RIC 2011
Regulatory and Industry Perspectives on the Resolution of Fire Protection Issues:
Harris Nuclear Plant Transition to NFPA 805

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NFPA 805 Transition Perspectives Discussion Topics

- Harris Transition Results
- Post Transition Fire Protection (FP) Program
- Remaining Challenges
- Summary of Benefits

NFPA 805 Transition Results Harris Status

- 2010
  - Safety Evaluation (SE) Received June 28
  - Program Implemented September 3
  - SE Outstanding Items Completed by December 24
  - Modifications Completed by December 31
- Triennial Inspection 3Q 2011
- Harris Transition Project Closeout 2011

NFPA 805 Transition Results Compliance Modifications

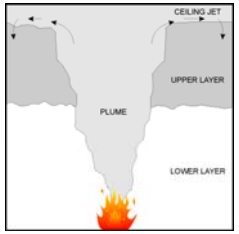
- Most Important for Risk Reduction at Harris
  - Alternate Seal Injection Pump and Diesel Generator
  - Meggit Cable
  - Incipient Detection
  - Hemyc Upgrades
  - Thermal Shields
- Internal Events Risk Reduction
  - 1.7E-06/yr CDF and 9.0E-08/yr LERF

NFPA 805 Transition Results Fire Watches Cleared

- Operator Manual Actions (OMAs) Addressed
  - Fewer Actions Needed
  - Many are Now for Defense in Depth
- Fire Induced Multiple Spurious Operations (MSOs)
  - Addressed as Part of NFPA 805 Analysis Process
- Hemyc Cable Fire Wrap Addressed
  - Limited Upgrades Required
- IN 92-18 Resolved – Spurious MOVs
  - Addressed as Part of NFPA 805 Analysis Process

Post Transition Program Performance Based Approach

Now address potential fires on a case by case basis
Prevention program focuses on ignition sources & targets



Post Transition Program
Integration of PRA/SSA/Classical FP

- Primary Technical Elements:
  - Classical Fire Protection
    - ✓ Including Fire Modeling
    - ✓ Rad Release During Fire Fighting
  - Safe Shutdown Analysis (SSA)
    - ✓ Includes MSO / Circuit Analysis
    - ✓ Non Power Operations (NPO)
  - Fire Probabilistic Risk Analysis (FPRA)

Post Transition Program
Non Power Operations

- Fire Evaluation While the Plant is Shutdown
  - Emphasis on Periods when High Risk Evolutions are in Progress.
  - Possible Loss of Key Safety Functions (KSF)
  - Identify Fire Areas Where a KSF May be Lost (i.e. “pinch point” created)
  - Qualitative Analysis
- Compensatory Measures for Important Pre-defined Equipment Configurations

Post Transition Program
Monitoring

- Harris used an Expert Panel Process Similar to Maintenance Rule
- NFPA 805 Required SSCs Periodically Tested
- FP Systems and Features Important in the Analysis have Performance Goals Applied
  - Incipient Detection Systems, Early Warning Systems
  - Automatic and Manual Suppression Systems
  - Passive Barriers including Selected Doors, Dampers, and Drains
  - Programmatic Elements such as Transient Combustible Program, Fire Brigade (FB) Response Time

Post Transition Program Compensatory Measures

- Under NFPA 805 Program
  - Applied to "Required Systems" (from LAR/SE)
  - Tiered Approach Depending on Importance of Impairment
  - Risk Informed via Monitoring Scoping Data
  - Reduction of Burden

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Post Transition Program Revised License Condition in Place

- Fire Protection License Condition Replaced under NFPA 805 for Plant Changes
- Risk Informed Metrics include:
  - ΔCDF and ΔLERF
  - Fire Protection Defense and Depth
- Process Uses Graded Approach to Involve Level of Evaluation Needed
- Evaluation Resources Can be Classical FP, SSA, and/or Fire PRA

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Remaining Challenges Post Transition

- Incorporating Fire PRA Methodology Updates
  - Metrics to Evaluate Impact on FP Program
- Inspection Process
  - NRC Pilot Inspection Procedure Expected Soon
- Timely Review of LARs and Issuance of SEs

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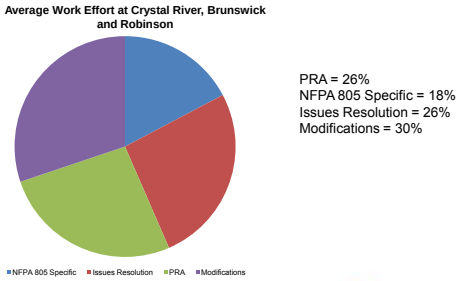
Remaining Challenges
Complete LARs Rest of PE Plants



PRA = 26%
NFPA 805 Specific = 18%
Issues Resolution = 26%
Modifications = 30%

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NFPA 805 Transition
Summary of Benefits

- Significant Risk Improvements
- Specific Fire Scenarios Evaluated
- Compliance Issues Resolved
  - Operator Manual Actions
  - Fire Induced Multiple Spurious Operations
  - Hemyc/MT Cable Fire Wrap
  - IN 92-18, MOV Performance
  - First Plant in Country to Resolve These Issues

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Acronyms

- PRA – Probabilistic Risk Analysis
- SSA – Safe Shutdown Analysis
- SE – Safety Evaluation
- OMA – Operator Manual Actions
- MOV – Motor Operated Valves
- MSO – Multiple Spurious Operations
- LAR – License Amendment Request
- IN 92-18 – Notice to Ensure Survivability of MOVs Susceptible to Spurious Actuation

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Acronyms

- IMPL – Implementation
- PRAI – Internal Events PRA
- PRAC - Classical Input to PRA
- PRAN – Electrical/Cable Input to PRA
- PRAF – Fire PRA Analysis
- SSC – Structures, Systems and Components
- CDF – Core Damage Frequency
- LERF – Large Early Release Frequency
- NSP – Non Suppression Probability