

NFPA 805 OBSERVATION VISIT TRIP REPORT

Date: March 6 - 8, 2007

Location: Shearon Harris Nuclear Power Plant, near New Hill, North Carolina

Attendees: Representatives from the following organizations attended the meetings:
NRC Headquarters Progress Energy
NRC Region II Duke Power
ERIN Engineering and Research Inc
Pacific Northwest National Laboratory (PNNL)

Subject: Risk-Informed, Performance-Based Fire Protection Transition Pilot-Plant
Observation Visit – Shearon Harris Nuclear Power Plant, North Carolina

Agenda: See Attachment 1

Summary:

A Nuclear Regulatory Commission (NRC) transition pilot plant observation visit for implementation of Title 10 of the Code of Federal Regulations (10 CFR) 50.48(c) was held with Progress Energy representatives at their Shearon Harris Nuclear Power Plant (Harris). Other industry representatives were also present to observe the proceedings. Progress Energy representatives presented the status of their transition projects and specific topics related to 10 CFR 50.48(c) implementation. Attachment 1 provides the Topics and Agenda. Attachment 2 provides a list of issues raised by the observation visit participants and is called the "Parking Lot." This list documents and tracks transition issues from visit to visit. The NFPA 805 Frequently Asked Question (FAQ) process is often used to close the Parking Lot issues. Attachment 3 references the presentations given during the visit. The presentations handouts are available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML070950030. Attachment 4 provides NRC staff Issue Summary Sheets. These summaries provide clarification and detail of lessons learned from the NFPA 805 Transition Pilot Program.

General Discussion:

The general objective of the observation visits is to facilitate communications between the NRC staff and pilot plant licensees 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 (RG) 1.205; (2) identify regulatory and licensing issues that may impact implementation; and (3) identify improvements and lessons learned to be considered in future inspection procedures and inspector training.

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

Specific Visit Topics:

This section of the trip report summarizes the specific visit topics identified in the agenda and includes information that resulted in identification of new parking lot issues, lessons learned, or other information that have the potential to influence regulatory or industry processes or guidance for implementation of NFPA 805. Attachment 4 identifies, by number, the Issue Summary Sheets associated with the agenda topics.

Agenda Topic 1, Progress Energy - NFPA 805 Project Status (Handout Reference 1):

Progress Energy provided the transition status of Harris. Probabilistic risk assessment (PRA) data collection is scheduled for completion by the end of summer 2007. Progress Energy expects to implement NFPA 805 at all four Progress Energy plants. There is some contractor support, but plant personnel are involved at all levels and will have full familiarity with and knowledge of the process at the end of the project. Discussions between the NRC and Progress Energy staff indicate Harris PRA success criteria verification is via MAAP while the NRC's SPAR models use RELAP. This may be an issue during reviews (see **Issue Summary Sheet 30**). There are concerns with interactions and potential conflicts between NFPA 805 and license renewal commitments. **Issue Summary Sheet 35** documents this concern.

Agenda Topic 2, Progress Energy – Response to NRC Questions on Tasks 1, 2, 4, & 6 (ADAMS, Accession No. ML070260516):

On January 24, 2007, the NRC staff from Headquarters and Region II, with support from Pacific Northwest National Laboratory and Sandia National Laboratory, participated in a teleconference with Progress Energy's NFPA 805 transition team regarding the development of their fire PRA. Progress Energy discussed their planned resolution of the issues. This discussion identified several issues that require further tracking and resolution:

- Once the global analysis boundary (area) is set, all components within are candidates for the "denominator" when determining ignition frequencies based on the total number of plant-wide components, even if they lie in areas that are subsequently qualitatively screened out. **Issue Summary Sheet 28** documents this concern.
- Expert elicitation/brainstorming to identify bounding sequences that are unquantified in current deterministic and probabilistic modeling (e.g., multiple spurious operations) requires a standardized approach. Industry documentation of expert elicitation processes will ensure consistency and reviewability of processes. **Issue Summary Sheet 34** documents this issue.
- The review indicated no 'RED FLAGS' or showstoppers. Using the Certification framework from the Internal Events PRA Peer review process (see NEI 00-02), it was suggested that the comments are mainly C- and D-level Facts and Observations.
- Plants are encouraged to use the terminology and definitions provided in NUREG/CR-6850 to ease reviews and ensure consistency with standards.

NRC expects Progress Energy to submit final comment resolutions for inclusion on the docket to close those already docketed items (ADAMS, Accession No. ML070260516)

Agenda Topic 3, Progress Energy – Fire PRA Task 8 Scoping Fire Modeling (Handout Reference 2):

Progress Energy reported on Task 8, Scoping Fire Modeling efforts. This discussion identified several issues that require further tracking and resolution:

- There are differences between the fire modeling done as part of a Fire Protection Significance Determination Process (FPSDP) and that done as part of NUREG/CR-6850 (e.g., inconsistencies between 75th and 98th percentile heat release rates (HRRs) as defined by the two methods). This is likely to raise multiple questions by inspectors as work progresses on license amendments. **Issue Summary Sheet 32** documents this issue.
- Progress Energy determined that walkdown of unscreened sources for source-target combinations that might screen based on zone-of-influence (ZOI) is not productive due to relatively high conditional core damage probabilities. **Issue Summary Sheet 31** documents this issue.
- Kerite FR cables are Thermoset cables with an unusually low damage threshold temperature. NUREG/CR-6850, Table H-4, incorrectly lists this temperature range as being 372 C – 382 C. This is an error and a value not higher than 237 C is appropriate. **Issue Summary Sheet 36** documents this issue. Although Kerite cables are Thermoset-sheathed, performance is more in line with Thermoplastic cables. Correctly accounting for Kerite cables as Thermoplastic cable results in additional targets within a ZOI. **Issue Summary Sheet 27** documents this issue.
- Progress Energy developed a database as part of the NUREG/CR-6850 Task 8 efforts that records source and target information for later use in the fire modeling and Fire PRA. Harris offered to share the tool with interested non-pilot transition plants. **Issue Summary Sheet 39** documents this lesson-learned.

Agenda Topic 4, Progress Energy – Task 11, Detailed Fire Modeling (Handout Reference 3):

Progress Energy reported on Task 11, Detailed Fire Modeling efforts. This discussion included details of defining hot gas layers (HGLs) and HRRs, and assessing electrical raceway fire barrier system (ERFBS) capabilities. All of these are standard fire modeling activities, but PRA requires a different view/attitude in that standard deterministic approaches generally need to know what is damaged, not what is needed for success. In addition, fire modeling for PRA requires multiple modeling efforts because of the iterative nature of PRA. It was not clear if current fire modeling properly accounts for environmental qualification (EQ) considerations for “other” equipment in a fire-impacted compartment. **Issue Summary Sheet 33** documents this issue.

Agenda Topic 5, Progress Energy, PRA Strategy Going Forward (Handout Reference 4):

Progress Energy reported on their expected Fire PRA activities. A substantial amount of effort has gone into Task 5, Fire-Induced PRA models, but an equal level of effort is still required. Task 7, Qualitative Screening, is being accomplished using FRANC, but little is being screened. Tasks associated with circuit routing and analysis (3, 9, and 10) are ongoing with

population of a database with all required routing information scheduled for completion in about a month. Task 12, HRA, will use an EPRI-developed tool in compliance with the expected joint EPRI/NRC NUREG that is under development. Task 13, Seismic Interaction, is not a large effort. Task 14, Quantification, will use the EPRI FRANC tool. Task 16, Documentation, is being performed in parallel with other tasks, and a fire PRA audit is expected in February 2008. NRC expects an approximately five-member team using the ANS standard and draft review guide to conduct the audit.

Agenda Topic 6, Progress Energy, Plant Walkdown:

NRC staff participated in a plant walkdown to examine items and areas of interest.

