a barrier around the exhaust ventilation system. This barrier was a caution barrier as opposed to a physical barrier. This contol was not included within the new revision to the 209-E Building JCO.

Chemical Segregation	As noted in the Materials at Risk section of this checklist, the chemicals are segrated depending on whether they are flammable or not. These chemicals are only household products and are in limited quantitiy. There are no bulk chemicals stored.
Safeguards and Security	Access to the CAR and Mix Room is controlled through the facility manager. Additionally, there is a sign-in sheet to ensure that all visitors are accounted for in case of an emergency.
Monitoring and Surveillance	Currently, the exhaust ventilation system's operability is being verified daily, the air purge systems operability is being verified quarterly, and the HEPA filter efficiency is being verified annually. These verifications are being performed per 97-WSD-160. Once the 209-E Building JCO gains RL approval, the exhaust ventilation system's operability and air purge system's operability will be verified every 90 days and the HEPA filter efficiency will be verified annually.
Historical Risks	Historical Risks included uncontrolled criticalities and radiological or toxicological releases. However, there were many safeguards, including 1) the dump tanks, which prevented uncontrolled criticalities and 2) the stoutness of the facility structure to limit dose consequences in the event of an uncontrolled criticality.
Current or Future Risks	Since the facility is in a shut down mode and will not be operated again, and also because the configuration of remaining fissile material precludes a criticality, criticalities are not a current or future risk.
Occurrence History	Occurrence History at the 209-E Building includes two missed surveillances that were required by the Authorization Basis. The surveillances were regained shortly thereafter. No additional USQs resulted from the missed surveillances.
Root Cause	One surveillance was missed on the exhaust ventilation system because it was not documented. The operater heard the exhauster operating on the day of the missed surveillance but did not document the operability. The other missed surveillance was that the air purge system was not verified to be operable within the quarterly period. The verification was completed two days later.
Records Location	The cognizant engineer of the facility has many of the safety documents including original operational documents and more recent shut down status reports. Many of the experiments and records of past operations are still classified since they involved criticalities. However, sufficient information is known about the process. Information was also obtained during conversations with a past facilility manager. Subsequent information was obtained during recent entries into the CAR and Mix Room.
Records Access	With the exception to the classified information, the cognizant engineer of the facility can provide the access to the records.
Adjacent Facility Location	Adjacent facilities include the 90-day storage pad to the west of the 209-E Building, building 2718 located to the southwest of the 209-E Building, Hot Semi-Works located to the east of the 209-E Building, and a mobile office MO-434 located to the northeast of the 209-E Building.
Underground Facilities	The only underground facility at the 209-E Building is TK-111 which is discussed in the Hardware and Contents sections of this checklist.
Aboveground Facilities	The 209-E Building has several aboveground facilities near it. These facilities include the 90-day storage pad to the west of the 209-E Building, building 2718 located to the southwest of the 209-E Building, Hot Semi-Works located to the east of the 209-E Building, and a mobile office MO-434 located to the northeast of the 209-E Building. The hazards of Hot Semi-Works have not been addressed. Hot Semi-Works is inactive and is not part of TWRS. Building 2718 is also not part of TWRS and is not addressed in any Authorization Basis document, with exception to the 209-E JCO. The 90-day storage pad is part of TWRS and is addressed within the TWRS BIO. The mobile office is an engineering trailer, contains no hazards, and is located outside of the perimeter fence of the 209-E Building.

BIO Coverage	The 209-E Building is not within the TWRS BIO. The current Authorization Basis is RL letter 97-WSD-160, which is soon to be replaced by revision 2 of the 209-E Justification for Continued Operation. It should be noted that no plans have been made to amend the BIO and incorporate the JCO. The JCO is a stand alone Authorization Basis and will serve as the Authorization Basis until a Safety Analysis Report for deactivation has gained RL approval.
FSAR Coverage	Like the BIO, there are no plans to incoroporate the 209-E Building into the FSAR. The JCO will adequately serve as the Authorization Basis for the 209-E Building until a Safety Analsis Report for Deactivation is approved by RL. Efforts are currently planned to deactivate the facility within a few years, provided funding and resources remain intact.

FACILITY HAZARD PROFILE CHECKLIST
Rev 0, April 24, 1998

Facility ID:	213-W	Facility Name:	Compactor Facility

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
WMH	North of 272-WA, 200W	N/A	See Below	None	None	None	Active	None	See Below

Geometry	58.6 m (192 ft) long, by 18.6 m (60 ft) wide, by approximately 3.8 m (12 ft) high.
Configuration	One-story pre-engineered metal building. Three rooms (entry, work room, inspection room) arranged in series. All rooms have fire exit doors. Inspection room has roll-up door. Entry room separated from work room by airlock. Building has ventilation system with HEPA filters and dedicated stack. Floor drains to 213-W-1 catch tank.
Hardware	Compactor, exhaust fans, HEPA filters, dry pipe sprinkler system.
Contents	Slightly contaminated compactor and catch tank. Household quantities of hazardous chemicals.
Condition	Only used for repair of equipment. No longer used as waste compactor.
Original Mission (Process History)	Compaction of LLW solid waste.
Current Mission	Contaminated instrument repair.
Future Mission	Compaction is no longer performed and will not be resumed.
Processes	None.
Input Streams	Dry LLW solid waste.
Product/Effluent	Dry LLW solid waste.

Material at Risk	None.
Form/Charac	N/A
Quantity	N/A
Material Stored	N/A
Condition	Good
Interactions	Connected to 213-W-1 Catch Tank
Energy Sources	Electrical power
Energy Needs	Electrical power for lighting, HVAC, and HEPA filtered exhaust system.
Energy Status	OK
Source Condition	N/A
Past Controls	Radiological Control Area. HEPA filter checks only.
Current Controls	Radiological Control Area. HEPA filter maintenance.
Planned Controls	None
Barriers	Compactor component walls, building, and ventilation system. Catch tank and HEPA filter.
Chemical Segregation	N/A
Safeguards and Security	None required
Monitoring and Surveillance	Only checks of HEPA filtered exhaust system.
Historical Risks	N/A
Current or Future Risks	None

Occurrence History	None
Root Cause	None
Records Location	200 West Area Mobile Office 720.
Records Access	Normal Hanford Access
Adjacent Facility Location	272-WA, and 200 West Tank Farms mobile offices.
Underground Facilities	Catch Tank 213-W-1.
Aboveground Facilities	Electric power
BIO Coverage	Facility is discussed in the TWRS BIO.
FSAR Coverage	Facility is discussed in the TWRS FSAR.
Information Sources	HNF-SD-WM-BIO-001 Rev. 0, "Tank Waste Remediation System Basis for Interim Operation," Lockheed Martin Hanford Co. WHC-SD-WM-SAR-067 Rev. E, "Tank Waste Remediation System Final Safety Analysis Report," Lockheed Martin Hanford Co. Conversations with Solid Waste Health Physics Technicians, and the Cognizant Engineer, Rod Tucker. Hanford Drawings: H-2-93690, Civil Plot Plan, H-2-93692, Structural Plans, Sections, and Details, H-2-93694, Architectural Plot Plan, and H-2-93696, Architectural Elevation and Details.

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	216-BY-201	Facility Name:	Supernatant Disposal Flush Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	N137594.5, E 573608 NW portion of 200E area, Between 241-BY tank farm and the 216-B-43 through 216-B-50 cribs.	Max 42.5KL (11220 gal) Nom 31KL (8,228 gal).	Unknown	Unknown	Unk.	none visible	Inactive	Unk	Unk

Geometry	Tank is 12.6m (41 ft 4 in.) long x 1.93m (6 ft 4 in.) wide x 2.8m (9 ft 2 in.) high (outside dimensions) with 1.5m (5 ft) or more of soil overburden (See drawing H-2-2604). This flush tank is also known as 216-BY-47 and Flush Tank 241-BY.
Configuration	This supernatant disposal flush tank is located in the NW portion of 200-E area, between the 241-BY Tank Farm & the 216-B Cribs. The tank is underground and not discernible from the surface. A monitoring pit located near the N corner of the tank is visible and may be identified by a steel cover. The drawing H-2-2604 , *Supernatant Disposal Flush Tank* shows a vent pipe 15 cm (6 in.) dia. x 2.75m (9 ft) long that extends from the top of the tank to 1.2m (4 ft) above grade, and a 15 cm (6 in) dia. x 2m (7 ft.) long pipe that extends from the tank to 61 cm (2 ft) above grade. The tank is 12.6m (41 ft 4 in.) long x 1.93m (6 ft 4 in.) wide x 2.8m (9 ft 2 in) high and is constructed of concrete. A manhole is located at each end of the tank. The tank has low water line set at 15 cm (6 in.) from the bottom surface and high water line set at 1.68m (5' 6") from the bottom of the tank. A 10 cm (4") dia. pipe from the 241-B-BY Tank Farms enters near the top of the tank. A "Miller Siphon" as manufactured by " Pacific Flush Tank Co" located at the bottom of the tank drains waste through a 35.5 cm (14") line to the 216-B-43 through 216-B-50 cribs. An 20 cm (8") dia. overflow pipe is also connected to this line. Three small areas are posted as surface contamination area in the vicinity of the tank. There is one manhole sheetmetal cover visible at the tank site and no visible risers or vents. Outlet through siphon could empty the tank to a minimum of 15 cm (6") from the bottom . In 1975 a 5 cm (2") low level monitoring line was blind flanged and monitoring equipment was left in the pit because it was too hot (see drawing H-2-2604). On 11/12/75 vent filters were removed and blank flanges added on all cribs and on incoming line between water monitor pit and flush tank. ITS-1 condensate to crib valve removed and flanges blanked off (See H-2-2603) .
Hardware	Reinforced concrete tank, 20 cm (8 in.) thick walls and top and 30.5 cm (12 in.) thick bottom (with inside dimensions 12.5m (41') L x 1.5m (5') W x 2.3m (7.5' H) associated piping, low level monitoring equipment (H-2-33950)
Contents	Unknown. As this tank received the waste from 241-BY tanks and TBP waste line en-route to 216-B cribs , the contents can very well be assumed to be same composition as average of 241-BY tanks. The estimated remaining waste volume in the tank could be 2.83K L (748 gal) at the time of stoppage of operations. This estimate is based on low water line of 15 cm (6") before siphon system could stop functioning to discharge to 216 -B Cribs. It is possible that some/all of the sludge may have evaporated and salt cake leaving solid crust.
Condition	Unknown. The tank has been isolated.

Original Mission (Process History)	The tank received radioactive waste from the 241-BY Tank Farm and the tributyl phosphate waste line. The unit was designed to scavenge the TBP waste and the supernatant was sent to the 216-B-43 through 50 cribs.
Current Mission	None. HNF-1566, Letter Report, 200-Area Plateau Inactive Miscellaneous Underground Storage Tanks Location documents that tank is stabilized and isolated but actual data sheets could not be located.
Future Mission	None
Processes	No processes were performed in this tank.
Input Streams	Supernate from the BY farm system of cascading tanks overflowed to this tank en route to cribs 216-B43 through 216-B50. Thus, this waste should be associated with the waste types represented by the BY tank farms. See the attached table for the potential chemicals and radionuclides deposited in the this flush tank. This table was derived from HNF-SD-WM-ER-637, *Evaluation to Establish Best-Basis Inventory for Tank 241-BY-107* and HNF-SD-WM-ER-687, *Evaluation to Establish Best-Basis Standard Inventory for Tank 241-BY-111.*
Product/Effluent	Supernate from the BY tanks farm tanks, en route to the cribs. (1955-1975). The dates are established when the flush tank was put into operation and when low level monitoring was stopped (See drawings H-2-2604, and H-2-2603)
Material at Risk	See table at the end of this checklist.
Form/Charac	Unknown
Quantity	Unknown
Material Stored	Unknown
Condition	Unknown
Interactions	Unknown
Energy Sources	None
Energy Needs	Unknown
Energy Status	N/A
Source Condition	N/A
Past Controls	Unknown
Current Controls	None
Planned Controls	Unknown

Barriers	Concrete tank structure
Chemical Segregation	None
Safeguards and Security	Tank is in a contamination area with a portion identified as underground radiation area. Site is posted with a IMUST sign.
Monitoring and Surveillance	None
Historical Risks	Unknown
Current or Future Risks	Unknown
Occurrence History	UPR-200-E-9: On September 15, 1955 the tank leaked supernatant waste from the TBP building to the ground. Most of the waste was removed to a site south of 216-B-43 and covered with 61 cm (2') of clean soil. The residual contamination was covered with clean soil.
Root Cause	Unknown
Records Location	Unknown
Records Access	Unknown
Adjacent Facility Location	None
Underground Facilities	Waste transfer piping
Aboveground Facilities	None
BIO Coverage	Yes
FSAR Coverage	Yes
Information Source	Drawings: H-2-2604 Supernatant Disposal Flush Tank, H-2-2603 Cribs 216-B43 Thru B50 "By Crib Area" Plot Plan, H-2-44501 Sheet 151, Area Map-200 East "B" Plant Facilities; H-2-33950 Low Level Water Monitor Installation. HNF-SD-WM-ER-637, Evaluation to Establish Best-Basis Inventory for Tank 241-BY-107 and HNF-SD-WM-ER-687, Evaluation to Establish Best-Basis Standard Inventory for Tank 241-BY-111. HNF-1566, Letter Report, 200-Area Plateau Inactive Miscellaneous Underground Storage Tanks Location.

Table 1. Tank 216-BY-201 Engineering Assessment-Based Solid and Liquid Compositions (Same as average 241-BY Tank Farm).

Analyte (Non-radioactive components)	Average Concentration (Saltcake) µg/g	Average Concentration(Sludge) µg/g
Al	17,633	29,550
Bi	<52.4	NR
Ca	308	11,175
Chloride	1,736	3,570
Cr	1,359	1,670
Fluoride	4,883	4,220
Fe	538	26,500
Pb	82	1,880
Mn	39.1	228
Ni	106	6,815
Nitrate	335,000	111,000
Nitrite	24,037	43,200
Oxalate	11,297	5,870
Phosphate	8,120	32,100
P	2,231	15,500
K	1,704	2,930
Si	272	1,190
Na	213,000	145,500
Sr	64	6,840
Sulfate	13,433	18,400
TIC	19,580	6,005
TOC	3,890	15,750
U	374	20,900
Zr	8.64	304.35
Density (g/mL)	1.71	1.76
wt% H_2O	21.6	33.9

Table 1. Tank 216-BY-201 Engineering Assessment-Based Solid and Liquid Compositions (Same as average 241-BY Tank Farm).

Analyte (Non-radioactive components)	Average Concentration (Saltcake) µg/g	Average Concentration(Sludge) µg/g
Radionuclides	µCi/g	µCi/g
^{90}Sr	22.5	555.5
^{137}Cs	83	324
$^{239/240}Pu$	0.0192	0.08035
Total alpha	NR	0.235

NR: Not reported

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	216-TY-201	Facility Name:	Supernatant Disposal Flush Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	N 136417, E 566946, 200W area, East of 241-TY tank farm, approx 65.5m (215') E of Camden Ave and 152m (500') N of 22nd Street.	Max. Cap: 36.24K L (9573 gal) Nom. Cap: 26.57K L (7020 gal)	Unknown	Unknown	Unknown	3-20 cm (8") risers	Inactive	Unknown	Unknown

Geometry	Tank is 7.11m (23' 4") long x 3m (10') wide x 2.9m (9.5') high (outside), 1.5m (5') of soil overburden (Drawing # H-2-2670)
Configuration	This supernatant disposal Flush tank is located in the 200-W area east of 241-TY Tank Farm, ~ 65.5m (215 ft) east of Camden Ave & ~ 152m (500 ft) North of 22nd St. The site may be identified by 3 vent risers protruding above an earth mound. The area is posted as a controlled area. The tank is 7.11m (23' 4") long x 3m (10 ft) wide x 2.9m (9.5 ft) high, and is constructed of concrete. The tank has a manhole located at each end. Three 2.13m (7 ft) long pipes extend from the top of the tank to 61 cm (2 ft) above ground level. Two of the pipes are 20 cm (8 in.) dia. vent pipes with vent filters installed on the top. A field inspection revealed that the vent filters have been removed and the pipes has been capped. A 10 cm (4 in) dia. x 2.1m (7 ft.) long pipe is located on the south end of the tank. A 7.62 cm (3 in) pipe from the 241-T-112 enters near the top of the tank. A "Miller Siphon " as manufactured by the Pacific Flush Tank Co located near the bottom of the tank drains waste through a 35.6 cm (14 in.) line to the 216-T cribs. An overflow pipe is also connected to this line. Before 1955 this tank received waste from TY Tank Farm (See drawing H-2-2913). Inlet from 241-TY tank farm was blanked in December 1955 (See drawing H-2-3019). Outlet through siphon emptied tank to a minimum of 15 cm (6") to cribs 216-T-26, 27, and 28. The tank is designed for operating depth 15 cm (6 in.) min to 1.68m (5' 6") max. Tank 241-T-112 was taken out of service in 1977 and declared isolated 6/81. This Flush tank can be assumed isolated at the same time as tank 241-T-112. The risers feeding to the piping connected to the Flush tank have been plugged/flanged (See SD-RI-TI-053).
Hardware	Reinforced concrete rectangular tank, 30.5 cm (1') thick (with inside dimensions of 6.m(21' 4") L x 2.44m (8') W x 2.29m(7.5') H. Three risers and 7.62 cm (3") sched. 40 inlet, 20 cm (8") sched 40 siphon (trap) under tank and leading to 35.6 cm (14") sched 40 pipe to cribs. Piping from 241-T-112 tank to this Flush tank and piping from Flush tank to the 216 cribs.
Contents	Unknown. As this tank was en route from 241-T-112 in the T Tank farm, the contents can very well be assumed to be same as in the 241-T-112 Tank. The estimated remaining waste volume in the tank could be 2.4K L (638 gal) at the time of isolation. This estimate is based on low water line of 15 cm (6") before siphon system could stop functioning to discharge to 216 -T Cribs. It is possible that some/all of the liquid may have evaporated and salt cake or sludge crust is left in the tank.
Condition	Three 20.32 cm (8") risers, two with blind flanges and one with some electrical equipment in place.

Original Mission (Process History)	Flush tank for supernate en route from TY tank to cribs from 1953 to 1955 (See drawing H-2-2913). From 1955 the Flush Tank was used for supernate en route from 241-T-112 to 216-T cribs. No processes were performed in this tank.
Current Mission	None
Future Mission	None
Processes	No processes were performed in this tank. The tank was used as a holding tank.
Input Streams	Originally the this Flush Tank received supernatant from TY tanks from 1953 to 1955. After 1955 supernate from tank 241-T-112 was routed through this Flush tank en route to the 216-T-26, 216-T-27, and 216-T-28 cribs . The waste in the 216-TY-201 should be associated with the waste types representaed by the 241-T-112 tank. See attached table for the potential chemicals and radionuclides deposited in the Flush tank. This table was derived from HNF-SD-WM-ER-699, Preliminary Tank Chacterization Report for Single Shell Tank 241-T-112: Best-Basis Inventory.
Product/Effluent	Supernate from the TY tanks, en route to the 216 cribs.(1953-1955) and supernate from 241-T-112 tank after 1955.
Material at Risk	See table at the end of this checklist.
Form/Charac	Unknown
Quantity	Unknown
Material Stored	Unknown
Condition	Unknown
Interactions	Unknown
Energy Sources	None
Energy Needs	Unknown
Energy Status	No energy sources
Source Condition	None
Past Controls	Passive Ventilation
Current Controls	Passive ventilation risers have been capped. Posted as underground radioactive area. Posted as IMUST location.

Planned Controls	None
Barriers	Concrete tank wall
Chemical Segregation	None
Safeguards and Security	Area is surrounded by AC540 marker posts. Posted as radiologically controlled area.
Monitoring and Surveillance	None
Historical Risks	None identified
Current or Future Risks	Unknown
Occurrence History	No unusual occurrences for this tank have been found.
Root Cause	N/A
Records Location	Unknown
Records Access	N/A
Adjacent Facility Location	No facilities nearby.
Underground Facilities	Inlet waste lines have been blanked.
Aboveground Facilities	None
BIO Coverage	Yes
FSAR Coverage	Yes
Information Source	Drawing: H-2-2670, Supernatant Disposal Flush Tank ;, H-2-2733, 216-T-26, T-27, T-28, T-18 CRIBS ADJ 241-TX & TY Farms. H-2-3019, Waste Routing 241-T-112 to 216-T-26, T-27, T-28 CRIBS; H-2-2913 241-TY Farm 1st Cycle Scavenged TBP Waste to 216-T-26, 27 & 28 CRIBS - PIPING ARR'G'T. SD-RE-TI-053; HNF-SD-WM-ER-699 Preliminary Tank Characterization Report for Single-Shell Tank 241-T-112 Best-Basis Inventory.

