NFPA 805
Regulatory Infrastructure

NEI NFPA 805 Workshop

March 24, 2009

Margaret Stambaugh, Engineer

Division of Risk Assessment

U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Infrastructure Topics

- **SRP Section 9.5.1.2 and RG 1.205 Revision 1**
  - Framework
  - Specific Technical Topics
- **Inspection Procedures**
- **Schedule**
- **Summary**

The SRP at 10,000'

- **Standard Review Plan (SRP) Section 9.5.1.2**
  - "Risk-informed, Performance-based Fire Protection Program"
  - Applies to existing nuclear power plants transitioning to a 10 CFR 50.48(c) licensing basis
  - As practical, the structure of Section 9.5.1.2 correlates with the draft SER Template.

The RG at 10,000'

- **Regulatory Guide (RG) 1.205, Revision 1**
  - "Risk-informed, Performance-based Fire Protection Program for Existing Light-water Nuclear Power Plants"
  - Rev 1 endorses, with exceptions, NEI 04-02 Revision 2
  - Revisions were made to incorporate lessons learned from pilot plant LAR reviews
  - As practical, the structure of the RG is consistent with NEI 04-02 and NFPA 805.

Guidance Framework

- **The content of the SRP and the RG are in agreement.**
- **NRR will pursue an expedited schedule to finalize both documents by December, 2009.**

Key Revisions to RG 1.205

Changes to Improve Clarity and Regulatory Stability

- License condition
- Guidance on self approval of changes
- Guidance on transitioning recovery actions
- Definition of primary control station
- Guidance on carrying over existing exemptions

Transition and Implementation

SRP Section III.3.1

- **The staff will ensure that the licensee used a systematic process to transition the post-fire safe-shutdown analysis to the new requirements in Chapter 2 of NFPA 805.**
  - Section 1.5 of NFPA 805 establishes nuclear safety performance criteria.
  - Chapter 4 of NFPA 805 provides the methodology to determine the fire protection systems and features required to achieve the performance criteria outlined in Section 1.5.
- **The LAR should clearly define how the nuclear safety performance criteria are to be met.**
- **The LAR should include a schedule for full implementation of NFPA 805.**

Plant Modifications

SRP Section III.1.2

- **LAR should include a clear definition of any plant modifications necessary to implement the RI/PB FPP (these will be listed in the license condition)**
  - A description of the modification
  - The schedule for implementation
  - Justification for the schedule
  - A commitment to maintain compensatory measures in effect until the modification is completed.
- **Note: Regulatory Issue Summary (RIS) 2005-07, "Compensatory Measures to Satisfy the Fire Protection Program Requirements," dated April 19, 2005, provides guidance on compensatory measures acceptable to the NRC**

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

SRP Section III.3.2

Compliance by Fire Area

The NRC staff will:

- **Ensure that each fire area has been evaluated and determined to comply with the requirements of NFPA 805**
- **Verify that each fire area either:**
  - Meets NFPA 805 paragraph 4.2.3 deterministic requirements
  - Employs performance-based methods NFPA 805 paragraph 4.2.4, or
  - Employs risk-informed or performance-based alternatives to compliance with NFPA 805 pursuant to 10 CFR 50.48(c)(4)
- **Ensure that the appropriate risk assessments and plant change evaluations have been performed for each fire area, as necessary, and that the results are acceptable.**

Carryover of Appendix R Exemptions

- **Existing exemptions may be used to:**
  - Show previous approval for alternatives to the fundamental FPP attributes of NFPA 805 Chapter 3
  - Demonstrate equivalent level of fire protection per NFPA 805 Section 2.2.7 compared to the deterministic requirements of Section 4.2.3
    - These cannot involve recovery actions
- **The exemption must remain *valid***
- **NRC will ordinarily rescind the original Appendix R exemption as it is obsolete in the new the licensing basis**
- **Exemptions involving recovery actions may be transitioned to the NFPA 805 licensing basis by performing a Chapter 4 evaluation (4.2.4)**

SRP Section III.1.3

Self-Approval of FPP Changes

- **A plant change evaluation is required for any change to the approved FPP and shall assess the impact of the change on risk, defense-in-depth, and safety margins.**
- **The NRC staff will review the licensee's process for self-approving changes**
  - Limited to methods that NRC approves via license amendment.
  - Combined changes: each individual change must meet the delta risk criteria
- **License condition will include a risk acceptance criteria for plant changes**
  - For example: 1E-7/yr delta CDF; 1E-8/yr delta LERF
- **Non-risk informed acceptance criteria – pending FAQ-8**

Recovery Actions

- **Defined in 805: Actions that take place outside the main control room or primary control station that are necessary to achieve nuclear safety performance criteria**
- **Additional risk presented by use of recovery actions shall be evaluated**
- **Evaluation may be either:**
  - Qualitative (e.g., NFPA 805 4.2.4.1)
  - Quantitative (e.g., NFPA 805 4.2.4.2)
- **Bounding risk assessment is acceptable**

Primary Control Station

- Too broad of an application of “primary control station” can prevent the identification of risk-significant recovery actions
- Action to transfer to the panel, including diagnosis, is a recovery action

Other Considerations

SRP Section III.3.3

Non-Power Operational Modes

- The staff will review the licensee's treatment of fires during non-power operations

SRP Section III.4

Radioactive Release Performance Criteria

- The LAR should document that radiation release to any unrestricted area due to the direct effects of fire protection activities remains as low as reasonably achievable

Risk Assessments and Plant Change Evaluations

- **Risk assessments are to be performed for plant change evaluations, additional risk associated with recovery actions, and fire risk evaluations.**
- **The LAR should provide an evaluation of the technical adequacy of the fire PRA model.**
  - A process for maintenance and updating of the PRA model, as appropriate
  - Clear definition of the base model used for plant change evaluations required to transition to a RI/PB FPP and clear definition of any types of changes the licensee will be allowed to self-approve after implementation of the approved RI/PB FPP
  - Capability Category II is generally acceptable for PRA Standard "supporting requirements" important to the NFPA 805 risk assessments.

Cumulative Risk and Grouping

- **Accumulation of Risk**
  - To transition, the cumulative risk is the total risk of transition
  - In the long term, cumulative plant change evaluations should be compared to the plant configuration modeled immediately after transition (as built, as operated and maintained)
- **Risk of Grouped Plant Changes**
  - Two risk evaluations required: individual plant change and the combined change
  - Risk increases may be grouped with decreases

Inspection Infrastructure Tasks

- **Finalize NFPA 805 Inspection Procedures**
  - Quarterly/Annual
  - Triennial/Annual
  - NFPA 805 Transition Period Triennial – lessons learned
- **Revise inspector qualification plans (resident and region)**
- **Finalize inspector qualification training material**
- **Pilot application of NFPA 805 inspection procedures**

Schedule

- **Out for public comment**
  - SRP: February 5, 2009
  - RG: March, 2009

Comments requested by:

- SRP: April 6, 2009
- RG: May, 2009

- **Public meeting planned in April, 2009, to engage stakeholders**
- **Estimate final SRP and RG by 12/2009**
- **SER template under development**
  - Estimated completion date: Second Quarter, 2009

Summary

- **Revision to RG 1.205 aims to improve clarity and regulatory stability**
- **SRP 9.5.1.2 agrees with the revised RG**
- **Regulatory infrastructure improvements result from:**
  - Lessons learned from review of Shearon Harris and Oconee LARs used to refine tools for NRR, Regions, and Licensees, and
  - FAQ process of resolving technical issues