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令和 4 年 8 月 24 日

原子燃料工業株式会社

代表取締役社長 伊藤 義章 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 8 月 15 日付け熊原第 22-022 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

J/2009/AF

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 Nuclear Fuel Industries, Ltd., that the package design described herein complies with the design requirements for a package containing Uranium oxide (UO_2 , UO_3 and U_3O_8) or Uranium oxides mixed with gadolinia, 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/2009/AF

Aug / 24 / 2022
Date



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/2009/AF
2. Name of Package : GP-01
3. Type of Package : Type A Fissile package
4. Specification of Package
 - (1) Materials of Packaging : See the attached Table-1
 - (2) Total Weight of Packaging : 730kg or less
 - (3) Outer Dimensions of Packaging
 - (i)Length : Approximately 1140 mm
 - (ii)Width : Approximately 830 mm
 - (iii)Height : Approximately 1060 mm
 - (4) Total Weight of Package : 1300kg or less
 - (5) Illustration of Package : See the attached Figure (Bird's-eye view)
5. Specification of Radioactive Contents : See the attached Table-2
6. Description of Containment System

The inner receptacle which is the containment boundary of this package consists of the body, the lid and the O-ring. The O-ring is made of silicon rubber.
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 inner receptacle which maintains the fuel pellets contained in the package.

(3) Assumptions of Leakage of Water into Package

The criticality analysis of this package is carried out on the assumption that the fuel zone is immersed in water under normal conditions and under accident conditions.

(4) Special Features in Criticality Assessment

There is no special device.

8. For Type B(M) Packages, a statement regarding prescriptions of Type B(U) Package that do not apply to this Package

Not applicable.

9. Assumed Ambient Conditions

(i) Ambient Temperature Range : $-40^{\circ}\text{C} \sim 38^{\circ}\text{C}$

(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 such as forklift or crane.

(iii) When packaging is stored outdoors, appropriate measures should be taken, avoiding the direct exposure to the weather.

(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 inspection

(ii) Subcriticality inspection

(iii) Lifting inspection

(iv) Maintenance of valves and gaskets of containment system

(3) Actions prior to Shipment

The following inspections should be performed prior to shipment.

- | | |
|--|---------------------------|
| (i) Visual Inspection | (ii) Contents Inspection |
| (iii) Surface Contamination Inspection | (iv) Dose Rate Inspection |
| (v) Subcriticality Inspection | (vi) Weight Inspection |
| (vii) Lifting 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 : August 1, 2022
(ii) Expiry Date : July 31, 2102

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.

Issuance: Order of the Prime Minister's Office No. 57 of December 28, 1978

*2 The Notification on Technical Details for Off-Site Transportation of Nuclear Fuel Materials, etc.

