

May 4, 2012

MEMORANDUM TO: Doug Weaver, Deputy Director  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

FROM: Steve Ruffin, Project Manager **/RA/ B. H. White for**  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: SUMMARY OF APRIL 12, 2012, MEETING WITH THE NUCLEAR  
ENERGY INSTITUTE AND INDUSTRY REGARDING MARINE  
ATMOSPHERE STRESS CORROSION CRACKING

#### Background

The U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting with Nuclear Energy Institute (NEI) and industry on April 12, 2012. The purpose of the meeting was to discuss the NRC staff's concern and basis for concern about Marine atmosphere stress corrosion cracking (SCC), including sources of existing data, and interpretation of existing data and industry's plans for collecting data from actual casks and development of screening criteria for marine atmosphere SCC. No regulatory decisions were requested nor made at the meeting. Enclosure 1 contains the list of meeting attendees, Enclosure 2 contains the meeting agenda, and Enclosure 3 contains the presentations given by NRC and NEI as meeting handouts.

#### Summary of Meeting

On April 12, 2012, NEI and industry met with NRC staff to discuss marine atmosphere SCC. NRC staff discussed the Regulatory Issue Resolution Protocol (RIRP) and regulatory background, including, governing regulations and basis for concern. The NRC staff presented its basis for why industry should assess the significance for specific site locations and cask designs and provide the relevant information to NRC for evaluation under the appropriate process. In addition, the NRC staff stated that industry should consider aging management approaches to assess phenomena.

In addition to the RIRP and regulatory information, the NRC staff presented relevant technical information based on the research efforts that are currently underway. The key messages from the technical presentation were: 1) Available operational experience indicates events where SCC of austenitic stainless steel components was attributed to atmospheric chloride exposure; 2) The susceptibility for SCC appears to increase at lower temperatures, potentially less than 60 to 80°C; 3) The deliquescence at relative humidity (DRH) for sea salt appears close to that of MgCl<sub>2</sub>; 4) SCC on U-bend specimens with sea salt is observed at relative humidity (RH) less than the DRH for NaCl and at atmospheric humidity (AH) less than 30 g/m<sup>3</sup>; 5) SCC is observed

on U-bend specimens covered with 1 g/m<sup>2</sup> of sea salt at AH less than 30 g/m<sup>3</sup>; and 6) Visual examination has not been demonstrated to identify the features associated with SCC of the canister.

Following the discussion of the NRC staff's presentation about marine atmosphere SCC, NEI and industry presented its conceptual screening process for identifying independent spent fuel storage installations (ISFSIs) potentially affected by marine atmosphere SCC, and the associated timeframes. Industry indicated that the intent of the draft was only to identify a general concept of the process, and may also be helpful in identifying high priority areas for research and development and in-situ inspection data collection. There were extensive Q&As between NRC and industry on its current plan and screening criteria. NRC staff noted the need for a master plan outlining all parallel efforts that will contribute to addressing the Marine atmosphere SCC issue. NEI proposed to provide NRC with a draft master plan, updated resolution issue plan, and discuss progress regarding field test data following completion of the first inspection scheduled to occur in late June at Calvert Cliffs.

TAC No.: LA0119

- Enclosures:
1. Meeting Attendees
  2. Agenda
  3. Handouts
    - Regulatory Issue Resolution Protocol (RIRP) Pilot: Marine Atmosphere Stress Corrosion Cracking (SCC) Plans for Inspection of Stainless Steel Canisters in Service
    - Conceptual Screening Process for Identifying ISFSIs Potentially Affected by Marine Atmosphere SCC, and the Associated Timeframes

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Distribution: NRC Attendees  
 Electronic Distribution: NMSS/SFST  
 G:\SFST\Ruffin\NEI\Meetings\2012 April 12\Meeting Summary-4-12-r1

**ADAMS Package No.: ML12128A133**

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<b>NAME</b>	SRuffin		WWheatley		CLipa	
<b>DATE</b>	5/1/2012		5/2/2012		5/4/2012	

C=Without attachment/enclosure E=With attachment/enclosure N=No copy **OFFICIAL RECORD COPY**

MEETING ATTENDEES  
Meeting Between the Nuclear Regulatory Commission,  
NEI and Industry

April 12, 2012

Brooke Poole	NRC/SFST
Doug Weaver	NRC/SFST
David Pstrak	NRC/SFST
Mike Waters	NRC/SFST
Steve Ruffin	NRC/SFST
Robert Einziger	NRC/SFST
Sara DePaula	NRC/SFST
John Goshen	NRC/SFST
Tae Ahn	NRC/SFAS
James Rubenstone	NRC/SFAS
Christian Jacobs	NRC/SFAS
Greg Oberson	NRC/RES
Darrell Dunn	NRC/RES
Michael Benson	NRC/RES
Aladar Csontos	NRC/RES
Stuart Richards	NRC/RES
William Bracey	Transnuclear
Mark Nichol	NEI
Keith Waldrop	EPRI
John Kessler	EPRI
Glenn Schwartz	PSEG Nuclear Fuels
Kris Garg	Constellation Energy
Carl Lee Friant	Constellation Energy
Jim Wood	Constellation Energy
Heidi Vallenta	Constellation Energy
Chuck Merritt	Constellation Energy
John Massari	Constellation Energy
Chip Perkins	Constellation Energy
Laszlo Zsidai	Holtec
James Connell	Maine Yankee
Tom Danner	NAC International
Suzanne Leblang	Entergy
Zita Martin	TVA

By Teleconference:

Yi-Ming Pan	SWRI
Ryan Hosler	Areva

**Agenda**  
**Public Meeting with Nuclear Energy Institute**  
**On Marine Atmosphere SCC**

April 12, 2012

1:00 PM - 5:00 PM

- |              |                                                                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1:00-1:05 PM | Call to Order and Introductory Remarks                                                                                                                  |
| 1:05-2:45 PM | NRC presentation of regulatory questions related to Marine Atmosphere SCC, including identification of timeframes currently of concern.                 |
| 2:45-3:00 PM | Break                                                                                                                                                   |
| 3:00-4:30 PM | NEI presentation of a conceptual screening process for identifying ISFSIs potentially affected by Marine Atmosphere SCC, and the associated timeframes. |
| 4:30-4:45 PM | Discussion of next milestones and anticipated dates                                                                                                     |
| 4:45-5:00 PM | Public Comments /Wrap-up                                                                                                                                |

PRESENTATION HANDOUTS