

July 10, 2007

MEMORANDUM TO: Michael L. Scott, Chief  
Safety Issues Resolution Branch  
Division of Safety Systems  
Office of Nuclear Reactor Regulation

FROM: Jay E. Robinson, Project Manager */RA/*  
Generic Communications and Power Uprate Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF JUNE 19, 2007, PUBLIC MEETING WITH THE  
NUCLEAR ENERGY INSTITUTE (NEI), PRESSURIZED WATER  
REACTOR OWNERS GROUP (PWROG), LICENSEES, AND SUMP  
STRAINER VENDORS TO DISCUSS THE RESOLUTION OF GENERIC  
SAFETY ISSUE (GSI)-191

On June 19, 2007, Nuclear Regulatory Commission (NRC) staff met with representatives of NEI, PWROG, licensees, and sump strainer vendors in a public meeting at NRC headquarters in Rockville, Maryland. Enclosure 1 provides a list of those in attendance and individuals who participated via teleconference. Enclosure 2 is the meeting agenda. Information presented by the NRC and industry at the meeting is available in the NRC Agencywide Documents Access and Management System (ADAMS) under Accession No. ML071780405.

The purpose of this meeting was to discuss a variety of issues related to GSI-191 in order to manage the ongoing activities needed to bring GSI-191 to closure. The meeting was convened by the NRC GSI-191 Project Manager. The Director of the Division of Safety Systems in the Office of Nuclear Reactor Regulation and the NRC GSI-191 team leader followed with additional remarks and a review of the agenda.

Representatives of the PWROG discussed industry activities related to chemical effects. The status of both WCAP-16530-NP, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191" and WCAP 16785-NP, "Evaluation of Additional Inputs to the WCAP-16530-NP Chemical Model" was discussed. The status of WCAP-16530-NP is that the PWR Owners' Group is still responding to NRC requests for additional information (RAIs), that NRC has witnessed additional testing, that the final testing will finish in about one week, and that a phone call with the NRC staff is scheduled in one week as well. The status of WCAP-16785-NP is that areas of testing have been identified, results of testing are being used to allow for plant-specific inputs to the model, user instructions concerning chemical refinements have been issued, and the PWROG is obtaining approval to submit the document "for information only" to the NRC Staff.

Representatives from the NRC discussed the Generic Letter (GL) 2004-02 Supplemental Response Draft Content Guide and provided a status update and discussed industry comments on the draft document.

Representatives of the NRC discussed the status of topical report WCAP-16406-P, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191." NRC representatives suggested that the PWROG convene for an industry-wide training session on the methodology described in the WCAP. A final safety evaluation is expected to be completed in September 2007, but revision 1 of the WCAP is needed. Also, agreement was reached on how to address the last RAI.

An NRC representative stated that WCAP-16793-NP, Revision 0, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid," has just been received and that the NRC is currently performing an acceptance review of the document.

Representatives of the NRC discussed remaining staff technical questions regarding GSI-191, which included a draft list of questions/concerns obtained through informal elicitation of the NRC team evaluating the issue. Set 1 consists of 11 issues which are to be addressed by licensees, as applicable, to their plant configurations. These 11 issues are grouped under 5 headings. Under "Hydraulic Input and Design Criteria" are issue numbers 1, 2, and 3 as follows: Issue No. 1 "Single Failure Assumption Regarding ECCS or CSS Pump Operation;" Issue No. 2 "Small Strainer Submergence and Possibility of Flashing;" Issue No. 3 "Vented Sump." Under the heading of "Scaling" is Issue No. 4 "Circumscribed Flow Condition in a Debris-Filled Pit Geometry." Under "Testing Protocol" are Issue Nos. 5, 6, and 7 as follows: Issue No. 5 "Coating Debris Form For Head Loss Test With Chemical Effects;" Issue No. 6 "Termination Criteria;" Issue No. 7 "Debris Sequencing When Crediting Near-Field Settlement." Under the heading of "Near-Field Settlement" is Issue No. 8 which is "Near Strainer Velocity and Turbulence Modeling." Under the heading of "Other Design Issues" are Issue Nos. 9, 10, 11 as follows: Issue No. 9 "Use of Back Flush Option;" Issue No. 10 "Chemical Model Refinements;" and Issue No. 11 "Coating Zone of Influence (ZOI)." Set 2 issues were also discussed. These are two issues raised by the staff for which no specific industry action is needed at this time. Set 2 issues include: "Sequential Clogging Caused by Uneven Flow Which Results in Higher Head Loss than Expected," and, "Stopping Pump Flow When a Strainer is Covered by a Full Debris Bed is Subject to Vortex Upon Restarting Due to High Flow."

