



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 11, 2000

MEMORANDUM TO: Susan F. Shankman, Deputy Director  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

FROM: Chester Poslusny, Jr., Senior Project Manager  
Transportation and Storage Safety  
and Inspection Section  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

*Charles Poslusny*

SUBJECT: SUMMARY OF PUBLIC MEETING WITH THE NUCLEAR ENERGY  
INSTITUTE

On March 30, 2000 a meeting was conducted at the U.S. Nuclear Regulatory Commission (NRC) headquarters in Rockville, Maryland. This meeting had been publicly noticed on March 16, 2000. Attending were staff from the NRC, the Nuclear Energy Institute (NEI), the Electric Power Research Institute (EPRI), and Duke Energy. Attachment 1 is a list of those who attended the meeting.

The purpose of the meeting was to discuss a number of questions and comments that NEI raised in a letter to NRC dated October 25, 1999, regarding the contents of a revision to Interim Staff Guidance-5 (ISG-5), "Confinement Evaluation."

The NRC staff began the meeting by summarizing the comments that were included in the referenced NEI letter and requested that NEI and the industry prioritize the comments to identify which issues would be most cost-beneficial for both the staff and industry to resolve. EPRI discussed two areas of interest from the industry perspective: rod breakage fraction assumptions and leakage rates assumptions.

Regarding rod breakage fractions, the EPRI staff member discussed the research effort being conducted at the Idaho National Engineering and Environmental Laboratory involving the opening of a Castor V dry fuel storage cask that had been sealed for 14 years. The pressurized water (PWR) reactor fuel assemblies had been taken from the Surry Plant. The effort includes visual inspection of the fuel, basket, and other cask internals for evidence of degradation mechanisms. At this point none had been detected, however additional destructive analysis of fuel samples is yet to be completed at Argonne National Laboratories. EPRI suggested that this is one example that would support the relaxation of rod breakage assumptions in the ISG.

Another example discussed was the French transportation experience where about 27,000 PWR fuel assemblies that had been cooled in a pool for a year have been shipped by rail to a reprocessing facility. Assemblies had been checked for leak tightness both at the shipping

location and at the receiving location and no evidence of rod leakage was determined for any assemblies.

The NRC staff acknowledged these examples of fuel cladding integrity but emphasized the fact that there is a need for more data reflecting field experience that fuel vendors should have in their design records. Such data is needed to justify a less conservative position that the staff could use to establish a lower baseline for rod breakage assumptions. The EPRI staff member agreed to consider additional types and sources of data. In addition, the NRC staff discussed a sensitivity evaluation of rod breakage fractions it had done with recent cask designs where it determined that the overriding effect for calculated dose came from the crud from the fuel rods. Attachments 2 and 3 are graphs that reflect this effect.

For the second issue, the EPRI staff member discussed the guidance for source term calculations found in Section 6.1 of NUREG/CR-6487 "Containment Analysis for Type B Packages Used to Transport Various Contents" (October 1996). This guidance includes simplifications such as assuming that available particulates from fuel fines and crud are treated as aerosols and can egress through any leakage paths. As previously noted, the dominant contributor to calculated dose is from the crud. The NRC staff stated that data supporting the size distribution of crud and activity levels, including that for high burnup fuel, would facilitate a change in the ISG. Further, the staff suggested that if the industry could develop a basis for demonstrating that welded lid designs do not leak, then the issue of leakage assumptions would be eliminated. It was agreed that these suggestions would be considered by the industry.

Discussions turned to the role of conducting a storage probabilistic risk assessment to develop insights into source terms, leakage, and other design issues. The EPRI staff member stated that its organization is working on a project to update a previously developed cask PRA and that pending a new contract award, work should begin. The NRC indicated that it was pursuing with the NRC's Office of Research to do a similar study and it was agreed that coordination of these actions to avoid duplication would be done.

It was agreed that a conference call would be held in about 3 weeks from the meeting date to discuss the above follow up actions related to the above subjects.

No proprietary information was disseminated or presented at this meeting. No regulatory decisions were requested or made.

Please contact me if you wish to further discuss these issues.

