

February 14, 2003

Dr. William D. Travers  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REGULATORY GUIDE DG-1077, "GUIDELINES FOR ENVIRONMENTAL QUALIFICATION OF MICROPROCESSOR-BASED EQUIPMENT IMPORTANT TO SAFETY IN NUCLEAR POWER PLANTS"

Dear Dr. Travers:

During the 499<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards on February 6-8, 2003, we met with representatives of the NRC's Office of Nuclear Regulatory Research to discuss the Draft Final Regulatory Guide DG-1077, "Guidelines for Environmental Qualification of Microprocessor-Based Equipment Important to Safety in Nuclear Power Plants." We also had the benefit of the documents referenced.

#### **RECOMMENDATION**

DG-1077 provides appropriate guidance for environmental qualification of microprocessor-based equipment and should be issued.

#### **DISCUSSION**

DG-1077 endorses the use of the Institute of Electrical and Electronics Engineers Standard 323-1983 (as reaffirmed in 1996) or the International Electrotechnical Commission Standard 60780, with some enhancements and exceptions, as well as RG 1.89 and RG 1.180. The staff used NUREG/CR-6741 as the basis for the guidelines for environmental qualification of microprocessor-based equipment.

Both NUREG/CR-6741 and DG-1077 recognize the important differences in the degradation and failure modes associated with microprocessor-based equipment and provide specific guidance to properly resolve issues in the environmental qualification of this equipment for use in nuclear power plants. The guidance recognizes the international market for replacement, and new instrumentation and controls, and appropriately incorporates international standards.

Sincerely,

**/RA/**

Mario V. Bonaca  
Chairman

References:

1. U. S. Nuclear Regulatory Commission, DG-1077, "Guidelines for Environmental Qualification of Microprocessor-based Equipment Important to Safety in Nuclear Power Plants," December 2001.
2. Institute of Electrical and Electronics Engineers, IEEE 323-1983, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," September 30, 1983.
3. International Electrotechnical Commission, IEC 60780, "Nuclear Power Plants - Electrical Equipment of the Safety System - Qualifications," Second Edition, 1998.
4. U. S. Nuclear Regulatory Commission, RG 1.89, "Environmental Qualification of Certain Electrical Equipment Important to Safety for Nuclear Power Plants," June 1984.
5. U. S. Nuclear Regulatory Commission, RG 1.180, "Guidelines for Evaluating Electromagnetic Radiofrequency Interference in Safety-Related Instrument and Control Systems," January 2000.
6. U. S. Nuclear Regulatory Commission, NUREG/CR-6741, "Application of Microprocessor-Based Equipment in Nuclear Power Plants - Technical Basis for Qualification Methodology," January 2003.