



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

June 23, 2020

The Honorable Kristine L. Svinicki
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: REVIEW OF NEI 96-07, APPENDIX D, REVISION 1, AND NRC DRAFT
REGULATORY GUIDE 1.187 REVISION 2 ADDRESSING APPLICATION OF
10 CFR 50.59 TO DIGITAL I&C MODIFICATIONS

Dear Chairman:

During the 674th meeting of the Advisory Committee on Reactor Safeguards, June 3-5, 2020, we met with representatives of the United States Nuclear Regulatory Commission (NRC) staff and the Nuclear Energy Institute (NEI) to review the subject documents. Our Digital Instrumentation and Control (DI&C) Subcommittee reviewed these documents on May 20, 2020. These documents were issued for public comment on May 30, 2019.

CONCLUSIONS AND RECOMMENDATION

1. Guidance for applying 10 CFR 50.59 to DI&C systems has been needed. This stems from the inherently different failure characteristics of systems that include DI&C equipment and from the unique and far-reaching potential impacts of DI&C system common-cause events.
2. Draft Revision 2 to Regulatory Guide (RG) 1.187, dated June 2020, that endorses NEI 96-07, Appendix D, Revision 1, provides an acceptable approach for applying 10 CFR 50.59 guidance when conducting DI&C modifications and should be issued.

BACKGROUND

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.59, "Changes, Tests and Experiments," paragraph (c)(1) authorizes a licensee to make changes in the facility or procedures described in its updated final safety analysis report (UFSAR) or perform tests or experiments not described in its UFSAR without obtaining a license amendment pursuant to 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," only if (i) a change to the facility's technical specifications is not required, and (ii) the change, test, or experiment does not meet any of the eight criteria in 10 CFR 50.59(c)(2). The NRC issued the final rule that adopted the eight criteria on October 4, 1999, and it took effect on March 13, 2001.

The Nuclear Energy Institute (NEI) issued NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Implementation," in November 2000, to aid the industry in developing the bases for determining if a license amendment request was required for facility changes.

The NRC developed RG 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments, November 2000," endorsing NEI 96-07, Revision 1 as a method that the staff considers acceptable for use in complying with the NRC regulations on the process by which licensees, under certain conditions, may make changes to their facilities and procedures as described in the UFSAR, and conduct tests or experiments not described in the UFSAR, without prior NRC approval. NRC did not provide any clarifications or exceptions to the methods and examples in the NEI 96-07, Revision 1 guidance.

The main body of NEI 96-07, Revision 1, is applicable for all structures, systems and components (SSCs) in addressing 10 CFR 50.59 applications. In use over the next decade, it was found that there were varying opinions on the interpretation of 10 CFR 50.59 requirements, when applying them to DI&C systems, as represented in submittals and discussions among the parties. These discrepancies resulted from the inherently different failure characteristics of systems that include DI&C equipment and from the unique and far-reaching potential impacts of DI&C system common-cause events.

In response, NEI developed Appendix D to the main document to clarify applications to DI&C systems and the staff issued Revision 2 to RG 1.187. The staff also developed NRC Regulatory Issue Summary (RIS) 2002-22, Supplement 1, "Clarification on Endorsement of NEI Guidance in Designing Digital Upgrades in I&C Systems."

Both the RIS and NEI 96-07, Appendix D, were intended to assist licensees in the performance of 10 CFR 50.59 reviews of activities involving digital modifications. NEI 96-07, Appendix D, pointed to the RIS for guidance on qualitative evaluations. Appendix D, was applicable to digital modifications involving safety-related and non-safety related systems and components and, also covers "digital-to-digital" activities. The RIS supplement was not directed towards DI&C replacements of the reactor protection system, the engineered safety features actuation system, or modification/replacement of the internal logic portions of these systems.

