

**Rulemaking Comments**

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**From:** Jason Lising  
**Sent:** Thursday, January 29, 2009 9:45 AM  
**To:** Rulemaking Comments  
**Cc:** Evangeline Ngbea  
**Subject:** FW: Petition for Rulemaking 50-87 submitted May 17, 2007 Update  
**Attachments:** Petition denial response.doc

Please include e-mail and attachment in PRM-50-87 docket.

Thank you,

DOCKETED  
USNRC

January 29, 2009 (11:45am)

*A. Jason Lising*  
Allan Jason Lising  
Project Manager  
Regulatory Analysis, Policy and Rulemaking Branch  
Division of Policy and Rulemaking, NRR  
[jason.lising@nrc.gov](mailto:jason.lising@nrc.gov) | 301-415-3220 | O-11H22

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

**From:** Ray Crandall [<mailto:rcrandall@sc.rr.com>]  
**Sent:** Tuesday, January 20, 2009 6:32 PM  
**To:** Jason Lising  
**Subject:** RE: Petition for Rulemaking 50-87 submitted May 17, 2007 Update

Dear Mr. Lising:

Please pass my concerns as expressed in the attached word document on to the appropriate personnel.

Ray Crandall

-----Original Message-----

**From:** Jason Lising [<mailto:Jason.Lising@nrc.gov>]  
**Sent:** Thursday, January 15, 2009 2:17 PM  
**To:** [rcrandall@sc.rr.com](mailto:rcrandall@sc.rr.com)  
**Subject:** Petition for Rulemaking 50-87 submitted May 17, 2007 Update

Dear Mr. Crandall,

On May 17, 2007, you submitted a petition for rulemaking (PRM), requesting that the U.S. Nuclear Regulatory Commission (NRC) amend 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants" and 10 CFR 50.67, "Accident source term." The NRC docketed your request, PRM-50-87 and published a notice of receipt and request for public comment in the *Federal Register* on July 12, 2007 (72 FR 38030).

In regards to PRM-50-87, the U.S. Nuclear Regulatory Commission has determined a final decision which will be published in the *Federal Register* within the next two weeks. You will also be receiving a letter informing you of the NRC's final decision sent to the following address:

Raymond A. Crandall  
3313 Stafford Ct.  
Florence, SC 29501

Sincerely,

*A. Jason Lising*

Allan Jason Lising

Project Manager

Regulatory Analysis, Policy and Rulemaking Branch

Division of Policy and Rulemaking, NRR

[jason.lising@nrc.gov](mailto:jason.lising@nrc.gov) | 301-415-3220 | O-11H22

RE: PRM 50-87

Thank you for providing the NRC's response to my petition for rulemaking. After reading the basis for the NRC's denial and their disagreement with my various positions, it is clear that the response was formulated by those individuals that have been responsible for implementing the design basis accident (DBA) deterministic dose methodology for control room habitability and that they remain unwilling to address risk-based considerations and hence improve safety. The continued imposition of less than optimum requirements based on one set of extremely low probability assumptions is what I was attempting to change with my petition.

Let me justify this conclusion with an example. My first point was that the probability of the entire spectrum of accidents that would release large quantities of noble gas as the predominant dose concern is much greater than the probability of the DBA source term assumptions that typically result in dose prevention controls to mitigate thyroid dose. This was combined with the fact that the primary desire of control room habitability requirements is to ensure the control room will not require evacuation and that the only dose consequence that will require evacuation is whole body dose from noble gas submersion and not the thyroid dose, as that can be mitigated by other means. Therefore, I concluded that it would be safer to base designs on reducing noble gas intake to the control room, such as isolation rather than filtered intake.

The NRC based their disagreement with this point based primarily on an analysis of the doses from the DBA. They state that their conclusion is based on a review of several existing DBA control room dose analyses and that they did some parametric evaluations of these DBA analyses to determine the impact of filtered intake vs. isolation. They concluded that although there may be an increase in the whole body dose from the filtered intake, the increase was small and would not increase the probability of having to evacuate the control room (doses remain less than design limits). The fallacy of this logic is that it is based solely on the DBA release assumptions, those assumptions I was trying to indicate have resulted in these less than optimum designs.

There is a large spectrum of source terms that are more realistic and hence more probable than the DBA source term, even the so-called more realistic 10 CFR 50.67 based source term. One need only look at the 1979 TMI accident to demonstrate this. At TMI, the primary release from the plant was of noble gases released from minor leaks of highly radioactive reactor coolant from the letdown/charging system, which was recirculating reactor coolant outside the containment. At times, the plume was blowing towards the control room and the noble gases did enter the control room volume. They did not have to evacuate the control room, but had the system leaks been significantly greater and/or the meteorological conditions worse with a more consistent wind direction towards the control room, it's possible they could have decided to evacuate. The DBA assumptions do not even analyze noble gas releases from leakage of reactor coolant outside containment. The DBA assumptions (both TID-14844 based and 10 CFR 50.67 based), assume a large break LOCA, and therefore assume the noble gases have flashed to the containment and are not dissolved in reactor coolant recirculated outside containment.

