ENHANCING SAFETY DURING THE GLOBAL NUCLEAR RENAISSANCE

NIST National Institute of Standards and Technology

Office of Nuclear Regulatory Research

ENHANCING SAFETY THROUGH FIRE RESEARCH

FIRE MODELING Sandia National • NUREG-1824 – Verification and Validation of Select Fire Models • PIRT – Phenomena Identification and Ranking Table program. [Report Fall 2008] • Fire Model Users Guide [Draft Report for Public Comment Early 2009] International Fire Research Cooperation (PRISME) – OECD/IRSN erification and Validation Selected Fire Models for uclear Power Plant FIRE & ELECTRICAL SYSTEMS EPPE ELECTRIC POWER RESEARCH INSTITUTE - CIRCUIT ANALYSIS • NUREG/CR-6931 – Cable Response to Live Fire – CAROLFIRE improvements. Volume 3 presents the NIST THIEF sub-model which predicts cable failure times. [Report Spring 2008] Circuit Fire Testing Data Analysis [Fall 2009] DC circuit testing CENTER FOR TECHNOLOGY RISK STUDIES Determine risk-significance of DC circuit response to fire [In Planning]

Joint NRC/RES – EPRI effort that documents the verification and validation of five fire models to support NFPA 805 implementation. [May 2007]

World-class experts discuss model capabilities for resolving fire safety issues to provide insights that will help guide the NRC's future fire safety research

Provide detailed understanding of the uses and limitations of select fire models

Collect real-scale data on electrical cable failure during fires, to further validate the CAROLFIRE implemented THIEF sub-model. [Report Summer 2009]

Data provides resolution of RIS 2004-03 "Bin 2 Items" and fire model

Develop Spurious Actuation Probabilities to supplement expert panel results

FIRE RESEARCH KNOWLEDGE CAPTURE

COLLABORATION WITH EXTERNAL COUNTERPARTS:

Fire Research Branch collaborative partners include the Electric Power Research Institute (EPRI), National Institute of Standards and Technology (NIST), Sandia National Laboratory (SNL), and University of Maryland (UMD).





OFFICE OF NUCLEAR **REGULATORY RESEARCH**

FIRE PROBABALISTIC RISK ASSESSMENT & HUMAN RELIABILITY ANALYSIS

NUREG/CR-6850 – Fire PRA Methodology

Describes the process and bases for the performance of a Fire PRA [September 2005]

• NUREG-1852 – Operator Manual Actions In Response to a Fire

Evaluates the feasibility and reliability of post-fire operator manual actions [October 2007]

• NFPA 805 - Performance-Based Standard for Fire Protection for Light Water Reactors

NRC/RES is providing pilot plant observation visit support and Frequently Asked Question Forum support. 42 NPP units (27 sites) have submitted letters of intent to transition to NFPA 805 via 10 CFR 50.48(c). [On-going]

• Fire Human Reliability Analysis

Developing a methodology and associated guidance for performing quantitative human reliability analysis for post-fire mitigative human actions modeled in a fire PRA. [Draft Report Early 2009]

Older NRC fire-related technical reports were not available in electronic format

 Identified, organized and made over 400 fire research documents available to the public in electronic format and designed a navigable excel program that allows the user to quickly find the needed document. [Introduced at RIC 2008]

Document will be maintained and updated when new documents become available