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**The Secretary of Energy**  
Washington, DC 20585

August 8, 2001

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DNF SAFETY BOARD

The Honorable John T. Conway  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW  
Washington, D.C. 20004

Dear Mr. Chairman:

My staff has briefed me on a proposed limited change regarding a commitment in the Department of Energy's (DOE's) 2000-1 Implementation Plan. The purpose of this letter is to inform you that I am approving this change.

Surveillance of the TRU waste drums containing chlorinated wet combustible residues at the Rocky Flats Environmental Technology Site (Rocky Flats) has indicated that the drum filters are degrading and routinely become plugged. The site is testing a redesigned filter for the outer drum but has not successfully developed an improved filter for the inner containers. To preclude the need to routinely open drums to monitor the inner can filters and replace failed filters (potentially multiple times), the site has proposed the alternative of eliminating the inner can closure seal (i.e., venting the inner can). Generally, the proposed packaging configuration consists of several filtered plastic bags inside a filtered 55-gallon drum. Although this packaging configuration meets the Waste Isolation Pilot Plant (WIPP) waste acceptance criteria, it represents a limited exception to DOE's Criteria for Interim Safe Storage of Plutonium-Bearing Solid Materials (ISSC), which precluded the use of plastic bags as an inner contamination barrier.

As a result of this change, Rocky Flats will package wet combustible residues using single vented containment meeting WIPP requirements by May 2002. All other categories of residues will still be packaged to meet both ISSC and WIPP requirements by May 2002. The details of the condition prompting change and the revised packaging configuration are described in the enclosure. This change will eliminate the need to monitor internal filtered containers for wet combustible residues and result in less personnel radiation exposure, less industrial hazards (due to less drum movement), less personnel resources, and less cost. Based on favorable experience while packaging residues to date, the site concludes that safe on-site storage of repackaged wet combustible residues can be achieved with the revised packaging configuration for wet combustible residues.

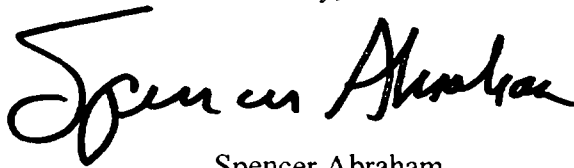


The commitment #308 in the 2000-1 Implementation Plan will be changed from "Complete repackaging all remaining low-risk residues to meet ISSC by May 2002" to "Complete repackaging all remaining low-risk residues (except wet combustible residues) to meet ISSC by May 2002. Wet combustible residues will be repackaged to meet WIPP requirements by May 2002."

The basis of the proposed change in technical approach for this commitment at Rocky Flats has been discussed with your staff both at Rocky Flats and at Headquarters. The Department will incorporate the change formally into the next revision of the Implementation Plan for Recommendation 2000-1.

If you have any questions regarding this proposed change, please contact me or have your staff contact Mr. David Huizenga, Deputy Assistant Secretary for Integration and Disposition, at (202) 586-5151.

Sincerely,

A handwritten signature in black ink, reading "Spencer Abraham". The signature is written in a cursive style with a large initial "S".

Spencer Abraham

Enclosure

cc: M. Whitaker, S-3.1

**Basis for Using Slip Lid Containers to Meet Interim Safe Storage Criteria  
for Certain  
Wet/Combustible Residues and the Use of Plastic Containment for Soft Waste  
Wet/Combustible Residues**

**Introduction**

Residue are being packaged at the Rocky Flats Site to meet the Waste Isolation Pilot Plant (WIPP) requirements as well as the requirements under the Interim Safe Storage Criteria (ISSC). Events have recently occurred that led the Site to re-evaluate the commitment made under the 2000-1 Implementation Plan of either shipping non-ISSC compliant wastes to the WIPP before May 2002 or making these wastes ISSC compliant after May 2002. After evaluation, the Site is being authorized to package the waste to meet the WIPP packaging requirements but establish alternative procedures for meeting the objectives of the ISSC requirement of two metal containment barriers.

