East Building, PHH-23
1200 New Jersey Ave, SE
Washington, D.C. 20590

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U)F FISSILE RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/9380/B(U)F-96, REVISION 0

The Competent Authority of the United States certifies that the radioactive material package design described in this certificate satisfies the regulatory requirements for a Type B(U)F package for fissile material as prescribed in the regulations of the International Atomic Energy Agency[1] and the United States of America[2] The package design is approved for use within the United States for import and export shipments made in accordance with applicable international and domestic transport regulations.

1. Package Identification - Traveller STD, Traveller XL.

2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9380, Revision 1 (attached).

3. Criticality - The minimum criticality safety index is As shown in the NRC certificate. The maximum number of packages per conveyance is determined in accordance with Table 11 of the IAEA regulations cited in this certificate.

4. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Engineering and Research, (PHH-23), Pipeline and Hazardous

[1] "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

d. Records of Management System activities required by Paragraph 306 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.

5. Marking and Labeling - The package shall bear the marking USA/9380/B(U)F-96 in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on April 30, 2027.

This certificate is issued in accordance with paragraph(s) 810 and 816 of the IAEA Regulations and Section 173.471 and 173.472 of Title 49 of the Code of Federal Regulations, in response to the April 14, 2022 petition by Westinghouse, Columbia, SC, and in consideration of other information on file in this Office.

Certified By:

William Schoonover
Associate Administrator for Hazardous Materials Safety

May 03, 2022
(DATE)

Revision 0 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance 9380, Revision 1.

NRC FORM 618
(8-2000)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE		PAGES
9380	1	71-9380	USA/9380/B(U)F-96	1	OF	19

2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

Westinghouse Electric Company, LLC
Nuclear Fuel
Columbia Fuel Fabrication Facility
5801 Bluff Road
Hopkins, SC 29061

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

Westinghouse Electric Company, LLC, application Revision No. 2, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model Nos.: Traveller STD, Traveller XL

(2) Description

The Traveller package is designed to transport fresh uranium or slightly contaminated uranium fuel assemblies with enrichment up to 6.0 weight percent or rods with enrichment up to 7.0 weight percent. The package is designed to carry one fuel assembly or one container for loose rods. The package consists of three components: 1) an Outerpack, 2) a Clamshell, and 3) a fuel assembly or rod pipe.

The Outerpack serves as the primary impact and thermal protection for the fuel assembly and also provides for lifting, stacking, and tie down during transportation. Two independent impact limiters consisting of two sections of foam of different densities sandwiched between three layers of sheet metal are integral parts of the Outerpack. Polyethylene foam sheeting may be positioned between the Clamshell and the lower Outerpack to augment shock absorbing characteristics during routine transportation. A weather gasket between the mating surfaces of the upper and lower Outerpack is used to mitigate rain and debris from entering the package.

5.(a)(2) Description (Continued)

The purpose of the Clamshell is to protect the contents during routine handling and limit rearrangement of the contents in the event of a transport accident. During routine handling, the Clamshell doors open to load the contents and are secured with multi-point cammed latches and hinge pins. The Clamshell is a part of the confinement system that protects and restrains the fuel assembly or fuel rod pipe contents during all transport conditions. Neutron

absorber plates are installed on the inside surface of the Clamshell along the full length of each main door and the top door.

A rectangular Clamshell is used in both the Traveller STD and XL packages, consisting of an aluminum “v” extrusion strong back base and two aluminum panel doors, bottom and top end plates, and similar multi-point cammed latch closure mechanism. The Clamshell uses piano-type hinges (continuous hinges) to connect each main door to the strong back. The strong back and bottom plate are lined with a cork rubber pad to cushion and protect the contents during normal handling and transport conditions. The Clamshell is fastened to the lower Outerpack using shock absorbing rubber mounts.

For any shipment of contents that are classified as Type B quantity material, a bottom support spacer/plate is required to be used along with the top axial clamping mechanism configuration, to ensure proper structural support for the fuel assembly during a free drop. The fuel assembly is positioned on top of the reusable aluminum bottom support spacer/plate, which rests on top of the Clamshell bottom plate (and fuel axial bottom spacer for shorter assemblies) and fits under the fuel assembly bottom nozzle structure. The bottom support spacer/plate is a stiff structure to ensure the fuel assembly bottom nozzle is supported during all transport conditions.

