March 6, 2008

Mr. Gary L. Clark
TRUPACT-III Program Manager
Packaging Technology, Inc.
1102 Broadway Plaza, Suite 300
Tacoma, WA 98402

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON TRUPACT-III

Dear Mr. Clark:

By the application dated June 30, 2007, packaging Technology, Inc., submitted an application in accordance with 10 CFR Part 71 for a Certificate of Compliance under Docket No. 71-9305 for the TRUPACT-III shipping package. The application also included a request for Payload Requirements Exemption (PREx). In my letter to you dated August 24, 2007, I acknowledged receipt of your application and provided a proposed schedule for our review. Our subsequent interactions resulted in the withdrawal of the exemption request (i.e., PREx) as requested in your February 18, 2008, letter. Therefore, the staff's review has been focused on the packaging design with its standard contents at this time.

In connection with the staff's review of the TRUPACT-III packaging design and its standard contents, we need the information identified in the enclosure to this letter. We request that you provide this information by May 15, 2008. Inform us at your earliest convenience, but no later than May 1, 2008, if you are not able to provide the information by that date. To assist us in re-scheduling your review, you should include a new proposed submittal date and the reasons for the delay.

Please reference Docket No. 71-9305 and TAC No. L24108 in future correspondence related to this request. The staff is available to meet to discuss your proposed responses. If you have any questions regarding this matter, I may be contact at 301-492-3338.

Sincerely,

/RA/

Meraj Rahimi, Senior Project Manager
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No: 71-9305
TAC No: L24108

Enclosure: Request for Additional Information
cc w/encl: R. Boyle, Department of Transportation
J. M. Shuler, Department of Energy

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NAME:	MRahimi	DTang	TChuang	RParkhill	ABarto	JSmith
DATE:	2/ 25/08	2/ 25/08	2/ 25/08	2/ 26/08	2/26/08	2/ 26/08
OFC:	SFST N	SFST N	SFST N	SFST N	SFST N	
NAME:	MDebose	CRegan	MWaters	LCampbell	RNelson	
DATE:	2/ 27/08	2/28/08	3/04/08	3/05/08	3/06/08	

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REQUEST FOR ADDITIONAL INFORMATION

Docket No. 71-9305
Model No. TRUPACT-III
Certificate of Compliance No. 9305

This document, titled Request for Additional Information (RAI), contains a compilation of additional information requirements identified to date by the U.S. Nuclear Regulatory Commission (NRC) staff, during its review of Packaging Technology, Inc.'s application for approval of the TRUPACT-III transportation package under 10 CFR Part 71.

Each individual RAI describes information needed by the staff to complete its review of the application and to determine whether Packaging Technology has demonstrated compliance with the regulatory requirements.

1.0 GENERAL INFORMATION

Unless otherwise indicated, the following RAIs are needed to determine compliance with 10 CFR 71.7(a).

1-1 Describe the impact of punctures on the lower part of the packaging without full coverage of the puncture-resistant plate.

As shown on Section B-B of Sheet 4 drawing, the puncture-resistant plate does not cover the entire length of the packaging all the way to the end. Given the results of the puncture tests, the bar penetrating all the way through the puncture-resistant plate and damaging the outer plate of the CSA, it is possible for the puncture bar to breach the containment boundary if the drop on puncture bar takes place towards the lower part of the packaging without the full coverage of puncture-resistant plate.

1-2 Drawing 51199, Sheets 4 and 17 of 21. Clarify the apparent design/drawing discrepancies for the overpack cover closure bolt “protection cup” of the overpack cover, shown in Zone A-8 of Sheet 4 and Zones C-2 and D-2 of Sheet 17.

The protection cup details shown on Sheet 4 appear to be typical for the protection of all 44 lid closure bolts from being subject to side impact shearing loads under the HAC free-drops. Figure 2.12.3-31 of the application displays typical contact marks on the closure bolt head and washer, which suggests that bolt heads have been subjected to a large shearing load during the free-drop tests. It’s unclear how the protection cup is configured for its intended function, which appears to have failed.

