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Clarification on Endorsement of Nuclear Energy Institute Guidance in Designing Digital Upgrades in Instrumentation and Control Systems

Comment On: NRC-2017-0154-0001

Clarification on Endorsement of Nuclear Energy Institute Guidance in Designing Digital Upgrades in Instrumentation and Control Systems; Request for Comment on Draft Regulatory Issue Summary and Public Meeting

Document: NRC-2017-0154-DRAFT-0003

Comment on FR Doc # 2017-13918

Submitter Information

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General Comment

Please see comments from GE Hitachi Nuclear Energy (GEH) in attached document.

Attachments

GEH Comments on Digital RIS 2017-XX Supplement to RIS 2002-22

SUNSI Review Complete

Template = ADM - 013

E-RIDS= ADM-03

Add= B. Hanna (bkha)

J. Drake (JXD 23)

GEH Comments on Draft NRC RIS 2017-XX

Supplement to RIS 2002-22

Clarifies NRC's Endorsement of NEI 01-01 on Preparing and Documenting the "qualitative assessment" used in Support of Providing Reasonable Assurance

Comment 1 - General

The context of the RIS is not clear to the general readers. Some GEH reviewers were familiar with the context when they read the draft RIS. Some of the GEH reviewers understood that by reducing the regulatory uncertainty of implementing digital upgrades under the 10 CFR 50.59 process, the number of small and large digital modifications implemented by the plants would increase. Other GEH reviewers who were not familiar with the context, however, did not get this impression. Please consider adding a clear statement that by providing the clarifications contained in the RIS, the intent is to reduce uncertainty and make digital modifications under 10 CFR 50.59 a more viable and cost effective option without sacrificing overall plant safety.

Comment 2 - Paragraph 2.1 Editorial

Repeating the same words from 10 CFR 50.59 could probably be avoided and would improve readability.

Comment 3 - Paragraph 2.1 Editorial

It may be helpful to add a sentence to explain why 10 CFR 50.59 (c)(2)(vi) gets its own section but the other three criteria of interest do not.

Comment 4 - Paragraph 3.1a) on page 5

This paragraph needs to specifically allow the integration of functions within a system, its subsystems, and its components. The wording in paragraph (a) could be misinterpreted to mean that combining functions from within a single system is not allowed. Digital I&C modifications invariably result in taking functions previously performed by multiple entities and combining them in software. It seems the intent in Section 1.a is to say something like, "Do not result in combining functions previously performed by more than one system."

Comment 5 - Paragraphs 4.2.1 and 4.3.1

It is stated in Section 4.2.1 and 4.2.3, and shown in Figure 1, that the licensee has the option to redesign the modification. However, a redesign to improve the Design Attributes could affect Operating Experience. It might be helpful to offer insight into expectations about this trade-off.

Comment 6 - Table 1, Quality Design Process on page 9

What will the acceptance criteria be for "Development process rigor"?

Comment 7 - Paragraph 4.2.1.2 on page 10

This paragraph needs to specifically allow the integration of functions within a system, its subsystems, and its components.

Comment 8 - Figure 1, RIS Decision Tree Flowchart on page 12

The 1st decision diamond - the YES and NO leg labels appear to be reversed as the RIS guidance is to be inclusive on using 50.59 for Digital changes and only use other NRC options when really warranted.

Suggest replacing "Question #2" with "50.59 Question ii" and "Question #6" with "50.59 Question vi."

Comment 9 - Various paragraphs

There are some sentences that are rather long and could be broken into two. For example: RIS, p 1 of 6, under "Intent" (first sentence); Attachment, page 6 of 17, last paragraph in Section 3 (first sentence). In general, when revising the document, we suggest you tend to break up sentences rather use longer sentences.

Comment 10 - General

A definition of "Similar Systems" would be helpful.

Comment 11 - Overall comment

This RIS guidance needs to emphasize that though Digital is different than Analog, moving to Digital does not necessarily require a LAR to be submitted to the NRC. The overall assessments performed by the licensee in evaluating the change under the 50.59 process can easily provide the technical rigor of the technical responses required to respond to the 50.59 questions (c)(2)(i), (c)(2)(ii), (c)(2)(v), and (c)(2)(vi) as they apply to the licensing basis for the respective plant at the initiating events, design functions, possibility of different accident, accidents of a different type, or create a possibility for a malfunction of an SSC with a different result. The use of Engineering Judgment in these evaluations as discussed in this RIS would be acceptable as discussed in the draft RIS. INPO 12-13 (PERFORMANCE OBJECTIVES AND CRITERIA) Engineering Fundamentals item 32 discusses the use of Engineering Judgment at the respective plants and the interpretation of acceptability of each plant's implementation can be monitored by the NRC and Industry as part of their respective surveillances and reviews.

A common definition of Engineering Judgment could be added to the RIS to allow for consistency across the industry. One example of a more detailed definition of Engineering Judgment is provided below. The other important aspect is that the technical qualifications of the evaluators at the respective plants have to be appropriate for the evaluation preparation and reviews. Most, if not all, of these types of evaluations will be completed by the Engineering Department or their delegate. The respective plant's

existing process with its current review and approval process would be totally adequate in providing the necessary qualified individuals to support these evaluations.

Engineering Judgment Definition

- If engineering judgment is used for any part of the bases/conclusions of evaluations/analyses, the basis for that judgment should be clearly documented in the evaluation/analysis. The intent of engineering judgment is not to supplant the use of calculations when determined appropriate or desirable.
- There should be a sound technical basis/rationale for the judgment (e.g., recognized engineering principles, standards, trend evaluations, empirical data, previous engineering experience and/or calculations or evaluations, demonstrated industry practices, etc.). The level of detail should be sufficient to permit another technical reviewer, with similar expertise and without recourse to the author, to understand the author's rationale and to develop consensus with the engineering judgment used.
- When the technical basis for the engineering judgment cannot be adequately justified or consensus obtained, an alternate analysis or supporting quantitative evidence should be provided.
- The level of detail and thoroughness used to justify the engineering judgment should be commensurate with the safety significance of the work.
- Engineering judgment should receive a peer technical review and/or a challenge board review before being used for final conclusions. If used in an evaluation, analysis, calculation, etc. that is required to be verified, the verification of engineering judgment may be considered either the peer technical review or challenge board review, as applicable.