**Background**

*ISSC Development*

The ISSC were developed in January 1996 as an addendum to the Department of Energy (DOE) Implementation Plan responding to the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-1. The intent of the ISSC was to provide criteria for safe storage of plutonium bearing materials for an interim duration at the originating sites (approximately 5 – 20 years). At the time that Recommendation 94-1 was issued, both the status of the WIPP and the magnitude of the hazards associated with interim storage of plutonium bearing materials known as “residues” was largely indeterminate. The primary criterion of the ISSC is “*Plutonium bearing materials shall be packaged to assure that no radiological contamination shall breach the storage package during interim storage.*” Specific criteria were developed for material content, storage packaging, and inspection and surveillance. With respect to the storage package criteria, the ISSC require a minimum of two metal contamination barriers, with the exterior of the innermost container free of external contamination. In addition, filtered vents were recommended for materials that are likely to generate a significant quantity of gas. Finally, plastic bags and slip-lid cans were specifically noted as not acceptable as one of credited contamination barriers.

*Wet/Combustible Project ISSC implementation History*

The Wet/Combustible Project began repackaging operations in October 1998. Initially, all of these residues, with the exception of a small amount of drums, were required to meet the ISSC requirements. The small population of drums, that did not initially meet the ISSC, was to be either shipped to WIPP or made ISSC-compliant by May 2002. The Project then began to repackage residues that were more amenable to counting the entire drum, as opposed to individual packages. The Implementation Plan was revised to recognize that the majority of the residues would not meet the ISSC but be shipped to WIPP or made ISSC compliant by May 2002. At this time WIPP was still not accepting wastes.

About 3000 filtered convenience cans have been generated to date, and an additional 3000 cans are anticipated through the life of the Wet/Combustible repackaging effort. It was originally anticipated that no filter problems would be encountered and that data could be amassed, prior to loading the convenience cans in drums, to ensure proper filter function. However, filter monitoring has revealed that a significant number of these convenience can filters are failing through an unknown mechanism. Although the Los Alamos National Laboratory is currently investigating issues associated with filter performance, the site has decided that finding a resolution that allows repackaging to continue is more desirable than delaying repackaging or having to monitor and repackage the waste multiple times.

### **Revised Approach**

Two approaches will be used as a substitute for filtered metal containers within the repackaged drum. In the first approach, a metal container will still be used for repackaged residues requiring a rigid container. For repackaged containers that are currently experiencing filter failure, the O-ring will be removed or the lid loosened and cross-taped in order to provide sufficient hydrogen diffusion. Alternatively, the option to replace the convenience can with a slip lid can will be used, should the Project decide to eliminate the convenience can. For other wastes that have not been repackaged and still require some type of rigid container, a slip lid can or screw lid can with the O-ring removed will be used. Hydrogen diffusion tests conducted on these configurations have been performed and demonstrate that a sufficient hydrogen diffusion rate is provided. The rigid container will be placed in two vented bags, of which the external surface of both bags will be free of contamination. Under the second approach, filtered plastic bags will be used for those wastes that do not require a rigid container. These residues will be repackaged like secondary waste that is already being package according to WIPP TRUCON code. Again, the external surface of the outer bag will be free of contamination. Both proposed configurations will eliminate the required monitoring of filters on the internal containers. Wastes packaged in either manner will undergo drum filter surveillance, as required, but will not be placed in an overpack container (85-gallon drum or Standard Waste Box) if it has not been shipped to WIPP by May 2002.

