



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 6, 2017

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

FROM: Lynnea E. Wilkins, Project Manager /RA/
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Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF APRIL 13, 2017, MEETING ON DIGITAL
INSTRUMENTATION AND CONTROL INTEGRATED ACTION PLAN
MODERNIZATION PLAN #4

On April 13, 2017, U.S. Nuclear Regulatory Commission (NRC) staff met with representatives from the Nuclear Energy Institute (NEI) to continue discussions related to Modernization Plan #4 (MP #4) of the digital instrumentation and control (DI&C) Integrated Action Plan (Agencywide Documents Access and Management System (ADAMS) Package Accession Number ML16126A137). The purpose of the meeting was to identify and discuss key significant issues associated with current guidance for license amendments that include DI&C in order to scope and plan activities for appropriate tactical guidance. Information related to the meeting and discussed in this summary can be found in the ADAMS Package Accession Number ML17114A438. Additional information that was listed in the meeting notice can be found in the ADAMS Package Accession Number ML15355A295.

Before the meeting, NEI shared an informational paper with NRC staff that described fundamental I&C design principles and included a list of industry concerns with the current digital licensing process. The NRC staff shared an informational paper with NEI on lessons learned from digital safety system licensing.

The meeting began with NEI sharing a presentation with NRC staff that highlighted industry's desired MP #4Ab deliverables for 2017. These include:

- NEI to develop a DI&C License Amendment Request (LAR) guidance document for licensees.
- NRC to generate an endorsement letter for the guidance document (Regulatory Guide endorsement would be a later activity).

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Industry proposed the development of a NEI/NRC project plan which would include schedule milestones, and define how the industry document would be applied and how lessons learned would be incorporated.

The industry and NRC staff then discussed the industry concerns with the current digital licensing process. The industry representatives proposed that a safety determination – in the form of an approved license amendment – be made after the digital system design phase stage information has been submitted to the NRC. The NRC staff noted past licensing review experiences in which design changes occurred after the system design phase have been completed. The staff further explained that per 10 CFR Part 50, the license amendment has to stand on its own and cannot contain a conditional approval based on a post-license amendment inspection (e.g., Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)).

This discussion expanded into the overall consideration of programmatic risk within the licensing process applied to DI&C. Since all DI&C safety system LARs have been approved to date, the NRC staff stated that it did not have supporting evidence that there is a risk of a DI&C modification not being approved. In other words, the current process provides regulatory certainty. Industry clarified that its concern centers on its ability to accurately estimate schedule and cost rather than a regulatory risk of ultimate disapproval. In other words, cost and schedule uncertainties are impediments to industry's pursuit of DI&C modifications via license amendments. Industry stated recent licensee experiences have been unable to generate a business case for many modifications requiring licensing amendment requests. NRC staff noted that although there have been no factory acceptance test (FAT) impacts on safety evaluation reports (SERs), there have been significant design changes prior to FAT. As such, issuing an SER earlier in the project would shift programmatic risk to licensees. Industry acknowledged this and the potential for subsequent licensing actions while noting the shift of programmatic risk would provide licensees the benefit of much more control in their management of programmatic risk.

Industry and NRC staff discussed NEI's information paper on fundamental I&C design principles of independence, redundancy, deterministic behavior, defense-in-depth and diversity, and one cross-cutting design attribute of an appropriate level of simplicity. NEI explained that this paper is intended to inform the near term and long term MP #4 activities. NRC staff requested that in its future deliverable, industry map how these four principles align with the Licensing Process Interim Staff Guidance (DI&C-ISG-06). NRC indicated that a design principles-based approach that demonstrates coverage of information required by DI&C-ISG-06 seemed viable.

During the meeting, a variety of discussions occurred. The following identifies topic areas of these discussions:

- a) Differences between the licensing process applied to DI&C when compared to other modifications
- b) Significance and distinction between information that is docketed, available for audit, or subject to inspection
- c) Purpose and content of DI&C-ISG-06, Enclosure B
- d) Greater use of pre-application review meetings to help clarify scope, process, and deliverables in consideration of DI&C-ISG-06
- e) Opportunities to improve the approach to grading information requirements of licensing amendment submittals

- f) Discussions of potential additional guidance that might support tailoring and scalability of LAR submittals
- g) The technical basis for Standard Review Plan Branch Technical Position (BTP) 7-14 (NUREG/CR-6101)
- h) Effectiveness at reducing programmatic risk of the DI&C-ISG-06 approach to software planning documents for platforms and systems

Actions identified during the meeting are:

- 1) NEI (with NRC collaboration) – In a future deliverable, NEI to develop a mapping between DI&C-ISG-06, Enclosure B and the proposed industry approach for new DI&C licensing guidance (e.g., to fundamental I&C principles, to inspection) including identification of any information that would not be produced. Due date to be determined by or before the next MP #4 public meeting.
- 2) NRC/NEI – Generate a NEI/NRC project plan, including schedule milestones, that defines how the industry DI&C LAR guidance document will be applied and how lessons learned will be incorporated. Due date to be determined by or before the next MP #4 public meeting.

D. Morey

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SUBJECT: SUMMARY OF APRIL 13, 2017, MEETING ON DITIGAL INSTRUMENTATION AND CONTROL INTEGRATION ACTION PLAN MODERNIZATION PLAN #4 DATED: JUNE 6, 2017

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ADAMS Accession Nos.: Pkg. (ML17114A438); Summary (ML17114A498); *via e-mail

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