

June 30, 2015

## **U.S. Nuclear Regulatory Commission Public Meeting Summary**

**Title:** The Performance-Based Emergency Core Cooling Systems Cladding Acceptance Criteria (Title 10 of the *Code of Federal Regulations* Section 50.46c) Proposed Rule

**Meeting Identifier:** 20150822

**Date of Meeting:** June 9, 2015

**Location:** NRC headquarters location in Rockville, Maryland

**Type of Meeting:** Category 3

**Purpose of the Meeting(s):** The purpose of the meeting was to discuss preliminary draft rule language regarding long-term cooling (LTC) in the Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.46c proposed rule (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12283A174.) This meeting afforded an opportunity for stakeholders to provide oral feedback on preliminary draft rule language, which represents a possible change to the LTC provision in the 10 CFR 50.46c proposed rule. The NRC did not accept formal written comments during the meeting.

**General Details:** The meeting was attended by 45 individuals including industry representatives, members of the public, and NRC staff, 26 of whom participated through audio teleconferencing and webinar.

**Summary of Presentations:** The meeting slides and handouts are available in ADAMS under Accession No. ML15135A144. In addition to the material presented in the slides, the major areas of discussion are summarized below.

### **Public Participation Themes:**

#### **NRC Presentations**

The meeting started with welcome, introductions, and meeting ground rules. NRC staff made a brief presentation; these slides are in ADAMS under Accession No. ML15159A886. The staff noted that this meeting was follow up to a category 3 public meeting the NRC held on March 17-18, 2015, on implementation of the 50.46c proposed rule. During that meeting, stakeholders suggested a public workshop to discuss the long-term cooling provisions in the proposed rule. Information from the March 2015 meeting can be found in ADAMS under Accession No. ML15071A272.

In order to facilitate discussion and stakeholders' presentations, the NRC staff provided draft preliminary rule language and associated Statements of Consideration (SOC) on LTC prior to the meeting that represented a possible change from the proposed rule. This draft preliminary SOC is found in ADAMS under Accession No. ML15135A178. During the meeting, NRC staff provided a presentation on this draft preliminary rule language, which is found in ADAMS under Accession No. ML15159A894. In addition to the material in the slides, key points of discussion included the following:

- Industry stated that they thought that the “self-evident and non-controversial” language used by the Atomic Energy Commission (AEC) does not necessarily mean that some amount of reheat is prohibited. The staff stated that you could not get a secondary reheat without some reduction in ability to cool the core. Industry stated that it may be more reasonable to assume that the AEC did not consider the potential for a reheat. Staff stated that they are attempting to clarify the meaning so that ambiguity is removed.
- The draft preliminary rule and draft preliminary SOC seem to be inconsistent. The draft preliminary SOC indicates that some degradation of fuel may occur as long as it does not lead to added radiological release. The draft preliminary rule says no further damage. Members of industry suggested changing language to “significant damage” or “failure.”
- The industry noted additional inconsistencies in the SOC, specifically regarding the usage of “debris-induced” reheat.
- The SOC needs to be consistent in its description of the causes of reheats. That is state that the concern is reheats due to debris. The SOC may need to discuss other causes of reheats, e.g. swapping to recirculation from injection or changing from cold leg to hot leg injection.
- There was a significant amount of discussion regarding dose.
- A member of industry questioned whether there is a public health and safety issue if the containment is not breached. A member of the NRC staff responded that the goal is to not reduce safety margin.

### Industry Feedback

There were two industry presentations during this meeting. A representative from Tennessee Valley Authority, Thomas Eichenberg, provided a presentation regarding feedback on the draft preliminary changes to the LTC provisions in the 10 CFR 50.46c proposed rule. This presentation is found in ADAMS under Accession No. ML15159A894. Additionally, a member of the Pressured Water Reactor Owners' Group (PWROG), Charles Albury, provided a presentation regarding an overview of current LTC methods and proposed path forward to address LTC methods. This presentation can be found in ADAMS under Accession No. ML15159B367. In addition to the material on the slides, key points of discussion included the following:

- The terms “analytical limit” and “must be approved by the NRC” were removed from proposed 50.46c (g)(1)(v). Industry noted the need to be sure that the rest of the rule reflects NRC intentions with these changes.
- There was a suggestion to add information in the SOC that Industry (PWROG coordinating with BWRs) is considering creating guidance for current LTC methodologies. This guidance can be considered for approval by the NRC.
- There was a comment to make the rule clear that evaluation models are not applicable to LTC. The NRC may need to define this and possibly tie this to 50.46c (g)(1)(v).

However, NRC should make it clear that evaluation models, or portions thereof, may be applied to LTC by entities if they decide to do so.

