

March 11, 2015

MEMORANDUM TO: Anthony J. Mendiola, Chief
Licensing Processes Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

FROM: Joseph J. Holonich, Senior Project Manager /RA/
Licensing Processes Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF FEBRUARY 4, 2015, PERIODIC MEETING ON DIGITAL
INSTRUMENTATION AND CONTROL

On February 4, 2015, staff from the U.S. Nuclear Regulatory Commission (NRC) met with representatives from the Nuclear Energy Institute (NEI) and industry. The meeting was another of the periodic update meetings on digital instrumentation and control (DI&C). The purpose of the meeting was to provide information and status to the public on various activities undertaken by the NRC staff and industry in the area of DI&C. Information related to the meeting including presentations and attendees list can be found in the Agencywide Documents Access and Management System (ADAMS) package accession number ML14336A542.

In their opening remarks, both NRC staff and industry representatives agreed these periodic meeting are beneficial in helping to align the status of activities. Topic coverage started with NEI representatives making a presentation on the topical report (TR) change management process. In its presentation, NEI representatives noted that a TR could be under NRC staff review for several years before it could be referenced by licensees.

The NEI representatives elaborated that given how quickly changes are happening in DI&C by the time the NRC staff completes its review of a TR, changes could make some of the DI&C design in the TR obsolete. The NRC staff responded that it was looking for ways the industry can track and address changes to DI&C platforms and ensure that licensees who choose to use any given platform can understand what they need to docket in their license amendment request (LAR) so the combination of the approved TR and an assessment of any differences can be made and approval obtained.

The NRC staff indicated that it was not pleased with the progress to date on this issue. It noted that NEI had the lead on this topic and that the NRC was waiting for NEI to provide a straw man of how industry can manage TRs. The NRC staff further acknowledged that NEI has many activities it was working and as such understood why NEI had not yet developed a straw man. Another point made by the NRC staff was that if the technology was changing before the TR review could be completed, there might be some questions about whether the scope of a DI&C TR was too detailed.

A second concern raised on DI&C TR reviews was the priority of such reviews. The NEI representatives stated that the industry sees a process in place for reviewing TRs but that the process was not working well. Of particular note was the priority process for TR reviews where TRs with licensees using them were given a higher priority than TRs that were not yet supporting a LAR. Industry acknowledged this approach makes sense but commented that it produced a “chicken-and-egg” situation.

The NEI representatives said that this created a situation where vendors developing DI&C systems could not get a licensee to buy it without NRC staff review. However, to get the NRC staff review, the TR needed to have a licensee. Having approved DI&C TRs could open up possible upgrades by licensees while putting the regulatory risk behind them; thus, giving higher priority to stand-alone TRs could help licensees move forward with DI&C safety-related upgrades. As part of the need to complete TR reviews, the NEI representatives recognized that the NRC staff was looking for ways to improve the TR review process. Part of this effort on the NRC staff's part includes expanding the review capacity to include contractors.

In ending the discussion on TR change management, it was understood that there was a need for cooperation in this area. A possible approach touched on was that small changes that impact the original safety evaluation (SE) could be documented in a letter to the NRC staff and those small changes could be given a higher priority even if no licensee was yet using the TR. During the closing portion of the meeting, the NRC staff made a commitment to provide the minutes from a recent meeting on computer code maintenance that was considering a similar situation (ADAMS Accession No. ML14296A026).

The next meeting topic dealt with the ability of licensees to make changes to accepted DI&C systems using the authority in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59. This topic was related to the guidance in NEI 01-01, “Guideline on Licensing Digital Upgrades: EPRI [Electric Power Research Institute] 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. ML020860169.

In its presentation, the NEI representatives provided a schedule showing that the changes to NEI 01-01 would be incorporated into NEI 96-07, “Guidelines for 10 CFR 50.59 Evaluations,” as endorsed by Regulatory Guide 1.187, “Guidance For Implementation Of 10 CFR 50.59, Changes, Tests, and Experiments,” Appendix D. NEI 96-07, Appendix D, is scheduled to be issued in October 2015. This was identified as an action item from the meeting.

A question was asked about where common-cause failures (CCFs) would be addressed. The NEI representatives stated that significant effort was being put into this area. Input was included in the EPRI technical-basis document for NEI 96-07, Appendix D, and there was confidence that the EPRI technical-support document would be ready in June 2015 for industry review and comment distribution.

A second question was asked about when any conflicts between NRC existing guidance and the EPRI technical document being prepared to support Appendix D would be addressed. The NEI representatives responded that it expected to identify any conflicts between the EPRI technical-support document for Appendix D and current NRC guidance in the first and second quarter of 2015. The NEI representatives committed to expeditiously bring any conflicts to NRC for discussion to facilitate completion of the EPRI technical-support document for Appendix D.

As part of the discussion on 10 CFR 50.59, the NRC staff pointed out that there appeared to be a sense of urgency coming from the industry to the NRC to achieve guidance that is more clear and easy for licensees to follow. However, NRC staff was not sure what industry was conveying to NEI about the urgency for the NEI 01-01 update. In response, the NEI representatives said that it was working with two fleets, Duke Energy and Exelon, to pilot the approach.

