

February 16, 2005

MEMORANDUM TO: Michael Johnson, Deputy Director  
Division of Systems Safety and Analysis  
Office of Nuclear Reactor Regulation

FROM: John N. Hannon, Chief **//RA//**  
Plant Systems Branch  
Division of Systems Safety and Analysis  
Office of Nuclear Reactor Regulation

SUBJECT: RESOLUTION OF GSI-191, "PRESSURIZED WATER REACTOR  
SUMP PERFORMANCE EVALUATION METHODOLOGY": PILOT  
PLANT REVIEW PROGRAM

The GSI-191 team prepared the attached document on Resolution of GSI-191, "Pressurized Water Reactor Sump Performance Evaluation Methodology": Pilot Plant Review Program (PPRP) per your request to Mr. David Solorio. This document evaluates the costs and benefits of reviewing pilot plants' responses to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accident at Pressurized-Water Reactors." The document outlines the benefits to the NRC, the pilot plants, and the other pressurized-water reactor plants and provides estimates of resources needed to implement PPRP under three different levels of effort: Option 1 - Minimal-Effort Review, Option 2 - Limited-Scope Review, and Option 3 - Full-Scope Review.

We recommend implementing PPRP Option 2 - Limited-Scope Review. The other two options lack benefits or will be difficult to implement for the following reasons. PPRP Option 1 involves minimal number of staff and contractors reviewing the most important issues during a short period. The experience gained will be limited to a few areas and a few members in the GSI-191 team. PPRP Option 3 - Full-Scope Review involves full GSI-191 team reviewing the entire evaluation methodology with an effort of 1 staff-year. The staff's experience is that the licensees generally spend about twice the effort of the staff in supporting reviews. Thus the estimated effort for a pilot plant licensee for supporting PPRP Option 3 will be 2 person-years, which may seem excessive for plants willing to participate in the PPRP.

The GSI-191 team is compiling detailed information on review, audit, and inspection items and planning a teleconference with Crystal River Nuclear Power Plant, a volunteer for the PPRP, to discuss and seek feedback from the licensee on PPRP.

Attachment: As stated

CONTACT: Harry Wagage  
415-1840

February 16, 2005

MEMORANDUM TO: Michael R. Johnson, Deputy Director  
Division of Systems Safety and Analysis  
Office of Nuclear Reactor Regulation

FROM: John N. Hannon, Chief **//RA//**  
Plant Systems Branch  
Division of Systems Safety and Analysis  
Office of Nuclear Reactor Regulation

SUBJECT: RESOLUTION OF GSI-191, "PRESSURIZED WATER REACTOR  
SUMP PERFORMANCE EVALUATION METHODOLOGY": PILOT  
PLANT REVIEW PROGRAM

The GSI-191 team prepared the attached document on Resolution of GSI-191, "Pressurized Water Reactor Sump Performance Evaluation Methodology": Pilot Plant Review Program (PPRP) per your request to Mr. David Solorio. This document evaluates the costs and benefits of reviewing pilot plants' responses to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accident at Pressurized-Water Reactors." The document outlines the benefits to the NRC, the pilot plants, and the other pressurized-water reactor plants and provides estimates of resources needed to implement PPRP under three different levels of effort: Option 1 - Minimal-Effort Review, Option 2 - Limited-Scope Review, and Option 3 - Full-Scope Review.

We recommend implementing PPRP Option 2 - Limited-Scope Review. The other two options lack benefits or will be difficult to implement for the following reasons. PPRP Option 1 involves minimal number of staff and contractors reviewing the most important issues during a short period. The experience gained will be limited to a few areas and a few members in the GSI-191 team. PPRP Option 3 - Full-Scope Review involves full GSI-191 team reviewing the entire evaluation methodology with an effort of 1 staff-year. The staff's experience is that the licensees generally spend about twice the effort of the staff in supporting reviews. Thus the estimated effort for a pilot plant licensee for supporting PPRP Option 3 will be 2 person-years, which may seem excessive for plants willing to participate in the PPRP.

The GSI-191 team is compiling detailed information on review, audit, and inspection items and planning a teleconference with Crystal River Nuclear Power Plant, a volunteer for the PPRP, to discuss and seek feedback from the licensee on PPRP.

Attachment: As stated

CONTACT: Harry Wagage  
415-1840

DISTRIBUTION:

PUBLIC	SBlack	JHannon	DSolorio
PD1-1 R/F	JHopkins	HWagage	RArchitzel

ADAMS ACCESSION: ML050450327

OFFICE	DSSA:SPLB	DSSA:SPLB	DSSA:SPLB
NAME	HWagage	DSolorio	JHannon
DATE	2/15/05	2/15 /05	2/16/05

OFFICIAL RECORD COPY

**Resolution of GSI-191,  
“Pressurized Water Reactor Sump Performance Evaluation Methodology”:  
Pilot Plant Review Program**

**Background/Purpose**

During the 2004 Sump Performance Workshop in December 2004, the Nuclear Energy Institute (NEI) proposed that the NRC conduct pilot plant reviews of the licensee submittals in response to Generic Letter 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accident at Pressurized-Water Reactors.” After the workshop, representatives of several utilities contacted John Hannon, Chief of the Plant Systems Branch, to express interest in volunteering for the program. The purpose of this document is to evaluate the costs and benefits of the pilot plant reviews.

