



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/0839/AF-96, REVISION 0**

**REVALIDATION OF JAPANESE COMPETENT AUTHORITY
CERTIFICATE J/2037/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 Agency¹ and the United States of America² The package design is approved for use within the United States for import and export shipments made in accordance with applicable international and domestic transport regulations.

1. Package Identification - MX-6P.
2. Package Description and Authorized Radioactive Contents - as described in Japanese Certificate of Competent Authority J/2037/AF-96, Revision 0 (attached).
3. Criticality - The minimum criticality safety index is 0. There is no restriction on the number of packages per conveyance.
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.

¹ "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

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

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- 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 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. Marking and Labeling - The package shall bear the marking USA/0839/AF-96 in addition to other required markings and labeling.
6. Expiration Date - This certificate expires on March 10, 2026. Previous editions which have not reached their expiration date may continue to be used.

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 October 11, 2021 petition by TN Americas LLC, Columbia, MD, and in consideration of other information on file in this Office.

Certified By:



William Schoonover
Associate Administrator for Hazardous
Materials Safety

January 03, 2023
(DATE)

Revision 0 - Issued to revalidate Japanese Certificate of Approval
No. J/2037/AF-96, Rev. 0 dated May 6, 2021.

IDENTIFICATION MARK

J/2037/AF-96

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 Mitsubishi Nuclear Fuel Co., LTD., that the package design described herein complies with the design requirements for a package containing fuel assemblies for pressurized water reactor (hereafter called "PWR"), specified in the 2012 Edition of the Regulations for the Safe Transport of Radioactive Material (International Atomic Energy Agency, Safety Standards Series No.SSR-6) and the Japanese rules based on the Act on 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/2037/AF-96

May. 6. 2021
Date

K. Hasegawa
Hasegawa Kiyomitsu

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/2037/AF-96
2. Name of Package : MX-6P
3. Type of Package : Type A Package containing Fissile Material
4. Specification of Package
 - (1) Materials of Packaging
 - (i) Body : Stainless steel, Copper, Alloy steel, Resin
 - (ii) Lid parts : Titanium alloy, Alloy steel, Resin
 - (iii) Basket : Aluminum alloy, Borated stainless steel, Stainless steel
 - (iv) Shock absorbing cover : Wood, Stainless steel, Alloy steel
 - (2) Total Weight of Packaging : 14.7 tons or less
 - (3) Outer Dimensions of Packaging
 - (i) Outer diameter : Approximately 2.1 m
 - (ii) Length : Approximately 6.0 m
(including top and rear shock absorbing covers)
 - (4) Total Weight of Package : 19.5 tons or less
 - (5) Illustration of Package : See the attached Figure
5. Specification of Radioactive Contents : See the attached Table-1
6. Description of Containment System

The containment system of the package consists of the body, the lid, the quick connection cover and the gaskets for the lid and the quick connection cover.
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) Description of Confinement System

The confinement system of the package consists of the fuel rods, the fuel assemblies, the basket and the inner shell of the body.
 - (3) Assumptions of Leakage of Water into Package

In the criticality safety analysis for the package, water is assumed to leak into the void spaces of the packages which are arrayed infinitely.
 - (4) Special Features in Criticality Assessment

Not applicable

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 : $-40^{\circ}\text{C}\sim 38^{\circ}\text{C}$
- (ii) Insolation Data : Table 12 of IAEA Regulation

10. Handling, Inspection and Maintenance

Packages must be handled, inspected and maintained in the manner described in the safety analysis report for the package.

