



U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**

**COMPETENT AUTHORITY CERTIFICATION  
FOR A TYPE FISSILE  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/0495/AF-96, REVISION 7**

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

**REVALIDATION OF JAPANESE COMPETENT AUTHORITY  
CERTIFICATE J/143/AF-96**

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - RAJ-II.
2. Package Description and Authorized Radioactive Contents - as described in Japan Certificate of Competent Authority J/143/AF-96, Revision 2 (attached).
3. Criticality - The minimum criticality safety index is 1.0. 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.

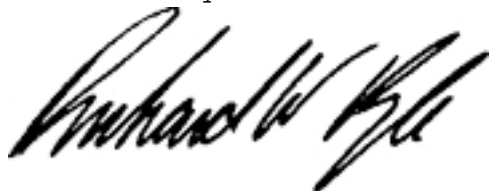
<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/0495/AF-96, REVISION 7**

- 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. Special Conditions -
- a. For shipments which enter into or transit the United States, all international approvals and revalidations, including Approval of Packaging and Confirmation of Packaging certificates issued by the government of Japan, shall be issued prior to the commencement of transport.
- b. In accordance with the attached Japanese Certificate of Competent Authority, the package is not to be transported by air.
6. Marking and Labeling - The package shall bear the marking USA/0495/AF-96 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on December 18, 2016.

This certificate is issued in accordance with paragraph 814 of the IAEA Regulations and Section 173.472 and 173.473 of Title 49 of the Code of Federal Regulations, in response to the June 04, 2012 petition by Global Nuclear Fuels - Americas, Wilmington, NC, and in consideration of other information on file in this Office.

Certified By:



Dr. Magdy El-Sibaie  
Associate Administrator for Hazardous Materials Safety

**Jun 21 2012**  
(DATE)

Revision 7 - Issued to revalidate, with higher criticality safety index, Japanese Certificate of Approval No. J/143/AF-96, Revision 2, dated January 18, 2012.

IDENTIFICATION MARK  
J/143/AF-96 (Rev.2)

**COMPETENT AUTHORITY  
OF  
JAPAN**

**CERTIFICATE OF APPROVAL OF  
PACKAGE DESIGN  
FOR THE TRANSPORT OF  
RADIOACTIVE MATERIAL**

ISSUED BY

MINISTRY OF ECONOMY, TRADE AND INDUSTRY  
1-3-1, KASUMIGASEKI, CHIYODA-KU  
TOKYO, JAPAN

**CERTIFICATE OF APPROVAL OF PACKAGE DESIGN  
FOR THE TRANSPORT OF RADIOACTIVE MATERIAL**

This is to certify, in response to the application by Global Nuclear Fuel - Japan Co., Ltd., that the package design described herein complies with the design requirements for a package containing fissile uranium dioxide fuel assemblies, specified in the 2009 Edition of the Regulations for the Safe Transport of Radioactive Material (International Atomic Energy Agency, Safety Standards Series No.TS-R-1) and the Japanese rules based on The Law for the Regulation on Nuclear Source Material, Nuclear Fuel Material and Reactors.

This certificate does not relieve the consignor from compliance with any requirement of the Government of any country through or into which the package will be transported.

COMPETENT AUTHORITY

IDENTIFICATION MARK: J/143/AF-96 (Rev.2)

Jan 18, 2012

Date

Shuhei Kojima

Shuhei Kojima

Director

Nuclear Fuel Transport and Storage

Regulation Division

Nuclear and Industrial Safety Agency

Ministry of Economy, Trade and Industry

Competent Authority of Japan

for Package Design Approval

1. The Competent Authority Identification Mark : J/143/AF-96 (Rev.2)
2. Name of Package : Type RAJ-II
3. Type of Package : Type A Fissile package
4. Specification of Package
  - (1) Materials of Packaging : See the attached Table-1
  - (2) Total Weight of Packaging : Approximately 930kg
  - (3) Outer Dimensions of Packaging
    - (i) Length : Approximately 507cm
    - (ii) Width : Approximately 73cm
    - (iii) Height : Approximately 74cm
  - (4) Total Weight of Package : 1490kg or less
  - (5) Illustration of Package : See the attached Figure(Bird's-eye view)
5. Specifications of Radioactive Contents : See the attached Table-2
6. Description of Containment System