Table 1. Tank 216-TY-201 Engineering Assessment-Based Solid and Liquid Compositions (Same as 241-T-112)

Analyte	216-TY-201 concentration	
	Solids (μg/g)	Supernatant (μg/mL)
Al	5,110	<10
Bi	28,800	44
Ca	<1,890	<20
Cr	2,110	691
Fe	16,400	<10
Hg	2	NR
K	1,270	603
La	4,800	<10
Mn	5,970	<20
Na	41,000	57,200
Ni	150	24
Pb	395	46
Si	8,810	<10
Sr	313	<20
U	3,100	<20
Zr	<172	8
CO3	4,960	NR
Cl	428	511
F	339	439
OH	36,600	9,800
NO_3	17,300	23,300
NO_2	28,100	38,800
P as PO_4	12,350	2,004

Table 1. Tank 216-TY-201 Engineering Assessment-Based Solid and Liquid Compositions (Same as 241-T-112)

Analyte	216-TY-201 concentration	
	Solids (µg/g)	Supernatant (µg/mL)
S as SO_4	9,030	9,500
TOC	3,160	3,000
Percent water	73.9	85.1
SpG, kg/L	1.28	1.10
Radionuclides[d]	µCi/g	µCi/g
^{137}Cs	0.184	NR
^{90}Sr	6.0	NR
^{99}Tc	0.0088	NR
^{238}Pu[c]	5.71 E-04	0
^{239}Pu	0.0709	0
^{240}Pu	0.00692	0
^{241}Am	1.0 E-04	9.0 E-06
Total alpha	0.256	0.0233

NR= Not reported

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	241-AX-151	Facility Name:	Diverter Station

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	200 E Area, SW of 241-A tank farm, N40980 W48050	See Hardware	Unknown	Unknown	Unknown	see config. below	Inactive	Unk.	Unk.

Geometry	The diverter station is 13.4m (44 ft) long x 3m (10 ft) wide x 7.62m (25 ft) high , reinforced concrete structure (See drawing H-2-44752 and H-2-44753).
Configuration	The unit is an underground reinforced concrete structure located on big dirt mound. Top of the diverter station extends approximately 30.5 cm (12") above grade. There are four small 76.2 qm (30") dia. x 132 cm (52") high (See drawing H-2-44798 and H-2-44799) stainless steel diverter tanks (max capacity 602 L (159 gal) and operating capacity 189 L (50 gal) D, E, F and G located in individual cells and a pump pit. Each cell has a stainless steel liner on the floor that extends up the wall. An 41.64K L (11,000 gal) stainless steel lined catch tank is located below the diverter tanks. The cells and pump pit are above and drain into the catch tank below. A 4 cm (1-1/2") dia. liquid level port is provided for the use of portable level detection in the catch tank. Each cell having the tank is furnished with a diverter operator mechanism (See drawing H-2-44791, H-2-44795 and H-2-44796). The diverter operators were used to route the waste out of the tanks to any desired transfer line. Drainage into the catch tank can be pumped or jetted to diverter tank E or F. Each diverter tank was equipped with a 5 cm (2") dia. cleanout pipe. The diverter station was in operation from 1962 to 1985. The station was isolated by the B-231 Project in 1985 (See drawing H-2-71645). The diverter station has been covered with foam weather covering. This diverter originally provided multiple diverter capabilities from which four PUREX lines could be routed to lines connecting A, AX, and AY tanks and the 244-AR vault. The four diverter operator mechanisms, leak detector lines, electrical conduits, flush lines, raw water line and other piping systems were isolated as part of the B-231 project. Isolation data sheets are available. There are various underground radioactive postings in the area. There is a one 1.37m (4'-6") riser with a bale indicating a possible shield plug. There is one 5 cm (2") riser with a threaded or welded cap.
Hardware	Catch Tank 241-AX-151CT – 42 K L (11,000 gal) capacity (See drawing H-2-44612) with normal operating limit of 20.8K L (5,500 gal) Catch tank pump (P-AX-151) – 379 L (100 gal) pm (See drawing H-2-44612) Diverter Tank 241-AX-151TKD – 189 L (50 gal) operating capacity (See drawing H-2-44798 and H-2-44799) Diverter Tank 241-AX-151TKE – 189 L (50 gal) operating capacity (See drawing H-2-44798 and H-2-44799) Diverter Tank 241-AX-151TKF – 189 L (50 gal) operating capacity (See drawing H-2-44798 and H-2-44799) Diverter Tank 241-AX-151TKG – 189 L (50 gal) operating capacity (See drawing H-2-44798 and H-2-44799) Associated internal piping systems Diverter Station Spout (See drawing H-2-44795)

Contents	Unknown. 241-AX-151CT catch tank contains 2946 gal of supernatant waste per Interim Stabilization Evaluation -Auxiliary Tanks Report dated 5/6/85. The diverter tanks 241-AX-151TKD, 241-AX-151TKE, 241-AX-151TKF, and 241-AX-151TKG are estimated to contain 189 L (50 gal) liquid waste heel in each tank due to the piping configuration for gravity flow in each tank. After the set elevation the waste will not flow out of the diverter tanks.
Condition	Unknown
Original Mission (Process History)	Various high level wastes from the PUREX Plant were routed to the diverter tanks in the 241-AX-151 diverter station. Depending on the disposition of the waste, it could be routed to an underground storage tank in the A farm, to tank 003 in the 244-CR Vault, the tank 001 in the A farm to tank 003 in the 244-AR vault, or to one of the two diverter tanks in station 241-AX-152.
Current Mission	The diverter station has been stabilized and isolated
Future Mission	None
Processes	No waste processing was performed, only a diverter function.
Input Streams	The diverter station tanks were used in the routing of liquids from the PUREX for the AX tank farm. Thus any contents remaining should reflect the waste types similar to the AX tanks. An accumulation of solids is unlikely . It may be possible that any remaining solids (and certainly liquids) are of the type represented by the last transfer through the diverter station tanks. The last transfers from the AX tank farms were salt well liquor. AX-102 historical sample data taken in 1988 shows that major radionuclides present are cesium-137 and strontium-90. Based on available results, the material is complexed (> 10 g/L TOC) and transuranic (> 100 μ Ci/gm Pu + Am) waste. The catch tank contents are questionable since one cannot determine which transfers had spills to the catch tank. It is expected that the contents are bound by the overall composition of the AX farm tanks. See the attached table for potential chemicals and radionuclides deposited in the diverter tanks and catch tan. This table is derived from WHC-SD-WM-ER-472, Appendix B *Analysis of Tank 241-AX-102 Sample*.
Product/Effluent	Waste transferred out of the diverter station would be the same as the input stream.
Material at Risk	Radiation hazard. Insignificant amounts of fissile materials.
Form/Charac	Unknown
Quantity	Unknown
Material Stored	It is estimated that approximately 23 kg (50 lb) of lead is stored in each diverter station.
Condition	Unknown
Interactions	Unknown
Energy Sources	Unknown
Energy Needs	Unknown

Energy Status	Unknown
Source Condition	Unknown
Past Controls	Unknown
Current Controls	None
Planned Controls	None
Barriers	Concrete tank wall and stainless steel liner.
Chemical Segregation	None
Safeguards and Security	The diverter station is located in a contamination area.
Monitoring and Surveillance	None
Historical Risks	None identified
Current or Future Risks	Unknown
Occurrence History	None identified
Root Cause	N/A
Records Location	Unknown
Records Access	N/A
Adjacent Facility Location	
Underground Facilities	Waste transfer lines

Aboveground Facilities	None
BIO Coverage	Yes
FSAR Coverage	Yes
Information Source	Drawings: H-2-44752, H-2-44753, H-2-44798, H-2-44799, H-2-44791, H-2-44795, H-2-44796, H-2-44612, H-2-71645 WHC-SD-WM-ER-472, Appendix B *Analysis of Tank 241-AX-102 Sample*.

Table 1. Estimated Composition of 241-AX-151 Catch Tank
Based on 241-AX-102 Sample

Component	Value
pH	11.3
NO_3	3.7M
NO_2	1,4M
TOC	36.8 g/l
Na	7.32 M
Am	1000 μ Ci/l
Pu	97 μ Ci/l
Cs^{137}	3.5 E + 05 μ Ci/l
Co^{60}	7.1 E + 02 μ Ci/l
Eu^{154}	3.5 E + 03 μ Ci/l
Eu^{155}	4.7 E + 03 μ Ci/l
Sr^{90}	1.7 E + 05 μ Ci/l

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	241-AX-IX	Facility Name:	Ion Exchange Column

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS/TWRS	E of A tank farm; between A and AX farms	0.844 m^3 (29.8 ft^3)	Unknown	N/A	N/A	N/A	Inactive		

Geometry	Height of resin is 2.89m (9.5 ft). Filter housing is approximately 4 - 1.52m (5 ft) tall by 2-0.91m (3 ft) in diameter and is thought to be empty of liquid contents.
Configuration	Ion exchange column and piping system to connect the facility to the 241-A-417 catch tank, transfer system, and discharge to the A-08 crib. The facility has been isolated from the catch tank and transfer system by isolating/capping the connecting lines.
Hardware	Carbon steel ion exchange column, 61 cm (24") dia. by 3.5m (11'6"), on a concrete pedestal which allows access for resin removal at the bottom of the column, iron piping connecting the facility to the 241-A-417 catch tank, radiation monitoring equipment, cuno filter assembly, flowmeter, diaphragm operated valve, and manual valves. A discharge line connecting the column to the F101 transfer line has been cut and capped under work procedure 2E-97-01324. The feed line connecting the column to 241-A-417 has also been cut and modified. There is a drain line running from the bottom of the column to the 417 catch tank. It is not known whether this drain line is open.
Contents	The exchange resin was Zeolon 900, crystalline aluminosilicate material (SiO_2/Al_3O_2). a synthetic, particle size controlled version of zeolite. Bed regeneration was done with 7 M hot sodium nitrite solution (7570 L {2000 gal}at 70°C). The loading status of the column upon deactivation is unknown. A work package is in place to inspect the column by video (2E-97-01834) to determine if any liquid is present.
Condition	Facility is not in use; maintenance is performed on an "as needed" basis.
Original Mission (Process History)	The facility was designed to remove cesium from the Aging Waste Facility exhauster condensate. Treated condensate was then discharged to the A-08 crib. The column was designed and built about 1967-1969 and was operated routinely from 1973-1978.
Current Mission	None
Future Mission	Eventual D&D, but no specific plans yet.
Processes	Waste treatment by ion exchange using Zeolon 900 resin. Column was regenerated with hot sodium nitrate.
Input Streams	Condensate from the 702-A exhauster, which served the Aging Waste Facility. Process history review did not indicate the presence of any other waste feed.

Product/Effluent	Treated condensate was discharged through a discharge line to the A-08 crib. Waste material from recharging the column was returned to the F-101 transfer line to the 501-AY valve pit.
Material at Risk	Material used in the facility process is described above. No known hazardous material currently present. There is radioactive contamination present from past operation.
Form/Charac	Work packages are currently being completed to determine if any liquid waste remains in the system. None is expected.
Quantity	Radioactive material dose rate data will be provided by the cognizant engineer.
Material Stored	None
Condition	None
Interactions	None apparent
Energy Sources	There is electrical power supply to the facility, which was used to power a 2 kw electrical heater at the bottom of the column. The power has not been disconnected at the junction box feeding the facility, however it has been confirmed that there is no amperage through the facility circuit. There are no connections to steam lines.
Energy Needs	None; the facility is inactive.
Energy Status	Electrical connections intact. However no electrical current is being used.
Source Condition	Electrical system appears to be sound. Cable are in conduit, and there are no exposed wires of obvious potential for short circuits.
Past Controls	Have not identified past operating limits.
Current Controls	The area is in a posted rad zone and is surrounded by a radiological buffer area. Standard RWP requirements imposed on the A-Complex are applicable to this facility.
Planned Controls	No planned future use of the facility other than D&D.
Barriers	The column is within a fenced area in the A Tank Farm complex. The column and filter housing are constructed of carbon steel, containing any remaining radioactive material. There is contamination in the concrete base of the column.
Chemical Segregation	No chemicals stored.
Safeguards and Security	Normal access controls applicable to the A complex apply to this facility. There does not appear to be a need for additional controls.
Monitoring and Surveillance	Not yet determined

Historical Risks	1969 hazards evaluation addressed the following hazards: potential fire from organic material in tank A-417, potential radiation exposure during zeolite bed elution, Potential contamination during elution effluent sampling, leakage from zeolite addition and removal plugs.
Current or Future Risks	Potential for release of material due to rust-through of components. Inventory is expected to be far below that which could result in a release approaching risk guidelines. Expected future life is not known at this point. D&D plans have not been established.
Occurrence History	None known.
Root Cause	None known.
Records Location	Records are currently maintained in the cognizant engineer's (Gary Tardiff) office, 200-E Area, 274-AW and record archives in Seattle.
Records Access	No special access requirements other than normal requirements for archive retrieval.
Adjacent Facility Location	The facility is located adjacent to and south of the AX Tank Farm, and northeast of the A Tank Farm. It is directly east of the 702-A exhauster. The TK-417 catch tank is located underground between 702-A and the IX column.
Underground Facilities	There is an underground piping connection of the facility to the F-101 transfer line between 241-AX-501 and 241-AY-501 valve pits. This connection has been cut and capped. There is a feed line from the TK-417 pump pit which has also been cut and capped. There are several drain lines from the facility structure and piping that lead to the TK-417 30.5 cm (12") riser. Open/closed status TBD.
Aboveground Facilities	The electrical power to the facility is still active, but not in use. There are no steam lines.
BIO Coverage	This component is not discussed or analyzed in the BIO.
FSAR Coverage	This component is not discussed or analyzed in the draft FSAR
Information Sources	Memorandum (not numbered), S. J. Beard to D. M. Fenton, et al., Dec. 19, 1969, *Hazards Evaluation - Steam Condensate Diverter and Prototype Ion Exchange Systems for the Purex Boiling Waste Tank Farm."* ECN 636354 to dwg. H-2-64770, SH. 1, Rev. 4 ECN 611271 to dwg. H-2-64771, SH. 1, Rev. 2 ECN 636376 to dwg. H-2-64771, SH. 1, Rev. 2 Drawings: H-2-64770, H-2-64771, H-2-64772, H-2-64774, H-2-64775 Interoffice Memo 97-026, 06/30/97, East Tank Farms Engineering to D. G. Baide, *"East Tank Farms Chemical Vulnerability Study."* Facility walkdown 12/11/97, Gary Tardiff, Paul Garello, Jim Poppiti, Matt Tiffany, Diane Clark, Wally Hendrickson, Carol Sohn, Randall Stickney, Cliff Ashley. Greg Hansen, Dan Baide. Conversations with Gary Tardiff and Dave Bowers

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	241-ER-311A	Facility Name:	Catch Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	N 136264.484, E 573219.625, 200E area, 220 m SW of B-Plant	Max. Cap: 105K L (27.7K gal) Nom.Cap: 54.2K L (14,314 gal)	Unknown	Unknown	Unknown	see config. below	Inactive	Unk.	Unk.

Geometry	The catch tank is a horizontal 2.74m (9') dia.meter and 12.2m (40 ft) long, carbon steel tank (See drawings H-2-43108 and H-2-43031).
Configuration	The catch tank is a horizontal tank abandoned in place in 1954 and replaced with a similar stainless steel tank 241-ER-311 (old 211-B-108, modified per drawing H-2-2542) in the same area (See drawing H-2-2537). Top of tank is 5.2m (17') below grade. The tank located between 241-ER-151 diverter box with concrete cover block and new 241-ER-311 catch tank. The tank was used to collect any spills in the 241-ER-151 diverter box. The tank was used from 1950 to 1954. This catch tank was isolated in 1954 (See drawing H-2-43031)
Hardware	Carbon Steel Tank, Steam Jet Chamber and Siphon, Associated Piping
Contents	Unknown, tank is expected to be empty based on probable pumping (steam jet syphon) prior to isolation . No records of contents or pump out at isolation.
Condition	Unknown, assume leaked.
Original Mission (Process History)	The tank received waste from the 241-ER-151 Diverter Box due to leaks and decontamination activities.
Current Mission	None (Replaced by 241-ER-311)
Future Mission	None
Processes	No processing was performed
Input Streams	This catch tank serviced the 241-ER-151 diverter box. It appears that this system interfaced with B-Plant but information is not conclusive. Since it was a catch tank that would receive occasional leaks and surface runoff the composition of any residuals is unknown. This tank was replaced (abandoned in place). It is unlikely that any significant accumulations remain in this tank.

Product/Effluent	Unknown
Material at Risk	Unknown
Form/Charac	Unknown
Quantity	Unknown
Material Stored	Unknown
Condition	Unknown
Interactions	Unknown
Energy Sources	None
Energy Needs	None
Energy Status	N/A
Source Condition	N/A
Past Controls	Unknown
Current Controls	None
Planned Controls	None
Barriers	Tank wall
Chemical Segregation	N/A
Safeguards and Security	The tank is located within a chain link fenced area. The area within the fence is posted as a surface contamination area and labeled with IMUST signs.
Monitoring and Surveillance	None
Historical Risks	None identified

Current or Future Risks	Unknown
Occurrence History	Unknown
Root Cause	Unknown
Records Location	None located
Records Access	N/A
Adjacent Facility Location	
Underground Facilities	None
Aboveground Facilities	None
BIO Coverage	Yes
FSAR Coverage	Yes
Information Source	Drawings: H-2-43108; H-2-2537; H-2-2542; H-2-43031, H-2-2538; H-2-71670; H-2-43034

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	242-S	Facility Name:	242-S Evaporator Facility

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	200-W Area, North of 241-S tank farm and West of 241-SY tank farm	*see below	*see below	*see below	*see below	not applicable	shutdown/ standby condition III	TBD	TBD

Geometry	The 242-S evaporator consists of a segmented building containing process, control, and personnel areas. The process section of the facility is approximately 22.86 m (75 ft.) long by 15.24 m (50 ft.) wide and 18.29 m (60 ft). high. The process portions of the facility contain the condenser and evaporator rooms and a separate vault for the ion exchange column. Geometry of individual vessels within the facility is described under "Hardware" below. The control room, lunch room, change room, and cold storage room are located in a one-story service building on the west side of the process rooms. The service building is approximately 13.72m (45 ft). square.
Configuration	In its original configuration, the facility was connected by piping to 241-S-102 (and later to 241-SY-102), which was the feed and blending tank for the evaporator and 241-S-103 which was the effluent tank for concentrated waste and other byproducts of the process. Tank 241-S-103 received the concentrated waste returned from the evaporation process and other facility effluents. Treated condensate was routed to the 216-S-25 crib. The facility was upgraded after shutdown with several piping connections to Tank 241-SY-103 to facilitate future waste concentration missions. The connecting lines to the 241-S Tank Farm were isolated so that the facility could no longer utilize single shell tanks. In 1985 several configuration changes were made to 242-S to support a groundwater treatment campaign from the U1 and U2 cribs. Changes included routing from the cribs to tank TK-302-C outside of the facility, and through the ion exchange column. The building is ventilated by two ventilation systems serving the "hot" and "cold" sides of the facility. The hot side of the facility is maintained at a negative pressure relative to the cold side.
Hardware	The facility consists of a number of components for evaporation of the liquid from the feed/staging tank 241-S-102 (or 241-SY-102) and return of the concentrated waste to Tank 241-S-103. Following is a listing of the major vessels within the facility, comprising the primary process components capable of containing significant quantities of liquids. Pumps, instrumentation systems, compressed air systems, utilities and the majority of the piping are not included in this list. C-A-1 (Vapor/Liquid Separator) - Approximately 12.19m (40 ft.) high and 4.57m (15 ft.) dia. 134.75K L (35,600 gal.) total capacity, 94.63K L (25,000 gal.) normal operating capacity. C-A-1 is connected by 71.12 cm (28-in.) recirculation line with E-A-1. Working liquid level approximately 5.18m (17 ft.) from bottom. A 107 cm (42-in.) vapor line connects to E-C-1. Feed line from 241-S-102 (later 241-SY-102) connects to recirculation loop. E-A-1 (Reboiler) - Approximately 4.57m (15 ft.) high and 1.07m (3.5 ft.) dia. E-A-1 is connected by 71.12 cm (28-in.) recirculation line with C-A-1, 186 m^2 (2000 ft^2) surface area, $2.5x10^7$ BTU/hr.

