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March 13, 1980

1-030-07

Director of Nuclear Reactor Regulation
ATTN: Mr. R. W. Reid, Chief
Operating Reactor Branch #4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Arkansas Nuclear One-Unit 1
Docket No. 50-313
License No. DPR-51
Fire Protection
(File: 1510:2040)

Gentlemen:

In response to your letter of February 25, 1980, the following is provided.

1. As noted in your letter, the safety related cables in the ANO-1 Cable Spreading Room are all in conduits and located at the ceiling. The only source of combustibles in the Cable Spreading Room is cable insulation on non-safety cables in trays located below the safety conduits. The detection/actuation system for the deluge system consists of ceiling mounted smoke detectors and Protecto wire in a "S" pattern in the non-safety cable trays.

The smoke detectors were installed in accordance with manufacturers recommendations, UL requirements, ANI requirements and to twice the density recommended in NFPA 72-E 1974. Air movement in the Cable Spreading Room due to HVAC is negligible and indeed could not be detected with instruments by NRC personnel during a site visit in 1979. Therefore, due to the known and fixed physical characteristics of heat generated smoke and ionization products, any smoke generated in the Cable Spreading Room will travel immediately to the ceiling and expand outward along the ceiling. Due to the extreme density of smoke detectors in the Cable Spreading Room, we cannot postulate any fire that would be significant enough for flame impingement on safety related conduits (impingement is necessary to damage the cables inside) that could avoid actuation of the smoke detectors.

A similar line of logic applies to the Protecto wire heat detectors. Due to the physical arrangement of the Protecto wire and the physical

properties of the wire and, hence, its actuation, we cannot possibly postulate any fire large enough to potentially threaten safety related cables in conduit that would not melt the Protecto wire and, thus, initiate a signal.

Based on our thorough review of the system, the reviews by ANI and our Fire Protection Consultant, we have concluded the existing system is more than adequate to assure that no conceivable fire in the ANO-1 Cable Spreading Room could go undetected and, hence, jeopardize our capability to safely shut down the plant.

We have further reviewed the minutes of meetings when this system was discussed in detail, Reg. Guide 1.120, BTP 9.5-1, applicable National Fire Codes, and the draft NRC rule on fire protection and have found no concerns or requirements that indicate that such a system is not adequate to detect and suppress a fire before any substantial damage is done.

We therefore believe that your concerns regarding whether the "response time for the detection system is adequate to actuate the suppression system" is unfounded. Fire protection systems such as this have been used successfully for many years and have performed adequately. Outside of your stated concern in your letter, we have found no indication of this concern within the Fire Protection Industry or in the development of NRC positions and requirements and ask that you reconsider your request.

2. With regard to your concern that the Fire Brigade could not respond if the automatic system failed, we believe the opposite is true. The smoke detectors in the Cable Spreading Room are of the ionization type, the most rapid activating fire detection system known. These smoke detectors will provide an alarm directly to the Control Room at the very early stages of a fire and most probably before any type of flame could develop. (Understanding that the only ignition source in the Cable Spreading Room is a shorted electrical cable and noting that previous testing has only been able to develop a flaming fire from a shorted cable under extreme circumstances and even then one that propagated very slowly, indicates that it is most unlikely a flame would ever develop.) The Cable Spreading Room is located directly below the Control Room. The Fire Brigade (which is dispatched from the Control Room) could reach the Cable Spreading within a very short time. As the Fire Brigade is composed of operators and security personnel which may be in various locations of the plant, the variation of response time of the Fire Brigade considerably overshadows a postulated few second delay in smoke detector actuation time.

Therefore, due to the sensitive nature of the smoke detectors, the density of the detectors, and the fact that a fire would have to develop to the point that substantial flame would have to impinge on the safety related conduits for some significant time before damage could be done, we believe more than adequate time would be available for the Fire Brigade to respond.

3. We do not believe that changing the deluge system actuation system as you request would be an improvement in the actuation system.

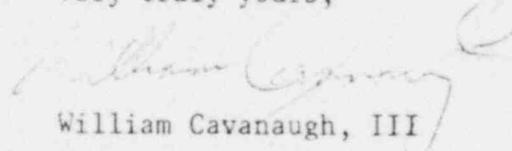
The system was designed and installed as discussed with and approved by the NRC in our March 25, 1979 meeting. The actuation system is designed (with substantial conservatism incorporated) in accordance with NFPA 13 and 15 as appropriate and as required by BTP 9.5-1 Section C.3.c. It meets the requirements of ANI, Reg. Guide 1.120 and the proposed NRC rule on fire protection. The system as it now exists, therefore, meets and/or exceeds all known industry standards, practices, and requirements.

In our opinion, modifying the actuation system as you request would significantly increase the probability of a spurious actuation which would therefore be in violation of BTP 9.5-1 Section D.3.

Since we are not aware of any standard or regulation which indicates such a modification would improve the system and our review indicates that such a modification would be in violation of BTP 9.5-1, we must ask that a firm basis be provided justifying that such a modification has a basis in standards and regulations, would substantially improve the system, and would not decrease reliability before any further consideration of your request can be entertained.

In summary, we believe that the existing ANO-1 Cable Spreading Room deluge and actuation system (which was reviewed and approved by NRC prior to installation and documented in the ANO-1 Fire Protection SER) meets or exceeds all the recommendations and/or requirements of the Fire Protection Industry, ANI, and NRC (Reg. Guide 1.120, BTP 9.5-1, and draft NRC rule on fire protection) and is more than adequate to assure a fire can be detected and suppressed without jeopardizing the capability to safely shut down the plant. We assure you that we consider a fire in the Cable Spreading Room to be an extremely serious matter and have given this issue considerable thought, review and analysis.

Very truly yours,



William Cavanaugh, III

WC:JTE:nak