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April 11, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

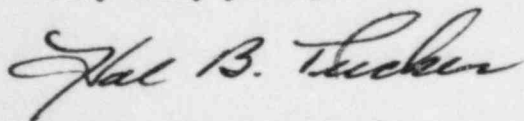
Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: Catawba Nuclear Station
Docket Nos. 50-413 and 50-414

Dear Mr. Denton:

Mr. R. L. Tedesco's letter of May 12, 1982 transmitted a copy of the Fire Protection preliminary draft Safety Evaluation Report. On July 5, 1983 Duke Power provided a response to the portion of the preliminary draft SER which addressed associated circuits. The attached discussion supplements our previous response.

Very truly yours,



Hal B. Tucker

ROS/php

Attachment

cc: Mr. James P. O'Reilly
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ASSOCIATED CIRCUIT REVIEW

This information is being provided to supplement the response submitted in Attachment 2 of H. B. Tucker's July 5, 1983 letter to H. R. Denton. The information presented in Attachment 2 is still valid for Catawba Nuclear Station but addresses non safety related associated circuits similar to that defined in IEEE 384.

A review of associated circuits has been performed for Catawba based on the following definition:

Associated Circuits of Concern are defined as those cables (safety related, non-safety related, Class 1E, and non-Class 1E) that:

1. Have a physical separation less than that required by Section III.G.2 of Appendix R, and;
2. Have one of the following:
 - a. a common power source with the shutdown equipment (redundant or alternative) and the power source is not electrically protected from the circuit of concern by coordinated breakers, fuses, or similar devices (see diagram 2a), or
 - b. a connection to circuits of equipment whose spurious operation would adversely affect the shutdown capability (e.g., RHR/RCS isolation valves, ADS valves, PORVs, steam generator atmospheric dump valves, instrumentation, steam bypass, etc.) (see diagram 2b), or
 - c. a common enclosure (e.g., raceway, panel, junction) with the shutdown cables (redundant and alternative) and,
 - (1) are not electrically protected by circuit breakers, fuses or similar devices, or
 - (2) will allow propagation of the fire into the common enclosure, (see diagram 2c).

The design of Catawba Nuclear Station employs three redundant shutdown divisions (Train A, Train B, and the Standby Shutdown System (SSS)). A review has been performed to assess the potential of associated circuits adversely affecting the shutdown capability.

The methodology and bases for this review were as follows:

1. Associated circuits as depicted in paragraph 2C and diagram 2C do not exist at Catawba Nuclear Station. This is due to the following:
 - A. The armored cable utilized at Catawba has a high resistance to fire propagation as demonstrated by existing test results.
 - B. Propagation of electrical faults from one shutdown division to another within enclosures is precluded by the separation and isolation criteria applied at Catawba.
2. Areas of the plant which contain cabling from two or fewer of the shutdown divisions required no further review of associated circuits since at least one shutdown division would be unaffected by a fire in those areas.
3. Areas of the plant which contain cabling from all three shutdown divisions were reviewed in detail to assess the potential of associated circuits adversely affecting the shutdown capability.

For each of the subject fire areas, a detailed analysis was performed by one of the following methods.

- A. The cabling of one of the three shutdown divisions was selected to be analyzed. Analysis of these cables was performed to verify:
 - (1) The cabling was not required to insure performance of necessary shutdown functions.
 - (2) Adequate electrical fault protection was provided by coordinated breakers, fuses or similar devices to prevent unacceptable impact to that shutdown division's power sources.
 - (3) No spurious operation of valves or equipment would occur which could adversely affect the shutdown capability of that division.

B. The shutdown functions were defined which were supported by equipment or cabling within the fire area. Each shutdown function was then reviewed to verify redundant shutdown equipment existed which was separated from the postulated fire location. For each shutdown function so identified, an analysis of associated circuits within the fire zone was performed to verify:

- (1) Adequate electrical fault protection was provided by coordinated breakers, fuses or similar devices to prevent unacceptable impact to that shutdown division's power sources.
- (2) No spurious operation of valves or equipment would occur which could adversely affect the shutdown capability of that division.

This review identified two cases where changes will be required to assure shutdown capability using this expanded definition of associated circuits. These changes will be made and are already underway. One of the changes involves the relocation of a control relay for the Auxiliary Feedwater System and will be completed prior to the required operability date for the Auxiliary Feedwater System. The second change will provide fuse/breaker coordination for two 600V motor control center loads and will be completed prior to fuel load.

Once these changes are completed the design of Catawba Nuclear Station will provide the desired protection of the safe shutdown capability from the postulated fire induced failures of associated circuits as defined in this response.

EXAMPLES OF ASSOCIATED CIRCUITS OF CONCERN

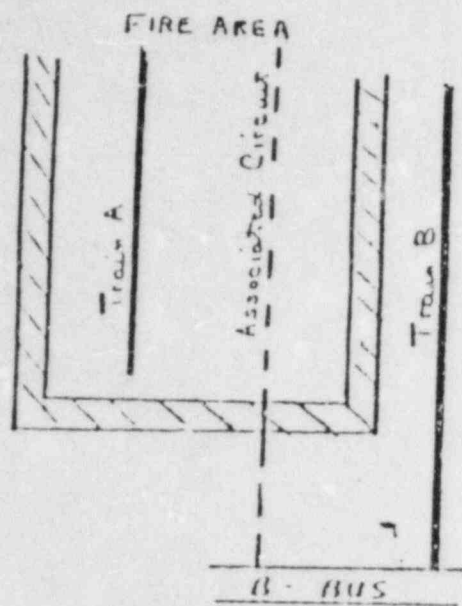
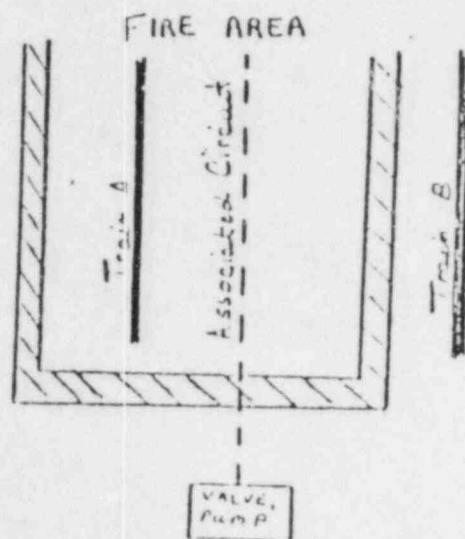
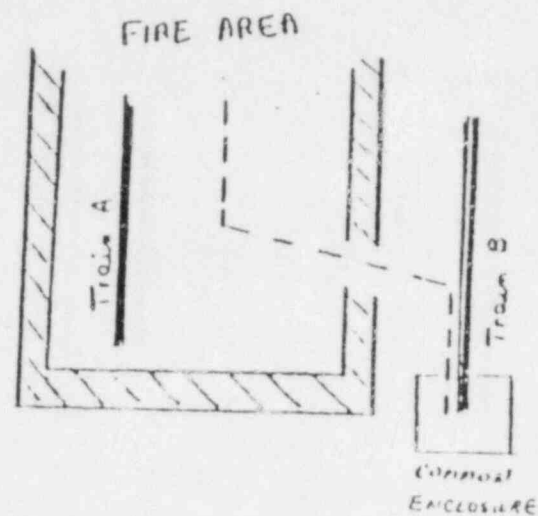


Diagram 2A



Equipment whose spurious operation could affect shutdown

Diagram 2B



The area barriers shown above meet the appropriate sub-paragraphs (a-f) of section III.G-2 of Appendix R.

Diagram 2C