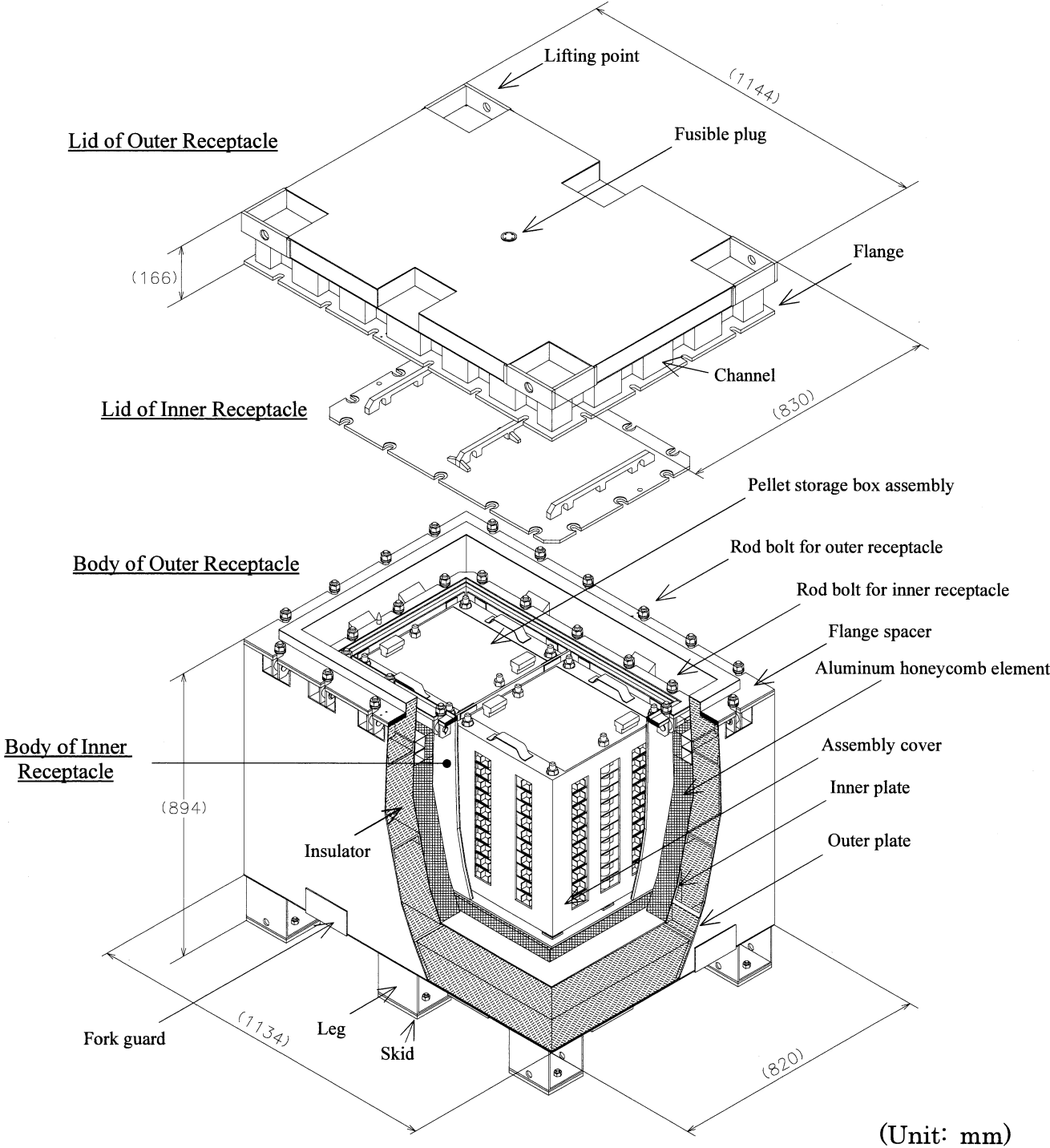
Issuance: The Public Notice of the Science and Technology Agency No. 5, an extra of November 28, 1990

Table 1. Material of Packaging

Component	Material
Outer receptacle	Stainless Steel
Inner receptacle	Stainless Steel
Heat insulating material	Ceramic Fiber
Neutron absorber	Borated stainless steel
Shock absorber	Aluminum honeycomb
Rod bolt	Chrome molybdenum steel
Nut	Stainless Steel

Table 2. Description of Nuclear Fuel Materials and so on

Description	Uranium oxide(UO ₂ , UO ₃ and U ₃ O ₈) or Uranium oxides mixed with gadolinia	
Physical State	Solid (Pellet)	
Weight	2 units of pellet storage box assembly(Type A) : 264kg or less 2 units of pellet storage box assembly(Type B) : 200kg or less Type A and Type B are not combined in one package	
Activity	Total	3.75 × 10 ¹⁰ Bq or less
	²³² U	1.34 × 10 ⁸ Bq or less
	²³⁴ U	2.70 × 10 ¹⁰ Bq or less
	²³⁵ U	1.87 × 10 ⁹ Bq or less
	²³⁶ U	1.40 × 10 ⁸ Bq or less
	²³⁸ U	8.26 × 10 ⁹ Bq or less
	⁹⁹ Tc	1.46 × 10 ⁶ Bq or less
Enrichment	5.0wt% or less	
Burn up Rate	Not Applicable	
Total Heat Generation Rate		
Cooling Time		
Impurity Specification of Enriched Uranium	²³² U	≦0.0001 μg/gU
	²³⁴ U	≦10 × 10 ³ μg/g ²³⁵ U
	²³⁶ U	≦250 μg/gU
	⁹⁹ Tc	≦0.01 μg/gU
	If the ²³⁶ U measurement result is less than 125 μg/gU, measurements of ²³² U and ⁹⁹ Tc are not required.	



General View of Type GP-01 Package