

NRR-DMPSPeM Resource

From: Ken Scarola <KenScarola@NuclearAutomation.com>
Sent: Wednesday, May 17, 2017 4:16 PM
To: Rahn, David
Subject: [External_Sender] Comments on RIS

Dave,
These are the comments I offered at the ACRS meeting today.

Ken

First, I'm concerned about ambiguity in the draft RIS:

The last bullet on Slide 6 of the Staff's presentation, which reflects the draft RIS, seems to require that a design defect be assumed, postulated to be triggered and then the malfunction result analyzed. This is restated slightly differently in the last bullet of Slide 8. I fully support this position in this RIS, because until industry and Staff reach agreement on design attributes that can be credited to preclude malfunctions due to a design defect, via NEI 16-16, the only deterministic design attributes that the staff currently endorses are simplicity (as demonstrated by 100% testability) and internal diversity, as identified in BTP 7-19. Therefore, for me, requiring a results analysis (or as John Stetkar says, a consequence analysis) for a potential malfunction due to a design defect, is a reasonable position in the RIS.

The ambiguity that I'm concerned about comes in through the words "if any" in this same bullet on Slide 6, because these words imply that a conclusion can be reached that no further consideration of a malfunction due to a design defect is needed, and this conclusion can be reached not through one of the deterministic design attributes in BTP7-19, but through the qualitative assessment process that is the foundation of this RIS. I see this same ambiguity on Slide 11 in the words "any residual defect" because again these words imply that there may not be a design defect, as concluded through only a qualitative assessment, and again, without one of the deterministic design attributes in BTP 7-19. Therefore, I request that this ambiguity in the draft RIS be removed before the RIS is finalized; the RIS should be very clear that a design defect should be assumed, postulated to be triggered and the resulting malfunction analyzed, unless that malfunction is precluded through simplicity or internal diversity.

Now, having said all that, and I know I'm expressing my conservatism after being a digital designer in this industry for more than 40 years, I hope that industry and Staff can quickly expand the list of creditable design attributes from BTP 7-19, by accelerating the endorsement of NEI 16-16, because there are certainly other technically sound and viable defensive measures that can preclude new malfunctions, even due to a design defect.

My next concern is about insufficient information and clarity in the draft RIS:

The last bullets on Slides 6 and 8, and the bullet on Slide 11, discuss demonstrating that a malfunction due to a design defect is "bounded". But the current draft RIS, as well as NEI 01-01 and NEI 96-07, are silent on what it means to be bounded, and the acceptable analysis methods to demonstrate bounded. For low likelihood defects, the SRM to SECY 93-087 and BTP 7-19 allow the resulting malfunction to be considered beyond design basis. This allows best estimate analysis methods, relaxed acceptance criteria and malfunction mitigation using non-safety systems. The RIS needs to be clear that these same criteria are acceptable to demonstrate "bounded" for low likelihood defects. The RIS also needs to explain what bounded means. For example, bounded may mean 'no more than a minimal reduction in margin to critical safety function limits'. The RIS also

needs to distinguish this methodology and acceptance criteria for a beyond design basis malfunction, from the criteria used for demonstrating that a design basis malfunction is bounded; the design basis criteria should be explicitly more conservative than the beyond design basis criteria. Finally, the RIS needs to clearly state that a bounded result facilitates a NO answer to 50.59 Question 6; a NO answer means there is not a malfunction with a different result.

All of this additional information and clarity is needed in the RIS, because the Staff has criticized industry for lack of consistency in 50.59 evaluations. We will never get that consistency if there is not clear and complete guidance. Therefore, I request this additional information and clarity be added to the RIS before it is finalized.

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