

# NFPA 805 OBSERVATION VISIT TRIP REPORT

**Date:** March 27-30, 2006

**Location:** Progress Energy Headquarters, Raleigh, North Carolina

**Attendees:** Representatives from the following organizations attended the meetings:

Duke Power	NRC Headquarters
Progress Energy	NRC Region II
Nuclear Energy Institute (NEI)	Pacific Northwest National Laboratory
Florida Power & Light	ERIN Engineering and Research Inc.
Kleinsorg Group	Appendix R Solutions

**Subject:** Risk-Informed, Performance-Based Fire Protection Transition Pilot-Plant Observation Visit - Harris Nuclear Plant and Oconee Nuclear Station

**Agenda:** See Enclosure 1

## **Summary:**

Nuclear Regulatory Commission (NRC) transition pilot plant observation visits for implementation of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(c) was held with representatives from Progress Energy and Duke Power at Progress Energy headquarters in Raleigh, North Carolina. Other utility and industry representatives were also present to observe the proceedings. Progress Energy and Duke Power presented the current status for their respective transition projects and specific topics related to 10 CFR 50.48(c) implementation. The topics of discussion are identified in the meeting agenda, which is included as Enclosure 1 to this report.

The meeting participants raised issues during the observation visits that are documented in Issue Summary Sheets included as Enclosure 2 to this report. These summary sheets are derived from the "parking lot" items (Enclosure 3) that are being documented and tracked by industry as part of the pilot-plant observation visits. The parking lot issues involve needs for clarification to the implementing guidance documents as well as regulatory and licensing issues requiring further evaluation by the staff or licensees to determine possible resolutions to be discussed at future meetings. Considerable discussion was held during the meeting to identify a means of getting NRC input or feedback on a number of these issues as implementation progresses. A Frequently Asked Question (FAQ) process was discussed as a possible means of providing this feedback.

The Issue Summary Sheets were developed by the NRC staff to provide additional detail and clarification of the industry parking lot items and to compile related or similar items into a single issue summary. The summary sheets provide, (1) a description of issue that have been identified; (2) the associated parking lot item(s); (3) the actions assigned or taken to resolve the issue; (4) reference to any Frequently Asked Questions (FAQs); and (5) lessons learned, as appropriate.

## **General Discussion:**

The general objective of the observation visits are to facilitate communications between NRC staff and the pilot plant licensees adopting 10 CFR 50.48(c) in order to: (1) gain experience with plant specific application of risk-informed, performance-based methods, including validation of the approach and methods of Nuclear Energy Institute (NEI) NEI 04-02, and Regulatory Guide 1.205; (2) identify regulatory and licensing issues that may impact implementation; and (3) identify improvements and lessons learned to be considered in future revisions and applications of the implementing guidance, methods, and future inspection procedures and inspector training.

This trip supported the NRC observation visit for on-going pilot-plant activities by Progress Energy and Duke Power involving the transition from their current fire protection programs to a risk-informed, performance-based fire protection program that meets 10 CFR 50.48(c) and NFPA 805, as endorsed therein.

Progress Energy's Harris Nuclear Plant (HNP) and Duke Power's Oconee Nuclear Station (ONS) are the (currently) designated pilot plants for 10 CFR 50.48(c) implementation. Both utilities had representatives at the meeting to present their respective transition project status and to present information on specific topics as identified in the attached agenda. The topics covered are works-in-progress and do not represent final analyses, processes, or procedures. The presentations are listed in the Handout References at the end of this report.

## **Project Status:**

Agenda Topic 2, HNP Project Status and goals of this meeting (Handout Reference 1): Progress Energy's provided transition status for the Harris Nuclear Plant (HNP). Current and near-term (i.e., next 6-months) activities include continued work on safe shutdown analysis transition; NFPA 805, Chapter 3 transition tasks; fire PRA ignition source walk downs and component selections; internal events gap assessment; and establishing fire protection program quality assurance interface with fire PRA quality requirements; and NRC Generic Letter responses. The current schedule indicates HNP transition completion in mid-2009.

Agenda Topic 3, Oconee Project Status and Meeting Goals (Handout Reference 2): Duke Power's transition status of the Oconee Nuclear Station (ONS). The completion of the fire PRA continues to be the critical path. Current and near term activities include safe shutdown analysis reconstitution and transition; non-power operational mode transition tasks; continuing fire PRA development tasks; armored cable testing; NFPA 805 Chapter 3 transition tasks; transient analysis; and manual action feasibility evaluation. The transition of ONS is currently scheduled to be complete by the first part of 2007.

## **Specific Meeting Topics:**

Meeting topics are listed in Enclosure 1 and the associated handouts are listed in the "Handout References" section of this report and included as Enclosure 4. This section of the trip report summarizes the specific meeting topics that resulted in identification of new parking lot issues, lessons learned, or other information that has the potential to impact regulatory or industry processes or guidance for implementation of NFPA 805. Issue Summary Sheets

associated with the agenda topics are identified by number and included in Enclosure 2:

Agenda Topic 3, Oconee Project Status and Meeting Goals (Handout Reference 2): In discussion of the transition status specific to nuclear safety performance criteria, Duke has determined that the tabular method of NEI 04-02, Appendix B, may not be the most effective means of communicating the transition methodology and the methodology would be better communicated in separate guidance. The need to provide an alternative method for NEI 04-02 is documented as **Issue Summary Sheet No. 16**.

Agenda Topic 4, NRC Status and Goals of the Meeting: NRC staff presented the status of Regulatory Guide 1.205, including final changes. Section 3.2.6 of the Regulatory Guide provides clarification on the treatment of cumulative risk associated with plant changes and specifically addresses the treatment of risk reduction for plant changes related to the fire protection program and changes unrelated to the program. The use of risk reductions from unrelated changes to offset risk attributable to the fire protection program requires NRC approval. Considerable discussion was held as to what constitutes “related” and “unrelated” changes. The need for additional definition and examples of related and unrelated changes for transition and post-transition change analysis is documented as **Issue Summary Sheet No. 13 & 19**.

Agenda Topic 5, Status Open Items List/NEI 04-02 Rev. 2 Impacts: The parking lot list from the November 2005, observation meeting was reviewed. The NRC staff presented information related to the NRC assigned issues, including approach to treating cumulative changes to risk and concerns over incremental risk impacts that are acceptable as individual changes but not as cumulative changes. Possible solutions were discussed and an action to revise NEI 04-02 to include additional guidance is documented as **Issue Summary Sheets No. 13 & 19**.

In response to an action assigned in the November 2005 observation meeting for Parking Lot Item No. 1, the NRC presented a flow chart illustrating an approach to treating inspector identified multiple spurious operations in the Reactor Oversight Process (ROP). This presentation closed the NRC action on this item by conveying the staff’s position to industry for their consideration and feedback at the next meeting. **Issue Summary Sheet No. 1** provides additional discussion on this topic.

Agenda Topic 6a, Duke: Fire PRA Technical Discussion (Handout Reference 3): Duke presented information on the progress of the fire probabilistic risk assessment (PRA) activities and a refresher on the approach to evaluating multiple spurious operations. As part of the PRA development effort, safe shutdown and PRA component lists are being compared and reconciled. Lessons learned from this activity include the need for safe shutdown and PRA resources to come together early in the process to take advantage of previous work done by each group and to standardize process and nomenclature to the extent possible to minimize confusion and rework. Other concerns presented involved being the lead plant in developing a fire PRA to draft standards and one of the first to apply NUREG/CR-6850. The ANS PRA standard will not likely be approved prior to transition completion and plant differences (e.g., armored cable) may limit the applicability of the Duke approach to other plants. (Also see Agenda Topic 7d discussion on peer review)

Agenda Topic 6b, Duke: Non-Power Transition (Handout Reference 4): Duke staff presented their approach to non-power operations transition, which includes identification of structures, systems, and components associated with key safety functions associated with high risk evolutions. Fire risk is managed by integrating fire protection with established shutdown risk planning and management processes. Discussions identified the need to revise NEI 04-02, Appendix I to include change evaluation guidance specific to non-power operational modes. This need is documented as **Issue Summary Sheet No. 6**.

Agenda Topic 6c, Duke: Multiple Spurious Expert Panel (Handout Reference 5): Expert panel elicitation is one element of the Duke approach to identifying risk significant multiple spurious operations. Duke staff presented the results of this process for Oconee, which identified additional scenarios to be investigated and action requiring further investigation. The lessons learned are described in the handout.

Agenda Topic 7d, Progress Energy: Fire Protection QA Under NFPA 805 (Handout Reference 9): Progress Energy staff presented their approach to applying quality requirements to the fire protection program and the PRA elements that interface with the program. The potential impacts of internal events model changes on the fire PRA and previous change evaluations were discussed. The means of addressing model changes and associated impacts will be further evaluated in the pilot plant effort. Also of concern was the process and documentation for the “in progress” PRA peer review approach that is being applied to the pilot plants. This is documented as **Issue Summary Sheet No. 5**.

