



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/0585/AF-96, REVISION 5**

**REVALIDATION OF JAPANESE COMPETENT AUTHORITY
CERTIFICATE J/159/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 - MST-30.
2. Package Description and Authorized Radioactive Contents - as described in Japanese Certificate of Competent Authority J/159/AF-96, Revision 3 (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. Special Conditions -

- a. Cylinders used under this certificate must have been designed and manufactured in compliance with the ANSI N14.1 standard in effect at the time of manufacture.
- b. Cylinders used under this certificate must be operated, maintained and handled in accordance with the ANSI N14.1 standard in effect at the time of shipment.
- c. Transport by air is not authorized.

6. Marking and Labeling - The package shall bear the marking USA/0585/AF-96 in addition to other required markings and labeling.

7. Expiration Date - This certificate expires on March 4, 2025. Previous editions which have not reached their expiration date may continue to be used.

CERTIFICATE USA/0585/AF-96, REVISION 5


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 May 15, 2020 petition by Edlow International Company, Washington, DC, and in consideration of other information on file in this Office.

Certified By:



February 10, 2021

(DATE)

 William Schoonover
Associate Administrator for Hazardous
Materials Safety

Revision 5 - Issued to endorse Japanese Certificate of Approval No.
J/159/AF-96, Revision 3.



IDENTIFICATION MARK

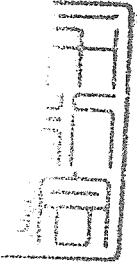
J/159/AF-96 (Rev. 3)

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 MITSUBISHI NUCLEAR FUEL CO., LTD., that the package design described herein complies with the design requirements for a package containing fissile uranium hexafluoride, 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/159/AF-96 (Rev. 3)

Mar. 24, 2020.

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



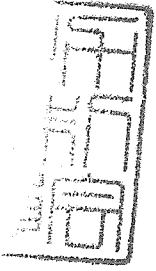
1. The Competent Authority Identification Mark : J/159/AF-96 (Rev.3)
2. Name of Package : MST-30
3. Type of Package : Type A, Fissile Material and Uranium Hexafluoride Package
4. Specification of Package
 - (1) Materials of Packaging : See the attached Table-1
 - (2) Total Weight of Packaging : 1,893 kg or less
 - (3) Outer Dimensions of Packaging :
 - (i) Length : Approximately 2.4 m
 - (ii) Width : Approximately 1.3 m
 - (iii) Height : Approximately 1.4 m
 - (4) Total Weight of Package : 4,170 kg or less
 - (5) Illustration of Package : See the attached Figure-1 (Bird's-eye view)
5. Specification of Radioactive Contents : See the attached Table-2
6. Description of Containment System

Containment system consists of 30B cylinder, valve and plug.
Teflon rubber is used for valve gaskets. The type of plug is limited to a socket head plug.
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

Confinement system consists of a mass of uranium hexafluoride and 30B cylinder.
 - (3) Assumptions of Leakage of Water into Package

No water will leak into or out of any void spaces of 30B cylinder not only during routine transport but also under normal and accident conditions even if the protective overpack is fractured and deformed.
 - (4) Special Features in Criticality Assessment

Quality control of 30B cylinder including its valve and plug should be performed so as to prevent any leakage of water thereinto.



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 MST-30 package.

9. Assumed Ambient Conditions

- (1) Ambient Temperature Range : $-20^{\circ}\text{C} \sim 38^{\circ}\text{C}$
- (2) Insolation Data : Table 12 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.

In particular, the acceptance criterion for the wall thickness of cylinder in the five year periodic inspection shall be 11.3 mm or more, which is decided based on 11 mm of the wall thickness required for subcriticality of this package and 0.3 mm of the wall thickness reduction assumed for five years.