11. Issue Date and Expiry Date

- (1) Issue Date : March 11, 2021
- (2) Expiry Date : March 10, 2026

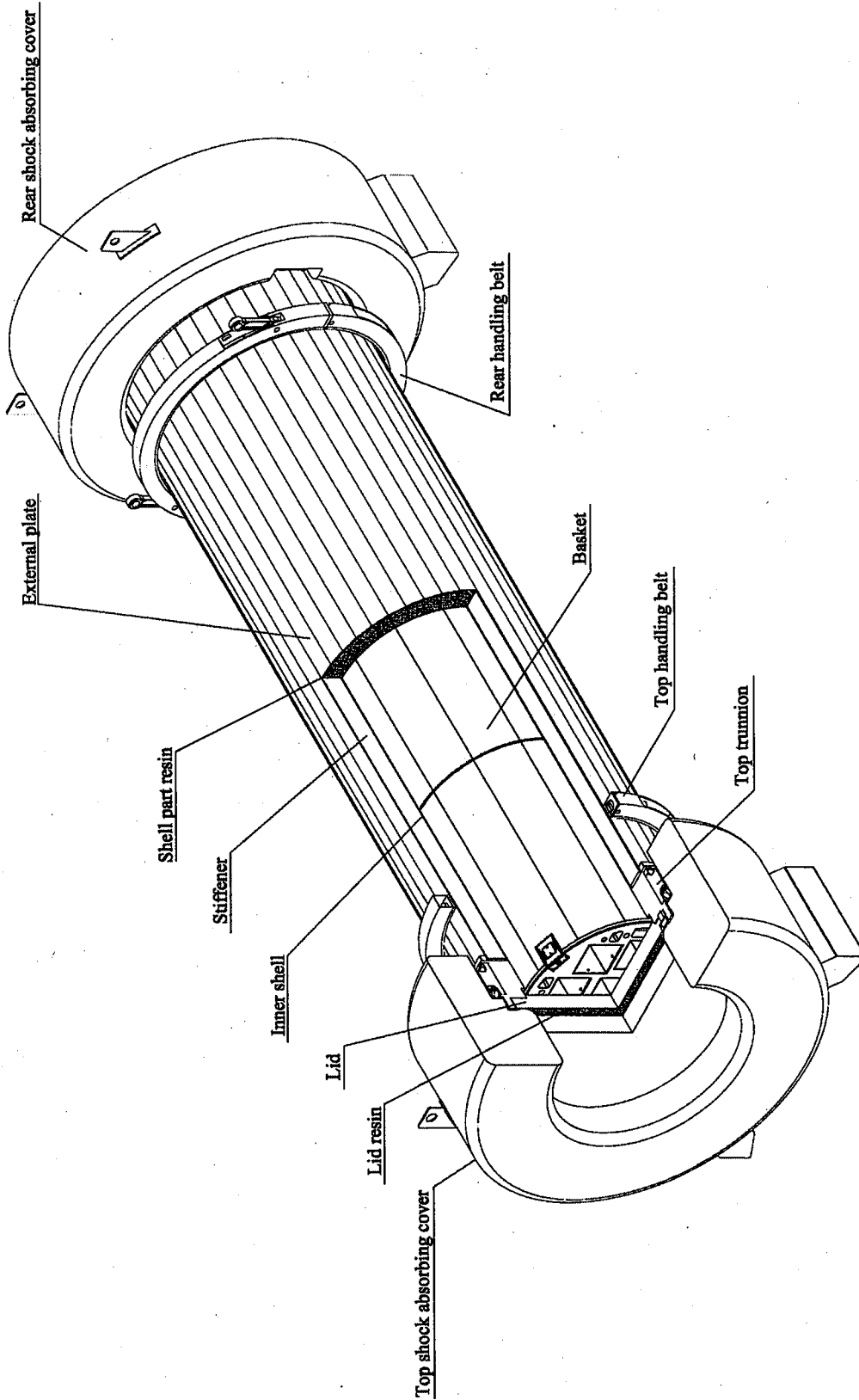


Figure MX-6P Packaging

Table-1 Specifications of Radioactive Content

Items		Type of Fuel Assembly	14 x 14 (10 Feet)	14 x 14 (12 Feet)	
Description		Fresh Fuel Assembly for PWR ¹⁾			
Physical State		Solid (UO ₂ Pellet or Gadolinia - UO ₂ Pellet)			
Per Packaging	Weight of Content (kg)		4800 or less		
	Number of Assemblies		8 or less		
	Weight of Fuel Assemblies (kg)		3920 or less	4720 or less	
	Activity	Total Activity (GBq)		5.85 x 10 ² or less (Total Major Nuclides: 4.89 x 10 ² or less)	7.05 x 10 ² or less (Total Major Nuclides: 5.90 x 10 ² or less)
		Major Nuclides ²⁾ (GBq)	²³² U	2.70 x 10 ⁻¹	3.25 x 10 ⁻¹
			²³⁴ U	4.33 x 10 ²	5.22 x 10 ²
			²³⁵ U	1.36 x 10 ¹	1.64 x 10 ¹
			²³⁶ U	2.04 x 10 ⁰	2.46 x 10 ⁰
			²³⁸ U	4.02 x 10 ¹	4.85 x 10 ¹
			⁹⁹ Tc	2.14 x 10 ⁻²	2.58 x 10 ⁻²
Heat Generation Rate		N/A (Fresh Fuel Assembly)			
Enrichment (wt%)		5.0 or less			
Per Fuel Assembly	Weight	Fuel Assembly (kg)	490 or less	590 or less	
		Uranium Oxide (kg)	390 or less	470 or less	
		Uranium (kg)	340 or less	410 or less	
	Burn up Rate		N/A (Fresh Fuel Assembly)		
	Cooling Time		N/A (Fresh Fuel Assembly)		
Impurity Specification of Enriched Uranium		²³² U	≤ 0.0001 µg/gU (Not applicable in case of ²³⁶ U < 125µg/gU)		
		²³⁴ U	≤ 1.10 x 10 ⁴ µg/g ²³⁵ U		
		²³⁶ U	≤ 250 µg/gU		
		⁹⁹ Tc	≤ 0.01 µg/gU (Not applicable in case of ²³⁶ U < 125µg/gU)		

Note 1) Fresh fuel assemblies stored in spent fuel pool are included.

Note 2) For enrichment of 5.0 wt%



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CERTIFICATE NUMBER: USA/0839/AF-96

ORIGINAL REGISTRANT(S) :

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