



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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November 29, 2017

MEMORANDUM TO: Dennis C. Morey, Chief  
Licensing Processes Branch  
Division of Licensing Projects  
Office of Nuclear Reactor Regulation

FROM: Joseph J. Holonich, Senior Project Manager /*Brian Benney Acting for RA*/  
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SUBJECT: SUMMARY OF NOVEMBER 2, 2017, MEETING TO DISCUSS STAFF  
COMMENTS ON NEI 16-16 [DRAFT 2]

On November 2, 2017, U.S. Nuclear Regulatory Commission (NRC) staff met with representatives from the Nuclear Energy Institute (NEI). The purpose of the meeting was to discuss NRC staff comments on NEI 16-16 [Draft 2], "Guidance for Addressing Digital Common Cause Failure." All information related to the meeting and discussed in this summary can be found in the Agencywide Documents Access and Management System (ADAMS) package accession number ML17285A944. This includes NEI 16-16 [Draft 2], comment documents, presentations, handouts, NRC documents, attendee lists, etc.

The meeting was held to continue discussions to address NRC staff concerns articulated on selected comments listed in the comment table. These comments were first discussed at the September 7, 2017, meeting (ADAMS Package Accession No.: ML17234A026). NEI stated that the feedback received at the past meetings on NEI 16-16 [Draft 2] have helped with changes to the document to better align with the NRC staff on terms and definitions.

The NRC staff began the meeting with a recap of the "Integrated Action Plan to Modernize Digital Instrumentation and Controls Regulatory Infrastructure" Modernization Plan (MP) 1B and MP1C project objectives, desired outcomes for this meeting, and a recap of NEI-NRC staff correspondence related to the NEI 16-16 review. NEI then used a handout (with responses to staff questions) and a presentation to discuss: the purpose and regulatory scope of NEI 16-16, the definition of common cause failure (CCF) used in NEI 16-16, the technical basis for CCF sufficiently low determinations, and the use of best estimate methods for Beyond Design Basis Event (BDBE) related to digital instrumentation and control (DI&C) CCF concerns.

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During NEI's presentation, the NRC staff and NEI engaged in clarifying and understanding the information in the material presented via questions and answers. As a result of these discussions, a number of actions were identified. These are listed at the end of this summary.

The NRC staff asked if NEI is seeking to address the same regulations listed in Branch Technical Position (BTP) 7-19, "Guidance for Evaluation of Diversity and Defense-In-Depth In Digital Computer-Based Instrumentation and Control Systems," and the Staff Requirements Memorandum (SRM), "STAFF REQUIREMENTS – SECY-16-0070 – INTEGRATED STRATEGY TO MODERNIZE THE NUCLEAR REGULATORY COMMISSION'S DIGITAL INSTRUMENTATION AND CONTROL REGULATORY INFRASTRUCTURE." NEI stated that it was uncertain which regulations NEI 16-16 addresses but that the document was intended as industry design guidance to satisfy the Commission policy in SRM-93-087, "SECY-93-087 - POLICY, TECHNICAL, AND LICENSING ISSUES PERTAINING TO EVOLUTIONARY AND ADVANCED LIGHT-WATER REACTOR (ALWR) DESIGNS" and guidance for staff review contained in BTP 7-19.

NRC staff recommended that NEI clarify its position on the regulations that NEI 16-16 is intended to meet by considering the regulations summarized by the staff and in Title 10 to the Code of Federal Regulations, Section 50.59 (10CFR 50.59) "Changes, tests, and experiments," in addition to referencing BTP 7-19 and the SRM. This discussion on the regulatory basis for NEI 16-16 is an open item.

Discussions were held about how the NRC staff would endorse NEI 16-16 if the staff ultimately found it acceptable for use. The NRC staff explained that if the staff determines that NEI 16-16 can be endorsed, it could be endorsed through either a revision to an existing regulatory guide (e.g., Regulatory Guide (RG) 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants") or through a new RG. Industry recommended a new RG because RG 1.152 is limited to safety systems.

