

原規規発第 2112201 号

令和 3 年 12 月 20 日

国立大学法人京都大学
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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 3 年 12 月 10 日付け 21 京大施環化第 106 号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



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 KYOTO UNIVERSITY, that the package design described herein complies with the design requirements for a package containing Fresh Fuel Elements and [REDACTED] [REDACTED] 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: [REDACTED]

Dec. 20. 2021
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 : [REDACTED]
2. Name of Package [REDACTED]
3. Type of Package : Type B(U) package for fissile material
4. Specification of Package
 - (1) Materials of Packaging
 - (a) Main Body : Stainless steel, [REDACTED]
[REDACTED]
 - (b) Outer lid : Stainless steel, [REDACTED]
[REDACTED]
 - (c) Inner lid : Stainless steel and [REDACTED]
 - (d) Fuel Basket : Stainless steel and [REDACTED]
 - (2) Total weight of Packaging [REDACTED]
 - (3) Outer Dimensions of Packaging
 - (i) Outer Diameter [REDACTED]
 - (ii) Length [REDACTED]
 - (4) Total Weight of Package : [REDACTED]
 - (5) Illustration of Package : See the attached Figure-1
(Bird's-eye View)
5. Specification of Radioactive Contents : See the attached Table-1, 2 and 3
6. Description of Containment System
Containment system consists of the inner shell and the inner lid (made of the stainless steel). O-ring made of [REDACTED] is used for the contact surface between inner shell and inner lid.
7. For Package containing Fissile Materials
 - (1) Restrictions on Package [REDACTED]
 - (i) Restriction Number "N"
 - (ii) Array of Package
 - (iii) Criticality Safety Index (CSI)
 - (2) Description of Confinement System

Confinement system consists of the [REDACTED]
[REDACTED]

(3) Assumptions of Leakage of Water into Package

It is assumed in criticality analysis that water will leak into void space of inner shell.

(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

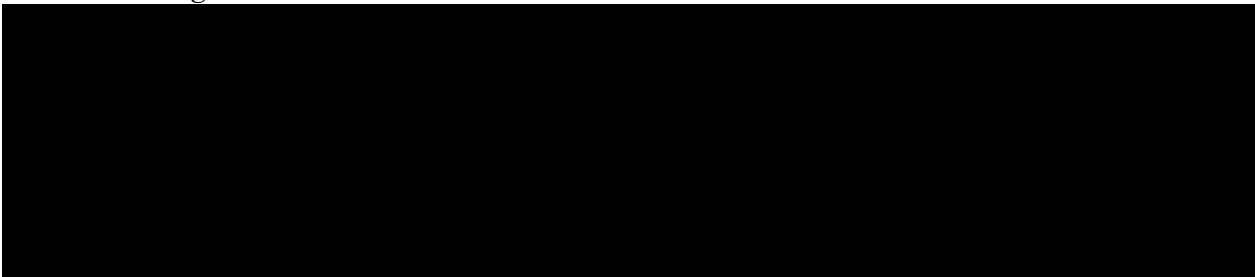
Not applicable (This package is Type B(U))

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



(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 not less than ten times a year) and defect of packaging should be repaired, if any, in order to maintain the integrity of packaging.

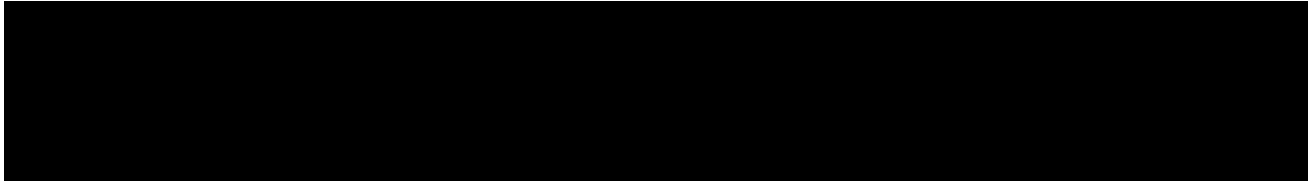
- (i) Visual Appearance Inspection
 - (ii) Pressure Durability Inspection
 - (iii) Maintenance of O-ring Used for Containment System
 - (iv) Leakage Rate Measurement Inspection
 - (v) Subcriticality Inspection
 - (vi) Lifting Inspection
- (3) Actions prior to Shipment

The following inspections should be performed prior to shipment.

- (i) Visual Appearance Inspection

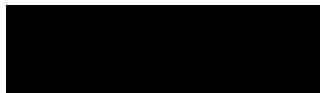
- (ii) Lifting Inspection
- (iii) Weight Measurement Inspection
- (iv) Surface Contamination Measurement Inspection
- (v) Radiation Dose rate Inspection
- (vi) Subcriticality Inspection
- (vii) Contents Specification Check Inspection
- (viii) Leakage Rate Measurement Inspection