Agenda Topic 8, Fire Protection Program Change Process (Handout Reference 10): This topic involved a presentation on the NFPA 805 change process and specifically changes to the guidance in NEI 04-02 and Regulatory Guide 1.205, as well as, treatment of cumulative risk, treatment in risk analysis of related and unrelated changes ( see also Agenda Topic 4), pre-approved/self approved changes, and non-power mode change evaluations. Included in the discussion of pre-approval/self approval was the need to have a method similar to that currently applied under Generic Letter 86-10 for engineering evaluations particularly with regard to NFPA 805, Chapter 3 transition. This method may be included in an license amendment request (LAR). Considerable discussion was held with regard to the different risk thresholds proposed in NEI 04-02, Regulatory Guide 1.205, and Regulatory Guide 1.174 and the need to reconcile these values. This issue is documented as **Issue Summary Sheet No. 17**. **Issue Summary Sheet No. 18** was created to address the need to better define what constitutes a change to the fire protection program, and specifically, how to treat PRA model updates.

Agenda Topic 9 (out of order on agenda), NRC/PE: Feedback process and Needs of Pilot Plants: Some of the identified parking lot issues involve clarifications to current guidance and will be incorporated in the next revision of NEI 04-02. Others will require further evaluation on the part of the industry and/or NRC staff to identify possible resolutions to be discussed at the next meeting or in future revisions to NEI 04-02 or the Regulatory Guide. The Regulatory Guide will endorse Revision 1 of NEI 04-02. The need to revise to NEI 04-02 to address parking lot issues and other needed changes identified during transition implementation requires a process be developed to address these interim changes pending future revision of the Regulatory Guide to endorse the updated NEI 04-02. Considerable discussion was held between the industry representatives and NRC staff with regard to establishing this process.

Progress Energy staff presented the frequently asked question (FAQ) process as a possible approach of obtaining NRC feedback on specific issues and interim changes to NEI 04-02 that are developed in response to implementation lessons learned or observation meeting input. The FAQ responses would reduce the uncertainty to the industry associated with implementing interim changes to NEI 04-02 pending revision of the Regulatory Guide to endorse the revised implementing guide. The purposes of the proposed FAQ process would be:

- To clarify the guidance for circumstances not anticipated when the current revision of NEI 04-02 was endorsed.
- To clarify the guidance when the licensee and NRC staff do not agree on the meaning or how to apply the guidance to a particular situation.
- To provide guidance for a class of plants whose design or system functions differ from that described in the guidance.
- Proposed changes to the guidance.

Additional items of discussion included:

- Questions were raised about security issues related to the FAQs.
- Discussed that the FAQs should be considered 'interim changes' to NEI 04-02.
- Discussion was held on the feedback loop for proposed changes to NUREG/CR-6850. It was agreed that the Pilot Plants would try to use the FAQ process to get proposed changes to NUREG/CR-6850 identified.

The NRC staff recommended that, in the interim of developing a process specific to NFPA 805 implementation issues, the issues or proposed changes to NEI 04-02 be submitted to the staff by formal letter. The parking lot (Enclosure 3) indicates those items for which the industry intends to submit a letter(s) or FAQ. The Issue Summary Sheets (Enclosure 2) reference specific FAQs that have been received for the specific issues.

### **Parking Lot Issues Summary**

Issues and needs identified during observation meeting presentations and related discussions are documented on the attached "parking lot" list that was developed during the initial observation meeting in November 2005 (see Enclosure 3). This list is being used by industry to track identified issues and was updated to close resolved items, revise existing items as necessary, and open new items for issues identified during the March meeting.

Seventeen items were identified during the November meeting. Nine items were closed and 7 new items were opened. Additional details have also been added to the parking lot to provide information on the actions taken, a summary of the meeting discussions on the specific issues and the intent of the industry to submit a letter(s) to the NRC to solicit review and feedback on the issue resolutions. This letter process may be subsumed by the proposed FAQ process discussed in Agenda Topic 9 of the "Specific Meeting Topics" section of this report.

### **Parking Lot Issues Assigned to NRC:**

The parking lot issues assigned to the NRC during the November 2005 observation meeting were either closed or reassigned to industry based on input provided at the March meeting. The status of these issues is as follows:

- Item 1: Reassigned to industry.
- Item 5: Closed.
- Item 6: Closed.
- Item 14: Closed.
- Item 15: Reassigned to industry.
- Item 16: Closed.
- Item 17: Closed.

The following new item was identified and assigned to the NRC during the March meeting:

**Item 20:** This issue is associated with the peer review process for the Fire PRAs being developed by Progress Energy and Duke Power in support of 10 CFR 50.48(c) implementation. The PRA peer review for the pilot plants will be performed by NRC staff as part of the observation process. Fire PRA methods and results will be used in support of change evaluations during transition and the industry requested NRC input on how the “in progress” peer review will be performed and documented to provide some degree of certainty in the use of the fire PRA in support of transition activities (see **Issue Summary Sheet No. 5**).

### **Issue Summary Sheets**

Following the March meeting, the NRC staff determined that additional information, clarification, and detail (to that provided in the parking lot table) was needed to convey pilot-plant identified issues and lessons learned to the non-pilot licensees and other interested parties that are not directly involved in the pilot-plant transition and observation process. In addition, it was determined that several items identified in the parking lot are related and could be combined into a common topic or issue. The enclosed Issue Summary Sheets were developed to address these needs.

### **Plans for Next Observation Meeting**

Discussions were held on plans for future observation meetings and tentative schedules. Duke/Oconee may be ready in October for a plant-specific review of PRA calculations. A plant visit to Progress Energy's, Harris plant to review NFPA 805, Chapter 3, transition activities is planned for November 2006.

### **Enclosures:**

1. NFPA 805 Meeting for Harris and Oconee Pilot Plants NRC Observation Meeting Topics and Agenda, Raleigh, NC March 27-30, 2006
2. NFPA 805 Pilot-Plant Implementation Issue Summary Sheets.



3. NFPA 805 Meeting for Harris and Oconee Pilot Plants, Raleigh, NC - March 27-30, 2006, Parking Lot

**Handout References:**

1. NFPA 805 Pilot Observations Meeting, Progress Energy Transition Status, Jeff Ertman et. al., , March 27, 2006 - Meeting Agenda Topic 2 - Slide Presentation.
2. Duke Power NFPA-805 Transition Pilot Observation Project Status, Oconee (ONS), Harry Barrett, March 27, 2006 - Meeting Agenda Topic 3 - Slide Presentation
3. Duke Power Fire PRA and Status of the ANS Fire PRA Standard, Dennis Henneke, Brandi Weaver - Meeting Agenda Topic 6a - Slide Presentation
4. Duke Power Non-Power Operations Transition, Oconee (ONS), Harry Barrett, Liz Kleinsorg, March 28, 2006 - Meeting Agenda Topic 6b - Slide Presentation
5. Duke Power Multiple Spurious Operations (MSO) Expert Panel, Oconee (ONS), Harry Barrett, Dennis Henneke, March 28, 2006 - Agenda Topic 6c - Slide Presentation
6. Discussion of Thermal-Hydraulic Analysis, Jill C. Watson, Progress Energy - Meeting Agenda Topic 7a - Slide Presentation
7. PE Development and Discussion for HFEs in the Fire PSA, Robert Rishel, Progress Energy - Meeting Agenda Topic 7b - Slide Presentation
8. NFPA 805 Transition, Chapter 3 - Manual Firefighting, Alan Holder, Alan Griffin, Mike Fletcher, Progress Energy, March 29, 2006 - Meeting Agenda Topic 7c - Slide Presentation
9. NFPA 805 NRC Pilot Observation Meeting NFP(sic)-805 Product Quality, David Miskiewicz, Progress Energy, March 29, 2006 - Meeting Agenda Topic 7d - Slide Presentation
10. NFPA 805 NRC Pilot Observation Meeting, Change Process, Jeff Ertman, Harry Barrett, Liz Kleinsorg, Duke Energy/Progress Energy, March 29, 2006 - Meeting Agenda Topic 8 - Slide Presentation

Enclosure 1  
Trip Report  
Pilot Plant Observation Meeting  
March 27-30, 2006

<b>NFPA 805 Meeting for Harris and Oconee Pilot Plants  NRC Observation Meeting Topics and Agenda, Raleigh, NC</b>				
		<b>Topic</b>	<b>Lead Presenter</b>	<b>Topic Notes</b>
Monday, March 27	1:00 PM to 1:15 PM	<b>1.</b> Progress Energy Management Kickoff	PE Management Joe Donahue	
	1:15 PM to 2:15 PM (break)	<b>2.</b> HNP Project Status and goals of this meeting	Jeff Ertman	Tony Maness and other PE Site Project Leads also present status, Mike Fletcher Hemyc/MT
	2:30 PM to 3:45 PM (break)	<b>3.</b> Oconee Project Status and goals of this meeting	Harry Barrett	
	4:00 PM to 5:00 PM	<b>4.</b> NRC status and goals fo the meeting /issues from NRC Workshop on March 3/ Reg Guide Impacts	Paul Lain	Include status of related regulatory activity. Include discussion of enforcement discretion.
Tuesday, March 28	8:00 AM to 8:30 AM	<b>9.</b> NRC/PE: Feedback process and Needs of Pilot plants	Paul Gaffney, Ken Hefner, Paul Lain	
	8:30 AM to 11:30 AM (Break as need/lunch)	<b>5.</b> Status Open Items list/ NEI 04-02 Rev 2 impacts	Harry Barrett, Jeff Ertman, Paul Lain, NEI	'Parking Lot' follow up actions from Nov 2005 meeting - review with entire group
	1:00 PM to 2:30 PM (break)	<b>6a.</b> Duke: Fire PRA Technical Discussion/ ANS standard status	Dennis Henneke	Include update on ANS Standard development and impacts
	2:45 PM to 3:30 PM (break)	<b>6b.</b> Duke: Non-Power Transition	Harry Barrett Liz Kleinsorg	Component Selection Process, Shutdown Risk Management