Hence, the only nuclide assumed to be released from leaking reactor coolant outside containment is iodine. Therefore, the DBA assumptions do not model reality as demonstrated by the one actual case we had, and in fact are non-conservative in estimating the noble gas releases for this likely release pathway. The DBA analyses assume low-level containment leakage, but do not address containment bypass or failure scenarios. From an overall risk perspective, these beyond DBA containment bypass/failure should be considered. If containment bypass/failure were considered too low a probability from a risk perspective to be credible, then the industry would not be spending millions of dollars on 10-mile emergency planning zones. The fact is that for this large spectrum of containment bypass or failure accidents, many can result in noble gas releases higher than those assumed in the DBA, and these could result in control room evacuation. From an overall risk perspective, my petition was an attempt to reduce the potential for having to evacuate the control room based on a consideration of the spectrum of postulated accidents. I already knew evacuation was not likely for the DBA assumptions.

This example is fairly technical; so let me use one more example that is less technical. The NRC states in the denial that one reason the use of KI as a thyroid dose mitigation method is not acceptable as a long-term solution is due to the potential medical complications of KI. However, the NRC endorses the mass distribution of KI to the public in the vicinity of a nuclear power plant. Additionally, regardless of the lack of credit for KI in the dose analyses, many licensees' emergency procedures specify the administration of KI to emergency workers when dose conditions warrant. Hence the use of KI by control room operators may occur regardless of the inputs to DBA calculations. If the potential medical complications of KI are that significant to preclude credit for their use, then shouldn't the NRC be concerned with the current practices for its prescribed use by the public and emergency workers? Additionally, from a risk perspective, dose reduction from KI is more reliable than that from the control room habitability design features. Many of the conditions that could result in core damage and a significant release would also render control room habitability features ineffective. These would be events such as an extended station blackout or a beyond design basis seismic event. Fans and filters would likely not work or be effective in such cases, but KI would still be effective. In the DBA world these types of events are not considered, as the DBA world is blind to realistically considering what the plant conditions are that could result in a significant release.

The NRC staff's reasoning for their disagreements with most of the other points in my petition are equally flawed. I will eventually address each, but in the interest of getting this email to you prior to publishing the denial in the Federal Register, I will defer those to later.

I was discouraged by my experience with this rule making petition process. Other than occasionally keeping me informed of the status by the administrative contact, there was no communication between me and the technical preparers of the response. Communication is a key tool in ensuring a clear understanding of the issues and in reaching an agreeable solution. Additionally, most of the faulty logic in the NRC

response has been expressed by NRC staff members before in various forums. I was hoping that by use of the petition process that this faulty logic, when put in writing, would be reviewed by sufficient levels at the NRC to recognize the flaws and start down the process of more logical and safer regulation in regard to control room habitability. That did not happen.

Unless you have other suggestions, I see the following two options for me in regard to my desire to improve safety in this area:

1. As my preferred option, I hope that you withdraw your denial and let me work with members of your staff willing to change from the deterministic DBA approach in order to reach reasonable solutions and improve safety.
2. If the denial as written represents your final attempt to address my concerns, then I will likely use this denial, along with some other recent examples, to express my concern with the ACRS and with Congress as to the NRC's inability to improve safety, either due to a lack of technical understanding or unwillingness to change.

Please provide a timely response as to whether Option 1 can be realized.

Sincerely,

Ray Crandall

Received: from HQCLSTR01.nrc.gov ([148.184.44.76]) by TWMS01.nrc.gov  
([148.184.200.145]) with mapi; Thu, 29 Jan 2009 09:45:08 -0500  
Content-Type: application/ms-tnef; name="winmail.dat"  
Content-Transfer-Encoding: binary  
From: Jason Lising <Jason.Lising@nrc.gov>  
To: Rulemaking Comments <Rulemaking.Comments@nrc.gov>  
CC: Evangeline Ngbea <Evangeline.Ngbea@nrc.gov>  
Date: Thu, 29 Jan 2009 09:45:07 -0500  
Subject: FW: Petition for Rulemaking 50-87 submitted May 17, 2007 Update  
Thread-Topic: Petition for Rulemaking 50-87 submitted May 17, 2007 Update  
Thread-Index: Acl7V1YJTgr8UKzMSRGBv7AwQbx6SwGyJwEg  
Message-ID: <1FA53ADF29758448974A8AC1118E627E8F5F966154@HQCLSTR01.nrc.gov>  
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