NRC PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 1 1979

MEMORANDUM FOR: W. M. Morrison, Assistant Director for General Engineering Standards, Division of Engineering Standards

FROM: Brian K. Grimes, Assistant Director for Systems Engineering, Division of Operating Reactors

SUBJECT: STANDARD REVIEW REQUEST (TAC 33)

The Plant Systems Branch has reviewed the proposed revision to IEEE Std. 384-1977. As a result of our review, we recommend a negative ballot. Those items which must be corrected in order to make the revised standard acceptable are identified in our enclosed comments.

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for Systems Engineering
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Enclosure:
As stated

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COMMENTS ON IEEE STD. P384/D1

1. "Low energy", as used in Section 4.6.1(4), is undefined and, therefore, this section does not give the guidance which should be provided by an industry standard. It is recommended that a footnote be added which cites Article 725-8 (Class 1 Circuits) of the National Electric Codes for a definition of and the requirements for "low energy" circuits.

2. The one inch separation distance that is specified in Section 5.1.5 is not acceptable because it does not offer any protection from the effects of an exposure fire. It is recommended that this specification be eliminated.

3. The use of fuses as isolation devices, specified in Section 6.2.2.3, is unacceptable because fuses do not satisfy the requirements of 10 CFR 50.55a(h) nor 10 CFR 50 Appendix A with regard to the requirements for testing. Consequently, and in accordance with IEEE Std. 379, all circuits that use fuses as isolation devices must be subjected to a single failure analysis which assumes a second failure (in addition to the non-tested, non-detectible, failure of the fuse to operate). It is recommended that this section be deleted.

4. The material presented in Sections 4.7, 4.8, 4.9 and 4.10 does not provide adequate separation criteria for the designer. They are restatements of 4.1 for certain events but are not adequate to define the events or give any significant guidance to the designer.

5. Section 5.1.1.2 does not give separation criteria for non-IEEE 383 cable. All plants contain some non-IEEE 383 cable. Provide separation criteria for non-IEEE 383 cable.

6. Section 5.1.3 should require a 3 hour fire barrier between redundant systems where practicable because no area can be deemed free of potential exposure fires caused by breakdown of administrative controls on combustibles.

7. The difference between a "non-hazard" and a "limited hazard" area is not discernable. The note in Section 5.1.4 misleads the designer because no area can be deemed free of a potential exposure fire.

8. The separation distances of Sections 5.1.3, 5.1.4, and 5.1.5 are meaningless unless the zone of influence of the specific hazard is known. Therefore, each separation distance should be justified based on the known hazards and this justification should be documented in the hazards analysis.

9. Section 5.1.6 does not cover pipes containing flammables or combustibles.

10. The separation distance of 50 ft. is without basis. Such distance depends upon the nature of the fire hazard. The variation of the fire barrier rating is without basis. Such rating also depends upon the nature of the fire hazard.

11. The special provisions required for cables to meet the single failure criteria should be defined in Section 5.1.8.3.

12. There is no basis for 6" separation in Section 5.6.2. Fire barriers should be required in all cases.

13. The difference between 4.7 and 7.1 is not obvious and should be clarified.

14. Sections 7.2.1 and 7.2.2 are inconsistent and must be corrected.

15. Section 7.2 is an inadequate attempt to define a fire design basis event. No other design basis events pipes break, missile etc., are defined. Indicate, by reference, where criteria for defining design basis events is stated.

16. The criteria for associated circuits in Section 4.5 permit redundant safe shutdown circuits to be isolated and run in the same conduit. This is unacceptable when redundancy is required.

17. Neither Section 4.5 nor 5.1.7.2(2) explicitly requires that, in the case of circuits and equipment that is required to mitigate the consequences of failure (including false operation) of other equipment and circuits, the former be physically separated from the latter.

18. Sections 5.1.1.3 and 7.3.4 should also state that there are, at present, no accepted methods of analysis.

19. Section 5.4.1 does not adequately address the separation of redundant equipment that is connected to the same offsite sources. There has been at least one instance where hot gases have passed through ducting from a cubicle in one division to the cubicle of a second division and resulted in breaker (isolator) damage in two divisions as a result of a single fire.