<b>NFPA 805 Meeting for Harris and Oconee Pilot Plants NRC Observation Meeting Topics and Agenda, Raleigh, NC</b>				
		<b>Topic</b>	<b>Lead Presenter</b>	<b>Topic Notes</b>
	3:45 PM to 4:30 PM	<b>6c.</b> Duke: Multiple Spurious Expert Panel	Harry Barrett Dennis Henneke	Overview of Expert Panel; approach used; multiple spurious combinations identified
	4:30 PM to 5:00 PM	Update Parking Lot List		
Wednesday, March 29	8:00 AM to 9:00 AM (break)	<b>7c.</b> PE: Chapter 3 Manual Firefighting	Alan Holder Mike Fletcher Alan Griffin	Fire Brigade Training and NFPA 600 comparison.
	9:15 AM to 10:00 AM (break)	<b>7b.</b> PE: HRA for Fire	Rob Rishel	Related CR 6850 discussion on HRA
	10:15 AM to 11:00 AM	<b>7d.</b> PE: Fire Protection QA Under NFPA 805	Dave Miskiewicz	Post transition FP QA and interface with PRA quality requirements
	11:00 AM to 11:30 AM (lunch)	<b>7a.</b> PE: T-H Analysis Acceptance Criteria	Jill Watson	Reconcile SSA vs. PRA criteria: May affect timeline duration and equipment selection
	1:00 PM to 4:30 PM (Break as needed)	<b>8.</b> FP Program Change Process	Liz Kleinsorg coordinate	Updated plant examples from last meeting and new ones as available - various presenters
	4:30 PM to 5:00 PM	Update Parking Lot List		
Thursday, March 30	8:00 AM to 9:00 AM	<b>10.</b> NEI NFPA 805 Task Force Operations/ Peer review process	NEI (TBD)	Include plans for future NEI 04-02 revisions
	9:00 AM to 11:45 AM (break as needed)	<b>11.</b> Wrap up and planning for future Pilot Meetings	Harry Barrett, Jeff Ertman, Paul Lain	Summary of revised list of parking lot items
	11:45 AM to 12 noon	<b>12.</b> Closing Summary	George Attarian	PE Management views

Enclosure 2  
Trip Report  
Pilot Plant Observation Meeting  
March 27-30, 2006

## Issue Summary Sheets

## NFPA 805 Pilot-Plant Implementation

### Issue Summary Sheet No. 1

**Topic:** Multiple Spurious Operation - Treatment of newly identified multiple spurious operations in Reactor Oversight Process (ROP) prior to risk significance determination

#### **Associated Observation Meeting Parking Lot Item(s):** 1

**Description:** The proposed industry approach to evaluating multiple spurious operations is described in NEI 04-02, Appendix B-2, which, in turn, references NEI 00-01. The proposed approach is to analyze all single spurious operations and risk-significant multiple spurious operations. The approach includes a provision that new multiple spurious operations that are identified through review processes will not be considered part of the licensing basis unless determined to be risk significant. The issue requiring further evaluation is how this approach to initially excluding new multiple spurious from the license basis (until determined to be risk significant) will be treated under the reactor oversight process (ROP).

**Status:** OPEN. This issue was initially identified during the November 2005 pilot-plant observation meeting with action assigned to the NRC staff to review the ROP relative to treatment of newly identified multiple spurious operations that have not yet been evaluated for risk significance.

The NRC staff presented a flowchart during the March 2006 pilot plant observation meeting that illustrated how new multiple spurious operations (identified during inspections) would be treated (See flow chart below). In addition to the flowchart, the following information was also conveyed during the meeting:

- If the circuit issue identified by the inspector and its related contributors that were also omitted are “greater than Green” OR “constitute a violation of defense-in-depth” or “safety margins,” in spite of using an appropriate screening tool, that would constitute a minor violation. If the inspector determines that the licensee’s screening tool is flawed, that would constitute a violation. Here “related contributors” are those that are associated via the same root cause, fire scenario, or fire area.
- If the circuit issue identified by the inspector and its related contributors that were also omitted are “less than Green” AND “do not constitute a violation of defense-in-depth” or “safety margins” AND the licensee has used an appropriate screening tool, no further action is warranted. However, if the inspector determines that the licensee’s screening tool is flawed, that would constitute a minor violation.

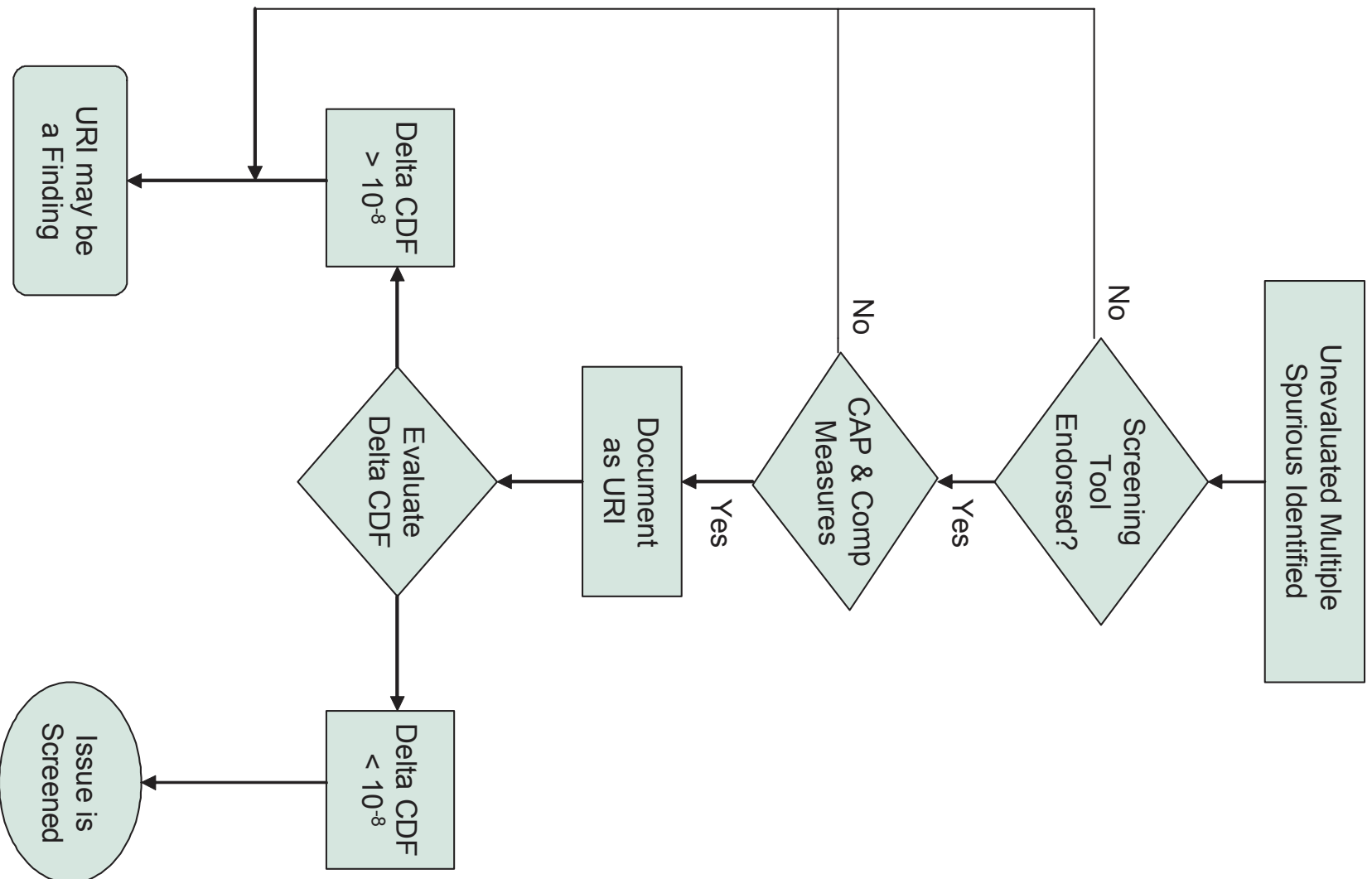
The process outlined in the flowchart documents (new) unevaluated multiple spurious operations as unresolved items (URIs) and proposes a risk threshold below which the multiple spurious operation is screened (a potential threshold for such “treatment” of 1E-08/yr delta-CDF [1E-09/yr delta LERF] was offered for discussion). Industry raised the concern that documenting all

multiple spurious operations as URIs pending evaluation will create a significant cost and resource impact because all URIs must be formally dispositioned and even those classified as minor can require 1000 hours. Industry's preference would be to not treat the new multiple spurious as a URI, but to disposition the issue within the fire probabilistic safety assessment (PSA) process. Consensus was to review the minor questions in Inspection Manual Chapter (IMC) 0612, and suggest development of new questions if necessary such that multiple spurious operations below a certain threshold could be relegated to minor and treated accordingly.

