January 31, 2008

MEMORANDUM TO: Michael L. Scott, 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: **REVISED** SUMMARY OF NOVEMBER 27, 2007, PUBLIC MEETING WITH THE BOILING WATER REACTOR OWNER'S GROUP (BWROG) TO DISCUSS THE TREATMENT OF GENERIC SAFETY ISSUE (GSI)-191 TECHNICAL ISSUES AS APPLIED TO BOILING WATER REACTOR (BWRs)

On November 27, 2007, Nuclear Regulatory Commission (NRC) staff met with representatives of the BWROG in a public meeting at NRC headquarters in Rockville, Maryland. Enclosure 1 provides a list of those in attendance and an individual 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. ML073320404.

The purpose of this meeting was to discuss differences in the treatment of pressurized water reactor (PWR) containment sump strainer and BWR emergency core cooling system (ECCS) strainer clogging technical issues.

The meeting was convened by the NRC GSI-191 Project Manager. The Director of the Division of Safety Systems (DSS) in the Office of Nuclear Reactor Regulation followed with additional remarks. Then the Chairman of the BWROG made opening remarks and presented background information.

The Branch Chief of the Safety Issue Resolution Branch (SSIB) of DSS commented on the reasons why disparities in treatment of strainer performance issues have occurred. These include in some cases different configurations, and in other cases the different time frames in which the issues were addressed (1990s for BWRs, 2000s for PWRs). He then highlighted some example disparities noted by the NRC staff. View slide no. 2 of the U.S.NRC briefing slides for this meeting at ADAMS Accession No. ML073320414 for a list of the subject areas discussed. The BWROG Chairman commented that bullet no. 3 was not accurate in that BWRs take suction at first from the condensate storage tank and when this supply is expended suction is then taken from the suppression pool. A General Electric-Hitachi representative stated disagreement with slide no. 4. He disagreed that debris settling was faster in PWR containment floor debris/water pools than BWR suppression pools because in BWR suppression pools the

downcomers are spread out and do not promote turbulence in the pool sufficient to cause debris to remain in suspension.

A staff member then presented the rest of the NRC briefing material. The BWROG Chairman asked about the expected scope of treatment of chemical effects for BWRs since there are potentially many different chemicals in containment. The SSIB Branch Chief stated that it is expected that chemicals that have the potential for the most significant detrimental effect on head loss at the ECCS strainer be investigated. On slide no. 5 the SSIB Branch Chief commented that the NRC believes that downstream effects on BWR fuel may be a significant factor to consider. The BWROG Chairman responded that the BWROG has information which shows that this effect is in fact not significant for BWRs.

After this presentation a representative of the BWROG from General Electric-Hitachi made a briefing entitled "Selected Topics In The Treatment of ECCS Strainer – Sump Clogging for BWRs and PWRs." The selected topics were BWR Ex-Vessel and In-Vessel Downstream Effects, BWR Chemical Effects, PWR ZOIs [zones of influence] Overly Conservative, and Credit for Near Field Effects. This presentation can be viewed at ADAMS Accession No. ML073320406.

The SSIB Branch Chief stated that information potentially pertinent to the BWROG efforts to address the identified issues may be gleaned from two particular documents that were prepared by the staff in pursuing the resolution to GSI-191 for PWRs. These documents are the "Revised Content Guide for Generic Letter 2004-02 Supplemental Responses" (ADAMS Accession No. ML073110389) and NRC staff review guidance in the form of three enclosures to a letter to the Nuclear Energy Institute. The letter may be viewed at ADAMS Accession No. ML072600337. Enclosure 1 to the letter is "NRC Staff Review Guidance Regarding Generic Letter 2004-02 Closure In The Area Of Strainer Head Loss And Vortexing" (ADAMS Accession No. ML072600348). Enclosure 2 is "Coatings Evaluation Guidance For NRC Review of Generic Letter 2004-02 Supplemental Responses" (ADAMS Accession No. ML072600335). Enclosure 3 is "Evaluation Guidance for the Review of GSI-191 Plant-Specific Chemical Effects Evaluations" (ADAMS Accession No. ML072600372).

The BWROG Chairman stated, after discussion of chemical effects, that it is the position of the BWROG at this time that chemical effects are not a significant problem for BWRs and not worthy of additional work by the BWR industry. The stated reasons are that BWRs do not utilize a buffering agent inside containment and BWRs have a large volume of water in their suppression pools compared to PWR containment floor debris/water pool. The NRC staff disagreed, stating that although BWRs are unlikely to have the same aluminum or calcium-based precipitates generated in PWR LOCA scenarios, there is some experience that shows other chemical effects are possible including corrosion products that can have similar head loss impacts as the PWR-type precipitates. The staff further stated that the BWR industry should consider additional analysis or testing to understand the potential for chemically generated material that may impact head loss across a strainer.

An NRC representative of the Office of New Reactors (NRO) made comments regarding the license application received from STP Nuclear Operating Company (STPNOC) to construct and operate a new reactor. The NRO representative stated that NRO will work with STPNOC, other applicants, and NRR to ensure that strainer clogging issues are addressed for new reactors.

