October 14, 2011

MEMORANDUM TO:	Michael Case, Director, Division of Engineering Office of Nuclear Regulatory Research
FROM:	Leroy Hardin, Engineer / RA / Digital Instrumentation and Controls Branch Division of Engineering Office of Nuclear Regulatory Research
SUBJECT:	SUMMARY OF SEPTEMBER 14, 2011, MEETING TO DISCUSS REVISIONS TO NUREG-1537, CONCEPTS FOR GRADED, RISK-INFORMED RESEARCH AND TEST REACTOR (RTR) DIGITAL SYSTEM EVALUATIONS, AND FACILITATE DISCUSSION OF OTHER RTR COMMUNITY ISSUES.

Background

A meeting was held with members of the (RTR) community, on September 14, 2011, in Idaho Falls, Idaho to discuss proposed changes to NUREG-1537. 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 August 24, 2011, (ML112360349). 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 continue 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 second in a series of meetings to provide details to the public on the procedural framework being developed with support from Oak Ridge National Laboratory (ORNL) to accomplish this revision in addition to providing more details on the actual proposed changes under development.

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 accepted throughout the presentation.

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Only if a topic was to take a significant amount of time or detract from the primary purpose of the meeting was it tabled for future discussion. In addition, as shown on the agenda, a block of time was specifically set aside for public questions and comments.

As was stated in the previous 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 as given is included as an attachment. In addition, a revised presentation that incorporates some pertinent items from the meeting is also included as a separate attachment. However, specific comments and issues of note addressed in the presentation and the associated discussion are as follows:

There was a general discussion over the safety concepts and protection systems that are used at RTR facilities. The debate continued over what types of systems and to what level they need to be protected and reviewed for use.

As the focus of this meeting was to continue to provide more information on the process being followed and there still was not a great deal of detailed specifics to present, the path forward to get information to those involved and interested for future meetings was discussed. It was agreed that information on what is being developed and proposed as changes to NUREG- 1537 will be made publically available in advance of each of the next meetings. This information dissemination will allow for productive and efficient meetings and enhance the collaborative efforts between the Staff and the RTR community.

Along with this procedural agreement, there were also some discussions on format and content type issues – such as numbering of bullets in NUREG 1537. All of these discussions were focused on improving the efficiency of the overall review and upgrade process currently underway, as well as improving the usability and effectiveness of the end product.

Technical issues were discussed further. Differences in analog and digital systems and components and how they are affected by similar events led to several exchanges. There was additional discussion as to what safety/protection systems are really needed – especially in smaller power reactors.

A significant amount of time was spent on the graded approach concept and the bases that determine the different requirements. For example, the 2 MW power level differentiator was questioned. If the reactor was in a very large pool, would or should that change what is required? These discussions were noted and will be considered as the process of revising the guidance continues. Staff reiterated the intent to comply with the spirit of minimal regulation of RTRs.

One suggestion discussed by the RTR community was to simply use an analog protection system to simplify the process. However, the point was made that a consensus definition of what is analog versus digital is hard to determine.

Another area of focused discussion involved the 10 CFR 50.59 process. Some participants stated that the process was still unclear. Staff's general position was that a license amendment

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will often be needed in the case of digital upgrades. However, even though participants gave examples and asked staff if they could make a determination as to what would be acceptable under the 10 CFR 50.59 process, such questions could not be answered in that venue. Staff basically stated that in such cases a technical evaluation would be needed to support any such decision.

Overall, the participants stated that the process as it is being used is sound. The problems will come from the implementation details. Further discussion on the 10 CFR 50.59 process is expected in future meetings.

Staff then reiterated that slides and information on what NUREG 1537 revisions are being proposed will be made publicly available sufficiently in advance of the next meeting to facilitate discussions between Staff and the RTR community.

IAEA Representative Charles Morris was then asked to speak briefly about the international efforts underway to support RTRs in developing nations. He stated that there are a series of "How To" documents being developed for use. The projected completion date of these documents is early 2012. He invited all meeting participants to review these documents and provide comments. However, he restated that these are not regulatory documents. Then, after opening the floor to any other meeting participants or members of the public for questions, the meeting was concluded.

A copy of the original presentation is provided as Enclosure No. 3. The revised presentation is included as Enclosure No. 4.

Enclosures:

- 1. Meeting Attendees
- 2. Agenda
- 3. Initial Presentation
- 4. Revised Presentation

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NAME	L. Hardin	R. Sydnor K. Sturzebecher for
DATE	10/14/11	10/14/11

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September 14, 2011, Public Meeting Between Research and Test Reactor licensees and the Nuclear Regulatory Commission

MEETING ATTENDANCE LIST

H. M. Hashemian Ryan O'Hagan Keith Lockie Roy Ray Charles Morris Mark Cox Chris Hott Gordon Kohse Tom Newton Ewald Liebhart Thomas Mackie¹ John Fruits Les Foyto Joe Revenga Sean O'Kelly Duane Hardestv Al Adams George Wilson Scott Sloan Jason Lising Norbert Carte Geoffrey Wertz¹ Leroy Hardin Lara Uselding Gary Wadu Steve Reese Roger Kisner Mike Muhlheim Mark Linn Gregory Perret Jere Jenkins Mark Trump Gordon Procter James Bryson Dave Clovis Gregory Piefer¹ Katrina Pitas¹ Tighe Smith George Miller Brian Shea Leo Bobek Dane Seong Sohn Gabriel Ghita Larry Welch Michael Krause Tim DeBey

AMS Corp AMS Corp DOE-Idaho **General Atomics** IAEA Idaho National Lab Idaho National Lab MIT MIT **Mirion Technologies** Morgridge Institute for Research MURR MURR NIST NIST NRC/NRR NRC/NRR NRC/NRR NRC/NRR NRC/NRR NRC/NRR NRC/NRR NRC/RES NRC **Oregon State Oregon State** ORNL ORNL ORNL PSI Purdue University/TRTR Penn State SAFARI-1 NECSA Sandia National Lab Sandia National Lab Shine Medical Shine Medical Thermo Fisher UCI UFTR UMASS-Lowell UNIST University of Florida University of Texas University of Texas USGS

¹ Attended meeting by Webinar

Agenda for Public Meeting United States Nuclear Regulatory Commission

September 14, 2011 8:00 AM – 12:00 PM

PURPOSE: Continue discussion of revision to NUREG-1537, discuss concepts for graded 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	Торіс	Led By
08:00 AM - 08:10 AM	Opening Remarks	NRC
08:10 AM - 08:30 AM	Summary of Prior Meeting	NRC
08:30 AM - 10:00 AM	Proposed Acceptance Criteria Revisions	NRC
10:00 AM - 10:15 AM	BREAK	
10:15 AM – 11:15 AM	Proposed Acceptance Criteria Revisions (cont)	NRC
11:15 AM – 11:45 AM	Invitation for Public Participation	NRC
11:45 AM – 12:00 PM	Conclusion/Document Actions	NRC

The initial presentation is available in ADAMS under ML11249A229

Enclosure 3

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The revised presentation is available in ADAMS under ML112710395

Enclosure 4

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