

November 10, 2010

MEMORANDUM TO: Stewart N. Bailey, Chief
Safety Issues Resolution Branch
Division of Safety Systems
Office of Nuclear Reactor Regulation

FROM: Blake A. Purnell, Project Manager */RA/*
Generic Communications and Power Uprate Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF OCTOBER 21, 2010, PUBLIC MEETING ON REVISION
TO SAFETY EVALUATION OF NEI 04-07, "PRESSURIZED WATER
REACTOR SUMP PERFORMANCE EVALUATION METHODOLOGY"
AND DRAFT GUIDANCE ON USING *SURE-HOLD* BANDS

On October 21, 2010, U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting to obtain feedback from stakeholders on the draft revision to the NRC safety evaluation (draft SE revision) of Nuclear Energy Institute (NEI) 04-07, "Pressurized Water Reactor Sump Performance Evaluation Methodology" and draft NRC guidance for the installation of *Sure-Hold* bands. By letter dated July 29, 2010, these draft documents were sent to NEI (Agencywide Document and Access Management System (ADAMS) Accession No. ML100900172). By letter dated September 27, 2010, NEI provided industry comments on the draft SE revision (ADAMS Accession No. ML102710403).

The NRC staff began the meeting by presenting a summary of the draft SE revision and the basis for the changes (Enclosure 2). One person commented during this presentation that the request for public comments was not sent to the Federal Register, but only appeared in the July 29, 2010, letter to NEI. The staff later determined that the process used to elicit comments on the proposed revision was consistent with NRC policies and procedures. The NRC staff then led the discussion by reviewing the comments provided by NEI. For each comment the staff provided its proposed response and the other participants provided feedback. Staff stated that they plan to provide a formal response to the comments around the end of the year, most likely with the final SE revision.

Several industry members stated that selectively applying the scaling equation, including the proposed debris characterization of 100 percent fine debris would discourage the use of *Sure-Hold* bands. The staff indicated that the application of the revised methodology for *Sure-Hold* bands was necessary due to the limited experiments. The question of debris characterization is further discussed below. The staff determined that applying the methodology to other types of insulating materials, not included in the revision, was not necessary to assure operability of the emergency core cooling system strainers. The technical reasons for not applying scaling to other insulations vary depending on the construction of each system.

Additionally, the staff was sensitive to industry concerns about being overly conservative and did not believe that increasing the complexity of the evaluation of the zones of influence for other materials would enhance safety.

Industry members also commented that some experiments showed that certain insulation materials would be removed from the pipe and, therefore, from the zone of influence once the outer jacketing was destroyed by a jet. Thus, this insulation would not be destroyed into smaller pieces. The staff, however, noted that experiments that showed this effect were limited and were not sufficient to determine how much insulation would remain intact.

The industry expressed some disagreement with the staff's decision to recommend using 100 percent fine debris. The staff stated that it had documented a trend toward destruction into finer debris with higher jet pressures in Appendix II of the NRC Safety Evaluation of NEI 04-07. The industry stated that this was overly conservative and one would expect debris to be generated over a range of sizes. However, the staff stated that the extrapolation from the destruction pressures used in experiments to the high pressures that would be encountered within the reduce pipe break zones of influence in the plant was large enough that the characterization of debris as 100 percent fines is warranted without justification of some other value. The staff stated that they were not aware of any experimental data which could be used to justify a smaller percentage of fine debris.

Some industry members noted the differences between aluminum and stainless steel jacketing and how they might fail. The staff stated that the positions taken in the draft SE revision are not new relative to these differences.

A commenter asked what level of rigor was required when applying debris generation test results to plant configurations since there will always be differences between the plant and test configurations. Another commenter then stated that it appears that the NRC wants licensees to redo their analyses based on the revision. The NRC staff responded that each licensee needs to determine for themselves the appropriate level of rigor and if existing analyses are adequate. However, the staff stated that they had reviewed most licensee evaluations and had requested clarifications from licensees in areas where potential issues existed. The staff stated that they did not expect licensees to redo debris generation evaluations that had already been reviewed and accepted by the staff.

In the letter from NEI, it states: "It is timely and appropriate that the NRC conduct, with industry participation, a comprehensive and critical review of the existing tests and data used in support of debris generation models." The letter then requests that the SE not be revised until this review is completed. The staff responded that it believes it is important to proceed with the revision because the information may be required for licensees to evaluate potential modifications to the installation within their plants in the near future. During plant-specific reviews the staff has considered available test results and data in the evaluation of debris generation analyses. The staff further stated that the industry could provide its own analysis if a comprehensive review is desired.

Another commenter stated that credit for double jacketing on insulation would be a useful alternative to *Sure-Hold* bands.

The NEI letter also asks for credit for seam orientation on insulation jacketing since this affects the amount of debris generation. The staff stated that it is not opposed to such credit, but noted that credit for this variable could be difficult to assess because of the potential for jets originating from various directions with respect to the piping and insulation seams. The available destruction test data for various longitudinal seam angles is incomplete, which the staff considers to be a significant obstacle to considering a reduction in debris generation based on seam angle. The current zone-of-influence values in NEI 04-07 are based on various seam angles, not all of which represent the worst case. Thus, some degree of credit for less limiting seam angles is implicitly allowed in the current guidance.

Enclosure 1: List of Attendees

Enclosure 2: NRC Presentation Slides

cc: John Butler, NEI

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Enclosure 2: NRC Presentation Slides

cc: John Butler, NEI

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ADAMS ACCESSION NUMBER: ML103081038

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|--------|-------------|-------------|-------------|-------------|
| OFFICE | LA:DPR:PGCB | PM:DPR:PGCB | BC:DSS:SSIB | PM:DPR:PGCB |
| NAME | CHawes | BPurnell | SBailey | BPurnell |
| DATE | 11/10/2010 | 11/10/2010 | 11/10/2010 | 11/10/2010 |

List of Participants for October 21, 2010, Public Meeting

| NAME | AFFILIATION |
|--------------------|----------------------------------------------------|
| Nancy Chapman* | Bechtel Power Corp. |
| Peter Wilkens* | Southern California Edison (San Onofre) |
| Edwin Kimoto* | Southern California Edison (San Onofre) |
| Karen Ngai* | Southern California Edison (San Onofre) |
| Joseph Gasper* | Omaha Public Power District (Fort Calhoun Station) |
| Ron Holloway* | Wolf Creek Nuclear Operating Corporation (WCNOC) |
| Timothy Sande* | Alion Science and Technology |
| Ken Peterson* | STARS Regulatory Affairs |
| Kip Walker* | Enercon |
| Eric Crabtree* | Enercon |
| Nathan Miller* | Transco Products |
| Deann Raleigh* | Curtis-Wright Corp. |
| Gilbert Zigler | Alion Science and Technology |
| John Butler | Nuclear Energy Institute |
| Mo Dinger | WCNOC/Pressurized Water Reactor Owners Group |
| Lawrence Fleischer | GE-Hitachi |
| Ed Wolbert | Transco Products |
| Chris Kudla | Performance Contracting Inc. |
| Jason Carneal | NRC |
| Chris Hott | NRC |
| Ralph Architzel | NRC |
| Clint Ashley | NRC |
| Stewart Bailey | NRC |
| Eric Miller | NRC |
| John Lehning | NRC |
| Steve Smith | NRC |
| Blake Purnell | NRC |

*Participated via phone

Memorandum to Stewart Bailey from Blake Purnell

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Stacey Rosenberg
Paul Klein
Christopher Hott
John Lehning
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Stephen Smith
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Eric Miller
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Ralph Architzel
Jason Carneal