



U.S. Department  
of Transportation

Pipeline and  
Hazardous Materials  
Safety Administration

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

COMPETENT AUTHORITY CERTIFICATION FOR A  
TYPE FISSILE  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/0595/AF-96, REVISION 7

REVALIDATION OF JAPANESE COMPETENT AUTHORITY  
CERTIFICATE J/156/AF-96

The Competent Authority of the United States certifies that the radioactive material package design described in this certificate satisfies the regulatory requirements for a Type AF package 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 - RAJ-III.
2. Package Description and Authorized Radioactive Contents - as described in Japanese Certificate of Competent Authority J/156/AF-96, 3 (attached).
3. Criticality - The minimum criticality safety index is 0.25. 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 Engineering and Research, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

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<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" 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/0595/AF-96, REVISION 7**

- 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.
- d. Records of Management System activities required by Paragraph 306 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. Transport by air is not authorized.
- b. Lid lifting features must be rendered incapable of being used for lifting or tie-down of the package.
- c. Package closure bolts must be adequately secured and torqued to prevent loosening during transport. Minimum and maximum torque values shall be included in the operating instructions for the package.
- d. For shipments which enter into or transit the United States, all international approvals and revalidations, including the Approval of Packaging and Confirmation of Package certificates issued by the government of Japan, shall be issued prior to the commencement of transport.

6. Marking and Labeling - The package shall bear the marking USA/0595/AF-96 in addition to other required markings and labeling.

7. Expiration Date - This certificate expires on September 3, 2022. Previous editions which have not reached their expiration date may continue to be used.

**CERTIFICATE USA/0595/AF-96, REVISION 7**


This certificate is issued in accordance with paragraph(s) 816 of the IAEA Regulations and Section 173.472 and 173.473 of Title 49 of the Code of Federal Regulations, in response to the August 8, 2018 petition by Edlow International Company, Washington, DC, and in consideration of other information on file in this Office.

Certified By:

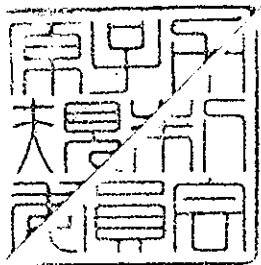


August 31, 2018

(DATE)

 William Schoonover  
Associate Administrator for Hazardous  
Materials Safety

Revision 7 - Issued to endorse Japanese Certificate of Approval No. J/156/AF-96, Revision 3, dated October 10, 2017.



IDENTIFICATION MARK

J/156/AF-96(Rev.3)

COMPETENT AUTHORITY  
OF  
JAPAN

CERTIFICATE FOR APPROVAL OF  
PACKAGE DESIGN  
FOR THE TRANSPORT OF  
RADIOACTIVE MATERIALS

ISSUED BY

NUCLEAR REGULATION AUTHORITY  
1-9-9, ROPPONGI MINATO-KU  
TOKYO, JAPAN

CERTIFICATE FOR APPROVAL OF PACKAGE DESIGN  
FOR THE TRANSPORT OF RADIOACTIVE MATERIALS

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 rods, specified in the 2012 Edition of the Regulations for the Safe Transport of Radioactive Materials (International Atomic Energy Agency, Safety Standards Series No.SSR-6) and the Japanese rules based on the Act on the Regulation of 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/156/AF-96(Rev.3)

Oct. 10, 2017

Date

青木 一哉

Kazuya Aoki

Director, Division of Licensing for  
Nuclear Fuel Facilities

Secretariat of Nuclear Regulation Authority  
Competent Authority of JAPAN  
for Package Design Approval

1. The Competent Authority Identification Mark : J/156/AF-96 (Rev.3)

2. Name of Package : Type RAJ-III

3. Type of Package : Type A Fissile Package

4. Specification of Package

- |                                   |   |
|-----------------------------------|---|
| (1) Main Material of Packaging    | : See the attached Table-1                  |
| (2) Total Weight of Packaging     | : Approximately 920kg                       |
| (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) |

Refer to the following drawings for more details.

