August 6, 2013

MEMORANDUM TO: William D. Reckley, Chief
Policy and Support Branch
Japan Lessons-Learned Project Directorate
Office of Nuclear Reactor Regulation

FROM: Rajender Auluck, Senior Project Manager ***/RA/***
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SUBJECT: SUMMARY OF JULY 11, 2013 MEETING TO DISCUSS ACTIVITIES ASSOCIATED WITH IMPLEMENTATION OF NEAR- TERM TASK FORCE RECOMMENDATION 5.1 RELATEDTO CONTAINMENT VENTING SYSTEMS

On July 11, 2013, a Category 2 public meeting was held between the Nuclear Regulatory Commission (NRC) staff, representatives from the Nuclear Energy Institute (NEI), and the Boiling Water Owners group (BWROG) related to the Implementation of Recommendation 5.1 of the Near-Term Task Force (NTTF) Recommendations for Enhancing Reactor Safety in the 21st Century report, issued July 12, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111861807). The specific purpose of this meeting was to continue discussions on the development of (i) interim staff guidance (ISG) in support of Order EA-13-109, which was issued on June 6, 2013, (ADAMS Accession No. ML13130A067) and (ii) technical bases for filtering strategies and accident management of Boiling Water Reactors Mark I and II containments for the proposed rulemaking.

The NRC management opened the meeting, thanked everyone for supporting these public meetings and actively participating in addressing the important issues which we all must mutually agree upon before moving forward in completing these activities. In their opening remarks, the industry representatives thanked the NRC staff for this opportunity and fully agreed that discussions must focus on these important issues and how best to reach an agreement and move forward. The industry working group is looking forward to future public meetings and will support the NRC staff in meeting the target schedules.

The NRC staff presentation was divided into four parts; backfitting, general rulemaking, event tree modifications, and MELCOR calculations matrix. In the first part, NRC management provided an overview of the rulemaking process and backfit requirements per Section 50.109 to Title 10 of the *Code of Federal Regulations* (10 CFR 50.109). A backfit analysis must be completed (10 CFR 50,109(a)(3)) unless an exception under 10 CFR 50.109(a)(4) is applicable. A backfit analysis is a two-step process. The first step relates to whether the regulatory action will provide a substantial safety enhancement, and if so, then the next step is whether the action is cost-justified. If both of these steps are satisfied, then it is a cost-justified substantial safety enhancement. This could be quantitative and/or qualitative and may include safety goal quantitative health objective (QHO), risk to people (person-rem), and other qualitative issues (e.g. defense-in-depth). The NRC staff provided references pertaining to examples of

substantial safety enhancements.

In the second presentation, the NRC staff provided additional clarification regarding performance measures that were discussed in a previous public meeting held on June 26, 2013. This included, use of decontamination factors, margins in QHO values, equipment and procedures availability during severe accident conditions. The NRC staff also clarified their understanding that FLEX equipment is for conditions prior to core damage conditions and that there is no role after core damage. The NRC staff also clarified that in their evaluation of alternatives; it is assumed that both the drywell (DW) and wetwell vents are severe accident capable. The staff is interested in learning about the industry's plans to address several important issues. These include, performance measures, defining severe accident conditions, potential event tree, treatment of uncertainties, alternative/potential costs, and addressing Mark II containments. The industry representatives agreed that these are important questions, which must be addressed and resolved. The industry representative pointed out that Emergency Procedure Guidelines (EPG)/Severe Accident Guidelines (SAG) Rev 3 should be used as a base case for rulemaking purposes. Furthermore, drywell sprays are not credited for decontamination purpose and no new equipment is planned to be installed.

In the next presentation, NRC staff briefly described the proposed modifications to the current event tree. These include, credit for portable pumps and potential operator actions. The NRC staff noted that these modifications are still a work-in-progress and presented several questions for the industry. The questions were regarding FLEX success criteria, use of vent cycling, Human Reliability Analysis (HRA) model, operator actions and dependencies, battery depletion time, and credit for containment flooding. The staff proposed that these should be discussed in future public meetings. The last NRC staff presentation was related to the MELCOR calculation matrix proposed by the staff. These were potential scenarios included only for discussion purposes. However, these selected scenarios do match the proposed event tree under preparation. The staff is very keen on receiving industry comments before moving forward. The industry representatives agreed to do so in the next public meeting.

