Inverso, Tara

From: Inverso, Tara
Sent: Friday, May 28, 2010 11:09 AM
To: 'mitched@westinghouse.com'; 'kyueh@epri.com'; 'Stras68@optonline.net'; 'Owen.Thomsen@sce.com'; 'Thomas.Remick@sce.com'; 'Dean.tibbits@pgnmail.com'; 'rodackt@westinghouse.com'; 'sdsimpson@aep.com'; 'kepeter@wcnoc.com'; 'nissleme@westinghouse.com'; 'billone@anl.gov'; 'kobelajr@westinghouse.com'; 'rob@anatech.com'; 'joe@anatech.com'; 'Charles.heck@ge.com'; 'James.Harrison@ge.com'; 'Nicolas.waeckel@edf.fr'; 'Yang-pi.lin@gnf.com'; 'GAC@NEI.org'; 'brian.blackmore@aps.com'; 'pgs@iberdrola.es'; 'aalapour@southernco.com'; 'tweichenberg@tva.gov'; 'akilic@apsc.com'; 'Gayle.elliott@areva.com'; Voglewede, John; 'emader@epri.com'; 'Douglas.wise@exeloncorp.com'; 'rmeyer@anl.gov'; 'Dana.knee@dom.com'; 'Gary.d.miller@dom.com'; 'Claude.grandjean@irsn.fr'; 'Donald.notigan@pseg.com'; 'Smith1jd@westinghouse.com'; 'Darius.Ahrar@exeloncorp.com'; 'John.massari@cenglic.com'; 'slaglewh@westinghouse.com'; 'markleyse@gmail.com'; 'Steve.winston@xenuclear.com'; 'jcb@nei.org'; 'Bert.dunn@areva.com'; 'bobleyse@aol.com'
Cc: Helton, Shana
Subject: Information: 50.46(b) Rulemaking

Good morning,

At the public meeting conducted on April 28-29th, and in a subsequent e-mail to the meeting attendees (dated May 13, 2010), the NRC staff suggested the ability for external stakeholders to send additional proposals regarding revised reporting criteria for the proposed rulemaking on fuel cladding. We also indicated that there would be a public meeting on June 30th for discussion of these proposals.

After further consideration of the issues, the public comments provided in response to the ANPR, the information presented at the public meeting, and the Commission-directed schedule for the rulemaking, the staff has decided to proceed directly with preparing a proposed rule for consideration by the Commission. All issues raised to date – including the matter of revised reporting criteria – will be discussed in the rulemaking. The proposed rule will also present various options for resolution of the more important issues and any staff recommendations on the selection of options. Accordingly, the staff has decided not to accept proposals regarding the 50.46(b) rulemaking prior to the publication of the proposed rule. Stakeholders who have submitted information to the NRC since the last public meeting may resubmit the information during the formal public comment period associated with the proposed rule. The proposed rulemaking will contain specific questions regarding the reporting criteria, and we encourage you to respond to those questions, as well as to send additional proposals, during the public comment period. In addition, the staff remains open to holding public meetings or workshops during the proposed rule's comment period, as an additional opportunity for exchanges of information between the NRC staff and all external stakeholders. Therefore, we are no longer planning an additional public meeting prior to the publication of the proposed rule.

The staff's proposed generic letter seeking additional information from current nuclear power plant licensees is related to, but outside the space of, the proposed rulemaking. Therefore, we continue our internal deliberations regarding the generic letter, and may schedule additional public meetings to accept public feedback on the generic letter.

Sincerely,

Tara Inverso

Inverso, Tara

From: Mark Leyse [markleyse@gmail.com]
Sent: Tuesday, May 25, 2010 9:41 PM
To: Inverso, Tara
Subject: Information: 50.46(b) Public Meeting
Attachments: Crud Effect in LOCA - ANS Final.pdf

Dear Ms. Inverso:

On May 13, 2010, I received an e-mail from you regarding the 50.46(b) rulemaking (ECCS Cladding Acceptance Criteria).

(I have resent this e-mail: there wasn't proper line spacing in my first e-mail.)

In your e-mail you said:

"[W]e are interested in reviewing the material that public or industry stakeholders may be preparing in anticipation of the early June meeting. If we receive that information in draft form by the first week in June, we will review it for possible incorporation into the proposed rule."

