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Project Title/Work Order		EDT No. NA
PACKAGING DESIGN CRITERIA MODIFIED FUEL SPACER BURIAL BOX (WHC-SD-TP-PDC-001)		ECN No. 606683

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ENGINEERING CHANGE NOTICE

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1. ECN 606683

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ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐		3. Originator's Name, Organization, MSIN, and Telephone No. P. F. Stevens/84100/G2-02/372-3747		4. Date 09/02/94										
		5. Project Title/No./Work Order No. Modified Fuel Spacer Burial Box, MFSB	6. Bldg./Sys./Fac. No. B Plant/ N Reactor	7. Approval Designator SQ										
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11a. Modification Work ☐ Yes (fill out Blk. 11b) ☒ No (NA Blks. 11b, 11c, 11d)		11b. Work Package No. NA	11c. Modification Work Complete NA _____ Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) NA _____ Cog. Engineer Signature & Date										
12. Description of Change Changes to the MFSB PDC include: <ul style="list-style-type: none"> • The planned method of moving the MFSB from the railcar to the burial trench has changed from a drag-off operation to lifting via a crane. The MFSB will require structural reinforcement so that it may be lifted with an adequate margin of safety. • The MFSB shall be equipped to allow for grouting of waste materials prior to burial. • The maximum allowable payload for the MFSB has been changed from 4,000 A₂ to 2,000 A₂s of activity. • The maximum gross MFSB weight has been revised from 36.0 tons to 37.5 tons. • The train speed used for determining the forces on the MFSB and tiedown system has been lowered from 35 mph to 15 mph. • During normal conditions of transport, no appreciable release of radioactive material shall be permitted. Previously, doses up to 1 mrem EDE were allowed. • The dose consequence for offsite persons for accidental release events determined to be incredible (10⁻⁶/yr) shall be evaluated. The maximum permissible dose to offsite persons shall be limited to 25 rem EDE. • The drawings for the MFSB have been changed from H-1-44980 to H-2-817864. 														
13a. Justification (mark one) <table border="0"> <tr> <td>Criteria Change ☒</td> <td>Design Improvement ☐</td> <td>Environmental ☐</td> </tr> <tr> <td>As-Found ☐</td> <td>Facilitate Const. ☐</td> <td>Const. Error/Omission ☐</td> </tr> <tr> <td></td> <td></td> <td>Design Error/Omission ☐</td> </tr> </table>						Criteria Change ☒	Design Improvement ☐	Environmental ☐	As-Found ☐	Facilitate Const. ☐	Const. Error/Omission ☐			Design Error/Omission ☐
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As-Found ☐	Facilitate Const. ☐	Const. Error/Omission ☐												
		Design Error/Omission ☐												
13b. Justification Details The PDC for the MFSB is required to be modified due to changes in off-loading procedures. New procedures will incorporate a lifting operation instead of the dragging operation previously planned. Also, the projected payloads for the MFSB have been changed somewhat to more accurately reflect the needs of B Plant and N Reactor. These changes will effect the acceptance criteria for the SARP that are established in the PDC.														
14. Distribution (include name, MSIN, and no. of copies) See Attached.														

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15. Design Verification Required ☐ Yes ☒ No	16. Cost Impact <table style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">ENGINEERING</th> <th colspan="2" style="text-align: center;">CONSTRUCTION</th> </tr> <tr> <td style="width: 15%;">Additional</td> <td style="width: 15%;">[NA]</td> <td style="width: 15%;">\$</td> <td style="width: 15%;"></td> </tr> <tr> <td>Savings</td> <td>[NA]</td> <td>\$</td> <td></td> </tr> </table>			ENGINEERING		CONSTRUCTION		Additional	[NA]	\$		Savings	[NA]	\$		17. Schedule Impact (days) Improvement [NA] Delay [NA]																																																																																																							
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18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.																																																																																																																							
SDD/DD Functional Design Criteria Operating Specification Criticality Specification Conceptual Design Report Equipment Spec. Const. Spec. Procurement Spec. Vendor Information OM Manual FSAR/SAR Safety Equipment List Radiation Work Permit Environmental Impact Statement Environmental Report Environmental Permit	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Seismic/Stress Analysis Stress/Design Report Interface Control Drawing Calibration Procedure Installation Procedure Maintenance Procedure Engineering Procedure Operating Instruction Operating Procedure Operational Safety Requirement IEFD Drawing Cell Arrangement Drawing Essential Material Specification Fac. Proc. Samp. Schedule Inspection Plan Inventory Adjustment Request	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Tank Calibration Manual Health Physics Procedure Spares Multiple Unit Listing Test Procedures/Specification Component Index ASME Coded Item Human Factor Consideration Computer Software Electric Circuit Schedule ICRS Procedure Process Control Manual/Plan Process Flow Chart Purchase Requisition Tickler File	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐																																																																																																																		
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RELEASE AUTHORIZATION

