



Washington TRU Solutions LLC

CP:11:03014  
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April 14, 2011

ATTN: Document Control Desk  
Director, Spent Fuel Project Office  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: RESPONSE TO QUESTIONS REGARDING APPLICATION FOR REVISION 5  
OF THE RH-TRU 72-B SHIPPING PACKAGE, DOCKET NO. 71-9212, TAC  
NO. L24419

- References:
1. Letter from T. E. Sellmer to Document Control Desk, dated February 12, 2010, subject: Revision 5 of the RH-TRU 72-B Shipping Package Application, Docket No. 71-9212
  2. Letter from T. E. Sellmer to Document Control Desk, dated April 19, 2010, subject: Supplemental Information Regarding Application for Revision 5 of the RH-TRU 72-B Shipping Package Application, Docket No. 71-9212
  3. Letter from S. I. Soto (NRC) to T.E. Sellmer, dated July 15, 2010, subject: Request for Additional Information for Review of the Model No. RH-TRU 72-B Shipping Package
  4. Letter from T. E. Sellmer to Document Control Desk, dated August 30, 2010, subject: Response to Request for Additional Information Regarding Application for Revision 5 of the RH-TRU 72-B Shipping Package, Docket No. 71-9212, TAC No. L24419
  5. Letter from R. Johnson to T.E. Sellmer, dated November 22, 2010, subject: Application for Revision to Certificate of Compliance No. 9212 for the Model No. RH-TRU 72-B Packaging, Docket No. 71-9212 – Supplemental Information Needed
  6. Memorandum from C. Staab to D. Weaver, dated December 23, 2010, subject: Summary of December 9, 2010, Meeting with the Department of Energy and Washington TRU Solutions
  7. Letter from T. E. Sellmer to Document Control Desk, dated February 16, 2011, subject: Response to Request for Supplemental Information Regarding Application for Revision 5 of the RH-TRU 72-B Shipping Package, Docket No. 71-9212, TAC No. L24419
  8. Email from C. Staab to T.E. Sellmer, dated March 24, 2011, subject: Further questions for the RH-TRU 72B package, ML110910035

Dear Sir or Madam:

Washington TRU Solutions LLC (WTS), on behalf of the U.S. Department of Energy (DOE), hereby submits an amendment to Revision 5 of the application for a Certificate of Compliance

NM 5501

(CoC) for the RH-TRU 72-B Packaging, U.S. Nuclear Regulatory Commission (NRC) Docket No. 71-9212 (Reference 1). The amendment is in response to questions regarding the RH-TRU 72-B package application (Reference 8) as clarified during the 3/31/10 teleconference between the NRC, WTS, and DOE.

The amendment consists of the following documents, where the RH-TRAMPAC is the only document revised with the SAR and Payload Appendices unchanged from the February 2011 submittal (Reference 7):

- RH-TRU 72-B Safety Analysis Report (SAR), Revision 5
- Remote-Handled Transuranic Waste Authorized Methods for Payload Control (RH-TRAMPAC), Revision 1
- RH-TRU Payload Appendices, Revision 1.

This letter includes the following attachments:

- Attachment A – Responses to Questions
- Attachment B – Summary of Revisions
- Attachment C – Revised Documents

Individual responses to the questions are provided in Attachment A. All technical changes necessary to specifically address the questions are indicated by right-bars in the margin of the documents (“|”) and are summarized in Attachment B. Right-bars in the margin of the documents (“|”) indicating technical changes made to the documents in the original and subsequent submittals of this application have been retained.

To facilitate implementation, it is requested that the current package CoC be valid for use one year from the date of issuance of the revised CoC.

If you have any questions regarding this submittal, please contact Mr. B. A. Day of my staff at (575) 234-7414.

Sincerely,



T. E. Sellmer, Manager  
Packaging Integration

TES:clm

Enclosures

cc: J.R. Stroble (CBFO)  
C. Staab (NRC)

## ATTACHMENT A – Responses to Questions

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### Responses to NRC Questions on Revision 5 of the RH-TRU 72-B Cask Safety Analysis Report (SAR), Revision 1 of the Remote-Handled Transuranic Waste Authorized Methods for Payload Control (RH-TRAMPAC), and Revision 1 of the RH-TRU Payload Appendices

**5-1:** Clarify that the procedure for comprehensive pre-shipment dose rate surveys/measurements now being included in the SAR and RH-TRAMPAC has been followed for all the shipments to date.