The Traveller package is designed to carry loose rods using a rod pipe. The rod pipe consists of a 15.2 cm (6 in.) standard 304 stainless steel, Schedule 40 pipe, and standard 304 stainless steel closures at each end. The closure is a 0.635 cm (0.25 in.) thick cover secured with Type 304 stainless steel hardware to a flange fabricated from 0.635 cm (0.25 in.) thick plate.

5.(a)(2) Description (Continued)

There are two models of the Traveller packaging: the Traveller STD and the Traveller XL.

Traveller STD:

Package gross weight	2,041 kilograms (kg) (4,500 pounds (lbs))
Packaging gross weight	1,293 kg (2,850 lbs)
Contents gross weight	748 kg (1,650 lbs)
Outer dimensions	
Length	500.4 cm (197 in.)
Width	68.8 cm (27.1 in.)
Height	99.8 cm (39.3 in.)

Traveller XL:

Package gross weight	2,372 kg (5,230 lbs)
Packaging gross weight	1,479 kg (3,260 lbs)
Contents gross weight	893 kg (1,970 lbs)
Outer dimensions	
Length	574 cm (226.0 in.)
Width	68.8 cm (27.1 in.)
Height	99.8 cm (39.3 in.)

5.(a)(3) Drawings

The packagings are fabricated and assembled in accordance with the following Westinghouse Electric Company's Drawing Nos.:

10004E58, Rev. 9 (sheets 1-9)
10071E36, Rev. 4 (sheets 1-9)
10006E58, Rev. 7

5. (b) Contents (Type and Form of Material)

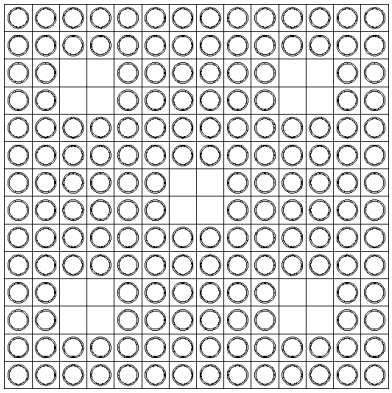
(1) PWR Group 1 Fuel Assembly

(i) PWR uranium dioxide fuel assemblies with a maximum uranium-235 enrichment of 5.0 weight percent. The parameters of the fuel assemblies that are permitted are as follows:

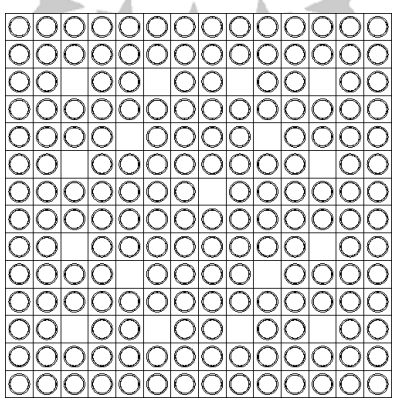
Parameters for Square Lattice Group 1 Fuel Assemblies

Fuel Assembly Description	Fabrication Tolerance Limit	14 Bin 1	14 Bin 2	15 Bin 1
Array Size	-	14 x 14	14 x 14	15 x 15
No. of Fuel Rods per Assembly	-	176	179	204
No. of Non-Fuel Holes	-	20	17	21
Nominal Pitch (in./cm)	+0.005 (+0.0127)	0.580 (1.4732)	0.556 (1.4122)	0.563 (1.4300)
Minimum Fuel Pellet Outer Diameter (in./cm)	-0.0007 (-0.0018)	0.3805 (0.9665)	0.3439 (0.8735)	0.3582 (0.9098)
Minimum Cladding Inner Diameter (in./cm)	-0.002 (-0.0051)	0.3855 (0.9792)	0.3489 (0.8862)	0.3636 (0.9235)
Minimum Cladding Thickness (in./cm)	-0.002 (-0.0051)	0.0245 (0.0622)	0.0228 (0.0579)	0.0228 (0.0579)
Maximum Active Fuel Length (in./cm)	+0.500 (+1.270)	136.70 (347.22)	144.00 (365.76)	144.00 (365.76)

