

August 30, 2013

MEMORANDUM TO: Anthony J. Mendiola, Chief
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FROM: Joseph J. Holonich, Senior Project Manager /RA/
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SUBJECT: SUMMARY OF JULY 31, 2013, PERIODIC MEETING ON
DIGITAL INSTRUMENTATION AND CONTROL

On July 31, 2013, staff from the U.S. Nuclear Regulatory Commission (NRC) participated with representatives from the Nuclear Energy Institute (NEI) and industry in a periodic Category 2 public meeting. The purpose of the meeting was to discuss ongoing activities in digital instrumentation and control (DI&C). Meeting presentations and a list of attendees can be found in the Agencywide Documents Access and Management System (ADAMS) package for the meeting at Accession No. ML13193A229. A copy of the notice and agenda can be found at ADAMS Accession No. ML13193A231.

In its opening remarks, the NRC staff gave a historical perspective about how these periodic meetings had their genesis in the DI&C project, which included contributions from NRC stakeholders and members of the public, that was in place from 2007-2011. Although the project and its steering committee were sunset approximately 24 months ago, it was agreed that the industry and the NRC would continue to hold periodic meetings on issues of mutual importance in the DI&C area.

In its opening remarks, the NEI representatives stated that there was considerable interest in the DI&C area. The NEI representatives explained that there had been a lot of success with DI&C in non-safety-related systems and that the industry wanted to share the experience and challenges from the operation of these systems. As an example, the NEI representatives cited the Wolf Creek Generating Station as a plant that had years of successful experience with DI&C in safety-related and non-safety-related systems. Further, the NEI representatives noted that the use of the DI&C Interim Staff Guidance (DI&C-ISG-06), "Licensing Process" (ADAMS Accession No. ML110140103), as a pilot project at the Diablo Canyon plant will help reduce uncertainty in DI&C processing for safety-related systems modifications.

Both the NRC staff and the NEI representatives emphasized that this meeting was a status meeting and not intended to resolve problems.

The first topic discussed was the NEI activities on topical report (TR) change management. It was noted that this was an item held over from the DI&C project and is one of continued NRC

staff interest as demonstrated at the meeting held on December 3, 2012, specifically on this topic (ADAMS Accession No. ML12341A226).

The NRC staff recalled that following the December 3, 2012, meeting, NEI was to form a working group to evaluate how TR changes could be managed more efficiently. The NRC staff went on to explain that it saw one of the challenges the working group would face is how to enable a vendor to continuously make changes to designs that did not require NRC approval but then have the safety-significant design change, as well as all other minor changes, included in a submittal for NRC staff review. Discussions associated the proposed TR change-management process to existing configuration management processes.

The NRC staff identified that if a licensee selected a given DI&C platform, it was then incumbent upon that licensee to look at the incremental changes that were made to the platform and determine if the platform was still bounded by the TR safety evaluation (SE).

During its overview of the TR change-management topic, the NEI representatives reviewed what they learned in a drop-in meeting held in April 2013 with NRC staff to discuss the process and NRC resources available for TR reviews. The NEI representatives discussed how it now better understands the cost-recovery budget aspects of the NRC; NRC does not directly receive the fees for its review activities, rather it gets a budgeted appropriation from Congress and the fees go to the Treasury. Thus, there is no mechanism to hire contractors to assist in an increased TR review workload.

Further, the NEI representatives reported that at the drop-in meeting it discussed a process for allowing changes to TRs where a detailed NRC staff review was not needed. It described how these changes would be those that would not affect plant safety and stated that the working group intends to use the lessons learned from the Oconee DI&C implementation. Overall, the NEI representatives explained they are looking for a TR change-management process that is suitable for vendors to use while also being acceptable to NRC staff, licensees, and other DI&C system stakeholders.

One of the challenges the NEI representatives reported was that of configuration control on DI&C designs, which are typically large, detailed packages. The NEI representatives also noted that creating a generic vendor change process for design control and TR updates has been difficult because each vendor already has its own unique process.

