U.S. Department of Energy
Office of River Protection
Mr. R. J. Schepens
Manager
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 052732

MAR 2 1 2003

Dear Mr. Schepens:

CONTRACT NO. DE-AC27-01RV14136 – FOR INFORMATION: RESUBMITTAL OF AUTHORIZATION BASIS CHANGE NOTICES AND SUPPORTING SAFETY EVALUATIONS

Reference: CCN 052951, Letter, R. J. Schepens, ORP, to R. F. Naventi, BNI, "Bechtel National, Inc. (BNI) Submission of Authorization Basis Change Notices (ABCN) Without a Safety Evaluation Summary," 03-OSR-0057, dated February 28, 2003.

As requested in the reference letter, Bechtel National, Inc. (BNI) is resubmitting the attached Authorization Basis Change Notices (ABCN) along with supporting Safety Evaluations (SE) to the U.S. Department of Energy, Office of River Protection, and the Safety Regulation Division (OSR) for information. A listing of the ABCNs and their respective SEs are provided in the attached table (Attachment 1).

Electronic copies of the ABCNs and SEs are provided for OSR's information and use.

If you have any questions or comments, please contact Mr. Bill Spezialetti at 371-3074.

Very truly yours,

R. F. Naventi
Project Director

TR/slr

Attachments:
(1) Authorization Basis Change Notice and Safety Evaluation List
(2) 24590-WTP-ABCN-ENS-02-005, Rev. 0, plus Safety Evaluation
(3) 24590-WTP-ABCN-ENS-02-008, Rev. 0, plus Safety Evaluation
(4) 24590-WTP-ABCN-ENS-02-009, Rev. 0, plus Safety Evaluation
(5) 24590-WTP-ABCN-ENS-02-010, Rev. 0, plus Safety Evaluation
(6) 24590-WTP-ABCN-ENS-02-014, Rev. 0, plus Safety Evaluation
(7) 24590-WTP-ABCN-ENS-02-016, Rev. 0, plus Safety Evaluation
(8) 24590-WTP-ABCN-ENS-02-017, Rev. 0, plus Safety Evaluation
(9) 24590-WTP-ABCN-ENS-02-022, Rev. 0, plus Safety Evaluation
(10) 24590-WTP-ABCN-ENS-02-023, Rev. 0, plus Safety Evaluation
(11) 24590-WTP-ABCN-ENS-02-028, Rev. 0, plus Safety Evaluation
(12) 24590-WTP-ABCN-ENS-02-038, Rev. 0, plus Safety Evaluation
(13) 24590-WTP-ABCN-ENS-02-046, Rev. 0, plus Safety Evaluation
(14) 24590-WTP-ABCN-ENS-02-047, Rev. 0, plus Safety Evaluation
(15) 24590-WTP-ABCN-ENS-02-048, Rev. 0, plus Safety Evaluation

cc:

Barr, R. C. w/a (1 hard copy and 1 electronic copy)	OSR	H6-60
Barrett, M. K. w/o	ORP	H6-60
Beranek, F. w/o	WTP	MS4-A1
Betts, J. P. w/o	WTP	MS14-3C
DOE Correspondence Control w/a	ORP	H6-60
Ensign, K. R. w/o	ORP	H6-60
Erickson, L. w/o	ORP	H6-60
Hamel, W. F. w/o	ORP	H6-60
Hanson, A. J. w/o	ORP	H6-60
Johnson, B. w/o	BNI	MS7-ESW
Klein, D. A. w/o	WTP	MS4-A1
Naventi, R. F. w/o	WTP	MS14-3C
PDC w/a	WTP	MS11-B
QA Project Files w/a	WTP	MS14-4B
Ryan, T. B. w/o	WTP	MS4-B1
Spezialetti, W. R. w/o	WTP	MS4-B1
Taylor, W. J. w/o	ORP	H6-60
Tosetti, R. J. w/o	WTP	MS4-A2
Veirup, A. R. w/o	WTP	MS14-3B

Attachment 1

Authorization Basis Change Notice and Safety Evaluation List

Attachment 1. Authorization Basis Change Notices and Safety Evaluations

ABCN#	ABCN Title	SE #
24590-WTP-ABCN-ENS-02-005, Rev. 0	Changes to High-Integrity Crane Control Requirements	24590-WTP-SE-M-02-001, Rev. 0
24590-WTP-ABCN-ENS-02-008, Rev. 0	LAW Mechanical Systems	24590-WTP-SE-ENS-02-061, Rev. 0
24590-WTP-ABCN-ENS-02-009, Rev. 0	Revision to Pretreatment PSAR to Reflect System RWH Removal of Drum Lidding Machine and Drum Transfer Drawer	24590-WTP-SE-ENS-02-064, Rev. 0 24590-WTP-SE-ENS-02-011, Rev. 0
24590-WTP-ABCN-ENS-02-010, Rev. 0	System LSH Equipment and Operations Description Modification	24590-WTP-SE-ENS-02-008, Rev. 0
24590-WTP-ABCN-ENS-02-014, Rev. 0	HLW Pour Tunnel Lidding Station Removal & Canister Rack modifications	24590-WTP-SE-ENS-02-017, Rev. 0 24590-WTP-SE-ENS-02-032, Rev. 0
24590-WTP-ABCN-ENS-02-016, Rev. 0	Reagent Supply System Design Update	24590-WTP-SE-ENS-02-028, Rev. 0
24590-WTP-ABCN-ENS-02-017, Rev. 0	System HMH PSAR Section 2 and Section 4 Design Modifications	24590-WTP-SE-ENS-02-010, Rev. 0
24590-WTP-ABCN-ENS-02-022, Rev. 0	Update LAW PSAR	24590-WTP-SE-ENS-02-019, Rev. 0
24590-WTP-ABCN-ENS-02-023, Rev. 0	Process Update HLW PSAR	24590-WTP-SE-ENS-02-020, Rev. 0
24590-WTP-ABCN-ENS-02-028, Rev. 0	Design changes associated with High Level Waste Vitrification System HSH - Mechanical Handling Diagram - Melter Cave Support Handling -Melter Cave 1	24590-WTP-SE-ENS-02-033, Rev. 0
24590-WTP-ABCN-ENS-02-038, Rev. 0	Alignment of System HFH Rev 0 Mechanical Handling Diagram with the HLW Authorization Basis	24590-WTP-SE-ENS-02-052, Rev. 0
24590-WTP-ABCN-ENS-02-046, Rev. 0	Revision to HLW PSAR to Reflect System RWH Drum Lidding Modifications and Drum Assay Removal	24590-WTP-SE-ENS-02-065, Rev. 0
24590-WTP-ABCN-ENS-02-047, Rev. 0	Delete sampling from HLW PSAR	24590-WTP-SE-ENS-02-071, Rev. 0
24590-WTP-ABCN-ENS-02-048, Rev. 0	ITS Instrument Service Air (ISA) AB Compliance	24590-WTP-SE-ENS-02-072, Rev. 0

Attachment 2

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-005, Revision 0 and Safety Evaluation 24590-WTP-SE-M-02-001, Revision 0

ISSUED BY
FPP-WTP PDC
12/13/02
INIT DATE

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-005 Revision 0

ABCN Title Changes to High-Integrity Crane Control Requirements

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	David Horton	Dave H	11/21/2002
Reviewer:	Ken Varma	K. J. Varma	11/21/02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS Manager	Fred Beranek	D. Klein / F. Beranek	11/21/02
☒	QA Manager	George Shell	George Shell	12/11/02
☐	Operations Manager			
☒	Commissioning/Training Manager	James Wilson for N. Brosee	[signature]	11/25/02
☒	Manager of Engineering	HLW Fred Marsh	Fred B Marsh	12/10/02
☐	Construction Manager			
☒	Area Project Manager	Bob Lawrence Phil Schuetz	B Lawrence [signature]	11/21/02 11/21/02
☐	Research & Technology Manager			
☐	PMT Chair			
☒	Other Affected Organization (HLW DOC. CUSTODIAN)	Dwight Krahn	Dwight Krahn	11-21-02
	(PT DOC. CUSTODIAN)		Taber G Herrera	11/21/02

C. ABCN Approval

	Print/Type Name	Signature	Date
PSC Chair	Bill Poulson	[signature]	12/11/02
WTP Project Director	Ron Naventi	[signature]	12/11/02

ABCN Number 24590-WTP-ABCN-ENS-02-005 Revision 0

ABCN Title Changes to High-Integrity Crane Control Requirements

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0
Preliminary Safety Analysis Report to Support Partial Construction; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-001-04	0
Preliminary Safety Analysis to Support Construction Authorization; PT Facility Specific Information	24590-WTP-PSAR-ESH-01-002-02	E (0 when issued)
Engineering Specification for High-Integrity CMAA 70 Cranes	24590-WTP-3PS-MJKG-T0003	1
Engineering Specification for High-Integrity CMAA 70 Cranes with Power Manipulators	24590-WTP-3PS-MJKG-T0004	1

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Several sections of 24590-WTP-PSAR-ESH-01-002-04, Rev. 0, 24590-WTP-PSAR-ESH-01-001-04, Rev. 0, and 24590-WTP-PSAR-ESH-01-002-02, Rev. E contain references to types of crane control that would require continuous positional feedback and, in some cases, automation. This design change removes both positional feedback and travel automation from the design and replaces them with administrative controls. Crane zone controls and interlocks with hatches have been identified as Risk Reduction Class features in chapter 3 of the HLW PSAR and are reflected as control strategy elements in Appendix A. This change does not remove SDS interlocks such as high –high limit switches, overload protection, wire rope misreeving protection, and redundant and independent hoist braking systems. These features are credited in the accident analysis of chapter 3 of the PSAR to meet the SDS safety function (to minimize the probability of a dropped load). Below is a list of specific PSAR and PCAR references along with the design documents to be changed.

1. Zone Controls are referenced in the following documents and sections:

   AB document 24590-WTP-PSAR-ESH-01-002-04:

   - Appendix A, CSD-HHASX/N0011
   - Appendix A, CSD-HHFP/N0032
   - Appendix A, CSD-HHOP/N0007
   - Appendix A, CSD-HHDH/N0012
   - Appendix A, CSD-HRWH/N0021
   - Appendix A, CSD-HRWH/N0024

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

- Appendix A, CSD-HHPH/N0012

AB document 24590-WTP-PSAR-ESH-01-001-04:

- Appendix A, CSD-H450/N0017
- Appendix A, CSD-H450/N0036
- Appendix A, CSD-H270/N0002

All references to zone controls will be removed from 24590-WTP-3PS-MJKG-T0003 and 24590-WTP-3PS-MJKG-T0004.

2. 24590-WTP-PSAR-ESH-01-002-04, Appendix A, CSD-HHPH/N0010 states, "the crane load cell interlocked with that load movement (z-axis) is interrupted if canister does not travel required vertical distance." This will be changed to administrative controls, as necessary. Specification 24590-WTP-3PS-MJKG-T0003 will be updated to reflect this.
3. 24590-WTP-PSAR-ESH-01-002-04, Section 3.3.3.4, states, "....the following RRC control strategies for canister or cask drops have been identified: crane zone controls limit the crane path (avoid obstacles, canister integrity, container lifting points, and interlocks to hatches to ensure SSCs are in place before performing lifts." The references to the RRC will be replaced by Administrative Control, as appropriate. Specifications 24590-WTP-3PS-MJKG-T0003 and 24590-WTP-3PS-MJKG-T0004 will be updated to reflect this.
4. 24590-WTP-PSAR-ESH-01-002-04, Section 2.4.21.1.2, states, "Mechanical Handling Operations are automated and sequenced where possible, with the number of stages requiring operator interaction minimized. The degree of automation depends upon the operation to be performed. Where automation is undesirable, such as for non-repeatable operations, direct device control is used." This should be revised to clarify that the cranes will not be automated, even as they will perform several repeated operations.
5. 24590-WTP-PSAR-ESH-01-002-02, Appendix A, CSD-PRWH/N0015 states, "interlocks preventing operations out of sequence (will be provided)." The references to the RRC will be replaced by Administrative Control, as appropriate. Specification 24590-WTP-3PS-MJKG-T0003 will be updated to reflect this.
6. 24590-WTP-PSAR-ESH-01-002-02, Appendix A, CSD-PRWH/N0012 states, "interlock prevents lowering in this area if platform is not fully raised." The references to the RRC will be replaced by Administrative Control, as appropriate. Specification 24590-WTP-3PS-MJKG-T0003 will be updated to reflect this.
7. 24590-WTP-PSAR-ESH-01-002-02, Appendix A, CSD-PPFH/N0004 and CSD-PPFH/N0005 states, "crane interlocks prevent sideways movement unless grab is raised to height which clears equipment." The references to the RRC will be replaced by Administrative Control, as appropriate. Specification 24590-WTP-3PS-MJKG-T0004 will be updated to reflect this.
8. 24590-WTP-PSAR-ESH-01-002-02, Table 3A-21, CSD-PCXP/N0026, states, "a potential CSE – Prevention crane controls prevent approaching columns while they are on line. Proper management of crane maintenance and operation." The references to the RRC will be replaced by Administrative

ABCN Number 24590-WTP-ABCN-ENS-02-005 Revision 0

ABCN Title Changes to High-Integrity Crane Control Requirements

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Control, as appropriate. The specification 24590-WTP-3PS-MJKG-T0004 will be updated to reflect this.

It should be noted that this change does not remove interlocks such as high –high limit switches, overload protection, wire rope misreeving protection, and redundant and independent hoist braking systems. These interlocks are ITS SSCs in both 24590-WTP-3PS-MJKG-T0003 and 24590-WTP-3PS-MJKG-T0004.

F. Explain why the change is needed:

A review of facility controls against the minimum essential requirements has determined that the RRC function associated with crane automation is not necessary and imposes additional costs associated with operations and maintenance. The RRC controls will be replaced by administrative controls, as necessary.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-M-02-001 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-005 Revision 0

ABCN Title Changes to High-Integrity Crane Control Requirements

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

ISSUED BY: RPP-WTP PDC
INIT 12/13/02 DATE

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-WTP-3PS-MJKG-T0003 **Rev:** 1

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-005

Safety Evaluation No: (if used as SE) 24590-WTP-SE-M-02-001

Brief description of Design:

Several sections of 24590-WTP-PSAR-ESH-01-002-04, Rev. 0, 24590-WTP-PSAR-ESH-01-001-04, Rev. 0, and 24590-WTP-PSAR-ESH-01-002-02, Rev. E contain references to types of crane control that would require continuous positional feedback and, in some cases, automation. This design change removes both positional feedback and travel automation from the design and replaces them with administrative controls. Crane zone controls and interlocks with hatches have been identified as Risk Reduction Class features in chapter 3 of the HLW PSAR and are reflected as control strategy elements in Appendix A. This change does not remove SDS interlocks such as high –high limit switches, overload protection, wire rope misreeving protection, and redundant and independent hoist braking systems. These features are credited in the accident analysis of chapter 3 of the PSAR to meet the SDS safety function (to minimize the probability of a dropped load).

AB Documents Reviewed:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	Appendix A, 2.1.21.1.2, 3.3.3.4, 3.3.3.5, 4.4.10.3, 4.4.10.4
24590-WTP-PSAR-ESH-01-001-04	0	Appendix A
24590-WTP-PSAR-ESH-01-002-02	E (0 when issued)	Appendix A

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change include modifications other than those providing additional details for SSCs described in Chapter 2 of the PSAR[1]?	☒	☐
3.	Does the change affect the descriptions or figures in the LCAR[2] or Partial Construction Authorization Request (PCAR)[3]?	☐	☒
4.	Are any plant general arrangement drawings that are figures in the PSAR changed?	☐	☒
5.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
6.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
7.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐

12/12/02
Processed/ Data Entry | Copied/ QA | Scanned | Filed

[1] Assumes the PSAR (General Information, PT, HLW, LAW, & BOF Volumes) is approved.
[2] Assumes the LCAR is still in effect but this reference may be deleted if PCAR or CAR supersedes the LCAR.
[3] Assumes PCAR is approved but this reference may be deleted if PCAR is superseded by CAR

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-WTP-3PS-MJKG-T0003 **Rev:** 1

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-005

Safety Evaluation No: (if used as SE) 24590-WTP-SE-M-02-001

GENERAL REVIEW		YES	NO
8.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[4]	☐	☒

If any question above is checked "YES", an ABCN is probably required.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		YES	NO	N/A
9.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
10.	Is a different type of component used to perform the safety function?	☐	☒	☐
11.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
12.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
13.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
14.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
15.	Are design imposed position control requirements for valves changed?	☐	☒	☐
16.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
17.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
18.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
19.	Are there changes to position related interlocks?	☒	☐	☐
20.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
21.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		YES	NO	N/A
22.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
23.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
24.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐

[4] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-WTP-3PS-MJKG-T0003 **Rev:** 1

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-005

Safety Evaluation No: (if used as SE) 24590-WTP-SE-M-02-001

CONTROLS & INSTRUMENTATION AND ELECTRICAL		YES	NO	N/A
25.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
26.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
27.	Are any time delays or actuation times changed?	☐	☒	☐
28.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
29.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
30.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
31.	Are any door interlocks or alarms changed?	☐	☒	☐
32.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
33.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
34.	Are there any increases in loads or changes in load paths?	☐	☒	☐
35.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
36.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
37.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
38.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY		**YES**	**NO**	**N/A**
39.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
40.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
41.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
42.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-WTP-3PS-MJKG-T0003 **Rev:** 1

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-005

Safety Evaluation No: (if used as SE) 24590-WTP-SE-M-02-001

REGULATORY		YES	NO	N/A
43.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
44.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 41 must be explained in greater detail. "Yes" or "No" answers to questions 42-44 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

2. The change occurs in several places outside of chapter 2, including chapter 3. This change impacts automation and crane zone controls.

7. This changes several CSDs. The CSDs are CSD-HHASX/N0011, CSD-HHFP/N0032, CSD-HHOP/N0007, CSD-HHDH/N0012, CSD-HRWH/N0021, CSD-HRWH/N0024, CSD-HHPH/N0010, CSD-PRWH/N0015, CSD-PRWH/N0012, CSD-PPFH/N0004, CSD-PPFH/N0005, CSD-PCXP/N0026.

19. With this change the cranes will not be able to interlock with hatches and storage racks. However, this was not credited in the accident analysis in Chapter 3 of the PSAR.

39. This change to delete the crane zone controls and automation features and replace them with administrative controls results in the same level of safety during crane operation and does not create a new DBE.

40. This change has no effect on the frequency or consequence of any analyzed DBE described in the PSAR.

41. The change to delete crane zone controls and automation features does not affect any SDS or SDC SSCs. The addition of administrative controls replaces the RRC identified crane zone controls to minimize the probability of a dropped load. This change maintains the RRC Safety function. Also, the cranes are not SDC, thus there is no change in the way an SDC SSC meets its safety function.

42. The change is not related to rules for nuclear activities (10CFR 820), nuclear safety management (10 CFR 830, or occupational radiation protection (10 CFR 835). Therefore, compliance with applicable laws and regulations is maintained.

This change is beyond the level of detail provided in the top-level safety principles for design (R1/REG-96-0006, Section 4.2.1). Therefore, this change continues to perform to top-level safety standards.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide adequate safety.

43. The contract does not contain design details and only includes requirements relative to the PSAR/PCAR that are associated with the format and content. This change is consistent with the original PSAR/PCAR format and content and therefore continue to conform to the contract requirements with the original PCAR/PSAR submittal.

44. The level of detail associated with these changes is only described in the HLW PCAR/PSAR. Therefore, this change will not result in inconsistencies with other commitments and descriptions contained in other AB documents or authorization agreements.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-WTP-3PS-MJKG-T0003 **Rev:** 1

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-005

Safety Evaluation No: (if used as SE) 24590-WTP-SE-M-02-001

Prepared By:	David Horton *Print/Type Name*	Dave Horton *Signature*	11/21/2002 *Date*
Reviewed By: (Discipline AB Reviewer)	Ken Varma *Print/Type Name*	K. J. Varma *Signature*	11/21/02 *Date*

Attachment 3

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-008, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-061, Revision 0

ISSUED BY
BP WTP PDC
12/19/02
INIT DATE

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-008 Revision 0

ABCN Title LAW General Update of PSAR from P&ID Checklist Review

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Lisa Han	LM Han	12/18/02
Reviewer:	Eric Isern	Eric Isern	12/19/02

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

Review Required?		Print/Type Name	Signature	Date
☒	E&NS	Dana Cresci	Dana Cresci	12/19/02
☒	QA	George Shell	for	12/19/02
☒	AB Document Custodian	Dwight Krahn	for D. Krahn	12/19/02
☒	Commissioning/Training	Jim Wilson		12/19/02
☒	Engineering	Fred Marsh/Steve Lynch	/FM	12/19/02
☐	Construction			
☒	Area Project Manager	~~Bill Clements~~ Bill Clements		12/19/02
☐	Project Archives Document Control			
☐	Other Affected Organization			

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek		12/19/02

ABCN Number 24590-WTP-ABCN-ENS-02-008 Revision 0

ABCN Title LAW General Update of PSAR from P&ID Checklist Review

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report for Construction Authorization, LAW Specific Information	24590-WTP-PSAR-ESH-01-002-03	0
Preliminary Safety Analysis Report for Construction Authorization, General Information	24590-WTP-PSAR-ESH-01-002-01	0
P&ID-LAW PRIMARY OFFGAS PROCESS SYSTEM MELTER 1 (Q)	24590-LAW-M6-LOP-00001	0
P&ID-LAW PRIMARY OFFGAS PROCESS SYSTEM MELTER 2 (Q)	24590-LAW-M6-LOP-00002	0
P&ID-LAW PRIMARY OFFGAS PROCESS SYSTEM MELTER 3 (Q)	24590-LAW-M6-LOP-00003	0
P&ID-LAW RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM PLANT WASH AND SBS COLLECTION	24590-LAW-M6-RLD-00001	1
P&ID-LAW RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM C3/C5 DRAINS/SUMP COLLECTION	24590-LAW-M6-RLD-00002	1
P&ID-LAW RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM C3/C5 FLOOR DRAINS COLLECTION	24590-LAW-M6-RLD-00003	1
P&ID-LAW DEMINERALIZED WATER SYSTEM DISTRIBUTION	24590-LAW-M6-DIW-00001	0
P&ID-LAW BREATHING SERVICE AIR SYSTEM DISTRIBUTION (EL.-21 FT-0 IN)	24590-LAW-M6-BSA-00001	0
P&ID-LAW HIGH PRESSURE STEAM DISTRIBUTION	24590-LAW-M6-HPS-00001	0
P&ID - LAW INSTRUMENT SERVICE AIR SYSTEM DISTRIBUTION EL (-) 21 FT & 3 FT	24590-LAW-M6-ISA-00002	0
P&ID-LAW MELTER FEED PROCESS SYSTEM MELTER 1 FEED PREPARATION AND FEED	24590-LAW-M6-LFP-00001	0
P&ID-LAW MELTER FEED PROCESS SYSTEM MELTER 1 ADS PUMPS	24590-LAW-M6-LFP-00002	0
P&ID-LAW MELTER FEED PROCESS SYSTEM MELTER 2 FEED PREPARATION AND FEED	24590-LAW-M6-LFP-00003	0
P&ID-LAW MELTER FEED PROCESS SYSTEM MELTER 2 ADS PUMPS	24590-LAW-M6-LFP-00004	0
P&ID-LAW MELTER FEED PROCESS SYSTEM MELTER 3 FEED PREPARATION AND FEED	24590-LAW-M6-LFP-00005	0

Authorization Basis Change Notice

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Title	Document Number	Revision
P&ID-LAW MELTER FEED PROCESS SYSTEM MELTER 3 ADS PUMPS	24590-LAW-M6-LFP-00006	0
P&ID-LAW SECONDARY OFFGAS / VESSEL VENT PROCESS SYSTEM MELTERS SECONDARY OFFGAS (Q)	24590-LAW-M6-LVP-00001	0
P&ID-LAW SECONDARY OFFGAS / VESSEL VENT PROCESS SYSTEM MELTERS SECONDARY OFFGAS TREATMENT (Q)	24590-LAW-M6-LVP-00002	0
P&ID-LAW MISCELLANEOUS GASES SYSTEM	24590-LAW-M6-MXG-00001	0
P&ID-LAW MISCELLANEOUS REAGENTS (SYSTEMS MXR & SHR)	24590-LAW-M6-MXR-00001	0
P&ID-LAW PLANT SERVICE AIR SYSTEM DISTRIBUTION EL. 28 FT -0 IN AND 48 FT -0 IN	24590-LAW-M6-PSA-00002	0
P&ID-LAW UREA REAGENT SYSTEM	24590-LAW-M6-URR-00001	0
P&ID-LAW CONCENTRATE RECEIPT PROCESS SYSTEM CONCENTRATE RECEIPT VESSEL VSL-00001	24590-LAW-M6-LCP-00001	1
P&ID-LAW CONCENTRATE RECEIPT PROCESS SYSTEM CONCENTRATE RECEIPT VESSEL VSL-00002/VSL-00003	24590-LAW-M6-LCP-00002	1
P&ID-LAW NON-RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM C1/C2 DRAINS/SUMP COLLECTION	24590-LAW-M6-NLD-00001	1

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Changes to 24590-WTP-PSAR-ESH-01-002-03. Rev. 0:

Chapter 2:

a) Section 2.4.12: See attached mark-up. (RLD)

b) Section 2.4.13.10: See attached mark-up. (RLD)

c) Section 2.4.13.11: See attached mark-up. (NLD)

d) Section 2.5.2.1: See attached mark-up. (LCP)

e) Section 2.5.2.3 & 2.5.2.4: See attached mark-ups. (LFP)

f) Section 2.5.4 & 2.5.4.1.3: See attached mark-up. (LOP)

g) Section 2.5.4.2.1: See attached mark-up. (LVP)

h) Section 2.5.9: See attached mark-up. (NLD)

i) Section 2.9.2: See attached mark-up. (DIW)

j) Section 2.9.3: See attached mark-up. (HPS)

k) Update **Figures** 2A-20(LOP); 2A-22, 2A-24, 2A-31(LVP)

Section 2.9: Add a description of the Breathing Service Air system (BSA), to include details such as:

- The BSA compresses air in an annex attached to the main LAW facility and distributes it to hose stations located near rooms that require entry for maintenance.
- The systems consists of a compressor, purification package vessel receiver, analyzers and manifolds with hose stations.
- The BSA has no ITS functions.
- BSA Delivery Pressure/Temperature at Respirator ranges from 100 psig max to 65 psig min and 60 deg F. The Delivery volume flow has a peak value of 300 scfm to support two manifolds (up to twelve personnel).

Chapter 3:

a) Section 3.4.2.1.1: See attached mark-up. (NLD)

b) Section 3.4.2.2: See attached mark-up. (LCP)

c) Section: 3.6.2.5: See attached mark-up

Table 3-1:

a) Update room numbers, vessel numbers and vessel volumes (per vessel sizing calcs) for "C3/C5 Drain/Sump Collection Vessel," "LAW Concentrate Receipt Vessels," and "SBS Condensate Collection Vessel." (LCP)

b) Update LAW Melter Feed Vessel capacities and tag numbers. (LFP)

c) Update volumes for SBS and SBS Condensate Receiver Vessel.(LOP)

d) Update size of Caustic Collection Vessel (LVP)

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

e) Update room numbers and vessel volumes (RLD)

Table 3-2:

See attached mark-up of Table 3-2 (MXG, MXR, URR)

Table 3-5:

See attached mark-up of Table 3-5 (ISA, PSA)

Table 3-10: See attached mark-up

Table 3-10: Add CSD-LLVP/N0015 to the table & Appendix A per SIPD

Chapter 4:

a) Section 4.4.2.1, 4.4.2.3, 4.4.2.5, 4.4.2.6: See attached mark-up. (LVP)

b) Section 4.4.3.1, 4.4.3.3, 4.4.3.5, 4.4.3.6: See attached mark-up. (LOP)

Table 4-2:

See attached mark-up of Table 4-2 (LOP, LVP)

Chapter 5:

a) Section 5.5.1, 5.5.2 & 5.6.3: See attached mark-up. (LOP & LVP)

Appendix A:

a) CSD-LLOP/N00015 see attached mark-up (LVP)

b) CSD-LLOP/N0003 : update per SIPD

Changes to 24590-WTP-PSAR-ESH-01-002-01, Rev. 0:

Table 8-1: See attached mark-up (MXG)

F. Explain why the change is needed:

The changes of these sections, tables and figures were identified as part of the AB Consistency check of numeric revision P&IDs. The checklists were performed in response to CAR No. 24590-WTP-CAR-02-052, Design Conflicts with Description in PSARs. These changes will update the PSAR per the numeric revision of the P&IDs.

Changes to 24590-WTP-PSAR-ESH-01-002-03. Rev. 0:

Table 3-1: Update vessel volumes per calculation 24590-LAW-M6C-LCP-00001, Rev. 0, 24590-LAW-M6C-LFP-00001, Rev. 0, 24590-LAW-M6C-RLD-00006, Rev. 1, 24590-LAW-M6C-LVP-00001, Rev. A, 24590-LAW-M6C-LOP-00002, Rev. A, 24590-LAW-M6C-RLD-00001, Rev. 1

Sections 2.4.12, 2.4.13.10, 2.4.13.11, 2.5.9, 3.4.2.1.1, : Changes to these sections are due to design evolution and to clarify the description of the equipment in that area.

Sections 2.5.2.1, 2.5.2.3, 2.5.2.4: Changes to "spray nozzles" from wash rings because spray nozzles provide better spray coverage. Also added more description to the overflow line to the melter feed vessel.

Section 2.5.4: Diverting the SBS standby lines was chosen over using a bypass line to allow for

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ABCN Title LAW General Update of PSAR from P&ID Checklist Review

F. Explain why the change is needed:

maintenance without bypassing treatment steps in the process.

Section 2.5.4.1.3: Changing the flow of the offgas from downward direction to upward is design evolution. The gas tends to more readily flow upward and is therefore a more efficient design.

Section 2.5.4.2.1: Separate housing for the heaters is necessary to allow for maintenance on one heater without shutting down the whole system.

Section 2.5.4.2.1: The high radiation instrumentation on the outlet stream was deleted since there is radiation instrumentation on the first bank of the HEPA filters.

Section 2.5.9: Correct the descriptive text regarding the C1/C2 drain/sump vessel. The tank discharges to the LAW Plant Wash Vessel if contaminated, not the C3/C5 drain/sump collection vessel.

Section 2.9.2: Change number of DIW pumps per 24590-LAW-M6C-DIW-00001, Rev. A

Section 2.9.3: Change nominal temperature of the HPS system per 24590-BOF-3YD-HPS-00001, Rev. B

Section 3.4.2.1.1: Correct the descriptive text regarding the C1/C2 drain/sump vessel, and update tag number.

Section 3.4.2.2: A spare pipeline is in the design, so delete the reference to the single pipeline for batch transfers.

Table 3-2: Update NaOH Tank volume per 24590-LAW-MTC-SHR-00002, Rev. A

Table 3-2: Changed to direct injection in order to eliminate the hazards from the use of the ammonia conversion unit and anhydrous ammonia.

Table 3-2: Change to Welding Shield gas from Argon to an Argon gas mixture to provide flexibility in the welding operation. Change the number of bottles to have ample supply on hand. therefore reducing vendor on-site traffic (for bottle replenishment).

Table 3-5: Change the pressure of the compressed (process air) and instrument air per 24590-LAW-M6C-ISA-00001, Rev. A and 24590-LAW-M6C-PSA-00001, Rev. A

Section 3.6.2.5, Table 3-10, 4.4.2.1, 4.4.2.3, 4.4.2.5, Appendix A: Offgas exhauster isolation dampers change to fail "open" since this position allows for the highest probability of keeping the flow path open. If the damper were to fail "as-is" it could possibly fail closed. Failing in the open opposition gives more response time to get the system back on line.

Table 3-10, Section 4.4.2.1, 4.4.2.5, 4.4.2.6, 4.4.3.1, 4.4.3.3, 4.4.3.5, 4.4.3.6, Table 4-2, 5.5.1, 5.5.2, Appendix A (CSD-LLOP/N0003) : An ITS Instrumentation meeting held on 4/18/02 to discuss, in part, the instrumentation on the SBS. Monitoring the SBS temperature was decided against in favor of monitoring the differential pressure across the first bank of HEPA filters in the offgas train. The plugging of the HEPA will ultimately result in the overpressurization of the melters and dispersion of NOx gas. Monitoring the differential pressure was determined to be a better strategy (per 5/21/02 ISM meeting), since the differential pressure will trip the feed to the melter. The SBS temperature would only give an alarm. The differential pressure instrumentation on the first bank of HEPA filters are safety related and have redundant instrumentation.

Changes to 24590-WTP-PSAR-ESH-01-002-01. Rev. 0:

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F. Explain why the change is needed:

Table 8-1: Increased quantity of Argon for melters to reduce the vendor traffic on-site for replenishment.

Table 8-1: Change to Welding Shield gas from Argon to an Argon gas mixture to provide flexibility in the welding operation. Change the number of bottles to have ample supply on hand, therefore reducing vendor on-site traffic (for bottle replenishment).

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-061 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

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Remarks:

H. Attachments (if any): Proposed changes indicated by red-line strike outs.

24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Sections: 2.4.12, 2.4.13.10, 2.4.13.11, 2.5.2.1, 2.5.2.3, 2.5.2.4, 2.5.4, 2.5.4.1.3, 2.5.4.2.1, 2.5.9, 2.9.2, 2.9.3, 3.4.2.1.1, 3.4.2.2, 3.6.2.5, Table 3-2, Table 3-5, Table 3-10, 4.4.2.1, 4.4.2.3, 4.4.2.5, 4.4.2.6, 4.4.3.1, 4.4.3.3, 4.4.3.5, 4.4.3.6, Table 4-2, Section 5.5.1, 5.5.2, 5.6.3, & Appendix A

24590-WTP-PSAR-ESH-01-002-01, Rev. 0, Table 8-1.

2.4.11 Penetrations and Embedments

Penetrations and embedments are identified for equipment that will be embedded in the basemat, walls, and elevated slabs. These are characterized as follows:

- Basemat - Embedments in the LAW basemat will be provided for supporting vessels, equipment, and liner plate. Additionally, electrical cable and instrumentation conduits, electrical grounding grid connections, and miscellaneous anchor bolts will be embedded in the concrete
- Walls - Embedments and penetrations through the walls are needed for process systems, maintenance and operation activities, utility systems, personnel access, and protection systems. The following are typical of equipment needing penetrations through walls:
  - Drive plugs for maintenance equipment
  - Electrical and instrumentation systems
  - Fire protection systems
  - Process and utility piping
  - Shield windows
  - Shield door interfaces
  - HVAC ductwork
  - Miscellaneous equipment mountings
  - Manipulators
- Elevated slabs - Embeds for supporting equipment mounted on elevated slabs will be provided for vessels and other equipment. Additionally, electrical cable and instrumentation conduits, electrical grounding grid connections, miscellaneous anchor bolts, and penetrations (for piping, ducts, and trays) will be embedded in the concrete.

