August 28, 2012

MEMORANDUM TO: Douglas Weaver, Deputy Director
Division of Spent Fuel Storage and Transportation, NMSS

FROM: Bernard White, Senior Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF AUGUST 14, 2012, MEETING WITH AREVA FEDERAL SERVICES TO DISCUSS TWO NEW FRESH FUEL MOX PACKAGES (TAC NO. L24660)

Background

A meeting was held on August 14, 2012, in Rockville, Maryland, between the U.S. Nuclear Regulatory Commission (NRC) and AREVA Federal Services (AREVA) to discuss two proposed package designs to transport unirradiated mixed oxide (MOX) fuel from the MOX Fuel Fabrication Facility in South Carolina.

The meeting was noticed on July 2, 2012 (ADAMS Accession No. ML12191A338). The meeting attendance list is provided as Enclosure No. 1.

Discussion

The discussion generally followed the agenda (Enclosure No. 2). The meeting started with a short overview of the MOX fuel fabrication facility to familiarize the staff with the facility and AREVA's needs for early engagement on the two MOX packages; one for boiling-water reactor (BWR), and the other for pressurized-water reactor (PWR) MOX fuel assemblies, the Model Nos. BWR MOX fuel Package and PWR MOX Fuel Package, respectively. A copy of the presentation slides for the MOX facility overview is provided as Enclosure No. 3. The packages are considered a primary system structure and component of the facility and are relied upon for safety. For this reason, the packages that will be used to transport the fuel assemblies from the facility need to be certified, prior to the MOX fuel fabrication facility being licensed.

The facility overview included a brief discussion on the Model No. MFFP package (Docket No. 71-9295) that is approved to transport unirradiated PWR MOX fuel. It was noted that this package is too short to transport BWR fuel assemblies. Additionally, the MFFP package relied on the packaging for containment instead of the fuel assemblies. The newer packages AREVA is developing will rely on the fuel assembly to provide containment and will weigh less so that more packages can be loaded in a single consignment. There was a brief discussion on the potential storage of fuel at the fabrication facility prior to shipment and whether storage durations longer than a year would invalidate the fuel assemblies' pre-shipment leak test. AREVA does not anticipate storage durations for fuel assemblies would approach the year timeframe.

AREVA provided a presentation on its plans and work to-date on development of the two new packages for MOX fuel. A copy of the presentation slides is provided as Enclosure No. 4. AREVA discussed its prior work on the Model Nos. MAP-12 and RAJ-II packages (Docket Nos. 71-9319 and 71-9309, respectively). Both packages are Type B packages certified to transport fresh fuel assemblies constructed of enriched commercial grade uranium. AREVA discussed in details the drop orientations and results of the tests for hypothetical accident conditions, for both packages. The testing program and lessons learned during the tests for hypothetical accident conditions for the MAP-12 and RAJ-II are being used to inform the testing program for these two new packages.

The new package designs are based on the MAP-12 with enhancements to address safety for containment and criticality control. AREVA discussed the testing program including development of drop orientations, and fire testing. AREVA plans to perform engineering tests for each package design to identify features that may need to be changed, and most damaging orientation for drop tests. Following the engineering testing, AREVA will perform certification testing that will form the basis for the applications for the certificates of compliance. AREVA will fabricate two full-size specimens of each package design to use in the drop tests for hypothetical accident conditions. Currently, AREVA is planning on performing the thermal test for hypothetical accident conditions on one of the two packages of each design, whichever has the most severe damage after the drop and puncture tests. Leak tests will be performed on the prototypic fuel assembly after each fire test.

AREVA is proposing using the fuel assembly cladding as the containment boundary and testing each assembly to leaktight conditions from American National Standards Institute (ANSI) in ANSI N14.5-1997, “Radioactive Materials - Leakage Tests on Packages for Shipment.” AREVA will perform helium leak tests on each fuel assembly before and after the tests for hypothetical accident conditions to ensure that it meets the leaktight criteria. AREVA is developing the test to detect and verify helium inside the fuel assemblies. Ensuring that the helium is located in the fuel assembly after tests for hypothetical accident conditions is critical to ensuring that it can detect a leak, if one were to exist after the tests.

