ENGINEERING CHANGE NOTICE

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Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedeure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. D. L. Kelly/33120/G1-11/ 372-2276 6. Project Title/No./Work Order No. SARP Upgrade Plan/YL321 9. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-TP-PLN-006, Rev. 2	4. USQ Required? ☐ Yes ☒ No 7. Bldg./Sys./Fac. No. NA 10. Related ECN No(s). NA	5. Date 12/02/96 8. Approval Designator NA 11. Related PO No. NA
12a. Modification Work ☐ Yes (fill out Blk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. NA	12c. Modification Work Complete. NA Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) NA Design Authority/Cog. Engineer Signature & Date
13a. Description of Change This revision to the Safety Analysis Report for Packaging (SARP) Upgrade Plan reflects a SARP upgrade schedule based on the most current program needs. References have been updated. Several SARPs have been deleted from the plan. New and replacement SARPs have been added to the plan. A performance agreement has been assigned, beginning in FY 1997, to update, revise, and/or cancel 20 percent of the existing onsite SARPS (as of FY 1997), so that 100 percent are reviewed and within current standards by the completion of the Project Hanford Management Contract (a five-year period, beginning in FY 1997 and ending in FY 2001).			
14a. Justification (mark one) Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐			
14b. Justification Details Changes to the SARP Upgrade Plan reflect current SARP needs for the Hanford Site.			
15. Distribution (include name, MSIN, and no. of copies) See attached distribution listing.			

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SAFETY ANALYSIS REPORT FOR PACKAGING UPGRADE PLAN

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Abstract: This Safety Analysis Report for Packaging (SARP) Upgrade Plan reflects a SARP upgrade schedule based on the most current program needs. A performance agreement has been assigned, beginning in FY 1997, to update, revise, and/or cancel 20 percent of the existing onsite SARPS, so that 100 percent are reviewed and within current standards by the completion of the Project Hanford Management Contract (five-year period).

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Chris Williamson 12-9-96
Release Approval Date

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SAFETY ANALYSIS REPORT FOR PACKAGING UPGRADE PLAN

1.0 INTRODUCTION

The purpose of this report is to provide an upgrade plan for all existing Safety Analysis Reports for Packaging (SARP) (onsite). This plan will also include addition of new SARPs to the SARP completion schedule.

Currently, about half of the existing approved SARPs in use at Hanford are over ten years old, and were originally written and approved by several different contractors. Therefore, the packaging approval criteria, approval authorities, and method of documentation are not consistent among the SARPs. These issues were noted as a finding in a 1992 U.S. Department of Energy, Richland Operations Office (DOE/RL) Surveillance (Fisher 1992).

Various actions have been taken over the last several years to upgrade existing SARPs, cancel unused or inadequate SARPs, and to develop the technical safety criteria for onsite packagings. Also, existing approved SARPs have been entered into a copy control process to better control and track their use. These actions, in conjunction with this SARP Upgrade Plan, have resulted in higher quality SARPs that are consistent in their technical approach.

A performance agreement has been assigned, beginning in fiscal year 1997 (FY 1997), to update, revise, and/or cancel 20 percent of the existing onsite SARPs (as of FY 1997), so that 100 percent are reviewed and within current standards by the completion of the Project Hanford Management Contract (a five-year period, beginning in FY 1997 and ending in FY 2001).

2.0 SARP UPGRADE SELECTION PROCESS

The following describes the criteria, SARP ranking, and implementation of the SARP Upgrade Plan. The plan will be upgraded periodically (at least annually) to provide accurate SARP improvement direction, and to reflect the performance agreement requirements. As a minimum, seven SARPs must be upgraded or canceled in FY 1997. The anticipated SARP upgrades and cancellations for the next five-year period are shown in Section 2.3 of this document.

2.1 CRITERIA

Ranking of the current SARPs listed in Section 2.2 will be based on the following formula:

$$\text{Rank \#} = (TSC + DQ + PP + MQ) + (3 * UT) + (2 * RE)$$

TSC = Technical Safety Criteria

DQ = Document Quality

PP = Packaging Performance

MQ = Material Quantity

UT = Utilization

RE = Revision

Higher ranking numbers indicate a SARP that is in need of an upgrade more than a SARP with a lower ranking number. The ranking criteria factors are defined in Table 2-1.