### **Justification**

The ISSC primary criterion was developed to ensure that no radiological contamination breach the storage package during the interim storage period. At the time that the ISSC was written the future opening of WIPP was uncertain and it was thought that the repackaged waste would be stored at the originating sites for an extended period of time. The ISSC provided guidance for the interim safe storage of plutonium-bearing solid materials for a period of 20 years or less. To ensure the safe storage up to 20 years, the storage package was modeled after the "3013 standard" and was required to include a minimum of two metal contamination barriers. Plastic bags and slip-lid cans were not considered acceptable barriers for the storage period. The technical basis noted that previous experience had shown that the lids on slip lid containers can be opened due to internal pressure or mechanical force and that plastic bags may degrade or be mechanically damaged over a period of time.

However, with WIPP now open and Rocky Flats actively shipping in order to meet the 2006 site closure goal, the interim storage period at the Site is significantly reduced compared to the 20-year period assumed in the original ISSC basis.

The revised repackaging configuration provides reasonable assurance that no radiological contamination will breach the storage package while awaiting shipment to WIPP. During residue characterization, 85 internally contaminated drums were found from over a thousand samples taken. Although data did not exist as to when the internal contamination took place, the drums were stored between 18 – 27 years before they were opened. Only a small number of internally contaminated drums have been detected during repackaging operations, which is now over 75 % complete (~4000 drums initially). Additionally, no external drum contamination has been found. The packaging configuration for these wastes routinely used a slip lid can or other rigid containment in conjunction with plastic contamination barriers. The 55-gallon drum provided the only metal containment barrier. Improvements to this original packaging configuration have occurred as a result of insights gained from residue characterization, filter vent monitoring, and compliance with WIPP requirements. These improvements include the use of filtered polyurethane bag-out bags, use of larger rigid containers to prevent displacement of the container lid by its contents, replacement of mild-steel filters with more corrosion-resistant filters, use of acid-neutralizing absorbents, granulated activated carbon pads, and verification of waste parameters that may affect storage (moisture content, headspace gases, etc.) All residues will be shipped to WIPP on a schedule which supports site closure in 2006. The combination of new packaging material, short storage time prior to shipment, and verification of storage parameters provides the reasonable assurance that no contamination breaches during the interim storage period occur. No external contamination has been detected on repackaged residues that had to be reopened or rehandled because of subsequent discovery of WIPP non-compliance. Additionally, once residues have been repackaged to WIPP requirements, validated, and awaiting shipment, the site has no plans to reopen drums. In the unlikely event that reopening a drum becomes necessary, appropriate facilities and precautions will be taken to prevent the spread of any potential contamination.

The revised packaging configuration will mitigate personnel radiation exposure during post-repackaging filter monitoring, reduce drum handling and drum movements, and save valuable personnel resources. Drum and container filter monitoring is currently being conducted in accordance with the Residue Vent Filter Monitoring Plan (Plan). The Plan was developed to comply with the ISSC to ensure safe storage of both the feed residue drums and the resulting repackaged TRU/mixed TRU waste drums. The Plan requires that internal container filters be monitored for integrity in addition to those on the drum. Elimination of filtered convenience cans will eliminate the need to perform filter monitoring on a large population of internal containers.

Since reasonable assurance is provided to ensure that contamination is contained by the revised packaging configuration for the short time duration until shipment to WIPP, the repackaged drums will not be placed into a Standard Waste Box if they are not shipped to WIPP by May 2002. Removing the requirements for loading these drums and performing surveillance of internal filters (drum filter) will limit resource expenditures and additional hazards imposed from hoisting and rigging, and decrease radiation exposure to personnel.

## Summary

The revised approaches for the Wet/Combustible residues at Rocky Flats will streamline the waste packaging operations and will eliminate the repetitive monitoring requirements that will be required should the Project continue with the current packaging plans to meet ISSC. The goal of the revised approaches is to provide a balance between the primary objectives of the ISSC (to minimize contamination events and worker exposure) and the increased worker radiological and industrial hazards associated with the filter monitoring activities. In light of the progress that the Residue Projects have made to date, WIPP opening, and the progress made toward the goal of Site closure in 2006, these revised approaches will improve worker safety during interim storage of the repackaged waste while it remains at Rocky Flats.