December 2, 2013

MEMORANDUM TO: Rani L. Franovich, Chief
Performance Assessment Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

FROM: Stephen Vaughn, Reactor Operations Engineer **/RA/**
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SUBJECT: SUMMARY OF THE PUBLIC MEETING TO DISCUSS STAFF GUIDANCE USED TO ESTIMATE THE SAFETY SIGNIFICANCE OF INSPECTION FINDINGS THAT CAUSE INITIATING EVENT OCCURRENCES

On November 4, 2013, the U.S. Nuclear Regulatory Commission (NRC) staff hosted a public meeting with the Nuclear Energy Institute (NEI) and other industry representatives. The purpose of the meeting was to discuss the alignment between the technical guidance in the Risk Assessment Standardization Project (RASP) Handbook, Volume 1, Revision 2.0, Section 8 and Inspection Manual Chapter (IMC) 0308, Attachment 3, "Technical Basis for the Significance Determination Process." Enclosure 1 contains the meeting attendance list.

NRC staff opened up the meeting and stated that the purpose of the meeting was to listen to industry's interpretations of existing significance determination process (SDP) and RASP guidance. An industry representative noted that there could be an issue with SDP policy and that this potential issue is not new. NRC staff stated that there is some inconsistency in modeling the safety significance of findings that cause initiating event occurrences. The staff noted that RASP, Volume 1, was revised to improve consistency. Specifically, the staff added guidance regarding initiating events modeling as a result of industry comments in the 2011 Reactor Oversight Process (ROP) external survey. Industry stated that it believes the revision to RASP, Volume 1, specifically the addition of Section 8, is inconsistent with governing SDP policy. A representative from the Pressurized Water Reactors Owners Group (PWROG) raised additional concerns about the technical adequacy of the guidance in Section 8 of the RASP, Volume 1. He mentioned that the PWROG will be proposing a new SDP modeling approach for findings that cause initiating event occurrences, but that this effort is focused on the technical adequacy issue and does not address any SDP policy concerns. NRC staff and the industry agreed that discussions regarding policy should guide the direction of technical discussions. NRC staff noted that original ROP policy documents, such as SECY 99-007 and SECY 99-007A, stated that delta core damage frequency (CDF) was the SDP metric as opposed to an event assessment conditional core damage probability (CCDP). However, an event assessment CCDP approach has been used in the past to characterize the safety significance of initiating event findings.

Industry noted that the recent Browns Ferry Unit 2 finding involving a failure to follow procedures, which was a contributing cause of a loss of condenser heat sink (LOCHS) event, was an illustrative example of its concern with this policy and technical issue. Furthermore, the recent Browns Ferry Unit 2 LOCHS event counted against both the Unplanned Scrams per 7,000 Critical Hours and Unplanned Scrams with Complications performance indicators (PIs) and was also a White finding. Since delta CDF was the metric used to establish the thresholds for the initiating event PIs, the SDP should use the same metric to ensure that Action Matrix inputs are equal (i.e., using delta CDF for a PI threshold and an event assessment CCDP for an SDP outcome creates unequal inputs into the ROP Action Matrix). NRC staff noted that the outcomes from other Agency programs, such as Accident Sequence Precursor (ASP) and Management Directive (MD) 8.3, can be significantly different than SDP outcomes. For example, given the same event, the ASP and MD 8.3 risk results (using the event assessment CCDP approach) could be orders of magnitude higher than the SDP outcome.

Industry mentioned that an event assessment CCDP for some initiators (e.g., loss of main feedwater, reactor trip) could be greater than 1E-6 for some plants. In addition, industry provided a hypothetical example of a finding related to inadequate maintenance on a circulating water pump that eventually caused the pump to fail two years later, resulting in a LOCHS event. Given that example, industry asked if that finding should really be characterized as White. Another industry representative noted that an event assessment does not subtract out the baseline risk of the plant and questioned whether the occurrence of an event really increases the likelihood of that initiating event occurring in the future. NRC staff asked the industry if an event assessment CCDP is a good enough metric for the SDP since it is used for findings during shutdown operations. Industry noted that using an event assessment CCDP for shutdown findings was an approach that was well vetted in advance and agreed to by the staff and industry; however, the new RASP guidance, which is applicable to at-power findings, did not involve industry perspectives prior to its issuance.

