

September 1, 2011

MEMORANDUM TO: Marissa G. Bailey, Deputy Director
Special Projects and Technical
Support Directorate
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

FROM: Cinthya Román, Chemical Engineer **/RA/**
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Special Projects and Technical
Support Directorate
Division of Fuel Cycle Safety
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Office of Nuclear Material Safety
and Safeguards

SUBJECT: AUGUST 17, 2011, MEETING SUMMARY: PUBLIC MEETING
TO DISCUSS INDUSTRY'S PROPOSED APPROACH FOR THE
USE OF DESIGN FEATURES TO MEET THE REGULATORY
REQUIREMENTS OF TITLE 10 OF THE *CODE OF FEDERAL
REGULATIONS* PART 70

On August 17, 2011, staff from the Office of Nuclear Material Safety and Safeguards conducted a public meeting with representatives of the Nuclear Energy Institute, fuel cycle licensees, and applicants. During this meeting, industry representatives presented their thoughts on the use of bounding assumptions and design features for risk assessment in the licensee's integrated safety analysis. No regulatory commitments were made during the meeting. The meeting summary is enclosed for your use and contains no proprietary or classified information.

Enclosures:

1. Meeting Summary
2. Attendance List
3. Meeting Slides
4. Proposed changes to Appendix B of NUREG-1520
5. Proposed changes to Appendix D of NUREG-1520

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Summary of Public Meeting on Design Features

Date & Time: August 17, 2011, 1:00 P.M.-5:00 P.M. (EDT)

Place: U.S. Nuclear Regulatory Commission (NRC)
Executive Boulevard Building
6003 Executive Boulevard
EBB-01E15
Rockville, MD 20852

Category 2: The public was invited to participate in this meeting by discussing regulatory issues with the NRC at designated points on the agenda.

Attendees: See Enclosure 2

Purpose: The purpose of this meeting was to provide an opportunity for both Nuclear Energy Institute (NEI) and Industry Representatives to discuss the use of Design Features by licensees to meet the regulatory requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 70.

Discussion:

Ms. Cinthya Román (Office of Nuclear Material Safety and Safeguards/Division of Fuel Cycle Safety and Safeguards [FCSS] Project Manager for the Design Features Task) introduced the meeting attendees, discussed the meeting logistics, and led the agenda discussions. Mr. John Kinneman, Director FCSS, and Marissa Bailey, Deputy Director of FCSS provided opening remarks stating that they appreciated the cooperation between NRC and NEI. M. Bailey discussed the meeting purpose and her expectations for the meeting. M. Bailey also stated that the staff reviewed the NEI letter submitted on June 7, 2011, on this subject. M. Bailey indicated that the purpose of the meeting was not to reach a consensus on these issues, nor discuss pending enforcement actions. Ms. Janet Schlueter, Director of Fuel and Materials Safety Nuclear Generation Division of NEI, provided opening remarks on behalf of the industry and discussed her expectations for the meeting.

Gerard Couture, Westinghouse, provided some background regarding the performance requirements in 10 CFR Part 70.61. Specifically, Mr. Couture discussed the performance requirements established in 10 CFR 70.61(b) and 70.61(c) which require that the risk of each credible high-consequence and intermediate-consequence event be limited. He also discussed that 10 CFR 70.61(d) requires that the risk of nuclear criticality accidents be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical. In addition, he explained that those events considered "credible" must then be demonstrated to meet the standard of being "highly unlikely" for high-consequence events and "unlikely" for intermediate-consequence events; and that §70.61(e) also requires each engineered or administrative control or control system necessary to comply with the performance requirements of §70.61 shall be designated as an item relied on for safety (IROFS). After, he discussed the performance requirements, he explained the definition of the term "control" that the industry believes is appropriate. Further, he noted that industry defined control (and control systems) as engineered systems or administrative controls designated to prevent the causes or mitigate the consequences of deviations (e.g. process alarms, interlock, and procedures). The industry

obtained the definition from "AICHE Guidelines for Hazards Evaluations Procedures, pg. 133, referenced in NUREG-1513."

Then, Mr. Couture presented the proposed definition for the concept of design features. Design features, as defined by the industry, are passive engineered features of the facility/process configuration that have insignificant possibility of failure, the safety aspect is not easily altered, is not subject to routine replacement, is not subject to degradation and do not require periodic testing or verification to ensure they remain available and reliable to perform their intended function. He explained that the only credible mechanism by which these features could be altered is through a formal design process change performed under a configuration control program. Industry representatives indicated that design features would be subject to change control under configuration management (70.72), and are documented in the Integrated Safety Analysis.

NRC staff asked several questions regarding the degree of reliability of design features. Staff asked how they determine that a design feature has insignificant probability of failure without implementing management measures and other quality assurance elements. The staff indicated that passive features are subject to some failure mechanisms and they need to be assessed. Industry representatives discussed some examples to explain how they evaluate the reliability of their design features. However, NRC staff stated that the examples and the responses from the licensees in terms of the reliability of the design features were not uniform or consistent.

Industry representatives indicated that they are not required to request NRC approval before removing a design feature without an equivalent replacement of the safety function. Staff indicated that if design features are not expected to be changed frequently and they have insignificant probability of failure (e.g., a building, robust tank with insignificant probability of failure), requesting NRC approval before a change is implemented would happen infrequently, therefore shouldn't be a significant administrative burden for the licensees. Staff stated that making a commitment to request approval from NRC before implementing such change would support their design feature definition (insignificant probability of failure, not easily altered, and not subject to routine replacement). Industry representatives disagree with that statement. The industry believes that evaluating changes through their configuration change process should be enough to ensure changes to design features are properly evaluated.

Industry representatives believe that the designation of all safety items as IROFS dilutes distinction for most safety significant items. Industry stated that the training to the workers would be less effective and that the workers would be overwhelmed. NRC staff explained that not every item at the facility needs to be an IROFS. Only engineered controls, control systems, and administrative controls used to meet the performance requirements of 10 CFR Part 70.61 need to be designated as IROFS. Also, staff indicated, that the licensees can apply management measures in graded manner commensurate with the risk significance.

NEI briefly discussed proposed changes to Appendix B, "Qualitative Criteria for Evaluation of Likelihood" and Appendix C, "Initiating Frequency" of NUREG 1520, Revision 01, to address industry's approach for the use of design features. NEI and industry representatives stated that they did not believe the regulations of 10 CFR Part 70 needed to be revised and that only staff guidance was necessary to implement its approach to design features. NRC staff commented that other sections of NUREG 1520, such as the criticality and quality assurance sections may also need to be revised if the concept of design features is determined to be acceptable to meet the regulatory requirements of 10 CFR Part 70. On the other hand, industry representatives

indicated that they might try to include the term “design features” in the regulations of 10 CFR Part 40, since they are currently under rulemaking.

Staff also indicated that the concepts of design features and bounding assumptions are not defined or mentioned in the regulations, and the concepts were created by the industry. Staff indicated that there is no a clear distinction between a passive engineered control and a design feature. Therefore, if design features are used to make a particular event highly unlikely or not credible, it is not clear how this features can be used to meet the performance requirements of 10 CFR Part 70.61.

Staff stated that the meeting was very helpful to understand the perspective of the industry regarding this issue. Staff also indicated that they will consider the submittals and the information presented by the industry to establish an appropriate path forward.

Action Items:

None

Regulatory Commitments:

No regulatory commitments were made during the meeting.