1-3 Drawing 51199-SAR, Sheet 4 of 21. Clarify the drawing shown in Zone C-4 and Zone C-5 with regards to Item 68 (porous polyethylene filter) to show how the item fits into other surrounding parts.

The debris shield design shown on Zone B-7 with an enlarged drawing shown in Zone C-4 and C-5 lacks in clarity. With only one cross-section shown, it is not clear how the filter of 5/16 inch in diameter and one inch in thickness fits into the drawing (e.g., with a gap present, how does Item 66 connect to Item 68?). Exploded cross-sections from other directions and isometric view should be provided to show the correct configuration and detailed layout.

1-4 Drawing 5119-SAR, Sheets 1 and 19 of 21. Correct drawing and/or Bill of Materials on Item 65 so that the dimensions of the part (steel bar or receptacle) are consistent between the two sheets.

Drawing Sheet 19, Zone A-4, depicts the dimensions of the receptacle to be 38 mm by 29.5 mm. However, the Bill of Materials on Sheet 1, Item 65 shows that the steel bar has a cross-section of 27 mm by 39 mm. The discrepancies between the two should be resolved by correcting either one or both to bring the dimensions into agreement.

1-5 Drawing 5119, Sheets 5 and 6 of 21. Verify the polyurethane foam thicknesses specified for the side and close-end faces of the packaging body assembly.

Drawing Sheet 6 depicts a foam thickness of 114 mm, which is different from the 109 mm identified in Sheet 5 and Figures 1.1.3 and 1.1.6 of the application, and all those thicknesses are different from the 120 mm called out in Section 3.7.3.2 for the sidewalls of the packaging. Also, the 120 mm thick foam identified for the closed-end face deviates from the 140 mm foam thickness described in Section 3.7.3.2.

2.0 STRUCTURAL

Unless otherwise indicated, the following RAIs are needed to determine compliance with 10 CFR 71.35(a).

Section 2.2.2 Chemical, Galvanic or Other Reactions

2-1 Page 2.2-3, Material Property for Silicon Foam. Provide data or assurance for silicon foam used as the insert in the debris shield new design to be free of chemical, galvanic or other reactions.

The major materials of construction of the TRUPACT-III packaging such as stainless steel, alloy steel, copper alloy, polyurethane foam, balsa wood, silicate insulation board, butyl rubber O-ring seal will not have significant chemical, galvanic or other reactions as they have been previously used, without any incident for transporting radioactive materials of similar payload contents. However, with the new design of a debris shield at the containment boundary, a new material of silicon foam (Item 67) is used for the insert, yet its material properties are unknown. Thus materials property data is needed to assure that there will be no chemical, galvanic, or other reactions during the transport.

2-2 Page 2.2-3, Material Property for Polyethylene. Provide materials property data for the filter in terms of its durability and filtering function. Justify using the pore size of one micrometer for the filter.

In the new design of debris shield, a new component of polyethylene filter of 5/15 inch in diameter, one inch thickness with pore size of one micrometer is proposed to be used for equilibrating pressure. Material data of the polyethylene proposed are requested to determine the reliability and its filtering function. Also, provide justification on using the pore size of one micrometer. The information is relevant to the operation, maintenance, QA, and testing programs.

2-3 Page 2.2-12, Figure 2.2-1, True Stress-Strain Curves for Alloy UNS S31803 and Type 304 Stainless Steel. Correct the typographic error in the first line of the insert of the figure to read “UNS S31803,” instead of “UNS S31830.”

2-4 Tables in Pages 2.7-14 and 2.7-16. Delete items relating to red wood in the tables. Since the packaging does not use red wood at all, the information is irrelevant. They should be deleted.

Section 2.5.2 Tie-Down Devices

2-5 Discuss how the SLB2 is to be stowed in the CSA cavity in order to meet the intent of the 10 CFR 71.45(b)(1) requirements.

