



U.S. Department  
of Transportation

Pipeline and  
Hazardous Materials  
Safety Administration

COMPETENT AUTHORITY CERTIFICATION  
FOR A TYPE FISSILE  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/9196/AF-96, REVISION 26

East Building, PHH-23  
1200 New Jersey Avenue SE  
Washington, D.C. 20590

This certifies that the radioactive material package design described has been certified by the Competent Authority of the United States as meeting the regulatory requirements for a Type AF packaging for fissile radioactive material as prescribed in the regulations of the International Atomic Energy Agency<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - Model No. UX-30.
2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9196, Revision 23 (attached).
3. Criticality - The minimum criticality safety index is 5.0 for the 30B cylinder; 0.0 for the 30C cylinder. The maximum number of packages per conveyance is determined in accordance with Table X of the IAEA regulations cited in this certificate.
4. General Conditions -
  - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
  - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
  - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

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<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

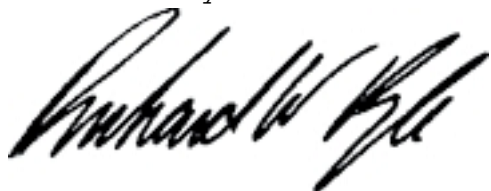
<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

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- d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations<sup>1</sup> shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
5. Marking and Labeling - The package shall bear the marking USA/9196/AF-96 in addition to other required markings and labeling.
6. Expiration Date - This certificate expires on April 30, 2010. On October 01, 2009, this certificate supersedes all previous revisions of USA/9196/AF-96.

This certificate is issued in accordance with paragraph 814 of the IAEA Regulations and Section 173.471 and 173.472 of Title 49 of the Code of Federal Regulations, in response to the July 16, 2009 petition by Energy Solutions, Campbell, CA, and in consideration of other information on file in this Office.

Certified By:



Robert A. Richard  
Deputy Associate Administrator for Hazardous Materials Safety

**Jul 20 2009**  
(DATE)

Revision 26 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Approval No. 9196, Revision 23.

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
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2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

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| a. ISSUED TO (Name and Address)<br>EnergySolutions<br>140 Stoneridge Drive<br>Columbia, South Carolina 29210 | b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION<br>Duratek, Inc., application dated June 9, 2005, as supplemented. |
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4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5. (a) Packaging

(1) Model No.: UX-30

(2) Description

Overpack for 30-inch uranium hexafluoride (UF<sub>6</sub>) cylinders. The overpack is a right circular cylinder constructed of two stainless steel shells with the volume between the shells filled with 6-inch thick foam (7.8 - 9.8 PCF). A stepped and gasketed horizontal joint permits the top half of the overpack to be removed from the base. The package "halves" are secured with ten indexed, cross-locking "ball lock" pins. The overpack is 43.5" in diameter by 96" long. The maximum gross weight of the package is 8270 lbs.

Two types of 30 inch uranium hexafluoride cylinders may be carried in the UX-30 overpack. These are (1) an ANSI N14.1 Standard 30B cylinder, or (2) an ANSI N14.1 Standard 30C cylinder.

The ANSI N14.1 Standard 30C cylinder is essentially a 30B cylinder equipped with a Valve Protective Cover (VPC) that bolts over and protects the cylinder valve during transport. The VPC is a special design feature that provides additional assurance against the inleakage of water to the containment system and is an enclosure that retains any leakage.

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(3) Drawings

The Model No. UX-30 packaging is fabricated in accordance with Duratek, Inc., Drawing No. C-110-B-57922-0002, Sheets 1 through 3, Rev. 3.

(b) Contents

(1) Type and form of material

Unirradiated uranium, in the form of  $UF_6$ , with a U-235 mass percentage not to exceed 5 percent.

(2) Maximum quantity of material per package

5,020 pounds  $UF_6$  contained in an ANSI Standard N14.1 30B or 30C cylinder. The maximum H/U atomic ratio for the  $UF_6$  is 0.088.

(c) Criticality Safety Index (CSI)

Criticality safety index for the UX-30 overpack containing a standard ANSI N14.1 30B cylinder 5.0

Criticality safety index for the UX-30 overpack containing a standard ANSI N14.1 30C cylinder 0.0

6. The ANSI standard 30B, 30-inch diameter  $UF_6$  cylinder, must be fabricated, inspected, tested and maintained in accordance with a) American National Standard N14.1-2001 or an earlier version of ANSI N14.1 in effect at the time of fabrication or b) American National Standard N14.1-2001 or an earlier version of ANSI N14.1 in effect at the time of fabrication and ISO 7195:1993(F). Cylinders must be fabricated in accordance with Section VIII, Division I, of the ASME (American Society of Mechanical Engineers) Boiler and Pressure Vessel Code and be ASME Code stamped.

