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December 8, 2023
E-62910

U.S. Department of Transportation
Attn: Mr. Richard W. Boyle
Pipeline & Hazardous Materials Safety Administration
Radioactive Materials Branch
1200 New Jersey Avenue, S.E.
East Building, PHH-20
Washington, DC 20590

Subject: Materials Package Design Certificate USA/0535/AF-96, Revalidation of Japanese Competent Authority Certificate J/105/AF-96

Reference: [1] Competent Authority of Japan, Certification for Approval of Package Design for Transport of Radioactive Materials, Identification Mark: J/105/AF, dated September 13, 2023

[2] Competent Authority Certification for Type Fissile Radioactive Materials Package Design, Certificate USA/0535/AF-96, Revision 5, Revalidation of Japanese Competent Authority Certificate J/105/AF-96, dated October 7, 2019

Dear Mr. Boyle:

TN Americas LLC (TN), on behalf of Mitsubishi Nuclear Fuel Co., Ltd. (MNF), requests a U.S. Department of Transportation (DOT) revalidation of the Competent Authority of Japan, Certification for Approval of Package Design for Transport of Radioactive Materials, Identification Mark: J/105/AF [1] in accordance with §173.473.

The request being submitted is to revalidate the MFC-1 as a Type AF package design that meets the applicable requirements for fissile material packages in Section VI of the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material, SSR-6, Revision 1, 2018 Edition.

The DOT previously issued Competent Authority Certification (CAC) USA/0535/AF-96, Revision 5 [2], to revalidate the Japanese Competent Authority (ASN) certificate J/105/AF-96, Revision 3. This current DOT CAC expires on July 7, 2024. TN requests that the DOT reissue a revalidation as USA/0535/AF, Revision 6 to approve changes and renew the revalidation through July 2029.

Enclosures transmitted herein contain SUNSI. When separated from enclosures, this transmittal document is decontrolled.

The following enclosures are provided for the review of changes to the MFC-1 package design:

- Enclosure 1 provides the English version of Japanese Approval Certificate of a Package Design, Number J/105/AF
- Enclosure 2 provides a summary of changes in the MFC-1 SAR
- Enclosure 3 provides a revision comparison table for MFC-1 SAR Rev. August, 2016 and Rev. December, 2023 (Proprietary version)
- Enclosure 4 provides the proprietary version of the MNF Safety Analysis Report for MFC-1, Rev. December 2023 (Proprietary version)
- Enclosure 5 provides the MNF Fundamental Policy of Quality Management, Rev. December 2023 (Proprietary version)

Non-proprietary versions of Enclosures 3, 4, and 5 will be provided in a supplement to this application. Due to the size of the enclosure files, a secure file sharing application is used for submission of Enclosures 4.

Issuing of the DOT revalidation allows for ongoing export shipments of the PWR fuel from a fuel fabricator in the U.S. to commercial utilities in Japan. The revalidation certificate is needed by June 2024.

Should you have any questions or require additional information to support review of this application, please contact Mr. Peter Vescovi by telephone at 336-420-8325, or by e-mail at Peter.Vescovi@orano.group.

Sincerely,

SHAW Donis Digitally signed by SHAW Donis
Date: 2023.12.08 10:43:40
-05'00'

Don Shaw
Licensing Manager
TN Americas LLC

cc: Peter Vescovi, Licensing Engineer, TN Americas, LLC
Laurence Labbe, Senior Project Manager, TN Americas, LLC
Toshihiro Matsuoka, MNF
Norihiko Kaneko, MNF

Enclosures:

1) Competent Authority of Japan, Certification for Approval of Package Design for Transport of Radioactive Materials, Identification Mark: J/105/AF (English version)
2) Summary of Changes in Revision 0 of the Safety Analysis Report for the Model MFC-1 Package
3) Revision Comparison Table of “Contents” for MFC-1 SAR (Proprietary version)
4) Safety Analysis Report for Model MFC-1 Package, Rev. December, 2023 (Proprietary version)
5) Fundamental Policy of Quality Management, Rev. December, 2023 (Proprietary version)

