

September 9, 2008

MEMORANDUM TO: Donnie Harrison, Acting Chief
Safety Issues Resolution Branch
Division of Safety Systems
Office of Nuclear Reactor Regulation

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

SUBJECT: NOTICE OF PUBLIC MEETING WITH THE NUCLEAR ENERGY
INSTITUTE (NEI) AND INDUSTRY TO DISCUSS ISSUES RELATED TO
THE RESOLUTION OF GENERIC SAFETY ISSUE (GSI) -191

DATE AND TIME: September 25, 2008
9:00 a.m. - 12:00 a.m.

LOCATION: NRC Headquarters
One White Flint North
11555 Rockville Pike
Rockville, MD 20852 (Commissioner's Conference Room)

PURPOSE: To discuss various issues related to the resolution of GSI-191 including
Draft Regulatory Issue Summary (RIS) on schedule for the resolution of
remaining issues related to Generic Letter 2004-02. See enclosed
agenda for details.

Comments on the Draft RIS received by September 18, 2008, will be
addressed at the meeting. Please submit comments electronically to
Joe Golla at jaq2@nrc.gov.

PARTICIPANTS: NRC INDUSTRY
Donnie Harrison and John Butler, NEI
Members of the NRC PWR Industry Representatives
GSI-191 Team

CATEGORY 2*: The public is invited to participate in this meeting by discussing regulatory
issues with the NRC at the designated point identified on the agenda.

CONTACT: Joe Golla, NRR ENCLOSURES:
301-415-1002 1. Agenda
jaq2@nrc.gov 2. Draft RIS

*Commission's Policy Statement on "Enhancing Public Participation in NRC Meetings," 67
Federal Register 36920, May 28, 2002. For information regarding participating via
teleconference, please contact Joe Golla at 301-415-1002 or jaq2@nrc.gov.

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OFFICE	NRR/DPR/PGCB:LA	NRR/DPR/PGCB: PM	NRR/DPR/PGCB: BC
NAME	CHawes CMH	JGolla	MMurphy
DATE	09/09/2008	09/09/2008	09/09/2008

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MEETING AGENDA
U.S. NUCLEAR REGULATORY COMMISSION (NRC)
MEETING WITH NEI AND INDUSTRY

September 25, 2008

9:00-9:10	Introductions and meeting purpose	NRC
9:10-9:20	GL 2004-02 supplemental response review progress	NRC
9:20-10:00	Regulatory Issue Summary on in-vessel downstream effects	NRC/NEI/ INDUSTRY
10:00-10:45	Discussion on Generic Letter 2004-02 response requests for additional information	NRC/NEI/ INDUSTRY
10:45-11:15	Approaches for providing additional assurance of safety, and addressing uncertainty, e.g., sump strainer backflushing	NRC/NEI/ INDUSTRY
11:15-11:45	Open discussion on next steps	NRC/NEI
11:45-12:00	Opportunity for public comment	NRC
12:00	Adjourn	

Enclosure 1

DRAFT
UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

September 30, 2008

**NRC REGULATORY ISSUE SUMMARY 2008-xx
SCHEDULE FOR THE RESOLUTION OF
REMAINING ISSUES RELATED TO
GENERIC LETTER 2004-02**

ADDRESSEES

All holders of operating licenses for pressurized-water reactors (PWRs), except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this Regulatory Issue Summary (RIS) to inform PWR licensees of (1) the circumstances for a delay in resolution of the in-vessel downstream effects issue that is part of Generic Safety Issue (GSI)-191, (2) communicate the staff's plans and expectations for resolving this issue, (3) explain why continued operation is acceptable until this issue is resolved, and (4) provide guidance on when and how licensees should provide additional submittals to support closure of Generic Letter (GL) 2004-02 and GSI-191. This RIS requires no action or written response from addressees.

BACKGROUND INFORMATION

GL 2004-02 requested licensees of PWRs, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel, to (1) perform a mechanistic evaluation to determine the potential for post-accident debris to block flow paths in emergency core cooling systems (ECCS) and the containment spray system (CSS) and evaluate the adverse effects of ECCS/CSS operation with debris-laden fluids on the recirculation functions of these systems following all postulated accidents for which the recirculation function of these systems is required, (2) implement any plant modifications that the evaluation identifies as being necessary to ensure system functionality, and (3) provide, among other things, information describing the method used to analyze the susceptibility of the ECCS and CSS to the adverse effects of post-accident debris blockage, and the basis for concluding that inadequate core or containment cooling would not result due to debris blockage at flow restrictions in the ECCS and CSS flow-paths downstream of the sump screens (e.g., at high pressure safety injection (HPSI) throttle valves, pump bearings and seals, fuel assembly inlet debris screens, or containment spray nozzles). The GL requested licensees to complete all corrective actions by December 31, 2007.

Enclosure 2

GL 2004-02 included the NRC staff's determination that existing PWRs could continue operations while responding to GL 2004-02. The GL cited the August 14, 2001, "Summary of July 26-27, 2001, Meeting with Nuclear Energy Institute and Industry on ECCS Strainer Blockage in PWRs," which delineated the justification for continued operation. As discussed in that justification, continued plant operation was justified for several reasons. The probability of the most severe initiating events (i.e., large and intermediate break loss-of-coolant-accidents LOCAs) is extremely low. More probable (although still low probability) is that small LOCAs would require less ECCS flow, take more time to use up the water inventory in the refueling water storage tank (RWST), and in some cases may not even require the use of recirculation from the ECCS sump because the flow through the break would be small enough that the operator will have sufficient time to initiate residual heat removal operation and depressurize the reactor coolant system. In addition, there are PWR design features that tend to prevent debris blockage of the ECCS sumps during a LOCA. These features are effective for sequestering or settling out insulation and coating debris. Moreover, in response to Bulletin 2003-01, addressees have implemented interim compensatory measures to reduce the risk.