Table 2-1. Ranking Criteria Factors. (2 pages)

TSC = Technical Safety Criteria	
0	Meets all Type A/B performance tests (no risk analysis needed), and DOT shielding/criticality limits.
1	Meets most current technical safety criteria (WHC 1994), and DOT shielding and Hanford Site criticality limits.
2	Meets some other legitimate risk or dose consequence criteria, and DOT shielding and Hanford Site criticality limits.
3	Does not evaluate risk or dose consequence and/or does not meet DOT shielding and Hanford Site criticality limits.
DQ = Document Quality	
0	SARP meets Packaging Engineering Desk Instruction format (DI-84000-002-02).
1	SARP is similar to Packaging Engineering Desk Instruction format or similar to NRC Regulatory Guide 7.9 (NRC 1986) format, and evaluates applicable requirements.
2	SARP meets some other logical format, and evaluates applicable requirements.
3	SARP is unformatted and/or does not evaluate applicable requirements.
PP = Packaging Performance	
0	Quantitatively meets all Type A/B performance tests.
1	Meets all Type A performance tests, and qualitatively meets the Type B performance tests.
2	Meets all Type A performance tests, but none or only some of the Type B performance tests.
3	Strong tight or less.

Table 2-1. Ranking Criteria Factors. (2 pages)

MQ = Material Quantity	
0	Material quantity is Type AF, Low Specific Activity (LSA) Fissile, LSA greater than Type A, or Type B less than 30A ₂ .
1	Material quantity is Type B between 30A ₂ and a Highway Route Controlled Quantity (HRCQ) (3000A ₂ or 27,000 Ci).
2	Material quantity is Type B HRCQ.
3	SARP is unclear to precise material quantity limit.
UT = Utilization	
0	Package is operated under a risk analysis that meets WHC 1994, or package quantitatively meets all Type A/B performance tests.
1	Rarely used (less than 2 shipments per year) intra-area.
2	Often used (greater than 2 shipments per year) intra-area, or rarely used interarea.
3	Often used interarea and intra-area.
RE = Revision	
0	SARP has an existing expiration date.
1	Full review since January 1992.
2	Full review between January 1987 and January 1992.
3	No full review since before January 1987.

A weighing factor of three is applied to the utilization factor (UT) to ensure that packagings that are used often (and thus subject the environment to a greater probability of a release or other incident) take precedence in the upgrade plan.

A weighing factor of two is applied to the revision factor (RE) to ensure that very old SARPs will take precedence over newer SARPs. Many of the other factors such as the equivalent safety method, document quality, and packaging performance, are primarily driven by the age of the SARP. The revision factor will also be used as the "tie-breaker" for SARPs that receive identical ranking numbers.

2.2 SARP UPGRADE RANKING

Table 2-2 lists the current onsite SARPs. Each SARP is graded in accordance with the criteria of Section 2.1 and a ranking number calculated. Depending upon the quality of the specific SARP, grading factors were assigned either by direct quantitative analysis or by a more subjective evaluation. Utilization of the ranking numbers to determine a SARP upgrade schedule is provided and discussed in Section 2.3.

Table 2-2. Current Onsite SARPs. (2 pages)