Hardware (continued)	E-C-1 (Primary Condenser) - Vessel is approximately 5.5m (18 ft.) long 2.13m (7 ft.) dia. 697 m^2 (7,500 ft^2) condenser surface area. 107 cm (42-in.) vapor feed from C-A-1, connected to E-C-2, E-C-3, vessel vent system and TK-C-100. $2.2x10^7$ BTU/hr. E-C-2 (Inter Condenser) – Approximately 2.13m (7 ft.) long 0.46m (1.5 ft.) dia. 18.58 m^2 (200 ft^2) surface area. Connected to E-C-1, E-C-3, vessel vent system, and TK-C-100. 1×10^6 BTU/hr. E-C-3 (After Condenser) – Approximately 2.29m (7.5 ft) long 25.4 cm (10 in.) dia. 9.29 m^2 (100 $ft^{2)}$ surface area. Connected to E-C-1, E-C-2, vessel vent system, and TK-C-100. 7×10^5 BTU/hr. TK-C-100 (Condensate Catch Tank) - 67.373K L (17,800 gal.) approx 4.27m (14 ft.) dia. and 6.1m (20 ft). high. Connected to condensers and provides feed to IX-D-1 by 60 gpm pump. IX-D-1 (Ion Exchange Column) - Approx 1.22m (4 ft.) dia. and 4.88m (16 ft) high. 4288 L (1133 gal.) capacity. Process feed from TK-C-100, effluent to 216-S-25 crib through diverter R-C-3 (diverts to TK-C-100) Eluent line from TK-E-01, Eluted waste drains to 241-S-103. Reconfigured in 1985 to drain to Tank 241-SY-102. TK-E-101 (Eluent Tank) - 15,897 L (4,200 gal.) approx 2.74m (9 ft. dia.) and 2.74m (9 ft.) high. Eluent line to IX-D-1, overflow line routed to tank 241-S-103. Reconfigured in 1985 to route overflow to Tank 241-SY-102. TK-E-102 (Anti-Foam Tank) - 379 L (100 gal.), approx 76.2 cm (30 in) dia. and 81.28 cm (32 in.) high. Connected to raw water supply , C-A-1, overflow drain routed to tank 241-S-103. TK-C-103 (Flow Measurement Tank) - 1893 L (500 gal.) approx 1.83m (6 ft.) long and 0.915m (3 ft.)square. Connected to steam condensate line from E-A-1. TK-E-104 (Decontamination Tank) - 2347 L (620 gal.) approx 1.52m (5 ft.) dia and 1.52m (5 ft.) high. Connected to raw water supply, condensate catch tank, and process equipment and loadout room. DU-C-1 (De-Entrainment Unit) - Removes moisture from vessel vent system connected to condensers, drains to TK-C-100. TK - 302-C (Acid Storage Tank) - 178K L (47,000 gal.) approx 6.1m (20 ft.) dia and 6.7m (22 ft.) high. Located above ground, outside of the facility and was used for feed storage in the U1/U2 ground water clean-up campaign. Floor Sump in hot side of facility - 3,785 L (1,000 gal.) capacity. approx 1.52m (5 ft.) by 1.52m (5 ft.) and 1.83m (6 ft.) deep. Original routing to Tank 241-S-102. Configured during project B-464 for routing to Tank 241-SY-103. Collects all drainage from the hot side of the facility, currently contains some liquid.

Contents	
	C-A-1 (Vapor/Liquid Separator) - As described in the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown. According to the Operations representative, there is a residual of about 3-10.16 cm (4 in) of unidentified liquid remaining. E-A-1 (Reboiler) - According to the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown and is not thought to contain any residual liquids. E-C-1 (Primary Condenser) - According to the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown and is not thought to contain any residual liquids. E-C-2 (Inter Condenser) - According to the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown and is not thought to contain any residual liquids. E-C-3 (After Condenser) - According to the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown and is not thought to contain any residual liquids. TK-C-100 (Condensate Catch Tank) - The condensate catch tank was last used during the U1/U2 groundwater treatment campaign in 1985. It was not re-used. The tank contains approximately 8-34,065 L (9,000 gal.) [approximately 8-3m (10 ft.) depth] of residual waste (walkdown notes). The amount of sludge in this waste is unknown. Since the resin in the ion exchange column was organic, the tank likely also contains some organic materials. IX-D-1 (ion exchange column) - The column originally contained Zeolon 900 ion exchange medium (ARH-MA-119). To support the U1/U2 groundwater treatment campaign in 1985, Dowex MSA-1 ion exchange resin was added to the ion exchange column (letter, 65950-85-350-AX; SD-WM-SSP-002). After the U1/U2 treatment the resin was regenerated with sodium hydroxide and the column was filled with water to cover the resin. The column is not vented, but opened and inspected periodically. TK-E-101 (Eluent Tank) - Tank originally contained sodium nitrate for regeneration of the ion exchange column, and was later used in the U1/U2 treatment campaign to contain sodium hydroxide for regeneration of the ion exchange column. The tank is assumed empty. TK-E-102 (Anti-Foam Tank) - The tank was used in the U1/U2 treatment campaign. It contains a white power and is labeled as "Sodium Bicarbonate." The tank was sampled in 1997 (74620-97-208) and the analysis confirmed the tank contained sodium bicarbonate. TK-C-103 (Flow Measurement Tank) - According to the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown and is not thought to contain any residual liquids. TK-E-104 (Decontamination Tank) - The tank was sampled in 1997 (74620-97-208). It currently contains a minimal heel of yellow-tinted water. Analysis determined a pH of 10.0 and sp gr of 1.028. DU-C-1 (De-Entrainment Unit) - According to the shutdown plan (SD-WM-SSP-002) this vessel was drained and flushed during shutdown and is not thought to contain any residual liquids. The vessel vent system has been shutdown and isolated. TK-302-C - This tank was originally an acid addition tank for injection of dilute nitric acid in the process stream, and was more recently used during the U1/U2 treatment campaign as lag storage for the U1/U2 crib groundwater. This tank has been emptied and cleaned for use as a raw water storage and chemical addition tank for the cross site transfer system. Pump Room Floor Sump - This sump contains floor drainage from the hot side of the facility.

Condition	The facility has been unused since 1985, and the process equipment is deteriorating. A deactivation plan is being developed. There are no current plans to restore the function of the facility.
Original Mission (Process History)	The original mission of the facility was to remove liquid from waste in the 241-S Tank Farm. Operation of the evaporator began on November 1, 1973 and continued until 1980. The facility was shutdown in 1980 and placed in a standby condition II in 1981, whereby restart would take less than 6-months to accomplish. The facility was placed in standby condition III in 1985, whereby restart would take more than 6-months. A number of configuration changes were made in 1985 to use the ion exchange column and some of the process tanks to reduce uranium content in the U1/U2 crib groundwater. This was done in 1985, and the facility has been inactive since.
Current Mission	The facility currently contains controls for the tank waste transfer system and houses the control room for the cross site transfer system. The facility also houses instrument air compressors for SY Tank Farm and alarms for 244-S, and SY/SX Tank Farms. A tank outside 242-S (TK-302-C) serves as the flush water storage and chemical addition point for the cross site transfer system.
Future Mission	The facility will continue to provide compressed air and control room functions until it is deactivated. A deactivation plan is to be prepared which will specify the time frame for deactivation of the facility.
Processes	Original Mission: The evaporator system received a feed blend of recycled supernate from the bottoms settling tanks and unprocessed waste from Tank 241-S-102 (102-SY in RHO-CD-56). The waste feed was injected into the recirculation line between the liquid separator and the reboiler, where it was heated. The waste was then pumped to the separator where under vacuum the vapor was released. The vapor was processed through a series of three condensers and then vented to the atmosphere. The residual liquid was recirculated through the evaporator until it was sufficiently concentrated to return to the bottoms settling tanks in S, SX, and U Tank Farms. Condensate from the condensers was collected in a catch tank and routed through an ion exchange column, and discharged to the 216-S-25 Crib. Condensate from the reboiler and cooling waster from the condensers was discharged to the 216-U-10 pond. The ion exchange column was eluted with hot sodium nitrate from a heated eluant tank in the facility. Eluted waste was routed to Tank 241-S-103. The facility design included decontamination tank and lines to the process equipment. An anti-foam tank provided chemical feed to reduce foaming in the evaporator. Nitric acid was stored in a tank outside the facility and was injected into the process stream to provide partial neutralization of the salt slurry. U1/U2 Groundwater Treatment: Uranium-contaminated groundwater was pumped to the TK-302-C tank and through the ion exchange column. Treated groundwater was discharged to the 216-S-25 Crib. The ion exchange column was eluted with sodium hydroxide and eluted waste was routed to Tank 241-SY-102.
Input Streams	Input to the facility during its original mission was tank waste liquids and recycled supernate from the S, SX and U Tank Farms. 241-S-102 (and later 241-SY-102) served as the feed tank for the evaporation process. The facility later received uranium contaminated groundwater from U1 and U2 cribs, which was routed through the ion exchange column and the treated groundwater was discharged to the 216-S-25 Crib.
Product/Effluent	The original effluents from the faciliy included the concentrated salts from the evaporation process, which were returned to the bottoms settling tanks in the S, SX, and U Tank Farms. Tank 241-S-103 received eluted waste from the ion exchange column. Overflow from the process vessels and floor drains were also routed to Tank 241-S-103. The vessel ventilation system was routed through a HEPA filter system to the atmosphere. The buidling ventilation systems also vent through HEPA filtration to the atmosphere. Condensate from the condensers was collected in a catch tank and routed through an ion exchange column, and discharged to the 216-S-25 Crib. Condensate from the reboiler and cooling waster from the condensers was discharged to the 216-U-10 pond. Tank 241-SY-102 received eluted waste from the U1/U2 groundwater treatment campaign. Treated groundwater was discharged to the 216-S-25 Crib

Material at Risk	Waste liquids remain in the evaporator (C-A-1), condensate catch tank (TK-C-100), and the decon tank (TK-E-104). Waste sodium bicarbonate is contained in the anti-foam tank (TK-E-102) The ion exchange column contains resin , covered with water.
Form/Charac	Described under "contents" above for process waste materials
Quantity	Described under "contents" above for process waste materials
Material Stored	Process materials remain in the process vessels.
Condition	Storage vessels are unused and slowly deteriorating.
Interactions	There is a possibility of an organic layer in TK-C-100. This should be evaluated for potential reactions. There is an organic resin covered with water in the ion exchange column. The headspace in the column has been sampled and contains trace amounts of ammonia and organics. Interaction between materials in the process vessels is prevented by physical separation of the vessels from each other.
Energy Sources	The facility is serviced with electrical power. Steam service to the facility has been discontinued.
Energy Needs	Facility needs a power supply to operate its control room functions and provide ventilation/HVAC.
Energy Status	Electrical service to the facility is active. Steam lines are not active
Source Condition	Electrical service is active and maintained. Electrical equipment for the original process is not actively maintained.
Past Controls	The safety analysis for the facility (RHO-CD-56) credits the following controls: backflow preventers, radiation detection and diverter in condensate streams, line isolation, radiation detection and diversion of the IX column effluent, pump interlocks, HEPA filtration monitoring and replacement, exhauster interlocks, fire detection and suppression, organic material limits, excavation controls, lock and tag procedures.
Current Controls	Fire suppression system is active. Ventilation systems are active with the hot side of the building maintained at negative pressure with respect to the cold side. Roof inspection is required on a 5-yr cycle. The ion exchange column liquid level is inspected weekly. Exhauster is isolated by a fence. Hot side of the facility is isolated. Operating controls are applied to the instrument and control functions in the facility. Normal rad control, industrial safety, and hazardous materials controls apply.
Planned Controls	To be determined.
Barriers	The hot side of the facility is isolated from the cold side. The roll up door to the equipment load out room is sealed. The exhauster is protected by a fenced enclosure. Waste materials are contained within the process vessels.
Chemical Segregation	Chemicals are segregated by being contained in the process vessels which are physically separated.
Safeguards and Security	The facility is locked when unmanned with access controlled by the Single Shell Tanks Shift Manager.

Monitoring and Surveillance	Periodic inspection of the ion exchange column liquid level is performed. Routine readings are taken in the Evaporator Control Room of condensate tank level, exhauster operating parameters, and compressor operating parameters.
Historical Risks	The safety documentation for the facility (RHO-CD-56) addressed 6 postulated accidents: Siphoning or backflow of contaminated process solution into personnel areas; Excessive foaming of process solution, accompanied be entrainment of foam in the process condensate system; Organic distillate fire or explosion of organic vapors in the condensate collection tank; Failure of the vessel vent system exhaust filters; Failure of reboiler tubes, with simultaneous failure of the steam condensate monitor/diverter station; Rupture of an underground waste transfer line during processing or power shovel operation.
Current or Future Risks	Potential energy sources (electrical). Potential for flammable gasses (organics and ammonia) in IX column. Potential for flammable gasses (organics) in the condensate collection tank
Occurrence History	Three relatively significant occurrences are listed below 1. The hot side of the facility flooded when a break in the emergency shower water system occurred. 2. A break in the transfer line occurred which resulted in a surface pool of waste. 3. Ventilation to the hot side of the facility was lost several times after shutdown.
Root Cause	1. The event was caused by a failure of a backflow preventer. 2. The event was caused by corrosion/aging of the transfer line. 3. The event was caused by general area power outages.
Records Location	The records for this facility are located in the Shift Manager Logbook, Operator round sheets in 272-WA and old Shift Manager Logbooks that are archived.
Records Access	No special access requirements except the normal for archived records.
Adjacent Facility Location	The 242-S facility is adjacent to the S and SY Tank Farms.
Underground Facilities	There are underground piping connections from the facility to the S, SY, SX and U Tank Farms. All piping connections to single-shell tank farms have been cut and capped to isolate them from the facility. There is a piping connection to 216-S-25 crib which may not be isolated, connections to the U1/U2 cribs.
Aboveground Facilities	Electrical power connections to the facility are active. Steam lines are inactive.
BIO Coverage	This facility is not currently described or analyzed in the TWRS BIO.
FSAR Coverage	This facility is not currently described or analyzed in the draft TWRS FSAR.
Information Sources	SD-WM-SSP-002, *242-s Facility Shutdown & Standby Plan* RHO-CD-56, *Operational Safety Analysis Report 242S Evaporator-Crystallizer and Tank Farm Facilities* Internal Letter, 07/29/85, 65950-85-350-AX, R. T. Kimura to R. D. Wojtasek, *Temporary Use of 242-S Evaporator Equipment for U-1/U-2 Crib Groundwater Treatment Project* Interoffice Memo, 07/30/97, 74620-97-208, Data Assessment and Interpretation to M. J. Sutey, *Data Review of Samples Taken at 242-S and 242-T Evaporator Facilities* ARH-MA-119, *242-S Evaporator-Crystallizer Information Manual*

	WHC-MR-0132, *A History of the 200 Area Tank Farms* RHO-RE-SA-116P, 1986, *Chemical and Anion Exchange Removal of Uranium From Hanford Groundwater* Interoffice Memo, 07/22/1997, P. F. Kison to G. L. Dunford, *West Tank Farms Facility Chemical Inventory and Vulnerability Evaluation* Drawings: H-2-46320, H-2-46322, H-2-46323, H-2-46324, H-2-46325, H-2-46326, H-2-46327, H-2-46335, H-2-46336, H-2-46342, H-2-46343, H-2-46347, H-2-46355, H-2-46357, H-2-46361, H-2-46365, H-2-46366, H-2-46367, H-2-46369, H-2-46370, H-2-46371, H-2-822350, H-2-822351, H-2-822409 Facility walkdown 8/15/97; Ron Tucker, Jeff Doeler, Carole Leach, Jim Poppiti, Kim Beacher, Carol Sohn, Ken Wade Conversations with Mike Sutey (Engineering), Paul Kison (Engineering) and Ron Tucker (Operations)

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	242-T Evaporator	Facility Name:	242-T Evaporator

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
LMHC	200W near PFP	Detailed below	Detailed below	Unknown	Detailed below	N/A	Inactive	Not Known	Not known

Geometry	A rectangular concrete building with a divided process area (radiological area, or "hot"), a control area (non-radiological, or "cold"), and a stand alone chemical storage tank building. The process area has two ft of concrete shielding and is approximately 13.1 m (43 ft.) long, 12.8 m (42 ft.) wide, with 6.7 m (22 ft.) tall walls, and a 12.7 cm (5 in.) thick cover block (flat) roof, reinforced with external steel trusses. The process area roof cover blocks have been foamed over. The building is built on a concrete slab floor. The attached single story control area has a pitched roof. This cold area originally contained a lunch room, wash room and lavatory, a change room, a control room, instrument air dryers, and an anti-foam tank and pump. The processing area consists of a "Feed Cell", and "Evaporator Cell", and a "Condensate Cell" that are separated by one ft concrete walls. One corner of the Condensate Cell holds the sample gallery and the decontamination sink. A small in-ground decontamination tank (hot) (242-T-135) is adjacent to the building. The tanks in 242-T-601, a small chemical storage tank building, are empty. Outside there are three empty tanks, including a 24,000 L (6,345 gal) capacity nitric acid tank..
Configuration	The facility was modified in 1973 from the original design of taking feed from Tank 118-TX, to also be able to take feed from Tank D-5 in the 241-Z building of the Plutonium Finishing Plant, or Tank 242-TA-R1 in the 242-TA Receiver Tank Vault. The "Bottoms Storage" tanks (113-TX, 116-TX, or 117-TX) receive concentrated effluent from the evaporator process. Acceptable "condensate" from the condenser was sent to the 216-T-19 crib, or could be recycled by routing back to Tank 118-TX. Sludge from the evaporator was sent to Tank 109-TX, via the 242-T-151 diverter box. The 242-T-601 building chemical tanks (Ferrocynide, HNO3, NaOH, and NiSO4) are empty. The 10.16 cm (4 in.) raw water line has been blanked off inside the control building. The 242-TA vault has been made an IMUST item, and not part of this facility.

Hardware

Component	Designation	Capacity (Liters)	(gal)
Evaporator	(242-T-101)	41,640	(11,000)
Blend Tank (Feed Tank)	(242-T-102)(A.K.A. TK-B1)	15,899	(4,200)
Preheaters	(242-T-103) and (242-T-104)	178	(47)
Cyclone Separator	(242-T-105)	568	(150)
Packed Scrubber	(242-T-106)	1,779	(470)
Condenser	(242-T-107)	1,893	(500)*
Condenser Catch Tanks (2)	(242-T-108) and (242-T-109)	15,842	(4,185)
Cyclone Catch Tank	(242-T-110)	284	(75)
Compressor & Receiver	(242-T-123)	NA	NA
Decontamination Tank	(242-T-135) outside building	946	(250)
Anti-foam Tank	(242-T-112)	NA	NA

*Vapor tube side

The Evaporator contains four helical steam coils of 51mm (2 in.) Sch 40 stainless steel pipe in parallel. Three sections are 8.83 m^2 (95 ft^2) long, and one section is 17.66 m^2 (190 ft^2) in length.

The 242-T-601 Building contains seven empty chemical tanks (242-T-601-TK-3 has a few centimeters of water). Tank capacity was taken from estimated dimensions.

Component	Designation	Dimensions (M) (Ft)	Capacity (Liters)	(gal)
Sodium Ferrocynide	242-T-601-TK-1	1.5 x 2.75 (5' dia. x 9')	5,004	(1,322)
Nickel Sulfate	242-T-601-TK-3	0.9 x 1.82 (3' dia. x 6')	1,201	(317)
Caustic	242-T-601-TK-5	2.4 x 2.75 (8' dia. x 9')	12,810	(3,384)
Not Labeled	242-T-601-TK-7	1.5 x 2.75 (5' dia. x 9')	5,004	(1,322)
External tanks (not connected):				
Acid	242-T-601-TK-2	3.7 x 2.29 (12' dia. x 7.5')	24,019	(6,345)
Nickel Sulfate	242-T-601-TK-4	0.5 x 0.90 (1.75' dia. x 3')	204	(55)
Caustic	242-T-601-TK-6	1.5 x 1.22 (5' dia. x 4')	2,224	(588)

Contents

The radiological and chemical contents are unknown. The facility was abandoned and the activities specified in the shutdown plan were never completed. The contents will be estimated from historical documents; see section on Information Sources for basis. The evaporator process approximately 126,994K L (33,552,000 gal) of radioactive tank waste for waste volume reduction.

