

# PUBLIC SUBMISSION

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Draft NUREG for Comment

**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-0024  
Comment on FR Doc # 2015-29029

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## General Comment

See attached file(s)

11/16/2015  
80 FR 72850

## Attachments

TRTR Chapter 7 ISG Letter 2016-01-31

15

<b>SUNSI Review Complete</b>
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1 February 2016

Cindy Bladey,  
Office of Administration, Mail Stop: O12-H08,  
U.S. Nuclear Regulatory Commission,  
Washington, DC 20555-0001

**SUBJECT:** The National Organization of Test, Research, and Training Reactors  
Comments on Interim Staff Guidance Augmenting Chapter 7 of NUREG-  
1537

Dear Ms. Bladey:

The following comments on the Interim Staff Guidance (ISG) Augmenting Chapter 7 of NUREG-1537 are being provided by the Executive Committee of the National Organization of Test, Research, and Training Reactors (TRTR) on behalf of the research reactor community in the United States.

The subject of Digital Instrumentation and Controls (I&C), and the regulation of the non-power reactor and utilization facilities with respect to digital I&C, is an important one to our members. We thank the Nuclear Regulatory Commission for this opportunity to comment on this ISG, and the venue to do so.

The current License Amendment Request (LAR) process required for the upgrade of any I&C (Digital or Analog) not installed under the provisions of 10 CFR 50.59 is slow, cumbersome, unpredictable and inconsistent. The Research and Test Reactor (RTR) community feels very strongly that the ISG revisions to Chapter 7 of NUREG-1537 as presented will exacerbate the issue.

Specifically, we have serious concerns that the ISG continues to erode the boundaries established by section 104(c) of the Atomic Energy Act which directs the NRC "... to impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public and will permit the conduct of widespread and diverse research and development". We assert that the regulatory requirements and the associated burden added by the ISG are inconsistent with the public health and safety risk presented by the RTR facilities.

The ISG reminds us that "[a] licensee should obtain a license amendment pursuant to 10 CFR 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would result in an increase in the likelihood or consequence of an accident or introduce a previously unanalyzed accident." (Section 7, page 3) The ISG then informs us that essentially any change to the Chapter 7 I&C systems involving digital will require a LAR. The NRC position of requiring a LAR path on RTR licensees considering digital I&C upgrades comes with an apparent built-in assumption that current aging analog technologies are inherently safer (or, the parlance of the ISG, have less of a likelihood to cause an accident or that result in lesser consequences). No analysis or basis for this assumption has been provided.

Additionally, the level of analysis and documentation that the agency has required for digital I&C upgrades LARs to prove "reasonable assurance" is beyond the capacity of most of the RTR fleet and is not necessary to demonstrate the impact on public health and safety. The regulatory environment likely under the auspices of the ISG will greatly increase regulatory uncertainty and burden to the point where none of the facilities will consider upgrade of obsolete and increasingly unreliable instrumentation.

Furthermore, since the large majority (nearly all) of the domestic RTRs have Maximum Hypothetical Accidents (MHA) that do not involve the controls of the reactor (i.e., failure of a fueled experiment or fuel element), it is difficult to conceive that a digital control failure can lead to an event that would impact the public or environment. Certainly, all facilities performed the analyses to determine their safety bases to include "control system initiated" accidents, such as a rapid or ramped insertion of the maximum available excess reactivity by control system removal of all control rods. Often these analyses include the second failure of the RPS to actuate and shutdown the reactor. In all cases where the MHA does not involve the reactor controls, these hypothetical accidents were, by definition, found to be bounded by the MHA analysis and thus pose less of a risk than the MHA scenario (failure of fuel clad or a fueled experiment). This is true for most if not all U.S. RTRs. This very large safety envelope makes research and test reactors the ideal testbeds for the latest digital I&C systems.

A truly risk-informed approach to digital I&C implementation would, in our opinion, include some level of generic failure-rate and consequence comparisons and also take into account the very large safety envelopes which bound the NRC licensed RTRs.

The systems used in reactor I&C have varying safety significance. From the way the ISG is written, it is apparent that the same broad brush is applied to all digital systems, regardless of the safety significance. The proposed implementation methodology of having licensees justify why each criteria does not apply during an LAR is unworkable.

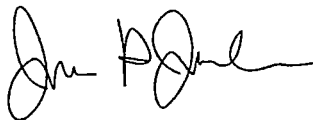
#### Conclusion

We, as a community, feel that the ISG is not ready for final release and requires significant work. The trend to require actions on the part of licensees based on ISGs and NUREGs as if they were regulation raises significant concerns within the RTR community. The interpretation of these documents by the agency staff shifts over time, and leads to additional unpredictability and increased regulatory uncertainty; thus reinforcing the need to get this revision to the NUREG right.

Overseen under a philosophy of minimum (not zero) regulation, the RTR reactors, designed with safety in mind, should be on the forefront of modern reactor instrumentation and digitalization providing valuable insights to the broader nuclear community. The NRC paradigm on RTR safety needs to be revisited. If the MHA remains the limiting event, then the public health and safety cannot be impacted by instrumentation changes, and the level of assurance needed to be "reasonable" is much less than that proposed in the ISG.

Much good work has been done by the NRC staff to get these documents to this point, but there is still much work to be done before they can become clear, concise guidance on the implementation of the regulations with respect to Digital Instrumentation and Control at non-power reactors and utilization facilities. We look forward to participation in that process.

Sincerely,



Jere H. Jenkins  
Chairman  
National Organization of Test, Research and Training Reactors