COMMISSION BRIEFING SLIDES/EXHIBITS

BRIEFING ON FIRE PROTECTION

JULY 17, 2008

Nuclear Regulatory Commission
Briefing on
Fire Protection

July 17, 2008
Mr. Richard A. Muench
President and CEO
Wolf Creek Nuclear Operating Corporation

Discussion Topics

- **Operator Manual Actions**
- **Fire Induced Circuit Failures**
- **NFPA 805 Transition**

Operator Manual Actions

- Licensees working to complete corrective actions by March of 2009
- NFPA 805 transition and resolution of fire induced multiple spurious circuit failure issue impacts resolution of many operator manual action items

Fire Induced Circuit Failures

- **Status**
  - **Agreement on conceptual approach**
  - **Implementation details addressed in future meetings**
- **Use of risk to address associated circuit issues without exemption or LAR must be included**

Fire Induced Circuit Failures

- Industry / NRC meetings will continue
- Industry actions in the interim
  - Developing implementation details
  - Guiding use of risk insights for resolution of issues
  - Preparing draft revision to industry guidance
- Goal – receive NRC endorsement

Fire Induced Circuit Failures

- **Use of risk to address fire induced circuit failures in associated circuits**
  - **Regulations do not prohibit**
  - **Use of risk is consistent with the Commission's Policy Statement on use of PRA (60FR42622)**
- **Failure to allow could result in**
  - **actions that could raise overall plant risk,**
  - **need for new exemptions or LAR's and/or**
  - **costly modifications for low risk and low safety significance items**

NFPA 805 Transition

- Pilot plants (Oconee and Harris) license amendment requests submitted
- Activities necessary to enhance regulatory certainty
  - Refinement of LAR template
  - Resolve PRA issues
  - Minimize requests for additional information

Fire PRA

- **Fire PRA is a challenge**
  - **Preliminary results are conservative**
  - **Goal in PRA is to be more realistic**
- **Industry and NRC Staff addressing items seen as main contributors to conservatism**
- **Goal is to resolve by late 2008**

NFPA 805 Enforcement Discretion

- Extension to enforcement discretion is important
  - Limited qualified resources
  - Incorporate lessons learned from pilot plants
  - Assure consistent licensing bases
- Near term Commission decision requested

Acronyms

- **NFPA** National Fire Protection Association
- **LAR** License Amendment Request
- **PRA** Probability Risk Assessment

NFPA 805
Lessons Learned
Shearon Harris Nuclear Plant

July 17, 2008

Joe Donahue
Vice President Engineering

NGG Nuclear Generation Group

Progress Energy

Fire Protection Defense In Depth

- Prevent Fires
- Prompt Detection Of Fires
- Prompt Control and Suppression Of Fires
- Separation Of Safety Systems

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Fire PRA Implementation

- Extensive Walkdowns Identified Potential Fire Sources
- 4000+ Fire Scenarios Evaluated
- NRC Team Review
- Industry Expert Peer Review

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Fire PRA Implementation

- Fire PRA Is Acceptable For Use
- Other Inputs are Used for Decision Making
- Process Improvements Provided To NRC and Industry

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Harris NFPA 805 Fire Protection

- Implements classical requirements
- Implements nuclear safety performance criteria
- Addresses fire safety during non-power operations
- License amendment request submitted
- Transition resources were greater than originally estimated

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Generic Issues Addressed

- Hemyc/MT Fire Wrap Qualification
- Operator Manual Actions
- Multiple Spurious Operations

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Harris Physical Plant Changes

- New Cable Raceway Wrap
- New Fire Rated Cable
- Upgrades To Hemyc/Mt Wrap
- Additional Equipment Separation
- Additional Incipient Fire Detection In Critical Electrical Panels

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Summary

- Transition To NFPA 805 Is Improving Fire Protection Program
  - Resolution Of Generic Fire Protection Issues
  - Physical Plant Modifications Already Completed
  - Additional Modifications Being Implemented