Condition

In 1976 the evaporator broke down. Modifications were performed to accommodate the processing of Z-plant waste. That campaign was completed in 1980, and the evaporator has been inactive since. High level surface contamination was left in the process areas. The ventilation system is required to keep running. The shutdown plan was never completed, as funding was withdrawn by the DOE.

Original Mission (Process History)

The 242-T Evaporator facility was built as a prototype in the early 1950s to remove liquids to reclaim space in existing waste storage tanks, and later to process PFP waste. The Evaporator was modified several times. It was used to processed liquid into concentrated solids (crystallization), as well as to remove liquids and concentrate waste. The process standards Pu limit for the blend tank was 75 grams per "batch" run.

The evaporator was first operated as a batch unit from 1952 until its first shutdown in 1955. In 1965, the first modifications were made and the plant ran as a continuous evaporation process. In 1976 further modifications were made to allow the facility to neutralize and

	concentrate high and low salt acid waste from Z Plant. This role continued to 1980, when the facility was shutdown. From 1980 through 1986 the control area was used for monitoring saltwell pumping, but no plant components were used. The evaporator Blend Tank (also called the Feed Tank) was filled with waste from the source tank. The amount of Feed Tank overflow back to the source tank controlled the process rate. Over the life of the facility, feed came from three sources. The facility was feed from either underground storage tank 118-TX, Tank D-5 in the 241-Z building of the Plutonium Finishing Plant, or 242-TA-R1 in the 242-TA Receiver Tank Vault. The facility was designed to run with control on the feed rate, based on condensate output. Overflow feed was routed back to the source tank. This allowed full capacity operation, with efficiency tied to the amount of solids (concentration) in the feed liquids. Process output came from the condenser, usually low-level "condensate", and the evaporator or condenser, as concentrated waste. Vapor was also removed. Liquid vapor was pulled from the evaporator, through a cyclone separator, then a screened scrubber, and off of a cooled and low vacuum condenser. Finally the now "dry" air was routed through a deentrainer, then warmed by heaters, and sent through pre-filters and two stages of HEPA filters to a building stack exhaust. Acceptable "condensate" from the condenser was sent to the 216-T-19 crib, and concentrated solids from the evaporator were routed to bottom storage tanks. Unacceptable condensate and process drains were routed back to the source tank for recycle. Sludge from the evaporator was sent through the 242-T-151 diverter box to Tank 109-TX. There were two operating processes, evaporation (with precipitation), and crystallization. For crystallization, the feed tank inside the evaporator facility was called a blend tank because the crystallization process required a small amount of solids to "seed" the supernate. Waste feed was pumped from Tank 118-TX through a jet valve to siphon the blend tank and send the blended stream through the evaporator. When used for crystallization, the dried solids, termed "bottoms" or "salt cake" were sent to one of several "Bottoms Storage Tanks" (116-TX, 117-TX, or 113-TX) through the 242-T-151 diverter box. In evaporation, the hot concentrated waste was sent back to a storage tank and allowed to cool. As the concentrated waste cooled, the solids precipitated out of suspension and the remaining supernatant liquid was decanted and sent back through the process again. Tank 118-TX was used to receive supernatant liquids (and fed the evaporator) from a decant tank. The facility used nitric acid (HNO_3) and caustic (NaOH) for pH adjustment. Caustic was also used for decontamination as some components were made of mild steel. TBP scavenging used ferrocyanide and nickel sulfate, $NiSO_4$.
Current Mission	Shutdown, with controls requiring active ventilation, and annual building structural inspection.
Future Mission	None
Processes	See section on Process History.
Input Streams	Tank 118-TX, Tank D-5 in the 241-Z building of the Plutonium Finishing Plant, or Tank R-1 in the 242-TA Receiver Tank Vault.
Product/Effluent	Hot side effluent was salt cake or concentrated waste. The salt cake was sent to bottom storage tanks, 116-TX, 117-TX, or 113-TX. The concentrated waste was sent to waste storage tanks 114-TX, or 116-TX. Cold side effluent was low level radionuclide "condensate" which was sent to the 216-T-19 crib, and vapor which was first filtered and then sent up the exhaust stack. Sludge from the evaporator was sent to tank 109-TX.

Material at Risk	Waste material may still remain in the sump, as the shutdown plan to pump sump back to feed tank was never initiated. Other process vessels such as the evaporator, condenser, and catch tanks may contain waste material of unknown concentrations and volumes. Flammable gas is a concern for certain vessels. The (penetrating) dose rate from the side wall of the evaporator is 1R/hr at 2.44 m (8 ft). The level of alpha inside a vessel can not be measured. The neutron counters in the feed tank are broken.
Form/Charac	The form of the possibly remaining waste is unknown. Significant surface contamination in the form of dry powder is on the floor of the process area. See the section on Information Sources for the radiological survey reports.
Quantity	See the above two sections.
Material Stored	Process waste may still remain in the vessels, lines, and sump.
Condition	The facility suffered a break down in the evaporator, and was abandoned. Process vessels are not maintained. The building and ventilation systems are inspected and maintained.
Interactions	No chemicals are stored at the facility. Caution should be used to ensure the flammability of hydrogen is addressed if exothermic decontamination is attempted. A flush of the process vessels should first be done immediately before internal decontamination.
Energy Sources	The facility has electrical power. The steam has been disconnected. A 10.16 cm (4 in) raw water line enters the building and is blanked off in the control room.
Energy Needs	The facility requires electrical power to operate the ventilation system and control room CAM.
Energy Status	Electrical power is active.
Source Condition	Electrical power is active and maintained. Electrical service to process instruments is inactive and not maintained.
Past Controls	The process standards Pu limit for the blend tank was 75 grams per "batch" run. Neutron detectors were used on the blend tank. A process area HEPA filtered and monitored ventilation system. Alpha/beta CAM in control area, and process exhaust HEPA system CAM.
Current Controls	The document provisionally accepted by DOE-RL for the Authorization Basis, 242-T Evaporator Facility Shutdown/Standby to Condition V Safety Analysis Report (SD-HS-SAR-009, Rev., 0) of February, 1983 requires the following; HEPA filtered ventilation of process "hot" area, and annual building structural inspections. An alpha/ beta CAM on HEPA filtered exhaust and building control area.
Planned Controls	Specific flammable gas controls should be expanded to all 242-T Evaporator vessels, due to corrosion, thermal, and radiolytic production of hydrogen in water and organics, and the unknown presence or amount of nitrate and nitrite scavengers. The relative position of components and the natural law of hydrogen buoyancy and possible migration (natural or forced) requires all vessels have flammable gas controls. The second control would require critically safe geometry and spacing be used (at all stages) for collection of any waste, should internal decontamination of the process vessels be undertaken. Conservative shielding analysis for the decontamination waste receiver vessel should be used. Update dose consequence analysis with sampling data, and include radiological survey data of loose surface contamination in release term. Ensure release fraction is credible, and dose consequence within DOE evaluation guidelines.

Barriers	Access to the facility is controlled by RWP and locks. The control room is locked, and the ventilation system is behind a locked fence. A portable concrete shield blocks the high background emanating from the evaporator facility. The radiological area is placarded and marked off by a yellow and magenta rope.
Chemical Segregation	Only mixed waste remains in the process vessels. The external and partially in-ground decontamination tank is contaminated with caustic and mixed fission products. The chemical feed and storage tanks are empty.
Safeguards and Security	The facility is unoccupied and locked. An RWP is required to enter.
Monitoring and Surveillance	Daily CAM readings are required. Ventilation system is routinely monitored. The facility requires an annual building structural inspection.
Historical Risks	Supporting document, 242-T Evaporator Facility Shutdown/Standby to Condition V Safety Analysis Report (SD-HS-SAR-009) of February, 1983, presents a worst-case accident for the facility of building destruction by an earthquake of less than 0.25 g intensity. It is a small point that this older document does not use present standards for dose consequences. The larger points are that the waste inventory available for dispersal as still unknown, and the shutdown requirements were not implemented. Newer analysis is of dubious value as the most important variable is the amount of inventory at risk. A recent hazard assessment (RE Potter, 1998) shows the 242-T Evaporator as hazard category 2.
Current or Future Risks	Potential hydrogen gas in process vessels, high radiation and surface contamination. Criticality safeguards should be used for any decontamination. It is highly cautioned that decontamination reactions and exothermic (heat) could produce as well as release trapped hydrogen gas already present but bound up in the waste.
Occurrence History	The facility suffered a break in the evaporator piping and significant surface contamination remians on the floor of the process area. A washout of the foundation and resultant building cracking required structural repair with grout. Small lighting ballast fire.
Root Cause	None
Records Location	Mobile Office, MO-281 in the 200 West area (top two file drawers of 5 drawer cabinet in cubical B-109)
Records Access	Normal Hanford access.
Adjacent Facility Location	The Plutonium Finishing Plant, the Plutonium Reclamation Facility, and TX and TY Tank Farms.
Underground Facilities	Underground piping connections from the 241-TA Receiver Vault (Tank 242-TA-R1), out to the 216-T-19 crib, and to and from waste tanks through the 242-T-151 diverter box. A 10.16 cm (4 in) raw water line leads to the control room where it is blanked off. Steam no longer is connected to the facility.
Aboveground Facilities	Electrical power to the facility.
BIO Coverage	This facility is not described or analyzed in the TWRS BIO.

FSAR Coverage	This facility is not described or analyzed in the draft TWRS FSAR. The TWRS Administration Manual, HNF-IP-0842, cites the supporting document 242-T Evaporator Facility Shutdown/Standby to Condition V Safety Analysis Report (SD-HS-SAR-009, Rev. 0) of February, 1983. It should be noted that Luis Williamson, the last operating cognizant engineer reports that the work referenced in this document was never completed.
Information Sources	The transition to shutdown Cognizant Engineer was Luis Williamson. Current Cognizant Engineer is Kevin Hull. The last process to be documented is discussed in ARH-CD-178, Operational Safety Analysis 242-T Waste Evaporator, Nov, 18, 1974. Past historical Pu limit of 75 grams per batch was taken from Process Specifications and Standards for the 242-T Evaporator Facility, RL-SEP-649, September 1, 1965. Original operating logs for final years (1976-1980) of operation (custody of Kevin Hull - soon to record storage) RHO-CD-1410 242-T Evaporator Facility Shutdown/Standby Plan, April 1981, calls for the Hot Cell Sump to be pumped to Feed Tank, work never completed as funding withdrawn by the DOE. OSD-T-151-00015 Rev/Mod B-6 Safety Based Specifications Support for the OSD is provided in Technical Basis for OSD-T-151-00015, SD-WM-TI-352, September 30, 1988. 242-T Evaporator Facility Shutdown/Standby to Condition V Safety Analysis Report (SD-HS-SAR-009) of February, 1983 (work not completed according to discussion with Luis Williamson. Project B-106 provided ventilation improvements which are documented in Building Effluent Improvements Conceptual Design Description 242-T Facility Building, ARH-2943, December 6, 1973. The supporting document, Structural Inspection 242-T Evaporator Facility, SD-WM-PRS-008, February, 1989 called for roof reinforcing. Analysis of foundation (prompted by repairs to cracks due to wash out) was documented in Structural Assessment of the 242-T Evaporator Facility, WHC-SD-WM-ER-194, Rev., 0, March, 1993. Radiological Survey Report 196474 of June 13, 1995, covered an entry to the condenser room, average dose rate was 7 R/hr. Radiological Survey Report 196477 of June 23, 1995, covered an entry to the Feed Tank room, average was ~150 mR/hr. Radiological Survey Report 196498 of June 29, 1995, covered an entry to the Feed Tank room, average was ~800 mR/hr. Field verified HEPA ventilation system and control room CAM were in operation, at 1:43pm on March 9, 1998. Hanford Drawings: The year 1965 TBP Modifications are on SK-2-1821. Preheaters (H-2-1847), Condenser (H-2-1849), Condenser Catch Tanks (H-2-1850), Cyclone Separator (H-2-1851), Decontamination Tanks (H-2-1852), Feed Tank (H-2-1853), Packed Scrubber (H-2-1880), Evaporator (H-2-1882), 242- T Evaporator Plan (H-2-1895), Cyclone Catch Tanks (H-2-2012),

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	242-T-135	Facility Name:	Decontaminant Storage Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	N 136312, E 566818, 200W area, outside 241-TX tank farm	3142 L (830 gal)	Unknown	Unknown	Unknown	2-7.62 cm (3") and 1-5 cm (2")	Inactive	Unknown	Unknown

Geometry	The tank is 1.37m (4'6") in diameter and 2.13m (7') in height made of stainless steel. (Drawing H-2-1852)
Configuration	The tank is partially below grade. Constructed of stainless steel. A hopper is installed on top of the tank. The tank was associated with the operation of the 242-T evaporator. This tank was initially installed in 221-U. It was modified in accordance with drawing H-2-1852. The purpose of this tank when installed at 242-T Evaporator was to provide decontamination solutions (probably caustic and acid solutions) to the feed tank, evaporator, cyclone separator, and scrubber. Decontamination solutions were charged through a hopper in the tank top and solutions were removed through the top using a jet (See drawing H-2-1211). The tank is equipped with an agitator but has no instrumentation. The tank is assumed isolated because 242-T evaporator operations have been stopped since 1981.
Hardware	Tank, agitator, hopper and associated piping
Contents	Unknown. The tank has been inactive since 1981. The hopper cover above the tank is offset (not covering the opening completely) making the inside of the tank exposed to the atmosphere.
Condition	Tank risers may contain equipment. Area around tank is congested and considered a contamination area. A field walkdown on 3/27/98 revealed that radiation shield wall (a steel structural frame filled with about 15 cm {6"} concrete) is placed on the NE side of the tank. The hopper cover above the tank is offset making the inside of the tank exposed to the atmosphere.
Original Mission (Process History)	Storage of decontamination solutions in support of 242-T Evaporator operation
Current Mission	None
Future Mission	None
Processes	The tank was not used for processing operations
Input Streams	Decontamination chemicals in support of 242-T Evaporator operation. Operations logbooks for the evaporator can not be located per the cognizant engineer.
Product/Effluent	Decontamination solutions
Material at Risk	Cannot be determined due to unknown input streams.

Form/Charac	Unknown
Quantity	Unknown
Material Stored	Unknown
Condition	Unknown
Interactions	Unknown
Energy Sources	Unknown
Energy Needs	Unknown
Energy Status	Unknown
Source Condition	Unknown
Past Controls	Unknown
Current Controls	A radiation shield wall (a steel structural frame filled with about 15cm{6"} concrete) is placed on the NE side of the tank to reduce the background dose level. The area is posted as a contamination area and as an IMUST location.
Planned Controls	Unknown
Barriers	Tank wall
Chemical Segregation	None
Safeguards and Security	A structural steel shielding filled with concrete is installed in front of the tank.
Monitoring and Surveillance	None performed
Historical Risks	Unknown
Current or Future Risks	Unknown
Occurrence History	None identified
Root Cause	N/A

Records Location	Not available
Records Access	N/A
Adjacent Facility Location	242-T evaporator
Underground Facilities	None
Aboveground Facilities	None
BIO Coverage	Yes
FSAR Coverage	Yes
Information Source	Drawing H-2-1852, H-2-1208, H-2-1209, H-2-1211, H-2-37256 Sht 3. RL-SEP-396, 242-T Evaporator Facility Information Manual (June, 1965); HNF-1566, "Letter Report 200-Area Plateau Inactive Miscellaneous Underground storage Tanks Locations".

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	242-TA-R1	Facility Name:	Receiver Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	N 136296.203, E 566804.5, 200W area, within 241-TX tank farm, SW of 242-T bldg.	15.9K L (4200 gal)	Unknown	Unknown	Unknown	None	Inactive	Unknown	Unknown

Geometry	Receiver Vault: 4.88m (16') dia., 6m (20') height, below grade (See drawing H-2-27275). Receiver Tank: 2.74m (9') dia., 2.95m (9' 8") height stainless steel (See drawing H-2-27344). This receiver tank is known as 242-TA, Receiver TK-Vault , 242-TA Receiver Tank Vault, Receiver Tank TK-R1.
Configuration	The receiver tank is located at the bottom of the 242-TA receiver vault. The vault is concrete lined pit with an octagonal concrete cover at grade level and the tank is stainless steel. The tank has seventeen nozzles including 6 spare nozzles. The tank overflows to a sump at the receiver vault bottom. The tank is equipped with a pump and agitator A-R1-1 (See drawings H-2-27345, and H-2-27339). The sump is also equipped with a pump. The receiver tank along with blending tank were used for neutralization of Z-Plant acid waste. Use of 242-T Evaporator Facility to neutralize Z-Plant waste was concluded with the anticipated startup of 244-TX, a double shell receiver tank (See RHO-CD-1410). Transfer line was re-routed to a different receiver tank (244-TX Vault) in 1980 (See drawing H-2-73901). In April 1981, a document was generated by Rockwell International, Rockwell Hanford Operations, Energy System Group, titled *242-T Evaporator Facility Shutdown/Standby Plan (RHO CD-1410)*. The plan detailed a comprehensive plan to be carried out that would place the entire 242-T Evaporator Facility, including 242-TA-R1 tank in a condition wherein all process lines would be blanked, equipment would be disabled, and instruments disconnected, to effectively isolate 242-T process area. The 242-T Evaporator Facility Shutdown/Standby plan was never implemented. This fact is documented in correspondence no. 8956942, R. E. Gerton , Director Waste Management Division, DOE-RL, dated December 4, 1989, regarding the DOE-RL, Standby/Shutdown Program audit December 15-16, 1987. This letter further recommended that the plan be deleted. Examination of existing documentation provides no proof that any part of the plan was ever actually completed. It is estimated the receiver tank was in operation from 1972-1980.
Hardware	Receiver Vault Receiver Tank 242-TA-R1 and associated piping. Tank Pump Tank Agitator Sump Pump
Contents	The contents, amount, and residual heel remaining are unknown. The tank must be sampled with emphasis on catching the very bottom layers, as this tank was used to receive plutonium bearing wastes. The drawing H-2-27332 shows the process flow and waste streams along with the waste stream composition. The waste stream composition is based on design criteria established for the process. The mixed aqueous waste stream no. 3 was used for processing High Salt waste from 236-Z and 242-Z after it was treated in tank D-5 located in 241-Z building. This waste stream was routed from tank D-5 to 242-TA-R1, blending tank TK-B1 and then to 242-T building. Waste stream no. 3 composition as listed on drawing H-2-27332 consists of the following:

	0.005 grams per gal of Pu; 3.457 molar concentration of nitrate ion (total); 0.124 molar concentration of sodium ion; 0.564 molar concentration of trivalent aluminum; 0.620 molar concentration of free hydrogen ions; 0.331 molar concentration of divalent aluminum fluoride; 0.091 molar concentration of bivalent magnesium; 0.012 molar concentration of trivalent iron; 0.040 molar concentration of potassium ion; 0.009 molar concentration of sulphate ion; and 0.0004 molar concentration of divalent uranium oxide.
Condition	Located in a contamination area (alpha). Posted as IMUST area.
Original Mission (Process History)	The tank received mixed aqueous waste from tank D-5 in the 241-Z building. This receiver tank along with blend tank were used for neutralization of Z-Plant acid waste. The tank waste is sent to the blend tank TK-B1 in the 242-T evaporator building. Off-gases from the tank are sent to the vessel vent system in the 242-TB building. The original waste stream composition taken from design criteria of the waste is provided in the flow diagram H-2-27332.
Current Mission	None
Future Mission	None
Processes	Unknown
Input Streams	See original mission.
Product/Effluent	None
Material at Risk	Unknown
Form/Charac	Unknown
Quantity	Unknown
Material Stored	Unknown
Condition	Unknown
Interactions	Unknown
Energy Sources	None
Energy Needs	Unknown
Energy Status	N/A
Source Condition	N/A
Past Controls	Unknown
Current Controls	None

Planned Controls	None
Barriers	Tank wall
Chemical Segregation	None
Safeguards and Security	TX-tank farm access control
Monitoring and Surveillance	None
Historical Risks	Unknown
Current or Future Risks	Unknown
Occurrence History	None identified
Root Cause	N/A
Records Location	Could not be located.
Records Access	N/A
Adjacent Facility Location	242-TB Ventilation Building
Underground Facilities	None
Aboveground Facilities	None
BIO Coverage	Yes
FSAR Coverage	Yes
Information Source	Drawings: H-2-27275, H-2-27344, H-2-27345, H-2-27339, H-2-37256, H-2-27332, H-2-73901 RHO CD-1410, 242-T Evaporator Facility Shutdown/Standby Plan; Correspondence no. 8956942, R. E. Gerton , Director Waste management Division, DOE-RL, dated December 4, 1989, regarding the DOE-RL, Standby/Shutdown Program audit Dec. 15-16, 1987.

