From: Sellmer, Todd - WTS [Todd.Sellmer@wipp.ws]
Sent: Wednesday, September 22, 2010 1:32 PM
To: Staab, Christopher
Subject: 09/21/10 Tele-Con on 72B RAI Question

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Chris,

I wanted to thank you for facilitating the telephone conference between DOE, WTS and members of the NRC review staff. The purpose of the telephone call was to discuss the WTS response to the RH-TRU 72-B RAI question #2 on Shielding. The question specifically was;

> " Provide NCT activity limits similar to the HAC limits in Table 3.2-2 of the RH-TRAMPAC document.
>
> Prior to loading the package the shipper needs to rely on the calculated allowable source terms for all isotopes under normal and accident conditions. The pre-shipment radiological survey should be used only for confirming the regulatory dose limit. Also provide the composition and density of the compressed transuranic waste to be shipped in the RH-TRU 72-B. Of particular interest is the amount of hydrogen and other light elements. Staff performed scoping calculations to investigate the amount of self-shielding required to load up to the new curie limits without exceeding the NCT dose limits. To achieve acceptable dose rates for NCT a significant amount of self-shielding is needed. The NRC staff needs this information to determine whether there is enough self shielding to allow shipment of the higher activity waste.
>
> This information is requested by staff to show compliance with 10 CFR 71.47."

As discussed on the call, the NRC does not have a safety concern for this issue or a concern of the waste reconfiguring during the normal conditions of transport.

During the call it was recommended that WTS should perform an NCT analysis to establish activity limits similar to those presented in Tables 3.2-1 and 3.2-2 of the RH-TRAMPAC for the HAC using reasonable engineering assumptions. WTS has looked at this possibility and has determined that, due to the variability in the configurations that make up our waste, NCT analyses similar to those performed for HAC would either result in unnecessarily large reductions in the activity limits to the waste population and/or result in excessive delays in the amendment approval process. This is due to the fact that any "reasonable" NCT analysis would have to take credit for self-shielding in the waste matrix. Taking credit for the self-shielding would necessitate the use of MCNP or another monte-carlo tool to analyze all RH-TRU radionuclides in the inventory under conditions which properly represent the range of content conditions related to activity distribution and composition of the waste matrix. It is estimated that this approach would result in the performance of approximately 3600 separate analyses and equate to approximately a 30 man-week effort, not including report preparation, checking and SAR development time. It seems that this approach of performing these multiple analyses provides no tangible benefit to the safety basis of the package because the preshipment survey more effectively and efficiently ensures that the activity of the contents is sufficiently restricted to ensure compliance with 10CFR71.47.

To date, WTS has performed more than 400 RH shipments using the currently approved method of utilizing pre-shipment dose rate surveys on the surface of the package to satisfy NCT dose rate requirements with no non-compliances. It seems to WTS that the use of the pre-shipment survey, which is a direct measurement of the package surface dose rate, is the best method for ensuring compliance with 10CFR71.47 during normal conditions of transport. As reflected in chapter 5 of the RH-TRU 72-B SAR, NCT conditions are far more restrictive than the HAC allowable (200 mrem/hr maximum on the surface of the package and 10mrem/hr at any point 2 meters from the package versus 1000 mrem/hr at any point 1 meter from the package). It should be noted that the pre-shipment does rate surveys currently performed on the package are very extensive and encompass the entire surface of the package. WTS would like for the NRC to consider that, in lieu of the suggested NCT analysis, WTS would modify and augment section 3.2 of the RH-TRAMPAC to describe in detail the methodologies to be performed for the pre-shipment surveys and that these methodologies would result in a complete survey of the package to ensure compliance with the NCT package surface dose rate requirements. This process ensures that the activity limits for the package, beyond that required by the HAC radionuclide activity limits, are restricted to ensure compliance with NCT and fully satisfy 10CFR71.33, 71.47, and 71.51.

The proposed methodology to be incorporated in section 3.2 of the RH-TRAMPAC would be sent to the NRC for their review and input prior to re-submittal to the NRC. Since the RH-TRAMPAC is the document that currently describes the methodologies used for verification of nuclear properties, gas generation, chemical properties, etc. we feel it would be appropriate to describe the pre-shipment survey methodologies in this document. The current CofC for the RH-TRU 72-B currently requires that payloads be prepared in accordance with Chapter 7 of the SAR (section 7.1.2.22 currently requires the pre-shipment surveys be performed) and could be amended to require that the pre-shipment surveys be performed in accordance with section 3.2 of the RH-TRAMPAC (once modified).

Please contact me at your earliest convenience to discuss this issue further.

Regards,

Todd

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