There are no components parts as the containment device in this packaging, and the containment boundary consists of cladding tube of fuel rod.
7. For Package containing Fissile Materials,
  - (1) Restriction on Package
    - (i) Restriction Number "N" : 200
    - (ii) Array of Package : No restriction
    - (iii) Criticality Safety Index (CSI) : 0.25
  - (2) Special Features in Criticality Assessment

The subcriticality calculation is evaluated upon assumption that the whole portion of outer and inner container is in immersion condition by water except fuel rods as the containment boundary under the normal conditions and accident conditions in transport.
8. For type B(M) Packages, a statement regarding prescriptions of Type B(U) Package that do not apply to this Package

This is not applicable to this type RAJ-II package.

9. Assumed Ambient Conditions

- (i) Ambient Temperature Range : - 40°C ~ 83°C
- (ii) Insolation Data : Table XI of IAEA Regulation

10. Handling, Inspection and Maintenance

(1) Handling Instructions

- (i) Package should be handled carefully in accordance with the schedule and procedures established properly taking all possible safety measures.
- (ii) Package should be handled using appropriate lifting devices such as forklift or crane.
- (iii) When packaging is stored outdoors, it should be covered with an appropriate waterproof sheet, avoiding the situation where it is placed directly on the ground.

(2) Inspections and Maintenance of packaging

The following inspections should be performed not less than once a year (once for every ten times in a case where the packaging is used not less than ten times a year) and defect of packaging should be repaired, if any, in order to maintain the integrity of packaging.

- (i) Visual Inspection
- (ii) Subcriticality Inspection

(3) Actions prior to Shipment

The following inspections should be performed prior to shipment.

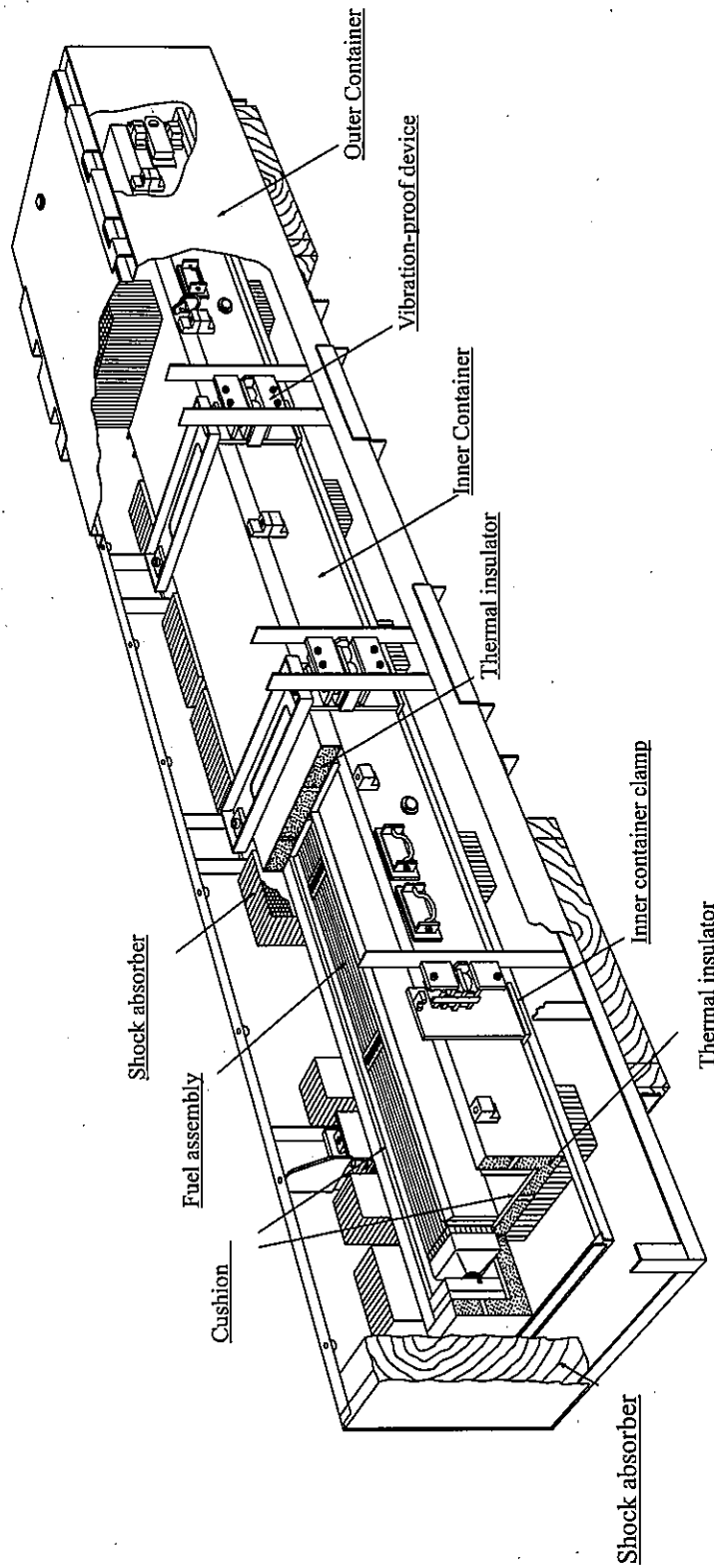
- (i) Visual Inspection
- (ii) Lifting Inspection
- (iii) Weight Inspection
- (iv) Surface Contamination Inspection
- (v) Dose rate Inspection
- (vi) Subcriticality Inspection
- (vii) Contents Inspection

