



U.S. Department  
of Transportation

Pipeline and  
Hazardous Materials  
Safety Administration

COMPETENT AUTHORITY CERTIFICATION  
FOR A TYPE B(M)F FISSILE  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/0388/B(M)F-96, REVISION 5

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

REVALIDATION OF JAPANESE COMPETENT AUTHORITY  
CERTIFICATE J/108/B(M)F-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 - NR-10F.
2. Package Description and Authorized Radioactive Contents - as described in Japan Certificate of Competent Authority J/108/B(M)F-96, Revision 1 (attached). Contents are restrict to those listed as Content I, II, II and IV on Japanese certificate.
3. Criticality - The minimum criticality safety index is 0.0. 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/0388/B(M)F-96, REVISION 5**

- d. This certificate provides no relief from the limitations for transportation of plutonium by air in the United States as cited in the regulations of the U.S. Nuclear Regulatory Commission 10 CFR 71.88.
  - e. Pursuant to Paragraph 558 of the IAEA Regulations, for each shipment made in accordance with this certificate, the shipper shall notify the competent authorities of each country through or into which the shipment is to be transported. The shipper shall ensure that this notification has been received by the competent authority at least 15 days prior to the commencement of the shipment.
  - f. 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. This package is approved as a Type B(M)F because an ambient temperature range between -20 degrees C and -40 degrees C has not been considered. Accordingly, it may not be operated in temperatures below -10 degrees C.
  - b. Contents are restricted to those listed as Content I, II, III and IV on Japanese certificate.
  - c. This package is not authorized for transport by air.
  - d. The impact limiters used on this package must be attached with high strength SCNM material bolts.
6. Marking and Labeling - The package shall bear the marking USA/0388/B(M)F-96 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on December 23, 2013.

**CERTIFICATE USA/0388/B(M)F-96, REVISION 5**

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 February 25, 2009 petition by Secured Transport Services, Sugar Hill, GA, and in consideration of other information on file in this Office.

Certified By:



**Mar 23 2009**

(DATE)

 Robert A. Richard  
Deputy Associate Administrator for Hazardous Materials Safety

Revision 5 - Issued to revalidate Japanese Certificate of Approval No. J/108/B(M)F-96, Revision 1.

IDENTIFICATION MARK  
J/108/B(M)F-96(Rev.1)

**COMPETENT AUTHORITY  
OF  
JAPAN**

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

**ISSUED BY MINISTRY OF EDUCATION, CULTURE, SPORTS,  
SCIENCE AND TECHNOLOGY  
3-2-2, KASUMIGASEKI, CHIYODA-KU, TOKYO, JAPAN**

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

This is to certify, in response to the application (including Safety Analysis Report No. J/108/B(M)F - 96(Rev.1)) by the Nippon Nuclear Fuel Development Co. Ltd. on 4 November, 2008, that the Design of Package described herein satisfies the design requirement of Type B(M)F Package specified in "Regulations for the Safe Transport of Radioactive Material (International Atomic Energy Agency, Safety Standards No. TS-R-1 2005 Edition)" and the Japanese rules based on the Law for the Regulations of Nuclear Source Material, Nuclear fuel Material and Reactors.

**COMPETENT AUTHORITY**

**IDENTIFICATION MARK: J/108/B(M)F- 96(Rev.1)**

January 22. 2009

Date

Shinichi Yoshida

for Shinichiro Izumi

Director General,  
Science and Technology Policy Bureau,  
Ministry of Education, Culture,  
Sports, Science and Technology.  
Competent Authority of Japan for  
Package Designs of Nuclear Materials

1. The Competent Authority Identification Mark: J/108/B(M)F-96(Rev.1)

2. Name of Package: NR-10F

3. Type of Package: Type B(M) Package containing Fissile Materials

4. Specification of Package

(1) Materials of Packaging

- (i) Main body : Stainless steel (SUS F304)
- (ii) Lid : Stainless steel (SUS F304)
- (iii) Trunnion : Stainless steel (SUS 304)
- (iv) Lid bolt : Alloy steel (SNCM 630)
- (v) Inner vessel : Stainless steel (SUS F304)
- (vi) Impact limiter : Stainless steel (SUS 304)

(2) Total Weight of Packaging : 11.5 tons or less

(3) Outer Dimensions of Packaging

- (i) Outer diameter : Approx. 1.5 m(including Shock absorber)
- (ii) Height : Approx. 2.0 m(including Shock absorber)

(4) Total Weight of Package : 11.5 tons or less

(5) Illustration of Package : See the attached Figure (Bird's-eye view)

5. Specification of Radioactive Contents : See the attached Table

6. Description of Containment System

Containment system consists of main body, lid, drain valve, valve mounting flange, valve cover, vent plug, contamination preventive plug for leak test hole, O ring and volt.

