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# UNIVERSITY of MISSOURI

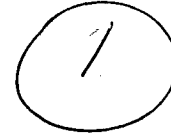
## RESEARCH REACTOR CENTER

August 10, 2012

7/12/2012

77 FR 41206

Cindy Bladey  
Chief, Rules, Announcements, and Directives Branch (RADB)  
Office of Administration  
Mail Stop: TWB-05-B01M  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001



**SUBJECT:** Request for Public Comment on Chapter 7, Section 7.3, Reactor Control System, augmenting NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for Licensing of Non-Power Reactors: Format and Content," for instrumentation and control (I&C) upgrades and NUREG-1537, Part 2, "Guidelines for Preparing and Reviewing Applications for Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria," for instrumentation and control (I&C) upgrades, (77 FR 41206); Docket ID NRC-2012-0167

The University of Missouri Research Reactor (MURR) appreciates the opportunity to provide comments on the proposed revision to Chapter 7, Section 7.3, Reactor Control System, of NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for Licensing of Non-Power Reactors: Format and Content," and NUREG-1537, Part 2, "Guidelines for Preparing and Reviewing Applications for Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria," as published in the Federal Register (Volume 77, No. 134 / July 12, 2012).

The following are MURR's comments on the draft section of NUREG-1537 which provides revised guidance for preparing and reviewing applications to amend a facility operating license for I&C upgrades:

**I. NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for Licensing of Non-Power Reactors: Format and Content"**

1. General Comment: Use consistent formatting for "10CFRxx.x" throughout the section.
2. Page 1, second paragraph: The apostrophe after the words "flux" and "and" should be deleted.
3. Page 1, third paragraph: The hyphen before the word "power" should be deleted.
4. Page 2, second paragraph: The acronyms "PSAR" and "FSAR" are not defined. Furthermore, these terms are not typically used in the non-power reactor world.

SUNSI Review Complete  
Template = ADM-013



FRFDS = ADM-03  
Add = D. Handley (DAH7)

5. Page 3, first bullet: The information regarding the PSAR and FSAR was previously stated on Page 2, seems redundant with no added value.
6. Page 7, Design Basis 21: We feel that the example does not seem to be an example but merely a restatement of the previous sentence.
7. Page 9, Design Basis 29: Second paragraph describes hazards to an experiment or experimental facility or the reactor. We recommend adding a potential hazard to personnel and the environment.
8. Page 10, Design Basis 32: The introductory paragraphs of this design basis seem to be written as general criteria and not specifically for the reactor control system. We feel that it would be more appropriate in the introduction section of Section 7.3.
9. Page 11, Design Basis 33: First sentence of third paragraph, delete the word “failures” after the words “Failures in the control system...”
10. Page 11, Design Basis 33: Second sentence of third paragraph, delete the word “design” after the words “The design of the control system...”
11. Page 12, the bulleted sentence: “A description of the conclusions about capability and suitability of the RCS requested in Section 7.2.5” is not grammatically correct. We suggest a sentence something like this: “A description of the conclusions about capability and suitability of the RCS requested in Section 7.2.5 should be included.”

## **II. NUREG-1537, Part 2, “Guidelines for Preparing and Reviewing Applications for Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria”**

1. General Comment: The words “verify” and “confirm” are used interchangeably throughout the section. To be consistent, use one or the other. We believe that the word “verify” more accurately reflects what is trying to be conveyed.
2. General Comment: Sometimes the word “system” is used while other times the acronym “RCS” is used in Design Basis. For consistency and to prevent any ambiguity, we believe using RCS is more appropriate.
3. Page 1, first 3 bullets under *Areas of Review*: For consistency with the rest of the document, all of the bullets need a period at the end of the sentence.
4. Page 1, third bullet under *Areas of Review*: Delete the symbols “.-“ after the word “features.”
5. Page 2, first 3 bullets: For consistency with the rest of the document, all of the bullets need a period at the end of the sentence.
6. Page 2, first paragraph under *Acceptance Criteria*: The word “fill” should be “full” in the first sentence.

7. Page 2, Design Basis 2: For I&C systems that are being upgraded to systems based on digital technology, the applicant should consult NRC Generic Letter 95-02, "Use of NUMARC/EPRI Report TR-102348, Guideline on Licensing Digital Upgrades, in Determining the Acceptability of Performing Analog-to-Digital Replacements Under 10 CFR 50.59." Because this applies to all sections it was updated and moved to the introduction of Chapter 7.

First, the clarifications in Generic Letter 95-02 were incorporated into EPRI Report TR-102348, Revision 1 (see NRC RIS 2002-22). We recommend that this be reflected in the introduction to Chapter 7. See:

<http://www.nrc.gov/reading-rm/doc-collections/gen-comm/reg-issues/2002/ri200222.pdf>

Second, the same update and move should also be revised in Part 1 also. This reference in Part 1 is currently at the end of Section 7.2.2 and a copy is provided as Appendix 7.4.

Third, the concerns expressed in the Generic Letter were fairly specific, including: *(1) the use of common software in redundant channels, (2) increased sensitivity to the effects of electromagnetic interference, (3) the improper use and control of equipment used to control and modify software and hardware configurations, (4) the effect that some digital designs have on diverse trip functions, (5) improper system integration, and (6) inappropriate commercial dedication of digital electronics.* Regarding these specific concerns, we feel that the draft revision to 7.3 adequately includes these concerns, but other reviewers may want to ensure the same.

8. Page 2, Design Basis 3: Delete the second "The" near the beginning of the sentence.
9. Page 3, Design Basis 5: Delete the second "The" near the beginning of the sentence.
10. Page 3, Design Basis 12: The new word "is" should be "are."
11. Page 4, Design Basis 20: The word "includes" should be "include."
12. Page 4, Design Basis 21: The word "indicates" should be "indicate."
13. Page 5, Design Basis 22: The words "rod control system" should be replaced with the acronym "RCS" since it has already been defined.
14. Page 5, Design Basis 27: The word "Conform" should be "confirm" or "verify."
15. Page 7, First bullet under *Evaluation Findings*: The words "rod control system" and the parentheses around the first "RCS" may be deleted since it has already been defined.

Thank you for the opportunity to comment. Should you have any questions, please feel free to contact me at 573-882-4211; ButlerRa@missouri.edu or John Fruits at 573-882-5319; FruitsJ@missouri.edu.

Sincerely,

A handwritten signature in black ink, appearing to read "Ralph A. Butler", with a long horizontal flourish extending to the right.

Ralph A. Butler, P.E.  
Director

xc: Reactor Advisory Committee  
Reactor Safety Subcommittee  
Dr. Robert Duncan, Vice Chancellor for Research  
Mr. Alexander Adams, U.S. NRC  
Mr. Craig Basset, U.S. NRC