



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

May 4, 2016

Mr. Stephen A. Fleger, Chairman  
Nuclear Power Engineering Committee  
Institute of Electrical and Electronics Engineers  
c/o U.S. Nuclear Regulatory Commission  
11545 Rockville Pike  
Washington, DC 20555

**SUBJECT: CONTENT OF IEEE STANDARDS 603, "IEEE STANDARD CRITERIA FOR SAFETY SYSTEMS FOR NUCLEAR POWER GENERATING STATIONS," AND 7-4.3.2, "IEEE STANDARD CRITERIA FOR DIGITAL COMPUTERS IN SAFETY SYSTEMS OF NUCLEAR POWER GENERATING STATIONS"**

Dear Mr. Fleger:

The NRC Commission in its Staff Requirement Memorandum to SECY-15-0106, "Proposed Rule: Incorporation by Reference of Institute of Electrical and Electronics Engineers Standard 603-2009, 'IEEE Standard Criteria for Safety Systems for Nuclear Power Generating,'" directed the NRC staff to "engage in public workshops and meetings with the relevant IEEE standards setting committee, licensees, vendors, and other external stakeholders to reach a common understanding of the DI&C regulatory challenges, priorities, and potential solutions to address them."

On April 19, 2016, the NRC Standards Executive and NRC technical leads held a conference call with the leadership of the IEEE Nuclear Power Engineering Committee (NPEC) to discuss NRC's request to work with the NPEC on the revision of IEEE Standards 603, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," and 7-4.3.2, "IEEE Standard Criteria for Digital Computers in Safety Systems of Nuclear Power Generating Stations." On the call was the NPEC Chair, Vice-Chair, and Secretary, as well as a member of the IEEE Board.

The purpose of the conference call was to discuss the possibility of the committees addressing certain NRC technical concerns and incorporating them, to the extent practicable, into the 2018 Edition of the IEEE 603 Standard and the current edition of the IEEE 7-4.3.2 Standard which is currently in the public comment process. Moreover, we discussed, in general, the "conditions" that the staff had identified in the proposed draft rulemaking (SECY-15-0106) that would have incorporated by reference IEEE 603-2009.

Discussions regarding the topics of the conditions and the IEEE standards to which they correlate are as follows:

IEEE Standard	Condition Topic	Brief Explanation of Condition
603	Maintenance Bypass	The NRC is concerned that removal of the requirement to continue to perform required safety functions while redundant portions are in maintenance bypass mode could have an adverse effect on plant safety.

7-4.3.2	Hazard Analysis	The NRC believes that performance of an analysis to identify and address both hazards and benefits of digital safety systems would provide a substantial improvement to the design process for development of these systems which would result in improved levels of safety assurance.
7-4.3.2	System Integrity	The NRC believes that new requirements are needed to help ensure predictable and repeatable performance of I&C safety systems to address the potential for digital technology to exhibit performance characteristics which are different than those associated with analog technologies.
7-4.3.2	Independence	The NRC believes that there is a need for new requirements as well as proposed architectural solutions which provide assurance that independence would be maintained when communication paths are established between systems.

During the call, I committed to send this letter to NPEC regarding our request. The NPEC leadership, in response, indicated its intent to respond with a letter regarding their plans to pursue the NRC's request. NPEC's letter would be used to facilitate further discussion on the matter at the forthcoming June 2016 public meeting of the IEEE 603 and 7-4.3.2 committees.

Thank you in advance for your support of the NRC's technical concerns. We look forward to working with the NPEC to address the issues identified in this letter and resolve IEEE standard to our mutual satisfaction.

Sincerely,

**/RA/**

Brian E. Thomas  
NRC Standards Executive

CC: Thomas Koshy, NPEC Vice-Chair  
Daryl L. Harmon, NPEC Secretary

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Brian E. Thomas  
NRC Standards Executive

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