Agenda Topic 7, Progress Energy, Manual Firefighting Update (Handout Reference 5):

Progress Energy described their overall transition process. The plant characterized the effort as an upgrade to their fire brigade requirements and saw this as an opportunity to cleanup commitments. The transition of Fire Brigade training is common across Progress Energy's fleet and is slated for simultaneous upgrade at all sites.

Agenda Topic 8, Progress Energy – Review of NRC Comments on Project Instructions (PIs) (ADAMS, Accession No. ML070590686, Handout Reference 6):

On February 5, 2007, NRC staff from Headquarters and Region II, with support from Pacific Northwest National Laboratory and Sandia National Laboratory, participated in a teleconference with Progress Energy's NFPA 805 transition team regarding the Chapter 3 Transition Review and radiation release. Progress Energy provided discussions of their planned resolution of the raised issues. This discussion identified several issues that require further tracking and resolution:

- Table B-1 should show how 10 CFR 50.48(a) requirements map to NFPA 805. This led to a more general observation that 10 CFR 50.48(a) contains the requirements while 10 CFR 50.48(b) and 10 CFR 50.48(c) constitute ways for a plant to satisfy the requirements. Plants must ensure that they map their efforts back to the requirements in 10 CFR 50.48(a). **Issue Summary Sheet 25** documents this lesson learned.
- Both pilot plant parent organizations (Progress Energy and Duke Power) have purchased an NFPA 805 transition tool from the same vendor for collecting Chapter 3 and 4 required information. The tool allows for generation of the related NEI 04-02 tables, while also collecting and reporting on a superset of information. Other organizations should consider use of similar tools (whether purchased from a vendor or developed in-house).
- Progress Energy recommends implementing changes and improvements as they are developed and not waiting until the License Amendment Request (LAR) submittal.

NRC expects Progress Energy to submit final comment resolutions for inclusion on the docket to close the already docketed comments (ADAMS, Accession No. ML070590686)

Agenda Topic 9, Progress Energy – MT Fire Wrap Barrier Calculation (Handout Reference 7):

Progress Energy described their MT electrical raceway testing and associated project calculations. MT ratings varied from 115 minutes to 180 minutes depending on configuration. Fire testing results have dictated MT upgrades to address identified weaknesses. The fire protection team is going into a level-of-detail that may not be necessary for Fire PRA, but still is a desired exercise to verify configuration values that will become part of the licensing basis.

Agenda Topic 10, Progress Energy – Equivalency Evaluation (Handout Reference 8):

Progress Energy led a discussion on Existing Engineering Equivalency Evaluation (EEEE) screening as part of pre-transition activities. EEEEs do not have prior NRC approval. NEI 04-02 provides no screening guidance on existing “86-10” evaluations (EEEEEs), so guidance from NEI 02-03 provided the basis for the plant procedure (FPIP-0125). The list of screened EEEEs is to be included as part of the LAR. Industry proposed resolution of FAQ 06-0008 (see Agenda Topic 11 below) is based on Progress Energy’s approach. **Issue Summary Sheet 8** documents this issue. NRC staff stipulated that EEEEs only apply to NFPA 805 Chapter 4, not Chapter 3, plant changes (i.e., no applicability to “fundamental FPP changes”). This includes both performance and deterministically based changes. The plants indicated the EEEE guidance in NEI 04-02 still requires further clarification (in addition to that being provided as part of FAQ 06-0008) and plan to propose changes. **Issue Summary Sheet 26** documents this issue.

Agenda Topic 11, Progress Energy – FAQ 06-0008 (ADAMS, Accession No. ML070640544, Handout Reference 9):

Progress Energy led a discussion on FAQ 06-0008, “Performance-based alternative for fire area boundary evaluation.” NFPA 805 includes provisions 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. The Pilot Plants identified a need to revise NEI 04-02 to provide additional methodologies for performing engineering equivalency analyses that licensees could reference in their license amendment request. **Issue Summary Sheet 8** documents this issue. Progress Energy presented the industry proposed resolution to Revision 1 of the FAQ, while the NRC presented their comments on Revision 1. The two approaches are different as the NRC approach is bounded by existing codes (i.e., limited to requirements in secondary codes) while the Progress Energy proposal is more open-ended and is bounded by criteria. Fire Protection Engineering Analysis (FPEA) is part of the industry proposed FAQ 06-0008 resolution. An NEI technical paper on FPEA is proposed as part of the FAQ 06-0008 resolution. The final recommendation is to revise the FAQ (FAQ 06-0008 Revision 2) to focus on secondary codes and features that have linkage to Chapter 4 and to include an FPEA if an acceptable approach is defined. **Issue Summary Sheet 38** documents the FPEA issue.

Agenda Topic 12, Summary/Actions/Schedule (Attachments 2 and 4, Handout Reference 10):

The summary session identified new Parking Lot (Attachment 2) and Lessons Learned (see Issue Summary Sheets in Attachment 4) items. Progress Energy presented an updated review schedule (Handout Reference 10). The April Fire PRA session will be a teleconference, while the next onsite visit will be May 29- 31.

Parking Lot Issues Summary:

The attached Parking Lot (see Attachment 2) was initiated at the first observation visit in November 2005. The summary documents the issues and needs identified during observation visit presentations and related discussions. NRC and Industry use this summary to track issues, revise existing items as necessary, and open new items for issues identified during follow-on observation visits.

The March 2007 observation visit identified thirteen new items. No discussion of existing items on the Parking Lot occurred (i.e., the documented status of existing items did not change during this meeting). Additional details on actions taken, a short summary of the visits' discussions on the specific issues, and whether a FAQ is associated with an item are included in the Parking Lot.

Issue Summary Sheets

Following the March 2006 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. Attachment 4 provides the Issue Summary Sheets combined with the related Parking Lot issues.

Plans for Next Observation Meeting:

We discussed future observation visits and a tentative schedule for working level visits. Progress Energy provided a "strawman" for a 2007 schedule (Reference 10) for interim review of deliverables (in particular, the PRA activities) and Duke Power is to provide NRC with PRA schedule information to facilitate planning of review activities.

Attachments:

1. NFPA 805 Transition Observation Visit at Harris Nuclear Power Plant, Topics and Agenda, March 6 - 8, 2007
2. NFPA 805 Transition Observation Visit at Harris Nuclear Power Plant, Updated Parking Lot, March 6 - 8, 2007
3. NFPA 805 Transition Observation Visit at Harris Nuclear Power Plant, Handout References, March 6 - 8, 2007 (ADAMS, Accession No. ML070950030)
4. NFPA Pilot-Plant Implementation Issue Summary Sheets

Handout References:

1. NFPA 805 Transition, March HNP Pilot Observation Visit, Objectives and Background, Jeff Ertman and David Miskiewicz, Progress Energy, March 6, 2007 - Meeting Agenda Topic 1 - Slide Presentation.
2. NFPA 805 Transition, March HNP Pilot Observation, Fire PRA Task 8, Scoping Fire Modeling, David Miskiewicz and Ricardo Davis-Zapata, Progress Energy, March 6, 2007 - Meeting Agenda Topic 3 - Slide Presentation.
3. NFPA 805 Transition, March HNP Pilot Observation, Fire PRA Task 11, Detailed Fire Modeling, David Miskiewicz, Progress Energy, March 6, 2007 - Meeting Agenda Topic 4 - Slide Presentation.
4. NFPA 805 Transition, March HNP Pilot Observation, Fire PRA Strategy Going Forward, David Miskiewicz, Progress Energy, March 7, 2007 - Meeting Agenda Topic 5 - Slide Presentation.
5. NFPA 805 Transition, Chapter 3 – Manual Firefighting Update, Alan Holder, Progress Energy, March 8, 2007 - Meeting Agenda Topic 7 - Slide Presentation.
6. Summary of Comments on PIs, David Miskiewicz, Progress Energy, March 8, 2007 - Meeting Agenda Topic 8 - Slide Presentation.(ADAMS, Accession No. ML070590686)
7. MT Electrical Raceway Fire Barrier Systems (ERFBS), Mike Fletcher, Progress Energy, March 8, 2007 - Meeting Agenda Topic 9 - Slide Presentation
8. Existing Engineering Equivalency Evaluations (EEEE), Mike Fletcher, Progress Energy, March 8, 2007 - Meeting Agenda Topic 10 - Slide Presentation
9. FAQ 06 -0008, Revision 1 Examples, Jeff Ertman, Progress Energy March 8, 2007 - Meeting Agenda Topic 11 - Slide Presentation (ADAMS, Accession No. ML070640544)
10. Harris NFPA 805 Pilot Observation Meetings/Reviews 2007 Schedule, Revision 3, Jeff Ertman, Progress Energy, March 8, 2007 – Meeting Agenda Topic 12.

