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December 19, 2007

Mr. M. Rahimi, Senior Project Manager
NMSS/SFPO, Mail Stop O13D13
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Subject: REVISION 23 OF THE TRUPACT-II SHIPPING PACKAGE APPLICATION,
DOCKET NO. 71-9218, AND REVISION 6 OF THE HalfPACT SHIPPING PACKAGE
APPLICATION, DOCKET NO. 71-9279

Dear Mr. Rahimi:

Washington TRU Solutions LLC, on behalf of the U.S. Department of Energy (DOE), hereby submits Revision 23 to the application for a Certificate of Compliance (CoC) for the TRUPACT-II Packaging, U.S. Nuclear Regulatory Commission (NRC) Docket No. 71-9218, and Revision 6 to the application for a CoC for the HalfPACT Packaging, NRC Docket No. 71-9279. The application consists of the following documents:

- [TRUPACT-II Safety Analysis Report \(SAR\), Revision 23](#)
- [HalfPACT SAR, Revision 6](#)
- [Contact-Handled Transuranic Waste Authorized Methods for Payload Control \(CH-TRAMPAC\), Revision 4](#)
- [CH-TRU Payload Appendices, Revision 3.](#)

The application seeks the addition of a new authorized payload container (Shielded Container) that incorporates gamma shielding for shipment in the HalfPACT packaging. No modifications other than administrative header revision number and date changes were made to the TRUPACT-II SAR, but a revision to its CoC is requested due to revisions to the commonly referenced CH-TRAMPAC and CH-TRU Payloads Appendices documents. The HalfPACT SAR has been revised to incorporate the Shielded Container into the HalfPACT packaging design basis and to add SAR drawings for the new payload assembly configuration. Revisions to the CH-TRAMPAC and CH-TRU Payload Appendices are those required to define the payload controls necessary for the Shielded Container. A new Appendix 4.5 of the CH-TRU Payload Appendices provides a detailed description and summary of the design basis for use of the Shielded Container with the HalfPACT packaging. Changes are indicated by right-bars in the margin of the documents (“|”).

This letter includes the following attachments:

- [Attachment A – Summary of Requested Changes](#)
- [Attachment B – Revised Documents](#)
- [Attachment C – Supplementary References.](#)

As noted in previous application submittals, an NRC/DOE agreement exists to waive applicable review fees. To facilitate implementation, it is requested that the current package CoCs be valid for use one year from the date of issuance of revised CoCs.

If you have any questions regarding this submittal, please contact Mr. R. A. Johnson of my staff at (360) 438-6145.

Sincerely,

A handwritten signature in cursive script that reads "T. E. Sellmer" with the word "for" written in smaller cursive below it.

T. E. Sellmer, Manager
Packaging Integration

TES:clm

Attachments

cc: M. A. Italiano, CBFO

ATTACHMENT A – Summary of Requested Changes

<u>Summary</u>	<u>Pg.</u>
TRUPACT-II SAR, Revision 23	A-2
HalfPACT SAR, Revision 6	A-3
CH-TRAMPAC, Revision 4	A-7
CH-TRU Payload Appendices, Revision 3	A-11

ATTACHMENT A – Summary of Requested Changes

TRUPACT-II SAR, Revision 23			
Section	Page	Change Description	Justification
General		No technical changes. Revised headers for revision number and date and removed all right-bars indicating prior changes.	Due to the common payloads document, CH-TRAMPAC, which is being revised to accommodate HalfPACT payload modifications, a revision to the TRUPACT-II CoC is administratively required. No impact to safety basis.