Facility ID:	244-AR	Facility Name:	AR Vault Complex

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	200 East; N of PUREX and W of 241A Tank Farm	See below.	See below.	See below.	See below.	None.	Active.	Unknown	Unknown

Geometry	The AR Vault is 28.66m (94 ft) long by 5.5m (18 ft) wide by 12.5m (41 ft) high.
Configuration	The 244-AR Complex consists of the 244-AR canyon/service building; the 2704-AR lunchroom/changeroom; the 244-AR-712 Wind Reduction Facility; the 291-AR filter vault and addition; the 292-AR instrument building, prefilter vault, and filter vault; the 701-AR building; the 715-AR Closed Loop Cooling System building; the 2904-AR cooling warter sample building; and the air compressor building. The 244-AR canyon building is a reinforced concretestructure housing three process cells and a failed equipment cell. The process cells contain sumps with an intercell sump overflow. Cell #1 contains tank 244-AR-001. Cell #2 contains tank 244-AR-002. Cell #3 contains tanks 244-AR-003 and 244-AR-004. The canyon vent filter vaults drain to cell #1. The vessel vent system seal pot drains to cell #3. The process cells and failed equipment cell are covered with 1.53 m (5 ft) thick concrete shielding blocks. The 244-AR-712 Wind Reduction Facility is a prefabricated metal building adjoining the east end of the 244-AR canyon building. The 244-AR service building is a steel frame structure with a concrete roof which contains the control room, sample room, and lavatory. It adjoins the south wall of the 244-AR canyon building. The 2704-AR lunchroom/changeroom is a prefabricated metal building adjoining the south side of the service building. The crane control room is on the east side of the service building.
Hardware	Tank 244-AR-001 is a 189,250 L (50,000 gal) capacity tank constructed of 9.5-mm (0.374") thick Type 304L stainless steel plate. It is 6.1 m (20 ft) in diameter and 6.0 m (19'-9") high with a flat bottom. It has upper and lower cooling coils, a transfer pump, a transfer jet, an agitator, spray rings, a purge air system, a sampler, vessel vent and chemical addition lines, instrumentation, and three spare nozzles. Tank 244-AR-002 is a 189,250 L (50,000 gal) capacity tank constructed of 9.5-mm (0.374") thick Type 304L stainless steel plate. It is 6.1 m (20 ft) in diameter and 6.0 m (19'9") high with a flat bottom. It is equipped with upper and lower dual service heating/cooling coils, a transfer pump, a sluice pump, a transfer jet, an agitator, spray rings, a purge air system, a sampler, vessel vent and chemical addition lines, a radiation monitoring dry well, instrumentation, three spare nozzles, and a spare permanent piping line. Tank 244-AR-003 is a 18,925 L (5,000 gal) capacity tank constructed of 13-mm (½-in.) thick Type 18-8Cb stainless steel plate. It is 2.9 m (9'-6") in diameter and 2.7 m (9 ft high) with a sloped bottom. It is equipped with a cooling coil, two transfer jets, a transfer pump, an agitator, a spray ring, a purge air system, a sampler, vessel ventilation and chemical addition lines, instrumentation, and three spare nozzles. Tank 244-AR-004 is a 18,925 L (5,000 gal) capacity tank and is identical to 244-AR-003.

Hardware (Cont.)	- The canyon buiding bridge crane has a 20-ton main hoist and two 1-ton monorail hoists. It is inoperable. - Vessel vent system portable exhauster, 5.664 m^3/min (200 cfm). - Compressor C-S2-2.
Contents	Tank 001 contains 379 L (100) gal of residual sludge from past transfers or transfer line leakage. Tank 001 also contains 4540 L (1200 gal) of liquid which is believed to be water from post transfer line flushes. No sampling information is available. The cell sump contains approximately 900 L (240 gal) of liquid which may be drainage from a 1997 flooding event and/or from the failed equipment storage tubes. Tank 002 contains 2270 L (600 gal) of residual sludge from 241-AX-104 and other transfers. Tank 002 also contains 44,100 L (11,650 gal) of water from tank 004 and post transfer line flushes. No sampling information is available. The cell sump contains approximately 150 L (40 gal) of liquid. Tank 003 contains 189 L (50 gal) of residual sludge from past transfers. Tank 003 also contains 7380 L (1950 gal) of water from the cell sump and post transfer line flushes. No sampling information is available. The cell sump contains approximately 11,635 L (3074 gal) water (rain and snowmelt) from roof leaks and seal pot overflow. Tank 004 contains 189 L (50 gal) of residual sludge from 241-AX-104 and other transfers. Tank 004 also contains 757 L (200 gal) of water from tank 003 and post transfer line flushes. No sampling information is available. The failed equipment tubes are believed empty, but this cannot be verified with the crane out of service.
Condition	The facility was deactivated in 1978, and is in an advanced stage of decay. The canyon building and service building roofs leak. The canuyon building north wall is suspected to be cracked. The 2704-AR building roof is sagging underneath the evaporative cooler. The tanks were studied for corrosion in 1989, and are believed to be sound. All HVAC systems are inoperable. The vessel vent system uses a portable exhauster to maintain contamination control The canyon ventilation filter vault contains only one intact filter bank; the filter vault addition was never used. The vessel vent filters and prefilters are contaminated. The canyon building bridge crane has not been maintained for the past eleven years and is inoperable. The 715-AR Closed Loop Cooling System building and 2904-AR cooling water sample bulding equipment was never used. Compressor C-S2-1 and the diesel generator are out of service. The diesel generator fuel tank and battery have been removed. Compressor C-S2-2 and the tank level instrumentation are functional.
Original Mission (Process History)	The facility operated from 1968 to 1978. Acid waste from PUREX was cooled in the 244-AR vault before transfer to B-Plant. Alkaline waste from the 241-A and 241-AX tank farms was acidified in the 244-AR vault before transfer to B-Plant. Neutralized waste from B-Plant was stored in the 244-AR vault and transferred to the tank farms. The facility was modified in 1985 for an anticipated mission was to transfer Neutralized Current Acid Waste (NCAW) from the 241-AY and 241-AZ tank farms to B-Plant, but this was never done.
Current Mission	There is no current mission, except for incidental interim radioactive waste storage.

Future Mission	Waste retrieval, eventual deactivation/decommissioning.
Processes	Storage, acidification, cooling.
Input Streams	Purex acid waste (PAW), Zirflex acid waste (ZAW), current acid waste (CAW), Purex supernate (PSN), neutralized high-level waste (NHW).
Product/Effluent	Purex acidified sludge (PAS), neutralized high-level waste (NHW). Purex sludge waste (PSW) was a product of the vault. Cooling water and cold area HVAC system drainage was discharged to B-Pond or the Gable Mountain Pond.
Material at Risk	Tank and cell sulmp contents (see above); radioactive contamination in canyon building and filter vaults; seal pot contents.
Form/Charac	Tank contents are described above. Canyon building and filter vault contamination may be fixed or smearable. Seal pot contents are believed to be low-level contaminated water.
Quantity	Tank contents are described above. Quantities and activity levels of canyon building, filter vault, and seal pot contamination is unknown.
Material Stored	See above.
Condition	See above.
Interactions	Waste characterization data is insufficient to predict interactions.
Energy Sources	Steam, electrical, compressed air.
Energy Needs	Electrical, compressed air.
Energy Status	- The steam supply line has been isolated. - The electrical system is active. - Raw and potable water have been isolated.
Source Condition	The electrical system is functional but has not recently been evaluated for code compliance. The compressed air sytem is functional.
Past Controls	Administrative contols at waste source; continuous tank ventilation; tank monitoring and surveillance; HEPA filter pressure drop and air inlet temperature; stack sampling; cooling water discharge sampling; canyon building ventilation.
Current Controls	TSR requirement of .085 cu meter/hr (3 scfh) of instrument air to tank 244-AR-002 to maintain flammable gas concentrations in tank headspace to less than 25% lower flammability limit; cover blocks to contain spray leak. Tank levels are limited to 80% of capacity. Normal radiological and criticality controls apply. Sump levels are monitored.
Planned Controls	No planned operating controls. Deactivation controls will be established as part of the job package.
Barriers	Tank wall, cover blocks, canyon building structure.

Chemical Segregation	Cell and sump contents are segregated by tank and cell wall integrity.
Safeguards and Security	Facility is under Shift Manager control.
Monitoring and Surveillance	Tank and sump monitoring instruments are checked once per shift. The facility is inspected daily. Tank instrumentation is connected to Computer Automated Surveillance System.
Historical Risks	Transfer line leak; loss of canyon ventilation; loss of vessel vent system; discharge to B-Pond.
Current or Future Risks	Facility is evaluated against loss of HEPA filter, organic salt-nitrate reaction, and spray leak from waste transfer system. Loss of vessel ventilation may cause release of radioactive material which approach the risk guideline, and/or increased likelihood of organic salt-nitrate reaction. Eventual tank waste retrieval and facility decontamination activities will have the possibility of releasing radioactive materials.
Occurrence History	Radioactive mud was discovered in the eaves of the 244-AR vault in May 1979. The mud was removed.
Root Cause	The mud came from the 216-A-40 trench and was transported by swallows building nests.
Records Location	Maintained by East Tank Farms.
Records Access	No special requirements for access.
Adjacent Facility Location	241-A tank farm, 241-AR-151 diverter box.
Underground Facilities	The 241-AR-151 diverter box was never used. It drains to Tank 001. The 291-AR canyon filter vault is an underground concrete vault containing three HEPA filters, located north of the canyon buildilng. The vault addition contains two HEPA filters. The vault sumps drain to seal pots and via the wind tunnel to the canyon building cell #1 sump. The 292-AR vessel vent prefilter vault is an underground reinforced concrete structure located south of the instrument building, and drains to the canyon building cell #3 sump. The 292-AR vessel vent filter vault is a reinforced concrete vault at grade, located northwest of the canyon building, and containing a steam heater and two HEPA filters. The filter vault pit drains to the vessel vent seal pot and the canyon building cell #3 sump. Waste transfer lines to PUREX, B-Plant, and 241-AR-151 diverter box. Vessel vent system seal pot.

Underground Facilities (Cont.)	Electrical wiring. Raw and potable water lines (isolated). Septic tank.
Aboveground Facilities	The 244-AR-715 Closed Loop Cooling System building is a prefabricated metal building located west of the canyon building. It contains electrical MCCs, an annunciator panel, pumps and motors, piping and valves, water conditioners, and backflow preventers. Two chillers are outside the building. The 2904-AR cooling water sampling building is a prefabricated metal building on the north side of the complex. It contains an automated sample system with associated piping and valves. It was to be used to sample liquid discharges from 244-AR before release to B-Pond. The air compressor buildings are fabricated metal buildings located west of the canyon building. They contain compressors C-S2-1 and C-S2-1. Only C-S2-2 is operable. The 701-AR building is a fabricated metal building which originally housed the backup diesel generator. It currently contains electrical MCCs and a transformer. 291-AR canyon vent stack and fans. The 292-AR instrument building is a prefabricated metal building located north of the canyon building. Vessel vent system portable exhauster and stack. Steam line (isolated). Electrical lines. Diesel generator (deactivated).
BIO Coverage	Facility is described in the TWRS BIO.
FSAR Coverage	Facility is described in the TWRS FSAR. The vessel vent system is identified as a safety-class system.
Information Sources	WIDS General Summary Report Ficklin, J.W., "Condition Assessment of the 244AR Complex," 3/7/97. 244-AR Vault fact sheet prepared by Terry Laney, 1/29/98. Facility walkdown 3/18/98. Conversation with Terry Laney 3/23/98. WHC-SD-WM-ES-135 Rev. 0, December 1989, "Corrosion Study of the 244-AR Vault Tanks 001, 002, 003, & 004," Carlos, W.C. FDM-T-280-00001 Rev. A-0, September 1986, "244-AR Vault Facility Description Manual," Koerner, J.A. HNF-SD-WM-BIO-001 Rev. 0, "Tank Waste Remediation System Basis for Interim Operation," Lockheed Martin Hanford Co. HNF-SD-WM-TSR-006 Rev. 0-J, "Tank Waste Remediation System Technical Safety Requirements," Lockheed Martin Hanford Co.

	HNF-SD-WM-SAR-067 Rev. G, "Tank Waste Remediation System Final Safety Analysis Report," Lockheed Martin Hanford Co. WHC-SD-WM-HIE-007, May 1996, "Tank Waste Remediation System FSAR Hazard Identification/Facility Configuration Verification Report," Science Applications International Corporation. Procedure TF-OR-EF-244AR, Rev. C-4, "244 AR Vault Rounds," 1/20/98. Procedure TO-040-700, Rev. D-1, "Perform Surveillance at 244-AR Vault," 9/22/97. Procedure OSD-T-151-00014, Rev. A-5, "Operating Specifications for 244-AR Vault Facility," 12/21/94.

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	244-BXR	Facility Name:	244-BXR Vault

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS/TWRS	E 573573.5625; N 137257.5859 200-E adjacent to and within the fencing at the southern end of 241-BX Farm.	See Hardware below	See Contents below	See Contents below	See Contents below	Cut and capped 30.5 cm (12") below grade	Inactive	Unk. - Less than amount for fissile event.	See Material at Risk below

Geometry	244-BXR is a four cell, concrete underground vault. The vault dimensions are 31m (102') long, 7.93 m (26') wide (at widest point) and 14.9 m (49') deep. Two of the cells measure 6.7m (22') x 7.93m (26 ') x 8.84m (29') and the other two are 4.88m (16') x 6m (20') x 5.79m (19'). The cells each have a pump pit located above the cells and an associated cell access pit.
Configuration	244-BXR vault contains four tanks (TK-BXR-001, TK-BXR-002, TK-BXR-003, and TK-BXR-011). The 244-BXR Vault was isolated in 1985. Isolation was accomplished by cutting and capping the pipes connecting it BX and BY Farms and the 241-ER-151 diverter station. Isolation also included cutting and capping ducts, sealing a conduit trench, and installing a weather cover over the vault at grade level.
Hardware	Four waste tanks in underground reinforced concrete vaults. Two of the tanks (TK-BXR-001 & TK-BXR-011) are 189,250 L (50,000 gal.) capacity and the others (TK-BXR-002 & TK-BXR-003) are 56,775 L (15,000 gal.) capacity tanks. Tank BXR-001 is constructed of 6.35m (1/4") carbon steel, while tanks BXR-002, BXR-003 and BXR-011 are 6.35mm (1/4") type 347 stainless steel construction. Each cell within the vault has a sump with a capacity of 170 L (45 gal.) The vault has been isolated by cutting and capping pipes and ducts outside the vault, sealing a conduit trench, and installing a weather cover over the vault at grade level. The acid tank (TK-BXR-004) has been removed.
Contents	The tanks within each cell contain waste associated with their previous use in the uranium recovery operations. TK BXR-001 is a 189,250 L (50,000 gal.) capacity tank containing 27,300 L (7,215 gal.) of sludge remaining from operation as a slurry accumulator for metal waste slurry from BX and BY Farms. TK-BXR-002 is a 56,775 L (15,000 gal). capacity tank containing 8,270 L (2,185 gal.) of waste from operation as a blend tank. The material in the tank consists of 6,832 L (1,805 gal). of sludge and 1,438 L (380 gal.) of supernate. TK-BXR-003 is also a 56,775 L (15,000 gal) capacity blend tank. It contains a total of 6,832 L (1,805 gal.) of waste material of which 5,485 L (1,449 gal.) is sludge and 1348 L (356 gal.) is supernate. The other 189,250 L (50,000 gal.) capacity tank, TK-BXR-011, contains 26,942 L (7,118 gal.) of waste. Sludge volume in the tank is 26,571 L (7,020 gal.) and the remaining 371 L (98 gal.) is supernate. The 170 L (45 gal.) capacity sump of each cell may contain residual radioactive material and chemicals from discharges during the operation of the facility.
Condition	The vault facility has been isolated and covered. Conditions of the tanks is not known except for TK-BXR-011 which is reported to have a buckled wall (Occurrence Report 79-70).

Original Mission (Process History)	The 244-BXR vault was utilized in the Uranium Recovery Program receiving waste material from the BX and BY Farms, processing the waste and transferring it to U Plant for the recovery of the uranium in the waste material. Tank BXR-001 operated as a slurry accumulation tank receiving a maximum of 51930 L (13,720 gal)./day of metal waste slurry from tanks in BX and BY Tank Farms as part of the Uranium Recovery Program. Tanks BXR-002 and BXR-003 operated as blend tanks. Normally, a slurry stream was brought in from TK-BXR-001 and mixed with nitric acid. A maximum of 53,860 L (14,230 gal)./day was received from TK-BXR-001 and a maximum of 29523 L (7,800 gal)./day of nitric acid was received. The in-tank cooling coils were capable of transferring 1,202,000 BTU/hr of heat out of the tank. The blended solution of waste and acid was then pumped to TK-BXR-011. When in service, TK-BXR-011 was used as a pump tank for the Uranium Recovery operations. It received approximately 102,952 L (27,200 gal)./day of acid solutions from tanks TK-BXR-002 and TK-BXR-003. The solutions were pumped to the 241-ER-151 diverter box and from there to U Plant for uranium recovery.
Current Mission	The vault facility is inactive and isolated.
Future Mission	There are no plans for future use of the facilities. D&D will be performed but has not yet been planned.
Processes	Currently the facility is inactive and isolated.
Input Streams	The vault was used for processing and transfer of waste material in the Uranium Recovery Program.
Product/Effluent	The product was processed waste for retrieval of uranium.
Material at Risk	The material at risk currently is the remaining waste material contained in the tanks.
Form/Charac	Tank BXR-001 contains sludge from uranium recovery metal waste slurry. Analysis of a tank sample taken in 1984 showed the material to have a pH of 9.91 and total α = 13.30 μCi/L, total β = 1.93E4 μCi/L and gamma energy analysis of Cs-137 = 1.01E4 μCi/L. BXR-002 contains sludge and supernatant remaining from blending of uranium recovery metal waste slurry and nitric acid. 1984 sample analysis results for this tank showed a pH of 9.55 with radiological content of total α = 0.393 μCi/L, total β = 1.53E3 μCi/L and Cs-137 = 5.19E2 μCi/L. Tank BXR-003 also contains sludge and supernatant remaining from blending of uranium recovery metal waste slurry and nitric acid. Analysis of the 1984 sample of this material showed a pH of 10.10, and α = 0.93, β = 8.99E4 and Cs-137 = 6.03E3 μCi/L. BXR-011 contains sludge and supernatant from uranium recovery program acid slurry solution. Analysis of a solids sample from this tank in 1978 showed the following: Component / Water Soluble / Acid(Fusion) U: 1.56×10^{-4} g/g / 9.34×10^{-4} g/g Pu: 2.80×10^{-9} g/g / 3.75×10^{-7} g/g Am: $<2.10\times10^{-11}$ g/g / 3.18×10^{-8} g/g $^{89+90}$Sr: 0.54 μCi/g / 85.5 μCi/g ^{137}Cs: 11.1 μCi/g / 23.0 μCi/g ^{155}Eu: 11.03 μCi/g
Quantity	TK-BXR-001: 27,309 L (7,215 gal.) of sludge remaining from operation as a slurry accumulation tank receiving a maximum of 51,930 L (13,720 gal.)/day of metal waste slurry from tanks in BX and BY Tank Farms. TK-BXR-002: 6,832 L (1,805 gal.) of sludge and 1,438 L (380 gal.) of supernatant remaining from operation as a blend tank for mixing waste from TK-BXR-001 with nitric acid.