The SSIB Branch Chief and the BWROG Chairman then reviewed the BWROG's planned activities for each area as discussed during the course of the meeting. Following is a summation of the issues:

1. Downstream effects – components: BWROG believes that this is not a problem at

BWRs since BWRs use fewer throttle valves than do PWRs. They will nevertheless consider the staff's comments.

2. Downstream effects – fuel: BWROG will provide a report to the NRC on this issue for BWRs. The report will have links to testing that the BWROG believes supports their position that in-vessel downstream effects are not a problem for BWRs.

3. Debris bed head loss predictions: The BWROG stated this has already been addressed but will revisit the issue and will provide a position on it to the NRC by April 2008.

4. Chemical effects: The BWROG stated that it plans to take no action for reasons previously discussed.

5. Assessment of coatings: The BWROG will consider the NRC staff's comments and will address the subject at the next meeting with the NRC.

6. Latent debris: The BWROG will consider the NRC staff's comments and will address the subject at the next meeting with the NRC.

7. Zone of influence (ZOI) adjustment for air jet testing: BWROG stated that the position taken for PWRs is overly conservative. No action planned.

8. ZOI for protective coatings: BWROG stated that the position taken for PWRs is overly conservative. No action planned.

9. Debris transport – erosion: The BWROG stated that this issue has already been addressed for BWRs but they will consider the NRC staff's comments.

10. Debris characteristics – calcium silicate insulation: BWROG will consider the staff's comments and will discuss the issue at the next meeting with the NRC.

11. Near field effect: BWROG will evaluate whether other (non-GE) sump strainer vendors took credit for near-field settling.

12. Spherical ZOI approach: BWROG to wait for further discussion with NRC on this.

The SSIB Branch Chief encouraged the BWROG to take initiative to address the potential issues identified by the NRC staff rather than wait for a potential Generic Communication.

The NRC and the BWROG agreed to have another meeting on this subject in Spring 2008.

Public comments were requested at the end of the meeting. An individual asked for the ADAMS Accession Numbers for the Content Guide and the Staff Review Guidance discussed above. This information was transmitted to the individual after the meeting by the GSI-191 Project Manager. Another member of the public inquired about the time frame of the original review and treatment of the BWR strainer clogging issues. Comments were made by a staff member which answered this question. The meeting was then adjourned.

Enclosure 1: List of Attendees
Enclosure 2: Meeting Agenda

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Enclosure 2: Meeting Agenda

ADAMS ACCESSION NUMBER: Memo: ML080240235

OFFICE	PM:DPR:PGCB	BC:DPR:PGCB	BC:DCI:CPTB	BC:DCI:CSGB	BC:DSS:SSIB
NAME	JGolla	MMurphy	JMcHale	AHiser	MScott
DATE	1/24/2008	1/28/2008	01/29/2008	01/30/2008	01/31/2008

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List of Attendees for November 27, 2007,
Meeting of BWROG and NRC

November 27, 2007	
Name	**Organization**
Andy Kaufman	Continuum Dynamics, Inc.
Randy Bunt	BWROG/SNC
Tom Morales	BWROG/Energy NW
Greg Holmes	BWROG/GEH
John Butler	NEI
Sara Hassan	Westinghouse
Tim Andreychek	Westinghouse
Jim Furman	GEH
Kent Allen	Alion Science & Technology
Steven Dolley	Platts/Inside NRC
Nancy Chapman*	Bechtel
John Kauffman	NRC/RES
Ata Istar	NRC/RES
Jerry Wermiel	NRC/NRR
Ralph Architzel	NRC/NRR
Joe Golla	NRC/NRR
Emma Wong	NRC/NRR
Matt Yoder	NRC/NRR
Steve Smith	NRC/NRR
Rich Lobel	NRC/NRR
Ervin Geiger	NRC/NRR
Ralph Landry	NRC/NRO
Mike Scott	NRC/NRR

Enclosure 1

List of Attendees for November 27, 2007,
Meeting of BWROG and NRC

November 27, 2007	
Name	**Organization**
Bill Ruland	NRC/NRR
Thomas Koshy	NRC/RES
John Lehning	NRC/NRR
Mike Snodderly	NRC/NRO
Ahsan Sallman	NRC/NRR
John Burke	NRC/NRR
Allen Hiser	NRC/NRR

*participated via teleconference

MEETING AGENDA
U.S. NUCLEAR REGULATORY COMMISSION (NRC)
MEETING WITH BOILING WATER REACTOR OWNER'S GROUP (BWROG)

NOVEMBER 27, 2007

8:30-8:40	Introduction and meeting purpose	NRC
8:40-9:30	Review of topics in NRC White Paper, "Differences In Treatment of Containment Strainer/Sump Clogging Technical Issues for BWRs and PWRs"	NRC
9:30-10:30	Presentation on selected topics in the NRC White paper	BWROG
10:30-11:20	Open discussion on NRC next steps and BWROG assistance	NRC/BWROG
11:20-11:30	Opportunity for public comment or questions	Public/NRC
11:30	Adjourn	

Enclosure 2

Memorandum to Michael L. Scott from Joseph A. Golla

SUBJECT: MEETING SUMMARY OF PUBLIC MEETING WITH BWROG ON NOVEMBER 27, 2007, TO DISCUSS STRAINER CLOGGING ISSUES

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MYoder (MGY)
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