ATTACHMENT A – Summary of Requested Changes

HalfPACT SAR, Revision 6			
Section	Page	Change Description	Justification
General		Revised header for revision number and date.	Administrative change. No impact to safety basis.
1.0	1.1-1	Added sentence referring to the CH-TRU Payloads Appendix 4.5 for a description of the shielded container payload configuration.	Administrative change to accommodate new payload configuration. No impact to safety basis.
1.1	1.1-2	Revised list of authorized payload containers to include the shielded container.	Administrative change to accommodate new payload configuration. No impact to safety basis.
1.2.1.1	1.2-1	Revised list of authorized payload containers to include the shielded container.	Administrative change to accommodate new payload configuration. No impact to safety basis.
1.3.1	1.3.1-1	Added reference to and a SAR drawing for the shielded container, 163-008.	SAR drawing prescribes the material, construction, inspection, and dimensional attributes of the shielded container and associated dunnage assemblies.
1.3.2	1.3.2-4	Revised payload container definition to include the shielded container and added a definition to the glossary of terms for the shielded container.	Administrative change to accommodate new payload configuration. No impact to safety basis.
2.2	2.2-1	Added a sentence to describe and include the shielded container in the weights and center of gravity evaluation for the package.	Administrative change to accommodate new payload configuration. No impact to safety basis.
2.2.1	2.2-3	Added a section to evaluate the shielded container payload configuration's effect on radial payload imbalance.	Shielded container payload configuration is shown to have less effect on radial payload imbalance than previously approved payload configurations. Axial imbalance is also bounded by previously approved payload configurations. No impact to safety basis.

ATTACHMENT A – Summary of Requested Changes

HalfPACT SAR, Revision 6			
Section	Page	Change Description	Justification
2.2.2	2.2-5	Revised Table 2.2-1 to include a summary of weights and heights to center of gravity for the shielded container payload configuration.	Shielded container payload configuration is shown to have less effect on radial payload imbalance than previously approved payload configurations. Axial imbalance is also bounded by previously approved payload configurations. No impact to safety basis.
2.2.1	2.2-11	Added Figure 2.2-6.	Administrative change to accommodate new payload configuration. No impact to safety basis.
2.10.3.4	2.10.3-3	Revised list of authorized payload containers to include the shielded container.	Administrative change to accommodate new payload configuration. No impact to safety basis.
2.10.3.4	2.10.3-4	Revised summary of maximum weights to include the shielded container and again revised list of authorized payload containers to include the shielded container.	Administrative change to accommodate new payload configuration. No impact to safety basis.
3.1.2	3.1-2	Revised list of authorized payload containers to include the shielded container.	Administrative change to accommodate new payload configuration. No impact to safety basis.
3.1.2	3.1-3	Added a fifth payload configuration for the shielded container and associated reference to Appendix 4.5 of the CH-TRU Payload Appendices.	Administrative change to accommodate new payload configuration. No impact to safety basis.
3.4.4.2.1	3.4-8	Revised multiple references from Table 3.4-7 to Table 3.4-8.	Administrative change to accommodate new Table 3.4-8 that provides the pressure increase for three shielded containers. No impact to safety basis.

ATTACHMENT A – Summary of Requested Changes

HalfPACT SAR, Revision 6			
Section	Page	Change Description	Justification
3.4.4.2.1	3.4-16	Added Table 3.4-8.	Table 3.4-8 provides the pressure increase for three shielded containers to demonstrate analytical compliance with MNOP. No impact to safety basis.
5.0	5-1	Added the shielded containers to the list of payload configurations for which shielding credit is taken and associated reference to Appendix 4.5 of the CH-TRU Payload Appendices.	Administrative change to accommodate new payload configuration. No impact to safety basis.
6.0	6.1-1	Added summary description of new criticality cases G and H for the shielded container payload configuration.	Administrative change to accommodate new payload configuration. No impact to safety basis.
6.1	6.1-4	Added summary of limits associated with cases G and H for the shielded container payload configuration in Tables 6.1-1 and 6.1-2.	Administrative change to accommodate new payload configuration. No impact to safety basis.
6.2.7 and 6.2.8	6.2-5 and 6.2-6	Added sections to provide summaries for new cases G and H with references to Appendix 4.5 of the CH-TRU Payload Appendices.	Administrative change to accommodate new payload configuration. No impact to safety basis.
6.4.3.4	6.4-8	Revised sentence to add to the number of cases associated with machine-compacted waste and added summary of new case H.	Administrative change to accommodate new case H analysis. No impact to safety basis.
6.4.3.5	6.4-9	Revised paragraph and table to include new cases G and H for the shielded container.	Administrative change to accommodate new case G and H analyses. No impact to safety basis.

ATTACHMENT A – Summary of Requested Changes

HalfPACT SAR, Revision 6			
Section	Page	Change Description	Justification
7.1.4	7.1-3	Revised bullet items 3 and 6 to clarify that an axial dunnage assembly shall be placed into the bottom of the ICV cavity and above the payload assembly when the payload configuration is shielded containers.	Administrative change to accommodate new payload configuration. No impact to safety basis.
7.2.4	7.2-2	Revised bullet item 1 to clarify that the axial dunnage assembly on top of the payload assembly, when transporting shielded containers, must be removed prior to the payload assembly.	Administrative change to accommodate new payload configuration. No impact to safety basis.