	TK-BXR-003: 5,485 L (1,449 gal.) of sludge and 1,348 L (356 gal.) of supernatant remaining from operation as a blend tank for mixing waste from TK-BXR-001 with nitric acid. TK-BXR-011: 26,571 L (7,020 .) of sludge and 371 L (98 gal.) of supernatant remaining from operation as a pump tank for the Uranium Recovery operations.
Material Stored	The material is contained in the tanks within BXR Vault. The cell sumps have a capacity of 170 L (45 gal.) and may contain radiologically and/or chemically contaminated liquid.
Condition	The overall condition of the vault cannot currently be observed since the facility has been isolated and covered with a weather seal. The conditions of the tanks cannot be observed, however, tanks BXR-001, 002 and 003 are assumed to be sound. TK-BXR-011 is reported to be buckled from overpressurization of the tank exterior.
Interactions	There are no identified interactions of materials located within the facility. Feed material to the tanks originated in tanks containing materials that may produce toxic vapors when combined, thus tank contents may produce toxic vapors.
Energy Sources	The facility has been isolated from all energy sources.
Energy Needs	None.
Energy Status	Facility isolated from energy sources.
Source Condition	N/A - Isolated facility.
Past Controls	Past controls include the facility and tank ventilation system and radiological controls related to entry into the components of the facility.
Current Controls	Currently, the TSR Controls related to Flammable Gas ignition (AC 5.10) and tank dome loading (AC 5.16) apply to the facility since the tanks in it are identified as IMUSTs referred to in the BIO.
Planned Controls	No additional controls are anticipated or planned.
Barriers	The facility has been isolated and sealed.
Chemical Segregation	Materials within the facility are contained within the four tanks each located within individual reinforced concrete cells which provide physical separation of the contents.
Safeguards and Security	Radiological controls are imposed for entry into the BXR Vault area and surrounding Tank Farm.
Monitoring and Surveillance	The facility is not currently routinely monitored.
Historical Risks	No safety documentation of historical risks or postulated accidents has been identified.

Current or Future Risks	No current or future risks have been identified other than potential presence of toxic vapors in the tanks.
Occurrence History	Occurrence Report 79-70 provides information that the wall of TK-BXR-011 is buckled. The failure was due to an overpressure condition from a higher than allowed liquid level in the cell.
Root Cause	No root cause analysis for the occurrence has been identified.
Records Location	Records regarding the facility are located in Engineering Files, operational reports files and Discrepancy Report files located within TWRS Engineering and Operations organizations. Some of the records may be located in Records Holding locally and at the records repository.
Records Access	No special access requirements for facility documentation have been identified.
Adjacent Facility Location	The 244-BXR Vault is located adjacent to and within the fencing of 241-BX Tank Farm.
Underground Facilities	Isolation of the facility included cutting and capping pipes and ducts. Isolation drawings indicate risers and lines were cut and capped 30.5 cm (12") below grade.
Aboveground Facilities	Aboveground lines have been removed.
BIO Coverage	244-BXR Vault is not discussed in the BIO. The Individual tanks within the Vault are identified in the BIO Table B2-16 as IMUSTs that are radiologically contaminated. As such, BIO discussions of IMUSTs includes these tanks.
FSAR Coverage	244-BXR Vault is not discussed in the draft FSAR. The Individual tanks within the Vault are identified in the FSAR Table 2-16 as IMUSTs that are radiologically contaminated. As such, FSAR discussions of IMUSTs includes these tanks.
Information Sources	J.A. Crawford - Cognizant Engineer HNF-SD-WM-BIO-001, REV 0 - Tank Waste Remediation System Basis for Interim Operation WHC-SD-EN-ES-040, REV 0 - Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site WA WHC-SD-WM-HIE-007, REV 0 - Tank Waste Remediation System FSAR Hazard Identification/Facility Configuration Verification Report WHC-SD-WM-HA-001, REV 0 - Preliminary Hazards Analysis of the Miscellaneous Underground Storage Tanks WHC-EP-0861, REV 0 - Status Report for Inactive Miscellaneous Underground Storage Tanks at Hanford Site 200 Areas Drawings - H-2-71638, H-2-42485, H-2-42486, H-2-42487, H-2-42488, H-2-71655, H-2-71656.

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID	244-CR	Facility Name:	244-CR Vault

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS/TWRS	E 575150; N 135450 200-E, adjacent to and within the fencing at the southern end of C farm.	See Hardware below	See Contents below	Unknown – cf. Content and Mat'l at Risk below	Unknown – cf. Content and Mat'l at Risk below	See Hardware below	See Current Mission below	Unk.	Unknown

Geometry	244-CR is a four cell, concrete underground vault. The vault dimensions are 31m (102') long, 7.93m (26') wide (at widest point) and 14.94m (49') deep. Two of the cells measure 6.7m (22') x 7.93m (26 ') x 8.84m (29') and the other two are 4.88m (16') x 6m (20') x 5.79m (19'). The cells each have a pump pit located above the cells and an associated cell access pit. TK-CR-001 is a 189,250 L (50,000 gal.) tank located in a reinforced concrete cell 6.7m (22') x 7.93m (26') x 8.84m (29'). Tanks TK-CR-002 and TK-CR-003 are 56,775 L (15,000 gal.) tanks located in reinforced concrete cells 4.88m (16') x 6m (20') x 5.79m (19'). TK-CR-011 is a 189,250 L (50,000 gal). tank located in a reinforced concrete cell 6.7m (22') x 7.93m (26') x 8.84m (29'). Adjacent to the Vault is the 271-CR/CRL facility. 271-CR operated as the control room/shift office for the 244-CR uranium recovery and ferrocyanide programs and housed the saltwell pumping alarm panels. 271-CRL was used as a shielded laboratory facility for reactor coolant studies. 271-CR is a wood frame building 9.75m (32') wide and 19m (62' 7") long. 271-CRL is a metal & concrete building 9.75m (32') wide and 15.75m (51' 8") long.
Configuration	244-CR vault contains four tanks (TK-CR-001, TK-CR-002, TK-CR-003 and TK-CR-011). The tanks provided interim storage and transfer of liquid waste. Piping connecting the vault to C Farm and the 241-CR-151 Diverter Box is still connected and electric lines and ventilation systems are operational. 271-CR contains the Motor Control Center (MCC) for C Farm and both electrical and fire protection water systems are connected and active.
Hardware	Two of the four tanks (TK-CR-001 & TK-CR-011) are 189,250 L (50,000 gal) capacity, and the others (TK-CR-002 & TK-CR-003) are 56,775 L (15,000 gal.) capacity tanks. Only TK-CR-003 is currently in use. All above ground piping and lines have been removed except for the following: the Air Intake for the ventilation system, Cell 003 Heat Trace and Water Drip Cabinet, the Temporary Power Supply and the exhaust ventilation system fan and Stack. The Cell 003 sample pit manual tape and zip cord have also been left in place. The ventilation system filter pit containing the stack gas filter is operable. All of the cell access pits and pump pits are covered with cover blocks which have been sealed for cells 001, 002 and 011. 271-CR is active as the MCC and CASS for C Farm. An 30,280 L (8000 gal.) tank previously used for nitric acid tank has been removed. The CRL facility is empty and is not currently in use.
Contents	The tanks within each cell in the vault contain waste associated with their previous use as interim storage and transfer of liquid process waste. TK-CR-003 contains approximately 15,973 L (4220 gal.) of saltwell waste with an unknown amount of solids associated with it. The contents of the other tanks are not verified but estimated to be: 7.570 L (2,000 gal.) of Uranium Recovery Program solids in TK-001; 56,775 L (1,500 gal.) of waste solids from PUREX acidified sludge in TK-002; and 132,475 L (35,000 gal.) of supernatant and rainwater in TK-011. (Source: Discussions with cognizant individuals.) Each cell has a 170 L (45 gal.) capacity sump with the possibility of containing standing liquids which would contain contamination. Within the 271-CR/CRL complex, only the MCC instrumentation and piping for the fire suppression system remain as operational equipment. The buildings themselves contain radiological contamination and entry is controlled.

Condition	In 244-CR vault, only TK-CR-003 in cell 003 is still in use. The cells, access and pump pits and drain pit are covered and all are sealed except for cell 003. 271-CR is active as the MCC for 241-C Tank Farm. 271-CRL is inactive. CR-003 exhibited a decrease of 500 gal since October 1994, but also exhibited about 400 gal intrusions in January 1998. Investigation is ongoing.
Original Mission (Process History)	The 244-CR Vault was used as the uranium sludge recovery and distribution vault for C Farm. Sludge was recovered by sluicing, dissolved with nitric acid and pumped cross-site for uranium recovery at U Plant. CR Vault was later used for interim storage and transfer of waste from B Plant, Hot Semiworks and PUREX. 271-CR was used as the Control Room and shift office for the 244-CR operations while 271-CRL was utilized as a shielded laboratory for reactor coolant studies. 244-CR Vault operation began in the early 1950's and partial operation continued through the 1995 saltwell pumping activities. Tanks CR-001, 002 and 011 were abandoned during the 1980-90 time frame and only CR-003 remained active. 271-CR was built in 1953 and operated supporting various vault and C Farm activities through the present time. 271-CRL was constructed in 1962 and operated as a laboratory and later a shift office through 1978.
Current Mission	The 244-CR Vault is inactive except for TK-CR-003 which is an available DCRT for 241-C Farm saltwell transfers. 271-CR is active as the MCC for C Farm and 271-CRL is inactive.
Future Mission	The only identified future mission for the 244-CR Vault is the use of TK-CR-003 in conjunction with possible C Farm saltwell transfers. 271-CR would continue to provide the MCC for the Farm and transfer activities. No future mission has been identified for 271-CRL.
Processes	Currently, the Vault facility is inactive except for the availability of TK-CR-003 for 241-C saltwell pumping transfers and the continued storage of the waste heels remaining in the other tanks. 271-CR provides the MCC for the c Farm and contains the fire suppression system for the facility. 271-CRL laboratory is inactive.
Input Streams	The CR Vault was used for uranium sludge recovery and dissolution, and later for interim storage and transfer of B Plant processing, Semiworks discharge, fission produce "crude" from PUREX and acidified PUREX sludge. 271-CRL received samples for laboratory analysis. Nitric acid was stored in the 30,280 L (8000 gal.) tank.
Product/Effluent	Since the original mission was waste retrieval/dissolution, and interim storage and transfer of waste, the product/effluent was the waste material received from the identified sources above. The product/effluent of the laboratory facility consisted of laboratory analysis results and laboratory waste discharged to the outfall.
Material at Risk	Currently, approximately 15,873 L (4,220 gal.) of saltwell waste from C Farm is contained in TK-CR-003, and the contents of the other tanks are unknown. Estimated contents consist of 7,570 L (2,000 gal.) of waste solids from the Uranium Recovery Program in TK-CR-001; 56,775 L (1,500 gal.) of waste solids from PUREX acidified sludge in TK-CR-002; and 132,475 L (35,000 gal.) of supernatant and rainwater from 241-CX-70, Hot Semiworks and 244-CR sumps in TK-CR-011. Within the 271-CR/CRL complex, there are no hazardous materials stored or used. Both of the buildings contain radiological contamination from past activities and rodent intrusion.
Form/Charac	Unknown - see item above.
Quantity	Unknown except as noted above regarding documented and estimated volumes.
Material Stored	The material in the Vault is contained in the tanks except for possible accumulation of contaminated water in the cell sumps.
Condition	The condition of the vault and internal tanks is not observable currently since the Vault is sealed with polyurethane foam. Surveillance of portions of the vault and tanks will be performed in conjunction with the investigation of a 1/6/98 event resulting in intrusion of approximately 8,895 L (2,350 gal.) of raw water into the facility. The 271-CR/CRL buildings appear to be in good condition and are empty except for the MCC equipment, the fire suppression system and some old unused equipment.

Interactions	There are no identified interactions of materials located within the vault facility. However, based on the previous use of the 244-CR Vault in conjunction with B Plant, there is the potential for organic materials to be in the tank contents. The tank contents are potentially capable of producing flammable gas. There is no identified interactions associated with 271-CR/CRL.
Energy Sources	Currently the only energy source active in the vault is the electrical system for operation of the ventilation fan. Electrical power is also supplied to 271-CR to operate the 241-C MCC equipment. 271-CR also has a connection to raw water for the fire protection sprinkler system in the facility.
Energy Needs	Electricity for operation of the vault ventilation system and the C Farm MCC. Water for the fire suppression system, however, this system is being considered for deactivation based on the current value of the facility and its contents.
Energy Status	Electrical power to the vault and 271-CR is active. The water system to the vault has been shut down and the steam system has been disconnected. Water is still connected to the 271-CR facility.
Source Condition	The electrical system and raw water system for the fire suppression system appears sound.
Past Controls	Past controls include the facility and tank ventilation systems, radiological controls related to entry into the components of the facility and the fire suppression system for the 2371-CR/CRL complex.
Current Controls	Current controls include those imposed by the JCO on Flammable Gas/Slurry Growth USQ (Appendix E to the TWRS BIO). Specific controls are identified in the JCO TSR style Controls 4, 6 and 8. Currently, the ventilation system and radiological control systems are still being used as controls for both the vault and 271-CR. The fire suppression system provides control within 271-CR and procedural controls are in place regarding activities associated with the facilities. The facilities are within posted locations and have RWP requirements imposed for entry into and work associated with them.
Planned Controls	There are no controls anticipated other than those noted above.
Barriers	Currently, all of the vault cell access pits and pump pits are covered with cover blocks which have been sealed for cells 001, 002 and 011. Cell 003 is sealed but will be opened to allow video surveillance and observation for associated with investigation of the consequences of a 1/6/98 introduction of raw water and the observed level decrease from 10/95 to 11/97. The tanks are assumed to be sound and the ventilation system is operational. The 271-CR/CRL complex is within the Tank Farm fenced area and are closed to entry except as specifically authorized.
Chemical Segregation	Materials within the vault facility are contained in the four tanks which are contained in individual cells which provides physical separation of the contents unless deliberate transfer of the tank contents is initiated.
Safeguards and Security	Radiological controls are imposed for entry into the CR facility and surrounding Tank Farm.
Monitoring and Surveillance	Currently, the facility is not routinely monitored other than of the TK-003 content level and routine entry into 271-CR to read the water meter located there. The recent incident involving release of approximately 8,706 L (2300 gal.) of raw water into the vault facility have resulted in planning for surveillance of some of the cells and tanks.
Historical Risks	The TWRS BIO addresses the facility as one of the potential sources of a spray leak accident.

Current or Future Risks	The sludge heels in tanks CR-001, 002, and 003 are assumed to pose a potential GRE hazard in addition to the potential steady-state generation and accumulation of flammable gas. The potential exists for release of radiological contamination from the 271-CR facility if the fire sprinkler system is activated and results in runoff from the interior of the building.
Occurrence History	Discrepancy Report 97-836 documents an approximately 1,893 L (500 gal.) decrease in TK-003 level between 10/95 and 11/97. The 1/6/98 erroneous routing of approximately 8.706 L (2300 gal.) of raw water to the facility was not documented as an occurrence since no significant cause and affect or adverse conditions were determined to result. The raw water erroneously routed to the facility is assumed to have gone to TK-CR-003, however, this has not been verified.
Root Cause	TK-003 level decrease is being analyzed for evaporation as the cause. Operations critique of the 1/6/98 event determined the cause to be procedure inadequacy.
Records Location	Records regarding the facility are located in Engineering Files, operational reports files and Discrepancy Report files located within TWRS Engineering and Operations organizations. Some of the records may be located in Records Holding locally and at the records repository.
Records Access	No special access requirements for facility documentation have been identified.
Adjacent Facility Location	The 244-CR Vault and 271-CR/CRL are located adjacent to and within the fencing of 241-C Tank Farm. The recent release of raw water to the vault from an abandoned 271-C water line resulted in shutting off the water access path to the vault facility. No other potential interactions with adjacent facilities have been identified.
Underground Facilities	Currently, waste lines, electrical conduit and ventilation ducts are still connected to the vault. Connections to steam lines have been removed. The only active lines are electric for powering the active ventilation system and the MCC equipment and water system for the 271-CR fire sprinkler system.
Aboveground Facilities	Above ground lines have been removed. The air intake for the ventilation system, ventilation system stack, Cell 003 Heat Trace and Water Drip Cabinet and temporary power supply are located above ground.
BIO Coverage	The 244-CR Vault is addressed in the BIO in Appendix B, "Facility and process Description" and in Appendix D, "Hazard Analysis Results Report." The 244-CR Vault references in the Hazard Analysis are in the Material at Risk Table, however, the information provided indicates there was no data obtained on the tank contents and other hazards relate to contamination of the cells, pits and sumps. The 244-CR vault and tanks are discussed in Appendix E of the TWRS BIO. Specifically, tanks CR-001, CR-002 and CR-003 are assigned to Facility Group 3 in Control 6 of the JCO. TK-CR-003 is also addressed as requiring active ventilation system operation at all times under the JCO Control 4b and verification of ventilation flow prior to introduction of new waste into the tank (JCO Control 8.b.2.d). TK-CR-011 is categorized as non-GRE in the JCO. The adequacy of potential accident coverage cannot be determined since specific chemical and radiological composition of the contents of the tanks is not known. 271-CR/CRL is not addressed in the BIO.
FSAR Coverage	The facility is addressed in the draft FSAR. The same potential deficiencies identified for the BIO also exist for the FSAR.
Information Sources	RL Powers - Cognizant Engineer; OR Rasmussen - Cognizant Individual HNF-SD-WM-BIO-001, REV 0 - Tank Waste Remediation System Basis for Interim Operation Drawings: H-2-31887, H-2-31889, H-2-41093, H-2-41094, H-2-31890, H-2-31886, H-2-41888, H-2-40247, H-2-41496, H-2-55971, H-2-73876, H-2-71636.

FACILITY HAZARD PROFILE CHECKLIST
Rev 0, April 20, 1998

Facility ID:	244-TXR	Facility Name:	244-TXR Vault

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS/TWRS	E 573573.5625; N 137257.5859 200-E adjacent to and within the fencing at the South end of 241-TX Farm.	See Hardware below	See Contents below	See Contents below	See Contents below	Cut and capped, some below grade	Inactive	Unk. - Less than amount for fissile event.	See Material at Risk below

Geometry	244-TXR is a three cell, underground reinforced concrete vault. The vault dimensions are 22.6m (74') long, 7.93m (26') wide (at widest point) and 14.9m (49') deep. One cell measures 6.7m (22') x 7.93m (26 ') x 8.84m (29') and the other two are 4.88m (16') x 6.1m (20') x 5.79m (19'). The cells each have a pump pit located above the cells and an associated cell access pit.
Configuration	The 244-TXR Vault contains three tanks with capacities of: TK-TXR-001: 189.25K L (50,000 gal.); Tanks TK-TXR-002 and TXR-003: 56.775K L (15,000 gal). The Vault was taken out of regular service in 1957 and underwent stabilization in 1984.
Hardware	Three tanks in reinforced concrete cells. Tank TXR-001 is a 189.25K L (50,000 gal.) steel plate tank, tanks TK-TXR-002 and TXR-003 are 56.775K L (15,000 gal.) stainless steel tanks. Cells TXR-001, 002 and 003 each contain a 170 L (45 gal.) capacity sump.
Contents	The tanks within TXR Vault contain residue from their operation in the uranium recovery process. In 1984, the contents of the tanks and sumps were reported to be: TK-TXR-001 - 8,671 L (2,291 gal.) of sludge and 185.5 L (49 gal.) of supernatant; TXR-001 Sump - 15 L (4 gal) solids and 18.93 L (5 gal.) of liquids; TK-TXR-002 - 11.15K L (2,945 gal.) of sludge with no associated supernatant; TXR-002 Sump - 56.78 L (15 gal.) of liquid and no solids; TK-TXR-003 - 24.45K L (6,460 gal.) of sludge with no supernatant; and TXR-003 Sump - 75.7 L (20 gal.) of solids and 11.355 L (3 gal.) of liquid.
Condition	The condition of the vault is not known. Hanford Occurrence Report 79-68 relates to TK-TXR-001 and concludes that the tank is of questionable integrity. The conditions of the two blend tanks is unknown.
Original Mission (Process History)	The Vault was in service from 1951 to 1956, receiving metal waste from tanks TX-103 through TX-108 and T-101 through T-103. The metal waste was received in TK-TXR-001 and the waste slurry was pumped to TK-TXR-002 and/or TK-TXR-003 for acidification and blending. The processed waste was then pumped to U Plant as feed for the uranium recovery process.
Current Mission	None.
Future Mission	None. D&D will be performed in the future but has not yet been planned.
Processes	The facility is currently isolated and stabilized.

