



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 B(U)F FISSILE
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0849/B(U)F, REVISION 1**

**REVALIDATION OF JAPANESE COMPETENT AUTHORITY
CERTIFICATE J/2044/B(U)F**

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 B(U)F 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 - JMS-87Y-18.5T.
2. Package Description and Authorized Radioactive Contents - as described in Japanese Certificate of Competent Authority J/2044/B(U)F dated October 19, 2022 (attached).
3. Criticality - The minimum criticality safety index is 0.0. The maximum number of packages per conveyance is determined in accordance with Table 11 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 Engineering and Research, (PHH-23), Pipeline and Hazardous

¹ "Regulations for the Safe Transport of Radioactive Material, 2018 Edition, No. SSR-6, Revision 1" 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/0849/B(U)F, REVISION 1

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.
 - 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/0849/B(U)F in addition to other required markings and labeling.
6. Expiration Date - This certificate expires on August 31, 2030. Previous editions which have not reached their expiration date may continue to be used.

This certificate is issued in accordance with paragraph(s) 810 and 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 March 23, 2023 petition by Edlow International Company, Washington, DC, and in consideration of other information on file in this Office.

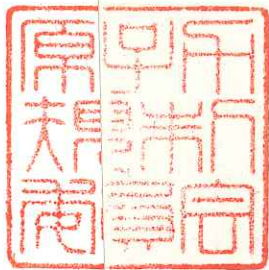
Certified By:



William Quade
Acting Associate Administrator for
Hazardous Materials Safety

August 11, 2025
(DATE)

Revision 1 - Issued revalidation certificate based on NRC's evaluation of packaging's ageing management program to the 2018 edition of the IAEA

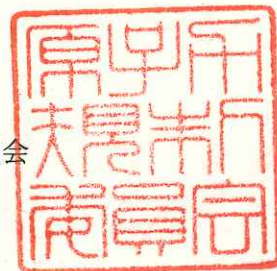


原規規発第 22101910 号
令和 4 年 10 月 19 日

国立研究開発法人日本原子力研究開発機構

理事長 小口 正範 殿

原子力規制委員会



核燃料輸送物設計承認英文証明書について

核燃料物質等の工場又は事業所の外における運搬に係る核燃料輸送物設計承認及び容器承認等に関する申請手続ガイド（令和 2 年 2 月 26 日付け原規規発第 2002264 号）2.4.に基づき、令和 4 年 10 月 13 日付け令 04 原機（環材）028 をもって申請のあった標記の件について、添付のとおり証明します。

IDENTIFICATION MARK

J/2044/B(U)F

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 Japan Atomic Energy Agency, that the package design described herein complies with the design requirements for a package containing Medium Enriched Uranium Fuels(Spent Fuel Elements) and Low Enriched Uranium Fuels(Spent Fuel Elements), specified in the 2018 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/2044/B(U)F

Oct. / 19 / 2022

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/2044/B(U)F
2. Name of Package : JMS-87Y-18.5T
3. Type of Package : Type B(U) package for fissile material
4. Specification of Package
 - (1) Materials of Packaging
 - (a) Body and Lid : Stainless steel
 - (b) Basket : Stainless steel and Boral plate
 - (c) Shock absorber : Stainless steel and Fir-plywood
 - (2) Total Weight of Packaging : 18,110 kg or less
 - (3) Outer Dimensions of Packaging
 - (i) Outer Diameter : Approximately 1,900 mm
 - (ii) Height : Approximately 2,000 mm
 - (4) Total Weight of Package : 18,440 kg or less
 - (5) Illustration of Package : See Figure-1
(Cutaway view)
5. Specification of Radioactive Contents : See Table-1
6. Description of Containment System

Containment system consists of the body, the lid, inside the lid O-ring, the vent plug and the drain valve.

Silicone rubber is used for contact surface of body and lid, body and vent plug , body and drain valve and the valve seat.
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 the basket which maintains the fuel elements contained in the package.
 - (3) Assumptions of Leakage of Water into Package

It is assumed in criticality analysis that water will leak into void spaces of inner packaging.
 - (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 (This package is Type B(U))

9. Assumed Ambient Conditions

- (i) Ambient Temperature Range : -40°C~38°C
- (ii) Insolation Data : Table 12 of IAEA Regulation

10. Handling, Inspection and Maintenance

- (1) Handling Instructions

- (i) Package should be handled carefully in accordance with the schedule and procedures established properly taking all possible safety measures.
- (ii) Package should be handled using appropriate lifting devices and the crane.
- (iii) When packaging is stored outdoors, it should be covered with an appropriate waterproof sheet, avoiding the situation where it is placed directly on the ground.

- (2) Inspections and Maintenance of Packaging

The following inspections should be performed not less than once a year (once for every ten times in a case where the packaging is used more than ten times a year) and defect of packaging should be repaired, if any, in order to maintain the integrity of packaging.