Draft Revision 2 to RG 1.187, endorsed NEI 96-07, Appendix D, with an exception and clarifications as providing an acceptable approach for the application of 10 CFR 50.59 guidance when conducting DI&C modifications. The exception was a point of contention between the NRC staff and NEI. It related to the interpretation of 10 CFR 50.59, Section (c)(2)(vi), "Create a possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the UFSAR." The phrase 'different result' was interpreted differently by NRC staff and NEI.

We reviewed NEI 96-07, Appendix D, and RG 1.187, Revision 2, during our 664th meeting in June 2019. In our letter report of June 20, 2019, we agreed that the new guidance was needed and that it was acceptable. However, we suggested that there was an opportunity for expanding the use of 10 CFR 50.59 for DI&C modifications by more clearly identifying the significance of different results caused by a malfunction of an SSC important to safety as specified in Criterion 6. We were essentially urging the staff and NEI to continue their discussions to find a way to resolve the disagreement, before releasing the final guidance. Additional details of the staff and NEI positions are provided in our letter report.

DISCUSSION

Since our last report, NEI developed a new draft, NEI 96-07, Appendix D, Revision 1, dated May 2020, to resolve the exception. It included a substantively revised Section 4.3.6 dealing with 10 CFR 50.59 Criterion 6. It delineates an approach that focuses on the significance of a different result caused by a malfunction to determine the need for obtaining a license amendment prior to performing a DI&C modification or replacement. The staff proposed draft RG 1.187, Revision 2, dated June 2020, to endorse NEI 96-07, Appendix D, Revision 1 with clarifications only, since the need for the exception was resolved.

We agree with the proposed resolution and RG 1.187 Revision 2 should be issued.

Also, we are not requesting a formal response from the staff to this letter report.

Sincerely,

Matthew W. Sunseri
Chairman

REFERENCES

1. Nuclear Energy Institute, NEI 96-07, "Guidelines for 10 CFR 50.59," Revision 1, November 17, 2000 (ML003771157)
2. Nuclear Energy Institute, NEI 96-07, Appendix B, "Guidelines for 10 CFR 72.48 Implementation," March 05, 2001 (ML010670023)
3. Nuclear Energy Institute, NEI 96-07, Appendix C, "Guideline for Implementation of Change Processes for New Nuclear Power Plants Licensed under 10 CFR Part 52," Revision 0, March 2014, (ML14091A739)
4. Nuclear Energy Institute, NEI 96-07, Appendix D, Supplemental Guidance for Application of 10 CFR 50.59 to Digital Modifications," Revision 0, November 2018 (ML18338A389)
5. U.S. Nuclear Regulatory Commission, Letter to NEI documenting staff comments on NEI 96-07 Appendix D, December 20, 2018 (ML18340A124)
6. U.S. Nuclear Regulatory Commission, Regulatory Issue Summary (RIS) 2002-22, Supplement 1, "Clarification on Endorsement of NEI Guidance in Designing Digital Upgrades in I&C Systems," Revision 1, May 31, 2018 (ML18143B633)
7. U.S. Nuclear Regulatory Commission, NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59 Changes, Tests, and Experiments," Revision 0, November 2000 (ML003759710)
8. U.S. Nuclear Regulatory Commission, NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59 Changes, Tests, and Experiments," Draft Revision 2, Draft Guide DG-1356, May 2019 (ML19045A435)

9. U.S. Nuclear Regulatory Commission, NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59 Changes, Tests, and Experiments," Revision 2, June 2020 (ML20157A115)
10. Nuclear Energy Institute, NEI 96-07, Appendix D, Supplemental Guidance for Application of 10 CFR 50.59 to Digital Modifications," Revision 1, May 2020 (ML20135H168)
11. Advisory Committee on Reactor Safeguards, "Review of Nuclear Energy Institute (NEI) 96-07, Appendix D, Supplemental Guidance for Application of 10 CFR 50.59 to Digital Modifications," dated November 2018, and the NRC's Associated Draft Revision 2 to Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59 Changes, Tests and Experiments," June 20, 2019 (ML1917A323)

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