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Your ref: Docket No. 71-9297
Our ref: LTR-LCPT-13-29

Subject: Request for Renewal and Amendment of Certificate of Compliance USA/9297/AF-96 for Model No. Traveller Standard and XL Packages October 4, 2013

References: (1) Docket 71-9297
(2) Certificate of Compliance USA/9297/AF-96, Rev 5
(3) Canadian Nuclear Safety Commission Endorsement CDN/E216/-96, (Rev 4)

Pursuant to 10CFR71.38, Westinghouse Electric Company LLC hereby requests renewal of NRC Certificate of Compliance (CoC) USA/9297/AF-96. A consolidated application is submitted that incorporates all changes previously incorporated by reference in existing approvals or certificate. The current certificate, Revision 5, is supported by the following dated applications and supplements, incorporated since the prior renewal application:

- October 23, 2009
- January 28, 2010
- April 30, 2010
- November 19, 2010
- April 20, 2011
- June 17, 2011

WEC letter dated October 23, 2009 initiated the prior five-year renewal application. Changes made to the application for renewal are summarized as follows:

Revisions

SAR page numbers have changed due to consolidations and referenced updates. All page changes for the renewal are marked as Revision 10 and the revised portion of each page is marked using a “change indicator” consisting of a bold vertical line drawn in the margin opposite the binding margin. Changes are also noted in the application *Record of Revisions* and *List of Effective Pages*.

Changes previously incorporated in existing approvals or certificate

Renewal request dated October 23, 2009 and supplement dated January 28, 2010 provided a consolidated application SAR Revision 7 and was approved as CoC Revision 3. The consolidated application with supplement included administrative changes to correct the number of fuel and non-fuel rods in the 15x15 fuel assembly specified in the contents 5.(b)(1)(i), minor editorial corrections, and the addition of details in application.

The next amendment application dated April 20, 2010 requested addition to the authorized contents section 5.(b)(1)(i), two 16x16 fuel assemblies, CE16VA and CE16NGF. The request was approved as CoC Revision 4 with details consolidated to application SAR Revision 8.

The current application SAR Revision 9 approved as CoC Revision 5 is resultant of application request dated November 19, 2010 and supplemented April 20, 2011 and June 17, 2011 resulting from two requests for additional information. The application requested modification to the designs of the Clamshell top end plate, the axial spacer, and the Outerpack based on operational experience. Additional certificate changes included revisions to 16x16 ATOM fuel guide/instrument tube specifications in 5.(b)(1)(i) and removal of the loose rod transport container, the rod box, as a contents configuration in 5.(a)(2). Clarifications in the contents section were made to indicate allowable configuration changes that replace fissile material with non-fissile material including SS rods, CoC 5.(b)(1)(vi), and secondary source rods, CoC 5.(b)(1)(ii). Based on prior package evaluations and the package design components, the inclusion of polyethylene sleeves were included in the contents sections 5.(b)(1)(iv) and 5.(b)(2) to protect fuel assemblies and fuel rods, respectively.

Since the prior five-year certification in 2010, there have been three approved CoC revisions, all of which incorporated all changes into the application SAR. All prior incorporated changes were reviewed and accepted by the NRC staff.

Changes incorporated by SAR revision

CoC Revision 3 and application SAR Revision 7 incorporated a correction to the 15x15 rod pattern quantity aligning parameters in the certificate and application SAR Chapter 6. Additional application updates were to the inspection requirements in Chapter 8, minor clarifications, and the addition to Chapter 1 of a sketch representing the package as prepared for transport. All changes were administrative and did not affect the package design or contents.

CoC Revision 4 and SAR Revision 8 incorporated a revision to Chapter 6 to include the addition of two 16x16 fuel assemblies, CE16VA and CE16NGF, as authorized contents. The fuel types were evaluated as unique fuel types in the contents comparison of the fuel assembly k_{eff} values, ensuring the criticality safety case maintained the most reactive contents; the evaluation results did not change the original conclusion of the reference assembly, 17x17OFA, therefore keeping the package criticality safety case unchanged.

