PUBLIC SUBMISSION

As of: December 04, 2012
Received: December 04, 2012
Status: Pending_Post
Tracking No. 1jw-82cj-pesr
Comments Due: December 04, 2012
Submission Type: Web

Docket: NRC-2012-0167
Draft NUREG for Comment

Comment On: NRC-2012-0167-0006
Guidlines for Preparing and Reviewing Licensing Applications for Instrumentation and Control Upgrades for Non-Power Reactors

Document: NRC-2012-0167-DRAFT-0009
Comment on FR Doc # 2012-23326

9/20/2012

77FR58419

(2)

Submitter Information

Name: Daniel Cronin
Organization: University of Florida Training Reactor

General Comment

Comments in attached docx file.

Attachments

UFTRCommentSubmittalLetter

UF | UNIVERSITY of FLORIDA

College of Engineering
UF Training Reactor Facility
Licensing Engineer

212 Nuclear Sciences Center
PO Box 118300
Gainesville, FL 32611-8300
352-294-2103
dcronin@ufl.edu

December 4, 2012

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

Docket NRC-2012-0167
Proposed Revision to Ch. 7 of NUREG-1537

An earlier set of UFTR comments were submitted on this same docket in August 2012 regarding proposed changes to Section 7.3 of Chapter 7 NUREG-1537. The following are additional comments on the proposed revision to Chapter 7.

As evidenced by the number of times NUREG-1537 is quoted in non-power RAI transmittals, it is apparent non-power NRC staff rely heavily on the guidance provided in NUREG-1537 to make "reasonable assurance" determinations for non-power reactor (NPR) licensing actions.

Consistent with this staff reliance on NUREG-1537, from the NPR licensee point of view, licensing interactions with the staff have demonstrated the guidance of NUREG-1537 is not treated as "guidance" at all but rather as requirements. More specifically, the NPR NRC staff working interpretation of the NUREG guidance can be paraphrased as follows - *if NUREG-1537 has 350 related recommendations, and if the licensee hopes to get their LAR approved, then the licensee needs to clearly address each of those 350 recommendations in order to provide the NRC with sufficient information to make a reasonable assurance determination under 10 CFR 50.40(a).*

In the current revision of NUREG-1537 Chapter 7, there are approximately:

- 10 uses of the word "verify"
- 279 uses of the word "should"
- 4 uses of the word "confirm"
- 36 pages of "guidance"

In the proposed revision to NUREG-1537 Chapter 7, these numbers increase dramatically to approximately:

- 237 uses of the word "verify"
- 931 uses of the word "should"
- 48 uses of the word "confirm"
- 128 pages of "guidance"

Combining this dramatic proposed increase in NUREG-1537 Chapter 7 "guidance" with the NPR NRC staff working interpretation of how this "guidance" is to be treated, effectively ensures that a minimally resourced facility like the UFTR can never implement a significant reactor I&C system upgrade through the LAR process. The UFTR reached this conclusion regarding our planned digital I&C upgrade project and withdrew our LAR in late August

2012 once the scope of the proposed NUREG-1537 changes became clear (Ref. ML12256A989). This increase in regulatory burden, and the continuing regulatory uncertainty associated with licensing digital I&C systems, will also further exaggerate the current effect of driving the NPR community away from consideration of digital I&C systems in general.

Minimally resourced NPR facilities like the UFTR rely heavily on DOE funding and/or vendor partnerships for these types of projects. With their necessarily small staff, the timeframe required to individually address nearly one thousand "recommendations" to the satisfaction of the NPR NRC staff require too long a period of time to hope to meet DOE funding time limits or any reasonable deliverable schedule under a vendor partnership agreement.

Rather than pursue new or revised rulemaking to address future licensing and implementation of NPR I&C systems, the NRC is bypassing the need to document and demonstrate a clear regulatory basis and safety benefit for these proposed changes by incorporating it into the NUREG as "guidance". Bypassing the limitations imposed by AEA Section 104(c) in this manner is, at very least, inconsistent with the intent of AEA Section 104(c).

Additionally, this "guidance" is being imposed on a NPR community that is already over regulated and overburdened. Evidence of the treatment of this "guidance", and the resulting increase in regulatory burden caused by the dramatic increase in RAIs, is demonstrated by the NPR license renewal problems associated with the last major increase in NUREG-1537 "guidance" in 1996 (Ref. NRC-2011-0087).

The refrain from the NPR community that it is overburdened with administrative regulatory requirements has been repeated over and over again at every opportunity by the NPR community. Considering the TRTR is made up of the NPR licensees themselves, as opposed to the NEI or paid consultants common on the power reactor side, this willingness by the NPR community and TRTR to push back on overreach by the NRC should not be taken lightly. Surprisingly, this refrain may have some supporters within segments of the NRC as well.

An important finding in the NRC document titled, "A Proposed Risk Management Regulatory Framework" (Ref. ML12109A277), dated April 2012, reads as follows:
The analysis of design basis and the maximum hypothetical accidents based on conservative design limits, acceptance criteria, safety margins, and assumptions in conjunction with the application of a defense-in-depth philosophy continues to be a sound but highly conservative licensing approach to ensuring adequate safety of NPRs.

This document elaborates further on the topic of conservatism as follows:
While significant conservatism has contributed to the demonstrated safety of NPRs, it is reasonable to assume that conservative design beyond some point does not yield an equivalent safety benefit. The imposition of excessively conservative NPR design and licensing criteria could be viewed as inconsistent with Section 104c of the Act.

This cumulative effect of these conservatisms is described as follows:
The combination of the conservatisms introduced through the consideration of an incredible accident scenario (e.g., the MHA), the use of restrictive 10 CFR Part 20 standards for evaluation of the effects of a postulated accident at research reactors, and large safety margins associated with the traditional engineering analyses, may result in an overly conservative NPR regulatory framework.

