

July 28, 2011

MEMORANDUM TO: Michael Case, Director
Division of Engineering
Office of Nuclear Regulatory Research

FROM: Leroy Hardin, Engineer */RA/ R. Sydnor for*
Digital Instrumentation and Controls Branch
Division of Engineering
Office of Nuclear Regulatory Research

SUBJECT: SUMMARY OF JUNE 23, 2011, MEETING TO DISCUSS REVISIONS
TO NUREG-1537, CONCEPTS FOR GRADED, RISK-INFORMED RTR
DIGITAL SYSTEM EVALUATIONS, AND TO FACILITATE DISCUSSION
OF OTHER RTR COMMUNITY ISSUES.

Background

A meeting was held with members of the Research and Test Reactor (RTR) community, on June 23, 2011, in Rockville, Maryland, to discuss proposed changes to NUREG-1537, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors" as applicable to licensing of digital instrumentation and control (I&C) systems. The purpose was to provide information on the process to be used to develop the proposed revisions as well as foster open discussions between the Nuclear Regulatory Commission (NRC) and the community in the areas of RTR digital systems upgrades.

The meeting was noticed on June 6, 2011, (ML111530455). The meeting attendance list is provided as Enclosure No. 1.

Discussion

The meeting generally followed the agenda (Enclosure No. 2). The primary reason for the meeting was to engage members of the RTR community in the ongoing process to revise the aspects of NUREG-1537 that deal with digital system upgrades. Specifically, this was the first opportunity to provide details to the public on the initial procedural framework being developed with support from Oak Ridge National Lab (ORNL) to accomplish this revision.

The information to be disseminated was consolidated into a presentation, which guided the meeting. Prior to the start of the presentation, discussion ground rules were stated. An open exchange of information was promoted and for the most part, questions were to be accepted throughout the presentation. Only if a topic was to take a significant amount of time or detract from the primary purpose of the meeting would it be tabled for future discussion. In addition, as shown on the agenda, a block of time was specifically set aside for public questions and comments.

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From the beginning of the meeting, the point was made that the purpose of this revision was to make NUREG-1537 responsive in the current environment of digital reactor systems for RTRs. Staff stated that ORNL was contracted to support this development effort and would be participating in the meeting.

The presentation is included as an attachment. However, specific comments and issues of note addressed in the presentation and the associated discussion are as follows:

There was general agreement that Nuclear Power Plant (NPP) Power Reactor standards cannot be simply imposed on RTRs. Thus, a major intent of this effort is to give licensees and applicants a single point of reference in NUREG-1537 that does not require the use of NPP Branch Technical Positions (BTPs) and other power reactor or similar guidance.

Previously accomplished console upgrades were mentioned, but staff stated that these 1990s era Training Research and Isotope Production, General Atomics (TRIGA) upgrades would not meet guidance today. Yet there are still valuable lessons that were learned in these reviews. For example, the General Atomics (GA) console review was performed using a graded approach. In many cases, the deficiencies found were a result of a lack of requirements and planning.

It was generally agreed that engineering judgment was extensively used in past reviews and that a more standardized approach is needed. Moreover, additional guidance – relatable to the RTR community – on the use and applicability of 10 CFR 50.59 process is needed.

The RTR community expressed concern with the Staff's approach to revising NUREG- 1537. Their suggestion was to look at RTR needs only, foregoing the adoption of guidance from the NPP Power Reactors. In fact, they stated a concern that just the amount of NPP guidance made the task of extracting RTR relative material very difficult. Staff pointed out that this practice would be very restrictive and would eliminate a great deal of pertinent information that has been gathered to support NPP digital system upgrades. The staff suggested that the digital system guidance used for NPPs has been gathered primarily from the general digital electronics realm has been consolidated and made applicable to NPPs. Therefore, much of the same information may be applicable to RTRs. Making the determination of applicability was stated as a reachable goal of this effort.

Staff stated that digital system upgrades basically require new system evaluations, a requirement driven primarily by the use of software. In addition, staff noted that the software verification and validation (V&V) process is not a substitute for diversity. Staff stated that the NRC's position is simply that the 10 CFR 50.59 process will not suffice if software components are added.