Title: Structure of Outer Container (RAJ-III) 1/6 – 6/6, Date: 2006.12.25

Number of Drawing: TTO-T06-047-01

Title: Structure of Inner Container (RAJ-III) 1/6 – 6/6, Date: 2006.12.25

Number of Drawing: TTO-T06-047-02

Title: Structure of Shock Absorber (RAJ-III) 1/1, Date: 2006.12.25

Number of Drawing: TTO-T06-047-03

5. Specifications of Radioactive Contents : See the attached Table-2

6. Description of Containment System

There are no component parts as the containment device in this packaging,  
and the containment boundary consists of cladding tube and end plugs of fuel rod.

7. For Package containing Fissile Materials

(1) Restrictions on Package

- |                                      |                  |
|--------------------------------------|------------------|
| (i) Restriction Number "N"           | : 200            |
| (ii) Array of Package                | : No Restriction |
| (iii) Criticality Safety Index (CSI) | : 0.25           |

(2) Description of Confinement System

No equipment corresponds to confinement system for criticality.

(3) Assumptions of Leakage of Water into Package

The criticality calculation takes the event of water leaking into packaging into account.

(4) Special Features in Criticality Assessment

The criticality 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

Not applicable.

9. Assumed Ambient Conditions

- (i) Ambient Temperature Range : - 40°C ~ 38°C
- (ii) Insulation Data : Table 12 of IAEA Regulation (No.SSR-6).

10. Handling, Inspection and Maintenance

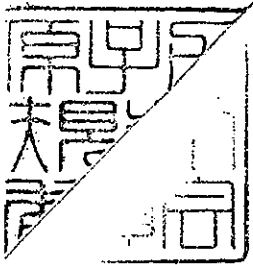
(1) Handling Instructions

- (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 Equivalent Rate Inspection
- (vi) Subcriticality Inspection
- (vii) Contents Inspection

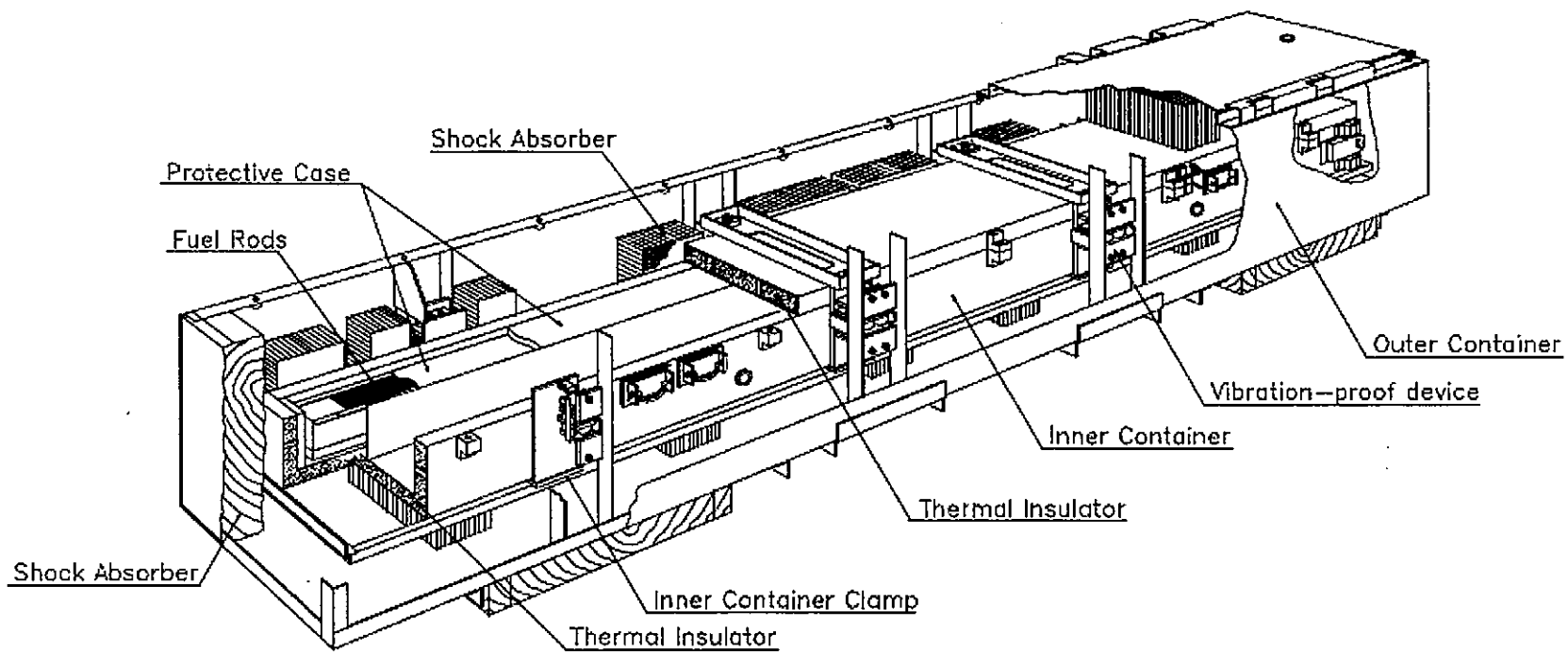
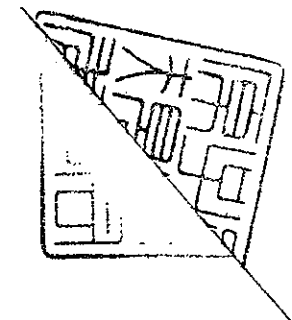
(4) Precautions for Loading of package for Shipment