**Resolution Action(s)/Action Party:** OPEN. Industry and pilot-plant participants agreed to review the flowchart, IMC 0612 questions, screening thresholds and provide feedback to the NRC at the next observation meeting. The industry may also submit an FAQ on the issue.

**Associated FAQ:** Planned, but not yet submitted.

**Lesson Learned:** Pending resolution of issue.



## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 2**

**Topic:** Multiple spurious operations - screening criteria

**Associated Observation Meeting Parking Lot Item(s):** 2

**Description:** Duke Power presented its methodology for identification and analysis of multiple spurious operations during the November 2005 observation meeting (See November 2006 Trip Report Handout Reference 4). Considerable discussion was held with regard to screening and treatment of newly identified multiple spurious operations. The Duke approach considers newly identified spurious operations as outside the license basis until risk significance is determined. One suggested approach to establishing risk significance was the use of Fussell-Vesely risk importance criteria.

This topic arose from a more general discussion on a proposed method to perform an acceptable transition change evaluation. A fire PSA that represents the plant “going forward” (GF) would be performed, i.e., crediting any modifications/changes to be implemented as part of the transition. This would be compared against an “ideal” fire risk if all deterministic compliance were strictly met, yielding a fire delta-CDF (using CDF as the risk metric) = (fire-CDF-GF) minus (fire-CDF-ideal). The fire-CDF-ideal need not be calculated from a separate full fire PSA, but rather using the Fussell-Vesely (F-V) risk importance measures (indicating the fractional contribution of fire-induced failures to the fire CDF) associated with “non-compliance” as determined from the fire-CDF-GF. The sum of these F-V values would conservatively bound the delta-CDF. In the case where this bounding technique proved too conservative, relaxations could be made as discussed under Issue Summary Sheet 13.

**Resolution Action(s)/Action Party:** CLOSED. The spurious operations evaluation methodology continues to evolve, and this specific issue was determined to be no longer relevant and was closed in the March 2006 meeting.

**Associated FAQ:** None.

**Lesson Learned:** PSA methods and application to analysis of spurious operations and plant change continue to evolve as experience is gained in transitioning the pilot-plants to a risk-informed, performance-based fire protection program. As the PSA methods and process output become finalized and confirmed by peer review, NEI 04-02 will be revised, as appropriate, to provide the necessary guidance for implementing/applying these methods. No specific changes to the guidance were proposed as a result of this issue.



## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 3**

**Topic:** Transition of operator manual actions (OMAs) to NFPA 805 Recovery Actions

**Associated Observation Meeting Parking Lot Item(s):** 3

**Description:** NEI 04-02, Revision 1, Section 2.3.1 and Appendix B-2 discuss the direct transition of current fire protection program elements to the new risk-informed, performance-based fire protection program based on these elements being previously approved by the NRC. Transition of fire protection elements that do not meet the previous approval criteria should be addressed via the change evaluation process. Specific concerns have been expressed by industry with regard to transition of OMAs currently relied on to demonstrate compliance with 10 CFR 50, Appendix R, III.G.2, and the approval of which may be explicitly or implicitly addressed in a NRC Safety Evaluation Report (SER). (Ideally, approval would be documented via a license amendment, either embedded within or as a separate SER.) The NRC has established the position that OMAs are not an acceptable method to demonstrate compliance with 10 CFR 50, Appendix R, III.G.2; do not meet the deterministic criteria of NFPA 805, Chapter 4; and therefore must be addressed via a plant change evaluation. The NRC's position is described in Regulatory Guide 1.205, Section 2.3, and Regulatory Issue Summary (RIS) 2006-10.

Considerable discussion was held during the November and March pilot-plant observation meetings regarding transition of OMAs for safe shutdown, what documentation constitutes NRC approval of those OMAs, and how to disposition those manual actions relied on to demonstrate compliance with 10 CFR 50, Appendix R, III.G.2.

**Resolution Action(s)/Action Party:** OPEN. A Frequently Asked Question will be submitted that clarifies the approach to transitioning OMAs to Recovery Actions that proposes the necessary changes to NEI 04-02.

**Associated FAQ:** 06-0001

**Lesson Learned:** Pending final resolution of FAQ.

## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 4**

**Topic:** Spurious Operations - Risk informed, performance-based treatment of high-low pressure interface components

**Associated Observation Meeting Parking Lot Item(s):** 4

**Description:** During the November 2005 observation meeting, Duke Power presented their NFPA 805, Chapter 4, methodology for transition. Included in this presentation was a discussion of the treatment of high-low pressure interface components. Duke's presentation identified that there are some differences in how high-low pressure interfaces are defined between NFPA 805 and NEI 00-01. NEI 00-01 is the circuit analysis methodology referenced in NEI 04-02. NFPA 805 establishes the requirements by reference in 10 CFR 50.48(c), and the guidance must be consistent with the standard.

**Resolution Action(s)/Action Party:** OPEN. NEI will revise NEI 04-02 as necessary to clarify that the guidance in NEI 00-01 is consistent with the definitions in NFPA 805 and meets the requirements. Pilot-plants will continue to identify inconsistencies as they arise. FAQ may be submitted to get NRC feedback on application of NEI 00-01 methodology for identifying and evaluating high-low pressure interface components.

**Associated FAQ:** Planned, but not yet submitted.

**Lesson Learned:** By reference in 10 CFR 50.48(c), NFPA 805 establishes the requirements of the rule and supersedes any implementation guidance.

## **NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 5**

**Topic:** Fire PSA Peer Review

**Associated Observation Meeting Parking Lot Item(s):** 5, 20

**Description:** During the November 2005 observation visit, the fire PSA effort for Oconee was identified as critical path. The current schedule for completion of the PSA and submittal of the license amendment for adopting 10 CFR 50.48(c) and NFPA 805 would not support completion of an industry-developed fire PSA Peer Review prior to submittal. The staff position is that an endorsed fire PSA Peer Review should be completed as part of the transition prior to submittal of the license amendment.

While an ANS Fire PSA Standard is under development, and state-of-the-art guidance on performing fire PSA exists via NUREG/CR-6850 (EPRI TR-1011989), fire PSA remains (and will remain) in a state of development, rendering a “final” baseline against which to measure quality difficult. A peer review process analogous to that performed for internal event PSAs has been proposed, and is under development by NEI and the Owners Groups to coincide roughly with the issuance of the fire PSA standard. However, it is unlikely that the Standard and the NEI peer review process will be completed and endorsed on a schedule that will fully support pilot-plant transition. Relief may come with the extension of enforcement discretion and Oconee may extend their pilot program for another year.

Discussion of this issue indicated that NRC oversight of the pilot-plant PSA effort would provide confidence in the quality of the PSA as part of the transition program. The pilot plants requested that the NRC perform intermediate PSA audits as the various elements of their fire PSAs are completed, rather than waiting to do a single audit during the license amendment review, to provide assurance that they are heading along the right path and provide lessons learned for non-pilot plants. The NRC agreed to accomplish this through several visits focused specifically on the fire PSA and a roll-up of these audits will substitute for an endorsed, industry-developed Fire PSA Peer Review for the pilot plants.

**Resolution Action(s)/Action Party:** OPEN. The NRC incorporated peer review guidance in Regulatory Guide 1.205, Section 4.3, which was discussed at the March 2006 observation meeting. The Regulatory Guide states that licensees should subject their fire PSA to a peer review to the extent that adequate industry guidance is available to support the transition process. Absent industry guidance, the NRC will review the quality of the PSA for acceptability.

During the March 2006 observation visit, the NRC staff was asked to identify any specific needs they may have to perform the PSA Peer Review and what documentation will be necessary or provided that will constitute the record of this review and the acceptability of the PSA.

**Associated FAQ:** None.

**Lesson Learned:** The acceptability of the quality of pilot-plant PSAs will be established via the NRC's participation and in-process review of PSA development. Until current efforts to establish fire PSA peer review standards and processes are completed, non-pilot plants transitioning to NFPA 805 may choose to have the fire PSA reviewed by an independent group against available guidance to minimize impacts to transition schedules and reduce uncertainty in fire PSA application acceptability (e.g., in change analysis). Additional lessons learned information will be provided as experience is gained with the pilot-plant reviews.

## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 6**

**Topic:** PSA and change evaluations for Low-Power/Shutdown (LP/SD) modes

**Associated Observation Meeting Parking Lot Item(s):** 6, 22

**Description:** During the November 2005 pilot-plant observation meeting, industry representatives indicated that any requirement for a LP/SD mode fire PSA would be a cost prohibitive. There is no current guidance/methods for performing a LP/SD fire PSA. Although LP/SD fire PSAs exist, development of a standard is in progress and NRC/EPRI are considering a joint effort to develop guidance for shutdown fire PSA. Resources are not likely to be committed by utility management, and the development of methods and performance of a LP/SD fire PSA would not support the transition schedules.

The NRC provided specific examples of LP/SD “risk” assessments that have been submitted under RG 1.174 plant change applications for licensees to consider in their NFPA 805 evaluations. The guidance in NEI 04-02 addresses LP/SD risk via the defense-in-depth approach currently used for outage management. This approach relies on the identification of high risk evolutions and key safety functions associated with those evolutions (See NEI 04-02, Rev. 1, Section 4.3.3). The meeting attendees suggested that implementing guidance for meeting 10 CFR 50.48(c) should be clarified to explicitly indicate the NRC’s expectations for assessing fire risk in LP/SD modes.