**Attachments:**

1. Attendees List
2. PWR Rod Breakage Analysis
3. BWR Rod Breakage Analysis

**DISTRIBUTION:**

NRC File Center    Public    SFPO r/f    NMSS r/f    WBrach    WHodges    SGagner, OPA

G:\NEI\neimsum330.wpd

<b>OFC:</b>	SFPO <i>JP</i>	SFPO <i>N</i>	SFPO						
<b>NAME:</b>	CPoslusny:dd	<i>WHarpe</i>	<i>PENG</i>	<i>Freeman</i>					
<b>DATE:</b>	<i>5/4</i> /00	<i>5/11</i> /00	<i>5/11</i> /00						

OFFICIAL RECORD COPY

ADAMS Accession No.:

ADAMS Template No.: NMSS\IRGN Materials-001

*4/26*  
*amd*

location and at the receiving location and no evidence of rod leakage was determined for any assemblies.

The NRC staff acknowledged these examples of fuel cladding integrity but emphasized the fact that there is a need for more data reflecting field experience that fuel vendors should have in their design records. Such data is needed to justify a less conservative position that the staff could use to establish a lower baseline for rod breakage assumptions. The EPRI staff member agreed to consider additional types and sources of data. In addition, the NRC staff discussed a sensitivity evaluation of rod breakage fractions it had done with recent cask designs where it determined that the overriding effect for calculated dose came from the crud from the fuel rods. Attachments 2 and 3 are graphs that reflect this effect.

For the second issue, the EPRI staff member discussed the guidance for source term calculations found in Section 6.1 of NUREG/CR-6487 "Containment Analysis for Type B Packages Used to Transport Various Contents" (October 1996). This guidance includes simplifications such as assuming that available particulates from fuel fines and crud are treated as aerosols and can egress through any leakage paths. As previously noted, the dominant contributor to calculated dose is from the crud. The NRC staff stated that data supporting the size distribution of crud and activity levels, including that for high burnup fuel, would facilitate a change in the ISG. Further, the staff suggested that if the industry could develop a basis for demonstrating that welded lid designs do not leak, then the issue of leakage assumptions would be eliminated. It was agreed that these suggestions would be considered by the industry.

Discussions turned to the role of conducting a storage probabilistic risk assessment to develop insights into source terms, leakage, and other design issues. The EPRI staff member stated that its organization is working on a project to update a previously developed cask PRA and that pending a new contract award, work should begin. The NRC indicated that it was pursuing with the NRC's Office of Research to do a similar study and it was agreed that coordination of these actions to avoid duplication would be done.

It was agreed that a conference call would be held in about 3 weeks from the meeting date to discuss the above follow up actions related to the above subjects.

No proprietary information was disseminated or presented at this meeting. No regulatory decisions were requested or made.

Please contact me if you wish to further discuss these issues.

**Attachments:**

1. Attendees List
2. PWR Rod Breakage Analysis
3. BWR Rod Breakage Analysis

## NRC/NEI MEETING

March 30, 2000

Name	Organization	Phone Number
Chet Poslusny	NRC/NMSS/SFPO	301-415-1341
Jim Lyons	NRC/NMSS/SFPO	301-415-8540
Allen Howe	NRC/NMSS/SFPO	301-415-3561
Chris Bajwa	NRC/NMSS/SFPO	301-415-1237
Nancy Osgood	NRC/NMSS/SFPO	301-415-8513
Christopher M. Regan	NRC/NMSS/SFPO	301-415-1179
Lawrence Kokajko	NRC/NMSS/SFPO	301-415-1309
Jack Guttman	NRC/NMSS/SFPO	301-415-8576
Earl Easton	NRC/NMSS/SFPO	301-415-8520
Jason Scheperow	NRC/RES	301-415-5907
Lynnette Hendricks	NEI	202-739-8109
Albert Machiels	EPRI	650-855-2054
Bryan Anderson	LLNL	925-422-2685
Michael Sheaffer	LLNL	925-422-6292
Harry Vanpelt	Duke-Energy	704-373-8474

### BWR Normal Dose vs. Rod Breakage