The subject of cyber security and connectivity to other systems was discussed. There was general consensus among RTR participants at the meeting that RTRs will never be connected to the internet and therefore, will not have cyber security requirements. There was concern that any such new requirements would be burdensome and against the spirit of minimal regulation. Though the topic of insider threats and counterfeit suppliers (supply chain management) was introduced, staff determined that the overall scope of cyber security and it's impacts could not be properly considered in this meeting and that it was best to follow up on this issue in the near future.

The question of how or if analog and digital systems differ was asked. The RTR representatives suggested that perhaps the burden of proof that a digital system upgrade's design is a problem lays with the NRC— not the licensees. In addition, they were concerned that added steps and tasks would be imposed in a review of a digital system which would impact staffing by requiring extra time and additional resources.

There was discussion over the proposed variation in requirements for the system reviews based on the specific reactor system(s) being upgraded, the range of various power levels, and the reactor types. This variability is a cornerstone of the proposed revision and was reasonably well received. Additional detail and further discussions on the bases for this variation is to be provided at future meetings.

Staff reiterated that the intent is not to make the licensing process for RTR digital I&C upgrades so difficult that it would be preferable and would minimize the design review process to build new RTR installations with analog systems. To help prevent such an opinion in the RTR community, staff made it clear that their involvement in the development of this guidance is critical. To this end, staff stated that they will be participating in the TRTR Conference in Idaho this September and holding a public meeting there to further discuss this revision effort. Additionally, staff invited the RTR community to participate in a public forum on the effort to revise NUREG-1537. While staff was clear that sufficient regulatory oversight required by the NRC had to be maintained, they invited this interaction to make sure that minimum regulation, as required by Section 104b of the Atomic Energy Act (AEA), is also exercised. The RTR representatives agreed that this was a good starting point and that it would lead to an efficient and effective NUREG revision.

The meeting was then opened to the public to make comments or ask questions. After no questions or comments were presented, the meeting was concluded.

A copy of the revised presentation is provided as Enclosure No. 3.

Enclosures:

1. Meeting Attendees
2. Agenda
3. Presentation

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DISTRIBUTION:

DE r/f	D. Hardesty, NRR	A. Adams, NRR
G. Wilson, NRR	S. Arndt, NRR	M. Voth, NRR
D. Rahn, NRR	B. Kemper, NRR	P. Chung, NRR

ADAMS Accession No.: ML112092676

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DATE	7/ 28/11	7/ 28/11

OFFICIAL RECORD COPY

**June 23, 2011, Public Meeting
Between Research and Test Reactor licensees and
the Nuclear Regulatory Commission**

MEETING ATTENDANCE LIST

Duane Hardesty	NRC/NRR
Al Adams	NRC/NRR
George Wilson	NRC/NRR
Steven Arndt	NRC/NRR
Mark Voth	NRC/NRR
David Rahn	NRC/NRR
Bill Kemper	NRC/NRR
Pong Chung	NRC/NRR
Leroy Hardin	NRC/RES
Sy Weiss	TRTR
Jere Jenkins	Purdue University/TRTR
Mark Trump	Penn State
Jana Bergman	Sciencetech, CWFC
Roger Kisner	ORNL
Mike Muhlheim	ORNL
Tom Myers	NIST
Les Foyto	MURR
Gabriel Ghita	University of Florida

**Agenda for Public Meeting
United States Nuclear Regulatory Commission**

**June 23, 2011
1:00 PM – 4:00 PM**

PURPOSE: To discuss revision to NUREG-1537, discuss concepts for graded, risk-informed evaluations of RTR digital systems, and to facilitate discussion of other issues related to this revision that affect the Research and Test Reactor (RTR) community.

Time	Topic	Led By
01:00 p.m. – 01:05 PM	Opening Remarks	NRC
01:05 p.m. – 03:00 PM	NUREG-1537 Revision Process	NRC
03:00 p.m. – 03:30 PM	Decision Points Discussion	NRC
03:30 p.m. – 03:50 PM	Invitation for Public Participation	NRC
03:50 p.m. – 04:00 PM	Conclusion/Document Actions	NRC

The revised presentation is available in ADAMS under ML112092610.

Enclosure 3