



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/0558/B(U)F-96, REVISION 3

REVALIDATION OF JAPANESE COMPETENT AUTHORITY  
CERTIFICATE J/150/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 Agency<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - JMS-87Y-18.5T (Kyoto University).
2. Package Description and Authorized Radioactive Contents - as described in Japan Certificate of Competent Authority J/150/B(U)F-96, dated December 6, 2006 (attached).
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.

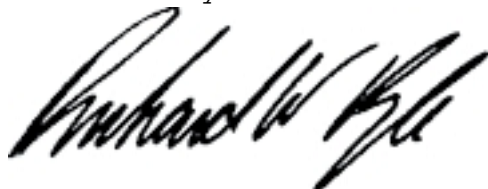
<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/0558/B(U)F-96, REVISION 3**

- d. 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. The package is not authorized for air transport.
  - b. The maximum decay heat per package is 1.5 kilowatts.
  - c. Known or suspected failed fuel assemblies and fuel with cladding defects greater than pin holes and hairline cracks are not authorized.
  - d. Neutron poison plates in the fuel basket must be constructed in accordance with Japan Atomic Energy Research Institute document entitled "JMS-87Y-18T Package Information" dated June 11, 2003.
  - e. The transport index for the package shall be determined by direct measurement.
6. Marking and Labeling - The package shall bear the marking USA/0558/B(U)F-96 in addition to other required markings and labeling.
7. Expiration Date - This certificate expires on October 31, 2009.

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 December 19, 2006 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

**Dec 29 2006**  
(DATE)

Revision 3 - Issued to endorse Japanese Certificate of Approval No. J/150/B(U)F-96 dated December 6, 2006.

IDENTIFICATION MARK

J/150/B (U) F-96

COMPETENT AUTHORITY

OF

JAPAN

CERTIFICATION OF  
APPROVAL OF PACKAGE DESIGN FOR  
THE TRANSPORT OF RADIOACTIVE  
MATERIALS

ISSUED BY

THE MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND  
TECHNOLOGY

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Reference J/150/B (U) F-96  
Page 1 of 6 Pages

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

This is to certify, in response to the application by the Kyoto University on October 19, 2006, that the Design of Package described herein satisfies the design requirements of Type B (U) F specified in the Regulations for Safe Transport of Radioactive Materials (International Atomic Energy Agency Safety Standards, Safety Series No. TS-R-1, 1996 Edition (As Amended 2003)) and the Japanese rules based on the Law on the Regulation of Nuclear Source Material, Nuclear Material and Reactors.

COMPETENT AUTHORITY  
IDENTIFICATION MARK : J/150/B (U) F-96

December 6, 2006  
Date for

Kaoru Kohara  
Kimihiko Oda

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

1. NAME OF PACKAGE : JMS-87Y-18.5T
  
2. SPECIFICATION OF CONTENT
  - (1) DESCRIPTION OF CONTENTS
    - (i) Materials of Nuclear Fuel : See Table 1
    - (ii) Initial Enrichment : See Table 1
  - (2) RESTRICTION ON CONTENTS
    - (i) Total Weight of Nuclear Fuel : See Table 1
    - (ii) Total Activity : See Table 1
    - (iii) Total Heat Generation Rate : See Table 1
    - (iv) Burn Up Rate : See Table 1
    - (v) Cooling Time : See Table 1
  
- 3 SPECIFICATION OF PACKAGE
  - (1) TOTAL WEIGHT OF PACKAGE : less than or equal to 18.440 ton
  - (2) OUTER DIMENSION OF PACKAGING
    - (i) Outer Diameter : Approx. 1.9 m
    - (ii) Height : Approx. 2.0 m
  - (3) MATERIALS OF PACKAGING
    - (i) Cask Body and Lid : Stainless steel
    - (ii) Basket : Stainless steel, Boral plate
    - (iii) Shock Absorber : Stainless steel, Fir-plywood
  - (4) PACKAGE ILLUSTRATION : See the attached Figure 1
  