7. The ANSI N14.1 Standard 30C cylinder (new or retrofitted cylinders) must be fabricated, inspected, tested, and maintained in accordance with ANSI N14.1-2001 Addendum 2-2004.

8. When the optional 4 lid lifting clips are used instead of the top lugs, the top lid (cover) must be lifted with a spreader bar (saddle).

9. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) Prior to each shipment, the weather/dust seal gasket between the upper and lower shells must be inspected and must be replaced if inspection shows excessive wear or any defects to the gasket.

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- (b) Each packaging must meet the Acceptance Tests and Maintenance Program of Chapter 8 of the application, as supplemented.
  - (c) The package shall be prepared for shipment and operated in accordance with the Operating Procedures of Chapter 7 of the application, as supplemented.
  - (d) Prior to each shipment, the stainless steel components of the packaging must be visually inspected. Packagings in which stainless steel components show pitting, corrosion, cracking, or pinholes are not authorized for transport.
10. The 30-inch diameter UF<sub>6</sub> cylinder valve and plug threads may be tinned with ASTM B32, alloy 50A or Sn50 solder material, or a mixture of alloy 50A or Sn50 with alloy 40A or Sn40A material, provided the mixture has a minimum tin content of 45 percent.
  11. Transport by air is not authorized.
  12. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
  13. Revision No. 22 of this certificate may be used until November 30, 2009.
  14. Expiration date: February 28, 2011.

REFERENCES

- Duratek Inc., application dated: June 9, 2005.
- Duratek Inc., supplements dated: June 30 and September 9, 2005.
- EnergySolutions supplements dated: October 29 and November 6, 2008.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Eric J. Benner, Chief  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Date: 11/7/08



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

**SAFETY EVALUATION REPORT**

**Docket No. 71-9196**  
**Model No. UX-30 Package**  
**Certificate of Compliance No. 9196**  
**Revision No. 23**

**SUMMARY**

By letter dated October 29, 2008, as supplemented November 6, 2008, *EnergySolutions* requested a revision to Certificate of Compliance No. 9196 for the Model No. UX-30 package. *EnergySolutions* requested changes to the authorized contents to explicitly allow transport of unirradiated uranium, in the form of uranium hexafluoride ( $UF_6$ ), with a U-235 mass percentage not exceeding 5 percent. Additionally, in 2006, *EnergySolutions* acquired Duratek, therefore, Certificate of Compliance No. 9196 is being transferred from Duratek to *EnergySolutions*.

Based on the statements and representations in the application, as supplemented, the staff agrees that the changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

**EVALUATION**

*EnergySolutions* requested revision of Certificate of Compliance No. 9196 for the Model No. UX-30 package by letter dated October 29, 2008, as supplemented.

The following revisions to the certificate have been made:

The certificate holder, Item No. 3(a), has been changed from Duratek to *EnergySolutions*. *EnergySolutions* acquired Duratek, and has accepted responsibility for the completeness and accuracy of the statements and representations of the previous certificate holder, Duratek. *EnergySolutions* will be responsible for maintenance of the certificate and Safety Analysis Report for the package design in accordance with the requirements of 10 CFR 71.91(c). *EnergySolutions* has indicated that the records for this design will be maintained at the same location where the records have been maintained by Duratek, in Columbia, South Carolina.

Condition No. 5(b)(1) and (2) have been revised to clarify that natural or depleted  $UF_6$  is authorized for transport, in addition to  $UF_6$  enriched up to 5 weight percent in the U-235 isotope. The UX-30 package was evaluated for  $UF_6$  enriched to 5 weight percent in the U-235 isotope, which has the same physical and chemical properties as natural and depleted  $UF_6$ . Natural and depleted  $UF_6$  are defined as non-fissile, and therefore, criticality is not a concern.

Condition No. 12, which allowed an alternative package identification number with the -85 designation, was deleted in its entirety because it was no longer needed.

As a consequence of the removal of Condition No. 12, the previous Conditions No. 13 – 15 were renumbered 12 – 14, respectively.

Condition No. 13 was modified to authorize use of the previous revision of the certificate for a period of approximately one year.

**CONCLUSION**

The Certificate of Compliance has been revised to transfer the certificate from Duratek to EnergySolutions and to include natural and depleted UF<sub>6</sub> in the authorized contents. Based on the statements and representations in the application, as supplemented, the staff concludes that the change does 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. 23,  
on November 7, 2008.

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**Pipeline and  
Hazardous Materials  
Safety Administration**

East Building, PHH-23  
1200 New Jersey Avenue SE  
Washington, D.C. 20590

**CERTIFICATE NUMBER:** USA/9196/AF-96, Revision 26

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