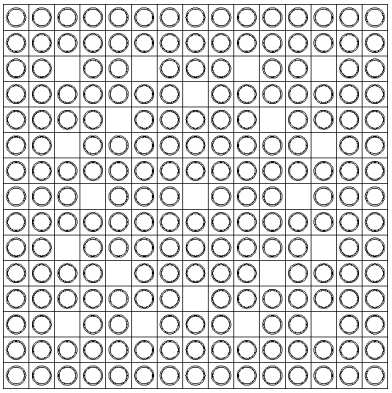
14 Bin 1 Rod Pattern



14 Bin 2 Rod Pattern



15 Bin 1 Rod Pattern

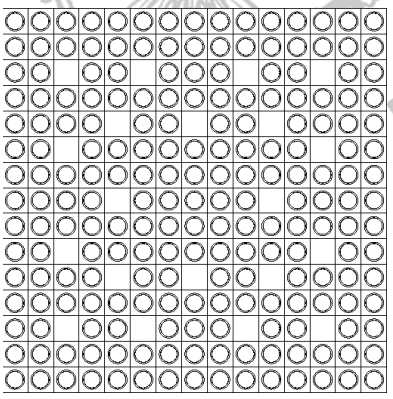


5.(b)(1)(i) PWR Group 1 Fuel Assembly (Continued)

Parameters for Group 1 Fuel Assemblies

Fuel Assembly Description	Fabrication Tolerance Limit	15 Bin 2
Array Size	-	15x15
No. of Fuel Rods per Assembly	-	205
No. of Non-Fuel Holes	-	20
Nominal Pitch (in./cm)	+0.0118 (+0.03)	0.563 (1.4300)
Minimum Fuel Pellet OD (in./cm)	-0.0007 (-0.0018)	0.3580 (0.9092)
Minimum Cladding ID (in./cm)	-0.002 (-0.0051)	0.3627 (0.9214)
Minimum Cladding Thickness (in./cm)	-0.002 (-0.0051)	0.0265 (0.0674)
Maximum Active Fuel Length (in./cm)	+0.500 (+1.270)	139.76 (355.00)

15 Bin 2
Rod Pattern

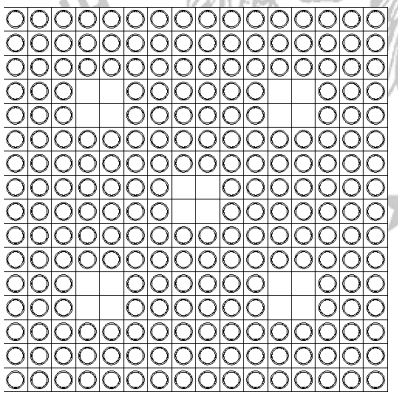


5.(b)(1)(i) PWR Group 1 Fuel Assembly (Continued)

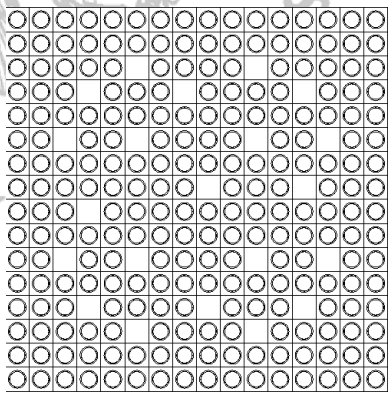
Parameters for Group 1 Fuel Assemblies

Fuel Assembly Description	Fabrication Tolerance Limit	16 Bin 2	16 Bin 3
Array Size	-	16x16	16x16
No. of Fuel Rods per Assembly	-	236	235
No. of Non-Fuel Holes	-	20	21
Nominal Pitch (in./cm)	+0.005 (+0.0127)	0.506 (1.2852)	0.485 (1.2319)
Minimum Fuel Pellet OD (in./cm)	-0.0007 (-0.00178)	0.3220 (0.8179)	0.3083 (0.7831)
Minimum Cladding ID (in./cm)	-0.002 (-0.0051)	0.3265 (0.8293)	0.3125 (0.7938)
Minimum Cladding Thickness (in./cm)	-0.002 (-0.0051)	0.0210 (0.0533)	0.0210 (0.0533)
Maximum Active Fuel Length (in./cm)	+0.500 (+1.270)	150.00 (381.00)	144.00 (365.76)

16 Bin 2 Rod Pattern



16 Bin 3 Rod Pattern

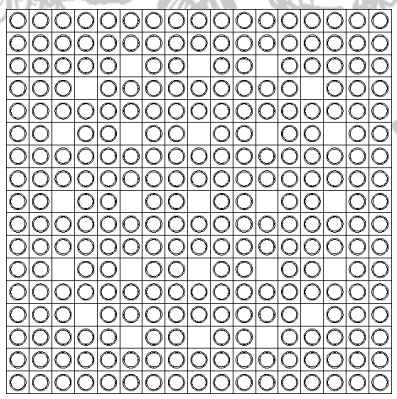


5.(b)(1)(i) PWR Group 1 Fuel Assembly (Continued)

