



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

400 Seventh Street, S.W.
Washington, D.C. 20590

COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)F FISSILE
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0713/B(U)F-96, REVISION 0

REVALIDATION OF JAPANESE COMPETENT AUTHORITY
CERTIFICATE J/166/B(U)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 Agency¹ and the United States of America².

1. Package Identification - JMS-87Y-18.5T (Musashi Institute).
2. Package Description and Authorized Radioactive Contents - as described in Japan Certificate of Competent Authority J/166/B(U)F-96, Revision 0 (attached).
3. Criticality - The minimum criticality safety index is 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.

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.

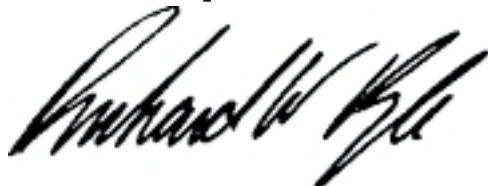
² Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

CERTIFICATE USA/0713/B(U)F-96, REVISION 0

- d. 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 and consignees in the United States exporting or importing shipments under this certificate shall satisfy the requirements of Subpart H of 10 CFR 71.
5. Special Conditions -
- a. Known or suspected failed fuel assemblies and fuel with cladding defects greater than pin holes and hairline cracks are not authorized.
- b. In accordance with Japanese Certificate of Approval, the package is not authorized for air transport.
- c. The maximum decay heat per package is 1.5 kilowatts.
- d. For shipments which exit, enter or transit the United States, all international approvals and revalidations, including Approval of Packaging and Confirmation of Packaging 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/0713/B(U)F-96 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on March 16, 2008.

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 June 22, 2005 petition by Edlow International Company, Washington, DC and in consideration of other information on file in this Office.

Certified By:



Robert A. McGuire
Associate Administrator for Hazardous Materials Safety

Feb 10 2006
(DATE)

Revision 0 - Issued to endorse Japanese Certificate of Approval No. J/166/B(U)F-96, Revision 0, dated May 30, 2005.

IDENTIFICATION MARK

J/166/B (U) F-96

COMPETENT AUTHORITY

OF

JAPAN

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

**ISSUED BY MINISTRY OF EDUCATION, CULTURE,
SPORTS, SCIENCE AND TECHNOLOGY**

2-5-1 MARUNOUCHI, 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 GOTO IKUEIKAI EDUCATION FOUNDATION on January 18, 2005, that the package design described herein satisfies the design requirements of type B(U) fissile package, specified in the 1996 Edition (As Amended 2003) 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 Law on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors.

COMPETENT AUTHORITY

IDENTIFICATION MARK: J/166/B(U) F-96

May 30, 2005
Date for

Tateo Arimoto
Tateo Arimoto

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

1. NAME OF PACKAGE : JMS-87Y-18.5T
(IDENTIFICATION MARK: J/166/B (U)
F-96)

2. SPECIFICATION OF CONTENT

(1) Description of Contents

1) Materials of Nuclear Fuel : See Tables 1 & 2

(2) Qualitative Restrictions on Contents

1) Gross Weight of Uranium : See Tables 1 & 2

2) Total Activity of Contents : See Tables 1 & 2

3) Uranium-235 Enrichment : See Tables 1 & 2

4) Burn up : See Tables 1 & 2

5) Total Heat Generation Rate : See Tables 1 & 2

6) Cooling Time : See Tables 1 & 2

3. SPECIFICATION OF PACKAGE

(1) Total Weight of Package : less than or equal to 18.5 ton

(2) Outside Dimension of Packaging

1) Outer diameter : Approx. 1.9 m

2) Height : Approx. 2.0 m

(3) Materials of Packaging

1) Cask body and lid : Stainless Steel

2) Basket (J) : Stainless Steel, Boral plate

Basket (M) : Stainless Steel

3) Shock absorber : Stainless Steel, Fir-plywood

(4) Package Illustration : See Attached Figure 1

4. RESTRICTIONS ON TRANSPORT

(1) Array : No Restriction

(2) Restriction Number : No Restriction

(3) Transport Index for Criticality Control : 0

5. SPECIAL FEATURES ASSUMED IN THE CRITICALITY ASSESSMENT

Any special features are not considered in the criticality assessment, because the subcriticality calculation is evaluated upon the assumption that internal void spaces of the packaging are filled with water.

6. DETERMINATION IN THE CRITICALITY ASSESSMENT

Any determination is not considered in the criticality assessment, because the subcriticality calculation is evaluated upon the condition of the fresh nuclear fuels.

