FAQ Number	07-0038 Revision 1 Lessons learned on Multiple Spurious Operations		_	
FAQ Title			-	
Plant: <u>Harris</u> Contact: <u>Keith</u> Distribution: <i>(NEI</i>)	s Began Internal Use)	Date: July 24, 2008 Phone: (919) 546-5026 Email: Keith.Began@pgnmail.com	Formatted: Not Highlight Deleted: May 5,	
☑ 805 TF ☐ FPWG ☐ RATF ☐ RIRWG ☐ BWROG ☐ PWROG Purpose of FAQ:			_	
				The purpose of this FAQ is to provide updates to NEI 04-02 to reflect lessons learned from pilot plant activities, NFPA 805 task force meetings, and NRC reviews and discussions on multiple spurious operations (MSOs).
Is this Interpretation of guidance? Yes / No			-	
Proposed new guidance not in NEI 04-02? Yes / No				
Details:			-	
NEL 04-02 quida	nco nooding interpretati	on (include section paragraph and line		

NEI 04-02 guidance needing interpretation (include section, paragraph, and line numbers as applicable):

|

NEI 04-02 Section Appendix B.2, Transition of Nuclear Safety Performance Criteria.

FAQ Number 07-0038 Revision 1

FAQ Title Lessons learned on Multiple Spurious Operations

Circumstances requiring guidance interpretation or new guidance:

Lessons have been learned from pilot plant activities, NFPA 805 task force meetings, and NRC reviews and discussions on multiple spurious operations (MSOs).

Detail contentious points if licensee and NRC have not reached consensus on the facts and circumstances:

None.

Potentially relevant existing FAQ numbers:

Response Section:

Proposed resolution of FAQ and the basis for the proposal:

See the proposed attached proposed NEI 04-02 markups.

If appropriate, provide proposed rewording of guidance for inclusion in the next Revision:

2

See the proposed attached proposed NEI 04-02 markups.

B.2.1.3 Fire-Induced Circuit Failures (Multiple Spurious Operations)

A licensee should may choose to submit a summary of its <u>approach for addressing potential fire-induced multiple spurious operations (MSOs)</u> licensing basis on circuits for NRC review and approval. At a minimum, the summary <u>should must</u> contain sufficient information relevant to methods, tools, and acceptance criteria used to enable the staff to determine the acceptability of the licensee's methodology. The NRC staff may request additional information necessary to adequately assess the licensee's submittal.

The options to establish a licensing basis include 1) crediting a well documented design basis which meets minimum NRC expectations, or 2) using other methods accepted by the AHJ for selection of circuits and for using risk insights to evaluate the consequences.

Minimum NRC expectations include (however are not limited to) addressing single spurious and risk significant multiple spurious failures, DID and SM.

The NRC staff has reviewed Revision 1 of NEI 00-01 and concluded that Chapter 3 provides an acceptable <u>deterministic approach</u> way for analysis of post-fire safe shutdown circuits when applied in accordance with the regulatory expectations described in RIS 2005-30 and when used in conjunction with NFPA 805 and Regulatory Guide 1.205 for a plant that has transitioned to a 10 CFR 50.48(c) licensing basis (Reference: RIS 2005-30 and Regulatory Guide 1.205 Revision 0) to select circuits. , and Chapter 4 provides an acceptable way to determine risk significance of circuit findings. In addition, an acceptable Fire PRA as defined in Regulatory Guide 1.205 Regulatory Position C.4.3 includes methods for the selection of cables and detailed circuit failure modes analysis, as well as the integration of these circuit failures into the overall Fire PRA (e.g., NUREG/CR-6850 Tasks 3, 9, 10, and 14).

In addition, the NRC staff has reviewed the following methodology provided by Duke Energy and agrees that it provides an acceptable approach for screening out non-risk-significant issues.