Parameters for Group 1 Fuel Assemblies

Fuel Assembly Description	Fabrication Tolerance Limit	17 Bin 1	17 Bin 2
Array Size	-	17x17	17x17
No. of Fuel Rods per Assembly	-	264	264
No. of Non-Fuel Holes	-	25	25
Nominal Pitch (in./cm)	+0.005 (+0.0127)	0.496 (1.2598)	0.502 (1.2751)
Minimum Fuel Pellet OD (in./cm)	-0.0007 (-0.00178)	0.3083 (0.7831)	0.3238 (0.8225)
Minimum Cladding ID (in./cm)	-0.002 (-0.00508)	0.3125 (0.7938)	0.3276 (0.8321)
Minimum Cladding Thickness (in./cm)	-0.002 (-0.00508)	0.0210 (0.0533)	0.0220 (0.0559)
Maximum Active Fuel Length (in./cm)	+0.500 (+1.270)	168.00 (426.72)	144.00 (365.76)

17 Bin 1 / Bin 2
Rod Pattern



(ii) For each parameter, the listed fabrication tolerance limit applies to all bins included in the table. For maximum parameters, only the positive tolerance is limited and for minimum parameters, only the negative tolerance is limited.

(iii) All rod cladding must be composed of a Zirconium Alloy. Cladding may include a chromium coating of 25 μm thick, nominally and/or include an Optimized ZIRLO Liner (OZL).

(iv) There is no restriction on the length of top and bottom annular blankets. The annular fuel pellet inner diameter in the blanket region must be ≥0.155 in. and ≤0.183 in. (≥0.3937 cm and ≤0.4648 cm).

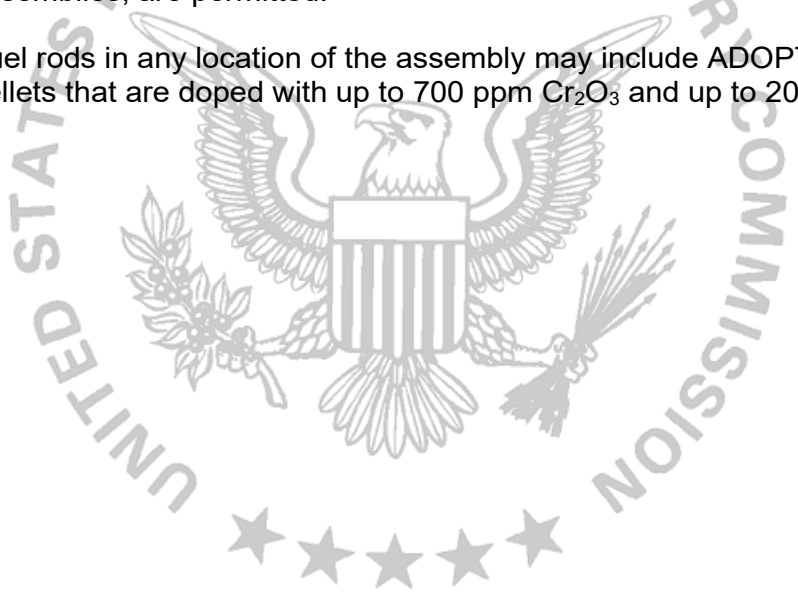
(v) Any quantity of stainless steel replacement rods is allowed in the assembly.

(vi) Primary neutron sources or other radioactive material are not permitted.

(vii) Polyethylene packing materials are limited to a maximum of 2.0 kg in the Clamshell and may not have a hydrogen density greater than 0.1325 g/cm^3.

(viii) Non-fissile base-plate mounted core components, and spider-body core components, including burnable absorbers, secondary source rods, and axial spacer assemblies, are permitted.

(ix) Fuel rods in any location of the assembly may include ADOPT uranium dioxide pellets that are doped with up to 700 ppm Cr_2O_3 and up to 200 ppm Al_2O_3.



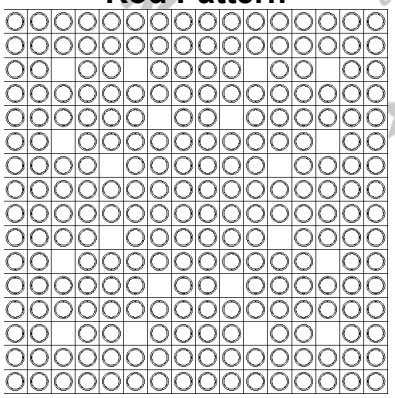
5.(b)(2) PWR Group 2 Fuel Assembly

(i) PWR uranium dioxide fuel assemblies with a maximum uranium-235 enrichment of 5.0 weight percent. The parameters of the fuel assemblies that are permitted are as follows:

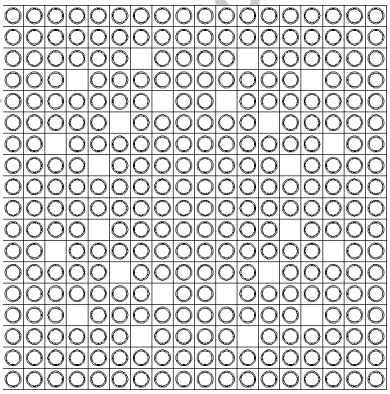
Parameters for Square Lattice Group 2 Fuel Assemblies

Fuel Assembly Description	Fabrication Tolerance Limit	16 Bin 1	18 Bin 1
Array Size	-	16x16	18x18
No. of Fuel Rods per Assembly	-	236	300
No. of Non-Fuel Holes	-	20	24
Nominal Pitch (in./cm)	+0.01181 (+0.0300)	0.563 (1.430)	0.500 (1.27)
Minimum Fuel Pellet OD (in./cm)	-0.0007 (-0.0018)	0.3581 (0.9097)	0.3165 (0.8039)
Minimum Cladding ID (in./cm)	-0.002 (-0.0051)	0.3665 (0.9310)	0.3236 (0.8220)
Minimum Cladding Thickness (in./cm)	-0.002 (-0.0051)	0.0283 (0.0720)	0.0252 (0.0640)
Maximum Active Fuel Length (in./cm)	+0.500 (+1.270)	153.54 (390.00)	153.54 (390.00)

16 Bin 1 Rod Pattern



18 Bin 1 Rod Pattern



(ii) For each parameter, the listed fabrication tolerance limit applies to all bins included in the table. For maximum parameters, only the positive tolerance is limited and for minimum parameters, only the negative tolerance is limited.

(iii) All rod cladding must be composed of a Zirconium Alloy. Cladding may include a chromium coating of 25 μm thick, nominally and/or include an Optimized ZIRLO Liner (OZL).

(iv) The length of top and bottom annular blankets is restricted to 50.8 cm (20 in.). The annular fuel pellet inner diameter in the blanket region must be ≥0.155 in. and ≤0.183 in. (≥0.3937 cm and ≤0.4648 cm).

(v) Any quantity of stainless steel replacement rods is allowed in the assembly.

(vi) Polyethylene packing materials are limited to a maximum of 2.0 kg in the Clamshell and may not have a density greater than 0.1325 g/cm^3.

(vii) Non-fissile base-plate mounted core components, and spider-body core components, including burnable absorbers, secondary source rods, and axial spacer assemblies, are permitted.

(viii) Primary neutron sources or other radioactive material are not permitted.

(ix) Fuel rods in any location of the assembly may include ADOPT uranium dioxide pellets that are doped with up to 700 ppm Cr_2O_3 and up to 200 ppm Al_2O_3.

5.(b)(3) PWR Group 4 Fuel Assembly

(i) PWR uranium dioxide fuel assemblies with a maximum uranium-235 enrichment of 6.0 weight percent. The parameters of the fuel assemblies that are permitted are as follows:

Parameters for Square Lattice Group 4 Fuel Assemblies

Fuel Assembly Description	Fabrication Tolerance Limit	14 Bin 1	16 Bin 2
Array Size	-	14 x 14	16x16
No. of Fuel Rods per Assembly	-	176	236
No. of Non-Fuel Holes	-	20	20
Guide Tubes/Instrument Tubes	-	5[a]	5[a]
Nominal Pitch (in./cm)	+0.005 (+0.0127)	0.580 (1.4732)	0.506 (1.2852)
Minimum Fuel Pellet Outer Diameter (in./cm)	-	0.3805 (0.9665)	0.3220 (0.8179)
Minimum Cladding Inner Diameter (in./cm)	-	0.3855 (0.9792)	0.3265 (0.8293)
Minimum Cladding Thickness (in./cm)	-	0.0245 (0.0622)	0.0210 (0.0533)
Minimum GT/IT Inner Diameter (in./cm)	-	0.9630 (2.4460)	0.5450 (1.3843)
Minimum GT/IT Thickness (in./cm)	-	0.0360 (0.0914)	0.0360 (0.0914)
Maximum Active Fuel Length (in./cm)	+0.500 (+1.270)	136.70 (347.22)	150.00 (381.00)

Note: [a] Each GT/IT occupies four non-fuel holes that constitute a 2x2 lattice section.