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 : September 4, 2017
- (2) Expiry Date : September 3, 2022





Attached Figure Overall View of Type RAJ-III Package

Attached Table-1 Description of Main Materials in Packaging Assembly

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

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

Description	Non Irradiated Nuclear Fuel Rod (Uranium Dioxide)		
Property	Solid (Pellet)		
Weight	Contents	Maximum 570 kg Protective Case(TYPE I) [Maximum 46 pieces of non Irradiated 8x8 Type Nuclear Fuel Rods are installed by one Protective Case] Protective Case(TYPE II) [Maximum 46 pieces of non Irradiated 8x8 Type Nuclear Fuel Rods are installed by one Protective Case] [Maximum 52 pieces of non Irradiated 9x9 Type Nuclear Fuel Rods are installed by one Protective Case] Maximum 2 units of Protective Cases are installed by one packaging	
		UO <sub>2</sub>	Maximum 306 kg
		U	Maximum 269.7 kg
Activity	Total Activity	Maximum $3.56 \times 10^{10}$ Bq	
	<sup>232</sup> U	Maximum $2.23 \times 10^7$ Bq	
	<sup>234</sup> U	Maximum $3.11 \times 10^{10}$ Bq	
	<sup>235</sup> U	Maximum $1.08 \times 10^9$ Bq	
	<sup>236</sup> U	Maximum $1.62 \times 10^8$ Bq	
	<sup>238</sup> U	Maximum $3.19 \times 10^9$ Bq	
	<sup>99</sup> Tc	Maximum $1.69 \times 10^6$ Bq	
Enrichment	Maximum 5.0 wt%		
Burn up Rate	Not Applicable		
Total Heat Generation Rate			
Cooling Time			
Impurity Specification of Enriched Uranium	<sup>232</sup> U	$\leq 0.0001 \mu\text{g/gU}$	
	<sup>234</sup> U	$\leq 10,000 \mu\text{g/g}^{235}\text{U}$	
	<sup>236</sup> U	$\leq 250 \mu\text{g/gU}$	
	<sup>99</sup> Tc	$\leq 0.01 \mu\text{g/gU}$	
	If the <sup>236</sup> U measurement result is less than $125 \mu\text{g/gU}$ , then measurement of <sup>232</sup> U and <sup>99</sup> Tc are not required.		



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**CERTIFICATE NUMBER:** USA/0595/AF-96

**ORIGINAL REGISTRANT(S) :**

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Washington, DC, 20009  
USA