FAQ Number		09-0057		FAC	Q Revision 0				
FAQ Title		Safe Shutdown Strategy Changes							
Plant: VC Summer				Date:	April 09, 2009				
Contact: Mike k		Kammer		Phone:	(803) 345-4000				
-				Email:	MKammer@scana.com				
Distribution: (NEI Internal Use)									
🛛 805 TF 🖾 FPWG 🗌 RATF 🗌 RIRWG 🗌 BWROG 🗌 PWROG									

Purpose of FAQ:

The purpose of this FAQ is to provide an alternative basis for change evaluation when a plant, transitioning to NFPA 805, wants to use an alternate Safe Shutdown Strategy. The example used in this FAQ is a self-induced station blackout (SISBO) strategy, which is the current Safe Shutdown Strategy. In the example, the Licensee has in their design basis (existing program)

- has committed to make a change to their current FP program to eliminate SISBO,
- has a commitment to make change prior to the transition, and
- has commitment to reflect change in the FPRA, used as the baseline for the transition process.

In addition, since NEI 04-02 addresses transitioning the CLB as the only means of satisfying the NFPA 805 goals as codified in 10 CFR 50.48(c), this FAQ proposes updates to specifically allow the alternative approach resulting from the alternative basis proposed.

Is this Interpretation of guidance? Yes / No

Proposed new guidance not in NEI 04-02? Yes / No

Details:

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

Section 2.3.1 Section 4.1.1 Section 4.3.1 Section 4.3.2 Section 5.3.1 Appendix J, Section J.5

Circumstances requiring guidance interpretation or new guidance:

The above sections from NEI 04-02 establish two important concepts:

 When transitioning to NFPA 805, the existing Appendix R program serves as the baseline for all evaluations, with certain permitted exceptions. Specifically, Section 4.1.1 states:

"The extent to which the pre-transitional fire protection licensing basis can be incorporated into the new NFPA 805 licensing basis is determined by the extent to which the fire protection CLB can be shown to comply with the requirements in NFPA 805. However, exceptions are permitted for the following licensee specific deviations from NFPA 805 requirements:

- "Alternatives from the fundamental fire protection program attributes of NFPA 805 Chapter 3 [NFPA 805 Chapter 3 Section 3.1] previously reviewed and approved by the NRC.
- "Exemptions/deviations from 10 CFR 50 Appendix R / NUREG 0800 [NFPA 805 Figure 2.2] previously reviewed and approved by the NRC. Note the licensee will review these exemptions/deviations during the transition process to ensure the basis for acceptability is still valid.
- Existing Engineering Equivalency Evaluations [NFPA 805 Figure 2.2]. Note the licensee will review these equivalency evaluations during the transition process to ensure the quality level and the basis for acceptability is still valid.

Figure 4-2 in section 4.3.1 shows that the existing fundamental fire protection program and design elements is evaluated against the NFPA 805 Chapter 3 requirements. If an element fails to meet those requirements and is not a previously approved alternative, then it must be brought into compliance through a change or the change evaluation process.

Figure 4-3 in section 4.3.2 shows that the "existing" fire area compliance strategy is subjected to the area-by-area transition process and that if it does not meet the deterministic requirements then it would be treated through a change evaluation.

Section 5.3.1 discusses the application of change evaluations, and quotes from NFPA 805 as follows:

"In the event of a change to a previously approved fire protection program element, a risk-informed plant change evaluation shall be performed and the results used as described in 2.4.4 to ensure that the public risk associated with fire-induced nuclear fuel damage accidents is low and the adequate defense-indepth and safety margins are maintained. [NFPA 805, Section 2.2.9]"

Section 5.3.1 and Appendix J, Section J5, indicate that such change evaluations, and other change evaluations, would use a FPRA representing the "existing"

program as the baseline for comparison and for demonstrating that a change was risk neutral or risk reducing.