- (i) Visual Inspection
- (ii) Pressure Measurement Inspection
- (iii) Leak Tightness Inspection
- (iv) Maintenance of O-rings, Valve, etc., used for Containment System
- (v) Shielding Inspection
- (vi) Subcriticality Inspection
- (vii) Heat Transfer Inspection
- (viii) Lifting Inspection

- (3) Actions Prior to Shipment

The following inspections should be performed prior to shipment.

- (i) Visual Inspection
- (ii) Lifting Inspection
- (iii) Weight Inspection
- (iv) Surface Contamination Inspection
- (v) Dose Rate Inspection
- (vi) Subcriticality Inspection
- (vii) Contents Inspection
- (viii) Surface Temperature Inspection
- (ix) Leak Tightness Inspection
- (x) Pressure Inspection

- (4) Precautions for Loading of Package for Shipment

Package should be securely loaded to the conveyance at the designated tie-down portion of the packaging so as not to move, roll down or fall down from the loading position during transport.

11. Issue Date and Expiry Date

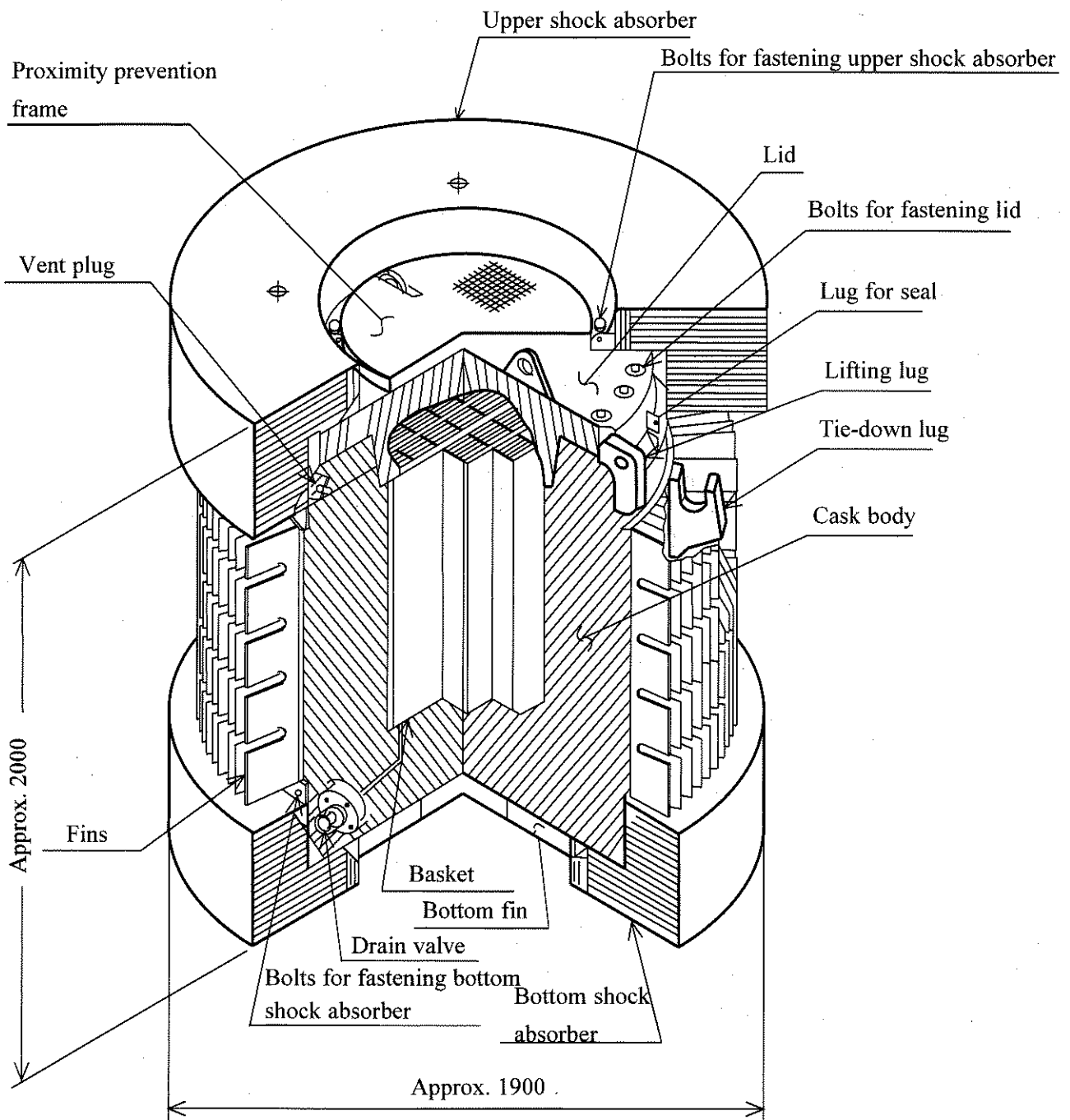
(i) Issue Date : Sep 21, 2022

(ii) Expiry Date : Sep 20, 2062

However, if this certificate no longer meets the technical standards (limited to those related to the design of package) due to a revision of the regulations^{*1,2}, this certificate will be expired.