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Summary

- NFPA 805 License Amendment Request Submitted
- On Track To Complete Implementation By End Of 2010

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NFPA 805
Lessons Learned
Oconee Nuclear Station

July 17, 2008

David Baxter
Site Vice President

Duke Energy®

NFPA 805 Lessons

- Oconee showed that NFPA 805 is an excellent fit for the older nuclear stations.
- A good solid Safe Shutdown Analysis documenting deviations with Fire Regulations should be in place to start transition

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NFPA 805 Lessons

- The pilot process was very complicated, time consuming and expensive.
- Document and calculation reviews took much longer than expected due to new program.

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NFPA 805 Lessons

- Oconee required separate Fire PRA models.
- NUREG-6850 turned out to be somewhat conservative, but provided a good foundation to build on.

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NFPA 805 Lessons

- Although further tuning is planned, the Fire PRA's models realistically modeled the plant.
- The process of transition is very man-power intensive

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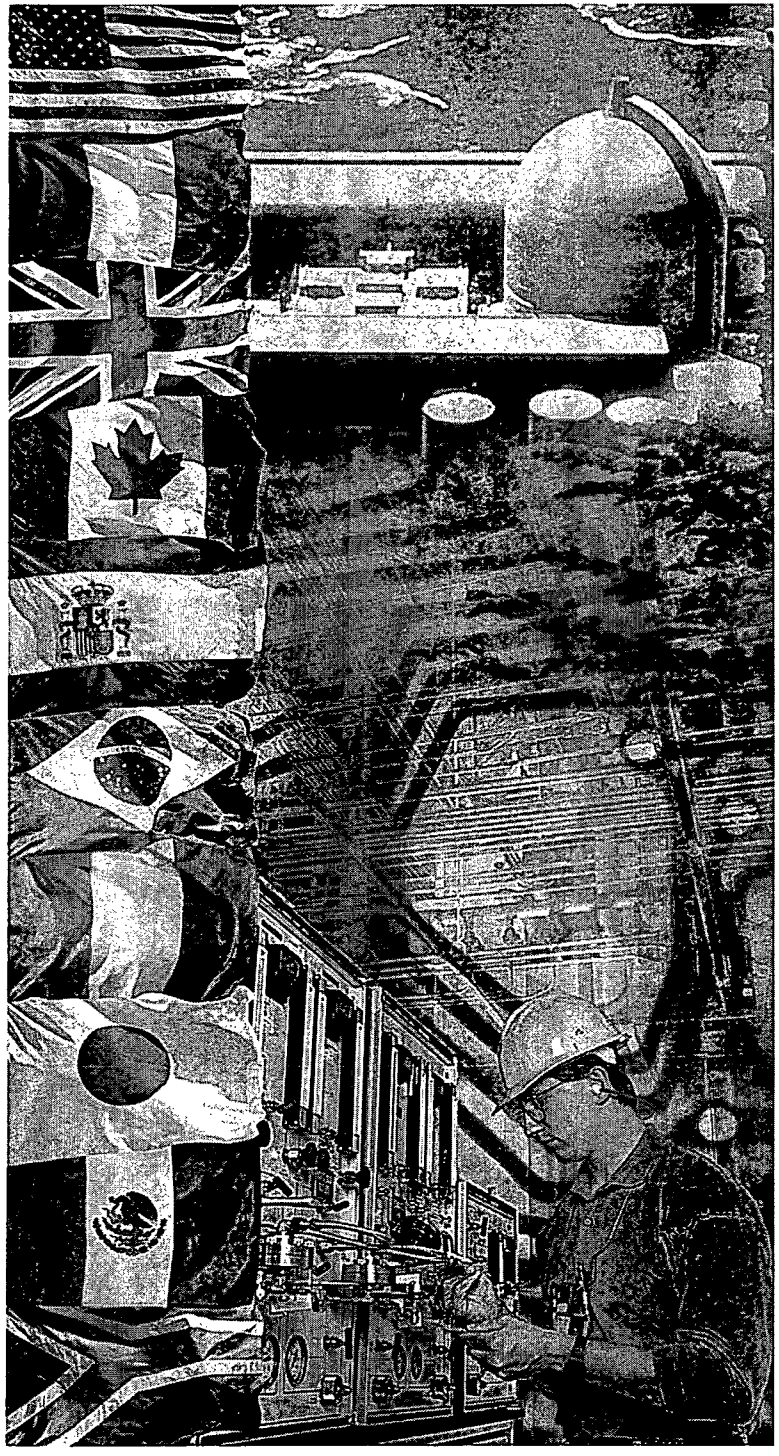