Document Number: WHC-SD-TP-PDC-001, Rev. 1

Document Title: Packaging Design Criteria Modified Fuel Spacer
Burial Box

Release Date: September 9, 1994

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This document was reviewed following the
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WHC Information Release Administration Specialist:

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<p style="text-align: center;">APPROVED FOR PUBLIC RELEASE <i>9/9/94/40.8011</i></p>		
7. Abstract <p>This Packaging Design Criteria (PDC) establishes onsite transfer and burial/storage safety criteria that shall be met to justify the interim use of the Fuel Spacer Burial Box (FSBB) when modified to meet this criterion. There are eighteen FSBBs available onsite, and an existing design modification to provide positive lid closure. The FSBB will require structural modifications to be capable of being lifted into the burial trench. Additional FSBB design modifications, and/or the use of specific control requirements, will be required to meet this criterion. Compliance to the criteria in this PDC will demonstrate that the transfer of a Modified Fuel Spacer Burial Box (MFSB) will provide an equivalent degree of safety as would be provided by a package meeting offsite transportation requirements. This fulfills the onsite transportation safety requirements implemented in WHC-CM-2-14, <i>Hazardous Material Packaging and Shipping</i>. A Safety Analysis Report for Packaging (SARP) will be prepared to evaluate the safety of the transfer operation. Approval of the SARP is required to authorize transfer. Criteria are also established to ensure burial requirements are met.</p>		
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9. Impact Level SQ		

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EXECUTIVE SUMMARY

Various Hanford facilities must transfer large radioactively contaminated items to burial/storage. Presently, there are eighteen Fuel Spacer Burial Boxes (FSBBs) available on the Hanford Site for transport of such items. Previously, the FSBBs were transported from a rail car to the burial trench via a drag-off operation. To allow for the lifting of the boxes into the burial trench, it will be necessary to improve the packagings lifting attachments and provide structural reinforcement. Additional safety improvements to the packaging system will be provided by the addition of a positive closure system and package ventilation. FSBBs that are modified in such a manner are referred to as Modified Fuel Spacer Burial Boxes (MFSBs).

The criteria provided by this PDC will be used to demonstrate that the transfer of the MFSB will provide an equivalent degree of safety as would be provided by a package meeting offsite transportation requirements. This fulfills the onsite transportation safety requirements implemented in WHC-CM-2-14, *Hazardous Material Packaging and Shipping*.^{*} A Safety Analysis Report for Packaging (SARP) will be prepared to evaluate the safety of the transfer operation. Approval of the SARP is required to authorize transfer. Criteria are also established to ensure burial requirements are met.

^{*}WHC-CM-2-14, *Hazardous Materials Packaging and Shipping*, Westinghouse Hanford Company, Richland, Washington.

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PACKAGING DESIGN CRITERIA /
MODIFIED FUEL SPACER BURIAL BOX

1.0 INTRODUCTION

1.1 BACKGROUND

With the growing emphasis on cleaning up the Hanford Site, the need for containers capable of carrying large payloads (12 tons) is increasing. The clean up of the canyon areas of existing facilities and the shut down of N Reactor require large containers to allow the disposal of large contaminated items and equipment. The use of these large containers or burial boxes serves to reduce the number of shipments and reduce exposure to personnel, thereby fulfilling As Low As Reasonably Achievable (ALARA) principles. Reduction of exposure is achieved because the need to dismantle or cut up large objects and equipment is eliminated or reduced.

The Fuel Spacer Burial Box (FSBB), with a payload of 12 tons, cannot be lifted off a transport vehicle because of structural restrictions. Design changes will be required to allow for the lifting of a fully loaded box from a rail car to the burial trench. Additional FSBB design improvements, as required, will be implemented to ensure safety requirements are met. FSBBs with design improvements shall be referred to as Modified Fuel Spacer Burial Boxes (MFSBs).