SARP Number and Current Revision	Last Complete Review	Expiration Date	Title	TSC	DQ	PP	MQ	UT	RE	RANK #
SD-RE-SAP-002 Rev. 1-E	02/12/82 Rev. 0	TBD	TRU Contaminated Liquid Organics	2	3	3	2	2	3	22
SD-RE-SAP-013 Rev. 6-E	5/87 Rev. 2 ECN N/A	TBD	Railroad Liquid Waste Tank Cars	2	2	3	2	0	2	13
SD-RE-SAP-014 Rev. 1-B	09/23/82 Rev. 0-0	TBD	Irradiated Fuel Cask Cars	2	2	3	2	2	3	21
SD-RE-SAP-024 Rev. 1-B	09/22/83 Rev. 0-0	TBD	Non-TRU, Non-Fissile Waste, 55-Gallon Drum	3	2	2	1	3	3	23
SD-RE-SAP-025 Rev. 2	03/01/84 Rev. 0 EDT N/A	TBD	Decontaminated Equipment Self-Container	2	2	3	1	2	3	20
SD-RE-SAP-033 Rev. 2-N	06/26/84 Rev. 1 ECN N/A	TBD	TRU 55-Gallon Drum	2	2	2	2	3	3	23
SD-RE-SAP-043 Rev. 1	03/05/85 Rev. 0	TBD	Internally Shielded 55-Gallon Drum	2	2	2	1	2	2	17
SD-RE-SAP-044 Rev. 1-A	07/06/84 Rev. 0	TBD	225-B Waste Cask	3	2	3	2	1	3	19
SD-RE-SAP-054 Rev. 3-A	03/05/84 Rev. 2	TBD	21-PF-1 Overpack/ EBR-II Spent Fuel Cask	3	2	1	2	1	3	17
SD-RE-SAP-083 Rev. 1	09/05/84 Rev. 0	TBD	AL-M6, CoC	3	3	2	2	1	3	19
SD-RE-SAP-084 Rev. 1	09/05/84 Rev. 0	TBD	21-PF-1 Overpack/ Zircalloy Hull Cask	3	3	2	2	1	3	19
SD-RE-SAP-091 Rev. 1	02/18/88 Rev. 0	TBD	TRU Metal Box Container	2	2	2	2	3	2	21
SD-RE-SAP-092 Rev. 1	12/13/88 Rev. 0	TBD	Low-Level Metal Box Container	2	2	3	1	3	2	21
WHC-SD-FF-SARP-001 Rev. 1	05/02/90 Rev. 0	04/05/96	Radial Reflector Shipping Container	0	1	1	2	1	0	7
WHC-SD-MP-SARP-001 Rev. 1-F	12/11/92 Rev. 1	1997	Doorstop Sample Carrier System	0	1	1	2	3	2	17
WHC-SD-NR-SARP-001 Rev. 1	12/05/88 Rev. 0 EDT #465716	TBD	Finished Fuel Assembly	0	1	1	0	1	2	9
WHC-SD-NR-SARP-002 Rev. 1-D	01/11/88 Rev. 0 EDT #111016	06/01/96	OH-142 Mark I (Big Bertha)	2	1	2	2	3	0	16
WHC-SD-NR-SARP-004 Rev. 1-F (UNI-2849)	09/17/84 Rev. N/A	TBD	Ion Exchange Modules	3	2	2	2	1	3	18
WHC-SD-TP-SARP-001 Rev. 1	11/15/96 Rev. 1	2001	Sample Pig Transport System	0	0	1	1	3	0	11
WHC-SD-TP-SARP-002 Rev. 1	11/15/96 Rev. 1	2001	Onsite Transfer Cask System	1	0	3	1	0	0	5
WHC-SD-TP-SARP-003 Rev. 0-B	08/21/92 Rev. 0	TBD	Disposable Solid Waste Cask	1	0	3	1	0	1	7

SARP Number and Current Revision	Last Complete Review	Expiration Date	Title	TSC	DQ	PP	MQ	UT	RE	RANK #
SD-RE-SAP-002 Rev. 1-E	02/12/82 Rev. 0	TBD	TRU Contaminated Liquid Organics	2	3	3	2	2	3	22
WHC-SD-TP-SARP-004 Rev. 0-A	09/30/92 Rev. 0	TBD	Standard Waste Box	2	0	2	2	0	1	8
WHC-SD-TP-SARP-005 Rev. 0-A	09/20/94 Rev. 0	TBD	Modified Fuel Spacer Burial Box	2	0	2	1	2	1	13
WHC-SD-TP-SARP-006 Rev. 0-A	04/19/94 Rev. 0	TBD	85-Gallon Retrieval Drum	2	0	2	1	3	1	16
WHC-SD-TP-SARP-007 Rev. 0-E	05/23/94 Rev. 0	TBD	Flexible Material Packaging	2	0	3	1	3	1	17
WHC-SD-TP-SARP-008 Rev. 0-B	09/26/94 Rev. 0	TBD	NRF TRIGA Packaging	0	0	0	2	2	1	10
WHC-SD-TP-SARP-009 Rev. 0	08/15/96 Rev. 0	2001	LR 56/H Cask System	0	0	0	1	0	0	1
WHC-SD-TP-SARP-010 Rev. 0	01/30/96 Rev. 0	2000	Interim Storage Cask	1	0	0	2	0	0	3
WHC-SD-TP-SARP-011 Rev. 0-A	07/28/95 Rev. 0	2000	N-Reactor Fuel Spacers	1	0	0	2	0	0	3
WHC-SD-TP-SARP-012 Rev. 1-A	02/29/96 Rev. 1	2000	L3-181 N Basin Cask	1	0	1	1	0	0	3
WHC-SD-TP-SARP-015 Rev. 0	10/01/96 Rev. 0	2001	Double-Shell Tank Car	1	0	0	2	0	0	3
WHC-SD-TP-SARP-016 Rev. 0-A	02/23/96 Rev. 0	2001	Hanford Ecorok Packaging	1	0	1	2	0	0	4
WHC-SD-TP-SARP-018 Rev. 0	09/21/96 Rev. 0	2001	Type B Quantities of Radioactive Material in Type A Boxes	1	0	1	2	0	0	4
WHC-SD-WM-SARP-001 Rev. 1-A	08/20/90 Rev. 0	TBD	Lead-Lined Drum/ 21-PF-1 Packaging System	0	1	1	2	1	1	9

2.3 PLANNED SARP UPGRADES AND CANCELLATIONS

By using the SARP ranking numbers shown in Table 2-2 and considering cancellations, a schedule of SARP upgrades and SARP cancellations through the year 2001 is depicted in Table 2-3. Those SARPs that currently have expiration dates (mandated by RL) are moved up into the year that they expire even though their ranking supports a later upgrade, thus "bumping" other SARPs down the list.