(4) Precautions for Loading of package for Shipment

Package should be securely loaded to the conveyance at the designated tie-down portion of the packaging so as not to move, roll down or fall down from the loading position during transport.

11. Issue Date and Expiry Date

- (1) Issue Date : December 19, 2011
- (2) Expiry Date : December 18, 2016



Attached Figure Over view of Type RAJ-II Package



Attached Table - 1 Description on Materials of Packaging

	Portion of Packaging Assembly	Material and so on
Outer Container	Outer Shell	Stainless Steel (SUS 304;ASTM 304/304L)
	Angle	
	Shock Absorber	Balsa and Paper Honeycomb
	Gaskets	Natural Rubber
Inner Container	Outer Shell	Stainless Steel (SUS 304; ASTM 304/304L)
	Inner Wall	
	Thermal Insulator	Alumina Silicate
	Cushion	Polyethylene Foam
	Gaskets	Natural Rubber

Attached Table - 2 Description of Nuclear Fuel Materials and so on.

Content		8x8 Fuel Bundle	9x9 Fuel Bundle
Item	Description	Non irradiated Nuclear Fuel Bundle (Uranium Dioxide)	
Property		Solid (Uranium Dioxide Sintered Pellet or Gadolinia Doped Uranium Dioxide Sintered Pellet)	
Bundle Quantity in Package		2 Bundles or less	
Weight	Bundle	560kg or less	560kg or less
	UO <sub>2</sub>	397 kg or less	400 kg or less
	U	349.5 kg or less	352 kg or less
Total Activity		45.5 GBq or less (2 Bundle/1 Package)	45.9 GBq or less (2 Bundle/1 Package)
Enrichment		5.0 wt% or less	
Burn up Rate		Not Applicable	
Total Heat Generation Rate			
Cooling Time			
Impurity Specification of Enriched Uranium	<sup>232</sup> U	$\leq 2 \times 10^{-9}$	g/g <sup>235</sup> U
	<sup>234</sup> U	$\leq 1 \times 10^{-2}$	g/g <sup>235</sup> U
	<sup>236</sup> U	$\leq 5 \times 10^{-3}$	g/g <sup>235</sup> U
	<sup>99</sup> Tc	$\leq 2 \times 10^{-7}$	g/g <sup>235</sup> U



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**Pipeline and  
Hazardous Materials  
Safety Administration**

**CERTIFICATE NUMBER:** USA/0495/AF-96, Revision 7

**ORIGINAL REGISTRANT(S):**

Mr. Scott Murray  
Manager, Facility Licensing  
Global Nuclear Fuels - Americas  
3901 Castle Hayne Road  
Mail Code K-84  
Wilmington, 28401  
USA

Mr. Phillip Ollis  
Global Nuclear Fuels - Americas  
3901 Castle Hayne Road  
Mail Code K-84  
Wilmington, 28401  
USA

**REGISTERED USER(S):**

Wes Stilwell  
Acting Manager - Licensing, Compliance, and Package Technology  
Westinghouse  
Westinghouse Electric Company - Nuclear Fuel  
Columbia Fuel Site  
P.O. Drawer R  
Columbia, SC 29250