Following the NRC staff and NEI presentations on the TR change-management process, there was an open discussion. In this time, the NRC staff agreed that a process for simple changes to a TR that did not need detailed review would be supported. The NRC staff further emphasized that developing and implementing such a process would be expected to have limitations; the staff wants to avoid a process that results in unnecessary delays or frustrated reviewers and submitters.

The NEI representatives indicated that it was thinking of a TR change-management process with features like the Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59 process. The NEI representatives noted that in its simplest form, 10 CFR 50.59 identified if changes to plants were handled at the plant or if a licensee needed to come to NRC for prior approval. The NRC staff cautioned the NEI representatives that the 10 CFR 50.59 process was one that had a regional/plant interface impacting the inspection process, while TRs were a

Headquarters/vendor interface, impacting the licensing process. These inspection and licensing processes have different safety conclusions, acceptance criteria, and thresholds.

In addition, the NRC staff identified that an alternative to consider could be to evaluate the suitability of the commercial-dedication process. The NRC staff stated that the commercial-dedication process might be more attuned to the TR change-management process.

In response to an NRC staff question about the appropriate time for NRC staff to engage in the process development, the NEI representatives stated the window would likely be within the next three months. The NRC staff expressed a desire to be involved, at the right regulatory level, to gain understanding and confidence in the final TR change-management process.

When asked by a meeting participant what was the ultimate goal, the NRC staff responded that it would not like to see 10 CFR 50.59 used in the TR change-management process. The NRC staff noted that the final process would need to ensure good TR change-management. Also, the NRC staff reiterated that it wanted to stay in touch in the development of the process and in identifying the best regulatory vehicle for the process.

A vendor representative at the meeting indicated how a TR change-management process was needed and represented a missing link in the TR-review process. As an action item, the NEI representatives stated that NEI would be pressing forward with the guidance and would engage the NRC as soon as it felt comfortable with its draft product.

The next topic discussed at the meeting covered the NEI guidance document NEI 01-01¹. In its presentation, the NRC staff provided a historical perspective on how NEI 01-01 provides guidance to licensees on the use of 10 CFR 50.59 for upgrades to licensed plant DI&C equipment and systems. The NRC staff presentation also noted that NEI 01-01 had been endorsed in Regulatory Issue Summary (RIS) 2002-22². Continuing, the NRC staff discussed industry's experience as it sought to use 10 CFR 50.59 for the LaSalle County Station rod control management system and the Harris replacement of Solid State Protection System (SSPS) cards with complex programmable logic device -based replacement cards.

Next in the presentation was an identification of NRC staff concerns with NEI 01-01. The three concerns reported in the NRC staff presentation were: 1) the need for revisions of definitions in NEI 01-01; 2) changes in technology (such as Complex Programmable Logic Devices and Field Programmable Gate Arrays) and in NRC documents referenced in NEI-01-01; and 3) the industry's interpretation of NEI 01-01 guidance is not leading to the appropriate application of 10 CFR 50.59. Given these challenges, the NRC staff finished its presentation by announcing that NRC is considering qualifying or modifying its endorsement of NEI 01-01. Staff then outlined the possible paths for such an action.

The discussions following the presentation centered on NEI considerations for revising NEI 01-01. The NRC staff noted that its preference was to modify its endorsement in the short term

1. "Guideline on Licensing Digital Upgrades: EPRI TR-102348, Revision 1, NEI 01-01: A Revision of EPRI TR-102348 to Reflect Changes to the 10 CFR 50.59 Rule."

2. "Use of EPRI/NEI Joint Task Force Report, "Guideline on Licensing Digital Upgrades: EPRI TR-102348, Revision 1, NEI 01-01: A Revision of EPRI TR-102348 to Reflect Changes to the 10 CFR 50.59 Rule," (ADAMS Accession No. ML023160044).

while the industry addressed the NRC concerns on NEI 01-01. It was noted that the NRC staff involvement in addressing NEI 01-01 would involve three major offices, the Offices of Nuclear Reactor Regulation (NRR), Nuclear Regulatory Research (RES), and New Reactors (NRO).