Attachment 1 to the Trip Report
Pilot Plant Observation Meeting
March 6 – 8, 2007

NFPA 805 Meeting for Harris NRC Observation Meeting Topics and Agenda, Harris Nuclear Power Plant – March 6 - 8, 2007				
		Topic	Lead Presenter	Topic Notes
Tuesday March 6	1300 – 1305	Introductions, Meeting Kickoff	N/A	
	1305 – 1350	Objectives and Background	Ertman	Topic 1, Reference 1
	1350 – 1530	Tasks 1, 2, 4, 6 Response to NRC Questions	Miskiewicz	Topic 2, ML070260516
	1550 – 1700	Task 8, Scoping	Miskiewicz	Topic 3, Reference 2
Wednesday March 7	0830 – 1015	Task 11, Detailed Fire Modeling	Miskiewicz	Topic 4, Reference 3
	1030 – 1200	PRA Strategy Going Forward	Miskiewicz	Topic 5, Reference 4
	1300 – 1700	Plant Walkdown	Ertman	Topic 6
Thursday March 8	0815 – 0830	Manual Firefighting Update	Holder	Topic 7, Reference 5
	0830 – 0930	Review of NRC Comments on PI	Fletcher	Topic 8, ML070590686, Reference 6
	0930 – 1030	MT Fire Wrap Barrier Calculation	Fletcher	Topic 9, Reference 7
	1110 – 1145	Equivalency Evaluation, FPIP-0125	Fletcher	Topic 10, Reference 8
	1215 – 1300	FAQ 06-0008	Ertman	Topic 11, Reference 9
	1300 – 1340	Summary/Actions/Schedule	Ertman	Topic 12, Reference 10, Enclosure 2, Enclosure 4

Attachment 2 to the Trip Report
Pilot Plant Observation Meeting
March 6 – 8, 2007

NFPA 805 Transition Observation Visit Cary, NC – March 6 – 8, 2007 – Updated Parking Lot							
No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
1	How will Reactor Oversight Process deal with multiple spurious operations? Low significance vs. high significance. Philosophical approach for RI-PB treatment of multiple spurious operations is in NEI 04-02. 'Endorsement' of process will be accomplished via Reg. Guide.	Duke / Progress	ROP (new) / NEI 04-02 Methodology for Expert Panel Update Markup to P. Lain 3/28/06 flowchart Review of MC 0612	March 2007 (HNP Pilot Mtg)	NRC (Paul Lain) presented 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.	Concerns and questions were raised about the process and the burden associated with URIs. Look at minor violation questions for MC 0612 – to see if 'potential multiple spurious operation findings' are adequately addressed. 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) Pilot plants to provide comments on NRC flowchart and potential changes to NEI 04-02. Pilot Plants to provide Update by March 2007	Potential
2	Consider Fussell-Vesely risk importance criteria for spurious operations in the gray area.					[CLOSED] Refer to previous version of parking lot for details.	No
3	Clarify approved/unapproved manual actions for change analysis.						Closed to FAQ 06-0001 and 06-0012 October 2006
4	NRC feedback on high-low pressure interface methodology and other items.						Closed to FAQ 06-0006 October 2006
5	Submittal/approval relative to Fire PRA peer review. Will the peer review be a prerequisite for license amendment submittal / approval.					[CLOSED] Refer to previous version of parking lot for details.	No

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
6	Non-power operational modes PRA requirements will be a 'show stopper'.					[CLOSED] Refer to previous version of parking lot for details.	No
7	NEI 04-02 needs to be clearer on the relationship between NFPA 805 Chapter 3 and 4 requirements.						Closed to FAQ 06-0004 October 2006
8	Recommend making nuclear safety questions first in screening reviews.						Closed to FAQ 06-0002 October 2006
9	Clean up all change evaluation examples and send to NRC.					[CLOSED to Item 10] Refer to previous version of parking lot for details.	No
10	Modify NEI 04-02 to "show the path through" fire area boundary qualification.						Closed to FAQ 06-0008 October 2006
11	Guidance for performing preliminary risk screening.					[CLOSED] Refer to previous version of parking lot for details.	No
12	Change Question 4.f to "potentially greater than minimal" vs. "greater than minimal"						Closed to FAQ 06-0003 October 2006
13	How should the screening question be "reviewed" by the PRA engineers?					[CLOSED] Refer to previous version of parking lot for details.	
14	Consider having others serve as role of AHJ with respect to prior approval of Ch. 3 anomalies.					[CLOSED to No. 10] Refer to previous version of parking lot for details.	
15	Match up NEI 04-02 with RG 1.205 for baseline (Section 2.2 of Draft RG 1.205)						Closed to FAQ 06-0010 October 2006
16	How are interim changes to NEI 04-02 and issues going to be handled administratively?					[CLOSED] Refer to previous version of parking lot for details.	
17	Impact of circuit failure draft proposed RIS (May 2005) and Generic Letter (October 2005)					[CLOSED] Refer to previous version of parking lot for details.	

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
	Items started at PE Pilot (March 2006)						
18	Format for NEI 04-02 Appendix B NSPA methodology transition process.						Closed to FAQ 06-0013 October 2006
19	Need to provide definitions and examples of related and unrelated changes.						Closed to FAQ 06-0005 October 2006
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 in instead of a Peer Review.	NRC and Progress	Provide proposed schedule at Nov. 2006 Pilot Mtg for NRC review of PRA Task documents (estimated Jan. – Feb. 2007)	11/6/06		11/7/06 Discussion Item closed based on PE 'strawman' schedule for 2007 presented at 11/7/06 meeting. New item 31 (related) created. [CLOSED]	None
21	Reconciliation of different risk acceptance thresholds (RG 1.205, ROP acceptance, MSO acceptance).	Duke / Progress	Table of data and recommendations for change. Create FAQ?	4/30/07		Discussed at Oct. 2006 Pilot Mtg. Guidance will be needed prior to performance of change evaluations.	Potential
22	Update Appendix I of NEI 04-02 to include non-power operational mode change evaluation.	NEI	Create FAQ to provide specific guidance.	05/31/07			Potential
23	Discussion was held over wording related to FPP systems and features for the purposes of an FPP change.						Closed to FAQ 06-0005 October 2006
24	NRC expressed concern over "dividing up" individual changes that are small.						Closed to FAQ 06-0014 October 2006

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
	Items started at ONS Pilot (October 2006)						
25	ONS Fire PRA are based on the fire zones as defined in the FP Program, which are not necessarily based on physical barriers or features that are subject to any rigorous treatment. The discussion with the NRC highlighted concerns with respect to the treatment of such compartment in the Fire PRA and the consistency of that treatment with the guidance provided in NUREG/CR-6850. Questions arose over impact of this approach on other tasks and level of documentation needed to justify this approach.	Duke	Provide clarification on methodology.	TBD		11/7/06 Update Closed due to change in Duke approach. PE will create similar item if issues arise at the PE sites. [CLOSED]	Potential
26	The NUREG/CR- 6850 methodology includes a specific frequency Bin for the treatment of the main control board in the Main Control Room (Bin 4 of Table 6-1). While the general description of this board by making Reference to the 'horseshoe', is generally correct, there are control room layout details that create some ambiguity, and the potential to characterize other electrical panels/cabinets as Bin 15. The guidance in NUREG 6850 is not clear enough to result in consistent application.	Duke	Provide clarification on methodology (FAQ)	11/6/06 (HNP Pilot Mtg.)		High priority [CLOSED]	FAQ 06-0018