It is not clear how spacers, if any, are used to fill the nominal axial gap of about 2 inches between the 2,790-mm long inner cavity of the packaging and the 2,747-mm long SLB2, which rests on the roller floor shown in Figure 2.8.2-1 of the TRAMPAC. If there are no spacers or the SLB2 is unsecured, the resulting fatigue effects on key structural components from the repeated impact of the payload on the CSA closure lid should be evaluated.

Section 2.6.1.3 Stress Calculations

2-6 Page 2.6-4, Stress Analysis of the Governing CSA Wall. Reevaluate margins of safety for the fillet welds connecting the V-stiffeners to the CSA inner wall for all applicable loading and load combination conditions in accordance with the ASME Code, Division 1, Subsection NB-1132.1 containment boundary jurisdiction provisions.

The fillet welds connecting the load-bearing V-stiffeners, as attachments to the containment boundary, fall within the containment jurisdiction boundary. Section 2.1.4 of the application notes that these welds do not qualify as Subsection NB weld types. Section 2.3.2 further states, "[W]elds that are part of the CSA but not part of the containment boundary are inspected …, omitting the radiographic inspection." Therefore, appropriate quality factors commensurate with weld inspection procedures must be considered in determining the stress allowables and corresponding margins of safety for all loading conditions, including fatigue, for the subject welds.

Section 2.6.1.6 Closure Bolts

2-7 Page 2.6-10. (1) Provide a free-body diagram in the application, including the washer and bolt hole, to illustrate the assumptions used for calculating the stiffness and resulting force in the intervening load bearing structural components. (2) Provide structural performance acceptance criteria and perform an evaluation to demonstrate that the washer over the over-sized bolt hole is adequately sized for preventing the closure bolt from losing its preload functionality as the result of the mechanical impact loads such as those associated with the NCT and HAC free drops.

Page 2-6-10 of the application evaluates stiffness for the closure bolt load path by considering the respective outer and inner diameters of 64 mm and 44 mm for the tube forming the bolt hole in the closure lid. However, it's unclear why the washer stiffness was left out in the evaluation. Section 2.12.3.8.2.2 notes that all bolt washers showed evidence of a thickness reduction due either to the initial preload torque, the applied impact load, or both. Thus, design details and structural acceptance criteria for the closure bolt assembly, including the washer, must properly be captured in the evaluation.

Section 2.7.1.2 Certification Test Units and Test Conditions

2-8 Section 2.7.1.2. Justify the use of aluminum bars weighing 6,746-kg to provide adequate simulation for the potential dunnage-induced secondary impact effect of a fully loaded SLB2 on the structural and containment performance of the closure lid.

The nominal axial gap of about 2 inches between the 2,790-mm long inner cavity of the packaging and the 2,747-mm long LSB-2, which acts as a whole structural entity, needs to be considered for potential secondary impact effects on the closure lid performance for all applicable drop tests.

2-9 Section 2.7.1.2. Justify the use of ambient temperatures in performing the side-edge down (LD5) and C.G.-over-corner (LD4) drop tests given the observed damages to the closure lid/body flange interface, including the plastic offset between the bolt head and the threads which appears to have been associated with the side-impact force on bolt heads.

Results of the LD4 and LD5 tests have demonstrated that damages to the packaging containment capability could have also been associated with high side-impact forces on bolt heads. The staff notes that the crush strength of the energy absorbing materials generally varies inversely with decreased temperature. As such, cold temperature, at -29 ^{o}C, other than the prevailing ambient temperature of at least 7 ^{o}C, would have resulted in even higher impact forces on the bolt heads.

The package should be tested with appropriate temperature conditions and drop orientations for which maximum damage is expected in accordance with the requirements of 10 CFR 71.73 (b) and (c).

Section 2.7.8 Summary of Damage

2-10 Provide a structural evaluation to show that the closure lid sliding against the CSA body flange is bounded so as not to result in adverse effects on the package performance under the HAC drop accidents.