11. Issue Date and Expiry Date

- (1) Issue Date : March 5, 2020
- (2) Expiry Date : March 4, 2025

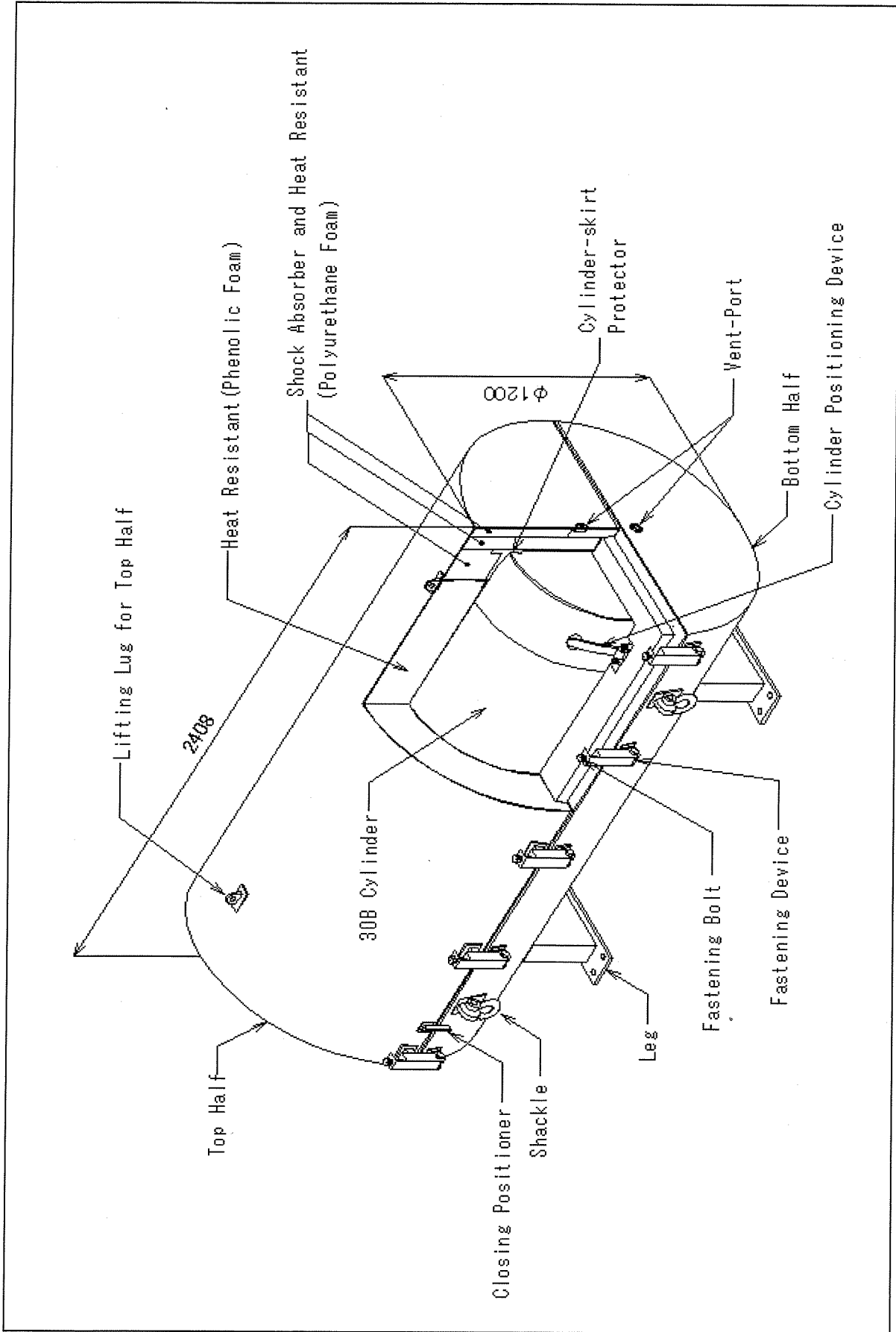


Figure-1 MST-30 Type Transport Package External Appearance

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Table-1 Materials of Packaging

Construction		Material
Protective Packaging	External Shell	Stainless Steel (SUS304)
	Internal Shell	
	Heat Insulator	Phenolic Foam
	Support	Polyurethane Foam
	Pad	Neoprene and Neoprene Sponge
Cylinder	Shell	Pressure Vessel Plates, Carbon Steel, for Moderate-and Lower-Temperature Service (ASTM A516)
	Heads	
	Skirt	Pressure Vessel Plates, Carbon Steel, for Moderate-and Lower-Temperature Service (ASTM A516) or Structural Steel (ASTM A36)
	Valve	Aluminum Bronze (UNS C63600)
	Plug	Aluminum Bronze (ASTM B150 or ASTM B171)
Ring Plate		Stainless Steel (SUS304)

Table-2 Specification of Content

Material of Nuclear Fuel		Uranium Hexafluoride (UF ₆)		
Physical State		Solid (Block and Powder)		
Total Weight of Nuclear Fuel		2,277 kg -UF ₆ or less		
Activity (Bq/package)	Total	265 GBq or less		
	Principle Radionuclides (breakdown)	Isotope	Without progeny nuclides	With progeny nuclides
		²³² U	1.22 × 10 ⁸ Bq	8.87 × 10 ⁸ Bq
		²³⁴ U	1.96 × 10 ¹¹ Bq	1.96 × 10 ¹¹ Bq
		²³⁵ U	6.16 × 10 ⁹ Bq	1.24 × 10 ¹⁰ Bq
		²³⁶ U	9.22 × 10 ⁸ Bq	9.22 × 10 ⁸ Bq
		²³⁸ U	1.82 × 10 ¹⁰ Bq	5.46 × 10 ¹⁰ Bq
		⁹⁹ Tc	9.66 × 10 ⁶ Bq	9.66 × 10 ⁶ Bq
Total	2.22 × 10 ¹¹ Bq	2.65 × 10 ¹¹ Bq		
Enrichment		5% or less		
Moderation Control, i.e. H/U Atomic Ratio		0.088 or less (The purity of UF ₆ shall be 99.5% or more.)		
Radionuclide Concentrations		²³² U	≤ 0.0001 μg/g U	
		²³⁴ U	≤ 11.0 × 10 ³ μg/g ²³⁵ U	
		²³⁶ U	≤ 5,000 μg/g ²³⁵ U	
		⁹⁹ Tc	≤ 0.01 μg/g U	
		If the ²³⁶ U measurement result is less than 125 μg/g U, then measurement of ²³² U and ⁹⁹ Tc is not required .		



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CERTIFICATE NUMBER: USA/0585/AF-96

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