(4) Precautions for Loading of Package for Shipment



11. Issue Date and Expiry Date

- (i) Issue Date
- (ii) Expiry Date



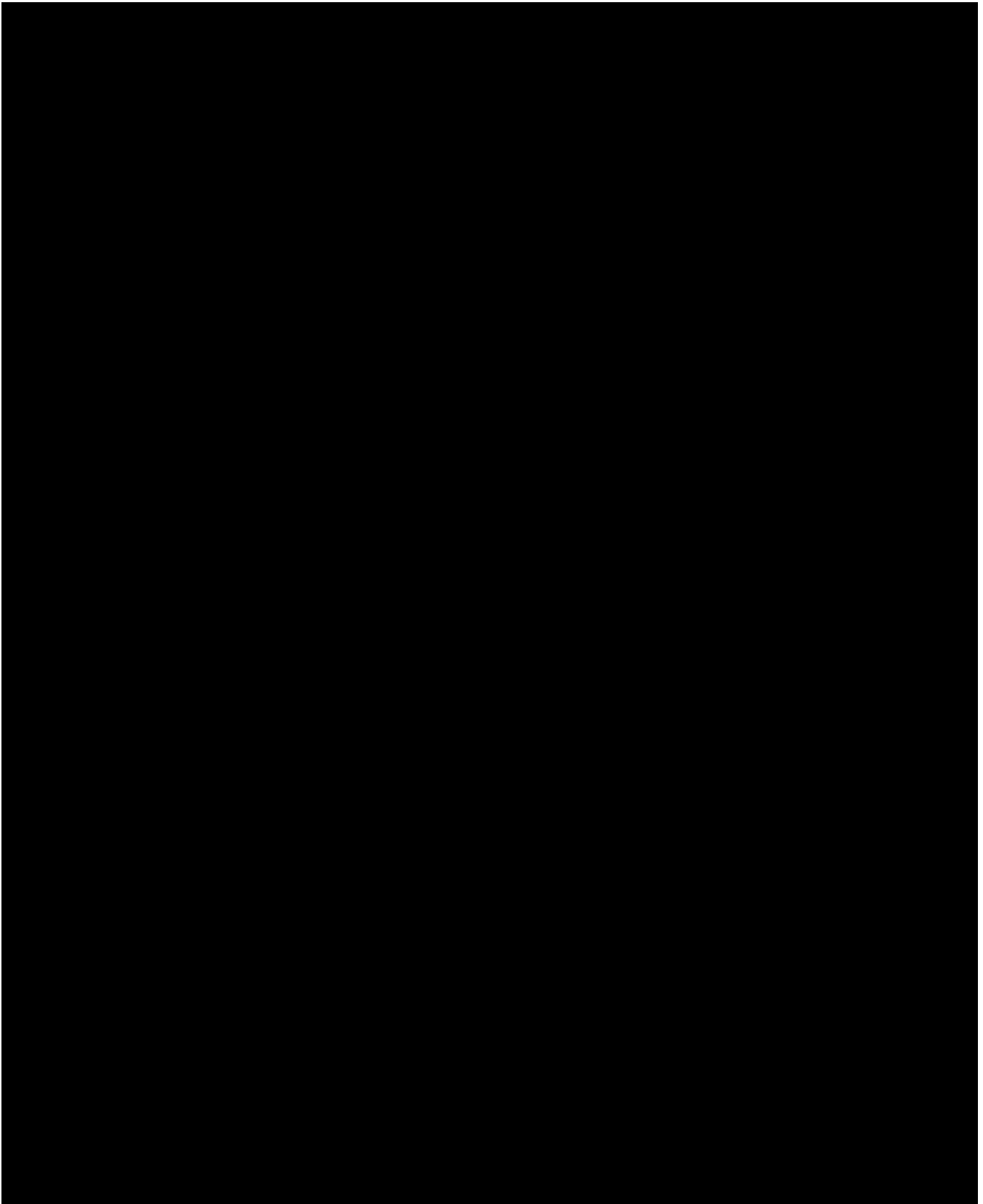


Figure-1 Illustration of [REDACTED] package (Bird's-eye view)

Table-1 Specification of Contents (KUR Fresh Fuel Element)

Reactor	
Fuel Element	
Number of Fuel Elements (element/package)	
Fuel Type	
Materials of Nuclear Fuel	
Weight	²³⁵ U weight (g or less/package)
	U weight (g or less/package)
	²³⁵ U weight (g or less/element)
	U weight (g or less/element)
Enrichment (wt% or less)	
Activity of Contents	Total (GBq or less/package)
	Principal Radionuclide (GBq or less/package)
Physical State	
Burn-up (% or less)	
Total Heat Generation Rate (W or less/package)	
Cooling Time (days)	

- Loading a transport package with different types of nuclear fuel material is allowed for each reactor only when all the fuel elements contained are the same type having the same enrichment level.

- The values of weight and heat generation are calculated proportionally from the maximum weight and heat generation for each type of fuel element according to the number of assemblies contained.

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

Table-2 Specification of Contents

Reactor	
Fuel Element	
Number of Fuel Elements (element/package)	
Fuel Type	
Materials of Nuclear Fuel	
Weight	²³⁵ U weight (g or less/package)
	U weight (g or less/package)
	²³⁵ U weight (g or less/element)
	U weight (g or less/element)
Enrichment (wt% or less)	
Activity of Contents	Total (GBq or less/package)
	Principal Radionuclide (GBq or less/package)
Physical State	
Burn-up (% or less)	
Total Heat Generation Rate (W or less/package)	
Cooling Time (days)	

-Loading a transport package with different types of nuclear fuel material is allowed for each reactor only when all the fuel elements contained are the same type having the same enrichment level.

- The values of weight and heat generation are calculated proportionally from the maximum weight and heat generation for each type of fuel element according to the number of assemblies contained.

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

Table-3 Specification of Contents

	Specification
Material of Nuclear Fuel	[REDACTED]
Physical State	[REDACTED]
Form	[REDACTED]
[REDACTED] size (mm)	[REDACTED]
Weight of [REDACTED] (g or less)	[REDACTED]
Number of [REDACTED] or less)	[REDACTED]
Weight	²³⁵ U (kg or less)
Activity	Total (Bq or less) ----- Principle Radionuclides (Bq or less)
Uranium Enrichment (wt % or less)	[REDACTED]
Heat Generation Rate (W or less)	[REDACTED]
Burn up Rate (%)	[REDACTED]
Cooling Time (days or more) *	[REDACTED]

* As of April 2021

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