Figures 2A-10 through 2A-14 show typical penetrations and embedments.

2.4.12 Sumps

The LAW facility basemat will have ~~eight~~ SIX sumps, each with a diameter of about 18 in. except as noted in the list below, for the collection and removal of spills and washdown solutions. The following areas of the basement will be provided with these sumps:

- LCB012 Pour Cave Cooling Water Room
- L-B022A-C5 filter room (two)
- L-B001B-C3/C5 drain vessel room with a 24 in. sump
- L-B003-C1/C2 drains collection tank area
- L-B008-power supply cooling room
- ~~L-B019B, L-B023B, L-B025B one~~ in each pour cave as an integral part of the liner plate (rooms L-B019B/C, L-B023B/C and L-B025B/C.)

There is a sump

There will also be eight sumps embedded in the floors at 3 ft grade level as noted below.
Each sump is about 30 in. in diameter.

- Two in each of the three process cells

2.4.13.8 C5 Exhaust Fan Room (L-B020)

The C5 exhaust fan room is on the west central side of the basement and is designated as an R3/C3 area. The room is accessed through a subchange room for maintenance and operational activities. The following components are in the C5 exhaust fan room:

- Two 100 % capacity centrifugal exhaust fans with upstream and downstream isolation dampers
- Chilled water fan coil units for supplemental cooling

2.4.13.9 C5 Filter Room (L-B022A)

The C5 filter room is at the northwest part of the basement, and is classified as R3/C5. This room contains filter units with first and second stage HEPA filters ducted in series, which are upstream of the C5 exhaust fans. This room is designated as a R3/C3 area. The following types of components are in this room:

- Filter housing units constructed of stainless steel and consisting of four individual HEPA filters
- Chilled water fan coil units for supplemental cooling

2.4.13.10 C3/C5 Drain Collection Cell (L-B001B)

This cell is northeast of the C5 filter room. It contains a collection vessel that will receive C3 area fire protection water, and process-related C3/C5 drain and sump effluent.

In addition to the previously mentioned effluents, the C3/C5 drain/sump collection vessel also collects a constant liquid purge from the wet electrostatic precipitators (WESP) and any overflows from the feed receipt, melter feed/feed preparation, and plant wash/SBS condensate collection vessels. This vessel is sized for these functions and the contents will either be transferred to the ~~submerged~~ bed scrubber (SBS) condensate collection vessel or the plant wash vessel. This vessel overflow is routed to a sump in the room. This vessel is equipped mixing eductors and level and temperature measurement.

A pump bulge in an adjacent room provides pumping and valving capabilities for the C3/C5 drain/sump collection vessel.

2.4.13.11 C1/C2 ~~Drain~~ Drains/Sump Collection ~~Tank~~ Vessel Area (L-B003) NID

This area is in the north central part of the basement, and is classified as R2/C2. It contains a tank, surrounded by a berm for containment.

The C1/C2 ~~drain~~ Drains/Sump collection ~~tank~~ Vessel will receive effluents from C1/C2 area floor washes, Plant Cooling Water purge, ~~overflows from the caustic scrubber blowdown vessel,~~ and fire protection water from C1/C2 areas. It is sized for these functions and the contents will normally be transferred to the balance of facilities (BOF) effluent collection vessel. If sampling results indicate that the effluent is contaminated, the contents will be transferred to the plant wash vessel. The ~~tank~~ vessel overflow is directed to a sump in the bermed area. The ~~tank~~ vessel is equipped with the level and ~~radiation~~ temperature measurement.

2.5 Process Description

2.5.1 Basic Overview and Theory

Section 2.3.1, above, overviews the process systems, and Figure 2A-23 illustrates a basic process systems schematic. This schematic provides the basic logic for the facility process activities; it shows block system designations for the principal systems involved. Table 2-1 identifies the system naming convention and Table 2-2 lists the systems applicable to LAW. Figure 2A-24 diagrams the overall process flow for the facility.

Figure 2A-25 shows a cross-section of a typical LAW melter and Figures 2A-26 through 2A-36 provide process flow diagrams (including one mechanical handling diagram) showing most of the major LAW process components described below. Also included on the process flow diagrams are preliminary quantitative and qualitative information concerning the process flow streams. Figure 2A-35 provides the symbols and legend for Figures 2A-26 through 2A-34.

Following are more detailed descriptions for each of these principal systems shown in Figure 2A-23 except for the Stack Discharge Monitoring (SDJ) System. The SDJ System connects more with the HVAC System, as shown in Figure 2A-41, and is covered in section 2.6.6.

2.5.2 LAW Concentrate Receipt Process System (LCP), Glass Formers Reagent System (GFR), and LAW Melter Feed Process System (LFP)

The LCP, GFR, and LFP systems operate in conjunction with each other to prepare feed for the melters (Figures 2A-26 and 2A-27). The process starts in LCP with an analysis of the waste concentrate from the PT facility to determine a glass additive formulation for conversion of the waste to glass. (The radiological source inventory for LAW is controlled at the PT, as described in section 3.3.2.1.1 of this volume.) The glass additives specified in the formulation are weighed, transferred from the glass former hoppers of GFR, and mixed with the waste to form melter feed in LFP.

There is a melter feed supply arrangement in each of the three process cells. There are three vessels in each cell for the receipt, preparation, and supply of feed to the melters. Each melter feed supply arrangement in a process cell consists of a concentrate feed receipt vessel, a feed preparation vessel, and a melter feed vessel. However, the glass former hoppers are isolated from the process cells with a contamination barrier between the melter feed supply and the glass former supply. The LCP system includes the concentrate feed receipt vessels. The GFR system includes the glass former feed hoppers. The LFP system includes the feed preparation vessels and the melter feed vessels. A description of the operation of each of these vessel types follows.

2.5.2.1 Concentrate Feed Receipt Vessels

The concentrate feed receipt vessels in LCP receive LAW feed concentrate from the PT facility. One of these vessels is located in each of the three process cells. There is also a melter feed preparation vessel and a melter feed vessel in each of the process cells. These vessels are described below. Each concentrate feed receipt vessel is equipped with the following:

- Mechanical agitator
- Pump to transfer concentrate feed

- Instrumentation for liquid level and density measurements
- Thermowell/temperature sensor for temperature measurements LCP2
- Internal ~~wash rings~~ for periodic washdown spray nozzles
- Overflow to C3/C5 drain/sump collection vessel
- Spare nozzles
- Vent to the LAW secondary offgas system (LVP) via the vessel vent header

Each pump for the vessel has the volute in the liquid and the pump motor mounted on a flange. Associated valves are provided in a valve bulge above each process cell on the 28 ft elevation. Valving in each bulge allows the concentrate feed to be routed to any of the melter feed preparation vessels or to the plant wash vessel (if the concentrate receipt vessel is being cleaned or if the contents of that vessel cannot be satisfactorily processed).

2.5.2.2 Glass Former Feed Hoppers

The three glass former feed hoppers in GFR, supplying glass formers to the LFP, receive blended glass formers and sucrose by dense-phase pneumatic conveying from the LAW transporters at the GFR glass former handling facility. Each feed hopper is equipped with a pneumatic blending head at the base of the hopper to re-blend the glass former feed.

The feed hoppers have load cells to weigh the glass formers, to confirm that all of the material in the upstream blending silo is conveyed to the feed hoppers and that all of the glass formers are transferred from the feed hoppers to the melter feed preparation vessels. The feed hoppers also have filters to remove dust from the air used for pneumatic conveying and blending before it is released.

After the blending cycle, the glass formers are gravity fed with a rotary feeder into the associated melter feed preparation vessels, where the blended glass formers are mixed with the concentrate feed. The rotary valve assists and controls the rate of glass former addition into the melter feed preparation vessels.

2.5.2.3 Melter Feed Preparation Vessels

The LAW melter feed preparation vessels mix feed from the concentrate feed receipt vessels with glass formers and sucrose from the glass-former feed hoppers. Each vessel is equipped with the following:

- Mechanical agitator
- Pump (with installed spare not shown in PFD) to transfer feed
- Instrumentation for liquid level and density measurement LFP
- Thermowell/temperature sensor for temperature measurement spray nozzles
- Internal ~~wash rings~~ for periodic wash-down
- Overflow ~~to the corresponding melter feed vessel~~ line to the common overflow header to the C3/C5 Drains/Sump Collection Vessel RLD-VSL-00004
- Spare nozzles
- Vent to the LAW secondary offgas system (LVP) via the vessel vent header

Either of the two pumps transfer blended feed slurry via a valve bulge above each process cell on the 28 ft elevation. Valves in the valve bulge allow melter feed to be routed to any of the three melter feed vessels. However, normal operation is to transfer the feed slurry to the melter feed vessel in the same cell. The vessel contents can also be circulated by a pump and injected back into the tank in the recirculation mode or routed to the plant wash vessel.

2.5.2.4 Melter Feed Vessels

The melter feed vessels receive blended melter feed (concentrate feed, sucrose, and glass formers) from the melter feed preparation vessels. Each melter feed vessel is equipped with the following:

- Mechanical agitator
- Six air displacement slurry pumps to transfer feed to the corresponding melter
- Vertical turbine pump
- Instrumentation for liquid level and density measurement
- Thermowell/temperature sensor for temperature measurement
- Miscellaneous solution addition line spray nozzles LFP
- Internal ~~wash rings~~ for periodic washdown
- Overflow to the corresponding melter feed preparation vessel
- Spare nozzles
- Vent to the LAW secondary offgas system (LVP) via the vessel vent header

The vertical turbine pump transfers melter feed through the valve bulge. Valving in the bulge allows the melter feed to be routed to the corresponding melter feed preparation vessel if the melter is shut down. It is then circulated back to the same melter feed vessel for sampling or routed to the plant wash vessel for vessel cleanout. The normal transfer is with the air displacement slurry pumps to the melter.

2.5.2.5 LCP/LFP Vessel Controls and Instrumentation

The concentrate feed receipt vessels, the melter feed preparation vessels, and melter feed vessels will have associated instrumentation and interlocks to indicate or prevent the following conditions:

- Loss of vessel integrity
- Loss of agitator function
- Low liquid level stop of pump and agitator to prevent agitator and vessel damage
- High temperature
- Level (high and low)
- Pump discharge pressure

2.5.3 LAW Melter Process System (LMP)

The LMP system converts a blended slurry of LAW melter feed and glass former additives, transferred from LFP, into molten glass (Figure 2A-28.) Each of the three LAW melters has a nameplate capacity of

airlift riser, a glass pour trough, a heated discharge chamber, and other components or instruments needed to control the discharge of glass.

The glass discharge from the melter is initiated by injecting air or an inert gas at the bottom of the airlift riser, thus lowering the density and "air-lifting" the glass up the airlift riser. As the glass rises, it is replaced by glass flowing in from the pool through the riser throat. The glass is lifted to the inlet of the trough, where the air bubbles disengage, and the glass flows into the trough. The glass then flows down the trough, and falls from the pour tip at the end of the trough into the awaiting container, where it cools to form the ILAW. The rate of glass discharge is controlled by adjusting the rate at which air is injected into the bottom of the riser.

LMP instrumentation, alarms, controls, and interlocks will be provided to indicate or prevent the following conditions:

- High glass temperature
- High electrode extension temperature
- Loss of melter cooling water
- Plugged feed nozzle
- Overfilling of glass container

2.5.3.6 Glass Pour Seal Head

The glass pour seal head is the interface between the melter discharge and the product container during glass pouring. The seal head consists of a metal bellows arrangement permanently connected to the melter discharge, and the other end of the bellows is open for connection to product containers. A shroud provides the seal to isolate the molten glass from the pour cell. The seal is a double-seal arrangement to ensure proper connection. Because the container opening is sealed to the melter discharge, its inner space is ventilated to the melter offgas system during filling.

Container fill level is monitored by a thermal imaging camera that provides a complete view of the container diameter and an upper two-thirds view of the container length. The thermal camera does not view the bottom portion of the container in the lower overpack. The thermal imaging camera indicates the container fill level and the rate of filling, and has a high-level alarm. At the container "high" fill level, a gamma detector also activates an alarm. If the fill reaches a "high-high" level, a second gamma detector or thermal imaging camera automatically shuts down the melter discharge. In summary, the fill level is monitored by a thermal imaging camera, a high level alarm is activated by the thermal imaging camera and a gamma detector, and a high-high level shutdown is initiated by a gamma detector.

2.5.4 LAW Primary Offgas Process System (LOP) and LAW Secondary Offgas/Vessel Vent Process System (LVP)

Vitrification of low-activity waste in the melters generates offgas at a variable rate. This offgas results from decomposition, oxidation, and vaporization of feed material. Constituents of the offgas include:

- NO_x from decomposition of metal nitrates and nitrites in the melter feed
- Chlorine, fluorine, and sulfur as oxides, acid gases, and salts

- Cesium, cobalt, technetium and europium in small quantities (the major radionuclides of consideration)
- Small quantities of other, volatile compounds, including ^{129}I, ^{14}C (as CO_2), tritium (as water), and volatile organic compounds
- Air from in-leakage, bubblers, and purges

The purpose of the LAW offgas system is to cool and treat the melter offgas and vessel ventilation offgas to a level that meets environmental, safety, and health requirements. The design of the melter offgas system must accommodate changes in offgas flow from individual melters, without causing any single melter to pressurize and without allowing variations in the flow from one melter to affect other melters.

Separate systems are provided for the initial decontamination of offgas from each melter. This is considered the primary offgas treatment system (LOP) (Figure 2A-29). The LOP is designed to handle intermittent changes in offgas generation rates. The LOP consists of a film cooler, SBS, and WESP. This system cools the offgas, condenses the water vapor, and removes particulates.

A standby line from the melter to the SBS is also provided, in case the function of the primary offgas line is impaired or melter gas generation exceeds the design basis of the primary line. This extra line is fitted with a butterfly valve as an isolation device, which is normally closed. As soon as the melter vacuum decreases to a set point, the butterfly valve actuates and offgas flows through the line to the SBS, thereby preventing loss of melter vacuum. If melter offgas is generated at a rate higher than the system is designed to handle, a relief vent acts at a pressure setpoint to vent the offgas into the adjacent process cell. Once the melter pressure returns to below the setpoint, the vent closes.

After the WESP, the dedicated primary offgas lines combine with the vessel ventilation header and are routed to the secondary offgas treatment system (LVP) for treatment (Figure 2A-30). The vessel ventilation header receives offgas from the concentrate receipt process system vessels and melter feed process system vessels (described in section 2.5.2, above), plant wash and condensate vessels, and the C3/C5 effluent vessel. The offgas received through the vessel ventilation system consists primarily of air, water vapor, and minor amounts of aerosols generated by the agitation or movement of vessel contents.

The LVP system (from HEPA preheater to final discharge) is designed to handle the maximum sustained flowrate from the three melters (assuming all three melters are operating), and from the vessel ventilation system. However, the system can also operate effectively with only one melter running. The LVP consists of HEPA filters with preheater, exhausters, and a catalytic oxidizer unit for volatile organic compound oxidation. A SCR unit reduces NO_x to nitrogen, and water. Final treatment of the offgas is by caustic scrubbing. The LVP removes almost all remaining particulates, miscellaneous acid gases, gaseous NO_x, and volatile organic compounds from the offgas discharge to the plant stack.

No maintenance on the SBS or WESP is planned between melter outages. However, prudent design mandates the capability to maintain these pieces of equipment between melter outages, if necessary. ~~To do this, a maintenance bypass is provided from each melter to downstream of the WESP. This bypass line will be used only when the melter is idle and the challenge to the offgas system is low. At this point, the maintenance bypass will be opened and the isolation valve downstream of the WESP closed.~~

Primary components of the above-described two offgas systems are detailed below.

To do this, the SBS standby lines are interconnected allowing offgas flow to be diverted to an alternate SBS.

- High-pressure differential across the SBS column vessel

2.5.4.1.3 Wet Electrostatic Precipitators (WESP)

After larger particulates and aerosols are removed in the SBS, the cooled offgas is routed to the offgas WESP to remove additional aerosols. Each melter has a dedicated WESP, in the same process cell as the SBS.

The offgas ~~enters at the top of the unit and~~ passes through a distribution plate. The saturated gas then flows ~~downward~~ through the tubes of the WESP. Each tube also has a single negatively charged electrode, which runs down the center of the tube. A strong electric field is generated along the electrode, giving a negative charge to aerosols as they pass through the tubes. The negatively charged particles move toward the positively charged tube walls, and are intercepted. As the gas passes through the tubes, the mist particles are captured. As the water droplets drain through the electrode tubes, the collected particles are washed off and the liquid is collected in the dished bottom area. The collected condensate then drains into the C3/C5 drain/sump collection vessel. Water sprays at the top and bottom of the tubes facilitate removal of captured aerosols.

WESP instrumentation, alarms, controls, and interlocks will be provided to indicate and prevent the following conditions:

- Loss of electrical power to the unit
- High differential pressure across the unit
- Loss of water supply
- Retention of liquid

2.5.4.2 LAW Secondary Offgas/Vessel Vent Process System (LVP) Components

Major components in this system include the HEPA preheaters and filters, exhaust fans, catalytic oxidizer/SCR, and a caustic scrubber (Figures 2A-30 and 2A-31).

2.5.4.2.1 HEPA Preheaters and Filters

The offgas is subjected to final particulate removal with HEPA filters. The combined offgas stream is passed through the LAW melter offgas HEPA preheaters. This electric heater increases the gas temperature above its dew point to avoid condensation in the HEPA filters. Two electric heaters in individual housing are provided. ~~A second heater is provided for redundancy. One is operational, while the other one is on standby~~. The offgas then passes through HEPA filters. To obtain 99.999 % removal efficiency of particulates, two sets of filters are arranged in series. The system is comprised of two parallel trains of two filter sets each in series. The offgas passes through one train, while the other remains available on standby.

HEPA unit instrumentation, alarms, controls, and interlocks will be provided to indicate and prevent the following conditions:

- High differential pressure across a HEPA, signaling a switch to the redundant unit
- Loss of preheater element

- Low pressure differential
- ~~High radiation in the outlet stream~~
- High radiation on the filters

2.5.4.2.2 Exhauster Fans

Three variable-speed exhauster fans are downstream of the HEPAs in a separate room that also contains the catalytic oxidation/reduction unit. The exhauster fans provide the motive force to keep melters under vacuum. Each exhauster fan is rated at 50 % of the total system capacity. Either one or two exhauster fans will work at the same time, depending on how many melters are operating. However, melter operation with only one exhauster fan is considered an abnormal operating condition. Each exhauster fan has a nominal capacity of 2,500 cubic feet per minute. The offgas then continues through the catalytic oxidizer/reduction unit.

2.5.4.2.3 Catalytic Oxidizer and Selective Catalytic Reduction (SCR)

The offgas contains a high level of gaseous NO_x, since the melter decomposes the parent nitrate/nitrite compounds. Adding sugar during feed makeup and in the melter destroys significant amounts of nitrate/nitrites. Scrubbing in the SBS removes some of the NO_x not decomposed by the sugar addition. Further removal is provided by selective catalytic reduction (SCR).

Volatile organic compounds in the offgas stream must be removed, so the offgas is passed through a catalytic oxidizer. A skid-mounted unit houses a heat recovery unit, an electric heater, the catalytic oxidizer, and the SCR.

As the offgas enters the unit, it passes through the heat recovery unit, which is a plate heat exchanger. The heating medium is the exhaust from the catalytic oxidizer/reduction unit. The offgas passes through the heat recovery exchanger, then an electric heater, to bring the temperature up to that required for the volatile organic catalyst to operate.

The volatile organic catalyst column operates at a somewhat lower temperature than the NO_x catalyst, and is therefore placed first. The volatile organic destruction reaction is exothermic, slightly increasing the offgas temperature. Through this catalytic reaction, the organics are decomposed into carbon dioxide, and water vapor.

After going through the volatile organic catalyst, the offgas enters a chamber where a urea solution is injected to form ammonia and CO_2. Ammonia reacts with the NO_x and reduces it to nitrogen and water vapor. The offgas then passes through the first set of NO_x catalyst modules. Two sets of NO_x catalyst columns are required. After the offgas passes through the first set of catalyst columns, more urea solution is injected into the offgas stream. The offgas then passes through the second set of catalyst columns. In total, over 98 % of the NO_x is destroyed. The treated offgas stream is then sent through the heat exchanger and to the caustic scrubber for iodine and acid gas removal and final cooling.

The catalytic oxidizer/reducer unit instrumentation, alarms, controls, and interlocks will indicate or prevent abnormal conditions, including:

- High-pressure differential across each catalyst bed

- Melter gamma gate
- Shield cover removal tool
- Consumable size-reduction shears
- Glove box
- Drum conveyer
- Drum lidder
- Hatches

Melter consumables will be removed through the top of the melter shielding. Melter consumable items are those that require routine and nonroutine maintenance, but provide functions necessary to melter operations. The routine consumable items include bubbler assemblies. New bubbler assemblies will be shipped or installed in the melter directly from reusable CCBs. Spent bubblers will be extracted from the melter, size reduced, and packaged into drums.

Replacement of refractory thermocouples, airlifts, level detectors, feed nozzles, and film coolers will be considered nonroutine. These items are replaced as needed, according to appropriate procedures and with appropriate equipment.

The LSH system also provides for the methods, equipment, and packaging needed to import new melter bubbler assemblies, export spent melter bubbler assemblies, and removal of other melter consumables.

2.5.7 LAW Melter Handling System (LMH)

The LMH system provides the equipment necessary to install and remove the melters from the facility. Equipment includes melter rails, a block-and-tackle system to move melters, a monorail hoist to move maintenance equipment from one melter bay to another, and air lock doors for contamination control.

2.5.8 Radioactive Solid Waste Handling System (RWH)

The RWH system provides for change-out and packaging of LAW process vessels and other solid wastes, including spent or failed melters. A spent or failed process vessel is prepared for removal by rinsing, disconnected from the process lines, decontaminated, and then moved out of the process cell and covered to prevent the spread of contamination. The vessel is then staged, closed and secured, and delivered to the central waste storage area.

Disposal of miscellaneous solid waste streams created during operation is facilitated by packaging at the point of generation. Localized collection points and disposal routes are established to conveniently accommodate maintenance and operations. Waste containers are transferred to a staging area where they are weighed, placarded, and externally decontaminated for non-fixed contamination before transfer. The packaged waste forms are then transferred to the central waste storage area.

2.5.9 Liquid Effluent System (RLD and NLD)

The RLD receives, stores, and transfers routine and nonroutine LAW secondary effluent streams for subsequent treatment or disposal. (Figure 2A-34.) Routine effluents are those liquids or slurries routinely or periodically generated during vitrification. Nonroutine effluents include vessel, equipment, and cell

washes; spills; vessel overflows; fire protection water discharges; and sump, floor drain, and sink discharges.

The three primary components of the RLD are the plant wash collection vessel, the C3/C5 drain/sump collection vessel, and the SBS condensate collection vessel. The plant wash collection vessel receives vessel washes in the LAW vitrification building on a nonroutine basis. The C3/C5 drain/sump collection vessel receives a constant liquid purge gravity drained from the WESPs. This vessel also receives effluent from C3 and C5 floor drains via gravity drain, and from C3 and C5 sumps (fire protection discharge and floor wash) via mechanical pumps on a nonroutine basis. The SBS condensate collection vessel receives purge effluent from the SBS and from the C3/C5 drain/sump collection vessel. The plant wash and SBS effluents are routed to the WTP PT facility. NLD

Drains and fire water from the C2 areas drain to the C1/C2 ~~drain~~ collection ~~tank~~ drains/sump vessel (nonradioactive liquid waste disposal [NLD] system). This tank can discharge to the BOF area if uncontaminated, or to the ~~C3/C5 drain/sump collection~~ LAW Plant Wash vessel if contaminated.

2.6 Confinement Systems

2.6.1 Confinement Philosophy and Summary

To maintain control over sources of radioactive or hazardous materials, a series of confinement barriers protect facility workers, co-located workers, the public, and the environment. The number and arrangement of these confinement barriers and their required design features are determined on a case-by-case basis in each facility. Engineering evaluations and experience are used to determine confinement system boundaries.

Heating, ventilation, and air-conditioning (HVAC) systems actively support passive design features such as physical structures, compartments, vessels, and process piping. The HVAC systems allow pressure gradients to be established that flow ("cascade") air from less contaminated areas to areas of greater contamination potential.

Three general confinement zones are established and referred to by a contamination zone classification designator.

- Zone C5 includes process enclosures and their ventilation systems. In LAW, this includes the process vessels, melter and melter enclosure, process cells and their ventilation systems.

- Zone C3 may also be referred to as including operating areas. These areas have low levels of contamination due to the work processes in them. Examples include filter rooms, bulge rooms, and crane maintenance areas. Subchange rooms may also be included. These minimize the affect of facility access requirements on the ventilation system, and minimize the potential for release of radioactive materials to the normally occupied areas of the facility.

- Zone C2 includes the building walls, roof, and associated exhaust systems. C2 areas are maintained uncontaminated but are adjacent to contaminated areas, and may become contaminated from these sources.

2.9.2 Reagent Systems

There are five chemical reagent systems in the LAW vitrification process:

- URR - urea reagent system
- SHR - sodium hydroxide reagent system
- GFR - glass formers reagent system (described in section 2.5.2)
- MXR - miscellaneous reagents system
- DIW - demineralized water reagent system

Chemicals are required in the LAW vitrification facility for process operations and equipment/cell cleaning and decontamination. The LAW reagent systems are designed to receive, store, and transfer chemicals.

The URR receives urea in dry granular form delivered by truck and pneumatically conveyed directly to the urea-dissolving tank. A saturated solution of urea is made up and pumped to the SCR catalyst beds. Nominally, this operates at a mass flow rate of 642 lb/hr and a temperature of 140° F. (See section 2.5.4.2.3 for further description.)

The SHR receives 5 M sodium hydroxide solution delivered from BOF to the sodium hydroxide storage tank. This tank has two centrifugal sodium hydroxide pumps, for recirculation and delivery of caustic to the caustic scrubber collection tank. Caustic solution is added automatically to the caustic scrubber collection tank, maintaining the caustic molarity at a predetermined level. Nominally, this system operates at a mass flow rate of 1,128 lb/hr and a temperature of 77 ° F.

The MXR receives miscellaneous chemicals (such as cleaning/decontamination chemicals) transferred directly from drums or other containers to the storage tank via the miscellaneous cold chemical transfer pump. Pump suction is connected to a flexible hose and wand that is then connected to the drum to retrieve the chemical. Dry chemicals can also be added through a hatch in the top of the tank. The tank has a nozzle for addition of demineralized water. This tank has one centrifugal pump (miscellaneous cold chemicals pump) to recirculate and deliver the chemicals to the wash cart. A mechanical agitator is provided for mixing chemicals. Operating parameters vary depending on the chemical being transferred.

The DIW consists of the demineralized water header, distribution piping, the demineralized water storage tank, and ~~two~~ three demineralized water pumps. Demineralized water is supplied from the primary synthesizer BOF. This tank is sized to store sufficient demineralized water to supply make-up to the melter transformer and electrode bus cooling system during short term, temporary loss of demineralized water supply from BOF. The tank has two centrifugal pumps to recirculate and deliver demineralized water to the cooling water head vessel. Demineralized water is added to the melter transformer and electrode bus cooling system as needed. The overall average usage of demineralized water is expected to be about 4.4 gal/min at a nominal ambient temperature of 68° F DIW

The LAW chemical supply includes instrumentation to monitor and provide alarm functions as appropriate (such as pressure, temperature, level, flow, density, and conductivity measurements/alarms).

2.9.3 High Pressure Steam System (HPS)

The LAW HPS system receives, regulates, and distributes steam to the melter film coolers. High pressure steam is supplied by the primary system in BOF. The LAW HPS system consists of a high-pressure steam pressure regulation valve station, distribution piping, vents, steam traps, drains, and low-pressure steam pressure regulation valves at low-pressure steam components.

The HPS includes instrumentation to monitor high-pressure steam temperature and pressure and to transmit signals to the integrated control network. This system operates at nominal conditions of 109 psig and ~~3,565°~~ 343 F, and with a flow rate of 500 lb/hr. HPS

2.9.4 Plant Service Air System (PSA)

The LAW PSA receives dry, oil-free compressed air from the primary system in BOF, and distributes a regulated supply to the LAW facility components. The PSA consists of a pressure regulation station, a process air receiver, and a distribution piping system. Pressure is monitored and transmitted, as needed. Controls regulate the air distribution to critical users if the supply from BOF is temporarily lost. This system operates at nominal conditions for LAW facility services at 110 psig and temperatures from 10° F to 95° F. Peak flow rate is 4,800 cfm.

2.9.5 Instrument Service Air System (ISA)

The LAW ISA receives instrument quality air from the primary system in BOF, and distributes a pressure regulated supply of instrument air to LAW plant equipment and instruments. The instrument air system consists of a pressure regulation station, an instrument air receiver, and a filtering and distribution system. Main instrument supply, air receiver, and backup air supply pressures; and instrument air filter differential pressure are monitored and transmitted to the integrated control network. This system operates at nominal conditions for LAW facility services at 110 psig and temperatures from 10° F to 95° F. Peak flow rate is 400 cfm.

2.9.6 Process Service Water System (PSW)

The LAW PSW receives process water from the primary system in BOF via distribution pumps. The process water is supplied to component and maintenance areas. Supply pressure is monitored and transmitted to the integrated control network. This system operates at nominal conditions of 65 psig and temperatures from 450° F to 65° F. The flow rate will average about 100 gpm.

2.9.7 Chilled Water System (CHW)

The LAW CHW receives chilled water supply from BOF, balances the supply flow in the distribution piping to the LAW HVAC cooling coils, SBS vessels cooling heat exchanger, and pour cave cooling heat exchangers; collects the chilled water return from these components; and returns the chilled water to BOF. The chilled water system includes closed-loop chilled water circuits for the SBS vessels cooling and the pour caves cooling. Chilled water from BOF circulates in the secondary loop and removes heat from the primary loop, which cools the vessels and pour caves. Each closed-loop portion of the chilled water system includes two pumps, two heat exchangers, a head tank, and a chemical feed tank. This system operates at nominal conditions of 65 psig and temperatures between 45° F and 55° F. The flow rate will average about 3,700 gpm.

3.4.2.1 Seismic Design Basis

A calculation for seismic categorization of the LAW facility was performed and is summarized in this section (24590-LAW-Z0C-S30T-00001). The calculation estimates the chemical and radiological dose consequences to the facility worker, co-located worker, and public due to a seismic event of 0.26 g magnitude. Results are compared to the radiological and chemical exposure standards in the SRD. This comparison will help determine the seismic categorization of the systems, structures, and components (SSCs) in the LAW facility.

SRD Safety Criteria 4.1-3 and 4.1-4 address the natural phenomena hazards design for SSCs that are important to safety (ITS). SSCs designated as ITS shall be designed to withstand the effects of a design basis earthquake without loss of capability to perform their specified safety functions. This applies to front line and support systems that must function such that the radiological and chemical exposure standards in Safety Criteria 2.0-1 and 2.0-2 are not exceeded. SSCs that may be ITS for radiological reasons but do not have an earthquake related safety function can be classified as Seismic Category III (SC-III). SSCs that are ITS because they protect receptors from exposure to chemicals are classified as SC-III (SRD, Volume II).

3.4.2.1.1 Scenario

This analysis assumes that during a beyond design basis seismic event, all SSCs that contain radiological and chemical materials fail. Radiological and chemical consequences, where available, are derived from the severity level and design basis event calculations previously completed on the project. For significant SSCs not previously analyzed, a conservative consequence analysis is conducted in accordance with *Guide: Radiological Consequence Analysis* (24590-WTP-GPG-SANA-004). Potential consequences from other facilities in the WTP complex are not added to the estimated consequences calculated here.

The following assumptions are used as initial inputs to the seismic evaluation:

Drains/Sump Collection — NLD-VSL-00005 NLD

1 The C1/C2 ~~drains and sump~~ vessel (~~T25032~~) does not receive radioactive effluents of significance (*Revised Severity Level Calculations for the LAW Facility,* 24590-LAW-Z0C-W14T-00003).

2 Spray releases are not evaluated, as all transfer vessels are assumed to fail removing the material at risk (MAR). In addition, spray releases are included as part of the Severity Level (24590-LAW-Z0C-W14T-00003). The calculated doses of 2.03E+00 rem, 7.28E-03 rem, and 3.06E-05 rem, to the facility worker, co-located worker, and public, respectively, do not affect the conclusions of this analysis.

3 For short-duration radiological releases affecting the co-located worker, radiological consequences will be assessed using an atmospheric dispersion coefficient of 3.41×10^{-2} s/m^3. This dispersion coefficient does not credit plume meander (24590-WTP-GPG-SANA-004).

4 For short-duration radiological releases affecting the public, radiological consequences will be assessed using an atmospheric dispersion coefficient of 1.88×10^{-5} s/m^3 (24590-WTP-GPG-SANA-004).

5 The breathing rate for the co-located worker corresponds to an individual engaged in light activity. This value is 3.33×10^{-4} m^3/s (24590-WTP-GPG-SANA-004).

Receptor	Initiating Frequency	Dose (rem)	RES Limit (rem)	Within Guidelines?
Facility Worker	5.0×10^{-4}/y	5.1	≤ 25	Yes
Co-Located Worker	5.0×10^{-4}/y	10.5	≤ 25	Yes
Public	5.0×10^{-4}/y	2.0×10^{-2}	≤ 5	Yes

3.4.2.1.3.2 Chemical Releases

The comparison of chemical consequences to the chemical exposure standards follow.

	Facility Worker		Co-Located Worker		Public	
Chemical	IDLH (mg/m^3)	Exposure (mg/m^3)	TEEL-3 (mg/m^3)	Exposure (mg/m^3)	TEEL-2 (mg/m^3)	Exposure (mg/m^3)
NO	120	> 120	125	> 125	30	< 30
NO_2	38	> 38	50	> 50	25	< 25

3.4.2.1.4 Conclusions

The largest unmitigated radiological dose to the facility worker is 5.1 rem. This dose is due to a catastrophic failure of a concentrate receipt vessel. The cumulative unmitigated inhalation doses calculated for the co-located worker and public are 10.5 rem and 2.0×10^{-2} rem, respectively. All radiological doses are well below the limits set by SRD Safety Criterion 2.0-1.

For the facility and co-located workers, the chemical consequences of a melter offgas release (NO_x) are above the thresholds specified in SRD Safety Criterion 2.0-2.

It is therefore concluded that all LAW SSCs evaluated fit into one of the following categories:

- They are ITS SSCs that do not have an earthquake safety function; or
- They are non-ITS SSCs that have significant inventories of radioactive or hazardous materials but in amounts less than quantities that might lead to an ITS designation; or
- They are ITS because of their function to protect receptors from chemical exposures.

In accordance with SRD Safety Criterion 4.1-4, SSCs that fit into one of the above categories are to be designated SC-III (SRD, Volume II).