The implication or assumptions resulting from the above current text from NEI 04-02 for a plant that currently uses a SISBO strategy is as follows:

- that the existing program to be used for the compliance assessment would be the SISBO program;
- that the elimination of the SISBO strategy would be a change, and hence be subject to a change evaluation;
- that the baseline for this change evaluation would have to be a FPRA representing the SISBO strategy; and
- that all other change evaluations would also use the SISBO FPRA as a baseline for change evaluation.

Discussion

A major benefit to the nuclear industry of the risk informed regulation in NFPA 805 is that it provides a driving force for utilities to abandon strategies that, while they comply with Appendix R requirements, take actions that inherently increase plant risk. The Self Induced Station Blackout (SISBO) approach is an example of such a strategy that, in order to meet deterministic requirements, purposefully removes offsite power and a train of Engineered Safety Feature equipment to reduce the likelihood of spurious operation.

Using NFPA 805 as the driver, plants that eliminate the SISBO strategy in favor of an approach that optimizes available equipment are inherently reducing the plant risk due to fire and the actions taken to mitigate fire is realized as an opportunity to improve station risk. However, because NFPA 805 is the driver for performing a new Fire PRA that complies with RG1.200, many plants only have old IPEEE Fire PRAs (which do not comply with RG 1.200) that show the fire risk associated with their current Appendix R fire protection strategy. As a result, plants that are revising their overall Safe Shutdown Strategy while concurrently developing the Fire PRA to support it, will be developing their new Fire PRA to reflect the revised overall strategy and will not have a comparable assessment of the fire risk under their Appendix R Program (CLB) to use as a comparison with the improved strategy. It is not cost-effective to develop two fire PRAs just to make the comparison, especially when the existing, deterministic (CLB) compliance strategy is to be abandoned.

A plant may make the decision that it will eliminate SISBO and many associated operator actions as part of the transition process to NFPA 805. As a result, the FPRA being developed to support the NFPA 805 change evaluations would logically reflect the plant operations after these changes have been made. Hence, the FPRA will not be reflective of the current Appendix R program, but of a revised shutdown strategy. As a result there will be no baseline FPRA that meets the requirements of the soon-to-be-issued RG 1.200 addendum for FPRA capability per the ASME/ANS

FAQ Title Safe Shutdown Strategy Changes

standard ASME/ANS-RA-2009, and thus no basis for the change evaluation showing that elimination of SISBO and associated operator actions is "risk neutral or risk reducing" versus the current Appendix R program. Further, other change evaluations resulting from the transition process will not have a baseline FPRA for the current Appendix R program against which to compare the impact of the change.

It is believed that transitioning to NFPA805 will provide long term benefit to the Fire Protection Program, and a plant would approach this project as an opportunity to improve risk in this area. In addition, there would be little value in developing a full Fire PRA for a strategy the station intends to abandon, with the NFPA805 LAR submittal. While it is understandably desirable to quantitatively define risk improvements, the additional project expenses to re baseline the existing Appendix R strategy is not cost beneficial.

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

Project goals were established to improve the Fire Protection Program by revising the Appendix R shutdown approach. While the new approach may be beneficial from a regulatory standpoint, the specific directions found in NEI 04-02 may be challenged from a "comparable" risk standpoint. NRC may not accept the elimination of SISBO as representing an "allowable" deviation from Appendix R for the purpose of establishing the baseline for the pre-transition program. This could also lead to NRC not accepting change analyses as being valid unless "comparable" risk insights are made available in the LAR. This includes assuming that the starting point for the NFPA805 change evaluations (after elimination of SISBO and associated manual operator actions to the extent practical) is risk neutral or risk reducing versus Appendix R program.

Potentially relevant existing FAQ numbers:

06-0012 08-0054 08-0055

Response Section:

Proposed resolution of FAQ and the basis for the proposal:

Proposed Alternative: The elimination of SISBO will be accepted on its face as being risk reducing or risk neutral without the need of a change evaluation. The FPRA performed for the non-SISBO case would constitute the baseline PRA for all change evaluations performed to support the NFPA 805 transition.

