

March 21, 2016

MEMORANDUM TO: Kevin Hsueh, Chief  
Licensing Processes Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

FROM: Joseph J. Holonich, Senior Project Manager /RA/  
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SUBJECT: SUMMARY OF JANUARY 20, 2016, MEETING ON DIGITAL  
INSTRUMENTATION AND CONTROL

On January 20, 2016, U.S. Nuclear Regulatory Commission (NRC) staff met with representatives from the Nuclear Energy Institute (NEI) and industry. The purpose of the meeting was to discuss and coordinate NEI's digital instrumentation and control (DI&C) Roadmap with the NRC staff's DI&C Action Plan and to provide information/status to the public on various activities being undertaken by the NRC staff and industry in the area of DI&C. Information related to the meeting including presentations and the attendees list can be found in the Agencywide Documents Access and Management System (ADAMS) package Accession Number ML16004A007.

In its opening remarks, the NRC staff stated that it viewed the meeting as a step toward coordinating the NRC staff DI&C Action Plan and NEI Roadmap. It noted that the objective of the meeting was to establish and implement a process to coordinate these plans. Continuing, the NRC staff said that coupling the NEI Roadmap with the NRC staff Action Plan could help document NRC priorities.

The NRC staff acknowledged that there were challenges in the DI&C area and that it wanted to hear specifics of the NEI Roadmap. The NRC staff stated that having these documents appropriately coordinated would help align the different organizations on what to cover at future meetings and how the NRC staff could focus its resources on high-priority items. In addition, the NRC staff emphasized that this was a meeting to discuss digital I&C issues and not make regulatory decisions.

NEI representatives stated that acceleration of the meeting date by NRC staff showed the NRC commitment to addressing DI&C issues promptly. In addition, the NEI representatives

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said that it was important to improve confidence so that licensees will be willing to submit license amendment requests (LARs) to implement DI&C system enhancements. It was noted by the NEI representatives that there is a sense of urgency in the industry to solve licensing challenges.

During the meeting, the industry representatives noted that 2015 was the best year ever for unit availability, but I&C operating technology was experiencing serious age related issues. A point made by industry was that other industries, such as the airline industry, have made safety improvements by transitioning to digital technologies, although there was no evidence of a direct correlation to only digital technology changes. The industry representatives also noted that nuclear plants have successfully implemented digital I&C system upgrades in many non-safety related systems.

Further, the industry representatives stated that two conditions would be necessary to support transition of safety-related systems to digital technologies. These are: (1) such modifications would need to be economical, and (2) the expected duration and costs of the regulatory review process would need to be quantifiable and predictable. It was reported that, in general, Chief Nuclear Officers wanted to make progress on digital upgrades but they do not have confidence they could perform such modifications efficiently for safety-related systems. Thus, the industry representatives stressed the need to break down roadblocks to DI&C implementation as soon as possible.

The NRC staff reported that its action plan contains ten areas, including three areas of high priority. These high priority areas are:

- Improvement in the Title 10 of the *Code of Federal Regulations* Section 50.59, (10 CFR 50.59) process through new guidance (NEI 96-07, Appendix D),
- Re-evaluation of the NRC policy on Software common-cause failure (CCF), and
- Incorporation of streamlining the license amendment process, where appropriate.

To support these action items, the NRC made a presentation of specific improvements which could be made to the license amendment process.

The NRC staff has made improvements to the licensing amendment process however, only one license amendment for complete replacement of a safety-related reactor plant protection system has been received since the current guidance in DI&C-ISG-06, "Licensing Process" was issued in January 2011. Therefore, the NRC staff questioned the benefits of making improvements in the license amendment process if new LARs were not to be expected. Further, the NRC staff stated that it was not essential for the Action Plan to address the licensing process immediately, and that it could be addressed later once more data was available.

A point made by the NRC staff was the current workload involved the review of topical reports (TRs) that presented design information on generic platforms. However, to the NRC staff's knowledge, none of these proposed vendor platforms were being implemented in any plant specific applications. Given the limited number of TRs under review and the lone LAR in house, the NRC staff reported that the small amount of data made it hard to identify trends that could be improved to make the process more efficient.

A discussion of capturing lessons learned from recent staff reviews was held. One recommendation was to look at TR evaluations to determine if experience from them could be applied to subsequent LARs. It was then suggested that successfully completed TR evaluations such as the solid-state protection system safety evaluation be used for such an effort. A third suggestion was to consider use of licensing reviews of new reactors. It was agreed that some information supporting licensing process improvements might be found in these areas.

Another area of discussion during the meeting was the guidance for the use of 10 CFR 50.59 will be proposed in a soon-to-be submitted NEI 96-07, Appendix D. Industry reported that it wanted to use the flexibility in 10 CFR 50.59 to move towards more DI&C implementations. It emphasized that it wanted to use 10 CFR 50.59 in a way that will give the NRC staff confidence that the industry is appropriately modifying their designs and that the NRC is clearly aware of the changes being done in DI&C systems.

A point made by industry was a reminder that the 10 CFR 50.59 process results in a decision whether a LAR will be required or not for a modification. There is no desire in industry to shift everything into 10 CFR 50.59. Having enhanced guidance for the 10 CFR 50.59 process will lead to better decision making, justification, and documentation.

In the discussions on the Appendix D work, the NRC staff asked if Appendix D would be independent of the technical basis document being prepared by the Electric Power Research Institute (EPRI). The NEI representative responded that yes, the guidance was independent, but that the expectation was the technical work supporting any 10 CFR 50.59 analysis would reflect guidance that is available. The NRC expressed concern that if the EPRI technical document presents technical justifications that are not in keeping with current NRC policy on Software CCF, then 10 CFR 50.59 analysis referring to this document might not be acceptable. This could challenge the ability of the NRC staff to endorse the new Appendix D without also endorsing the EPRI document.

Another concern raised by the NRC staff was the schedule for NRC staff comments on Appendix D to be due in 60 days. The NRC staff said that it was hard to commit to only 60 days. The industry clarified that it was not necessarily looking for an endorsement in 60 days, but to have constructive comments from the NRC staff. It was also suggested by industry that a letter could be issued by the NRC staff stating it would be endorsing the guidance through the Regulatory Guide process, but that Appendix D was acceptable for use while the Regulatory Guide was being issued.

The following action items were identified at the meeting. The actions were mostly identified during the presentations, but for brevity are not explicitly detailed in this summary.

- 1) NRC and NEI will schedule meetings in the next month or two to interact on the Roadmap and Action Plan.
- 2) NEI will coordinate and provide comments on the NRC staff Action Plan.
- 3) NEI will develop its DI&C Roadmap in the coming months. Information on the industry's roadmap will be shared with NRC staff when available.
- 4) A single NEI and NRC staff point of contact will be identified for each topic in the NEI Roadmap and NRC staff Action Plan.
- 5) Industry will look into models from other industries and hierarchy for DI&C systems to obtain factual information and examples for consideration.

- 6) EPRI will look for ways to share its DI&C guidance document at no costs to NRC staff.
- 7) NRC and NEI will schedule routine meetings to continue the discussions toward reaching alignment on key issues.
- 8) NRC staff will establish coordination functions for routine calls that are programmatically focused.
- 9) NRC staff will schedule a meeting, possibly all day in March 2016, to discuss common cause failures.
- 10) NEI will identify ways NRC staff can participate in its three DI&C demonstration projects.
- 11) NEI will consider using Appendix D in its three demonstration projects.
- 12) NRC will schedule a telephone call, targeting the week of January 25, 2016, to discuss the dates for future meetings.

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