3.4.2.2 Risk of Transferring High-Level Waste to the LAW Facility from Pretreatment

LAW facility feed is accumulated in the PT facility in the treated LAW concentrate buffer vessel (TCP-VSL-00001), a 99,000 gallon vessel about ten times the volume of the LAW feed tanks. This is the sole source of LAW facility feed from pretreatment. Batches are transferred ~~via a single pipeline~~ by one of two transfer pumps (TCP-PMP-00001A/B). The LAW feed tanks in the LAW facility are arranged in a group of 3. One receives feed from PT; one can be isolated for sampling; and the third can be used to feed the LAW blend tanks. If sampling at the LAW facility shows that the feed received from PT is out of specification, PT is notified to stop any additional transfers, and the feed is transferred back to PT for

The seismic risk contributions were added to the overall risk total to produce an estimate for LAW facility workers, the ex-facility worker who will get an exposure from each facility, the co-located worker and the general public.

3.6.2.3 Risk Dominant Sequences

The overall contribution of risk to the receptor populations is sufficiently low; no further action to reduce the dominant sequences was considered necessary.

3.6.2.4 Sensitivities

The dominant sequences show that the C5 system and the melter offgas system provide protection for the receptor populations for events, which contribute the majority of the risk. As a result it is important to understand the impact from a change in risk, due to a change in the reliability of the important systems, to the receptor populations. Therefore, sensitivities for the C5 and the melter offgas systems were performed and results follow.

Quantification	Risk FW	Risk Ex-Facility Worker (no CLW prompt fatalities)	Risk General Public
Baseline (not crediting evacuation and best estimate doses)	8.9×10^{-8}	9.4×10^{-9}	4.6×10^{-10}
C5 System unreliability increased 10x	1.4×10^{-7}	1.0×10^{-8}	4.6×10^{-10}
C5 System reliability increased 10x	8.3×10^{-8}	9.3×10^{-9}	4.6×10^{-10}
Melter offgas system unreliability increased 10x	2.9×10^{-7}	1.6×10^{-7}	4.7×10^{-9}
Melter offgas system reliability increased 10x	5.3×10^{-8}	4.4×10^{-9}	3.5×10^{-10}

The sensitivity analyses depict a strong inverse relationship between C5 and melter offgas reliability and the risk the overall process engenders to each receptor population. This confirms the importance of the C5 and melter offgas systems (depression and filtration) in protecting the FW, the CLW, and the public. Note that the C5 system (depression) also protects the FW during a nonradiological event. Additional detailed sensitivities will be performed to focus on important sequences as design progresses. It is expected that these will be produced when designs are finalized before the FSAR development.

3.6.2.5 Relative Risk and Risk-Dominant Contributors in Design

The results of the Operations RA indicate that the preliminary overall radiological risk contributions from LAW are sufficiently low to be considered de minimis. The conservatively calculated risk contributions of less than 1 % of the risk goals attributed to LAW clearly imply that LAW does not represent a potentially profitable area in which to search for economically justified radiological risk reduction improvements.

and subsequently the design went to a fail open design.

However, RA techniques were used to eliminate design weaknesses. As an example, during melter offgas system modeling for the RA it was determined that the ventilation isolation valves would fail closed on loss of power; therefore, later they were redesigned to fail as-is. These designs resulted in a potential lack of ability to restart a melter offgas exhauster during a loss-of-site power event as one exhauster could spin in the reverse direction while the other exhauster was restarting. So, the option was suggested either to provide backup power to the isolation valves or install backdraft dampers on the exhausters.

Subsequently, backdraft dampers were included in the design. Numerous other ad-hoc studies have been performed during the RA to date.

3.6.2.5.1 RAMI Analysis for ITS Components

The results of the reliability, availability, maintainability, and inspectability (RAMI) analysis are presented in the *RAMI Analysis Calculation*, 24590-WTP-U7C-50-002. ITS SSCs credited in the LAW DBE analysis and in the RA are part of the RAMI Analysis. The RAMI Analysis identifies maintenance requirements commensurate with its importance through application of the following parameters: testing, surveillances, replacement interval, and allowed outage time.

The C5 and melter offgas systems and their support systems are in the RAMI program.

Once the overall quantification is complete, the RA group will balance ITS SSC availability targets to (1) maintain the DBE severity level target frequencies for representative events, and (2) maintain the WTP site risk goal both cumulatively and for each facility. This step will not be completed until all systems are analyzed. It is currently expected that this will occur when the FSAR is developed, at which time testing and surveillance requirements will be determined.

Preliminary RAMI surveillance testing intervals are provided below. This information will be finalized once equipment procurement is complete and vendor recommendations have been incorporated.

Component	Surveillance	Interval
Melter offgas primary/secondary HEPA filters train A & B	Aerosol leak test	Annual
Melter offgas exhauster and dampers	Operation of standby exhauster	Monthly
Melter offgas exhauster A, B, & C uninterruptible power supplies	Functional test	Semi-annual
Melter offgas exhauster A, B, & C uninterruptible power supplies	Battery test (30 minutes under fan load) or as specified by vendor	Annual
Melter offgas low melter vacuum sensing loops A, B, & C	Channel check	12 Hours
Melter offgas low melter vacuum sensing loops A, B, & C	Channel functional test	Quarterly

Table 3-2 LAW Process Chemicals

Material	Physical Form	Location	Quantity
Glass formers [aluminum silicate (Al_2SiO_4), boric acid (H_3BO_3), calcium silicate ($CaSiO_3$), ferric oxide (Fe_2O_3), lithium carbonate (Li_2CO_3), magnesium silicate (Mg_2SiO_4, silica (SiO_2), titanium dioxide (TiO_2), zinc oxide (ZnO), and zirconium silicate ($ZrSiO_4$)] and sucrose ($C_{12}H_{22}O_{11}$) Note: The actual glass formers that exist in the feed hopper at any given time, and their ratio to the overall mix, is dependent upon the composition of the feed stream. All possible glass former chemicals are shown since any of them may be used in LAW.	Solid	Glass Formers Reagent System (GFR)-glass former feed hopper	Maximum volume of 450 cu ft
5 M Sodium Hydroxide (NaOH)	Liquid	Sodium Hydroxide Reagent System (SHR) - cold chemical supply system , sodium hydroxide storage tank,	Maximum volume is ~~3750~~ gallons 5100 (total tank volume) MXR
Dry granular urea delivered to holding tank where it is dissolved with water and fed ~~to a urea~~ to ~~ammonia conversion unit producing ammonia in~~ the selective catalytic reduction unit and used as it is generated by URR direct injection TO	Received as dry-pellet - dissolved to make a saturated aqueous solution	Urea Reagent System (URR)	Maximum urea storage is 25 tons ~~with 43.95 kg/hr of ammonia generated per hour and used as generated~~ URR
Carbon Dioxide	Liquid/ solid/gas	LAW Container Finishing Handling System (LFH) - vessel V23002	54 tons of carbon dioxide 16 406
~~Argon~~ Welding Shield Gas, a mixture of 98% Argon + 2% Hydrogen	Gas	LAW Container Finishing Handling System (LFH)	4 bottles, ~~150~~ ft^3 at standard temperature and pressure MXG

Table 3-5 Major LAW Energy Sources by Process System

More information is available from the electrical and mechanical plant item lists

Energy	Energy Type	Source/Quantity
Thermal	Melter heat (molten glass) High heat arc welding Steam	Temperatures of >1000C, (1500 kW) High temperatures in pour cave during container filling operations Arc welding energies for sealing containers Process steam heats decontamination solution steam pressures of ~110 psig
Potential Energy	Dropped equipment - kinetic energy	(2.4E5 ft-lb from dropped container), hatch covers, decontamination lids, crane operations
Potential Energy	High pressure water	Decontamination activities (~90 psig)
LAW Melter Changeout and Solid Waste Packaging and Disposal		
Kinetic	Rotational	Rotational energies associated electric motors, conveyors, turntables
Thermal	Friction	Friction heat from conveyors, turntables, electric motors handling equipment
Electrical	Electric shock Electrical heat	Electrical energy for transport conveyors, motors, handling equip., instrumentation (120 VAC and 24 VDC)
Potential	Movement of heavy loads crane operations	Lifting operations - melter import/export/ transport hatch covers, (up to 2.4 E 5 ft-lb)
Liquid Waste Disposal		
Potential energy	Pressurized process water	Wash water provided at ambient temperature and at an average pressure of 70 psig
Potential energy	Compressed (process) air for tank agitation/sampling, air ejectors	Provided at a mean temperature of ~60 °F and a mean pressure of ~~~150~~ 125 psig reduced to ~100 psig
Potential energy	Pressure compressed (instrument) air	Provided at a mean temperature of ~60 °F and a mean pressure of ~~~100~~ 125 psig reduced to ~ 100 psig
Electrical	Electrical-energy -shock, and heat	120 VAC and 24 VDC motors, exhausters, instrumentation
Thermal/ Potential	Pressurized steam Friction	Provided at a mean temperature of ~325 °F and a mean pressure of ~110 psig Heat from friction of motors pumps, bearing surfaces
LAW Reagents		
Chemical Energies include: - Heat of Neutralization - Heat of Solution - Heats of Reactions		

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Table 3-5 Major LAW Energy Sources by Process System

More information is available from the electrical and mechanical plant item lists

Energy	Energy Type	Source/Quantity
LAW HVAC		
Kinetic	Rotational	Rotational energies associated with motors, exhausters, blowers, coolers
Thermal	Friction	Friction heat from electric motors, rotors, bearings, exhausters, and coolers
Electrical	Electric shock Electrical heat	Electrical energy, pumps, motors exhausters, blowers, instrumentation (110 VAC and 24 VDC)
LAW Control, Electrical, and Instrumentation		
Electrical	Heat, shock	13.8, 4.16KVA, 480V, 208/110 V, 240 VAC, 277 VAC, 125 VDC, 120 VAC (UPS), lighting, heat tracing, cathodic protection, instrumentation (120 VAC and 24 VDC)
Kinetic	Rotational equipment	Rotating shafts, exhausters, rotors
LAW Utilities		
Potential Energy	Compressed air, instrument air	Provided at a mean temperature of ~60 °F and a mean pressure of ~~~150~~ 125 psig reduced to ~100 psig
Thermal	Hot water	Nominal utility temperatures
Thermal	High and low pressure steam	Nominal pressures (~110 psig at 325 F)
Kinetic	Rotating machinery	Exhausters, coolers, HVAC motors pumps
Electrical	Electric shock, heat	Power for pumps, exhausters, electrical equipment, instrumentation (120 VAC and 24 VDC)
Potential Energy	Miscellaneous gases	Nominal tank pressure

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HVAC - heating, ventilating, and air-conditioning
UPS - uninterruptible power supply

Table 3-10 LAW Melter Offgas Treatment System Components and Their Safety Functions Related to a Melter Offgas Release Event

SIPD Reference	Initiator	Event	SSC/Administrative Control	SCR Number	Safety Function
CSD-LLOP/N0002	Offgas system/components upstream of exhausters subject to full offgas exhauster suction due to control system errors.	Collapse/breach of offgas system or component with resultant loss of offgas vacuum	Offgas system/components upstream of the offgas system exhausters	SCR-LPIPN/N0052	Offgas system/components upstream of the exhausters are designed to remain intact and functional to direct melter offgas to the exhaust stack under the maximum vacuum that the exhausters can pull.
CSD-LLOP/N0003	Heat load on SBS cooling exceeds capacity due to degradation or loss of cooling water systems or excessive heat input.	Increasing temperature of SBS reduces unit's efficiency and may eventually result in increased moisture/particulate loading on downstream components. Potential to plug offgas HEPA filters	~~SBS temperature indication and alarm~~	~~SCR-LADM/N0025~~	~~Melter feed shall be terminated on detection of high SBS temperature.~~
			~~SBS temperature indication and alarm~~	~~SCR-LINST/N0059~~	Offgas SBS shall have temperature indication ~~and alarm~~
			HEPA inlet air heater	SCR-LPIPN/N0014	Offgas HEPA filters are provided with heaters upstream sufficient to reduce relative humidity to acceptable levels under all anticipated operating conditions.
CSD-LLOP/N0004	Loss of WESP function due to failure of electrode power supply	Decreased efficiency of WESP resulting in increased loading rate of materials on HEPA filters; eventual plugging of HEPA filters	Electrode power monitor	SCR-LINST/N0046	Proper functioning of the WESP electrode power supply shall be monitored and alarm provided if malfunctions are detected.
CSD-LLOP/N0005	WESP drain line becomes plugged	WESP flooding results in eventual offgas flow restriction and melter pressurization	WESP level detection and alarm, with interlock to shut WESP demineralized water flushing valve.	SCR-LINST/N0003	Level detection, alarm and interlock to shut demineralized water flush valve shall be provided for the WESP.
			Melter feed shutoff interlock	SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.
			Melter pressure control air interlock	SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.
			Melter film cooler steam/air flow interlock	SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.
CSD-LLOP/N0006	Loss of normal power to the LAW facility due to random system failures or natural forces (not seismic).	Loss of offgas system fans results in melter pressurization.	Uninterruptible power to offgas system exhausters	SCR-LELEC/N0006	The melter offgas fans shall be supplied by uninterruptible power in the event of a loss of normal power.
CSD-LLOP/N0007	SBS level is pumped down too far	Offgas flow perturbations result in inadequate offgas flow through other SBS vessels.	Controls to shut off SBS purge pump on detection of low SBS level	SCR-LINST/N0049	SBS level instrumentation shall be provided to shut off SBS condensate purge pumps on detection of low SBS level.
CSD-LLOP/N0009	Unplanned operation of WESP wash ring	Flooding of WESP results in eventual offgas flow restriction and melter pressurization	WESP level detection, alarm and interlock	SCR-LINST/N0003	Level detection, alarm and interlock to shut demineralized water flush valve shall be provided for the WESP.
			Melter feed shutoff interlock	SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.
			Melter pressure control air interlock	SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.
			Melter film cooler steam/air flow interlock	SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.
CSD-LLOP/N0011	Selective catalytic reduction unit heater manual isolation valves shut when melters are operating	Loss of flow through melter offgas system	selective catalytic reduction unit heater manual isolation valves	SCR-LPIPN/N0050	Offgas system manual isolation valves located out of the process cells will be locked open.

Table 3-10 LAW Melter Offgas Treatment System Components and Their Safety Functions Related to a Melter Offgas Release Event

SIPD Reference	Initiator	Event	SSC/Administrative Control	SCR Number	Safety Function
CSD-LLOP/N0012	Operating offgas HEPA filter train isolation damper closed due to operator error	Blocked offgas flow	Melter feed shutoff interlock	SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.
			Melter pressure control air interlock	SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.
			Melter film cooler steam/air flow interlock	SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.
			Offgas HEPA filter isolation dampers	SCR-LVENT/N0003	Offgas filters shall include manual isolation valves and shall be configured such that it is not possible to isolate both filter trains at once.
CSD-LLOP/N0013	Offgas HEPA filter heater power fails when offgas exhausters are running	Potential for HEPA plugging	Offgas HEPA filter heater	SCR-LELEC/N0003	Offgas heater design shall preclude HEPA filter plugging on loss of heater power.
CSD-LLOP/N0014	Offgas HEPA filter train isolation damper opens during filter changeout	Potential loss of melter vacuum	Offgas HEPA filter train isolation dampers (administrative control)	SCR-LADM/N0028	Offgas HEPA filter isolation valves shall be locked shut before initiating filter changeout.
			Melter feed shutoff interlock	SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.
			Melter pressure control air interlock	SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.
			Melter film cooler steam/air flow interlock	SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.
			Manual isolation valves at filter plenum inlets	SCR-LPIPN/N0033	A means of local manual isolation of filter assemblies shall be provided.
CSD-LLOP/N0015	Control system errors or loss of instrument air pressure cause offgas exhauster dampers to deviate from normal position	Loss of offgas flow caused by shut dampers on running exhausters, or open dampers on standby exhausters causes melter pressurization	Melter feed shutoff interlock	SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.
			Melter pressure control air interlock	SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.
			Melter film cooler steam/air flow interlock	SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.
			Offgas exhauster isolation dampers	SCR-LINST/N0093	Offgas exhauster isolation dampers are designed to fail ~~as-is~~ open on loss of control signal.
			Offgas exhauster backflow prevention device	SCR-LPIPN/N0058	Offgas exhausters shall be provided with backflow prevention devices.
			Offgas exhauster isolation dampers	SCR-LVENT/N0010	Offgas exhauster isolation dampers are designed to fail ~~as-is~~ open on loss of actuating power.
CSD-LLOP/N0016	Chilled water piping rupture inside SBS or SBS condensate vessel, or wash ring inadvertently charged; SBS drains plugged	Flooding of SBS or SBS condensate vessel leading to restricted offgas system	Demineralized water supply to SBS and SBS condensate tank wash rings (administrative control)	SCR-LADM/N0035	Demineralized water supply to offgas system component wash rings shall be locked shut whenever any melter is operating.
			SBS and SBS condensate vessel level interlocks to chilled water and SBS recirculation pumps	SCR-LINST/N0052	Level indication and high level alarm interlocked to shut off chilled water and SBS recirculation pumps shall be provided for the SBS and SBS condensate vessels.
			Melter feed shutoff interlock	SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.
			Melter pressure control air interlock	SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.
			Melter film cooler steam/air flow interlock	SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.
CSD-LLOP/N0017	Melter vent exhausts into process cell with roof plugs removed for component changeout	Potential release of toxic/radioactive melter offgas to occupied area	Process cell roof plugs (administrative control)	SCR-LADM/N0070	Access to process cells (including removal of roof plugs) where the melter relief device relieves will be prohibited unless the melter is idled with no cold cap present.

4.4.1.5 System Evaluation

The structure (including the basemat, floors, and load bearing walls) of the LAW facility has been evaluated using conservative assumptions to identify the maximum loads. Preliminary design calculations have confirmed that the structure is adequate to accommodate these loads.

The final design is proceeding in accordance with the requirements in section 2.4, for evaluation of NPH and operating loads. The design and detailing of reinforcing steel follow national standards. Implementation of these designs will be reflected on issued design documents.

The design process will be implemented and documented in accordance with the design procedures for the production of design calculations, drawings, and specifications. The administrative controls in TSRs will implement the configuration management program.

The structural design will meet the requirements in section 4.4.1.3 and perform its SDS safety function. The structure's ability to support ITS SSCs during normal, abnormal, and accident conditions will be demonstrated to ensure that it meets the credited safety function in accordance with the hazard and accident analysis. The operations risk assessment (24590-WTP-PSAR-ESH-01-001-01) has identified no additional structural credited safety functions for the LAW facility. The structure should therefore meet its required role protecting the public, the workers, and the environment.

4.4.1.6 Controls Related to TSRs

The LAW facility structure is a passive design feature, and does not require frequent maintenance or surveillance. No testing is required relative to this design feature to support its credited safety function. The WTP configuration management program and preventive maintenance program, addressed as administrative controls in the TSRs, will ensure that the management of this design feature protects its SDS safety function. No safety limits will be required relative to the structure because the hazard analysis does not identify any process variables associated with the structure that can cause a release of unacceptable levels of radioactive material to workers or the public.

4.4.2 Melter Offgas System

4.4.2.1 Credited Safety Function

The melter offgas system contains SDS components to support the following credited safety functions.

- The melter offgas system piping between the WESP and the HEPA filters must be sloped to drain back into the WESP to prevent restriction of the melter offgas flowpath (Melter Offgas Release, section 3.4.1.1). This design feature protects against wetting and eventual blinding of the HEPA filters. Blinding of the HEPA filters can restrict the melter offgas system flowpath and result in a melter offgas release event.
- The melter offgas exhauster backflow prevention dampers prevent recirculation loops if an exhauster is not operating but has not been isolated (Melter Offgas Release, section 3.4.1.1). This design feature ensures that the melter offgas exhausters will direct melter offgas flow to the exhaust stack.
- The melter offgas system exhauster isolation dampers are designed to fail "~~as-is~~" open (Melter Offgas Release, section 3.4.1.1). If the isolation dampers in the melter offgas system failed closed when they
- The first bank of offgas HEPA filters differential pressure interlocks stop feed to the melter(s) when high differential pressure are detected. The safety function reduces the likelihood of HEPA filter blockage to a degree that would permit the flow of melter offgas to the exhaust stack.

should be open, this could block the melter offgas system and result in a melter offgas release event. This safety function reduces the likelihood of damper failure that prevents the flow of melter offgases to the exhaust stack.

- The melter offgas HEPA filter train manual isolation valves are designed to ensure that both banks of HEPA filters cannot be isolated simultaneously (Melter Offgas Release, section 3.4.1.1). If both trains were isolated, the melter offgas system would be blocked. This design feature reduces the likelihood of the position of the isolation valve preventing the flow of melter offgases to the exhaust stack.
- Other nonmanual isolation valves in the melter offgas system must not fail in such a way as to affect the safety function of maintaining an unobstructed flowpath (Melter Offgas Release, section 3.4.1.1). If nonmanual isolation valves fail in such a way as to restrict the flowpath, the melter offgas system could be obstructed, resulting in a melter offgas release.
- The melter offgas HEPA filter inlet heaters (including control systems and power source) keep the flow stream temperatures high enough to prevent condensation and blinding of the HEPA filters, which could restrict the melter offgas system flowpath and result in a melter offgas release event. This safety function reduces the likelihood of HEPA filter blockage to a degree that would prevent the flow of melter offgases to the exhaust stack.
- SBS, WESP, and caustic scrubber liquid level interlocks isolate sources of liquid addition into these vessels when high liquid levels are detected. This prevents flooding of the vessels, which would block the flow of offgas. An additional interlock prevents inadvertent emptying of the SBS, which would create a preferred flow path that could prevent venting other operating melters. (These functions are addressed in this chapter under the appropriate melter offgas system component. They are therefore not discussed further in the melter offgas section.)

4.4.2.2 System Description

The melter offgas system is described in section 2.5.

4.4.2.3 Functional Requirements

To prevent restriction of the melter offgas flowpath and subsequent pressure rise in the melter, the following functional requirements must be met.

- The melter offgas system piping between the WESP and the HEPA filters must be sloped to drain back into the WESP.
- The melter offgas exhauster backflow prevention dampers must be installed so that recirculation loops do not negate the function of the exhausters, to protect the melter offgas system's ability to provide an elevated release of melter offgas.
- The melter offgas system design shall include a means of local manual isolation of filter assemblies.
- The melter offgas exhauster isolation dampers must fail in "~~as is~~" position if control signal or motive power is lost.
  open
- The melter offgas HEPA filter inlet heaters and their control systems must maintain differential airflow temperatures across the heaters sufficient to prevent moisture condensation before entering the HEPA filters when any melter is operating.

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Of 24590-WTP-PSAR-ESH-01-002-03, Rev. 0

To prevent blockage of the melter offgas system and to prevent overpressurization of the melter plenum which would result in a gas release to the operating environment, a HEPA filter differential pressure safety instrumented system performs a number of actions. The differential pressure instrumentation detects the increase in differential pressure across the first bank of Offgas HEPA filters. The safety instrumented system measures the differential pressure across the HEPA filters, sending the signal to the PPJ in the LAW control room at a pre-determined setpoint. The PPJ executes on action to a safety valve to turn off air to the melter feed ADS pumps, which stops the melter feed.

- The melter offgas HEPA filter manual isolation valve design must ensure that the filter isolation dampers cannot isolate both filter banks at the same time.
- The other nonmanual isolation valves must fail in "~~as-is~~" position if control signal or motive power is lost. open
- The offgas HEPA filter differential pressure interlocks must stop feed to the melter upon an activating signal from the differential pressure instrumentation across the first bank of HEPA filters.

Based on natural phenomena and confinement considerations, the offgas system components will be designed to meet SC-III requirements. The remaining natural forces design requirements do not apply to these components, since they are protected from these other events (such as high winds) by the facility structure. SDS SSCs must meet QL-2 requirements in accordance with 24590-WTP-PSAR-ESH-01-001-01, Chapter 4.

4.4.2.4 Standards

ISA S84.01, *Application of Safety Instrumented Systems for the Process Industries*, applies to the melter SDS offgas system controls and displays. ISA S84.01 is a national standard for the design and configuration of instrumented systems, selection, application, installation, commissioning, pre-startup acceptance testing, operation, maintenance, documentation, and ongoing testing.

A tailored version of IEEE 1023, *Guide for the Application of Human Factors Engineering to Systems, Equipment, and Facilities of Nuclear Power Generating Stations,* is used for all safety functions that require indication or alarm functions at a safety qualified operator interface.

IEEE 338 will be used in the design of the safety systems so they can be tested to prove the required safety functions.

4.4.2.5 System Evaluation

To maintain an open flow path through the melter offgas system, many aspects of the instrumentation are classified as SDS, including the automatically controlled exhauster dampers and the HEPA filter inlet heater controls.

The actuated dampers are designed to fail safe on loss of process control system (PCJ) control signal, loss of air to the damper actuators, or loss of electrical power to the damper actuators. The actuators for the dampers will be designed and installed to the safe state "~~as-is~~." The damper itself will also be designed to fail to ~~as-is~~ position. open open

The instrumented HEPA filter control that protects the filters from blinding is an inline gas temperature detection system that starts a backup HEPA filter heater. Resistive thermal device (RTD) thermowells in the gas stream send temperature signals through an RTD transmitter to the programmable protection system (PPJ). When the temperature differential drops below a predetermined setpoint, the PPJ sends a signal to start the backup HEPA heater, if the PCJ has failed to do so at a slightly higher setpoint.

The melter offgas system uses three 50 % capacity exhausters, with two normally running and the third in standby to increase the reliability of the SDC safety function to maintain minimum flow. The system is designed so that during normal melter operations a single exhauster unit can provide adequate melter venting (although this would be considered an abnormal operating condition).

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4.4.2.6 Controls Related to TSRs

The design of the melter offgas exhauster backflow prevention dampers, exhauster isolation dampers, melter offgas system piping slope, and the melter offgas HEPA filter train manual isolation valves are design features for the LAW vitrification facility. The project's configuration management and maintenance programs, addressed as administrative controls in the TSRs, ensure that the management of these design features protects their safety function.

To prevent restriction of the melter offgas flowpath and subsequent pressure rise in the melter, the following controls must be applied at the TSR level.

- Periodic instrument loop calibrations and instrument loop checks of temperature and pressure instrumentation in the melter offgas system used to control the exhausters and the melter offgas HEPA filter inlet heater control system must be performed.
- Periodic functional testing of the melter offgas HEPA filter inlet heater control system must be performed.
- Offgas HEPA filter differential pressure detection instrumentation loop must be periodically checked.
- Offgas HEPA filter differential pressure interlock in the melter must be periodically functionally checked.

4.4.3 Submerged Bed Scrubber Level Instrumentation

4.4.3.1 Credited Safety Function

The SBS level and alarm instrumentation and related interlocks are considered SDS to support the following credited safety functions.

- The SBS level indication and alarm instrumentation must monitor SBS level and must alarm when high or low level is detected (Melter Offgas Release, section 3.4.1.1) whenever its associated melter is operating. High SBS levels can restrict flow of the offgas melter line, resulting in a melter offgas release event. This safety function reduces the potential for SBS levels to result in a melter offgas release, by alerting operators to a developing adverse condition and providing time to correct it before the safety function is lost. Low SBS liquid level can also cause offgas flow perturbations beyond the design basis. This could result in inadequate offgas flows in the other melter primary offgas systems.
- The SBS level indication and alarm instrumentation must monitor SBS level and, if high level is detected, provide an activation signal to the SBS condensate recirculation pump and chilled water circulation pump interlocks (section 3.4.1.1). This safety function, in conjunction with the following safety function, reduces the potential for the condensate recirculation or chilled water circulation pumps to flood the SBS to a level that would result in a melter offgas release. If low SBS level is detected, the indication and alarm instrumentation must activate the SBS purge pump shutdown interlock.
- The SBS pump interlocks must shut down the operating condensate recirculation pump and chilled water circulation pump whenever a high liquid level is detected (Melter Offgas Release, section 3.4.1.1). This safety function, in conjunction with the previous safety function, will shut down the pumps before SBS levels rise too high. This reduces the potential for the condensate recirculation pumps or the chilled water circulation pumps to flood the SBS to the point of blocking the melter offgas pathway, which could result in a melter offgas release. The SBS purge pump interlock must shut down the purge pump if low SBS level is detected. This safety function, in conjunction with the previous safety function, will shut down the SBS purge pump before SBS level drops too low. This

reduces the potential for the SBS liquid level to be pumped down below the minimum necessary for the SBS to function.

~~In addition, the SBS temperature indication and alarm instrumentation is considered SDS to support the following safety function.~~

- ~~The SBS temperature indication and alarm instrumentation must monitor SBS temperature and alarm on detected high temperature (section 3.4.1.1) whenever its associated melter is operating. High SBS temperatures can reduce unit efficiency, with increased moisture or particulate loading on the downstream components, especially the HEPA filter. This increased loading can restrict flow in the offgas melter line, resulting in a melter offgas release event. This safety function reduces the potential for SBS temperatures to result in a melter offgas release, by alerting operators to a developing adverse condition and providing time to correct it before the safety function is lost.~~

4.4.3.2 System Description

The SBS is described in section 2.5.

4.4.3.3 Functional Requirements

To prevent SBS flooding, the following functional requirements must be met:

- The SBS level indication and high/low level alarms must be able to detect high/low SBS levels and alarming whenever its associated melter is operating.
- The SBS pump shutdown interlocks must be able to shut down the operating condensate recirculation pump and chilled water circulation pump on high SBS levels, or the SBS condensate purge pump on low level, whenever its associated melter is operating.
- ~~The SBS temperature indication and high temperature alarm must be able to detect high SBS temperatures and alarming whenever its associated melter is operating.~~

Based on natural phenomena and confinement considerations, the offgas system will be SC-III. The remaining natural forces design requirements do not apply to these components, since they are protected from these other events by the facility structure. SDS SSCs must meet QL-2 requirements in accordance with 24590-WTP-PSAR-ESH-01-001-01, Chapter 4.

4.4.3.4 Standards

ISA S84.01 applies to design of the SBS pump shutdown interlocks. IEEE 338 will be used in designing the safety systems so they can be tested to prove the required safety functions. IEEE 1023 (tailored) is used for all safety functions that require indication or alarm functions at a safety qualified operator interface.

ANSI/ANS 58.8-94, *Time Response Design Criteria for Safety-Related Operator Actions*, will guide design of alarm instrumentation. This standard provides design criteria for safety-related operator actions in Light Water Reactor nuclear power plants, such as

- Guidance regarding the time intervals necessary for adequate operator response
- Guidance for determining when to use operator response instead of automatic response
- Functional guidelines to assist in determining which functions should be instrumented to inform and assist operators in recognizing and executing their safety-related actions
- Design criteria for properly locating the instrumentation, which depends on the time interval necessary for operator response.

4.4.3.5 System Evaluation

To maintain an open flow path through the melter offgas system, certain aspects of the instrumentation for the SBS System are ITS, classified as SDS. The safety-instrumented systems involved are the level measurement and control on the SBS ~~and SBS temperature~~. LOP

Level instrumentation will be monitored and will alarm in the LAW control room on the PPJ operator interface. Two separate level instrument systems detect low and high level in the SBS to ensure proper execution of fail-safe requirements for each safety system function.

A high-level alarm will also simultaneously execute, from the PPJ, two actions if the PCJ has failed to maintain the levels in the normal operating range. The first action is to shut a safety valve that prevents further addition of chilled water to the SBS cooling water loop. The second action is to stop the SBS condensate vessel recirculation pump from adding more liquid to the SBS vessel.

A low-level alarm will also execute, from the PPJ, an action to stop the SBS purge pump if the PCJ has failed to do so.

~~The SBS temperature will be monitored in the LAW control room on the PPJ operator interface. When the current rises above a predetermined setpoint, the PPJ operator interface will provide a visual and audible alarm to the control room operator.~~ LOP

4.4.3.6 Controls Related to TSRs

To prevent SBS flooding or pump out, the following controls must be applied at the TSR level:

- The SBS level instrumentation must be periodically calibrated.
- The SBS high/low level instrumentation and alarm must be periodically functionally checked.
- The SBS condensate recirculation pump, chilled water circulation pump, and SBS condensate purge pump shutdown interlocks must be periodically functionally checked.

~~To prevent high SBS temperature and the resulting potential for melter offgas system flow restriction, the following controls must be applied at the TSR level:~~

- ~~The SBS temperature instrumentation must be periodically calibrated.~~
- ~~The SBS high temperature instrumentation and alarm must be periodically functionally checked.~~

LOP

Table 4-2 Safety Design Significant Structures, Systems, and Components Summary for LAW

Safety Design Significant Structure, System, or Component	Credited Safety Function	Representative and Bounding Accident (Chapter 3)	Controls (Chapter 5)
SBS condensate recirculation pump and chilled water circulation pump interlocks Section 4.4.3	Shut down SBS condensate recirculation pump and chilled water circulation pump whenever a high liquid level is detected in the SBS.	Melter Offgas Release (section 3.4.1.1)	SBS condensate recirculation pump and chilled water circulation pump shutdown interlocks shall be operational whenever the associated melter is operating.
SBS purge pump interlocks Section 4.4.3	Shut down SBS purge pump whenever low level is detected in the SBS.	Melter Offgas Release (section 3.4.1.1)	SBS purge pump interlocks shall be operational whenever the associated melter is operating.
~~SBS temperature Instrumentation and alarm~~ ~~Section 4.4.3~~	~~Notify plant operations of increasing SBS temperature.~~	~~Melter Offgas Release (section 3.4.1.1)~~	~~SBS temperature instrumentation and alarm shall be functional whenever the associated melter is operating.~~
WESP level indication and alarm Section 4.4.4	Monitor WESP level, alarm on detected high level, provide activation signal to WESP demineralized water isolation interlock.	Melter Offgas Release (section 3.4.1.1)	WESP level and alarm system shall be operational whenever the associated melter is operating.
WESP demineralized water flush valve Interlock Section 4.4.4	Isolate water flow to WESP if the WESP drain is plugged.	Melter Offgas Release (section 3.4.1.1)	WESP demineralized water Flush Valve Interlock shall be operational whenever the associated melter is operating.
WESP electrode power monitor and alarm Section 4.4.4	Alert plant operations to loss of WESP particulate removal function.	Melter Offgas Release (section 3.4.1.1)	WESP electrode power monitor and alarm shall be operational whenever the associated melter is operating.
Selective catalytic reducer temperature interlock to urea injection Section 4.4.5	Terminate urea injection into the LAW offgas system when low selective catalytic reducer inlet gas temperatures are detected.	Melter Offgas Release (section 3.4.1.1)	Selective catalytic reducer temperature interlock to urea injection shall be operational whenever any melter is operating.
Melter plenum pressure interlocks Section 4.4.6	Stop injection of air and steam to film coolers and offgas control air inlet if melter plenum vacuum is lost. Stop feed to the melter if melter plenum vacuum is lost. Actuate standby offgas line isolation valve to provide additional offgas system flow capability if melter plenum vacuum is lost.	Melter Offgas Release (section 3.4.1.1)	Melter plenum pressure interlock shall be functional whenever the associated melter is operating.
HEPA filter differential pressure instrumentation and interlocks Section 4.4.2	Stop feed to the melter(s) when high differential pressure is detected across the first bank of ΔP HEPA filters	Melter Offgas Release (Section 3.4.1.1)	HEPA filter differential pressure instrumentation + interlock shall be operating whenever any melter is operating.