So I have some information I wanted to send you (perhaps you already have this information: I sent it to Paul Clifford on May 3, 2010): 1) an e-mail (below) I sent to Paul Clifford on May 3, 2010; and 2) the paper "Considering the Thermal Resistance of Crud in LOCA Analysis," which I discuss in the e-mail I sent to Paul Clifford.

I sent the paper to Paul Clifford to show that the thermal resistance of crud layers would increase the peak cladding temperature (PCT) in the event of a LOCA. And in the e-mail to him, I provided information on the fact that oxide layers, like crud layers, have a very low thermal conductivity.

Additionally, I think this provides information that shows that modeling the thermal resistance of crud layers *and oxide layers* should be required in 50.46(b) ECCS Cladding Acceptance Criteria.

And as I said in the meeting, if a crud layer that is 100 microns thick would cause the PCT to increase by 77 K, it indicates that a a crud layer that is 35 microns thick should also be modeled, because such a layer would also increase the PCT.

Thank you,

Mark Leyse

----- Forwarded message from mel2005@columbia.edu -----
Date: Mon, 03 May 2010 20:17:41 -0400
From: mel2005@columbia.edu
Reply-To: mel2005@columbia.edu
Subject: Paper on RELAP5 Simulation of Crud Layer
To: "Clifford, Paul" <Paul.Clifford@nrc.gov>

Dear Mr. Clifford:

I have attached the paper "Considering the Thermal Resistance of Crud in LOCA Analysis," presented at the

ANS meeting in Washington D.C. last fall. I mentioned this paper during the public workshop on 10 CFR 50.46(b).

The paper discusses a RELAP5-3D simulation of a crud layer on fuel cladding during a LB LOCA; it was performed at MIT in 2009.

The crud layer was modeled to be 100 microns thick and assigned a thermal conductivity of 0.8648 W/mK. 0.8648 W/mK is the thermal conductivity value of crud that is listed in NUREG-1230 and NUREG/CR-6534 (please see notes 4 and 5 of the paper).

As I mentioned during the public workshop, the predicted PCT was 77 K higher for the crud-layer cladding than for the clean cladding (please see pages 2-3).

I also want to add that in PRM-50-84, I mention that the thermal conductivity value of Zr oxide layers has been measured as low as 1.354 to 1.586 W/mK (at temperatures between 297 and 1450 K), reaching as low as 0.955 W/mK at 668 K. And that NUREG/CR-6534 (Frapcon-3 code manual) states that , the current MATPRO function uses values of approximately 2 W/mK for the the thermal conductivity of Zr oxide layers; but NUREG/CR-6534 also states that an EPRI-sponsored Halden Reactor experiment gave indications that the thermal conductivity of Zr oxide layers may be approximately 1 W/mK (please see page 9 of PRM-50-84, and notes 31 and 32 of PRM-50-84).

For your convenience, here is a link to the Docket Folder Summary of PRM-50-84:

http://www.regulations.gov/search/Regs/home.html#docketDetail?R=NRC-2007-0013

Sincerely,

Mark Leyse

----- End forwarded message -----

Inverso, Tara

From: Ralph Meyer [rmeyer@anl.gov]
Sent: Monday, May 17, 2010 10:10 AM
To: Inverso, Tara
Cc: 'Billone, Michael C.'
Subject: RE: Information: 50.46(b) Public Meeting
Attachments: Alternate Draft LOCA Rule Language .pdf

Tara,

In response to your e-mail, it looks like this is the opportunity to get the alternate draft rule language into consideration. Please accept the attached material for NRC's review.

At the meeting, it appeared that NRC's proposed rule language was overly complicated and that the industry wanted an unrealistically weak rule. The attached alternate rule language is simple, yet adequately specific, and may provide the middle ground that is best. Please notice that the attached alternate rule language remains structured exactly like the original rule and would therefore be easy to implement for both the industry and the NRC reviewers.

Figure 1 in the attached alternate rule language was prepared more than a year ago and there are a few more recent data points and insights. Therefore, it would seem desirable to have an open discussion about the exact placement of the curve in this figure and make any adjustment that might be needed. Nevertheless, Figure 1 is based on a large data base and would not be expected to change much.

