

As of: 2/1/16 10:56 AM  
Received: January 27, 2016  
Status: Pending Post  
Tracking No. 1k0-8nml-vu6c  
Comments Due: February 01, 2016  
Submission Type: Web

# PUBLIC SUBMISSION

**Docket:** NRC-2012-0167  
Draft NUREG for Comment

3

**Comment On:** NRC-2012-0167-0011  
Preparing and Reviewing Licensing Applications for Instrumentation and Control Systems for Non-power Reactors; Draft NUREG for Comment

**Document:** NRC-2012-0167-DRAFT-0013  
Comment on FR Doc # 2015-29029

11/16/2015

@FR 70850

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## General Comment

The risks associated with digital systems vary greatly depending on whether the systems are used in the RCS, RPS, or in auxiliary / monitoring equipment. Software flow diagrams for computer-based systems should only be required for components that have safety significance. There are other components, such as digital strip chart recorders, that may be included in the license application that have software but cannot cause an unsafe situation by failing.

Pt. 1, p. 34 "For the protocols used in the RPS, the licensee should discuss actual protocol functions needed to perform the safety function should be determined." - This sentence should be rephrased so that it makes sense.

The draft NUREG-1537 makes it far easier for approval of analog electronics than digital electronics. This incentivizes the operators to eschew modern digital systems, and as a result may result in less safety from a human factors standpoint, considering the advantages digital systems offer in terms of readability and configurability.

The draft NUREG-1537 is overreaching with regard to software design processes. The document should focus of whether the software related to the RCS and RPS can be demonstrated by the applicant to be of high quality, etc., without providing requirements for how the software design process is conducted. (See Pt. 1, pp. 49 - 51).

The draft NUREG-1537 mentions that human diversity is considered when determining whether there is adequate diversity in a safety system. What exactly does human diversity mean in this context and why is it considered?

SUNSI Review Complete  
Memphis = ADM-013

F-RIDS = ADM-03  
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Pt. 1 p. 91, "For control console and display instruments, vulnerabilities can occur because the COTS monitors allow external devices (e.g., USB sticks or flash drives) can be inserted into the monitor or the monitor software can be changed via external devices." This sentence should be revised: "...the COTS monitors allow external devices can be inserted" doesn't make grammatical sense.