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June 17, 1983

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

Subject: Byron Generating Station Units 1 and 2  
Braidwood Generating Station Units 1 and 2  
Fire Protection  
NRC Docket Nos. 50-454, 50-455, 50-456,  
and 50-457

- References (a): January 6, 1983, letter from T. R. Tramm  
to H. R. Denton.
- (b): October 5, 1982, letter from B. J.  
Youngblood to L. O. DelGeorge.
- (c): April 11, 1983, letter from B. J.  
Youngblood to D. L. Farrar.

Dear Mr. Denton:

This is to provide additional information regarding the Byron/  
Braidwood fire protection program. Review of this information should  
help close Outstanding Item 13 of the Byron SER.

Enclosure 2 of reference (b) requested further discussion of four  
specific fire protection issues. Reference (a) addressed two of those  
issues. This letter addresses the other two issues: communications and  
cable spreading room suppression. System modifications are described in  
Attachment A to this letter which, based on conversation with technical  
reviewers, will satisfy NRC concerns regarding cable spreading room sup-  
pression systems. Additionally, a third radio communication channel is  
being installed. The repeater for this channel will be located in the  
turbine building and will be separated from the other two repeaters by at  
least fifty feet. Appropriate changes to the FSAR and Fire Protection  
Report will be provided in future amendments.

Please address further questions regarding these matters to this  
office.

One signed original and fifteen copies of this letter and the  
attachments are provided for your review.

Very truly yours,

T. R. Tramm

Nuclear Licensing Administrator

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ATTACHMENT A

Cable Spreading Room Suppression Systems

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1 The applicant's position on fire protection features for the cable spreading rooms was last transmitted to the NRC in January, 1983. At that time, we concluded that when the overall design of the cable spreading rooms and their fire protection features were considered, adequate protection for these areas has been provided. We believe that conclusion is still valid. Nevertheless, during several subsequent discussions with the staff, we have agreed to provide additional features and modifications to the fire protection systems to further enhance their reliability. These are discussed below.

First, all interior doors in both the upper and lower cable spreading areas will be electrically supervised. Previously, only perimeter doors to the cable spreading areas were provided with this feature. Since all of the cable spreading area doors will now be supervised, the staff concern that an interior door inadvertently left open could compromise the effectiveness of the automatic gaseous suppression system by preventing the suppression agent from reaching its design concentration is now eliminated. The reliability of the primary suppression systems for both the upper and lower cable spreading areas is enhanced by this change. Additionally, the fire brigade's training emphasizes the need to keep these doors closed to ensure the effectiveness of the gaseous suppression systems. The fire brigade would not open these doors randomly, nor leave them open for any cable spreading rooms in which there was a fire.

In response to a staff concern regarding potential adverse effects of active component failures on the automatic Halon primary suppression system for the upper cable spreading areas, the applicant has agreed to modify the system to provide resistance to single failures. The modifications to be made will consist of the following changes. Additional detectors will be added to provide two separate detection circuits. A second train of actuation logic will be added in parallel to the existing logic train. The second detector circuit will provide input to the new actuation logic. The existing Halon bottle discharge valve

actuators (which presently consist of a single pilot valve) will be replaced with a pair of pilot valves, each connected to one of the two trains of actuation logic, and either of which can actuate the Halon bottle discharge valve. Additional zone discharge valves will be added so that each cable spreading area will have two parallel zone discharge valves to direct Halon from the discharge manifold to the zone distribution piping. Additional Halon bottles are being provided to add redundancy to the Halon supply to provide an increase in the duration of the design level concentration. For all zones, one additional bottle will be initially discharged to insure an adequate concentration in the event of a failure of one bottle to discharge. Additional bottles will be discharged in a timed sequence to insure that the design concentration can be maintained for at least 20 minutes. With these changes, the reliability of the automatic Halon suppression system will be significantly enhanced. A single failure of principle active components and subsystems of the fire detection and suppression system can now be tolerated without loss of function.

The staff expressed a concern about isolating the suppression systems during entry into the cable spreading rooms, and what indication is available to the operators. All of the gaseous suppression systems are included on the fire protection panel in the main control room. For each suppression system discharge zone, the panel in the main control room has two indicator lights, one for "fire" and one for "trouble". Each of these indications is accompanied by an audible alarm. The "trouble" indication includes an input for "isolation valve closed". Thus, whenever the suppression system is intentionally isolated (as for extended maintenance in the room), the operators in the Control Room are alerted to this situation by audible and visible alarms. Additionally, both the Halon and CO<sub>2</sub> systems have audible pre-discharge alarms in the rooms which they protect. Thus, anyone present in the room receives a warning and has a few moments to leave the room prior to the discharge. This ensures that the suppression system isolation valves will not be used every time someone enters the rooms. The system would only be isolated for major maintenance activities.

The applicant believes that with the modifications and enhancements described above, the reliability of the fire protection system for the cable spreading areas is equivalent to that provided by a fixed water spray system. The defense in depth concept has been applied to these areas, and plant safety is assured.