U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Electric Power Research Institute (EPRI)

Sandia National Laboratories (SNL)

Information Sheet: Methods for Applying Risk Analysis to Fire Scenarios (MARIAFIRES)-2008

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Background

In 1995, the NRC adopted a policy statement on PRA with the intent to increase the use of PRA technology in all regulatory matters to the extent supported by the state of the art in PRA methods and data. In 2001, the NRC's Office of Nuclear Regulatory Research (RES) embarked on a cooperative project with the Electric Power Research Institute (EPRI) to improve the state-of-the-art in fire risk assessment to support this new risk-informed environment as applied to fire protection. This project produced a consensus document, NUREG/CR-6850 (EPRI 1011989), entitled "Fire PRA Methodology for Nuclear Power Facilities" which addresses fire risk for at-power operations. In 2004, the NRC amended its fire protection requirements to allow existing reactor licensees to voluntarily adopt the risk-informed, performance-based, 10CFR50.48(c) rule, that endorses National Fire Protection Association (NFPA) 805 "Performance Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants", as an alternative to the existing prescriptive fire protection requirements.

Approach

In practice, NUREG/CR-6850 (EPRI 1011989) provides an effective, albeit complex, methodology for application of risk-informed methods to fire protection. Because of the complexity, initially a forum was generated to discuss technical issues with its application, from which it was learned that licensees and inspectors could benefit from the firsthand experience of their predecessors who had employed the tactics outlined in NUREG/CR-6850 (EPRI 1011989) for a number of years. Without such training and examples of how the methodology should be implemented, it was realized the it would be a challenge for users to adopt the new way of thinking about fire risk assessment.

Therefore, beginning in 2005, bi-annual conferences and workshops were held to train risk analysts in the use of this methodology. Initially, these meetings served as forums to allow analysts to discuss tactics and personal experiences dealing with this fire probabilistic risk analysis methodology, but they have since developed into training courses for users and reviewers of the methodology.

The most recent workshops were held in 2008 from 29 September through 2 October, and again from 17-20 November, in Bethesda, MD, They attracted about 170 participants including domestic representatives from NRC Headquarters and all four Regional Offices, Department of Energy (DOE), National Aeronautics and Space Administration (NASA), EPRI, NPP Utilities' Licensees, Nuclear Steam Supply System (NSSS) Vendors, Consulting Engineering firms, and Universities. Also in attendance were international representatives from Belgium, Canada, France, Japan, South Korea, Spain, and Sweden.

Those training workshops were video-recorded, and adapted by NRC-RES Fire Research Branch (FRB) members with support from EPRI for use as an alternative training method for those who were unable to physically attend the training sessions. This material will be published in the near future as NUREG/CP-0194 (EPRI 1020621), which can also serve as a refresher for those who attended one or more training sessions, and would be useful preparatory material for those planning to attend a session.

Figure 1: Course attendees shown in a typical session of the 2008 workshops.

For More Information
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