



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

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

**COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE FISSILE
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0490/AF-96, REVISION 10**

**REVALIDATION OF JAPANESE COMPETENT AUTHORITY
CERTIFICATE J/37/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 Agency¹ and the United States of America².

1. Package Identification - NT-IV.
2. Package Description and Authorized Radioactive Contents - as described in Japan Certificate of Competent Authority J/37/AF-96, issued December 1, 2009 (attached). The contents are limited to two unirradiated uranium dioxide fuel assemblies arranged in a 9x9 square array as described in paragraph 5(a) of this 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.

¹ "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.

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

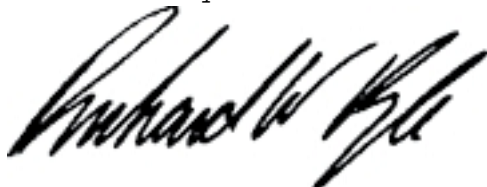
CERTIFICATE USA/0490/AF-96, REVISION 10

- 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. 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. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations¹ 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. The contents are limited to two unirradiated uranium dioxide fuel assemblies, total weight not to exceed 560 kg, arranged in a 9x9 square array of rod locations with a maximum fuel cross section area of 5.0 inches square, a pellet diameter up to 1.016 cm (0.40 inch), a maximum nominal pitch of 1.45 cm (0.57 inch), a maximum fuel length of 380 cm (150 inches) and a maximum enrichment of 5.0 w/o U-235. Uranium daughter isotopes are not included in the activity limit. Each assembly must have a water channel in a central 3x3 rod position (central means within one row and column of the center 3x3 positions). There may be gadolinia-bearing rods in the assembly, but they are not required. Plastic shims between fuel rods are allowed up to 26 gm plastic/cm length of shimmed area of the fuel assembly. Any plastic sheathing used around the fuel bundle must be free draining on both ends of the fuel bundle
 - b. The transport index of each package shall be determined by direct measurement.
 - c. This package is not authorized for transport by air.
6. Marking and Labeling - The package shall bear the marking USA/0490/AF-96 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on April 07, 2014.

CERTIFICATE USA/0490/AF-96, REVISION 10

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 January 12, 2010 petition by Areva - TN Inc, Columbia, MD, and in consideration of other information on file in this Office.

Certified By:



May 21 2010

(DATE)

Dr. Magdy El-Sibaie

Associate Administrator for Hazardous Materials Safety

Revision 10 - Issued to endorse, for contents listed in paragraph 5(a) only, Japanese Certificate of Approval No. J/37/AF-96 dated December 1, 2009.

IDENTIFICATION MARK
J/37/AF-96

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 MATERIALS**

This is to certify, in response to the application by Nuclear Fuel Industries, Ltd., that the package design described herein complies with the design requirements for a package containing fissile uranium dioxide fuel assemblies, specified in the 2005 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 Act on the Regulation of Nuclear Source Materials, Nuclear Fuel Materials 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/37/AF-96

December 1, 2009
Date

Izuru Hanaki
Izuru Hanaki
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/37/AF-96

2. Name of Package : NT-IV

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 : 1,100kg or less

 - (3) Outer Dimensions of Packaging
 - (i)Length : Approximately 5,300 mm
 - (ii)Width : Approximately 830 mm
 - (iii)Height : Approximately 820 mm

 - (4) Total Weight of Package : 1,660kg or less

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

5. Specification 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 consist of cladding tube of fuel rod.

7. For package containing Fissile Materials,

(1) Restrictions on Package

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

(2) Special Features in Criticality Assessment

The subcriticality calculation is evaluated upon the assumption that the container is in immersion condition by water under the normal conditions and accident conditions in transport except inside of the fuel rods.

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 NT-IV package.

9. Assumed Ambient Conditions

- (i) Ambient Temperature Range : $-15^{\circ}\text{C} \sim 38^{\circ}\text{C}$
- (ii) Insulation Data : Table. XI of IAEA Regulation

10. Handling, Inspection and Maintenance

Execute a handling, the periodic inspection and maintenance of the packaging used for the transportation of this package by the method indicated in safety analysis report of this package.