At present, the NRC staff has not made a decision on whether to endorse NEI 16-16. However, the NRC staff said that it will continue internal discussions in the near term to ascertain whether NEI 16-16 can be endorsed and to clarify what would be needed to gain endorsement. NRC staff stated that developing policy recommendations to the Commission on protection of DI&C against CCF concerns could impact future drafts and revisions of NEI 16-16.

The NRC staff provided a figure it developed by marking-up a table that had been supplied by a representative from Nuclear Automation Engineering as a comment on an earlier (April 2017) version of the draft Regulatory Issue Summary (RIS) 2017-XX before it had been formally issued for public comments. This figure depicts three levels of potential CCF likelihood that could be introduced when implementing DI&C control systems in nuclear plants. It also maps them to the appropriate evaluation process a licensee should be performing when evaluating whether the CCF of a structure, system or component (SSC) described in the plant safety analysis is possible, and if so, whether the results are bounded within the existing analyses, or whether a revised analysis to address the CCF is needed.

The figure depicts the conclusions that are needed to be reached regarding the likelihood of occurrence of an SSC malfunction and how to treat the evaluation of possible SSC malfunction results. NEI stated that the table helped provide alignment with draft RIS-2017-XX. NEI stated it would include a figure and/or language within NEI 16-16 [Draft 3] that is consistent with the NRC handout.

Another topic covered in detail during the meeting was BDBE. The subject of these discussions related to how a BDBE was covered in the RIS. The question was whether a BDBE occurrence was lower or much lower than a design-basis event.

It was agreed that NRC staff Comment 16 was closed. It was also agreed that NEI would look at how to use best estimates within licensing amendment requests to address NRC staff Comment 47.

At the end of the discussions, NEI reported that the NRC staff had all the responses to staff concerns from NEI except for those that were related to NEI 16-16, Appendix A. The NRC staff acknowledged that NEI had sent responses to comments on the body of NEI 16-16, but that it did not agree that all staff concerns have been addressed during the last two public meetings. Further, the NRC staff confirmed it was awaiting the NEI responses for the Appendix A comments. The NRC staff agreed to check on how many comments on the body of NEI 16-16 have been addressed and closed and how many comments remain open.

NEI requested a final round of Appendix A comments. NEI pointed out that Appendix A was part of an Electric Power Research Institute report and making changes would require resources that cannot be easily allocated. However, NEI did agree to look at putting more information in the body of NEI 16-16 on how to use Appendix A.

The NRC staff did not commit to a time frame for providing final comments on Appendix A. The NRC staff said it was checking available resources to meet a desired industry request for final Appendix A comments in November/December 2017.

It was agreed additional interactions would be beneficial and that two would be scheduled for late November (public teleconference) and mid December 2017 (public face-to-face meeting). The purpose of the meetings would be to discuss the NRC staff feedback on the NEI responses to staff comments.

Actions from the meetings included:

- 1) NRC staff will provide a final recommendation on the notes provided with the definition of CCF in NEI 16-16.
- 2) NEI will consider how to better articulate the regulatory basis in NEI 16-16.
- 3) NEI will include in NEI 16-16 the concept that if a design defect is found it will be fixed.
- 4) NEI will include a figure in NEI 16-16 to be consistent with the NRC meeting handout on CCF Susceptibility Analysis and CCF Malfunction Result Analysis.
- 5) NEI will compare NEI 16-16 to Table 1 in RIS 2017-XX and identify any significant differences for further discussion.
- 6) NRC staff will look at its comments and the NEI responses and inform NEI which have been addressed and are closed and highlight comments which still need to be addressed.

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- 7) NEI will contact the research and test reactors to determine what participation, if any, they want in the development of NEI 16-16.
- 8) NEI will add an explicit purpose statement to NEI 16-16.

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