

May 16, 2016

MEMORANDUM TO: Kevin Hsueh, Chief
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Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

FROM: Joseph J. Holonich, Senior Project Manager /RA/
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SUBJECT: SUMMARY OF MARCH 21, 2016, PUBLIC MEETING TO REVIEW THE
U.S. NUCLEAR REGULATORY COMMISSION EFFORT TO UPDATE
ITS TECHNICAL POLICY ON COMMON-CAUSE FAILURE IN DIGITAL
INSTRUMENTATION AND CONTROL SYSTEMS

On March 21, 2016, U.S. Nuclear Regulatory Commission (NRC) staff met with representatives from the Nuclear Energy Institute (NEI) and industry. The purpose of the meeting was to initiate discussions on the technical basis for common-cause failure (CCF) in digital systems, and gather information on what areas of the current NRC policy on CCF need to be updated or modified. Information related to the meeting, including presentations and the attendees list, can be found in the Agencywide Documents Access and Management System (ADAMS) package Accession Number ML16068A072.

In its opening remarks, the NRC staff stated that CCF in digital systems is a topic that needed discussion and interaction. The NRC staff continued by stating that the meeting was the first in a series of meetings, and that additional meetings would be scheduled for April and June 2016. The NRC staff stated that the outcome of each meeting would help support the ongoing review of the NRC policy on CCF in digital systems, and the development of a technical basis recommendation to the Commission for possible changes to the current NRC policy

The NEI representatives agreed with the NRC staff that CCF was a topic that needed to be addressed as a high priority in the short-term. Representatives from NEI stated that CCF was an area that needed clear guidance on how to address when performing system upgrades for plants or when designing the systems for new reactors. Representatives from NEI also stated that the industry desires to work with the NRC staff to develop a consensus position on CCF.

In the morning, the meeting covered a series of presentations from the NRC staff, NEI and Electric Power Research Institute (EPRI). Presentations by the NRC staff discussed the current NRC policy on CCF in digital systems, efforts to reevaluate the NRC staff position on CCF, and the key technical and regulatory concepts to be considered.

The industry presentation provided its perspective on CCF developed through EPRI research, including the key concepts associated with providing credit for previous analysis in digital systems CCF policy, the scope of CCF failures to be considered, and the use of preventive and limiting measures. An action from the presentation portion of the meeting was for EPRI to identify a way to make its information available to the public. The industry also provided its perspective on comparative regulatory and technical positions on CCF, including deterministic defensive measures that facilitate reaching a CCF unlikely conclusion.

Copies of the presentations can be found in the ADAMS package referenced above.

The remainder of the meeting was open discussion and brainstorming. During this portion of the meeting, participants identified areas that required clarification or that have been challenging when evaluating CCF. Participants agreed the staff should consider the following topics in its evaluation:

- 1) scope of systems that need to be considered in the NRC CCF policy/rule
- 2) design attributes to reach a conclusion that a CCF need not be further analyzed
- 3) whether and, if so, how a bounding analysis can be used to assess a CCF
- 4) criteria to determine when a CCF analysis is acceptable

A number of possible strategies to address the topics were discussed. For the scope of systems topic, items to be considered include: (1) the safety significant of the systems; (2) the function of the systems; and (3) the classification of the systems. The potential to use system grading as part of the policy, and ways to best use previous analysis including manual operator actions were also topics of discussion.

It was agreed that there should be a way to use previous analysis in the policy or guidance. There was also discussion of the use of updated industry standards to support the new policy and the usefulness of the current NRC position on simplicity.

After the brainstorming session, the staff noted that a meeting in April would be scheduled to discuss the technical evaluation. In addition, the April meeting will focus on several of the technical topics identified during this meeting and discussed above.

The following action items were identified at the meeting.

- 1) Schedule future meetings for April and June (NRC).
- 2) EPRI will look at how to best put its methods, discussed in the meeting, in the public domain (EPRI).

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