SARGENT & LUNDY ENGINEERS CHICAGO

Calcs. For Tray Cover Exemption for Safety Trays Under Non-Safety Raceway	Calc. No. 19-BD-13	
	Rev. 0	Date 01-08-85
X Safety-Related / Non-Safety-Related	Page 1 of 2	

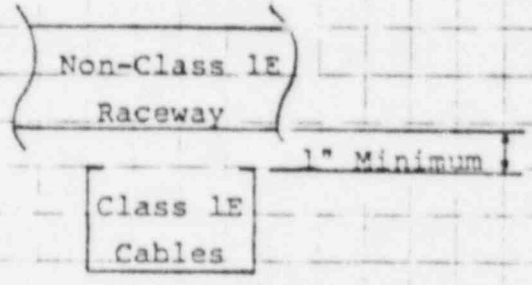
Client Illinois Power Company	Prepared by [illegible]	Date 12-31-84
Project Clinton	Reviewed by [illegible]	Date 1-2-85
Proj. No. 4536-00 Equip No. ----	Approved by [illegible]	Date 1-8-85

RESPONSIBLE DIVISION: EPED FILE NO.: 19BD

Purpose:

The purpose of this analysis is to demonstrate that Class 1E cables routed in uncovered trays which are located under non-Class 1E cable in uncovered solid bottom trays or conduit do not require covers for internally generated faults/fire provided a one inch minimum separation is maintained. Separation requirements for external hazards are not addressed in this analysis.

Figure:



Justification:

Regulatory Guide 1.75-1978 and IEEE 384-1974 address separation due to both internally generated fire and external hazards. Since external hazards (including exposure fires) are addressed in specific studies with specific requirements, this analysis will be limited to addressing internally generated faults/fires.

For damage potential limited to internally generated failures or faults, IEEE 384-1974, Section 5.1.1.2 dictates that a minimum separation distance can be established by analysis of the proposed cable installation. Otherwise a vertical separation of three feet in cable spreading areas and five feet in general plant areas shall be maintained per Section 5.1.3 and 5.1.4.

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Justification: (continued)

The cable which is installed in the trays on the Clinton Project is IEEE-383 qualified fire retardant cable. Also, the design basis is that trays will not be filled above the side rails. Whenever the raceways (i.e. conduit or solid bottom uncovered tray) with only non-Class 1E cables pass over an uncovered tray with Class 1E cables, the results of an internally generated fault/fire in the essential tray can only affect that division of the cables and the non-Class 1E cables which are not required for safe shutdown. Internally generated faults/fires in the non-essential raceway will only affect the non-Class 1E cabling because heat from internally generated faults/fires will rise thus not affecting the cables below, provided a one inch air gap is utilized. Covers on non-Class 1E cable tray will not provide any protection for the Class 1E tray beneath.

Based on the above, tray covers on neither the tray with Class 1E cables nor the tray with non-Class 1E cable are required when non-Class 1E raceways are over Class 1E uncovered trays and there is a minimum of 1" separation.

Reference:

1. IEEE 384-1974
2. Final Safety Analysis Report (FSAR) - Amendment 15
3. NUREG-0853 - Safety Evaluation Report (Clinton)
4. NRC Regulatory Guide 1.75 - 1978

The review of this analysis consisted of a detailed review of the original

KB Musser
1-2-85

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