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Department of Nuclear Energy

**DRAFT**

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August 21, 1980

Mr. Robert L. Ferguson  
Chemical Engineering  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Re: Peach Bottom, Fire Protection Review

Dear Bob:

Attached are our comments on items 3.2.3(1), (2), (3), (4), 3.2.9, 3.2.13, 3.2.14, 3.2.15, and 3.2.4 of the Peach Bottom Nuclear power plant.

The final item 3.1.8(2) will be sent to you shortly.

Respectfully yours,

*Ed MacDougall for*

Robert E. Hall, Group Leader  
Reactor Engineering Analysis

REH:EAM:sd  
attachment  
cc: V. Benaroya w/o att.  
W. Kato "  
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PEACH BOTTOM

Fire Protection Review

Item 3.2.3(1) a, b, c and d - Fire Detection Systems

Item a of the above SER requirement indicates that the licensee will evaluate the need for additional early warning detectors in fire zones 5H, 5J, 5K, 13H, 13J, 13K, 19, 27, 20, 30 21, 29, 23, and 31.

In their letter dated February 16, 1979, the licensee stated that smoke detectors would be installed in certain areas, but not in others. The licensee did not indicate in detail which area contained safe shutdown equipment. This is not acceptable.

It is our opinion that early warning detectors be placed in all areas containing safe shutdown equipment or cables.

This would include all of the subject areas unless the licensee can demonstrate that they are not needed for safe shutdown.

Item b of the captioned SER requirement requires the licensee to evaluate the need for early warning detectors above the ceiling of the control room.

By letter dated February 16, 1979, the licensee indicated that the area above the control room suspended ceiling contains 26 cable trays; none of which is safety related. It also indicates that of the 26 cable trays, 23 contain only cable that is of flame retardant construction. The remaining 3 cable trays contain only instrumentation cable consisting of polyethylene and PVC insulation and jacketing. Based on this, the licensee has indicated that the 3 cable trays containing non fire retardant cabling will be covered with a fire retardant coating. The licensee has also indicated that there is no need for the installation of early warning fire detectors in the space above the suspended ceiling of the control room.

The licensee's submittal on this item is considered acceptable based on the fact that the cables located in this area above the control room ceiling are not safety related, and that the cable insulation is of a fire retardant type or will be covered with a fire retardant coating. The installation of early warning fire detectors, therefore, in this area is not considered necessary.

Item c of the captioned SER requirement indicates that the licensee will evaluate the need for early warning fire detectors within room enclosed panels which contain redundant channels.

By letter dated February 16, 1979 the licensee has indicated that the installation of early warning fire detectors within the control room panels is not necessary. Their basis for this conclusion is that the control room is continually occupied and a fire would be quickly detected by an operator on duty. They also base this on their safe shutdown analysis of the control room consoles and cabinets which indicates that there are redundant methods available for shutting down the plant following a fire in any single control room or console compartment.

Because safe shutdown systems are located in the control room console and cabinets, it is our opinion that early warning fire detectors be provided in the enclosed cabinets.

Item d of the captioned SER requirement calls for the licensee to evaluate the need for early warning fire detectors in the torus compartment and instrumentation rack rooms.

By letter dated February 16, 1979, the licensee in their response to staff position PF-39a addresses the need for fire detectors in the torus compartment. The licensee does not provide a response, however, to the need for fire detectors in the instrumentation rack compartments. The licensee's response indicates that the torus compartment has only one cable tray which runs around the circumference of the enclosure and the cable in this tray is primarily of IEEE 383 qualified cable. All other cable is within conduit. They propose to place flame retardant blankets in this cable tray but do not intend to provide fire detectors in the torus compartment. As there is no mention of the instrumentation rack compartments, it can be assumed that fire detectors will not be provided here either.

The SER, Section 5.6.3 states that cables for safety shutdown equipment are routed in the torus compartments. Preliminary evaluations indicate that redundant division of such cable could be damaged by an unmitigated fire but the licensee has not adequately addressed the consequences relative to safe hot and cold shutdown from fire damage to these cables.

The licensee's response has not indicated if safety-related or safe shutdown cables are routed in the cable tray in the torus compartment and the effects of a fire involving these cables.

In order to meet the requirements of Appendix R III F, we recommend that early warning fire detectors be provided in the torus compartment and in the compartments containing the instrumentation racks.

#### Item 3.2.3 (2), (3), and (4)

Item (2) of the captioned SER requirement states that the licensee has agreed to have a qualified fire protection engineer review the smoke detector installation design to ensure that the placement and sensitivity of the detectors will adequately provide early warning.

The licensee has not responded to this requirement. In their February 16, 1979 submittal the licensee states in response to position PF-27 that they do not intend to perform detector bench tests, but will perform an operational and calibration pre-op test on each detector following installation to ensure its design sensitivity. They do not outline the qualifications of the personnel supervising these tests, nor the method that will be followed. Therefore, the submittal on SER item 3.2.3(2) is considered unacceptable.

Item (3) of the captioned SER requirement indicates that the licensee will study the feasibility of installing remote alarm lamps for new or existing detectors which are obstructed from sight in large rooms with multiple detectors.

The licensee has not responded to this item.

Item (4) of the captioned SER requires the licensee to evaluate the necessity for installing additional detectors in all those areas that contain safety related equipment and those areas that pose a hazard to safety related areas. This modification is based on requirements of the SER contained in Sections 5.1, 5.2 and 5.13.

In their February 16, 1979 submittal the licensee responded to item 5.1 in reference to position PF-37a.