FAQ Title

FAQ Number

Safe Shutdown Strategy Changes

Discussion

In virtually all areas of nuclear power plant emergency response except for fire, nuclear plants follow symptom-oriented emergency procedures. This is recognized as the most appropriate manner of responding to plant accident conditions to assure that critical safety functions are maintained and/or recovered. The use of SISBO and associated operator actions is what is known as event-oriented, which existed prior to the post-TMI transition to symptomoriented in the 1980's. By its very nature, the transition from SISBO and numerous associated operator actions will provide greater flexibility and capability for any current SISBO plant to successfully maintain and/or recover critical safety functions in the event of a serious fire, and the completion of comprehensive circuit analysis for both NSP and FPRA as part of the NFPA 805 transition process obviates the reason why SISBO was originally used at these plants. Therefore, elimination of SISBO and numerous associated operator actions should be deemed to be risk-neutral or risk reducing on its face when comprehensive circuit analysis is being performed as part of NFPA 805 transition and no change evaluation is required.

Since this will be the new baseline risk for fire, and since this constitutes an improvement over the Appendix R case, the non-SISBO case should constitute the baseline PRA for all change evaluations performed to support the NFPA 805 transition, including any subsequent change evaluations.

FAQ Title Safe Shutdown Strategy Changes

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

Revise NEI 04-02 Section 4.1.1 Transition Process Overview

Modify as follows (new text in **bold italic**).

The extent to which the pre-transitional fire protection licensing basis can be incorporated into the new NFPA 805 licensing basis is determined by the extent to which the fire protection CLB can be shown to comply with the requirements in NFPA 805,. However, exceptions are permitted for the following licensee specific deviations from NFPA 805 requirements:

- "Alternatives from the fundamental fire protection program attributes of NFPA 805 Chapter 3 [NFPA 805 Chapter 3 Section 3.1] previously reviewed and approved by the NRC.
- "Exemptions/deviations from 10 CFR 50 Appendix R / NUREG 0800 [NFPA 805 Figure 2.2] previously reviewed and approved by the NRC. Note the licensee will review these exemptions/deviations during the transition process to ensure the basis for acceptability is still valid.
- Existing Engineering Equivalency Evaluations [NFPA 805 Figure 2.2]. Note the licensee will review these equivalency evaluations during the transition process to ensure the quality level and the basis for acceptability is still valid.

In cases where alternate shutdown strategies and equipment are selected to support evaluation of the plant against the performance criteria of NFPA805, Chapter 1, compliance with the deterministic requirements [NFPA805, section 4.2.3] or the performance based approach [NFPA805, section 4.2.4] shall be performed consistent with the requirements of the standard. For this case,

- An engineering evaluation shall indicate the strategy (1) satisfies the performance criteria, performance objectives, and goals for nuclear safety and radiological release; (2) maintains safety margins (3) maintains post-fire defense-in-depth (fire prevention, fire suppression, and post-fire safe shutdown capability); and (4) a qualitative assessment of the change in risk comparing the CLB (and shutdown strategy) and new shutdown strategy shall conclude that the new strategy/ associated equipment is riskneutral or risk reducing.
- For areas where a risk based evaluation has been performed (NFPA805, section 4.2.4.2) utilizing an alternative safe shutdown

FAQ Title Safe Shutdown Strategy Changes

09-0057

strategy, the initial baseline risk evaluation shall be used as a basis for future Plant Change Evaluations [NFPA 805, section 2.4.4]

Revise NEI 04-02 Figure 4-3, "Fire Area by Fire Area Transition Process (Simplified)"

Revise Entry Box		to	
	Existing Fire Area Compliance Strategy		Fire Area Compliance Strategy

Revise NEI 04-02, Section 4.3.2, Nuclear Safety Performance Criteria Transition Review

The fire area by fire area review determines whether the CLB is intact **or revised shutdown strategy is** documented adequately to support the transition. The review is intended to identify and document how each fire area: ...