Thank you for your help in getting this alternate rule language considered.

Ralph

From: Inverso, Tara [mailto:Tara.Inverso@nrc.gov]
Sent: Thursday, May 13, 2010 1:33 PM
To: mitch.d@westinghouse.com; kyueh@epri.com; Stras68@optonline.net; Owen.Thomsen@sce.com; Thomas.Remick@sce.com; Dean.tibbits@pgnmail.com; rodackt@westinghouse.com; sdsimpson@aep.com; kepeter@wcnoc.com; nissleme@westinghouse.com; Billone, Michael C.; kobelajr@westinghouse.com; rob@anatech.com; joe@anatech.com; Charles.heck@ge.com; James.Harrison@ge.com; Nicolas.waeckel@edf.fr; Yang-pi.lin@gnf.com; GAC@NEI.org; bblackmore@apsc.com; pgs@iberdrola.es; aalapour@southernco.com; tweichenberg@tva.gov; akilic@apsc.com; Gayle.elliott@areva.com; Voglewede, John; emader@epri.com; Douglas.wise@exeloncorp.com; Meyer, Ralph; Dana.knee@dom.com; Gary.d.miller@dom.com; Claude.grandjean@irsn.fr; Donald.notigan@pseg.com; Smith1jd@westinghouse.com; Darius.Ahrar@exeloncorp.com; John.massari@cenglic.com; slaglewh@westinghouse.com; markleyse@gmail.com; Steve.winston@xenuclear.com; jcb@nei.org; Bert.dunn@areva.com; bobleyse@aol.com
Subject: Information: 50.46(b) Public Meeting

Good afternoon,

To begin, I would like to thank each of you for attending the April 28th-29th public meeting on the 50.46(b) rulemaking (ECCS Cladding Acceptance Criteria).

On day two of the meeting, we discussed the potential for another public meeting in approximately 5 weeks (~ June 4th). After close inspection of the schedule established by the Commission for this proposed rule, the staff has determined that it will not be possible to conduct another public meeting within 5 weeks.

However, we are interested in reviewing the material that public or industry stakeholders may be preparing in anticipation of the early June meeting. If we receive that information in draft form by the first week in June, we will review it for possible incorporation into the proposed rule.

Pending receipt of stakeholder proposals, we are tentatively planning a half day public meeting on/about June 30th. The purpose of this meeting would be to discuss with stakeholders alternatives to the generic letter and alternate §50.46(b) reporting criteria that were previously submitted for our review. We hope that this approach will be mutually acceptable.

Sincerely,

Tara Inverso

Tara Inverso, Project Manager
Rulemaking and International Projects Branch
Tara.Inverso@nrc.gov

Inverso, Tara

From: CLEFTON, Gordon [gac@nei.org]
Sent: Friday, May 14, 2010 10:12 AM
To: Inverso, Tara
Subject: RE: Information: 50.46(b) Public Meeting

Tara,

Thanks for proposing additional input from the Industry. We appreciated it and want to contribute; I am sure that you want to receive it too.

To stay in-process and avoid repercussions from the anti-nuclear folks, you should officially (FRN) change the end of the ANPR comment period to after these input dates (half day public meeting on/about June 30th).

I do not expect trouble, but we do not want to get NRC in trouble for taking input "just" from NEI and selected industry representatives.

GC
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Gordon Clefton
Senior Project Manager

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O: 202-739-8086
F: 202-533-0128
C: 202-439-2543
E: gac@nei.org

nuclear. clean air energy.