Input Streams	The vault and associated tanks were used for processing of waste material from T and TX Farms and transfer of the processed waste to U Plant for uranium recovery.
Product/Effluent	The product consisted of processed waste slurry for retrieval of uranium.
Material at Risk	The material at risk is the waste material remaining in the isolated tanks. The records associated with the isolation project provide the best indication of the remaining material in the vault and tanks.
Form/Charac	Tank TXR-001 contains 8.67K L (2,291 gal.)of sludge and 185.5 L (49 gal.) of supernatant. Analysis of the sludge performed in 1984, showed the following: pH = 9.52; total α = 1.05 μCi/L; total β = 4.51E3 μCi/L; Cs-137 (γ energy analysis) = 4.49E3 μCi/L. The sump in cell 001 contains 15.14 L (4 gal.) of solids and 18.93 L (5 gal.) of liquid with no information available regarding the material composition. TK-TXR-002 contains 11.15K L (2,945 gal.) of sludge with estimated radionuclides inventories (1992) of: Pu = 8.1 mg; Sr-89/90 = 0.08 Ci; Cs-134 = 0.8 Ci; and Cs-137 = 169.2 Ci. Cell TXR-002 sump contains 56.775 L (15 gal.) of liquid with no analytical data available. The tank TXR-003 contains 24.45K L (6,460 gal.) of sludge. No analytical data is available for this material or the 75.7 L (20 gal.) of solids and 11.355 L (3 gal.) of liquid in the TXR-003 cell sump.
Quantity	TK-TXR-001: 8671.4 L (2,291 gal.) sludge and 185.5 L (49 gal.) of supernatant. TXR-001 Cell Sump: 15.14 L (4 gal.) of solids and 18.93 L (5 gal.) of liquid.; TK-TXR-002: 11.15K L (2,945 gal.) of sludge and no supernatant. TXR-002 Cell Sump: 56.775 L (15 gal.) of liquid.; TK-TXR-003: 24.45K L (6,460 gal.) of sludge. TXR-003 Cell Sump: 75.7 L (20 gal.) of solids and 11.355 L (3 gal.) of solids.
Material Stored	The material is stored in the tanks within the 244-TXR Vault and within the cells containing the tanks and the cell sumps.
Condition	Hanford Occurrence Report 79-68 relates to tank TXR-001 and concludes that the tank is of questionable integrity. The condition of the other tanks is unknown.
Interactions	There are no identified interactions of materials located within the facility. The feed material for the tanks originated in tanks which contained constituents that may produce toxic vapors when combined.
Energy Sources	The facility has been isolated from all energy sources.
Energy Needs	None.
Energy Status	Facility isolated from energy sources.
Source Condition	N/A - The facility is isolated.
Past Controls	Past controls include the facility and tank ventilation system and radiological controls related to entry into the components of the facility.
Current Controls	Currently, the TSR Controls related to Flammable Gas ignition (AC 5.10) and tank dome loading (AC 5.16) apply to the facility since the tanks in it are identified as IMUSTs referred to in the BIO.

Planned Controls	No additional controls are anticipated or planned.
Barriers	The facility has been isolated and stabilized.
Chemical Segregation	Materials within the facility are contained within the four tanks each located within individual reinforced concrete cells which provide physical separation of the contents.
Safeguards and Security	Radiological controls are imposed for entry into the UR Vault area and surrounding Tank Farm.
Monitoring and Surveillance	The facility is not currently routinely monitored.
Historical Risks	No safety documentation of historical risks or postulated accidents has been identified.
Current or Future Risks	No current or future risks have been identified other than potential presence of toxic vapors in the tanks.
Occurrence History	Occurrence report 79-68 indicates that a liquid level decrease exceeding the 2.54 cm (1-in.) decrease criterion was recorded on 7/08/79. No evidence of tank leakage was found in the cell sump liquid level. The cause of the decrease in liquid level in the tank could not be determined, the tank was reclassified as questionable integrity.
Root Cause	No root cause of the liquid level decrease was determined.
Records Location	Records regarding the facility are located in Engineering Files, operational reports files and Discrepancy Report files located within TWRS Engineering and Operations organizations. Some of the records may be located in Records Holding locally and at the records repository.
Records Access	No special access requirements for facility documentation have been identified.
Adjacent Facility Location	The 244-TXR Vault is located adjacent to and within the fencing of 241-TX Tank Farm.
Underground Facilities	Isolation of the facility included cutting and capping pipes and ducts.
Aboveground Facilities	Aboveground lines have been removed.
BIO Coverage	244-TXR Vault is not discussed in the BIO. The Individual tanks within the Vault are identified in the BIO Table B2-16 as IMUSTs that are radiologically contaminated. As such, BIO discussions of IMUSTs includes these tanks.

FSAR Coverage	244-TXR Vault is not discussed in the draft FSAR. The Individual tanks within the Vault are identified in the FSAR Table 2-16 as IMUSTs that are radiologically contaminated. As such, FSAR discussions of IMUSTs includes these tanks.
Information Sources	KJ Hull - Cognizant Engineer HNF-SD-WM-BIO-001, REV 0 - Tank Waste Remediation System Basis for Interim Operation WHC-SD-EN-ES-040, REV 0 - Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site WA WHC-SD-WM-HIE-007, REV 0 - Tank Waste Remediation System FSAR Hazard Identification/Facility Configuration Verification Report WHC-SD-WM-HA-001, REV 0 - Preliminary Hazards Analysis of the Miscellaneous Underground Storage Tanks WHC-EP-0861, REV 0 - Status Report for Inactive Miscellaneous Underground Storage Tanks at Hanford Site 200 Areas Drawings - H-2-42300, H-2-42301, H-2-42302, H-2-42303, H-2-42707, H-2-44511, H-2-71661, H-2-71662, H-2-73112

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	244-UR	Facility Name:	244-UR Vault

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
ERS (To be TWRS)	E 566793.2678; N 135162.4158 200 W, adjacent to and within the fencing at the north end of 241U Tank Farm	See Hardware below	See Contents and Quantity below	See Contents and Quantity below	See Contents and Quantity below	Cut and capped and weather cover installed	Inactive	None - Trace amounts only	See Form/ Charac below

Geometry	244-UR Vault is a four cell reinforced concrete underground structure 27.43m (90 ft.) long, 7.93m (26 ft.) wide at its widest point and 14m (46 ft.) deep at the deepest cell. The cell containing TK-UR-001 has internal dimensions of 7.93m (26') x 6.7m (22') x 9.0m (29.5') with 61 cm (2') thick walls, ceiling and floor. Above the cell is a 3.81m (12.5') deep pump pit. The cells containing tanks TK-UR-002 and 003 measure 6m (20') x 4.88m (16') x 5.95m (19.5') internally and also have a pump pit located above them. The cell containing TK-UR-004 measures 4.27m (14') x 4.88m (16') x 5.49m (18'), internal dimensions and has the pump pit located above it also.
Configuration	244-UR Vault contains four tanks with capacities of: UR-001 - 189,250 L (50,000 gal.), UR-002 - 56,775 L (15,000 gal.), UR-003 - 56,775 L (15,000 gal), and UR-004 - 31,151 L (8,230 gal). The Vault was taken out of regular service in 1957 and underwent interim stabilization in 1985.
Hardware	Four tanks in underground reinforced concrete vault cells. Tank TK-UR-001 is a 189,250 L (50,000 gal.) steel plate tank, tanks TK-UR-002 and UR-003 are 56,775 L (15,000 gal.) stainless steel tanks and TK-UR-004 is a 31,151 L (8,230 gal). stainless steel tank. Cells UR-001, 002 and 003 each contain a 170 L (45 gal.) capacity sump.
Contents	The tanks within UR Vault contain residue from their operation in the uranium recovery process. TK-UR-001 contains 7,010 L (1,852 gal.) of sludge and 1,476 L (390 gal.) of supernatant from its use as a slurry accumulator tank for the U Tank Farm. Tank UR-002 contains 8,721 L (2,304 gal.) of sludge and either 810 L (214 gal.) or 2,158 L (570 gal.) of supernatant (conflicting liquid level data). TK-UR-003 contains 5,935 L (1,568 gal.) of sludge. Tank UR-004 is reported to be empty. The sumps in cells UR-001, 002 and 003 also contain volumes of waste.
Condition	The vault facility has been isolated and covered. Conditions of the tanks is not known. No evidence of leakage during the operating life of the tanks has been located. Design life of the tanks has been exceeded.
Original Mission (Process History)	The 244-UR Vault was built in 1951 for use in the uranium recovery process. The vault received uranium bearing waste slurries from tanks in U Tank Farm, blended the slurry, added acid for pH adjustment and conditioned the material as feed for the TBP uranium extraction process in U Plant.
Current Mission	None. The vault was isolated and interim stabilized in 1985.
Future Mission	None. D&D will be performed in the future but has not yet been planned.

Processes	The facility is currently isolated and interim stabilized.
Input Streams	The vault and associated tanks were used for processing of waste material from U Farm and transfer of the processed waste to U Plant for uranium recovery.
Product/Effluent	The product consisted of processed waste slurry for retrieval of uranium.
Material at Risk	The material at risk is the waste material remaining in the isolated tanks. The records associated with the isolation project provide the best indication of the remaining material in the vault and tanks.
Form/Charac	The material remaining in TK-UR-001 consists of 7,010 L (1,852 gal.) of sludge and 1,476 L (390 gal.) of supernatant. The cell and sump contain either 992 L (262 gal.) of solids and either 5,549 L (1,466 gal.) or 14,497 L (3,830 gal.) of liquid (conflicting liquid level data). The material remaining in TK-UR-002 consists of 8,721 L (2,304 gal.) of sludge and 810 or 2,158 L (214 or 570 gal.) of supernatant (conflicting data). Cell UR-002 and its sump contain either 53 or 125 L (14 or 33 gal.) of solids and 125 or 4,379 L (33 or 1,157 gal) of liquid (conflicting data). TK-UR-003 contains 5,935 L (1,568 gal.) of sludge and no supernatant. The cell and sump contains 8,706 L (2,300 gal.) of solids and 0 or 13,989 L (3,696 gal.) of solids (conflicting data). Limited analytical data on the materials in the tank and cell sump are available from 1977. This analytical data shows the following.

	TK-001	Sump 001	TK-002	Sump 002	TK-003	Sump 003
pH	7.5	8.6	0.7	9.0	2.0	1.5
Rad Lvl	25 mrad/hr	30 mrad/hr	50 mrad/hr	10 mrad/hr	50 mrad/hr	10 mrad/hr
SpG	1.0	1.03				
Sr-89, 90					3.7E3 μCi/gal	
U	2.0E-3 g/gal				2.1E-4 g/gal	
Cs-137	1.8E3 μCi/gal	1.7E3 μCi/gal	3.3 μCi/gal	1.8E2 μCi/gal	9.5E2 μCi/gal	
Total α	1.2E-1 μCi/gal	5.5E-2 μCi/gal	1.4 μCi/gal	3.8E-1 μCi/gal	6.7E-2 μCi/gal	1.7E-1 μCi/gal
Total β	3.2E3 μCi/gal	2.4E3 μCi/gal	5.0E3 μCi/gal	2.5E2 μCi/gal	1.1E4 μCi/gal6.	3E2 μCi/gal

Quantity	TK-UR-001: 7,010 L (1,852 gal.) sludge and 1,476 L (390 gal.) of supernatant. UR-001 Cell & Sump: 992 L (262 gal.) of solids and either 5,549 L (1,466 gal.) or 14,497 L (3,830 gal.) of liquid.; TK-UR-002: 8,721 L (2,304 gal.) of sludge and 810 or 2,157 L (214 or 570 gal.) of supernatant. UR-002 Cell & Sump: 53 or 125 L (14 or 33 gal.) of solids and 125 or 4,379 L (33 or 1,157 gal) of liquid.; TK-UR-003: 5,935 L (1,568 gal.) of sludge. UR-003 Cell & Sump: 8,706 L (2,300 gal.) of solids and 0 or 13,989 L (3,696 gal.) of solids. TK-UR-004 and its cell and sump are reported empty.
Material Stored	The material is stored in the tanks within the 244-UR Vault and within the cells containing the tanks and the cell sumps.
Condition	Conditions of the tanks is not known. No evidence of leakage during the operating life of the tanks has been located. Design life of the tanks has been exceeded.
Interactions	There are no identified interactions of materials located within the facility. Tanks UR-001, 002 and 003 had tributyl phosphate-containing wastes so some amount of organic salts are probably present. TK-UR-004 was used only for storage of nitric acid.

Energy Sources	The facility has been isolated from all energy sources.
Energy Needs	None.
Energy Status	Facility isolated from energy sources.
Source Condition	N/A - The facility is isolated and stabilized.
Past Controls	Past controls include the facility and tank ventilation system and radiological controls related to entry into the components of the facility.
Current Controls	Current controls include radiation protection controls for work in the vicinity of the vault.
Planned Controls	No additional controls are anticipated or planned.
Barriers	The facility has been isolated and stabilized.
Chemical Segregation	Materials within the facility are contained within the four tanks each located within individual reinforced concrete cells which provide physical separation of the contents.
Safeguards and Security	Radiological controls are imposed for entry into the UR Vault area and surrounding Tank Farm.
Monitoring and Surveillance	The facility is not currently routinely monitored.
Historical Risks	No safety documentation of historical risks or postulated accidents has been identified.
Current or Future Risks	No current or future risks have been identified other than potential presence of toxic vapors in the tanks.
Occurrence History	In 1953, an unplanned release occurred from the vault. The release (UPR-200-W-24) was the result of a violent chemical reaction in TK-UR-002 involving metal waste supernate. Pressure built up from the waste reacting with the acid and was suddenly relieved through a riser. The contaminated area was stabilized and backfilled. Due to the terrain at the vault, water runoff spread contamination beyond the vault area. Descriptions of the event (unverified) indicate uranium oxide (yellowcake) covered the soil around the vault. Radiation levels observed varied from 35 rad/hr at the point of origin to a few hundred cpm 306m (1,000 ft.) away.
Root Cause	Disregard of instructions and faulty equipment design. Agitation of contents of TK-UR-002 was not maintained during waste addition, as required. Special process routing of waste bypassed a safety interlock for prevention of waste addition without operation of the agitator.

Records Location	Records regarding the facility are located in Engineering Files, operational reports files and Discrepancy Report files located within TWRS Engineering and Operations organizations. Some of the records may be located in Records Holding locally and at the records repository.
Records Access	No special access requirements for facility documentation have been identified.
Adjacent Facility Location	The 244-UR Vault is located adjacent to and within the fencing of 241-U Tank Farm.
Underground Facilities	Isolation of the facility included cutting and capping pipes and ducts.
Aboveground Facilities	Aboveground lines have been removed.
BIO Coverage	Neither the 244-UR Vault not the tanks contained in it are covered by the BIO.
FSAR Coverage	Neither the 244-UR Vault not the tanks contained in it are covered by the draft FSAR.
Information Sources	KJ Hull - Cognizant Engineer WHC-SD-EN-ES-040, REV 0 - Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site WA WHC-SD-WM-HA-001, REV 0 - Preliminary Hazards Analysis of the Miscellaneous Underground Storage Tanks WHC-EP-0861, REV 0 - Status Report for Inactive Miscellaneous Underground Storage Tanks at Hanford Site 200 Areas WHC-EP-0489-2 - Hanford Site Surface Soil Radioactive Contamination Control Plan Drawings - H-2-71642, H-2-40199, H-2-40200, H-2-40201, H-2-40202, H-2-71658, H-2-71659.

FACILITY HAZARD PROFILE CHECKLIST
Rev 0, April 20, 1998

Facility ID:	2727-W	**Facility Name:**	2727-W Building

Owner/Operator	**Location**	**Capacity**	**Volume of Contents**	**Sludge Volume**	**Liquid Volume**	**Risers**	**Active/ Inactive**	**Fissile Content**	**Rad Content**
LMHC	200W behind U Plant	Detailed below	Detailed below	0	Frozen	0	Active	Non-TRU	Low-level

Geometry	A rectangular metal building 25.6 m (84 ft.) long, 8.5 m (28 ft.) wide, 5.5 m (18 ft.) tall walls, and a pitched roof. Built around an existing concrete slab.
Configuration	The building is a metal prefab on a cement slab with a partial gravel perimeter. No water, steam, or fire sprinkler services.
Hardware	Five horizonal 60,560 Liter (16,000 gal) stainless steel tanks containing sodium w/ nitrogen cover gas. Heaters are not active, and tanks are covered with metal covered insulation.
Contents	Five 60,560 liter (16,000 gal) capacity stainless steel tanks containing approximately 125,194 kilograms (276,000 lb) [129,826 liters (34,300 gal)] of slightly radioactively contaminated metallic sodium.
Condition	Unoccupied storage building. Surveillance is detailed under section on Current Controls.
Original Mission (Process History)	In 1967, the sodium storage tanks were shipped to the Hanford Facility from the Hallam Nuclear Power Facility in Hallam, Nebraska. The tanks were placed on one of the U Plant Complex storage pads and the 2727-W building was erected over this pad. In 1984, three of the five 2727-W tanks were transported to the FFTF and 117,335 liters (31,000 gal) of the Hallam sodium was loaded into the FFTF Fuel Storage Facility. Two empty tanks and one half-filled tank were returned to 2727-W.
Current Mission	Storage.
Future Mission	None defined.
Processes	N/A
Input Streams	None
Product/Effluent	N/A

Material at Risk	Slightly contaminated sodium metal.
Form/Charac	Frozen solid in five SS tanks with nitrogen cover gas.
Quantity	129,826 Liters (34,300 gal) remaining in 5 tanks. Two of the tanks are nearly empty.
Material Stored	Metallic sodium.
Condition	Frozen in SS tanks with nitrogen cover gas.
Interactions	Only connected to nitrogen cover gas bottles when adding gas, and when doing the semi-annual PM on the pressure switch.
Energy Sources	Electrical power only, for lights, bottle pressure alarm, and fire detectors.
Energy Needs	Electrical power only, for lights, bottle pressure alarm, and fire detectors.
Energy Status	Connected to electrical power.
Source Condition	Electrical OK
Past Controls	Same as current checks.
Current Controls	Ionizing smoke detectors are installed to give advanced warning of threat to tanks from a fire (not to detect a sodium fire). Operator checklist "Sodium Storage Building 2727-W and SAMSM Check List" is contained in Solid Waste Management plant operating procedure SW-04-043, *Inspect the CWC and Sodium Storage Building and Associated Equipment.* This checklist assures: Chemicals (other than fire extinguisher) are greater than 30.5m (100 ft) from building. Combustibles are greater than 15.24 m (50 ft.) from building. (except for motor vehicle parking). Building lighting operable, fire alarms undisturbed, moisture not present, roof not leaking, wind damage not present, suspicious objects or packages not present, and building secured. Tank condition check specifies; "Leaks not present".
Planned Controls	The following controls are recommended: Annual building integrity and foundation wall height 0.9 m (3 ft.) above grade, as per Section 4.4.3.4 of Tank Waste Remediation System Final Safety Analysis Report (HFN-SD-WM-SAR-067) should be implemented. Pull sample from tank and analyze for radiological content for input into accident consequences. Formalize limit on combustibles and chemicals to help pre-fire plan. Limits should be marked on building sign and surveillance sheet. Prohibit vehicles from within 15.24m (50 ft) of building (prohibit source of fuel and ignition). Placard building and add to surveillance checklist.

	Since pad was pre-existing, verify by test the performance of grounding strap conductivity to ground. Tanks are currently covered with unneeded (dissimilar metal covered) insulation that is also a hindrance to visual and NDT inspection. Remove insulation and store for future use. Add tank wall integrity NDT testing schedule. This will provide tank wall thickness quantification and allow timely planning. Presently there is no high pressure relief valve on the tanks in case of fire. Verify requirment of having a relief valve on the tanks, considering that this is not a pressure vessel and is used only for storage. Verify that the building pre-fire plan assures safety of fire fighters by avoiding caustic fumes. The goal is not to save property but to prevent spread of fire.
Barriers	Single tank walls, no double containment, which is not required for solid material storage.
Chemical Segregation	No other chemicals. (There is a surveillance check, but no formal requirement)
Safeguards and Security	Radiological Hazardous Material Storage Area.
Monitoring and Surveillance	Current surveillance provided by contract with Solid Waste, and detailed under section Current Controls.
Historical Risks	Postulated high wind opening roof and breeching tank, allowing rain water to enter tank and reach sodium thus starting fire.
Current or Future Risks	Tank wall integrity breach from high wind or vehicle collisions.
Occurrence History	None.
Root Cause	None.
Records Location	Hanford Site Sodium Management Plan (WHC-SD-FF-MP-001).
Records Access	N/A
Adjacent Facility Location	200W U Plant and 241-U Tank Farm.
Underground Facilities	None.