INSERT 2
TO SECTION 5.5.1
Of 24590-WTP-PSAR-ESH-01-002-03, Rev. 0

In addition, interlocks that stop the feed to the melter upon receiving an actuating signal due to high differential pressure as read by instrumentation across the first bank of HEPA filters must be operable. Operability of this interlock will prevent facility worker exposure to melter offgas in excess of the chemical exposure standards due to a blocked melter offgas flowpath."

INSERT 3
TO SECTION 5.5.1
Of 24590-WTP-PSAR-ESH-01-002-03, Rev. 0

- The melter offgas system differential pressure instrumentation across the first bank of HEPA filters must be operable, and must send a signal to the HEPA filter high differential pressure interlock to shut down melter feed on detection of a predetermined high differential pressure value.

- The melter offgas system HEPA filter high differential pressure interlock must be operable, and must shut down melter feed upon receiving a signal from the melter offgas system differential pressure instrumentation.

5.5 Technical Safety Requirement Derivation

5.5.1 LCO - Melter Offgas System Operability

Purpose. This control, to ensure melter offgas system operability, is derived from the melter offgas release accident (section 3.4.1.1) and design basis fire (section 3.4.1.2). Without controls, the release of melter offgas may exceed the chemical exposure standards for both the facility worker and the co-located worker. The melter offgas system draws gas from the melters and directs releases to the exhaust stack. Drawing gas from the melters through the melter offgas system prevents facility worker exposure to the chemical release. Elevated releases from the exhaust stack have been demonstrated (Chapter 3) to meet the chemical exposure standards for the co-located worker. Two melter offgas system exhauster units must normally be operating, to protect against a melter offgas release as a result of a single exhauster failure, based on the design basis events (DBEs) in sections 3.4.1.1 and 3.4.1.2. ← INSERT 2

The melter offgas system controls consist of operability requirements with the following elements:

- Three melters (and their corresponding control systems) operable, with two melter offgas system exhausters operating during normal operations to direct melter offgas to the exhaust stack. Melter offgas exhausters shall be supplied with uninterruptible power.
- The melter offgas HEPA filter inlet heaters and their corresponding control systems must be operable and must maintain differential airflow temperatures across the heater before entering the HEPA filters above a predetermined temperature value.
- INSERT 3

Surveillances related to this LCO include the following elements:

- Periodic verification that two melter offgas system exhausters are operating
- Periodic functional tests of the melter offgas exhauster control system (including the variable frequency drives)
- Periodic instrument loop calibrations and instrumentation loop checks of the HEPA filter inlet heater instrumentation
- Periodic functional tests of the HEPA filter inlet heater control system
- Periodic verifications of operability of the UPS for the exhausters
- Periodic verifications that the differential airflow temperature is greater than or equal to a predetermined value.

These controls apply to the LAW facility in operation mode, whenever any melter is in a state of operation. When no melters are in a state of operation, there are no cold caps, and no melter offgas release of NO_x above exposure standards is possible.

Derivation Criteria. This control was selected to prevent exposures to the facility worker and mitigate exposures to the co-located worker (within the SRD chemical exposure standards) related to melter offgas releases.

- Offgas HEPA filter differential pressure detection instrumentation loop must be periodically checked.
- Offgas HEPA filter differential pressure interlock in the melter must be periodically functionally checked.

5.5.2 LCO - Submerged Bed Scrubber Operability

Purpose. This control, to ensure submerged bed scrubber (SBS) operability, is derived from the melter offgas release accident (section 3.4.1.1). Without controls, the release of melter offgas may exceed the chemical exposure standards for both the facility worker and the co-located worker. Operation of the SBS level indication and alarm, as well as the associated interlocks on the condensate purge pump, condensate recirculation pump, and chilled water circulation pump, maintains an open flowpath from the melter to the exhaust stack. ~~Operation of the SBS temperature indication and alarm prevents increased moisture or particulate in the melter offgas system and subsequent flow restriction~~. Drawing gas from the melter through the melter offgas system prevents facility worker exposure to the chemical release. Elevated releases from the exhaust stack have been demonstrated (Chapter 3) to meet the chemical exposure standards for the co-located worker. LOP

The SBS controls consist of operability requirements with the following elements:

- The SBS level instrumentation shall be operable, and shall actuate a remote alarm and the appropriate pump interlock(s) when SBS levels are above or below predetermined values.
- The SBS condensate purge pump interlock shall be operable, and shall shut down the condensate purge pump upon receiving a low-level signal of a predetermined value from the SBS level instrumentation.
- The SBS condensate recirculation pump interlock shall be operable, and shall shut down the condensate recirculation pump upon receiving a high-level signal of a predetermined value from the SBS level instrumentation.
- The SBS chilled water circulation pump interlock shall be operable, and shall shut down the chilled water circulation pump upon receiving a high-level signal of a predetermined value from the SBS level instrumentation.
- ~~The SBS temperature instrumentation~~ shall be operable, and shall actuate a remote alarm ~~when a SBS temperature is at or above a predetermined value~~ LOP

Flooding of the SBS could block the release path of the melter offgas system. The level and alarm instrumentation will alert LAW personnel to both high and low SBS liquid levels, and will allow corrective action to be taken before melter offgas system flow restriction occurs. The level instrumentation will also provide an actuation signal to the SBS condensate purge pump interlock, the condensate recirculation pump, or the chilled water circulation pump, as required by their setpoint.

Low SBS liquid levels can cause a preferential flow in the melter offgas system, and result in perturbations where inadequate offgas flows occur in other melter primary offgas systems. The SBS condensate purge pump interlock on low SBS level prevents low liquid levels from occurring in the SBS to protect against such perturbations.

~~High temperatures in the SBS could result in increased moisture or particulate on downstream components, restricting melter offgas system flow. The temperature and alarm instrumentation will alert LAW personnel to high SBS temperatures, and will allow corrective action to be taken before the melter offgas system flow is restricted.~~ LOP

Surveillances related to this LCO include the following elements:

- Periodic functional tests of the SBS level instrumentation and alarm
- ~~Periodic functional tests of the SBS temperature instrumentation and alarm~~ COP
- Periodic loop calibrations of the SBS level instrumentation and alarms
- ~~Periodic loop calibrations of the SBS temperature instrumentation and alarms~~
- Functional tests of the associated pump shutdown interlocks to protect the melter offgas safety function.

These controls apply to each LAW facility SBS in the operation mode, whenever the associated melter is in a state of operation. When the associated melter is not in a state of operation, there is no cold cap on the associated melter, and no melter offgas release of NO_x above exposure standards is possible.

Derivation Criteria. This control was selected to prevent exposures to the facility worker and mitigate exposures to the co-located worker (within the SRD chemical exposure standards) related to melter offgas releases.

5.5.3 LCO - Wet Electrostatic Precipitator Operability

Purpose. This control, to ensure wet electrostatic precipitator (WESP) operability, is derived from the melter offgas release accident (section 3.4.1.1). Without controls, the release of melter offgas may exceed the chemical exposure standards for both the facility worker and the co-located worker. Operation of the WESP level indication and alarm instrumentation maintains an open flowpath from the melter to the exhaust stack. Drawing gas from the melter through the melter offgas system prevents facility worker exposure to the chemical release. Elevated releases from the exhaust stack have been demonstrated (Chapter 3) to meet the chemical exposure standards for the co-located worker. Operation of the WESP electrode power monitoring instrumentation alerts operators to any malfunctions that could lead to failure of the particulate removal capabilities of the WESP and cause early plugging of offgas HEPA filters. Operation of the demineralized water flush valve interlock prevents flooding of the WESP due to the inadvertent introduction of too much flush water to the WESP.

The WESP controls consist of operability requirements with the following elements.

- The WESP level instrumentation shall be operable, and shall actuate a remote alarm and the demineralized water flush valve interlock when WESP levels are at or above a predetermined value.
- The WESP electrode power monitoring instrumentation shall be operable, and shall actuate a remote alarm when electrode malfunctions are detected.
- The WESP demineralized water flush valve interlock shall be operable, and shall shut off flush water supplied to the WESP upon receiving a high level signal from the level instrumentation.

Flooding of the WESP could block the release path of the melter offgas system. The level and alarm instrumentation will alert LAW personnel to accumulation of liquid, and will allow time for corrective action before melter offgas system flow is restricted. The demineralized water flush valve interlock also provides automatic protection against flooding of the WESP from this source. The safety analysis does not require a specific particulate removal capability from the WESP to reduce dose consequences from offgas releases, but it does acknowledge that if this capability is degraded, the downstream HEPA filters can be blocked and thus restrict the melter offgas system flow. The electrode power monitoring

- Traceability of M&TE used to calibrate TSR-related instruments (National Institute of Standards and Technology-traceable standards)
- Use of calibration standards and M&TE of equal or greater accuracy than the instrument under test

Derivation Criteria. This control was deemed necessary to ensure that instrumentation used to demonstrate compliance with TSRs is accurate and reliable.

5.6 Design Features

Design features are those features not covered elsewhere in the TSRs that, if altered or modified, would have a significant effect on safety. Chapter 2 describes these design features. The system descriptions and functional requirements for SDC and SDS SSCs in Chapter 4 include general discussion of safety functions for these design features.

5.6.1 Exhaust Stack

Design features for the exhaust stack include the following:

- The exhaust stack must route melter offgas releases to an elevated level.

5.6.2 Law Facility Structure

Design features for the facility structure include the following:

- The facility structure must provide support for the exhaust stack and offgas containment systems during normal and accident conditions.

5.6.3 Melter Offgas System

Design features for the melter offgas system include the following:

- The melter offgas system piping and component pressure boundary must provide an intact pathway to direct melter offgas from the melter(s) to the exhaust stack.
- The melter offgas system design shall include a means of local manual isolation of filter assemblies.
- The melter offgas piping between the WESP and the HEPA filters shall be sloped to drain back into the WESP.
- All melter offgas system isolation valves must fail in "~~as is~~ open" position if control signal or motive power is lost.
- All melter offgas system exhauster isolation dampers and HEPA filter isolation dampers must fail in "~~as is~~ open" position if control signal or motive power is lost.
- The melter offgas exhauster backflow prevention dampers and the HEPA filter train manual isolation valves must be designed so that both banks of HEPA filters cannot be isolated simultaneously.

CSD-LLOP/N0013	Offgas HEPA filter heater power failure.	OFFGAS RELEASE	0.01	Potential for HEPA plugging caused by excessive moisture.	AT	AT	BT	Strategy under development.	SCR-LVENT/N0001	RRC: The melter enclosure ventilation system is designed to prevent leakage of melter offgas into the melter gallery during the maximum expected offgas release (assuming a normally functioning melter) into the enclosure, considering a blocked offgas flow path.	RRC
									SCR-LUNA/N0002	A means shall be provided to prevent offgas flow blockage as a result of excess moisture in the system.	ITS
CSD-LLOP/N0014	Offgas HEPA filter train isolation damper opens during filter change-out.	OFFGAS RELEASE	0.01	Potential loss of melter vacuum, damage to operating train due to debris, and industrial safety hazard. Loss of melter vacuum results in leakage of toxic/radioactive offgas to melter gallery.	AT	AT	BT	Manual isolation valves are provided at filter plenum inlets. Melter enclosure and C5 ventilation. Melter is placed in standby mode on detection of high plenum pressure.	SCR-LVENT/N0001	RRC: The melter enclosure ventilation system is designed to prevent leakage of melter offgas into the melter gallery during the maximum expected offgas release (assuming a normally functioning melter) into the enclosure, considering a blocked offgas flow path.	RRC
									SCR-LADM/N0028	Offgas HEPA filter isolation valves shall be locked shut prior to initiating filter changeout.	ITS
									SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.	ITS
									SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.	ITS
									SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.	ITS
									SCR-LPIPN/N0033	A means of local manual isolation of filter assemblies shall be provided.	ITS
CSD-LLOP/N0015	Control system errors or loss of instrument air pressure cause offgas fan dampers to deviate from normal position.	OFFGAS RELEASE	0.01	Loss of offgas flow caused by shut dampers on running fans, or open dampers on standby fans causes melter pressurization and release of toxic/radioactive offgas into melter gallery.	AT	AT open	BT	Melter enclosure ventilation Stop melter feed Shutoff melter pressure control air Shutoff melter film cooler steam/air supply Offgas fan isolation dampers are designed to fail ~~as~~ open on loss of control signal or actuating power.	SCR-LVENT/N0001	RRC: The melter enclosure ventilation system is designed to prevent leakage of melter offgas into the melter gallery during the maximum expected offgas release (assuming a normally functioning melter) into the enclosure, considering a blocked offgas flow path.	RRC
									SCR-LADM/N0046	Two melter exhausters are required to be running during normal melter operations.	ITS
									SCR-LINST/N0064	Melter feed will be terminated (interlock) at a predetermined melter pressure.	ITS
									SCR-LINST/N0065	Melter pressure control air will be isolated (interlock) at a predetermined melter pressure.	ITS
									SCR-LINST/N0066	Steam/air flow to the melter film cooler will be isolated (interlock) at a predetermined melter pressure.	ITS
									SCR-LINST/N0093	Offgas fan isolation dampers are designed to fail ~~as is~~ open on loss of control signal.	ITS
									SCR-LPIPN/N0058	Offgas fans shall be provided with backflow prevention devices.	ITS
									SCR-LVENT/N0010	Offgas fan isolation dampers are designed to fail ~~as is~~ open on loss of actuating power.	ITS

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Table 8-1 Summary of WTP Chemicals

Chemical Name	Formula	Concentration	Quantity[a,b]				EHS
			PT gal	BOF gal (ft[t])	LAW gal	HLW gal	
Aluminum Silicate	Al_2SiO_4	100 %		(3,500)			No[c]
Ammonia, anhydrous	NH_3	100 %				500	Undecided
Antifoam 1520	Emulsion	--	100		32,000		No[c]
Argon (Melters)	Ar	100 %			~~600~~ cubic ft		No
Boric Acid	H_3BO_3	100 %		(3,000)			No
Calcium Silicate	$CaSiO_3$	100 %		(3,600)			No[c]
Carbon Dioxide	CO_2	100 %			[28 tons]		No[c]
Cerium Nitrate	$Ce(NH_2)_4$	0.5M				550	No[c]
Ferric Oxide	Fe_2O_3	100 %		(800)			No
Hydrogen Peroxide	H_2O_2	30 %				5	No
Ion Exchange Resins	SuperLig	100 %	1,200				No[c]
Lithium Carbonate	Li_2CO_3	100 %		(2,100)			No
Magnesium Silicate	Mg_2SiO_3	100 %		(1,000)			No
Nitric Acid	HNO_3	12.2 M		17,000			No
Nitric Acid	HNO_3	5 M		1,800			No
Nitric Acid	HNO_3	2 M		2,900		1,500	No
Nitric Acid	HNO_3	1 M				350	No
Nitric Acid	HNO_3	0.5 M	9,900			1,500	No
Silica	SiO_2	100 %		(5,500)			No
Sodium Bromide	NaBr	40 %		300			Undecided
Sodium Carbonate	$NaCO_3$	100 %		(1,500)			No
Sodium Hydroxide	NaOH	19 M		16,000			No
Sodium Hydroxide	NaOH	5 M		3,900	3,100	5,400	No
Sodium Hydroxide	NaOH	2 M		2,700			No
Sodium Hydroxide	NaOH	0.25 M		1,200			No
Sodium Hydroxide	NaOH	0.1 M	2,900				No
Sodium Hypochlorite	NaOCl	12 %		800			Undecided
Sodium Nitrite	$NaNO_2$	40wt %		300			No
Sodium Permanganate	$NaMnO_4$	40wt %		2,000			No
Strontium Nitrate	$Sr(NO_3)_2$	40wt %		4,000			No

mxg

Welding Shield Gas Ar + H Ar 98% H 2% 6500 ft3 MXG

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-LAW-M6-LOP-00001	**Rev:** 0
	24590-LAW-M6-LOP-00002	0
	24590-LAW-M6-LOP-00003	0
	24590-LAW-M6-RLD-00001	1
	24590-LAW-M6-RLD-00002	1
	24590-LAW-M6-RLD-00003	1
	24590-LAW-M6-DIW-00001	0
	24590-LAW-M6-BSA-00001	0
	24590-LAW-M6-HPS-00001	0
	24590-LAW-M6-ISA-00002	0
	24590-LAW-M6-LFP-00001	0
	24590-LAW-M6-LFP-00002	0
	24590-LAW-M6-LFP-00003	0
	24590-LAW-M6-LFP-00004	0
	24590-LAW-M6-LFP-00005	0
	24590-LAW-M6-LFP-00006	0
	24590-LAW-M6-LVP-00001	0
	24590-LAW-M6-LVP-00002	0
	24590-LAW-M6-MXG-00001	0
	24590-LAW-M6-MXR-00001	0
	24590-LAW-M6-PSA-00002	0
	24590-LAW-M6-URR-00001	0
	24590-LAW-M6-LCP-00001	1
	24590-LAW-M6-LCP-00002	1
	24590-LAW-M6-NLD-00001	1

ISSUED BY
BPP-WTP PDC
INIT DATE 12/20/08

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-008, Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-061

Brief description of Design Change:

a) Add offgas filter differential pressure instrumentation across the first bank of HEPA filters

b) Change classification of SBS temperature and alarm (LOP) to non-ITS.

c) Change offgas isolation dampers from fail "as-is" to "open"

d) Adding Breathing Service Air System to Section 2.9

e) Update vessel volumes

12/20/08

Processed Date Stamp Rec'd NA Accepted Date Scanned Filed

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

AB Documents Impacted: 24590-WTP-SE-E NS-02-061

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-03	0	2.4.12, 2.4.13.10, 2.4.13.11, 2.5.2.1, 2.5.2.3, 2.5.2.4, 2.5.4, 2.5.4.1.3, 2.5.4.2.1, 2.5.9, 2.9.2, 2.9.3, Figures 2A-20, 2A-22, 2A-24, 2A-31, 2.9,3.4.2.1.1, 3.4.2.2, 3.6.2.5, Table 3-1, Table 3-2, Table 3-5, Table 3-10, 4.4.2.1, 4.4.2.3, 4.4.2.5, 4.4.2.6, 4.4.3.1, 4.4.3.3, 4.4.3.5, 4.4.3.6, Table 4-2, 5.5.1, 5.5.2, 5.6.3, Appendix A
24590-WTP-PSAR-ESH-01-002-01	0	Table 8-1

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☒	☐
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

24590-WTP-SE-ENS-02-001

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☒	☐	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☒	☐	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☒	☐	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☒	☐	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☒	☐	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐

Safety Checklist for Design

24590-WTP-SE-ENS-02-061

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

RADIOLOGICAL AND HVAC		YES	NO	N/A
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

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REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

2. The Breathing Service Air (BSA) is added to the PSAR. This system does not present additional hazards. (SIN # 24590-LAW-SIN-ESH-02-026)

3. The HEPA filter differential pressure instrumentation are now SDS. These instruments replace the safety function of the SBS alarm instrumentation which has been reclassified as non-ITS. The safety function of maintaining the offgas flow is still being performed . The differential pressure instrumentation has the additional; function of tripping the melter feed upon high differential pressure.

4. [for changes a) & b)]Chapter 4 of the PSAR was changed to add the offgas HEPA filter differential pressure instrumentation and remove the SBS temperature alarm. An ITS Instrumentation meeting was held on 4/18/02 to discuss, in part, the instrumentation on the SBS. Monitoring the SBS temperature was decided against in favor of monitoring the differential pressure across the first bank of HEPA filters in the offgas train. The plugging of the HEPA will ultimately result in the overpressurization of the melters and dispersion of NOx gas. Monitoring the differential pressure was determined to be a better strategy (per 5/21/02 ISM meeting, CCN 035683), since the differential pressure will trip the feed to the melter. The SBS temperature would only give an alarm. The differential pressure instrumentation on the first bank of HEPA filters are safety related and have redundant instrumentation.

5. [for change b)]: CSD-LLOP/N0003: (Heat load on SBS Cooling exceeds capacity due to degradation or loss of cooling water systems or excessive heat input.) was changed per 5/21/02 ISM meeting. Details described above in #4. This change was viewed by the ISM team as a more effective means of achieving the safety function.

5. [for change a)]: CSD-LLVP/N0015 (Melter feed will be terminated at a predetermined high differential pressure setpoint across the first bank of Offgas HEPA filters.) is added. Details described above in #4. This change was viewed by the ISM team as a more effective means of achieving the safety function.

8. As described in # 4 above, monitoring the differential pressure across the first bank of HEPA filters was determined to be a better control strategy to prevent plugging of the offgas flow, since the differential pressure will trip the feed to the melter and will monitor directly the SSC at risk. The SBS temperature would only give an alarm, requiring operator action.

10/11. The vessels volumes from RLD, LCP, LOP, LVP and LFP were updated per their respective volume calculations. (24590-LAW-M6C-LCP-00001, Rev. 0, 24590-LAW-M6C-LFP-00001, Rev. 0, 24590-LAW-M6C-RLD-00006, Rev. 1, 24590-LAW-M6C-LVP-00001, Rev. A, 24590-LAW-M6C-LOP-00002, Rev. A, 24590-LAW-M6C-RLD-00001, Rev. 1.) The following vessels volumes have been reduced, therefore reducing the consequences: LOP-VSL-00001, LOP-VSL-00002, LOP-VSL-00003, RLD-VSL-00004, NLD-VSL-00005.

The following vessel volumes have increased, but a linear extrapolation of the consequences listed in the Severity Level calculation for LAW:24590-ALW-Z0C-W14T-00003, Rev. A did not result in a change in the existing severity levels for these vessels, as such, no new DBE has been created. Vessels: LCP-VSL-00001, LCP-VSL-00002, LCP-VSL-00003, LFP-VSL-00001, LFP-VSL-00002, LFP-VSL-00003, LFP-VSL-00004, LFP-VSL-00005,

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Describe or explain answers, as appropriate

LFP-VSL-00006, LVP-VSL-00001, RLD-VSL-00003, RLD-VSL-00005.

13. Offgas exhauster isolation dampers change to fail "open" since this position allows for the highest probability if keeping the flow path open. If the damper were to fail "as-is" it could possibly fail closed. Failing in the open opposition gives more response time to get the system back on line.

20. Added the melter feed trip on high differential pressure over the first bank of LOP HEPA filters, as described in # 4 above. The SBS temperature alarms are still in place, they are no longer credited as ITS. This change was viewed by the ISM team as a more effective means of achieving the safety function.

37. [for change a)]: Adding CSD-LLVP/N0015: Melter feed will be terminated at a predetermined high differential pressure setpoint across the first bank of Offgas HEPA filters, does not alter the safety function. The safety function of prevent blockage of the first bank of HEPA filters and maintaining offgas flow is still being performed. This safety function is analyzed in 24590-LAW-Z0C-LOP-00001: Design Basis Event: LAW Melter Offgas. The DBE will be updated to reflect the new instrumentation restoring the safety function.

37. [for changes b), c), d) & e)]: these changes do not create a new DBE.

38. [for change a) & b)]: These changes do not result in an increase in frequency or consequence of the analyzed offgas DBE. The change in control strategy from SBS temperature monitor to the HEPA filter differential pressure interlock is considered an active engineering feature, whereas the SBS temperature monitor was a feature that required operator action. Safety Criterion 2.0-2 does not provide a stepped approach based on event frequency for toxic chemical hazards, as does the safety criterion addressing radiological releases. Therefore, the initiating event frequency is not addressed for this event. The preference of which control strategy used does not affect the unmitigated consequences of an offgas release.

39. [only changes a), b), & c) refer to a safety related system]: The addition of the DBE does not change the safety function of the system. The safety classification of the LOP remains the same. The change does not change the number of controls required for the system.

40. 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE Nuclear Activities, in particular to achieve compliance with DOE nuclear safety requirements. These design changes are not related to any compliance, violation, or enforcement issue; exemption from safety requirements; or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifier QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions (USQs) and their process, documented safety analysis (DSAs), hazards control, major modifications, facility safety classified SSCs, and the quality assurance program (QAP). These design changes do not challenge any requirements of 10 CFR 830, and are being processed via the WTP procedural requirements for design change safety screening and evaluation with respect to the authorization basis and safety basis to ensure there are no unresolved safety questions.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These design changes do not challenge any requirements of 10 CFR 835.

These changes are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, these changes continue to perform to top-level safety standards as described above.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide the adequate safety as described in the PSAR and approved by DOE.

41. The contract does not contain system design details and only includes requirements relative to the PSAR that are associated with format and content. These changes are consistent with the original PSAR format and content and therefore continue to conform to the contract requirements with the original PSAR submittal.

42. The level of detail associated with these changes are only described in the LAW PSAR. Changes described above do not result in inconsistencies with other commitments and descriptions contained in portions of the

Safety Checklist for Design

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Describe or explain answers, as appropriate
authorization basis or an authorization agreement.

	Print/Type Name	Signature	Date
Prepared By:	Elizabeth HAN	EMHan	12/18/02
Reviewed By: (Discipline AB Reviewer)	Timothy P. Eckhorn	Timothy P. Eckhorn	12/18/02

ENS Dana Cresci Dana Cresci 12·19·02

Attachment 4

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-009, Revision 0 and Safety Evaluations 24590-WTP-SE-ENS-02-064, Revision 0, and 24590-WTP-SE-ENS-02-011, Revision 0

ISSUED BY
RPP-WTP PDC
12/19/02
INIT DATE

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-009 Revision 0

ABCN Title Revision to Pretreatment PSAR to Reflect System RWH Removal of Drum Lidding Machine and Drum Transfer Drawer

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Greg Fenton	[signature]	12-16-02
Reviewer:	Ken Varma	K. J. Varma	12-16-02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	~~ES&H Manager~~ E&NS	~~Fred Beranek~~ Maurice J. Higuera	[signature]	12/19/02
☒	QA Manager	George Shell	[signature]	12/18/02
☐	Operations Manager			
☐	Commissioning/Training Manager			
☒	Engineering Manager	STEVE LYNCH	[signature]	12/18/02
☐	Construction Manager			
☐	Area Project Manager			
☐	Research & Technology Manager			
☐	PMT Chair			
☒	Other Affected Organization	Taber Hersum	Taber G Hersum	12/17/02

C. ABCN Approval

	Print/Type Name	Signature	Date
~~PSC Chair~~	* N/A		
~~WTP Project Director~~ * E&NS Mgr.	Fred Beranek	[signature]	12/19/02

* Per Rev. 4 of 24590-WTP-GPP-SREG-001 and 24590-WTP-GPP-SREG-002.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-009 Revision 0

ABCN Title Revision to Pretreatment PSAR to Reflect System RWH Removal of Drum Lidding Machine and Drum Transfer Drawer

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report To Support Construction Authorization; PT Facility Specific Information	24590-WTP-PSAR-ESH-01-002-02	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Chapter 2, Section 2.4.19.5

Remove the following enteries:

Drum Lidding Station – The remotely operated Drum Lidding Station removes, holds, and returns the drum lid to the solid waste drum.

Drum Transfer Drawer – Transfers a lidded drum from the hot cell to the container handling area at the 0ft elevation.

F. Explain why the change is needed:

The Drum Lidding Station and the Drum Transfer Drawer are no longer needed due to a change in the method of handling the drum.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-009 Revision 0

ABCN Title Revision to Pretreatment PSAR to Reflect System RWH Removal of Drum Lidding Machine and Drum Transfer Drawer

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-011 Rev 0

Safety Evaluation No. 24590-WTP-SE-ENS-02-064 Rev. 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

Safety Checklist for Design

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	24590-PTF-M5-PIH-00014001		0
	24590-PTF-M5-PIH-00014002		0
	24590-PTF-M5-PIH-00016001		0
	24590-PTF-M5-PIH-00016002		0
	24590-PTF-M5-PIH-00017001		0
	24590-PTF-M5-PIH-00017002		0
	24590-PTF-M5-PIH-00018001		0
	24590-PTF-M5-PIH-00018002		0
	24590-PTF-M5-PIH-00019001		0
	24590-PTF-M5-PIH-00019002		0
	24590-PTF-M5-PIH-00020		0
	24590-PTF-M5-PIH-00021		0
	24590-PTF-M5-PIH-00022		0
	24590-PTF-M5-PIH-00023		0
	24590-PTF-M5-PIH-00024001		0
	24590-PTF-M5-PIH-00024002		0

ISSUED BY
PPP-WTP PDC
INIT DATE 12/20/02

ABCN/ABAR No: (if used as safety evaluation) 24590-~~PTF~~ WTP-ABCN-ENS-02-009 12/19/02

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-064

Brief description of Design Change:

Evolution of the design for Pretreatment Sytem RWH has led to the removal of the following equipment:

Drum Lidding machine

Drum Transfer Drawer

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-02	E	Chapter 2 Section 2.4.19.5

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

Processed Data Entry NA Copied OA ☐ Scanned ☐ Filed 12/20/02

Safety Checklist for Design

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	24590-PTF-M5-PIH-00016001		0
	24590-PTF-M5-PIH-00016002		0
	24590-PTF-M5-PIH-00017001		0
	24590-PTF-M5-PIH-00017002		0
	24590-PTF-M5-PIH-00018001		0
	24590-PTF-M5-PIH-00018002		0
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	24590-PTF-M5-PIH-00023		0
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GENERAL REVIEW 24590-WTP-SE-ENS-02-064 JR 12/19/02		**YES**	**NO**
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

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	24590-PTF-M5-PIH-00016002	0
	24590-PTF-M5-PIH-00017001	0
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TECHNICAL REVIEW 24590-WTP-SE-ENS-02-064 OK 12/19/02 These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐

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	24590-PTF-M5-PIH-00014002	0
	24590-PTF-M5-PIH-00016001	0
	24590-PTF-M5-PIH-00016002	0
	24590-PTF-M5-PIH-00017001	0
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	24590-PTF-M5-PIH-00022	0
	24590-PTF-M5-PIH-00023	0
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CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐

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	24590-PTF-M5-PIH-00014001	0
	24590-PTF-M5-PIH-00014002	0
	24590-PTF-M5-PIH-00016001	0
	24590-PTF-M5-PIH-00016002	0
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	24590-PTF-M5-PIH-00017002	0
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	24590-PTF-M5-PIH-00021	0
	24590-PTF-M5-PIH-00022	0
	24590-PTF-M5-PIH-00023	0
	24590-PTF-M5-PIH-00024001	0
	24590-PTF-M5-PIH-00024002	0

ABCN/ABAR No: (if used as safety evaluation) 24590-~~PTF~~ WTP-ABCN-ENS-02-009 JE 12/19/02

FIRE PROTECTION 24590-WTP-SE-ENS-02-064 JE 12/19/02		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☐	☒

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:		**Rev:**
	24590-PTF-M5-PIH-00001	0
	24590-PTF-M5-PIH-00014001	0
	24590-PTF-M5-PIH-00014002	0
	24590-PTF-M5-PIH-00016001	0
	24590-PTF-M5-PIH-00016002	0
	24590-PTF-M5-PIH-00017001	0
	24590-PTF-M5-PIH-00017002	0
	24590-PTF-M5-PIH-00018001	0
	24590-PTF-M5-PIH-00018002	0
	24590-PTF-M5-PIH-00019001	0
	24590-PTF-M5-PIH-00019002	0
	24590-PTF-M5-PIH-00020	0
	24590-PTF-M5-PIH-00021	0
	24590-PTF-M5-PIH-00022	0
	24590-PTF-M5-PIH-00023	0
	24590-PTF-M5-PIH-00024001	0
	24590-PTF-M5-PIH-00024002	0

ABCN/ABAR No: (if used as safety evaluation) 24590-~~PTF~~ WTP JR 12/19/02-ABCN-ENS-02-009

REGULATORY JR 12/19/02 24590-WTP-SE-ENS-02-064		**YES**	**NO**	**N/A**
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☐	☒
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☐	☒

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

Question 2.

