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Rules and Directives Branch  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington DC 20555-0001

**SUBJECT: Draft Regulatory Guide DG-1077, "Guidelines for Environmental Qualification of Microprocessor-Based Equipment Important to Safety In Nuclear power Plants" (66 FR 51479, October 9, 2001)**

The Nuclear Energy Institute (NEI)<sup>1</sup>, on behalf of its members, is submitting these comments in response to the Nuclear Regulatory Commission's solicitation of public comments on the subject draft regulatory guide.

Draft Regulatory Guide DG-1077 was developed as part of the NRC's research plan for digital instrumentation and control (I&C)<sup>2</sup>. The shorter-term elements of this research plan were intended to improve the efficiency of the technical review process. The draft regulatory guide fails to meet this objective. Instead, it would likely create ambiguity and regulatory uncertainty in the process of equipment environmental qualification by creating new and unique regulatory guidance applicable to only digital I&C. The industry and the NRC have over many years developed a comprehensive process to demonstrate that equipment important to safety is capable of performing its safety-related function(s) in harsh and mild environments. This comprehensive process has been successfully applied to digital applications in safety-related applications by individual licensees and by vendors. If adopted, the draft regulatory guide would create confusion in what has become a stable and effective regulatory review process.

<sup>1</sup> NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including 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.

<sup>2</sup> SECY-01-0155

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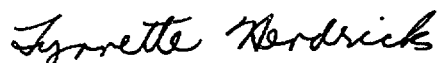
In the Discussion section, the draft guide regulatory guide appropriately notes that the use of computers (i.e., digital devices) in safety systems poses challenges different from those of analog systems. Based on several examples of technical differences, the draft regulatory guide then concludes, *"These differences and analyses suggest a different approach to qualification for digital instrumentation and control (I&C) safety systems."* We disagree. While the design, manufacture, materials and testing of digital devices can create differences from those associated with analog devices, these differences are relevant to the digital design and manufacturing process and the methods used to qualify the design. The processes and standards for environmental qualification are the same for analog and digital devices. The regulatory requirements (10 CFR 50.49) and regulatory review process (NUREG-0800) for equipment environmental qualification are well established and adequate to ensure the qualification of digital systems.

We endorse the concept that either IEEE Standard 323-1983<sup>3</sup> or IEC 60780<sup>4</sup> are appropriate for satisfying the environmental qualification of safety-related equipment. Recognition of the European standard as well as the American standard appropriately reflects the reality of international supply of equipment.

In conclusion, we recommend that the draft regulatory guide be withdrawn and technical insights from the NRC's digital I&C research program be communicated via another mechanism such as a NUREG report.

Please contact Fred Madden (202-739-8114 or [fwm@nei.org](mailto:fwm@nei.org)) or me (202-739-8109 or [lxh@nei.org](mailto:lxh@nei.org)) or if you have any questions or wish to further discuss these comments.

Sincerely,



Lynnette Hendricks

c: Ms. C. E. Antonescu, NRC

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<sup>3</sup> It is noted that Regulatory Guide 1.89 does not presently endorse this version of the standard.

<sup>4</sup> International Electrotechnical Commission (IEC) 60780, "Nuclear Power Plants – Electrical Equipment of the Safety System – Qualification"