7. For Package containing Fissile Materials

(1) Restriction on Package

- (i) Restriction Number "N": No restriction
- (ii) Array of Package: No restriction
- (iii) Criticality safety Index (CSI): 0

(2) Description of Containment System

Containment system consists of a mass of uranium dioxide and packaging.

(3) Assumptions of Leakage of Water into Package

It is assumed in criticality analysis that water will leak into void spaces of inner packaging.

(4) Special Features in Criticality Assessment

There is no special device.

8. For Type B(M) Package, a statement regarding prescriptions of Type B(U) Package that do not apply to this Package

Ambient temperature -20 to -40 is not considered.

9. Assumed Ambient Conditions

(i) Ambient Temperature Range: 38°C

(ii) Isolation 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) Operation check and inspection

(iii) Leak tightness inspection

(iv) Lifting inspection

(v) Thermal inspection

(3) Actions prior to Shipment

The following inspections shall be performed prior to shipment.

(i) Visual Inspection

(ii) Lifting inspection

(iii) Weight inspection

(iv) Surface contamination density inspection

(v) Dose rate inspection

(vi) Contents inspection

(vii) Temperature measurement inspection

(viii) Leak tightness inspection

(ix) Pressure measurement inspection

(x) Subcriticality inspection

(4) Precautions for Loading of Package for Shipment

Package should be securely loaded to the conveyance at the designed 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**