Chapter, Section 2.4.19.5

Remove the following enteries:

- Drum Lidding Station – The remotely operated drum lidding station removes, holds, and returns the drum lid to the solid waste drum.
- Drum Transfer Drawer – Transfers a lidded drum from the hot cell top the container handling area at the 0 ft elevation.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-PTF-M5-PIH-00001	**Rev:**	0
	24590-PTF-M5-PIH-00014001		0
	24590-PTF-M5-PIH-00014002		0
	24590-PTF-M5-PIH-00016001		0
	24590-PTF-M5-PIH-00016002		0
	24590-PTF-M5-PIH-00017001		0
	24590-PTF-M5-PIH-00017002		0
	24590-PTF-M5-PIH-00018001		0
	24590-PTF-M5-PIH-00018002		0
	24590-PTF-M5-PIH-00019001		0
	24590-PTF-M5-PIH-00019002		0
	24590-PTF-M5-PIH-00020		0
	24590-PTF-M5-PIH-00021		0
	24590-PTF-M5-PIH-00022		0
	24590-PTF-M5-PIH-00023		0
	24590-PTF-M5-PIH-00024001		0
	24590-PTF-M5-PIH-00024002		0

ABCN/ABAR No: (if used as safety evaluation) 24590-~~PTF~~ WTP-ABCN-ENS-02-009 WTP SE 12/19/02 24590-WTP-SE-ENS-02-064 JK 12/19/02

Prepared By: Claude Kabera (*Print/Type Name*) Claude Kabera (*Signature*) 12/16/02 (*Date*)

Reviewed By: (Discipline AB Reviewer) Ken Varma (*Print/Type Name*) K. J. Varma (*Signature*) 12/16/02 (*Date*)

Concurred By: (E&NS) MAURICE J. HIGUERA M J Higuera 12/17/02

Attachment 5

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-010, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-008, Revision 0

ISSUED BY
BBP-WTP PDC
KRS 12/19/02
INIT DATE

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-010 Revision 0

ABCN Title System LSH Equipment and Operations Description Modification

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Kevin R. Sump	[signature]	12/12/02
Reviewer:	KEN VARMA	K.J. Varma	12/12/02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS Manager	Fred Beranek	[signature]	12/13/02
☒	QA Manager	DEK George Shell	[signature] for	12/18/02
☒	Operations Manager		[signature] 12-18-02 KRS	12/13/02 12-18-02 KRS
☒	Commissioning/Training Manager	James W. Wiley	[signature]	12/13/02
☒	Manager of Engineering	FRED B. MARSH	[signature]	12/13/02
☐	Construction Manager			
☒	Area Project Manager	DILIP PATEL	[signature]	12/13/02
☐	Research & Technology Manager			
☒ KRS 12-12-02	PMT Chair			
☒	Other Affected Organization (LAW DOC CUSTODIAN)	DWIGHT KRAHN	[signature]	12-12-02

C. ABCN Approval

	Print/Type Name	Signature	Date
~~PSC Chair~~ KRS 12/18/02	* N/A KRS 12/18/02		
~~WTP Project Director~~ * E&NS Mgr.	Fred Beranek	[signature]	12/18/02

* Per Revision 4 of 24590-WTP-GPP-SREG-001 and 24590-WTP-GPP-SREG-002.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-010 Revision 0

ABCN Title System LSH Equipment and Operations Description Modification

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-03	0
Preliminary Safety Analysis Report to Support Partial Construction Authorization; LAW Facility Specific Information	24590-WTP-PSAR-ESH-01-001-03	0
LAW Vitrification System LSH Mechanical Flow Diagram Level 1 Melter Equipment Support Handling	24590-LAW-M5-LSH-00001	0
LAW Vitrification System LSH Mechanical Flow Diagram Level 2 Melter Equipment Support Handling System	24590-LAW-M5-LSH-00002001	0
LAW Vitrification System LSH Mechanical Flow Diagram Level 2 Melter Equipment Support Handling System	24590-LAW-M5-LSH-00002002	0
LAW Vitrification System LSH Mechanical Flow Diagram Level 2 Melter Equipment Support Handling System	24590-LAW-M5-LSH-00002003	0
LAW Vitrification System LSH Mechanical Flow Diagram Level 2 Melter Equipment Support Handling System	24590-LAW-M5-LSH-00002004	0
LAW Vitrification System LSH Mechanical Flow Diagram Level 2 Melter Equipment Support Handling System	24590-LAW-M5-LSH-00002005	0
Mechanical Sequence Diagram for LAW Vitrification System LSH Melter Equipment Support Handling	24590-LAW-M1-LSH-00001	1
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equipment Support Handling Maintenance Cranes	24590-LAW-M7-LSH-00001001	0
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equipment Support Handling Process Crane	24590-LAW-M7-LSH-00001002	0
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equipment Support Handling CCB Handler	24590-LAW-M7-LSH-00001003	0
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equip Support H'ling	24590-LAW-M7-LSH-00001004	0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-010 Revision 0

ABCN Title System LSH Equipment and Operations Description Modification

Title	Document Number	Revision
CCB Lifting Head (Clean)		
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equip Support H'ling Melter Gamma gate and Discharge Chamber Gate	24590-LAW-M7-LSH-00001005	0
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equip Support H'ling Consumable Import Area	24590-LAW-M7-LSH-00001006	0
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equip Support H'ling Consumable Export Area	24590-LAW-M7-LSH-00001007	0
LAW Vitrification System LSH Mechanical Handling Diagram Melter Equip Support H'ling CCB Lifting Head (Spent)	24590-LAW-M7-LSH-00001008	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Section 2.5.6 :

- Primary equipment list requires modification to remove items associated with the size reduction operation. This process was removed in favor of a less complex system for LAW melter consumable disposal. The replacement system is a bagging operation. The melter consumable is bagged in the melter gallery and then placed into a burial box. Items to be removed from list in PSAR: Consumable Size- Reduction Shears, Glove Box, Drum Conveyor, Drum Lidder.
- New bubbler assemblies will be shipped or installed in the melter directly from reusable CCBs. Melter consumable items will not arrive prepackaged in CCBs. The consumables will be delivered to the LAW facility and imported into reusable CCBs. Remove " shipped or" from statement.
- Spent bubblers will be extracted from the melter, size reduced, and packaged into drums. The melter consumable will no longer be size reduced due to potentially high maintenance activities associated with the process. Melter consumables will not be packaged into drums. The melter consumable is bagged in the melter gallery and then placed into a burial box. Remove " sized reduced" from statement and replace " into drums" with " by bagging operation, for disposal".

Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Figure 2A-2 :

- Facility general arrangement depicted does not reflect current equipment and layout. Update drawing with current revision.

Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Figure 2A-3 :

- Facility general arrangement depicted does not reflect current equipment and layout. Update drawing with current revision.

Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Figure 2A-4 :

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-010 Revision 0

ABCN Title System LSH Equipment and Operations Description Modification

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

- Facility general arrangement depicted does not reflect current equipment and layout. Update drawing with current revision.

Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Figure 2A-6 :

- Facility general arrangement depicted does not reflect current equipment and layout. Update drawing with current revision.

Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-03, Rev. 0, Figure 2A-8 :

- Facility general arrangement depicted does not reflect current equipment and layout. Update drawing with current revision.

Preliminary Safety Analysis Report to Support Partial Construction Authorization; LAW Facility Specific Information, 24590-WTP-PSAR-ESH-01-001-03, Rev. 0, Section 2.5.5.5 :

- New bubbler assemblies will be shipped to the facilty in consumable change-out boxes, and will be installed into the melter directly from the consumable change-out boxes. Melter consumable items will not arrive prepackaged in CCBs. The consumables will be delivered to the LAW facility and imported into reusable CCBs. Remove "will be shipped to the facilty in consumable change-out boxes, and" from statement.
- Spent bubblers will be extracted from the melter and packaged into 85 gallon drums. The melter consumable will no longer be size reduced due to potentially high maintenance activities associated with the process. Melter consumable will not be packaged into drums. Remove "into 85 gallon drums." and replace with "for disposal" in referenced statement.

F. Explain why the change is needed:

The changes will update the PSAR/ PCAR to reflect the current System LSH equipment and operations.

The size reduction equipment indicated by the PSAR/ PCAR has been replaced with a melter consumable bagging operation through design evolution. The size reduction and drumming operation was removed in favor of a bagging operation, which required significantly less maintenance operations. The processing time for the spent melter consumables also has been reduced.

Reference to shipping methods needs to reflect that the CCBs remain in the melter gallery and will not be used as shipping containers. The melter consumables are imported into the CCBs at the consumable import station within the LAW facility.

Modification of figures in the PSAR/ PCAR is necessary to remove depicted equipment that does not describe the status of the design.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-010 Revision 0

ABCN Title System LSH Equipment and Operations Description Modification

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-008 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

Safety Evaluation: 24590-WTP-SE-ENS-02-008, Rev.0

Safety Checklist for Design

ISSUED BY
BPP-WTP PDC
INIT DATE 12/19/02

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-LAW-M5-LSH-00001	**Rev:**	0
	24590-LAW-M5-LSH-00002001		0
	24590-LAW-M5-LSH-00002002		0
	24590-LAW-M5-LSH-00002003		0
	24590-LAW-M5-LSH-00002004		0
	24590-LAW-M5-LSH-00002005		0
	24590-LAW-M1-LSH-00001		1
	24590-LAW-M7-LSH-00001001		0
	24590-LAW-M7-LSH-00001002		0
	24590-LAW-M7-LSH-00001003		0
	24590-LAW-M7-LSH-00001004		0
	24590-LAW-M7-LSH-00001005		0
	24590-LAW-M7-LSH-00001006		0
	24590-LAW-M7-LSH-00001007		0
	24590-LAW-M7-LSH-00001008		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

Brief description of Design Change:

The changes will update the PSAR/ PCAR to reflect the changes to the description of System LSH equipment and operations.

The size reduction equipment indicated by the PSAR/ PCAR has been replaced with a melter consumable bagging operation through design evolution. The size reduction and drumming operation was removed in favor of a bagging operation, which required significantly less maintenance operations. The processing time for the spent melter consumables also has been reduced.

Reference to shipping methods needs to reflect that the CCBs remain in the melter gallery and will not be used as shipping containers. The melter consumables are imported into the CCBs at the consumable import station within the LAW facility.

Modification of figures in the PSAR/ PCAR are necessary to remove depicted equipment that does not describe the status of the design.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-03	0	2.5.6
24590-WTP-PSAR-ESH-01-002-03	0	Appendix 2
24590-WTP-PSAR-ESH-01-001-03	0	2.5.5.5

12/19/02

Processed/ Data Entry | Copied/ QA | Scanned | Filed

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-LAW-M5-LSH-00001	**Rev:**	0
	24590-LAW-M5-LSH-00002001		0
	24590-LAW-M5-LSH-00002002		0
	24590-LAW-M5-LSH-00002003		0
	24590-LAW-M5-LSH-00002004		0
	24590-LAW-M5-LSH-00002005		0
	24590-LAW-M1-LSH-00001		1
	24590-LAW-M7-LSH-00001001		0
	24590-LAW-M7-LSH-00001002		0
	24590-LAW-M7-LSH-00001003		0
	24590-LAW-M7-LSH-00001004		0
	24590-LAW-M7-LSH-00001005		0
	24590-LAW-M7-LSH-00001006		0
	24590-LAW-M7-LSH-00001007		0
	24590-LAW-M7-LSH-00001008		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-LAW-M5-LSH-00001	**Rev:** 0
	24590-LAW-M5-LSH-00002001	0
	24590-LAW-M5-LSH-00002002	0
	24590-LAW-M5-LSH-00002003	0
	24590-LAW-M5-LSH-00002004	0
	24590-LAW-M5-LSH-00002005	0
	24590-LAW-M1-LSH-00001	1
	24590-LAW-M7-LSH-00001001	0
	24590-LAW-M7-LSH-00001002	0
	24590-LAW-M7-LSH-00001003	0
	24590-LAW-M7-LSH-00001004	0
	24590-LAW-M7-LSH-00001005	0
	24590-LAW-M7-LSH-00001006	0
	24590-LAW-M7-LSH-00001007	0
	24590-LAW-M7-LSH-00001008	0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW
These questions evaluate design change affects on DBE hazards analysis.

SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☒	☐	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☒	☐	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-LAW-M5-LSH-00001	**Rev:**	0
	24590-LAW-M5-LSH-00002001		0
	24590-LAW-M5-LSH-00002002		0
	24590-LAW-M5-LSH-00002003		0
	24590-LAW-M5-LSH-00002004		0
	24590-LAW-M5-LSH-00002005		0
	24590-LAW-M1-LSH-00001		1
	24590-LAW-M7-LSH-00001001		0
	24590-LAW-M7-LSH-00001002		0
	24590-LAW-M7-LSH-00001003		0
	24590-LAW-M7-LSH-00001004		0
	24590-LAW-M7-LSH-00001005		0
	24590-LAW-M7-LSH-00001006		0
	24590-LAW-M7-LSH-00001007		0
	24590-LAW-M7-LSH-00001008		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

TECHNICAL REVIEW
These questions evaluate design change affects on DBE hazards analysis.

SYSTEMS (general)		**YES**	**NO**	**N/A**
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-LAW-M5-LSH-00001	**Rev:**	0
	24590-LAW-M5-LSH-00002001		0
	24590-LAW-M5-LSH-00002002		0
	24590-LAW-M5-LSH-00002003		0
	24590-LAW-M5-LSH-00002004		0
	24590-LAW-M5-LSH-00002005		0
	24590-LAW-M1-LSH-00001		1
	24590-LAW-M7-LSH-00001001		0
	24590-LAW-M7-LSH-00001002		0
	24590-LAW-M7-LSH-00001003		0
	24590-LAW-M7-LSH-00001004		0
	24590-LAW-M7-LSH-00001005		0
	24590-LAW-M7-LSH-00001006		0
	24590-LAW-M7-LSH-00001007		0
	24590-LAW-M7-LSH-00001008		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☒	☐	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

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	24590-LAW-M5-LSH-00002002		0
	24590-LAW-M5-LSH-00002003		0
	24590-LAW-M5-LSH-00002004		0
	24590-LAW-M5-LSH-00002005		0
	24590-LAW-M1-LSH-00001		1
	24590-LAW-M7-LSH-00001001		0
	24590-LAW-M7-LSH-00001002		0
	24590-LAW-M7-LSH-00001003		0
	24590-LAW-M7-LSH-00001004		0
	24590-LAW-M7-LSH-00001005		0
	24590-LAW-M7-LSH-00001006		0
	24590-LAW-M7-LSH-00001007		0
	24590-LAW-M7-LSH-00001008		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

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	24590-LAW-M5-LSH-00002004	0
	24590-LAW-M5-LSH-00002005	0
	24590-LAW-M1-LSH-00001	1
	24590-LAW-M7-LSH-00001001	0
	24590-LAW-M7-LSH-00001002	0
	24590-LAW-M7-LSH-00001003	0
	24590-LAW-M7-LSH-00001004	0
	24590-LAW-M7-LSH-00001005	0
	24590-LAW-M7-LSH-00001006	0
	24590-LAW-M7-LSH-00001007	0
	24590-LAW-M7-LSH-00001008	0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

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REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

2. The changes alter the description of System LSH in the PSAR/ PCAR. The size reduction equipment (shears, glovebox, drum conveyor, drum lidder) described will be removed from the text description. References to the method of shipping the melter consumables also needs to be addressed. The CCB will not be the shipping package for the consumables and the CCBs will remain in the melter gallery.

7. System LSH will not be using drums as an intermediate disposal container for melter consumables. The drum not only contained the size reduced consumable but also collected the residual waste glass that adhered to the consumable during extraction. The drum package was placed in a disposal box for export from the facility.

To minimize maintenance operation a bagging sytem was designed to replace the size reduction equipment which included the drum. The melter consumable will be bagged in the melter gallery area and exported directly to the disposal box. The residual glass that was spaulded off during the cool down cycle of the spent consumable will be collected at the bottom of the bagging station tube. The bagging station tube will be emptied periodically and the

Safety Checklist for Design

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	24590-LAW-M5-LSH-00002002	0
	24590-LAW-M5-LSH-00002003	0
	24590-LAW-M5-LSH-00002004	0
	24590-LAW-M5-LSH-00002005	0
	24590-LAW-M1-LSH-00001	1
	24590-LAW-M7-LSH-00001001	0
	24590-LAW-M7-LSH-00001002	0
	24590-LAW-M7-LSH-00001003	0
	24590-LAW-M7-LSH-00001004	0
	24590-LAW-M7-LSH-00001005	0
	24590-LAW-M7-LSH-00001006	0
	24590-LAW-M7-LSH-00001007	0
	24590-LAW-M7-LSH-00001008	0

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Describe or explain answers, as appropriate

contents placed in the disposal box along with the spent bubblers.

11. The collection of waste glass from multiple spent consumables in the bagging station would increase the amount of material being handled. The drumming operation collected the residual glass product in separate drums along with the size reduced consumable. The quantity of glass removed from the bagging station tube, combined with the packaging, shall not exceed personnel exposure limits. The frequency of removal shall be adjusted to limit waste glass collection volumes. The bagging system will reduce operator exposure times by minimzing the time spent maintaining equipment used for the size reduction process.

35. The bag used to encapsulate the spent melter consumables is constructed with materials that would, minimally, increase the combustible loading.

37. Replacement of the size reduction and drumming operation with a bagging and boxing method for disposal of melter consumables does not result in a new DBE. The hazards associated with the new consumable export method remain direct exposure to radioactive material and radioactive contamination. The level of direct exposure is bound by a full ILAW container and is well below the threshold of a DBE analysis. Exposure to radioactive contamination is bound by a dropped ILAW container and is also well below the threshold of a DBE analysis.

38. The hazards associated with the new consumable export method remain direct exposure to radioactive material and radioactive contamination. There were no events involving direct radiation or contamination resulting from exposure to ILAW evaluated as a DBE for LAW, because all events in this category are below the Radiation Exposure Standards. Therefore, there is no increase in frequency or consequence of an analyzed DBE.

39. The equipment associated with the size reduction equipment was non-ITS therefore, the change has no effect on any the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function.

40. The changes are not related to rules for nuclear activities (10 CFR 820), nuclear safety management (10 CFR 830), or occupational radiation protection (10 CFR 835). Therefore, compliance with applicable laws and

Safety Checklist for Design

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	24590-LAW-M5-LSH-00002002		0
	24590-LAW-M5-LSH-00002003		0
	24590-LAW-M5-LSH-00002004		0
	24590-LAW-M5-LSH-00002005		0
	24590-LAW-M1-LSH-00001		1
	24590-LAW-M7-LSH-00001001		0
	24590-LAW-M7-LSH-00001002		0
	24590-LAW-M7-LSH-00001003		0
	24590-LAW-M7-LSH-00001004		0
	24590-LAW-M7-LSH-00001005		0
	24590-LAW-M7-LSH-00001006		0
	24590-LAW-M7-LSH-00001007		0
	24590-LAW-M7-LSH-00001008		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-010

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-008

Describe or explain answers, as appropriate

regulations is maintained.

The changes are beyond the level of detail provided in the top-level safety principles for desing (R1/REG-96-0006, Section 4.2.1). Therefore, the changes continue to conform to the top-level safety standards.

41. The contract does not contain design details and only includes requirements relative to the PSAR/PCAR which are associated with format and content. The changes are consistent with the original PSAR/PCAR format and content and therefore continue to conform to contract requirements with the original PSAR/PCAR submittal.

42. The level of detail associated with these changes is only described in the LAW PSAR/PCAR. Therefore, these changes will not result in inconsistencies with other commitments and descriptions contained in other AB documents or authorization agreements.

Prepared By:	KEVIN R. SUMP *Print/Type Name*	Kevin R Sump *Signature*	12/18/02 *Date*
Reviewed By: (Discipline AB Reviewer)	K. VARMA *Print/Type Name*	K. J. Varma *Signature*	12/18/02 *Date*

Attachment 6

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-014, Revision 0 and Safety Evaluations 24590-WTP-SE-ENS-02-017, Revision 0, and 24590-WTP-SE-ENS-02-032, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-014 Revision 0

ISSUED BY BPP-WTP PDC INIT DATE 12/20/02

ABCN Title HLW Pour Tunnel Lidding Station Removal & Canister Rack modifications

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Lisa Green	Lisa Green	12/18/02
Reviewer:	Ken Varma	K. J. Varma	12/18/02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS ~~Manager~~	JR 12/18/02 ~~Fred Beranek~~ Pete Lowry	Pete Lowry	12/19/02
☒	QA Manager	DEK George Shell	[signature] for	12/19/02
☐	Operations Manager			
☐	Commissioning/Training Manager			
☒	Manager of Engineering	Fred Marsh	[signature]	12/18/02
☐	Construction Manager			
☒	Area Project Manager	Phil Schuetz	[signature]	12/18/02
☐	Research & Technology Manager			
☐	PMT Chair			
☒	HLW Document Custodian	Dwight Krahn	[signature] for D. Krahn	12/19/02

C. ABCN Approval

	Print/Type Name	Signature	Date
JR 12/18/02 ~~PSC Chair~~	~~Bill Poulson~~ *NA		
JR 12/18/02 ENS Mgr ~~WTP Project Director~~	JR 12/18/02 ~~Ron Naventi~~ Fred Beranek	[signature]	12/19/02

JR 12/18/02

* Per Rev. 4 of 24590-WTP-GPP-SREG-001 and 24590-WTP-GPP-SREG-002

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-014 Revision 0

ABCN Title HLW Pour Tunnel Lidding Station Removal & Canister Rack modifications

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04

Chapter 2, Section 2.4.11.7

- Equipment list - Delete lidding stations

Chapter 2, Section 2.4.12.5

- The canister storage cave is designed to retain as many as 45 canisters, should read 46 canisters

Chapter 2, Section 2.4.19.5

- Buffer/Cooling Racks paragraph – They will have a total capacity of 40 canisters, should read 48 canisters.
- Lidding Station paragraph– Delete paragraph.

Chapter 2, Section 2.4.21.1.2

- Remove canister lid handling from list (6th item down)

Chapter 2, Section 2.5.4.1

- Second bullet point - remove the following from the text: The lid is removed and both canister and lid are inspected. The lid is replaced and secured.

Chapter 2, Figure 2A-2, 2A-3, 2A-4, 2A-8 & 2A-9

- Figure needs updating in line with Plant Model to show correct rack configurations.

Chapter 2, Figure 2A-31

- Change canister storage racks (40 capacity) to buffer & cooling racks (48 capacity)

Chapter 3, Table 3-10

- The table does not detail all the canister racks in the high level facility. The table should therefore read:

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-014 Revision 0

ABCN Title HLW Pour Tunnel Lidding Station Removal & Canister Rack modifications

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

HRH Canister Rack (16 canisters) SCIV

HPH Canister Cooling Rack (24 canisters) SCIII

HPH Canister Buffer Rack (24 canisters) SCIII

HDH Canister Rack (1 canister) SCIII

HEH Canister Storage Rack (46 canisters) SCI

F. Explain why the change is needed:

The current baseline requires the canister to be supplied from the manufacturer with the permanent lid, which would remain with the canister as it travels into the HLW facility. The lid is removed at the Pour Tunnel Lidding Stations prior to the canister being filled. After the canister has been filled, the lid is replaced and the canister travels to the Welding Station where the permanent lid is welded to the canister.

The current baseline complies with the *Waste Compliance Plan for Immobilized High Level Waste, RPT-W375HV-TE00008* specification 3.1 to 3.4, which states that the canister must be protected from the ingress of free liquids, gases, explosive, pyrophoric or combustible and organic materials. The current baseline method of covering the canister involves using complex equipment, the Lidding Stations, in a location with limited accessibility.

It is proposed that administrative controls and the design of the overhead cranes may instead be used to inhibit foreign debris from entering the canister. Drip trays may be designed into the crane gearbox housings, thus adding extra protection against drippage of crane oil or grease into the canister.

There is no manned entry to either the Canister Handling Cave or the Pour Tunnel, thus minimizing the potential for Protective Clothing from being a source of debris. Administrative controls, such as Loose Article Control, may be put in place to limit extraneous materials from being introduced into the canister handling areas to further reduce the chance of introducing foreign debris into the canister. By inhibiting foreign debris from entering the canister, there is no need for the Lidding Stations in the Pour Tunnel.

The PSAR identifies all HLW canister racks as seismic category I (SC-1). However, the System HPH Canister Cooling Rack, System HPH Canister Buffer Rack, and System HDH Canister Rack are contained within C5 areas. Because this places these three racks inside of seismically qualified C5 boundaries they can be classified as seismic category III (SC-3). The System HEH Canister Storage Rack is contained within a C3 area. Because it is not contained within a seismically qualified boundary it will remain classified as a seismic category I (SC-1). The System HRH Canister Rack will contain clean and empty canisters as they enter the facility. Because they will contain no contaminates or radioactive material they do not require a seismically qualified boundary. Thus, they are classified as seismic category V (SC-4). Canister racks should be identified with the appropriate seismic category and the number of canister positions. Section 3.4.2.1 needs updating to reflect the above.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-014 Revision 0

ABCN Title HLW Pour Tunnel Lidding Station Removal & Canister Rack modifications

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-017 rev 0, 24590-WTP-SE-ENS-02-032 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

Safety Checklist for Design

ISSUED BY RPP-WTP PDC
INIT / DATE

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M7-HPH-00001001	**Rev:**	1
	24590-HLW-M5-HPH-00001001		1
	24590-HLW-M5-HRH-00001001		1
	24590-HLW-DCA-M-02-019		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-017

Brief description of Design Change:

Due to the removal of the HLW Pour Tunnel Lidding Stations the permanent lid is no longer supplied with the Canister. References to the lid and lidding station need to be removed from the PSAR.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	2.4.11.7, 2.4.19.5, 2.4.21.1.2, 2.5.4.1

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

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Safety Checklist for Design

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	24590-HLW-DCA-M-02-019		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-017

TECHNICAL REVIEW
These questions evaluate design change affects on DBE hazards analysis.

SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☐	☒
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☐	☒
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☐	☒
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐

Safety Checklist for Design

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	24590-HLW-M5-HRH-00001001		1
	24590-HLW-DCA-M-02-019		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-017

CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M7-HPH-00001001	**Rev:**	1
	24590-HLW-M5-HPH-00001001		1
	24590-HLW-M5-HRH-00001001		1
	24590-HLW-DCA-M-02-019		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-017

REGULATORY		**YES**	**NO**	**N/A**
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

2: The current baseline requires the canister to be supplied from the manufacturer with the permanent lid, which would remain with the canister as it travels into the HLW facility. The lid is removed at the Pour Tunnel Lidding Stations prior to the canister being filled. After the canister has been filled, the lid is replaced and the canister travels to the Welding Station where the permanent lid is welded to the canister.

The current baseline complies with the *Waste Compliance Plan for Immobilized High Level Waste, RPT-W375HV-TE00008* specification 3.1 to 3.4, which states that the canister must be protected from the ingress of free liquids, gases, explosive, pyrophoric or combustible and organic materials. The current baseline method of covering the canister involves using complex equipment, the Lidding Stations, in a location with limited accessibility.

It is proposed that administrative controls and the design of the overhead cranes may instead be used to inhibit foreign debris from entering the canister. Drip trays may be designed into the crane gearbox housings, thus adding extra protection against drippage of crane oil or grease into the canister.

There is no manned entry to either the Canister Handling Cave or the Pour Tunnel, thus minimizing the potential for Protective Clothing from being a source of debris. Administrative controls, such as Loose Article Control, may be put in place to limit extraneous materials from being introduced into the canister handling areas to further reduce the chance of introducing foreign debris into the canister. By inhibiting foreign debris from entering the canister, there is no need for the Lidding Stations in the Pour Tunnel.

37: This design change only removes the lidding station from the pour tunnel. There are no new hazards identified and thus no new DBE created.

38: There are no analyzed DBEs associated with the HLW pour tunnel lidding stations in the PSAR, therefore there is no increase in the frequency or consequences of any analyzed DBE.

39: There are no ITS or SDC SSCs associated with the lidding station. Therefore there will be no decrease in the safety functions of important to safety SSCs or change how a Safety Design Class SSC meets its respective safety function.

40: 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE nuclear activities, in particular to achieve compliance with DOE nuclear safety

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M7-HPH-00001001	**Rev:**	1
	24590-HLW-M5-HPH-00001001		1
	24590-HLW-M5-HRH-00001001		1
	24590-HLW-DCA-M-02-019		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-017

Describe or explain answers, as appropriate

requirements. This change is not related to any compliance, violation, or enforcement issue, exemption from safety requirements, or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifies QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions, facility safety basis, facility safety classified SSCs, and the quality assurance program (QAP). This change does not change the QAP or challenge any requirements of 10 CFR 830.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. This change does not change the radiation protection program or challenge any requirements of 10 CFR 835.

This change is beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, the facility continues to perform to top-level safety standards as described above.

This change has been evaluated per the WTP Integrated Safety Management process and has been determined to provide adequate safety as described in the PSAR and approved by DOE/OSR.

41. The contract does not contain details in the facility specification, such as this change, regarding the lidding stations. Therefore, this change does not challenge the contract requirements.

42. The level of detail associated with this change is only described in the HLW PSAR, BNI's response to DOE/OSR questions, and the DOE/OSR Safety Evaluation Report. This change does not result in inconsistencies with these documents, other commitments, or descriptions contained in authorization basis documents or authorization agreements.

Prepared By:	Lisa Green	Lisa Green	12/18/02
	Print/Type Name	*Signature*	*Date*
Reviewed By: (Discipline AB Reviewer)	Ken Varma	K. Varma	12/19/02
	Print/Type Name	*Signature*	*Date*

Safety Checklist for Design

ISSUED BY
RPP-WTP PDC
NIT DATE 12/20/07

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-3PS-30-T0001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-032

Brief description of Design Change:

All racks are grouped under the title Buffer/Cooling Racks. There are 5 distinct canister racks in the HLW facility. Each rack has its own PIN and should be called out (with proper name) as individual racks relative to each system. Table 3-10 needs updating to include all racks and the appropriate seismic classification.
System HRH Canister Rack (16 canisters), SC-IV
System HPH Canister Buffer Rack (24 canisters), SC III
System HPH Canister Cooling Rack (24 canisters), SC-III
System HDH Canister Rack (1 canister), SC-III
System HEH Canister Storage Rack (46 canisters), SC-I

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	2.4.11.12, 2.4.19.5, Figures 2A-2, 2A-3, 2A-4, 2A-8, 2A-9, 2A-31 & Table 3-10

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☐	☒
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

12/20/06
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Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-3PS-30-T0001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-032

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance. Continue with answering all the Technical Review questions.

TECHNICAL REVIEW
These questions evaluate design change affects on DBE hazards analysis.

SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☒	☐	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☐	☒
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☒	☐	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☐	☒
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☐	☒
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☐	☒
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☐	☒
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☐	☒
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☐	☒
22.	Are single failure requirements for ITS SSCs changed?	☐	☐	☒
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☐	☒
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☐	☒
25.	Are any time delays or actuation times changed?	☐	☐	☒

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-3PS-30-T0001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-032

CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☐	☒
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☒	☐	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☒	☐	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-3PS-30-T0001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-032

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-3PS-30-T0001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-032

Describe or explain answers, as appropriate

3. All racks are grouped under the title Buffer/Cooling Racks. There are 5 distinct canister racks in the HLW facility. Each rack has its own PIN and should be called out (with proper name) as individual racks relative to each system.

Table 3-10 – All racks should be listed with their appropriate Seismic Classification.
HRH Canister Rack (16 canisters) SCIV
HPH Canister Cooling Rack (24 canisters) SCIII
HPH Canister Buffer Rack (24 canisters) SCIII
HDH Canister Rack (1 canister) SCIII, Non-ITS
HEH Canister Storage Rack (46 canisters) SCI

9. The canister racks now classified with a seismic category less stringent than seismic category I (SC-1) may not be designed with the same reliability as had they remained classified as SC-1.

11. The amount of canisters held by each rack has either been expanded or initially defined. The total amount of canisters has increased and thus has increased the amount of radioactive or hazardous materials being handled. The amount of canisters held by each rack should be specified in the descriptions for each rack.

32. The total amount of canisters has increased and thus has increased the loads seen by canister racks. The amount of canisters held by each rack should be specified in the descriptions for each rack. The acceptability of this load increase will be confirmed during design.

33. See 32.

37. The design evolution has resulted in downgrade of the HPH, HDH & HRH racks from SDC ITS. Since this change in classification is consistent with classification of other HLW ITS and non-ITS SSCs this change does not result in any new DBE. The HEH racks remain ITS SDC, SC-I.

38. There are no analyzed DBEs associated with the canister racks in the PSAR, therefore there is no increase in the frequency or consequences of any analyzed DBE.

39. As discussed in 37 & 38 the change in classification of the non-ITS racks from the SC-I designated racks in the PSAR does not adversely affect the capability of the ITS SDC racks to meet its safety function.

40. 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE nuclear activities, in particular to achieve compliance with DOE nuclear safety requirements. Theses changes are not related to any compliance, violation, or enforcement issue, exemption from safety requirements, or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifies QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions, facility safety basis, facility safety classified SSCs, and the quality assurance program (QAP). The changes do not result in a change to the QAP or challenge any requirements of 10 CFR 830.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These changes does not change the radiation protection program or challenge any requirements of 10 CFR 835.

These clarifications are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, the facility continues to perform to top-level safety standards as described above.

These clarifications have been evaluated per the WTP Integrated Safety Management process and have been determined to provide adequate safety as described in the PSAR and approved by DOE/OSR.

41. The contract does not contain details in the facility specification, such as these classifications, regarding the canister racks. Therefore, these changes do not challenge the contract requirements.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-3PS-30-T0001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-014

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-032

Describe or explain answers, as appropriate

42. The level of detail associated with these changes is only described in the HLW PSAR, BNI's response to DOE/OSR questions, and the DOE/OSR Safety Evaluation Report. This change does not result in inconsistencies with these documents, other commitments, or descriptions contained in authorization basis documents or authorization agreements.

Prepared By:	N.Sorensen *Print/Type Name*	*Signature*	12/19/02 *Date*
Reviewed By: (Discipline AB Reviewer)	K.Varma *Print/Type Name*	K. Varma *Signature*	12/19/02 *Date*

P.L 12/19/02

Attachment 7

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-016, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-028, Revision 0

Authorization Basis Change Notice

ISSUED BY
RPP-WTP PDC
INIT 12/11/02 DATE

ABCN Number 24590-WTP-ABCN-ENS-02-016 Revision 0

ABCN Title Reagent Supply System Design Update

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Thomas Galioto	Thomas M. Galioto	11-27-02
Reviewer:	Jeff Provo	Jeff Provo	11-27-02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS Manager	Fred Beranek	[signature]	12/3/02
☒	QA Manager	DEK ASG George Shell	[signature]	12/4/02
☐	Operations Manager			
☐	Commissioning/Training Manager			
☒	Manager of Engineering	Fred Marsh	[signature] FM	12/3/02
☐	Construction Manager			
☒	Area Project Manager	Phil Schuetz	[signature]	12/4/02
☐	Research & Technology Manager			
☐	PMT Chair			
☒	Other Affected Organization	Dwight Krahn	Dwight Krahn	12-3-02

C. ABCN Approval

	Print/Type Name	Signature	Date
PSC Chair	W.G. Poulson	[signature]	~~12/5/02~~ 12/5/02
WTP Project Director	R.F. Naventi	[signature]	12/9/02

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-016 Revision 0

ABCN Title Reagent Supply System Design Update

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
HLW Vitrification Building General Arrangement Plan at EL. –21'-0"	24590-HLW-P1-P01T-00001	1
HLW Vitrification Building General Arrangement Plan at EL. 11'-0"	24590-HLW-P1-P01T-00003	0
HLW Vitrification Building General Arrangement Section G-G and H-H	24590-HLW-P1-P01T-00010	4
Process Flow Diagram HLW Vitrification Reagents (System NAR, SHR, AMR, and DIW)	24590-HLW-M5-V17T -00008	3
P&ID-HLW Sodium Hydroxide Reagent System Sodium Hydroxide Supply	24590-HLW-M6-SHR-00001	C
P&ID-HLW Demineralized Water System Demineralized Water Distribution	24590-HLW-M6-DIW-00001	C
P&ID-HLW Nitric Acid System Nitric Acid Supply	24590-HLW-M6-NAR-00001	0
Preliminary Safety Analysis Report To Support Partial Construction: HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-001-04	0
Preliminary Safety Analysis Report To Support Construction: HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Section 2.4.11.14 of documents 24590-WTP-PSAR-ESH-01-001-04 and 24590-WTP-PSAR-ESH-01-002-04 currently describes the reagent tank room (H-B052) at the –21 ft elevation, this room has been relocated to the 11 ft elevation directly above its old position in the SW corner of the building. The majority of the tank instrumentation listed in this section is no longer required. We currently only require a level instrument in each reagent tank. The new reagent room (H-0214) bermed area is not lined with stainless steel as stated in this section, but instead chemical resistant epoxy paint will be applied to the concrete.

Table 3-3 of documents 24590-WTP-PSAR-ESH-01-001-04 and 24590-WTP-PSAR-ESH-01-002-04 currently list the old BNFL style tank numbers, these numbers have been updated to the BNI RPP-WTP project format. Nitric tanks T36001 and T36004 are now NAR-TK-00001 and NAR-TK-00002, respectively.

Figures 2-1 and 2-4 in 24590-WTP-PSAR-ESH-01-001-04 and figures 2A-1, 2A-3, and 2A-9 in 24590-WTP-PSAR-ESH-01-002-04 show the General Arrangement drawings and sectionals with the reagent room in the –21 ft elevation. Although these figures are marked for "illustration purposes only" they are not consistent with the design of the reagent room at the 11 ft elevation.

