



COLUMBIANA HI TECH LLC

Nuclear Manufacturing Excellence

71-9291

February 17, 2006

Bill Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
United States Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

Cc: Director, Document Control Desk, SFPO (without attachments)

Re: RAI dated 11/07/05 for Revision 6 of the Eco-Pak LiquiRad, Certificate of Compliance
No. 9291/Docket Number 71-9291

Mr. Brach,

On August 5, 2005, Columbiana Hi Tech, LLC (CHT) requested amendment of Certificate of Compliance No. 9291 for the Model No. EcoPak LiquiRad (LR) Transport Unit Package to include the designation "-96" in the identification number, as specified in 10 CFR 71.19(e). NRC requested additional information regarding CHT's application, and this submittal provides CHT's response to the RAI.

Attached, please find one copy of the consolidated Safety Analysis Report (SAR), Revision 6, for the Columbiana Hi Tech (CHT) Liqui-Rad Transport Unit Packaging Safety Analysis Report (SAR). The consolidated SAR includes the complete Revision 6 text, drawings and supplements, as requested by the NRC.

In addition to the consolidated SAR, Attachment B is provided to itemize CHT's Response to each RAI question.

If you have any questions concerning this request or this submittal, please feel free to contact CHT at your convenience.

Sincerely,

D.W. Olson
President
Columbiana Hi Tech, LLC

NMSS 01

Enclosures:

Attachment A: Consolidated Safety Analysis Report for the Model No. Eco-Pak LiquiRad (LR)
Transport Unit, Revision 6

Attachment B: Itemized RAI Response

Attachment A
Consolidated Safety Analysis Report for the
Model No. Eco-Pak Liqui-Rad (LR) Transport Unit, Revision 6
(1 Copy)

Attachment B
Itemized RAI Response

Question 1-1: Provide a consolidated application. Ensure the consolidated application includes all the pertinent information referenced in the certificate as well as legible drawings.

Response: CHT has provided a consolidated SAR that includes all text, drawings, and supplements referenced in the application. Drawing sheets 1, 2, and 3 (Dwg. No. LR-SAR) have been revised to Revision 7 to match sheet 4 of the drawing and to improve legibility of the drawings. No drawing changes have been made.

Question 1-2: Clearly show that the package meets the current regulation requirements that became effective on October 1, 2004 (69 FR 3698).

Response: Each requirement for “-96” status is detailed in the following paragraphs with respect to the LR package.

Issue 1, Changing Part 71 to the International Systems of Units (SI) only. This proposal was not adopted in the final rule, and, therefore, no changes are needed in the package application or the Certificate of Compliance to conform to the new rule.

Issue 2, Radionuclide Exemption Values. The final rule adopted radionuclide activity concentration values and consignments activity limits in TS-R-1 for the exemption from regulatory requirements for the shipment or carriage of certain radioactive low-level materials. In addition, the final rule adopted an exemption from regulatory requirements for certain natural material and ores containing naturally occurring radionuclides. This rule is not applicable to the LR package; thus, no changes are needed to conform to the new rule.

Issue 3, Revision of A_1 and A_2 . The final rule adopted changes in the A_1 and A_2 values from TS-R-1, with the exception of two radionuclides. The LR's updated containment analysis (Section 4 of the application) incorporates the revised A_2 values, which are for radioactive material in normal form. In general, the A_2 values for radionuclides important to the containment requirements were increased. The increased A_2 values increased the maximum allowable leakage rates calculated for the Uranyl Nitrate solutions authorized for transport, as shown in the revised Table 4-2 of the application. The leakage rate testing requirements for the package were revised based on the calculated maximum allowable leakage rates, Table A-1, of the revised 10 CFR Part 71.

Issue 4, Uranium Hexafluoride (UF_6) Package Requirements. These changes are not applicable, since the package is not authorized for the

transport of Uranium Hexafluoride. Therefore, no changes are needed to conform to the new rule.

Issue 5, Criticality Safety Index (CSI). The final rule adopted the CSI requirement from TS-R-1. Revision 6 of the SAR includes revisions in Sections 1 and 6 of the package application to incorporate the CSI nomenclature.

Issue 6, Type C Packages and Low Dispersible Material. This proposal was not adopted for the final rule. Thus, no changes are necessary.

Issue 7, Deep Immersion Test. The final rule adopted an extension of the previous version of 10 CFR 71.61 from packages for irradiated fuel to any Type B package containing activity greater than $10^5 A_2$. The LR package is not used to transport irradiated fuel. The LR is rated as a Type B package; however, the activity is $12.1 A_2$, which is much less than the activity for which the rule applies. Thus, no changes are necessary to conform to the new rule.

Issue 8, Grandfathering Previously Approved Packages. The final rule adopted a process for allowing continued use, for specific periods of time, of a previously approved packaging design without demonstrating compliance to the final rule. Since CHT has elected to submit information demonstrating compliance with the final rule, grandfathering the package is not necessary.