From: Inverso, Tara [mailto:Tara.Inverso@nrc.gov]
Sent: Thursday, May 13, 2010 1:33 PM
To: mitch.d@westinghouse.com; kyueh@epri.com; Stras68@optonline.net; Owen.Thomsen@sce.com; Thomas.Remick@sce.com; Dean.tibbits@pgnmail.com; rodackt@westinghouse.com; Susan Simpson; kepeter@wcnoc.com; nissleme@westinghouse.com; billone@anl.gov; kobelajr@westinghouse.com; rob@anatech.com; joe@anatech.com; Charles.heck@ge.com; James.Harrison@ge.com; Nicolas.waeckel@edf.fr; Yang-pi.lin@gnf.com; CLEFTON, Gordon; bblackmore@apsc.com; pgs@iberdrola.es; aalapour@southernco.com; tweichenberg@tva.gov; akilic@apsc.com; Gayle.elliott@areva.com; Voglewede, John; emader@epri.com; Douglas.wise@exeloncorp.com; rmeyer@anl.gov; Dana.knee@dom.com; Gary.d.miller@dom.com; Claude.grandjean@irsn.fr; Donald.notigan@pseg.com; Smith1jd@westinghouse.com; Darius.Ahrar@exeloncorp.com; John.massari@cenglic.com; slaglewh@westinghouse.com; markleyse@gmail.com; Steve.winston@xenuclear.com; BUTLER, John; Bert.dunn@areva.com; bobleyse@aol.com
Subject: Information: 50.46(b) Public Meeting

Good afternoon,

To begin, I would like to thank each of you for attending the April 28th-29th public meeting on the 50.46(b) rulemaking (ECCS Cladding Acceptance Criteria).

On day two of the meeting, we discussed the potential for another public meeting in approximately 5 weeks (~ June 4th). After close inspection of the schedule established by the Commission for this proposed rule, the staff has determined that it will not be possible to conduct another public meeting within 5 weeks.

However, we are interested in reviewing the material that public or industry stakeholders may be preparing in anticipation of the early June meeting. If we receive that information in draft form by the first week in June, we will review it for possible incorporation into the proposed rule.

Pending receipt of stakeholder proposals, we are tentatively planning a half day public meeting on/about June 30th. The purpose of this meeting would be to discuss with stakeholders alternatives to the generic letter and alternate §50.46(b) reporting criteria that were previously submitted for our review. We hope that this approach will be mutually acceptable.

Sincerely,

Tara Inverso

Tara Inverso, Project Manager
Rulemaking and International Projects Branch
Tara.Inverso@nrc.gov

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Sent through outbound.mailwise.com

Inverso, Tara

From: Inverso, Tara
Sent: Thursday, May 13, 2010 1:33 PM
To: 'mitch.d@westinghouse.com'; 'kyueh@epri.com'; 'Stras68@optonline.net'; 'Owen.Thomsen@sce.com'; 'Thomas.Remick@sce.com'; 'Dean.tibbits@pgnmail.com'; 'rodackt@westinghouse.com'; 'sdsimpson@aep.com'; 'kepeter@wcnoc.com'; 'nissleme@westinghouse.com'; 'billone@anl.gov'; 'kobelajr@westinghouse.com'; 'rob@anatech.com'; 'joe@anatech.com'; 'Charles.heck@ge.com'; 'James.Harrison@ge.com'; 'Nicolas.waeckel@edf.fr'; 'Yang-pi.lin@gnf.com'; 'GAC@NEI.org'; 'bblackmore@apsc.com'; 'pgs@iberdrola.es'; 'aalapour@southernco.com'; 'tweichenberg@tva.gov'; 'akilic@apsc.com'; 'Gayle.elliott@areva.com'; Voglewede, John; 'emader@epri.com'; 'Douglas.wise@exeloncorp.com'; 'rmeyer@anl.gov'; 'Dana.knee@dom.com'; 'Gary.d.miller@dom.com'; 'Claude.grandjean@irsn.fr'; 'Donald.notigan@pseg.com'; 'Smith1jd@westinghouse.com'; 'Darius.Ahrar@exeloncorp.com'; 'John.massari@cenglic.com'; 'slaglewh@westinghouse.com'; 'markleyse@gmail.com'; 'Steve.winston@xenuclear.com'; 'jcb@nei.org'; 'Bert.dunn@areva.com'; 'bobleyse@aol.com'
Subject: Information: 50.46(b) Public Meeting

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To begin, I would like to thank each of you for attending the April 28th-29th public meeting on the 50.46(b) rulemaking (ECCS Cladding Acceptance Criteria).

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Sincerely,

Tara Inverso

Tara Inverso, Project Manager
Rulemaking and International Projects Branch
Tara.Inverso@nrc.gov