FAQ Number 06-0017, Revision 1

Plant:	Oconee, Harris	FAQ #	06-0017
Submittal Date:	5/10,07		
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Subject: Clarification/enhancement of Ignition Source counting guidance for High Energy Arcing Faults (HEAF) in NUREG/CR-6850, supporting NFPA-805 Fire PRA application.

Interpretation of guidance? Yes

Proposed new guidance not in NEI 04-02? Yes

Details:

NEI 04-02 Guidance needing interpretation (include section, paragraph number, and line number):

New attachment on interpretation issues

Circumstances requiring guidance interpretation or new guidance:

The guidance provided in NUREG/CR-6850 for Task 6, Fire Ignition Frequency (Section 6.5.6, Bin 16), states:

> Bin 16 – High-Energy Arcing Faults (Plant-Wide Components): High-energy arcing faults are associated with switchgear and load centers. Switchyard transformers and isolation phase buses are not part of this bin. For this bin, similar to electrical cabinets, the vertical segments of the switchgear and load centers should be counted. Additionally, to cover potential explosive failure of oil filled transformers (those transformers that are associated with 4.16 or 6.9kV switchgear and lower voltage load centers) may be included in vertical segment counts of the switchgear.

Pilot discussions and benchmarking of NUREG/CR-6850 for Task 6, Fire Ignition Frequency, has shown inconsistency in the treatment of High Energy Arcing Faults (Bin 16). Strict interpretation of the guidance is that the HEAF count should mimic the electrical cabinet counts for switchgear and load centers. The application of such a counting method is expected to result in reported High Energy Arcing Fault (HEAF) frequency values for an individual plant being inconsistent with industry experience. The industry experience and consequently the HEAF frequency is based on 3 events occurring on medium voltage switchgears and ½ event occurring on a 480 VAC Load Center. Because of the relative numbers of switchgears and load centers at an individual plant, it is expected that the resultant frequency may be inappropriately skewed. There is a concern that the occurrence of a HEAF frequency distribution that departs significantly from the 3 to ½ ratio would cause results to be challenged.

There is a need to resolve these issues to prevent future rework and to reduce burden associated with uncertainty treatment. This topic has impact on the NFPA-805 pilots, non-pilots and other users of NUREG/CR-6850.

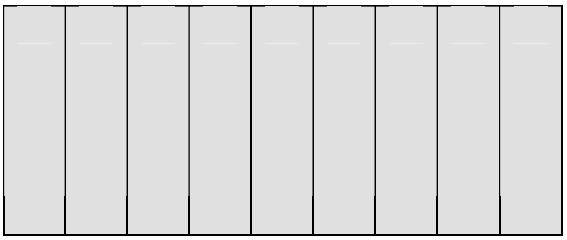
Detail contentious points if licensee and NRC have not reached agreement

Potentially relevant existing FAQ numbers:

This guidance is specific to the characterization of electrical cabinets for Bin 16 HEAF determination. The characterization and counting of electrical cabinets for Bin 15 determination is addressed by FAQ 06-0016.

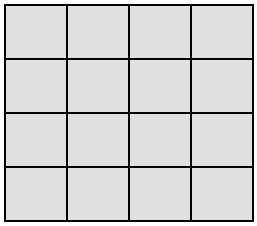
<u>Response Section</u>

It is proposed that the existing guidance in NUREG/CR-6850 that recommends counting based on segments be modified. Since industry experience shows that the medium voltage switchgears are most likely to experience this event, it is proposed that each low voltage switchgear (usually referred to as load centers or unit substations) operating at 440 Vac or higher be counted as a single unit regardless of the number of vertical sections or segments. This treatment would ensure that the majority of the HEAF frequency is allocated to the medium voltage switchgears. When performing detailed fire modeling, the HEAF should be distributed by vertical section of the applicable load center.



Medium Voltage Switchgear

9 Breakers and Sections
Count = 9 for Bin 16



Low Voltage Switchgear ≥ 440 Vac

(Load Centers or Unit Substations)

16 Breakers in 4 Sections

Count = 1 for Bin 16

Basis:

The existing guidance in NUREG/CR-6850 is based on industry data which has only been provided with fidelity adequate to support plant level ignition frequencies for HEAFs. Although the guidance does address the data, it leaves room for variability that can create issues with PRA quality. It is important that the ignition frequency results be of sufficient quality to support not only NFPA-805 transition but also the more broad scope of regulatory inspection and enforcement issues.

The guidance proposed will provide more consistency when determining plant specific electrical cabinet ignition frequencies while working within the bounds of the exiting data provided by the NUREG. This should facilitate the review and acceptability of the results.