

October 14, 2005

Mr. Patrick L. Paquin  
General Manager, Licensing and Engineering  
Duratek, Inc.  
140 Stoneridge Drive  
Columbia, South Carolina 29210

SUBJECT: CERTIFICATE OF COMPLIANCE NO. 9196 FOR THE MODEL NO. UX-30  
PACKAGE

Dear Mr. Paquin:

As requested by your application dated June 9, 2005, as supplemented on June 30 and September 9, 2005, enclosed is Certificate of Compliance No. 9196, Revision No. 22, for the Model No. UX-30 package. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's Safety Evaluation Report is also enclosed.

Those on the attached list have been registered as users of the package under the general license provision of 10 CFR 71.17 or 49 CFR 173.471.

This approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471.

Registered Users may request by letter to remove their names from the Registered Users List.

If you have any questions regarding this certificate, please contact me or Stacie Sakai of my staff at (301) 415-8500.

Sincerely,

**/RA/**

Robert Nelson, Chief  
Licensing Section  
Spent Fuel Project Office  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9196  
TAC Nos. L23861 and L23862

Enclosures: 1. Certificate of Compliance  
No. 9196, Rev. No. 22  
2. Safety Evaluation Report  
3. Registered Users List

cc w/encls 1 & 2: R. Boyle, Department of Transportation  
J. Shuler, Department of Energy  
RAMCERTS  
Registered Users

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\*see previous concurrences

	SFPO	C	SFPO	N	SFPO	E	SFPO	
NAME	SSakai*		NOsgood*		MDeBose*		RNelson	
DATE	10/12/05		10/12/05		10/13/05		10/14 /05	

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## **SAFETY EVALUATION REPORT**

Docket No. 71-9196  
Model No. UX-30 Package  
Certificate of Compliance No. 9196  
Revision No. 22

### **SUMMARY**

By application dated June 9, 2005, as supplemented on June 30 and September 9, 2005, Duratek, Inc., (Duratek) requested an amendment to Certificate of Compliance No. 9196, for the Model No. UX-30 package. The application dated June 9, 2005, included a consolidated package application and superceded the previous submittals. Duratek requested that the package identification number of the package be revised to include the "-96" designation. Duratek provided a reformatted application and made editorial and administrative changes throughout the document and drawings. In addition, by application dated June 9, 2005, Duratek requested renewal of Certificate of Compliance No. 9196, for the Model No. UX-30 package.

Based on the statements and representations in the application, as supplemented, and for the reasons stated in this Safety Evaluation Report, we agree that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

### **EVALUATION**

By application dated June 9, 2005, as supplemented on June 30 and September 9, 2005, Duratek, requested an amendment to Certificate of Compliance No. 9196 for its Model No. UX-30 package to include the designation "-96" in the identification number, as specified in 10 CFR 71.19(e). Duratek also requested that the Certificate of Compliance be renewed. To support its request for the "-96" designation, Duratek provided a table addressing the changes to 10 CFR Part 71 (69 FR 3698), and a discussion of how each change has been addressed. The staff evaluated the applicant's request, as described below.

- Issue 1, Changing Part 71 to the International Systems of Units (SI) only.

This proposal was not adopted into 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 consignment 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. The applicant indicated that this revision was not applicable to the Model No. UX-30 package. The staff agrees based on the

design purpose of the Model No. UX-30 package and the allowed contents specified in the certificate. 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  $A_1$  and  $A_2$  values were modified in TS-R-1 based on refined modeling of possible doses from radionuclides, and the NRC agreed that incorporating the latest in dosimetric modeling would improve transportation regulations. The applicant indicated that no revisions to the application were required to address this change. The authorized contents for the package are limited to a type A quantity of uranium in the form of uranium hexafluoride. The  $A_2$  value for uranium enriched to 5 weight percent uranium-235 did not change in the new rule, and is unlimited. The staff agrees that no change is needed to conform to the new rule.

- Issue 4, Uranium Hexafluoride ( $UF_6$ ) Package Requirements.

