OFFICE OF THE SECRETARY
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To: Dyer, NRR

AUTHOR:	Robert Leyse
AFFILIATION:	ID
ADDRESSEE:	Nils Diaz
SUBJECT:	PRM-50-73 and 50-73A and other business

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ACTION:	Appropriate
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LETTER DATE:	03/18/2004
ACKNOWLEDGED	No
SPECIAL HANDLING:	
NOTES:	
FILE LOCATION:	ADAMS

DATE DUE: **DATE SIGNED:**

From: <Bobleyse@aol.com>
To: <Chairman@nrc.gov>
Date: Thu, Mar 18, 2004 1:55 PM
Subject: PRM-50-73 and PRM-50-73A and other business

The attachment, Lyse1, has three items: a copy of my e-mail to you dated October 17, 2003; a copy of a letter from Haney to me dated January 29, 2004; and a copy of a letter from Travers to me dated march 2004.

Haney asserts that I provided no information "ΓÇ¦to explain why you believed the 2002/2003 River Bend situation was as severe as in 1998/1999." Why can't Haney read? The following underlined paragraphs are copied directly from my 10/27/03 e-mail:

Now Mr. Chairman, the real case at River Bend is revealed by the following quote from the Transcript of ACRS Reactor Fuels Subcommittee, September 30, 2003.
On page 246, lines 17-22, Cheng of EPRI states, "But in 1988, we had one plant that had a very significant crud, very heavy crud deposit, that caused a failure. This plant experienced the same type of failure just sometime this year, early part of this year. So we had a repeat of this similar failure this year by similar mechanisms."
On page 247, lines 15-16, the 1998 plant is identified as River Bend.

Haney should be required to study that ACRS transcript including the closed portion of that meeting. She also says no LERs were written. So what? Even in 1998/1999, the River Bend staff reported that its LER was being submitted only voluntarily. Neither River Bend nor the NRC recognizes that heavy fouling is dangerous.

The NRC has an arrangement with INPO in which SOERs may be disclosed to the NRC provided that NRC does not disclose the contents to its public. It would be interesting to know if SOERs were ever written for the 1998 and 2002 incidents at River Bend. If so, Haney should study those and reference those in any future correspondence. I find it very difficult to believe that sanitized versions can not be provided to he public.

Haney twice points out that in the 2002/2003 River Bend experience there were only seven pins out of 48,000 pins that failed. Well, that partially makes my point: reactor cores may be extensively fouled, and the heavy fouling is not detected on line. What Haney does not recognize is that even if no fuel had failed, the heavy fouling was a dangerous operating condition. Moreover, the American Public was basically uniformed. My only source of information for the 2002/2003 incident was the ACRS meeting of September 30, 2003.

Haney missed the point regarding ballooning. With the heavily fouled power reactor in operation, the cladding becomes overheated. With the plant at operating pressure, the cladding does not balloon. Instead, it is pressed against the fuel pellets. Now the overheated cladding also becomes oxidized and the heavy oxidation is a heat transfer barrier in addition to the fouling.
Moreover, the overheated cladding also contains dissolved (stored) oxygen. At some point it is possible for autocatalytic chemical reactions to begin. And the fouling will not prevent progression of the chemical reactions any more than the largely intact heat shield of the Columbia space shuttle yielded protection (of course, NASA had gotten away with several cases of defective heat shields). No analogies are perfect; Columbia had no dissolved oxygen and the

atmosphere had to contact the structure to effect the incineration. However, with dissolved oxygen in the cladding, the initiation of autocatalytic reactions does not require contact with the pressurized water. But once the autocatalytic reaction starts, there will be adequate disintegration to insure contact between unreacted zirconium and water. (I live near INEEL, and at no charge to NRC I will show INEEL staff how to set up and operate bench scale apparatus that will demonstrate this, if NRC or DOE or both will fund the activity, $100,000.)

Moving to Travers, I read, "NUREG-0800 provides guidance to NRC staff, not requirements for licensees." (The underline is mine.) Now, on page 12 of the Federal Register Notice of Denial of my PRM-50-73 and PRM-50-73A, "ΓÇª. NRC's Standard Review Plan (SRP) for ECCS has already defined detailed requirements to monitor the effect of crud deposits." (this underline is also mine). I will submit a revised request for rulemaking under 10 CFR 2.802. In the meantime, NRC should not ignore the deficiencies of NUREG-0800 and RG 1.77. Moreover, NRC should issue Information Notices that are at least partially based on the River Bend experience.

