

Enclosure 1

List of SAR Changes

Volunteer Package SAR, Revision 25C

Docket No. 71-9403

April 2025

List of Changes, Volunteer Package SAR, Revision 25C

Chapter 1

- Page 1.2-11, added text where indicated. (The new text font is red.)

Chapters 2 thru 7 – no changes

Chapter 8

- Page 8.1-7, added text where indicated. (The new text font is red.)

Chapter 9 – no changes

Enclosure 2

SAR Changed Pages

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The contents are described in the following sections, including the type and form of materials, maximum quantity per package, and loading and shipping restrictions.

1.2.2.1 Irradiated Hardware

Contents 1A, 2A, and 3A are irradiated and/or contaminated non-fuel bearing (or fissile exempt quantities) metal and/or solid metal oxide, such as intact or segmented BWR control rod assemblies (CRAs) or control rod blades (CRBs), segmented reactor components, and solid metal GTCC waste. Contents 1A, 2A, and 3A are packaged in the long, standard, and short-length shield liner assemblies and shipped in the long, standard, and short-length cask assemblies, respectively. Shield liners with irradiated hardware contents may be dry- or wet-loaded into the cask and shipped with **instrument grade air (oil-free, clean, dry, compressed air for valves and instruments), dry nitrogen, helium, or an inert gas** as the cask fill gas. Wet loaded contents shall be vacuum dried prior to backfilling.

These contents shall meet the following requirements and restrictions:

Type and Form of Material:

1. Radioactive material in the form of neutron activated metals or metal oxides in solid form and/or contaminated non-fuel bearing reactor accelerator components.
2. Components may be intact, segmented, and/or size reduced (e.g., compacted) to fit within the cavity of the shield liner assembly.

Maximum Quantity per Package:

1. Maximum total Co-60 activity of 30,000 Ci.
2. Maximum total heat load of 470 thermal watts.

Loading and Shipping Restrictions:

1. Contents shall be packaged in a shield liner assembly. Except for close fitting contents, shoring must be placed between the shield liner and activated components to prevent reconfiguration of the contents under HAC.
2. Contents loaded in water shall be drained of all free water within the cavity of the shield liner and cask, to the extent practicable.
3. The package shall be covered by a personnel barrier when configured for transport.

1.2.2.2 Vitrified HLW Canisters

Contents 1B and 3B are HLW that is vitrified in borosilicate glass and contained inside a sealed stainless steel HLW canister with a welded closure. The glass matrix may also contain non-

Note: Irradiated hardware contents that are wet-loaded do not require inerting of the cask cavity.

14. Attach a vacuum drying system (VDS) to the vent port and vacuum dry the cask cavity and contents as follows:
 - a. Turn on the VDS vacuum pump and evacuate the cask cavity to a pressure below 10 torr (13 mbar) and continue vacuum pumping for at least 15 minutes more.
 - b. Isolate the vacuum pump and monitor the cask cavity vacuum pressure for a minimum of 10 minutes. If the pressure rise is greater than 5 torr (6.7 mbar), repeat vacuum drying operation.
 - c. Backfill the cask cavity with helium for TPBAR contents, or **instrument grade air (oil-free, clean, dry, compressed air for valves and instruments), dry nitrogen, helium, or an inert gas** for irradiated hardware contents to a pressure of 0 to 1 psig (i.e., 14.7 to 15.7 psi absolute).
 - d. Disconnect the VDS from the cask.
15. Install the vent and drain port covers. Lubricate, install, and tighten each of the three (3) cask port cover bolts to a torque of 100 ± 10 ft-lbs. If the port covers are already installed, verify that the port cover bolts are tightened to a torque of 100 ± 10 ft-lbs.

8.1.2.2 Dry Loading

This section describes the procedure for dry-loading the cask assembly and installing the packaging closures. Dry loading operations are either performed using engineered radiological controls, such as remotely operated equipment in a shielded enclosure (e.g., a hot cell) or specially designed equipment (e.g., a dry transfer system, or DTS), or using administrative controls, such as temporary shielding and distance to limit occupational exposure to ALARA. For dry-loading operations, the user is required to verify adequate radiological controls are in place. The following procedure is not specific to any of the radiological control approaches discussed above.

1. If contents have been pre-loaded into a secondary container (e.g., irradiated hardware in a shield liner or vitrified HLW in a sealed canister), verify that the secondary container is properly closed (e.g., lid installed and lid bolts installed and tightened or vitrified HLW canister welded closed) and ready to load into the cask assembly.
2. Carefully lift and lower the contents into the cask cavity as follows:
 - a. If loading a loaded shield liner into the cask cavity, align the channel in the edge of the shield liner assembly with the drain tube assembly in the cask cavity and slowly lower the shield liner to the bottom of the cask cavity.