Page 2.7-36 of the application states, “[I]t is plain that the bolt bending was caused by the side impact on the bolt heads from the overpack cover head recess cups, which struck the heads during a lateral translation of the overpack cover, which in some cases also struck the edge of the washer.” In arguing that the condition of the closure bolts and body flanges is of no design concern, Page 2.7-37 further states, “[D]amage to the closure bolts from the single, worst-case free drop and puncture drop would be much less than that which was generated in the certification test series.” The staff notes that these statements fail to recognize that the closure lid and its overpack cover are subject to concurrent axial and side impacts in a single C.G.-over-corner HAC drop event, which is likely to result in a loss of bolt preload and would exacerbate the closure lid sliding. As such, bounding damages could be expected from a single C.G.-over-corner drop test, which must appropriately be assessed for the debris shield design consideration.

Section 2.12.3 Certification Tests

2-11 Page 2.12.3-9. Clarify the statement, “A hard vacuum would not be obtained between the closure lids, but the internal cavity pressure was maintained.”

The statement appears to suggest that the containment continued to remain functional after the last C.G.-over-corner drop test. This is contradictory to the Page 2.12.3-10 assessment, “[T]he leakage rate test of the closure lid containment O-ring seal was, however, not initially successful.”

Complete and accurate information should be provided in the application in accordance with the 10 CFR 71.7(a) requirements.

Section 2.12.3.8.2 CTU Measurements

2-12 Discuss how the as-built anomaly of body flange surface taper of 0.25 to 0.5 mm over the distance between the inner surface edge and the bolt lines is to be controlled for the production units. Evaluate effect of the taper on the bolt prying force that must be overcome in determining the effective bolt preload for calculating bolt stresses for the closure bolt design.

The observed surface taper suggests a lack of metal-to-metal contact between the closure lid and the body flange. This design or operating condition should be considered in sizing the bolt torque and corresponding bolt preload to ensure adequate closure bolt design.

2-13 Explain why the implied overpack crushing/sliding against the closure lid was not identified as a primary cause for the large plastic offset between the head and the threads of the closure bolt given the statements in Page 2.12.3-12: “[T]he worst bolt was No. 17, having a total indicator reading (TIR) of 10.7 mm,” and “[E]ach of the bent bolts also showed evidence of a side impact on the head.”

Causes for closure bolt bending and loss of bolt preloads are not convincingly delineated in the application. The maximum TIR plastic offset of 10.7 mm and the common bolt bending toward the11:00 o’clock direction appear to be associated primarily with the relative displacements between the overpack and the closure lid during the LD4 C.G.-over-corner drop test for which the lower right center of the packaging landed on the test pad.

Complete and accurate information should be provided in the application in accordance with the 10 CFR 71.7(a) requirements.

Section 2.12.5 Closure Lid Debris Shield

The following questions on the closure lid/body flange interface damages indicate that failure causes may not have been properly interpreted in the application. This has led to: (1) selecting the two non-causal drop events for determining the debris shield relative motion design criteria, and (2) excluding modeling the most damaging failure mode as related to the bolt head shear impact by the overpack cover during the C.G.-over-corner drop test. RAI 2-17 suggests a robust transient impact analysis model for determining debris shield design parameters. However, a more straightforward alternative is retesting of the full-scale test unit with the debris shield in order to demonstrate the performance of the package in maintaining the containment with the debris shield under hypothetical accident conditions in spite of the plastic deformations of the closure bolts.

2-14 Clarify the statement in Page 2.12.5-3, “…the debris shield must accommodate the relative motions which could occur between the closure lid and the body. These include the lateral position of the lid within the limits established by the shear lip…," by discussing also that the relative motion between the overpack cover and the closure lid could be the primary cause for resulting in large side impact force on the closure bolt head.