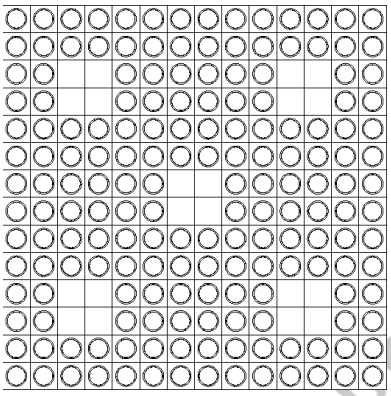
5.(b)(3)(i) PWR Group 4 Fuel Assembly (Continued)

Parameters for Square Lattice Group 4 Fuel Assemblies

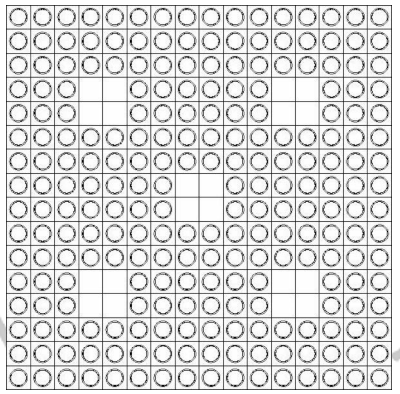
Fuel Assembly Description	Fabrication Tolerance Limit	14 Bin 2	15 Bin 3	16 Bin 3	17 Bin 1
Array Size	-	14x14	15x15	16x16	17x17
No. of Fuel Rods per Assembly	-	179	204	235	264
No. of Non-Fuel Holes	-	17	21	21	25
Guide Tubes/Instrument Tubes	-	17	21	21	25
Nominal Pitch (in./cm)	+0.001 (+0.0025)	0.556 (1.4122)	0.563 (1.4300)	0.485 (1.2319)	0.496 (1.2598)
Minimum Fuel Pellet Outer Diameter (in./cm)	-	0.3439 (0.8735)	0.3654 (0.9281)	0.3083 (0.7831)	0.3083 (0.7831)
Minimum Cladding Inner Diameter (in./cm)	-	0.3489 (0.8862)	0.3709 (0.9421)	0.3125 (0.7938)	0.3125 (0.7938)
Minimum Cladding Thickness (in./cm)	-	0.0228 (0.0579)	0.0228 (0.0579)	0.0210 (0.0533)	0.0210 (0.0533)
Minimum GT/IT Inner Diameter (in./cm)	-	0.3720 (0.9449)	0.4970 (1.2624)	0.3810 (0.9677)	0.3950 (1.0033)
Minimum GT/IT Thickness (in./cm)	-	0.0147 (0.0373)	0.0147 (0.0373)	0.0157 (0.0399)	0.0137 (0.0348)
Maximum Active Fuel Length (in./cm)	+0.50 (+1.27)	144.00 (365.76)	144.00 (365.76)	144.00 (365.76)	168.00 (426.72)

5.(b)(3)(i) PWR Group 4 Fuel Assembly (Continued)

