December 2, 2015

MEMORANDUM TO: Christepher McKenney, Branch Chief
Performance Assessment Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety and Safeguards

FROM: A. Christianne Ridge, Sr. Systems Performance Analyst ***/RA/***
Performance Assessment Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
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SUBJECT: UPDATE ON NRC PARTICIPATION IN ACTIVITIES OF THE ELECTRIC POWER RESEARCH INSTITUTE (EPRI) WORKING GROUP ON THE U.S. NUCLEAR REGULATORY COMMISSION BRANCH TECHNICAL POSITION ON CONCENTRATION AVERAGING AND ENCAPSULATION

The U.S. Nuclear Regulatory Commission (NRC) staff is participating in a working group created by the Electric Power Research Institute (EPRI) regarding the NRC Branch Technical Position on Concentration Averaging and Encapsulation (CA BTP). The working group includes representatives of utilities, waste processors, and disposal site operators, as well as Agreement State regulators and NRC staff. The purpose of the working group is to produce an EPRI implementation guide for Nuclear Power Plant (NPP) licensees, including examples specific to NPP operations. NRC participation has been limited to clarification of positions in the CA BTP and has not resulted in any regulatory decisions or commitments. A summary of activities is attached for your use.

CONTACT: A. Christianne Ridge, DUWP/NMSS
(301) 415-5673

Enclosures:
1. Summary of working group activities
2. List of kickoff teleconference participants
3. List of first meeting participants
4. List of second meeting participants

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OFFICE	NMSS/PAB	NMSS/LA	NMSS/LLWB	NMSS/PAB	NMSS/PAB
NAME	A. Ridge	T. Moon	D. Lowman	C. McKenney	A. Ridge
DATE	11/16/15	11/17/15	11/18/15	11/27/15	12/2/15

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Update on NRC Participation in Activities of the Electric Power Research Institute (EPRI) Working Group on the U.S. Nuclear Regulatory Commission Branch Technical Position on Concentration Averaging and Encapsulation

Purpose

The working group was established by the Electric Power Research Institute (EPRI). The purpose of the working group is to produce an EPRI implementation guide for Nuclear Power Plant (NPP) licensees using the NRC Branch Technical Position on Concentration Averaging and Encapsulation (CA BTP), including examples specific to NPP operations. EPRI has stated that it will make the implementation guide free and publicly available. NRC participation has been limited to clarification of positions in the CA BTP and has not resulted in any regulatory decisions or commitments.

Summary

The kickoff teleconference was held by EPRI representatives on April 23, 2015. Working group members include representatives of utilities, waste processors, and disposal sites as well as Agreement State regulators and NRC staff (see Enclosure 2). The EPRI moderator introduced the purpose of the group, which is to produce an EPRI implementation guide for the NRC CA BTP tailored to NPP licensees. An EPRI representative described the three main goals of the implementation guide as fostering common understanding, consistent implementation, and reliable acceptance and enforcement of concentration averaging as it pertains to waste classification.

An EPRI representative provided a brief history of EPRI work related to blending of Low-Level Radioactive Waste (LLRW). In response to an EPRI comment, NRC staff clarified that the Agreement State regulators of LLRW disposal sites may choose whether to allow continued use of the 1995 CA BTP, use of 2015 Revision 1 of the CA BTP, or a combination of the two. An EPRI representative described the planned content of the implementation guide as organized into the following three main areas:

- A description of each section of the CA BTP with specific implementation guidance for waste streams of interest to NPP licensees;
- A discussion of issues for licensees to consider in developing alternative approaches; and
- A comparison of the revised CA BTP guidance with the previous guidance, a description of the changes, and an analysis of the impact of each change.

An EPRI representative described the main working group member responsibilities as follows:

- Providing input on the draft implementation guide;
- Providing and vetting examples (both data and applicability);

- Participating in meetings and teleconferences; and developing common understanding and interpretation of the CA BTP.