7. RESTRICTIONS ON THE MODES OF TRANSPORT

It is not confirmed that the design of package satisfies the additional requirements for packages transported by air.

8. INSTRUCTIONS ON USE AND MAINTENANCE OF PACKAGING

The packaging shall be handled with care according to the operating manual. In order to ensure the integrity of the packaging, the following inspection shall be performed at least once a year (in case frequency of transport exceeds 10 times a year, the inspections shall be done at least once per every 10 times.).

- (1) Visual Inspection
- (2) Pressure Durability Inspection
- (3) Leakage Rate Measurement Inspection
- (4) Maintenance of O-ring, Valve, etc. Used for Containment System
- (5) Shielding Inspection
- (6) Subcriticality Inspection
- (7) Heat Transfer Inspection
- (8) Lifting Inspection

9. ACTIONS PRIOR TO SHIPMENT

Each package shall be inspected for the following items prior to each shipment.

- (1) Visual Inspection
- (2) Lifting Inspection
- (3) Weight Measurement Inspection
- (4) Surface Contamination Measurement Inspection
- (5) Radiation Dose Rate Measurement Inspection
- (6) Subcriticality Inspection
- (7) Contents Inspection
- (8) Surface Temperature Measurement Inspection
- (9) Leakage Rate Measurement Inspection
- (10) Package Internal Pressure Measurement Inspection

10. PRECAUTIONS FOR LOADING OF PACKAGE FOR TRANSPORT

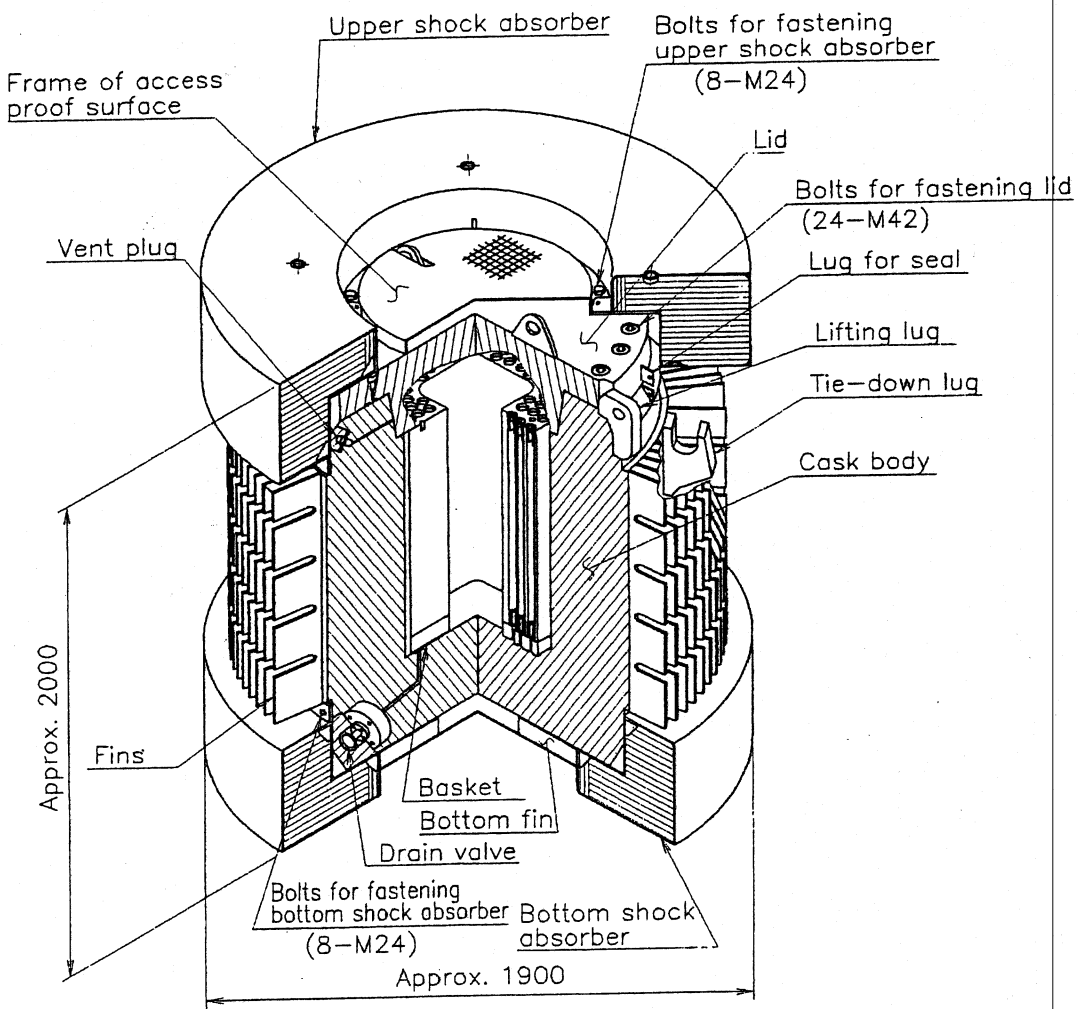
Loading of the package shall be performed such that the package will not move, roll down or fall down during transport.