The pilot focus will be on major projects that are non-safety systems and use the existing guidance. In response to a recommendation from the NRC staff, the NEI representatives committed to keep the NRC informed on the pilot activities.

Because of the urgency expressed to the NRC staff by licensees, the NRC staff requested that NEI keep Chief Nuclear Officers (CNOs) informed of the activities being undertaken. The NEI representatives responded that it was sharing what is being done with CNOs and that it has created a senior management team to look at DI&C activities as a whole. This NEI Working Group will put increased senior management attention on DI&C work.

Next, the NEI representatives discussed the information provided in the presentation on cyber security. Following that presentation, the meeting focused on experience with using Digital I&C Interim Staff Guidance-06 (DI&C ISG-06), "Task Working Group #6: Licensing Process Interim Staff Guidance" (ADAMS Accession No.: ML110140103).

Two presentations were made on the DI&C ISG-06 topic. First, Diablo Canyon provided its perspective on how the LAR implementation pilot project was progressing. One lesson learned in the presentation was that some design personnel did not have nuclear experience. This resulted in the discovery of some inadequately implemented design requirements and associated rework and delays in the projects.

There were several questions about why this situation existed. In response, industry representatives, including the presenter, noted that some companies involved in the Diablo Canyon work had a nonnuclear side or were companies acquired by nuclear vendors who did not originally work in the nuclear industry. Thus, the lack of nuclear personnel was not indicative of a lack of digital experience.

Another attendee asked whether the lead time to install the Westinghouse Advanced Logic System (ALS) would mean that the technology was obsolete even as it was being installed. The Diablo Canyon representative responded that that was not the case. Supporting that position, a Westinghouse representative noted that the ALS was being used on new plants currently undergoing licensing.

The Diablo Canyon representative also noted that there were good explanations for why the review had gone beyond the original two-year schedule. They included a first-of-a-kind platform design and the issues noted above. To optimize efficiency during the review, the NRC staff and licensees had frequent calls and used a licensee SharePoint site to exchange information both of which were very beneficial.

In its discussion about the lessons learned from the Diablo Canyon review, the NRC staff stated that it believed too many documents were submitted on the docket. Many of the documents submitted could instead be evaluated on the SharePoint site to help the NRC staff determine the information needed on the docket to support the review. Also, some documents can be, and typically are, evaluated during the audit process and need not be submitted.

A positive lesson learned from the process was the use of a regular status meeting (nominally once a month). The meeting format was a public-meeting style teleconference that focused on the administrative and technical aspects of the review. A key tool during the calls and in the timeframe between is the open-item list.

Some opportunities for improvement identified by the NRC staff during the pilot include: 1) excessive duplication of information in DI&C ISG-06 submittals and 2) the need to consider submittals that form a logical subset of a given phase, and encourage timely submission of these documents. In addition, the NRC staff stated that it was investigating how to best transition DI&C ISG-06 into permanent guidance such as Standard Review Plan Section 7.0. Any revision would have to be coordinated with the Office of New Reactors (NRO) since the NRO staff faces unique regulatory review challenges.

When SRP Section 7.0 was raised, the NRC staff was asked when Branch Technical Position (BTP) 7-19, "Guidance for Evaluation of Diversity and Defense-In-Depth in Digital Computer-Based Instrumentation and Control Systems," would be updated and incorporated into SRP Section 7.0. In response to question, the NRC staff committed to provide a date.

The morning session concluded with two additional presentations. One covered the industry initiative on open-phase conditions. The other was a status of the NRC work on a Regulatory Information Summary (RIS) on embedded digital devices (EDDs)

In the RIS presentation, the NRC staff covered the status of the EDD RIS that is scheduled to be issued in early 2015. The NRC staff is issuing this RIS to heighten awareness that EDDs may exist in procured equipment used in safety-related systems without the devices having been explicitly identified in procurement documentation. The NRC staff acknowledged the benefits in use of digital technology including the fact there may often be an overall enhancement of nuclear facility safety. The NRC staff also outlined safety concerns including potential CCF. Both the NRC staff and industry representatives recognize the need for additional detailed guidance.

Starting the afternoon session, the NRC staff covered the status of its review of the TR on solid-state protection system (SSPS). Overall there was consensus that the review was a major success. Industry expressed appreciation for the focus and timely production of the SE by the NRC staff in less than seven months. Because of that success, it was agreed to look into a lesson-learned exchange process to identify what could be transported to other TR reviews.

Next, EPRI then made a presentation on human factors planning. A commitment was made to provide the NRC staff with a document describing considerations to human-factors by the end of 2015.

This was followed by an industry presentation on digital transition obstacles. A number of concerns and recommendations were identified in the presentation. It was agreed to exchange information, issues, and recommendations. One of the items in the presentation was the use of factory acceptance testing (FAT). In particular, the industry noted that the current sequence involves completion of the FAT prior to finalization of the SE. Licensee attendees at the meeting believe this creates uncertainty on projects that have expended significant funds before NRC provides the SE.