(i) Issue Date : Dec.24, 2008

(ii) Expiry Date : Dec.23, 2013

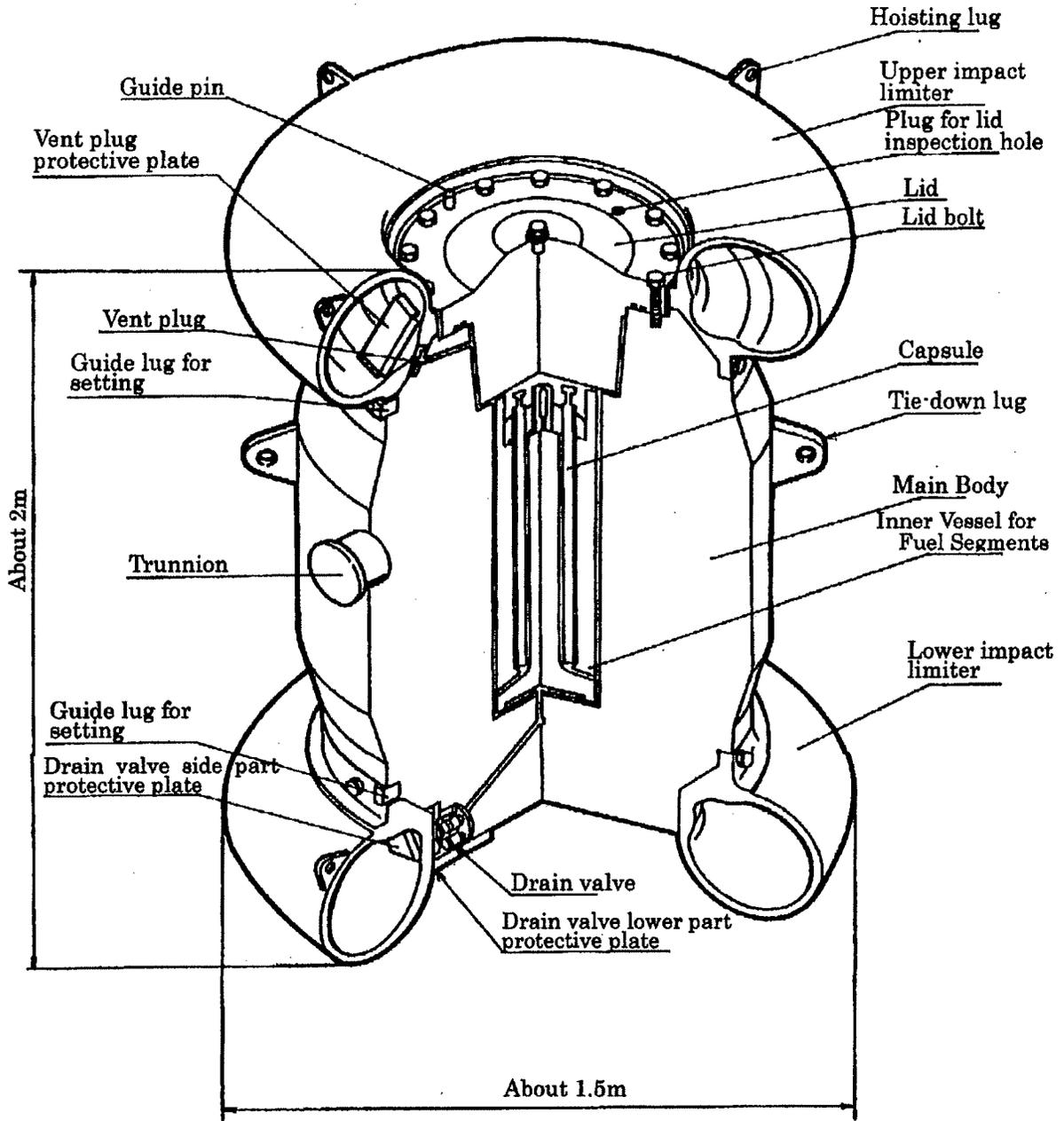
**12. Note**

**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.**

Attached Table Specifications of contents

Categories of contents	Content I		Content II		Content III		Content IV		Content V	
	Irradiated by power Reactor and test reactor <sup>1)</sup>		Fuel segment capsule		Irradiated by test reactor only <sup>2)</sup>		Irradiated by power Reactor <sup>3)</sup>		MOX fuel segment capsule	
Item	Uranium dioxide (irradiated)		UO <sub>2</sub> and MOX fuel segment capsule							
Kind	Uranium dioxide (irradiated)		Uranium dioxide and Plutonium dioxide (irradiated)							
Weight	Total : $\leq 13.63$ kg U : $\leq 2.40$ kg		Total : $\leq 16.48$ kg U : $\leq 3.20$ kg		Total : $\leq 13.88$ kg U : $\leq 0.80$ kg		Total : $\leq 16.48$ kg U : $\leq 3.20$ kg		Total : $\leq 12.00$ kg U : $\leq 2.69$ kg Pu : $\leq 0.40$ kg	
Radioactivity	$\leq 556$ TBq		$\leq 1.29$ PBq		$\leq 331$ TBq		$\leq 137$ TBq		$\leq 683$ TBq	
Properties	solid		solid		solid		solid		solid	
Enrichment	$\leq 4.6$ % (initial)		$\leq 10.0$ % (initial)		$\leq 13.5$ % (initial)		$\leq 4.9$ % (initial)		$\leq 10.0$ %	
Fissile Plutonium Enrichment	—		—		—		—		—	
Burn-up	$\leq 67$ GWD/MTU <sup>5)</sup>		$\leq 63$ GWD/MTU		$\leq 103.5$ GWD/MTU		$\leq 70$ GWD/MTU		$\leq 110$ GWD/MT	
Decay heat	$\leq 1$ kW		$\leq 1$ kW		$\leq 1$ kW		$\leq 0.03$ kW		$\leq 0.18$ kW	
Cooling time	After irradiation by a power reactor $\geq 180$ days <sup>6)</sup>		$\geq 90$ days		$\geq 90$ days		$\geq 2,300$ days		$\geq 180$ days	
Loading quantity	$\leq 8$ pieces		$\leq 8$ pieces							
Outer dimensions	$\phi 21.7$ mm $\times$ 800 mm		$\phi 17.9$ mm $\times$ 692 mm							
Structure and material	Capsule where the segment containing uranium dioxide pellets are loaded into an unirradiated stainless steel(SUS 304)tube		Capsule where the segment containing uranium dioxide pellets are loaded into an unirradiated stainless steel(SUS 304)tube		Capsule where the segment containing uranium dioxide pellets are loaded into an unirradiated stainless steel(SUS 304)tube		Capsule where the segment containing uranium dioxide pellets are loaded into an unirradiated stainless steel(SUS 304)tube		Capsule where the segment containing UO <sub>2</sub> and MOX fuel pellets are loaded into an unirradiated stainless steel(SUS 304)tube	

- 1) The fuel segment additionally irradiated by a test reactor after independent irradiation by a power reactor.
- 2) The fuel segment irradiated by a test reactor only.
- 3) The fuel segment of regular size diameter ( $\phi 12.3$  mm  $\sim \phi 14.3$  mm).
- 4) The fuel segment of smaller size diameter ( $\phi 6.5$  mm).
- 5) Total of burn up of irradiation by a power reactor and a test reactor.
- 6) Minimum cooling time after irradiation by a power reactor.
- 7) Minimum cooling time after irradiation by a test reactor additionally.
- 8) The fuel segment of regular size diameter ( $\phi 11.0$  mm  $\sim \phi 12.3$  mm)



Attached Figure Bird's-eye view



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

**CERTIFICATE NUMBER:** USA/0388/B(M)F-96, Revision 5

**ORIGINAL REGISTRANT(S):**

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