As an action item, the NEI representatives committed to continue work on addressing the NRC staff concerns with NEI 01-01. It also explained that this work will be done in a focus group format, staffed appropriately, and specific problem statements would be identified and addressed. Within the next couple of weeks, NEI will identify the milestones for this effort and draft a problem statement. As an action item, the NRC staff committed to provide NEI with the names of NRC individuals who would participate in this effort.

The NEI representatives and the NRC staff then each made a short presentation on small modular reactors (SMRs). The NEI presentation provided information on the progress being made on SMRs. It identified the lead plant-specific applications and when they would be expected. Lessons learned from the review of combined-operating license reviews were discussed and several generic regulatory issues were noted. The NRC staff presentation focused on the overall review perspective for the applications, design-specific review standards, and the importance of pre-application communications with the NRC staff in the review process.

Following the presentations and discussions on SMRs, the NRC staff provided information on the proposed RIS on embedded digital devices. The presentation outlined the purpose of the RIS, the regulatory requirements for each of the disciplines affected, the major regulatory guidance available, and the key safety issues. It also covered the NRC staff perspective and the path forward.

After lunch, the NRC staff provided an update on the Diablo Canyon DI&C digital upgrade. The topics covered include the DI&C system design, the review status, and the length of the review. With Diablo Canyon being a pilot project for the DI&C-ISG-06 licensing process, the NRC staff found that several aspects of the Phase-Two documents outlined in DI&C-ISG-06 needed to be revisited. The NEI representatives stated that it was expecting to have a workshop to discuss the industry lessons learned from the review. A representative of the Pacific Gas and Electric Company, the plant owner, stated the review was going well. He particularly cited the importance of the monthly calls held on the review and noted the slower pace of the review had been due to competing plant priorities.

Next, a status of the Fukushima lessons-learned activity on the implementation of reliable spent-fuel pool instrumentation was then given by the NRC staff. A review of the Fukushima Order and guidance opened the presentation. This included discussing the Order requirements followed by the NRC staff discussing the status of its evaluation of the Overall Integrated Plan submitted by licensees in response to the Order. The activity is on target to develop draft SEs for all licensee plan submittals by December 2013.

Following the Fukushima topic, NRC staff made a presentation on the status of durable guidance concerning DI&C-ISG-04³. The information provided covered the project deliverables,

3. "Task Working Group #4: Highly Integrated Control Rooms-Communications Issues (HICRc) Interim Staff Guidance, Revision 1," (ADAMS Accession No. ML110140103).

the overall structure, the relationship of DI&C-ISG-04 with other regulatory documents and industry standards, the relationship to the regulatory requirements, and other influences. The final topic for the day was a short talk on the cyber-security program for fuel-cycle facilities. Overall, the NEI representatives reported that the industry felt this area was working well with good communication between the NRC and the industry.

A topic covered in the meeting closing remarks was the agreement that another meeting should be held within the next six months. The tentative time frame mentioned was December 2013 or January 2014. The NRC staff cautioned that December was a busy month for the Fukushima reviews. An action was identified to schedule the next meeting taking this work into account.

Action Items

- NEI will press forward with the TR change-management guidance and will engage the NRC as soon as it feels comfortable with its draft product.
- NEI will continue to work on addressing NEI 01-01 concerns. Within the next couple of weeks, NEI will identify the milestones for this effort and draft a problem statement.
- The NRC staff will provide the names of NRC personnel from NRO, RES, and NRR to work with NEI on a focus group to enable the regulatory acceptability of the guidance in NEI 01-01. (complete)
- NRC staff and NEI will schedule the next periodic Digital Update meeting, based upon discussions beginning in the fall on an optimal date for the meeting.

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