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

BRIEFING ON FIRE PROTECTION ISSUES

Ken Canavan
Senior Program Manager
Risk and Safety Management
July 2008

EPRI Fire PRA Philosophy

- Consistent with the PRA Policy Statement
  - "Use of the PRA technology should be increased in all regulatory matters to the extent supported by the state of the art …"
- Committed to supporting a risk-informed, performance based approach to fire protection
  - Realistic methods
  - Realistic input
  - Monitoring and feedback process

Fire PRA Methodology Development

- NUREG/CR-6850 is guidance for developing a Fire PRA
  - NRC–RES / EPRI collaboration (EPRI 1011989)
  - Only pieces piloted (initially)
- Two Fire PRA Pilots
  - Initial results are conservative
  - Not unexpected
  - Result of individual minor to moderate conservatisms

Fire PRA Methodology Issues

- Fire Ignition Frequencies
- Credit for Incipient Detection
- Treatment of Large Oil Fires
- Fire Growth and Propagation Models
- Credit for Fire Suppression
- Hot Short Susceptibility, Probability and Duration
- High Energy Arching Faults
- Cable Tray Fire Modeling

Other Issues, Progress and Challenges

- Other Issues
  - Shortage of Trained Risk Personnel
  - Practical modeling limitations
- Progress
  - Education of Risk Professionals and Fire PRA Methods Training
  - EPRI / NRC–RES working to refine Fire PRA methods
- Challenges
  - Available resources
  - Time constraints

U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Commission Briefing on Fire Protection Issues

July 17, 2008

Agenda

- **Introduction**
  - **Jack Grobe, NRR**
- **Current Issues**
  - **Mark Cunningham, NRR**
- **Summary**
  - **Jack Grobe, NRR**

Introduction

- Fire protection at operating reactors
- Steering Committee activities
- Remaining issues
  - Fire barrier performance
  - Operator manual actions
  - Fire-induced circuit failures
  - Implementation of NFPA 805

Fire Barrier Performance

- Protection of electrical equipment required
- Inspections and research identified deficiencies
- Actions were taken
- Documenting closure

Operator Manual Actions

- **Inspections identified inconsistencies**
  - **RIS 2006-10 clarified regulatory positions**
- **Completing closure**
  - **Plant-specific resolution**
  - **Staff follow up**

Fire-Induced Circuit Failures

- SECY-08-0093 provides approach
  - Methods for protecting safe shutdown capability
  - Enforcement discretion proposal
- Achieving closure
  - Finalize and implement guidance
  - Complete direct current circuits research
  - Implementing closure plan

NFPA 805 Implementation

- Alternative approach
  - Risk informed
  - Performance based
- 47 units committed to transition
- Pilot plant license amendments under acceptance review

NFPA 805 Implementation

- Infrastructure being finalized
  - Technical methods and standards
  - Regulatory Guidance
  - Resource planning and allocation
  - Communications

NFPA 805 Implementation

- Implementing closure plan
  - Finalize guidance
  - Standardize review process
  - Share lessons learned
  - Receive and review amendments
  - Licensees implement changes
  - Staff inspects implementation

Summary

- **Maintain a stable and predictable regulatory environment**
- **Communicate with licensees and public**