

-----Original Message-----

From: Hicks, Dave [mailto:Dave.Hicks@rfets.gov]

Sent: Friday, September 10, 1999 2:15 PM

To: Wangler, Mike

Cc: Leonard, Bob; Dart, Bob

Subject: Re: Approval of 6M Package for Metals and Metal Alloys

Mike,

Attached is the issue paper I discussed on the phone with you. I believe that these changes are not substantial enough to invalidate your previous approvals. Please let me know if this is acceptable to you. (303-966-3122)

v/r,

dauidalanhicks <<Letter on Canning.doc>>

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The purpose of this correspondence is to document changes to the planned canning configuration for Rocky Flats Environmental Technology Site (RFETS) Scrub Alloy and Pu metal. The Scrub Alloy is being shipped to Savannah River Site (SRS) and the Pu metal is being shipped to SRS, and Los Alamos National Laboratory (LANL). Per DOE Order 460.1, your approval has been obtained to ship these materials in the DOT-6M shipping container (Reference 1 and 2). The following canning configuration changes are planned:

Scrub Alloy Shipments to SRS

The approved configuration called out for use of a 0.050" thick internal tin alloy shield to reduce the gamma radiation from the Americium in the alloy. After your approval was granted, SRS process personnel identified that the tin in the shield might precipitate after dissolving in the canyon dissolvers, thus causing solids handling problems.

At Savannah River's request we are changing from the tin alloy shield to a 0.0625" thick mild steel shield. For alloy shipments where radiation exposure is not of concern, RFETS is planning to not use any shielding material.

Crumpled aluminum foil may be used to help cushion the alloy button in the inner can.

Plutonium Metal Shipments to SRS and LANL

Recently a concern was raised about the potential for damage to the inner produce can caused by movement of the plutonium metal piece in the can. While denting of the inner can has been found, and duplicated in several tests with surrogate materials and plutonium metal, no failures of the inner can have been found.

The investigation of how to mitigate this damage first used crumpled aluminum foil to better secure the plutonium metal in the inner can. While this decreased the damage seen, when cans packed with aluminum foil cushioning were roughly handled, damage to the inner could still occur. The mitigation approach then successfully evaluated the use of a physical shield to protect the cans.

Based on the evaluation above, RFETS is implementing two changes in the canning of plutonium metal:

1. Implement the use of a shield between the metal and the can to minimize the potential for handling damage. RFETS will use either the 0.050" thick tin alloy shields which became available when they were identified as unacceptable for SRS Scrub and Alloy Shipments, or the .0625" thick steel shields being used for the SRS shipments. Use of aluminum foil cushioning inside the shield will be optional.
2. Use inner cans with a wall thickness of either 0.010" or 0.015".

These changes are not planned for the low-radiation scrub alloy shipments. Due to the larger size and the lower density of the alloy pieces being shipped, the damage to the inner can of scrub alloy caused by handling has not occurred.

Table 15-2 (Authorized Contents) of the DOT-6M Users Guide (Reference: User's Guide for Shipping Type B Quantities of Radioactive and Fissile Material, Including Plutonium,

in DOT-6M Specification Packaging Configurations) specifies the maximum contents for a DOT-2R or an inner can. As the shields identified above are being used to improve the structural integrity of the inner cans, the weight of the shield will not be included in the maximum content verification calculations for either metal or scrub alloy shipments.

Your concurrence with these upgrades to the canning configuration is appreciated. If you have any questions, please contact Don Thorp at 303-966-3410 or Rick Geinitz at 303-966-5115.