^{*1} The NRA Ordinance on Off-Site Transportation of Nuclear Fuel Materials, etc. (Ministerial ordinance issued by the Prime Minister's Office No. 57 of 1978)

^{*2} The Notification on Technical Details for Off-Site Transportation of Nuclear Fuel Materials, etc. (Notice issued by Science and Technology Agency No. 5 of 1990)



(Unit : mm)

Figure-1 Illustration of JMS-87Y-18.5T Package (Cutaway view)

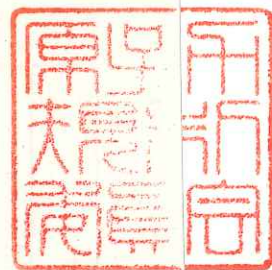
Table-1 Specification of Radioactive Contents

Type \ Fuel Element		Medium Enriched Uranium Fuels (MEU)(Spent Fuel Elements)	Low Enriched Uranium Fuels (LEU) (Spent Fuel Elements)			
		JMTR Standard Fuel Elements (MEU)	JMTR Standard Fuel Elements (LEU)		JMTR Follower Fuel Elements (LEU)	
Reactor		JMTR	JMTR			
Fuel Type		Plate Fuel	Plate Fuel			
Number of Fuel Elements (elements/Package)		30 or less	30 or less			
Initial Value	Enrichment (wt%)	46.0 or less	19.95 or less			
	²³⁵ U weight (g /element)	315.6 or less	450 or less		302 or less	
	U weight (g /element)	719 or less	2338 or less		1569 or less	
Burn-up (%)		40 or less	50 or less	60 or less	50 or less	60 or less
Cooling Time (days)*		360 or more	420 or more	540 or more	420 or more	540 or more
Condition		Solid	Solid			
Activity of Contents	Total (TBq /30 elements)	1.78×10 ⁴	2.43×10 ⁴	2.12×10 ⁴	1.63×10 ⁴	1.43×10 ⁴
	Principal Radionuclide (TBq /30 elements)	⁹⁵ Zr :1.02×10 ³ ⁹⁵ Nb :2.21×10 ³ ¹⁴⁴ Ce:4.98×10 ³ ¹⁴⁴ Pr:4.98×10 ³ ¹⁴⁷ Pm:1.00×10 ³	⁹⁵ Zr :8.28×10 ² ⁹⁵ Nb :1.76×10 ³ ¹⁴⁴ Ce:7.41×10 ³ ¹⁴⁴ Pr:7.41×10 ³ ¹⁴⁷ Pm:1.44×10 ³	⁹⁰ Sr :7.47×10 ² ⁹⁰ Y :7.47×10 ² ¹³⁷ Cs:7.74×10 ² ¹⁴⁴ Ce:6.63×10 ³ ¹⁴⁴ Pr:6.63×10 ³ ¹⁴⁷ Pm:1.40×10 ³	⁹⁵ Zr :5.56×10 ² ⁹⁵ Nb :1.18×10 ³ ¹⁴⁴ Ce:4.97×10 ³ ¹⁴⁴ Pr:4.97×10 ³ ¹⁴⁷ Pm:9.68×10 ²	⁹⁰ Sr :5.04×10 ² ⁹⁰ Y :5.04×10 ² ¹³⁷ Cs:5.22×10 ² ¹⁴⁴ Ce:4.47×10 ³ ¹⁴⁴ Pr:4.47×10 ³ ¹⁴⁷ Pm:9.43×10 ²
Material	Fuel Core	Uranium-Aluminum Dispersion Alloy	Uranium-Silicon-Aluminum Dispersion Alloy			
	Cladding and Side Plate	Aluminum Alloy	Aluminum Alloy			
Total Heat Generation Rate (kW/30 elements)		1.98	2.80	2.40	1.88	1.61

• Each package shall be loaded with single fuel (i.e. only one kind of "Spent Fuel Elements") or mixed fuels (i.e. two or more kinds of "Spent Fuel Elements") within an identical group.

• The absorbed dose rate to air at a position 1 m away from the surface of the package is 1 Gy/h or more.

*This is the period set for the design of the package, and since there will be no additional spent fuel in the future, the minimum number of cooling time for the fuel to be transported is 5800 days or more. As of August 2022, the radioactivity intensity has decreased by about 90%.





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East Building, PHH-23
1200 New Jersey Ave, SE
Washington, D.C. 20590

CERTIFICATE NUMBER: USA/0849/B(U) F-96

ORIGINAL REGISTRANT(S) :

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