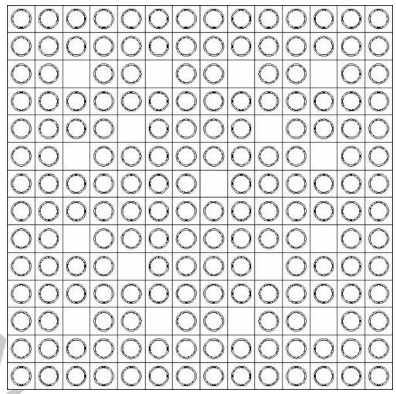
14 Bin 1 Rod Pattern



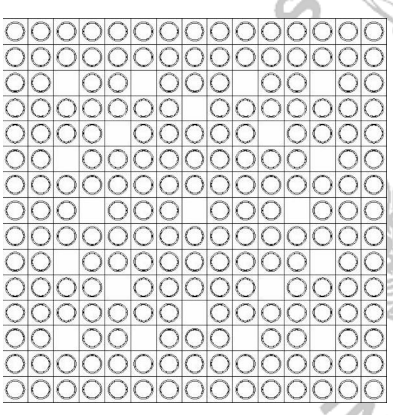
16 Bin 2 Rod Pattern



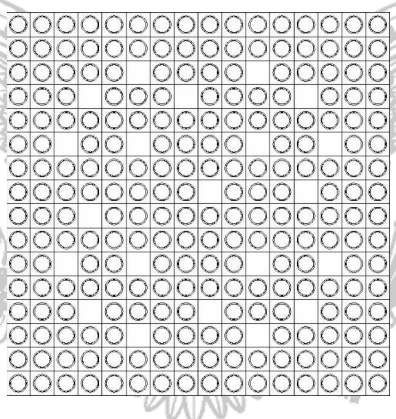
14 Bin 2 Rod Pattern



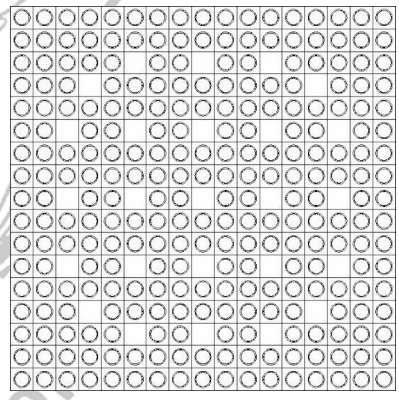
15 Bin 3 Rod Pattern



16 Bin 3 Rod Pattern



17 Bin 1 Rod Pattern



(ii) For each parameter, the listed fabrication tolerance limit applies to all bins included in the table. For maximum parameters, only the positive tolerance is limited and for minimum parameters, only the negative tolerance is limited.

(iii) All rod cladding must be composed of a Zirconium Alloy. Cladding may include a chromium coating of 25 μm thick, nominally and/or include an Optimized ZIRLO Liner (OZL).

(iv) The length of top and bottom annular blankets is restricted to 20 in. (50.8 cm). The annular fuel pellet inner diameter in the blanket region must be ≥0.155 in. and ≤0.183 in. (≥0.3937 cm and ≤0.4648 cm).

(v) Any quantity of stainless-steel replacement rods is allowed in the assembly.

(vi) Polyethylene packing materials are limited to a maximum of 2.0 kg in the Clamshell and may not have a density greater than 0.1325 g/cm^3.

(vii) Non-fissile base-plate mounted core components, and spider-body core components, including burnable absorbers, secondary source rods, and axial spacer assemblies, are permitted.

(viii) Primary neutron sources or other radioactive material are not permitted.

(ix) Fuel rods in any location of the assembly may include ADOPT uranium dioxide pellets that are doped with up to 700 ppm Cr_2O_3 and up to 200 ppm Al_2O_3.

5.(b)(3) Loose Uranium Dioxide Fuel Rods

Uranium dioxide (UO_2) fuel rods with a maximum uranium-235 enrichment of 7.0 weight percent, and an isotopic composition not exceeding a Type A quantity. Any fuel rod may include ADOPT uranium dioxide pellets that are doped with up to 700 ppm Cr_2O_3 and up to 200 ppm Al_2O_3. Fuel rods shall be transported in the Traveller STD and XL package inside a Rod Pipe as specified in Drawing 10006E58. The fuel rods shall meet the parametric requirements given below:

Parameter	Limit
Maximum Enrichment	7.0 weight percent uranium-235
Minimum Pellet Diameter (in./cm) [a]	0.308 (0.7823)
Maximum stack length	Up to rod container length
Cladding Material	Zirconium, aluminum, or stainless steel alloy; Zirconium alloy cladding may include a chromium coating of 25 μm thick, nominally and/or include an Optimized ZIRLO Liner (OZL).
Integral absorber	Including, but not limited to, gadolinia, erbia, boron, and hafnium
Annular Blanket	No limit on length. Inner diameter must be ≥0.155 in. and ≤0.183 in. (≥0.3937 cm and ≤0.4648 cm). For inner diameters >0.183 in. (>0.4648 cm), the inner diameter must be equivalent to no more than 44% of the fuel pellet diameter.
Maximum number of rods per Rod Pipe	Up to Rod Pipe capacity
Wrapping or sleeving	- Polyethylene packing materials: unlimited quantity in the Rod Pipe. - Materials with hydrogen density less than 0.1325 g/cm^3.

Note: [a] Maximum allowable negative tolerance is -0.0014 in. No limit on positive tolerance.

