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MEMORANDUM TO: Dennis C. Morey, Chief  
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Office of Nuclear Reactor Regulation

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SUBJECT: SUMMARY OF JULY 25, 2018, MEETING TO DISCUSS THE  
STATUS OF THE DIGITAL INSTRUMENTATION AND  
CONTROL INTEGRATED ACTION PLAN REVISION 3

On July 25, 2018, U.S. Nuclear Regulatory Commission (NRC) staff held a Category 2 meeting with representatives from the Nuclear Energy Institute (NEI), Dominion Energy, Curtis-Wright, Framatome, Westinghouse, Entergy Services, Inc., Engineering Planning and Management, Inc., NewClear Day, Inc., and Certrec Corporation. The purpose of the meeting was to discuss the status and proposed updates for the next revision to the digital instrumentation and control (DI&C) integrated action plan (IAP), Revision 3. The discussion included updates to the four modernization plans (MPs), as defined in Revision 2 to the IAP, and the NRC staff's proposed plans for possible broader modernization efforts. In addition, the purpose of the meeting was to obtain feedback from stakeholders on their needs and priorities for NRC staff consideration as Revision 3 to the IAP is being finalized. A copy of Revision 2 to the IAP can be found in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML18016B023. All other information related to the meeting and discussed in this summary can be found in the ADAMS package Accession No. ML18204A313.

In its presentation, the NRC staff provided background information on the development of the IAP, including Commission direction from staff requirements memoranda (SRM) for SECY-15-0106 and SECY-16-0070 and the key elements in modernizing the regulatory framework for DI&C. Background information on the NRC staff's current focus on the development of regulatory products that support stakeholder-identified high-priority needs was also provided. For example, near-term upgrades and initial licensing needs identified by industry included: (1) clear expectations for regulatory acceptability of modifications performed under Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50.59; (2) clear guidance and expedited approval of license amendment requests; and (3) clear expectations for applicants for new reactor licenses and new DI&C platforms.

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During the NRC staff's presentation, an update was provided on the status and plans for each MP, including the path forward on how MPs 1-4 will be documented in Revision 3 to the IAP. As defined in Revision 2 to the IAP, MP #1, Protection Against Common Cause Failure (CCF), includes three subparts. MP #1A is the development of guidance in supporting the lower risk-significant digital upgrades under 10 CFR 50.59. The NRC staff stated that Regulatory Issue Summary (RIS) 2002-22, Supplement 1, "Clarification on Endorsement of Nuclear Energy Institute Guidance in Designing Digital Upgrades in Instrumentation and Control Systems" (ADAMS Accession No. ML18143B633), was issued on May 31, 2018. In Revision 3 to the IAP, the NRC staff plans to document MP #1A as complete, however, the NRC staff noted its plans to continue to support industry's workshops on RIS 2002-22, Supplement 1 and its plans to develop training materials for NRC inspection staff. The development of training materials and any other follow-up activities from the issuance of RIS 2002-22, Supplement 1 are expected to be tracked under a new sub-MP in Revision 3 to the IAP.

MP #1B is the evaluation of proposed guidance in NEI 16-16, "Guidance for Addressing Digital Common Cause Failure," for addressing CCF in DI&C systems. During the meeting, the NRC staff stated that this activity is ongoing and is of high-priority. The NRC staff communicated that they expect NEI to submit its revised version of NEI 16-16 by late Fall or Winter 2018. However, the NRC staff also stated that they may initiate its own guidance regarding the need for and use of design attributes to address CCF concerns, if NEI's revised guidance is not submitted in a timely manner. NEI commented that completing this guidance is also of high priority, but resources were diverted to support the issuance of RIS 2002-22, Supplement 1. In addition, NEI expressed concern that the NRC would develop its own CCF guidance. Therefore, NEI stated that they are focusing its resources on providing a revised NEI 16-16 by the 1<sup>st</sup> quarter of 2019.

MP #1C relates to evaluating the NRC's current position on protection of DI&C systems and components against CCF, including issuing an information SECY paper of the NRC staff's plans to clarify guidance associated with evaluating and addressing potential CCF of DI&C systems. The staff indicated that the information SECY paper is scheduled to be sent to the Commission by September 2018. In addition, the NRC staff presented draft guiding principles for the purpose of clarifying staff guidance. In Revision 3 to the IAP, the NRC staff plans to document MP #1C as complete.

MP #2 addresses the need for adequate guidance for 10 CFR 50.59 evaluations of DI&C upgrades in order to reduce licensing uncertainty and clarify the regulatory process. NEI provided draft NEI 96-07, Appendix D, "Supplemental Guidance for Application of 10 CFR 50.59 to Digital Modifications," in response to MP #2. During the meeting, the NRC staff stated that this activity is ongoing and work resumed after the issuance of RIS 2002-22, Supplement 1. In addition, the NRC staff stated that concepts from RIS 2002-22, Supplement 1 are expected to be incorporated into NEI 96-07, Appendix D. MP #3 relates to the acceptance of digital equipment and updating agency guidance in support of commercial grade dedication processes. The NRC staff stated that this activity is ongoing and working with stakeholders to identify an appropriate, effective, and consistent certification process.