4. ASSUMED AMBIENT CONDITIONS
  - (i) Ambient Temperature : 38 °C
  - (ii) Insolation Data : Table XI of the IAEA Regulations (Safety Series TS-R-1 1996 Edition (As Amended 2003) )
  
5. RESTRICTION OF TRANSPORT
  - (i) Allowable Number of Package : No restriction
  - (ii) Arrangement of Package : No restriction

6. INSTRUCTIONS ON USE AND MAINTENANCE OF PACKAGING

- (i) The package shall be handled with care according to the operating manual.
- (ii) Every shipment of package, the inspection prior to shipment shall be undertaken so as to verify the integrity of the packaging.
- (iii) The packaging shall be kept in good condition and requires the periodical inspection.
- (iv) The package must be fixed to the vehicle by bolts.

7. ACTIONS PRIOR TO SHIPMENT

Each package shall be checked for the following items before shipment.

- (i) Visual inspection
- (ii) Lifting inspection
- (iii) Weight check
- (iv) Surface contamination measurement
- (v) Radiation dose rate measurement
- (vi) Subcriticality inspection
- (vii) Inspection of contents
- (viii) Surface temperature measurement
- (ix) Leakage test
- (x) Check of the packaging internal pressure
- (xi) Verification of the package tightness

8. THIS CERTIFICATE IS VALID FROM NOVEMBER 1, 2006 UNTIL OCTOBER 31, 2009.

9. 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.

Table 1 Specification of Content

Reactor Name		JMTR						JRR-3	
Type	Fuel Elements	High enriched uranium fuels (HEU)		Medium enriched uranium fuels (MEU)		Low enriched uranium fuels (LEU)			
		Standard fuel elements	Fuel followers	Standard fuel	Fuel followers	Standard fuel elements	Fuel followers	Standard-type fuel elements	Follower-type fuel elements
U235 enrichment (wt%)		less than or equal to 93.3		less than or equal to 46.0		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	
Material									
Burn-up (%)		less than or equal to 40		Aluminum alloy		Aluminum alloy		less than or equal to 50	
Cooling time (days)		greater than or equal to 360		Aluminum alloy		greater than or equal to 420		greater than or equal to 360	
Decay heat (W/element)		less than or equal to 60.9	less than or equal to 42.7	less than or equal to 66.0	less than or equal to 43.9	less than or equal to 93.3	less than or equal to 62.6	less than or equal to 64.6	less than or equal to 41.0
Activity (TBq/element)		less than or equal to $5.50 \times 10^2$	less than or equal to $3.86 \times 10^2$	less than or equal to $5.93 \times 10^2$	less than or equal to $3.93 \times 10^2$	less than or equal to $8.10 \times 10^2$	less than or equal to $5.43 \times 10^2$	less than or equal to $5.86 \times 10^2$	less than or equal to $3.70 \times 10^2$
Total number of fuel elements/cask)		less than or equal to 30							

Table 1 Specification of Content (continued)

Reactor Name		KUR			
Type	Fuel Elements	High enriched uranium fuels (HEU)		Low enriched uranium fuel (LEU)	
		Standard fuel element	Half-loaded fuel element	Special fuel element	Standard fuel element
235U enrichment (wt%)		less than or equal to 93.3		less than or equal to 19.9 <sub>5</sub>	
Uranium contents (gU/element)		less than or equal to 197.4	less than or equal to 98.7	less than or equal to 111 <sub>5</sub>	
	Fuel core	Uranium-aluminum alloy			
Material	Cladding	Aluminum alloy			
	Side plate	Aluminum alloy			
	Burn-up (%)	less than or equal to 25		less than or equal to 35	
Cooling time (days)	greater than or equal to 360				
Decay heat (W/element)	less than or equal to 19.3	less than or equal to 9.65	less than or equal to 9.65	less than or equal to 28.3	
Activity (TBq/element)	less than or equal to $1.74 \times 10^2$	less than or equal to $8.70 \times 10^1$	less than or equal to $8.70 \times 10^1$	less than or equal to $2.52 \times 10^2$	
Total number of fuel (elements/cask)	less than or equal to 30				