ATTACHMENT A – Summary of Requested Changes

CH-TRAMPAC, Revision 4			
Section	Page	Change Description	Justification
General		Revised header for revision number and date.	Administrative change.
2.1.1	2.1-1	Revised Table 2.1-1 to specify the shielded container as an authorized payload container and to specify the number of shielded containers allowed per HalfPACT payload.	Change made to accommodate new payload configuration.
2.1.2	2.1-2	Added requirement to visually inspect shielded container associated radial and axial dunnage prior to shipment.	Change made to accommodate new payload configuration.
2.2.1	2.2-1	Revised to specify the use of empty shielded containers as dunnage to complete a payload configuration if too few loaded shielded containers are available.	Change made to accommodate new payload configuration.
2.3.1.1	2.3-1	Revised Table 2.3-1 to specify the maximum gross weight for the shielded container.	Change made to accommodate new payload container.
2.3.1.1	2.3-2	Revised to add the “axial and radial dunnage” that is used to assemble the shielded container payload in the HalfPACT to the list of payload assembly items.	Change made to accommodate new payload configuration.
2.4.1	2.4-1	Revised to specify the labeling requirements for an empty shielded container used as dunnage to complete a payload configuration.	Change made to accommodate new payload container.
2.5.1	2.5-2	Revised Table 2.5-1 to add the minimum filter vent specifications for the shielded container and its 30-gallon drum contents.	Change made to accommodate new payload container.

ATTACHMENT A – Summary of Requested Changes

CH-TRAMPAC, Revision 4			
Section	Page	Change Description	Justification
2.9.10	2.9-40 – 2.9-44	Added new Section 2.9.10 to provide the payload container specifications (dimensions, materials of construction, weights, and material content forms authorized for transport) for the shielded container.	Change made to accommodate new payload container.
3.1.1	3.1-2 – 3.1-4	Revised text and Table 3.1-1 to specify the nuclear criticality limits per individual shielded container and per HalfPACT payload of shielded containers.	Change made to accommodate new payload configuration.
3.2.1	3.2-1	Revised Table 3.2-1 to specify the maximum surface dose rate limit per shielded container.	Change made to accommodate new payload container.
3.3.1	3.3-1 and 3.3-7 – 3.3-10	Revised text and added Table 3.3-3 to specify the individual radionuclide activity limits per shielded container.	Change made to accommodate new payload container.
3.3.2	3.3-1 and 3.3-2	Revised to define the method (sum of partial fractions) for demonstrating compliance with the individual radionuclide activity limits for each shielded container.	Change made to accommodate new payload container.
5.1	5.1-3	Revised Table 5.1-1 to clarify that dose-dependent G values cannot be used for waste packaged in the shielded container.	Due to the potential for the higher contribution of gamma energy from waste in the shielded container compared to other CH-TRU waste forms, waste packaged in shielded containers is conservatively not given credit for dose-dependent G values.

ATTACHMENT A – Summary of Requested Changes

CH-TRAMPAC, Revision 4			
Section	Page	Change Description	Justification
5.2.2	5.2-2	Revised to clarify that compliance with flammable (gas/VOC) limits for shielded containers cannot be evaluated by testing (as described in Section 5.2.5.4).	Full container testing for shielded containers is not anticipated and has not been included as a compliance option.
5.2.2.4	5.2-12	Revised to clarify that compliance with flammable (gas/VOC) limits for shielded containers cannot be evaluated by testing.	Full container testing for shielded containers is not anticipated and has not been included as a compliance option.
5.2.5.2	5.2-33	Revised to clarify that compliance with flammable (gas/VOC) limits for shielded containers cannot be evaluated by testing.	Full container testing for shielded containers is not anticipated and has not been included as a compliance option.
5.2.5.3.3	5.2-36	Revised Table 5.2-9 to specify the wattage limits per shielded container HalfPACT payload for the theoretical analysis of the design pressure limit.	Change made to accommodate new payload configuration.
5.2.5.4.1	5.2-40	Revised to clarify that compliance with flammable (gas/VOC) limits for shielded containers cannot be evaluated by testing.	Full container testing for shielded containers is not anticipated and has not been included as a compliance option.
5.2.5	5.2-49	Revised Table 5.2-12 to add the shielded container as an option for container type.	Change made to accommodate new payload container.
6.0	6.1-2	Revised Figure 6.1-1 to add shielded containers to the evaluation step for checking payload container curie limits.	Change made to accommodate new payload container.
6.2.1.1	6.2-2	Revised the “Container Configuration” description to add the shielded container as an option for the direct load container configuration type.	Change made to accommodate new payload container.