Aboveground Facilities	Electrical power connection only.
BIO Coverage	Covered Tank Waste Remediation System, Basis for Interim Operation, HNF-SD-WM-BIO-001, Section 5.3.2 10. The safety analysis identified only toxicological consequences. No radiological consequences exceeding risk guidelines were discussed. However, the BIO takes credit for a small metal building in a metal fire, which may not be appropriate.
FSAR Coverage	Covered in Tank Farms FSAR, HNF-SD-WM-SAR-067, Rev., G, Section 4.4.3.
Information Sources	Drawing H-2-34084. Brett Barnes for copy of Hanford Site Sodium Management Plan (WHC-SD-FF-MP-001). Mike Aichele for surveillance routines and review. James E. (Jim) Mitchell for review and nitrogen configuration. Tank Waste Remediation System, Basis for Interim Operation, HNF-SD-WM-BIO-001, Section 5.3.2 10., and the Tank Farms FSAR, HNF-SD-WM-SAR-067, Rev. G, Section 4.4.3. Also procedure SW-04-043, Inspect the CWC and Sodium Storage Building and Associated Equipment.

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	Grout	**Facility Name:**	Grout Treatment Facility

Owner/Operator	**Location**	**Capacity**	**Volume of Contents**	**Sludge Volume**	**Liquid Volume**	**Risers**	**Active/ Inactive**	**Fissile Content**	**Rad Content**
LMH	200E	Detailed below	Detailed below	0	0	0	Inactive	Non-TRU	Low-level

Geometry	Detailed below.
Configuration	The Grout Treatment Facility (GTF) comprises three separate facilities, the Dry Materials Facility (DMF) off Fourth Avenue, the Grout Processing Facility (GPF) (buildings designated 243-G) adjacent to AP Tank Farms, and the Grout Disposal Facility (GDF) or vault area near the 218-E-16 Area outside the 200E fence. The Feed Transfer System (FTS) underground piping feeds tank waste to the GPF.
Hardware	DMF: 2402E Compressor Building with external 8,251 L (2180 gal) Air Receiver Tank 2402EA Railcar unloading pit contains a 18,925 L (5,000 gal) dry materials transfer bin 2402EB Storage Bin is 6.57m (21 ft 6-1/2-in.) dia. and 19.85m (65 ft 1-5/8-in) high 2402EC Storage Bin is 7.97m (26 ft 1-7/8-in) in diameter and 19.85m (65 ft 1-5/8-in) high 2402ED Storage Bin is 3.75m (12 ft 3-3/4-in.) in diameter and 14.9m (48 ft 11-in.) high 2402EF Storage Bin is 6.57m (21 ft 6-1/8-in.) in diameter and 19.85m (65 ft 1-1/8-in)high 2402EG Pump Pit contains a 18,925 L (5,000 gal) transfer bin 2403E Blended Material Storage/Truck Loadout 2403EA Compressor Building 2451E Electrical Substation
Hardware Cont.	GPF: Control Room, Change Room/Lunch Room, Decon Additive Module, Dry Blend Module, Air Filtration module, Motor Pit, and adjacent Liquid Collection Tank/Mixer Module. Decon Additive Module contains 5 tanks. Tank R01 is a 379 L (100 gal) Additive Tank. Tank R02 is a 1,893 L (500 gal)Additive Tank. Tank R03 is a 946 L (250 gal) Additive Tank. Tank R04 is a 757 L (200 gal) Additive Tank. Tank F01 is a 1,893 L (500 gal) decontamination solution storage tank. The Dry Blend Module contains a 62.3 cu meters (2,200 ft^3) storage bin which is 3m (10 ft) in diameter and 7.93m (26 ft) high, and two bag house filters. The Air Filtration module contains two dual HEPA filter trains. The Motor Pit contains a small sampling glovebox.

	The LCT/Mixer Module contains: a 18,925 L (5,000 gal) Liquid Collection Tank. a 1,893 L (500 gal) hopper-fed surge tank. GDF: Four empty 5.299 M liters (1.4 M gal) near-surface vaults, 1 buried vault filled with low-level (Class C) DST phosphate/sulfate grouted waste.
Contents	DMF: Four above ground vertical storage bins, two transfer bins in below-grade pits, which includes a rail car unloading station. The storage bins are empty. GPF: All tanks are empty. Only Tank F01 was used to hold decontamination solution (Citric Acid). The Dry Blend Module has two bag house filters that are slightly contaminated. The Air Filtration module contains two dual train HEPA filters that are slightly contaminated. The partially below-grade LCT/Mixer Module components are slightly contaminated internally. GDF: Vaults 102-105 are empty. Vault 101 is sealed, buried, and inactive. The vault has been filled with 3.785 M Liters (1.0 M gal) of low-level (Class C) DST phosphate/sulfate grouted waste, and a cold cap layer of clean grout added on top of the waste layer.
Condition	Devalued by DOE-RL, except for the vaults. Preparing for turnover to Bechtel Hanford, Inc.
Original Mission (Process History)	Select DST low-level Class B and C waste, process with grout forming solids, and store in near-surface 1.4 Million gal concrete vaults. Only one vault was filled, with low-level phosphate/sulfate grouted waste. The LCT/Mixer Module was cleaned, flushed, and rough decontaminated.
Current Mission	Shutdown, preparation for turnover to Bechtel Hanford, Inc. DOE-RL Letter 97-WSD-243 (12/09/97) from JK McClusky to HJ Hatch of FDH.
Future Mission	Devalued, except for the empty vaults which may have a future mission with TWRS or vitrification.
Processes	DMF: Receive, store, and blend dry materials for grout. GPF: Mix dry materials with DST waste and pump to vaults. GDF: One test run processed low-level DST waste with phosphate/sulfate grout into Vault 101.
Input Streams	DMF: Only naturally occurring separate dry materials. GPF: Blended dry materials from DMF and DST waste via Feed Transfer System from AP Tank Farms tank 102. GDF: Received grouted waste from GPF into Vault 101 only.
Product/Effluent	DMF: Blended grout forming dry materials. GPF: Grouted DST waste. GDF: Received and stored grouted waste in near-surface asphalt lined concrete vault.

Material at Risk	3.785 M liters (1 Million gal) of phosphate/sulfate grout in Vault 101, with remaining volume a cold cap grout layer and head space.
Form/Charac	Class C waste in low quality phosphate/sulfate grout
Quantity	3.785 M liters (One Million US Gal).
Material Stored	3.785 M liters (One Million US Gal) of low-level phosphate/sulfate grouted waste.
Condition	Land Disposal of grouted waste in concrete vault lined with asphalt, with lechate collection basin.
Interactions	No chemicals stored. All facilities piping isolated.
Energy Sources	DMF: Water and power (no water shut off valve). Power is for freeze protection. GPF: Control Room power only. No water. GDF: No power. No water.
Energy Needs	None
Energy Status	GPF: All water disconnected. Only Control Room connected to electrical power.
Source Condition	DMF: Equipment abandoned, but still connected to water and power. GPF: Equipment abandoned, no connection to utilities except for control room. GDF: Four empty vaults ready for mission.
Past Controls	Ventilation of LCT/Mixer Module and feed transfer line leak detection. Temporary vault exhauster was planned for future fills.
Current Controls	Only burial ground leachate and envirnomental monitoring on Vault 101. No oversight on other components.
Planned Controls	No requirements outside normal radiological controls of contaminated componets.
Barriers	Asphalt coated concrete vault with lechate collection basin, and double-contained feed transfer line when operated.
Chemical Segregation	N/A
Safeguards and Security	Subsidence is the only issue; vault load limits and area posting should be considered.
Monitoring and Surveillance	Leachate collection and upgradient monitoring wells.

Historical Risks	Piping leak while processing. Below surface drilling/intrusion after vault closure.
Current or Future Risks	Below surface drilling, which is discuss in the Grout Probability Assessment. Subsidence, and earthquakes.
Occurrence History	None
Root Cause	N/A
Records Location	Hanford Document Management system contains PSW campaign report (WHC-SD-WM-ER-059), the Grout FSAR (WHC-SD-WM-SAR-027), and supporting documents. The Grout Project boxes sent to the FRC in Jan '96 for Project B-714 are 13700-137020, 138501-138543, 141027, 141028S, and 140311-140324E. Project B475 files were sent off in '89, and are in boxes 115991, 115992, 116970, and 116755.
Records Access	Normal Hanford access.
Adjacent Facility Location	PUREX and 200E AP Tank Farms, the vaults are located near the 218-E-16 Area outside the 200E Area fence.
Underground Facilities	The Feed Transfer System piping leads from 241-AP-02D pump pit at AP Tank Farms to the LCT/Mixer Module, and then out to the GDF vaults. Vault 101 is inactive and buried, and the other four vaults are empty and uncovered.
Aboveground Facilities	May be disconnected from electrical utilities.
BIO Coverage	Not currently addressed in the BIO.
FSAR Coverage	Not currently addressed in the FSAR.
Information Sources	Shutdown conditions from Ron Claghorn, former Grout Engineer. Current status from Dave Spark, building administrator. Descriptions and designations from Grout FSAR (WHC-SD-WM-SAR-027). See WHC-SD-WM-EE-004 Performance Assessment of Grouted Double-Shell Tank Waste Disposal at Hanford for long-term post-closure analysis on possible health effects from inadvertant vault drilling and crop irrigation/consumption. For data on vault 101 contents, see WHC-SD-WM-ER-059 Phosphate Sulfate Waste Grout Campaign Report and/or WHC-SD-WM-TP-068 Laboratory Testing of PSW Grout Slurry Specimens, and WHC-SD-WM-TRP-115 Phosphate/Sulfate Waste Grout Sampling Report for validity checking. Mark Williams, of Project Files for box numbers.

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	241-BY-ITS-1	Facility Name:	ITS-1 OFF GAS SYSTEM

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
TWRS	200-E Area in 241-BY Tank Farm	*See Below	*See Below	*See Below	*See Below	Not Applicable	Shut Down Isolated	TBD	TBD

Geometry	The ITS-1 offgas system consist of a demister tank, condenser, mist eliminator, cyclone, condensate tank, filter, ion exchange column, and HEPA filtered input system.
Configuration	The system is isolated from tank farm facilities. Ducting has been removed. Piping is disconnected and capped.
Hardware	The equipment consists of components required to remove condensate from waste tank exhaust air, and to radioactively decontaminate the condensate by filtration and ion exchange. The remaining ITS-1 equipment consists of the following components: • 241-BY-ITS1-IX-1 ion exchange column, 0.5 m (18 in.) dia. by 2.7 m (9 ft.) tall, 0.3 m^3 (10.5 ft^3) resin capacity • 241-BY-ITS1-IX-2 cuno filter, 0.6 m (2.1 ft.) dia. by 1.3 m (4.5 ft.) tall • 241-BY-ITS1-TK-2 condensate catch tank, 1.7 m (5.5 ft.) dia. by 1.5 m (5 ft.) tall • 241-BY-ITS1-DM-102 de-entrainment vessel, 3.3 m (11 ft.) dia. by 5.8 m (19 ft.) tall • 241-BY-ITS1-EX-1 condenser, 0.7 m (2.25 ft.) dia. by 4.3 m (14 ft.) long • 241-BY-ITS1-DM-1 demister and cyclone, approximately 0.9 m (3 ft.) dia. • HEPA filtered exhaust system • Concrete IX Column Enclosure.
Contents	The shutdown plan called for draining all liquids and ion exchange resin to underground tanks. Small amounts of liquid may remain in vessels. Actual draining of column has not been verified.
Condition	Equipment is in safe condition awaiting dismantling. The chief problem is deteriation of the asbestos lagging on the demister tank.

Original Mission (Process History)	The ITS-1 offgas system was used in the 1960s to treat the offgas from underground radioactive waste storage tanks. Tank contents were evaporated by sparging heated air through the waste. The offgas system removed and decontaminated condensate, and filtered the dried air exhaust.
Current Mission	None. Isolated and awaiting dismantling.
Future Mission	None. To be dismantled when BY Farm is brought to Controlled-Clean-Stable status, est. FY2000.
Processes	None. In operation or planned. Last operation (condensate removal, cleanup) shutdown more than 30 years ago.
Input Streams	None. System is blanked, sealed, and isolated.
Product/Effluent	None. Some atmospheric breathing/venting is occurring through the HEPA filtered vent (passive).
Material at Risk	None. System is sealed, awaiting dismantling. Small amounts of radiation contamination remains in vessels and piping.
Form/Charac	Small amounts of solid radioactive residue and possible aqueous condensate may remain in vessels and piping. It is also possible that Zeolite, an ion exchange medium, remains in the ion exchange column.
Quantity	Liquid - estimated at less than 100 gal. Zeolite may remain in the IX column.
Material Stored	Residual condensate (if any), residual waste in demister elements. Zeolite may remain in the IX column.
Condition	Material is safely contained.
Interactions	None. Facility is sealed and isolated.
Energy Sources	None. Facility is sealed and isolated. There is a slight possibility that hydrogen is present in vessels and piping due to radiolytes decay in the presence of water.
Energy Needs	None. No part of system is operating. No part will operate in future.
Energy Status	No parts of system are energized.
Source Condition	Source isolation needs to field verified.
Past Controls	
Current Controls	None. Facility is isolated awaiting dismantling. Facility is visually inspected on daily basis by operator rounds.

Planned Controls	None.
Barriers	Facility is located inside BY Tank Farm in a locked and fenced area. The demister, condenser and HEPA filter are enclosed in a separate fence to keep personnel away from high radiation area.
Chemical Segregation	N.A.
Safeguards and Security	Protected by Hanford road access guard check points, BY farm locked fenced area, and by separate fenced area around demister and condenser/HEPA filter system.
Monitoring and Surveillance	The facility is visually observed by daily operator rounds in BY tank farm.
Historical Risks	Release of radioactive particulates from HEPA filtered exhaust. Potential leakage, spray from condensate and elution chemicals.
Current or Future Risks	The chief current risk is asbestos fiber release from deteriorating demister lagging, and from radiation from the demister tank. Future risks are the same until dismantling is initiated. Dismantling will include industrial hazards, and the possibility of hydrogen in the system from radiolytic decay. Chief risk will be radiological exposure during dismantling.
Occurrence History	None.
Root Cause	None.
Records Location	Hanford Drawing Files. Letters in personal files. Old operating records may be in Seattle Records Repository. Some limited information is retained in 2750-E/D-127 by Olaf Rasmussen
Records Access	Contact File Custodians.
Adjacent Facility Location	BY tank farms (underground) surround the ITS-1 offgas system. B tank farm is located to the east.
Underground Facilities	BY farm underground storage tanks.
Aboveground Facilities	Change/access trailer, instrument cabinets, concrete pump pits and diverter boxes.
BIO Coverage	None.
FSAR Coverage	Addressed generically as part of tank farm complex.
Information Sources	Drawings: H-2-32203, H-2-34124, H-2-33482, H-2-33484 Conversations with Jim Crawford (Engineering), Olaf Rasmussen (Operations) Facility walkdown 10/24/97; Carol Sohn, Carole Leach, Kim Beacher, Ken Wade, Diane Clark, Mark Brown, Rocky Brooks.

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	241-BY-ITS2-TK-1	Facility Name:	241-BY-ITS2 Condenser Vessel

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
LMHC	200W BY Tank Farm	Detailed below	Detailed below	0	0	0	Inactive	Unknown	Unknown

Geometry	A small vapor condenser, 76.2 cm (30 in.) in diameter by 2.9m (9.5 ft.) in a pit above Tank 241-BY-112.
Configuration	The condenser has been disconnected.
Hardware	A small, approximately 1,320 Liters (349 gal) vapor condenser.
Contents	The radiological and chemical contents in the condenser are unknown, assume condensed vapors and carry-over particles. The condenser was disconnected and no longer in service.
Condition	Abandoned in place.
Original Mission (Process History)	Condense vapor from heated in-ground waste storage tank.
Current Mission	None, component disconnected and inactive.
Future Mission	None
Processes	Remove moisture and entrained particles from vapor.
Input Streams	Waste tank heated vapors, and volatile chemicals.
Product/Effluent	Deentrained waste tank vapor.
Material at Risk	Contents unknown, assume condensed waste vapors from in-ground single-shell tank(s).
Form/Charac	The form of any possibly remaining waste is unknown.

Quantity	The quantity of remaining waste in the condenser is unknown.
Material Stored	Some process waste may still remain in the condenser.
Condition	The component is not inspected nor maintained.
Interactions	None
Energy Sources	None
Energy Needs	None
Energy Status	Not connected to electrical power.
Source Condition	Electrical power is not connected.
Past Controls	None
Current Controls	Normal Tank Farms SOP.
Planned Controls	None
Barriers	Access to the facility is controlled by BY Tank Farms RWP.
Chemical Segregation	N/A
Safeguards and Security	The facility is occupied, and an RWP is required to enter.
Monitoring and Surveillance	Routine tank farm surveillance is not required.
Historical Risks	None
Current or Future Risks	None anticipated.

Occurrence History	None
Root Cause	None
Records Location	See information sources below.
Records Access	Normal Hanford access.
Adjacent Facility Location	The facility is located north of "B" Plant, near the B and BX Tank Farms.
Underground Facilities	Underground piping connections from the tank has been blanked off.
Aboveground Facilities	Electrical power to the facility.
BIO Coverage	This facility is described and analyzed in the TWRS BIO.
FSAR Coverage	This facility is described and analyzed in the draft TWRS FSAR.
Information Sources	The Cognizant Engineer is Lee Dougherty. Hanford Drawings: Tanks BY-111 & BY-112 (H-2-62451), ITS#2 Condenser Assembly (H-2-62424), Condenser Pit Arr'g't 241-BY-112 ITS#2 (H-2-62445), ITS#2 Civil Plot Plan (H-2-62401), and ITS#1 - ITS#2 Intertie Piping Plot Plan & Drawing Index (H-2-36679).

FACILITY HAZARD PROFILE CHECKLIST
Rev. 0, April 20, 1998

Facility ID:	241-BY-ITS2-TK-2	Facility Name:	241-BY-ITS2 Heater Flush Tank

Owner/Operator	Location	Capacity	Volume of Contents	Sludge Volume	Liquid Volume	Risers	Active/ Inactive	Fissile Content	Rad Content
LMHC	200W BY Tank Farm	Detailed below	Detailed below	0	0	0	Inactive	Unknown	Unknown

Geometry	A vertical in-ground heater flush tank. The flush tank is installed between Tank 241-BY-111 and Tank 241-BY-112.
Configuration	The flush tank contains a sparger ring and full length flush pipe. The flush tank is not connected to any vessel or piping.
Hardware	12.8m (42 ft.) of 101 cm (40 in.) ID pipe inside 13.1m (43 ft.) of 118.1 cm (46.5 in.) ID caisson on bottom [mated to a 5.18m (17 ft.) of 122 cm (48 in.) OD pipe top section].
Contents	The radiological and chemical contents in the approximately 10,379 Liter (2,742 gal) flush tank are unknown. The tank was abandoned.
Condition	The tank has been inactive since 1977.
Original Mission (Process History)	To decontaminate heater elements used for in-tank heating.
Current Mission	None, inactive.
Future Mission	None
Processes	Dip heater elements in tank.
Input Streams	None
Product/Effluent	None
Material at Risk	Unknown dissolved single-shell waste tank contamination.

Form/Charac	The form of any possibly remaining waste is unknown. Caustic mixed waste.
Quantity	The quantity of remaining waste in the heater flush tank are unknown.
Material Stored	Some process waste may still remain in the flush tank.
Condition	Unknown integrity, as the tank is not inspected nor maintained.
Interactions	None
Energy Sources	None
Energy Needs	None
Energy Status	Not connected to electrical power.
Source Condition	Electrical power is not connected.
Past Controls	Liquid level of decontamination solution.
Current Controls	Only normal tank farms SOP.
Planned Controls	None
Barriers	Access to the facility is controlled by BY Tank Farms RWP.
Chemical Segregation	N/A
Safeguards and Security	The facility is not occupied, and an RWP is required to enter.
Monitoring and Surveillance	Routine tank farm surveillance is not required.
Historical Risks	Unknown
Current or Future Risks	None anticipated

Occurrence History	Unknown
Root Cause	None
Records Location	See information sources
Records Access	Normal Hanford access.
Adjacent Facility Location	The facility is located north of "B" Plant, near the B and BX Tank Farms.
Underground Facilities	No underground piping connections associated with flush tank.
Aboveground Facilities	Electrical power to the facility.
BIO Coverage	This facility is described and analyzed in the TWRS BIO.
FSAR Coverage	This facility is described and analyzed in the draft TWRS FSAR.
Information Sources	The Cognizant Engineer is Lee Dougherty. Hanford Drawings: Tanks BY-111 & BY-112 (H-2-62451), ITS Tank Heater Flush Tank (H-2-34383), and Piping Waste Tank 241-BY-111 (H-2-73256).