The industry presentation on filtering strategies rulemaking started with a discussion on the overall objectives of evaluating filtering strategies alternatives, developing an appropriate base case scenario that accurately reflects plant procedure and guidance, and possible variations to the base case to account for uncertainties. The presentation was divided into two parts. The first part discussed the basis for the accident management rulemaking and the second part was devoted to alternatives to support performance measures. In the first part of the presentation, discussions continued from the previous meeting on the industry's proposal of performance goal, performance objectives, and performance measures. The staff agreed to respond to these performance criteria in a future meeting. The staff asked for clarification and meaning of the word "reliable" in this context and what are the attributes? The industry responded that these are part of engineering basis, which includes staffing availability, response time, and coordination with other activities. The industry recommends a functional approach, under which the regulatory analysis will describe effective strategies for the dominant scenarios and the calculated decontamination factor (DF) will indicate relative effectiveness of filtering strategies. Finally, margin to QHO will provide the necessary confidence that uncertainties do not impact the overall success of filtering strategies.

The second part of the industry's presentation focused on possible alternatives in support of

performance measures. These included water injection, temperature control, pressure control, and capture of radionuclides. For each of these potential strategies, alternatives and tradeoffs were highlighted. The presentation also discussed possible rulemaking options and noted that there are a large number of potential scenarios. It will be important as to how certain of these assessments could be combined or simplified. The base case assumes FLEX injection to Reactor Pressure Vessel (RPV), implementation of Order EA-13-109, and use of Rev. 3 EPG/SAGs. Alternative options will include additional water injection points for RPV and DW, as well as, use of small and large filters. Next, the industry discussed their approach to scenario definition. Important considerations include the alternatives to be evaluated and the boundary conditions for the scenarios which will be evaluated. An example of a core damage scenario was briefly discussed and it was agreed that a more detailed discussion should be scheduled for the next public meeting.

The last part of the meeting was devoted to the development of the guidance document in support of Order EA-13-109. The staff briefly provided their initial thoughts on the severe accident capable vent system design and operation in beyond design-basis core damage conditions. The design must also consider conditions leading to core damage. These extreme conditions including temperature, pressure, and radiation that may be the result of reactor vessel breach, main steam line rupture, or a safety/relief valve failure. The other important component to protect from failure is the drywell head gasket. In their presentation, industry provided an overview of the table of contents in NEI 13-02, “Guidance to Implement EA-13-109” and a brief discussion on selected sections. The presentation noted that the hardened containment venting system (HCVS) function is to the help prevent severe accident from occurring and to add the capability of helping to mitigate the consequences of a severe accident should one occur. In addition, the presentation noted that wetwell and drywell vent paths are not required to be in operation at the same time and furthermore, a strategy to limit the possible need to vent from the drywell during severe accident conditions is an acceptable phase 2 compliance item. Overall, the industry guidance will provide an integrated set of considerations for the design and implementation of a severe accident capable HCVS. The licensees will have the option to propose other methods for satisfying these requirements. The NRC staff stated that they are reviewing the guidance document sections provided earlier and will discuss their comments at the next public meeting.

Members of the public attended in person, through the bridgeline and via webcast. At designated points during the meeting, members of the public were invited to provide any comments on the presentations. Members of the public asked several clarifying questions, and there were some comments similar to previous comments received by the NRC. The NRC staff responded to all questions adequately.

Presentation slides may be located through ADAMS Package Accession No. ML13211A395.

Enclosure:
1. List of attendees
2. Presentation slides

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NAME	RAuluck	SLent	WReckley	RAuluck
DATE	07/29/2013	07/30/2013	08/05/2013	08/06/2013

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NRC Public Meeting
Mark I and Mark II BWRs Containment Venting Systems Guidance for Order EA-13-109 and Accident Management Rulemaking
July 11, 2013

Name	Organization
Rajender Auluck	Nuclear Regulatory Commission(NRC)
Chuck Norton	NRC
Sud Basu	NRC
N.R. Karipineni	NRC
Jerome Bettle	NRC
Shana Helton	NRC
Ed Fuller	NRC
Fred Schoffer	NRC
Tina Ghosh	NRC
Robert Pettis	NRC
John Lane	NRC
Weidong Wang	NRC
Jeff Gabor	ERIN
Doug Truc	ERIN
Steven Kraft	Nuclear Energy Institute
Jana Bergman	Scientech
John Emmett	Pennsylvania Power & Light Co.
Dennis Hennike	GE Hitachi
Randy Bunt	Sierra Nuclear Corp.(SNC)
Lesa Hill	SNC
Greg Krueger	Exelon/ Boiling Water Reactors Owners Group(BWROG)
Tom Parker	Excel/BWROG
Phil Amway	Constellation Energy Nuclear Group