Robert H. Leyse

CC: <Laurel.Hall@mail.house.gov>, <Kotekjf@id.doe.gov>, <rrudman@epri.com>

Subject: Demand for Withdrawal of NRC's Denial of Petition for Rulemaking
Date: 10/27/03
From:
Reply To:
To: Chairman@NRC.gov
CC: Laurel.Hall@mail.house.gov, Kotekjf@id.doe.gov, rrudman@epri.com, margaret_ryan@platts.com mike_knapik@platts.com, fai@forsmark.vattenfall.se, aumiller@bettis.gov, bandinib@bettis.gov, nxb@fluent.com, pdb@inel.gov, J_jburtt@adelphia.net, Ken.Carlson@framatom-anp.com, dauria@ing.unipi.it, cbd@inel.gov, jef@inel.gov, gringe@inel.gov, bgitnick@islinc.com, tgitnick@islinc.com, hae@inel.gov, y-hassan@tamu.edu, gwj@inel.gov, Johnsen@srv.net, pettinam@id.doe.gov, rra@inel.gov keithline@alum.mit.edu, knu@inel.gov, ksliang@iner.gov.tw, mccollum@bettis.gov, azb@inel.gov, myerbj@inel.gov, ece@inel.gov, chh@inel.gov, popove@ornl.gov, ransom@helios.ecn.purdue.edu, francesc.reventos@upc.es, rar@inel.gov, aruggles@utk.edu, Kurt.Schneider@framatom-anp.com, dgs@fluent.com, srr@inel.gov, lis@inel.gov, tomlinso@bettis.gov, jtrapp@carbon.cudenver.edu, rjw@srv.net, wlw@inel.gov, jrw@inel.gov

Reference:
[Federal Register: July 16, 2003 (Volume 68, Number 136)] [Proposed Rules] [Page 41963-41967] From the Federal Register Online via GPO Access [wais.access.gpo.gov] [DOCID:fr16jy03-27] [[Page 41963]]
========== ---------- NUCLEAR REGULATORY COMMISSION 10 CFR Part 50 [Docket Nos. PRM-50-73 and PRM-50-73A] Mr. Robert H. Leyse; Denial of Petition for Rulemaking AGENCY: Nuclear Regulatory Commission. ACTION: Denial of petition for rulemaking. ----------

Mr. Chairman, the referenced Denial is loaded with errors and I demand that it be withdrawn. Here are two quotes from the NRC's Rejection of Docket Nos. PRM-50-73 and PRM-50-73A.

Quote from NRC Technical Evaluation [[Page 41965]]

As the licensee event report (LER 50-458/99-016-00) indicated, the occurrence of this event was unusual and only happened once. The NRC staff has not found any other nuclear power plants that experienced this unusually heavy crud formation.

And a quote from Reasons for Denial [[Page 41967]]

The event (River Bend) identified by the petitioner as evidence of the likelihood of high crud levels occurred only once at that plant and has not been repeated there, or at any other plant in the United States.

Now Mr. Chairman, the real case at River Bend is revealed by the following quote from the Transcript of ACRS Reactor Fuels Subcommittee, September 30, 2003.

On page 246, lines 17-22, Cheng of EPRI states, "But in 1988, we had one plant that had a very significant crud, very heavy crud deposit, that caused a failure. This plant experienced the same type of failure just sometime this year, early part of this year. So we had a repeat of this similar failure this year by similar mechanisms."

On page 247, lines 15-16, the 1998 plant is identified as River Bend.

Mr. Chairman, the Denial is loaded with many other errors of fact that I am not detailing in this note although the attachment has my working notes in which some of the errors that I have thus far uncovered are highlighted.

Perhaps your staff will find this of use in supporting my demand for withdrawal of the Denial.

Another especially interesting error is the reference to ballooning on [[Page 41966]]. Ballooning will not occur at the operating pressures of BWRs or PWRs; the grossly overheated cladding will instead be pressed against the uranium oxide pellets, chemical reactions will occur at the interface between the zirconium alloy cladding and the uranium dioxide fuel pellets, and this will contribute to the exothermic runaway.