Risk must also be addressed in the change evaluation process for changes that impact LP/SD modes. The plant change evaluation process required by NFPA 805 and described in NEI 04-02, does not currently address the method to be used in performing change evaluations for these operational modes.

**Resolution Action(s)/Action Party:** OPEN. In RG 1.205, the NRC staff accepted the approach described in NEI 04-02, Revision 1, for managing risk of LP/SD modes of operation and demonstrating that nuclear safety performance criteria are met. NEI 04-02 will be revised to address the performance of plant change evaluations for non-power modes.

**Associated FAQ:** Planned but not submitted.

**Lesson Learned:** At this time, a separate LP/SD fire PSA is not required, because there are currently no standards, methods or guidance available. (although some are being considered). Until these LP/SD fire PSA methods are developed and accepted, fire risks during LP/SD modes can be managed according to established methods for outage risk management. Plants should identify high risk evolutions and key safety functions and evaluate the associated structures, systems, and components as described in the endorsed NEI 04-02.

## **NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 7**

**Topic:** NFPA 805 Chapter 3 - Chapter 4 related requirements

**Associated Observation Meeting Parking Lot Item(s):** 7, 8, 9

**Description:** During pilot-plant efforts to transition NFPA 805 Chapter 3 requirements and further develop and implement the guidance for plant change evaluations, concerns were identified relative to the dependence of Chapter 3 fire protection design features on Chapter 4 required systems. Specifically, Chapter 3 requirements for detection, suppression, and fire barriers are dependent on these fire protection elements being required by Chapter 4. During the November 2005 observation meeting the attendees determined that there was some confusion over the application of these requirements, particularly when applying a performance-based approach. In addition, because of the dependence of Chapter 3 on the requirements of Chapter 4, the change evaluation process should establish the Chapter 4 required systems before evaluating those systems against the Chapter 3 requirements.

**Resolution Action(s)/Action Party:** OPEN. NEI 04-02 needs to be revised to clarify the application of these requirements. The proposed revision has been submitted for industry and NRC review in an FAQ.

**Associated FAQ:** 06-0004

**Lesson Learned:** Before doing Chapter 3 code compliance, determine which fire protection systems and elements are required by Chapter 4.



## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 8**

**Topic:** Performance-based alternative for fire area boundary evaluation

**Associated Observation Meeting Parking Lot Item(s):** 10

**Description:** NFPA 805 includes provision for using existing engineering equivalency evaluations (i.e., GL 86-10 evaluations), but does not contain similar requirements for evaluation of fire protection features (e.g., fire barriers) using a risk-informed, performance-based approach. NFPA 805, Section 1.7, describes the general requirement for demonstrating equivalency in meeting the requirements of the standard. Section 1.7 states that alternative approaches must be approved by the Authority Having Jurisdiction (i.e., the NRC). The rule (10 CFR 50.48(c)(2)(vii)) requires NRC approval of performance-based approaches to demonstrating compliance with NFPA 805, Chapter 3 requirements.

A need was identified to revise NEI 04-02 to provide additional methodologies for performing engineering equivalency analyses that licensees could reference in their license amendment request.

**Resolution Action(s)/Action Party:** OPEN. NEI will develop proposed changes to NEI 04-02 to include a methodology and process for performing engineering equivalency evaluations. These changes will be presented and discussed at the next pilot-plant observation meeting. An FAQ containing the proposed changes may be submitted for industry and NRC review.

**Associated FAQ:** Planned, but not yet submitted.

**Lesson Learned:** A methodology for performing engineering equivalency evaluations, similar to current GL 86-10 evaluations, is needed for risk-informed, performance-based applications to fire protection under NFPA 805.

## **NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 9**

**Topic:** Plant change evaluations - Preliminary risk screening

**Associated Observation Meeting Parking Lot Item(s):** 11

**Description:** NEI 04-02, Revision 1, Section 5.3.3, Appendix I, and Appendix J address the use of preliminary screening with regard to evaluation of changes to the fire protection program. Considerable discussion was held in the November 2005 observation meeting regarding the criteria to be applied in the preliminary screening process and the need for additional guidance and examples in NEI 04-02.

Early in the development of NEI 04-02, a “qualitative” approach was advocated by which plant changes which clearly would not impact risk could be dispositioned without any quantification. Ultimately, this met with resistance from the ACRS, and it was agreed that all plant changes would be processed through at least a preliminary risk screen with some minimal level of quantification (i.e., essentially a “qualitative” approach whereby changes that clearly did not increase risk, or did so at some “negligible” level, need not undergo any formal risk evaluation beyond a statement as to why any effect could be dismissed). Appendix I of NEI 04-02 listed some examples of these types of plant changes, and Progress Energy provided example evaluations at the first observation visit.

**Resolution Action(s)/Action Party:** CLOSED. NRC and industry agreed that this would be a “living” part of NEI 04-02, whereby examples encountered in the transition process could be added to subsequent versions of NEI 04-02 for illustrative purposes.

**Associated FAQ:** None submitted.

**Lesson Learned:** The plant change evaluation process described in NEI 04-02 will be supplemented with examples during the pilot-plant transition to clarify application of the process.

## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 10**

**Topic:** Plant change evaluations - Preliminary screening criteria and form corrections.

**Associated Observation Meeting Parking Lot Item(s):** 12

**Description:** While it was originally proposed that the RG 1.174 thresholds be applied for determining “acceptable” increases in risk (measured via CDF and LERF) for NFPA 805 “self-approvals” by licensees (i.e., without prior NRC review), the fact that RG 1.174 was conditioned on NRC review made adoption of equivalent thresholds untenable. Eventually, thresholds as outlined in RG 1.205, including a “grey area” where NRC review would be at NRC’s discretion, were established.

NEI 04-02, Appendix I, contains the plant change evaluation form. Section 4 of this form addresses the preliminary risk screening and includes qualitative criteria. Discussion during the November 2005 observation meeting concluded that “greater than minimal” criteria should be revised to “potentially greater than minimal” when determining if more quantitative risk analysis is needed for the change. Regulatory Guide 1.205, Section 3.2.5, provides additional guidance with regard to risk thresholds to be applied in the plant change evaluation process, and also clarifies the terminology, such as “minimal,” used in NEI 04-02, in determining the acceptability of the change and the need for NRC approval.

**Resolution Action(s)/Action Party:** OPEN. NEI 04-02, Sections 5.3 and Appendix I will be revised to provide additional guidance on performance of preliminary screening and correct the change evaluation form with regard to applying the “potentially greater than minimal” criteria.

**Associated FAQ:** 06-0002; 06-0003

**Lesson Learned:** Pending final resolution of FAQs

**NFPA 805 Pilot-Plant Implementation**  
**Issue Summary Sheet No. 11**

**Topic:** Plant change evaluation - PSA engineer reviews of screens

**Associated Observation Meeting Parking Lot Item(s):** 13

**Description:** During the November 2005 observation meeting, considerable discussion was held regarding whether or not a PSA engineer should review the preliminary risk screening performed for plant changes. This topic is connected with some of the previous discussions regarding “qualitative” risk screening, and involved the level of licensee review, if any, by the licensee PSA staff that would be required for easily screened plant changes. The NRC advocated that all plant changes be forwarded to the plant PSA staff, such that even the most trivial could be dismissed via a simple sentence in the record. Licensees favored screening by fire protection personnel for such trivial items (using guidance developed with input from the plant PSA staff, perhaps in the form of screening questions), such that no PSA staff notification would be required.

In followup discussions of this topic during the March 2006 observation meeting, it was determined that the interface between the PSA staff and fire protection program change evaluation screening process is plant specific and did not warrant tracking as a parking lot issue.

**Resolution Action(s)/Action Party:** CLOSED. No action taken.

**Associated FAQ:** None.

**Lesson Learned:** The interface between the PSA and fire protection staff during the fire protection program screening process for plant change evaluations is plant-specific, but it should ensure that all necessary communication between these respective disciplines occurs as part of the screening process.

## **NFPA 805 Pilot-Plant Implementation**

### **Issue Summary Sheet No. 12**

**Topic:** Authority having jurisdiction (AHJ) - NFPA Code deviations

**Associated Observation Meeting Parking Lot Item(s):** 14

**Description:** The NRC is the *defacto* Authority Having Jurisdiction (AHJ) for the purpose of determining acceptability of fire protection program elements to meet the requirements of NFPA 805 (where AHJ authority is cited in the NFPA 805 Standard). Chapter 3 of NFPA 805 references other NFPA codes that apply to administrative and design elements of the fire protection program (e.g., those that apply to suppression, detection, and water supply) that are managed day-to-day by the licensee but also contain responsibilities and requirements for AHJ approval. A compliance approach that applies the AHJ authority (as described in the NFPA Standards) as strictly meaning NRC approval could burden the NRC with reviewing fire protection system design changes and administrative procedures that implement NFPA code provisions requiring AHJ approval. Minor deviations to code compliance would also require possible NRC review. Licensees would be burdened by costs and delays associated with the review and approval process.