As observed in the application, the closure bolts have been shown to bend in opposite direction between the head and threads during the LD4 C.G.-over-corner drop test. This bolt damage mode would most likely be attributed to the lateral impact on the bolt head by the overpack cover head cups in addition to the interaction between the lid shear lip and the body flange. Results from the CTU tests have provided valuable information on potential closure lid damage modes, and should be considered for evaluating the proposed debris shield design.

Complete and accurate information should be provided in the application in accordance with the 10 CFR 71.7(a) requirements.

2-15 Page 2.12.5-4. Justify the consideration of only the lid-down and the flat side down drops in the determination of the bounding axial motions for the debris shield design for which potential secondary impact interactions between the CSA and the SLB2 must also be evaluated in calculating impact responses of the closure lid assembly.

The CTU tests have demonstrated the closure lid capability of maintaining leak-tightness after the sequential lid-down and flat side 9-meter drop tests. This suggests that any credible analysis for evaluating the closure lid/body flange interface performance, including relative motion at the debris shield, must necessarily predict a small gap opening so as not to allow debris to escape from the CSA cavity for these two tests. For this matter, finite element analyses based on these two drop tests should only be used for demonstrating acceptable structural performance of the closure lid, rather than those being reported for determining the debris shield relative motion design criteria.

2-16 Page 2.12.5-4. Clarify the statement, "[T]he maximum transient dynamic relative motion at the debris shield is calculated to be 3.0 mm. This value will therefore be used as a bounding criterion for axial debris shield function," to ensure that governing drop test positions are considered for evaluating the proposed debris shield design.

The debris shield relative motion design criteria should be based on the maximum damage expected for the packaging drop accidents. Since the flat side down drop has been shown to remain leak-tight, it should not be considered as the drop event to drive the debris shield design evaluation.

Section 2.12.5.5 Finite Element End Drop Analysis

2-17 Provide benchmarking analysis using the LD4, C.G.-over-corner drop test for evaluating the proposed debris shield relative motion design criteria. Demonstrate that the analysis model, which should also consider the secondary impact effect by the SLB2, is capable of predicting the observed closure lid damage modes, including the bolt head side impact by the overpack cover and the corresponding bolt bending characterized by the permanent offset between the bolt head and threads.

The lid-down drop has been shown to remain leak-tight. As such, it is not a valid candidate for establishing the debris shield relative motion design criteria. Relevant structural damages of the LD4, C.G.-over-corner, drop test, including the bolt permanent offsets, must appropriately be captured in benchmarking the LS-DYNA drop analysis model.

Section 2.12.5.6 Finite Element Side Drop Analysis

2-18 Apply realistic boundary conditions at the “open” end of the CSA body for the ANSYS quasi-static side-drop flat down analysis to reexamine the calculated body flange rotation of 0.02003 radians and the corresponding relative axial motion of 3 mm between the body flange and the closure lid inner surface.

The side-drop flat down analysis may not have properly been performed. The staff notes that the open end boundary conditions may have resulted in an unrealistically large 3-mm wide gap opening. With the constraints by the closure lid properly incorporated into the ANSYS model, which should be similar to those of the closed end of the CSA body, the calculated gap opening would likely be much smaller than the reported 3 mm. As evidenced in Figure 2.12.5-14, the edge rotation at the “closed” end, shown in Figure 2.12.5-14, is about 0.0045 to 0.0086 radians to result in a maximum gap opening about 1 mm. Consistent with the observation of the LD3 side flat-down drop test, this 1-mm gap opening would not allow the shards or chips at a few millimeter in diameter, shown in Figures 2.12.3-32 and 2.12.3-33, to escape to the seal region to fail the containment O-ring vacuum test.

Complete and accurate information should be provided in the application in accordance with the 10 CFR 71.7(a) requirements.

3.0 THERMAL

Unless otherwise indicated, the following RAIs are needed to determine compliance with 10 CFR 71.7(a) and 71.51(a).

3-1 Section 3.1.1.2. Justify centering of the hypothetical waste box within the CSA rather than locating it against the closure lid for maximum heat input to the seals.

A centered hypothetical waste box would not be conservative assumption for maximum heat input the seal regions and may under predict the maximum seal temperature.

