



Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221
May 21, 2010

Mr. Jonathan Edwards, Director
Radiation Protection Division
US Environmental Protection Agency (6608J)
Center for Federal Regulation
Ariel Rios Building
1200 Pennsylvania Ave, NW
Washington, DC 20460

Subject: Planned Change Notice for the RH-72B Neutron Shielded Canister

Dear Mr. Edwards:

The purpose of this letter is to inform the Environmental Protection Agency that the Department of Energy (DOE) is planning to employ a liner inside some standard Remote Handled (RH) transuranic (TRU) waste canisters to shield neutron emitting waste for shipment in the RH-72B cask. This shipping configuration will use an RH-72B removable lid canister lined with a high-density polyethylene (HDPE) liner and HDPE end caps which are slip-fit into the HDPE liner. The neutron shielding is required to meet the dose limits for transportation, but not for disposal of moderate neutron-emitting Remote Handled waste at the Waste Isolation Pilot Plant (WIPP).

The size of neutron emitting TRU waste streams that will require some added neutron shielding (in addition to the gamma shielding already provided by the RH-72B transportation cask) are relatively small in comparison with the total RH inventory planned for disposal at WIPP. At this time, the only candidate waste known to DOE to need this additional neutron shielding for transport is at Oak Ridge and contains moderate levels of Cf-252. Because the RH-72B does not provide neutron attenuation, a fraction of this waste stream, when packaged, would result in a combined gamma and neutron dose rate that would exceed transportation limits when shipped in the RH-72B. DOE believes that less than about a hundred neutron shielded canisters may be needed to complete disposal of this waste stream. The neutron shielding liner and end caps ensure that the neutron dose rates at the surface of the canister (still inside the RH-72B) will be less than 200 mrem/hr.

The HDPE liner and end caps provide neutron shielding for the RH-72B canister. This neutron shielded canister will have two possible configurations, NS15 or NS30, as shown in the attached drawing (X-106-503-SNP). The NS30 neutron shielded canister has a liner with a nominally 1.454 inch thickness of HDPE and HDPE top and bottom end caps are nominally 5 inches thick. This canister is designed to be direct loaded or to carry three vented 30-gallon steel drums with internal lever-lock closures, and will provide a neutron attenuation factor of about 3. The NS15 neutron shielded canister is essentially identical to the NS30 with a cylindrical liner that is nominally 3.387 inches thick and HDPE top and bottom end caps, nominally 5 inches thick. The NS15 is designed to be direct loaded or carry three vented 15-gallon steel drums with internal lever lock closures, and will provide a neutron attenuation factor of about 8.

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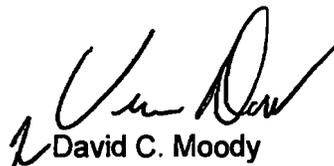
When received at WIPP, the neutron shielded canisters will be handled and emplaced exactly as any other removable lid canister (RLC). For all practical purposes, the neutron shielding interior to the RLC will not affect existing RH waste processing procedures at WIPP. Even though the neutron shielding may result in total dose rates less than 200 mrem/hr on contact with the RLC, DOE will still capture the waste characteristics of each canister and include the volumes as Remote Handled waste for the purpose of demonstrating compliance with the WIPP Land Withdrawal Act.

Sandia National Laboratories Carlsbad Program Group has conducted an analysis to determine if emplacing neutron shielded RH canisters in the repository will have an adverse impact on the WIPP repository Performance Assessment (PA) and the associated assumptions, (Kirkes 2010, ERMS 553272). The conclusion from this analysis is that the minimal increase in cellulosic, plastic, and rubber (CPR) materials due to the HDPE neutron shielding in RH waste canisters will not affect PA as long as an MgO excess factor of 1.2 is maintained, and provided that the total CPR mass tracked in the WIPP Waste Data System includes the neutron shielding in the packaging materials.

It is not anticipated that the neutron shielded canister will be available for use until early 2011. On February 12, 2010, Washington TRU Solutions LLC, on behalf of DOE, submitted an amendment to Revision 5 of the application for a revision to the Certification of Compliance (CoC) for the RH-72B Packaging, NRC Docket No. 71-9212. The amendment seeks Nuclear Regulatory Commission (NRC) approval to use the NS30 and NS15 canisters. NRC approval of this amendment is expected to occur no later than October 2010. Upon receiving NRC approval, Chapters 2 through 6 of DOE/WIPP-07-3372, WIPP Documented Safety Analysis (DSA) will be updated to include the use of the Neutron Shielded Canister. The analysis supporting the DSA evaluates each waste container in a range of hazard scenarios. This update will then receive DOE approval prior to use of the neutron canister at WIPP.

If you have any questions or need additional information please contact Russell Patterson at (575) 234-7457.

