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

[redacted]
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 [redacted]
      (c) Shock absorber : Stainless steel and [redacted]
   (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, [redacted], the vent plug and the drain valve.
   [redacted] 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)

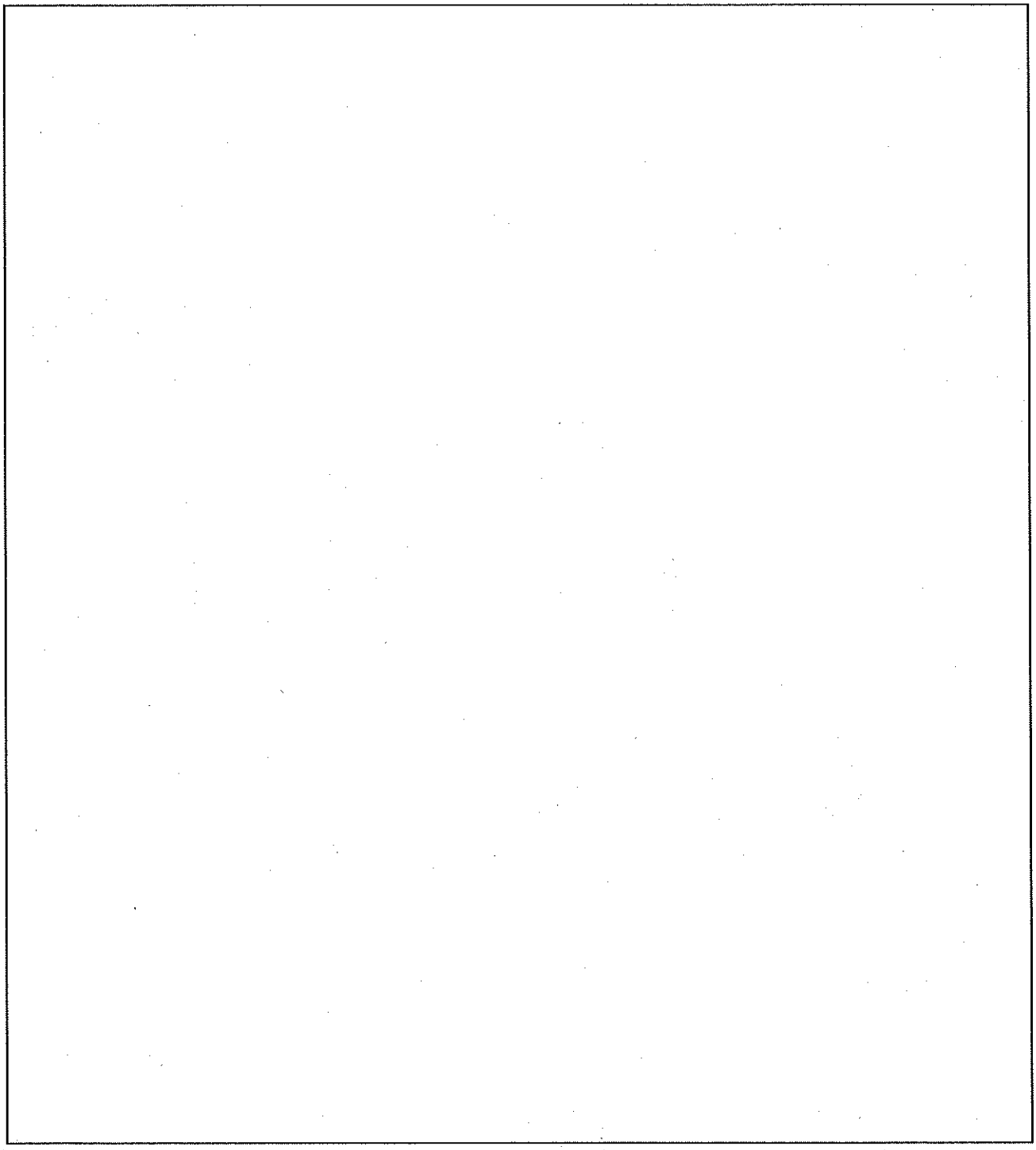

Figure-1 Illustration of JMS-87Y-18.5T Package (Cutaway view)

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%)					
	^{235}U weight (g /element)					
	U weight (g /element)					
Burn-up (%)						
Cooling Time (days)*						
Condition		Solid	Solid			
Activity of Contents	Total (TBq /30 elements)					
	Principal Radionuclide (TBq /30 elements)					
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 [redacted] days or more. As of August 2022, the radioactivity intensity has decreased by about [redacted]