AREVA discussed its schedule for testing and submitting an application to the NRC. AREVA expects to perform the engineering tests in the February or March 2013 timeframe, the certification tests 3 to 5 months later and have an application to the NRC near the end of 2013 or early 2014. While the schedule is informative to the NRC, it is not binding on AREVA.

A member of the public asked questions at the end of the meeting pertaining to general MOX package certification and whether or not NRC would certify a French package for domestic transport of MOX fuel. NRC was also questioned about whether the packages being developed by AREVA would have to be tested to withstand a shaped charge. Finally, the NRC was asked about a different meeting between Global Nuclear Fuels and the NRC (Office of Nuclear Reactor Regulation) on August 8, 2012, to discuss its proposed plans for fabricating and using MOX fuel. The member of the public inquired which transportation package might be used by Global Nuclear Fuels to ship MOX fuel, that it is considering fabricating.

After the meeting was over, NRC received a statement from another member of the public for inclusion in the meeting summary. The statement is included as Enclosure 5.

Docket Nos.: 71-9353, 71-9354,
TAC Number: L24660

Enclosures:
1. Meeting Attendees
2. Agenda
3. MOX Facility Overview Presentation Slides
4. MOX Fresh Fuel Package Presentation Slide
5. Comments by Mr. Stewart Horn

A member of the public asked questions at the end of the meeting pertaining to general MOX package certification and whether or not NRC would certify a French package for domestic transport of MOX fuel within the U.S. NRC was also questioned about whether these packages would have to be tested to withstand a shaped charge. Finally, the NRC was asked about which transportation package would be used by Global Nuclear Fuels to ship MOX fuel, that it is considering fabricating. Global Nuclear Fuels met with the NRC (Office of Nuclear Reactor Regulation) on August 8, 2012, to discuss its proposed plans for fabricating and using MOX fuel.

After the meeting was over, NRC received comments from another member of the public for inclusion in the meeting summary. The statement is included as Enclosure 5.

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Distribution: (closes TAC No. L24660)
NRC Attendees Bob Tripathi Kim Hardin Michele Sampson David Tang
Mark Lombard Bob Einziger Kevin Morrissey (FCSS)

- G:\SFST\Bernie White\AREVA MOX Packages\August 14 2012 MEETING SUMMARY.docx
- G:\SFST\Bernie White\AREVA MOX Packages \Introduction – Overview of MFFF NRC Packaging Meeting 8-14-12.pdf
- G:\SFST\Bernie White\AREVA MOX Packages \MOX Fresh Fuel Pkgs, NRC 8-14-12 Meeting.pdf
- Comments by Stewart Horn

**ADAMS P8 Package No.: ML12242A135 ADAMD P8 Memo No.: ML12242A139**

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| NAME | BWhite | | MDeBose | | MWaters | |
| DATE | 8/27/12 | | 8/28/12 | | 8/28/12 | |

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MEETING ATTENDEES

Meeting Title: Meeting to discuss proposed designs for two new fresh MOX fuel transportation packages

Participants: AREVA Federal Services and the NRC

Date: August 14, 2012, 9:00 – 11:00 a.m.

Location: U.S. NRC Headquarters, EBB 1B13

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| Scott Ludwig | ORNL | (865) 574-7916 |

Meeting Agenda

Meeting with AREVA Federal Services, LLC.,
August 14, 2012, from 9:00 a.m. to 11:00 a.m.
Room EBB 1B13

Purpose: Discuss proposed designs for two new fresh MOX fuel transportation packages. An agenda is enclosed.

- Introductions
- MOX Project Overview
- Packaging Designs
- Payloads
- Licensing Approach
- Planned Schedule
- Discussion and Closure

Enclosure 2