11. Issue Date and Expiry Date

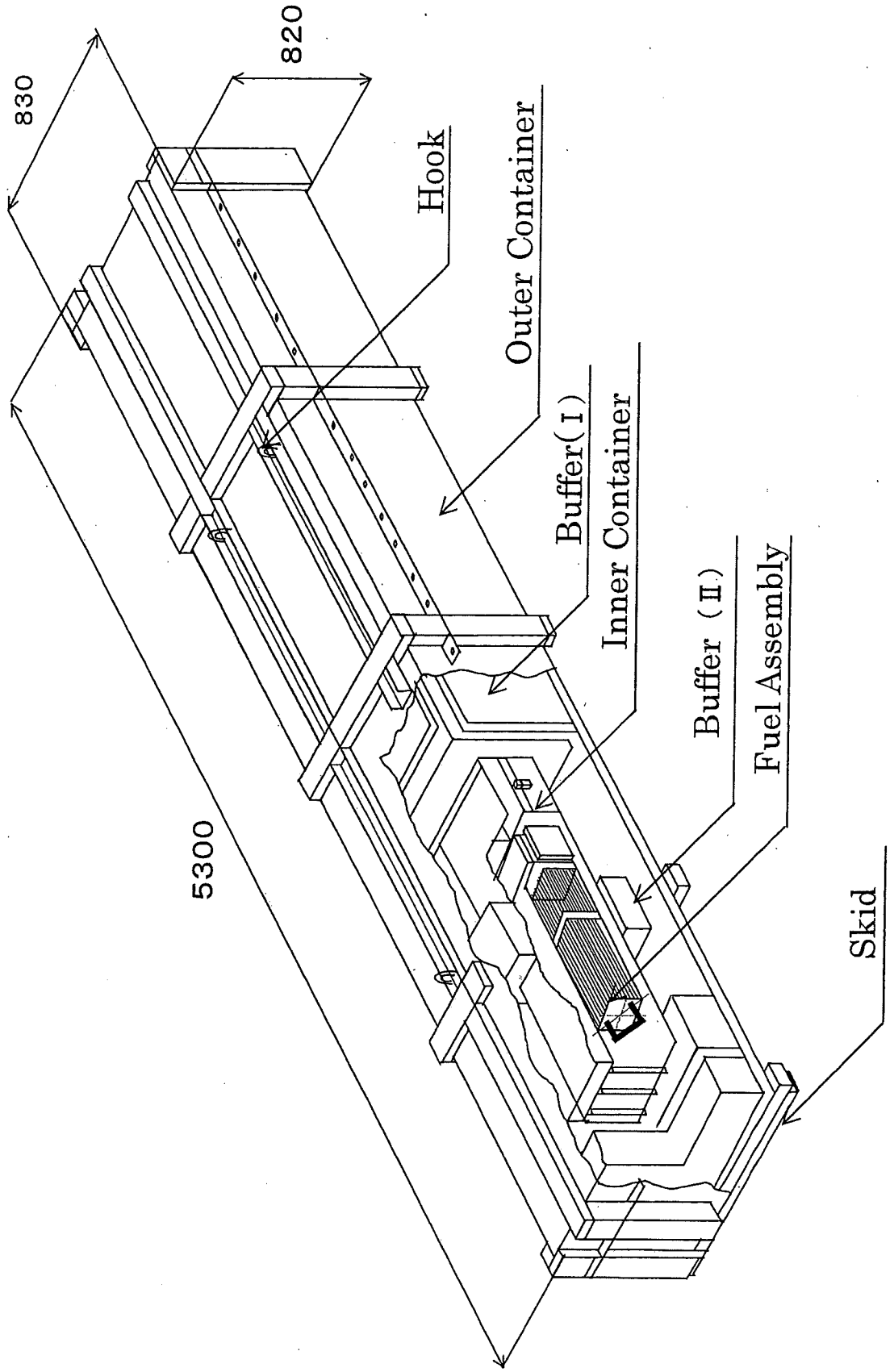
- (i) Issue Date : April 8, 2009
- (ii) Expiry Date : April 7, 2014

Table 1. Material of Packaging

Construction	Material
Outer Container	: Carbon Steel(SS400)
Inner Container	: Carbon Steel(SS400)
Buffer agent	: Honeycomb Paper, Polyethylene Foaming Object
Packing	: Neoprene Rubber
Skid	: Wood
Bolt and Nut	: Stainless Steel (SUS304) and Chromium Molybdenum Steel(SCM435)

Table 2. Description of Nuclear Fuel Materials and so on

Fuel Type	Fuel Assembly				
	8×8	New Type 8×8	High burnup 8×8	9 × 9 (Type B)	
Description	Fuel Assembly for BWR				
Physical State	Solid (UO ₂ Pellet or Gadolinia - UO ₂ Pellet)				
Weight	Fuels	2 or less			
	Weight of U	390kg or less			
Total Activity	63GBq or less				
Initial Enrichment	5wt% or less				
Burn up Rate	0				
Total Heat Generation Rate	0				
Cooling Time	0				
(Per Fuel)					
Weight	Weight of Fuel	About 280 kg	About 270 kg	About 265 kg	About 260kg
	Weight of UO ₂	About 195 kg	About 180 kg	About 180 kg	About 175kg
Specification of Enriched Uranium	$^{232}\text{U} \leq 2 \times 10^{-9} \text{g/g}^{235}\text{U}$ $^{234}\text{U} \leq 1 \times 10^{-2} \text{g/g}^{235}\text{U}$ $^{236}\text{U} \leq 5 \times 10^{-3} \text{g/g}^{235}\text{U}$ $^{99}\text{Tc} \leq 2 \times 10^{-7} \text{g/g}^{235}\text{U}$				





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Safety Administration**

CERTIFICATE NUMBER: USA/0490/AF-96, Revision 10

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