August 17, 2012

Dr. J. Sam Armijo, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS LETTER, DATED JULY 19, 2012, CONCERNING DRAFT FINAL NUREG-1934 (EPRI REPORT 1023259), "NUCLEAR POWER PLANT FIRE MODELING ANALYSIS GUIDELINES (NPP FIRE MAG)"

Dear Dr. Armijo:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter, dated July 19, 2012, concerning NUREG-1934 (EPRI Report 1023259)[1], "Nuclear Power Plant Fire Modeling Analysis Guidelines (NPP FIRE MAG)." We agree with the Advisory Committee on Reactor Safeguards (ACRS) that the NRC should publish this collaboratively prepared NUREG-series report because it provides valuable information for the staff and licensees.

As noted in your letter, the NRC's Office of Nuclear Regulatory Research collaborated with the Electric Power Research Institute (EPRI) under a memorandum of understanding (MOU) in developing this fire modeling analysis guidance. NUREG-1934 provides useful guidance on the application of mathematical fire models to nuclear power plant fire scenarios, serves as a teaching tool for the advanced fire modeling module in the joint NRC/EPRI fire probabilistic risk assessment training course, and supports the identification and quantification of uncertainties in the mathematical fire model predictions.

The staff agrees with the two ACRS recommendations regarding improving the final report and has incorporated the recommendations. In particular:

(1) The staff revised section 1.6.2, "Fire Induced Circuit Failures," to clarify the guidance and objectives for modeling of fire-induced circuit failures. The section has been divided into deterministic and performance-based subsections and references to Regulatory Guide (RG) 1.189, "Fire Protection for Nuclear Power Plants," and RG 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," have been added.

(2) The staff has expanded the "Parameter Uncertainty Propagation" and "Conclusions" sections of Appendix B to better describe the impact of the uncertainty results on the fire modeling conclusions. Specifically, the differences between using discrete values for heat release rate (e.g., 50th percentile and 98th percentile) versus using a distribution are discussed.

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[1] Hereinafter referred to as NUREG-1934 for brevity

With respect to the third ACRS recommendation, the staff agrees that a useful next step would be the development of a separate case study to demonstrate how uncertainties are assessed and quantified in an integrated fire analysis of a typical nuclear power plant fire hazard and its consequential damage scenarios. The staff will consider the development of this case study in a future project with consideration of available resources.

In closing, the staff values the review and comments that the ACRS provided on this report.

Sincerely,

/RA/

R. W. Borchardt
Executive Director
for Operations

cc: Chairman Macfarlane
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff
SECY

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