



# TRUPACT-III Exemption Request

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*An AECOM-led partnership with B&W and AREVA*

# Outline

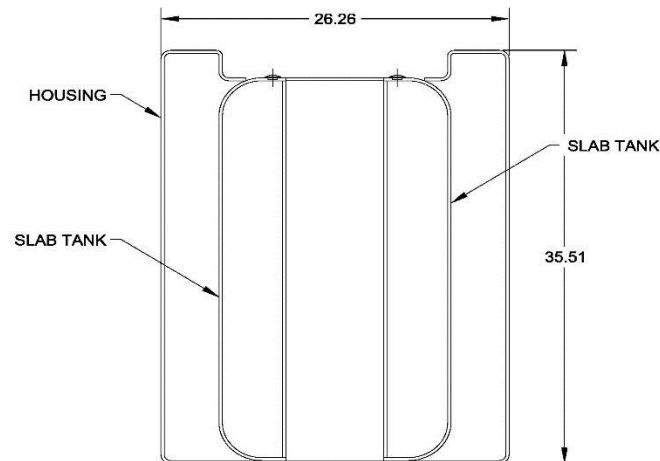
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# Introduction

- ◆ NWP, LLC and its legacy companies have been the M&O Contractor at the Waste Isolation Pilot Plant (WIPP) Site for the U.S. Department of Energy Carlsbad Field Office (DOE/CBFO) for over 30 years. The WIPP Site is located in South Eastern New Mexico.
- ◆ NWP, LLC currently maintains and operates the DOE/CBFO owned NRC licensed Type B package fleet used to transport transuranic waste to the WIPP Site. The fleet is comprised of both contact handled (CH) and remote handled (RH) packages equaling a total fleet size of 117.
- ◆ Six of the fleet of 117 are TRUPAC-III (TP-III) Type B Packages. The TP-III's authorized payload container is the Standard Large Box 2 (SLB2). The TP-III operates under the NRC Coc No. 71-9305.
- ◆ This presentation will discuss the decision process, efforts required and lessons learned for seeking an exemption from the regulations for two payloads in the TP-III.

# Background of the Issue

- ◆ During cleanup activities at Savannah River National Laboratory (SRNL), a facility was encountered that contained a tank which had previously held Pu-238 solutions.
- ◆ The tank was actually an assembly that consisted of two highly contaminated slab tanks.



# Background of the Issue (Cont.)

- ◆ The slab tank assembly was mechanically separated however, concerns over personnel exposure and contamination release prevented further segmentation activities.
- ◆ Each of the separated slab tanks were loaded in to a SLB2 for characterization activities.
- ◆ These SLB2's were initially destined for final disposal at the WIPP.



# Background of the Issue (Cont.)

- ◆ The TP-III is a large, rectangular, Type B(U)F-96 shipping package. The TP-III has a maximum loaded weight of 55,116 pounds, 80 watts of decay heat and activity is limited to  $10^5 A_2$ .



# Background of the Issue (Cont.)

- ◆ In September of 2013 a group at SRNL responsible for performing the characterization activities for potential waste to be shipped to WIPP contacted the NWP Packaging group to discuss the two SLB2's in question.
- ◆ Initial discussions identified that both of these SLB2's exceeded the allowable decay heat for the TP-III (approximately a factor of two).
- ◆ During review of the specific characterization documentation it was identified that the activity for both of the SLB2's exceeded  $10^5 A_2$ .
- ◆ All other payload parameters met the CoC limits.
- ◆ Discussions with both DOE CBFO & SRNL were initiated to discuss options and limitations for shipment of these two SLB2's.

# Path Forward Determination

- ◆ Because of the high specific activity of the Pu-238 residues, these two slab tanks required addressing two separate licensing issues;
  - ◆ Decay heat of approximately twice the CoC limit
  - ◆ Activity exceeding  $10^5 A_2$
- ◆ For the issue of the decay heat there were two potential path forwards;
  - ◆ Submitting a amendment request for the CoC that demonstrates the increased decay heat did not negatively affect the safety envelope of the package
  - ◆ Requesting a special package authorization for one time shipments, this requires the applicant to demonstrate that the overall level of safety in transport for these shipments is at least equivalent to that which would be provided if all the applicable requirements of the CoC had been met



# Path Forward Determination (Cont.)

- ◆ For the issue of exceeding activity limits of  $10^5 A_2$  it was significantly more challenging;
  - ◆ § 10 CFR71.61 requires “A Type B package containing more than  $10^5 A_2$  must be designed so that its undamaged containment system can withstand an external water pressure of 2 MPa (290 psi) for a period of not less than 1 hour without collapse, buckling, or inleakage of water”
  - ◆ The geometry of the TP-III was not designed to meet the requirements of § 10CFR71.61
- ◆ After discussions with the CoC holder Areva Federal Services (AFS), DOE decided that submittal of an exemption request in accordance with § 10CFR71.12 for these two shipments was the only viable path forward.

# Exemption Request

- ◆ On January 28, 2014 NWP on behalf of the DOE submitted our exemption request to the NRC. The exemption request addressed the two issues;
  - ◆ For the decay heat AFS performed a revised thermal analysis that demonstrated that due to the large size and material of construction the TP-III did not go outside of the safety envelope for the package (temperature increase was only about 6 °C)
  - ◆ Relative to the requirements of § 10CFR71.61 a different approach was used to demonstrate that these shipments would not endanger life or property or the common defense and security;
    - ◆ The origination and purpose of § 10CFR71.61
    - ◆ The transport route to be used in the shipments
    - ◆ Grandfathering Previously Approved Packages

# Exemption Request (Cont.)

- ◆ The deep water immersion test defined in § 10CFR71.61 was initially put in for package recoverability. With the 2MPa (290 psig) equivalent to a 200 meter water depth at the continental shelf.
- ◆ Deepest body of water the two shipments would take is  $\approx 45$  feet at the Mississippi River crossing at Vicksburg, Mississippi.
- ◆ Grandfathered “-85” irradiated nuclear fuel packages containing up to  $10^6$  Ci still eligible for transport without deep water immersion test.