3-2 Section 3.1.2. Justify the assumption regarding the hypothetical waste box that the decay heat is distributed equally within the payload volume.

It appears that the actual loading of a SLB2 does not have any controls to ensure a uniform heat loading and as such a concentrated heat load in the area seals could be more severe.

Section 3.1.3 Summary Table of temperatures

3-3 Page 3.1-5. Substantiate the statement “a small region of the CSA structural sheet may experience embrittlement due to being heated above 316 °C during the HAC fire……”

Page 3.1-5 of the application stated that “a small region of the CSA structural sheet may experience embrittlement due to being heat above 316 °C during the HAC fire……”

However, it is well-known that the stainless steel, UNS S38103 should not undergo reduction of ductility in the temperature range considered. Accordingly, mechanical data are needed to substantiate the statement that, indeed, at 316 °C the material does exhibit embrittlement phenomenon.

3-4 Page 2.12.2-3. Revise the temperature range and re-calculate the O-ring compression to assure leak-tight condition under NCT.

The test results in Sec. 2.12.2.6 showed the calculated O-ring compressions over the temperature range of -29 °C to 204 °C. It was concluded that at the minimum temperature of -29 °C the O-ring compression is 18.5%, enough to ensure the leak-tight condition. However, the temperature of the O-ring at center disk can go down to -40 °C (see Table 2.12.2-1) under NCT.

Calculations should be based on this regulated temperature range per 10 CFR 71.71(c)(2).

3-5 Section 3.2.1. Describe how the thermal conductivity of the exposed balsa wood for HAC, is utilized once the temperature of the wood exceeds its allowable temperature limit and its flammability point.

During the hypothetical fire it does not seem reasonable to assume a thermal conductivity for the exposed balsa wood resulting from drop testing, since it would be consumed in the fire. The applicant needs to explain under what conditions this HAC thermal conductivity for the balsa wood was employed and how exposed balsa wood was modeled.

3-6 Section 3.2.1. Change the title of Table 3.2.10 to indicate that the radiative properties listed are for NCT.

The SAR text indicates that the radiative properties listed in the subject table are for NCT and the requested change would make the table consistent with the text and avoid any confusion with the thermal properties associated with the hypothetical accident fire. 10 CFR 71.73(c)(4) lists the thermal properties of the package during the HAC fire.

3-7 Section 3.3.1.1. Quantify the effect of assuming no air gaps between component interfaces with foam, balsa wood, or calcium silicate on the maximum NCT package temperatures or minimizing their thickness.

The SAR states that the package temperature levels are driven primarily by the ambient conditions rather than the decay heat. Therefore, any increased thermal resistance from the gaps would tend to lower the temperature in the seal area, which would under predict the maximum NCT temperatures.

3-8 Section 3.4.1. Describe the consequences of damage to the package if a much longer puncture bar was used (at least equivalent to the width of the package) and the package was dropped in an orientation to produce the maximum damage in an area adjacent to the containment seal. Also, if the damage is more severe than previously analyzed for the HAC fire, then evaluate its effect.

The length of the puncture bar utilized was relatively short compared to the width of the package and it isn't apparent that the package impact with the ground doesn't limit the damage.

3-9 Section 3.4.2. Describe in detail and via illustration, the thermal model utilized (including boundary conditions) for the damaged areas resulting from the drop tests.

The information presented does not include a detailed description of the model used for the damaged areas of the package. Include an explanation of how the exposed balsa wood is considered both during and after the fire.

3-10 Section 3.4.2. Justify not eliminating the air gaps or minimizing their thickness between component interfaces with foam, calcium silicate, or balsa wood inner surface on the maximum HAC package temperatures.

The SAR states that only the air gap between the outer skin and the blasa wood was assumed to be direct contact. Keeping the gaps from the NCT model would tend to lower the temperature in the seal area, which would under predict their maximum HAC temperature.