1.2 PURPOSE

This Packaging Design Criteria (PDC) was developed to document the criteria used to ensure the safe interim onsite use of the single-trip FSBB (modified as necessary) pending implementation of the preferred alternative determined by the currently ongoing Engineering Study. Compliance to this criteria will ensure the safe transport and disposal/storage of wastes using the MFSB. These criteria will allow evaluation of the existing FSBB to determine appropriate modifications. A combination of packaging design, operational controls, risk analysis, and dose consequence analysis will be used in the preparation of the SARP to demonstrate the safety of the transfer.

1.3 JUSTIFICATION

Eighteen FSBBs are available onsite. There are no other packagings available for interim use that can be used to dispose of large contaminated items. Personnel exposure in canyon storage areas is increasing due to the increasing inventory of these items; this trend is an ALARA concern. The existing FSBB may not provide an appropriate level of safety without modification or more stringent operational control. Modification of the existing FSBBs, as

required, and the thorough evaluation of transfer safety and storage/burial requirements will be performed, documented in a SARP, and approved to allow interim use.

2.0 FUNCTIONAL CRITERIA

2.1 PAYLOAD CHARACTERISTICS

The contents of the packaging consist of radioactively contaminated irradiated fuel spacers, drums, tanks, jumpers, building rubble, piping, valves, reactor and storage basin components, carbon steel and stainless steel equipment, structural components, filtration components, borated concrete blocks, activation and mixed fission products. Combustible waste, e.g., paper, plastic, wood, rubber, cloth, may be included with noncombustible waste. Oxidizing or pyrophoric material, or free liquids, shall not be allowed. Total payload weight shall not exceed 12 tons without modification to the existing FSBB, and items shall not exceed the size limitations given in this section.

Because of the variety of items which may be placed into the box, no standard dunnage configuration is used. However, as practicable, items shall be positioned to minimize movement, evenly distributed to maintain a centrally located center of gravity, and dunnage added as required to prevent movement of material in the packaging.

Total maximum activity (for transportation) will be Type B not to exceed 2,000 A₂s (bounding limit above known need) of mixed fission products. The term "A₂s" is the maximum activity of normal form radioactive material permitted in a Type A package (see 49 CFR 173.403). Fissile material shall be less than 15 g per package (fissile excepted for transfer). Transuranic (TRU) contamination will not exceed 100 nCi/g (non TRU for burial).

The contents shall be either Category 1 or Category 3 waste for burial purposes.

The major radionuclides include:

Cobalt-60
Strontium-90

Barium-137m
Cesium-137

Yttrium-90

The packaging system shall be sized to transport materials and equipment up to 22 ft in length and 9.75 ft in width and 5.75 ft in height when used without a liner.

The packaging system shall be capable of carrying a maximum payload of 12 tons unless modified for larger payloads.

The following representative payload will be used for design and analysis purposes. A thermal analysis will be performed on the packaging system using the representative payload to determine the thermal limitations and maximum heat loading for the package. Maximum allowable A_2 s are 2,000.

B PLANT

Material Distribution:

Item	Volume (%)	Volume (ft ³)
Steel	2.28	32.9
Paper, Cloth, Rubber, Plastic, Wood	14.61	210.4
Air	83.10	1,196.6

Normal Radionuclide Distribution:

Item	Number of A_2 s	Activity (Ci)
¹³⁷ Cs	154.2	1,542
⁹⁰ Sr	800	320
Other	40	112
Total	994.2	1,974
Alternate Number 1 Radionuclide Distribution		
¹³⁷ Cs	154.2	1,542
⁹⁰ Sr	200	80
Other	40	112
Total	394.2	1,734
Alternate Number 2 Radionuclide Distribution		
¹³⁷ Cs	154.2	1,542
⁹⁰ Sr	1,800	720
Other	40	112
Total	1,994.2	2,374

Note: Other radionuclides include ²⁴²Cm, ²⁴¹Am, ²⁴⁴Cm, ²³⁸Pu, ²³⁹Pu, ²⁴⁰Pu, ²⁴¹Pu, ²³⁷Np, and ⁹⁹Tc.

