

March 14, 2016

MEMORANDUM TO: Bo Pham, Acting Deputy Director  
Division of Spent Fuel Management, NMSS

FROM: Pierre Saverot, Project Manager **/RA/**  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management, NMSS

SUBJECT: SUMMARY OF FEBRUARY 24, 2016, MEETING WITH  
WESTINGHOUSE ELECTRIC COMPANY

### Background

Westinghouse Electric Company (Westinghouse, or the applicant) requested this pre-application meeting to discuss a pending amendment request for the Model No. Traveller package, a renewal of the Model No. MCC package certificate of compliance (CoC), and the definition of “unirradiated” terminology. The meeting was noticed on February 2, 2016 (ML 16033A334). The meeting attendance list and the presentation are provided as Enclosures 1 and 2.

### Discussion

The purpose of the meeting was threefold: (i) discuss a new criticality evaluation of the Model No. Traveller package, (ii) discuss the renewal of the Model No. MCC package, and (iii) obtain clarifications on the 10 CFR 71.4 definition of “unirradiated uranium.”

The criticality safety case of the Model No. Traveller package will be revised by improving the analysis methods, updating the computation codes, and including clarifications and responses to questions from foreign competent authorities. Westinghouse will develop generic fuel assembly parameters to have the flexibility to use the package internationally by narrowing down all currently authorized fuel assemblies into a bounding case and performing a pre-assessment by lumping them by array size and rod patterns. An array size is typically axially stacked and, for fissile packages, a package array is a bounding case. Westinghouse will redo the entire benchmark analysis and perform a sensitivity study. Most notably, Westinghouse intends to model 100 cm of fuel expansion behavior versus a 20 cm deformation observed in the full scale drop tests.

Staff noted that the CoC of the Model No. Traveller package did not include any tolerances on the fuel data, and thus needed to be corrected. Staff asked Westinghouse to make the case that, with a generic design, all fuel assemblies can have the same structural behavior. In other words, chapter 2 of the application shall include an analysis of the validity of assuming a maximum expansion and contraction for all assembly types. Westinghouse said that it should be adequate to do a lattice expansion since it increases the reactivity.

Westinghouse intends to meet with staff as soon as results from the criticality evaluation are available and to request to maintain Revision 7 of the CoC (which is the basis for international validations of the package) active both during the review and for one year after CoC issuance.

Regarding the CoC of the Model No. MCC package expiring on March 31, 2017, a renewal application will be submitted this August. In responding to the applicant's question on the "longevity of the 1973 era regulatory approved packages", staff confirmed that the CoC can be renewed (i) as long as the package meets the criteria in 10 CFR 71.19(d) for a previously approved package and (ii) the package meets the requirements of 10 CFR 71.19(b). Staff said also that, except for unforeseen maintenance and repair issues, a package is not "retired" nor a CoC "terminated".

Westinghouse is also looking at removing the word "unirradiated" from its certificates and licenses while maintaining safety by an  $A_2$  calculation for any material assayed above the 10 CFR 71.4 definition. Westinghouse notes that the 10 CFR 71.4 definition, i.e., "not more than  $5 \times 10^{-3}$  g of uranium-236 per gram of uranium-235" is at odds with slightly "off-spec" materials referencing "per g of U" as is the case in ASTM C996 and ASTM 753-04. Staff responded that it will start looking at this issue over the next months, as part of the current effort to harmonize Part 71 and IAEA SSR6 regulations. The regulatory definition of unirradiated uranium changed in the 2004 revision of 49 CFR 173.403 which implemented that U-236/U-235 limit. Staff noted that, by definition, if uranium is out of the ratio of ranges for unirradiated uranium, one cannot use  $A_2$  unlimited values. Staff also said that the applicant has to (i) prove that a quantity greater than  $A_2$  is not in the package or (ii) demonstrate that less than a Type A quantity is within the "intent of what was approved".

Staff made no regulatory commitments during the meeting.

Docket No. 71-9297

TAC No. L25081

Enclosures:

1. Meeting Attendees
2. Presentation

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Westinghouse is also looking at removing the word "unirradiated" from its certificates and licenses while maintaining safety by an A<sub>2</sub> calculation for any material assayed above the 10 CFR 71.4 definition. Westinghouse notes that the 10 CFR 71.4 definition, i.e., "not more than 5x10<sup>-3</sup> g of uranium-236 per gram of uranium-235" is at odds with slightly "off-spec" materials referencing "per g of U" as is the case in ASTM C996 and ASTM 753-04. Staff responded that it will start looking at this issue over the next months, as part of the current effort to harmonize Part 71 and IAEA SSR6 regulations. The regulatory definition of unirradiated uranium changed in the 2004 revision of 49 CFR 173.403 which implemented that U-236/U-235 limit. Staff noted that, by definition, if uranium is out of the ratio of ranges for unirradiated uranium, one cannot use A<sub>2</sub> unlimited values. Staff also said that the applicant has to (i) prove that a quantity greater than A<sub>2</sub> is not in the package or (ii) demonstrate that less than a Type A quantity is within the "intent of what was approved".

Staff made no regulatory commitments during the meeting.

Docket No. 71-9297  
TAC No. L25081

- Enclosures:
1. Meeting Attendees
  2. Presentation

Distribution: Attendees, M. Lombard, J. Piotter

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DSFM r/f      NMSS r/f      NRC Attendees

**ADAMS Package No.: ML                      Memo: ML                      Slides: ML**

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<b>NAME</b>	PSaverot		WWheatley		SRuffin			
<b>DATE</b>	02/29/2016		03/01/2016		03/14/2016			

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**Meeting Between Westinghouse and the  
Nuclear Regulatory Commission  
February 24, 2016  
Meeting Attendees**

**NRC/NMSS/DSFM**

Pierre Saverot

Meraj Rahimi

Andrew Barto

Shadi Ghrayeb

**WESTINGHOUSE**

Wes Stilwell

Tanya Sloma

Tony Grange