



NUCLEAR ENERGY INSTITUTE

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April 25, 2007

Mr. John A. Grobe
Associate Director for Engineering
and Safety Systems
U.S. Nuclear Regulatory Commission
Mail Stop O-5 E7
Washington, DC 20555

Subject: Comments on Task Working Group

Project Number: 689

Dear Mr. Grobe:

This letter provides the Nuclear Energy Institute's (NEI's)¹ comments to the six Task Working Group (TWG) project plans and problem statements provided by NRC staff letters dated April 6 and April 13, 2007. These comments were developed with input from industry participants on TWG and NEI's Digital I&C and Human Factors Working Group. We recommend that the schedules already established by TWGs be reflected in the project plans.

The TWG and Steering Committee concept provide us a unique opportunity to address digital technology issues in a more proactive manner and, therefore, ensure a more predictable licensing process. We appreciate NRC staff's efforts in identifying and addressing issues associated with Digital I&C applications in commercial nuclear power plants. We look forward to continued interactions with the NRC Steering Committee and the successful resolution of the issues we have jointly identified.

¹ NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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If you have any questions regarding this letter, please contact me (202-739-8080; am@nei.org) or Jim Riley (202-739-8137; jhr@nei.org).

Sincerely,

A handwritten signature in cursive script that reads "Alexander Marion".

Alexander Marion

Attachment

Industry Comments on Task Working Group Plans

Project Plan General Comments

Industry has no comments on the Project Plan provided in the April 13 letter. Industry considers the priority of each item "High" unless otherwise noted.

TWG #1: Cyber Security Project Plan Comments

Dates previously agreed upon with NRC staff on these issues were not in the April 13 project plans. The dates need to be re-established and agreed upon.

TWG #2: Diversity and Defense-In-Depth Project Plan Comments

1. In problem statement 3g (Echelons of Defense), replace "Current nuclear power plant designs maintain the above safety functions within safe margins using the following echelons of defense" with "BTP-19 describes the following echelons of defense". The current wording implies that existing plants use all four echelons to provide back-up functions for each other. In reality, not all echelons are required for a given transient.
2. The Milestones, Assignments, and Deliverables table has a long-term item to "Revise consensus standards (e.g., IEEE), if appropriate." That item should be revised as follows: "Work with other organizations to incorporate diversity and defense-in-depth standards into consensus standards, if appropriate."

TWG #3: Risk-Informing Digital I&C Project Plan Comments

We believe Problem Statements 1 and 2, and the associated plans, reflect our concerns. We appreciate NRC staff input at the April 12, 2006 Risk TWG meeting regarding comments and observations on PRAs submitted for Design Certification applications (Problem Statement 1). NEI will continue to develop a technical paper that we believe will facilitate a more efficient licensing process for both COL and Design Certification applications. In addition, we agreed to provide a technical paper on a screening process associated with using risk insights in diversity and defense in depth evaluations (Problem Statement 2).

With respect to Problem Statement 3, we do not believe that this statement adequately depicts the issue and state of the art in PRA modeling of digital systems. We do not believe that either industry or NRC has clearly determined that "detailed modeling" or an "advancement in the state-of-the-art" are needed to permit risk-informed decision making relative to digital system applications. NRC Research has not clearly shown that the current PRA modeling methods are unsatisfactory for digital systems in nuclear power plants. Therefore, we believe:

- Research should focus current efforts on analyzing the vulnerabilities in traditional PRAs that we use today, and gaining consensus in this area among stakeholders.
- Once vulnerabilities are identified, NRC staff should collaborate with stakeholders to identify possible ways to address them without new modeling techniques.

We do not believe that dynamic modeling has been shown to be viable or necessary in modeling digital systems. For example, NUREG 6901 lists the characteristics of digital I&C systems for which dynamic modeling may provide benefit. We believe that designers can address these characteristics, obviating the need for dynamic modeling. We are concerned that the cost of implementing this type of modeling tool would be prohibitive and unnecessary given no safety benefit has been shown from the use of this tool. We believe that current research should be directed toward improving current modeling techniques by:

- Defining software failure probabilities
- Identifying failure modes and effects
- Assessing failure data

Further discussion is needed to reach consensus on a path forward relative to identifying a meaningful and effective approach for risk informing digital application reviews. We believe this Problem Statement 3 should be revised to reflect the lack of consensus regarding the adequacy of current modeling techniques for risk informing digital system application reviews.

TWG #4: Highly Integrated Control Room – Communications Project Plan Comments

1. The following changes should be made to the Milestones, Assignments, and Deliverables table on page 6:
 - a. NEI is listed as the lead for items 1d (Receive public comments) and 1e (CRGR interaction). NRC should be the lead for those items.
 - b. Based on discussions between industry and the NRC Task Working Group, the due dates should be June 1, 2007, for deliverable 1a (Receive industry proposals for HICR communication design concepts) and September 7, 2007, for deliverable 1c (Issue draft interim guidance if appropriate).

TWG #5: Highly Integrated Control Room - Human Factors Project Plan Comments

The Human Factors project plan states: "The following Human Factors problems, identified during the initial meetings of the Working Group, will be addressed..." Only one meeting has been held between industry and this TWG (March 1, 2007). The list provided in the April 6 and 13 NRC letters is not consistent with the list developed at the March 1 Human Factors TWG Meeting. In addition, no communication between industry and TWG members occurred from the time of the meeting and

the publication of the problem statements on April 6 regarding the changes to the jointly developed list.