Enclosure 1 to E-62910

Competent Authority of Japan,
Certification for Approval of Package Design for Transport of Radioactive Materials,
Identification Mark: J/105/AF
(English version)

原規規発第 2309133 号
令和 5 年 9 月 13 日

三菱原子燃料株式会社
代表取締役社長　大和矢　秀成　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 5 年 8 月 30 日付け三原燃第 23-0318 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/105/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 Mitsubishi Nuclear Fuel Co., Ltd., that the package design described herein complies with the design requirements for a package containing Fuel Assembly for PWR, 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/105/AF

Sep. 13, 2023
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/105/AF

2. Name of Package : MFC-1

3. Type of Package : Type A, Fissile Material Package

4. Specification of Package
   (1) Materials of Packaging : See the attached Table-1
   (2) Total Weight of Packaging : 2,804kg or less
   (3) Outer Dimensions of Packaging
      (i) Length : Approximately 5.4m
      (ii) Outer diameter : Approximately 1.2m
      (iii) Height : Approximately 1.3m
   (4) Total Weight of Package : 4,340 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-2

6. Description of Containment System
   There are no components as the containment device in this packaging, and the containment boundary consists of cladding tube and end plugs of fuel rod.

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
      The confinement system of the package consists of fuel rods, fuel assemblies, cradle assembly (consists of shock mount frame, cross frame including skin plates (neutron absorber) and clamping frames) and outer shells of both upper cover and lower container.
   (3) Assumptions of Leakage of Water into Package
      In order to derive higher neutron multiplication, in criticality assessment, it is assumed that water whose density is 1.0(g/cm^3) exists both inside and outside the package and the accommodated fuel assemblies are completely flooded with the water but no water is leaked into the fuel rods.
   (4) Special Features in Criticality Assessment
      In inspection before each shipment and annual periodical inspection, appearance check of the confinement system is performed to confirm to maintain integrity of the confinement system.

8. For Type B(M) Packages, a statement regarding prescriptions of Type B(U) Package that do not apply to this Package
   This is not applicable to this type MFC-1 package.

9. Assumed Ambient Conditions
   (i) Ambient Temperature Range : −20°C to 38°C
   (ii) Insolation Data : Table 12 of IAEA Regulation

10. Handling, Inspection and Maintenance
    Execute handling, the periodic inspection and maintenance of the packaging by the method indicated in the safety analysis report of this package.

11. Issue Date and Expiry Date
    (1) Issue Date : August 15, 2023
    (2) Expiry Date : August 14, 2083

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)