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
27	NUREG/CR-6850 does not provide explicit guidance for the counting of plant electrical cabinets. Two basic approaches were debated. The Method 1 approach would count each individual electrical cabinet based on the physical boundaries of that cabinet independent of size or length. Method 2 would count electrical cabinets based solely on size.	Duke and Progress	Provide clarification on methodology (FAQ?)	11/6/06 (HNP Pilot Mtg.)		High priority <u>11/8/06 Update</u> FAQ 06-0016 presented at the meeting. [CLOSED]	FAQ 06-0016
28	The overall counting method guidance for switchgears, load centers, unit substations, and bus ducts is not completely clear. The concern is that counting these component types for Bin 16 using the Bin 15 method could result in a fire frequency distribution for HEAFs for switchgears and load centers that is inconsistent with industry experience in that the HEAF on the load centers and load centers would be much more frequent as compared to switchgears. A proposed change to the counting method for this Bin is proposed so that the HEAF frequency for low voltage equipment would be weighted to a lesser degree.	Duke / Progress	Provide clarification on methodology (FAQ?)	11/6/06 (HNP Pilot Mtg.)		High priority <u>11/8/06 Update</u> FAQ 06-0017 presented at the meeting. [CLOSED]	FAQ 06-0017
29	Miscellaneous ignition frequency binning issues. Questions arise during ignition frequency counting, such as: - o MOV motors - o Hydraulic actuators for valves - o Transformers.	Duke / Progress	Provide clarification on methodology (FAQ?)	12/31/06		High priority [CLOSED] – Closed to FAQ 07-0031	FAQ 07-0031

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
30	There is potential confusion over the role of 10 CFR 50.48(a) for a plant that is transitioning to NFPA 805. This may impact the scope of the transition and post-transition program management.	Duke	Provide clarification on the role of 10 CFR 50.48(a) with a post-transition fire protection program.	12/31/06		11/7/06 HNP Pilot Discussion Discussion held on information available in promulgation of 10 CFR 50.48(c) on 6/8/04 [ADAMS Accession No. ML041340086]. New FAQ to be issued to update NEI 04-02. [CLOSED] – Closed to FAQ 07-0032	FAQ 07-0032
Items started at PE Pilot (November 2006)							
31	NRC to provide feedback to PE on 'strawman' 2007 schedule for interim review of deliverables (in particular, the PRA activities). Duke to provide NRC with PRA schedule information to plan 'peer review' activities.	NRC / Duke / Progress	Work together on plan for peer review	12/31/06		Added 11/7/06 Progress Energy has developed a schedule and considers item closed	
32	What to do about the new requirement for seismic hose stations (NFPA 805 Section 3.6.4, considering info in 10 CFR 50.48(c))	Duke / Progress	Provide proposed resolution.			Added 11/8/06 [CLOSED]	Closed based on B1 review
33	What to do about the new 'requirement' for suppression for the diesel fire pump (NFPA 805 Section 3.9.4).	Duke / Progress	Provide proposed resolution.			Added 11/8/06 [CLOSED]	Closed based on B1 review
34	What to do about the new requirement for qualified cable (NFPA 805 Section 3.3.5.3, considering info in 10 CFR 50.48(c))	Duke / Progress	Provide proposed resolution.			Added 11/8/06	
35	Need additional discussion on FAQ 06-0011 (ASD area transition). Discussion was held at the 11/8/06 meeting on how an ASD fire area (in particular operator manual actions) transition over. Confusion was voiced over the characterization of ASD fire areas as 'deterministic', while recovery actions are defined in NFPA 805 as 'performance-based'. This issue needs additional clarification.	Duke / Progress	Provide proposed resolution.			Added 11/8/06 [CLOSED]	Closed to FAQ 06-0011

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
36	Discussion was held on assessing the risk of recovery actions (operator manual actions) and the need/methods to perform/report this information as part of transition. Reference Section 4.2.4 of NFPA 805. NRC expressed concerns over risk significant operator manual actions.	Duke / Progress				Added 11/9/06 [CLOSED]	Closed to FAQ 07-0030 February 2007
37	Determine whether the NRC plans to endorse the ANS Fire PRA standard in RG 1.200 or wait for an integrated standard. The impact on non-pilots requiring peer review needs to be understood.	NRC / NEI				Added 11/9/06 The NRC is going to use the ANS FPRA Standard for the Pilot Plants. The integration of the PRA standards will not alter the technical requirements from the individual ASME and ANS Standards. [CLOSED]	
38	Determine information sharing between Task force members (details of project / products).	Duke / PE / NEI				[CLOSED]	
39	Question was raised on allowing the NRC to have some specific access to the NEI NFPA 805 webboard.	NEI				[CLOSED]	
40	With respect to getting acknowledgment from the NRC, NEI stated that working level Task progress could be posted on the NEI Webboard. This could be used to get information out on specific tasks to the non-pilot plants.	NEI / Duke / Progress				[CLOSED]	
Items started at PE Pilot (March 2007)							
41	Technical paper on Fire Protection Engineering Analysis (FPEA)	NEI/ Duke/ Progress				Added 03/08/07 Related to FAQ 06-0008. FPEAs were part of industry's proposed FAQ -6-0008. It is proposed that NEI provide a technical paper that better describes and defines FPEAs	
42	Both industry and NRC have proposed resolutions to FAQ 06-0008.	NEI/ Duke/ Progress				Revision 2 will be issued that incorporates changes in Revision 0 and 1 as well as the industry and NRC proposed resolutions.	06-0008 Revision 2

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No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
43	Revise NEI 04 02 to clarify existing engineering equivalency evaluations (EEEE) guidance	NEI/ Duke Progress				The plants indicated that the EEEE guidance in NEI 04 02 still requires further clarification (in addition to that being provided as part of FAQ 06 0008) and plans to propose changes.	
44	Consider establishing a NEI site for U.S. Nuclear Regulatory Commission (NRC) review of pilot material	NEI				Consideration is being given to setting up a site at NEI to allow NRC staff and contractors to review pilot-plant material. This will enhance the review of required material while allowing the plants' proprietary, security, and business sensitive information to be maintained under appropriate controls. Also see Parking Lot issue 39	
45	Define boundary versus qualitative counting	NEI/ Duke Progress				Discussions were held concerning whether to count items in structures and compartments that screened out earlier as part of the process. It was stipulated at this meeting that once the analysis boundaries are set then all components within a bin that is within the boundaries should be counted. This means that the possibility exists that the sum of all compartments will not be equal to the sum of all the given generic frequencies	
46	Transformer threshold	NEI/ Duke Progress				NUREG/CR 6850 has several bins into which transformers fit (e.g., Bin 16, Bin 23 and Bin 29). While the criteria for counting transformers in Bin 16 and Bin 29 is adequately clear, the lower bound on Bin 23 transformers is not clear and needs further definition.	Yes
47	Resolve NUREG/CR 6850 versus Fire Protection Significance Determination Process (FPSDP) differences for fire modeling	NRC				There are differences between the fire modeling done as part of a FPSDP and that done as part of NUREG/CR 6850. This is likely to raise multiple questions by inspectors as work progresses and licenses are amended. NUREG/CR 6850 is the guiding requirement for the NFPA 805 efforts and as such is the appropriate modeling approach. Additional work in anticipation of this issue is needed to assist plants and inspectors in dealing with the differences.	NRC Item