The two areas of the Turbine Building containing safety-related cables or cables for safe shutdown equipment will have smoke detectors installed.

The licensee's submittal on this item is considered acceptable at this time.

In their submittal dated December 20, 1978, the licensee submitted their response to Item 5.2 which indicated that they would comply with the requirement. We find this acceptable.

In the licensee's response to staff position PF-46(c) of their December 10, 1978 submittal, the licensee responded to item 5.13. This was further elaborated in their letter of February 16, 1979.

The need for early warning fire detectors in fire zone 72A is contingent on the safety related and safe shutdown equipment contained in this zone. This information will be forthcoming in the safe shutdown analysis. Therefore, the evaluation of the licensee's submittals should be held open until a safe shutdown analysis of this area.

#### Item 3.2.9 - Ventilation Ducts

Item 3.2.9 of the Peach Bottom SER states that the licensee will evaluate the necessity of modifying the ventilation in the control room complex by installing, as necessary, manual or automatic closing devices for dampers.

In their submittal dated February 16, 1979, the licensee responded to this item. They state that the HVAC system can be changed to 100% exhaust to the outside and if smoke enters the control area from the surrounding areas it will be exhausted. The submittal also states that the area has low combustible loading and smoke detectors are going to be provided in the peripheral rooms. Based on this, the licensee does not plan to install automatic smoke actuated or manually actuated dampers in the ventilation ducts between the control room. The licensee's submittal also indicates that openings in the walls will be closed and self-closing mechanisms will be provided on all doors.

The licensee's submittal on this item is unacceptable. A fire originating in one of the peripheral rooms of the control room complex could result in large quantities of smoke entering the control room. It is therefore our opinion that all communicating passages should be equipped with provisions to prevent the spread of smoke to the control room, and that all ventilation ducts entering the control room be provided with automatically or manually actuated dampers.

### Item 3.2.13 - Hose Houses

Item 3.2.13 of the Peach Bottom SER states that the licensee will evaluate the need to provide two hose houses at the east side of the plant at the hydrants nearest the northeast and southeast corners of the turbine building (4.3). Each hose house should contain a minimum of specified equipment.

The licensee's response to this item in their letter dated December 10, 1978, is unacceptable. Presently, there are no hose houses with connected hose along the east side of the plant. A fire on this side of the plant would require moving a hose cart from its house to a hydrant on the east side and connecting the hose. In the event of a fire involving the turbine lube oil storage and equipment rooms, the time required to utilize the firefighting equipment on the existing hose carts could be unacceptable.

In order to meet the requirements of SER item 3.2.13 we recommend that you request the licensee to provide the two hose houses and all of the additional equipment as listed in the SER.

### Item 3.2.14 - Emergency Lighting

Item 3.2.14 of the Peach Bottom SER states that the licensee will evaluate the need to provide fixed emergency lighting consisting of fixed sealed beam units with individual battery power supplies for access to and egress from the control room, the cable spreading room, the emergency switchgear and battery rooms, and the ground floor below via stairway No. 9.

In their submittal dated February 16, 1979 the licensee responded to this item referenced as response to staff position PF-32. In their submittal, the licensee describes the existing 3 lighting systems consisting of normal lighting system, emergency AC lighting system and emergency DC lighting system. It also discusses the lighting systems serving the control room, cable spreading room, switchgear rooms, battery rooms and stairway No. 9.

As stated in the submittal, all of the above areas are provided with emergency AC lighting, emergency DC lighting or both, in addition to the normal lighting system. The licensee concludes that the existing emergency lighting provisions are adequate in these areas and additional battery powered emergency lights are not needed.

The licensee's submittal is considered satisfactory and we recommend that it be acceptable.

### Item 3.2.15 - Hydrant Fittings

The captioned SER item states that the licensee will evaluate the need to provide two double female adaptors for use by a fire department pumper in pumping fire water directly from the inlet pond to a hydrant. These fittings should be stored in a central location.

The licensee has not submitted a response to this item.

#### Item 3.2.4 - Water Suppression Systems

In the Peach Bottom Fire Protection Safety Evaluation Report, we required the licensee to evaluate the adequacy of protection in: (1) Recombiner Building, and (3) Recombiner Building for the ventilation system filters. (Item (2) was previously evaluated in our letter dated June 6, 1980).

By letter dated February 16, 1979, the licensee provided the results of their evaluation captioned as response to Staff Position PF-42 Fire Hazards Analysis. They state that the likelihood of an explosion in the Recombiner Building has been addressed in their response to I.E. Bulletin 78-03. In addition, they state that NUREG-0442 indicates that an explosion in the off-gas system would not result in an unacceptable release of radiation. The probability of an external fire affecting the Recombiner Building charcoal filters and exhaust ventilation fans is remote. The equipment is enclosed in a masonry and concrete room with no combustibles present. Ducts passing through the walls are provided with fire dampers and the charcoal filters are protected by automatic deluge water suppression systems. Hose stations and portable extinguishers are also provided in the area. Excessive radiation conditions will initiate an alarm in the control room which will be immediately investigated. Based on this, the licensee has concluded that no additional fire protection provisions in the Recombiner Building is necessary.

In our opinion the licensee's response to Item 3.2.4(1) and (3) is acceptable. This is based on their statement that an explosion in the Recombiner Building would not result in an unacceptable release of radiation as per NUREG-0442. As required by Appendix A, the charcoal filters are protected by automatic deluge water fire suppression systems and manual hose stations and portable extinguishers are provided.