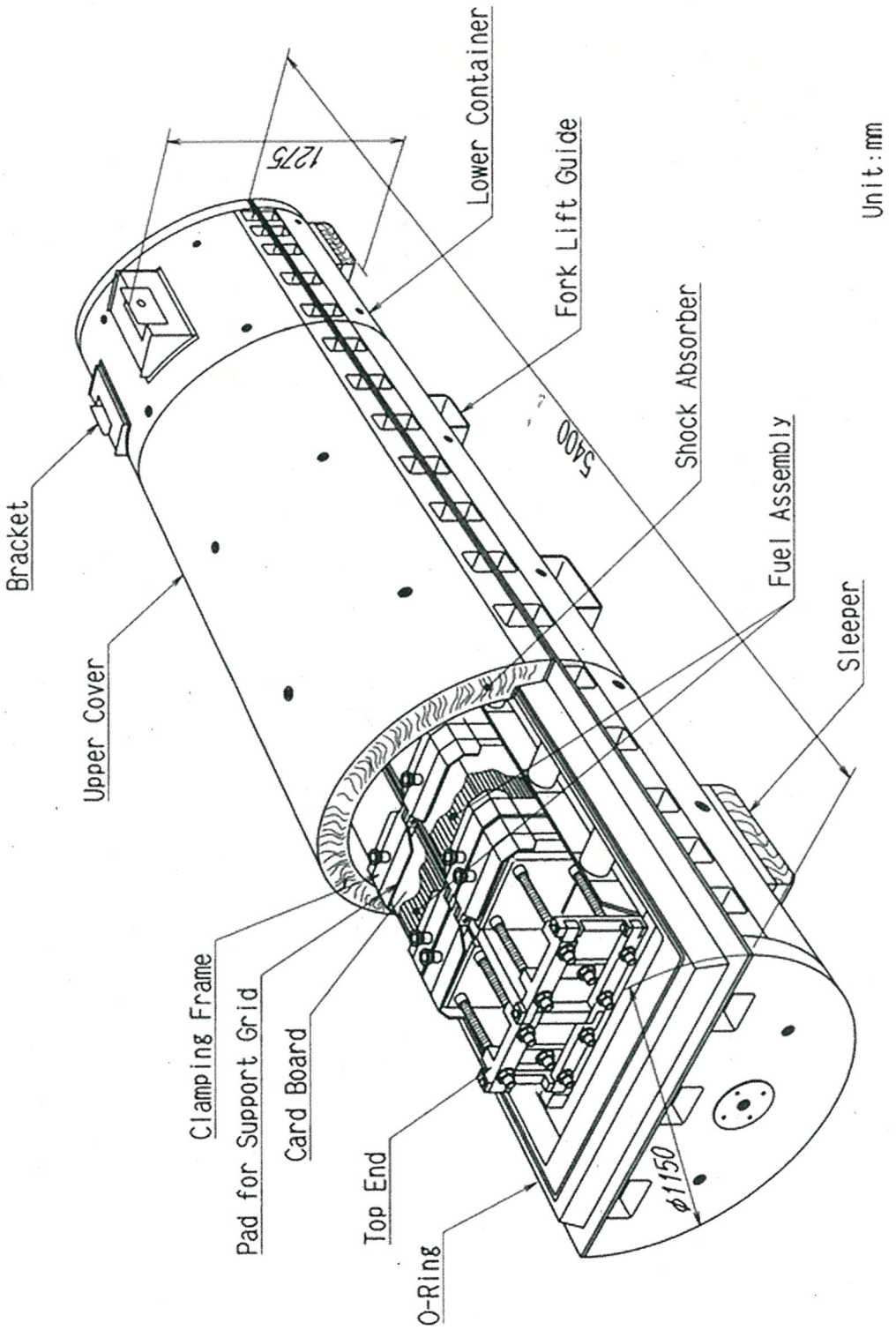

Figure-1 Illustration of Package (Bird's-eye view)

Table-1 Material of Packaging

Construction	Material
a. External Shell	Carbon Steel
b. Shock Absorber	Wood
c. Cradle Assembly	Carbon Steel, and Boronated Stainless Steel
d. O-Ring	Rubber
e. Shock Mount	Rubber

Table-2 Specification of Radioactive Content

Fuel Assembly Type			14×14 (10ft)	14×14 (12ft)	15×15 (12ft)	17×17 (12ft)
(Per one package)						
Description			Fuel Assembly for PWR			
Physical State			Solid (UO_2 Pellet or Gadolinia-UO_2 Pellet)			
Weight	Number of contents		Two assemblies or less			
	Fuel assembly		1,400kg or less			
	UO_2		1,080kg or less			
Activity	Total		1.65×10^{11} Bq or less			
	Major Nuclide (*1)	^{232}U	7.60×10^{7} Bq			
		^{234}U	1.22×10^{11} Bq			
		^{235}U	3.84×10^{9} Bq			
		^{236}U	5.74×10^{8} Bq			
		^{238}U	1.13×10^{10} Bq			
		^{99}Tc	6.02×10^{6} Bq			
Initial enrichment	UO_2		5wt% or less			
	Gadolinia-UO_2		3.3wt% or less (Gadolinia concentration: 10.2wt% or less)			
(Per one fuel assembly)						
Weight	Fuel assembly		490kg or less	600kg or less	680kg or less	700kg or less
	UO_2		390kg or less	470kg or less	540kg or less	540kg or less
Radio-nuclides		^{232}U	≦0.0001 μg／gU			
		^{234}U	≦11,000 μg／g^{235}U			
		^{236}U	≦5,000 μg／g^{235}U			
		^{99}Tc	≦0.01 μg／gU			
			If the ^{236}U measurement result is less than 125 μg／gU, then measurement of ^{232}U and ^{99}Tc is not required.			