As part of the RSI response, the applicant provided measurement data for past shipments for the RH-TRU package to support the use of pre-shipment measurements in lieu of an NCT evaluation. However, for this information to support that position, the data must have been obtained from surveys that used the same procedure as the comprehensive measurement procedure now being included in the application. If this is not the case, then further justification is needed to show how this data supports the use of pre-shipment measurements versus an evaluation for the current application.

This information is needed to confirm compliance with 10 CFR 71.35(a) and 71.47.

#### **Response:**

The procedure described in the revised Section 3.2.2 of the RH-TRAMPAC is based on current practices at the sites. While the RH-TRAMPAC did not previously specify a detailed procedure for performing and documenting pre-shipment dose rate surveys/measurements, they were performed and documented using site-specific procedures. These procedures independently implemented the requirements of 10 CFR 71.47(b) and applicable national standards. The revised Section 3.2.2 of the RH-TRAMPAC was developed by simply combining the elements of these site-specific procedures to describe how pre-shipment surveys/measurements are and have been performed and specifies a common format for results documentation (see Table 3.2-1 of the RH-TRAMPAC).

**5-2:** Clarify the meaning and nature of the dose rate data provided in Table 6 of the RSI response for those shipments that the data for which shows the same dose rate for the package surface and the 2-meter distance.

A number of shipments in Table 6 of the RSI response show the same dose rate value for the package surface and at 2-meters from the vehicle edge. It is not clear why these values are the same; in reality this doesn't make sense. The dose rates at the package surface should always be greater than those at 2 meters from the vehicle edge. It also causes some concern regarding the comprehensiveness of the measurements for those shipments.

This information is needed to confirm compliance with 10 CFR 71.35(a) and 71.47.

#### **Response:**

The shipments for which the same dose rate value was reported at the package surface and the 2-meter distance have a maximum reported dose rate of 1.3 mrem/hr or less. These low dose rate "readings" result from reporting the sum of the calibrated gamma and neutron dose rate instrument's lower limit of detection (LLD), rather than reporting zero for non-detect readings by the instruments.

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**5-3:** Clarify the information discussed below in relation to the contents properties of previous shipments and the contents properties for the current amendment request.

Staff noticed that a number of shipments were numbered with “ORR.” It is some of these shipments that had the highest dose rates. It is staff’s understanding that “ORR” would refer to Oak Ridge, the package user for which the current amendment is needed. To support the use of measurements in lieu of NCT evaluations, further information is needed to understand the physical properties of the contents of the shipments already made by this user and whether or not the shipments under the proposed amendment would have contents with physical properties that are the same or similar (and the level of similarity) to those already shipped. Also, the applicant should clarify whether the physical properties of the previous shipments for this user limited the actual curie amounts in the package and that the proposed shipments can be expected to follow the same trend (regarding both the contents properties limiting the curie quantities that can be loaded and the measured dose rates).

This information is needed to confirm compliance with 10 CFR 71.35(a) and 71.47.

**Response:**

The RH-TRU debris waste anticipated for shipment in the neutron shielded canister is similar in material, physical form, hazardous constituents, and radiological constituents to other debris waste shipped from Oak Ridge National Laboratory (ORNL). Waste Stream OR-REDC-RH-HET includes RH-TRU debris waste originating from the REDC hot cell facility target fabrication and processing, analytical chemistry, and process development activities. The waste includes cellulose (paper), plastic, rubber, metal, and glass items. A portion of this waste stream is more recently generated such that lesser amounts of radioactive decay has occurred resulting in higher neutron dose rates that require use of the neutron shielded canister.

**5-4:** Clarify that the measurements for the previous shipments (as given in Table 6 of the RSI response) meet the requirement in the second paragraph of Section 3.2.1 of the RH-TRAMPAC. Also clarify how measurements for shipments under the proposed amendment would meet the same requirement.

