



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

July 24, 2009

The Honorable Gregory B. Jaczko  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT: DRAFT FINAL REGULATORY GUIDE 1.215, "GUIDANCE FOR ITAAC CLOSURE UNDER 10 CFR PART 52"**

Dear Chairman Jaczko:

During the 564th meeting of the Advisory Committee on Reactor Safeguards, July 8-10, 2009, we reviewed Draft Final Regulatory Guide (RG) 1.215, "Guidance for ITAAC Closure under 10 CFR Part 52." Our Future Plant Designs Subcommittee also reviewed this matter during a meeting on July 7, 2009. During these reviews, we had the benefit of discussions with representatives of the NRC staff and the Nuclear Energy Institute (NEI). We also had the benefit of the documents referenced.

**CONCLUSIONS AND RECOMMENDATIONS**

1. Inspections, tests, analyses, and acceptance criteria (ITAAC) provide a systematic approach to define safety significant acceptance criteria for new plants. RG 1.215 provides an acceptable approach for closing ITAAC.
2. Prior to issuing, RG 1.215 should be revised to specify where the detailed closure process guidance for design acceptance criteria (DAC) will be provided.
3. The DAC closure process guidance should include a provision for an in-depth review comparable to the usual design certification process to ensure adequacy of the design.
4. The DAC closure process guidance should be provided to the ACRS for review.

**BACKGROUND**

ITAAC are the proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility is in conformance with the design certification. ITAAC are discussed in 10 CFR 52.47(b)(1), with the closure requirements specified in 10 CFR 52.99, "Inspection During Construction." They were also discussed in several Commission documents.

DAC, a special type of ITAAC, were first proposed by the staff nearly twenty years ago in SECY-92-053, "Use of Design Acceptance Criteria During 10 CFR Part 52 Design Certifications Reviews," when the staff found that vendors were not providing detailed design information in some areas because they include a consideration of: technologies that are changing so rapidly that it would be unwise for the NRC to freeze the details of the design many years before an actual plant is ready to be constructed; and design areas such as pipe stress and support analyses, where vendors do not have sufficient as-built, or as-procured information to complete the final design.

In SECY-92-053, the staff states that the DAC are to be a set of prescribed limits, parameters, procedures, and attributes in a limited number of technical areas. They are to be objective (measurable, testable, or subject to analysis using pre-approved methods) and at the same time they would have to be sufficiently detailed to provide an adequate basis for the staff to make a final safety determination regarding the design.

## **DISCUSSION**

The concept of a set of inspections, tests, and analyses predefined during design certification provides an orderly set of important acceptance criteria for new plants, adding a useful structure to previous approaches to acceptance testing. RG 1.215 provides guidance for an acceptable approach for ITAAC closure. This Guide endorses the methodologies described in the NEI guidance document NEI 08-01, Revision 3, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52."

The bulk of the ITAAC are construction acceptance tests and inspections to ensure the plant is built in accordance with the certified design. The focus of the NEI document is on providing guidance for proper format and content of ITAAC closure letters. RG 1.215 provides an overview of what is in the NEI 08-01 document, as well as a discussion of the ITAAC closure process. This Guide and the endorsed NEI document provide valuable guidance for closure of ITAAC.

However, the NEI 08-01 document provides limited guidance on the DAC closure process, especially on what is required at a detailed level to assess that the DAC are satisfactorily met. The NEI document identifies three options for closing DAC. The first two options are DAC closure through amendment of the design certification rule, or through combined license (COL) application review. In these two scenarios, DAC would be completed before construction begins. The third approach is DAC closure after the COL is issued. For this case, we are concerned that the staff's objective in SECY-92-053, that the DAC should ensure adequacy of the design, may not get appropriate emphasis in staff's inspections and other DAC closure verification activities, without detailed guidance.

In RG 1.215, the staff should acknowledge that DAC are a special type of ITAAC and clearly define them. It should also point unambiguously to the documents that will eventually contain the specific guidance on how to review/inspect DAC closure and what staff expertise will be required. We understand that the detailed staff guidance on DAC closure is still under preparation, but links to such guidance should be established now.

There is a significant difference in the use of DAC for piping design and digital instrumentation & control (I&C). For piping design, the DAC rely heavily on the American Society of Mechanical Engineers (ASME) Code. The Code has evolved over decades of use and refinement and there is high confidence in its completeness and accuracy. The corresponding standards for digital I&C are new and untried. The NRC staff is currently in the midst of licensing the first safety-related digital protection system in an operating reactor. Although the DAC are to be objective, the relative immaturity of the standards for digital I&C has led to a greater reliance on process-based standards, and the degree of judgment involved in assessing whether the DAC have been satisfactorily met will be greater than in the case of the piping DAC.

The systems under DAC do not get the detailed review during the design certification process, due to lack of availability of detailed design information. Therefore, the DAC closure process guidance should include a provision for an in-depth review comparable to the usual design certification process to ensure adequacy of the design. Also, we should be provided an opportunity to review the DAC closure process guidance, including possible review of selected staff evaluations of the design's compliance with DAC.

We expect that the detailed DAC closure review process guidance will specify that the staff should ensure that DAC closure activities examine integrated system design, ensuring adequacy of the actual design – not just to fulfill the stated design functions but also to identify and eliminate unexpected failure modes. We suggest that inclusion of specific examples in RG 1.215 would be of great value to all users of the Guide.

We appreciate the use of a multidisciplinary team, cooperation between staff and industry, and the public meeting process that was used to reach the consensus presented in RG 1.215 and the NEI 08-01 document.

Sincerely,

*/RA/*

Mario V. Bonaca  
Chairman

## References:

1. Memorandum from Michael J. Case, Director, Division of Engineering, Office of Nuclear Regulatory Research to Edwin M. Hackett, Executive Director, ACRS; Subject: Regulatory Guide 1.215 and Withdrawal of Regulatory Guide 1.16, 05/28/2009 (ML091480619)
2. Draft Final Regulatory Guide 1.215 (DG-1204), "Guidance for ITAAC Closure Under 10 CFR Part 52," March 2009 (ML082960039)
3. NEI 08-01, Revision 3, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52," January 2009 (ML090270415)
4. Final Rule for 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," 08/28/2007 (ML063060337)
5. SECY-08-0117, "Staff Approach to Verify Closure of Inspections, Tests, Analyses, and Acceptance Criteria and to Implement Title 10 CFR 52.99, 'Inspection During Construction,' and Related Portion of 10 CFR 52.103(g) on the Commission Finding," 08/07/2008 (ML081220237), and Enclosure 3, "Flowchart and Description of Implementation under 10 CFR 52.99 and 10 CFR 52.103(g)," 08/07/2008 (ML081080399)
6. SECY-92-053, "Use of Design Acceptance Criteria during 10 CFR Part 52 Design Certification Reviews," 02/19/1992 (ML003707942)

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 Mario V. Bonaca  
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Letter to the Honorable Gregory B Jaczko, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS, dated July 24, 2009

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