A question arose as to whether the SE could be written without the FAT and would it be considered in a revision to DI&C ISG-06. The NRC staff agreed to look into including the appropriate use of the FAT in any DI&C ISG-06 revision or subsequent documentation.

The final agenda was the identification of new topics. These included: 1) the consideration of how non-safety control system failures could affect the plant safety analysis; 2) a discussion of whether a non-safety CCF could put a plant in an unanalyzed condition; and 3) an question on what the NRC staff was doing about counterfeit, fraudulent and suspect items (CFSI). In response to the question, the NRC staff committed to provide a summary of the status of the CFSI program.

The following action items were identified at the meeting.

Joint Actions

- Identify a date for a public workshop on DI&C ISG-06.
- Add non-safety system failures as an agenda item for the next meeting.
- Exchange information and recommendations on items in the presentation on 10 CFR 50.59 challenges.
- Schedule the next periodic meeting.
- Establish an exchange process to identify lessons learned from the SSPS TR review.

NEI Actions

- Keep the NRC informed on the 10 CFR 50.59 pilots.
- Provide a date for when EPRI will complete the actions for 10 CFR 50.59.
- Expediently bring conflicts between the EPRI technical-support document and NRC guidance on the 10 CFR 50.59 process to the NRC staff's attention by the 2nd quarter of 2015 or sooner.
- Submit NEI 96-07, Appendix D by October 2015.
- Provide the EPRI HF document by the end of 2015.

NRC Staff Actions

- Provide copies of the minutes from the meeting discussing TR management for computer code changes.
- Consider whether SEs can be issued without waiting on the FAT in revisions to DI&C ISG-06 or subsequent documents.
- Identify a date by which BTP 7-19 will be updated.
- Provide a summary of the NRC CFSI program.

This was followed by an industry presentation on digital transition obstacles. A number of concerns and recommendations were identified in the presentation. It was agreed to exchange information, issues, and recommendations. One of the items in the presentation was the use of factory acceptance testing (FAT). In particular, the industry noted that the current sequence involves completion of the FAT prior to finalization of the SE. Licensee attendees at the meeting believe this creates uncertainty on projects that have expended significant funds before NRC provides the SE.

A question arose as to whether the SE could be written without the FAT and would it be considered in a revision to DI&C ISG-06. The NRC staff agreed to look into including the appropriate use of the FAT in any DI&C ISG-06 revision or subsequent documentation.

The final agenda was the identification of new topics. These included: 1) the consideration of how non-safety control system failures could affect the plant safety analysis; 2) a discussion of whether a non-safety CCF could put a plant in an unanalyzed condition; and 3) an question on what the NRC staff was doing about counterfeit, fraudulent and suspect items (CFSI). In response to the question, the NRC staff committed to provide a summary of the status of the CFSI program.

The following action items were identified at the meeting.

Joint Actions

- Identify a date for a public workshop on DI&C ISG-06.
- Add non-safety system failures as an agenda item for the next meeting.
- Exchange information and recommendations on items in the presentation on 10 CFR 50.59 challenges.
- Schedule the next periodic meeting.
- Establish an exchange process to identify lessons learned from the SSPS TR review.

NEI Actions

- Keep the NRC informed on the 10 CFR 50.59 pilots.
- Provide a date for when EPRI will complete the actions for 10 CFR 50.59.
- Expediently bring conflicts between the EPRI technical-support document and NRC guidance on the 10 CFR 50.59 process to the NRC staff's attention by the 2nd quarter of 2015 or sooner.
- Submit NEI 96-07, Appendix D by October 2015.
- Provide the EPRI HF document by the end of 2015.

NRC Staff Actions

- Provide copies of the minutes from the meeting discussing TR management for computer code changes.
- Consider whether SEs can be issued without waiting on the FAT in revisions to DI&C ISG-06 or subsequent documents.
- Identify a date by which BTP 7-19 will be updated.
- Provide a summary of the NRC CFSI program.

Project No. 689

DISTRIBUTION:

RidsNrrDe
JThorp

RidsNrrLADHarrison
RidsOgcMailCenter
RidsNrrDprPlpb

PUBLIC
RidsNrrDeEicb
RidsAcrsAcnwMailCenter

RidsNrrOd
AMendiola
PLPB R/F

RidsOpaMail
JHolonich

EXTERNAL DISTRIBUTION:

gac@nei.org, kra@nei.org

ADAMS Accession Nos.: Package (ML14336A542); Summary (ML15040A001); *Concurred via e-mail

NRC-001

OFFICE	DPR/PLPB/PM	DPR/PLPB/LA	DE/EICB/BC	DPR/PLPB/BC	DPR/PLPB/PM
NAME	JHolonich	DHarrison	JThorp*	AMendiola	JHolonich
DATE	02/27/2015	02/19/2015	03/06/2015	03/10/2015	03/11/2015

OFFICIAL RECORD COPY