N REACTOR**Material Distribution:**

Item	Volume (%)	Volume (ft ³)
Steel	1.71	24.6
Aluminum	0.81	11.6
Concrete	2.90	41.7
Paper, Cloth, Rubber, Plastic, Wood	7.31	105.2
Air	87.28	1,256.8

Normal Radionuclide Distribution:

Item	Number of A ₂ s	Activity (Ci)
⁶⁰ Co	21.5	150
¹³⁷ Cs	7.7	77
⁹⁰ Sr	100	40
⁵⁴ Mn	5	100
⁶³ Ni	80	8,000
¹⁴ C	40	2,400
Other	40	112
Total	294	10,879

Note: Trace amounts of other radionuclides include ²³⁴U, ²³⁵U, ²³⁸U, ²³⁹Pu, ²⁴⁰Pu, and ²⁴¹Am.

2.2 FACILITY OPERATIONS

During the SARP upgrading effort, the following facility operations will be used in conjunction with this criteria to determine modifications required to the existing FSBB and changes in loading, transfer and burial operations.

2.2.1 B Plant

The MFSB will be used to remove waste and debris from the B Plant canyon. For remotely handled shipments, the empty box is loaded onto a railcar. The box

and spacer cars are then positioned into the railroad tunnel. The box lid is removed, placed on the canyon deck and covered with plastic. Waste is removed from the process cells and placed in the burial box. Once the box is full, the lid is installed. The box exterior is washed and air dried overnight. Finally, the package is transported by railcar from B Plant to the burial grounds in the 200 East Area for disposal.

2.2.2 100 N and K Areas

The MFSB will be used for shipping fuel spacers and various waste, equipment, and debris from the reactor complex. Prior to the loading process, the lids are removed outside the facility and the box and railcar are covered with plastic and then moved inside the facility. After loading, the plastic is removed and the box and railcar are surveyed and released. The railcar is then pulled outside the facility and the lids are installed. Some burial campaigns are performed completely outside the facility, where the process would be similar. The package is transported from 100 N or K Areas to the 200 West Burial Grounds for disposal.

2.2.3 T Plant

T Plant will serve as an equipment decontamination, repair and disposal facility for the Hanford Site. The MFSB will be used primarily in conjunction with canyon operations and low-level waste (LLW) burial. An optional liner may be fabricated to fit into the burial box, and positioned on the canyon deck to be filled as material becomes available. Once the liner is filled it will be placed in the burial box which has been secured to a railroad flat car. If no liner is used, the MFSB will be brought into the canyon, covered with plastic, and filled. After closure, the package will be transported by railcar to the 200 West Burial Grounds for disposal.

2.2.4 Burial Ground/Storage Facility

Category 1 waste shall be transported to the Central Waste Complex (CWC) or a similar waste storage facility. It will be lifted from the rail car via a crane and placed onto a storage pad.

Category 3 waste will be transported to the burial grounds in the 200 East or 200 West Areas. Upon arrival at the burial ground, the rail car will be positioned along the off-loading pad. The burial box will be lifted from the rail car via a crane and moved into the burial trench. The box will be decoupled from the crane and buried. Category 3 waste packages may also require stabilization with grout.

2.3 TRANSPORTATION OPERATIONS

After loading and closure, the package will be transported by railcar at 15 mph to the 200 East or West burial grounds where it will be lifted off the railcar into the burial trench. Railroad spacer cars may be used if required. Tiedowns will be used for contact handled packages.

2.4 BASIS FOR PACKAGING SAFETY

The FSBB has been used onsite for many years. Because of its large size and heavy payload (12 tons) it is not structurally capable of being lifted when loaded or of meeting offsite transportation regulations. The existing boxes will be required to be modified to make them structurally capable of being lifted when fully loaded and to make them meet onsite transfer requirements.

The safety of onsite transfers using the MFSB will be based on providing an equivalent degree of safety as would be provided by the offsite transportation regulations. This equivalent degree of safety will be demonstrated by evaluating the ability of the packaging to provide containment for normal transfer conditions and for credible or probable accidents. A combination of packaging design, control requirements, risk assessment, and dose consequence analysis will be employed in the evaluation process.

3.0 PACKAGING SYSTEM DESIGN CRITERIA

The packaging system described in this PDC is the MFSB which consists of the existing FSBB and modification necessary to meet the criteria in this PDC.

Because burial requirements differ from transportation requirements they are addressed separately in this section. Section 3.1 gives criteria required for transportation packaging and Section 3.2 gives waste packaging burial criteria.

3.1 TRANSPORTATION PACKAGING

3.1.1 Construction Materials

The MFSB shall consist of a FSBB modified/constructed in accordance with Drawing H-2-817864, Revision 0, Sheets 1 through 7, and modifications necessary to meet these criteria.