Figure 2A-40 in 24590-WTP-PSAR-ESH-01-002-04 also shows an old revision of the PFD. Although this figure is also marked for "illustration purposes only" it is not consistent with the current design.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-016 Revision 0

ABCN Title Reagent Supply System Design Update

Appendix B.4.1.2 in 24590-WTP-PSAR-ESH-01-002-04 describes the reagent room as a C5 area that is entirely below grade. This room has been moved to the 11 ft elevation and will therefore be removed from this section.

F. Explain why the change is needed:

Preliminary Safety Analysis Report to Support Partial Construction Authorization, Section 2.4.11.14, Reagent Tank Room (H-B052) describes the reagent tank room at the –21 ft level. This room was moved up to the 11 ft level per DCA 24590-HLW-DCA-PL-02-001, *Relocation of the Reagents Room – Room #H-B052.*

The instrumentation listed is no longer required in the tanks per DCN 24590-HLW-DCN-PR-02-010, *Delete Temperature, Conductivity, and Pressure Indication for tanks.* We currently only require a level instrument in each reagent tank.

The bermed area is not lined with steel but instead a chemical resistant paint applied to the concrete as described in 24590-HLW-FD-PR-01-001, HLW Vitrification Facility Sump and Liner Characterization Document (Below Grade).

Preliminary Safety Analysis Report to Support Partial Construction Authorization, Table 3-3, HLW Process and By-product Chemicals and Inventories lists the old BNFL style tank numbers, these numbers have been updated to the BNI RPP-WTP project format.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-028 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-016 Revision 0

ABCN Title Reagent Supply System Design Update

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

All changes are within the intent of the AB documents. All changes are consistent with top level standards and do not result in non-conformance of the contract requirements.

H. Attachments (if any):

Safety Checklist for Design

ISSUED BY RPP-WTP PDC
INIT DATE 12/11/02

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-DIW-00001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-016

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-028

Brief description of Design: Demineralized Water System Distribution

The following keywords were used in the search: "Demin" and "reagent". The relevant sections are listed.

Section 2.4.11.14 of documents 24590-WTP-PSAR-ESH-01-001-04 and 24590-WTP-PSAR-ESH-01-002-04 currently describes the reagent tank room (H-B052) at the –21 ft elevation. This room has been relocated to the 11 ft elevation directly above its old position in the SW corner of the building. The new reagent room (H-0214) bermed area is not lined with stainless steel as stated in this section, but instead chemical resistant epoxy paint will be applied to the concrete.

Table 3-3 of documents 24590-WTP-PSAR-ESH-01-001-04 and 24590-WTP-PSAR-ESH-01-002-04 currently list the old BNFL style tank numbers. These numbers have been updated to the BNI RPP-WTP project format. Demineralized Water tank T36003 is now DIW-TK-00002.

Figures 2-1 and 2-4 in 24590-WTP-PSAR-ESH-01-001-04 and figures 2A-1, 2A-3, and 2A-9 in 24590-WTP-PSAR-ESH-01-002-04 show the General Arrangement drawings and sectionals with the reagent room in the –21 ft elevation. Although these figures are marked for "illustration purposes only", they are not consistent with the design of the reagent room at the 11 ft elevation.

Figure 2A-40 in 24590-WTP-PSAR-ESH-01-002-04 also shows an old revision of the PFD. Although this figure is also marked for "illustration purposes only" it is not consistent with the current design.

Appendix B.4.1.2 in 24590-WTP-PSAR-ESH-01-002-04 The Reagent Room has moved to the 11 ft elevation and will therefore be removed from the description in this section.

AB Documents Reviewed:

Document Number	Rev	Section
Integrated Safety Management Plan, 24590-WTP-ISMP-ESH-01-001	1i	No Relevant Information
Quality Assurance Manual, 24590-WTP-QAM-01-001	2	No Relevant Information
Safety Requirements Document (Volume II), 24590-WTP-SRD-ESH-01-001-02	1i	No Relevant Information
Limited Construction Authorization Request, 24590-WTP-LCAR-ESH-01-001	1f	No Relevant Information
Radiation Protection Plan for Design and Construction, 24590-WTP-RPP-ESH-01-001	0	No Relevant Information
ABCN's pending OSR Approval	N/A	No Relevant Information
DOE/OSR Questions and Responses	N/A	HLW-PSAR-13 HLW-PSAR-119 HLW-PSAR-127 HLW-PSAR-170 HLW-PSAR-188 HLW-PSAR-213 HLW-PSAR-214 HLW-PSAR-225

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Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-DIW-00001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-016

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-028

AB Documents Reviewed:

Document Number	Rev	Section
Preliminary Safety Analysis Report To Support Partial Construction Authorization: General Information, 24590-WTP-PSAR-ESH-01-001-01	0a	No Relevant Information
Preliminary Safety Analysis Report To Support Partial Construction: HLW Facility Specific Information, 24590-WTP-PSAR-ESH-01-001-04	0	2.4.11.14, 3.3.3.7 Table 3-3, Table 3-6 Table 3-7, Table 3-11 Table 1-2, Figure 2-1 Figure 2-4
Preliminary Safety Analysis Report To Support Construction Authorization: General Information, 24590-WTP-PSAR-ESH-01-002-01	0	2.9.1.2
Preliminary Safety Analysis Report To Support Construction: HLW Facility Specific Information, 24590-WTP-PSAR-ESH-01-002-04	0	2.4.11.14, 2.4.20.1, 2.5.3.1.5 2.5.4.3, 2.9.4, 2.9.4.1 2.9.4.2, 2.9.4.4, 2.9.8 3.3.3.7, 3.4.1.2 3.4.1.2.1, 3.4.1.10.2.1 Table 3-3, Table 3-6 Table 3-10 Figure 2A-1 Figure 2A-3 Figure 2A-9 Figure 2A-40 Appendix B.4.1.1 Appendix B.4.1.2 Appendix B.5

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-DIW-00001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-016

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-028

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change include modifications other than those providing additional details for SSCs described in Chapter 2 of the PSAR[1]?	☐	☒
3.	Does the change affect the descriptions or figures in the LCAR[2] or Partial Construction Authorization Request (PCAR)[3]?	☒	☐
4.	Are any plant general arrangement drawings that are figures in the PSAR changed?	☒	☐
5.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
6.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
7.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
8.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[4]	☐	☒

If any question above is checked "YES", an ABCN is probably required.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		YES	NO	N/A
9.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
10.	Is a different type of component used to perform the safety function?	☐	☒	☐
11.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
12.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
13.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐

[1] Assumes the PSAR (General Information, PT, HLW, LAW, & BOF Volumes) is approved.

[2] Assumes the LCAR is still in effect but this reference may be deleted if PCAR or CAR supersedes the LCAR.

[3] Assumes PCAR is approved but this reference may be deleted if PCAR is superseded by CAR

[4] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-DIW-00001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-016

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-028

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
14.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
15.	Are design imposed position control requirements for valves changed?	☐	☒	☐
16.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
17.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
18.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
19.	Are there changes to position related interlocks?	☐	☒	☐
20.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☐	☒
21.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☐	☒
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
22.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
23.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
24.	Are single failure requirements for ITS SSCs changed?	☐	☐	☒
25.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
26.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
27.	Are any time delays or actuation times changed?	☐	☒	☐
28.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
29.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
30.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
31.	Are any door interlocks or alarms changed?	☐	☒	☐
32.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
33.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
34.	Are there any increases in loads or changes in load paths?	☐	☒	☐
35.	Are there any increases in floor or wall loads or significant relocation of loads?	☒	☐	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-DIW-00001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-016

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-028

CIVIL/STRUCTURAL		YES	NO	N/A
36.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
37.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
38.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY		**YES**	**NO**	**N/A**
39.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
40.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
41.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
42.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-DIW-00001 **Rev:** 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-016

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-028

REGULATORY		YES	NO	N/A
43.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
44.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 41 must be explained in greater detail. "Yes" or "No" answers to questions 42-44 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

3. Figures 2-1 and 2-4 of the PCAR describe the reagent room location as –21ft elevation. These figures should be modified to incorporate the reagent room to the 11 ft elevation.

4. Figures 2A-1, 2A-3, 2A-9 and 2A-40 of the PSAR describe the location of the reagent room as –21 ft elevation. These figures should be modified to incorporate the reagent room to the 11 ft elevation. Figure 2A-40 shows on old revision of the Process Flow diagram that shows old instrumentation, sample points, flows, etc. This PFD should be updated with the latest revision.

35. The load for the Demineralized Water tank have been moved from the –21 ft elevation to the 11 ft elevation.

42. This change does not result in a noncompliance with applicable laws, regulations, top-level safety standards, or fail to provide adequate safety.

43. Although the location is described incorrectly in the PSAR and PCAR it does not result in a nonconformance to the contract requirements. However, an ABCN must be written and approved to allow this change to be implemented.

44. No, all other commitments and descriptions contained in the AB or authorization agreement will be revised via an ABCN.

	Print/Type Name	Signature	Date
Prepared By:	Thomas Galioto	Thomas Galioto	12/5/02
Reviewed By: (Discipline AB Reviewer)	Sharok Khabir	Sharok Khabir	12/5/02

Attachment 8

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-017, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-010, Revision 0

Authorization Basis Change Notice

ISSUED BY
BPP-WTP PDC
INIT 12/19/02
DATE

ABCN Number 24590-WTP-ABCN-ENS-02-017 Revision 0

ABCN Title HLW Vitrification System HMH PSAR Modification

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Ryan Bingham	Ryan Bingham	12/16/02
Reviewer:	Ken Varma	K.J. Varma	12/16/02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	ES&H ~~Manager~~	~~Fred Beranek~~ Pete Lowry	For Pete Lowry	12/18/02
☒	QA Manager	George Shell		12/18/02
☐	Operations Manager			
☐	Commissioning/Training Manager			
☒	Engineering Manager	Steve Lynch		12/18/02
☐	Construction Manager			
☒	Area Project Manager	Phil Schuetz		12/18/02
☐	Research & Technology Manager			
☐	PMT Chair			
☒	Other Affected Organization (HLW Doc. Custodian)	Dwight Krahn	Dwight Krahn	12/17/02

C. ABCN Approval

	Print/Type Name	Signature	Date
~~PSC Chair~~	* N/A		
~~WTP Project Director~~ * E&HS Mgr.	Fred Beranek		12/18/02

* Per Revision 4 of 24590-WTP-GPP-SREG-001 & 24590-WTP-GPP-SREG-002.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-017 Revision 0

ABCN Title HLW Vitrification System HMH PSAR Modification

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-~~0~~04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04, Rev. 0, 2.6.5

- Remove C3/C5 Overpack from list of C5 ventilation systems

24590-WTP-PSAR-ESH-01-002-04, 3.4.1.6.4.6

- Remove "Rail Endstops", replace with "Transporter locking equipment"

24590-WTP-PSAR-ESH-01-002-04, 4.4.13

- Remove "rail endstops" from title and replace with "Transporter Locking Equipment".

24590-WTP-PSAR-ESH-01-002-04, Rev. 0, 4.4.13.5

- (Delete following sentence) "The endstops will prevent the overpack from dropping off of the transport dock."
- (Replace sentence above) "The locking equipment between the transporter to the transport dock embed, will prevent the overpack from dropping off of the transport dock."
- Replace "railstops" with "transport locking equipment"

24590-WTP-PSAR-ESH-01-002-04, Rev. 0, Section 4.4.13.6

- (Change 1st sentence) Replace endstops with transport locking equipment.

24590-WTP-PSAR-ESH-01-002-04, Rev. 0, Table 4-2

- Replace endstops for melter travel export bay with transporter/loading dock locking equipment.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-017 Revision 0

ABCN Title HLW Vitrification System HMH PSAR Modification

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04, 5.6.13

- Title should read "Melter Overpack and Transporter Locking Equipment".
- (From 4th sentence) Remove entire sentence and replace with the design feature below.
- (Add the following design feature) The HLW Melter Overpack transporter will be designed such that it is locked to the loading bay embed upon final positioning. Only after the transporter is physically locked to the loading bay and the correct position is verified through administrative controls, is the import/export of the overpack from the transporter allowed. This ensures that the overpack cannot fall from the loading dock.

24590-WTP-PSAR-ESH-01-002-04, Appendix A CSD Records

- CSD-HHMH/N0007 draft version needs to be approved to notify that the control strategy for not allowing the HLW Melter Overpack to fall from the loading dock relies upon the locking equipment between the transporter and loading dock embed. The HLW Melter Overpack transporter will be designed such that it is locked to the loading bay embed upon final positioning. Only after the transporter is physically locked to the loading bay and the correct position is verified through administrative controls, is it possible to import/export the overpack from the transporter. This ensures that the overpack cannot fall from the loading dock. Administrative controls recommended for operating the winch upon locking transporter to the loading dock embed.

24590-WTP-PSAR-ESH-01-002-04, (add new section 5.5.13.8)

Administrative Controls – Transporter Locking Equipment Verification

Purpose: This AC ensures and verifies that the transporter is locked to the loading bay in the correct position prior to import/export. Verification that the transporter is locked and in the correct position is required before import/export activities for the HLW Melter Overpack can begin. This will prevent the HLW Melter Overpack from falling from the HLW loading dock during import/export activities.

Derivation Criteria: The drop of a drum cask basis event (section 3.4.1.6.4) identifies the need to prevent the HLW Melter Overpack from falling off of the HLW Loading dock during import/export activities.

F. Explain why the change is needed:

As a result of an ISM which took place on 12/13/02 it was determined that locking the transporter to the the loading dock embed along with administratively controls that verify that the transporter is locked and in its correct position, negate the chances of the HLW Melter Overpack from falling off of the loading dock. Previously, the safety contol feature for this type of an event was through removable rail stops.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-017 Revision 0

ABCN Title HLW Vitrification System HMH PSAR Modification

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-0101 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-017 Revision 0

ABCN Title HLW Vitrification System HMH PSAR Modification

H. Attachments (if any):

~~Safety Evaluation # 24590-WTP-SE-ENS-02-0101 Rev. 0~~

JK 12/18/02

Safety Checklist for Design

ISSUED BY
BRP-WTP PDC
INIT 12/19/02
DATE

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-0101 Rev. 0

QR 12/19/02

Brief description of Design Change:

The current design is for the transporter to be attached to the loading dock via locking bolts/embeds, locking the transporter to the loading dock with additional administrative controls guaranties that the transporter is in a safe and verified position for both melter overpack import and export activities. The transport locking equipment replaces "rail endstops" which were previously used and identified in the PSAR as the safety control feature to prevent the HLW Melter Overpack from falling off of the HLW facility loading dock.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	4.4.13.6 Table 4-2 4.4.13.5 5.6.13 4.4.13 3.4.1.6.4.6 2.6.5 Appendix A CSD Records

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

12/19/02
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Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-0101 Rev. 0

JR 12/19/02

GENERAL REVIEW		YES	NO
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance. Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		YES	NO	N/A
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☒	☐	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-010 Rev. 0

SR 12/19/02

CONTROLS & INSTRUMENTATION AND ELECTRICAL		YES	NO	N/A
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-010 Rev. 0

JR 12/19/02

38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-010 Rev. 0

DR 12/19/02

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

2. The change alters the location of the SSC by removal of rail endstops and adding transporter locking equipment between the transporter and the loading dock embed. By using the tranporter locking equipment, the reliability for this SSC has increased in assuring that the HLW Melter Overpack does not fall from the HLW facility loading dock.

3. The SDS ITS railstops are being deleted and replaced with the transporter locking equipment. The reliability to perform this safety function has increased by replacing the rail endstops with the transporter locking equipment.

5. CSD-HHMH-N0007 needs to be revised to reflect the following:

- The HLW Melter Overpack transporter will be designed such that it is locked to the loading bay embed upon final positioning. Only after the transporter is physically locked in the correct position to the loading bay and verified is it possible to import/export the overpack from the transporter. This ensures that the overpack cannot fall from the loading dock. Administrative controls are recommended for operating the winch upon locking the transporter to the loading dock embed.

8. The rail endstops are being replaced with the transporter locking equipment to perform the same safety function.

37. Based on the answer to the technical questions and any other analysis, does the change create a new DBE?

No, the design change is to lock the transporter to the HLW facility loading dock embed upon final positioning of the transporter. Only after the transporter is physically locked to the loading dock upon final positioning is it possible to import/export the overpack from the transporter. Administrative controls will be incorporated for winch operation upon locking transporter to loading dock. The locking equipment will take the place of previously identified rail endstops (ITS SDS SSC) to meet the safety function for preventing the overpack from falling off of the loading dock. This change in the SSC design does not adversely affect the capability of the SSC to meet its safety function and does not create a new DBE.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-010 Rev. 0

JK 12/19/02

Describe or explain answers, as appropriate

38. Based on the answers to the technical questions and any other analysis, does the change result in more than a minimal (≥ 10%) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?

No, the safety function is not changed by the revised design. There is no change to the analyzed DBE for cask drop as described PSAR Section 3.4.1.6.4 since the overpack is prevented from falling off of the loading dock. Therefore, there is no increase in the frequency or consequence of an analyzed DBE.

39. Based on the answers to the technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?

No, as discussed in questions 37 & 38, the change in the ITS SDS SSC does not adversely affect the capability to meet its safety function. There is no change in to any ITS SDC SSC.

40. Does the change result in a noncompliance with applicable laws and regulations (e.g., 10 CFR 820, 10 CFR 830, 10 CFR 835), nonconformance to top-level safety standards (e.g., DOE/RL-96-0006), or fail to provide adequate safety?

10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE nuclear activities, in particular to achieve compliance with DOE nuclear safety requirements. This design change is not related to any compliance or violation issue, exemption from safety requirements, or reporting of supplier defective products or inaccurate information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of the facility safety bases and clarifies QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This includes certain aspects of technical safety requirements, unreviewed safety questions and their process, documented safety analysis, hazards control, major modifications and the quality assurance program. This design change does not change the QAP and does not challenge any requirements of 10 CFR 830.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. The design change to replace an ITS SDS SSC control with an improved design to ensure the safety function is met, provides for safer and more efficient control. The design change does not change the radiation protection program or challenge any requirements of 10 CFR 835.

This change is a design improvement to the facility and beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, this change continues to perform to top-level safety standards as described above

This change has been evaluated per the WTP Integrated Safety Management process and has been determined to provide adequate safety as described in the PSAR and approved by DOE.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-HMH-00002001 **Rev:** 0
24590-HLW-M5-HMH-00002002
24590-HLW-M5-HMH-00002003
24590-HLW-M5-HMH-00002004

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-017 Rev. 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-0101 Rev. 0

12/19/02

Describe or explain answers, as appropriate

41. Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?

The contract does not contain details in the facility specification such as this change to replace rail endstops with transporter locking equipment. Therefore, this change does not challenge any contract requirements

42. Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?

The level of detail associated with this change is only described in the HLW PSAR, BNI's response to DOE/OSR questions, and the DOE/OSR Safety Evaluation Report. This change does not result in inconsistencies with these documents, and other commitments or descriptions contained in AB documents or authorization agreements.

Prepared By:

	Print/Type Name	Signature	Date
	Ryan Bingham	Ryan Bingham	12/18/02
Reviewed By: (Discipline AB Reviewer)	Ken Varma	K. Varma	12/18/02

Attachment 9

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-022, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-019, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-022 Revision 0

ISSUED BY GPP-WTP PDC 12/20/02 DATE

ABCN Title Update LAW PSAR

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	C. Meng	C Meng	12-17-02
Reviewer:	S. Colby	Scott Colby	Dec 17, 2002

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS	CM 12-17-02 ~~Fred Beranek~~ Dana Cresci	Dana C Cresci	12/18/02
☒	QA	DEK George Shell	for	12/19/02
☒	AB Document Custodian	Dwight Krahn	Dwight Krahn	12/17/02
☐	Commissioning/Training			
☐	Engineering	Fred Marsh	FM	12/18/02
☐	Construction			
☒	Area Project Manager	CM 12/17/02 ~~Dillip Patel~~ W. Elements		12/21/02
BC 12/19/02 ☒	Project Archives Document Control			
☐	Other Affected Organization	~~D. Krahn~~ DEK 12-17-02		

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek		12/19/02

ABCN Number 24590-WTP-ABCN-ENS-02-022 Revision 0

ABCN Title Update LAW PSAR

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
PSAR to Support CAR; LAW Specific Information	24590-WTP-PSAR-ESH-01-002-03	0
Process Flow Diagram LAW Vitrification Melter 1 (System LMP)	24590-LAW-M5-V17T-00004	3
Process Flow Diagram LAW Vitrification Melter 2 (System LMP)	24590-LAW-M5-V17T-00005	3
Process Flow Diagram LAW Vitrification Melter 3 (System LMP)	24590-LAW-M5-V17T-00006	3

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

These changes were identified during a review of the LAW PFDs in response to 24590-WTP-CAR-QA-01-252.

- The changes identified during the review associated with the PCAR 24590-WTP-PSAR-ESH-01-001-03 will not be addressed as the PCAR is being superceeded by the PSAR.
- The changes identified during the review associated with the figures are being addressed generally below.
- All changes identified during the review associated with off-gas are being addressed in another ABCN.

24590-WTP-PSAR-ESH-01-002-03,

1. General: Update all old equipment and stream numbers to current numbers.
2. Section 2.4.13.11, Second paragraph, first sentence. Delete "..., overflows from caustic scrubber blowdown vessel,..."
3. Section 2.5.2. Delete second sentence. 'The process starts in LCP with an analysis of the waste concentrate from the PT facility to determine a glass additive formulation for conversion of the waste to glass."
4. Section 2.5.2.3. Replace sixth bullet "Overflow to the corresponding melter feed vessel" with "Overflow to RLD-VSL-00004".
5. Section 2.5.2.4 bullets. Delete sixth bullet.
6. Section 2.5.9. Third paragraph, second sentence. Replace "...the C3/C5 drain/sump collection vessel..." with "...the plant wash vessel...".
7. Section 2.9.2 Third paragraph, third sentence. Replace "...642 lb/hr and a temperature of 140°F..." with "...about 642 lb/hr and a temperature of about 140°F...".
8. Section 2.9.2 Fourth paragraph, fourth sentence. Replace "..., 1,128 lb/hr and a temperature of 77°F..." with "...about 495 lb/hr and a temperature of about 77°F."
9. Section 2.9.2 Seventh paragraph, first sentence. Delete "..., pressure," and delete "...and conductivity measurements/alarms...".

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-022 Revision 0

ABCN Title Update LAW PSAR

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

10. Table 3-1. Update Table 3-1 to current stream numbers.

11. Table 3-2. In carbon dioxide row, Change "LAW container finishing handling system (LFH) – vessel V23003" to "LAW carbon dioxide gas system (CDG) – vessel CDG-VSL-00001".

12. Table 3-2. Change "54 tons of carbon dioxide" to "maximum carbon dioxide storage is 120 tons"

13. The figures in 24590-WTP-PSAR-ESH-01-002-01 and 24590-WTP-PSAR-ESH-01-002-03 need to be updated during the next general revision of the PSAR.

    (The discrepancy in the figures do not change the fundamental processes or aspects of design as described in the text of the PSAR. As such, there is no impact on nuclear or process safety. The discrepancy in the figures will be corrected to align with the text description of the process.)

24590-LAW-M5-V17T-00004, -00005, -00006

1. **24590-LAW-M5-V17T-00004, -00005, -00006** Change the LPS to HPS (24590-DCA-PR-02-006) and the CHW to PCW on the PFDs.

F. Explain why the change is needed:

24590-WTP-PSAR-ESH-01-002-03

1. General update to current numbers needed.
2. As depicted on 24590-LAW-M5-V17T-00011, the caustic scrubber blowdown vessel (LVP-VSL-00001) now overflows to a berm and not to the C1/C2 drains/sump collection vessel (NLD-VSL-00005).
3. Sample may be confirmatory rather than manditory for current glass receipt. Therefore, this sentence is being deleted.
4. As depicted on 24590-LAW-M5-V17T-00001, -00002, and –00003, the melter feed preparation vessels overflow to the C3/C5 drains/sump collection vessel (RLD-VSL-00004) instead of the melter feed vessels.
5. Miscellaneous solution addition line was deleted which adds to the safety of the facility by eliminating the potential source of unwanted solutions.
6. Any contaminated solution in the C1/C2 drains/sump collection vessel is pumped to the plant wash vessel not the C3/C5 drain/sump collection vessel.
7. The flowrate and temperature are approximate.
8. The approximate flowrate for the SHR system is being updated.
9. The instrumentation and alarms on the reagent vessels is being updated. Pressure and conductivity are not part of the current instrumentation.
10. Stream numbers are being updated to reflect 24590-LAW-M5-V17T-00013.
11. Table is being updated to same numbers shown on 24590-LAW-M5-V17T-00013.
12. CO_2 storage tank size is being updated.
13. The figures in the docuements need to be updated to reflect current design.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-022 Revision 0

ABCN Title Update LAW PSAR

F. Explain why the change is needed:

24590-LAW-M5-V17T-00004, -00005, -00006

1. High pressure steam is used exclusively in LAW. Cooling water will be used instead of chilled water. The PFDs need to be updated to match current design.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-019 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-022 Revision 0

ABCN Title Update LAW PSAR

Remarks:

H. Attachments (if any):

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, -00016 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-022

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-019

Brief description of Design Change:

These changes were identified during a review of the LAW PFDs in response to 24590-WTP-CAR-QA-01-252. Chnages to the equipment and stream numbers, overflow paths, corrections on instruments, flowrates and volumes of tanks were identified.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-03	0	2.4, 2.5, 2.9, 4.4, Tables 3-1, 3-2

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, -00016 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-022

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-019

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance. Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☒	☐	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☒	☐	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, -00016 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-022

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-019

CONTROLS & INSTRUMENTATION AND ELECTRICAL		YES	NO	N/A
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☒

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, -00016 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-022

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-019

40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, -00016 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-022

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-019

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

#2 See Safety Checklist for Design for 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, and -00016 for details.

#10 and #11 The CO_2 tank increased in size from 54 tons to 120 tons. CO_2 is not an extremely hazardous substance as defined in 24590-WTP-RPT-ESH-01-001, Rev. 1. Normal material controls have been specified as appropriate by the ISM process. The increase in material does not impact the conclusions of the ISM process. No DBE has been impacted.

#37 The rerouting of the overflows for the Melter Feed Preparation Vessels and the caustic scrubber does not create a new DBE. The increase in the size of the CO_2 tank does not create a new DBE (not an EHS).

#38 The rerouting of the overflows for the Melter Feed Preparation Vessels and the caustic scrubber and increase in the size of the CO_2 does not result in the increase in the consequences or frequency of an analyzed DBE.

#39 The rerouting of the overflows for the Melter Feed Preparation Vessels and the caustic scrubber and increase in the size of the CO_2 does not change the safety function of the overflows or the CO_2 tank. These changes do not result in a decrease in the reliability or safety function to safety (ITS) SSCs.

#40 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE Nuclear Activities, in particular to achieve compliance with DOE nuclear safety requirements. These design changes are not related to any compliance, violation, or enforcement issue; exemption from safety requirements; or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifier QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions (USQs) and their process, documented safety analysis (DSAs), hazards control, major modifications, facility safety classified SSCs, and the quality assurance program (QAP). These design changes do not challenge any requirements of 10 CFR 830, and are being processed via the WTP procedural requirements for design change safety screening and evaluation with respect to the authorization basis and safety basis to ensure there are no unresolved safety questions.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-LAW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009, -00010, -00011, -00012, -00013, -00014, -00015001, -00015002, -00015003, -00015004, -00016 **Rev:** 3

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Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-019

Describe or explain answers, as appropriate

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These design changes do not challenge any requirements of 10 CFR 835.

These changes are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, these changes continue to perform to top-level safety standards as described above.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide the adequate safety as described in the PSAR and approved by DOE.

#41 The contract does not contain system design details and only includes requirements relative to the PSAR that are associated with format and content. These changes are consistent with the original PSAR format and content and therefore continue to conform to the contract requirements with the original PSAR submittal.

#42 The level of detail associated with these changes are only described in the HLW PSAR. Changes described above do not result in inconsistencies with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement.

	Print/Type Name	Signature	Date
Prepared By:	C. Meng	C Meng	12-18-02
Reviewed By: (Discipline AB Reviewer)	R.M. Nakao	R.M. Nakao	12/18/02
E:NS	Dana Cresser	Dana C Cresser	12.18.02

Attachment 10

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-023, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-020, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-023 Revision 0

ISSUED BY GPP-WTP PDC INIT DATE 12/20/02

ABCN Title Update HLW PSAR

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	C. Meng	C Meng	12/17/02
Reviewer:	J. Rouse	Jim Rouse	12/17/02

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS	~~Fred Beranek~~ Pete Lowry DE 12/19/02	Peter Lowry	12/18/02
☒	QA	George Shell DEK	[illegible] for	12/18/02
☒	AB Document Custodian	DWIGHT KRAHN	Dwight Krahn	12/17/02
☐	Commissioning/Training			
☒	Engineering	Fred Marsh	[illegible]	12/18/02
☐	Construction			
☒	Area Project Manager	P. Schuetz	[illegible]	12/18/02
☐	Project Archives Document Control			
☐	Other Affected Organization	~~D. Krahn~~ DEK 12/17/02		

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek	[illegible]	12/19/02

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-023 Revision 0

ABCN Title Update HLW PSAR

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
PSAR to Support CAR; HLW Specific Information	24590-WTP-PSAR-ESH-01-002-04	0
Process Flow Diagram HLW VIT Primary Offgas Treatment (System HOP)	24590-HLW-M5-V17T-00003	3

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

These changes were identified during a review of the HLW PFDs in response to 24590-WTP-CAR-QA-01-252.

- The changes identified during the review associated with the PCAR 924590-WTP-PSAR-ESH-01-001-03) will not be addressed as the PCAR is being superceeded by the PSAR.
- The changes identified during the review associated with the figures are being addressed gernerally below.
- The changes identified during the review associated with the anhydrous ammonia tank will be addressed in 24590-WTP-ABAR-ENS-02-015.

24590-WTP-PSAR-ESH-01-002-04

1. General: Update equipment numbers (vessels, heaters, fans, etc.), stream numbers, and vessel volumes throughout document.
2. General: Replace deionized water with demineralized water.
3. General: Change "Acidic Waste Storage Vessel" to "Acidic Waste Vessel".
4. Section 2.4.11.1.5, Change first sentence to read: "The offgas drains collection vessel collects condensate from the offgas line between the HEMEs and the HEPA Preheater."
5. Section 2.4.11.3.1, bullets. Delete the third bullet.
6. Section 2.4.11.14, Replace "The nitric acid tanks have level, temperature, conductivity, and pressure indication. The nitric acid tanks also have air spargers for mixing , and provisions for the addition of demineralized water." With: "The nitric acid tanks have level indication and provisions for the addition of demineralized water." and the third sentence should read "The sodium hydroxide tank has level inication."
7. Section 2.4.12.1.2, first and second bullets. First bullet should read "Mechanical transfer/recirculation/sample pumps". Third bullet is deleted.
8. Section 2.4.12.1.4, bullets. Delete first two bullets. Add a bullet "Air powered siphon".
9. Section 2.4.12.1.5, first bullet. Delete density.
10. Section 2.5.1.2, first paragraph, second sentence. Add "borax" after "zinc oxide"
11. Section 2.5.3, fifth bullet. Delete "(if used)".
12. Section 2.5.3.1.1, Delete first and second bullet. Replace with 1. High Differential Pressure Alarm across Film Cooler and Offgas Jumper, and 2. Jumper (i.e., SBS inlet) Discharge Temperature.
13. Section 2.5.3.1.2, fourth paragraph, first bullet. Delete the first bullet "High SBS liquid temperature".
14. Section 2.5.3.1.3, second paragraph, first sentence. Replace "top" with "bottom" and "down" with "up".

ABCN Number 24590-WTP-ABCN-ENS-02-023 Revision 0

ABCN Title Update HLW PSAR

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

15. Section 2.5.3.1.3, second paragraph, third sentence. Reword sentence as follows: "A strong electric field is generated along the electrode. Aerosols are negatively charged as they pass through the tubes."
16. Section 2.5.3.1.3, third paragraph, bullets. Delete the second bullet. Add "spray" between "water" and "supply" on the third bullet.
17. Section 2.5.3.1.3, third paragraph. Delete "and prevent the".
18. Section 2.5.3.1.4, first paragraph, last sentence. Add ", and breakpots." to the end of this sentence.
19. Section 2.5.3.1.4 , second paragraph. Delete "and high".
20. Section 2.5.3.1.5, second paragraph, first sentence. Replace "with 99% removal" with "with medium removal".
21. Section 2.5.3.1.5, third paragraph, third bullet. Add "spray" between "water" and "supply" on the third bullet.
22. Section 2.5.3.1.6, first paragraph, third sentence. Replace "to obtain 99.999% removal" with "to obtain >99.999% removal".
23. Section 2.5.3.1.6, second paragraph, bullets. Delete fourth and fifth bullets.
24. Section 2.5.3.2.2, first paragaph, fourth sentence. Replace "about 1,000 cfm at –50 in. w.c." with "about 1,000 cfm at 60 in. w. g".
25. Section 2.5.3.2.2, second paragaph, fourth sentence. Replace "at –50 in. w.c." with "at 60 in. w. g.".
26. Section 2.5.3.2.2, third paragaph, bullets. Delete the fourth and seventh bullets. Replace the sixth bullet with "High Scondary Offgas Pressure (Low Vacuum).
27. Section 2.5.3.2.3, first paragaph, first and second sentences. First sentence should read "Because the melter decomposes the parent nitrate/nitrite compounds, the offgas contains NO_x." The second sentence should read "Offgas passing through the SBS will have part of the NO_x removed. NO_x removal will be completed in the SCR."
28. Section 2.5.3.2.3, sixth paragaph, bullets. Delete the first, second, third, and fifth bullets. Replace the sixth bullet with "High Discharge Temperature"
29. Section 2.5.3.2.4, first paragaph, second sentence. Replace "removes 99.9%" with "removes >99.9%".
30. Section 2.5.3.2.4, second paragaph, first sentence. Delete the first sentence and combine the first and second paragraphs.
31. Section 2.5.5.3, Second sentence. Change "The vessel would be dry most of the time, except that a hydraulic seal must be maintained between the low-pressure lcoations of the drains and the high-pressure location of the vessel vent." to "The vessel must maintain a minimum liquid level in order to maintain a hydraulic seal between the Process Vessel Ventilation System (PVV) and the Melter Offgas Treatment Process System (HOP)."
32. Section 2.5.6, first paragraph, second, and third sentences. Should read "The NLD collection area consists of C2 drains collection tank (NLD-TK-00006), at the –21 ft level, and a firewater collection containment pit at the –31 ft level. Effluents that are nonradioactive or non-dangerous will be transferred to a BOF tank."
33. Section 3.4.2.1.1, bullets. Add a bullet "Canister decontamination vessel (HDH-VSL-00002)".
34. Update Table 3-1.
35. Table 3-3 Update vessel sizes.
36. Table 3-14 Change "Acidic Wash Vessel" to "Acidic Waste Vessel".
37. Section 4.4.3.2 Remove "The header is sloped, to drain to the offgas drains collection vessel to prevent

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

blocking."