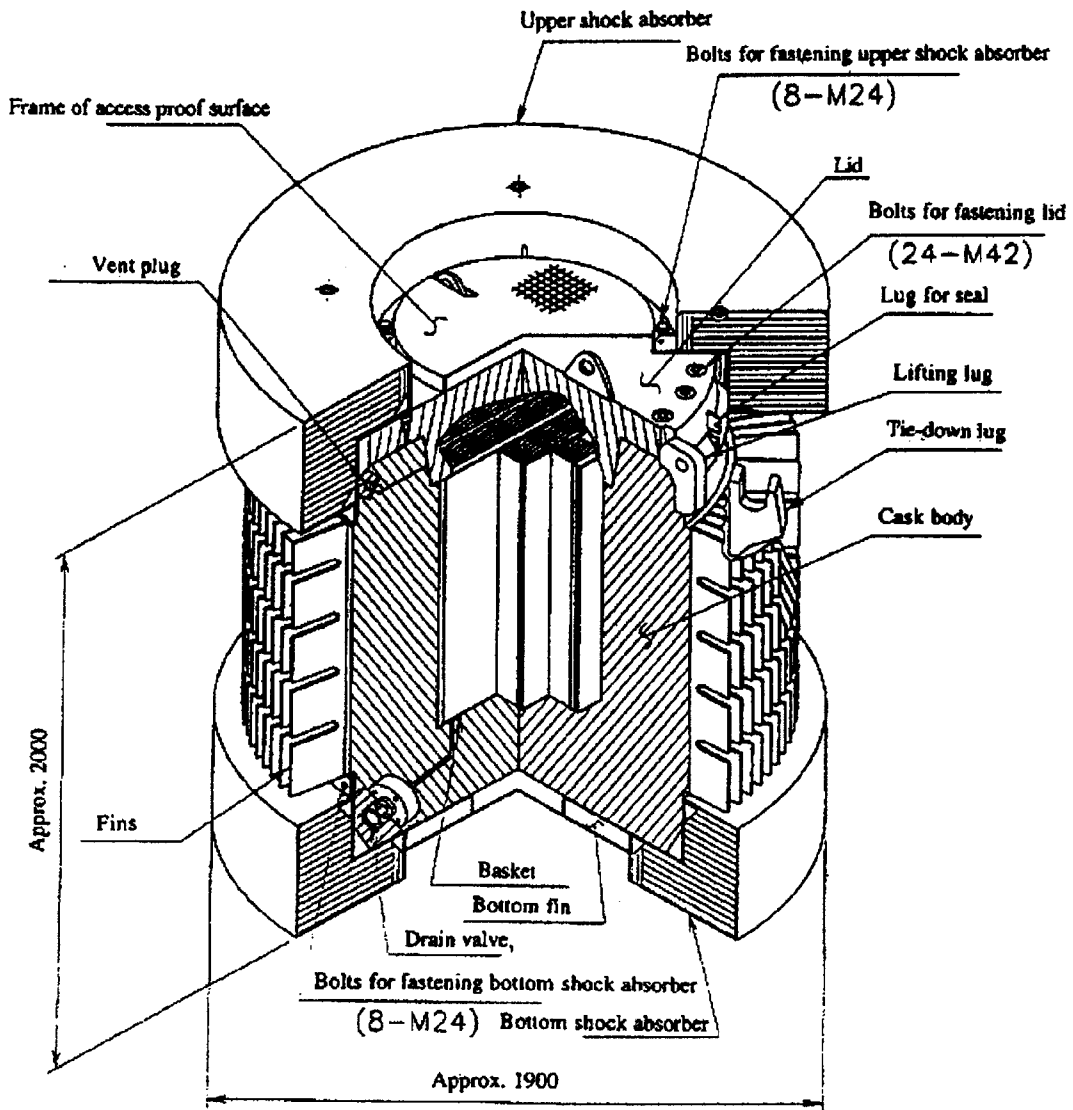


Fig. 1 Illustration of JMS-87Y-18.5T Package



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400 Seventh Street, S.W.  
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**CERTIFICATE NUMBER:** USA/0558/B(U)F-96, Revision 3

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