May 18, 2010

MEMORANDUM TO: Robert M. Taylor, Chief
Steam Generator Tube Integrity and
Chemical Engineering Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

FROM: Thomas P. Morgan, General Engineer ***/RA/***
Steam Generator Tube Integrity and
Chemical Engineering Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE MAY 6, 2010, CATEGORY 2 PUBLIC MEETING WITH INDUSTRY TO DISCUSS NEUTRON ABSORBER MATERIALS DEGRADATION ISSUES

Industry representatives and members of the public met with U.S. Nuclear Regulatory Commission (NRC) staff on May 6, 2010, at the Baltimore Marriott Inner Harbor at Camden Yards in Baltimore, Maryland. The purpose of the meeting was to discuss neutron absorber materials degradation issues. The topics discussed are summarized in the staff's and industry's slides, which are available in the Agencywide Documents Access and Management System (ADAMS) under Accession Numbers ML101310015 and ML101310017. The enclosure provides a list of those in attendance. This meeting was noticed as a public meeting and the meeting agenda is available in ADAMS under Accession Number ML101110002.

During the meeting there was discussion on many neutron absorber materials degradation issues. These discussions are summarized below:

- The BORAL material porosity issues that were discussed included historical porosity issues and manufacturing improvements in the more recent vintages of BORAL. The industry indicated that 5-7% porosity was optimal in BORAL to prevent blistering.

- Hydrogen production and entrainment during the blistering process in BORAL was discussed, and whether all possible chemical reactions have been considered for all spent fuel pool environments and conditions.

- Neutron absorber material degradation as a function of spent fuel pool conditions was discussed. Conditions such as neutron flux, impurities, and chemistry (products and reactants) were discussed. In 2010, these parameters will be evaluated parametrically to discover their effects on BORAL degradation.

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- The issue of helium production within neutron absorbing materials during extended plant operation was raised. The industry stated that helium production and the subsequent $B_4C$ swelling is not an issue in spent fuel pool environments.

- The industry stated that guidelines for a Boraflex surveillance program were issued subsequent to the first Boraflex Users Group meeting. These guidelines ("Guidelines for a Standard Boraflex Coupon Surveillance Program") were published as Appendix C in EPRI Report NP-6159 in December 1988. Additionally, this guidance informed ASTM standard C 1187-07, "Establishing Surveillance Test Program for Boron-Based Neutron Absorbing Material Systems for Use in Nuclear Spent Fuel Storage Racks."

- The industry mentioned that pitting corrosion has been seen on Metamic samples. The cause was thought to be due to cleanliness during production.

- The industry indicated that coupon surveillance samples that are removed from the spent fuel pool for testing are generally disposed of since subsequent surveillance tests would be invalidated once the samples are removed from the spent fuel pool environment and prepared for testing.

Enclosure:
Attendance List

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Enclosure:
Attendance List

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| **DATE** | 05/18/2010 | 05/18/2010 |

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Attendance List
May 6, 2010 Public Meeting

Industry
Albert Machiels, EPRI
John Kessler, EPRI
Andrew Sowder, EPRI
Everett Redmond, NEI
Steven Edwards, Progress Energy
John Ponder, Southern Nuclear
William Slagle, Westinghouse
Bill Lang, Constellation
Brendan Brown, Constellation
John Massari, Constellation
Ken Lindquist, NETCO
Matt Eyre, NETCO
Kevin Morris, TransNuclear
Kevin Koski, First Energy
Peter Sharp, FPL
Dennis Buschbaum, Luminant Power
Brett Carlsen, INL
Zita Martin, TVA
Suzanne Leblang, Entergy
Phil Blue, Nanotec
Luis Hinojasa, Holtec
Jayant Bondre, Transnuclear
Brian Gustems, PSEG Nuclear
Sandra Birk, INL
Joy Russell, Holtec
Brian Gutherman, ACI
Michael Lampe, TransWare Enterprises
Robert Sanchez, US GAO

Phone Participants
Ray Lambert, EPRI
William Murphy, Duke Energy
Joseph Coletta, Duke Energy
Philip Tufts, Duke Energy
Robert St. Clair, Duke Energy
Curt Bock, FPL-Duane Arnold
William Long, Engineered Materials Insights
Deann Raleigh, Scientech-Curtiss Wright
Elaine Hiruo, Platts
John Weiss, Entergy

Phone Participants, Continued
Robin Jones, Southern Nuclear
Ron Cocherell, Southern Nuclear
Susan Hoxie-Key, Southern Nuclear
Adel Alapour, Southern Nuclear
Rick Fennell, Southern Nuclear
John Hannah, GE Hitachi Nuclear Energy
Bob Ashe-Everest, SONGS
Janice Bostelman, Alion
Joseph Willett, Fort Calhoun Station
Richard Roenigk, Fort Calhoun Station
Matthew Kirkland, Fermi Unit 2
Jeffrey Dunlap, Exelon
Charles Rombough, CTR Technical Services
Robert Quinn, Westinghouse
Adam Levin, Exelon
Thomas Loomis, Exelon
James Rajenski, PVNGS
Nancy Chapman, Bechtel Power
Dale Lancaster, Nuclear Consultants
Don Algama, NRC
Tony Nakanishi, NRC
Matt Gordon, NRC

NRC
Robert Taylor
Emma Wong
April Pulvirenti
Marilyn Diaz
Eduardo Sastre
Aloysius Obodoako
Charles Harris
Thomas Morgan

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