38. Section 4.4.3.3, first paragraph, third sentence. Should read "The fans have provision for automatic shutdown and switchover to the standby fan on detection of low differential pressure in one of the primary fans."
39. Section 4.4.3.4, third Sub-Section. The quote from AG-1, Section FC-1130 is in error. It should read "...99.97%...".
40. Section 4.4.3.5, second paragraph, second sentence. Replace "the design includes a fully line on standby" with "the design includes a standby line".
41. Section 4.4.3.6, third paragraph, first sentence. Add at the end of the sentence "and offgas system."
42. Section 4.4.4.2, third Sub-Section, Change first paragraph to "automatically trips melter feed and SBS solids suspension system recycle."
43. 5.5.9 third bullet change "acidic waste vessels" to "acidic waste vessel".
44. The figures in 24590-WTP-PSAR-ESH-01-002-01 and 24590-WTP-PSAR-ESH-01-002-03 need to be updated during the next general revision of the PSAR.

    (The discrepancy in the figures do not change the fundamental processes or aspects of design as described in the text of the PSAR. As such, there is no impact on nuclear or process safety. The discrepancy in the figures will be corrected to align with the text description of the process.)

24590-HLW-M5-V17T-00003

45. Add vent to HOP-SCB-00001 on 24590-HLW-M5-V17T-00003.

F. Explain why the change is needed:

1. The equipment numbers have changed.
2. The HLW facility no longer uses deionized water. Demineralized water is used through out the facility.
3. The vessel name has changed.
4. The location of the drain has changed.
5. HOP-VSL-00903 does not have a sampler.
6. These instruments were deleted in 24590-HLW-DCA-PR-02-013, as they are not needed for process control.
7. These pumps were deleted in 24590-HLW-DCN-PR-01-003 and TN-24590-02-00404 as the transfer/recirculation pumps will be used for the sample pump. Section 2.4.12.1.3, first and second bullets. First bullet should read "Mechanical transfer/recirculation/sample pumps". Third bullet is deleted.
8. The HOP-SCR-00001 does not have a steam ejector pump or pulse jet mixer and it does have an air powered siphon.
9. The density measurement is not needed for process control and has been deleted.
10. Updating to include Borax.
11. The use of bubbler in the HLW melter is now part of the baseline design since the minimum design glass production rate of 1.5 Mt/day can not be achieved without them per R&T results.
12. Process indicators listed are not relevant to the system safety case. Replacement process indicator provide

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F. Explain why the change is needed:

indication of potential restrictions in the system which could eventually impair ventilation of the melter.

13. There are no defined alarms or interlocks associated with high SBS liquid temperature.
14. The baseline gas flow path in the HLW WESP has been changed to upward flow per 24590-HLW-DCN-PR-02-011.
15. Change made for process clarification.
16. Significant increases across the WESP are highly improbable due to its design. Therefore, no alarms or interlocks have been defined so the second bullet will be deleted. "Spray" is added for clarification.
17. Change made for document consistency in defining instrumentation.
18. Process clarification.
19. No high vacuum alarm has been defined for the PVV system since no adverse effects have been identified.
20. HEME DFs will be variable depending on process conditions and chemical species. Since no efficiency level was defined for the SBS and WESP, none should be defined for the HEMEs.
21. Clarification.
22. The two HEPA in series will achieve a much higher efficiency than what is defined here. We are using DFs of 2000 and 100 for the air permit. It is extremely misleading to state that an offgas abatement unit will have a specific efficiency to five significant figures.
23. No radiation monitors are included in the HOP system per 24590-HLW-DCN-PR-02-012.
24. Each HOP extraction fan (both booster and stack) have design duties of 1000 SCFM and 60" WG per process datasheets 24590-HLW-MAD-HOP-00001/2/3/4/5/6, Rev. 1.
25. Each HOP extraction fan (both booster and stack) have design duties of 1000 SCFM and 60" WG per process datasheets 24590-HLW-MAD-HOP-00001/2/3/4/5/6, Rev. 1.
26. A. No process need or upset condition has been identified to justify directly monitor fan discharge temperature. Therefore, the fan discharge temperature indicators have been removed per 24590-HLW-DCN-PR-02-021. B. There is no process or safety issue to have a low pressure (i.e., high vacuum) alarm on the offgas system. C. A low vacuum alarm will be provided after the booster extraction fans to warn of potential positive pressures in the HOP secondary offgas system.
27. Process Clarification.
28. A. No high differential pressure alarm is defined for the HLW catalyst skid since no mechanism for increases in pressure drop have been defined. B. Loss of ammonia to the NOx SCR has not been identified as a process upset. An alarm for high NOx concentrations downstream of the catalysts skid has been identified instead. In addition, the ammonia system is passive with little probably of failing. C. Failure of the catalyst skid electric heater will impact abatement efficiency, but is not considered a safety issue. D. To protect from high temperatures, a high catalyst skid discharge temperature alarm will be provided.
29. At the defined operational temperature, silver mordenite will have an abatement efficiency in excess of 99.9% (DF=1000) per calculation 24590-HLW-MKC-HOP-00002.
30. Verbiage clarification.
31. Verbiage clarification. Effluents that are nonradioactive or non-dangerous will be transferred to a BOF tank.
32. If the origins of the material in this tank are known, the tank will not be sampled prior to transfer.
33. Since this vessel is in the same room as HDH-VSL-00001, it should be included in list of radiological vessels in C5 exhausted areas.

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ABCN Title Update HLW PSAR

F. Explain why the change is needed:

34. Cs137 concentration is higher on PFD than in Table 3-1 for the CRV.
35. Vessel sizes have changed. Update table.
36. There is a new vessel designation.
37. Process clarification, line slopes to HEME.
38. Section 4.4.3.3 A melter surge is one of the primary process upsets for the melter offgas system. Since melter surges are essentially dramatic increases in steam generation, which would be quenched in the SBS, the extraction fans will actually see a significant decrease in offgas flowrate during these surges. By relying on a flowrate to indicate fan failure and switch over to the standby fan, this flow trip could be activated by a false positive and make matters worse. The real indicator of fan performance is its differential pressure which is the essence of the SIPD requirement to maintain vacuum in the system, not gas flow. It is also important to state that whatever trip is used to startup the backup fan, the primary fan in question is shutdown to prevent starving all three fans of air. If all three 50% fans are operated concurrently, they will probably become unstable and therefore ineffectual.
39. The quote is in error.
40. Process Clarification.
41. Process Clarification.
42. Process Clarification.
43. Equipment title change. Process Clarification.
44. The figures in the docuements need to be updated to reflect current design.
45. The PFD needs to be updated to reflect current design.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-020 Rev 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-023 Revision 0

ABCN Title Update HLW PSAR

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

ISSUED BY RPP-WTP-PDC
12/20/08
INIT DATE

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Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-020

Brief description of Design Change:

These changes were identified during a review of the HLW PFDs in response to 24590-WTP-CAR-QA-01-252. Chnages to the equipment and stream numbers, corrections on instruments, transfer routes, text clarification, and volumes of tanks were identified. Update to reflect current offgas configuration.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-01	0	Table 8-1
24590-WTP-PSAR-ESH-01-002-04	0	2.4, 2.5, 4.4, Tables 3-1, 3-3, 3-14,

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☐	☒
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

12/20/08
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Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

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Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-020

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance. Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☒	☐	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☒	☐	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☒	☐	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-023

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-020

CONTROLS & INSTRUMENTATION AND ELECTRICAL		YES	NO	N/A
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☒	☐	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-023

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-020

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

#2 See Safety Checklist for Design for 24590-HLW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009 for details

#5 HOP-VSL-00903 is referenced in CSDs as HOP-VSL-00003.

#10 and #11 Vessel volumes need to be updated on Table 3-1. (RLD-VSL-00001 from 5177 to 4500 gallons, RLD-VSL-00002 from 125 to 150 gallons, RLD-VSL-00007 from 12,100 to 11,000 gallons, and RLD-VSL-00008 from 8887 to 7900 gallons.) These changes may be due to definitions of batch volume versus operating volume.

#13 Was marked yes in the original Safety Checklist for Design but it is marked no since the change to the anhydrous ammonia tank will be covered in 24590-WTP-ABAR-ENS-02-015, Rev. 0

#27 Inline Radiation Monitors are removed downstream of the HEPAs as they cannot detect small radiation changes. The offgas is pulled through a filter that is monitored for radiation changes.

#37 The change in volume for the RLD vessels does not create a new DBE.

#38 The change in volume for the RLD vessels does not result in the increase in the consequences or frequency of an analyzed DBE.

#39 The change in volume for the RLD vessels does not change the safety function of the vessels. These changes do not result in a decrease in the reliability or safety function to safety (ITS) SSCs.

#40 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE Nuclear Activities, in particular to achieve compliance with DOE nuclear safety requiements. These design changes are not related to any compliance, violation, or enforcement issue; exemption from safety requirements; or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifier QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions (USQs) and their process, documented safety analysis (DSAs), hazards control, major modifications, facility safety classified SSCs, and the quality assurance program (QAP). These design changes do not challenge any requirements of 10 CFR 830, and are being processed via the WTP procedural requirements for design change safety screening and evaluation with respect to the authorization basis and safety basis to ensure there

Safety Checklist for Design

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Design Document No: 24590-HLW-M5-V17T-00001, -00002, -00003, -00004, -00005, -00006, -00007001, -00007002, -00008, -00009 **Rev:** 3

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-023

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-020

Describe or explain answers, as appropriate

are no unresolved safety questions.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These design changes do not challenge any requirements of 10 CFR 835.

These changes are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, these changes continue to perform to top-level safety standards as described above.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide the adequate safety as described in the PSAR and approved by DOE.

#41 The contract does not contain system design details and only includes requirements relative to the PSAR that are associated with format and content. These changes are consistent with the original PSAR format and content and therefore continue to conform to the contract requirements with the original PSAR submittal.

#42 The level of detail associated with these changes are only described in the HLW PSAR. Changes described above do not result in inconsistencies with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement.

	Print/Type Name	Signature	Date
Prepared By:	C. Meng	C Meng	12-18-02
Reviewed By: (Discipline AB Reviewer)	R.M. Nakao	R.M. Nakao	12/18/02
	R. Lowry	Ron Lowry	12-18-02

Attachment 11

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-028, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-033, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-028 Revision 0

ABCN Title Design changes associated with High Level Waste Vitrification System HSH - Mechanical Handling Diagram - Melter Cave Support Handling -Melter Cave 1.

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Bryan K Smith		12/18/02
Reviewer:	Ken Varma	K.J. Varma	12/18/02

ISSUED BY RPP-WTP PDC INIT DATE 12/24/02

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS	Pete Lowry		12/19/02
☒	QA	George Shell	for	12/23/02
☒	AB Document Custodian	Dwight Krahn		12/18/02
☐	Commissioning/Training			
☒	Engineering	Fred Marsh	for	12/23/02
☐	Construction			
☒	Area Project Manager	Phil Schuetz		12/18/02
☐	Project Archives Document Control			
☐	Other Affected Organization			

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek	D. Klein / F. Beranek	12/23/02

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-028 Revision 0

ABCN Title Design changes associated with High Level Waste Vitrification System HSH - Mechanical Handling Diagram - Melter Cave Support Handling -Melter Cave 1.

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
HLW VITRIFICATION SYSTEM HSH MECHANICAL HANDLING DIAGRAM MELTER CAVE SUPPORT HANDLING MELTER CAVE 1	24590-HLW-M7-HSH-00001001 24590-HLW-M7-HSH-00001002	0 (When Issued) 0 (When Issued)
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

The design includes Posting Box HSH-TWDVC-00001 with several ITS controls. This SSC was not identified in the PSAR and is not currently identified in the Appendix A Hazards Assessment Report. A draft CSD-HSH/0013 has been created within SIPD for this SSC. The posting box information needs to be added to section 2.4.12.1 of the PSAR. The section will need a statement describing the function of the posting box and that the posting box is a portion of the C5 containment boundary. The posting box will be used to transfer tools and miscellaneous items into the melter cell from the C2 corridor. Add Posting Box to bolded subtitles in sections 4.3.11.1 and 4.3.11.2 of the PSAR. (Example: Change "Gamma Detector Interlock for the Shield Doors, PSADs, and Shielded Hatches" to "Gamma Detector Interlock for the Shield Doors, PSADs, Shielded Hatches, and Posting Ports"). Add posting boxes to first sentence of section 5.3.2.2 of PSAR. ITS items on the posting box need to be added to Table 4.1.

The design includes the addition of a decontamination pit with a gamma interlocked hatch, shield window, and C5 ventilation that is not identified in the PSAR. The pit and decon tank are used for decontaminating items after they have been removed from the melter cave so that hands on maintenance can be performed on the items. These additions have been approved through trend TN-24590-02-00601. See also DCA's 24590-HLW-DCA-M-02-017 and 24590-HLW-DCA-M-02-018. Section 2.6.5 of the PSAR needs to be updated to include the decontamination pit in the list of systems served by the C5 ventilation. The Decontamination Pit and Tank need to be added to section 2.4.14.1 of the PSAR. The section will require a statement describing the function of the Decontamination Pit and Tank and that the pit will form a C5 boundary.

ITS misreeving detection associated with the crane hoists is not identified in the PSAR. This will be clarified in SCR-HMECH/N0001.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-028 Revision 0

ABCN Title Design changes associated with High Level Waste Vitrification System HSH - Mechanical Handling Diagram - Melter Cave Support Handling -Melter Cave 1.

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

"Hoisting equipment shall be designed appropriately (including parameters such as material selection, operating conditions, operating methods, operating speeds, controls and interlocks) to minimize unplanned and uncontrolled load movement including load drops."

Add a line at the end of the first paragraph of PSAR Sections 4.4.9.2 and 4.4.10.2 stating that the hoist drums have cable misreeving detection to reduce the probability of damage to the hoist ropes.

In PSAR Chapter 5, develop a Limiting Condition for Operation, as necessary, for the active, ITS SSCs associated with the crane load path components. This should include any ITS SSC operability and surveillance requirements.

F. Explain why the change is needed:

Align the design document with the Authorization Basis Document due to trend approval. The majority of these changes are associated with the Cycle III ISM review. The decontamination pit, decontamination tank, C5 ventilation, and gamma interlocked hatch have been added to better facilitate decontamination. A posting port has been added to reduce time and effort of importing small items into the melter cave.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-033 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-028 Revision 0

ABCN Title Design changes associated with High Level Waste Vitrification System HSH - Mechanical Handling Diagram - Melter Cave Support Handling -Melter Cave 1.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M7-HSH-00001001	**Rev:**	0
	24590-HLW-M7-HSH-00001002		0
	24590-HLW-M7-HSH-00001003		0

ISSUED BY RPP-WTP PDC
INIT DATE

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-028

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-033

Brief description of Design Change:

The design includes Posting Box HSH-TWDVC-00001 with several ITS controls not in the PSAR and not currently identified in the PSAR Appendix A Hazards Assessment Report.

The design includes the addition of a decontamination pit with a gamma interlocked hatch and C5 ventilation that is not in the PSAR.

ITS misreeving detection associated with the crane hoists is not identified in the PSAR. It will be clarified in SCR-HMECH/N0001.

"Hoisting equipment shall be designed appropriately (including parameters such as material selection, operating conditions, operating methods, operating speeds, controls and interlocks) to minimize unplanned and uncontrolled load movement including load drops."

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	2.4.12.1, 4.3.11.1, 4.3.11.2, 5.3.2.2, 2.6.5, 2.4.14.1, 4.4.9.2, 4.4.10.2
*This only includes the AB documents that may need to be changed. All AB documents were reviewed.		

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

Safety Checklist for Design

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Design Document No:	24590-HLW-M7-HSH-00001001	**Rev:**	0
	24590-HLW-M7-HSH-00001002		0
	24590-HLW-M7-HSH-00001003		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-028

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-033

GENERAL REVIEW		YES	NO
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW
These questions evaluate design change affects on DBE hazards analysis.

SYSTEMS (general)		YES	NO	N/A
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☒	☐	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☐	☒

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

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Design Document No: 24590-HLW-M7-HSH-00001001 **Rev:** 0
24590-HLW-M7-HSH-00001002 0
24590-HLW-M7-HSH-00001003 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-028

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-033

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☐	☒
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☐	☒
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☐	☒
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☐	☒
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☒	☐	☐
29.	Are any door interlocks or alarms changed?	☒	☐	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☒	☐	☐
31.	Is any radiation shielding changed including shield wall openings?	☒	☐	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☒	☐	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☒	☐	☐
34.	Does the change affect the melter glass spill event?	☐	☐	☒
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

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24590-HLW-M7-HSH-00001002 0
24590-HLW-M7-HSH-00001003 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-028

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-033

REGULATORY (These questions to be answered for SE only)		YES	NO	N/A
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

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Design Document No:	24590-HLW-M7-HSH-00001001	**Rev:**	0
	24590-HLW-M7-HSH-00001002		0
	24590-HLW-M7-HSH-00001003		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-028

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-033

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

Question 2: Does the change alter the location, function, or reliability of an SSC described in the AB[1]? Yes, Additional SSCs have been added (i.e. the decontamination pit with interlocks and shield windows) and an existing SSC that was not identified in the PSAR (i.e. the posting box) was added.

Question 3: Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2) Yes, Additional SSCs have been added (i.e. the decontamination pit with interlocks) and an existing SSC has been added to the PSAR (i.e. the posting box).

Question 5: For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records? Yes, a CSD associated with the Posting Box will need to be added, and the addition of the pit may add several CSDs.

Question 17: Are there changes to position related interlocks? Yes, The design includes the addition of a decontamination pit with a gamma interlocked hatch.

Question 28: Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA? Yes, The design includes the addition of a decontamination pit with C5 ventilation. Shield windows and liner penetrations are being added.

Question 29: Are any door interlocks or alarms changed? Yes, The design includes the addition of a

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	24590-HLW-M7-HSH-00001003		0

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Safety Evaluation No: (if used as SE)	24590-WTP-SE-ENS-02-033

Describe or explain answers, as appropriate

decontamination pit with a gamma interlocked hatch.

Question 30: Are there any changes to the C5/R5 zone boundaries? Yes, The design includes the addition of a decontamination pit with C5 ventilation. Shield windows and liner penetrations are being added.

Question 31: Is any radiation shielding changed including shield wall openings? Yes, The decontamination pit includes shielding for the pit and the decontamination tank.

Question 32: Are there any increases in loads or changes in load paths? Yes, a shield wall associated with the decontamination pit and tank is being added. This additional load will be evaluated for acceptability in the design effort.

Question 33: Are there any increases in floor or wall loads or significant relocation of loads? Yes, a shield wall associated with the decontamination pit and tank is being added. This additional load will be evaluated for acceptability in the design effort.

Question 37: Based on the answers to the above technical questions and any other analysis, does the change create a new DBE? No, The design change to add the decontamination pit with gamma interlocked hatch, shield windows, and additional SSCs identified during design evolution, such as the posting box, do not create a new DBE.

Question 38: Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report? No, the design changes and addition of SSCs to the PSAR do not adversly affect the C5 ventilation safety function for confinement or any DBE analyzed in the PSAR. Therefore, there is no affect on the frequency or consequence of an analyzed DBE.

Question 39: Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function? No, the safety functions of ITS SSCs (gamma interlocks, position switches, crane load path components, shield windows, and shielding) are not changed by these design changes.

Safety Checklist for Design

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Safety Evaluation No: (if used as SE)	24590-WTP-SE-ENS-02-033

Describe or explain answers, as appropriate

Question 40: Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety? No, 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE nuclear activities, in particular to achieve compliance with DOE nuclear safety requirements. This design change is not related to any compliance or violation issue, exemption from safety requirements, or reporting of supplier defective products or inaccurate information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of the facility safety bases and clarifies QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This includes certain aspects of technical safety requirements, unreviewed safety questions and their process, documented safety analysis, hazards control, major modificfations, and the quality assurance program. This design change does not change the QAP and does not challenge any requirements of 10 CFR 830.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. This design change to add a decontamination pit provides an enclosed area for decontamination of items after they are removed from the melter cave. This enclosed pit will effectively separate the pit from the Decontamination Area, reducing the spread of contamination within the Decontamination Area during decon operations. A posting port will be added to transfer small items into the cave. This will reduce the time and effort required to import these items into the melter cave. These changes will provide a significant cost savings for decontaminating the Decontamintion Area and reduce time for importing small items into the melter cave while maintaining the PSAR established safety functions of confinement, C5 Ventilation, and protection of facility workers from the hazards of direct radiation and contamination. These changes do not change the radiation protection program or challenge any requirements in 10 CFR 835.

These changes are design improvements to the facility and beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, this change continues to perform to top-level safety standards as described above.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide the adequate safety as described in the PSAR.

Question 41: Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change? No, the contract does not contain details in the facility specification such as the change to add a decontamination pit. Therefore, this change does not challenge any contract requirements.

Safety Checklist for Design

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Describe or explain answers, as appropriate

Question 42: Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised? No, the level of detail associated with these changes is only described in the HLW PSAR, BNI's response to DOE/OSR questions, and the DOE/OSR Safety Evaluation. This change does not result in inconsistencies with these documents, other commitments, or descriptions contained in AB documents or authorization agreements.

Prepared By:	Bryan K Smith *Print/Type Name*	*Signature*	12/19/02 *Date*
Reviewed By: (Discipline AB Reviewer)	Ken Varma *Print/Type Name*	K. J. Varma *Signature*	12/19/02 *Date*

Attachment 12

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-038, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-052, Revision 0

ISSUED BY
RPP-WTP PDC
KA 12/19/02
INIT DATE

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-038 Revision 0

ABCN Title Alignment of System HFH Rev 0 Mechanical Handling Diagram with the HLW Authorization Basis.

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Brian Kellogg	[signature]	12/12/02
Reviewer:	Ken Varma	K. Varma	12/12/02

B. Required Technical Reviewers

Review Required? *For each person checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS ~~Manager~~	DK 12/18/02 ~~Fred Beranek~~ Pete Lowry	[signature]	12/18/02
☒	QA Manager	DEK George Shell	[signature]	12/18/02
☐	Operations Manager			
☐	Commissioning/Training Manager			
☒	Manager of Engineering	Fred Marsh	[signature]	12/18/02
☐	Construction Manager			
☒	Area Project Manager	Phil Schuetz	[signature]	12/18/02
☐	Research & Technology Manager			
☐	PMT Chair			
☒	HLW Doc Custodian	Dwight Krahn	Dwight E Krahn	12/16/02

C. ABCN Approval

	Print/Type Name	Signature	Date
PSC Chair	~~Bill Poulson~~ *DK 12/17/02 NA		
DK 12/17/02 ~~WTP Project Director~~ E&NS Mgr.	DK 12/17/02 ~~Ron Naventi~~ Fred Beranek	[signature]	12/18/02

DK 12/17/02 * Per Rev. 4 of 24590-WTP-GPP-SREG-001 & 24590-WTP-GPP-SREG-002

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-038 Revision 0

ABCN Title Alignment of System HFH Rev 0 Mechanical Handling Diagram with the HLW Authorization Basis.

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04

3.3.3.5:

Remove hydraulic designation of the Filter Size Reduction Unit in the PSAR. Add the statement that selection of construction material will minimize ignition source and combustible materials in the Filter Cave.

Appendix A:

- Update CSD-HHFH/N0002 to include reference to Posting Port ITS shield door position sensors
- Update CSD-HHFH/N0005 to remove hydraulic designation of the Filter Size Reduction Unit and add existing SCR-HFIRE/N0003.
- Update Appendix A to include new CSD records as follows:

  CSD-HHFH/N0013 – Prevent Filter Cave shield doors from opening unless all Floor Plug pieces are in place to prevent excessive direct radiation exposure to personnel in the Laydown Area (H-0103).

  CSD-HHFH/N0014 – Prevent Filter Cave shield doors from opening unless all Floor Plug pieces are in place to prevent loss of differential pressure and contamination spread to personnel in the Laydown Area (H-0103).

  CSD-HHFH/N0015 – Prevent Filter Cave shield doors from opening while personnel are in the Filter Cave Crane Maintenance Area (H-0201) to prevent exposure of personnel to direct radiation sources from Filter Cave (H-0104).

Authorization Basis Change Notice

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ABCN Title Alignment of System HFH Rev 0 Mechanical Handling Diagram with the HLW Authorization Basis.

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

F. Explain why the change is needed:

The clarifications and additions are needed to bring a Rev 0 primary design document into alignment with the Authorization Basis.

3.3.3.5:

The Filter Size Reduction Unit (FSRU) is identified as a hydraulic unit in the PSAR. Method of prime movement has not been limited to hydraulic. Mitigation of uncontrolled fire will be covered through selection of construction materials to minimize combustible loading to the extent practical.

Appendix A:

CSD-HHFH/N0002:

Posting Port shield door position switches have been identified as ITS to prevent direct radiation and contamination exposure to personnel. Switches prevent multiple shield doors from opening simultaneously.

CSD-HHFH/N0005:

FSRU is identified as hydraulic and the PSAR should be amended to remove this designation. Method of prime movement has not been limited to hydraulic. Existing SCR-HFIRE/N0003 should be added to CSD-HHFH/N0005 to minimize combustible loading to the extent practical in the Filter Cave.

CSD-HHFH/N0013 through 15:

CSD-HHFH/N0013 through 15 are additions to the PSAR Appendix A as part of design development and contain SDC SSCs. SDC position sensors have been added to floor plug pieces to prevent multiple shield doors, floor hatches, and personal access doors from opening simultaneously.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-038 Revision 0

ABCN Title Alignment of System HFH Rev 0 Mechanical Handling Diagram with the HLW Authorization Basis.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-052 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

Safety Checklist for Design

ISSUED BY
RPP-WTP PDC
INIT DATE

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

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	24590-HLW-M7-HFH-00001003		0

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Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-052, Rev. 0

Brief description of Design Change:

The following changes are inconsistent with AB document 24590-WTP-PSAR-ESH-01-002-04:

1. Cave Layout reference drawing number, room numbers, and equipment designations have changed from those in the PSAR.
2. ITS position switches have been added to the Floor Plug in the CMA to prevent shield doors opening unless all plug sections are in place. This is covered in ISM cycle-III.
3. CSD-HHFH/N0013, 14, and 15 are not included in the PSAR. Posting Port ITS shield doors are not included in Appendix A.
4. Method of prime movement for Filter Size Reduction Unit has not been limited to hydraulic. Final design is pending vendor selection.
5. PSAR identifies SDC proximity switches for open and closed indication on PSADs. Proximity switches are not the only acceptable means of positional indication. Other types of positional indication may be used to meet the same safety function.

* Design changes 1, and 5 have been evaluated and do not require an ABCN. These changes do not affect the function, reliability, or safety risk characteristics identified in the Authorization Basis.

* The remaining design changes are covered by the above referenced ABCN.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	2.4, 2.4.12.2, 2.4.13.1, 2.5.7.1, Fig 2A-2 through Fig 2A-6, Fig 2A-15, 3.3.3.5, 3.4.1.2.5, Table 3-20, 4.3.2.2, 4.3.3.6, 4.3.11.2, 4.4.10.3, Appendix A, Table 4-2,

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

12/19/02
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GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☐	☒
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☒	☐
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		YES	NO	N/A
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☒	☐	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

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TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☒	☐	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐

Safety Checklist for Design

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FIRE PROTECTION		YES	NO	N/A
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☒	☐	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

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REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

3. CSD records included in Appendix A of the PSAR are out of date. ITS instrumentation has been added to Posting Port shield doors to protect facility workers from contamination and radiation exposure. ITS position sensors have been added to the Floor Plug pieces to prevent multiple shield doors from opening simultaneously.

4. CSD records included in Appendix A of the PSAR are out of date.

5. CSD cycle II outputs included in Appendix A of the PSAR are out of date. Method of prime motive force for Filter Size Reduction Unit has not been limited to hydraulic. Final design is pending vendor selection.

8. SCR-HFIRE/N0003 should be added to CSD-HHFH/N0005 in Appendix A to minimize combustible loading to the extent practical in the Filter Cave. This is included in ISM cycle-III output.

29. An Interlock has been added to prevent the Filter Cave shield doors from opening unless all floor plug pieces are in place to prevent multiple shield doors and hatches from opening simultaneously. The associated SDC SSCs are not listed in the PSAR Appendix A.

35. FSRU is not defined as hydraulic at this point in time, and electro-mechanical is the preferred method for prime motive force. Credit was given to non-flammable hydraulic fluid (water/glycol) to reduce fire source and flammable material hazards. SCR-HFIRE/N0003 should be added to CSD-HHFH/N0005 to minimize combustible loading to the extent practical in the Filter Cave.

37. The design change to incorporate an electro-mechanical Filter Size Reduction Unit instead of a hydraulic unit does not change the basic filter compaction process and does not create a new DBE. The use of limit switches open/close position indication of PSAD doors, deletion of PSAD key interlocks, addition of ITS position indication of Posting Port shield doors, and addition of ITS position indication for floor plug/shield door interlocks are a result of the evolving design. The additions and clarifications do not conflict with ITS controls described in the PSAR, and do not create a new DBE

38. Application of the above discussion to the results of the DBE analysis for direct radiation and loss of contamination control events described in chapter 3 of the PSAR and the referenced calculation, results in no change to the assumptions or conclusions of any analyzed DBEs described in the PSAR. Therefore, there are no changes in frequencies or consequences of the DBEs analyzed in the PSAR.

39. The clarifications to the PSAR include addition of ITS controls for floor plugs to prevent shield doors from

Safety Checklist for Design

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Describe or explain answers, as appropriate

opening when plug pieces are not in place, ITS instrumentation added to the Posting Port shield doors to protect facility personnel from contamination and direct radiation exposure, and selection of motive force for the Filter Size Reduction Unit. The clarifications do not change the safety functions of any ITS SSCs.

40. 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE nuclear activities, in particular to achieve compliance with DOE nuclear safety requirements. These clarifications are not related to any compliance, violation, or enforcement issue, exemption from safety requirements, or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifies QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions, facility safety basis, facility safety classified SSCs, and the quality assurance program (QAP). The clarifications do not challenge any requirements of 10 CFR 830.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These changes and clarifications do not change the radiation protection program or challenge any requirements of 10 CFR 835.

These clarifications are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, theses clarifications continue to perform to top-level safety standards as described above.

These clarifications have been evaluated per the WTP Integrated Safety Management process and have been determined to provide adequate safety as described in the PSAR and approved by DOE/OSR.

41. The contract does not contain details in the facility specification, such as these clarifications, regarding filter size reduction unit design, interlocks, and position indication. Therefore, these changes do not challenge the contract requirements.

42. The level of detail associated with these clarifications is only described in the HLW PSAR, BNI's response to DOE/OSR questions, and the DOE/OSR Safety Evaluation Report. These changes do not result in inconsistencies with these documents, other commitments, or descriptions contained in authorization basis documents or authorization agreements.

Prepared By:	Brian Kellogg	B. Kellogg	12/18/02
	Print/Type Name	*Signature*	*Date*
Reviewed By: (Discipline AB Reviewer)	Ken Varma	K Varma	12/18/02
	Print/Type Name	*Signature*	*Date*

Attachment 13

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-046, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-065, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-046 Revision 0

ABCN Title Revision to HLW PSAR to Reflect System RWH Drum Lidding Modifications and Drum Assay Removal

ISSUED BY RPP-WTP PDC INIT DATE 12/20/02

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Steven L. Winsel		12/18/02
Reviewer:	Ken Varma	K. Varma	12/18/02

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS	Peter Lowry	for P. Lowry	12/19/02
☒	QA	George Shell		12/19/02
☒	AB Document Custodian	Dwight Krahn	Dwight Krahn	12/18/02
☐	Commissioning/Training			
☒	Engineering	Fred Marsh		12/18/02
☐	Construction			
☒	Area Project Manager	Phil Schuetz		12/18/02
☐	Project Archives Document Control			
☐	Other Affected Organization			

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek		12/19/02

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0
Preliminary Safety Analysis Report to Support Partial Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-001-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04 (PSAR):

Chapter 2.0, Section 2.4.11.11

- Removed reference to through wall elevator drive on bogie.

Chapter 2.0, Section 2.4.12.7

- Removed reference to waste monitoring station.

Chapter 2.0, Section 2.4.19.7

- Removed reference to through wall elevator drive on bogie.
- Removed reference to waste monitoring station.

Chapter 2.0, Section 2.5.7.1

- Incorporated drum preparation with outer lid staging for installation with MSMs.

Chapter 2.0, Section 2.5.7.2

- Incorporated description of drum lidding using MSMs.
- Removed reference to waste monitoring station.

Chapter 3.0, Section 3.4.1.6

- Deleted reference to paragraph 3.4.1.6.3 in the 2nd paragraph.

Chapter 3.0, Section 3.4.1.6.3

- Removed entire section to reflect elimination of bogie through-wall elevator drive.

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

Chapter 4.0, Section 4.4.12 and Table 4-2.

- Revised section and subparagraphs to reflect removal of event 2 for toppling of a secondary waste container at the lid crimping station and reflect elimination of bogie through-wall elevator drive.

Chapter 5.0, Section 5.5.10 and Table 5-1.

- Revised section and subparagraphs to reflect removal of event for toppling of a secondary waste container at the lid crimping station and reflect elimination of bogie through-wall elevator drive.

Appendix A, Hazards Assessment Report, Page A-88.

- Remove Hazardous situation ID CSD-HRWH/N0017.

24590-WTP-PSAR-ESH-01-001-04 (PCAR):

Chapter 2.0, Section 2.4.11.10

- Removed reference to through wall elevator drive on bogie.

Chapter 2.0, Section 2.5.6.1

- Removed reference to through wall elevator drive on bogie.

Chapter 2.0, Section 2.5.6.2

- Incorporated drum preparation with drum outer lid staging for installation with MSMs.
- Removed reference to waste monitoring station.

Chapter 3.0, Section 3.4.2.1.1

- Removed paragrapgh to reflect elimination of bogie through-wall elevator drive.

F. Explain why the change is needed:

The ABCN is needed to reflect two design changes:

1. Elimination of drum crimping allows the HLW Facility to package radioactive waste in 55 gallon drums that is acceptable for transport from the facility. 55 Gallon drums with crimped lids are not currently accepted for transporting radioactive material at the Hanford site or accepted at the WIPP Facility in New Mexico. DOT 7A, Type A drums with bolted locking rings are accepted at both sites. In addition, this alternative lidding method would provide the capability for drums to be re-opened if re-packaging of the drum became necessary. Information obtained from a recent visit to the Waste Encapsulation and Storage Facility (WESF) at Hanford provided verification of the proposed method and equipment required for remotely lidding 55 gallon drums using MSMs. WESF operators have remotely packaged this type of drum configuration for many years. Removal of the drum transfer bogie elevating table on the bogie eliminates the unmitigated DBE scenario for a drum drop caused by bogie movement (See Meeting Minutes CCN 047097).