Robert H. Leyse bobleyse@aol.com
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Sun Valley, ID 83353
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 29, 2004

Mr. Robert H. Leyse
P.O. Box 2850
Sun Valley, ID 83353

SUBJECT: DEMAND FOR WITHDRAWAL OF NUCLEAR REGULATORY COMMISSION'S DENIAL OF PETITIONS FOR RULEMAKING

Your e-mail sent October 28, 2003, to the Chairman of the Nuclear Regulatory Commission (NRC) was assigned to my office for a response. The e-mail demanded that the Commission's decision to deny PRM-50-73 and PRM-50-73A be withdrawn because of errors in the denial. Specifically, you contend that the staff was in error when it stated that the occurrence of unusually heavy crud that was seen at River Bend Station in 1998 happened only once. You also stated that ballooning of the fuel cladding will not occur, because overheated cladding will instead be pressed against the fuel pellets. Our technical staff has reviewed the information submitted with your demand for withdrawal and evaluated it against the basis on which the staff had recommended denial of your petitions to the Commission.

In your e-mail you identified several passages in the Federal Register notice (FRN) of denial of your petitions for rulemaking where you assert the staff stated incorrectly that the heavy crud build-up on fuel bundles in the core of the River Bend Station in 1999 only happened once at that plant. The FRN issued on July 16, 2003, regarding PRM-50-73 and PRM-50-73A, stated, "As the licensee event report (LER 50-458/99-016-00) indicated, the occurrence of this event was unusual and only happened once during the previous eight cycles for this specific plant. The NRC staff has not found any other nuclear power plants that experienced this unusually heavy crud formation." Because of this, the NRC staff also indicated that the 1998/1999 event identified by you as evidence of the likelihood of high crud levels had occurred once at River Bend and had not been repeated there, or at any other plant in the United States. You are correct that, subsequent to the NRC's response to PRM-50-73 and 50-73A published in July 2003, River Bend Station documented in October 2003 that some fuel pins had failed in 2002 due to crud build-up. Specifically, the licensee determined that seven (7) fuel pins, out of more than 48,000 that make up the reactor core, had failed and replaced the assemblies containing these seven pins. The licensee performed examinations and analysis of the removed fuel rods and determined in October 2003 that the fuel pins had failed due to accelerated corrosion attributed to crud build-up. However, in your e-mail to the Chairman, you did not provide, nor did the NRC staff find, any information to explain why you believed that the 2002/2003 River Bend crud situation was as severe as in 1998/1999.

At no time during River Bend's 2002/2003 operating cycle were any operating limits exceeded and plant conditions did not rise to any threshold that would require a licensee event report (LER) or trigger any other reporting requirement due to crud buildup. The fuel failure was detected by routine coolant activity monitoring currently required by NRC regulations and mitigating actions were implemented by the licensee to prevent any safety significant event from developing. This new evidence further confirms the staff's position in the denial of your petitions that fuel failure caused by crud build-up can be detected and mitigated, that licensees

have procedures in place to do so and are implementing those procedures, and therefore, that no rulemaking is necessary.

In summary, some nuclear power plants continue to experience some crud build-up on fuel pins during operations. The industry is continuing to improve plant operating conditions and attempting to prevent heavy crud build-up from recurring. Neither the heavy crud experienced by River Bend in 1998/1999 nor the crud situation in 2002/2003 involving only seven pins out of 48,000 pins would negate the overall conclusions reached by the NRC staff in its recommendation to deny your petitions. In the staff analysis of your petitions, NRC concluded that there was no evidence provided by you or found by the staff to indicate that this heavy crud build-up had compromised the capability of the Emergency Core Cooling System (ECCS) to mitigate a Loss of Coolant Accident (LOCA).

Your second point questions the staff's statement that "[U]nder conditions where heavy crud deposition occurs, fuel damage could eventually lead to cladding cracks or ballooning effects." The staff continues to believe that this statement is correct in that the ballooning of the fuel pin during a depressurization procedure can result from weakening of the cladding material due to effects such as wear or corrosion.

In conclusion, your demand for withdrawal of the Commission's decision provides no new information that would suggest the staff's technical evaluation of your petitions for rulemaking was in error. Thus, there continues to be no reason to revise the regulations as requested by your petitions.