**NFPA 805 Transition Observation Visit
Cary, NC – March 6 – 8, 2007 – Updated Parking Lot**

No	Topic	Assigned To	Actions	Schedule	Action Taken	Meeting Discussion	FAQ Action
48	Environmental Qualification (EQ) considerations for “other” equipment in fire affected compartments.	NEI/ Duke Progress				It was not clear to attendees if the current fire modeling was properly accounting for environmental considerations for “other” equipment in a fire impacted compartment. The fire modeling accounts for sources and targets and zones of influence (ZOI), but it is not clear if other equipment outside of the ZOI, which could be impacted from fire secondary effects (e.g., smoke and temperature), is being addressed in the fire modeling being conducted as part of the NFPA 805 transition.	Yes
49	NUREG/CR 6850 Kerite FR is 237°C not 372°C	NRC				NUREG/CR 6850 Table H 3 and H 4 incorrectly list the Kerite failure temperatures as being between 372 C - 382°C with a Recommended Failure Threshold of 372°C. The recommended Failure Threshold for Kerite should be 237°C. The tables need to be reviewed and an errata/revision issued for the NUREG/CR.	
50	Multiple spurious operation (MSO) expert elicitation industry “guidance” required	NEI/ Duke Progress				There is not currently a single standard by which to hold an expert elicitation as part of bounding the MSO possibilities. Both of the pilot-plants have pursued acquiring expert opinions on the subject as part of their NFPA 805 efforts. An industry standard and/or guidance on how to conduct such a meeting as well as how to handle and process knowledge gained is needed.	
51	Harris has source/target database that they are willing to share.	Progress				Harris Nuclear Plant (HNP) has developed a database as part of its NUREG/CR 6850 Task 8 efforts that is used to record source and target information for later use in the fire modeling and Fire PRA. HNP has offered to share this tool with interested non-pilot transition plants.	
52	Potential coordination issues between License Renewal Application (LRA) and NFPA 805 transitions (License Amendment Request [LAR])	Progress				The Harris Nuclear Plant (HNP) will be submitting a LRA that will be reviewed between 10/08 – 06/09. The current schedule for the NFPA 805 LAR is for submittal in 06/08 with review through 12/08. An LRA locks down a license (i.e., an LAR would not be considered prior to approval of a submitted LRA. This scheduling conflict has not been resolved for HNP.	

Attachment 3 to the Trip Report
Pilot Plant Observation Meeting
March 6 – 8, 2007

Handout References

Located in ADAMS, Accession No. ML070950030

Attachment 4 to the Trip Report
Pilot Plant Observation Meeting
March 6 – 8 , 2007

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: NEI 04-02, Appendix B-2 describes the proposed industry approach to evaluating multiple spurious operations, 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 newly identified multiple spurious operations will not be considered part of the licensing basis unless determined to be risk significant. The issue requiring further evaluation is how the reactor oversight process (ROP) will exclude newly discovered multiple spurious circuits from the license basis, until they are determined to be risk significant.

Status: OPEN. The November 2005 pilot-plant observation visit initially identified this issue. The NRC Staff reviewed the ROP relative to the treatment of newly identified multiple spurious operations that have unknown risk significance.

At the March 2006 pilot plant observation visit, the Staff presented a flow chart, illustrating how newly found multiple spurious circuits identified during an inspections, could be treated (See flow chart below). In addition to the flowchart, the following information was discussed:

- If circuits identified by an inspector and its related contributors were omitted, and their contribution to risk; are “greater than Green” OR “constitute a violation of defense-in-depth” or “safety margins,” in spite of using an appropriate screening tool, the issue 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 (URI) and proposes a risk threshold below which the multiple spurious operation is screened (a potential threshold for such “treatment” of 1 E-08/yr delta-CDF [1 E-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 submitted.

Lesson Learned: Pending resolution of issue.

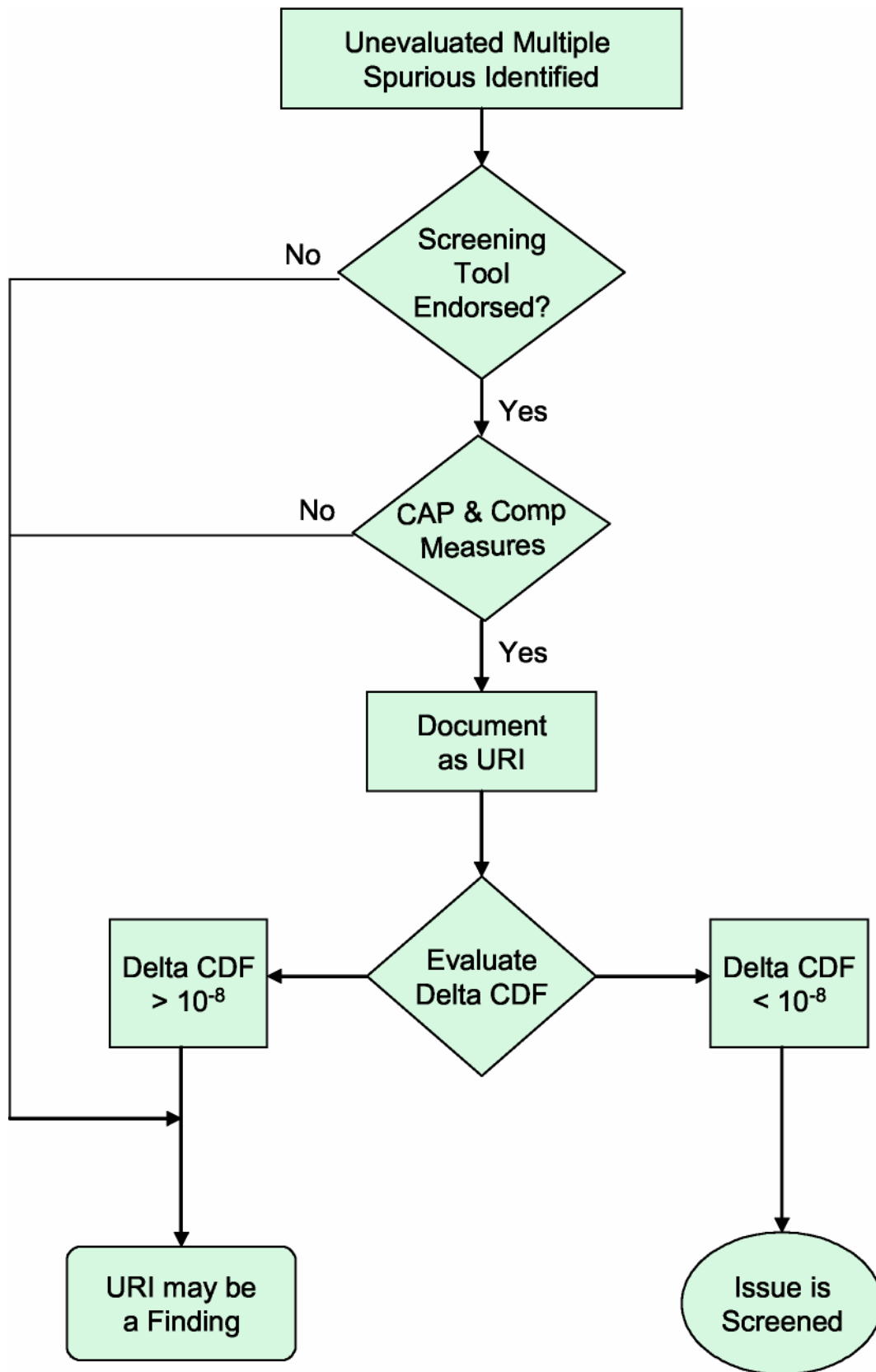


Figure 1. Multiple Spurious Post-Transition Inspections

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 visit (See November 2006 Trip Report Handout Reference 4). During the visit, the participants held considerable discussion with regard to screening and treatment of newly identified multiple spurious operations. The Duke Power 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 (F-V) 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 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, Issue Summary Sheet 13 discusses some relaxations.

