

原規規発第 22101911 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
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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 4 年 10 月 13 日付け令 04 原機(科研)016 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/2045/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

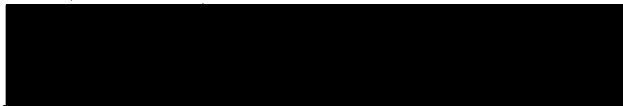
This is to certify, in response to the application by Japan Atomic Energy Agency, that the package design described herein complies with the design requirements for a package containing Standard silicide type Spent fuel, Follower silicide type Spent Fuel and MNU type Spent Fuel, specified in the 2018 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/2045/B(U)F

Oct. / 19 / 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/2045/B(U)F
2. Name of Package : JRC-80Y-20T
3. Type of Package : Type B(U) package for fissile material
4. Specification of Package
 - (1) Materials of Packaging
 - (i) Body and Lid : Stainless steel
 - (ii) Basket : Stainless steel,
 - (iii) Fin(Heat dissipation and shock absorbing) : Stainless steel
 - (2) Total Weight of Packaging : 22.8×10^3 kg or less
 - (3) Outer Dimensions of Packaging
 - (i) Outer Diameter : Approximately 1.9 m
 - (ii) Height : Approximately 2.1 m
 - (4) Total Weight of Package : 23.2×10^3 kg or less
 - (5) Illustration of Package : See the attached Figure-1(Bird's-eye view)
5. Specification of Radioactive Contents : See the attached Table-1
6. Description of Containment System

Containment system consists of body, lid, vent valve, and drain valve made of stainless steel.
 is used for contact surface of the lid, the valves, and 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 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 : $-40^{\circ}\text{C}\sim 38^{\circ}\text{C}$
- (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 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 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) Leak Inspection
- (iii) Lifting Inspection
- (iv) Subcriticality Inspection
- (v) Heat Transfer Inspection
- (vi) Shielding Inspection

(3) Actions prior to Shipment

The following inspections should be performed prior to shipment.

- (i) Visual Inspection
- (ii) Lifting Inspection
- (iii) Weight Measurement Inspection
- (iv) Surface Contamination Measurement Inspection
- (v) Radiation Dose Rate Measurement Inspection
- (vi) Subcriticality Inspection
- (vii) Contents Inspection
- (viii) Surface Temperature Measurement Inspection
- (ix) Leak Inspection
- (x) Package Internal Pressure Measurement 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, 2092

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)

