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Submitter Information

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General Comment

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Attachments

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket NRC-2012-0167
Proposed ISG for Ch. 7 of NUREG-1537

I submitted two earlier sets of comments on this same topic and docket (August 2012 and December 2012). Rather than repeat those comments, I ask that the staff reconsider them as they better explain the overarching concerns I have with the proposed approach to regulation of digital I&C (DI&C) in non-power reactors and they provide additional context for my supplemental comments that follow here.

Over the last several years, the NRC held public meetings on a quarterly basis to discuss DI&C licensing topics as well as lessons learned based on the DI&C licensing efforts for Oconee and Diablo Canyon. Since this proposed ISG is essentially a conglomeration of the various power reactor DI&C related regulations, guidance documents, and branch technical positions, it's appropriate that the Oconee and Diablo Canyon lessons learned be reviewed and incorporated into the proposed ISG where applicable. The following are some of the DI&C lessons learned presented by the NRC staff themselves in July of 2015 (paraphrased and edited as needed):

- The regulatory infrastructure makes it difficult to achieve efficient, effective and consistent staff implementation, for a number of reasons. The infrastructure: a) is cumbersome, b) is not well organized and is somewhat redundant, c) does not allow for graded approaches based on safety significance, d) is not updated frequently enough to address advancements in technology, and e) lacks appropriate integration with other areas/disciplines of regulatory evaluation. This results in high review burdens and increased regulatory uncertainty.

    - The ISG should be organized in a logical review area format.
    - Overlap between sections makes the review process overly complicated.
    - Including IEEE clauses and interpretations is not useful.
    - A regulatory requirement matrix cross referenced to the ISG is useful.
    - A shared open item list is useful to limit RAIs and unnecessary submittals.
    - The "volatile document concept" should be incorporated to prevent submissions of multiple versions of the same documents.
    - There is no direct correlation between the information the NRC requires and the evaluations it performs (some required documents are never evaluated).

- The level of technical detail required for submittal in license applications, license amendments, and licensing topical reports, as well as the timing and sequence of the technical information expected to be submitted for NRC evaluation during the review cycle, has been inconsistent. This results in high review burdens and increased regulatory uncertainty.

- The current regulatory treatment and acceptance criteria dealing with Common Cause Software Failure in the analysis of DI&C systems has been problematic for licensees. The criteria for 100% testability and lack of a graded approach based on safety significance, places a high burden for demonstrating adequate development processes have been

employed, especially for localized embedded DI&C systems. This results in high review burdens and increased regulatory uncertainty.

- More guidance is needed for NRC technical reviewers to evaluate licensee-submitted proposed alternatives to the criteria in regulatory guidance and endorsed codes and standards, applicable to the licensing of DI&C systems and components (for example, commercial-off-the-shelf systems). These gaps in guidance create a challenge for technical reviewers seeking to make appropriate and consistent engineering judgments on the safety assurance of proposed alternative solutions for meeting applicable acceptance criteria. This results in high review burdens and increased regulatory uncertainty.

    - Additional guidance is needed on how to credit commercial grade systems with significant operating history.

- NRC staff interpretation/application of 10 CFR 50.59 criteria has changed / is inconsistent. This results in increased regulatory uncertainty (and unnecessary license amendment requests).

- The expenditure of NRC staff resources for the review of DI&C platform topical reports has not gained the efficiencies in performing licensing evaluations as was originally envisioned. A means or process to effectively and efficiently address updates to the topical report, to address design changes made to the platform following issuance of the original topical report safety evaluation, has not been established. This results in high review burdens and increased regulatory uncertainty.

The proposed ISG is not an appropriate location for non-power staff interpretation / application of 10 CFR 50.59 criteria nor does it provide any benefit. The lessons learned (if incorporated) that would provide greatest benefit, to minimal risk non-power facilities as well as the staff, are a graded approach based on safety significance in conjunction with a regulatory requirement matrix cross referenced to the ISG.

As written, however, the proposed ISG drastically increases regulatory burden and regulatory uncertainty associated with non-power reactor DI&C licensing actions. The staff has used it informally for several years now and the result has been to discourage licensees from implementing DI&C except as a last resort.

Given these lessons already learned, it is my deepest hope the staff will give thoughtful consideration of my comments. Thank you for the opportunity to comment.

Sincerely,

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