3.1.2 Maximum Gross Weight

The maximum gross weight of the package shall not exceed 37.5 tons for the existing design. Modifications and structural analysis may allow a change of this limit.

3.1.3 Lifting Attachments

Any lifting attachment that is a structural part of the MFSB shall be designed with a minimum safety factor of 1.5 against yielding when used to lift the unloaded MFSB in the intended manner, and shall be designed so that failure of any lifting device under excessive load would not impair the ability of the package to meet other criteria. Any other structural part of the MFSB which could be used to lift the package shall be capable of being rendered inoperable for lifting the package during transfer or shall be designed with strength equivalent to that required for lifting attachments.

3.1.4 Decontamination

The exterior of the container shall be designed so it can be easily decontaminated to meet the requirements of Section 4.1.2.

3.1.5 Thermal

The combination of an ambient temperature range of 0 °C (32 °F) to 46 °C (115 °F), solar, and internal heat loading shall not prevent the MFSB from maintaining containment as defined in Section 4.1.2.

3.1.6 Positive Closure System

The MFSB shall have a positive closure device which cannot be opened unintentionally and will keep the lid on after a rollover on soft soil. The closure system shall provide for remote closure. Guides shall be provided to allow positioning the lid(s) remotely.

3.1.7 Venting

The MFSB shall provide filtered ventilation for the payload. For MFSB used to transport Category 1 waste, the filter shall be in accordance with Drawing H-2-72106, Revision 1, Sheet 1, and Revision 0, Sheet 2.

3.1.8 Tiedown

Tiedown devices which are a structural part of the MFSB shall be capable of holding the package on the railcar at sudden stops and cornering at a speed of 15 mph without exceeding the yield strength of the tiedown device or its connection point to the package.

3.1.9 Water Retention

The liner cover/lid shall be designed to prevent water intrusion and avoid collection of water during transfer.

3.2 BURIAL PACKAGING

3.2.1 Thermal

Internal heat generation shall not cause degradation of the MFSB after burial.

3.2.2 Closure Systems

For Category 3 wastes, closures, such as gaskets or welded seals, shall not degenerate during handling, burial and/or storage.

3.2.3 Radiation Exposure

For Category 3 wastes the design shall consider the stability of the MFSB under exposure to radiation.

3.2.4 Chemical Resistance

The design shall consider the effects of corrosion and chemical characteristics of both the waste contents and storage/disposal environment.

3.2.5 Mechanical Properties

The package shall be designed and fabricated with sufficient structural strength to withstand the maximum forces exerted on it during storage/disposal. In the disposal mode, it will be capable of withstanding horizontal and vertical loads generated by 5 m of cover material in addition to loads due to disposal site operations, such as trench compaction. The cover material has a density of 120 lb/ft³ and will produce a pressure of 16 psi. A waste package with void space less than 10% is considered to meet this criterion.

3.2.6 Other Requirements

MFSBs used for the transportation and burial of Category 3 waste shall be outfitted with appropriate grouting ports and vents to allow for the payload to be grouted prior to burial.

4.0 GENERAL REQUIREMENTS

4.1 TRANSPORTATION SAFETY

4.1.1 Chemical and Galvanic Reactions

The MFSB shall be evaluated during SARP preparation to insure that there will be no significant chemical, galvanic, or other reaction among the packaging components, contents, or between the packaging components and the intended contents.

4.1.2 Surface Contamination

Removable contamination on the exterior surfaces of the packages shall not exceed the following limits:

- 220 dpm/100 cm² for alpha contamination
- 2,200 dpm/100 cm² for beta-gamma contamination

4.1.3 Normal Transfer Conditions

The packaging system shall be capable of retaining the contents and limiting direct radiation during transfer operations. An evaluation of transfer operations shall be performed to demonstrate that the packaging system meets the following criteria.

4.1.3.1 Containment

The packaging system shall have a minimum of one containment barrier. The package and closure system shall retain contents during transfer such that there will be no appreciable release of material.

4.1.3.2 Shielding

For contact handled packages, the dose rate on the external surfaces of the MFSB shall not exceed 200 mrem/h at contact. However a marked point with dose rates up to 1,000 mrem/h on the bottom and one side may be permitted with preapproval of Solid Waste Engineering Analysis.

For remote handled transfers, the dose rate shall not exceed 5 rem/h at 1 m from the sides of the railcar.

Shielding may be added to the packaging interior if required to meet the dose limit or ALARA goals. Due to mixed waste disposal requirements, lead shall not be used for supplemental shielding.