CoC Revision 5 and SAR Revision 9 consolidated all revisions from the application and subsequent RAIs. The application also included a new configuration of to the top plate of the Clamshell and modification of other Outerpack components; new evaluations and engineering drawings supported the application. As part of the amendment request for the new removable top plate configuration an additional FEA structural evaluation was included in Chapter 2, while additional design and operation descriptions were updated in Chapter 1 and Chapter 7, respectively. Chapter 6 revisions included corrections to the 16x16 ATOM fuel guide/instrument tube and pellet specifications and inclusion of non-fuel materials in the contents. Throughout the application SAR Revision 9 the loose rod transport container, the rod box, was removed as an allowed contents configuration. Upon submittal, RAI responses were incorporated into engineering drawings and the application; a new version of the application SAR Revision 9 was issued.

There are no outstanding approved changes that have not been consolidated in the application SAR Revision 9.

Additional changes not previously reviewed

During a review of the package recertification efforts, it was found that several Traveller XL packagings were above the 3,155 pound tare weight listed in Section 5.(a)(2) of the CoC Revision 5 and SAR Revision 9. All measured weights for the Traveller STD were below the current licensed weight. Further research discovered inconsistencies in the defined tare weight (i.e., packaging gross weight) throughout the complete license application. The issue was documented in the Westinghouse Corrective Action Program and in a 71.95 notice to the NRC. During the 5-year recertification process, the Traveller STD and XL packages are weighed to ensure compliance to SAR Chapter 8 and optimum operability. Statistical analysis of the measured weight data is shown in Table 1.

Table 1. Traveller Tare Weight Statistics

Tare Weight	Traveller XL	Traveller STD
Minimum (lb)	3,085	2,755
Maximum (lb)	3,220	2,850
Variance Range (lb)	135	95
Std Deviation (lb)	30	25

Review of the initial package weight SAR specification indicated that an overage or tolerance was added to the estimated maximum packaging weight based on rounding up. For the Traveller STD, a weight of 104 pounds, or approximately 2.3% of the estimated theoretical maximum weight was added based on rounding. And for the Traveller XL, an overage weight of 29 pounds, or approximately 0.6% of the estimated theoretical maximum weight was added based on rounding. The overage percentage is determined from comparison of the total weight and the design and licensing basis weight. The total, rounded overage weight became the design and license basis used as the application specification.

The measured package data was compared to expected manufactured weight ranges based upon the updated removable top plate SolidWorks (SW) models. The primary weight contributors are stainless steel inner and outer shells, stainless steel Outerpack structures, polyurethane foam, aluminum Clamshell and the polyethylene blocks. The model did not include weld metal. The range represents the maximum to minimum packaging weight based on material and component tolerances. Table 2 compares the tare weight and weight range of the SolidWorks models to the maximum, measured tare weights.

Table 2. Comparison of Modeled and Measured Traveller Tare Weight and Ranges

Traveller Design	Traveller STD	Traveller XL
Measured Range (lb)	95	135
SW Range (lb)	336	380
Range Delta (lb)	241	245
Measured Maximum (lb)	2850	3220
SW Maximum (lb)	2883	3245
Maximum Delta (lb)	33	25

Based upon the measurement data and modeling data, it is concluded that the heavier than expected Traveller XL tare weight is a result of an initial under-estimating of the total packaging weight with

tolerances. It has also been concluded that there has been no unexpected weight variance through operation of the package and that there have not been unexpected manufacturing variability with the Traveller STD or XL packages. For the Traveller XL, an updated design and licensing basis package gross weight (3255 lb) is calculated from the maximum, measured tare weight (3220 lb) plus the standard deviation of the measured data (30 lb) and the 5 lb scale tolerance. The maximum tare weight (3255 lb) plus the maximum fuel assembly contents weight (1971 lb) defines the calculated gross weight (5226 lb); the design and licensing basis package gross weight is set as the value rounded to the nearest tenth (5230 lb). The new Traveller XL package gross weight defined in Table 3 was used to reevaluate mechanical assessments of the Traveller package. The updated mechanical analyses are documented in Section 2, *Structural Evaluation*, of the SAR revision 10; results show the Traveller package remains compliant to mechanical requirements described in 10CFR71 and TS-R-1.