Sincerely,


David C. Moody
Manager

Enclosure

cc: w/enclosure

C. Byrum, EPA * ED
T. Peake, EPA ED
R. Lee, EPA ED
G. Basabilvazo, CBFO ED

R. Patterson, CBFO ED
R. Nelson, CBFO ED
CBFO M&RC

*ED denotes electronic distribution

Mr. Jonathan Edwards

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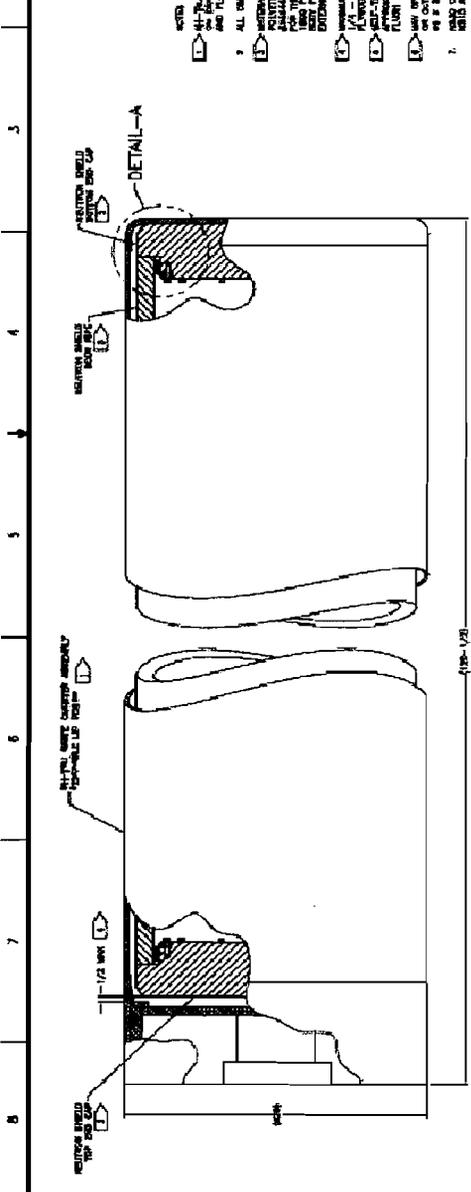
May 21, 2010

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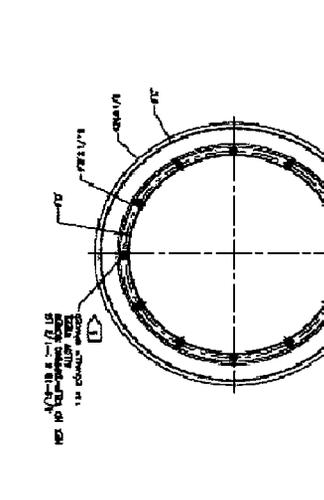
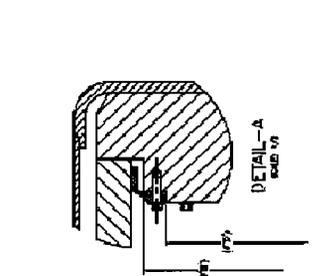
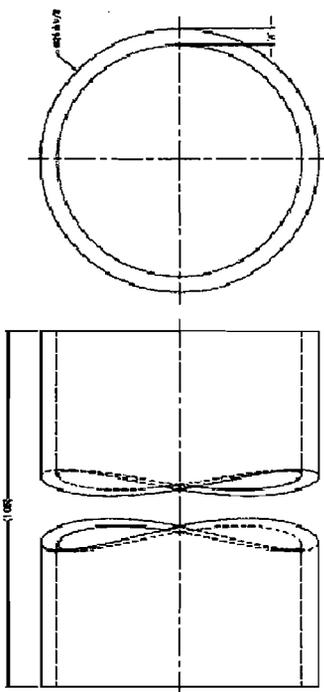
R. Chavez, WRES	* ED
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INITIAL REVISIONS			
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NS15 & NS30 NEUTRON SHIELDED CANISTER



DIMENSION TABLE

NO.	SIZE	QTY.
1	10.00 IN. DIA. BODY	1 (SEE NOTE 1)
2	10.00 IN. DIA. END CAP	2 (SEE NOTE 2)
3	10.00 IN. DIA. BODY	1 (SEE NOTE 3)
4	10.00 IN. DIA. END CAP	2 (SEE NOTE 4)
5	10.00 IN. DIA. BODY	1 (SEE NOTE 5)
6	10.00 IN. DIA. END CAP	2 (SEE NOTE 6)

U.S. Department of Energy
 NATIONAL BUREAU OF STANDARDS
 NEUTRON SHIELDED CANISTER ASSEMBLY
 NS15 & NS30
 NEUTRON SHIELDED DESIGN

CRITICAL SCENARIOS
END FILE

DATE: 10/15/80
 DRAWN BY: J. L. BROWN
 CHECKED BY: J. L. BROWN
 PROJECT NO.: D K-106-503-SNP

1. THIS DRAWING IS A PART OF THE NEUTRON SHIELDED CANISTER ASSEMBLY DRAWING SET. THE DRAWING SET IS TO BE USED TO FABRICATE THE CANISTER ASSEMBLY.
2. ALL DIMENSIONS IN INCHES AND DECIMAL INCHES UNLESS OTHERWISE SPECIFIED.
3. MATERIALS ARE TO BE AS SUPPLIED UNLESS OTHERWISE SPECIFIED.
4. THE CANISTER SHALL BE ASSEMBLED IN THE MANNER SHOWN IN THIS DRAWING SET.
5. THE CANISTER SHALL BE ASSEMBLED IN THE MANNER SHOWN IN THIS DRAWING SET.
6. THE CANISTER SHALL BE ASSEMBLED IN THE MANNER SHOWN IN THIS DRAWING SET.
7. THIS DRAWING IS A PART OF THE NEUTRON SHIELDED CANISTER ASSEMBLY DRAWING SET. THE DRAWING SET IS TO BE USED TO FABRICATE THE CANISTER ASSEMBLY.