NFPA 805, Section 1.8 addresses “Code of Record,” which allows licensees to meet the version of the standard applicable to the fire protection element or design feature at the time it was designed or otherwise committed to the AHJ. Plants should follow the approval authorities granted by the code-of-record, with the recognition that the AHJ is the NRC as described in Regulatory Guide 1.205, Regulatory Position C.1.

**Resolution Action(s)/Action Party:** CLOSED. NRC position on AHJ was incorporated in Regulatory Guide 1.205. Parking Lot Item 10 (See Issue Summary Sheet No. 8 above) involves development of a process similar to the existing engineering equivalency evaluation (NFPA 805, Section 2.2.7 and GL 86-10) that will be submitted to the NRC for approval (e.g., NEI 04-02 revision) that will allow licensees similar flexibility to evaluate certain design features as adequate for the hazard.

**Associated FAQ:** None.

**Lesson Learned:** NRC is the AHJ as described in RG 1.205, but the code-of-record for a given plant fire protection feature may allow licensees certain authority to establish applicable requirements that may differ (i.e., equivalency evaluations) from the versions cited in NFPA 805.

## **NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 13**

**Topic:** Transition baseline risk.

**Associated Observation Meeting Parking Lot Item(s):** 19, 24

**Description:** Discussion was held regarding the cumulative impact of changes to the fire protection program that occur during the transition process. These impacts are incorporated in the new baseline risk established at the completion of implementation. Related somewhat to Topics 2 and 24, this topic was raised at the first observation meeting as a spin-off of the industry's concern with how and to what extent the difference between the "going forward" and "deterministically fully compliant" risks was to be evaluated for the transition. Based on the recent NRC clarifications with respect to vital fire protection program elements, especially circuit spurious operations ("any and all, one at a time") and operator manual actions for redundant trains in the same fire area (Appendix R, III.G.2), industry is concerned as to what exactly would serve as the "deterministically fully compliant" baseline risk against which to measure the increase "going forward."

While calculating the "going forward" fire risk is relatively straightforward, doing likewise for the "deterministically fully compliant" risk could require essentially a second full fire PSA for "ideal" conditions. NRC proposed a multi-step analytic approach whereby the licensees could proceed from the most to least conservative (least to most realistic) estimate of the risk increase due to the transition, with the ability to stop the analysis at whatever step provides an estimate of an acceptable risk increase.

**Resolution Action(s)/Action Party:** OPEN. Regulatory Guide 1.205, Section C.3.2.6, provides the staff position on treatment of individual and cumulative changes in risk, as well as the use of risk reductions associated with unrelated plant changes to offset increases in fire protection risks. NEI 04-02 will be updated to clarify that the baseline fire protection program risk, post-transition, will be the risk of the plant as-designed and operated according to the NRC-approved licensing basis. This position is already stated in Regulatory Guide 1.205. NEI 04-02 will also be revised to address screening, processing and tracking of changes.

**Associated FAQ:** Planned, but not yet submitted.

**Lesson Learned:** Pending submittal and final resolution of FAQ. Baseline fire protection risk must be established to support plant change evaluations post-transition.



## **NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 14**

**Topic:** Regulatory position on interim guidance changes

**Associated Observation Meeting Parking Lot Item(s):** 16

**Description:** Regulatory Guide 1.205 endorses NEI 04-02, Revision 1. The pilot-plant implementation activities and observation meetings have identified a number of changes that are necessary to clarify, update, or revise the implementing guidance in NEI 04-02. It is expected that the need to make these types of changes will continue to be identified as pilot-plant implementation progresses. The processes for revising and reissuing these documents are not efficient nor timely enough to support the on-going transition activities. Administrative mechanisms are necessary to allow guidance changes to be accumulated (e.g., as errata) between official/approved revisions. The ability to apply interim changes to the guidance is potentially problematic because of the Regulatory Guide revision and approval process and the direct endorsement of a specific revision of NEI 04-02 within the Regulatory Guide.

At the March 2006 pilot-plant observation meeting, the industry proposed a Frequently Asked Question (FAQ) process as a means to address this issue. The FAQ process used for the Reactor Oversight Process (ROP) performance indicators was presented as an example. The NRC staff agreed this may be a viable approach, but suggested that the utilities formally submit their requests by letter to initiate the FAQ process being established.

**Resolution Action(s)/Action Party:** CLOSED. By letter dated May 2, 2006, NEI submitted a letter with a draft description of the FAQ process for NRC review. The NRC responded with proposed changes in a letter to NEI dated July 12, 2006.

**Associated FAQ:** None. See referenced letters.

**Lesson Learned:** A process has been established to provide timely NRC review of needed changes to NFPA 805 implementing guidance. This guidance will be incorporated in revisions to NEI 04-02. Regulatory Guide 1.205 will be revised in the future, as appropriate, to endorse this revised guidance.

## **NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 15**

**Topic:** Circuit analysis Generic Letter and RIS - Compliance issues for transition

**Associated Observation Meeting Parking Lot Item(s):** 17

**Description:** This issue has significant implications related to implementation of NFPA 805. Specifically, the circuit analysis RIS and draft Generic Letter require a level of compliance for deterministic circuit analysis (associated with current fire protection programs) that is not currently achieved by most plants. NFPA 805 risk analyses for NFPA 805 must be compared against the deterministic case (NFPA 805, Section 4.2.4.2). Licensees that plan to transition to NFPA 805 do not plan to bring their plants into compliance with the RIS and GL provisions prior to transitioning to NFPA 805.

The NRC staff presented a suggested process by which licensees could establish an “ideal” risk baseline for the compliant deterministic case.

**Resolution Action(s)/Action Party:** CLOSED. This issue is tied to others related to establishing the PSA baseline for the performance of plant change evaluation and other PSAs (See Issue Summary Sheets 13 and 18).

**Associated FAQ:** None planned.

**Lesson Learned:** None. Issue and associated lessons learned will be addressed through resolution of other issues/parking lot items discussed above.

**NFPA 805 Pilot-Plant Implementation**  
**Issue Summary Sheet No. 16**

**Topic:** NEI 04-02, Appendix B, methodology changes

**Associated Observation Meeting Parking Lot Item(s):** 18

**Description:** Pilot-plant transition activities at the Oconee Nuclear Station have determined that the comparison tables of NEI 04-02, Appendix B, do not adequately communicate the compliance status and transition of current fire protection program elements to the nuclear safety performance criteria of NFPA 805. The pilot-plants and NEI will develop an alternative methodology to be incorporated in NEI 04-02. The NRC staff expressed concern that these types of issues with the existing (endorsed) guidance need to be communicated to non-pilot plants.

**Resolution Action(s)/Action Party:** OPEN. NEI to develop alternative methods to comparison tables in NEI 04-02, Appendix B.

**Associated FAQ:** None planned.

**Lesson Learned:** Transition activities for ONS identified that the current tabular method for transition of nuclear safety performance criteria, as described in NEI 04-02, Appendix B, is not an effective means of communicating the necessary information to demonstrate compliance with NFPA 805.

**NFPA 805 Pilot-Plant Implementation  
Issue Summary Sheet No. 17**

**Topic:** Risk acceptance thresholds.

**Associated Observation Meeting Parking Lot Item(s):** 21

**Description:** There is a number of “risk acceptance” thresholds for fire PSA-related applications among various documents and programs, specifically the Reactor Oversight Process (ROP), the Significance Determination Process (SDP), Regulatory Guide 1.174 (and, by incorporation, NFPA-805), NEI 04-02 and Regulatory Guide 1.205. A reconciliation of these various thresholds is needed for clarity and application of transition processes.

**Resolution Action(s)/Action Party:** OPEN. A list of thresholds and related information will be developed for discussion at the next pilot-plant observation meeting.

**Associated FAQ:** None planned.

**Lesson Learned:** Pending final resolution of the issue.

**NFPA 805 Pilot-Plant Implementation**  
**Issue Summary Sheet No. 18**

**Topic:** Definition for fire protection program change

**Associated Observation Meeting Parking Lot Item(s):** 23

**Description:** During the March 2006 meeting, discussion was held regarding what constitutes a change to the fire protection program. Plant changes that are not related to the fire protection program may impact the program. Fire protection systems and features may be installed for protective purposes not related to demonstrating compliance with NFPA 805. Are these systems and features within the scope of the fire protection program that is subject to evaluation under the NFPA 805-required plant evaluation change process? The discussion identified a need to better define the boundaries of the fire protection program for the purposes of configuration control and application of the change evaluation process.

**Resolution Action(s)/Action Party:** OPEN. Industry will draft a methodology and examples of what constitutes a fire protection program change to be discussed at a future pilot-plant observation meeting.

**Associated FAQ:** None planned.

**Lesson Learned:** Pending final resolution of this issue.

## NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 19

**Topic:** Tracking of Cumulative Risk from Post-Transition Plant Changes

**Associated Observation Meeting Parking Lot Item(s):** 15, 24

**Description:** Three specific items were discussed at the March observation meeting related to this topic:

- (1) Is a license amendment request needed post-transition to credit existing Systems, Structures, and Components (SSCs) to lower fire risk, i.e., taking credit for these not as offsets to risk increases but purely as decreases;
- (2) If both risk increases and decreases are due to related changes, such that the net increase is  $<1\text{E-}7/\text{yr}$  delta-CDF ( $<1\text{E-}8/\text{yr}$  delta-LERF), the changes need not be submitted for prior NRC approval. However, if they are unrelated (e.g., one is part of the fire protection program while the other is not), then prior NRC approval is needed; and
- (3) If an initial change results in a risk increase below some threshold value, need it be tracked for future changes, or can it be exempted from future tracking? What would be the appropriate threshold value, as determined through a screening process? Clarification is needed in the implementing guidance (i.e., Regulatory Guide or NEI 04-02) as to whether the tracking of the impacts of these changes needs to be continued post-transition or whether tracking of cumulative impacts begins when the new baseline risk is established.

