



## International Isotopes Inc.

February 20, 2009

Mr. Rick Boyle

U.S. Department of Transportation  
Office of Hazardous Materials Technology  
PHH-23 Radioactive Materials  
1200 New Jersey Ave., SE East Building, 2<sup>nd</sup> Floor  
Washington, D.C. 20590-0001

Subject: Response to Request for Additional Information as Discussed during the January 27, 2009 Conference Call in Regards to Revalidation of the Model No. 1860 A Package Revalidate AUS/2007-13/B(U)-96

Dear Mr. Boyle,

A conference call to address additional comments from the US Nuclear Regulatory Commission was conducted on January 27, 2009. Representatives from the US NRC, US Department of Transportation, International Isotopes, Inc. and Analogue & Digital Measurements (A&DM) participated in the call.

Mr. Parrott from A&DM provided a letter and supplemental documentation intended to address the items discussed during the conference call, copy of mail containing these concerns is attached.

Two thermal questions, RAI 2-3 and RAI 2-4 are addressed in A&DM letter paragraph **Heat Test Oven TSR-1 728(a)** which provides a description of the oven. Supplemental documentation includes a copy of an email written by Mr. William Townsend, Australian Nuclear Science and Technology Organization (ANSTO) which further describes the thermal test as well as the fin analysis. A copy of the temperature analysis conducted by Mr. Townsend is also provided.

In addition, a video of the actual package testing is available on the web at:

[http://www.nuclearaustralia.com.au/info\\_cask3.html#select](http://www.nuclearaustralia.com.au/info_cask3.html#select)

There were several Shielding related RAIs that required additional response. Some of these were addressed during the conference call, particularly the issue regarding Ra-226. The request to authorize the container to transport Ra-226 had been rescinded. Additional shielding questions

surrounding the modeled transport index value and a discrepancy in the modeled thickness of lead and the actual thickness of lead shielding for Configuration A. AD&M suggested lowering the allowable activity in the cask configurations to coincide with the activity that would result in a transport index of less than 10 based on the NRC models. A&DM reiterates this position in the Maximum Activity section of Mr. Parrott's letter. Mr. Parrott also notes that an 1860 cask in Configuration C will be loaded with 10,000 Ci and actual measurements will be obtained to validate the design and attenuation coefficients. This information will be forwarded to the DOT and NRC when it is obtained.

Mr. Parrott addressed the question regarding the appropriate surface to be used to obtain the transport index (T.I.) measurement. The NRC suggests the end caps since the crumple shield does not cover the end cap. Mr. Parrott contends in his letter that the T.I. as measured from the crumple shield is valid in that it is only possible to reach this area with the hands and therefore does not pose an elevated risk to body exposure. I agree with Mr. Parrott's argument in that the T.I. should be measured 1 meter from the surface of a package that is accessible to the whole body. The following paragraphs from Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material, IAEA Safety Guide TS-G-1.1 (Rev. 1) 2008 support this reasoning:

526.1. The TI is an indicator of the radiation level in the vicinity of a package, overpack, tank, freight container, conveyance, unpackaged LSA-I or unpackaged SCO-I and it is used in the provision of radiation protection measures during transport.

526.4. Where there are protrusions on the exterior surface, the protrusion should be ignored in determining the 1 m distance, except in the case of a finned package, in which case the measurement may be made at 1 m distance from the external envelope of the package.

General questions were raised regarding source drawer configurations. Mr. Parrott provided a response to these comments in the AD&M letter, including round and square drawer and cavity dimensions and tolerances, a list of approved source drawers for specific devices, and methods to fix the position of the source capsule within the source drawer. Language similar to that found in Certificate of Compliance Docket Number 71-9215, Paragraph 7 which reads: *The contents must be secured in the drum assembly so as to restrict movement in any direction to less than 0.25 inch, by lead, steel, or tungsten full diameter plugs and spacers*, would be appropriate for use in

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the 1860 revalidation to describe the positioning of the source within the source drawer.  
Clarification of configuration D was addressed during the call, the NRC's comment regarding the authorized contents, i.e. pencils is accurate.

Issues regarding the End Crumple Shield and TSR-1 drop test are addressed in the A&DM letter paragraph End Crumple Shield. A&DM provides suggested modifications that could be completed without interfering with the design of the cask to cover the access tube.

The A&DM letter revised Table 60 of the SAR to cross reference the listings to the relevant table or text.

Finally Drawing No. 1860A-D1-105-00 has been provided/

Should you have any questions, or need additional documentation please contact me by phone at (208) 524-5300 or by email at [jjmiller@intisoid.com](mailto:jjmiller@intisoid.com)

Sincerely,

A handwritten signature in black ink, appearing to read 'John J. Miller', with a long horizontal flourish extending to the right.

John J. Miller, CHP  
International Isotopes Inc.  
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Idaho Falls, ID 83401

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cc  
Chris Staab, Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety and Safeguards