



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

January 25, 2021

Matthew W. Sunseri, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: RESPONSE TO ACRS LETTER ON DESIGN REVIEW GUIDE:
INSTRUMENTATION AND CONTROLS FOR NON-LIGHT-WATER REACTOR
REVIEWS

Dear Chairman Sunseri,

On behalf of the U.S. Nuclear Regulatory Commission (NRC) staff, I would like to thank you for the letter from the Advisory Committee on Reactor Safeguards (ACRS or the Committee) dated December 16, 2020 (Agencywide Documents Access and Management System Accession No. ML20349E838). The NRC staff appreciates the Committee's review of the draft design review guide (DRG) and associated references as well as the thoughtful discourse during the June 2 and October 21, 2020, meetings of the Digital Instrumentation and Controls (DI&C) Systems Subcommittee and the December 2, 2020, meeting of the Full Committee.

The ACRS letter included the following three conclusions and recommendations:

1. The DRG is a significant advancement to the standard review process for nuclear power plant (NPP) reactor instrumentation and control (I&C) systems. The DRG should be issued subject to incorporation of Recommendation 2.

Staff Response: The staff agrees with the ACRS, subject to the NRC staff response to Recommendation 2.

2. Some I&C systems may be suitable for sharing among multiple units. However, the sharing of reactor trip systems (RTS) or engineered safety features actuation systems (ESFAS) between multiple units potentially compromises plant safety. Sharing should not be allowed for these two specific systems.

Staff Response: In response to the above ACRS recommendation, the staff plans to revise the first sentence in item 1 of DRG Section A.8, Multi-Unit Stations, as follows (additions underlined): "I&C design descriptions in the application provide assurance that safety-related I&C SSCs [structures, systems, and components] such as reactor trip systems and engineered safety features actuation systems are not shared among units in multi-unit stations in a manner that compromises plant safety."

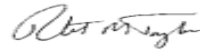
While the NRC staff agrees that sharing RTS and ESFAS between multiple units could potentially compromise plant safety, revising the DRG to explicitly prohibit sharing these systems as recommended by the ACRS seems unnecessary for the following reasons:

- The DRG currently states in Section A.8 that: “If safety-related I&C SSCs are shared among NPP units then, the reviewer should confirm that the ability to simultaneously perform required safety functions in all units is not impaired.” Therefore, the review guidance as written would allow the NRC staff to validate that the application demonstrates that a proposed design that shares any I&C system(s) between multiple units, including RTS and ESFAS, does not compromise plant safety.
 - As stated in the ACRS letter, regulatory requirements referenced in the DRG (e.g., Appendix A, “General Design Criteria for Nuclear Power Plants,” to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, “Domestic licensing of production and utilization facilities,” and 10 CFR 50.55a(h), Institute of Electrical and Electronics Engineers (IEEE) Standard 603-1991, “Standard Criteria for Safety Systems for Nuclear Power Generating Stations”) provide the basis for the stated review guidance. These references permit sharing these systems as long as it can be shown that such sharing will not impair the systems’ ability to perform the required safety functions.
3. This guide is technology neutral in all aspects and would streamline the review of I&C safety systems for any proposed Light Water Reactor (LWR) or Non-LWR reactor plant design and any proposed safety I&C system modifications in operating plants.

Staff Response: The NRC staff agrees that the DRG is technology neutral and could be used for the review of non-LWR or LWR plant designs and any proposed safety I&C system modifications in operating plants. The DRG was developed to address the immediate needs associated with the non-LWR community consistent with Regulatory Guide 1.233, “Guidance for a Technology-Inclusive, Risk-Informed, and Performance-Based Methodology to Inform the Licensing Basis and Content of Applications for Licenses, Certifications, and Approvals for Non-Light-Water Reactors” and Nuclear Energy Institute 18-04, “Risk-Informed Performance-Based Technology Inclusive Guidance for Non-Light Water Reactor Licensing Basis Development,” referred to as the Licensing Modernization Project (LMP). Although the DRG aligns with the LMP framework, the DRG provides the flexibility for the NRC staff to perform I&C reviews for applications that do not implement the LMP framework. The NRC staff will continue to ensure the DRG aligns with the industry-led Technology-Inclusive Content of Application Project (TICAP), NRC-led Advanced Reactor Content of Application Project (ARCAP), and other advanced reactor initiatives, including the future 10 CFR Part 53 regulatory framework. In response to the ACRS recommendation, the staff plans to add a statement in Section X.0.1, Introduction, to note that the review approach in the DRG may be used for the review of LWR plant designs and other reactor technologies.

The NRC staff appreciates the ACRS review and feedback and plans to issue the DRG expeditiously to support the reviews of future non-LWR applications. The NRC staff looks forward to further interactions with the Committee on other upcoming advanced reactor topics.

Sincerely,



Signed by Taylor, Robert
on 01/25/21

Robert M. Taylor, Deputy Office Director
For New Reactors
Office of Nuclear Reactor Regulation

cc: Chairman Hanson
Commissioner Baran
Commissioner Caputo
Commissioner Wright
SECY

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ADAMS Accession No.: ML21008A575

NRR-106

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