Regulatory Guide 1.174, used as a risk acceptance template for NFPA 805, requires that cumulative increases in risk be tracked over time, and that increases in risk attributable to “related” program changes be aggregated to determine their total impact even if separated over time. Both of these imply that, no matter how widely separated in time these increases may be, they need to be summed and measured against the original baseline, i.e., the initial “going forward” fire risk, even if a fire PSA re-baselining is periodically performed. NRC distributed a graphic to illustrate the difference between the Regulatory Guide 1.174 approach and another where the “going forward” fire risk is “reset” after each periodic update (essentially shifting the time axis). The latter, although somewhat simpler, is not consistent with Regulatory Guide 1.174. However, except for related changes, tracking of the cumulative risk increase can be accomplished by considering the total risk rather than by segregating the changes into separate entities requiring individual aggregation. However, this separate tracking must still be performed for “related” changes over the life of the plant. Screening methods were discussed to simplify this latter process, whereby risk increases of sufficiently low magnitude could be considered too small to merit retention for future tracking as part of a series of “related” changes (they would still be tracked implicitly through the total plant risk).

**Resolution Action(s)/Action Party:** OPEN. Regulatory Guide 1.205, Section C.3.2.6, provides the staff position on treatment of individual and cumulative changes in risk, as well as the use of



risk reductions associated with unrelated plant changes to offset increases in fire protection risks. NEI 04-02 will be updated to clarify that the baseline fire protection program risk, post-transition, will be the risk of the plant as-designed and operated according to the NRC-approved licensing basis. This position is already stated in Regulatory Guide 1.205. NEI 04-02 will also be revised to address screening, processing and tracking of changes.

**Associated FAQ:** Planned, but not yet submitted.

**Lesson Learned:** Pending submittal and final resolution of FAQ. Baseline fire protection risk must be established to support plant change evaluations post-transition.

Enclosure 3  
Trip Report  
Pilot Plant Observation Meeting  
March 27-30, 2006

NFPA 805 Meeting for Oconee and Harris Pilot Plants Raleigh, NC - March 27-30, 2006 Parking Lot Issues							
No.	Topic	Assigned To	Actions	Schedule	Action Taken	March 2006 Discussion	Letter to NRC
1.	<p>How will Reactor Oversight Process deal with multiple spurious operations? Low significance vs. high significance.</p> <p>Philosophical approach for RI-PB treatment of multiple spurious operations is in NEI 04-02. 'Endorsement' of process will be accomplished via Reg. Guide.</p>	NRC	<p>ROP (new) / NEI 04-02</p> <p>Methodology for Expert Panel Update</p> <p>Markup to P. Lain 3/28/06 flowchart</p> <p>Review of MC 0612</p>	06/30/06 (draft)	<p>NRC (Paul Lain) present flowchart for "unevaluated Multiple Spurious operations" on 03/27/06. It included a screening process that included CAP and comp. measure inclusion, and documentation of the issue as a potential URI based upon risk significance.</p>	<p>Concerns and questions were raised about the process and the burden associated with URIs.</p> <p><b>March 2006 Action Items</b></p> <p>Look at minor violation question for MC 0612 - to see if 'potential multiple spurious operation findings' are adequately addressed.</p> <p>1E-08 threshold for screening. Is it an appropriate value to use and consistent with the ROP? (NEI 04-02, NUREG-6850. RG 1.205)</p> <p>Pilot plants to provide comments on NRC flowchart and potential changes to NEI 04-02.</p>	Yes
2.	<p>Consider Fussell-Vesely risk importance criteria for spurious operations in the gray area.</p> <p>Add more specific discussion of circuit failures (single, multiples, etc.) to transition change analysis discussion and update NEI 04-02.</p>	Henneke / Ratchford	NEI 04-02	March 2006 Pilot Meeting	<p>Meeting in CLT in Jan. 2006 determined that additional guidance is not appropriate in NEI 04-02 until further along in the Pilot PRA efforts. Dennis will present spurious actuation methods at March 2006</p>	<p>Ongoing effort. Item will remain open to allow pilot efforts to 'test drive' the process.</p> <p>[CLOSED]</p>	No

NFPA 805 Meeting for Oconee and Harris Pilot Plants  
Raleigh, NC - March 27-30, 2006  
Parking Lot Issues

No.	Topic	Assigned To	Actions	Schedule	Action Taken	March 2006 Discussion	Letter to NRC
3.	<p>Clarify approved/unapproved manual actions for change analysis. Add additional discussion on actions associated with redundant trains/fire affected train/alternative shutdown.</p> <p><b>March 2006 Update</b> What constitutes prior approval of operator manual actions (See NEI 04-02 B2.2.4)? As part of submittal, should we provide an estimate of delta-CDF to the NRC (in addition to the total delta-CDF being reported as part of RG 1.205)? The NRC stated that a specific approval in an Appendix R III.G.2 SER (without a 10 CFR 50.12 exemption) does not constitute prior approval of manual actions for the purposes of compliance with existing regulations for non-NFPA 805 plants or for change evaluations during transition (for NFPA 805 plants); however, these SERs are part of our licensing basis.</p>	NEI	<p>NEI 04-02</p> <p>a. FAQ - III.G.2 OMAs</p> <p>b. FAQ - SER approval</p>	<p>a. 5/31/06</p> <p>b. 6/30/06</p>	<p>Figure B-4 added to NEI 04-02 rev. 2 reflects the concept of III.G.1 (fire affected train) manual actions. At 3/1/06 NRC public meeting, the NRC (Klein) discussed that 'fire affected train manual actions were not considered unapproved (for the context of 'change' for the NFPA 805 transition). Industry requested clarification in writing.</p>	<p>a. NEI will add new figure to NEI 04-02 to include fire affected train operator manual actions (where credited train is protected in a fire area, e.g., 3-hour wrap, that includes the fire affected train operator manual action).</p> <p>NEI will submit a letter to clarify manual action items from 3/1/06. The upcoming RIS on manual actions may provide additional clarification.</p> <p>b. NRC requested that the pilot plants make a proposal on how to address the 'incorrect approval' of 'SER approved' Appendix R III.G.2 manual actions. This proposal should consider input from the manual action RIS scheduled to be issued in June 2006.</p>	Yes

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No.	Topic	Assigned To	Actions	Schedule	Action Taken	March 2006 Discussion	Letter to NRC
4.	<p>NRC feedback on high-low pressure interface methodology and other items.</p> <p>Clarify in NEI 04-02 that an RI-PB approach could be used for RCS boundary valve spurious operation using available and developed likelihood values for spurious operation.</p> <p>Position needs to be clarified in Chapter 4 transition, as well as other potential items where NEI 00-01 method may differ from NFPA 805.</p>	NEI	FAQ	05/30/06	NEI 00-01 methodology comparisons are in progress at the pilot plants. Nothing specific changed in NEI 04-02 rev. 2 yet.	Need to clarify in NEI 04-02 that the guidance in NEI 00-01 is consistent with NFPA 805 definition.	Yes

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No.	Topic	Assigned To	Actions	Schedule	Action Taken	March 2006 Discussion	Letter to NRC
5.	<p>Submittal/approval relative to Fire PRA peer review. Will the peer review be a prerequisite for license amendment submittal / approval.</p> <p>ANS standard development schedule does not support established peer review completion prior to submittal.</p> <p>Issue for 'non-pilot' plants, rather than pilots. NEI peer review process schedule could impact 'non-pilot' transition schedules.</p>	NRC	NRC Reg. Guide, NEI PRA peer review process	March 2006 Pilot Meeting	<p>NRC provided specific information in the Draft Reg. Guide 1.205 in Feb. 2006. Discussed at meetings with NRC on 2/27/06 and 3/3/06.</p>	<p>RG 1.205 draft includes specific information on peer review. RG 1.205 will state that the licensee's fire PRA must be subject to a peer review process or NRC review process as part of transition.</p> <p><b>NEI to develop peer review process for non-pilots.</b></p> <p>PE requested that reviews be conducted of PRA by the NRC prior to performing change evaluations to gain level of confidence prior to significant effort on change evaluations. NRC stated that they would be agreeable to these types of reviews. Need to schedule future pilot items on PRA review.</p> <p>Add information in NEI 04-02 include information from RG 1.205 on the peer review process (that was added prior to the 2/27/06 Public Meeting).</p> <p>[NRC Handout 03/28/06]</p> <p>[CLOSED]</p>	No

