



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

July 18, 2005

Mr. Luis A. Reyes  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REGULATORY GUIDE DG-1137, "GUIDELINES FOR LIGHTNING PROTECTION OF NUCLEAR POWER PLANTS"

Dear Mr. Reyes:

During the 524<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, July 6-8, 2005, we met with the NRC staff and its contractor to discuss the draft final Regulatory Guide DG-1137, "Guidelines for Lightning Protection of Nuclear Power Plants," and NUREG/CR-6866, "Technical Basis for Regulatory Guidance on Lightning Protection in Nuclear Power Plants." We also had the benefit of the documents referenced.

### **Recommendation**

The Regulatory Guide should be issued.

### **Discussion**

This draft Regulatory Guide provides guidance for designing and installing lightning protection systems (LPSs) to ensure that electrical transients resulting from lightning phenomena do not render safety-related systems inoperable or cause spurious operation of such systems. It is intended for new plants but can also be used by existing plants.

The guidance covers protection of the power plant and relevant ancillary facilities, as well as the testing and maintenance of LPSs. It does not cover testing and design practices specifically intended to protect safety-related I&C systems against the secondary effects of lightning discharges, i.e., low-level power surges and electromagnetic and radio-frequency interference (EMI/RFI). These practices are covered in Regulatory Guide 1.180, "Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems."

Draft Regulatory Guide DG-1137 endorses four standards issued by the Institute of Electrical and Electronics Engineers (IEEE) that are intended to provide comprehensive lightning protection guidance for nuclear power plants:

- IEEE Std. 665-1995 (reaffirmed 2001), "IEEE Guide for Generating Station Grounding"
- IEEE Std. 666-1991 (reaffirmed 1996), "IEEE Design Guide for Electrical Power Service Systems for Generating Stations"
- IEEE Std. 1050-1996, "IEEE Guide for Instrumentation and Control Equipment Grounding in Generating Stations"
- IEEE Std. C62.23-1995 (reaffirmed 2001), "IEEE Application Guide for Surge Protection of Electric Generating Plants."

The staff endorses these IEEE standards in their entirety except for an error in IEEE Std. 665-1995 (reaffirmed 2001). These standards contain numerous references to other secondary standards. Accordingly, the staff's endorsement of the four standards includes the applicable portions of the secondary standards.

We agree with the staff that DG-1137 and the endorsed IEEE standards provide adequate guidance for use by the industry in designing and installing LPSs at nuclear power plants. The Regulatory Guide should be issued.

Sincerely,

**/RA/**

Graham B. Wallis  
Chairman

References:

1. Memorandum from R. Barrett, RES, to J. Larkins, ACRS, dated June 24, 2005, Subject: Request ACRS to Review Final Guide, DG-1137, "Guidelines for Lightning Protection of Nuclear Power Plants" (ADAMS Accession No. ML051780237)
2. Draft Regulatory Guide DG-1137, "Guidelines for Lightning Protection of Nuclear Power Plants," May 2005 (ADAMS Accession No. ML051780242)
3. NUREG/CR-6866, "Technical Basis for Regulatory Guidance on Lightning Protection in Nuclear Power Plants," May 2005 (ADAMS Accession No. ML051780247)
4. Letter from T. Groblewski, Progress Energy, to the Rules and Directives Branch, dated April 15, 2005, regarding comments to DG-1137 (ADAMS Accession No. ML051110419)
5. Letter from F. Mashburn, Tennessee Valley Authority, to the Rules and Directives Branch, dated April 20, 2005, regarding comments to DG-1137 (ADAMS Accession No. ML051160217)
6. Staff responses to public comments (ADAMS Accession No. ML051780249)