11. EXPIRY DATE

March 16, 2008

12. NOTE

This certificate does not relieve the consignor from compliance with any requirements of the government of any country through or into which the package will be transported.



(Unit: mm)

Figure 1 ILLUSTRATION of JMS-87Y-18.5T PACKAGE

Table 1 Specification of Package

Type	Reactor	J M T R						J R R - 3		
		High Enriched Uranium Fuels (HEU)		Medium Enriched Uranium Fuels (MEU)		Low Enriched Uranium Fuels (LEU)				
Spent Fuel Elements		Standard Fuel Elements	Fuel Followers	Standard Fuel Elements	Fuel Followers	Standard Fuel Elements	Fuel Followers	Standard Fuel Elements	Follower -type Fuel Elements	
²³⁵ U Enrichment (wt%)		less than or equal to 93.3	less than or equal to 214	less than or equal to 46.0	less than or equal to 475	less than or equal to 2338	less than or equal to 1569	less than or equal to 19.95		
Uranium Contents (gU /Element)		less than or equal to 307	less than or equal to 214	less than or equal to 719	less than or equal to 475	less than or equal to 2338	less than or equal to 1569	less than or equal to 1612	less than or equal to 1049	
Fuel Core		Uranium-Aluminum Alloy		Uranium-Aluminum Dispersion Alloy		Uranium-Silicon -Aluminum Dispersion Alloy		Uranium-Aluminum Dispersion Alloy		
Cladding		Aluminum Alloy								
Side Plate		Aluminum Alloy								
Burn up (%)		less than or equal to 40			Less than or equal to 50					
Cooling Time (Day)		greater than or equal to 360			greater than or equal to 420		greater than or equal to 360			
Decay Heat (W /30 Elements)		less than or equal to 1.83	less than or equal to 1.29	less than or equal to 1.98	less than or equal to 1.32	less than or equal to 2.80	less than or equal to 1.88	less than or equal to 1.94	less than or equal to 1.23	
Activity (TBq /30 Elements)		less than or equal to 1.65×10^4	less than or equal to 1.16×10^4	less than or equal to 1.78×10^4	less than or equal to 1.18×10^4	less than or equal to 2.43×10^4	less than or equal to 1.63×10^4	less than or equal to 1.76×10^4	less than or equal to 1.11×10^4	
Total Fuels (Element /Unit)		less than or equal to 30								

Table 2 Specification of Package

Reactor		MUR					
Type	Spent Fuel Elements	Al-clad fuel elements			SS-clad fuel elements		
		Al-clad standard fuel elements	Al-clad 3/4 length fuel elements	Al-clad 1/2 length fuel elements	Al-clad 1/4 length fuel elements	SS-clad standard fuel elements	SS-clad instrumented fuel elements
²³⁵ U Enrichment (wt%)		less than or equal to 19.81	less than or equal to 21.12	less than or equal to 19.85	less than or equal to 19.86	less than or equal to 19.99	
Uranium Contents (gU /Element)		less than or equal to 196	less than or equal to 141	less than or equal to 89	less than or equal to 45	less than or equal to 196	
Material	Fuel Core	Uranium-Zirconium-Hydride Alloy					
	Cladding	Aluminum Alloy			Stainless steel		
Burn up (%)		less than or equal to 4	less than or equal to 3	less than or equal to 5	less than or equal to 9	less than or equal to 2	less than or equal to 1
Cooling Time (Day)		greater than or equal to 6800					
Decay Heat (W /80 Elements)		less than or equal to 0.0025	less than or equal to 0.0014	less than or equal to 0.0014	less than or equal to 0.0014	less than or equal to 0.0016	less than or equal to 0.0008
Activity (TBq /80 Elements)		less than or equal to 2.95×10^1	less than or equal to 1.64×10^1	less than or equal to 1.64×10^1	less than or equal to 1.59×10^1	less than or equal to 1.93×10^1	less than or equal to 9.70
Total Fuels (Element /Unit)		less than or equal to 80					