An industry representative mentioned that an event assessment CCDP describes what happened in the past and can be interpreted as a measure of margin remaining to core damage as opposed to delta CDF, which is forward looking and measures changes in risk. In addition, when the ROP was being formulated it was assumed that if a certain PI was at an elevated level (e.g., Unplanned Scrams per 7,000 Critical Hours) for some period of time it would be equivalent to a delta CDF going forward. As such, the SDP metric using delta CDF would match the delta CDF used to establish the risk-informed PI thresholds. The focus should be on understanding how the finding affects the initiating event model. NRC staff proposed an example of a finding that involved improper commercial grade dedication to service water pumps and after 6 months following the installation all the service water pumps failed causing a loss of service water during at-power operations. The staff asked if the safety significance of this hypothetical finding should be modeled as an initiating event that actually occurred (i.e. loss of service water) or as an increase in the likelihood of a loss of service water event. An NRC staff member mentioned that the focus should be on what actually happened as opposed to what might have happened. Several industry representatives commented that the duration of the finding should be used to develop an increase in the initiating event frequency to establish an increase above the plant's baseline risk profile. An NRC staff member mentioned that in situations where there is not an appropriate SDP tool, the use of IMC 0609, Appendix M, "The Significance Determination Process Using Qualitative Criteria" could be used to integrate qualitative considerations and quantitative risk insights.

Industry asked if the current version of RASP, Volume 1, Section 8, should be replaced by the previous version that did not provide explicit guidance on using an event assessment in the SDP. An NRC staff member noted that further discussions with additional staff members needed to take place before making a decision to remove sections of the current RASP guidance. Industry mentioned that the RASP changes were implemented out of process (as described in IMC 0609, 07.01, "SDP Development") because industry was not provided an opportunity to share its perspectives involving technical risk guidance that contradicts ROP policy. In addition, going forward the NRC and industry need to have discussions and agree on a method that produces reliable regulatory outcomes. NRC staff agreed and indicated that it would develop an interim approach in the coming weeks. NRC staff also agreed to host additional public meetings to discuss this topic further, as needed. A public stakeholder asked if there were any prepared papers on this topic. An NRC staff member responded that there are not any formal papers prepared and that the staff is in the early stages of developing an appropriate path forward.

Enclosure:
Attendance List – November 4, 2013

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OFFICE	NRR/DIRS/IPAB	BC: NRR/DRA/APOB	BC:NRR/DIRS/IPAB
NAME	SVaughn	SWeerakkody*	RFranovich
DATE	11/ 25/13	11/25/2013	12/2/13

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PUBLIC MEETING TO DISCUSS STAFF GUIDANCE USED TO ESTIMATE THE SAFETY SIGNIFICANCE OF INSPECTION FINDINGS THAT CAUSE INITIATING EVENT OCCURRENCES

ATTENDANCE LIST
November 4, 2013

Luis Cruz	NRC
Ronald Frahm	NRC
Allen Howe	NRC
Rani Franovich	NRC
Stephen Vaughn*	NRC
Daniel Merzke	NRC
Ho Nieh	NRC
Sunil Weerakkody	NRC
Rudy Bernhard*	NRC
Wayne Schmidt*	NRC
Rick Deese*	NRC
Andrew Waugh	NRC
Jeff Circle	NRC
Fernando Ferrante	NRC
Michael Montecalvo	NRC
Laura Kozak*	NRC
Nick Valos*	NRC
Curtis Smith	INL
Jim Slider	NEI
Chris Earls	NEI
Biff Bradley	NEI
Victoria Anderson	NEI
Jana Bergman	Scientech
Gareth Parry*	ERIN
Roy Linthicum	Exelon/PWROG
Peter Wilson	TVA
Gerald Loignon	SCANA
Larry Naron	CENG
Steven Dolley*	Platts
Larry Parker	STARS
James Curry	NuScale
Chris Robinson	Entergy
Jeff Stone	CENG
Brian Thomas	

*participated via teleconference