Table 2-3. SARP Upgrade Schedule. (2 pages)

FY 1997 SARP Upgrades	
SD-RE-SAP-013	Railroad Liquid Waste Tank Cars
SD-RE-SAP-014	Irradiated Fuel Cask Cars
SD-RE-SAP-091	TRU Metal Box Container
SD-RE-SAP-092	Low-Level Metal Box Container
WHC-SD-MP-SARP-001	Doorstop Sample Carrier System
SD-RE-SAP-002	TRU Contaminated Liquid Organics
SD-RE-SAP-024	Non-TRU, Non-fissile Waste, 55-gal Drum
SD-RE-SAP-033	TRU 55-gal Drum
FY 1998 SARP Upgrades	
SD-RE-SAP-025	Decontaminated Equipment Self-Container
SD-RE-SAP-043	Internally Shielded 55-gal Drum
WHC-SD-NR-SARP-002	OH-142 Mark I (Big Bertha)
WHC-SD-NR-SARP-004	Ion Exchange Modules
WHC-SD-TP-SARP-007	Flexible Material Packaging
WHC-SD-TP-SARP-006	85-gal Retrieval Drum
WHC-SD-TP-SARP-005	Modified Fuel Spacer Box
FY 1999 SARP Upgrades	
SD-RE-SAP-044	225-B Waste Cask
SD-RE-SAP-054	21-PF-1 Overpack/EBR-II Spent Fuel Cask
SD-RE-SAP-083	AL-M6, CoC
SD-RE-SAP-084	21-PF-1 Overpack/Zircalloy Hull Cask
WHC-SD-FF-SARP-001	Radial Reflector Shipping Container
WHC-SD-WM-SARP-001	Lead-Lined Drum/21-PF-1 Packaging System
FY 2000 SARP Upgrades	
WHC-SD-TP-SARP-010	Interim Storage Cask
WHC-SD-TP-SARP-011	N-Reactor Fuel Spacers
WHC-SD-TP-SARP-012	L3-181 N Basin Cask
WHC-SD-NR-SARP-001	Finished Fuel Assembly
WHC-SD-TP-SARP-003	Disposable Solid Waste Cask
WHC-SD-TP-SARP-004	Standard Waste Box

Table 2-3. SARP Upgrade Schedule. (2 pages)

FY 2001 SARP Upgrades	
WHC-SD-TP-SARP-001	Sample Pig Transport System
WHC-SD-TP-SARP-002	Onsite Transfer Cask System
WHC-SD-TP-SARP-015	Double-Shell Tank Car
WHC-SD-TP-SARP-016	Hanford Ecorok Packaging
WHC-SD-TP-SARP-018	Type B Quantities of Radioactive Material in Type A Boxes
WHC-SD-TP-SARP-008	NRF TRIGA Packaging
WHC-SD-TP-SARP-009	LR 56/H Cask System

3.0 SUMMARY AND RECOMMENDATIONS

This document is a living document and is intended to be used as a management tool for administering the Project Hanford Management Contract SARP performance agreement for the FY 1997 through FY 2001 period. This document provides the schedule for SARP upgrades and cancellations. It is recommended that the SARP upgrade plan schedule provided in Table 2-3 be implemented. It should be noted that the following uncertainties were not accounted for in this plan, and will be factored into commitments to each particular fiscal year SARP upgrade schedule:

- Operational requirements may lead to a SARP upgrade ahead of schedule. In those cases, other SARPs may be moved within the plan based on available funding and staffing.
- Funding and workload may result in changes to this plan by management prerogative. This plan will be revisited and revised periodically until all SARPs are upgraded. This revision to the plan reflects a SARP upgrade schedule based on the most current program needs. Future revisions to the plan will include results of the plan, beginning in FY 1997.
- All SARPs shall be reviewed and updated as necessary at least every five years, and shall have controlled distribution as outlined by DOE Order (DOE 1995).
- A standardized SARP numbering system will be applied to all SARPs.

4.0 REFERENCES

- DOE, 1995, *Packaging and Transportation Safety*, DOE0460.1, U.S. Department of Energy, Washington, D.C., September 27, 1995.
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- WHC, 1994, *Report on Equivalent Safety for Transportation and Packaging of Radioactive Materials*, WHC-SD-TP-RPT-001, Westinghouse Hanford Company, Richland, Washington, January 3, 1994.

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