NFPA 805 Implementation

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Duke Energy Nuclear Generation
NFPA 805
Fire Protection Program

Duke Energy Status

- Entire Duke Operating Fleet Adopting 50.48(c) – NFPA 805
- Harris and Oconee were pilot plants for NFPA 805
  - Harris effectively implemented NFPA 805
  - Oconee implementation still in progress
- Brunswick submitted NFPA 805 License Amendment Request (LAR) in September 25, 2012
- Robinson, Catawba, McGuire submitted NFPA 805 LARs in September 2013

Transition Experience

- Resource intensive LAR preparation and Request for Additional Information (RAI) process
  - Fire PRA is driving factor relative to cost and schedule

- Teaching plant to think differently about fire
  - Enhanced knowledge of fire scenarios and the impact to the plant
  - Recognize significance of fire risk to the overall risk to the plant

Implementation Experience

- More comprehensive understanding of the physical plant
  - Documentation of cable routings
  - Realistic fire scenarios versus whole room burn up “insights”
  - Plant response to fires

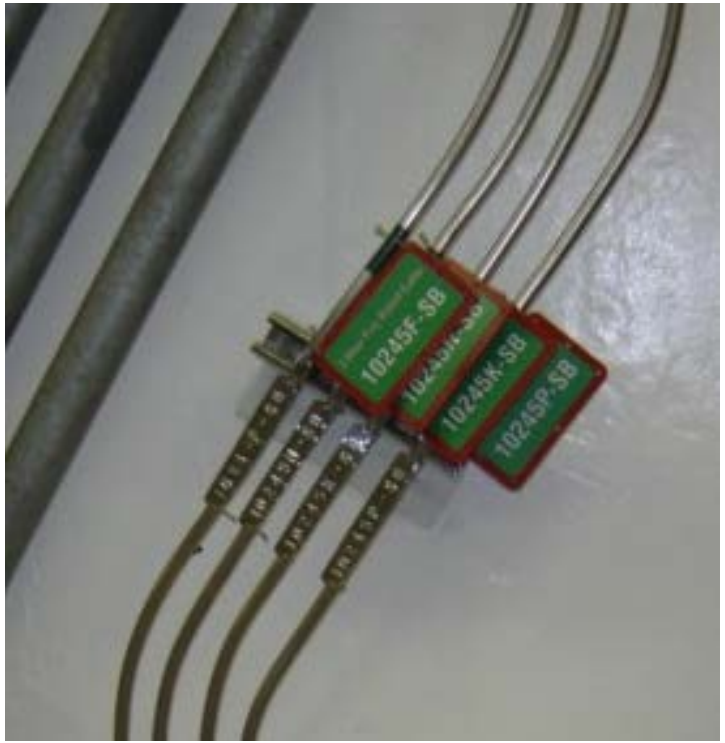
- At Harris and Oconee, we are managing the specific fire scenarios and its impact to the plant

Safety Improvements

- NFPA 805 Modifications – Incipient Detection

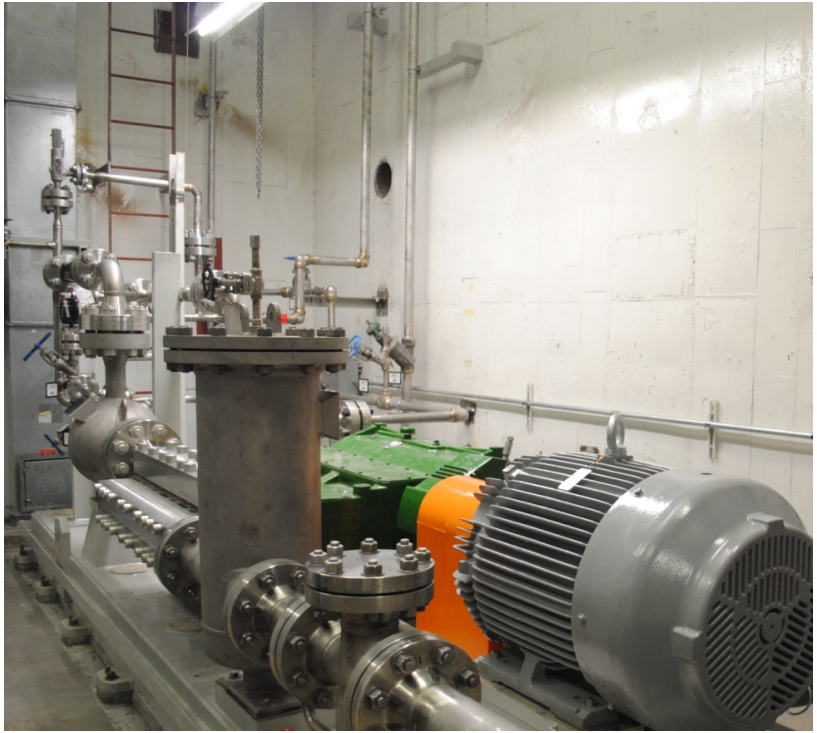
Safety Improvements

- NFPA 805 Modifications – 3-hour Cable



Safety Improvements

- NFPA 805 Modifications – Alternate Seal Injection System for Reactor Coolant Pump Seals



Safety Improvements

- Addressed Multiple Spurious Operations (MSOs)
  - MSOs were modeled and treated as Variances from Deterministic Requirements (VFDRs)
    - Disposition of most VFDRs using the performance based approach
- Reduction in the number of manual actions required by an operator during a fire event

Program Maintenance

- More Informed Maintenance of the Fire Protection Program
  - Fire Protection Program Change Process
  - Transient Combustibles
  - Abnormal Operating Procedures
  - Compensatory Measures
  - NFPA 805 Monitoring

Mutual Fire Protection Insights

- Management of Plant Changes
  - Insights from fire scenarios are used during development of plant modifications
- Transient Combustible Control Program Improvements
  - Control of stand-off distances from plant equipment

Challenges Moving Forward

- Consistent program implementation throughout the industry
- Understanding that NFPA 805 is risk informed, not risk based
- Continual improvement of the processes
  - NRC Frequently Asked Questions (FAQ) process
  - Memorandum of Understanding (MOU)
  - Industry Benchmarking and Lessons Learned
  - Sharing lessons learned from the NRC inspection process
- Conservatisms in the fire PRA may result in unintended consequences when combined with other PRAs (internal events, seismic, flooding)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