The approach outlined in Figure XX below is one acceptable method to address fire-induced MSOs. This method uses insights from a Fire PRA that meets the requirements of Regulatory Guide 1.205, Revision 0.

This process is intended to be in support of transition to a new licensing basis. Post-transition changes would use the risk-informed, performance-based change process. The post-transition change process for the assessment of a specific MSO would be a simplified version of this process, and may not need the level of detail shown in the following section (e.g., An expert panel may not be necessary to identify and assess a new potential MSO. Identification of new potential MSOs may be part of the plant change review process and/or inspection process).

Appendix B-2 - Transition of Nuclear Safety Performance Criteria



Figure XX – Multiple Spurious Operations – Transition Resolution Process

Step 1 - Identify potential MSOs of concern.

Information sources that may be used as input include:

- Post-fire safe shutdown analysis (NEI 00-01, Revision 1, Chapter 3)
- Generic lists of MSOs (e.g., from Owners Groups, if available.)
- <u>Self assessment results (e.g., NEI 04-06 assessments performed to addressed RIS 2004-03)</u>
- PRA insights (e.g., NEI 00-01 Revision 1, Appendix F)
- Operating Experience (e.g., licensee event reports, NRC Inspection Findings, etc.)

<u>Step 2 - Conduct an expert panel to assess plant specific vulnerabilities (e.g., per NEI 00-01, Rev. 1 Section F.4.2).</u>

Appendix B-2 - Transition of Nuclear Safety Performance Criteria

The expert panel should focus on system and component interactions that could impact nuclear safety. This information will be used in later tasks to identify cables and potential locations where vulnerabilities could exist.

[Note: The physical location of the cables of concern (e.g., fire zone/area routing of the identified MSO cables), if known, may be used at this step in the process to focus the scope of the detailed review in further steps.]

Step 3 – Update the fire PRA model and NSCA to include the MSOs of concern.

This includes the:

- Identification of equipment (NUREG/CR-6850 Task 2)
- Identification of cables that, if damaged by fire, could result in the spurious operation (NUREG/CR-6850 Task 3, Task 9)
- <u>Identify routing of the cables identified above.</u>

Include the equipment/cables of concern in the Nuclear Safety Capability Assessment (NSCA). Including the equipment and cable information in the NSCA does not necessarily imply that the interaction is possible since separation/protection may exist throughout the plant fire areas such that the interaction is not possible).

Note: Instances may exist where update of the MSOs may not warrant update of the Fire PRA and NSCA analysis. For example, Fire PRA analysis in NUREG/CR-6850 Task 2, Component Selection, may determine that the particular interaction may not lead to core damage, or preexisting equipment and cable routing information may determine that the particular MSO interaction is not physically possible. The rationale for exclusion of identified MSOs from the Fire PRA and NSCA should be documented and the configuration control mechanisms should be reviewed to provide reasonable confidence that the exclusion basis will remain valid.

Step 4 – Evaluate for NFPA 805 Compliance

MSOs of concern should be included in the compliance assessment in the NSCA, consistent with the process for all NSCA components. The compliance assessment may use both deterministic and performance-based approaches.

The performance-based approach may include the use of feasible and reliable recovery actions. During transition, if the recovery actions are deemed unallowed per the pre-transition licensing basis (Bin H for FAQ 06-0012), a risk-informed performance-based change evaluation may be used as potential means of demonstrating NFPA 805 compliance.

Note that during the NFPA 805 transition, deterministic separation/protection is per the current licensing basis (10 CFR 50, Appendix R / NUREG-0800) with consideration of approved exemptions, etc. MSOs that meet the separation/protection requirements of the pre-transition licensing basis should be documented and the appropriate transition documentation updated as necessary.

MSOs that are not in compliance with NFPA 805 will be reviewed for other resolution options, such as plant modifications.

Step 5 - Document Results

The results of the process should be documented. High level methodology utilized as part of the transition process should be included in the 10 CFR 50.48(c) License Amendment Request/Transition Report.