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 during the March 2006 meeting.

Associated FAQ: None.

Lesson Learned: As experience grows during transitioning the pilot-plants to a risk-informed, performance-based fire protection program, PSA methods and application to analyze spurious operations and plant change continue to evolve. 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. At this time, no specific changes to the guidance were proposed.

NFPA 805 Pilot-Plant Implementation Issue Summary Sheet No. 3

Topic: Transition of operator manual actions (OMA) 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 previously approved program elements to the new program. 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, OMA approval would be documented within an 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 in Regulatory Guide (RG) 1.205, Section 2.3, and Regulatory Issue Summary (RIS) 2006-10.

Considerable discussion was held during the November and March pilot-plant observation visits regarding transition of OMAs for safe shutdown, what documentation constitutes NRC approval of those OMAs, and how to disposition those

Resolution Action(s)/Action Party: OPEN. Pending approval of FAQs that clarify the approach to transitioning OMAs to Recovery Actions. The FAQs proposes necessary changes to NEI 04-02.

Associated FAQ: 06-0001 and 06-0012

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 visit, 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 Power'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. Pending approval of FAQ. 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.

Associated FAQ: FAQ 06-0006

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, 37

Description: During the November 2005 observation visit, Oconee's fire PSA effort was identified as their 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 endorsed a position that a fire PSA Peer Review is part of the license amendment request to transition to NFPA 805.

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 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.

During the November 2006 pilot-plant observation visit, industry noted NRC's endorsement/non-endorsement of ANS Fire PRA standard in RG 1.200 will impact non-pilot plants. Issues may arise from a lack of endorsement

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

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

Associated FAQ: None.

Lesson Learned: The NRC Staff will assess the quality of the pilot-plant's fire PRA during the pilot in-process review of the PRA development. Until current efforts to establish fire PRA peer

review standards and processes are completed, non-pilot plants transitioning to NFPA 805 may choose to have their fire PRA reviewed by an independent group against available guidance to minimize impacts to transition schedules and reduce uncertainty in fire PRA application acceptability (e.g., in change analysis). As experience is gained with the pilot-plant reviews, additional lessons learned information would be provided.

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 visit, industry representatives indicated that any requirement for a LP/SD mode fire PSA would be a cost prohibitive. There are 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 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 explicitly indicate the NRC’s expectations for assessing fire risk in LP/SD modes.

The change evaluation process must address risk for changes that affect LP/SD modes. However, NEI implementation guidance (NEI 04-02) currently does not address the method to use 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. NEI will revise NEI 04-02 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. Until these LP/SD fire PSA methods are developed and accepted, manage the fire risks during LP/SD modes 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, the pilot plants identified concerns 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 required by Chapter 4. During the November 2005 observation visit, 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. Pending approval of FAQs. NEI needs to revise NEI 04-02 to clarify the application of these requirements. NEI has submitted a proposed revision and NRC Staff are reviewing the FAQs.

Associated FAQ: 06-0002 and 06-0004

Lesson Learned: Before doing Chapter 3 code compliance, determine which fire protection systems and elements Chapter 4 requires.

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 the Authority Having Jurisdiction (i.e., the NRC) must approve alternative approaches. 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.

The Pilot Plants identified a need 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. Pending approval of FAQ. NEI developed proposed changes to NEI 04-02 to include a methodology and process for performing engineering equivalency evaluations. NEI Submitted a FAQ containing the proposed changes for NRC review.

Associated FAQ: 06-0008

Lesson Learned: Risk-informed, performance-based applications to fire protection under NFPA 805 needs a methodology for performing engineering equivalency evaluations, similar to current GL 86-10 evaluations.

**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. The attendees at the November 2005 observation visit held considerable discussion regarding the criteria to apply 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, NEI advocated a “qualitative” approach by which plant changes, which clearly would not influence risk, could be dispositioned without any quantification. Ultimately, the ACRS resisted this approach and therefore, all plant change processes would at least have a preliminary risk screen with some minimal level of quantification. Essentially a “qualitative” approach whereby changes that clearly did not increase risk, or did so at some to a “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 subsequent versions of NEI 04-02, for illustrative purposes, could include additional examples encountered in the transition process.

Associated FAQ: None submitted.

Lesson Learned: NEI will supplement the NEI 04-02 plant change evaluation process with examples identified during the pilot-plant transition.

**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 NEI 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, NRC included a “grey area” where the NRC review would be at NRC’s discretion.

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 visit 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. RG 1.205, Section 3.2.5, provides additional guidance with regard to risk thresholds to apply in the plant change evaluation process, and 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. Pending approval of FAQs. 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: 06-0003

Lesson Learned: Pending final resolution of FAQ

**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 visit, the Pilot Plants held considerable discussion regarding whether or not a PRA engineer should review the preliminary risk screening performed for plant changes. This topic is similar with some of the previous discussions regarding “qualitative” risk screening and involves the level of licensee review, if any, by the licensee PRA staff. The NRC advocates that the plant PRA staff see all plant changes, such that even the most trivial could be 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 follow-up discussions of this topic during the March 2006 observation visit, 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 Authority Having Jurisdiction (AHJ) for determining acceptability of fire protection program elements to meet the requirements of NFPA 805. 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 RG 1.205, Regulatory Position C.1.

Resolution Action(s)/Action Party: CLOSED. RS 1.205 incorporates the NRC position on AHJ. 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) and is currently under review as an FAQ.

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: The Pilot Plants discuss an issue regarding the cumulative impact of changes to the fire protection program that occur during the transition process. The new baseline risk established at the completion of implementation should incorporate these impacts. From the November 2005 observation visit, this issue is a spin-off of an industry concern with how and to what extent the difference between the “going forward” and “deterministically fully compliant” risks will be evaluated for transition. This issue is somewhat related to Topics 2 and 24. 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 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. Pending approval of FAQs. RG 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 RG 1.205 and NEI will revise NEI 04-02 to address screening, processing, and tracking of changes.

Associated FAQ: 06-0005, 06-0014.

Lesson Learned: Pending submittal and final resolution of FAQ. Transitioning plants must establish baseline fire protection risk 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: RG 1.205 endorses NEI 04-02, Revision 1. The pilot-plant implementation activities and observation visits have identified a number of changes that are necessary to clarify, update, or revise the implementing guidance in NEI 04-02. As pilot-plant implementation progresses, it is expected that the need to make these types of changes will continue. The processes for revising and reissuing these documents are neither 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 visit, the industry proposed a Frequently Asked Question (FAQ) process as a means to address this issue. The Maintenance performance indicators process FAQs is the baseline for the NFPA 805 process. 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.

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: The NRC established a FAQ process to provide timely NRC review of changes to NFPA 805 implementing guidance. NEI will be incorporate approves FAQs in revisions to NEI 04-02. The NRC will revise RG 1.205, as appropriate; to endorse this revised NEI 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. A comparison between the NFPA 805 risk analyses against the deterministic case is required (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 related to others issues establishing the PRA baseline for the performance of plant change evaluation (See Issue Summary Sheets 13 and 18).

Associated FAQ: None planned.

Lesson Learned: None. Other parking lot issues and associated lessons learned will address this issue.

**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 incorporate in NEI 04-02 an alternative methodology. The NRC staff expressed concern that NEI should communicate these types of issues with the existing (endorsed) guidance to non-pilot plants.

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

Associated FAQ: 06-0013

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), RG 1.174 (and, by incorporation, NFPA 805), NEI 04-02 and RG 1.205. The Pilot Plants need to develop a reconciliation of these various thresholds for clarity and application of transition processes.

Resolution Action(s)/Action Party: OPEN. Guidance is required before performance of change evaluations.

Associated FAQ: Planned but not submitted.

