



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

December 16, 2022

Dr. Jennifer Uhle
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1201 F Street NW, Suite 1100
Washington, DC 20004

**SUBJECT: RESPONSE TO NEI LETTER, NEI COMMENTS ON SECY-22-0076,
EXPANSION OF CURRENT POLICY ON POTENTIAL COMMON-
CAUSE FAILURES IN DIGITAL INSTRUMENTATION AND CONTROL
SYSTEMS, DATED AUGUST 26, 2022**

Dear Dr. Uhle:

In response to your letter dated August 26, 2022 (Agencywide Document Access and Management System (ADAMS) Accession No. ML22238A289), I want to thank you for providing the Nuclear Energy Institute's (NEI's) comments on the U.S. Nuclear Regulatory Commission (NRC) staff's recommended digital instrumentation and control (I&C) common cause failure (CCF) policy documented in SECY-22-0076, "Expansion of Current Policy on Potential Common Cause Failures in Digital Instrumentation and Control Systems" (ML22193A290). In summary, NEI's comments were regarding the staff's position on the need for independent and diverse displays and manual controls in the main control room in the event of a digital I&C CCF (for example, Point 4), as discussed in SECY-22-0076. Please note that SECY-22-0076 is currently with the Commission and the staff is waiting for Commission direction.

The staff believes that the policy direction in Point 4 remains essential to providing reasonable assurance of adequate protection for digital I&C systems. Specifically, Point 4 provides what the staff considers to be the minimum appropriate level of defense-in-depth by ensuring operators remain equipped to readily: (1) identify the need for; (2) initiate, and (3) confirm the actuation of critical safety functions, even in the event of a beyond-design-basis CCF in the digital I&C system. The staff acknowledges that current reactor designs provide for manual control capability outside of the control room (e.g., licensees have remote shutdown controls in case of a fire in the control room, and equipment operators can be sent to operate field equipment). However, the staff's position is that, to achieve an appropriate level of defense-in-depth, a minimum set of diverse manual controls is necessary to ensure a digital I&C CCF does not compromise the operators' capability in the control room to place and maintain the plant in a safe and stable condition during or after certain anticipated and unanticipated events. Although the analysis in Points 1-3 may credit some manual actions to cope with the loss of a safety function, Point 4 ensures the capability to manually actuate all critical safety functions.

The staff recognizes that the industry anticipates the implementation of modern digital control rooms where safety-related indication and control (automatic or manual) is implemented in software-based systems. As such, in developing SECY-22-0076, the staff considered whether Point 4 should be revised to better accommodate modern digital control room designs. The staff

concluded that Point 4 already accommodates fully digital control rooms because it is not prescriptive in how the diverse displays and manual controls are implemented (e.g., the diverse displays and manual controls do not have to be hardwired). Point 4 is risk-informed because it focuses only on those critical safety functions needed to ensure the safety of the facility and because the diverse displays and manual controls do not have to be safety-related or hardwired. In addition, Point 4 does not require a separate analysis beyond what is required in Points 1-3 of the policy. Thus, the staff expects future fully digital control rooms to provide the displays and manual controls called for by Point 4, in a risk-informed manner (e.g., as have been provided for in the NuScale design and in the AP1000 design used at Vogtle 3 and 4).

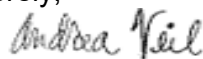
As stated in your August 26, 2022, letter, the NRC staff has held several public meetings to discuss Point 4 of SECY-22-0076, including a public meeting held on October 20, 2022 (ML22299A108) and presenting during the Advisory Committee on Reactor Safeguards (ACRS) digital I&C subcommittee meetings on May 20, 2022 (ML22130A727) and September 23, 2022 (ML22249A150) and the ACRS full committee meeting on November 1, 2022 (ML22279A900).

I also wish to clarify one other point discussed in these interactions regarding whether an exemption or alternative is needed if a particular application identifies critical safety functions that are different from those listed in the SECY (i.e., reactivity control, core heat removal, reactor coolant inventory, containment isolation, and containment integrity). This list is not in the regulations; thus, an exemption or alternative would not be needed merely because a different set of critical safety functions was identified for a particular reactor design.

We look forward to continuing to engage with industry and members of the public as we develop implementing guidance to the policy, including application of code requirements, once the Commission has issued its direction on SECY-22-0076.

Should you or your staff have any questions, please contact Mr. Bhagwat P. Jain at (301) 415-6303.

Sincerely,



Signed by Veil, Andrea
on 12/16/22

Andrea D. Veil, Director
Office of Nuclear Reactor Regulation

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