These NRC conclusions were pointed out to NPR NRC staff in UFTR comments made regarding proposed NPR License Renewal Rulemaking. In August of 2012, in response to the UFTR comments on this topic, the NPR branch made the following comments (Ref. ML12240A676):
The NRC staff agrees that NPR design requirements are conservative and that the NRC staff must pay careful attention to ensure its regulations are in compliance with section 104(c) of the Atomic Energy Act of 1954, as amended (AEA). The NRC's position is consistent with the AEA and that the regulation requirements are minimal requirements to the NPR community. The mission of the NRC is to protect the health and safety of the American public, regardless of the effect on its licensees. Therefore, NRC regulations that apply to NPR licensees must first meet the standard of providing reasonable assurance of protecting the public health and safety. However, unlike power reactors, NRC regulations that apply to NPR licensees must also be the minimum necessary to protect the public health and safety. The NRC staff consistently strives to write its regulations for NPR licensees that maintain the lowest possible burden while still protecting the public health and safety. In various public meetings, Commission meetings, and other discussions with licensees, the overwhelming opinion in the NPR community is that the current regulations for relicensing NPRs are over burdensome.

Close examination of these comments reveals the most likely cause of the apparent failure of the NPR NRC staff to take serious the overwhelming opinion of the NPR community, is the NRC mission statement itself.
The mission of the NRC is to protect the health and safety of the American public, regardless of the effect on its licensees.

This mission statement is in direct conflict with section 104(c) of the Atomic Energy Act of 1954, which reads as follows (in part):
The Commission is directed 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

Based on these NRC comments, it is also clear that regulatory burden on the licensee is only a secondary consideration after the NRC decides that sufficient "reasonable assurance" is in place. Since the NRC is the sole decider of what is "reasonable" enough, and the NRC has chosen to incorporate "reasonable assurance" requirements in the form of NUREG "guidance", this is analogous to manipulating a legal loophole.

Also stated in AEA Section 104(c), is a NRC responsibility to "*...permit the conduct of widespread and diverse research and development*" within the NPR community. At a minimum, the NPR branch of the NRC should proactively seek to quantitatively measure the regulatory burdens it imposes on the NPR community to ensure these functions of the NPR community are not unnecessarily stifled. Because of the limited resources of the NPR community, and the lack of a strong independent advocacy group, this should be in the form of a more objective analysis from NPR NRC staff as opposed to simply providing time for comments and qualitative analysis/staff opinion of proposed changes.

Increasing "assurance" in the form of increased administrative requirements on an already overburdened NPR community with excessively conservative design and licensing criteria is unlikely to have any positive impact on the health, safety, and security of the public. It will, however, ultimately result in the opposite effect as the result of diminished nuclear research, development, and training.

Serious consideration should be given to revising the NRC mission statement and associated mission to accommodate the important functions of the NPR community it also oversees. The NPR NRC mission should be consistent not only with the words of AEA 104(c) but with the intent as well.

Serious consideration should be given to a significantly more streamlined NUREG-1537 format that first lists the applicable regulation followed by further explanation and legal basis for NRC interpretation of any vague terms in the regulation (i.e. terms like "reasonable assurance"). This further explanation would be most useful if it included clearly illustrated examples of methods the NRC finds acceptable for specific areas of the regulation(s). Regulation that is generic (not system specific) in nature should be stated early in the Chapter and redundant statements should be eliminated.

Serious consideration should be given to performance of an analysis that quantifies the licensing burden required to gain approval for a comprehensive digital I&C upgrade at a generic NPR facility. Using the licensing process guidance for digital instrumentation upgrades developed for Interim Staff Guidance-6 as a template (or a similar NPR version of this ISG), a hypothetical licensing deliverable schedule and project plan could be developed that estimates the man-hour and scheduling requirements for both the NRC and a generic NPR facility. The UFTR is willing to participate in the performance of this assessment. In my opinion, however, the results of this proposed analysis will confirm my earlier statement that a significant NPR digital I&C upgrade is no longer feasible under the LAR process due to the minimal resources typical of NPR facilities and the excessive NPR regulatory burden. The LAR process for a project of this type simply takes too long to meet any reasonable deliverable schedule and, unlike power reactors, NPR facilities are unable to show the cost benefit required to justify a large increase in resources.

Serious consideration should also be given to the lower risk associated with NPRs which makes them well suited platforms for research and development of I&C systems. This type of prototype systems testing should be encouraged rather than prevented by additional "guidance" unless a strong safety benefit can be shown justifying the additional licensing

requirements. Additionally, NPR facilities who wish to upgrade their I&C systems should not be coerced into a scaled down power reactor safety system when an appropriately safe but much simpler and less expensive alternative exists nor should they be dissuaded from even attempting such an I&C upgrade due to an impossible regulatory hurdle.

The past failures of NPR NRC staff to seriously consider the regulatory burden that increased regulatory "guidance" has imposed on the NPR community has likely already resulted in several NPR closures. At very least, it has resulted in numerous deferred and/or cancelled NPR systems upgrades and improvements which could have provided a measureable safety benefit not only to the NPR facility and NPR community but to the reactor community as a whole.

The continued insistence by the NPR branch of the NRC on increased guidance and regulation of the NPR community "... *regardless of the effect on its licensees*", will simply result in more and more complaints by the NPR community followed ultimately by more and more NPR facility closures.

Thank you for the opportunity to comment on the proposed changes to the non-power reactor regulations and licensing documents. I appreciate your thoughtful consideration of these comments.

Sincerely,

Daniel J. Cronin
Licensing Engineer

cc: UFTR Facility Director
UFTR Reactor Manager