The second paragraph of Section 3.2.1 of the RH-TRAMPAC states that for the dose rate measurements (and compliance with 10 CFR 71.47 limits) additional payload container shielding beyond that identified as an integral component of the payload container shall not be used. It is not clear how this requirement was met for the previous shipments. It also not clear how the measurements on shipments under the proposed CoC will meet this requirement, given the measurements are taken after the package is closed (See Step 7.1.2.22 of the SAR). Staff notes that the analyses to determine the curie limits did not include such additional shielding.

This information is needed to confirm compliance with 10 CFR 71.35(a) and 71.47.

**Response:**

The addition to Section 3.2.1 of the RH-TRAMPAC was incorporated during the initial submittal of the RH-TRU 72-B SAR Rev. 5 application in order to formalize a requirement that was previously established in the CH-TRAMPAC and subsequently followed on all RH-TRU 72-B shipments to date. Although rarely applicable, the added text ensures that any internal payload container shielding added for ALARA purposed is not credited when evaluating compliance with the NCT package surface and 2-meter dose rate requirements. The ALARA shielding is not

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credited by imposing a reduced allowable dose rate that is commensurate with the efficacy of the ALARA shielding. The efficacy of the ALARA shielding is determined analytically by evaluating the package NCT surface and 2-meter dose rates with and without the ALARA shielding to determine a dose rate attenuation factor. The dose rate attenuation factor is then applied to determine a reduction in the allowable dose rate for use in the compliance evaluation. This implementation of the requirement ensures that the regulatory NCT dose rate limits are met if the ALARA shielding was to be removed.

**5-5:** Change the words “should be” to “are” in the second sentence of RH-TRAMPAC Paragraph 3.2.2.1.2.

The RSI response indicates that the measurements are performed as described, not that they should be performed as described. The text in the RH-TRAMPAC description of the procedure should be consistent with the RSI response. An important part of the basis for allowing the measurements in lieu of an NCT evaluation for the current amendment is that the measurements are performed as described.

This information is needed to confirm compliance with 10 CFR 71.35(a) and 71.47.

**Response:**

Comment incorporated. The second sentence in Paragraph 3.2.2.1.2 of the RH-TRAMPAC has been revised to replace “should be performed” with “shall be performed” and to implement a scanning speed requirement that is consistent with the response capability of the calibrated detector.

**5-6:** Modify RH-TRAMPAC Paragraph 3.2.2.1.6 to describe the dose rate measurements at 2 meters from the vehicle edge as comprehensive and explain how they are comprehensive.

The dose rates measured at 2 meters from the vehicle edge are, in many cases, the limiting dose rates for a package (i.e., the dose rates that are closest to the appropriate regulatory limit). Thus, these measurements should be comprehensive, and the procedure should also describe how the comprehensive measurement is done (similar as is provided in the description of the dose rate measurements at the package surface).

This information is needed to confirm compliance with 10 CFR 71.35(a) and 71.47.

**Response:**

Comment incorporated. A new second sentence in Paragraph 3.2.2.1.6, that is consistent with the revised second sentence in Paragraph 3.2.2.1.2, has been added to clarify the comprehensive scanning requirements for the 2-meter dose rate measurements.

**5-7:** Clarify that gas sampling is performed prior to gas venting in the SAR Section 7.2 operations describing package unloading. Also clarify how this venting is done.

The operations should include a check for the presence of contamination in the gas in the package prior to venting so that appropriate radiation protection procedures can be employed during gas venting. It is not clear from the descriptions in the SAR that this is done. Also, it is not clear how venting is done, especially in the case when contamination is present.

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This information is needed to confirm compliance with 10 CFR 71.89 and that appropriate special controls and precautions for handling and unloading are addressed, per Section 7.5.2.1 of NUREG-1609.