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 observation visit, the Pilot Plants held a discussion regarding what constitutes a change to the fire protection program. The attendees noted that plant changes not related to the fire protection program might influence the program. Installation of some fire protection systems and features are 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 plan 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. Pending resolution of FAQ. Industry drafted a methodology and examples of what constitutes a fire protection program change.

Associated FAQ: 06-0005.

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: At the March 2006 observation visit, three specific items discussed were relevant to this topic:

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;

If both risk increases and decreases are due to related changes, such that the net increase is $<10 \text{ E-7/yr delta-CDF}$ ($<10 \text{ E-8/yr delta-LERF}$), 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

If an initial change results in a risk increase below some threshold value, the licensee needs to track future changes or be exempt 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.

RG 1.205 uses RG 1.174 as a risk acceptance template and 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 RG 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 RG 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, separate tracking for “related” changes over the life of the plant is a requirement. The Pilot Plants discussed screening methods 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. Pending resolution of FAQ. RG 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. As stated in RG 1.205, NEI will revise NEI 04-02 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. NEI will also revise NEI 04-02 to address the screening, processing, and tracking of changes.

Associated FAQ: FAQ 06-0014.

Lesson Learned: Pending submittal and final resolution of FAQ. Licensees must establish baseline fire protection risk to support plant change evaluations post-transition.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 20**

Topic: Fire Zones/Compartment Definitions

Associated Observation Meeting Parking Lot Item(s): 25

Description: During the October 2006 visit, Pilot Plants held discussion regarding what constitutes an acceptable Fire PSA compartment. For the purposes of fire PRA, plants portioning divides the plant into the Fire Compartments as defined in NUREG/CR-6850. Fire Compartments map fire areas and zones into compartments defined by fire damage potential. Defining many Fire Compartments within zones are that are not necessarily based on physical barriers or features can lead to the need to do substantial multi-compartment analysis. This is inconsistent with the guidance provided in NUREG/CR-6850 and raises concerns with the difficulty in managing and reviewing an analysis that relies on such complexities. Questions arose over impact of this approach on other tasks and level of documentation needed to justify this approach

Resolution Action(s)/Action Party: CLOSED. Industry changed approach to be consistent with NUREG/CR-6850 guidance.

Associated FAQ: None.

Lesson Learned: NUREG/CR-6850 provides adequate guidance concerning development of Fire Compartments for Fire PRA purposes.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 21**

Topic: Ignition Frequency Binning Issues

Associated Observation Meeting Parking Lot Item(s): 26, 27, 28, 29

Description: NUREG/CR-6850 Task 6, "Fire Ignition Frequencies" provides a procedure for estimating fire-ignition frequencies for use in the Fire PSA. During the October 2006 observation visit, the pilot plants held presentations regarding the definitions and boundaries associated with "binning" of different components into appropriate collections to appropriate the fire ignition frequencies correctly compartment. Specifically questions arose concerning:

- a) Main control board definition: The delineation between Bin 4 (main control board) and Bin 15 (electrical panels/cabinets) has some ambiguity that could lead to inconsistent application of the guidance (Parking Lot Item 26).
- b) Electrical cabinets: NUREG/CR-6950 needs explicit guidance on counting of plant electrical cabinets. Presentations on two different approaches; one that counts electrical cabinet based on physical boundaries regardless of size or length and another that counts solely based on cabinet size (Parking Lot Issue 27).
- c) HEAF frequency for low voltage equipment: Counting Bin 16 equipment using the Bin 15 method can result in a fire frequency distribution for HEAF for switchgears and load centers that are inconsistent with industry experience (Parking Lot Item 28).
- d) Miscellaneous Binning Issues: Questions arose concerning ignition county frequency for MOV motors, hydraulic actuators for valves, and transformers (Parking Lot Item 29).

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the methodology.

Associated FAQ: 06-0016, 06-0017, 06-0018. FAQ still under consideration for parking lot item 29 (miscellaneous ignition frequency binning issues).

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 22**

Topic: Transition and Post-Transition Program Management

Associated Observation Meeting Parking Lot Item(s): 30

Description: During the October 2006 visit, discussion was held regarding the role of 10 CFR 50.48(a) for a plant that is transition to NFPA 805

Resolution Action(s)/Action Party: OPEN. Clarification information is available in the promulgation of 10 CFR 50.48(c) on 06/08/04 (ADAMS Accession No. ML041340086). Industry will provide clarification on the issue.

Associated FAQ: FAQ planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 23**

Topic: “New” Requirements in NFPA Chapter 3/Table B-1 Issues

Associated Observation Meeting Parking Lot Item(s): 32, 33, 34

Description: Participants of the November 2006 meeting discussed the 82 paragraphs of Chapter 3. Industry reports based on pilot-plant experience, that seventeen paragraphs appear to be new requirements (e.g., NFPA 805 Section 3.94 requirement for suppression for the diesel fire pump). Clarification of some paragraphs may be required. Industry also noted that additional clarification/standardization of terms used in NEI 04 02 Tables B-1, B-2, and B-3 may also be necessary. Industry stipulated the table formats are not rigid (i.e., database, other report formats are acceptable).

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 24**

Topic: Assessing Risk of Recovery Actions

Associated Observation Meeting Parking Lot Item(s): 35, 36

Description: Participants of the November 2006 meeting discussed assessing the risk of recover actions (operator manual actions) and the need/methods to perform/report this information as part of transition (NFPA 805 Section 4.2.4). Risk significant operator manual actions are a concern to the NRC.

Resolution Action(s)/Action Party: OPEN. Discussions held at the November 2006 meeting concerning how an ASD fire area (in particular operator manual actions) transition over. Meeting participants voiced confusion over the characterization of ASD fire areas as 'deterministic', while NFPA 805 defines recovery actions as 'performance-based'. Industry will provide clarification on the issue.

Associated FAQ: 06-0011 and other FAQs may be required.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 25**

Topic: Mapping efforts to 10 CFR 50.48(a) requirements

Associated Observation Meeting Parking Lot Item(s): None

Description: Participants of the March 2007 meeting discussed mapping their efforts to 10 CFR 50.48(a). Specifically 10 CFR 50.48(b) and 10 CFR 50.48(c) constitute ways for a plant to satisfy the requirements of 10 CFR 50.48(a). Efforts to date appear to be concentrating on meeting the conditions of 10 CFR 50.48(c). Plants must ensure that they map these efforts back to the requirements in 10 CFR 50.48(a).

Resolution Action(s)/Action Party: Closed. No further actions required.

Associated FAQ: No FAQ is required.

Lesson Learned: Plants must ensure they map their NFPA 805 related efforts to the requirements in 10 CFR 50.48(a).

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 26**

Topic: clarify existing engineering equivalency evaluations (EEEE) guidance

Associated Observation Meeting Parking Lot Item(s): 43

Description: The plants' indicated the EEEE guidance in NEI 04 02 still requires further clarification (in addition to that being provided as part of FAQ 06 0008) and plan to propose changes.

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 27**

Topic: Properly accounting for Kerite cables impacts on targets within a zone of influence (ZOI)

Associated Observation Meeting Parking Lot Item(s): None

Description: Kerite cables are a Thermoset sheathed cable, but the Kerite cables performance is more in line with Thermoplastic cable. Correctly accounting for Kerite cables as Thermoplastic cable results in additional targets within the zone of influence (ZOI).

Resolution Action(s)/Action Party: Closed. No further actions required.

Associated FAQ: No FAQ is required.

Lesson Learned: Plants must ensure they properly account for Kerite cables when establishing targets within the zone of influence (ZOI).