In response to GL 2004-02, licensees have significantly modified their facilities and procedures to (1) reduce the quantity of loss-of-coolant accident-generated (LOCA) debris that are transported to the sump screen and (2) reduce the effects of the debris on the ability of the ECCS and CSS to perform their safety related functions. Modifications include the replacement of the original sump screens with significantly larger strainers that are more capable of capturing smaller particles and fiber fragments. Other modifications include installation of debris interceptors and removing or banding insulation to reduce the debris load on the sump screens, and improving coating inspection programs to reduce the quantity of LOCA-generated debris.

During the review of the initial licensee responses to GL 2004-02, the NRC staff identified the need for additional information on several issues related to sump performance and in February 2006, the staff sent a request for additional information (RAI) letter to individual licensees and requested responses within 60 days. Due to the scope of the RAIs, the NRC staff, by letters to the Nuclear Energy Institute (NEI) dated March 3, 2006, and January 4, 2007, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML060650335 and ML063460258) agreed to an NEI proposed alternative approach and timetable that licensees could use to address the subject matter of the RAIs. The agreed upon alternative was that licensees could elect to submit a complete supplemental response no later than December 31, 2007. However, to allow for the resolution of emerging technical issues and the completion of strainer performance testing, the NRC granted additional extensions of various lengths on a plant-specific basis.

Among other issues, GL 2004-02 requested licensees of PWRs to address the adverse effects of post-accident debris blockage at the fuel assembly inlet debris screen. To provide an acceptable method for addressing the potential for core inlet blockage by debris, the Pressurized-Water Reactor Owners Group (PWROG) developed Topical Report (TR) WCAP-16793-NP, Revision 0, and submitted it to the NRC for review in June 2007.

The NRC staff has reviewed WCAP-16793-NP, revision 0, but has not issued a final SE on this WCAP because of several issues that were identified by the Advisory Committee on Reactor Safeguards (ACRS) and staff (e.g., chemical effects, core inlet configuration, assumed debris loads, etc.) that need to be addressed. The NRC staff is working with the PWROG to resolve

these issues and the PWROG intends to submit a revised WCAP that is supported by additional testing. Assuming that the PWROG makes an adequate technical case, the NRC expects to issue the final safety evaluation (SE) on WCAP-16793-NP in the second quarter of 2009. Because most licensees' GL 2004-02 supplemental responses either apply the methods contained in WCAP-16793-NP, or directly reference the generic evaluations in WCAP-16793-NP for their in-vessel downstream effects evaluation, the NRC does not expect in-vessel downstream effects to be resolved for all plants until mid 2009.

SUMMARY OF ISSUE

The NRC staff is currently reviewing the GL 2004-02 supplemental responses received in February 2008. The staff is finding that many of the submittals indicate that work remains to support the assumptions and conclusions contained in the submittals. Further, some plants may need to perform additional strainer testing or make modifications to adequately address the remaining issues.

To develop a path forward for resolving technical issues, the NRC staff is issuing RAIs to address the deficient areas. In the area of in-vessel downstream effects, the RAIs are informing the licensees that they may resolve in-vessel downstream effects by showing that their plant conditions are bounded by the final WCAP-16793-NP and the corresponding final NRC safety evaluation. Alternately, a licensee may demonstrate, without reference to WCAP-16793-NP, that downstream effects have been addressed on a plant-specific basis.

Licensees should provide their final GL 2004-02 submittal responses addressing all issues, except in-vessel downstream effects, no later than 90 days after completion of all testing and analyses showing that the GL issues have been adequately addressed, or 90 days after issuance of NRC RAIs on the February 2008 GL 2004-02 supplementary responses, whichever is later. This schedule may lead to some licensees having submitted their final responses prior to completing all corrective actions (e.g., modifications). In such cases, licensees should state in their final responses what corrective actions remain open and the date by which the actions will be completed. Also, the licensee shall notify NRC staff, by letter, when the remaining corrective actions are completed.

Licensees should provide their final GL 2004-02 submittal addressing in-vessel downstream effects within 90 days of issuance of the final NRC SE on WCAP-16793-NP.

Because of the above considerations plants may continue to operate during the extended review period of WCAP-16793-NP without submitting plant-specific extension requests. As stated above, licensees have made significant improvements toward resolving the issues identified in GL 2004-02 by implementing measures to control latent debris inside containment, by removing harmful materials, and by replacing sump screens with much larger strainers having smaller perforations. These modifications decrease the quantity of bypassed fiber that can enter the reactor vessel and increase the available net positive suction head for the ECCS and CSS pumps. Also, initial core inlet blockage tests have shown that due to the PWR fuel assembly design, in-vessel downstream effects may not be a severe problem for PWRs.

VOLUNTARY ACTION

This RIS only provides information and requires no action.

VOLUNTARY RESPONSE

This RIS only provides information and requires no response.

Memorandum to Donnie Harrison from Joseph A. Golla

SUBJECT: NOTICE OF PUBLIC MEETING ON SEPTEMBER 25, 2008, WITH NEI
AND INDUSTRY TO DISCUSS VARIOUS ISSUES RELATED TO
GENERIC SAFETY ISSUE (GSI)-191

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Stephen Smith
John Burke
Roberto Torres
Ralph Landry
John Butler (JCB@NEI.ORG)