Issue 9, Changes to Various Definitions. The final rule adopted several revised and new definitions. These changes were adopted to provide clarity to Part 71. No change is necessary to conform to the new rule.

Issue 10, Crush Test for Fissile Material Packages. The revised 10 CFR 71.73 expanded the applicability of the crush test to fissile material packages. The crush test is required for packages with a mass not greater than 500 kilograms (1100 pounds). Since the LR package has a mass greater than this, the crush test is not applicable. Therefore, the requirement to perform a crush test is not applicable to the package, and no change is necessary to conform to the new rule.

Issue 11, Fissile Material Package Design for Transport by Aircraft. The final rule adopted a new section, Section 71.55 (f), which addresses packaging design requirements for packages transporting fissile material by air. This requirement is not applicable to the LR package.

Issue 12, Special Package Authorizations. The final rule adopted provisions for special package authorization that will apply only in limited circumstances and

only to one-time shipments of large components. This provision is not applicable to the LR package. Thus, no change is necessary to conform to the new rule.

Issue 13, Expansion of Part 71 Quality Assurance (QA) Requirements to Certificate Holders. The final rule expanded the scope of Part 71 QA requirements to apply to any person holding or applying for a Certificate of Compliance. QA requirements apply to design, purchase, fabrication, handling, shipping, storing, cleaning, assembly, inspection, testing, operation, maintenance, repair, and modification of components of packaging that are important to safety. CHT's QA program satisfies the specific requirements of 10 CFR 71.101 (a), (b), and (c) and the safety analysis report states that the package is designed, manufactured, and maintained to the requirements of 10 CFR 71.

Issue 14, Adoption of the American Society of Mechanical Engineers (ASME) code. This proposal was not adopted in the final rule. Thus, no change is needed to conform to the new rule.

Issue 15, Change Authority for Dual-Purpose Package Certificate Holders. This proposal was not adopted for the final rule. Thus, no change is necessary to conform to the new rule.

Issue 16, Fissile Material Exemptions and General License Provisions. The final rule adopted various revisions to the fissile material exemptions and the general license provisions in Part 71 to facilitate effective and efficient regulation of the transport of small quantities of fissile material. The criticality safety of the package does not rely on limiting fissile materials to exempt or generally licensed quantities. Chapter 6 of the package application demonstrates criticality safety of the package with the authorized fissile contents. Therefore, no change is necessary to conform to the new rule.

Issue 17, Double Containment of Plutonium. The final rule removed the requirement that packages with Plutonium in excess of 0.74 TBq (20 curies) have a second separate inner container. The LR package is not used to transport quantities of Plutonium in excess of 0.74 TBq; thus, the rule is not applicable to LR and no change is necessary.

Issue 18, Contamination Limits as Applied to Spent Fuel and High Level Waste Packages. This proposal was not adopted for the final rule. Thus, no change is needed to conform to the new rule.

Issue 19, Modification of Events Reporting Requirements. The final rule adopted modified reporting requirements. While the final rule is applicable to the package,

no change is needed to either the Certificate of Compliance or the package application to conform to the new rule.

Question 1-3: Correct the A₂ value for the mixture shown in two places on Page 4-2.

Response: These typographical errors have been corrected. Note that the revision level of the safety analysis report remains at revision 6 and the changes on page 4-2 as a result of the RAI have been labeled with a 6s on the revision bar to note that the changes were made with the supplement submittal.

Question 1-4: Include the pre-shipment leakage test in Chapter 8 and its associated maximum Leakage rate criterion of 1×10^{-3} ref-cc/sec.

Response: Section 4 of the LR safety analysis report made the statement, "Leak tests will be performed post-fabrication, periodically, and pre-shipment per the requirements of ANSI N14.5-1997, as described in Sections 7 and 8," implying that all tests are provided in both Sections 7 and 8. However, Section 7 only deals with loading, shipment, and unloading of the package, and the pre-shipment leakage test is the only leakage test necessary to perform the actions required during shipping. On the other hand, Section 8 only deals with acceptance of new packages and maintenance of existing packages. For the Section 8 activities, only the periodic and post-fabrication leakage tests are necessary. In order to clarify location of each of the tests within the SAR, the text in Section 4 has been modified: "Leak tests will be performed pre-shipment per the requirements of ANSI N14.5-1997, as described in Section 7. Leak tests will be performed post-fabrication and periodically per the requirements of ANSI N14.5-1997, as described In Section 8." Note that the revision level of the safety analysis report remains at revision 6 and the changes in Section 4 have been labeled with a 6s on the revision bar to note that the changes were made with supplement submittal.

Question 1-5: Delete the wording, "without opening the containment boundary" in Chapter 1, Section 1.2.2 vi.

Response: This text has been removed.