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 28**

Topic: Define boundary with respect to the counting of fire ignition sources

Associated Observation Meeting Parking Lot Item(s): 45

Description: Discussions during the March 2007 meeting highlighted issues with counting items in structures and compartments that screened out as part of the NEI 04-02 process. Once the analysis boundaries are set, then counting should include all components within a bin that are within the boundaries. This means that the possibility exists that the sum of the frequencies for all components in all compartments will not be equal to the total given generic frequencies in NUREG/CR-6850. The issue is strongly related to the establishment of the global analysis boundary of the plant. One concern is that components unrelated to the safety of the plant could dilute the fire ignition frequency for those areas important to safety. Another is that failure to include components within the boundaries, but located in screened compartments, could lead to overestimates of the frequency contribution from that class of components, thereby distorting the risk importance profile.

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 29**

Topic: Transformer threshold

Associated Observation Meeting Parking Lot Item(s): 46

Description: Discussions during the March 2007 meeting identified an issue with the minimum size of transformer included during component counting. NUREG/CR 6850 has several bins into which transformers fit (e.g., Bin 16, Bin 23 and Bin 29). While the criteria for counting transformers in Bin 16 and Bin 29 is adequately clear, the lower bound on Bin 23 transformers is not clear and needs further definition.

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: The lower bound on Bin 23 transformers is not clear and needs further definition.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 30**

Topic: Modular Accident Analysis Program (MAAP) versus Reactor Excursion and Leak Analysis Program (RELAP) review of Thermal-Hydraulic success criteria.

Associated Observation Meeting Parking Lot Item(s): 46

Description: Discussions during the March 2007 meeting raised issues concerning use of Modular Accident Analysis Program (MAAP) versus Reactor Excursion and Leak Analysis Program (RELAP) for review of Thermal-Hydraulic success criteria. Staff noted that many utilities (Progress Energy included) use MAAP to model for success criteria. While MAAP has been part of the internal events PRAs at many facilities the NRC has not endorsed the code.

Resolution Action(s)/Action Party: Closed. No action required.

Associated FAQ: None

Lesson Learned: Plants can expect to be questioned on their use of MAAP for determining PRA success criteria

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 31**

Topic: Screening ignition sources (NUREG/CR-6850, Task 8).

Associated Observation Meeting Parking Lot Item(s): None

Description: NUREG/CR-6850, Task 8, allows for the screening of certain ignition sources through scoping fire modeling. Additionally, Task 8 allows for the development of a severity factor based upon these scoping fire modeling estimates. Harris Nuclear Power Plant indicated during the March 2007 meeting that they had determined this second phase screening effort was not worth the effort or worth generating questions that might be raised later. HNP decided not to screen ignition sources in this second phase of the process, but rather to bring those ignition sources that did not screen from the basic scoping fire modeling forward. Keeping ignition sources, rather than screening them, is a conservative approach to fire PRA.

Resolution Action(s)/Action Party: Closed. No action required.

Associated FAQ: None

Lesson Learned: Skipping screening of certain ignition sources as allowed as part of NUREG/CR 6850 Task 8 is desirable under some circumstances.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 32**

Topic: Difference in fire modeling between NUREG/CR 6850 and the Fire Protection Significance Determination Process (FDSDP)

Associated Observation Meeting Parking Lot Item(s): 47

Description: There are differences between the fire modeling done as part of an FPSDP and that done as part of NUREG/CR-6850 (e.g., the designation of initial HRRs for a few types of fire ignition sources). This is likely to raise multiple questions by inspectors as work progresses. NUREG/CR-6850 is the guiding requirement for the NFPA 805 efforts and as such is the appropriate modeling approach. Clarification in anticipation of resolving this issue will assist plants and inspectors in dealing with the differences.

Resolution Action(s)/Action Party: Closed. NUREG/CR-6850 is the guiding requirement for NFPA 805.

Associated FAQ: No FAQ required.

Lesson Learned: NRC inspectors are used to FDSDP and its methods, yet NUREG/CR 6850 is the appropriate modeling approach for NFPA 805 activities.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 33**

Topic: Environmental Qualification (EQ) considerations for “other” equipment in fire affected compartments.

Associated Observation Meeting Parking Lot Item(s): 48

Description: During the March 2007 meeting, it was not clear to attendees if the current fire modeling was properly accounting for EQ considerations for “other” equipment in a fire-impacted compartment. The fire modeling accounts for sources and targets and zones of influence (ZOI), but it is not clear if other equipment outside of the ZOI, which could be impacted from fire secondary effects (e.g., smoke and temperature), is being addressed in the fire modeling being conducted as part of the NFPA 805 transition.

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 34**

Topic: Multiple spurious operation (MSO) expert elicitation guidance.

Associated Observation Meeting Parking Lot Item(s): 1, 50

Description: During the March 2007 meeting, comparison of methods used by plants' to conduct MSO expert elicitation highlighted the need for standardized guidance. There is not currently a single standard to which to hold an expert elicitation as part of bounding the MSO possibilities. Both of the pilot-plants have pursued acquiring expert opinions on the subject as part of their NFPA 805 efforts. An industry standard and/or guidance is needed on the process and criteria for establishing important MSO possibilities as well as how to handle and process the knowledge that is gained at such elicitation meetings.

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 35**

Topic: Potential coordination issues between License Renewal Application (LRA) and NFPA 805 transitions (License Amendment Request [LAR])

Associated Observation Meeting Parking Lot Item(s): 52

Description: During the March 2007 meeting the Harris Nuclear Plant (HNP) noted its LRA will be reviewed between 10/08 – 06/09. The current schedule for the NFPA 805 LAR is for submittal in 06/08 with review through 12/08. An LRA locks down a license (i.e., an LAR would not be considered prior to approval of a submitted LRA. This scheduling conflict has not been resolved for HNP.

Resolution Action(s)/Action Party: CLOSED. Plants must coordinate their LAR and LRA submittals

Associated FAQ: None

Lesson Learned: . There are potential coordination issues between LRA and NFPA 805 transitions LAR that must be resolved between plants and the NRC.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 36**

Topic: NUREG/CR 6850 Kerite FR listed temperature

Associated Observation Meeting Parking Lot Item(s): 49

Description: NUREG/CR 6850 Table H 3 and H 4 incorrectly list the Kerite failure temperatures as being between 372 C -382°C with a Recommended Failure Threshold of 372°C. The recommended Failure Threshold for Kerite should be 237°C.

Resolution Action(s)/Action Party: Open. NRC to issue an errata/revision for the NUREG/CR

Associated FAQ: None

Lesson Learned: . Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 37**

Topic: Consistent use of pre-defined definitions

Associated Observation Meeting Parking Lot Item(s): None

Description: NFPA 805, NEI 04 02, and NUREG/CR 6850 all contain specialized language and definitions. It is important that as plants develop procedures and documentation for this effort that they use the definitions and language from the references. This ensures their procedures are consistent with the accepted guidance (and thus also helps reduce review comments). There is no need to “word smith” or “invent” new phrases, definitions, and language.

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

Associated FAQ: None

Lesson Learned: Use of standardized definitions and languages from project references ensures consistency and enhances reviewability.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 38**

Topic: Define Fire Protection Engineering Analysis (FPEA)

Associated Observation Meeting Parking Lot Item(s): 41

Description: Part of the industries proposed FAQ 06 0008 resolution includes FPEAs. NEI will provide a technical paper that better describes and defines FPEAs.

Resolution Action(s)/Action Party: OPEN. Industry will provide clarification on the issue.

Associated FAQ: FAQs planned but not submitted.

Lesson Learned: Pending final resolution of this issue.

**NFPA 805 Pilot-Plant Implementation
Issue Summary Sheet No. 39**

Topic: Source and Target Database

Associated Observation Meeting Parking Lot Item(s): 51

Description: Progress Energy developed a database as part of the NUREG/CR 6850 Task 8 efforts that records source and target information for later use in the fire modeling and Fire PRA. HNP offered to share the tool with interested non-pilot transition plants

Resolution Action(s)/Action Party: CLOSED. HNP is willing to share this database with interested organizations.

Associated FAQ: None.

Lesson Learned: HNP is will to share its fire source and target database with interested organizations.