The EPRI moderator outlined the following proposed schedule for the project:

- Production of a draft implementation guide by an EPRI contractor prior to the first in-person meeting;

- A meeting on June 18-19, 2015, in Orlando, Florida, in conjunction with the annual EPRI LLRW conference, including a discussion of the draft EPRI document;

- EPRI revision of the implementation guide based on discussion at the June meeting with subsequent circulation of a revised draft to working group members;

- November meeting in Dallas to discuss the revised draft; and

- Completion of the implementation guide in the spring of 2016.

At the conclusion of the teleconference, a working group participant asked if NRC staff would make its training slides for NRC Regional Inspectors and Agreement State Regulators available to the public. After the meeting, and after consulting with NRC management, NRC staff informed the working group that the training materials would be made publicly available after all of the training sessions were complete. The EPRI moderator asked stakeholders to consider whether they had examples of disposal issues and data relevant to the BTP, and asked working group members to supply the information for incorporation into the first draft of the implementation guide.

The working group met from June 18-19, 2015, in Orlando, Florida to discuss an EPRI draft that was circulated to the group prior to the meeting. During that meeting, the working group asked NRC staff to clarify several CA BTP positions including:

- The relationship of waste types and waste streams in the revised CA BTP, and whether one waste stream could include multiple waste types;

- The applicability of positions in Section 3.2.2 of the revised CA BTP to mixtures of multiple blendable waste types;

- The acceptability of averaging over uncontaminated material added to fill void space to meet disposal facility waste acceptance criteria (WAC);

- The treatment of certain combinations of wastes as a single waste type or multiple waste types, including mixed bed resins containing charcoal and combinations of anion and cation resins;

- The meaning of the term “extreme measures” as used in the revised CA BTP and whether a 14 percent waste loading threshold used in the CA BTP position on encapsulation could be generalized to other processes, such as solidification; and

- The process for determining whether primary gamma-emitting radionuclides are classification controlling, outlined in Section 3.3.2.2 of the revised CA BTP.

NRC staff provided preliminary clarification of these issues at the meeting and stated that each issue would be discussed with additional NRC staff and management, at which point final clarifications would be made publicly available. Subsequent to the meeting, written clarification of each of these issues was made publicly available in the NRC Agencywide Documents Access and Management System (ADAMS) at Accession Number ML15303A109. The document was also placed on the NRC public Web site on the CA BTP webpage.

At the meeting, working group members also discussed the distinction between contaminated trash and contaminated materials. NRC staff had identified this issue as potentially requiring further clarification in the Federal Register Notice (FRN) issued with publication of the revised CA BTP (80 *Federal Register* 10165, February 25, 2015). In response to a question from EPRI representatives, NRC staff reiterated the position in the FRN and stated that NRC was evaluating whether further clarification would be needed and may publish a Regulatory Issue Summary (RIS) on the issue. Working group members expressed concern about potential disruptions to current practice, including classification of "high rad trash". NRC staff noted that the language in the revised CA BTP regarding contaminated materials is very similar to the language in the 1995 CA BTP. NRC staff also noted that part of the purpose of issuing a RIS, if staff determines a RIS is warranted, would be to collect stakeholder input on the issue. At the conclusion of the meeting, EPRI representatives asked utility and processor representatives in the group to supply examples of specific waste streams that could illustrate some of the positions in the revised CA BTP.

The second working group meeting was held from November 5-6, 2015 in Dallas, Texas. The purpose of the second meeting was for EPRI to collect and discuss comments on a revised draft document, which had been provided to the working group prior to the meeting. NRC staff discussed clarifications that the staff had made publicly available prior to the second meeting (ML15303A109). EPRI representatives expressed concern with the clarification regarding the relationship of waste types and waste streams in the revised CA BTP, which defines waste streams more narrowly than waste types for the purposes of concentration averaging. EPRI representatives explained that NPP licensees define waste streams as including any waste that can be characterized with a single set of scaling factors, and that by this definition of waste stream, a waste stream often contains more than one waste type (e.g., filters and resins). EPRI representatives expressed concern that the definition of waste stream in the revised CA BTP would lead to increased sampling requirements to define additional scaling factors. NRC staff stated that sampling programs are outside the scope of the CA BTP, and that the definition of waste stream in the revised CA BTP applies only to concentration averaging. In addition to that discussion of the relationship between waste types and waste streams, which NRC has publicly clarified, working group members asked for clarification on the following issues:

- Whether materials used in contact with one another in a NPP (e.g., a mixed bed) can be considered a single waste stream;

- Whether the original or shredded volume of filters should be used to determine waste loading for solidification;

- Whether the screening value of 1 mCi discussed in Section 3.3.2.1 of the revised CA BTP can be interpreted as “up to and including 1 mCi”;

- Whether all discrete items smaller than 280 cm^3 in a waste package must be included in a single sum for comparison to CA BTP Table 2 activity limits;

- Whether Figure 5 of the revised CA BTP is correct in showing 9.4 m^3 as an upper limit of encapsulation when 9.5 m^3 is provided as the volume limit in the text; and

- Whether the first of four methods of waste characterization listed in Section 3.1.4 of the revised CA BTP is intended to say “materials compatibility” instead of “materials accountability,” which is the term used in the NRC 1983 BTP on waste classification.

NRC staff indicated that these issues would be discussed with additional NRC staff and management and that clarifications would be provided publicly in a manner similar to the clarifications provided after the first meeting.

Teleconference Participants

April 23, 2015 Teleconference of the EPRI Working Group on the NRC CA BTP

Rick Reed	EPRI	Oversight
Karen Kim	EPRI	Sr. Technical Leader
Lisa Edwards	EPRI	Sr. Program Manager
Mike Snyder	EPRI	Sr. Technical Leader
Tom Kalinowski	DW James Consulting	EPRI Principal Investigator & Shipping Expert
Clint Miller	PG&E	Utility
Mark Ross	Exelon	Utility
Glen Vickers	Exelon	Utility
Lee Hammel	Duke Energy	Utility
Brian Wood	TVA	Utility
Jim Alldredge	Luminant	Utility
Dan Shrum	EnergySolutions	Disposal Site
Kurt Colborn	Waste Control Specialists	Disposal Site
Christianne Ridge	US NRC	Federal Regulator
John LePere	WMG	Shipping Expert
Rusty Lundberg	Utah	State Regulator
Brad Broussard	Texas	State Regulator
Mikel Elsen	Washington	State Regulator
Susan Jenkins	South Carolina	State Regulator
Ralph Andersen	NEI	Industry Policy

Meeting Participants

June 18-19, 2015 Meeting of the EPRI Working Group on the NRC CA BTP

Karen Kim	EPRI	Sr. Technical Leader
Phung Tran	EPRI	Sr. Project Manager
Lisa Edwards	EPRI	Sr. Program Manager
Mike Snyder	EPRI	Sr. Technical Leader
Tom Kalinowski	DW James Consulting	EPRI Principal Investigator & Shipping Expert
Clint Miller	PG&E	Utility
Mark Ross	Exelon	Utility
Glen Vickers	Exelon	Utility
Miguel Azar	Exelon	Utility
Brian Wood	TVA	Utility
Jim Alldredge	Luminant	Utility
Dan Shrum	EnergySolutions	Disposal Site
Kurt Colborn	Waste Control Specialists	Disposal Site
Christianne Ridge	US NRC	Federal Regulator
John LePere	WMG	Shipping Expert
Brad Broussard	Texas	State Regulator
Mikel Elsen	Washington	State Regulator
Susan Jenkins	South Carolina	State Regulator
Janet Schleuter	NEI	Industry Policy

Meeting Participants

November 5-6, 2015 Meeting of the EPRI Working Group on the NRC CA BTP

Lisa Edwards	EPRI	Sr. Program Manager
Mike Snyder	EPRI	Sr. Technical Leader
Tom Kalinowski	DW James Consulting	EPRI Principal Investigator & Shipping Expert
Mark Ross	Exelon	Utility
Glen Vickers	Exelon	Utility
Ron Wheeler	Southern Nuclear Operating Co.	Utility
Dan Shrum	EnergySolutions	Disposal Site
Kurt Colborn	WCS	Disposal Site
Christianne Ridge	US NRC	Federal Regulator
Brad Broussard	Texas	State Regulator
Mikel Elsen	Washington	State Regulator
Susan Jenkins	South Carolina	State Regulator