Regarding MP #4, Assessment for Modernization of the Instrumentation and Controls Regulatory Infrastructure, there are two subparts: MP #4A, Tactical (near-term activities) and MP #4B, Strategic (long-term activities). In its presentation, the NRC staff stated that there is one existing MP #4A item, and two new items that are expected to be added to Revision 3 to the IAP. The existing MP #4A item is associated with updating guidance in DI&C-ISG-06, "Licensing Process," to provide an alternative for earlier approval, which would precede factory

acceptance testing, for digital designs that are based on approved topical reports. The NRC staff stated that this activity is ongoing and the final issuance of ISG-06 is expected at the end of 2018.

The two new items are associated with (1) updating branch technical position (BTP) 7-19, "Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems," regarding how to address the need for defense-in-depth and diversity for new (or proposed changes to) DI&C systems that are less safety significant than reactor protection systems and engineered safety features actuation systems, and (2) developing 10 CFR 50.59 NRC staff inspection training and guidance. The NRC staff stated that activities associated with updating BTP 7-19 are expected to begin by October 2018, and activities associated with developing 10 CFR 50.59 NRC staff inspection training and guidance are expected to begin after the completion of MP #2 (2<sup>nd</sup> quarter of 2019).

In its presentation, the NRC staff provided their plans to re-baseline MP #4B in Revision 3 to the IAP into three new sub-MPs: licensing, inspection, and research. In addition, the NRC staff presented its proposed plans on the IAP, Appendix A items for longer-term modernization and how these items will be incorporated into the scope of the new sub-MPs. Lastly, the NRC staff presented on new research activities (e.g., risk-informed reviews of DI&C), and a new proposed activity to develop guidance on architecture measures that is being considered to be included in Revision 3 to the IAP.

The NRC staff requested stakeholder feedback on priorities and the NRC staff's proposed plans to re-baseline MP #4B. NEI commented that they are very appreciative of the NRC staff looking more broadly at a strategic modernization of the DI&C regulatory infrastructure, as long as the NRC staff maintains its focus on the near-term, high-priority tactical activities. Specifically, the near-term tactical items identified by NEI as high-priority include: (1) supporting industry's RIS 2002-22, Supplement 1 workshops; (2) issuing the final ISG-06 guidance in December 2018; (3) supporting industry's efforts to submit NEI 96-07, Appendix D guidance on implementing DI&C upgrades under 50.59 by December 2018 for staff endorsement and associated workshops and training; and (4) resolution of CCF technical issues including the review of NEI 16-16.

After the re-baseline efforts discussion, the NRC staff provided an overview of its understanding of the Transformation Team's recommendations associated with DI&C in SECY 18-0060, "Achieving Modern Risk-Informed Regulation" (ADAMS Accession No. ML18110A186). Specifically, the recommendations include rulemaking to include high-level performance-based DI&C safety design principles, providing future versions of the Institute of Electrical and Electronics Engineers (IEEE) Standard IEEE-603 into regulatory guidance as one acceptable method to meet the regulation, and reviewing the development processes related to DI&C systems under the NRC's quality assurance program. The NRC staff stated that it plans to maintain awareness of any Commission direction on the transformation team recommendations. A representative from Framatome expressed concern that with the overlap between the transformation team's recommendations and IAP, the IAP may not align with the Commission's direction.

The NRC staff concluded its presentation by providing a schedule to issue Revision 3 to the IAP and the annual DI&C Commission paper, and schedule for the Commission meeting. Lastly, the NRC staff requested that stakeholders provide written comments for consideration on the proposed plans for Revision 3 to the IAP by August 10, 2018.

After the conclusion of the NRC staff's presentation, stakeholders were given an opportunity to provide comments on the presentation, which are summarized above. In addition to the comments summarized above, two stakeholders recommended that the NRC staff should not continue the practice of endorsing standard IEEE-603 in 10 CFR 50.55a(h). One of the stakeholders continued by recommending that the NRC staff should consider evaluating the IEC standards for possible endorsement and consider revising the regulatory guides that endorse the IEEE standards by providing an alternative to follow the IEC standards. A third stakeholder commented how the proposed changes under the DI&C IAP and the associated MPs improve the health and safety of the public simply by encouraging the use of digital technology in safety functions that is deemed more reliable than aging analog equipment.

Subsequent to the meeting, three stakeholders provided comments and supporting documents on MP #4B and considerations for future research on preventing CCF. The NRC staff provided an opportunity for the stakeholders to present their comments during the meeting. The stakeholders' comments and documents can be found in the meeting package.

The NRC staff offered stakeholders an opportunity to provide written comments to the NRC staff on the proposed plans for Revision 3 to the IAP by August 10, 2018. Specifically, the NRC staff requested that the stakeholders include comments on the staff's re-baseline efforts and their priorities for completing the activities in the IAP. By email dated August 7, 2018 (ADAMS Accession No. ML18204A319), NEI provided feedback on the NRC staff's proposed plans for Revision 3 to the IAP. NEI's feedback included a general comment that each of the activities should have a target date for issue resolution and/or final documentation issuance. NEI provided specific comments directly on the NRC presentation. The comments received on the presentation are consistent with the comments received during the meeting. NEI provided an additional comment regarding the proposed new activity to develop guidance on the DI&C architecture measures. On Slide 21, the comment noted that the common position and the path forward, as defined in the NRC's presentation, are very different agendas. In addition to the NRC presentation comments, NEI also provided comments on the plan under MP #3, "Acceptance of Digital Equipment," in Revision 2 to the IAP. The NRC did not receive written comments from other stakeholders.

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**ADAMS Accession Nos.:**

**Package (ML18204A313)**

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