3-11 Explain and justify why the CSA stiffeners don't conduct and radiate heat to produce a higher localized temperature than 150 ^{o}C on the containment sheet of the CSA as shown on Figure 3.4-1 "Temperature Response of TRUPACT-III Package to HAC Fire Event," when the corresponding structural sheet that is only 124 mm away is at 714 ^{o}C .

6.0 CRITICALITY

6-1 Section 6.2.3. Provide additional justification for using a non-conservative geometry (i.e., pyramid) in your analysis of the reconfigured fuel lump. Alternatively, revise your analysis of reconfigured fuel to adequately bound the unknown configuration of the fuel.

During a fuel reconfiguration there is no definitive way to postulate what ultimate configuration the fuel may assume. Given the wide range of materials that may be compacted, including plastic bags and other items that may be able to hold a somewhat spherical shape of moderated fissile material, assuming a non-conservative shape as the bounding case necessitates a much more thorough justification.

This information is necessary to ensure compliance with 10 CFR 71.55(b)(1).

Contact Handled-Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC)

Unless otherwise indicated, the following RAIs are needed to determine compliance with 10 CFR 71.43(d).

TR-1 Revise the application to compare the TRUPACT-III TRAMPAC to the previously approved CH-TRAMPAC for the TRUPACT-II and HalfPACT packages. Justify any significant differences between the requirements in the CH-TRAMPAC and the TRUPACT-III TRAMPAC.

Given that the TRUPACT-III is designed to transport the same or similar material as the previously approved TRUPACT-II and HalfPACT packages, the payload requirements should also be very similar. Deviations from the previously approved payload requirements should be justified.

TR-2 Revise Figure 5.1.2-1 and associated text in the TRUPACT-III TRAMPAC document to clarify that all payload containers to be shipped in the Model No. TRUPACT-III package must meet either the 500 ppm limit on headspace VOC concentration, or the Allowable Flammable Gas Concentration (AFGC).

Figure 5.1.2-1 – Methodology for Compliance with Flammable (Gas/VOC) Concentration Limits, appears to show that waste described by an approved content code is not screened for the 500 ppm headspace VOC concentration. This figure should be revised to show that the flammable VOC criteria should be met by all payload containers, including those for which a content code already exists.

TR-3 Revise Section 7.1.1.4 of the TRUPACT-III TRAMPAC document, and associated text in other sections of the document, to list the waste types to be transported in the TRUPACT-III package and their associated flammable gas G values to be used in the determination of decay heat limits.

This section of the TRUPACT-III TRAMPAC, as stated, allows the determination of effective flammable gas G values for each content code by the WIPP CH-TRU Payload Engineer. This appears to be a departure from the compliance methodology for gas generation requirements approved for the TRUPACT-II and HalfPACT packages, where G values were pre-determined for various waste types and applied to content codes containing those waste types.

TR-4 Revise the TRUPACT-III TRAMPAC to include the requirements for venting and aspiration of payload containers to be transported.

Section 5.2 of the TRUPACT-III TRAMPAC states that unvented containers "shall be aspirated to ensure equilibration of any gases that may have accumulated in the closed container prior to transport." This section does not provide any specific requirements for venting and aspiration of payload containers, as are present in the previously approved CH-TRAMPAC. This section should be revised to include requirements and methods of compliance and verification for ensuring that payload containers are properly aspirated prior to shipment.

Chapter 8 Acceptance Tests and Maintenance Program

8-1 Provide information on polyethylene filter used in the new debris shield design with regards to fabrication, installation, QA, acceptance, operation, and maintenance in the appropriate sections.

In a new design of the debris shield, a filter using polyethylene material with specific specifications is proposed. Yet information on fabrication, installation, QA, acceptance, operation, and maintenance are not provided. Sections involved include, but not limited to: Sec. 2.3: Fabrication and Examination; Sec. 8.1.5: Component Test, and Sec. 8.2: Maintenance Program.

This information should be provided with the application in accordance with the 10 CFR 71.35(a).