The final rule allows uranium hexafluoride packages to be evaluated for criticality safety without considering the in-leakage of water into the containment system provided certain conditions are met, including that the uranium is enriched to not more than 5 weight percent uranium-235. The Model No. UX-30 package is an overpack for the ANSI N14.1 Standard 30B cylinder or the ANSI N14.1 Standard 30C cylinder. The applicant indicated that no revisions to the application were required to address this change. The staff agrees that the package meets the new provisions of 71.55(g), since (1) the  $UF_6$  cylinders have adequate quality control in the manufacture, maintenance, and repair of the packagings, (2) physical testing of the packages under hypothetical accident conditions demonstrated there is no physical contact between the valve body and any other component of the packaging, other than at its original point of attachment, and the valve remains leak tight, and (3) the package operations specify that each package is tested to demonstrate closure before each shipment.

- Issue 5, Criticality Safety Index (CSI).

The final rule adopted the CSI requirement from TS-R-1. The applicant revised Chapters 1, 2, and 6 of the 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 change is needed to conform to the new rule.

- 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 Model No. UX-30 package is a Type A package and has an activity less than  $10^5 A_2$ . Therefore, no changes are needed 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 previously approved packaging designs without demonstrating compliance to the final rule. The applicant has decided in accordance with 10 CFR 71.19(e) to submit information demonstrating compliance with the final rule. Thus, grandfathering the design of the Model No. UX-30 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. A definition of "Criticality Safety Index" (CSI) has been added and "Criticality Safety Index" has been substituted for "Transportation Index" for nuclear criticality control throughout the application.

- 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). The Model No. UX-30 package has a mass greater than this (8270 pounds). Therefore, the requirement to perform a crush test is not applicable to the Model No. UX-30 package, and no change is necessary to conform to the new rule. The applicant added sub-section 2.7.2 to the application to address this.

- 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. The applicant stated that revisions were not required at this time to address this issue. Therefore, for clarity, the Certificate of Compliance has been revised to specify that air transport is not authorized.

- 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. This provision is not applicable to the Model No. UX-30 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 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. The applicant has a QA program meeting the requirements, as required for the

Certificate Holder. The QA program has been approved by the NRC. Therefore, no change is necessary to conform to the new rule.

- Issue 14, Adoption of the American Society of Mechanical Engineers (ASME) code.

This proposal was not adopted for 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 needed 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 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 Model No. UX-30 package is not authorized for the transport of plutonium. Therefore, no changes are needed to conform to the new rule.

- 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. The applicant indicated that no revisions to the application were required to address this change.

Item No. 3(b) of the certificate was revised to update the certificate holder and to reference the consolidated application.

Condition No. 5(a)(3) of the certificate has been revised to reference the updated packaging drawings.

Condition No. 5(c) was revised to delete the wording "Minimum criticality safety index to be shown on label for nuclear criticality control" and replaced with "Criticality safety index (CSI)."

Condition No. 11 of the certificate was added to specify that air transport is not authorized.

Condition No. 12 of the certificate allows a package to be marked with the previous package identification number, USA/9196/AF-85 until October 31, 2007. This is to allow time to replace the packaging nameplate that shows the revised package identification number, USA/9196/AF-96.

Condition No. 13 of the certificate was changed to clarify that the package is approved for use under the general license provisions of 10 CFR 71.17. This change is due to a revision in the numbering of the sections in 10 CFR Part 71, that became effective on October 1, 2004.

Condition No. 14 of the certificate authorizes use of the previous revision of the certificate for a period of approximately one year.

### **Request for Renewal and Consolidated Application**

By application dated June 9, 2005, Duratek also requested that the Certificate of Compliance be renewed and provided a consolidated package application in accordance with 10 CFR 71.38.

The staff reviewed the consolidated application and concluded that the application incorporated the changes that were previously referenced in the Certificate of Compliance. The staff also reviewed the package operations and maintenance program for the package and found them to be adequate.

As specified in the Condition No. 15, the certificate has been renewed for a five year term that expires February 28, 2011.

### **CONCLUSION**

The certificate was revised to include the "-96" designation in the package identification number, and was renewed for a five year term that expires on February 28, 2011. These changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9196, Revision No. 22, on 10/14/05.