Fire Protection for Nuclear Power Plants

Lead Office/Division: NRR/DRA/AFPB
Supporting Offices/Divisions: RES/DFERR, NRR/ADRO, OE/EPPOB, NRO/DSRA, RII

Description

Risk-Informed, Performance-Based Fire Protection Implementation (NFPA 805)

The staff completed the rulemaking to endorse a voluntary alternative risk-informed, performance-based fire protection regulation for operating nuclear power plants. The staff worked with the National Fire Protection Association (NFPA) to develop a consensus standard, NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. In June 2004, NFPA 805 was endorsed in 10 CFR 50.48(c) and published in the *Federal Register (69 FR 33536)*. This Risk-Informed (RI) rule is a voluntary alternative to the existing deterministic fire protection requirements of 10 CFR 50.48(b).

In conjunction with the NFPA 805 rule, the Nuclear Energy Institute (NEI) developed an implementation guide, NEI 04-02, "*Guidance for Implementation a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)."* In May 2006, NRC issued Regulatory Guide (RG) 1.205, "*Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants*" endorsing revision 1 of NEI 04-02. NEI 04-02 was again revised (Revision 2) in April 2008 and the staff is currently in the process of providing an endorsement of this guidance via a revision (Revision 1) to RG 1.205, which is expected to be completed in October 2009. To date, 51 operating nuclear power plant units have sent the NRC a letter of intent to adopt NFPA 805 as their licensing basis.

The NRC has chosen two sites, Oconee and Shearon Harris to pilot their transition to the NFPA 805. Regulatory audits and supplementary clarification visits have been held with the pilot plants to review their transition progress and address any implementation issues. Trip reports document the lessons learned from these visits. A Frequently Asked Question (FAQ) process has been developed to review and establish a preliminary staff position on implementation issues. The staff holds public meetings monthly with the NEI NFPA 805 Task Force to work on these FAQs. The FAQ resolution is documented in a publically available memo, then incorporated into the next NEI 04-02 revision, which should be endorsed by the NRC in a revised RG 1.205, or other reference document (e.g., NUREG/CR-6850).

The Office of Research worked with the Electric Power Research Institute (EPRI) to develop two documents essential for the successful implementation of the NFPA 805 rule. First is NUREG/CR-6850, "*Fire PRA Methodology for Nuclear Power Facilities*," September 2005 and NUREG-1824, "*Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications,"* May 2007. Credible Fire PRAs and Fire Models help ensure the application of risk is appropriate for the NRC's fire protection regulation. The staff has conducted reviews of the Pilot Plant's Fire PRAs to assure adequate quality and completeness. Subsequent plants will conduct peer reviews per industry standards, as endorsed by RG 1.200, and the staff will review these evaluations for adequacy.

The staff is developing a Standard Review Plan (SRP) to review License Amendment Requests (LARs) for plants changing to the new licensing basis. The staff has developed a final SRP that builds off lessons learned from the pilot plant reviews and the latest revision of RG 1.205. This SRP, which will be issued for the non-pilot plant reviews, is expected to be issued in October 2009.

Web-site: http://www.nrc.gov/reactors/operating/ops-experience/fire-protection.html

Project Considerations: Lack of Fire PRA expertise may slow the transition process.

Completed Milestones

- Conduct Oconee FPRA Staff Review (March 2008)
- Conduct Pilot Observation Visit Number Eleven (April 2008)
- Receive Shearon Harris License Amendment Request (May 2008)
- Receive Oconee License Amendment Request (May 2008)
- Conduct Regional Inspector Fire Protection Workshop (July 2008)
- Conduct Shearon Harris License Amendment Request Acceptance Review (August 2008)

Future Milestones

Selected Major Milestones and Schedules				
Major Milestones	**Original Target Date**	**Revised Date**	**Completion Date**	**NRC Responsibility**
Review Shearon Harris LAR, Pilot the draft SRP, and then prepare Safety Evaluation Report (SER).	SER: December 2008	SER: December 2009		NRR/ADES/ DRA/AFPB
Review Oconee LAR, pilot the draft SRP and then prepare SER	SER: December 2008	SER: March 2010		NRR/ADES/ DRA/AFPB