**Pilot Plant Review Program**

The Pilot Plant Review Program (PPRP) is an effort between the industry and the NRC to effectively evaluate the implementation of the NEI’s sump evaluation methodology on a plant-specific basis at selected pilot plants. The PPRP will enable the staff to (1) identify and resolve potential issues that arise when employing the approved methodology, (2) improve the review process, and (3) focus the audit process. In selecting plants for the PPRP, the staff will consider the licensee’s willingness to participate in the program, the use of risk-informed alternatives, the extent of activities completed by the licensee, the vendor performing the evaluation, whether the licensee would implement a new sump design, types of insulations used in the containment, the chemical environment of the sump as it relates to potential chemical effects, and the type of sump screen design (active or passive).

Three options are available for implementing PPRP. Option 1 is a minimal-effort review conducted by selected staff members from the GSI-191 team, with contractor support. The staff and contractors would select only the most important areas to review, exercise parts of the audit process, and provide feedback to all stakeholders. Option 2 is a limited-scope review conducted by selected staff members from the GSI-191 team, with contractor support. The staff and contractors would select specific areas to review, exercise parts of the audit process, and provide feedback to all stakeholders. Option 3 is a full-scope review that would involve the entire GSI-191 team and contractors. The PPRP will be the same as for Option 2, except that Option 3 will cover the entire evaluation methodology.

Providing feedback to the industry from lessons learned during the PPRP is an important aspect of the program. The NRC will provide feedback to the industry by posting meeting summaries, trip reports, and evaluation summaries on the NRC public website.

**Benefits to the NRC**

- Lessons learned during the PPRP will guide the agency in determining the staff and contractor resources needed for the future reviews, audits, and/or inspections. The lessons learned will also allow the staff to focus the audits to minimize the impact on staff and licensee resources.

- Early engagement in the review process will help the staff be more realistic in resolving GSI-191.
- The staff can identify early during the resolution of GSI-191 what issues need to be further addressed and clarified in the safety evaluation.
- Feedback from the lessons learned will help the staff enhance research and testing programs and inspection activities.
- The PPRP will permit the staff to review early the requests for license amendments, Technical Specifications changes, and/or exemptions that are necessary for implementing mods. This would enable the GSI-191 team to plan staff resource needs including support from other technical branches, which are not currently involved, for the review of licensees' GL 2004-02 responses and possible related requests for license amendments, Technical Specifications changes, and/or exemptions.
- Feedback from the lessons learned will enable the industry to make high-quality submittals by September 2005. High-quality submittals will need less staff resources to review and take regulatory actions.

#### **Benefits to the Pilot Plants**

- Gain staff clarifications regarding GL 2004-02, if needed, early during the resolution of GSI-191.
- Improve the quality of September 2005 submittals.
- Reduce need for audits because the staff will become familiar with the approach taken for the resolution of GSI-191.
- Possible fee waiver for NRC review of license amendment requests related to GSI-191.
- The PPRP evaluations will consist of general observations that are placed on the NRC public website and documented in trip reports.

#### **Benefits to the Industry**

- Feedback from lessons learned during the PPRP will enable the industry to make high-quality submittals by September 2005.
- Get staff clarifications of any problem areas in GL 2004-02 early during the resolution of GSI-191.
- Helps the industry focus and prioritize the open items impacting the GSI-191 resolution.

**Estimated Resources Needed for PPRP**

PPRP Option 1 involves three personnel (two staff members and one contractor) in the following effort: few days to review the licensee submitted material, few days for a site visit, and few days to prepare reports. The PPRP Option 1 effort is estimated to be about 6 staff-weeks per pilot plant over a 1-month period (1.5 full-time personnel).

PPRP Option 2 is similar to the limited plant audits performed following the BWR resolution of Potential Plugging of Emergency Core Cooling Suction Strainers by Debris. Each plant audit involved four personnel (two staff members and two contractors) in the following effort: 1 week to review the licensee submitted material, 1 week for a site visit, and 2 weeks to prepare reports. Thus each audit took about 4 staff-months. Based on this information and the additional areas needed for review for PWRs, the PPRP Option 2 effort is estimated to be about 6 staff-months per pilot plant over a 3-months period (2 full-time personnel).

Because of the full-scope review and extensive involvement of the staff and contractors, PPRP Option 3 effort is estimated to be about twice the effort for Option 3, which is 1 staff-year per pilot plant over a 3-months period (4 full-time personnel).