# Environmental Report

- ◆ On May 20, 2014 the NRC responded that they had found that our 01/28/14 submittal contained sufficient technical information in scope and depth to allow the staff to complete its detailed technical/safety review, “*however*”;
  - ◆ “*based on the scope of the exemption request, the NRC will need to conduct an environmental review to fulfill the requirements of the National Environmental Policy Act of 1969, as amended (NEPA), and the NRC’s NEPA implementing regulations at 10 CFR Part 51*”
  - ◆ “*Thus, environmental information is necessary to commence this environmental review, as identified in the enclosure*”

# Environmental Report (Cont.)

- ◆ NEPA requires U.S. government agencies to analyze for any environmental impacts of their actions, particularly those contained in regulations.
- ◆ NRC's NEPA implementing regulations 10 CFR Part 51, *Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions* contains categorical exclusions (10CFR51.22(c)(13)), which includes packaging designs (typically) thus no environmental assessment required.
- ◆ However, granting an exemption to 10 CFR 71 falls outside of the categorical exclusions and preparation of an environmental report was necessary.

# Environmental Report (Cont.)

- ◆ *“In order for NRC to conduct an environmental review of the proposed request, NRC needs certain information normally contained in an environmental report (ER). Accordingly, provide an ER that addresses the topics identified in 10 CFR 51.30 with respect to the requested exemption from 10 CFR 71.61.”*
- ◆ The ER was required to address;
  - ◆ A description of the proposed action (e.g., planned activities, location, duration, maps showing location and facilities, as applicable).
  - ◆ A discussion of the purpose and need for the proposed action (why the proposed action and subsequent transport is needed)
  - ◆ A description of the alternatives considered;
    - ◆ Status quo (storing waste onsite indefinitely)
    - ◆ Further size reduction to reduce  $A_2$  to CoC limits
    - ◆ Use of a different approved Type B Package for the shipments
  - ◆ Describe any operational controls that will be used to compensate for using a package that does not meet all of the transportation package performance standards

# Environmental Report (Cont.)

- ◆ Identify the applicable regulatory requirements and permits. The information provided should identify the issuing agency, describe the type of license, permit or approval needed, and provide the status of securing the license, permit or approval.
- ◆ Description of the affected environment. The description of the affected environment focuses on the baseline conditions, which are used to assess the environmental impacts.
- ◆ Discussion of the environmental impacts of the proposed action and alternatives including but not limited to the following environmental resources: public and occupational health impacts, transportation impacts (e.g., doses to workers and public, traffic impacts), air quality impacts, water quality impacts, noise impacts, waste management impacts, potential impacts to historic and cultural resources and threatened and endangered species or critical habitats.

# Environmental Report (Cont.)

- ◆ A lot of the information required had been discussed in previous DOE environmental impact studies and assessments for the WIPP Site. However, mining through that data is very daunting.
- ◆ The ER was completed and submitted to the NRC on March 10, 2015 with each aspect covered in detail.
- ◆ The ER concluded that there were no viable alternatives and that the environmental effects of granting this exemption would be negligible.



# Exemption Request Granted

- ◆ After submission of the ER the typical Request for Additional Information (RAI) process kicks in (similar to amendment process).
- ◆ On June 2, 2016 the NRC issued in the Federal Register their Finding of No Significant Impact (FONSI) in response to the ER.
- ◆ On June 29, 2016 the NRC granted the exemption request.
- ◆ In the response letter the NRC cited that since the applicant stated in the exemption request that the deepest body of water that the shipments would traverse is  $\approx 45$  feet and the fact that the TP-III had already been evaluated to meet 10CFR71.73(c)(6) the exemption to 10CFR71.61 was authorized by law.

# Exemption Request Granted (Cont.)

- ◆ The exemption request approval contained the following “Conditions”;
  - ◆  $A_2$  quantity shall not exceed  $2.1 \times 10^5$  per package
  - ◆ Decay heat shall not exceed 190 watts per package
  - ◆ Contents of the SLB2’s shall be as described in the application
  - ◆ The shipments shall be in compliance with a special permit issued by the U.S. DOT
  - ◆ The route utilized for shipments shall not traverse water deeper than 50 feet
  - ◆ Authorization expires on December 31, 2019

# Lessons Learned

- ◆ Exemption requests from the requirements of 10CFR71 cannot be viewed as a “get out of jail free card” for failure to meet the requirements;
  - ◆ Only considered when you have researched and exhausted every viable alternative
- ◆ Exemption request cannot ask the regulator to ignore a 10CFR71 requirement;
  - ◆ The need must be significant
  - ◆ The request must be supported by a sound technical evaluation that demonstrates no compromise in safety
  - ◆ The request must also demonstrate that it is in the best interest of the public and that it will not endanger life or property or the common defense and security

# Lessons Learned (Cont.)

- ◆ Preparation of environmental report is extensive and requires considerable effort;
  - ◆ Use available literature for developing the ER
  - ◆ Use known formats for the organization and structure of the ER
- ◆ Efforts for an exemption request can rival (or exceed) those of a package approval in both resources and cost.
- ◆ Be patient, the timeline can also be equivalent to that of a package approval;
  - ◆ Exemption request submitted on January 28, 2014
  - ◆ ER development took 10 months
  - ◆ Exemption granted June 29, 2016
  - ◆ Duration was approximately 2 ½ years