ATTACHMENT A – Summary of Requested Changes

CH-TRAMPAC, Revision 4			
Section	Page	Change Description	Justification
6.2.1.1	6.2-7	Revised the “Curie Limits” description to specify that payload container curie limits apply to the shielded container.	Change made to accommodate new payload container.
6.2.1.1	6.2-15	Revised Table 6.2-1 to add the shielded container option to the “Direct Load Configurations” field and to specify that payload container curie limits apply to the shielded container.	Change made to accommodate new payload configuration.
6.2.1.1	6.2-17	Revised Table 6.2-2 to add the shielded container option to the “Direct Load Configurations” field and to specify that payload container curie limits apply to the shielded container.	Change made to accommodate new payload configuration.
6.2.2	6.2-22	Revised to add the “axial and radial dunnage” that is used to assemble the shielded container payload in the HalfPACT to the list of payload assembly items.	Change made to accommodate new payload configuration.
6.2.2	6.2-25	Revised Table 6.2-4 to add the shielded container option to the “Type of Payload” field.	Change made to accommodate new payload configuration.

ATTACHMENT A – Summary of Requested Changes

CH-TRU Payload Appendices, Revision 3		
Appendix	Change Description	Justification
General	Revised header for revision number and date.	Administrative change.
2.1	Revised Section 2.1.1 and Table 2.1-2 to clarify that dose-dependent G values cannot be used for waste packaged in the shielded container.	Due to the potential for the higher contribution of gamma energy from waste in the shielded container compared to other CH-TRU waste forms, waste packaged in shielded containers is conservatively not given credit for dose-dependent G values.
2.2	Revised Tables 2.2-1, 2.2-3, and 2.2-4 to add the shielded container as an authorized payload container option in the procedure for determining numeric payload shipping categories.	Change made to accommodate new payload container.
2.4	Revised Table 2.4-1 to specify the void volume in the HalfPACT with a payload of three shielded containers and revised the title of Section 2.4.1.1, which provides the methodology for the derivation of the mass balance for the shielded container payload configuration.	Change made to accommodate new payload configuration.
3.3	Revised Section 3.3.5 to address the conservative assignment of initial G values to waste packaged in the shielded container and to specify that dose-dependent G values cannot be used for waste in shielded containers.	Due to the potential for the higher contribution of gamma energy from waste in the shielded container compared to other CH-TRU waste forms, waste packaged in shielded containers is conservatively not given credit for dose-dependent G values.
4.5	Added new appendix to summarize the structural, thermal, shielding, and criticality bases for the shielded container.	The new appendix summarizes the testing and analyses performed for the shielded container.

ATTACHMENT B – Revised Documents

(Two Hard Copies and Seven CDs in Adobe PDF Format)

- TRUPACT-II SAR, Revision 23
- HalfPACT SAR, Revision 6
- CH-TRAMPAC, Revision 4
- CH-TRU Payload Appendices, Revision 3.

ATTACHMENT C – Supplementary References

(Two Hard Copies and Seven CDs in Adobe PDF Format)

- *Regulatory Hypothetical Accident Condition Type B Testing for the HalfPACT Shielded Container Payload*, WP 08-PT.15, Rev. 0, Washington TRU Solutions, December 2007.
- G. J. Banken, *HalfPACT Shielded Container Thermal Analysis*, P04F.M2.02-03, Rev. 1, Packaging Technology, Inc., Tacoma, WA, December 2007.
- R. J. Migliore, *HalfPACT Shielded Container Nuclide Activity Limits*, P04F.M2.02-01, Rev. 0, Packaging Technology, Inc., Tacoma, WA, December 2007.
- R. J. Migliore, *HalfPACT Shielded Container Criticality Analysis*, P04F.M2.02-02, Rev. 0, Packaging Technology, Inc., Tacoma, WA, December 2007.