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No.	Topic	Assigned To	Actions	Schedule	Action Taken	March 2006 Discussion	Letter to NRC
6.	Non-power operational modes PRA requirements will be a 'show stopper'. There are no existing standards/methods for developing a non-power operational modes risk assessment. This would make the performance of this analysis impossible to meet prior to current transition submittal dates. Proposed addition to Section 4.3.3 of NEI 04-02 being prepared by NRC.	NRC	NEI 04-02	Need by 11/30/05 for NEI 04-02 Rev. 2	NRC provided specific information in a draft markup of App. F to NEI 04-02 Rev. 1. Feedback to the NRC from NEI was that the proposed changes were unacceptable to the industry.	No changes to NEI 04-02 Rev. 1 regarding the non-power operational modes are proposed by the NRC as part of RG 1.205. The NRC handout states that "the NRC accepts the guidance provided in NEI 04-02 Rev. 1 regarding the issue."  [NRC Handout 03/28/06]  [CLOSED]	No
7.	NEI 04-02 needs to be more clear on the relationship between NFPA 805 Chapter 3 and 4 requirements. There are a number of sections in Chapter 3 that are dependent upon the requirements for protection in Chapter 4 (e.g., ERFBS, barriers, suppression, detection). There is potential for misinterpretation if this is not made more clear.	PE	NEI 04-02  FAQ / Equivalent PE letter	04/15/06	Updated NEI 04-02 Rev. 2 Section 5.3 and Appendix B to include more discussion of requirements for protection and flowcharts (in App. B) to assist in determining which systems and features are 'required' by Ch. 4 of NFPA 805.	Revision 2h sent to NRC includes flowcharts in Appendix B on the relationships between NFPA 805 Chapter 4 requirements and 'required' systems for NFPA Chapter 3.  Resend with a letter on specific issues. Will request an expedited review.  Concerns were identified by the NRC over the RG 1.174 acceptance criteria for risk significance of fire protection systems/features in Appendix B to NEI 04-02.  Editorial correction: Add "no" to ERFBS flowchart (Figure B-2 of Draft 2h o NEI 04-02.	Yes

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8.	Recommend making nuclear safety questions first in screening reviews in order to determine necessity for Chapter 3 features and systems. Related to question above.	PE	NEI 04-02  FAQ / Equivalent PE letter	04/15/06	NEI 04-02 Rev. 2 Section 5.3 and Appendix I reflect the revised order of questions.	NEI 04-02 Rev. 2h changes presented to the group. NEI will send in the proposed changes to NRC with the letter.	Yes
9.	Clean up all change evaluation examples and send to NRC. Chapter 3.11.3 (fire barrier) needs to be clarified in transition that "qualification by other means" has to be acceptable to the AHJ.	Ertman/ Kleinsorg	Change Examples (handouts)/ NEI 04-02	11/30/05 to support NRC Trip Report	New change evaluation examples to be reviewed during March pilot.	[CLOSED to No. 10]	No
10.	Modify NEI 04-02 to "show the path through" fire area boundary qualification. We should provide LAR wording to address qualification of fire barriers  "Minimal" does not meet the standard but is adequate for the hazard.	NEI	Develop alternative methodology for performing Engineering Equivalency Evaluations	07/31/06 (draft)  10/06 pilot vet process  FAQ (TBD)	Figure B-3 of NEI 04-02 draft provides flowchart of requirements for fire barriers. This is related to ability to transition and perform 'adequate for the hazard' fire barrier evaluations (LAR approach).	Will put the 'alternate methodology process' in future revision to NEI 04-02 and individual licensees will refer to it in their LAR.  Discussed LAR process for existing engineering equivalency evaluations that is planned to be added to a future revision to NEI 04-02. Agreed that it would be discussed at the next pilot meeting.	Yes
11.	Guidance for performing preliminary risk screening. • Manual action timing • Fire frequency impact	Kleinsorg/ Ratchford	NEI 04-02	Not for NEI 04-02 Rev. 2	Will be developed further as PRA results are obtained.	Will add examples in the future. Does not warrant inclusion in the parking lot.  [CLOSED]	No

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12.	Change Question 4.f to "potentially greater than minimal" vs. "greater than minimal" in the change process sheets in Appendix I of NEI 04-02. Also factor risk decreases in to the processes.	PE	FAQ / Equivalent PE letter	04/15/06	Updated NEI 04-02 Rev. 2 Section 5.3 and Appendix I.	NEI 04-02 Rev. 2h changes presented to the group. Will be submitted along with other NEI 04-02 changes.	Yes
13.	How should the screening question be "reviewed" by the PRA engineers? Do all "Greater than 'no'" answers need to be reviewed by the PRA engineers?	Ertman / Barrett	Plant Specific	March 2006 Pilot Meeting	Not a major issue.	Does not warrant inclusion in the parking lot.  [CLOSED]	No
14.	Consider having others serve as role of AHJ with respect to prior approval of Ch. 3 anomalies such as NFPA (non-NFPA 805) code deviations on new installed systems, etc.	NRC	Regulatory Guide (later)	March 2006 Pilot Meeting	Draft RG 1.205 from Feb. 2006 is clear that NRC is the AHJ.	[NRC Handout 03/28/06]  RG 1.205 draft and handout provide clarifications.  [CLOSED to No. 10]	No
15.	Match up NEI 04-02 with RG 1.205 for baseline (Section 2.2 of Draft RG 1.205)	NEI	FAQ	07/31/06		Need update to NEI 04-02 to clarify that upon completing transition to an NFPA 805 licensing basis, the baseline FPP risk will be the risk of the plant as-designed and operated according to the NRC-approved licensing basis.	Yes



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16.	How are interim changes to NEI 04-02 and issues going to be handled administratively, in conjunction with the Regulatory Guide, given that potential changes are being identified as part of the pilot process and will continue to be identified.	NRC / NEI	TBD	March 2006 Pilot Meeting	Timeline and plan prepared and presented at 3/3/06 NRC workshop. Will be discussed at March 2006 Pilot meeting,	Discussed in detail on 3/27/06. Frequently Asked Question (FAQ) process used for ROP performance indicator (PI) was presented as an example process to be used for addressing 'parking lot' items for the pilot plants and for non-pilot transitioning plants.  [CLOSED]	No
17.	Impact of circuit failure draft proposed RIS (May 2005) and Generic Letter (October 2005) on NFPA 805 transition process. Recommend providing feedback to NRC on these implications.	Ertman / Barrett		11/30/05	Harry B. provided input to Sunil on the topic.	Ray G. provided handout on process for doing transition evaluation in order to try to simplify process. Basically involved calculating a new CDF and assuming it as a 'surrogate change' for the purposes of transition acceptability. The process then did progressive additional work to look at the change based upon the safety significance and acceptability determination.  [CLOSED]	No
18.	Format for NEI 04-02 Appendix B NSPA methodology transition process. Based on ONS pilot efforts, may need to revise NEI 04-02 table process to more of a guidance document.	Duke	Duke / NEI provide alternative method for NEI 04-02	05/31/06 (draft)		NRC (P. Lain) discussed concerns with communicating items of concern to non-pilot transitioning plants. NEI 04-02 may be revised to provide alternative approaches to completing comparison tables for the NEI 00-01 NSPA methodology comparison.	No

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19.	Need to provide definitions and examples of related and unrelated changes. Include examples in NEI 04-02. (For example: what "CDF" element is affected?). This discussion occurred as part of Parking Lot item 15. Also need to determine how PSA updates (model changes, method changes, etc) are considered? Are they changes, do previous changes need to be re-evaluated?	PE	Draft methodology and examples	07/31/06		Related to Parking Lot Item 24.	No
20.	NRC provide any specific needs for "in progress" fire PRA peer review. This is relative to NRC stated intent to credit the observation process instead of a peer review.	NRC	Process	TBD			No
21.	Reconciliation of different risk acceptance thresholds (RG 1.205, ROP acceptance, MSO acceptance).	Duke	Table of data and recommendations for change.	06/30/06			No
22.	Update Appendix I of NEI 04-02 to include non-power operational mode change evaluation.	NEI	FAQ	07/31/06			Yes

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23.	<p>Discussion was held over wording related to FPP systems and features. Questions were asked about "...fire protection systems and features relied upon to meet FPP nuclear safety and radioactive release performance criteria) not required by NFPA 805...." And configuration management.</p> <p>Additional discussion was held over "what constitutes an FPP change".</p>	PE	Draft methodology and examples of what constitutes a fire protection program change	07/31/06			No
24.	<p>[NRC Handout 03/28/06] NRC expressed concern over "dividing up" individual changes that are small (that are acceptable individually), but are not acceptable cumulatively.</p> <p>Potential solutions:</p> <ul style="list-style-type: none"> <li>o Screening out of changes at very low values.</li> <li>o Screening method for determining threshold for tracking cumulative changes ("related")</li> <li>o Define related (how are features that are going to be tracked for cumulative affect) (Section 3.2.5 and 3.2.6 of RG 1.205)</li> </ul>	PE	Draft revision of NEI 04-02 to address the screening, processing and tracking of changes.	06/30/06		<p>Draft RG 1.205 (Feb. 2006) states that changes associated with the new post-transition baseline do not have to be tracked in the future.</p> <p>Ray G. provided handout on tracking post-transition cumulative changes that tracks all changes back to baseline.</p> <p>Related to Parking Lot Item 19.</p>	No

Enclosure 4  
Trip Report  
Pilot-Plant Observation Meeting  
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## Handout References

Located in ADAMS Accession No. ML061530193