### **Response:**

All users of the RH-TRU 72-B package are required to operate the package in compliance with DOE/WIPP 02-3284, *RH Packaging Operations Manual*. DOE/WIPP 02-3284 provides detailed instructions on performing package venting operations that require the use of a radiation assessment filter downstream of the test port tool. Utilizing a vacuum pump, the package is evacuated through the tool and filter for five minutes with the filter subsequently evaluated for contamination prior to removal of the lid.

**5-8:** Clarify the tolerance for the lead shielding thickness, modifying the licensing drawing and acceptance test criterion as appropriate.

The allowable tolerance for lead shielding thickness is not clear from the information in the application; thus it is not clear that the acceptance criterion is consistent with the allowable tolerance. The acceptance test criterion allows for 10% thinner lead than nominal. This translates to about 4.8mm for a tolerance, which seems to be a reasonable tolerance. However, it is not clear from the drawings that this is the tolerance for the lead shielding thickness.

This information is needed to confirm compliance with 10 CFR 71.85.

### **Response:**

The packaging SAR Drawing X-106-500-SNP, Revision 5, enforces the acceptance criteria for the lead shield through flag note 5. Flag note 5 references Section 8.1.5 of the SAR for specific methods and acceptance criteria for the gamma scan. Thus, the allowable thickness of the lead shield is enforced through the gamma scan acceptance test. This approach ensures that the lead thickness plus any internal porosity and/or density variations due to the lead pour are evaluated to ensure that the dose rate attenuation through the cask is greater than or equal to the nominal minus 10% lead standard. A mock-up of the nominal cask walls with a lead section equal to the nominal minus 10% lead standard was used to establish the allowable maximum dose rate allowed during the cask gamma scans.

## ATTACHMENT B – Summary of Revisions

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<b><u>Summary</u></b>	<b><u>Pg.</u></b>
RH-TRU 72-B SAR, Revision 5	B-2
RH-TRAMPAC, Revision 1	B-3
RH-TRU Payload Appendices, Revision 1	B-4

**ATTACHMENT B – Summary of Revisions**

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<b>RH-TRU 72-B SAR, Revision 5, February 2011</b>			
<b>Section</b>	<b>Page</b>	<b>Change Description</b>	<b>Justification</b>
General		No changes.	No changes required to resolve questions; same revision as supplied with February 2011 submittal.

**ATTACHMENT B – Summary of Revisions**

<b>RH-TRAMPAC, Revision 1, April 2011</b>			
<b>Section</b>	<b>Page</b>	<b>Change Description</b>	<b>Justification</b>
General		Revised header for date.	Administrative change. No impact to safety basis.
3.2.2.1.2	3.2-2	Revised 2 <sup>nd</sup> sentence to replace "Scans on the surfaces should be performed by slowly moving the probe (1 to 2 inches per second) over the surface of the package." with "Surface dose rate surveys shall be performed by slowly moving the probe at a rate compatible with the detector response capability (e.g., 1 to 2 inches per second) over the package surfaces."	Change is to resolve question 5-5.
3.2.2.1.6	3.2-2	Added 2 <sup>nd</sup> sentence as follows: "Two-meter dose rate surveys shall be performed by slowly moving the probe at a rate compatible with the detector response capability (e.g., 1 to 2 inches per second) over the 2-meter surfaces."	Addition is to resolve question 5-6.

**ATTACHMENT B – Summary of Revisions**

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<b>RH-TRU Payload Appendices, Revision 1, February 2011</b>			
<b>Section</b>	<b>Page</b>	<b>Change Description</b>	<b>Justification</b>
General		No changes.	No changes required to resolve questions; same revision as supplied with February 2011 submittal.

## ATTACHMENT C – Revised Documents

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(One Hard Copy and One CD<sup>1</sup> – Document Control Desk)  
(Five Hard Copies and One CD<sup>1</sup> – C. Staab)

- RH-TRAMPAC, Revision 1

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<sup>1</sup> CD contains a PDF version of the complete set of application documents: RH-TRU 72-B SAR, Revision 5, February 2011; RH-TRAMPAC, Revision 1, April 2011; RH-TRU Payload Appendices, Revision 1, February 2011. Only the revised RH-TRAMPAC is submitted as hardcopy, all other documents are unchanged from February 2011 submittal.