4.1.3.3 Criticality

The quantity of fissile material shall be limited to the level required to be excepted from additional packaging requirements and criticality evaluation.

4.1.4 Accident Events

During SARP preparation a risk assessment will be performed on the proposed transfer to determine credible and probable events using the following criteria. Credible and probable events will be addressed in the SARP. Incredible events do not require evaluation of the dose consequence to onsite persons. In addition, the packaging system shall be capable of retaining the contents and limiting radiation exposure under unplanned credible and probable events during transfer in accordance with the following criteria.

4.1.4.1 Incredible Events

Any unplanned event which has a probability less than 10^{-6} per year shall not lead to a radiation exposure of greater than 25 rem effective dose equivalent (EDE) to offsite persons. Evaluation of dose to onsite personnel is not required. These unplanned events are considered incredible.

4.1.4.2 Credible Events

An unplanned event which has a probability between 10^{-6} and 10^{-3} per year shall not lead to a radiation exposure of greater than 1000 mrem to onsite personnel, or 200 mrem to offsite personnel. These unplanned events are considered credible.

4.1.4.3 Probable Events

An unplanned event which has a probability of greater than 10^{-3} per year shall not lead to a radiation exposure of greater than 200 mrem to a radiation worker, or 10 mrem to a member of the public or a non-radiation worker. Any unplanned event that has an indeterminate probability shall be considered probable.

4.1.5 Thermal

The maximum surface temperature of the MFSB shall be evaluated in the SARP for occupational safety. No accessible surface of the MFSB shall have a temperature exceeding 82 °C (180 °F) in still ambient air temperature of 38 °C (100 °F) and in the shade.

4.1.6 Transport Speed

The speed of the railcar shall not exceed 15 mph during the transfer of the MFSB.

4.1.7 Transport Vehicle

A railroad flatcar shall be used, capable of transporting the size and weight of a package meeting this design criteria.

4.1.8 Tiedown Devices

The MFSB shall have a tiedown system to maintain retention on the transport vehicle. The tiedown system (tiedown, tiedown attachment on railcar) shall ensure that the package does not move on the railcar for sudden stops or cornering at a speed of 15 mph.

4.2 ALARA

The design and operational features of the packaging shall be consistent with the requirements in WHC-CM-4-11, *ALARA Program Manual*. Exposure of personnel to radiological and other hazardous materials associated with the loading, closure, and off-loading of the package shall be minimized.

4.3 QUALITY ASSURANCE

The packaging design shall specify all inspection and testing requirements. All inspections and tests shall be documented. Inspection during fabrication shall include normal verification of dimensions and visual inspection of materials and workmanship as prescribed in WHC-CM-4-2, *Quality Assurance Manual*. Quality Assurance instructions or plans shall be developed based on the assigned Safety Class of the package.

5.0 CODES AND STANDARDS

The following documents provide criteria and requirements for the packaging, transfer, and burial/storage of waste using the MFSB.

WHC-EP-0063-3, *Hanford Site Solid Waste Acceptance Criteria*.

WHC-CM-2-14, *Hazardous Material Packaging and Shipping*.

WHC-CM-4-11, *ALARA Program Manual*.

WHC-CM-4-2, *Quality Assurance Manual*.

Hanford Site Radiological Control Manual.

6.0 REFERENCES

- 49 CFR 173, 1993, "Shippers - General Requirements for Shipments and Packagings," *Code of Federal Regulations*, as amended.
- RL, 1992, *Hanford Site Radiological Control Manual*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, December 1992.
- WHC-CM-2-14, *Hazardous Material Packaging and Shipping*, Westinghouse Hanford Company, Richland, Washington.
- WHC-CM-4-2, *Quality Assurance Manual*, Westinghouse Hanford Company, Richland, Washington.
- WHC-CM-4-11, *ALARA Program Manual*, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1976, *Standard Air Vent for Non-Transuranic Burial Boxes*, Drawing H-2-72106, Revision 1, Sheet 1, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1976, *Standard Air Vent for Non-Transuranic Burial Boxes*, Drawing H-2-72106, Revision 0, Sheet 2, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1989, *Hanford Site Solid Waste Acceptance Criteria*, WHC-EP-0063-3, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1994, *Modified Fuel Spacer Burial Box*, Drawing H-2-817864, Revision 0, Sheets 1-7, Westinghouse Hanford Company, Richland, Washington.