Thank you for your comments.

David L. Solas for

Catherine Haney, Program Director
Reactor Policy and Rulemaking Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 8, 2004

Mr. Robert H. Leyse
P.O. Box 2850
Sun Valley, ID 83353

Dear Mr. Leyse:

I am writing to inform you that your most recent request for rulemaking, submitted on January 17, 2004, fails to meet the minimum requirements for docketing as a petition for rulemaking under 10 CFR 2.802.

Your letter asks the Nuclear Regulatory Commission (NRC) to amend its regulations concerning the effect of fouled or corroded fuel elements on the course of reactivity insertion accidents (RIAs). You request that the NRC amend or revoke the following agency documents:

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (SRP), Draft Sections 2.2 and 4.4
- Regulatory Guide (RG) 1.77, "Assumptions Used for Evaluating a Control Rod Ejection Accident for Pressurized Water Reactors"
- Information Notice (IN) 97-85, "Effects of Crud Buildup and Boron Deposition on Power Distribution and Shutdown Margin"
- The NRC's July 16, 2003, Federal Register notice denying PRM-50-73 and PRM-50-73A (68 FR 41963)

Of these four items, only RG 1.77 arguably falls within the intended scope of the rulemaking petition process outlined in § 2.802. Regulatory Guides, because they detail for the public and licensees acceptable methods of complying with specific NRC regulations, may be considered "interpretive rules" open to petition under § 2.802.

None of the other documents you list is a regulation. NUREG-0800 provides guidance to NRC staff, not requirements for licensees. It is not legally binding, and it does not constitute a rule or regulation. An NRC Information Notice is neither a legally binding requirement, nor does it provide guidance to licensees on methods for compliance with NRC requirements; hence, IN 97-85 is not a rule. Finally, the NRC's published denial of your earlier petitions for rulemaking, PRM-50-73 and PRM-50-73A, is not itself a rule. Rather, it states the NRC's reasons for declining to amend current Part 50 requirements in response to your petitions. Your earlier email to Chairman Diaz, dated October 28, 2003, requested that the NRC withdraw the notice denying PRM-50-73 and PRM-50-73A. On January 29, 2004, Catherine Haney, Program Director, Reactor Policy and Rulemaking Program, informed you by letter that the Office of Nuclear Reactor Regulation had reviewed your October 28 email and determined that it provided no new information to support your contention that the staff's technical basis for denying the petitions contained errors that warranted a reversal of the agency's decision.

With respect to RG 1.77, your letter requests that this document be revoked or amended because it assumes a "fuel damage limit ... of 280 cal/g peak fuel enthalpy [that] is grossly excessive for fouled and/or corroded fuel elements." However, your letter does not appear to

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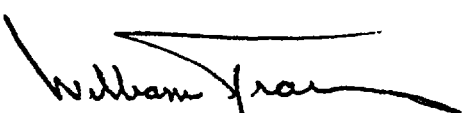
provide a basis for this claim. Moreover, you do not specify how the NRC should rectify the perceived problem with the fuel damage limit. You do not indicate whether you believe the NRC should remove the stated limitation, modify the limitation to some other value, or substitute an altogether different methodology or approach.

Section 2.802(c)(1) states that a petition for rulemaking must "[s]et forth a general solution to the problem or the substance or text of any proposed regulation or amendment, or specify the regulation which is to be revoked or amended." Because your letter does not clearly state the basis for the action requested and proposes no definite regulatory alternative to the current fuel damage limit, it fails to fully satisfy the specificity requirement in § 2.802(c)(1).

You indicate that your January 17 letter is meant to supplement the requests for Part 50 rulemaking you submitted on September 11 and November 28, 2003. Each of your previous letters was determined to be ineligible for docketing as a petition for rulemaking because it did not include specific information required by § 2.802(c). Your most recent letter is similarly deficient and, as provided for in § 2.802(f), is being returned to you. The return of your letter does not prejudice in any way your right to file a new petition.

Any questions about this matter may be directed to Michael Lesar, Chief, Rules and Directives Branch, by calling 301-415-7163 or by e-mail to MTL@nrc.gov.

Sincerely,



William D. Travers
Executive Director
for Operations

Enclosure: As stated