Representatives of the NRC discussed a peer review evaluation of post-loss of coolant accident (LOCA) chemical effects. This review identified 108 chemical phenomena. Forty-one issues were unique with at least one high-importance ranking. Sixty-seven issues ranked lower or could be combined with other issues. Of the 41 unique items, 5 phenomena are potentially advantageous; 2 phenomena have no practical implications; and, 34 phenomena are potentially deleterious. Of the 34, 15 can be dispositioned based on available technical information or planned industry evaluations, and 19 merit additional analysis by NRC/Industry. All except 3 issues have been previously identified. NRC-sponsored scoping evaluations will be initiated by July 2007 to determine whether additional attention is needed on these 19 items, and initial evaluations are expected to be completed by September 2007. Complete evaluations are expected by December 2007. NRC welcomes industry input to inform the evaluations.

Representatives of the NRC staff discussed the status of NRC expectations regarding audits of licensee corrective actions for GSI-191. Emphasis of audits is on adequacy of design and supporting analyses. Six audits are complete or in progress and include: Watts Bar, San Onofre, Prairie Island, Millstone, Oconee, and Waterford. The remaining four audits are scheduled as follows: North Anna, July 2007; Salem, October 2007; Indian Point, December 2007; and St. Lucie, January 2008. At least one audit has been performed for each strainer vendor. Similar issues observed at multiple plants include single failure of emergency core cooling pump to stop, ex-vessel downstream effects evaluations, lack of basis for key assumptions regarding debris generation and transport. The NRC GSI-191 team leader stated that licensees should review previous audit reports, note identified issues, and address them.

Representatives of Corrosion Control Consultants & Labs discussed the status of recently completed qualified coatings assessments. The Electric Power Research Institute/Nuclear Utilities Coating Council (EPRI/NUCC) collected containment coating adhesion and visual inspection data on behalf of the industry. Testing was performed on coatings on concrete and steel substrates. Volunteer plants were selected to include a variety of coating systems. These included San Onofre, Waterford, McGuire, and Oconee. Adhesion data were collected using American Society for Testing Materials (ASTM) D 4541-02 (pull off test) and ASTM D 6677-01 (knife test). Various coatings systems were tested, including coatings from Mobil, Carboline, and Ameron. Corrosion Control Consultants concluded that aged, visually intact DBA-qualified coatings for various manufacturers, exhibiting no visual anomalies, continue to exhibit system pull-off adhesion at or in excess of the originally specified minimum value of 200 psi (American National Standards Institute (ANSI) N5.12 and ASTM D5144). The final report is to be published in mid 2007 as EPRI PSE Report No. 1014883 "Plant Support Engineering: Adhesion Testing of Nuclear Service Level I Coatings".

The following action items were agreed to:

1. The NRC will finalize the GL 2004-02 Draft Supplemental Response Content Guide by the end of July 2007, and transmit it to NEI by letter
2. NEI will provide proposed wording for the Content Guide on how to discuss uncertainties.
3. NRC will provide a schedule for completion of review of the in-vessel Topical Report WCAP-16793-NP, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid."
4. NRR/RES will provide NEI a description of proposed scoping work to facilitate industry input.
5. There will be a phone call regarding the minimum 200 psig coatings pull-off adhesion value.
6. NEI will expand their "illustrative examples" of the proposed level of detail of licensee responses to cover all sections of the Content Guide.
7. NEI will arrange a conference call with the strainer vendors to discuss Issue 4 "Circumscribed Flow Condition in a Debris-Filled Pit Geometry," of the staff's remaining technical questions.

8. NEI will provide a list of industry contacts who were involved in preparing the coatings zone-of-influence reports currently under NRC review.

9. NEI will attempt to obtain sump strainer testing schedules from vendors or licensees.

Public comments were requested at two points during the meeting. None were provided.

The next meeting was tentatively scheduled for August. After this, the meeting was adjourned.