- Paragraph (c) discusses analytical limits. NRC may need to clarify that they do not apply to LTC.
- Paragraph (d)(1) discusses performance of the ECCS both short term and long term. It also discusses analytical limits. NRC may need to clarify that the analytical limits are for short term only.
- Paragraph (d)(2) discusses evaluation models. There was discussion regarding the need to add language about a different model for LTC, not Appendix K or Realistic. The NRC may need to clarify that evaluation models (Appendix K and Realistic) are not applicable to LTC, and may use the SOC as a vehicle for this.
- Paragraph (d)(2) discusses ECCS design. This may need to be changed to separate the requirements for LTC and STC.
- Questions were raised regarding the need for reporting for LTC. What is significant? Is there another reporting requirement if a licensee finds that they are not in compliance? If so, is this adequate so that other reporting requirements aren't needed for deterministic LTC? The NRC will need to recognize in the SOC that debris is being addressed on a different schedule than the other aspects of the rule. However, the NRC staff clarified that the risk-informed alternative to addressing the effects of debris on LTC (paragraph (e)) will remain in the rule.

#### Public Feedback

Per the meeting notice, members of the public were invited to make a presentation on any topics that were relevant to the LTC discussion. The NRC staff did not receive any requests to provide a presentation prior to the meeting. During the meeting, NRC staff reiterated this invitation, and no member of the public wished to make a presentation.

#### Overall Conclusions

During the closing remarks, the NRC staff led a group discussion to highlight the overall key points from the meeting. The points raised were as follows:

- There needs to be consistency within the SOC, between the SOC and rule language, and between the (g)(v) provision and other parts of the 50.46c rule.
- The NRC should consider changing the term “damage” to “failure” in the draft preliminary changes to (g)(v).
- The NRC needs to distinguish between the period of ECCS compliance and long-term cooling.
  - In paragraph (b), “ECCS model” definition may need to be revised (e.g., when does the model stop and LTC begin). Rather than trying to define this, it may be more beneficial to make explicit that the ECCS model excludes LTC.
- Current LTC models would be acceptable under 50.46c.
- The PWROG is considering a project regarding LTC guidance, but this schedule is not tied to the 50.46c rule schedule. The NRC staff was supportive of this concept.

There was discussion of additional future public meetings. The NRC staff noted that there are plans for a public meeting toward the end of the draft final rule concurrence process to discuss how public comments were being resolved and the general direction of the rule. This is tentatively scheduled for the end of Fall 2015. Members of industry suggested a public meeting

to discuss paragraph (m) of the proposed rule, and the NRC staff responded that they would discuss this internally.

**Action Items/Next Steps:**

**Attachments:**

- Meeting agenda – ML15135A161
- ADAMS accession number to NRC staff presentation – ML15159A886, ML15159A894
- ADAMS accession number(s) to industry presentation – ML15159B355, ML15159B367

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**Action Items/Next Steps:**

**Attachments:**

- Meeting agenda – ML15135A161
- ADAMS accession number to NRC staff presentation – ML15159A886, ML15159A894
- ADAMS accession number(s) to industry presentation – ML15159B355, ML15159B367

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**NRC-001**

<b>OFFICE</b>	DPR/PRMB/PM	DPR/PRMB/RS	DPR/PRMB/BC	DPR/PRMB/PM
<b>NAME</b>	ABone*	GLappert	TInverso	ABone
<b>DATE</b>	6/13/2015	6/23/2015	6/30/2015	6/30/2015

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**List of 50.46c Public Meeting Attendees  
June 9, 2015**

<b>Name</b>		<b>Organization</b>
Alysia	Bone	NRC
Paul	Clifford	NRC
Matt	Thomas	NRC
Steve	Smith	NRC
Ralph	Landry	NRC
Michelle	Bales	NRC
Jen	Whitman	NRC
Geary	Mizuno	NRC
Glenna	Lappert	NRC
Tara	Inverso	NRC
Aby	Mohseni	NRC
Lisa	Gerken	AREVA
Greg	Broadbent	Entergy
Thomas	Stoddard	GE-Hitachi
Robert	Florian	Southern Nuclear
James	Spring	Westinghouse
Charles	Albury	STPNOC
David	Fink	Westinghouse Electric Company
Jerald	Holm	AREVA
John	Alvis	Anatech
Glenna	Appert	NRC
Miguel	Armenta	Energy Northwest
Jana	Bergman	Curtiss-Wright
Jason	Castro	TVA
Victor	Cusumano	NRC
Mark	Handrick	Duke Energy
Shane	Jurek	Excel Energy
Steven	Laur	USNRC
Dave	Medek	AZ Public Service
Nasser	Nik	Entergy
Andy	Olson	Exelon
Lindsay	Robinson	NRC
Harold	Scott	NRC
Jim	Smith	Westinghouse Electric Company
Alfred	Strasser	Aquarius Services
Ronaldo	Szillard	Idaho National Laboratory
Ruth	Thomas	Environmentalist Inc

Brian	Thomas	US Nuclear Regulatory Commission
Tom	Tramm	Certrec
Boyce	Travis	NRC
Kip	Walker	Enercon
Ken	Yueh	Electric Power Research Institute
Gordon	Clefton	NEI
Kurt	Flaig	Dominion