

March 25, 2014

MEMORANDUM TO: Sunil Weerakkody, Chief */RA/*
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FROM: Fernando Ferrante, Reliability and Risk Analyst */RA/*
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SUBJECT: TRIP REPORT ON OBSERVATIONS OBTAINED BY THE NRC
STAFF AT MULTIPLE TABLETOP EXERCISES PERFORMED
BY THE NUCLEAR ENERGY INSTITUTE TO ASSESS THE
FEASIBILITY OF A POTENTIAL PRIORITIZATION PROCESS

The Nuclear Energy Institute (NEI) coordinated and organized three separate tabletop exercises on February 20 – 21, 2014, March 6 – 7, 2014, and March 13 – 14, 2014 in order to exercise NEI-developed preliminary draft guidance to characterize and prioritize regulatory and plant-identified actions and scheduling plant improvements at licensee facilities consistent with safety significance. The preliminary draft guidance was submitted to the U.S. Nuclear Regulatory Commission (NRC) via a letter dated October 1, 2013 (Agencywide Documents Access and Management System Accession (ADAMS) Accession No. ML13276A147). The intent to perform these tabletops and their general structure was discussed during a public meeting held on December 18 – 19, 2013, between NRC and NEI (ADAMS Accession No. ML14015A090).

The NEI-initiated tabletops were organized in response to an ongoing effort by the NRC staff in response to the February 6, 2013, Staff Requirements Memorandum (SRM) to COMGEA-12-0001/COMWDM-12-0002 "Proposed Initiative to Improve Nuclear Safety and Regulatory Efficiency" (ADAMS Accession No. ML13037A541). The SRM approved an initiative to further explore the idea of incentivizing the use of existing and/or enhanced risk tools for current and emerging reactor issues, by allowing licensees to propose a prioritization of the implementation of regulatory actions as an integrated set and in a way that reflects their risk significance on a plant-specific basis. This effort is commonly referred to as the Risk Prioritization Initiative (RPI).

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Therefore, in order to inform the staff's effort on RPI, the NRC participated as an observer on all three tabletops with the main objectives of (1) gaining insights into the details and feasibility of implementing NEI's preliminary guidance, and (2) assessing potential guidance enhancements and additional activities with respect to the RPI effort. The NRC participation was coordinated with NEI and included specific guidance on the purpose and engagement of NRC staff during the tabletop exercises (see Enclosure 1). While the tabletops were not open to the public, this trip report documents the NRC staff's main observations and insights for sharing with all external stakeholders.

A brief description of the tabletops is provided next:

- The NEI tabletop exercises took place in three distinct meetings of approximately 1½ days each, hosted by three separate utilities. Aside from NRC, NEI, and the host utility, a limited number of additional participants from other utilities were present.
- The first tabletop took place on February 20 – 21, 2014, at the Xcel Energy HQ Offices in Minneapolis, MN. It was hosted by Xcel Energy and was focused on the potential implementation of the guidance for the Monticello/Prairie Island sites.
- The second tabletop took place on March 6 – 7, 2014, at the H.B. Robinson site; in Hartsville, SC. It was hosted by Duke Energy.
- The final tabletop took place on March 13 – 14, 2014, at the V.C. Summer site, in Jenkinsville, SC. It was hosted by South Carolina Electric & Gas Company (SCE&G).
- As indicated previously, each tabletop exercised draft NEI guidance by considering the individual and aggregate characterization of the safety significance of a limited number of individual regulatory and non-regulatory activities. This was done via a structured process that used panels comprised of senior management and subject matter experts stepping through specific screening, assessment, and aggregation actions to achieve a final prioritization level for each activity.

The following general observations made by the NRC staff were compiled from the attendance at all three tabletops:

Screening process

- The NEI tabletop exercises illustrated that, for the limited set of examples, the overall process envisioned by NEI (i.e., screening questions, quantitative metrics, tables, and flowcharts) incorporates both robustness and predictability to avoid excessive reliance on subjective decision-making attributes for plant-specific prioritization purposes.
- The screening process assessed whether the activities have a more-than-minimal impact on safety by answering a series of questions. In some tabletop exercises, subject matter experts were utilized to discuss the background and to present the evaluation to the integrated decision making panel (IDP), i.e., the panel responsible for implementing the overall process and reviewing each activity under consideration for a specific site.

- The IDP was very methodical and simulated how an actual panel would work in a plant environment.
- As observed in some exercises, the panel was engaged and asked challenging questions.
- The panel considered both the positive and adverse effects of the activities in their deliberations.
- The use of risk information, such as insights from the site-specific Probabilistic Risk Assessment (PRA) models, took place throughout the process (even for processes where a complete/mature PRA framework may not be immediately available).
- A key benefit identified by the licensee staff was the insights obtained from discussing and documenting each individual activity by fully debating and answering the existing screening questions. The NRC staff noted that there were questions raised regarding the appropriate level of documentation for each individual assessment as well as for the final documentation on the entire process.