Enclosure 1: List of Attendees

Enclosure 2: Meeting Agenda

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Enclosure 1: List of Attendees

Enclosure 2: Meeting Agenda

**ADAMS ACCESSION NUMBER:** Package: ML071780405; Memo: ML071780526.

OFFICE	LA:DPR:PGCB	PM:DPR:PGCB	PM:DPR:PGCB	BC:DSS:SSIB	BC:DPR:PGCB
NAME	CHawes CMH	JRobinson	JGolla	MScott	MMurphy
DATE	07/03/2007	07/05/2007	07/09/2007	07/11/2007	07/10/2007

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List of Attendees for June 19, 2007,  
Meeting of NEI, Industry, and NRC

NAME	ORGANIZATION
Chris Kudla	PCI
Stuart Cain	Alden
Wes McGown	Progress Energy
Shannon Burke	Progress Energy
Jay Darrell	Progress Energy
Frank Eppler	Duke Energy - Oconee
Christopher Petrovitch	NRC
Takahire Imamara	MNES
Leon Whitney	NRC
Jeremy Fischer	NMC - Point Beach
Ed Carmack	SNC - Farley
Brian McCabe	Progress Energy
Kiran Mathur	PSEG
Kirk Troxler	FENOC
Victor Linnenbom	FENOC
Mike Franklin	Progress Energy
Shanlai Lu	NRC
Steve Smith	NRC
Brian Davenport	Exelon Nuclear
Steven Unikewicz	NRC
Der-Zly Shich	TECRO
Deann Raleigh	LIS Scientech
John Butler	NEI
Maurice Dingler	WCNOC/PWROG
E. J. Mistele	Ontario Power Generation

List of Attendees for June 19, 2007,  
Meeting of NEI, Industry, and NRC

<b>NAME</b>	<b>ORGANIZATION</b>
R. M. Waters	Entergy - Indian Point
D. Shih	Entergy - Indian Point
Nicholas Petit	Entergy - Waterford
Gregory Ferguson	Entergy - Waterford
Jun Cavallo	CCC & L Inc.
Timothy S. Andreychek	Westinghouse Electric Co.
Spyros Trayforos	SAT Consultants, Inc.
Joe Gasper	OPPD
Chuck Feist	TXU power
Ken Petersen	USA/STARS
Jim Kuemin	Entergy - Palisades
George Goralski	Entergy - Palisades
Phillip Rush	MPA Associates
Aaron Smith	Enercon Services
Gary D. Miller	Dominion Resources
Thomas Shaub	Dominion Resources
Addison Hall	Dominion
Michael W. Henig	Dominion
Dale M. Vincent	NMC
Mike Staley	NMC - Prairie Island
Tony Jackson	Duke Energy
Harold Hopkins	FPL
Brian Dunn	FPL
Robert Peterson	Sargent & Lundy
Paul Leonard	AEP/DC Cook

List of Attendees for June 19, 2007,  
Meeting of NEI, Industry, and NRC

NAME	ORGANIZATION
Sue Simpson	AEP/DC Cook
Linda Conklin	SCE/SONGS
Michael Scott	NRC
Bill Ruland	NRC
Jared Wermeil	NRC
Paul Klein	NRC
Joe Golla	NRC
Jay Robinson	NRC
Bill Bateman	NRC
Elliot Rosenfeld *	State of New Jersey

\* Participated Via Teleconference

AGENDA  
June 19, 2007

8:30-8:45	Introduction and meeting purpose	NRC
8:45-9:45	Chemical effects (industry activities) <ul style="list-style-type: none"><li>• PWROG activities</li><li>• vendor testing activities</li></ul>	PWROG/Vendors
9:45-11:15	GL 2004-02 Draft Content Guide Update <ul style="list-style-type: none"><li>• completed draft</li><li>• industry comments</li></ul>	NRC/NEI
11:15-11:30	Break	
11:30-12:00	Topical report status	PWROG/NRC
12:00-12:15	Opportunity for public comments or questions	NRC
12:15-1:30	Lunch	
1:30-2:30	Remaining technical questions <ul style="list-style-type: none"><li>• NRC staff questions</li><li>• RES peer review comments</li></ul>	NRC
2:30-3:15	Audit status update	NRC
3:15-3:30	Break	
3:30-4:30	Qualified coatings assessments	NEI/NRC
4:30-4:45	Opportunity for public comments or questions	NRC
4:45	Adjourn	

Memorandum to Michael L. Scott from Jay E. Robinson

SUBJECT: MEETING SUMMARY OF PUBLIC MEETING WITH NEI AND INDUSTRY ON  
JUNE 19, 2007, TO DISCUSS TOPICS RELATED TO GSI-191

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LWhitney (LEW1)

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WJensen (WLJ)

SLu (SXL2)

AHiser (ALH1)

MEvans (MGE)

SSmith (SJS2)

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