Table 3. Summary of Updated Traveller XL Design Weights

Maximum Weights	Traveller XL
Calculated tare weight, lb (kg) ¹	3255 (1476)
Contents gross weight, lb (kg)	1971 (894)
Calculated package gross weight, lb (kg)	5226 (2370)
Final package gross weight, lb (kg)	5230 (2372)

Note: ¹ packaging gross weight

Reviews were performed to evaluate the impact that deviations in the maximum gross weight of the Traveller XL may have on conclusions in Section 2, *Structural Evaluation*. The updated Traveller XL weight rounded up, 5,230 pounds, is 130 pounds, or 2.5%, greater than the current SAR package gross weight of 5,100 pounds. It is noted from SAR Section 2.12.5.4 that the bounding gross tested weight based upon the mass-energy equivalent to the actual 9-meter Certification Test Unit (CTU) drop test is 5,389 pounds, resulting in a remaining 3.1% of available weight design margin for the new 5,230 pound bounding package gross weight. Since the CTU package exhibited the most mechanical damage to a fuel assembly, it is considered bounding of all drop tests, therefore no additional formal testing was conducted.

As a result of the measured data and subsequent analysis, Westinghouse requests the update of Traveller XL weights defined in CoC Section 5.(a)(2), based on the gross weights defined in Table 3 above. Since all Traveller STD measured weights are below current licensed weight, there is no request to change the Traveller STD gross weights.

Traveller XL:

Package gross weight	2,372 kg (5,230 lbs)
Packaging gross weight	1,476 kg (3,255 lbs)

Revisions to the engineering licensing drawings due to weight revisions, require CoC Section 5.(a)(3) be updated with the following revision numbers:

- 10004E58, Rev. 8 (Sheets 1-9)
- 10006E58, Rev. 5

As part of the renewal application, updates to all chapters and headings of the application SAR Revision 10 include minor revisions for style and composition. Additional legacy references to the loose rod transport container, the rod box, as a contents configuration have been removed throughout the text of the SAR Revision 10, except Chapter 6 where the reference exists as a loose rod criticality evaluation. As a

response to international review, Section 6.9, Benchmark Evaluations, has been revised to include further detailed discussion, however no evaluations have changed.

Additionally, Westinghouse requests to amend the Certificate of Compliance to allow continued use of Revision 5 until the expiration of the current renewal date March 31, 2015. The current US DoT Competent Authority Certification (CAC) references NRC CoC, Revision No. 5, and international certificates are requiring increasingly more review time. Maintaining the current renewal expiration date may allow for additional review time for international validations prior to the current renewal expiration.

Finally, it is requested that this application be reviewed for the Joint United States – Canada process for package approval and validation, in accordance with NUREG 1886. The current Canadian endorsement for the Traveller STD and Traveller XL Package is CDN/E216/-96, (Rev 4).

Westinghouse has a quality assurance program, approved by the Commission, which satisfies the provisions of subpart H (Quality Assurance) of Part 71. Further, Westinghouse complies with the terms and conditions of the applicable requirements of subparts A (General Provisions), G (Operating Controls and Procedures), and H (Quality Assurance) of Part 71.

Please note there has been an address change for the Westinghouse site in South Carolina, as noted in the letter head.

One copy of the renewal application is submitted electronically via EIE system and one paper copy and CD has been mailed to the Project Manager, Pierre Saverot. Additional copies or electronic submissions are available upon request. Should you have any questions, or require additional information, please contact the undersigned either by telephone at (803) 647-1786, or by email at sloamat@westinghouse.com.

Sincerely,

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Tanya Sloma
Licensing, Nuclear Fuel Transport
Uranium Asset Management (UAM)
Westinghouse Electric Company LLC

Enclosure:

1. License Renewal Application for Certificate of Compliance No. USA/9297/AF-96 for Model No. Traveller Standard and XL Packages, Safety Analysis Report (SAR Revision 10, dated September 2013)

cc w/o enclosures: W.E. Stilwell, Director, Nuclear Fuel Transport

*Electronically approved records are authenticated in the Electronic Document Management System.