Assessment process:

- Safety prioritization is determined based on a flowchart and a matrix table, already made publicly available as part of NEI's draft prioritization guidance that was submitted to the NRC on October 1, 2013. The matrix table provided in the guidance for the characterization of reactor safety also included built-in robustness in terms of the final prioritization level assigned to a specific activity (i.e., it was not highly sensitive to individual assumptions).
- The tabletops illustrated that broad initiatives with a potential wide-ranging scope are more difficult to prioritize than those initiatives that have a narrow, well-defined problem statement with respect to plant modifications.
- Newly developed categories for prioritization purposes were introduced in the tabletops: "Security", "Emergency Planning", "Radiation Protection", and "Reliability". These were not included in previous versions of the draft guidance (although "Security" was discussed during the previously mentioned public meeting held in December 2013) and are in addition to a "Safety" category, to address activities more directly related to reactor and/or spent fuel pool impact.
 - The NRC staff observed and commented that flowcharts for "Emergency Planning", "Security", and "Radiation Protection" need further clarifications in the guidance documents and need to be added, as appropriate, to the publicly available guidance.
- Once each activity is screened and assessed using the draft process, it is assigned an individual prioritization level from a pre-determined set: HIGH, MEDIUM, LOW, or VERY

LOW. For issues that can be quantitatively or qualitatively correlated to risk metrics such as core damage frequency (CDF) and large early release frequency (LERF), a matrix table is used. The table correlates an estimated current risk level with the potential reduction impact of the specific activity under consideration is used.

Aggregation process:

- After the assessment process assigns a prioritization level (e.g., MEDIUM, LOW) to individual activities, an aggregated process is applied with the intention of evaluating all activities in an integrated manner. A priority level ranging from 1 (highest) to 5 (lowest) is determined based depending on the category considered ("Safety" is weighted higher for this purposes) and the level assigned (HIGH to VERY LOW). The output of the process is intended to be a prioritization of multiple site-specific plant modification activities ranked by safety significance in an integrated manner.
- The NRC staff noted that the guidance needs to be updated to include the process for aggregation, as it is critical to ensure the overall success of the process regarding proper aggregation of the regulatory activities.
- Several licensees commented that many individual sites and/or utilities already have processes in place for short-, medium-, and long-term management/planning of plant activities that mirror the NEI draft guidance to varying degrees. During the tabletops, the IDP panel considered whether and how its already existing programs should address the results of the NEI draft prioritization process. The NRC staff noted that this NEI prioritization process should not replace the licensee's internal long-range planning program.
- One potential end result of the NEI draft prioritization process is the scheduling of prioritized activities in the plant's outage scheduling (e.g., higher priority tasks would be expedited, while lower priority tasks may be deferred by a number of outages). The IDP discussed the issue of having a "back-stop" measure (i.e., a limit for continuous deferral of low or very low issues). It is recognized that there is a potential that all low-priority issues may become a "must-do" activity (e.g., in essence, HIGH) with such a limit in place and that it may defeat the purpose of the current prioritization. On the other hand, the NRC staff noted the concern that the process should not be used for indefinite deferral of activities as new actions arise without proper consideration of a "backstop" or an alternate process.

Enclosure:

NRC Staff purpose and conduct

- NEI Risk Prioritization Tabletop Site Visits

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OFFICIAL RECORD

NRC Staff Purpose and Conduct - NEI Risk Prioritization Tabletop Site Visits

Purpose of these site visits is to observe tabletop exercises of Nuclear Energy Institute (NEI) draft plant-specific prioritization process. The staff has been tasked with the development of a Commission notation vote paper describing potential options for using a risk-informed process to prioritize regulatory activities on a plant-specific basis and in an integrated manner. These site-visits will assist the staff in completing that task.

- During the observation of the NEI tabletop exercises, the U.S. Nuclear Regulatory (NRC) staff will make no Regulatory decision or take any Regulatory action. This activity is NOT considered an NRC inspection and/or an audit.
- In order to facilitate the sharing of technical information between the industry participants, the NEI tabletop exercises are not scheduled to be open to the public. The information shared is anticipated to be of a proprietary and/or security-related nature.
- The extent of the NRC staff participation will be to observe the NEI plant-specific prioritization process and to inquire on details for clarification and understanding of the process only.
- As a result of NRC staff observations, the staff will not be providing any specific direction or endorsement of the contents, related documents, NEI/licensee conclusions, and/or conduct of the tabletops.
- At the conclusion of the table top exercises, the NRC staff plans to prepare a publicly available trip report delineating the observations and insights gained from these site visits to ensure appropriate sharing of information will be made public with other interested parties. This information will then be used in the development of a Commission paper describing potential options for using a risk-informed process to prioritize regulatory activities.

Enclosure