(*1) Reference value.

Enclosure 2 to E-62910

Summary of Changes in Revision 0 of the Safety Analysis Report for the Model MFC-1 Package

Mitsubishi Nuclear Fuel Co., Ltd.
November 2023
Doc No.: TPD-23-036

Summary of Change in Revision 0 of the Safety Analysis Report for the Model MFC-1 Package

The safety analysis report for the model MFC-1 package ("SAR" for short) has been modified.

The principal items revised are as follows;

1. Consideration of impact due to aging has been added to comply with requirement of IAEA transport regulation, SSR-6 (Rev.1).
2. Three-dimensional model has been employed in critical analysis for improvement of analysis precision.
3. Structure of SAR including chapter number and chapter title has been revised in accordance with Japanese regulatory guide revised.
4. QMS document has been separated from SAR in accordance with Japanese regulatory guide revised and it has been updated.
5. Other minor revisions including update of information, corrections of phrase etc. has been performed.

Detail of the changes is summarized in attached Revision Comparison Tables.

Attachment

Revision Comparison Table Comparison Table

<Appendix-1> Safety Analysis Report for Model MFC-1 Package
<Appendix-2> Fundamental Policy of Quality Management

Enclosure 6 to E-62910

STATEMENT OF PROPRIETARY INFORMATION
PURSUANT TO 49 CFR 7.14, 49 CFR 105.30, AND 10 CFR 2.390

I, Isao Nakajima, depose and say that I am the General Manager of the Transportation and Service Department of Mitsubishi Nuclear Fuel Co., Ltd. (MNF), duly authorized to execute this statement of proprietary information and have reviewed or caused to have reviewed the information which is identified as proprietary and referenced in the paragraph immediately below. TN Americas LLC on behalf of MNF, is submitting this statement of proprietary information in conformance with the provisions of 49 CFR 7.14 and 49 CFR 105.30 of the U. S. Department of Transportation's (U.S. DOT) regulations, and with the provisions of 10 CFR 2.390 of the Nuclear Regulatory Commission's (NRC) regulations. This information is exempt from public disclosure under the Freedom of Information Act, 5 U.S.C. 552, as amended, for withholding this information.

The information for which withholding is requested is listed below:

- Enclosure 3 - Revision Comparison Table of "Contents" for MFC-1 SAR
- Enclosure 4 - Safety Analysis Report for Model MFC-1 Package, Rev. December 2023
- Enclosure 5 - Fundamental Policy of Quality Management, Rev. December 2023

These documents have been appropriately designated as proprietary.

Pursuant to the provisions of paragraph 7.14 of Part 7 and paragraph (a) (3) of Part 105 of the U.S. DOT regulations, and the provisions of paragraph (b) (4) of Section 2.390 of the NRC regulations the following is furnished for consideration by the U.S.DOT and by the NRC in determining whether the information sought to be withheld from public disclosure, included in the above referenced document, should be withheld.

1) The information sought to be withheld contains trade secret or confidential or privileged commercial for Model MFC-1 Packaging. The information in the Revalidation request is owned and has been held in confidence by MNF.

2) The information is of a type customarily held in confidence by MNF and not customarily disclosed to the public. MNF has a rational basis for determining the types of information that is customarily held in confidence by it.

3) Public disclosure of the information is likely to cause substantial harm to the competitive position of MNF because the information consists of descriptions of the design and analysis of the MFC-1 Packaging, as well as company business sensitive information, the application of which provides a competitive economic advantage. The availability of such information to competitors would enable them to modify their product to better compete with MNF, take marketing or other actions to improve their product's position or impair the position of MNF product, and avoid developing similar data and analyses in support of their processes, methods, or apparatus.

Further the deponent sayeth not.

Isao Nakajima
General Manager of Transportation and Service Department
Mitsubishi Nuclear Fuel Co., Ltd.