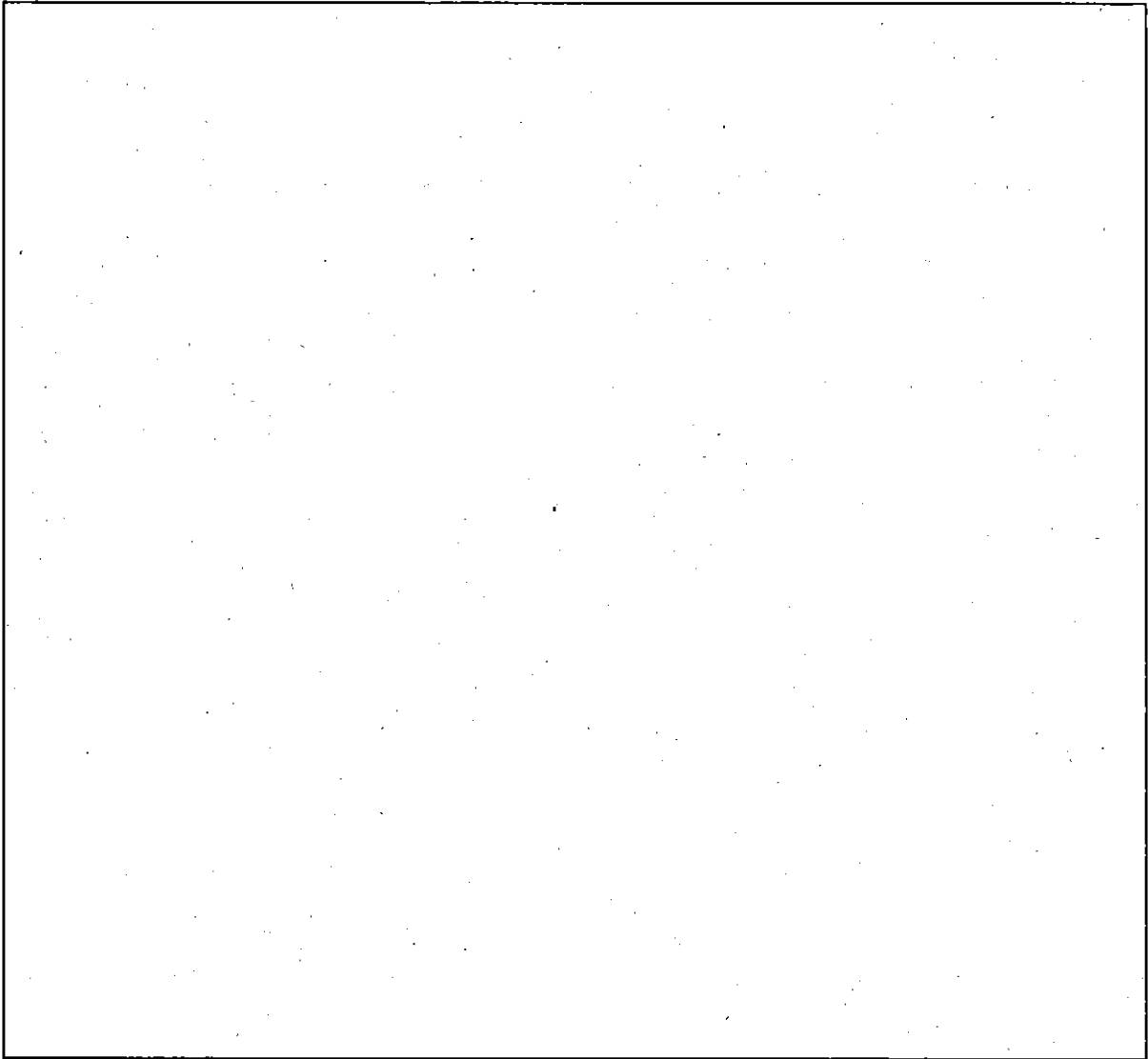


Figure-1 Illustration of JRC-80Y-20T Package

Table- 1 Specification of Radioactive Contents

Fuel Element	Standard silicide type Spent fuel	Follower silicide type Spent Fuel	MNU type Spent Fuel
Number of fuel elements(piece)	40 or less	40 or less	160 or less
Initial enrichment(%) ¹⁾			
Physical State	Solid		
Material of nuclear fuel	Uranium silicon aluminum dispersion type alloy	Uranium silicon aluminum dispersion type alloy	Metallic natural uranium
U weight(kg/package) ¹⁾			
Total mass of ²³⁵ U(g/piece) ¹⁾			
Total mass of U(g/piece) ¹⁾			
Burnup(%) ²⁾			
Cooling time(day)			
Decay heat(W/package)	2.24×10 ³ or less	1.43×10 ³ or less	7.24×10 ¹ or less
Total activity (Bq/package)	2.09×10 ¹⁶ or less	1.33×10 ¹⁶ or less	9.33×10 ¹⁴ or less
Activity of Contents	Quantities of major radionuclides (Bq/package)		

Note. The fuel elements of Standard silicide type and Follower silicide type can be contained together (except MNU type fuel elements).

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

1) The value in the nuclear specification shows an upper value which contains fabrication tolerance.

2) Burn up (%) = ((All depletion weight of ²³⁵U) ÷ (Initial weight of ²³⁵U)) × 100