This TWG met for the second time on April 19, 2007. At this meeting, industry provided several comments on the April 6 and 13 Problem Statements. Herein are the comments industry provided at the meeting, including the relative priority of the issues.

Problem Statement a: Revise as agreed upon at the April 19 meeting: "Eliminate the inconsistent use of the term "minimum inventory" and define acceptance criteria for "minimum inventory" associated with alarms, controls, and displays in regulatory documents." Note as "High" priority item.

Problem Statement b: as agreed upon at the April 19 meeting: "Existing guidance and acceptance criteria are not sufficiently detailed for computerized procedures to determine their effect on safety." Also, re-title to "Computerized Procedures" to ensure the scope is sufficiently limited. Note as "High" priority item.

Problem Statement c: Industry believes that the lead on this effort should clearly be the Diversity and Defense in Depth TWG – we suggest revising the problem statement as follows: "Support the Diversity and Defense in Depth (D3) TWG effort in developing a process to define the feasibility and reliability of operator actions in D3 evaluations." Note as "High" priority item.

Problem Statement d: as agreed upon at the April 19 meeting, "Current guidance needs to be reviewed to ensure it adequately addresses soft controls." Although the industry agreed with the proposed re-write, we believe that the existing guidance is adequate. Therefore, we note this as a "Low" priority item.

Problem Statement e: 10 CFR 50.34 contains the following statement: "Provide a plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant, capable of displaying a full range of important plant parameters and data trends on demand, and capable of indicating when process limits are being approached or exceeded. (I.D.2)" The group determined that there does not appear to be an issue with new plant SPD consoles; however, we agreed to review to "Determine the need to revise 50.34 (f)(iv) or associated guidance relative to safety parameter display consoles." This action is intended to ensure that existing guidance is not overly restrictive relative to the displays. We note this as a "Low" priority item.

Problem Statement f: as agreed upon at the April 19 meeting, re-write as "Ensure that existing regulatory guidance and positions can accommodate changes to personnel roles and responsibilities that may result from implementing digital technology." We agreed this is a "Medium" priority item. We also clearly identified the need to ensure that the process for

licensing operators be outside the scope of this group. NEI has developed a task force for new plant operator licensing issues and will be publicly meeting with NRC staff in the near future to discuss new plant issues.

Problem Statement g: industry and NRC staff did not agree that this is an issue for digital I&C. We believe existing design guidance is adequate to ensure that operators are knowledgeable and able to respond appropriately to degraded instrumentation. We recommend deleting this item.

Problem Statement h: industry and NRC staff did not agree that this is an issue for digital I&C. We believe existing guidance is sufficient if designers and licensees desire to expand the use of the remote shutdown panel beyond the traditional functionality. We therefore recommend deleting this item.

New Problem Statement: During a recent Communications TWG meeting, a potential issue was discussed related to Human-System Interface (HSI) and digital communications. At the April 19 meeting, industry and NRC staff agreed NEI would provide in this response a proposed problem statement (pending Steering Committee approval): "Work with the Communications TWG to address the HSI aspects of safety to non-safety communications." Industry considers this a "High" priority item.

New Problem Statement: The following problem statement was agreed upon at the March 1 meeting; however, it was deleted from the list in the April 6 and April 13 letters regarding a graded approach to Human Factors evaluations. "There currently are no clear guidance or acceptance criteria on a process to implement a graded approach to Human Factors Engineering." Although NUREG-0711 and the Standard Review Plan allow a graded approach to reviewing HFE analyses and activities, there is no NRC or industry guidance on how to accomplish this approach. This would include guidance for determining the specific types of HFE activities and levels of rigor that should be applied in those activities for designs or design changes having different levels of complexity and/or risk. Industry considers this a "High" priority and requests this be added back to the list of issues for this TWG.

As noted above, although several agreements were reached during the April 19 meeting, some issues remain open or unresolved. In addition, because this meeting focused on revisiting and agreeing on problem statements, we do not believe it is appropriate to comment on the details of the project plan until agreement is reached on the various problem statements. Industry did agree and indicate to the staff that we would provide technical papers to advance the dialogue for three high priority items: minimum inventory, computerized procedures, and manual operator actions. We further believe that these three items should be addressed in upcoming meetings to begin developing proposed solutions for the issues.

TWG #6: Licensing Process Issues Project Plan Comments

1. Problem statement b should apply to both Chapter 7 and Chapter 18 of the Standard Review Plan. Revise this problem statement as follows: "...and the applicability of Chapter 7 and Chapter 18 of the Standard Review Plan..."
2. Make the following editorial changes to problem statement c:

"Clear licensing process protocols for implementing the submittal and NRC review of digital technology applications, including consideration of the licensee submitting and NRC completing its review in stages, ~~and~~ considering the applicability of NRC review activities being conducted in the field."
3. Revise deliverable c as follows to include Chapter 18: "Conforming changes for licensing process to Chapter 7 and Chapter 18 of NUREG-0800..."