F. Explain why the change is needed:

2. Investigation into the issue of remote assay of remote handled waste containers for TRU content has indicated that the technology for such equipment is unproven and still in the developmental stage. A recent meeting with a representative from a company that supplies assay equipment for contact handled drums also confirmed that our needs could not be met with any existing off-the-shelf equipment and would require further development to confirm feasibility. At this time, the equipment configuration can't be determined to the extent of producing a preliminary data sheet. However, it is not likely that this equipment would require a large shielded box as envisioned in the baseline, but rather would more likely be in the form of several sensors strategically mounted about the drum on a turntable. This equipment could probably be developed and installed at a later date without impacting layout or construction of the facility. Drum assay is not a safety related function.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-065 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-046 Revision 0

ABCN Title Revision to HLW PSAR to Reflect System RWH Drum Lidding Modifications and Drum Assay Removal

Remarks:

Removal of the drum transfer bogie elevating table on the bogie eliminates the unmitigated DBE scenario for a drum drop caused by bogie movement (See Meeting Minutes CCN 047097). Drum assay is not a safety issue.

H. Attachments (if any):

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-RWH-00001 **Rev:** 0
24590-HLW-M5-RWH-00002001 0
24590-HLW-M7-RWH-00002001 0

ISSUED BY RPP-WTP PDC
INIT / DATE 12/20/08

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-046, Revision 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-065, Revision 0

Brief description of Design Change:

The design changes are:

1. Elimination of drum crimping allows the HLW Facility to package radioactive waste in 55 gallon drums that is acceptable for transport from the facility. 55 Gallon drums with crimped lids are not currently accepted for transporting radioactive material at the Hanford site or accepted at the WIPP Facility in New Mexico. DOT 7A, Type A drums with bolted locking rings are accepted at both sites. In addition, this alternative lidding method would provide the capability for drums to be re-opened if re-packaging of the drum became necessary. Elimination of drum crimping also removes the need for the drum lift on the drum bogie and associated through wall recovery equipment.
2. Removal of the drum assay mechanism. Investigation into the issue of remote assay of remote handled waste containers for TRU content has indicated that the configuration and technology for such equipment is unproven and still in the developmental stage. This equipment could be developed and installed at a later date without impacting layout or construction of the facility. Drum assay is not a safety related function.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-001-04	0	2.4.11.10 2.5.6.1 2.5.6.2 3.4.2.1.1
24590-WTP-PSAR-ESH-01-002-04	0	2.4.11.11 2.4.12.7 2.4.19.7 2.5.7.1 2.5.7.2 3.4.1.6 3.4.1.6.3 4.4.12, Table 4-2 5.5.10, Table 5-1 Appendix A, A-88

12/20/08
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Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M5-RWH-00001	**Rev:**	0
	24590-HLW-M5-RWH-00002001		0
	24590-HLW-M7-RWH-00002001		0
ABCN/ABAR No: (if used as safety evaluation)	24590-WTP-ABCN-ENS-02-046, Revision 0		
Safety Evaluation No: (if used as SE)	24590-WTP-SE-ENS-02-065, Revision 0		

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		**YES**	**NO**
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☒	☐
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☒	☐
8.	Is a different type of component used to perform the safety function?	☐	☒	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☒	☐

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-RWH-00001 **Rev:** 0
24590-HLW-M5-RWH-00002001 0
24590-HLW-M7-RWH-00002001 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-046, Revision 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-065, Revision 0

TECHNICAL REVIEW
These questions evaluate design change affects on DBE hazards analysis.

SYSTEMS (general)		**YES**	**NO**	**N/A**
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☒	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☒	☐	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-RWH-00001 **Rev:** 0
24590-HLW-M5-RWH-00002001 0
24590-HLW-M7-RWH-00002001 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-046, Revision 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-065, Revision 0

RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☒	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☒	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☒	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M5-RWH-00001 **Rev:** 0
24590-HLW-M5-RWH-00002001 0
24590-HLW-M7-RWH-00002001 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-046, Revision 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-065, Revision 0

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

2. Removal of the drum transfer bogie elevating table on the bogie eliminates the unmitigated DBE scenario for a drum drop caused by bogie movement while the drum is elevated on the drum transfer bogie elevating table, and therefore eliminates the required safety function of interlocking the elevating table with bogie movement. Drum assay is not a safety related function.

3. Removal of the drum transfer bogie elevating table on the bogie eliminates ITS components associated with interlocking the bogie movement with the elevating table.

4. Revised section and subparagraphs to reflect removal of the event for toppling of a secondary waste container at the lid crimping station and reflect elimination of bogie through-wall elevator drive.

5. Removal of the drum transfer bogie elevating table on the bogie eliminates the unmitigated DBE scenario for a drum drop caused by bogie movement while the drum is elevated on the drum transfer bogie elevating table, and therefore eliminates the required safety function of interlocking the elevating table with bogie movement.

17. Removal of the drum transfer bogie elevating table on the bogie eliminates the unmitigated DBE scenario for a drum drop caused by bogie movement while the drum is elevated on the drum transfer bogie elevating table, and therefore eliminates the required safety function of interlocking the elevating table with bogie movement.

37. Removal of the drum transfer bogie elevating table on the bogie does not create a new DBE and eliminates the DBE for a drum drop caused by bogie movement analyzed in PSAR Section 3.4.1.6. Drum assay is not a safety issue, elimination does not create a new DBE.

38. Elimination of the drum transfer bogie elevating table eliminates the analyzed DBE scenario for a drum drop caused by bogie movement. Drum assay is not a safety related function. Therefore, there is no increase in the

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M5-RWH-00001	**Rev:**	0
	24590-HLW-M5-RWH-00002001		0
	24590-HLW-M7-RWH-00002001		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-046, Revision 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-065, Revision 0

Describe or explain answers, as appropriate

frequency or consequences of any analyzed DBE

39. Removal of the drum transfer bogie elevating table eliminates the DBE scenario for a drum drop caused by bogie movement while the drum is elevated on the drum transfer bogie elevating table, and therefore eliminates the required ITS SDS interlock of the elevating table with bogie movement. Drum assay is not a safety related function. There is no change in any ITS SDC SSC.

40. 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE nuclear activities, in particular to achieve compliance with DOE nuclear safety requirements. This design change is not related to any compliance or violation issue, exemption from safety requirements, or reporting of supplier defective products or inaccurate information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of the facility safety bases and clarifies QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This includes certain aspects of technical safety requirements (TSRs), unreviewed safety questions and their process, documented safety analysis, hazards control, major modifications, and the quality assurance program (QAP). This design change does not change the QAP and does not challenge any requirements of 10 CFR 830.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. This design change to eliminate the drum transfer bogie elevating table reduces the probability of the drum drop event and subsequent contamination spread. This change does not change the radiation protection program or challenge any requirements of 10 CFR 835.

This change is a design improvement to the facility and beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, with this change the facility continues to perform to top-level safety standards as described above.

This change has been evaluated per the WTP Integrated Safety Management process and has been determined to provide adequate safety as described in the PSAR and approved by DOE.

41. The contract does not contain details in the facility specification, such as drum crimping and bogie elevating table. Therefore, this change does not challenge any contract requirements.

42. The level of detail associated with these changes is only described in the HLW PSAR, BNI's response to DOE/OSR questions, and the DOE/OSR Safety Evaluation Report. This change does not result in inconsistencies with these documents, other commitments, or descriptions contained in authorization basis documents or authorization agreements.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M5-RWH-00001	**Rev:**	0
	24590-HLW-M5-RWH-00002001		0
	24590-HLW-M7-RWH-00002001		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-046, Revision 0

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-065, Revision 0

Describe or explain answers, as appropriate

Prepared By:	Steve Winsel *Print/Type Name*	*Signature*	12/19/02 *Date*
Reviewed By: (Discipline AB Reviewer)	Ken Varma *Print/Type Name*	*Signature*	12/19/02 *Date*

Attachment 14

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-047, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-071, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-047 Revision 0

ABCN Title Melter Offgas (HOP) System AB Compliance

Best Available Copy

I. ABCN Review and Approval Signatures

ISSUED BY RPP-WTP PDC INIT 1/27/03 DATE

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Anthony Cutrona	A. Cutrona	12-19-02
Reviewer:	Steven J. Cross		12/19/02

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS	Pete Lowry	Pete Lowry	12/19/02
☒	QA	George Shell	for	12/23/02
☒	AB Document Custodian	Dwight Krahn	for D. Krahn	12/19/02
☐	Commissioning/Training			
☒	Engineering	Fred Marsh	for	12/23/02
☐	Construction			
☐	Area Project Manager			
☐	Project Archives Document Control			
☐	Other Affected Organization			

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek	F. Beranek	12/23/02

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-047 Revision 0

ABCN Title Melter Offgas (HOP) System AB Compliance

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
P&ID - HLW Melter Offgas System Melter 1 Primary Offgas Scrubber (Q)	24590-HLW-M6-HOP-00001	0
P&ID - HLW Melter Offgas System Melter 1 Primary Offgas Scrubber Condensate Vessel (Q)	24590-HLW-M6-HOP-00006	0
P&ID - HLW Melter Offgas System Melter 1 Secondary Offgas Treatment Sheet 2 of 2 (Q)	24590-HLW-M6-HOP-00008	0
P&ID - HLW Melter Offgas System Melter 1 Primary Offgas HEME (Q)	24590-HLW-M6-HOP-00009	0
Preliminary Safety Analysis Report to Support Construction Authorization : HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04, Rev. 0, Preliminary Safety Analysis Report to Support Construction; HLW Facility Specific Information.

1. Section 2.4.11.3.1: Remove "Fluidic sampler (section 2.4.17)" from the list of equipment for vessel HOP-VSL-00903.
2. Section 2.4.12.1.4: Remove "ADS sampler pump (section 2.4.17)" and "pulse jet mixer" from the list of equipment for HOP-SCB-0001.
3. Section 2.4.12.1.4: Steam ejector pump function is now performed by a Siphon air ejector pump and the emptying ejector function is now performed by the siphon ejector.
4. Table 3-1: Revise the normal operating volume for HOP-SCB-00001 to 2790 gallons and HOP-VSL-00903 to 7896 gallons.
5. Section 2.4.12.1.5: Remove the density measurement from the list of measurement instrumentation for HOP-HEME-00001A and HOP-HEME-00001B.
6. Add a new section for the addition of the Activated Carbon Column (HOP-ADBR-00001) for mercury abatement.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-047 Revision 0

ABCN Title Melter Offgas (HOP) System AB Compliance

F. Explain why the change is needed:

1. Sampling is no longer performed for HOP-SCB-00001 and HOP-VSL-00903. Sampling of the HOP-SCB-00001 was removed per DCN 24590-HLW-DCN-PR-02-014. The DCN determined sampling of HOP-SCB-00001 is not needed since sampling capabilities is provided downstream in RLD-VSL-00007. HOP-VSL-00903 is not included in the DCN, but is upstream of HOP-SCB-00001 and RLD-VSL-00007.
2. Pulse jet mixers were removed from HOP-SCB-00001 per DCN-W375-00-00105. Agitation of HOP-SCB-00001 is accomplished by recirculation of condensate from HOP-VSL-00903 via RFD's.
3. The steam ejector for HOP-SCB-00001 was changed to an air ejector induced siphon.
4. The volumes for the SBS Condensate Receiver Vessel (HOP-VSL-00903) and Melter 1 SBS (HOP-SCB-00001) have changed from early estimates. The new vessel volumes are based on the current vessel design.
5. Density measurement was removed from HOP-HEME-00001A and HOP-HEME-00001B. Density measurement is not required for process control.
6. The Activated Carbon Column was added for mercury abatement in the Melter Offgas. The Activated Carbon Column was added per DCA 24590-HLW-DCA-PR-02-001, Rev. 0. The DCA determined that a Activated Carbon Column is needed for the melter and offgas systems to meet the Maximum Achievable Control Technology (MACT) standards. The DCA references P&ID 24590-HLW-M6-HOP-00003 as the affected document, the Activated Carbon Column is shown on P&ID 24590-HLW-M6-HOP-00008.

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590WTP-SE-ENS-02-071 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-047 Revision 0

ABCN Title Melter Offgas (HOP) System AB Compliance

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

All changes are within the intent of the AB documents. All changes are consistent with top level standards and do not result in non-conformance of the contract requirements.

H. Attachments (if any):

ISSUED BY
BRP-WTP PDC
INIT DATE 1-28-03

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation)	24590-WTP-ABCN-ENS-02-047
Safety Evaluation No: (if used as SE)	24590-WTP-SE-ENS-02-071

Brief description of Design Change:

The level instrumentation for HOP-SCB-00001 and HOP-VSL-00903 changed from bubbler to radar level detection.

24590-WTP-PSAR-ESH-01-002-04:

- Activated Carbon Column (HOP-ADBR-00001) was added to the system.
- Section 2.4.11.3.1 - Fluidic sampler has been deleted from the system.
- Section 2.4.12.1.4 - Steam ejector pump has been changed to a siphon transfer air ejector pump, ADS sampler deleted from the design, and delete emptying ejector in the last bullet (this function is performed by the siphon ejector).
- Section 2.4.12.1.4 – Pulse Jet Mixers have been removed from HOP-SCB-00001.
- Section 2.4.12.1.5 - Density measurement has been deleted from the system.
- Table 3-1 - HOP-SCB-00001 normal operating volume has changed from 4800 gallons to 2790 gallons.
- Table 3-1 – HOP-VSL-00903 normal operating volume has changed from 8134 gallons to 7896 gallons.

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04, Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	0	2.4.12.1.4, 2.4.12.1.5, 2.4.11.3.1

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☐	☒

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

1-28-03 Processed/ Data Entry ☐ Copied/ QA ☐ Scanned ☐ Filed

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-047

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-071

GENERAL REVIEW		YES	NO
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☒	☐
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		YES	NO	N/A
7.	Are any new components being added containing radioactive or hazardous materials?	☒	☐	☐
8.	Is a different type of component used to perform the safety function?	☒	☐	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☒	☐
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☒	☐	☐
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☒	☐	☐
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-047

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-071

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☒	☐
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☒	☐
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☒	☐
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☒	☐
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☒	☐
25.	Are any time delays or actuation times changed?	☐	☒	☐
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☒	☐
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☒	☐
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☒	☐
29.	Are any door interlocks or alarms changed?	☐	☒	☐
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☒	☐
31.	Is any radiation shielding changed including shield wall openings?	☐	☒	☐
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☒	☐	☐
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☒	☐	☐
34.	Does the change affect the melter glass spill event?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-047

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-071

FIRE PROTECTION		YES	NO	N/A
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☒	☐	☐
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☒	☐
REGULATORY (These questions to be answered for SE only)		**YES**	**NO**	**N/A**
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☒	☐	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-047

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-071

REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

Question 3:

The addition of the Active Carbon Column is a new item being classified.

Question 5:

CSD records are needed for the addition of the Active Carbon Column.

Question 7:

The Active Carbon Column will absorb mercury.

Question 8:

Change from bubbler to radar level detection.

Question 10:

Actual vessel volume decreased from the originally estimated value.

Question 11:

Spent charcoal will contain mercury.

Question 32:

The addition of the Active Carbon Column adds load.

Question 33:

The addition of the Active Carbon Column adds load to the floor.

Question 35:

Charcoal in the unit is combustible.

Question 37:

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation)	24590-WTP-ABCN-ENS-02-047
Safety Evaluation No: (if used as SE)	24590-WTP-SE-ENS-02-071

Describe or explain answers, as appropriate

The addition of the Active Carbon Column has the potential to block the melter offgas flow. The addition of the mercury abatement sytem creates a new initiating event for *Design Basis Event: HLW Melter Offgas Release* (24590-HLW-Z0C-HOP-00001). The volumes for HOP-SCB-00001 and HOP-VSL-00903 have decreased. Decrease in the volume of HOP-SCB-00001 and HOP-VSL-00903 does not create a new DBE and is still bounded by the DBEs analyzed for the Concentrate Receipt Vessels. The change from bubbler to radar level detectors is a change in method of level detection only. Removal of the density instrumentation from HOP-HEME-00001A/B, fluidic sampling for HOP-SCB-00001 and HOP-VSL-00903, and Pulse Jet Mixers from HOP-SCB-00001 does not create a new DBE.

Question 38:

The addition of the Active Carbon Column does not have a more than minimal increase in the frequency or consequence of an analyzed DBE for Offgas release. The flow path for the Active Carbon Column will be ITS designated. Decrease in the volume of HOP-SCB-00001 and HOP-VSL-00903 does not result in a more than minimal increase in the frequency or consequence of an analyzed DBE. The change from bubbler to radar level detectors is a change in method of level detection only. Removal of the density instrumentation, fluidic sampling, and Pulse Jet Mixers described in question 37 do not perform a safety function. Therefore, these changes do not result in more than a minimal impact to the frequency or consequence of an analyzed DBE.

Question 39:

The Active Carbon Column does not result in more than a minimal decrease in the safety functions of ITS SSCs or change how a SDC SSC meets its respective safety function. Removal of the density instrumentation, fluidic sampling, and Pulse Jet Mixers described in question 37 do not perform a safety function. Removal of these components do not result in more than a minimal decrease in the safety functions of ITS SSCs or change how a SDC SSC meets its respective safety function.

Question 40:

10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE Nuclear Activities, in particular to achieve compliance with DOE nuclear safety requirements. These design changes are not related to any compliance, violation, or enforcement issue; exemption from safety requirements; or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifier QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of technical safety requirements (TSRs), unreviewed safety questions (USQs) and their process, documented safety analysis (DSAs), hazards control, major modifications, facility safety classified SSCs, and the quality assurance program (QAP). These design changes do not challenge any requirements of 10 CFR 830, and are being processed via the WTP procedural requirements for design change safety screening and evaluation with respect to the authorization basis and safety basis to ensure there are no unresolved safety questions.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These design changes do not challenge any requirements of 10 CFR 835.

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No:	24590-HLW-M6-HOP-00001	**Rev:**	0
	24590-HLW-M6-HOP-00006		0
	24590-HLW-M6-HOP-00008		0
	24590-HLW-M6-HOP-00009		0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-047

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-071

Describe or explain answers, as appropriate

These changes are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, these changes continue to perform to top-level safety standards as described above.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide the adequate safety as described in the PSAR and approved by DOE.

Question 41:

The contract does not contain system design details and only includes requirements relative to the PSAR that are associated with format and content. These changes are consistent with the original PSAR format and content and therefore continue to conform to the contract requirements with the original PSAR submittal.

Question 42:

The level of detail associated with these changes are only described in the HLW PSAR. Changes described above do not result in inconsistencies with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement.

Prepared By:	Anthony Cutrona *Print/Type Name*	A. Cutrona *Signature*	12.19.02 *Date*
Reviewed By: (Discipline AB Reviewer)	Shank Khabir *Print/Type Name*	[signature] *Signature*	12/19/02 *Date*
E&NS	M. Toyooka	[signature]	12/19/02

Attachment 15

Authorization Basis Change Notice 24590-WTP-ABCN-ENS-02-048, Revision 0 and Safety Evaluation 24590-WTP-SE-ENS-02-072, Revision 0

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-048 Revision 0

ABCN Title ITS Instrument Service Air (ISA) AB Compliance

ISSUED BY RPP-WTP PDC
INIT 1/24/03 DATE

I. ABCN Review and Approval Signatures

A. ABCN Preparation

	Print/Type Name	Signature	Date
Preparer:	Ryan Brown	Ryan Brown	12/18/02
Reviewer:	Pacifico Julian		12/18/02

B. Required Technical Reviewer

Review Required? *For each organization checked, that signature block must be completed.*

		Print/Type Name	Signature	Date
☒	E&NS	Pete Lowry		12/18/02
☒	QA	GEORGE SHELL	for	12/23/02
☐	AB Document Custodian			
☐	Commissioning/Training			
☒	Engineering	Fred Marsh		12/19/02
☐	Construction			
☒	Area Project Manager	Phil Schuette		
☐	Project Archives Document Control			
☒	Other Affected Organization	Dwight Krahn	for D. Krahn	12/19/02

C. ABCN Approval

	Print/Type Name	Signature	Date
E&NS Manager	Fred Beranek		12/23/02

Best Available Copy

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-048 Revision 0

ABCN Title ITS Instrument Service Air (ISA) AB Compliance

II. Description of the Proposed Change to the Authorization Basis

D. Affected Authorization Basis and Implementing Documents (drawings, procedures, plans, etc):

Title	Document Number	Revision
Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information	24590-WTP-PSAR-ESH-01-002-04	0

E. Describe the proposed changes to the Authorization Basis documents. Include specific references to the AB documents and design documents that are to be changed:

24590-WTP-PSAR-ESH-01-002-04, Rev. 0:

1. Section 2.9.7. Instrument airflow will not be monitored.
2. Table B-2. Instrument air will not be the motive force for the ITS SDC vessel level detection. This motive force will be provided by radar. (Note that this table does not differentiate between SDS and SDC for level detection.)
3. Table 4-1. Instrument air will not be the SDC motive force for level detection in H_2 mitigation vessels. (Note that all other level detection for non-H_2 mitigation vessels are SDS as stated in section 4.4)

F. Explain why the change is needed:

1. Air flow monitoring is not required for any ITS function and therefore will be removed.
2. DCN # 24590-HLW-DCN-J-02-001 states that "Radar Level detection is more accurate and more reliable, due to less failure points and easier maintenance, than are bubblers. Therefore ISA is no longer needed to supply the ITS motive force for level detection.
3. DCN # 24590-HLW-DCN-J-02-001 states that "Radar Level detection is more accurate and more reliable, due to less failure points and easier maintenance, than are bubblers. Therefore ISA is no longer needed to supply the ITS motive force for level detection.

Authorization Basis Change Notice

ABCN Number 24590-WTP-ABCN-ENS-02-048 Revision 0

ABCN Title ITS Instrument Service Air (ISA) AB Compliance

III. Summary of Safety Evaluation

G. DOE approval of this AB change is not required because the Safety Evaluation has determined that the change meets all the criteria for Contractor approval of the change.

Summarize the results of the Safety Evaluation by checking the statements below for Administrative Control changes OR Facility changes, not both. Add clarifying remarks, as necessary, to provide complete and accurate information.

Safety Evaluation No. 24590-WTP-SE-ENS-02-072 Rev 0

☐ For an Administrative Control:

This administrative control change does not affect the SRD. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

☒ For a Facility Control:

This facility change does not affect the SRD. The change does not create a new DBE or increase the frequency or consequence of an analyzed DBE. The change does not result in a decrease in the safety function of an ITS SSC or change how an SDC SSC meets its respective safety function. The change falls beneath the level of detail described in the Code of Federal Regulations applicable to the project (10 CFR 820, 10 CFR 830, and 10 CFR 835). The change conforms to the requirements in the top-level safety standards (e.g., DOE/RL-96-0006). The change provides adequate safety because the applicable questions on the Safety Evaluation have been answered in a way that ensures adequate safety following the change. The change conforms to contract requirements and will not result in inconsistencies with other AB or authorization agreement commitments or descriptions.

Remarks:

H. Attachments (if any):

None

ISSUED BY
BPP-WTP PDC
INIT DATE 1-28-03

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

Design Document No: 24590-HLW-M6-ISA-00001 **Rev:** 0
24590-HLW-M6-ISA-00002 0
24590-HLW-M6-ISA-00003 0

ABCN/ABAR No: (if used as safety evaluation) 24590-WTP-ABCN-ENS-02-048

Safety Evaluation No: (if used as SE) 24590-WTP-SE-ENS-02-072

JK 12/18/02

Brief description of Design Change:

Instrument Service Air (ISA) is supplied to the High Level Waste (HLW) Vitrification plant from the Balance of Facility (BOF) compressed air plant and distributes a regulated supply to the HLW facility instrumentation, actuated valves, etc.

The following are changes identified against the AB:

24590-WTP-PSAR-ESH-01-002-04, Rev. 0:

1. Section 2.9.7. Instrument airflow will not be monitored.
2. Table B-2. Instrument air was not intended to be the motive force for the hydrogen mitigation systems. This motive force is to be provided by the Plant Service Air system.
3. Table B-2. Instrument air will not be the motive force for the ITS SDC vessel level detection. This motive force will be provided by radar. (Note that this table does not differentiate between SDS and SDC for level detection.)
4. Table 4-1. Instrument air will not be the SDC motive force for level detection in H_2 mitigation vessels. (Note that all other level detection for non-H_2 mitigation vessels are SDS as stated in section 4.4)

AB Documents Impacted:

Document Number	Rev	Section
24590-WTP-PSAR-ESH-01-002-04	0	2.9.7, Table B-2, Table 4-1

This safety checklist aids in determining if this design change falls within the threshold of changes that may be made without prior DOE approval. It also serves to document the engineering safety evaluation of this design change.

GENERAL REVIEW		YES	NO
1.	Does the change modify or delete a standard prescribed in the Safety Requirements Document Volume II (SRD)?	☐	☒
2.	Does the change alter the location, function, or reliability of an SSC described in the AB[1]?	☒	☐

[1] This question refers to SSC's described in the LCAR, PCAR, and PSAR, including text descriptions and figures in Chapter 2 of the PSAR.

1-28-03

Processed/Data Entry ☒ Copied/QA ☐ Scanned ☐ Filed ☐

Safety Checklist for Design

This checklist shall be used for a safety screening of primary design drawings and specifications. The checklist shall be used for safety evaluations associated with actual authorization basis changes (ABCN or ABAR).

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24590-HLW-M6-ISA-00002 0
24590-HLW-M6-ISA-00003 0

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GENERAL REVIEW		YES	NO
3.	Is there a change in classification, new items being classified, or existing items deleted? (SDC, SDS, RRC, SC-I, SC-II, SC-III, PC-3, PC-2)	☒	☐
4.	Does the change affect the safety function descriptions in Chapter 4 of the PSAR?	☐	☒
5.	For any of the SSCs, does this change affect any of the associated control strategy development (CSD) records?	☐	☒
6.	Are any other Authorization Basis documents affected by this change? (ISMP, QAM, or RPP) (Also ISAR & HAR)[2]	☐	☒

If any question above is checked "YES", an ABCN or ABAR is probably required. Contact E&NS for assistance.

Continue with answering all the Technical Review questions.

TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		YES	NO	N/A
7.	Are any new components being added containing radioactive or hazardous materials?	☐	☐	☒
8.	Is a different type of component used to perform the safety function?	☒	☐	☐
9.	Does the change modify SDC/SDS component's function (e.g. auto to manual), failure mode or reliability?	☐	☐	☒
10.	Is there a change in the volume or critical dimension of any tank containing radioactive or hazardous materials?	☐	☐	☒
11.	Does the change increase the concentration or amount of radioactive or hazardous materials being handled?	☐	☐	☒
12.	Is there an increase in system design or operating pressure or temperature?	☐	☒	☐
13.	Are design imposed position control requirements for valves changed?	☐	☒	☐
14.	Does the change route high or moderate energy lines near SDC/SDS SSCs?	☐	☒	☐
15.	For non-ITS modifications, does the design resulting from the modifications affect any SSCs which is SDC (e.g. non-seismic/seismic)?	☐	☒	☐
16.	Are there changes to material selection affecting corrosion/ erosion resistant materials?	☐	☒	☐
17.	Are there changes to position related interlocks?	☐	☒	☐
18.	Does the change reduce the tank purge air flow that may affect hydrogen accumulation?	☐	☒	☐

[2] Assumes ISAR and HAR have not yet been superseded by PSAR.

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TECHNICAL REVIEW These questions evaluate design change affects on DBE hazards analysis.				
SYSTEMS (general)		**YES**	**NO**	**N/A**
19.	Is there a change in the chemical composition of the process material that affect chemical reactions or increase hydrogen generation?	☐	☐	☒
CONTROLS & INSTRUMENTATION AND ELECTRICAL		**YES**	**NO**	**N/A**
20.	Are any process level or chemical control points, trips or alarms changed?	☐	☐	☒
21.	Are requirements for redundancy/separation/isolation of SDC/SDS SSCs changed?	☐	☐	☒
22.	Are single failure requirements for ITS SSCs changed?	☐	☒	☐
23.	Does the change add or remove any Vital Bus Loads (Emergency Diesel Generator)?	☐	☐	☒
24.	Are any loads added or removed from SDC uninterruptible power supplies (UPS)?	☐	☐	☒
25.	Are any time delays or actuation times changed?	☐	☐	☒
26.	Does the change reduce the Emergency Diesel Generator operating capabilities (e.g. fuel oil inventory)?	☐	☐	☒
RADIOLOGICAL AND HVAC		**YES**	**NO**	**N/A**
27.	Does the change modify the Radiation Monitoring System location or response?	☐	☐	☒
28.	Does the change modify any portion of HVAC system, including doors and/or walls which may change air flow patterns, that is within the RCA?	☐	☐	☒
29.	Are any door interlocks or alarms changed?	☐	☐	☒
30.	Are there any changes to the C5/R5 zone boundaries?	☐	☐	☒
31.	Is any radiation shielding changed including shield wall openings?	☐	☐	☒
CIVIL/STRUCTURAL		**YES**	**NO**	**N/A**
32.	Are there any increases in loads or changes in load paths?	☐	☐	☒
33.	Are there any increases in floor or wall loads or significant relocation of loads?	☐	☐	☒
34.	Does the change affect the melter glass spill event?	☐	☐	☒
FIRE PROTECTION		**YES**	**NO**	**N/A**
35.	Is there an increase in combustible loading or ignition sources in any fire area including electrical cables?	☐	☐	☒
36.	Does the change affect fire barriers separating fire areas or redundant SDC SSCs?	☐	☐	☒

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REGULATORY (These questions to be answered for SE only)		YES	NO	N/A
37.	Based on the answers to the above technical questions and any other analysis, does the change create a new DBE?	☐	☒	☐
38.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal (≥ 10 %) increase in the frequency or consequence of an analyzed DBE as described in the Safety Analysis Report?	☐	☒	☐
39.	Based on the answers to the above technical questions and any other analysis, does the change result in more than a minimal decrease in the Safety Functions of important-to-safety SSCs or change how a Safety Design Class SSC meets its respective safety function?	☐	☒	☐
40.	Does the change result in a noncompliance with applicable laws and regulations (i.e., 10CFR820, 830, and 835), nonconformance to top-level safety standards (i.e., DOE/RL-96-0006), or fail to provide adequate safety?	☐	☒	☐

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REGULATORY		YES	NO	N/A
41.	Does the change result in nonconformance to the contract requirements associated with the authorization basis document(s) affected by the change?	☐	☒	☐
42.	Does the change result in an inconsistency with other commitments and descriptions contained in portions of the authorization basis or an authorization agreement not being revised?	☐	☒	☐

If any of the Technical Review questions is answered "YES", a DBE hazards analysis may be affected that may require ISM process review prior to proceeding with the change. Contact E&NS for assistance in determining if an ISM review is required or if there are questions on DOE approval of the change.

All "YES" answers for questions 1 through 36 must be explained in greater detail. "Yes" or "No" answers to questions 37-42 must be explained in greater detail. Provide a description and/or explanation below and on the ABCN or ABAR, as appropriate.

Describe or explain answers, as appropriate

Question 2, 3, & 8. Yes: Table B-2 in doc. 24590-WTP-PSAR-ESH-01-002-04, Rev. 0. Rev. 0 of the ISA P&ID's, Instrument Air is shown to be the SDS motive force for vessel level detection , it is not the SDC and will not be the SDS motive force for future revisions and is being replaced by a SDC radar system. This table does not make it clear what ITS class the level detection shall be (for example: SDS or SDC).

Yes: Table 4-1 in doc. 24590-WTP-PSAR-ESH-01-002-04, Rev. 0. Instrument Air will not be the SDS motive for level detection for any SSC's in the facility.

DCN # 24590-HLW-DCN-J-02-001 states that "Radar Level detection is more accurate and more reliable, due to less failure points and easier maintenance, than are bubblers.

Question 37. No: This change does not create a new DBE and is still bounded by the DBEs analyzed for the Instrument Service Air System. A change in motive force for level detection from ISA to Radar does not impact safety or any DBE's (new or current).

Question 38. No: This change does not result in more than a nominal (≥ 10%) increase in the frequency or consequence of an analyzed DBE. A change in motive force for level detection from ISA to Radar does not impact safety or any DBE's (new or current).

Question 39. No: This change does not result in a decrease in the reliability or safety function of important to safety (ITS) SSCs. A change in motive force for level detection from ISA to Radar does not impact safety or any BDE's (new or current).

Question 40. No: 10 CFR 820, Procedural Rules for DOE Nuclear Activities, sets forth the procedural rules for conduct of persons involved in DOE Nuclear Activities, in particular to achieve compliance with DOE nuclear safety requirements. These design changes are not related to any compliance, violation, or enforcement issue; exemption from safety requirements; or reporting of supplier defective products or inaccurate or incomplete information.

10 CFR 830, Nuclear Safety Management, requires establishment and maintenance of safety bases and classifier QA work process requirements applicable to standards and controls adopted to meet regulatory or contract requirements that may affect nuclear safety. This included certain aspects of

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Describe or explain answers, as appropriate

technical safety requirements (TSRs), unreviewed safety questions (USQs) and their process, documented safety analysis (DSAs), hazards control, major modifications, facility safety classified SSCs, and the quality assurance program (QAP). These design changes do not challenge any requirements of 10 CFR 830, and are being processed via the WTP procedural requirements for design change safety screening and evaluation with respect to the authorization basis and safety basis to ensure there are no unresolved safety questions.

10 CFR 835, Occupational Radiation Protection, sets forth rules to establish radiation protection standards, limits, and program requirements for protecting individuals from radiation resulting from conduct of DOE activities. These design changes do not challenge any requirements of 10 CFR 835.

These changes are beyond the level of detail in the top-level safety principles for design (RL/REG-96-0006, Section 4.2.1). Therefore, these changes continue to perform to top-level safety standards as described above.

These changes have been evaluated per the WTP Integrated Safety Management process and have been determined to provide the adequate safety as described in the PSAR and approved by DOE.

Question 41. No: The contract does not contain system design details and only includes requirements relative to the PSAR that are associated with format and content. These changes are consistent with the original PSAR format and content and therefore continue to conform to the contract requirements with the original PSAR submittal.

Question 42. No: The change does not result in an inconsistency with other commitments in the Authorization Basis or authorization agreements that are not being revised.

Item 2 in the Description of Design Change as stated above: This change is not addressed in any of the questions above but still needs to be addressed in this SE:

OSR Comment and Response HLW-PSAR-184 clarifies that PSA will provide both redundant ITS supplies for Hydrogen Mitigation as follows: "The system provides 2 individual ITS air supplies from PSA system, each of which provides air supply to 50% of the PJM agitation systems in each vessel." There for no ABCN is required for this particular change.

Prepared By:	Ryan Brown *Print/Type Name*	*Signature*	12/18/02 *Date*
Reviewed By: (Discipline AB Reviewer)	Sharok Khabir *Print/Type Name*	*Signature*	12/18/02 *Date*
	Steven Woolfolk		12/18/02