5.(b) (4) Loose Uranium Silicide Fuel Rods

Uranium silicide (U_3Si_2) fuel rods with a maximum uranium-235 enrichment of 5.0 weight percent, with an isotopic composition not exceeding a Type A quantity. Fuel rods shall be transported in the Traveller STD package inside a Rod Pipe as specified in Drawing 10006E58. The fuel rods shall meet the parametric requirements given below:

Parameter	Limit
Maximum Enrichment	5.0 weight percent uranium-235
Minimum Pellet Diameter (in./cm) [a]	0.3078 (0.7818)
Maximum Pellet Diameter (in./cm) [a]	0.382 (0.9703)
Maximum stack length	Up to Rod Pipe length
Cladding Material	Zirconium, aluminum, or stainless steel alloy; Zirconium alloy cladding may include a chromium coating of 25 μm thick, nominally and/or include an Optimized ZIRLO Liner (OZL).
Integral absorber	Including, but not limited to, gadolinia, erbia, boron, and hafnium
Annular Blanket	No limit on length. Inner diameter must be ≥0.155 in. and ≤0.183 in. (≥0.3937 cm and ≤0.4648 cm).
Maximum number of rods per Rod Pipe	60 rods
Wrapping or sleeving	- Polyethylene packing materials unlimited quantity in the Rod Pipe. - Materials with hydrogen density less than 0.1325 g/cm^3.

Note: [a] Maximum allowable negative tolerance is -0.0014 in. No limit on positive tolerance.

5.(c) Maximum quantity of material per package

(1) PWR fuel assemblies as described in 5.(b)(1), 5.(b)(2) and 5.(b)(3) may only be transported as Type B quantities, if

(i) The material is enriched commercial grade uranium or slightly contaminated uranium with trace quantities limits as specified below:

Content	Slightly Contaminated U
^{232}U	0.0500 µg/gU
^{234}U	2000 µg/gU
^{236}U	25,000 µg/gU
^{99}Tc	5 µg/gU
Alpha Activity from Np and Pu	3300 Bq/kgU
Total Gamma Activity from Fission Products	4.4×10^5 MeV-Bq/kgU

(ii) The bottom support spacer/plate and top axial clamping mechanism configuration, as defined in Section 1.2.1.5.3 of the application, are utilized.

(2) PWR fuel assemblies as described in 5.(b)(1), 5.(b)(2) and 5.(b)(3) and Loose rods in the rod pipe as described in 5.(b)(4) and 5.(b)(5) may be transported as Type A quantities, if

(i) The uranium content meets the “unirradiated uranium” definition of 10 CFR 71.4, or

(ii) The contents meet the requirements of the Enriched Commercial Grade specification of ASTM C996, specifically the ^{236}U limit (250 µg^{236}U/gU) and the total quantity of material does not exceed a Type A quantity.

Content	Enriched Commercial Grade
^{232}U	0.0001 µg/gU
^{234}U	11.0×10^3 µg/g^{235}U
^{236}U	250 µg/gU
^{99}Tc	0.01 µg/gU
Alpha Activity from Np and Pu	Expected to be below the detection limits of commonly used measurement methodology
Total Gamma Activity from Fission Products	Expected to be below the detection limits of the measurement methodology

5.(d) Criticality Safety Index

(1) When transporting Group 1 PWR fuel assemblies as described in 5.(b)(1): 1.0

(2) When transporting Group 2 PWR fuel assemblies as described in 5.(b)(2): 4.2

(3) When transporting Group 4 PWR fuel assemblies as described in 5.(b)(3): 2.5

(4) When transporting loose rods in the rod pipe as described in 5.(b)(4) and 5.(b)(5): 0.7

6. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package must be prepared for shipment and operated in accordance with the Operating Procedures in Chapter 7 of the application.

(b) The package must meet the Acceptance Tests and Maintenance Program in Chapter 8 of the application.

(c) The maximum backfill pressure of the fuel rod shall not exceed 460 psig in a Type A configuration or 275 psig in a Type B configuration.

(d) All Zirconium alloy cladding must have at least a total minimum strain energy of 263 psi-in/in when considering tensile yield strength, ultimate strength, and elongation at failure.

7. Transport by air of fissile material is not authorized.

8. The package authorized by this certificate is hereby authorized for use under the general license provisions of 10 CFR 71.17.

9. Revision No. 0 of this certificate may be used until April 30, 2023.

10. Expiration date: April 30, 2027

REFERENCES

Safety Analysis Report, Revision No. 2 - Application for Certificate of Compliance for the Traveller PWR Fuel Shipping Package, NRC Certificate of Compliance USA/9380/B(U)F-96. Revision request Letter dated August 2, 2021. Supplement SAR Revision No. 2A, dated March 11, 2022.

Renewal Request Letter dated March 11, 2022.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Yoira K. Diaz-Sanabria, Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Date: April 7, 2022

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U.S. Department of
Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

CERTIFICATE NUMBER: USA/9380/B(U)F-96

ORIGINAL REGISTRANT(S):

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